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Impeding or Accelerating Assimilation?
Immigration Enforcement and Its Impact on Naturalization Patterns

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Abstract

Naturalization bestows economic benefits to immigrants, their families and communities through greater access to employment opportunities, higher earnings, and homeownership. It is the cornerstone of immigrant assimilation in the United States. Yet, less than 800,000 of the estimated 8.8 million legal permanent residents eligible to naturalize do so on a yearly basis. Using data from the 2008-2016 American Community Survey, we analyze how the expansion of interior U.S. immigration enforcement affects naturalization patterns. We find that the intensification of interior enforcement increases migrants' propensity to naturalize and accelerates their naturalization, possibly in response to increased uncertainty about future immigration policy. Yet, the impacts are highly heterogeneous. For eligible-to-naturalize immigrants living in mixed-status households—households with at least one unauthorized member, we find the opposite effects. Intensified enforcement makes them less likely to naturalize or to delay their status adjustment, possibly to avoid any contact with immigration officials. Understanding how immigration policy influences naturalization decisions is important given the benefits to naturalization and the potential to counter the adverse impacts of tougher enforcement on the 16 million individuals, many of them U.S. citizens, residing in mixed-status households.

Keywords: Immigration enforcement, Naturalization, United States.

JEL Codes: F22, J15, K37.

1. Introduction

Naturalization is the cornerstone of immigrant assimilation. Naturalized immigrants can obtain access to government benefits and jobs requiring citizenship, sponsor immediate relatives for visas, participate in the formal electoral process and are guaranteed the right to remain permanently in the United States protected from deportation. In 2013, the Department of Homeland Security (DHS) estimated that 8.8 million immigrants or 31 percent of the Legal Permanent Resident (LPR) population was eligible to naturalize. Yet, in the past 8 years, only an average of 716,457 immigrants have become naturalized citizens annually.[1]

While it has been shown that the decision to naturalize is influenced by personal circumstances, country of origin traits, and host country characteristics that alter the costs and benefits associated with naturalization (*e.g.* Chiswick and Miller, 2008), Jones-Correa (2001) and Bloemraad (2002) suggest that the decision may also be shaped by institutional factors, such as immigration policies. Our aim for this study is to gauge how one example of such policies–the formidable expansion of interior immigration enforcement–is affecting naturalization patterns.

Between 2003 and 2016, funding for the Immigration and Customs Enforcement (ICE) agency–the federal agency responsible for interior immigration enforcement–increased by approximately 130 percent.[2] Interior removals by ICE also more than doubled between 2003 and 2014.[3] The increase in the intensity of interior immigration enforcement has been reflected in the greater number of immigration enforcement initiatives and programs involving local and state governments. In some states, this intensification of enforcement has fostered an environment of fear and hostility towards unauthorized migrants and their families. This policy environment may

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[1] https://www.uscis.gov/news/fact-sheets/naturalization-fact-sheet
[2] U.S. Department of Homeland Security, *Budget in Brief*, fiscal years 2003-2016 (http://www.dhs.gov/dhs-budget).
[3] See data from The Transactional Records Access Clearinghouse at
http://trac.syr.edu/phptools/immigration/removehistory/

also cultivate uncertainty regarding legal permanent resident (LPR) status. Some LPRs may be reluctant to leave the United States for temporary trips to their home countries for fear that they may encounter difficulties re-entering the United States. Other LPRs may even fear deportation in light of heightened enforcement.[4] Lastly, some might be concerned about the extent to which greater enforcement might transform other immigration laws and policies such as naturalization. In sum, heightened enforcement can create a sense of uncertainty regarding immigration policy that may alter non-citizens' naturalization patterns, regardless of their immigration status.

The importance of examining the link between immigration enforcement and naturalization cannot be overstated. Naturalization provides better employment opportunities and higher earnings for immigrants and their families. In that regard, Shierholz (2010) finds that family income and poverty rates are, respectively, 14.6 percent higher and 3 percentage points lower among naturalized immigrants than among their non-naturalized counterparts. In a similar vein, Pastor and Scoggins (2012) estimate an 8 percent gain in individual earnings following naturalization (an 11 percent gain for naturalized immigrants in California and a 15 percent gain for Californian Latinos). Likewise, using data from the American Community Survey, Enchautegui and Giannarelli (2015) find that the earnings of eligible to naturalize immigrants would increase by 8.9 percent if they were to become U.S. citizens. Moreover, using both cross-sectional and longitudinal data, Bratsberg *et al*. (2002) document how naturalization increases men's wages between 5 and 6 percent. In addition to the importance of naturalization, both Pastor and Scoggins (2012) and Bratsberg *et al*. (2002) underscore the importance of the timing of naturalization. Specifically, they note that gains to naturalization are the highest for immigrants who have been naturalized for longer periods of time. Finally, the gains from naturalization

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[4] Kandil, Caitlin Yoshiko, "Fearing Deportation, Asian Immigrants in America Obtain U.S. Citizenship," Los Angeles Times, December 21, 2017.

expand well beyond the abovementioned economic gains to encompass the right to participate in the electoral process and easily sponsor a wider range of family members for legal permanent residency.

A growing body of work has examined the impact of immigration policies on immigrants and/or their families in the wake of intensified interior immigration enforcement. For instance, Watson (2014) documents that heightened federal immigration enforcement leads to "chilling effects" in Medicaid participation among children of noncitizens, even when the children are U.S. citizens. Amuedo-Dorantes and Lopez (2015) find that greater enforcement has a negative impact on the schooling progression of U.S. children with unauthorized parents. In addition, the increase in deportations accompanying the intensification of interior immigration enforcement has been shown to break up families, leaving children behind in the care of a single parent, an older sibling, or other relatives (Landale *et al.*, 2011; Amuedo-Dorantes and Arenas-Arroyo, 2017). Deportations, mostly of male household heads, have also resulted in single-headed households struggling to make ends meet (Dreby, 2012). Even when the enforcement measures do not specifically target employment, they induce families to start living in the shadows due to fear of apprehension. Such a decision has been shown to negatively impact their employment and earnings opportunities, as well as the political participation of U.S. citizens in the household (*e.g.* Orrenius and Zavodny, 2009; Chaudry *et al.*, 2010; Lopez, 2011; Amuedo-Dorantes *et al.*, 2013; Amuedo-Dorantes and Lopez 2017). With this study, we seek to gain a better understanding of how the intensification of immigration enforcement that started in the early 2000s, which has also become a high priority for the current Administration, is affecting what has always been conceived of as the cornerstone of immigration assimilation–the decision to naturalize and the timing of naturalization of eligible-to-naturalize immigrants.

Using a constructed population weighted index that serves as a proxy for the intensity of interior immigration enforcement at the MSA level, we show that tougher enforcement generally increases migrants' propensity to naturalize and accelerates the naturalization process of most eligible-to-naturalize immigrants. These results hold separately for immigrant women, for immigrants with a high school education or more, for non-Hispanic immigrants, and for immigrants from countries offering dual citizenship. In contrast, intensified immigration enforcement makes immigrants with less than a high school education less likely to naturalize, and both less educated and Hispanic immigrants respond by delaying their naturalization. Of particular interest to us, given their direct exposure to the consequences of tougher immigration enforcement, are eligible-to-naturalize immigrants in mixed-status households –households with at least one unauthorized immigrant. We find that intensified enforcement lowers these migrants' propensity to naturalize and lengthens the number of years to naturalization (*i.e.* delays the naturalization process) by 1.5 percent and 9 percent, respectively. These responses are diametrically opposed to those exhibited by immigrants in non-mixed status households, who become more likely to naturalize and do so faster.

Furthermore, we find that the naturalization impacts of immigration enforcement differ, not only according to whether immigrants reside in a mixed-status household, but also with the nature of the immigration enforcement measure in place. In particular, while police-based enforcement lowers the propensity to naturalize and delays the naturalization of immigrants in mixed-status households, it hastens naturalization among immigrants in non-mixed status households. Perhaps, among eligible-to-naturalize immigrants in mixed status households, intensified enforcement instills reluctance to disclose the legal status and residence of their undocumented family members in the naturalization application form for fear they might be

apprehended. Among other eligible-to-naturalize immigrants, the toughening of immigration enforcement may create uncertainty about the future of immigration laws and generate the urge to naturalize to secure their citizenship status in the United States. In contrast to police-based enforcement, employment-based enforcement, such as E-Verify, has a similar impact among all eligible-to-naturalize immigrants, regardless of the type of household in which they reside. Specifically, it increases the desire and propensity to naturalize, possibly as a means to get around employment barriers, but lengthens the time to naturalization, signaling a harder to reach assimilation when additional employment verification requirements are in place.

Because of the implicit economic benefits of naturalization for immigrants and the rights that newly gained citizenship grants them, gaining an understanding of how recent immigration policy initiatives influence migrants' decisions to naturalize and the timing of their naturalization deserves attention. We believe this is especially true given the current Administration's immigration policies, which include rising enforcement, elimination of the Department of Homeland Security (DHS) removal priorities, and expansion of enforcement operations to include people who do not necessarily have criminal records (Pierce and Selee, 2017).

2.   The Decision to Naturalize and Immigration Enforcement

2.1   The Drivers of Naturalization

Naturalization requires that immigrants hold legal permanent residence status for at least 5 years, that they pass a naturalization test where they demonstrate their English language proficiency and knowledge of U.S. history and government, be 18 years of age or older, pass a criminal background check, and pay an application fee. Even when these requirements can be met, immigrants still weigh the costs against the benefits when deciding to naturalize. Research has shown that an immigrant's decision to naturalize is influenced by a combination of personal

attributes, host country characteristics, and country of origin factors that alter the costs and benefits associated with naturalization. For example, educational attainment, gender, and age at migration have been shown to be strong determinants of naturalization (Chiswick and Miller 2008). Immigrants are also more likely to naturalize the longer they have resided in the host country. Indeed, Passel (2007) finds that three-quarters of immigrants who have resided in the United States for more than 20 years have naturalized, compared to 53 percent of those living in the United States between 11 to 20 years, and 31 percent of those residing 6-10 years. Additionally, the characteristics of immigrants' spouses, such as their citizenship status and educational attainment, can play a role (Chiswick and Miller, 2008; Passel, 2007).

Geographic distance between the home country and the United States has also been shown to be a significant predictor of the decision to naturalize. The greater the distance, the larger is the cost of return migration, raising the likelihood that the migrant might naturalize (Chiswick and Miller, 2008; Passel, 2007). In addition, naturalization rates have been shown to be higher among immigrants from countries that grant dual citizenship rights (Mazzolari, 2009; Chiswick and Miller, 2008; Jones-Correa, 2001). Dual citizenship lowers the cost of naturalization by allowing immigrants residing in the United States to maintain their citizenship rights in their home countries. Finally, other country of origin traits shown to impact the decision to naturalize include linguistic distance between the home and host country, real GDP per capita, the level of political rights and civil liberties, economic freedom, and whether or not the source country is a refugee-sending country (Chiswick and Miller, 2008).

