

Student Labor Market Outcomes for Work Ready Kentucky Scholarship Eligible Programs

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INTRODUCTION

This brief is part of a series produced by a University of Kentucky research team examining the effects of the Work Ready Kentucky Scholarship (WRKS).¹ Like numerous states, Kentucky has set a statewide postsecondary educational achievement goal, aiming to “accelerate job creation, grow the economy, and expand our tax base.”² Concurrently, the state has championed policies that attempt to narrow the gap between skill development that has traditionally been considered either “higher education” or “job training.” A prominent example is the Work Ready Kentucky Scholarship (WRKS), which provides “last-dollar” financial assistance for students who enroll in targeted workforce-linked sub-baccalaureate credential programs and first became available to students starting in the 2017-2018 academic year. WRKS is part of an emerging national trend in workforce-aligned aid policies that are typically designed with a focus on promoting certifiable skills in high-demand industry sectors. These programs aim to create career pathways to high-wage and high-demand occupations and to increase the supply of workers who can fill local industry needs.

KEY FINDINGS

1. Students who enroll in WRKS-eligible programs tend to have higher earnings than students who enroll in non-WRKS-eligible programs within a few years of initial enrollment. Students in WRKS-eligible programs have relative earnings gains that reach about \$600 per quarter within three years. Employment follows a similar dynamic pattern, though estimates are less precise.
2. Earnings gains reflect returns to workforce-aligned programs. Similar long-term earnings patterns are observed among students who enrolled in the same programs before WRKS implementation, suggesting that gains stem from the intrinsic labor market value of these fields.

¹ The full collection of briefs is available at: <https://martin.uky.edu/research/understanding-impact-work-ready-kentucky-scholarships>.

² 2016-2021 *Strategic Agenda for Postsecondary and Adult Education*. Kentucky Council on Postsecondary Education.

In this current brief, we analyze the labor market outcomes of quarterly earnings and employment of students who enrolled in WRKS-eligible programs.³ To conduct our analysis, we compare these labor market outcomes of students enrolled in academic programs that become eligible for WRKS to students enrolled in programs that are not WRKS eligible. More specifically, we compare the labor market outcomes for students in WRKS-eligible programs before and after program participation relative to non-WRKS-eligible students for the same time period. All earnings are adjusted to 2021 dollars using the consumer price index to account for inflation. This brief supplements other briefs and the broader research project, where we analyze a series of questions to understand the overall costs and benefits of the WRKS policy.

BACKGROUND

WRKS funds are targeted to students who enroll in programs aligned with workforce needs as defined by the state, including advanced manufacturing, business and information technology, construction, healthcare, and transportation/logistics.⁴ Beginning in the 2025-2026 academic year, eligible fields were updated to include construction, education, healthcare, manufacturing and logistics, and professional, scientific, and technical services. In a previous brief, we found that the most popular field students in WRKS-eligible programs pursue is healthcare, followed by business services/technical services and advanced

manufacturing. We also found that the number of WRKS recipients and the total amount of WRKS money disbursed have grown rapidly since enactment. By the 2023-2024 academic year, WRKS disbursed approximately \$12.6 million to 4,360 recipients, accounting for about 3.2% of total state financial aid.⁵ In addition, we found that WRKS participants generally reflect the geographic distribution of the statewide community college population. In a separate brief, we found that enrollment and credentials awarded were higher in WRKS-eligible programs as compared to non-WRKS-eligible programs. Finally, in a third brief, we examined the migration patterns of WRKS participants and found that the average travel distance for WRKS recipients closely mirrors two-year institution enrollment patterns, but rural participants travel three times as much as the distance as urban participants.

These previous briefs have provided important insights into who participates and the growth of the program; they have not provided insights into the effect these programs have on labor market outcomes. In this current brief, we examine both earnings and employment of WRKS participants.

RESEARCH APPROACH AND DATA

We examine changes in earnings and employment over time among students in programs that become eligible for WRKS compared to students in programs that do not. We describe the research design in detail in Appendix A, and present a more

³ Quarterly earnings are defined to include positive earnings in employed quarters as well as zero earnings in quarters with no observed UI record. This allows us to capture both whether a person worked at all and how much they earned when they worked.

