Due diligence and demographic disparities: effects of the planning of U.S.-Mexico border fence on marginalized populations

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Abstract

In the buildup to the construction the U.S.-Mexico border fence by the United States Department of Homeland Security (USDHS), much attention was drawn to security, drug enforcement, and immigration issues. However, there was little quantitative analysis regarding which populations were most likely to be affected by the proposed fence. Using a geographic information system, we classified census blocks in Cameron County, Texas into one of two categories: either 'fence' or 'gap'. A total of 14 demographic factors were tested for disparities between those living in gap areas and those living in areas exposed to the fence. Twelve of fourteen factors were found to have statistically significant ($p < 0.05$) disparities between gap and fence designations. Fence-designated areas were lower income ($3,833 lower for 2007) and more Hispanic (94.13% vs. 90.27%; $p < 0.01$) with a higher percentage of foreign-born residents (11.17% vs. 8.99%; $p < 0.01$). These results indicate that there were marked and statistically significant disparities in the demographics between groups living in the fence areas and those in the gap areas. Thus, as laid out by USDHS during the planning process, the U.S.-Mexico border fence in Cameron County, Texas would disproportionately affect certain already marginalized groups in an adverse manner, including through loss of ownership and use of their property. While USDHS may have made changes to the route of the border fence before final construction, the government has offered no suggestion that it considered the disparate impact of the fence and then acted to change fence locations on that

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basis. Beyond security, drug enforcement and immigration, future planning efforts along the border should take into account social justice impacts.

Introduction

The Secure Border Fence Act of 2006 and the Consolidated Appropriations Act of 2008 authorized the United States Department of Homeland Security (USDHS) to construct approximately 700 miles (1155 km) of barrier along the U.S.-Mexico border. The targeted completion date of the fence set by these acts was the end of 2008. Approximately 315 of those miles were to be in Texas (US Congress 2006, 2008).

Much of the barrier in Texas would have to cross private land. In late 2007, the federal government began approaching landowners with property along the projected path of the fence, seeking to obtain temporary easements to survey their property (US Army Corps of Engineers 2007). The eventual aim of these surveys was to acquire permanent easements over the property needed for the fence. The government encountered significant resistance from property owners to the possibility of having a sixteen foot high fence built across their land (Government Accountability Office (GAO) 2009, 20).

While the stated purpose of the border fence was to increase border security to prevent illegal cross-border activity near points of entry (US Department of Homeland Security (USDHS 2007, 2008a), a number of local landowners and organizations began to comment anecdotally on the seemingly arbitrary placement of the fence, which did not seem to coincide with border security concerns. Some questioned the rationale behind placement of the open, or 'gap', locations along the border relative to actual fence locations (del Bosque 2008; Dulitzky, Nedderman, and Gilman 2008).

Beyond individual landowners, groups representing a variety of constituents expressed concern over the impacts of the wall on native American communities and on the surrounding land, flora and fauna. Park and refuge managers, conservationists and wildlife biologists argued that the fragmentation caused by a fence and vehicle barrier would affect any animal that "walks, crawls, or slithers" (Cohn 2007; Hurwitz, Guzman, and Gilman 2008; Erikkson and Taylor 2008).

The construction of the border fence may also have implications for social and environmental justice. Environmental Justice (EJ) is defined as the fair treatment and involvement of all people such that disparities between minority and/or low-income populations and wealthy, white populations are minimal (United States Environmental Protection Agency (USEPA) 1994). A 1994 executive order by President Clinton directs federal agencies to identify and mitigate disproportionate and adverse health or environmental effects of any new construction on marginalized populations, to the greatest extent practicable and

permitted by law (Executive Order 12898 1994). The order also directs each agency to develop a strategy for implementing environmental justice, should any disparities be discovered.

This paper grew out of an attempt to analyze the differential impact of the fence's placement on certain populations, using Cameron County, Texas as a case study. In this paper, we therefore aim: (i) to understand the underlying demographics along the path of the proposed fence by utilizing spatial and statistical analysis; (ii) to examine how resulting data might inform claims that the construction of the border wall discriminates against certain, protected populations (e.g. ethnic minorities, low-income groups and under-educated groups), thereby highlighting deficiencies in the pre-fence EJ analysis conducted by the USDHS; and (iii) to comment on lessons learned from this exercise and make recommendations as to what should be addressed in future projects along the border so as to understand effectively the intricacies of any disparities. We begin by outlining the study area, data and methods of analysis. We then provide the results of the analysis before finally turning to a discussion of the results, their wider implications, limitations of the study, and future work to be considered.

