Supplementary Appendix for

Association between Health Care Utilization and Immigration Enforcement Events in San Francisco

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1. Data

1.1 Source

Data for the analyses come from electronic medical records covering all visits in all healthcare facilities in the San Francisco Health Network (SFHN) from November 2015 until February 2018. SFHN is an integrated health care delivery system run by San Francisco Public Health Department (SFPHD) that includes primary and specialty clinics as well as the Zuckerberg San Francisco General (ZSFG) hospital and trauma center. Data were de-identified with the exception of date of service. The data include demographic information on all patients as well as the location, diagnoses and insurance codes for each visit. SFHN is the home for the majority of Healthy San Francisco (HSF) members. HSF is a health access program for residents of San Francisco that allows uninsured residents to access affordable health care services. In 2016-2017, 13,615 people were enrolled in the program.

1.2. Outcomes

The three primary outcomes considered were the log number of encounters for adult patients (18+) in each of the following settings: primary care clinics, urgent care clinics; the emergency department (ED). We also examined the log number of wellness or preventive visits in primary care clinics. The first three outcomes are defined based on the facility in which the encounter took place (e.g., an ED or an urgent care clinic) while the wellness or preventive visits are identified based on ICD-10 codes.[1]

In an additional analysis, we focused on emergency department visits for ambulatory care sensitive conditions among adult patients. These encounters were defined based on both hospital facility (i.e. ED) and ICD-10 codes as listed in Eggli et al. (2014).[2] These codes are designed to isolate ED encounters due to complications which could have been avoided under regular healthcare utilization. These could arise if, for instance, patients initially avoided seeking healthcare as a result of immigration-related events, contributing to the worsening of underlying medical conditions.

1.3. Sample

The sample for the primary analyses consisted of all patients age 18 and over who appeared in the data at least once in the year prior to the 2016 US Presidential election (i.e. November 2015 – November 2016). This second restriction limited the potential for spurious results driven by compositional changes in the San Francisco population resulting from the outcome of the election. For instance, it is possible that more immigrant patients moved to or away from San Francisco or to non-SFHN health care settings within San Francisco post-election which will result in either

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[1] General and other special examinations without complaint and encounters for immunization.
[2] The list is based in part on original article by Purdy et al. (2009). These included angina, asthma, bacterial pneumonia, cellulitis, congestive heart failure, chronic obstructive pulmonary disease, dehydration and gastroenteritis, infectious/food-borne gastroenteritis, dental conditions, diabetes complications, ear, nose and throat infections, hypertension, hypoglycemia, influenza and pneumonia, iron or other nutritional deficiency anemia, nutritional deficiency, other vaccine preventable diseases, pelvic inflammatory disease, perforated/bleeding ulcer, pyelonephritis, appendicitis with rupture.

higher or lower observed healthcare utilization among this subgroup. This is a different effect than the one we aimed to isolate. However, we conducted additional tests to evaluate potential selection bias generated by this sample restriction and examined all new patients to determine whether our null results could be driven by compositional changes of HSF and Medi-Cal patients (aggregated across all four types of visits to the week-group level). In 2016, Hispanic patients accounted for close to 75 percent. In the final set of analyses, we focus separately on children age 17 and younger who appeared in the data at least once in the year prior to the 2016 US Presidential election.

1.4. Exposure groups

We split the primary analytic sample of adult patients into four groups. Two were considered the groups we expected were most likely to be impacted by immigration-related events and two were considered groups we expected would be less impacted or not impacted. The first group comprised all patients for whom we observed at least one HSF claim in every healthcare encounter throughout the sample period. We call this the "HSF Always" group. After the passage of the Affordable Care Act, most US-born low-income patients became eligible for Medi-Cal and were no longer in the HSF program. Our assumption was that that HSF membership served as a proxy for immigrants who are undocumented or hold other immigration statuses that have been targeted by recent anti-immigration policies and enforcement events. Since the Affordable Care Act, HSF reported that immigration status is the driving factor for why patients are enrolled in HSF instead of other health insurance programs (HSF 2016-2017 Report). The proportion of Hispanic enrollees in the program increased rapidly from 27% in FY 2012-2013 (HSF 2013-2014 Report) to nearly 75% in 2014-2015, where it has remained stable for the past few years of reported data (HSF 2014-2015 Report).

The second group we expected would be most impacted includes all Hispanic patients who claimed HSF in at least one encounter but were not a part of the HSF Always group. The reason we relax the restriction that the patient must use HSF at every encounter is that healthcare providers attempt to exhaust Medi-Cal resources whenever possible prior to billing HSF.[3] It is thus possible that an HSF member who had even one encounter that was covered by Medi-Cal, such as perinatal care, rather than HSF would not appear in the HSF Always group.

The first group we expected would be less impacted included Hispanic patients for whom all observed encounters were billed to Medi-Cal (Medi-Cal Always, Hispanic). Our assumption was that those with all encounters billed to Medi-Cal were on unrestricted or regular Medi-Cal, and that this was a proxy for low-income Hispanic patients who were U.S. citizens, legal permanent residents, or otherwise held immigration statuses that made them eligible for unrestricted/regular Medi-Cal. Similarly, the second group we expected would be less or not at all impacted is made of up of non-Hispanic patients for whom all observed encounters were billed to Medi-Cal (Medi-Cal Always, non-Hispanic). Groups were designed to be mutually exclusive; those in the less impacted groups did not include patients who were not in any of the two most impacted groups.

When conducting ancillary analysis for pediatric patients, we had to use other specifications for the comparison groups. There is no way via the electronic medical records to approximate nativity or immigration status of pediatric patients or their parents. As of May 2016, all children in

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[3] For example, prenatal care and labor & delivery are covered by (Emergency) Medi-Cal regardless of immigration status and would be billed to Medi-Cal.

California were eligible for Medi-Cal regardless of immigration status meaning that payer type would therefore not serve as a good proxy for the immigration status of children. We compared utilization outcomes for Hispanic compared to non-Hispanic children. This mirrors other research focusing on widespread impacts of the 2016 Presidential election and immigration enforcement on Hispanic families and children in the US (e.g., Eskenazi et al. 2019, Gemmil et al. 2019, Krieger et al. 2017).

1.5. Descriptive Statistics

Table A1 presents summary statistics for the analytic sample of adult patients with one SFHN encounter prior to the 2016 Presidential election. Each column corresponds to a different group (full sample, treatment or control) of patients denoted in the header. Panel A shows means and standard deviations for the individual-level demographic variables. The entire analytic sample included 22,525 adult patients. Groups we expected would be most impacted consisted of 2,815 (HSF Always) and 4,627 (HSF Ever, Hispanic) adult patients, and the groups we expected would be less or not impacted were made up of 5,001 (Medi-Cal Always, Hispanic) and 10,082 (Medi-Cal Always, non-Hispanic) adult patients. Across settings, about half of adult patients were female, half were Hispanic and 16% were white.

Panel B describes the encounter-level variables. We have information on 168,975 encounters of which 19,703 were for adult patients in the HSF Always group (most impacted) and 74,067 are for the HSF Ever Hispanic (most impacted) group. For the groups less or not exposed these numbers are 30,925 (Medi-Cal Always, Hispanic) and 44, 280 (Medi-Cal Always, non-Hispanic). Next, 11% of all visits were ED and this number varied from 4% to 19% in our four treatment and control groups. About 4% of all visits were in an Urgent Care setting while about half were in a Family Clinic. HSF accounted for 30% of all visits and 64% were Medi-Cal claims.

