

Supplementary Information for

Promoting Sustainable Travel Decisions through Health and Active Lifestyle Messaging

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Supplementary Information Text

Estimating the Addressable Population

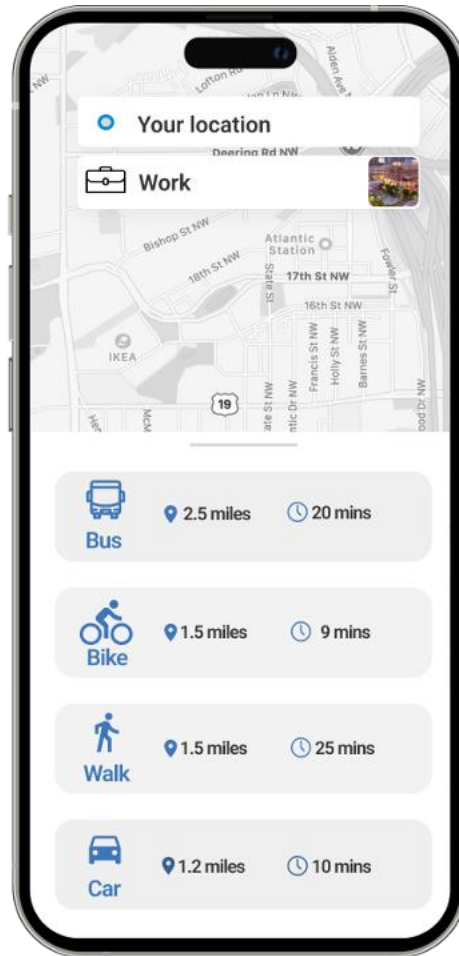
To estimate the yearly reduction potential in car miles, we first calculate the addressable population, defined as U.S. urban residents. We identify urban residents by selecting areas classified as “Metropolitan area core: primary flow within an urbanized area (UA)”, “Metropolitan area high commuting: primary flow 30% or more to a UA”, or “Metropolitan area low commuting: primary flow 10% to 30% to a UA” under the Rural-Urban Commuting Area Codes classification (1), and using census population estimates, yielding a total of 93.2 million urban residents. We further focus on individuals with commute times under one hour, who comprise of 91.1% of residents (2), yielding 84.8 million urban residents. Lastly, based on data from National Health Interview Survey, we estimate 51.8% of urban residents have at least one underlying health condition (3), yielding 44.6 million urban residents with underlying health conditions.

Calculating Equivalent Car Miles Reduced

To estimate the social cost of carbon avoided due to health informational messages, we calculated the reductions in carbon emissions as a result of mode shifts away from personal cars. We estimated the social cost of carbon avoided for active lifestyle messaging targeting walking and air pollution exposure messaging targeting bus transit. For walking, the reduction in emissions per mile compared to car travel is assumed to be the average car emission factor of 435 grams per mile (4). This value is multiplied by the trip length of 1.2 miles, as used in the stated choice question in the survey, and by the proportion of survey participants switching from car to walking. For a conservative estimate, we assume only a 10% adoption rate of the mobile application (which would be used to deliver informational messages) within the addressable population, and apply an additional 50% behavioral yield to account for intention-action gap. A similar approach is used to estimate the social cost of carbon savings from air pollution exposure messages targeting bus transit. In this case, the reduction in emissions is estimated by replacing car trips with bus trips, with bus transit having an average emission factor of 290 grams per mile over a trip length of 2.5 miles (as used in the survey) (4). The net reduction in emissions is determined by subtracting the total emissions from a 2.5-mile bus trip from those of a 1.2-mile car trip. Note that an initial car adoption rate of 85% is used in our calculation (5). The odds ratios from the corresponding experiments are used: a 4.3 times increase in bus transit trips under air pollution exposure messaging, and 3.3 times increase in walking trips under active lifestyle messaging. Further, the 95% CIs for these odds ratios are used to estimate the lower and higher ranges for the social cost of carbon savings. Finally, a social cost of carbon of \$413 per metric ton of CO₂ is applied to estimate the monetary value (6). Back-of-the-envelope calculations were conducted to convert car miles reduced to equivalent round trips to the moon by dividing it by twice the distance to the moon. Similarly, the car miles reduced values were also converted to an equivalent distance of traversing U.S. Route 66.

Calculating Cost-Effectiveness for App Development

We estimated the cost of developing and acquiring customers for a mobile app-based intervention platform over a three-year period. For an app with medium complexity, the initial development cost is estimated to be around \$100,000 (7). We assumed a cost per initial install of \$5 (8) and scaled it to the addressable population, assuming a conservative 10% app penetration rate. This approach yielded a total customer acquisition cost of \$42,448,052. Assuming a 50% behavioral yield among users, this results in approximately 1,194,009 trips per day and around 1,307,440,580 trips over three years. The cost per trip is \$0.03 when air pollution exposure messages are presented. When considering only those with underlying conditions, the cost per trip is \$0.02. When calculating the cost of different incentive programs, an additional inflation-adjusted amount of \$5.7 is included to account for the transit costs.



Control

Fig. S1. Screenshot of the mobile app display presented to the control group

Air pollution exposure

Personal gain



Personal gain + Community benefit

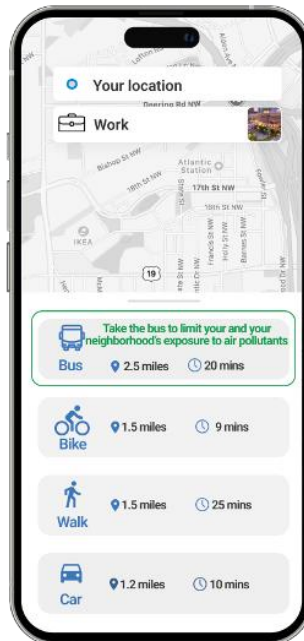


Fig. S2. Screenshots of the mobile app display presented to the treatment groups in Experiment 1 (air pollution exposure messaging targeting bus transit)

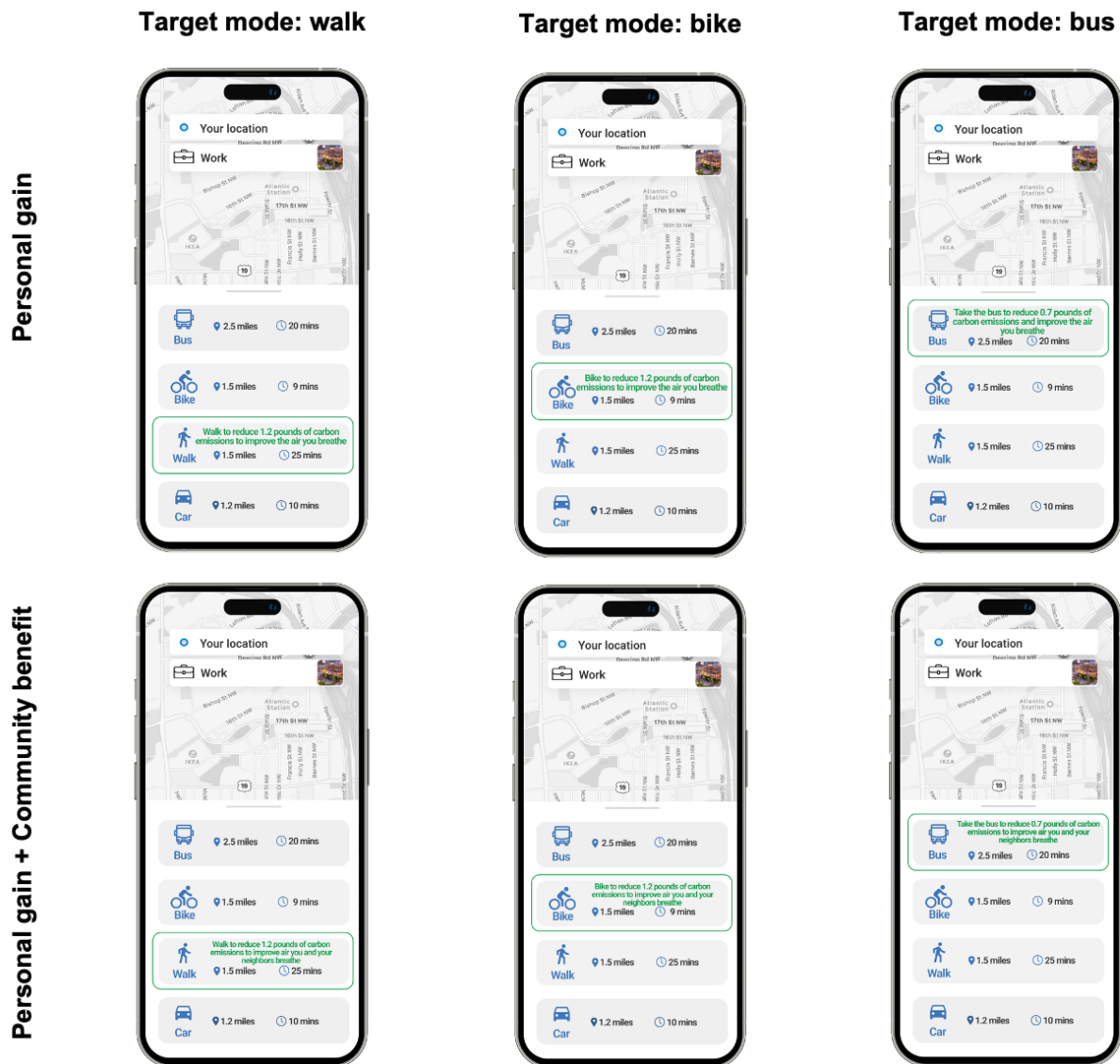


Fig. S3. Screenshots of the mobile app display presented to the treatment groups in Experiment 2 (air quality improvements messaging targeting walking, biking, and bus transit)

