High Schools Tailored To Adults Can Help Them Complete a Traditional Diploma and Excel in the Labor Market

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Online Appendix

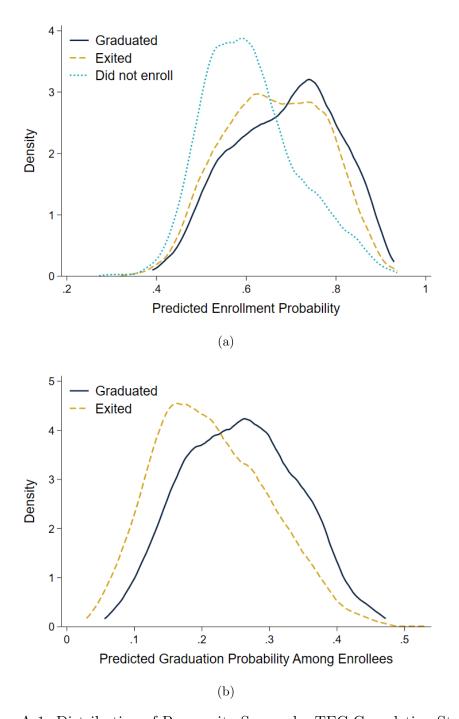


Figure A-1: Distribution of Propensity Scores, by TEC Completion Status

Notes: Each figure shows the distribution of propensity scores estimated by logit. In panel (a), the outcome is enrolling at TEC estimated for our main analysis sample, and in panel (b) it is graduating from TEC estimated among applicants who enroll. In both panels, the predictors are quarterly pre-period employment, quarterly pre-period earnings, an indicator for employment in the year prior to application, demographics from K-12 data (race, gender, free/reduced lunch, homeless), application quarter indicators, and age ventile indicators.

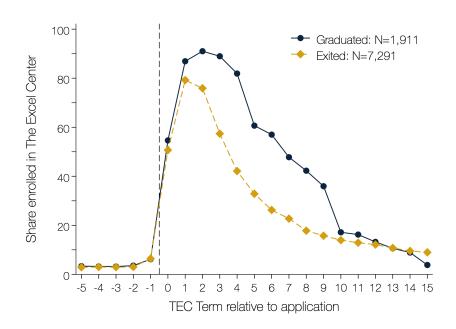


Figure A-2: Enrollment Trajectory, by TEC Completion Status

Notes: Data come from TEC application records and enrollment records reported by Goodwill to the Indiana Department of Education. The Excel Center school year includes five 8-week terms. The horizontal axis denotes the school term relative to application, where term 0 is the first term starting on or after an application date. We code a student as enrolled in a given term if they have an enrollment spell that overlaps with the start and end dates of the term. The sample includes all TEC applicants that can be linked to enrollment records (have a student test number) and could potentially be observed in all 21 relative school terms. The figure plots the enrollment rates of TEC graduates (navy circles) and TEC students who did not graduates (gold diamonds).

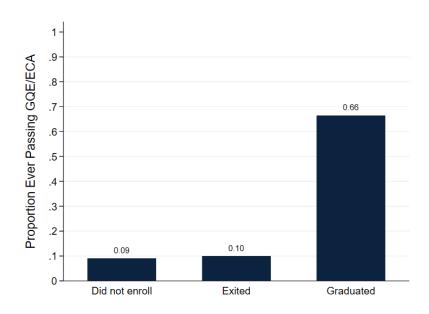


Figure A-3: Ever Passed Graduation Qualifying Exam as Measured by DOE Records

Notes: Data come from TEC application records linked to testing records from the Indiana Department of Education (DOE). Since the data do not have test dates, we measure whether each person has ever passed both English and Mathematics, as of 2020.

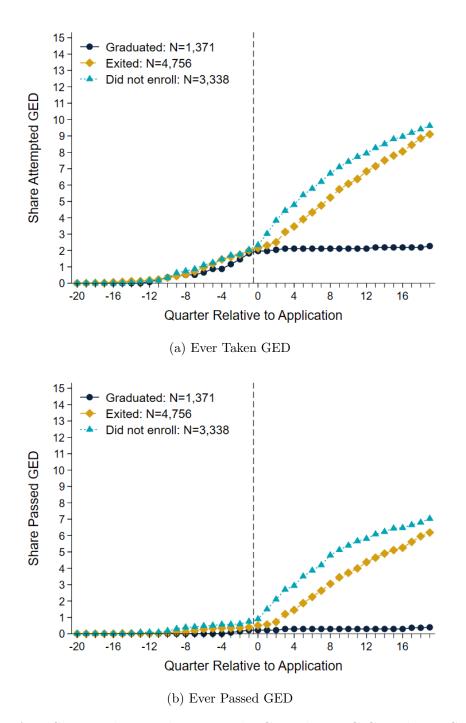
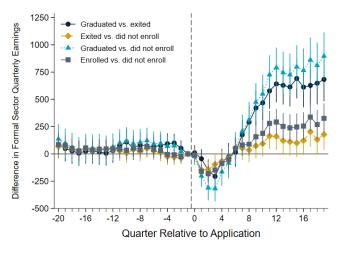


Figure A-4: Share Taking and Passing the GED, by TEC Completion Status

Notes: Data come from TEC application records linked to GED completion data from the Indiana Department of Workforce Development. The sample includes all TEC applicants from January 2013 through June 2015 with any pre-application MPH record, and is divided into three groups: TEC graduates (navy circles), TEC students who did not graduate (gold diamonds), and TEC applicants who did not enroll (teal triangles). The horizontal axis indicates quarter relative to initial TEC application date, where quarter 0 represents the quarter in which an individual applied to TEC. Panel A plots the share who have attempted the GED by the indicated quarter. Similarly, Panel B plots the share that have ever passed the GED.





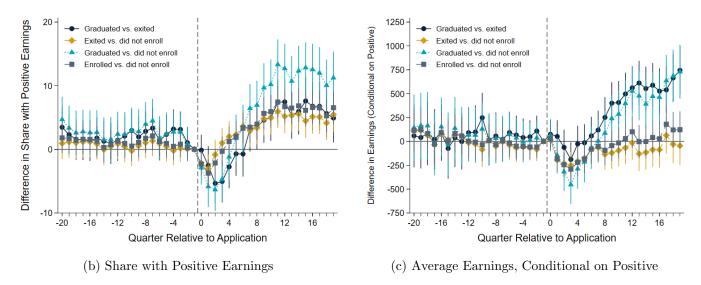
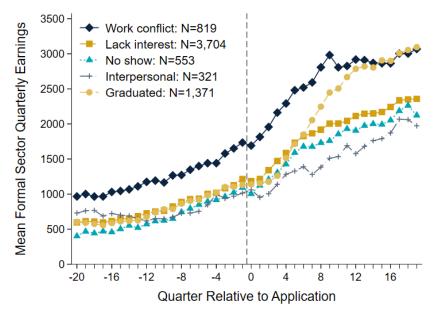
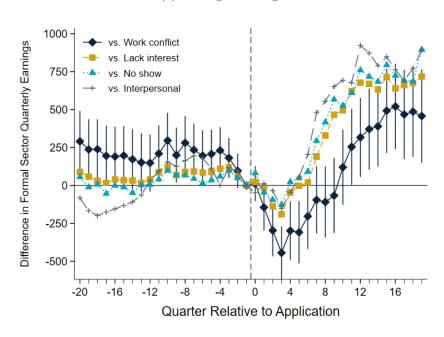


Figure A-5: Unweighted Event Study of Earnings, by Quarters Since Application

Notes: Data come from TEC application records linked to UI earnings data from the Indiana Department of Workforce Development. The sample includes all TEC applicants from January 2013 through June 2015 with any pre-application MPH record. The horizontal axis indicates quarter relative to initial TEC application date, where quarter 0 represents the quarter in which an individual applied to TEC. The figure plots the regression coefficients from three event study specifications that compare (1) the employment and earnings of TEC graduates to TEC students who did not graduate (navy circles); (2) TEC students who did not graduate to TEC applicants who did not enroll (gold diamonds); (3) TEC graduates to TEC applicants who did not enroll (teal triangles); and (4) all TEC students to TEC applicants who did not enroll (gray squares), controlling for individual fixed effects, calendar quarter fixed effects, and fixed effects for the interactions of calendar quarter and initial age ventile. Observations are unweighted. The outcomes are an indicator for unconditional total earnings (Panel A), positive earnings (2014Q1 USD) (Panel B), and average earnings among individuals with positive earnings (Panel C). The reference quarter is the quarter before application. Vertical bars represent 95 percent confidence intervals, where standard errors are clustered at the individual level.



(a) Average Earnings



(b) Event Study with Exit Type-Specific Comparison Groups

Figure A-6: Comparison of Graduates to Enrollees Who Drop Out, by Exit Reason

Notes: Data come from TEC application records linked to UI earnings data from the Indiana Department of Workforce Development and TEC enrollment records. The sample includes all TEC students who applied between January 2013 through June 2015, had any pre-application MPH record, enrolled in TEC, and had a listed exit reason. TEC students are divided into groups based on the reason they exited the school, either because of graduation or their reason for dropping out. The horizontal axis indicates quarter relative to initial TEC application date, where quarter 0 represents the quarter in which an individual applied to TEC. Panel A plots average unconditional quarterly UI-covered earnings (2014Q1 USD) of TEC graduates (light gold circles) and TEC students who exit because of a work conflict (navy diamonds), lack of interest in the curriculum (gold square), stopped coming to school (teal triangle), and had interpersonal problems (light gray plus sign). Panel B plots the regression coefficients from event study specifications that compare the earnings of TEC graduates to TEC students who exited for the reasons listed above, controlling for individual fixed effects, calendar quarter fixed effects, and fixed effects for the interactions of relative quarter and initial age ventile. The reference quarter is the quarter before application. Vertical bars represent 95 percent confidence intervals on the estimates for "vs Work conflict" exit reason, where standard errors are clustered at the individual level.

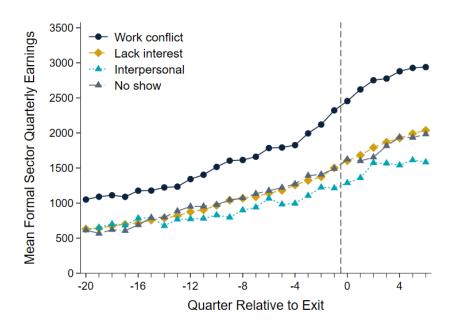
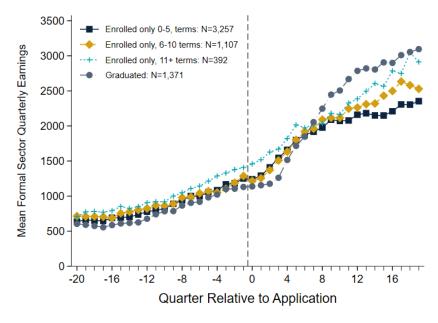
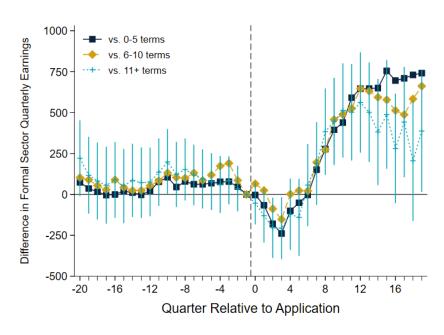


Figure A-7: Earnings Trends, by Time Relative to Exit and Exit Reason

Notes: Data come from TEC application records linked to UI earnings data from the Indiana Department of Workforce Development. The sample includes all TEC students who applied between January 2013 through June 2015, had any pre-application MPH record, enrolled in TEC without graduating, and had a listed exit reason. The horizontal axis indicates quarter relative to the time the person exited TEC. The figure plots total unconditional earnings (2014Q1 USD), winsorized at 99%.



(a) Average Earnings



(b) Event Study with Enrolled Terms-Specific Comparison Groups

Figure A-8: Comparison of Graduates to Enrollees Who Drop Out, by Number of Terms Enrolled

Notes: Data come from TEC application records linked to UI earnings data from the Indiana Department of Workforce Development and TEC enrollment records. The sample includes all TEC students who applied between January 2013 through June 2015 with any pre-application MPH record. TEC students are divided into groups based on the number of terms they ever enrolled at TEC. The horizontal axis indicates quarter relative to initial TEC application date, where quarter 0 represents the quarter in which an individual applied to TEC. Panel A plots average quarterly UI-covered earnings (2014Q1 USD) of TEC graduates (light gray circles) and TEC enrollees who exited after 0-5 terms (navy squares), 6-10 terms (gold diamonds), and 11+ terms (teal plus signs). Panel B plots the regression coefficients from an event study specification that compares the earnings of TEC graduates to TEC students who exited after the number of terms listed, controlling for individual fixed effects, calendar quarter fixed effects, and relative quarter-age ventile fixed effects. The reference quarter is the quarter before application. Vertical bars represent 95 percent confidence intervals for the 11+ terms comparison, where standard errors are clustered at the individual level.

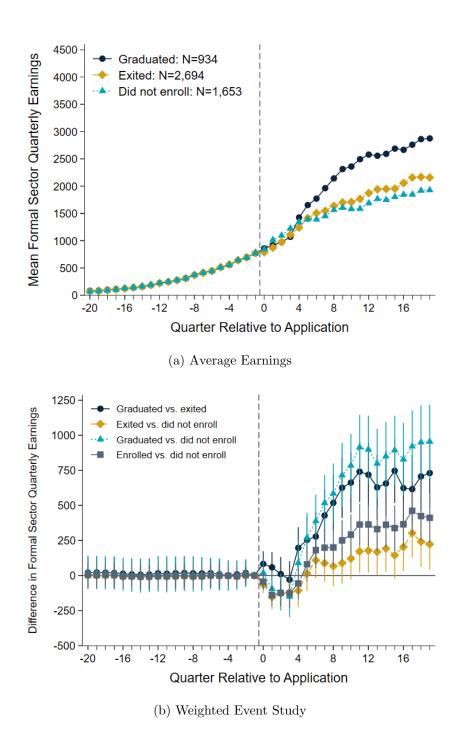


Figure A-9: Comparison of Graduates to Non-Graduates, 23 or Younger at Application

Notes: Data come from TEC application records linked to UI earnings data from the Indiana Department of Workforce Development and TEC enrollment records. The sample includes all TEC applicants who applied between January 2013 through June 2015 with any pre-application MPH record and were 23 years or younger at application. Applicants are divided into groups based on enrollment and graduation. The horizontal axis indicates quarter relative to initial TEC application date, where quarter 0 represents the quarter in which an individual applied to TEC. Panel A plots average quarterly UI-covered earnings (2014Q1 USD) of TEC graduates (navy circles), TEC students who exited before graduation (gold diamonds), and applicants who did not enroll (teal triangles). Panel B plots the regression coefficients from weighted event study specifications that control for individual, calendar quarter, and relative quarter-age ventile fixed effects. The reference quarter is the quarter before application. Vertical bars represent 95 percent confidence intervals, where standard errors are clustered at the individual level.

