The Retaining Employment and Talent After Injury/Illness Network (RETAIN) Demonstration: Evaluation Findings One Year After Enrollment

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Contents

Exhibits

Acronyms

COHE	Centers for Occupational Health and Education (Washington State)
DOL	U.S. Department of Labor
EMR	electronic medical record
KS	Kansas
KY	Kentucky
MN	Minnesota
OH	Ohio
OVR	Kentucky Office of Vocational Rehabilitation
RETAIN	Retaining Employment and Talent after Injury/Illness Network
RTW	return-to-work
SAW	stay-at-work
SGA	substantial gainful activity
SNAP	Supplemental Nutrition Assistance Program
SSA	Social Security Administration
SSDI	Social Security Disability Insurance
SSI	Supplemental Security Income
SSN	Social Security number
UI	unemployment insurance
VDOL	Vermont Department of Labor
VR	vocational rehabilitation
VT	Vermont

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Executive Summary

Each year, millions of workers in the United States leave the labor force, at least temporarily, because of a medical condition or illness (Ben-Shalom et al. 2021; Hollenbeck 2015). Many of these workers fall through critical cracks in the social support system and exit the workforce permanently. Affected workers and the federal and state governments all stand to gain from the implementation of strategies that help people stay at work or return to work following an injury or illness (Ben-Shalom and Burak 2016).

The Retaining Employment and Talent After Injury/Illness Network (RETAIN) demonstration was a collaborative effort by the U.S. Department of Labor (DOL) and the Social Security Administration (SSA) to help workers stay in the labor force after they experience an injury or illness. The goal of RETAIN was to implement and test programs that used early-intervention stay-at-work/return-to-work (SAW/RTW) strategies with adult workers who had recently experienced the onset or worsening of an injury or illness that challenged their ability to work.[1] In Phase 1, which began in 2018, DOL awarded funds to eight state agencies to develop and pilot test programs to help those who experience a potentially disabling condition stay at work or return to work. In Phase 2, which began in 2021, DOL competitively selected five of these states (Kansas, Kentucky, Minnesota, Ohio, and Vermont) to fully implement such programs (named RETAINWOR*KS*, RETAIN Kentucky [RETAIN KY], Minnesota RETAIN [MN RETAIN], Ohio RETAIN [OH RETAIN] and Vermont RETAIN [VT RETAIN], respectively). The five RETAIN programs began enrolling participants in late 2021 and early 2022 and continued enrollment for evaluation purposes through mid-May 2024.

Under contract to SSA, Mathematica conducted an independent evaluation of the RETAIN programs. The overarching goal of the evaluation was to build evidence on the effectiveness of early intervention SAW/RTW strategies in helping people with an injury or illness stay connected to work, avoid entry into SSA's disability programs, and experience better health and economic well-being. The evaluation had several components, including rigorous assessments of the programs' implementation and their impacts on enrollee outcomes in the months immediately following enrollment and in the first year after enrollment.

This report presents findings from participation, impact, and benefit-cost analyses for each of the five RETAIN programs. Each RETAIN program used a random assignment study design, such that some enrollees were in a treatment group that could use RETAIN services and the others were in a control group that could use limited or no services besides those typically available in the community. The report findings cover a one-year follow-up period and are based on Mathematica's analysis of programs' enrollment and service use data, state unemployment insurance (UI) wage records, SSA program data, a follow-up survey of RETAIN enrollees that Mathematica conducted about 12 months after enrollment, and program cost data. The one-year follow-up period reflects data availability, evaluation timing, and a time horizon over which impacts on key outcomes such as SSDI applications could be expected to emerge. An earlier report (Patnaik et al. 2025) summarized impacts on service use, employment, and health outcomes based on an early follow-up survey that Mathematica conducted about two months after enrollment.

[1] Stay-at-work (SAW) strategies seek to avert job interruption by supporting continued work with appropriate adjustments. Return-to-work (RTW) strategies support re-entry to work following an interruption.

A. RETAIN program model

The RETAIN program model builds on an SAW/RTW intervention (Washington State's Centers for Occupational Health and Education [COHE]) that prior research has found to be associated with reductions in the likelihood of being out of work and on disability during the first year after injury or illness and the likelihood of entry into permanent work disability status over eight years (Wickizer et al. 2011; Wickizer et al. 2018).[2] Although COHE focused on people with work-related injuries or illnesses, RETAIN expanded the intended population to reach workers that might be less likely to receive SAW/RTW supports in the absence of RETAIN. The additional populations included those with non-work-related injuries if they were in the labor force when the injury or illness first occurred, or when an existing condition had worsened and began to challenge their ability to work. The RETAIN cooperative agreements specified minimum eligibility criteria for all the programs: to be eligible, individuals needed to have a health condition that was either new or recently exacerbated, be in the labor force at the onset of the condition and not be receiving or have a pending application for Social Security Disability Insurance (SSDI) or Supplemental Security Income (SSI) benefits.

The RETAIN programs followed a core program model (Exhibit ES.1). Medical provider and RTW coordination services were central components of the model that DOL and SSA expected all five programs to provide to all treatment enrollees. Other components of the model could vary by program or treatment enrollees' needs. RETAIN treatment enrollees were eligible to use RETAIN services for up to six months. States had to enroll 80 percent of enrollees within three months of the onset or worsening of the primary health condition that had the potential to limit continued employment or labor force participation. Ideally, states would begin providing services to treatment enrollees immediately upon enrollment.

[2] Many SAW/RTW programs operate in the private sector, including programs run by workers' compensation and disability insurers and, in many markets, third-party administrators that manage absence and disability for large, self-insured employers. RETAIN was premised on the observation that many workers "fall through the cracks" because their cases are not workers' compensation cases and they lack private disability coverage, or they are covered but receive little proactive support (see, for example, Stapleton et al. 2015).

Exhibit ES.1. RETAIN program model

Service category	Program component	Definition
Medical provider services		
	Training medical providers	Programs deliver training on occupational medicine best practices and alternatives to opioids for pain management.
	Offering financial compensation or other incentives to medical providers	Programs offer incentives for medical providers to use occupational medicine best practices and alternatives to opioids for pain management.
RTW coordination services		
	Coordinating return-to-work services	Programs coordinate the delivery of medical and employment services to participants, including developing and implementing an RTW plan. An RTW coordinator usually leads the coordination of RTW services.
	Communicating among parties involved in return-to-work plan	Program staff communicate with other parties (such as the participants' employers) about their plan or ability to return to work. This communication should occur early in delivering RETAIN services to support the participant in returning to work as soon as possible.
	Monitoring treatment enrollees' progress	Programs track and monitor the participants' medical and employment progress.
Other SAW/RTW services		
	Supporting workplace-based interventions	Programs offer services to facilitate the participants' return to work. This might include modifying their duties and adjusting their schedules, tasks, and physical worksites.
	Retraining or rehabilitating enrollees	Programs offer or connect participants to retraining or rehabilitation services when participants can no longer perform their primary jobs or suitable alternate work.

Source: The U.S. Department of Labor's RETAIN Funding Opportunity Announcement.

B. RETAIN programs

In each state participating in Phase 2 of RETAIN, the lead agency worked with a consortium of partners, such as state or local workforce development entities, healthcare systems, and medical provider networks, to implement its RETAIN program. Each program was also free to specify (within the bounds of the cooperative agreement requirements, as described in the previous section) the organizational structure, service area, eligible population, recruitment approach, and experimental study design (Exhibit ES.2).

Exhibit ES.2. RETAIN programs and their key features

Program	Key partners[a]	Service area, eligible population[b] and referral sources
RETAINWORKS (Kansas RETAIN)	**Lead agency:** Kansas Department of Commerce **Healthcare partners:** Ascension Via Christi, Stormont Vail Healthcare, University of Kansas Medical Center, Kansas Clinical Improvement Collaborative **Workforce partners:** All five local workforce development boards in Kansas, Kansas Business Group on Health, Kansas Society for Human Resource Management	**Service area:** Entire state (105 counties) **Eligible population:** Adults who are employed or seeking employment and have a work- or non-work-related injury or illness **Referral sources:** EMR reports, medical providers, local workforce development area staff, employers, self-referrals
RETAIN Kentucky (RETAIN KY)	**Lead agency:** Kentucky Department of Workforce Investment, Office of Vocational Rehabilitation **Healthcare partners:** University of Kentucky HealthCare, University of Louisville Health **Workforce partners:** University of Kentucky Human Development Institute, Council of State Governments, Kentucky Chamber of Commerce	**Service area:** Entire state (120 counties) **Eligible population:** Adults who are employed or seeking employment and have a non-work-related injury or illness **Referral sources:** Office of Vocational Rehabilitation, targeted online advertising, healthcare partners, workforce partners, employers, self-referrals
Minnesota RETAIN (MN RETAIN)	**Lead agency:** Minnesota Department of Employment and Economic Development **Healthcare partners:** Mayo Clinic, HealthPartners TRIA **Workforce partners:** Workforce Development, Inc.	**Service area:** Entire state (87 counties) **Eligible population:** Adults who are employed or seeking employment and have a work- or non-work-related injury or illness **Referral sources:** EMR reports, mass email campaigns to Mayo Clinic patients, targeted online advertising, medical providers, employers, self-referrals
Ohio RETAIN (OH RETAIN)	**Lead agency:** Ohio Department of Job and Family Services **Healthcare partners:** Bon Secours Mercy Health **Workforce partners:** Local workforce development boards, Opportunities for Ohioans with Disabilities, Ohio Bureau of Workers' Compensation	**Service area:** Three regions in Ohio, encompassing the cities of Youngstown, Toledo, and Cincinnati **Eligible population:** Adults who are employed or seeking employment and have a non-work-related injury or illness **Referral sources:** EMR reports, medical providers, employers, self-referrals
Vermont RETAIN (VT RETAIN)	**Lead agency:** Vermont Department of Labor **Healthcare partners:** OneCare Vermont **Workforce partners:** Vermont Workforce Development Division, HireAbility Vermont, Invest EAP, Vermont Chamber of Commerce	**Service area:** Entire state (14 counties) **Eligible population:** Adults who are employed or seeking employment and have a work- or non-work-related injury or illness **Referral sources:** Self-referrals through web-based pre-screening tool available at primary care practices and other locations in the community, referrals from clinicians and partners

[a] This list is not comprehensive; see Keith et al. (2024) for complete information on program partners.

[b] The cooperative agreements specified minimum eligibility criteria: (1) having a health condition that was either new or recently exacerbated, (2) being in the labor force at the onset of the condition, and (3) not receiving or having a pending application for disability benefits from SSA.

EMR = electronic medical record.

Each program included the core components of the RETAIN program model. However, each state proposed its own approach to each component and developed its own logic model. The RETAIN states differed in how they implemented services and supports to account for differences in their intended populations and the services available to support program outcomes (Keith et al. 2024). Not all services that are part of the RETAIN model were provided directly by the RETAIN program—some were provided by other programs or agencies following a referral from RETAIN.

C. RETAIN evaluation and study design

The federal sponsors of the RETAIN demonstration and other interested parties, such as state workforce agencies, disability advocates, and researchers, want to know whether and how the RETAIN programs achieved their goals, and whether the benefits of each program outweighed its cost. The RETAIN evaluation was designed to build evidence on the effectiveness of the RETAIN programs in helping people with an injury or illness stay connected to work, avoid entry into SSA's disability programs, and experience better health and economic well-being. Mathematica designed the RETAIN evaluation with several components to document how the five states implemented their RETAIN programs and whether they were able to achieve their goals of improving enrollees' outcomes (Berk et al. 2021). These components include process, participation, impact, and benefit-cost analyses.

The evaluation drew on a mix of quantitative and qualitative methods. It used multiple data sources, including RETAIN program documents, RETAIN enrollment and service use data, interviews with treatment enrollees and program staff, two enrollee follow-up surveys (at approximately 2 months and 12 months after enrollment), a survey of medical providers in one state, and state and federal administrative data.

The evaluation's impact analyses relied on an experimental design in which Mathematica randomly assigned enrollees or clusters of enrollees to either a treatment or a control group. Enrollees in the treatment group had access to RETAIN services, whereas the control group had access to limited or no RETAIN services.[3] In four states (Kansas, Kentucky, Minnesota, Ohio), random assignment occurred at the individual level. In Vermont, Mathematica randomly assigned primary care practices into treatment and control groups. For each program, the use of stratified random assignment should have resulted in two groups of enrollees with similar characteristics at the time of enrollment. With a treatment and control group that are broadly similar in initial characteristics, the evaluation can attribute any differences in the outcomes of these groups to the effects of the programs.

Earlier in the evaluation, an **early assessment report** (Keith et al. 2023) described the initial implementation of the RETAIN programs through June 2022. A **process analysis report** (Keith et al. 2024) assessed each RETAIN program's implementation and service delivery from the beginning of program operations through June 2023. This assessment occurred midway through the 48 months of program operations funded under the Phase 2 grants and about 20 months into the enrollment period that began in October 2021 and ended in May 2024. The **early impact report** (Patnaik et al. 2025) examined the

[3] Kentucky's RETAIN program offered an expedited version of RTW coordination services to control enrollees for up to three hours within a two-week period. In the other four programs, control enrollees were not eligible for any RETAIN RTW coordination services. VT RETAIN provided enrollees a resource inventory of services available in the community that they could independently seek out and use.

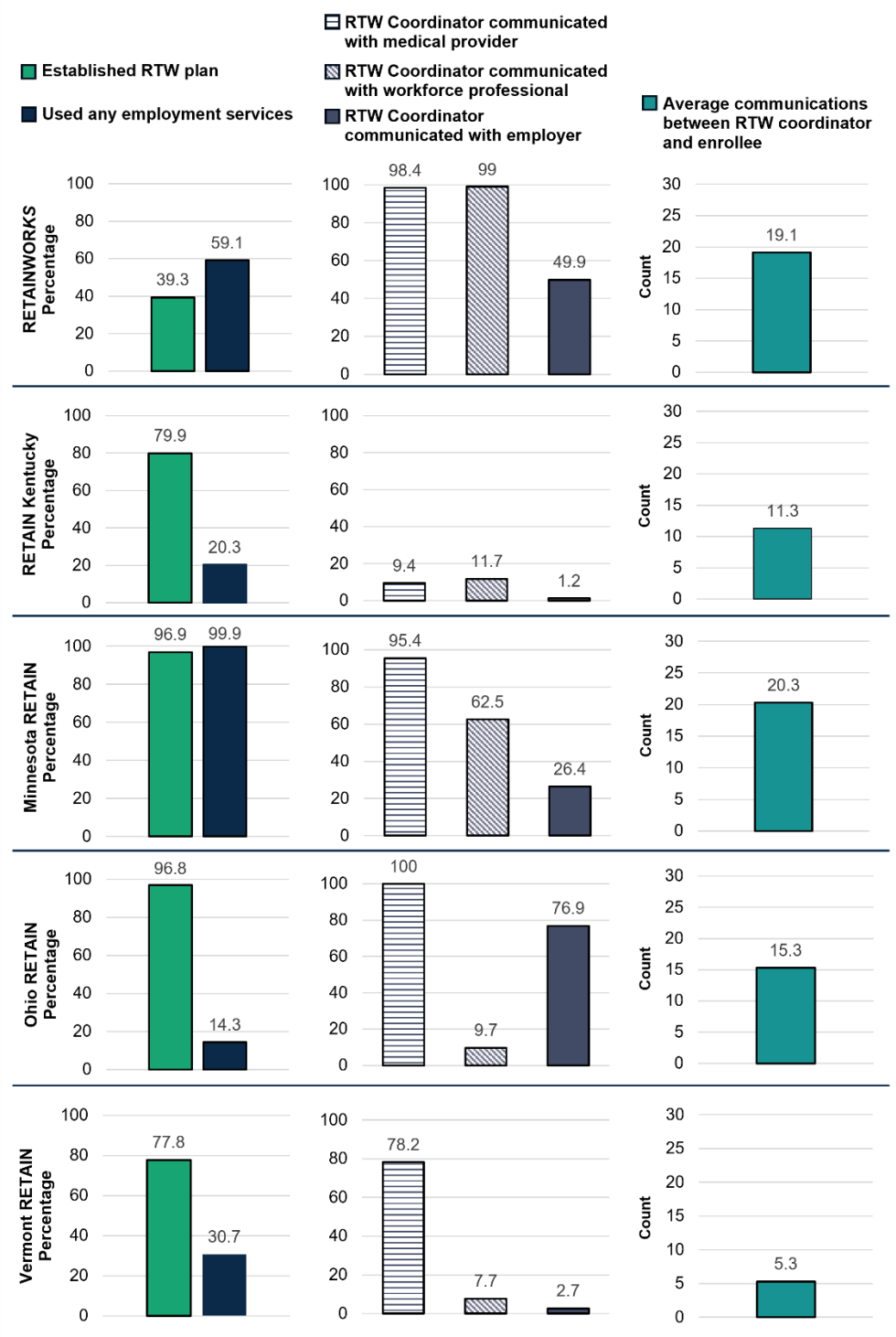
impacts of RETAIN programs on short-term outcomes, including enrollees' use of SAW/RTW services and their work- and health-related outcomes.

The **final evaluation report** (this document) presents findings from analyses of program participation, impacts on enrollee outcomes one year after enrollment, and benefits and costs during that period. For the program participation analysis, we examined program service use data to report on the characteristics of treatment enrollees and patterns of their service use during the six months they were eligible for RETAIN services. Next, for the one-year impact analysis, we assessed each RETAIN program's impact on enrollee outcomes after confirming that the random assignment designs had resulted in treatment and control groups with broadly similar characteristics. We examined each program's impact on intermediate-term outcomes, including (1) employment and earnings outcomes based on state wage records, (2) SSDI and SSI applications and benefits based on SSA program data, and (3) work- and health-related outcomes as reported in the one-year follow-up survey of enrollees. Finally, for the benefit-cost analysis, we estimated the benefits and costs of each RETAIN program during the first year from different perspectives: treatment enrollees, the federal government, the state government, and their combined perspectives.

D. Key findings from the one-year evaluation

Program participation. The five RETAIN programs successfully identified and enrolled workers experiencing new or worsening health conditions and connected them to SAW/RTW supports. Programs' service use data indicate that nearly all treatment enrollees developed an RTW plan and most had repeated contact with an RTW coordinator during the six-month service window (Exhibit ES.3).

Exhibit ES.3. RTW plan establishment, use of employment services, and communication patterns, by program



Source: RETAIN service use data for treatment enrollees.

Note: Treatment enrollees were eligible to use services for up to six months. Employment services could be job retention services (including help with accommodations), job training and job search services, or other employment services.

RTW = return-to-work.

Engagement was strongest in RETAINWOR*KS* and MN RETAIN, which featured frequent communication among enrollees, coordinators, and medical providers and relatively high use of employment-related services (for example, workplace accommodations, job search assistance, and training). OH RETAIN delivered the core coordination elements—near-universal establishment of an RTW plan, frequent contacts between enrollees and their coordinator, and high levels of communication between coordinators and medical providers and employers—but treatment enrollees had limited connection with the workforce system and relatively low use of employment services. RETAIN KY and VT RETAIN achieved relatively high rates of RTW plan completion but had relatively low use of employment services and limited communication with employers and workforce professionals. The core program model's most consistent contribution across the programs was ensuring workers received communication and support with RTW planning.

Impacts on enrollee outcomes. Impacts on employment and earnings varied across states, with RETAINWOR*KS* producing clear evidence of favorable impacts and promising signs for two other programs (MN RETAIN and RETAIN KY) (Exhibit ES.4).

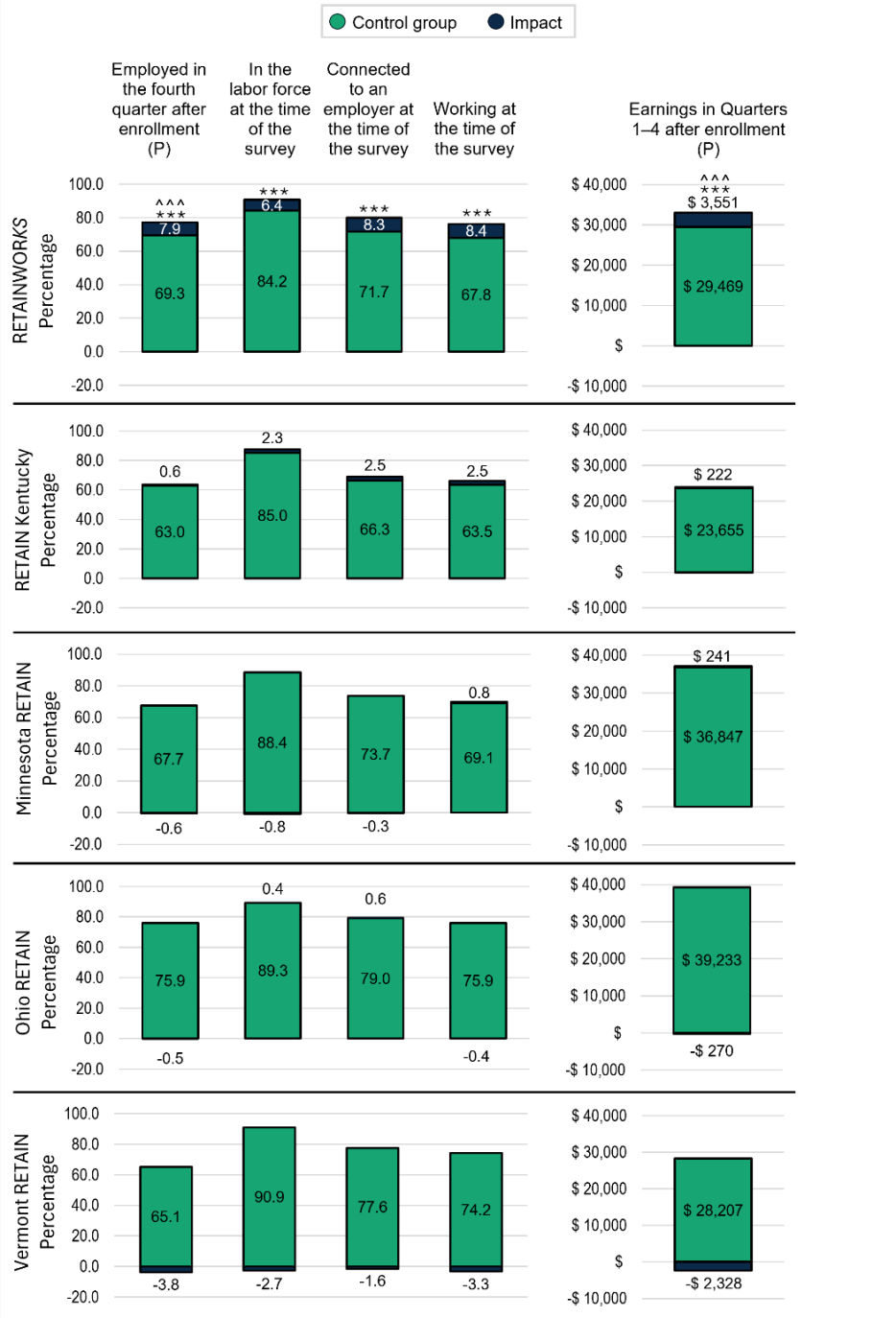
RETAINWOR*KS* generated significant gains in employment and earnings in the first year for treatment enrollees relative to control enrollees. In other states, we did not find evidence of positive impacts on these outcomes within the one-year follow-up period. However, patterns of positive point estimates for the impact on earnings in MN RETAIN suggest that impacts could emerge over time as participants stabilize in the labor market. Further, while RETAIN KY did not impact labor market outcomes overall, it had favorable impacts on such outcomes for some subgroups of enrollees.

RETAINWOR*KS* is the only program that had an impact on SSA program participation; the program reduced applications for SSDI among treatment enrollees compared with control enrollees (Exhibit ES.5). The other four programs had no impact on applications for SSDI and/or SSI benefits within the one-year follow-up period. The pattern of these findings is consistent with the pattern of impacts on employment and earnings. No program significantly reduced the share of enrollees who received any SSDI or SSI benefits or the average payment amounts received in the 12 months following enrollment.

In one program, we found evidence of modest impacts on household economic well-being (Exhibit ES.6). VT RETAIN treatment enrollees reported receiving more Supplemental Nutrition Assistance Program benefits and housing assistance compared with control enrollees. The VT program also increased the share of enrollees who reported their household receiving private short- or long-term disability payments at the time of the one-year survey.

Three programs (RETAINWOR*KS*, MN RETAIN, and VT RETAIN) had large, favorable impacts on enrollees' self-reported health outcomes at the time of the one-year follow-up survey (Exhibit ES.7). RETAINWOR*KS* reduced the proportion of treatment enrollees reporting that pain interfered with their ability to work. MN RETAIN treatment enrollees reported less pain interference and fewer poor mental health days compared with their control counterparts and they were also more likely to rate their health as at least fair (that is, fair, good, very good or excellent). VT RETAIN treatment enrollees were more likely to report that their health was very good or excellent compared with control enrollees; however, there is suggestive evidence that treatment enrollees were more likely than control enrollees to report a recent prescription of opioids.

Exhibit ES.4. Impacts on employment and earnings, by RETAIN program



Source: RETAIN enrollment data; one-year follow-up survey; state unemployment insurance wage records.

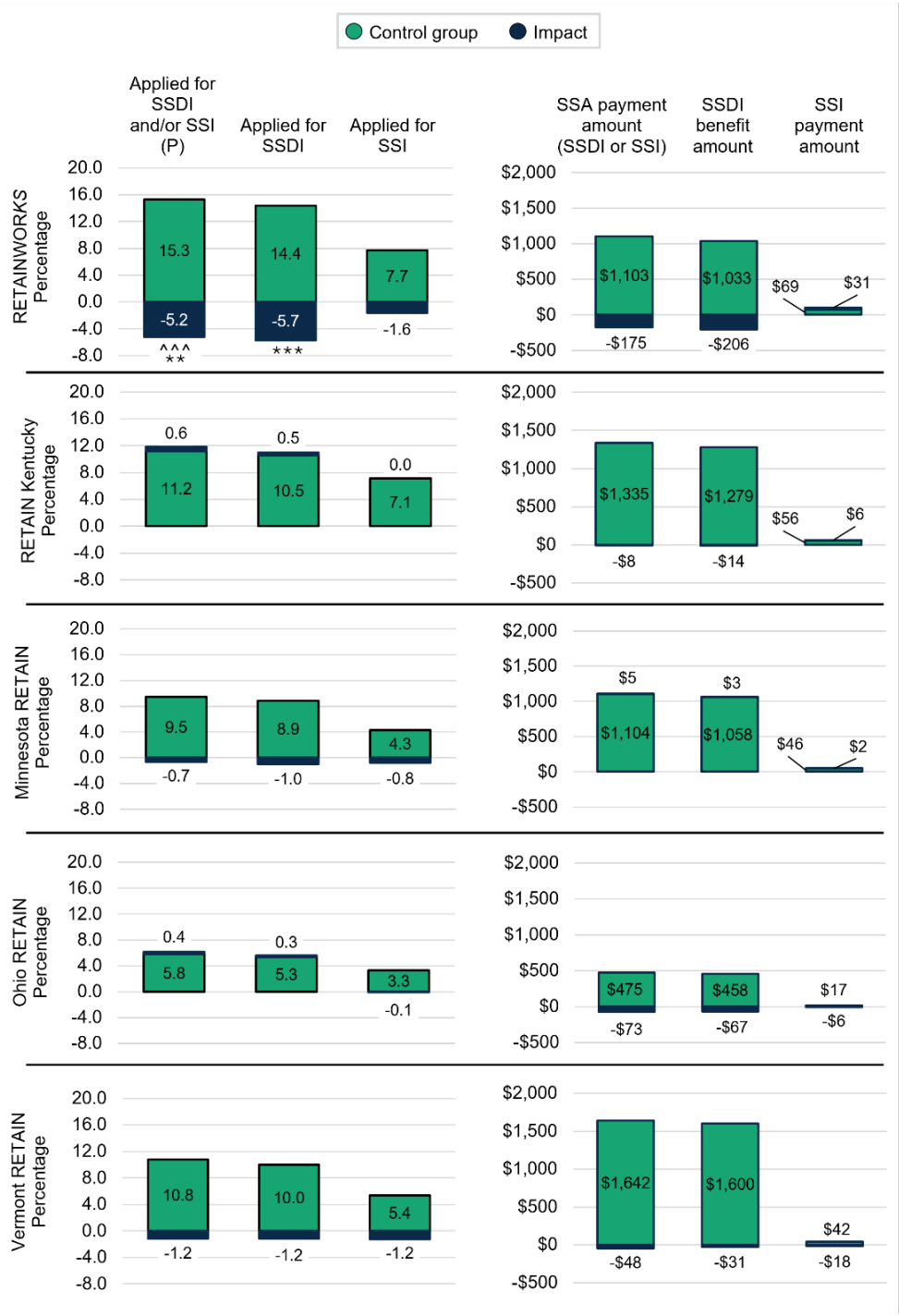
Note: This exhibit shows the regression-adjusted means for the control group (the estimate of the counterfactual) and the regression-adjusted estimates of programs' impacts. We tested statistical significance of impacts using a two tailed test for all outcomes; for primary outcomes we additionally used a one-tailed *t*-test.

*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

^/^^/^^^ Impact estimate is significantly greater than zero (*p*-value is less than .10/.05/.01) using a one-tailed t-test. This test was only conducted for primary outcomes.

(P) = primary outcome.

Exhibit ES.5. Impacts on SSA program participation, by RETAIN program



Source: RETAIN enrollment data; SSA data.

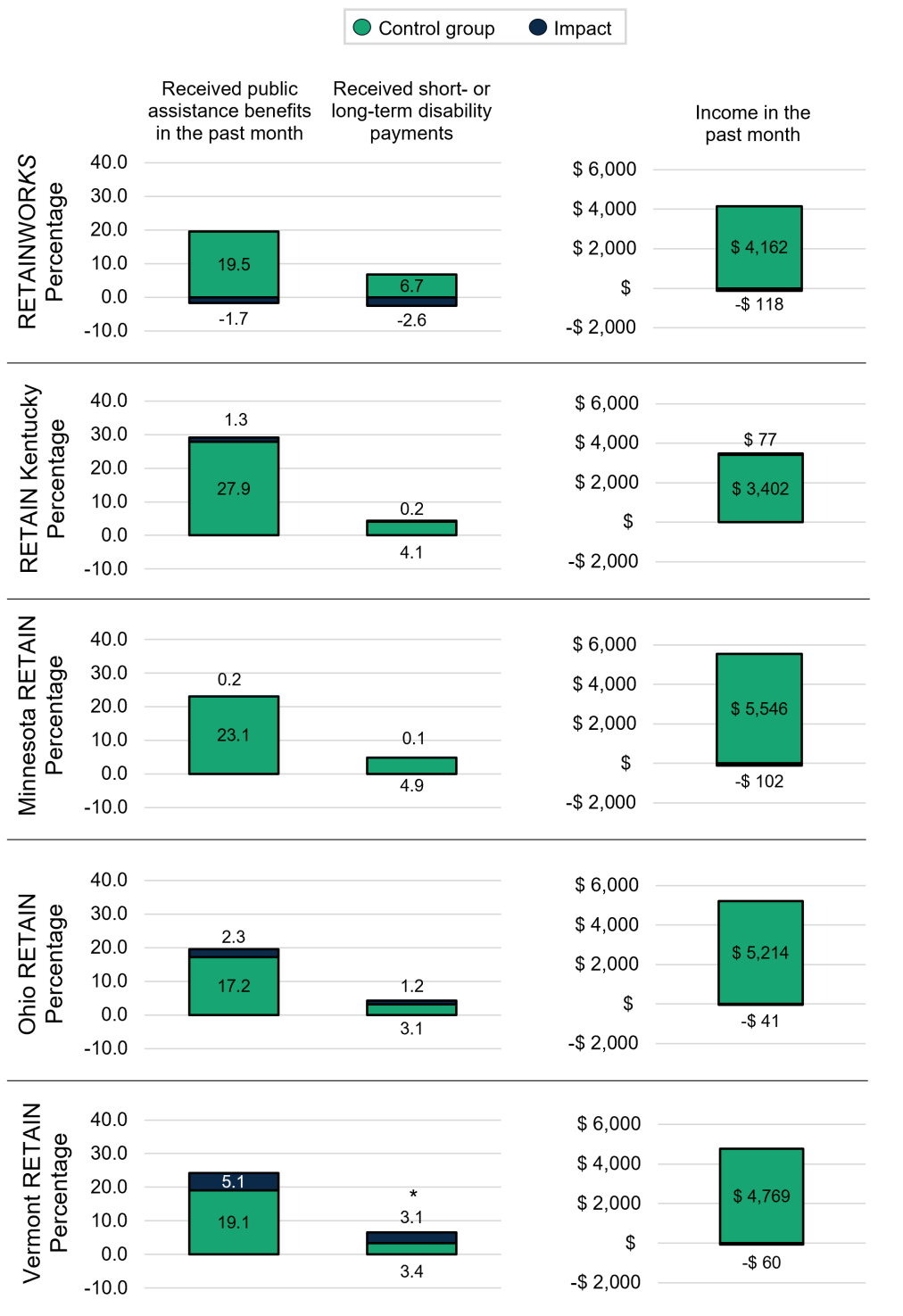
Note: This exhibit shows the regression-adjusted means for the control group (the estimate of the counterfactual) and the regression-adjusted estimates of programs' impacts. We tested statistical significance of impacts using a two tailed test for all outcomes; for primary outcomes we additionally used a one-tailed *t*-test.

*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

^/^^/^^^ Impact estimate is significantly less than zero (*p*-value is less than .10/.05/.01) using a one-tailed t-test. This test was only conducted for primary outcomes.

(P) = primary outcome.

Exhibit ES.6. Impacts on household economic well-being, by RETAIN program

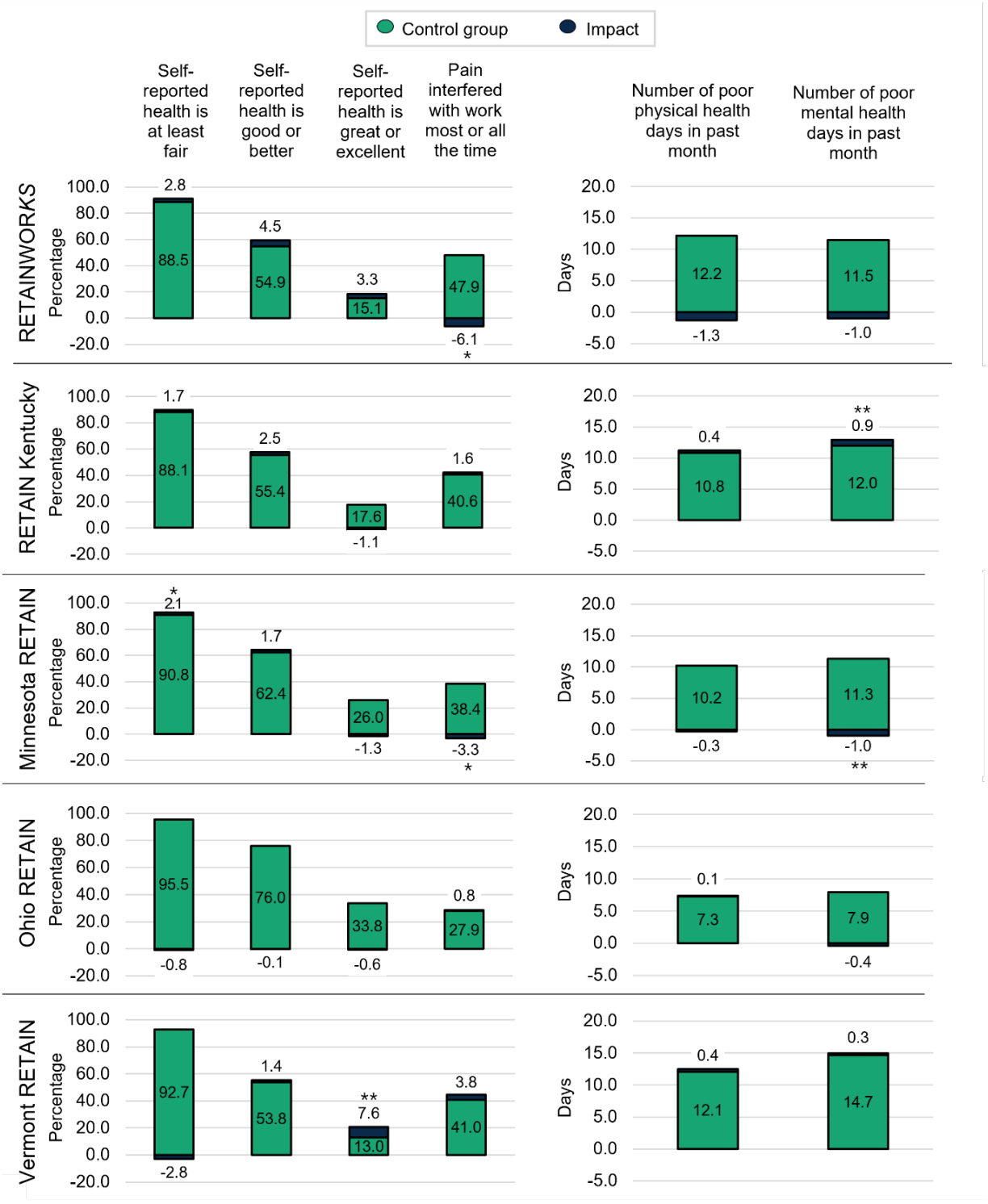


Source: RETAIN enrollment data; one-year follow-up survey.

Note: Public assistance benefits refer to benefits from the Supplemental Nutrition Assistance Program, housing assistance, or unemployment insurance programs. Short or long-term disability benefits refer to private disability insurance benefits.

*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

Exhibit ES.7. Impacts on enrollees' self-reported health, by RETAIN program

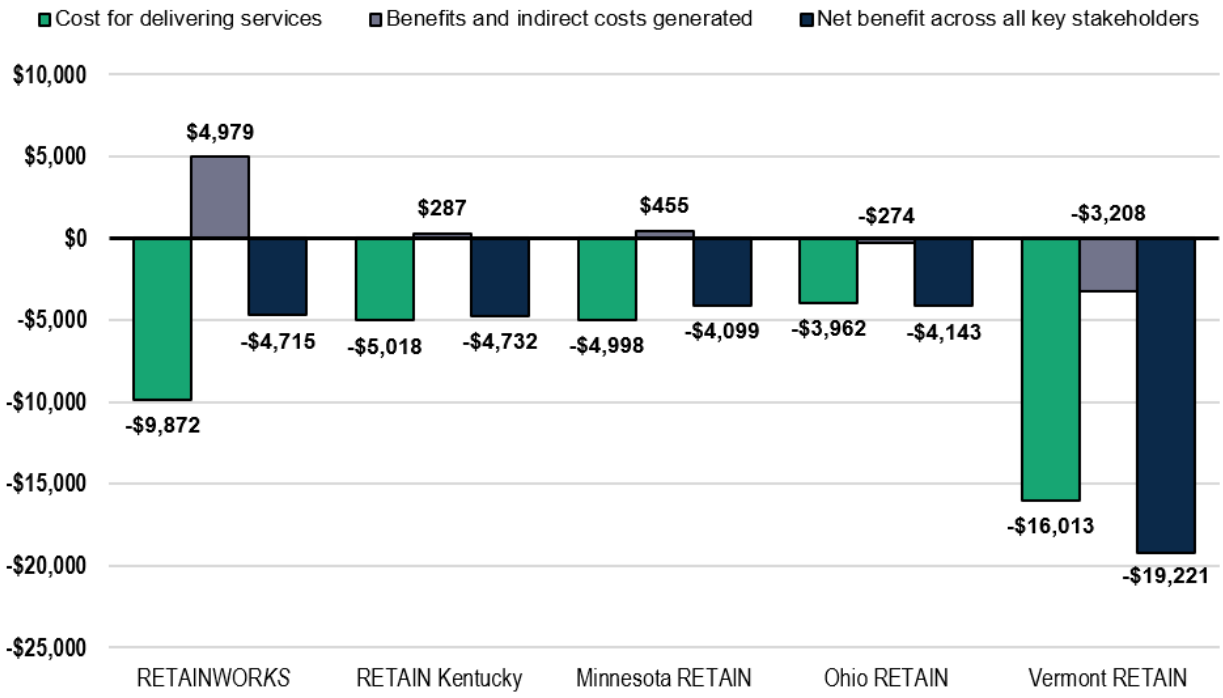


Source: RETAIN enrollment data; one-year follow-up survey.

*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

Benefits and costs. In all programs, the estimated costs of delivering services exceeded the estimated monetized benefits observed within the first year after enrollment (Exhibit ES.8), reflecting the up-front investment in services and the limited time frame for benefits to accrue during the one-year follow-up period.

Exhibit ES.8. RETAIN programs' benefits and costs in the one-year follow-up period



Source: Author calculations.

Note: We considered key stakeholders to be treatment enrollees and the federal and state government. Cost for delivering services refer to direct costs programs incur as part of service delivery. Indirect costs refer to those that result from the program having an impact on enrollee outcomes. Net benefits are benefits minus costs, expressed as dollars per enrollee, inflation-adjusted to 2024 dollars, and discounted to 2024 present values.

The estimated cost of delivering program services per treatment enrollee ranged from about $4,000 in OH RETAIN to more than $16,000 in VT RETAIN. We estimated program costs for a steady state period when programs were not in the start-up stage nor winding down. For each program, the costs per treatment enrollee in the first year after enrollment exceeded the benefits generated when looking across the combined perspectives of treatment enrollees and state and federal governments. In RETAINWOR*KS*, RETAIN KY, and MN RETAIN, treatment enrollees experienced a net benefit in the first year whereas the federal government did not; interestingly, in all programs, the state government experienced a small net benefit per treatment enrollee in the first year. Notably, these estimates do not account for some benefits that cannot be monetized, such as any favorable impacts on enrollees' health, and do include some program costs incurred because programs were participating in a federal grant and evaluation.

Program benefits could continue to accrue in the future while the costs of service delivery were incurred up front, and at least two programs are expected to break even within a reasonable time frame. In supplemental analyses, we estimated that RETAINWOR*KS* is likely to become cost neutral within five years after enrollment, whereas MN RETAIN is expected to do so sometime between 10 and 20 years after

enrollment. For the other three programs to achieve cost neutrality within 20 years of enrollment, the annual impact on earnings would need to be substantially more favorable than the point estimate from the first year. The required growth in earnings impacts to achieve cost neutrality 20 years after enrollment is plausible for RETAIN KY and OH RETAIN.

Considerations for interpreting findings. When considering the one-year evaluation findings, there are important study features that affect our interpretation of the findings and the generalizability of the results.

- **Study considerations affecting interpretation of findings**. First, in some states, the service contrast between treatment and control enrollees was muted either because the control group had access to similar services (RETAIN KY) or because initiatives like statewide marketing campaigns (VT RETAIN) or provider training (RETAINWOR*KS*, OH RETAIN, and VT RETAIN) potentially improved outcomes for control enrollees as well. Second, two programs (RETAINWOR*KS* and VT RETAIN) enrolled significantly fewer people than their original targets; the smaller-than-expected sample sizes reduce our ability to detect impacts. Hence, it is possible there were some positive or negative impacts on enrollee outcomes that we could not detect. Third, some outcomes might be measured with error either due to missing data or self-reports that are subject to recall error, differences in interpretation, and potential response bias. In addition, service use data might be inconsistent across programs due to differences in data recording procedures or service definitions. Fourth, the one-year follow-up period is likely insufficient to capture the full benefits of SAW/RTW interventions because enrollees may have slower recovery trajectories and many SSDI and SSI applicants had not yet received determinations.
- **Study considerations affecting generalizability of the results**. First, implementation variation across programs limits the ability to draw conclusions about the overall RETAIN model. Although all five programs were designed to follow the core RETAIN model, they differed in their eligibility criteria, recruitment sources, enrollee composition, and operational details, which likely influenced their impacts. Second, favorable labor market conditions during much of the study period likely supported employment retention and earnings growth for all enrollees, narrowing observable treatment–control differences. Although this environment provides a strong test of RETAIN's value under favorable conditions, effects may differ in weaker labor markets, when job loss risks are higher and SAW/RTW supports may be more critical. Finally, the documented program costs might overstate the resources required to implement the program in different circumstances (for example, without the data collection and reporting requirements of a federal demonstration and independent evaluation); further, the per-enrollee costs of program delivery might change with scaling and duration if many costs are fixed.

E. Implications for policy, practice, and research

The findings from the one-year evaluation of the RETAIN programs offer some valuable insights for policy, practice, and research.

Encouraging and enabling timely, intensive intervention is likely critical to the success of SAW/RTW programs. The RETAIN model was built on evidence that workers with newly acquired injuries or health conditions are more likely to remain in the labor force if they receive well-targeted support

within the first few weeks of onset (Ben-Shalom et al. 2018). Consistent with this, the RETAIN programs that engaged workers soon after an injury or illness—before prolonged detachment from the labor market—showed the strongest impacts on employment and health. At the same time, some treatment enrollees reported during interviews that they were too early in their recovery for the program to support their return to work, and program staff noted that some employers expressed concerns about workers' compensation liability if employees returned too soon and reinjured themselves. In addition, subgroup analyses revealed a pattern in some programs of more favorable impacts on labor market outcomes if enrollees had not been working the week before enrollment. More research is needed to determine the optimal timing of intervention, which likely varies by type of condition, work status, and nature of the pre-injury job.

Best practices for SAW/RTW programs should emphasize strong cross-system coordination between healthcare and workforce systems, paired with direct connections to employment-related services. The programs that most effectively aligned these systems—RETAINWOR*KS* and MN RETAIN—saw higher service uptake and more favorable one-year impacts on enrollee outcomes. In contrast, programs that were well integrated into either the healthcare system or the workforce system, but not both (such as RETAIN KY, OH RETAIN, and VT RETAIN), were less successful in producing promising impacts during the one year after enrollment. These findings suggest that effective SAW/RTW programs require intentional and active partnerships across systems rather than relying primarily on one of these systems with light or no connections to the other.

A multipronged approach might help SAW/RTW programs effectively engage employers in planning. Except for OH RETAIN, employer engagement was limited in the RETAIN programs. Yet, the findings from RETAINWOR*KS* suggest that workplace modifications and employers' willingness to offer accommodations could be a key facilitator of job retention, highlighting the need for effective strategies to engage employers. To help employers see the value of SAW/RTW programs, these programs might need to design effective promotional campaigns and build strong partnerships with local business boards. Another advantage of closely collaborating with the workforce system, as discussed above, is that workforce staff tend to have experience engaging and effectively communicating with employers.

SAW/RTW programs should consider opportunities for more precise targeting of their services to maximize benefits for workers and society. Differences in program impacts by worker characteristics suggest that some subgroups may gain more than others from timely support. For example, in some programs, individuals with non-musculoskeletal conditions and those who had been out of work for more than a week at enrollment experienced larger one-year impacts on employment and earnings. If policymakers are interested in maximizing the return on investment of taxpayer dollars, they could encourage RETAIN-like programs to prioritize such subgroups and develop appropriate screening and triage tools.

A broader and longer-term perspective on the cost-effectiveness of SAW/RTW programs would more accurately capture their value for workers and the government. Because program costs are typically front-loaded while benefits—such as increased earnings and reduced SSDI expenditures—emerge gradually but can persist, the one-year evaluation window might not fully capture the net benefits of SAW/RTW programs. The evaluation findings also point to the critical role of health improvements as a

pathway to employment; accounting for the inherent value of health improvements and the implied long-term fiscal benefits would provide a more accurate representation of the value of RETAIN-like programs. Finally, some RETAIN programs likely had system-level spillovers that benefited all enrollees but muted outcome differences between treatment and control enrollees. The systems change efforts, including strengthened partnerships, provider training, public outreach campaigns, and closer collaboration between public and private organizations, might have generated benefits to society that are not captured in the enrollee-level impacts nor reflected in the benefit-cost models used for this evaluation. If so, the estimated net benefits might understate the value generated by the program because they do not capture the value of positive systems transformation.

I. Introduction

The Retaining Employment and Talent After Injury/Illness Network (RETAIN) demonstration was a collaborative effort by the U.S. Department of Labor (DOL) and the Social Security Administration (SSA) to help workers stay in the labor force after they experience an injury or illness. The goal of RETAIN was to implement and test programs that used early-intervention stay-at-work/return-to-work (SAW/RTW) strategies with adult workers who had recently experienced the onset or worsening of an injury or illness that challenged their ability to work.[4] DOL competitively selected five states (Kansas, Kentucky, Minnesota, Ohio, and Vermont) to implement such programs (which were named RETAINWOR*KS*, RETAIN Kentucky [RETAIN KY], Minnesota RETAIN [MN RETAIN], Ohio RETAIN [OH RETAIN], and Vermont RETAIN [VT RETAIN], respectively). The programs began enrolling participants in late 2021 and early 2022, with the window of enrollment for evaluation purposes ending mid-May 2024. Participants eligible for RETAIN services could access them for up to six months. Each RETAIN program used a random assignment study design, in which some enrollees were in a treatment group that could use RETAIN services and others were in a control group that could use limited or no services besides those typically available in the community. The demonstration aimed to build evidence on the effectiveness of SAW/RTW services in supporting the employment and earnings of workers who experience injury or illness and preventing their entry into federal disability programs.

Under contract to SSA, Mathematica conducted an independent evaluation of the RETAIN programs. The evaluation had several components, including rigorous assessments of the programs' implementation and their impacts on enrollee outcomes in the months immediately following enrollment and in the first year after enrollment.

For each of the five RETAIN programs, this report presents findings from participation, impact, and benefit-cost analyses. The report findings cover a one-year follow-up period and are based on Mathematica's analysis of programs' enrollment and service use data, state unemployment insurance (UI) wage records, SSA program data, a follow-up survey of RETAIN enrollees that Mathematica conducted about 12 months after enrollment, and program cost data. The one-year follow-up period reflects data availability, evaluation timing, and a time horizon over which impacts on key outcomes such as SSDI applications could be expected to emerge. An earlier report (Patnaik et al. 2025) summarized impacts on service use, employment, and health outcomes based on an early follow-up survey we conducted about two months after enrollment.

In the remainder of this introductory chapter, we first provide background on the RETAIN demonstration, discussing the need for early SAW/RTW interventions and past interventions with some evidence of success. We then present the RETAIN program model and provide an overview of the five RETAIN programs and the national evaluation. The concluding section describes the report objectives and organization of the chapters that follow.

[4] Stay-at-work (SAW) strategies seek to avert job interruption by supporting continued work with appropriate adjustments. Return-to-work (RTW) strategies support re-entry to work following a period away from the job.

A. Background

Each year, millions of workers in the United States leave the labor force, at least temporarily, because of a medical condition or illness (Ben-Shalom et al. 2021; Hollenbeck 2015). Many of these workers fall through critical cracks in the social support system and exit the workforce permanently. Exits from the workforce can lead to subsequent adverse effects on standard of living (Schimmel and Stapleton 2012) and well-being (Ben-Shalom et al. 2018; Michaud et al. 2016). Without steady income and other benefits that often come with employment, such as health insurance, these workers and their families often turn to public programs such as Social Security Disability Insurance (SSDI) and Supplemental Security Income (SSI), which also provide access to public health insurance through Medicare and Medicaid. People who enter the SSDI and SSI programs rarely leave them (Ben-Shalom and Stapleton 2015; Liu and Stapleton 2011; Maestas et al. 2013; French and Song 2014).

Affected workers, the federal government, and state governments all stand to gain from the implementation of strategies that help people stay at work or return to work following an injury or illness (Ben-Shalom and Burak 2016). The potential financial and nonfinancial benefits to workers who can keep their jobs instead of relying on federal disability benefits are considerable, including increased income and improved health. Both the federal and state governments stand to gain from increased tax revenues and reduced outlays on public assistance programs. Employers might benefit from potential improvements in staff morale, productivity, turnover, and legal liability, though these effects could differ depending on factors such as firm size, industry, and turnover costs (Bardos et al. 2015).

RETAIN represented a substantial investment by the federal government that recognizes the potential benefits of helping workers with injury or illness return to work *before* they have turned to rely on programs such as SSDI, SSI, Medicare, and Medicaid. Past and current federal initiatives have largely focused on helping people with disabilities enter the labor force in the first place and helping them return to work *after* they enter SSDI or SSI. For example, the Rehabilitation Services Administration provides grants to state vocational rehabilitation (VR) agencies to help people with disabilities prepare for and engage in competitive integrated employment and achieve economic self-sufficiency. SSA's Ticket to Work program supports career development for SSDI beneficiaries and SSI recipients who want to work. The types of supports that the state VR and Ticket to Work programs provide could help workers in need of immediate assistance retain a job or secure a new one, but they are rarely available to such workers due to program eligibility restrictions and service prioritization (Ben-Shalom 2016).

One SAW/RTW intervention model that has shown promise for helping workers with injury or illness remain in the workforce is Washington State's Centers for Occupational Health and Education (COHE) program.[5] The COHE program provides a tightly defined set of immediate-to-early evidence-based services for workers' compensation claimants. The key components of the COHE model include care coordination, occupational medicine best practices, regular provider training and performance feedback,

[5] Many SAW/RTW programs operate in the private sector, including programs run by workers' compensation and disability insurers and, in many markets, third-party administrators that manage absence and disability for large, self-insured employers. RETAIN was premised on the observation that many workers "fall through the cracks" because their cases are not workers' compensation cases and they lack private disability coverage, or they are covered but receive little proactive support (see, for example, Stapleton et al. 2015).

provider incentives, and community outreach (Wickizer et al. 2004). An evaluation of the COHE program, using non-experimental methods, found that it was associated with a 21 percent reduction in the likelihood of being out of work and on disability one year after injury, with particularly large reductions for those with back injuries. The COHE program was also associated with a 7 percent reduction in medical costs and a 24 percent reduction in workers' compensation indemnity (that is, cash benefit) costs (Wickizer et al. 2011). Further, there is evidence of long-term effects on COHE participants. Follow-up results over eight years suggest that the COHE program was associated with a 30 percent reduction in the likelihood of entry into permanent work disability status, including into the SSDI program (Franklin et al. 2015; Wickizer et al. 2018).

The RETAIN demonstration sought to build on the evidence of the COHE model's effectiveness. The demonstration encourages state entities to develop their own intervention models, drawing on key elements of the COHE model and considering other populations in addition to workers' compensation claimants. It also sought to expand and strengthen the evidence base on SAW/RTW strategies by funding independent and rigorous experimental evaluations of the state programs.

In another report (Patnaik et al. 2025), we assessed the five programs' early impacts on enrollee outcomes during the first two months after enrollment. We found that all programs substantially increased treatment enrollees' self-reported use of SAW/RTW services, particularly care coordination and employment-related support, compared with control enrollees. Although none of the programs produced significant early gains in employment rates or weekly earnings during the first few months after enrollment, this was not surprising because many participants were still recovering from their medical conditions. Several programs, including RETAINWOR*KS* and MN RETAIN, increased the share of employed participants who received advice about workplace accommodations, an outcome consistent with the programs' emphasis on early engagement with healthcare providers and development of RTW plans. Health impacts were generally limited, though RETAINWOR*KS* had early impacts on self-reported physical health measures, pain, and receipt of opioid prescriptions. These early results suggest that programs were effective in connecting enrollees to intended services but that more time might need to pass to observe impacts on employment and health.

B. The RETAIN demonstration

The RETAIN demonstration included two phases. In Phase 1, which started in 2018, DOL awarded grants to eight state agencies to develop and pilot test programs to help those who experience a potentially disabling condition stay at work or return to work. In Phase 2, which started in 2021, DOL competitively awarded approximately $103 million in cooperative agreements to five state agencies to continue and expand their RETAIN programs.[6]

[6] DOL announced the awards to the five state agencies in April 2021. The awards were in the form of cooperative agreements that facilitated an ongoing working relationship between DOL and the individual state agencies to achieve the objectives of RETAIN. DOL awarded the grants through a competitive process that included publication of a funding opportunity announcement on October 15, 2020; state agencies' preparation and submission of applications; and DOL's review of the applications by a panel it convened.

Below we provide an overview of the RETAIN program model, describe the programs that the five states implemented during Phase 2, and describe the goals and components of the evaluation that Mathematica is conducting.

1. RETAIN model and theory of change

Each state's RETAIN program centered on early intervention, using coordination of healthcare and employment-related services and supports to help injured or ill workers remain in the workforce. The RETAIN states differed in how they implemented these services and supports to account for differences in their intended populations and the services available to support program outcomes (Keith et al. 2024). Nonetheless, certain services and supports were required and proved central to all state RETAIN programs.

The RETAIN program model builds on key features of the Washington State COHE model: care coordination, occupational medicine best practices, regular provider training and performance feedback, provider incentives, and community outreach (Wickizer et al. 2004). In addition to the care coordination and provider training components, RETAIN emphasized access to workforce services and employment-related services and supports. These services included providing support for workplace-based interventions and assistance in retraining and rehabilitation if treatment enrollees could no longer perform their job.

The RETAIN programs followed a core program model (Exhibit I.1). Medical provider and RTW coordination services were central components of the model that DOL and SSA expected all five programs to provide to all treatment enrollees. Other components of the model could vary by program or treatment enrollees' needs. DOL and SSA expected successful RETAIN programs to provide services through coordinated partnerships between state and local workforce development entities, healthcare providers, and other partners. RETAIN programs also pursued informal partnerships with employers and other organizations to prompt referrals of workers who could benefit from RETAIN.

Exhibit I.1. RETAIN program model

Service category	Program component	Definition
Medical provider services		
	Training medical providers	Programs deliver training to medical providers that covers occupational medicine best practices and alternatives to opioids for pain management.
	Offering financial compensation or other incentives to medical providers	Programs offer incentives for medical providers to use occupational medicine best practices and alternatives to opioids for pain management.
RTW coordination services		
	Coordinating RTW services	Programs coordinate the delivery of medical and employment services to participants, including developing and implementing an RTW plan. An RTW coordinator usually leads the coordination of RTW services.
	Communicating among parties involved in RTW plan	Program staff communicate with other parties (such as the participants' employers) about their plan or ability to return to work. This communication should occur early in delivering RETAIN services to support the participant in returning to work as soon as possible.
	Monitoring treatment enrollees' progress	Programs track and monitor the participants' medical and employment progress.
Other SAW/RTW services		
	Supporting workplace-based interventions	Programs offer services to facilitate the participants' return to work. This might include modifying their duties and adjusting their schedules, tasks, and physical worksites.
	Retraining or rehabilitating enrollees	Programs offer or connect participants to retraining or rehabilitation services when participants can no longer perform their primary jobs or suitable alternate work.

Source: The U.S. Department of Labor's RETAIN Funding Opportunity Announcement.

RTW = return-to-work.

Although the COHE model focused on people with work-related injuries or illnesses, RETAIN expanded the intended population to include those with non-work-related injuries if they were employed or in the labor force when the injury or illness first occurred, or when an existing condition had worsened and began to challenge their ability to work. The RETAIN cooperative agreements specified minimum eligibility criteria that the intended populations in each state had to meet (Box 1).[7]

Box 1. Minimum eligibility criteria under the RETAIN cooperative agreement

1. Individual had either (a) an existing disability or chronic condition or (b) a new injury or illness or worsening of an existing condition while employed and might otherwise be at risk of developing work disabilities. The health condition could be work or non-work related.
2. Individual was employed or in the labor force at the onset of the injury, illness, or condition for which they enrolled in RETAIN.
3. Individual did not have an application for SSDI or SSI benefits pending and was not already receiving such benefits at the onset of the injury or illness. ◢

[7] Despite these eligibility criteria, a small number of RETAIN enrollees reported they had applied for or received SSDI or SSI benefits in the three years prior to enrollment; some of them also reported receiving SSDI or SSI income at the time of enrollment.

RETAIN treatment enrollees were eligible to use RETAIN services for up to six months. States had to enroll 80 percent of enrollees within 12 weeks of work-disability onset (or worsening) and ideally begin providing services to treatment enrollees immediately upon enrollment. If a treatment enrollee required medical care and employment services after being enrolled in RETAIN for six months, or if the enrollee needed services beyond the scope of the RETAIN program, states should have referred the enrollee to other available services, such as VR, and discharged them from RETAIN.

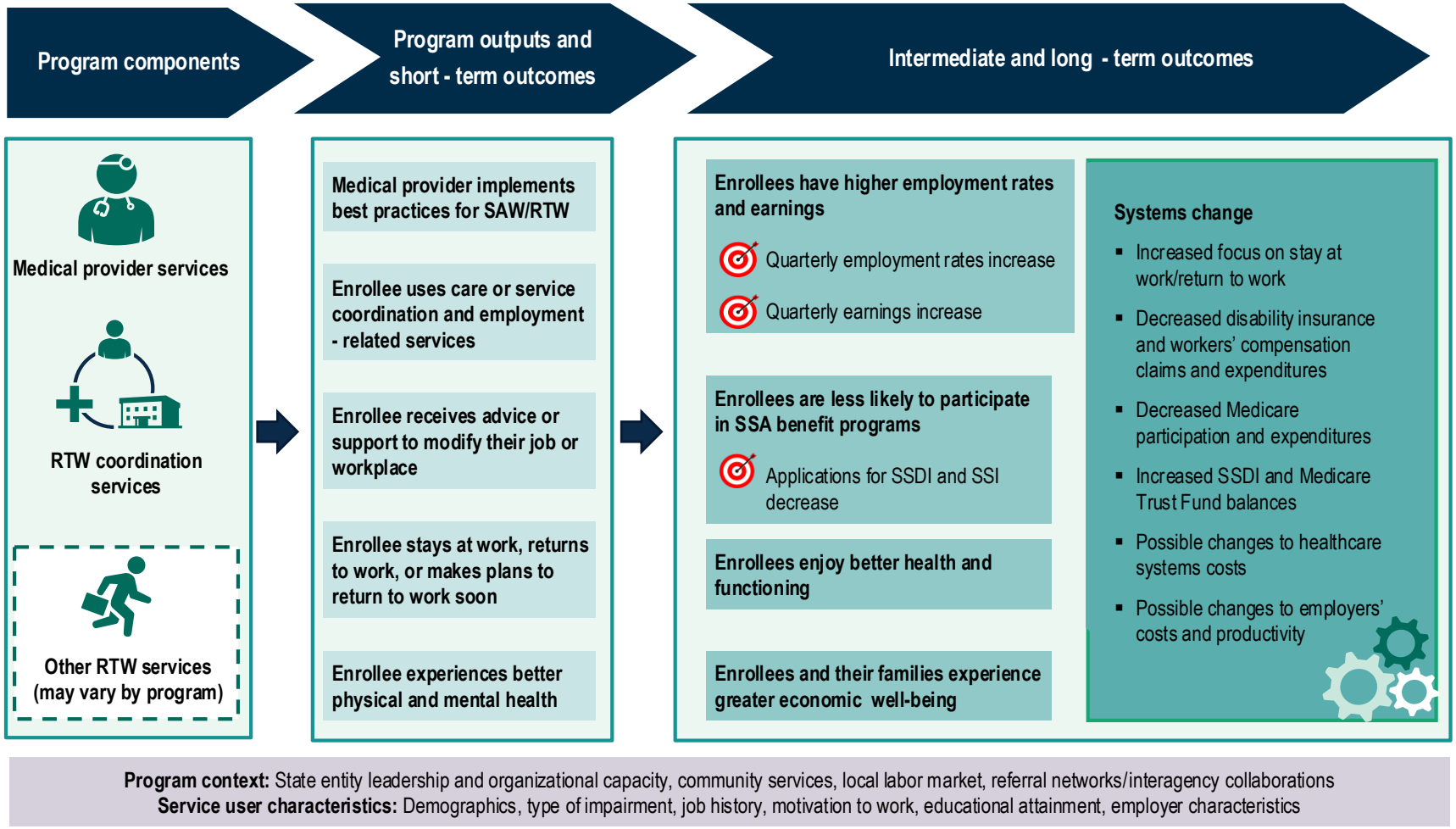
The ultimate policy goals of RETAIN were to reduce long-term disability—including the need for SSDI or SSI benefits—and increase employment retention and earnings among people who experienced an illness or injury. Exhibit I.2 illustrates the RETAIN theory of change, summarizing the program components, expected outputs and enrollee short-term outcomes, and the potential enrollee and system outcomes in the intermediate and long term. We summarize the theory as follows:

- In the **short term**, the RETAIN programs' medical provider services should increase medical providers' adherence to best practices.[8] The programs' RTW coordination and other SAW/RTW services should increase enrollees' use of care coordination and employment-related services and their receipt of advice about workplace accommodations. These program components were expected to have a positive effect in the short term on enrollee's mental and physical health and on the probability that the enrollee stayed at work, returned to work early, or made plans to return to work soon.
- In the **intermediate and long term**, the program outputs and short-term outcomes could produce sustained impacts on the economic and general well-being of enrollees. An effective RETAIN program could increase quarterly employment rates and quarterly earnings and in turn reduce applications for SSA disability benefits.[9] In the long term, if the programs are effective, we would expect to see increased employment and earnings, lower participation in SSA programs, better physical and mental health, and improved economic well-being.
- A sustained pattern of impacts on enrollee outcomes in the long term could in turn lead to **systems-level changes**. Potential changes could include reduced expenditures for disability insurance, workers' compensation claims, and Medicare and Medicaid, as well as increased SSDI and Medicare Trust Fund balances. As medical providers learn about any positive impacts on enrollees' health, this could lead to an increased focus on SAW/RTW in healthcare settings. Changes in healthcare costs as well as employer costs and productivity could occur, though the direction that these changes would take is unclear.

[8] Croake et al. (2024) described the experiences of medical providers who participated in Ohio RETAIN, including their characteristics, adherence to occupational health best practices, experiences working with RTW coordinators, and barriers to participating in the program, based on a survey that 138 medical providers completed.

[9] The primary mechanism through which RETAIN is expected to influence applications to SSA programs is through employment (rather than shifting enrollees away from participation in SSA programs toward other programs such as private disability insurance). Notably, most long-term disability insurance providers require claimants to apply for SSDI so that SSDI benefits can offset some of their payouts.

Exhibit I.2. RETAIN theory of change



RTW = return-to-work; SAW = stay-at-work; SSA = Social Security Administration; SSDI = Social Security Disability Insurance.

2. RETAIN programs

In 2021, DOL competitively selected five RETAIN Phase 1 state agency recipients to receive Phase 2 funding to continue and expand their RETAIN programs (Exhibit I.3). In each state, the lead agency worked with a consortium of partners, such as state or local workforce development entities, healthcare systems, and medical provider networks, to implement its RETAIN program. A DOL contractor, American Institutes for Research, supported DOL in providing programmatic technical assistance to assist RETAIN programs with implementation.

Exhibit I.3. RETAIN awardees

Participating state	Lead agency	RETAIN program name	Award amount
Kansas	Kansas Department of Commerce	RETAINWOR*KS*	$21,600,000
Kentucky	Kentucky Department of Workforce Investment	RETAIN Kentucky	$21,600,000
Minnesota	Minnesota Department of Employment and Economic Development	Minnesota RETAIN	$19,518,509
Ohio	Ohio Department of Job and Family Services	Ohio RETAIN	$18,800,000
Vermont	Vermont Department of Labor	Vermont RETAIN	$21,600,000[a]

[a] The final round of incremental funding was not distributed to Vermont, so it received less than the full award amount.

