

Extended Abstract for the
International Union for the Scientific Study of Population
Annual Meeting 2013

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**How Does the Context of Reception Matter? : The Role of Residential Enclaves on
Maternal Smoking during Pregnancy for Mexican-origin Mothers**

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Introduction

Understanding the persistent racial and ethnic health disparities in the United States is inherently linked to immigration. The health of the growing U.S. immigrant population is not only critical for understanding the current states and future trajectories of the population health in the United States, but it also provides a ground for investigating how changing environments affect individuals.¹ In addition, it challenges the conventional understanding about how social factors influence health in general. That is, despite their disadvantageous socioeconomic profile, immigrants tend to have better health outcomes when compared to both Non-hispanic whites and U.S. natives born of same ethnic origin,² and these health advantages of immigrants are referred to as an epidemiological paradox or Hispanic paradox.^{3,4} Such health advantages of immigrants include lower infant and adult mortality,⁵⁻⁷ better perinatal health and birth outcomes,^{8,9} better mental health,¹⁰ lower rates of obesity,^{11,12} and better self-rated health.^{1,13}

One area which epidemiological paradox literature has largely overlooked is maternal smoking during pregnancy. Maternal smoking during pregnancy is an important behavioral aspect of health outcomes, and it has significant implications for both the mother and her child.¹⁴ Smoking during pregnancy puts women at an increased risk of pregnancy complications,¹⁵ and is associated with various negative outcomes for infants including preterm delivery,^{16,17} low birth weight,^{15,18-22} birth defects,²³ and fetal and infant mortality.^{16,24} Furthermore, maternal smoking during pregnancy has lasting negative effects on children's cognitive development,^{25,26} psychological health²⁷ and physical health.^{28,29} Although immigrant women are less likely to smoke compared to Non-hispanic whites and U.S. natives born of same ethnic origin,³⁰⁻³² previous studies indicate that acculturation is positively associated with maternal smoking during pregnancy.^{33,34} The increase in maternal smoking during pregnancy with acculturation is often attributed to the downward trajectory within the segmented assimilation framework.^{35,36}

Theoretical frameworks (e.g., acculturation) that emphasize cultural explanations have been prominent in immigrant health research, yet they are not without limitations.³⁷⁻³⁹ Most previous studies have utilized unidimensional definitions of acculturation that assume a linear progression (e.g., nativity, duration in the United States, and language use) in which immigrants acculturate into the dominant culture by abandoning their original culture.³⁹ While it does provide some constricted measures of acculturation,³⁷ such a “zero-sum game” approach⁴⁰ does not provide a comprehensive understanding of complex acculturative processes of the immigrant experience. In addition, critics have argued that such an overreliance on cultural explanations do not account for the effects of structural factors on immigrant health.⁴¹ Alternatively, the “social determinants of health” framework,⁴² which incorporates the role of social and structural factors, provides the foundations for understanding the complexity of changing immigrant health in the United States.

To incorporate the structural factors in the context of reception in understanding maternal smoking during pregnancy of Mexican-origin women in the United States, we draw from the emerging scholarship on how residential segregation affects health.⁴³⁻⁴⁵ Previous studies on how residential segregation affects health predominately focus on the health of African-Americans, who have a unique history of discrimination in the United States.⁴⁶ However, there has been a recent scholarly push to incorporate other racial and ethnic minority groups into segregation

studies,⁴³ and increasingly more studies are investigating how residential segregation affects the health of other minority groups. While residential segregation has deleterious effects on health outcomes of African-Americans (i.e., place stratification perspective),⁴⁶ studies have found that residential segregation can have beneficial effects on health outcomes for Hispanics and Asians.⁴⁶ Such a paradoxical relationship between residential segregation and positive health outcomes for Hispanics and Asians is often attributed to the protective effects of residential enclaves. That is, concentrated social and structural resources within ethnic enclaves translate to positive health outcomes by facilitating day-to-day survival, buffering the negative effects of socioeconomic disadvantages,⁴⁷ and providing financial and educational resources.⁴⁶

However, the relationship between residential segregation (i.e., ethnic enclaves) and health outcomes of immigrants is more complex for several reasons. First, the findings on the effect of residential segregation on the health of immigrants are inconclusive. While some previous studies have documented that residential segregation has positive effects on immigrant health in multiple dimensions including mental health,⁴⁸ physical health and access to health care,^{49,50} others studies have found that residential segregation can have deleterious effect on health, especially for infectious diseases like tuberculosis.⁵¹ Second, there is also contradicting evidence that the effect of residential segregation on immigrants varies by generational status. In some studies, second and later generations have better health outcomes than immigrants of the same ethnic group in segregated neighborhoods;⁵² other argue that second and later generations are worse off in their health status as they follow the trajectory of downward assimilation.³⁵ In fact, among Hispanics, it seems individuals either successfully spatially assimilate to more ethnically diverse and affluent neighborhoods with longer duration in the United States⁵³; or they follow the downward assimilation trajectory.⁵⁴ With such complexity, more nuanced research on “whether, how, for whom, and under what conditions”⁴¹ residential enclaves are protective is called for.

This study aims to move beyond the acculturation framework to investigate how the context of reception (e.g., place) and migration intersect to influence immigrants’ maternal smoking during pregnancy. That is, we investigate whether maternal smoking during pregnancy of Mexican-origin women in the United States is associated with their residential contexts (e.g., residential enclaves and poverty), and whether these associations are modified by nativity (i.e., mothers’ place of birth). We focus on three different types of residential enclaves –immigrant enclaves (i.e., exposure to Mexican immigrant enclaves), ethnic enclaves (i.e., exposure to Mexican-American enclaves), and pan-ethnic enclaves (i.e., Hispanic enclaves); and investigate (a) whether residential contexts are associated with maternal smoking during pregnancy behavior of Mexican-origin women in the United States, and (b) for whom (by nativity) residential enclaves matter.