⁴ We focus our attention in this brief on postsecondary WRKS; in other ongoing work, we analyze dual credit WRKS.

⁵ *KHEAA KHESLC Annual Report Fiscal Year 2024*. <https://www.kheaa.com/web/resources/pdf/reports/annual/annual2024.pdf>

complete discussion in a forthcoming research manuscript.

Our analysis draws on statewide administrative data from Kentucky’s public postsecondary education system, covering all students who attended the state’s eight public four-year universities and 16 community colleges across more than 70 locations. We then merge the postsecondary education data with quarterly earnings and employment records from the state Unemployment Insurance (UI) system. The combined student-level data set ranges from the 2008-2009 through 2020-2021 academic years. We describe the data in detail in Appendix B.

To conduct the analysis, we identify individuals whose first observed enrollment as a college student occurred at a Kentucky community college in the 2017-2018 or 2018-2019 academic year, corresponding to the first two cohorts following the implementation of WRKS. We exclude students who had earned an associate degree or higher prior to their first enrollment, as the WRKS funds are only available to individuals without a prior associate degree or above. Applying this restriction ensures that the analytical sample is comparable in terms of WRKS eligibility. To enable comparisons of labor market outcomes before and after first enrollment, we restrict the sample to individuals with at least one observed employment record within two years prior to enrollment and at least one employment record within two years following enrollment. We further limit the sample to students aged 18-60 at the time of first enrollment.

In this analysis, we focus on all students who enrolled in a WRKS-eligible program, regardless of whether they received WRKS funds. As a last-dollar policy – aid that can cover shortfalls *after* other federal and state funds are applied – one of the effects of WRKS could be to induce students to enroll in WRKS-eligible programs, but to receive aid from other sources.⁶ Therefore, our findings effectively provide evidence about the returns to enrollment in specific fields that are eligible for WRKS, but should not be interpreted as causal evidence about whether and how WRKS affects earnings for students. There are some channels for which this is possible, for example if the WRKS policy induces some students to switch into higher earning WRKS-eligible fields from lower earning fields, or if it is effective in encouraging students to pursue productive postsecondary education that they otherwise would not. However, more work is needed to explore these channels.

In Appendix Table 1, we present summary statistics for the pooled 2017-2018 and 2018-2019 entering cohorts. We compare the full analytical sample with students enrolled in WRKS-eligible programs and those in non-WRKS-eligible programs. We document the mechanical differences across major fields. Students in WRKS-eligible programs are disproportionately concentrated in skilled trades, health, and business and communication programs, which reflects the workforce-aligned design of the financial aid. Students in non-WRKS-eligible programs are more likely to enroll in other fields, with these programs primarily spanning broad general education and liberal arts areas, again as part of policy design. Demographic characteristics are

⁶ See for example, Burland et al. (2023) and Sotherland (2025) for a more in-depth discussion of the potential for local financial aid to “crowd in” other sources of aid. We

discuss crowd in of aid in greater detail in the forthcoming manuscript.

broadly similar across groups, though students in WRKS-eligible programs are less likely to be female. Prior to the initial enrollment, students in WRKS-eligible programs exhibit lower average quarterly earnings but similar probabilities of employment relative to students in non-WRKS-eligible programs. Overall, these descriptive patterns highlight important differences in academic pathways across groups, while pre-enrollment demographic and labor market characteristics remain largely comparable.

FINDINGS

In Figure 1, we trace the evolution of quarterly earnings and employment for students enrolling in WRKS-eligible programs relative to students enrolling in non-WRKS-eligible programs, before and after initial enrollment. We present results separately for the 2017-2018 and 2018-2019 entering cohorts. During most of the pre-enrollment period, students enrolled in WRKS-eligible and non-WRKS-eligible programs exhibit similar trends in both earnings and employment. However, students in WRKS-eligible programs experience a sharper decline one quarter prior to enrollment compared to students in non-WRKS-eligible programs. This pattern could reflect enrollment behavior in response to labor market performance prior to enrollment, whereby individuals with weaker recent earnings or employment outcomes elect to enroll in workforce-aligned training programs.

