Appendices

Online Appendix A

Table A1: Classification of observations around the threshold

Age in 2012	Quarter of birth	Possible year of birth	DACA eligibility	Conclusion
31	1	1981 or 1980	No	Control group
31	2 or 3 or 4	1981 or 1980	Ambiguous	Exclude from sample
30	1 or 2	1981 or 1982	Ambiguous	Exclude from sample
30	3 or 4	1981 or 1982	Yes	Treatment group

Online Appendix B

Mexican immigrants I run the main model only for Mexican immigrants. Mexican immigrants made up approximately 50% of the total undocumented population in the US in 2018 (**?**). According to Pew Research Center (2019), approximately one in every two Mexicans is undocumented. In terms of DACA participation, Mexicans made up almost 80% of all DACA holders. Therefore, restricting the sample to non-citizen immigrants from Mexico focuses the estimates on a population with a larger anticipated effect.

Mexican in California and Texas California and Texas are home to approximately 36% of the undocumented population in the US. According to the Pew Research Center, 69% and 73% of the undocumented population in California and Texas respectively are Mexican. In contrast, Massachusetts has less than 4% of the undocumented population and only 2% of them are Mexican.[1] Suppose I compare a Mexican who lives in Massachusetts and a Mexican who lives in Texas, a Mexican in Texas is more likely to be undocumented. So, I run my main analysis again on the sample of Mexicans who reside in California and Texas only.

Sample selection There is suggestive evidence that DACA may move up to 2% of people into

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[1]https://www.pewresearch.org/hispanic/interactives/u-s-unauthorized-immigrants-by-state/

employment in the early years following the introduction of DACA. So, if DACA moved people at the lowest percentile of the job skill distribution into employment, this sample selection would bias the estimates downwards. To determine the maximum extent that sample selection of this kind might affect my results, I eliminate all individuals in the bottom 2% for each job skill distribution by each age in 2012 and year bracket. For instance, when the outcome is math skills, I rerun my main analysis, dropping 2% of observations to the left of the discontinuity with the lowest usage of math skills.[2]

Difference-in-discontinuities I modify my econometric strategy in two ways. First, I use the raw data without adjusting for the CEF of natives as described in Section 4. Second, I adopt a difference-in-discontinuities framework and examine the effects of DACA eligibility on labor market outcomes over the period from 2005 to 2019. These adjustments serve to possibly solve two potential problems: 1) Instead of using CEF of natives in my main analysis to adjust for the functional form in a regression discontinuity design, this method incorporates the population of non-immigrants before the DACA policy started, which is comparable to my post-DACA sample; 2) This will also allow having a larger sample and I could examine how characteristics of the sample composition change from pre-DACA to post-DACA. The idea of a difference-in-discontinuities framework is to examine the difference around the threshold in the pre-policy period and post-policy period. Specifically, I compare two separate regression discontinuities, which are the effects of DACA eligibility. The econometric model is as follows:

$$Y_{ist} = \alpha + \beta_1 D_{ist} + \beta_2 D_{ist} * Post_t + f(RVF)_i + \lambda X_{ist} + \omega_s + \theta_t + \epsilon_{ist}$$

in which: D_{ist} was defined in Section 4. $Post_t$ is equal to 1 if year is 2013 onward, 0 otherwise. $f(RVF)_i$ is a function of running variable R_{ist}, it may take a linear form or a quadratic form. X_{ist} is a vector of control variables. To make it precise with my main analysis, I control for sex, year

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[2]I only present results for occupational skill usage because most of employment outcomes are just binary variables. However, I include results for weekly working hours and wage income in Online Appendix C

of education, and year in the US. I also add state (ω_t) and year (θ_t) fixed effects because my data sample ranges over a period of 14 years and includes the Great Recession period.

Online Appendix C

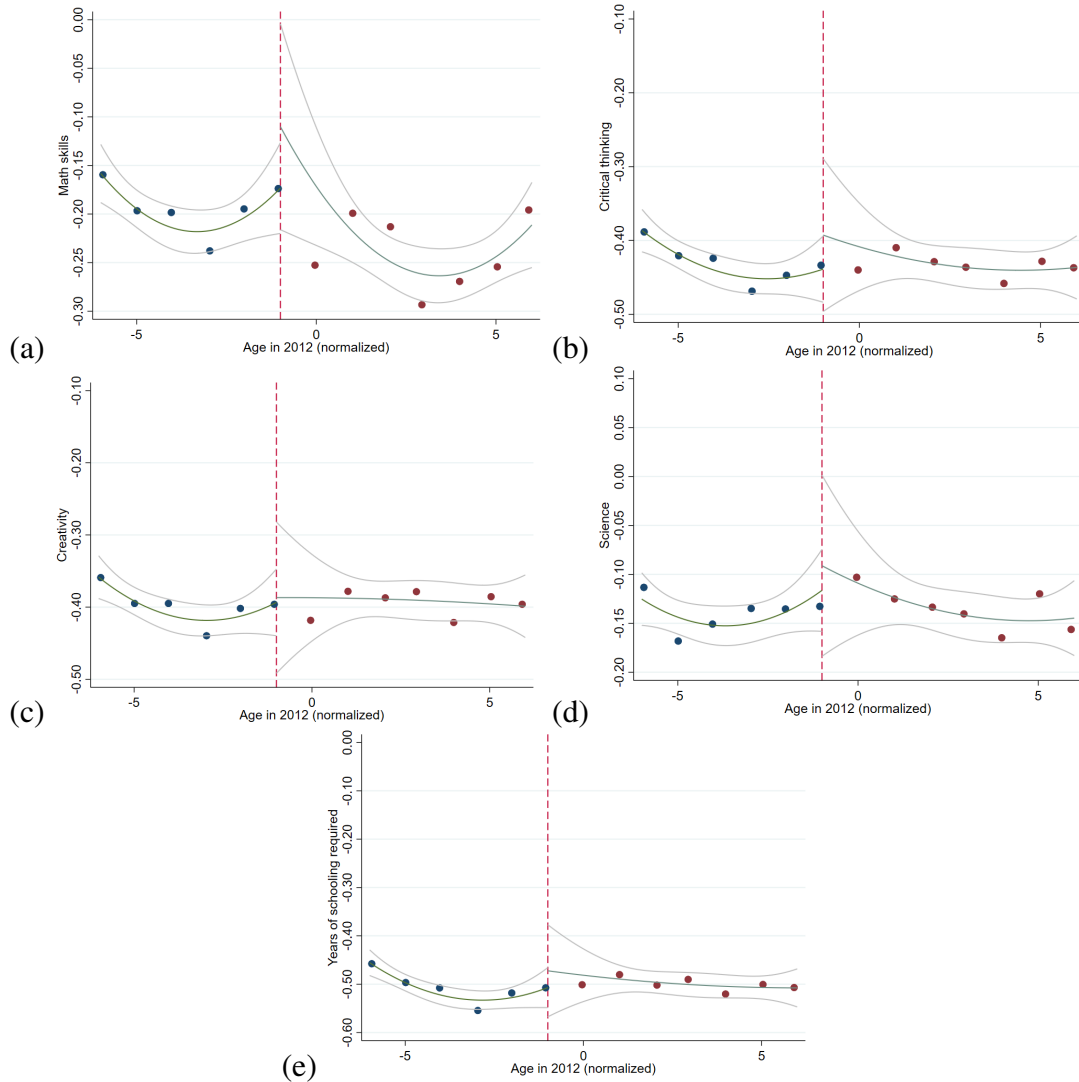**Employment outcomes with a quadratic line of fit**

