



One Fell Through the Safety Net: Embeddedness and Take Up of Social Benefits

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The U.S. social safety net comprises a patchwork quilt of welfare programs, but not all eligible beneficiaries receive aid. Incomplete take-up suggests that some children and families are not receiving access to the education, healthcare, housing, and income needed to break the cycle of poverty and may reflect unequal burdens in accessing benefits. We examine incomplete take-up using the case of Michigan's largest need-based financial aid program, where eligibility is based on childhood Medicaid participation. Somewhat surprisingly, we find that economic disadvantage—proxied by duration of childhood on Medicaid—is positively associated with take-up, suggesting that those most in need have highest take-up rates. While prior work has focused on the relationship between individuals and single programs in isolation, we illustrate how embeddedness (both of individuals within programs and individuals within communities) can help explain patterns of incomplete benefit take-up. Those with consistent safety net attachment—continuous Medicaid enrollment and participation in other programs like food stamps—have higher take-up than those with inconsistent attachment, despite similar need. Additionally, community-level take-up among the network of one's peers is associated with individual take-up patterns. Overall, we argue that policies to improve take-up might be more effective if safety net take-up is considered holistically rather than individually.

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One Fell Through the Safety Net: Embeddedness and the Take Up of Social Benefits

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ABSTRACT

The U.S. social safety net comprises a patchwork quilt of welfare programs, but not all eligible beneficiaries receive aid. Incomplete take-up suggests that some children and families are not receiving access to the education, healthcare, housing, and income needed to break the cycle of poverty and may reflect unequal burdens in accessing benefits. We examine incomplete take-up using the case of Michigan's largest need-based financial aid program, where eligibility is based on childhood Medicaid participation. Somewhat surprisingly, we find that economic disadvantage—proxied by duration of childhood on Medicaid—is positively associated with take-up, suggesting that those most in need have highest take-up rates. While prior work has focused on the relationship between individuals and single programs in isolation, we illustrate how *embeddedness* (both of individuals within programs and individuals within communities) can help explain patterns of incomplete benefit take-up. Those with consistent safety net attachment—continuous Medicaid enrollment and participation in other programs like food stamps—have higher take-up than those with inconsistent attachment, despite similar need. Additionally, community-level take-up among the network of one's peers is associated with individual take-up patterns. Overall, we argue that policies to improve take-up might be more effective if safety net take-up is considered holistically rather than individually.

1. INTRODUCTION

The U.S. social safety net comprises a patchwork quilt of welfare programs that aim to alleviate poverty by providing access to education, healthcare, housing, and income, among others. Such programs counteract some of the harmful consequences of poverty on children and families: prior research illustrates that increased investment in the social safety net over time has contributed to reductions in child poverty, resulting in better social and economic outcomes over the life course (Brady & Parolin, 2020; Jackson et al., 2024; McDonnell, 2025; Moffitt, 2015; Morrissey et al., 2025; Wimer et al., 2016). However, participation in social safety net programs among eligible individuals and families is not universal. Take-up rates—the percent of eligible beneficiaries who ultimately receive aid—vary widely across social programs. For example, over half of those eligible for cash assistance through the Temporary Assistance for Needy Families (TANF) program do not receive aid (Ko & Moffitt, 2022). Likewise, some 7 million Americans do not receive benefits from the primary food stamps program in the U.S., the Supplemental Nutrition Assistance Program (SNAP), even though they are eligible for them (Ko & Moffitt, 2022). The incomplete take-up of social programs suggests that some individuals and families face unequal burdens in accessing benefits, with consequences for a number of important outcomes, including poverty, mobility, educational attainment, and health (Brady & Parolin, 2020; Currie, 2004; Jackson & Fanelli, 2023; Ko & Moffitt, 2022; Micheltore & Lopoo, 2021; Moffitt, 2015; Morrissey et al., 2025).

Who is most likely to take up a social program? On the one hand, we might expect that those who apply for and receive benefits from social programs are those who stand to gain the most (i.e., those with the most need). For example, under a rational choice framework, we might assume that those who apply for benefits are those for whom the expected benefits outweigh the

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costs (Moffitt, 1983). This would suggest that those experiencing the most economic disadvantage—and therefore the most need—have higher take-up than those with less economic disadvantage. Still, while safety net programs are ostensibly designed to support those experiencing high levels of disadvantage, a more recent body of literature highlights several patterns that trouble this assumption. For example, studies on the administrative burdens associated with access to benefits highlight not only that individuals and families face different costs of applying, but also that the costs of applying can be especially high for those most in need (Herd & Moynihan, 2018; McDonnell, 2025). Participation in a particular social program may therefore reflect not only economic need, but also one's ability to navigate a complex web of application and recertification costs. As a result, the question of who is most likely to take up a social program is not straightforward, as those experiencing comparatively less economic disadvantage may face fewer barriers to program access, while those experiencing higher levels of disadvantage struggle to access the benefits that could in theory lift them out of poverty.

Much of the existing empirical literature on take-up begins with the starting point of the individual- or family-level take-up of a single social program, such as Medicaid or SNAP. While such questions undoubtedly shed light on both the characteristics of individuals and programs that matter in shaping take-up, they overlook the fact that many social programs are interconnected, and that low-income households in particular tend to be eligible for multiple interlocking programs (Jackson & Fanelli, 2023; Richard & Bart, 2025; Schmidt et al., 2024). For example, there are growing efforts by numerous states to streamline the process of applying for benefits, including by creating categorical eligibility where applying for one program (e.g. TANF) automatically enrolls one in other programs where the income cut-off is met (e.g. SNAP and Medicaid). This interconnectedness facilitates access to programs because eligible

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beneficiaries only have to verify their income for one program. However, it also ties eligibility together such that any difficulties with recertification could trigger loss in not one but multiple programs that an individual or family relies on (Richard & Bart, 2025). This again suggests that remaining enrolled in one or many programs may be an indicator not only of depth of economic need, but also of the ability to overcome compliance costs. People who are more embedded within the system of safety net benefits may also be more likely to know about programs (and therefore more likely to take them up) or perhaps more likely to reach out to the state for assistance with application and recertification requirements (Schmidt et al., 2024).

Finally, just as individuals are embedded within the safety net, they are also embedded within communities of people who may also be eligible for any number of social welfare programs (Aizer, 2003; Edin et al., 2023; Rank & Hirschl, 1993). For example, community-level awareness of social safety net programs is associated with whether individuals themselves are aware of them (Chetty et al., 2013), which might lead to patterns of take-up that operate at the community level rather than the individual or family level alone. As a result, the social networks in which individuals and families are embedded may provide important context for understanding the incomplete take-up of benefits more broadly.

In this article, we examine four broad research questions on the take-up of safety-net benefits: First, what is the relationship between economic disadvantage and program take-up? Second, how does embeddedness in the social safety net, including one's ability to navigate complex application and recertification procedures, shape take-up? Third, are community-level take-up patterns associated with individual take-up behavior? Finally, to what extent does the relationship between economic disadvantage and program take-up reflect depth of disadvantage versus embeddedness within the social safety net and broader community? Answering these

questions sheds light not only on the individual characteristics associated with take-up, but also how embeddedness (both of individuals within programs and of individuals within communities) can help us better understand interactions with the welfare state and the intergenerational persistence of poverty and inequality.

We examine these patterns by focusing on the case of the Tuition Incentive Program (TIP) in Michigan, the state's largest need-based college aid program¹. The TIP program serves as a critical mechanism for Michigan children growing up in poor families to access higher education as they transition into adulthood. Importantly, TIP is unusual among other aid programs in that it ties eligibility not to direct measures of income, but rather to Medicaid participation over childhood. Despite the relatively simple verification process, take-up of the program is low: among eligible students who attend community college, only 35 percent receive TIP aid. This means that nearly two-thirds of TIP-eligible students are leaving money on the table. Prior mixed-methods work has found that the presence of administrative burdens, and constraints faced by front-line administrators in alleviating these burdens when administrative responsibility is fractured and ill-defined, represent important impediments to connecting students with this resource (Burland et al., 2025). Using statewide administrative data on seven cohorts of Michigan high school graduates, we assess the role of individual and community embeddedness as explanations for incomplete take-up, shedding light on the role of the broader safety net environment on program participation.

Consistent with the notion that those with the highest need will be most likely to participate, we find that the most economically disadvantaged students (as proxied by the duration of childhood spent on Medicaid) have the highest take-up rates of TIP. On its face, this

¹ Note that TIP was the largest need-based aid program in Michigan during the time period covered in this study.

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result provides support for the hypothesis that those with the greatest need are most likely to receive benefits. Importantly, because take-up of Medicaid among children in Michigan is approximately 95% (Haley et al., 2021), we argue that differences in the duration of childhood spent on Medicaid reflect real differences in underlying eligibility for the program, rather than differences in take-up among those eligible. However, the duration of childhood spent on Medicaid could also reflect ability to comply with rules and recertification procedures to maintain access to benefits. In support of the latter, we also find that, conditional on duration of childhood on Medicaid, those who are continuously enrolled have higher take-up of TIP than those with more inconsistent Medicaid enrollment, potentially reflecting differences in latent abilities to manage the complex deadlines and requirements associated with such programs. While experiencing breaks in Medicaid coverage could also reflect volatility in income, which is thought to be particularly detrimental for children (e.g. Hardy, 2014), we find that the relationship between continuous enrollment and TIP take-up persists even when we restrict the sample to individuals who only experience (at most) a one-month break in Medicaid coverage, which we argue is more likely to reflect recertification issues than income volatility per se.

More broadly, we find evidence that economically disadvantaged students who are more embedded in the social safety net environment (as proxied by their participation in multiple social programs in addition to Medicaid, such as SNAP and TANF) have higher take-up rates than those who are only enrolled in a single program, suggesting that duration of childhood spent on Medicaid could reflect one's awareness of the broader social safety net. We also find that community-level take-up rates matter: students who are chronically disadvantaged appear to be particularly sensitive to their take-up environments, measured by historical take-up at the high school level, suggesting that the role of place may not be consistent across individuals.

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Combining all of these factors into a single regression analysis, our results indicate that each of these factors—duration of economic disadvantage, embeddedness in the social safety net, and embeddedness in community—independently contributes to predicting TIP take-up.

Individuals who spend their entire childhood continuously enrolled in Medicaid and other safety net programs and attend high take-up high schools have TIP take-up rates approaching 60%, while those with only intermittent coverage on Medicaid who attend low take-up high schools have take-up rates near zero.

This work has several implications for understanding not only access to this particular benefit designed to reduce educational inequality and facilitate mobility, but also for policymakers aiming to better understand and implement social programs designed to reduce poverty. We argue that take-up is best understood not as a standalone decision (or lack thereof) by one person or family, but rather as a system of decisions and programs, with individuals potentially connected to many programs as well as communities of others who may also be eligible for a range of benefits (Chetty et al., 2013; Cholli & Wu, 2025; Edin et al., 2023; Schmidt et al., 2024; Yelowitz, 1996). This highlights that policies to improve take-up and understand the persistence of poverty across generations might be more effective if safety net take-up is considered collectively and holistically rather than individually.

2. BACKGROUND

2.1 Take-Up Among the Economically Disadvantaged

An extensive body of literature has examined take-up rates across social safety net programs in the U.S., documenting wide heterogeneity in the extent to which eligible beneficiaries receive resources. Ko and Moffitt (2022:1), in examining a host of safety net

programs both domestically and internationally, characterize low take-up of social benefits as “the rule rather than the exception.” But why do people fail, as Ko and Moffitt put it, to “pick up the \$1 bill on the sidewalk”? Research suggests several overarching explanations that together explain the problem of low take-up of social benefits. These include the costs of participation or compliance, low information about eligibility, administrative burdens, discretion of front-line administrators, and stigma, among others (Currie, 2004; Herd & Moynihan, 2018; Ko & Moffitt, 2022; Lu & Matheny, 2025; Watkins-Hayes, 2009). Together, these hurdles create an uneven safety net for individuals and families, who may not know which programs they are eligible for, how to access aid, or how to remain eligible once they do access it. Many of these hurdles are created in part due to processes of means testing, or the determination of eligibility for particular programs based on an individual’s or family’s economic circumstances. While means testing ostensibly ensures that individuals with higher incomes or other economic advantages are not able to use a particular benefit, it also creates additional barriers for individuals and families who are in fact eligible.

