# Seeing is Believing: Identity, Inequality, and the Impact of Television on the Hispanic Achievement Gap*

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**Abstract**

Hispanics face the lowest high school and college completion rates out of all major ethnic and racial groups in the United States. In this paper, I investigate the impact of Spanish Language Television (SLTV) on Hispanic students in public schools using a spatial regression discontinuity arising from FCC regulation. I find that SLTV improves academic outcomes and narrows the Hispanic achievement gap, increasing SAT and ACT tests taken, enrollment in calculus, and AP exams passed. However, SLTV also causes more Hispanic students to be labelled 'limited English proficiency' and bullied on the basis of their ethnicity. I dig into the mechanism driving these contradictory results and find that Hispanic students perform better academically where SLTV programming focuses more on the Hispanic identity, but not when it focus more on role models or education itself. Furthermore, Hispanics with access to SLTV visit Hispanic branded establishments more frequently. Collectively, these findings suggest that the effects of SLTV are driven by its effects on identity.

**JEL Codes:** I24, J15, L82, Z13.
**Keywords:** Hispanic, television, education, identity

## 1 Introduction

The Hispanic achievement gap is wide and persistent. Hispanics face the lowest high school and college completion rates out of all major ethnic and racial groups in the United States.[1] In this paper, I argue that Spanish Language Television (SLTV) has increased Hispanic educational attainment, and that moreover, these gains can be attributed to a heightened sense of a Hispanic identity.

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[1]See Tienda (2009). This Hispanic achievement gap encompasses a wide range of educational outcomes from kindergarten test scores to enrollment in graduate programs. Factors such as segregation (Cascio and Lewis, 2012), socioeconomic and ESL status (Carpenter, Ramirez and Severn, 2006), and immigration status (Reardon and Galindo, 2009) exacerbate the Hispanic achievement gap, whereas interventions such as providing free computers (Fairlie, 2012), detracking (Burris and Welner, 2005), or school choice, performance-based pay, and alternative teacher certification (Ladner and Burke, 2010) may help close it.

Despite the rise of the internet, broadcast Spanish Language TV remains an important fixture in Hispanic households. 78% of Spanish-dominant households watch SLTV. In 2010, every single one of the top 10 shows watched by Hispanics were Spanish language programs (Pardo and Dreas, 2011). By investigating Spanish Language TV, I take a closer look at Hispanic communities and examine how identity can affect educational outcomes.

To identify the causal effect of SLTV, I follow Velez and Newman (2019) and exploit a spatial regression discontinuity arising from a Federal Communications Commission (FCC) regulation. This regulation grants federal protection of a TV station's broadcast signal to areas within a certain distance of a station's main antenna, with a sharp cutoff in enforcement beyond this distance. Thus, households and schools just inside a TV station's coverage contour should be observably similar to those just outside the contour, except for the presence of broadcast and satellite TV. This allows me to identify the causal effect of SLTV, given several features: (1) contours are mechanically decided by a formula involving geographical features and antenna strength, (2) contours are large and their boundaries tend to cut across small towns rather than urban centers (which fall squarely within contours), (3) SLTV stations were often built before this regulation was imposed, (4) demographic and other controls across the regression discontinuity are similar, and (5) Hispanics do not differentially migrate across contours, minimizing the possibility of selection. To further dispel concerns over potential confounds, I employ a difference-in-discontinuities design, comparing outcomes for Hispanic students against Asian students in schools with and without SLTV based on a 100 kilometer cutoff to SLTV coverage contours.[2]

I verify the relevance of this instrument's first stage by employing the difference-in-discontinuities design with the American Time Use Dataset. I find that Hispanics watch 10 minutes more TV within coverage contours. This is a plausible lower bound for the amount of extra Spanish Language TV watched if Hispanics do not substitute watching English programs with Spanish ones. I also show that Hispanics watch more TV with their children—Hispanic students, in other words. Notably, non-Hispanics do not exhibit differential TV viewership across SLTV coverage contours.

Next, I utilize the Civil Rights Data Collection to analyze the effect of SLTV on Hispanic students in public schools. The white-Hispanic achievement gap is large: 36.6% for the number of SAT and ACTs taken, 15% for the number of calculus courses taken, and 17.8% for the number of APs passed. The Asian-Hispanic gap achievement gap is larger still. I find that SLTV improves academic outcomes across the board for Hispanics: compared to Asians, Hispanics with SLTV are 16% more likely to take the SAT or ACT, 27% more likely to enroll in calculus and higher math, and pass 8% more AP exams. These gains are also present in absolute terms, extend to a variety of other academic outcomes, and remain qualitatively similar under a variety of robustness tests, establishing that SLTV reduces the Hispanic achievement gap.

However, I also find that Hispanic students are more likely to be classified as having 'limited English proficiency' in the presence of SLTV despite greater general academic achievement, a likely outcome if these students shift from English to Spanish mastery due to SLTV. Furthermore, Hispanic students are also bullied more on the basis of their ethnicity in the presence of SLTV, consistent with a more salient identity that other students may target.

Given these findings, I investigate in greater depth the mechanisms that drive these gains in Hispanic performance. I use archive.org's TV transcript database to classify the proportion of programs in each SLTV station that focus on the Hispanic identity. I show that a greater amount of SLTV programming focused

[2]I compare against Asian rather than white students because they are much less likely to identify as Hispanic.

on the Hispanic identity is associated with stronger Hispanic academic performance. However, a greater amount of programming focused on education or positive role models for children both have a null effect on Hispanic performance. This indicates that the content of these television programs matter, and that identity is a primary channel through which these gains are attained. Additionally, I use foot-traffic data from Safegraph to investigate engagement with Hispanic cultural experiences. Hispanics with SLTV are differentially more likely to visit Hispanic branded restaurants and recreation establishments. Conducting a placebo exercise, I find that Hispanics with SLTV are no more likely to visit Japanese, Brazilian, or Cajun and Creole establishments. This indicates a specific strengthening of the Hispanic identity versus a broader Latin American one. Collectively, these results suggest that identity is an important mechanism through which SLTV reduces inequality and the Hispanic achievement gap.

**Layout.** Following this Introduction, Section 2 presents the data sources used. Section 3 describes the difference-in-discontinuities empirical strategy and establishes the first stage. Section 4 presents evidence that SLTV narrows the Hispanic achievement gap, with two notable exceptions in 'Limited English Proficiency' and ethnicity-based bullying. Section 5 presents evidence that an identity mechanism underlies these results using SLTV transcript and foot-traffic data. Finally, Section 6 concludes with the prior literature and this paper's contribution.

## 2 Data

**Coverage contours** The central instrument used in this paper is the discontinuity in SLTV access across coverage contour boundaries introduced by FCC regulation. To build the coverage contours of SLTV stations in the United States, I combine data from TMS Media, a large provider of data on TV, movies, and other media, with the FCC's Consolidated DataBase System (CDBS) to obtain the coverage contour boundaries in 2015.

**Public school data** I collect data on public schools from the US Department of Education's Civil Rights Data Collection (CRDC) dataset in 2015. This data contains information on various indicators of educational performance. School addresses are geocoded using ArcGIS and coded as receiving SLTV if they fall within a coverage contour.

**Television transcript data** To code the content of programs broadcasted by SLTV stations, I make use of archive.org's television transcript database covering the years 2005-2015. Because transcript data is available at the television network level, I assign all affiliate stations data from their parent network. For each network in the database, I code the fraction of television programs whose transcripts contain keywords related to the mechanisms that I study: identity, education, and role models.

## 3 Empirical strategy

To isolate the causal effect of Spanish language television, I adapt the technique used in Velez and Newman (2019) and extend it from two counties to the entirety of the United States.

Digital and satellite TV stations operate by broadcasting signals from a central antenna, and the antenna's field strength at any given location is a mechanical product of several geographical and technical factors. This signal declines in strength with the square of distance, making it subject to interference and general loss of signal. When one gets far enough away from a TV station, this interference becomes widespread and meaningfully impedes TV viewership. To safeguard TV signals, the FCC passed in 1997 a series of regulations to protect signals for commercial TV stations from interference. These established coverage contours inside of which sufficiently strong interfering signals are banned.[3]

This regulation creates a natural spatial regression discontinuity. Combined with the decaying strength of a TV signal due to distance, this cutoff in broadcast protection creates a split among households and schools just inside and outside of these coverage contours that should be ex ante comparable save for their access to broadcast TV. This is operationalized as a 100 kilometer cutoff from the coverage contour border in my baseline specifications. Even with this discontinuity, one may still worriy that unobserved variation across coverage contours could drive the observed results. Therefore, I follow the recent literature on difference-in-discontinuities (Casas-Arce and Saiz (2015), Grembi, Nannicini and Troiano (2016)) and employ a design that, in addition to the regression discontinuity, also compares outcomes for Hispanic students against Asian students. I compare against Asian rather than white students because they are much less likely to identify as Hispanic. Thus, any alternative explanation for these results would need to differentially affect only Hispanics across these coverage contours. The main specification is:

$$y_{i,j} = \beta \mathbb{I}[InsideContour_{i,j}] \times \mathbb{I}[Hispanic_{i,j}] + \gamma_k + \delta X_i + \epsilon_{i,j}$$

where $y_{i,j}$ is an outcome for observation $i$ (which may be an individual, school, or establishment) under demographic category $j \in \{\text{Hispanic, not Hispanic}\}$, $\gamma_k$ is fixed effect for school district $k$ (included when relevant), and $X$ is a vector of controls for the observation. The main coefficient of interest is $\beta$, and in particular, the interaction term between the Inside Contour and Hispanic indicators.

### 3.1 First stage evidence: do Hispanics in SLTV coverage contours watch more TV?

I test for the amount of television watched across these contour boundaries with data from the American Time Use Survey. Figure 1 graphs the minutes of television watched against the distance to the contour boundary: it is clear that Hispanic television viewership increases inside the boundary while non-Hispanic viewership remains flat. Running this as a regression following the main specification, Hispanics watch an average of 10 minutes more television when within the contour, whereas the effect of the contour on non-Hispanics is insignificant. If one reasonably assumes that English and Spanish Language TV are not complements, then this estimate is a lower bound for the increase in SLTV watched by Hispanics.

[3]The relevant sections of federal law are 47 C.F.R. 73.622, 73.623, and 74.704. The FCC's OET Bulletin No. 69 most clearly summarizes and provides guidance on the salient features in this law. These contour interference protection lines are constructed following the Longley-Rice methodology also adopted in 1997 and are termed $F(50, 10)$ lines.

# 4 The impact of Spanish language television on Hispanic educational performance

To determine the effect of SLTV on the Hispanic achievement gap, I apply the main difference-in-discontinuity specification at the school-ethnicity level and compare differential outcomes between Hispanics and Asians while varying the presence of SLTV.