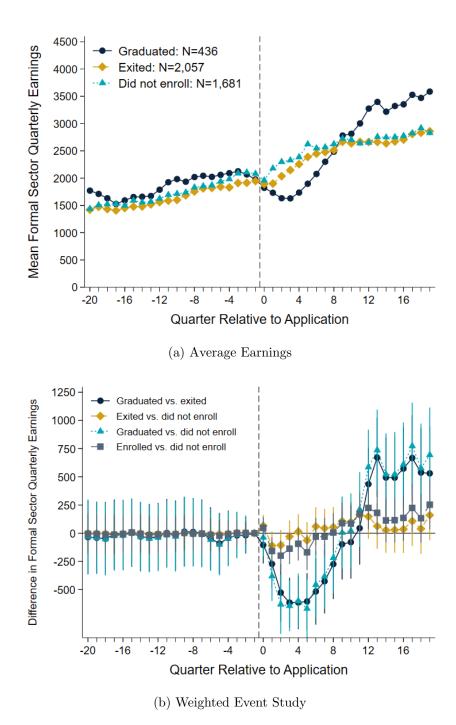
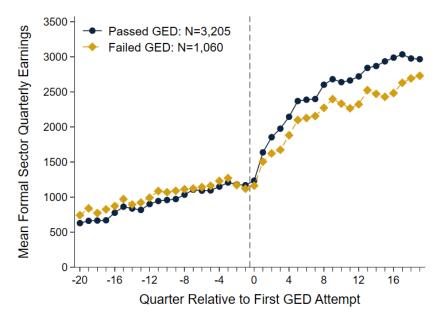
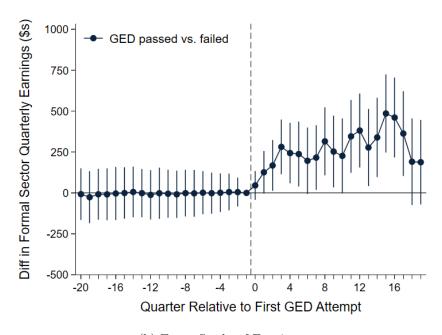


Figure A-10: Comparison of Graduates to Non-Graduates, 24 or Older at Application

Notes: Data come from TEC application records linked to UI earnings data from the Indiana Department of Workforce Development and TEC enrollment records. The sample includes all TEC applicants who applied between January 2013 through June 2015 with any pre-application MPH record and were 24 years or older at application. Applicants are divided into groups based on enrollment and graduation. The horizontal axis indicates quarter relative to initial TEC application date, where quarter 0 represents the quarter in which an individual applied to TEC. Panel A plots average quarterly UI-covered earnings (2014Q1 USD) of TEC graduates (navy circles), TEC students who exited before graduation (gold diamonds), and applicants who did not enroll (teal triangles). Panel B plots the regression coefficients from weighted event study specifications that control for individual, calendar quarter, and relative quarter-age ventile fixed effects. The reference quarter is the quarter before application. Vertical bars represent 95 percent confidence intervals, where standard errors are clustered at the individual level.



(a) Average Earnings



(b) Event Study of Earnings

Figure A-11: Effect of Passing the GED on Earnings

Notes: Data come from TEC application records linked to GED completion and UI earnings data from the Indiana Department of Workforce Development. The sample includes all adults in Indiana who attempted the GED exam for the first time between February 2014 and September 2014. Test takers are divided into groups based on whether they passed the GED during their first attempt. The horizontal axis indicates quarter relative to initial GED exam attempt date, where quarter 0 represents the quarter in which an individual first took the GED exam. Panel A plots average quarterly UI-covered earnings (2014Q1 USD) of Hoosiers who passed the GED on their first attempt (navy circles) and Hoosiers who did not pass the GED on their first attempt (gold diamonds). Panel B plots the regression coefficients from an event study specification that compares the earnings of GED passers to GED non-passers, controlling for individual fixed effects, calendar quarter fixed effects, and relative quarter-age ventile fixed effects. The reference quarter is the quarter before the test quarter. Vertical bars represent 95 percent confidence intervals, where standard errors are clustered at the individual level.

Table A-1: State Laws Regarding Adult High School Diplomas

State	Has Adult Diploma	
	Yes	Adult Diploma = Standard Diploma Yes
AK	No	100
AZ	No	
AR	No	
CA	Yes	Yes
CO		Yes
	Yes	
CT	Yes	No Voc
DE	Yes	Yes
FL	Yes	Yes
GA	No	
HI	No	
ID	No	
IL	Yes	Yes
IN	Yes but limited	Yes
IA	Yes	No
KS	Yes	Yes
KY	No	
LA	No	
ME	Yes	Yes
MD	Yes	Yes
MA	Yes	Yes
MI	Yes	Yes
MN	Yes	Yes
MS	Yes	No
MO	Yes but limited	Yes
MT	No	100
NE	No	
NV	Yes	No
NH	Yes	No
NJ	Yes	Yes
NM	No	165
NY	Yes	No
		Yes
NC ND	Yes	ies
ND	No	V
OH	Yes	Yes
OK	No	N/
OR	Yes	Yes
PA	No	37
RI	Yes	Yes
SC	No	
SD	No	
TN	Yes but limited	Yes
TX	Yes	Yes
UT	Yes but limited	Yes
VT	Yes	Yes
VA	Yes	Yes
WA	Yes	No
WV	No	
WI	Yes	No
WY	No	

Notes: Coded from state government websites between June 2020 and April 2021.

Table A-2: The Excel Center Campuses Operated by Goodwill of Central & Southern Indiana

IDOE School Name	City	Start Month
Excel Center for Adult Learners - Michigan St Campus	Indianapolis, IN	July 2011
Excel Center for Adult Learners - Decatur Campus	Indianapolis, IN	July 2011
Excel Center for Adult Learners - Meadows Campus	Indianapolis, IN	July 2011
Excel Center for Adult Learners - Franklin Campus	Indianapolis, IN	July 2012
Excel Center - Anderson	Anderson, IN	August 2012
Excel Center - Lafayette	Lafayette, IN	August 2013
Excel Center - Richmond	Richmond, IN	August 2013
Excel Center - Lafayette Square	Indianapolis, IN	August 2013
Excel Center - Kokomo	Kokomo, IN	August 2013
Excel Center - University Heights	Indianapolis, IN	August 2015
Excel Center - Noblesville	Nobleville, IN	August 2015
Excel Center - Shelbyville	Shelbyville, IN	August 2016
Excel Center - Clarksville	Clarksville, IN	July 2017
Excel Center - Muncie	Muncie, IN	July 2018
Excel Center - Bloomington	Bloomington, IN	July 2019

Notes: Dates from school calendar start dates provided by Goodwill. The four campuses under the Excel Center for Adult Learners fall under a single charter as one school, but operate as four separate campuses.

Table A-3: Effect of Enrollment and Graduation from The Excel Center on Quarterly Earnings, No Winsorizing

	Fixed Effects	Fixed Effects	Fixed Effects	Weighted	Weighted	Weighted SD
	(1)	(2)	(3)	(4)	(5)	(6)
Enrolled X Year 1	-124.28***	-101.84***	-124.37***	-84.14**	-77.37**	-22.15
	(35.52)	(37.25)	(37.32)	(36.88)	(36.31)	(55.20)
Enrolled X Year 2	17.40	4.90	-36.03	-1.99	8.62	60.00
	(45.33)	(47.36)	(47.29)	(48.26)	(47.82)	(62.14)
Enrolled X Year 3	206.99***	97.61*	54.03	98.45*	110.58**	160.44**
	(51.47)	(53.22)	(53.24)	(54.57)	(54.14)	(66.75)
Enrolled X Year 4	302.07***	143.16**	90.73	102.45*	117.51^{*}	164.44**
	(57.46)	(59.55)	(59.40)	(60.91)	(60.22)	(70.35)
Enrolled X Year 5	329.42***	169.13**	115.25*	151.04**	165.41**	213.03***
	(64.23)	(66.65)	(66.36)	(67.19)	(66.64)	(76.81)
Graduated X Year 1	,	-100.32**	-142.66***	-141.12**	-142.68**	-94.12
		(47.74)	(47.03)	(60.43)	(59.38)	(113.01)
Graduated X Year 2		55.84	-17.17	-35.74	-37.30	11.26
		(62.27)	(61.37)	(71.52)	(69.43)	(117.00)
Graduated X Year 3		488.82***	404.05***	370.57***	368.38***	417.57***
		(76.25)	(75.42)	(85.03)	(82.96)	(123.44)
Graduated X Year 4		710.17***	604.12***	652.95***	649.59***	699.95***
		(86.09)	(85.55)	(97.96)	(96.84)	(138.04)
Graduated X Year 5		716.34***	605.30***	684.91***	680.83***	731.91***
		(92.76)	(92.52)	(106.72)	(105.68)	(143.44)
Relative Quarter FE	X	X	X	X	X	X
Person FE	X	X	X	X	X	
Calendar Quarter FE			X		X	
Age Bin X Relative Quarter FE			X		X	
Comp. Mean-Year 1	1,698	1,698	1,698	1,502	1,502	1,502
Comp. Mean-Year 2	2,040	2,040	2,040	1,865	1,865	1,865
Comp. Mean-Year 3	2,201	2,201	2,201	2,025	2,025	2,025
Comp. Mean-Year 4	2,298	2,298	2,298	2,154	2,154	2,154
Comp. Mean-Year 5	2,444	2,444	2,444	2,276	2,276	2,276
$P(\hat{\beta}_Pre - Enroll^{18} = 0)$	0.390	0.278	0.398	1.000	1.000	0.974
$P(\hat{\beta}_Pre - Grad^{18} = 0)$		0.695	0.330	0.951	0.953	0.953
R^2	0.58	0.58	0.59	0.60	0.60	0.02
Observations	378,600	378,600	378,600	378,600	378,600	189,300
Individuals	9,465	9,465	9,465	9,465	9,465	9,465

Notes: Data come from TEC application records linked to UI earnings data from the Indiana Department of Workforce Development. The sample includes all TEC applicants from January 2013 through June 2015 with any pre-application MPH record. Time is measured in quarters relative to application date, and the data are a balanced panel from quarter -20 to quarter 19. The outcome is unconditional total quarterly earnings (2014Q1 USD), not winsorized. Non-employment is coded as zero earnings. Columns (4) through (6) are reweighted using inverse propensity score weights. See text for details. Column (6) is a single-difference specification that only includes the 20 post-period quarters. Standard errors clustered by individual are in parentheses. Statistical significance at the 10, 5, and 1 percent levels are denoted respectively by *, ***, and ****.

Table A-4: Effect of Graduation on Living Out of State

	Fixed Effects	Fixed Effects	Weighted	Weighted	Weighted SD
	(1)	(2)	(3)	(4)	(5)
Enrolled X Year 1	-0.001	-0.000	0.003	0.003	0.003
	(0.006)	(0.006)	(0.008)	(0.007)	(0.009)
Enrolled X Year 2	0.004	0.005	0.010	0.010	0.009
	(0.006)	(0.006)	(0.008)	(0.007)	(0.007)
Enrolled X Year 3	0.002	0.003	0.006	0.006	0.006
	(0.006)	(0.006)	(0.008)	(0.008)	(0.009)
Enrolled X Year 4	0.002	0.004	0.005	0.005	0.004
	(0.008)	(0.008)	(0.010)	(0.010)	(0.010)
Enrolled X Year 5	0.001	0.002	0.004	0.004	0.001
	(0.009)	(0.009)	(0.011)	(0.011)	(0.011)
Graduated X Year 1	-0.003	-0.005	-0.007	-0.006	-0.009
	(0.006)	(0.006)	(0.008)	(0.008)	(0.010)
Graduated X Year 2	-0.006	-0.008	-0.012	-0.011	-0.014
	(0.006)	(0.006)	(0.008)	(0.008)	(0.009)
Graduated X Year 3	-0.005	-0.007	-0.006	-0.006	-0.008
	(0.007)	(0.007)	(0.009)	(0.009)	(0.009)
Graduated X Year 4	-0.006	-0.009	-0.007	-0.007	-0.008
	(0.008)	(0.008)	(0.011)	(0.011)	(0.011)
Graduated X Year 5	-0.005	-0.009	-0.011	-0.011	-0.009
	(0.009)	(0.009)	(0.012)	(0.012)	(0.012)
Relative Quarter FE	X	X	X	X	X
Person FE	X	X	X	X	
Calendar Quarter FE		X		X	
Age Bin X Relative Quarter FE		X		X	
Comp. Mean-Year 1	0.024	0.024	0.025	0.025	0.025
Comp. Mean-Year 2	0.027	0.027	0.028	0.028	0.028
Comp. Mean-Year 3	0.028	0.028	0.029	0.029	0.029
Comp. Mean-Year 4	0.030	0.030	0.028	0.028	0.028
Comp. Mean-Year 5	0.036	0.036	0.034	0.034	0.034
R^2	0.63	0.63	0.60	0.60	0.00
Observations	130,800	130,800	$130,\!426$	$130,\!426$	65,026
Individuals	3,270	3,270	3,270	3,270	3,270

Notes: We link TEC application records to address histories from Infutor Data Solutions using name and date of birth. We limit the sample to individuals who match to an address in Infutor prior to applying to TEC. The outcome is an indicator for the most recent recorded address being outside the state of IN. All columns include quarters 0-19 post application. Columns 1-4 include 20 quarters pre-application. Columns 3 and 4 are weighted by an inverse propensity score constructed using indicators for moving in the 20 quarters pre-application, quarter of application indicators, and age at application. Column 5 uses this same IPW, but presents a simple-difference and thus exclude periods pre-application and person FEs. Statistical significance at the 10, 5, and 1 percent levels are denoted respectively by *, ***, and ****.

Table A-5: Effects on Earnings with Various Difference-in-Difference Methods

	TWFE	TWFE	BJS	BJS	BJS Event Time	BJS Event Time	BJS Event Time
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Enrolled X Year 1	-97.84***	-114.74***	-116.51***	-119.91***	-111.79***	-120.10***	-90.69***
	(27.34)	(27.34)	(26.40)	(26.05)	(34.87)	(33.08)	(34.06)
Enrolled X Year 2	66.50*	38.35	38.55	25.55	3.74	-20.66	2.22
	(37.84)	(37.88)	(38.85)	(38.39)	(44.72)	(43.68)	(45.58)
Enrolled X Year 3	119.84***	81.55*	98.45**	72.93	100.39**	70.93	108.72**
	(45.49)	(45.42)	(47.58)	(47.02)	(51.08)	(50.56)	(52.26)
Enrolled X Year 4	139.45***	98.57*	123.12**	92.79*	144.30**	101.00*	117.92**
	(51.71)	(51.58)	(53.52)	(52.97)	(56.77)	(56.11)	(57.61)
Enrolled X Year 5	167.88***	122.59**	166.41***	131.51**	184.96***	150.32**	176.75***
	(57.43)	(57.20)	(59.47)	(58.95)	(62.27)	(61.60)	(62.96)
Graduated X Year 1	-107.82**	-127.89***	-105.62**	-99.01**	-98.56**	-113.37**	-141.25**
	(45.66)	(45.32)	(45.46)	(45.60)	(44.94)	(45.09)	(55.23)
Graduated X Year 2	44.06	-3.67	46.24	28.26	54.20	15.60	-38.98
	(59.50)	(58.73)	(59.33)	(59.65)	(59.12)	(59.40)	(65.76)
Graduated X Year 3	468.75***	396.36***	470.25***	426.24***	480.67***	425.70***	367.17***
	(73.08)	(72.41)	(72.93)	(73.56)	(72.93)	(73.65)	(79.78)
Graduated X Year 4	686.50***	598.41***	688.67***	623.20***	698.74***	616.66***	636.58***
	(82.34)	(81.98)	(82.49)	(83.29)	(82.58)	(83.60)	(92.77)
Graduated X Year 5	697.54***	598.29***	699.26***	626.87***	709.57***	635.79***	670.22***
	(90.01)	(89.78)	(90.23)	(91.14)	(90.31)	(91.58)	(102.02)
Panel Period	2008Q1-2020Q2	2008Q1-2020Q2	2008Q1-2020Q2	2008Q1-2020Q2	-Q20-Q19	-Q20-Q19	-Q20-Q19
Person FE	X	X	X	X	X	X	X
Calendar Quarter FE	X	X	X	X		X	X
Age Bin X Calendar Quarter FE		X		X			
Relative Quarter FE					X	X	X
Age Bin X Relative Quarter FE						X	X
$P(\hat{\beta}_{Enroll}^{Pre1-8} = 0)$	0.264	0.342					
$P(\hat{\beta}_{Grad}^{Pre1-8} = 0)$	0.801	0.752					
$P(\hat{\beta}_{BJS}^{Pre18} = 0)$			0.150	0.196	0.332	0.477	1.000
Observations	473,250	473,250	438,090	438,090	378,600	378,600	378,600

Notes: Data come from TEC application records linked to UI earnings data from the Indiana Department of Workforce Development. The sample includes all TEC applicants from January 2013 through June 2015 with any pre-application MPH record. In columns (1) through (4), the sample is a balanced quarterly panel from Q1 2008 through Q2 2020. In columns (5) through (7), the sample is a balanced quarterly panel in relative time that includes quarters -20 through 19. The outcome is quarterly earnings (2014Q1 USD), winsorized at 99%. Non-employment is coded as zero earnings. Columns (1) reports results from a standard two-way fixed effects regression that includes person and calendar quarter fixed effects. Column (2) additionally controls for initial age ventile-calendar quarter fixed effects. Columns (3) through (7) report results using the imputation method of Borusyak et al. (2021). Columns (3) and (4) include the same fixed effects as columns (1) and (2), respectively. Columns (5) and (6) repeats this analysis but using relative time fixed effects. Column (7) incorporates inverse propensity score weights. Standard errors clustered by individual are in parentheses. Statistical significance at the 10, 5, and 1 percent levels are denoted respectively by *, **, and ***.