Figure 1: Employment outcomes with a quadratic line of fit

(a)

(b)

(c)

(d)

(e)
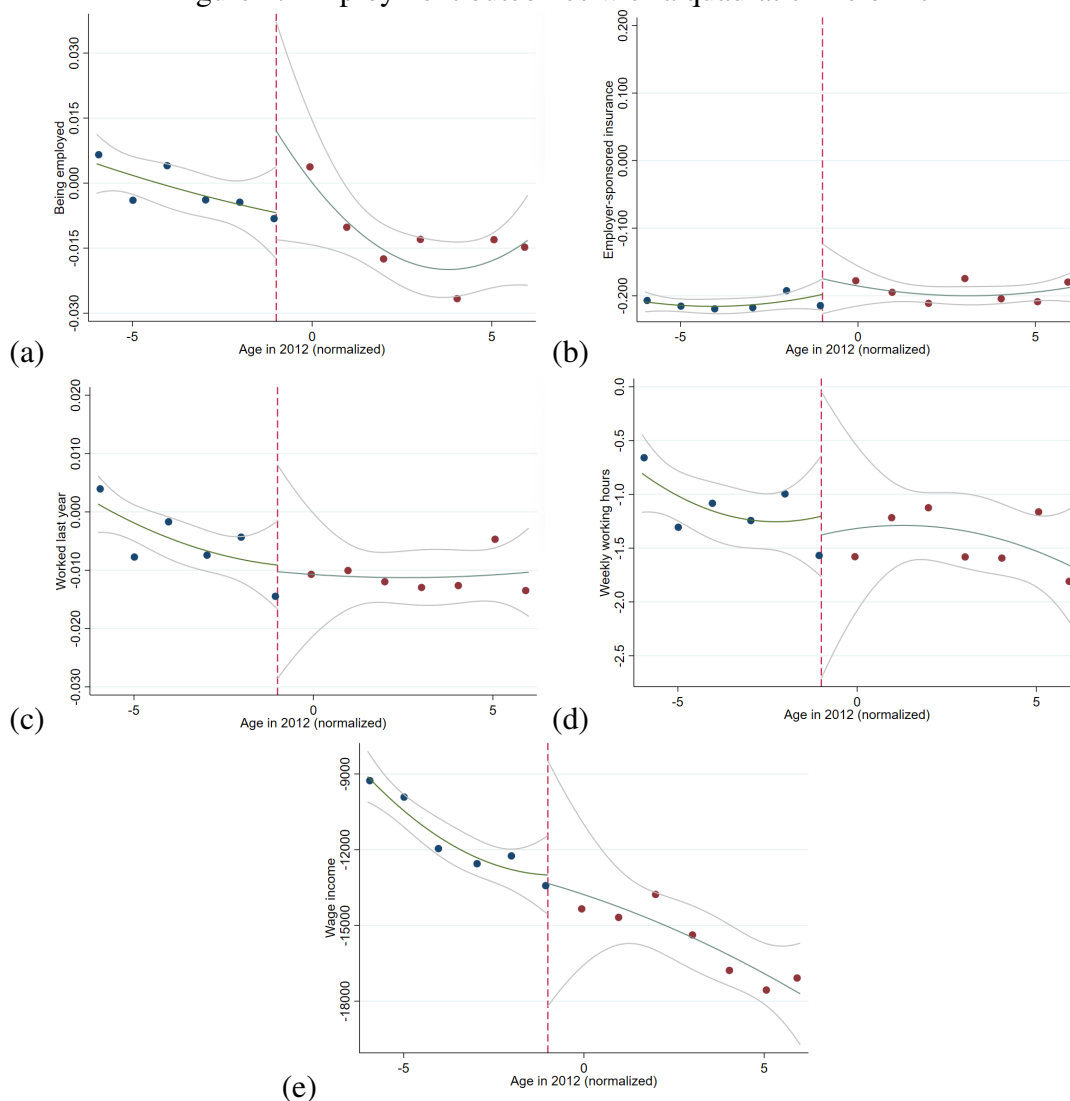
Notes: This figure presents the means of all employment outcomes with quadratic lines of fit and 95% confidence intervals. Observations are on the left side of the threshold are treated and observations are on the right side of the threshold are untreated.

Occupational skill usage with a quadratic line of fit

Figure 2: Occupational skill usage with a quadratic line of fit

(a)

(b)

(c)

(d)

(e)

Notes: This figure presents the means of all occupational skill usage outcomes with quadratic lines of fit and 95% confidence intervals. Observations are on the left side of the threshold are treated and observations are on the right side of the threshold are untreated.

