

# Impact of Individual and Neighborhood-level Factors on Cardiovascular Risk in Hispanics compared to Whites



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## Background

- Cardiovascular disease (CVD) is the leading cause of mortality in the US, accounting for nearly 1 in every 4, or 600,000, deaths each year (CDC, 2013; Daviglius et al., 2012; Heron, 2012).
- Roughly 715,000 Americans have a heart attack each year; about 525,000 are first events (CDC, 2013).
- Rates of CVD vary across race and ethnicity and account for about 25 % of deaths for Caucasians, and African Americans, and 21% for Hispanics (CDC, 2013).
- At least 50% of non-Hispanic Whites (NHWs) have high blood pressure, LDL cholesterol, and/or smoking.
- However, 71% of Hispanic women and 80% of Hispanic men have one or more those CVD risk factors (Daviglius et al., 2012), resulting in a higher prevalence of *risk factors* compared to NHWs (Derby et al., 2010).
- The lower aggregate mortality rate for Hispanics compared to Whites and African-Americans is therefore unexpected and as yet unexplained.**

## Purpose

To examine the impact of individual and neighborhood-level factors on CVD risk and mortality rates in White Hispanic women and men compared to White non-Hispanic women and men in Miami-Dade County, FL.

- Describe individual-level and neighborhood-level factors for White Hispanic men and women compared to White non-Hispanic men and women.
- Determine whether neighborhood-level factors predict individual-level Framingham Risk Score (FRS-10) and selected non-FRS-10 CVD risk factors in White Hispanic men and women compared to White non-Hispanic men and women.
- Determine whether individual-level and neighborhood-level CVD risk factors predict neighborhood-level CVD mortality for White Hispanic men and women compared to White non-Hispanic men and women.

## Methods

- Secondary analysis using an archival database and guided by the Fundamental Causes Theory (Link & Phelan, 1995)

### Setting

- Five hospitals Miami-Dade County, FL
- County has a largely Hispanic population; 34.3% of Cuban descent (U.S. Census, 2011)

### Sample

- 3,317 adults, 30 –74 years old, living in Miami-Dade County, with no history of CVD
- Sample included White Hispanic Women (n=1,188), White Hispanic Men (n=1,384), White non-Hispanic Women (n=335), and White non-Hispanic Men (n=410)

### Data sources

- Individual level data: limited data set from January 2012 to February 2013 retrieved from hospital records
- Neighborhood-level data: Census tract data from USCensus.gov and Floridacharts.org

