

IMMIGRATION STATUS AND HIGHER EDUCATION: EVIDENCE FROM A LARGE PUBLIC UNIVERSITY

Proposal to the William T. Grant Foundation
Reducing Inequality Priority Area

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I. Major Research Questions

The estimated 250,000 undocumented immigrants currently enrolled in college share a common dream with their legal status counterparts: that higher education will be a vehicle for social mobility (Passel and Cohn 2008). Yet the reality is that the vast majority of students who attend non-elite public and community colleges—as most undocumented students do—will never graduate with their intended degrees (Bailey, Jaggard and Jenkins 2015). For undocumented students, the odds of graduation are ostensibly lower because they are not eligible for government financial aid and attend school under the threat of deportation. The few who overcome these formidable challenges and do graduate will then face legal barriers to employment that prevent them from fully realizing the benefits of their degree. As national immigration reform that could change undocumented students' legal status has not yet been enacted, social scientists face the challenge of understanding how legal status affects undocumented students' college attendance and achievement, and what policies might help to facilitate their educational attainment and social mobility.

In the first paragraph, the authors frame the problem and introduce clear alignment with the Reducing Inequality portfolio by identifying: 1) the dimension of inequality to be studied, 2) the case for the importance of this dimension, 3) the outcomes to be studied, and 4) currently unequal outcomes.

Our understanding of the sources of educational and occupational inequality for undocumented students and the potential levers of change to reduce them is limited in numerous ways. First, we lack data that reliably identify legal status. As a result, much of what we know about the college experiences of undocumented youth comes from qualitative studies that focus on very specific populations (e.g., Mexicans in California) and disproportionately center on selective 4-year institutions, rather than on the community colleges and non-elite public institutions that undocumented students predominantly attend (Abrego 2006; Contreras 2009; Garcia and Tierney 2011; Gonzales 2011). Quantitative studies, too, are limited because they: (1) infer legal status (Amuedo-Dorantes and Antman, 2016; Flores 2010; Greenman and Hall 2013; Kaushal 2008), or (2) analyze non-representative

This paragraph identifies gaps and limitations in the existing literature on undocumented immigrants. It demonstrates the value of this project and its relevance for policies and practices to reduce inequality for this population.

online surveys (Suarez Orozco et al. 2015; Gonzales et al. 2014).

Second, most studies examine college attendance as the main outcome of interest yet the barriers to undocumented students' educational and economic opportunities do not end at enrollment. Therefore, we do not know, for example, (1) how legal status affects educational trajectories, (2) the social and institutional policies and practices that mitigate or exacerbate drop-out rates, and (3) the policies and practices that expand the occupational choices of undocumented students who graduate. In sum, our ability to craft effective responses to improve the social and economic well-being of undocumented youth and their families are hindered by gaps in our understanding that range from the very basic (e.g., Who are undocumented college students and how are they different from documented students? What motivates their college attendance?), to the more complex (e.g., What policies can facilitate their educational attainment and social mobility?).

We propose a mixed methods research project to address these gaps in our knowledge. We will combine quantitative analysis of 15+ years of administrative data on students enrolled in a large, public urban university with qualitative interviews of current and former students, their families, and key university administrators and community organizers. A key feature of the administrative data is the ability to accurately identify legal status, because the university requires undocumented students who wish to benefit from lower in-state tuition rates to submit notarized affidavits attesting to their legal status. Undocumented students have a large financial incentive to report their legal status because in-state tuition is substantially lower than out-of-state tuition. The data comprise nearly the entire population of undocumented college students in the northeastern metropolitan area in which the university is located (over 80% of undocumented college students living in the area attend this university) (DiNapoli and Bleiwas, 2014).

The researchers preview the mixed methods design of this project, which uses a unique dataset that enables them to accurately measure legal status and to look at racial and ethnic variation within this population – significant contributions to the literature.

Other key advantages of the administrative data are: (1) they are longitudinal and follow every entering cohort of students since 1999 (N> 600,000), (2) relative to other quantitative datasets, they include an unusually large number of undocumented students (N>20,000), (3) they contain information on diverse populations of undocumented students about whom we know virtually nothing (e.g., those of Caribbean, Central American and Asian origins), and (4) they offer the opportunity to more accurately describe academic performance, retention and course-taking patterns of undocumented students who attend college part-time and who experience discontinuities in enrollment. Combining this rich administrative dataset with qualitative interviews in a mixed methods approach will allow both a broad and deep analysis of a diverse group of undocumented students' educational experiences and outcomes and shed light on

Note the clear engagement with the Foundation's guidance and language – the authors will examine potential levers of change to reduce inequality among a racially and ethnically diverse population of undocumented college students. The authors do an exemplary job of fully articulating and centering a dimension of inequality (immigration status), outcomes (educational), and a lever of change (policy) for reducing inequality throughout the proposal.

potential levers of change for reducing educational inequalities that arise from differences in immigration status.

Our study proposes to evaluate the following questions:

1. How do the immigration experiences of undocumented students differ across racial and ethnic groups? How do undocumented students make sense of their immigration status and how might these perceptions vary across racial and ethnic groups?
2. How does legal status affect educational outcomes (e.g., performance, transfer, dropout, graduation and major choice)?
3. How does the Deferred Action for Childhood Arrivals (DACA) affect the college outcomes of undocumented students?
4. How do recent changes in New York State licensing laws—which have removed citizenship and/or permanent residency requirements and now allow qualified DACA recipients entry into select professions—affect the educational outcomes and occupational choices of undocumented students?
5. What institutional policies, practices and characteristics across the university’s campuses create more “undocu-friendly” environments? Do these factors affect the educational outcomes of undocumented students?