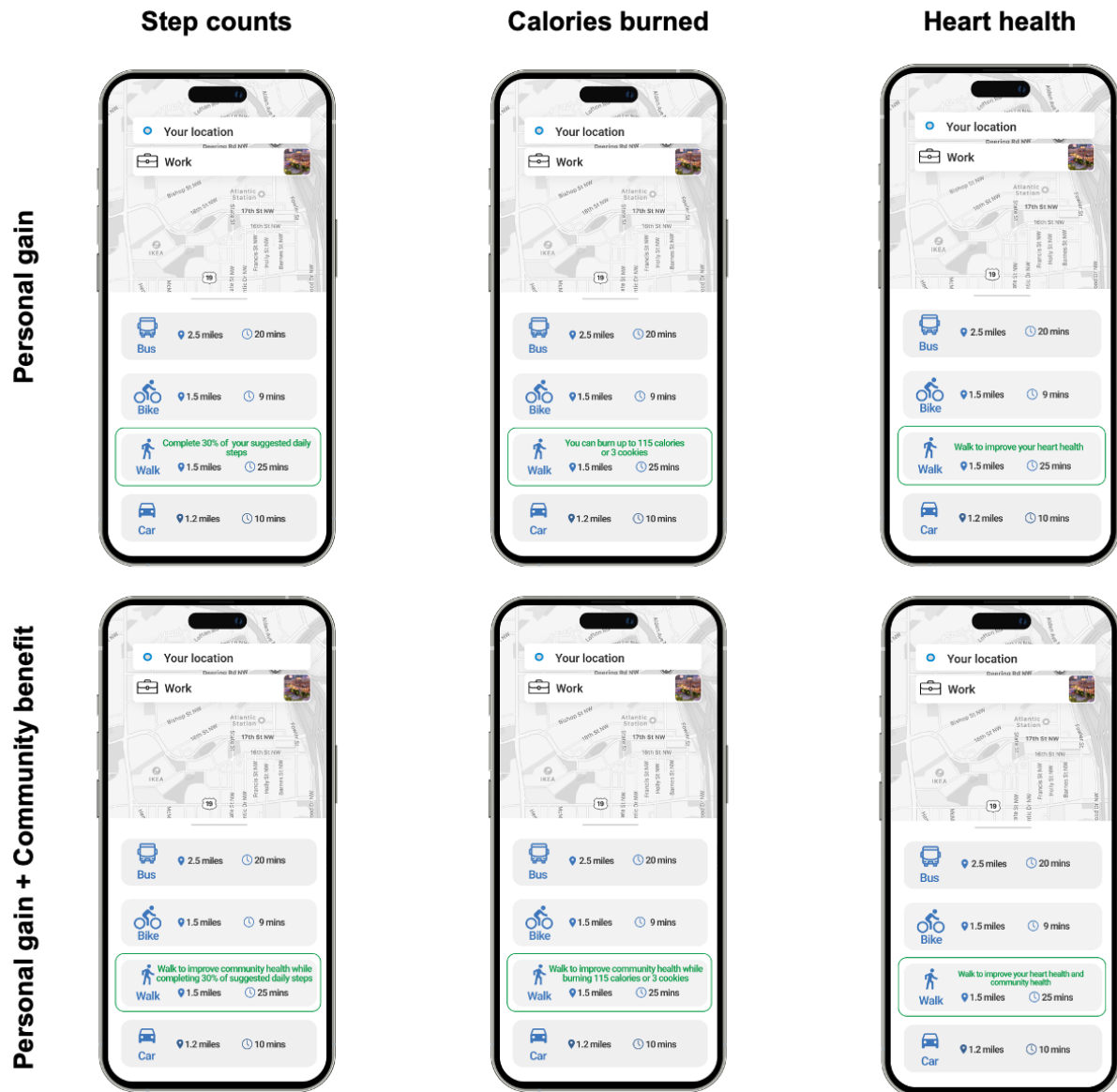


Fig. S4. Screenshots of the mobile app display presented to the treatment groups in Experiment 3 (active lifestyle messaging targeting walking)

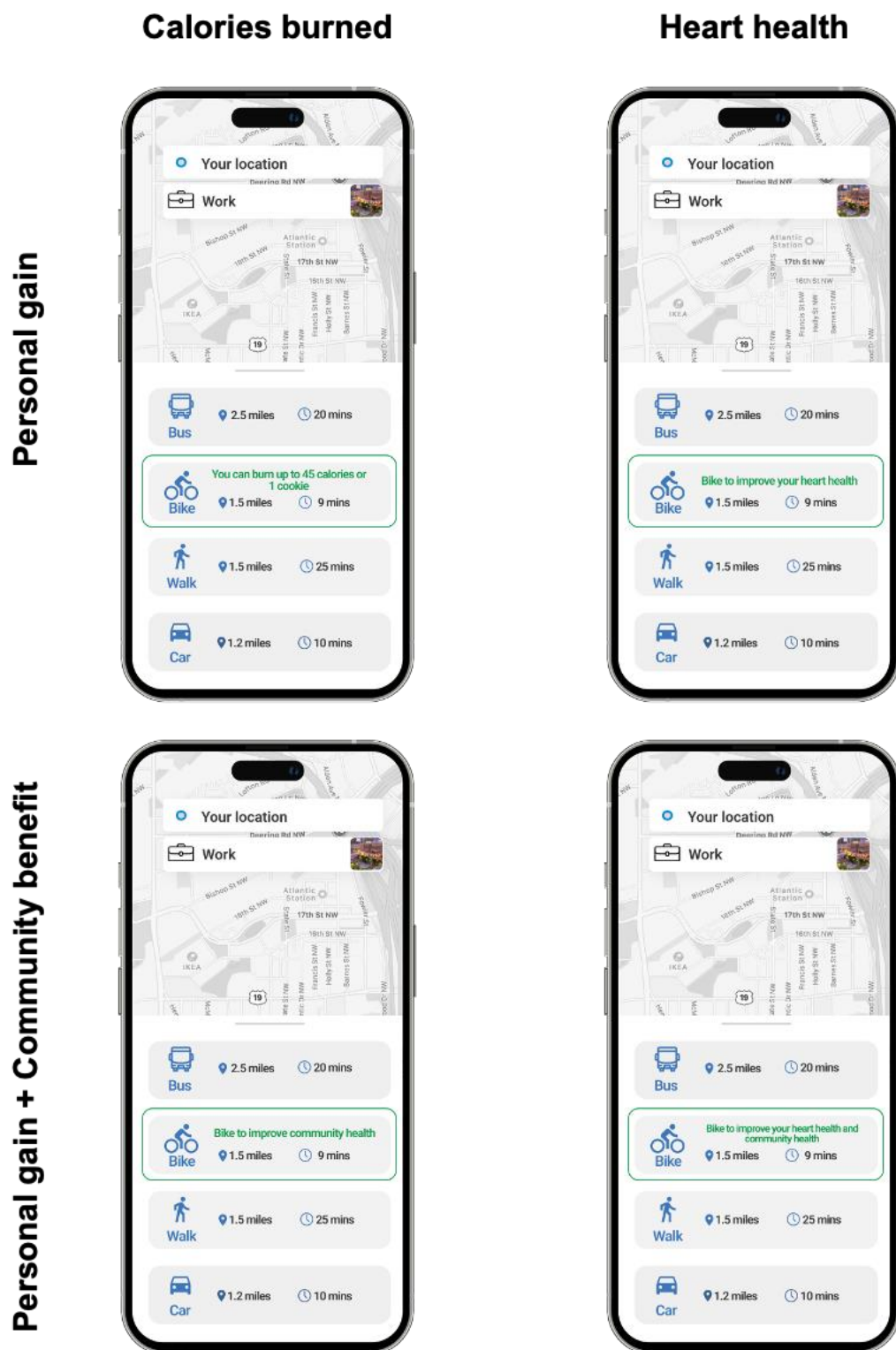


Fig. S5. Screenshots of the mobile app display presented to the treatment groups in Experiment 3 (active lifestyle messaging targeting biking)