In this study, we are particularly interested in the role of immigration policy in the host country. Prior studies have pointed to the role that policy can play in shaping immigrants' decision to naturalize. For instance, Zong and Batalova (2016) document how naturalization rates rose

during the 1990s in response to: (1) the 1986 Immigration Reform and Control Act (IRCA) amnesty, (2) restrictions placed on non-citizens' access to welfare benefits (1996 Personal Responsibility and Work Opportunity Reconciliation Act, PRWORA), and (3) limited legal protection due to an expanded list of deportable offenses (1996 Anti-Terrorism and Effective Death Penalty Act, AEDPA).[5] While there was somewhat of a decline thereafter due to growing backlogs (Chishti and Bergeron, 2008), naturalization rates spiked again between FY2007 and FY2008 (increase of 59 percent) following naturalization campaigns launched for the 2008 presidential election and the impending increase in naturalization fees from $300 to $595 that was set to begin in mid-2007 (Zong and Batalova, 2016).

As in the prior policy examples, immigration enforcement policy may influence migrants' decisions to naturalize. There is evidence of the number of naturalization applications rising from around 500,000 in 1994 to almost one million in 1995 after California voters passed Proposition 187 (Linthicum, 2016). Jones-Correa (2001) argues that an anti-immigrant environment could push immigrants into naturalizing and encourage them to vote to protect their rights once naturalized. Singer and Gilbertson (2000) show how the policy environment can alter how immigrants view the status of legal permanent residency. Immigrants who view their LPR status as insecure or uncertain may find that U.S. citizenship is necessary to maintain their existing rights.[6]

However, the policy environment could also force immigrants to remain on the sidelines, avoiding naturalization, especially if they reside in mixed-status households (households with at

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[5] See also Van Hook, Brown, and Bean (2006) who show that naturalization increased as a result of PRWORA and positive social contexts of immigrant reception.
[6] See Jordan, Miriam, "Citizenship Applications in the U.S. Surge as Immigration Talk Toughens," New York Times, October 27, 2017, Kandil, Caitlin Yoshiko, "Fearing Deportation, Asian Immigrants in America Obtain U.S. Citizenship," Los Angeles Times, December 21, 2017, and Linthicum, Kate, "More People Are Filing to Become Citizens in the Face of Anti-Immigration Policies," Los Angeles Times, April 22, 2016.

least one unauthorized member) for fear that the location of their unauthorized family members might be revealed to immigration authorities. Not only do these factors influence the decision of whether or not to naturalize, but they may also affect the timing of naturalization (when migrants decide to naturalize).

Finally, it is also possible that some immigrants simply do not have a preference to naturalize, regardless of the policy context. Among Latinos, twenty-six percent of LPRs reported that they just have not tried to naturalize or are not that interested in naturalizing (Taylor *et al.* 2012). Immigrants may feel that U.S. citizenship results in a loss of identity or they may not associate citizenship with any significant political or economic gains above what they already experience.[7]

2.2   The Intensity of Interior Immigration Enforcement

The past two decades have witnessed an impressive expansion of interior immigration enforcement. Between 2003 and 2013, funding for the Immigration and Customs Enforcement (ICE) agency –the federal agency responsible for interior immigration enforcement– increased approximately 80 percent, apprehensions more than doubled, and removals increased by three-fold.[8] The increase in the intensity of interior immigration enforcement has been made evident by the greater participation of local and state governments in a number of immigration enforcement initiatives and programs. For instance, E-Verify is a free internet-based system provided by the United States government that allows employers to determine the employment eligibility of new hires. As of January 2015, the number of participating employers had risen above 550,000 and 19

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[7] See Kirk Semple "Making Choice to Halt at Door of Citizenship," New York Times, August, 25, 2013.
[8] U.S. Department of Homeland Security, *Budget in Brief*, fiscal years 2003-2013 (http://www.dhs.gov/dhs-budget).
Data on apprehensions can be found in Table 33 at:
http://www.dhs.gov/yearbook-immigration-statistics-2013-enforcement-actions,
and data on interior removals can be found at:
http://www.migrationpolicy.org/research/deportation-and-discretion-reviewing-record-and-options-change

states had enacted legislation requiring some level of mandatory E-Verify use (either among all employers, or by public sector employers and contractors).[9] Bohn and Lofstrom (2012) and Bohn *et al.* (2014) document that the 2007 Legal Arizona Workers Acts (LAWA) –which mandated, for the first time, all Arizona employers to use E-Verify– reduced the employment of likely unauthorized immigrants. Looking across all states, Amuedo-Dorantes and Bansak (2012, 2014) find that the state adoption of mandatory E-Verify laws results in unauthorized migrants relocating to states without mandatory legislation or being forced to accept employment in the underground economy. In the process of evading state mandates or employers who have adopted E-Verify, greater emotional and financial stress is likely to be placed on unauthorized immigrants and their families.

In addition to E-verify, programs such as 287(g) and Secure Communities strengthened the partnership between federal immigration authorities and state and local police, further intensifying interior immigration enforcement. The U.S. government's 287(g) program allowed state and local law enforcement to establish a partnership with the federal government under joint Memorandum of Agreements, in which state and local law enforcement would receive federal authority for immigration enforcement within their jurisdictions. In 2006, only five counties collaborated with the federal government. By 2008, that number had jumped to 41 counties (Wong, 2012). Between 2006 and 2010, the budget for 287(g) increased from $5 million to $68 million, with over 1,500 state and local law enforcement officers trained and granted authorization to enforce federal immigration laws (Nyugen and Gill, 2015). In response to the rolling out of the program, immigrants altered their residential choices. Watson (2013) finds that immigrants responded to

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[9] U.S. Citizenship and Immigration Services, E-Verify Overview, 2015.
(http://www.uscis.gov/sites/default/files/USCIS/Verification/E-Verify/E-Verify_Native_Documents/e-verify-presentation.pdf)

local 287(g) agreements by relocating within the United States, but that this internal migration effect was concentrated among educated non-citizens.

In 2008, as ICE debated whether to continue renewing 287(g) agreements, Secure Communities was introduced.[10] Secure Communities is an information-sharing program used in the apprehension and deportation of unauthorized immigrants. Under the program, local law enforcement agencies can submit information from arrests, such as fingerprints, to an integrated database with ICE that allows for the identification of the immigration status and criminal activity of any individual. In the latter case, ICE requests that local authorities hold certain individuals for deportation. By 2013, every jurisdiction in the United States was covered under Secure Communities, compared to just 14 jurisdictions in 2008.[11] Both programs, the latter one replaced by the Priority Enforcement Program (PEP) in 2015, have been criticized for aiding in the deportation of immigrants with no criminal records, creating a strong fear of law enforcement officials among immigrants, and pushing unauthorized migrants and their families into the shadows (Nguyen and Gill, 2015; Aguilasocho *et al.*, 2012; Preston, 2011).[12]

Finally, a number of state-level omnibus immigration laws further contributed to the intensification of interior immigration enforcement. According to the National Conference of State Legislators, five states adopted laws similar to Arizona's SB 1070 in 2011 (*i.e.* Alabama, Georgia, Indiana, South Carolina, and Utah). One year later, five additional states introduced immigration enforcement legislation (*i.e.* Kansas, Mississippi, Missouri, Rhode Island, and West Virginia).[13] Despite the recent drop in proposed state-level immigration enforcement legislation,

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[10] In 2013, the Department of Homeland Security (DHS) decided not to any new agreements.

[11] http://www.ice.gov/secure-communities

[12] A portion of Secure Communities was temporarily suspended by DHS from November 20, 2014 through January 25, 2017. The program was reactivated from January 25, 2017 through the end of the 2017 fiscal year. See http://www.ice.gov/secure-communities

[13] National Conference of State Legislators, http://www.ncsl.org/research/immigration/2013-immigration-report.aspx

the increase in omnibus immigration laws after 2010 received considerable national attention and identified the states that wanted to take immigration enforcement into their own hands, thereby fostering an atmosphere of fear and anxiety resulting from increased family separations and migrant abuse reports. In that regard, Amuedo-Dorantes and Pozo (2014) document how apprehension in a state with an omnibus immigration law is more likely to lead to family separation, as well as how the incidence of physical and verbal abuse towards unauthorized migrants increases with the number of states enacting such laws.

2.3   The Link between Enforcement and Naturalization

As noted earlier, prior studies, such as Jones-Correa (2001) and Bloemraad (2002), have pointed out how LPRs' propensity to naturalize can be shaped by institutional and policy factors. In particular, they argue that naturalization rates increase when there is a supporting institutional framework encouraging the naturalization process, which could also accelerate its timing. Bloemradd (2002) suggest that the amount of institutional support for immigrant settlement can influence whether immigrants feel welcomed or not by the host country. A more welcoming environment and greater resources to support integration may provide motivation for becoming U.S. citizens.

Even though immigration enforcement does not directly target LPRs, one can easily foresee how its intensification might create a fearful environment for immigrants and their families. Rising deportations can foster a sense of uncertainty when one lacks U.S. citizenship (Singer and Gilbertson 2000). Some LPRs may feel that naturalization might help secure their U.S. residency and rights, protecting them from removal in the worst-case scenario.[14]   Others might feel

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[14] Green card holders are still subject to deportation under criminal offenses, see:
http://www.pe.com/2017/02/11/legal-residents-seek-citizenship-when-green-cards-are-not-enough/

compelled to naturalize or naturalize quickly if they fear immigration laws regarding naturalization might change in the near future, or if they believe that they can influence policy through their vote (Jones-Correa 2001).

Alternatively, LPRs who reside in mixed-status households might be fearful of immigration authorities and decide to postpone any status adjustments to avoid contact with federal immigration law officers. After all, the application for naturalization (USCIS Form N-400) requires that the applicant reveal detailed information about certain family members. For example, the names, addresses, country and dates of birth, citizenship status, and A-number (the number issued to any LPR) must be recorded for the applicant's mother, father, all children, and spouse. LPR's might be reluctant to disclose this information about their family members. The literature has already documented how, in the midst of intensified enforcement, migrants might forgo access to government benefits if they fear authorities. For example, the participation of many U.S. citizen children with undocumented parents in federal programs has been shown to decline as enforcement toughens for fear that their undocumented family members might be identified (Watson 2014).[15]

In sum, the impact of intensified immigration enforcement on the propensity to naturalize and on the timing of naturalization among eligible-to-naturalize immigrants remains an empirical question and one potentially heterogeneous across immigrant groups.

3.   Data

3.1   Data on Naturalization

We rely on two different data sources: (1) the 2008 to 2016 American Community Survey (ACS) extracted from Integrated Public Use Microdata Series, and (2) local and state-level data

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[15]   See   also   http://abcnews.go.com/International/wireStory/fear-deportation-drives-people-off-food-stamps-us-47865988

on the enactment and implementation dates of numerous measures of interior immigration enforcement adopted since 2002. The ACS reports citizenship status of respondents and allows us to distinguish between naturalized U.S. citizens and non-citizens. Beginning in 2008, the ACS also began asking naturalized immigrant respondents for the year in which they naturalized. We use this information to capture the timing of naturalization and calculate the years until naturalization.[16] Because naturalization might eventually take place for most migrants, it is also important to examine how its timing is affected by immigration enforcement.

