Uncertainty about DACA May Undermine its Positive Impact on Health for Recipients and their Children

Abstract

Undocumented immigrants and their children have worse self-reported health than documented immigrants and U.S. citizens. Evidence suggests that the Deferred Action for Childhood Arrivals (DACA) program, which granted some rights to undocumented immigrants who arrived as children, improved the wellbeing of recipients and their children in the first three years after the program's introduction. However, DACA is subject to executive discretion, and the U.S. presidential campaign that began in 2015 introduced substantial uncertainty regarding the program's future. We examine whether DACA's health benefits persisted beyond 2015 using the 2007-2017 waves of the California Health Interview Survey (CHIS) and dynamic treatment effects models. Our results show that self-reported health improved for Latina/o DACA-eligible immigrants and their children from 2012-2015 but worsened after 2015. Our results suggest that the political climate of the 2016 presidential election may have underscored the politically contingent nature of the DACA program and eroded the program's health benefits for eligible immigrants and their children.

INTRODUCTION

Immigrant legal status is a central driver of inequality in U.S. society [1, 2] and is closely linked to health. Multiple studies have shown that undocumented immigrant status is associated with stress and poor health outcomes, compared to documented or naturalized immigrants [3-5]. Worries about deportation are associated with poor health and mental health [6] and immigrants' mental health is worse in communities with anti-immigration climates [7]. Furthermore, research suggests that the negative impacts of undocumented legal status and anti-immigration policies are intergenerational [8-11].

Although we know undocumented status undermines the health of immigrants and their children, we know far less about one of the most straightforward solutions to this problem: the regularization of immigration status. In 2012, President Obama announced the Deferred Action for Childhood Arrivals (DACA) Program, which granted a subset of undocumented youth temporary relief from deportation, access to work authorization, and other benefits, renewable every two years. As of September 2018, over 908,000 (approximately 70 percent) of the 1.3 million young adults eligible for DACA had participated in the program [12, 13]. However, DACA has been highly contested in the national political climate. On the U.S. presidential campaign trail in

summer 2015, then-candidate Donald Trump stated that he would end DACA if elected. And indeed, in September 2017, President Trump announced plans to terminate the program. Currently mired in litigation, DACA's future remains uncertain.

A number of studies have examined DACA's short-term impacts and found overwhelmingly positive effects in the two-to-three years following its passage. These studies have linked DACA to improved high school graduate rates and employment outcomes [14-16], decreased rates of poverty [17], lower teen birth rates [14], improvements to mental health [18-20], and stronger feelings of inclusion and belonging [21]. One study found that DACA's effects may be intergenerational, specifically, that diagnoses of adjustment and anxiety disorders declined among children of DACA-eligible immigrants in Oregon in the three years following the program's creation [18]. However, it is unclear whether DACA's short-term impacts to health will hold over the longer term. With the Trump administration's efforts to terminate DACA, the futures of nearly one million program participants hang in limbo. The stress generated by the uncertainty of the program may override the positive health benefits it brought in the short term.

In this study, we assess whether DACA's impacts changed over time by examining the self-rated health of DACA-eligible

immigrants and their children in California from 2007-2017. We find significant improvements to health among both groups during the first three years of the program. However, these improvements disappear from 2015-2017, a period corresponding to substantial uncertainty regarding DACA. Taken together, our results suggest that DACA's limited and politically contingent nature eroded the program's perceived health benefits for eligible immigrants and their children.

DATA & METHODS

Data

We analyze the 2007-2017 waves of the California Health Interview Survey (CHIS), a population-based, telephone survey of California's residential, non-institutionalized population [22]. This repeated, cross-sectional survey oversamples non-English-speaking populations and is one of very few population-based samples that includes a detailed set of legal status questions [23]; it is therefore well positioned to analyze the experiences of undocumented immigrants [24, 25]. The CHIS represents an improvement over other representative data sets used in previous studies of DACA, which only identified citizens and non-citizens, whereas the CHIS further identifies Lawful Permanent Residents (LPRs) among non-citizens, allowing a better

approximation of likely-undocumented immigrants. We apply CHIS sampling weights to all analyses.