Table A-6: Effect of Enrollment and Graduation from The Excel Center on Quarterly Earnings, Longer Follow-up Samples

-	Weighted	Weighted	Weighted	Weighted
	(1)	(2)	(3)	(4)
Enrolled X Year 1	-104.81***	-89.45***	-31.67	-134.26*
	(29.75)	(33.73)	(41.21)	(77.54)
Enrolled X Year 2	-17.81	5.17	30.48	-113.70
	(39.81)	(45.49)	(54.89)	(108.16)
Enrolled X Year 3	101.67**	111.59**	137.66**	86.46
	(45.92)	(52.29)	(63.24)	(123.18)
Enrolled X Year 4	84.86*	119.65**	83.68	-0.18
	(51.27)	(57.61)	(69.91)	(135.81)
Enrolled X Year 5	,	179.68***	111.43	49.54
		(62.99)	(77.36)	(142.06)
Enrolled X Year 6		,	127.68	-76.55
			(84.35)	(162.29)
Enrolled X Year 7			,	-167.18
				(170.90)
Graduated X Year 1	-118.75**	-142.12***	-179.75**	-196.52
	(51.57)	(55.11)	(70.75)	(120.64)
Graduated X Year 2	33.33	-39.72	-89.20	-39.26
	(63.02)	(65.21)	(81.76)	(150.04)
Graduated X Year 3	468.47***	365.69***	366.27***	465.51**
	(76.65)	(79.06)	(98.58)	(198.13)
Graduated X Year 4	708.35***	634.60***	672.15***	790.08***
	(85.45)	(91.76)	(112.41)	(204.03)
Graduated X Year 5	,	669.06***	684.98***	770.71***
		(101.00)	(121.39)	(230.40)
Graduated X Year 6		,	832.22***	811.19***
			(134.37)	(237.98)
Graduated X Year 7			, ,	849.64***
				(261.34)
Relative Quarter FE	X	X	X	X
Person FE	X	X	X	X
Calendar Quarter FE	X	X	X	X
Age Bin X Rel. Quarter FE	X	X	X	X
Comp. Mean - Final Year	2,202	2,232	2,376	2,602
$P(\hat{\beta}_{Enroll}^{Pre1-8} = 0)$	1.000	1.000	1.000	1.000
$P(\hat{\beta}_{Grad}^{Pre1-8} = 0)$	0.982	0.994	0.999	0.923
R^2	0.56	0.55	0.54	0.51
Observations	480,348	378,600	264,440	77,520
Individuals	13,343	9,465	6,010	1,615
	_==,===	-,100	-,,,,	

Notes: Data come from TEC application records linked to UI earnings data from the Indiana Department of Workforce Development. The sample differ across columns. The first column includes all TEC applicants from January 2013 through June 2016 with any pre-application MPH record. Each subsequent column moves the end date for the sample one year earlier to allow for an additional follow-up year. Time is measured in quarters relative to application date, includes quarters -20 to the indicated end quarter. The outcome is quarterly earnings (2014Q1 USD), winsorized at 99%. Non-employment is coded as zero earnings. All columns report the results of a 'doubly robust' specification that includes person, calendar quarter, and relative quarter-age ventile fixed effects and re-weights using inverse propensity score weights. Standard errors clustered by individual are in parentheses. Statistical significance at the 10, 5, and 1 percent levels are denoted respectively by *, ***, and ****.

Table A-7: Effect of Graduation from The Excel Center on Quarterly Earnings, Comparing to Exiting Students with Different Enrollment Lengths

	0-5 Terms	6-10 Terms	11+ Terms
	(1)	(2)	(3)
Graduated X Year 1	-115.14**	-49.42	-134.97
	(50.82)	(58.88)	(82.25)
Graduated X Year 2	-15.29	43.52	12.68
	(62.87)	(77.58)	(112.12)
Graduated X Year 3	391.48***	408.85***	373.87**
	(76.34)	(93.60)	(169.17)
Graduated X Year 4	692.09***	580.10***	431.68***
	(89.24)	(105.87)	(158.94)
Graduated X Year 5	756.84***	556.14***	212.15
	(97.58)	(118.06)	(211.70)
Relative Quarter FE	X	X	X
Person FE	X	X	X
Calendar Quarter FE	X	X	X
Age Bin X Rel. Quarter FE	X	X	X
$P(\hat{\beta}_{Grad}^{Pre1-8} = 0)$	1.000	1.000	1.000
R^2	0.52	0.55	0.56
Observations	185,120	99,120	70,520
Individuals	4,628	2,478	1,763

Notes: Data come from TEC application records linked to UI earnings data from the Indiana Department of Workforce Development and TEC enrollment records from Goodwill. The sample includes all TEC applicants from January 2013 through June 2015 with any pre-application MPH record and an enrollment spell in the TEC enrollment records. Time is measured in quarters relative to application date, and the data are a balanced panel from quarter -20 to quarter 19. The outcome is quarterly earnings (2014Q1 USD), winsorized at 99%. Non-employment is coded as zero earnings. All columns report the results of a 'doubly robust' specification that includes person, calendar quarter, and relative quarter-age ventile fixed effects and re-weights using inverse propensity score weights. See text for details. The treatment group in all columns is comprised of graduates. The comparison group changes across columns, with each column limited to individuals who dropped out but were enrolled for the listed number of terms. Standard errors clustered by individual are in parentheses. Statistical significance at the 10, 5, and 1 percent levels are denoted respectively by *, ***, and ****.

Table A-8: Heterogeneous Effects of Enrollment and Graduation from The Excel Center on Quarterly Earnings

	Age<=23	Age>23	DOE	FRL	Not	Indianapolis	Not	High	Low	Remediation	Not
			Sample		FRL		Indianapolis	Absence Rate	Absence Rate		Remediation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Enrolled X Year 1	-111.19***	-42.60	-101.57**	-86.55**	-171.84	-70.99	-94.56**	-132.08**	-76.35		
	(36.52)	(61.76)	(49.91)	(38.60)	(135.32)	(48.18)	(46.79)	(67.02)	(62.36)		
Enrolled X Year 2	31.31	16.23	56.63	51.48	174.89	13.77	41.54	13.94	83.62		
	(53.72)	(74.53)	(64.60)	(58.99)	(152.30)	(61.12)	(64.14)	(87.70)	(91.49)		
Enrolled X Year 3	117.53*	108.56	101.11	80.87	307.50	37.09	223.84***	-7.79	177.08		
	(63.92)	(82.81)	(85.26)	(76.79)	(187.17)	(70.06)	(75.24)	(120.30)	(111.51)		
Enrolled X Year 4	176.68**	69.57	135.17	91.36	315.71*	45.92	264.90***	9.66	231.94**		
	(72.58)	(90.28)	(89.87)	(86.44)	(189.58)	(77.08)	(85.15)	(130.84)	(110.05)		
Enrolled X Year 5	248.54***	88.22	204.60**	163.98*	509.46***	68.09	338.40***	140.69	245.83*		
	(80.22)	(98.74)	(100.92)	(96.09)	(196.29)	(85.37)	(92.79)	(130.02)	(136.25)		
Graduated X Year 1	17.13	-355.91***	-52.02	15.85	-265.19***	-160.23*	-157.81**	-102.77	-57.16	-228.58***	-22.84
	(50.03)	(117.61)	(47.90)	(50.65)	(102.10)	(84.71)	(71.52)	(73.92)	(60.69)	(77.76)	(71.36)
Graduated X Year 2	276.28***	-517.05***	101.31	160.01**	-33.49	-120.14	24.94	-15.62	135.56	-189.95**	124.06
	(74.77)	(125.70)	(65.00)	(72.22)	(144.69)	(98.32)	(94.98)	(95.50)	(89.18)	(95.19)	(90.39)
Graduated X Year 3	623.62***	-77.71	485.81***	498.28***	360.44**	268.70**	413.52***	386.96***	495.56***	241.84**	392.44***
	(98.52)	(145.91)	(81.14)	(93.42)	(172.54)	(112.96)	(126.98)	(129.53)	(106.95)	(111.78)	(113.55)
Graduated X Year 4	674.22***	547.63***	623.63***	564.34***	580.29***	582.36***	674.62***	609.56***	580.50***	530.65***	504.23***
	(107.25)	(169.41)	(91.29)	(105.16)	(192.13)	(133.03)	(144.30)	(152.71)	(120.26)	(124.99)	(133.17)
Graduated X Year 5	655.55***	601.46***	660.49***	604.01***	568.00***	519.88***	715.58***	610.99***	611.48***	547.91***	444.23***
	(117.35)	(187.77)	(100.88)	(117.69)	(205.14)	(144.23)	(156.32)	(162.10)	(136.47)	(140.32)	(147.42)
Relative Quarter FE	X	X	X	X	X	X	X	X	X	X	X
Person FE	X	X	X	X	X	X	X	X	X	X	X
Age Bin X Relative Quarter FE	X	X	X	X	X	X	X	X	X	X	X
Calendar Quarter FE	X	X	X	X	X	X	X	X	X	X	X
Comp. Mean - Year 5	2,172	2,898	2,298	2,137	2,663	2,629	2,286	2,110	2,473	2,616	2,699
$P(\hat{\beta}_{Grad}^{Pre1-8} = 0)$	1.000	1.000	0.557	1.000	0.777	1.000	1.000	0.898	0.719		
$P(\hat{\beta}_{Enroll}^{Pre1-8} = 0)$	1.000	0.995	0.999	0.999	0.987	0.862	0.997	0.990	1.000	1.000	0.998
Graduation Rate	0.257	0.175	0.237	0.253	0.209	0.229	0.218	0.182	0.284	0.229	0.386
R^2	0.45	0.57	0.51	0.45	0.55	0.55	0.55	0.50	0.53	0.55	0.53
Observations	211,240	166,960	249,680	171,720	72,200	206,760	171,440	117,400	134,840	112,440	74,840
Individuals	5,281	4,174	6,242	4,293	1,805	5,169	4,286	2,935	3,371	2,811	1,871

Notes: Data come from TEC application records linked to UI earnings data from the Indiana Department of Workforce Development, TEC enrollment records from Goodwill, and high school enrollment records from the Indiana Department of Education. Time is measured in quarters relative to application date. The outcome is quarterly earnings (2014Q1 USD), winsorized at 99%. Non-employment is coded as zero earnings. All columns use a balanced panel from quarter -20 to quarter 19. All columns report the results of a 'doubly robust' specification that includes person, calendar quarter, and relative quarter-age ventile fixed effects and re-weights using inverse propensity score weights. See text for details. The sample varies across columns. Columns (1) and (2) split the main sample of all TEC applicants from January 2013 through June 2015 with any pre-application MPH record by age, according to birthdate on the TEC application. Column (3) limits the main sample to those with a pre-application high school enrollment record. Columns (4)-(9) further limit the sub-sample from column (3) based on characteristics from K-12 school records: receipt of free or reduced-price lunch, applying to an Indianapolis school, and above/below median absence rates. Column (10) and (11) limit the sample to TEC applicants with enrollment records, splitting by whether the student completed any credits for remedial classes. Standard errors clustered by individual are in parentheses. Statistical significance at the 10, 5, and 1 percent levels are denoted respectively by *, **, and ***.

Table A-9: Heterogeneous Effects of Enrollment and Graduation from The Excel Center on Quarterly Earnings

	All	White	Black	White	Black
		Female	Female	Male	Male
	(1)	(2)	(3)	(4)	(5)
Enrolled X Year 1	-101.57**	-69.94	1.81	-262.33***	-50.15
	(49.91)	(73.93)	(134.77)	(101.04)	(76.29)
Enrolled X Year 2	56.63	133.89	369.27**	-187.46	169.08*
	(64.60)	(101.56)	(183.69)	(170.80)	(96.97)
Enrolled X Year 3	101.11	195.85*	279.83	-309.31	263.20**
	(85.26)	(114.79)	(178.56)	(270.21)	(115.29)
Enrolled X Year 4	135.17	293.39**	226.51	-285.42	327.80**
	(89.87)	(125.18)	(177.67)	(311.16)	(131.97)
Enrolled X Year 5	204.60**	313.52**	264.79	30.59	453.53***
	(100.92)	(145.50)	(164.15)	(351.91)	(136.48)
Graduated X Year 1	-52.02	-8.32	-12.60	-70.70	-0.91
	(47.90)	(69.66)	(93.51)	(91.47)	(97.23)
Graduated X Year 2	101.31	325.50***	8.50	125.56	147.15
	(65.00)	(110.53)	(137.26)	(162.02)	(149.57)
Graduated X Year 3	485.81***	463.68***	382.47**	601.09**	289.01*
	(81.14)	(129.58)	(155.51)	(233.04)	(161.36)
Graduated X Year 4	623.63***	719.34***	304.88*	740.79***	405.21*
	(91.29)	(153.83)	(168.14)	(282.82)	(232.69)
Graduated X Year 5	660.49***	768.70***	143.82	933.36***	431.48**
	(100.88)	(164.15)	(188.57)	(360.98)	(208.69)
Relative Quarter FE	X	X	X	X	X
Person FE	X	X	X	X	X
Calendar Quarter FE	X	X	X	X	X
Age Bin X Rel. Quarter FE	X	X	X	X	X
Comp. Mean - Year 5	2,298	1,585	2,262	3,006	1,822
$P(\hat{\beta}_{Enroll}^{Pre1-8} = 0)$	0.557	0.948	0.852	0.981	0.997
$P(\hat{\beta}_{Grad}^{Pre1-8} = 0)$	0.999	0.921	0.562	0.968	0.793
Graduation Rate	0.235	0.285	0.226	0.239	0.166
R^2	0.51	0.45	0.54	0.50	0.46
Observations	249,680	51,680	55,440	39,640	$47,\!320$
Individuals	6,242	1,292	1,386	991	1,183

Notes: Data come from TEC application records linked to UI earnings data from the Indiana Department of Workforce Development, TEC enrollment records from Goodwill, and high school enrollment records from the Indiana Department of Education. Time is measured in quarters relative to application date. The outcome is quarterly earnings (2014Q1 USD), winsorized at 99%. Non-employment is coded as zero earnings. All columns use a balanced panel from quarter -20 to quarter 19. All columns report the results of a 'doubly robust' specification that includes person, calendar quarter, and relative quarter-age ventile fixed effects and re-weights using inverse propensity score weights. See text for details. The sample varies across columns. Column (1) limits the main sample to those with a pre-application high school enrollment record. Columns (2)-(5) further limit the sub-sample from column (3) based on race and gender characteristics from K-12 school records. Standard errors clustered by individual are in parentheses. Statistical significance at the 10, 5, and 1 percent levels are denoted respectively by *, **, and ***.