Study Area

The study area for this research is Cameron County, Texas, along the U.S. -Mexico border. Cameron County is the southernmost county in the state of Texas and the eastern-most extent of the U.S.-Mexico border, consisting of 387,000 persons that are predominantly of Hispanic ethnicity (86%) (U. S. Census Bureau 2006). Cameron County and the adjoining county to the north, Hidalgo County, are among the poorest counties in the United States in terms of percentage of the population living below the poverty line (U. S. Census Bureau 2006).

This study specifically draws focus on Cameron County for several reasons: (i) anecdotal information about unequal treatment first emerged here (Sieff 2007) through local, state, and national news reporting (Blumenthal 2007, 2008; Morning Edition: National Public Radio (NPR) 2008; del Bosque 2008); (ii) the County was a central battleground for property owners contesting the taking of property and otherwise protesting the fence's placement (Blumenthal 2008)[1]; and (iii) Cameron County had 1/3 of the planned gaps (n = 10) in Texas (n = 30), more gaps than any other county, and nearly 20% of the total sections (n = 55) along the entire US-Mexico border (USDHS 2007). Most counties along the Texas-Mexico border had none or few sections of fence, which would not allow for gap/fence comparisons. Any disparities that exist between groups will be much more likely to be detected when there is a sufficient sample of gaps and fence sections within a particular area.

Data and Methods

Border fence route data

The proposed route for the border fence in Cameron County used in this study was the route planned by USDHS and set out in maps that were included in the November 2007 USDHS Environmental Impact Statement (EIS) for the Rio Grande Valley Sector. In the EIS, an initial 'Route A' and proposed revisions – 'Route B' – were discussed. This study considered 'Route B' because the USDHS referred to it as the 'preferred alternative' (USDHS 2007, ES-4). The EIS also included an alternative in which 'the proposed tactical infrastructure [fence] would not be built', but that alternative was obviously not taken, given the USDHS's subsequent waiver of environmental regulations and construction of the barrier (USDHS 2008b). It is likely that the final construction route differed from that set out in the EIS. However, USDHS has not provided any information indicating that the route changed substantially or that the government considered the characteristics of those who were impacted in making changes to the location of the fence.

Demographic data

The demographic data used in this study were at the census block group level. A block group is the smallest unit of aggregation for which full demographic data are tabulated. The block group data were available through the Environmental Systems Research Institute (ESRI) Community Info (People) database, which includes projections to 2007 on a limited number of factors. Census block boundaries were obtained from the US Census Bureau via the Office of the Texas State Demographer (Texas State Demographer 2008). The U.S. Census Bureau only collects information on a limited number of factors at the block level. In order to have sufficient statistical power for such a small area as one county, it was necessary to estimate block data, based on census block groups. A census block group consists of approximately 50 blocks. Demographic factors for individual blocks were calculated using a disaggregation method, with the necessary assumption that block groups are demographically homogenous. This method of analysis allowed us essentially to ascertain (and represent by an estimated proportion) the extent to which any block group was exposed to the fence[2].

Spatial analysis and block designation

The EIS on the Rio Grande Valley Sector released by USDHS in November 2007 contained detailed maps of the proposed routes of the border fence (USDHS 2007). The data were available in Adobe's Portable Document Format (PDF) on compact discs, along with hard copy versions. We converted the PDF maps within Cameron County's geographic extent into 300 dot per inch TIFF image files to retain image quality, and then were imported them into the GIS and geo-referenced them using the lat/lon grid lines on each map as con-

trol points. Root-mean squared error for all maps was estimated to be less than 3 meters. After USDHS maps were geo-referenced, the proposed border fence sections were then digitized by tracing the paths in the GIS and stored as a feature class. A one-mile section of existing fence was used to verify positional accuracy with a sub-meter Trimble GPS loaded with the digitized fence and was found to be precise to ± 3m. For sections designated as 'gaps' in the fence, an anticipated path between the two inside end points of the fence was entered into the GIS. ESRI's ArcGIS 9.3 and associated extensions were utilized for all GIS analyses with the 1983 North American Datum (NAD) Universal Transverse Mercator (UTM) Zone 14N coordinate system projection for all layers (ESRI 2009).

