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Purchase of Loose Cigarettes by Adult Smokers in Philadelphia: Individual-level Correlates and Neighborhood Characteristics

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Background

- Philadelphia has the highest adult smoking rate¹ and the highest rate of tobacco retailers² among the 10 largest U.S. cities.
- Governmental reports have identified high rates of illegal sale of cigarettes in Philadelphia².
- Studies have found that a main source of cigarette use in low income communities is single (loose) cigarettes purchased at tobacco retailers or from unregulated street vendors^{3,4}.
- While studies have shown that loose cigarette use is a problem among urban youth who reside in disadvantaged neighborhoods, less research has been performed among adults on this topic^{5,6}, and no studies focus on Philadelphia.
- In order to efficiently target tobacco control efforts towards reducing smoking rates in Philadelphia, demographic, geographic, and behavioral factors affecting the purchase of loose cigarettes need to be determined.

Research Questions:

- What are the demographic and smoking-related correlates of having purchased loose cigarettes among adult smokers in Philadelphia?
- Are smokers who purchased loose cigarettes more likely to reside in Philadelphia neighborhoods with high poverty rates, compared to smokers who did not?
- Are smokers who purchased loose cigarettes more likely to reside in Philadelphia neighborhoods with high tobacco retail density, compared to smokers who did not?

Methods

- This study used self-reported data from the Public Health Management Corporation's 2010 Household Health Survey (HHS), a representative cross-sectional survey of health related factors among residents of Southeastern Pennsylvania⁷.
- Balancing weights were used to make the sample representative of Philadelphia, PA.
- Smoking status was determined by answering "Every Day" or "Some Days" to the question "Do you NOW smoke cigarettes?"
- A logistic regression model was used to identify demographic and smoking-related predictors of having purchased loose cigarettes in the past 2 months among a sample of adult smokers in Philadelphia.
- The logistic regression model also contained variables representing the density of tobacco retail outlets (per 1000) and percent poverty by Philadelphia Planning Analysis Section (PAS).
- Base maps and geo-coded tobacco-retailer data were provided by the City of Philadelphia. Income data by census tract was compiled using the 2010 U.S. census, and aggregated by PAS.
- Statistical analysis was performed using IBM SPSS Statistics 22. Geographical analysis was performed using ArcGIS 10.2.

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Results

- Figure 1 shows a positive association between number of individuals in the HHS sample who purchased loose cigarettes and areas of Philadelphia with high poverty.
- Figure 2 shows a positive association between number of individuals in the HHS sample who purchased loose cigarettes and tobacco retail density.

Figure 1.