Each of the RETAIN programs included the core components of the RETAIN program model described in Exhibit I.1. However, the federal sponsors of the RETAIN demonstration did not prescribe details for how to implement the program components; rather, each state proposed its own approach to each component and developed its own logic model for the program. Each awardee was also free to specify the organizational structure, service area, target population and recruitment approach, and experimental study design for its program, within the bounds of the grant and in close coordination with DOL, the programmatic technical assistance provider, and SSA's evaluation contractor (Mathematica). In Exhibit I.4, we briefly outline each program's key partners, service area, eligible population and referral sources, and experimental study design. Additional information about each program, including its specific eligibility criteria and service approach, is available in the process analysis report that documented program implementation through June 2023 (Keith et al. 2024).

Exhibit I.4. RETAIN programs and their key features

Program	Key partners[a]	Service area, eligible population[b], and referral sources
RETAINWOR*KS*	**Lead agency:** Kansas Department of Commerce **Healthcare partners:** Ascension Via Christi, Stormont Vail Healthcare, University of Kansas Medical Center, Kansas Clinical Improvement Collaborative **Workforce partners:** All five local workforce development boards in Kansas, Kansas Business Group on Health, Kansas Society for Human Resource Management	**Service area:** Entire state (105 counties) **Eligible population:** Adults who are employed or seeking employment and have a work- or non-work-related injury or illness **Referral sources:** EMR reports, medical providers, local workforce development area staff, employers, self-referrals
RETAIN Kentucky	**Lead agency:** Kentucky Department of Workforce Investment, Office of Vocational Rehabilitation **Healthcare partners:** University of Kentucky HealthCare, University of Louisville Health **Workforce partners:** University of Kentucky Human Development Institute, Council of State Governments, Kentucky Chamber of Commerce	**Service area:** Entire state (120 counties) **Eligible population:** Adults who are employed or seeking employment and have a non-work-related injury or illness **Referral sources:** Office of Vocational Rehabilitation, targeted online advertising, healthcare partners, workforce partners, employers, self-referrals
Minnesota RETAIN	**Lead agency:** Minnesota Department of Employment and Economic Development **Healthcare partners:** Mayo Clinic, HealthPartners TRIA **Workforce partners:** Workforce Development, Inc.	**Service area:** Entire state (87 counties) **Eligible population:** Adults who are employed or seeking employment and have a work- or non-work-related injury or illness **Referral sources:** EMR reports, mass email campaigns to Mayo Clinic patients, targeted online advertising, medical providers, employers, self-referrals
Ohio RETAIN	**Lead agency:** Ohio Department of Job and Family Services **Healthcare partners:** Bon Secours Mercy Health **Workforce partners:** Local workforce development boards, Opportunities for Ohioans with Disabilities, Ohio Bureau of Workers' Compensation	**Service area:** Three regions in Ohio, encompassing the cities of Youngstown, Toledo, and Cincinnati **Eligible population:** Adults who are employed or seeking employment and have a non-work-related injury or illness **Referral sources:** EMR reports, medical providers, employers, self-referrals
Vermont RETAIN	**Lead agency:** Vermont Department of Labor **Healthcare partners:** OneCare Vermont **Workforce partners:** Vermont Workforce Development Division, HireAbility Vermont, Invest EAP, Vermont Chamber of Commerce	**Service area:** Entire state (14 counties) **Eligible population:** Adults who are employed or seeking employment and have a work- or non-work-related injury or illness **Referral sources:** Self-referrals through web-based pre-screening tool available at primary care practices and other locations in the community, referrals from clinicians and partners

[a] This list is not comprehensive; see Keith et al. (2024) for complete information on program partners.

[b] The cooperative agreements specified minimum eligibility criteria: (1) having a health condition that was either new or recently exacerbated, (2) being in the labor force at the onset of the condition, and (3) not receiving or having a pending application for disability benefits from SSA.

EMR = electronic medical record.

3. RETAIN evaluation

The federal sponsors of the RETAIN demonstration and other interested parties, such as state workforce agencies, disability advocates, and researchers, want to know whether and how the RETAIN programs achieved their goals and whether the benefits of each program outweighed its cost. Mathematica designed the RETAIN evaluation with several components to document how the five states implemented their RETAIN programs and whether they were able to achieve their goals of improving enrollees' SAW/RTW outcomes (Berk et al. 2021). These components include process, participation, impact, and benefit-cost analyses.

The key research questions for the evaluation were as follows:

- How were RETAIN programs designed, implemented, and operated, and what factors influenced the implementation experience?
- Who enrolled in RETAIN programs? What kinds of services did they use? What were the characteristics of medical providers delivering RETAIN services?
- Did the RETAIN programs increase employment and earnings? Did they reduce applications for SSDI and SSI benefits? Were they more effective at achieving these outcomes for some individuals than others?
- What were the benefits and costs of each RETAIN program? Were the benefits of each RETAIN program larger than its costs?

The evaluation drew on a mix of quantitative and qualitative methods to address these questions. It used multiple data sources, including RETAIN program documents, RETAIN enrollment and service use data, interviews with treatment enrollees and program staff, two enrollee follow-up surveys, a survey of medical providers in one state, and state and federal administrative data.

The evaluation's impact analyses relied on an experimental design in which Mathematica randomly assigned enrollees or clusters of enrollees to either a treatment or a control group. Enrollees in the treatment group had access to RETAIN RTW coordination services, whereas the control group had access to the usual services available in the community.[10] In four states (Kansas, Kentucky, Minnesota, Ohio), random assignment occurred at the individual level. In Vermont, Mathematica randomized primary care clinics into treatment and control groups.

Earlier in the evaluation, an **early assessment report** (Keith et al. 2023) described the initial implementation of the RETAIN programs through June 2022. A **process analysis report** (Keith et al. 2024) assessed each RETAIN program's implementation and service delivery from the beginning of program operations through June 2023. The assessment occurred midway through the 48 months of program operations funded under the Phase 2 grants and about 20 months into the enrollment period that began in October 2021 and ended in May 2024. The findings focused on (1) program partnerships and the

[10] Kentucky's RETAIN program offered an expedited version of RTW coordination services to control enrollees for up to three hours within a two-week period. VT RETAIN provided enrollees a resource inventory of services available in the community that they could independently seek out and use.

environment surrounding RETAIN implementation and service delivery, (2) recruitment and enrollment of eligible workers, and (3) RETAIN implementation and service delivery.

The **early impact report** (Patnaik et al. 2025) examined the impacts of RETAIN programs on short-term outcomes, including enrollees' use of SAW/RTW services and their work- and health-related outcomes. It was based on data from a follow-up survey of enrollees conducted approximately two months after enrollment. The report also examined the extent to which the RETAIN programs' impacts on self-reported service use differed by enrollees' characteristics.

The **final evaluation report** (this document) assesses each RETAIN program's impact on intermediate-term outcomes, including (1) work- and health-related outcomes as reported in the one-year follow-up survey of enrollees, (2) employment and earnings outcomes based on state wage records, and (3) SSDI and SSI applications and benefits based on SSA program data.[11] The report also includes a program participation analysis and a benefit-cost analysis estimating the benefits and costs of each RETAIN program for treatment enrollees, the federal government, the state government, and their combined perspectives.

In addition to the main reports described above, a series of RETAIN **special topic reports** examined the following:

- State variation in SSDI entry in 2017 before RETAIN (Anderson et al. 2020)
- RETAIN programs' approaches to recruiting potential enrollees during the first 11 months of the demonstration (Croake et al. 2023)
- Differences between the socioeconomic characteristics of RETAIN enrollees, all workers in RETAIN states, and applicants for SSDI and SSI in those states (Farid et al. 2023)
- The SAW/RTW experiences of RETAIN enrollees with behavioral health conditions (Farid et al. 2024)
- The experiences of medical providers in Ohio RETAIN (Croake et al. 2024)

C. Report objectives and organization

This report presents findings from participation, impact, and benefit-cost analyses of each RETAIN program, based on data on the first year after enrollment. In the participation analysis, we examined treatment enrollees' use of SAW/RTW services, as captured in program service use data. In the impact analysis, we investigated the extent to which programs were able to change enrollee outcomes related to employment and earnings, applications for and receipt of SSDI and SSI, economic well-being, and health. We also present findings on the extent to which program participation or impacts, respectively, differed by enrollees' characteristics. In the benefit-cost analysis, we assessed if the benefits of each program

[11] We did not analyze one of the data sources we had originally planned to, as outlined in the evaluation design report (Berk et al. 2021). For two reasons, we did not use SSA's Master Earnings File, which contains information on calendar-year earnings in Social Security-covered employment based on Internal Revenue Service data. First, these data provide limited additional value beyond the available earnings data in UI wage records, especially given they are for calendar years and would have been missing for earnings in the year after enrollment for individuals who enrolled in RETAIN in 2024. Second, SSA had limited resources to analyze these data, which Mathematica staff could not access directly.

exceeded its costs for treatment enrollees, the federal government, the state government, and their combined perspectives. The one-year evaluation is focused on data and analyses at the enrollee-level; thus, impacts or net benefits generated by programs at a higher level, such as systems-level or community-level improvements, are not fully captured in the findings.

In the next chapter, we describe the approaches we used in each of the three analyses, including the study design, data sources, analysis samples, outcome measures, and analytic methods. Five program-specific chapters follow. In each, we present an overview of the RETAIN program and its implementation, measures of service use among treatment enrollees, estimates and discussion of the program's impacts on enrollee outcomes, and findings from our benefit-cost analysis. In the final chapter of the report, we summarize and compare the findings across the five programs and discuss key themes and implications.

We present additional information in the appendices. We provide additional details on the data and analytic methods in Appendix A and Appendix B, respectively, and detailed results of participation, impact, and benefit-cost analyses, by program, in Appendix C (RETAINWOR*KS*) through Appendix G (VT RETAIN). We present findings from two supplemental analyses in two appendices. In the supplementary analysis on predicting need for RETAIN services (Ben-Shalom et al. 2026), we present findings from an analysis of baseline characteristics that predict early return to work after injury or Illness. In the supplementary analysis that explores the lives of RETAIN treatment enrollees (Keith et al. 2026), we present findings from a qualitative analysis of the experiences of treatment enrollees in RETAIN KY.

II. Impact Study Design, Data Sources, and Methods

The goal of the analyses conducted for this report was to document program participation patterns and to generate evidence on the impacts and net benefits of the RETAIN programs, based on differences between the outcomes of enrollees in the treatment and control groups one year after enrollment. Mathematica's evaluation team specified the key features of the impact analyses in the evaluation design (Berk et al. 2021) and registered them on ClinicalTrials.gov before beginning data analyses. In the sections below, we describe the design of the study of each program, as well as data sources and estimation methods that are common across the programs.

A. Study design

As we outlined in the evaluation design report (Berk et al. 2021), the RETAIN evaluation consistently treated the five RETAIN programs as independent programs. The rationale for evaluating each program separately is that, even though all programs broadly followed a general program model (Exhibit I.1), they varied substantially in how they implemented the model components. Indeed, the findings of the process study showed variation in model implementation and in the composition of enrollees across the programs (Keith et al. 2024). Assessing the impacts of the programs separately enables the evaluation to consider qualitatively how differences in implementation and enrollee populations might influence the outcomes of the general program model and help identify lessons for future programs.

Each RETAIN program implemented an experimental study design (Exhibit II.1). Four states implemented an individual random assignment design (Kansas, Kentucky, Minnesota, and Ohio), and one state implemented a clustered random assignment design (Vermont). For each program, the evaluation team placed units of random assignment (individuals or primary care practices) in either a treatment group eligible for the program's full-service menu or a control group that could use limited or no RETAIN services (but could use the usual services available in their communities). For each program, random assignment should have resulted in two groups of enrollees with similar characteristics at the time of enrollment. If so, the evaluation can attribute any differences in the outcomes of these groups to the effects of the programs.

In the four programs with individual random assignment (RETAINWOR*KS*, RETAIN KY, MN RETAIN, and OH RETAIN), the evaluation team randomly assigned enrollees to either the treatment or control group immediately after they enrolled in the RETAIN program. We stratified random assignment based on individuals' characteristics at the time of enrollment. The evaluation team selected the stratification factors based on data availability, characteristics that could be correlated with the impact of RETAIN programs on enrollees' SAW/RTW outcomes, and factors relevant to each program's implementation. We constructed cells based on the stratification factors and assigned individuals to the treatment or control group within each cell to guarantee that each cell would have individuals both eligible and ineligible for RETAIN

services. Most of the time, the probability of being assigned to the treatment group was 50 percent within a stratum.[12]

Exhibit II.1. Study designs for the five RETAIN programs

Program	Unit of random assignment	Stratification factors	Probability of assignment to treatment
RETAINWOR*KS*	Individual	Age, sex, employment status, time since last worked, and workforce region	Within a stratum, the probability of assignment to the treatment group was 50 percent for most of the enrollment period; it was temporarily increased to more than 50 percent for five months.
RETAIN KY	Individual	Age, sex, employment status, and time since last worked	Within a stratum, the probability of assignment to the treatment group was 50 percent for most of the enrollment period; it was temporarily increased to more than 50 percent for three months.
MN RETAIN	Individual	Age, sex, employment status, and time since last worked	Within a stratum, the probability of assignment to the treatment group was 50 percent.
OH RETAIN	Individual	Age, sex, employment status, and time since last worked	Within a stratum, the probability of assignment to the treatment group was 50 percent.
VT RETAIN	Primary care practice	Size of practice	Within a stratum, the probability of assignment to the treatment group was 50 percent.

Note: The evaluation's process analysis report (Keith et al. 2024) describes each RETAIN program's process for recruiting participants and formally enrolling them in the evaluation.

In VT RETAIN, which used a clustered random assignment design, the evaluation team assigned primary care practices (rather than individual enrollees) to either the treatment or control group. We stratified random assignment based on the practice size (number of patients typically served); among primary care practices of a similar size, there was an equal probability of being assigned to the treatment or control group. Thus, we designated any eligible enrollee associated with a practice who had been assigned to the treatment group as a treatment enrollee who could use services from VT RETAIN. The evaluation team designated any eligible enrollee associated with a practice who had been assigned to the control group as a control enrollee who could not use services from VT RETAIN. The number of eligible people who enrolled in RETAIN through each practice varied, and a larger share of enrollees were designated to the treatment group than the control group.[13]

[12] There were exceptions in two states. Due to slow initial enrollment in Kentucky and Kansas, starting in January 2023, we changed the probability of assignment to the treatment group to 80 percent. After an uptick in enrollment in Kentucky, we restored the probability of assignment to the treatment group in that state to 50 percent in April 2023. In Kansas, we changed the probability of assignment to the treatment group to 60 percent in April and May 2023, and we restored it to 50 percent in June 2023.

[13] The program took broadly similar approaches to outreach, recruitment, and enrollment for treatment and control group practices. To support consistency, we provided technical assistance to Vermont to reinforce the need for a standard approach across clinics in the enrollment of treatment and control group members.

Because random assignment should have resulted in two groups of enrollees with similar characteristics, we estimated the impacts of each program by comparing the outcomes of individuals in the treatment group to those of individuals in the control group. We included all treatment group members, regardless of whether they used any program services. Thus, for each program, the impact estimates provide evidence on whether offering the program's services resulted in improvements to enrollees' outcomes relative to what we expect they would have experienced in the absence of RETAIN.

B. Data sources

1. Data sources

The one-year impact analysis relied on administrative and survey data. We used information from RETAIN enrollment data, state UI wage records, SSA administrative data, and an enrollee survey we conducted about one year after individuals enrolled in the evaluation. We required enrollees to have valid Social Security numbers (SSNs) to ensure accurate matching with state UI wage records and SSA data.[14] We briefly describe these sources below and provide additional detail in Appendix A.

a. RETAIN enrollment data

Every RETAIN program collected information about the characteristics of enrollees at the time of their enrollment in the study through a Participant Enrollment Information Form that DOL developed. The form comprised two parts. Part 1 of the enrollment form collected contact and demographic information, along with information on health, qualifying injury or illness, recent employment, past application for SSA disability benefits, health insurance coverage, and receipt of various types of unearned income. Part 2 of the enrollment form collected details about the qualifying injury or illness and recent employment. States provided Mathematica with Part 2 data in their quarterly data submissions. The data also contained personal identifiers that we used to link these records to the administrative and survey data.

b. Service use data

DOL required every RETAIN program to collect and report data on service use, which RETAIN programs submitted quarterly. RTW coordinators recorded the data, which documented enrollees' service use and contextual information about factors that could pose challenges to work. We used these data to quantify treatment enrollees' use of RETAIN services.

c. State UI wage records

We used state UI wage records to obtain baseline information on earnings in the quarter before enrollment in RETAIN, as well as to track earnings in the four quarters after enrollment. The five RETAIN programs supplied the individual-level quarterly UI wage data necessary to carry out the final impact analyses.

We used earnings in the quarter before enrollment as a proxy for enrollees' employment quality before their injury or illness—an important control in the impact analysis because earnings and employment quality before injury might be correlated with SAW/RTW outcomes after enrollment in RETAIN. We also

[14] SSA used the Enumeration Verification System to verify SSNs.

used state UI wage data to construct measures of employment and earnings in the four quarters after enrollment, enabling us to assess the program's impact on these key outcomes.

d. SSA program data

We obtained information on applications to SSDI and SSI from the Structured Data Repository. The Structured Data Repository is a relational database used to collect disability data during the processing and development of disability claims. These data include information on date of application and applicant characteristics. We used data from October 2021 through May 2025, which covered the 12 months after enrollment for all enrollees.

We obtained information about Old-Age, Survivors, and Disability Insurance and SSI receipt and monthly benefit amounts from the Master Beneficiary Record and Supplemental Security Record, respectively. We used data from October 2021 through May 2025, which covered the 12 months after enrollment for all enrollees. For Old-Age, Survivors, and Disability Insurance, we included benefits received by the enrollee based on their own eligibility, and benefits received by someone else based on the enrollee's eligibility. For SSI, we included only federal SSI payments and excluded state supplemental payments to facilitate cross-state comparisons. Of the five RETAIN states, all offer state supplemental payments but only Vermont's are administered by SSA and therefore available in the Supplemental Security Record; for this reason, we did not include state supplemental payments in our measure of SSI payments.

e. One-year follow-up survey of enrollees

Between January 2023 and August 2025, we fielded a follow-up survey to gather data from enrollees about one year after their enrollment in RETAIN. Across the five programs, the median time between enrollment in RETAIN and survey completion was about 55 weeks (just over 12 months). Appendix A provides more details on the timing of survey fielding and completion.

The survey was designed to capture information on enrollees' outcomes. It collected detailed information about enrollees' employment characteristics at interview, including weekly hours worked, employer benefits, employer accommodations, and occasional work activities or side jobs. It also included information on enrollees' economic well-being (such as their household income and their receipt of public assistance benefits) and on their health.

All RETAIN enrollees in the treatment and control groups of all programs were eligible for the survey, with a small number of exceptions.[15] We attempted to survey treatment and control enrollees in all the RETAIN programs except Ohio. In Ohio, which had the largest number of enrollees, we only surveyed some enrollees. Specifically, we fielded all enrollees who enrolled before October 2023 and then later conducted sampling by attempting to survey a random sample of enrollees. We implemented this sampling approach in Ohio to target 3,500 respondents, a sample we determined would yield sufficient power to detect impacts.

[15] The eligible sample comprises all enrollees who were randomly assigned except enrollees who were enrolled in error (n = 6), experienced contamination (n = 5), chose to withdraw from the evaluation (n = 1), chose to withdraw from the survey but remain in the evaluation (n = 3), died during the fielding of the one-year survey (n = 53), or were OH RETAIN enrollees who were not sampled for the survey (n = 1,016). It excludes wildcard enrollees who did not undergo random assignment (n = 3).

The survey response rates were high (Exhibit II.2). For each program, the response rates exceeded 72 percent, and the differences in response rates between treatment and control group members were small (less than 2.3 percentage points). Respondents completed the survey primarily via the web but had the option to complete it in the mode they preferred—web, paper, or over the telephone with a professional interviewer. The one-year follow-up survey took roughly 14 minutes to complete. Approximately 67 percent of respondents completed the survey by web, 32 percent by phone, and 1 percent by paper.

Exhibit II.2. One-year follow-up survey response rates, by program (percentages)

Random assignment group	RETAIN-WORK*S*	RETAIN KY	MN RETAIN	OH RETAIN	VT RETAIN	All programs
Treatment	76.3	72.8	75.2	78.6	76.2	75.7
Control	76.2	73.1	73.8	76.3	77.3	74.8
Eligible sample	960	3,134	3,175	3,499	798	11,566

Source: RETAIN enrollment data and one-year follow-up survey.

Note: The eligible sample comprises all enrollees who were randomly assigned except enrollees who were enrolled in error (n = 6), experienced contamination (n = 5), chose to withdraw from the evaluation (n = 1), chose to withdraw from the survey but remain in the evaluation (n = 3died during the fielding of the one-year survey (n = 53), or were OH RETAIN enrollees who were not sampled for the survey (n = 1,016). It excludes wildcard enrollees who did not undergo random assignment (n = 3).

C. Analysis samples

For the RETAIN evaluation, we define the research sample for each program as the enrollees who were assigned to either the treatment or control group through random assignment of either individuals or primary care practices, depending on the program (Exhibit II.3).[16] Some research sample members did not complete the one-year follow-up survey, which provides several key outcomes measures for the final impact analysis. Therefore, for each program, the analysis sample for the survey-based outcomes comprises the subset of the research sample that responded to the one-year follow-up survey.

[16] Each program's research sample comprises all enrollees randomly assigned to either the treatment or control group with a small number of exceptions (12 enrollees) who were enrolled in error, experienced contamination, or chose to withdraw from the evaluation. It excludes three wildcard enrollees who did not undergo random assignment.

Exhibit II.3. RETAIN sample sizes, by program

Random assignment group	RETAINWORK*S*	RETAIN KY	MN RETAIN	OH RETAIN	VT RETAIN
Research sample (randomly assigned enrollees)					
Treatment	509	1,654	1,598	2,264	450
Control	454	1,499	1,601	2,261	348
Total	963	3,153	3,199	4,525	798
Sample eligible for the one-year follow-up survey					
Treatment	507	1,641	1,589	1,741	450
Control	453	1,493	1,586	1,758	348
Total	960	3,134	3,175	3,499	798
Analysis sample (one-year follow-up survey respondents)					
Treatment	387	1,195	1,195	1,369	343
Control	345	1,092	1,170	1,342	269
Total	732	2,287	2,365	2,711	612

Source: RETAIN enrollment data and one-year follow-up survey.

Note: The research sample comprises all enrollees who were randomly assigned except enrollees who were enrolled in error (n = 6), experienced contamination (n = 5), or chose to withdraw from the evaluation (n = 1). It excludes wildcard enrollees who did not undergo random assignment (n = 3). The sample eligible for the one-year follow-up survey comprises all research sample members except those who chose to withdraw from the survey but remain in the evaluation (n = 33), died during the fielding of the one-year survey (n = 53), or were OH RETAIN enrollees who were not sampled for the survey (n = 1,016). The analysis sample comprises the sample of people eligible for the one-year follow-up survey who responded to the survey.

D. Participation analysis methods

1. Service use measures

We examined service use measures in five domains: (1) use of any RETAIN services, (2) use of RTW coordinator services, (3) use of or referral to job retention services, (4) use of or referral to job search or training service, and (5) use of or referral to other employment-related services and supports. In this section, we describe how we constructed the measures examined in the participation analysis, organized by domain. Note that we use the general "RTW" terminology for some RETAIN activities such as developing "RTW plans", though some enrollees might have been working and thus be focused on staying at (rather than returning to) work.

a. Use of RETAIN services

We examined several summary measures of any RETAIN service use among treatment enrollees.[17] We assessed the share of enrollees who used any RETAIN services beyond the RTW plan, which was considered an early step in program participation. We also assessed the share of enrollees who used any employment services, meaning that they used or were referred to at least one job retention service, job training or job search service, or other employment service. The third measure we examined was the average number of days between the enrollee's RETAIN enrollment and exit dates.

[17] For the one RETAIN program that offered limited services to the control group, RETAIN Kentucky, we also examined service use among control enrollees.

b. Use of RTW coordinator services

We examined enrollees' use of planning and communication services provided by RTW coordinators. We measured the share of enrollees who had established an RTW plan, which the RTW coordinator developed to support the enrollees' ability to return to or stay at work by assessing their barriers to employment and providing ways to overcome them. We also measured the share of enrollees whose RTW plan was informed by a meeting between the RTW coordinator and a medical provider, employer, or another party (during which the parties could clarify the enrollee's work ability, medical restrictions, and functional limitations, or obtain buy-in for the RTW plan) and the average number of days between the enrollees' RETAIN enrollment and the date the RTW plan was established. Additionally, we measured the share of enrollees who had at least two communications with their RTW coordinator; the mean number of communications; and the distribution in frequency of communication between the RTW coordinator and key players in the RTW process including the enrollee, employer, medical provider, or workforce professional.

c. Use of or referral to job retention services

We examined the percentage of enrollees who used or were referred to services that support job retention, including on-site job analysis, ergonomic assessments, and RTW coordinator assisting their employer in identifying and implementing workplace accommodations, and the percentage who used at least one of those services.

d. Use of or referral to job search or job training services

We examined the percentage of enrollees who used or were referred to services that support job search or job training services, including job search, job training, and transitional work services, and the percentage who used at least one of those services.

e. Use of other employment services and supports

We examined enrollees' use of other employment services and supports separate from the services described above. We measured the share of enrollees who used other employment services, and the percentage who received a referral to employment-related supports.

2. Methods

We conducted a descriptive analysis to examine the patterns of services used by treatment enrollees. For each measure of service use described above, we calculated and reported the group means.

We also assessed the extent to which service use differed by selected enrollee characteristics at the time of enrollment. In this comparison, we focused on four measures representing the main categories of RETAIN services: (1) the percentage of enrollees with an established RTW plan, (2) the percentage with two or more RTW coordinator communications, (3) the percentage who used or were referred to at least one service to support job retention, and (4) the percentage who used or were referred to at least one service to support job search or training. We investigated whether service use differed by eight enrollee characteristics. These characteristics aligned with the subgroups of interest in the impact analysis and the contextual information that RTW coordinators recorded about factors that could pose challenges to work:

age at enrollment (younger than 50; 50 and older), sex (female; male), education (no postsecondary education; any postsecondary education), type of primary diagnosis (musculoskeletal injuries; non-musculoskeletal injuries), time since the enrollee last worked (last worked within one week or less of enrollment; last worked more than one week of enrollment); primary or secondary behavioral health condition (yes or no), dissatisfaction or conflict with current job or employer at the time of enrollment (yes or no), and reported problems with housing or economic circumstances (yes or no). We calculated group means for subgroups of enrollees and tested for differences between the group means using a two-tailed *t*-test.

E. Impact analysis methods

1. Outcome measures

For the one-year impact analysis, we examined outcomes in four domains: labor force attachment and employment, SSA program participation, economic well-being, and health. We assessed impacts on three primary outcomes and a wide range of secondary outcomes. We differentiated between primary and secondary outcomes to distinguish the measures that should receive the most policy focus in the ultimate evaluation of the program's efficacy. This designation is a transparent way to avoid concerns about data mining when assessing impacts on a broad range of outcomes. The focus on a limited set of outcomes also mitigates a potential issue with multiple comparisons—that is, the chance of finding a statistically significant result across several outcomes by chance. Based on the RETAIN theory of change, we selected three primary outcomes to test the projects' efficacy: employment in the fourth quarter after enrollment, earnings in the four quarters after enrollment, and applications for SSDI or SSI in the 12 months after enrollment. We pre-specified the primary outcomes in the evaluation design report (Berk et al. 2021).

Below we include a description of the outcomes organized by domain. (We also include detailed definitions in Appendix A.)

a. Labor force attachment and employment

Using state UI wage records, we assessed each RETAIN program's impacts on enrollees' employment and earnings in the four quarters after enrollment. We estimated impacts for each individual quarter as well as cumulatively across all four quarters. In addition, we examined whether RETAIN affected the share of enrollees who had earnings above the substantial gainful activity (SGA) threshold in each quarter.[18]

We also used data from the one-year follow-up survey to assess each RETAIN program's impacts on labor force attachment at the time of the survey. We examined the shares of enrollees who were connected to an employer (either working or on medical leave), working, and either connected to an employer or actively looking for work. In addition, we examined whether RETAIN had an impact on average weekly hours worked, average weekly earnings, and the share of enrollees working for an employer that offered health insurance or paid leave. We define all labor market measures for the full sample of enrollees, not conditional on being employed.

[18] In 2024, SSA defined SGA as monthly earnings of $1,550 for non-blind individuals. Individuals earning above SGA are generally ineligible to receive disability benefits from SSA.

b. SSA program participation

We examined whether RETAIN affected the share of enrollees who applied for SSA benefits (SSI or SSDI), the share that received benefits, and the average amount of SSA benefits received in the 12 months after enrollment in each RETAIN state.[19] We examined these measures overall and by program (SSDI and SSI). We measured average benefit amounts among all enrollees, not just among those who received benefits. We derived all measures in this outcome domain from SSA administrative data.

c. Economic well-being

We examined whether each RETAIN program had an impact on household earnings and household income in the month before the survey. Household income captured cash and in-kind income from Supplemental Nutrition Assistance Program (SNAP), housing assistance, SSDI or SSI, UI, workers' compensation, retirement, private disability benefits, household earnings, and any other sources of income not listed in the survey. We also examined whether each RETAIN program had an impact on the share of people using public assistance benefits (including SNAP, government housing assistance, and UI) and the share of people receiving short- or long-term private disability payments. Finally, we examined whether the programs had an impact on the amounts of public assistance, UI, workers' compensation' and private disability benefits received. We measured these amounts among all enrollees, not just among enrollees receiving benefits. We derived all measures in this outcome domain from self-reported survey data.

d. Health at the time of the survey

We examined whether each RETAIN program had an impact on the shares of enrollees who reported their health as: at least fair; good or better; or very good or excellent, as well as the share covered by any type of health insurance. We also evaluated whether the programs affected the average number of poor physical health days in the month before the survey, the average number of poor mental health days in the month before the survey, and the average pain score on a 0–10 scale during the seven days before the survey. In addition, we measured whether each RETAIN program affected the share of enrollees who reported that pain interfered with their ability to work most or all the time, and the share who had been prescribed opioid pain relievers in the past two months. We derived all measures in this outcome domain from self-reported survey data.

2. Estimation methods

Our basic impact estimation approach was to compare the average outcomes of the treatment and control enrollees using a regression-based adjustment to account for random assignment design and baseline characteristics. Random assignment, when implemented correctly, should result in research groups that are, on average, similar in their characteristics at the time they enrolled in the evaluation. As a result, by design, a simple comparison of mean values of outcomes between the treatment and control groups should provide an unbiased estimate of program impacts. Nonetheless, we conducted regression

[19] Some enrollees might have received SSDI benefits and/or SSI payments after enrollment based on an application filed before enrollment. However, fewer than 1 percent of enrollees in each RETAIN program reported receiving any income from the SSDI or SSI program at the time of enrollment (Appendix Exhibits A.10.1–A.13.2).

adjustment to improve the statistical precision of the estimates and control for chance differences in baseline characteristics between treatment and control groups. Controlling for such differences was important for characteristics that could be correlated with outcomes. Notably, in the case of VT RETAIN, we randomly assigned primary care practices rather than enrollees but we did not have practice-level data to control for differences across practices.[20]

Regression models. All regression models included three types of covariates that reflected enrollees' characteristics at the time of enrollment in RETAIN. The first type consisted of strata covariates, which reflected the stratified random assignment design.[21] The second type comprised enrollee characteristics for which we always controlled regardless of stratification, including enrollees' age, sex, race and ethnicity, past earnings, type of injury or illness, employment status, and time since last worked. Finally, a third type of covariate comprised enrollee characteristics for which we found a statistically significant difference between the treatment and control groups for a program. See Appendix Exhibit B.1 for a list of covariates for each program.

We used ordinary least squares regression models to estimate impacts, including linear probability models for binary outcomes.[22] For each impact estimate, we report whether it is statistically significantly different from zero. To test for statistical significance, we calculated a two-tailed *t*-statistic to test the null hypothesis that there is no difference between the regression-adjusted means for the treatment and control groups. The associated *p*-value reflects the probability of obtaining the observed impact estimate when the null hypothesis of no effect is true. When discussing an impact estimate, we considered it to be statistically significantly different from zero if the *p*-value was smaller than 0.10 (Berk et al. 2021). For the three primary outcomes, we also conducted a one-tailed *t*-test to test the null hypotheses that RETAIN had no favorable impact on these outcomes.[23] Specifically, for employment in the fourth quarter after enrollment and earnings in the four quarters after enrollment, the null hypothesis is that RETAIN did not increase these outcomes; for applications for SSDI or SSI in the 12 months after enrollment, the null hypothesis is that RETAIN did not decrease this outcome.

We produced heteroskedasticity-consistent standard errors using the method proposed by White (1980). In addition, for the program that used clustered random assignment (Vermont RETAIN), we clustered standard errors at the practice level to account for the fact that outcomes for people in the same primary care practice might be correlated. As described above, we used survey weights to account for survey sampling (applicable to Ohio RETAIN only) and nonresponse for outcomes based on survey data.

[20] Mathematica had data on practice size (number of patients typically served), which we used to stratify random assignment so that practices of approximately the same size had an equal probability of assignment to the treatment or control group.

[21] For each program, we included the controls for strata in all regression models to avoid overly conservative standard errors (Bruhn and McKenzie 2009). The larger standard errors could increase the likelihood that we did not detect differences in baseline characteristics (that might be correlated with the outcomes) as being statistically significant. Similarly, the larger standard errors could increase the likelihood that we did not detect program impacts as statistically significant.

[22] When treatment status is binary, linear probability models yield estimates of impacts that are just as accurate as those estimated by logistic regression and are easier to interpret (Deke 2014).

[23] The evaluation design report (Berk et al. 2021) calculated minimum detectable effects using one-tailed *t*-tests for the primary outcomes.

In the body of this report, we focus on findings from the main impact models. We discuss each program's impacts on all outcomes and present the impacts on selected outcomes using tables and figures. In Appendix B, we provide tables with details of the estimated impacts on all outcomes.

Sensitivity analyses. We conducted several checks to assess the sensitivity of the main impact findings to different modeling assumptions and approaches (Appendix C). We tested the sensitivity of the impact estimates to the use of survey weights, adjustment for all covariates, adjustment for covariates beyond strata variables, and multiple imputation to fill in missing data. We found that for most of the outcomes, the impact estimates were robust with respect to the estimation approach.

Subgroup analyses. To understand whether effects on outcomes differed across demographic groups, we estimated impacts on primary outcomes and a select set of other outcomes for key subgroups of enrollees. To minimize the risk of drawing spurious conclusions due to multiple comparisons, we analyzed only a selected set of subgroups defined by the baseline characteristics of enrollees: age at enrollment (younger than 50; 50 and older), sex (female; male), education (no postsecondary education; any postsecondary education), primary diagnosis (musculoskeletal injuries; non-musculoskeletal injuries), and time since the enrollee last worked (last worked within one week or less of enrollment; last worked more than one week of enrollment).

To estimate each set of subgroup impacts, we modified the main regression model to include an indicator for each subgroup, as well as interaction terms between the treatment status indicator and the indicator variable for each subgroup. We conducted two types of tests to understand program impacts for subgroups. First, for each subgroup, we used a two-sided *t*-test to assess whether the estimated impact was statistically significantly different from 0. Because we are interested in understanding which subgroups benefited from RETAIN services, we discussed subgroup findings when we found a statistically significant impact for one subgroup but not its counterpart. Second, for each pair of subgroups, we conducted a joint Wald test to determine whether the differences in the impact estimates for the two subgroups were statistically significantly different. In our discussion of results, we note when a program's impact was significantly more favorable for one subgroup than the other.

Bayesian interpretation of RETAIN programs' impacts. We used Bayesian methods to interpret the impacts of each RETAIN program while taking the broader context of other impact estimates into account. This enabled us to understand estimated impacts for specific programs considering broad patterns across RETAIN programs as well as evidence from prior studies of other employment programs. The backbone of the Bayesian approach is data-driven learning through partial pooling of data. We used this data-driven learning to move the impact estimates for a program closer to the average impact across programs, in proportion to how precise the impact estimate is and the degree to which the model has learned that the impacts vary across programs. Bayesian methods also use external evidence from existing studies to further contextualize results. We considered evidence from the Pathways to Work Clearinghouse using results from the Bayesian meta-analysis presented in Shiferaw and Thal (2022), limiting the evidence to high-quality studies that examined employment outcomes over a period of less than 18 months.

This approach enabled us to make statements about the probability that a RETAIN program had favorable impacts on each of the three primary outcomes in the year after enrollment relative to the comparison group. More details are available in Appendix A.D.3.

F. Benefit-cost analysis methods

We conducted benefit-cost analysis to help DOL, SSA, state agencies, and policymakers identify key cost drivers of the RETAIN programs and inform decision making about whether it is worthwhile sustaining such interventions or initiating similar interventions in the future. The benefit-cost analysis addressed two research questions:

- **What are the benefits and costs of each RETAIN program during the first year after enrollment?** If the RETAIN programs are effective in achieving their goals, we would expect RETAIN treatment enrollees to have greater employment and earnings, lower participation in SSA disability programs, better health and functioning, and greater economic well-being than control enrollees. At the same time, the federal government incurred costs for funding the programs, and there may be costs from other perspectives depending on the estimated impacts of the program.
- **Are the benefits of each RETAIN program greater than its costs during the first year after enrollment?** For each accounting perspective, we calculated net benefits by subtracting program costs and indirect costs from benefits, with a positive value indicating that the monetary value of the program's benefits outweighed its costs. We also calculated the benefit-cost ratio by dividing the net benefits (benefits minus indirect and direct program costs) by the program costs.

1. Accounting framework

We considered four accounting perspectives when we characterize benefits and costs:[24]

1. **Treatment enrollees.** A primary goal of the RETAIN programs is to help workers stay at work or return to work after an illness or injury, thus supporting their long-term economic well-being. If the programs succeed, many of the benefits will accrue to treatment enrollees.
2. **Federal government.** Another central goal of the RETAIN demonstration is to reduce reliance on federal disability programs. By preventing some enrollees from entering SSDI and SSI programs, RETAIN programs could reduce expenditures from SSA programs and, relatedly, Medicare and Medicaid services.[25] Further, by increasing enrollee earnings, RETAIN programs might bolster federal funding through increased contributions via income and payroll taxes from enrollees. At the same time, DOL funded the RETAIN programs and bore the bulk of the costs associated with service delivery.

[24] Following SSA's recommendation, we revised perspectives (2) and (3) from "SSA" and "Other federal and state government agencies," as outlined in the Evaluation Design Report (Berk et al. 2021), to "Federal government" and "State government," reflecting DOL's funding of the intervention. A limitation of the benefit-cost analysis is that it does not include the perspectives of employers, who are an important stakeholder group. Depending on the extent to which RETAIN increased enrollees' employment and well-being, their employers might experience benefits and costs related to staff turnover, project disruptions, productivity, accommodations, and morale. However, the RETAIN program model did not directly target employer outcomes and the evaluation did not collect data on their outcomes. We refrain from extrapolating employer impacts from the enrollee impacts, because it would require unjustifiably strong assumptions.

[25] SSDI awardees become eligible for Medicare after a 24-month qualifying period. In most states, SSI awardees are automatically eligible for Medicaid upon award.

3. **State government.** RETAIN programs' impacts on enrollee outcomes might translate into benefits and indirect costs for state governments. For example, increased enrollee earnings could boost consumer spending and lead to increased sales tax and state income tax revenues for state governments.
4. **All key perspectives.** To assess benefits and costs from all key accounting perspectives, we aggregated them across enrollees, the federal government, and state governments. This combined perspective is likely of greatest interest to policymakers, as finding positive net benefits would indicate that a RETAIN program increased the overall resources available to key parties.

2. Estimation methods

We calculated benchmark estimates for RETAIN program costs, benefits and indirect costs (that is, costs that stem from impacts on enrollee outcomes), and benefit-cost summary measures using one-year impact estimates, program cost data, and external literature. Appendix Exhibit B.3 summarizes the program costs, benefits, and indirect cost measures, as well as data sources, calculation methods, and modeling assumptions and considerations.

a. Estimating program benefits and indirect costs

We estimated each benefit and indirect cost per enrollee by combining impact estimates with other information from enrollee survey data (for example, we used marital status and average household income to determine the appropriate tax rate) and external sources (for example, for the sales tax rate). We reported the benefit and indirect cost measures and their sums by RETAIN program.

To obtain estimates for benefits and indirect costs, we used the point estimates of the program impacts even if the estimates were not significantly different from zero at conventional levels of statistical significance.[26] For certain benefit and indirect cost calculations, we used parameters drawn from external sources (for example, the sales tax rates as a percentage of personal income), as noted above. A sensitivity analysis evaluated how alternative parameter values affected net benefit estimates. See Appendix Exhibit C.13, D.13, F.13, G.13 and H.13.

b. Estimating program costs

We estimated program costs separately by RETAIN program over a steady-state period, Quarter 2 2023 through Quarter 1 2024. We selected this period because during this interval, recruitment had stabilized and the programs were neither in a start-up or wind-down phase. Mathematica developed a grantee cost form and asked each RETAIN program to complete it between March and May 2025 to collect cumulative costs over a 12-month steady-state cost accounting period. The form captured costs invoiced to DOL and those not invoiced, categorized as personnel and labor costs (staff wages and fringe benefits), payments for providing services (including enrollee stipends, incentive payments to participants, and payments for subcontractors for amounts less than 10 percent of expenditures), outreach costs (such as payments for flyers, brochures, and radio advertisements), other direct costs (such as non-labor costs related to running

[26] Following Boardman's (2018) guidance, this approach provides a more accurate and complete accounting of the benefits of a program because it uses the best evidence available on the size of the impacts—our unbiased point estimates—even if they are imprecisely estimated.

online clinical research platforms), administrative and overhead costs, and costs not invoiced to DOL (such as the value of volunteer time). We calculated total program costs by summing direct costs invoiced to DOL and non-invoiced indirect costs. The program costs include those of participating in a grant program, such as meeting regularly with the grantor, collecting and reporting quarterly data, providing quarterly update reports, and meeting financial reporting requirements.

The program cost estimates may overestimate the costs of service delivery for the treatment group under non-evaluation conditions. The cost estimates could include costs related to the control group (for example, costs related to recruiting, enrolling, and delivering light-touch services to control group members) that were only necessary because the program was participating in an experimental study. In addition, we cannot isolate and subtract all the program costs of participating in the evaluation (for example, time staff spent attending meetings with the evaluation team).[27]

c. Supplementary break-even analysis

The direct program costs of delivering services were incurred up front during the evaluation period, but the benefits and indirect costs may continue to accrue and compound over time, including beyond the evaluation period. During the one-year evaluation period, we did not observe many of the programs' expected benefits (for example, reductions in long-term SSDI outlays). To address this issue, we conducted a supplementary where we calculated the annual earnings impact needed for RETAIN to be cost neutral (that is, for benefits to equal costs) within five, 10, and 20 years after enrollment. The first step in this analysis was to build a model to forecast future net benefits. Through this supplementary analysis, we assess whether it is likely or plausible that each's program will generate sufficient benefits to eventually exceed the service delivery costs that were incurred up-front.

Forecasting future net benefits. We assumed there are no direct program costs beyond the one-year period. We also assumed that enrollees receiving benefits will continue to do so in the future and that enrollees not receiving benefits will continue not receiving benefits, with the exception of SSDI and SSI applicants. For SSDI and SSI, we assumed that a share of those who applied would receive benefits in the future. We calculated the present value of expected future benefits and indirect costs by accounting for opportunity costs, retirement, and mortality. Appendix B contains more detailed information about the approach we used to forecast future net benefits.

Calculating impacts that lead to cost neutrality. We calculated how large the impact on earnings would have to be for RETAIN program benefits to equal the costs in five, 10 and 20 years after enrollment. We assumed all other impacts were the same as in the one-year analysis; however, we adjusted them for opportunity costs, retirement, and mortality. Then, we estimated the annual earnings impacts that would be needed for cumulative net benefits from all key accounting perspectives to be zero at five, 10 and 20 years after enrollment.

[27] We did not include evaluation-related expenses that were easy to remove, such as the cost of technical assistance, valued at $10.4 million for Phases 1 and 2 collectively (U.S.A. Spending n.d.), and incentive payments to participants.

III. Kansas RETAIN (RETAINWOR*KS*)

Key findings from the one-year evaluation

Enrollment and participation

- RETAINWOR*KS* enrolled 963 people during Phase 2, of whom 509 were randomly assigned to the treatment group and thus were eligible for services. Treatment and control enrollees had similar characteristics at the time of enrollment. We found three statistically significant differences between the two groups across more than 20 characteristics measured at the time of enrollment.
- Program data indicate that 39 percent of treatment enrollees established an RTW plan, and 59 percent used or received a referral to employment services. On average, enrollees and RTW coordinators had 19 communications, with 99 percent of treatment enrollees having at least two such communications. The share of enrollees for whom the RTW coordinator communicated with a medical provider, workforce professional, or employer were 98 percent, 99 percent, and 50 percent, respectively.

Impacts on enrollees' one-year outcomes

- RETAINWOR*KS* had favorable impacts on all three primary outcomes. Compared with control enrollees, treatment enrollees were 8 percentage points more likely to be employed in the fourth quarter after enrollment (a relative increase of 13 percent) and earned $3,551 more in the four quarters after enrollment (a relative increase of 12 percent). RETAINWORKS reduced the share of enrollees who had applied for SSDI or SSI by 5 percentage points (a relative reduction of 34 percent) compared with control enrollees.
- RETAINWORKS improved enrollees' employment and earnings during the first year after enrollment with impacts emerging in the first quarter following enrollment and continuing in subsequent quarters. Relative to control enrollees, treatment enrollees reported better employment outcomes at the time of the one-year follow-up survey.
- RETAINWORKS reduced enrollees' participation in SSA programs primarily by reducing applications for SSDI. It did not affect enrollees' application rates, receipt rates, or payment amounts for SSI.
- RETAINWORKS did not affect other measures of economic well-being.
- RETAINWOR*KS* improved enrollees' health. Compared with control enrollees, treatment enrollees reported less pain at the time of the survey.

Net benefits during the one-year evaluation period

- The estimated cost of delivering RETAINWOR*KS* was $9,872 per treatment enrollee.
- RETAINWOR*KS*' costs exceeded its benefits during the one-year evaluation period, with a net cost of $4,715 per treatment enrollee. However, benefits could continue to accrue in the future whereas program costs will not. A simple forecast suggests that the program would break even within five years. ◢

A. Program overview

Below, we provide an overview of the RETAINWOR*KS* (Kansas RETAIN) program design and implementation as documented through Mathematica's independent evaluation. We draw on key findings from Mathematica's process analysis (Keith et al. 2024), which covered program implementation and service delivery through June 2023, midway through the program's operation period under the Phase 2 grant. The program made changes to some implementation components over time, following a continuous quality improvement approach.

1. Program design

The Kansas Department of Commerce was the lead agency for RETAINWOR*KS*. The program service area was the entire state of Kansas, organized by the five local workforce development areas that cover the state's 105 counties. Each workforce development area had a healthcare partner that supported implementation. RETAINWOR*KS* enrolled adults ages 18-64 who were employed or seeking employment and had a work- or non-work-related injury or illness, including (1) a musculoskeletal injury, (2) a mental health disorder, (3) a chronic disease, or (4) another newly diagnosed illness or injury affecting the person's employment. RETAINWOR*KS* required enrollees to live or work in Kansas, have a valid Social Security number, and be legally authorized to work in the United States.

RETAINWOR*KS* offered services to treatment enrollees for up to six months. The program model included the following:

- Training and compensation for medical providers to use occupational medicine best practices.
- Closely coordinated RTW coordination and employment counseling services for all enrollees. These services involved working with the enrollee to develop individualized RTW and employment plans; meeting at least weekly with the enrollee; and communicating with the enrollee's medical provider, employer, and others as needed to coordinate the enrollee's staying at or return to work.
- Other services, including supporting workplace accommodations, referrals to retraining or rehabilitation services, and supportive services such as financial assistance with housing, utilities, and childcare.

The evaluation of RETAINWOR*KS* used an individual random assignment design. Mathematica randomly assigned enrollees to either the treatment or the control group; enrollees received a $50 incentive payment for enrollment. Enrollees in the treatment group could access RETAINWOR*KS* services, whereas those in the control group could not access program services but received a list of resources available to the general public. In total, RETAINWOR*KS* enrolled 963 people in the RETAIN evaluation between October 2021 and May 2024.

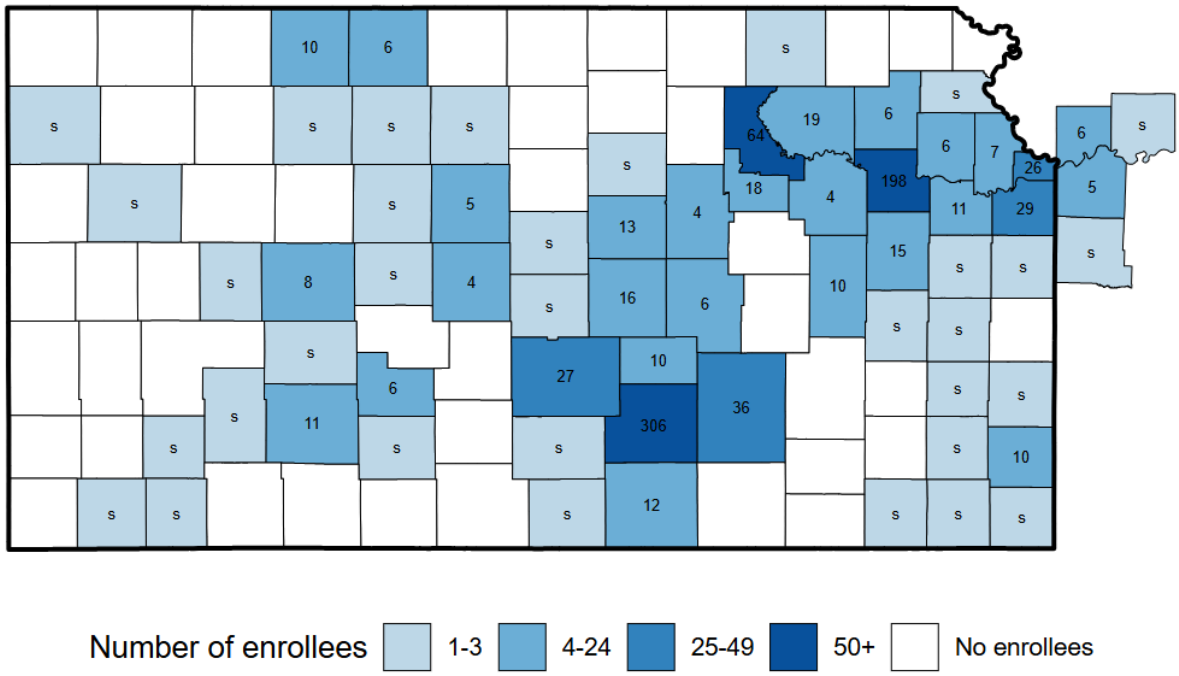
2. Program implementation

RETAINWOR*KS* enrolled people throughout the state (Exhibit III.1). Enrollment was highest in Sedgwick County, where Wichita is located (32 percent), followed by Shawnee County, where Topeka is located (21 percent).

RETAINWOR*KS* struggled with recruitment and enrollment throughout Phase 2, enrolling 24 percent of its original target of 4,000. RETAINWOR*KS* enrollments were primarily driven by referrals from medical providers employed by the healthcare partners (Keith et al. 2024). Referrals could also come from employers, local workforce development areas, or self-referrals, but RETAINWOR*KS* required all enrollees to be seen and referred by a RETAINWOR*KS*-trained provider to complete the enrollment process. At the time of the process study, limited medical provider engagement was the primary reason for lower-than-expected patient referrals to RETAINWOR*KS*. To boost enrollment, RETAINWOR*KS* tried numerous strategies, including in-person outreach to providers, outreach to specialists who might have more

RETAIN-eligible patients, public relations campaigns to increase self-referrals, and reviewing electronic medical records (EMRs) and texting potentially eligible patients.

Exhibit III.1. RETAINWOR*KS:* Enrollment coverage in the program's service area



Source: RETAINWOR*KS* enrollment data.

Note: The number in a county represents the total number of treatment and control enrollees for that county; we suppressed the number if it was fewer than three enrollees. Counties shown in white had no enrollees. Counties shown in pale blue had 1-3 enrollees, while counties in light blue had between 4-24 enrollees, and counties in blue had 25-49 enrollees. Counties in the darkest shade of blue had more than 50 enrollees each

To be eligible to refer patients, providers needed to complete a four-hour, self-paced online training on RETAINWOR*KS* and its intended benefits, the COHE model, and the opioid crisis.[28] Providers were eligible for financial incentives for successful referrals, completing activity assessments, making RETAIN-related phone calls, and completing RTW plans and 30-day risk assessments for treatment enrollees. However, program staff reported that most providers were not motivated by the financial incentives, perhaps because the payment model did not allow providers to keep all of the incentives (incentives were shared between the practice and providers). Program staff noted that incentives seemed more salient to advanced practice nurses and physician assistants. Because all providers who referred patients to RETAINWOR*KS* completed the required training, both treatment and control enrollees would be seen by trained providers.

Upon receiving a referral for RETAINWOR*KS*, recruitment staff contacted the potential enrollee to review eligibility. If eligible and interested, recruitment staff obtained the completed informed consent and alerted the potential enrollee they would be contacted by an employment counselor at the workforce

[28] RETAINWOR*KS* shortened the provider training to a one-hour recorded webinar on July 2023.

partner organization. If the referral did not originate with the provider, the recruitment staff contacted the medical provider for the referral, but the process of onboarding a new provider was lengthy. Once the program received a referral, the recruitment staff would coordinate with the provider to ensure completion of the activity assessment. Both the healthcare recruitment staff and the employment counselor worked together with the enrollee to collect documentation confirming eligibility. Eligible individuals received a $50 incentive for completing enrollment paperwork.

In the RETAINWOR*KS* program model, RTW coordinators were responsible for providing SAW/RTW services, including developing RTW plans and engaging in communication with the enrollee, employer, medical provider, employment counselor, and others. Employment counselors were responsible for providing services or referrals to support job retention, job search, or training, and financial support.

B. Program participation

Of the 963 people who enrolled in RETAINWOR*KS* during Phase 2, 509 were randomly assigned to the treatment group and thus were eligible for services. Below, we describe the baseline characteristics of treatment enrollees and then discuss their use of RETAIN services.

1. Baseline characteristics of treatment enrollees

a. Demographic characteristics

About 60 percent of RETAINWOR*KS* treatment enrollees were women (Exhibit III.2), and about two-thirds (67 percent) were younger than 50, with the average age being 43 (Appendix Exhibit A.10.1). About 70 percent of treatment enrollees were non-Hispanic White, followed by non-Hispanic Black (14 percent), Hispanic (9 percent), more than one race (4 percent), and non-Hispanic other race (2 percent). Almost all treatment enrollees cited English as their preferred language (99 percent) and had a high school diploma or further education (95 percent). The most frequently reported educational attainment was a high school diploma, GED, or certificate of completion (48 percent). Nearly one-third (29 percent) of treatment enrollees had an occupational certificate or license or two-year college degree, and 18 percent had a four-year college or postgraduate degree.

b. Injury or illness characteristics

The most common type of injury or illness among RETAINWOR*KS* treatment enrollees was musculoskeletal, with 17 percent citing a back-related musculoskeletal injury or illness and 48 percent citing a non-back musculoskeletal injury or illness as the primary diagnosis that made them eligible for RETAIN. Eight percent had a mental health condition and about one-quarter (27 percent) had a health condition that was neither a musculoskeletal nor mental health condition. For 48 percent of treatment enrollees, the primary injury or illness was a new condition rather than a worsening of an existing condition, and 46 percent of treatment enrollees reported their condition was a result of an accident or injury rather than an illness or a chronic condition. More than one-quarter (28 percent) of treatment enrollees reported that their health condition was caused, at least in part, by work-related factors, and some treatment enrollees (16 percent) reported that their injury or illness was part of a workers' compensation claim.

Most treatment enrollees enrolled in RETAINWOR*KS* shortly after experiencing the onset or worsening of their primary illness or injury; the average time between the onset or worsening of injury or illness and enrollment was 45 days.[29] Half of treatment enrollees had a new or existing behavioral health condition, defined as a mental health diagnosis or a substance use disorder (as either the condition that made them eligible for RETAIN or a secondary health condition). There was some overlap between these two condition types. Forty-seven percent of treatment enrollees had a mental health diagnosis, and 13 percent reported having a substance use disorder (statistics not shown).

c. Recent employment

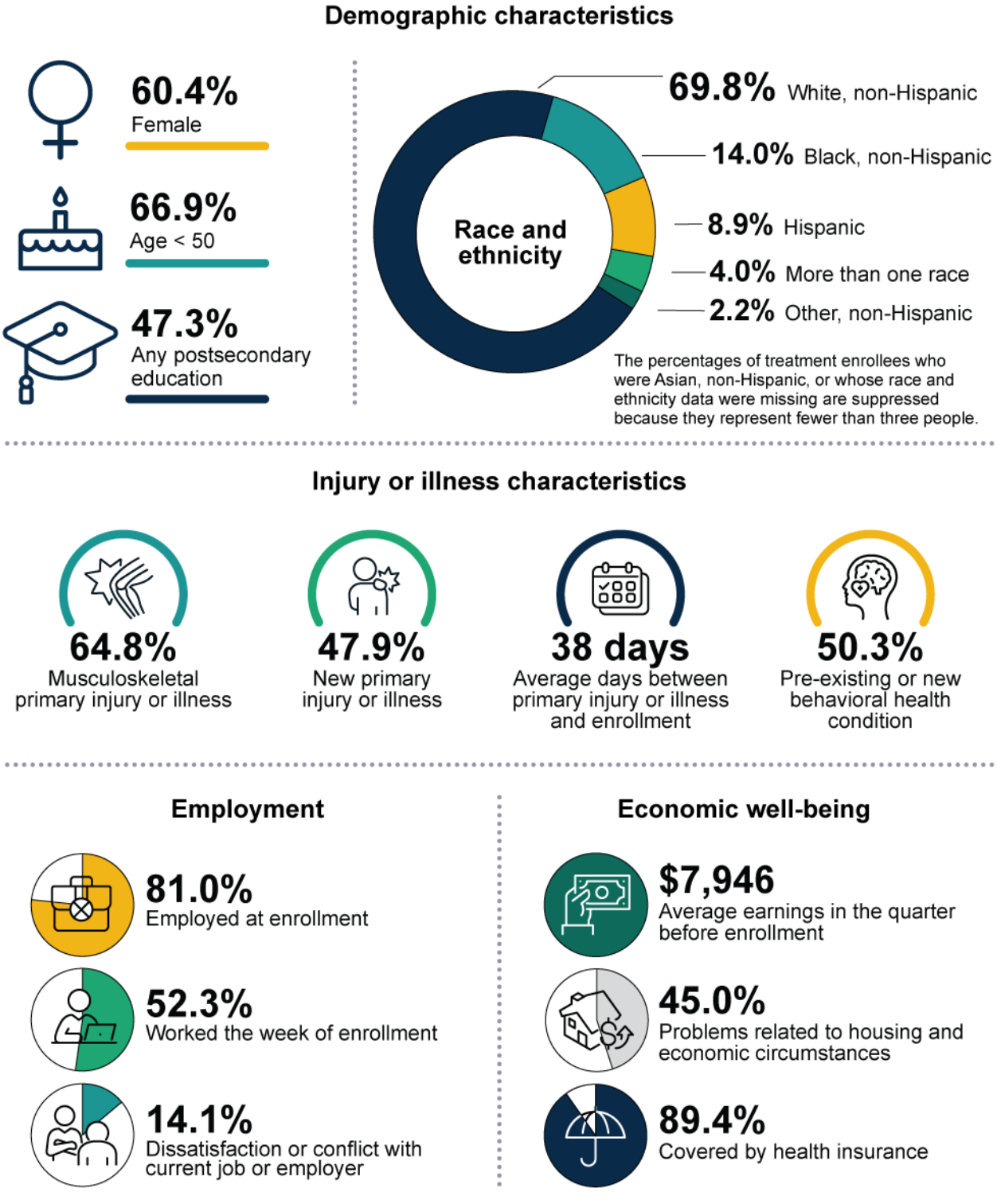
Most treatment enrollees (81 percent) were employed (either self-employed or employed at a private company, nonprofit, or government) at the time of enrollment, but a little over half of them (52 percent) had worked during the week before enrollment. About one-third of treatment enrollees had not worked for at least one month before enrollment. Before their injury or illness, treatment enrollees worked 40 hours per week on average. Treatment enrollees varied considerably in their tenure at their current or most recent job: a little over one-quarter (28 percent) had been at their job for more than five years, but a sizable share (23 percent) had worked at their job for less than six months. Treatment enrollees most frequently worked in service occupations (35 percent) or in management, professional, or related occupations (26 percent). Fourteen percent of treatment enrollees reported dissatisfaction or conflict with their current job or employer.

d. Economic well-being

On average, treatment enrollees earned $7,950 in the quarter before the quarter they enrolled in RETAIN, and most (79 percent) had earnings of $1,000 or more before taxes and deductions in at least one of the 12 months before enrollment. At enrollment, relatively few enrollees reported receiving income from sources other than earnings. Only 7 percent received employer-provided or other private disability insurance, and 6 percent received workers' compensation. Fewer than 1 percent received SSDI, 2 percent received veterans' benefits, and 2 percent reported income from other public programs. Consistent with RETAIN's goal to intervene before people apply for federal disability benefits, only 4 percent reported that they had applied for or received SSI or SSDI in the three years before enrolling in RETAINWOR*KS*. Nearly all treatment enrollees (89 percent) had health insurance coverage. Nearly half of treatment enrollees (45 percent) reported experiencing homelessness, inadequate housing, extreme poverty, low income, or insufficient social insurance or welfare support (Exhibit III.2).

[29] The median time was 33 days (not shown).

Exhibit III.2. RETAINWOR*KS*: Baseline characteristics of treatment enrollees



Source: RETAIN enrollment data. See Appendix Exhibit A.10.1 for additional information.

2. Service use

Program data indicate that 39 percent of treatment enrollees established an RTW plan and, on average, enrollees remained in the program for 121 days before exiting (Exhibit III.3).[30] More than half of treatment enrollees (59 percent) used or received a referral to employment services, including job retention, job training, job search, or other employment services.

About 40 percent of RETAINWOR*KS* treatment enrollees established an RTW plan (39 percent). Program data indicate that key components of an RTW plan were likely in place for the remaining enrollees. RTW coordinators met with the medical provider to inform the RTW plan for more than three-quarters of treatment enrollees (79 percent) and with the employer for 21 percent of treatment enrollees (Appendix Exhibit C.1). RETAINWOR*KS* required input from medical providers to complete the RTW plan, and program leaders reported that competing demands on medical providers' time slowed the completion of RTW plans. For enrollees with completed RTW plans, on average, RTW coordinators worked with medical providers to develop RTW plans within 57 days of enrollment.

RETAINWOR*KS* RTW coordinators frequently communicated with treatment enrollees. Nearly all treatment enrollees (99 percent) communicated with their RTW coordinator at least twice, with an average of 19 communications per enrollee. For about 33 percent of enrollees, RTW coordinators communicated with them more than 20 times, which is consistent with the expectations RETAINWOR*KS* set for RTW coordinators to communicate with each enrollee weekly over the six-month service period.

The RETAINWOR*KS* model specified that RTW coordinators should communicate with each enrollee's medical provider and workforce professional, and as needed with the employer, to coordinate the enrollee's staying at or returning to work. RTW coordinators communicated with a medical provider for nearly all treatment enrollees (98 percent), with an average of five communications per enrollee (Exhibit III.1; Appendix Exhibit C.1). RTW coordinators communicated with a workforce professional for almost all treatment enrollees (99 percent), with an average of 11 communications per enrollee. RTW coordinators communicated with employers for half of treatment enrollees (50 percent), with an average of 0.5 communications per enrollee. Some enrollees, especially those with a mental health diagnosis, did not permit RETAINWOR*KS* staff to communicate with their employer for fear of stigma or retaliation, which was a barrier to engaging employers in supporting enrollees' return to work (Keith et al. 2024).

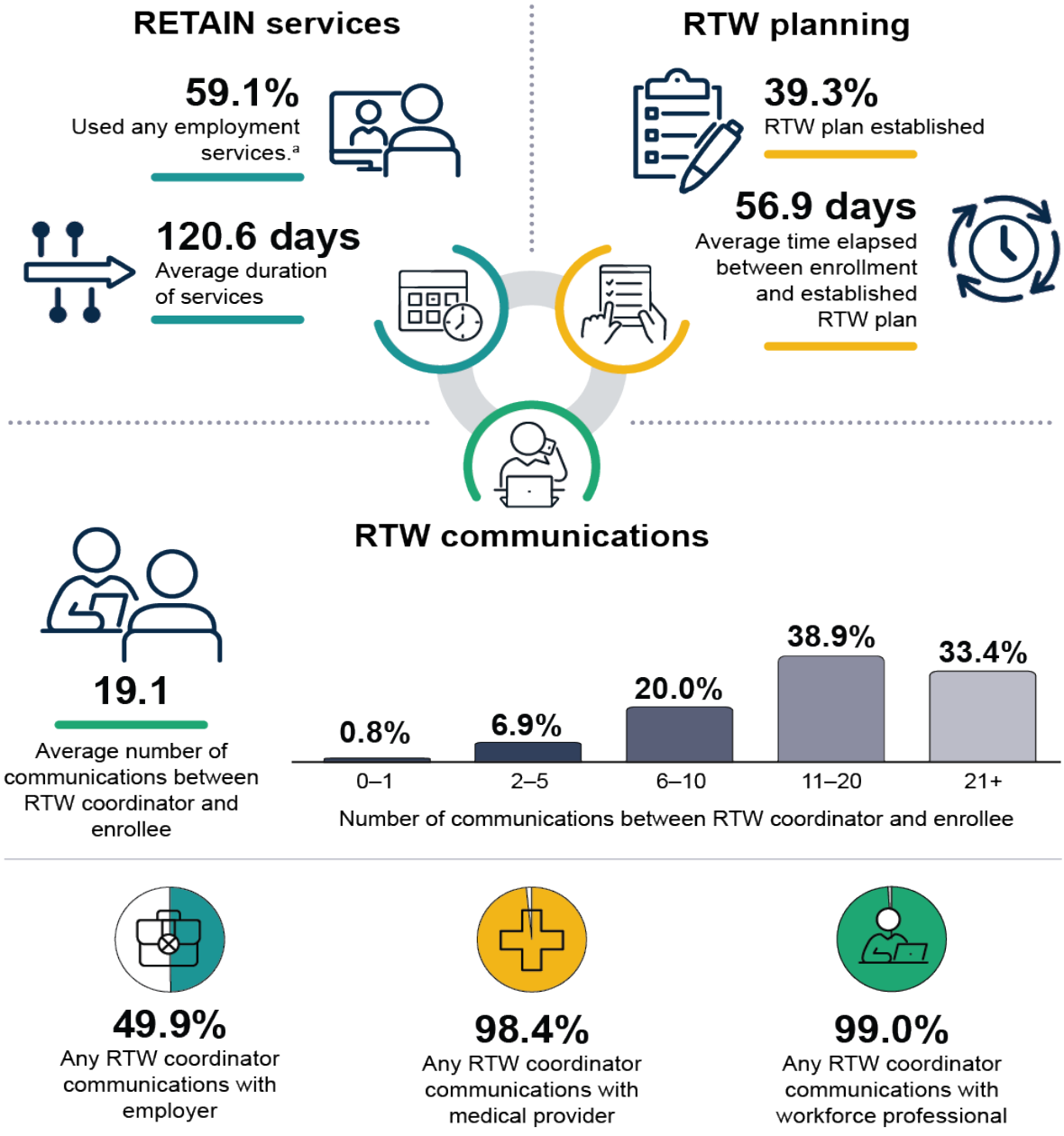
About six in every 10 treatment enrollees used employment services (59 percent). A little over half of treatment enrollees used job retention services (53 percent), such as on-site job analysis or ergonomic assessment services, and 21 percent used job search or training services. Program staff saw more enrollee interest in supportive services provided by workforce partners through financial assistance, such as assistance with rent or housing, utilities, and childcare, than interest in employment services (Keith et al. 2024).