Under both routes 'A' and 'B' presented in the November 2007 EIS, the total impact buffer zone would be 60 feet, or 30 feet on either side of the proposed fence (USDHS 2007, 2-7). Based on this information, a buffer of 30' was created on either side of the fence in the GIS. We used a buffer of 60' as this was a conservative measure. One fence design specification alternative discussed in the EIS called for 130' between two separate layers of fencing (USDHS 2007:11). This 60-foot wide buffer was used to evaluate areas affected by the fence as this is the minimum area of land required to install the fence and patrol roads on either side of the fence and is the minimum area of land taken by the government from property owners for construction of the fence. In Cameron County, census block groups were first identified by overlaying the digitized map of the fence (as described above) over the border area census blocks groups obtained from ESRI.

The process for defining which census blocks were affected and categorized as 'fence' or 'gap' was as follows. Census blocks received a 'fence' designation if they met any of the following conditions:

- the census block was bisected entirely by the proposed fence and buffer-zone;
- the census block border was partially bisected (at any point) by the proposed fence and buffer-zone;
- the census block was between the fence and the Rio Grande river;

Gap-designated blocks were defined by first extrapolating a reasonable path between inside sections of the border fence route. Census blocks that were isolated on the Mexican side based on this 'reasonable path' were designated as 'gaps'.

Only spaces between constructed barriers were designated as gaps, thus, any gap between a barrier formed by a natural feature (e.g. the Gulf of Mexico, a secluded desert area, etc.) and a section of the wall was not included in the analysis. A spatial join was performed in the GIS between the fence buffer and the individual census blocks. Each individual block was then examined for

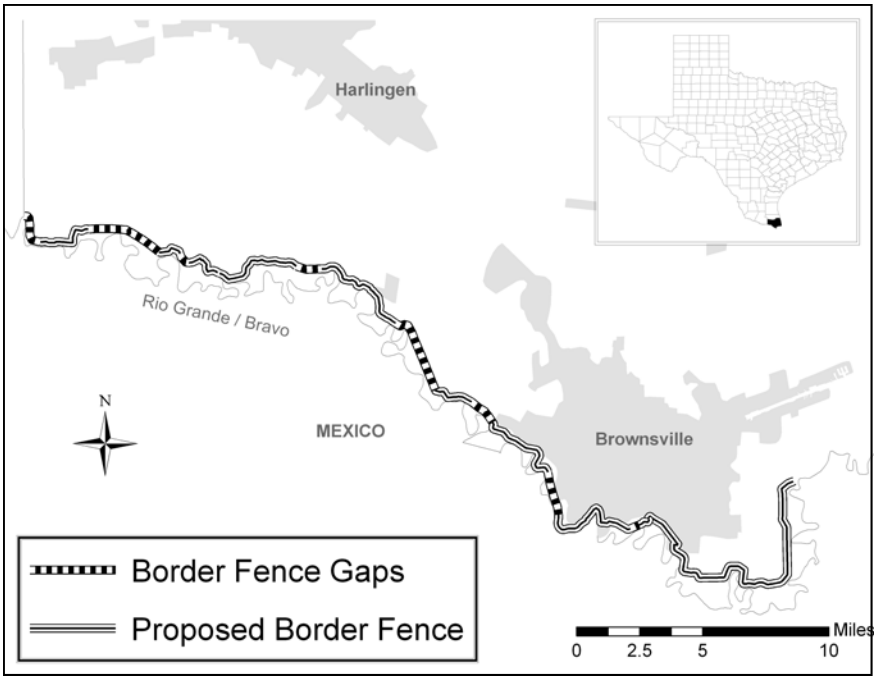

Figure 1. Study area and proposed fence sections with estimated path of gaps in Cameron County, Texas.

quality control purposes. Figure 1 illustrates the study area with proposed fence sections, gap section estimates and census block groups identified.

Statistical analysis

Data were exported from GIS to a format suitable for data preparation and analysis. For population data and for each of the demographic variables under study, descriptive statistics for the block groups were calculated, including sample size (n), median, mean, minimum, maximum and standard deviation. For the purposes of determining statistically significant differences between mean values for gap and fence blocks, a t-test was performed, with the grouping variable designated as 'gap' or 'fence' and respective demographic factors designated as the test variables. For data preparation and statistical analyses, we used Excel 2007 and SPSS v.15.

