Improving Economic Outcomes for Disadvantaged Youth with Disabilities: Evidence from PROMISE*

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February 2025

Though numerous programs and policies have been shown to improve long-term outcomes for youth, finding similar successful efforts for youth with disabilities has been historically difficult. In this paper, we report on the results of a randomized controlled trial with 12,000 Supplemental Security Income recipients that offered intensive supports and services to youth with disabilities from low-income backgrounds. These services improved youth's employment and reduced health care utilization as they transitioned into adulthood. Mediation analysis suggests that early paid employment experiences played a critical role in these long-term improvements.

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I. Introduction

Research has demonstrated that anti-poverty programs in the United States improve the long-term outcomes of their participants, especially when they reach children. For example, studies exploiting both the initial creation of Medicaid and subsequent expansions decades later found that greater exposure to Medicaid coverage for children in households with low incomes improves outcomes like health and employment later in life (Goodman-Bacon 2021; Miller and Wherry 2019; Brown, Kowalski, Lurie 2020). Similar findings of positive long-term impacts emerge in studies of the Earned Income Tax Credit (Barr, Eggleston, Smith 2022), the Supplemental Nutrition Assistance Program (Bailey et al. 2024), housing vouchers (Chetty, Hendren, Katz 2016), and Head Start (Bailey, Sun, Timpe 2021). Welfare analyses consistently find that the highest marginal value of public funds is associated with policies that invest in children living in low household incomes (Hendren and Sprung-Keyser 2020), especially to the extent such efforts can reduce criminal activity (Deshpande and Mueller-Smith 2022).

Yet programs that focus on children with disabilities have not been able to achieve beneficial long-term results, raising the critical question of how to potentially do so. Using an approach similar to the previously cited studies, Levere (2021) found worse long-term employment outcomes for youth with disabilities who qualified for Supplemental Security Income (SSI) benefits earlier in childhood despite the additional income and Medicaid coverage conferred with SSI eligibility. A related study also found no improvement in the long-term outcomes of children who qualified for SSI at birth because of low birthweight (Hawkins et al. 2024). Overcoming the double disadvantage of low income and disability may require support that goes beyond what is offered through existing programs like SSI.

In this paper, we explore the effects of an intervention that sought to supplement means-tested cash benefits (SSI) with intensive services offered to youth with disabilities from households with very low incomes. The intervention—Promoting Readiness of Minors in SSI (PROMISE)—offered supports and services to youth SSI recipients ages 14 to 16 with the goal of increasing their long-term economic well-being and self-sufficiency. PROMISE sought to (1) offer educational, vocational, and other services to youth; and (2) make better use of existing resources by improving service coordination between state and local agencies. Key services offered included case management, benefits counseling, financial education, career and work-based learning experiences, and parent training and information. Child SSI recipients enrolled in PROMISE between April 2014 and April 2016, with services delivered through August 2019.

To test the service model, the PROMISE demonstration used a randomized controlled trial with more than 12,000 youth with disabilities between ages 14 and 16 who were receiving SSI. To evaluate the impacts of the intervention, we use a simple linear regression approach that compares mean outcomes between the treatment and control groups during the five years after they enrolled in the study. Given the randomized design, members of the control group represent a valid counterfactual for members of the treatment group. Our analysis draws heavily from administrative data, including measures related to SSI participation (from Social Security Administration [SSA] data), Medicaid expenditures (from Centers for Medicare & Medicaid Services [CMS] data), and annual earnings (from Internal Revenue Service [IRS] data). We also draw on data from two surveys – conducted 18 months and 5 years after youth enrolled in the study – to assess more granular employment outcomes as well as use of services. This paper thus offers the definitive assessment of the impacts of this important demonstration.

We first show that the youth and families assigned to the treatment group used transition services much more intensively than those assigned to the control group. Nearly 90 percent of treatment group youth used at least one of the five key services noted above during the first 18 months after enrollment, an improvement of 21 percentage points (or 32 percent) compared to the control group. The most frequently received services for treatment group members were employment-promoting services (72 percent) and case management (68 percent). Both increases represented a more than 50 percent increase compared to the control group. These results indicate that even though an array of services already exist to help support youth with disabilities from families with low incomes, PROMISE successfully delivered more intensive services to those in the treatment group.

These intensive services helped to improve youth's employment outcomes and reduce utilization of health care as they transitioned into adulthood. Five years after enrolling in the demonstration, youth in the treatment group were 3 percentage points more likely to be employed than youth in the control group, a 7 percent increase relative to the control group employment rate of 42 percent. Average earnings after five years were also about 7 percent higher. However, these impacts on employment and earnings generally faded over time, with consistently larger impacts in the first years after enrolling in the demonstration. The reduction in size of impacts over time may be partially because some youth were directly offered employment opportunities as part of the intervention; they may also reflect the overlap of the last few years of the study with the COVID-19 pandemic, which saw a general deterioration in the labor market in 2020. In contrast, the reduction in health care utilization grew stronger over time. Youth in the treatment group had lower monthly average health care expenditures, with the largest reductions in expenditures occurring in the fifth year after enrolling. Youth in the treatment group were also

slightly more likely to maintain SSI eligibility over time (and thus, also received higher average SSI benefit amounts) in later years.

We then use mediation analysis to identify the specific services that contributed to the positive impacts on youth's economic outcomes. The single most important mediator of longer-term impacts was whether youth had an early paid employment experience. The evidence strongly suggests that the intervention's impact on youth's economic outcomes is explained in part by the increase in the share of treatment group youth who had a paid work experience during the 18 months after study enrollment. Though use of case management and parent training and information increased, these increases were associated with a reduction in youth earnings and an increase in SSA payments five years after study enrollment.

Our results contribute to a broad literature on the sorts of policies that can help disadvantaged youth achieve success later in life. Beyond the broad programs discussed at the outset, our findings relate to the literature on summer youth programs and education more broadly. These types of jobs can help spur behavioral change and reduce violence (Davis and Heller 2020). Of course, education can also play an important role beyond improving human capital; effective teachers who improve short run behaviors like reducing school suspensions and increasing attendance can improve long-term outcomes (Rose, Schellenberg, and Shem-Tov 2022). Given the substantial disadvantages that youth receiving SSI face—magnified by the intersectionality between poverty and disability—identifying the supports and services that can make even modest improvements in outcomes is critical.

II. Institutional Context

SSI offers monthly cash payments to youth with disabilities from families with very low incomes. To qualify, children must have a "functional and severe medical limitation" expected to

last at least 12 months or to result in death. Children must also have limited assets and earnings available to them, primarily based on the assets and earnings of their parents. For example, SSI has a $2,000 resource limit for individuals ($3,000 for couples), after a $2,000 exclusion if resources are deemed from a parent, meaning that families with even a modest amount of savings would not qualify for SSI. SSI therefore reaches substantially disadvantaged youth – when a child receives SSI, the monthly cash payments on average make up almost half of household income (Rupp et al. 2005).

Youth receiving SSI benefits face important challenges as they transition to adulthood. First, all youth must undergo a redetermination of SSI eligibility at age 18 to assess if their condition meets the SSI adult definition of disability. Although close to half of youth have benefits ceased through this age-18 redetermination (SSA 2024), families rarely expect or plan for this possibility (Deshpande and Dizon-Ross 2023). Those who lose benefits go on to experience poor labor market outcomes and involvement with the criminal justice system at higher rates than those who remain on SSI (Deshpande 2016, Deshpande and Mueller-Smith 2022). Second, whereas youth with disabilities can access most services they need through their school – such as special education services mandated by the Individuals with Disabilities Education Act – upon aging out of public school they face a more fragmented support system. For example, youth might access employment services through a state's vocational rehabilitation agency while accessing general supports to facilitate full integration into the community through a state's center for independent living and by receiving Medicaid long-term support services. The fragmentation and lack of service coordination makes it more difficult for youth with disabilities to obtain services they need, which contributes to the poor outcomes youth SSI recipients experience as they enter adulthood (Honeycutt et al. 2017).