Service use varied by some enrollee characteristics. For select services, relative to other enrollees, rates of service use were higher among enrollees who were age 50 or older, were men, had last worked more than

[30] RETAINWOR*KS*' program staff recorded the exit date as approximately 30 days after the last contact with the enrollee.

one week before enrollment, or were dissatisfied or had conflict with their employer. Depending on the service type, use rates were higher or lower among enrollees who had problems related to their housing or economic circumstances, relative to other enrollees. Detailed findings for service use among subgroups are available in Appendix Exhibit C.2.

Exhibit III.3. RETAINWOR*KS:* Services used by treatment enrollees



Source: RETAIN service use data. See Appendix Exhibit C.1 for additional information.

[a] The percentage of treatment enrollees who received any employment services includes enrollees who used or were referred to one or more of the following: job retention services, job training and job search services, or other employment services.

Note: We refer to certain activities (such as RTW planning) in terms of RTW, though some enrollees might be working and focused on SAW goals.

RTW = return-to-work.

C. Impacts on enrollees' outcomes

The findings in this section show the extent to which RETAINWOR*KS* led to changes in enrollees' labor force attachment and employment, SSA program participation, economic well-being, and health in the first year after enrollment. The findings are based on Mathematica's independent evaluation of the program.

How we estimated the impacts of RETAINWOR*KS*

We estimated the program's impacts by comparing the outcomes of enrollees in the treatment group, who could access RETAINWOR*KS* services, to the outcomes of enrollees in the control group, who could not. We describe the program's impact on an outcome in terms of how the average outcome of treatment enrollees differed from that of control enrollees. ◢

We estimated the program's impact on these outcomes by comparing the outcomes of enrollees in the treatment group, who could access RETAINWOR*KS* services, to those of enrollees in the control group, who could not. Before doing so, we examined the sample characteristics of all enrollees and of survey respondents to confirm that enrollees in the treatment and control groups had similar characteristics on average, as expected from the individual random assignment (Appendix Exhibit A.10.2). We found three statistically significant differences between the two groups across more than 20 characteristics measured at the time of enrollment. The usual hours worked per week differed between the groups. Treatment enrollees worked an average of 40 hours per week, compared with an average of 41 hours per week for control enrollees. The occupational distribution also differed between treatment and control enrollees. Compared with control enrollees, treatment enrollees were more likely to work in production, transportation, material moving, natural resources, construction, or maintenance jobs before enrollment, and less likely to work in management, professional, sales, or office jobs. There was also a statistically significant difference in the share of enrollees who had health insurance, with higher rates of coverage among treatment enrollees (89 percent) than control enrollees (84 percent). To obtain unbiased estimates of program impacts, when comparing the average outcomes of the treatment and control groups we accounted for the differences in hours worked, occupation, and health insurance coverage at enrollment in addition to a core set of covariates (see Appendix Exhibit B.1).[31]

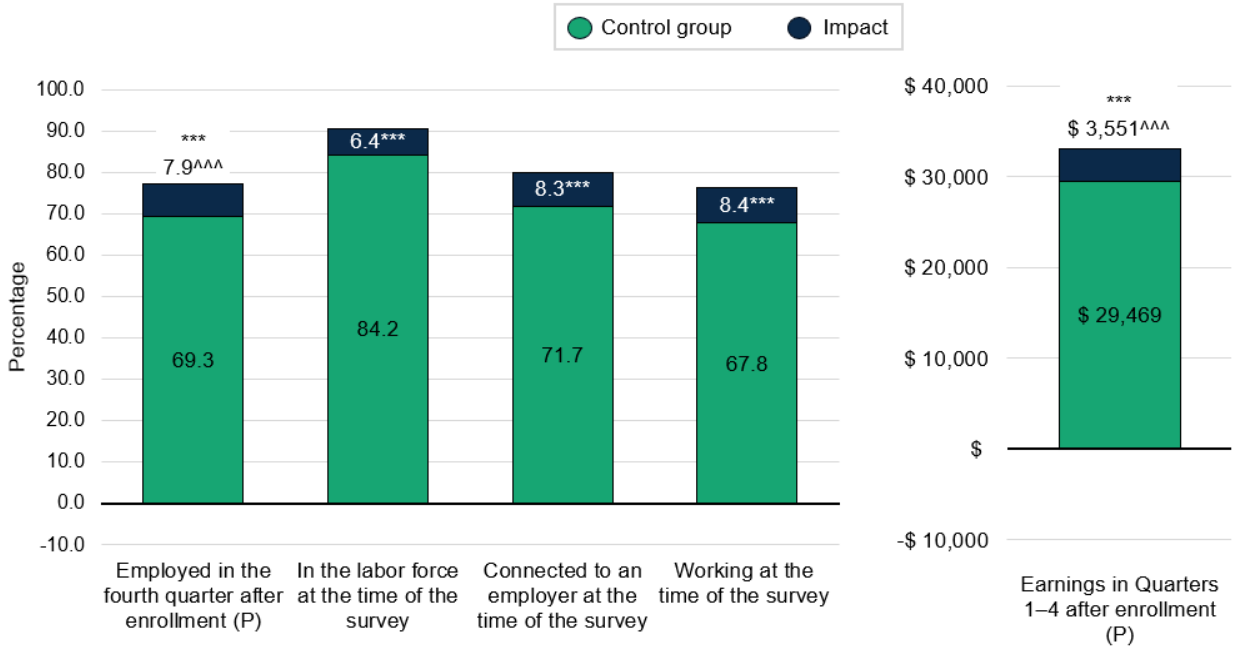
In an earlier report, we examined RETAINWOR*KS*'s impacts on enrollees' outcomes during the two months after enrollment using data from an early follow-up survey of enrollees (Patnaik et al. 2025). We found that RETAINWOR*KS* increased enrollees' use of SAW/RTW services during the two months before the early follow-up survey. The program increased the share of enrollees who were in the labor force but did not affect the share who were working at the time of the survey, relative to the control group. The program appeared to have a positive impact on enrollees' health at the time of the early follow-up survey, with significant decreases in the number of poor physical health days and the share of enrollees reporting that pain interfered with work most or all of the time. RETAINWOR*KS* also reduced the likelihood that enrollees had been prescribed an opioid pain reliever.

[31] For some baseline characteristics (such as having applied for or received SSDI or SSI in the past three years), the difference between the treatment and control group was nontrivial in size but statistically insignificant. We conducted robustness checks wherein we accounted for group differences in such characteristics through covariate adjustment. The results (not shown) confirm that the estimates of RETAINWOR*KS*' impacts on enrollee outcomes do not meaningfully change if we account for such differences.

The one-year impact estimates suggest that RETAINWOR*KS* had positive impacts on the three primary outcomes and many of the secondary outcomes we assessed (Appendix Exhibit C.3). Among other impacts, the program increased employment in the fourth quarter after enrollment, increased earnings in Quarters 1–4 after enrollment and decreased the share of enrollees who applied for SSDI or SSI. The program also improved enrollees' self-reported health. We also estimated impacts of the program on select outcomes for subgroups of enrollees defined by their age, sex, education, primary diagnosis, and time since last worked at enrollment (Appendix Exhibits C.4–C.8). We found that the positive impacts on some labor market outcomes were stronger for male enrollees, enrollees with a non-musculoskeletal primary condition, and enrollees who had last worked more than one week before enrollment, compared to their counterparts.

RETAINWOR*KS* increased enrollees' employment and earnings. In the first year after enrollment, RETAINWOR*KS* increased treatment enrollees' employment rates and earnings and had positive impacts on other employment outcomes, including labor force participation and the average number of hours worked per week. About 69 percent of control enrollees were employed in the fourth quarter after enrollment and average earnings were $29,469 during the four quarters after enrollment; RETAINWOR*KS* increased these figures among treatment enrollees by 8 percentage points (a relative increase of 13 percent) and $3,551 (a relative increase of 12 percent), respectively (Exhibit III.4).

Exhibit III.4. RETAINWOR*KS*: One-year impacts on employment outcomes



Source: RETAIN enrollment data; one-year follow-up survey; Social Security Administration data; state unemployment insurance wage records.

Note: See Appendix Exhibit C.3 for detailed estimates and description of estimation methods.

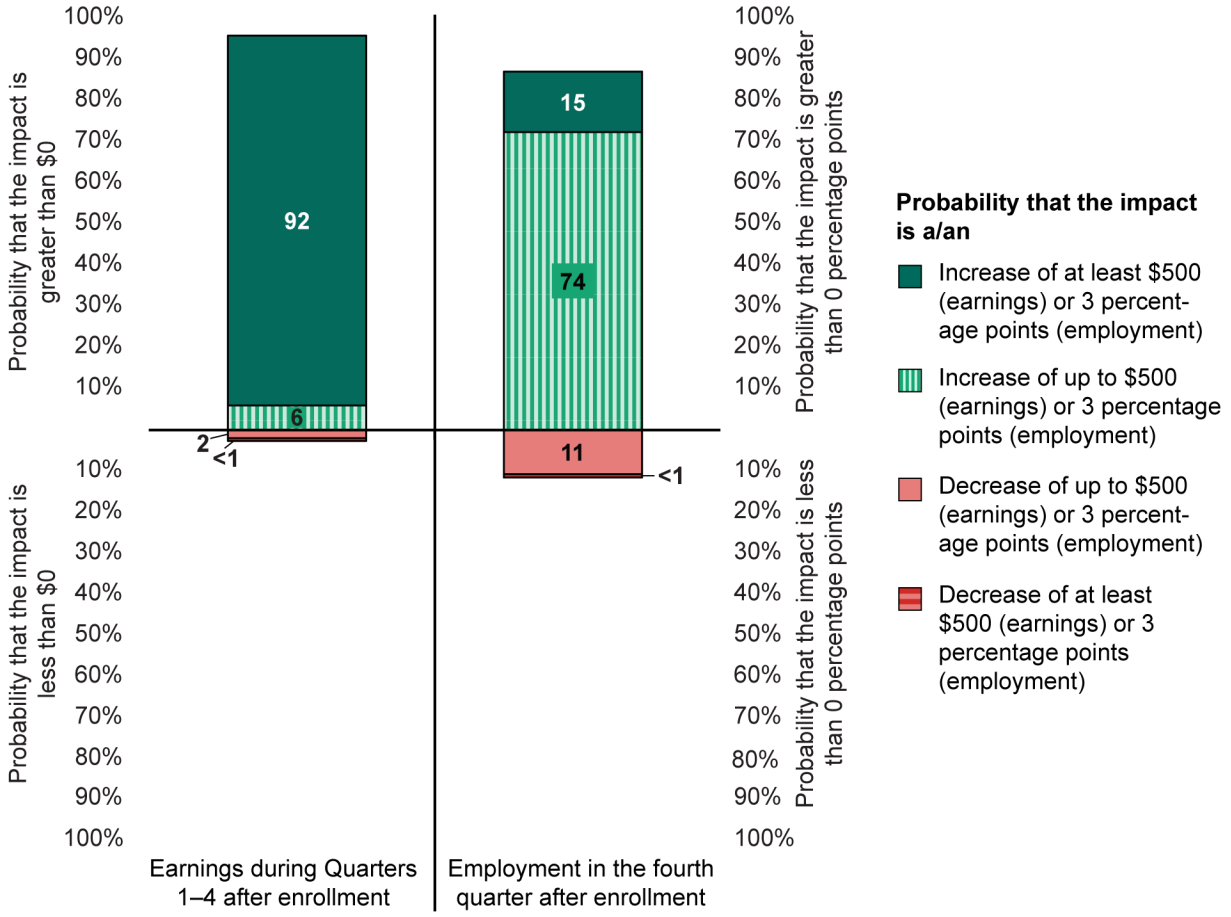
*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

^/^^/^^^ Impact estimate is significantly greater than zero (*p*-value is less than .10/.05/.01) using a one-tailed t-test. This test was only conducted for primary outcomes.

(P) = primary outcome.

Findings from supplementary Bayesian analyses indicate a high likelihood that RETAINWOR*KS* had substantive, positive impacts on employment and earnings (Exhibit III.5; Appendix Exhibit C.10). We estimated a 98 percent probability that the program increased average earnings in the four quarters after enrollment and a 92 percent probability that the program increased earnings in the year after enrollment by more than $500. Similarly, we estimated an 89 percent probability that RETAINWOR*KS* increased employment in the fourth quarter after enrollment but only a 15 percent probability that the increase was greater than 3 percentage points.

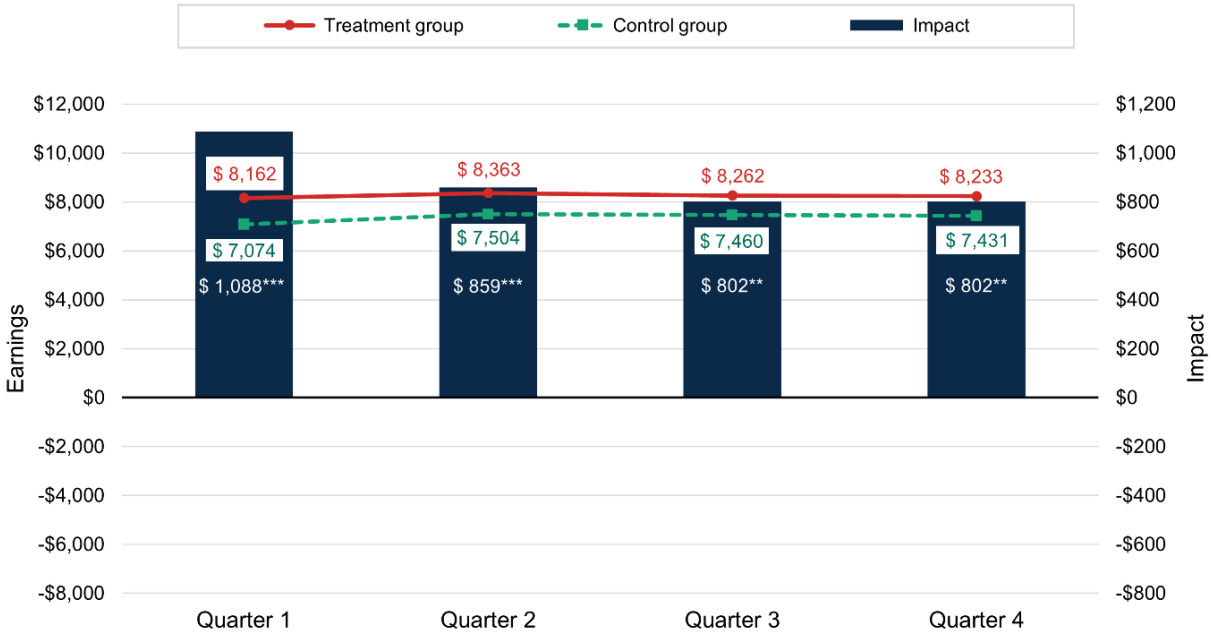
Exhibit III.5. RETAINWOR*KS*: Estimated probabilities of impacts on earnings and employment



Note: See Appendix Exhibit C.10. An annual earnings increase of at least $500 is the approximate impact many RETAIN programs need to break even within 20 years. For employment, 3 percentage points is approximately 5 percent of the control group's mean outcome.

When we examined employment rates and earnings in each of the first four quarters after enrollment, we found that RETAINWOR*KS* increased these outcomes in all quarters (Exhibit III.6; Appendix Exhibit C.3). Interestingly, employment rates decreased from Quarter 1 to Quarter 4 for both treatment and control enrollees, but treatment enrollees maintained a statistically significant advantage over control enrollees. Similarly, treatment enrollees outearned control enrollees in every quarter, on average.

Exhibit III.6. RETAINWOR*KS*: Impacts on earnings during the four quarters after enrollment



Source: RETAIN enrollment data; state unemployment insurance wage records.

Note: Statistics have been rounded to nearest dollar. See Appendix Exhibit C.3 for detailed estimates and description of estimation methods.

*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test

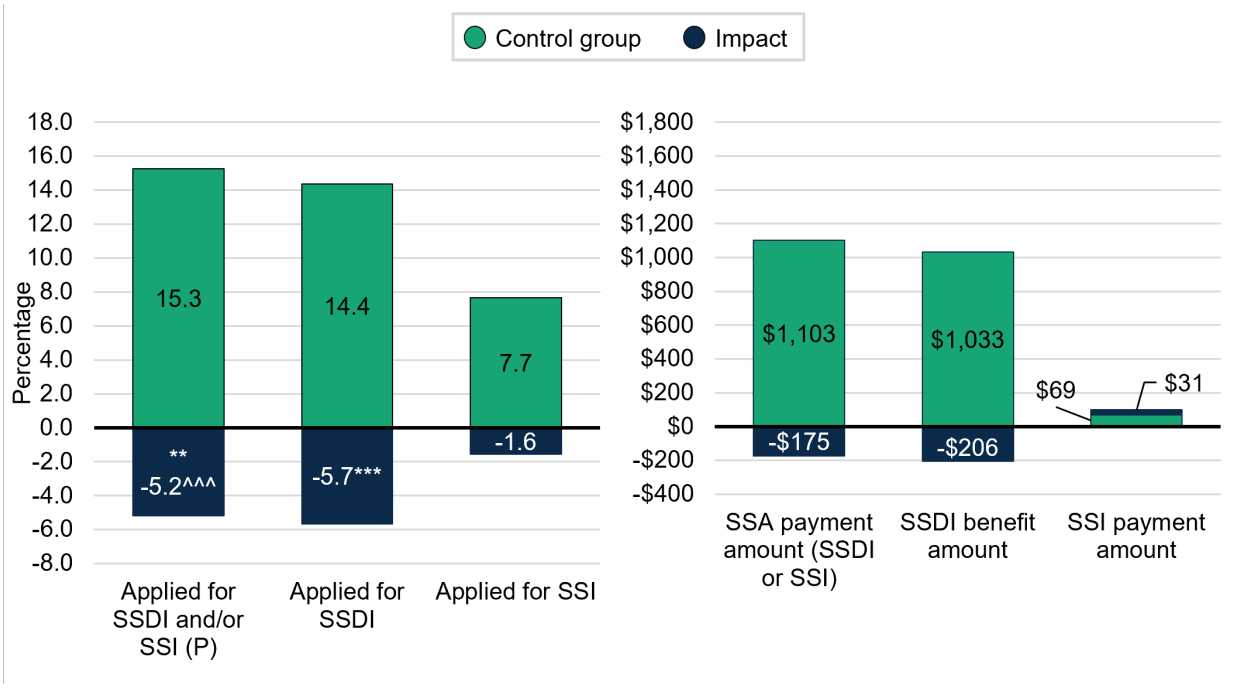
RETAINWOR*KS* had positive impacts on several other employment outcomes that we examined (Exhibit III.5; Appendix Exhibit C.3). Consistent with the employment findings based on administrative data, treatment enrollees were more likely to be working, connected to an employer, and in the labor force at the time of the survey. Treatment enrollees also reported working two more hours per week than control enrollees in the typical week. Other employment outcomes were similar between treatment and control enrollees. Control enrollees reported earning an average of $614 per week. Half of control enrollees had been tenured at their job for at least one year, with slightly higher shares working for an employer that offered health insurance (55 percent) and for an employer that offered paid leave (54 percent). About 4 percent of control enrollees reported participation in a job-related training program during the last two months.

Impacts on some labor market outcomes differed by sex, by whether the enrollee had a musculoskeletal primary diagnosis, and by whether they had worked in the week before enrollment (Appendix Exhibits C.4–C.8). For male enrollees, the program's impacts on earnings in the four quarters after enrollment and average weekly pay were $6,284 and $123, respectively. The corresponding impacts for female enrollees were not statistically significantly different from zero. For several self-reported labor market outcomes, the program had a significant impact for enrollees with a non-musculoskeletal primary diagnosis when it had no significant impact for enrollees with a musculoskeletal primary diagnosis (however, the opposite was true for one outcome—employment in the fourth quarter after enrollment, as measured in state wage

records).[32] Similarly, the program had a significant impact on several outcomes for enrollees who had last worked more than one week before enrollment but not for those who had last worked one week or less before enrollment.

RETAINWOR*KS* reduced the share of enrollees who applied for SSDI or SSI by one-third. About 15 percent of control enrollees applied for SSDI or SSI during the 12 months after enrollment, and RETAINWOR*KS* reduced the application rate by 5 percentage points (Exhibit III.7). About 8 percent of control enrollees received any SSDI and/or SSI payments, and the average payment amount was $1,103; the program did not affect these outcomes.

Exhibit III.7. RETAINWOR*KS*: One-year impacts on SSDI and SSI program participation



Source: RETAIN enrollment data; SSA data.

Note: See Appendix Exhibit C.3 for detailed estimates and description of estimation methods.

*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test

^/^^/^^^ Impact estimate is significantly less than zero (*p*-value is less than .10/.05/.01) using a one-tailed t-test. This test was only conducted for primary outcomes.

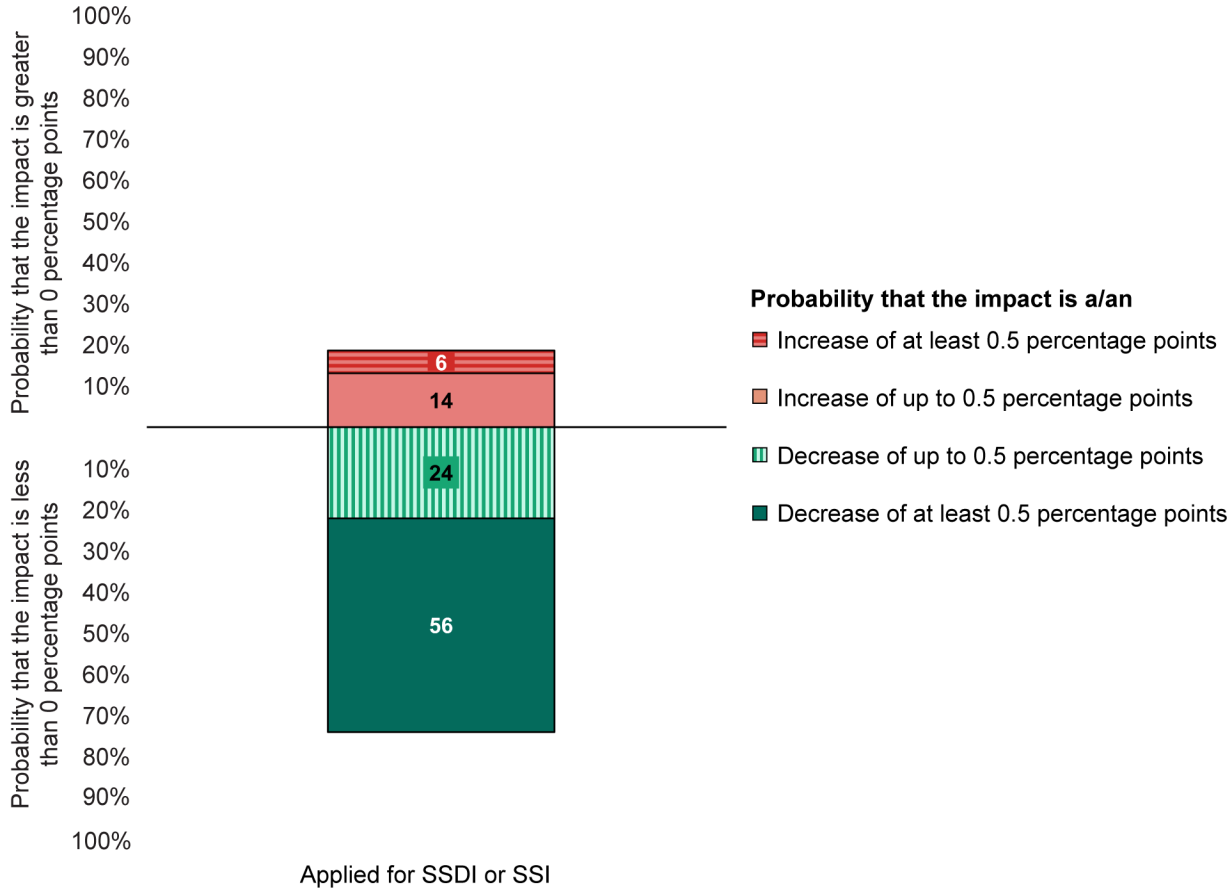
(P) = primary outcome; SSA = Social Security Administration; SSDI = Social Security Disability Insurance; SSI = Supplemental Security Income.

Findings from supplementary Bayesian analysis indicate a high likelihood that the program reduced applications for SSI and SSDI (Appendix Exhibit C.10). We estimate an 80 percent probability that RETAINWOR*KS* decreased applications for SSDI or SSI during the 12 months after enrollment, and a 56 percent probability of a decrease greater than 0.5 percentage points (Exhibit III.8).

[32] The inconsistent pattern of subgroup impacts across data sources might be explained by factors such as survey nonresponse and state wage records not covering some types of employment (such as self-employment and contract, gig, informal, and federal jobs). Notably, the difference between the subgroups in the control group's average outcome is larger for the survey-based measures of employment than those based on state wage records.

The overall impact on SSA applications appears entirely due to the program's impact on SSDI applications. RETAINWOR*KS* reduced the share of enrollees that applied for SSDI but did not affect SSI applications (Exhibit III.7). About 14 percent of control enrollees applied for SSDI; the application rate for treatment enrollees was 6 percentage points lower. We found no statistically significant differences between treatment and control enrollees in SSDI receipt rates or benefit amounts. About 7 percent of control enrollees received SSDI benefits, and the average amount received was $1,033. Fewer control enrollees (about 8 percent) applied for SSI than SSDI, and the program did not affect the application rate, receipt rate, or the average SSI payment amount received. About 2 percent of control enrollees received SSI payments, and the average SSI payment amount received by control enrollees was $69.

Exhibit III.8. RETAINWOR*KS*: Estimated probabilities of impacts on SSDI and SSI applications

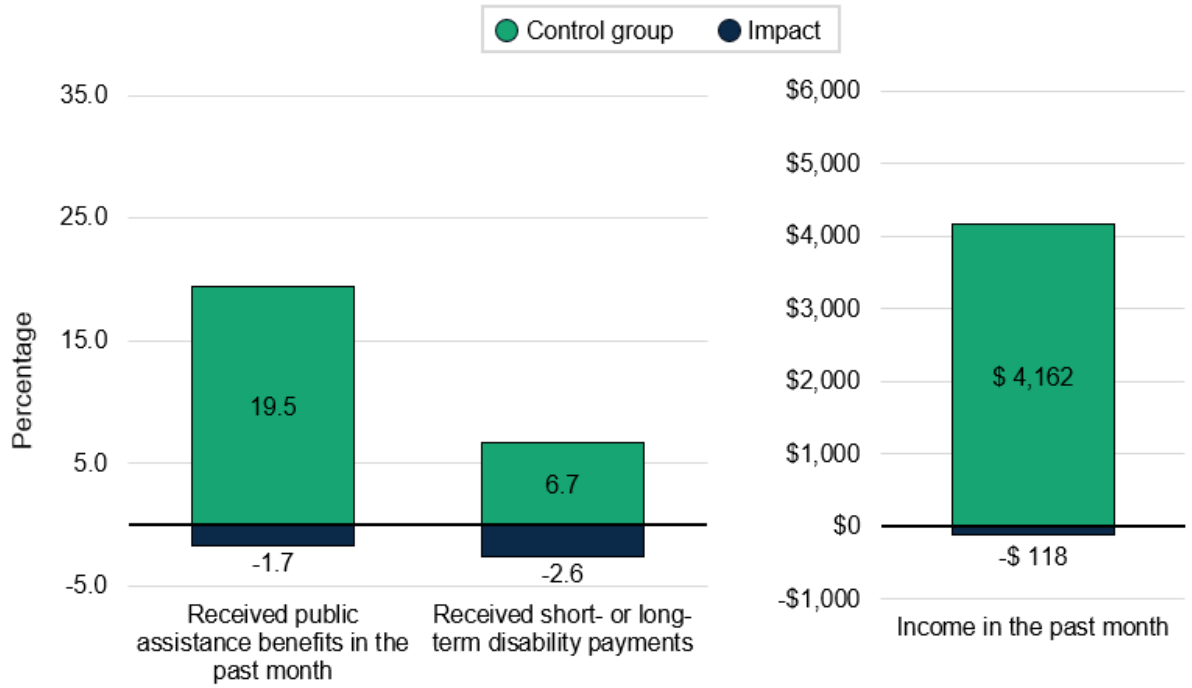


Note: An impact of 0.5 percentage points constitutes approximately 5 percent of the control group's mean outcome.
SSDI = Social Security Disability Insurance; SSI = Supplemental Security Income.

RETAINWOR*KS* did not impact household economic well-being. RETAINWOR*KS* had no impact on almost all of the household economic well-being measures that we examined (Appendix Exhibit C.3; Exhibit III.9). On average, control enrollees responding to the one-year follow-up survey reported a household income of $4,162 and household earnings of $3,414 during the previous month. The difference between the two amounts reflects the fact that some households received public assistance benefits, as reported by one-fifth (20 percent) of control enrollees. Control enrollees noted that their households

received, on average, $15 in UI benefits, $77 in SNAP benefits, and $20 in government housing assistance in the month before the survey. Very few control enrollees (2 percent) reported receiving workers' compensation benefits in the past month; on average, enrollees received $33 in such benefits. Seven percent of control enrollees received short or long-term private disability payments in the previous month; on average, control enrollees received $114 in benefits. The program's estimated impact on these last two outcomes was non-trivial in size but just shy of being statistically significant.

Exhibit III.9. RETAINWOR*KS*: One-year impacts on economic well-being



Source: RETAIN enrollment data; one-year follow-up survey.

Notes: See Appendix Exhibit C.3 for detailed estimates and description of estimation methods.

Public assistance benefits refer to benefits from the Supplemental Nutrition Assistance Program, housing assistance or unemployment insurance programs. Short or long-term disability benefits refer to private disability insurance benefits.

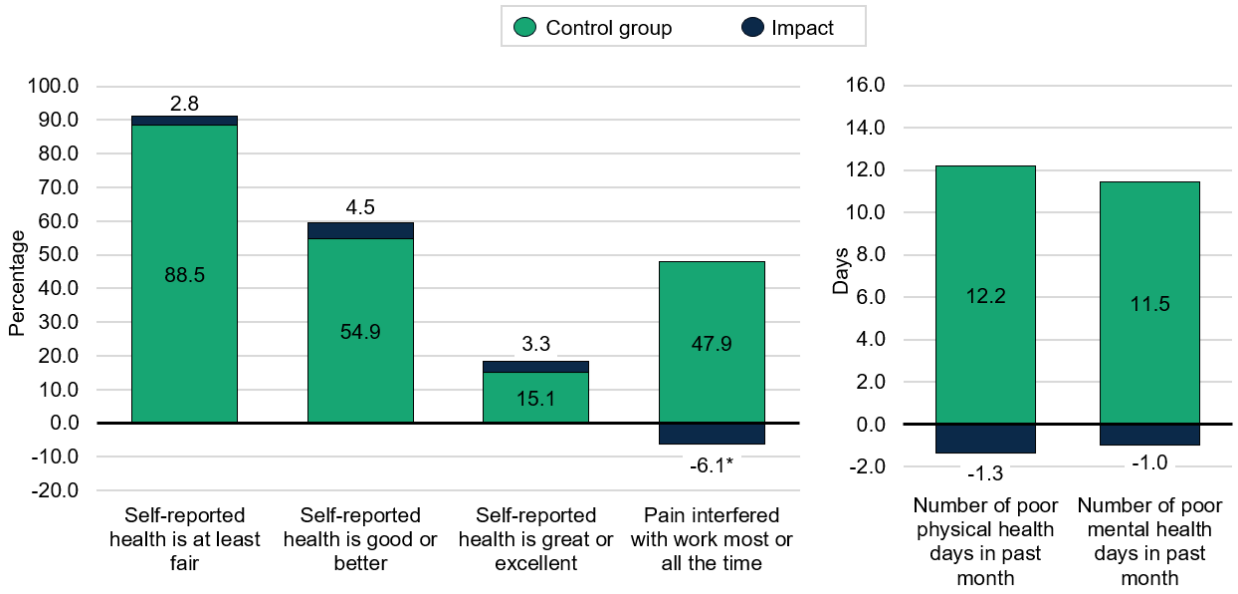
*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

RETAINWOR*KS* improved enrollees' self-reported pain. About half of control enrollees (48 percent) reported that pain had interfered with their ability to work most or all the time during the two months before the survey, and the program reduced this share by 6 percentage points (a decrease of 13 percent relative to the control mean) (Exhibit III.10). On a pain score ranging from 0 to 10, control enrollees reported an average score of 4.7; the program reduced the score by 0.5 points for treatment enrollees (Appendix Exhibit C.3). The program had no significant impacts on other health outcomes, including self-reported health status measures, health insurance coverage, number of poor physical health days, number of poor mental health days, and being prescribed an opioid pain reliever. The estimated impact on poor physical health days was non-trivial in size (an 11 percent reduction relative to control mean); however, it was not statistically significant (*p*-value=0.11).

Although the program had an early impact on three outcomes (physical health, pain, and opioid prescriptions) at the time of the early follow-up survey, it only impacted the pain outcome at the time of

the one-year survey.[33] In the case of opioid prescriptions, the share of the control group that reported receiving such prescriptions shrank by half between the early and one-year follow-up surveys, suggesting that the programs' impact was related to timing. That is, RETAINWOR*KS* helped a sizable share of treatment enrollees avoid the use of opioids early on, even if they might otherwise have eventually ceased using this type of pain management at the one-year mark.

Exhibit III.10. RETAINWOR*KS*: One-year impacts on health



Source: RETAIN enrollment data; one-year follow-up survey.

Note: See Appendix Exhibit C.3 for detailed estimates and description of estimation methods.

*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

D. Benefits and costs of the program

We examined the benefits and costs of RETAINWOR*KS* for the year after enrollment using the program's estimated one-year impacts on enrollee outcomes and program costs during the steady-state period April 1, 2023, through March 31, 2024. We estimated the net benefits (or costs) separately for enrollees, the federal government, the state government, and across these three key perspectives. The net benefit (cost) is based on (1) the point estimates for the program's impacts on treatment enrollees, (2) assumptions based on existing literature regarding how impacts lead to indirect benefits and costs,[34] and (3) the calculated cost of delivering RETAINWOR*KS* per treatment enrollee.

The estimated cost of delivering RETAINWOR*KS* was $9,872 per treatment enrollee. (Appendix Exhibit C.12). The cost per enrollee includes wages paid for staff time dedicated to RETAIN activities across all partners ($5,867); fringe benefits for those staff ($1,315); and other direct costs not related to

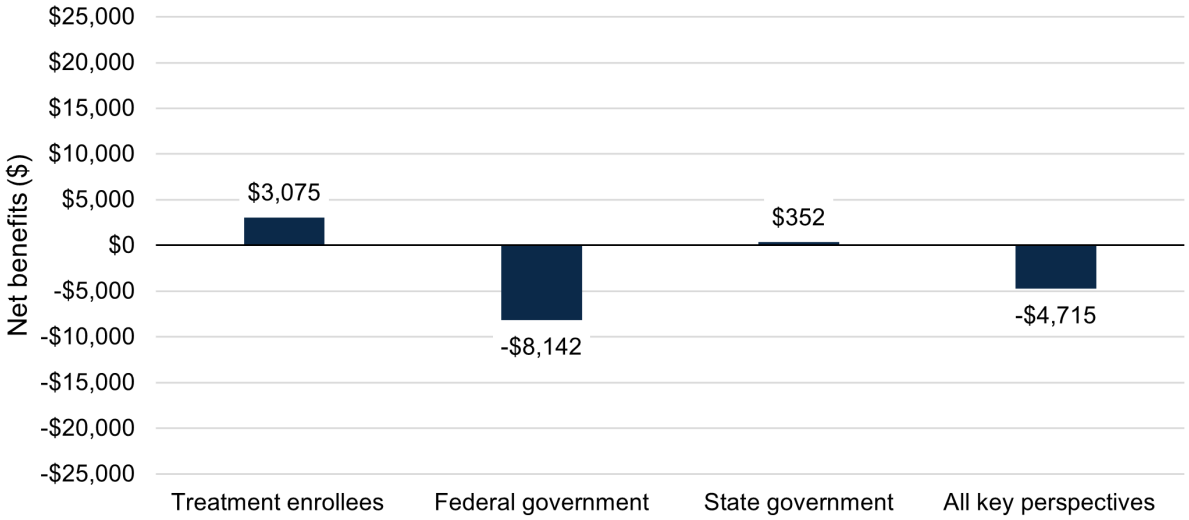
[33] RETAINWOR*KS*' impact on number of physical health days at the time of the one-year survey is just shy of being statistically significant (estimate=-1.3; p=0.11). It is similar to that of RETAINWOR*KS*' statistically significant impact on this outcome at the time of the early follow-up survey (estimate=-1.4; p=0.09).

[34] A full list of relevant literature is available in the technical appendix to this report (Patnaik et al. 2026).

personnel or labor costs, enrollee stipends, incentive payments, or outreach costs ($2,008). Though we estimated program costs using data for the period April 1, 2023, through March 31, 2024, we recognize that program costs might have varied over the program's implementation period depending on the stage of implementation and the number of enrollees in the program at that time. The estimates do not account for incentives offered to enrollees; we considered such incentives to be evaluation costs that would not accrue in a non-evaluation context.

Treatment enrollees experienced a significant net benefit from RETAINWOR*KS*; however, the overall cost of RETAINWOR*KS* outweighed the value of its overall benefit during the year after enrollment. Treatment enrollees experienced an average net benefit from the program of $3,075 in the year after enrollment (Exhibit III.11). The state government also experienced a net benefit of $352. However, across the three key perspectives, we estimated that RETAINWOR*KS* resulted in a net cost of $4,715 per treatment enrollee in the year after enrollment.

Exhibit III.11. RETAINWOR*KS*: Net benefits per treatment enrollee in the year after enrollment



Source: See Appendix Exhibit C.12 for details on sources and methods for our calculations.

Note: Net benefits are benefits minus costs, expressed as dollars per enrollee, inflation-adjusted to 2024 dollars, and discounted to 2024 present values.

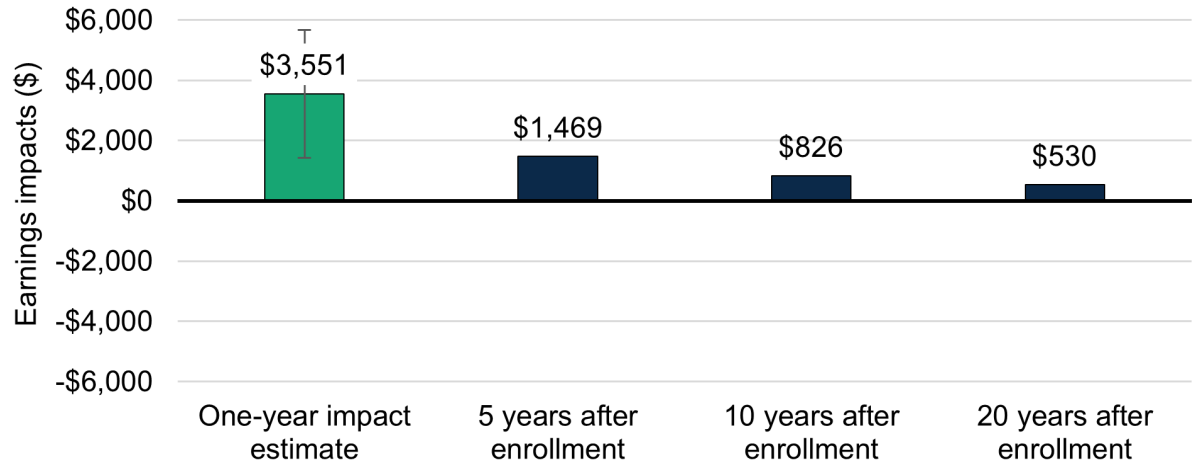
Below, we summarize the benefit-cost findings from each of the key perspectives (see Appendix Exhibit C.12 for detailed estimates):

- **Treatment enrollees.** On average, RETAINWOR*KS* treatment enrollees experienced net benefits of $3,075 in the year after enrollment. The key contributors to the benefits were positive impacts on earnings ($3,551) and corresponding fringe benefits ($1,610).
- **Federal government.** We estimated that a net cost of $8,142 accrued to the federal government for each treatment enrollee in the year after enrollment. The only cost component was program delivery, which accounted for a cost to the federal government of $9,872 per treatment enrollee. This outlay was greater than the benefits, which included increased income taxes ($645) and payroll taxes ($543) and reduced SNAP ($153) and public housing assistance outlays ($94).

- **State government.** We estimated that the state government experienced a net benefit of $352 per treatment enrollee. This stemmed from increased income and sales tax revenue ($282), decreased outlays for UI benefits ($50) and Medicaid benefits ($23), and decreased administrative costs associated with SNAP benefits ($9).

A simple forecast suggests that RETAINWOR*KS* is likely to generate a net benefit for each of the three key perspectives within a five-year period. Because program costs are incurred up front but benefits to treatment enrollees and other stakeholders can continue to accrue in the future, we conducted supplementary analyses to assess the program's benefits and costs beyond the first year after enrollment. We calculated the average annual impact on earnings per year that would be needed for the program to be cost neutral by five, 10, and 20 years after enrollment. For RETAINWOR*KS* to be cost neutral from all key perspectives within five years, we estimated that the impact on annual earnings must be at least $1,469 per treatment enrollee; to be cost neutral in 10 years, it must be at least $826; and to be cost neutral in 20 years, it must be at least $530 (Exhibit III.12; Appendix Exhibit C.14). These estimates represent, respectively, 41 percent, 23 percent, and 15 percent of the point estimate for the one-year impact on earnings ($3,551). If the program's annual earnings impacts persist at just a fraction of the impact estimated for the first year, RETAINWOR*KS* would be cost neutral within the first five years.

Exhibit III.12. RETAINWOR*KS*: Annual impact on earnings needed to reach cost neutrality at five, 10, and 20 years after enrollment



Source: See Appendix Exhibit C.14 for details on sources and methods for our calculations.

Note: This chart shows the average annual impact on earnings that would be needed for the program to be cost neutral five, 10, and 20 years after enrollment. The first bar shows the one-year impact on earnings (point estimate and 95 percent confidence interval).

E. Discussion

In this section, we highlight key patterns in the findings from the one-year evaluation of RETAINWOR*KS* and discuss their significance and possible explanations.

RETAINWOR*KS* demonstrated strong implementation of a program model with RTW coordinators and workforce development professionals actively involved in service delivery. The key partners involved in RETAINWOR*KS* implemented the program with a high degree of fidelity to the program model

and its emphasis on close connections between the medical and workforce systems. RETAINWOR*KS* was unique across the five programs in that treatment enrollees were assigned an employment counselor and an RTW coordinator, both of whom coordinated to offer treatment enrollees support with workplace accommodations and provide retraining and rehabilitation services. Following enrollment, RETAINWOR*KS* maintained high levels of communication across all key players in the program model. RTW coordinators frequently communicated with treatment enrollees. Nearly all treatment enrollees (99 percent) communicated with their RTW coordinator at least twice, with an average of 19 communications per enrollee. RTW coordinators were also in regular communication with medical providers (an average of five communications per enrollee) and workforce professionals (an average of 11 communications per enrollee). RTW coordinators also communicated with employers for half of treatment enrollees.

The close coordination between RTW coordinators and workforce professionals likely facilitated access to and use of workforce services. The program's emphasis on facilitating connection with workforce services during Phase 2 reflected a change from its approach during Phase 1, where they observed that few enrollees took a self-directed approach to such services. Soon after enrollment, RTW coordinators used a warm handoff to introduce a treatment enrollee to an employment counselor by identifying the workforce staff and the types of supports they could provide. The RTW coordinators and employment counselors met regularly and were able to view each other's notes from their meetings with the enrollee. On a biweekly basis, the RTW coordinators and workforce professionals met to discuss case staffing; on a monthly basis, they also met with leads from the medical and workforce systems for a coordination meeting. Data from the early follow-up survey show that the program increased the share of enrollees self-reporting the use of employment-related support services and participation in job-related training (Patnaik et al. 2025). Other early findings highlight ways the program might have supported enrollees' ability to stay in the workforce. RETAINWOR*KS* increased the shares of enrollees who were working and received advice about modifying a job or workplace, as well as the share of enrollees working who reported that their employer offered the chance to return to work with needed accommodations.

The implementation experiences of RETAINWOR*KS* highlight the challenges of involving medical providers in service delivery. As initially designed, RETAINWOR*KS* required physicians to play an active role in enrollee referrals to the RETAIN program and the development of the RTW plan, but both stages of involvement proved challenging. The program struggled with recruitment and enrollment throughout Phase 2, enrolling 24 percent of its original target. RETAINWOR*KS* required all enrollees to be seen and referred by a RETAINWOR*KS*-trained provider to complete the enrollment process. At the time of the process study, limited medical provider engagement was the primary reason for lower-than-expected patient referrals to RETAINWOR*KS* (Keith et al. 2024). In addition, requiring providers to submit an activity prescription that outlined work restrictions and collaborate with RTW coordinators to complete the RTW plans was challenging to implement, likely due to the demands on providers' time. Although the program had high rates of participant engagement as measured by communication with enrollees and rates of employment service use, only 39 percent of participants had a finalized RTW plan. Based on interviews with program staff, we believe the required involvement of medical providers, along with their limited responsiveness, contributed to the low rate of completed RTW plans. Although medical providers were eligible for financial incentives for successful referrals, completing RTW plans, and other activities, program staff reported that most providers were not motivated by the financial incentives perhaps

because the payment model did not allow providers to keep all of the incentives (incentives were shared between the practice and providers) (Keith et al. 2024).

RETAINWOR*KS*'s goal of engaging physicians is consistent with previous research that suggests medical providers can play a key role in helping patients who have sustained a recent injury or illness to stay at work or return to work (Heidkamp and Christian 2013). Providers' clinical expertise makes them well-positioned to determine whether or how a patient's injury or illness affects their ability to work (Heidkamp and Christian 2013). RETAINWOR*KS* attempted to address previously identified barriers including a lack of provider training (Heidkamp and Christian 2013) and lack of financial compensation (Christian 2015) by providing training and financial incentives. Nonetheless, given the competing demands on provider time, requiring provider involvement created bottlenecks for enrollee recruitment and RTW plan development.

RETAINWOR*KS* succeeded in its goals of significantly improving employment and earnings during the first year and reducing entry into SSA's disability programs. It also substantially improved enrollees' health. Treatment enrollees were significantly more likely to be employed in the fourth quarter after enrollment, and they had higher earnings during the four quarters after enrollment. Findings from supplementary Bayesian analyses indicate it was likely that RETAINWOR*KS* had substantive, positive impacts on earnings during the first year and positive impacts on employment in the fourth quarter. Interestingly, these impacts emerged almost immediately after enrollment (in the first quarter) and persisted in later months. As treatment enrollees were more likely to be working, they had less need for or interest in SSA's disability programs. They were significantly less likely than control enrollees to apply for SSDI. Given the processing time for disability benefit applications, the full impact of this change in applications on SSA program outlays is not known at this time, but even relatively small changes in the number of people receiving disability benefits would have large long-term benefits for the trust fund.

One possible explanation for these findings is the program's impact on use of services. Data from the early follow-up survey showed that RETAINWOR*KS* doubled the share of enrollees who used employment-related support services during the two months before the survey and nearly doubled the share who had participated in job-related training (Patnaik et al. 2025). This is consistent with the program model's emphasis on close coordination between RTW coordinator and workforce professionals. Another possible factor contributing to the positive impacts is the support treatment enrollees received around job modifications. Findings from the early impact report included that RETAINWOR*KS* increased the shares of enrollees who were working and received advice about modifying a job or workplace, as well as the share of enrollees working who reported that their employer offered the chance to return to work with needed accommodations (Patnaik et al. 2025). Program data showed that more than half of treatment enrollees received assistance from RETAINWOR*KS* to help their employer assess or implement a workplace accommodation. We speculate that the program's success with workplace accommodations could stem from its training efforts with program staff. For example, it heavily encouraged workforce staff to take trainings from the Job Accommodation Network, which could have equipped them to support enrollees in identifying appropriate modifications and discussing them with employers.

A third possible contributing factor is the program's early impact on self-reported health. Data from the early follow-up survey show that treatment enrollees reported better physical health and were less likely to report that pain interfered with their ability to work and less likely to report that they had been

prescribed opioid pain relievers. The program's impact on health outcomes might be explained by its staffing model, where all RTW coordinators were certified nurses. Although the coordinators did not provide medical advice, the reassurance of their medical training, along with the information and support they provided enrollees, might have contributed to a better healthcare experience and in turn better health outcomes.

Although RETAINWOR*KS* increased enrollees' employment and earnings, the program had no impact on household economic well-being. It is possible that the program had a small impact on some measures, but the sample size of one-year survey respondents did not provide enough statistical power to detect them. For example, the point estimate of the impact on private disability benefits was relatively large (a 50 percent reduction compared to the control mean) but was not statistically significant (p = 0.11).

Although RETAINWOR*KS* resulted in net costs across the key perspectives examined for the first year after enrollment, it is highly likely that its benefits will exceed its costs within a few years. The program incurred a cost of approximately $10,000 per treatment enrollee during the first year, largely reflecting the up-front costs of delivering intensive, individualized services. In the first year, the costs of delivering the program exceeded the measurable benefits when looking across the combined perspectives of treatment enrollees and state and federal governments. For example, treatment enrollees experienced an average net benefit of $3,075 in the year after enrollment, stemming primarily from increased earnings during that time, but this was still less than the cost of delivering the program. Across key perspectives, the program delivered a net cost of $4,715 per treatment enrollee in the first year. Importantly, this figure likely understates the true value of the program; it does not capture non-monetary benefits to enrollees such as reduced pain and better health. In addition, the up-front costs have already been incurred, whereas the program's benefits are likely to continue to accrue in the future.

RETAINWOR*KS* is on track to break even and generate net positive benefits to society within a few years. Despite the outlays already made to deliver services, program benefits—particularly to treatment enrollees—are likely to continue accruing. Further, the program's impact on SSDI application rates suggests large savings to the federal government that have not yet been realized in the first year. A simple forecast using reasonable assumptions suggests that the program could achieve cost neutrality within less than five years if the annual impact on earnings remained steady.

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IV. RETAIN Kentucky (RETAIN KY)

Key findings from the one-year evaluation

Enrollment and participation

- RETAIN KY enrolled 3,153 people during Phase 2, of whom 1,654 were randomly assigned to the treatment group and thus were eligible for the full set of RETAIN KY services. Control enrollees were able to access a limited set of expedited RETAIN KY services. Treatment and control enrollees had similar characteristics at the time of enrollment. We found three statistically significant differences between the two groups across more than 20 characteristics measured at the time of enrollment.
- Program data indicate that 80 percent of treatment enrollees established an RTW plan and 20 percent used or received a referral to employment services. On average, enrollees and RTW coordinators had 11 communications, with 97 percent of treatment enrollees having at least two such communications. The shares of enrollees for whom the RTW coordinator communicated with a medical provider, workforce professional, or employer were 9 percent, 12 percent, and 1 percent, respectively.

Impacts on enrollees' one-year outcomes

- RETAIN KY had no impact on any of the three primary outcomes. Treatment and control enrollees had similar earnings in the four quarters after enrollment (about $23,655 on average) and similar employment rates in the fourth quarter (63 percent). About 11 percent of enrollees in the treatment and control groups had applied for SSDI or SSI during the year after enrollment.
- RETAIN KY increased the share of enrollees who earned above SGA in the second quarter after enrollment. It had no impact on any other employment outcomes, including quarterly employment and earnings and employment characteristics at the time of the one-year follow-up survey.
- RETAIN KY had no impact on participation in SSA programs. For both the SSDI and the SSI programs, treatment and control enrollees had similar application rates, receipt rates, and average payments received in the 12 months after enrollment.
- Treatment and control enrollees self-reported similar economic well-being at the time of the one-year survey.
- Treatment and control enrollees self-reported similar health outcomes at the time of the one-year survey, with one exception. Compared with control enrollees, treatment enrollees experienced, on average, one more day of poor mental health in the month before the survey.

Net benefits during the one-year evaluation period

- The estimated cost of delivering RETAIN KY was $5,018 per treatment enrollee.
- RETAIN KY's costs exceeded its benefits during the one-year evaluation period, with a net cost of $4,732 per treatment enrollee. However, benefits could continue to accrue in the future whereas program costs will not. RETAIN KY's annual impact on earnings would need to increase for the program to become cost neutral within 20 years. ◢

A. Program overview

Below, we provide an overview of the RETAIN Kentucky (RETAIN KY) program design and implementation as documented through Mathematica's independent evaluation. We draw on key findings from Mathematica's process analysis (Keith et al. 2024), which covered program implementation and service delivery through June 2023, midway through the program's operation period under the Phase 2 grant. The program made changes to some implementation components over time, following a continuous quality improvement approach.

1. Program design

The Kentucky Office of Vocational Rehabilitation (OVR) was the lead agency for RETAIN KY. OVR's workforce partner, the University of Kentucky Human Development Institute, led the day-to-day implementation of the program, including enrollment and the provision of RTW and employment services. Two healthcare partners, University of Kentucky HealthCare and University of Louisville Health, supported enrollment. Midway through the enrollment period, RETAIN KY partnered with an online clinical research platform to increase referrals to the program. The program's service area was the entire state of Kentucky. RETAIN KY enrolled people who were employed or had been employed within the past 12 months and had an injury or illness that was not work related but affected their employment.

The RETAIN KY program used a vocational rehabilitation model, which considers employment as a contributing factor to a person's recovery process and health outcomes. RETAIN KY offered services to treatment enrollees for up to six months. RETAIN KY's model included the following:

- Training for medical providers covering best practices in supporting return to work and providing an overview of the RETAIN KY program
- RTW coordination services that involved developing an RTW plan; communicating with the enrollee weekly; and communicating with the enrollee's employer, medical provider, and others to coordinate their SAW/RTW services as needed, if permitted by the enrollee
- Other services, including retraining, rehabilitation, referrals within RETAIN KY to an assistive technology specialist or peer mentor, and referrals outside of RETAIN KY to local career centers and OVR

The evaluation of RETAIN KY used an individual random assignment design. Mathematica randomly assigned enrollees to the treatment or control group; they received a $100 incentive payment for enrolling. Enrollees in the treatment group could access the full set of RETAIN KY services for six months or until they returned to work with a completed RTW plan, whichever came first. Those in the control group could access a limited set of RETAIN KY services on an expedited basis, as well as the usual services available in their communities. In total, RETAIN KY enrolled 3,153 people in the evaluation from October 2021 to May 2024.

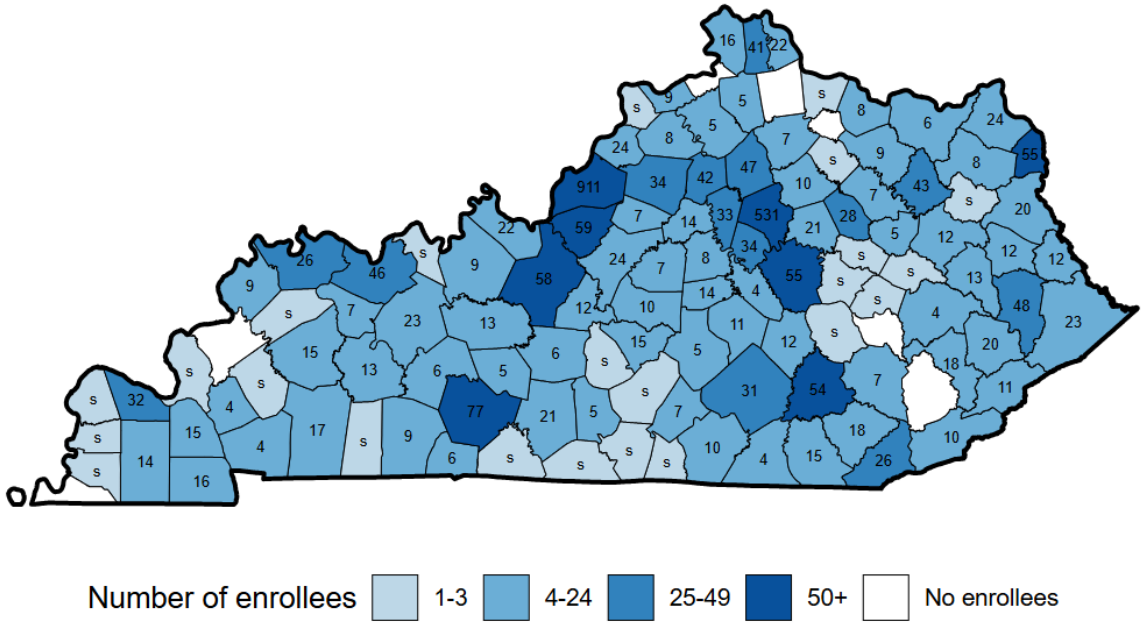
2. Program implementation

RETAIN KY enrolled at least one person in 113 of the 120 counties in the state (Exhibit IV.1). Enrollment was highest in Jefferson County, where Louisville is located (29 percent), followed by Fayette County, where Lexington is located (17 percent).

RETAIN KY initially experienced challenges with recruitment but was eventually able to come close to its original target of 3,200 enrollees. RETAIN KY staff conducted outreach to employers, career centers, local workforce innovation boards, medical providers, and other types of clinicians to increase awareness of RETAIN KY and prompt referrals. Initially, the primary sources of referrals for enrollment in RETAIN KY were from clinical support staff at University of Kentucky HealthCare and University of Louisville Health. In 2023, the program began using Build Clinical, an online clinical research recruitment platform, which

quickly became the primary source of referrals, followed by OVR counselors and staff using a newly streamlined referral process. At that point, the pace of enrollment increased significantly.

Exhibit IV.1. RETAIN KY: Enrollment coverage in the program's service area



Source: RETAIN KY enrollment data.

Note: The number in a county represents the total number of treatment and control enrollees for that county; we suppressed the number if it was fewer than three enrollees. Counties shown in white had no enrollees. Counties shown in pale blue had 1-3 enrollees, while counties in light blue had between 4-24 enrollees, and counties in blue had 25-49 enrollees. Counties in the darkest shade of blue had more than 50 enrollees each.

Upon receiving a referral for RETAIN KY, intake staff reached out to potentially eligible people to confirm their eligibility and discuss the program. If eligible people were interested in enrolling, the intake coordinator obtained their informed consent and completed enrollment and random assignment.

Once enrolled, treatment enrollees received RTW coordination services from an RTW coordinator. RTW coordinators developed an RTW plan; delivered services directly and made referrals to external service providers; and communicated with the enrollee's employer, medical provider, and others to coordinate services. During interviews conducted in April 2023, program leaders and staff reported delivering services as planned in the RETAIN KY program model. However, program staff also reported difficulty engaging treatment enrollees who had health-related social needs, mental health conditions, and lack of motivation to return to work.

RTW coordinators delivered services and made service referrals based on treatment enrollees' needs, although they reported that the engagement challenges mentioned above could contribute to low service use. RTW coordinators delivered employment-related services directly to treatment enrollees who were unemployed or seeking a job transition and referred these enrollees to employment service providers. Other referral opportunities included social service providers for treatment enrollees with health-related

social needs and assistive technology specialists for those who experienced a loss of functioning. Treatment enrollees could also receive psychosocial support from peer mentors.

RTW coordinators we interviewed cited coordination with others involved in enrollees' RTW plans as a challenge. RTW coordinators attributed the coordination challenges to the need to obtain enrollees' permission to contact their medical providers and employers. Enrollees' willingness to grant their permission varied; one RTW coordinator reported receiving permission from 90 percent of enrollees, whereas another RTW coordinator reported receiving permission from only 25 percent. Another factor that likely contributed to low levels of coordination with medical providers was that medical provider training did not begin until 2023, a delay caused by the closure of the accreditation organization from which RETAIN KY initially sought approval for continuing medical education credits.

Unlike the other RETAIN programs, RETAIN KY offered enrollees in the control group access to some program services. The control group could access services generally available in the community and an expedited version of RTW coordination services that RETAIN KY provided within a two-week period, for up to three hours total. Expedited services consisted of two meetings that included a work experience survey, the development of an RTW plan, guidance on self-advocating with an employer, and referrals to other services.

B. Program participation

Of the 3,153 people who enrolled in RETAIN KY during Phase 2, 1,654 were randomly assigned to the treatment group and thus were eligible for the full set of RETAIN KY services. Below, we describe the baseline characteristics of treatment enrollees and then discuss their use of RETAIN services, drawing on program data to do so.

1. Baseline characteristics of treatment enrollees

a. Demographic characteristics

About 61 percent of RETAIN KY treatment enrollees were women (Exhibit IV.2), and nearly three-quarters (72 percent) were younger than 50, with the average age being 42 (Appendix Exhibit A.11.1). Three-quarters of treatment enrollees were non-Hispanic White, followed by non-Hispanic Black (16 percent), more than one race (5 percent), Hispanic (4 percent), non-Hispanic Asian (1 percent), and non-Hispanic other race (less than 1 percent). Almost all (99 percent) treatment enrollees cited English as their preferred language and close to half had postsecondary education (44 percent). The most frequently reported educational attainment was a high school diploma, GED, or certificate of completion (49 percent). About 24 percent of enrollees had a four-year college or postgraduate degree, and 20 percent held an occupational certificate or license or two-year college degree.

b. Injury or illness characteristics

The most common type of injury or illness among RETAIN KY treatment enrollees was "other" (40 percent), meaning that the primary diagnosis that made them eligible for RETAIN KY was not a musculoskeletal or mental health condition. One-third had a mental health condition, and 10 percent and 17 percent of enrollees, respectively, cited a back-related musculoskeletal injury or illness or non-back musculoskeletal injury or illness. For 18 percent of treatment enrollees, the primary injury or illness was a

new condition rather than a worsening of an existing condition, and 20 percent of treatment enrollees reported their condition was a result of an accident or injury rather than an illness or a chronic condition. Only 7 percent of treatment enrollees reported that their health condition was caused, at least in part, by work-related factors, and few treatment enrollees (1 percent) reported that their injury or illness was part of a workers' compensation claim.

For treatment enrollees in RETAIN KY, the average time between the onset or worsening of injury or illness and enrollment was 48 days.[35] Two-thirds of treatment enrollees (67 percent) had a new or existing behavioral health condition, defined as a mental health diagnosis or a substance use disorder (as either the condition that made them eligible for RETAIN or a secondary health condition).) There was some overlap between these two condition types. Sixty-one percent of treatment enrollees had a mental health diagnosis and 23 percent reported having a substance use disorder (statistics not shown).

c. Recent employment

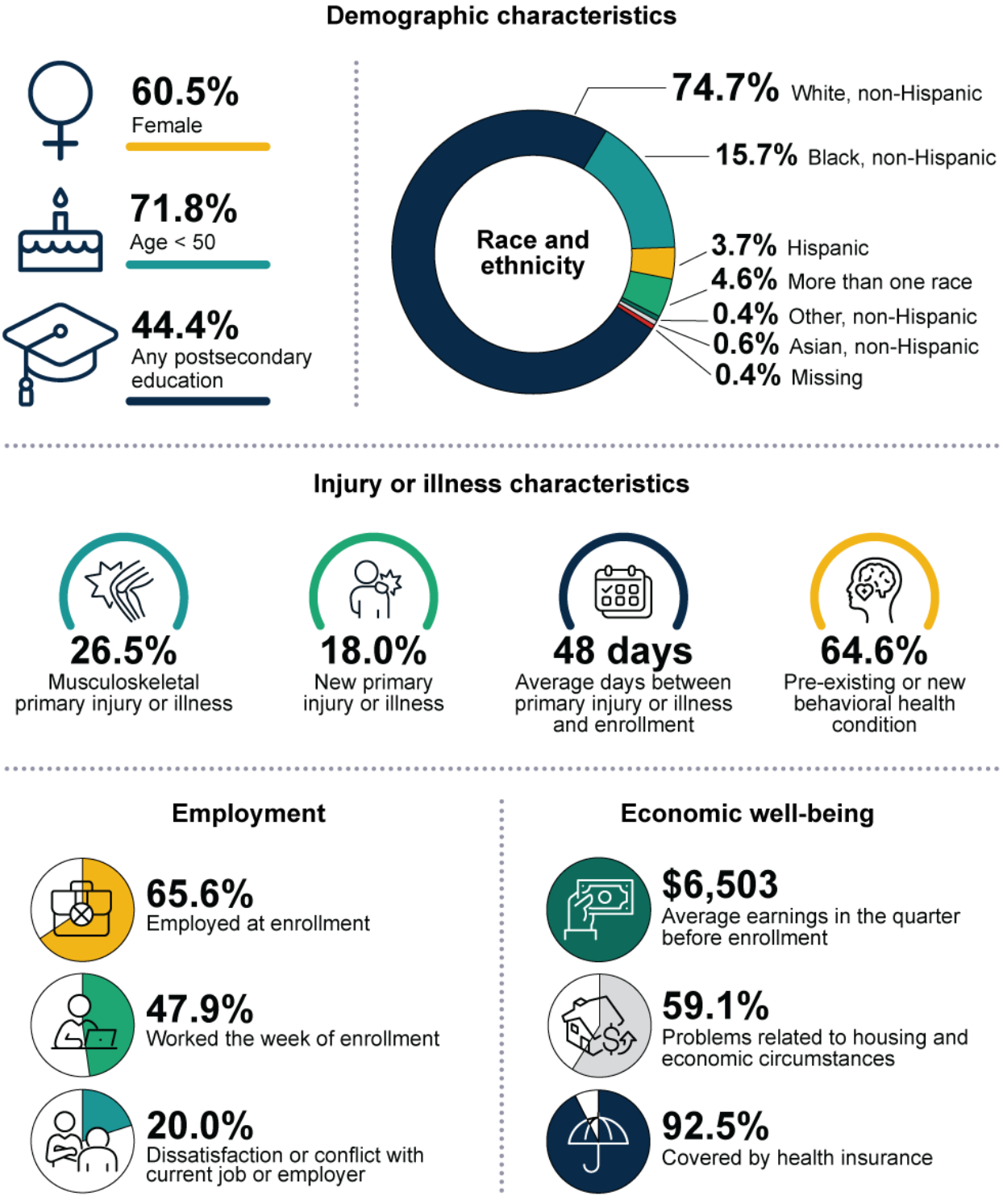
At enrollment, most treatment enrollees (66 percent) were employed (either self-employed or employed at a private company, nonprofit, or government), and nearly half of them (48 percent) had worked during the week of enrollment. More than one-third (37 percent) of treatment enrollees had not worked for at least one month before enrollment. Before their injury or illness, treatment enrollees usually worked 37 hours per week on average. Treatment enrollees varied considerably in their tenure at their current or most recent job: one-fifth (21 percent) had been at their job for more than five years, but a substantial share (33 percent) had worked at their job for less than six months. Treatment enrollees most frequently worked in service occupations (40 percent) or in management, professional, or related occupations (28 percent). Twenty percent of treatment enrollees reported dissatisfaction or conflict with their job or employer.

d. Economic well-being

On average, treatment enrollees earned $6,503 in the quarter before the quarter they enrolled in RETAIN, and most (81 percent) had earnings of $1,000 or more before taxes and deductions in at least one of the past 12 months. At enrollment, relatively few enrollees reported receiving income from sources other than earnings. About 6 percent received employer-provided or other private disability insurance. About 1 percent received SSDI or veterans' benefits, and 11 percent reported income from other public programs. Consistent with RETAIN's goal to intervene before people apply for federal disability benefits, about 2 percent reported that they had applied for or received SSI or SSDI in the three years before enrolling in RETAIN KY. Nearly all treatment enrollees (93 percent) had health insurance coverage. Nearly three-fifths (59 percent) reported experiencing homelessness, inadequate housing, extreme poverty, low income, or insufficient social insurance or welfare support (Exhibit IV.2).