Table A-10: Marginal Value of Public Funds Calculations

	5-Year	7-Year	20-Year	40-Year	40-Year	40-Year
	Impacts	Impacts	Impacts	Impacts	Impacts	Impacts
Outcomes:	(1)	(2)	(3)	(4)	(5)	(6)
Enrolled at Excel Center						
NPV of After-Tax Earnings Gains	2,559	4,907	8,415	34,063	24,073	26,680
	[1,269, 3,871]	[2,919, 6,950]	[5,267, 11,573]	[22,217, 46,101]	$[15,622,\ 32,629]$	[17,533, 35,904]
Cost Net of Fiscal Savings	6,809	$6,\!560$	6,188	1,648	3,330	4,248
	[6,702, 6,913]	[6,374, 6,741]	[5,878, 6,491]	[90, 3,313]	[2,244, 4,489]	[3,290, 5,198]
MVPF	0.38	0.75	1.36	20.67	7.23	6.28
	[0.18, 0.58]	[0.43, 1.09]	[0.81, 1.97]	[6.78, 498.67]	[3.50, 14.46]	[3.37, 10.93]
Enrolled Only						
NPV of After-Tax Earnings Gains	1,491	2,841	4,859	$20,\!556$	14,488	$15,\!365$
	[152, 2,809]	[777, 4,875]	[1,669, 8,058]	[8,169, 33,126]	[5,612, 23,461]	[5,974, 24,869]
Cost Net of Fiscal Savings	6,153	6,010	5,795	4,128	4,773	4,680
	[6,042, 6,257]	[5,818, 6,195]	[5,477, 6,107]	[2,798, 5,416]	[3,833, 5,684]	[3,693, 5,645]
MVPF	0.24	0.47	0.84	4.98	3.04	3.28
	[0.02, 0.47]	[0.13, 0.84]	[0.27, 1.47]	[1.51, 11.83]	[0.99, 6.12]	[1.06, 6.73]
Graduated						
NPV of After-Tax Earnings Gains	$6,\!266$	12,074	20,750	80,917	$57,\!324$	65,932
	[4,078, 8,434]	[8,675, 15,376]	[15,386, 25,966]	[62,402, 99,835]	[44,035, 70,842]	[50,121, 81,432]
Cost Net of Fiscal Savings	9,086	8,469	7,548	-6,956	-1,675	2,750
	[8,903, 9,274]	[8,158, 8,791]	[7,029, 8,081]	[-10,798, -2,260]	[-4,302, 1,559]	[1,133, 4,406]
MVPF	0.69	1.43	2.75	∞	∞	23.98
	[0.44, 0.95]	[0.99, 1.88]	[1.91, 3.70]	$[\infty,\infty]$	$[28.22, \infty]$	[11.37, 71.73]
Discount Rate	3%	3%	3%	3%	5%	3%
Extrapolation Method	Actual	Lifecycle	Lifecycle	Lifecycle	Lifecycle	Constant

Notes: Data come from TEC application records linked to UI earnings data from the Indiana Department of Workforce Development. The sample includes all TEC applicants from January 2013 through June 2015 with any pre-application MPH record. The table reports estimates of the net present value of after-tax earnings gain, cost of the program net of fiscal savings, and the marginal value of public funds (MVPF). Outcomes are reported separately by type of student: any enrolled TEC student, students who exit before graduation, and graduates. Results across columns vary the assumed duration of earnings impacts (given by the column header), the discount rate, and the method for extrapolating earnings gains into the future. The lifecycle extrapolation method (columns 2 through 5) assumes Year-5 gains are held constant in proportion to the earnings of non-enrolled applicants, where non-enrolled applicant earnings follow the population age-earnings profile of high school non-completers observed in the 2015 ACS (Ruggles et al., 2020). The constant extrapolation method assumes the Year-5 earnings gains are held constant in dollar terms throughout the remainder of the time horizon. 95% confidence intervals are reported in brackets and come from 10,000 bootstrap samples of the data. See text and Hendren and Sprung-Keyser (2020) for additional details.

Table A-11: Effects of Enrollment and Graduation from The Excel Center on Industry Employment

	Any	Const.	Mfg.	Wholesale	Retail	Trans.	Business	Education	Health	Hotel &	Other	Other
							Services			Restaurant	Services	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Enrolled X Year 1	-0.007	-0.004**	0.001	-0.000	-0.001	-0.002	-0.020***	-0.001	0.003	0.014**	0.002	0.001
	(0.008)	(0.002)	(0.003)	(0.001)	(0.004)	(0.002)	(0.005)	(0.001)	(0.003)	(0.006)	(0.001)	(0.002)
Enrolled X Year 2	0.033***	-0.006***	0.001	-0.001	0.017***	-0.005*	0.004	-0.002	0.003	0.020***	0.002	0.001
	(0.009)	(0.002)	(0.003)	(0.002)	(0.005)	(0.003)	(0.006)	(0.002)	(0.004)	(0.007)	(0.002)	(0.003)
Enrolled X Year 3	0.056***	-0.006**	0.009**	-0.001	0.021***	-0.004	0.011*	-0.003*	0.005	0.026***	-0.003	0.001
	(0.010)	(0.003)	(0.004)	(0.002)	(0.005)	(0.003)	(0.006)	(0.002)	(0.004)	(0.007)	(0.002)	(0.003)
Enrolled X Year 4	0.054***	-0.007***	0.010**	0.003	0.010*	-0.001	0.016**	-0.002	0.006	0.016**	-0.000	0.004
	(0.010)	(0.003)	(0.004)	(0.002)	(0.005)	(0.003)	(0.006)	(0.002)	(0.005)	(0.007)	(0.002)	(0.003)
Enrolled X Year 5	0.053***	-0.004	0.014***	0.004**	0.015***	-0.004	0.011*	-0.003	0.005	0.010	0.001	0.005
	(0.010)	(0.003)	(0.004)	(0.002)	(0.005)	(0.003)	(0.006)	(0.002)	(0.005)	(0.007)	(0.002)	(0.003)
Graduated X Year 1	-0.047***	0.001	-0.007**	0.000	0.002	0.002	-0.019***	0.005	-0.006	-0.020**	0.002	-0.006*
	(0.012)	(0.002)	(0.004)	(0.002)	(0.007)	(0.004)	(0.007)	(0.004)	(0.005)	(0.009)	(0.003)	(0.003)
Graduated X Year 2	-0.009	0.002	-0.007*	-0.001	0.005	0.006	-0.006	0.012***	0.007	-0.029***	0.001	0.001
	(0.014)	(0.002)	(0.004)	(0.002)	(0.008)	(0.004)	(0.009)	(0.004)	(0.006)	(0.010)	(0.004)	(0.004)
Graduated X Year 3	0.048***	0.002	-0.008	0.003	0.011	0.008*	0.010	0.016***	0.025***	-0.031***	0.003	0.009*
	(0.014)	(0.003)	(0.005)	(0.003)	(0.008)	(0.004)	(0.010)	(0.004)	(0.007)	(0.010)	(0.004)	(0.005)
Graduated X Year 4	0.071***	0.005*	0.002	-0.000	0.017*	0.006	0.009	0.014***	0.035***	-0.026**	-0.000	0.009*
	(0.015)	(0.003)	(0.006)	(0.003)	(0.009)	(0.005)	(0.010)	(0.004)	(0.009)	(0.011)	(0.003)	(0.005)
Graduated X Year 5	0.069***	0.006	0.005	-0.002	0.013	0.005	0.012	0.013***	0.032***	-0.033***	0.001	0.016**
	(0.016)	(0.004)	(0.007)	(0.003)	(0.009)	(0.005)	(0.009)	(0.004)	(0.009)	(0.010)	(0.003)	(0.006)
Relative Quarter FE	X	X	X	X	X	X	X	X	X	X	X	X
Person FE	X	X	X	X	X	X	X	X	X	X	X	X
Calendar Quarter FE	X	X	X	X	X	X	X	X	X	X	X	X
Age Bin X Rel. Quarter FE	X	X	X	X	X	X	X	X	X	X	X	X
Com. Mean - Year 4	0.531	0.019	0.039	0.009	0.080	0.025	0.135	0.009	0.051	0.125	0.010	0.028
Com. Mean - Year 5	0.519	0.020	0.038	0.009	0.072	0.031	0.131	0.007	0.055	0.120	0.008	0.028
$P(\hat{\beta}_{Enroll}^{Pre1-8} = 0)$	0.876	0.143	0.692	0.863	0.791	0.914	0.037	0.668	0.723	0.246	0.889	0.708
$P(\hat{\beta}_{Grad}^{Pre1-8} = 0)$	0.808	0.441	0.013	0.585	0.318	0.102	0.002	0.231	0.842	0.430	0.110	0.417
R^2	0.43	0.35	0.33	0.27	0.25	0.28	0.21	0.35	0.40	0.28	0.27	0.23
Observations	378,600	378,600	378,600	378,600	378,600	378,600	378,600	378,600	378,600	378,600	378,600	378,600
Individuals	$9,\!465$	$9,\!465$	$9,\!465$	$9,\!465$	$9,\!465$	$9,\!465$	$9,\!465$	$9,\!465$	$9,\!465$	$9,\!465$	$9,\!465$	$9,\!465$

Table A-12: Effects of Enrollment and Graduation from The Excel Center on Health Industry Employment

	Any	Nursing	Vocational	Individual &	Home	General	Other
	Health	Home	Rehab	Family	Health	Medicine	Health
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Enrolled X Year 1	0.003	0.005**	-0.001	-0.000	0.001	-0.001	-0.000
	(0.003)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)
Enrolled X Year 2	0.003	-0.001	0.000	-0.001	0.002	-0.001	0.003
	(0.004)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.002)
Enrolled X Year 3	0.005	0.000	0.001	-0.001	0.002	-0.001	0.004
	(0.004)	(0.003)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)
Enrolled X Year 4	0.006	0.001	-0.001	0.001	0.000	-0.001	0.005**
	(0.005)	(0.003)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Enrolled X Year 5	0.005	-0.001	-0.001	0.001	0.002	-0.000	0.005**
	(0.005)	(0.003)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Graduated X Year 1	-0.006	-0.009***	0.001	0.000	-0.001	-0.002	0.004*
	(0.005)	(0.003)	(0.003)	(0.002)	(0.002)	(0.001)	(0.002)
Graduated X Year 2	0.007	0.000	0.010***	-0.002	-0.002	0.003	-0.002
	(0.006)	(0.004)	(0.003)	(0.002)	(0.002)	(0.002)	(0.003)
Graduated X Year 3	0.025***	0.002	0.015***	0.002	-0.001	0.006**	0.003
	(0.007)	(0.004)	(0.004)	(0.002)	(0.002)	(0.003)	(0.004)
Graduated X Year 4	0.035***	0.006	0.011**	0.003	-0.000	0.009***	0.006
	(0.009)	(0.004)	(0.005)	(0.003)	(0.002)	(0.003)	(0.004)
Graduated X Year 5	0.032***	0.005	0.010***	0.007**	-0.002	0.008**	0.004
	(0.009)	(0.005)	(0.004)	(0.003)	(0.002)	(0.003)	(0.005)
Relative Quarter FE	X	X	X	X	X	X	X
Person FE	X	X	X	X	X	X	X
Calendar Quarter FE	X	X	X	X	X	X	X
Age Bin X Rel. Quarter FE	X	X	X	X	X	X	X
Com. Mean - Year 4	0.051	0.016	0.005	0.007	0.006	0.007	0.011
Com. Mean - Year 5	0.055	0.017	0.005	0.007	0.006	0.006	0.013
$P(\hat{\beta}_{Enroll}^{Pre1-8} = 0)$	0.723	0.160	0.894	0.678	0.040	0.638	0.351
$P(\hat{\beta}_{Grad}^{Pre1-8} = 0)$	0.842	0.604	0.300	0.819	0.066	0.569	0.257
R^2	0.40	0.37	0.23	0.18	0.24	0.39	0.27
Observations	378,600	378,600	378,600	378,600	378,600	378,600	378,600
Individuals	9,465	$9,\!465$	$9,\!465$	9,465	9,465	9,465	9,465
	*	*	*	,		*	

Table A-13: Effects of The Excel Center on Professional Certificates

	Did Not Enroll	Enro	lled	Gradu	ated
	Mean	Coef.	S.E.	Coef.	S.E.
	(1)	(2)	(3)	(4)	(5)
Any	0.197	0.052***	(0.011)	0.427***	(0.016)
Agriculture	0.014	-0.002	(0.003)	0.007*	(0.004)
Construction	0.016	0.003	(0.003)	0.003	(0.004)
Manufacturing	0.017	0.014***	(0.004)	0.154***	(0.012)
Retail Trade	0.000	0.000	(0.000)	-0.000	(0.001)
Transportation & Warehousing	0.003	0.003	(0.002)	-0.005***	(0.001)
Information	0.009	-0.002	(0.003)	0.003	(0.003)
Scientific & Technical Services	0.023	0.009**	(0.004)	0.100***	(0.011)
Business Services	0.001	0.000	(0.001)	0.002	(0.002)
Finance	0.005	-0.001	(0.002)	0.002	(0.002)
Educational Services	0.043	0.005	(0.006)	0.089***	(0.010)
Healthcare & Social Assistance	0.058	0.016**	(0.007)	0.092***	(0.011)
Arts, Entertainment, & Recreation	0.001	0.001	(0.001)	0.000	(0.001)
Hotels & Restaurants	0.012	-0.003	(0.003)	0.009**	(0.004)
Other Services	0.025	-0.004	(0.004)	0.001	(0.004)
Public Adminministration	0.003	-0.001	(0.001)	-0.000	(0.001)
Life Skills	0.077	0.045***	(0.008)	0.165***	(0.015)
Business Skills	0.021	0.017***	(0.004)	0.173***	(0.013)
Observations	3,338	4,756		1,371	

Table A-14: Effects of The Excel Center on College Credits

	Did Not Enroll	Enrol	lled	Gradu	ated
	Mean	Coef.	S.E.	Coef.	S.E.
	(1)	(2)	(3)	(4)	(5)
Any	0.115	-0.026***	(0.007)	0.211***	(0.015)
Agriculture	0.001	-0.000	(0.001)	0.001	(0.001)
Construction	0.004	-0.001	(0.001)	0.005	(0.004)
Manufacturing	0.003	-0.001	(0.001)	0.006**	(0.003)
Transportation & Warehousing	0.000	0.000***	(.)	0.002	(0.002)
Information	0.001	-0.001	(0.001)	0.001	(0.001)
Scientific & Technical Services	0.014	-0.004	(0.003)	0.039***	(0.007)
Business Services	0.003	-0.001	(0.002)	0.002	(0.002)
Educational Services	0.007	-0.002	(0.002)	0.013***	(0.004)
Healthcare & Social Assistance	0.035	-0.008*	(0.004)	0.071***	(0.009)
Arts, Entertainment, & Recreation	0.001	-0.000	(0.001)	0.002	(0.001)
Hotels & Restaurants	0.001	-0.000	(0.001)	0.008***	(0.003)
Other Services	0.004	-0.002	(0.001)	0.009**	(0.003)
Public Adminministration	0.005	0.002	(0.002)	0.005	(0.003)
Business Skills	0.012	-0.002	(0.002)	0.033***	(0.007)
Liberal Arts	0.036	-0.005	(0.004)	0.046***	(0.009)
Observations	2 220	4 75G		1 971	
Observations	3,338	4,756		1,371	

Table A-15: Effects of The Excel Center on Certificate-Predicted Industry Employment

	Did Not Enroll	Enrol	led	Gradu	ated
	Mean	Coef.	S.E.	Coef.	S.E.
	(1)	(2)	(3)	(4)	(5)
Any	0.512	0.008***	(0.001)	0.094***	(0.005)
Construction	0.030	-0.000	(0.000)	-0.001	(0.001)
Manufacturing	0.106	-0.002***	(0.001)	-0.015***	(0.003)
Wholesal Trade	0.014	-0.000***	(0.000)	-0.003***	(0.000)
Retail Trade	0.066	0.001**	(0.001)	0.000	(0.001)
Transportation & Warehousing	0.022	-0.000*	(0.000)	-0.004***	(0.000)
Business Services	0.085	-0.000	(0.000)	-0.013***	(0.001)
Educational Services	0.009	-0.000***	(0.000)	-0.003***	(0.000)
Healthcare & Social Assistance	0.052	0.003***	(0.001)	0.059***	(0.004)
Hotels & Restaurants	0.095	0.007***	(0.001)	0.080***	(0.003)
Other Services	0.013	-0.000	(0.000)	-0.003***	(0.000)
Other	0.037	-0.000	(0.000)	-0.007***	(0.001)
$Health care\ Sub\mbox{-}Industries$, ,		, ,
Nursing Home	0.014	0.001***	(0.000)	0.006***	(0.001)
Vocational Rehabilitation	0.003	0.000	(0.000)	-0.000***	(0.000)
Individual & Family	0.005	0.000	(0.000)	0.002***	(0.000)
Home Health	0.004	0.001***	(0.000)	0.014***	(0.001)
General Medicine	0.007	-0.000***	(0.000)	-0.003***	(0.000)
Other Health	0.020	0.002***	(0.000)	0.040***	(0.004)
Observations	3,338	4,756		1,371	

Notes: Data come from TEC application records linked to UI earnings data from the Indiana Department of Workforce Development. The sample is a cross section of all TEC applicants from January 2013 through June 2015 with any pre-application MPH record. The outcome is the predicted probability of employment in an industry based on types of certificates obtained. All columns are re-weighted using inverse propensity score weights. Standard errors clustered by person are in parentheses. Statistical significance at the 10, 5, and 1 percent levels are denoted respectively by *, ***, and ****.