PROMISE sought to address these challenges and facilitate youth's successful transition to adulthood. The intervention offered five key services to youth and families. First, case management sought to appropriately plan and coordinate PROMISE services, help participants navigate the broader service delivery system, and help with transition planning for post-school goals and services. Second, benefits counseling sought to help youth and families understand SSI work supports, the eligibility requirements of various programs, and rules governing earnings and assets. Third, financial education sought to promote families' financial stability. Fourth, career and work-based learning experiences sought to connect youth with paid and unpaid work experiences in an integrated setting while youth were in high school. Fifth, parent training and information sought to improve parents' understanding of their role in supporting and advocating for their youth to help them achieve their education and employment goals. To deliver these five services most effectively, the intervention required formal partnerships between state agencies to ensure better coordination given the generally fragmented nature of the existing service environment.

The core PROMISE components were intended to address a common set of personal barriers youth with disabilities experience, such as low familial expectations regarding education and employment, fear of losing eligibility for public programs, and limited education and skills. The components were also intended to address some of the systemic factors that affect the education, employment, and financial outcomes of youth receiving SSI and their families, including inadequate and uncoordinated services. If successful in reducing barriers and addressing systemic issues, PROMISE could improve a variety of short- and long-term outcomes related to youth's service use, education, employment, health insurance coverage, income, and participation in SSI.

More than 12,000 SSI recipients ages 14 to 16 enrolled in the study. Enrollees came from 11 states: Arizona, Arkansas, California, Colorado, Maryland, Montana, New York, North Dakota, South Dakota, Utah, and Wisconsin, with a particularly large number in California. Enrollment began in April 2014 and ended in April 2016. Services were offered through August 2019, though ended as early as September 2018 in some states (Maryland and Wisconsin). Youth were eligible to enroll in PROMISE if they were receiving SSI payments at some time during the enrollment period, ages 14 through 16, living in an area where services were offered,[1] and not residing in an institution. Enrollees were randomly assigned with equal probability to either a treatment group, which meant they were eligible to receive PROMISE services, or a control group, which meant they were not eligible for PROMISE services but could receive other services available in their communities. If a youth's sibling had previously enrolled, that youth was automatically assigned to the same group as their previously enrolled sibling – such siblings are therefore excluded from our analysis.[2]

III. Data

The analyses presented in this paper rely primarily on administrative data, including from SSA, CMS, and the IRS. Additionally, we use data from two surveys conducted 18-months and five years after the youth enrolled. All dollar values are converted to real 2020 dollars.

SSA administrative data provided information on SSI and Social Security Disability Insurance (SSDI) payments and youth characteristics prior to enrollment. We used SSA disability program data from April 2013 through April 2021, which covered the year before study enrollment through the five years after. We used data on Medicaid and Medicare

[1] For several of the eleven states, only certain regions of the state were part of the PROMISE service delivery area.

[2] Some youth also were purposefully assigned to the treatment group as a result of a "wild card" selection, of which very few opportunities were offered. We exclude such youth from the analysis.

enrollment and expenditures from CMS over the same timeframe. We also analyzed annual earnings data reported by employers to the IRS (which SSA staff accessed on our behalf through the agency's Master Earnings File). The annual earnings data covered 2013 through 2021, which encompassed the calendar year before and five calendar years after the year all youth enrolled. In all analyses of administrative data, the sample includes all 12,584 youth who enrolled in the demonstration.

We conducted surveys (primarily by telephone) at two points in time: 18 months and five years after enrollment.[3] We surveyed youth and their parents using separate instruments. The 18-month surveys of youth and parents provided information about youth and family characteristics, their use of the five key services as well as other types of transition services (such as self-advocacy or self-determination training and life skills training), and their short-term outcomes (such as whether they held a paid job). The five-year surveys of youth provided information on their longer-term outcomes such as their employment and earnings. Although the target respondents for the youth survey were the youth themselves, they were sometimes helped by their parents, or parents or others in the household supplied their responses. The survey response rates exceeded 80 percent, and were approximately similar in both the treatment group (83 percent) and control group (82 percent). The sample sizes for analyses of survey data vary, both based on survey non-response (adjusted for with nonresponse weights as discussed below) and item-level non-response on specific questions (which was quite rare).

The full study sample includes all study enrollees who were randomly assigned to either the treatment or control group. Random assignment resulted in two comparison groups of youth

[3] We invited all eligible youth to complete the survey, except for youth in California. In California, we sampled 2,000 of the 3,097 enrollees. Analyses of outcomes from survey data (discussed in Section IV) thus include sampling weights that adjust for the probability of selection for the survey.

who were similar in their characteristics at the time of enrollment in the study (Appendix Table 1). We compared 25 baseline characteristics of enrollees in the treatment and control groups and found no statistically significant differences. Within a restricted sample of five-year follow-up survey respondents, we found only two statistically significant differences.[4]

In this paper we focus on assessing whether PROMISE resulted in improvements in youth's employment and earnings, SSA program participation, income and Medicaid participation during the five years after study enrollment. We list and define the outcome measures and their data sources in Appendix Table 2.

IV. Methods

To estimate the impacts of PROMISE, we compared the outcomes of youth in the treatment and comparison groups. We carried out intent-to-treat analyses and estimated impacts for all youth in the treatment and control groups, thus estimating the impacts of PROMISE on treatment group members regardless of the services (if any) they used. The estimated impacts represent the effects of PROMISE relative to a counterfactual condition where youth and families may have sought and used other, similar services in the community. Thus, the impact estimates provide policy-relevant information by capturing the effect of offering PROMISE services to families on a voluntary basis when not everyone offered services will necessarily use them and when other transition services are available in the community.

We compared the average outcomes of control and treatment group youth, using ordinary least-squares regression models. To estimate impacts, we estimated a regression model of the following form:

[4] The two differences were in the share who were female and the share who received SSI payments at the time of enrollment. Both differences were small in absolute terms (less than 2 percentage points in each case).

$$Y_i = \alpha + \beta Treatment_i + \lambda X_i + \in_i,$$

$Treatment_i$ denotes the indicator for whether individual i was assigned to the treatment group, X_i denotes the vector of covariates, and $\in_i$ denotes the error term. The coefficient β denotes the primary parameter of interest: the average treatment effect. By adjusting for covariates, we improved the statistical precision of the estimates and (when relevant) controlled for the small number of chance differences in the measured baseline characteristics between treatment and control groups. We controlled for youth characteristics such as youth's age, sex, race and ethnicity, primary impairment, duration of SSI payments at enrollment, amount of disability payments received in the year before enrollment, and whether youth had any earnings in the year before enrollment (only for earnings-related outcomes). We also controlled for household characteristics such as whether the household had multiple SSI-eligible children and parents' receipt of SSI or SSDI payments at the time of enrollment. When analyzing the survey-based outcomes, we used survey nonresponse and sampling weights to derive impact estimates that were as representative as possible of the full research sample and minimized the potential for bias.

V. Results

PROMISE operated in a generally service rich environment. About two-third of youth in the control group used one of the five key transition services offered through the intervention in the first 18 months after enrolling (Appendix Table 3). The most used services for control group youth included help with life skills (50 percent), employment-promoting services (46 percent), and case management (36 percent).