The CHIS includes adult, teen, and child questionnaires designed to capture the experiences of multiple members of the household. We focus on Latina/o-origin individuals, defined as anyone born in Mexico, Central America, or other Latin American or Caribbean countries, or anyone who identifies ethnically as Hispanic/Latino. Latina/o-origin individuals make up over nine out of every ten DACA applicants [13]. Our analytical sample includes 14,578 teens and adults aged 15-30 in 2012, and 2,119 children aged 0-11 years. For simplicity, we refer to these populations as "adults" and "children," respectively. Children's outcomes in the CHIS are reported by the parent in the household who is most knowledgeable about the focal child's health. Because DACA-eligibility (based on age, age of arrival, etc.) can only be determined for the responding parent in the CHIS, and given research finding that mothers' legal status is especially important for assessments of child health [26], we limit our sample to children of responding DACA-eligible mothers.

Analytical Strategy

We utilize a difference-in-differences (DID) approach. DID models compare the impacts of a "treatment" on a "treatment

group," compared to a "control group," before and after the treatment is introduced. In our case, the treatment is the DACA program. We first consider the impacts of the DACA program on adults by comparing them to likely-undocumented immigrants who are ineligible for DACA (the "undocumented-ineligible"). We then consider the impacts of the DACA program on children of DACA-eligible mothers, whom we compare to children whose mothers are undocumented-ineligible.

We restrict adults and responding mothers to the DACA age criteria (ages 15-30 in 2012) so that all groups age similarly over time and program impacts are not confounded by age. The DACA-eligible group—our treatment group—satisfies the additional DACA program criteria of having arrived in the U.S. in 2007 or earlier and being age 15 or younger at the time of arrival. We assume that respondents have resided continuously in the United States since they arrived and will not be disqualified by a criminal record or educational background.

Given the uncertainty surrounding DACA, we hypothesize that the program's impact on health has not been uniform over the post-policy period. We therefore use dynamic treatment effects DID models, which are characterized by sequences of interventions that require dividing the post-treatment period into relevant sub-periods [27, 28]. In this case, we compare the

pre-period to two treatment periods that correspond to distinct stages of relative stability or threat to the program. The pre-treatment period extends from January 1, 2007 (the earliest CHIS wave-year that matches DACA eligibility criteria) to June 14, 2012 (the date before DACA was announced). The first post-period is June 15, 2012 (the announcement of the DACA program) to June 16, 2015 (the day before the announcement of Donald Trump's presidential bid). This period is characterized by relative optimism about, and few explicit threats to, DACA. The second post-period is June 17, 2015 (the announcement of Trump's presidential bid) through December 31, 2017 (the final date for which CHIS data are currently available). This second post-period is characterized by highly publicized anti-immigrant rhetoric and explicit threats to DACA during the U.S. presidential election and post-election period, including the Trump administration's announcement of plans to terminate DACA.

We also analyze DACA's cumulative impacts over time using a series of simple DID models that add each subsequent year following DACA's announcement into the post-period, one by one (i.e., the first model includes a post-period from June 15, 2012-June 14, 2013, the second model's post-period is June 15, 2012-June 14, 2014, and so on). This gives us an additional opportunity to explore the cumulative impact of DACA over time

and how the definition of the post-period changes conclusions about the treatment effect.

Measures

Our dependent variable is self-reported health, which has been validated as an independent predictor of morbidity [29]. Adults are asked, "Would you say that in general your health is excellent, very good, good, fair, or poor?" Children's health is reported by their mothers, who answer the same question about the child's health. We dichotomize responses (1=excellent, very good, or good; 0=fair or poor) and refer to this measure as "good" health. The models predicting adult health include covariates for respondent's age and gender, household income (as a percentage of the federal poverty level), whether the respondent has a usual source of care other than the emergency room (ER) (0=no, 1=yes), and whether the respondent has any type of health insurance (0=no, 1=yes). The models predicting children's health include covariates for child's age and gender, household income, usual source of care, and any insurance.

Limitations

Although the CHIS measures undocumented legal status more precisely than most representative surveys (by identifying non-citizens who are not LPRs), it does not measure it exactly.