[35] The median time was 28 days (not shown).

Exhibit IV.2. RETAIN KY: Baseline characteristics of treatment enrollees



Source: RETAIN enrollment data. See Appendix Exhibit A.11.1 for additional information.

2. Service use

Program data indicate that 80 percent of treatment enrollees established an RTW plan and, on average, they remained in the program for 82 days (Exhibit IV.3; Appendix Exhibit D.1).[36] Two in every 10 treatment enrollees used or received a referral to employment services including job retention, training, and search services or other employment services.

After enrollment, it was common for enrollees to establish an RTW plan and to do so quickly. On average, RTW coordinators developed RTW plans within seven days of enrollment. The plan outlined the steps for the enrollee to maintain employment, including an RTW date and services needed (Keith et al. 2024). Program data suggest that when preparing the RTW plan, RTW coordinators rarely met with medical providers (3 percent of enrollees) or employers (less than 1 percent of enrollees) to inform the RTW plan (Appendix Exhibit D.2). These low rates of communication with medical providers and employers were likely because RTW coordinators could only contact the treatment enrollee's employer, medical provider, and others involved in their RTW plan if the enrollee signed a release of information, and obtaining this release was often a challenging and time-consuming process (Keith et al. 2024).

RETAIN KY RTW coordinators frequently communicated with treatment enrollees. Nearly all treatment enrollees (97 percent) communicated with their RTW coordinator at least twice, and for about 12 percent of enrollees, RTW coordinators communicated with them more than 20 times. On average, there were 11 such communications per enrollee, consistent with RETAIN KY's goal that an RTW coordinator communicate with an enrollee approximately weekly to monitor the enrollee's progress (Keith et al. 2024).

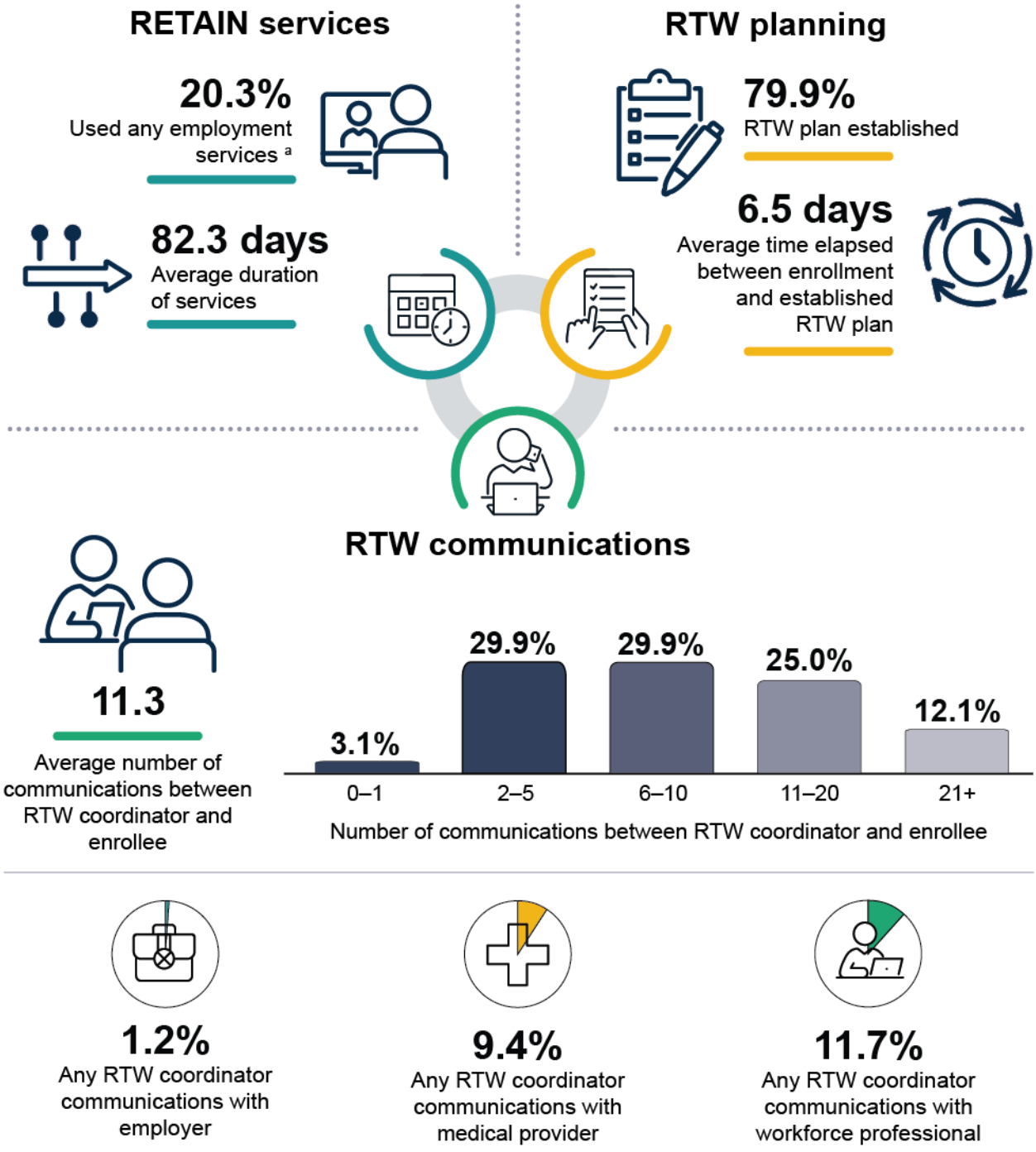
RETAIN KY treatment enrollees frequently did not permit RTW coordinators to communicate with medical providers, employers, or workforce professionals (Keith et al. 2024). RTW coordinators communicated with an employer for almost no treatment enrollees (1 percent); they communicated with medical providers and workforce professionals for 9 and 12 percent of the treatment enrollees, respectively. In each case, the average number of communications per enrollee was less than one.

One-fifth of all treatment enrollees (20 percent) used at least one employment service. Fifteen percent used job search or training services, and 4 percent used job retention services. Relatively few treatment enrollees (5 percent) used other employment services.

Service use varied by some enrollee characteristics. For select services, relative to other enrollees, rates of service use were higher among enrollees who were age 50 and older, were women, had postsecondary education, had a non-musculoskeletal primary diagnosis, or were dissatisfied or had conflict with their employer. Service use rates also differed depending on whether enrollees had a behavioral health condition, had last worked more than one week before enrollment, or had problems related to their housing or economic circumstances, though the pattern was not consistent across types of services. Detailed findings for service use among subgroups are available in Appendix Exhibit D.2.

[36] Program staff recorded the exit date as approximately 2 weeks after the last contact with the enrollee.

Exhibit IV.3. RETAIN KY: Services used by treatment enrollees



Source: RETAIN service use data. See Appendix Exhibit D.1 for additional information.

[a] The percentage of treatment enrollees who received any employment services includes enrollees who used or were referred to one or more of the following: job retention services, job training and job search services, or other employment services.

Note: We refer to certain activities (such as RTW planning) in terms of RTW, though some enrollees might be working and focused on SAW goals.

RTW = return-to-work.

Because RETAIN KY offered a limited set of services on an expedited basis to the control group, we also examined the control group's use of services. About 84 percent of control enrollees developed an RTW plan (not shown), a larger share than the 80 percent of treatment enrollees who did so. Whereas treatment enrollees received a referral to OVR, control enrollees received information on how to self-refer to OVR. Although only treatment enrollees were eligible to have RTW coordinators communicate with their medical providers or employers, this communication did not happen for most enrollees. Thus, the main distinction between the treatment and control groups is the treatment group's longer duration of services, during which they received regular contact from their RTW coordinator in support of reaching the goals in their RTW plan and identifying referrals for any health-related social needs.

C. Impacts on enrollees' outcomes

The findings in this section show the extent to which RETAIN KY led to changes in enrollees' labor force attachment and employment, SSA program participation, economic well-being, and health in the first year after enrollment. The findings are based on Mathematica's independent evaluation of the program.

How we estimated the impacts of RETAIN KY

We estimated the program's impacts by comparing the outcomes of enrollees in the treatment group, who could access the full set of RETAIN KY services, to the outcomes of enrollees in the control group, who could access a limited set of services on an expedited basis. We describe the program's impact on an outcome in terms of how the average outcome of treatment enrollees differed from that of control enrollees. ◢

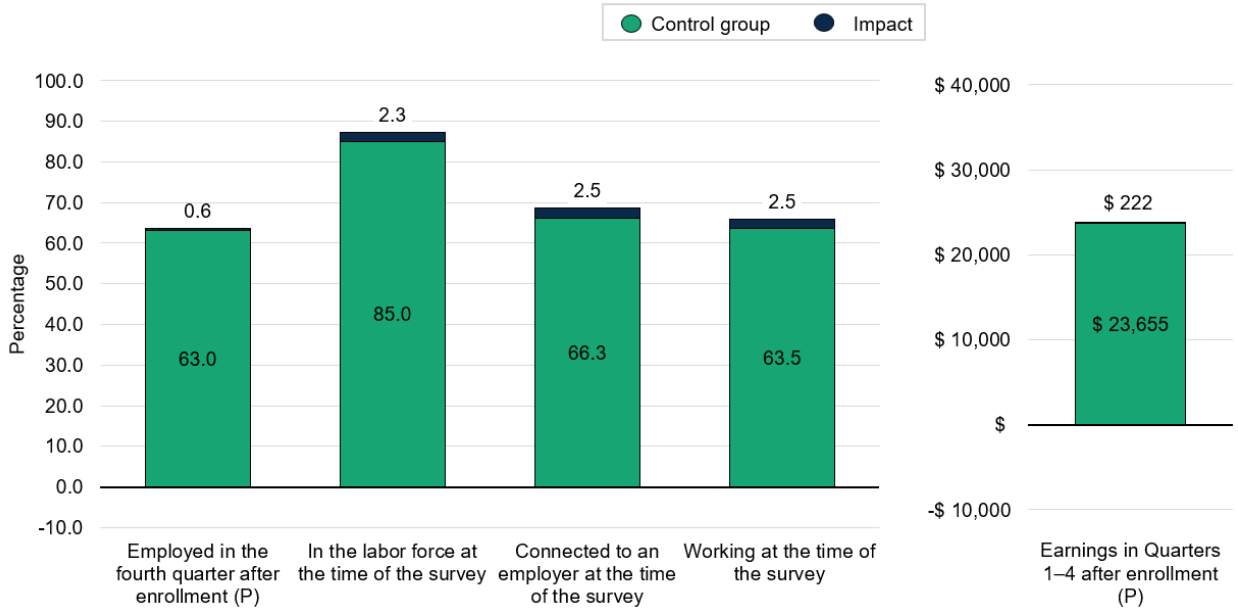
We estimated the program's impacts on these outcomes by comparing the outcomes of enrollees in the treatment group, who could access the full set of RETAIN KY services, to those of enrollees in the control group, who could access a limited set of services on an expedited basis. Before doing so, we examined the sample characteristics of all enrollees and of survey respondents to confirm that enrollees in the treatment and control groups had similar characteristics on average, as expected from the individual random assignment (Appendix Exhibit A.11.1 and A.11.2). Among enrollees, we found three statistically significant differences between the two groups across more than 20 characteristics measured at the time of enrollment. Enrollees in the treatment group differed from those in the control group in their educational attainment, with a larger share of treatment enrollees having at least a high school diploma. Also, the share of enrollees for whom the injury or illness was work-related was slightly larger among the treatment group than the control group. Finally, the average length of time between onset/worsening of illness or injury and enrollment in RETAIN KY was larger for the treatment group than the control group. To obtain unbiased estimates of program impacts, when comparing the average outcomes of the treatment and control groups, we accounted for the differences in educational attainment and the share of enrollees for whom their condition was work-related in addition to a core set of covariates (see Appendix Exhibit B.1).

In an earlier report, we examined RETAIN KY's impacts on enrollees' outcomes during the two months after enrollment using data from an early follow-up survey of enrollees (Patnaik et al. 2025). We found that RETAIN KY increased the shares of enrollees in the treatment group who worked with a care or service coordinator and used any employment-related support services. RETAIN KY had no impacts on enrollees' labor force attachment, employment, and health at the time of the early follow-up survey.

The one-year impact estimates suggest that RETAIN KY did not impact enrollees' employment, economic well-being, health outcomes or SSA program participation in the one year after enrollment (Appendix Exhibit D.3), with two exceptions. First, the program increased the share of enrollees who earned above SGA in the second quarter after enrollment. Second, relative to the control group, treatment enrollees reported one additional poor mental health day, on average, in the month before the one-year follow-up survey. We also estimated impacts of the program on select outcomes for subgroups of enrollees defined by their age, sex, education, primary diagnosis, and time since last worked at enrollment. We found positive impacts on some survey-based outcome measures for men but not women, for enrollees with a non-musculoskeletal primary diagnosis but not others, and for enrollees who last worked more than one week before enrollment but not those who last worked one week or less before enrollment (Appendix Exhibits D.4–D.8).

One year after enrollment, treatment and control enrollees had similar employment rates and average earnings. RETAIN KY had no impact on any employment outcomes during the one-year follow-up period, except the likelihood of earning above SGA in one quarter. About 63 percent of control enrollees were employed in the fourth quarter after enrollment, and average earnings among control enrollees were $23,655 over the four quarters after enrollment; we did not detect a statistically significant difference between the treatment and control groups for these outcomes (Exhibit IV.4).

Exhibit IV.4. RETAIN KY: One-year impacts on employment outcomes



Source: RETAIN enrollment data; one-year follow-up survey; Social Security Administration data; state unemployment insurance wage records.

Note: See Appendix Exhibit D.3 for detailed estimates and description of estimation methods.

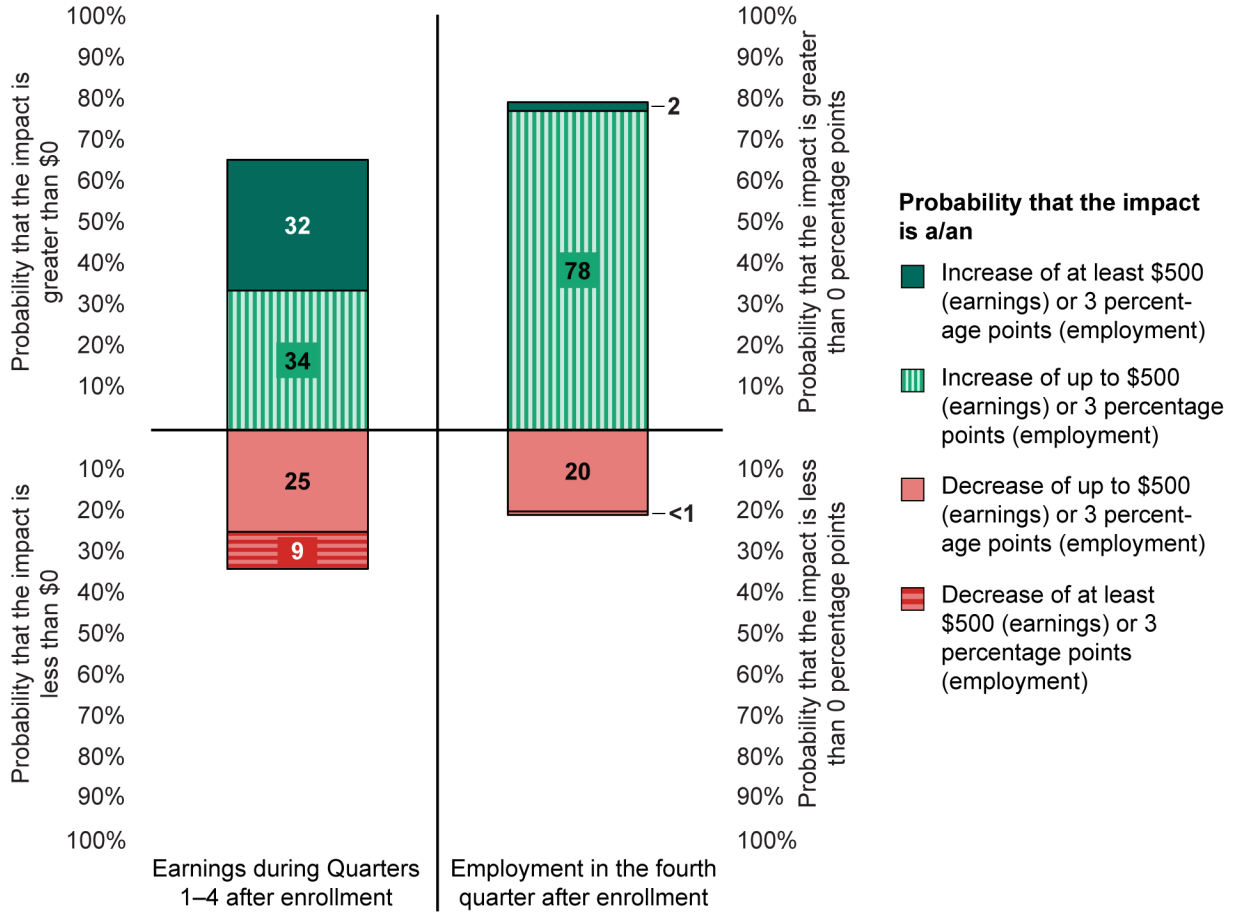
*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

^/^^/^^^ Impact estimate is significantly greater than zero (*p*-value is less than .10/.05/.01) using a one-tailed t-test. This test was only conducted for primary outcomes.

(P) = primary outcome.

Findings from supplementary Bayesian analyses indicate a low likelihood of large favorable impacts on employment and earnings (Exhibit IV.5). Although we estimated a 66 percent probability that the program increased average earnings in the four quarters after enrollment, we estimated only a 32 percent probability that the program increased earnings by more than $500. Similarly, we estimated an 80 percent probability that RETAIN KY increased employment in the fourth quarter after enrollment but only a 2 percent probability of an increase greater than 3 percentage points.

Exhibit IV.5. RETAIN KY: Estimated probabilities of impacts on earnings and employment

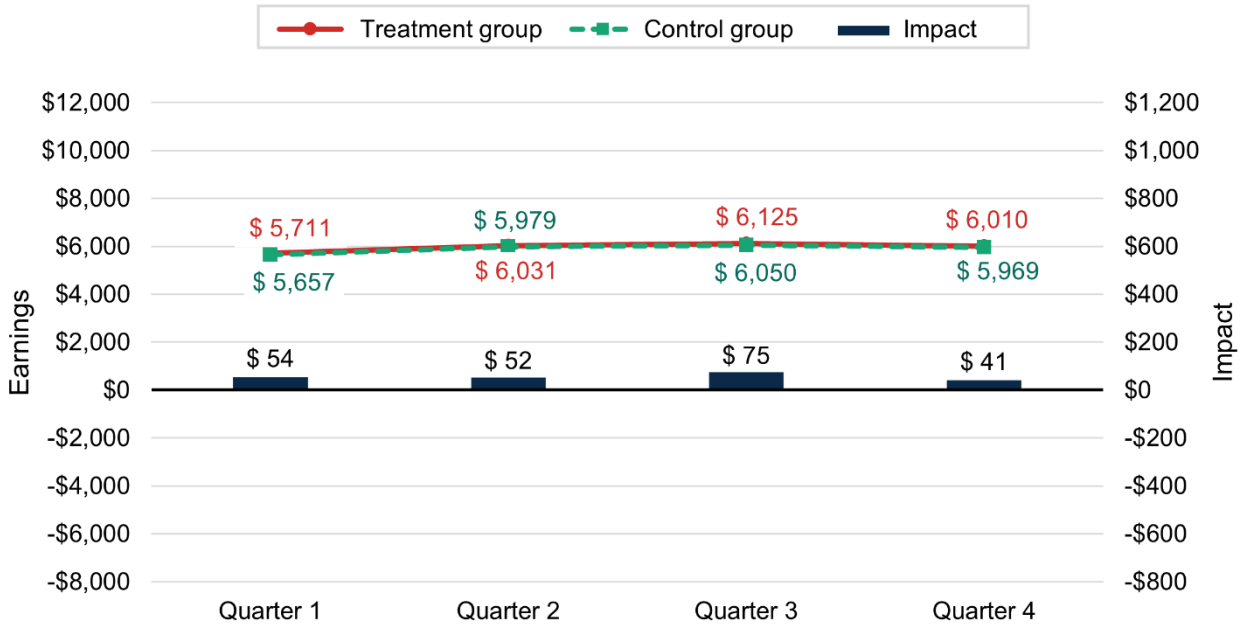


Note: See Appendix Exhibit D.10. An annual earnings increase of at least $500 is the approximate impact many RETAIN programs need to break even within 20 years. For employment, 3 percentage points is approximately 5 percent of the control group's mean outcome.

With one exception, we also did not find statistically significant differences between treatment and control enrollees for any other employment outcomes that we examined (Exhibits IV.4 and IV.6; Appendix Exhibit D.3). About 85 percent of control enrollees were in the labor force at the time of the survey, 66 percent of control enrollees were connected to an employer, and 64 percent of control enrollees were working. Control enrollees reported earning an average of $479 per week and working, on average, 22 hours per week at the time of the survey. About 36 percent of enrollees had been tenured at their job for at least one year, 43 percent were working for an employer that offered health insurance, and 43 percent were working for an employer that offered paid leave. Fewer than one in every 10 control enrollees (7 percent)

reported that they had participated in a job-related training program during the two months before the survey. The program did have a positive impact on one measure of earnings: in the second quarter after enrollment, the share of treatment enrollees who had earnings above SGA was about 3 percentage points greater than the share in the control group.

Exhibit IV.6. RETAIN KY: Impacts on earnings in the four quarters after enrollment



Source: RETAIN enrollment data; state unemployment insurance wage records.

Note: Statistics have been rounded to nearest dollar. See Appendix Exhibit D.3 for detailed estimates and description of estimation methods.

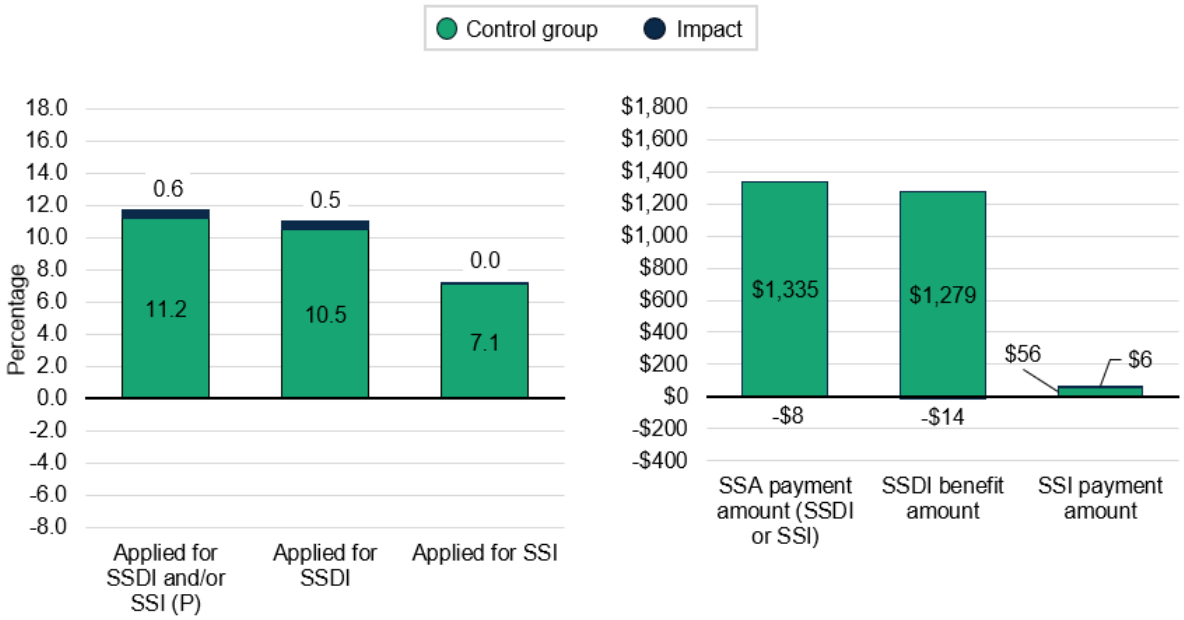
*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

Although the program had no impact on most employment measures overall, it improved a few measures among subgroups of men, enrollees with non-musculoskeletal conditions, and enrollees who last worked more than one week before enrollment. For male enrollees, RETAIN KY increased the share connected to an employer, the share working at the time of the survey, and usual hours worked per week by 6 percentage points, 7 percentage points, and 2.6 hours, respectively. The corresponding impacts for female enrollees were not statistically significantly different from zero. For enrollees with non-musculoskeletal conditions, RETAIN KY increased the share connected to an employer, the share working at the time of the survey, and usual hours worked per week by 4 percentage points, 4 percentage points, and 1.5 hours, respectively. The corresponding impacts for enrollees with musculoskeletal conditions were not statistically significantly different from zero. For enrollees that last worked more than one week before enrollment, RETAIN KY increased both the share connected to an employer and the share working at the time of the survey by 5 percentage points. The corresponding impacts for enrollees who last worked one week or less before enrollment conditions were not statistically significantly different from zero.

About one in 10 enrollees applied for SSDI, SSI, or both in the 12 months after enrollment; RETAIN KY had no impact on any measure of application for or participation in these programs. RETAIN KY had no impact on the share of enrollees who applied for SSDI or SSI (Exhibit IV.7). About 11 percent of

control enrollees applied for SSDI, SSI, or both in the year after enrollment. About 9 percent of control enrollees received any SSDI and/or SSI payments, and the average payment amount was $1,335; RETAIN KY had no impact on these outcomes.

Exhibit IV.7. RETAIN KY: One-year impacts on SSDI and SSI program participation



Source: RETAIN enrollment data; SSA data.

Note: See Appendix Exhibit D.3 for detailed estimates and description of estimation methods.

*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

^/^^/^^^ Impact estimate is significantly less than zero (*p*-value is less than .10/.05/.01) using a one-tailed t-test. This test was only conducted for primary outcomes.

(P) = primary outcome; SSA = Social Security Administration; SSDI = Social Security Disability Insurance; SSI = Supplemental Security Income.

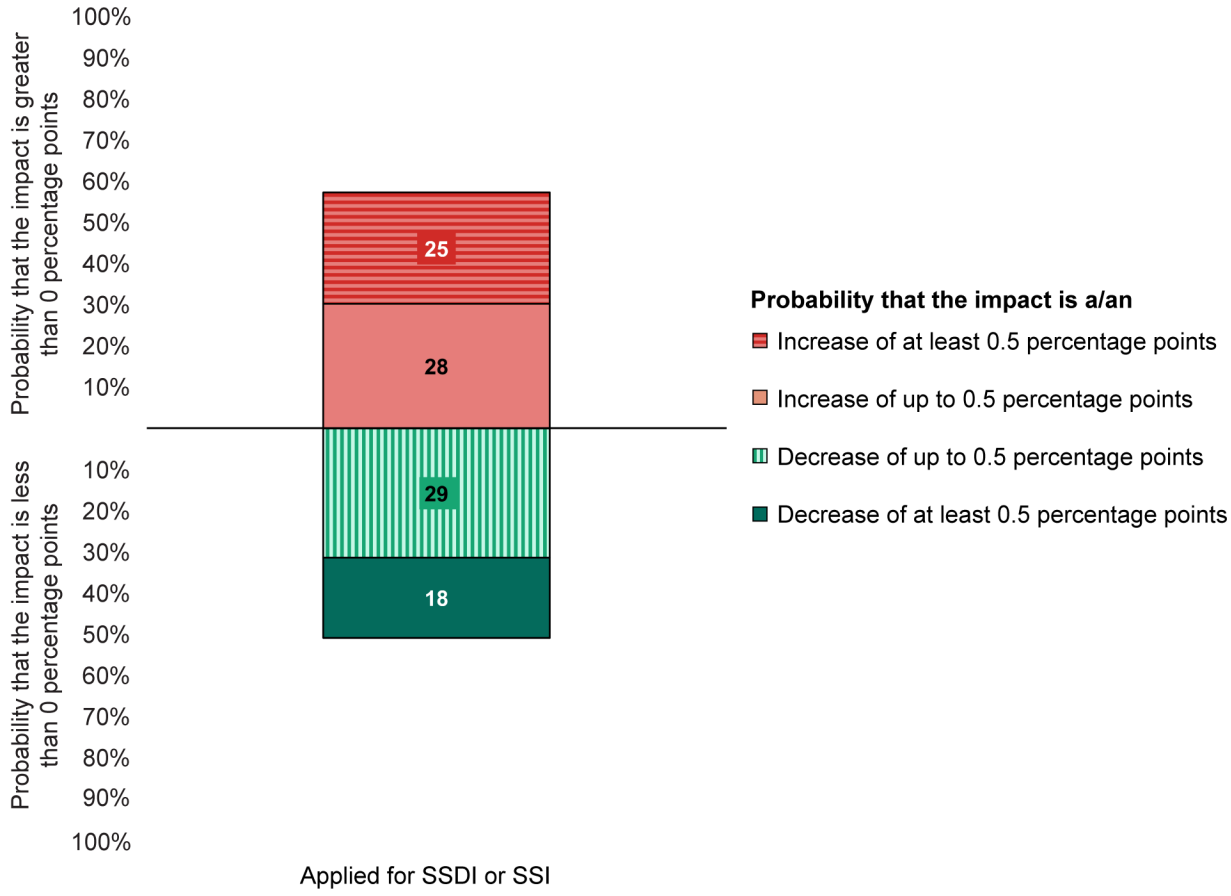
Findings from supplementary Bayesian analysis indicate a low likelihood that the program had large favorable impacts on applications for SSDI and SSI. We estimate a 47 percent probability that RETAIN KY decreased applications for SSDI or SSI during the 12 months after enrollment, and only an 18 percent probability of a decrease greater than 0.5 percentage points (Exhibit IV.8).

We also found no impacts when we examined the SSDI and SSI programs separately. About 11 percent of control enrollees applied for SSDI, and 7 percent applied for SSI. RETAIN KY did not affect the share of enrollees who received SSDI benefits (8 percent among control enrollees) or SSI payments (2 percent) nor the amounts received ($1,279 and $56, respectively).

Treatment and control enrollees reported similar levels of economic well-being at the time of the one-year follow-up survey. RETAIN KY had no impact on any of the measures of household economic well-being that we examined (Appendix Exhibit D.3). On average, control enrollees who responded to the one-year follow-up survey reported a household income of $3,402 and household earnings of $2,847 in the month before the survey (Exhibit IV.9). About one-quarter (28 percent) of control enrollees reported household receipt of public assistance benefits in the month before the survey. Among all control enrollees, the reported household benefit amounts averaged $87 for SNAP, $36 for government housing

assistance, and $10 for UI. Few control enrollees reported receiving private short- or long-term disability payments (4 percent) or workers' compensation benefits (1 percent) in the month before the survey. On average, control enrollees received $63 in private short- or long-term disability payments and $9 in workers' compensation benefits.

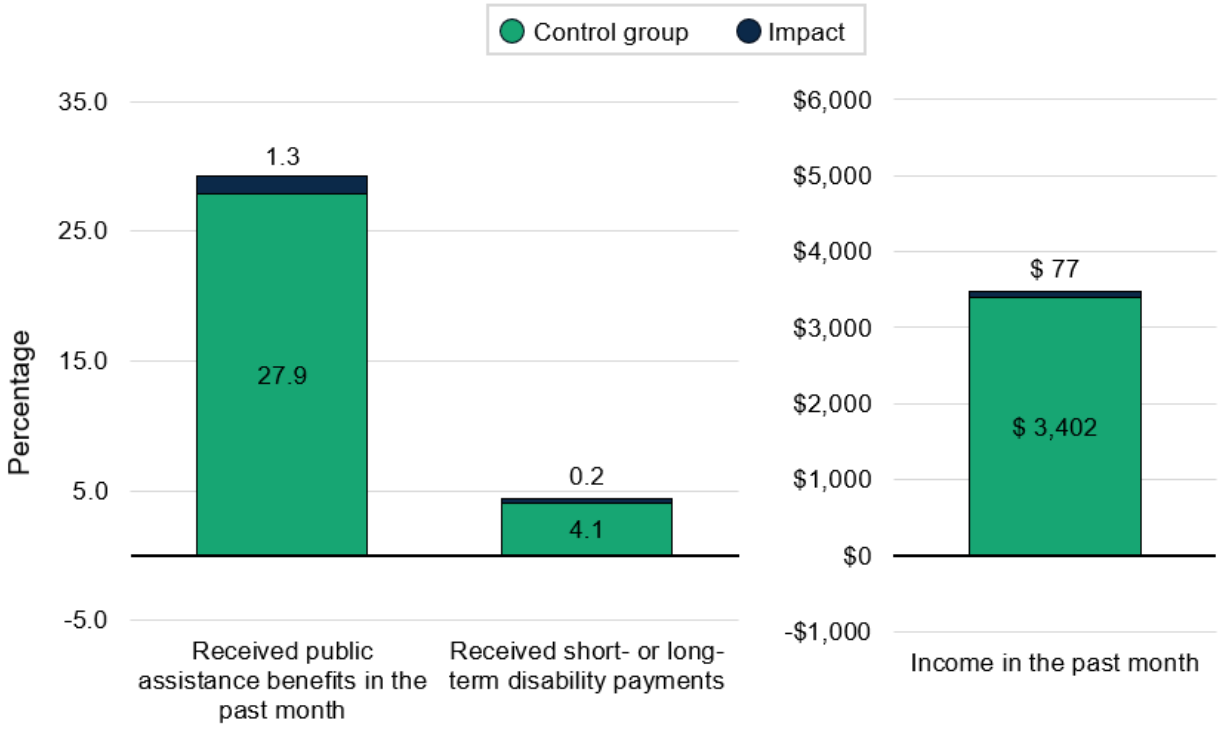
Exhibit IV.8. RETAIN KY: Estimated probabilities of impacts on SSDI and SSI applications



Note: An impact of 0.5 percentage points constitutes approximately 5 percent of the control group's mean outcome.
SSDI = Social Security Disability Insurance; SSI = Supplemental Security Income.

Although the program had no impact on economic well-being overall, it improved one measure of economic well-being among men and among enrollees who had last worked more than one week before enrollment. Even though both male and female control enrollees reported a household income of about $3,400 in the past month, RETAIN KY increased this by about $397 for men while the impact for women was not statistically significant. Similarly, RETAIN increased household income in the past month by $261 for enrollees who had last worked more than one week before enrollment while the impact for those who had worked in the week before enrollment was not statistically significant.

Exhibit IV.9. RETAIN KY: One-year impacts on economic well-being



Source: RETAIN enrollment data; one-year follow-up survey.

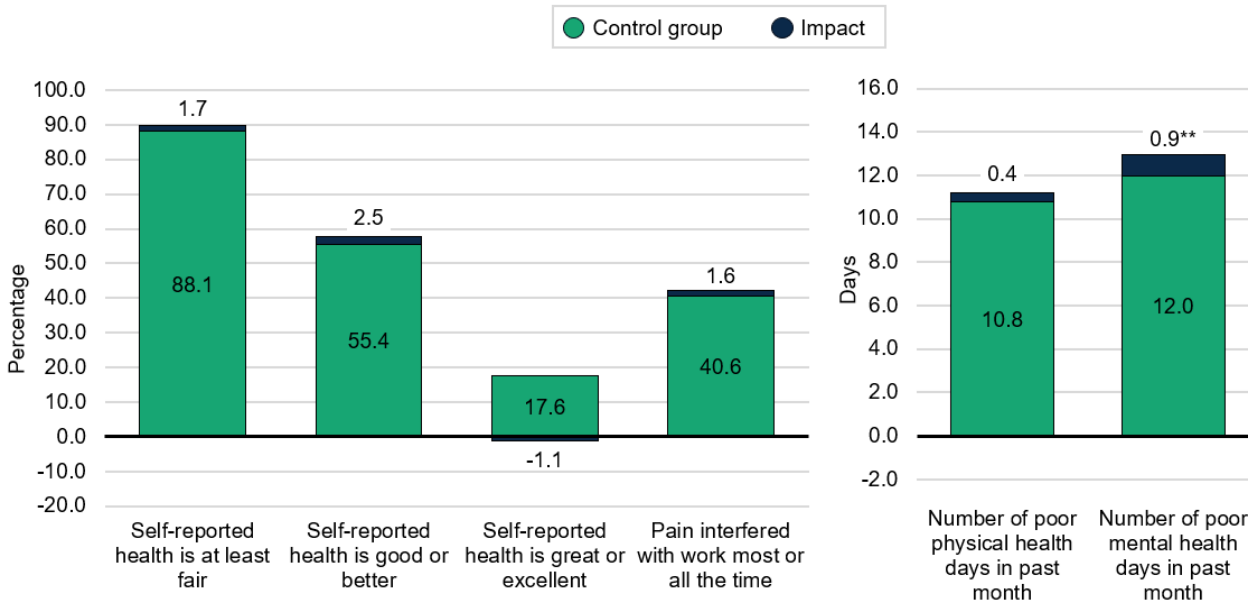
Note: See Appendix Exhibit D.3 for detailed estimates and description of estimation methods.

*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

Note: Public assistance benefits refer to benefits from the Supplemental Nutrition Assistance Program, housing assistance or unemployment insurance programs. Short or long-term disability benefits refer to private disability insurance benefits.

RETAIN KY did not improve enrollees' self-reported health at the time of the one-year follow-up survey. Compared with control enrollees, treatment enrollees reported slightly worse mental health. With one exception, we did not find statistically significant differences in the self-reported health of control and treatment enrollees. Control enrollees reported experiencing an average of 12 days of poor mental health during the month before the survey, whereas treatment enrollees reported one additional day on average (Exhibit IV.10); subgroup analyses suggest this increase was concentrated among female enrollees, those with no postsecondary education, and those with a non-musculoskeletal primary diagnoses. The program had no impact on the other self-reported health measures. Nearly all control enrollees (92 percent) reported having health insurance. The shares of control enrollees who reported their health as at least fair, good or better, or very good or excellent were 88, 55 and 18 percent, respectively. About two-fifths (41 percent) reported that pain interfered with their ability to work most or all the time during the two months before the survey. On average, control enrollees experienced 11 days of poor physical health during the month before the survey and a pain score of four out of 10 at the time of the survey. About one-tenth of control enrollees (12 percent) had been prescribed an opioid pain reliever.

Exhibit IV.10. RETAIN KY: One-year impacts on health



Source: RETAIN enrollment data; one-year follow-up survey.

Note: See Appendix Exhibit B.5 for detailed estimates and description of estimation methods.

*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

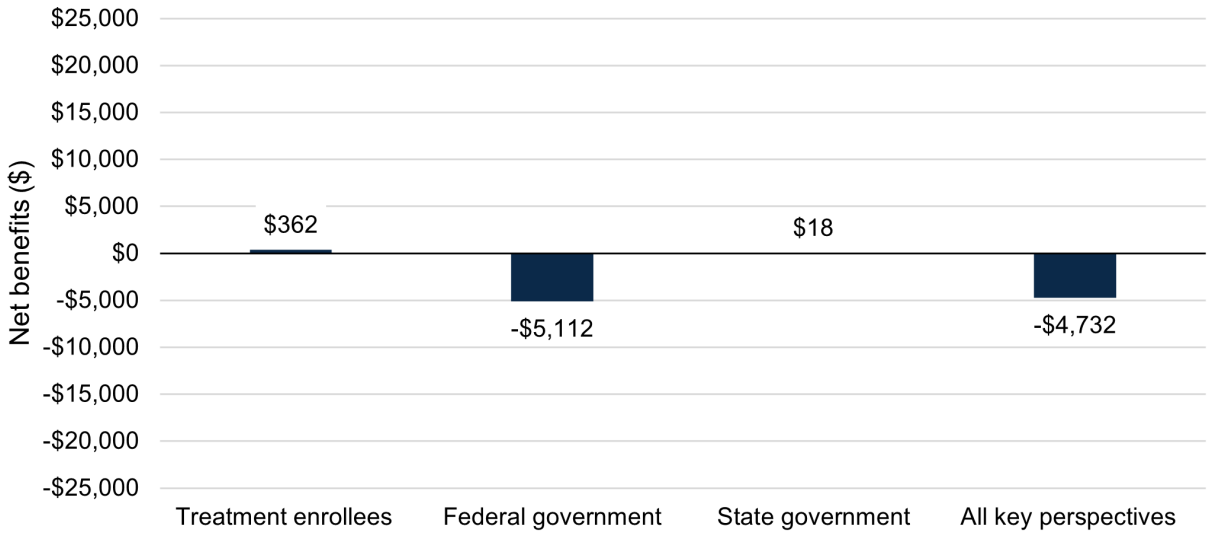
D. Benefits and costs of the program

We examined the benefits and costs of RETAIN KY for the year after enrollment using the program's estimated one-year impacts on enrollee outcomes and program costs during the steady-state period April 1, 2023, through March 31, 2024. We estimated the net benefits (or costs) separately for treatment enrollees, the federal government, the state government, and across these three key perspectives. The net benefit (cost) is based on (1) the point estimates for the program's impacts on treatment enrollees, (2) assumptions based on the literature regarding how impacts lead to indirect benefits and costs, and (3) the cost of delivering RETAIN KY per treatment enrollee.

The estimated cost of delivering RETAIN KY was $5,018 per treatment enrollee. Using data provided by the program, we estimated the costs of RETAIN KY to be a little more than $5,000 per treatment enrollee (Appendix Exhibit D.12). The cost per enrollee includes wages paid for staff time dedicated to RETAIN activities across all partners ($2,246), fringe benefits for those staff ($644), and administrative and overhead costs for program operation ($1,058). We estimated program costs using data for the period April 1, 2023, through March 31, 2024, but we recognize that program costs might have varied over the program's implementation period depending on the stage of implementation and the number of enrollees in the program at that time. The costs do not account for incentives offered to enrollees; we considered such incentives to be evaluation costs that would not have accrued in a non-evaluation context. The cost data provided by the program include the limited services provided to the control group; therefore, our estimate of the cost of delivering RETAIN KY likely overstates the true cost per treatment enrollee.

Treatment enrollees experienced an average net benefit of $362 from RETAIN KY; however, the overall costs of RETAIN KY outweighed its overall benefits during the year after enrollment. Treatment enrollees experienced a net benefit from the program (on average, $362) in the year after enrollment (Exhibit IV.11). However, across the three key perspectives, we estimated that RETAIN KY resulted in a net cost of $4,732 per treatment enrollee during that period.

Exhibit IV.11. RETAIN KY: Net benefits per treatment enrollee in the year after enrollment



Source: See Appendix Exhibit D.12 for details on sources and methods for our calculations.

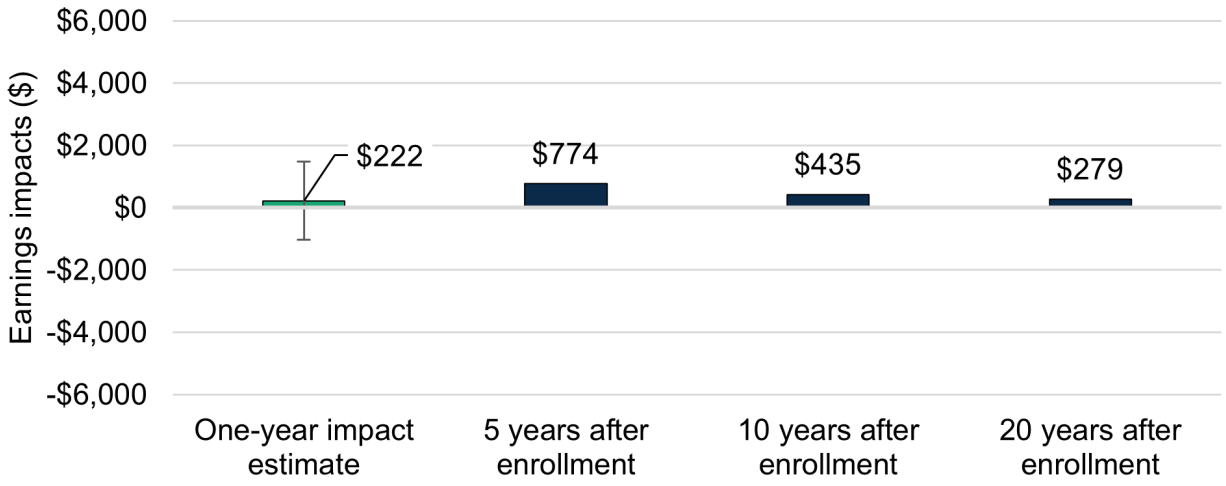
Note: Net benefits are benefits minus costs, expressed as dollars per enrollee, inflation-adjusted to 2024 dollars, and discounted to 2024 present values.

Below, we summarize the benefit-cost findings for the one-year follow-up period from each of the key perspectives (Appendix Exhibit D.12 provides detailed estimates):

- **Treatment enrollees.** On average, RETAIN KY treatment enrollees experienced net benefits of $362 in the year after enrollment. The key contributors to the benefits were statistically insignificant but positive impacts on earnings ($222), corresponding estimated fringe benefits ($101), SNAP benefits ($110), and public housing assistance benefits ($66). Importantly, treatment enrollees likely experienced some costs from the program's negative impacts on their mental health, but we are unable to quantify the value.
- **Federal government.** We estimated that a net cost of $5,112 accrued to the federal government for each RETAIN KY treatment enrollee in the year after enrollment. The largest cost component was program delivery, which accounted for a cost to the federal government of $5,018 per treatment enrollee. We estimate that the federal government also experienced increased indirect costs associated with increased outlays for SNAP benefits and public housing assistance, which exceeded the estimated benefits from increased income and payroll taxes.
- **State government.** We estimated that the state government experienced a net benefit of $18 per treatment enrollee stemming from increased income and sales tax revenue ($14) and savings from decreased outlays for UI ($13) and Medicaid benefits ($2), balanced by increased administrative costs associated with additional workers' compensation ($4) and SNAP benefits ($7).

RETAIN KY's annual impact on earnings would need to increase for the program to become cost neutral within the next 20 years. Because program costs are incurred up front but benefits to enrollees and other stakeholders can continue to accrue in the future, we conducted supplementary analyses to consider the program's benefits and costs beyond the first year after enrollment. We calculated the average annual impact on earnings per year that would be needed for the program to be cost neutral by five, 10, and 20 years after enrollment. For RETAIN KY to be cost neutral from all key perspectives within five years, we estimated that the impact on annual earnings must be at least $774 per treatment enrollee; to be cost neutral in 10 years, it must be at least $435; and to be cost neutral in 20 years, it must be at least $279 (Exhibit IV.12; Appendix Exhibit D.14). These estimates represent, respectively, 349 percent, 196 percent, and 126 percent of the point estimate for the one-year impact on earnings ($222). It is plausible that impacts on annual earnings could grow by the amount required for cost neutrality over the 20-year period because these estimates are within the 95 percent confidence interval of the point estimate for the one-year impact on earnings (-$1,035, $1,479).

Exhibit IV.12. RETAIN KY: Annual impact on earnings needed to reach cost neutrality at five, 10, and 20 years after enrollment



Source: See Appendix Exhibit D.14 for details on sources and methods for our calculations.

Note: This chart shows the average annual impact on earnings that would be needed for the program to be cost neutral five, 10, and 20 years after enrollment. The first bar shows the one-year impact on earnings (point estimate and 95 percent confidence interval).

E. Discussion

In this section, we highlight key patterns in the findings from the one-year evaluation of RETAIN KY and discuss their significance and possible explanations.

Low service use among the treatment group and the provision of a limited set of services to the control group reduced the contrast between the treatment and control groups. A majority of RETAIN KY treatment enrollees established an RTW plan and communicated with their RTW coordinator, but most did not use program services beyond those. Of the five RETAIN programs, RETAIN KY had the second lowest average number of communications between RTW coordinators and enrollees. It was also exceptionally rare for RTW coordinators to communicate with other parties such as the enrollees'

employer, medical provider, or workforce professional. Across the RETAIN programs, treatment enrollees in RETAIN KY had the second lowest use of any employment services and the lowest average duration of services.

A range of indicators point to the control group in RETAIN KY receiving some services relevant to their SAW/RTW goals. First, RETAIN KY delivered a limited set of services on an expedited basis to the control group, including the development of an RTW plan. Program data indicate that 84 percent of the control group created an RTW plan, which is comparable to the treatment group (80 percent). Second, data from the early follow-up survey showed that the share of control enrollees who self-reported receiving care or service coordination was substantially higher in RETAIN KY (17 percent) than other programs (no more than 7 percent) (Patnaik et al. 2025). Similarly, compared to the other programs, RETAIN KY had the largest share of control enrollees who self-reported using employment services during the two months after enrollment (20 percent). There are at least two possible explanations for the high rate of employment service use among control enrollees. First, RETAIN KY both relied heavily on referrals from OVR for recruitment of enrollees and provided the control group with information about how to self-refer to OVR. As a result, many control group members might already have used employment-related services and training from OVR at enrollment or gone on to use such services and training after enrollment. Second, compared to the other RETAIN programs, RETAIN KY's enrollees had the lowest earnings in the quarter before enrollment and the lowest employment at enrollment. It is possible that control group members might have used employment and other services such as from American Jobs Centers or from means-tested programs such as Temporary Assistance for Needy Families.

RETAIN KY did not substantially improve enrollees' employment, economic well-being, or health or reduce SSA program participation in the year after enrollment. RETAIN KY had no impacts on any of the outcomes we measured during the first year after enrollment except the likelihood of earning above SGA in one quarter and number of poor mental health days at the time of the survey (which it increased slightly). Three factors might explain the absence of significant program impacts. First, the limited contrast between the treatment and control groups noted above left less room for the program to have an impact. It is possible that the program improved the outcomes of both treatment and control enrollees through its service offerings to each group, and we would not detect this improvement as an impact because it would not cause a difference between the treatment and control group's outcomes. Second, the program might not have intervened early enough to achieve the desired impact on SAW/RTW outcomes. Third, only 20 percent of treatment enrollees used any employment services and, for nearly all enrollees, the RTW coordinator did not communicate with the employer. The program's limited implementation of these key aspects of the RETAIN model might also have muted impacts on economic outcomes.

Although RETAIN KY did not improve enrollees' self-reported health, the evidence suggests that it slightly increased the self-reported number of poor mental health days among treatment enrollees relative to control enrollees. The size of the impact is small, and there is no clear explanation for this finding. We cannot rule out the possibility that treatment enrollees had worse mental health than control enrollees prior to enrollment (we did not have data to assess or control for this possibility) and that this difference persisted over time. Assuming this was not the case, we can speculate about some possible reasons why the program might have led to treatment enrollees experiencing slightly worse mental health one year after enrollment. One possibility is that RETAIN KY heightened treatment enrollees' expectations about

staying at or returning to work, such that they experienced worse mental health when they had not returned to work by the end of the year compared to control enrollees who experienced the same employment outcome. During interviews, program staff described one of the most valuable benefits of the services they provided enrollees was hope that they could return to work and motivation to overcome challenges they may face in the process (Keith et al. 2024). Not experiencing an improvement in their economic circumstances despite program participation might have negatively affected treatment enrollees' mental health. Another possibility is that the program's focus on work-limiting injuries and illnesses caused distress by increasing the salience of the injuries and illnesses. Other research has shown that mental health interventions can have adverse effects on participants' mental health, although the mechanisms are uncertain (Bonell et al. 2015; Foulkes and Andrews 2023; Foulkes and Stringers 2023; Lorenc et al. 2014). Finally, it is possible the program increased awareness of mental health and its importance for work, such that treatment enrollees were more likely to recognize if they were having a poor mental health day. Given the small size of the impact estimate, it is also possible that the difference in this outcome between treatment and control enrollees emerged by chance.

Although RETAIN KY did not impact most labor market outcomes during the first year after enrollment, it had positive impacts on such outcomes for some subgroups of enrollees RETAIN KY increased self-reported measures of labor market participation for male enrollees, enrollees with non-musculoskeletal conditions, and enrollees who had last worked more than one week before enrollment, but not for their counterparts. One potential explanation for these findings is that these groups had greater needs at enrollment compared to their counterparts. For example, men were more likely than women to have last worked more than a week before enrollment and were less likely to have been employed at enrollment (not shown). Other research has shown that men have a higher threshold for seeking physical and mental healthcare than women (Mursa et al. 2022), and it is possible that the men willing to enroll in a program like RETAIN were those with more acute needs. If men had greater needs than women, a couple of mechanisms could explain why the program improved the outcomes of men. First, treatment enrollees with high needs might have used more services or benefitted more from the services they used. Second, control enrollees with low needs might have obtained sufficient support through either the limited services RETAIN KY provided to the control group or regularly available community services, thus erasing the contrast with the treatment group.

Although RETAIN KY resulted in net costs during the first year after enrollment for all key perspectives examined, it is plausible that it could produce net benefits in about 20 years. The program incurred a net cost of $4,732 per treatment enrollee during the first year, largely reflecting the up-front costs of delivering intensive, individualized services. Although treatment enrollees experienced an average net benefit of $362 in the first year, when looking across the combined perspectives of treatment enrollees and state and federal governments, the costs of delivering the program exceeded the measurable benefits. However, there are two ways in which this estimate might be overly pessimistic. First, the costs of delivering services reported by the program included the cost of delivering limited services provided to the control group, which means the true cost per treatment enrollee was lower. Second, as discussed above, it is possible that the program improved both treatment and control enrollees' outcomes, but we would not be able to detect this as an impact. If this is the case, then the true benefit per treatment enrollee was higher than our estimates suggest.

Despite the outlays already made to deliver RETAIN KY's services, program benefits—particularly to enrollees—are likely to continue accruing. The program could achieve cost neutrality within 20 years if it realizes modest gains in annual earnings for treatment enrollees relative to control enrollees. For example, to achieve cost neutrality at 20 years, the annual impact on earnings would only need to be 26 percentage points larger than we observed during the first year. This is plausible given that treatment enrollees might have depressed their earnings during the first two quarters after enrollment by taking time away from work to participate in program services or focus on recovery. Notably, the reasons discussed above for why our estimated net benefit might be overly pessimistic also might cause us to overestimate the future earnings impacts needed to achieve cost neutrality.

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V. Minnesota RETAIN (MN RETAIN)

Key findings from the one-year evaluation

Enrollment and participation

- MN RETAIN enrolled 3,199 people during Phase 2, of whom 1,598 were randomly assigned to the treatment group and thus were eligible for services. Treatment and control enrollees had similar characteristics at the time of enrollment.
- Program data indicate that 97 percent of treatment enrollees established an RTW plan, and nearly all used or received a referral to employment services. On average, enrollees and RTW coordinators had 20 communications, with all treatment enrollees having at least two such communications. The share of enrollees for whom the RTW coordinator communicated with a medical provider, workforce professional, or employer were 95 percent, 63 percent, and 26 percent, respectively.

Impacts on enrollees' one-year outcomes

- MN RETAIN had no impact on the three primary outcomes. Treatment and control enrollees had similar earnings in the four quarters after enrollment (about $36,847 on average), and similar shares (68 percent) were employed in the fourth quarter. About 10 percent of enrollees applied for SSDI or SSI during the year after enrollment, a share that was similar for both the treatment and control groups.
- MN RETAIN had no impact on any other employment outcomes, including quarterly employment and earnings and employment status and characteristics at the time of the one-year follow-up survey.
- MN RETAIN had no impact on participation in SSA programs. It did not affect enrollees' application rates, receipt rates, or payment amounts for either SSDI or SSI.
- Treatment and control enrollees reported similar levels of economic well-being at the time of the one-year survey.
- MN RETAIN improved enrollees' self-reported health. Compared with control enrollees, treatment enrollees reported fewer poor mental health days they were less likely to report that pain interfered with their ability to work.

Net benefits during the one-year evaluation period

- The estimated cost of delivering MN RETAIN at $4,998 per treatment enrollee.
- MN RETAIN's costs exceeded its benefits during the one-year evaluation period, with an estimated net cost of $4,099 per treatment enrollee. However, benefits could continue to accrue in the future whereas program costs will not, and a simple forecast suggests that the program would break even within 20 years. ◢

A. Program overview

Below, we provide an overview of the Minnesota RETAIN (MN RETAIN) program design and implementation as documented through Mathematica's independent evaluation. We draw on key findings from Mathematica's process analysis (Keith et al. 2024), which covered program implementation and service delivery through June 2023, midway through the program's operation period under the Phase 2 grant. The program made changes to some implementation components in accordance with a continuous quality improvement approach.

1. Program design

The Minnesota Department of Employment and Economic Development was the lead agency overseeing MN RETAIN. The agency collaborated with key partners—including the Mayo Clinic as the lead healthcare

partner and Workforce Development, Inc., as the main workforce partner—to implement the program. MN RETAIN operated statewide, covering all 87 Minnesota counties. The program's service population was adults ages 18 and older who were in the workforce and had experienced the onset or worsening of a work-related or non–work-related injury or illness that affected their employment. People who had been out of the workforce for more than six months were not eligible for the program.

MN RETAIN provided services to treatment enrollees for up to six months. The program model included the following:

- Training and incentives for medical providers to use best practices to support stay at work and return to work for their patients
- RTW coordination services that involved working with an enrollee to develop an employment plan and an RTW plan; meeting regularly with the treatment enrollee; and communicating with the enrollee's medical provider, employer, and others as needed to coordinate the enrollee's staying at or return to work
- Other services, including supporting workplace accommodations and referrals to retraining or rehabilitation services

The evaluation of MN RETAIN used an individual random assignment design. Mathematica randomly assigned half of the enrollees to the treatment group and the other half to the control group. All enrollees received a $100 incentive payment for enrolling. Enrollees in the treatment group could access MN RETAIN services; those in the control group could not access program services but received a list of resources available to the general public. In total, MN RETAIN enrolled 3,199 people in the RETAIN evaluation from December 2021 to May 2024.

2. Program implementation

MN RETAIN enrolled at least one person in 77 of Minnesota's 87 counties (Exhibit V.1). Enrollment was highest in Hennepin County, where Minneapolis is located (27 percent), followed by Olmsted County, where Rochester is located (13 percent).

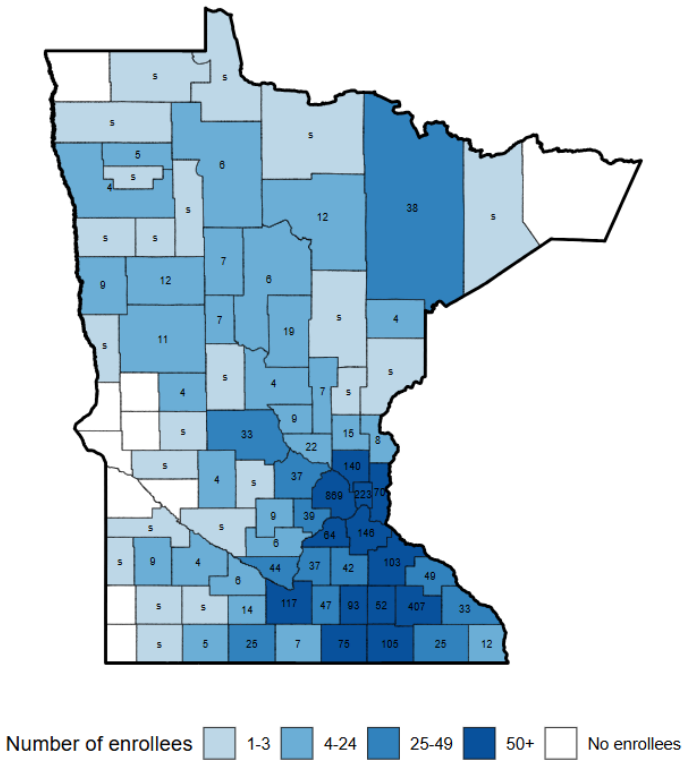
MN RETAIN successfully achieved its Phase 2 enrollment goal by relying primarily on the Mayo Clinic and four additional healthcare partners as recruitment sources. Referrals came from several sources, including EMRs, healthcare providers, and self-referring individuals. Most participants were identified through a patient registry maintained within the Mayo Clinic's EMR system, which was used to identify and conduct outreach to potential enrollees. MN RETAIN also used a mass email invitation campaign and an online recruitment platform (BuildClinical) to recruit potential enrollees. Although MN RETAIN staff also conducted outreach to medical professionals, employers, and the broader public to raise awareness and encourage referrals, these efforts led to relatively few enrollments compared to the EMR-based recruitment strategy.

Once program staff identified a potential enrollee through the EMR or a referral, MN RETAIN's recruitment staff contacted the potential participant to verify the person's eligibility and explain the program. If they met the criteria and expressed interest, staff obtained informed consent and completed

the enrollment process, at which time Mathematica randomly assigned participants with equal probability to either the treatment or control group.

In the MN RETAIN program model, recruitment staff made a warm handoff to RTW coordinators, who were responsible for providing RTW services, including developing RTW and employment plans; providing services or referrals to support job retention, job search, or training; and engaging in related communication with the enrollee, employer, medical provider, workforce professionals, and others. In general, MN RETAIN was able to deliver the services specified in its program model. The program leaders, staff, and partners we interviewed in May 2023 noted that they initially experienced challenges in prompting medical providers to complete the MN RETAIN training. They overcame these challenges by adopting strategies such as individualized emails from RETAIN provider champions/healthcare leads inviting providers to complete the training, in-person training for provider groups, and reduced length of training.

Exhibit V.1. MN RETAIN: Enrollment coverage in the program's service area



Source: MN RETAIN enrollment data.

Note: The number in a county represents the total number of treatment and control enrollees for that county; we suppressed the number if it was fewer than three enrollees. Counties shown in white had no enrollees. Counties shown in pale blue had 1-3 enrollees, while counties in light blue had between 4-24 enrollees, and counties in blue had 25-49 enrollees. Counties in the darkest shade of blue had more than 50 enrollees each

Central to the MN RETAIN program model is the role of the RTW coordinator in facilitating communication among the parties involved in a treatment enrollee's RTW plan, including the medical provider, employer, and workforce professional, to ensure the coordination of needed services. Communication between RTW coordinators and medical providers improved over time as medical providers increasingly recognized the value of the RTW coordinators' role, trusted the RTW coordinators, and gained awareness of the MN RETAIN program. However, employer engagement with MN RETAIN remained challenging. MN RETAIN staff needed enrollees' permission before they could contact employers. For their part, enrollees were hesitant to grant permission for fear that employers would react negatively to RTW coordinators' recommendations for work accommodations.

RTW coordinators were to make a referral for employment or financial support services if they identified a treatment enrollee needing those services. Employment counselors at the lead workforce partner (Workforce Development, Inc.) and the subrecipient workforce partner (Goodwill-Easter Seals of

Minnesota) were to provide employment services, including general job search services (such as resume review and mock interviews), access to training if the enrollee wanted to transition to a different career, access to paid transitional work opportunities that aligned with the enrollee's work accommodations, and financial support services. During interviews, program staff told us they referred most enrollees for employment services, though it is unclear how many enrollees used these services or the nature of services they used (see Section B below).

B. Program participation

Of the 3,199 people who enrolled in MN RETAIN during Phase 2, 1,598 were randomly assigned to the treatment group and thus were eligible for services. Below, we describe the baseline characteristics of treatment enrollees and then discuss their use of RETAIN services, drawing on program data to do so.