Nonetheless, a larger share of youth in the treatment groups used transition services than those in the control group as a result of the intervention (Appendix Table 3). The intervention

increased the use of any of the five key transition services by 21 percentage points, or 32 percent relative to the control group mean. The key transition services that saw the largest increases were benefits counseling (273 percent relative increase), case management (87 percent), and financial literacy (84 percent). Impacts on service use also spilled over to many not formally a part of the intervention, with particularly large increases in the use of attending a job-related training program (122 percent) and early work experience (83 percent).

Youth in the treatment group experienced improvements in earnings and employment, though these impacts faded somewhat over time. About 42 percent of control group youth were employed in the year before the five-year survey; the intervention increased this share by 3 percentage points (7 percent relative to the control group mean, Table 1).[5] Findings were similar using administrative data on employment, with a 1.5 percentage point increase for youth in the treatment group in the fifth year after enrollment relative to an employment rate of 50 percent for the control group. However, these impacts shrunk substantially over time (Figure 1, Panel A) – the impact estimate in the first year after enrollment was 15.6 percentage points, which was an 83 percent increase relative to the control group mean.[6] These initial positive benefits likely relate to the offered intervention services themselves, which in many states included paid work

[5] We also correct for multiple hypothesis testing using the approach described by Anderson (2008) to compute a sharpened False Discovery Rate (FDR) q-value. Among outcomes estimated within Table 1, the multiple hypothesis adjustment leads all outcomes to not be significant except for this first outcome on employment in the year before the five-year survey. Yet most of the other sharpened q-values are borderline significant with a value of 0.11 that indicates the main findings presented here are robust to correcting for multiple hypotheses.

[6] One potential contributor to the declining impacts over time is the COVID-19 pandemic. Hill, Patnaik, and Musse (2022) examine employment impacts using survey data, distinguishing the respondents by whether their survey response occurred during the pandemic or before the pandemic. For those who responded before the pandemic, PROMISE had a significant and substantial positive impact on employment (8 percentage points or 17 percent relative to the control group) and earnings ($984 or 22 percent relative to the control group). In contrast, those who responded during the pandemic, the impacts on employment and earnings were small and not significant.

experiences.[7] Earnings increased five years after enrollment, with a $301 impact in reported survey earnings (*p*-value = 0.10, Table 1). Estimates from administrative data were more precise in the earlier years, though point estimates were positive in all five years after enrollment (Figure 1, Panel B).[8] Combining earnings and SSA benefit payments, youth's total income also significantly increased.

Though a goal of the intervention was to reduce youth's long-term reliance on SSA payments in adulthood, PROMISE did not do so during the five-year follow-up period, at which point the oldest participating youth were age 22. To the contrary, SSA participation increased for treatment group youth relative to control group youth (Figure 2). In the fourth and fifth years after PROMISE enrollment, treatment group youth were significantly more likely to still be receiving any SSA benefit payments (the increase relative to the control group was 3 percent), with the results entirely driven by receipt of SSI rather than SSDI. Part of this may relate to Section 301, a provision that allows youth to continue receiving benefits even after an age-18 redetermination might result in their SSI payments ending (which they must actively apply for). Payments can continue if youth are actively participating in SSA-approved programs that promote youth's self-sufficiency, of which PROMISE and its corresponding services counted as one such program. Subgroup results by age further suggest Section 301 as an important driver: the impacts are driven by youth who were age 16 when they enrolled, and thus, were most likely

[7] Unfortunately, the earnings data only include the total amount of annual earnings within a given calendar year, but do not disaggregate by type of job. The survey data do not include the source of the job, for example, whether the job was acquired through the demonstration or not. We therefore can only speculate that in the early years these findings may be somewhat mechanical, though the later years capture a period after all intervention services ended.

[8] Though the point estimates for earnings are relatively stable, as a percentage of the control group mean they fell over time – from a 56 percent increase in the first year to a 3.6 percent increase in the fifth year.

to have completed the age-18 redetermination by the end of the study period.[9] Despite increases in employment and earnings at the end of the study period, average SSI payments did not correspondingly decline. For SSI payments to decline because of earnings, youth's annual earnings must have exceeded the SSI student earned income exclusion amount ($7,670 in 2020), which was a relatively rare outcome.

Youth who were offered PROMISE services also experienced reductions in their long-term utilization of health care (Table 1). As shown in Panel A of Figure 3, there was no impact on enrollment in Medicaid or Medicare. Over the five years after enrollment, average monthly Medicaid and Medicare expenditures were $24 lower among treatment group youth, a 2 percent reduction compared to the control group mean of $1,176.[10] This reduction in health care utilization combined with no change in enrollment might signify an improvement in health status. Impacts grew over the course of the demonstration, with the largest reductions in health care utilization in the fifth year after enrollment (a reduction of $49, or 4 percent relative to the control group mean, see Panel B of Figure 3). Nearly all of these results are driven by Medicaid expenditures, as fewer than 5 percent of youth had any Medicare enrollment (consistent with low take-up of SSDI).

We considered the potential for heterogeneous impacts by a variety of characteristics but found no meaningful patterns of differential impacts across subgroups. We estimated

[9] The control group mean receipt of SSA payments in the fifth year after enrollment was 11 percentage points lower for those who were age 16 at enrollment as opposed to age 14 or 15 (56.8 percent versus 67.9 percent). These older youth were more likely to have completed the age-18 redetermination (and thus, have benefits ceased). Yet the impact of PROMISE on receipt of payments was significantly larger for these older youth (4.1 percentage point increase versus 0.3 percentage points in for the younger youth), suggesting that the older treatment group youth were more consistently able to maintain their benefits because of Section 301.

[10] The implied annual expenditures of $14,112 is nearly identical to other recent research on Medicaid expenditures for SSI recipients, which found average Medicaid expenditures of $14,488 for all SSI recipients in North Carolina (Levere and Wittenburg 2024).

heterogeneous outcomes by youth's age at enrollment (14 and 15 versus 16), youth's sex (male versus female), youth's primary impairment (intellectual or developmental disabilities versus other mental impairments versus other impairments), parent receipt of SSA payments at the time of enrollment (no parent received SSA payments versus any parent received SSA payments), and by state (Arkansas versus California versus Maryland versus New York versus Wisconsin versus the remaining six states). We considered six of the outcomes presented in this paper: (1) employment in a paid job in the past year; (2) earnings in the past year; (3) receipt of SSA payments in the fifth year after enrollment; (4) total SSA payments in the fifth year after enrollment; (5) average monthly Medicaid and Medicare expenditures; (6) income in the past year. Yet estimates suggest no consistent differential impacts. The only two outcomes with differential impacts were receipt of SSA payments in the fifth year after enrollment (by state and by age, as discussed above) and total SSA payments in the fifth year after enrollment (by parent receipt of SSA payments).

VI. Mediation analysis

Because PROMISE offered an array of services, we sought to understand the mechanisms through which it affected youth's outcomes. We used mediation analysis to examine the extent to which the estimated impacts operated through the channel of increasing the likelihood that youth and families used the services that PROMISE offered. We decomposed the total effect of PROMISE on youth outcomes into two components: (1) the indirect effects that operated through mediators such as transition services and work experiences and (2) the direct or unattributed effect that operated through alternative pathways besides the mediators.