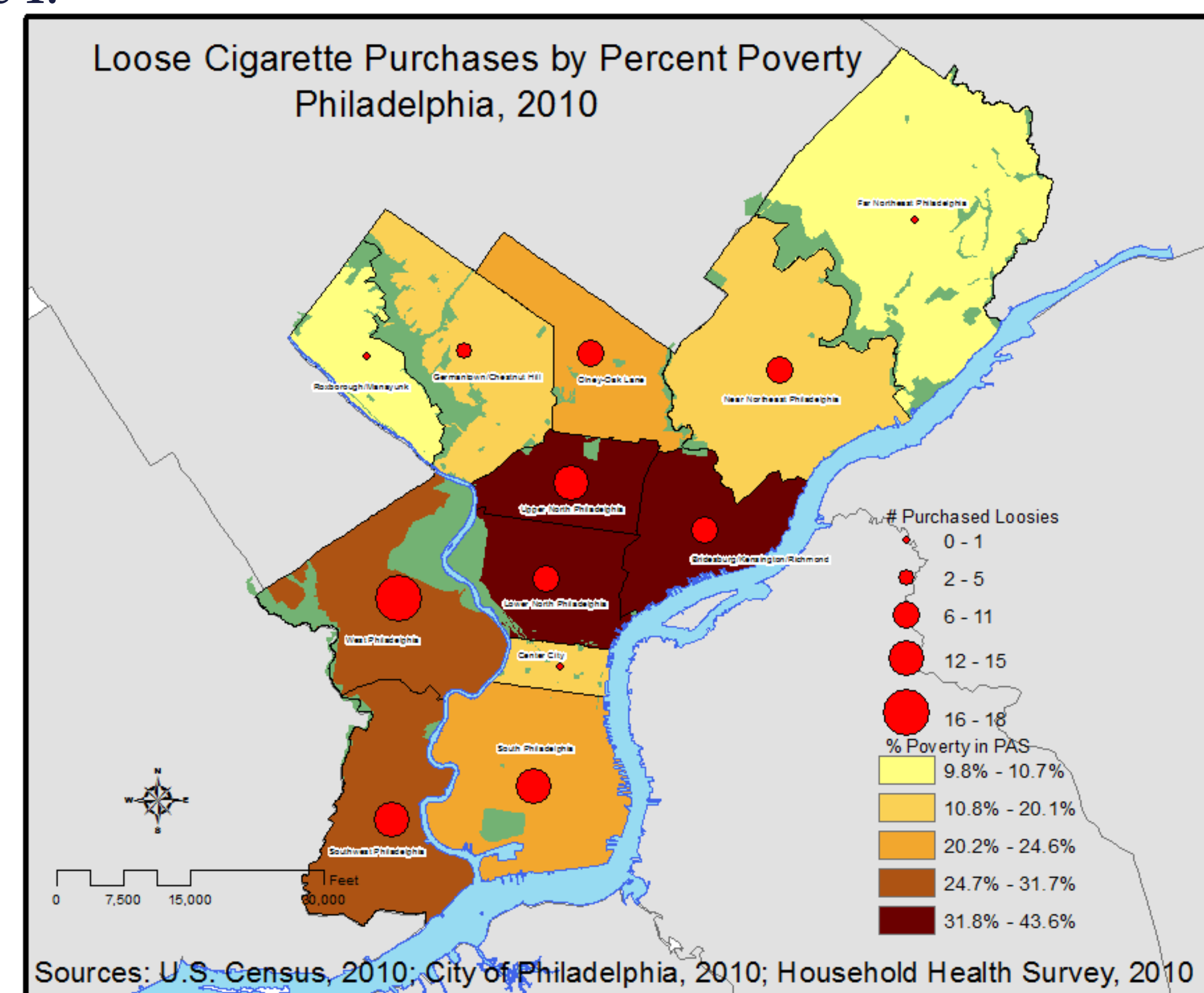
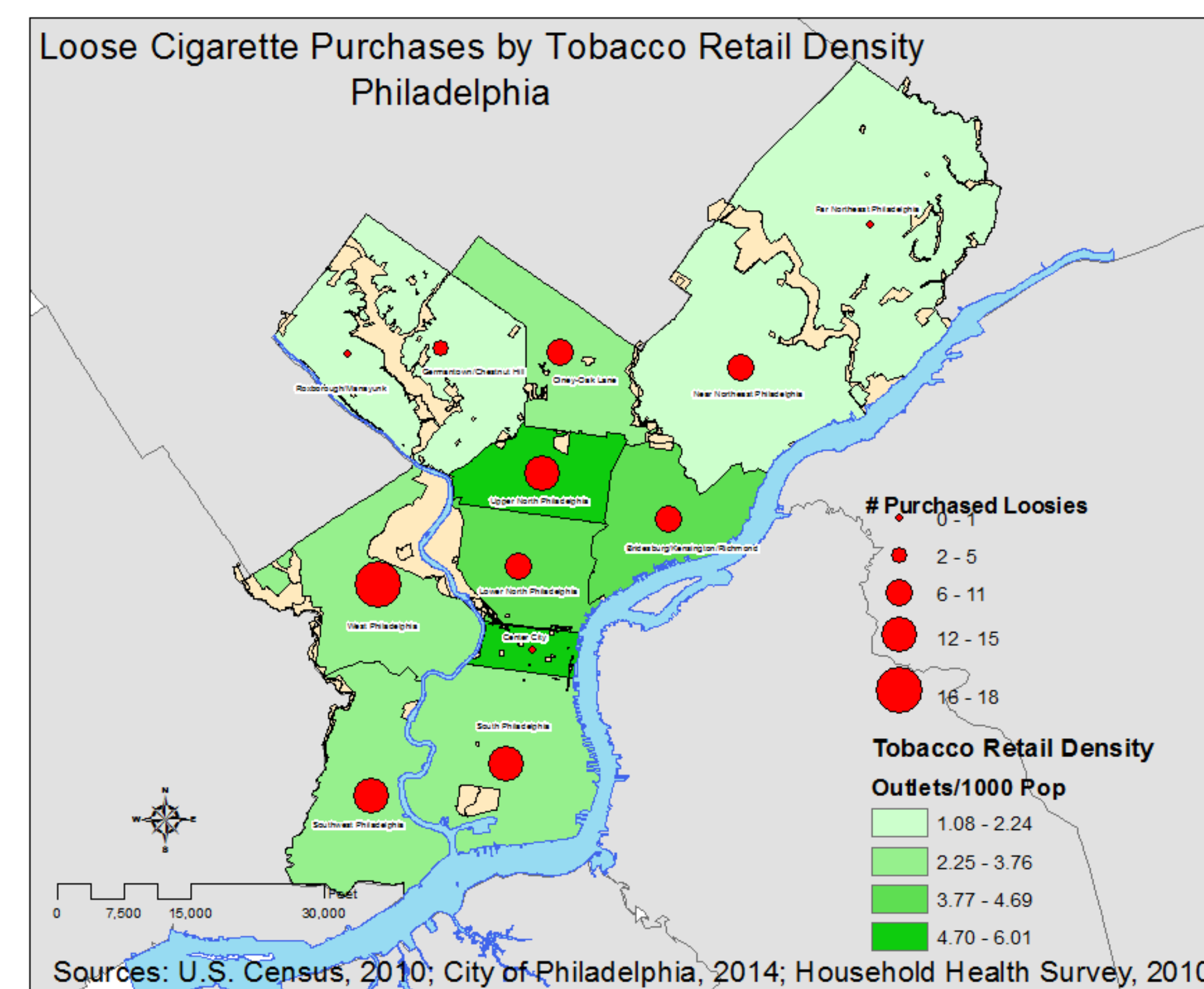