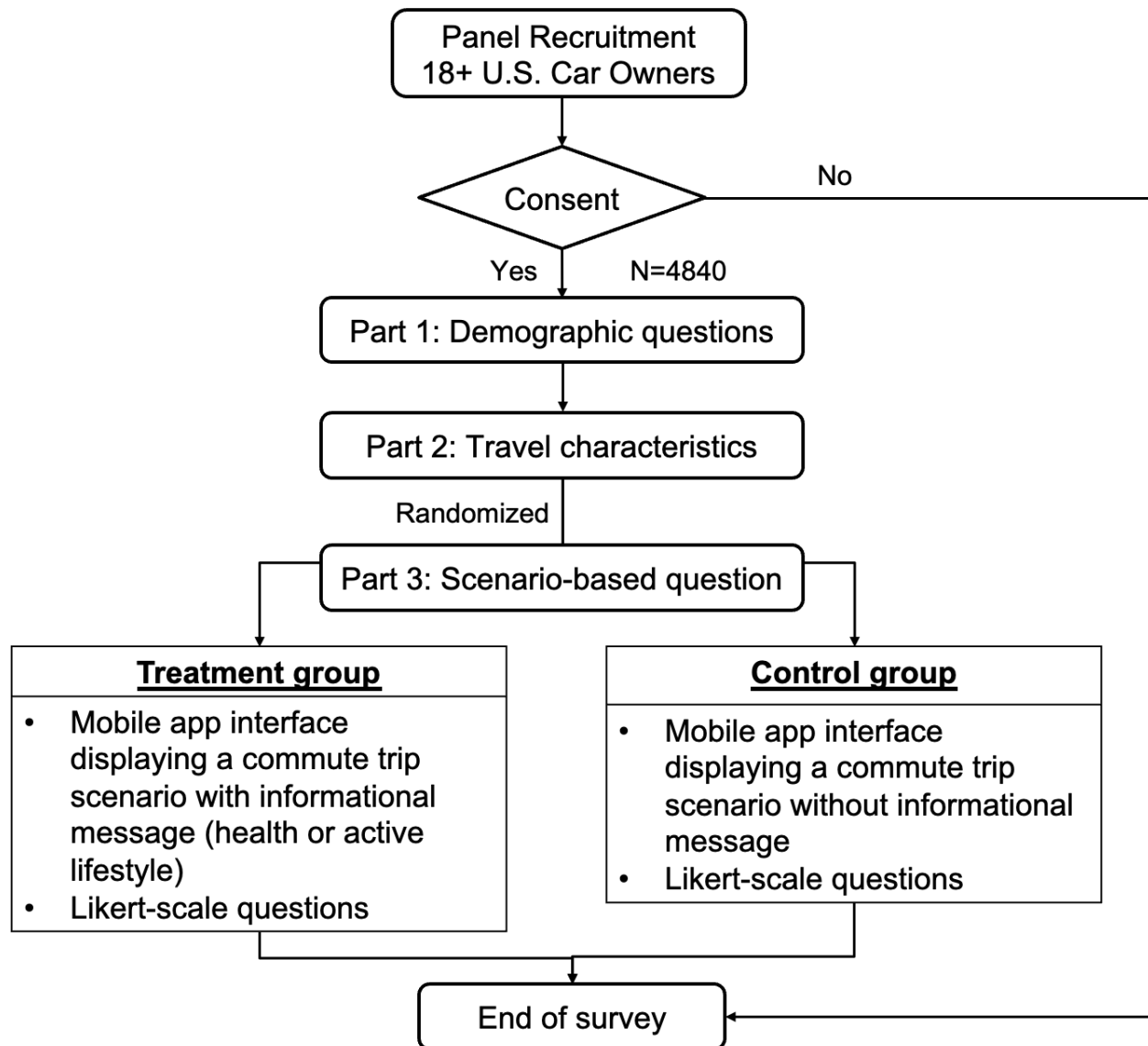


Fig. S6. Flowchart of the experimental design

Table S1. Treatment messages communicating health and active lifestyle externalities

Category	Information Type	Target Mode	Treatment Message
Personal gain			
Air quality impacts	Exposure to air pollutants*	Bus	“Limit your exposure to air pollutants”
	Air quality improvement	Walk	“Walk to reduce 1.2 pounds of carbon emissions to improve the air you breathe”
		Bike	“Bike to reduce 0.7 pounds of carbon emissions to improve the air you breathe”
		Bus	“Take the bus to reduce 0.7 pounds of carbon emissions to improve the air you breathe”
Active lifestyle	Step counts	Walk	“Complete 30% of your suggested daily steps”
	Calories burned	Walk	“You can burn up to 115 calories or 3 cookies”
		Bike	“You can burn up to 45 calories or 1 cookie”
	Heart health	Walk	“Walk to improve your heart health”
		Bike	“Bike to improve your heart health”
Personal gain + Community benefit			
Air quality impacts	Exposure to air pollutants*	Bus	“Take the bus to limit your and your neighborhood’s exposure to air pollutants”
	Air quality improvement	Walk	“Walk to reduce 1.2 pounds of carbon emissions to improve the air you and your neighbors breathe”
		Bike	“Bike to reduce 0.7 pounds of carbon emissions to improve the air you breathe”
		Bus	“Take the bus to reduce 0.7 pounds of carbon emissions to improve the air you and your neighbors breathe”
Active lifestyle	Step counts	Walk	“Walk to improve community health while completing 30% of your suggested daily steps”
	Calories burned	Walk	“Walk to improve community health while burning 115 calories or 3 cookies”
		Bike	“You can burn up to 45 calories or 1 cookie”
	Heart health	Walk	“Walk to improve your heart health and community”
		Bike	“Bike to improve your heart health and community”

* Walking and biking were excluded from air pollution exposure interventions as these activities could lead to exposure to air pollutants. Bus was excluded from interventions related to active lifestyle and heart health.

Table S2. Comparison of demographic characteristics for treated and control respondents (N=4,840)

		Treatment groups	Control group	P values
# of Travelers		179	181	-
Sex	Male	49.40%	47.51%	0.623
	Female	49.70%	51.38%	0.662
Age	19-30	15.78%	17.13%	0.641
	31-55	55.75%	52.49%	0.394
	55+	28.47%	30.39%	0.586
Income	<\$9,999	2.14%	2.76%	0.618
	\$10,000 - \$15,999	3.38%	3.31%	0.962
	\$16,000 - \$19,999	2.67%	2.76%	0.939
	\$20,000 - \$29,999	10.76%	11.60%	0.731
	\$30,000 - \$39,999	7.50%	7.18%	0.871
	\$40,000 - \$49,999	7.57%	8.29%	0.732
	\$50,000 - \$59,999	7.57%	10.50%	0.210
	\$60,000 - \$69,999	6.64%	8.84%	0.309
	\$70,000 - \$79,999	8.22%	6.63%	0.409
	\$80,000 - \$89,999	4.43%	4.42%	0.993
	\$90,000 - \$99,999	6.48%	4.42%	0.197
	\$100,000 - \$149,999	19.19%	19.34%	0.962
	>\$150,000	13.46%	9.94%	0.130
Race/Ethnicity	White	76.31%	80.66%	0.153
	Black	15.22%	11.60%	0.144
	Asian	7.50%	8.29%	0.710
	Others	4.12%	1.10%	0.208
Household count		2.75	2.6	0.146
Employment status	Employed (full-time)	70.20%	66.30%	0.281
	Employed (part-time)	17.55%	16.57%	0.733
	Employed (self)	8.74%	12.71%	0.119
	Unemployed (student, retired, looking for jobs, not looking)	3.50%	4.42%	0.433
Educational attainment	High school and below	31.94%	33.15%	0.661
	Bachelors	42.17%	41.99%	0.962
	Masters	16.34%	13.81%	0.342
	Doctorates	3.78%	3.31%	0.734
	Others	5.77%	7.73%	0.334

Table S3. Comparison of travel characteristics, health status, and psychographic variables for treated and control respondents (N=4,840)

		Treatment groups	Control group	P values
# of Travelers		179	181	-
Car ownership		100.00%	100.00%	-
Daily travel time	< 15 mins	34.05%	30.39%	0.301
	16-30 mins	41.15%	38.67%	0.508
	31-45 mins	14.39%	18.23%	0.193
	46-60 mins	6.36%	7.73%	0.499
	1-1.5h	2.70%	3.31%	0.652
	1.5-2h	0.84%	1.10%	0.737
	> 2h	0.53%	0.55%	0.964
Urban setting (%)	Urban (with limited transit access)	11.94%	8.84%	0.159
	Urban (with adequate access to transit)	19.35%	20.44%	0.723
	Suburban	50.02%	48.62%	0.716
	Rural	18.70%	22.10%	0.284
Stated attitudes (% agree)	Carbon concern	4.35	4.56	0.151
	Active lifestyle	5	5.07	0.523
	Health consciousness	5.25	5.36	0.231
	Air quality concern	4.93	5.12	0.102
	Social approval	4.09	4.09	0.982
Underlying health conditions	Diabetes	7.91%	6.08%	0.322
	Cardiovascular	2.02%	1.66%	0.716
	Respiratory	7.94%	9.94%	0.380
	Other	9.74%	6.08%	0.050
Mode viability	Experiment 1	3.32	3.25	0.64
	Experiment 2	3.68	2.79	0.22
	Experiment 3	4.15	4.06	0.20

Table S4. Treatment effects of air pollution exposure messaging in Experiment 1 (personal and community benefits targeting bus transit)