Our study is unique in several ways:

The administrative data are exceptional because they are the only data of this scale that accurately identify legal status, are longitudinal, contain information on valid comparison groups and have rich set of pre- and post- enrollment variables. The data also allow a focus on the non-elite public 2- and 4-year colleges that undocumented students predominantly attend.

The unique contributions of the study are noted here and unpacked throughout the remainder of the proposal.

The sampling design of our qualitative interviews will leverage the fact that the university’s administrative data provide the underlying distribution of the population of undocumented college students in the metropolitan area. The distribution of undocumented populations is rarely known and as a result, existing studies rely on snowball and purposive sampling to identify respondents; however, these methods cannot ensure representativeness nor can they offer insight into how their sample of participants differs from the true population. Our study will work with the university’s Office of Institutional Research and Assessment (OIRA), the office that collects and processes the administrative data, to contact a sample of the population of current and past undocumented students. Those students who agree to participate in our study will be interviewed. This novel sampling strategy makes our study one of a kind.

We integrate rigorous quantitative analysis with targeted qualitative data collection to identify causal effects of legal status and policy reforms on educational outcomes and also to uncover the mechanisms and processes that give rise to these effects.

Our research setting is one of the largest and most racially and ethnically diverse urban areas in the country. Because of this size and diversity, it is an important setting in which to study the experiences of undocumented immigrants. Having served as the gateway city for many immigrants for centuries, New York is home to multiple waves of immigrants and immigrants from an especially diverse set of origin places. Moreover, politically, New York City is welcoming to immigrants and a relatively safe place for undocumented immigrants (or relatively “undocu-friendly”) compared to some other areas of the country. Moreover, studying undocumented populations in a place as large and diverse as New York can also shed light on immigrant processes occurring in other parts of the country and among undocumented populations who are not frequently studied, such as low-SES Asian and Caribbean immigrants. We will leverage our partnership with the university’s Office of Institutional Research and Assessment (OIRA) to disseminate our findings and educational materials containing guidance about DACA and occupational licensing to students, administrators and policy makers at and within the city and state governments, as well as leaders of educational and immigrant advocacy organizations. These findings and materials will help legislators and public education officials, as well as university and community leaders to make evidence-based policy and program decisions that reduce inequalities for undocumented students in college and in their subsequent career paths.

Theoretical and Empirical Rationale

Higher Education and Undocumented Immigrants

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, Jaggard and Jenkins 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/or their family members, so interactions with institutions like admissions offices and college registrars may be 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 face limited employment options. Third, often undocumented youth are expected to contribute to household finances by working, but many legal employment opportunities are closed to them (i.e., work study) (Gonzales 2015). Undocumented youth are more likely than their documented counterparts to come from families whose incomes are near or below the poverty line, to have parents who hold low-income and unstable jobs that offer no ancillary benefits (e.g., sick leave, health insurance, overtime pay), and who are ineligible for government programs aimed at alleviating poverty (Donato et al. 2008; Hall, Greenman and Farkas 2010). Thus, the families of undocumented youth rely on them for additional financial support. These familial obligations often interfere with college enrollment and successful graduation. Finally, the returns to education are uncertain for undocumented youth because they cannot legally work. As a result, college attendance and graduation may be negatively affected by legal status because undocumented students are unable to successfully transfer their human capital investments into higher wages and occupational attainment.

In this section, the research team carefully documents existing inequalities faced by undocumented college students compared to citizens and permanent residents.

Despite facing great barriers to entry, it is estimated that nearly 250,000 undocumented youth currently attend college in the U.S. Yet our understanding of the higher education experiences of undocumented immigrant youth is extremely limited. Efforts to better understand their academic trajectories and outcomes are hampered by data constraints. National surveys rarely collect data on documentation status. Our knowledge of the experiences of undocumented college students is primarily informed by qualitative studies (Abrego 2006; Contreras 2009; Garcia and Tierney 2011; Gonzales 2011). Many of these studies focus on specific populations (i.e., Mexicans) attending selective 4-year colleges. The few quantitative studies on undocumented youth rely on national surveys that have no direct measure of legal status and therefore must infer legal status (Flores 2010; Greenman and Hall 2013; Kaushal 2008; Potochnick 2014). As a result, these 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 elusive undocumented student population, but voluntary surveys are likely to be biased, potentially excluding students who are less politically active or who are lower-income (Suarez Orozco et al. 2015; Gonzales et al. 2014). Finally, a further complication of analyzing undocumented youth's educational experiences is that to accurately estimate the causal effect of legal status, one must take into account unobserved characteristics that differ between undocumented students and their counterparts. Undocumented youth who enroll in higher education tend to be more positively selected in terms of motivation and abilities relative to their counterparts with legal status (Conger and Chellman 2013; Suarez-Orozco et al. 2015). Failing to account for these unobserved differences will lead to biased estimates of the effect of legal status on educational outcomes. Our longitudinal dataset offers important advantages over previous studies by allowing accurate identification of legal status, containing information on valid comparison groups, including a plentiful set of pre- and post-enrollment variables, and focusing on the public 2- and 4-year colleges that undocumented students predominantly attend.

The team cites extant empirical research and explains how their project will contribute to the field.