Table A-16: Effects of The Excel Center on Credit-Predicted Industry Employment

	Did Not Enroll	Enrol	lled	Gradu	ated
	Mean	Coef.	S.E.	Coef.	S.E.
	(1)	(2)	(3)	(4)	(5)
Any	0.507	0.001	(0.001)	0.054***	(0.002)
Construction	0.030	0.000	(0.001)	0.003***	(0.001)
Manufacturing	0.104	0.001*	(0.000)	-0.001	(0.001)
Wholesal Trade	0.014	-0.000	(0.000)	0.000	(0.000)
Retail Trade	0.065	0.000	(0.000)	0.009***	(0.001)
Transportation & Warehousing	0.022	-0.000	(0.000)	-0.000	(0.000)
Business Services	0.085	0.000	(0.000)	0.001	(0.000)
Educational Services	0.009	-0.000	(0.000)	0.001**	(0.000)
Healthcare & Social Assistance	0.051	-0.001	(0.001)	0.019***	(0.002)
Hotels & Restaurants	0.094	0.002***	(0.000)	0.013***	(0.001)
Other Services	0.013	-0.000	(0.000)	0.001***	(0.000)
Other	0.037	-0.000	(0.000)	0.010***	(0.001)
$Health care\ Sub\mbox{-}Industries$,		,
Nursing Home	0.013	-0.000	(0.000)	0.004***	(0.000)
Vocational Rehabilitation	0.003	-0.000	(0.000)	0.001***	(0.000)
Individual & Family	0.004	-0.000	(0.000)	0.001***	(0.000)
Home Health	0.004	-0.000***	(0.000)	0.001***	(0.000)
General Medicine	0.007	-0.000	(0.000)	0.005***	(0.001)
Other Health	0.020	-0.000	(0.000)	0.006***	(0.001)
Observations	3,338	4,756		1,371	

Notes: Data come from TEC application records linked to UI earnings data from the Indiana Department of Workforce Development. The sample is a cross section of all TEC applicants from January 2013 through June 2015 with any pre-application MPH record. The outcome is the predicted probability of employment in an industry based on types of college credits earned. All columns are re-weighted using inverse propensity score weights. Standard errors clustered by person are in parentheses. Statistical significance at the 10, 5, and 1 percent levels are denoted respectively by *, ***, and ****.

Table A-17: Effects of Enrollment and Graduation from The Excel Center on Industry Employment, Black Females

	Any	Const.	Mfg.	Wholesale	Retail	Trans.	Business	Education	Health	Hotel &	Other	Other
							Services			Restaurant	Services	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Enrolled X Year 1	-0.033	-0.000	0.004	0.002	-0.012	0.013	-0.041	-0.000	-0.014	0.017	0.000	-0.002
	(0.034)	(0.000)	(0.004)	(0.002)	(0.018)	(0.009)	(0.025)	(0.004)	(0.023)	(0.021)	(0.002)	(0.013)
Enrolled X Year 2	0.041	-0.000	0.002	0.002	-0.001	0.009	0.010	-0.003	-0.011	0.057**	-0.002	-0.022
	(0.029)	(0.000)	(0.006)	(0.002)	(0.028)	(0.011)	(0.022)	(0.004)	(0.015)	(0.027)	(0.004)	(0.015)
Enrolled X Year 3	0.053*	-0.001	-0.001	0.001	-0.045	0.013	-0.010	0.001	0.006	0.100**	-0.001	-0.011
	(0.031)	(0.001)	(0.006)	(0.002)	(0.047)	(0.010)	(0.029)	(0.008)	(0.018)	(0.042)	(0.005)	(0.010)
Enrolled X Year 4	0.053	-0.003	-0.002	0.003	-0.016	0.015	-0.003	0.009	0.000	0.059*	0.006*	-0.015
	(0.035)	(0.002)	(0.008)	(0.003)	(0.027)	(0.012)	(0.031)	(0.008)	(0.023)	(0.033)	(0.003)	(0.014)
Enrolled X Year 5	0.059*	-0.002	0.004	0.004	0.038***	0.008	-0.021	0.014*	0.008	0.055*	0.002	-0.050*
	(0.032)	(0.001)	(0.007)	(0.003)	(0.014)	(0.014)	(0.027)	(0.008)	(0.025)	(0.031)	(0.004)	(0.025)
Graduated X Year 1	0.003	0.000	-0.012	0.002	0.039*	0.008	0.007	-0.006**	-0.008	-0.019	0.003	-0.012**
	(0.027)	(0.000)	(0.008)	(0.004)	(0.023)	(0.007)	(0.018)	(0.003)	(0.012)	(0.021)	(0.003)	(0.005)
Graduated X Year 2	-0.033	0.000	-0.018**	0.006	0.022	-0.002	-0.020	0.021	0.023	-0.055**	0.000	-0.012
	(0.032)	(0.000)	(0.009)	(0.005)	(0.021)	(0.010)	(0.021)	(0.017)	(0.019)	(0.025)	(0.004)	(0.007)
Graduated X Year 3	0.032	-0.000	-0.010	0.009	0.003	0.005	-0.034	0.038*	0.051**	-0.044*	0.011*	-0.005
	(0.030)	(0.000)	(0.009)	(0.007)	(0.022)	(0.013)	(0.020)	(0.022)	(0.022)	(0.026)	(0.006)	(0.009)
Graduated X Year 4	0.015	0.000	-0.016*	0.003	0.008	0.013	-0.040**	0.028	0.043*	-0.052*	-0.000	0.026*
	(0.033)	(0.000)	(0.010)	(0.005)	(0.021)	(0.013)	(0.020)	(0.022)	(0.023)	(0.027)	(0.005)	(0.015)
Graduated X Year 5	-0.018	-0.000	-0.015	-0.002	0.006	0.007	-0.009	0.015	0.000	-0.053**	-0.002	0.034*
	(0.034)	(0.000)	(0.010)	(0.004)	(0.023)	(0.010)	(0.020)	(0.009)	(0.025)	(0.026)	(0.004)	(0.018)
Relative Quarter FE	X	X	X	X	X	X	X	X	X	X	X	X
Person FE	X	X	X	X	X	X	X	X	X	X	X	X
Calendar Quarter FE	X	X	X	X	X	X	X	X	X	X	X	X
Age Bin X Rel. Quarter FE	X	X	X	X	X	X	X	X	X	X	X	X
Com. Mean - Year 4	0.676	0.003	0.018	0.002	0.124	0.019	0.198	0.006	0.109	0.143	0.003	0.050
Com. Mean - Year 5	0.655	0.002	0.013	0.003	0.057	0.029	0.185	0.003	0.113	0.145	0.006	0.101
$P(\hat{\beta}_{Enroll}^{Pre1-8} = 0)$	0.983	0.611	0.308	0.545	0.849	0.200	0.429	0.223	0.151	0.358	0.589	0.578
$P(\hat{\beta}_{Grad}^{Pre1-8} = 0)$	0.224	0.633	0.421	0.956	0.192	0.104	0.237	0.444	0.679	0.077	0.216	0.869
R^2	0.48	0.07	0.18	0.24	0.20	0.19	0.21	0.27	0.35	0.28	0.21	0.21
Observations	$55,\!440$	$55,\!440$	$55,\!440$	55,440	$55,\!440$	$55,\!440$	$55,\!440$	55,440	$55,\!440$	55,440	$55,\!440$	$55,\!440$
Individuals	1,386	1,386	1,386	1,386	1,386	1,386	1,386	1,386	1,386	1,386	1,386	1,386

Table A-18: Effects of Enrollment and Graduation from The Excel Center on Industry Employment, White Females

	Any C	Const.	Mfg.	Wholesale	Retail	Trans.	Business	Education	Health	Hotel &	Other	Other
							Services			Restaurant	Services	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	` '	0.002	0.001	0.001	-0.026*	0.003	-0.003	-0.000	-0.002	0.051**	0.000	0.001
(0.	.026) (0	0.002)	(0.003)	(0.001)	(0.015)	(0.004)	(0.014)	(0.002)	(0.011)	(0.021)	(0.006)	(0.005)
Enrolled X Year 2 0.0	051* -	0.000	-0.001	0.000	-0.015	-0.000	0.004	-0.004	0.011	0.045*	0.010*	0.002
(0.	.027) (0	0.002)	(0.006)	(0.001)	(0.017)	(0.003)	(0.012)	(0.003)	(0.011)	(0.025)	(0.006)	(0.004)
Enrolled X Year 3 0.	.043	$0.003^{'}$	0.002	-0.001	0.006	0.001	0.014	-0.005	-0.011	0.032	0.005	-0.001
(0.	.032) (0	0.002)	(0.008)	(0.002)	(0.018)	(0.004)	(0.012)	(0.004)	(0.020)	(0.026)	(0.005)	(0.006)
Enrolled X Year 4 0.0)78** ($0.002^{'}$	0.011	0.000	0.030*	0.001	0.013	-0.010**	0.012	0.007	0.008**	0.004
(0.	.033) (0	0.002)	(0.007)	(0.003)	(0.017)	(0.004)	(0.015)	(0.005)	(0.012)	(0.027)	(0.004)	(0.005)
Enrolled X Year 5 0.09	93*** ($0.002^{'}$	0.014*	0.001	0.015	0.002	0.010	-0.004	0.020*	0.021	0.010**	0.004
(0.	.034) (0	0.004)	(0.007)	(0.002)	(0.019)	(0.004)	(0.015)	(0.003)	(0.011)	(0.026)	(0.004)	(0.006)
Graduated X Year 1 -0.0	053** -	-0.003	-0.001	-0.001	0.005	-0.000	-0.025**	0.002	-0.002	-0.028	-0.000	0.000
(0.	.025) (0	0.002)	(0.005)	(0.001)	(0.017)	(0.003)	(0.012)	(0.003)	(0.009)	(0.021)	(0.006)	(0.007)
Graduated X Year 2 0.	.030	0.002	-0.004	-0.000	0.028	0.006	-0.006	0.007	0.029**	-0.040*	0.001	0.009
(0.	.029) (0	0.003)	(0.006)	(0.002)	(0.019)	(0.005)	(0.015)	(0.005)	(0.013)	(0.024)	(0.007)	(0.009)
Graduated X Year 3 0.0)74**	0.002	-0.008	0.005	0.017	0.005	-0.012	0.022***	0.055***	-0.030	0.006	0.012
(0.	.032) (0	0.004)	(0.007)	(0.005)	(0.019)	(0.005)	(0.015)	(0.008)	(0.017)	(0.024)	(0.007)	(0.009)
Graduated X Year 4 0.08	89***	0.003	0.002	0.003	0.029	0.001	-0.014	0.023***	0.043***	-0.028	-0.001	0.029**
(0.	.033) (0	0.004)	(0.009)	(0.004)	(0.020)	(0.004)	(0.016)	(0.008)	(0.015)	(0.023)	(0.005)	(0.012)
Graduated X Year 5 0.10	08***	0.002	-0.004	0.001	0.024	0.007	0.009	0.025**	0.049***	-0.034	0.002	0.025**
(0.	.033) (0	0.005)	(0.009)	(0.004)	(0.019)	(0.006)	(0.017)	(0.010)	(0.017)	(0.023)	(0.006)	(0.012)
Relative Quarter FE	X	X	X	X	X	X	X	X	X	X	X	X
Person FE	X	X	X	X	X	X	X	X	X	X	X	X
Calendar Quarter FE	X	X	X	X	X	X	X	X	X	X	X	X
Age Bin X Rel. Quarter FE	X	X	X	X	X	X	X	X	X	X	X	X
Com. Mean - Year 4 0.	.387 (0.001	0.013	0.003	0.064	0.005	0.070	0.009	0.034	0.177	0.002	0.010
Com. Mean - Year 5 0.	.343	0.004	0.012	0.002	0.066	0.004	0.069	0.002	0.035	0.138	0.001	0.011
$P(\hat{\beta}_{Enroll}^{Pre1-8} = 0) 0.$.801	0.351	0.109	0.443	0.060	0.828	0.526	0.380	0.573	0.962	0.044	0.934
	.769	0.176	0.068	0.594	0.522	0.945	0.288	0.131	0.538	0.381	0.767	0.450
	0.41	0.17	0.16	0.09	0.22	0.14	0.15	0.23	0.34	0.27	0.30	0.14
		51,680	51,680	51,680	51,680	51,680	51,680	51,680	51,680	51,680	51,680	51,680
		1,292	1,292	1,292	1,292	1,292	1,292	1,292	1,292	1,292	1,292	1,292

Table A-19: Effects of Enrollment and Graduation from The Excel Center on Industry Employment, Black Males

