Border Enforcement and the Sorting and Commuting Patterns of Hispanics

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Abstract

I analyze the effects of immigration enforcement by the U.S. Border Patrol on the sorting and commuting patterns of Hispanics. Using a regression discontinuity design based on a 100-Mile Border Zone, which permits Border Patrol agents to conduct warrantless searches within 100 air miles of the U.S. border, I find that the share of Hispanics in southwestern states increases outside the Border Zone. This sorting effect disappears, however, when focusing on within-county differences in shares of Hispanics. I also find no significant commuting effect on Hispanics at the 100-mile cutoff. On the contrary, I show that Hispanics near Border Patrol checkpoints inside the Border Zone exhibit significantly different commuting patterns, commuting at lower probabilities toward checkpoints and over shorter distances than non-Hispanics.

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1 Introduction

In fiscal year 2019 alone, the U.S. Border Patrol made nearly 860 thousand apprehensions. Border Patrol operations are not limited only to areas that are immediately adjacent to borders or ports of entry. Border Patrol agents can carry out their responsibilities as far as 100 miles from the border. The area where Border Patrol agents are granted extra authority to conduct immigration enforcement is often called the "100-Mile Border Zone" (see Figure 1). According to federal regulations established in the 1940s and 1950s, Border Patrol agents are permitted to conduct warrantless searches and operate checkpoints within 100 air miles of any external boundary of the United States.

Although the primary role of the Border Patrol is to protect the borders from illegal entry to the United States, enforcement by the Border Patrol can have significant impacts not only on undocumented immigrants but also on the general Hispanic population in the Border Zone. This is because Border Patrol agents are permitted to consider race or ethnicity as a factor in stopping someone within the Border Zone (Chapablanco 2019).[1] In fact, Hispanics are often targets of border enforcement, enduring questioning, searches, and detentions (Anthony 2020).

In this paper, I analyze the effects of immigration enforcement by the Border Patrol on sorting and commuting patterns among Hispanics. I use distance from the border and distance from checkpoints to identify the effects of border enforcement. The first identification strategy uses a regression discontinuity (RD) design, based on the assumption that the 100-Mile Border Zone creates discontinuity in the intensity (or Hispanics' perceptions of the intensity) of immigration enforcement at the 100-mile cutoff. The second identification strategy compares the commuting patterns of Hispanics and Non-Hispanics in areas near checkpoints and examines how this difference in commuting patterns evolves as distance from checkpoints increases.

[1] In United States vs. Brignoni-Ponce (1975), the Supreme Court ruled that one reason for pulling over a car at the border is "the appearance of persons who live in Mexico, such as the mode of dress and haircut."

I first find that Hispanics are more likely to be concentrated outside the Border Zone around the 100-mile cutoff. This concentration is, however, driven largely by populous cities outside the Border Zone, such as San Antonio and Phoenix, that attract Hispanics. In fact, the discontinuity in the Hispanic share at the 100-mile cutoff mostly disappears when focusing on within-metro or within-county variation. I also show that there is no discontinuity in the commuting patterns of Hispanics—commuting distance or the probability of commuting toward the border—at the 100-mile cutoff. I provide graphical and anecdotal evidence that the non-existence of the "100-mile effects" may result from the lack of clear discontinuity in immigration enforcement at the 100-mile cutoff.

I show that, in contrast to the absence of a significant commuting effect at the 100-mile cutoff, Hispanics and non-Hispanics exhibit significantly different commuting patterns near checkpoints. In census blocks that are within two miles of the checkpoints, Hispanic workers commute 8 percentage points less often toward checkpoints and for 20-mile-shorter distances than non-Hispanic workers. This difference in commuting patterns between Hispanics and non-Hispanics gradually disappears as the distance from checkpoints increases, accounting for census-tract-level differences in the commuting patterns. This indicates that the "checkpoint effects" are larger in places that are closer to checkpoints, where immigration enforcement by the Border Patrol is stronger.

This paper makes the following contributions to the existing literature. First, it adds to the literature on the impacts of border enforcement using a novel policy variation: the 100-Mile Border Zone and checkpoints. As a measure of the intensity of border enforcement, previous studies use the number of person-hours spent patrolling the borders (Dávila, Pagán, and Soydemir 2002; Hanson, Robertson, and Spilimbergo 2002; Gathmann 2008; Angelucci 2012; Lessem 2018), the number of Border Patrol agents (Bohn and Pugatch 2015), the Border Patrol budget (Massey, Durand, and Pren 2016), or the timing of the adoption of immigration enforcement policies, such as Secure Communities (East et al. 2018). Diverging from these previous studies, this is the first paper to use the 100-Mile Border Zone and

checkpoints to identify the effects of Border Patrol enforcement on the Hispanic population. The 100-Mile Border Zone is an arbitrary and plausibly exogenous immigration policy that makes it possible to use the regression discontinuity design. Checkpoints can capture more direct effects of Border Patrol enforcement on local neighborhoods than the state-level or border-sector-level measures used in previous studies.[2]

The paper's second contribution involves analyzing the effects of border enforcement on outcome variables that have not previously been studied, namely the sorting and commuting patterns of Hispanics. Most previous papers on border enforcement focus on the effects on aggregate inflows and outflows of migrants (Espenshade 1994; Dávila, Pagán, and Soydemir 2002; Gathmann 2008; Angelucci 2012; Massey, Durand, and Pren 2016; Lessem 2018) or on labor markets (Hanson, Robertson, and Spilimbergo 2002; East et al. 2018). One exception is Bohn and Pugatch (2015), who studies the effects of border enforcement on the sorting of Mexicans at the state level. Instead, this paper identifies the effects of Border Patrol enforcement on the Hispanic share at a fine-grained level of geography—the census-block level—using a novel policy variation, the 100 Mile Border Zone.

Moreover, its analysis of the commuting patterns among Hispanics, which have not been covered in previous studies of border enforcement, enables this paper to fit broadly in the spatial mismatch literature. The relevant literature studies patterns as a result of which minorities are spatially disconnected from jobs and the consequences of such patterns on minority labor market outcomes (Kain 1968; Brueckner and Zenou 2003; Hellerstein, Neumark, and McInerney 2008; Andersson et al. 2018).[3] This is the first paper to examine the question whether border enforcement can distort the commuting patterns of Hispanics through the 100-Mile Border Zone and checkpoints. Although data limitations prevent this paper from finding direct effects on labor market outcomes, previous studies on spatial mismatch have

[2]U.S. Government Accountability Office (2009) seeks to identify the community impacts of checkpoint operations in Arizona(I-19), but they conclude that the data that would be needed to establish casual links between checkpoints and other outcome variables, such as property values, economic growth, tourism, and crime, are unavailable.

[3]For literature surveys on spatial mismatch, see Ihlanfeldt and Sjoquist (1998), Houston (2005), and Gobillon et al. (2007).

shown that minorities' limited accessibility to jobs caused by legal restrictions or residential patterns can ultimately reduce the likelihood that they find employment while also reducing wage levels.

The paper proceeds as follows. In Section 2, I summarize background information regarding the Border Patrol's immigration enforcement and the 100-Mile Border Zone. In section 3, I describe the data and empirical strategies. In Section 4, I discuss the effects of the 100-Mile Border Zone on sorting and commuting outcomes for Hispanics. In Section 5, I analyze how Border Patrol checkpoints affect the commuting patterns of Hispanics. I conclude in Section 6.

2 Background

The role of the U.S. Border Patrol is to protect inland borders and coastal waters from illegal entry and smuggling. Their operations are not, however, limited to border crossings. They can operate up to 100 miles from any external boundary of the United States. The legal justification for this 100-Mile Border Zone stems from the Immigration and Nationality Act of 1946, which permitted Border Patrol agents to board and search automobiles and other conveyances within a "reasonable distance" of any external boundary of the United States. The Attorney General's Regulation 8 CFR 287.1 (1953) further defines a "reasonable distance" as 100 air miles from any external U.S. boundary. This external boundary area includes not only the U.S.-Mexico and U.S.-Canada inland borders, but all coasts and waterways including the Pacific Ocean, the Atlantic Ocean, the Gulf of Mexico, and the Great Lakes. Thus, the 100-Mile Border Zone includes many major cities in the United States, such as New York, San Francisco, and Chicago.

Since these legal parameters were established, a series of court rulings have further entrenched this 100-Mile Border Zone. For example, in United States v. Martinez-Fuerte, 428 U.S. 543 (1976) the Supreme Court ruled that warrantless searches by the Border Patrol at

checkpoints located within the Border Zone do not violate the Fourth Amendment. Also, the 100-Mile Border Zone has been recognized by the public and the Border Patrol as a regulation that is still in effect.[4] Recent reports by the U.S. Government Accountability Office (GAO) as well as internal/external Customs Border Protection (CBP) documents clearly state that the U.S. Border Patrol can deploy agents in areas up to 100 miles from the border.[5]

Border Patrol operations in the Border Zone far from actual boundaries (up to 100 miles from the border) constitute a "defense-in-depth" strategy (U.S. Government Accountability Office 2017). This strategy is carried out mainly through Border Patrol checkpoints, which are often placed along stretches of highways where the surrounding terrain restricts vehicle passage around a checkpoint.[6] There are two types of checkpoints: permanent checkpoints with physical structures that are operated at permanent locations and tactical checkpoints without physical structures that are operated temporarily to support permanent checkpoints. At these checkpoints, whether they are permanent or tactical, Border Patrol agents have additional authority to stop or briefly detain vehicles and ask questions about passengers' immigration status. They can further detain or search vehicles without warrants even if they have only a "reasonable suspicion" that the occupants have violated immigration laws or committed crimes (Anthony 2020).

Border Patrol agents also operate in the 100-Mile Border Zone through roving patrols (Osete 2016). In practice, this results in Border Patrol agents pulling over vehicles and ask-

[4]In Section 4.4, I discuss whether the 100-Mile Border Zone is effective in practice in terms of the intensity of immigration enforcement.

[5]Taken from the CBP Enforcement Law Course (released via FOIA requests by the ACLU's Border Litigation Project). Immigration officers are given the authority to search vehicles for aliens under two statutes: INA 235(d)(1)14 authorizes them to search vehicles "in which they believe aliens are being brought into the United States," and INA 287(a)(3)15 permits them to search vehicles "within a reasonable distance from any external boundary of the United States . . ."By regulation, the term "reasonable distance" generally "means within 100 air miles from any external boundary of the United States . . ."

[6]Written testimony of CBP U.S. Border Patrol Chief Mark Morgan for a House Committee on Homeland Security, "Moving the Line of Scrimmage: Re-Examining the Defense-In-Depth Strategy": Checkpoint sites are positioned far enough from the border to avoid interfering with traffic in populated areas near the border; at sites where the surrounding terrain should restrict vehicle passage around the checkpoint; and located on stretches of highway that are compatible with safe operation (https://www.dhs.gov/news/2016/09/13/written-testimony-cbp-house-homeland-security-subcommittee-border-and-maritime).

ing drivers and passengers about their immigration status or requesting documents. Unlike checkpoints, in these cases there must be a reasonable suspicion that a law has been violated to justify stopping a vehicle, although "Hispanic appearance" can be cited as a factor in establishing reasonable suspicion (Chapablanco 2019). To further arrest or detain the occupants of vehicles, Border Patrol agents must be able to cite probable cause based on objectively reasonable beliefs (a stronger notion than reasonable suspicion) that immigration laws have been violated or crimes have been committed. In addition to stopping private vehicles, CBP officials occasionally board buses and trains within the 100-Mile Border Zone, asking passengers for their immigration documents.[7]

The Border Patrol's area of operation is divided into 20 Border Patrol sectors, which can be more broadly categorized into the southwest, coastal, and northern border sectors (Figure 2).[8] I find that, in the southwest sectors, more than 80 percent of Border Patrol agents are deployed and almost 99 percent of apprehensions by the Border Patrol occur in these sectors (Table A1). The statistics suggest that the effects of the Border Zone, if there exist any, will likely appear in the southwestern states where the resources and operations of the Border Patrol are largely concentrated.

Some observers complain that the Border Patrol's activities in the 100-Mile Border Zone violate the Fourth Amendment, which protects individuals from unreasonable searches and seizures, while others assert that they are necessary for neighborhood safety. There is, however, no clear answer regarding how the Border Patrol's enforcement activities affect local neighborhoods. U.S. Government Accountability Office (2009) finds that some community members around Border Patrol checkpoints assert that checkpoints have been successful in deterring criminal activities in their communities and have had no adverse effects on violent crime rates, businesses, or real estate values. On the other hand, some have expressed concern

[7]American Civil Liberties Union. "Know Your Rights: 100 Mile Border Zone." (https://www.aclu.org/know-your-rights/border-zone/)

[8]States in the southwest sectors: California, Nevada, Arizona, New Mexico, Oklahoma and Texas. States in the coastal sectors: Arkansas, Louisiana, Mississippi, Alabama, Georgia, Florida, South Carolina, North Carolina, Tennessee and Kentucky. States in the northern sectors: all the other states.

that checkpoints have adversely affected local neighborhoods, for example by discouraging tourism or reducing real estate values.

3 Data and Empirical Strategy

3.1 Data

In this paper, the intensity of Border Patrol enforcement is measured in two ways. The first proxy for Border Patrol enforcement is distance from the border, where there is a discontinuity in enforcement intensity (or Hispanics' perceptions of enforcement intensity) 100 miles from the border. More specifically, I use the distance between the centroid of each census block and its nearest US external border, including land and water borders.

The second proxy for Border Patrol enforcement is distance from Border Patrol checkpoints, based on the assumption that Hispanics living near checkpoints are affected more directly and frequently by border enforcement. Unfortunately, CBP does not officially release the locations of checkpoints. Thus, I collect and merge data from multiple maps posted on the web that identify the locations of checkpoints in the southwestern states.[9] I also manually checked whether a given location actually existed continuously from 2010 to 2018 using satellite data from Google Earth. I exclude checkpoints (mostly temporary tactical checkpoints) whose satellite pictures do not show physical buildings, vehicles, or structures installed by the Border Patrol. In total, 43 checkpoints and census blocks in the southwest sectors are used for the main analysis, excluding two checkpoints that are located immediately adjacent to the border (located less than 1 mile from the border).[10] Figure 3 shows the locations of the checkpoints and their 2-mile buffers (areas located less than 2 miles from the checkpoints)

[9] In particular, I use data from https://osm4wiki.toolforge.org/cgi-bin/wiki/wiki-osm.pl?project=en&article=United+States+Border+Patrol+interior+checkpoints, https://www.google.com/maps/d/viewer?hl=en_US&mid=1L872WkbWL11Zob-E9Oyk_Zen1Ws&ll=30.36332925760974%2C-107.836285&z=6 and https://www.google.com/maps/d/viewer?mid=1m3M9G1ctiulkZk3UnbDQJ2oRIaE&hl=en&ll=32.61028277951566%2C-108.27414830381939&z=6.