Applicants often do not fully discuss the dimension(s) of inequality they plan to study. In this case, reviewers were impressed with the promise of this research to speak to a racially and ethnically diverse group of undocumented students, as well as with the theoretically grounded discussion of how and why different groups may have different trajectories.

Undocumented College Students

Today, populations from Asia, Central America and Africa are the fastest growing groups of undocumented immigrants (Rosenblum and Ruiz Soto 2015). The university's data offer the unique opportunity to better understand the educational experiences of under-studied but fast-growing groups from Asia, the Caribbean, Africa, and Central America. As shown in Table 1, the data include large numbers of undocumented students from, for example: Mexico (16%), Ecuador (14%), South Korea (6%), Jamaica (5%), Dominican Republic (4%), and China (4%).

Mexican immigrants comprise the largest share of undocumented immigrants in the United States (56%) but this share has been

declining since 2000. Because the undocumented population predominately originates from Mexico (Rosenblum and Ruiz Soto 2015), the research to date has almost exclusively focused on this specific group (Abrego 2006; Contreras 2009; Gonzales 2011; Huber and Malagon 2007). Thus we do not have a complete picture of the migration trajectories, the circumstances that motivate migration decisions, the modes of incorporation, and the culturally- specific barriers faced by understudied undocumented groups originating from Asia, the Caribbean, Africa, and Central America. Filling these gaps in our knowledge is critical for understanding the decision-making processes and underlying mechanisms that drive the behaviors and outcomes of undocumented students, as those groups of immigrants continue to grow rapidly. We hypothesize that there are three key sources of racial and ethnic origin differences affecting educational outcomes: (1) migration trajectories, (2) co-ethnic resources, and (3) modes of incorporation.

The researchers draw on immigration theory to hypothesize about how pathways for undocumented students might vary by national origin.

The migration trajectories of Asian, Caribbean and African undocumented immigrants likely differ from Mexican undocumented immigrants. For example, Mexican undocumented immigrants are more likely to cross the U.S./Mexico border rather than overstay their visa, although some researchers believe this pattern may have shifted somewhat in recent years with increased border enforcement (Warren and Kerwin 2015). In contrast, due to the distance of migration, undocumented immigrants from Asia, the Caribbean, and Africa are more likely to be visa over-stayers. They must at least be able to afford a plane ticket to the U.S. and are likely to have family or friends residing in the U.S. to assist them after immigrating. This may also mean that they are less likely to owe money to smugglers who helped them cross the border. As a result, these undocumented youth may have access to more financial or familial resources than undocumented youth who have been previously studied. Alternatively, some undocumented immigrants from Asia, the Caribbean and Africa may be more in debt to smugglers compared to the average undocumented Mexican because of the migration distance. For example, many low-skilled Chinese migrants must spend decades working exceptionally long days to pay off their debt to smugglers (Kwong 1997; Liang and Zhou 2016).

Access to co-ethnic resources may also vary across immigrant groups. In particular, Chinese and Korean undocumented groups in the metropolitan area can draw on ethnic communities that are supported by a strong Asian middle class and a steady flow of foreign transnational investments. Ethnic communities offer valuable educational resources to undocumented Chinese and Korean immigrants including low-cost or free supplementary education programs and vast information networks about schooling (Lee and Zhou 2015). Many businesses in the city's Korean and Chinese enclaves benefit from foreign investments and have strong transnational ties to South Korea or China (Min 2011). This may mean that undocumented Chinese and Korean college graduates have more opportunities to find high-skilled employment in ethnic enclaves than Latino and Caribbean undocumented college graduates do, for example. Nevertheless, there are obviously differences within country-of-origin groups, as well. For example, Fuzhounese (Fujianese) immigrants from China, who are often undocumented, are much less well-educated and often have many fewer resources in the U.S. than some other Chinese immigrants, such as those from the northeastern provinces of China (Lu, Liang, and Chunyu 2013; Kwong 1997).

Modes of incorporation into the United States also vary by immigration group. In particular, the experiences of undocumented students (and immigrants in general) are influenced by their racialization in the local context (Aptekar 2009; Ludwig and Reed 2016). Black immigrants in the metropolitan area, and, to a lesser extent, Latino immigrants face some of the highest residential and school segregation levels in the nation, which shapes their access to quality public primary and secondary education (Reardon and Owen 2014; Sampson, Sharkey and Raudenbush 2008). And, in turn, this partially determines young Black and Latino immigrants' preparedness for college and even whether or not they attend college. Asian immigrants, who are disproportionately represented among the poor, must contend with the double-edged sword of the model minority myth. Expected to perform well in school, these students may not get the attention, help, and guidance that best benefits them (Lee and Zhou 2015; Louie 2004; Hsu 2015). Undocumented Asian, African, or European students may be "flying under the radar" and not be viewed as undocumented. This can have positive and negative outcomes. Stereotypes of the quintessential undocumented student being Latino – and more specifically, Mexican – may reduce the scrutiny of and discrimination against non-Latino students. Yet it may also make it more difficult for such students to connect with networks and organizations that assist undocumented students with navigating their educational career, finding resources to help pay for college, landing a job, or applying for DACA. Undocumented immigrants of color may face a double burden of illegality and race-based discrimination and racial profiling. The case of this university offers unique opportunities to study the intersectionality of race, ethnicity, and immigration status because of its population diversity. Among immigrants with legal status enrolled at the university, 31% are Asian, 27% are Black, and 27% are Hispanic. Among undocumented students at this institution, 27% are Asian, 27% are Black, and 36% are Hispanic (Table 2).