For the mediation analysis, we focused on five of the youth outcomes related to economic well-being. Specifically, we focused on employment, earnings, and income in the past year

(measured in survey data), and receipt of any SSA payments during the fifth year after enrollment as well as total SSA payments received during all five years after enrolling (measured in administrative data).[11] The PROMISE impacts on these outcomes were all statistically significant or nearly significant, which is important because a mediation analysis is only relevant when there is a significant impact to decompose.

We examined nine potential mediators of PROMISE's impact on youth's outcomes (Appendix Table 4). The mediators include the use of each of the five key PROMISE services during the 18 months after enrollment as well as four additional potential mediators reflecting youth's use of other services and other experiences during that period, such as youth's receipt of help with life skills and work experience.

The main sample for the mediation analysis includes 8,056 youth who completed both the 18-month and the five-year surveys. Importantly, because inclusion in the sample is based on response to both surveys, the analysis sample for the mediation analysis is a subset of the analysis sample used in the impact analyses presented above. The sample for the mediation analysis represents about 77 percent of the PROMISE enrollees who were eligible for the surveys; about 21 percent did not respond to at least one of the surveys, and another 2 percent did not respond to specific survey questions required for the analysis, such as questions about service use. We used weights to account for survey nonresponse and survey sampling.

To examine the mechanisms behind the impacts of PROMISE, we coupled the variation in youth's exposure to PROMISE services through random assignment with an econometric

[11] We could not conduct the mediation analysis on outcomes using IRS or CMS administrative data because we could not directly access those data sources and combine them with other data needed to conduct the analysis.

decomposition (Heckman, Pinto, and Savelyev 2013; Heckman and Pinto 2015; Kautz and Zanoni 2024). We used a two-step mediation analysis method.

In the first step, we estimated the impact of PROMISE on each mediator, using a linear regression model with covariate adjustment for each mediator. For each of the nine types of service *k*, we estimated:

$$UseOfServicek_i = \alpha_{1k} + \beta_{1k} Treatment_i + X_i' \omega_{1k} + \varepsilon_i$$

In the second step, we estimated the effect of PROMISE on the outcome after controlling for the effects of the mediators on the outcomes, using linear regression and covariate adjustment for each outcome. We estimated:

$$YouthOutcome_i = \alpha_2 + \beta_2 Treatment_i + \gamma_2 UseOfService1_i + \lambda_2 UseOfService2_i \ldots\ldots + X_i' \omega_2 + \epsilon_i$$

Here, β_2 represents the direct effect of PROMISE on the youth outcome. The indirect effect of PROMISE on the outcome through the first type of service is equal to $\beta_{11} \times \gamma_2$; the indirect effect of PROMISE on the outcome through the second type of service is equal to $\beta_{12} \times \lambda_2$. The total effect of PROMISE on the outcome is given by $\beta_2 + \beta_{11} \times \gamma_2 + \beta_{12} \times \lambda_2$.

The two-step procedure enabled us to investigate how the mediators affected outcomes. The indirect effect of PROMISE through a mediator can be interpreted as the marginal effect of PROMISE changing a mediator (for example, from youth not using case management to using it) on mean outcomes, while holding constant the other measured mediators. The direct effect of the program is the part of the impact on the outcome that cannot be attributed to the mediators examined in the model. The total effect is the sum of these two effects.[12] Importantly, this decomposition method does not account for the confounding effect of unmeasured mediators. In

[12] The total effect estimated in the second step often differed by a small amount from the impact estimates in Table 2, due to small differences in the analysis samples and related differences in weights and covariates.

other words, the estimated indirect effects through mediators do not account for changes in other determinants of youth outcomes that PROMISE might have generated.

Youth having had paid employment during the 18 months after enrollment stands out as a mediator of critical importance (Table 2). PROMISE's indirect effects through early work experiences are statistically significant for all five-year youth outcomes that we examined, and they are substantial in size (larger than the direct effect and at least half the size of the total effect for all outcomes). The direction of the indirect effects through this mediator is consistent with the notion that early work experiences help youth achieve higher employment rates, earnings, and income, while nudging them away from reliance on SSA programs. For example, the indirect effect of PROMISE through youth's paid work experience during the 18 months after enrollment increased youth's five-year employment rates by 3.1 percentage points, which is nearly all of the total positive effect on this outcome (3.4 percentage points). Another mediator of importance was whether youth received help learning about or getting into a school or training. PROMISE's indirect effects through this type of assistance are statistically significant for all five-year youth outcomes that we examined though they are substantially smaller than the indirect effects through paid work experience.

The indirect effects of the five key PROMISE services were mostly small and sometimes not in the predicted direction. For example, the indirect effects of benefits counseling, financial education, and employment promoting services were only marginally significant in the case of a few outcomes.[13] The indirect effects of PROMISE through case management and parent training

[13] However, it is useful to note that when we estimated a version of the indirect effects only focusing on the five key services, the story changes somewhat – employment promoting services stand out as an important mediator for nearly all outcomes, while benefits counseling and financial education are important mediators especially related to the receipt of SSA payments (see Appendix Table 5). However, those channels may have been through the services considered in Table 2, like the employment-promoting services are especially effective when they offer youth early work experiences.

and information led to a reduction in youth's earnings and an increase in participation in SSA programs and total SSA payments. The indirect effects of case management may relate to the findings of higher overall SSA payments tied to Section 301 – case managers may have helped educate youth about the Section 301 waivers that allowed them to maintain benefits even if their age-18 redetermination indicated they would not qualify for SSI as adults, thus leading them to be more likely to apply for one.

VII. Conclusion

Our paper represents the definitive and comprehensive assessment of PROMISE, a novel initiative to offer highly intensive services and supports to an extremely disadvantaged group of child SSI recipients as they approached the transition to adulthood.[14] The key transition services delivered through PROMISE to youth SSI recipients offer the potential to improve outcomes as youth transition into adulthood. Using a randomized controlled trial with more than 12,000 SSI recipients ages 14 to 16, we found that these key services—case management, benefits counseling, financial education, career and work-based learning experiences, and parent training and information—improved employment and earnings, while reducing utilization of health care. These improvements, while often small and fading somewhat over time, are notable given the prior work that has documented the significant difficulties youth SSI recipients face as they transition to adulthood (Deshpande 2016; Levere 2021; Deshpande and Mueller-Smith 2022;

[14] A wide array of literature has studied various elements of PROMISE, including an entire 2019 special volume of the *Journal of Vocational Rehabilitation*, which offered various lessons learned from implementation teams that administered the PROMISE services (Golden et al. 2019; Schlegelmilch et al. 2019; Crane et al. 2019; Tucker et al. 2019; Williams et al. 2019; Hartman et al. 2019; Saleh et al. 2019; Chambless et al. 2019; Ipsen et al. 2019; Tucker et al. 2019; Luecking et al. 2019; Gold et al. 2019; Anderson et al. 2019; Enayati and Shaw 2019; Nye-Lengerman et al. 2019). Additionally, Patnaik et al. (2021) summarized findings from the first 18 months of enrollment while the intervention was ongoing, while Levere et al. (2024) descriptively studied the role of family services in these early outcomes. Our paper thus is the primary contribution from the study of the PROMISE to the academic literature as it offers the only complete assessment of its impacts.

Hawkins et al. 2024). Those challenges may relate to the significant intersectional disadvantages these youth face, based both on their family socioeconomic status and their disability.