Table 1, Panel A presents results on the IHS transformed number of SAT and ACT tests taken, Panel B presents results on the IHS transformed number of calculus courses taken, and Panel C presents results on the IHS transformed number of AP exams passed. Results are statistically and economically significant. SLTV differentially increases the number of Hispanics taking the SAT or ACT by 16% (Panel A), the number of Hispanics taking calculus by 27% (Panel B), and the number of Hispanics passing an AP exam by 10% (Panel C). The degree to which this decreases the achievement gap is presented in Appendix Table A.3, Column 3. These results also hold in absolute terms (see Appendix Table A.4) and hold for a variety of other outcomes, including the number of gifted students, advanced math courses, and college preparatory science courses taken (see Appendix Table A.5). The results are also robust to a variety of specifications and I rule out alternative hypotheses in Appendix Table A.6.

Taken as a whole, these results suggest that SLTV is a meaningful force that can improve Hispanic student performance in public schools and reduce the achievement gap. However, academic brilliancy is not typically associated with the banal, mindless enjoyment of lazing on a couch before a flatscreen. So what might drive these results?

## 4.1 Identity within schools

I identify two outcomes in public schools that speak to the strength of one's Hispanic identity: (1) classification as a 'Limited English Proficient' (LEP) student, and (2) harassment or bullying on the basis of race, color, or national origin. Table 1, Panel D shows that Hispanics with access to SLTV are 30% more likely to be classified as a 'Limited English Proficient' (LEP) student when compared to their peers. This decrease in educational performance contrasts with all other academic outcomes studied thus far, suggesting that it is not a difference in general intelligence or work ethic that drives this result, but rather an idiosyncratic decline in English speaking ability. Panel E shows that Hispanics with access to SLTV are also differentially more likely to be bullied on the basis of their ethnicity. Appendix Table A.8 shows that these results hold in absolute terms as well. Any mechanism through which SLTV increases the propensity for Hispanic students to be bullied (such as students picking on strong academic performers) would need to reconcile the null result for bullying based on sex. My preferred explanation is that Hispanics watching SLTV make their ethnic identity more salient, making them a greater target for bullying along this specific dimension.

Thus, though it is impossible to rule out all other stories that may drive this set of results, there are not many which can explain the reversal in academic ability for English proficiency and the increased bullying on the basis of ethnicity but not sex among Hispanic students. A strengthened Hispanic identity through SLTV, wherein Hispanics feel a stronger affinity towards Hispanic cultural practices, people, and countries of origin, neatly fits these facts.

# 5 Zeroing in on the identity mechanism

I turn to the content of these SLTV programs in order to assess the potential mechanisms through which SLTV could increase educational performance: (1) SLTV programs strengthening the Hispanic identity, (2) SLTV programs stressing the importance of education, and (3) SLTV programs providing good role models for students. I infer the content of SLTV programs using keyword matching of terms related to each mechanism in the archive.org TV transcript database, described in Table A.1. To evaluate the strength of each mechanism, I modify the main specification by interacting the difference-in-discontinuity with the salience of each mechanism:

$$y_{i,j} = \beta \mathbb{I}[InsideContour_{i,j}] \times \mathbb{I}[Hispanic_{i,j}] \times Mechanism_s + \gamma_k + \delta X_i + \epsilon_{i,j}$$

where $s$ indexes a given SLTV station, and $Mechanism_s$ is the percentage of programs from the nearest station focused on a given mechanism. The triple interaction term between Inside Contour, Hispanic, and Mechanism yields the elasticity of the outcome with respect to the mechanism, and is thus the coefficient of interest. Table 2 displays results for regressions following this specification. I focus first on column 1, which measures the strength of the identity mechanism. The triple interaction term is positive for all academic outcomes. These results indicate that SLTV stations increase Hispanic academic performance more when they focus more on the Hispanic identity. Thus, if these identity-focused shows impart a stronger sense of identity for Hispanics, then this would suggest that identity can be mobilized to close the Hispanic achievement gap.

However, the results do not support other mechanisms driving the increases in educational attainment. Table 2, Column 2 suggests that a greater emphasis on education in SLTV programs does not necessarily translate into stronger academic performance among Hispanics when compared to their peers. Table 2, Column 3 looks at the percentage of programs that contain good role models for students and children. As in the preceding case of education, the sign on the triple interaction term is mixed and never significant.

In the full version of this paper, I also examine foot-traffic data and find that Hispanics more frequently visit Hispanic branded establishments when in the presence of SLTV. Collectively, these results suggest that an identity mechanism drives these results.

# 6 Conclusion

Americans spend an average of three hours a day watching TV—more than any other activity but sleep! Accordingly, a large literature has examined the impact that television has on education. Prior work has frequently been correlational and findings remain conflicted: one line of research contends that TV is as a distraction which 'rots' the mind and harms student outcomes (Zavodny, 2006),[4] while another line of inquiry has found consistent null effects.[5] Gentzkow and Shapiro (2008) are closest to this paper in using

[4]See also Aksoy and Link (2000), Hornik (1981), and Keith et al. (1986). This theory enjoys popular support (see Winn (2002) or Gentile (2004) which finds broad support for the theory among paediatricians). Huang and Lee (2010) and Nakamuro et al. (2015) use more sophisticated panel data approaches and also find negative (but smaller) effects.

[5]Gaddy (1986), Gortmaker et al. (1990), and Hu et al. (2020) take correlational approaches, while Munasib and Bhattacharya (2010) and Kureishi and Yoshida (2013) use self-reportedly weak instruments that may generate the null.

a difference-in-difference strategy to find that TV improves student test scores—particularly among non-white students and English language learners. I contribute to this literature by taking a quasi-experimental approach and examining mechanisms.

Others have studied the effect of television on Hispanic communities. Oberholzer-Gee and Waldfogel (2009) demonstrate that the presence of Spanish language local news increases Hispanic voter turnout, whereas Velez and Newman (2019) (who develop the instrument used in this paper) find that SLTV depresses Hispanic voter turnout. I extend on this literature by moving beyond the political realm, arguing that the consequences of SLTV are large in educational settings, and also provide the first evidence on a mechanism through which SLTV operates: identity.

There is a growing literature that looks at how identity can influence behaviour. This has been studied through theory, in the lab, and the field.[6] However, the underlying forces that construct identity (rather than simply triggering them via priming or other short-term interventions) are less well understood. Bisin et al. (2010), Atkin, Colson-Sihra and Shayo (2019), and Bazzi et al. (2019) encompass some recent studies on this topic, and all come to the conclusion that intergroup tensions or differences lead to a strengthening of identity. I contribute to this literature by proposing a media-based channel through which the Hispanic identity may be strengthened and influence action. This is closest to work such as Jensen and Oster (2009) and Gentzkow and Shapiro (2004), which establish a link between media & gender norms and media & anti-Americanism respectively.[7]

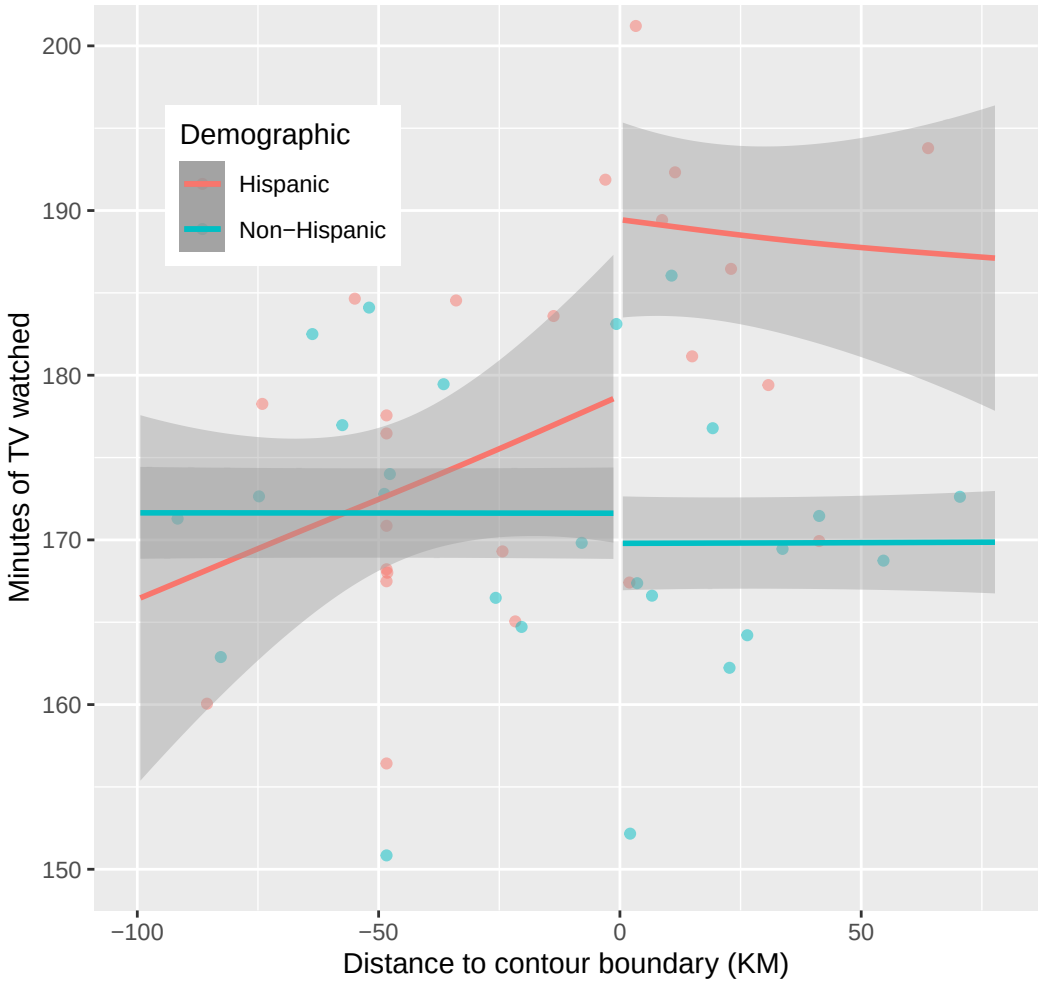
Finally, in the education and psychology literature, stereotype threat is a phenomenon that pinpoints minority identities as a root cause of achievement gaps (Appel and Kronberger (2012), Spencer, Logel and Davies (2016)). This has led to the rise of methods such as "situational disengagement" to avoid the negative stigma of identity (Nussbaum and Steele, 2007). This paper argues that a stronger sense of identity may not have uniformly negative consequences on Hispanic students, creating space for a more positive conception of identity.