Results

A total of 242 census blocks were determined to be subject to analysis (Figure 2). Seventy blocks within six block groups were designated 'gap' and 172 blocks within eight block groups were designated 'fence'. Summary statistics for demographic factors are presented in Table 1. The total population of

the block groups was 24,434 with an average population of 1,745 and populations within individual block groups ranging from 470 to 3,754. Blocks ranged from zero (areas along the Rio Grande that are devoid of housing) to 807 persons, with a mean population of 24 persons.

Descriptive statistics

Fourteen distinct demographic factors in the 14 census block groups are summarized in Table 1. Demographic factors were selected based upon the factors (ethnicity and income) selected in the USEPA environmental justice analysis within the EIS (USDHS 2007, 3-66) as well as other indicators of disparity from the literature such as immigration status and language spoken at home (Massey 1985; White and Sassler 2000). Median household income increased from $23,617 in 2000 to $27,822 in 2007. The mean percent Hispanic population was 94% (Cameron County average = 86%). Less than 1% of the population in the 14 block groups identified themselves to the census as Native American Indian residents (mean = 0.76%). Sixty-four percent of the population was U.S. native-born citizens, while 21% were foreign-born non-U.S. citizens and 12% were naturalized citizens.

Fence vs. gap analysis

Of the 14 demographic factors tested, 12 showed a statistically significant ($p < 0.05$) difference in means between gap and fence-designated areas (Table 2). Income factors were higher overall in the gap areas as compared to fence-designated blocks. In 2000, the mean of the median household incomes in gap areas was 13.4% higher than in fence areas ($26,512 vs. $23,371, $p < 0.01$). This disparity in the mean of median household incomes between gap and fence designations increased in 2007 to 13.9% ($31,316 vs. $27,483, $p < 0.01$). 2000 per capita income was also found to be higher in gap areas ($8,453 vs. $8,013, $p = 0.095$).

For race, ethnicity, and language factors, gap-designated areas were on average significantly less Hispanic (90.72% vs. 94.13%, $p < 0.01$), less Spanish-speaking (87.92% vs. 91.40%, $p < 0.01$) and less Hispanic Indian (0.34% vs. 0.49%, $p < 0.01$). Overall, American Indian identification was lower in gap areas (0.57% vs. 0.64%) but the differences were not deemed to be statistically significant given the small sample size ($n = 182$).

For citizenship demographic factors, it was found that census blocks designated gaps contained a lower percentage of foreign born non-U.S. citizens (18.29% vs. 20.73%, $p < 0.01$), a lower percentage of foreign born naturalized citizens (8.99% vs. 11.17%, $p < 0.01$), and a higher percentage of native-born U.S. citizens (71.7% vs. 66.8%, $p < 0.01$).

Discussion

The results presented in this paper indicate that the early plans by the USDHS for constructing a border barrier and the accompanying effects on