In spite of the breadth of prior work on the issue of incomplete take-up, several questions remain. In the first portion of this study, we examine the relationship between economic disadvantage and take-up. On the one hand, a number of studies suggest that the most economically disadvantaged eligible beneficiaries are the most likely to take up a program. Assuming a framework of rational decision-making, we might infer that those who seek out social programs are the ones for whom the expected benefits outweigh the costs (Moffitt, 1983). Given both compliance costs and psychological costs such as stigma, it follows that those who experience higher costs than benefits are unlikely to apply for social benefits. Further, if the

expected benefit is assumed to be small, potential beneficiaries may not be willing to go through the hassle of paperwork and requirements (Herd & Moynihan, 2025).

On the other hand, the costs associated with taking up a social benefit are often higher for those experiencing more economic disadvantage. This is, in part, due to policy implementation choices. For example, both Social Security and unemployment insurance require a specific amount of work or earnings over a predetermined time period; such restrictions make it more difficult for those in poverty to access these programs as they are more likely to have volatility in their work histories (Moffitt, 2015). Along similar lines, administrative burdens—the various paperwork, recertification requirements, and other bureaucratic demands—are often the most onerous for those with the fewest resources to manage them (Herd & Moynihan, 2018; Homonoff & Somerville, 2021). Human capital factors such as economic hardship, low levels of education, and poor health can compound experiences of disadvantage, leading to lower likelihoods of program knowledge and take-up among affected populations (Bell et al., 2023; Christensen et al., 2020; Herd & Moynihan, 2025; Masood & Azfar Nisar, 2021). At the same time, these factors also simultaneously increase one’s need for social safety net programs, creating a difficult situation where the most disadvantaged are both the most in need of benefits as well as the population with the most difficulty in accessing them (Christensen et al., 2020; Deshpande & Li, 2019). Indeed, in the last few decades, there has been a slow but meaningful shift in the targeting of benefits away from the most economically disadvantaged individuals and families and towards those who are comparatively less disadvantaged (Moffitt, 2015).

2.2 Safety Net Attachment and Embeddedness

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Even among those with similar levels of economic or social disadvantage, there is heterogeneous experience with the social safety net that may also be associated with take-up behavior. Factors such as level of safety net attachment and broader embeddedness within the social safety net may complicate the relationship between disadvantage and take-up. First, attachment to the safety net may be associated with whether disadvantaged individuals and families are able to take up other benefits that they are eligible for. Families and individuals increasingly rely on multiple benefits (Jackson & Fanelli, 2023). For example, nationally, cross-enrollment in SNAP and Medicaid is high, with enrollment in one program significantly associated with enrollment in the other (even net of other observable characteristics; see Cholli & Wu, 2025; Schmidt et al., 2024).

One mechanism through which enrollment in one program increases enrollment in other safety net programs is through awareness. For example, Medicaid expansions through the 1980s increased participation in SNAP (explaining about 10 percent of SNAP growth), likely due to information spillovers between the two programs (Yelowitz, 1996). There are also growing efforts at the state level to streamline the process of benefit receipt through direct certification, which automatically qualifies individuals for other programs where the income cut-off is met. In Michigan, those who apply for TANF automatically qualify for Medicaid, SNAP benefits, and subsidized meals for school-aged children. There are a number of advantages to this process of direct certification with regard to take-up, such as simplifying the process of application and reducing the burden on families, who only have one program's requirements to keep track of. For example, the introduction of direct certification for subsidized meals in school may have increased participation by as much as 10 percentage points among families who previously had only received SNAP benefits (Kim & Joo, 2020). Furthermore, reforms to streamline enrollment

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across multiple safety-net programs simultaneously increase take-up of individual programs as well (Cholli & Wu, 2025). As a result, examining program enrollment in isolation may miss much of the complex architecture of the safety-net landscape and associated administrative hurdles (Schmidt et al., 2024).

Still, direct certification and embeddedness within the safety net also introduce additional challenges. In particular, recertification is a key time when individuals and families lose program access (Homonoff & Somerville, 2021); if programs are tied together, the loss of one program may cascade into a loss of access to multiple (or even all) programs. For example, Richard and Bart (2025) find that work requirement violations that led individuals to lose access to TANF also led to decreased enrollment in both SNAP and Medicaid (in spite of continued eligibility for these other programs). As a result, increased reliance on the safety net, conditioned on economic disadvantage, may carry a risk of *lower*—not higher—take-up. Further, those able to take advantage of multiple programs may not be those in the most need. Indeed, Jackson and Fanelli (2023) illustrate that, though the percentage of U.S. households using multiple benefits has increased in the last 40 years, the primary beneficiaries of multiple benefits have been disproportionately higher-income, two-parent families with more education.

Finally, just as individuals and families are embedded within a system of programs, where they may be eligible for and applying to multiple programs simultaneously, they are also embedded within communities of people in similar situations. Theories from economic sociology posit that people do not make choices in a vacuum, but rather that their social context and networks influence their economic actions (Granovetter, 1985). Relatedly, patterns of community-level program awareness and take-up have been shown to be associated with individual take-up. For example, several studies have indicated that individual propensity to

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take-up a program is associated with community-level welfare or retirement program enrollment (Bertrand et al., 2000; Chetty et al., 2013; Currie, 2004; Duflo & Saez, 2003). It is thought that this relationship operates through information sharing among social networks (Chetty et al., 2013; Duflo & Saez, 2003). In the case of TIP, this information sharing may occur through peers, or important adult actors who facilitate the application process, such as teachers or school counselors. However, the extent to which individual embeddedness and community-level embeddedness together shape patterns of take-up is relatively unexplored.

The present study builds on this literature to advance a theory of safety net embeddedness. More specifically, we argue that embeddedness operates through two pathways. The first is program embeddedness, or the degree to which individuals are integrated into a system of interlocking safety net programs, reflecting both their awareness of benefits and their capacity for navigating complex application and recertification procedures. The second is community embeddedness, or the degree to which individuals are situated within social networks where program participation is common, which may reflect information spillovers or the normalization of benefit receipt. All told, we argue that embeddedness facilitates a more comprehensive understanding of safety net take-up and offers key insight into why take-up remains incomplete even among the most economically disadvantaged.

2.3 Empirical Context: Michigan's Tuition Incentive Program

We examine questions of disadvantage and broader embeddedness in the social safety net through the lens of take-up of state grant aid for college. The take-up of federal and state grant aid is no exception to broader patterns of low take-up of social benefits; students leave billions of dollars on the table from the Federal Pell grant each year (Kofoed, 2017). Nearly every state

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offers some form of state grant aid; in all, states spent nearly \$17 billion on college financial aid in the 2022-2023 school year, with about \$10.3 billion of this sum allocated to need-based aid for low-income students (Goldrick-Rab et al., 2016; Ma et al., 2024; NASSGAP, 2023). Such programs reflect a critical support system for children from low-income families as they transition to adulthood. Access to higher education facilitates positive outcomes over the life course and is a key driver of social mobility (Hout, 2012); as a result, the mechanisms underpinning the low take-up of programs supporting educational attainment are an important area of study for scholars and policymakers interested in reducing inequality. In addition, our study sheds light on how benefit take-up in more traditional safety net programs, such as Medicaid and SNAP, are related to more peripheral safety net programs, such as financial aid.

More specifically, we examine the Tuition Incentive Program (TIP) in the state of Michigan. TIP is one of the largest scholarship programs in the state of Michigan, funding over 30,000 students annually. Somewhat unusually (relative to similar programs in other states), TIP eligibility is tied to participation in Medicaid during childhood. Students are categorically eligible for TIP if they are enrolled in Medicaid for at least 24 months within any 36-month period between age 9 and high school graduation.² This eligibility is determined automatically, with students receiving a letter in the mail soon after they become eligible. Further, after initial enrollment in the program, students do not need to recertify to remain eligible.

The other key aspect of TIP that sets it apart from other types of state aid is that the program is effectively first-dollar, meaning students are able to use it in conjunction with the Federal Pell grant, which allows them to maximize their aid. Both of these factors are aimed at

² Students must also earn a high school diploma or GED by age 20, be Michigan resident, a US citizen or permanent resident, and not have defaulted on a Federal student loan. Students must file the FAFSA and be enrolled at least half-time at a participating institution, though these are process requirements rather than aspects of eligibility *per se*.

increasing access, as eligibility is based on participation in another safety net program rather than complex formulas for family income, and the first-dollar nature of the program means that it can be combined with other sources of funding. We would therefore expect take-up of TIP to be high given its relatively simple design and generosity.

However, despite its seemingly straightforward design and regulations, the TIP program has low take-up relative to other safety net programs: just 35% of eligible community-college attendees receive funds, resulting in approximately \$35 million forgone annually by some of the state's lowest-income students. This is due, in part, to a series of classic explanations for low take-up, such as administrative burdens like the requirement of the FAFSA and a stand-alone TIP application (in spite of the fact that neither is used to directly verify eligibility for TIP)³ and imperfect information about eligibility on the part of both students and high school counselors.⁴

3. DATA

We leverage several administrative datasets from the state of Michigan. First, we use administrative data from the Michigan Department of Education (MDE) and the Center for Educational Performance and Information (CEPI), which contain information on all Michigan public school students and schools since the 2002-03 school year. Our assembled dataset includes K–12 educational records, including test scores, attendance, course-taking, and demographic measures (race/ethnicity, gender, and free-lunch eligibility, among others) for the population of individuals attending public and charter schools within the state of Michigan.

³ The FAFSA is used to verify residency, citizenship, and loan default, but is not directly used to verify that a student meets the Medicaid enrollment or educational requirements for TIP.

⁴ We investigate patterns specific to TIP in two companion articles, one of which is currently under review. The first examines the factors that predict take-up, including timing of eligibility and assistance from high-school counselors. The second examines the causal effects of the TIP program on college attendance using a regression discontinuity approach. In addition, the state has made additional outreach efforts, information campaigns, and process streamlining over the past several years to address low take-up, but these occur after our sample period.

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These data are merged onto postsecondary schooling records from the National Student Clearinghouse (NSC) as well as transcripts from the Student Transcript and Academic Record Repository (STARR) for individuals who attend public postsecondary institutions in the state of Michigan.

We match these administrative education records with data from the Michigan Department of Health and Human Services (MDHHS) on Medicaid, TANF, and SNAP enrollment in each month since 2001 using probabilistic matching based on first and last name, gender, date of birth, and zip code.⁵ With MDHHS data, we can construct both measures of the total number of months that an individual is enrolled in any safety net program, but also the length of their enrollment spells and any breaks in enrollment over time. Note that the income cut-offs for each of these programs are different: Medicaid has the highest income cut-off, while TANF is the most restrictive of the three. Our education data is limited to annual K-12 years, while data from MDHHS allows us to observe participation in Medicaid, TANF, and SNAP each month from age 9 through high school graduation, so long as individuals remain within the state of Michigan.⁶

To measure TIP participation, we use data from the Michigan Department of Lifelong Education, Advancement, and Potential (MiLEAP) on participation in all aid programs administered by the state, which includes TIP participation and dollar amount received. We

⁵ Note that we have social safety net participation information for the universe of children who have ever been on Medicaid in Michigan (including the state children's health insurance program or CHIP) since 2001. Because Medicaid has the highest income cut-off (particularly for CHIP, which is about 217% of the federal poverty line) and the highest participation rate (over 95%) of these three programs, this should also nearly capture the universe of children on SNAP and TANF. However, if there are children who receive SNAP and/or TANF but not Medicaid, we would not have information on them with these data. The match rate between the MDHHS data and the education records was approximately 92%.

⁶ For individuals born starting in 2001, we can observe duration on Medicaid from birth to high school graduation. For all figures and tables, with the exception of Figure 1, we use duration on Medicaid from age 9 to high school graduation.

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calculate TIP eligibility using Medicaid enrollment records for the students in our sample. As previously noted, students are categorically eligible for TIP if they have been on Medicaid for 24 months within any 36-month window from the age of 9 until they finish high school.

For our main analytic sample, we restrict our analyses to individuals who are eligible for TIP based on their childhood Medicaid participation and who graduated from high school between 2015 and 2021. Because we can only measure social safety net participation and education outcomes for the years in which an individual resides in the state of Michigan, we restrict our main analysis to individuals who are present in the Michigan public school system each year between kindergarten and 12th grade, which includes about 74% of all Michigan public high school graduates.⁷ Results are quite similar if we do not make this restriction, but restricting to those present in Michigan for all of their elementary and secondary school years reduces concerns that the patterns we uncover are driven by differential sample attrition. Making these restrictions leaves a sample of 181,105 TIP-eligible high school graduates.