The authors explain why this university is a valuable case – it not only identifies legal status, but it also captures impressive racial/ethnic variation given its location.

Using the university's administrative data, we will describe patterns of educational inequality by immigration status, paying particular attention to variation across racial and ethnic groups. Qualitative analysis will examine how undocumented students across racial and ethnic groups make sense of their

legal status and construct their identities. Interviews with students and their families will help us understand how migration trajectories, access to co-ethnic resources and modes of incorporation shape undocumented students' understanding and lived experience of their legal status and guide educational behaviors. This mixed-method approach will offer (1) new evidence of educational inequalities across understudied and underserved immigrant groups, and (2) uncover the processes and mechanisms linking legal status to educational outcomes.

Levers for Reducing Educational and Occupational Inequality

Although national comprehensive immigration reform has yet to be enacted, recent policy changes have occurred that have likely had an impact on undocumented students' academic careers. We propose to investigate three potential levers of change. The first lever is the June 2012 national policy reform, Deferred Action for Childhood Arrivals, or DACA. The second lever is the May 2016 reforms to New York State occupational licensing regulations. The third lever is the university's institutional practices and policies that can improve the college experiences and educational attainment of undocumented students.

One reviewer noted that this natural experiment offers the "best possible conditions" to understand policy effects on inequality.

Deferred Action for Childhood Arrivals (DACA)

In response to the U.S. Congress' failure to pass the DREAM Act—which would have granted U.S. citizenship to immigrants who arrived in the U.S. as children—President Obama enacted the Deferred Action for Childhood Arrivals (DACA) on June 15, 2012 through an executive order. DACA was intended to be a stop-gap measure, designed to allow youth who arrived before their 16th birthday to work legally on a temporary basis, until Congress could pass comprehensive immigration reform. DACA offered temporary relief from deportation, two-year work permits and temporary Social Security numbers for eligible undocumented youth. Although DACA does not provide a pathway to legal permanent status, it offers the potential to improve the economic incorporation and the social mobility of eligible undocumented youth. Estimates show that within the first year of implementation, about 61% of those immediately eligible for DACA applied, and over 98% of applications were approved (Wong et al. 2013). Since 2012, over 728,000 applicants have been approved out of an estimated 1.16 million who are eligible to apply.

The team provides relevant information about DACA – as well as what we know from existing studies – to provide reviewers with adequate information to evaluate the study.

Preliminary evidence suggests that the policy has improved the economic conditions of DACA recipients. DACA recipients are more economically integrated because they are more likely to open bank accounts and hold credit cards compared to DACA-ineligible undocumented immigrants (Gonzales, Terriquez and Ruszczyk 2014). DACA increases the labor force participation of DACA recipients (Amuedo-Dorantes and Antman 2016a; Pope 2016) and reduces the poverty rate of households headed by DACA-eligible immigrants (Amuedo-Dorantes and Antman, 2016b).

To date, however, the effect of DACA on educational attainment is still unknown. On the one hand, DACA may have a positive effect on educational attainment by improving undocumented students' sense of economic and social integration. DACA may also motivate the academic performance of undocumented students if the extension of legal work options increases their potential returns to education. Additionally, DACA may improve retention and enrollment by allowing DACA-eligible students legal part-time work to help finance college expenses. On the other hand, DACA could have negative effects on educational attainment if legal work options increase the opportunity costs of college attendance. DACA may incentivize DACA-eligible youth to forgo college and seek full-time employment. In some cases, DACA eligible students may be the only family members who have legal work options, increasing pressure for these students to leave school to work. Therefore, DACA may have the unintentional consequence of reducing educational attainment.

We know of only two existing studies that examine the effect of DACA on schooling outcomes. Analyzing the American Community Survey, Pope (2016) finds that DACA increases the probability of employment but has no effect on college enrollment among DACA-eligible youth. In contrast, using the Current Population Survey, Amuedo-Dorantes and Antman (2016) find that DACA increases the probability of employment among DACA-eligible youth but reduces their college enrollment. Both studies are limited because they: (1) must infer legal status by assuming all foreign-born non-citizens are undocumented, (2) do not consider other schooling outcomes such as retention, transfer, academic performance, part-time versus full-time enrollment, and major choice, and (3) do not consider how the effect of DACA might vary by individuals' gender, race and ethnicity, and academic ability.

Our Preliminary Results. As a first step to explore the effect of DACA on schooling, we estimate individual fixed-effect regressions and plot the gap in dropout rates between undocumented and documented students (i.e., citizens and LPRs) for each year from 2007 to 2014. A discontinuous increase or decrease in the undocumented-documented gap following the implementation of DACA would offer evidence that DACA significantly affects the educational attainment of undocumented students. Figure 1 presents results for 2-year colleges and Figure 2 presents results for 4-year colleges. Two important results are evident: (1) a discontinuous increase occurs in 2013, and (2) this increase is larger for 4-year colleges than for 2-year colleges. The discontinuity in 2013 makes sense because while DACA was announced in June 2012, applications were not accepted until August 2012 and the vast majority of applications were not approved until after December 2012. (U.S. Citizenship and Immigration Services, 2013). This means the anticipated effect of DACA on retention should be observed in 2013, once the majority of DACA applicants received notice of their approval. Whereas the increase in dropout rates from 2012 to 2013 at 2-year colleges is relatively small (about a 1-percentage point increase), the increase in dropout at 4-year colleges is larger—about a 3-percentage point increase.

