The Effects of Deferred Action for Childhood Arrivals on the Educational Outcomes of Undocumented Students

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Abstract

Deferred Action for Childhood Arrivals (DACA) is the first large-scale immigration reform to affect undocumented immigrants in the United States in decades and offers eligible undocumented youth temporary relief from deportation and renewable work permits. While DACA has improved the economic conditions and mental health of undocumented immigrants, we do not know how DACA improves the social mobility of undocumented immigrants through its effect on educational attainment. This paper uses administrative data on students attending a large public university to estimate the effect of DACA on undocumented students' educational outcomes. The data are unique because they accurately identify students' legal status, account for individual heterogeneity, and allow separate analysis of students attending community colleges versus baccalaureate-granting, 4-year colleges. Results from difference-in-difference estimates demonstrate that as a temporary work-permit program, DACA incentivizes work over educational investments but that the effect of DACA on educational investments depends on how easily colleges accommodate working students. At 4-year colleges, DACA induces undocumented students to make binary choices between attending school on a full-time basis or dropping out of school to work. At community colleges, undocumented students have the flexibility to simply reduce course work to accommodate increased work hours. Overall, the results suggest that the precarious and temporary nature of DACA creates barriers to educational investments.

Introduction

An estimated 11 million undocumented immigrants reside in the United States (Passel and Cohn, 2016). They account for one-quarter of the foreign-born population, 5% of the labor force, and are responsible for almost 3% of GDP (Edwards and Ortega, 2016). Many of these immigrants are "dreamers" or undocumented youth who were brought to the United States as children. While undocumented youth have a constitutional right to K-12 public education, they come to face the realities of their illegality as they transition into adulthood; undocumented immigrants in the Unites States cannot legally work or vote, and are under the threat of deportation (Gonzales 2011; Gonzales, Terriquez and Ruszczyk, 2014; Wong et al. 2013).

Recent efforts to reform immigration policies have focused on expanding opportunities for "dreamers" because public sympathy for them remains strong. Since 2001, legislators have attempted to enact the Development, Relief, and Education for Alien Minors Act, or DREAM Act, which offers legal status and pathways to citizenship for undocumented youth who entered the United States as children. In 2010, the DREAM Act failed to pass the U.S. Senate. In response, President Obama enacted the Deferred Action for Childhood Arrivals (DACA) on June 2012 through an executive order. DACA granted two-year, renewable work permits and temporary relief from deportation to eligible undocumented youth. As of 2016, over 740,000 applications have been approved for DACA of the estimated 1.7 million who are eligible (USCIS 2017).

As a stop-gap measure intended to offer temporary legal employment options to undocumented youth in the absence of viable options for legal residency, the program has been successful in increasing labor force participation among undocumented youth (Amuedo-Dorantes and Antman 2017; Pope 2016) and reducing poverty among households headed by

DACA eligible immigrants (Amuedo-Dorantes and Antman 2016). The positive effects that DACA has on labor force participation parallels the findings of research that shows that other types of programs granting temporary work permits, like Temporary Protected Status, also improve the labor market conditions of undocumented immigrants (Orrenius and Zavodny, 2015). In addition, research has shown that DACA increase the economic and social incorporation of recipients by allowing them increased opportunities to open bank accounts and obtain credit cards (Gonzales, Terriquez and Ruszczyk, 2014) and improves recipients' mental health (Venkataramani, et al. 2017).

However, the effect of DACA on higher education remains unclear. Education has long been viewed as an engine for social mobility. Understanding the effects of DACA on the college attendance of undocumented students offers insight into how temporary work permits can affect the socio-economic integration and well-being of their recipients. Do temporary, legal work permits raise the returns to schooling and encourage college attendance? Or does the short planning horizon associated with two-year work permits distort educational decisions and limit the chances for upward social mobility? To date, an estimated 250,000 undocumented students are enrolled in post-secondary schools. Yet, despite the importance of these issues, we know very little about how DACA affects the educational choices and outcomes of undocumented college students.

Our study addresses these questions using a unique data set that accurately identifies legal status. We use a difference-in-difference approach to estimate the causal effect of DACA on the educational outcomes of undocumented students. We separately analyze community colleges and 4-year colleges because these two types of institutions differ in terms of how students typically balance schooling and work and our results suggest that DACA has important

effects on this trade-off. Our results demonstrate that DACA increases the dropout rates of undocumented students attending 4-year colleges and causes undocumented students attending 2-year community colleges to switch from full-time attendance to part-time attendance. These results suggest that despite evidence of DACA's positive economic impact on undocumented immigrants through increased labor force participation, the temporary and precarious nature of DACA status incentivizes work over schooling.

Background and Prior Research

Undocumented Students in Higher Education

Just like immigrants with legal status, undocumented students tend to be first generation college-goers from low-income families, who struggle to graduate with their intended degree (Bailey, Jenkins and Jaggars 2015; Suarez-Orozco et al. 2015). However, undocumented students face additional obstacles to college enrollment, attendance, and graduation. First, they attend college under the threat of deportation for themselves and their family members, which makes institutional interactions intimidating (Suarez-Orozco et al. 2015). Second, the cost of attending college is higher for undocumented students because they do not qualify for government financial aid, and the returns are lowered by limited employment options. Third, undocumented youth face greater pressure to contribute to household finances (Gleeson ad Gonzales 2012; Terriquez 2015) and are at greater risk of leaving school early. Finally, the returns to education are uncertain for undocumented youth because they cannot legally work. Thus, undocumented youth are less likely to enroll in college than their peers with legal status (Greenman and Hall 2013).