To avoid confounding TIP take-up with factors associated with college attendance, we further condition much of our analyses on TIP-eligible students who attend a two-year community college within two years of high school graduation, which represents 62,479 individuals.⁸ In this way, our investigation seeks to understand those who are, in effect, leaving money on the table. As a robustness check, in some analyses we expand our sample to all high school graduates to examine how sample selection into community college enrollment affects the

⁷ Because the MDHHS data only contain information on the months in which a child is enrolled in Medicaid, SNAP, or TANF, we cannot make the same sample restriction as with the education data (e.g. we cannot observe whether a lack of presence in the MDHHS data reflects living out of state or merely not receiving benefits in those months).

⁸ Approximately 60% of our high school graduate sample attends any college within 2 years, but only 35% attend a public, 2-year community college.

interpretation of our results (see appendix). Substantive results remain unchanged whether or not we include this restriction.

3.1 Outcome Measures

Our main outcome of interest is the receipt of TIP aid within two years of graduating from high school, conditioned on attending community college.⁹ We calculate this binary variable based on whether an individual is observed receiving TIP financial aid at some point in the two academic years following high school graduation (i.e., the academic year immediately following high school graduation and one academic year later).

3.2 Key Explanatory Measures

We examine how TIP take-up varies according to childhood disadvantage, which we proxy using two main measures: receipt of subsidized meals in school and Medicaid participation. Since everyone in our sample receives Medicaid at some point in childhood, to further distinguish the most economically disadvantaged students, we create measures of disadvantage based on the duration of childhood spent on these programs. Micheltore and Dynarski (2017) demonstrated that the duration of economic disadvantage as measured by the number of years participating in the subsidized meals program was indicative of one's level of poverty, with those who are chronically on subsidized meals having the lowest income. For both subsidized meals and Medicaid, we conceptualize duration of disadvantage as the fraction of total observed years in the data participating in these programs. For subsidized meals (which we

⁹ We specify a two-year time frame to be consistent with much of the prior literature that analyzes college enrollment, and because it allows us to evaluate take-up within a consistent time frame for individuals in our sample graduating high school across a span of seven years.

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refer to as the *poverty ratio*), this duration captures participation between kindergarten and 12th grade, while duration on Medicaid is measured from age 9 through high school graduation.

We use both duration on subsidized meals and duration on Medicaid as proxies for depth of disadvantage because we lack income information in our data and these two programs may pick up on slightly different measures of disadvantage due to differences in income cut-offs for eligibility as well as take-up rates between the two programs. To receive subsidized meals, students must have family income below 130% (free) or 185% (reduced-price) of the federal poverty line. Further, children who receive SNAP benefits, cash welfare, experience homelessness, or are part of the foster care system are also eligible for subsidized meals. Children in Michigan can receive Medicaid or the state children's health insurance plan (CHIP) if their family income is below 210% of the federal poverty line. While take-up of Medicaid is approximately 95% for children in Michigan, national estimates of take-up of the subsidized meal program are closer to 80% (Currie, 2004; Domina et al., 2018).

To proxy for ability to comply with application and recertification procedures, we take advantage of the monthly nature of the MDHHS data, which allows us to measure participation in Medicaid, SNAP, and TANF at a relatively high-frequency. This allows us to construct individual "spells" of participation in these programs. We identify the number of spells on Medicaid according to the number of breaks in coverage that a student experiences, even if the break is only a single month. For instance, a student who is continuously enrolled in Medicaid from age 9 through age 12 and never enrolled before or after that time is considered to have a single spell of Medicaid. On the other hand, a child who is enrolled in Medicaid from age 9 to age 10 and from age 11 to age 12 is considered to have two spells on Medicaid. In addition to measuring the total number of unique spells on Medicaid, we also measure the duration of each

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break between spells and capture the longest break (measured in months) between Medicaid spells. Histograms of both the number of spells and the longest break in coverage can be found in the appendix.

To capture one's embeddedness within the broader social safety net, we create three mutually-exclusive indicators based on which programs an individual participates in over the course of childhood. Of course, since TIP eligibility is tied to Medicaid enrollment, everyone in our TIP-eligible sample is embedded within the Michigan safety net to some extent. As a result, our main focus is on variation between students who are only ever on Medicaid and those who also enroll in other programs. Unfortunately, given the eligibility constraints for the TIP program, there are no TIP-eligible students who never enrolled in Medicaid. In particular, we categorize students based on whether they (1) only ever participated in the Medicaid program, (2) participated in Medicaid and either SNAP or TANF or (3) participated in Medicaid, SNAP, and TANF at some point in childhood.¹⁰

Finally, to represent community embeddedness, we include school-level measures of TIP eligibility and the TIP take-up rate among TIP-eligible high school students within a graduation cohort who enroll in community college within two years of high school graduation. For these measures, we calculate a lagged three-year rolling average, reflecting the eligibility rate and take-up rate, respectively, of the students in the previous three graduation years. In this way, these measures reflect the peers for whom our students may have plausibly interacted with over the course of high school.

¹⁰ Note that individuals need not simultaneously participate in these programs to be included in either the second or third category, but they need to have been on the programs at least one month over the course of childhood. Because of the difference in income eligibility cut-offs and direct certification processes for those receiving cash welfare, individuals in the second category are nearly entirely those who were on Medicaid and SNAP but not TANF.

3.3 Descriptive Statistics

Table 1 presents descriptive statistics for the main study sample of TIP-eligible community college enrollees, split by whether the individual receives TIP within 2 years of high school graduation. Overall, approximately one-third (35%) of TIP-eligible community college students receive TIP within two years. The average individual in our sample is on Medicaid for 83 months (approximately 7 years) between age 9 and high school graduation and experiences 1.2 different spells, with some individuals experiencing as many as 7 different spells over the course of childhood. Approximately 81% of individuals in our sample have one single spell on Medicaid from age 9 to graduation, while the remaining students experience more than one spell. On average, the longest break that an individual experiences between spells during this period (excluding zeros for individuals who are continuously enrolled in Medicaid) is approximately 5.53 months. Compared to eligible students who do not receive TIP, those who take up the financial aid program are more likely to be female, White or Hispanic, and spend more time in childhood receiving subsidized meals, Medicaid, TANF, and SNAP benefits.

[Table 1]

4. METHODS

Our analysis proceeds across several steps. We are interested in how each of the factors discussed above predict TIP take-up, which we categorize as follows: duration of childhood disadvantage; embeddedness within the social safety net; and community embeddedness. We evaluate the relationship between TIP take-up and each of these factors separately, before combining them into a single regression analysis to test how each set of factors independently contributes to predicting TIP take-up. Our goal with these analyses is to (1) test the hypothesis that those who have the greatest economic need are most likely to receive TIP benefits and (2)

test whether other factors associated with economic need (such as embeddedness within the social safety net or ability to comply with recertification procedures) explain the relationship between economic disadvantage and TIP take-up.

More specifically, we examine take-up using a series of descriptive figures and tables, along with regression models that examine the role of different attributes on take-up patterns. We estimate models of the following general form:

$$y_{ijk} = \alpha + D_i \gamma + S_{jk} \lambda + \pi_k + \varepsilon_{ijk} \quad [1]$$

where y_{ijk} is an indicator for whether student i in high school j and cohort k received TIP aid. D_i is a vector of individual-level characteristics, including demographic characteristics (such as race/ethnicity, gender, and free-lunch eligibility), total months on Medicaid, and other enrollment in other programs, such as SNAP and TANF. S_{jk} is a vector of high school-level characteristics for each year, including the lagged measure of TIP eligibility and take-up rate described in the previous section. π_k is a cohort fixed effect. As with other analyses, our preferred measure of take-up for the regression models conditions on students that enrolled in a Michigan community college, so as not to confound take-up with enrollment differences across groups. However, we include unconditioned results in the appendix. Finally, it should be noted that these results should be interpreted descriptively and do not necessarily convey causal relationships.

5. RESULTS

5.1 Duration on Medicaid and TIP take-up

We start by examining the relationship between duration of disadvantage and TIP take-up among our main sample of TIP-eligible individuals who enrolled in a two-year community

college within two years of high school graduation.¹¹ The first panel of Figure 1 presents these results. Overall, there is a strong, positive relationship between economic disadvantage and TIP take-up, regardless of which proxy for economic disadvantage we use. In fact, the two proxies for income—Medicaid enrollment and the poverty ratio (which largely captures subsidized meal participation)—present a remarkably similar pattern. The slope of the relationship is quite steep, with those who barely meet the criteria for TIP (24 months on Medicaid) receiving TIP at a rate around 25%, and those who spent all of childhood on Medicaid receiving TIP at a rate of nearly 50%.¹²

At least on its face, this pattern supports the idea that the most economically disadvantaged students are those most likely to participate in TIP. However, the relationship depicted in the first panel of Figure 1 conditions the sample on those who enroll in community college. If more economically disadvantaged individuals are less likely to enroll in community college in the first place, then this relationship may in part reflect the positive selection of economically disadvantaged individuals into community college. On the other hand, this figure also excludes individuals who enroll in four-year postsecondary institutions, who are likely even more positively-selected than those who enroll in community college. Thus, how sample selection into community college affects the relationship between economic disadvantage and TIP take-up is ambiguous.

¹¹ For this figure only, we also restrict our sample to individuals born in 2001 or later, since we can observe Medicaid participation for all of childhood for individuals in these birth cohorts. Results are quite similar if we instead use our entire sample and measure Medicaid duration since age 9, which we have for everyone in our sample.

¹² Note that mechanically, none of the individuals in our sample can have Medicaid participation at 0%, since they all have sufficient participation in Medicaid to qualify for TIP. However, not everyone in our sample who receives Medicaid participates in the subsidized meals program, either because they do not qualify based on their income, or they choose not to enroll in the program even if they are income-eligible. Approximately 80% of individuals who are income-eligible at a given point in time certify for subsidized meals.

In the second panel of Figure 1, we relax this constraint by presenting TIP take-up rates among all Michigan public high school graduates who meet the Medicaid eligibility criteria for TIP (e.g., the unconditioned TIP take-up rate). While the relationship between duration of economic disadvantage and TIP take-up is more muted compared to the conditional take-up rate (and the overall take-up rate is much lower), the relationship is still positive, and certainly not negative, which is what we would expect to find if those with the most economic need face more barriers in accessing TIP. This suggests that the relationship between duration of childhood on Medicaid (or subsidized meals) and TIP take-up is not merely driven by positive selection, whereby only the most determined students who are always on Medicaid enroll in community college. In fact, since more economically disadvantaged students are *less* likely to enroll in college at all, it would not have been surprising if the unconditional take-up of TIP were negatively correlated with duration of childhood on Medicaid. The fact that unconditional take-up is still *positively* correlated with disadvantage despite this well-known negative correlation between disadvantage and college-going is striking (Bailey & Dynarski, 2011).

Overall, Figure 1 provides suggestive evidence that more economically disadvantaged students are more likely to receive TIP. However, duration of time spent on Medicaid or subsidized meals conflates multiple characteristics of students: their economic disadvantage that determines eligibility for a means-tested program and their ability to comply with the rules and recertification procedures associated with maintaining coverage. In the analysis that follows, we attempt to disentangle these two factors (economic disadvantage and ability to comply with regulations and recertification procedures) by using the patterns of Medicaid and other program participation as proxies for the extent to which individual students and their families can adhere to compliance requirements of participating in the social safety net.

5.2 Medicaid Spells and Take-Up Behavior

To attempt to identify whether the positive relationship we observe between duration of childhood spent on Medicaid and TIP take-up reflects individuals' ability to comply with complex certification and recertification procedures, we next examine the relationship between the number of spells on Medicaid that a child experiences and TIP take-up. To measure this relationship, we regress an indicator for TIP receipt on indicators for whether the individual experienced one (reference), two, three, or four or more spells on Medicaid, while controlling for the underlying share of childhood spent in poverty and the total number of months on Medicaid throughout childhood.

Results, depicted in a coefficient plot in Figure 2, indicate a negative, monotonic relationship between the number of spells of Medicaid and participation in TIP. Compared to those who only have one spell of Medicaid throughout childhood (e.g., continuous enrollment), those who have one break in their participation in the program are about 5 percentage points less likely to participate in TIP. The relationship appears fairly linear beyond one break, with each additional break in coverage corresponding to an approximately 2 percentage point decline in the likelihood of receiving TIP. These estimates are conditional on duration of childhood spent on Medicaid, as well as the fraction of years spent on subsidized meals, so differences in take-up of TIP do not reflect underlying differences in duration of childhood spent on these programs, but rather something about experiencing multiple spells of Medicaid rather than a single, continuous spell.¹³

[Figure 2]

¹³ We also conduct this exercise on the full sample of high school graduates rather than those enrolled in community colleges in Figure A2. The patterns are quite similar.