Models			1	2	3	4	5	6	7	8	9	10	11
Personal and community benefits targeting bus transit			1.301* (0.520)	1.328* (0.521)	1.307* (0.518)	1.467** (0.516)	1.472** (0.512)	1.435** (0.508)	1.443** (0.518)	1.461** (0.535)	1.461** (0.530)	1.494** (0.534)	1.678** (0.520)
Odds ratio			3.671 (1.682)	3.772 (1.684)	3.695 (1.679)	4.337 (1.676)	4.360 (1.669)	4.200 (1.661)	4.235 (1.678)	4.309 (1.708)	4.312 (1.699)	4.456 (1.706)	5.354 (1.682)
Demographic variables	Sex (Male)		0.998* (0.494)	0.979* (0.490)	1.074* (0.494)	1.075* (0.495)	1.117* (0.492)	1.117* (0.485)	1.111* (0.484)	1.007 (0.543)	0.780 (0.595)	1.014 (0.576)	
	Age	Age below 30		-0.848 (1.067)	-0.895 (1.049)	-0.828 (1.051)	-0.888 (1.045)	-0.811 (1.073)	-0.799 (1.074)	-1.049 (1.149)	-1.213 (1.158)	-1.261 (1.071)	
		Age above 55		-0.030 (0.507)	-0.086 (0.528)	-0.047 (0.551)	-0.131 (0.556)	-0.015 (0.533)	-0.015 (0.532)	0.093 (0.644)	0.056 (0.664)	0.383 (0.658)	
		Employment	Full time employment		-0.898 (0.581)	-0.967 (0.618)	-0.973 (0.623)	-1.004 (0.630)	-1.007 (0.633)	-1.093 (0.805)	-1.033 (0.838)	-1.039 (0.811)	
		Self employment		0.084 (0.751)	0.200 (0.763)	0.212 (0.748)	0.217 (0.748)	0.222 (0.747)	-0.076 (0.821)	0.177 (0.895)	0.427 (0.858)		
	Income	Income 80-150K			0.465 (0.507)	0.351 (0.547)	0.306 (0.552)	0.307 (0.553)	0.405 (0.690)	0.368 (0.678)	0.369 (0.726)		
		Income above 150K			-0.167 (0.852)	-0.187 (0.857)	-0.194 (0.821)	-0.190 (0.821)	-0.186 (0.860)	-0.166 (0.860)	-0.460 (1.035)		
		Travel characteristics	Transit access	Urban with adequate transit				-0.110 (0.818)	0.024 (0.847)	0.009 (0.854)	-0.583 (0.815)	-0.540 (0.821)	-0.008 (0.899)
		Urban with limited transit					0.905 (0.857)	0.948 (0.885)	0.913 (0.879)	1.073 (1.013)	1.081 (1.031)	1.708 (0.969)	
		Suburban					0.445 (0.669)	0.521 (0.690)	0.511 (0.693)	0.183 (0.710)	0.129 (0.769)	0.684 (0.763)	
Psychographic variables	Daily travel time	15 - 60 min					0.877 (0.576)	0.870 (0.575)	0.695 (0.568)	0.621 (0.563)	0.650 (0.649)		
		60 + min					1.389 (0.920)	1.402 (0.922)	0.984 (1.082)	1.133 (1.117)	1.530 (0.985)		
		Target mode is preferred mode						0.284 (0.936)	-0.933 (0.981)	-1.118 (0.973)	-1.545 (0.913)		
	Mode viability								0.557** (0.175)	0.506** (0.165)	0.356* (0.160)		
	Health conscious									0.505* (0.225)	0.414 (0.258)		
		Carbon action										0.828** (0.305)	
	# Observations			361	361	361	361	361	361	361	361	361	361
	# Treated			180	180	180	180	180	180	180	180	180	180
	AIC			162	160	163	163.31	166	170	171	173	157	155
	Psuedo R squared			0.0447	0.0719	0.0769	0.0991	0.1051	0.1167	0.1362	0.1365	0.2430	0.2709

Parentheses contain standard errors. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table S5. Treatment effects of air quality improvement messaging in Experiment 2 (personal and community benefits targeting bus transit)

Models			1	2	3	4	5	6	7	8	9	10	11	
Personal and community benefits targeting bus transit			1.008 (0.537)	1.040 (0.538)	1.040 (0.536)	1.092* (0.529)	1.104* (0.529)	1.100* (0.546)	1.095* (0.554)	1.100* (0.560)	1.468* (0.683)	1.526* (0.655)	1.983** (0.665)	
Odds ratio			2.740 (1.711)	2.830 (1.712)	2.828 (1.709)	2.980 (1.697)	3.016 (1.697)	3.005 (1.726)	2.989 (1.741)	3.004 (1.751)	4.340 (1.980)	4.600 (1.925)	7.267 (1.945)	
Demographic variables	Sex (Male)			0.984 (0.538)	0.995 (0.539)	0.986 (0.573)	0.946 (0.561)	0.960 (0.547)	0.989 (0.555)	0.881 (0.543)	0.146 (0.634)	0.081 (0.660)	0.567 (0.864)	
	Age	Age below 30			-0.267 (0.783)	-0.185 (0.789)	-0.324 (0.778)	-0.266 (0.804)	-0.206 (0.795)	-0.210 (0.820)	-0.318 (0.833)	-0.522 (0.870)	-0.337 (1.005)	
		Age above 55			-0.307 (0.607)	-0.340 (0.619)	-0.338 (0.627)	-0.233 (0.617)	-0.324 (0.627)	-0.406 (0.641)	0.355 (0.830)	0.131 (0.807)	0.597 (0.898)	
		Employment	Full time employment			-0.074 (0.700)	0.017 (0.699)	-0.002 (0.686)	-0.125 (0.652)	0.103 (0.669)	0.196 (0.836)	0.312 (0.886)	0.854 (1.232)	
	Self employment					0.549 (0.846)	0.437 (0.839)	0.459 (0.825)	0.470 (0.855)	0.752 (0.895)	0.644 (1.039)	0.718 (1.101)	0.479 (1.212)	
	Income	Income 80-150K					-0.271 (0.543)	-0.276 (0.563)	-0.316 (0.552)	-0.264 (0.554)	-0.573 (0.576)	-0.693 (0.552)	-1.173 (0.720)	
		Income above 150K						-	-	-	-	-	-	
	Travel characteristics	Transit access	Urban with adequate transit					21.411*** (0.371)	20.983*** (0.396)	11.618*** (0.406)	20.161*** (0.400)	21.442*** (1.149)	12.659*** (1.327)	21.323*** (1.392)
			Urban with limited transit						0.675 (0.793)	0.693 (0.793)	0.359 (0.775)	-0.482 (0.937)	-0.538 (0.926)	0.044 (0.968)
			Suburban						0.712 (0.790)	0.793 (0.813)	0.666 (0.812)	0.082 (0.867)	-0.035 (0.863)	0.560 (1.031)
Daily travel time		15 - 60 min						0.046 (0.712)	0.076 (0.712)	-0.066 (0.713)	-1.136 (0.861)	-1.305 (0.880)	-0.498 (0.924)	
		60 + min							0.753 (0.552)	0.732 (0.555)	0.231 (0.585)	0.223 (0.594)	-0.438 (0.763)	
		Target mode is preferred mode							-	-	-	-	-	
Mode viability									19.611*** (0.745)	19.230*** (0.759)	19.030*** (1.150)	-8.878*** (1.231)	27.854*** (1.079)	
										1.390* (0.677)	0.490 (0.914)	0.802 (0.821)	1.254 (0.986)	
											1.325*** (0.265)	1.342*** (0.295)	1.361*** (0.328)	
Psychographic variables	Health conscious													
	Carbon action													
# Observations			361	361	361	361	361	361	361	361	361	361	361	
# Treated			180	180	180	180	180	180	180	180	180	180	180	
AIC			143	141	145	148.37	148	152	153	153	114	115	103	
Psuedo R squared			0.0274	0.0531	0.0554	0.0605	0.0923	0.1039	0.1245	0.1431	0.4240	0.4334	0.5351	

Parenteses contain standard errors. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table S6. Treatment effects of air quality improvement messaging in Experiment 2 (personal gain targeting walking)