Online Appendix D

Table A2: DACA eligibility and employment outcomes: Mexican in CA and TX

	Linear
Bandwidth	6
Being employed	0.016*
	(0.000, 0.032)
Employer-sponsored insurance	-0.013
	(-0.070, 0.044)
Worked last year	-0.007
	(-0.023, 0.009)
Weekly working hours	-0.604
	(-1.527, 0.319)
Wage income	1040
	(-1679, 3759)
Observations	9024

Confidence intervals are presented in parentheses and calculated with 95% confidence. Standard errors in parentheses are clustered at the state-year level.
Notes. This table shows the effects of DACA eligibility on labor market outcomes among non-citizen Mexican immigrants in California anD Texas, employing the linear functional form with a bandwidth of 6. Sample includes those who have obtained high-school diploma, have entered the US before their 16th birthday and have immigrated to the US before 2007.
* $p < .10$, ** $p < .05$, *** $p < .01$

Table A3: DACA eligibility and occupational skill usage: Mexican in CA and TX

	Linear
Bandwidth	6
Math skills	0.036
	(-0.054, 0.126)
Critical thinking	-0.039
	(-0.112, 0.034)
Creativity	-0.033
	(-0.102, 0.036)
Science	0.001
	(-0.089, 0.091)
Years of schooling required	-0.058**
	(-0.107, -0.009)
Observations	8353

Confidence intervals are presented in parentheses and calculated with 95% confidence. Standard errors in parentheses are clustered at the state-year level. Notes. This table shows the effects of DACA eligibility on choosing high-skilled jobs among non-citizen Mexican immigrants in California and Texas, employing the linear functional form with a bandwidth of 6. Sample includes those who have obtained high-school diploma, have entered the US before their 16th birthday and have immigrated to the US before 2007.
* $p < .10$, ** $p < .05$, *** $p < .01$

Employment outcomes for non-Mexican

Table A4: Effects of DACA eligibility on labor market outcomes: Non-Mexican

	Linear
Bandwidth	6
Being employed	0.009
	(-0.011, 0.029)
Employer-sponsored insurance	0.010
	(-0.029, 0.049)
Worked last year	0.004
	(-0.010, 0.018)
Weekly working hours	0.254
	(-0.714, 1.222)
Wage income	506
	(-3238, 4250)
Observations	14599

Confidence intervals are presented in parentheses and calculated with 95% confidence. Standard errors in parentheses are clustered at the state-year level. Notes. This table shows the effects of DACA eligibility on labor market outcome among non-citizen non-Mexican immigrants, employing the linear functional form with a bandwidth of 6. Sample includes those who have obtained high-school diploma, have entered the US before their 16th birthday and have immigrated to the US before 2007.
* $p < .10$, ** $p < .05$, *** $p < .01$

Occupational skill usage for non-Mexican

Table A5: DACA eligibility and occupational skill usage: Non-Mexican

	Linear
Bandwidth	6
Math skills	0.038
	(-0.038, 0.114)
Critical thinking	-0.025
	(-0.096, 0.046)
Creativity	-0.025
	(-0.096, 0.046)
Science	-0.034
	(-0.103, 0.035)
Years of schooling required	-0.009
	(-0.070, 0.052)
Observations	13439

Confidence intervals are presented in parentheses and calculated with 95% confidence. Standard errors in parentheses are clustered at the state-year level. Notes. This table shows the effects of DACA eligibility on choosing high-skilled jobs among non-citizen non-Mexican immigrants, employing the linear functional form with a bandwidth of 6. Sample includes those who have obtained high-school diploma, have entered the US before their 16th birthday and have immigrated to the US before 2007.
* $p < .10$, ** $p < .05$, *** $p < .01$

Online Appendix E

Table A6: DACA eligibility and employment outcomes, remove lowest 2%

	Linear
Bandwidth	6
Weekly working hours	0.340
	(-0.111, 0.791)
Wage income	1895*
	(-349, 4139)
Observations	26383

Confidence intervals are presented in parentheses and calculated with 95% confidence. Standard errors in parentheses are clustered at the state-year level. Notes. This table shows the effects of DACA eligibility on weekly working hours and wage income indices among non-citizen immigrants, employing the linear functional form with a bandwidth of 6. Sample includes those who have obtained high-school diploma, have entered the US before their 16th birthday and have immigrated to the US before 2007. This table presents the results after I restrict to individuals who are employed and remove observations in lowest 2 percentile of each outcome variable.
* $p < .10$, ** $p < .05$, *** $p < .01$

Online Appendix F

Difference-in-differences framework

The difference-in-differences equation is presented below:

$$Y_{it} = \alpha + \beta_1 D_{it} * Post_{it} + \beta_2 D_{it} + \beta_3 Post_{it} + \beta_4 X_{it} + \beta_5 W_{it} + \theta_t + \gamma_s + \epsilon_{it} \tag{1}$$

in which, D_{it} is the treatment status. $Post_{it}$ if year is 2013 onwards. X_{it} is a vector of control variables, including sex, year of education, race, hispanic ethnicity. The vector W_{it} includes fixed effects for individual i. I also include year and state fixed effects.

In this analysis, to be consistent with sample construction in my main analysis, I restrict to people age 25 to 60 and further look at people who age $\pm$ 6 in 2012. People in that age range from 2005 to 2006 are never in treatment group. So, event studies only have 5 pre-periods for most outcomes. ACS has started to ask about insurance since 2008, so employer-sponsored insurance has 4 pre-periods.