Specifically, the undocumented category in the CHIS may include temporary visa holders. While it is estimated that 98% of non-citizen, non-LPR, Latino immigrants are undocumented [30], by potentially including the remaining 2% of these individuals in the DACA-eligible group, our estimates of DACA's impacts are conservative. Still, these estimates are likely more precise than the estimates of past studies, which also included LPRs in the eligible group, who comprise an estimated 40 percent of noncitizens under age 35 [31]. Relatedly, because we can only estimate the DACA-eligible, as opposed to actual DACA recipients, our estimates should be interpreted as the "intent-to-treat" effect. We note that the overall uptake rate for DACA is 70 percent [12].

It is also possible that our results may be limited by the way children's health is assessed in the CHIS. Because CHIS data measure parents' reports of children's health, we cannot determine whether children's health actually changed, or whether their mothers' *perceptions* of their health changed, over this period. If mothers' perceptions change, our results still suggest that DACA affects families insofar as the stress of legal status impacts not just how parents perceive their own health but also their children's. Additional intergenerational research that can directly access children's health could confirm these results.

Finally, due to sample limitations, we are not able to examine whether the impacts of DACA vary by characteristics such as race, gender, age, or sexual orientation. Nor are we able to assess DACA's effects outside of California, a state with a policy climate that is generally supportive of immigrant integration [32]. It remains unclear whether our results would change in states with more restrictive policy climates. That limitation notwithstanding, California is critically important for understanding DACA's impacts given that it is home to five of the 20 metropolitan areas with the largest unauthorized immigrant populations in the United States [33] and 25 percent of all DACA recipients [13].

Robustness Checks

We completed a series of robustness checks to ensure the appropriateness of the DID design and the controls in our models. First, we verified that the "treatment" and "control" groups had parallel trends prior to the treatment. To confirm parallel pre-trends in our analyses, we estimated the interactions between each pre-DACA survey year (2007, 2009, and 2011-June 14, 2012) across each comparison group. These models produce a series of non-statistically-significant interactions, indicating parallel pre-trends across our treatment and control

groups for both adults and children (see Supplemental Table 1)[34].

The CHIS does not gather age or ethnicity information for non-responding parents. We are therefore unable to assess DACA-eligibility or our Latina/o subsample criteria beyond the reporting parent and thus cannot directly test DACA's impact on children's outcomes in mixed-immigration-status parent couples. It is possible that having a U.S. citizen parent might provide resources that could impact children's health [35]. As a robustness check, we ran our models including a fixed effect for whether the child had a U.S. citizen parent (responding or non-responding); the variable was not significant in any of our models and did not change our substantive results.

RESULTS

Sample Description

- Exhibit 1 about here –

Exhibit 1 displays self-reported good health by legal status for adults and children in the CHIS for the three periods. In the pre-period (2007-2012), 77 percent of DACA-eligible adults reported having good health. This increased to 84 percent in the first post-period (2012-2015) but returned to 77 percent in the second post-period (2015-2017). The health of children of DACA-

eligible mothers followed a similar pattern across the three periods. Seventy-nine percent of children were reported to have good health during the pre-period, which then rose to 99 percent during the first post-DACA period. However, by the second post-period, the percentage had dropped to 75 percent. Exhibit 1 also shows descriptive statistics for each of the covariates in the model across the DACA-eligible and control groups.

Multivariable Regression Analyses

- *Exhibit 2 about here* –

Exhibit 2 displays the results from linear regression models analyzing the change in good health from the pre-period to each of the two post-periods, net of covariates. The first model displays results for adults, and the second model displays results for children. The interactions between DACA eligibility and each of the post-treatment periods are the treatment effects. The control group is the undocumented-ineligible; we also include superscripts representing the results of Wald tests comparing the interaction between DACA-eligible immigrants (and their children) and documented immigrants U.S.-born Latinos (and their children), across the pre- and post-policy periods.