Figure 1- Fundamental Causes Theory

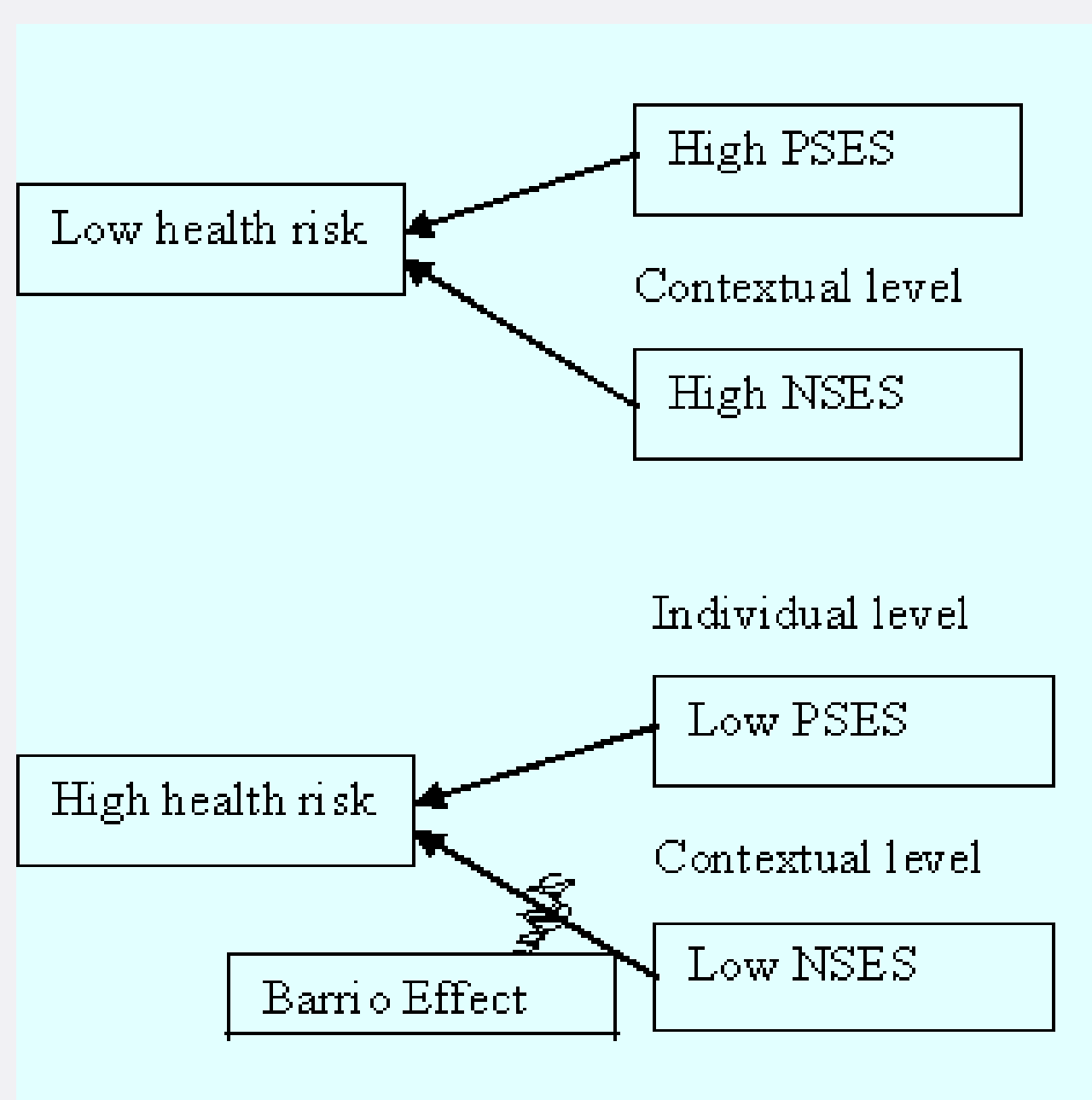


Figure 2- FRS-10 Risk Categories by Race/Ethnicity

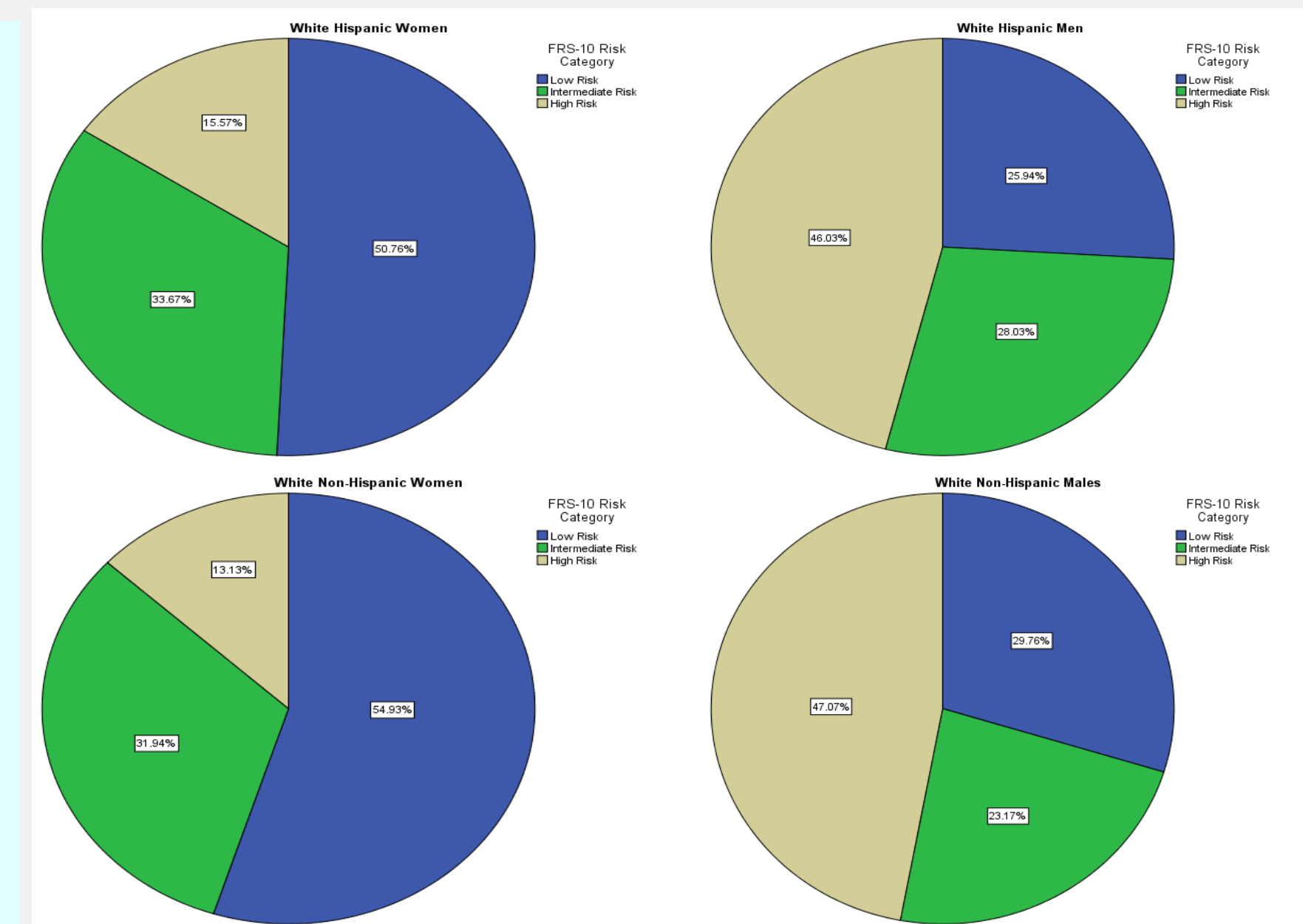


Table 1- Relationships between Neighborhood-level Factors, FRS-10, and CVD Mortality by Race/ Ethnicity and Sex

	FRS-10	CVD Mortality
<b>White Hispanic Women:</b>		
% Hispanics in Neighborhood	r = <b>-.08**</b>	r = <b>.26***</b>
Median Household Income	r = .02	r = <b>-.11***</b>
<b>White Hispanic Men:</b>		
% Hispanics in Neighborhood	r = <b>.07*</b>	r = <b>.24***</b>
Median Household Income	r = -.05	r = <b>-.12***</b>
<b>White non-Hispanic Women:</b>		
% Hispanics in Neighborhood	r = .08	r = <b>.27***</b>
Median Household Income	r = -.08	r = <b>-.20***</b>
<b>White non-Hispanic Men:</b>		
% Hispanics in Neighborhood	r = .08	r = <b>.28***</b>
Median Household Income	r = .07	r = <b>-.19***</b>

\*p<.05; \*\*p<.01; \*\*\*p<.001

## Results

- FRS-10 risk was significantly different across the four subgroups (p < .001).
  - Post hoc tests showed that White Hispanic women had less cardiac risk compared to White Hispanic men (p < .001) and White non-Hispanic men (p < .001).
- Of the seven components of the FRS-10, only *total cholesterol* differed significantly across the four subgroups (p=.001).
  - Post hoc tests showed that White Hispanic women had higher total cholesterol compared to White non-Hispanic women (p=.013) and White non-Hispanic men (p=.031).
- Of the five individual-level CVD risk factors, *LDL* (p < .001) and *triglycerides* (p = .051) differed significantly across the four subgroups.
  - Post hoc tests showed White Hispanic women had higher LDL compared to White non-Hispanic women (p=.007) and White non-Hispanic men (p=.005).
- Multilevel models were assessed to see if neighborhood-level factors predict FRS-10 and non-FRS-10 individual-level CVD risk factors. None of the models were significant at the .05 level.
- Only neighborhood median household income (NSES) and Hispanic ethnic concentration were significant predictors of CVD mortality (p=.01).

## Conclusions

- This study supports previous studies that demonstrate *higher* individual-level risk but *lower* CVD mortality rates for Hispanics.
- Living in neighborhoods with higher Hispanic concentration may put White Hispanic women and men at higher risk of CVD, based on FRS-10 estimates.
- Living in neighborhoods with higher Hispanic concentration and lower median household income may put individuals at greater mortality risk regardless of race/ethnicity.
- Findings disagree with the Fundamental Causes Theory's barrio effect and several other previous studies.
- Further research is needed to:
  - Identify other potential protective factors that account for lower CVD mortality for Hispanics in the US.
  - Understand differences for U.S. Hispanic subgroups, since data are predominantly from Mexican-Americans.