While this relationship between TIP take-up and Medicaid spells might reflect one's ability to maintain continuous enrollment on Medicaid, it could also reflect a different type of economic disadvantage. Individuals with multiple spells of Medicaid might experience more volatile family income compared to individuals who experience one continuous spell, conditional on overall number of months of economic disadvantage. It might be the case that income volatility is what drives this relationship between number of spells and TIP take-up, rather than compliance with Medicaid recertification procedures *per se*.

While we cannot definitively distinguish between these two mechanisms, we conduct a robustness check to provide some suggestive evidence that the relationship we uncover reflects something about the recertification process rather than income volatility. We restrict our sample to individuals who have either never had a break in Medicaid coverage (i.e. they only ever have one spell) or only have one break in coverage. (This is the most common pattern among those who experience multiple spells of Medicaid.) We then examine the relationship between TIP take-up and the duration of the break in coverage. For instance, we compare TIP take-up for those who experience a one-month, two-month, three-month (and so on) break in coverage. With this analysis, our assumption is that the shorter the break in Medicaid coverage, the more likely it is that the break is driven by an issue with the re-certification process itself rather than a change in circumstances that render a child ineligible for Medicaid. For instance, if a child is on Medicaid for 12 months, experiences a one-month break in coverage, and then regains Medicaid coverage for another 12 months, we assume that the break in coverage reflects a lapse in coverage driven by the recertification process rather than a temporary increase in family income that renders a child ineligible for Medicaid for only a single month. If we continue to find a similar pattern of TIP take-up for those who are continuously enrolled compared to those who

experience a break in coverage even for a month or two, we take this as evidence that differences in take-up are driven more by failure to recertify for Medicaid rather than income volatility.

We present results of this robustness check in Figure A1 in the appendix. Compared to those who are continuously enrolled in Medicaid, those who experience a one-month break in coverage are about 4 percentage points less likely to take up TIP within two years of completing high school, a gap very similar to the relationship depicted in Figure 2. We see very little variation in the TIP take-up rate according to the duration of the break in Medicaid coverage—individuals who experienced a 2-6 month-long break in Medicaid are each about 4-5 percentage points less likely to take-up TIP relative to those who are continuously enrolled in Medicaid. This pattern suggests that differences in TIP take-up according to the number of Medicaid spells is likely driven by failure to recertify for Medicaid rather than income volatility. If the relationship were instead driven by income volatility, we would have expected to find lower rates of TIP take-up among those who experienced longer breaks in Medicaid coverage, for whom a break in coverage is likely to reflect changes in income eligibility rather than failure to recertify for Medicaid.

5.3 Enrollment in Multiple Safety Net Programs

Patterns of participation in other safety net programs such as food stamps (SNAP) and cash welfare (TANF) offer another way to examine the ability to navigate the social safety net. Unlike Medicaid, these programs do not directly determine eligibility for TIP. One's embeddedness in the broader social safety net reflects several factors, including awareness of different programs that one might qualify for, ability to navigate the complex web of application processes for multiple programs, as well as depth of economic disadvantage.

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Because of the different income cut-offs for the three programs, with TANF using the most stringent income requirements and Medicaid using the least stringent, individuals who are eligible for TANF or SNAP will automatically qualify for Medicaid, but not vice versa (i.e. those who are eligible for Medicaid will not necessarily be eligible for SNAP or TANF). Because our sample represents the population of individuals receiving Medicaid, participation in SNAP and/or TANF indicates that an individual's family resources are sufficiently low to also qualify for these programs and that the individual went through the income verification process for both Medicaid and SNAP/TANF. In other words, participation in multiple programs reflects both economic disadvantage as well as ability to navigate the application processes of multiple programs, and may also indicate some degree of connection to the state or reliance on state programming.

When we consider participation in all three of these programs and their relationship with TIP take-up (Figure 3), an interesting pattern emerges. First, the upward sloping relationship between duration of disadvantage and TIP take-up is primarily driven by the individuals who are enrolled in all three programs and therefore are more attached to the safety net. Second, notably, for children who spent the majority of their K-12 years on subsidized meals, we observe that TIP take-up rates are highest for those receiving Medicaid as well as another safety net program (either SNAP or TANF).

While it is difficult to definitively say what explains this relationship, it could reflect one's ability to comply with the application and recertification procedures of multiple programs. It is quite likely that the individuals in our sample who spent all of their K-12 years on subsidized meals were eligible not only for Medicaid, but also SNAP and/or TANF at some point in their childhood. Thus, the subset of these individuals who only ever participate in Medicaid

may not have participated in these other programs not because they weren't eligible, but because they didn't go through the process of applying for benefits. Another potential explanation is that students who experience persistent economic disadvantage throughout childhood are more likely to be advised about TIP and other programs by either case workers at the state or school counselors. Put differently, counselors and other administrators (or even the students themselves) may assume that someone who is persistently on subsidized meals and other programs should be eligible to receive funding for college through TIP and other state financial aid programs.

[Figure 3]

5.4 Community Eligibility and Take-Up

Beyond one's individual embeddedness within the social welfare system, individuals are embedded within communities that also vary dramatically in their participation in TIP. Students may also learn about TIP and their eligibility for the program through their peers, teachers, or high school counselors. Thus, it is important to examine how not only individual factors are associated with TIP take-up, but also community level factors. In prior work, we documented the large variation in participation in TIP across Michigan high schools (Burland et al., 2025); some schools exhibit a take-up rate close to zero, while others have take-up rates above 80%.¹⁴

Splitting these schools into three categories—those with high, medium, or low take-up based on a lagged average of the preceding 3 years—we next examine how individual-level disadvantage interacts with school-level historical TIP take-up. For the purposes of this study, we don't investigate the underlying source of this school-level variation but instead view it as capturing a combination of counselors, school resources, peers, and community factors. Figure 4

¹⁴ Appendix Figure A3 shows the distribution of TIP take-up among eligible students who enroll in 2-year community colleges across Michigan high schools.

plots TIP take-up rates according to the share of childhood spent economically disadvantaged (as proxied by our poverty ratio measure), separately for individuals in historically high, medium, and low take-up high schools. This figure indicates that, while the bases are quite different, the upward-sloping relationship between economic disadvantage and TIP take-up depicted in Figure 1 is apparent in both low take-up high schools as well as high take-up high schools. In high take-up high schools, over 35% of the least disadvantaged students take up TIP, compared to about 55% of students who spent their entire K-12 years on subsidized meals. In low take-up high schools, less than 20% of the least disadvantaged students take up TIP, compared to about 25% of students who are on subsidized meals for all of their K-12 years. This pattern indicates that while peers and other high school factors are important in predicting individual TIP take-up, we still see that individual level disadvantage matters within these different types of high school environments.

Two other findings from Figure 4 are worth noting. First, there is substantial variation in the take-up rates across historically low, medium, and high take-up high schools. Take-up of TIP ranges from 35-55% in high take-up high schools, 30-40% in medium take-up high schools, and hovers between 17-25% in low take-up high schools. In addition to the level differences in take-up across these different types of high schools, it is also particularly striking that the most economically disadvantaged students in low take-up high schools have much lower take-up rates than the *least* economically disadvantaged students in high take-up high schools. Beyond one's own economic disadvantage, this pattern suggests that the high school context is also important for connecting students to TIP. While unpacking the factors contributing to these large school-level differences in take-up is beyond the scope of this paper, this may include different resources, counselors, and other related factors.

[Figure 4]

5.5 Regression Analysis

We next turn to a regression analysis where we combine all of the factors discussed so far into a single regression to test both how these factors interact with each other and are associated with TIP take-up (see Table 2). Our goal with this analysis is two-fold: first, we are interested in the association between each of these factors and TIP take-up in a regression-adjusted framework that accounts for correlations between these different measures of disadvantage. Second, we are also interested in whether controlling for things like embeddedness within the social safety net and within communities explains away the positive relationship between duration of childhood spent on Medicaid and TIP take-up we illustrated in Figure 1. Essentially, we are interested in testing whether duration of disadvantage continues to be associated with TIP take-up even after accounting for factors that are correlated with it, such as our proxies for ability to comply with the recertification processes (as measured by the number of Medicaid spells experienced in childhood) and connection to the broader social safety net (as measured by indicators for ever participating in SNAP and/or TANF).

To examine these patterns, we first conduct an analysis where we only include our two measures of duration of disadvantage in the regression model. We subsequently add controls for the number of Medicaid spells experienced in childhood, participation in other social programs, and high school environment.

[Table 2]

Several interesting insights emerge from this analysis. First, duration of childhood spent on Medicaid continues to be positively associated with TIP take-up even after controlling for the

number of Medicaid spells experienced throughout childhood, one's embeddedness in the broader social safety net, and high school-level measures of TIP take-up. Point estimates on each of our duration of disadvantage controls are remarkably stable across regression models, which suggests that the other factors that we include in our models are not highly correlated with duration of disadvantage. With all controls in the model, each additional 6 months on Medicaid during childhood is associated with a 1 percentage point increase in the probability of TIP take-up. The standard deviation of this measure is about 5, which implies that increasing the share of childhood on Medicaid by one standard deviation (30 months) increases TIP take-up by 5 percentage points, a 14% increase at the mean (34.7% of the sample takes up TIP).

Despite the strong relationship between duration of childhood on Medicaid and TIP take-up, we also find that our proxies for connection to the broader social safety net and ability to comply with recertification procedures are associated with TIP take-up as well. In our fully-controlled model, each additional spell on Medicaid is associated with a decrease in the likelihood of participating in TIP by about 1.9 percentage points, while the relationship between SNAP and TANF participation and TIP take-up mimics the relationship depicted in Figure 3: for students who are never on subsidized meals in childhood, TIP take-up is lower for individuals who receive SNAP and/or TANF in addition to Medicaid. However, for those who spend a substantial portion of childhood receiving subsidized meals, participation in SNAP and/or TANF (in addition to Medicaid) is associated with an increased probability of receiving TIP. Finally, historical high-school level of TIP participation continues to be strongly associated with one's own likelihood of receiving TIP, even after controlling for individual level factors. Importantly, it is not the case that high schools with more TIP-eligible students predict higher individual take-

up, rather it is high schools that have historically had higher take-up rates of TIP among eligible students that predict higher participation in TIP at the individual level.

Together, the results of this exercise indicate that while no single factor can perfectly predict TIP take-up, together, they can explain wide variation in TIP participation. As another way to illustrate this point that both individual and community-level factors are important for understanding TIP take-up and to illustrate their relative importance, Figure 5 presents average TIP take-up across historically low and high take-up high schools (those in the bottom and top quintile, respectively) for those with low and high Medicaid enrollment durations (those in the bottom and top quintile, respectively) and with continuous and non-continuous enrollment. As can be seen in the figure, within low take-up high schools, those with high and continuous Medicaid enrollment have much higher take-up than those with low Medicaid enrollment. While we found that experiencing multiple Medicaid spells does reduce participation in TIP, Figure 5 illustrates how, conditional on low enrollment in Medicaid, having multiple spells is relatively less important in terms of predicting take-up rates.

We find a very similar pattern of TIP take-up when we turn to students in historically high take-up high schools: students with low Medicaid enrollment durations have much lower TIP take-up compared to those with high Medicaid enrollment durations (approximately 40% compared to 60%). Overall, however, students enrolled in high schools with historically high take-up rates have much higher take-up of TIP compared to their peers in low take-up high schools. While these patterns are descriptive in nature and cannot speak to the underlying cause of differential take-up, it suggests that a combination of individual and community-level factors are associated with higher take-up, consistent with our regression results. All told, students in low-take up high schools with low and uneven Medicaid participation have quite low take-up

rates relative to students in high take-up environments with high, consistent Medicaid participation.

[Figure 5]

Finally, as previously noted, the main results focus on TIP-eligible students who attend community college. While this was an intentional choice for our study that allowed us to examine factors predicting take-up specifically rather than college-going more broadly, our results also may miss patterns related to the relationship between eligibility and college enrollment. For example, embeddedness may operate differently for highly disadvantaged students who do not intend to enroll in college. We illustrate unconditional results in the appendix. Results are broadly similar to our conditional results.

