

# An examination of education–occupation mismatch and wages of DACA eligible and ineligible college graduates

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## Abstract

Education-occupation mismatch, or educational mismatch, is the discrepancy between an occupation's educational requirements and a worker's educational attainment or field of study, that often results in a wage and productivity penalty than those that were educationally matched - and skilled immigrants face higher rates of mismatch and wage penalties (Li and Lu, 2022; Hsin and Ortega, 2018). We look at the education-occupation mismatch rates and wage penalties of DACA-likely eligible and ineligible college graduates by building econometric models for mismatch and wage with U.S.-born citizens as the benchmark category. Our results indicate that DACA-likely eligible and working, college graduates face higher rates of vertical and horizontal mismatch, and receive greater associated wage penalties for being mismatched than their U.S.-born citizen peers.

## Background

**Deferred Action for Childhood Arrivals (DACA):** The 2012 policy allows undocumented youth that meet certain criteria to be shielded from deportation and allows them work authorization within the United States.

### Education-Occupation mismatch:

- Vertical mismatch:** Workers that hold an educational attainment that is not the most common for their occupation (e.g. college graduate as retail worker)
- Horizontal mismatch:** Worker that holds a degree in a field that is not one of two most common degree fields for an occupation (e.g. engineering major working as an accountant)
- Horizontal undermatch:** A horizontally mismatched worker, whose median wage for their occupation is less than the median wage for workers with the same field of study
- Horizontal overmatch:** A horizontally mismatched worker, whose median wage for their occupation is more than the median wage for workers with the same field of study

## Methods & Relevant Literature

Data was collected from the American Community Survey (ACS) for the years 2009-2022, with this time frame chosen due to availability of the degree field variable.

Primary Data preparation methods and definitions came from:

- Dr. Shih's replication code for DACA-likely eligibility
- Working definitions and analysis methods/criteria from the Li and Lu 2022 paper, and the Hsin and Ortega 2018 paper

Sample consisted of employed, college graduates that did not have missing, zero, or "N/A" values for their: occupation, degree field, wage/salary.

As far as I know, there are no papers on this particular topic of the relation of DACA-eligibility and mismatch and wage penalties. The references section list contain related research. There are many qualitative papers on DACA, and quantitative papers on mismatch and wage penalties regarding immigrants and other populations.

## Results

Table 1: Regression statistics for Vertical Mismatch and Horizontal Undermatch and Overmatch models

	Logit V. Mismatch Model			Logit H. Undermatch Model			Logit H. Overmatch Model			FE w/ d.f. H. Undermatch Model			FE w/ d.f. H. Overmatch Model		
	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.
Intercept	-30196.3***	106635	-16295.62***	1051517	-17170.7***	107561	-107891.4***	101132	-151569.9***	1007707	-107891.4***	1007707	-107891.4***	1007707	-107891.4***
SUM Degree	+ 30196.3***	106635	+ 16295.62***	1051517	+ 16547***	105919	+ 106616***	101132	+ 10719.9***	1007707	+ 106616***	1007707	+ 106616***	1007707	+ 106616***
DACA-eligible	-205***	106635	-17752.9***	1050918	-23000.0***	101132	-111395.9***	101132	-10719.9***	1007707	-111395.9***	1007707	-111395.9***	1007707	-111395.9***
Matched	-105622.7***	106635	-105622.7***	1051517	-105622.7***	105919	-105622.7***	101132	-105622.7***	1007707	-105622.7***	1007707	-105622.7***	1007707	-105622.7***
Foreign Degree (likely)	-506289.9	106635	-108377.99	1051517	-90533.00***	105919	-107891.4***	101132	-10119.9***	1007707	-10119.9***	1007707	-10119.9***	1007707	-10119.9***
Foreign Degree (likely) * Foreign Citizens	-110622.7	106635	-104329.21	1051517	-108751.5	105919	-106952.0***	101132	-106952.0***	1007707	-106952.0***	1007707	-106952.0***	1007707	-106952.0***
Immigration status (1 = year of age)	-1074567	106635	-1050818	1051517	-1070798	105919	-108891.4***	101132	-108891.4***	1007707	-108891.4***	1007707	-108891.4***	1007707	-108891.4***
Panel(s) Received	-1074567	106635	-1050818	1051517	-1070798	105919	-108891.4***	101132	-108891.4***	1007707	-108891.4***	1007707	-108891.4***	1007707	-108891.4***
N of cases	2506161		2506211		2506211		2506211		2506211		2506211		2506211		2506211

Note: DACA-eligible/Ineligible groups are created with Kuka et al. (2020) methods. Foreign Degree (likely) consists of individuals that were outside the U.S. during typical college age. FE by d.f. model has 20 unique degree fields.