1. Baseline characteristics of treatment enrollees

a. Demographic characteristics

Slightly more than half (55 percent) of MN RETAIN treatment enrollees were women (Exhibit V.2), and about two-thirds (67 percent) were younger than 50, with 43 being the average age (Appendix Exhibit A.12.1). Nearly three-quarters of treatment enrollees were non-Hispanic White (74 percent), followed by non-Hispanic Black (11 percent), Hispanic (7 percent), more than one race (4 percent), non-Hispanic Asian (2 percent), and non-Hispanic other race (2 percent). Almost all treatment enrollees (97 percent) cited English as their preferred language and had postsecondary education (58 percent). The most frequently reported educational attainment was a high school diploma, GED, or certificate of completion (38 percent). About 33 percent of enrollees had a four-year college or post-graduate degree, and 25 percent held an occupational certificate or license or two-year college degree.

b. Injury or illness characteristics

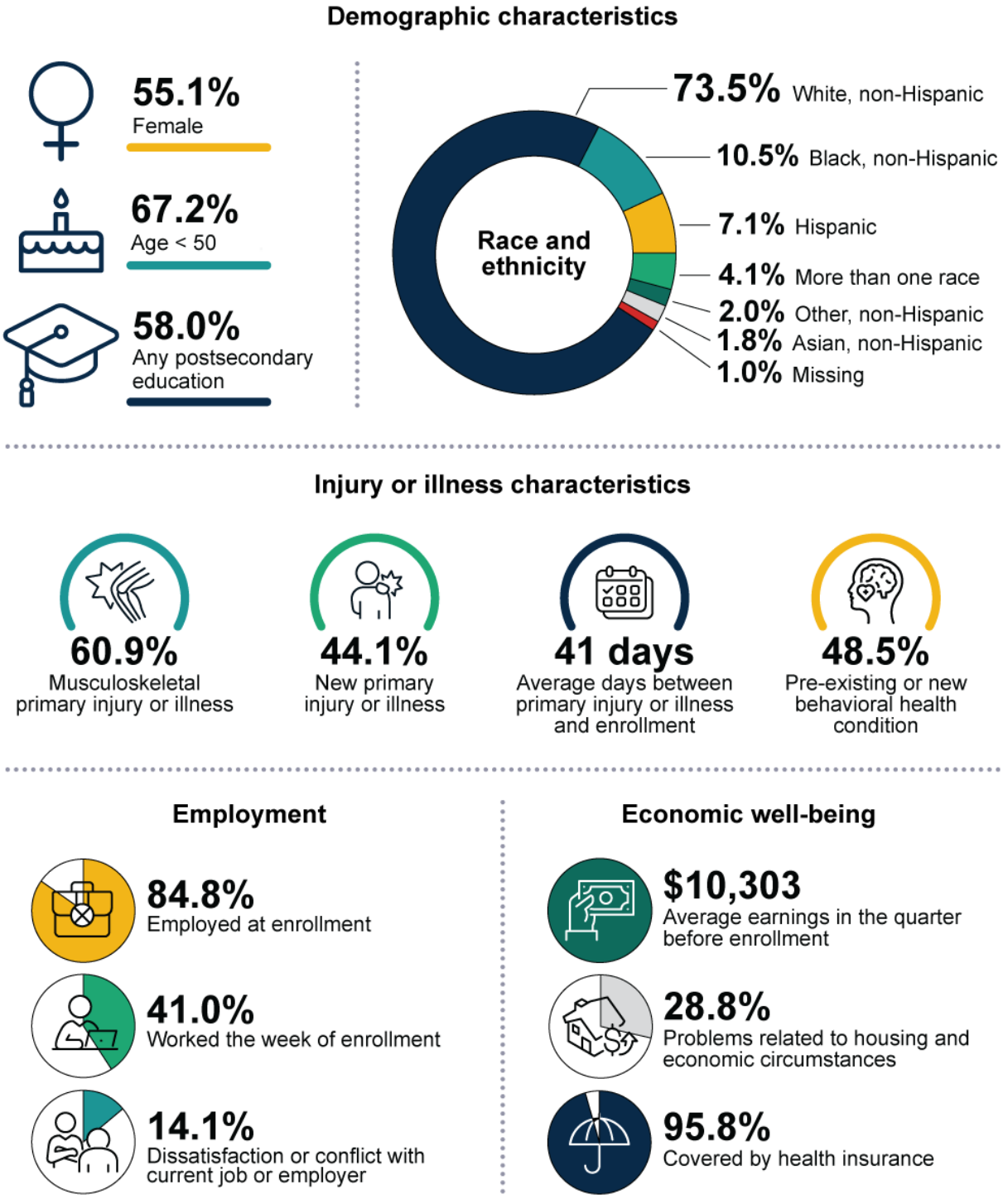
The most common type of injury or illness among MN RETAIN treatment enrollees was musculoskeletal (61 percent). Eleven percent of enrollees cited a back-related musculoskeletal injury or illness as the primary diagnosis making them eligible for MN RETAIN, and 50 percent of enrollees cited a non-back musculoskeletal injury or illness as the primary diagnosis. Fourteen percent had a mental health condition, and one-quarter had a health condition that was neither a musculoskeletal nor mental health condition. For 44 percent of treatment enrollees, the primary injury or illness was a new condition rather than worsening of an existing condition, and 40 percent of treatment enrollees reported that their condition resulted from an accident or injury rather than from an illness or chronic condition. Only 14 percent of treatment enrollees reported that their health condition was caused, at least in part, by work-related factors, and few treatment enrollees (5 percent) reported that their injury or illness was part of a workers' compensation claim.

Most treatment enrollees enrolled in MN RETAIN shortly after experiencing the onset or worsening of their primary illness or injury; the average time between the onset or worsening of injury or illness and enrollment was 41 days.[37] About half of treatment enrollees (49 percent) had a new or existing behavioral

[37] The median time was 23 days (not shown).

health condition, defined as a mental health diagnosis or a substance use disorder (as either the condition that made them eligible for RETAIN or a secondary health condition). There was some overlap between these two condition types. Forty-seven percent of treatment enrollees had a mental health diagnosis, and 14 percent reported a substance use disorder (statistics not shown).

Exhibit V.2. MN RETAIN: Baseline characteristics of treatment enrollees



Source: RETAIN enrollment data. See Appendix Exhibit A.12.1 for additional information.

c. Recent employment

Most treatment enrollees (85 percent) were employed (either self-employed or employed by a private company, nonprofit organization, or government) at the time of enrollment, but fewer than half (41 percent overall) had worked during the week before enrollment. About one-third of treatment enrollees had not worked for at least one month before enrollment. Before their injury or illness, treatment enrollees usually worked, on average, 38 hours per week. Treatment enrollees varied considerably in their tenure at their current or most recent job: nearly one third (32 percent) had been at their job for more than five years, but a sizable share (21 percent) had worked at their job for fewer than six months. Treatment enrollees most frequently worked in management, professional, or related occupations (36 percent) or in service occupations (32 percent). Fourteen percent of treatment enrollees reported dissatisfaction or conflict with their job or employer.

d. Economic well-being

On average, treatment enrollees earned $10,303 in the quarter before the quarter they enrolled in MN RETAIN, and most (81 percent) had earnings of $1,000 or more before taxes and deductions in at least one of the past 12 months. At enrollment, relatively few enrollees reported income from sources other than earnings. Only 2 percent received employer-provided or other private disability insurance, and 1 percent received workers' compensation. Fewer than 1 percent received veterans' benefits, and 12 percent reported income from other public programs. Consistent with RETAIN's goal to intervene before people apply for federal disability benefits, fewer than 1 percent reported that they had applied for or received SSI or SSDI in the three years before enrolling in MN RETAIN. Nearly all treatment enrollees (96 percent) had health insurance coverage. Nearly one-third (29 percent) reported experiencing homelessness, inadequate housing, extreme poverty, low income, or insufficient social insurance or welfare support (Exhibit V.2).

2. Service use

Program data indicate that 97 percent of treatment enrollees established an RTW plan and, on average, treatment enrollees remained in the program for 102 days before exiting (Exhibit V.3; Appendix Exhibit E.1).[38] All treatment enrollees used at least one employment service, though the nature of the service was not clear from the program data.

Nearly all MN RETAIN treatment enrollees established an RTW plan (97 percent). On average, RTW coordinators and enrollees co-developed RTW plans within 2.5 days of enrollment. Established RTW plans included enrollees' medical information, RTW goals, barriers to work, and health-related social needs (Keith et al. 2024). The program data suggest that RTW coordinators did not meet with medical providers or employers to inform the RTW plan (Appendix Exhibit E.1). However, it is possible that RTW coordinators sought their input but recorded such meetings as part of other RTW communications (discussed below).

MN RETAIN RTW coordinators frequently communicated with treatment enrollees. All treatment enrollees communicated with their RTW coordinator at least twice, with an average of 20 communications per enrollee. For about 39 percent of enrollees, RTW coordinators communicated with them more than 20

[38] In Minnesota, program staff recorded the exit date as approximately 30 days after the last contact with the enrollee.

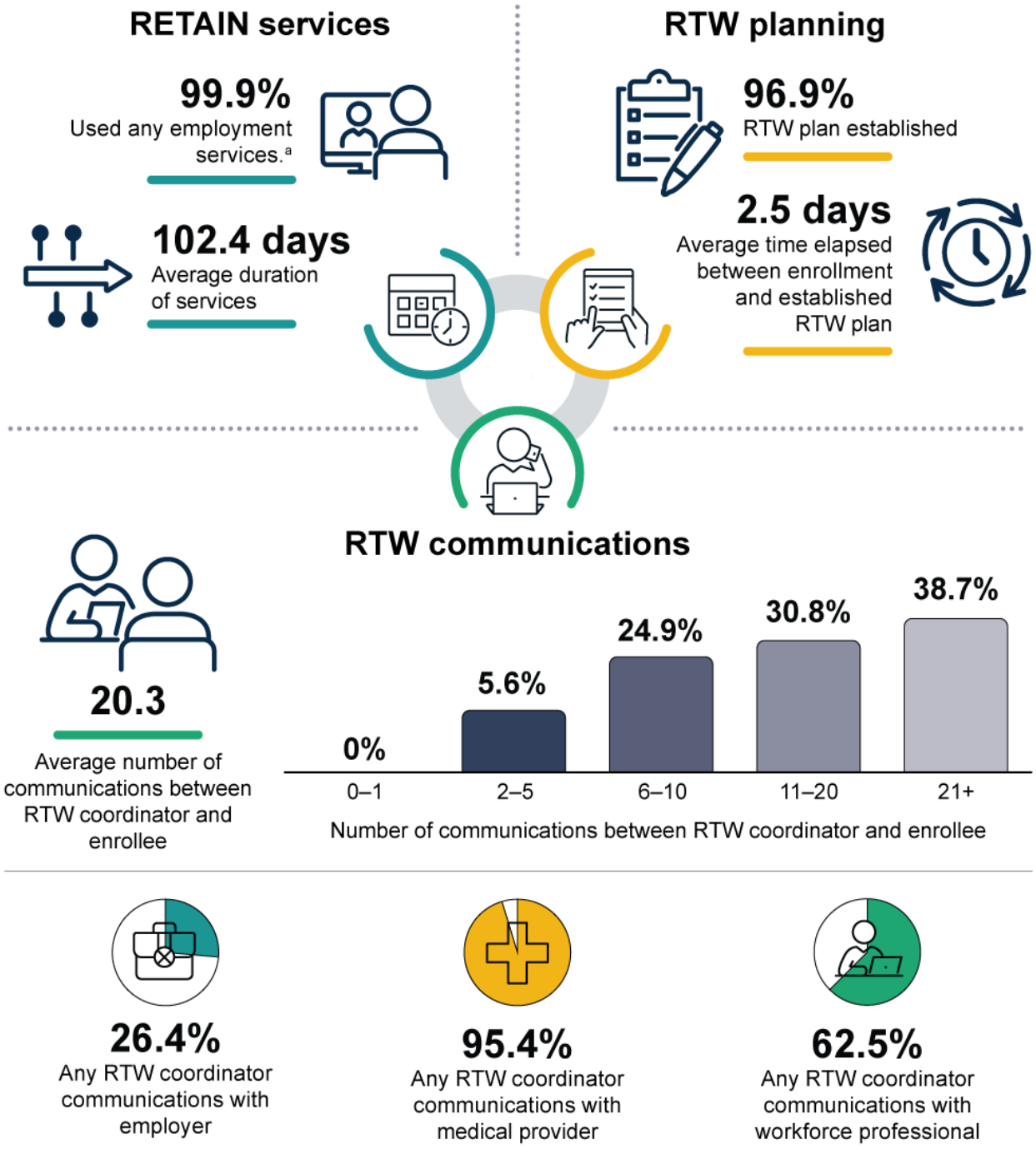
times, far exceeding the goal set by MN RETAIN of two communications per month over the six months that enrollees were eligible to receive services.

The MN RETAIN model specified that RTW coordinators should communicate with other parties such as the enrollee's medical provider or employer, as appropriate, to coordinate the enrollee's staying at or returning to work. RTW coordinators communicated with a medical provider for 95 percent of treatment enrollees, with an average of one communication per enrollee. This communication may indicate that RTW coordinators notified each treatment enrollee's medical provider of the patient's enrollment in MN RETAIN (Keith et al. 2024). RTW coordinators communicated with a workforce professional for about two-thirds of treatment enrollees (63 percent), with an average of two communications per enrollee. RTW coordinators communicated with employers for about one-quarter of treatment enrollees (26 percent), with an average of less than one communication per enrollee.

All treatment enrollees used some employment service, though the nature of the service was not clear. According to MN RETAIN's data on employment services, no treatment enrollees used job retention services. Job retention services included on-site job analysis or ergonomic assessment services and RTW coordinator assistance to enrollees' employers to identify or implement workplace accommodations. None of the treatment enrollees used job search or training services. However, nearly all treatment enrollees used other employment services, which consisted of career counseling provided by the RTW coordinator or an employment counselor. It is possible that counseling covered topics that supported job retention, search, or training, but this could not be discerned in the program data. Employment counselors also provided, if appropriate, financial support services to help enrollees pay bills such as rent, utility, or car payments.

We found no evidence that service use significantly differed by enrollees' characteristics at the time of enrollment. Rates of service use did not vary by demographic characteristics, employment experiences, or economic situation. Detailed findings for service use among subgroups are available in Appendix Exhibit E.2.

Exhibit V.3. MN RETAIN: Services used by treatment enrollees



Source: RETAIN service use data. See Appendix Exhibit E.1 for additional information.

[a] The percentage of treatment enrollees who received any employment services includes enrollees who used or were referred to one or more of the following: job retention services, job training and job search services, or other employment services.

Note: We refer to certain activities (such as RTW planning) in terms of RTW, though some enrollees might be working and focused on SAW goals.

RTW = return-to-work.

C. Impacts on enrollees' outcomes

The findings in this section show the extent to which MN RETAIN led to changes in enrollees' labor force attachment and employment, SSA program participation, economic well-being, and health in the first year after enrollment. The findings are based on Mathematica's independent evaluation of the program.

How we estimated the impacts of MN RETAIN

We estimated the program's impacts by comparing the outcomes of enrollees in the treatment group, who could access MN RETAIN services, to the outcomes of enrollees in the control group, who could not access these services. We describe the program's impact on an outcome in terms of how the average outcome of treatment enrollees differed from that of control enrollees. ◢

We estimated the program's impact on these outcomes by comparing the outcomes of enrollees in the treatment group, who could access MN RETAIN services, to those of enrollees in the control group, who could not access these services. We examined the sample characteristics of all enrollees and survey respondents to confirm that enrollees in the treatment and control groups had similar characteristics on average, as expected from the individual random assignment (Appendix Exhibits A.1 and A.2). We found no statistically significant differences between the two groups across more than 20 characteristics measured at the time of enrollment. Although the treatment and control groups appeared to be balanced on all measurable baseline characteristics, we included a core set of covariates in the impact models for all states to increase the precision of the estimates (see Appendix Exhibit B.1).

In another report, using data from an early follow-up survey of enrollees (Patnaik et al. 2025), we examined MN RETAIN's impacts on enrollees' outcomes during the two months after enrollment. We found that MN RETAIN increased the shares of enrollees in the treatment group who used care coordination, employment services, and job-related training as well as the share who talked with healthcare providers about how an injury or illness affected their ability to work. We found no significant impact on most measures of enrollees' employment and health during the two months after enrollment. Treatment enrollees were less likely to be working and more likely to be planning to return to work compared with control enrollees. Treatment and control enrollees reported similar health outcomes, on average, at the time of the early follow-up survey.

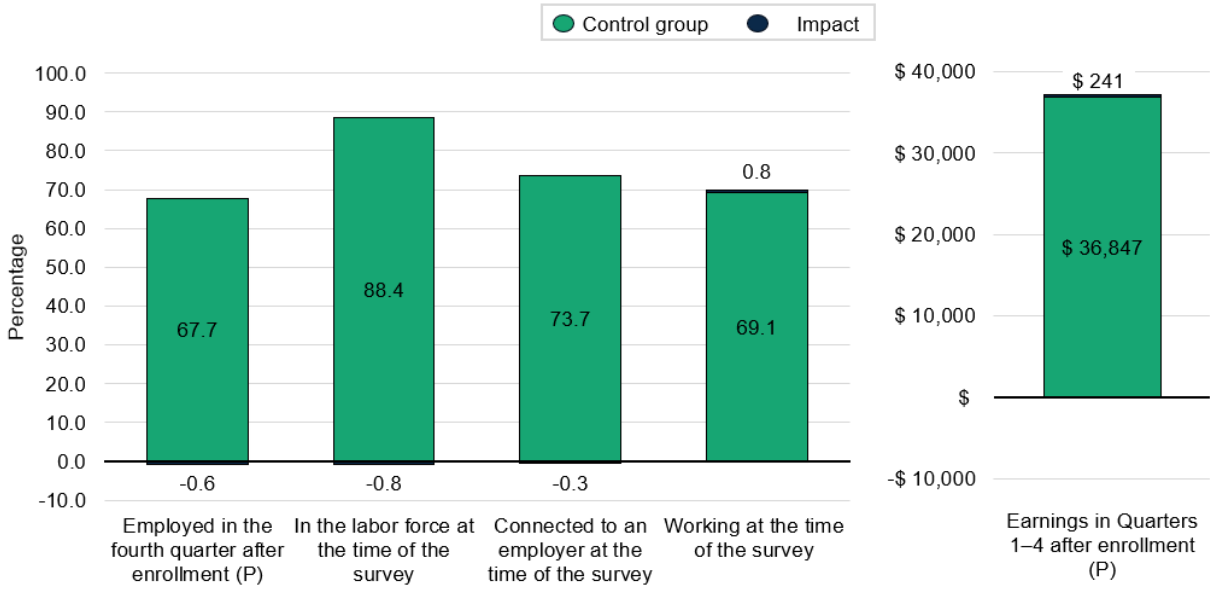
The one-year impact estimates suggest that MN RETAIN had important positive impacts on enrollees' health but did not affect employment, economic well-being, or participation in the SSDI and SSI programs (Appendix Exhibit E.3). MN RETAIN had no impacts on earnings during the four quarters after enrollment, fourth-quarter employment status, or a range of other employment-related outcomes. It also did not affect the share of enrollees applying for SSDI or SSI during the year after enrollment. Treatment and control enrollees reported similar economic well-being at the time of the one-year follow-up survey. However, MN RETAIN had positive impacts on enrollees' self-reported pain and mental health.

We also estimated program impacts on selected outcomes for subgroups of enrollees defined by age, sex, education, primary diagnosis, and time since last worked at enrollment. We found a few differential impacts by postsecondary education, but the pattern was not consistent (Appendix Exhibits E.4–E.8). In addition, we found a reduction in the number of poor mental health days in the past month among

enrollees younger than 50 (but not those age 50 or older) and among males (but not females). We also found a reduction in the number of poor physical health days for males but not females.

Treatment and control enrollees had similar employment rates and earnings in the year after enrollment, and MN RETAIN had no impact on any employment outcomes during that period. About 68 percent of control enrollees were employed in the fourth quarter after enrollment, with average earnings totaling $36,847 during the four quarters after enrollment; we did not find statistically significant differences between the treatment and control groups for these outcomes (Exhibit V.4). However, the impact on employment differed by enrollees' education level at enrollment.

Exhibit V.4. MN RETAIN: One-year impacts on employment outcomes



Source: RETAIN enrollment data; one-year follow-up survey; Social Security Administration data; state unemployment insurance wage records.

Note: See Appendix Exhibit E.3 for detailed estimates and description of estimation methods.

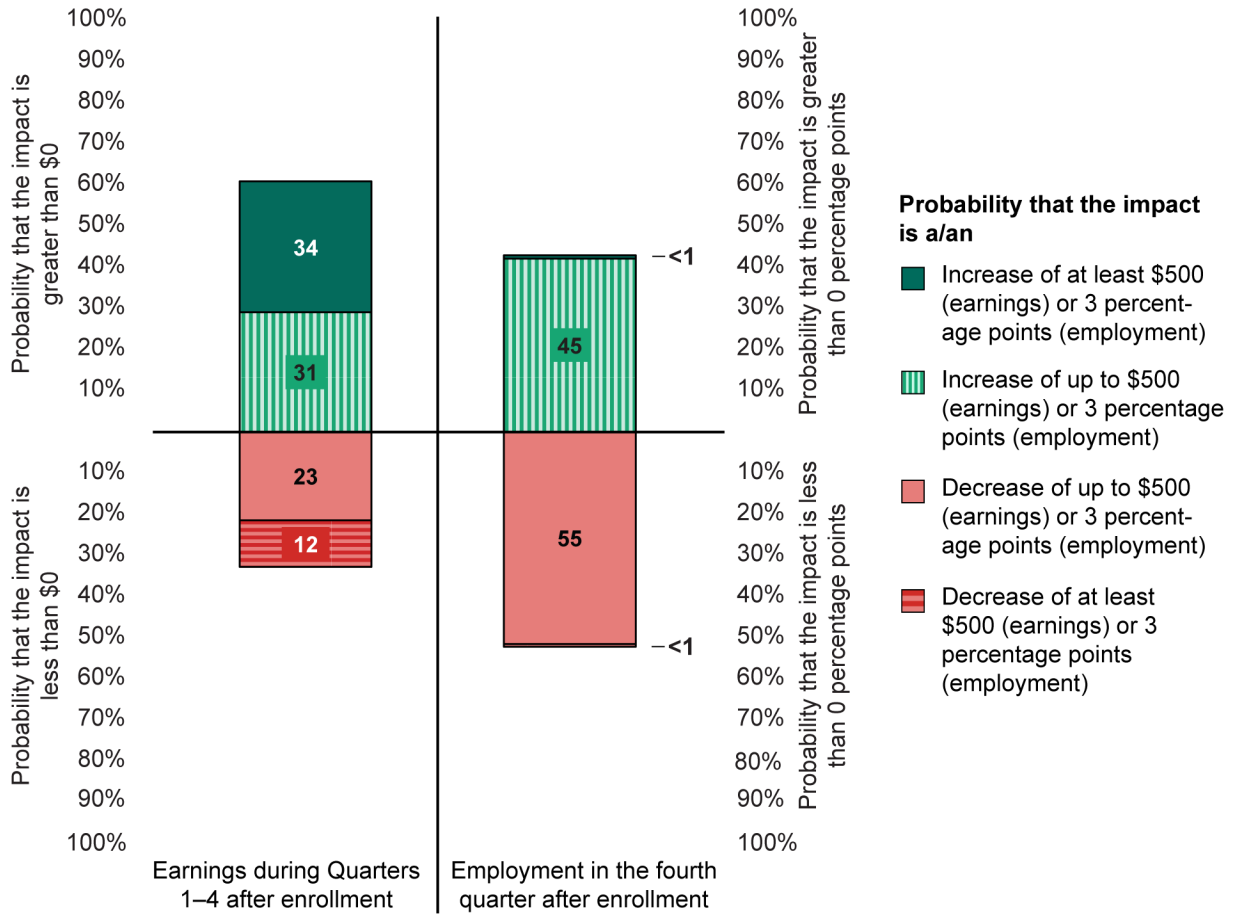
*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

^/^^/^^^ Impact estimate is significantly greater than zero (*p*-value is less than .10/.05/.01) using a one-tailed *t*-test. This test was only conducted for primary outcomes.

(P) = primary outcome.

Findings from supplementary Bayesian analyses indicate a low likelihood of large favorable impacts on employment or earnings during the first year (Exhibit V.5; Appendix Exhibit E.10). Although we estimated a 65 percent probability that the program increased average earnings in the four quarters after enrollment, we estimated only a 34 percent probability that the program increased earnings by more than $500. Similarly, we estimated a 45 percent probability that MN RETAIN increased employment in the fourth quarter after enrollment and less than 1 percent probability of an increase greater than 3 percentage points.

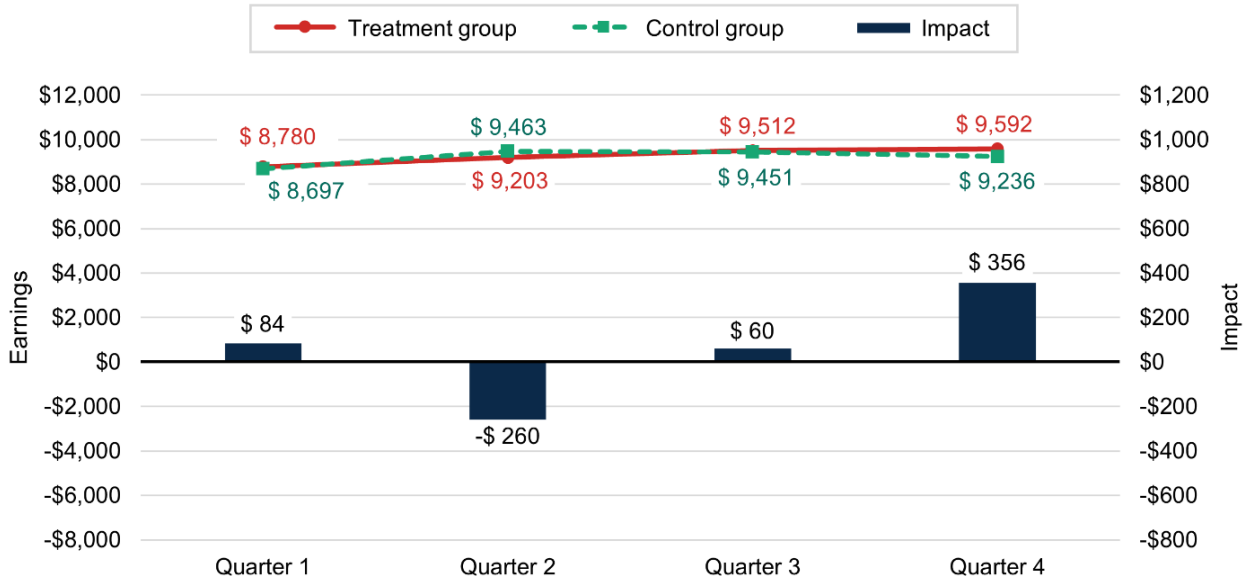
Exhibit V.5. MN RETAIN: Estimated probabilities of impacts on earnings and employment



Note: See Appendix Exhibit E.10. An annual earnings increase of at least $500 is the approximate impact many RETAIN programs need to break even within 20 years. For employment, 3 percentage points is approximately 5 percent of the control group's mean outcome.

When we examined employment rates in each quarter after enrollment (Exhibit V.6), we found that treatment enrollees were less likely than control enrollees to be working during the first quarter after enrollment but found no differences in later quarters. One possible explanation is that treatment enrollees took time away from employment when they were actively engaged in the MN RETAIN program during the first quarter. During interviews, MN RETAIN staff members noted that they helped enrollees understand the Family and Medical Leave Act and helped them take job-protected leave. Consistent with this finding, at the time of the early follow-up survey, treatment enrollees were less likely to be working but more likely to be planning to return to work soon compared to control enrollees (Patnaik et al. 2025). Although we did not detect statistically significant impacts on enrollees' earnings during each quarter, the pattern over time suggests that treatment enrollees may have experienced a temporary dip in average earnings compared to the earnings of control enrollees in the second quarter, but by the fourth quarter, treatment enrollees were, on average, earning as much as, if not more than, control enrollees.

Exhibit V.6. MN RETAIN: Impacts on earnings in the four quarters after enrollment



Source: RETAIN enrollment data; state unemployment insurance wage records.

Note: Statistics have been rounded to nearest dollar. See Appendix Exhibit E.3 for detailed estimates and description of estimation methods.

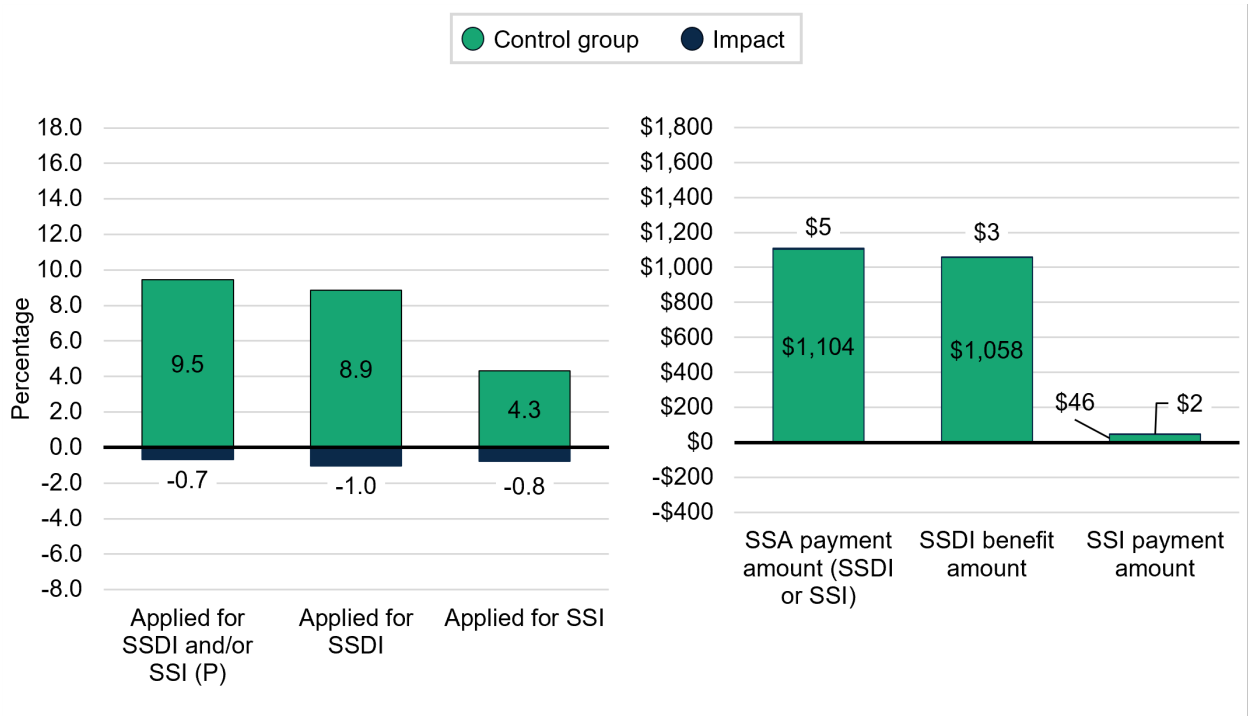
*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

There were no statistically significant differences between treatment and control enrollees for the other employment outcomes that we examined (Exhibit V.5; Appendix Exhibit E.3). About 88 percent of control enrollees were in the labor force at the time of the survey, 74 percent were connected to an employer, and 69 percent were working. Control enrollees reported earning an average of $763 per week and working an average of 25 hours per week. About half of control enrollees (47 percent) had been tenured at their job for at least one year, and similar shares were working for an employer that offered health insurance (49 percent) and for an employer that offered paid leave (52 percent). About one in 20 control enrollees (6 percent) reported participation in a job-related training program during the last two months.

We found some evidence that MN RETAIN's impacts on labor market outcomes differed for subgroups of enrollees. Even though employment rates were similar among control enrollees who had or did not have postsecondary education, the program decreased this rate by 6 percentage points among enrollees with no postsecondary education. The corresponding impact for enrollees with postsecondary education was not statistically significantly different from zero.

About one in 10 enrollees applied for SSDI or SSI during the 12 months after enrollment; MN RETAIN had no impact on the application rate. MN RETAIN had no impact on the share of enrollees who applied for SSDI or SSI (Exhibit V.7). About 10 percent of control enrollees applied for SSDI and/or SSI in the year after enrollment.

Exhibit V.7. MN RETAIN: One-year impacts on SSDI and SSI program participation



Source: RETAIN enrollment data; SSA data.

Note: See Appendix Exhibit E.3 for detailed estimates and description of estimation methods.

*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

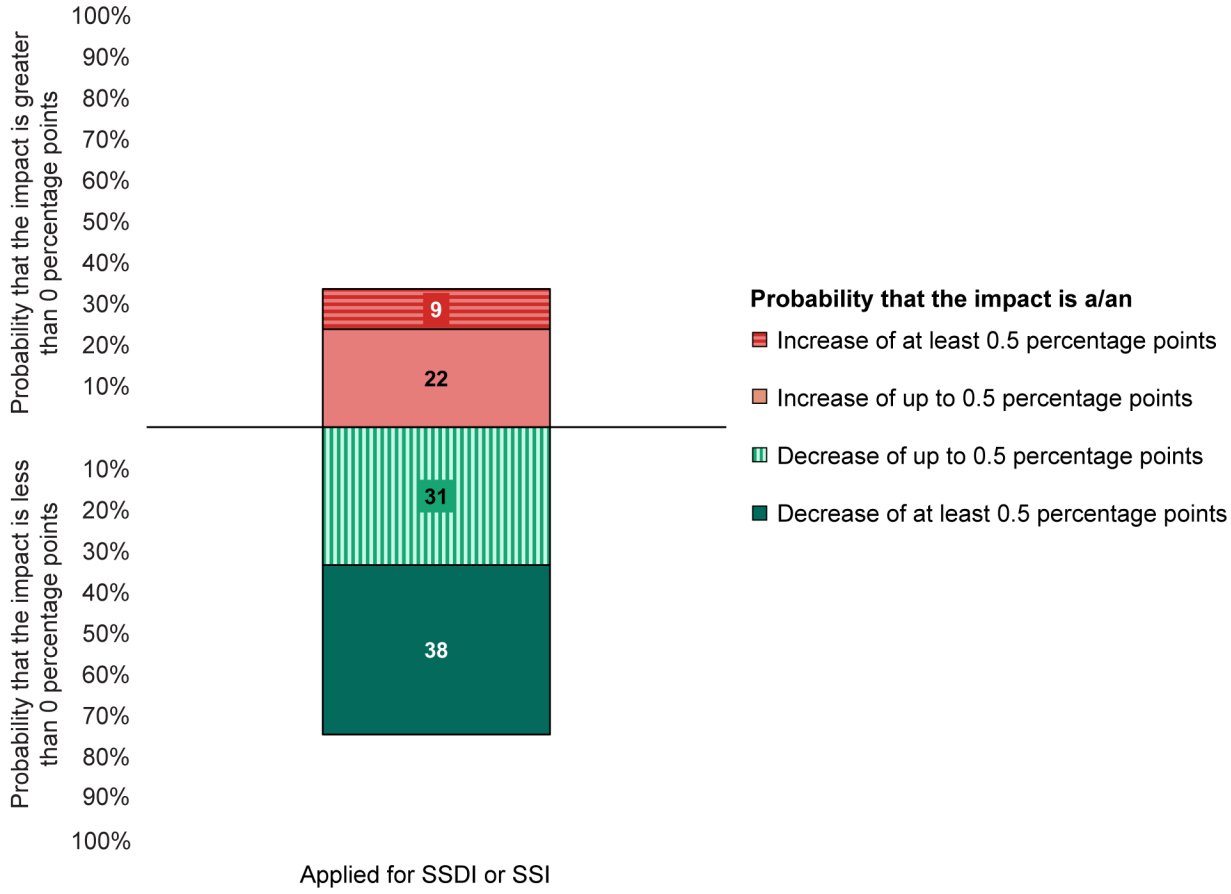
^/^^/^^^ Impact estimate is significantly less than zero (*p*-value is less than .10/.05/.01) using a one-tailed t-test. This test was only conducted for primary outcomes.

(P) = primary outcome; SSA = Social Security Administration; SSDI = Social Security Disability Insurance; SSI = Supplemental Security Income.

Findings from supplementary Bayesian analysis suggest a low likelihood of large favorable impacts on applications for SSI and SSDI. We estimated a 69 percent probability that MN RETAIN decreased applications for SSDI or SSI during the 12 months after enrollment, but only a 38 percent probability of a decrease greater than 0.5 percentage points (Exhibit V.8).

MN RETAIN did not impact any of the other measures of SSA program participation we examined (Exhibit V.4; Appendix Exhibit E.3). About 7 percent of control enrollees received either SSDI or SSI payments in the year following enrollment and the average payment received among all control enrollees was $1,104; MN RETAIN did not impact either outcome. When we examined the SSDI and SSI programs separately, we found no statistically significant differences between treatment and control enrollees. About 9 percent of control enrollees applied for SSDI, 6 percent received SSDI, and the average amount received was $1,058. Few control enrollees (about 4 percent) applied for SSI. About 1 percent of control enrollees received SSI, and the average SSI payment amount received by control enrollees was $46.

Exhibit V.8. MN RETAIN: Estimated probabilities of impacts on SSDI and SSI applications

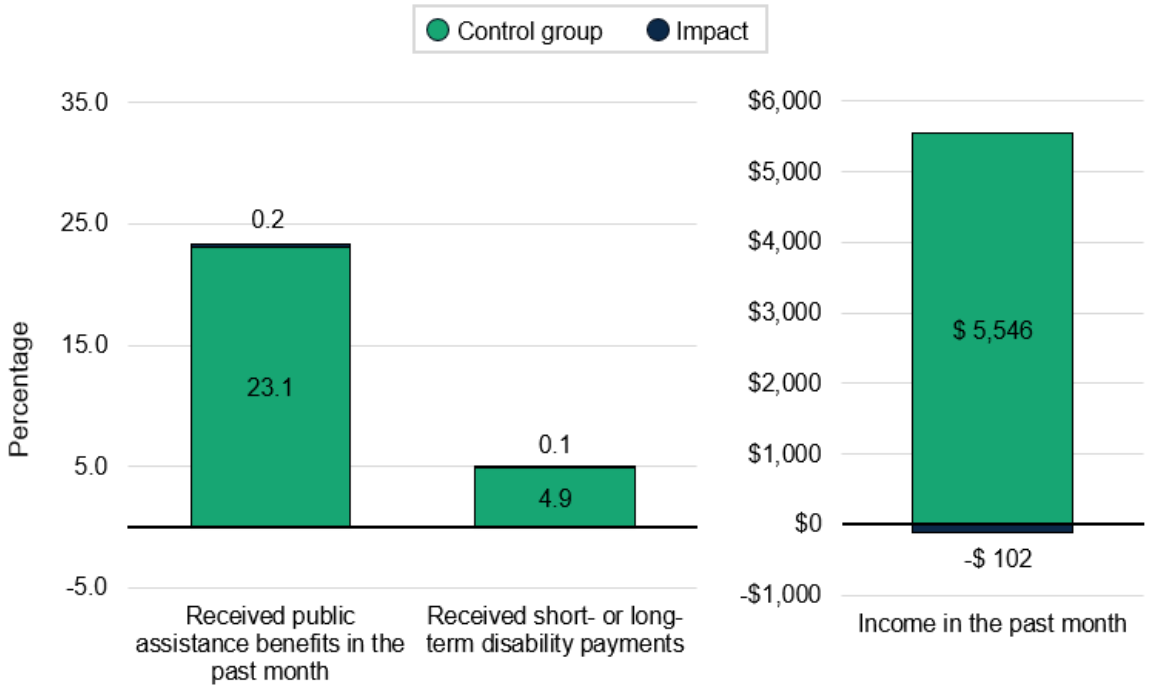


Note: An impact of 0.5 percentage points constitutes approximately 5 percent of the control group's mean outcome.
SSDI = Social Security Disability Insurance; SSI = Supplemental Security Income.

MN RETAIN had no impact on household economic well-being at the time of the one-year follow-up survey. MN RETAIN had no impact on any of the household economic well-being measures that we examined (Appendix Exhibit E.3). On average, enrollees responding to the one-year follow-up survey reported a household income of $5,546 and household earnings of $4,888 during the previous month (Exhibit V.9). The difference between the two amounts reflects the fact that some households received public assistance benefits, as reported by about one-quarter (23 percent) of enrollees. Enrollees noted that their households received, on average, $36 in UI benefits, $60 in SNAP benefits, and $36 in government housing assistance in the month before the survey. Very few enrollees (1 percent) reported receiving workers' compensation benefits in the past month; on average, enrollees received $22 in such benefits. About 5 percent of enrollees reported that they received private short- or long-term disability payments in the past month; on average, enrollees received $88 in such payments.

Although overall the program had no impact on economic well-being, the program's impacts differed by enrollees' education. The program had a negative impact on household income among enrollees with postsecondary education, whereas the impact among enrollees without such education was not statistically significant.

Exhibit V.9. MN RETAIN: One-year impacts on economic well-being



Source: RETAIN enrollment data; one-year follow-up survey.

Note: See Appendix Exhibit E.3 for detailed estimates and description of estimation methods.

*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

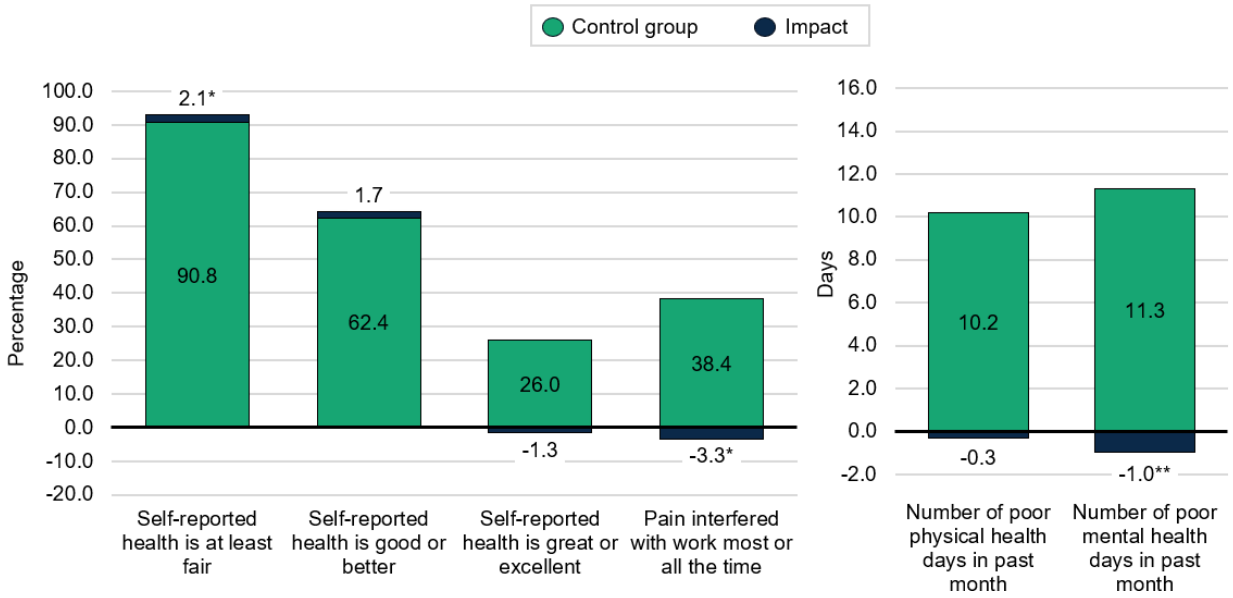
Note: Public assistance benefits refer to benefits from the Supplemental Nutrition Assistance Program, housing assistance or unemployment insurance programs. Short or long-term disability benefits refer to private disability insurance benefits.

MN RETAIN improved enrollees' self-reported pain and mental health and increased the share of enrollees who rated their health as at least fair. Control enrollees reported experiencing 11 days of poor mental health on average during the month before the survey; MN RETAIN reduced this number by about one day among the treatment group (Exhibit V.10). About 38 percent of control enrollees reported that pain interfered with their ability to work; MN RETAIN reduced this share among treatment enrollees by 3 percentage points. While 91 percent of control enrollees rated their health as at least fair (instead of poor), this share was 2 percentage points higher among treatment enrollees. For other health outcomes, including health insurance coverage, number of poor physical health days, and being prescribed an opioid reliever, MN RETAIN had no impacts (Appendix Exhibit E.3).

The evidence suggests MN RETAIN's impacts on health were more favorable for some subgroups. The program had a positive impact on mental health overall, but the impacts might have been larger among some subgroups. For enrollees younger than 50, male enrollees, enrollees with any postsecondary education, and enrollees who had last worked more than one week before enrollment, MN RETAIN reduced the number of poor mental health days in the past month by 1.1, 1.5, 1.0, and 1.6 days, respectively. The corresponding impacts for enrollees ages 50 and older, female enrollees, enrollees with no postsecondary education, and enrollees who had worked in the week before enrollment were not statistically significant. Also, even though the program did not have an overall impact on physical health, it

reduced the number of poor physical health days in the past month by 1.2 days among male enrollees (the corresponding impact for female enrollees was not statistically significant).

Exhibit V.10. MN RETAIN: One-year impacts on health



Source: RETAIN enrollment data; one-year follow-up survey.

Note: See Appendix Exhibit E.3 for detailed estimates and description of estimation methods.

*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

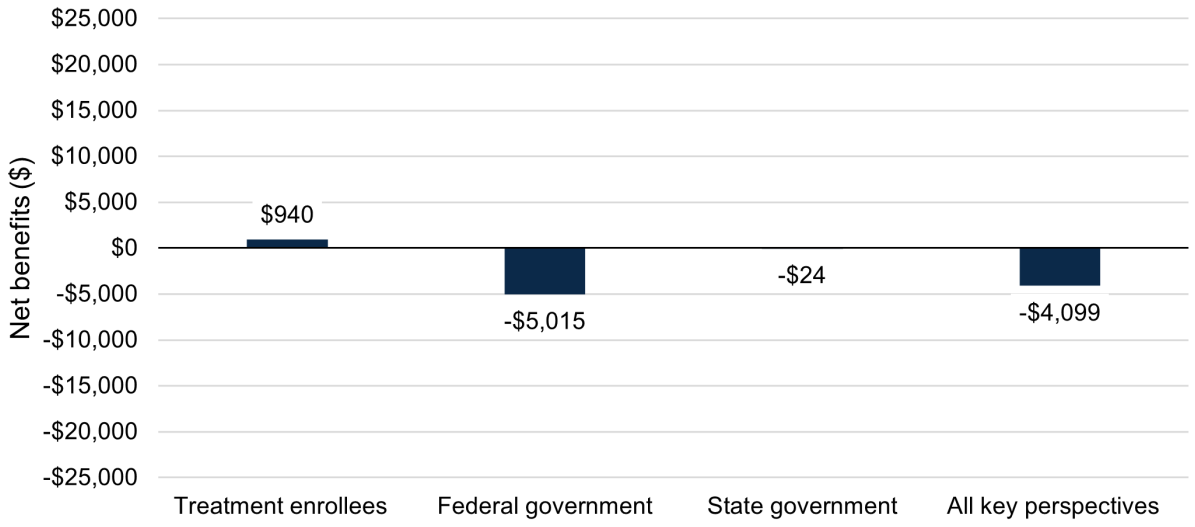
D. Benefits and costs of the program

We examined the benefits and costs of MN RETAIN for the year after enrollment using the program's estimated one-year impacts on enrollee outcomes and program costs during the steady-state period April 1, 2023, through March 31, 2024. We estimated the net benefits (or costs) separately for treatment enrollees, the federal government, and state government and across these three key perspectives. The net benefit (cost) is based on (1) the point estimates for the program's impacts on all enrollees offered the opportunity to participate in the program, (2) assumptions based on the literature regarding how impacts lead to indirect benefits and costs, and (3) the calculated cost of delivering MN RETAIN per treatment enrollee.

The estimated cost of delivering MN RETAIN was $4,998 per treatment enrollee. Using data provided by the program, we estimated the costs of MN RETAIN to be about $5,000 per treatment enrollee (Appendix Exhibit E.12). The cost per enrollee includes administrative and overhead costs for program operation ($1,573), wages paid for staff time dedicated to RETAIN activities across all partners ($1,515), and payments to other subcontractors ($811). We estimated program costs by using data for the period April 1, 2023, through March 31, 2024, but we recognize that program costs might have varied over the program's implementation period depending on the stage of implementation and the number of enrollees in the program at that time. The estimates do not account for incentives offered to enrollees; we considered such incentives to be evaluation costs that would not accrue in a non-evaluation context.

Treatment enrollees experienced a net benefit from MN RETAIN; however, the overall costs of MN RETAIN outweighed its overall benefits during the year after enrollment. Treatment enrollees experienced a net benefit from the program (on average, $940) in the year after enrollment (Exhibit.V.11). However, looking across the three key perspectives, we estimated that MN RETAIN resulted in a net cost of $4,099 per treatment enrollee in the year after enrollment.

Exhibit V.11. MN RETAIN: Net benefits per treatment enrollee in the year after enrollment



Source: See Appendix Exhibit E.12 for details on sources and methods for our calculations.

Note: Net benefits are benefits minus costs, expressed as dollars per enrollee, inflation-adjusted to 2024 dollars, and discounted to 2024 present values.

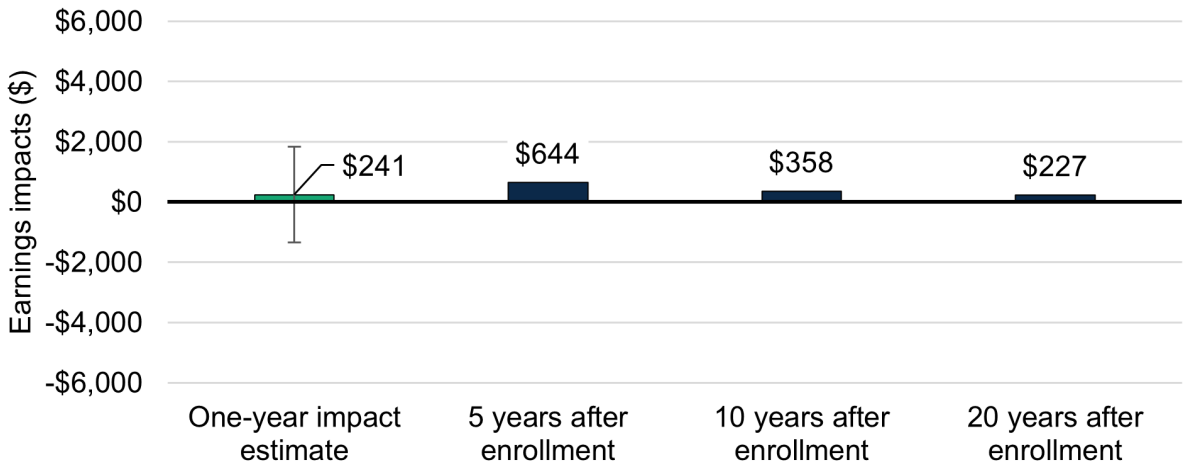
Below, we summarize the benefit-cost findings from each of the key perspectives (Appendix Exhibit E.12 provides detailed estimates):

- **Treatment enrollees.** On average, MN RETAIN treatment enrollees experienced net benefits of $940 in the year after enrollment. The key contributors to the benefits were enrollee stipends for supportive services such as rent, transportation, or utility payments ($443) and the statistically insignificant but positive impacts on earnings ($241), corresponding estimated fringe benefits ($109), public housing assistance benefits ($84), and short- or long-term private disability payments ($95). Importantly, treatment enrollees likely experienced additional benefits from the program's positive impacts on their health, but we are unable to quantify the value of their reduced pain and improved mental health.
- **Federal government.** We estimated that a net cost of $5,015 accrued to the federal government for each MN RETAIN treatment enrollee in the year after enrollment. The largest cost component was program delivery, which cost the federal government $4,998 per treatment enrollee. The federal government also experienced increased indirect costs associated with increased outlays for public housing assistance and SNAP benefits. These increased outlays were greater than the benefits from increased income and payroll taxes and reduced costs of processing SSDI and SSI applications.

- **State government.** We estimated that the state government experienced a net benefit of $24 per treatment enrollee stemming from income and sales tax revenue ($22) and savings from decreased workers' compensation benefit outlays, balanced by increased outlays for UI benefits.

MN RETAIN's annual impact on earnings would need to increase for the program to become cost neutral within the next five or 10 years. A simple forecast suggests that the program could generate a net benefit within 20 years. Because program costs are incurred up front but benefits to enrollees and other stakeholders can continue to accrue in the future, we conducted supplementary analyses to consider the program's benefits and costs beyond the first year after enrollment. We calculated the average annual impact on earnings per year that would be needed for the program to be cost neutral by five, 10, and 20 years after enrollment. For MN RETAIN to be cost neutral from all key perspectives within five years, we estimated that the impact on annual earnings must be at least $644 per treatment enrollee; to be cost neutral in 10 years, it must be at least $358; and to be cost neutral in 20 years, it must be at least $227 (Exhibit V.12; Appendix Exhibit E.15). These estimates represent, respectively, 267 percent, 148 percent, and 94 percent of the point estimate for the one-year impact on earnings ($241). If the one-year impact remains steady in future years, our projections suggest the program will break even within 20 years. Further, it is plausible that impacts on annual earnings could grow by the amount required for cost neutrality over the 5- and 10-year period because these estimates are within the 95-percent confidence interval of the point estimate for the one-year impact on earnings (-$1,345, $1,827Notably, if the point estimate of the impact on earnings in the fourth quarter ($356) holds steady in future quarters, then the program could break even in about 10 years.

Exhibit V.12. MN RETAIN: Annual impact on earnings needed to reach cost neutrality at five, 10, and 20 years after enrollment



Source: See Appendix Exhibit E.14 for details on sources and methods for our calculations.

Note: This chart shows the average annual impact on earnings that would be needed for the program to be cost neutral five, 10, and 20 years after enrollment. The first bar shows the one-year impact on earnings (point estimate and 95 percent confidence interval).

E. Discussion

In this section, we highlight key patterns in the findings from the one-year evaluation of MN RETAIN and discuss their significance and possible explanations.

MN RETAIN demonstrated strong implementation of the desired integration of medical and workforce systems and was able to secure a high degree of participant engagement. The key partners involved in MN RETAIN succeeded in establishing close connections between the program and medical and workforce systems. The program covered a broad geographic area and recruited 3,199 enrollees for the evaluation, just shy of its 3,200 target. Among enrollees who were randomly assigned to the treatment group and thus eligible for MN RETAIN services, participant engagement was high. All treatment enrollees used at least one service beyond enrollment, and nearly all established an RTW plan—within just 2.5 days of enrollment, on average. The use of EMR for recruitment and communication was likely a key contributing factor in recruitment success, enabling the program to identify people who could potentially benefit from MN RETAIN services and reaching them at a time when they might be most interested in SAW/RTW services.

Consistent with the program model, RTW coordinators played a central role in MN RETAIN, maintaining frequent and sustained communication with enrollees and coordinating across medical providers and workforce systems. The high level of documented engagement between RTW coordinators and enrollees likely reflects a strong operational infrastructure, the setting of clear expectations for staff, and consistent outreach. The program's data also suggest high levels of coordination with medical providers and workforce professionals. RTW coordinators routinely notified and communicated with enrollees' medical providers—recorded for 95 percent of participants—providing a channel for provider input into RTW plans, documentation for medical leave, and guidance on accommodations. For more than half of enrollees, the RTW coordinator communicated with a workforce professional at least twice, likely facilitating enrollees' connections to workforce services. Program data show that nearly all treatment enrollees used some employment services (career counseling services), and data from the early follow-up survey show that the program increased the share of enrollees self-reporting the use of employment-related support services and participation in job-related training (Patnaik et al. 2025). However, engagement between RTW coordinators and employers was low, with communication taking place on behalf of only about one-quarter of treatment enrollees, potentially limiting the program's ability to facilitate workplace accommodations or job retention strategies.

MN RETAIN helped enrollees recover from health setbacks that disrupted their work lives. The program's impacts on self-reported pain and mental health suggest improved quality of life for enrollees and could be the first step toward longer-term economic stability. MN RETAIN improved enrollees' self-reported health by reducing pain and poor mental health days. It also improved self-reported physical health among male enrollees and mental health among several other subgroups of enrollees. These improvements are particularly meaningful given the nature of injury and illness among MN RETAIN enrollees. Musculoskeletal conditions—often associated with chronic pain—were the most common type of primary injury or illness among enrollees. In addition, half of treatment enrollees had a primary or co-occurring behavioral health condition, which can present challenges for the successful promotion and implementation of SAW/RTW strategies (Brouwers 2020; Charette-Dussault and Corbière 2019; Gould-Werth et al. 2018).

One possible explanation for health improvements is that information sharing and communication among enrollees, RTW coordinators, and enrollees' medical providers enabled the development of effective treatment and RTW plans that translated into health impacts. After the enrollment process, MN RETAIN

RTW coordinators notified treatment enrollees' medical providers that their patients had enrolled in the MN RETAIN study. Program staff typically had access to EMR data on enrollees' health that provided important and up-to-date information on enrollees' condition, recovery, treatment plan, and other factors relevant to SAW/RTW planning. Program data show that it was the norm for RTW coordinators to communicate with the enrollee's medical provider. Process study findings also indicate that RTW coordinators coached treatment enrollees to communicate with their medical providers (Keith et al. 2024). We previously found, consistent with this finding, that the program increased the share of treatment enrollees who talked with a healthcare provider about how their injury or illness affected their ability to work, relative to the control group (Patnaik et al. 2025).

Another possible explanation for health improvements is that MN RETAIN helped enrollees take protected medical leave, enabling them time to focus on their medical recovery while retaining a connection to their job. As part of its program model, MN RETAIN trained RTW coordinators on the Family and Medical Leave Act and helped enrollees navigate job-protected leave, perhaps enabling participants to prioritize recovery without severing ties to their employer. Data from the early follow-up survey suggest that treatment enrollees were more likely than control enrollees to be on leave during the first few months after enrollment. In the early impact study, we found that MN RETAIN had no impact on the share of enrollees connected to an employer at the time of the early follow-up survey but instead reduced the share of enrollees who were working (Patnaik et al. 2025). Quarterly employment data show a similar pattern; the program had a negative impact on treatment enrollees' employment rate during the first quarter after enrollment, but that pattern faded in subsequent quarters.

A third explanation for MN RETAIN's favorable impacts on health outcomes lies in the program's early impacts on health insurance coverage rates. MN RETAIN had a small but statistically significant impact on the share of treatment enrollees covered by health insurance at the time of the early follow-up survey. In addition, at the time of the one-year survey, we found a similarly sized difference in coverage rates between treatment and control enrollees, though the difference was not statistically significant. MN RETAIN made efforts to connect treatment enrollees to health insurance (mainly Medicaid) if they had none at the time of program enrollment. Increased access to healthcare services might have driven some of the improvements in treatment enrollees' health by enabling access to certain medications or treatments (such as physical therapy) and greater peace of mind.

By reducing pain and improving mental health, MN RETAIN likely led to improved quality of life for treatment enrollees. Pain is a central and often explicitly measured component of many quality-of-life measures and is associated with worse mental health. Studies have found that pain negatively affects various aspects of life such as mood, sleep, and social interactions and is linked to greater depression and anxiety (Breivik et al. 2006; Yong et al. 2022; Dueñas et al. 2016). Similarly, studies have shown that mental health is associated with a person's current quality of life and strongly predicts future quality of life (Vaillant and Mukamal 2001; Moussavi et al. 2007).

MN RETAIN had no impact on enrollees' employment, earnings, or applications for SSDI and SSI in the first year after enrollment; however, several promising signs suggest that impacts could emerge in the future. Despite strong implementation and positive health outcomes, MN RETAIN did not affect employment or earnings during the first year after enrollment. On average, treatment and control

enrollees were just as likely to be employed in the fourth quarter after enrollment and have similar earnings during the four quarters after enrollment. In self-reported data from enrollee surveys, we found no differences between the treatment and control groups in labor force participation, job tenure, or access to employer benefits. These results suggest that MN RETAIN did not improve treatment enrollees' labor market outcomes during the year after enrollment.

Several factors might explain the absence of program impacts on labor market outcomes. First, despite MN RETAIN's strong implementation of most parts of the program model, there was limited communication between RTW coordinators and treatment enrollees' employers, which might represent missed opportunities to facilitate supports such as workplace accommodations. Second, there might have been limited room for improvement in enrollees' employment and earnings. About 69 percent of MN RETAIN's control enrollees had returned to work in the fourth quarter after enrollment, a share that is higher than all other RETAIN programs except OH RETAIN. Moreover, this share represents a substantial improvement from the time of enrollment, when only 41 percent of control enrollees had worked during the week before enrollment. The significant improvement in work status for control enrollees over time suggests that MN RETAIN enrollees might have been in less need of SAW/RTW services and at low risk of dropping out of the workforce to begin with. During interviews, program leaders and staff cited Minnesota's labor shortage and low unemployment rates (Keith et al. 2023), which could have boosted labor market outcomes of both treatment and control enrollees. These factors would have reduced the potential for the program to improve treatment enrollees' employment rates compared to those of the control group. Because the main mechanism through which MN RETAIN could affect earnings was through increasing employment rates, it is not surprising that the absence of impacts on work status was accompanied by an absence of impacts on earnings.

Although we did not find impacts on the primary outcomes, it is important to consider how labor market outcomes may have changed during the one-year evaluation period. The estimated impacts on quarterly earnings are not statistically significant; however, the point estimates suggest that the program had a negative impact on earnings in the second quarter, which slowly turns into an increasingly positive impact over the next two quarters. A possible explanation is that MN RETAIN helped treatment enrollees step away from work temporarily to engage in services or take protected medical leave in the first two quarters after enrollment. This explanation aligns with two prior findings from the evaluation: that RTW coordinators tried to help participants understand and access Family and Medical Act leave (Keith et al. 2024) and that treatment enrollees were less likely than control enrollees to be working about two months after enrollment (Patnaik et al. 2025). The dip in earnings during the second quarter when some treatment enrollees were on leave might have reduced average earnings over the year. In comparison, data from the fourth quarter after enrollment suggest that treatment enrollees might have earned more, on average, than control enrollees. Analyses of earnings in subsequent quarters (for example, the fifth and sixth quarters after enrollment) could shed light on whether the trend in MN RETAIN's growing positive impacts on earnings persisted beyond the third and fourth quarters.

MN RETAIN's one-year impacts on pain and mental health could contribute to future impacts on employment and earnings. Studies have found that pain and psychological distress are strongly associated with reduced work capacity, absenteeism, and lower productivity at work (Kessler et al. 2001; Breivik et al. 2006; de Oliveria et al. 2023). One recent study showed a causal relationship between poor

mental health and reduced long-term earnings (Andersen et al. 2024). MN RETAIN's impacts on treatment enrollees' health could boost long-term earnings by enhancing enrollees' likelihood of remaining in the labor force, retaining their preferred jobs or occupations, working more hours, missing fewer days, and increasing productivity. By addressing some of the upstream health barriers that often lead to labor force exit or reduced earning capacity after injury or illness, MN RETAIN might have laid the groundwork for future gains in employment and earnings that manifest beyond the one-year evaluation period.

Although MN RETAIN resulted in net costs across the key perspectives examined for the first year after enrollment, the program could break even within the next two decades. The program incurred a net cost of approximately $4,099 per treatment enrollee during the first year, largely reflecting the up-front costs of delivering intensive, individualized services. Although treatment enrollees experienced an average net benefit of $940 in the first year, when looking across the combined perspectives of treatment enrollees and state and federal governments, the costs of delivering the program exceeded the measurable benefits. Importantly, the estimated net benefits likely understate the true value of the program; it does not capture non-monetary benefits to enrollees such as reduced pain and improved mental health. Further, the health impacts imply potential downstream savings that we were not able to measure, such as reductions in medical visits or prescription drug use and absenteeism. Moreover, such downstream savings would not represent a transfer across stakeholder groups but rather a net benefit to enrollees, employers, the healthcare system, and state and federal governments (for enrollees using Medicaid or Medicare services), thereby benefiting society.

MN RETAIN could break even and generate net benefits to society within the next two decades. Program benefits—particularly to enrollees—are likely to continue accruing. A simple forecast using reasonable assumptions suggests that the program could achieve cost neutrality within 20 years if it sustains a modest gain in annual earnings for treatment enrollees relative to control enrollees. These gains are plausible given the observed upward trend in the program's impacts on quarterly earnings and success in addressing health-related barriers to work.

VI. Ohio RETAIN (OH RETAIN)

Key findings from the one-year evaluation

Enrollment and participation

- OH RETAIN enrolled 4,525 people during Phase 2, of whom 2,264 were randomly assigned to the treatment group and eligible to receive services. Treatment and control enrollees had similar characteristics at the time of enrollment. We found two statistically significant differences between the two groups across more than 20 characteristics measured at the time of enrollment.
- Program data indicate that 97 percent of treatment enrollees established an RTW plan and 14 percent used or received a referral to employment services. On average, enrollees and RTW coordinators had 15 communications, with all treatment enrollees having at least two such communications. The shares of enrollees for whom the RTW coordinator communicated with a medical provider, workforce professional, or employer were 100 percent, 10 percent, and 77 percent, respectively.

Impacts on enrollees' one-year outcomes

- OH RETAIN had no impact on the three primary outcomes. Treatment and control enrollees had similar earnings in the four quarters after enrollment (about $39,233) and similar employment rates in the fourth quarter after enrollment (76 percent). About 6 percent of OH RETAIN enrollees applied for SSDI or SSI in the 12 months after enrollment.
- OH RETAIN had no impact on any employment outcomes, including quarterly employment and earnings and employment status and characteristics at the time of the one-year follow-up survey.
- OH RETAIN had no impact on participation in SSA programs. For both the SSDI and the SSI programs, treatment and control enrollees had similar application rates, receipt rates, and average payments received in the 12 months after enrollment.
- Treatment and control enrollees reported similar levels of economic well-being at the time of the one-year survey.
- Treatment and control enrollees reported similar health outcomes at the time of the one-year survey.

Net benefits during the one-year evaluation period

- The estimated cost of delivering OH RETAIN was $3,962 per treatment enrollee.
- OH RETAIN's costs exceeded its benefits during the one-year evaluation period, with a net cost of $4,143 per treatment enrollee. However, benefits could continue to accrue in the future while program costs will not. OH RETAIN's annual impact on earnings would need to increase substantially for the program to become cost neutral within 20 years. ◢

A. Program overview

Below, we provide an overview of the OH RETAIN program design and implementation as documented through Mathematica's independent evaluation. We draw on key findings from Mathematica's process analysis (Keith et al. 2024), which covered program implementation and service delivery through June 2023, midway through the program's operation period under the Phase 2 grant. The program made changes to some implementation components over time, following a continuous quality improvement approach.

1. Program design

The Ohio Department of Job and Family Services was the lead agency for OH RETAIN. Mercy Heath, the lead healthcare partner, was responsible for implementing the program, including identifying, screening, and recruiting eligible people; recruiting and training medical providers; and training and overseeing RTW coordinators. The program served three primary catchment areas in the state: Youngstown (Mahoning, Columbiana, and Trumbull counties), Toledo (Lucas County), and Cincinnati (Butler, Clermont, Hamilton, and Warren counties). The program enrolled adults ages 18 to 65 receiving care at Mercy Health who experienced an onset or worsening of a non-work-related musculoskeletal, cardiovascular, mental health, behavioral health, or specific neurological conditions or abdominal surgeries in the past three months. As a condition of enrollment, all enrollees had to provide consent for their RTW coordinator to communicate with their employer and medical provider.

OH RETAIN offered services to treatment enrollees for up to six months. The OH RETAIN program model included the following:

- Training and compensation to medical providers on occupational medicine best practices
- RTW coordination services, including development of an individualized RTW for treatment enrollees
- Communicating with the enrollee's medical provider, employer, and others as needed to support the enrollee staying at or returning to work
- Support for enrollees to obtain workplace accommodations and referrals to other services such as career and retraining programs or rehabilitation services

The evaluation of OH RETAIN used an individual random assignment design. Mathematica randomly assigned enrollees to either the treatment group or control group. Enrollees received a $100 incentive payment for enrolling. Treatment enrollees could access services provided by OH RETAIN, whereas control enrollees did not have access to program services but received a list of resources available to the public. From January 2022 through May 2024, OH RETAIN enrolled 4,525 people in the RETAIN evaluation.

