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3 **Title:** Cross-sectional and Longitudinal Associations of Neighborhood Social
4 Environment and Smoking Behavior: the Multi-Ethnic Study of Atherosclerosis
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8 **Authors:** Stephanie L. Mayne, Amy H. Auchincloss, Kari A. Moore, Yvonne L. Michael,
9 Loni Philip Tabb, Sandra E. Echeverria, Ana V. Diez Roux
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24 **Supplemental Table 1.** Comparison of Included Sample to All MESA Neighborhood
25 Study Participants
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29 **Supplemental Table 2.** Bivariate Associations of Socio-demographic Characteristics
30 with Smoking Status
31
32
33

34 **Supplemental Table 3.** Bivariate Associations of Socio-demographic Characteristics
35 with Baseline Neighborhood Social Environment
36
37
38

39 **Supplemental Table 4.** Sensitivity Analysis: Cross-sectional and Longitudinal
40 Associations of Baseline Neighborhood Social Environment with Smoking Status and
41 Intensity Among Participants with at least 5 1-mile neighbors (N=5,558)
42
43
44
45

46 **Supplemental Table 5.** Sensitivity Analysis: Cross-sectional and Longitudinal
47 Associations of Baseline Neighborhood Social Environment with Smoking Status and
48 Intensity Among Participants with at least 3 Exam-Years of Data (N=5,526)
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Supplemental Table 1. Comparison of Baseline Socio-demographic, Neighborhood, and Health Behavior Characteristics between Included Sample and Excluded MESA Neighborhood Study Participants (2000-2002). N=6,191

Sample Characteristics	Included N=5,856	Excluded N=335	p-value
Demographic Characteristics			
Mean age (SD)	61.9 (10.1)	62.2 (10.2)	0.6
Gender (%)			0.0002
Male	2753 (47.0)	192 (57.3)	
Female	3103 (53.0)	143 (42.7)	
Race (%)			0.5
White	2291 (39.1)	142 (42.4)	
Chinese	694 (11.9)	35 (10.4)	
Black/African American	1610 (27.5)	83 (24.8)	
Hispanic	1261 (21.5)	75 (22.4)	
Education (%)			0.8
High school graduate or less	2051 (35.0)	106 (33.4)	
Some college	1660 (28.4)	95 (30.0)	
Bachelor's or Graduate degree	2145 (36.6)	116 (36.6)	
Employment Status (%)			0.6
Currently working	3190 (54.5)	172 (53.1)	
Not currently working	2666 (45.5)	152 (46.9)	
Mean per capita annual household income adjusted for inflation, in increments of 10,000 (SD)	2.6 (2.0)	2.8 (2.3)	0.1
Marital status (%)			0.7
Currently married	3610 (61.6)	202 (60.7)	
Not currently married	2246 (38.4)	131 (39.3)	
Current Alcohol Use (%)			0.07
Yes	3287 (56.1)	205 (61.2)	
No	2569 (43.9)	130 (38.8)	
Smoking Status			0.8
Current	741 (12.7)	42 (13.2)	
Former	2158 (36.8)	121 (38.1)	
Never	2957 (50.5)	155 (48.7)	
Mean # cigs in current smokers only	13.5 (17.7)	11.3 (11.4)	0.2
Neighborhood Characteristics			
Mean neighborhood SES score (SD)	-0.01 (6.33)	1.03 (5.77)	0.002
Mean neighborhood social environment score (SD)	-0.15 (2.52)	-0.01 (2.35)	0.4
Mean aesthetic quality score (SD)	3.67 (0.43)	3.74 (0.38)	0.006
Mean safety score (SD)	3.65 (0.42)	3.70 (0.45)	0.2
Mean social cohesion score (SD)	3.54 (0.26)	3.55 (0.27)	0.4

¹Participants were excluded due to inaccurate geocoding of addresses or missing data on smoking outcomes, neighborhood social environment, or covariates.