2.   Statistical Analysis

We used a difference-in-difference design in a linear regression framework to measure the effect of immigration enforcement events, policies, and related political events on healthcare utilization among probable immigrant patients in San Francisco. We aggregated all outcomes (visits) to the week-group level and then took the log of the outcome. The equation we estimated is:

$$y_{gt} = \alpha + +\gamma PostEvent_t * ImpactedGroup_g + \delta_g + \lambda_t + \epsilon_{gt},$$

where g indexes groups and t denotes weeks. The term $PostEvent_t$ is an indicator equal to one for an observation after the event and zero otherwise while $ImpactedGroup_g$ is a comparison group dummy. The coefficient of interest is γ, which measures the differential response in healthcare utilization among the groups we expected would be most impacted relative to the groups we expected would be less impacted in the weeks following each event relative to the weeks leading up to it. Next, δ_g represent group fixed effects which control for permanent differences in healthcare utilization between the four groups. Similarly, λ_t are week fixed effects which account for aggregate trends in hospital visits common to all groups (e.g., lower utilization around major holidays such as Christmas and July 4th). We estimate all regressions on a 10-week window around

each of the events described below (5 weeks before and 5 weeks after). To gain statistical precision, we also estimated a specification in which we pooled all 6 events together.

3. Immigration-Related Enforcement, Policy, and Political Events

Figure A1 presents the timeline of the events analyzed in this study. These included political events, policy changes, and rumored or actual immigration enforcement events covering the period from November 2015 to March 2018. One set of events included political and policy changes at the federal level, such as the 2016 US Presidential election, the 2017 Presidential Inauguration, and subsequent passage of anti-immigration Executive Orders.

We also considered local-level immigration enforcement events during this period that occurred in or adjacent to San Francisco County. We included rumored events in additional to actual events, given our expectation that rumors, or anticipated immigration enforcement may have also had an adverse impact on health care utilization (e.g. causing reductions or delays due to fear of traveling or presenting to clinical settings). To identify local-level enforcement events, we used Google to search local newspaper records in the Bay Area for immigration-related events that had widespread media coverage. We additionally evaluated the dates of spikes in pre-identified Spanish and English-language search terms in the San Francisco Metropolitan Area related to immigration enforcement as defined by Google Trends time-series data.

- Event #1 (Jan 6, 2016) corresponds to the spread of rumored Immigration and Customs Enforcement (ICE) raids in an adjacent county (Oakland and Hayward, CA).[5] This event was also characterized by a spike in Google Trends in enforcement-related terms in the San Francisco Metro Area.

- Event #2 (Nov 8, 2016) was the 2016 US Presidential election. While there were no documented enforcement events on this day, the Trump campaign was characterized by promises to enact anti-immigrant policies, including mass deportation, and to roll-back inclusive policies such as the Deferred Action for Childhood Arrivals (DACA) program.[6]

- Event #3 (Jan 20 – Feb 16, 2017) included the day of and three weeks following the 2017 US Presidential Inauguration. In the aftermath of the Inauguration, the Trump Administration passed a series of anti-immigrant policies such as Executive Order #13769 which, among other things, halted the refugee admission program and enacted a ban against travelers from some Muslim-majority countries,[7] an Executive Order to re-establish participation with local law

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[5] https://splinternews.com/social-media-is-driving-a-frenzy-of-false-immigration-r-1793853934
https://missionlocal.org/2016/01/sf-advocates-hold-protest-against-recent-immigration-raids/
http://www.sfusd.edu/en/news/current-news/2016-news-archive/01/4751.html
[6] https://www.nytimes.com/2016/09/02/us/politics/transcript-trump-immigration-speech.html
[7] https://tinyurl.com/y9x4xubl
https://www.cnn.com/2017/01/25/politics/donald-trump-immigration-executive-orders/index.html
https://tinyurl.com/yd9e7juf
http://sfist.com/2017/01/26/ice_agents_descend_on_missions_good.php
https://tinyurl.com/y9egdxad
https://sanfrancisco.cbslocal.com/2017/02/16/immigration-and-customs-enforcement-rumors-east-bay-panic/
https://www.nbcbayarea.com/news/local/False-Report-of-ICE-Raid-Causes-Panic-in-East-San-Jose-413905663.html

enforcement agencies to carry out interior immigration enforcement,[8] and Executive Order #13767 which laid the framework to build a wall at the US Southern border.[9] During this same period there was an ICE Raid at Good Samaritan Family Resource Center in San Francisco, CA in which one person was detained. This led to widespread rumors of ICE activity in East and South Bay Area. Given the close temporal proximity of these events, we were not able to distinguish the unique impact of any single one (e.g. the Inauguration only). For multi-week events like this one, we used the earliest date to denote the onset of the event.

- Event #4 (Jul 27–Aug 16, 2017) comprised ICE raids in adjacent cities (Hayward and Oakland, CA) in which 2 detainees were arrested. Although ICE claimed that they were targeting specific individuals with criminal backgrounds, individuals who were not initially targeted were arrested.[10]

- Event #5 (Sep 25-29, 2017) comprised widespread ICE raids which took place throughout the San Francisco Bay Area which resulted in 27 detained individuals.[11] Six of these people were detained in San Francisco, CA and the rest in Santa Clara county. These enforcement efforts were part of a nationwide surge in ICE activity targeting undocumented immigrants.[12]

- Event #6 (Jan 10-Feb 1, 2018) comprised another large-scale ICE raid throughout the SF Bay Area.[13]

[8] https://www.whitehouse.gov/presidential-actions/executive-order-enhancing-public-safety-interior-united-states/
[9] https://www.whitehouse.gov/presidential-actions/executive-order-border-security-immigration-enforcement-improvements/
[10] https://tinyurl.com/ybfm7596
https://www.mercurynews.com/2017/07/29/ice-shows-up-to-apartment-complex-looking-for-undocumented-hayward-man-arrests-two-others-instead/
https://www.mercurynews.com/2017/08/06/hayward-officials-raise-questions-about-ice-arrests-of-2-residents/
https://tinyurl.com/yalw43lg
https://abc7news.com/society/ice-raid-in-west-oakland-related-to-human-trafficking/2315669/
https://www.nbcbayarea.com/news/local/ICE-HSI-Serve-Federal-Warrant-in-West-Oakland-440781753.html
[11] https://tinyurl.com/ybqdbxjr
https://www.sfgate.com/nation/article/ICE-sweep-targeting-sanctuary-cities-snares-27-in-12239739.php
http://www.sfweekly.com/topstories/27-arrested-by-ice-in-santa-clara-s-f/
https://www.mercurynews.com/2017/09/29/ice-arrests-in-sf-santa-clara-county-targeted-immigrants-with-previous-convictions/
[12] https://tinyurl.com/ybqdbxjr
https://www.sfgate.com/nation/article/ICE-sweep-targeting-sanctuary-cities-snares-27-in-12239739.php
http://www.sfweekly.com/topstories/27-arrested-by-ice-in-santa-clara-s-f/
https://www.mercurynews.com/2017/09/29/ice-arrests-in-sf-santa-clara-county-targeted-immigrants-with-previous-convictions/
[13] https://tinyurl.com/yd2hrb9s
https://www.sfgate.com/bayarea/article/ICE-targets-6-Bay-Area-cities-in-7-Eleven-12488821.php
https://abc7news.com/politics/south-bay-supervisor-calls-ice-raids-at-7-eleven-stores-tragic/2926682/
http://www.ktvu.com/news/ice-plans-major-sweep-in-northern-california-bay-area-report
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https://www.eastbaytimes.com/2018/02/01/ice-targets-77-northern-california-businesses-in-crackdown-on-illegal-workers/

In the analyses we compared healthcare utilization for comparison groups in the 5 weeks leading up to and following each of these six events. The results when comparing each of the comparison groups separately (e.g., HSF Always vs Medi-Cal Always, Hispanic) were qualitatively very similar, but less precisely estimated. We additionally pooled estimates across all of the events.