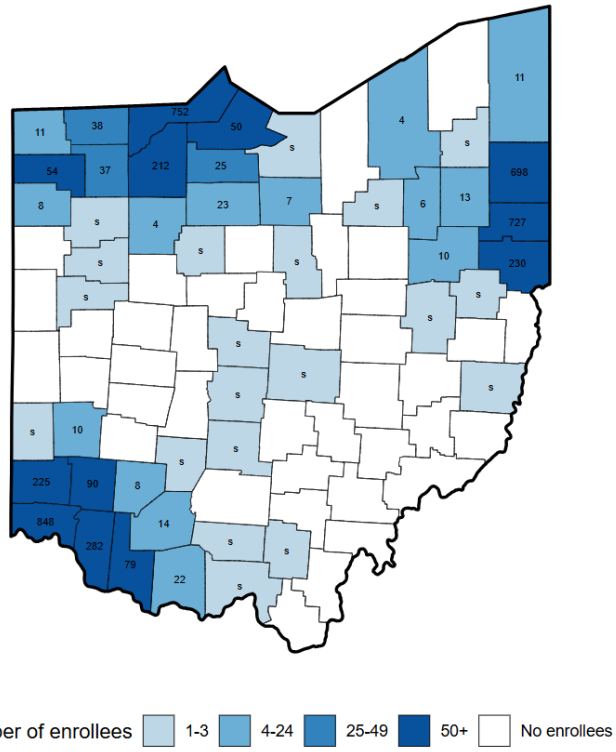
2. Program implementation

OH RETAIN enrolled participants in three primary areas across the state (Exhibit VI.1). Enrollment was highest in Hamilton County, where Cincinnati is located (18 percent) followed by Lucas (17 percent) and Mahoning counties (16 percent).

OH RETAIN exceeded its enrollment target using a recruitment strategy that identified eligible patients through EMR reports generated by Mercy Health. Mercy Health staff produced daily EMR reports and reviewed patients' age, medical condition, and the timing of the condition onset or worsening of the condition relative to the program's eligibility criteria. About midway through the enrollment period, OH RETAIN expanded its eligibility criteria to include more medical conditions, such as certain mental and behavior health diagnoses, abdominal surgeries, and neurological conditions. The expansion of the eligibility criteria increased the number of patients identified through EMR reports. EMR reports were the source of 95 percent of referrals for OH RETAIN.

Participating OH RETAIN medical providers received training on program service and occupational medicine best practices. The program required medical providers to complete an online training after enrolling in the program; they received compensation for completing the training. Program staff also connected with the providers of eligible patients to engage them in the training. Once the providers completed their training, their patients could enroll in the program. Program leaders and staff we interviewed in May 2023 noted challenges getting providers to complete the occupational medicine best practices training. Getting providers to complete the training required staff to conduct regular follow-ups with providers. The monetary compensation appeared to do little to encourage providers to complete the training. Medical providers who completed the training could treat patients in both the treatment and control groups.

Exhibit VI.1. OH RETAIN: Enrollment coverage in the program's service area



Source: OH RETAIN enrollment data.

Note: The number in a county represents the total number of treatment and control enrollees for that county; we suppressed the number if it was fewer than three enrollees. Counties shown in white had no enrollees. Counties shown in pale blue had 1-3 enrollees, while counties in light blue had between 4-24 enrollees, and counties in blue had 25-49 enrollees. Counties in the darkest shade of blue had more than 50 enrollees each

Program staff contacted referred individuals to confirm their eligibility and interest in OH RETAIN. After confirming interest and eligibility, staff obtained informed consent and completed the random assignment process. Consent to receive OH RETAIN services included consent for the person's RTW coordinator to communicate with their employer and medical provider. Enrollees were randomly assigned with equal probability to either the treatment or control group.

B. Program participation

Of the 4,525 people who enrolled in OH RETAIN during Phase 2, 2,264 were randomly assigned to the treatment group and thus were eligible for services. Below, we describe the baseline characteristics of treatment enrollees and then discuss their use of RETAIN services, drawing on program data to do so.

1. Baseline characteristics of treatment enrollees

a. Demographic characteristics

About 62 percent of OH RETAIN treatment enrollees were women (Exhibit VI.2) and 60 percent were younger than 50, with the average age being 45 (Appendix Exhibit A.13.1). More than three-quarters of treatment enrollees were non-Hispanic White (77 percent), followed by non-Hispanic Black (17 percent), Hispanic (4 percent), more than one race (1 percent), non-Hispanic Asian (1 percent), and non-Hispanic other race (less than 1 percent). All treatment enrollees cited English as their preferred language and 56 percent had any postsecondary education. The most frequently reported educational attainment was a high school diploma, GED, or certificate of completion (40 percent). Nearly one-third of enrollees had an occupational certificate, license, or two-year college degree (32 percent). One-quarter of enrollees had a four-year college or postgraduate degree (25 percent).

b. Injury or illness characteristics

The most common type of injury or illness among OH RETAIN treatment enrollees was musculoskeletal, with 9 percent citing a back-related musculoskeletal injury or illness and 71 percent citing a non-back musculoskeletal injury or illness as the primary diagnosis that made them eligible for OH RETAIN. Very few enrollees (1 percent) had a mental health condition as their primary diagnosis that made them eligible for the program, while 19 percent of enrollees had a primary diagnosis that was neither musculoskeletal nor a mental health condition. For nearly half of treatment enrollees (48 percent), the primary injury or illness was a new condition rather than a worsening of an existing condition, and 59 percent of treatment enrollees reported their condition was a result of an accident or injury rather than an illness or a chronic condition. Few enrollees (4 percent) reported that their health condition was caused, at least in part, by work-related factors, and no treatment enrollees reported that their injury or illness was part of a workers' compensation claim.

Most treatment enrollees enrolled in OH RETAIN shortly after experiencing the onset or worsening of their primary illness or injury; the average time between the onset or worsening of injury or illness and enrollment was 20 days.[39] Some treatment enrollees (17 percent) had a new or existing behavioral health condition, defined as a mental health diagnosis or a substance use disorder (as either the condition that made them eligible for RETAIN or a secondary health condition).) There was some overlap between these two condition types. Sixteen percent of treatment enrollees had a mental health diagnosis, and 5 percent of enrollees reported having a substance use disorder (statistics not shown).

c. Recent employment

Most treatment enrollees (88 percent) were employed (either self-employed or employed at a private company, nonprofit, or government) at the time of enrollment, but less than half of them (44 percent) had worked during the week before enrollment. Twenty-one percent of treatment enrollees had not worked for at least one month before enrollment. Before their injury or illness, treatment enrollees usually worked 39 hours per week on average. Treatment enrollees varied considerably in their tenure at their current or most recent job: 41 percent had been at their job for more than five years, while 15 percent had worked at

[39] The median time was 14 days (not shown).

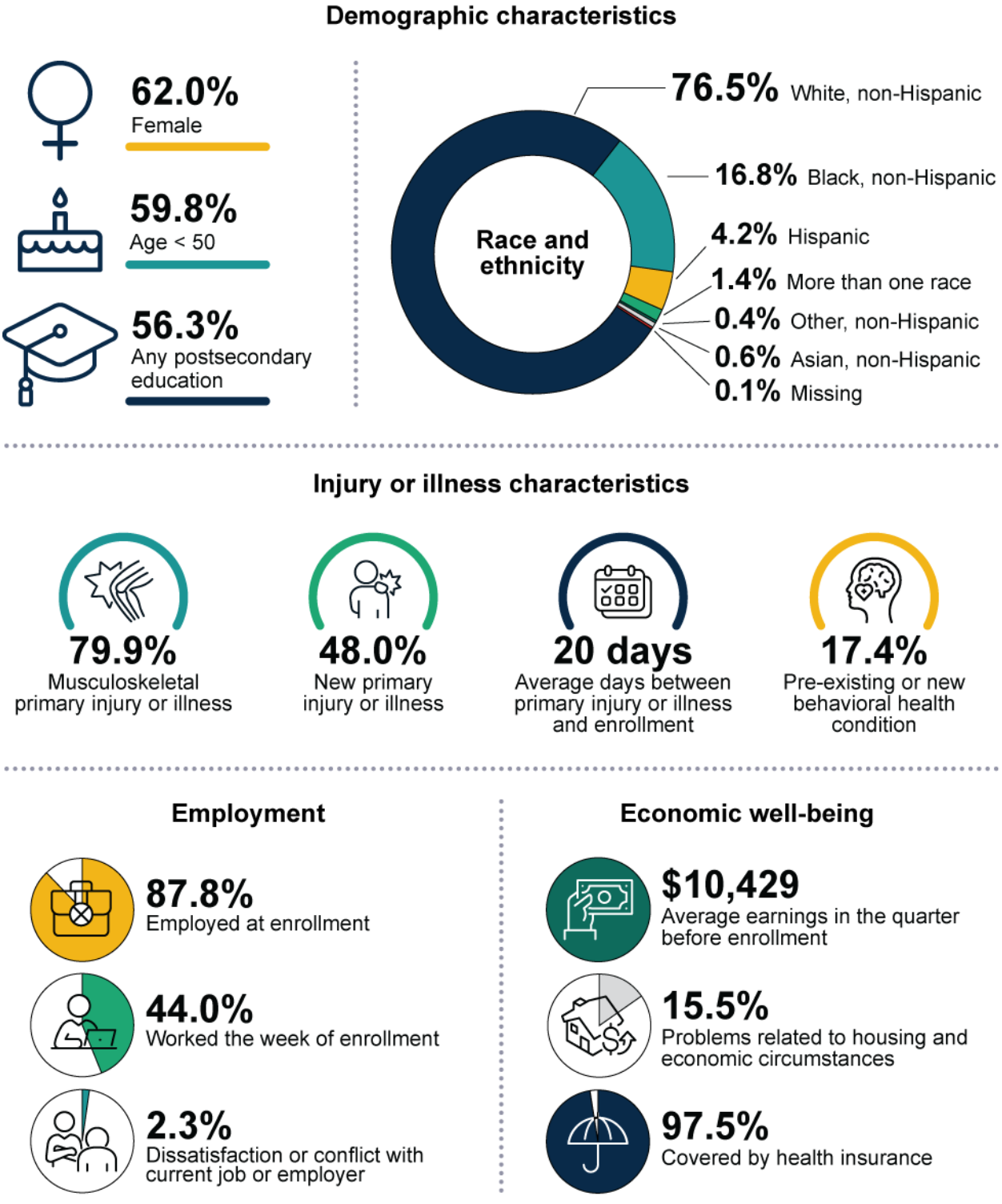
their job for less than six months. Treatment enrollees most frequently worked in service occupations (40 percent) or in management, professional, or related occupations (27 percent). Very few treatment enrollees (2 percent) reported dissatisfaction or conflict with their current job or employer.[40]

d. Economic well-being

On average, treatment enrollees earned $10,429 in the quarter before the quarter they enrolled in OH RETAIN, and most (82 percent) had earnings of $1,000 or more before taxes and deductions in at least one of the past 12 months. At enrollment, more than one-quarter of enrollees reported receiving income from sources other than earnings, with 25 percent of enrollees receiving employer-provided or other private disability insurance and very few enrollees (1 percent) receiving veterans' benefits. Fewer than 1 percent of enrollees received SSDI benefits or income from other public programs, and no enrollees received workers' compensation. Consistent with RETAIN's goal to intervene before people apply for federal disability benefits, only 1 percent of enrollees reported that they had applied for or received SSI or SSDI in the three years before enrolling in OH RETAIN. Nearly all treatment enrollees (98 percent) had health insurance coverage. About 16 percent of enrollees reported experiencing homelessness, inadequate housing, extreme poverty, low income, or insufficient social insurance or welfare support (Exhibit VI.2).

[40] OH RETAIN required enrollees to provide consent for the program to communicate with employers as a condition of enrollment. This requirement would likely have discouraged people who had conflict with their employer from enrolling in the program.

Exhibit VI.2. OH RETAIN: Baseline characteristics of treatment enrollees



Source: RETAIN enrollment data. See Appendix Exhibit A.13.1 for additional information.

2. Service use

Program data indicate that 97 percent of treatment enrollees established an RTW plan (97 percent, Exhibit VI.3 and Appendix Exhibit F.1). On average, enrollees remained in the program for 120 days before exiting.[41] However, according to program data, about 14 percent used or received a referral to employment services including job retention services, job training and search services, or other employment services.

Nearly all OH RETAIN treatment enrollees established an RTW plan (97 percent). On average, RTW coordinators developed RTW plans within 21 days of enrollment. Established RTW plans included the enrollee's treatment goals and steps for the enrollee to RTW or maintain employment, including an RTW date and services needed (Keith et al. 2024). To inform the RTW plan, RTW coordinators met with medical providers for 91 percent of enrollees, with employers for 84 percent of enrollees, and with other parties (such as OH RETAIN social workers) for 12 percent of enrollees (Appendix Exhibit F.2).

RTW coordinators frequently communicated with treatment enrollees. All treatment enrollees communicated with their RTW coordinator at least twice, with an average of 15 communications per enrollee. For about 23 percent of enrollees, RTW coordinators communicated with them more than 20 times. The OH RETAIN model expectations were for RTW coordinators to communicate with each enrollee at least every 30 days throughout the six-month service period.

RTW coordinators communicated with a medical provider for all treatment enrollees and with an employer for most enrollees, but communications with workforce professionals were less common (Exhibit VI.3). This pattern is likely explained by OH RETAIN's requirement that enrollees had to consent to RTW coordinators' communication with their medical provider and employer as a condition of enrollment. RTW coordinators averaged eight communications with a medical provider per treatment enrollee. All medical providers were employed by the lead healthcare agency and able to communicate directly with RTW coordinators through the EMR, which likely facilitated these communications (Keith et al. 2024). RTW coordinators communicated with employers for more than three-quarters of treatment enrollees (77 percent), with an average of one communication per enrollee.[42] RTW coordinators communicated with a workforce professional for only 10 percent of treatment enrollees, with an overall average of less than one communication per enrollee.

OH RETAIN service use data indicate that about 14 percent of treatment enrollees used or were referred to employment services.[43] RTW coordinators only referred enrollees to employment services if enrollees could not return to their previous employers or if they required a higher level of employment support than the RTW coordinator could offer (Keith et al. 2024). According to OH RETAIN's data on employment services, only 1 percent of treatment enrollees used job retention services. Job retention services included

[41] OH RETAIN staff recorded the exit date as the date of last service or contact with the enrollee.

[42] In their efforts to engage employers in OH RETAIN, the lead healthcare and workforce partners encouraged employers to sign an OH RETAIN pledge indicating that they would implement occupational medicine best practices in their workplace. Midway through the enrollment period, 173 employers had signed the pledge (Keith et al. 2024), which could have contributed to the high rate of communication between RTW coordinators and employers.

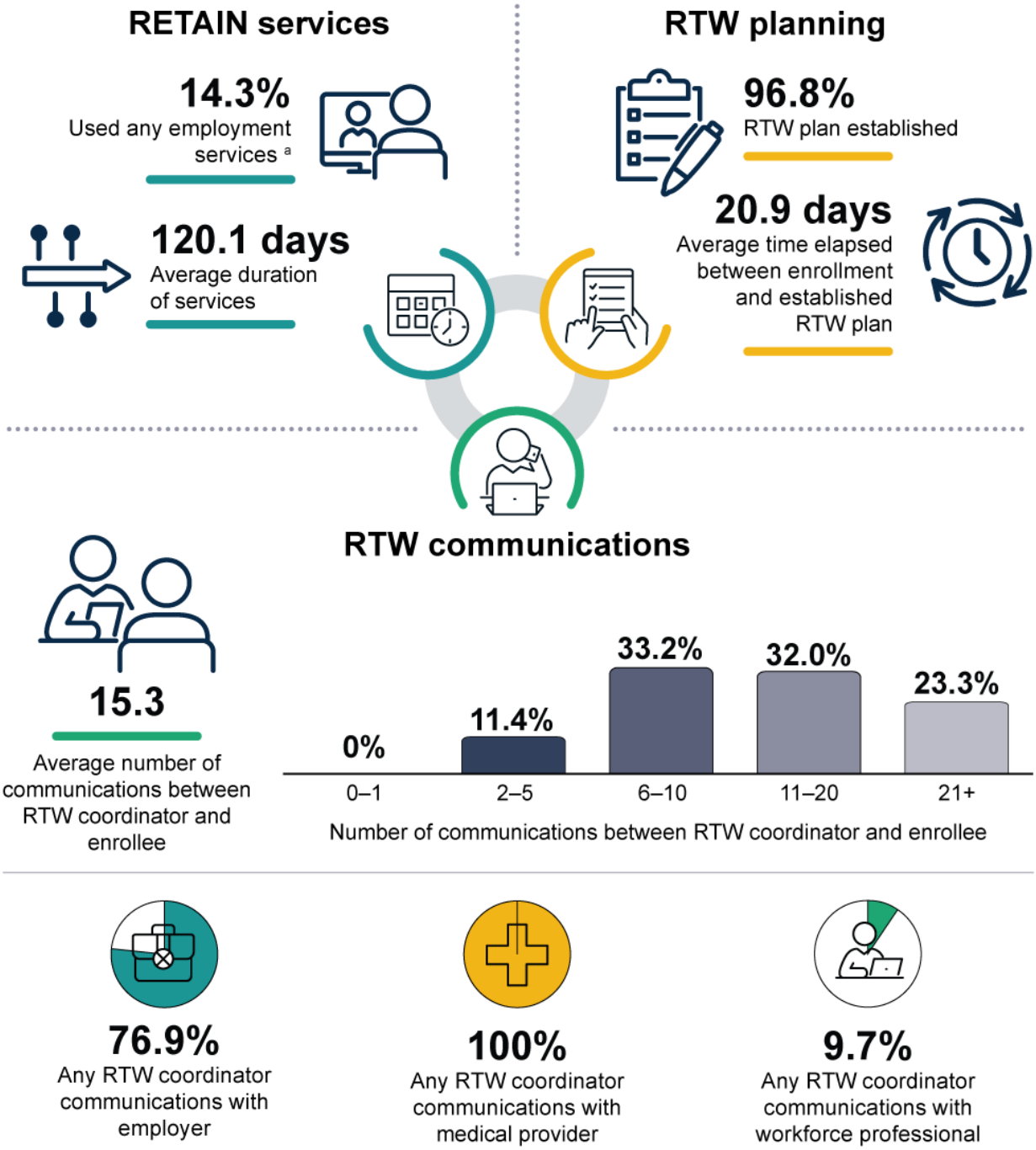
[43] This statistic includes referrals to "Ohio Means Jobs".

on-site job analysis, ergonomic assessment services, and RTW coordinator assistance to enrollees' employers to identify or implement workplace accommodations. The low use of job retention services might be due in part to OH RETAIN considering these services as employer engagement activities rather than tracking them at the enrollee level. Program data recorded that 3 percent of enrollees used or were referred to any job search or training services, including transitional work opportunities. However, this might be an underestimate due to the way that the program recorded referrals to "Ohio Means Jobs".[44]

Service use varied by some enrollee characteristics. For select services, relative to other enrollees, rates of service use were higher among enrollees who had a musculoskeletal primary diagnosis, a new or existing behavioral health condition, had postsecondary education, or had problems related to their housing or economic circumstances. Service use rates also differed depending on whether enrollees were younger than 50 or had last worked more than one week before enrollment, though the pattern was not consistent across types of services. Detailed findings for service use among subgroups are available in Appendix Exhibit F.2.

[44] We categorize referrals to Ohio Means Jobs as "other employment services" because we are unable to discern the nature of service provided. However, Ohio Means Jobs offers services such as job search assistance and skill assessments.

Exhibit VI.3. OH RETAIN: Services used by treatment enrollees



Source: OH RETAIN service use data. See Appendix Exhibit F.1 for additional information.

[a] The percentage of treatment enrollees who received any employment services includes enrollees who used or were referred to one or more of the following: job retention services, job training and job search services, or other employment services.

Note: We refer to certain activities (such as RTW planning) in terms of RTW, though some enrollees might be working and focused on SAW goals.

RTW = return-to-work.

C. Impacts on enrollees' outcomes

The findings in this section show the extent to which OH RETAIN led to changes in enrollees' labor force attachment and employment, SSA program participation, economic well-being, and health in the first year after enrollment. The findings are based on Mathematica's independent evaluation of the program.

How we estimated the impacts of OH RETAIN

We estimated the program's impacts by comparing the outcomes of enrollees in the treatment group, who could access OH RETAIN services, to the outcomes of enrollees in the control group, who could not. We describe the program's impact on an outcome in terms of how the average outcome of treatment enrollees differed from that of control enrollees. ◢

We estimated the program's impact on these outcomes by comparing the outcomes of enrollees in the treatment group, who could access OH RETAIN services, to those of enrollees in the control group, who could not access these services. We examined the sample characteristics of all enrollees and survey respondents to confirm that enrollees in the treatment and control groups had similar characteristics on average, as expected from the individual random assignment (Appendix Exhibits A.13.1 and A.13.2). We found two statistically significant differences between the two groups across more than 20 characteristics measured at the time of enrollment. The treatment group had a slightly smaller gap in time between injury or illness and enrollment (20 days, compared with 21 days among the control group) and were less likely to have applied for or received SSDI or SSI during the past three years (the share was 0.5 percent in the treatment group and 1.1 percent in the control group). To obtain unbiased estimates of program impacts, we accounted for these differences in the regression models in addition to including a core set of covariates (see Appendix Exhibit B.1).

In an earlier report (Patnaik et al. 2025), we analyzed OH RETAIN's impacts on enrollees' outcomes during the two months after enrollment using data from an early follow-up survey of enrollees. We found that OH RETAIN increased the share of treatment enrollees who used care or service coordination services, as well as the share who talked with their healthcare providers about how an injury or illness affected their ability to work. OH RETAIN had no impact on enrollees' labor force attachment or self-reported health at the time of the early follow-up survey. Treatment enrollees were less likely to be working and more likely to be planning to return to work in the next 90 days compared with the control group. Treatment and control enrollees self-reported similar health outcomes, on average, at the time of the early follow-up survey.

The one-year impact estimates suggest that OH RETAIN had no impacts on employment, earnings, or SSA program participation (Appendix Exhibit F.3). The program also had no impacts on the economic well-being of enrollees' households. Treatment and control enrollees also reported similar health outcomes at the time of the one-year survey.

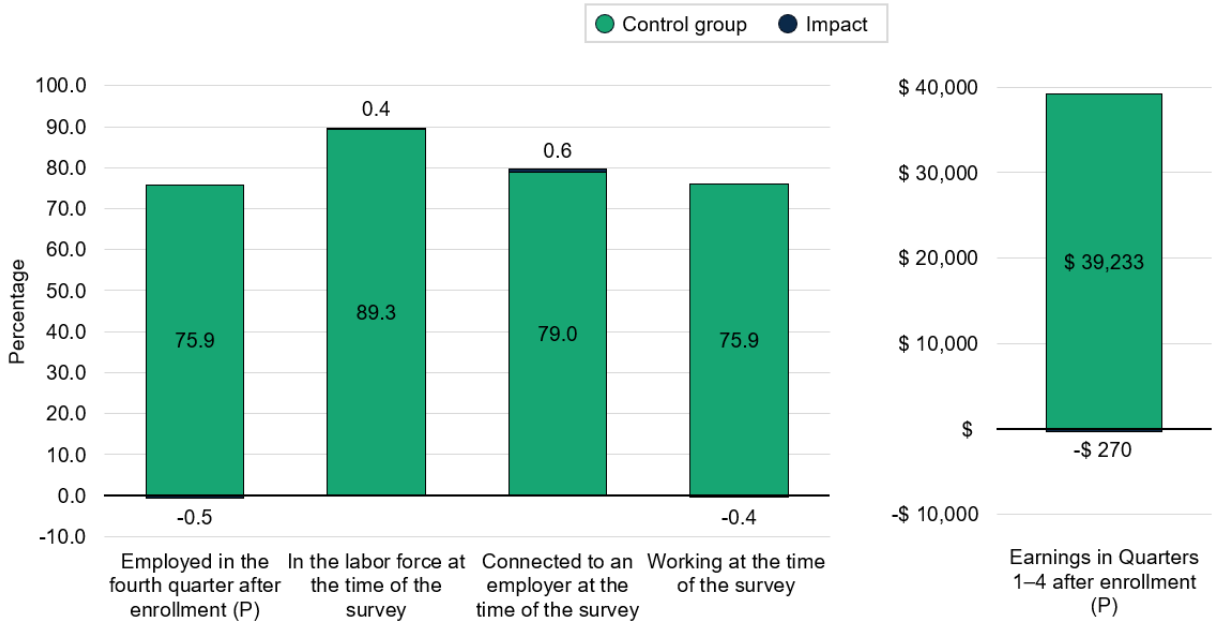
We also estimated program impacts on selected outcomes for subgroups of enrollees defined by age, sex, education, primary diagnosis, and time since last worked at enrollment. We found a meaningful differential impact for one outcome measure: the amount of SSDI or SSI payments increased for enrollees who had last worked one week or less before enrollment but decreased for those who last worked more

than one week before enrollment (Appendix Exhibit F.8). However, we did not detect the same pattern on applications for SSDI or SSI, so the pattern might be driven by applications filed prior to enrollment.

Treatment and control enrollees had similar employment rates and earnings in the year after enrollment, and OH RETAIN had no impact on any employment outcomes during that period.

Seventy-six percent of control enrollees were employed in the fourth quarter after enrollment with average earnings of $39,239. We did not find statistically significant differences between the treatment and control groups for these outcomes (Exhibit VI.4).

Exhibit VI.4. OH RETAIN: One-year impacts on employment outcomes



Source: RETAIN enrollment data; one-year follow-up survey; Social Security Administration data; state unemployment insurance wage records.

Note: See Appendix Exhibit F.3 for detailed estimates and description of estimation methods.

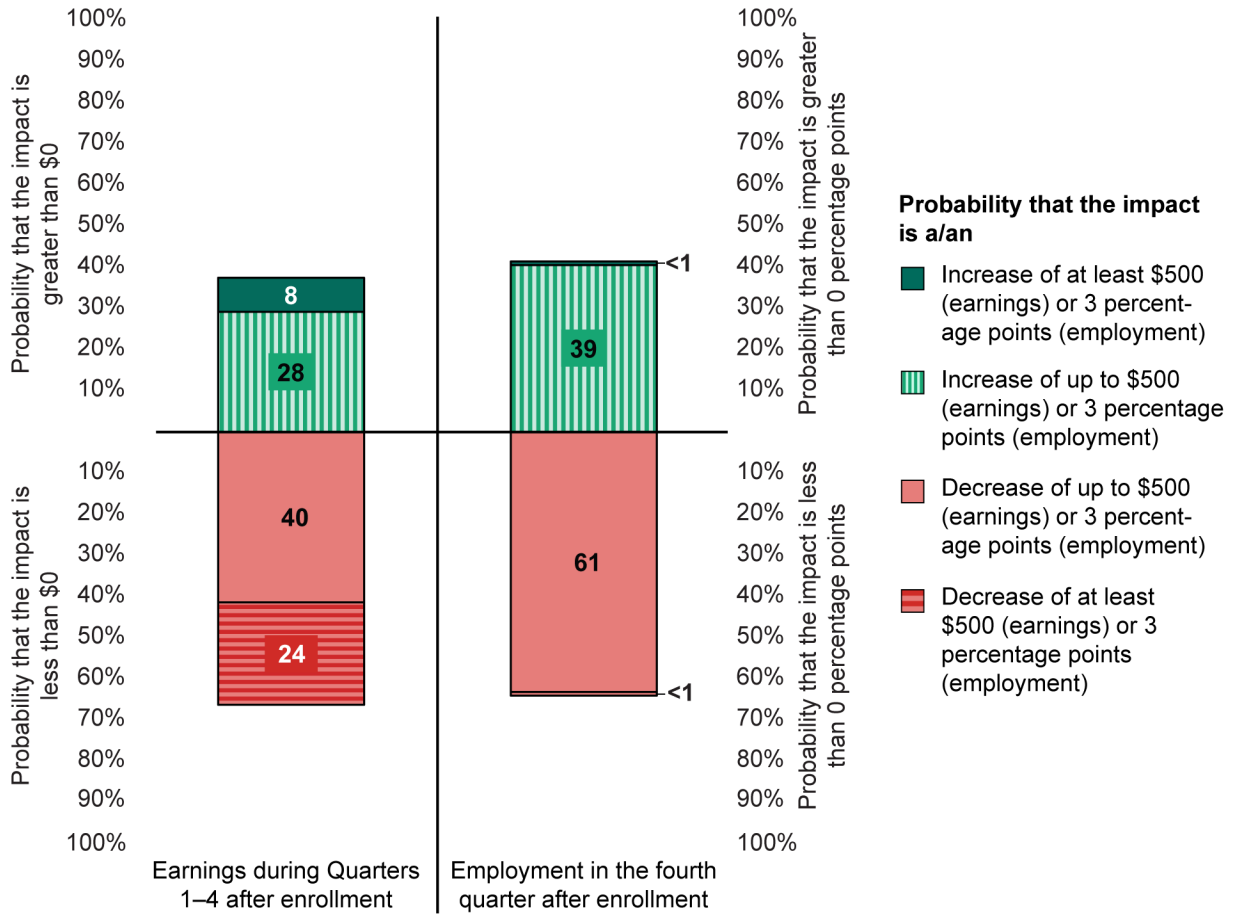
*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

^/^^/^^^ Impact estimate is significantly greater than zero (*p*-value is less than .10/.05/.01) using a one-tailed t-test. This test was only conducted for primary outcomes.

(P) = primary outcome.

Findings from supplementary Bayesian analyses indicate a low likelihood of favorable impacts on employment or earnings in the first year (Exhibit VI.5). We estimated a 36 percent probability that the program increased average earnings in the four quarters after enrollment and an 8 percent probability that the program increased earnings by more than $500. We estimated a 39 percent probability that the program increased employment in the fourth quarter after enrollment.

Exhibit VI.5. OH RETAIN: Estimated probabilities of impacts on earnings and employment

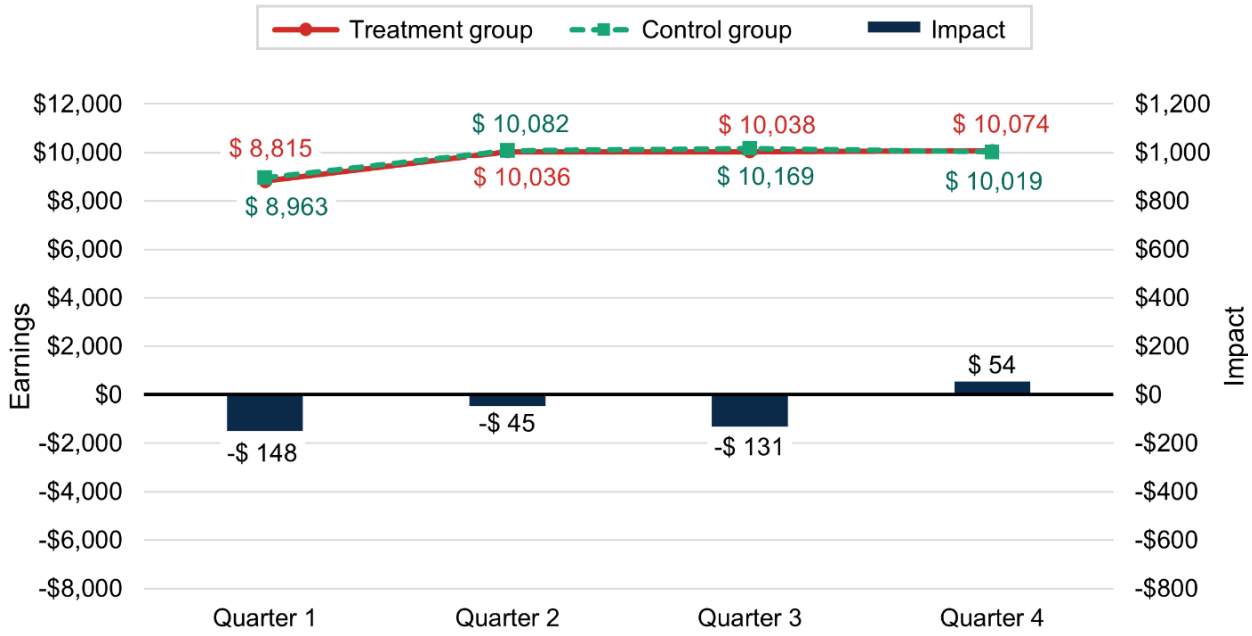


Note: See Appendix Exhibit F.10. An annual earnings increase of at least $500 is the approximate impact many RETAIN programs need to break even within 20 years (see Section VI.D). For employment, 3 percentage points is approximately 5 percent of the control group's mean outcome.

We examined employment rates in each of the four quarters after enrollment (Exhibit VI.6) and found no significant differences between treatment and control enrollees. In the four quarters after enrollment, about 85 percent of treatment and control enrollees were employed in at least one quarter. We did not find statistically significant differences in the quarterly employment rates or earnings between treatment and control enrollees.

The differences between treatment and control enrollees for other employment and earnings outcomes measured through the one-year follow-up survey were not statistically significant. About 89 percent of control enrollees were in the labor force at the time of the survey, 76 percent were working, and 79 percent were connected to an employer. Control enrollees worked an average of 29 hours per week and had an average weekly pay of $791. More than half (61 percent) of control enrollees were tenured at their job for more than a year, with similar shares reporting they were working for an employer that provided paid leave (60 percent) and worked for an employer that provided health insurance (60 percent). About 4 percent of control enrollees reported participating in any job-related training during the last two months at the time of the survey.

Exhibit VI.6. OH RETAIN: Impacts earnings in the four quarters after enrollment



Source: RETAIN enrollment data; state unemployment insurance wage records.

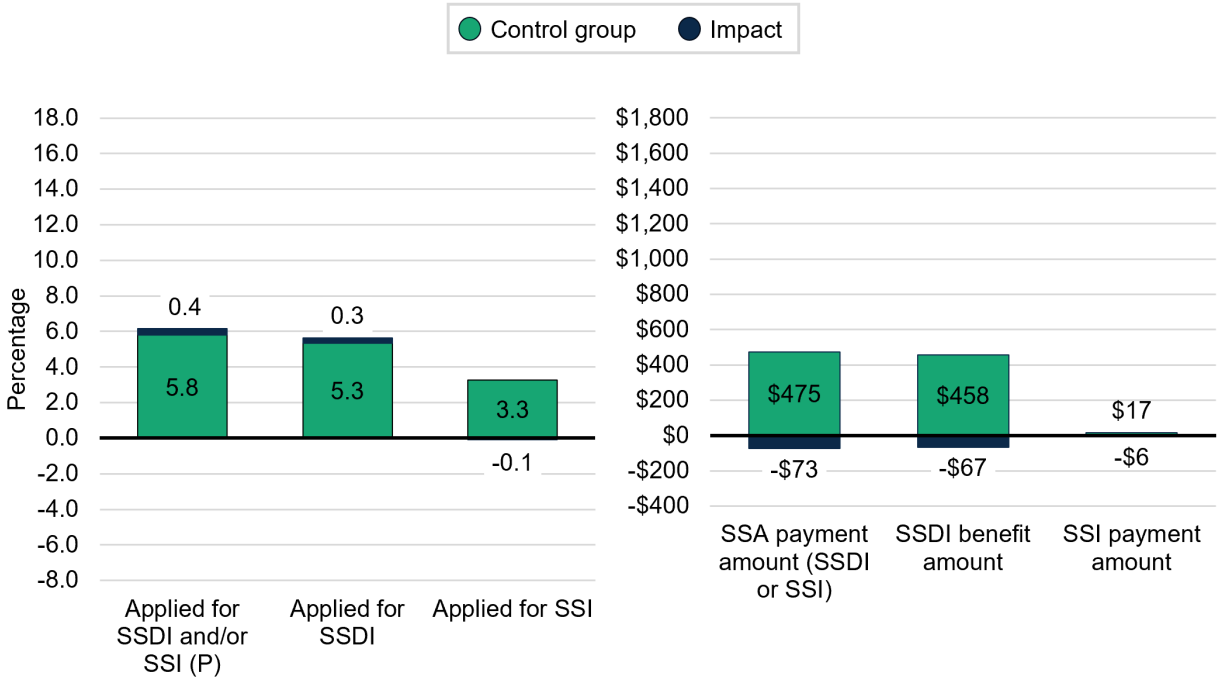
Note: Statistics have been rounded to nearest dollar. See Appendix Exhibit F.3 for detailed estimates and description of estimation methods.

*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

About one in 20 OH RETAIN enrollees applied for SSDI and/or SSI in the 12 months after enrollment. The program had no impact on SSDI or SSI application rates, receipt rates, or average payment amounts. OH RETAIN had no impact on the share of enrollees who applied for SSDI or SSI in the year after enrollment (Exhibit VI.7). About 6 percent of control enrollees applied for either or both programs, and this share was similar in the treatment group. Findings from supplementary Bayesian analysis suggest a low likelihood of large favorable impacts on SSA program applications. We estimate a 42 percent probability that OH RETAIN decreased applications for SSDI or SSI during the 12 months after enrollment, and a 12 percent probability of a decrease greater than 0.5 percentage points (Exhibit VI.8).

As in other programs, most applications from enrollees were for SSDI. About 5 percent of control enrollees applied for SSDI; 3 percent received any SSDI benefits and the average benefit amount was $458 About 3 percent of control enrollees applied for SSI. Less than 1 percent of enrollees received any SSI payments. Although OH RETAIN did not impact SSDI or SSI participation overall, it had a differential impact on the combined SSA payment amount for enrollees who had and had not last worked in the week before enrollment. For enrollees who had last worked in the week before enrollment, the program increased the combined SSA payment amount in the past 12 months by $132. For enrollees who had last worked more than one week before enrollment, the program reduced that amount by $244. However, we did not detect the same pattern on applications for SSDI or SSI, so the pattern might be driven by applications filed prior to enrollment.

Exhibit VI.7. OH RETAIN: One-year impacts on SSDI and SSI program participation



Source: RETAIN enrollment data; SSA data.

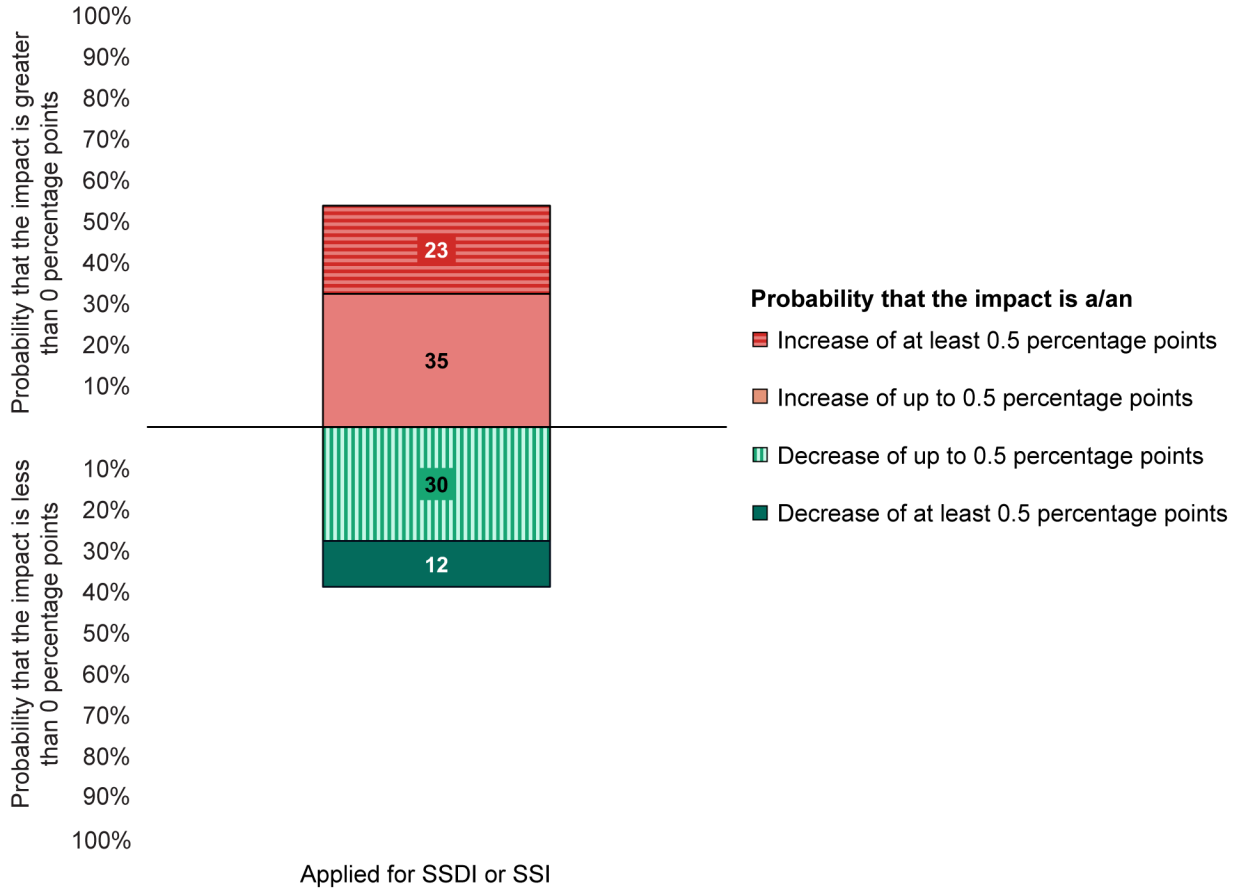
Note: See Appendix Exhibit F.3 for detailed estimates and description of estimation methods.

*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

^/^^/^^^ Impact estimate is significantly less than zero (*p*-value is less than .10/.05/.01) using a one-tailed t-test. This test was only conducted for primary outcomes.

(P) = primary outcome; SSA = Social Security Administration; SSDI = Social Security Disability Insurance; SSI = Supplemental Security Income.

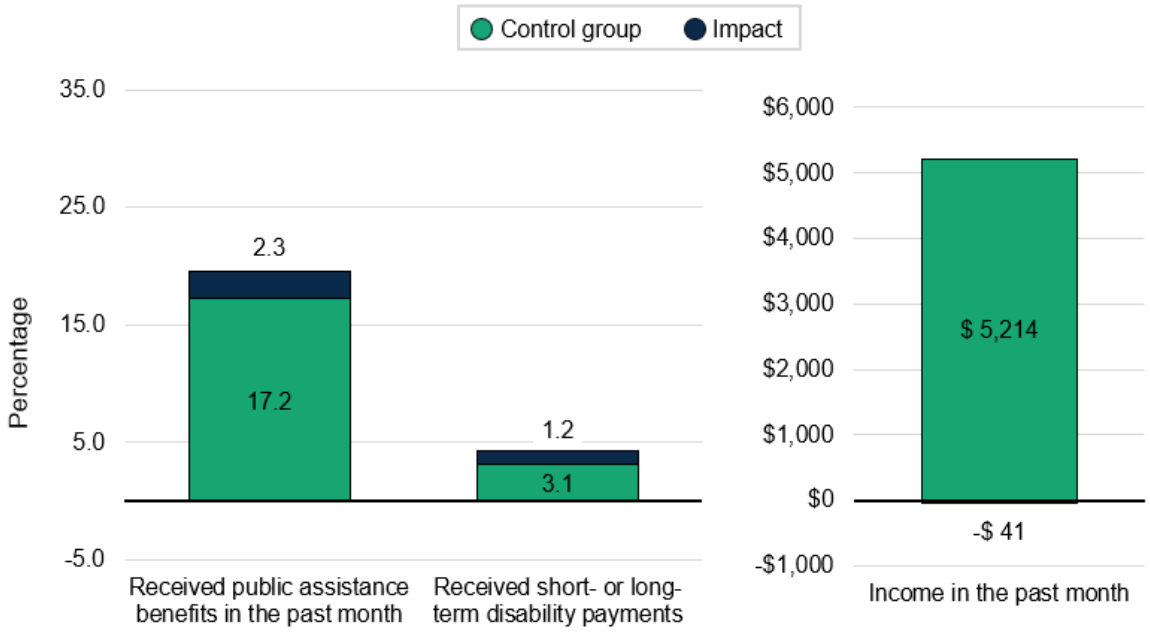
Exhibit VI.8. OH RETAIN: Estimated probabilities of impacts on SSDI and SSI applications



Note: For applications to SSDI or SSI, 0.5 percentage points is approximately 5 percent of the control group's mean outcome.
SSDI = Social Security Disability Insurance; SSI = Supplemental Security Income.

Treatment and control enrollees reported similar levels of household economic well-being at the time of the one-year survey. OH RETAIN had no impact on household economic well-being in the month before the one-year survey (Appendix Exhibit F.3). Treatment and control enrollees reported similar household income and earnings and receipt of government assistance benefits such as UI, SNAP, or government housing assistance. On average, control enrollees reported $5,214 in household income and $4,596 in household earnings in the month before the one-year follow-up survey. About 17 percent of control enrollees reported receiving public assistance benefits in the past month. OH RETAIN enrollees also reported receipt of workers' compensation and private short-or long-term disability payments at similar rates. A small share of control enrollees, 1 percent, reported receipt of workers' compensation benefits and 3 percent reported receipt of private short-or long-term disability payments.

Exhibit VI.9. OH RETAIN: One-year impacts on economic well-being



Source: RETAIN enrollment data; one-year follow-up survey.

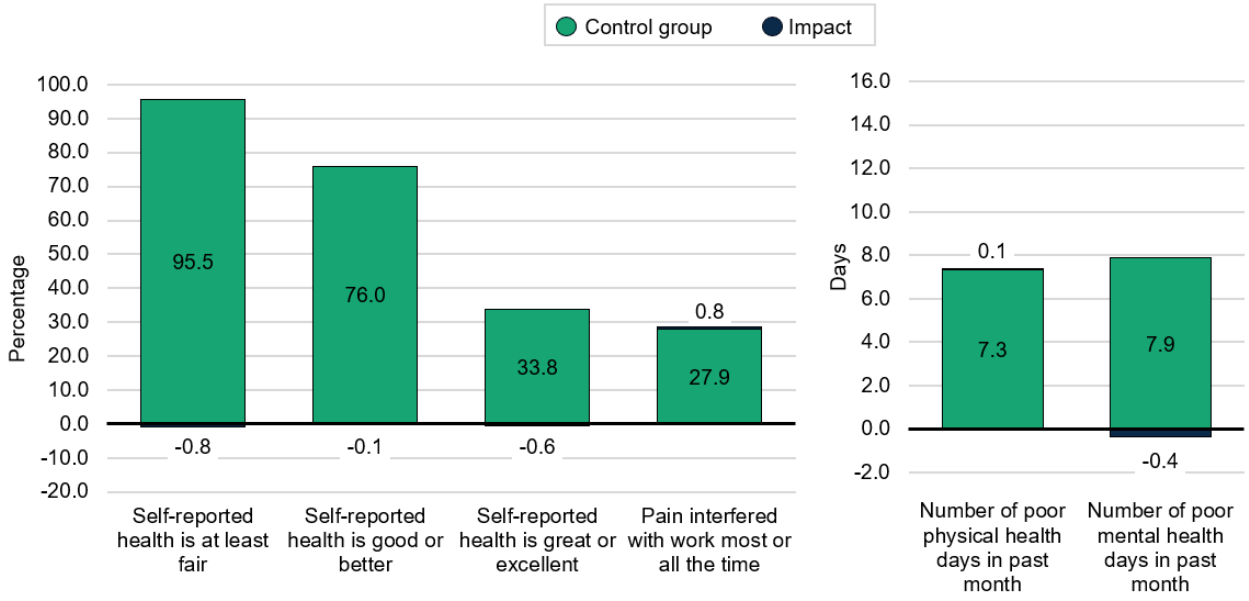
Note: See Appendix Exhibit F.3 for detailed estimates and description of estimation methods.

*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

Note: Public assistance benefits refer to benefits from the Supplemental Nutrition Assistance Program, housing assistance or unemployment insurance programs. Short or long-term disability benefits refer to private disability insurance benefits.

OH RETAIN had no impact on self-reported health at the time of the one-year survey. Treatment and control enrollees responded similarly to questions about their health and well-being in the follow-up survey. About 96 percent of control enrollees reported being covered by health insurance. Among the control group, the shares of enrollees who rated their health as at least fair; good or better; or very good or excellent were 96, 76 and 34 percent respectively. Control enrollees reported an average number of seven poor physical health days in the past month and an average of eight poor mental health days in the past month. On a pain scale of 1 to 10, control enrollees reported an average of 3.4. About 9 percent of control enrollees had been prescribed an opioid pain reliever. For all these outcomes, the average for the treatment group did not statistically differ from that of the control group.

Exhibit VI.10. OH RETAIN: One-year impacts on health



Source: RETAIN enrollment data; one-year follow-up survey.

Note: See Appendix Exhibit F.3 for detailed estimates and description of estimation methods.

*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

D. Benefits and costs of the program

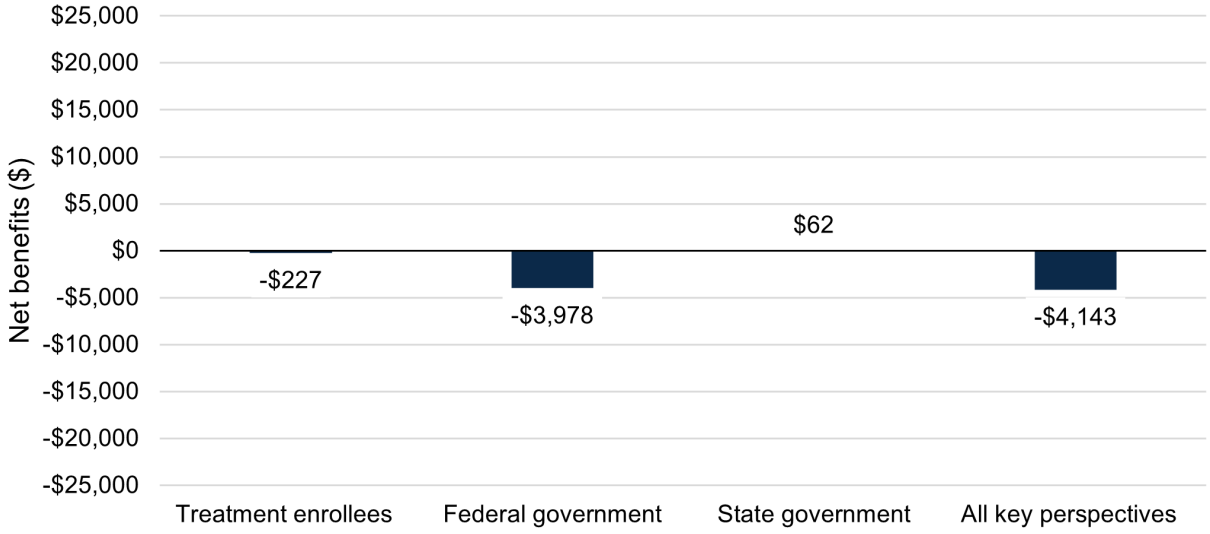
We examined the benefits and costs of OH RETAIN for the year after enrollment using the program's estimated one-year impacts on enrollee outcomes and program costs during the steady-state period April 1, 2023, through March 31, 2024. We estimated the net benefits (or costs) separately for enrollees, the federal government, and the state government and across these three key perspectives. The net benefit (cost) is based on (1) the point estimates for the program's impacts on treatment enrollees, (2) assumptions based on the literature regarding how impacts lead to indirect benefits and costs, and (3) the calculated cost of delivering OH RETAIN per treatment enrollee.

The estimated cost of delivering OH RETAIN was $3,962 per treatment enrollee. Using data provided by the program, we estimated the costs of OH RETAIN to be about $4,000 per treatment enrollee (Appendix Exhibit F.12). The cost per enrollee includes wages paid for staff time dedicated to RETAIN activities across all partners ($1,852), compensation to providers ($645), administrative and overhead costs for program operation ($369), and other direct costs not related to personnel or labor costs, enrollee stipends, compensation to providers, or outreach costs ($475). We estimated program costs using data for the period April 1, 2023, through March 31, 2024, but we recognize that program costs might have varied over the program's implementation period depending on the stage of implementation and the number of enrollees in the program at that time. The estimates do not account for incentives offered to enrollees; we considered such incentives to be evaluation costs that would not accrue in a non-evaluation context.

Treatment enrollees experienced a net cost from OH RETAIN, and the overall costs of OH RETAIN outweighed its overall benefits during the year after enrollment. Treatment enrollees experienced a net cost of $227 on average in the year after enrollment (Exhibit VI.11). Across the three key perspectives,

we estimated that OH RETAIN resulted in a net cost of $4,143 per treatment enrollee in the year after enrollment.

Exhibit VI.11. OH RETAIN: Net benefits per treatment enrollee in the year after enrollment



Source: See Appendix Exhibit F.12 for details on sources and methods for our calculations.

Note: Net benefits are benefits minus costs, expressed as dollars per enrollee, inflation-adjusted to 2024 dollars, and discounted to 2024 present values.

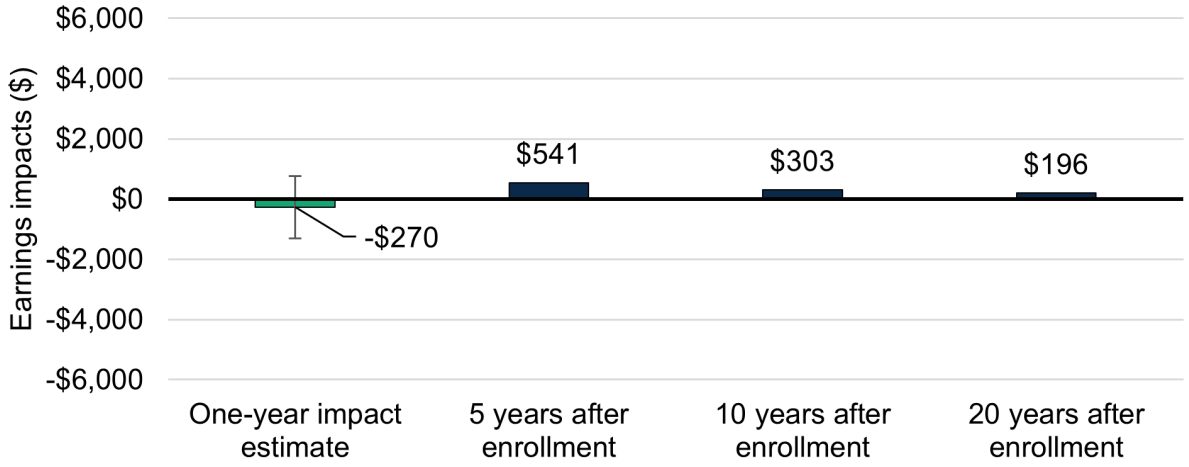
Below, we summarize the benefit-cost findings from each of the key perspectives (Appendix Exhibit F.12 provides detailed estimates):

- **Treatment enrollees.** On average, OH RETAIN treatment enrollees experienced a net cost of $227 in the year after enrollment. Though statistically insignificant, the key contributors to the net cost were negative impacts on earnings ($270), corresponding fringe benefits ($122), and UI benefit amounts ($56).
- **Federal government.** We estimated that a net cost of $3,978 accrued to the federal government per OH RETAIN treatment enrollee in the year after enrollment. The largest cost component was program delivery, which cost the federal government $3,962 per treatment enrollee. The federal government also experienced reduced income and payroll tax revenue ($88) and increased outlays for SNAP benefits ($44). The increased outlays were greater than the estimated savings from reduced public housing assistance support ($20) and administrative UI costs ($7).
- **State government.** We estimated that the state government experienced an average net benefit of $62 per treatment enrollee stemming from reduced outlays for UI ($56) and workers' compensation ($17) benefits but offset by reduced income and sales tax revenue ($14) and increased outlays on SNAP administrative costs ($3).

OH RETAIN's impact on earnings must become positive for the program to become cost neutral within the next 20 years; however, a simple forecast suggests the program is unlikely to generate a net benefit across key perspectives within that time. Because program costs are incurred up front but benefits to enrollees and other stakeholders can continue to accrue in the future, we conducted

supplementary analyses to consider the program's benefits and costs beyond the first year after enrollment. First, we calculated the average annual impact on earnings per year that would be needed for the program to be cost neutral by five, 10, and 20 years after enrollment. For OH RETAIN to be cost neutral from all key perspectives within five years, we estimated that the impact on annual earnings must be at least $541 per treatment enrollee; to be cost neutral in 10 years, it must be at least $303; and to be cost neutral in 20 years, it must be at least $196 (Exhibit VI.12; Appendix Exhibit F.15). These estimates are substantially different from the point estimate for the one-year impact on earnings (-$270). However, achieving these earnings levels might be plausible because they fall within the 95 percent confidence interval of the one-year impact estimate (-$1,377 to $923). It is uncertain whether the program's impact on earnings will become positive and large enough over 20 years to attain cost neutrality.

Exhibit VI.12. OH RETAIN: Annual impact on earnings needed to reach cost neutrality at five, 10, and 20 years after enrollment



Source: See Appendix Exhibit F.14 for details on sources and methods for our calculations.

Note: This chart shows the average annual impact on earnings that would be needed for the program to be cost neutral five, 10, and 20 years after enrollment. The first bar shows the one-year impact on earnings (point estimate and 95 percent confidence interval).

E. Discussion

In this section, we highlight key patterns in the findings from the one-year evaluation of OH RETAIN and discuss their significance and possible explanations.

OH RETAIN implemented a promising program model with strong recruitment and high engagement among medical providers and participants. Working within a single healthcare system, OH RETAIN was able to engage medical providers to enroll in RETAIN and complete training on best practices in occupational medicine, enrolling the highest number of enrollees among the RETAIN programs. For enrollees randomly assigned to the treatment group, engagement in services was high. Almost all treatment enrollees (97 percent) established an RTW plan within an average of 20 days after enrollment. Focusing recruitment and communication via EMRs enabled OH RETAIN to recruit people at a consistent and rapid pace and to communicate and engage with participating medical providers.

RTW coordinators played a key role engaging participants in the program through frequent communications with enrollees as well as their medical providers and employers. All OH RETAIN enrollees had two or more communications with the RTW coordinator, with an average of 15 communications through their participation in the program. Almost a quarter of enrollees had 21 or more communications. RTW coordinators also regularly communicated with enrollees' medical providers, with 99 percent having two or more communications with medical providers. RTW coordinators also had success in communicating with enrollees' employers, with 77 percent having more than one communication with an employer. OH RETAIN required consent for RTW coordinators to contact employers as a condition of enrollment and also required enrollees' medical providers to have completed the provider training. These requirements likely strengthened engagement between the different parties by opening the door for RTW coordinator communications with these parties.

The one area where OH RETAIN had limited success was in delivering employment or workforce services. Engagement with workforce professionals was minimal, with RTW coordinators having no communication with workforce staff for 90 percent of enrollees. Program data show that enrollees' participation in employment services and job search, training services, or referrals was low, with 4 percent of treatment enrollees using any employment services and 3 percent using any job search or training services or referrals. The low uptake of these services may be because treatment enrollees did not need these services during their recovery. If treatment enrollees were able to stay connected to their existing job, they would not need job search services or training.

OH RETAIN did not impact enrollees' employment, earnings, or SSA disability applications during the first year after enrollment. Despite strong implementation and recruitment, OH RETAIN did not produce impacts on labor market outcomes or SSA program applications in the first year after enrollment. Treatment and control enrollees were equally likely to be employed and had similar earnings during the four quarters after enrollment. The self-reported data from the enrollee surveys did not show any differences in labor force participation or job tenure, suggesting that OH RETAIN did not impact labor force participation in the year after enrollment. Because the primary mechanism by which a SAW/RTW program would influence entry into SSA programs is by helping people stay at or return to work, the absence of impacts on SSA program applications is consistent with the absence of impacts on employment rates.

A few reasons could explain why OH RETAIN had no impacts on labor force participation. First, there might have been limited room for improvement in enrollees' employment and earnings because the program might have enrolled people who were likely to fare well even in the absence of SAW/RTW services. About 76 percent of the control group had returned to work by the fourth quarter after enrollment, the highest of all RETAIN programs. This is a significant improvement from enrollment, where 42 percent of control enrollees had worked during the week before enrollment. Further, at the time of the one-year survey, 61 percent of control enrollees had a job tenure of at least one year, suggesting they were able to keep their pre-enrollment job. These findings suggest that the risk of OH RETAIN enrollees dropping out of the workforce was low, regardless of participation in RETAIN. With the substantial improvement in employment for the control group in the absence of OH RETAIN services, the program had limited potential to improve employment outcomes in the treatment group relative to the control group. In addition, the enrollees in OH RETAIN appear to be healthier on average than those in other

programs. Across the five programs, the share of control enrollees who reported their health was very good or excellent was the highest in Ohio RETAIN—at both two months and one year after enrollment (37 and 33 percent, respectively).

Second, despite the program having the highest rates of communication between RTW coordinators and employers among all the programs, it had no impact on the share of enrollees who were working and for whom their employer offered a chance to return to work with accommodations (measured at both two months and 12 months after enrollment). It is possible the nature of communication between RTW coordinators and employers did not focus on accommodations or that the jobs available were not suitable for accommodations.[45]

Third, of the five RETAIN programs, OH RETAIN had the lowest rates of employment service use, potentially because it had the weakest connections to the workforce system. In the absence of such services, treatment enrollees who could not return to their former job without accommodations might have struggled to find alternative work.

Earnings among treatment enrollees were not statistically significantly different from the control group, but the trend in point estimates offers reason for optimism. There is variation in the point estimates in the four quarters after enrollment, with the estimate becoming less negative in the fourth quarter, indicating the potential for positive earnings growth in the future. One explanation for this pattern of earnings in the treatment group is that the program helped them access leave and disability benefits that enabled them to take a break from work. This is consistent with the findings from the early impact analysis that OH RETAIN reduced the share of enrollees who were working at the time of the two-month survey. The slow improvement in earnings becoming less negative in the fourth quarter hints at the possibility that treatment enrollees' earnings would improve over time. Data on earnings beyond the one-year mark would confirm whether the improvement trend continues and delivers long-term earnings gains for treatment enrollees.

OH RETAIN resulted in net costs across the key perspectives examined for the first year after enrollment and is unlikely to produce net benefits over the next 20 years. The estimated costs of OH RETAIN were $3,962 per treatment enrollee, representing the costs of implementing the program and delivering services. Enrollees experienced a net cost in the year after enrollment, driven by negative impacts on earnings and corresponding decreases in fringe benefits and UI benefits. All stakeholders except the state government experienced a net cost in the first year after enrollment. Unless the program begins to have large, positive impacts on earnings in the future, it is unlikely OH RETAIN will become cost neutral in the next 20 years. The estimated impact on annual earnings to achieve cost neutrality in the next 20 years must be at least $196. This estimate falls within the 95 percent confidence interval around the one-year impact estimate, though it is uncertain whether the program's impact on earnings will become positive and large enough to reach cost neutrality.

[45] During interviews, program leaders and partners noted that although numerous job openings were available in Ohio, many jobs were physically demanding, and employers often did not have less physically demanding jobs for workers needing accommodations (Keith et al. 2024).

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VII. Vermont RETAIN (VT RETAIN)

Key findings from the one-year evaluation

Enrollment and participation

- The VT RETAIN program enrolled 798 people during Phase 2, of whom 450 had enrolled through primary care practices that were assigned to the treatment group and thus were eligible for VT RETAIN SAW/RTW coordination services. Both control and treatment enrollees were given a resource inventory of services available in the community. Treatment and control enrollees had similar characteristics at the time of enrollment. We found three statistically significant differences between the two groups across more than 20 characteristics measured at the time of enrollment.
- Program data indicate that 78 percent of treatment enrollees established an RTW plan and 31 percent used or received a referral to employment services. On average, enrollees and RTW coordinators had five communications, with 78 percent of treatment enrollees having at least two such communications. The shares of enrollees for whom the RTW coordinator communicated with a medical provider, workforce professional, or employer were 78 percent, 8 percent, and 3 percent, respectively.

Impacts on enrollees' one-year outcomes

- The VT RETAIN program had no impact on the three primary outcomes. Control enrollees earned $28,207 on average in the four quarters after enrollment; about 65 percent were employed in the fourth quarter and 11 percent had applied for SSDI or SSI during the year after enrollment.
- The VT RETAIN program had no impact on any employment outcomes, including quarterly employment and earnings and employment status and characteristics at the time of the one-year follow-up survey.
- The VT RETAIN program had no impact on participation in SSA programs. For both the SSDI and the SSI programs, treatment and control enrollees had similar application rates, receipt rates, and average payments received in the 12 months after enrollment.
- The VT RETAIN program had an impact on some measures of economic well-being in the month before the one-year follow-up survey. Treatment enrollees reported that their households received higher amounts of SNAP benefits and government housing assistance per month, on average, compared with the control group, and were more likely to have received private short- or long-term disability payments.
- The VT RETAIN program improved treatment enrollees' self-reported health at the time of the one-year survey. A larger share of treatment enrollees reported that their health is very good or excellent (21 percent) compared with control enrollees (13 percent).

Net benefits during the one-year evaluation period

- The estimated cost of delivering the VT RETAIN program was $16,013 per treatment enrollee.
- The VT RETAIN program's costs exceeded its benefits during the one-year evaluation period, with a net cost of $19,221 per treatment enrollee. VT RETAIN's impact on earnings would need to increase substantially for the program to become cost neutral within 20 years. ◢

A. Program overview

Below, we provide an overview of the Vermont RETAIN (VT RETAIN) program design and implementation as documented through Mathematica's independent evaluation. We draw on key findings from Mathematica's process analysis (Keith et al. 2024), which reported on program implementation and service delivery through June 2023, midway through the program's operation period under the Phase 2 grant.

1. Program design

The Vermont Department of Labor (VDOL) was the lead agency for VT RETAIN. VT RETAIN partnered with OneCare Vermont (the state's accountable care organization) and other organizations to help recruit primary care practices to both participate in the VT RETAIN program and screen patients for enrollment into the evaluation. VT RETAIN operated statewide, covering all 14 Vermont counties. The program's service population included adults 18 and older who were in the labor force (employed or actively seeking employment) and experienced an injury or illness in the previous six months that limited or could limit their ability to work, and who were living or working in Vermont or willing to include Vermont in a job search. All VT RETAIN enrollees needed to be affiliated with a primary care practice that was participating in the evaluation. Primary care clinics in all Vermont health systems and all federally qualified health centers in the state participated.