Immediately following enrollment, students in WRKS-eligible programs experience a decline in earnings and a modest reduction in employment relative to students in non-WRKS-eligible programs. These short-run losses persist for several quarters. Recall that the quarters reflect time in which students are likely enrolled in their

programs. Therefore, these findings are reflecting working behavior of students while they are in school, and the speed at which they return to employment. It is possible, for example, that students in WRKS-eligible programs choose to dedicate more of their time to their academic programs than do students in non-WRKS-eligible programs, or stay in school for longer.

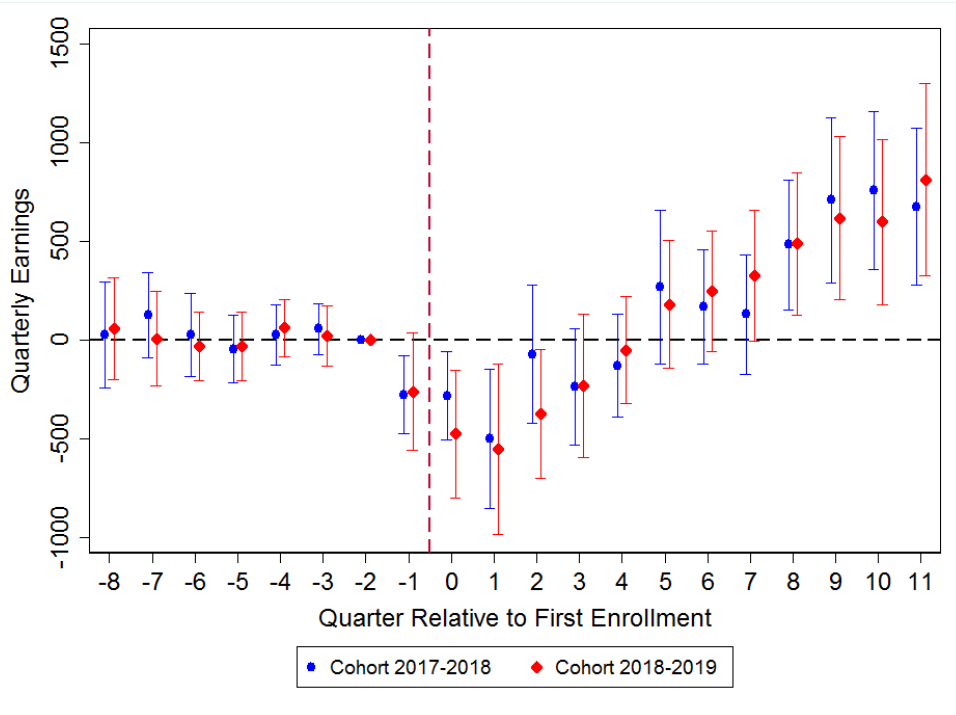
Beginning roughly one to one-and-a-half years after enrollment, the trajectory shifts. Earnings among students in WRKS-eligible programs begin to exceed those of comparable students in non-WRKS-eligible programs, and the gap widens steadily over time. In the third year after enrollment, the average earnings gain associated with WRKS participation reaches approximately \$586 per quarter. Employment estimates are not statistically significant, but they follow a similar pattern to the earning results—after an initial decline, students in WRKS-eligible programs gradually become more likely to be employed.

Overall, the evidence suggests that students who enroll in WRKS-eligible programs tend to have earnings that outperform that of their peers in non-WRKS-eligible programs in the long run.