Supplemental Table 2. Bivariate Associations of Socio-demographic Characteristics with Smoking Status (N=5,856)

Sample Characteristics at Baseline	Baseline Smokers	Baseline Non-Smokers	p-value ¹
N	741	5,115	
Demographic Characteristics			
Mean age (SD)	57.9 (9.1)	62.5 (10.2)	<0.0001
Gender (%)			0.0006
Male	392 (52.9)	2,361 (46.2)	
Female	349 (47.1)	2,754 (53.8)	
Race (%)			<0.0001
White	251 (33.9)	2,040 (39.9)	
Chinese	38 (5.1)	656 (12.8)	
Black/African American	286 (38.6)	1,324 (25.9)	
Hispanic	166 (22.4)	155 (22.4)	
Education (%)			<0.0001
High school graduate or less	287 (38.7)	1,764 (34.5)	
Some college	273 (36.8)	1,387 (27.1)	
Bachelor's or Graduate degree	181 (24.4)	1,964 (38.4)	
Employment Status (%)			0.001
Currently working	445 (60.1)	2,745 (53.7)	
Not currently working	296 (39.9)	2,370 (46.3)	
Mean per capita annual household income adjusted for inflation, in increments of 10,000 (SD)	2.5 (2.1)	2.6 (2.0)	0.2
Marital status (%)			<0.0001
Currently married	383 (51.7)	3,227 (63.1)	
Not currently married	358 (48.3)	1,888 (36.9)	
Health Behaviors			
Current Alcohol Use (%)			<0.0001
Yes	506 (68.3)	2,781 (54.4)	
No	235 (31.7)	2,334 (45.6)	
Mean number of cigarettes smoked per day (SD)	13.5 (17.7)	0 (0.0)	<0.0001
Neighborhood Characteristics			
Mean neighborhood socioeconomic score (SD)	-1.51 (5.94)	0.21 (6.35)	<0.0001
Mean neighborhood social environment score (SD) ^b	-0.63 (2.50)	-0.08 (2.52)	<0.0001
Mean aesthetic quality score (SD)	-0.22 (0.96)	-0.05 (0.96)	<0.0001
Mean safety score (SD)	-0.24 (0.89)	0.01 (0.92)	<0.0001
Mean social cohesion score (SD)	-0.17 (0.91)	-0.04 (0.91)	0.0005
Unstandardized Component Scores			
Mean aesthetic quality score (SD)	3.60 (0.4)	3.68 (0.43)	<0.0001
Mean safety score (SD)	3.56 (0.4)	3.67 (0.42)	<0.0001
Mean social cohesion score (SD)	3.51 (0.3)	3.54 (0.26)	0.0005

¹p-values calculated using chi-squared test for categorical variables and t-tests and Mann Whitney U tests for continuous variables

Supplemental Table 3. Bivariate Associations of Socio-demographic Characteristics with Baseline Neighborhood Social Environment (N=5,856)

Sample Characteristics at Baseline	Baseline Neighborhood Social Environment Score			p-value ¹
	Tertile 1 (worst)	Tertile 2	Tertile 3 (best)	
N	1932 (33.0)	1991 (34.0)	1933 (33.0)	
Demographic Characteristics				
Mean age (SD)	61.5 (10.2)	62.3 (10.3)	61.9 (9.8)	0.07
Gender (%)				0.04
Male	874 (45.2)	928 (46.6)	951 (49.2)	
Female	1058 (54.8)	1063 (53.4)	982 (50.8)	
Race (%)				<0.0001
White	350 (18.1)	820 (41.2)	1121 (58.0)	
Chinese	155 (8.0)	363 (18.2)	176 (9.1)	
Black/African American	747 (38.7)	394 (19.8)	469 (24.3)	
Hispanic	680 (35.2)	414 (20.8)	167 (8.6)	
Education (%)				<0.0001
High school graduate or less	963 (49.9)	673 (33.8)	415 (21.5)	
Some college	528 (27.3)	547 (27.5)	585 (30.2)	
Bachelor's or Graduate degree	441 (22.8)	771 (38.7)	933 (48.3)	
Employment Status (%)				<0.0001
Currently working	995 (51.5)	1060 (53.2)	1135 (58.7)	
Not currently working	937 (48.5)	931 (46.8)	798 (41.3)	
Mean per capita annual household income adjusted for inflation, in increments of 10,000 (SD)	2.0 (1.6)	2.5 (2.0)	3.4 (2.2)	<0.0001
Marital status (%)				<0.0001
Currently married	1006 (52.1)	1234 (62.0)	1370 (70.9)	
Not currently married	926 (47.9)	757 (38.0)	563 (29.1)	
Health Behaviors				
Current Alcohol Use (%)				<0.0001
Yes	956 (49.5)	1132 (56.9)	1199 (62.0)	
No	976 (50.5)	859 (43.1)	734 (38.0)	
Current Smoking (%)				<0.0001
Yes	315 (16.3)	228 (11.5)	198 (10.2)	
No	1617 (83.7)	1763 (88.5)	1735 (89.8)	
Mean number of cigarettes smoked per day (SD)- current only	11.6 (9.7)	13.4 (10.2)	16.6 (29.9)	<0.0001
Neighborhood Characteristics				
Mean neighborhood socioeconomic score (SD)	-5.39 (5.30)	0.80 (4.76)	4.52 (4.43)	<0.0001