The results for the first model presented in Exhibit 2 reveal that the intent-to-treat effect for adults is positive

and significant during the first post-period. Indeed, the change between the pre-period and the first post-period is associated with a 17 percent increase in reports of good health for DACA-eligible adults, compared to pre-post differences for undocumented-ineligible immigrants. The second regression model in Exhibit 2 shows that the children of DACA-eligible mothers follow a similar pattern: the change between the pre-period and the first post-period is associated with a 21 percent increase in reports of good health.

However, these improvements to health do not persist over time. The positive difference that emerged in good health between DACA-eligible immigrants and the control groups disappears in the second post-treatment period. This result is found for both adults and children. In other words, DACA-eligible immigrants and their children are no better off in the second post-period than during the pre-period in which DACA did not yet exist.

The results in Exhibit 3 generate a similar conclusion. We use a series of models in which a single post-period cumulatively adds each subsequent post-policy year. The results show that the impact of DACA increasingly and consistently improved for adults over the first three years of the program, but then disappeared abruptly by the time the 2016 DACA-year is

included in the post-period (i.e. after June 15, 2015). Children's health improved marginally over the first three years of the program ($p = 0.056$ in year 2, $p = 0.051$ in year 3), but those improvements were no longer detected after June 15, 2015.

- *Exhibit 3 about here* -

DISCUSSION

We examined DACA's impacts on the self-rated health of adults, as well as mothers' ratings of children's health, from the initiation of the program in June 2012 through the end of 2017. Our results reveal that DACA has not had a uniform impact on health over time. While we found significant improvements to the health of DACA-eligible adults and children of DACA-eligible mothers during the short-term period following the program's creation (mid-2012–mid-2015), these improvements disappeared after mid-2015.

The first finding, that health improved in the short-term, is consistent with past research on the immediate post-DACA period, which found that DACA increased high school graduation rates, labor force participation, and wages, and decreased poverty [14, 15, 17, 36]. Existing studies also link DACA to improvements in the mental health of DACA-eligible immigrants [19, 20] and their children [18] in the short-term, post-policy

period. A variety of mechanisms related to socioeconomic status and socio-emotional transformations may explain improvements to health in the short-term period following DACA's announcement. First, DACA enabled socioeconomic mobility [5-7, 21] and may have thereby attenuated poverty-related stressors. The program may also have reduced stress related to deportation fear [19] or lack of ontological security [5] and led to feelings of optimism, social inclusion, and greater coherence between DACA-eligible immigrants' identities as Americans and their formal immigration status [21]. These symbolic changes are consequential for the wellbeing of young immigrants in the United States, for whom a major stressor is the dissonant experience identifying as a bonafide member of society but not being treated as such [37].

Importantly, in this study, we control for changes to socio-economic status (i.e. household poverty level) that may have arisen as a result of DACA and still find positive impacts of the program on health in the short-term period following DACA. This suggests that the short-term health benefits of the program may have reflected not just material but also symbolic mechanisms. If DACA's positive impact on health largely reflected material changes—improvements to employment and income that resulted from access to work authorization, we might expect the DACA-associated health improvements to persist with the

program, that is, beyond 2015. However, we do not find this result. Instead, our analyses show that DACA's impacts on self-reported health among adults and children receded after mid-2015, to such an extent that they are no longer statistically distinguishable from the pre-policy period (Exhibit 2). This is also clear when we add each year into the post-policy period one by one (Exhibit 3).

The erasure of improvements to self-reported health that begins after June 2015 may reflect stressors that are more closely related to socio-emotional health than to changes in material circumstances. Beginning in June 2015, the presidential campaign inaugurated a new era of heightened anti-immigrant rhetoric and direct threats to DACA [38]. It is possible that the observed declines in health after mid-2015 may be a response to the stressful and painful experiences of fearing the termination of DACA, not knowing what the future holds, and imagining a return to undocumented status under an explicitly anti-immigrant federal policy climate.

Our study also shows that DACA's impacts on health are intergenerational. Indeed, our results hold not just for individuals who are eligible for the program but also for the children of DACA-eligible mothers. We find that DACA was associated with improvements in the health of children whose

mothers were DACA-eligible between 2012-2015, but, as with DACA-eligible adults, those improvements disappear after mid-2015. Children's health and wellbeing are sensitive to family stress processes, and prior studies have shown that children are aware of and affected by their mothers' immigration status and deportation threat [8-11, 26, 39]. Our results for children in the first post-period period are consistent with the only other existing study of DACA's intergenerational health impacts [18]. However, our findings extend existing research by providing evidence that such benefits did not persist after the commencement of the U.S. presidential campaign in mid-2015.