Caraduated X Year 3 Character Services Charac	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	
$ \begin{array}{c} \text{Enrolled X Year 2} \\ \text{Co.}029 \\ \text{Co.}030 \\ \text{Co.}029 \\ \text{Co.}030 \\$	nrolled X Year 1
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	
$ \begin{array}{c} \text{Enrolled X Year 3} \\ Colored Model Normal National Normal National Normal National Normal National $	nrolled X Year 2
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	nrolled X Year 3
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$\begin{array}{cccccccccccccccccccccccccccccccccccc$	nrolled X Year 4
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	nrolled X Year 5
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	raduated X Year 1
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	raduated X Year 2
(0.040) (0.008) (0.010) (0.005) (0.023) (0.013) (0.031) (0.002) (0.011) (0.038) (0.017) (0.018) (0.0	
	raduated X Year 3
Graduated X Year 4	
Graduleta II 1000 0.001 0.002 -0.000 0.000 -0.012 0.000 0.001 0.000 -0.020 -0.003 0.00	raduated X Year 4
(0.044) (0.005) (0.015) (0.006) (0.025) (0.013) (0.029) (0.006) (0.015) (0.037) (0.005) (0.015) (0.018) (0.0	
Graduated X Year 5 0.091^* 0.010 0.002 0.001 0.035 -0.001 0.015 0.011 0.029 -0.017 0.009 -0.00	raduated X Year 5
(0.047) (0.008) (0.014) (0.008) (0.026) (0.014) (0.029) (0.007) (0.020) (0.037) (0.009) (0.014) (0.0	
	elative Quarter FE
Person FE X X X X X X X X X X X X X X X X X X	erson FE
	alendar Quarter FE
Age Bin X Rel. Quarter FE $$ X $$	ge Bin X Rel. Quarter FE
Com. Mean - Year 4 0.497 0.012 0.014 0.007 0.080 0.034 0.170 0.008 0.029 0.124 0.007 0.01	om. Mean - Year 4
Com. Mean - Year 5	om. Mean - Year 5
$P(\hat{\beta}_{Enroll}^{Pre1-8} = 0) \qquad 0.858 0.334 0.140 0.942 0.836 0.390 0.298 0.432 0.685 0.169 0.475 0.53$	$(\hat{\beta}_{Enrall}^{Pre1-8} = 0)$
$P(\hat{\beta}_{Grad}^{Pre1-8} = 0)$ 0.624 0.216 0.020 0.167 0.953 0.778 0.182 0.601 0.297 0.399 0.379 0.26	$(\hat{Q}Pre1-8 - 0)$
R^2 0.43 0.22 0.16 0.18 0.19 0.19 0.22 0.41 0.24 0.22 0.16 0.14	
Observations 47,320 47,320 47,320 47,320 47,320 47,320 47,320 47,320 47,320 47,320 47,320 47,320 47,320	bservations
Individuals 1,183 1,183 1,183 1,183 1,183 1,183 1,183 1,183 1,183 1,183 1,183	

Table A-20: Effects of Enrollment and Graduation from The Excel Center on Industry Employment, White Males

	Any	Const.	Mfg.	Wholesale	Retail	Trans.	Business	Education	Health	Hotel &	Other	Other
							Services			Restaurant	Services	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Enrolled X Year 1	-0.036	-0.009	0.001	-0.009	0.007	0.006	-0.041**	0.003*	-0.000	-0.001	0.001	0.009
	(0.028)	(0.009)	(0.008)	(0.007)	(0.019)	(0.004)	(0.019)	(0.002)	(0.006)	(0.022)	(0.007)	(0.007)
Enrolled X Year 2	-0.010	-0.029*	0.017	-0.008	0.047**	-0.019*	-0.016	0.000	-0.004	-0.016	0.007	0.012*
	(0.032)	(0.017)	(0.013)	(0.005)	(0.020)	(0.010)	(0.020)	(0.002)	(0.007)	(0.030)	(0.006)	(0.007)
Enrolled X Year 3	0.018	-0.055*	0.016	-0.010	0.046**	-0.010	0.055***	0.001	-0.007	0.006	-0.026**	0.004
	(0.045)	(0.029)	(0.015)	(0.010)	(0.021)	(0.008)	(0.020)	(0.002)	(0.007)	(0.029)	(0.010)	(0.010)
Enrolled X Year 4	0.004	-0.051*	0.030**	-0.011	0.007	0.000	0.039*	0.000	-0.004	0.010	-0.021	0.004
	(0.047)	(0.029)	(0.015)	(0.011)	(0.022)	(0.008)	(0.023)	(0.001)	(0.006)	(0.027)	(0.014)	(0.012)
Enrolled X Year 5	0.058	-0.034	0.033*	0.005	0.030	0.004	0.020	-0.002	0.003	0.027	-0.020	-0.004
	(0.047)	(0.031)	(0.017)	(0.007)	(0.019)	(0.010)	(0.022)	(0.002)	(0.005)	(0.025)	(0.014)	(0.013)
Graduated X Year 1	-0.035	-0.004	-0.007	0.004	0.008	0.000	-0.005	0.008	-0.012	0.001	-0.014	-0.013
	(0.029)	(0.005)	(0.009)	(0.005)	(0.023)	(0.009)	(0.022)	(0.010)	(0.011)	(0.025)	(0.009)	(0.013)
Graduated X Year 2	0.035	-0.004	-0.015	0.005	0.006	0.004	0.055*	0.023	-0.001	-0.022	-0.010	-0.006
	(0.037)	(0.009)	(0.013)	(0.005)	(0.024)	(0.014)	(0.032)	(0.019)	(0.012)	(0.030)	(0.011)	(0.015)
Graduated X Year 3	0.086**	-0.009	-0.015	0.005	0.025	0.010	0.060*	0.021	-0.002	-0.011	-0.007	0.009
	(0.036)	(0.011)	(0.016)	(0.009)	(0.027)	(0.013)	(0.034)	(0.019)	(0.011)	(0.027)	(0.008)	(0.016)
Graduated X Year 4	0.065	-0.009	0.007	0.003	0.044	0.008	0.021	0.004	0.009	-0.010	-0.009	-0.005
	(0.042)	(0.012)	(0.019)	(0.008)	(0.028)	(0.013)	(0.030)	(0.005)	(0.012)	(0.032)	(0.010)	(0.016)
Graduated X Year 5	0.034	-0.024	0.066*	-0.011	0.028	0.022	0.004	0.010	0.008	-0.052**	-0.009	-0.009
	(0.048)	(0.018)	(0.034)	(0.007)	(0.029)	(0.018)	(0.025)	(0.010)	(0.014)	(0.024)	(0.008)	(0.017)
Relative Quarter FE	X	X	X	X	X	X	X	X	X	X	X	X
Person FE	X	X	X	X	X	X	X	X	X	X	X	X
Calendar Quarter FE	X	X	X	X	X	X	X	X	X	X	X	X
Age Bin X Rel. Quarter FE	X	X	X	X	X	X	X	X	X	X	X	X
Com. Mean - Year 4	0.583	0.096	0.052	0.021	0.089	0.018	0.106	0.000	0.009	0.133	0.031	0.027
Com. Mean - Year 5	0.548	0.109	0.059	0.011	0.064	0.021	0.105	0.001	0.006	0.110	0.024	0.038
$P(\hat{\beta}_{Enroll}^{Pre1-8} = 0)$	0.688	0.172	0.668	0.593	0.465	0.203	0.219	0.297	0.678	0.398	0.658	0.105
$P(\hat{\beta}_{Grad}^{Pre1-8} = 0)$	0.736	0.363	0.121	0.412	0.559	0.490	0.300	0.290	0.514	0.898	0.345	0.150
R^2	0.45	0.29	0.24	0.16	0.23	0.25	0.19	0.21	0.30	0.24	0.24	0.17
Observations	39,640	39,640	39,640	39,640	39,640	39,640	39,640	39,640	39,640	39,640	39,640	39,640
Individuals	991	991	991	991	991	991	991	991	991	991	991	991

Table A-21: Effect of Enrollment and Graduation from The Excel Center on Employment Stability

		Number	of Quarters		Coef. of
	Employed	Continuous	Continuous	Continuous	Variation
		Employment	Employment	Employment	Earnings
		Any	in Sector	in Industry	J
	(1)	(2)	(3)	(4)	(5)
Panel A: Blac	k Females		` ,	` ,	
Graduated	-0.19	-0.14	0.09	0.43	-0.05
	(0.51)	(0.54)	(0.35)	(0.30)	(0.07)
Enrolled	-0.25	-0.57	0.10	0.08	-0.02
	(0.80)	(1.05)	(0.35)	(0.26)	(0.12)
Comp. Mean	13.08	10.27	5.22	4.36	1.31
R^2	0.00	0.00	0.00	0.00	0.00
Observations	1,386	1,386	1,386	1,386	1,320
Panel B: White	te Females				
Graduated	0.94*	0.89*	0.80**	0.96***	-0.35***
	(0.50)	(0.47)	(0.32)	(0.29)	(0.07)
Enrolled	1.76***	1.57***	0.86**	0.62*	-0.12
	(0.63)	(0.52)	(0.36)	(0.33)	(0.09)
Comp. Mean	8.01	5.81	3.81	3.36	1.77
R^2	0.02	0.02	0.02	0.02	0.03
Observations	1,293	1,293	1,293	1,293	1,168
Panel C: Blac					
Graduated	1.34**	1.55**	0.76*	0.81**	-0.19**
	(0.62)	(0.63)	(0.42)	(0.40)	(0.08)
Enrolled	1.24***	1.03**	0.71***	0.77***	-0.19**
	(0.43)	(0.41)	(0.21)	(0.19)	(0.07)
Comp. Mean	9.87	6.99	3.89	3.30	1.70
R^2	0.02	0.02	0.02	0.02	0.01
Observations	1,183	1,183	1,183	1,183	1,100
Panel D: Whi					
Graduated	0.89	1.32**	0.95**	1.07***	-0.27***
	(0.55)	(0.59)	(0.39)	(0.34)	(0.07)
Enrolled	0.57	-0.05	-0.42	-0.76*	0.01
	(0.52)	(0.55)	(0.45)	(0.44)	(0.08)
Comp. Mean	11.11	8.87	5.74	5.35	1.42
R^2	0.01	0.01	0.01	0.01	0.01
Observations	994	994	994	994	935

Notes: Data come from TEC application records linked to UI earnings data from the Indiana Department of Workforce Development. The sample includes all TEC applicants from January 2013 through June 2015 with any pre-application MPH record. This sample uses one observation per applicant. Outcomes are measured using post-application earnings data in quarter -20 to quarter 19. Column (1) counts the total number of quarters with positive earnings. Columns (2) count the longest string of consecutive quarters of with positive earnings. Columns (3) and (4) narrow to consecutive strings with the same 2-digit NAICS code and 6-digit NAICS code, respectively. Column (5) measures the coefficient of variation of total earnings across quarters within a person. All specifications measure simple post-period differences, weighted by inverse propensity scores. Standard errors clustered by individual are in parentheses. Statistical significance at the 10, 5, and 1 percent levels are denoted respectively by *, ***, and ****.

Table A-22: Effects of The Excel Center on Professional Certificates, Black Females

	Did Not Enroll	Enro	lled	Gradu	ated
	Mean	Coef.	S.E.	Coef.	S.E.
	(1)	(2)	(3)	(4)	(5)
Any	0.232	0.079**	(0.039)	0.434***	(0.037)
Agriculture	0.002	0.002	(0.003)	-0.003	(0.002)
Construction	0.003	-0.000	(0.004)	-0.001	(0.003)
Manufacturing	0.026	0.016	(0.012)	0.049**	(0.021)
Retail Trade	0.000	0.000***	(0.000)	0.000***	(0.000)
Transportation & Warehousing	0.000	0.000***	(0.000)	0.000***	(0.000)
Information	0.021	-0.015	(0.010)	-0.004	(0.004)
Scientific & Technical Services	0.025	0.004	(0.012)	0.134***	(0.032)
Business Services	-0.000	-0.000	(0.000)	0.005	(0.005)
Finance	0.000	0.001	(0.001)	0.001	(0.003)
Educational Services	0.090	0.005	(0.023)	0.071**	(0.030)
Healthcare & Social Assistance	0.091	0.030	(0.024)	0.138***	(0.033)
Arts, Entertainment, & Recreation	0.002	-0.002	(0.002)	-0.000	(0.000)
Hotels & Restaurants	0.014	-0.003	(0.007)	0.013	(0.010)
Other Services	0.022	-0.003	(0.009)	0.012	(0.013)
Public Adminministration	0.002	0.002	(0.003)	-0.004*	(0.002)
Life Skills	0.091	0.065***	(0.024)	0.228***	(0.039)
Business Skills	0.008	0.031***	(0.008)	0.267***	(0.035)
Observations	319	918		268	

Table A-23: Effects of The Excel Center on Professional Certificates, White Females

	Did Not Enroll	Enro	lled	Gradu	ated
	Mean	Coef.	S.E.	Coef.	S.E.
	(1)	(2)	(3)	(4)	(5)
Any	0.347	0.028	(0.046)	0.368***	(0.035)
Agriculture	0.029	-0.000	(0.012)	0.016	(0.013)
Construction	0.003	0.007	(0.005)	-0.003	(0.006)
Manufacturing	0.022	-0.004	(0.010)	0.148***	(0.025)
Retail Trade	0.003	0.000	(0.004)	-0.001	(0.004)
Transportation & Warehousing	-0.000	0.001	(0.001)	-0.001	(0.001)
Information	0.007	-0.002	(0.005)	0.000	(0.005)
Scientific & Technical Services	0.048	-0.007	(0.016)	0.051***	(0.019)
Business Services	0.001	0.001	(0.002)	-0.002	(0.002)
Finance	0.016	-0.006	(0.009)	0.013	(0.009)
Educational Services	0.110	0.038	(0.026)	0.183***	(0.033)
Healthcare & Social Assistance	0.135	0.022	(0.029)	0.081***	(0.031)
Arts, Entertainment, & Recreation	0.000	0.000***	(0.000)	0.000***	(0.000)
Hotels & Restaurants	0.014	0.002	(0.008)	0.000	(0.009)
Other Services	0.015	0.001	(0.010)	-0.012*	(0.007)
Public Adminministration	-0.000	0.003	(0.002)	0.008	(0.006)
Life Skills	0.143	0.015	(0.029)	0.205***	(0.034)
Business Skills	0.054	0.013	(0.018)	0.183***	(0.030)
Observations	283	814		325	

Table A-24: Effects of The Excel Center on Professional Certificates, Black Males

	Did Not Enroll	Enrol	led	Gradu	ated
	Mean	Coef.	S.E.	Coef.	S.E.
	(1)	(2)	(3)	(4)	(5)
Any	0.288	0.062*	(0.032)	0.367***	(0.051)
Agriculture	0.003	0.003	(0.004)	-0.006**	(0.003)
Construction	0.042	-0.006	(0.013)	0.026	(0.022)
Manufacturing	0.018	0.022**	(0.010)	0.167***	(0.038)
Retail Trade	0.000	0.000***	(0.000)	0.000***	(0.000)
Transportation & Warehousing	0.013	-0.006	(0.007)	0.001	(0.009)
Information	0.011	0.003	(0.008)	0.022	(0.016)
Scientific & Technical Services	0.033	0.043***	(0.014)	0.154***	(0.042)
Business Services	0.000	-0.000***	(.)	0.005	(0.005)
Finance	0.002	0.001	(0.003)	0.001	(0.005)
Educational Services	0.024	-0.012	(0.009)	0.026*	(0.015)
Healthcare & Social Assistance	0.059	0.022	(0.016)	0.074**	(0.033)
Arts, Entertainment, & Recreation	0.003	0.001	(0.004)	-0.000	(0.004)
Hotels & Restaurants	0.022	-0.014	(0.009)	0.025	(0.019)
Other Services	0.056	-0.017	(0.015)	0.004	(0.022)
Public Administration	0.008	-0.006	(0.006)	-0.003	(0.002)
Life Skills	0.099	0.079***	(0.023)	0.154***	(0.050)
Business Skills	0.021	0.028**	(0.011)	0.193***	(0.044)
Observations	344	751		149	

Table A-25: Effects of The Excel Center on Professional Certificates, White Males