Our sample is restricted to immigrant respondents who have naturalized or are eligible to do so. In order to identify the population of immigrants eligible to naturalize,[17] we restrict our sample to immigrants who were at least 18 years of age when they arrived to the United States and who have been living in the country for, at least, 5 years (3 years if married to a U.S. citizen). While 18 years of age at arrival is not one of the criteria for eligibility to naturalize, imposing adulthood upon arrival eliminates immigrants who did not voluntarily decide to naturalize but, instead, received citizenship status through their parents' naturalization (Mazzolari 2009).

3.2. Enforcement Data and Its Temporal and Geographic Variation

We gather information regarding the timing and geographic scope of various interior enforcement policies. Specifically, data on the enactment of state-level employment verification (E-Verify) mandates –often a key element in the Omnibus Immigration Laws (OIL)– and data on OIL are gathered from the National Conference of State Legislatures (NCSL) website. Data on the implementation of 287(g) agreements and Secure Communities (SC) at the state and local levels are collected from the Immigration and Customs Enforcement (ICE) 287(g) Fact Sheet

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[16] Years to naturalization is calculated as the year an immigrant reported naturalizing his or her status minus the year in which the respondent migrated to the United States, conditional on reporting naturalized status.

[17] The ACS, while highly representative of the immigrant population for this recent period of time of intensified enforcement, does not have information on the LPR status of the foreign-born.

website, from Kostandini *et al.* (2014), and from the ICE's *Activated Jurisdictions* document, respectively.[18]

We begin by first computing five separate indices at the MSA level.[19] Three of the indices –**OIL, State_287(g)** and **E-Verify**– rely on state-level data in their construction. The other two indices –**MSA-287(g)** and **SC** – rely on county level data. To construct the **OIL, State_287(g), and E-Verify** indices, we first determine the month and year when a state first enacted an omnibus immigration law, entered into a written 287(g) agreement with federal immigration authorities, or enrolled in the federal E-Verify program. We also take into account the month and year in which the measure was no longer in effect for that state. In other words, we are capturing the duration of enforcement coverage for each enforcement measure and for every state in a given year. For example, we assign a zero to any state in a given year if no omnibus immigration law was enacted. We assign a one to any state in a given year if an omnibus immigration law was in effect for the entire year. We assign a number between 0 and 1 to any state in a given year if an omnibus immigration law was in effect for only part of the year (equal the fraction of covered months over that year). We follow the same steps to calculate the 287(g) index and the E-Verify index. Since our objective is to create an index at the MSA-level, we then assign these indices (constructed from state-level data) to each MSA within the state in a given year.

To construct the **MSA-287(g)** and **SC** indices, we follow a similar process. However, since they were adopted at the county level, for each county and year, we construct an index measuring the fraction of months during a given year in which the 287(g) agreement or Secure Communities

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[18] ICE (2012a, 2012b, 2012c).

[19] The ACS provides very limited county information. Thus, the most comprehensive and finest level of geographic detail is the MSA level.

program was in effect, weighted by that county's fraction of the total MSA population in 2000.[20]

We weight these two indices because, unlike the previous three indices, where a state-level measure implies that everyone at the MSA level is also exposed to the measure, exposure to a county-level measure does not imply that everyone at the MSA level is exposed. Only if every county included in the MSA adopted the enforcement measure would everyone in the MSA level be impacted by it. Since our objective is to construct an index at the MSA level, each MSA is assigned **MSA-287(g)** and **SC** indices equal to the sum of the county indices in that MSA and year.[21]

Once we have constructed all five separate state and local immigration enforcement indices, we sum all five indices for any given MSA and year to derive the enforcement index we work with in our analysis.[22] The enforcement index is the sum of all the aforementioned five enforcement measures for any MSA and year and, as such, fluctuates between 0 and 5. It is merged to the ACS data by MSA and year.

There are several advantages to using a single index of enforcement as a proxy for the intensification of immigration enforcement.[23] *First*, an index provides a more comprehensive way of measuring the overall impact of a variety of immigration enforcement initiatives and, to the extent that any one measure can be applied differently by any two entities, distinguishing across the various types of measures does not shed much light. Instead, what we do later in the analysis

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[20] These two additional indices strengthen our enforcement index by providing greater geographic variation in immigration enforcement.

[21] For example, if an MSA is comprised of 2 counties, the Enforcement Index for SC (or MSA-287(g)) assigned to MSA m in year t would be given by: $EI_{m,t}^{SC} = \frac{Months\_coverage}{12} * \frac{Cnty\ 1_{Pop}}{MSA\_Pop} + \frac{Months\_coverage}{12} * \frac{Cnty2\_Pop}{MSA\_Pop}$

[22] Thus, the $Total\ Enforcement\ Index_{m,t} = \sum_{k=1}^{5} EI_{m,t}^{k}$ or k=SC, MSA-287g, State-287g, OIL, and E-verify

[23] It is worth noting that the index is a proxy of the intensity of immigration enforcement to which respondents in a particular MSA might be exposed to. At the end of the day, the true intensity of any enforcement measure will inevitably vary across jurisdictions as each one is different and might implement alike measures more or less strictly depending on who is in charge of its implementation or other unobserved local traits. To address that limitation, we include area fixed-effects as well as area-specific time trends intended to capture such idiosyncrasies.

is to distinguish between police-based and employer-based enforcement measures given their distinct consequences –the former being more directly linked to apprehension and deportation.[24] *Second*, through the combination of various indexes, each weighted by the population and number of months the measure was in place in that particular year, the index allows us to capture the depth and intensity of immigration enforcement in a given area, as opposed to only whether enforcement existed or not. *Third*, immigration enforcement is an interconnected system administered by various federal, state, and local authorities and agencies with similar missions and, some measures, such as Secure Communities, were enacted as a continuum of prior existing measures, like the 287(g) program. The index allows us to better account for this interconnectedness, while facilitating the interpretation of the overall impact of intensified enforcement.[25]

3.3   Descriptive Statistics

We merge the interior immigration enforcement data to the ACS data by MSA and year. Figure 1 provides an overview of the progression of interior immigration enforcement during the time under examination. There has been a clear and steady upward trend in interior immigration enforcement that confirms the intensification of enforcement over the 2008 through 2016 period.

Figure 2 further plots the naturalization rate and average years to naturalization according to the intensity of interior immigration enforcement as measured by the enforcement index, which ranges from zero to five based on the five different types of immigration enforcement measures detailed earlier. As previously noted, the data consists of eligible-to-naturalize and naturalized immigrants. We observe a slight inverse relationship between naturalization rates and immigration

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[24] In the analysis of the sources of impacts, our five individual indices are separated into police and employment based measures. For $police\_based\ enforcement_{m,t} = \sum_{k=1}^{4} EI_{m,t}^{k}$ or k=SC, MSA-287g, State-287g, and OIL. It is the sum of the four measures for each MSA for each year. The $employment\_based\ enforcement_{mt} = E\_verify_{mt}$.
[25] Many of the immigration enforcement measures were designed to substitute, replace or continue one another, *e.g.* Secure Communities and the 287(g) agreements. In addition, they overlap, which has the potential to exponentially raise their impact as each measure builds on the police infrastructure established by the other.

enforcement, hinting on the possibility that tougher enforcement measures might have deterred some individuals from naturalizing. Additionally, immigration enforcement might have delayed or lengthened the time taken to naturalize among naturalized immigrants. Nevertheless, Figure 2 is purely descriptive. To the extent that it does not take into account other individual, family, geographic or temporal traits potentially responsible for the observed links, we can only view it as suggestive evidence of a link that we explore more thoroughly in what follows.

Finally, Appendix Table A presents summary statistics for our overall sample of naturalized and eligible-to-naturalize immigrants, as well as descriptive statistics for the subsample of naturalized immigrants. Approximately 50 percent of our overall sample of naturalized and eligible-to-naturalize immigrants have naturalized and, on average, it took them close to 12 years to do so. This larger sample has annual individual incomes averaging $35,229, with approximately 17 percent of immigrants residing in poor households. In terms of human capital, three-fourths of them have, at least, a high-school education. Slightly more than half of the sample is female and, on average, 51 years old. Sixty-six percent of them are married, and 41 percent have children. Finally, close to 40 percent of individuals in this larger sample live in mixed-status households and the vast majority of the sample entered the United States between 1985 and 2005. Among the subsample of naturalized immigrants in the last two columns, annual incomes are higher ($41,907), poverty rates are lower (12 percent), and immigrants are older (57 years), more educated, and much less likely to live in a mixed-status household (15 percent).

4. Empirical Methodology

Our aim is to learn how the intensification of interior immigration enforcement is affecting naturalization rates and overall patterns. To that end, we estimate the following equation, which

exploits the temporal and geographic variation in immigration enforcement across MSAs as follows:

(1) $y_{i,c,a,h,m,t} = \alpha + \beta\, EI_{m,t} + X'_{i,c,a,h,m,t}\, \gamma + \delta Urate_{m,t} + \rho_c + \pi_a + \theta_m + \mu_t + \rho_c t +$

$$+\; \theta_m t + \varepsilon_{i,c,a,h,m,t}$$

where $y_{i,c,a,h,m,t}$ is either: (1) a dummy variable indicative of whether an eligible-to-naturalize immigrant, i, from country c, who arrived to the United States in year a, and is residing in household h, in MSA m, in year t has naturalized; and (2) for naturalized respondents, a variable indicative of the years it took her/him to naturalize. The variable measuring the years to naturalization is calculated as the difference between the year the respondent reported naturalizing and the year the respondent migrated to the United States.[26] The vector $EI_{m,t}$ captures the intensity of interior immigration enforcement in MSA m, where the migrant resides at time t. Equation (1) includes the vector $X_{i,c,a,h,m,t}$, which accounts for individual level characteristics known to be potentially correlated with naturalization patterns, including age, gender, race, marital status, number of children and educational attainment.

Additionally, equation (1) incorporates MSA unemployment rates, as well as a broad range of fixed-effects to account for unobserved time-invariant characteristics potentially influencing migrants' naturalization patterns. Specifically, we first include country of origin (ρ_c) fixed-effects and country of origin time trends ($\rho_c t$) to capture both fixed and time-varying country-specific traits potentially affecting naturalization rates, such as whether the migrant originates from an underdeveloped or developed economy, or one that has recently endured political turmoil, civic unrest or conflicts. Secondly, we add fixed-effects for the year of arrival (π_a) to capture

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[26] The regression analysis is conditional on being naturalized already when the outcome variable is years to naturalization.

unobserved and time-invariant immigrant cohort characteristics potentially correlated to their naturalization patterns. Third, we include MSA (θ_m) and MSA-specific time trends ($\theta_m t$) to address unobserved fixed and time-invariant local area characteristics correlated with naturalization patterns via migrants' residential choices and economic assimilation. The latter include residing in a less welcoming or economically challenged MSA where it might prove harder for immigrants to succeed or, alternatively, in a MSA with a growing share of countrymen facilitating their economic and social assimilation. Finally, we also include year (μ_t) fixed-effects to capture, for instance, the impact of macroeconomic and political shocks, as would be the case of being surveyed during the 2008-2009 recession or during Presidential election years.[27] Standard errors are clustered at the MSA level.