[10] I re-include them in Section 5.2 for a robustness check.

and 20-mile buffers (areas located less than 20 miles from the checkpoints).

The primary outcome variables in this paper are the sorting and commuting patterns of Hispanics. For measures of Hispanic sorting, I use primarily 100 percent 2010 census-block-level data obtained from the National Historical Geographic Information System (NHGIS) (Manson et al. 2019). A census block is the smallest geographic unit used in the decennial Census, which makes it possible to identify the effects of border enforcement on local neighborhoods more precisely.[11]

For commuting measures, I use census-block-level yearly data from 2010 through 2018 drawn from Longitudinal Employer-Household Dynamics Origin-Destination Employment Statistics (LODES) (U.S. Census Bureau 2021). The LEHD data combine administrative data for employers and employees, including Unemployment Insurance earnings data, the Quarterly Census of Employment and Wages (QCEW), and the Decennial Census. The data report the total number of jobs associated with a home census block and a work census block. Using this information, for each home census block I calculate the outcome variables related to commuting patterns: average commute distance and the share of workers commuting toward borders and checkpoints.

3.2 Empirical Strategy

To analyze the effects of border enforcement, I first use a regression discontinuity (RD) design based on the 100-mile cutoff of the Border Zone and distance from the border. Border Patrol agents are in principle permitted to conduct their operations only up to 100 air miles from any external boundary of the United States. Thus, a discontinuity in immigration enforcement may occur in areas located 100 miles from the border, which can also lead to discontinuities in sorting and commuting outcomes for Hispanics.

More formally, I estimate the following regression discontinuity equation:

[11] Taken from the Census: Census blocks are statistical areas bounded by visible features such as roads, streams, and railroad tracks; by non-visible boundaries such as property lines; and city, township, school district, and county limits and short line-of-sight extensions of roads.

$$y_i = \alpha + \beta t_i + f(x_i) + \epsilon_i \tag{1}$$
$$\forall x_i \in (c-h, c+h)$$

where i denotes a census block, t is the indicator variable for distance to the border being greater than 100 miles, x is distance from the border, and $f(x)$ is the linear control function. c is the cutoff point, which is 100 miles. h is the bandwidth around the cutoff, where I use a fixed value of 50 miles.[12] Thus, $\hat{\beta}$ is the RD estimate, which identifies the effects of border enforcement around the 100-mile cutoff. I also report RD estimates using a 4th-order polynomial control function (instead of a linear control function) with no bandwidth restriction (instead of a 50-mile bandwidth). I first present the results separately for the three border sectors: the southwest, coastal and northern sectors. For all regressions, I cluster standard errors by county.

The outcome variables, y, are the measures of Hispanic sorting and commuting patterns. The first sorting measure is the (raw) share of Hispanics in each census block. To control for county-level fixed characteristics that may influence the sorting patterns of Hispanics, I also additionally use "residual" shares of Hispanics as the second sorting measure. This is census-block-level Hispanic shares minus average county-level Hispanic shares, which captures the within-county differences in the shares of Hispanics. I also consider the shares of immigrants as an additional sorting measure, although the data are available only at the census-tract level.

In addition to these sorting measures, I use commuting patterns among Hispanics as the main outcome variable. Since it is not possible using LEHD data to identify commuting patterns separately for Hispanics and non-Hispanics in each block, I focus on the census-

[12] I also estimated the RD regressions using the optimal bandwidth from Imbens and Kalyanaraman (2012), which ranges from 20 miles to 30 miles depending on the sample. The coefficients are usually smaller than those that use the fixed 50-mile bandwidth (they are also nonsignificant). The paper's main implications do not change when I use the optimal bandwidth.

tract-level average difference in commuting patterns between census blocks by shares of Hispanics. More specifically, I first estimate the following equation for each census tract:

$$Commute_i^j = \alpha^j + \gamma^j \cdot ShareHispanic_i^j + \epsilon_i^j \tag{2}$$

where i is again a census block in each census tract j. $Commute$ denotes outcome variables for commuting patterns, which are shares of workers who commute toward borders and the average commute distance.[13] $ShareHispanic$ is the share of Hispanic workers in each census block. The regression is weighted by the number of total workers in each census block. $\hat{\gamma}^j$ represents the estimated difference in commuting patterns between Hispanics and non-Hispanics for each census tract j. $\hat{\gamma}^j$ is then used as the outcome variable for equation 1, which tests for discontinuity of $\hat{\gamma}^j$ at the 100-mile cutoff.

Finally, I analyze the effects of Border Patrol checkpoints on commuting patterns among Hispanics by estimating the following equation:

$$Commute_{ict} = \alpha + \delta^m \cdot ShareHispanic_{ict} + Checkpoint_c + Tract_i + Year_t + \epsilon_{ict} \tag{3}$$

where i, c and t denote census blocks, checkpoints, and years, respectively. The outcome variables are $Commute$, which denote the probability of commuting toward checkpoints and the average commute distance.[14] I include checkpoint fixed effects, $Checkpoint_c$, in addition to census-tract fixed effects, $Tract_i$, to control for heterogeneity in commuting patterns across regions. $Year_t$ are year fixed effects.

I estimate equation 3 separately for varying values of $m = 2, 3, \ldots, 20$, where m denotes

[13] An individual commutes toward a border when the distance between the individual's workplace census block and the nearest border is shorter than the distance between the individual's home census block and the nearest border.

[14] See Figure A1 for a graphical representation of commuting toward checkpoints.

the size of a checkpoint buffer (see Figure 3). This is essentially the maximum distances (in miles) between each checkpoint and census block that are used in the regression. $\hat{\delta^m}$ with smaller m represents more local effects of checkpoints on the commuting patterns of Hispanics. To adjust for duplicates of census blocks when using large m (when there are overlaps of checkpoint buffers), I use adjusted regression weights based on census-block population divided by the number of times that a given census block appears in the estimation. Standard errors are clustered by checkpoint.

4 Border Zones, Sorting and Commuting

4.1 Sorting of Hispanics

Figure 4 plots the share of Hispanics against distance to borders, separately for the southwest (Panels A and B), northern (Panels C and D), and coastal sectors (Panels E and F). Each dot represents the average Hispanic share across census blocks within 0.5-mile bins. In the left-hand side panels (Panels A, C, and E), I plot "global" versions of the RD figures using all census blocks in each sector, fitting 4th-order polynomials. In the right-hand side panels (Panels B, D, and F), I plot "local" versions of the RD figures using census blocks that are between 50 and 150 miles from the border, using local linear fit.

I first report the sorting results for the southwest sector in Panels A and B of Figure 4. In Panel A (using all census blocks), I show that there is a sharp break in the share of Hispanics at the 100-mile cutoff. The share of Hispanics increases by 10 percentage points outside the Border Zone, although the RD estimate is statistically nonsignificant. As can be seen in Panel B (using blocks located between 50 and 150 miles from the border), I also find a similar marginally significant 10-percentage-point increase in the share of Hispanics at the 100-mile cutoff. Yet, this increase reflects a "kink" instead of a sharp break, where the share of Hispanics begins increasing gradually at the 100-mile cutoff. In contrast, coastal sectors (Panels C and D) and northern sectors (Panels E and F) do not exhibit such a

pattern of increases in Hispanic shares around the 100-mile cutoff. In sum, the RD plots suggest that Hispanics tend to be more concentrated outside the Border Zone only in the southwestern states, where most arrests and apprehensions by the Border Patrol occur (as shown in Table A1).

I then plot the same regression discontinuity figures in Figure 5, separately by state, in the southwest sector: California, Arizona, New Mexico and Texas.[15] Around the 100-mile cutoff, there exists a pattern of increases in Hispanic shares outside the Border Zone in every state (except for New Mexico, which has a relatively small population). The share of Hispanics begins increasing between 100 and 110 miles and decreases after that. This indicates that the sorting pattern in the southwestern states shown in Figure 4 is not driven solely by a single state with a large Hispanic population around the 100-mile cutoff.

This association between Hispanic shares and the Border Zone in southwest sectors does not necessarily, however, confirm the occurrence of causal effects of border enforcement on location choices made by Hispanics. To ensure the validity of the spatial RD design, the characteristics of census blocks that could affect location choices made by Hispanics should not change significantly around the 100-mile cutoff. For example, the size of a city, which can significantly affect the location choices made by Hispanics, needs to be smoothly distributed around the 100-mile cutoff.

In fact, I find that some populous southwestern-state metropolitan areas, such as Fresno, Phoenix, San Antonio and Austin, are located just outside the 100-mile cutoff (Figure A2). I also find that the average county population of census blocks in the southwestern states (metropolitan areas are collections of counties) begins increasing immediately at the 100-mile cutoff, which resembles the pattern of increases in Hispanic shares shown in Figures 4 and 5 (Figure A3). Thus, the pattern of Hispanic sorting outside the Border Zone may merely reflect the fact that Hispanics are concentrated in these large cities or urban counties.

To confirm that these large southwestern cities outside the Border Zone are driving the

[15] I exclude Nevada and Oklahoma here, as their blocks are all located farther than 100 miles from the borders.

sorting results for Hispanics, I first plot the shares of Hispanics in census blocks against their distances to the border in the southwest sectors (as in Panels A and B of Figure 4) while excluding large metropolitan areas with populations above 500 thousand people. I find that the discontinuity at the 100-mile cutoff that was shown in Figure 4 diminishes when excluding theses larger metros, where the RD estimates shrink by half and become largely nonsignificant (Figure A4). This suggests that the concentration of Hispanics outside the Border Zone is driven largely by these populous metropolitan areas, which often are strong magnets for Hispanic populations.

The results reported above highlight the importance of additionally controlling for a range of county-level characteristics, such as population and amenities, that may affect the location choices made by Hispanics. Therefore, I next fully control for fixed county characteristics by focusing on within-county variation in Hispanic shares around the 100-mile cutoff. That is, instead of the raw Hispanic shares that are used in the previous analysis, here I use "residual Hispanic shares," which are block-level Hispanic shares minus county-level Hispanic shares. This is equivalent to focusing on within-county differences in Hispanic shares between census blocks in each county.

Figure 6 plots the residual Hispanic shares of census blocks against their distances to the border. Varying the sample restrictions for Panels A (all census blocks) and B (census blocks within 50-150 miles of the border), the discontinuity in Hispanic shares at the 100-mile cutoff that was shown in Figure 4 mostly disappears. In the global RD plot (Panel A), the RD coefficient is essentially zero with no noticeable difference in residual Hispanic shares between census blocks inside and outside the Border Zone. In the local RD plot (Panel B), zooming in on census blocks located between 50 and 150 miles from the border, there remains a kink, with an increase in the residual shares of Hispanics in census blocks located between 100 and 115 miles from the border. The local RD estimate with a linear fit is, however, smaller (0.032) and statistically nonsignificant, compared with the estimate based on raw Hispanic shares (0.102). I also plot the same RD plots when further restricting the sample to counties

that span across the Border Zone (with census blocks on both sides), and the RD estimate is essentially identical (Figure A5).[16]

In sum, Hispanics in southwest sectors are more likely to be concentrated outside the Border Zone around the 100-mile cutoff. It is likely, however, that this result is driven mostly by populous counties or metropolitan areas, as the discontinuity disappears when focusing on within-county differences in shares of Hspanics.

4.2 Sorting of Immigrants

I next focus on the effects of the 100-Mile Border Zone on sorting of immigrants. The Decennial Census does not contain nativity information, so I use sample-based census-tract-level data from the 5-year American Community Survey (2014-2019). I first plot tract-level "raw" shares of immigrants against distance to the border. As is the case with my analysis regarding Hispanics, I find that the share of foreign-born individuals increases significantly outside the Border Zone around the 100-mile cutoff in the southwest sector only (Figure A7). The similarity between the results for Hispanics and those for immigrants is not surprising given that a large share of the Hispanic population is comprised of immigrants.

Again, this increase in the share of immigrants may be driven by the fact that many large cities are located outside the Border Zone around the 100-mile cutoff. Thus, I next focus on the "residual" shares of immigrants, which is defined as tract-level immigrant shares minus county-level immigrant shares. This step involves comparing immigrant shares across tracts within each county. When focusing on "residual" shares of immigrants in Panels A and B of Figure 7, this discontinuity at the 100-mile cutoff disappears, as is the case with the results for Hispanics. This finding shows that there is no significant effect of the Border Zone on sorting by immigrants within a given county.

I then consider heterogeneity among immigrants. Foreign-born non-citizens are more likely to avoid the Border Zone because those who are undocumented would be subject

[16] I also consider residual shares of Hispanics using commuting zones (collections of counties) instead of counties, but the RD estimate does not significantly change (Figure A6).

to deportation if caught by Border Patrol agents. Also, all non-citizens, including green card holders, are required to carry their immigration documents at all times, which can be an additional burden for them. In Panels C and D of Figure 7, I plot the residual shares of foreign-born citizens and foreign-born non-citizens, respectively, against distance to the border in the southwestern states. Contrary to the above prediction, I find that there is no significant difference in the shares of non-citizens and citizens either inside or outside the 100-mile cutoff. The results suggest that the 100-mile cutoff of the Border Zone has no significant effects on immigrants in general, regardless of their citizenship status.

It is possible that focusing on within-county differences is too demanding when estimating the effects of the Border Zone because some small counties include very few census tracts or in some cases even just one census tract. Thus, I analyze within-commuting-zone differences in the shares of foreign-born individuals instead, where commuting zones are collections of counties. I find a small increase in shares of immigrants outside the Border Zone, although the results are mostly nonsignificant. Also, there is no significant difference in the magnitude of the discontinuity between the shares of citizens and non-citizens (both shares exhibit small increases outside the Border Zone), suggesting that the increase in immigrant shares is not likely to be driven by border enforcement in the Border Zone (Figure A8).

4.3 Commuting Patterns of Hispanics

In this section, I analyze the effects of the Border Zone on commuting patterns among Hispanics. It is possible that Hispanics exhibit significantly different commuting patterns from those of non-Hispanics inside and outside the Border Zone as a result of immigration enforcement by the Border Patrol. Suppose again that there is a discontinuous drop in the probability of confronting Border Patrol agents at the 100-mile cutoff. Hispanics living outside the Border Zone, who do not need to worry about confronting Border Patrol agents near their homes, may then be more reluctant to commute toward the border and risk encountering Border Patrol agents while they commute. In addition, Hispanics living inside

the Border Zone may be unwilling to commute farther, also to avoid encountering Border Patrol agents. Thus, it is possible that the share of Hispanics commuting toward the border decreases or that the average commute distance increases outside the Border Zone at the 100-mile cutoff.