	Did Not Enroll	Enrolled		Graduated	
	Mean	Coef.	S.E.	Coef.	S.E.
	(1)	(2)	(3)	(4)	(5)
Any	0.481	-0.044	(0.045)	0.431***	(0.034)
Agriculture	0.061	-0.010	(0.019)	0.044*	(0.024)
Construction	0.080	-0.005	(0.023)	0.026	(0.027)
Manufacturing	0.041	0.034*	(0.018)	0.283***	(0.043)
Retail Trade	0.000	0.000***	(0.000)	0.000***	(0.000)
Transportation & Warehousing	0.003	0.027***	(0.008)	-0.027***	(0.008)
Information	0.013	0.010	(0.011)	-0.012	(0.010)
Scientific & Technical Services	0.053	-0.008	(0.019)	0.116***	(0.029)
Business Services	0.006	-0.001	(0.005)	0.008	(0.008)
Finance	0.004	0.005	(0.006)	-0.000	(0.008)
Educational Services	0.019	0.007	(0.012)	0.128***	(0.037)
Healthcare & Social Assistance	0.107	-0.015	(0.039)	0.070**	(0.031)
Arts, Entertainment, & Recreation	0.008	0.001	(0.009)	-0.005	(0.006)
Hotels & Restaurants	0.035	-0.022	(0.016)	0.008	(0.011)
Other Services	0.119	-0.033	(0.027)	0.006	(0.026)
Public Adminministration	0.004	-0.002	(0.005)	-0.002	(0.002)
Life Skills	0.140	0.064**	(0.031)	0.087**	(0.044)
Business Skills	0.059	0.008	(0.019)	0.097**	(0.038)
Observations	263	628		197	

Table A-26: Effects of The Excel Center on College Credits, Black Females

	Did Not Enroll	Enro	lled	Gradu	ated
	Mean	Coef.	S.E.	Coef.	S.E.
	(1)	(2)	(3)	(4)	(5)
Any	0.136	-0.017	(0.029)	0.215***	(0.037)
Agriculture	-0.000	0.001	(0.001)	-0.001	(0.001)
Construction	0.000	0.000***	(0.000)	0.000***	(0.000)
Manufacturing	0.002	-0.002	(0.002)	0.006	(0.006)
Transportation & Warehousing	0.000	0.000***	(0.000)	0.000***	(0.000)
Information	0.004	-0.004	(0.004)	0.004	(0.004)
Scientific & Technical Services	0.012	-0.003	(0.007)	0.009	(0.008)
Business Services	0.000	0.003*	(0.002)	0.001	(0.004)
Educational Services	0.010	-0.005	(0.006)	0.026**	(0.011)
Healthcare & Social Assistance	0.066	-0.014	(0.018)	0.107***	(0.030)
Arts, Entertainment, & Recreation	0.002	-0.001	(0.003)	-0.002	(0.002)
Hotels & Restaurants	0.003	-0.000	(0.003)	0.014	(0.011)
Other Services	-0.000	0.001	(0.001)	0.002	(0.003)
Public Adminministration	0.005	0.002	(0.004)	0.006	(0.007)
Business Skills	0.014	0.010	(0.013)	0.036**	(0.018)
Liberal Arts	0.035	-0.008	(0.014)	0.035**	(0.016)
Observations	319	918		268	

Table A-27: Effects of The Excel Center on College Credits, White Females

	Did Not Enroll	Enro	lled	Gradu	iated
	Mean	Coef.	S.E.	Coef.	S.E.
	(1)	(2)	(3)	(4)	(5)
Any	0.133	-0.046	(0.040)	0.202***	(0.031)
Agriculture	0.000	0.000	(0.000)	0.005	(0.005)
Construction	0.000	-0.000	(0.000)	0.003	(0.003)
Manufacturing	-0.000	0.001	(0.001)	-0.001	(0.001)
Transportation & Warehousing	0.000	0.000***	(0.000)	0.000***	(0.000)
Information	0.003	-0.002	(0.004)	0.002	(0.003)
Scientific & Technical Services	0.040	-0.033	(0.036)	0.027*	(0.015)
Business Services	0.005	-0.001	(0.005)	-0.002	(0.003)
Educational Services	0.007	-0.000	(0.005)	0.029**	(0.012)
Healthcare & Social Assistance	0.044	-0.004	(0.014)	0.069***	(0.020)
Arts, Entertainment, & Recreation	-0.000	0.002	(0.002)	-0.002	(0.002)
Hotels & Restaurants	0.000	0.002	(0.002)	0.001	(0.004)
Other Services	0.000	0.000	(0.000)	0.012*	(0.006)
Public Adminministration	0.001	0.001	(0.002)	0.016*	(0.010)
Business Skills	0.011	-0.004	(0.006)	0.020**	(0.010)
Liberal Arts	0.037	-0.007	(0.016)	0.063***	(0.020)
Observations	283	814		325	

Table A-28: Effects of The Excel Center on College Credits, Black Males

	Did Not Enroll	Enrol	lled	Gradu	ated
	Mean	Coef.	S.E.	Coef.	S.E.
	(1)	(2)	(3)	(4)	(5)
Any	0.078	-0.027	(0.017)	0.170***	(0.045)
Agriculture	0.000	0.000***	(0.000)	0.000***	(0.000)
Construction	0.012	-0.007	(0.007)	-0.000	(0.005)
Manufacturing	0.007	-0.005	(0.005)	0.004	(0.006)
Transportation & Warehousing	0.000	0.000	(0.000)	0.005	(0.005)
Information	0.000	-0.000***	(.)	0.011	(0.011)
Scientific & Technical Services	0.013	-0.003	(0.008)	0.046**	(0.018)
Business Services	0.003	-0.003	(0.003)	-0.000	(0.000)
Educational Services	0.000	0.004	(0.003)	-0.004	(0.003)
Healthcare & Social Assistance	0.007	0.000	(0.005)	-0.007**	(0.003)
Arts, Entertainment, & Recreation	0.000	0.000***	(0.000)	0.000***	(0.000)
Hotels & Restaurants	0.003	-0.001	(0.003)	0.010	(0.009)
Other Services	0.005	-0.002	(0.004)	0.027	(0.019)
Public Adminiministration	0.000	0.003*	(0.002)	0.003	(0.004)
Business Skills	0.011	-0.002	(0.006)	0.053	(0.035)
Liberal Arts	0.020	-0.007	(0.009)	0.054**	(0.024)
			. ,		,
Observations	344	751		149	

Table A-29: Effects of The Excel Center on College Credits, While Males

	Did Not Enroll	Enro	lled	Gradu	ated
	Mean	Coef.	S.E.	Coef.	S.E.
	(1)	(2)	(3)	(4)	(5)
Any	0.070	-0.016	(0.019)	0.166***	(0.036)
Agriculture	0.002	-0.002	(0.002)	0.006	(0.006)
Construction	0.006	0.003	(0.006)	0.004	(0.009)
Manufacturing	0.007	-0.003	(0.005)	0.031	(0.020)
Transportation & Warehousing	0.000	0.000***	(0.000)	0.000***	(0.000)
Information	0.006	-0.006	(0.006)	0.000	(0.000)
Scientific & Technical Services	0.019	-0.016*	(0.009)	0.022**	(0.010)
Business Services	0.000	0.000***	(0.000)	0.000***	(0.000)
Educational Services	0.010	-0.010	(0.007)	0.006	(0.006)
Healthcare & Social Assistance	0.006	-0.001	(0.007)	0.014	(0.010)
Arts, Entertainment, & Recreation	0.001	-0.001	(0.001)	0.015*	(0.009)
Hotels & Restaurants	0.000	0.000***	(0.000)	0.000***	(0.000)
Other Services	0.005	0.002	(0.006)	0.027	(0.017)
Public Adminiministration	0.002	0.006	(0.004)	0.002	(0.008)
Business Skills	0.005	0.003	(0.005)	0.012	(0.010)
Liberal Arts	0.017	0.005	(0.010)	0.044**	(0.020)
			•		. ,
Observations	263	628		197	

B Data Appendix

B.1 State Administrative Records

We measure education and labor market outcomes using administrative data from the Indiana Management Performance Hub (MPH). The data include quarterly wage records from the Indiana Department of Workforce Development (DWD); information on demographics, high school enrollment and graduation – including qualifying graduation exam (QGE) results – from the Indiana Department of Education (DOE); post-secondary education information from the Indiana Commission for Higher Education (CHE); and professional and course certificates and GED test results from DWD. All state administrative records are limited to what is observable in the state of Indiana, i.e. formal sector employment in Indiana and education obtained by public schools in Indiana.

In addition to the main sample of TEC applicants, we have these same administrative records for all recorded GED test takers in the MPH database. These records primarily cover January 2011 to January 2020. They include all people passing the GED. Coverage of unsuccessful and repeat attempts varies over time. We use data on all available GED takers to categorize higher education credits and certificates (see below). When we measure the return to the GED, we focus on a subset of people who took the test in Indiana between February and September 2014. This group has sufficient follow-up data to match our main sample and complete histories of unsuccessful and repeat tests.

B.1.1 Employment and Earnings

Employment and earnings records maintained by DWD come from the unemployment insurance (UI) system. Wages associated with quarterly UI records reflect the sum of all wages earned in a given quarter in UI-covered employment. We observe data from the first quarter of 2008 through the first quarter of 2020. This time frame allows us to observe applicants' employment and earnings outcomes at least five years before and after application for our primary sample. We winsorize earnings at the 99th percentile within each calendar quarter separately for our three comparison groups.²⁹ When identifying the 99th percentile, we include the implicit 0 values for individuals who do not have a wage record in a given quarter. We adjust earnings for inflation to first quarter 2014 values using the CPI-U Midwest.

We categorize employment by sector using NAICS codes. For people with multiple employers in a quarter, the data list the NAICS code for the employer that paid the most earnings. We construct NAICS industry groups based on the first two digits of the NAICS code. We concentrate on the most popular industries for our sample, including construction (23), manufacturing (31–33), wholesale (42), retail (44–45), transportation (48–49), business services (56), education (61), health care (62), hotels and restaurants (72), and other services (81). All remaining industries are classified as other. Additional detail is used to analyze employment trends in health care and social assistance. We use 4-digit NAICS codes to construct sub-sectors of health, include vocational rehab, general medicine, and home health care. All remaining health sectors are classified as "Other health." We adhere to all NAICS categorizations with the exception of daycare (62-4410), which we classify as education for our analysis.

 $^{^{29}}$ When winsorizing earnings for the GED and community college samples, we similarly winsorize separately by the relevant comparison groups.

B.1.2 Secondary Education

The MPH data includes secondary schooling records maintained by DOE. We observe enrollment records but only for secondary school enrollments that occurred within four years of starting ninth grade. The limit to four years means that we can measure enrollment in traditional schooling, which we use to define some baseline demographic and school experience controls. However, we cannot observe adult enrollment in or graduation from secondary school (TEC or otherwise) for most applicants in the administrative data. Instead, we focus on DOE reported results of the Indiana state Graduation Qualifying Exam (GQE).

We also observe GED test attempts from DWD, including test dates and test outcome (pass or fail). States use different but very similar tests for high school equivalency. In 2014, Indiana switched from the GED to the similar TASC High School Equivalency test. We refer to both of these tests as "the GED" and treat taking and passing them as interchangeable.

B.1.3 Certificates and Higher Education

We track professional and course certificates using DWD data. Common certificates for our study sample include, Preparing for College and Careers; Nutrition and Wellness; Child Development; Applied Digital Application and Responsibilities; and Technical Business Communications. These certificates do not track the date of certificate, so we consider all certificates earned as of the second quarter of 2020.

We categorize certificates into NAICS 2-digit industry codes in two ways. First, we categorize certificates directly based on course descriptions available through annually updated publications of "Indiana State Approved Course Titles and Descriptions." Certificates that were not closely associated with NAICS sectors could be classified as "Life Skills" or "Business Skills." Courses in these categories include "Preparing for College and Careers," "Technical Business Communication," or "Technology Lab." Second, we categorize certificates based on the empirical distribution of employment among GED test-takers who hold that certificate. To do this, we link all GED test-takers to their industry of employment in the third quarter of 2019. We group employment into sectors using the same NAICS categorization scheme described above. For each certificate, we estimate the share of certificate-earners who work in a given industry and use these industry shares to proxy for the probability of employment in a given sector for our TEC sample. Sector 2012.

We measure higher education participation using CHE data on college credits earned and attempted. These data cover only public schools in Indiana, but the vast majority of college-going for this population will be covered by such institutions. For example, Indiana's College Readiness Reports indicate that public schools in Indiana cover 79% of college-going even for the full population of Indianapolis Public Schools students. The data are reported by school year and we aggregate across schools. Common college credit programs for our sample include Medical/Health Management and Clinical Assistant/Specialist; Liberal Arts and Science; General Studies; Business Administration and Management; and Criminal Justice/Safety Studies.

³⁰Technical Business Communication and Technology Lab provide introductory information on communicating in the business place and using a suite of basic business products include Microsoft Office.

³¹For individuals in our TEC sample who have earned multiple certificates, we average the industry shares across the various earned certificates. Individuals who have not earned a certificate are assigned the industry distribution from the subset of GED-takers who also had not eared any certificates.

We also categorize credit programs into 2-digit NAICS industry codes in two ways. First, we directly code courses to industries informed by course definitions available through the National Center for Education Statistics' Classification of Instruction Programs (CIP) (National Center for Education Statistics, 2022). Courses that could not be associated with any NAICS 2-digit industry code could be classified as "Liberal Arts" (examples include humanities, liberal arts, and general studies) or "Business" (examples include business administration and management). Second, we categorize credit programs using the empirical distribution of employment among GED test-takers with at least one credit in a given field. We implement this method in the same way as for certificates.

B.2 Age Bins

In many specifications, we include interactions between a set of age bins and relative time fixed effects. We construct these age bins by identifying 20 age ventiles based on an applicant's integer age at the time of TEC application. In practice, this groups applicants into 15 age groups: 18 and under, 19, 20, 21, 22–23, 24, 25, 26–27, 28, 29–30, 31–32, 33–35, 36–39, 40–45, and 46 and older.