Despite facing great barriers to entry, an estimated 250,000 undocumented youth currently attend college in the United States. Yet our understanding of the higher education experiences of undocumented immigrant youth is limited. Efforts to better understand their academic trajectories and outcomes are hampered by data constraints limitations. First, the U.S. Census and most large-scale, national surveys do not contain information on immigrants' legal status. As a result, researchers need to rely on imputations of undocumented status. These imputation methods have evolved considerably over the last few decades (Passel and Cohn 2009, Warren and Warren 2013). However, some authors have shown that these imputations can lead to large bias in some applications (van Hook et al. 2015). Recent studies either treat all foreign born residents, including those who are legally authorized to be in the United States (i.e., legal permanent residents or LPRs) as undocumented (Flores 2010; Kaushal 2008; Potochnick 2014) or treat students who hold student visas or who have refugee or asylum status as undocumented (Greenman and Hall 2013). Other researchers have employed online surveys as a tool for accessing the undocumented student population, but voluntary web surveys are very likely to suffer from selection biased, potentially excluding students who are less politically active or who are lower-income (Suarez Orozco et al. 2015; Gonzales et al. 2014). Therefore, much of our knowledge of the experiences of undocumented college students have been informed by qualitative studies (Abrego 2006; Contreras 2009; Garcia and Tierney 2011; Gonzales 2011) that have tended to focus on specific populations (i.e., Mexicans) attending selective 4-year colleges.

The second important limitation is the lack of longitudinal data. Most studies rely on cross-sectional surveys, like the Current Population Survey (CPS) or the American Community Survey (ACS), and are likely to suffer from estimation bias arising from unobserved individual heterogeneity. Undocumented youth who enroll in higher education tend to be more positively

selected; they are academically gifted, motivated and resilient individuals with exceptionally high educational aspirations (Conger and Chellman 2015; Terriquez 2014; Contereras 2009; Perez and Cortes 2011). These characteristics likely correlate strongly with decisions to seek employment or to enroll in college. Failing to account for these unobserved differences would likely introduce omitted variable bias.

Deferred Action for Childhood Arrivals and Higher Education

The effects of DACA on college attendance are theoretically ambiguous, and the existing empirical literature provides only mixed evidence. On the one hand, by providing access to a wider set of jobs and offering reprieve from deportation, DACA increases the returns to schooling and may incentivize current undocumented students to complete their degrees promptly. Additionally, DACA may motivate undocumented youth to invest in human capital by reducing the experience of liminality or the sense of living a life in limbo (Menjívar 2006; Gonzales 2011). On the other hand, there are also reasons to believe that DACA may increase college dropout rates for undocumented students. Nearly 70% of families headed by undocumented parents subsist at or near the poverty line (Amuedo-Dorantes and Antman 2016; Gonzales, Terriquez and Ruszczyk 2014) and are typically employed in low-wage, unstable jobs that offer no benefits like health insurance, sick leave or over-time pay (Donato et al. 2008; Hall, Greenman and Farkas 2010). Thus, families headed by undocumented parents commonly rely on all working-age members to contribute to family income. By providing access to the legal segment of the job market, DACA presents an opportunity to increase household earnings, which raises the opportunity cost of attending school. As a result, DACA status may lead unauthorized

college students to drop out of school in order to take advantage of the enhanced earning opportunities.

The existing empirical analyses of the effects of DACA on the educational outcomes of undocumented youth face the same data limitations that all quantitative efforts to study the undocumented population face. Pope (2016) and Amuedo-Dorantes and Antman (2017) use data from the ACS and CPS, respectively. Lacking information on immigrants' legal status, they assume that non-citizens in a given age range are undocumented. Both studies find positive effects of DACA on employment but mixed results of effects on schooling. Whereas Amuedo-Dorantes and Antman (2017) finds that DACA reduces college enrollment among probable DACA eligible students, Pope (2016) finds no significant effect of DACA on schooling. Other studies have relied on web-based surveys of undocumented college students to explore the effect of DACA on college outcomes and find that DACA allows recipients to pursue educational opportunities that they previously could not (Wong et al. 2015; Gonzales et al. 2016). However, respondents of online surveys are self-selected and likely to be higher achieving and more motivated than the general population of undocumented students. Thus, it is unclear whether the findings based on online surveys can be generalized to the entire population of undocumented college students.

Our study extends the existing literature on the effects of DACA on college attendance by using a unique administrative data. These data allow us to overcome many of the data limitations that have plagued previous studies because we can accurately identify students' legal status, account for individual heterogeneity, and separately consider students enrolled at community and baccalaureate-granting, 4-year colleges. Due to data confidentiality agreements with the university, we have anonymized the data source and the name of the university, and refer to it as

Urban College System (UCS). This university is set in a major metropolitan area and educates over 260,000 degree seekers across 18 undergraduate campuses, of which 7 are community colleges. Nearly 80% of undocumented college students living in the major metropolitan area attend UCS (DiNapoli and Bleiwas, 2014). Therefore, our analytical sample of undocumented college students includes nearly the entire universe of undocumented students attending college in this large metropolitan area.

We can reliably identify legal status because the university is located in one of 20 U.S. states that offer in-state tuition to resident undocumented immigrants. Specifically, in order to qualify for in-state tuition, undocumented students must submit notarized affidavits attesting to their legal status and committing to the pursuit of legalization should it become possible. There are large financial incentives to accurately report legal status because in-state tuition is substantially lower than out-of-state tuition. Out-of-state tuition for a full-time student at a UCS senior college in 2016 was about $17,000 versus $6,500 for in-of-state tuition. At community colleges, out-of-state tuition for a full-time student was approximately $9,500, compared to $5,000 for in-state tuition.

Another key feature of the data is that UCS includes seven (2-year) community colleges that are open access to anyone with a high school diploma or GED, and eleven (4-year) senior colleges that offer bachelor's degrees. This is important for two reasons. First, previous studies have tended to focus on elite institutions rather than the less selective public four-year and community colleges where undocumented students are concentrated (Gonzales, Terriquez and Ruszczyk, 2014). Second, distinguishing between community and senior colleges may be important to understanding the effects of DACA on college attendance. The reason is that students at 4-year colleges face a sharp trade-off between studying and working, whereas

community colleges provide greater flexibility to students who want to combine part-time enrollment with work. Nationally, less than a third of 4-year college students work while nearly 70% of community college students work (Bureau of Labor Statistics 2017; American Association Community Colleges 2016). As a result, we hypothesize that DACA will have larger effects on attendance at 4-year colleges than at community colleges.