Reviewers are interested in results from preliminary analyses or pilot studies and in how these results inform the proposed project.

Overall, our preliminary results suggest that DACA may have a negative effect on the educational attainment of undocumented students. The reasons motivating these decisions are yet unknown and will be explored by the proposed study. One likely possibility is that DACA recipients leave school to work. Using a mixed-methods approach, we will explore this possibility. In-depth interviews will explore how

undocumented students and their families make sense of DACA eligibility and the promises and disappointments DACA offers. For example, are DACA-eligible students under pressure to drop out of school so they may work to support their families, especially in cases when families have mixed legal status and parents or siblings are DACA ineligible, or particularly when younger siblings are documented (and thus prioritized in terms of educational investment)? Given the temporary nature of DACA, do families perceive DACA as an opportunity to maximize earnings in the short term with the hope that DACA recipients will return to school in the future? Is DACA seen by some as a means to work to finance college attendance? In concert with the qualitative analysis, we will use the university's administrative data to determine: (1) whether undocumented students who dropped out of college following the passage of DACA re-enter college in subsequent years, and (2) whether DACA causes undocumented students to switch from full-time to part-time attendance or to transfer from one college to another so that they can work more.

Our study will also examine whether the effects of DACA on educational outcomes vary across individuals (e.g., by ability, gender, and race and ethnicity). For example, high-achieving students are more motivated and more likely to graduate college than lower-achieving students (Walberg and Tsai, 1983; Bailey, Jaggard and Jenkins 2015). Thus, DACA may induce low-achieving undocumented youth to leave school early to seek work options and motivate high-achieving students to continue investing in human capital. Furthermore, recent ethnographic work demonstrates that undocumented youth face gendered expectations regarding work and family obligations (Gonzales 2015).

These studies show that greater pressure is placed on male youth to enter the labor force to help support their families. This may leave female undocumented youth relatively more freedom to pursue higher education. Alternatively, women might be expected to put family obligations, such as caring for younger siblings or grandparents, ahead of their own educational aspirations. In either case, DACA may have differential effects by gender. Undocumented youth are also likely to live in mixed-status families, where some siblings or parents have legal status and some do not. Qualitative research indicates that undocumented siblings are often expected to place their own educational and career goals on hold for the good of documented siblings (Dreby 2015).

The authors draw on existing theoretical and empirical literature to inform their selection of factors that may affect the academic outcomes of undocumented college students. These factors are clearly identified in the proposal.

Our study will extend the literature because we can accurately observe legal status, examine a variety of schooling outcomes, and consider heterogeneous effects of policy reform. We will use methods to estimate the casual effects of DACA on educational outcomes. We integrate targeted qualitative data collection to better understand the mechanisms that produce potential effects. For example, qualitative interviews will examine: (1) how undocumented students make sense of DACA, (2) how DACA is used as part of a larger family strategy, and (3) the extent to which DACA is seen as a way to help finance college attendance. This will offer insights into how and why DACA affects educational outcomes and behaviors.

Reforms to State-level Occupational Licensure Requirements

Even with legal work options, DACA recipients face significant barriers that prevent them from fully realizing the benefits of their education. As mentioned, professional licensing laws are potential obstacles because many exclude qualified undocumented immigrants based on legal status requirements (Gonzales et al. 2016). Today nearly 30 percent of all jobs in the U.S. require professional licenses, including jobs in growth industries such as health care, social assistance and educational services (Thornton and Timmons 2015). Professions such as medical assistants, teaching and nursing are high-demand, well-paid occupations and that have been traditional vehicles for upward mobility for many immigrants; yet they are restricted to citizens and/or legal permanent residents (Aptekar 2015). Some immigration activists and scholars argue that removing barriers to professional licensing would have unambiguous positive effects on the educational attainment and social mobility of DACA recipients by offering undocumented youth greater occupational opportunities and motivating their college attendance (Gonzales et al. 2016). Yet to date, no study has systematically studied how licensing laws affect the educational and occupational outcomes of undocumented youth.

In May 2016, the state-level Department of Education adopted changes to professional licensing laws that enable eligible DACA recipients to obtain occupational licenses if they meet all other requirements for licensure except for documentation status. The remaining 13 state departments (e.g., Departments of Financial Services, Health, Motor Vehicles and Criminal Justice) that together grant 76 other professional licenses did not implement such changes. Table 4 lists the 54 professional licenses granted by the state Department of Education that are now open to DACA recipients. Educational requirements span a range of occupations from those that require only some college education (e.g., dental assistant, land surveyor, respiratory therapy technician and veterinary technician) to those that require a bachelor's degree or advanced degree (e.g., teacher, social worker, pharmacist and physician). Salaries range from \$38,030 (veterinary technicians) to \$230,466 (podiatrist), with a median salary for all of these professions of \$77,405. This reform opens opportunities to a varied set of high-demand, well-paid, and stable employment options.

The researchers consistently elaborate on how their methodological choices are consistent with the project's goals.