Our coefficient of interest is β, which measures how intensified enforcement influences immigrants' naturalization patterns. On one hand, intensified immigration enforcement could create a sense of fear among eligible-to-naturalize immigrants residing in mixed-status households, causing them to shy away from adjusting their status in order to avoid any disclosure of family information and contact with federal immigration officers. In addition, overall, tougher immigration enforcement might get in the way of the economic and social assimilation of immigrants, regardless of their legal status or the status of other household members. Even if they are legally in the United States, they might feel discriminated against which, in turn, could hamper their desire to naturalize. In those instances, we would expect: $\beta < 0$, as tougher immigration enforcement inhibits some eligible migrants from naturalizing. If that is the case, we may, in turn,

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[27] We also include an indicator for whether it was a presidential election year given the launched naturalization campaigns in some of occasions. However, it drops due to collinearity reasons once we include year fixed-effects.

observe a delay in the timing of naturalization, which would lengthen the time to naturalization ($i.e. \beta > 0$).

On the other hand, perceived uncertainty over their LPR status and the future of immigration laws or economic hardships endured by undocumented family members could induce some eligible-to-naturalize migrants to naturalize (*i.e.* fewer years until naturalization) in order to secure their own rights or to be in a better position to assist their households economically. After all, citizenship grants access to a wider range of safety net programs, and it is viewed positively by some employers, who interpret it as a sign of the employee's intent to permanently settle in the United States. In all these instances, we would expect: $\beta > 0$, suggesting that enforcement induces migrants to naturalize and to do so earlier, reducing the average time to naturalization (*i.e.* $\beta < 0$).

In what follows, we explore which hypotheses are supported by the data, as well as for which immigrant groups.

5. Immigrant Naturalization Patterns in the Midst of Intensified Enforcement

5.1 Main Findings

Table 1 displays the estimated impact of intensified immigration enforcement on the naturalization patterns of eligible-to-naturalize immigrants. We estimate various model specifications that progressively add a number of demographic information on the respondent, as well as aggregate level characteristics, like regional unemployment rates. Our first specification only includes the enforcement index along with MSA and year fixed effects, as well as MSA-specific time trends, to capture the estimated impact of intensified enforcement within MSA and year. Subsequently, in specification (2), we add basic demographic characteristics of the eligible-to-naturalize migrant, including age, gender, ethnicity, marital status, number of children, race/ethnicity, educational attainment, and arrival year fixed-effects. Finally, specification (3)

incorporates area and origin controls, such as the MSA unemployment rate plus country of origin fixed-effects and country of origin specific time trends.

The estimates in Table 1 appear robust to the inclusion of additional regressors; therefore, we focus our discussion on the most complete model specification. According to the estimates in Table 1, a one standard deviation increase in the intensity of immigration enforcement (similar to the average level of immigration enforcement over the period under consideration) lowers the propensity to naturalize by 0.51 percent and reduces the length of time (years) to naturalization by approximately 1.10 percent or 1.5 months.[28]

Demographic characteristics, as well as household and MSA traits, play an important role in explaining immigrants' naturalization patterns. For instance, older, educated, and married individuals are more likely to naturalize than their younger, less educated and unmarried counterparts. In contrast, men, immigrants with more offspring, and Hispanics are less likely to naturalize than women, migrants with fewer children, and non-Hispanics, respectively. It is also worth noting that some of the aforementioned traits have large impacts on the propensity to naturalize, including gender, ethnicity or educational attainment. For example, male and Hispanic migrants are 6 percent less likely to naturalize than their female and non-Hispanic counterparts are. Furthermore, migrants with more than a high school education are 28 percent more likely to naturalize than those without a high school education. Finally, MSA unemployment rates appear to raise migrants' propensity to naturalize. Perhaps, higher unemployment rates induce migrants to naturalize to improve their employment opportunities and earnings.

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[28] The estimated impacts are computed as [(1 s.d. increase in enforcement in Table A in the appendix*estimated coefficient)/mean of the dependent variable]*100. In this case, [(.863*-0.003)/.510] *100= -0.51 percent for naturalization and [(.838*-0.152)/11.552] *100= -1.10 percent for years to naturalization. We can also express the latter in months as follows: (1 s.d. increase in enforcement*estimated coefficient*12).

Demographic traits also play a crucial role in the timing of naturalization. Older, married, and more educated migrants are more likely to naturalize sooner, whereas male, Black, Hispanic and migrants with more children are more likely to take longer to naturalize. As with naturalization, some of these impacts are rather large. For example, highly educated immigrants with more than a high school education cut their time to naturalization by practically 2 years.

In sum, the intensification of immigration enforcement appears to have inhibited the naturalization of eligible-to-naturalize immigrants. However, those choosing to naturalize seem to have done so faster –seemingly, a paradox given the hesitation to naturalize exhibited by the overall sample in the first place. This contradictory finding makes us wonder about the degree to which the estimates in Table 1 could be biased by the inclusion of potentially unauthorized immigrants in our sample. While unauthorized immigrants are not likely to be included in the sample of naturalized migrants reporting about the timing of their naturalization, they might be present in the larger pool of eligible-to-naturalize migrants used to estimate migrants' propensity to naturalize. If that is the case, they could be biasing downwards the estimated impact of immigration enforcement given they are not eligible to naturalize.

As noted earlier, our sample is restricted to immigrants who were at least 18 years of age when they arrived to the United States and who have been living in the country for, at least, 5 years (3 years if married to a U.S. citizen). Like all representative datasets on the immigrant population for the 2008-2016 period of intensified immigration enforcement for which we have information on the year of naturalization of naturalized immigrants, the ACS lacks information on legal status. Instead, we need to infer their status. There are various ways in the literature to proxy for immigrants' legal status, depending on the information available and the period of interest to the analysis (Orrenius and Zavodny 2016). For example, the residual method uses Census data to

identify immigrants who are legally in the country through temporary or permanent immigrant visas or legal permanent status, to then proxy likely undocumented migrants as the residual immigrant population (Passel and Cohn 2014). However, it can result in estimates of the unauthorized population that are somewhat larger than the DHS' estimates (Borjas 2017). A second method used in the literature has relied on predicting immigrants' legal status using out-of-sample predictions derived from a donor sample, such as the Survey of Income and Program Participants (SIPP), which has asked respondents about their legal status in some years (*e.g.* Rendall *et al.* 2013 and Van Hook *et al.* 2015). Unfortunately, the last SIPP module including such information is from 2008 –thus collected prior to the implementation of Secure Communities and other enforcement initiatives responsible for the increases in deportations and the adverse environment faced by immigrant populations. Relying on such data to predict immigrants' legal status over the 2008-2016 period for which we have information on the timing of naturalizations would not be appropriate. Finally, other studies have relied on logical imputation methods by which specific groups of immigrants are identified as likely undocumented immigrants. The latter include less-educated Hispanics, less-educated and long-term Hispanic immigrants, or less-educated Hispanics without government benefits and employed in non-governmental jobs or in occupations that do not require a license (*e.g.* Orrenius and Zavodny 2014, 2016, Amuedo-Dorantes and Bansak 2012, 2014, Amuedo-Dorantes and Lopez 2017).

Given the sample period we are focusing on and the fact that his estimates closely mirror those from the Department of Homeland Security for the undocumented population, we follow Borjas' (2017) latest method for imputing undocumented status. Specifically, we classify individuals as unauthorized migrants if all of the following conditions apply:[29]

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[29] Not all characteristics used by Borjas (2017) from the CPS data can be found in the ACS. For example, Borjas also included a condition for residing in public housing or receiving rental subsidies. This information is not available in

a. The person is a non-citizen;
b. The person was not born in Cuba;
c. The person arrived after 1980;
d. The person did not receive Social Security benefits, SSI, Medicaid, or Medicare insurance;
e. The person did not receive welfare assistance;
f. The person is not employed in the government sector;
g. The person is not a veteran or is currently in the Armed Forces;
h. The person's occupation does not require some form of licensing (such as physicians, registered nurses, air traffic controllers, lawyers, etc.); and
i. The person's spouse is not a naturalized citizen.

Once we categorize the potentially unauthorized immigrant population, we exclude those individuals from our sample and re-estimate equation (1) using our new sample.[30] Results from this exercise are shown in Table 2.[31] Note that, since undocumented immigrants are not likely included among the sample of naturalized immigrants, the estimates for the years to naturalization remain unchanged. However, according to the estimates in the first column of Table 2, once potentially undocumented migrants are removed from our original sample, a one standard deviation increase in immigration enforcement *raises* the propensity to naturalize of eligible-to-naturalize migrants by approximately 0.8 percent.[32] Based on the 800,000 naturalizations that occur on a yearly basis, this implies an additional 6,400 migrants choosing to naturalize. In addition, those who naturalize, choose to do so earlier. In other words, the toughening of immigration enforcement seems to induce eligible-to-naturalize migrants to naturalize and to naturalize sooner. Perhaps, as hypothesized earlier, growing uncertainty about the future of

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the ACS. In addition, Borjas did not disclose which occupations required a license according to his definition. As a result, while we closely mirror Borjas' technique, our proxy is not an exact replica of his. Yet, our results across several years also match DHS estimates.

[30] Summary statistics for the sample of eligible to naturalize immigrants excluding the likely unauthorized are displayed in Table B in the appendix. When the likely unauthorized are removed from the sample, the percentage of those naturalized increases, as well as the average income, age, and education.

[31] We also re-estimate equation (1) using an alternative definition of likely unauthorized. Specifically, we identify the likely unauthorized as Hispanic, non-citizens, who arrived after 1982. The results using this alternative definition follow quite closely our main findings, with enforcement raising the propensity to naturalize by 0.8 percent as well.

[32] As can be seen in Appendix Table B (column 1), the average level of enforcement is 1.187, with a standard deviation of 0.847. Additionally, the average naturalization rate is 0.665. The estimated impacts are computed as [(one s.d. increase in enforcement*estimated coefficient)/dependent variable mean]*100.

immigration laws, the desire to secure their immigration status, or to improve the economic well-being of a household adversely affected by tougher enforcement, are partially responsible for this response.[33]

5.2   Identification Checks

An important caveat to our empirical approach would be if the impact of intensified immigration enforcement on immigrants' naturalization patterns predated the adoption of tougher enforcement by the MSA, or if the naturalization patterns exhibited by immigrants in counties with tougher immigration enforcement were already different from the ones exhibited by other migrants prior to the adoption of tougher enforcement. In either case, we would be falsely attributing the observed impacts to immigration enforcement when, in fact, they pre-dated the tougher measures in place. To investigate if this is a valid concern, we conduct a couple of identification checks. First, we create lagged values of the enforcement index within each MSA for up to 4 years prior to the true implementation of any interior enforcement measure, and include them along with the other regressors in equation (1) as follows:

(2) $y_{i,c,a,h,m,t} = \alpha + \sum_{b=-4}^{0} \beta_b\, EI_{m,b} + X'_{i,c,a,h,m,t}\, \gamma + \delta Urate_{m,t} + \rho_c + \pi_a + \theta_m + \mu_t +$

$+ \rho_c t + \theta_m t + \varepsilon_{i,c,a,h,m,t}$

where EI is the enforcement immigration index for b years prior to the enforcement index turning positive in a particular MSA. Note that, because the adoption of these initiatives occurred at

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[33] While naturalization generally requires five years of residency in the United States to legal permanent residents (LPR), the vast majority of LPRs (based on the New Immigrant Survey) have already resided in the country for an average of 6 years prior to gaining their LPR status. As such, in practice, the U.S. residency requirement for naturalization might be closer to an average of 11+ years (9+ years for individuals married to U.S. citizens). If that is the case and the U.S. residency requirement criterion used to select our sample was 5+ years (4+ years for those married to U.S. citizens), we might have included not eligible-to-naturalize immigrants in our sample. To gauge if that should be a matter of concern, we repeat the analysis restricting our sample to immigrants fulfilling the longer residency requirement. The results, shown in Table C in the appendix, are similar to our main results in Table 2. We also ran the analysis excluding the recession years 2008 and 2009. The results, available upon request, were not significantly different from those presented in Table 2.

different points in time across MSAs, the lagged values might be different from zero for some MSAs in 2006, for other MSAs in 2007, and so on.

