

# Smoke Before Food: A Tale of Baltimore City

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**THE GROCERY STORE IN THE** image represents a typical store in Baltimore's inner city. This store is located in the "Middle East" neighborhood of East Baltimore, within 5 blocks of the Johns Hopkins Bloomberg School of Public Health. Census data from 2000 show that, in this neighborhood, 94.4% of residents are African American, 64.4% of family households are female-run households with no husband present, the unemployment rate is 23.5%, the median household income is \$15 493, and only 53.6% of adults have completed high school.

As part of our study addressing the association between the availability and price of food and diabetes and obesity, we spent 5 months identifying the type and location of food stores, interviewing store managers, and collecting data on the availability and price of foods in 240 stores located in the Baltimore-area neighborhoods where the 963 participants in our study resided.<sup>1</sup> Out of the 187 food stores located within the city, 17 were classified as supermarkets, 136 as grocery stores, and 34 as convenience stores. A total of 25 participants in the study live within 1 mile of the grocery store in the image. We asked the grocery store managers what items they sold the most of. Cigarettes were consistently at the top of the list. The image shows a store where cigarettes are advertised, but no sign exists that shows that this is an actual grocery store.

The *2005 Dietary Guidelines for Americans*, published jointly

every 5 years by the US Department of Health and Human Services and the US Department of Agriculture, recommend increasing the consumption of fruits, vegetables, whole grains, and fat-free dairy products.<sup>2</sup> No fresh fruits or vegetables, whole wheat bread, or skim milk are sold in the city's grocery stores. Only "convenience food" items, such as whole milk, sodas, chips, and canned foods are typically available. The store in the image is not the exception but the rule in Baltimore inner city neighborhoods. We found that the price of whole milk, cereal, and white bread in this store was 20% higher than in the closest supermarket 0.9 miles away.

Several studies support the hypothesis that economic and racial disparities in obesity and diabetes may be, at least partially, explained by the food environment.<sup>3,4</sup> Public health research and interventions on obesity and diabetes should include the local food environment (measured by the availability and prices of recommended foods) as determinants of poor diets and, most importantly, as barriers to the prevention and treatment of these common conditions. Interventions and policies aimed at improving the food environment by making recommended foods available and affordable are crucial to stopping the current trends in obesity and diabetes. ■

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**Grocery store in the "Middle East" neighborhood of Baltimore City, July 2006.**  
Source. Photo courtesy of Carles Lerin.

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## Contributors

M. Franco was responsible for the design of the study, collection and analysis of the data, and preparation of the article. A. Nandi helped to analyze the data and write the article. T. Glass and A. Diez-Roux helped to design the study, interpret the data, and write the article.

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## References

1. Bild DE, Bluemke DA, Burke GL, et al. Multi-ethnic study of atherosclerosis: objectives and design. *Am J Epidemiol.* 2002;156:871–881.
2. *Dietary Guidelines for Americans 2005.* Washington, DC: US Department of Agriculture and US Department of Health and Human Services; 2005. Available at: <http://www.healthierus.gov/dietaryguidelines>. Accessed March 8, 2007.
3. Morland K, Wing S, Diez Roux A. The contextual effect of the local food environment on residents' diets: the atherosclerosis risk in communities study. *Am J Public Health.* 2002;92:1761–1767.
4. Moore LV, Diez Roux AV. Associations of neighborhood characteristics with the location and type of food stores. *Am J Public Health.* 2006;96:325–331.