Finally, the data tracks students over time, even when they switch from one college to another within the UCS system. The longitudinal nature of the data allows us to account for unobserved individual heterogeneity by estimating individual fixed-effects models, which limits the potential for compositional effects and greatly reduces concerns of omitted-variable bias.

Data and Methods

Data

We analyze administrative data from one of the largest public university systems in the country. Due to data confidentiality agreements with the university, we have anonymized the data source and will refer to the university as Urban College System (UCS). The university system is set in a major metropolitan area and educates over 260,000 degree seekers across 18 undergraduate campuses of which 7 are community colleges. Once individuals enter the administrative records, they are followed over the course of 10 years. We analyze entering cohorts from fall 2009 to fall of 2012. This analytical sample includes 4 cohorts of students who entered the university system during the 4 years immediately prior to DACA implementation. We exclude cohorts who enter post-DACA to avoid bias due to the possibility that undocumented students who entered college post-DACA may be differentially selected relative to those who entered college prior to DACA. Our analytical sample is comprised of 385,467 students; 198,986 attending 2-year colleges and 186,481 attending 4-year colleges.

Measures

We focus on two main outcome variables for our student population: a dropout indicator and a full-time enrollment indicator. Dropout is measured as a dummy variable indicating that a student who was previously enrolled is no longer enrolled (dropout=1) in a given year (as opposed to remaining enrolled or having graduated). Full-time attendance is measured as a dummy variable indicating that a student completed 24 credits or more during the academic year (full-time = 1), and is defined only for the subset of students who are enrolled at each point in time.

Our main explanatory variable is the student's immigration and legal status. Students are asked to self-report as U.S. citizens, legal permanent residents, or undocumented immigrants at time of initial enrollment. Students must submit documentation to validate their own self-reports. There are large financial incentives for undocumented students to self-identify because UCS is located in one of 20 states that offer in-state tuition to undocumented students who graduated from a high school or obtained a GED from within the state. In order to qualify for in-state tuition, undocumented students must provide a notarized affidavit stating that they will pursue steps to obtain legal residency if such options become available. Out-of-state tuition for a full-time student at 4-year colleges in 2016 is about $17,000 versus $6,500 for in-of-state tuition.

Legal status is measured as a dummy variable indicating that a student reported being undocumented and submitted an affidavit to obtain in-state tuition rates, or failed to provide documentation of legal status. Individuals who obtained their high school degree outside of the United States and self-report as undocumented (N=762) and individuals who obtained their high school degree in the United States but outside of the state (N=338) are excluded from the

analytical sample. This step was taken to eliminate foreign students or out-of-state, documented students who might self-report undocumented status to gain in-state tuition.

Analytical Strategy

Our empirical strategy exploits changes in our outcome variables for undocumented students before and after DACA, relative to changes for documented students over the same time period. Netting out the changes in outcomes for documented students allows us to purge the effects of unobserved factors that affected all students similarly, such as changes in local economic conditions.

Specifically, our difference-in-difference estimation is based on the following linear probability model:

$$Y_{itc} = \alpha_i + \alpha_t + \alpha_c + \beta Post_t * Undoc_i + \varepsilon_{itc} . \quad (1)$$

The dependent variable Y_{itc} is the outcome variable for individual *i* in cohort *c* in calendar year *t*. Importantly, the specification includes individual fixed-effects, denoted by α_i, that absorb all time-invariant characteristics of individuals (such as ability, motivation, race/ethnicity and family background). Additionally, our specification includes dummy variables for calendar year (α_t) and years-since-enrollment (α_c). The former account for time-varying aggregate effects, such as local labor market conditions, and the latter set of fixed-effects account for the differences in dropout rates (and full-time status) as a student progresses toward graduation. Dummy variable $Undoc_i$ indicates whether student *i* reported being undocumented, and $Post_t$ is an indicator variable marking the roll out of DACA. Lastly, disturbance term ε_{itc}, captures all idiosyncratic variation in the outcome variable that is not picked up by any of the

aforementioned regressors. When the outcome variable is full-time enrollment, the sample is restricted to currently enrolled students.

The key parameter of interest is β, the coefficient on the interaction term between $Post_t$ and $Undoc_i$. This coefficient is identified by the changes in the outcome variable for undocumented students before and after DACA, net of changes for documented students in the same time period. Besides the difference-in-difference estimation just described, we will also estimate a more flexible specification that allows for time-varying gaps in outcomes between documented and undocumented students. The results of this specification will be useful to assess the validity of the identification assumption of *common trends* required to provide a causal interpretation of our estimates.

One important caveat is that we cannot determine DACA eligibility perfectly. To be eligible, undocumented immigrants need a high-school degree (or a GED, or having been honorably discharged from the Armed Forces), to have arrived to the United States before age 16, continuous residence in the United States since 2007, and a clean criminal record. All students in our sample have fulfilled the first requirement but we cannot determine if they fulfill the other requirements. Nevertheless, it is likely that most undocumented students in our data are DACA eligible.

For the reasons above, our estimates of β should be interpreted as *intent-to-treat* effects. It is likely that average treatment effects (on the treated) are substantially larger because not all eligible individuals have applied for DACA. As of March 31, 2014, nearly 50% of eligible youth who reside in the state that UCS is located in applied for DACA (Batalova et al. 2014), and nearly 95% of those who applied were approved (USCIS). This compliance ratio implies that the *average treatment* effect (on the treated) will be about twice as large as the *intent-to-treat* effect.