If the impact attributed to tougher immigration enforcement in Table 2 predated the adoption of tougher measures by the MSA, we would expect the placebo enforcement indexes to be statistically different from zero and to have coefficient estimates of the same sign as the estimated coefficient for the immigration enforcement index. The results of this test are shown in Panel A of Table 3. None of the placebo enforcement terms is statistically different from zero. It is also reassuring that, despite the inclusion of the placebo terms leading up to the true period with intensified immigration enforcement in each MSA, the point estimate for the immigration enforcement index continues to be statistically different from zero and does not differ much in size from the point estimate in Table 2.[34]

As an alternative check, we also experiment with restricting our sample to MSAs with an immigration enforcement index equals to zero –what we refer to as the pre-policy period. We then distinguish between MSAs that eventually implement interior immigration enforcement measures (*i.e. treated MSA*) and those that do not, and interact the *treated MSA* dummy with a time trend for the pre-policy period as follows:

(3) $y_{i,c,a,h,m,t} = \alpha + \beta_1 Treated\ MSA_m t + \beta_2 Treated\ MSA_m +$

$+ X'_{i,c,a,h,m,t}\ \gamma + \delta Urate_{m,t} + \rho_c + \pi_a + \theta_m + \mu_t + \rho_c t + \theta_m t + \varepsilon_{i,c,a,h,m,t}$

If the differential naturalization patterns observed among eligible-to-naturalize immigrants in MSAs with intensified enforcement were already trending differently from those of eligible-to-naturalize immigrants in MSAs with less enforcement prior to the adoption of tougher measures itself, we would expect the interaction term (β_1) to be statistically different from zero. Yet,

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[34] A one standard deviation increase in the intensity of immigration enforcement would increase the propensity to naturalize and cut down years to naturalization by 0.8 and 0.7 percent (approximately 1 month), respectively.

according to the estimate in Panel B of Table 3, it is not. In sum, based on the identification checks in Table 3, we can be reasonably confident that the effects from Table 2 were not pre-existent.

Finally, we might be concerned about the non-random adoption of tougher immigration enforcement policies by MSAs and, consequently, migrants' non-random exposure to such measures. While no policy is logically randomly observed, our concern should be on whether the adoption of tougher immigration enforcement was related to immigrants' naturalization patterns. To that end, we restrict our sample again to the pre-policy period, collapse the data at the MSA level, and estimate the following regression:

(3) $EI\ Year_m = \alpha + X_m^0 \beta + Z_m^0 \mu + \gamma_s + \varepsilon_m,$

The goal of equation (3) is to gauge if we can predict the year in which the immigration enforcement index first turns positive for any given MSA based on its share of naturalized, the average time until naturalization in the MSA, and the remaining regressors collapsed at the MSA level for the pre-policy period. The vector *EI Year_m* is the year in which MSA *m* enacted its first enforcement measure. The vector X_m^0 represents either: (1) the share of naturalized immigrants, or (2) the average years until naturalization in MSA *m* prior to the adoption of any enforcement. The next vector, Z_m^0, contains aggregate MSA level characteristics from prior to the adoption of any of the enforcement measures. We include state fixed effects and cluster standard errors at the state level.

As shown in Table 4, we find no evidence of immigrants' naturalization patterns driving the adoption of tougher immigration enforcement policies by MSAs. Hence, while non-random, the adoption and, therefore, migrant exposure to tougher enforcement cannot be predicted by their naturalization patterns.

6. Heterogeneity Analyses

Thus far, we have shown how the intensification of immigration enforcement appears to induce eligible-to-naturalize migrants to naturalize and to do so faster. Nevertheless, as noted by the literature, naturalization patterns have been shown to differ widely by a number of personal traits –most notably *gender*, *ethnicity, educational attainment,* and *dual citizenship* (Chiswick and Miller 2008, Mazzolari, 2009). Consequently, it is logical to expect that their naturalization patterns might respond differently to the adoption of tougher immigration enforcement as well. In this section, we investigate if that is the case and, if so, how.

We start by focusing on *gender* differences. Women account for a larger share of the legal permanent resident population and have been shown to have higher naturalization rates relative to men (Ruiz *et al.*, 2015). Pastor and Scoggins (2012) find that the economic return to naturalization is greater for women than it is for men, possibly contributing to their higher naturalization rates. Women also seem to have a greater desire to have a voice in politics, as captured by their higher propensity to register and vote relative to men (Schlozman *et al.*, 1995). For all these reasons, women might exhibit differential naturalization patterns, motivating the distinction by gender when examining naturalization patterns and how they might be impacted by the toughening of immigration enforcement. To that end, in Panel A of Table 5, we separate men and women. According to the estimates in that panel, tougher immigration enforcement appears to induce more eligible-to-naturalize men and women to do so, although only women seem to speed up their naturalization. Specifically, the same one standard deviation increase in immigration enforcement that we have been considering thus far raises the propensity to naturalize of men and women by 1.3 percent and 0.4 percent, respectively. However, it does not appear to accelerate the timing of naturalization for men, only that of women, who cut down the time to naturalization by 2 percent

29

or, roughly, 3 months. In sum, both men and women become more likely to naturalize as immigration enforcement toughens, but only women seem to accelerate the process.

We next explore if the response of migrants' naturalization patterns to tougher immigration enforcement also differs according to immigrants' *ethnicity*. Distinguishing between Hispanic and non-Hispanic migrants when examining naturalization patterns is important given the marked differences in their naturalization rates. Indeed, naturalization rates among Hispanic immigrants (49 percent among immigrants from Latin American and the Caribbean and 36 percent from Mexico) continue to remain significantly lower than the naturalization rates of all other immigrants (72 percent).[35] When we look, separately, by ethnicity, we also find evidence of differential responses to the intensification of immigration enforcement. While the impacts of tougher immigration enforcement on non-Hispanics resemble those found in Table 2 for all immigrants, Hispanics appear more likely to delay naturalization. Specifically, according to the estimates in Panel B of Table 5, while a one standard deviation increase in enforcement hastens the naturalization process among non-Hispanics by 1.5 percent (about 2 months), it delays it among Hispanic immigrants by 1.5 percent (roughly 3 months). Therefore, immigrants' naturalization patterns do seem to respond differently to immigration enforcement according to migrants' ethnicity. To the extent that the vast majority of unauthorized immigrants are Hispanic (Passel and Cohn 2009, 2011), their differential response to immigration enforcement might be signaling their direct exposure to the impacts and consequences of tougher policing on their loved ones. We will return to this point later in this section.

The literature has also underscored the important differences in migrants' naturalization patterns depending on their *educational attainment*. In that regard, Passel (2007) documents how

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[35] See: http://www.pewhispanic.org/files/2012/11/hispanic_vote_likely_to_double_by_2030_11-14-12.pdf

immigrants with higher levels of schooling naturalize at a higher rate than less educated immigrants. High-skilled immigrants might have an easier time fulfilling the naturalization requirements and, indeed, naturalized immigrants display higher educational attainment than the larger eligible-to-naturalize and naturalized sample.[36] To assess if the two groups react somewhat differently to intensified immigration enforcement, we distinguish between eligible-to-naturalize immigrants with less than a high school education and those with at least a high school degree in Panel C of Table 5. As can be seen therein, tougher immigration enforcement appears to curtail low-educated immigrants' propensity to naturalize, as well as delay their naturalization. In contrast, their more educated counterparts exhibit the exact opposite responses to tougher immigration enforcement –becoming more likely to naturalize and hurrying to do so. Specifically, a one standard deviation increase in enforcement lowers the propensity to naturalize among low skilled immigrants by approximately 1 percent and lengthens the time to naturalization by 1.5 percent, delaying it by roughly 3 months. The impacts of tougher enforcement among their more skilled counterparts are, however, comparable to those in Table 2, with a one standard deviation increase in the index raising their propensity to naturalize by 1.3 percent and cutting down the time to naturalization by 1.3 percent (about 2 months). In sum, migrants' naturalization patterns seem to also respond differently to the toughening of immigration enforcement depending on their educational attainment.

Finally, the literature has also emphasized the importance of *dual citizenship* in migrants' decision to naturalize (Mazzolari 2009). Migrants from countries that allow for dual citizenship with the United States might be more likely to choose to naturalize, and do so faster, if the

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[36] This can be seen in Tables A and B in the appendix. The last two columns of Table A show descriptive statistics for the naturalized only subsample and Table B shows descriptive statistics for larger sample of naturalized and eligible to naturalize immigrants (excluding the likely unauthorized).

toughening of immigration enforcement creates uncertainty about the future of immigration law and the ability to do so later (Singer and Gilbertson 2000). Since the ACS does not have information on whether the migrant has dual nationality, we distinguish, instead, according to whether their countries of origin allow for dual citizenship with the United States. Consistent with our expectations, immigrants from countries that allow for dual citizenship with the United States are more likely to naturalize in the midst of intensified immigration enforcement, and to do so earlier. In contrast, migrants from countries that do not allow for dual nationality with the United States do not significantly alter their naturalization decision, even though those who naturalize also do so faster.

Given the focus on immigration enforcement, it makes sense to also differentiate between eligible-to-naturalize immigrants residing in mixed-status households and those who are not. An estimated 16 million people currently live in mixed status families—households with at least one unauthorized immigrant. Of the estimated population living with at least one unauthorized immigrant, 8.2 million are U.S. citizens or naturalized citizens, and 2.6 million are non-citizen legal permanent residents (LPRs) (Mathema 2017). Mixed-status families face a number of challenges due to the unauthorized status of one or more family members. These challenges include increased stress and anxiety levels over familial separation, geographic relocation in order to evade the apprehension of a family member, or a significant loss of household income when a family member (typically the household head) is deported. While LPRs living in mixed-status households are not the direct target of immigration enforcement, they are personally connected to the struggles experienced by their unauthorized family members. Thus, it is natural to expect tougher immigration enforcement to have a differential impact on eligible-to-naturalize migrants' naturalization decisions based on their families' composition.