¹P-values from chi-squared tests for categorical and ANOVA/Kruskal Wallis for continuous variables

Supplemental Table 4. Sensitivity Analysis- Cross-sectional and Longitudinal Associations of Baseline Neighborhood Social Environment with Smoking Status and Intensity Among Participants with at least 5 1-mile neighbors (N=5,558)

A. Relative Risk (95% CI) for Current Smoking N=5,558

	Model 1			Model 2			Model 3		
	Baseline Score	Time Trend (5 year interval)	Baseline Score x Time (5 year interval)	Baseline Score	Time Trend (5 year interval)	Baseline Score x Time (5 year interval)	Baseline Score	Time Trend (5 year interval)	Baseline Score x Time (5 year interval)
Neighborhood Social Environment	0.82 (0.76, 0.89)	0.71 (0.68, 0.75)	0.99 (0.94, 1.03)	0.85 (0.76, 0.95)	0.73 (0.69, 0.77)	0.98 (0.94, 1.03)	0.89 (0.78, 1.00)	0.74 (0.69, 0.79)	0.97 (0.92, 1.02)
Aesthetic Quality	0.84 (0.78, 0.91)	0.72 (0.68, 0.75)	1.00 (0.95, 1.04)	0.84 (0.74, 0.94)	0.73 (0.69, 0.77)	0.99 (0.94, 1.04)	0.87 (0.77, 0.99)	0.73 (0.69, 0.77)	0.97 (0.92, 1.02)
Safety	0.76 (0.70, 0.82)	0.71 (0.68, 0.75)	0.98 (0.94, 1.04)	0.84 (0.76, 0.93)	0.73 (0.69, 0.77)	0.98 (0.93, 1.03)	0.87 (0.78, 0.97)	0.73 (0.69, 0.77)	0.97 (0.92, 1.03)
Social Cohesion	0.90 (0.83, 0.98)	0.71 (0.68, 0.75)	0.98 (0.93, 1.03)	0.92 (0.82, 1.04)	0.73 (0.69, 0.77)	0.98 (0.93, 1.03)	0.98 (0.87, 1.11)	0.73 (0.70, 0.77)	0.95 (0.90, 1.01)

B. Rate Ratio (95% CI) for Average Number of Cigarettes Smoker Per Day by Baseline Smokers N=714

	Model 1			Model 2			Model 3		
	Baseline Score	Time Trend (5 year interval)	Baseline Score x Time (5 year interval)	Baseline Score	Time Trend (5 year interval)	Baseline Score x Time (5 year interval)	Baseline Score	Time Trend (5 year interval)	Baseline Score x Time (5 year interval)
Neighborhood Social Environment	1.13 (1.03, 1.24)	0.51 (0.47, 0.55)	0.97 (0.92, 1.03)	1.00 (0.88, 1.13)	0.44 (0.38, 0.50)	0.99 (0.93, 1.05)	0.97 (0.84, 1.11)	0.44 (0.38, 0.50)	0.99 (0.93, 1.06)
Aesthetic Quality	1.14 (1.04, 1.25)	0.51 (0.47, 0.55)	0.99 (0.94, 1.04)	1.00 (0.88, 1.14)	0.44 (0.38, 0.50)	1.00 (0.94, 1.05)	0.97 (0.84, 1.12)	0.43 (0.38, 0.50)	1.00 (0.94, 1.07)
Safety	1.12 (1.01, 1.23)	0.51 (0.47, 0.55)	0.97 (0.91, 1.02)	1.01 (0.90, 1.13)	0.44 (0.38, 0.50)	0.99 (0.93, 1.05)	0.99 (0.87, 1.12)	0.44 (0.38, 0.50)	0.99 (0.93, 1.05)
Social Cohesion	1.12 (1.02, 1.24)	0.51 (0.47, 0.55)	0.97 (0.91, 1.03)	0.98 (0.86, 1.12)	0.44 (0.38, 0.50)	0.98 (0.93, 1.05)	0.95 (0.83, 1.09)	0.44 (0.38, 0.50)	0.99 (0.93, 1.05)

^a Results are from generalized linear mixed Poisson models with robust variance estimates. All models include the baseline neighborhood environment score, time in years since baseline, and an interaction between baseline neighborhood score and time since baseline to test whether neighborhood social environment modifies the change in smoking status over time. All models included repeated measures and a random intercept for each participant.