6. DISCUSSION

The U.S. provides an uneven safety net to individuals and families experiencing economic disadvantage, where only a portion of those eligible receive the benefits to which they are entitled. There have been longstanding debates in the social sciences about who is most likely to take-up such benefits, and why take-up remains low across a range of programs. We advance this debate by providing detailed descriptive analysis of take-up patterns for Michigan's TIP program and its complex intertwined nature with other state social safety net programs, including Medicaid, SNAP, TANF, and the subsidized meals program.

First, we illustrate that, among those eligible for TIP, students who spend more of their childhood on Medicaid or receiving subsidized meals have higher take-up. On its face, this is good news, suggesting that students with more demonstrated economic need have the highest likelihood of taking up TIP. Importantly, however, even for this particularly disadvantaged

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group, take-up rates hover only around 50%, indicating the high cost of other burdens and barriers facing eligible students.

However, the duration of childhood spent on Medicaid does not completely account for variation in TIP take-up rates. For example, after conditioning on those with the same duration on Medicaid, we find that individuals with multiple spells on Medicaid tend to have lower take-up than those who are continuously enrolled. While the mechanisms underlying this result are unclear, it suggests that individuals and families may either have (1) circumstances that align such that they are able to overcome high compliance costs and burdens or (2) a set of latent traits that assist with remaining continuously enrolled in benefits. This is consistent with prior work that suggests that administrative burdens and recertification costs depress take-up (Herd & Moynihan, 2018; Homonoff & Somerville, 2021). Furthermore, we illustrate the extent to which the intertwined nature of program enrollment is also associated with take-up among both the very disadvantaged and the comparatively less disadvantaged. These results follow a somewhat unexpected pattern: among those who spend nearly all of their childhood on Medicaid, take-up is highest among those who also participate in SNAP and TANF.

What could explain these patterns? We hypothesize that, consistent with prior work on administrative burden and information gaps in particular, students who experience persistent economic disadvantage throughout childhood may be more engaged with the broader social safety net. Therefore, those students who participate in all available programs may also be those who are the most likely to know about other programs such as TIP and have the social or cultural capital to enroll and stay enrolled (Schmidt et al., 2024). Further, it is likely that students who are persistently on subsidized meals but are not enrolled in SNAP or TANF are, in fact, eligible for these other programs but do not participate in them. As a result, these findings comport well with

our findings on continuity in Medicaid enrollment to illustrate that individuals and families with more inconsistent attachment to social programs may struggle to engage with programs that they are eligible for. Still, given the stricter eligibility thresholds for SNAP and TANF, students who are enrolled in SNAP and TANF in addition to Medicaid may also be more economically disadvantaged than those who are enrolled in Medicaid alone.

Finally, we broaden our discussion from individual students and their families to the community. One of the more influential factors predicting take-up is historical school-level take-up rates. In fact, students who are *barely* eligible for TIP but who attend high take-up schools have higher take-up rates than students who are *persistently* eligible for TIP but who attend low take-up schools. This suggests that, beyond individual factors influencing compliance and program knowledge, attending a low take-up high school may also serve as a barrier to students' access to the program. Again, we are not able to unpack which factors underlie these large aggregate differences in take-up, but it is clear that community-level factors have an important influence on the behaviors and welfare of individuals as it pertains to receiving this benefit. Importantly, this suggests that there may be some unexpected protective factors associated with concentrated geographic disadvantage as it pertains to the take-up of social programs.

All told, this work has several implications for the study of safety net take-up as well as for policymakers aiming to increase take-up. First, we find that, rather than a standalone action by one person or family, take-up should also be understood in terms of *embeddedness*. This is true both in terms of attachment to the broader safety net (Schmidt et al., 2024; Yelowitz, 1996), as well as in terms of embeddedness within a community of those with high attachment (see also Chetty et al., 2013). Together, this suggests that policies aimed at increasing take-up might be improved by considering these problems collectively rather than individually. This is particularly

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important in the case of explicit linkages between programs, such as between Medicaid and TIP or in circumstances where there is direct certification. Second, though we find—encouragingly—that students experiencing the most economic disadvantage are the most likely to take-up benefits and receive aid, we also find wide heterogeneity in the extent to which more disadvantaged students have higher take-up than comparatively less disadvantaged students, highlighting variation across place in access to high take-up peers. Uncovering the sources of these large cross-context differences in take-up is a fruitful area for future work.

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FIGURES

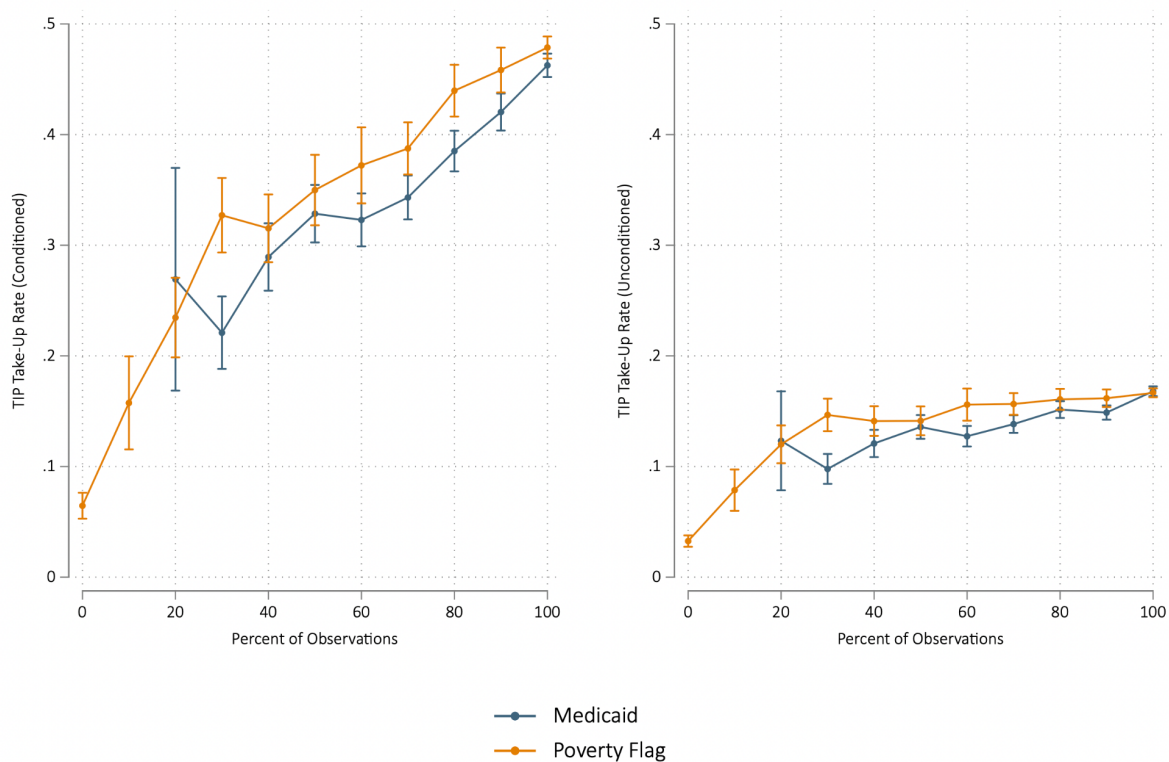


Figure 1. Conditional and unconditional TIP take-up, by time on Medicaid and in poverty

Notes: For this figure only, we also restrict our sample to individuals born in 2001 or later, since we can observe Medicaid participation for all of childhood (from birth to high school graduation) for individuals in these birth cohorts. The state of Michigan classifies students with a flag for poverty if they are eligible for free or reduced-price meals, experience homelessness, or are in the foster care system (for all K-12 years). All other figures and tables use Medicaid participation from age 9.

EMBEDDEDNESS AND SOCIAL BENEFIT TAKE UP

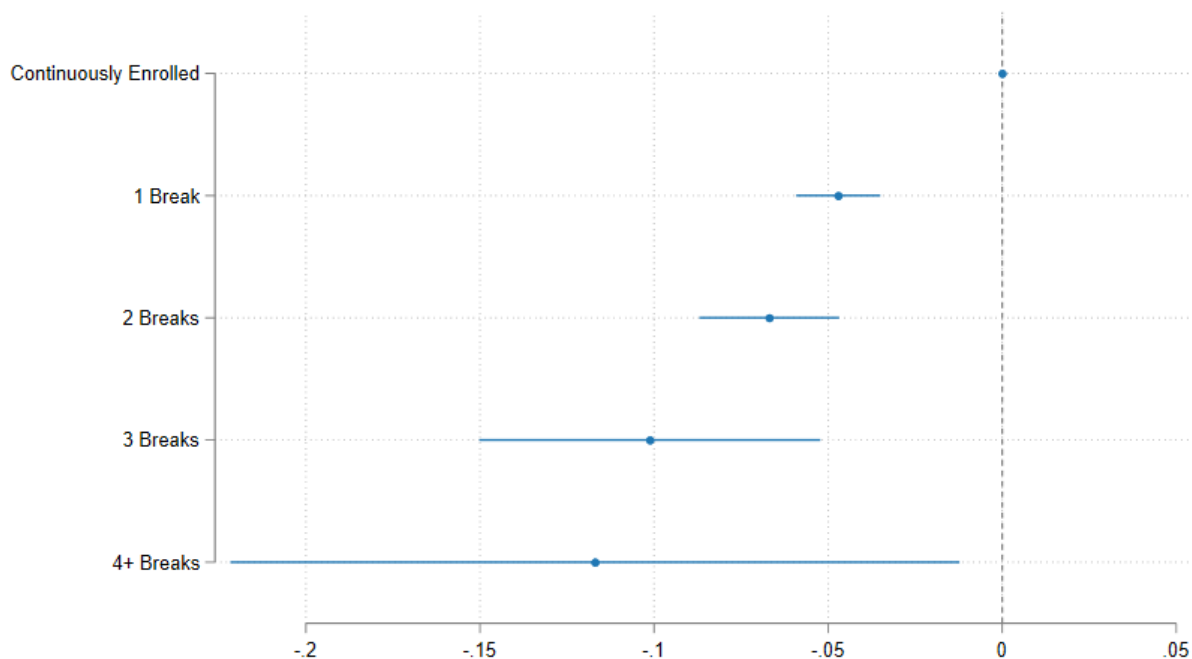


Figure 2. Association between number of spells and take-up, conditional on community college enrollment.

Notes: This figure illustrates a coefficient plot for a regression predicting TIP take-up, by the number of Medicaid spells between age 9 and high school graduation. The underlying regression is of the form of Equation 1 and controls for individual covariates and months on Medicaid. The reference category is continuous enrollment in Medicaid. 95% confidence intervals are displayed. Robust standard errors are clustered at the school level.

EMBEDDEDNESS AND SOCIAL BENEFIT TAKE UP

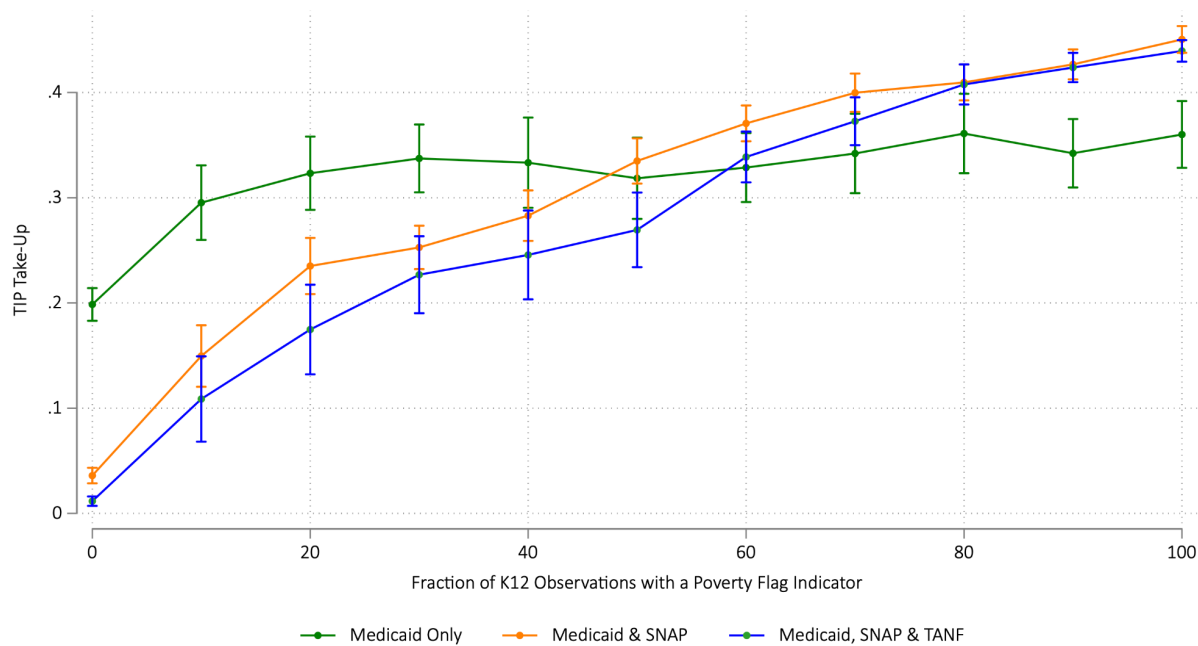


Figure 3. TIP take-up and program enrollment, by poverty ratio

Notes: This figure reports conditional take-up by the fraction of K-12 observations with a poverty flag indicator (also referred to as the poverty ratio), collapsed into bins in 10 percent intervals. Further, the figure is split by program enrollment, defined as whether the individual ever participated in Medicaid, SNAP, or TANF at some point throughout childhood. 95% confidence intervals are included.