[6]See Akerlof and Kranton (2000), Benjamin, Choi and Strickland (2007), Benjamin, Choi and Fisher (2010), and Bursztyn et al. (2019), among others. Alesina, Giuliano and Nunn (2013) take the long view and show how gender norms can be traced back to early agricultural practices.

[7]Other related work on the impact of mass media on social outcomes include Ferrara, Chong and Duryea (2012), Kearney and Levine (2015), Olken (2009), DellaVigna and Kaplan (2007), Yanagizawa-Drott (2014), and Putnam (2001). For an overview, see DellaVigna and La Ferrara (2015).

## Figures and Tables

Figure 1: Minutes of TV watched across the coverage contour




Lowess smoothed (lines) and binscattered (points) minutes of television watched by distance to SLTV coverage contour boundary. Negative values indicate individuals outside of a contour (no SLTV). Hispanic viewership is in red, non-Hispanic viewership is in blue. Minutes of TV watched are residualized by individual level age, age$^2$, sex, and county level controls for log(income), log(population) and percent Hispanic.

Table 1: Effect of Spanish language TV on Hispanic vs. Asian academic achievement

| | (1) | (2) | (3) |
|---|---|---|---|
| Panel A: IHS(SAT/ACTs taken) | | | |
| TV dummy × Hispanic | 0.1598*** | 0.1598*** | 0.1598*** |
| | (0.0264) | (0.0264) | (0.0264) |
| N | 21,610 | 21,610 | 21,610 |
| Panel B: IHS(calculus taken) | | | |
| TV dummy × Hispanic | 0.2718*** | 0.2718*** | 0.2718*** |
| | (0.0369) | (0.0369) | (0.0369) |
| N | 11,460 | 11,460 | 11,460 |
| Panel C: IHS(APs passed) | | | |
| TV dummy × Hispanic | 0.0964*** | 0.0966*** | 0.0972*** |
| | (0.0346) | (0.0353) | (0.0360) |
| N | 3,757 | 3,757 | 3,757 |
| Panel D: IHS(limited English proficiency) | | | |
| TV dummy × Hispanic | 0.3042*** | 0.3042*** | 0.3042*** |
| | (0.0379) | (0.0379) | (0.0379) |
| N | 83,004 | 83,004 | 83,004 |
| Panel E: IHS(bullied based on ethnicity) | | | |
| TV dummy × Hispanic | 0.0015* | 0.0015* | 0.0015* |
| | (0.0009) | (0.0009) | (0.0009) |
| School district FE | Yes | Yes | Yes |
| # Hispanic, Asian students | Yes | Yes | Yes |
| School size controls | No | Yes | Yes |
| School type controls | No | No | Yes |

*Notes:* The table presents coefficient estimates from regressions at the school-ethnicity level, only keeping schools within 100 KM of a Spanish language TV contour boundary. The dependent variables are inverse hyperbolic sine transformed counts of the number of students taking the SAT or ACT in Panel A, the number of students enrolled in calculus in Panel B, the number of Advanced Placement exams passed in Panel C, the number of students labelled as having limited English proficiency in Panel D, and the number of students bullied on the basis of their ethnicity in Panel E. TV dummy is an indicator variable for a school with access to Spanish language television, which is interacted with an indicator for whether the demographic is Hispanic (the omitted group is Asians). Columns 1-3 control for the number of Hispanic and Asian students enrolled. Columns 2-3 control for the number of teachers and total number of students at the school. Column 3 controls for indicators denoting whether the school contains a primary, middle, and high school division. School district fixed effects are always included. Standard errors are clustered at the school district level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 2: Differential effect of Spanish language TV by program content on Hispanic vs. Asian academic achievement

| | (1) | (2) | (3) |
|---|---|---|---|
| Panel A: IHS(SAT/ACTs taken) | | | |
| TV × Hispanic × % programs on identity | 2.313** | | |
| | (0.943) | | |
| TV × Hispanic × % programs on education | | −0.516 | |
| | | (0.626) | |
| TV × Hispanic × % programs with role models | | | −2.085 |
| | | | (2.151) |
| N | 21,610 | 21,610 | 21,610 |
| Panel B: IHS(calculus taken) | | | |
| TV × Hispanic × % programs on identity | 2.788*** | | |
| | (1.034) | | |
| TV × Hispanic × % programs on education | | 0.829 | |
| | | (0.666) | |
| TV × Hispanic × % programs with role models | | | 1.616 |
| | | | (2.463) |
| N | 7,112 | 7,112 | 7,112 |
| Panel C: IHS(APs passed) | | | |
| TV × Hispanic × % programs on identity | 1.721 | | |
| | (1.280) | | |
| TV × Hispanic × % programs on education | | 0.903 | |
| | | (0.922) | |
| TV × Hispanic × % programs with role models | | | −1.184 |
| | | | (2.989) |
| N | 3,168 | 3,168 | 3,168 |
| School district FE | Yes | Yes | Yes |
| # Hispanic, Asian students | Yes | Yes | Yes |
| School size controls | No | Yes | Yes |
| School type controls | No | No | Yes |

*Notes:* The table presents coefficient estimates from regressions at the school-ethnicity level, only keeping schools within 100 KM of a Spanish language TV contour boundary. The dependent variables are inverse hyperbolic sine transformed counts of the number of students taking the SAT or ACT in Panel A, the number of students enrolled in calculus in Panel B, and the number of Advanced Placement exams passed in Panel C. % programs on identity, education, and role models are coded based on TV channel network transcripts. TV dummy is an indicator variable for a school with access to Spanish language television, which is interacted with an indicator for whether the demographic is Hispanic (the omitted group is Asians) and the % of programs on identity, education, and role models. Columns 1-3 control for the number of Hispanic and Asian students enrolled. Columns 2-3 control for the number of teachers and total number of students at the school. Column 3 controls for indicators denoting whether the school contains a primary, middle, and high school division. School district fixed effects are always included. Standard errors are clustered at the school district level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

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ONLINE APPENDIX

# Appendix A Auxiliary data information

**Migration data** Data on migration comes from the 2011-2015 American Community Survey (ACS), which reports the number of people moving from each origin county to destination county (aggregated over the five years).[1] This sample also contains migration flows for the Hispanic population.

The migration data from the ACS is provided at the origin county-destination county level. I define a county as receiving SLTV if at least 50% of the area that the county encompasses is inside of the coverage contour.[2] There are 636 such counties (destination within 100 KM). The average origin county has 20 destination counties for which there is significant enough cross-county Hispanic migration that the ACS reports data for it.

**Civil Rights Data Collection (CRDC)** Below are descriptions of the academic outcomes as defined by the CRDC:

- **SAT/ACTs taken:** The SAT Reasoning test "is a nationally recognized assessment used to indicate college readiness. The SAT (formerly the Scholastic Aptitude Test) is sponsored by the College Board." The ACT test "is a nationally recognized assessment used to indicate college readiness. The ACT is sponsored by ACT, Inc." (CRDC (2016)) Scores for one of the two exams were almost universally required for admission to colleges in the United States in 2015.
- **Calculus taken:** Calculus "is a (college-preparatory) course with topics that include the study of derivatives, differentiation, integration, the definite and indefinite integral, and applications of calculus. Typically, students have previously attained knowledge of precalculus topics (some combination of trigonometry, elementary functions, analytic geometry, and math analysis)." (CRDC (2016)) It is frequently the most advanced mathematics course offered in US high schools.
- **AP programs passed:** The AP program is administered by the College Board, and defines a standardized college-level curriculum that is taught to high school students in AP Classes. In conjunction with AP Classes, AP Exams are national examinations which are designed to test mastery of material taught in AP classes. These exams are scored on a scale ranging from 1 to 5, with scores below a 3 marked as a failed exam. Even among the students who select into these classes (22% in 2015[3]), a substantial number of students who take these exams fail them - approximately 35% (College Board (2020*b*)).
- **Limited English Proficiency (LEP):** LEP students (also called English Learner students) are students that, as a result of their limited command over the English language, have difficulty participating in

[1] Historically, approximately 15% of the ACS migration data has been allocated, or imputed based on salient characteristics (United States Census Bureau (2020*a*)).

[2] Results are robust to different area cutoffs for a county to be considered inside the coverage contour.

[3] Data computed from number of high school graduates in 2015 (National Student Clearinghouse Research Center, (2015*a*)), and number of seniors who sat an AP exam in 2015. This is how the College Board currently tracks national AP participation (no comparable summary statistic was released in 2015) (College Board, (2015*b*))

regular school activities.[4] 9% of all public school students are considered LEP, and while students are placed into the program is at the discretion of individual school districts, all districts must provide language assistance services and have staff qualified to implement the LEP programs.[5]

- **Ethnicity-based bullying:** Harassment or bullying on the basis of race, color, or national origin "refers to intimidation or abusive behavior toward a student based on actual or perceived race, color, or national origin. Harassing conduct may take many forms, including verbal acts and name-calling, as well as non-verbal behavior, such as graphic and written statements, or conduct that is physically threatening, harmful or humiliating. The conduct can be carried out by school employees, other students, and non-employee third parties. Bullying on the basis of race, color, or national origin constitutes racial harassment." (CRDC, (2016)) A similar definition exists for bullying based on sex.

These variables are all reported at demographic level within schools. Additional outcomes used from the CRDC include the number of gifted students enrolled in the school, the number of students taking advanced math courses (including trigonometry, analytic geometry, math analysis, probability and statistics, and precalculus), enrollment in college preparatory courses for biology, physics, and chemistry, the number of students retained from one year to the next, and the number of students classified under IDEA (served under the Individuals with Disabilities Education Act). Additional variables from the CRDC used in the analysis include the address of the school (for geocoding), the school district, the number of total, Hispanic, and Asian students, and indicators for whether the school contains a primary school, middle school, and high school. School non-compliance on reporting for mandatory data typically represents $< 1\%$ of total data.

**archive.org transcript data** Appendix Table A.1 presents the keywords within SLTV transcripts used to identify each mechanism. Panel A contains the list of word stubs for Hispanic countries. Given that about half of all SLTV programming is locally produced or translations of US television content (such as news, the weather, or sports), these keywords are meant to capture the SLTV programming that is either produced abroad or focused on events abroad. Panel B contains a list of common words relating to education. This is meant to capture the extent to which a TV program focuses on education. Panel C contains a list of telenovelas (television dramas) aimed at children with good role models that aired before 2015.

Data is collected at the parent network level and values for each network is assigned to each affiliate TV station. Transcript data from the parent network is a reasonable proxy for local television content given that more than half the content in SLTV stations are either sourced internationally or produced for national consumption.

**Safegraph foot-traffic data** Restaurants in the Safegraph data are tagged with the kind of cuisine that they serve. I classify a restaurant as Hispanic-branded if any of the following tags apply to it: 'Argentinean

[4]The specific definition of a LEP student depends on individual state regulation, but must also satisfy the criteria outlined under Title IX of the Elementary and Secondary Education Act). The most salient features of Title IX are that students must either not speak English as a native language or come from an environment where non-English languages are dominant, and also face substantial difficulty in engaging with others on the basis of their English ability.