To examine whether the commuting patterns of Hispanics are affected by the Border Zone, I analyze the effects of the Border Zone on *differences* in commuting patterns between Hispanics and non-Hispanics. This is somewhat similar to employing a difference-in-differences methodology using non-Hispanics as a control for Hispanics, based on the assumption that only Hispanics' commuting patterns are affected by the Border Zone. There may be commuting effects on non-Hispanics as well, but it is likely that the effects are much stronger for Hispanics, who are often targets of searches and detentions by the Border Patrol.[17]

I consider two variables for commuting patterns: the share of workers commuting toward the border and the average commute distance. I first plot these variables, separately for Hispanic-majority census blocks and non-Hispanic-majority census blocks, against distance to the border. For *both* Hispanic-majority and non-Hispanic-majority census blocks, I find that the shares of workers commuting toward the border and the mean commute distance *decrease* outside the Border Zone around the 100-mile cutoff (Figure A9). This change in the commuting pattern might be caused, however, by changes in geographic characteristics around the cutoff (such as urban clusters located outside the Border Zone), not from changes in the intensity of immigration enforcement. Therefore, it is necessary to control for the baseline commuting patterns—the commuting patterns of non-Hispanics—for the RD strategy to be valid.

Thus, I next plot the difference in commuting patterns between Hispanics and Non-Hispanics in each census tract against distance to the border. More specifically, I estimate equation 2 for each census tract, regressing the commuting variables on the shares of Hispanics. The estimated coefficients, $\hat{\gamma^j}$, represent the tract-level average difference in commuting

[17] If non-Hispanics are affected by the 100-Mile Border Zone, the estimates here are the lower bounds of the actual effects on Hispanics.

patterns between Hispanics and non-Hispanics. I then plot the estimated coefficients for each tract ($\hat{\gamma^j}$) against its distance to the border. The commuting variables that I consider here are again the shares of workers commuting toward the border and the average commute distance.

Figure 8 shows that there is no discontinuity in the commuting-pattern difference between Hispanics and non-Hispanics at the 100-mile cutoff. In Panel A, I show that there is no difference in the probability of commuting toward the border between Hispanics and non-Hispanics either inside or outside the Border Zone, resulting in no discontinuity at the 100-mile cutoff. As shown in Panel B, I again find that there is no discontinuity in the commute distance difference at the 100-mile cutoff. The difference in commute distance between Hispanics and non-Hispanics is zero in census tracts that are located 50 miles from the border, but the difference grows linearly larger as the distance from the border increases. In census tracts that are located 150 miles from the border, Hispanics commute on average 10 miles *less* than non-Hispanics. This finding runs against the previous prediction that Hispanics would commute longer distances outside the Border Zone because they would be less likely to encounter Border Patrol agents in so doing.

4.4 Possible Reasons for the Non-Existence of the Effects

I have shown that there are no significant effects of the Border Zone on the sorting and commuting patterns of Hispanics (or immigrants) around the 100-mile cutoff. What might explain the absence of these effects?

First, it is possible that enforcement by the Border Patrol itself does not have large impacts on the sorting and commuting patterns of Hispanics. In theory, the main targets of the Border Patrol are undocumented immigrants who have crossed the border illegally, so Hispanics who are documented immigrants or natives may not be significantly affected. If that is the case, then it would be particularly difficult to detect any effects on commuting patterns among Hispanics because the LEHD data typically cannot capture jobs held by

undocumented immigrants. In the next section, however, I show, by analyzing the effects of Border Patrol checkpoints on the commuting patterns of Hispanics, that enforcement by the Border Patrol may actually have significant impacts on the general Hispanic population.

It is also possible that there is no discontinuity in Border Patrol operations around the 100-mile cutoff. Although the Border Patrol does acknowledge the existence of the "100-mile Border Zone," it is possible that the Border Patrol operates infrequently in areas far from the border. In other words, they focus their enforcement activities near the border to use their limited resources more efficiently. It is impossible, however, to gauge the discontinuity of Border Patrol enforcement activity around the 100-mile cutoff precisely because CBP does not publicly release enforcement data on hours of patrolling or apprehensions with detailed geographic information. I therefore provide the following indirect evidence that there is no discontinuity in Border Patrol operations at the 100-mile cutoff.

The first piece of evidence indicating a lack of discontinuity at the 100-mile cutoff is found in (limited) federal data on apprehensions by the Border Patrol, which show that most apprehensions occur near the border. According to a report by the GAO U.S. Government Accountability Office (2017), almost half of all apprehensions occur within 1 mile of the border, while only 15 percent of apprehensions occur more than 20 miles from the border. Moreover, when considering the U.S. Border Patrol apprehension heatmap released by CBP (Figure A10), I again find that most apprehensions occur close to the border.[18] The map also shows that the number of apprehensions far from the border is minimal (or zero), suggesting that there may be no discontinuity in apprehensions or border enforcement at the 100-mile cutoff.

The second piece of evidence comes from Immigration and Customs Enforcement (ICE) removals under the Secure Communities program, which is the deportation program operated by ICE in partnership with federal, state, and local government agencies. The data provided by TRAC (2021) contain individual records indicating the counties where the original fin-

[18]Map downloaded from U.S. Customs Border and Protection.

gerprints of apprehended individuals were taken and the apprehending agencies (indicating whether deported immigrants are arrested by the Border Patrol or another agency). Because many individuals apprehended by the Border Patrol are removed immediately and do not go through the Secure Communities process administered by ICE, this would be an imprecise measure of Border Patrol enforcement. Also, counties are so large that it is impossible to detect any discontinuity in apprehensions at the 100-mile cutoff. Despite these data limitations, I again find no noticeable discontinuity in the number of individuals who were apprehended by the Border Patrol and removed under Secure Communities at the 100-mile cutoff (Figure A11).

Finally, there is some anecdotal evidence that Border Patrol operations sometimes extend beyond the 100-Mile Border Zone. For example, in one case Border Patrol agents boarded a Greyhound Bus near an agricultural checkpoint that is located 205 air miles from the U.S.-Mexico border.[19] Also, Senator Patrick Leahy was stopped at an immigration checkpoint 125 miles south of the border in New York state.[20] This violation of the 100-Mile regulation by the Border Patrol is also depicted in the previous figure that shows the number of individuals apprehended by the Border Patrol and removed under Secure Communities, where some arrests by the Border Patrol do occur in counties located outside the 100-Mile Border Zone (Figure A11). If immigrants or Hispanics acknowledge that the probability of encountering the Border Patrol is non-zero even outside the Border Zone, it is possible that there exists no discontinuity in their sorting and commuting behaviors at the 100-mile cutoff.

[19]Cerullo, Megan. 2018. "California woman who knows her rights forces Border Patrol off Greyhound bus at agricultural checkpoint." *Daily News*. Jun 14. https://www.nydailynews.com/news/ny-news-greyhound-bus-border-patrol-20180614-story.html.

[20]Miller, Todd. 2013. "War on the Border." *The New York Times*. Aug 17. https://www.nytimes.com/2013/08/18/opinion/sunday/war-on-the-border.html.

5 Border Patrol Checkpoints and Commuting

5.1 Effects on the Commuting Patterns of Hispanics

In this section, I focus on checkpoints operated by the Border Patrol to analyze the effects of border enforcement on Hispanics. Checkpoints can have severe impacts on the daily lives of local residents because of traffic delays and the possibility of being searched or even detained. Here, I analyze in particular the impacts on commuting patterns among Hispanics around checkpoints. This analysis is motivated by the fact that Hispanics are more likely to avoid going through Border Patrol checkpoints because they are often targets of extensive questioning and invasive searches (Anthony 2020). This occurs in large part because Border Patrol agents are permitted to stop vehicles at checkpoints based on ethnicity even without reasonable suspicion that a vehicle's passengers have violated immigration laws (Chapablanco 2019). U.S. Government Accountability Office (2017) finds that enforcement by Border Patrol agents is indeed stronger around the checkpoints, where 3 percent of apprehensions and almost of half of all seizures occur within a half mile or less of a checkpoint.

As is the case with the previous analysis, which examines the effects of the 100-Mile Border Zone on commuting patterns, here I focus on differences in commuting patterns between Hispanics and non-Hispanics around Border Patrol checkpoints. Non-Hispanics, who are likely to be affected to a lesser extent by Border Patrol checkpoints, serve as the control group for Hispanics. To determine how commuting patterns among Hispanics and non-Hispanics differ around checkpoints, I estimate equation 3, regressing the outcome variables for commuting on the shares of Hispanic workers in census blocks located within m miles of a checkpoint (m-mile buffer). I then show how the estimated coefficients of Hispanic shares (δ^m), which represents the average difference between Hispanics and non-Hispanics within the m-mile buffer, evolve as I increase the size of the buffer from 2 miles to 20 miles. Hispanics living near Border Patrol checkpoints are more likely to encounter Border Patrol agents either at traffic checkpoints or as the agents are on roving patrols around checkpoints.

Therefore, if there exist any effects of checkpoints on commuting patterns among Hispanics, the differences in the commuting patterns will be larger in smaller (2-mile) buffers because the effects would be larger for census blocks located closer to the checkpoints.

In Figure 9, I report the coefficients for each buffer (from 2 miles to 20 miles), δ^m, estimated using equation 3. Again, these coefficients represent the differences in commuting patterns between Hispanics and non-Hispanics. The outcome variables depicted in Panels A and B are the shares of workers commuting toward checkpoints and commute distance, respectively. The black and gray lines represent the coefficients with census-tract fixed effects and 5-mile-by-5-mile square-zone (25 mi^2) fixed effects, respectively. Including these fixed effects is essential when focusing on larger buffers because geographic or city characteristics other than checkpoints can significantly influence the average commuting patterns of Hispanics. Here, I focus mainly on the specification that includes census-tract fixed effects (black line), which fully controls for tract-level differences in commuting patterns, although using the 5-mile-by-5-mile square-zone fixed effects generates analytically similar results.

In Panel A of Figure 9 I report the estimated coefficients of the shares of Hispanics, representing the average difference in the probability of commuting toward checkpoints between Hispanics and non-Hispanics. The coefficient for the 2-mile buffer is -0.1 and it is statistically significant. That is, within the 2-mile buffer, the probability that workers commuting toward checkpoints is 10 percentage points lower for Hispanics than for non-Hispanics. This shows that Hispanics living within 2 miles of checkpoints tend to avoid commuting to workplaces that are closer to those checkpoints. This difference in commuting patterns between Hispanics and non-Hispanics, however, begins disappearing as the size of the buffer increases and eventually becomes zero at the 9-mile buffer. This is consistent with a lower risk of encountering the Border Patrol associated with living farther from checkpoints.

Panel B of Figure 9 shows average differences in commute distance between Hispanics and non-Hispanics. Focusing again on the specification that includes census-tract fixed effects, Hispanics within the 2-mile buffer commute 20 miles less (one-way) than non-Hispanics. In

percentage terms, Hispanics on average commute 45 percent shorter distances than non-Hispanics, considering the fact that the average commute distance of non-Hispanic-majority census blocks within the 2-mile buffer is 44 miles. However, as is the case with Panel A, here the difference between Hispanics and non-Hispanics decreases as the size of the buffer increases. Within the 10- to 20-mile buffers, Hispanics commute only 3-7 miles shorter distances than non-Hispanics. In percentage terms, this is only 10-20 percentage points less relative to the average commute distance of non-Hispanic-majority blocks.

Some may question the plausibility of the above results because the locations of checkpoints are not exogenously determined. When determining the locations of checkpoints, the Border Patrol is likely to take into account many factors, such as known routes for illegal entry and smuggling. It is unlikely, however, that the average commuting pattern of Hispanics is the most important factor in determining checkpoint sites, especially for permanent checkpoints that were constructed well into the past. Also, even if such an endogenous relationship between the locations of checkpoint sites and commuting patterns of Hispanics (whose share of the undocumented population is relatively high) exists, it is likely that the Border Patrol will set up checkpoints where Hispanics are *more* likely to commute or pass through. In that case, the coefficients reported in Figure 9 will *underestimate* the actual effects of the checkpoints, biasing the estimates toward zero.

Summarizing these results, Hispanics living near checkpoints exhibit significantly different commuting patterns from those of non-Hispanics. They are more likely to commute away from checkpoints and commute shorter distances. This difference between Hispanics and non-Hispanics is larger in areas that are located closer to checkpoints, which is consistent with the fact that border enforcement is stronger at and around checkpoints.

5.2 Robustness of Commuting Effects

As shown in Figure 3, many Border Patrol checkpoints are located along highways far away from urban areas. Thus, it is possible that the commuting results highlighted in

Figure 9 are not driven by the checkpoints themselves, but rather by rural characteristics near the checkpoints. Also, these rural census blocks often do not have sufficient populations (especially Hispanic populations) to calculate the average commuting-distance difference between Hispanics and non-Hispanics. For a robustness check, I exclude 20 rural checkpoints where, on average, there are fewer than 100 workers inside the 5-mile buffer (between 2010 and 2018). The commuting results do not significantly change even after excluding these rural checkpoints (Figure A12).[21]

I also conduct a placebo test using rest areas that are located within 100 miles of the U.S.-Mexico border (Figure A13).[22] Rest areas can serve as placebos for checkpoints because they are also often located in isolated areas along highways, with similar geographic characteristics around them. Motivated by this similarity, I re-estimate equation 3 using 104 rest areas instead of Border Patrol checkpoints. I find that, unlike what happens with checkpoints, Hispanics do not exhibit significantly different commuting patterns around rest areas, which makes the previous results that find commuting effects of checkpoints reassuring (Figure A14).

In the main analysis (Figure 9), I excluded some Border Patrol checkpoints located immediately adjacent to external boundaries of the United States. For example, the Border Patrol checkpoint in Brownsville, Texas is located less than one mile from the U.S.-Mexico border, which may cause distorted commuting patterns around the checkpoint. That is, workers who live on the north side of that checkpoint will count as being less likely to commute toward checkpoints in general, not because of that particular checkpoint, but mainly because it is so near the border, which they cannot cross. This is why checkpoints that are located immediately adjacent to the border are excluded from the main analysis, but here I include them and re-estimate equation 3 for a robustness check. Still, the main patterns, whereby Hispanics generally commute at lower probabilities toward checkpoints and commute shorter

[21] The estimates in Figure 9 are weighted by the number of workers in each census block, which mechanically places more weight on checkpoints that are located in urban areas.

