



Diet and obesity in Los Angeles County 2007–2012: Is there a measurable effect of the 2008 “Fast-Food Ban”?



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ABSTRACT

We evaluate the impact of the “Los Angeles Fast-Food Ban”, a zoning regulation that has restricted opening/remodeling of standalone fast-food restaurants in South Los Angeles since 2008. Food retail permits issued after the ban are more often for small food/convenience stores and less often for larger restaurants not part of a chain in South Los Angeles compared to other areas; there are no significant differences in the share of new fast-food chain outlets, other chain restaurants, or large food markets. About 10% of food outlets are new since the regulation, but there is little evidence that the composition has changed differentially across areas. Data from the California Health Interview Survey show that fast-food consumption and overweight/obesity rates have increased from 2007 to 2011/2012 in all areas. The increase in the combined prevalence of overweight and obesity since the ban has been significantly larger in South Los Angeles than elsewhere. A positive development has been a drop in soft drink consumption since 2007, but that drop is of similar magnitude in all areas.

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1. Introduction

The obesity epidemic has spawned many attempts to change diets and increased the profile of non-medical approaches to prevention in health policy debates. In the U.S., policy initiatives to change food environments and availability of nutritionally less desirable foods have rarely succeeded politically or legally, the exception being policies limited to public schools. New York City's regulation to limit the serving size of caloric soft drinks to no more than 16 ounces was struck down the day before it became effective. None of many proposals to levy new taxes on soft drinks or other types of junk food has been adopted in the U.S. However, such taxes have been implemented in other countries with health goals. The most recent country is Mexico, which added a 1 peso per liter tax on sugared beverages and an 8 percent tax on calorie dense snack foods starting January 2014, corresponding to 10% price increase for a 2 L drink.

The “Los Angeles Fast-Food Ban” is a rare exception in the U.S. and received international attention when passed in 2008. It is a unique policy that deserves an evaluation now that several years

have passed. The Los Angeles Fast-Food Ban was introduced as a draft ordinance in the Los Angeles City Council in 2007 and after an extended debate was passed unanimously in July 2008 ([Office of the City Clerk, City of Los Angeles, 2008](#)). It became effective on September 14, 2008, initially as a temporary ordinance, but the City Council made it a permanent amendment to the city's General Plan in December 2010 ([Office of the City Clerk, City of Los Angeles, 2010](#)). Despite its nickname, the policy is a zoning regulation that restricts opening or expanding a “stand-alone fast-food restaurant” in Baldwin Hills, Leimert Park, and portions of South Los Angeles and Southeast Los Angeles; the paper refers to this area as South Los Angeles. Fast-food restaurants are defined as “any establishment which dispenses food for consumption on or off the premises, and which has the following characteristics: a limited menu, items prepared in advance or prepared or heated quickly, no table orders, and food served in disposable wrapping or containers” ([Office of the City Clerk, City of Los Angeles, 2010](#)), pF-1). The regulation prevents new drive-through windows, new stand-alone fast food restaurants, or expanding floor space. It does not affect interior remodeling or exterior changes that do not increase the floor space. For example, a fast food restaurant that shares a building in a strip mall would not be subject to the regulation. The area subject to the rule has about 700,000 residents, which by itself would make it one of the 20 largest cities in the U.S. ([City of Los Angeles](#)). The council

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members who introduced the measure argued that the proliferation of fast-food outlets in their district “...creates serious public health problems through poor nutrition for children.” ([Office of the City Clerk, City of Los Angeles, 2008](#), p1) While the Los Angeles Fast-Food Ban was not the first local regulation limiting fast-food outlets (a few small tourist locations implemented similar rules, but for aesthetic reasons), it was the first regulation presented by its proponents as a health measure and for a major area.

The rationale for the Fast-Food Ban put forward by its proponents parallels influential health policy statements, including the White House Task Force on Childhood Obesity, which attributes poor diets and high obesity rates in low-income neighborhoods to a lack of “convenient access to affordable and healthy food. Instead of supermarkets or grocery stores, these communities often have an abundance of fast-food restaurants and convenience stores” ([White House Task Force on Childhood Obesity, 2010](#), p49). Research has documented disparities in food availability and some studies argue that neighborhood food environments causally affect diets ([Larson et al., 2009](#)). This provides a plausible mechanism of how the regulation could affect food consumption and possibly even obesity rates.

This paper analyzes whether the composition of new food outlets since the regulation differs between South Los Angeles and either the remainder of the city of Los Angeles or Los Angeles County and whether there are differential changes in diet behaviors and obesity over time. We analyze the first issue with the Los Angeles County Department of Public Health's database of food retail permits and the second with 2007–2012 cross-sectional surveys from the California Health Interview Survey.