Our mediation analysis suggests that employment-promoting services—especially those that help youth obtain early paid work experiences—can help get youth on a path to longer-term economic self-sufficiency. This is consistent with the fact that each of the PROMISE key services have some evidence of effectiveness, but career and work-based learning experiences has the strongest evidence of effectiveness (Honeycutt, Gionfriddo, and Livermore 2018; Luecking et al. 2018; Fraker et al. 2018). These findings also suggest that early work experience need not necessarily involve competitive jobs to support youth's transition to adulthood. Many of the states involved in PROMISE sponsored temporary or subsidized jobs or connected youth to unpaid work experiences. For example, Wisconsin often connected youth to trial work experiences that typically lasted 90 days and paid participants wages subsidized by the program (Selekman et al. 2018). Work experience offers youth an opportunity to learn about their interests and abilities, shadow and be mentored by more experienced workers, build industry knowledge and networks, and develop valuable social and work-related skills, and youth with disabilities could potentially reap these benefits even if the job is obtained through non-competitive means.

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Table 1. Impacts on youth's outcomes five years after PROMISE enrollment

	Control group mean	Estimated impact	Standard error	Sample size
Employment-related outcomes				
Employed in a paid job (from survey, 5th year after enrollment)	42.2	2.9***	1.0	9,377
Earnings ($, from survey, 5th after enrollment)	4,426	301	183	9,377
Hours worked per week (from survey, 5th after enrollment)	6.9	0.5*	0.3	9,377
SSA program participation				
Received SSA payments (5th year after enrollment)	64.0	1.6**	0.8	12,584
SSA payments ($, 5th year after enrollment)	5,232	100	75	12,584
Total SSA payments ($, 5 years after enrollment)	33,225	401*	226	12,584
Economic well-being				
Total income ($, from survey, 5th year after enrollment)	9,858	373**	173	9,377
Health and health insurance related outcomes				
Average monthly Medicaid and Medicare expenditures ($, 5 years after enrollment)	1,176	-24*	14	12,584

Source: Authors' calculations using PROMISE 60-month survey, CMS administrative records, and SSA administrative records.

Note: The estimated impact represents an estimate of β from equation (1). Unless otherwise noted, all table entries are percentages for means or percentage points for impact estimates. The administrative data includes all initial participants in the demonstration. Standard errors, reported in parentheses, are robust to heteroscedasticity. Except if indicated as "from survey", items in the table come from administrative data. The survey was conducted five years after enrollment and asked about only the prior year, which therefore represents the fifth year after enrollment. All dollar values are converted to 2020 dollars.

***/**/* indicate estimate is significantly different from 0 at the 1/5/10 percent level.

Table 2. The indirect effects of PROMISE on youth outcomes through key and other transition services

Outcome	Case management	Benefits counseling	Financial education	Employment promoting services	Parent training or information on youth's disability	Help learning about or getting into a school or training	Help with life skills	Job-related training	Early work experience	Direct effect	Total effect	Sample size
Employed in a paid job (from survey, 5th year after enrollment)	-0.6	0.1	0.0	0.7*	-0.5***	1.4***	-0.2	0.4*	3.1***	-1.1	3.4***	7,503
Earnings ($, from survey, 5th year after enrollment)	-216***	113*	13	97	-106***	215***	-29	-7	550***	-254	377*	7,503
Received SSA payments (5th year after enrollment)	1.6***	-0.2	-0.2	0.4	0.5***	-1.5***	0.4***	0.4*	-2.0***	3.3***	2.5**	7,703
Total SSA payment amount (first five years after enrollment; $)	508***	54	-14	-5	113***	-386***	84**	46	-577***	581*	404	7,703
Total income ($, from survey, 5th year after enrollment)	-93	72	2	107*	-45	65*	10	20	334***	57	528***	7,503

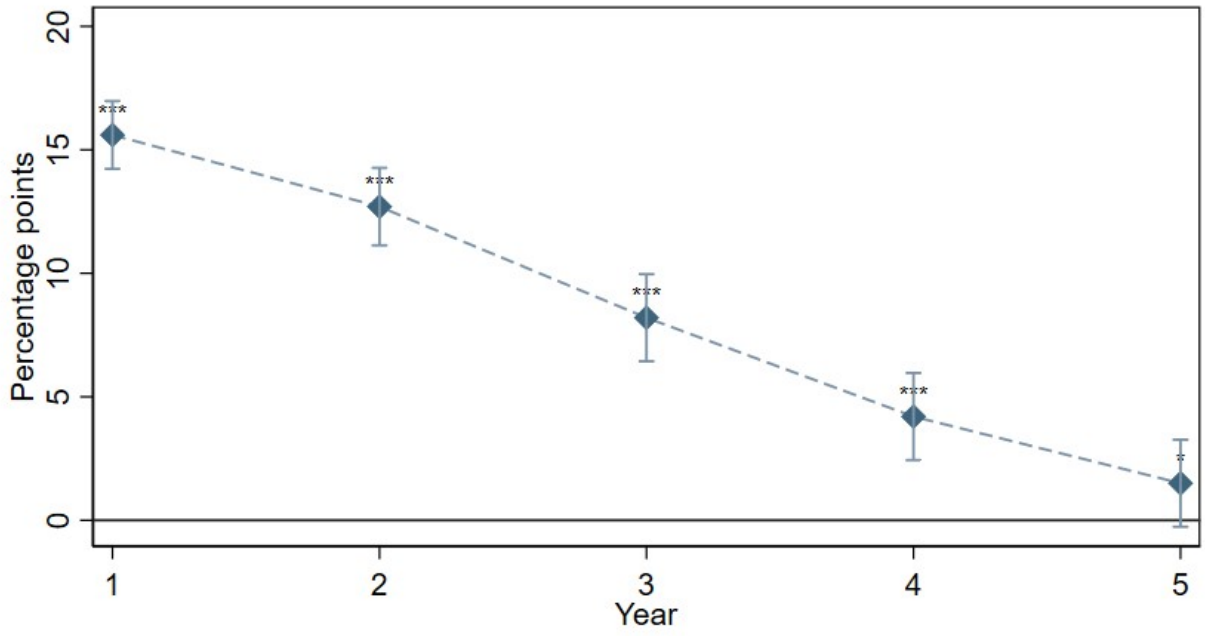
Source: PROMISE 18-month and five-year surveys and SSA administrative records.

Note: The first nine columns measure the indirect effects of each potential mediator. The sample includes all youth who completed the 18-month and five-year surveys and whose parents completed the 18-month survey. Unless otherwise noted, all table entries are percentages for means or percentage points for effect estimates. Except if indicated as “from survey”, items in the table