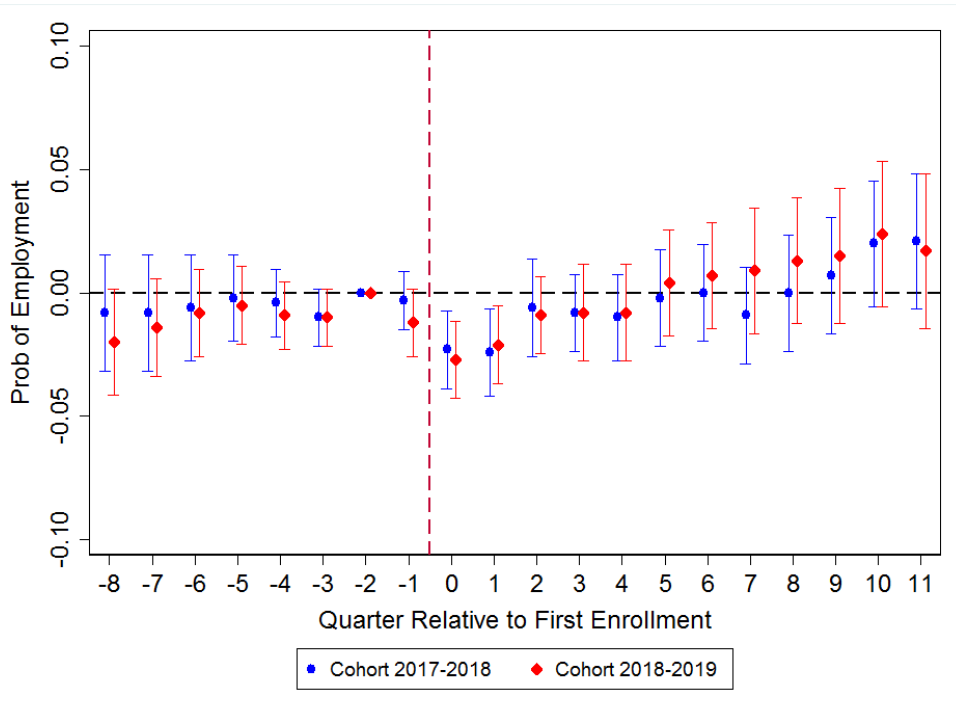
To assess whether these patterns reflect the WRKS policy itself or broader returns to workforce-aligned programs, we replicate the analysis using earlier entering cohorts whose first postsecondary enrollment occurred prior to WRKS implementation (2014-2015 through 2016-2017 academic years). We present these results in Appendix Figure 1. The overall dynamic pattern of labor market outcomes for pre-WRKS cohorts closely resembles that of post-WRKS cohorts. This similarity suggests that the WRKS policy has not meaningfully altered the earnings gains of enrollment in an WRKS-eligible program.

Figure 1: Effects of Enrollment in WRKS-Eligible Programs on Quarterly Earnings and Employment (2017-2018 and 2018-2019 Cohorts)

(A) Quarterly Earnings



(B) Employment



Notes: The horizontal axis denotes quarters relative to initial enrollment, with 0 indicating the first enrollment quarter. Labor market outcomes are observed from eight quarters (two years) prior to enrollment through twelve quarters (three years) after enrollment. Quarter -2 is omitted and serves as the reference period. Marker reports the point estimate for the treatment effect for each quarter, and 95% confidence intervals shown are based on standard errors clustered at the program level.

DISCUSSIONS

In this brief, we examine whether students who enroll in WRKS-eligible programs have positive earnings and employment gains. Our analyses document clear dynamic patterns in earnings and employment among students enrolling in workforce-aligned programs in Kentucky's community college system. We find that within three years of enrollment in WRKS-eligible programs, students have higher earnings than students who enrolled in non-WRKS-eligible programs. We observe similar patterns among students who enrolled in the same types of programs prior to WRKS implementation. We interpret this finding to imply that WRKS funds are being targeted to fields that are likely to lead to earnings gains, on average, but that WRKS did not change the returns to education in these fields.

These findings have several implications. First, the evidence reinforces the economic value of short-term and associate-level credentials in high-demand fields. Workforce-aligned programs in areas such as skilled trades, health, and technical services are associated with improved post-enrollment earnings. Second, our results suggest that a channel through which WRKS may improve participants' earnings is by shifting students into programs with strong labor market returns. In this sense, the policy's impact may operate through changes in program selection rather than through altering the intrinsic returns to those programs.