^b Model 1 adjusted for baseline age and sex. Model 2 further adjusted for race, marital status, education, income, employment, alcohol use, baseline study site. Model 3 further adjusted for neighborhood socioeconomic status.

Supplemental Table 5. Sensitivity Analysis - Cross-sectional and Longitudinal Associations of Baseline Neighborhood Social Environment with Smoking Status and Intensity Among Participants with at least 3 Exam-Years of Data (N=5,526)

A. Relative Risk (95% CI) for Current Smoking N=5,526

	Model 1			Model 2			Model 3		
	Baseline Score	Time Trend (5 year interval)	Baseline Score x Time (5 year interval)	Baseline Score	Time Trend (5 year interval)	Baseline Score x Time (5 year interval)	Baseline Score	Time Trend (5 year interval)	Baseline Score x Time (5 year interval)
Neighborhood Social Environment	0.82 (0.76, 0.89)	0.73 (0.70, 0.77)	1.00 (0.96, 1.04)	0.84 (0.75, 0.94)	0.75 (0.71, 0.78)	1.00 (0.95, 1.04)	0.87 (0.78, 0.99)	0.75 (0.71, 0.79)	0.98 (0.93, 1.03)
Aesthetic Quality	0.84 (0.78, 0.91)	0.73 (0.69, 0.78)	1.01 (0.97, 1.05)	0.84 (0.75, 0.94)	0.75 (0.71, 0.78)	1.00 (0.96, 1.04)	0.87 (0.77, 0.99)	0.75 (0.71, 0.79)	0.98 (0.94, 1.03)
Safety	0.76 (0.70, 0.83)	0.73 (0.69, 0.78)	1.01 (0.96, 1.05)	0.84 (0.76, 0.93)	0.75 (0.71, 0.79)	1.00 (0.96, 1.05)	0.87 (0.78, 0.97)	0.75 (0.71, 0.79)	0.99 (0.95, 1.04)
Social Cohesion	0.90 (0.83, 0.98)	0.73 (0.70, 0.77)	0.98 (0.94, 1.03)	0.90 (0.81, 1.01)	0.74 (0.71, 0.78)	0.98 (0.94, 1.03)	0.95 (0.84, 1.07)	0.75 (0.71, 0.79)	0.96 (0.91, 1.01)

B. Rate Ratio (95% CI) for Average Number of Cigarettes Smoked Per Day by Baseline Smokers N=692

	Model 1			Model 2			Model 3		
	Baseline Score	Time Trend (5 year interval)	Baseline Score x Time (5 year interval)	Baseline Score	Time Trend (5 year interval)	Baseline Score x Time (5 year interval)	Baseline Score	Time Trend (5 year interval)	Baseline Score x Time (5 year interval)
Neighborhood Social Environment	1.14 (1.03, 1.25)	0.51 (0.47, 0.55)	0.97 (0.92, 1.03)	1.02 (0.90, 1.15)	0.44 (0.38, 0.49)	0.99 (0.93, 1.04)	0.99 (0.87, 1.13)	0.43 (0.38, 0.49)	0.99 (0.94, 1.05)
Aesthetic Quality	1.12 (1.02, 1.23)	0.51 (0.48, 0.55)	0.99 (0.94, 1.04)	1.00 (0.88, 1.14)	0.43 (0.38, 0.49)	1.00 (0.95, 1.05)	0.97 (0.85, 1.11)	0.43 (0.38, 0.49)	1.00 (0.95, 1.06)
Safety	1.13 (1.02, 1.24)	0.51 (0.47, 0.55)	0.97 (0.92, 1.03)	1.04 (0.92, 1.16)	0.43 (0.38, 0.49)	0.99 (0.93, 1.05)	1.01 (0.90, 1.15)	0.43 (0.38, 0.49)	0.99 (0.93, 1.05)
Social Cohesion	1.13 (1.02, 1.25)	0.51 (0.47, 0.55)	0.96 (0.91, 1.02)	1.01 (0.89, 1.15)	0.44 (0.38, 0.50)	0.98 (0.92, 1.03)	0.99 (0.87, 1.13)	0.44 (0.38, 0.50)	0.98 (0.92, 1.04)

^a Results are from generalized linear mixed Poisson models with robust variance estimates. All models include the baseline neighborhood environment score, time in years since baseline, and an interaction between baseline neighborhood score and time since baseline to test whether neighborhood social environment modifies the change in smoking status over time. All models included repeated measures and a random intercept for each participant.

^b Model 1 adjusted for baseline age and sex. Model 2 further adjusted for race, marital status, education, income, employment, alcohol use, baseline study site. Model 3 further adjusted for neighborhood socioeconomic status.