We estimate the casual effects of licensing reforms on educational outcomes. A tightly-integrated qualitative data collection will provide insight into the mechanisms that produce potential effects. This mixed-methods approach is necessary because while the quantitative design can offer strong evidence of causal effects, it will not reveal the mechanisms that produce the effects. For example, if we find weak effects of licensing reforms, the

quantitative design cannot help us determine whether this is because students' schooling decisions are not responsive to licensing reforms or because students lack awareness of the reforms and their implications. Since licensing reforms are recent (May 2016) and have received relatively little media attention, it is likely that many DACA-eligible students, DACA recipients and university staff are unaware of the reforms and their implications. Qualitative interviews of undocumented students, university administrators, and immigrant and advocacy organizations will uncover: (1) the extent to which the undocumented community and university administration are aware of the reforms, (2) how undocumented students learn about laws and regulations related to their legal status on the federal, state, and local level, and (3) the institutional mechanisms in place to advise and disseminate information across the university's campuses and how they can be improved.

This innovative mixed-methods approach integrates rigorous statistical methods to identify causal effects and targeted qualitative analysis to uncover the mechanisms linking policy reforms to behaviors and outcomes. Thus, our study will investigate new, unstudied levers to reduce inequality. The findings will illuminate: (1) how licensing reform affects educational outcomes, major choice, and occupational choice, and (2) the best policies and practices to disseminate information and advice about current and future reforms that may affect undocumented students.

Role of Colleges and College Administrators

A brief section here was redacted for de-identification purposes. It documented the variation in the enrollment of undocumented students across the university's campuses.

The university's administrative data show substantial variation in enrollment and dropout rates of undocumented students across its campuses.

What accounts for this substantial variation across institutions? Institutional factors can play a critical role in reducing the obstacles faced by undocumented students for successful completion of college education and for improving career pathways beyond college (Suarez-Orozco et al 2015). Recent studies identify three ways colleges can offer support by establishing: (1) a safe campus environment, (2) institutional support, and (3) connections with immigrant rights organizations.

Safe campus environment. A politically safe campus environment reduces student anxiety over revealing their status to faculty and administrators who can help (Contreras 2009; Perez 2009). On safe campuses, college administrators develop explicit university policies to address the needs of their undocumented students (Munoz and Maldonado 2012), moving away from the "don't ask, don't tell" policies of the past to public acknowledgment and support of the undocumented student body (Suarez-Orozco et al 2015). Undocumented college students have a more difficult time forming helpful connections with faculty and staff than they did in high school, fear revealing their status, and are excluded from existing institutional support structures (Garcia and Tierney 2011). "Undocu-friendly" campuses provide information for undocumented students on their websites, host awareness events, and apportion resources for "undocu-ally" training of staff and faculty to better serve this student population (Richards and Bohorquez 2015; Suarez-Orozco et al 2015). Needless to say, an undocu-friendly campus has staff who treat students without discrimination and bias (Contreras 2009), and who respect students and their privacy (Suarez-Orozco et al 2015).

The team cites extant research to explain how institutional factors can shape individual outcomes.

Institutional support. Research shows that successful undocumented college students create a patchwork of support, and obtain much information that is salient to their legal status from peers rather than from institutional actors (Enriquez 2011). This is because frontline college bureaucracies can often provide inaccurate information (Gonzales 2008; Contreras 2009). For example, on some of the university's

campuses, undocumented students have been told, inaccurately, that they do not qualify for in-state tuition (Munoz 2009). Nienhusser (2013) found that although the university's central administration holds trainings and has written manuals to assist staff working to help undocumented students, on-the-ground implementation at two of the university's community colleges was uneven.

Institutionalizing support systems through special programs for undocumented students may make a difference. Such programs feature trained staff who are knowledgeable about the up-to-date implications of legal status for scholarships, financial aid, internships, graduate school, and careers (Suarez-Orozco et al 2015; Price et al 2010). If resource centers specifically for undocumented students are not available, these services can be provided through diversity offices, student affairs offices, cultural centers and organizations, and other existing entities (Contreras, 2009; Pérez Huber & Malagon, 2007; Suarez-Orozco et al 2015). Accurate and resourceful guidance through career services departments is especially crucial for undocumented students who become discouraged while in college upon realizing their limited career options (Gonzales 2015). Finally, special counseling services are needed to address mental health issues specific to the undocumented experience (Huber and Malagon 2007; Price et al 2010; Gonzales, Suárez-Orozco, & Dedios-Sanguineti 2013; Suárez-Orozco et al 2011; 2015).

Connections with immigrant-rights organizations. Colleges can better serve their undocumented students by building connections with immigrant rights organizations and other community groups that advocate for immigrant rights, as well as creating multicultural programming that affirms identities of undocumented students and reduces their sense of exclusion (Price et al 2010; Suárez-Orozco et al 2011). On- and off-campus undocumented student organizations and other safe spaces provide much a needed resource for undocumented students struggling with multiple social, economic, and psychological obstacles (Contreras, 2009; Pérez Huber & Malagon, 2007; Suarez-Orozco et al 2015).

Research Questions

In this section, we describe our main research questions in detail.

How do the immigration experiences of undocumented students differ across racial and ethnic groups? How do undocumented students make sense of their immigration status and how might these perceptions vary across racial and ethnic groups? Our knowledge of undocumented students almost exclusively comes from research on Mexicans.

The experiences of undocumented immigrants from Asia, the Caribbean and Africa are largely unknown. There are potentially vast differences in migration trajectories, the ability to draw on co-ethnic resources and institutions, and modes of incorporation across racial and ethnic groups. Understanding these sources of difference provides the frame of reference for understanding the motivations, goals and socio-economic conditions that underlie undocumented students' educational choices. We will use the university's administrative data to describe racial and ethnic variation in educational outcomes. Using qualitative methods, we will uncover: (1) how immigration experiences differ by race and ethnicity among undocumented students, (2) how these potential differences shape undocumented students'

This section clearly summarizes the previous sections of the proposal by research question, setting up a clear link between questions, theoretical framework, and methods.

understandings and experience of their immigration status, and (3) how immigration status shapes their educational decisions.