REFERENCES

Burland, E., Dynarski, S., Michelmore, K., Owen, S., & Raghuraman, S. (2023). The Power of Certainty: Experimental Evidence on the Effective Design of Free Tuition Programs. *American Economic Review: Insights*, 5(3), 293-310.

Sotherland, N. (2025). *To Target or Not to Target: Local Aid Program Design and Crowd-in of Federal Aid* [Unpublished manuscript]. Department of Economics, University of Michigan, United States. <https://drive.google.com/file/d/1izDbZSfq0-KerX5t8rMSKMYRi5TIftP/view>

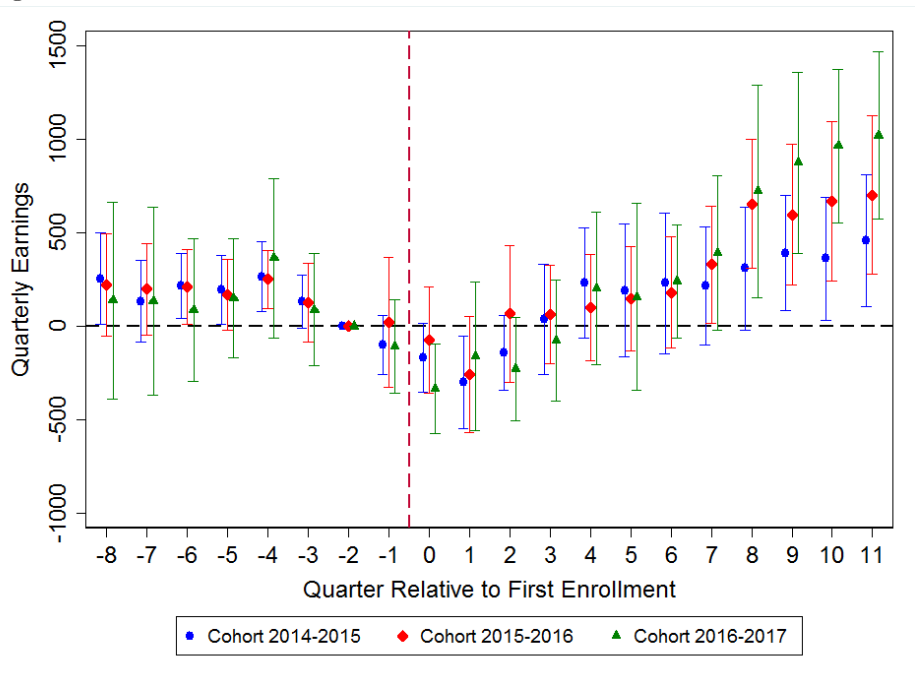
Appendix Table 1: Summary Statistics (2017-2018 and 2018-2019 Cohorts)

	Full Sample		Students in WRKS-Eligible Programs		Students in Non- WRKS-Eligible Programs	
	Mean (1)	S.D. (2)	Mean (3)	S.D. (4)	Mean (5)	S.D. (6)
Major Fields						
Business and Communication	0.068	0.251	0.239	0.427	0.002	0.049
Health	0.100	0.300	0.262	0.440	0.038	0.191
STEM	0.061	0.239	0.198	0.398	0.008	0.091
Skilled Trades	0.119	0.324	0.301	0.459	0.050	0.218
Other Fields	0.465	0.499	—§	—§	0.642	0.480
Demographic Characteristics						
Age at First Enrollment	28	10	27	9	28	11
Female	0.528	0.499	0.404	0.491	0.575	0.494
White	0.844	0.363	0.837	0.370	0.847	0.360
Black	0.124	0.330	0.126	0.332	0.123	0.329
Hispanic	0.064	0.244	0.062	0.242	0.064	0.245
Pre-Enrollment Labor Market Outcomes						
Average Quarterly Earnings (\$)	5325	6485	4905	5781	5486	6727
Probability of Employment	0.749	0.297	0.751	0.296	0.748	0.297
Number of Students	43,799		12,089		31,710	

