

## *Supplementary Material*

# More Turnover, Less Turnout? Domestic Migration and Political Participation Across Communities

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## Appendix A

### Description of Variables

#### Turnout Rates (0-100%)

Electoral data were obtained from the publicly available website of the Superior Electoral Court (TSE). From this source, we calculated registered voter (RV) turnout rates by dividing the total number of votes cast in each round of local and national elections from 2000 to 2010 by the total number of registered voters in each municipality, as reported by the TSE, and multiplying by 100.<sup>1</sup>

In particular, election data are available for the following years: 2000, 2002, 2004, 2006, 2008, and 2010. Of these, 2000, 2004, and 2008 correspond to local elections, while 2002, 2006, and 2010 correspond to national elections.

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<sup>1</sup>In instances where the number of voters in a given election exceeded the number of registered voters, we capped the turnout rate at 100%. Notably, this adjustment was required in only three municipalities, and our results remain unchanged if we use the unadjusted turnout rates.

## **In-migration, out-migration, net migration, and migration turnover: stock and flow shares**

Our migration flow measures are obtained from the Brazilian Population Census Survey of 2010, and are available annually from 2001 to 2010. Using microdata and retrospective migration questions—which ask individuals their duration of residence in the current municipality along with their municipality of origin—we construct an annual panel tracking migration between municipalities. Migration flow shares are calculated as the number of migrants who enter or leave a municipality in a given year as a fraction of the local population.

To construct our stock measures of migration turnover, in-migration, out-migration, and net migration, we use data from the demographic censuses conducted in 2000 and 2010. The census asks all household members where they lived five years ago, defining migrants as those who did not reside in the current municipality five years earlier. The key explanatory variable is the total number of out-migrants (in-migrants) who left (joined) the municipality between year  $t - 5$  and  $t$ , expressed as a share of the local population. Compared to the annual flow measures, using lagged migration stocks ( $t - 5$  to  $t$ ) reduces potential reverse causality between migration and voter turnout.

The measure of *net migration* (flows or stocks) shares reflects the difference between the population shares of migrants arriving and those leaving the municipality. The measure of *migration turnover* shares, on the other hand, is defined as the sum of these two values. For better interpretability, we standardize all migration variables with a mean of zero and a standard deviation of one.

## **Social Cohesion**

We capture various dimensions of local social cohesion in an index using a number of objective and subjective indicators (for details on the data construction, see Kustov and Pardelli, 2024). Most importantly, we create municipal-level estimates of generalized social trust, institutional trust, civic participation, and feelings of national belonging by aggregating all

available relevant survey data (Latinobarometer, LAPOP, ESEB) and improving the resultant estimates with the MRP technique. To obtain an objective measure of civic participation, we include IPEA data on the number of civil society organizations per capita (log) across municipalities. We also include one major outcome that is commonly viewed as a direct manifestation of social cohesion (or its absence), namely, homicide rates. To minimize measurement error, all of these measures are averaged across the 2000-2020 period. Collectively, these variables are intended to reflect the “social fabric” of communities. Therefore, we aggregate them in a single indicator, which we use in our main specifications (see Table A13).

### **Control Variables**

Our contemporary covariates incorporate a set of municipal characteristics that can influence the turnout and migration shares in municipalities. We control for the following variables: total population (log), population with higher education (log), population over 16 years (log), voting-age population (ages 18 to 70) (log), registered voters (log), poverty rate, per capita average income, municipal area, urban population (log), and income inequality. We also include a set of geographic covariates such as latitude, longitude, distance from the coast, and distance from the capital. When necessary, we use linear interpolation to align the control variables with electoral outcomes. Following the literature, all regressions are weighted by population Dix-Carneiro et al. (2018); Egger (2022).

## Appendix B

### 1 How Migration Can Impact Non-Migrant Turnout: Mechanisms

Migration has been shown to affect voter turnout in both destination and origin communities through various direct and indirect mechanisms, such as increased transaction and social costs. In this section, we focus specifically on the indirect social costs that migration imposes on non-migrants. We categorize these mechanisms into two main groups: migration-induced (1) changes in local social cohesion, and (2) changes in local perceptions of descriptive social norms regarding political participation.

First, migration can affect local social cohesion, often described as “the glue that holds societies together.”<sup>2</sup> Strong and cohesive social networks play a crucial role in disseminating information, mobilizing voters, and applying peer pressure to encourage political participation. Therefore, when migration disrupts this “glue”—through decreases in interpersonal trust, for instance—it can undermine socialization processes and diminish a community’s capacity to enforce civic norms and apply social sanctions, thereby lowering individual incentives to participate (Knack, 1992; Gerber et al., 2008).

Additionally, migration can affect non-migrants’ perceptions of social norms around political participation. Research has shown that people tend to align their behavior with what they believe others do in similar situations. These “descriptive” social norms can significantly shape a wide range of behaviors (Cialdini and Goldstein, 2004; Goldstein and Cialdini, 2011). In the context of migration, when residents observe that those leaving or entering their com-

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<sup>2</sup>Although approaches to operationalizing social cohesion vary, recent research has embraced a conceptualization rooted in “organic” solidarity, where prosociality extends beyond close-knit networks (Portes and Vickstrom, 2011; Baldassarri and Abascal, 2020). This perspective views social cohesion as a multifaceted concept encompassing three fundamental aspects that define the quality of social cooperation within a collective: resilient social relations, positive emotional connectedness, and an orientation toward the common good (Dragolov et al., 2016; Schiefer and van der Noll, 2017; Kustov and Pardelli, 2024).

munity are disengaged from civic duties, they may lower their expectations about overall levels of political engagement. This in turn reduces their motivation to participate (Gerber and Rogers, 2009).

These two mechanisms—changes in social cohesion and descriptive social norms regarding participation—can operate simultaneously or independently but typically push voter turnout downward. While positive effects are possible, they are typically contingent on the specific characteristics of both migrants and the community and often take time to manifest. Conversely, the negative impacts of migration on expected levels of participation are immediate and pervasive. In the sections below, we draw on the existing literature on international migration to explore how these mechanisms may operate in the context of both out-migration and in-migration.