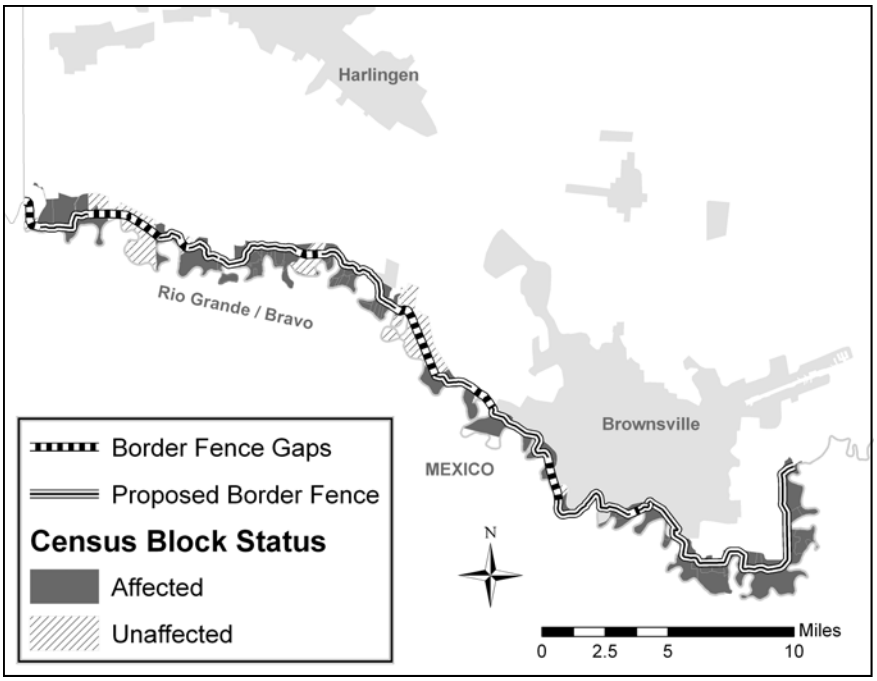

Figure 2. Census block designation (gap and fence) and location of fence and fence gaps.

property use and ownership associated with construction would have substantially disproportionate negative effects on marginalized populations in Cameron County, Texas. Specifically, our comparison of the areas planned to be fenced along the border with those areas where 'gaps' in the fence were planned suggests disproportionate impact on individuals with lower income and education, Hispanic ethnicity, and non-US citizenship status. A primary implication of this work is that the impact of the fence and its placement should have been examined more carefully to consider the effects on marginalized groups and to minimize those effects in future border security projects: in effect, the USDHS did not show sufficient due diligence in understanding and mitigating any disparate impacts. In this final section we interpret our findings, assess opportunities for improvement in the study, and suggest areas of further work.

While USDHS appears not to have studied the disparities between fence and gap areas, it acknowledged that the general placement of the fence along the Mexican border would ensure that poor Hispanic immigrant families would most likely to be affected by its construction. This concern was included in the EIS prepared for the area discussed here, but has not been further addressed by the U.S. government (USDHS 2007). We discuss the EIS both because it highlights the government's awareness of disparities and because the govern-

Table 1. Summary statistics for census block groups. Figures are based on census block groups.

	n*	Median	Mean	Mini-mum	Maximum	SD
Population	24,434	1,615.50	1,745.30	470	3754	906.3
Education and Income						
Median Household Income (2000)		$23,617	$24,281	$18,418	$31,094	$4,348
Median Household Income (2007)		$27,822	$28,602	$22,022	$36,575	$5,149
Per Capita Income		$7,192	$7,814	$5,182	$12,202	$2,076
Percent of 25+ Pop. with High School Diploma	2,187	18.09%	18.14%	9.10%	29.60%	5.12%
Race, Ethnicity and Language						
Percent Hispanic Population	23,261	94.18%	94.33%	82.93%	100.00%	6.15%
Percent American Indian	182	0.47%	0.76%	0.31%	1.59%	0.47%
Percent Hispanic American Indian in Combination	125	0.40%	0.51%	0.00%	1.52%	0.42%
Percent Hispanic Indian Alone or in Combination	144	0.41%	0.62%	0.00%	1.59%	0.49%
Percent White	2,187	18.09%	18.14%	9.10%	29.60%	5.12%
Percent 5+ Population that Speaks Spanish	24,419	91.98%	91.67%	81.52%	99.08%	4.95%
Diversity Index[#]		44.9	47.2	24.1	72.1	13.2
Citizenship						
Percent Foreign-Born and Not a Citizen	5,382	21.44%	22.18%	10.80%	32.61%	5.32%
Percent Foreign-Born/ Naturalized Citizen	2,837	11.62%	11.53%	5.09%	17.07%	3.44%
Percent Native/Born in the U.S.	15,844	64.12%	64.60%	52.95%	84.11%	7.29%

*For population and percentage values, *n* is the base population for that particular variable which is used to calculate proportions. A total of 14 U.S. Census block

groups were to be affected by the fence, consisting of six designated 'gap' and eight designated 'fence'. Within these 14 block groups, there were 242 blocks affected, consisting of 70 designated 'gap' and 172 designated 'fence'. Data for individual census blocks were derived from census block groups under the assumption that block groups are demographically homogenous.

[#]The 'Diversity Index' is a measure developed by ESRI that summarizes racial and ethnic diversity. The index ranges from 0 (no diversity) to 100 (complete diversity). The diversity index for the United States on average in 2000 was 54.6 (ESRI 2006).

ment's own data support some of our independently reached conclusions with reference to environmental justice and disparities.