EMBEDDEDNESS AND SOCIAL BENEFIT TAKE UP

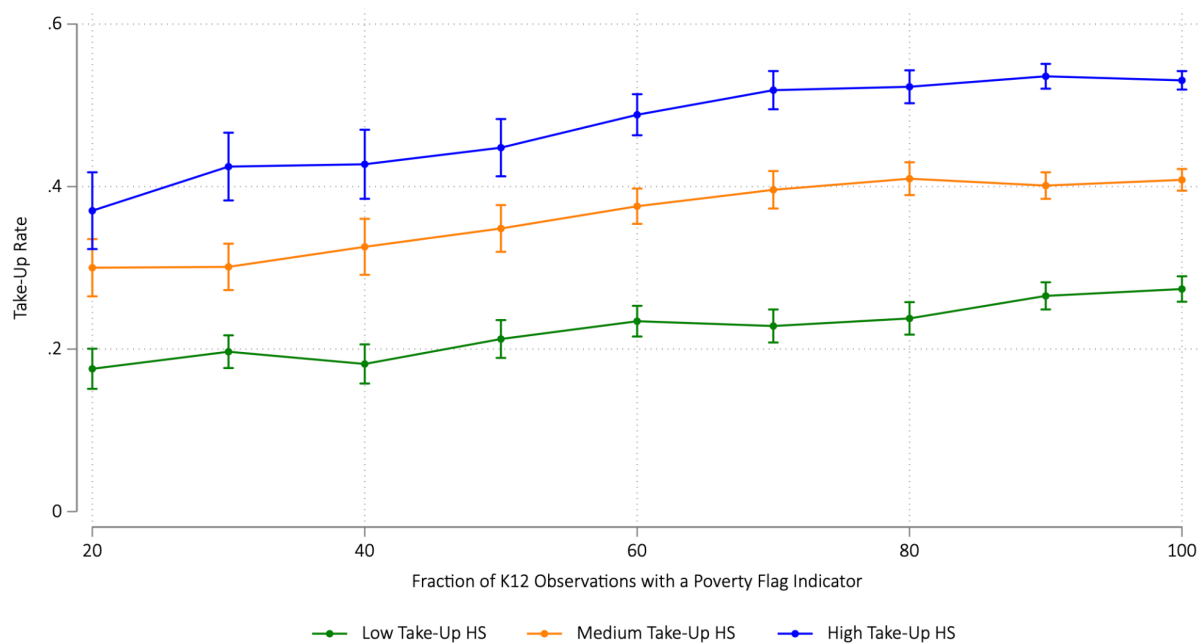


Figure 4. Relationship between individual take-up rate and lagged high school take-up, by poverty ratio

Notes: This figure reports conditional take-up by the fraction of K-12 observations with a poverty flag indicator (also referred to as the poverty ratio), collapsed into bins in 10 percent intervals. Further, the figure is split into terciles by high school take-up. 95% confidence intervals are included. High school take-up levels are calculated using a lagged three-year rolling average of the take-up rate of the students in the previous three graduation years. High schools are then split into terciles, reflecting low, medium, and high take-up schools.

EMBEDDEDNESS AND SOCIAL BENEFIT TAKE UP

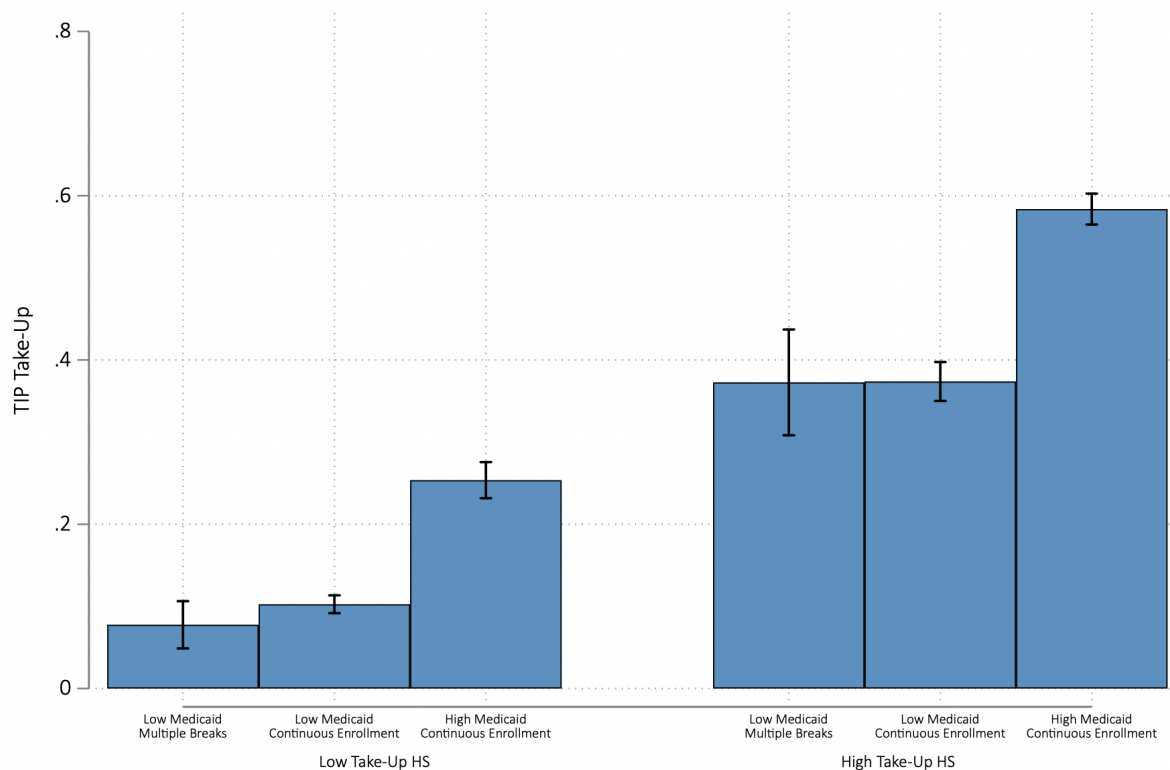


Figure 5. TIP take-up, by individual and community characteristics.

Notes: This figure presents descriptive information on average TIP take-up across low and high take-up high schools (those in the bottom and top quintile, respectively) for those with low and high Medicaid enrollment durations (those in the bottom and top quintile, respectively) and with continuous and non-continuous enrollment. 95% confidence intervals are included.

EMBEDDEDNESS AND SOCIAL BENEFIT TAKE UP

TABLES

Table 1. Descriptive statistics of sample.

	Did not take up TIP	Took up TIP	Total
Female	0.56	0.61	0.58
White	0.69	0.7	0.69
Black	0.24	0.24	0.24
Hispanic	0.09	0.11	0.1
Asian	0.03	0.02	0.03
American Indian or Alaska Native	0.02	0.03	0.02
Native Hawaiian or Other Pacific Islander	0.002	0.002	0.002
Two or More Races	0.02	0.03	0.03
Poverty Ratio	0.63	0.8	0.69
Received special education services	0.08	0.1	0.09
Total Months on Medicaid (from age 9)	79.97	90.21	83.52
Number of Medicaid Spells	1.25	1.22	1.24
Longest Medicaid Break (months)	5.76	5.04	5.53
Medicaid Breaks			
<i>Continuously Enrolled</i>	0.8	0.82	0.81
<i>1 Break</i>	0.16	0.15	0.16
<i>2 Breaks</i>	0.03	0.03	0.03
<i>3 Breaks</i>	0.01	0.004	0.01
<i>4+ Breaks</i>	0.001	0.001	0.001
Safety Net Program Enrollment			
<i>Only Medicaid</i>	0.16	0.13	0.15
<i>Medicaid and SNAP</i>	0.46	0.47	0.46
<i>Medicaid, SNAP, and TANF</i>	0.38	0.4	0.39
Community TIP Eligibility	0.38	0.42	0.39
Community TIP Take-Up	0.13	0.19	0.15
Observations	40,812	21,667	62,479

Notes: Authors' calculations using our constructed administrative data panel. This table displays descriptive statistics for the main analytic sample of TIP-eligible students who attended community college within 2 years of finishing high school. The measure of the longest Medicaid break excludes those who are continuously enrolled (i.e. those with a break of 0 months). Medicaid, TANF, and SNAP participation are only measured while individuals reside within Michigan. The poverty ratio indicates the proportion of K-12 observations where a student is eligible for free- or reduced-price lunch. With the exception of the proportion of Black students, the proportion of Native Hawaiian or Other Pacific Islander students, and the proportion of students on both Medicaid and SNAP, there are statistically significant differences ($p < 0.001$) between the means for students who did not take up TIP and those who did take up TIP.

EMBEDDEDNESS AND SOCIAL BENEFIT TAKE UP

Table 2. Regression results predicting individual take-up, conditional on community college enrollment.

	(1)	(2)	(3)	(4)	(5)
Poverty Ratio	0.300*** (0.012)	0.122*** (0.019)	0.114*** (0.019)	0.116*** (0.016)	0.111*** (0.016)
Months on Medicaid (6 month intervals)	0.009*** (0.000)	0.009*** (0.000)	0.009*** (0.000)	0.009*** (0.000)	0.010*** (0.000)
Number of Medicaid Spells		-0.023*** (0.003)	-0.024*** (0.003)	-0.020*** (0.002)	-0.019*** (0.002)
Program Enrollment: Medicaid only (ref.)		0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)
Program Enrollment: Medicaid & SNAP		-0.126*** (0.010)	-0.126*** (0.010)	-0.123*** (0.010)	-0.122*** (0.010)
Program Enrollment: Medicaid, SNAP & TANF		-0.206*** (0.011)	-0.205*** (0.011)	-0.207*** (0.010)	-0.210*** (0.010)
Poverty Ratio x Medicaid & SNAP		0.204*** (0.017)	0.204*** (0.017)	0.192*** (0.017)	0.181*** (0.016)
Poverty Ratio x Medicaid, SNAP & TANF		0.281*** (0.018)	0.279*** (0.018)	0.262*** (0.017)	0.254*** (0.017)
Community TIP Eligibility			0.066 (0.043)	-0.537*** (0.035)	
Community TIP Take-Up				1.370*** (0.057)	
Includes covariates	Yes	Yes	Yes	Yes	Yes
Includes year FE	Yes	Yes	Yes	Yes	Yes
Includes school FE	No	No	No	No	Yes
Adj R-squared	0.074	0.082	0.082	0.135	0.176
F-stat	126.390	111.215	105.362	202.205	76.141
Observations	61975	61891	61651	61615	61826

Notes: Robust standard errors clustered at the school level. This table uses our constructed administrative data panel. Each column presents results from a separate individual-level regression predicting take-up. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Results are conditional on attending a Michigan community college within two years of high school graduation.