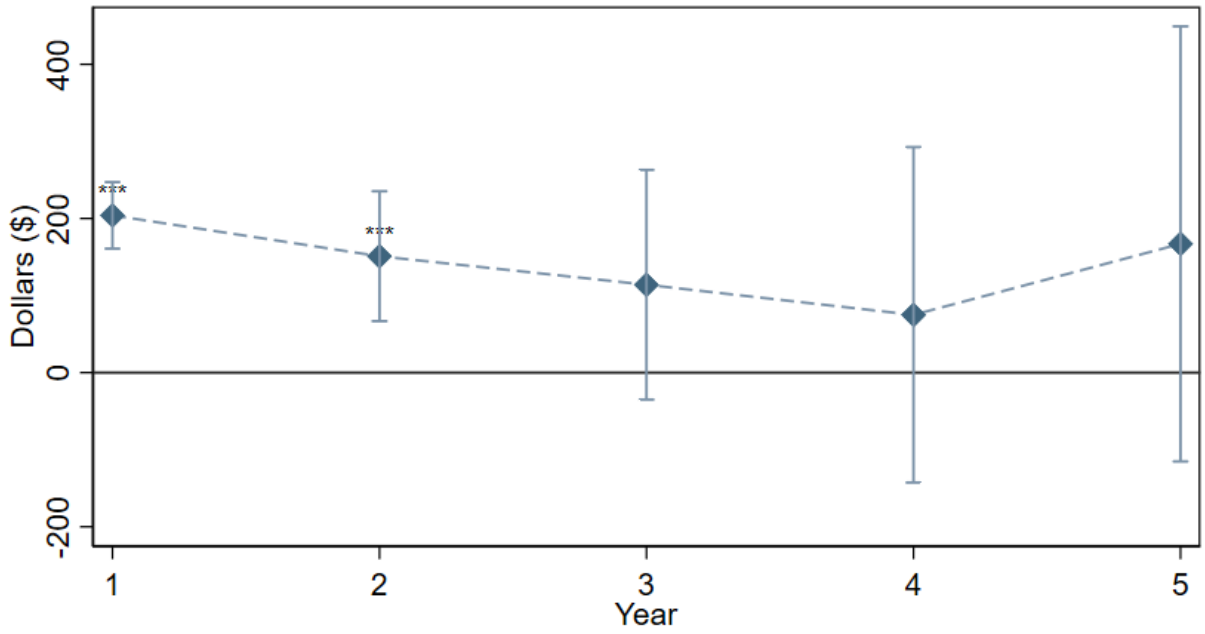
come from administrative data. The survey was conducted five years after enrollment and asked about only the prior year, which therefore represents the fifth year after enrollment.
***/**/* indicate estimate is significantly different from 0 at the 1/5/10 percent level.

Figure 1. Impacts on employment related outcomes over time

Panel A. Employment.



Panel B. Earnings.

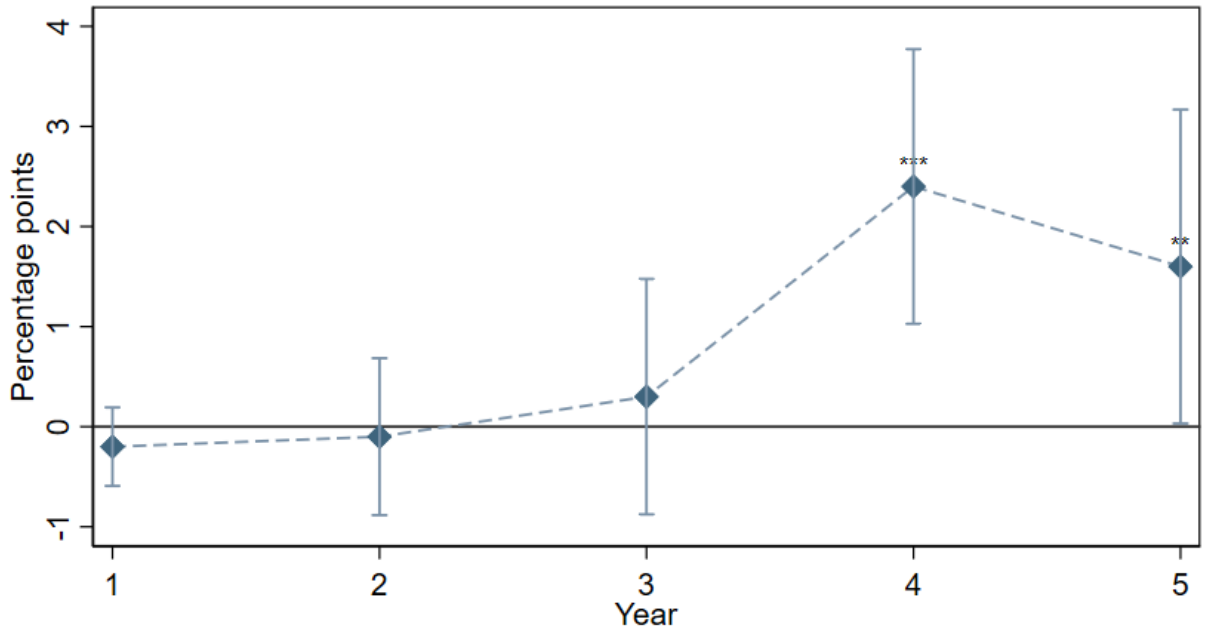


Source: Authors' calculations using IRS data.

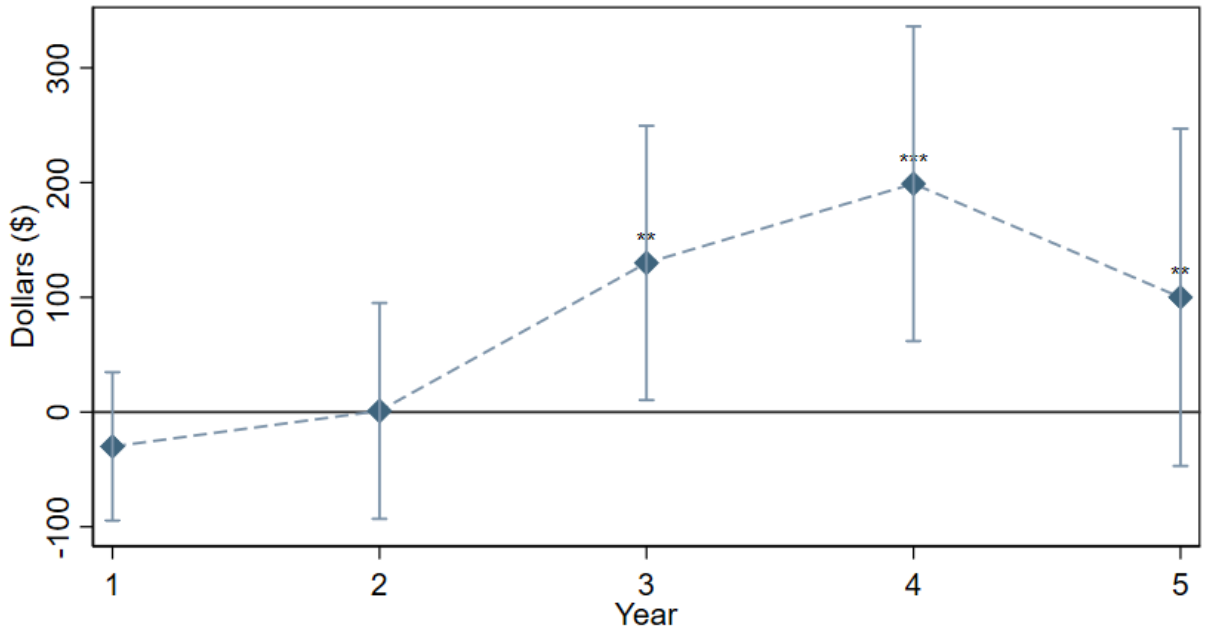
Note: Includes all 12,584 enrollees. The estimated impact represents an estimate of β from equation (1). The x-axis represents the year after enrollment in PROMISE. The bars represent the 95 percent confidence interval based on heteroscedasticity robust standard errors.

Figure 2. Impacts on SSA benefit outcomes over time

Panel A. Any receipt of benefits.



Panel B. Benefit amounts.