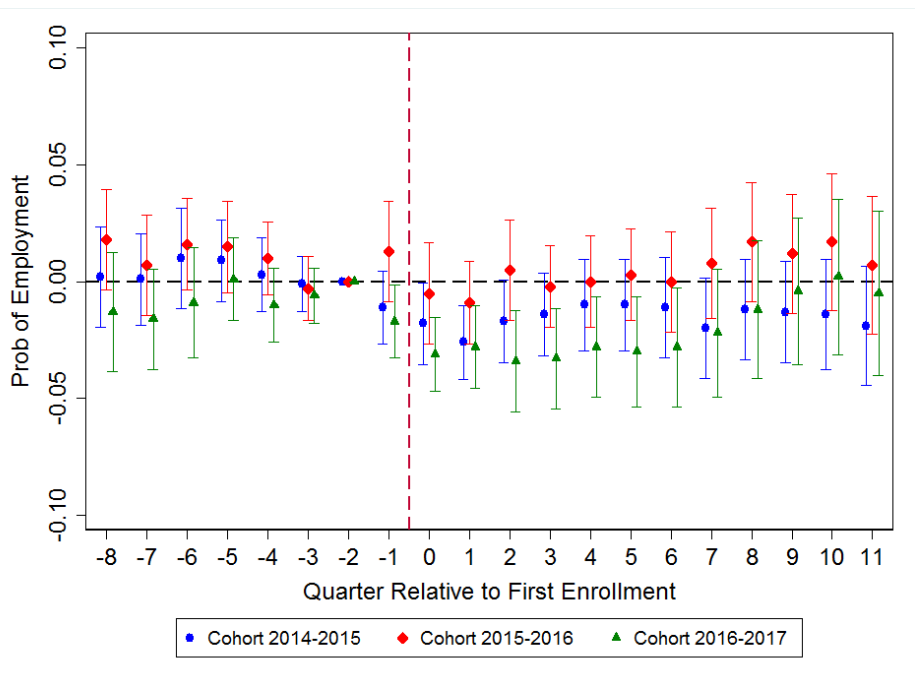
Notes: Summary statistics are based on the pooled sample of the 2017-2018 and 2018-2019 entering cohorts. Major fields are categorized into six groups following definitions from the Kentucky Center for Statistics (KYSTATS): business and communication, health, STEM, skilled trades, other fields, and undeclared/unknown. We do not report summary statistics for the “undeclared/unknown” group in order to comply with the data redaction policy. Information on major fields is obtained from the records of students’ first observed postsecondary enrollment. Pre-enrollment labor market outcomes are measured using earnings and employment information in the eight quarters prior to the initial enrollment. All earnings are adjusted to 2021 dollars. §: Following KYSTATS’s redaction and suppression guidelines, we cannot present exact values for groups with less than 10 students in order to maintain the privacy of individual students.

Appendix Figure 1: Effects of Enrollment in WRKS-Eligible Programs on Quarterly Earnings and Employment (2014-2015, 2015-2016, 2016-2017 Cohorts)

(A) Quarterly Earnings



(B) Employment



Notes: The horizontal axis denotes quarters relative to initial enrollment, with 0 indicating the first enrollment quarter. Labor market outcomes are observed from eight quarters (two years) prior to enrollment through twelve quarters (three years) after enrollment. Quarter -2 is omitted and serves as the reference period. Marker reports the point estimate for the treatment effect for each quarter, and 95% confidence intervals shown are based on standard errors clustered at the program level.

Appendix A: Research Design

Our main empirical strategy is to use a difference-in-differences model with individual fixed effects that compares within-student changes in labor market outcomes before and after first enrollment for students enrolled in WRKS-eligible programs to those enrolled in non-WRKS-eligible programs. The non-WRKS-eligible group provides a natural counterfactual because these students enroll in the same institutions and cohorts and are exposed to similar local labor market conditions. Moreover, baseline demographic and labor market characteristics are broadly comparable across groups, as we document in Appendix Table 1. We conduct the analysis separately for the 2017-2018 and 2018-2019 entering cohorts.