VT RETAIN offered SAW/RTW coordination and other services to treatment enrollees for up to six months. The program model included the following:

- SAW/RTW plan and coordination services for treatment enrollees, including an assessment of barriers to achieving work and health goals; referrals to external medical, mental health, employment, and social services; strength-based coaching to improve self-reliance such as how to speak to their health-care teams and employers about staying at work or returning to work; education and provision of resources; and communication between the VT RETAIN RTW coordinator and other parties if needed. Treatment enrollees had access to these services for up to six months.
- A central SAW/RTW expert team, which included occupational medicine, pain medicine, physical medicine and rehabilitation, physical therapy, occupational therapy, vocational rehabilitation, employee assistance program counseling, substance use disorder counselors, employment law professionals, and other specialties to support the RTW coordinators.
- An initial training to clinicians and staff at all primary care practices participating in the program to increase awareness of VT RETAIN, emphasize the importance of work for health, and implement screening into practice workflows
- A packet for all enrollees (for both treatment and control enrollees) that included 10 tips for staying at or returning to work with an injury or illness and an SAW/RTW services resource inventory that documented a robust and interconnected system of medical, mental health, employment, and social services available in the state.

The evaluation of VT RETAIN used a clustered random assignment design. In this design, Mathematica assigned participating primary care practices to either the treatment or control group.[46] VT RETAIN recruitment staff provided all enrollees with a $50 incentive payment for enrolling and completing intake

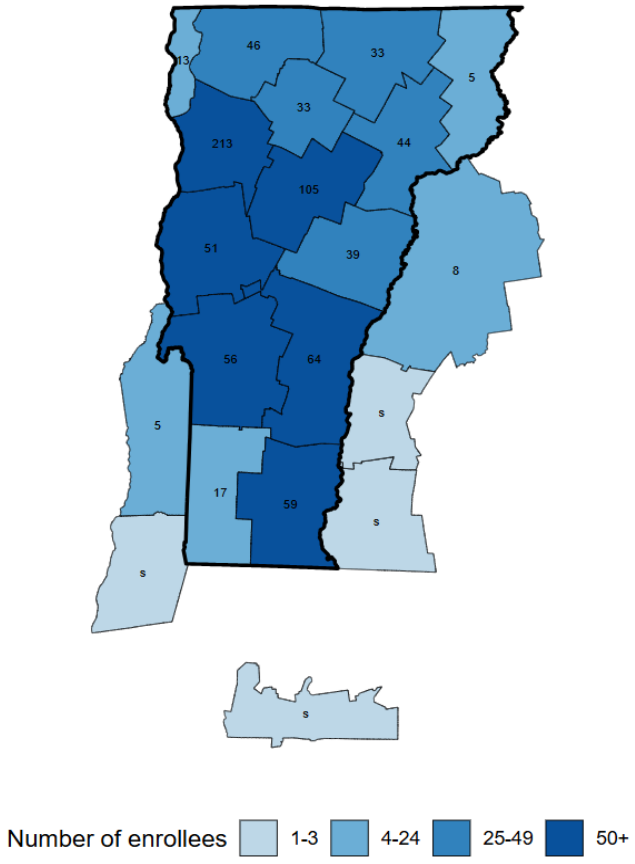
[46] Mathematica stratified random assignment based on clinic size. In other words, among clinics of roughly the same size, about half were randomly assigned to the treatment group while the other half were randomly assigned to the control group. However, clinic size was estimated based on historical data on number of total patients as reported by the clinic. Mathematica did not have access to data to estimate the number of patients at each clinic who could be potentially eligible for VT RETAIN or stratify the sample based on the patients' characteristics at the time of enrollment.

paperwork including baseline forms. After enrollment, recruitment staff provided all enrollees with program resources, including 10 tips for staying at or returning to work with an injury or illness and an SAW/RTW services resource inventory with information about medical, mental health, employment, and social services available in the state. Recruitment staff assigned treatment enrollees to an RTW coordinator to receive VT RETAIN's services to support staying at or returning to work. VT RETAIN enrolled 120 primary care practices in the evaluation. Between March 2022 and May 2024, the program enrolled 798 people in the evaluation through 104 primary care practices. In all, the program randomly assigned 450 enrollees to the treatment group who could receive VT RETAIN SAW/RTW coordination services

2. Program implementation

VT RETAIN enrolled at least five people in each of Vermont's 14 counties (Exhibit VII.1) and 13 enrollees in two counties located in the states surrounding Vermont—New Hampshire and New York. Enrollment was highest in Chittenden County, where Burlington is located (27 percent), followed by Washington County, where Montpelier is located (13 percent).

Exhibit VII.1. VT RETAIN: Enrollment coverage in the program's service area



Source: VT RETAIN enrollment data

Note: The number in a county represents the total number of treatment and control enrollees for that county; we suppressed the number if it was fewer than three enrollees. Counties shown in pale blue had 1-3 enrollees, while counties in light blue had between 4-24 enrollees, and counties in blue had 25-49 enrollees. Counties in the darkest shade of blue had more than 50 enrollees each.

By the end of the Phase 2 enrollment period, VT RETAIN had enrolled 39 percent of its original target of 2,040 enrollees.[47] Based on interviews with program staff, the initial primary referral source was patients completing a self-screening tool at participating primary care practices. Later, when primary care participation was established, program staff began engaging additional referral sources, such as grocery stores and libraries, and specialty clinical sites, such as urgent care, physical therapy, or chiropractors' offices. The expansion enabled VT RETAIN to reach a larger population for self-screening and direct referrals in the community served by the primary care practice. When potential enrollees were not affiliated with a participating primary care practice, program staff contacted potential enrollees' primary care providers to invite them to participate in VT RETAIN and undergo random assignment.

Recruitment staff contacted potential enrollees who met the self-screening eligibility criteria to confirm their eligibility and interest in enrolling. If they were interested in enrolling, recruitment staff obtained their informed consent and completed their enrollment. Eligible individuals received up to $50 as an incentive for completing enrollment paperwork. Enrollees were assigned to the treatment or control group based on the random assignment of their primary care provider's practice as a treatment or control practice. When a potential enrollee was not affiliated with a participating primary care practice, program staff contacted their primary care provider to invite their participation in VT RETAIN, and if interested in participating, the provider's practice was randomly assigned as a treatment or control practice.

After enrollment, recruitment staff assigned treatment enrollees to an RTW coordinator who was responsible for providing SAW/RTW coordination services. These services included assessing the treatment enrollee's work and health goals and barriers to staying at work, developing an RTW plan, providing support and education, and connecting the enrollee to resources to address social, medical, mental health, employment, and social needs such as vocational rehabilitation and career services.

RTW coordinators used a strength-based coaching model to help enrollees self-navigate their SAW/RTW process, including communicating directly with their employers, medical providers, and other parties as needed to support their SAW/RTW goals. For example, RTW coordinators encouraged and prepared enrollees to self-advocate and communicate directly with their employers about workplace accommodations and with their medical providers about job modifications and functional goals. RTW coordinators solicited authorization forms from treatment enrollees that gave coordinators permission to speak with the treatment enrollees' employer, workforce professional, or other member of the RTW team about their RTW plan and progress; however, not all enrollees provided authorization. Program staff reported that enrollees seemed more comfortable giving RTW coordinators permission to communicate with medical providers than employers. When a treatment enrollee gave permission, RTW coordinators sent the RTW plan to the enrollee's medical provider to promote awareness and coordination of care.

During interviews, program leaders and staff reported that providers' limited availability was a barrier to providing input to the RTW coordinators on the plan or confirming they had reviewed it. Program leaders and staff said it was rare for RTW coordinators to communicate with enrollees' employers, medical providers, and others, consistent with the strength-based coaching model. RTW coordinators encouraged

[47] expected enrollment of practices into VT RETAIN. Because individuals could only enroll in the program through their primary care practice, this might have also impacted recruitment of enrollees.

enrollees to bring copies of their RTW plans to appointments with their clinicians for review and discussion. RTW coordinators also met weekly with an RTW expert team, which included occupational medicine, pain medicine, physical medicine and rehabilitation, physical therapy, occupational therapy, vocational rehabilitation, employee assistance program counseling, substance use disorder counselors, employment law professionals, and other specialties.

Program staff delivered a training to medical providers and staff at all primary care practices participating in the program. The purpose of the training was to increase awareness of VT RETAIN, emphasize the importance of work for health, and implement screening into practice workflows. VT RETAIN did not provide financial incentives to medical providers for completing the training or using occupational medicine best practices. In November 2024 (after the six-month service eligibility period for all treatment enrollees concluded), VT RETAIN offered a training video offered on-demand to medical providers as an enduring continuing education offering through the Dartmouth Health Medical Grand Rounds program.

The lead workforce partner, the Workforce Development Division (WFD) within VDOL, had less capacity to engage in VT RETAIN than planned. Initially, VDOL planned for WFD staff to help VT RETAIN access WFD data, foster employer connections as a referral source, develop employer trainings, and connect treatment enrollees to WFD's American Job Centers.[48] In addition, VT RETAIN coordinated with the state's existing vocational rehabilitation program, HireAbility, to support enrollees' SAW/RTW plan. HireAbility's role was to provide vocational rehabilitation counseling, assistive technology support, and job placement and retention services to treatment enrollees when appropriate. Treatment enrollees also were connected to VDOL career services when appropriate.

To promote collaboration for supporting VT RETAIN's goals across sectors, VT RETAIN developed a Resilient Workplace Certification Program for employers. This program included training on a wide range of topics that positively affect SAW/RTW, combined with individual assessment and benchmarking to support organizational change. The program began in September 2024 with nine employers.

B. Program participation

Of the 798 people who enrolled in VT RETAIN during Phase 2, 450 were assigned to the treatment group and thus were eligible for SAW/RTW coordination services. Because the study design involved random assignment of primary care practices rather than enrollees, the distribution of enrollees across the treatment and control groups was uneven, with a little over half (56 percent) belonging to the treatment group.[49] Below, we describe the baseline characteristics of treatment enrollees and then discuss their use of VT RETAIN services, drawing on program data to do so.

[48] The U.S. Department of Labor funds American Job Centers throughout the country to provide career services to job seekers.

[49] Mathematica stratified the random assignment of primary care practices by practice size, so practices of approximately the same size had an equal probability of assignment to the treatment or control group. Despite this stratification, more people associated with treatment group practices enrolled in RETAIN than those associated with control group practices, possibly because practice size is not a perfect proxy for the number of potential enrollees who come to a clinic. Moreover, practices assigned to the control group may have been less active in supporting recruitment for VT RETAIN.

1. Baseline characteristics of treatment enrollees

a. Demographic characteristics

About 60 percent of VT RETAIN treatment enrollees were women (Exhibit VII.2). Seventy-one percent of enrollees were younger than 50, with the average age being 42 years (Appendix Exhibit A.14.1). Almost 90 percent of treatment enrollees were non-Hispanic White (89 percent), followed by Hispanic (4 percent), more than one race (3 percent), and non-Hispanic Black (2 percent). All treatment enrollees cited English as their preferred language, and nearly all (96 percent) had a high school diploma or further education. The most frequently reported educational attainment was a four-year college or postgraduate degree (47 percent). Thirty-four percent of treatment enrollees had a high school diploma, GED, or certificate of completion, and 16 percent had an occupational certificate or license or two-year college degree.

b. Injury or illness characteristics

The most common type of injury or illness among VT RETAIN treatment enrollees was a mental health condition (43 percent). The next most common type of injury or illness was musculoskeletal, with 9 percent citing a back-related musculoskeletal injury or illness and 21 percent citing a back or non-back musculoskeletal injury or illness. Twenty-four percent had a health condition that was neither a musculoskeletal nor mental health condition. For 18 percent of treatment enrollees, the primary injury or illness was a new condition rather than a worsening of an existing condition, and 21 percent of treatment enrollees reported their condition was a result of an accident or injury rather than an illness or a chronic condition. About one-quarter (23 percent) of treatment enrollees reported that their health condition was caused, at least in part, by work-related factors, and few treatment enrollees (6 percent) reported that their health condition was part of a workers' compensation claim. The average time between the onset of injury or illness and enrollment in the program was 156 days.[50]

Two-thirds of treatment enrollees (67 percent) had a new or existing behavioral health condition, that is, a mental health condition or a substance use disorder (as either the condition that made them eligible for RETAIN or a secondary health condition). Nearly all these enrollees had a mental health condition and about 1 in 6 also had a substance use disorder (statistics not shown).

c. Recent employment

About three-quarters of treatment enrollees (76 percent) were employed (either self-employed or employed at a private company, nonprofit, or government) at the time of enrollment, and more than half of them (62 percent overall) had worked during the week before enrollment. About one-quarter of treatment enrollees had not worked for at least one month before enrollment. Before their injury or illness, treatment enrollees usually worked 38 hours per week on average. Treatment enrollees varied considerably in their tenure at their current or most recent job: less than one-quarter (22 percent) had been at their job for more than five years, and about one quarter (28 percent) had worked at their job for less than six months. Treatment enrollees most frequently worked in management, professional, or related

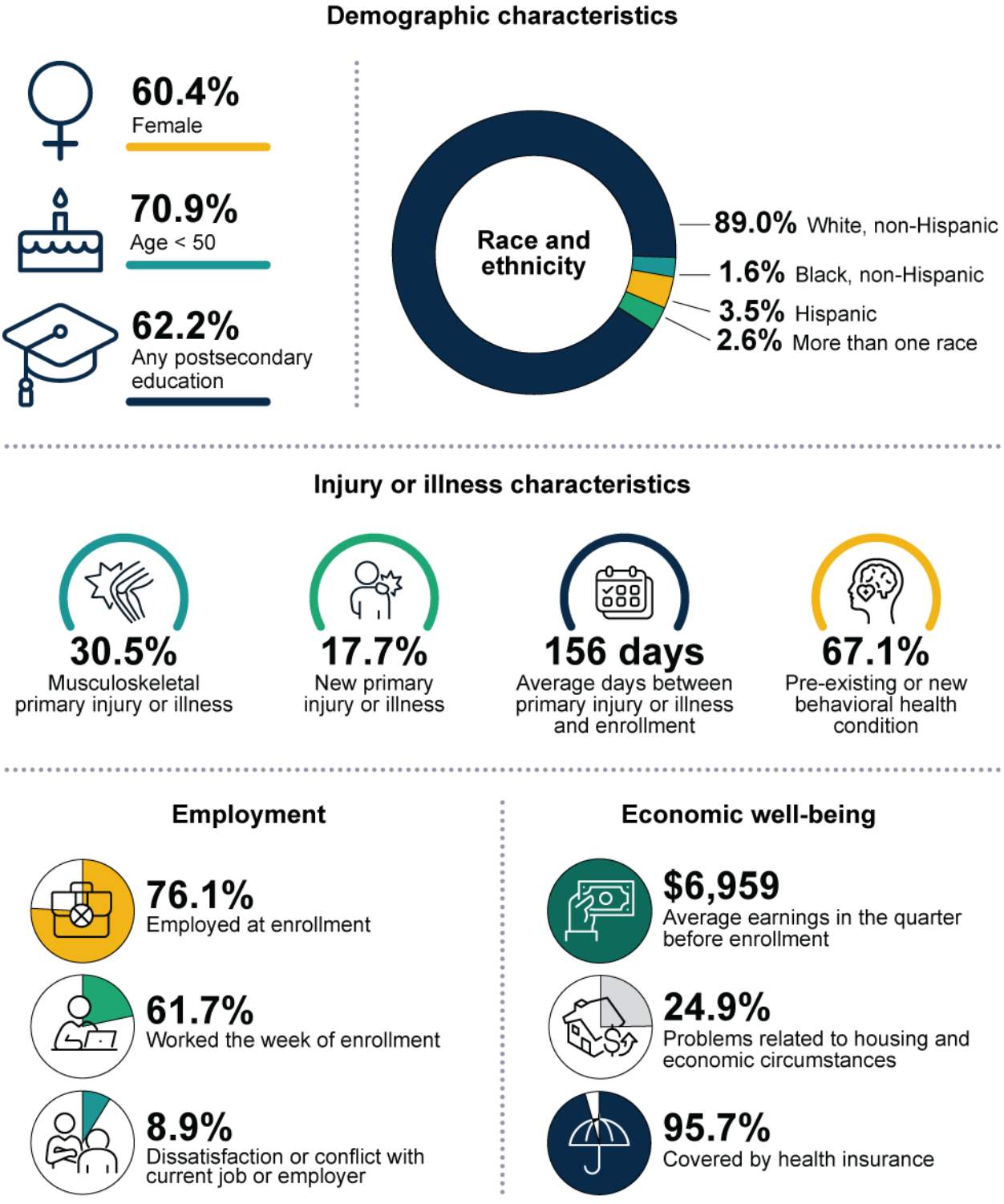
[50] The median time between the onset of injury or illness and enrollment in the VT RETAIN program was 91 days (not shown). VT RETAIN staff recorded the date of initial onset of the medical condition (rather than the date of onset or worsening of the condition, whichever was more recent). Hence, the duration between onset of the medical condition and enrollment is substantially longer for VT RETAIN than the other RETAIN programs.

occupations (42 percent) or in service occupations (32 percent). Nine percent of treatment enrollees reported dissatisfaction or conflict with their current job or employer.

d. Economic well-being

On average, treatment enrollees earned $6,959 in the quarter before the quarter they enrolled in VT RETAIN, and most (77 percent) had earnings of $1,000 or more before taxes and deductions in at least one of the past 12 months. At enrollment, relatively few treatment enrollees reported receiving income from sources other than earnings. Only 2 percent received employer-provided or other private disability insurance, and 3 percent received workers' compensation. Three percent received SSDI or veterans' benefits, and 11 percent reported income from other public programs. In contrast to the program's intent to enroll people before they apply for federal disability benefits, 7 percent of treatment enrollees reported on the baseline participant form that they had applied for or received SSI or SSDI in the three years before enrolling in VT RETAIN. This may reflect some enrollees' confusion about VT RETAIN eligibility requirements related to SSDI application or receipt, as was reported by program staff during interviews (Keith et al. 2024). Nearly all treatment enrollees (96 percent) had health insurance coverage. One-quarter reported experiencing homelessness, inadequate housing, extreme poverty, low income, or insufficient social insurance or welfare support (Exhibit VII.2).

Exhibit VII.2. VT RETAIN: Baseline characteristics of treatment enrollees



Source: RETAIN enrollment data. See Appendix Exhibit A.14.1 for additional information.

2. Service use

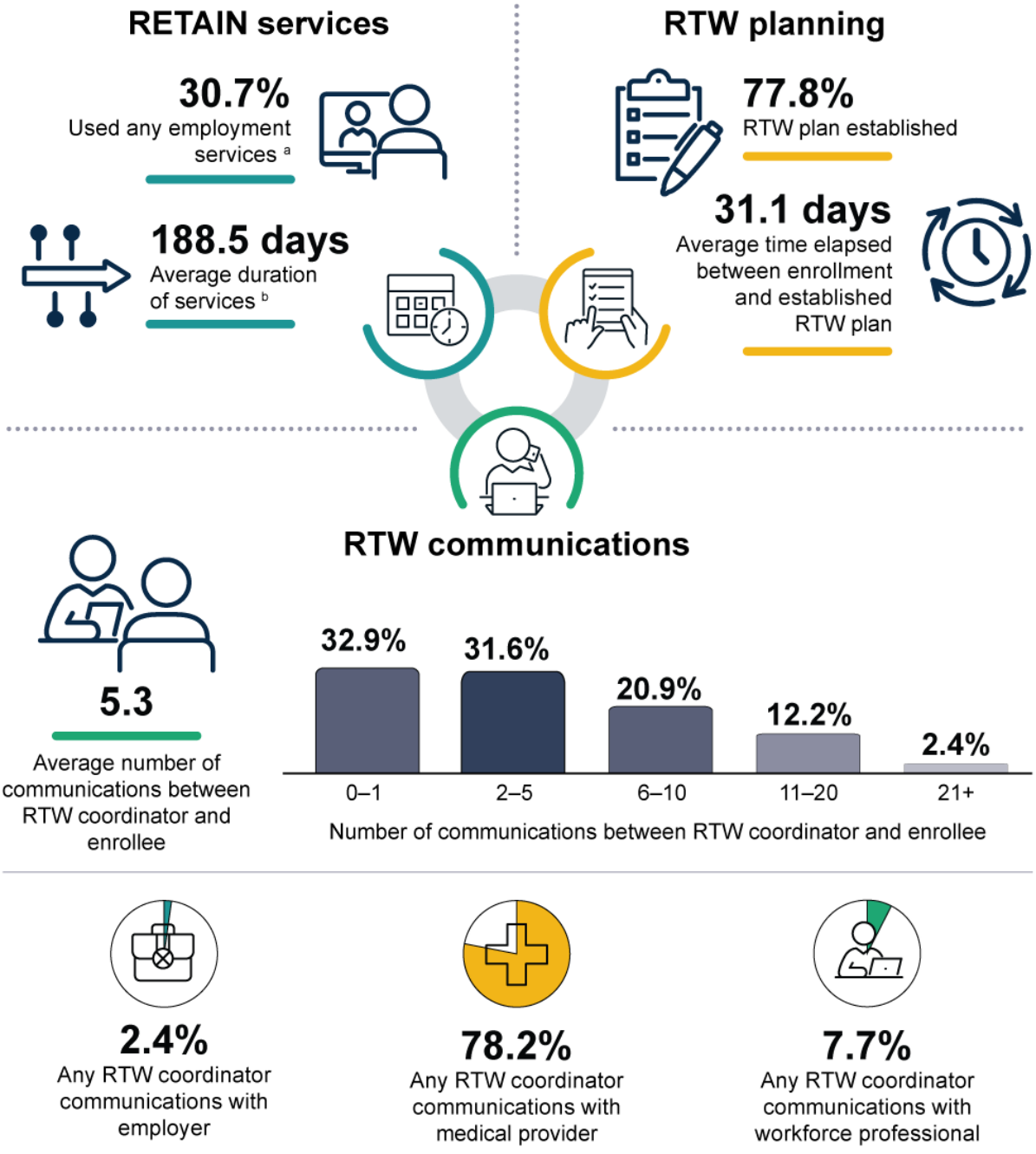
Program data suggest that about three-quarters of VT RETAIN treatment enrollees established an RTW plan (78 percent) and on average, the RTW coordinator communicated with the treatment enrollee to develop these plans within 31 days of enrollment (Exhibit VII.3). RTW plans included details about the enrollee's case, including work and health goals, barriers to pursuing those goals, a plan for progress, and an associated timeline (Keith et al. 2024). RTW coordinators communicated with an enrollee's medical provider to inform the RTW plan for 16 percent of treatment enrollees and met with an employer to inform the RTW plan for 7 percent of enrollees. However, the share of meetings with employers may be an undercount because RTW coordinators may have recorded such meetings as part of other RTW communications (discussed below).

Communication between enrollees and RTW coordinators was a key mechanism for VT RETAIN to achieve its goal of coaching enrollees to self-advocate and navigate SAW/RTW services. Two-thirds of treatment enrollees (67 percent) communicated with their RTW coordinator at least twice, with an average of five communications per enrollee, and about 15 percent of enrollees communicated with their RTW coordinators more than 10 times. If the treatment enrollee consented, the RTW coordinator could contact their medical providers, employer, and other members of the RTW team to discuss the enrollee's RTW plan and progress toward its goals. RTW coordinators communicated with a medical provider for 78 percent of treatment enrollees, with an average of two communications per enrollee. RTW coordinators communicated with an employer for reasons other than a meeting to inform the RTW plan for fewer than three percent of treatment enrollees. RTW coordinators communicated with a workforce professional, such as employment counselors at HireAbility or American Job Centers, for 8 percent of treatment enrollees, averaging less than one communication per enrollee.

Close to one-third (31 percent) of treatment enrollees were recorded by the program as having used or been referred to some form of employment services. Only 6 percent used job retention services, such as on-site job analysis or ergonomic assessment services. One-quarter used job search or training services, and about one-tenth (9 percent) used other employment services. However, program data might underestimate the extent to which VT RETAIN treatment enrollees engaged with employment services. VT RETAIN gave both treatment and control enrollees a resource library and they could independently contact the resources. If they went on to use some services but did not report it back to the RTW coordinator, this might not be captured in the program data on service use.

VT RETAIN's program data indicate that use of VT RETAIN's services varied substantially depending on treatment enrollees' characteristics at the time of enrollment. For select services, relative to other enrollees, rates of service use were higher among enrollees who were 50 or older, had a primary diagnosis that was not musculoskeletal, had a primary or secondary behavioral health condition, were dissatisfied or had conflict with their employer, or had problems related to their housing or economic circumstances. Detailed findings for service use among subgroups are available in Appendix Exhibit G.2.

Exhibit VII.3. VT RETAIN: Services used by treatment enrollees



Source: RETAIN service use data. See Appendix Exhibit E.1 for additional information.

Note: We refer to certain activities (such as RTW planning) in terms of RTW, though some enrollees might be working and focused on SAW goals. VT RETAIN gave both treatment and control enrollees a resource library and they could independently contact the resources. If an enrollee independently used a service but did not report it back to the RTW coordinator, this might not be captured in the program data on service use.

RTW = return-to-work.

[a] The percentage of treatment enrollees who received any employment services includes enrollees who used or were referred to one or more of the following: job retention services, job training and job search services, or other employment services.

[b] VT RETAIN recorded date of exit as six months post-enrollment for all enrollees.

C. Impacts on enrollees' outcomes

The findings in this section show the extent to which VT RETAIN led to changes in enrollees' labor force attachment and employment, SSA program participation, economic well-being, and health in the first year after enrollment. The findings are based on Mathematica's independent evaluation of the program.

How we estimated the impacts of VT RETAIN

We estimated the program's impacts by comparing the outcomes of enrollees who enrolled through primary care practices in the treatment group to the outcomes of enrollees who enrolled through primary care practices in the control group. Only people who enrolled through treatment group practices could access VT RETAIN services. We describe the program's impact on an outcome in terms of how the average outcome of treatment enrollees differed from that of control enrollees. ◢

We estimated the program's impacts on these outcomes by comparing the outcomes of enrollees in the treatment group, who could access VT RETAIN services, to those of enrollees in the control group, who could not access these services. We compared the treatment and control groups across more than 20 characteristics measured at the time of and enrollment (Appendix Exhibit A.14.1). In general, enrollees in the treatment and control groups had similar characteristics on average—as expected, given the experimental study design. We found three statistically significant differences, in sex, age, and time since last worked. The share of female enrollees was smaller in the treatment group than the control group (60 percent versus 69 percent), and enrollees in the treatment group were younger on average than those in the control group (age 42 versus 44). In addition, the groups differed in the distribution of time since last worked at enrollment, with treatment enrollees being less likely to have worked during the week of enrollment. To obtain unbiased estimates of program impacts, we accounted for the difference in sex, age, and time since last worked in addition to a core set of covariates (see Appendix Exhibit B.1).[51]

In an earlier report, using data from an early follow-up survey of enrollees (Patnaik et al. 2025), we examined VT RETAIN's impact on enrollee outcomes during the two months after enrollment. We found that VT RETAIN increased the shares of enrollees in the treatment group who used care coordination services and employment-related support services. We found no impact on the shares of enrollees who participated in job-related training, talked with healthcare providers about how an injury or illness affected their ability to work, and were enrolled in school or taking any classes. We also found no impact on measures of enrollees' employment and health during the two months after enrollment.

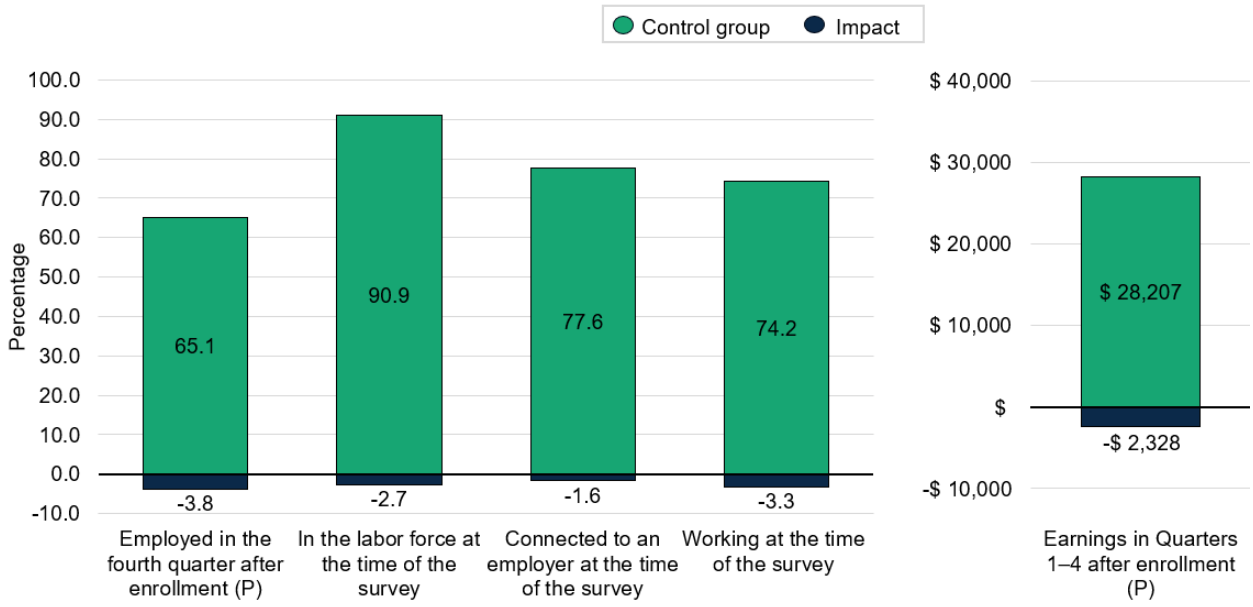
The one-year impact estimates suggest that VT RETAIN had positive impacts on some measures of enrollees' health and economic well-being but did not improve their employment or earnings or reduce participation in the SSDI and SSI programs (Appendix Exhibit G.3). We estimated program impacts on selected outcomes for subgroups of enrollees defined by age, sex, education, primary diagnosis, and time since last worked at enrollment. We found evidence of negative impacts on labor market outcomes

[51] For some baseline characteristics (such as having applied for or received SSI or SSDI in the past three years), the difference between the treatment and control group was nontrivial in size even if it was statistically insignificant. We conducted robustness checks wherein we accounted for group differences in such characteristics through covariate adjustment in our impact estimation models. The results (not shown) confirm that the estimates of VT RETAIN's impacts on enrollee outcomes do not meaningfully change if we account for such differences.

among several subgroups: enrollees age 50 and older, female enrollees, enrollees with no postsecondary education, enrollees with a musculoskeletal primary diagnosis, and enrollees who last worked more than one week before enrollment. (Appendix Exhibits G.4-G.8).

VT RETAIN did not improve enrollees' employment rates and earnings in the first year after enrollment. The evidence from quarterly wage records indicates that VT RETAIN did not improve enrollees' labor market outcomes in the first year after enrollment (Exhibit VII.4). About 65 percent of control enrollees were employed in the fourth quarter; this rate was about 4 percentage points lower among treatment enrollees though the difference was not statistically significant. Control enrollees' average earnings in the four quarters after enrollment were $28,207; the program did not have a statistically significant impact on this outcome. (Appendix Exhibit G.3).

Exhibit VII.4. VT RETAIN: One-year impacts on employment outcomes



Source: VT RETAIN enrollment data; one-year follow-up survey; Social Security Administration data; state unemployment insurance wage records.

Note: See Appendix Exhibit G.3 for detailed estimates and description of estimation methods.

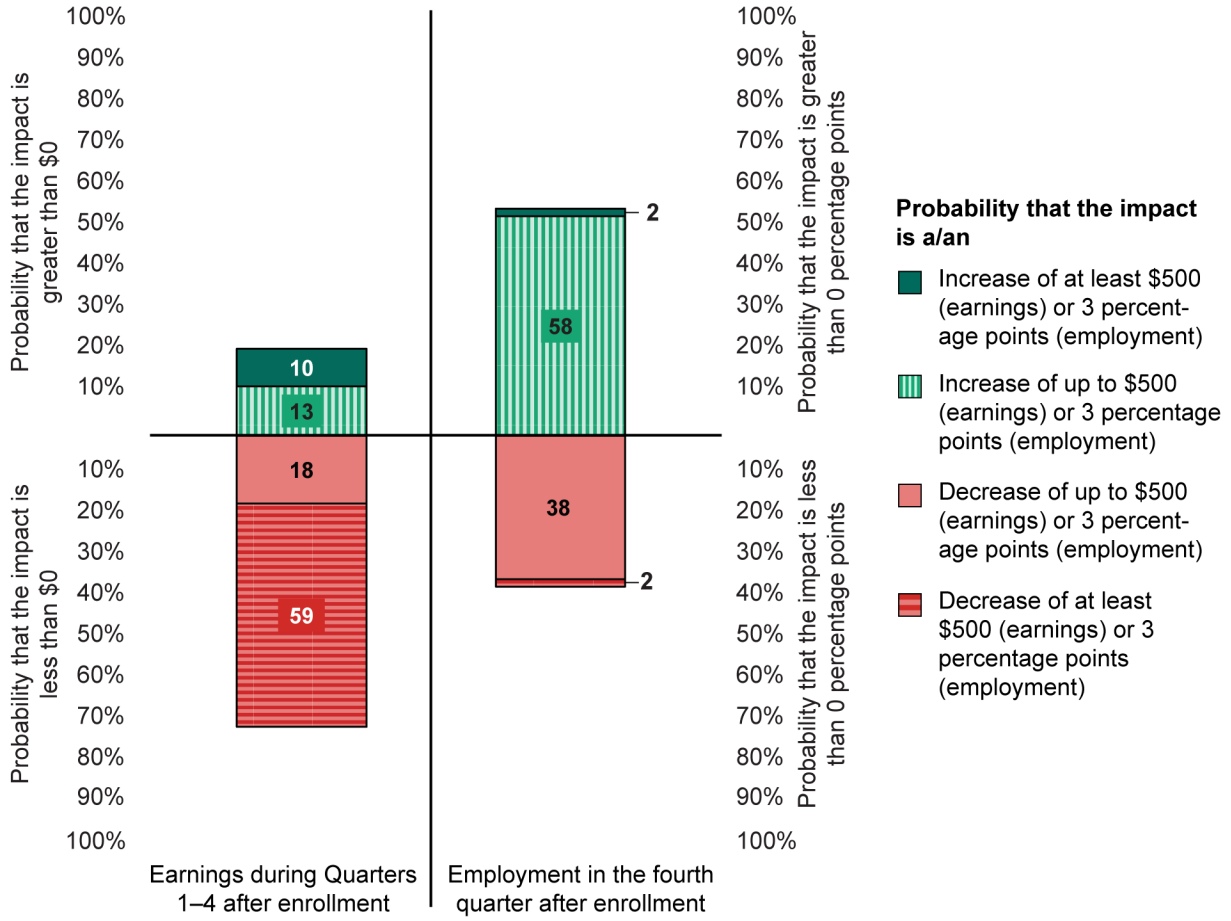
*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

^/^^/^^^ Impact estimate is significantly greater than zero (*p*-value is less than .10/.05/.01) using a one-tailed t-test. This test was only conducted for primary outcomes.

(P) = primary outcome.

Findings from supplementary Bayesian analyses suggest a high likelihood that VT RETAIN had unfavorable impacts on enrollees' earnings (Exhibit VII.5). We estimated a 77 percent probability that the program reduced treatment enrollees' earnings and only a 23 percent probability it increased earnings. For employment, the findings from supplementary Bayesian analyses are more uncertain. We estimated a 60 percent probability of a favorable impact on employment in the fourth quarter after enrollment, which is similar odds to a coin toss.

Exhibit VII.5. VT RETAIN: Estimated probabilities of impacts on earnings and employment



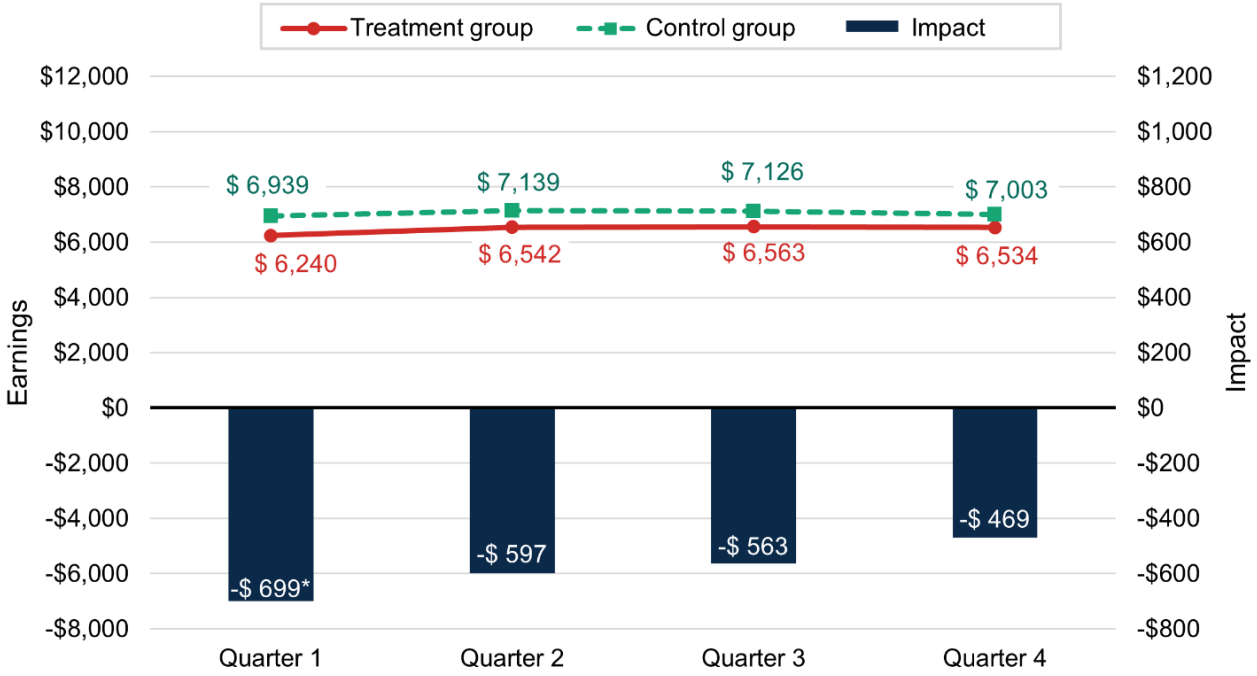
Note: See Appendix Exhibit G.10. An annual earnings increase of at least $500 is the approximate impact many RETAIN programs need to break even within 20 years (see Section VII.D). For employment, 3 percentage points is approximately 5 percent of the control group's mean outcome.

When we examined earnings in each of the four quarters after enrollment (Exhibit VII.6), we found one difference between the treatment and control groups. In the first quarter after enrollment, treatment enrollees earned $699 less than control enrollees. In the other quarters, the difference in earnings between treatment and control enrollees was not statistically significant. In each of the four quarters, the program did not have a significant impact on employment rates.

In terms of employment characteristics at the time of the one-year follow-up survey, we found no statistically significant differences (Exhibit VII.4; Appendix Exhibit G.3). The share of enrollees who were working for an employer that offers paid leave was substantially smaller among treatment enrollees compared with control enrollees (47 percent versus 54 percent), but this difference was not statistically significant. For other employment outcomes, we also did not find significant impacts. About 91 percent of control enrollees were in the labor force, 78 percent were connected to an employer, and 74 percent were working at the time of the survey (one year after enrollment). Control enrollees reported earning an average $684 per week and working an average 24 hours per week. A little under half of control enrollees (43 percent) had been tenured at their job for at least one year, and almost half were working for an

employer that offered health insurance (47 percent). About one in every 20 control enrollees (7 percent) reported participating in a job-related training program during the last two months.

Exhibit VII.6. VT RETAIN: Impacts on earnings in the four quarters after enrollment



Source: VT RETAIN enrollment data; state unemployment insurance wage records.

Note: Statistics have been rounded to nearest dollar. See Appendix Exhibit G.3 for detailed estimates and description of estimation methods.

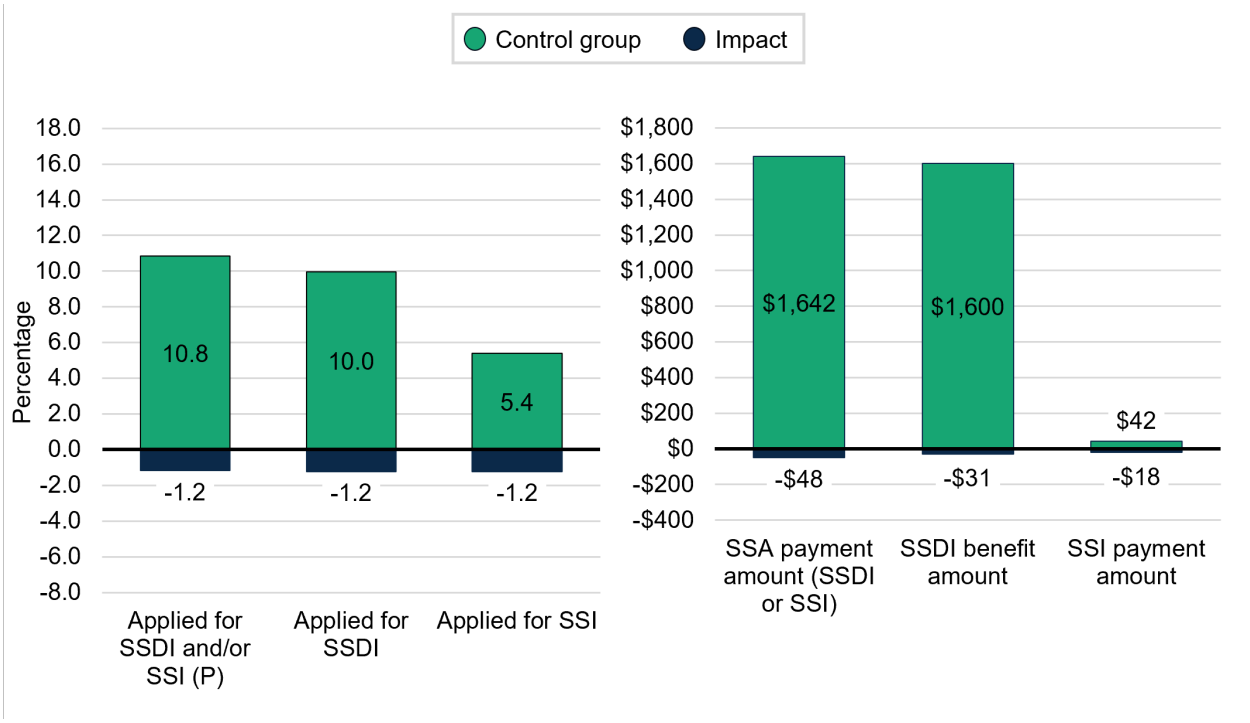
*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

Although the program did not impact labor market outcomes overall, the evidence suggests that VT RETAIN had an unfavorable impact on these outcomes for select subgroups of enrollees. The program's impacts on employment-related outcomes differed by enrollees' age, sex, education, primary diagnosis, and time since last worked (Appendix Exhibits G.4-G.8). For enrollees ages 50 and older, VT RETAIN reduced the percentages employed in the fourth quarter of enrollment and reporting being connected to an employer by 10 and 9 percentage points, respectively. The corresponding impacts on enrollees younger than 50 were not statistically significant. In contrast, the program reduced average weekly pay at the time of the survey by $116 among enrollees who were younger than age 50 at the time of enrollment, but had no impact on average weekly pay among older enrollees. For female enrollees, enrollees with no postsecondary education, enrollees with musculoskeletal conditions, and enrollees who last worked more than one week before enrollment, VT RETAIN reduced earnings in the four quarters after enrollment by $3,170, $4,680, $6,038, and $4,807, respectively. The corresponding impacts for male enrollees, enrollees with any postsecondary education, enrollees with non-musculoskeletal conditions, and enrollees who had last worked in the week before enrollment were not statistically significant.

About one in every 10 enrollees applied for SSDI or SSI in the 12 months after enrollment. The program had no impacts on SSDI or SSI application rates, receipt rates, or average payment amounts during the one-year follow-up period. VT RETAIN had no impact on the share of enrollees

who applied for SSDI or SSI in the year after enrollment (Exhibit VII.7). About 11 percent of control enrollees applied for SSDI, SSI, or both.

Exhibit VII.7. VT RETAIN: One-year impacts on SSDI and SSI program participation



Source: RETAIN enrollment data; SSA data.

Note: See Appendix Exhibit G.3 for detailed estimates and description of estimation methods.

*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

^/^^/^^^ Impact estimate is significantly less than zero (*p*-value is less than .10/.05/.01) using a one-tailed t-test. This test was only conducted for primary outcomes.

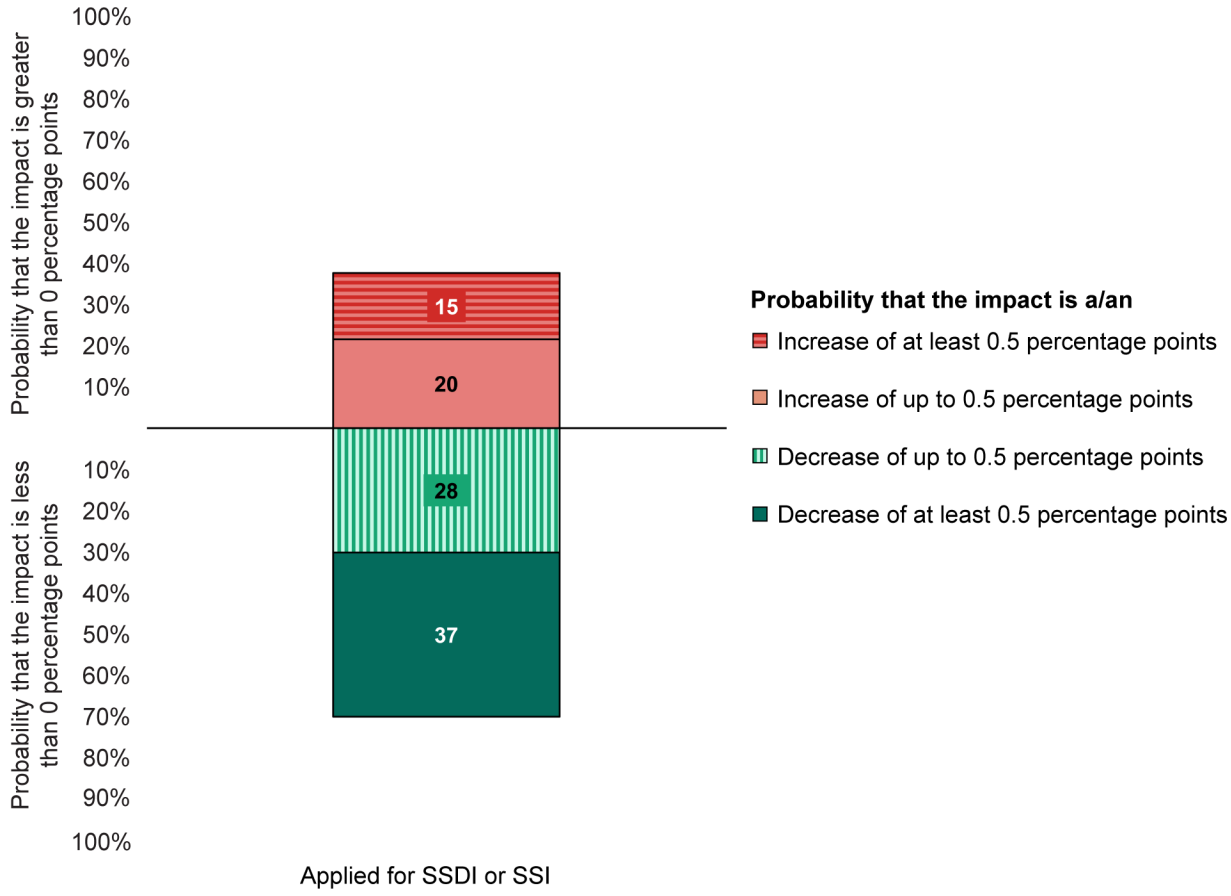
(P) = primary outcome; SSA = Social Security Administration; SSDI = Social Security Disability Insurance; SSI = Supplemental Security Income.

Findings from supplementary Bayesian analysis suggest it was unlikely that the program had much of an impact on applications for SSDI and SSI. We estimated a 65 percent probability that VT RETAIN decreased applications for SSDI or SSI during the 12 months after enrollment, but only a 37 percent probability of a decrease greater than 0.5 percentage points (Exhibit VII.8).

VT RETAIN did not impact other measures of SSA program participation. About 10 percent of control enrollees received either SSDI or SSI payments and the average payment received among all control enrollees was $1,642; VT RETAIN did not impact either outcome (Appendix Exhibit G.3). When we examined the SSDI and SSI programs separately, we found no statistically significant differences between treatment and control enrollees. Ten percent of control enrollees applied for SSDI, almost ten percent received SSDI, and the average amount received was $1,600. Few control enrollees (about 5 percent) applied for SSI. Given that there is typically a substantial delay between applying for SSDI and receiving any benefits, it is likely that many of the enrollees who received SSDI/SSI during the 12 months following

enrollment did so on the basis of an application filed prior to enrollment.[52] About 1 percent of control enrollees received SSI, and the average SSI payment amount received by control enrollees was $42.

Exhibit VII.8. VT RETAIN: Estimated probabilities of impacts on SSDI and SSI applications



Note: For applications to SSDI or SSI, 0.5 percentage points is approximately 5 percent of the control group's mean outcome.
SSDI = Social Security Disability Insurance; SSI = Supplemental Security Income.

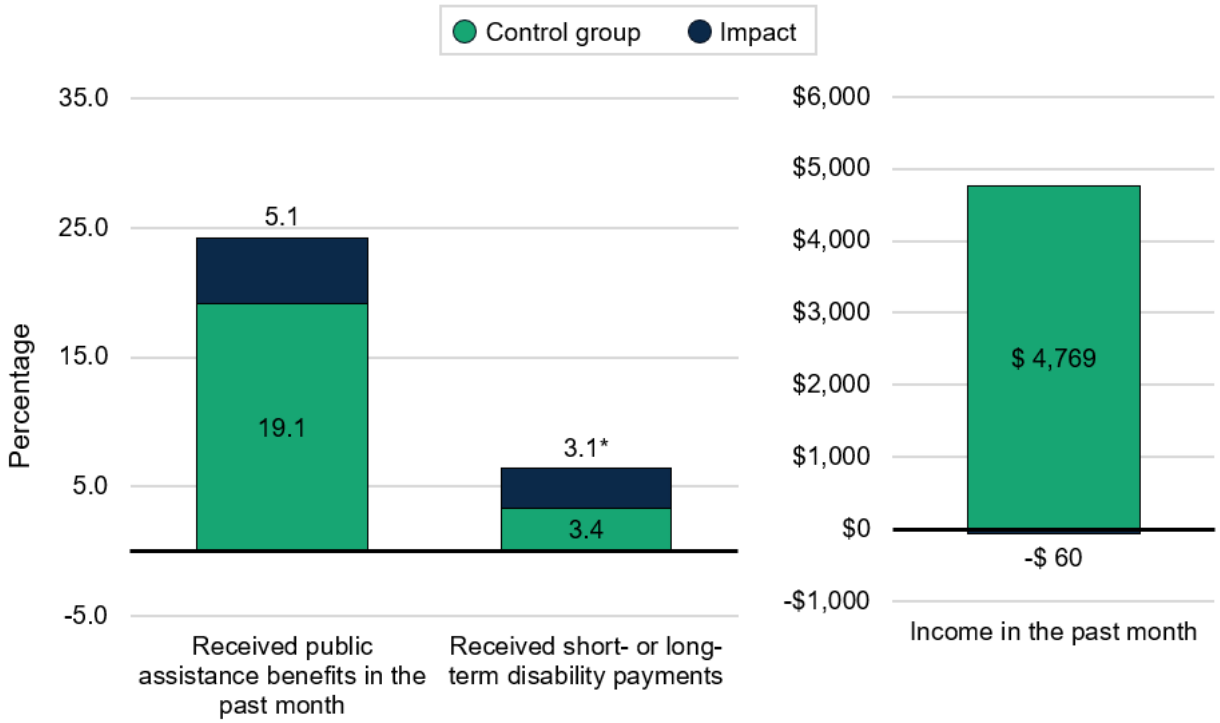
VT RETAIN increased SNAP benefits and government housing assistance and the percentage of treatment enrollees who received short- or long-term disability payments. VT RETAIN had no impact on most of the household economic well-being measures that we examined (Exhibit VII.9). However, it did affect three of these outcomes (Appendix Exhibit G.3). Relative to control enrollees, treatment enrollees reported that their households received larger amounts of SNAP benefits ($52 versus $81, respectively) and government housing assistance ($39 versus $74, respectively). VT RETAIN increased the share of treatment enrollees who receive short- or long-term disability payments by about 3 percentage points.

Other measures of household economic well-being were similar across treatment and control groups. On average, control enrollees responding to the one-year follow-up survey reported a household income of $4,769 and household earnings of $4,056 during the previous month (Exhibit VII.9). There was no

[52] SSDI benefits do not begin until the sixth full month of disability, and this waiting period begins with the first full month after the date the disability began. Further, it takes time for SSA to evaluate claims and render a decision.

difference in the share of enrollees whose households received any public assistance benefits (19 percent) or amounts of household UI ($31), or workers' compensation ($56). However, we found impacts on receipt of public assistance benefits for two subgroups. For enrollees ages 50 and older and those with no postsecondary education, the share receiving any public assistance benefits increased by 10 and 13 percentage points, respectively. The corresponding impacts for enrollees younger than 50 and for enrollees with any postsecondary education were not statistically significant.

Exhibit VII.9. VT RETAIN: One-year impacts on economic well-being



Source: VT RETAIN enrollment data; one-year follow-up survey.

Note: See Appendix Exhibit G.3 for detailed estimates and description of estimation methods.

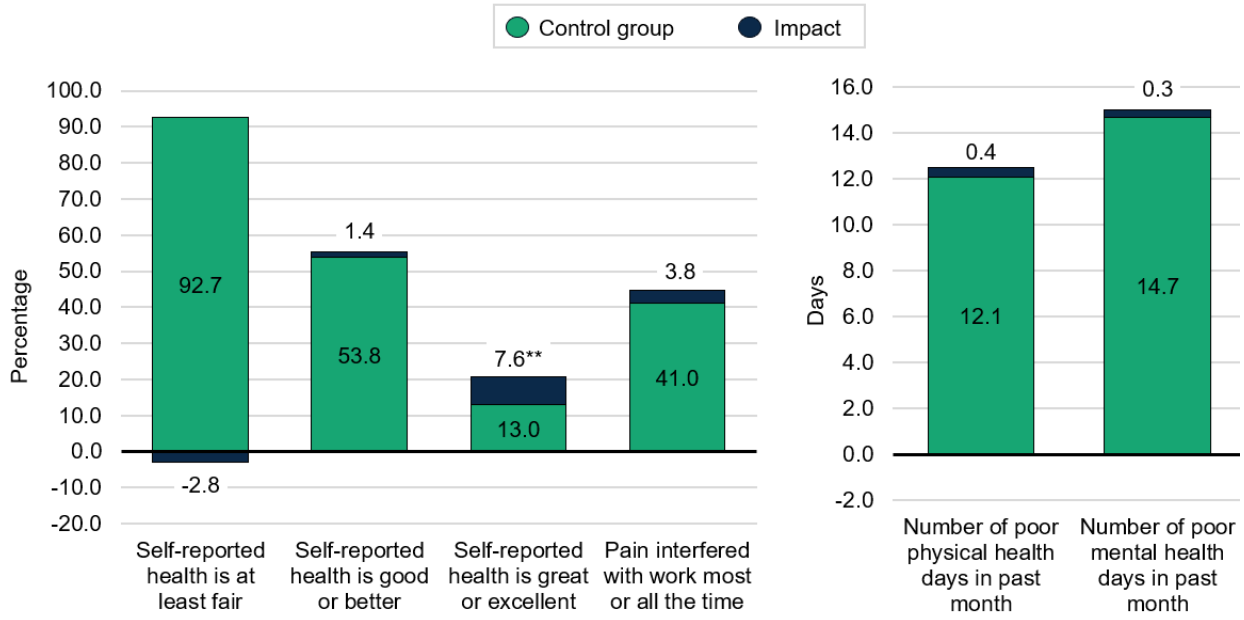
*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

Note: Public assistance benefits refer to benefits from the Supplemental Nutrition Assistance Program, housing assistance or unemployment insurance programs. Short or long-term disability benefits refer to private disability insurance benefits.

VT RETAIN treatment enrollees were more likely than control enrollees to rate their health as very good or excellent but they were also more likely to report recently receiving opioid prescriptions; there were no differences in other self-reported measures of health. VT RETAIN had a large, favorable impact on one measure of self-reported health. About 21 percent of treatment enrollees reported that their health was very good, or excellent, compared with 13 percent of control enrollees (Exhibit VII.10). It had no impact on the share of enrollees who rated their health as at least fair (92 percent) or the share who rated it as good or better (54 percent). The rate of health insurance coverage (95 percent), pain level (4 out of 10), rate of pain interfering with work (41 percent), average number of poor physical health days (12 days in past month), and average number of poor mental health days (15 days in past month) did not differ between the treatment and control groups. However, there is suggestive evidence that the program might have impacted opioid prescriptions: while about 6 percent of control enrollees reported they had

received such a prescription in the 2 months before the one-year survey, this share was about 4 percentage points higher in the treatment group.[53]

Exhibit VII.10. VT RETAIN: One-year impacts on health



Source: VT RETAIN enrollment data; one-year follow-up survey.

Note: See Appendix Exhibit G.3 for detailed estimates and description of estimation methods.

*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

D. Benefits and costs of the program

We examined the benefits and costs of VT RETAIN for the year after enrollment based on the program's estimated one-year impacts on enrollee outcomes and program costs during the steady-state period April 1, 2023, through March 31, 2024. We estimated the net benefits (or costs) separately for enrollees, the federal government, and state government and across these three key perspectives. The net benefit (cost) is based on (1) the point estimates for the program's impacts on treatment enrollees, (2) assumptions based on the literature regarding how impacts lead to indirect benefits and costs, and (3) the calculated cost of delivering VT RETAIN per treatment enrollee.

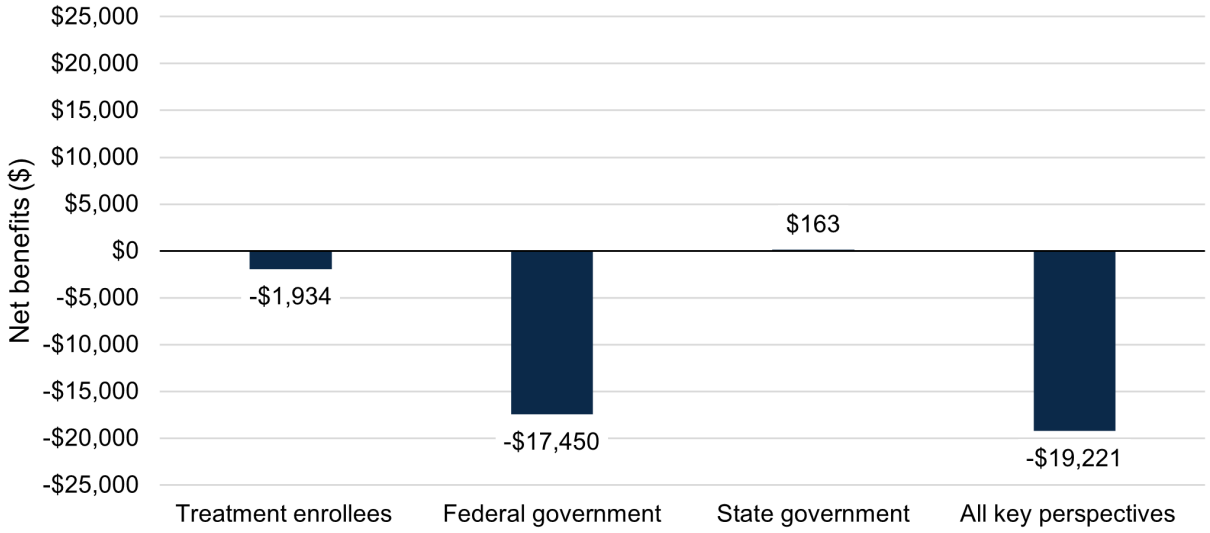
The estimated cost of delivering VT RETAIN was $16,013 per treatment enrollee. Using data provided by the program, we estimated the costs of VT RETAIN to be $16,013 per treatment enrollee (Appendix Exhibit G.12). The cost per enrollee includes wages paid for staff time dedicated to VT RETAIN activities across all partners ($8,842), fringe benefits for those staff ($2,374), administrative and overhead costs for program operation ($3,413), and outreach costs ($1,001). We estimated program costs using

[53] We interpret the evidence of impacts on opioid prescriptions as suggestive rather than definitive because we are unable to control for external factors influencing opioid prescriptions that could differ systematically across primary care practices, which were the units of random assignment for the VT RETAIN evaluation. For example, if the treatment group comprised a large share of clinicians who commonly prescribed opioids for pain, that could lead to a difference in self-reported opioid prescriptions between the treatment and control enrollees that would be unrelated to the VT RETAIN program.

data for the period April 1, 2023, through March 31, 2024, but we recognize that program costs might have varied over the program's implementation period depending on the stage of implementation and the number of enrollees in the program at that time. We also recognize that the cost per treatment enrollee might be inflated due to the smaller than expected sample size resulting from recruitment challenges. The estimate does not include incentives offered to enrollees; we considered such incentives to be evaluation costs that would not accrue in a non-evaluation context.

Treatment enrollees experienced a net cost and the overall costs of VT RETAIN outweighed its overall benefits during the year after enrollment. Treatment enrollees experienced a net cost of $1,934 on average during the year after enrollment (Exhibit VII.11). This is driven primarily by the large negative point estimate for the impact on enrollee earnings during the four quarters after enrollment. The federal government also experienced a net cost ($17,450) per treatment enrollee. In addition to bearing the cost of delivering program services, the federal government experienced reduced revenue from income, sales, and payroll taxes resulting from the negative point estimate of impact on earnings and increased outlays in public assistance benefits. Across the three key perspectives, we estimated that VT RETAIN resulted in a net cost of $19,221 per treatment enrollee in the year after enrollment.

Exhibit VII.11. VT RETAIN: Net benefits per treatment enrollee in the year after enrollment



Source: See Appendix Exhibit G.12 for details on sources and methods for our calculations.

Note: Net benefits are benefits minus costs, expressed as dollars per enrollee, inflation-adjusted to 2024 dollars, and discounted to 2024 present values.

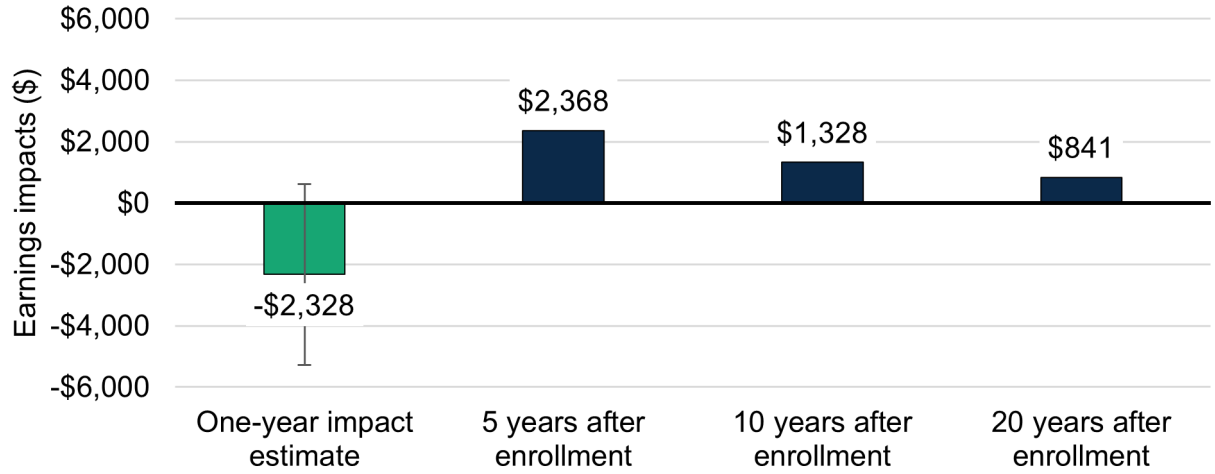
Below, we summarize the benefit-cost findings from each of the key perspectives (Appendix Exhibit G.12 provides detailed estimates):

- **Treatment enrollees.** On average, VT RETAIN treatment enrollees experienced a net cost of $1,934 during the year after enrollment. The key contributors to the costs were the statistically insignificant but negative impacts on earnings ($2,328), corresponding reductions in fringe benefits ($1,056), and reduced UI benefits ($302). These costs exceeded the benefits treatment enrollees experienced through savings in earnings-based taxes and increased SNAP benefits, housing assistance, and private disability payments.

- **Federal government.** We estimated that a net cost of $17,450 accrued to the federal government for each treatment enrollee in the year after enrollment. The largest cost component was program delivery, which cost the federal government $16,013 per treatment enrollee. The federal government also experienced increased indirect costs associated with loss of income and payroll tax revenue ($783) and increased outlays for public housing assistance ($421) and SNAP benefits ($347).
- **State government.** We estimated that state government experienced a net benefit of $163 per treatment enrollee stemming from decreased outlays for UI benefits ($302), offset by reduced income and sales tax revenue ($117), and increased workers' compensation benefit outlays ($23) and administrative costs associated with additional SNAP benefits ($21).

For VT RETAIN to become cost neutral within the next 20 years, the program's impact on earnings would need to become positive and grow over time. A simple forecast suggests the program is unlikely to generate a net benefit across key perspectives within that time. Because program costs are incurred up front but benefits to enrollees and other stakeholders can continue to accrue in the future, we conducted supplementary analyses to consider the program's benefits and costs beyond the first year after enrollment. First, we calculated the average annual impact on earnings per year that would be needed for the program to be cost neutral by five, 10, and 20 years after enrollment. For VT RETAIN to be cost neutral from all key perspectives within five years, we estimated that the impact on annual earnings must be at least $2,368 per treatment enrollee; to be cost neutral in 10 years, it must be at least $1,328; and to be cost neutral in 20 years, it must be at least $841 (Exhibit VI.12; Appendix Exhibit G.14). These required future annual impacts are implausible because they fall outside of the 95 percent confidence interval of the one-year impact estimate (-$5,270 to -$615). In our assessment, it is unlikely that the program's impact on earnings will become positive and sufficiently large over 20 years to attain cost neutrality.

Exhibit VII.12. VT RETAIN: Annual impact on earnings needed to reach cost neutrality at five, 10, and 20 years after enrollment



Source: See Appendix Exhibit G.14 for details on sources and methods for our calculations.

Note: This chart shows the average annual impact on earnings that would be needed for the program to be cost neutral five, 10, and 20 years after enrollment. The first bar shows the one-year impact on earnings (point estimate and 95 percent confidence interval).

E. Discussion

In this section, we highlight key patterns in the findings from the one-year evaluation of VT RETAIN and discuss their significance and possible explanations.