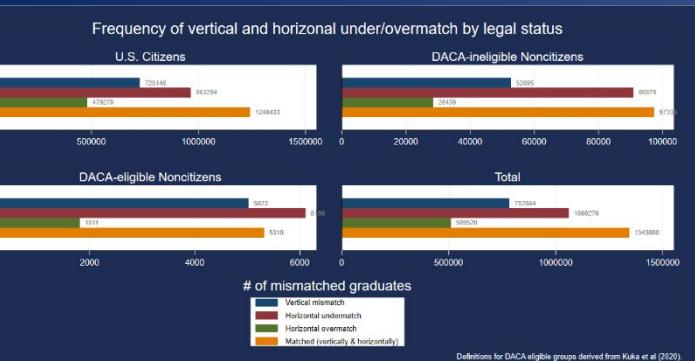
\* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001

Table 2: Regression statistics for Log-transformed Wage models

	Base Wage Model			FE w/ d.f. Wage Model			FE w/ d.f. Wage Model			FE w/ d.f. (Mismatch x for d.f.) Wage Model			FE w/ d.f. (Mismatch x for d.f.) Wage Model		
	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.
DACA-eligible Noncitizen	-205***	106635	-105622.7***	1051517	-107891.4***	105919	-107891.4***	101132	-107891.4***	1007707	-107891.4***	1007707	-107891.4***	1007707	-107891.4***
DAC-A-eligible Noncitizen	-889009.9	106635	-1070798	1051517	-108891.4***	105919	-108891.4***	101132	-108891.4***	1007707	-108891.4***	1007707	-108891.4***	1007707	-108891.4***
Immigrated before 30 yrs of age	-205689.9	106635	-102084	1051517	-103434.31***	105919	-102169.9***	101132	-102169.9***	1007707	-102169.9***	1007707	-102169.9***	1007707	-102169.9***
STEM	-105622.7	106635	-105622.7	1051517	-105622.7	105919	-105622.7	101132	-105622.7	1007707	-105622.7	1007707	-105622.7	1007707	-105622.7
Foreign Degree (likely)	-154147.4	106635	-102471	1051517	-135204.04	105919	-149582.9	101132	-149582.9	1007707	-149582.9	1007707	-149582.9	1007707	-149582.9
Hispanic	-105622.7	106635	-1041995	1051517	-1050523.2	105919	-107039.8	101132	-107039.8	1007707	-107039.8	1007707	-107039.8	1007707	-107039.8
Horizontal Undermatch	-204010.9	106635	-100201	1051517	-100879.99	105919	-201068.1	101132	-201068.1	1007707	-201068.1	1007707	-201068.1	1007707	-201068.1
Vertically Mismatched	-206337.31	106635	-101777	1051517	-117814.94	105919	-134635.87**	101132	-134635.87**	1007707	-134635.87**	1007707	-134635.87**	1007707	-134635.87**
Foreign Citizens	-105622.7	106635	-101986	1051517	-101986	105919	-105622.7	101132	-105622.7	1007707	-105622.7	1007707	-105622.7	1007707	-105622.7
U.S. Citizens	-481	106635	-552994	1051517	-552994	105919	-552994	101132	-552994	1007707	-552994	1007707	-552994	1007707	-552994
N. of cases	2506211		2506211		2506211		2506211		2506211		2506211		2506211		2506211

Note: DACA-eligible/Ineligible groups are created with Kuka et al. (2020) methods. Foreign Degree (likely) consists of individuals that were outside the U.S. during typical college age. FE by d.f. model has 20 unique degree fields.

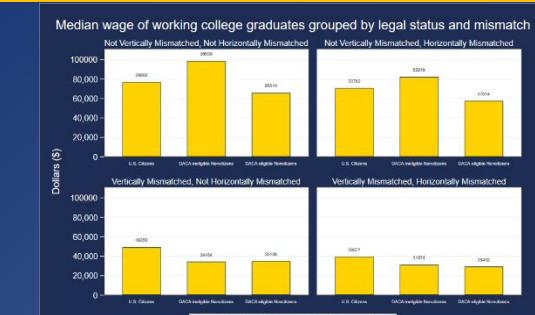
\* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001



## Discussion

Our results indicate that many of the covariates from our literature review and the added DACA-eligible variable are highly statistically significant. Other regression statistics indicate much of the variance is yet to be accounted for in the mismatch models, though the wage model covariates fare well in explaining variance of an individual's log-transformed wage.

**Primary concern:** Omitted Variable Bias arising from not having included degree field and occupation to all models. We were unable to include vertical mismatch, an important predictor, into a Fixed Effects model, with our allotted time, because the predictor was found collinear when occupation was fixed



## Conclusions & Recommendations

Our conclusions echo those of the papers referenced, extending the implications of mismatch and wage penalties to a more specific group: DACA-eligible college graduates.

### Future Research:

- Expand sample beyond college graduates
- Improve accuracy of categorization algorithm by using the updated version of the Warren and Passel (1987) unauthorized status imputation method
- Improve econometric models and break-down of variables such as eligibility, occupation, degree field, types of workers, and industry

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