[5]Department of Justice and Department of Education,"Ensuring English Learner Students Can Participate Meaningfully and Equally in Educational Programs" contains a full enumeration of the responsibilities school districts have. It further includes requirements such as ensuring equal access to various school programs etc.

Food', 'Cuban Food', 'Latin American Food', 'Mexican Food', 'Peruvian Food', 'Spanish Food', 'Tapas'. 'Japanese Food', 'Brazilian Food', and 'Cajun and Creole Food' are the tags used for the respective branding.

Other non-restaurant establishments do not contain explicit tags (relating to nationality or otherwise). Thus, for internal consistency, I classify recreation establishments using the same keyword matching procedure as the TV transcript data. The same set of countries used for identity-based SLTV transcripts are used to identify Hispanic-branded establishments. For Japan and Brazil, these country name stubs are used. For the case of Cajun and Creole, the case-insensitive terms 'cajun', 'creole', 'haiti', and 'jamaica' are used (the latter two representing the two largest countries with substantial Creole speaking populations). A manual check of 100 restaurants and recreation establishments validates that these locations are correctly classified.

**Geocoding** Geocoding based on address names is performed by ArcGIS to obtain a particular latitude/longitude. The US Census Geocoder is used to validate these locations. This geocoding procedure is successful over 99.9% of the time. Schools and other locations not successfully geocoded are dropped from the sample. For counties and other non-point locations, distances to the SLTV coverage contour boundary are computed using the minimum distance from the region to the boundary.

# Appendix B Hispanic migration across SLTV boundaries

One concern for identification is that Hispanics may move based on access to SLTV, causing results to be driven by selection. I investigate whether this occurs using census data on migration. As mentioned in Appendix A, this migration data is provided at the origin county-destination county level. Given the relative size of a county, I define a county as receiving SLTV if at least 50% of its area is inside of the SLTV coverage contour.[6] I present summary statistics for this sample in Table A.13.

Given the role that the distance between counties plays in migration distances, I modify the difference-in-discontinuities approach to this interaction. The main specification is also adapted slightly for this data at the origin county-destination county-ethnicity level. The first specification I examine is:

$$y_{o,d,j} = \beta \mathbb{I}[InsideContour_o] \times \mathbb{I}[Hispanic_j] \times Distance_{o,d} + \gamma_d + \delta X_o + \epsilon_{o,d,j}$$

where $o$ indexes an origin county, $d$ a destination county, and $j$ is a demographic category (Hispanic or not). This first specification only keeps destination counties that are within 100 KM of the contour boundary. To test for whether Hispanics differentially cross the contour boundary when moving, I split the sample into destination counties inside & outside the contour and test for whether they differentially migrate to contours outside or into the contour respectively: therefore, the coefficient of interest is the interaction between $InsideContour_o$ and $Hispanic$ indicator. All specifications include destination fixed effects and controls at the origin county level.

Table A.14 presents this regression, where the outcome is the inverse hyperbolic sine transformed value of the number of migrants between the two counties. Panel A shows the sample where destination counties are inside the contour and finds that Hispanics do not differentially migrate to counties outside the contour. Panel B shows the sample where destination counties are outside the contour and finds that Hispanics do not differentially migrate to counties inside the contour. Coefficients are stable across columns, which add origin county level controls for log(population), % county Hispanic, and mean log(income) in each successive column.

Table A.15 changes the sample to those where the origin county are within 100 KM of the contour boundary. This specification flips the $o, d$ subscripts, so that the specification is now:

$$y_{o,d,j} = \beta \mathbb{I}[InsideContour_d] \times \mathbb{I}[Hispanic_j] \times Distance_{o,d} + \gamma_o + \delta X_d + \epsilon_{o,d,j}$$

which can be interpreted similarly, except that we are now looking at migration to a given destination county conditional on viewing their origin county. Table A.15, Panel A shows the sample where origin counties are inside the contour and finds that Hispanics do not migrate in greater numbers across the contour. Panel B shows the sample where origin counties are outside the contour and finds that Hispanics do not differentially migrate in greater numbers across the contour. In fact, these results show a negative sign, suggesting that if anything, Hispanics are averse to moving across these boundaries. This is sufficient for me to make the argument that there is no selection, given that so long as there are not positive coefficients, there is no evidence of migration across contour borders.[7] One might wonder why results are not symmet-

[6] Results are robust to different area cutoffs for a county to be considered inside the coverage contour.

[7] One potential reason for aversion to moving across the contour boundary could be the tightness of Hispanic communities with SLTV if there is indeed an identity mechanism at play, or simply something in common to bond over.

ric to those displayed in Table A.14. This is due to the census data censoring counties for which there is a low number of migrants.

Tables A.16 and A.17 replicate the prior analysis, but now uses only the regression discontinuity interacted with the Hispanic indicator, and so no longer examines the differential amount of migration, but rather the absolute. The null result remains when examining the destination sample and, reassuringly, it does too in the origin sample as well too.

But even in cases where significant results are observed, the base rate of migration is sufficiently low that it should not drive results. in the origin county sample, an average of 84 Hispanic people are observed to move between each county-county pair (median: 25) over the five year period which the dataset spans. This also speaks to the magnitude of the coefficients observed, where the drop in 10 to 40% of migrants observed is plausible if it induces slightly fewer people to move.

These results combined indicate that movement across coverage contours is not a major threat to identification.

# Appendix C Additional figures and tables

Figure A.1: Map of coverage contours of Spanish Language TV stations and public schools within 100 KM of the contour boundary in the US

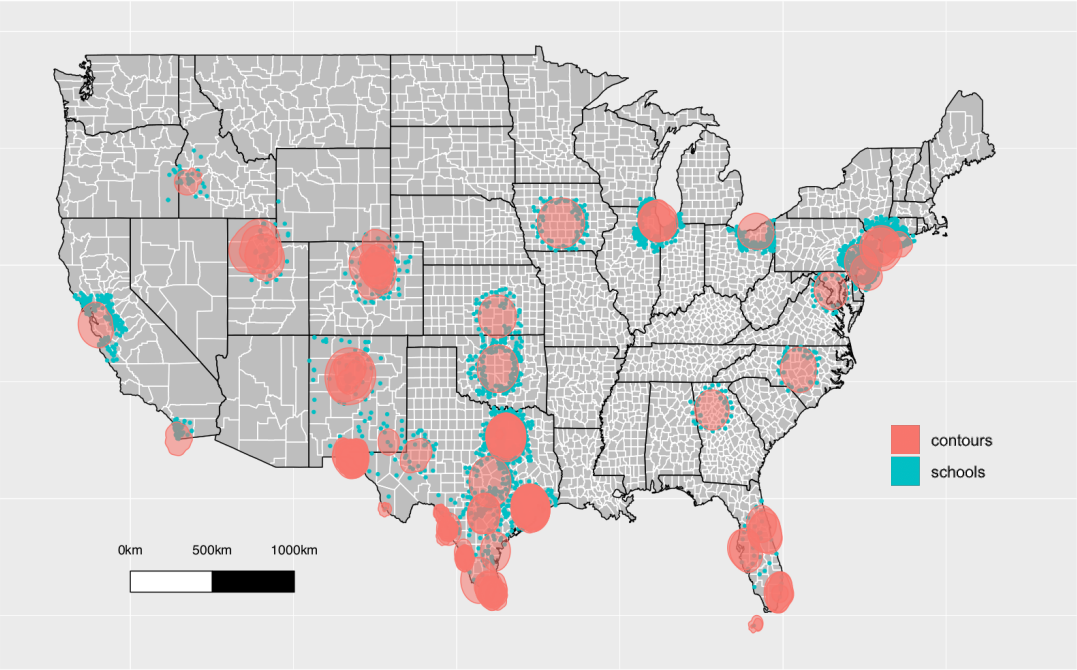

Table A.1: TV transcript keywords

| | |
|---|---|
| *Panel A: Hispanic references* | mexic, bolivia, chile, argentin, venezuela, beliz, costa rica, salvador, guatemala<br>hondur, nicaragua, panama, colombia, ecuador, guyana, paragua, peru<br>urugu, cuba, dominican, puerto, latin |
| *Panel B: Education references* | educación , enseñanza, colegio, escuela, universidad, estudio, estudiar, estudiante<br>alumna, alumno, profesora, profesor, maestro, maestra, clase, rango, grado<br>aprender, mates, matematicas |
| *Panel C: Role model references* | Vivan los niños, Alegrijes y rebujos, Aventuras en El tiempo, amigos por siempre<br>Misión S.O.S., Carrusel y El abuelo y Yo, El Juego de la Vida, De pocas pulgas<br>luz Clarita, Serafín, 31 minutos, Bizbirije, Odisea Burbujas, El Tesoro del Saber<br>Topo Gigio, Once Niñas y Niños |

*Notes:* Television transcripts are classified as containing a reference name if any keyword (or program title in Panel C) in the panel is exactly matched within the word, ignoring case. Panel A contains the list of word stubs for Hispanic countries. Panel B contains a list of common words relating to education. Panel C contains a list of telenovelas with good role models for children that aired before 2015.