APPENDIX

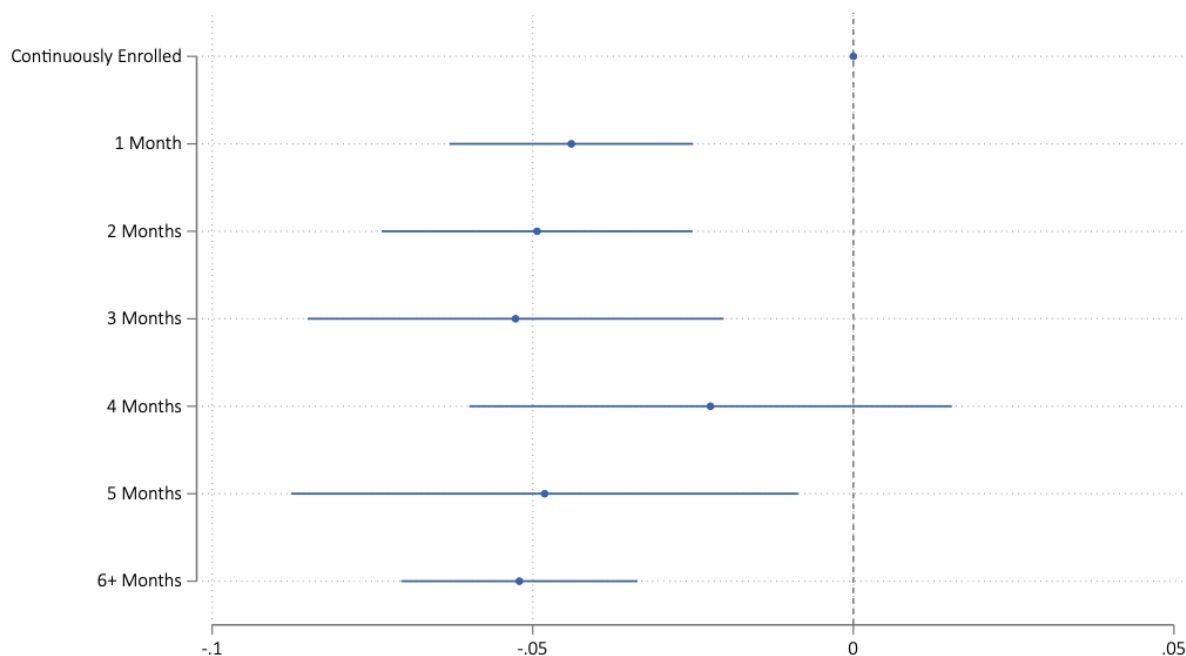


Figure A1. Association between length of break and conditional TIP take-up among those with 0 or 1 break in Medicaid enrollment.

Notes: This figure illustrates a coefficient plot for a regression predicting TIP take-up, by the length of the break in Medicaid coverage among those with 0 or 1 break in enrollment. The reference category is continuous enrollment in Medicaid. 95% confidence intervals are displayed. The underlying regression is of the form of Equation 1 and controls for individual covariates and months on Medicaid (see Table A3). Robust standard errors are clustered at the school level.

EMBEDDEDNESS AND SOCIAL BENEFIT TAKE UP

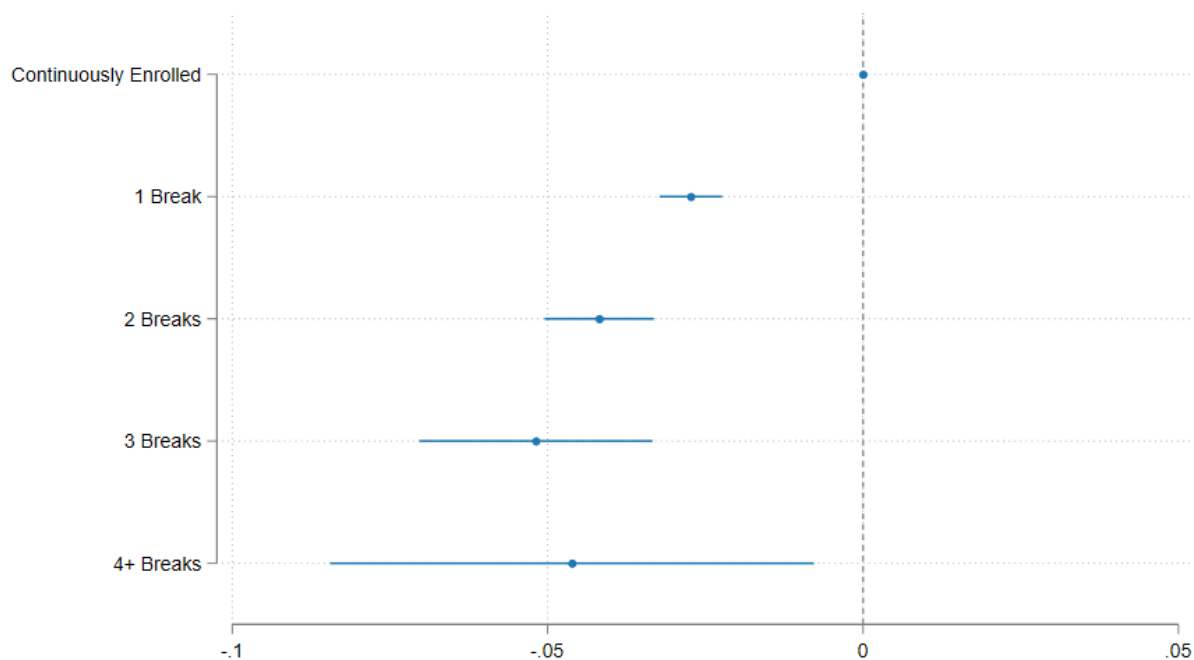


Figure A2. Association between number of spells and unconditional take-up.

Notes: This figure illustrates a coefficient plot for a regression predicting unconditional TIP take-up, by the number of Medicaid spells between age 9 and high school graduation. The reference category is continuous enrollment in Medicaid. 95% confidence intervals are displayed. The underlying regression is of the form of Equation 1 and controls for individual covariates and months on Medicaid (see Table A2). Robust standard errors are clustered at the school level.

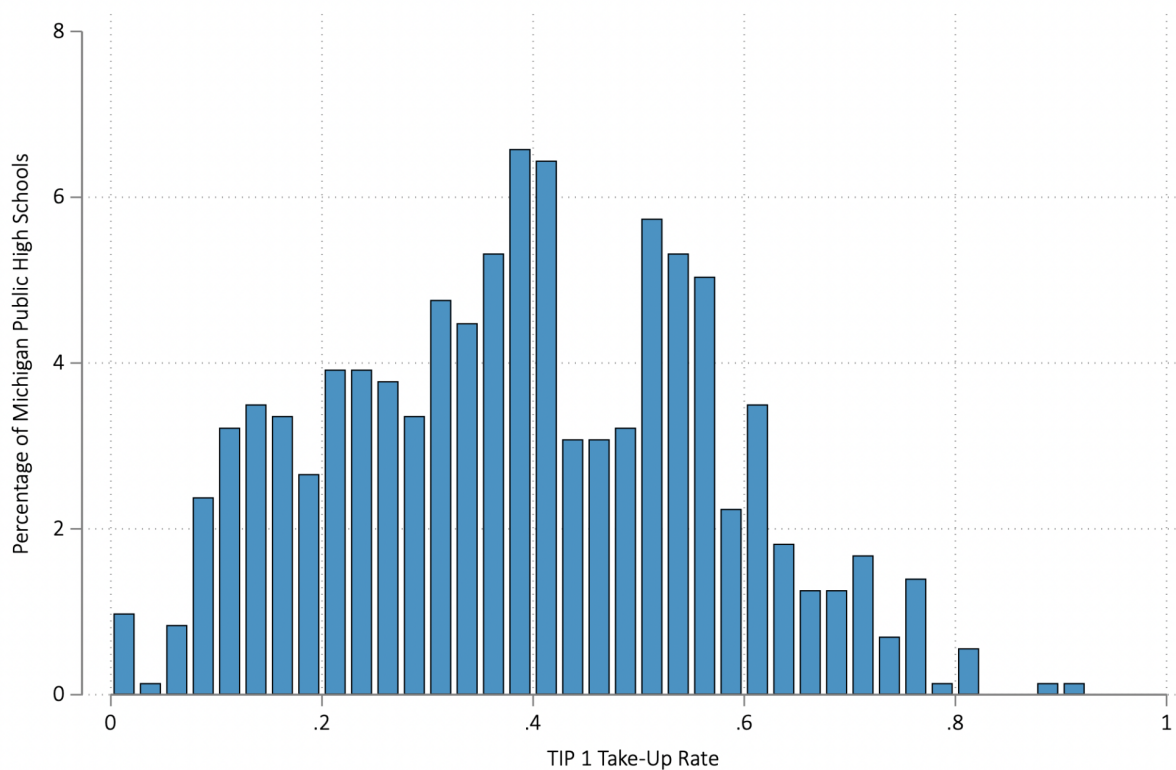


Figure A3. Distribution of high school take-up rates.

Notes: This figure uses our constructed administrative data panel to report the distribution of high school take-up rates. Take-up is conditioned on enrollment in a Michigan community college within 2 years of high school graduation.

EMBEDDEDNESS AND SOCIAL BENEFIT TAKE UP

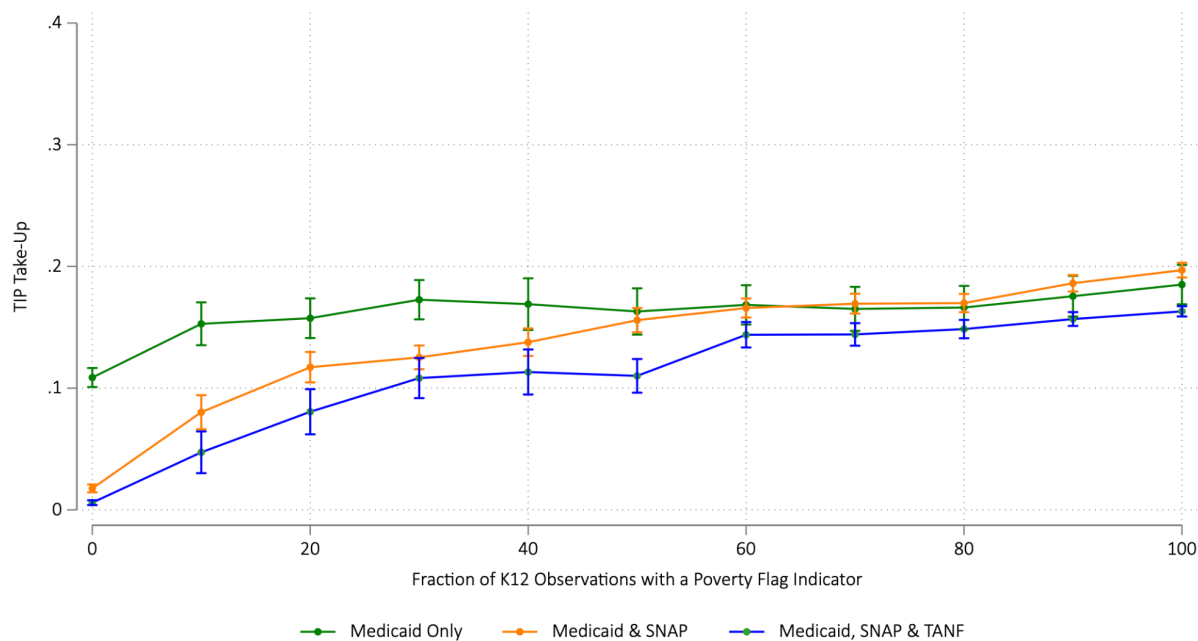


Figure A4. Unconditional TIP take-up and program enrollment, by poverty ratio

Notes: This figure reports unconditional take-up by the fraction of K-12 observations with a poverty flag indicator (also referred to as the poverty ratio), collapsed into bins in 10 percent intervals. Further, the figure is split by program enrollment, defined as whether the individual ever participated in Medicaid, SNAP, or TANF at some point throughout childhood. 95% confidence intervals are included.