The ACS allows us to identify all household members in our sample. Once we identify a household, we are able to determine if other immigrants live in the same household and, in that case, to proxy for their legal status.[37] We then separate respondents according to whether or not they reside in a mixed-status household –that is, a household with one or more likely undocumented immigrants. In Panel E of Table 5, we conduct our analysis separately for the two groups of eligible-to-naturalize immigrants. While naturalization patterns of immigrants in non-mixed status households exhibit a similar response to tougher immigration enforcement to the one presented in Table 2, the naturalization patterns of immigrants in mixed-status households move in the opposite direction. A one standard deviation increase in enforcement lowers the propensity to naturalize of eligible-to-naturalize immigrants in mixed-status households by 1.5 percent. This response is not only contrary to the response of immigrants in non-mixed status households, but it is also quite large. Given that 2.9 million non-citizen LPRs reside in mixed-status households, this would imply 39,000 fewer naturalizations or, approximately, a 5 percent reduction in naturalizations, which currently hover at around 800,000/year. Furthermore, a one standard deviation increase in immigration enforcement would also delay naturalization among immigrants in those households choosing to naturalize. It would lengthen the time to naturalization by 9 percent, or in excess of one year (*i.e.* 13 months). As we shall discuss later, this additional waiting period can lead to income deprivation and household poverty.

In sum, intensified immigration enforcement appears to accelerate naturalization among several different groups of immigrants including women, individuals who are educated, non-Hispanic immigrants from countries that do not allow for dual citizenship with the United States and, most importantly, individuals who do not reside in mixed-status households. Among mixed-

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[37] We use the same approach from the analysis in Table 2 for identifying likely unauthorized immigrants.

status households, the impacts are, however, completely different, leading to increased reticence to naturalize and delays in the naturalization process.

7.   Policy Channels

Thus far, we have shown that the intensification of immigration enforcement appears to induce and hasten the naturalization of most eligible-to-naturalize immigrants. Nevertheless, the effects are highly heterogeneous. For a non-negligable share of immigrants residing in mixed-status households, tougher enforcement curtails their propensity to naturalize and delays their naturalization by lengthening the period between their arrival to the United States and the year in which they naturalize. Of the various types of enforcement policies we consider, which ones are mainly responsible for the observed impacts?

To address that question, we distinguish among enforcement initiatives and group them according to their similarities. Specifically, we separate what we refer to as *police-based* policies from *employer-based* measures. This distinction is important, not only because of who is involved in the implementation of such measures, but also because of the distinct implications of each set of initiatives. Police-based measures directly involve the local or state police, as in the case of 287(g) agreements, Secure Communities and omnibus immigration laws. Because the police can stop individuals in the street, road or elsewhere and, if in doubt, request proper identification, these measures encompass an element of uncertainty and fear of apprehension/deportation of undocumented family members. Of particular importance to us is the fact that they all include similar checks, use alike law enforcement resources and, when implemented simultaneously, build on each other. Finally, they are responsible for immigrant deportations. In contrast, employer-based measures, such as employment verification mandates, are implemented by those hiring and checking the work eligibility of new hires through the electronic E-Verify program. Employees

34

are made aware of the firm's use of E-Verify, and non-approvals are not directly associated to deportations.

We construct separate immigration enforcement indexes for the two sets of measures and include them in an equation similar to equation (1). According to the estimates in Table 6, tougher police-based enforcement have differential impacts depending on whether we focus on immigrants in mixed-status households or not. If we look at immigrants residing in mixed-status households, the escalation of police-based enforcement dampens their propensity to naturalize. A one standard deviation increase in the police-based immigration enforcement index lowers the likelihood of naturalization of immigrants in mixed-status households by 3 percent, and it delays their naturalization by 6 percent or 8 months. However, increases in police-based enforcement have no apparent impact on the naturalization propensity of eligible-to-naturalize migrants in non-mixed status households. If anything, they hasten the process among those who naturalize, with a one standard deviation increase in police-based immigration enforcement reducing the years to naturalization by 3 percent or, roughly, the equivalent of 4 months.

In contrast to the disparate impacts of police-based enforcement depending on the type of household migrants reside in, employer-based enforcement has alike impacts among all immigrants in our sample. By restricting job options, employment-based enforcement can delay migrants' economic assimilation. In the interest of broadening the scope of jobs they might be able to work in and, in turn, better assisting their households, one would logically expect these employment restrictions to incentivize migrants to naturalize. Indeed, that is what we find. A one standard deviation increase in employment-based immigration enforcement raises migrants' propensity to naturalize by 3 percent in mixed-status households, and by close to 2 percent among immigrants in the remaining households. Yet, by placing additional work eligibility controls and

barriers to their economic assimilation, employment-based enforcement holds back their naturalization by 9 months in the case of immigrants in mixed-status households, and by close to 3 months for migrants in other households.

8.   Summary of Findings and Brief Discussion of Economic and Policy Implications

Using data from the 2008-2016 American Community Survey, we examine the impact of intensified enforcement on the decision to naturalize among immigrants living in mixed-status households. We find that the toughening of immigration enforcement induces most migrants to naturalize and do so faster, possibly in response to the uncertain environment created by the policies. However, the effects of intensified enforcement are highly heterogeneous and, among eligible-to-naturalize migrants living in mixed-status households experiencing the adverse impacts of intensified enforcement in their households, it displays the opposite effects –namely, it curtails their naturalization efforts and delays their naturalization process.

The negative impact of intensified immigration enforcement on the propensity to naturalize of migrants in mixed-status households can be primarily attributed to police-based measures, which possibly scare them away from reporting information about their loved ones to immigration officials. In contrast, the same type of enforcement hastens the naturalization efforts of migrants in other types of households who might conceivably try to secure their citizenship in the midst of an increasingly uncertain immigration policy environment. Only employment verification mandates display alike impacts on both types of eligible-to-naturalize migrants, regardless of the type of home in which they report living. Specifically, they induce migrants to naturalize, plausibly as a way to broaden their job prospects; however, they delay their naturalization process, perhaps by hindering their economic assimilation.

Naturalization is the cornerstone of assimilation, with many migrants valuing the opportunity to become U.S. citizens. However, our results suggest that enforcement is either preventing immigrants from naturalizing or causing them to naturalize in response to fear or the uncertainty about future immigration policy. Neither response is ideal. In particular, the naturalization delays observed among migrants in mixed-status households is especially worrisome given the size of this group and the current policy environment. An estimated 2.6 non-citizen LPRs reside in mixed-status households. An increase in immigration enforcement close to its average level over the period under examination, which would align with the proposed increases by the Trump Administration, would curtail the current volume of 800,000 naturalizations/year by 5 percent.

A number of studies have emphasized the significant economic returns to naturalization. Acquiring citizenship translates to increases in individual earnings ranging between 5 and 8 percent, household incomes rising by more than 14 percent, and poverty reductions averaging 3 percentage points, with the highest returns observed among immigrants who have been naturalized for 12 to 17 years (Enchautegui and Giannarelli 2015, Pastor and Scoggins 2012, Shierholz 2010, Bratsberg *et al*. 2002). In this context, our findings highlight the negative impact that immigration enforcement can have on the economic assimilation of Hispanic immigrants and migrants with less than a high school education –two of the largest foreign-born population groups, via changes in naturalization patterns. The economic implications are even more salient when one considers mixed-status households due to their growing prevalence and the many U.S.-born children living in them. Households with undocumented family members may already experience lower household income due to the limited employment and earnings opportunities available to unauthorized migrants (Amuedo-Dorantes *et al*. 2018). Lower household income can have

negative consequences for the human capital development of the children living in these households –many of whom are U.S.-born (Amuedo-Dorantes and Lopez 2017). Thus, naturalization can create an opportunity for these households to improve their economic well-being and that of their offspring.