We estimate the following specification to examine whether enrollment in WRKS-eligible programs improves students' employment and earnings outcomes:

$$\begin{aligned}
 Y_{ict\tau} = & \alpha + \sum_{\substack{j=-8 \\ j \neq -2}}^{-1} \beta_1^\tau (WRKS_{ic} * \mathbf{1}[\tau = j]) + \sum_{j=0}^{11} \beta_2^\tau (WRKS_{ic} * \mathbf{1}[\tau = j]) \\
 & + \gamma Credit_{ict} + \delta Enroll_{ict} + \theta_\tau + \varphi_a + \eta_i + \lambda_t + \varepsilon_{ict\tau},
 \end{aligned} \tag{1}$$

where i , c , and t index individuals, cohorts, and quarters, respectively, and τ denotes quarters relative to the first observed enrollment. For the outcome variable $Y_{ict\tau}$, we separately examine quarterly earnings and employment. $WRKS_{ic}$ is an indicator equal to one if a student's first enrollment was in a WRKS-eligible program and zero otherwise. The indicator $\mathbf{1}[\tau = j]$ denotes event time relative to the first enrollment quarter, with $\tau = 0$ corresponding to the first enrollment quarter. We examine labor market outcomes from eight quarters (two years) prior to enrollment through twelve quarters (three years) following enrollment, omitting $\tau = -2$ as the reference period.

In the specification, we include $Credit_{ict}$ that denotes the cumulative number of observed course credits completed by individual i as of the end of quarter t , which reflects human capital accumulation over time. $Enroll_{ict}$ is an indicator for contemporaneous enrollment equal to one when the student is enrolled in quarter t and zero otherwise. This term captures opportunity costs (in terms of earnings and employment) of enrollment, as students may reduce labor supply while enrolled and potentially re-enter employment after enrollment ends. We include fixed effects for event time (θ_τ), ages (φ_a), individuals (η_i), and calendar year-quarters (λ_t). $\varepsilon_{ict\tau}$ is the error term. We cluster standard errors at the program level.

The coefficients of interest are β_2^τ , which measure the differential post-enrollment changes in earnings and employment for students in WRKS-eligible programs relative to students in non-WRKS-eligible programs, net of pre-enrollment differences. Our identification relies on the assumption that, in the absence of the WRKS, labor market trajectories for students in WRKS-eligible and non-eligible programs would have evolved similarly. A key advantage of this event-study framework is that it allows us to assess the plausibility of this assumption by examining the estimated pre-enrollment coefficients β_1^τ . Estimates close

to zero and statistically insignificant in the pre-period provide supporting evidence that the parallel trends assumption is satisfied in our context.

Appendix B: Data

To conduct the analysis, we use administrative Kentucky Postsecondary Education Data System (KPEDS) provided by the Kentucky Council on Postsecondary Education to the Kentucky Center for Statistics (KYSTATS). KPEDS is part of the broader Kentucky Longitudinal Data System (KLDS). The KLDS data contain individual-level records from the state agencies that oversee K-12 education, postsecondary education, and the Unemployment Insurance (UI) system. The primary data we use in the paper are KPEDS data that include information on postsecondary institutions attended, enrollment and course-taking records, credits attempted and earned, credential attainment, and student-level demographics for eight public four-year institutions and 16 community colleges with more than 70 locations.

Using the KPEDS data files, we construct a student-level data set that consists of all individuals who enrolled in public postsecondary education system between the 2008-2009 and 2020-2021 academic years. We then merge the postsecondary education data with quarterly earnings and employment records from the state UI program that is available from the third quarter of calendar year 2008 to the second quarter of calendar year 2021. Administrative UI records are from covered jobs as reported by employers in Kentucky to the state's UI system. This includes most workers, but those who do not work, who work only out of state, or who work in jobs not subject to UI reporting requirements (for example, federal employment and self-employment) in every quarter during the analysis period will not be included in our analytical sample. According to the Bureau of Labor Statistics, approximately 96 percent of the wage and salary civilian labor force and 98 percent of nonagricultural employment are covered by State UI programs.⁷

⁷ Source: Wage Records Program, U.S. Bureau of Labor Statistics. Available at: <https://www.bls.gov/wrp/overview.htm>.