[22] Data downloaded from http://www.poi-factory.com/node/6643.

distances near the checkpoints, do not change (Figure A15).

Finally, it is possible that the commuting results I find merely represent the overall characteristics of southwestern states, not the effects of the checkpoints. To test for this possibility, I choose 43 census blocks randomly (other than the actual locations of the 43 checkpoints) in the 100-Mile Border Zone in southwestern states and run the same analysis using equation 3. I repeat this exercise 500 times and report the means of the 500 coefficients for each buffer size, m. I find that the difference in commuting patterns between Hispanics and non-Hispanics are mostly identical with varying values of m (Figure A16). This shows that the commuting patterns in areas near Border Patrol checkpoints (shown in Figure 9) are significantly different from general commuting patterns in the southwestern states.

6 Conclusion

The U.S. Border Patrol, which operates within the 100-Mile Border Zone, may have large impacts on Hispanics, who are often targets of immigration enforcement. Yet previous empirical studies of border enforcement have focused mostly on impacts on migrant inflows or labor market outcomes, using limited data on Border Patrol operations. This paper contributes to the literature by using two novel policy variations to identify the effects of border enforcement on local neighborhoods: the 100-Mile Border Zone and Border Patrol checkpoints. Using these proxies for border enforcement, I analyze the effects of border enforcement on sorting and commuting outcomes for Hispanics.

This paper contributes three main findings to the literature. First, Hispanics and immigrants tend to sort just outside the 100-Mile Border Zone, but this pattern disappears when focusing on within-county differences in shares of Hispanics or immigrants. Second, there is also no significant difference in commuting patterns between Hispanics and non-Hispanics around the 100-mile cutoff. Third, Hispanics living near Border Patrol checkpoints, on the other hand, exhibit significantly different commuting patterns, commuting at lower proba-

bilities toward checkpoints and commuting shorter distances than non-Hispanics.

These empirical results suggest that the effects of the Border Patrol depend largely on the actual intensity of border enforcement. That is, the effects of the 100-mile cutoff on Hispanics may be marginal because there is no significant discontinuity in border enforcement at the 100-mile cutoff. In contrast, Border Patrol checkpoints can have substantial effects on commuting patterns among Hispanics around the checkpoints because immigration enforcement is in fact stronger at and around the checkpoints.

Of course, one should be cautious when interpreting the empirical results reported in this paper. For instance, focusing on within-county differences in the shares of Hispanics may miss important variations in sorting patterns among Hispanics around the 100-mile cutoff. That is, it is possible, for example, that San Antonio and Phoenix have grown into large cities that are magnets for Hispanics because they are located outside the Border Zone. Moreover, there may be factors other than checkpoints that are driving the commuting results in this paper. If such unobserved factors (correlated with the locations of checkpoints) significantly influence Hispanics' commuting patterns, extra caution is necessary when interpreting the estimated coefficients, especially with respect to their magnitudes.

Despite these limitations, this paper can serve as a stepping stone toward understanding the effects of border enforcement on local neighborhoods by documenting sorting and commuting patterns among Hispanics around the 100-mile cutoff and checkpoints. If the commuting effects on Hispanics shown in this paper can be attributed largely to border enforcement, policymakers might understand that the Border Patrol can have impacts not only on undocumented immigrants but also on the general Hispanic population. That is, border enforcement may have unintended consequences even on documented immigrants or citizens who want to avoid the "hassle" of confronting Border Patrol agents.

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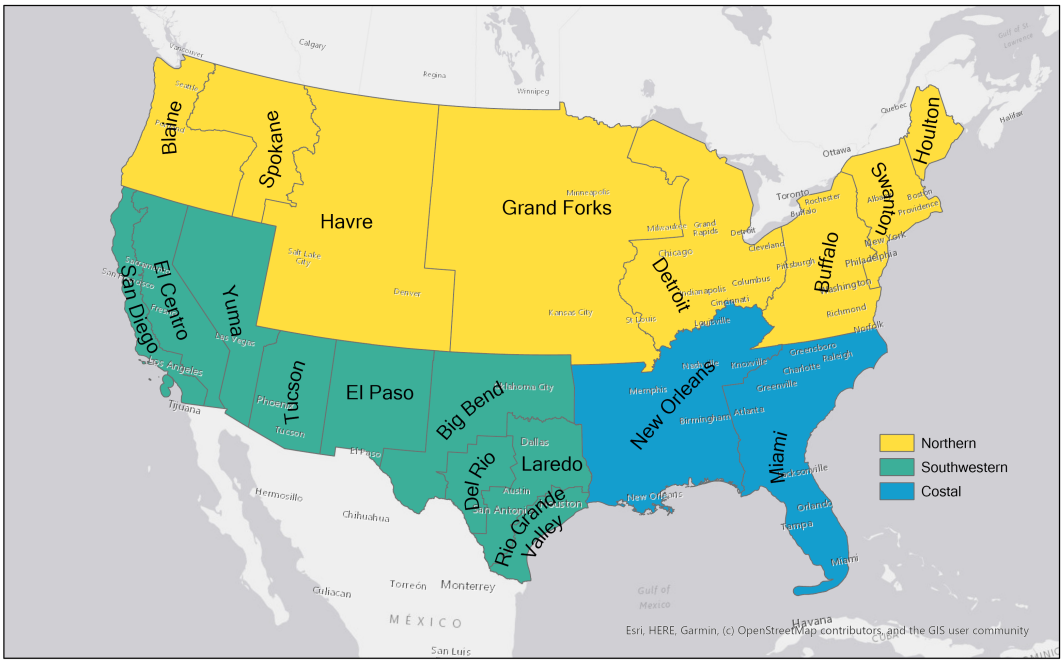
Figures and Tables

Figure 1: 100-Mile Border Zone

Notes: The shaded areas depict the 100-Mile Border Zone, which represent the areas that are within 100 miles of the external boundary of the United States.

Figure 2: Border Patrol Sectors



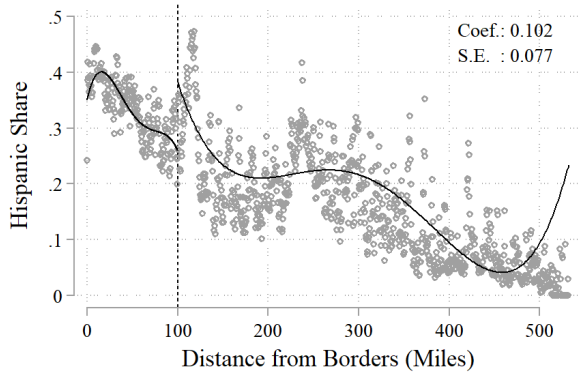
Notes: The map shows the Border Patrol sectors that are categorized into northern, southwest and coastal sectors.

Figure 3: Border Patrol Checkpoints

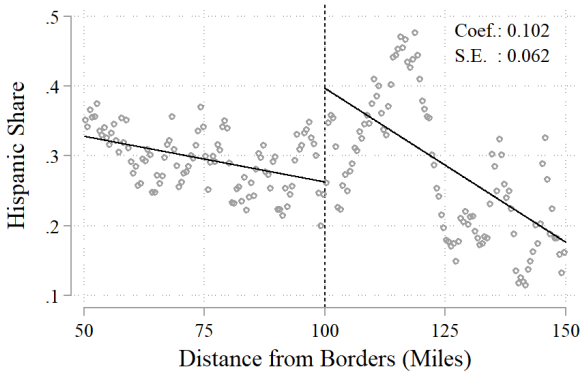
Notes: The red arrows are locations of identifiable checkpoints (from Google Earth) that are used in the analysis. Small circles (dark blue) around the checkpoints represent areas whose distance from the checkpoints are less than 2 miles (2-mile buffer). Large circles (light blue) represent the checkpoints are areas whose distance from the checkpoints are less than 20 miles (20-mile buffer). In the main analysis, I exclude two checkpoints that are right next to the border (distances between the checkpoints and the border are less than 1 mile).

Figure 4: Border Zone and Share of Hispanics (2010)

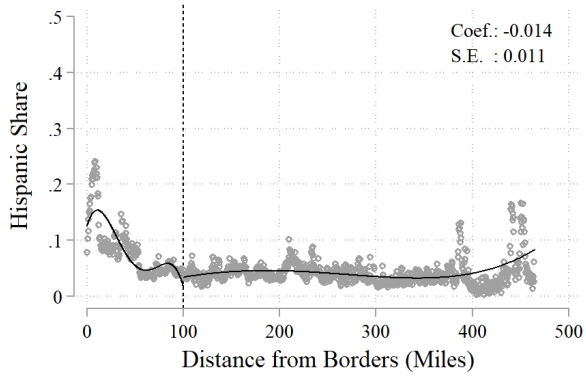
(a) Southwest: All Blocks



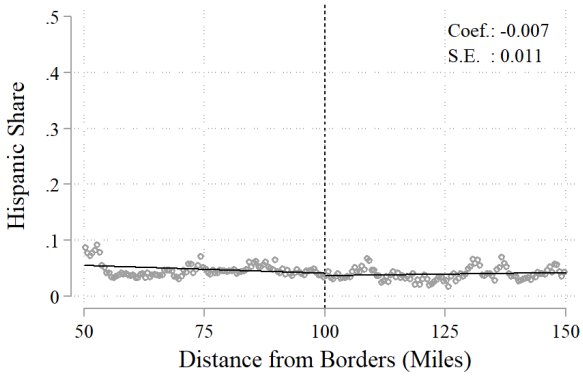
(b) Southwest: Blocks in 50-150 Miles



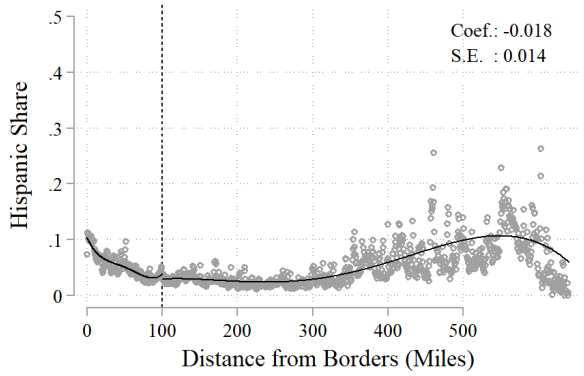
(c) Coastal: All Blocks



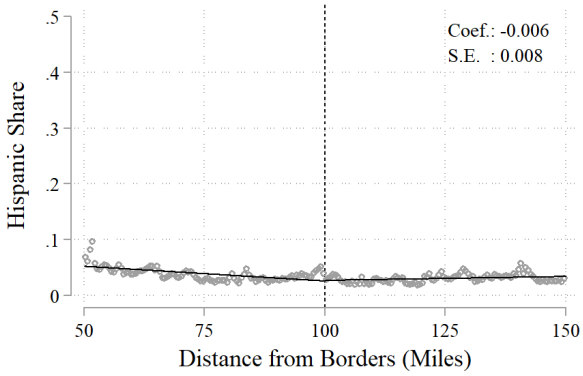
(d) Coastal: Blocks in 50-150 Miles



(e) Northhern: All Blocks

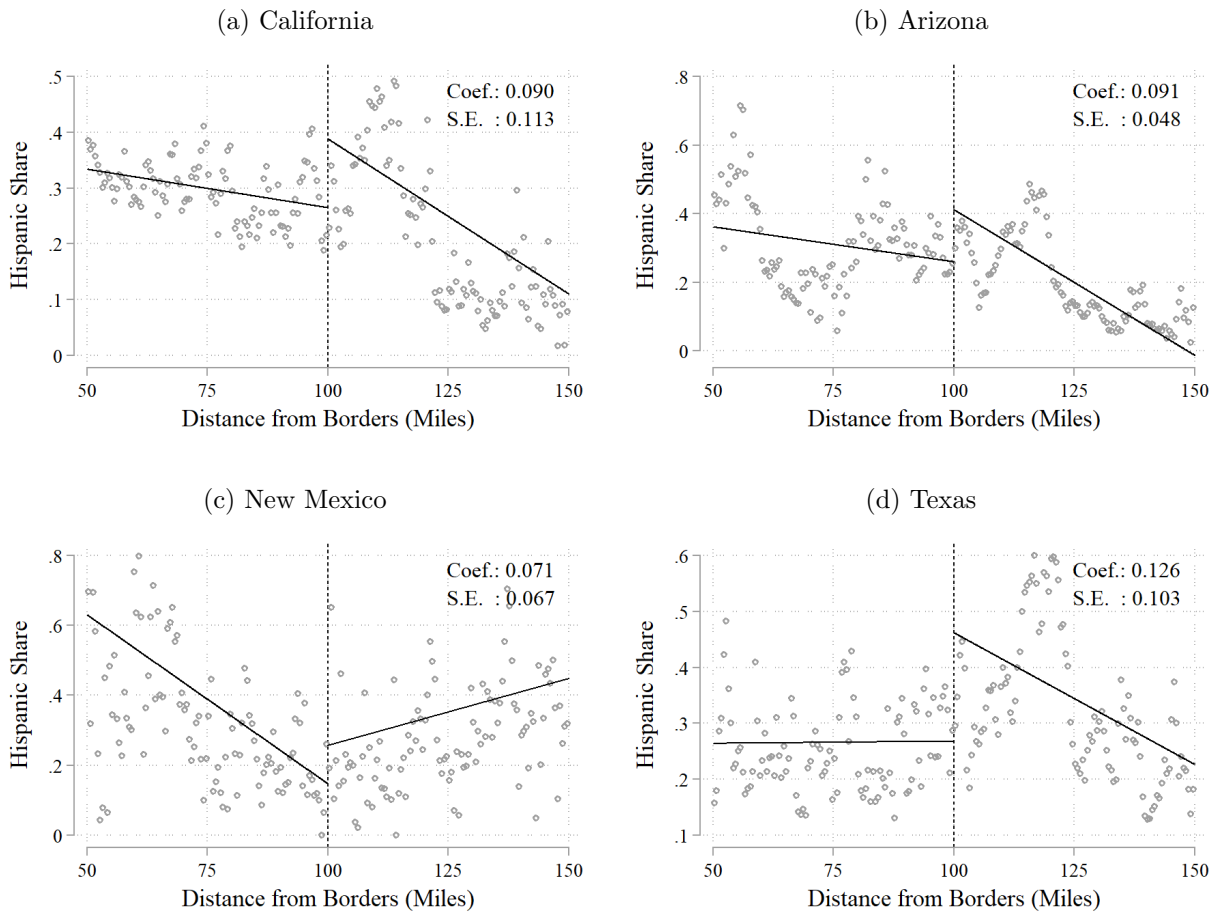


(f) Northern: Blocks in 50-150 Miles



Notes: The sample includes census-block-level Census data (2010) in southwest (Panels A and B), coastal (C and D), and northern Border Patrol Sectors (E and F), respectively. Each dot represents the average Hispanic share across census blocks within 0.5-mile bins. In Panels A, C and E ("global" version without sample restriction), I use a 4th-order polynomial control function. In Panels B, D and F ("local" version focusing on census blocks located 50 to 150 miles from the borders), I instead use a linear fit. For all figures, I report the estimated RD coefficients and their standard errors that are clustered by county.