How does legal status affect educational outcomes (e.g., performance, transfer, dropout or graduation, and major choice)? Existing studies are limited in answering this question because they lack the ability to identify legal status, analyze unrepresentative, cross-sectional data, lack a valid comparison group, lack pre-enrollment variables like academic ability, and/or use self-reported educational outcomes. Our administrative data are uniquely situated to examine these questions because they do not have these limitations. We will examine: (1) the effects of legal status on educational outcomes (e.g., performance, transfer, dropout or graduation, and major choice), and (2) whether effects vary by gender, academic ability, and country of origin. In-depth interviews will additionally shed light on the mechanisms that explain the statistical relationship between legal status and education outcomes.

How does Deferred Action for Childhood Arrivals (DACA) affect the college outcomes of undocumented students? We know of no existing study that has examined the effect of DACA on college performance, transfer, dropout, graduation, full-time versus part-time attendance or considered whether the effects of DACA vary by gender, country of origin and academic ability. Our study employs techniques to estimate the effect of DACA on these outcomes. Qualitative interviews will explore the mechanisms within family, work, school, and community contexts that give rise to the effects of DACA.

How do recent changes in New York State licensing laws affect the educational outcomes and occupational choice of undocumented students? We know of no existing study that has examined this question, yet these changes to state licensing laws have the potential to dramatically improve the labor market outcomes of DACA-eligible students by offering new employment opportunities in well-compensated, stable professions. Integrating rigorous quantitative strategies and targeted interviews with students and university staff and administrators, we will offer new insights into a potential lever of change by determining: (1) whether and how undocumented students become aware of these recent changes to licensing regulations, (2) the institutional mechanisms in place to advise and disseminate information across the university's campuses and how they can be improved, and (3) how licensing reforms affect performance, transfer, dropout, graduation and major choice of undocumented students.

What institutional policies, practices and characteristics across the university's campuses create more "undocu-friendly" environments? How do these factors affect the educational outcomes of undocumented students? Our focus on this large, public university system allows us to examine practices and policies across the range of institutional selectivity with a strong focus on the non-elite 2-year colleges that undocumented students predominantly attend. We consider three dimensions of institutional environment that affect the college experience and performance of undocumented students: (1) safe campus environment, (2) institutional support and (3) connections with immigrant-rights organizations. These three constructs will be measured using qualitative data collection (e.g., interviews with students and staff at various campuses), contextual analysis of the university system's websites, and campus-level measures from the university's administrative data.

Research Methods and Strategies

Data and Measures

The focal large, public urban university is the third largest university system in the United States, educating over 260,000 degree seekers across 18 undergraduate campuses. Administrative records from the university's system track each entry cohort of students since the fall of 1999 and data collection is currently ongoing. We analyze entering cohorts from fall 1999 to fall of 2015.

Reviewers appreciated the mixed methods design of this study and felt the researchers offered a clear and thorough explanation of why mixed methods were necessary to answer the proposed questions.

The quantitative data are well-suited for the project for several reasons. First, the university's campuses span the range of institutional selectivity, offering two-year community colleges and four-year senior colleges with varying selectivity. Thus, our analysis will include a broad spectrum of institutional selectivity and institutional type (2-year vs. 4-year colleges). Second, the data reliably identify documentation status. Upon enrollment, students are asked to self-report as U.S. citizens, legal permanent residents, temporary visa holders, refugees, or undocumented immigrants. Students must submit documentation to validate their own self-reports; those who fail to provide documentation are categorized as undocumented. Moreover, in order to qualify for in-state tuition rates, undocumented students must provide a notarized affidavit stating they will pursue steps to obtain legal residency if such options become available. Using data on self-reported race/ethnicity and country of birth, documentation status can be cross-classified with country of origin and race/ethnicity to compare undocumented students with co-ethnics who are legal permanent residents (LPRs), naturalized citizens, or U.S. native-born. Third, the data include pre-university enrollment information, which can account for students' differences in family background and academic preparation. Finally, the data track all degree-seeking students throughout the university system and include transfer and re-entry, and outcomes like GPA, time to graduation, credit completion, dropout, transfer within the system, major choice, and course-taking patterns.

Our main study variables for the quantitative analysis are described in Table 5. We examine a variety of college outcome variables including graduation, college performance, transfer, credit completion and major choice. We compare undocumented students to LPRs and U.S. Citizens (U.S. born and naturalized). We also consider country of origin and self-reported race/ethnicity. A key feature of the data is that they contain rich information on pre-college enrollment characteristics including high school grade point average (GPA), test scores and contextual measures of high schools, as well as individual and family socio-demographic measures. We separately analyze students attending 4-year and 2-year colleges.

Key constructs of institutional contexts

We will examine three dimensions of the university's institutions with the potential to affect the college experience and educational outcomes of undocumented students. These three dimensions are:

1. Safe Campus Environment

- Do undocumented students feel safe at their respective campuses? Which campuses have the reputation for being “undocu-friendly”? Which campuses have the reputation for being relatively unfriendly? Why?
- Do campuses provide information for undocumented students on websites and host awareness events?
- What are the campus policies about treatment of undocumented students, if they exist?
- Are there “undocu-ally” training programs for staff and faculty?

