Social Science & Medicine 90 (2013) 40–48

Contents lists available at SciVerse ScienceDirect

Social Science & Medicine

journal homepage: www.elsevier.com/locate/socscimed

Contextual factors and weight change over time: A comparison between U.S. Hispanics and other population sub-groups

S. Heidi Ullmann [a,*], Noreen Goldman [b], Anne R. Pebley [c]

[a] United Nations Economic Commission for Latin America and the Caribbean, Santiago, Chile
[b] Office of Population Research, Wallace Hall, Princeton, NJ, USA
[c] California Center for Population Research, UCLA, Los Angeles, CA, USA

ARTICLE INFO

Article history:
Available online 2 May 2013

Keywords:
United States
Weight
Neighborhood context
Social environment
Hispanics
Sex differences

ABSTRACT

In recent decades there has been an increasing interest in understanding the role of social and physical contexts in influencing health behaviors and outcomes. This is especially true for weight, which is considered to be highly dependent on environmental factors. The evidence linking neighborhood characteristics to weight in the United States, however, is mixed. Many studies in this area are hampered by cross sectional designs and a limited scope, insofar as they investigate only one dimension of neighborhood context. It is also unclear to what extent neighborhood characteristics account for racial/ethnic disparities in weight. Using longitudinal data from the Los Angeles Family and Neighborhood Survey (L.A. FANS), we compare patterns of weight change between Hispanics and other racial and ethnic groups in order to evaluate whether we observe a pattern of unhealthy assimilation in weight among Hispanic immigrants and to identify differences in the rate at which different groups gain weight over time. We also explore the extent to which patterns of weight change are related to a wider range of community characteristics. We find that weight increases across all groups between the two study waves of L.A. FANS and that the increases are significant except for Asians/Pacific Islanders. With respect to differences in the pace of weight change, second and higher generation Hispanic women and black men gain weight more rapidly than their first generation Hispanic counterparts. Although the evidence presented indicates that first generation Hispanics gain weight, we do not find evidence for convergence in weight since the U.S.-born gain weight at a more rapid rate. The inclusion of community-level variables does not alter the relationships between the race, ethnicity, and immigrant generation categories and weight change. Of the six types of community characteristics considered, only collective efficacy is consistently and significantly associated with weight change, although the protective effect of neighborhood collective efficacy is seen only among women.

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Introduction

By recent estimates, the prevalence of obesity in the United States has plateaued over the past decade. Nevertheless, it continues to increase among minority populations, especially minority women (Flegal, Carroll, Kit, & Ogden, 2012). Although genetic factors are implicated in weight gain (Sorenson, 2001), mounting evidence points to the importance of dietary and physical activity patterns that lead to excess weight. These patterns appear to be highly influenced by personal factors as well as elements of the social, built, and natural environments in which people live and work. The potential influence of the neighborhood context on weight has received much attention, although the evidence linking neighborhood characteristics to weight is inconsistent (Feng, Glass, Curriero, Stewart, & Schwartz, 2010).

In the U.S. some investigations of the neighborhood correlates of weight find a relationship between weight and the built environment, such as physical features of the neighborhood and the local food environment, while others do not. In their review of the relationship between obesity-related health disparities and built environments, Lovasi and colleagues report that the presence of food stores, places to exercise, and safety are potentially important for the development of obesity (Lovasi, Hutson, Guerra, & Neckerman, 2009). More recent reviews by Ferdinand, Sen, Rahurkar, Engler, and Menachemi (2012) and Feng et al. (2010), however, suggest that the existing evidence does not identify a clear and strong role for built environmental risk factors in weight. These reviews conclude that inconsistent results may be due to heterogeneous and potentially inadequate study designs and methodologies (Feng et al., 2010; Ferdinand et al., 2012).

* Corresponding author. Tel.: +1 917 620 4877.
E-mail address: heidi.ullmann@cepal.org (S.H. Ullmann).

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http://dx.doi.org/10.1016/j.socscimed.2013.04.024

As researchers have pointed out, there are many methodological challenges in trying to estimate neighborhood effects (Diez Roux, 2004; Oakes, 2004). One important issue is that the majority of studies that have attempted to estimate neighborhood effects on weight are based on cross-sectional designs. Neighborhoods change over time, individuals change neighborhoods, and weight is also dynamic, therefore trying to capture the relationship between these two facets using a static study design is problematic. Another issue is that studies typically focus on one dimension of the neighborhood context, while few studies have simultaneously explored the effects of various dimensions related to the sociodemographic, physical, and social-interactional environments (Leal, Bean, Thomas, & Chaix, 2012).

Beyond the methodological issues presented by many of the studies in this area of research, an analytic gap that has been identified is our poor understanding of how the neighborhood context contributes to racial/ethnic disparities in weight status (Osypuk & Acevedo-Garcia, 2010; Robert & Reither, 2004). Studies have documented differences in the strength and pattern of the association between neighborhood-level variables and weight by race/ethnicity (Do et al., 2007; Nicholson & Browning, 2012), but relatively less is known about nativity-based disparities in this relationship. This avenue of inquiry is important because immigration has a major effect on the size, distribution, and composition of the U.S. population. According to a recent estimate, the increase in the foreign-born population between 1990 and 2010 directly contributed to one third of U.S. population growth (Martin & Midgley, 2010) and as such the health of the immigrant population will have major implications for the future health burden in the country.