Difference-in-difference estimates provide our main analytical results. In addition, we also estimate a flexible specification that allows for time-varying gaps in outcomes between documented and undocumented students:

$$Y_{itc} = \alpha_i + \alpha_c + \alpha_t + \beta_t Undoc_i + \varepsilon_{itc} \quad (2)$$

The dependent variable Y_{itc} will represent a dummy variable for dropout or full-time status for individual *i* in cohort *c* in calendar year *t*. Terms α_i , α_c , and α_t are fixed-effects for individuals, years since enrollment and calendar year, respectively. β_t captures the difference in the dependent variable between undocumented students and their legal status counterparts for every year *t*. Regressions for full-time attendance are restricted to the subset of students who are enrolled at each point in time. We plot the estimated β_t to assess parallel trends in the pre-DACA period.

Timing of DACA implementation

Understanding the date of implementation of the DACA program and when one should expect to see effects on academic outcomes is critical. On June 15, 2012, President Barack Obama announces the DACA program. Applications begin being accepted on August 15, 2012, but very few cases were approved until after October 2012, with the vast majority of approvals occurring after December 2012 (Batalova et al. 2014). Figure 1 shows the number of approved DACA cases from the time when applications were first accepted (August 12, 2012) to July 2013. For college students, this means that DACA is announced during their 2012 summer break. The vast majority of DACA applicants in college would have been approved during or after their spring 2013 semester. This means that any anticipated effect of DACA should be observed during calendar year 2013 and beyond. Accordingly, indicator variable $Post_t$ takes a value of one for calendar years 2013 and onward.

Results

Descriptive statistics

Summary statistics for outcome variables by legal status and college type are presented in Table 1. Other characteristics of students are also included in Table 1 in order to provide a descriptive profile of students. However, they are not included as covariates in our regressions because they do not vary over time and, as a result, they are absorbed by the individual fixed-effects.

The most striking result in this table is the positive selection of undocumented students relative to their legal-status peers. At community colleges, documented students have high school grade-point-averages that are .44 standard deviations *below* the sample mean whereas undocumented students have .88 standard deviations *above* the sample mean. At 4-year colleges, the high school grade-point-averages for documented and undocumented students are .50 and .75 standard deviations above the sample mean, respectively. The positive selection of undocumented students relative to their legal status peers may explain why the statistics also show that undocumented students are less likely to dropout of college and more likely to attend college on a full-time basis than their legal status counterparts.

Fig. 1 plots the dropout rates for undocumented and documented students, as a function of years since enrollment, without making any adjustments to the raw data. The top panel corresponds to senior colleges and the bottom panel to community colleges. The figure reveals three noteworthy findings. First, the results offer strong evidence of parallel trends in the pre-DACA period, which is a key identifying assumption in difference-in-difference estimation. Namely, prior to 2012, the gap between the dropout and full-time enrollment rates of

documented and undocumented students were fairly constant over time. Interestingly, dropout rates for undocumented students were lower than for their legal-status peers at both community and senior colleges. These results are consistent with past studies that show that undocumented students are more positively selected in terms of ability and motivation than their peers with legal status (Conger and Chellman, 2013). Second, coinciding with the roll out of DACA, we observe a sharp increase in the dropout rates of undocumented students at senior colleges in year 2013 (top panel in *Fig. 1*). The increase in dropout rates is noticeable only for students who have been enrolled in college for up to three years, but not for students that are close to graduation. Third, the dropout rates for undocumented students in community colleges do not display any changes around the adoption of DACA.

We now turn to full-time enrollment rates, plotted in *Fig. 2*. The figures in the top panel provide no indication of sharp changes in full-time status for undocumented students in senior colleges around the adoption of DACA. In contrast, the bottom panel suggests a noticeable drop in full-time enrollment for undocumented students that have been enrolled for three years or less in community colleges. Taken together, these figures suggest that DACA has induced undocumented students in senior colleges to drop out of school, while leading to a reduction in course load for undocumented students in community colleges. In both cases, these findings are suggestive of an attempt by these students to take advantage of the improved earnings opportunities opened up by the DACA work permits. It appears that students in community colleges, who were likely to be working already, exhibited an intensive-margin response, simply increasing their work hours without dropping out of school. In contrast, students enrolled in senior colleges may have faced a sharper trade-off and responded by dropping out of college altogether.

While strongly suggestive, the results in the previous figures may be driven by compositional changes. To provide a more formal analysis that accounts for individual heterogeneity, and to test for statistical significance, we estimate a regression models that includes individual fixed-effects, plus calendar year and years-since-enrolment dummies. We begin with a more flexible version of the difference-in-difference model that allows for time-varying gaps in the outcome variable between documented and undocumented students (see *Eq. 2*). The resulting point estimates and corresponding 95-percent confidence intervals are plotted in *Fig. 3*. Each point in the graph can be interpreted as the adjusted mean gap in outcomes between undocumented and documented students. Full regression results are presented in *Table 3.*

The figure offers two noteworthy findings. First, it provides additional evidence in support of the parallel trends assumption. We fail to reject the null of a zero adjusted gap in all pre-DACA years in the four sub-figures. Second, the results confirm the descriptive results presented in *Fig. 1 and 2*. The top row of figures clearly show that DACA significantly increases dropout rates among undocumented students in senior colleges, but has no significant effects on the decision to attend college on a full-time basis. In contrast, we find the opposite effect at community colleges. As illustrated in the bottom row, DACA reduces full-time enrollment at community colleges, but does not seem to induce dropping out of college.