CONCLUSION

Undocumented legal status undermines the health and wellbeing of immigrants in the United States [1-5]. By granting eligible undocumented immigrants protection from deportation and some fundamental rights, DACA may have improved the health of participants and their children [14-21]. However, DACA recipients do not have access to permanent legal status nor a guarantee that their temporary status will remain in place. Indeed, since 2015, the program's future has been highly uncertain, leading journalists to describe the experience as a "political and legal limbo…a kind of purgatory [for DACA

recipients]” [40]. We show that the health of DACA-eligible immigrants and their children in California improved in the three years following DACA’s creation, when the rights the program bestowed were relatively secure. However, as the DACA program became increasingly threatened in 2015 as the U.S. presidential campaign began, these health benefits did not persist. What is more, the initial health improvements and subsequent declines were also intergenerational, providing further evidence that mothers’ legal status—and the uncertainties that surround it—is closely linked to children’s health [18, 26]. Until access to permanent legal status is available for all, the fate of nearly one million DACA recipients—and millions more family members—remains in limbo.

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EXHIBIT LIST

Exhibit 1. Weighted Mean Sample Characteristics, by Legal Status

Adults

	DACA-Eligible	Undocumented-ineligible	Documented	U.S.-Born
Good health				
Entire Period	78.9%[a]	73.6%	83.5%	84.7%
Pre-DACA	77.2%[ab]	76.1%	86.8%	85.6%
Post-DACA 1	84.2%[c]	66.8%	80.9%	84.5%
Post-DACA 2	77.5%	75.4%	82.0%	83.9%
Age (years)	21.4[bc]	27.3	24.0	21.3
Male	49.5%	51.0%	50.2%	50.6%
Household income (as times 100% of FPL)	1.33[ab]	1.25	2.40	2.83
Has usual source of care other than ER	62.4%[abc]	50.5%	75.3%	72.4%
Currently insured	63.0%[abc]	51.1%	76.5%	82.3%
Observations	832	1,265	1,623	10,858

Children

	DACA-eligible	Undocumented-ineligible	Documented	U.S.-born
Good health				
Entire Period	82.0%[ab]	89.3%	96.0%	95.2%
Pre-DACA	78.9%[a]	89.0%	91.0%	95.2%
Post-DACA 1	99.3%	90.1%	98.0%	97.1%
Post-DACA 2	75.2%	89.2%	97.7%	93.7%
Age (years)	4.9[c]	4.5	4.2	3.7
Male child	40.7%	42.4%	51.1%	52.0%
Household income (as times 100% of FPL)	1.00[ab]	0.86	1.80	1.80
Has usual source of care other than ER	59.9%[ab]	67.8%	83.9%	83.0%
Currently insured	97.8%	95.9%	92.0%	97.6%
Observations	120	405	221	891

Source: Authors' analyses of 2007-2017 California Health Interview Survey.
Notes: Sample is Latina/os ages 15-30 in 2012 (adult models) or children of Latinas ages 15-30 in 2012 (child models). Good health is coded as follows: Excellent, very good and good=1, Fair and poor=0. Pre-DACA = 1/1/07-6/14/12, Post-DACA 1 = 6/15/12-6/16/15; Post-DACA 2 = 6/17/15-12/31/17. a. Significant difference ($p < 0.05$) from U.S.-born; b. significant difference ($p < 0.05$) from Documented; c. significant difference ($p < 0.05$) from Undocumented-ineligible.