Online Appendix G

Table A7: DACA eligibility and employment outcomes among US citizens born outside of the US

	Linear
Bandwidth	6
Being employed	-0.007
	(-0.021, 0.007)
Employer-sponsored insurance	0.009
	(-0.022, 0.040)
Worked last year	-0.002
	(-0.012, 0.008)
Weekly working hours	-0.613
	(-1.364, 0.138)
Wage income	-1684
	(4787, 1419)
Observations	20820

Confidence intervals are presented in parentheses and calculated with 95% confidence. Standard errors in parentheses are clustered at the state-year level. Notes. This table shows the placebo tests of effects of DACA eligibility on labor market outcomes among US citizens born outside of the US, employing the linear functional form with a bandwidth of 6. Sample includes those who have obtained high-school diploma, have entered the US before their 16th birthday and have immigrated to the US before 2007.
* $p < .10$, ** $p < .05$, *** $p < .01$

Table A8: DACA eligibility on occupational skill usage among US citizens
born outside of the US

	Linear
Bandwidth	6
Math skills	0.032
	(-0.033, 0.097)
Critical thinking	0.004
	(-0.055, 0.063)
Creativity	-0.021
	(-0.078, 0.036)
Science	0.016
	(-0.058, 0.090)
Years of schooling required	-0.037
	(-0.086, 0.012)
Observations	19297

Confidence intervals are presented in parentheses and
calculated with 95% confidence. Standard errors in
parentheses are clustered at the state-year level. Co-
efficients are measured in standard deviation.
Notes. This table shows the placebo tests of effects of
DACA eligibility on choosing high-skilled jobs among
US citizens born outside of the US, employing the
linear functional form with a bandwidth of 6. Sam-
ple includes those who have obtained high-school
diploma, have entered the US before their 16th birth-
day and have immigrated to the US before 2007.
* $p < .10$, ** $p < .05$, *** $p < .01$