EMBEDDEDNESS AND SOCIAL BENEFIT TAKE UP

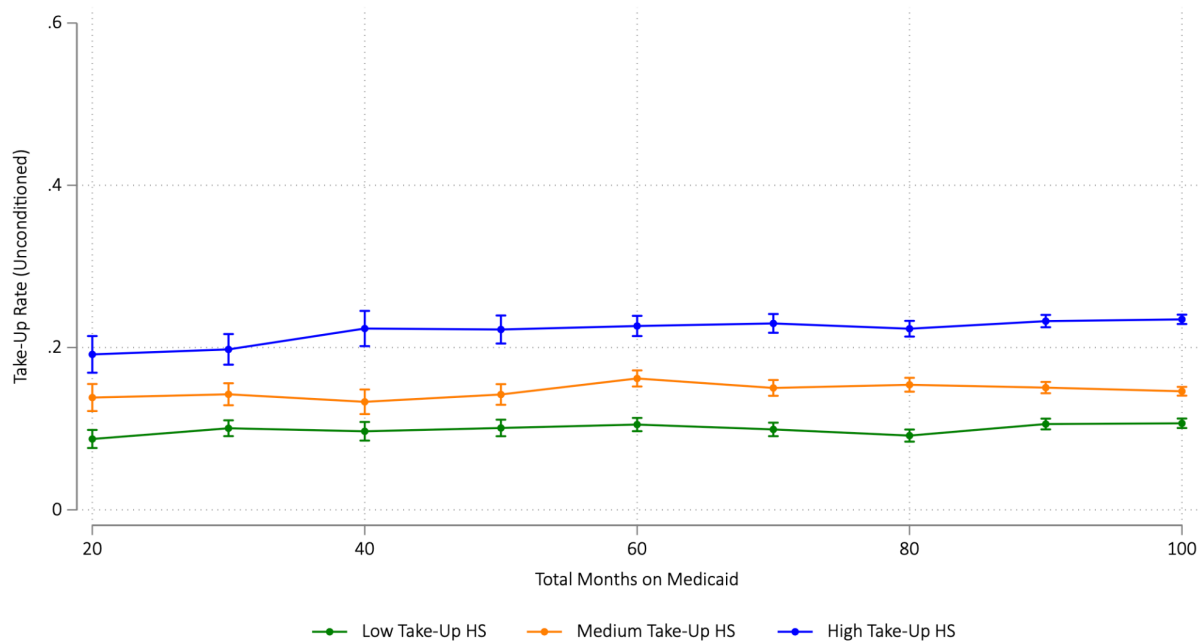


Figure A5. Relationship between unconditional individual take-up rate and lagged high school take-up, by months on Medicaid

Notes: This figure reports unconditional take-up by the number of months on Medicaid, collapsed into bins. Further, the figure is split into terciles by high school take-up. 95% confidence intervals are included. High school take-up levels are calculated using a lagged three-year rolling average of the take-up rate of the students in the previous three graduation years. High schools are then split into terciles, reflecting low, medium, and high take-up schools.

EMBEDDEDNESS AND SOCIAL BENEFIT TAKE UP

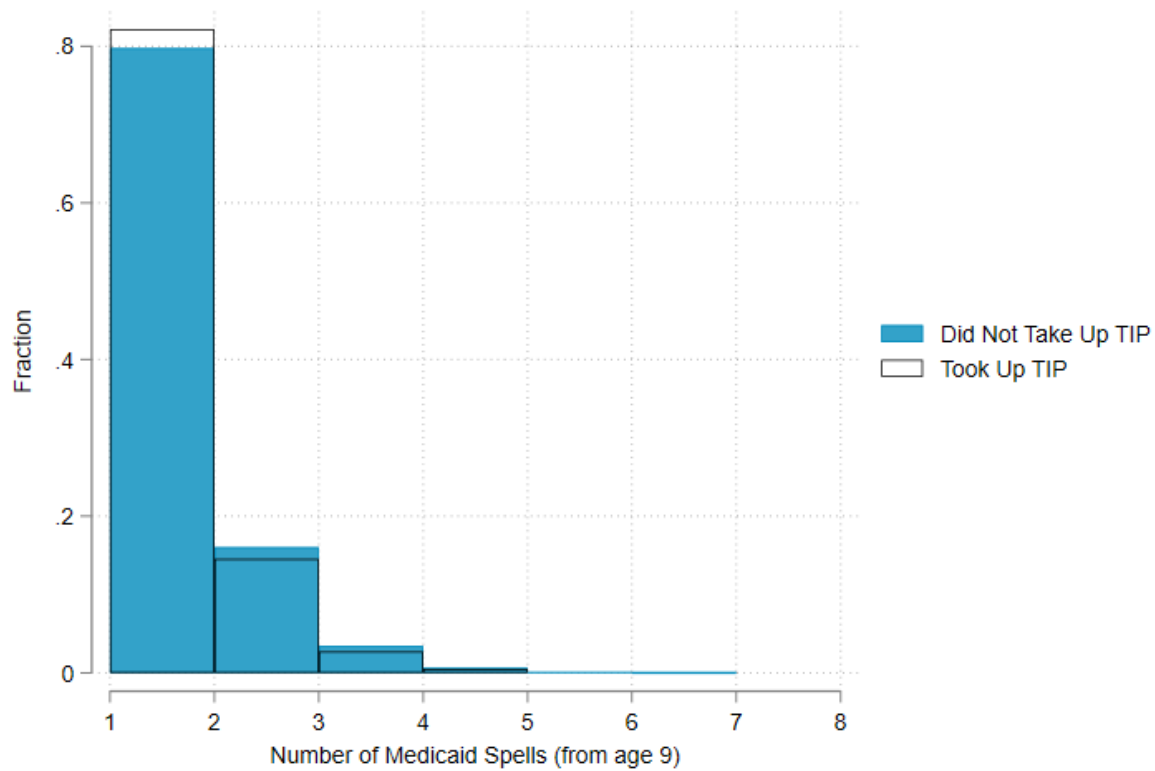


Figure A6. Distribution of the number of Medicaid spells (from age 9), by TIP take up.

Notes: TIP take up is conditional on community college attendance.

EMBEDDEDNESS AND SOCIAL BENEFIT TAKE UP

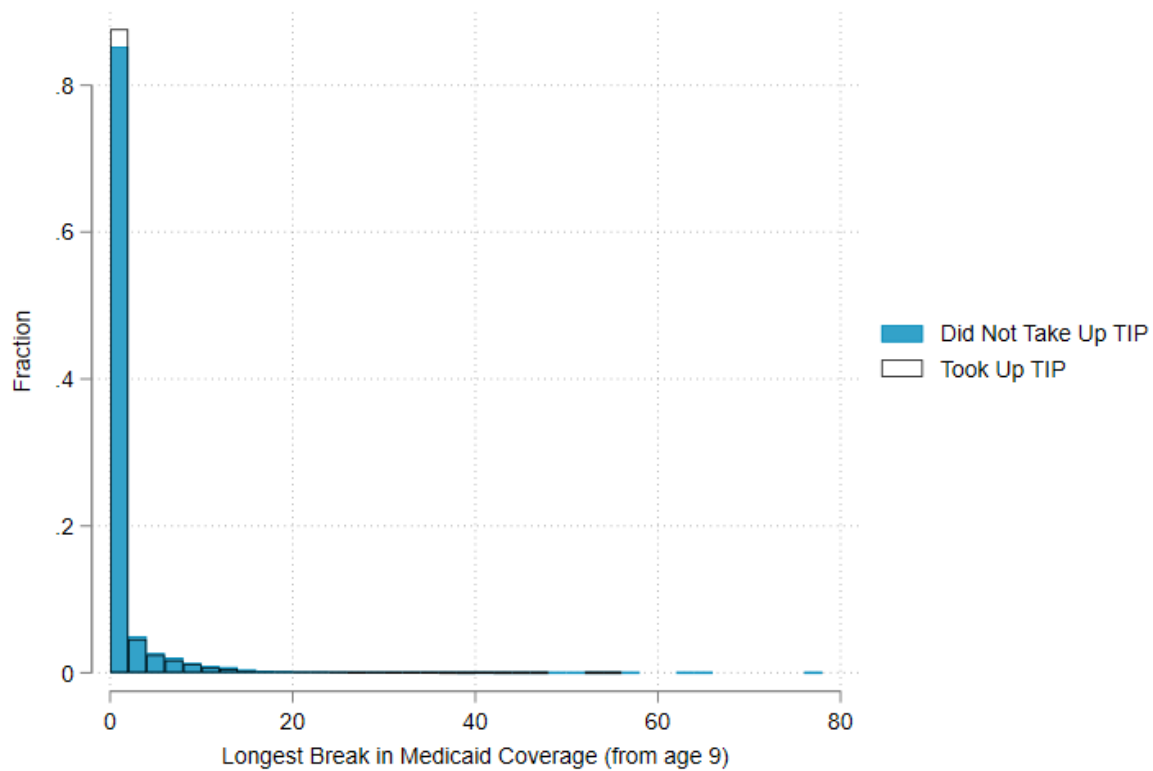


Figure A7. Distribution of the longest break in Medicaid coverage (from age 9), by TIP take up.

Notes: The sample is restricted only to those with more than one spell of Medicaid coverage from age 9 to high school graduation. TIP take up is conditional on community college attendance.

EMBEDDEDNESS AND SOCIAL BENEFIT TAKE UP

Table A1. Regression results predicting take-up (unconditional)

	(1)	(2)	(3)	(4)	(5)
Poverty Ratio	0.124*** (0.006)	0.063*** (0.009)	0.065*** (0.009)	0.060*** (0.008)	0.042*** (0.008)
Months on Medicaid (6 month intervals)	0.003*** (0.000)	0.004*** (0.000)	0.004*** (0.000)	0.004*** (0.000)	0.004*** (0.000)
Number of Medicaid Spells		-0.012*** (0.001)	-0.012*** (0.001)	-0.011*** (0.001)	-0.009*** (0.001)
Program Enrollment: Medicaid only (ref.)		0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)
Program Enrollment: Medicaid & SNAP		-0.068*** (0.005)	-0.069*** (0.005)	-0.068*** (0.005)	-0.065*** (0.005)
Program Enrollment: Medicaid, SNAP & TANF		-0.103*** (0.006)	-0.104*** (0.006)	-0.104*** (0.006)	-0.106*** (0.005)
Poverty Ratio x Medicaid & SNAP		0.084*** (0.009)	0.085*** (0.009)	0.082*** (0.009)	0.080*** (0.009)
Poverty Ratio x Medicaid, SNAP & TANF		0.099*** (0.009)	0.101*** (0.009)	0.097*** (0.009)	0.102*** (0.009)
Community TIP Eligibility			-0.028 (0.024)	-0.246*** (0.029)	
Community TIP Take-Up				0.509*** (0.024)	
Includes covariates	Yes	Yes	Yes	Yes	Yes
Includes year FE	Yes	Yes	Yes	Yes	Yes
Includes school FE	No	No	No	No	Yes
Adj R-squared	0.024	0.028	0.028	0.044	0.073
F-stat	89.977	83.533	83.859	111.468	65.398
Observations	178201	177965	177165	176842	177924

Notes: Robust standard errors clustered at the school level. This table uses our constructed administrative data panel. Each column presents results from a separate individual-level regression predicting take-up. * p<0.05, ** p<0.01, *** p<0.001.

EMBEDDEDNESS AND SOCIAL BENEFIT TAKE UP

Table A2. Regression results predicting take-up, by spells on Medicaid.

	(1) Conditional	(2) Unconditional
Continuously Enrolled (Ref.)	0.000 (.)	0.000 (.)
1 Break	-0.047*** (0.006)	-0.027*** (0.003)
2 Breaks	-0.067*** (0.010)	-0.042*** (0.004)
3 Breaks	-0.101*** (0.025)	-0.052*** (0.009)
4+ Breaks	-0.117* (0.053)	-0.046* (0.020)
Includes covariates	Yes	Yes
Adj R-squared	0.076	0.025
F-stat	96.382	72.069
Observations	61975	178201

Notes: Robust standard errors clustered at the school level. This table uses our constructed administrative data panel. Each column presents results from a separate individual-level regression predicting take-up. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Results in Column 1 are conditional on attending a Michigan community college within two years of high school graduation, while Column 2 includes all eligible Michigan students. The regression is of the form of Equation 1 and controls for individual covariates and months on Medicaid. The reference category is continuous enrollment in Medicaid.

EMBEDDEDNESS AND SOCIAL BENEFIT TAKE UP

Table A3. Regression results predicting take-up, by spells on Medicaid.

	(1)
Continuously Enrolled (Ref.)	0.000
	(.)
1 Month	-0.044*** (0.010)
2 Months	-0.049*** (0.012)
3 Months	-0.053** (0.017)
4 Months	-0.022 (0.019)
5 Months	-0.048* (0.020)
6+ Months	-0.052*** (0.009)
Includes covariates	Yes
Adj R-squared	0.075
F-stat	85.720
Observations	59588

Notes: Robust standard errors clustered at the school level. This table uses our constructed administrative data panel. The regression predicts conditional TIP take-up, by the length of the break in Medicaid coverage among those with 0 or 1 break in enrollment (controlling for individual covariates and months on Medicaid). * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Results are conditional on attending a Michigan community college within two years of high school graduation. The reference category is continuous enrollment in Medicaid.