## **Out-migration and Social Cohesion**

The idea that increased migration can weaken a community’s social cohesion is rooted in social disorganization theory. This theory argues that residential mobility, along with factors like disadvantage and diversity, undermines a community’s ability to regulate its members’ behavior (Shaw and McKay, 1942). Originally developed to explain variations in crime rates—often viewed as indicators of weakened social cohesion—the theory suggests that mobility disrupts communication among residents and hinders the development of social ties that provide informal control mechanisms. This makes it harder for communities to monitor behavior effectively, leading to diminished cohesion and the emergence of norms that encourage non-compliance. In other words, social ties play a key role in enforcing norms and fostering accountability (Panagopoulos, 2011), so when out-migration erodes these ties, a community’s ability to encourage participation declines. Empirical evidence supports this, as migration flows have been found to damage trust in origin communities (Jo, 2019). In contrast, communities with more long-term residents are typically better at building and maintaining social cohesion (Rupasingha et al., 2006).

## **Out-migration and Descriptive Social Norms**

Out-migration can also reduce voter turnout by altering the descriptive social norms related to political participation. When residents leave—regardless of their roles within the local network—it signals to those who remain that turnout in the upcoming election may be lower, thereby shifting expectations and influencing behavior. In communities experiencing high out-migration, residents may expect lower turnout because many migrants, though still registered, are unlikely to vote. This perception can further depress turnout, as people are less motivated to vote when they anticipate others will abstain (see, e.g., Blais and Hortala-Vallve, 2021).

Research confirms that beliefs about descriptive norms are strong predictors of behavior (Nolan et al., 2008), and that effectively communicating these norms increases compliance (Cialdini and Goldstein, 2004; Goldstein and Cialdini, 2011). As Gerber and Rogers (2009) note, “a citizen’s expectation of turnout has a causal impact on her likelihood of voting.” In essence, emphasizing descriptive norms—whether positive or negative—significantly increases the likelihood that individuals will behave consistently with them. This also aligns with Fowler’s 2005 “turnout cascades” model, which demonstrates how even a small conditional correlation between acquaintances can initiate chain reactions that result in significant aggregate changes in turnout. His findings suggest that one person’s decision to vote can influence four others in their network and, as connections expand, this influence grows exponentially.

## **In-migration and Social Cohesion**

In-migration introduces new individuals into the community, which tends to elevate social uncertainty and diminish trust among members. For example, Abascal and Baldassarri (2015) found a strong negative relationship between residential instability and trust. At the same time, Rupasingha et al. (2006) showed that communities with a higher proportion of long-term residents are more likely to generate social cohesion. Recent studies indicate that

in-migration tends to dilute social cohesion (Hotchkiss et al., 2022), and to negatively affect trust, political engagement, and organizational membership (Kesler and Bloemraad, 2010), with these effects varying based on institutional differences across countries.

Although in-migration could theoretically strengthen social cohesion by fostering in-group identity among long-term residents, this would not necessarily lead to increased turnout. Research shows that stronger family ties, for example, can actually reduce political participation, as reliance on close-knit networks often substitutes for broader, generalized social trust (Alesina and Giuliano, 2011). Fowler (2005) similarly found that when social networks become too clustered, individuals lose touch with the broader community, reducing their motivation and capacity to influence participation beyond their immediate circles. This diminishes their incentives to engage in civic activities and encourages others to do the same.

## **In-migration and Descriptive Social Norms**

In-migration can also shift descriptive norms around political participation. Research on cooperation in social dilemmas suggests that stable group composition promotes prosocial behavior and contributions to the common good. Stable interactions allow group members to establish and reinforce social norms, setting clear expectations and holding each other accountable for uncooperative behavior (Duffy and Ochs, 2009; Ambrus and Pathak, 2011; Fehr and Schurtenberger, 2018; Otten et al., 2022). Conversely, uncertainty and lack of information about newcomers' values and behavioral intentions can lead to diminished expectations about their adherence to social norms (see, e.g., McCarter and Sheremeta, 2013).

In the context of political participation, this uncertainty may prompt long-term residents to expect lower turnout from newcomers. Consequently, they may adjust their own voting behavior to match the perceived norm of reduced political engagement, which can ultimately result in lower overall voter turnout. This notion is supported by previous studies, which have shown that changes in group composition can negatively impact cooperation levels (e.g., Fehr and Schurtenberger, 2018; Salmon and Weber, 2017; Grund et al., 2015).

## 2 Conditional Effects

The previous section explored the mechanisms through which migration influences voter turnout in both origin and destination communities, focusing on its aggregate effects. This analysis assumed that migrants and non-migrants are similar in characteristics associated with political participation. While this assumption may raise questions, we argue in this section that variations in migrant characteristics are unlikely to significantly alter the negative effects of migration on turnout, particularly in the short term. This supports our focus on aggregate effects as the primary lens of analysis.

Research on the political characteristics of migrants is limited, and existing findings are mixed. The “brain drain” debate, initiated by Gruber and Scott (1966) and Bhagwati and Hamada (1974), argues that emigration depletes communities of their most skilled individuals. Applied to the political arena, this logic suggests that migrants might also be the most politically engaged individuals, leaving high-migration communities with residents less inclined to participate in formal politics. However, empirical evidence supporting this claim is limited. Most studies on self-selection into migration focus on economic or educational characteristics rather than political behavior (see, e.g., Borjas et al., 2019), and the few that do primarily examine international migration. For example, Douarin and Radu (2021) find that individuals planning to migrate are more likely to protest but less likely to vote. These patterns, however, may not generalize to domestic contexts. Consequently, there is little reason to believe that domestic migrants are systematically more or less politically engaged than non-migrants.<sup>3</sup> Nevertheless, it remains important to consider whether variations in migrants’ traits could affect turnout by altering the composition of the electorate in origin or destination communities.

In destination communities, migrants’ ability to influence local turnout rates by altering the composition of the electorate is limited in the short term, even if they possess sys-

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<sup>3</sup>Though see Lueders (2023) for evidence from Germany suggesting that domestic migrants may be more engaged in national politics while being less involved in local political activities.



tematically different and favorable traits. Politically active newcomers, for instance, might theoretically boost participation by increasing the proportion of the electorate likely to vote. In practice, however, transaction costs hinder their immediate involvement in elections. Logistical challenges, such as registering to vote, delay their integration into the electorate. Additionally, their ability to influence long-term residents through mechanisms like "positive peer pressure" is further constrained, as building new social connections requires time. In contrast, migration's negative effects on descriptive norms are immediate and operate regardless of migrant characteristics. As discussed in the previous section, long-term residents often perceive newcomers as less politically engaged, leading to shifts in local norms that reduce voting among established residents. Consequently, even when migrants are politically active, their potential to positively influence turnout is delayed, while negative effects, such as the erosion of participation norms, take hold quickly. These dynamics make it unlikely that migration will increase turnout in destination communities, regardless of the migrants' profiles.