Data and Methods

The individual-level data comes from the National Center for Health Statistics 2008 restricted use detailed natality files.⁵⁵ This dataset is based on the total population of women who had a live birth in the United States during the 2008 calendar year, and it includes detailed information on women’s prenatal care, birth experience, and birth outcomes as well as geographic identifiers. Whether women smoked during pregnancy is not reported on the birth certificate in California; thus, the analysis excludes women who resided in California. The contextual-level data

(both the tract- and county-level data) comes from the 2005-2009 American Community Survey 5-year estimates.⁵⁶ Drawing from Massey and Denton's five dimensions of segregation (i.e., evenness, exposure, concentration, centralization, and clustering),⁵⁷ we focus on the dimension of exposure, which measures the degree in which minority and majority group members potentially contact and interact by sharing common residential areas.⁵⁷

In this study, we utilize two basic measures of exposure: the isolation index and interaction index.^{57,58} More specifically, we create four measures of residential contexts for Mexican immigrant mothers: Mexican foreign-born isolation (i.e., Mexican immigrant enclave); Mexican native-born interaction (i.e., Mexican ethnic enclave); Hispanic interaction (i.e., Hispanic pan-ethnic enclave); and non-Hispanic white interaction. The isolation index measures the extent to which foreign-born Mexican residents are exposed to only one another, and is calculated:

$$\sum_{i=1}^n \left| \frac{x_i}{X} * \frac{x_i}{t_i} \right|$$

where x_i , and t_i are the number of residents who are foreign-born Mexicans and the total population of tract i within a county, and X represents the total number of foreign-born Mexican residents in the county. Similarly, the interaction index measures the extent to which foreign-born Mexican residents are exposed to other groups (e.g., native-born Mexican residents), and is calculated:

$$\sum_{i=1}^n \left| \frac{x_i}{X} * \frac{y_i}{t_i} \right|$$

where x_i , y_i and t_i are the number of residents who are foreign-born Mexicans, the number of other groups, and the total population of tract i within a county, respectively; and X represents the total number of foreign-born Mexican residents in the county. A series of multilevel logistic regression models are estimated using HLM 6.0 software.⁵⁹

Preliminary Results

The results in Table 1 demonstrate the effect of different residential contexts on foreign-born Mexican mothers' smoking behavior during pregnancy (see page 4 for Table 1). Overall, the intercept-only null models (i.e., variance components intercepts) show that a substantive proportion of the variance in foreign-born Mexican mothers' smoking behavior is between residential contexts (i.e., can be explained by differences between residential contexts). The results show that there are direct effects of residential contexts on maternal smoking during pregnancy for residents of Mexican immigrant enclaves (i.e., foreign-born Mexican isolation index) (Model I) and for the non-Hispanic white residential context (i.e., non-Hispanic white interaction index) (Model IV). Specifically, foreign-born Mexican mothers are 78 percent less likely to smoke if they reside in Mexican immigrant enclave; whereas they are 182 percent more likely to smoke if they reside in non-Hispanic white residential context. In other words, for foreign-born Mexican mothers living in a county where they are more exposed to non-Hispanic whites, the odds of maternal smoking during pregnancy increases substantially after controlling for individual characteristics. Although not statistically significant, living in a county where foreign-born Mexican mothers are exposed to either native-born Mexican mothers or other Hispanics equally reduced the odds of maternal smoking during pregnancy (Model II and Model III). Subsequent models will be estimated for native-born Mexican mothers as well.

<<< PRELIMINARY RESULTS >>>

Table 1. Multilevel logistic regression models predicting the odds of maternal smoking during pregnancy for foreign-born Mexican mothers.

Individual-level measures	Model I		Model II		Model III		Model IV	
	OR	p	OR	p	OR	p	OR	p
Intercept	0.002	***	0.002	***	0.002	***	0.001	***
Maternal age								
Age	1.081		1.083		1.082		1.082	
Age squared	0.999		0.999		0.999		0.999	
Marital status								
Married	0.549	***	0.550	***	0.549	***	0.547	***
Maternal education (ref: Less than HS)								
High school/GED	1.464	***	1.462	***	1.463	***	1.467	***
Some college	1.455	**	1.446	**	1.448	**	1.459	**
Bachelor's degree	1.237		1.234		1.235		1.243	
Weight gain during pregnancy								
Weight gain	1.006		1.006		1.006		1.006	
Weight gain squared	1.000		1.000		1.000		1.000	
Prenatal care utilization (ref: Inadequate)								
Intermediate care	0.930		0.931		0.931		0.932	
Adequate care	0.629	***	0.631	***	0.631	***	0.628	***
Adequate plus care	0.672	***	0.676	***	0.675	***	0.671	***
Parity								
First birth	0.782	**	0.784	**	0.784	**	0.783	**
County-level measures								
Foreign-born Mexican								
MxFB isolation	0.221	*						
MxFB: MxNB interaction			0.726					
MxFB: Hispanic interaction					0.772			
MxFB: NH White interaction							1.817	*
Controls								
SES	0.923	†	0.933		0.934		0.927	†
Variance Components								
Intercept	0.365	**	0.390	***	0.385	***	0.361	*

Note: p< 0.001 (***), p< 0.01 (**), p< 0.05 (*), p< 0.10 (†)

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