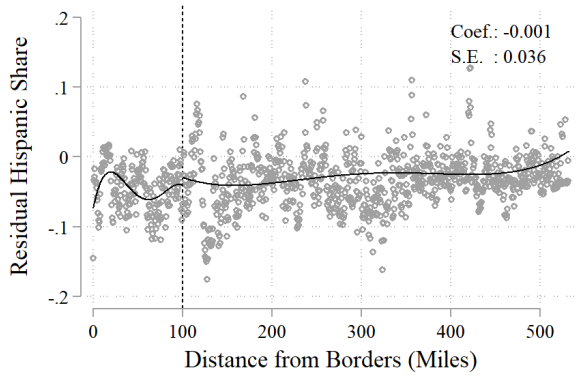
Figure 5: Share of Hispanics by State in Southwest Sectors



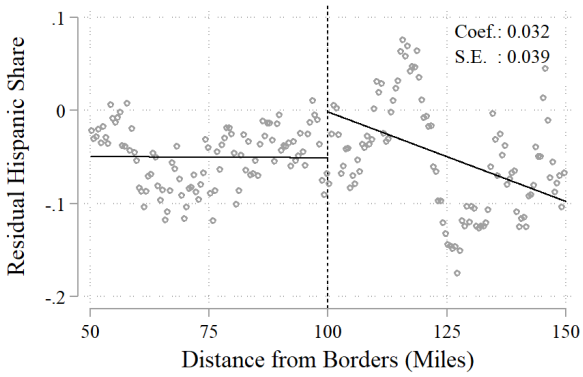
Notes: The sample includes census-block-level Census data (2010) in California, Arizona, New Mexico and Texas, respectively. In all figures, I use linear control functions. For all figures, I report the estimated RD coefficients and their standard errors, clustered by county.

Figure 6: Border Zone and Residual Share of Hispanics

(a) All Blocks



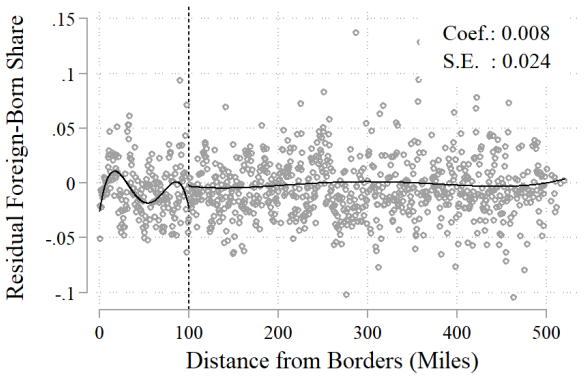
(b) Blocks in 50-150 Miles



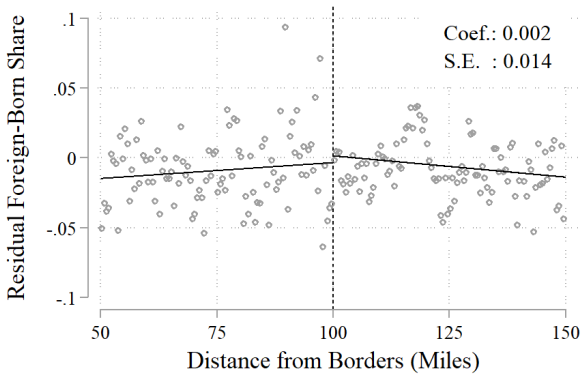
Notes: The sample includes census-block-level Census data (2010) in the southwest sectors. Each dot represents the average residual share of Hispanics across census blocks within 0.5-mile bins. Residual share of Hispanics is census-block-level Hispanic share minus the average county-level Hispanic share. In Panel A, (global version without sample restriction), I use a 4th-order polynomial control function. In Panel B (local version focusing on census blocks located 50 to 150 miles from the borders), I instead use a linear fit. For all figures, I report the estimated RD coefficients and their standard errors, clustered by county.

Figure 7: Border Zone and Residual Share of Immigrants (2014-2018)

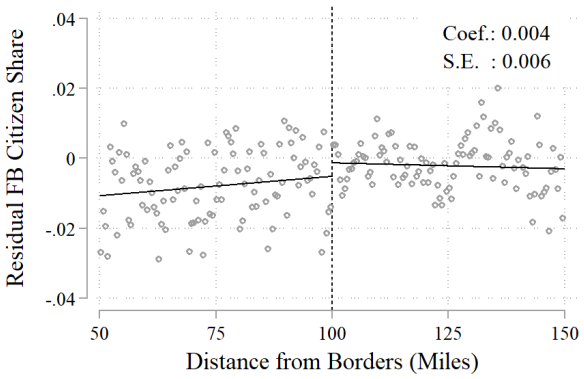
(a) Foreign Born: All Tracts



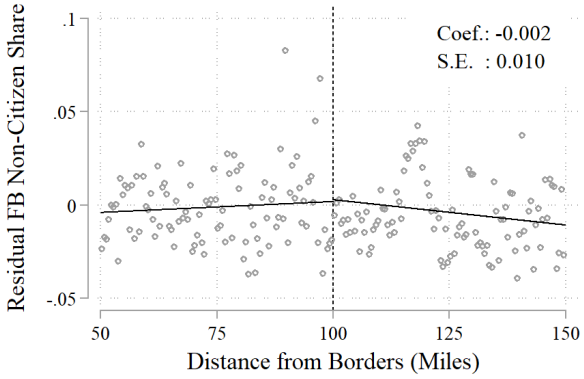
(b) Foreign Born: Tracts in 50-150 Miles



(c) Foreign Born Citizens: Tracts in 50-150 Miles

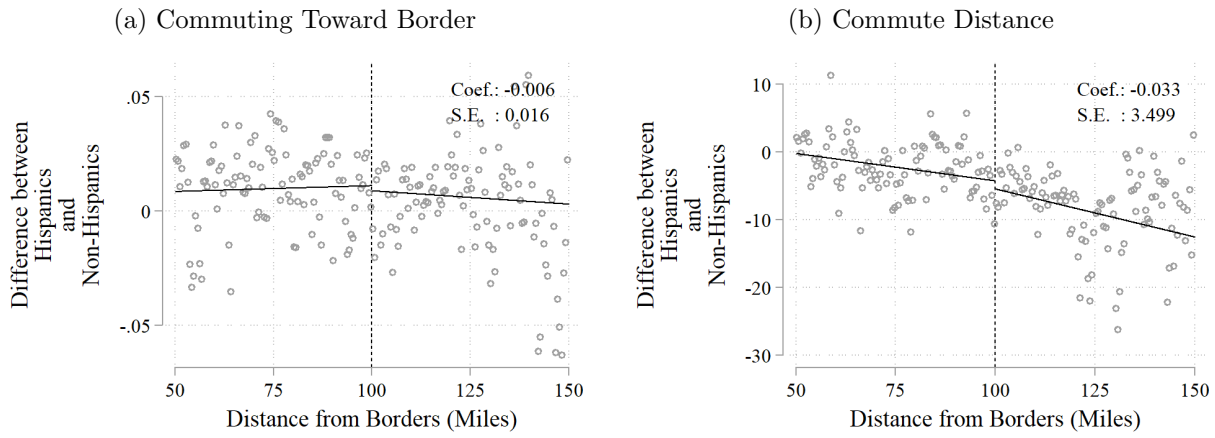


(d) Foreign Born Non-Citizens: Tracts in 50-150 Miles



Notes: The sample includes census-tract-level data in the southwest sectors, obtained from the 2014-2018 American Community Survey (5-year data). Each dot represents the average residual share of immigrants across census tracts within 0.5-mile bins. Residual share of immigrants is census-tract-level immigrant share minus the average county-level immigrant share. I plot the residual share of immigrants (Panels A and B), residual share of citizen immigrants (Panel C), and residual share of immigrants (Panel D). In Panel A (global version), I use a 4th-order polynomial fit to approximate the population conditional expectation functions. In Panels B, C, and D (local version), I instead use a linear fit. For all figures, I report the estimated RD coefficients and their standard errors, clustered by county.

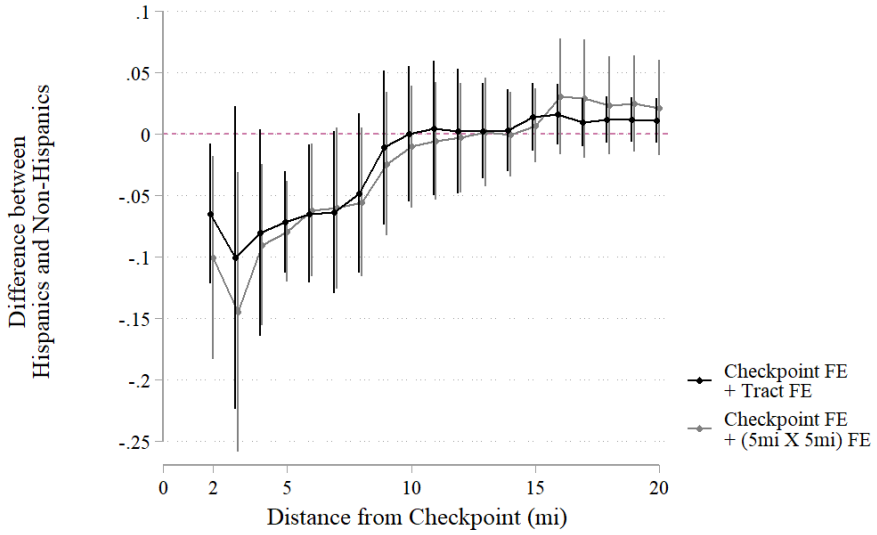
Figure 8: Border Zone and Difference between Commuting Patterns of Hispanics and Non-Hispanics



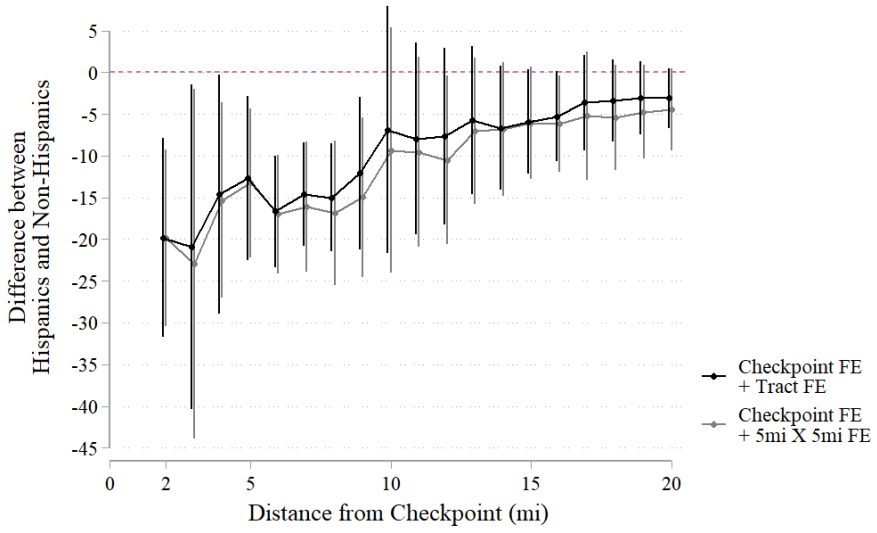
Notes: The sample includes census-block-level data in the southwest sectors, obtained from the 2010 LEHD Origin-Destination data. Each dot represents the average difference in commuting outcomes between Hispanics and non-Hispanics across census tracts within 0.5-mile bins. The commuting outcomes in Panels A and B are the share of workers commuting toward the border and the average commute distance (in miles), respectively. Refer to Section 3.2 for constructing these commuting variables. In all panels, I use linear control functions. I report the estimated RD coefficients and their standard errors, clustered by county.

Figure 9: Difference between Commuting Patterns of Hispanics and Non-Hispanics around Checkpoints

(a) Commuting toward Checkponints



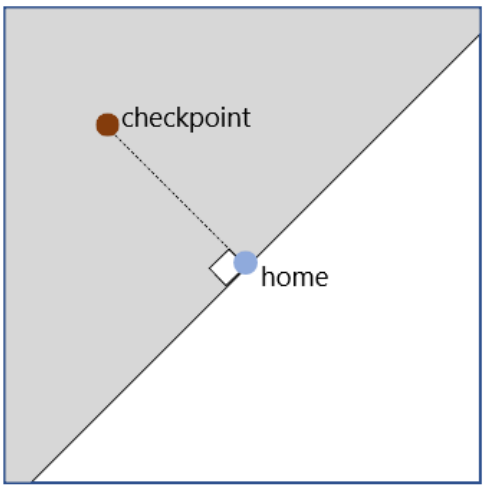
(b) Commute Distance



Notes: The sample includes census-block-level data in the Southwest Sectors, obtained from the 2010-2018 LEHD Origin-Destination data. Figure plots the estimated δ^m from equation 3, which represents the average difference in commuting outcomes between Hispanics and non-Hispanics in areas that are within m miles from checkpoints (m-mile buffer). The commuting outcomes in Panels A and B are the share of workers commuting toward checkpoints and the average commute distance (in miles), respectively. For all specifications, I include year fixed effects. Refer to Section 3 for more detailed information on the data and empirical strategy. Black dots represent the coefficients estimated from the specification that includes both checkpoint fixed effects and census tract fixed effects. Gray dots represent the coefficients estimated from the specification that includes checkpoint fixed effects and 5-mile-by-5-mile square zone fixed effects. For each coefficients, I plot the 95% confidence intervals from the standard errors that are clustered by checkpoint.