4. Results

4.1. Main Results

Figure A2 presents trends in family clinic visits surrounding each immigration-related enforcement and policy event described above for the four groups of interest. The two solid lines correspond to treatment groups (black - HSF Always, blue - HSF Ever, Hispanic) and dashed lines refer to the control groups (green – Medi-Cal always, Hispanic, brown – Medi-Cal always, non-Hispanic). The vertical dashed lines denote the last observation prior to each event. Each point measures the log number of weekly visits for a given group.

Across all outcomes, the time series for most vs. less or not impacted groups generally followed parallel paths prior to each event. This suggests that the groups we expected would be less or not impacted likely provided credible counterfactuals for the health care utilization of the groups we expected would be most impacted in absence of considered events.

There are no discernible differences in primary care visits following specific events or in pooled analysis. All groups utilized primary care at similar rates before and after immigration-related events took place.

Figures A3, A4 and A5 present the same trends for Wellness or preventive visits, Urgent Care and ED visits respectively. The time series generally follow similar (parallel) trajectories in the weeks leading up to each event and do not diverge afterward. We do not find visual evidence of a decrease in healthcare utilization among groups we expected to be most impacted relative to groups we expected would be less or not impacted for any of these types of visits following immigration-related enforcement and policy events.

Table A2 provides the estimates from the results for the difference-in-difference regression described above in the Statistical Analysis section. We conducted a series of regressions that include all four of the defined comparison groups, varying the time period considered and the type of visit (e.g. Event #1 – Family Clinic, Event #2 – Family Clinic, etc.) For each of the "Event"-specific regressions, there are 40 observations (i.e. for each of the 5 weeks before and 5 weeks after the event for each of the 4 groups). For each utilization type, we also run an additional regression to obtain a pooled estimate, which includes data for all the events for all groups. Because some of the events are close together, there is overlap, and the number of weeks included (232) is slightly less than the 240 that would be observed if there was no overlap (10 weeks around 6 events for 4 groups). The point estimates are provided for the interaction term of the comparison group indicator and the post-enforcement event period (γ from the equation above). The 95% confidence interval for the estimates are also provided. The regressions include group and week fixed effects.

Consistent with the visual inspection of the trends in Figures A2-A5, we find that the vast majority of estimates are not statistically significant. In other words, comparison groups utilized healthcare at similar rates before and after immigration-related events took place. Results were similar when using alternative group comparisons (e.g. HSF Ever - Hispanic compared to the Medi-Cal-Hispanic group).

Figure A6 displays the difference-in-differences estimates from Table A2, for adult patients. The horizontal lines correspond to 95% confidence intervals. The outcome variable is denoted in the header in each panel. Overall, we did not find systematic evidence of change in healthcare utilization for the comparison groups following enforcement-related events and policies across outcomes in the pooled estimates.

There were event-specific exceptions for Urgent Care and Emergency Department. We found evidence of higher utilization of Urgent Care visits in the group we expected would be most impacted relative to the group we expected would be least or not impacted in the five weeks following the 2016 US Presidential election (0.368, 95% CI: 0.107, 0.630) and lowered utilization of Urgent Care visits in the group we expected would be most impacted compared to the group we expected would be least or not impacted in the weeks following ICE raids in an adjacent county (-0.438, 95% CI: -0.700, -0.175). However, the figure suggests that this latter estimate of decline in utilization may have begun just prior to the dates of the raids themselves.

4.2. Pediatric Patients

Table A3 provides the estimates from the analysis of children. As explained in the analysis section, the comparison groups that we used for adults are not possible to construct for children. Instead, we defined the group we expected would be most impacted as Hispanic children and the comparison group non-Hispanic children. Due to limited power for specific settings, we evaluated utilization across settings rather than breaking them out by type. Again, we conducted a series of regressions varying the time period considered. For each of the "Event" regressions, there are 20 observations, 5 weeks before and 5 weeks after the event for each of the 2 groups. We also ran a regression to obtain a pooled estimate, which includes data for all of the events for all groups. Because some of the events are close together, there is overlap, and the number of weeks included (118) is slightly less than the 120 that would be observed if there was no overlap (10 weeks around 6 events for 2 groups). The point estimates are provided for the interaction term of the comparison group indicator and the post-immigration enforcement event period (γ from the equation above). The 95% confidence interval for the estimates are also provided. The regressions include group and week fixed effects.

Figure A7 shows the results from Table A3. There was evidence of increased overall health care utilization (0.140, 95% CI: 0.57, 0.22) for Hispanic compared to non-Hispanic children in the weeks following (compared to the weeks just before) the 2016 US Presidential election and in the weeks following widespread ICE raids in the SF Bay Area between January and February 2018 (0.149, 95% CI: 0.026, 0.271). There was not consistent evidence across immigration-related enforcement and policy events in the pooled estimate.

4.3. Ambulatory Care Sensitive Conditions

Table A4 provides the estimates from the analysis of ED visits for ambulatory care sensitive (ACS) conditions for adult patients (i.e. conditions that should not generally lead to ED visits given quality primary care). See footnote 2 for a full list of conditions that we classified as ACS conditions.

For the analysis of ACS conditions, we again used the log number of encounters for each week for each treatment and control group, but we subset the encounters to only those that occurred in the ED and could be classified as an ACS conditions. Similar to the other analyses, the regression included encounters from the five weeks before and five weeks after each event. When neither group had any instance of ACS conditions in a given week, that week was dropped from the analysis, resulting in less than the expected 40 observations for each regression. We also ran a regression to obtain a pooled estimate, which included data for all of the events for all groups. Because some of the events are close together and weeks with no encounters are dropped, the number of weeks included (222) is slightly less than the 240 that would be observed if there was no overlap (10 weeks around 6 events for 4 groups). The point estimates are provided for the interaction term of the comparison group indicator and the post-enforcement event period (γ from the equation above). The regressions include group and week fixed effects. The 95% confidence interval for the estimates are also provided. Note that, because of smaller samples, these coefficients are more noisily estimated compared to the ones discussed above. None of the coefficients were statistically significant at conventional levels.

The results from Table A4 are displayed in Figure A8. We did not find evidence for a discernible effect in ED visits for ambulatory care sensitive conditions between the comparison groups after the events included in this study.

4.4. Working Age Male Adults

Next, in Table A5 we restricted the sample to adult male patients aged 18-64. There are several reasons we might expect to find particular declines in health care use among working-age Hispanic men. For instance, they might be more likely than women to avoid health care at the risk of potential deportation or because criminalization, detention, and deportation is highly gendered. The outcome variable is (log) number of encounters in any setting. The regressions include group and week fixed effects. The 95% confidence interval for the estimates are also provided.