Table A.2: Effect of TV contour regulation on TV watched by ethnicity — parents and foreign born residents

| | *Minutes of TV watched* | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Panel A: TV watched with parents | | | | |
| TV dummy × Hispanic | 0.481* | 0.507** | 0.523** | 0.522** |
| | (0.251) | (0.239) | (0.231) | (0.230) |
| TV dummy | -0.318** | -0.336** | -0.327** | -0.328** |
| | (0.144) | (0.140) | (0.138) | (0.139) |
| N | 91,315 | 91,315 | 91,315 | 91,315 |
| Panel B: TV watched by foreign born residents | | | | |
| TV dummy × Hispanic | 12.248* | 11.822* | 11.268 | |
| | (6.955) | (6.957) | (6.989) | |
| TV dummy | 0.910 | 0.950 | 2.695 | |
| | (4.581) | (4.581) | (4.743) | |
| N | 8,929 | 8,929 | 8,929 | |
| Indiv. demographic | Yes | Yes | Yes | Yes |
| County log(incoome) | Yes | Yes | Yes | Yes |
| County % Hispanic | No | Yes | Yes | Yes |
| County log(pop.) | No | No | Yes | Yes |
| Foreign born × Hispanic | No | No | No | Yes |

*Notes:* The table presents coefficient estimates from regressions at the individual level. Panel A uses the number of minutes of TV watched with parents as the outcome, while Panel B uses the total number of minutes of TTV watched and restricts the sample to those who were born in a foreign country. TV dummy is an indicator variable for a person living in a county with access to Spanish language television, which is interacted with an indicator for whether the individual is Hispanic. Columns 1-4 include individual demographic controls for sex, age, and age squared, as well as the mean log(income) of the county. Columns 2-4 control for the percentage of the county that is Hispanic. Columns 3-4 control for the county's log(population). Column 4 controls for whether the individual is foreign born interacted with a Hispanic dummy. Standard errors are clustered at the county level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table A.3: Magnitude of the Hispanic achievement gap and SLTV effect size

| | White-Hispanic gap | Asian-Hispanic gap | Gap after SLTV |
|---|---|---|---|
| | (1) | (2) | (3) |
| SAT/ACTs taken | 36.6 % | 46.8% | 38.3% |
| Calculus taken | 15.0% | 53.6% | 41.0% |
| APs passed | 17.8% | 72.3% | 69.6% |
| Gifted students | 56.6% | 60.5% | 51.0% |
| Advanced math taken | 25.8% | 45.3% | 31.7% |
| Biology taken | -6.2% | 5.6% | -18.9% |
| Physics taken | 25.4% | 43.7% | 26.2% |
| Chemistry taken | 9.9% | 27.7% | 6.7% |

*Notes:* The table presents the achievement gap in percentage terms between whites and Hispanics in column 1, and between Asian and Hispanics in column 2. Column 3 presents the achievement gap using regression coefficients from Table **??**, Column 1 for SAT/ACTs taken, calculus taken, and APs passed, and coefficients from Appendix Table A.5 for the remaining outcomes.

Table A.4: Effect of Spanish language TV on Hispanic academic achievement

| | (1) | (2) | (3) |
|---|---|---|---|
| Panel A: IHS(Hispanic SAT/ACTs taken) | | | |
| TV dummy | 0.036*** | 0.038*** | 0.034*** |
| | (0.013) | (0.012) | (0.012) |
| N | 21,610 | 21,610 | 21,610 |
| Panel B: IHS(Hispanic calculus taken) | | | |
| TV dummy | 0.068*** | 0.076*** | 0.075*** |
| | (0.012) | (0.012) | (0.011) |
| N | 11,460 | 11,460 | 11,460 |
| Panel C: IHS(Hispanic APs passed) | | | |
| TV dummy | 0.038*** | 0.048*** | 0.047*** |
| | (0.009) | (0.009) | (0.009) |
| N | 3,757 | 3,757 | 3,757 |
| County controls | Yes | Yes | Yes |
| School size controls | No | Yes | Yes |
| School type controls | No | No | Yes |

*Notes:* The table presents coefficient estimates from regressions at the school level, only keeping schools within 100 KM of a Spanish language TV contour boundary. The dependent variable are inverse hyperbolic sine transformed counts of the number of Hispanic students taking the SAT or ACT in Panel A, the number of Hispanic students enrolled in calculus in Panel B, and the number of Advanced Placement tests passed by Hispanic students in Panel C. TV dummy is an indicator variable for a school with access to Spanish language television. Table **??** Columns 1-3 include county level controls for log(income), log(population), and percentage of the county that is Hispanic, as well as school level controls for the number of Hispanic and Asian students enrolled. Columns 2-3 control for the number of teachers and total number of students at the school. Column 3 controls for indicators denoting whether the school contains a primary, middle, and high school division. School district fixed effects are always included. Standard errors are robust. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table A.5: Effect of Spanish language TV on Hispanic vs. Asian academic achievement

| | (1) | (2) | (3) |
|---|---|---|---|
| Panel A: IHS(gifted students) | | | |
| TV dummy × Hispanic | 0.2389*** | 0.2389*** | 0.2389*** |
| | (0.0284) | (0.0284) | (0.0284) |
| N | 52,130 | 52,130 | 52,130 |
| Panel B: IHS(advanced math courses) | | | |
| TV dummy × Hispanic | 0.2501*** | 0.2501*** | 0.2501*** |
| | (0.0362) | (0.0362) | (0.0362) |
| N | 14,354 | 14,354 | 14,354 |
| Panel C: IHS(biology courses) | | | |
| TV dummy × Hispanic | 0.2596*** | 0.2596*** | 0.2596*** |
| | (0.0272) | (0.0272) | (0.0272) |
| N | 19,008 | 19,008 | 19,008 |
| Panel D: IHS(physics courses) | | | |
| TV dummy × Hispanic | 0.3114*** | 0.3114*** | 0.3114*** |
| | (0.0345) | (0.0345) | (0.0345) |
| N | 13,952 | 13,952 | 13,952 |
| Panel E: IHS(chemistry courses) | | | |
| TV dummy × Hispanic | 0.2896*** | 0.2896*** | 0.2896*** |
| | (0.0273) | (0.0273) | (0.0273) |
| N | 16,472 | 16,472 | 16,472 |
| School district FE | Yes | Yes | Yes |
| # Hispanic, Asian students | Yes | Yes | Yes |
| School size controls | No | Yes | Yes |
| School type controls | No | No | Yes |

*Notes:* The table presents coefficient estimates from regressions at the school-ethnicity level, only keeping schools within 100 KM of a Spanish language TV contour boundary. The dependent variable are inverse hyperbolic sine transformed counts of the number of gifted students in Panel A, the number of students enrolled in an advanced math course in Panel B, the number of students enrolled in a biology course in Panel C, the number of students enrolled in a physics course in Panel D, and the number of students enrolled in a chemistry course in Panel E. TV dummy is an indicator variable for a school with access to Spanish language television, which is interacted with an indicator for whether the demographic is Hispanic (the omitted group are Asians). Columns 1-3 control for the number of Hispanic and Asian students enrolled. Columns 2-3 control for the number of teachers and total number of students at the school. Column 3 controls for indicators denoting whether the school contains a primary, middle, and high school division. School district fixed effects are always included. Standard errors are clustered at the state level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table A.6: Effect of Spanish language TV on Hispanic vs. Asian academic achievement: robustness and evaluating alternative hypotheses

| | (1) | (2) | (3) |
|---|---|---|---|
| Panel A.1.1: Baseline — IHS(SAT/ACTs taken) | | | |
| TV dummy × Hispanic | 0.1598*** | 0.1598*** | 0.1598*** |
| | (0.0264) | (0.0264) | (0.0264) |
| Panel A.1.2: Baseline — IHS(calculus taken) | | | |
| TV dummy × Hispanic | 0.2718*** | 0.2718*** | 0.2718*** |
| | (0.0369) | (0.0369) | (0.0369) |
| Panel A.1.3: Baseline — IHS(APs passed) | | | |
| TV dummy × Hispanic | 0.0964*** | 0.0966*** | 0.0972*** |
| | (0.0346) | (0.0353) | (0.0360) |
| Panel A.2.1: Within 50 KM of contour boundary IHS(SAT/ACTs taken) | | | |
| TV dummy × Hispanic | 0.1481*** | 0.1481*** | 0.1481*** |
| | (0.0251) | (0.0252) | (0.0252) |
| Panel A.2.2: Within 50 KM of contour boundary IHS(calculus taken) | | | |
| TV dummy × Hispanic | 0.2756*** | 0.2756*** | 0.2756*** |
| | (0.0338) | (0.0338) | (0.0338) |
| Panel A.2.3: Within 50 KM of contour boundary IHS(APs passed) | | | |
| TV dummy × Hispanic | 0.1039*** | 0.1050*** | 0.1056*** |
| | (0.0398) | (0.0403) | (0.0408) |
| Panel A.3.1: Within 33 KM of contour boundary IHS(SAT/ACTs taken) | | | |
| TV dummy × Hispanic | 0.1326*** | 0.1326*** | 0.1326*** |
| | (0.0260) | (0.0260) | (0.0260) |
| Panel A.3.2: Within 33 KM of contour boundary IHS(calculus taken) | | | |
| TV dummy × Hispanic | 0.2625*** | 0.2625*** | 0.2625*** |
| | (0.0393) | (0.0393) | (0.0393) |
| Panel A.3.3: Within 33 KM of contour boundary | | | |

| | | | |
|---|---|---|---|
| IHS(APs passed) | | | |
| TV dummy × Hispanic | 0.1257*** | 0.1285*** | 0.1295*** |
| | (0.0459) | (0.0467) | (0.0475) |
| Panel A.4.1: Within 10 KM of contour boundary IHS(SAT/ACTs taken) | | | |
| TV dummy × Hispanic | 0.0751** | 0.0751** | 0.0751** |
| | (0.0320) | (0.0320) | (0.0320) |
| Panel A.4.2: Within 10 KM of contour boundary IHS(calculus taken) | | | |
| TV dummy × Hispanic | 0.2219*** | 0.2219*** | 0.2219*** |
| | (0.0380) | (0.0381) | (0.0381) |
| Panel A.4.3: Within 10 KM of contour boundary IHS(APs passed) | | | |
| TV dummy × Hispanic | 0.0471 | 0.0478 | 0.0497 |
| | (0.0440) | (0.0438) | (0.0435) |
| Panel A.5.1: Between 25-100 KM of contour boundary IHS(SAT/ACTs taken) | | | |
| TV dummy × Hispanic | 0.2195*** | 0.2195*** | 0.2195*** |
| | (0.0328) | (0.0328) | (0.0328) |
| Panel A.5.2: Between 25-100 KM of contour boundary IHS(calculus taken) | | | |
| TV dummy × Hispanic | 0.3213*** | 0.3213*** | 0.3213*** |
| | (0.0443) | (0.0443) | (0.0443) |
| Panel A.5.3: Between 25-100 KM of contour boundary IHS(APs passed) | | | |
| TV dummy × Hispanic | 0.0807** | 0.0805** | 0.0819** |
| | (0.0383) | (0.0384) | (0.0386) |
| Panel A.6.1: Control for distance, distance$^2$ IHS(SAT/ACTs taken) | | | |
| TV dummy × Hispanic | 0.1598*** | 0.1598*** | 0.1598*** |
| | (0.0210) | (0.0210) | (0.0210) |
| Panel A.6.2: Control for distance, distance$^2$ IHS(calculus taken) | | | |
| TV dummy × Hispanic | 0.2718*** | 0.2718*** | 0.2718*** |
| | (0.0277) | (0.0277) | (0.0277) |