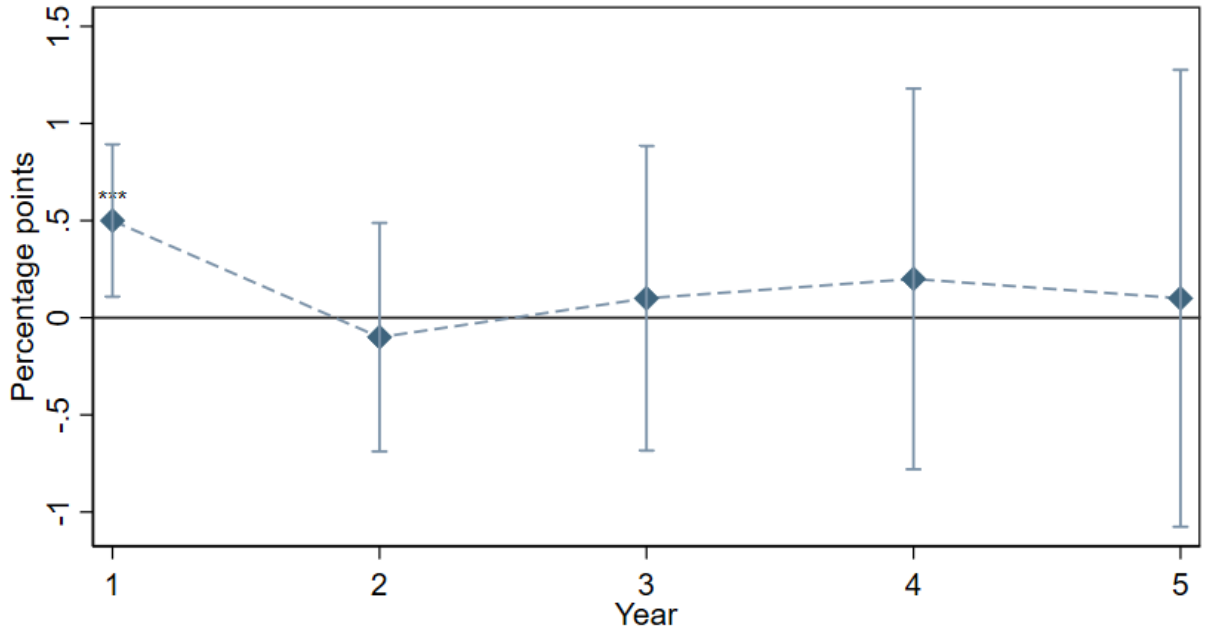


Source: Authors' calculations using SSA administrative records.

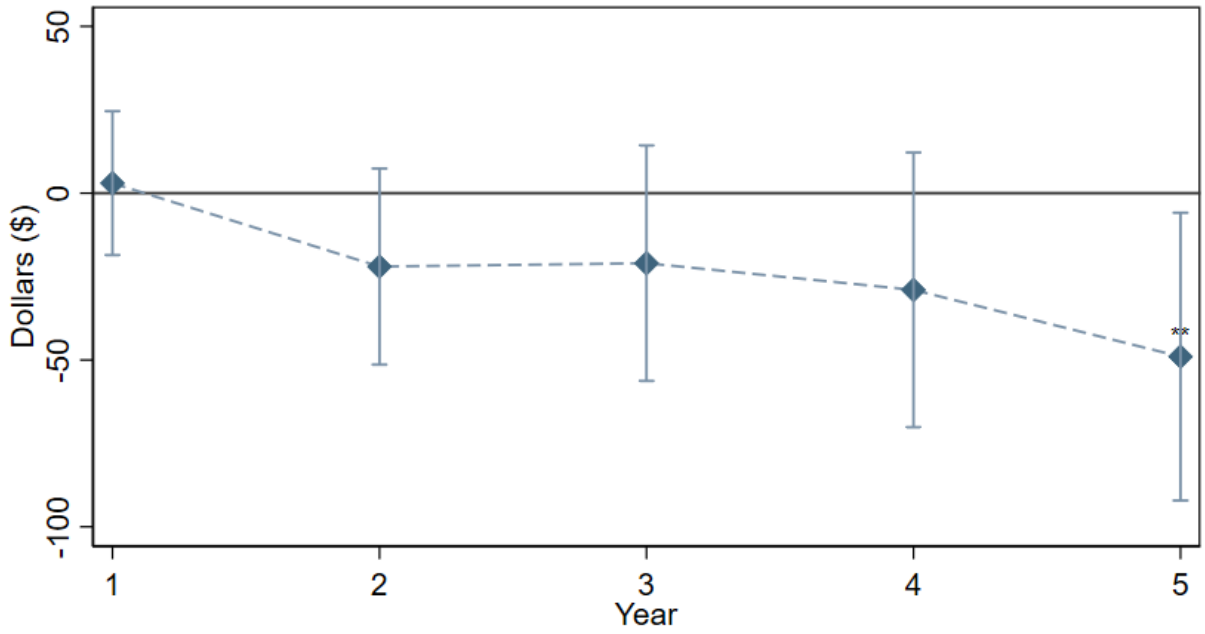
Note: Includes all 12,584 enrollees. The estimated impact represents an estimate of β from equation (1). The x-axis represents the year after enrollment in PROMISE. The bars represent the 95 percent confidence interval based on heteroscedasticity robust standard errors.

Figure 3. Impacts on health related outcomes over time

Panel A. Any Medicaid or Medicare participation.



Panel B. Average monthly Medicaid and Medicare expenditures.



Source: Authors' calculations using CMS administrative records.

Note: Includes all 12,584 enrollees. The estimated impact represents an estimate of β from equation (1). The x-axis represents the year after enrollment in PROMISE. The bars represent the 95 percent confidence interval based on heteroscedasticity robust standard errors.

Appendix Table 1. Characteristics of youth enrollees, by random assignment group

	Treatment	Control	*p*-value
Demographic characteristics			
Youth is female	32.7	33.6	0.31
Youth age at study enrollment			0.88
14	35.7	35.4	
15	28.8	29.2	
16	35.5	35.4	
Average age at study enrollment	15.5	15.5	0.88
Prefers English for written language	88.4	88.8	0.54
Prefers English for spoken language	88.3	88.5	0.70
Youth living arrangement at SSI application			0.61
In parents' household	84.6	84.3	
Own household or alone	13.5	13.5	
Another household	1.9	2.2	
Youth race and ethnicity			0.29
Non-Hispanic White	17.8	17.5	
Non-Hispanic Black	30.5	30.9	
Hispanic	22.4	21.1	
Non-Hispanic American Indian	1.9	1.8	
Non-Hispanic other or mixed race	6.5	6.3	
Missing	21.0	22.5	
Enrolling parent age at study enrollment	43.0	43.1	0.88
Parent race and ethnicity			0.36
Non-Hispanic White	22.7	22.4	
Non-Hispanic Black	32.5	32.1	
Hispanic	19.8	19.2	
Non-Hispanic American Indian	1.7	1.8	
Non-Hispanic other or mixed race	5.1	4.7	
Missing	18.3	19.8	
Disability			
Youth primary impairment			0.90
Intellectual or developmental disability	44.8	44.2	
Speech, hearing, or visual impairment	1.6	1.8	
Physical disability	13.9	13.8	
Other mental impairment	35.5	36.2	
Other or unknown disability	4.2	4.2	
SSA program participation			
Youth SSA payment status at study enrollment			
Received SSI	94.0	94.5	0.28
Received OASDI	11.1	10.5	0.29
Years between youth's earliest SSI eligibility and enrollment	8.8	8.8	0.99
Youth age at most recent SSI application	7.1	7.1	0.83
Youth payments in the year before study enrollment ($)			
SSI	7,302	7,295	0.86

	Treatment	Control	*p*-value
OASDI	309	307	0.92
Total SSI and OASDI	7,612	7,602	0.80
Household had multiple SSI-eligible children	19.4	20.0	0.39
Enrolling parent provided a valid SSN at study enrollment	76.3	76.3	0.99
Parents included in the administrative data			0.25
None	6.4	7.0	
One parent	59.9	60.2	
Two parents	33.7	32.8	
Parent SSA payment status at study enrollment			0.53
Any parent received SSI only	9.3	9.5	
Any parent received OASDI only	8.8	8.4	
Any parent received both SSI and OASDI	5.6	5.2	
No parent received any SSA payments	69.9	69.9	
No parent was included in the SSA data analyses	6.4	7.0	
Earnings			
Youth had earnings in the calendar year before study enrollment	3.3	3.2	0.60
Youth earnings in the calendar year before study enrollment ($)	35	33	0.80
Parent had earnings in the calendar year before study enrollment	69.8	70.5	0.45
Parent earnings in the calendar year before study enrollment ($)	16,768	16,853	0.81
Number of youth	6,302	6,282	

Source: SSA administrative records and 18-month surveys.