Once again, most coefficients were not statistically significant at conventional levels. In other words, we did not find systematic evidence of decreased healthcare utilization due to immigration-related events among a subsample of working age Hispanic men. The only large and statistically significant coefficient is in the analysis evaluating the effect of the 2016 US Presidential election. This coefficient is positive, suggesting an increase in utilization following this event.

4.5. Compositional Changes in the Sample

Lastly, we relaxed the restriction requiring all patients in our sample to have had a record in the SFHN prior to the 2016 Presidential election. For instance, it is possible that immigration-related

events deter new patients for signing up for HSF but do not have an effect on existing patients. This effect would not be captured in our main analysis.

In Panel A of Figure A9 we plotted the number of new patients (i.e., patients who appear for the first time in our data) using Medi-Cal and HSF in each week of our sample without imposing the aforementioned restriction. Alternatively, in Panel B we present the weekly-level number of unique patients in these two groups regardless of when they first entered the SFHN system (i.e., it includes patients that first appeared before the election and after the election). None of the time series in this figure exhibits a discernable trend break following the Presidential election. We therefore think it is unlikely that our null result is driven by compositional changes of HSF and Medi-Cal patients. Note that for these tests we restricted the sample to male patients because women were more likely to alternate between encounters billed to Medi-Cal and HSF, likely due to Medi-Cal coverage for labor and delivery.

4.6. Multiple Hypothesis Correction

Note that in Tables A2-A5 we tested 49 coefficients (i.e., hypotheses) altogether. While most were not statistically significant, six were statistically significant at conventional levels - Table A5, Event #2; Table A2, Panel C, Event #4; Table A3, Event #2; Table A2, Panel C, Event #2; Table A3, Event #6; Table A5, Pooled. Moreover, three of these six coefficients were positive and referred to the same event - the 2016 US Presidential election - indicating a potential increase in utilization, due to, for instance, negative health impacts of this event.

However, under standard statistical assumptions we would have expected 2 or 3 of the 49 tests to be statistically significant at the 5% level purely by chance. To account for this multiple hypothesis testing issue, we implemented two corrections - the Benjamini-Hochberg (controlling the false discovery rate, FDR) and the Bonferroni-Holm (controlling the family-wise error rate, FWER) procedures. Under both procedures only a single test was statistically significant (Table A5, Event #2).

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5. Figures and Tables

Table A1: Summary Statistics

		Treatment		Control	
	Full Sample	HSF Always	HSF Ever, Hispanic	Medi-Cal Always, Hispanic	Medi-Cal Always, non-Hispanic
	Panel A: Patient-level Variables				
Male	.49	.61	.44	.42	.52
	(.50)	(.49)	(.50)	(.49)	(.50)
Age	41.85	46.21	44.25	38.42	41.25
	(13.41)	(11.41)	(11.85)	(12.55)	(14.44)
White	.16	.10	.02	.02	.31
	(.37)	(.30)	(.13)	(.14)	(.46)
White, non-Hispanic	.15	.09	.00	.00	.31
	(.36)	(.29)	(.00)	(.00)	(.46)
Hispanic	.51	.64	1.00	1.00	.00
	(.50)	(.48)	(.00)	(.00)	(.00)
Asian	.13	.16	.01	.01	.24
	(.34)	(.36)	(.08)	(.09)	(.43)
Black	.13	.02	.00	.01	.29
	(.34)	(.13)	(.05)	(.10)	(.45)
English Language	.56	.36	.21	.41	.84
	(.50)	(.48)	(.41)	(.49)	(.37)
Spanish Language	.37	.57	.78	.57.	.03
	(.48)	(.49)	(.41)	(.50)	(.18)
Observations	22,525	2,815	4,627	5,001	10,082
	Panel B: Visit-level Variables				
Share ED Visits	.11	.04	.07	.14	.19
	(.32)	(.19)	(.26)	(.35)	(.39)
Share Urgent Care Visits	.04	.04	.04	.05	.04
	(.20)	(.19)	(.20)	(.22)	(.21)
Share Family Clinic Visits	.51	.58	.53	.43	.49
	(.50)	(.49)	(.50)	(.49)	(.50)
Share HSF Claims	.30	1.00	.42	.00	.00
	(.46)	(.02)	(.49)	(.01)	(.00)
Share Medi-Cal Claims	.64	.00	.44	1.00	1.00
	(.48)	(.03)	(.50)	(.00)	(.00)
Observations	168,975	19,703	74,067	30,925	44,280

Notes: Descriptive statistics of our patient-level (Panel A) and visit-level (Panel B) variables. Standard deviations are shown in parenthesis. Source: San Francisco Health Network, November 2015 – March 2018.

Table A2: Difference-in-Differences Estimates: Main Analysis, Adult Patients

	Pooled	Event #1	Event #2	Event #3	Event #4	Event #5	Event #6
Panel A: Family Clinic Visits							
Diff-in-diff	-.008	-.068	.063	.039	-.036	.005	-.046
	(-.070, .054)	(-.168, .033)	(-.046, .172)	(-.102, .179)	(-.170, .098)	(-.134, .144)	(-.166, .074)
N	236	40	40	40	40	40	40
R^2	.97	.98	.98	.97	.98	.98	.99
Panel B: Wellness or preventive visits							
Diff-in-diff	-.006	.024	.081	-.033	.008	.011	-.092
	(-.096, .084)	(-.100, .148)	(-.078, .240)	(-.206, .140)	(-.196, .212)	(-.158, .180)	(-.317, .133)
N	236	40	40	40	40	40	40
R^2	.94	.97	.95	.96	.95	.96	.95
Panel C: Urgent Care Visits							
Diff-in-diff	-.024	-.188	.368	-.041	-.438	.003	-.135
	(-.168, .120)	(-.457, .081)	(.107, .630)	(-.319, .237)	(-.700, -.175)	(-.317, .322)	(-.378, .108)
N	236	40	40	40	40	40	40
R^2	.87	.91	.94	.91	.93	.86	.94
Panel D: Emergency Department Visits							
Diff-in-diff	.109	-.261	.196	-.241	-.094	.325	.408
	(-.084, .303)	(-.534, .012)	(-.533, .141)	(-.779, .298)	(-.335, .147)	(-.031, .680)	(-.013, .829)
N	236	40	40	40	40	40	40
R^2	.93	.97	.96	.91	.97	.95	.94

Notes: Each column presents the difference-in-differences estimate of the impact of immigration-related events (denoted in the header; see Figure A1) on the (log) number of healthcare visits for adult patients. Each panel corresponds to a separate type of visit denoted in the panel header. These estimates reflect a specification with both treatment (i.e., HSF Always and HSF Ever, Hispanic) and both control (i.e., Medi-Cal Always Hispanic and Medi-Cal Always non- Hispanic) groups. 95% confidence intervals are shown in parenthesis. Source: San Francisco Health Network, November 2015 – March 2018.