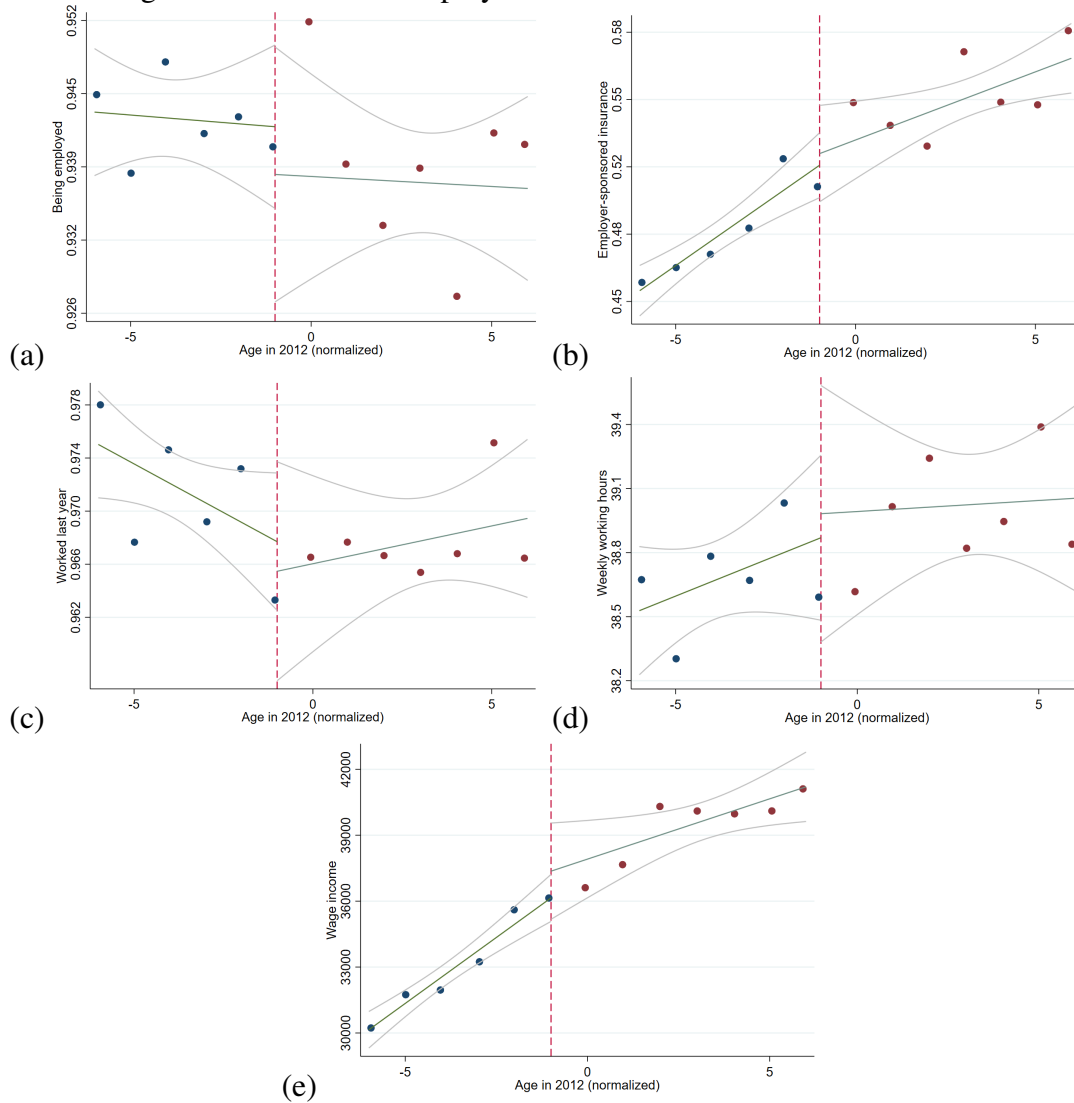# Online Appendix H

Pre-DACA employment outcomes

Figure 3: Pre-DACA employment outcomes with a linear line of fit
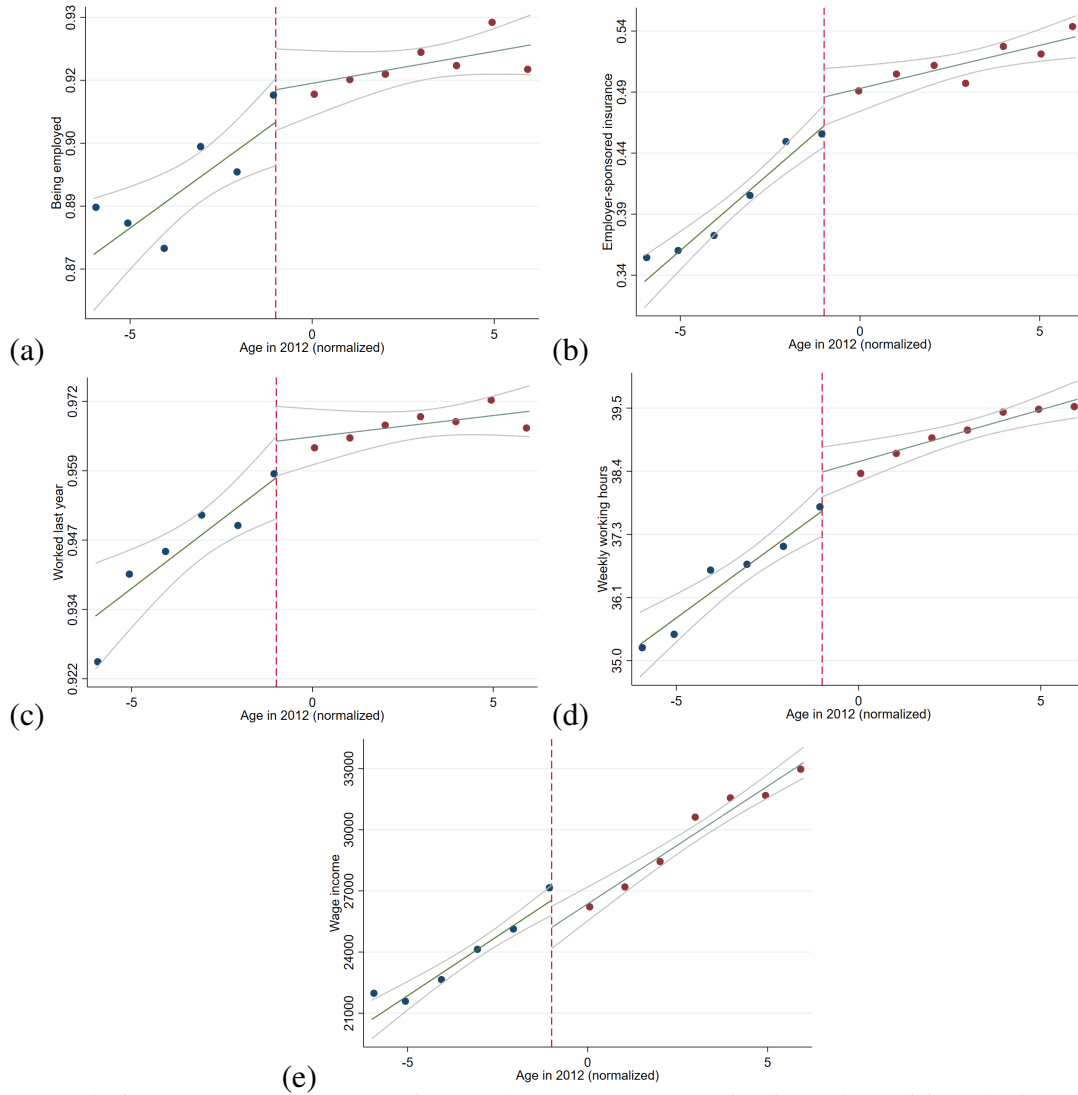
(a)

(b)

(c)

(d)

(e)

Notes: This figure presents the means of all employment outcomes with linear lines of fit and 95% confidence intervals during pre-DACA period. Observations are on the left side of the threshold are treated and observations are on the right side of the threshold are untreated.

Post-DACA employment outcomes

Figure 4: Post-DACA employment outcomes with a linear line of fit

(a)

(b)

(c)

(d)

(e)

Notes: This figure presents the means of all employment outcomes with linear lines of fit and 95% confidence intervals during post-DACA period. Observations are on the left side of the threshold are treated and observations are on the right side of the threshold are untreated.

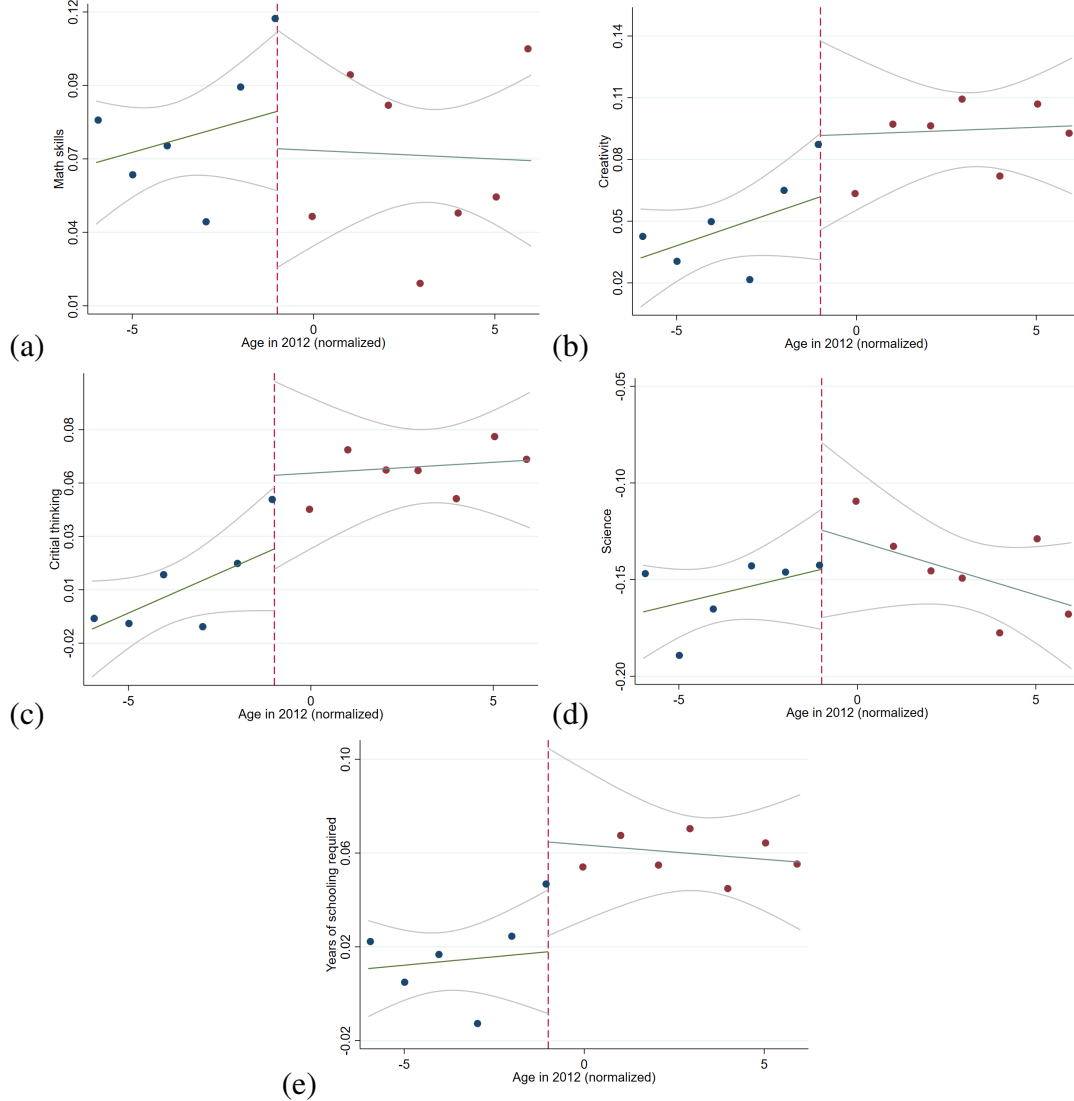**Pre-DACA occupational skill usage outcomes**