Figure 2.



- Of the 3744 adults that answered the item about smoking status, 943 (25.2%) indicated that they were smokers.
- Of the 919 smokers that answered the item about loose cigarettes, 101 (11.0%) indicated that they had purchased a loose cigarette in the past 2 months.
- Significant correlates of having purchased loose cigarettes in the past 2 months included the following: Race, age, and employment.

Results

Table 1.

Correlates of Having Purchased Loose Cigarettes among Adult Smokers in Philadelphia (n = 919)

Variable	Adj. Odds Ratio	95% C.I. ^b
Female	Reference	
Male	1.93	[0.97, 3.85]
White	Reference	
Black	7.06***	[2.57, 19.43]
Other	9.70***	[3.31, 28.38]
Age 18-39	Reference	
Age 40-59	0.18***	[0.88, 0.37]
Age 60+	0.06**	[0.01, 0.26]
No High School Diploma	Reference	
High School Graduate	0.51	[0.23, 1.12]
Attended Some College or More	0.41	[0.16, 1.05]
Employed Full-time	Reference	
Employed Part-time	4.04*	[1.37, 11.91]
Unemployed/Looking	2.77	[0.97, 7.89]
Unemployed/Not Looking/Retired	3.80**	[1.46, 9.90]
Not Poor	Reference	
Poor (100% of Poverty level or less)	1.13	[0.57, 2.25]
Married/Living with Partner	Reference	
Not Married or Living with Partner	0.91	[0.46, 1.78]
Past Year- Did Not Try to Quit	Reference	
Past Year- Tried to Quit	1.70	[0.87, 3.30]
1 to 5 Cigarettes/Day	Reference	
6 to 10 Cigarettes/Day	0.72	[0.32, 1.60]
11 to 20 Cigarettes/Day	0.62	[0.24, 1.58]
20+ Cigarettes/Day	0.94	[0.25, 3.58]
Tobacco Retail Density of PAS	0.84	[0.46, 1.57]
Percent Poverty of PAS	1.07	[0.98, 1.17]

Note: *p<0.05, **p<0.01, ***p<0.001.

^bConfidence interval

Discussion

- Greater likelihood of having purchased loose cigarettes among young African American smokers with less than full-time employment was expected given Philadelphia's high volume of cigarette retailers located in low income, primarily African American, neighborhoods.
- Income and quit attempts were not identified as significant correlates of purchasing loose cigarettes, which differs from previous research⁵.
- While bivariate analysis showed positive association between having purchased loose cigarettes and living in areas with high poverty or tobacco retail density, the multivariate analysis found no significant correlation.
- While fines are imposed for selling loose cigarettes, Philadelphia has limited enforcement capabilities. Results of this study could be used to inform community and city-wide actions to curb illegal sale of cigarettes as part of comprehensive tobacco control efforts.

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