Despite widespread recognition of the measurement and conceptual issues of acculturation and assimilation as variables to understand health among immigrants (Abraído-Lanza, Armbrister, Flórez, & Aguirre, 2006; Hunt, Schneider, & Comer, 2004), and indications that the acculturation paradigm for immigrant health is too simplistic (Creighton, Goldman, Pebley, & Chung, 2012), a majority of studies investigating weight change in immigrant populations in the U.S. rely on the acculturation/assimilation framework as an explanation. Although findings vary substantially, the stylized story is that initially immigrants have more favorable weight profiles than their U.S.-born counterparts, but over time their weight converges to levels observed for the U.S.-born (Goel, McCarthy, Phillips, & Wee, 2004). This pattern has been especially noted among Hispanic immigrants (Barcenas et al., 2007; Kaplan, Huguet, Newsom, & McFarland, 2004). The measurement of acculturation varies considerably from study to study, but place of birth, length of residence in the U.S., and language use are frequently used proxies. A limitation of previous studies is that they almost exclusively use whites as the comparison group (Abraído-Lanza et al., 2006), which suggests that whites are the group to which Hispanics will assimilate. This tendency not only precludes a fuller understanding of how weight among Hispanics evolves relative to other groups in American society, but it is also inconsistent with theories that suggest that there are multiple patterns of assimilation and acculturation (Portes & Zhou, 1993).

Our study has two overarching objectives that attempt to extend the literature on neighborhood effects and weight by addressing the limitations outlined above. First, we use longitudinal data to compare patterns of weight change between Hispanics and other race/ethnic groups, specifically whites, blacks, and Asians/Pacific Islanders. We are interested in assessing whether we observe a pattern of unhealthy assimilation in weight among Hispanic immigrants, and in contrast to earlier studies, we compare Hispanics to other groups, not just non-Hispanic whites. Second, we investigate the extent to which a wide range of neighborhood-level variables contributes to weight change, and we explore whether these variables influence the association between weight change among the different study population sub-groups.

Data and measures

Data

To investigate weight change among adults we use data from two waves of the Los Angeles Family and Neighborhood Survey (L.A. FANS). L.A. FANS is a longitudinal study of individuals, households, and neighborhoods. L.A. FANS -1 included approximately 3000 households in a stratified probability sample of 65 tracts (using 1990 census-tract boundaries) in Los Angeles County in 2000 and 2001. Poor neighborhoods and households with children were oversampled (Sastry, Ghosh-Dastidar, Adams, & Pebley, 2006). L.A. FANS -1 interviewed one randomly selected adult via face-to-face interview in each household. L.A. FANS -2, conducted between 2006 and 2008, interviewed panel respondents via face-to-face interview where possible and via phone otherwise (e.g., for those who moved out of L.A. County). L.A. FANS was reviewed and approved by the Institutional Review Boards of the University of California Los Angeles and the RAND Corporation.

The community-level variables for this analysis come from three sources: the first wave of L.A. FANS, the 2000 Census corresponding to the first wave of data collection, and the American Community Survey (ACS) 2005–2009 estimates roughly corresponding to the second wave of data collection.

Sample

Approximately 2600 adults were randomly selected to complete the wave 1 adult module. Of these, 1193 were matched to wave 2 data. Preliminary analyses (not shown) reveal that the weight profiles of those who participated only in wave 1 of data collection do not differ from those of respondents who contributed data to both waves. However, race, ethnicity, and immigrant generation are related to having participated in both waves: blacks, whites, and second plus generation Hispanics are more likely to have participated in both waves than first generation Hispanics. Of the 1193 respondents in the base sample, 218 are excluded due to missing values on nativity, socioeconomic status, and anthropometric data. Our final sample comprises 975 adults who were at least 18 years of age at wave 1.

Individual-level measures

Weight

Our outcome is annual weight change in kilograms. Weight is self-reported at both waves in pounds and we convert it into kilograms. We calculate the difference in reported weight between the two waves (wave 2 minus wave 1) divided by the number of years that elapsed between the two waves. Standardization for the length of time between interviews is necessary because the length of follow-up varied from 5 to 8 years across respondents.

Race, ethnicity, and immigrant generation

Our sample includes five mutually exclusive racial, ethnic, and immigrant generation (REI) categories: Hispanic respondents (1st and 2nd/3rd+ generation), the majority of whom are Mexican-origin, and whites, blacks, and Asians/Pacific Islanders of all generations. For Hispanics, first generation respondents are those who were born abroad, second generation respondents were born in the U.S. to at least one foreign-born parent, and third plus generation respondents were born in the U.S. to U.S. born parents. Although we initially distinguished between second and third plus generation Hispanic immigrants, we combined the two groups because they had similar results throughout the analysis. For those who indicated mixed race, we use the racial category that they reported that

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