Part three of the USDHS November 2007 methodology for evaluating potential environmental justice impacts states that USDHS shall 'assess whether there are potential significant adverse effects on minority and low-income populations that would be disproportionately high and adverse' (USDHS 2007, 3-66). In conducting this government assessment, the USDHS aggregated factors of interest at the *county* and *census tract* level for the Rio Grande Valley sector of the fence. The resulting USDHS census tract analysis indicated that the USDHS was well aware that lower income individuals and ethnic minorities were generally most likely to be affected by the fence.

Table 3 outlines the key data from the environmental justice survey regarding the anticipated impact on ethnic minorities. In addition, the EIS noted: 'In some cases, the population in the census tract closest to the project [fence] area would seem to be lower in income than the population in the same census tract farther away from the river' (USDHS 2007, 3-66). Despite these findings, the EIS did not suggest mechanisms for mitigating the impact on marginalized groups, and there exists no evidence to date that USDHS made an attempt to consider modifications to the fence route based on the impact on underrepresented groups. Our study provides a more detailed quantitative and spatial analysis of the racial and ethnic disparities resulting from the proposed placement of the fence than did the EIS.

We are aware that there are limitations to our study. The census data present both temporal and spatial challenges. In temporal terms, they are based on the last full census which was undertaken in 2000. That said, a comparison between 2000 figures and estimates from 2007 suggest that, if anything, using the 2000 data in the study might have understated disparities between those in fence-designated and gap-designated areas. Between 2000 and 2007, for example, the difference in median household income between those in each area increased from $3,141 to $3,833.

From a spatial perspective, we were limited by the fact that the data for the range of relevant demographic factors for this study are not available from the U.S. Census Bureau at the block level. We therefore assumed homogenous distribution throughout census block groups and transferred these values into

Table 2. Disparities in mean values, t-values and statistical significance for demographic factors in 'gap' and 'fence' designated census blocks.

Demographic factors†	**Gap***	**Fence****	***t******	***p*‡**
Education and Income				
Median Household Income (2000)	$26,512	$23,371	4.501	**0**
Median Household Income (2007)	$31,316	$27,483	4.358	**0**
Per Capita Income	$8,453	$8,013	1.676	0.095
Percent of 25+ Population with High School Diploma	21.44%	17.29%	6.039	**0**
Race, Ethnicity and Language				
Percent Hispanic Population	90.72%	94.13%	-4.612	**0**
Percent American Indian	0.57%	0.64%	-1.358	0.176
Percent Hispanic American Indian and Other	0.28%	0.39%	-2.354	**0.019**
Percent Hispanic Indian	0.34%	0.49%	-2.723	**0.007**
Percent White	0.73%	0.77%	-2.815	**0.005**
Percent 5+ Populat ion that Speaks Spanish	87.92%	91.40%	-5.693	**0**
Diversity Index#	55.3	46.6	4.219	**0**
Citizenship and Origin				
Percent Foreign-Born and Not a U.S. Citizen	18.29%	20.73%	-3.512	**0.001**
Percent Foreign-Born/ Naturalized U.S. Citizen	8.99%	11.17%	-6.039	**0**
Percent Native/Born in the U.S.	71.69%	66.82%	4.948	**0**

†All values are for 2000 Census unless otherwise indicated;
* there were 70 blocks designated 'gap'
** there were 172 blocks designated 'fence'
*** degrees of freedom = 240 for all tests
‡Bolded figures indicate a statistically significant difference in means to the 0.05 level.
#The 'Diversity Index' is a measure developed by ESRI that summarizes racial and ethnic diversity. The index ranges from 0 (no diversity) to 100 (complete diversity). The diversity index for the United States on average in 2000 was 54.6 (ESRI 2006).

Table 3. Environmental justice factors at the census tract level reported in the Department of Homeland Security Environmental Impact Statement (USDHS 2007).