| | | | |
|---|---|---|---|
| Panel A.6.3: Control for distance, distance$^2$<br>IHS(APs passed) | | | |
| TV dummy × Hispanic | 0.0962*** | 0.0961*** | 0.0967*** |
| | (0.0287) | (0.0289) | (0.0291) |
| Panel B.1.1: Functional form<br>log(SAT/ACTs taken +1) | | | |
| TV dummy × Hispanic | 0.1501*** | 0.1501*** | 0.1501*** |
| | (0.0191) | (0.0191) | (0.0191) |
| Panel B.1.2: Functional form<br>log(calculus taken +1) | | | |
| TV dummy × Hispanic | 0.2413*** | 0.2413*** | 0.2413*** |
| | (0.0250) | (0.0250) | (0.0251) |
| Panel B.1.3: Functional form<br>log(APs passed +1) | | | |
| TV dummy × Hispanic | 0.0931*** | 0.0928*** | 0.0934*** |
| | (0.0280) | (0.0282) | (0.0284) |
| Panel B.2.1: Functional form<br>SAT/ACTs taken | | | |
| TV dummy × Hispanic | 11.07*** | 11.07*** | 11.07*** |
| | (1.566) | (1.567) | (1.567) |
| Panel B.2.2: Functional form<br>Calculus taken | | | |
| TV dummy × Hispanic | 7.192*** | 7.192*** | 7.192*** |
| | (1.544) | (1.544) | (1.544) |
| Panel B.2.3: Functional form<br>APs passed | | | |
| TV dummy × Hispanic | 4.676* | 4.671* | 4.710* |
| | (2.550) | (2.544) | (2.559) |
| Panel B.3.1: Functional form<br>Standardized SAT/ACTs taken | | | |
| TV dummy × Hispanic | 0.1559*** | 0.1559*** | 0.1559*** |
| | (0.0221) | (0.0221) | (0.0221) |
| Panel B.3.2: Functional form<br>Standardized calculus taken | | | |

| | | | |
|---|---|---|---|
| TV dummy × Hispanic | 0.1662*** | 0.1662*** | 0.1662*** |
| | (0.0357) | (0.0357) | (0.0357) |
| Panel B.3.3: Functional form<br>Standardized APs passed | | | |
| TV dummy × Hispanic | 0.0624* | 0.0623* | 0.0628* |
| | (0.0340) | (0.0339) | (0.0341) |
| Panel C.1.1: Weight by school size<br>IHS(SAT/ACTs taken) | | | |
| TV dummy × Hispanic | 0.2379*** | 0.2379*** | 0.2379*** |
| | (0.0311) | (0.0311) | (0.0311) |
| Panel C.1.2: Weight by school size<br>IHS(calculus taken) | | | |
| TV dummy × Hispanic | 0.2615*** | 0.2615*** | 0.2615*** |
| | (0.0312) | (0.0312) | (0.0312) |
| Panel C.1.3: Weight by school size<br>IHS(APs passed) | | | |
| TV dummy × Hispanic | 0.1097*** | 0.1093*** | 0.1106*** |
| | (0.0328) | (0.0329) | (0.0333) |
| Panel C.2.1: Weight by school-demographic size<br>IHS(SAT/ACTs taken) | | | |
| TV dummy × Hispanic | 0.0772** | 0.0765* | 0.0784** |
| | (0.0390) | (0.0398) | (0.0395) |
| Panel C.2.2: Weight by school-demographic size<br>IHS(calculus taken) | | | |
| TV dummy × Hispanic | 0.0736* | 0.0739* | 0.0787* |
| | (0.0410) | (0.0412) | (0.0411) |
| Panel C.2.3: Weight by school-demographic size<br>IHS(APs passed) | | | |
| TV dummy × Hispanic | 0.0641 | 0.0631 | 0.0647 |
| | (0.0397) | (0.0399) | (0.0403) |
| Panel C.3.1: Add school fixed effects<br>IHS(SAT/ACTs taken) | | | |
| TV dummy × Hispanic | 0.1598*** | 0.1598*** | 0.1598*** |
| | (0.0210) | (0.0210) | (0.0210) |

| | | | |
|---|---|---|---|
| Panel C.3.2: Add school fixed effects<br>IHS(calculus taken) | | | |
| TV dummy × Hispanic | 0.2718*** | 0.2718*** | 0.2718*** |
| | (0.0277) | (0.0277) | (0.0277) |
| Panel C.3.3: Add school fixed effects<br>IHS(APs passed) | | | |
| TV dummy × Hispanic | 0.1024*** | 0.1024*** | 0.1024*** |
| | (0.0325) | (0.0325) | (0.0325) |
| Panel D.1.1: Drop bilingual stations<br>IHS(SAT/ACTs taken) | | | |
| TV dummy × Hispanic | 0.1653*** | 0.1653*** | 0.1653*** |
| | (0.0234) | (0.0234) | (0.0234) |
| Panel D.1.2: Drop bilingual stations<br>IHS(calculus taken) | | | |
| TV dummy × Hispanic | 0.2826*** | 0.2826*** | 0.2826*** |
| | (0.0300) | (0.0300) | (0.0300) |
| Panel D.1.3: Drop bilingual stations<br>IHS(APs passed) | | | |
| TV dummy × Hispanic | 0.1134*** | 0.1137*** | 0.1152*** |
| | (0.0302) | (0.0303) | (0.0306) |
| Panel E.1.1: Control station characteristics<br>IHS(SAT/ACTs taken) | | | |
| TV dummy × Hispanic | 0.1598*** | 0.1598*** | 0.1598*** |
| | (0.0210) | (0.0210) | (0.0210) |
| Panel E.1.2: Control station characteristics<br>IHS(calculus taken) | | | |
| TV dummy × Hispanic | 0.2718*** | 0.2718*** | 0.2718*** |
| | (0.0277) | (0.0277) | (0.0277) |
| Panel E.1.3: Control station characteristics<br>IHS(APs passed) | | | |
| TV dummy × Hispanic | 0.0964*** | 0.0966*** | 0.0972*** |
| | (0.0288) | (0.0290) | (0.0293) |
| Panel E.2.1: Drop stations built after 1997<br>IHS(SAT/ACTs taken) | | | |

| | | | |
|---|---|---|---|
| TV dummy × Hispanic | 0.1706*** | 0.1706*** | 0.1706*** |
| | (0.0219) | (0.0219) | (0.0219) |
| Panel E.2.2: Drop stations built after 1997 IHS(calculus taken) | | | |
| TV dummy × Hispanic | 0.2803*** | 0.2803*** | 0.2803*** |
| | (0.0281) | (0.0281) | (0.0281) |
| Panel E.2.3: Drop stations built after 1997 IHS(APs passed) | | | |
| TV dummy × Hispanic | 0.1020*** | 0.1020*** | 0.1025*** |
| | (0.0293) | (0.0294) | (0.0296) |
| Panel F.1.1: Correcting for spatial autocorrelation, arbitrary spatial clusters — IHS(SAT/ACTs taken) | | | |
| TV dummy × Hispanic | 0.160*** | 0.160*** | 0.160*** |
| | (0.034) | (0.034) | (0.034) |
| Panel F.1.2: Correcting for spatial autocorrelation, arbitrary spatial clusters — IHS(calculus taken) | | | |
| TV dummy × Hispanic | 0.272*** | 0.272*** | 0.272*** |
| | (0.054) | (0.054) | (0.054) |
| Panel F.1.3: Correcting for spatial autocorrelation, arbitrary spatial clusters — IHS(APs passed) | | | |
| TV dummy × Hispanic | 0.096*** | 0.097*** | 0.097*** |
| | (0.041) | (0.041) | (0.042) |
| Panel F.2.1: Correcting for spatial autocorrelation, Bartlett kernel IHS(SAT/ACTs taken) | | | |
| TV dummy × Hispanic | 0.160*** | 0.160*** | 0.160*** |
| | (0.030) | (0.030) | (0.030) |
| Panel F.2.2: Correcting for spatial autocorrelation, Bartlett kernel IHS(calculus taken) | | | |
| TV dummy × Hispanic | 0.272*** | 0.272*** | 0.272*** |
| | (0.043) | (0.043) | (0.043) |
| Panel F.2.3: Correcting for spatial autocorrelation, Bartlett kernel IHS(APs passed) | | | |
| TV dummy × Hispanic | 0.096*** | 0.097*** | 0.097*** |
| | (0.037) | (0.037) | (0.038) |

| | | | |
|---|---|---|---|
| Panel F.3.1: Two-way cluster, school district and TV network level<br>IHS(SAT/ACTs taken) | | | |
| TV dummy × Hispanic | 0.1598*** | 0.1598*** | 0.1598*** |
| | (0.0146) | (0.0146) | (0.0146) |
| Panel F.3.2: Two-way cluster, school district and TV network level<br>IHS(calculus taken) | | | |
| TV dummy × Hispanic | 0.2718*** | 0.2718*** | 0.2718*** |
| | (0.0211) | (0.0211) | (0.0211) |
| Panel F.3.3: Two-way cluster, school district and TV network level<br>IHS(APs passed) | | | |
| TV dummy × Hispanic | 0.0964** | 0.0966** | 0.0972** |
| | (0.0190) | (0.0197) | (0.0198) |
| Panel F.4.1: Clustering at the TV station level<br>IHS(SAT/ACTs taken) | | | |
| TV dummy × Hispanic | 0.1598*** | 0.1598*** | 0.1598*** |
| | (0.0377) | (0.0377) | (0.0377) |
| Panel F.4.2: Clustering at the TV station level<br>IHS(calculus taken) | | | |
| TV dummy × Hispanic | 0.2718*** | 0.2718*** | 0.2718*** |
| | (0.0407) | (0.0408) | (0.0408) |
| Panel F.4.3: Clustering at the TV station level<br>IHS(APs passed) | | | |
| TV dummy × Hispanic | 0.0964** | 0.0966** | 0.0972** |
| | (0.0348) | (0.0354) | (0.0359) |
| Panel F.5.1: Robust errors<br>IHS(SAT/ACTs taken) | | | |
| TV dummy × Hispanic | 0.1598*** | 0.1598*** | 0.1598*** |
| | (0.0210) | (0.0210) | (0.0210) |
| Panel F.5.2: Robust errors<br>IHS(calculus taken) | | | |
| TV dummy × Hispanic | 0.2718*** | 0.2718*** | 0.2718*** |
| | (0.0277) | (0.0277) | (0.0277) |
| Panel F.5.3: Robust errors<br>IHS(APs passed) | | | |

| | | | |
|---|---|---|---|
| TV dummy × Hispanic | 0.0964** | 0.0966** | 0.0972** |
| | (0.0288) | (0.0289) | (0.0291) |
| Panel G.1.1: Comparing Hispanic and white students IHS(SAT/ACTs taken) | | | |
| TV dummy × Hispanic | 0.4360*** | 0.4360*** | 0.4360*** |
| | (0.0353) | (0.0353) | (0.0353) |
| Panel G.1.2: Comparing Hispanic and white students IHS(calculus taken) | | | |
| TV dummy × Hispanic | 0.5322*** | 0.5322*** | 0.5322*** |
| | (0.0336) | (0.0336) | (0.0336) |
| Panel G.1.3: Comparing Hispanic and white students IHS(APs passed) | | | |
| TV dummy × Hispanic | 0.2505*** | 0.2561*** | 0.2565*** |
| | (0.0333) | (0.0333) | (0.0337) |
| School district FE | Yes | Yes | Yes |
| # Hispanic, Asian students | Yes | Yes | Yes |
| School size controls | No | Yes | Yes |
| School type controls | No | No | Yes |