Models			1	2	3	4	5	6	7	8	9	10	11	
Personal gain targeting walking			0.874* (0.354)	0.874* (0.354)	0.879* (0.351)	0.885* (0.349)	0.892* (0.352)	0.848* (0.352)	0.882* (0.352)	0.901* (0.362)	1.138** (0.391)	1.161** (0.391)	1.227** (0.405)	
Odds ratio			2.396 (1.425)	2.395 (1.424)	2.408 (1.421)	2.424 (1.417)	2.441 (1.423)	2.336 (1.422)	2.416 (1.421)	2.463 (1.436)	3.122 (1.478)	3.194 (1.479)	3.411 (1.499)	
Demographic variables	Sex (Male)			0.149 (0.337)	0.145 (0.337)	0.152 (0.331)	0.137 (0.336)	0.189 (0.341)	0.121 (0.342)	0.086 (0.351)	-0.191 (0.362)	-0.197 (0.358)	-0.114 (0.374)	
	Age	Age below 30			-0.253 (0.516)	-0.259 (0.536)	-0.332 (0.536)	-0.403 (0.542)	-0.379 (0.550)	-0.394 (0.541)	-0.455 (0.580)	-0.433 (0.584)	-0.467 (0.618)	
		Age above 55				-0.040 (0.401)	-0.040 (0.407)	-0.079 (0.412)	-0.098 (0.421)	-0.105 (0.437)	-0.121 (0.447)	-0.046 (0.500)	-0.035 (0.503)	-0.021 (0.509)
	Employment	Full time employment				-0.115 (0.425)	-0.211 (0.424)	-0.255 (0.436)	-0.215 (0.445)	-0.202 (0.445)	-0.241 (0.521)	-0.256 (0.514)	-0.296 (0.526)	
		Self employment				0.061 (0.603)	0.066 (0.616)	-0.005 (0.610)	0.060 (0.609)	0.048 (0.603)	-0.025 (0.648)	-0.066 (0.650)	-0.041 (0.656)	
	Income	Income 80-150K					0.601 (0.357)	0.571 (0.378)	0.548 (0.385)	0.566 (0.387)	0.471 (0.401)	0.534 (0.392)	0.562 (0.400)	
		Income above 150K					-0.716 (0.762)	-0.756 (0.787)	-0.878 (0.751)	-0.908 (0.764)	-0.970 (0.827)	-0.944 (0.826)	-1.016 (0.803)	
	Travel characteristics	Transit access	Urban with adequate transit						0.493 (0.630)	0.487 (0.624)	0.450 (0.625)	-0.119 (0.659)	-0.085 (0.653)	-0.205 (0.682)
			Urban with limited transit						1.031 (0.609)	1.007 (0.605)	0.941 (0.615)	0.539 (0.663)	0.569 (0.666)	0.491 (0.665)
			Suburban						0.775 (0.534)	0.783 (0.515)	0.765 (0.518)	0.617 (0.554)	0.677 (0.552)	0.654 (0.546)
Daily travel time		15 - 60 min							0.012 (0.393)	0.023 (0.391)	0.113 (0.394)	0.133 (0.396)	0.056 (0.401)	
		60 + min							1.255 (0.779)	1.313 (0.778)	1.381 (0.927)	1.423 (0.920)	1.408 (0.947)	
Target mode is preferred mode									0.290 (0.446)	-0.237 (0.465)	-0.233 (0.470)	-0.366 (0.478)		
Mode viability										0.628*** (0.146)	0.643*** (0.144)	0.605*** (0.146)		
Psychographic variables		Health conscious											-0.136 (0.145)	-0.213 (0.161)
	Carbon action												0.233 (0.144)	
# Observations			360	360	360	360	360	360	360	360	360	360	360	
# Treated			179	179	179	179	179	179	179	179	179	179	179	
AIC			253	255	258	262.18	261	264	265	266	235	236	235	
Psuedo R squared			0.0255	0.0263	0.0272	0.0279	0.0464	0.0602	0.0724	0.0740	0.2058	0.2087	0.2200	

Parentheses contain standard errors. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table S7. Treatment effects of air quality improvement messaging in Experiment 2 (personal and community benefits targeting walking)

Models			1	2	3	4	5	6	7	8	9	10	11	
Personal and community benefits targeting walking			0.881* (0.354)	0.901* (0.352)	0.907** (0.351)	0.933** (0.351)	0.923** (0.356)	0.923** (0.354)	0.920* (0.361)	0.982** (0.379)	1.213** (0.411)	1.213** (0.413)	1.323** (0.436)	
Odds ratio			2.412 (1.425)	2.461 (1.422)	2.478 (1.421)	2.543 (1.420)	2.518 (1.427)	2.516 (1.425)	2.510 (1.434)	2.669 (1.461)	3.364 (1.509)	3.363 (1.511)	3.755 (1.547)	
Demographic variables	Sex (Male)			0.335 (0.335)	0.339 (0.334)	0.308 (0.332)	0.322 (0.333)	0.359 (0.338)	0.363 (0.339)	0.254 (0.342)	0.313 (0.357)	0.313 (0.357)	0.330 (0.361)	
	Age				0.187 (0.489)	0.217 (0.492)	0.251 (0.502)	0.226 (0.499)	0.228 (0.505)	0.250 (0.500)	0.220 (0.506)	0.221 (0.504)	0.204 (0.499)	
		Age below 30												
		Age above 55				0.238 (0.385)	0.248 (0.390)	0.256 (0.398)	0.295 (0.398)	0.294 (0.399)	0.216 (0.402)	0.233 (0.435)	0.233 (0.437)	0.222 (0.447)
	Employment					0.102 (0.416)	-0.034 (0.430)	-0.080 (0.437)	-0.079 (0.439)	-0.087 (0.434)	-0.323 (0.481)	-0.323 (0.482)	-0.341 (0.491)	
		Full time employment												
		Self employment				0.434 (0.615)	0.617 (0.647)	0.613 (0.638)	0.599 (0.656)	0.538 (0.649)	0.507 (0.664)	0.507 (0.664)	0.519 (0.692)	
	Income						0.922* (0.361)	0.956** (0.365)	0.960** (0.363)	1.029** (0.374)	0.916* (0.391)	0.917* (0.394)	0.881* (0.395)	
		Income 80-150K												
			Income above 150K				0.377 (0.592)	0.434 (0.618)	0.426 (0.620)	0.342 (0.636)	0.431 (0.658)	0.431 (0.655)	0.299 (0.655)	
Travel characteristics	Transit access							0.077 (0.561)	0.077 (0.564)	-0.057 (0.551)	-0.302 (0.572)	-0.301 (0.576)	-0.273 (0.576)	
		Urban with adequate transit												
		Urban with limited transit						0.644 (0.598)	0.640 (0.597)	0.586 (0.589)	0.768 (0.612)	0.768 (0.613)	0.745 (0.594)	
		Suburban						0.131 (0.465)	0.127 (0.470)	0.073 (0.469)	0.086 (0.500)	0.086 (0.503)	0.136 (0.500)	
	Daily travel time								-0.061 (0.369)	0.114 (0.363)	0.230 (0.389)	0.231 (0.390)	0.144 (0.386)	
		15 - 60 min												
		60 + min							-0.008 (0.802)	0.291 (0.792)	0.122 (0.896)	0.123 (0.897)	0.007 (0.949)	
	Target mode is preferred mode									1.001** (0.387)	0.545 (0.377)	0.546 (0.377)	0.463 (0.386)	
	Mode viability										0.560*** (0.144)	0.560*** (0.144)	0.552*** (0.143)	
	Psychographic variables	Health conscious											-0.003 (0.125)	-0.041 (0.133)
Carbon action												0.189 (0.121)		
# Observations			359	359	359	359	359	359	359	359	359	359	359	
# Treated			178	178	178	178	178	178	178	178	178	178	178	
AIC			252	253	257	260.53	258	263	267	263	240	242	242	
Psuedo R squared			0.0259	0.0298	0.0315	0.0334	0.0574	0.0621	0.0622	0.0845	0.1843	0.1843	0.1931	

Parenteses contain standard errors. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table S8. Treatment effects of air quality improvement messaging in Experiment 2 (personal gain targeting biking)

Models			1	2	3	4	5	6	7	8	9	10	11	
Personal gain benefit targeting biking			0.210 (0.225)	0.235 (0.227)	0.222 (0.229)	0.165 (0.231)	0.163 (0.232)	0.161 (0.232)	0.170 (0.233)	0.205 (0.237)	0.665* (0.301)	0.667* (0.300)	0.693* (0.306)	
Odds ratio			1.234 (1.252)	1.264 (1.255)	1.249 (1.258)	1.180 (1.260)	1.177 (1.261)	1.174 (1.260)	1.185 (1.262)	1.228 (1.267)	1.945 (1.351)	1.949 (1.350)	1.999 (1.358)	
Demographic variables	Sex (Male)			0.427 (0.228)	0.448 (0.231)	0.488* (0.233)	0.492* (0.235)	0.507* (0.237)	0.498* (0.238)	0.399 (0.243)	0.249 (0.287)	0.249 (0.288)	0.275 (0.297)	
	Age				0.221 (0.332)	0.152 (0.333)	0.165 (0.331)	0.157 (0.328)	0.156 (0.328)	0.096 (0.340)	-0.327 (0.419)	-0.330 (0.423)	-0.265 (0.429)	
		Age below 30												
		Age above 55				-0.441 (0.276)	-0.426 (0.275)	-0.413 (0.277)	-0.433 (0.278)	-0.434 (0.278)	-0.566* (0.285)	-0.509 (0.358)	-0.512 (0.356)	-0.579 (0.357)
	Employment					0.026 (0.285)	-0.011 (0.289)	-0.027 (0.291)	-0.034 (0.292)	0.044 (0.302)	-0.362 (0.370)	-0.361 (0.371)	-0.443 (0.366)	
		Self employment				-1.142* (0.534)	-1.139* (0.535)	-1.178* (0.539)	-1.168* (0.541)	-0.984 (0.545)	-1.290 (0.687)	-1.286 (0.694)	-1.312 (0.681)	
	Income						0.028 (0.260)	0.013 (0.265)	0.000 (0.266)	-0.064 (0.277)	-0.246 (0.350)	-0.249 (0.356)	-0.317 (0.364)	
		Income 80-150K					0.403 (0.360)	0.344 (0.370)	0.340 (0.375)	0.337 (0.375)	0.537 (0.441)	0.536 (0.442)	0.467 (0.447)	
	Travel characteristics	Transit access							0.465 (0.369)	0.473 (0.369)	0.352 (0.378)	-0.136 (0.460)	-0.139 (0.466)	-0.142 (0.463)
Urban with adequate transit								0.101 (0.484)	0.105 (0.483)	-0.067 (0.501)	-0.342 (0.684)	-0.342 (0.684)	-0.366 (0.712)	
Urban with limited transit								0.311 (0.318)	0.319 (0.318)	0.329 (0.325)	0.140 (0.400)	0.135 (0.405)	0.146 (0.404)	
Daily travel time									0.096 (0.253)	0.129 (0.257)	0.797* (0.325)	0.796* (0.326)	0.779* (0.330)	
		15 - 60 min							0.250 (0.520)	0.401 (0.526)	0.387 (0.627)	0.388 (0.626)	0.299 (0.633)	
		60 + min												
Target mode is preferred mode									1.965** (0.662)	0.919 (0.642)	0.913 (0.641)	0.887 (0.659)		
Mode viability										0.833*** (0.104)	0.832*** (0.105)	0.808*** (0.104)		
Psychographic variables		Health conscious											0.012 (0.139)	0.025 (0.141)
	Carbon action												0.205* (0.101)	
# Observations			361	361	361	361	361	361	361	361	361	361	361	
# Treated			180	180	180	180	180	180	180	180	180	180	180	
AIC			459	458	458	455.53	458	462	466	456	326	328	326	
Psuedo R squared			0.0019	0.0097	0.0179	0.0323	0.0349	0.0390	0.0395	0.0656	0.3555	0.3555	0.3648	