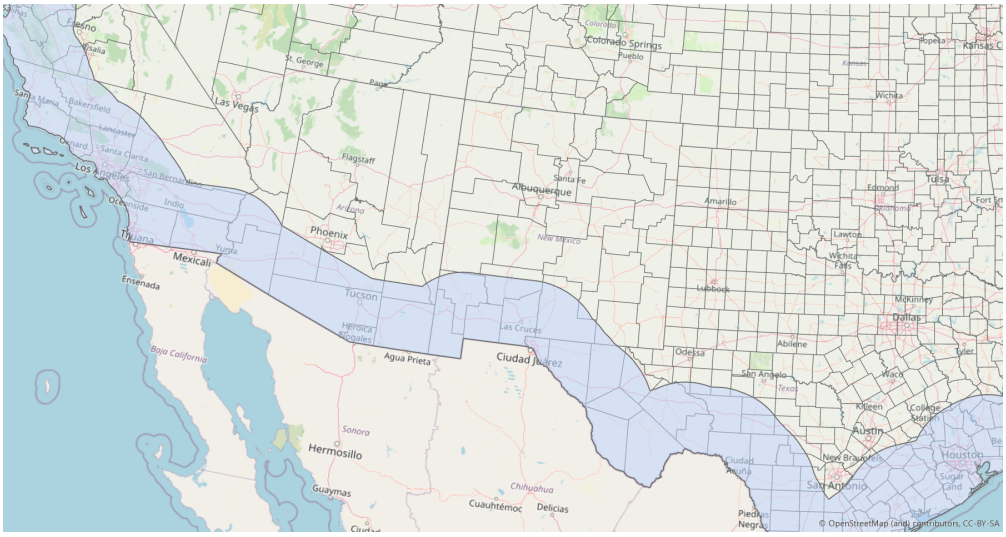
Appendix Figures and Tables

Figure A1: Probability of Commuting toward Checkpoints



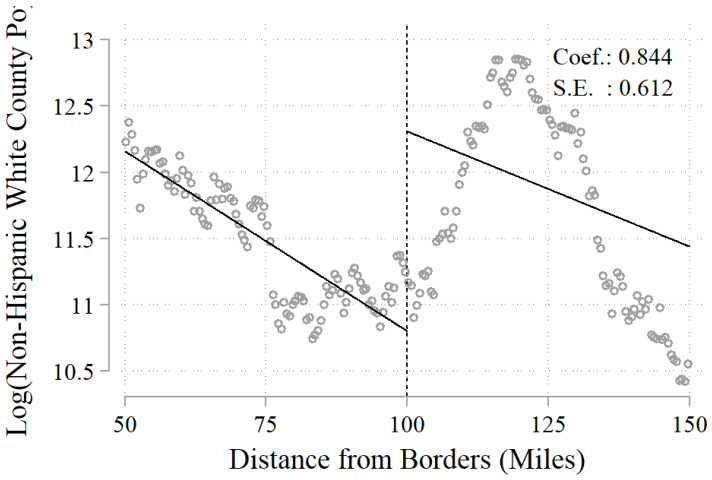
Notes: The probability of commuting toward checkpoint is defined as the number of jobs in the shaded area for a given home census block (blue circle) divided by the total number of jobs in the home census block.

Figure A2: 100-Mile Border Zone and County Borders



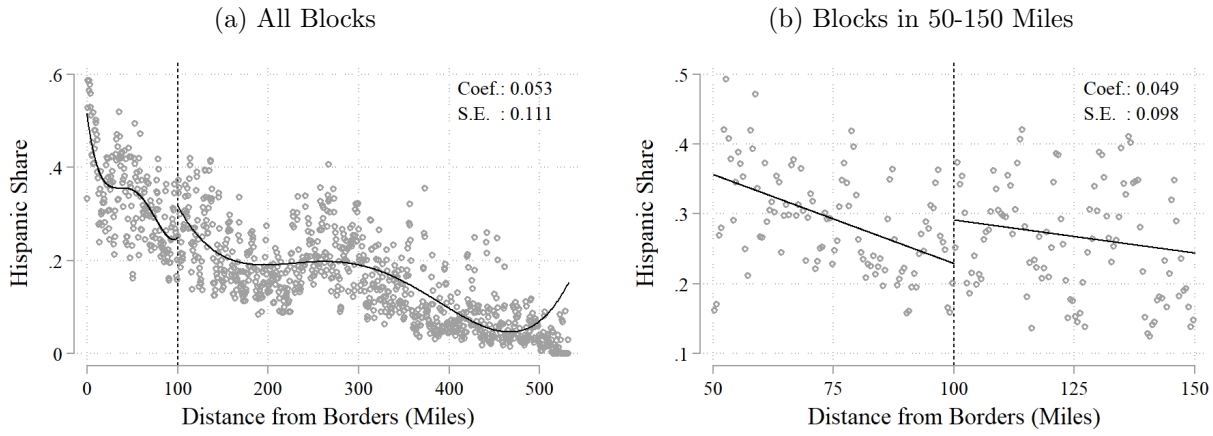
Notes: The shaded area represents the 100-Mile Border Zone.

Figure A3: Border Zone and County Population in Southwest Sectors



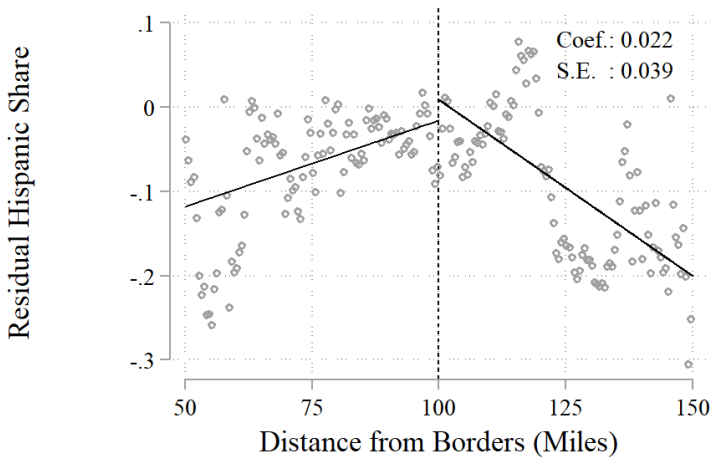
Notes: The sample includes census-block-level Census data (2010) in the southwest sectors. Each dot represents the log of non-Hispanic white county population within 0.5-mile bins.

Figure A4: Border Zone and Share of Hispanics in Southwest Sectors, Excluding Large Metros



Notes: The sample includes census-block-level Census data (2010) in the southwest sectors. Metropolitan areas with populations above 500 thousand people are excluded in the analysis. Each dot represents the average Hispanic share across census blocks within 0.5-mile bins. In Panels A, ("global" version without sample restriction), I use a 4th-order polynomial control function. In Panels B, ("local" version focusing on census blocks located 50 to 150 miles from the borders), I instead use a linear fit. For all figures, I report the estimated RD coefficients and their standard errors that are clustered by county.

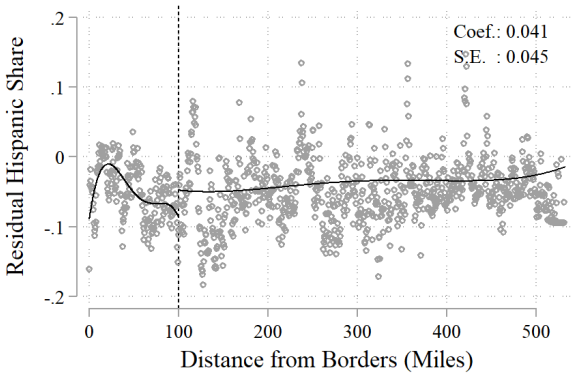
Figure A5: Border Zone and Residual Share of Hispanics in Border Counties



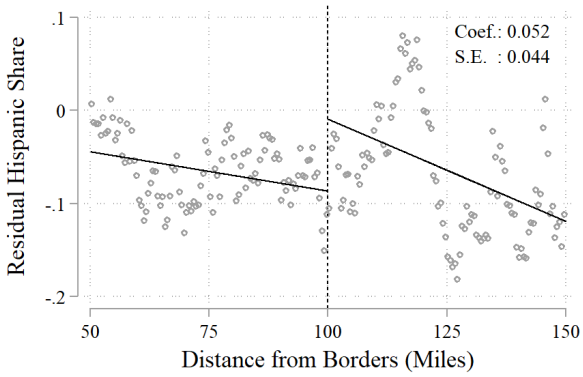
Notes: The sample includes census-block-level Census data (2010) in the southwest sectors. I restrict my sample to counties that span across the Border Zone (with census blocks on both sides). Each dot represents the average residual share of Hispanics across census blocks within 0.5-mile bins. Residual share of Hispanics is census-block-level Hispanic share minus the average county-level Hispanic share. I report the estimated RD coefficients and their standard errors, clustered by county.

Figure A6: Border Zone and Residual Share of Hispanics, Commuting Zone

(a) All Blocks



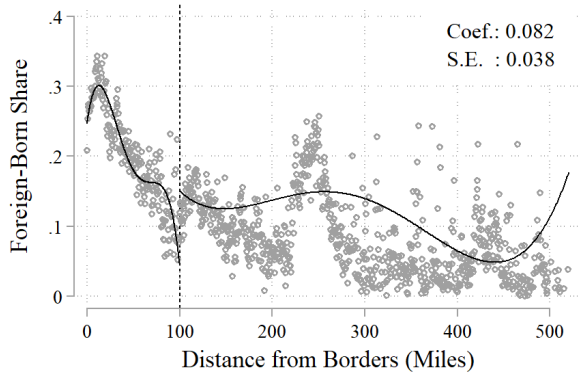
(b) Blocks in 50-150 Miles



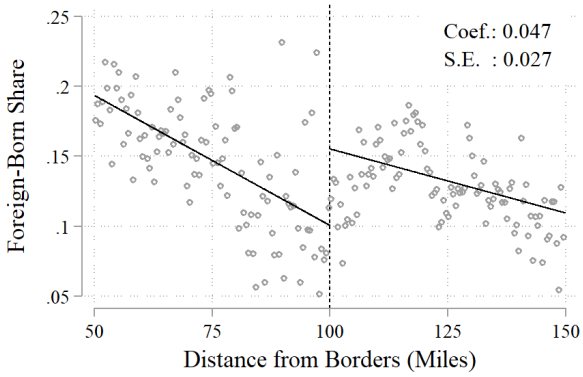
Notes: The sample includes census-block-level Census data (2010) in the southwest sectors. Each dot represents the average residual share of Hispanics across census blocks within 0.5-mile bins. Here, the residual share of Hispanics is census-block-level Hispanic share minus the average commuting-zone-level Hispanic share. In Panel A, (global version without sample restriction), I use a 4th-order polynomial control function. In Panel B (local version focusing on census blocks located 50 to 150 miles from the borders), I instead use a linear fit. For all figures, I report the estimated RD coefficients and their standard errors, clustered by county.

Figure A7: Border Zone and Share of Foreign Born in the Southwest Sectors (2014-2018)

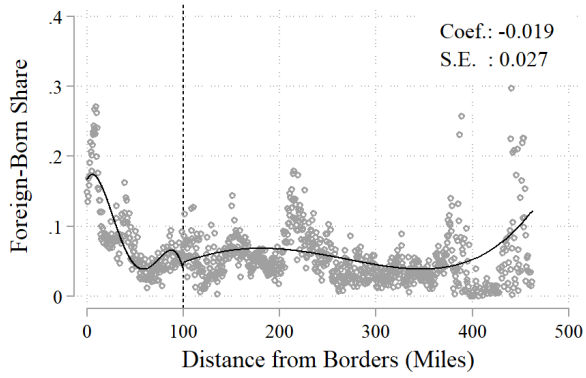
(a) Southwest: All



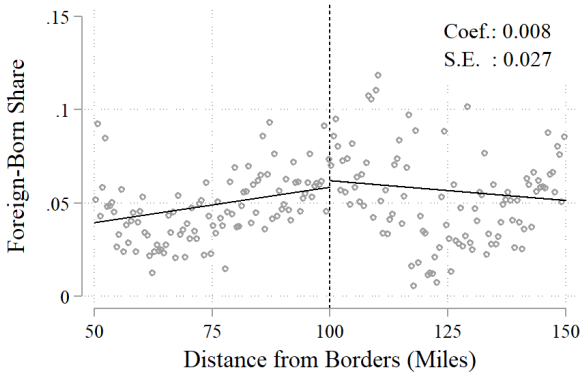
(b) Southwest: 50-150 Miles



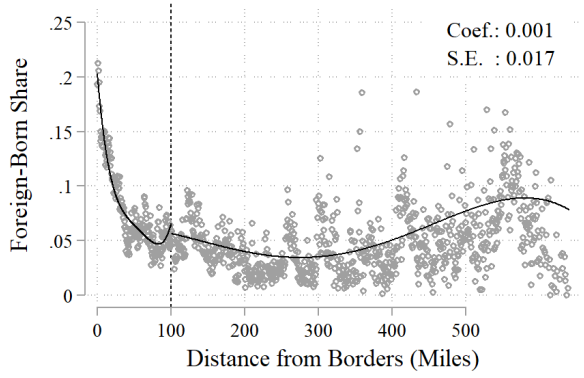
(c) Coatal: All



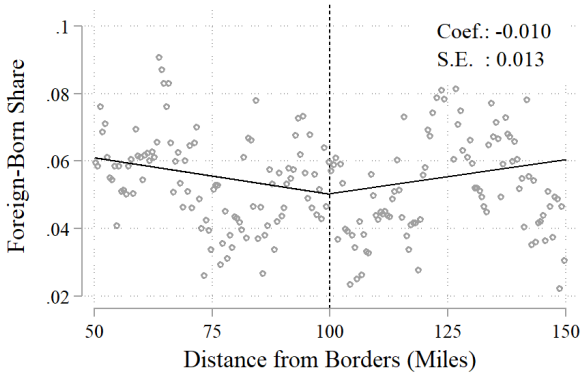
(d) Coastal: 50-150 Miles



(e) Northern: All



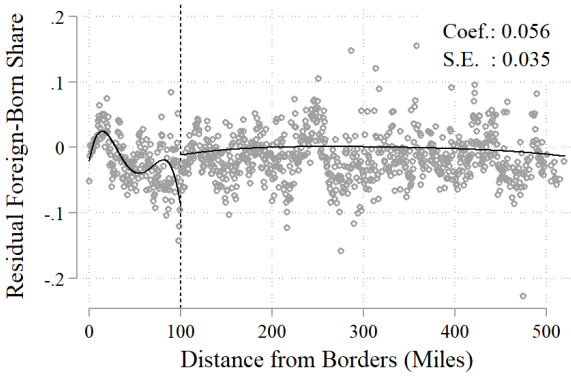
(f) Northern: 50-150 Miles



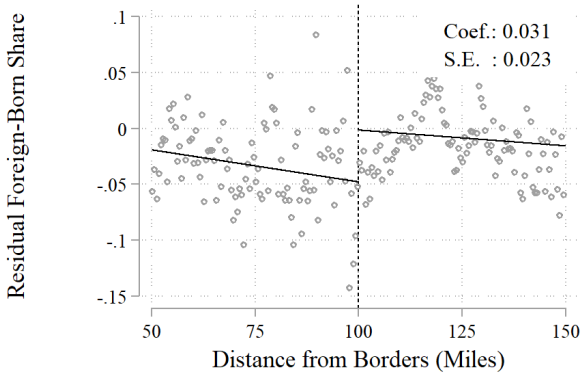
Notes: The sample includes census-tract-level data (2010), obtained from the 2014-2018 American Community Survey (5-year data), in southwest (Panels A and B), coastal (C and D), and northern Border Patrol Sectors (E and F), respectively. Each dot represents the average immigrant share across census tracts within 0.5-mile bins. In Panels A, C and E ("global" version without sample restriction), I use a 4th-order polynomial control function. In Panels B, D and F ("local" version focusing on census blocks located 50 to 150 miles from the borders), I instead use a linear fit. For all figures, I report the estimated RD coefficients and their standard errors that are clustered by county.