Compliance with Ethical Standards

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Figure 1
Trend in Immigration Enforcement
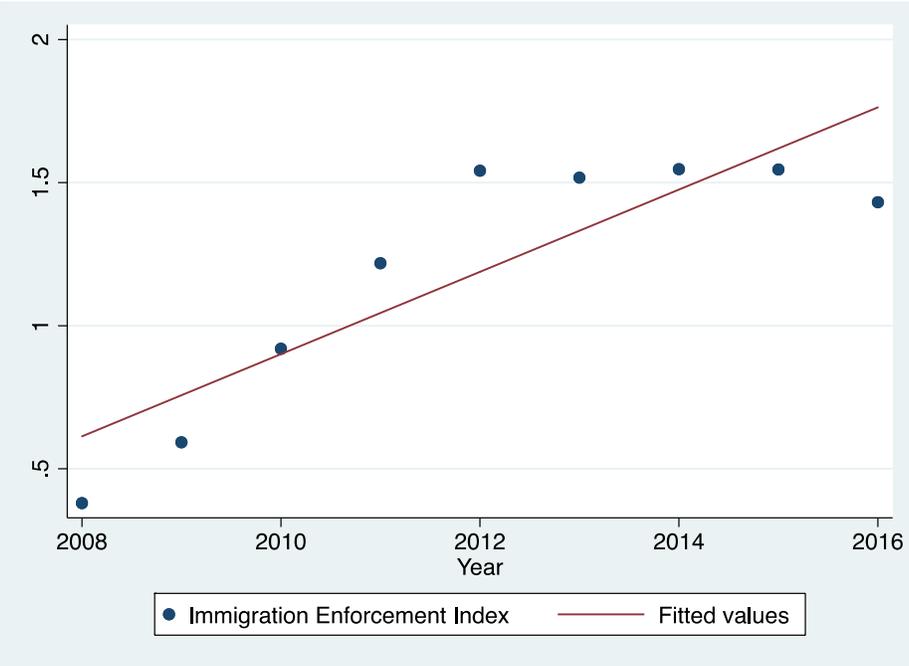
Figure 2
Relationship between Immigration Enforcement and Naturalization Outcomes
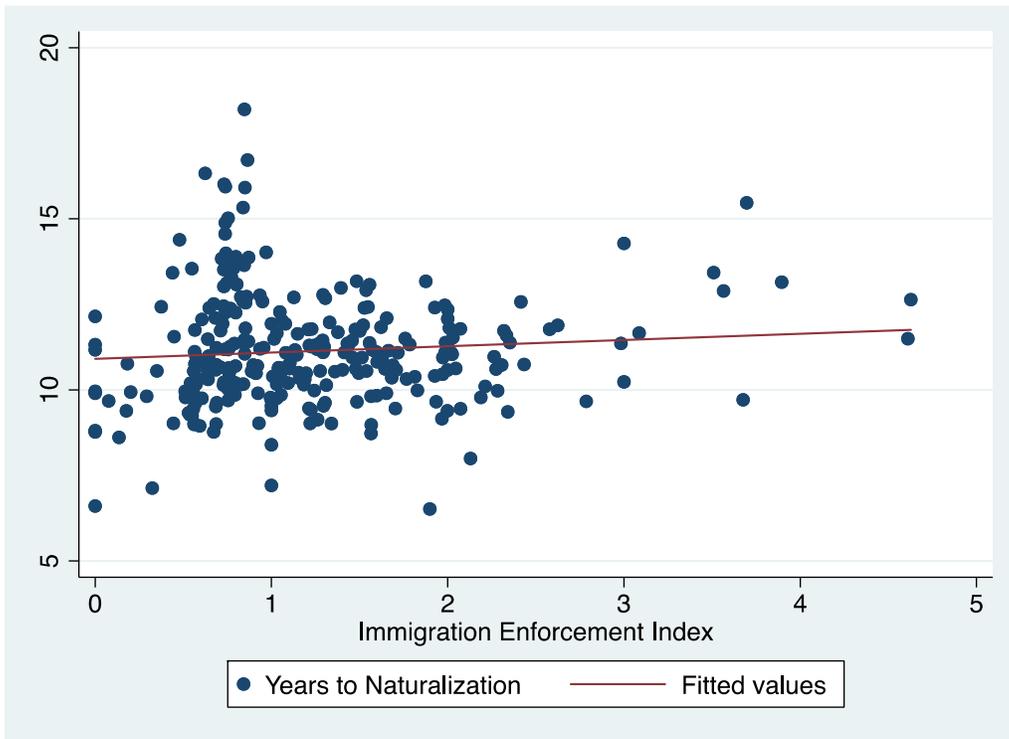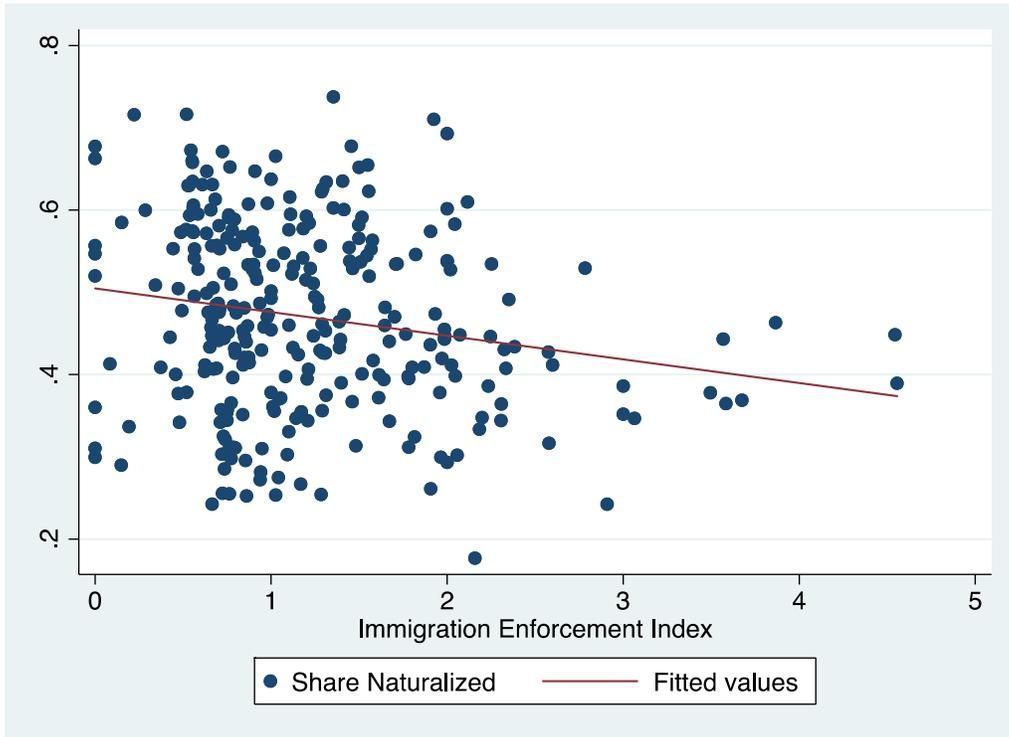
Table 1: The Role of Intensified Immigration Enforcement on Naturalization Outcomes

Outcome	Likelihood of Becoming Naturalized			Years To Naturalization		
Model Specification	(1)	(2)	(3)	(1)	(2)	(3)
Enforcement Index (EI)	-0.027***	-0.007***	-0.003**	0.071*	-0.104***	-0.152***
	(0.003)	(0.002)	(0.001)	(0.037)	(0.034)	(0.046)
Age		0.004***	0.003***		-0.027***	-0.017***
		(0.000)	(0.000)		(0.002)	(0.002)
Male		-0.037***	-0.037***		0.164***	0.147***
		(0.003)	(0.002)		(0.028)	(0.024)
Black		0.033***	-0.001		1.771***	0.647***
		(0.013)	(0.004)		(0.162)	(0.108)
Hispanic		-0.190***	-0.037***		3.493***	1.138***
		(0.020)	(0.007)		(0.391)	(0.151)
Other Race		0.020***	-0.011***		0.055	0.061
		(0.006)	(0.002)		(0.157)	(0.078)
Married		0.047***	0.048***		-0.059*	-0.117***
		(0.002)	(0.002)		(0.031)	(0.027)
Children		-0.005***	-0.010***		0.134***	0.146***
		(0.002)	(0.001)		(0.017)	(0.017)
HS Education		0.121***	0.103***		-1.955***	-1.797***
		(0.002)	(0.003)		(0.214)	(0.148)
More than HS		0.190***	0.166***		-2.140***	-1.988***
		(0.008)	(0.004)		(0.249)	(0.175)
Unemployment Rate			0.002***			0.097**
			(0.001)			(0.042)
Year Fixed-Effects	Y	Y	Y	Y	Y	Y
MSA Fixed-Effects	Y	Y	Y	Y	Y	Y
MSA Time Trends	Y	Y	Y	Y	Y	Y
Year of Entry Fixed-Effects	N	Y	Y	N	Y	Y
Country of Origin Fixed-Effects	N	N	Y	N	N	Y
Country of Origin Time Trends	N	N	Y	N	N	Y
Dependent Variable Mean		0.510			11.552	
Observations	1,714,120	1,714,120	1,714,120	914,525	914,525	914,525
R-squared	0.030	0.306	0.351	0.024	0.221	0.243

Notes: All regressions include a constant term. Robust standard errors are clustered at the MSA level and shown in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 2: The Role of Intensified Immigration Enforcement on Naturalization Outcomes
Excluding Likely Undocumented Immigrants

Outcome	Likelihood of Becoming Naturalized	Years To Naturalization
Independent Variables	Coefficient	Coefficient
	(S.E.)	(S.E.)
Enforcement Index (EI)	**0.006*****	**-0.152*****
	(0.002)	**(0.046)**
Age	0.001***	-0.017***
	(0.000)	(0.002)
Male	-0.036***	0.147***
	(0.003)	(0.024)
Black	-0.011***	0.647***
	(0.003)	(0.108)
Hispanic	-0.027***	1.138***
	(0.008)	(0.151)
Other Race	-0.013***	0.061
	(0.003)	(0.078)
Married	0.041***	-0.117***
	(0.001)	(0.027)
Children	-0.008***	0.146***
	(0.001)	(0.017)
HS Education	0.117***	-1.797***
	(0.005)	(0.148)
More than HS	0.159***	-1.988***
	(0.004)	(0.175)
Unemployment Rate	0.000	0.097**
	(0.001)	(0.042)
Year Fixed-Effects	Y	Y
MSA Fixed-Effects	Y	Y
MSA Time Trends	Y	Y
Year of Entry Fixed-Effects	Y	Y
Country of Origin Fixed-Effects	Y	Y
Country of Origin Time Trends	Y	Y
Dependent Variable Mean	0.665	11.552
Observations	1,384,713	914,525
R-squared	0.238	0.243

Notes: All regressions include a constant term. The regressions refer to the most complete specifications in Table 1. Robust standard errors are clustered at the MSA level and shown in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 3: Identification Checks #1 – Test for Anticipated Effects or Pre-existing Differential Trend

Panel A: Testing for Anticipated Impacts

Time Period	Entire Period	
Outcome	Likelihood of Becoming Naturalized	Years To Naturalization
Independent Variables	Coefficient	Coefficient
	(S.E.)	(S.E.)
Enforcement Index (EI)	**0.006****	**-0.094***
	(0.003)	**(0.049)**
1 Yr. Prior to EI>0	-0.003	0.013
	(0.004)	(0.066)
2 Yrs. Prior to EI>0	0.001	0.088
	(0.003)	(0.076)
3 Yrs. Prior to EI>0	0.004	-0.039
	(0.004)	(0.073)
4 Yrs. Prior to EI>0	-0.001	0.071
	(0.005)	(0.063)
Year Fixed-Effects	Y	Y
MSA Fixed-Effects	Y	Y
State Time Trends	Y	Y
Year of Entry Fixed-Effects	Y	Y
Country of Origin Fixed-Effects	Y	Y
Country of Origin Time Trends	Y	Y
Dependent Variable Mean	0.665	11.552
Observations	1,384,713	914,525
R-squared	0.237	0.241

Panel B: Testing Pre-existing Differential Trend

Time Period:	Pre-Policy Period	
Outcome	Likelihood of Becoming Naturalized	Years To Naturalization
Independent Variables	Coefficient	Coefficient
	(S.E.)	(S.E.)
Treated MSA*Time Trend	-0.005	-0.114
	(0.006)	(0.233)
Treated MSA (MSA with IE>0)	0.044	2.099
	(0.055)	(2.575)
Year Fixed-Effects	Y	Y
MSA Fixed-Effects	Y	Y
State Time Trends	Y	Y
Year of Entry Fixed-Effects	Y	Y
Country of Origin Fixed-Effects	Y	Y
Country of Origin Time Trends	Y	Y
Dependent Variable Mean	0.665	11.552
Observations	94,035	61,340
R-squared	0.258	0.239

Notes: *** 1% level or better, ** 5% level and * 10% level. The regressions refer to the most complete specifications in Table 1. They include a constant and standard errors are clustered at the MSA level. State time trends are included, in place of MSA time trends, due to collinearities when including the additional MSA specific terms.

Table 4: Identification Check #2 - Timing of Adoption of Tougher Immigration Enforcement

Outcome	First Year Enforcement Index>0	
Model Specification	(1)	(2)
Share of Naturalized Citizens	-2.306	-
	(1.504)	
Average Years To Naturalization	-	0.123
		(0.118)
Average Age	-0.152**	-0.187***
	(0.070)	(0.068)
Share of Men	-0.427	-0.553
	(2.485)	(2.402)
Share of Black	-1.140	-2.331
	(2.784)	(3.391)
Share of Other Race	-0.372	-0.156
	(0.849)	(0.582)
Share Married	-2.119*	-2.217
	(1.107)	(1.529)
Average Number of Children	-9.062***	-9.773***
	(2.146)	(2.410)
Share Who Has Completed HS	-0.521	-0.668
	(0.876)	(1.083)
Share Who Has Completed HS+	-4.472	-4.590
	(3.335)	(2.781)
Average Unemployment Rate	-2.759	-3.143
	(2.106)	(2.138)
Constant	2,031.402***	2,032.265***
	(7.731)	(7.595)
State Fixed-Effects	Y	Y
Year of Entry Fixed-Effects	Y	Y
Country of Origin Fixed-Effects	Y	Y
Observations	164	163
R-squared	0.678	0.680

Notes: Sample restricted to the first year of our sample and to MSAs that had not yet implemented tougher interior immigration enforcement measures. Standard errors are clustered at the state level. *** 1% level or better, ** 5% level and * 10% level.