Geographic Area by Census Tract	Percentage of Total Population						
	White and not Hispanic or Latino (A)	Asian and not Hispanic or Latino (B)	Black or African American and not Hispanic or Latino (C)	Other Races, Two or More Races, and not Hispanic or Latino (D)	Hispanic or Latino Ethnicity (E)	Total Racial and Ethnic Minorities (B+C+D+E)	Difference in Percent Minority Population Above/ Below Texas Avg.
Texas	52.4%	2.6%	11.3%	1.7%	32.0%	47.6%	---
Cameron County	14.5%	0.4%	0.3%	0.3%	84.5%	85.5%	37.9%
Census Tracts Included in Project*	7.6%	0.0%	0.0%	0.1%	92.2%	92.3%	44.8%
Census Tracts Not Included in Project*	15.3%	0.5%	0.4%	0.3%	83.5%	8470.0%	37.1%

* The USDHS methodology for determining how census tract areas are coded as 'included in the project area' and 'not included' was not specified in the EIS. It is therefore difficult to judge whether the areas designated by the EIS as 'Census Tracts Not Included in the Project Area' are referring to 'gaps' in the fence as designated in this paper or if they refer to entire areas outside the fence and gaps in the fence. Based on the fact that all 14 block groups in our analysis contained at least some portion of proposed fence, the EIS is most likely referring to census tracts outside the area of the fence or away from the actual path of the fence in Cameron County.

census blocks. This method is subject to what Openshaw (1984) defined as the modifiable area unit problem (MAUP), concerning the variation that can occur when data from one scale of areal units is aggregated into a greater or fewer number areal units. It may also be subject to 'the ecological fallacy', which arises when analysis of area-level aggregate statistics are assumed to apply at the individual level (Robinson 1950; Holt et al. 1996).

While there is no available data set to prove that our results can fully withstand both of these challenges, we have no reason to think that the assumptions on which we relied are faulty. Moreover, the aggregation and analysis method we used is both analogous to and—as discussed earlier—more precise than that employed by USDHS in its census tract-level environmental justice assessment (USDHS 2007, 3 - 66).

Nevertheless, the results we present here suggest both the opportunity and need for continued study. As more information is obtained from the federal government about the route it eventually chose, it would be important to consider whether the disparities were exacerbated even beyond what this analysis has suggested or whether the government might have lessened the disparate impact it identified in its own EIS. In addition to applying the analysis of this study to the final route, an analysis of the outcome of law suits between the federal government and property owners would be of interest.

It has been argued that border issues should be studied with a focus on the impact upon the daily life practices of people living in close proximity to the border (Newman 2006). In the case of Cameron County, Texas, many of those people living on the border expressed and continue to express significant opposition to the border fence in large part because of its impact on their daily lives. Albeit at a quantitative level, our study attempts to analyze some of the basis of the opposition by considering who would be most likely to end up feeling the effects of the fence because of its placement on their property or neighborhood. In this sense, it attempts to respond to the general dearth of attention given to the effects upon individuals exposed to newly implemented measures along the U.S.-Mexico border (Ackleson 2003b, 2005, 2003a).

Notes:

1. Indeed, many lawsuits filed by the USDHS fueled such controversy. One of the best known of these cases involved the University of Texas at Brownsville/ Texas Southern most College (UTB/TSC), located in the county seat of Cameron County. In early 2008, USDHS surveyed the UTB/TSC campus and informed university officials that a segment of fence would be constructed through campus, isolating the golf course, historical sites, and a satellite campus on the Mexican side of the fence. When University officials contested the action, USDHS brought a civil suit against UTB/TSC (University of Texas at Brownsville / Texas Southern most College (UTB/TSC) 2008).
2. It has been extremely difficult to obtain an accurate map of finalized construction despite efforts to do so. A request for maps reflecting the locations of the border fence was filed under the Freedom of Information Act in the spring of 2008 (Gilman April 11, 2008). A lawsuit was subsequently filed against USDHS to obtain a response under that request (Leonnig 2010). Yet, as of De-

cember 2010, USDHS has not provided a complete set of GIS shapefiles reflecting the fence's route as finally constructed.

References

Ackleson, J. 2003a. Directions in border security research. Social Science Journal 40 (4):573-581.

———. 2003b. Transnational crime and public security: Challenges to Mexico and the United States. Latin American Politics and Society 45 (1):170-174.

———. 2005. Constructing security on the US-Mexico border. Political Geography 24 (2):165-184.

Blumenthal, R. 2007. Some Texans Fear Border Fence Will Sever Routine of Daily Life. New York Times, June 20.

———. 2008. In Texas, Weighing Life With a Border Fence. New York Times, Jan. 13.