Table A3: Difference-in-Differences Estimates: Overall Healthcare Utilization, Pediatric Patients

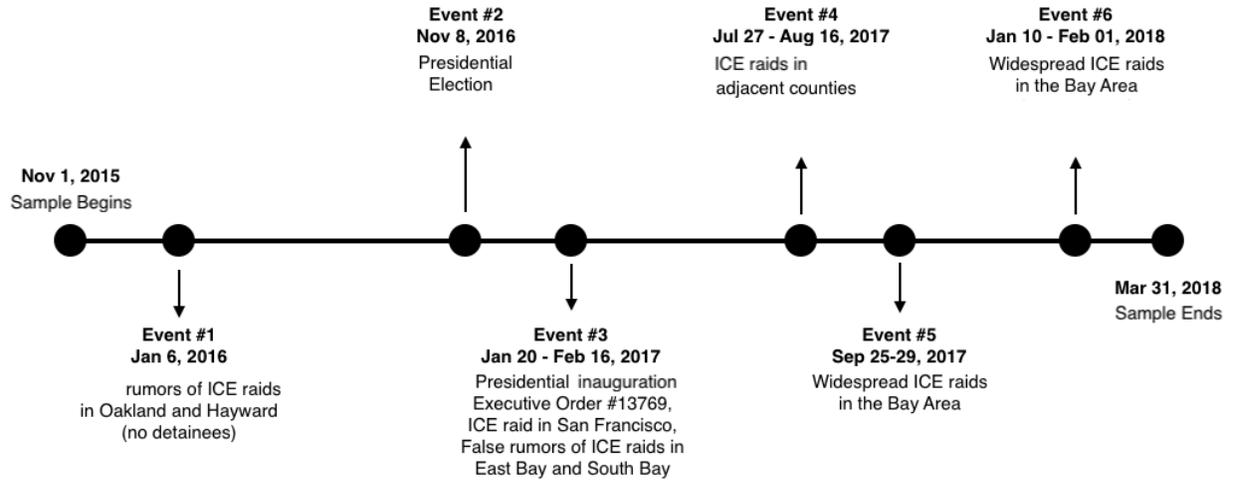|	Log Number of Visits among Children						
	Pooled	Event #1	Event #2	Event #3	Event #4	Event #5	Event #6
Diff-in-diff	.062 (-.006, .130)	.017 (-.051, .085)	.140 (.057, .222)	.074 (-.036, .185)	-.074 (-.183, .035)	.054 (-.087, .196)	.149 (.026, .271)
N	118	20	20	20	20	20	20
R^2	.97	.99	.99	.99	.99	.98	.99

Notes: Each column presents the difference-in-differences estimate of the impact of immigration-related events (denoted in the header; see Figure A1) on the (log) number of visits in all clinical settings among children. The treatment group consists of all Hispanic children age 17 and younger and the control is non- Hispanic children of the same age group. 95% confidence intervals are shown in parenthesis. Source: San Francisco Health Network, November 2015 – March 2018.

Table A4: Difference-in-Differences Estimates: Ambulatory Care Sensitive Conditions, Adult Patients

|	Log Number of Emergency Department Visits for Ambulatory Care Sensitive Conditions						
	Pooled	Event #1	Event #2	Event #3	Event #4	Event #5	Event #6
Diff-in-diff	.131	-.190	.385	.085	-.249	.395	.246
	(-.110, .373)	(-.788, .407)	(-.030, .800)	(-527, .696)	(-.814, .316)	(-.312, 1.101)	(-.267, .759)
N	222	38	36	38	39	38	37
R^2	.80	.88	.93	.79	.81	.76	.87

Notes: Each column presents the difference-in-differences estimate of the impact of immigration-related events (denoted in the header; see Figure A1) on the (log) number of emergency department visits for adult patients with a primary or secondary diagnosis corresponding to an ambulatory care sensitive condition. The estimates reflect a specification with both HSF treatment and both Medi-Cal control groups. 95% confidence intervals are shown in parenthesis. Source: San Francisco Health Network, November 2015 – March 2018.

Table A5: Difference-in-Differences Estimates: All Encounters, Working Age Male Patients

	Log Number of Healthcare Visits for Adult Male Patients in All Settings						
	Pooled	Event #1	Event #2	Event #3	Event #4	Event #5	Event #6
Diff-in-diff	.079	.055	.276	.012	.055	.041	-.002
	(.004, .154)	(-.057, .167)	(.152, .401)	(-.119, .144)	(-.074, .183)	(-.089, .171)	(-.141, .138)
N	236	40	40	40	40	40	40
R^2	.95	.97	.97	.98	.98	.98	.97

Notes: Each column presents the difference-in-differences estimate of the impact of immigration-related events (denoted in the header; see Figure A1) on the (log) number of visits in all settings. The sample is restricted to male patients aged 18-64. The estimates reflect a specification with both HSF treatment and both Medi-Cal control groups. 95% confidence intervals are shown in parenthesis. Source: San Francisco Health Network, November 2015 – March 2018.

## Figure A1: Timeline of Immigration-related Events

Event #2
Nov 8, 2016
Presidential
Election

Event #4
Jul 27 - Aug 16, 2017
ICE raids in
adjacent counties

Event #6
Jan 10 - Feb 01, 2018
Widespread ICE raids
in the Bay Area

Nov 1, 2015
Sample Begins

Mar 31, 2018
Sample Ends

Event #1
Jan 6, 2016
rumors of ICE raids
in Oakland and Hayward
(no detainees)

Event #3
Jan 20 - Feb 16, 2017
Presidential inauguration
Executive Order #13769,
ICE raid in San Francisco,
False rumors of ICE raids in
East Bay and South Bay

Event #5
Sep 25-29, 2017
Widespread ICE raids
in the Bay Area

Notes: Timeline of immigration-related enforcement and policy events analyzed in this paper.