Figure 5: Pre-DACA occupational skill usage outcomes with a linear line of fit
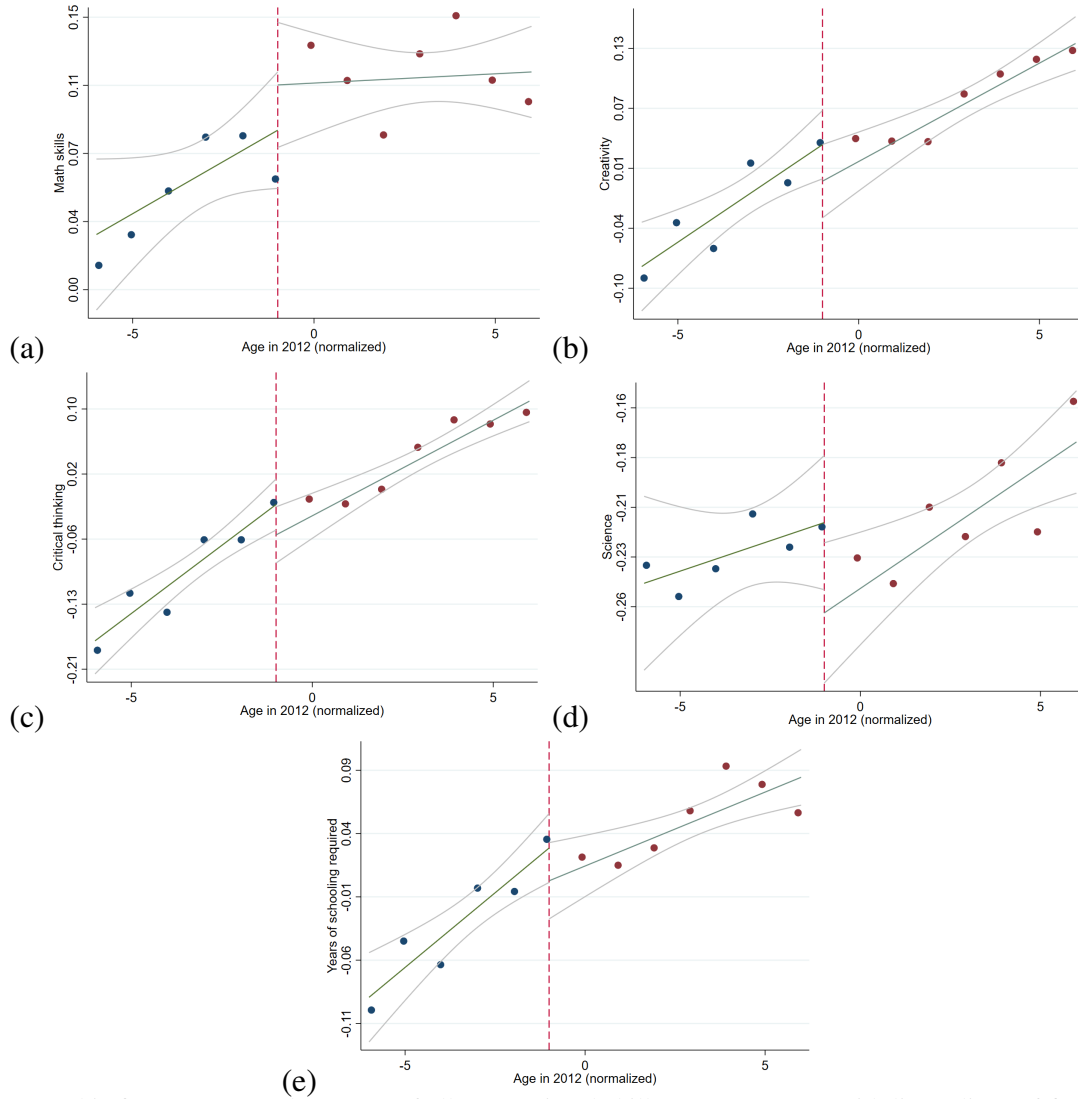
(a)

(b)

(c)

(d)

(e)

Notes: This figure presents the means of all occupational skill usage outcomes with linear lines of fit and 95% confidence intervals during pre-DACA period. Observations are on the left side of the threshold are treated and observations are on the right side of the threshold are untreated.

Post-DACA occupational skill usage outcomes

Figure 6: Post-DACA occupational skill usage outcomes with a linear line of fit

(a)

(b)

(c)

(d)

(e)

Notes: This figure presents the means of all occupational skill usage outcomes with linear lines of fit and 95% confidence intervals during post-DACA period. Observations are on the left side of the threshold are treated and observations are on the right side of the threshold are untreated.

Online Appendix I

Heterogeneous effects

Even I have found no evidence of DACA eligibility on labor market outcomes, the results may be divergent among different groups of education. This section estimates the effects of DACA

eligibility on individuals who have either only high school degree or at least a college degree.[3] In Panel A of Table A9, it is shown that DACA eligibility among individuals who have at least a college degree are around 2 to 4 percentage points more likely to be employed. However, statistical significance is sensitive to specifications. There is no evidence in employer-sponsored insurance, the probability of working last year, weekly working hours, or wage income. Panel B shows that it is unlikely that there is an increase in the probability of working among individuals with less than a college degree.