The table presents coefficient estimates from regressions at the school-ethnicity level, only keeping schools within 100 KM of a Spanish language TV contour boundary. The dependent variable are inverse hyperbolic sine transformed counts of the number of students taking the SAT or ACT in Panels X.X.1, the number of students enrolled in calculus in Panels X.X.2, and the number of Advanced Placement tests passed in Panels X.X.3. TV dummy is an indicator variable for a school with access to Spanish language television, which is interacted with an indicator for whether the demographic is Hispanic (the omitted group is Asians). Panel A.1 replicates the baseline specification in Table **??**. Panel A.2 reduces the sample to only schools within 50 KM of the contour boundary, Panel A.3 reduces the sample to only schools within 33 KM of the contour boundary, Panel A.4 reduces the sample to only schools within 10 KM of the contour boundary, Panel A.5 reduces the sample to only schools between 25 and 100 KM of the contour boundary, and Panel A.6 adds controls for distance and distance$^2$. Panel B.1 changes the functional form from $IHS(x)$ to $log(x+1)$, Panel B.2 changes the functional form to the variable count, and Panel B.3 changes the functional form to the standardized count. Panel C.1 weights each observation by the number of students enrolled in the school, Panel C.2 weights each observation by the number of students in the observation's demographic category in the school, and Panel C.3 adds school fixed effects. Panel D.1 drops stations that broadcast in both English and Spanish. Panel E.1 controls for characteristics of the nearest SLTV station, including its antenna's effective radiated power, height above average terrain, radiation center above mean sea level, and the presence of a directional antenna, while Panel E.2 drops observations where the nearest SLTV stations was built after 1997. Panel F.1 accounts for spatial autocorrelation by allowing for arbitrary spatial clusters for observations within 100 KM of one another, Panel F.2 accounts for spatial autocorrelation by imposing a linear decay (Bartlett kernel) on the correlation structure for observations within 100 KM of one another, Panel F.3 two-way clusters standard errors by school district and parent TV network, Panel F.4 clusters standard errors at the TV station level, and Panel F.5 uses heteroskedasticity robust standard errors. Panel G.1 changes the omitted demographic category from Asian students to white students. Columns 1-3 control for the number of Hispanic and Asian students enrolled. Columns 2-3 control for the number of teachers and total number of students at the school. Column 3 controls for indicators denoting whether the school contains a primary, middle, and high school division. School district fixed effects are always included. Except where otherwise noted, standard errors are clustered at the school district level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table A.7: Effect of Spanish language TV on Hispanic student retention

| | (1) | (2) | (3) |
|---|---|---|---|
| Panel A: IHS(Hispanic students retained) | | | |
| TV dummy | -0.0251 | -0.0211 | -0.0216 |
| | (0.0155) | (0.0152) | (0.0151) |
| N | 5,968 | 5,968 | 5,968 |
| County controls | Yes | Yes | Yes |
| School size controls | No | Yes | Yes |
| School type controls | No | No | Yes |

*Notes:* The table presents coefficient estimates from regressions at the school level, only keeping schools within 100 KM of a Spanish language TV contour boundary. The dependent variable is the inverse hyperbolic sine transformed count of the number of high school Hispanic students retained from the prior year. TV dummy is an indicator variable for a school with access to Spanish language television. Columns 1-3 include county level controls for log(income), log(population), and percentage of the county that is Hispanic, as well as school level controls for the number of Hispanic and Asian students enrolled. Columns 2-3 control for the number of teachers and total number of students at the school. Column 3 controls for indicators denoting whether the school contains a primary, middle, and high school division. Standard errors are clustered at the school district level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table A.8: Effect of Spanish language TV on Hispanic vs. Asian, placebo identity outcomes

| | (1) | (2) | (3) |
|---|---|---|---|
| Panel A: IHS(IDEA (disability) students) | | | |
| TV dummy × Hispanic | 0.0318 | 0.0325 | 0.0318 |
| | (0.0338) | (0.0339) | (0.0338) |
| N | 81,622 | 81,622 | 81,622 |
| Panel B: IHS(bullied based on sex) | | | |
| TV dummy × Hispanic | 0.0090 | 0.0088 | 0.0088 |
| | (0.0056) | (0.0055) | (0.0055) |
| N | 22,168 | 22,168 | 22,168 |
| School district FE | Yes | Yes | Yes |
| # Hispanic, Asian students | Yes | Yes | Yes |
| School size controls | No | Yes | Yes |
| School type controls | No | No | Yes |

*Notes:* The table presents coefficient estimates from regressions at the school-ethnicity level, only keeping schools within 100 KM of a Spanish language TV contour boundary. The dependent variable are inverse hyperbolic sine transformed counts of students classified under IDEA (students with disabilities) in Panel A and the number of students bullied on the basis of their sex in Panel B. TV dummy is an indicator variable for a school with access to Spanish language television, which is interacted with an indicator for whether the demographic is Hispanic (the omitted group are Asians). Columns 1-3 control for the number of Hispanic and Asian students enrolled. Columns 2-3 control for the number of teachers and total number of students at the school. Column 3 controls for indicators denoting whether the school contains a primary, middle, and high school division. School district fixed effects are always included. Standard errors are clustered at the school district level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table A.9: Effect of Spanish language TV on Hispanic identity outcomes

| | (1) | (2) | (3) |
|---|---|---|---|
| Panel A: IHS(limited English proficiency) | | | |
| TV dummy | 0.126*** | 0.127*** | 0.116*** |
| | (0.006) | (0.006) | (0.005) |
| N | 41,502 | 41,502 | 41,502 |
| Panel B: IHS(bullied based on ethnicity) | | | |
| TV dummy | 0.002*** | 0.002*** | 0.003*** |
| | (0.001) | (0.001) | (0.001) |
| N | 40,811 | 40,811 | 40,811 |
| County controls | Yes | Yes | Yes |
| # Hispanic, Asian students | Yes | Yes | Yes |
| School size controls | No | Yes | Yes |
| School type controls | No | No | Yes |

*Notes:* The table presents coefficient estimates from regressions at the school level, only keeping schools within 100 KM of a Spanish language TV contour boundary. The dependent variable are inverse hyperbolic sine transformed counts of Hispanic students classified as having limited English proficiency in Panel A and the number of Hispanic students bullied on the basis of their ethnicity or race in Panel B. TV dummy is an indicator variable for a school with access to Spanish language television, which is interacted with an indicator for whether the demographic is Hispanic (the omitted group are Asians). Columns 1-3 include county level controls for log(income), log(population), and percentage of the county that is Hispanic, as well as school level controls for the number of Hispanic and Asian students enrolled. Columns 2-3 control for the number of teachers and total number of students at the school. Column 3 controls for indicators denoting whether the school contains a primary, middle, and high school division. Standard errors are clustered at the school district level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table A.10: Effect of Spanish language TV by program content on Hispanic academic achievement

| | (1) | (2) | (3) |
|---|---|---|---|
| Panel A: IHS(SAT/ACTs taken) | | | |
| TV × % programs on identity | 2.054*** | | |
| | (0.678) | | |
| TV × % programs on education | | 1.116** | |
| | | (0.453) | |
| TV × % programs with role models | | | 1.601 |
| | | | (1.259) |
| N | 13,480 | 13,480 | 13,480 |
| Panel B: IHS(calculus taken) | | | |
| TV × % programs on identity | 0.581 | | |
| | (0.787) | | |
| TV × % programs on education | | −0.709 | |
| | | (0.502) | |
| TV × % programs with role models | | | -3.098* |
| | | | (1.583) |
| N | 7,112 | 7,112 | 7,112 |
| Panel C: IHS(APs passed) | | | |
| TV × % programs on identity | 5.475*** | | |
| | (1.079) | | |
| TV × % programs on education | | -0.132 | |
| | | (0.666) | |
| TV × % programs with role models | | | -0.554 |
| | | | (2.384) |
| N | 3,168 | 3,168 | 3,168 |
| County controls | Yes | Yes | Yes |
| # Hispanic, Asian students | Yes | Yes | Yes |
| School size controls | No | Yes | Yes |
| School type controls | No | No | Yes |

*Notes:* The table presents coefficient estimates from regressions at the school level, only keeping schools within 100 KM of a Spanish language TV contour boundary. The dependent variable are inverse hyperbolic sine transformed counts of the number of Hispanic students taking the SAT or ACT in Panel A, the number of Hispanic students enrolled in calculus in Panel B, and the number of Advanced Placement tests passed by Hispanic students in Panel C. % programs on identity, education, and role models are coded based on TV channel network transcripts. TV dummy is an indicator variable for a school with access to Spanish language television, which is interacted with the % of programs on identity, education, and role models. Columns 1-3 include county level controls for log(income), log(population), and percentage of the county that is Hispanic, as well as school level controls for the number of Hispanic and Asian students enrolled. Columns 2-3 control for the number of teachers and total number of students at the school. Column 3 controls for indicators denoting whether the school contains a primary, middle, and high school division. Standard errors are clustered at the school district level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table A.11: Effect of TV contour regulation on time spent on child's education by ethnicity

| | *Minutes spent on child's education* | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Panel A: Total TV watched | | | | |
| TV dummy × Hispanic | 0.060 | 0.105 | 0.178 | 0.179 |
| | (0.334) | (0.340) | (0.330) | (0.328) |
| TV dummy | 0.194 | 0.164 | 0.205 | 0.202 |
| | (0.205) | (0.208) | (0.224) | (0.225) |
| Indiv. demographic | Yes | Yes | Yes | Yes |
| County log(income) | Yes | Yes | Yes | Yes |
| County % Hispanic | No | Yes | Yes | Yes |
| County log(pop.) | No | No | Yes | Yes |
| Foreign born × Hispanic | No | No | No | Yes |