In origin communities, the departure of predominantly politically disengaged individuals could theoretically increase the rate of political participation by altering the composition of the electorate. However, transaction costs prevent these compositional benefits from materializing in the short term, as such migrants often remain registered to vote in their origin communities, artificially inflating the denominator of the turnout rate. Moreover, the departure of residents—regardless of their level of political engagement—disrupts local networks, weakening the enforcement of norms that sustain political participation. Even the exit of less-engaged migrants can erode perceptions of participation, further diminishing engagement among those who remain. Consequently, while out-migration might theoretically boost turnout under certain compositional scenarios, the combined impact of transaction and social costs makes such outcomes highly unlikely to materialize in the short term.<sup>4</sup>

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<sup>4</sup>Another important scenario to consider is when out-migrants are *more* politically engaged than non-migrants. In these cases, their departure depletes the electorate of its most engaged individuals, potentially weakening overall political participation. This compositional shift, when combined with the disruptive effects of transaction and social costs, exacerbates the decline in turnout within the origin community,

Financial and social remittances also influence the impact of migration on political participation. Financial remittances have been shown to reduce reliance on state-provided public goods, diminishing incentives for political engagement in origin communities (Adida and Girod, 2011; Pfutze, 2014). Social remittances, however, have more ambiguous effects. The norms and ideas that migrants transmit can either foster civic engagement or introduce less favorable norms (for a review, see Ivlevs, 2021). Importantly, in both cases, these effects unfold gradually, as migrants need time to assimilate and convey these norms (Batista et al., 2021).

Overall, in both origin and destination communities, migrant characteristics may amplify or mitigate the negative effects of migration on turnout but are unlikely to reverse them, particularly in the short term. In destination communities, transaction costs delay any potential benefits of politically active newcomers, while negative effects on local norms tend to emerge more immediately. In origin communities, social and transaction costs impede the realization of potential benefits from compositional changes, while the disruptive impact of migration on networks and participation norms continues to undermine turnout. Financial and social remittances can also play a role in influencing political participation, but these are only sent by a subset of migrants. Their positive effects are limited to specific contexts and require time to materialize, making them unlikely to offset the broader challenges migration poses to turnout in the short term.<sup>5</sup> Together, these factors underscore the robustness of the negative relationship between migration and turnout, despite potential variations in migrant characteristics or local conditions.

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exacerbating the overall negative impact of migration on voter participation.

<sup>5</sup>This is consistent with Gori Maia and Lu (2021), who provide evidence of political remittance transmission in Brazil and demonstrate that this effect depends on the level of democratic development in origin localities. Despite that, the authors still find the overall impact of migration on turnout rates to be negative.

## Appendix C

### Robustness Checks and Additional Analyses

#### Panel Data Analysis

Our two-way fixed effects specifications are based on either migration flow or stock measures as main independent variables. The model is as follows:

$$Y_{it} = \beta_1 M_{it} + \beta_2 \mathbf{X}_{it} + \lambda_t + \gamma_i + \epsilon_{it} \quad (1)$$

Where  $Y_{it}$  represents the turnout rate in municipality  $i$  at time  $t$ ,  $M_{it}$  denotes the share of in- or out-migrants, turnover, or net migration in municipality  $i$  at time  $t$  (for the flow measures) or between time  $t - 5$  and  $t$  (for the stock measures),  $\mathbf{X}_{it}$  is a vector of control variables,  $\lambda_t$  represents election year fixed effects,  $\gamma_i$  reflect the municipality fixed effects, accounting for unobservable time-invariant local characteristics, and  $\epsilon_{it}$  is the error term.

#### Different Turnout Measures (VEP and RV)

When calculating turnout as a proportion of registered voters, in-migrants who have moved to a new area but not yet registered to vote are typically not included in either the numerator (those who voted) or the denominator (total registered voters). As a result, the effect of in-migration on the turnout rate calculated this way does not reflect the transaction costs involved in moving; only the social costs associated with migration are reflected in this measure. Conversely, the VEP (voting-eligible population) includes all residents eligible to vote, regardless of their registration status. Thus, in-migrants are counted in the VEP upon establishing residency. In sum, Voter turnout measured against the VEP better reflects the comprehensive impact of in-migration, as it accounts for both transaction costs (such as registration difficulties) and social costs associated with moving to a new location.

In contrast, out-migrants who have moved away but have not yet transferred their voter

registration are still counted in the total number of registered voters. This inclusion tends to skew turnout calculated against registered voters (RV) downward since these individuals are less likely to vote locally if they no longer reside in the area. This calculation reflects both the transaction costs associated with changing one's voter registration after relocating and the social costs stemming from the loss of local social ties, both of which negatively impact turnout. Unlike the RV count, the VEP (voting-eligible population) only includes actual residents of the locality, excluding out-migrants who have relocated. This results in a smaller, more accurate denominator that only includes those genuinely eligible to vote in that locality. Consequently, voter turnout calculated against the VEP can appear higher in the presence of out-migration, as the denominator does not include those who have relocated. This measure therefore primarily reflects the social costs of out-migration, as it does not account for the reduction in turnout due to transaction costs.

Given our focus on the simultaneous effects of in- and out-migration on voter turnout, no single measure of turnout rate is suitable across all specifications. To accurately capture the local effects of out-migration through both proposed channels, we must calculate turnout as a ratio of the registered voter population (turnout/RV). Conversely, to effectively evaluate the impact of in-migration, we must use turnout as a percentage of the voting-eligible population (turnout/VEP). Thus, to capture the influence of both transaction costs and social costs and to ensure that our results are not dependent on a specific measure of turnout, in Table A8, we adopt the logarithm of total turnout as our dependent variable. Additionally, we include both the size of the registered voter population and the voting-eligible population as control variables, accounting for variations in each measure due to different migration dynamics. The results remain consistent with our previous findings, adding confidence in the robustness and reliability of our analysis across different specifications.