Effect of DACA on educational outcomes

Table 2 offers a simple quantification of the effects of DACA by reporting difference-in-difference estimates of the model specified in equation (1), referring to the decision to dropout (Panel 1) and to attend college on a full-time basis (Panel 2). For each outcome, we provide estimates separately by type of college. Column 1 presents estimates for the sample pooling

community and senior colleges, indicating a 3.7 percentage-point increase in the dropout probability, and a 2.8 percentage-point reduction in the probability of full-time status. However, these estimates mask important composition effects. When estimating the models separately on the samples for community and 4-year college students, we find that DACA increased the dropout rates of undocumented students in 4-year colleges by 7.3 percentage-points, but had no effect on the dropout rates of undocumented students enrolled in community colleges. In contrast, we find that DACA lowered the probability of full-time status by 5.5 percentage-points for undocumented students at community colleges, while having no effect on the full-time status of undocumented students in senior colleges. These findings underscore the importance of distinguishing between the effects of DACA by type of college, which probably reflects differences in students' capacity to balance work and school in senior and community colleges.

As noted earlier, our difference-in-difference estimates should be interpreted as *intent-to-treat* effects. As such, our estimates underestimate the effects of actually *receiving* DACA status, given that only about half of those eligible actually applied for DACA within our sample period. With a compliance ratio of approximately 0.5, the average treatment effect (on the treated) implied by our estimates is twice as large as our estimated coefficients. Namely, receiving DACA status is associated with a 14.6 percentage-point increase in the probability to drop out for an undocumented student at a 4-year college, and an 11 percentage-point reduction in the probability of full-time enrollment for an undocumented student at a community college.

These estimates are quantitatively large, but consistent with the findings reported in previous studies showing that DACA increases the employment opportunities of undocumented immigrants. For example, Pope (2016) and Amuedo-Dorantes and Antman (2017) report *intent-to-treat* effects on the probability of employment of non-citizen high school graduates in the

range of 5 to 10 percentage-points. Both qualitatively and quantitatively, these estimates reinforce our interpretation that DACA has led undocumented students to reduce their course-work, partially or fully, in order to take advantage of the enhanced employment opportunities.

Discussion

Our findings suggest that as a temporary work-permit program, DACA incentivizes work over investments in human capital but that the effect of DACA on undocumented students' decisions to remain in school depends on how easily colleges accommodate working students. We find that dropout rates for DACA *recipients* at 4-year colleges may have increased by over 14 percentage-points, while leaving largely unaffected the full-time status of those that remain in school. In contrast, at community colleges where the vast majority of students work while attending school, DACA *recipients* may have reduced full-time enrollment by 11 percentage-points, with no measurable effect on their dropout rates.

These patterns indicate that undocumented students at 4-year colleges must make binary choices between attending school on a full-time basis or dropping out of school to work. Community colleges, on the other hand, are designed to help students balance schooling with work. For example, they offer more evening and weekend classes than senior colleges. Course credits at community colleges are also significantly cheaper than at 4-year colleges, which allow undocumented students more flexibility in course load to accommodate variable work schedules. As a result, DACA recipients at community colleges can simply reduce their course work to accommodate increased work hours.

A caveat of the study is that we cannot assess the long-term impact of DACA on educational attainment. Our results clearly show that DACA has led undocumented students to

leave school, or reduce course loads, in order to take advantage of the (renewable) 2-year work permit. What we are currently unable to assess is whether those students will eventually return to school and complete their degrees. One possibility is that students take advantage of temporary work permits by leaving school to work on a temporary basis and return to school after their work permit expires. Since data collection is ongoing, we can observe whether students who dropout of college re-enter in the future as new data become available.

Recent studies have highlighted the role that many public universities play in providing access and opportunities for social mobility to low-income students (Chetty et al. 2017). These types of institutions have the potential to offer similar access and opportunities to undocumented youth. Moreover, the undocumented students who attend college are among the most highly motivated and academically gifted students in their institutions, making them arguably the most likely to graduate and successfully find employment if it were not for their lack of legal status. However, our results show that as a temporary work permit program, DACA leads many undocumented youth to myopically reduce educational investments because two-year work permits can only afford short-term planning horizons. Initially enacted by President Obama through an executive order, rather than through normal legislative channels, DACA can be rescinded at will by the President at any time. Thus, the uncertainty surrounding the future of DACA may temper the sense of security and stability that some policy makers hoped the program would provide to undocumented youth.

Overall, the research to date demonstrates that "dreamers" are better off with DACA than without it. Research has show that offering undocumented immigrants temporary legal status improves their mental health, economic wellbeing and social integration (Orrenius and Zavodny 2015; Venkatarami et al. 2017, Amuedo-Dorantes and Antman 2016, Gonzales et al. 2014). Yet,

the temporary nature of programs like DACA may not do enough to reduce undocumented youth's sense of liminality. Our findings suggest that immigration policies that offer students' longer planning horizons and greater certainty for the future, such as pathways to permanent residency, would introduce fewer distortions to educational investments.

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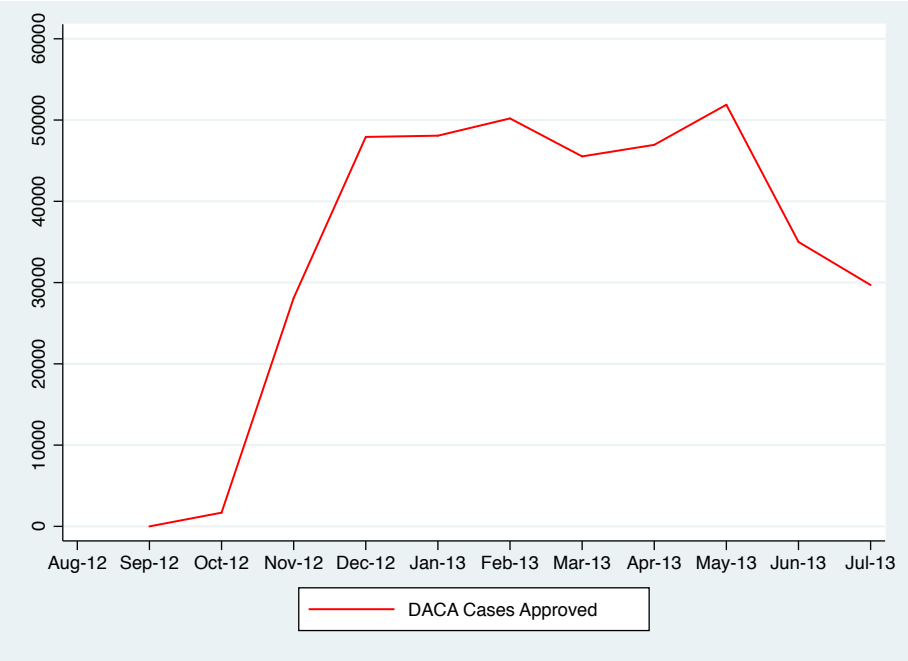
Figure 1. Number of DACA Approvals over Time



Source: Data available at USCIS (2014).