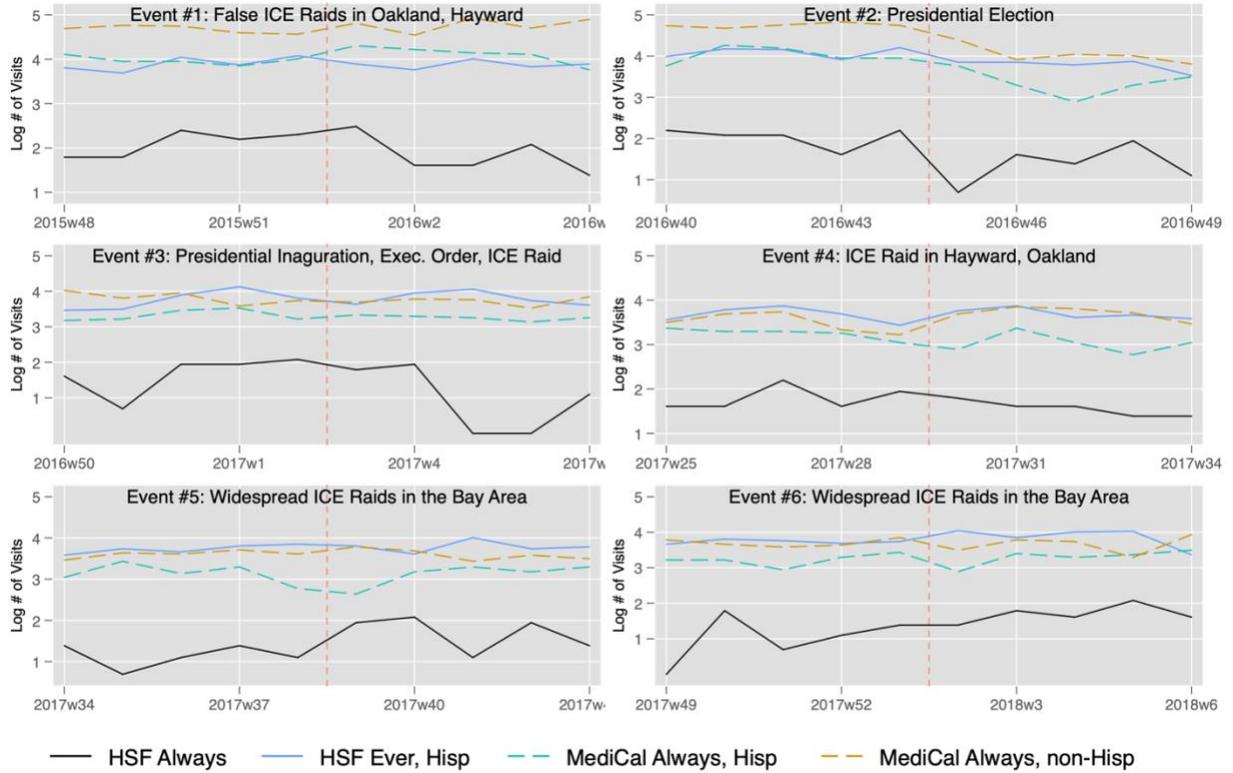# Figure A2: Family Clinic Visits, Adult Patients
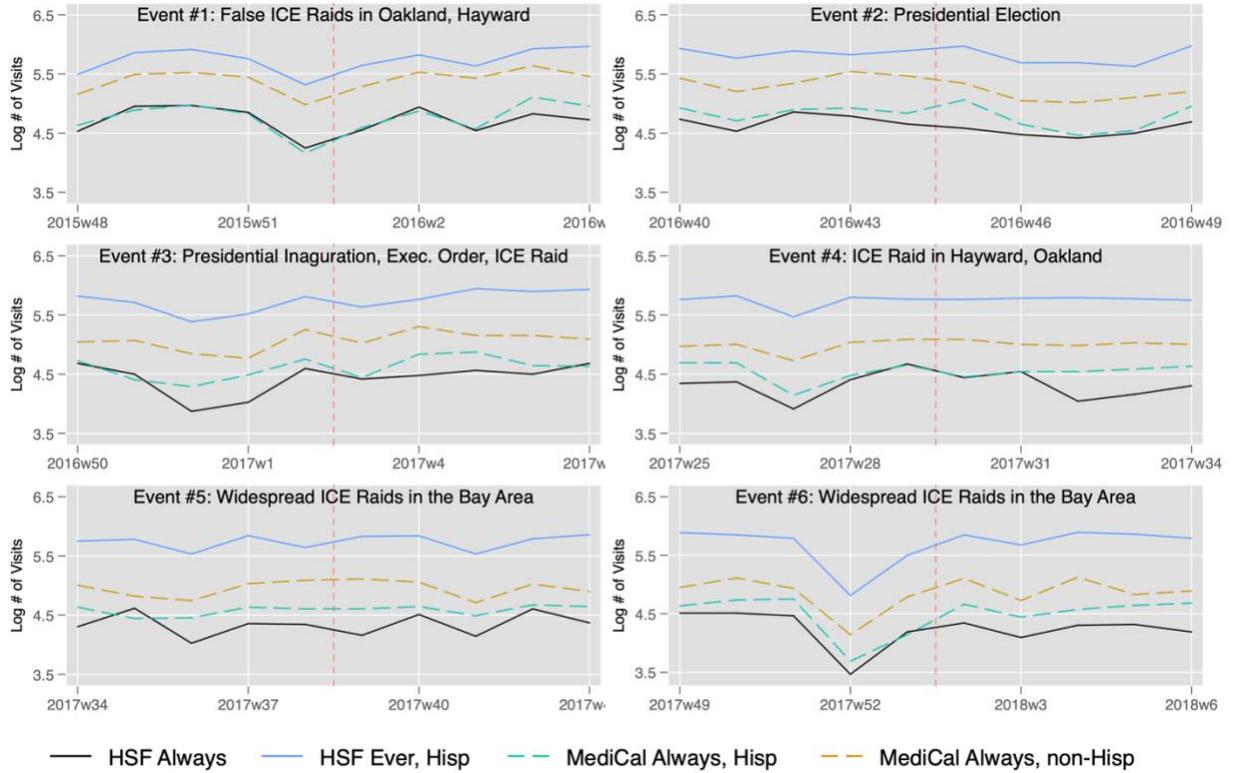
Notes: Week-level family clinics visits for adult patients around each immigration-related event by group. The vertical dashed line denotes the last observation prior to the event. Solid lines correspond to treatment groups (black – HSF Always, blue – HSF Ever, Hispanic) and dashed ones to control groups (green – Medi-Cal Always, Hispanic, brown – Medi-Cal Always, non-Hispanic). Source: San Francisco Health Network, November 2015 – March 2018.

Figure A3: Well Visits, Adult Patients
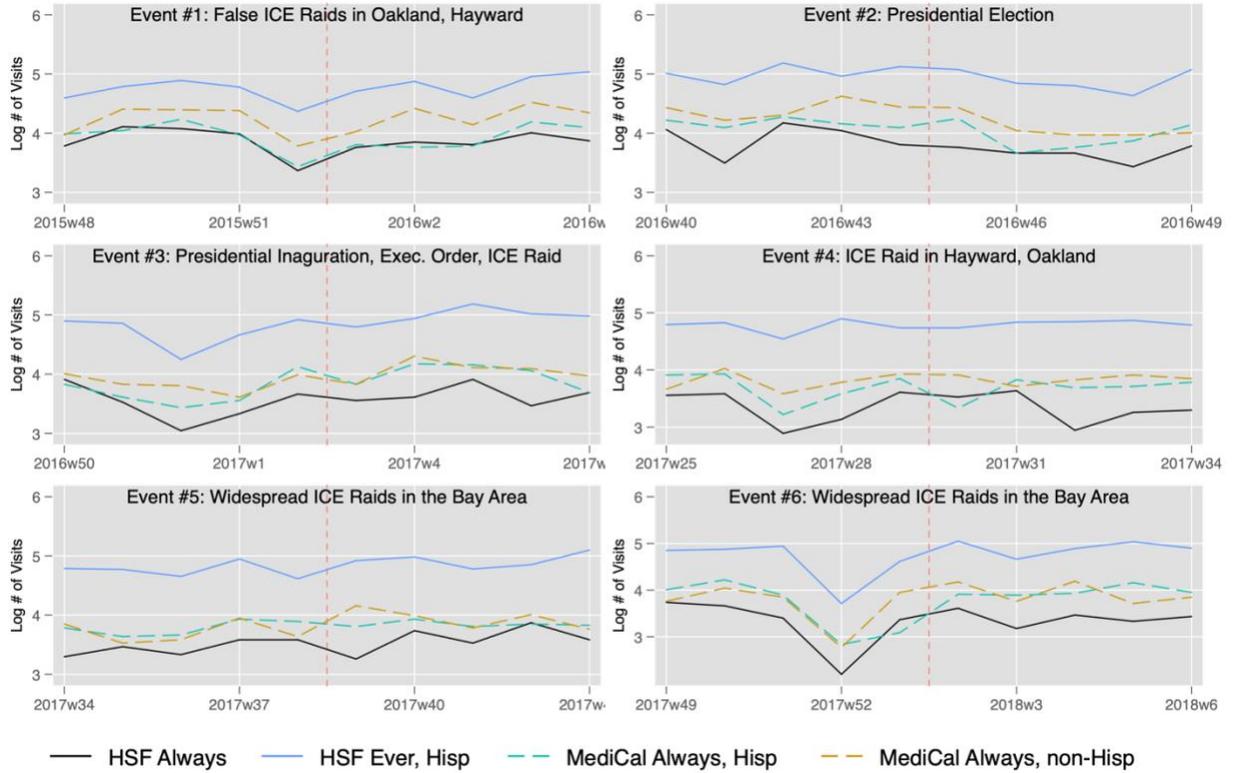
Notes: Week-level annual well visits for adult patients around each immigration-related event by group. The vertical dashed line denotes the last observation prior to the event. Solid lines correspond to treatment groups (black – HSF Always, blue – HSF Ever, Hispanic) and dashed ones to control groups (green – Medi-Cal Always, Hispanic, brown – Medi-Cal Always, non-Hispanic). Source: San Francisco Health Network, November 2015 – March 2018.