VT RETAIN encountered challenges with enrollment and program participation, which might have contributed to the absence of program impacts. VT RETAIN faced challenges with slow initial recruitment of primary care practices, which in turn impacted recruitment of enrollees for the program. VT RETAIN's partnership with the state's accountable care organization facilitated the recruitment of primary care practices across the state to act as referral sources, with patients completing a self-screening tool at participating practices. However, this recruitment strategy resulted in low initial enrollment and, despite dedicating staff time and resources to engaging several additional referral sources, enrollment remained lower than expected over the enrollment period. As such, the program enrolled only 39 percent of its enrollment target for Phase 2 (798 people instead of the planned 2,040). The smaller-than-expected sample size limited the statistical power available to detect small impacts.[54] It is possible the program had small impacts on some outcomes that we could not detect. For example, the point estimate for the impact on use of public assistance benefits (5.1 percentage points) is substantial in size (representing 27 percent of the control mean) and consistent with the significant impacts on amounts of SNAP benefits and housing assistance received. However, the impact on this outcome is not statistically significant, likely because of inadequate statistical power to detect impacts of a modest magnitude.

After enrollment, treatment enrollees' engagement in services was relatively low. About two-thirds of treatment enrollees communicated with their RTW coordinator at least twice, with an average of five communications per enrollee. During interviews, program staff cited a lack of enrollee responsiveness as presenting challenges to delivering RTW coordination services for some treatment enrollees, and they sometimes had difficulty connecting with enrollees after they had enrolled (Keith et al. 2024). It is possible that some enrollees did not need frequent communication to support their SAW/RTW plans. For a majority of enrollees, RTW coordinators communicated with their medical provider but did not communicate with an employer or workforce professional. Nonetheless, program data show that 31 percent of enrollees used some employment services, with 25 percent using job search or training services or referrals. This is consistent with the previous finding that VT RETAIN contributed to more than a 100 percent increase in employment-related support services in the first two months after enrollment compared with the control group (Patnaik et al. 2025). These findings suggest that the strengths-based coaching model may have empowered treatment enrollees to pursue these services.

The absence of impacts on employment and earnings might be explained by some features of the VT RETAIN program design, implementation, enrollees' healthcare challenges, resources offered to

[54] VT RETAIN proposed a target sample size of 2,040 enrollees for Phase 2. At the evaluation design stage, Mathematica estimated that the proposed sample size could provide sufficient statistical power to detect an impact of 6 percentage points or more on the primary outcome of employment in the fourth quarter after enrollment. This calculation assumed that 75 percent of the control group would be employed one year after enrollment. Survey data indicate this assumed rate held for control enrollees (with 78 percent working at the time of the one-year survey), though state wage records indicate that it did not (with only 65 percent were working in the fourth quarter after enrollment). The state wage records do not include self-employment or gig work.

control enrollees, or the cluster random assignment design. Despite the program's positive impact on the use of employment-related support services in the first two months after enrollment, it did not improve enrollees' employment or earnings during the first year after enrollment. In fact, evidence suggests the program might have unintentionally led to lower employment and earnings among the treatment group than the control group—especially among enrollees ages 50 and older, female enrollees, those with no postsecondary education, those with musculoskeletal conditions, and those who had last worked more than one week before enrollment.

One possible explanation for the absence of impacts is that limited service use made it difficult for VT RETAIN to improve participant outcomes. Compared with the other programs, VT RETAIN had relatively lower levels of service use. For example, enrollees and the RTW coordinators in the VT RETAIN program exchanged an average of five communications, whereas this average exceeded 10 in the other RETAIN programs. Also, fewer than one-third of enrollees used or received a referral to employment services, according to program data. During interviews, program staff told us that some enrollees were lost to follow-up, that is, they could not be contacted after they enrolled in the program. If some treatment enrollees never received VT RETAIN services, it would make it less likely for differences in average outcomes to emerge between treatment and control enrollees.

Other potential explanations for the absence of program impacts on SAW/RTW outcomes lie in the program's design features, implementation, or composition of enrollees. First, VT RETAIN's program model included strength-based coaching and empowering participants to self-advocate and self-navigate SAW/RTW conversations with their healthcare team and employer, rather than RTW coordinators communicating with others on the enrollee's behalf. However, program data indicated limited levels of communication between enrollees and their RTW coordinators. Ultimately, with few conversations with RTW coordinators, some enrollees might not have been adequately prepared to successfully self-navigate through their SAW/RTW experiences.

Second, the program's emphasis on self-empowerment might have nudged enrollees to pursue their own goals, which might not have been employment related. For example, enrollees might have prioritized health and recovery over SAW/RTW goals, as reflected in the positive impact on self-reported health.

Third, the significant impact on household receipt of SNAP benefits and government housing assistance suggests that VT RETAIN might have helped connect treatment enrollees with public assistance benefits, which in turn might have also encouraged them to postpone returning to work. Finally, compared with other states, VT RETAIN had the largest percentage of enrollees with an existing or new behavioral health condition. VT RETAIN program staff reported that unmet needs for behavioral healthcare due to provider shortages in the state posed a significant barrier to staying at or returning to work in Vermont. For some enrollees, these behavioral health conditions might have posed additional challenges to effective self-advocacy and self-navigation of SAW/RTW services.

Features of the program's experimental study design might also help explain the absence of impacts on treatment enrollees. First, the program gave both treatment and control enrollees a resource inventory of SAW/RTW services available in the community that they could independently seek out and use. If these resources alone were sufficient to help enrollees work toward their SAW/RTW goals, the inventory might

have helped treatment and control enrollees but diminished program impacts (improvements in the treatment group relative to the control group).

Second, a feature unique to the independent evaluation of VT RETAIN was the use of cluster random assignment, which could lead to different types of enrollees being assigned to the treatment versus control group. We took several steps to prevent this imbalance by stratifying random assignment of practices, testing for imbalance in baseline characteristics, and controlling for any differences that we observed. However, the efficacy of these steps depended on the data used to guide them, and it is possible unobserved differences in the baseline characteristics of treatment and control enrollees explain why the program did not improve employment and earnings. Random assignment of primary care practices was stratified based on practice size because it was the only practice-level data available that could proxy for the number of potential enrollees through that practice and thus be used to balance the size of the treatment and control group. However, practice size might be a poor proxy for practice or enrollee characteristics and thus be a poor predictor of the primary outcomes. Within a practice size category, the caseloads of some practices might have a higher share of enrollees with characteristics associated with labor market withdrawal (for example, being close to retirement age) than others. In an ideal experiment, we would stratify on enrollee-level characteristics as we did in the other programs, or on practice-level characteristics such as practice location, status as a federally qualified health center, and most common diagnoses among patients.

Although the program did not significantly impact applications for SSDI or SSI, VT RETAIN increased use of SNAP and government housing assistance, suggesting it nudged treatment enrollees away from disability-focused programs toward more general public assistance programs. There are several possible explanations for this finding. The increased receipt of SNAP and similar benefits is consistent with VT RETAIN's efforts to make enrollees aware of and connect them to state-level or local resources such as housing programs or the state SNAP program. Another reason might be that a large share of VT RETAIN enrollees had a mental health condition as their primary diagnosis, which might have made it harder to assemble the medical documentation needed for a SSDI or SSI application, compared with enrollees with physical health conditions. If so, this would have limited the potential for VT RETAIN to affect applications for SSDI or SSI.

VT RETAIN improved enrollees' self-reported health status at the time of the one-year follow-up survey, suggesting the program delivered some benefits to enrollees. VT RETAIN increased the share of enrollees who said their health was very good or excellent one year after enrollment. One potential explanation for this is that VT RETAIN increased the share of enrollees who worked with a care coordinator services in the two months after enrollment (Patnaik et al. 2025), which might have improved enrollees' experience with medical care and the advice they received from medical providers.[55] It is also possible that treatment enrollees took time away from work to focus on their medical recovery, which might improve their health but would lead to lower earnings- though notably we did not find any group differences in likelihood of working at the time of the early follow-up survey. VT RETAIN's positive impact

[55] In the early follow-up survey, we defined the care coordinator as someone who helped people with support services after injury or illness, and who might coordinate medical services, work with employers/supervisors to develop alternative job duties, or help people find temporary employment.

on self-reported health is particularly notable when we consider that, compared with the other RETAIN programs, VT RETAIN had the largest share of enrollees with a primary mental health diagnosis. The program also had a smaller share of enrollees whose injury or illness was new (18 percent), suggesting that most enrollees had chronic mental health conditions that might have been harder to treat and less likely to improve. It is possible the program's attempt to fill gaps in unmet needs and its emphasis on self-empowerment contributed to improved self-reported health status among treatment enrollees.

VT RETAIN resulted in net costs across the key perspectives examined for the first year after enrollment; it is uncertain whether the program will generate net benefits over the next 20 years. The estimated costs of delivering VT RETAIN were just over $16,000 per treatment enrollee. This reflects the costs of implementing the program and delivering services. However, this estimate does not account for the fact that the program was budgeted for a larger number of treatment enrollees than it ultimately recruited. Because some program costs were fixed, the cost per treatment enrollee would likely be lower had the program come closer to achieving its original target of 2,040 enrollees.

Both treatment enrollees and the federal government experienced a net cost from VT RETAIN during the first year. Enrollees experienced a net cost primarily due to the negative point estimate of impacts on earnings, the corresponding fringe benefits, and UI benefit amounts. The federal government bore the sizeable costs of program delivery and likely experienced reduced revenue from taxes due to the lower earnings of treatment enrollees.

Our forecasting analyses suggest it is unlikely that VT RETAIN will generate net benefits within 20 years - the impact on earnings would need to increase substantially for the program to become cost neutral within 20 years. To do so, the annual impact on earnings would need to change by an implausible amount. Nevertheless, we cannot rule out that the impact will change over time to some extent. For example, if VT RETAIN led treatment enrollees to postpone returning to work during the first year while focusing on their health and recovery, those enrollees might re-engage in the labor market after recovery. In such a scenario, the calculations for the future net benefits of the program would change.

VIII. Conclusion

This report presents findings from the one-year evaluation of the five RETAIN programs, focusing on program participation, impacts on enrollee outcomes, and benefits and costs across different stakeholder perspectives. Each program used an experimental study design, randomly assigning individuals (in the case of RETAINWOR*KS*, RETAIN KY, MN RETAIN and OH RETAIN) or primary care practices (in the case of VT RETAIN) to a treatment group eligible for the full menu of services or a control group with access only to limited or no program services. We examined treatment enrollees' characteristics and service use patterns using data from the programs. We estimated each program's impacts on enrollees' one-year outcomes by comparing the treatment and control groups using data from state UI wage records, SSA administrative data, and a one-year follow-up survey of enrollees. Finally, we estimated the costs of delivering each program's services using cost data provided by programs and estimated the benefits and indirect costs of each program based on its one-year impact estimates. In this chapter, we summarize the main findings, highlight cross-program themes, and discuss key considerations for interpreting the results and their implications for future policy and practice.

A. Summary of findings

The five RETAIN programs successfully identified and enrolled workers experiencing new or worsening health conditions and connected them to SAW/RTW supports. Programs' service use data indicate that nearly all treatment enrollees developed an RTW plan and most had repeated contact with an RTW coordinator during the six-month service window (Exhibit VIII.1). Engagement was strongest in RETAINWOR*KS* and MN RETAIN, which featured frequent communication among enrollees, coordinators, and medical providers and relatively high use of employment-related services (such as workplace accommodations, job search assistance, and training). OH RETAIN delivered the core coordination elements—near-universal establishment of an RTW plan, an average of 15 contacts between enrollees and their coordinator, and high levels of communication between coordinators and medical providers and employers—but treatment enrollees had limited connection with the workforce system and low use of employment services. RETAIN KY and VT RETAIN achieved high rates of RTW plan completion but had low use of employment services and limited communication with employers and workforce professionals. The core program model's most consistent contribution across the programs was ensuring that workers received communication and support with RTW planning.

Impacts on employment and earnings varied across programs (Exhibit VIII.2).[56] RETAINWOR*KS* generated significant positive impacts on employment and average earnings in the first year for treatment enrollees relative to control enrollees. There was no evidence of positive impacts on these outcomes in any other program. However, patterns of positive point estimates for the impact on earnings in MN RETAIN suggest that significant impacts could emerge over time as participants stabilize in the labor market. Although the other programs did not have impacts on labor market outcomes on average, they did have impacts for subgroups of enrollees. We found positive impacts on certain employment outcomes among specific subgroups in KY RETAIN such as males and those with non-musculoskeletal conditions. VT RETAIN's

[56] "Impact" refers to a statistically significant difference in outcomes between treatment and control enrollees after adjusting for baseline characteristics.

impacts on employment and earnings were unfavorable for several subgroups of enrollees such as older enrollees, female enrollees, and those with no postsecondary education.

RETAINWOR*KS* is the only program that had an impact on SSA program participation; the program reduced SSDI applications among treatment enrollees compared with control enrollees (Exhibit VIII.3). The other four programs had no impacts on applications for or receipt of SSDI or SSI benefits. The pattern of these findings is consistent with the pattern of impacts on employment and earnings.

Only one program produced evidence of modest impacts on household economic well-being (Exhibit VIII.4). VT RETAIN treatment enrollees reported receiving more SNAP benefits and housing assistance compared with control enrollees. Compared with control enrollees, VT RETAIN treatment enrollees were more likely to receive private disability benefits.

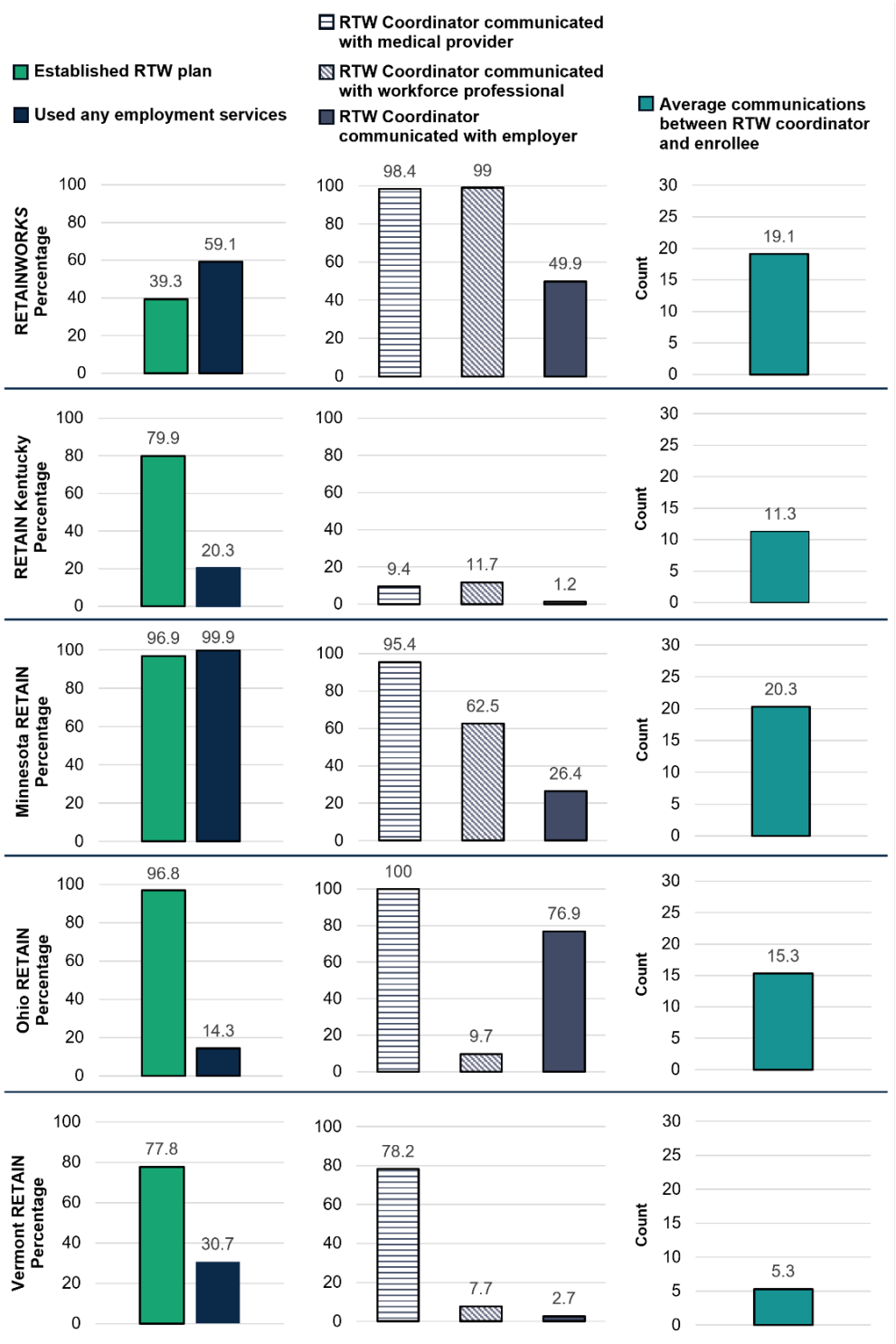
Three programs (RETAINWOR*KS*, MN RETAIN, and VT RETAIN) had large, positive impacts on some self-reported health outcomes (Exhibit VIII.5). RETAINWOR*KS* reduced the share of enrollees who reported that pain interfered with their ability to work most or all the time. MN RETAIN treatment enrollees reported less pain and fewer poor mental health days compared with their control counterparts; they were also more likely to rate their health as at least fair. VT RETAIN treatment enrollees were more likely to report that their health was very good or excellent compared with control enrollees.

In all programs, the costs of delivering services exceeded the monetized benefits observed within the first year after enrollment (Exhibit VIII.6), reflecting the up-front investment in intensive services and the limited time frame for benefits to accrue. The estimated cost of delivering the program per treatment enrollee ranged from about $4,000 in OH RETAIN to more than $16,000 in VT RETAIN. For each program, the costs in the first year exceeded the benefits when looking across the combined perspectives of treatment enrollees and state and federal governments. [57] In RETAINWOR*KS*, RETAIN KY, and MN RETAIN, treatment enrollees experienced a net benefit in the first year while the federal government did not. Interestingly, in all programs except MN RETAIN the state government experienced a small net benefit per treatment enrollee in the first year.

Importantly, even though the costs of service delivery were incurred up front, program benefits could continue to accrue in the future, and at least two programs (RETAINWOR*KS* and MN RETAIN) are expected to break even within a reasonable time frame. In supplemental analyses, we estimated that RETAINWOR*KS* is likely to become cost neutral within five years after enrollment, while MN RETAIN is expected to do so 10 to 20 years after enrollment, after which point we expect each program would produce positive net benefits. For the other three programs to achieve cost neutrality within 20 years after enrollment, the annual impact on earnings would need to be substantially larger than the point estimate in the first year. The required growth in earnings to achieve cost neutrality within 20 years is plausible for RETAIN KY and OH RETAIN.

[57] The benefit-cost analyses do not account for benefits and indirect costs experienced by employers as a result of RETAIN.

Exhibit VIII.1. RTW plan establishment, use of employment services, and communication patterns, by program

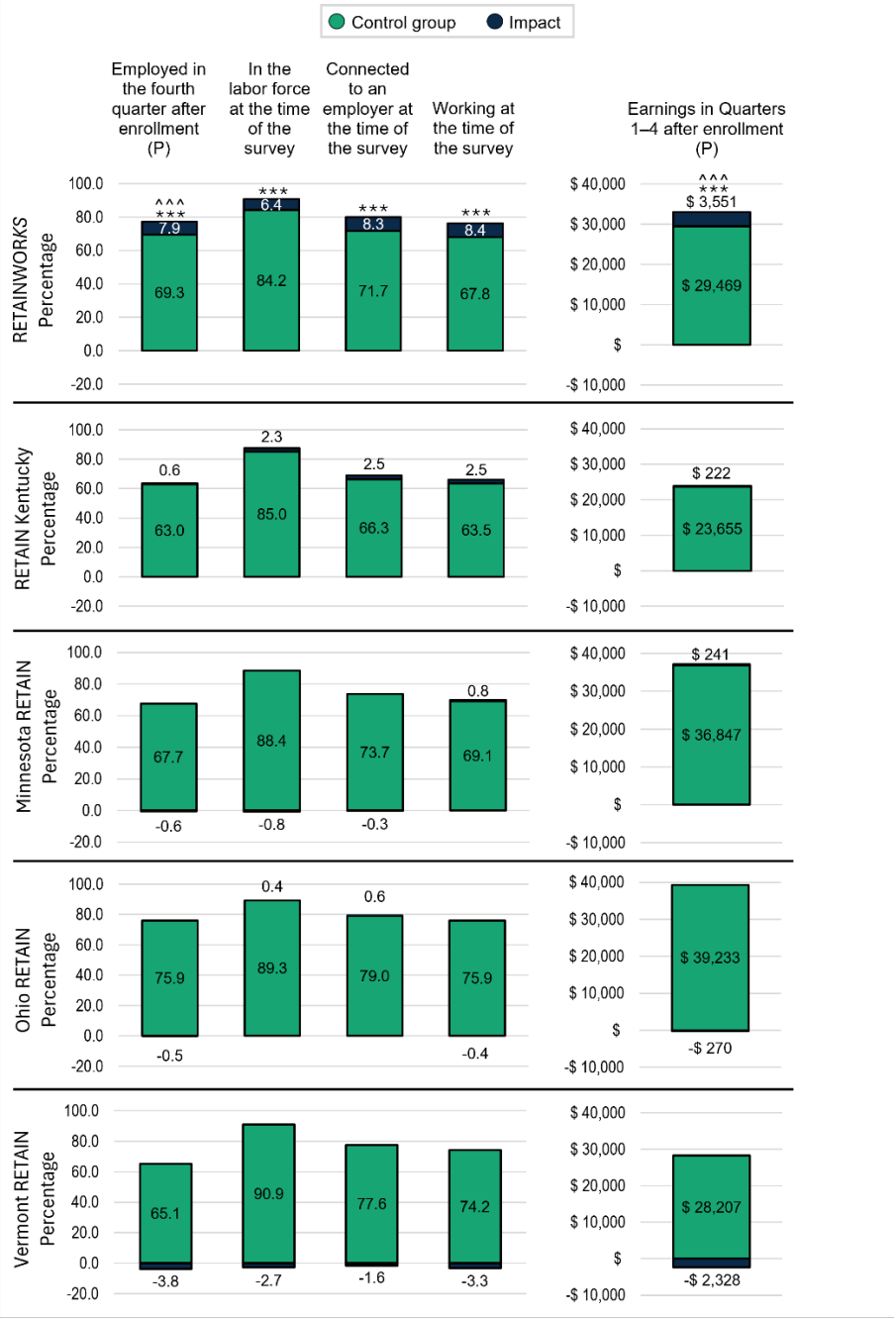


Source: RETAIN service use data for treatment enrollees.

Note: Treatment enrollees were eligible to use services for up to six months. Employment services could be job retention services (including help with accommodations), job training and job search services, or other employment services.

RTW = return-to-work.

Exhibit VIII.2 Impacts on employment and earnings, by program



Source: RETAIN enrollment data; one-year follow-up survey; state unemployment insurance wage records.

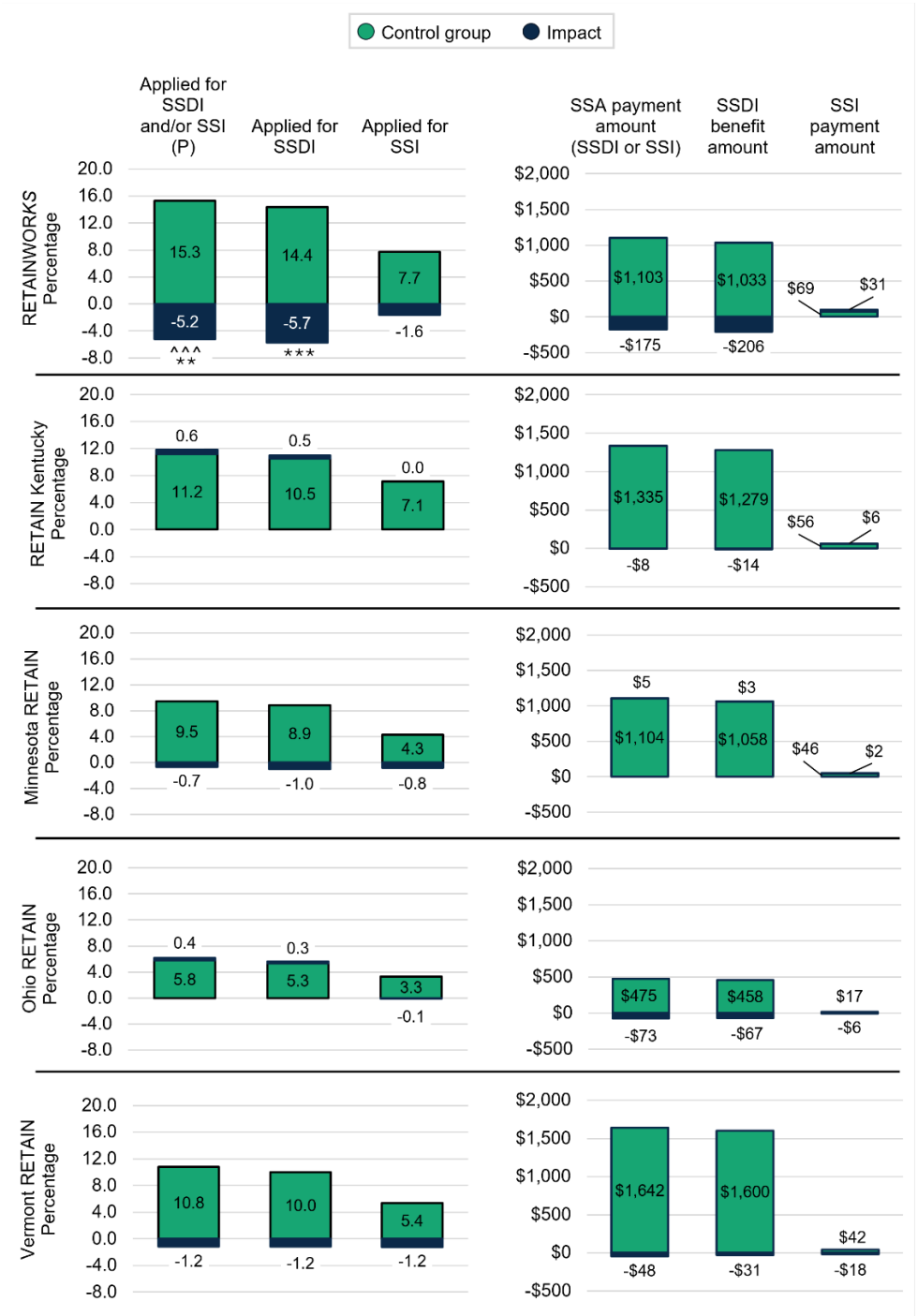
Note: This exhibit shows the regression-adjusted means for the control group (the estimate of the counterfactual) and the regression-adjusted estimates of programs' impacts. We tested statistical significance of impacts using a two tailed test for all outcomes; for primary outcomes we additionally used a one-tailed *t*-test.

*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

^/^^/^^^ Impact estimate is significantly less than zero (*p*-value is less than .10/.05/.01) using a one-tailed t-test. This test was only conducted for primary outcomes.

(P) = primary outcome.

Exhibit VIII.3. Impacts on SSA program participation, by program



Source: RETAIN enrollment data; SSA data.

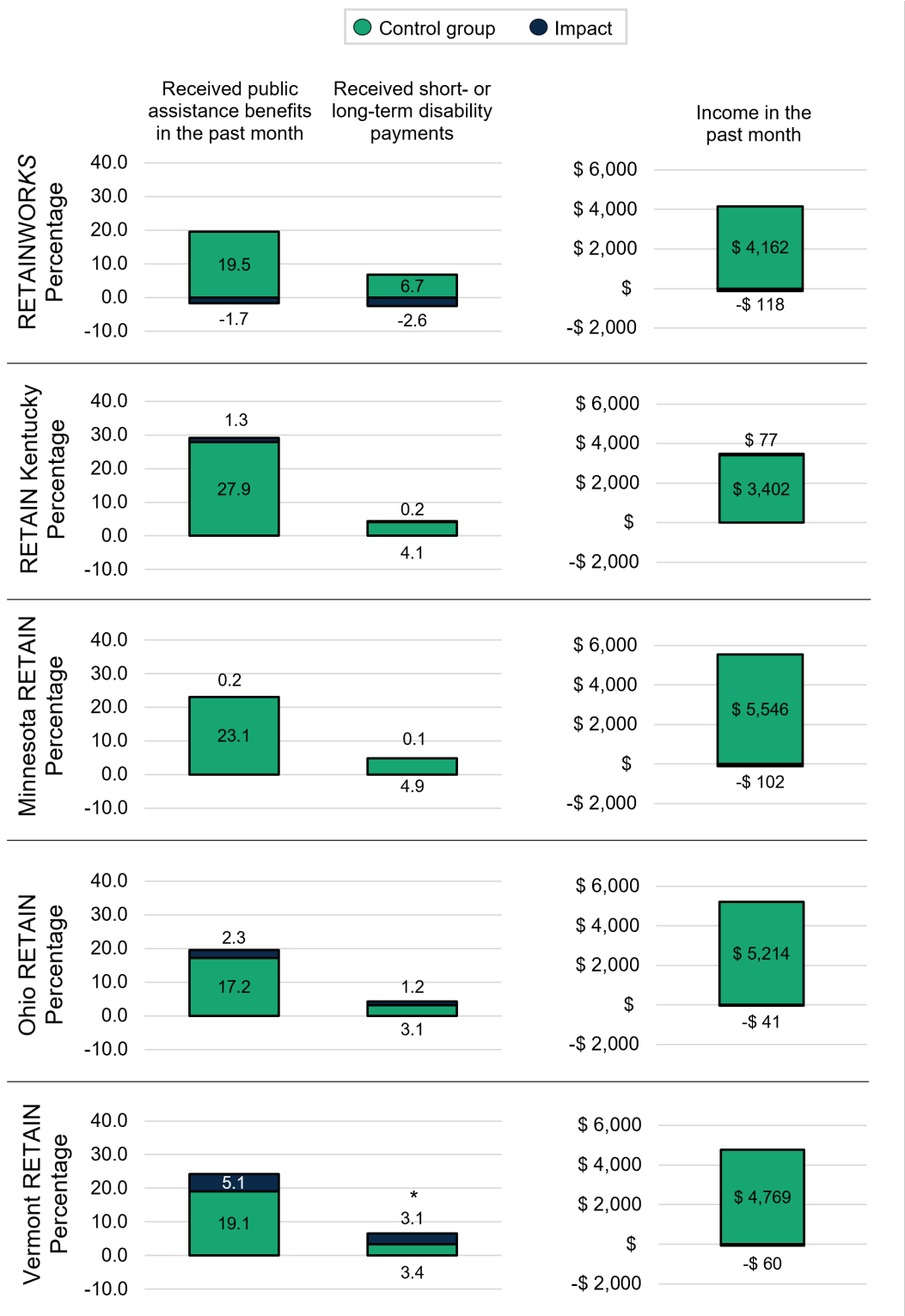
Note: This exhibit shows the regression-adjusted means for the control group (the estimate of the counterfactual) and the regression-adjusted estimates of programs' impacts. We tested statistical significance of impacts using a two tailed test for all outcomes; for primary outcomes we additionally used a one-tailed *t*-test.

*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

^/^^/^^^ Impact estimate is significantly less than zero (*p*-value is less than .10/.05/.01) using a one-tailed t-test. This test was only conducted for primary outcomes.

(P) = primary outcome.

Exhibit VIII.4. Impacts on household economic well-being, by program

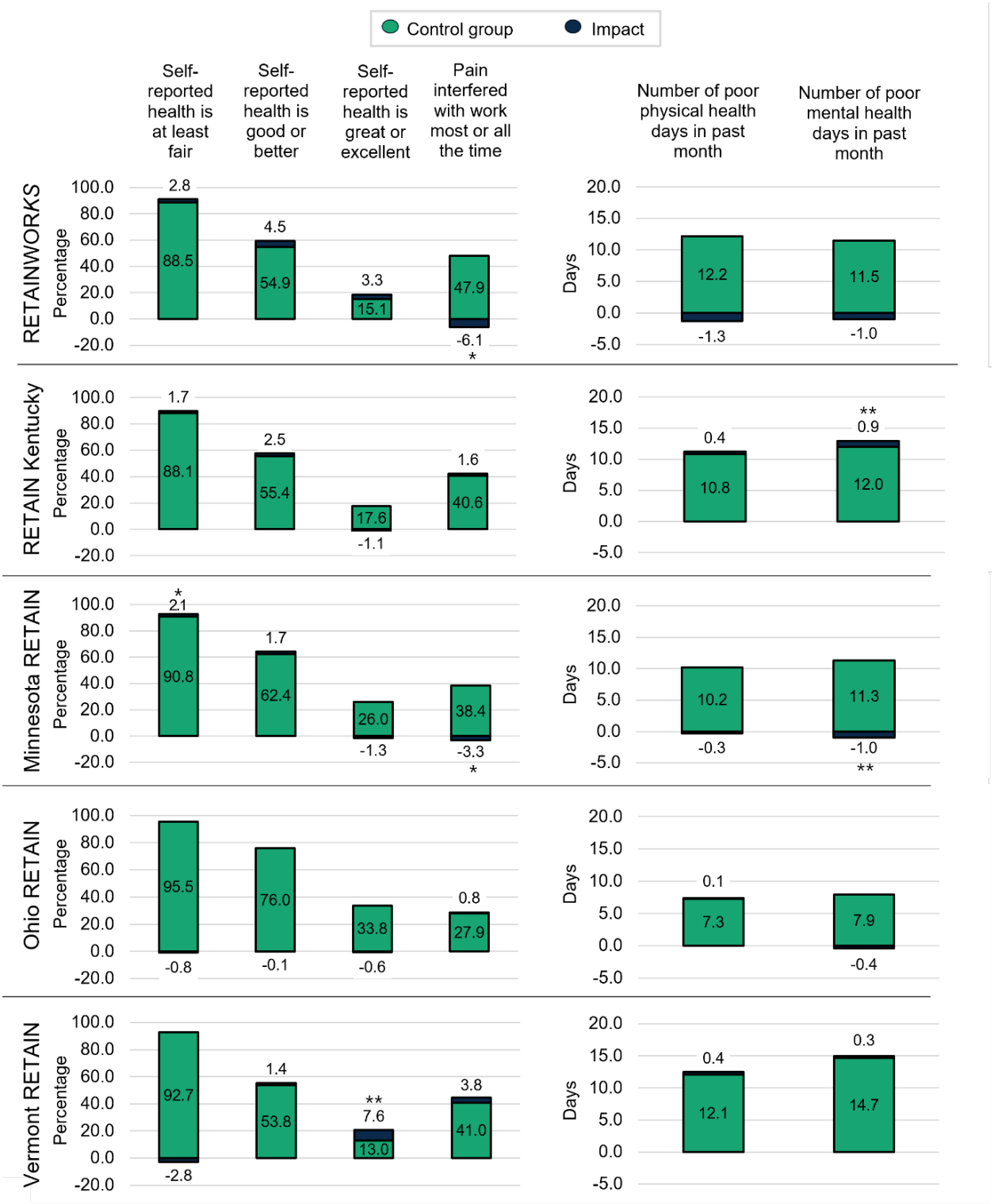


Source: RETAIN enrollment data; one-year follow-up survey.

Note: Public assistance benefits refer to benefits from the Supplemental Nutrition Assistance Program, housing assistance, or unemployment insurance programs. Short or long-term disability benefits refer to private disability insurance benefits.

*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

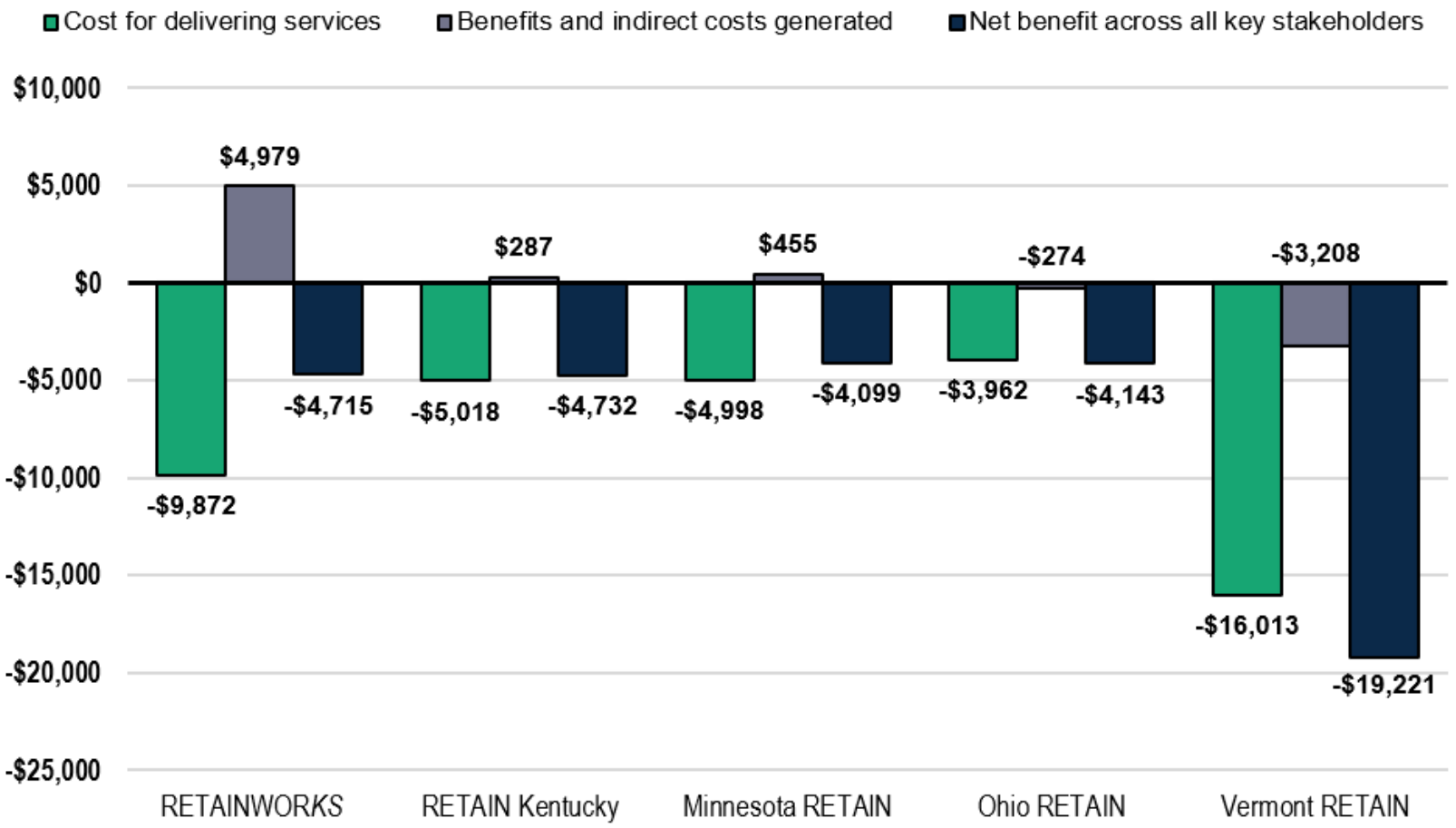
Exhibit VIII.5. Impacts on enrollees' self-reported health, by program



Source: RETAIN enrollment data; one-year follow-up survey.

*/**/*** Impact estimate is significantly different from zero (*p*-value is less than .10/.05/.01) using a two-tailed t-test.

Exhibit VIII.6. Benefits and costs in the one-year follow-up period, by program



Source: Author calculations.

Note: We considered key stakeholders to be treatment enrollees and the federal and state government. Net benefits are benefits minus costs, expressed as dollars per enrollee, inflation-adjusted to 2024 dollars, and discounted to 2024 present values.

B. Key themes

In this section, we highlight key patterns in the findings from the independent evaluation of the five RETAIN programs and discuss their significance and possible explanations.

The RETAIN programs had varying degrees of success in providing the key RETAIN services; differences in design or implementation might explain some of this variation. Among the key components of the RETAIN program model, RETAIN programs experienced the most success with establishing RTW plans and communications between RTW coordinators and enrollees. The average number of communications between RTW coordinator and enrollees ranged from five in VT RETAIN to 20 in MN RETAIN. The share of enrollees who established an RTW plan exceeded 70 percent in every program except RETAINWOR*KS*. In RETAINWOR*KS*, this share was 39 percent, though this statistic is likely an underestimate because it does not include enrollees who developed significant components of their RTW plan but did not receive the input from the medical provider that the program required before plans could be finalized. Nevertheless, the low share of enrollees with established RTW plans in RETAINWOR*KS* suggests that the requirement for medical providers' substantive involvement in developing RTW plans might be burdensome to providers and generate an obstacle to plan completion. In contrast, in OH RETAIN, where provider input was not required to develop the RTW plan, medical providers reported that RTW coordinators reduced the administrative burden associated with helping their patients return to work (Croake et al. 2024).

Although the core RETAIN model emphasizes communication and coordination between different parties involved in enrollees' SAW/RTW experience, program differences were substantial in the extent to which RTW coordinators communicated with other parties. Program design or implementation features might partially explain the differences:

- RTW coordinators' ability to communicate with employers depended on enrollees' consent to such communication, which was optional in all programs except OH RETAIN. During interviews, program staff noted that many enrollees were unwilling to provide consent for such communication (Keith et al. 2023), possibly due to fear of retaliation from their employer. This type of consent was a requirement for enrollment in OH RETAIN, and RTW coordinators in that program were able to communicate with employers of about three-quarters of enrollees. Notably, RTW coordinators in RETAINWOR*KS* were able to communicate with employers for half the enrollees without such a consent requirement.
- Integration of the SAW/RTW programs in healthcare systems was a key facilitator of communication between RTW coordinators and medical providers. In the programs that relied heavily on healthcare systems to provide referrals to support recruitment—RETAINWOR*KS*, MN RETAIN, and OH RETAIN—communication between the RTW coordinator and the medical provider was standard for almost all enrollees. In RETAIN KY, which had the least integration with the healthcare system, only 1 in every 10 enrollees had such communication.
- Partnerships with local workforce development entities facilitated communication between RTW coordinators and workforce professionals. MN RETAIN and RETAINWOR*KS* worked closely with the workforce partners in their states. Consistent with this implementation, the RTW coordinators

communicated with workforce professionals for at least two-thirds of enrollees. By contrast, such communication occurred for less than 15 percent of enrollees in RETAIN KY, OH RETAIN, and VT RETAIN.

Looking across service components, VT RETAIN stands out for its low levels of program participation. Across the programs, VT RETAIN recorded the lowest levels of communication with enrollees and other parties. In VT RETAIN, 33 percent of enrollees had at most one communication with the RTW coordinator, whereas in the other programs this share ranged from 0 to 3 percent. It was also the only program where the average number of communications between enrollees was fewer than 10. The average number of communications with medical providers, employers, and workforce professionals was also low, though notably all the programs faced challenges with at least one such type of communication, as discussed above. One likely explanation for this pattern is that VT RETAIN's design emphasized coaching and empowering enrollees to navigate SAW/RTW services themselves rather than coordinating on enrollees' behalf or making referrals to relevant services. It is possible the enrollees engaged in SAW/RTW conversations with their medical providers or sought out workforce services that were not recorded in the program data. At the same time, the limited communication between enrollees and RTW coordinators (relative to other programs) indicate that the enrollees engaged less intensively with VT RETAIN.

Close collaboration between RTW coordinators and workforce professionals helped connect enrollees to employment services; in its place, a strong referral system helped but was less effective. Rates of communication between RTW coordinators and workforce professionals were highest in RETAINWOR*KS* and MN RETAIN. Consistent with this finding, these two programs had the largest shares of treatment enrollees using any employment services, at 59 percent (RETAINWOR*KS*) and 100 percent (MN RETAIN). OH RETAIN had the weakest connection to the workforce system compared with the other programs (Keith et al. 2024), which might explain why it had the smallest share of enrollees using employment services (4 percent). The findings suggest that communication between RTW coordinators and workforce professionals can play a crucial role in helping enrollees use employment services.

RETAIN KY and VT RETAIN relied primarily on referrals to the workforce system, and they were moderately successful at connecting enrollees to employment services. In both programs, there was close to no recorded communications between RTW coordinators and workforce professionals, but about 20 percent of control enrollees and 30 percent of treatment enrollees used employment services, respectively. Data from the early follow-up survey also showed these programs had a positive impact on the share of enrollees who self-reported using such services during the two months after enrollment (Patnaik et al. 2025). This suggests that these programs were successful in connecting enrollees to employment services through other mechanisms. VT RETAIN did not directly provide employment services (such as job search assistance or training) to treatment enrollees but instead offered curated resources and made referrals to existing programs in the state. RETAIN KY provided treatment enrollees with a referral to OVR, where they could receive employment-related services. Given that less than half the treatment enrollees in these programs used employment services, these referral methods appear to have been helpful but less successful than RETAINWOR*KS*'s and MN RETAIN's approaches.

Impacts varied meaningfully across programs, which might be explained by differences in intervention timing, implementation intensity, cross-system coordination, and screening. Only RETAINWOR*KS* produced improvements in enrollees' employment, earnings, and SSDI and SSI applications in the first year, with effects emerging as early as the first quarter after enrollment. In contrast, the other four programs had no positive impacts on the three primary outcomes at one year, though MN RETAIN showed improvements in self-reported health and a promising trend in the point estimates for impacts on earnings.

Two factors that appear to hinder program impacts are low service intensity and limited service contrast. As described above, VT RETAIN, and to a lesser extent RETAIN KY, had lower levels of service engagement than the other programs. The designs of these two programs also muted the contrast between the treatment and control groups. RETAIN KY offered expedited RTW planning and service referrals for the control group, and VT RETAIN provided a resource inventory to all enrollees, training to medical providers of all enrollees, and conducted statewide marketing to raise awareness of work as a critical health outcome. The reduced contrast between the treatment and control groups in these programs likely limited the potential for differences in their outcomes to emerge.

Another factor that might have influenced program impacts is the timing of enrollment relative to the onset or worsening of the primary diagnosis. The first few weeks and months after condition onset or worsening can be crucial for SAW/RTW planning. For example, this is often time for identifying and securing appropriate accommodations with one's current employer before a lack of accommodations makes continued employment untenable. VT RETAIN recorded a long duration between injury and enrollment—though its data are not easily comparable to the other programs because the program recorded date of original onset (rather than date of onset or exacerbation). By contrast, MN RETAIN and RETAINWOR*KS* enrolled participants soon after injury or illness onset/worsening, offered intensive services to treatment enrollees and no services to control enrollees, and thus were likely to be better positioned to influence SAW/RTW outcomes.

The extent to which programs successfully screened out potential enrollees who had less need for SAW/RTW services might also have affected their ability to generate impacts. If a program enrolled people who were likely to experience relatively good outcomes even in the absence of its services, then the program would be less likely to improve their outcomes further. The outcomes of control enrollees shed light on how the different programs performed with respect to screening. Across the programs, OH RETAIN had the largest shares of control enrollees who were working at the time of the survey. It was the only program where more than half the control enrollees remained in their pre-enrollment job and fewer than 6 percent of control enrollees applied for SSDI or SSI during the year after enrollment. OH RETAIN enrolled the largest number of people in the evaluation; in its desire to enroll as many people as possible, the program might have included people who were less likely to benefit from SAW/RTW services and thus limited the potential for large impacts.

Sex, type of diagnosis, and time since last worked at enrollment were the characteristics that most strongly shaped variation in programs' impacts. Across the five RETAIN programs, the most consistent subgroup differences appeared along the dimensions of sex, diagnosis type (musculoskeletal versus non-musculoskeletal) and time since last worked at enrollment. In RETAINWOR*KS*, male enrollees experienced

larger earnings gains compared to female enrollees, and enrollees with non-musculoskeletal conditions experienced larger positive impacts on connection to an employer, employment, and weekly hours worked at the time of the one-year survey compared with those with musculoskeletal conditions. Likewise, those who had been out of work for more than a week at enrollment saw greater gains in employment, weekly pay, and hours worked than those still working just before enrollment. In RETAIN KY, we found positive impacts on employment and hours worked for males but not females, for enrollees with non-musculoskeletal conditions but not others, and for those who had been out of work for more than a week at enrollment but not those that were still working just before enrollment. For MN RETAIN, we found reductions in the number of poor physical and mental health days for males but not females and a reduction in the number of poor mental health days for those who had been out of work for more than a week at enrollment but not those that were still working just before enrollment. For VT RETAIN, we found negative impacts on earnings for females but not males and for enrollees with musculoskeletal conditions but not others. Taken together, these findings suggest that SAW/RTW services may be especially impactful for males, for people whose conditions are not musculoskeletal, and for those who have already experienced some detachment from work at the time of enrollment. This could point to opportunities to refine program design and targeting to maximize benefits for these subgroups.

Programs' early impacts on treatment enrollees foreshadowed longer-term gains. The two programs that had the most success delivering the key RETAIN services early on—RETAINWOR*KS* and MN RETAIN—showed the greatest potential for improving enrollees' labor market outcomes in the long term. Data from the early follow-up survey show that in these two programs, treatment enrollees were significantly more likely than control enrollees to report having used several types of SAW/RTW services in the two months following enrollment (Patnaik et al. 2025). The two programs had impacts on four of the five self-reported measures of service use examined after two months. While all programs increased the use of care coordination services, RETAINWOR*KS* and MN RETAIN had the largest early impacts. These programs were the only two to have a positive impact on both the share of enrollees who used employment services and the share who had talked with their medical provider about their SAW/RTW needs. They were also the only programs to increase participation in job-related training.

These favorable early impacts might be a key mechanism for their impacts in the one-year period, which are large for RETAINWOR*KS* and promising for MN RETAIN. By contrast, the other three programs had positive impacts on only two of the five measures of service use, and there is limited evidence they will start yielding positive earnings impacts soon.

The pattern of findings in RETAINWOR*KS* suggests that early impacts on work-related outcomes were able to persist and translate into longer-term gains for treatment enrollees. The early impact analysis found that RETAINWOR*KS* stood out from the other programs in its significant impacts on work-related and health outcomes (Patnaik et al. 2025). While none of the programs affected employment status or earnings at the time of the two-month survey, RETAINWOR*KS* treatment enrollees were more likely than control enrollees to report that they were connected to an employer or looking for work. In addition, although all programs increased the share of enrollees who were working and had received advice about job or workplace modifications, RETAINWOR*KS* had the largest impact relative to the control group. It was also the only program that increased the share of enrollees whose employers had offered them the chance to return to work with needed accommodations. These early positive signs in the work-related

outcomes of RETAINWOR*KS* treatment enrollees foreshadowed their substantial gains in employment and earnings over the control group over the first year following enrollment.

The pattern of findings in RETAINWOR*KS* also supports the idea that improving enrollees' health can be a key mechanism for improving employment and reducing the likelihood of entry into SSDI or SSI programs. At the time of the two-month survey, RETAINWOR*KS* significantly reduced enrollees' self-reported pain, number of poor physical health days, and opioid prescriptions, whereas the other RETAIN programs had no significant impacts on health outcomes. The program's impact on pain persisted over time, with RETAINWOR*KS* treatment enrollees reporting less pain than control enrollees at the time of the one-year survey; in fact, the size of the impact relative to the control group grew over time. One potential explanation for this persistent reduction in pain among treatment enrollees is the program's success in helping some enrollees avoid the use of opioids early on, which might have led them to use alternative pain management approaches that proved more sustainable.

If improved health is a necessary precursor for longer-term impacts on employment, then it bodes well that several programs impacted self-reported health at the time of the one-year survey. In addition to RETAINWORKS' positive impacts on pain, MN RETAIN reduced pain and poor mental health days and increased the share of enrollees who rated their health as at least fair, while VT RETAIN increased the share of enrollees who said their health was very good or excellent. These three programs' positive impacts on health could be a factor in future impacts on employment and earnings. Studies have found that pain and psychological distress are strongly associated with reduced work capacity, absenteeism, and lower productivity at work (Kessler et al. 2001; Breivik et al. 2006; de Oliveria et al., 2023) and reduced long-term earnings (Andersen et al. 2024). The programs' one-year impacts on enrollees' health could boost long-term earnings by increasing the likelihood of remaining in the labor force, retaining their jobs, working more hours, missing fewer days, and increasing productivity. By addressing some of the upstream health barriers that often lead to reduced earning capacity after injury or illness, the programs might have laid the groundwork for future gains in employment and earnings that manifest beyond the one-year evaluation period.

C. Study considerations

Several study design features are crucial for interpreting the findings of the one-year evaluation In this section, we discuss these features and their potential influence on our conclusions.

In some states, the service contrast between treatment and control enrollees was muted. In several programs, the distinction between services the treatment and control groups received was narrow, limiting the potential to detect impacts. In RETAIN KY, control enrollees had access to expedited RTW coordination (albeit for a shorter duration) and received information to self-refer to OVR—services that overlapped with treatment offerings and could have met some of the same needs. In VT RETAIN, a statewide informational and outreach campaign may have indirectly reached control participants, allowing them to benefit from program-generated awareness and resources without formal enrollment. All five RETAIN programs offered (and RETAINWOR*KS* and OH RETAIN required) training to medical providers of both treatment and control enrollees, which could have prompted earlier identification and referral of at-risk workers across the healthcare system, indirectly benefiting controls. Because the estimated impacts are based on differences between treatment and control enrollees, they do not reflect the potential for

programs to have improved the outcomes of both groups. Thus, the estimated impacts of these programs might be smaller than what would have occurred had the contrast between services available to treatment and control enrollees been more distinct.

Some programs enrolled significantly fewer people than their original targets; the smaller sample sizes reduce our ability to detect impacts. In designing the evaluation, we considered the sample sizes needed to provide sufficient statistical power to detect an impact on one primary outcome: employment in the fourth quarter after enrollment (Berk et al. 2021). These calculations informed the programs' proposed target sample sizes for Phase 2, but some programs fell significantly short of their targets. For example, VT RETAIN proposed a target of 2,040 enrollees, which our calculations indicated would provide enough power to detect an impact on the employment rate of at least 6 percentage points. However, VT RETAIN enrolled only 798 people, which means we would likely only be able to detect an impact if it was substantially larger than 6 percentage points. Hence, for the programs that enrolled much smaller samples than originally planned (VT RETAIN and RETAINWOR*KS*), it is possible there were some positive or negative impacts on enrollee outcomes we could not detect as statistically significant. For example, RETAINWOR*KS* did not have a statistically significant impact on the share of enrollees receiving SSDI in the first year, but the point estimate (2 percentage points) was non-trivial and low statistical power might have prevented us from detecting it as statistically significant.

Some outcomes might be measured with error. Service use data might be inconsistent across programs due to differences in data recording procedures or definitions (for example, the definition of program exit dates). We collected key outcomes—particularly those related to health, pain, and household economic well-being—via enrollee surveys, and thus they are subject to recall error, differences in interpretation, and potential response bias. In addition, some enrollees are missing from the survey sample due to sampling or nonresponse. Although the evaluation used weighting and other adjustments to mitigate these risks, they remain a limitation when interpreting subjective, self-reported measures. Administrative data are not susceptible to these same concerns, yet they are subject to coverage issues. For example, state UI wage records omit self-employment or employment in jobs that are not covered by UI (for example, gig work). Our primary outcomes of employment and earnings, which are derived from these data, therefore do not capture this type of employment. There is no strong reason to believe this measurement error would systematically differ by random assignment group and thus result in biased impact estimates; however, measurement error could reduce the statistical power to detect impacts.

The one-year follow-up period is likely insufficient to capture the full benefits of SAW/RTW interventions. Some impacts may take longer than one year to emerge, especially for participants with slower recovery trajectories or extended rehabilitation. In some programs, quarterly earnings were flat or declining in the first half of follow-up—when many treatment group enrollees were still receiving services—but began to rise in later quarters. For example, in MN RETAIN, the control group's employment rate remained high through all four quarters, while treatment group earnings showed modest upward momentum by year's end, suggesting measurable gains in earnings and employment stability might require more time. In addition, SSDI imposes a five-month waiting period after entitlement, and many SSDI and SSI applicants had not received determinations within one year. As a result, observed impacts on receipt of disability benefits likely understate near-term program effects. Longer-term follow-up (two to

three years post-enrollment) will provide a more complete view of sustained employment and participation in disability programs.

Implementation variation across programs limits the ability to draw conclusions about the overall RETAIN model. Although all five programs were designed to follow the core RETAIN model, they differed markedly in their eligibility criteria, recruitment sources, and operational details. RETAINWOR*KS* targeted both work- and non-work-related injuries and had a broad referral base through integrated healthcare partners, while RETAIN KY excluded work-related injuries and relied heavily on OVR referrals and an online recruitment platform later in the enrollment period. MN RETAIN and OH RETAIN used EMR-based outreach as a primary recruitment method, while VT RETAIN relied on self-referral through a statewide pre-screening tool and direct referrals from clinicians and partners. Service delivery also varied—from high-frequency RTW coordinator contact and close provider engagement in RETAINWOR*KS* and MN RETAIN, to more limited provider and employer communication in RETAIN KY and VT RETAIN. Finally, the programs differed in their service contrast between treatment and control enrollees, depending on whether they offered services to control enrollees, offered training to control enrollees' providers, and pursued systems change. These differences across the programs limit the ability to draw broad conclusions about the overall effectiveness of the RETAIN program model in a generic sense. Instead, the findings should be interpreted as evidence about specific implementations of the model in distinct state contexts. Notably, RETAINWOR*KS* showed substantial and statistically significant gains in earnings, employment, and reduced SSDI and SSI applications, suggesting that certain configurations of the RETAIN model may hold greater promise than others.

Contextual factors such as labor-market conditions and program size may limit generalizability. Much of the study period featured a historically tight labor market with low unemployment and rising wages. These conditions likely supported employment retention and earnings growth for both groups, narrowing observable treatment–control differences. While this environment provides a strong test of RETAIN's value under favorable conditions, effects may differ in weaker labor markets, when job loss risks are higher and SAW/RTW supports may be more critical. Similarly, the documented program costs might overstate the resources required to implement the RETAIN programs in different circumstances or contexts (for example, without the data collection and reporting requirements of a federal demonstration and independent evaluation). Further, program size and duration played an important role in the calculation of the per-enrollee costs, which might change with scaling if many costs are fixed.

D. Implications for policy, practice, and research

The findings from the one-year evaluation of the RETAIN programs offer some valuable insights for policy, practice, and research. Below, we discuss lessons learned from the evaluation as well as knowledge gaps the findings highlight that might be explored in future work.

Encouraging and enabling timely, intensive intervention is likely critical to the success of SAW/RTW programs. The RETAIN model was built on evidence that workers with newly acquired injuries or health conditions are more likely to remain in the labor force if they receive well-targeted support within the first few weeks of onset (Ben-Shalom et al. 2018). Consistent with this, the RETAIN programs that engaged workers soon after an injury or illness—before prolonged detachment from the labor market—showed the strongest impacts on employment and health. At the same time, some treatment

enrollees reported during interviews that they were too early in their recovery for the program to support their return to work, and program staff noted that some employers expressed concerns about workers' compensation liability if employees returned too soon and reinjured themselves. In addition, subgroup analyses revealed a pattern in some programs of more favorable impacts on labor market outcomes if enrollees had not been working the week before enrollment.

Prior research highlights that the optimal timing of SAW/RTW interventions depends on the worker's health condition, recovery trajectory, and job demands, and that intervening before a worker is physically or psychologically ready may limit effectiveness (Stapleton et al. 2015; Venning et al. 2021). However, more research is needed to determine the optimal timing of intervention which likely varies by type of condition, work status, and nature of the pre-injury job. Once this issue is better understood, policy frameworks should prioritize early identification and referral, and practitioners should embed outreach and referrals in the appropriate points in clinical workflows. In addition, practitioners should consider outreach strategies that reach workers at a point when they are both able and ready to engage in SAW/RTW services and begin planning their return to work.

Best practices for SAW/RTW programs should emphasize strong cross-system coordination between healthcare and workforce systems, paired with direct connections to employment-related services. The programs that most effectively aligned health and workforce systems—RETAINWOR*KS* and MN RETAIN—saw higher service uptake and more favorable one-year outcomes for enrollees. Both programs also produced larger impacts on the use of employment services, as seen in both program data and enrollee survey data. In contrast, programs that were well integrated into either the healthcare system or the workforce system but not both, such as RETAIN KY, OH RETAIN, and VT RETAIN, were less successful in producing promising impacts during the one year after enrollment. These findings suggest that effective SAW/RTW programs require intentional and active partnerships across systems rather than relying primarily on one of these systems with light or no connections to the other. As a next step, research and practice should work to identify the specific mechanisms of coordination that matter most—whether it is regular communication, shared data systems, formalized referral pathways, or joint case management—and assess how these can be adapted across varying state and local contexts.

A multi-pronged approach might help SAW/RTW programs effectively engage employers in planning. Except for OH RETAIN, employer engagement was limited in the RETAIN programs. Some possible reasons were that employers did not perceive value in the programs and enrollees did not consent to such communication due to concerns about stigma and retaliation (Keith et al. 2024). Yet, the findings from RETAINWOR*KS* suggest that workplace modifications and employers' willingness to offer accommodations could be a key facilitator of job retention, highlighting the need for effective strategies to engage employers. To help employers see the value of SAW/RTW programs, these programs might need to design effective promotional campaigns and build strong partnerships with local business boards. Finally, programs need to increase enrollees' trust in them to involve employers without negative consequences. To do so, they can consider peer mentoring and communication approaches that acknowledge fears of stigma, emphasize confidentiality, and highlight success stories where employer collaboration enabled workers to secure the accommodations necessary to remain employed. An advantage of closely collaborating with the workforce system, as discussed above, is that workforce staff tend to have experience engaging and effectively communicating with employers.

SAW/RTW programs should consider opportunities for more precise targeting of their services to maximize benefits for workers and society. Differences in program impacts by worker characteristics suggest that some subgroups may gain more than others from timely support. For example, the one-year evaluation found that in some programs, male enrollees, people with non-musculoskeletal conditions, and those who had been out of work for more than a week at enrollment experienced larger improvements in employment and earnings. If policymakers are interested in maximizing the benefits delivered to enrollees and society for every taxpayer dollar spent, they could encourage RETAIN-like programs to prioritize such subgroups and develop appropriate screening and triage tools. For example, in a supplementary analysis that used information on enrollees' baseline characteristics to predict their risk of non-employment two months after enrollment, we found that enrollees with a high need for RETAIN-like services were more likely to not be working at the time of enrollment and have at most a high school education (Ben-Shalom et al. 2026). At the same time, careful attention is necessary to avoid unintended consequences of targeting, such as underserving workers with complex needs or reinforcing barriers in the labor market if certain groups are systematically deprioritized. Future research could explore which components of the RETAIN model are most critical for different types of workers, which could guide more tailored approaches that improve efficiency in service delivery.

The experience of the RETAIN demonstration suggests a need for clearer and narrower implementation standards. The variation in one-year impacts across the RETAIN programs point to some inherent risks in implementation variability. Although all programs followed the core model, differences in recruitment sources, integration with health systems, workforce partnerships, and intensity of service coordination shaped both participation and impacts. For the RETAIN demonstration, DOL provided states with some flexibility to adapt the model to suit their needs and circumstances as the goal was to learn what might be feasible and effective in different contexts. In the future, policy might need to provide more narrow implementation standards, along with appropriately tailored technical assistance and some room for local adaptation. To inform these standards, practitioners and researchers should identify which program features are essential versus optional for achieving impacts across settings.

One implementation factor that stands out as highly influential is whether programs coordinate services on behalf of enrollees or support enrollees in navigating services themselves. The evidence from VT RETAIN suggests that a self-empowerment approach—helping workers to self-navigate healthcare, workforce, and employer systems with only light-touch coaching—did not succeed as expected and might even have contributed to negative impacts on employment and earnings. By contrast, RETAINWOR*KS* and MN RETAIN, which offered intensive, structured communication and coordination of services on behalf of enrollees, produced meaningful improvements in health and promising findings for earnings. Based on these results, policymakers and programs should prioritize active coordination and frequent contact with enrollees, rather than assuming workers can manage these complex systems on their own with some support from programs.

The RETAIN experience also highlights areas where the model might need to evolve with a changing labor market. As the prevalence of gig, contract, and self-employed work increases, SAW/RTW strategies will need to adapt to reach workers outside traditional employer-based structures, who often lack access to the types of employer accommodation and job modifications that appear to facilitate workforce retention. A further uncertainty is how artificial intelligence will reshape the employment landscape. Some jobs that

are less susceptible to elimination due to artificial intelligence, such as those involving physically demanding tasks, are precisely the ones that workers with health conditions might find most difficult to sustain. Yet, during interviews, several enrollees cited lack of work experience outside physical labor as more of a barrier to employment than their injury or illness (Keith et al. 2024). Other entry-level jobs, such as warehouse sorting or administrative work, could become scarcer due to automation of repetitive or predictable tasks.

A broader and longer-term perspective on the cost-effectiveness of SAW/RTW programs would more accurately capture their value for workers and the government. Because program costs are typically front-loaded and benefits—such as higher earnings and reduced SSDI expenditures—emerge gradually, the one-year evaluation window for this study did not fully capture the net benefits of SAW/RTW programs. For example, even a highly successful program like RETAINWOR*KS* that had large impacts on enrollee earnings was unable to break even within one year, though it is likely to do so a few years later. Thus, the one-year benefit-cost analysis likely understates the return on the investment that the government made in RETAINWOR*KS*. Future demonstrations of similar programs should consider building low-effort follow-up analyses, such as those using only administrative data, into their evaluation plans. Policymakers can consider funding models that account for the possibility of delayed payoffs, and practitioners can use projected long-term savings to build stronger cases for sustainability.

The evaluation findings also point to the critical role of health improvements as a pathway to employment, even though their value is not fully captured in cost-effectiveness calculations. RETAINWOR*KS* and MN RETAIN improved enrollees' health outcomes, which is valuable in itself for quality of life and might influence future earnings. Health improvements also likely have long-term fiscal benefits in the form of reduced medical expenditures, potentially from public programs like Medicaid and Medicare. Accounting for the value of health improvements would provide a more accurate representation of the social and fiscal value of RETAIN-like programs.

Finally, some RETAIN programs likely had system-level spillovers that shaped outcomes in ways not reflected in the benefit-cost models used for this evaluation. For example, in VT RETAIN, provider training and awareness campaigns might have encouraged use of best practices in primary care statewide but made it more difficult to detect program impacts on treatment enrollees' outcomes. If so, the estimated net benefits might understate the value generated by the program because they were calculated based on differences in outcomes between treatment and control enrollees. This type of systems change is particularly relevant in a context like RETAIN where the goal is integration of the healthcare and workforce systems. The systems change efforts, including strengthened partnerships, provider training, public outreach campaigns, and closer collaboration between public and private organizations, might have generated benefits to society that are not captured in the enrollee-level impacts nor reflected in the benefit-cost models used for this evaluation. Going forward, policymakers and researchers must consider how to measure both enrollee impacts and system transformation. This broader perspective on systems improvement will be especially important as workers face labor market opportunities that are shaped not only by their health and capacity but also by a rapidly evolving workforce landscape due to technological change.

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