Parenttheses contain standard errors. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table S9. Treatment effects of air quality improvement messaging in Experiment 2 (personal and community benefits targeting biking)

Models			1	2	3	4	5	6	7	8	9	10	11	
Personal and community benefits targeting biking			0.128 (0.226)	0.128 (0.226)	0.125 (0.228)	0.103 (0.231)	0.102 (0.231)	0.107 (0.232)	0.046 (0.234)	0.030 (0.236)	0.410 (0.308)	0.408 (0.307)	0.393 (0.307)	
Odds ratio			1.136 (1.254)	1.136 (1.254)	1.133 (1.257)	1.108 (1.260)	1.108 (1.260)	1.113 (1.261)	1.047 (1.263)	1.030 (1.267)	1.507 (1.361)	1.504 (1.359)	1.482 (1.359)	
Demographic variables	Sex (Male)			-0.069 (0.226)	-0.064 (0.228)	-0.024 (0.229)	-0.018 (0.229)	-0.022 (0.230)	-0.020 (0.231)	-0.112 (0.235)	-0.349 (0.305)	-0.350 (0.305)	-0.292 (0.310)	
	Age				0.077 (0.331)	0.073 (0.338)	0.089 (0.339)	0.098 (0.345)	0.152 (0.346)	0.053 (0.360)	-0.315 (0.410)	-0.316 (0.410)	-0.298 (0.413)	
		Age below 30												
		Age above 55				-0.747** (0.284)	-0.723* (0.285)	-0.713* (0.284)	-0.721* (0.28)	-0.714* (0.281)	-0.743** (0.280)	-0.544 (0.369)	-0.539 (0.365)	-0.662 (0.385)
	Employment					0.157 (0.285)	0.154 (0.292)	0.154 (0.296)	0.180 (0.298)	0.183 (0.302)	0.113 (0.389)	0.113 (0.389)	0.077 (0.392)	
		Full time employment												
		Self employment				-0.870 (0.509)	-0.868 (0.509)	-0.890 (0.514)	-0.920 (0.517)	-0.856 (0.506)	-1.157* (0.56)	-1.159* (0.559)	-1.234* (0.55)	
	Income						-0.075 (0.267)	-0.047 (0.270)	-0.017 (0.272)	-0.057 (0.281)	-0.756* (0.363)	-0.753* (0.364)	-0.788* (0.375)	
		Income 80-150K												
		Income above 150K				0.154 (0.381)	0.217 (0.385)	0.238 (0.391)	0.296 (0.392)	0.248 (0.508)	0.249 (0.508)	0.068 (0.525)		
Travel characteristics	Transit access							0.085 (0.357)	0.062 (0.360)	-0.080 (0.367)	-0.668 (0.479)	-0.666 (0.479)	-0.673 (0.474)	
		Urban with adequate transit												
		Urban with limited transit						-0.224 (0.437)	-0.223 (0.444)	-0.314 (0.476)	-0.732 (0.585)	-0.730 (0.582)	-0.824 (0.609)	
		Suburban						-0.296 (0.304)	-0.302 (0.305)	-0.231 (0.312)	-0.373 (0.448)	-0.370 (0.448)	-0.366 (0.448)	
	Daily travel time								-0.416 (0.244)	-0.398 (0.247)	-0.151 (0.313)	-0.150 (0.313)	-0.198 (0.321)	
		15 - 60 min								-0.804 (0.682)	-0.692 (0.665)	-0.677 (0.784)	-0.675 (0.784)	-0.669 (0.761)
		60 + min												
	Target mode is preferred mode										1.524** (0.548)	0.808 (0.601)	0.808 (0.601)	0.747 (0.577)
	Mode viability											0.921*** (0.120)	0.923*** (0.124)	0.897*** (0.123)
Psychographic variables	Health conscious											-0.013 (0.141)	-0.034 (0.145)	
	Carbon action												0.202 (0.116)	
# Observations			362	362	362	362	362	362	362	362	362	362	362	
# Treated			181	181	181	181	181	181	181	181	181	181	181	
AIC			456	458	454	452.23	456	460	460	453	311	313	312	
Psuedo R squared			0.0007	0.0009	0.0191	0.0317	0.0324	0.0368	0.0446	0.0656	0.3825	0.3825	0.3907	

Parenttheses contain standard errors. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table S10. Treatment effects of all active lifestyle messaging in Experiment 3 (personal and community benefits targeting walking and biking)

Models			1	2	3	4	5	6	7	8	9	10	11
Personal and community benefits targeting walking and biking			0.346* (0.155)	0.351* (0.156)	0.331* (0.157)	0.324* (0.158)	0.329* (0.158)	0.327* (0.158)	0.334* (0.158)	0.321* (0.161)	0.396* (0.173)	0.396* (0.173)	0.404* (0.174)
Odds ratio			1.413 (1.168)	1.420 (1.168)	1.392 (1.170)	1.383 (1.171)	1.390 (1.171)	1.387 (1.171)	1.396 (1.171)	1.379 (1.175)	1.486 (1.188)	1.486 (1.188)	1.497 (1.190)
Demographic variables	Sex (Male)			0.259 (0.135)	0.273* (0.137)	0.260 (0.139)	0.264 (0.139)	0.266 (0.139)	0.251 (0.139)	0.223 (0.140)	0.099 (0.154)	0.099 (0.154)	0.144 (0.157)
	Age	Age below 30			0.496** (0.180)	0.510** (0.181)	0.504** (0.181)	0.486** (0.183)	0.481** (0.185)	0.452* (0.188)	0.290 (0.202)	0.290 (0.203)	0.305 (0.204)
		Age above 55			-0.333 (0.171)	-0.300 (0.172)	-0.298 (0.172)	-0.301 (0.172)	-0.296 (0.172)	-0.291 (0.173)	-0.159 (0.190)	-0.159 (0.191)	-0.146 (0.192)
	Employment	Full time employment				0.239 (0.180)	0.253 (0.182)	0.231 (0.183)	0.230 (0.183)	0.337 (0.189)	0.365 (0.210)	0.365 (0.210)	0.319 (0.211)
		Self employment				0.006 (0.279)	0.002 (0.279)	-0.025 (0.281)	0.005 (0.281)	0.027 (0.280)	0.155 (0.316)	0.154 (0.316)	0.134 (0.318)
	Income	Income 80-150K					-0.020 (0.159)	-0.040 (0.161)	-0.057 (0.162)	-0.084 (0.165)	-0.130 (0.184)	-0.130 (0.184)	-0.136 (0.187)
		Income above 150K					-0.109 (0.205)	-0.149 (0.206)	-0.178 (0.208)	-0.207 (0.212)	-0.298 (0.232)	-0.298 (0.232)	-0.286 (0.232)
	Travel characteristics	Transit access	Urban with adequate transit						0.348 (0.221)	0.377 (0.222)	0.287 (0.225)	-0.128 (0.244)	-0.128 (0.244)
Urban with limited transit								-0.021 (0.273)	0.009 (0.275)	-0.090 (0.276)	-0.410 (0.316)	-0.410 (0.316)	-0.438 (0.318)
Suburban								0.202 (0.195)	0.229 (0.196)	0.213 (0.199)	-0.021 (0.224)	-0.021 (0.224)	-0.020 (0.225)
Daily travel time		15 - 60 min							0.220 (0.155)	0.241 (0.156)	0.339* (0.170)	0.339* (0.170)	0.312 (0.171)
		60 + min							0.423 (0.339)	0.485 (0.346)	0.411 (0.392)	0.411 (0.392)	0.365 (0.390)
Target mode is preferred mode									0.779*** (0.183)	0.234 (0.204)	0.234 (0.204)	0.190 (0.206)	
Mode viability										0.658*** (0.056)	0.658*** (0.057)	0.635*** (0.057)	
Psychographic variables		Health conscious											-0.001 (0.061)
	Carbon action												0.145** (0.052)
# Observations			1255	1255	1255	1255	1255	1255	1255	1255	1255	1255	1255
# Treated			893	893	893	893	893	893	893	893	893	893	893
AIC			1351	1349	1338	1339.99	1344	1346	1347	1332	1100	1102	1096
Psuedo R squared			0.0038	0.0065	0.0175	0.0192	0.0194	0.0220	0.0241	0.0367	0.2101	0.2101	0.2156