Table 1: Select Descriptive Statistics by Legal Status and College Type

	2-year college				4-year college			
	Documented		Undocumented		Documented		Undocumented	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Dropout	42%		35%		25%		19%	
Full-time attendance	40%		43%		61%		66%	
High school GPA (standardized)	-0.44	0.88	-0.29	0.91	0.50	-0.95	0.75	-0.91
Pell grant	72%		0%		61%		0%	
Country of birth								
U.S. born	76%		0%		82%		0%	
Latin America	4%		48%		2%		35%	
Asian	6%		20%		7%		31%	
Caribbean	11%		27%		6%		27%	
Other	2%		5%		2%		7%	
Female	53%		52%		53%		54%	
Age of entry	20.75	4.99	20.33	4.09	19.29	3.71	18.81	1.99
No. individuals	98,161		2,073		78,048		2,247	

Note: Pell grant indicates if student received a Pell grant, which is tuition assistance offered to students whose household income is below $50,000 and can be used as an indicator of socioeconomic disadvantage. Undocumented students are ineligible for Pell grants. The table reports standard deviations only for the continuous variables. High school GPA has been standardized so that the mean over the whole student body equals zero.

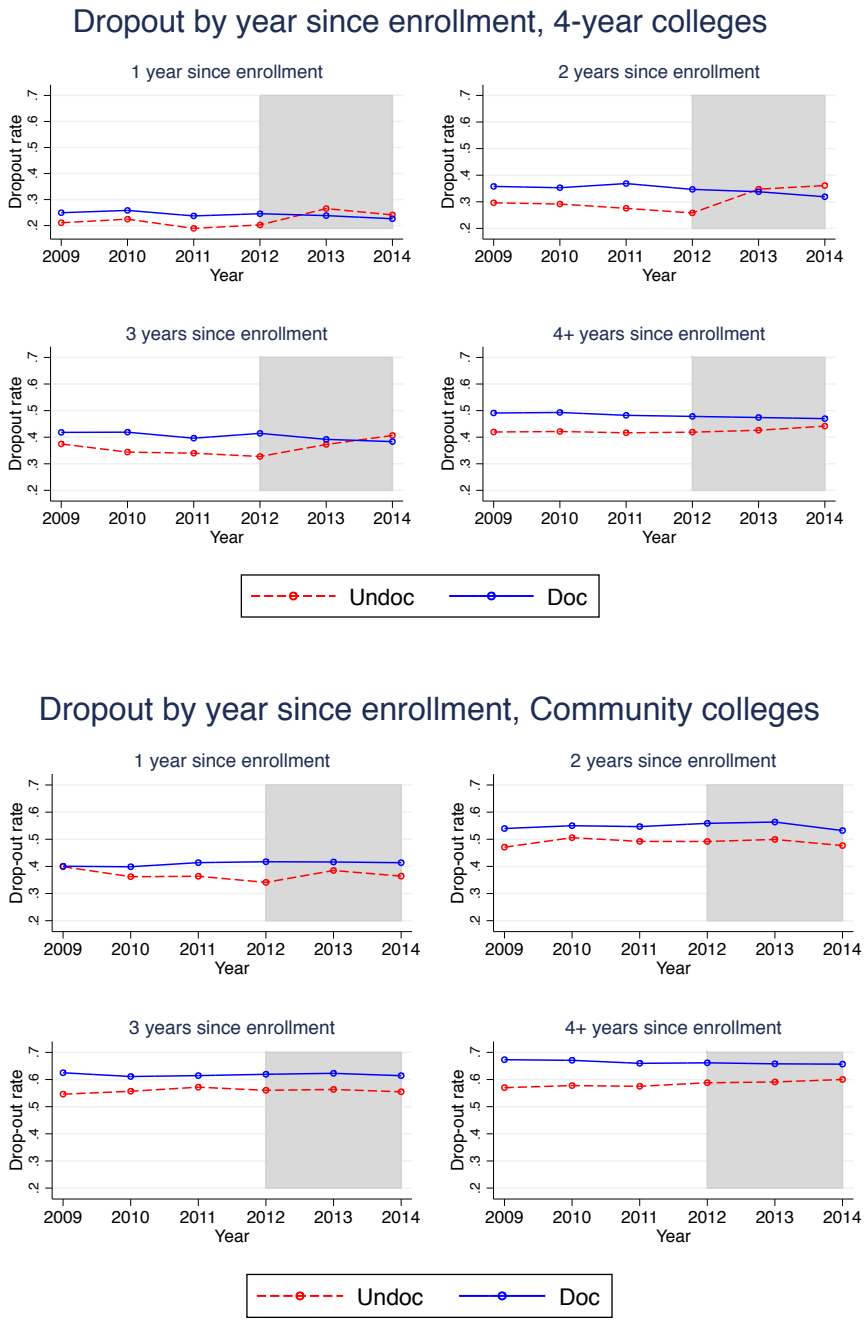
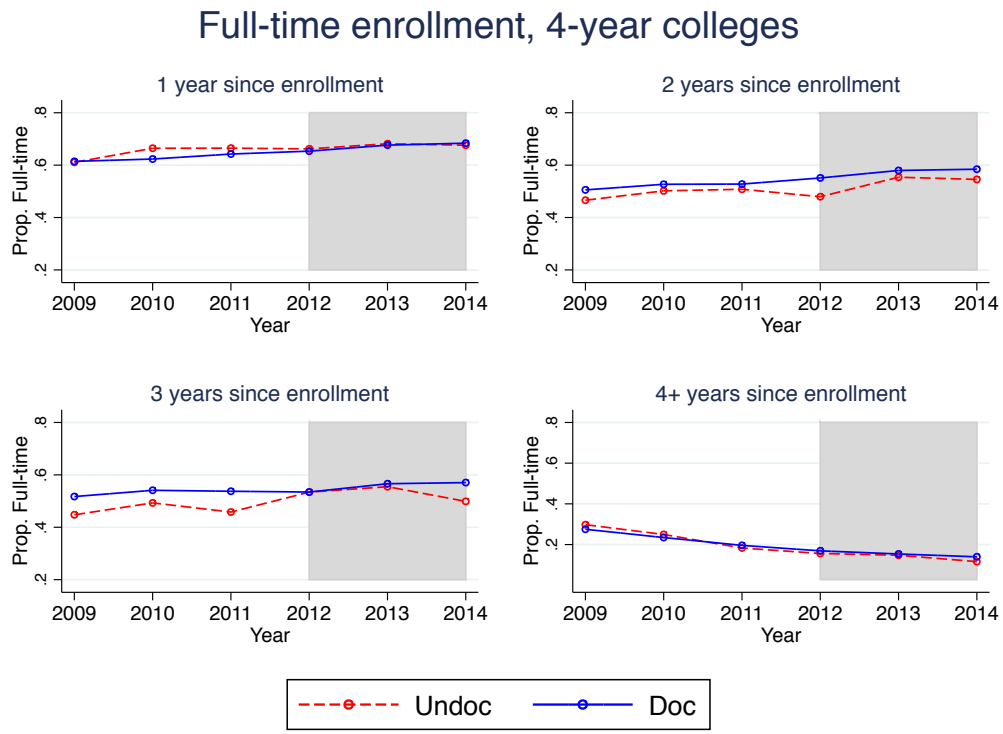