Table A9: Effects of DACA eligibility on employment outcomes: College and non-college educated individuals

	College or higher	Less than college
Being employed	0.022**	-0.004
	(0.002;0.042)	(-0.014;0.006)
Employer-sponsored insurance	0.029	-0.004
	(-0.022;0.080)	(-0.033;0.025)
Worked last year	0.007	-0.003
	(-0.009;0.023)	(-0.013;0.007)
Weekly working hours	0.074	-0.276
	(-1.369;1.517)	(-2.085;1.533)
Wage income	-407	-74
	(-8078;7264)	(-1711;1563)
Observations	5702	23324

Confidence intervals are presented parentheses and calculated with 95% confidence. Standard errors are clustered at the state-year level.
Notes. This table shows the effects of DACA on labor market outcomes among non-citizen immigrants who have obtained at least college degree and less than college, employing the linear functional form with a bandwidth of 6. Sample includes those who have obtained high-school diploma, have entered the US before their 16th birthday and have immigrated to the US before 2007.
* $p < .10$, ** $p < .05$, *** $p < .01$

Table A10 shows that both individuals with at least a college degree and less than a college degree do not move to work in high-skilled jobs.

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[3]I also do with males and females, however, there is no appreciable effects for both.

Table A10: Effects of DACA eligibility on occupational skill usage: College and non-college educated individuals

	College or higher	Less than college
Math skills	0.045	0.017
	(-0.071, 0.161)	(-0.042, 0.076)
Critical thinking	-0.024	-0.036
	(-0.142, 0.094)	(-0.083, 0.011)
Creativity	-0.032	-0.026
	(-0.13, 0.066)	(-0.079, 0.027)
Science	-0.036	-0.017
	(-0.185, 0.113)	(-0.068, 0.034)
Years of schooling required	-0.058	-0.038**
	(-0.178, 0.062)	(-0.073, -0.003)
Observations	5388	21489

Confidence intervals are presented parentheses and calculated with 95% confidence. Standard errors are clustered at the state-year level.
Notes. This table shows the effects of DACA on occupational skill usage among non-citizen immigrants who have obtained at least college degree and less than college, employing the linear functional form with a bandwidth of 6. Sample includes those who have obtained high-school diploma, have entered the US before their 16th birthday and have immigrated to the US before 2007.
* $p < .10$, ** $p < .05$, *** $p < .01$

? find that DACA program reduced the probability of school enrollment of eligible higher-educated individuals because the opportunity cost of pursuing higher education is higher when they are given a legal status. While restricting to individuals who are most likely to finish their education (i.e: who are at least 25 years old), my results complements their findings by showing that even when the opportunity cost may be higher, there are some improvement in employment for college-educated individuals.

Online Appendix J

Comparison of treatment effects of DACA

Table A11: Estimates on employment outcomes from Pope (2016) and this paper

	Pope (2016)				This paper		
NCs age 27 to 34, with high-school degree, and enter before 16	Point estimates	95% conf. interval		NCs with high-school degree, enter the US before 16, before 2007	Point estimates	95% conf. interval	
Being employed	0.066	0.028	0.104	Being employed	0.003	-0.024	0.030
Weekly working hours	1.776	0.347	3.205	Weekly working hours	-0.569	-2.344	1.205
Worked last year	0.041	0.008	0.073	Worked last year	-0.003	-0.025	0.019
Income	2096	-563	4754	Wage income	-742	-6537	5582

Notes. This table compares the effects of DACA on employment outcomes between this paper and Pope (2016). To be comparable with my uptake-adjusted estimates, estimates from Pope (2016) are adjusted by multiplying by 1.5 as discussed in his paper. This table presents all estimates along with confidence intervals.
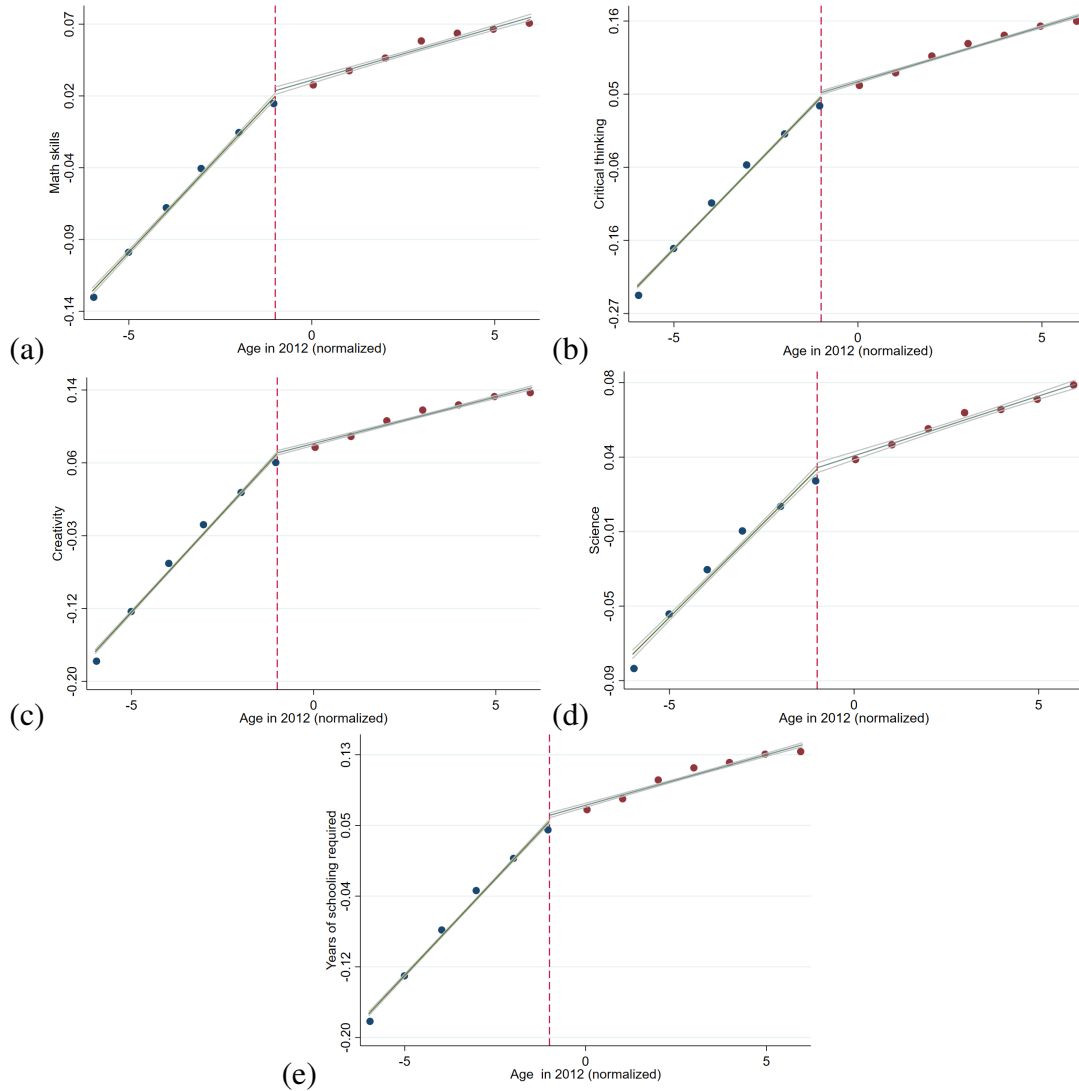
Online Appendix K