Parentheses contain standard errors. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table S11. Treatment effects of all active lifestyle messaging in Experiment 3 (personal gain targeting biking)

Models			1	2	3	4	5	6	7	8	9	10	11	
Personal gain targeting biking			0.016 (0.198)	0.022 (0.199)	0.013 (0.199)	-0.018 (0.201)	-0.030 (0.202)	-0.028 (0.202)	-0.038 (0.204)	-0.028 (0.209)	0.232 (0.251)	0.242 (0.251)	0.245 (0.252)	
Odds ratio			1.016 (1.219)	1.023 (1.220)	1.013 (1.221)	0.982 (1.223)	0.970 (1.223)	0.972 (1.224)	0.962 (1.227)	0.973 (1.232)	1.261 (1.285)	1.274 (1.286)	1.278 (1.286)	
Demographic variables	Sex (Male)			0.226 (0.188)	0.230 (0.189)	0.260 (0.190)	0.252 (0.191)	0.246 (0.191)	0.254 (0.192)	0.182 (0.196)	-0.010 (0.243)	0.001 (0.243)	0.003 (0.243)	
	Age	Age below 30			-0.087 (0.282)	-0.126 (0.286)	-0.116 (0.286)	-0.074 (0.291)	-0.059 (0.291)	-0.131 (0.294)	-0.387 (0.401)	-0.403 (0.404)	-0.405 (0.407)	
		Age above 55			-0.492* (0.23)	-0.496* (0.232)	-0.506* (0.233)	-0.509* (0.232)	-0.516* (0.234)	-0.579* (0.24)	-0.455 (0.287)	-0.481 (0.289)	-0.487 (0.289)	
	Employment	Full time employment				-0.110 (0.230)	-0.133 (0.238)	-0.108 (0.243)	-0.127 (0.245)	-0.043 (0.261)	-0.286 (0.333)	-0.298 (0.335)	-0.297 (0.335)	
		Self employment				-0.716 (0.411)	-0.752 (0.409)	-0.729 (0.415)	-0.744 (0.415)	-0.640 (0.419)	-0.999* (0.472)	-1.001* (0.477)	-1.006* (0.477)	
	Income	Income 80-150K					-0.108 (0.223)	-0.080 (0.225)	-0.067 (0.227)	-0.149 (0.237)	-0.475 (0.279)	-0.489 (0.279)	-0.502 (0.279)	
		Income above 150K					0.403 (0.290)	0.467 (0.294)	0.508 (0.299)	0.546 (0.300)	0.383 (0.354)	0.381 (0.353)	0.369 (0.356)	
	Travel characteristics	Transit access	Urban with adequate transit						-0.207 (0.303)	-0.196 (0.304)	-0.282 (0.309)	-0.91* (0.389)	-0.904* (0.389)	-0.888* (0.39)
			Urban with limited transit						-0.190 (0.354)	-0.169 (0.354)	-0.226 (0.368)	-0.670 (0.443)	-0.654 (0.442)	-0.648 (0.443)
Suburban								-0.400 (0.245)	-0.390 (0.247)	-0.355 (0.254)	-0.528 (0.340)	-0.541 (0.342)	-0.526 (0.346)	
Daily travel time		15 - 60 min						0.090 (0.207)	0.085 (0.210)	0.246 (0.264)	0.247 (0.264)	0.236 (0.265)		
		60 + min							-0.685 (0.589)	-0.715 (0.649)	-0.688 (0.509)	-0.752 (0.528)	-0.775 (0.524)	
Target mode is preferred mode									1.932*** (0.481)	1.166* (0.493)	1.144* (0.489)	1.150* (0.489)		
Mode viability										0.860*** (0.088)	0.848*** (0.089)	0.844*** (0.089)		
Psychographic variables		Health conscious											0.072 (0.095)	0.061 (0.098)
	Carbon action												0.040 (0.090)	
# Observations			539	539	539	539	539	539	539	539	539	539	539	
# Treated			358	358	358	358	358	358	358	358	358	358	358	
AIC			668	669	668	668.32	670	673	675	657	460	462	464	
Psuedo R squared			0.0000	0.0022	0.0095	0.0146	0.0187	0.0229	0.0260	0.0550	0.3551	0.3558	0.3562	

Parentheses contain standard errors. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table S12. Treatment effects of active lifestyle messaging in Experiment 3 (personal and community benefits targeting biking)

Models			1	2	3	4	5	6	7	8	9	10	11
personal and community benefits targeting biking			0.110 (0.197)	0.125 (0.203)	0.100 (0.205)	0.069 (0.206)	0.073 (0.207)	0.087 (0.208)	0.096 (0.208)	0.083 (0.212)	0.330 (0.250)	0.331 (0.249)	0.328 (0.249)
Odds ratio			1.117 (1.218)	1.133 (1.224)	1.105 (1.228)	1.071 (1.229)	1.076 (1.230)	1.091 (1.231)	1.101 (1.232)	1.087 (1.237)	1.391 (1.284)	1.392 (1.283)	1.388 (1.283)
Demographic variables	Sex (Male)		0.707*** (0.191)	0.695*** (0.194)	0.716*** (0.196)	0.735*** (0.197)	0.741*** (0.199)	0.742*** (0.201)	0.697*** (0.204)	0.619* (0.251)	0.614* (0.250)	0.628* (0.252)	
	Age			0.469 (0.256)	0.406 (0.258)	0.380 (0.257)	0.412 (0.258)	0.423 (0.261)	0.398 (0.274)	0.153 (0.356)	0.160 (0.356)	0.180 (0.355)	
		Age below 30											
	Age above 55			-0.629** (0.241)	-0.583* (0.241)	-0.565* (0.243)	-0.576* (0.245)	-0.568* (0.246)	-0.548* (0.248)	-0.494 (0.301)	-0.480 (0.303)	-0.482 (0.304)	
	Employment				0.117 (0.257)	0.184 (0.264)	0.156 (0.269)	0.153 (0.271)	0.240 (0.285)	0.241 (0.367)	0.210 (0.369)	0.186 (0.369)	
		Full time employment											
	Self employment				-0.746 (0.416)	-0.776 (0.416)	-0.806 (0.421)	-0.776 (0.421)	-0.92* (0.41)	-1.163* (0.546)	-1.211* (0.538)	-1.209* (0.539)	
	Income												
		Income 80-150K											
	Income above 150K												
Travel characteristics	Transit access												
		Urban with adequate transit						0.182 (0.322)	0.198 (0.321)	0.112 (0.324)	-0.410 (0.371)	-0.392 (0.374)	-0.376 (0.372)
		Urban with limited transit						-0.374 (0.391)	-0.331 (0.394)	-0.474 (0.420)	-0.785 (0.501)	-0.801 (0.504)	-0.819 (0.512)
	Suburban							0.077 (0.275)	0.097 (0.274)	0.126 (0.280)	-0.102 (0.338)	-0.074 (0.341)	-0.067 (0.340)
	Daily travel time												
		15 - 60 min											
	60 + min												
Psychographic variables	Target mode is preferred mode									1.842*** (0.498)	0.860 (0.647)	0.849 (0.631)	0.819 (0.629)
	Mode viability										0.797*** (0.076)	0.819*** (0.080)	0.801*** (0.082)
	Health conscious											-0.107 (0.097)	-0.121 (0.098)
	Carbon action												0.082 (0.082)
	# Observations		535	535	535	535	535	535	535	535	535	535	535
	# Treated		354	354	354	354	354	354	354	354	354	354	354
	AIC		674	662	653	650.41	653	657	659	642	460	461	462
	Psuedo R squared		0.0005	0.0215	0.0417	0.0508	0.0525	0.0563	0.0591	0.0872	0.3610	0.3627	0.3640

Parenttheses contain standard errors. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table S13. Treatment effects of step count messaging in Experiment 3 (personal and community benefits targeting walking)