2. Materials and methods

2.1. Food environments

The Los Angeles County Department of Public Health issues food permits and inspects all licensed food outlets ([County of Los Angeles](#)). The Department provided their permit/license database as of February 2013 in excel; duplicate permits and permits for food outlets under military veteran organizations were removed. The database collects addresses, issue date, permit types (restaurant, retail food market), and size. We analyze the type of permits issued after the Fast-Food Ban regulation became effective on September 14, 2008.

We distinguish 6 types of food permits:

- 1) Fast-food chains with 10 or more outlets in Los Angeles (these are the type of restaurants most likely to be subject to the regulation)
- 2) Other restaurant chains with 10 or more outlets (not fast-food and usually not satisfying some of the criteria about menu and food preparation)
- 3) Individual or small chain restaurants with seating up to 10 people
- 4) Individual or small chain restaurants with seating for more than 10 people
- 5) Small food stores (under 2000 sqft)
- 6) Large food stores (over 2000 sqft).

We used name searches to identify chains with 10 or more locations in Los Angeles County and manually classified them as “fast-food” if they predominantly serve hamburgers, pizza, tacos, sandwiches, fried chicken, etc. Restaurants in this group tend to satisfy the criteria of the regulation about stand-alone and limited menus, but not all do. Subway restaurants, for example, tend to be in shared buildings, not stand-alone restaurants, nor do they have

drive-through service.

About 30% of outlets belonging to chains that have more than 10 outlets do not fit into a “fast-food group” and we group them into “other chain restaurants”. This is a mixed group, including full-service restaurants (Denny's is the biggest with 88 outlets in Los Angeles County), coffee shops (Starbucks is the biggest in that category with 350 outlets), ice cream parlors (Baskin Robbins is the biggest with 116 outlets), but shares the feature that they would be unlikely to be affected by the fast-food ban. We separated the remaining restaurants by size (10 or fewer seats or more than 10 seats). A large number of the small restaurants (10 or fewer seats) sell baked goods, donuts, ice cream. Many are taco stands and we expect that the majority sells some type of “fast food”, but they would not satisfy the criterion of the regulation of being a “stand-alone fast-food restaurant”. The small stores are predominantly mini-marts, convenience stores (whether just food stores or part of a gas station) with a small set of specialty stores (e.g. meat markets). We use a two-sample test for proportions for a particular category between areas.

2.2. Diet and obesity

Diet and obesity measures come from the 2007, 2009, and 2011–2012 waves of the California Health Interview Survey (CHIS), a random-digit-dial telephone survey of California's non-institutionalized population ([UCLA Center for Health Policy Research](#)). We use the restricted files that identify a survey respondent's residential address. In the three waves, a total of 141,597 adults ages 18 years and older were interviewed. The sampling weights provided by CHIS account for unequal sampling probabilities and non-response. We exclude pregnant women (0.5%), respondents whose information was provided through a proxy interview (0.5%), and residents of areas defined as rural (1.7%).

The diet measures are the number of times per week the following items were consumed: fast-food, soft drinks (excluding diet), fruits (excluding juices), and vegetables (excluding fried potatoes). Body mass index (BMI) was calculated from self-reported height and weight and we classify respondents into “overweight or obese” ($BMI \geq 25.0$) and “obese” ($BMI \geq 30.0$), according to World Health Organization classifications for adults ([World Health Organization](#)).

The intervention group is respondents living in South Los Angeles, that is, the area targeted by the Fast-Food Ban ($n = 467$ in 2007, 483 in 2009, and 535 in 2011–2012). The comparison groups are either respondents living in other parts of the city of Los Angeles ($n = 3829$ in 2007, 2920 in 2009, and 3034 in 2011–2012) or living in other parts of Los Angeles County ($n = 11,591$ in 2007, 8377 in 2009, and 8252 in 2011–2012). We assess cross-sectional differences between areas and difference-in-differences (DID), whether secular changes in diet or obesity in South Los Angeles differ from secular changes in other areas).

Our main statistical analysis uses regression analysis to address potentially confounding variables at the individual and neighborhood level (including socio-demographic changes that may differ across areas): gender, age, race/ethnicity, household size, annual household income, education, and marital status at the individual level; population density, median household income, and proportion of non-Hispanic Whites of residential census tract from the 2010 Census as neighborhood-level covariates. In the regression, we include data from the intermediate 2009 wave and results are based on 1485 respondents in South Los Angeles, 28,220 respondents residing in other areas of Los Angeles County, and 9783 respondents residing in Los Angeles City but outside the intervention area.

Ordinary Least-Squares regression is used for a continuous

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