Exhibit 2. Difference-in-Differences Estimates of DACA's Impact on Good Health among Latinos in Two Post-DACA Periods

	Adult Good Health (OLS)	Child Good Health (OLS)
U.S.-born *(ref=Undocumented-ineligible)*	0.04	0.05
Documented	0.07**	0.01
DACA-eligible	-0.02	-0.11
Post-DACA 1	-0.09	0.03
Post-DACA 2	0.00	0.02
DACA effects		
DACA-eligible x Post Period 1	0.17**[a]	0.21**[ab]
DACA-eligible x Post Period 2	0.01	-0.02
U.S.-born x Post Period 1	0.09	-0.00
U.S.-born x Post Period 2	-0.01	-0.02
Documented x Post Period 1	0.04	0.03
Documented x Post Period 2	-0.05	0.07
Adult age	-0.00***	-
Child age	-	0.02****
Male child	-	-0.00
Male adult	0.00	-
Household income (as times 100% of FPL)	0.01****	0.00
Has usual source of care other than ER	0.05****	0.01
Currently insured	0.03**	-0.02
Constant	0.80****	0.96****
R-squared	0.023	0.074
Observations	14578	1637

Source: Authors' analyses of 2007-2017 California Health Interview Survey.
Notes: DACA effect rows are the difference-in-differences estimators for the indicated group. Pre-DACA = 1/1/07-6/14/12 (Reference); Post-DACA 1 = 6/15/12-6/16/15; Post-DACA 2 = 6/17/15-12/31/17. Sample is Latinas/os ages 15-30 in 2012 (adult models) or children of Latinas ages 15-30 in 2012 (child models). Good or better health is coded as follows: Excellent, very good and good=1, Fair and poor=0. a. significant difference ($p < 0.1$) between Documented x Post 1 and DACA-eligible x Post 1, Documented x Post 2 and DACA-eligible x Post 2, b. Significant difference ($p < 0.1$) between U.S.-born x Post 1 and DACA-eligible x Post 1, U.S.-born x Post 2 and DACA-eligible x Post 2. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$

Exhibit 3. Difference-in-Differences Estimates of DACA's Impact on Good Health among Latinos by Cumulative Post-DACA Years (OLS Regression)

Adult health	**Post-DACA Year 1** (6/15/12-6/14/13)	**Post-DACA Year 2** (6/15/12-6/14/14)	**Post-DACA Year 3** (6/15/12-6/14/15)	**Post-DACA Year 4** (6/15/12-6/14/16)	**Post-DACA Year 5** (6/15/12-12/31/17)
DACA effects (*Reference = Undocumented-Ineligible X Post-DACA Period*)					
DACA-eligible x Post-DACA Period	0.12	0.16*	0.17**[a]	0.08	0.07[a]
Documented x Post-DACA Period	0.15*	0.08	0.04	0.02	-0.02
U.S.-born x Post-DACA Period	0.13	0.11*	0.09	0.06	0.02
Constant	0.73****	0.76****	0.78****	0.81****	0.80****
R-squared	0.026	0.026	0.024	0.026	0.022
Observations	8,053	9,253	9,834	12,087	14,578
Child health					
DACA effects (*Reference = Undocumented-Ineligible X Post-DACA Period*)					
DACA-eligible x Post-DACA Period	0.13[ab]	0.21*[ab]	0.20*[ab]	0.01	0.06
Documented x Post-DACA Period	-0.05	0.05	0.04	0.05	0.06
U.S.-born x Post-DACA Period	-0.05	-0.01	-0.003	-0.02	-0.01
Constant	0.85****	0.90****	0.90****	0.95****	0.96****
R-squared	0.059	0.054	0.057	0.061	0.063
Observations	830	981	1,037	1,337	1,637

Source: Authors' analyses of 2007-2017 California Health Interview Survey.
Notes: DACA effect rows are the difference-in-differences estimators for the indicated group. Sample is Latinas/os ages 15-30 in 2012 (adult models) or children of Latinas ages 15-30 in 2012 (child models). Good or better health is coded as follows: Excellent, very good, and good=1, Fair and poor=0. Adult models control for age, male, household income (as times 100% of FPL), has usual source of care other than ER, and currently insured. Child models control for child's age, male child, household income (as times 100% of FPL), has usual source of care other than ER, and currently insured. a. Significant difference ($p < 0.1$) between Documented x Post-DACA. b. Significant difference ($p < 0.1$) between U.S.-born x Post-DACA. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$