Fig. 1. Unadjusted dropout rates. *Upper panel* shows the dropout rates by years of enrollment at 4-year colleges. *Lower panel* shows dropout rates by years of enrollment at community colleges.



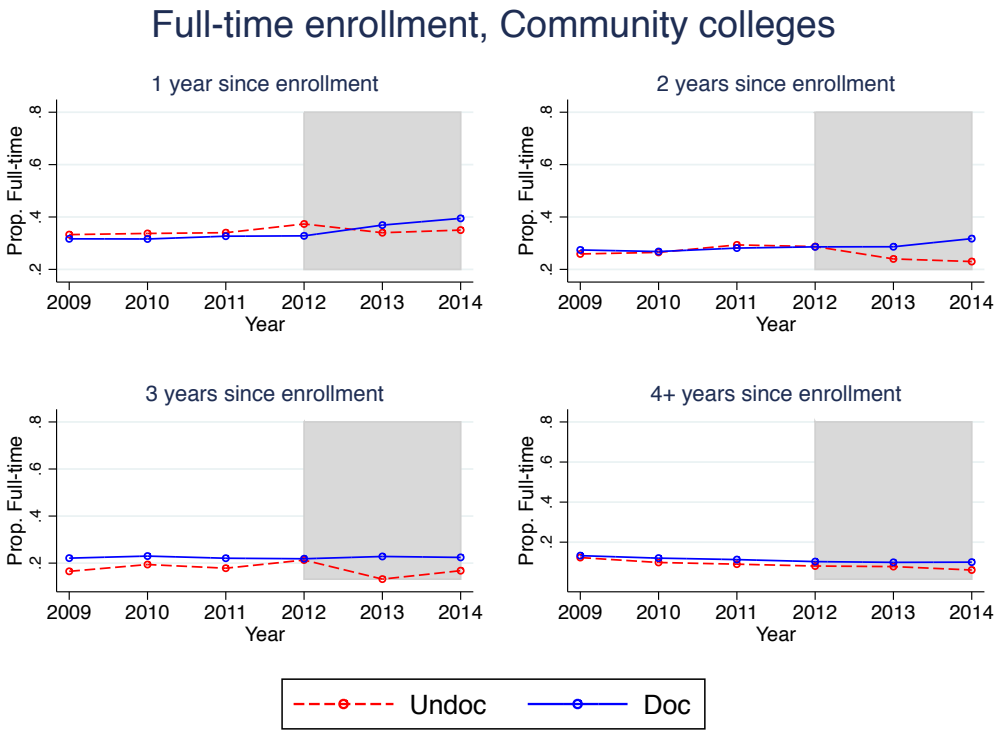


Fig. 2. Unadjusted full-time enrollment (vs. part-time enrollment) conditional on being currently enrolled. *Upper panel* shows the dropout rates by years of enrollment at 4-year colleges. *Lower panel* shows dropout rates by years of enrollment at community colleges.