Figure A4: Urgent Care Visits, Adult Patients
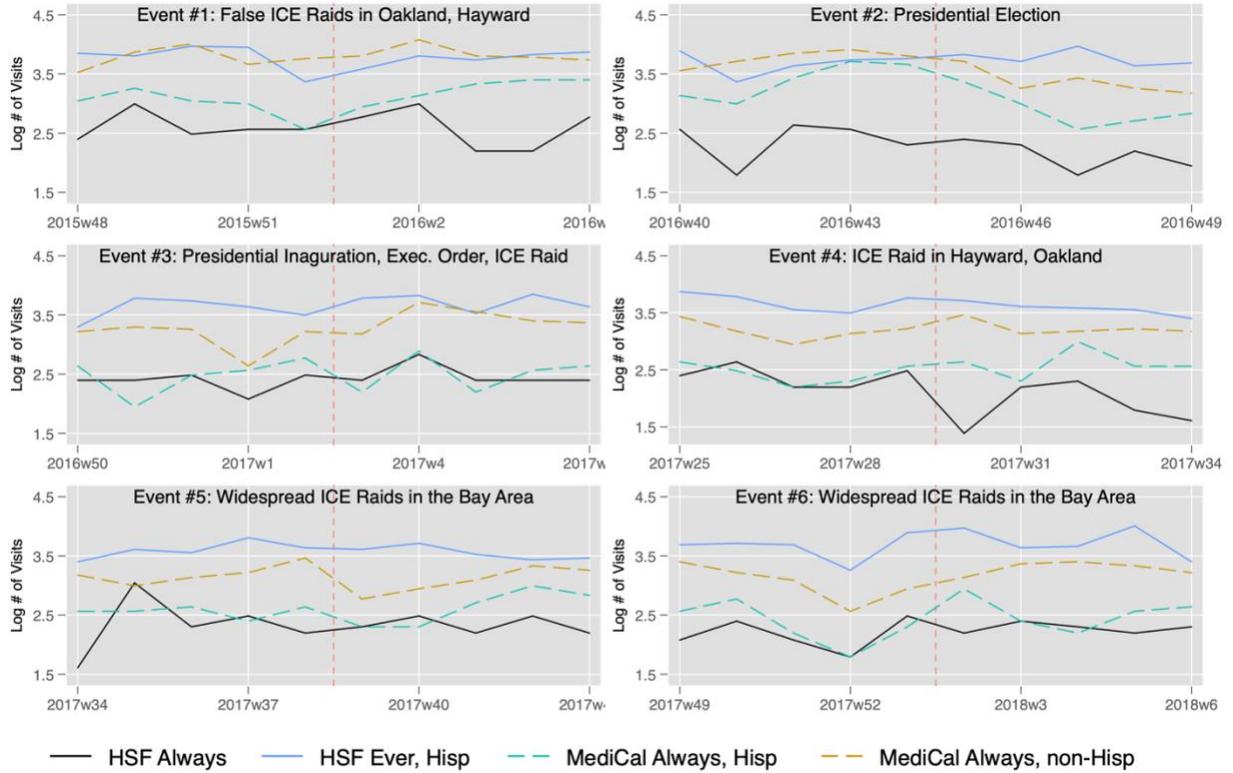
Notes: Week-level urgent care visits around each immigration-related event in our sample by group. The vertical dashed line denotes the last observation prior to the event. Solid lines correspond to our treatment groups (black – HSF Always, blue – HSF Ever, Hispanic) and dashed ones to our control groups (green – Medi-Cal Always, Hispanic, brown – Medi-Cal Always, non-Hispanic). Source: San Francisco Health Network, November 2015 – March 2018.

Figure A5: Emergency Department Visits, Adult Patients

Notes: Week-level emergency department visits for adult patients around each immigration-related event by group. The vertical dashed line denotes the last observation prior to the event. Solid lines correspond to treatment groups (black – HSF Always, blue – HSF Ever, Hispanic) and dashed ones to control groups (green – Medi-Cal Always, Hispanic, brown – Medi-Cal Always, non-Hispanic). Source: San Francisco Health Network, November 2015 – March 2018.

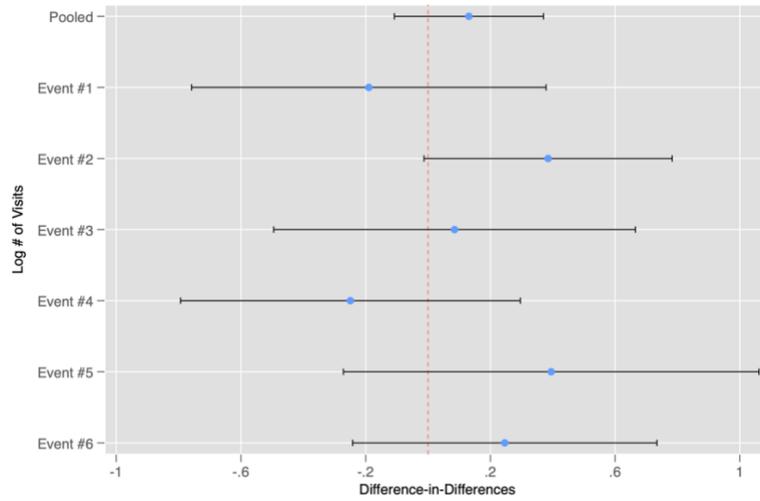## Figure A6: Difference-in-Difference Estimates: Adult Patients
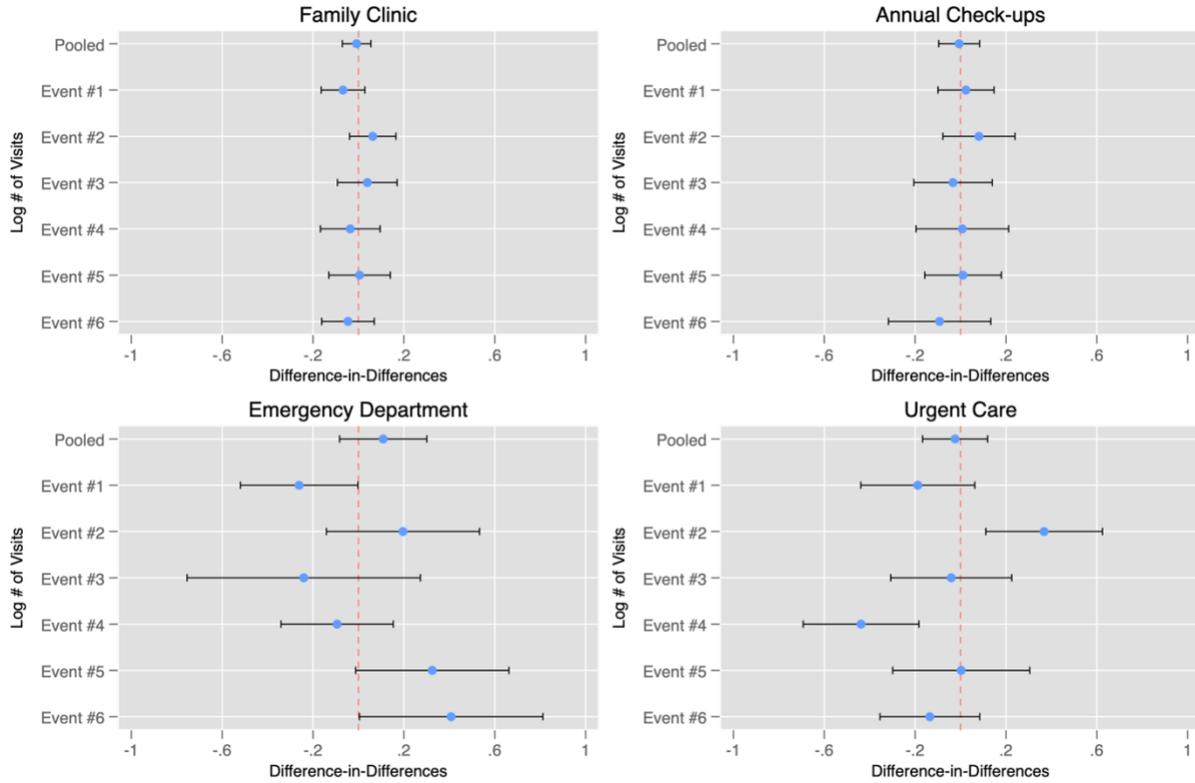
Notes: Difference-in-differences estimates of the impact of each immigration-related event on healthcare utilization for adult patients denoted in the header of each panel. The horizontal lines correspond to 95% confidence intervals. The outcome variable is measured in log number of visits. These estimates reflect a specification with both HSF treatment and both Medi-Cal control groups. These plots appear in Figure 2B in the main text. Source: San Francisco Health Network, November 2015 – March 2018.