Figure A8: Border Zone and Residual Share of Immigrants: Commuting Zone

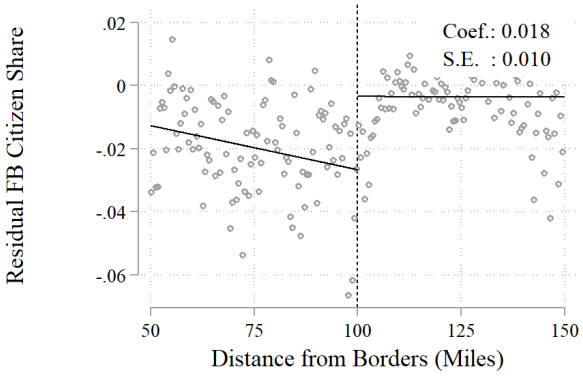
(a) Foreign Born: All Tracts



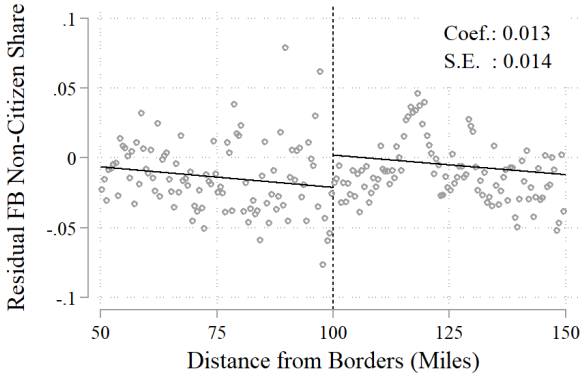
(b) Foreign Born: Tracts in 50-150 Miles



(c) Foreign Born, Citizen



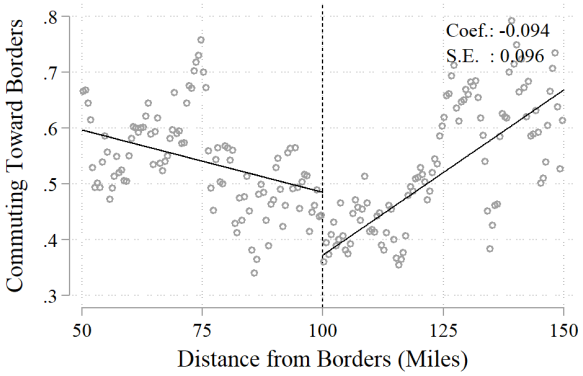
(d) Foreign Born, Non-Citizen



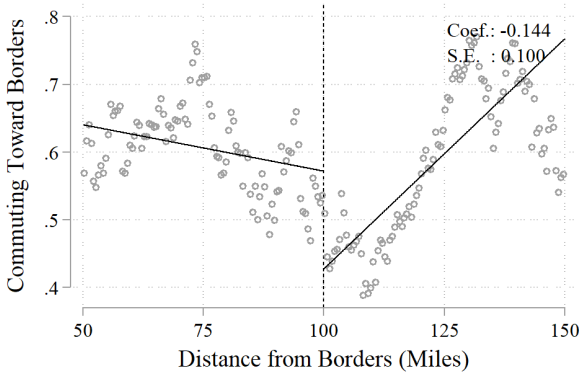
Notes: The sample includes census-tract-level data in the southwest sectors, obtained from the 2014-2018 American Community Survey (5-year data). Each dot represents the average residual share of immigrants across census tracts within 0.5-mile bins. Here, residual share of immigrants is census-tract-level immigrant share minus the average commuting-zone-level immigrant share. I plot the residual share of immigrants (Panels A and B), residual share of citizen immigrants (Panel C), and residual share of immigrants (Panel D). In Panel A (global version), I use a 4th-order polynomial fit to approximate the population conditional expectation functions. In Panels B, C, and D (local version), I instead use a linear fit. For all figures, I report the estimated RD coefficients and their standard errors, clustered by county.

Figure A9: Border Zone and Commuting Patterns

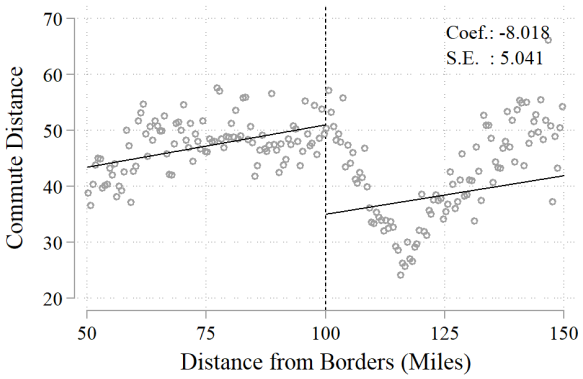
(a) Commuting To Borders: Hispanic Blocks



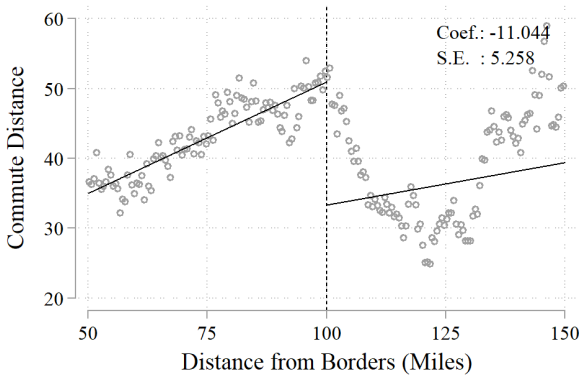
(b) Commuting To Borders: Non-Hispanic Blocks



(c) Commute Distance: Hispanic Blocks

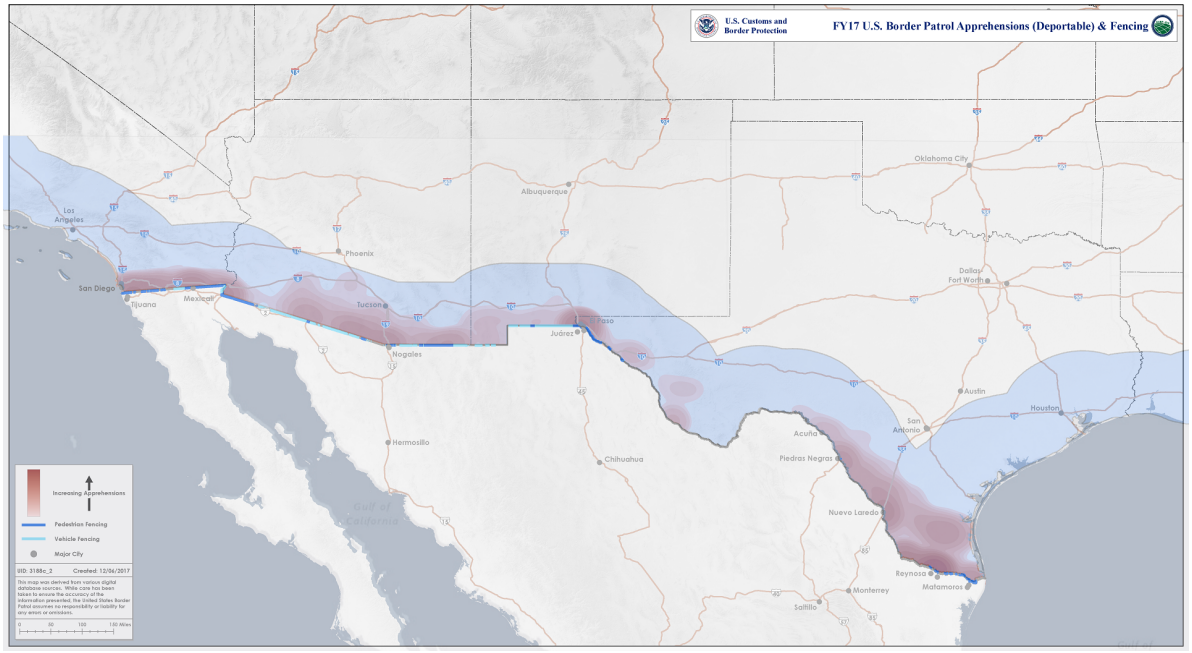


(d) Commute Distance: Non-Hispanic Blocks



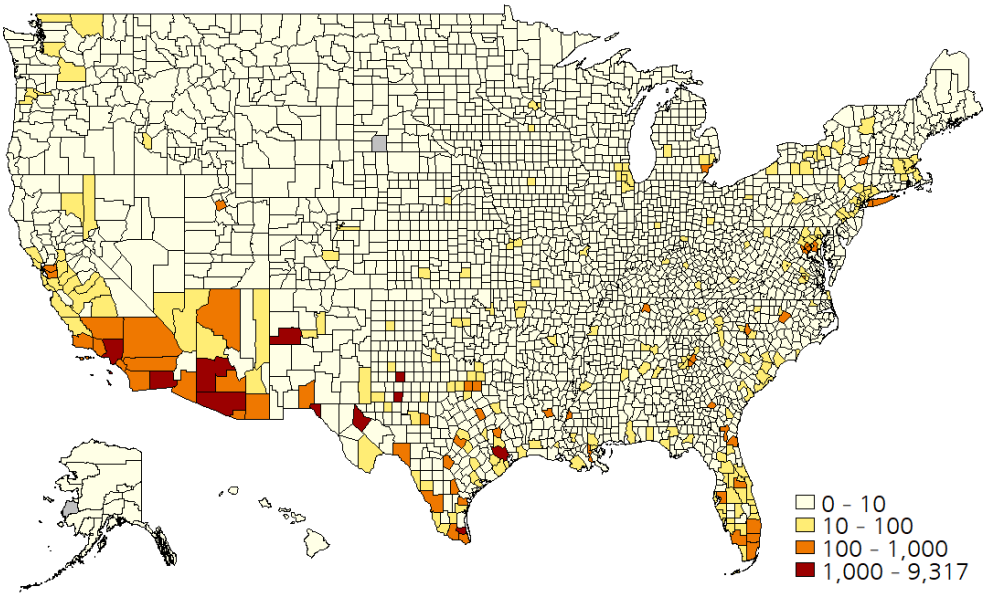
Notes: The sample includes census-block-level data in the southwest sectors, obtained from the 2010 LEHD Origin-Destination data. Each dot represents the average commuting outcomes across census Hispanic-majority blocks (Panels A and C) and non-Hispanic-majority census blocks (Panels B and D) within 0.5-mile bins. The commuting outcomes in Panels A and B are the share of workers commuting toward the border. The outcome variables in Panels C and D are the average commute distance. Refer to Section 3.2 for constructing these commuting variables. In all panels, I use linear control functions. I report the estimated RD coefficients and their standard errors, clustered by county.

Figure A10: Border Patrol Apprehension Heatmap



Notes: Map downloaded from the CBP. I added the 100-Mile Border Zone in the map (blue shaded areas).

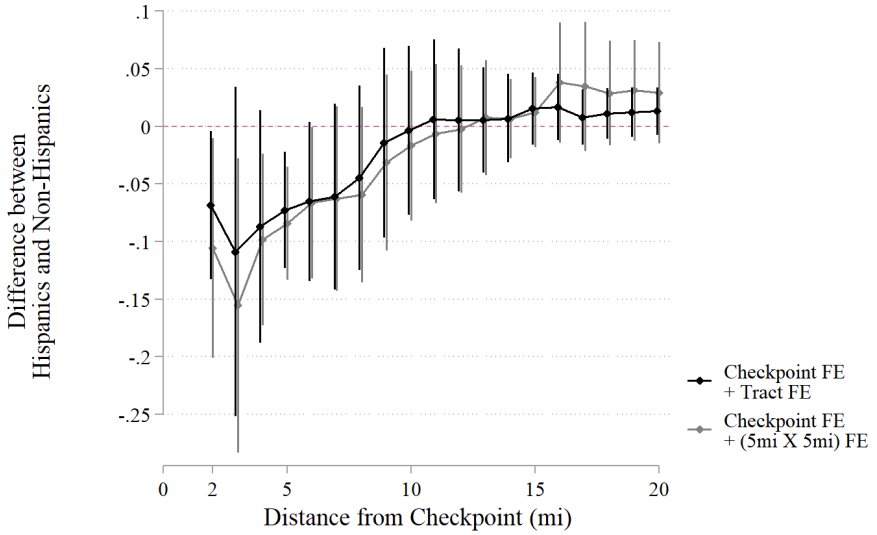
Figure A11: Removals under the Secure Communities Program, Apprehended by Border Patrols



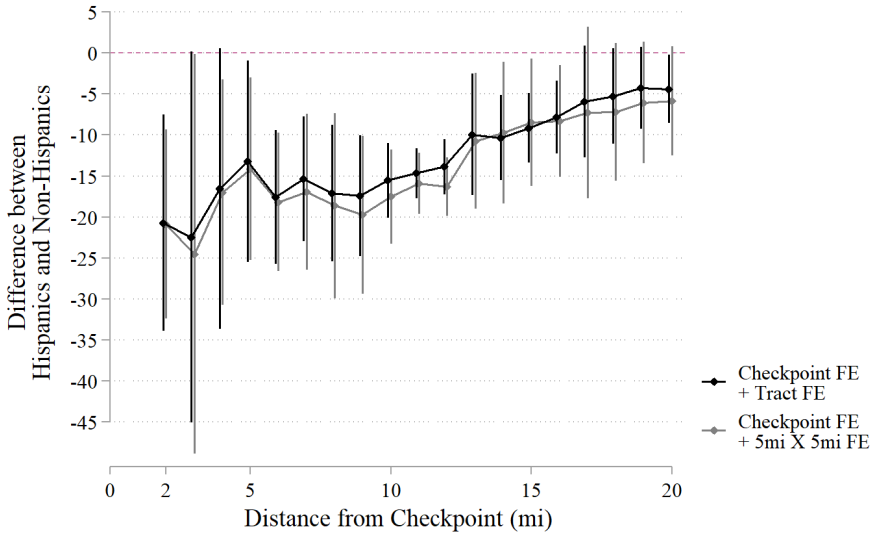
Notes: The map shows the number of individuals who were apprehended by the Border Patrol and removed under Secure Communities between 2009 and 2016 for each county. Starting from 2016, information about apprehending agencies (indicating whether deported immigrants are arrested by the Border Patrol or another agency) is withheld by ICE.