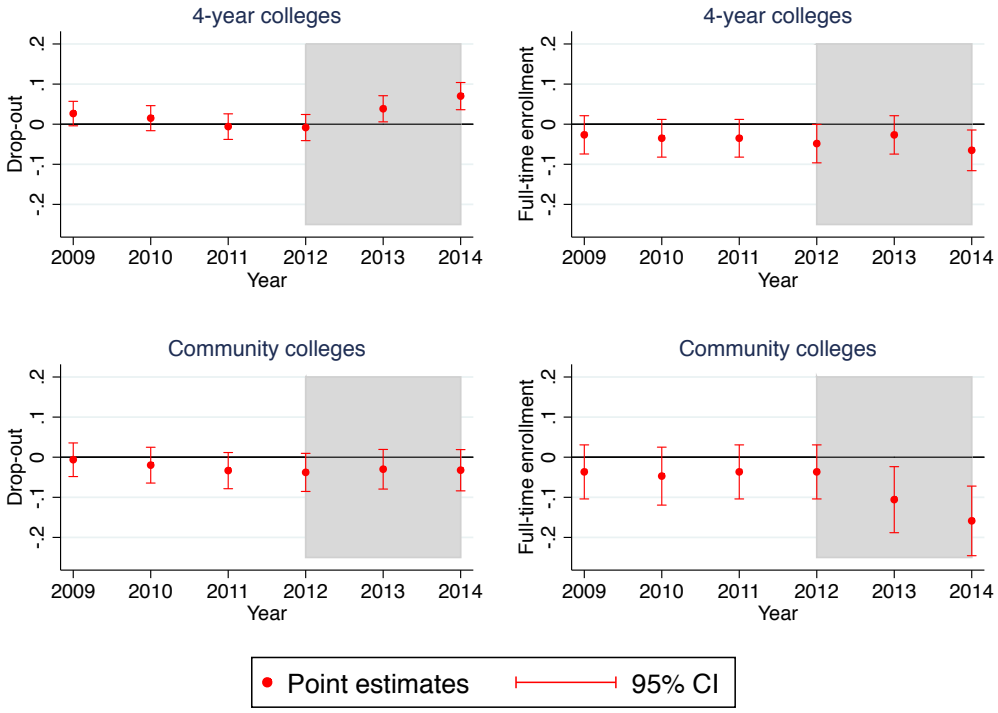


Fig. 3. The figures show point estimates and 95% confidence intervals for four separate regression models. In column 1 the dependent variable is a dropout indicator variable, and in column 2 it is a full-time enrollment indicator variable. The models in the top and bottom rows are estimated, respectively, on the samples of students attending 2-year and 4-year colleges. All models include interactions between year dummies and a dummy variable for undocumented status, in addition to individual fixed-effects, and dummies for calendar year and years since initial enrollment. Each point estimate can be interpreted as the mean gap in the outcome variable between undocumented and documented students at every year. Regressions for full-time enrollment are restricted to the subset of students who are enrolled at each point in time.

Table 2. Results from Difference-in-Difference Regressions

	Pooled	Community college	4-year college
Panel 1: Dropout			
DACA x Undocumented	.037***	0.000	.073***
	(0.007)	(0.008)	(0.009)
No. observation	740,169	330,772	345,269
No. individuals	180,529	100,234	80,295
Panel 2: Full-time enrollment			
DACA x Undocumented	-0.028**	-0.055***	-0.013
	-0.01	-0.012	-0.012
No. observation	505,481	230,538	248,915
No. individuals	180,529	100,234	80,295

Note: DACA increase dropout rates at 4-year colleges but has not effect on dropout rates at community colleges, whereas DACA reduces the share of students who are enrolled on a full-time basis at community colleges but has no effect at 4-year colleges. Robust standard errors are in parentheses. All models include individual fixed-effects and dummy variables for calendar year and years since enrollment. Sample includes only cohorts who entered college before DACA, from 2009 to 2012. Regressions using sample of community college students exclude students in their 4^{th} year or more. Regressions using sample of 4-year college students exclude students in their 6^{th} year or more. *** p<0.000, ** p<.001

Table 3. Regression Estimates from Individual Fixed Effect Estimations

	Dropout		Full-time Status	
	2-year college	4-year college	2-year college	4-year college
Calendar year				
2009	0.002	-0.002	0.003	0.001
	(0.004)	(0.003)	(0.006)	(0.004)
2010	0.004	0.003	-0.005	0.011
	(0.002)	(0.002)	(0.005)	(0.004)
2011	0.005	0.002	0.000	0.002
	(0.002)	(0.002)	(0.004)	(0.003)
2012	0.011	0.005	-0.004	-0.010
	(0.002)	(0.002)	(0.004)	(0.003)
2013	0.013	0.005	-0.005	0.002
	(0.001)	(0.001)	(0.003)	(0.002)
2014	(omitted)	(omitted)		
Year since enrollment				
1	(omitted)	(omitted)	(omitted)	(omitted)
2	0.140	0.098	-0.060	-0.125
	(0.001)	(0.001)	(0.002)	(0.117)
3	0.207	0.147	-0.152	-0.135
	(0.002)	(0.002)	(0.003)	(0.125)
4	0.233	0.182	-0.197	-0.153
	(0.002)	(0.002)	(0.004)	(0.141)
5	-	0.206	-	-0.497
		-0.002		(0.481)
6	-	0.209	-	-0.646
		(0.003)		(0.629)
Interaction between calendar year and undocumented status				
Undoc x 2009	-0.006	0.026	-0.037	-0.074
	(0.021)	(0.016)	(0.034)	(0.021)
Undoc x 2010	-0.019	0.015	-0.047	-0.082
	(0.011)	(0.016)	(0.037)	(0.012)
Undoc x 2011	-0.033	-0.006	-0.065	-0.116
	(0.013)	(0.016)	(0.037)	(0.020)
Undoc x 2012	-0.038	-0.008	-0.073	-0.096
	(0.015)	(0.017)	(0.040)	(0.001)
Undoc x 2013	-0.030	0.038	-0.106	-0.075
	(0.252)	(0.017)	(0.042)	(0.021)
Undoc x 2014	-0.032	0.070	-0.159	-0.116
	(0.026)	(0.017)	(0.044)	(0.014)
Constant	0.397	0.243	0.359	0.667
	(0.002)	(0.002)	(0.004)	(0.677)
R-squared	0.093	0.070	0.040	0.190
Individuals	100,234	80,295	100,234	80,295
N	524,575	345,269	230,538	273,003