2. Institutional support

- Are school personnel knowledgeable about the up-to-date implications of legal status for scholarships, financial aid, internships, graduate school, and careers?
- Do campuses have resource centers for undocumented students?
- Do diversity offices, student affairs offices and cultural centers offer outreach to undocumented students or provide staff training to better assist undocumented students?
- Do counseling services address specific mental health issues pertaining to the undocumented experience?

3. Campus and community organizing

- Which immigrant rights organizations are active on campus, what are their activities, and how are they connected to the institutional context (through administrative offices, individual staff members, students)?
- Which student organizations exist that provide safe spaces for undocumented students, whether specifically organized by and for undocumented students or broader groups like cultural groups that address the needs of undocumented students?

Data collection for institutional context variables will come from student and school personnel interviews (see Appendix 1 for the interview guide), contextual analysis of college websites, and analysis of campus-specific statistics from the university’s administrative data. The administrative data include measures such as the % of co-ethnic students, % of undocumented students and graduation rates of undocumented students across the university’s campuses. For contextual analysis of college websites, we will use web scraping techniques. Web scraping is a method used to extract large amounts of data from websites and save them into a database format. Rather than manually sifting through the vast number of web pages on the 18 individual campus websites using a web browser to find information about undocumented student services and organizations on each campus, we will automate the process. Using the beautiful soup library in Python, we can quickly export data from key university web pages using search phrases such as “undocumented” to find the data. These data can be saved in a number of formats for easy cataloging and analysis.

Quantitative Analysis

Estimating the Effect of Legal Status

A major methodological obstacle to comparing **students** across legal statuses is unobserved heterogeneity: undocumented college students may differ from college students who have legal status in ways that may affect their

Always acknowledge potential challenges in your analysis plan and discuss how you will address them.

college performance. Failing to account for this may falsely attribute differences in students' outcomes to differences in legal status, when in fact, they are due to differences in characteristics such as high school preparedness and motivation. Preliminary findings demonstrate that undocumented students at the university are more positively selected relative to their legal status counterparts. Figure 3 shows estimated differences in selected pre-enrollment characteristics between undocumented students and LPRs who are matched in terms of gender, country of origin, high school type, and economic disadvantage. Figure 4 shows similar differences between undocumented students and matched U.S. citizens. Both figures indicate that undocumented students are more positively selected in terms of high school GPA and NY State Regents test scores relative to their legal status counterparts. Overall, these results indicate that undocumented students are systematically different from their legal status counterparts and that unobserved heterogeneity is an issue that needs to be taken seriously in the analysis.

One major advantage over previous studies is that the university's data include a rich set of pre-college enrollment variables that allow us to control for a much more extensive set of individual and family characteristics. These variables include basic demographic variables such as age of entry into college, sex, race/ethnicity, country of origin, generational status and family SES. They also include a large set of variables that are rarely available, such as measures of cognitive ability and motivation (i.e., high school GPA, state subject area test scores and SAT scores). In addition, we will link high school information from the university's admissions data to contextual data on individual high schools obtained from the state and federal departments of education. This linkage will allow us to account for potential differences in the high school experiences (e.g., quality of instruction, strength of high school curricula and peer culture) between documented and undocumented students. High school characteristics include enrollment size, attendance rate, graduation rate, and SES composition of the student body.

We address unobserved heterogeneity by adopting two strategies: (1) using matching techniques to adjust for an unusually large set of observable covariates, and (2) extensive sensitivity tests. First, we employ matching techniques to account for differential selection between documented and undocumented college students. Matching can be used to mimic randomization by matching undocumented students with their counterparts who have legal residence status in terms of observable pre-enrollment variables.

A second threat to causal inference is the possibility that treatment models are mis-specified. To address this second threat, we apply two strategies. First, we propose to conduct extensive experimentation with different matching techniques to assess the sensitivity of our results to treatment model specifications. We will experiment with popular matching techniques including coarsened exact matching, kernel-based matching and propensity score matching (i.e., greedy matching, optimal matching, propensity score weighting). Second, we conduct formal sensitivity analyses to determine the robustness of our results to unobserved selection bias (Rosenbaum and Rubin 1983; Sharkey and Elwert, 2011). Using formal sensitivity tests, we can determine: (1) how inferences about treatment effects (i.e., legal status) may be altered by hidden biases of various magnitudes, and (2) how large unobserved bias would have to be to alter the substantive conclusions of the study. These models summarize the relationship between observed and counterfactual potential outcomes (e.g., college GPA, dropout, transfer, graduation, major choice, etc.) with a parsimonious selection function. Bias-adjusted

causal estimates are then computed across the domain of the function (Sharkey and Elwert, 2011). We can conclude that the results are robust to selection bias if the conclusions of the study do not change across reasonable range of values for the selection function. If the results are not robust, we can, at least quantify the range of the bias.

Although not featured here, in the remainder of the narrative, the researchers provide detailed descriptions of their methodologies and how their methodological choices are consistent with the project's goals. This includes a description of how the team will estimate the effect of policy reforms and a well-developed explanation for the value of qualitative interviews for this project. Interviews allow the researchers to explore mechanisms driving change and to more fully understand understudied racial/ethnic populations. Further, the investigator included guides for qualitative data collection, which helps reviewers to see whether and how data collection will operationalize key concepts, as well as a letter of support from a data partner.

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