Figure A12: Difference between Commuting Patterns of Hispanics and Non-Hispanics, Excluding Rural Checkpoints

(a) Commuting toward Checkpoints



(b) Commute Distance



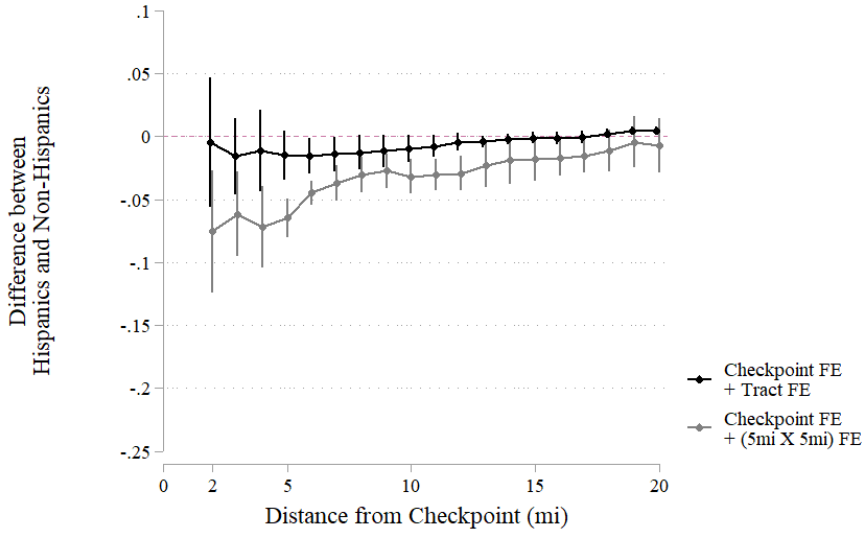
Notes: The sample includes census-block-level data in the Southwest Sectors, obtained from the 2010-2018 LEHD Origin-Destination data. I exclude 20 rural checkpoints where, on average, there are fewer than 100 workers inside the 5-mile buffer (between 2010 and 2018). Figure plots the estimated δ^m from equation 3, which represents the average difference in commuting outcomes between Hispanics and non-Hispanics in areas that are within m miles from checkpoints (m-mile buffer). The commuting outcomes in Panels A and B are the share of workers commuting toward checkpoints and the average commute distance (in miles), respectively. For all specifications, I include year fixed effects. Refer to Section 3 for more detailed information on the data and empirical strategy. Black dots represent the coefficients estimated from the specification that includes both checkpoint fixed effects and census tract fixed effects. Gray dots represent the coefficients estimated from the specification that includes checkpoint fixed effects and 5-mile-by-5-mile square zone fixed effects. For each coefficients, I plot the 95% confidence intervals from the standard errors that are clustered by checkpoint.

Figure A13: Rest Areas and Border Patrol Checkpoints

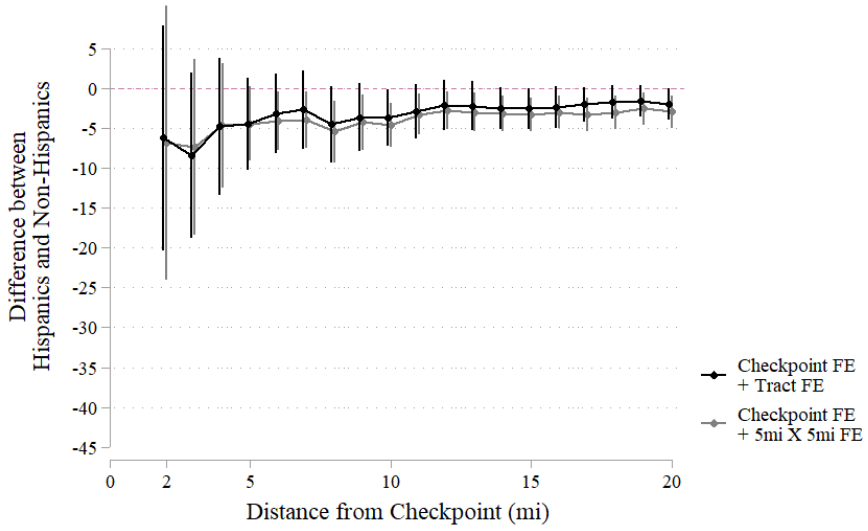
Notes: The arrows are location of identifiable checkpoints (from Google Earth) that are used in the analysis. Blue circles represent rest areas that are located within 100 miles of the U.S.-Mexico border. Data downloaded from http://www.poi-factory.com/node/6643.

Figure A14: Difference between Commuting Patterns of Hispanics and Non-Hispanics around Rest Areas

(a) Commuting toward Checkponints



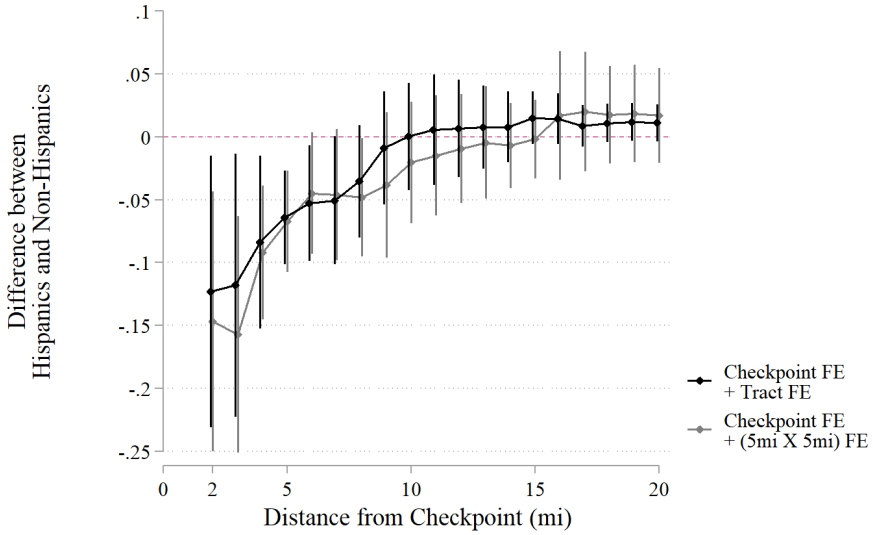
(b) Commute Distance



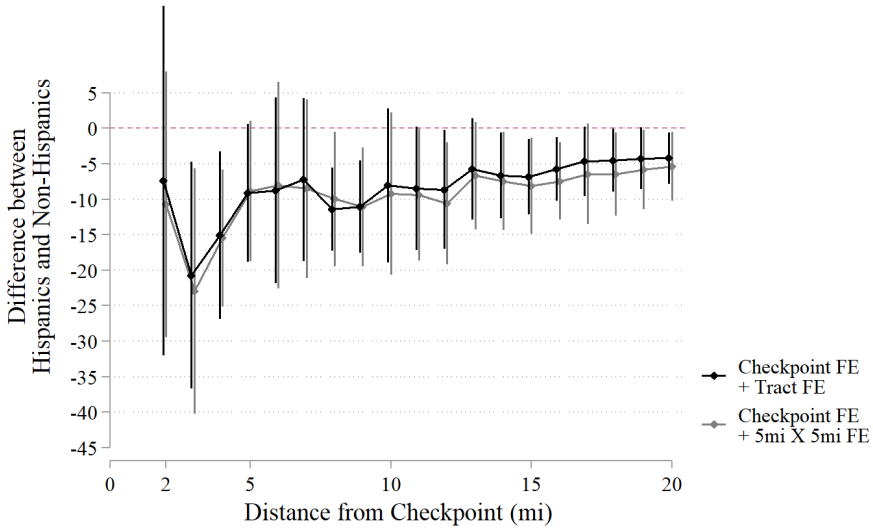
Notes: The sample includes census-block-level data in the Southwest Sectors, obtained from the 2010-2018 LEHD Origin-Destination data. Figure plots the estimated δ^m from equation 3, which represents the average difference in commuting outcomes between Hispanics and non-Hispanics in areas that are within m miles from rest areas (m-mile buffer). The commuting outcomes in Panels A and B are the share of workers commuting toward checkpoints and the average commute distance (in miles), respectively. For all specifications, I include year fixed effects. Refer to Section 3 for more detailed information on the data and empirical strategy. Black dots represent the coefficients estimated from the specification that includes both rest-area fixed effects and census tract fixed effects. Gray dots represent the coefficients estimated from the specification that includes rest-area fixed effects and 5-mile-by-5-mile square zone fixed effects. For each coefficients, I plot the 95% confidence intervals from the standard errors that are clustered by rest area.

Figure A15: Difference between Commuting Patterns of Hispanics and Non-Hispanics, Including Checkpoints Located Near Borders

(a) Commuting toward Checkponints



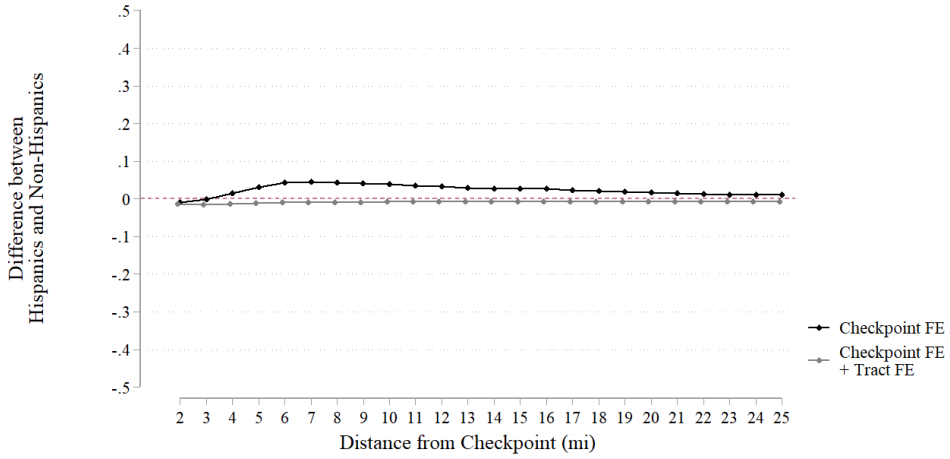
(b) Commute Distance



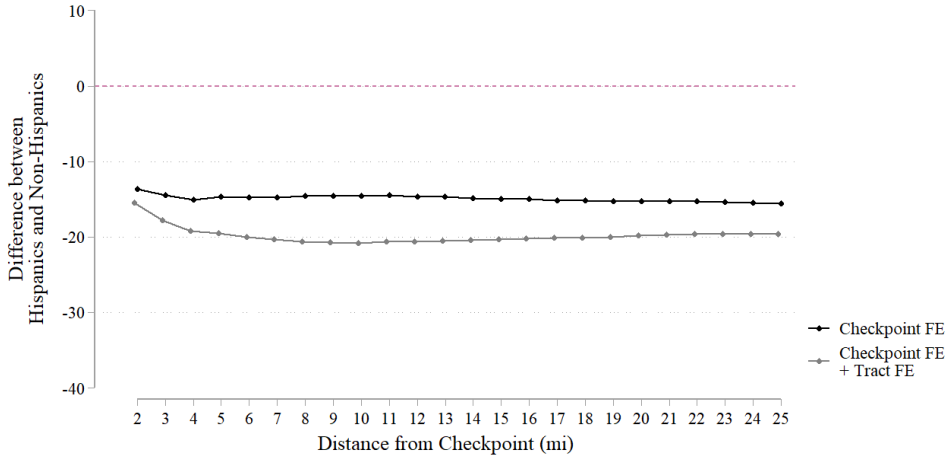
Notes: The sample includes census-block-level data in the Southwest Sectors, obtained from the 2010-2018 LEHD Origin-Destination data. I additionally include two Border Patrol checkpoints located immediately adjacent to external boundaries of the United States. Figure plots the estimated δ^m from equation 3, which represents the average difference in commuting outcomes between Hispanics and non-Hispanics in areas that are within m miles from checkpoints (m-mile buffer). The commuting outcomes in Panels A and B are the share of workers commuting toward checkpoints and the average commute distance (in miles), respectively. For all specifications, I include year fixed effects. Refer to Section 3 for more detailed information on the data and empirical strategy. Black dots represent the coefficients estimated from the specification that includes both checkpoint fixed effects and census tract fixed effects. Gray dots represent the coefficients estimated from the specification that includes checkpoint fixed effects and 5-mile-by-5-mile square zone fixed effects. For each coefficients, I plot the 95% confidence intervals from the standard errors that are clustered by checkpoint.

Figure A16: Difference between Commuting Patterns of Hispanics and Non-Hispanics, Randomly Chosen Checkpoint Locations

(a) Commuting toward Checkponints



(b) Commute Distance



Notes: The sample includes census-block-level data in the Southwest Sectors, obtained from the 2010 LEHD Origin-Destination data. I choose 43 census blocks randomly in the 100-Mile Border Zone in southwestern states and run the same analysis using equation 3. I repeat this exercise 500 times, and the means of the 500 coefficients for each buffer size, m. are reported in the figure.

Table A1: Border Patrol Agent Staffing and Apprehensions

Border Sector	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Panel A: Agent Staffing						
Southwest	18,156	17,522	17,026	16,605	16,608	16,731
Coastal	215	212	211	212	248	255
Northern	2,093	2,051	2,059	2,048	2,097	2,073
Total	20,863	20,273	19,828	19,437	19,555	19,648
Panel B: Apprehension						
Southwest	479,371	331,333	408,870	303,916	396,579	851,508
Coastal	3,942	3,158	4,663	3,588	3,247	3,585
Northern	3,338	2,626	2,283	3,027	4,316	4,408
Total	486,651	337,117	415,816	310,531	404,142	859,501

Notes: Data from https://www.cbp.gov/newsroom/media-resources/stats.