Note: The sample includes all youth who enrolled in PROMISE and were randomly assigned to either the treatment or control group. Unless otherwise noted, all table entries are percentages. The p-values in the final column of the table are based on a test for differences between the treatment and control groups. The p-value for a continuous or binary variable is based on a two-tailed t-test. The p-value for a multinomial categorical variable, which we present in the row for the variable label, is based on a chi-square test across all categories.

Appendix Table 2. Outcome measures

Measure	Description and data source
Employed in a paid job (from survey, 5th year after enrollment)	Binary measure of whether youth was ever employed in a paid job during the year before the 5-year survey interview. Based on youth five-year survey data.
Earnings (from survey, 5th year after enrollment) ($)	Continuous measure of total earnings from all paid jobs during the year before the 5-year survey interview. Based on youth five-year survey data.
Hours worked per week (from survey, 5th year after enrollment)	Continuous measure of the youth's average hours worked per week across all paid jobs in the year before the 5-year survey interview. If the youth did not report the number of hours worked at a job, he or she could report the number in ranges. We used the mid-point of each range to calculate weekly hours worked at a job. The top category was defined as more than 35 hours per week; we top-coded it at 40 hours. If the youth held a paid job in the year before the survey but reported neither the number nor range of hours, we used multiple imputation at the program level to fill in the missing information. Based on youth five-year survey data
Employment (from administrative data)	Binary measure of whether the youth's annual calendar year earnings (as reported to the IRS) were more than $0. Based on SSA administrative data.
Earnings (from administrative data) ($)	Measures of youth's annual calendar year earnings (as reported to the IRS). Based on SSA administrative data.
Any receipt of SSA payments	Binary measure of whether youth received either SSI or OASDI payments or both. Based on SSA administrative data.
SSA payment amount ($)	Continuous measure of the cumulative sum of SSI and OASDI monthly payments received. Based on SSA administrative data.
Total income in the past year ($)	Continuous measure of sum of SSA payments and total earnings from all paid jobs during the year before the 5-year survey interview. Based on SSA administrative data and youth five-year survey data.
Any Medicaid or Medicare participation	Binary measure indicating whether the youth was enrolled in Medicaid or Medicare, as captured in Medicaid and Medicare enrollment files.
Average monthly Medicaid and Medicare expenditures ($)	A continuous measure of the youth's average monthly expenditures across both Medicaid or Medicare, as captured in Medicaid and Medicare claims data. We calculated average monthly expenditures by summing the total dollar amounts in claims during the relevant period (either five years or each individual year) and then dividing by the number of months during that period (either 60 or 12).

Note: Monetary values in 2020 dollars.

Appendix Table 3. Impacts on youth's service use

	Control group mean	Estimated impact	Standard error	Sample size
Key transition services				
Employment promoting services	45.6	26.9	1.1	7,628
Case management	36.2	31.4	1.1	7,653
Benefits counseling	5.7	15.6	0.8	7,644
Financial education	17.2	14.4	1.0	7,673
Parent training and information	26.9	12.9	1.1	7,702
Any key transition service	65.7	21.0	1.0	7,632
Other services				
Help with life skills	50.4	10.6	1.2	7,668
Help learning about or getting into a school or training program	29.7	14.5	1.1	7,618
Attended a job-related training program	14.3	17.4	1.0	7,713
Had early work experience	20.4	17.0	1.0	7,726

Source: Authors' calculations using PROMISE 18-month survey.

Note: The estimated impact represents an estimate of β from equation (1). Unless otherwise noted, all table entries are percentages for means or percentage points for impact estimates. The administrative data includes all initial participants in the demonstration. Standard errors, reported in parentheses, are robust to heteroscedasticity.

***/**/* indicate estimate is significantly different from 0 at the 1/5/10 percent level.

Appendix Table 4. Measures of potential mediators used in the mediation analysis

Measure	Description and data source
Youth received employment-promoting services*	Participated in activities to help [him/her] learn about what jobs match [his/her] skills and interests; had help in finding or applying for a job; had any help while working at a job, such as help with job accommodations or learning job duties; or developed an individualized plan for employment through VR. Based on youth and parent 18-month survey data and VR administrative data.
Youth received case management*	Worked with anyone to determine [his/her] needs and help connect [him/her] to services and supports related to education, employment, health, housing, or anything else. Based on youth and parent 18-month survey data.
Youth received benefits counseling*	Help in understanding Social Security, SSI, or other program benefits and rules. Based on youth and parent 18-month survey data.
Youth received financial education*	Help learning about how to save and manage money. Based on youth and parent 18-month survey data.
Parent received training and information about the youth's disability*	Help learning about youth's disability and how to get the services or supports they need or had training on how to support their independence. Based on youth and parent 18-month survey data.
Youth received help with life skills	Taught skills needed for everyday activities. This includes skills such as telling time, interacting with people socially, or using public transportation. Based on youth and parent 18-month survey data.
Youth received help learning about or getting into a school or training program	Help with learning about or getting into a school or training program, including help with an application, entrance exam, or interview. Based on youth and parent 18-month survey data.
Youth attended a job-related training program	Attended a training program or took classes outside of school to help them learn job skills or get a job. Based on youth and parent 18-month survey data.
Youth had early work experience	Worked at a job or a business and was either paid or received income through self-employment. Based on youth and parent 18-month survey data.

Note: All mediators are measured over the 18 months following study enrollment.
* indicates a key transition service that PROMISE programs were required to provide

Appendix Table 5. The indirect effects of PROMISE on youth outcomes through key transition services

Outcome	Case management	Used benefits counseling	Used financial education	Used employment-promoting services	Used training or information on youth's disability	Direct effect	Total effect	Sample size
Employed in a paid job in the 5th year	-0.0	0.5*	0.4**	2.1***	-0.5***	0.9	3.4***	7,693
Earnings in the 5th year ($)	-129*	174***	80*	292***	-116***	85	386*	7,693
Received SSA payments in the 5th year	1.1***	-0.6**	-0.5***	-0.3	0.7***	1.4	1.8*	8,848
SSA payments during Years 1–5 ($)	311***	-62	-108**	-184**	162***	208	326	8,848
Income from earnings and SSA payments in the 5th year ($)	-31	89	44	216***	-49*	250	520***	7,693

Source: PROMISE 18-month and five-year surveys and SSA administrative records.

Note: The first five columns measure the indirect effects of each potential mediator. The sample includes all youth who completed the 18-month and five-year surveys and whose parents completed the 18-month survey. Unless otherwise noted, all table entries are percentages for means or percentage points for effect estimates.

***/**/* indicate estimate is significantly different from 0 at the 1/5/10 percent level.