## Different Units of Analysis

Although the municipality is the most relevant unit of analysis for examining the influence of mobility on electoral participation, changes in municipal boundaries over time present a concern, potentially skewing the analysis. Between 1991 and 2010, the number of municipalities increased from 4,491 to 5,565 due to boundary changes. To address this issue, we adopt the Instituto de Pesquisa Econômica Aplicada (IPEA) methodology, aggregating municipalities into 4,267 minimum comparable areas (MCAs) with consistent borders throughout our analysis period (Ehrl, 2017). We also estimate the effect of migratory turnover on turnout at the micro-region level – larger geographic units characterized by shared labor markets and economic activities Egger (2022). For these analyses, we only consider migrations that cross these broader boundaries, excluding local moves between nearby towns. Table A9 shows that these longer-distance moves have a more pronounced negative impact on voter turnout, possibly because migrants moving shorter distances can still return to their registered locations to vote, and the disruption to their social networks might be less severe.

# Appendix D

## Additional Figures and Tables

Figure A1: Average Turnout Across Brazilian Municipalities (2000-2010)

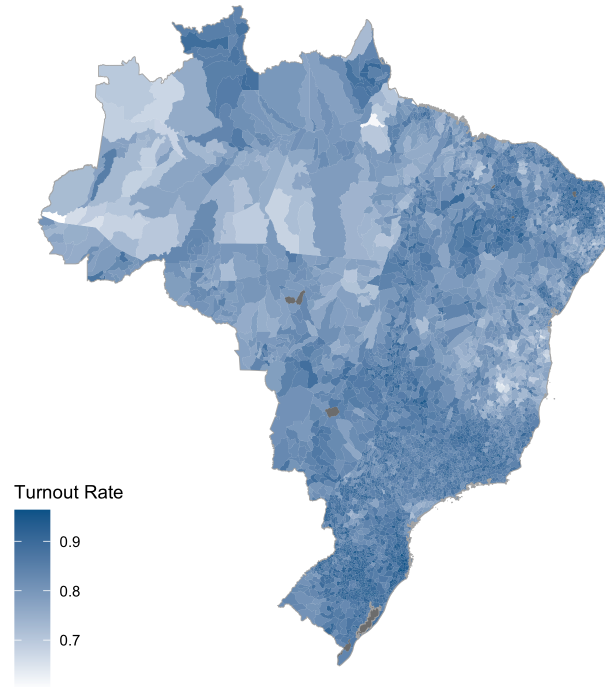


Figure A2: Average Migration Shares in Brazilian Municipalities (Stock Measure, 2000-2010)

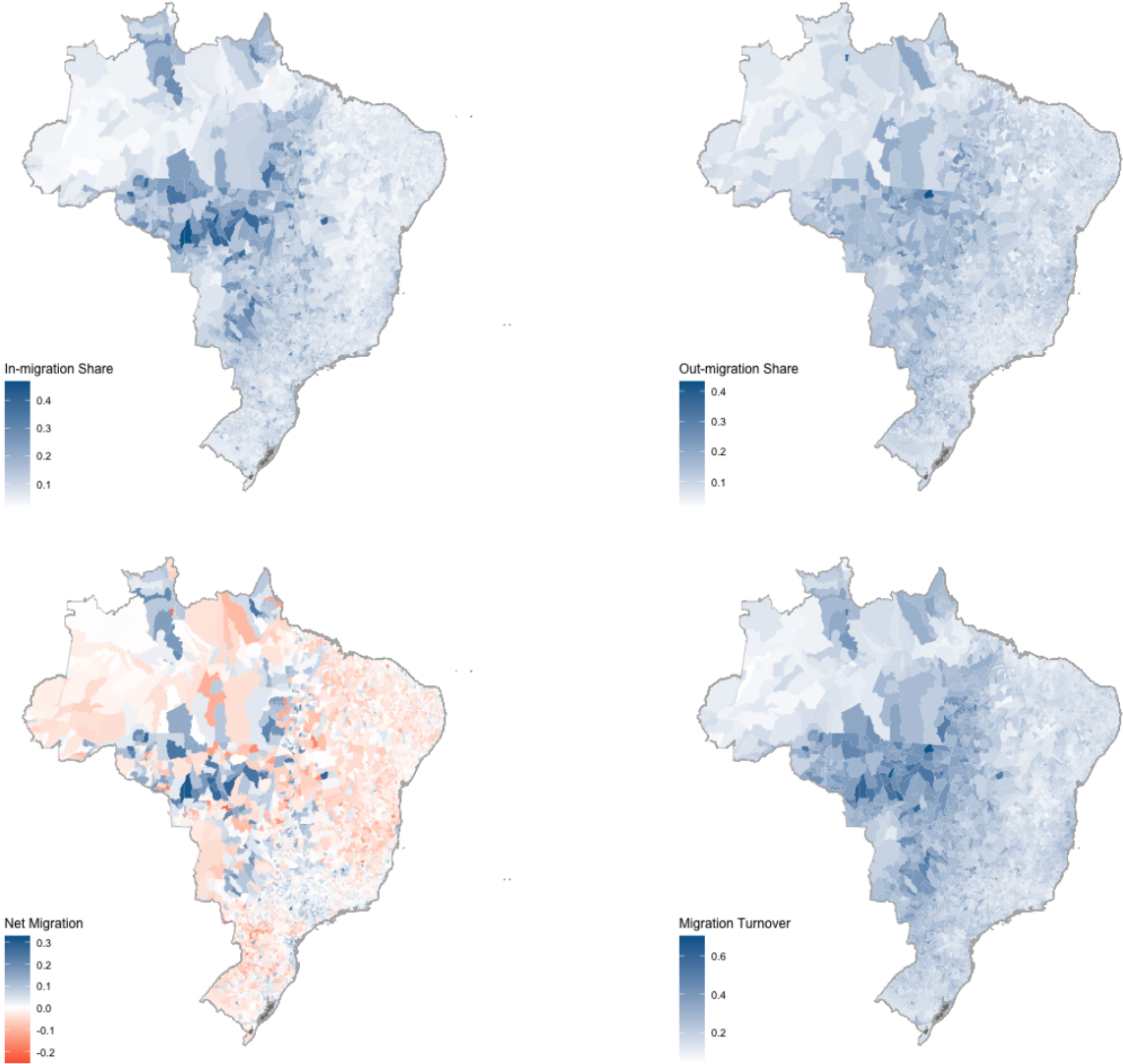


Table A1: **Cross-Sectional Analysis: Average Migration Shares and Turnout in Local Elections (2000-2008)**