Plots of outcome variables among natives

Figure 7: Post-DACA employment outcomes with a linear line of fit among natives
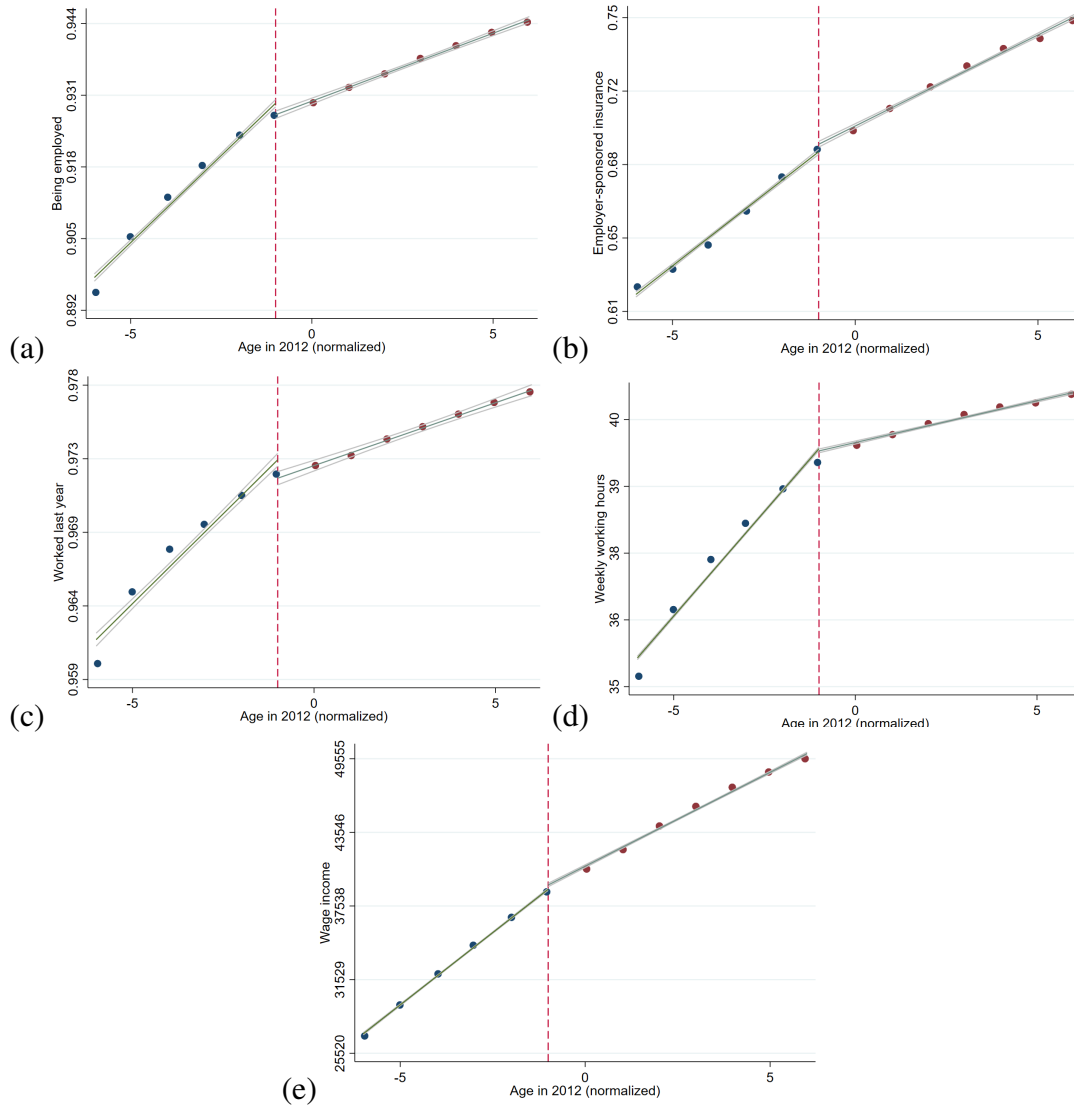
(a)

(b)

(c)

(d)

(e)

Notes: This figure presents the means of all employment outcomes with linear lines of fit and 95% confidence intervals during post-DACA period among natives. Observations are on the left side of the threshold are treated and observations are on the right side of the threshold are untreated.

Figure 8: Post-DACA occupational skill usage outcomes with a linear line of fit among natives

Notes: This figure presents the means of all occupational skill usage outcomes with linear lines of fit and 95% confidence intervals during post-DACA period among natives. Observations are on the left side of the threshold are treated and observations are on the right side of the threshold are untreated.