

Tobacco Outlet Density and Demographics in Erie County, New York

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Economic literature shows that smokers are responsive to the price of cigarettes and that African American and lower-income smokers are particularly price sensitive.¹⁻⁴ Tobacco control policies that effectively restrict access and use of cigarettes will raise the cost of the cigarettes themselves as a result of increased costs in obtaining and using cigarettes. For example, zoning restrictions on the number of tobacco outlets in a given area will require smokers to travel greater distances, which has a cost associated with it, to obtain cigarettes. Studies in the alcohol literature indicate that reductions in the physical availability of alco-

hol products are associated with positive health and behavioral outcomes,⁵⁻⁸ especially in low socioeconomic areas.^{9,10} No such studies have been performed concerning tobacco retail outlet densities. Given this deficiency in the tobacco literature, we set out to determine whether tobacco outlets were more densely concentrated in areas with lower incomes and more African Americans.

METHODS

The addresses of all 1019 licensed tobacco selling retail outlets in Erie County, NY, in 1996 were obtained from the Erie County Department of Health. The 1995 TIGER/Line files, which are used for census mapping needs, for Erie County were obtained to map 1990 census data into the 227 residential census tracts in Erie County. The total population of Erie County in 1990 was 968 532, with 11% African American and 3% other races, which are concentrated in census tracts within the city of Buffalo, NY, the county's largest city. Initial geocoding with Arcview, Version 3.1 (ESRI, Redlands, Calif), which was supplemented with the use of telephone directories, street maps, and neighborhood canvassing, led to successful geocoding of 1007 (98.8%) outlets.

The primary density measure studied was the number of outlets per 10 km of roadway in a given census tract. The percentage of African American residents and the median household income by census tract were used based on 1990 census data. The median outlet density across each income and race quartile was calculated. Analysis of variance was used to determine statistical significance of mean differences across quartile categories.

RESULTS AND DISCUSSION

As shown in Table 1, census tracts with lower median household income and a greater percentage of African Americans had greater tobacco retail outlet densities ($P < .05$ for both measures).

These findings are consistent with the alcohol literature^{9,10} and suggest that persons who reside in these locations may have greater physical access to cigarettes. Although not directly tested in this study, future study is

TABLE 1—Tobacco Outlet Density, by Income and Race Quartiles, in Erie County, NY

Median Household Income, \$, Quartile	Outlets per 10 km of Roadway	Percentage African American Quartile	Outlets per 10 km of Roadway
<19 850	4.0	>6.1	4.2
<27 736	3.1	>0.8	2.3
<35 386	1.7	>0.3	1.6
≥35 386	1.2	≤0.3	2.0

Note. $P < .05$ for analysis of variance for both predictors.

needed to test whether outlet density is associated with cigarette smoking, and these studies should account for spatial autocorrelation of outlets. Barriers such as clean indoor air policies and access restrictions essentially raise the cost of obtaining and using cigarettes, so consumption is predicted to decrease under such restrictions. Because lower-income and African American smokers are more price sensitive, policies that decrease tobacco outlet densities, such as zoning restrictions, may have a greater effect in these populations, although additional research is needed to address this hypothesis. ■

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Contributors

A. Hyland coordinated the study and finalized the brief. M.J. Travers collected and analyzed the data and wrote an initial draft of the brief. K.M. Cummings advised on methods for data collection and analysis. J. Bauer assisted with the analysis and contributed to the writing of the brief. T. Alford contributed advice on the study design and interpretation of the findings. W.F. Wieczorek provided advice on the analytical approach and assisted in writing the brief.

Human Participant Protection

No protocol approval was needed for this study.

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