|                         | Average Turnout Rate in Local Elections |                      |                     |                      |                   |
|-------------------------|---|----------------------|---------------------|----------------------|-------------------|
|                         | (1)                                     | (2)                  | (3)                 | (4)                  | (5)               |
| Out-migration           | -0.743***<br>(0.195)                    |                      | -0.685**<br>(0.212) |                      |                   |
| In-migration            |   | -0.625***<br>(0.171) | -0.544**<br>(0.180) |                      |                   |
| Migration Turnover      |   |                      |                     | -0.960***<br>(0.119) |                   |
| Net Migration           |   |                      |                     |                      | -0.009<br>(0.230) |
| State FE                | Yes                                     | Yes                  | Yes                 | Yes                  | Yes               |
| Additional Covariates   | Yes                                     | Yes                  | Yes                 | Yes                  | Yes               |
| Geographic controls     | Yes                                     | Yes                  | Yes                 | Yes                  | Yes               |
| Observations            | 5,557                                   | 5,557                | 5,557               | 5,557                | 5,557             |
| Adjusted R <sup>2</sup> | 0.497                                   | 0.493                | 0.504               | 0.503                | 0.484             |

*Notes:* All models are OLS regressions. Robust SE clustered at the state level are given in parentheses, <sup>+</sup>p<0.1; \*p<0.05; \*\*p<0.01; \*\*\*p<0.001.



Table A2: Cross-Sectional Analysis: Average Migration Shares and Turnout in National Elections (2002-2010)

|                         | Average Turnout Rate in National Elections |                      |                      |                      |                   |
|-------------------------|--|----------------------|----------------------|----------------------|-------------------|
|                         | (1)  | (2)                  | (3)                  | (4)                  | (5)               |
| Out-migration           | -1.057***<br>(0.169)                       |                      | -0.970***<br>(0.181) |                      |                   |
| In-migration            |  | -0.929***<br>(0.210) | -0.815***<br>(0.212) |                      |                   |
| Migration Turnover      |  |                      |                      | -1.398***<br>(0.142) |                   |
| Net Migration           |  |                      |                      |                      | -0.043<br>(0.243) |
| State FE                | Yes  | Yes                  | Yes                  | Yes                  | Yes               |
| Additional Covariates   | Yes  | Yes                  | Yes                  | Yes                  | Yes               |
| Geographic controls     | Yes  | Yes                  | Yes                  | Yes                  | Yes               |
| Observations            | 5,558                                      | 5,558                | 5,558                | 5,558                | 5,558             |
| Adjusted R <sup>2</sup> | 0.695                                      | 0.690                | 0.704                | 0.703                | 0.679             |

Notes: All models are OLS regressions. Robust SE clustered at the state level are given in parentheses, +p<0.1; \*p<0.05; \*\*p<0.01; \*\*\*p<0.001.

Table A3: **Cross-Sectional Analysis: Turnout Rate and Migration Shares (Stock Measure)**

| <b>Panel A</b>          |                                      |                      |                      |                      |                  |
|-------------------------|--------------------------------------|----------------------|----------------------|----------------------|------------------|
|                         | Turnout Rate 2000, Local Election    |                      |                      |                      |                  |
|                         | (1)                                  | (2)                  | (3)                  | (4)                  | (5)              |
| Out-migration           | -0.987***<br>(0.251)                 |                      | -1.035***<br>(0.239) |                      |                  |
| In-migration            |                                      | -0.786***<br>(0.213) | -0.850***<br>(0.200) |                      |                  |
| Migration Turnover      |                                      |                      |                      | -1.369***<br>(0.175) |                  |
| Net Migration           |                                      |                      |                      |                      | 0.105<br>(0.244) |
| State FE                | Yes                                  | Yes                  | Yes                  | Yes                  | Yes              |
| Additional Covariates   | Yes                                  | Yes                  | Yes                  | Yes                  | Yes              |
| Geographic controls     | Yes                                  | Yes                  | Yes                  | Yes                  | Yes              |
| Observations            | 5,502                                | 5,502                | 5,501                | 5,501                | 5,501            |
| Adjusted R <sup>2</sup> | 0.507                                | 0.501                | 0.517                | 0.516                | 0.493            |
| <b>Panel B</b>          |                                      |                      |                      |                      |                  |
|                         | Turnout Rate 2010, National Election |                      |                      |                      |                  |
|                         | (1)                                  | (2)                  | (3)                  | (4)                  | (5)              |
| Out-migration           | -1.506***<br>(0.225)                 |                      | -1.325***<br>(0.255) |                      |                  |
| In-migration            |                                      | -1.154***<br>(0.190) | -0.818***<br>(0.224) |                      |                  |
| Migration Turnover      |                                      |                      |                      | -1.721***<br>(0.170) |                  |
| Net Migration           |                                      |                      |                      |                      | 0.077<br>(0.263) |
| State FE                | Yes                                  | Yes                  | Yes                  | Yes                  | Yes              |
| Additional Covariates   | Yes                                  | Yes                  | Yes                  | Yes                  | Yes              |
| Geographic controls     | Yes                                  | Yes                  | Yes                  | Yes                  | Yes              |
| Observations            | 5,549                                | 5,549                | 5,549                | 5,549                | 5,549            |
| Adjusted R <sup>2</sup> | 0.607                                | 0.591                | 0.615                | 0.611                | 0.574            |

Notes: All models are OLS regressions. Robust SE clustered at the state level are given in parentheses, <sup>+</sup>p<0.1; \*p<0.05; \*\*p<0.01; \*\*\*p<0.001.

Table A4: **Two-Way Fixed Effects Analysis: Turnout Rate and Migration Shares (Stock Measure)**

|                         | Turnout Rate         |                      |                      |                      |                      |
|-------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|                         | (1)                  | (2)                  | (3)                  | (4)                  | (5)                  |
| Out-migration           | -0.416***<br>(0.143) |                      | -0.616***<br>(0.144) |                      |                      |
| In-migration            |                      | -1.450***<br>(0.191) | -1.559***<br>(0.192) |                      |                      |
| Migration Turnover      |                      |                      |                      | -1.641***<br>(0.198) |                      |
| Net Migration           |                      |                      |                      |                      | -0.523***<br>(0.131) |
| Municipality FE         | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| Year FE                 | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| Additional Covariates   | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| Adjusted R <sup>2</sup> | 0.698                | 0.706                | 0.708                | 0.706                | 0.699                |
| Observations            | 10,784               | 10,784               | 10,784               | 10,784               | 10,784               |

*Notes:* All models include municipality and year fixed effects. The migration variables are derived from stock measures taken from the 2000 and 2010 census data. Robust SE clustered at the municipality level are given in parentheses, <sup>+</sup>p<0.1; \*p<0.05; \*\*p<0.01; \*\*\*p<0.001.