*Notes:* The table presents coefficient estimates from regressions at the individual level, only keeping those living in a county within 100 KM of a Spanish language TV contour boundary. The dependent variable is the number of minutes spent on household children's education (e.g. helping with homework or talking with teachers). TV dummy is an indicator variable for a person living in a county with access to Spanish language television based on the FCC regulation OET Bulletin 69, which is interacted with an indicator for whether the individual is Hispanic. Columns 1-4 include demographic controls for sex, age, and age squared, as well as the mean log(income) of the county. Columns 2-4 control for the percentage of the county that is Hispanic. Columns 3-4 control for the county's log(population). Column 4 controls for whether the individual is foreign born interacted with a Hispanic dummy. Standard errors are robust. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table A.12: Effect of Spanish language TV on Hispanic foot traffic

| | *IHS(visitors to location)* | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Panel A.1: Restaurants — Hispanic dummy | | | | |
| TV × Hispanic food | 0.829*** | 0.829*** | 0.829*** | 0.829*** |
| | (0.151) | (0.151) | (0.151) | (0.151) |
| Panel A.2: Restaurants — Japanese dummy | | | | |
| TV × Japanese food | 0.084 | 0.084 | 0.084 | 0.084 |
| | (0.183) | (0.183) | (0.183) | (0.184) |
| Panel A.3: Restaurants — Brazilian dummy | | | | |
| Hispanic × TV × Brazilian food | 0.927*** | 0.927*** | 0.927*** | 0.927*** |
| | (0.183) | (0.183) | (0.183) | (0.184) |
| Panel A.4: Restaurants — Cajun and Creole dummy | | | | |
| TV × Cajun and Creole food | -0.240 | -0.240 | -0.240 | -0.240 |
| | (0.409) | (0.409) | (0.409) | (0.410) |
| N | 101,618 | 101,618 | 101,618 | 101,618 |
| Panel B.1: Recreation — Hispanic dummy | | | | |
| TV × Hispanic brand | 0.885*** | 0.885*** | 0.885*** | 0.885*** |
| | (0.327) | (0.327) | (0.327) | (0.327) |
| Panel B.2: Recreation — Japanese dummy | | | | |
| TV × Japanese brand | 2.360*** | 2.360*** | 2.360*** | 2.360*** |
| | (0.409) | (0.409) | (0.409) | (0.409) |
| Panel B.3: Recreation — Brazilian dummy | | | | |
| TV × Brazilian brand | 0.077 | 0.077 | 0.077 | 0.077 |
| | (0.498) | (0.498) | (0.498) | (0.499) |
| Panel B.4: Recreation — Cajun and Creole dummy | | | | |
| TV × Cajun and Creole brand | -0.550 | -0.550 | -0.550 | -0.550 |
| | (2.051) | (2.051) | (2.051) | (2.053) |
| N | 34,990 | 34,990 | 34,990 | 34,990 |
| County log(income) | Yes | Yes | Yes | Yes |
| County % Hispanic | No | Yes | Yes | Yes |
| County log(pop.) | No | No | Yes | Yes |
| County FE | No | No | No | Yes |
| NAICS code FE | No | No | No | Yes |

*Notes:* The table presents coefficient estimates from regressions at the establishment-visitor identity level, where a visitor identity is one of 2 categories (TV or not), only keeping locations within 100 KM of a Spanish language TV contour boundary. The dependent variable are inverse hyperbolic sine transformed counts of Hispanic visitors to a given location. Panel A restricts the universe of locations to food service establishments, while Panel B restricts to arts, entertainment, and recreation establishments. TV dummy is an indicator variable for visitors to the location with home access to Spanish language television. Panels A.1 and B.1 interacts this variable with an indicator for Hispanic establishments, Panels A.2 and B.2 interacts this variable with an indicator for Japanese establishments, Panels A.3 and B.3 interacts this variable with an indicator for Brazilian establishments, and Panels A.4 and B.4 interact this variable with an indicator for Cajun and Creole establishments. Columns 1-4 include controls for the mean log(income) of the county. Columns 2-4 control for the percentage of the county that is Hispanic. Columns 3-4 control for the county's log(population). Column 4 adds fixed effects for the county and NAICS code. Standard errors are clustered at the county level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table A.13: Summary statistics — migration

| | *All* | *No SLTV* | *SLTV* |
|---|---|---|---|
| | (1) | (2) | (3) |
| Panel A: Census migration data (county-county level) | | | |
| Origin county, IHS(Hispanic Migrants) | 4.391 | 4.548 | 4.086 |
| | (1.281) | (1.336) | (1.104) |
| Destination county, IHS(Hispanic Migrants) | 4.012 | 3.992 | 4.038 |
| | (1.201) | (1.252) | (1.132) |
| Observations | 12,551 | 12,551 | 12,551 |

*Notes:* The table presents means (and standard deviations). Variables in Panel A are data from counties within 100 KM of a coverage contour. Columns 2 and 3 show data for the subsample without and with SLTV coverage, respectively.

Table A.14: Effect of Spanish Language TV on Hispanic vs. non-Hispanic migration between counties — destination sample

| | IHS(# Migrants) | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| Panel A: Destination county inside contour | | | |
| Origin outside TV contour × Hispanic | 0.0445 | 0.0446 | 0.0430 |
| | (0.2055) | (0.2057) | (0.2060) |
| Observations | 21,826 | 21,826 | 21,826 |
| Panel B: Destination county outside contour | | | |
| Origin inside TV contour × Hispanic | 0.0056 | 0.0049 | 0.0072 |
| | (0.2786) | (0.2794) | (0.2798) |
| Observations | 11,098 | 11,098 | 11,098 |
| Destination F.E. | Yes | Yes | Yes |
| Distance, distance $^2$ | Yes | Yes | Yes |
| Origin log(pop.) | Yes | Yes | Yes |
| Origin % Hispanic | No | Yes | Yes |
| Origin log(income) | No | No | Yes |

*Notes:* The table presents coefficient estimates from regressions at the origin county-destination county-ethnicity level, only keeping destination counties within 100 KM of a contour boundary. The dependent variables are inverse hyperbolic sine transformed counts of migrants from the origin county to the destination county. The key dependent variable of interest is an indicator for whether the origin county has access to SLTV interacted with a Hispanic indicator (the omitted group is non-Hispanic). This is interacted with the distance and distance-squared to the boundary for both the origin and destination county. Columns 1-3 include individual demographic controls for sex, age, and age squared, as well as the mean log(income) of the county. Columns 2-3 control for the percentage of the county that is Hispanic. Column 3 controls for the county's log(population). All regressions also contain destination county fixed effects. Standard errors are two-way clustered by origin and destination county. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table A.15: Effect of Spanish Language TV on Hispanic vs. non-Hispanic migration between counties — origin sample

| | IHS(# Migrants) | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| Panel A: Origin county inside contour | | | |
| Destination outside TV contour × Hispanic | -0.1225** | -0.1205** | -0.1210** |
| | (0.0541) | (0.0536) | (0.0537) |
| Observations | 36,060 | 36,060 | 36,060 |
| Panel B: Origin county outside contour | | | |
| Destination inside TV contour × Hispanic | -0.1679** | -0.1679** | -0.1682** |
| | (0.0828) | (0.0828) | (0.0828) |
| Observations | 20,692 | 20,692 | 20,692 |
| Origin F.E. | Yes | Yes | Yes |
| Distance, distance $^2$ | Yes | Yes | Yes |
| Distance log(pop.) | Yes | Yes | Yes |
| Distance % Hispanic | No | Yes | Yes |
| Distance log(income) | No | No | Yes |

*Notes:* The table presents coefficient estimates from regressions at the origin county-destination county-ethnicity level, only keeping origin counties within 100 KM of a contour boundary. The dependent variables are inverse hyperbolic sine transformed counts of migrants from the origin county to the destination county. The key dependent variable of interest is an indicator for whether the destination county has access to SLTV interacted with a Hispanic indicator (the omitted group is non-Hispanic). This is interacted with the distance and distance-squared to the boundary for both the origin and destination county. Columns 1-3 include individual demographic controls for sex, age, and age squared, as well as the mean log(income) of the county. Columns 2-3 control for the percentage of the county that is Hispanic. Column 3 controls for the county's log(population). All regressions also contain origin county fixed effects. Standard errors are two-way clustered by origin and destination county. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table A.16: Effect of Spanish Language TV on Hispanic migration between counties — destination sample

| | IHS(# Hispanic Migrants) | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| Panel A: Destination county inside contour | | | |
| Origin outside TV contour | -0.2305 | -0.2430 | -0.2408 |
| | (0.1920) | (0.1870) | (0.1882) |
| Observations | 4,062 | 4,062 | 4,062 |
| Panel B: Destination county outside contour | | | |
| Origin inside TV contour | -0.3761 | -0.3486 | -0.3466 |
| | (0.2790) | (0.2900) | (0.2923) |
| Observations | 1,659 | 1,659 | 1,659 |
| Destination F.E. | Yes | Yes | Yes |
| Distance, distance $^2$ | Yes | Yes | Yes |
| Origin log(pop.) | Yes | Yes | Yes |
| Origin % Hispanic | No | Yes | Yes |
| Origin log(income) | No | No | Yes |

*Notes:* The table presents coefficient estimates from regressions at the origin county-destination county level, only keeping destination counties within 100 KM of a contour boundary. The dependent variables are inverse hyperbolic sine transformed counts of Hispanic migrants from the origin county to the destination county. The key dependent variable of interest is an indicator for whether the origin county has access to SLTV. This is interacted with the distance and distance-squared to the boundary for both the origin and destination county. Columns 1-3 include individual demographic controls for sex, age, and age squared, as well as the mean log(income) of the county. Columns 2-3 control for the percentage of the county that is Hispanic. Column 3 controls for the county's log(population). All regressions also contain destination county fixed effects. Standard errors are two-way clustered by origin and destination county. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table A.17: Effect of Spanish Language TV on Hispanic migration between counties — origin sample

| | IHS(# Hispanic Migrants) | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| Panel A: Origin county inside contour | | | |
| Destination outside TV contour | -0.1491* | -0.1073 | -0.1076 |
| | (0.0784) | (0.0663) | (0.0666) |
| Observations | 8,479 | 8,479 | 8,479 |
| Panel B: Origin county outside contour | | | |
| Destination inside TV contour | -0.2087 | -0.2121 | -0.2124 |
| | (0.1626) | (0.1645) | (0.1651) |
| Observations | 4,338 | 4,338 | 4,338 |
| Origin F.E. | Yes | Yes | Yes |
| Distance, distance $^2$ | Yes | Yes | Yes |
| Distance log(pop.) | Yes | Yes | Yes |
| Distance % Hispanic | No | Yes | Yes |
| Distance log(income) | No | No | Yes |

*Notes:* The table presents coefficient estimates from regressions at the origin county-destination county level, only keeping origin counties within 100 KM of a contour boundary. The dependent variables are inverse hyperbolic sine transformed counts of Hispanic migrants from the origin county to the destination county. The key dependent variable of interest is an indicator for whether the destination county has access to SLTV. This is interacted with the distance and distance-squared to the boundary for both the origin and destination county. Columns 1-3 include individual demographic controls for sex, age, and age squared, as well as the mean log(income) of the county. Columns 2-3 control for the percentage of the county that is Hispanic. Column 3 controls for the county's log(population). All regressions also contain origin county fixed effects. Standard errors are two-way clustered by origin and destination county. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.