Table 5: Heterogeneity Analyses

Outcome	Likelihood of Becoming Naturalized	Years To Naturalization	Likelihood of Becoming Naturalized	Years To Naturalization
Independent Variables	Coefficient	Coefficient	Coefficient	Coefficient
	(S.E.)	(S.E.)	(S.E.)	(S.E.)
Panel A: By Gender				
Sample	Men		Women	
Enforcement Index (EI)	**0.010***	-0.019	**0.003***	**-0.271***
	(0.002)	(0.054)	**(0.002)**	**(0.041)**
Dependent Variable Mean	0.649	11.661	0.679	11.464
Observations	620,557	402,284	764,156	512,241
R-squared	0.245	0.248	0.238	0.247
Panel B: By Ethnicity				
Sample	Hispanic		Non-Hispanic	
Enforcement Index (EI)	0.002	**0.259***	**0.007***	**-0.214***
	(0.002)	**(0.064)**	**(0.002)**	**(0.029)**
Dependent Variable Mean	0.529	14.757	0.742	10.270
Observations	463,018	248,813	921,695	665,712
R-squared	0.218	0.350	0.205	0.150
Panel C: By Educational Attainment				
Sample	Less than HS		HS or more	
Enforcement Index (EI)	**-0.007***	**0.258***	**0.011***	**-0.163***
	(0.002)	**(0.083)**	**(0.002)**	**(0.039)**
Dependent Variable Mean	0.534	14.856	0.709	10.723
Observations	334,152	180,855	1,050,561	733,670
R-squared	0.236	0.334	0.220	0.190
Panel D: By Dual Citizenship				
Sample	From Countries Offering Dual Citizenship		From Countries Not Offering Dual Citizenship	
Enforcement Index (EI)	**0.005***	**-0.126**	0.003	**-0.121***
	(0.001)	**(0.050)**	(0.003)	**(0.037)**
Dependent Variable Mean	0.634	12.261	0.721	10.444
Observations	883,772	557,492	500,941	357,033
R-squared	0.240	0.260	0.231	0.194
All models include:				
Year Fixed-Effects	Y	Y	Y	Y
MSA Fixed-Effects	Y	Y	Y	Y
MSA Time Trends	Y	Y	Y	Y
Year of Entry Fixed-Effects	Y	Y	Y	Y
Country of Origin Fixed-Effects	Y	Y	Y	Y
Country of Origin Time Trends	Y	Y	Y	Y

Notes: *** 1% level or better, ** 5% level and * 10% level. The regressions refer to the most complete specifications in Table 2. They include a constant and standard errors are clustered at the MSA level.

Table 5: Heterogeneity Analyses – Continued

Panel E: By Type of Household				
Sample	Mixed-Status Households		Non-mixed Status Households	
Outcome	Likelihood of Becoming Naturalized	Years To Naturalization	Likelihood of Becoming Naturalized	Years To Naturalization
Independent Variables	Coefficient (S.E.)	Coefficient (S.E.)	Coefficient (S.E.)	Coefficient (S.E.)
Enforcement Index (EI)	**-0.008****	**1.217****	**0.005****	**-0.230****
	(0.004)	**(0.071)**	**(0.001)**	**(0.047)**
Dependent Variable Mean	0.461	11.663	0.719	11.533
Observations	267,601	126,268	1,117,112	788,257
R-squared	0.285	0.334	0.205	0.234
Year Fixed-Effects	Y	Y	Y	Y
MSA Fixed-Effects	Y	Y	Y	Y
MSA Time Trends	Y	Y	Y	Y
Year of Entry Fixed-Effects	Y	Y	Y	Y
Country of Origin Fixed-Effects	Y	Y	Y	Y
Country of Origin Time Trends	Y	Y	Y	Y

Notes: *** 1% level or better, ** 5% level and * 10% level. The regressions refer to the most complete specifications in Table 2. They include a constant and standard errors are clustered at the MSA level.

Table 6: Source of Impacts by Type of Interior Immigration Enforcement among Mixed and Non-Mixed Status Households

Sample	Mixed-Status Households		Non-mixed Status Households	
Outcome	Likelihood of Becoming Naturalized	Years To Naturalization	Likelihood of Becoming Naturalized	Years To Naturalization
Independent Variables	Coefficient	Coefficient	Coefficient	Coefficient
	(S.E.)	(S.E.)	(S.E.)	(S.E.)
Police-Based EI	**-0.021****	**1.004*****	-0.006	**-0.526*****
	(0.009)	**(0.103)**	(0.005)	**(0.081)**
Employment-Based EI	**0.033*****	**1.940*****	**0.033*****	**0.591*****
	(0.013)	**(0.132)**	**(0.009)**	**(0.101)**
Dependent Variable Mean	0.461	11.663	0.719	11.533
Observations	267,601	126,268	1,117,112	788,257
R-squared	0.285	0.334	0.205	0.234
Year Fixed-Effects	Y	Y	Y	Y
MSA Fixed-Effects	Y	Y	Y	Y
MSA Time Trends	Y	Y	Y	Y
Year of Entry Fixed-Effects	Y	Y	Y	Y
Country of Origin Fixed-Effects	Y	Y	Y	Y
Country of Origin Time Trends	Y	Y	Y	Y

Notes: *** 1% level or better, ** 5% level and * 10% level. The regressions refer to the most complete specifications in Table 2. They include a constant and standard errors are clustered at the MSA level.

Table A: Descriptive Statistics

Sample	Eligible to Naturalize and Naturalized		Naturalized	
Descriptive Statistic	**Mean**	**S.D.**	**Mean**	**S.D.**
Dependent Variables:				
Naturalized	0.510	0.500	1.000	0.000
Years To Naturalization	-	-	11.555	8.280
Individual Income in 2016 Constant Dollars	35,229	5.47e04	41,907.42	6.13e04
HH Income < Poverty Line	0.166	0.372	0.118	0.322
HH Income < 1.5*Poverty Line	0.289	0.453	0.213	0.410
HH Income < 2*Poverty Line	0.400	0.490	0.306	0.461
Independent Variables:				
Enforcement Index (EI)	1.204	0.863	1.183	0.838
Police-based Enforcement	1.025	0.675	1.004	0.653
Employer-based Enforcement	0.179	0.376	0.180	0.377
Age	51.371	15.227	56.780	14.580
Male	0.472	0.499	0.446	0.497
White	0.469	0.499	0.433	0.496
Black	0.088	0.284	0.106	0.308
Hispanic	0.438	0.496	0.286	0.452
Other Race	0.443	0.497	0.460	0.498
Married	0.664	0.472	0.694	0.461
Number of Children	0.413	0.878	0.322	0.774
Mixed Household	0.393	0.488	0.145	0.352
Less than High School (HS)	0.294	0.456	0.201	0.400
HS Education	0.287	0.452	0.288	0.453
More than a HS Education	0.419	0.493	0.511	0.500
Unemployment Rate	0.075	0.025	0.074	0.025
Dual Citizenship Country	0.686	0.464	0.610	0.488
Entry Year <1965	0.045	0.208	0.077	0.267
Entry Year: 1965-1969	0.032	0.175	0.053	0.224
Entry Year: 1970-1974	0.045	0.207	0.072	0.258
Entry Year: 1975-1979	0.061	0.238	0.094	0.292
Entry Year: 1980-1981	0.043	0.203	0.064	0.244
Entry Year: 1982-1984	0.045	0.208	0.065	0.247
Entry Year: 1985-1990	0.148	0.356	0.179	0.383
Entry Year: 1991-1995	0.137	0.344	0.144	0.351
Entry Year: 1996-2000	0.193	0.395	0.141	0.348
Entry Year: 2001-2005	0.172	0.377	0.028	0.276
Entry Year: 2006-2010	0.075	0.263	0.050	0.164
Observations	1,714,120		914,525	

Sample: Eligible-to-naturalize (including naturalized) immigrants and non-likely unauthorized eligible to naturalize immigrants in the 2008-2016 ACS.

Table B: Descriptive Statistics (Excluding the LU population)

Sample	Eligible to Naturalize and Naturalized	
Descriptive Statistic	**Mean**	**S.D.**

Dependent Variables:

Naturalized	0.665	0.472
Years To Naturalization*	11.555	8.280
Individual Income in 2016 Constant Dollars	38,817.04	5.90e04
HH Income < Poverty Line	0.145	0.352
HH Income < 1.5*Poverty Line	0.254	0.435
HH Income < 2*Poverty Line	0.355	0.479

Independent Variables:

Enforcement Index (EI)	1.187	0.847
Police-based Enforcement	1.011	0.662
Employer-based Enforcement	0.176	0.374
Age	54.293	15.190
Male	0.457	0.498
White	0.452	0.498
Black	0.102	0.302
Hispanic	0.360	0.480
Other Race	0.446	0.497
Married	0.678	0.467
Number of Children	0.372	0.833
Mixed Household	0.208	0.406
Less than High School (HS)	0.251	0.433
HS Education	0.285	0.451
More than a HS Education	0.464	0.499
Unemployment Rate	0.075	0.025
Dual Citizenship Country	0.641	0.480
Entry Year <1965	0.059	0.235
Entry Year: 1965-1969	0.041	0.199
Entry Year: 1970-1974	0.058	0.234
Entry Year: 1975-1979	0.079	0.270
Entry Year: 1980-1981	0.051	0.220
Entry Year: 1982-1984	0.052	0.223
Entry Year: 1985-1990	0.158	0.365
Entry Year: 1991-1995	0.138	0.345
Entry Year: 1996-2000	0.166	0.372
Entry Year: 2001-2005	0.134	0.341
Entry Year: 2006-2010	0.059	0.236
Observations	1,384,713	

Sample: Eligible-to-naturalize non-likely unauthorized (including naturalized) immigrants in the 2008-2016 ACS. *Refers to the naturalized population only. Descriptive statistics for the non-LU naturalized only sample are the same as in Appendix Table A. [*] Refers only to naturalized individuals.

Table C: Robustness Check
Alternative Definition of Eligible to Naturalize Restricted to Those with Nine Plus Years in the United States

Outcome	Likelihood of Becoming Naturalized	Years To Naturalization
Independent Variable	Coefficient	Coefficient
	(S.E.)	(S.E.)
Enforcement Index (EI)	**0.008*****	**-0.186*****
	(0.001)	**(0.050)**
Year Fixed-Effects	Y	Y
MSA Fixed-Effects	Y	Y
MSA Time Trends	Y	Y
Year of Entry Fixed-Effects	Y	Y
Dependent Variable Mean	0.726	12.071
Observations	1,186,505	852,221
R-squared	0.190	0.214

Notes: *** 1% level or better, ** 5% level and * 10% level. The regressions refer to the most complete specifications in Table 2. They include a constant and standard errors are clustered at the MSA level.