Table A5: **Two-Way Fixed Effects Analysis: Turnout Rate and Migration Shares, Interaction with Local-Election Indicator**

|   | Turnout Rate         |                      |                      |                      |                     |
|---|----------------------|----------------------|----------------------|----------------------|---------------------|
|   | (1)                  | (2)                  | (3)                  | (4)                  | (5)                 |
| Local Elections                             | 3.130***<br>(0.280)  | 3.103***<br>(0.261)  | 3.113***<br>(0.265)  | 3.102***<br>(0.250)  | 3.122***<br>(0.295) |
| Out-migration                               | -1.014***<br>(0.075) |                      | -0.908***<br>(0.063) |                      |                     |
| Out-migration $\times$ Local Elections      | 0.884***<br>(0.164)  |                      | 0.784***<br>(0.164)  |                      |                     |
| In-migration                                |                      | -0.653***<br>(0.121) | -0.454***<br>(0.122) |                      |                     |
| In-migration $\times$ Local Elections       |                      | 0.534**<br>(0.227)   | 0.384*<br>(0.226)    |                      |                     |
| Migration Turnover                          |                      |                      |                      | -1.061***<br>(0.116) |                     |
| Migration Turnover $\times$ Local Elections |                      |                      |                      | 0.871***<br>(0.206)  |                     |
| Net Migration                               |                      |                      |                      |                      | 0.141<br>(0.096)    |
| Net Migration $\times$ Local Elections      |                      |                      |                      |                      | -0.036<br>(0.215)   |
| Municipality FE                             | Yes                  | Yes                  | Yes                  | Yes                  | Yes                 |
| Additional Covariates                       | Yes                  | Yes                  | Yes                  | Yes                  | Yes                 |
| Observations                                | 27,389               | 27,541               | 27,374               | 27,374               | 27,374              |
| Adjusted R <sup>2</sup>                     | 0.735                | 0.731                | 0.737                | 0.736                | 0.727               |

*Notes:*All migration variables are interacted with an indicator that equals one for local election years and zero for national election years. Migration shares are based on flow measures for the 2002-2010 period, derived from the 2010 census. The models include only municipality fixed effects, as adding year fixed effects would absorb the local election dummy. Robust standard errors, clustered at the municipality level, are reported in parentheses, <sup>+</sup>p<0.1; \*p<0.05; \*\*p<0.01; \*\*\*p<0.001.

Table A6: **Spatial Autoregressive Analysis: Turnout Rate and Migration Shares (Stock Measure)**

|                       | Turnout Rate 2000<br>Local Election |                      |                   | Turnout Rate 2010<br>National Election |                      |                    |
|-----------------------|-------------------------------------|----------------------|-------------------|--|----------------------|--------------------|
|                       | (1)                                 | (2)                  | (3)               | (4)                                    | (5)                  | (6)                |
| Out-migration         | -0.581***<br>(0.080)                |                      |                   | -0.822***<br>(0.074)                   |                      |                    |
| In-migration          | -0.376***<br>(0.070)                |                      |                   | -0.684***<br>(0.064)                   |                      |                    |
| Migration Turnover    |                                     | -0.691***<br>(0.082) |                   |  | -1.232***<br>(0.072) |                    |
| Net Migration         |                                     |                      | -0.092<br>(0.069) |  |                      | -0.121+<br>(0.065) |
| State FE              | Yes                                 | Yes                  | Yes               | Yes                                    | Yes                  | Yes                |
| Additional Covariates | Yes                                 | Yes                  | Yes               | Yes                                    | Yes                  | Yes                |
| Observations          | 5,425                               | 5,425                | 5,425             | 5,549                                  | 5,549                | 5,549              |

*Notes:* SAR models with state fixed effects. Models 1-3 utilize variables from the 2000 census, while models 4-6 use data from the 2010 census. Migration shares based on stock measures. Variables are standardized.  
<sup>+</sup>p<0.1; \*p<0.05; \*\*p<0.01; \*\*\*p<0.001.

Table A7: Panel Data Analysis: Turnout Rates (RV and VEP) and Migration Shares (Flow and Stock)

|                         | Migration Flow       |                      |                      |                      | Migration Stock      |                      |                      |                      |
|-------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|                         | Turnout/RV<br>(1)    | Turnout/RV<br>(2)    | Turnout/VEP<br>(3)   | Turnout/VEP<br>(4)   | Turnout/RV<br>(5)    | Turnout/RV<br>(6)    | Turnout/VEP<br>(7)   | Turnout/VEP<br>(8)   |
| Out-migration           | -0.474***<br>(0.058) |                      | -0.576***<br>(0.066) |                      | -0.616***<br>(0.144) |                      | -0.999***<br>(0.156) |                      |
| In-migration            | -0.203**<br>(0.086)  |                      | -0.261***<br>(0.098) |                      | -1.559***<br>(0.192) |                      | -1.640***<br>(0.233) |                      |
| Migration Turnover      |                      | -0.535***<br>(0.096) |                      | -0.661***<br>(0.110) |                      | -1.641***<br>(0.198) |                      | -2.010***<br>(0.224) |
| Municipality FE         | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| Year FE                 | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| Additional Covariates   | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| Observations            | 27,374               | 27,374               | 27,374               | 27,374               | 10,784               | 10,784               | 10,784               | 10,784               |
| Adjusted R <sup>2</sup> | 0.737                | 0.737                | 0.924                | 0.924                | 0.708                | 0.707                | 0.924                | 0.924                |

*Notes:* Two-way fixed effects models are estimated with turnout as the dependent variable, measured both as a proportion of registered voters and as a proportion of the voting-eligible population. Migration shares are calculated using flow measures (columns 5-8) for the 2002-2010 period, and stock measures (columns 1-4) derived from the 2000 and 2010 censuses. Robust SE clustered at the municipality level are given in parentheses, <sup>+</sup>p<0.1; \*p<0.05; \*\*p<0.01; \*\*\*p<0.001.