Cohn, J. P. 2007. The environmental impacts of a border fence. BioScience (1):57.

del Bosque, M. 2008. Holes in the Wall. The Texas Observer.

Dulitzky, A., L. Nedderman, and D. Gilman. 2008. Violations on the part of the United States government of the right to property and non-discrimination held by residents of the Texas Rio Grande Valley. In Obstructing Human Rights: The Texas-Mexico Border Wall. Austin: The Working Group on Human Rights and the Border Wall, Rapoport Center for Human Rights and Justice, and University of Texas School of Law.

Erikkson, L., and M. Taylor. 2008. The Environmental Impacts of the Border Wall Between Texas and Mexico. In Working Group on Human Rights and the Border Wall Report to the Organization of American States, 10.

ESRI. 2009. ArcGIS v. 9.3.1. Redlands, CA: Environmental Systems Research Institute.

Office of the President. 1994. Executive Order 12898. Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, no. 32.

Gamboa, S. 2008. Army invites companies to bid on border fence work. Associated Press, May 28.

Gilman, D. April 11, 2008. Freedom of Information Act (FOIA) Request filed by Denise Gilman (Plaintiff) v. US Department of Homeland Security, US Customs and Border Protection, and US Army Corps of Engineers.

Government Accountability Office (GAO). 2009. Secure Border Initiative: Technology Deployment Delays Persist and the Impact of Border Fencing Has Not Been Assessed.

Holt, D., D. G. Steel, M. Tranmer, and N. Wrigley. 1996. Aggregation and ecological effects in geographically based data. Geographical Analysis 28 (3):244-261.

Hurwitz, Z., M. Guzman, and D. Gilman. 2008. Violations on the part of the United States government of indigenous rights held by members of the Lipan Apache, Kickapoo, and Ysleta del Sur Tigua Peoples of the Texas-Mexico border. In Obstructing Human Rights: The Texas-Mexico Border Wall. Austin: The Working Group on Human Rights and the Border Wall; Rapoport Center for Human Rights and Justice; University of Texas School of Law.

Leonnig, C. 2010. More than 300 Public Records Lawsuits Filed in Obama's First Year. Washington Post, January 27.

Massey, D. S. 1985. Ethnic residential segregation - a theoretical sysntesis and empirical review. Sociology and Social Research 69 (3):315-350.

Morning Edition: National Public Radio (NPR). 2008. Border fence a great divide for Texas landowners, ed. C. Kahn.

Newman, D. 2006. The lines that continue to separate us: borders in our `borderless' world. Progress in Human Geography 30 (2):143-161.

Openshaw, S. 1984. The modifiable areal unit problem. Norwich, UK: Geo Books.

Robinson, W. S. 1950. Ecological Correlations and the Behavior of Individuals. American Sociological Review 15 (3):351-357.

Sieff, K. 2007. Land granted from King of Spain could see new owner — Uncle Sam. The Brownsville Herald, December 9.

Texas State Data Center and Office of the State Demographer. Data from the US Census Bureau for Texas. Cameron County, Texas Fact Sheet. US Census Bureau, Washington D.C.

United States Environmental Protection Agency (USEPA). Environmental Justice Compliance and Enforcement. U.S. Environmental Protection Agency, 2008/06/01/ 1994 [cited. Available from http://www.epa.gov/compliance/environmentaljustice/index.html.

US Army Corps of Engineers. 2007. Letter from US Army Corps of Engineers to Dr. Eloisa Tamez. Brownsville, Texas, December.

US Congress. 2006. Secure Fence Act of 2006: US Congress. Washington D.C.

———. 2008. Consolidated Appropriations Act, 2008. Washington D.C.

US Department of Homeland Security (USDHS). 2007. Environmental impact statement for construction, maintenance, and operation of tactical infrastructure: Rio Grande Valley Sector, Texas (draft), 538. Washington, D.C.: U.S. Department of Homeland Security.

———. 2008a. Fact sheet: US Department of Homeland Security five-year anniversary progress and priorities. Washington D.C.: U.S. Department of Homeland Security.

———. 2008b. Press release: DHS Exercises Waiver Authority to Expedite Advancements in Border Security. 2008/06/01.

White, M. J., and S. Sassler. 2000. Judging not only by color: Ethnicity, nativity, and neighborhood attainment. Social Science Quarterly 81 (4):997-1013.