Table B-1: Certificate Classifications

Category DOE Code	Course Title
Agriculture	
5622	Tractor/Trailer Operation
5070	Advanced Life Science: Animals (L)
5072	Advanced Life Science: Foods (L)
5074	Advanced Life Science: Plants and Soils (L)
5002	Agribusiness Management
5088	Agriculture Power, Structure and Technology
5008	Animal Sciences
5022	Farm Management
5132	Horticultural Science
5056	Introduction to Agriculture, Food and Natural Resources
5170	Plant and Soil Science
5229	Sustainable Energy Alternatives
Business Services	
5592	Building and Facilities Management I
5593	Business & Facilities Maintenance I
5136	Landscape Management I
5137	Landscape Management II
Business Skills	•
5268	Advanced Business Management
4512	Applied Business Math
4560	Business Law and Ethics
5240	Business Technology Lab I
5244	Business Technology Lab II
5334	Consumer Economics
5966	Entrepreneurship and New Ventures
4518	Introduction to Business
4562	Principles of Business Management
4508	Technical Business Communications
5260	Work Based Learning, Business and Marketing
$\overline{Construction}$	3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3
4830	Construction Trades: Electrical I
4832	Construction Trades: Electrical II
4792	Introduction to Construction
Education	
5360	Advanced Child Development
5362	Child Development
5412	Early Childhood Education I
5406	Early Childhood Education II
5408	Education Professions I
0.100	Continued on next page

Table B-1 – continued from previous page

Category	DOE Code	Course Title
Finance		
	5258	Banking and Investment Careers
Health care		
	5340	Advanced Nutrition and Wellness
	5276	Anatomy & Physiology
	5206	Dental Assisting IV
	5203	Dental Careers I
	5204	Dental Careers II
	5210	Emergency Medical Services
	5282	Health Science Education I
	5284	Health Science Education II: Nursing
	5214	Health Science II: Pharmacy
	5215	Health Science II: Physical Therapy
	5286	Health Science II: Special Topics
	5366	Human Development and Wellness
	5336	Human and Social Services I
	5294	Integrated Health Sciences I
	5208	Intro to Community Health Services
	5213	Intro to Medical Assisting
	5272	Introduction to Health Science Careers
	5274	Medical Terminology
	5456	Nutrition Science Careers I
	5342	Nutrition and Wellness
	5216	PLTW Human Body Systems
	5217	PLTW Medical Interventions
	5218	PLTW Principles of Biomedical Sciences
	5207	Work Based Learning, Health Science
$\overline{Hotels \ \mathcal{E} \ R}$	estaurants	<u> </u>
	5346	Culinary Arts and Hospitality II: Culinary Arts
	5440	Culinary Arts and Hospitality Management
	5438	Introduction to Culinary Arts and Hospitality
	5982	Marketing in Hospitality
$\overline{Information}$	$\overline{\imath}$	
<i>J</i>	4790	Introduction to Communication
	5986	Radio and Television I
	5992	Radio and Television II
Life Skills		
J	4528	Digital Applications and Responsibility
	4540	Personal Financial Responsibility
	5254	Career Planning and Success Skills
	5364	Interpersonal Relationships
	-	Continued on next pag

Table B-1 – continued from previous page

Category	DOE Code	Course Title
	5484	Personal Resource Management and Family Finance
	5394	Preparing for College and Careers
	5256	Professional Career Internship
	5330	Adult Roles and Responsibilities
Manufactur	\overline{ring}	
	5608	Advanced Manufacturing I
	5606	Advanced Manufacturing II
	5888	Cabinet and Furniture Manufacturing
	5420	Fashion and Textile Careers I & II
	5102	Food Science
	4796	Introduction to Advanced Manufacturing and Logistics
	5380	Introduction to Fashion and Textiles
	4784	Introduction to Manufacturing
	5782	Precision Machining I
	5784	Precision Machining II
	5602	Warehouse Operations and Materials Handling
	5776	Welding Technology I
	5778	Welding Technology II
	5892	Work Based Learning, Trade and Industry
Other Servi	ices	
	X117	Auto Collision Repair Technology 1 & 2
	5514	Automotive Collision Repair I
	5544	Automotive Collision Repair II
	5510	Automotive Services Technology I
	5546	Automotive Services Technology II
	5802	Cosmetology I
	5806	Cosmetology II
	5620	Diesel Service Technology I
	5842	Recreational and Mobile Equipment I
Professiona	l & Science Te	
<u> </u>	4816	Aerospace Engineering PLTW
	5640	Architectural Drafting and Design I
	5610	Automation and Robotics I
	4820	Civil Engineering and Architecture PLTW
	5650	Civil Engineering and Architecture non PLTW
	5570	Commercial Photography
	4810	Computer Integrated Manufacturing PLTW
	5532	Computer Network Technology
	4534	Computer Programming I
	5236	Computer Programming II
	4801	Computer Science and Software Engineering PLTW
	1001	Continued on next pag

Table B-1 – continued from previous page

	DOE Code	m previous page Course Title
	5230	Computer Tech Support
	4800	Computers in Design and Production
	4826	Digital Electronics PLTW
	5684	Electronics and Computer Technology I
	4828	Engineering Design and Development PLTW
	5550	Graphic Design and Layout
	5572	Graphic Imaging Technology
	5232	Interactive Media
	4524	Introduction to Accounting
	4794	Introduction to Design Processes
	4812	Introduction to Engineering Design PLTW
	4802	Introduction to Engineering Design non PLTW
	5350	Introduction to Housing and Interior Design
	5990	Marketing Field Experience
	5234	Network Fundamentals
	4062	Photography
	4814	Principles of Engineering PLTW
	5644	Principles of Engineering non PLTW
	5914	Principles of Marketing
	5918	Strategic Marketing
	5601	Supply Chain Management and Logistics
	5530	Three D Computer Animation and Visualization
	5211	Veterinary Careers I
	5212	Veterinary Careers II
Public Admir	nistration	
	5822	Criminal Justice I
	5824	Criminal Justice II Advanced
	5820	Fire and Rescue I
	5826	Fire and Rescue II
Retail		
	5430	Consumer Service Careers I & II
	5962	Merchandising
Transportation	on	
	5520	Aviation Maintenance
	5528	Aviation Operations
	4798	Introduction to Transportation

Table B-2: Credit Classifications

Category		Course Title
Agriculture		
	01.0000	Agriculture, General
	03.0301	Fishing and Fisheries Sciences and Management
	03.0101	Natural Resources/Conservation, General
Business Se	ervices	
	52.0302	Accounting Technology/Technician and Bookkeeping
	52.0401	Administrative Assistant and Secretarial Science, General
	52.0407	Business/Office Automation/Technology/Data Entry
	52.0402	Executive Assistant/Executive Secretary
	52.1001	Human Resources Management/Personnel
		Administration, General
	52.1201	Management Information Systems, General
Business Si		, , , , , , , , , , , , , , , , , , ,
	52.0201	Business Administration and Management, General
	52.9999	Business, Management, Marketing, and Related
	32.0000	- Support Services, Other
	52.0101	Business/Commerce, General
	52.0701	Entrepreneurship/Entrepreneurial Studies
	52.0203	Logistics, Materials, and Supply Chain Management
	52.0203	Management Information Systems, General
	52.1201 52.0205	Operations Management and Supervision
	52.0203 52.0213	Organizational Leadership
$\overline{Construction}$		Organizational Leadership
Constructio		D '11' ./C E' '.1' M
	46.0499	Building/Construction Finishing, Management,
	40.0410	- and Inspection, Other
	46.0412	Building/Construction Site Management/Manager
	46.0201	Carpentry/Carpenter
	15.1001	Construction Engineering Technology/Technician
	46.0000	Construction Trades, General
	46.9999	Construction Trades, Other
	49.0202	Construction/Heavy Equipment/Earthmoving Equipment Operation
	46.0301	Electrical and Power Transmission Installation/Installer, General
	46.0399	Electrical and Power Transmission Installers, Other
	46.0302	Electrician
	47.0201	Heating, Air Conditioning, Ventilation and Refrigeration
		- Maintenance Technology/Technician
	46.0414	Insulator
	46.0101	Mason/Masonry
	47.0000	Mechanics and Repairers, General
	46.0502	Pipefitting/Pipefitter and Sprinkler Fitter
		Continued on next pag

Table B-2 – continued from previous page

Category	CIP Code	om previous page Course Title
<u></u>	46.0503	Plumbing Technology/Plumber
Education		34,
	13.0201	Bilingual and Multilingual Education
	19.0706	Child Development
	13.1210	Early Childhood Education and Teaching
	13.0101	Education, General
	13.1202	Elementary Education and Teaching
	13.1305	English/Language Arts Teacher Education
	19.0701	Human Development and Family Studies, General
	13.1311	Mathematics Teacher Education
	13.1205	Secondary Education and Teaching
	13.1099	Special Education and Teaching, Other
Fine Arts		
	50.0701	Art/Art Studies, General
	50.0501	Drama and Dramatics/Theatre Arts, General
	50.0799	Fine Arts and Art Studies, Other
	50.1002	Fine and Studio Arts Management
	50.0702	Fine/Studio Arts, General
	50.0913	Music Technology
	50.0901	Music, General
	31.0504	Sport and Fitness Administration/Management
Health care		
	51.0999	Allied Health Diagnostic, Intervention, and Treatment
		- Professions, Other
	51.0899	Allied Health and Medical Assisting Services, Other
	51.0204	Audiology/Audiologist and Speech-Language Pathology/Pathologist
	26.0101	Biology/Biological Sciences, General
	51.1005	Clinical Laboratory Science/Medical Technology/Technologist
	51.1004	Clinical/Medical Laboratory Technician
	30.25	Cognitive Science
	51.1504	Community Health Services/Liaison/Counseling
	11.0101	Computer and Information Sciences, General
	51.0601	Dental Assisting/Assistant
	51.0602	Dental Hygiene/Hygienist
	51.0699	Dental Services and Allied Professions, Other
	51.0910	Diagnostic Medical Sonography/Sonographer and
		- Ultrasound Technician
	09.0702	Digital Communication and Media/Multimedia
	51.0810	Emergency Care Attendant (EMT Ambulance)
	51.0904	Emergency Medical Technology/Technician (EMT Paramedic)
	42.2704	Experimental Psychology
		Continued on next page

Table B-2 – continued from previous page

Category	CIP Code	Course Title
	51.3805	Family Practice Nurse/Nursing
	51.2601	Health Aide
	51.0706	Health Information/Medical Records Administration/
		- Administrator
	51.0707	Health Information/Medical Records Technology/Technician
	51.2211	Health Services Administration
	51.0701	Health/Health Care Administration/Management
	30.2701	Human Biology
	50.0408	Interior Design
	51.3901	Licensed Practical/Vocational Nurse Training
	51.1505	Marriage and Family Therapy/Counseling
	51.3501	Massage Therapy/Therapeutic Massage
	51.0713	Medical Insurance Coding Specialist/Coder
	51.0907	Medical Radiologic Technology/Science - Radiation Therapist
	51.0801	Medical/Clinical Assistant
	51.0711	Medical/Health Management and Clinical Assistant/Specialist
	51.2603	Medication Aide
	51.3902	Nursing Assistant/Aide and Patient Care Assistant/Aide
	51.2306	Occupational Therapy/Therapist
	51.0805	Pharmacy Technician/Assistant
	51.1009	Phlebotomy Technician/Phlebotomist
	51.1102	Pre-Medicine/Pre-Medical Studies
	51.1105	Pre-Nursing Studies
	51.1502	Psychiatric/Mental Health Services Technician
	42.0101	Psychology, General
	51.2201	Public Health, General
	51.0911	Radiologic Technology/Science - Radiographer
	10.0203	Recording Arts Technology/Technician
	51.3899	Registered Nursing, Nursing Administration, Nursing
		- Research and Clinical Nursing, Other
	51.3801	Registered Nursing/Registered Nurse
	42.2799	Research and Experimental Psychology, Other
	51.0908	Respiratory Care Therapy/Therapist
	44.0701	Social Work
	51.1501	Substance Abuse/Addiction Counseling
	51.0909	Surgical Technology/Technologist
	09.0908	Technical and Scientific Communication
Hotels & Res		
1100000 € 1600	12.0503	Culinary Arts/Chef Training
	12.0509	Culinary Science/Culinology
	52.0901	Hospitality Administration/Management, General
	02.0001	Continued on next page

Table B-2 – continued from previous page

Category C	IP Code	Course Title
	52.0999	Hospitality Administration/Management, Other
	12.0501	Baking and Pastry Arts/Baker/Pastry Chef
	12.0503	Culinary Arts/Chef Training
	12.0509	Culinary Science/Culinology
	52.0901	Hospitality Administration/Management, General
	52.0999	Hospitality Administration/Management, Other
	12.0504	Restaurant, Culinary, and Catering Management/Manager
	52.0903	Tourism and Travel Services Management
Information		
	09.9999	Communication, Journalism, and Related Programs, Other
	09.0702	Digital Communication and Media/Multimedia
	09.0401	Journalism
	25.0301	Library and Archives Assisting
	10.0203	Recording Arts Technology/Technician
	09.0101	Speech Communication and Rhetoric
	11.1004	Web/Multimedia Management and Webmaster
Liberal Arts		
	24.0101	Liberal Arts and Sciences/Liberal Studies
	24.0199	Liberal Arts and Sciences, General Studies
		- and Humanities, Other
	24.0101	Liberal Arts and Sciences/Liberal Studies
Liberal Arts -	$\overline{Humanities}$	·
	16.0300	East Asian Languages, Literatures, and Linguistics, General
	23.0101	English Language and Literature, General
	05.0209	Folklore Studies
	16.9999	Foreign Languages, Literatures, and Linguistics, Other
	54.0101	History, General
	16.0902	Italian Language and Literature
	16.0302	Japanese Language and Literature
	24.0199	Liberal Arts and Sciences, General Studies
		- and Humanities, Other
	23.0101	English Language and Literature, General
	24.0102	General Studies
	54.0101	History, General
	54.0199	History, Other
	24.0103	Humanities/Humanistic Studies
Liberal Arts -		ı
	45.02	Anthropology
	45.0601	Economics, General
	45.1001	Political Science and Government, General
	45.11	Sociology
		Continued on next pag

Table B-2 – continued from previous page

Category	CIP Code	Course Title
	45.0401	Criminology
	45.0601	Economics, General
	45.0901	International Relations and Affairs
	45.1001	Political Science and Government, General
	44.0701	Social Work
$\overline{Manufactur}$	ring	
	19.0901	Apparel and Textiles, General
	15.0699	Industrial Production Technologies/Technicians, Other
	15.0612	Industrial Technology/Technician
	48.0509	Ironworking/Ironworker
	15.0613	Manufacturing Engineering Technology/Technician
	48.0506	Sheet Metal Technology/Sheetworking
	48.0508	Welding Technology/Welder
Other Servi		<i>□</i>
	47.0608	Aircraft Powerplant Technology/Technician
	47.0607	Airframe Mechanics and Aircraft Maintenance
		- Technology/Technician
	47.0604	Automobile/Automotive Mechanics Technology/Technician
	47.0605	Diesel Mechanics Technology/Technician
	12.0301	Funeral Service and Mortuary Science, General
	48.0503	Machine Shop Technology/Assistant
	47.0613	Medium/Heavy Vehicle and Truck Technology/Technician
Professiona	$\overline{ll\ Science\ \mathcal{E}\ T}$, , ,
J	52.0301	Accounting
	52.0302	Accounting Technology/Technician and Bookkeeping
	14.0501	Bioengineering and Biomedical Engineering
	26.9999	Biological and Biomedical Sciences, Other
	30.0101	Biological and Physical Sciences
	26.0101	Biology/Biological Sciences, General
	26.1201	Biotechnology
	40.0501	Chemistry, General
	14.0801	Civil Engineering, General
	50.0402	Commercial and Advertising Art
	14.0901	Computer Engineering, General
	11.0203	Computer Programming, Vendor/Product Certification
	11.0701	Computer Science
	11.1006	Computer Support Specialist
	11.0901	Computer Systems Networking and Telecommunications
	11.0101	Computer and Information Sciences, General
	11.1099	Computer/Information Technology Services
	11.1000	Administration and Management, Other
		Continued on next pag

Table B-2 – continued from previous page

Category CIP C		Course Title	
11.08	602 I	Oata Modeling/Warehousing and Database Administration	
50.04	.01 I	Design and Visual Communications, General	
15.13	i01 I	Orafting and Design Technology/Technician, General	
14.10	01 F	Electrical and Electronics Engineering	
15.05	603 I	Energy Management and Systems Technology/Technician	
14.01	.01 F	Engineering, General	
15.06	i 199 I	ndustrial Production Technologies/Technicians, Other	
11.01	04 I	informatics	
11.04	.01 I	Information Science/Studies	
11.01	.03 I	nformation Technology	
22.03	i02 I	Legal Assistant/Paralegal	
52.14	.01 N	Marketing/Marketing Management, General	
15.13	306 N	Mechanical Drafting and Mechanical Drafting CAD/CADD	
14.19	01 N	Mechanical Engineering	
30.18	801 N	Natural Sciences	
11.10		Network and System Administration/Administrator	
15.07		Occupational Safety and Health Technology/Technician	
14.01		Pre-Engineering	
22.02	202 F	Programs for Foreign Lawyers	
16.16	503 S	Sign Language Interpretation and Translation	
11.08	801 V	Web Page, Digital/Multimedia and Information Resources Design	
11.10	004 V	Web/Multimedia Management and Webmaster	
Public Administration			
43.01	.03	Criminal Justice/Law Enforcement Administration	
43.01		Criminal Justice/Police Science	
43.01	04	Criminal Justice/Safety Studies	
45.04	.01	Criminology	
43.99	99 I	Homeland Security, Law Enforcement,	
	-	and Related Protective Services, Other	
44.04	.01 F	Public Administration	
Transportation			
49.02	05	Truck and Bus Driver/Commercial	
	-	Vehicle Operator and Instructor	