Table A8: **Panel Data Analysis: Turnout and Migration Counts (Flow and Stock)**

|                          | Migration Flow       |                      |                     | Migration Stock      |                      |                  |
|--------------------------|----------------------|----------------------|---------------------|----------------------|----------------------|------------------|
|                          | (1)                  | (2)                  | Turnout Rate<br>(3) | (4)                  | (5)                  | (6)              |
| Out-migration (log)      | -0.005***<br>(0.001) |                      |                     | -0.006**<br>(0.003)  |                      |                  |
| In-migration (log)       | -0.006***<br>(0.002) |                      |                     | -0.034***<br>(0.005) |                      |                  |
| Migration Turnover (log) |                      | -0.013***<br>(0.002) |                     |                      | -0.046***<br>(0.006) |                  |
| Net Migration            |                      |                      | -0.001**<br>(0.000) |                      |                      | 0.000<br>(0.001) |
| Municipality FE          | Yes                  | Yes                  | Yes                 | Yes                  | Yes                  | Yes              |
| Year FE                  | Yes                  | Yes                  | Yes                 | Yes                  | Yes                  | Yes              |
| Additional Covariates    | Yes                  | Yes                  | Yes                 | Yes                  | Yes                  | Yes              |
| Observations             | 27,374               | 27,374               | 27,374              | 10,784               | 10,784               | 10,784           |
| Adjusted R <sup>2</sup>  | 0.999                | 0.999                | 0.999               | 0.999                | 0.999                | 0.999            |

*Notes:* Two-way fixed effects models with both migration and turnout variables measured as counts. Migration counts are calculated using flow measures (columns 1-3) for the 2002-2010 period, and stock measures (columns 4-6), derived from the 2000 and 2010 censuses. Robust SE clustered at the municipality level are given in parentheses, <sup>+</sup>p<0.1; \*p<0.05; \*\*p<0.01; \*\*\*p<0.001.

Table A9: Panel Data Analysis: Turnout Rate and Migration Shares (Stock Measure), MCA and Micro-region Levels

|                         | MCA                  |                      | Micro-region        |                      |                      |                   |
|-------------------------|----------------------|----------------------|---------------------|----------------------|----------------------|-------------------|
|                         | (1)                  | (2)                  | Turnout Rate        |                      | (5)                  | (6)               |
|                         |                      |                      | (3)                 | (4)                  |                      |                   |
| Out-migration           | -1.372***<br>(0.518) |                      |                     | -1.356***<br>(0.267) |                      |                   |
| In-migration            | -2.289***<br>(0.738) |                      |                     | -1.523***<br>(0.396) |                      |                   |
| Migration Turnover      |                      | -2.825***<br>(0.885) |                     |                      | -2.262***<br>(0.397) |                   |
| Net Migration           |                      |                      | -0.699**<br>(0.337) |                      |                      | -0.033<br>(0.287) |
| Unit FE                 | Yes                  | Yes                  | Yes                 | Yes                  | Yes                  | Yes               |
| Year FE                 | Yes                  | Yes                  | Yes                 | Yes                  | Yes                  | Yes               |
| Additional Covariates   | Yes                  | Yes                  | Yes                 | Yes                  | Yes                  | Yes               |
| Observations            | 8,492                | 8,492                | 8,492               | 1,114                | 1,114                | 1,114             |
| Adjusted R <sup>2</sup> | 0.295                | 0.295                | 0.284               | 0.820                | 0.821                | 0.803             |

*Notes:* Two-way fixed effects models at the MCA and Micro-region levels. Migration shares are calculated using stock measures derived from the 2000 and 2010 censuses. All variables are standardized. Robust SE, clustered at the relevant unit level (MCA or micro-region), are provided in parentheses, <sup>+</sup>p<0.1; \*p<0.05; \*\*p<0.01; \*\*\*p<0.001.



Table A10: Municipality Fixed Effects: Turnout Rate and Migration Shares (Flow and Stock Measures)

|                         | Migration Flow       |                      |                    | Migration Stock      |                      |                      |
|-------------------------|----------------------|----------------------|--------------------|----------------------|----------------------|----------------------|
|                         | (1)                  | (2)                  | (3)                | (4)                  | (5)                  | (6)                  |
|                         |                      |                      | Turnout Rate       |                      |                      |                      |
| Out-migration           | -0.686***<br>(0.057) |                      |                    | -0.601***<br>(0.142) |                      |                      |
| In-migration            | -0.402***<br>(0.079) |                      |                    | -1.545***<br>(0.189) |                      |                      |
| Turnover Rate           |                      | -0.864***<br>(0.090) |                    |                      | -1.619***<br>(0.194) |                      |
| Net Migration           |                      |                      | 0.129**<br>(0.051) |                      |                      | -0.525***<br>(0.133) |
| Municipality FE         | Yes                  | Yes                  | Yes                | Yes                  | Yes                  | Yes                  |
| Additional Covariates   | Yes                  | Yes                  | Yes                | Yes                  | Yes                  | Yes                  |
| Observations            | 27,374               | 27,374               | 27,374             | 10,784               | 10,784               | 10,784               |
| Adjusted R <sup>2</sup> | 0.732                | 0.731                | 0.727              | 0.705                | 0.704                | 0.696                |

*Notes:* Municipality fixed effects models with standardized variables. Migration shares are calculated using flow measures (columns 1-3) for the 2002-2010 period, and stock measures (columns 4-6) are derived from the 2000 and 2010 censuses. Robust SE clustered at the municipality level are given in parentheses, <sup>+</sup>p<0.1; \*p<0.05; \*\*p<0.01; \*\*\*p<0.001.