Figure A7: Difference-in-Difference Estimates: Overall Health Care Utilization, Pediatric Patients
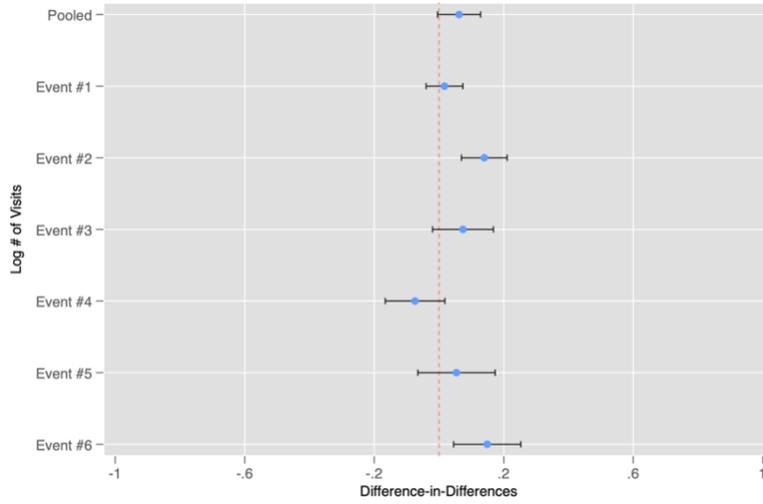
Notes: Difference-in-differences estimates of the impact of each immigration-related event on healthcare visits among children. The treatment group is Hispanic children age 17 and younger and the control group is non-Hispanic children of the same age group. The horizontal lines correspond to 95% confidence intervals. The outcome variable is (log) number of visits in any clinical setting. This plot appears in Figure 2B in the main text. Source: San Francisco Health Network, November 2015 – March 2018.

Figure A8: Difference-in-Difference Estimates: ED Visits for Ambulatory Care Sensitive Conditions, Adult Patients

Notes: Difference-in-differences estimates of the impact of each immigration-related event on ED visits for ambulatory care sensitive conditions among adult patients. The estimates reflect a specification with both treatment and both control groups. The horizontal lines correspond to 95% confidence intervals. The outcome variable is (log) number of visits in an emergency department with an ambulatory care sensitive condition. This plot appears in Figure 2B in the main text. Source: San Francisco Health Network, November 2015 – March 2018.

Figure A9: Number of New and Unique Medi-Cal and HSF Adult Patients
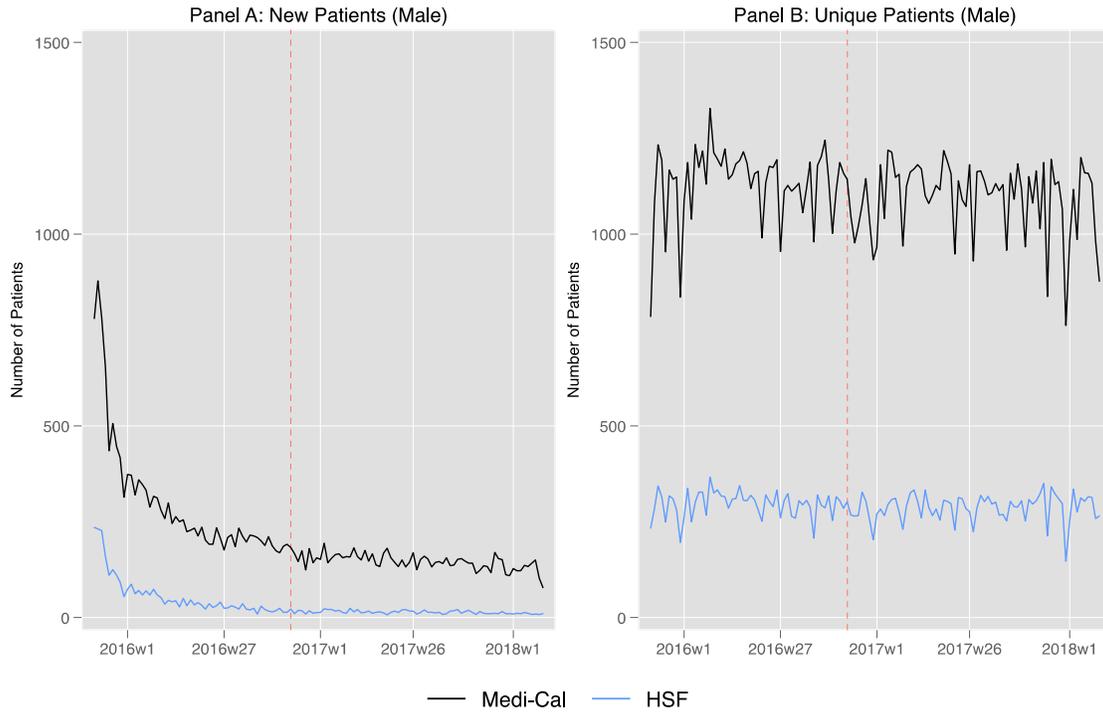
Notes: Number of new (Panel A) and unique (Panel B) adult patients using Medi-Cal (black lines) and HSF (blue lines). The vertical line corresponds to the week of the 2016 US Presidential election. Source: San Francisco Health Network, November 2015 – March 2018.