Table A11: Year Fixed Effects: Turnout Rate and Migration Shares (Flow and Stock Measures)

|                         | Migration Flow       |                      |                  | Migration Stock      |                      |                  |
|-------------------------|----------------------|----------------------|------------------|----------------------|----------------------|------------------|
|                         | (1)                  | (2)                  | (3)              | (4)                  | (5)                  | (6)              |
|                         |                      |                      | Turnout Rate     |                      |                      |                  |
| Out-migration           | -0.916***<br>(0.114) |                      |                  | -1.131***<br>(0.117) |                      |                  |
| In-migration            | -0.627***<br>(0.080) |                      |                  | -0.958***<br>(0.111) |                      |                  |
| Turnover Rate           |                      | -1.220***<br>(0.101) |                  |                      | -1.608***<br>(0.112) |                  |
| Net Migration           |                      |                      | 0.100<br>(0.095) |                      |                      | 0.100<br>(0.122) |
| Year FE                 | Yes                  | Yes                  | Yes              | Yes                  | Yes                  | Yes              |
| Additional Covariates   | Yes                  | Yes                  | Yes              | Yes                  | Yes                  | Yes              |
| Observations            | 27,374               | 27,374               | 27,374           | 10,784               | 10,784               | 10,784           |
| Adjusted R <sup>2</sup> | 0.407                | 0.406                | 0.386            | 0.471                | 0.470                | 0.432            |

*Notes:* Time fixed effects models with standardized variables. Migration shares are calculated using flow measures (columns 1-3) for the 2002-2010 period, and stock measures (columns 4-6) are derived from the 2000 and 2010 censuses. Robust SE clustered at the municipality level are given in parentheses, +p<0.1; \*p<0.05; \*\*p<0.01; \*\*\*p<0.001.

Table A12: **Within-Between Random-Effects Models: Turnout Rate and Migration Shares (Flow Measure)**

|                              | (1)                  | (2)                  | Turnout Rate<br>(3)  | (4)                  | (5)                |
|------------------------------|----------------------|----------------------|----------------------|----------------------|--------------------|
| Out-migration (within)       | -0.219***<br>(0.044) |                      | -0.172***<br>(0.045) |                      |                    |
| In-migration (within)        |                      | -0.219***<br>(0.041) | -0.209***<br>(0.042) |                      |                    |
| Migration Turnover (within)  |                      |                      |                      | -0.187***<br>(0.028) |                    |
| Net Migration (within)       |                      |                      |                      |                      | -0.024<br>(0.032)  |
| Out-migration (between)      | -1.056***<br>(0.099) |                      | -0.991***<br>(0.101) |                      |                    |
| In-migration (between)       |                      | -0.426***<br>(0.079) | -0.260**<br>(0.080)  |                      |                    |
| Migration Turnover (between) |                      |                      |                      | -0.561***<br>(0.054) |                    |
| Net Migration (between)      |                      |                      |                      |                      | 0.195**<br>(0.069) |
| Additional Covariates        | Yes                  | Yes                  | Yes                  | Yes                  | Yes                |
| Observations                 | 27,336               | 27,487               | 27,321               | 27,321               | 27,321             |
| RMSE                         | 0.06                 | 0.06                 | 0.06                 | 0.06                 | 0.06               |

*Notes:* Within-between random-effects models. Migration shares are calculated using flow measures expressed as a fraction (divided by 100) for the 2002-2010 period, and are derived from the 2010 censuses. Robust SE are given in parentheses, <sup>+</sup>p<0.1; \*p<0.05; \*\*p<0.01; \*\*\*p<0.001.

Table A13: Migration Shares and Social Cohesion Across Municipalities

|                         | Social Cohesion      |                      |                      |                      |                      |
|-------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|                         | (1)                  | (2)                  | (3)                  | (4)                  | (5)                  |
| Out-migration           | -0.075***<br>(0.013) |                      | -0.064***<br>(0.013) |                      |                      |
| In-migration            |                      | -0.130***<br>(0.012) | -0.126***<br>(0.012) |                      |                      |
| Migration Turnover      |                      |                      |                      | -0.099***<br>(0.009) |                      |
| Net Migration           |                      |                      |                      |                      | -0.043***<br>(0.009) |
| State FE                | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| Additional covariates   | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| Geographic controls     | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| Observations            | 5,505                | 5,505                | 5,505                | 5,505                | 5,505                |
| Adjusted R <sup>2</sup> | 0.815                | 0.818                | 0.819                | 0.819                | 0.815                |

*Notes:* All models are OLS regressions. Stock measures of migration shares are derived by calculating the mean of the relevant component variables from the 2000 and 2010 censuses. Municipal-level demographic and socio-economic covariates include total population, voting-age residents, population over age 16, registered voters, poverty levels, income Gini coefficient, urban population, and the proportion of the population with higher education. Geographic controls encompass municipal area, distance to the capital, distance to the coast, as well as latitude and longitude. Standard errors are indicated in parentheses, <sup>+</sup>p<0.1; \*p<0.05; \*\*p<0.01; \*\*\*p<0.001.

Table A14: Individual Voting Behavior, Migration Status, and Local Turnover

|                             | Voted in Last Election |                      |                      |                     |
|-----------------------------|------------------------|----------------------|----------------------|---------------------|
|                             | (1)                    | (2)                  | (3)                  | (4)                 |
| Non-Migrant Status          | 0.086***<br>(0.027)    |                      | 0.086***<br>(0.027)  | 0.086***<br>(0.027) |
| Municipal Turnover Share    |                        | -0.224***<br>(0.072) | -0.185***<br>(0.070) | -0.195**<br>(0.075) |
| State FE                    | Yes                    | Yes                  | Yes                  | Yes                 |
| Year FE                     | Yes                    | Yes                  | Yes                  | Yes                 |
| Individual-level covariates | Yes                    | No                   | Yes                  | Yes                 |
| Municipal-level covariates  | No                     | Yes                  | Yes                  | Yes                 |
| Geographic characteristics  | No                     | No                   | No                   | Yes                 |
| Adjusted R <sup>2</sup>     | 0.162                  | 0.016                | 0.165                | 0.165               |
| Observations                | 11,046                 | 11,189               | 11,046               | 11,046              |

*Notes:* All models are OLS regressions with state and year fixed effects. Migration shares are calculated as municipal averages of stock measures from the 2000 and 2010 censuses. Individual-level characteristics, such as stated turnout and migration status, are obtained from LAPOP data spanning 2006 to 2019. Non-migrant status equals 1 when respondents say they lived in the same municipality 5 years ago and 0 otherwise. Other individual covariates are age, gender, race, education level, and a dummy for missing migration status (if not recorded). Municipal-level demographic and socio-economic covariates include total population, voting-age residents, population over age 16, registered voters, poverty levels, income Gini coefficient, urban population, and the proportion of the population with higher education. Geographic controls encompass municipal area, distance to the capital, distance to the coast, as well as latitude and longitude. Robust standard errors, clustered at the municipality level, are indicated in parentheses, <sup>+</sup>p<0.1; \*p<0.05; \*\*p<0.01; \*\*\*p<0.001.

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