Models			1	2	3	4	5	6	7	8	9	10	11	
Personal and community benefits targeting walking			0.909** (0.352)	0.905** (0.350)	0.908** (0.350)	0.938** (0.352)	0.949** (0.356)	0.939** (0.357)	0.954** (0.356)	0.963** (0.363)	1.192** (0.412)	1.195** (0.413)	1.277** (0.427)	
Odds ratio			2.482 (1.422)	2.473 (1.419)	2.481 (1.419)	2.555 (1.422)	2.584 (1.427)	2.557 (1.429)	2.596 (1.428)	2.621 (1.438)	3.295 (1.510)	3.302 (1.512)	3.585 (1.532)	
Demographic variables	Sex (Male)			-0.093 (0.330)	-0.093 (0.326)	-0.074 (0.329)	-0.090 (0.335)	-0.074 (0.340)	-0.062 (0.347)	-0.090 (0.348)	-0.165 (0.371)	-0.148 (0.371)	-0.076 (0.376)	
	Age	Age below 30			0.460 (0.438)	0.544 (0.463)	0.509 (0.452)	0.495 (0.460)	0.548 (0.461)	0.429 (0.500)	0.409 (0.492)	0.435 (0.493)	0.451 (0.509)	
		Age above 55			0.310 (0.389)	0.307 (0.396)	0.247 (0.400)	0.254 (0.396)	0.261 (0.404)	0.226 (0.404)	0.531 (0.458)	0.562 (0.460)	0.611 (0.461)	
	Employment	Full time employment				-0.154 (0.436)	-0.346 (0.435)	-0.354 (0.437)	-0.361 (0.433)	-0.244 (0.443)	-0.282 (0.484)	-0.280 (0.484)	-0.359 (0.494)	
		Self employment				0.706 (0.561)	0.677 (0.573)	0.653 (0.576)	0.577 (0.587)	0.627 (0.585)	0.830 (0.632)	0.785 (0.638)	0.789 (0.640)	
	Income	Income 80-150K					0.622 (0.371)	0.552 (0.392)	0.549 (0.399)	0.498 (0.415)	0.833 (0.464)	0.831 (0.462)	0.868 (0.472)	
		Income above 150K					-0.379 (0.653)	-0.489 (0.673)	-0.594 (0.704)	-0.616 (0.721)	-0.541 (0.802)	-0.593 (0.814)	-0.622 (0.813)	
	Travel characteristics	Transit access	Urban with adequate transit						0.486 (0.556)	0.475 (0.553)	0.335 (0.553)	-0.214 (0.552)	-0.200 (0.556)	-0.271 (0.577)
			Urban with limited transit						0.090 (0.745)	0.037 (0.727)	-0.069 (0.728)	-0.438 (0.775)	-0.423 (0.775)	-0.515 (0.801)
Suburban								0.434 (0.509)	0.359 (0.518)	0.299 (0.526)	0.086 (0.553)	0.111 (0.560)	0.066 (0.569)	
Daily travel time		15 - 60 min							-0.241 (0.371)	-0.201 (0.372)	-0.194 (0.397)	-0.194 (0.393)	-0.272 (0.391)	
		60 + min							0.878 (0.759)	1.001 (0.760)	1.017 (0.884)	1.043 (0.899)	1.099 (0.895)	
Target mode is preferred mode									0.634 (0.386)	0.212 (0.385)	0.226 (0.385)	0.164 (0.399)		
Mode viability										0.715*** (0.168)	0.735*** (0.172)	0.703*** (0.167)		
Psychographic variables		Health conscious											-0.091 (0.121)	-0.143 (0.127)
	Carbon cction												0.179 (0.123)	
# Observations			361	361	361	361	361	361	361	361	361	361	361	
# Treated			180	180	180	180	180	180	180	180	180	180	180	
AIC			256	258	261	261.89	262	267	269	268	234	235	236	
Psuedo R squared			0.0276	0.0279	0.0329	0.0452	0.0593	0.0636	0.0736	0.0829	0.2226	0.2240	0.2314	

Parenteses contain standard errors. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table S14. Treatment effects of calories burned messaging in Experiment 3 (personal and community benefits targeting walking)

Models			1	2	3	4	5	6	7	8	9	10	11	
Personal and community benefits targeting walking			0.607*** (0.177)	0.619*** (0.178)	0.613*** (0.180)	0.607*** (0.181)	0.614*** (0.182)	0.617*** (0.183)	0.621*** (0.183)	0.615*** (0.184)	0.782*** (0.205)	0.784*** (0.205)	0.785*** (0.206)	
Odds ratio			1.836 (1.194)	1.858 (1.195)	1.846 (1.197)	1.835 (1.198)	1.847 (1.200)	1.854 (1.200)	1.860 (1.201)	1.850 (1.202)	2.185 (1.227)	2.190 (1.228)	2.193 (1.229)	
Demographic variables	Sex (Male)			0.339 (0.177)	0.329 (0.179)	0.303 (0.182)	0.311 (0.183)	0.318 (0.185)	0.290 (0.184)	0.249 (0.186)	0.108 (0.210)	0.110 (0.210)	0.148 (0.215)	
	Age				0.570* (0.242)	0.564* (0.246)	0.566* (0.246)	0.522* (0.246)	0.525* (0.248)	0.488 (0.250)	0.189 (0.284)	0.181 (0.289)	0.174 (0.291)	
		Age below 30												
		Age above 55				-0.396 (0.225)	-0.348 (0.226)	-0.336 (0.226)	-0.332 (0.226)	-0.323 (0.227)	-0.322 (0.228)	-0.217 (0.253)	-0.223 (0.255)	-0.234 (0.256)
	Employment	Full time employment				0.419 (0.244)	0.445 (0.247)	0.386 (0.249)	0.406 (0.252)	0.473 (0.255)	0.339 (0.294)	0.339 (0.294)	0.300 (0.296)	
		Self employment				-0.033 (0.363)	-0.049 (0.364)	-0.111 (0.364)	-0.048 (0.370)	-0.031 (0.371)	-0.252 (0.426)	-0.245 (0.425)	-0.251 (0.427)	
	Income	Income 80-150K					-0.144 (0.212)	-0.174 (0.214)	-0.188 (0.217)	-0.196 (0.217)	-0.438 (0.247)	-0.440 (0.247)	-0.439 (0.249)	
		Income above 150K					-0.054 (0.266)	-0.136 (0.265)	-0.137 (0.266)	-0.157 (0.267)	-0.456 (0.314)	-0.460 (0.313)	-0.468 (0.313)	
	Travel characteristics	Transit access	Urban with adequate transit						0.641* (0.302)	0.676* (0.304)	0.627* (0.305)	0.393 (0.339)	0.388 (0.339)	0.379 (0.339)
Urban with limited transit								0.238 (0.359)	0.285 (0.361)	0.246 (0.358)	0.135 (0.416)	0.137 (0.417)	0.115 (0.420)	
Suburban								0.478 (0.260)	0.513* (0.261)	0.520* (0.264)	0.595 (0.313)	0.590 (0.314)	0.581 (0.313)	
Daily travel time		15 - 60 min						0.294 (0.206)	0.322 (0.207)	0.538* (0.230)	0.538* (0.230)	0.522* (0.231)		
		60 + min						0.384 (0.428)	0.442 (0.432)	0.343 (0.474)	0.344 (0.473)	0.306 (0.473)		
Target mode is preferred mode									0.508* (0.245)	-0.115 (0.271)	-0.118 (0.272)	-0.150 (0.274)		
Mode viability										0.726*** (0.076)	0.724*** (0.076)	0.706*** (0.077)		
Psychographic variables		Health conscious										0.019 (0.084)	0.013 (0.083)	
		Carbon action												0.105 (0.069)
# Observations			721	721	721	721	721	721	721	721	721	721	721	
# Treated			359	359	359	359	359	359	359	359	359	359	359	
AIC			791	789	783	781.93	785	786	788	786	624	626	626	
Psuedo R squared			0.0150	0.0196	0.0332	0.0391	0.0397	0.0467	0.0495	0.0542	0.2590	0.2590	0.2620	

Parenttheses contain standard errors. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table S15. Treatment effects of heart health messaging in Experiment 3 (personal and community benefits targeting walking and biking)

Models			1	2	3	4	5	6	7	8	9	10	11	
Personal and community benefits targeting walking and biking			0.296 (0.184)	0.295 (0.184)	0.279 (0.185)	0.264 (0.185)	0.268 (0.186)	0.268 (0.187)	0.290 (0.188)	0.294 (0.189)	0.369 (0.209)	0.371 (0.209)	0.373 (0.210)	
Odds ratio			1.345 (1.202)	1.343 (1.202)	1.322 (1.203)	1.302 (1.204)	1.308 (1.204)	1.308 (1.205)	1.336 (1.207)	1.342 (1.207)	1.446 (1.232)	1.449 (1.233)	1.453 (1.234)	
Demographic variables	Sex (Male)			0.322 (0.186)	0.328 (0.188)	0.345 (0.190)	0.345 (0.190)	0.347 (0.191)	0.350 (0.193)	0.316 (0.194)	0.137 (0.214)	0.132 (0.214)	0.164 (0.217)	
	Age				0.227 (0.248)	0.214 (0.247)	0.215 (0.247)	0.226 (0.250)	0.216 (0.252)	0.229 (0.254)	0.039 (0.274)	0.048 (0.276)	0.078 (0.278)	
		Age below 30												
		Age above 55				-0.379 (0.228)	-0.352 (0.229)	-0.358 (0.230)	-0.359 (0.232)	-0.347 (0.232)	-0.360 (0.232)	-0.199 (0.264)	-0.193 (0.265)	-0.195 (0.264)
	Employment						0.082 (0.237)	0.067 (0.243)	0.061 (0.244)	0.060 (0.245)	0.113 (0.249)	0.233 (0.293)	0.232 (0.293)	0.179 (0.294)
		Full time employment												
		Self employment				-0.269 (0.385)	-0.259 (0.385)	-0.292 (0.391)	-0.259 (0.389)	-0.263 (0.384)	-0.175 (0.437)	-0.181 (0.435)	-0.234 (0.438)	-0.234 (0.438)
	Income							0.083 (0.219)	0.086 (0.220)	0.059 (0.222)	0.035 (0.223)	-0.149 (0.249)	-0.143 (0.251)	-0.167 (0.254)
		Income 80-150K												
			Income above 150K					-0.025 (0.286)	-0.022 (0.289)	-0.120 (0.304)	-0.150 (0.310)	-0.220 (0.331)	-0.217 (0.331)	-0.243 (0.333)
Travel characteristics	Transit access							0.194 (0.288)	0.234 (0.289)	0.157 (0.293)	-0.361 (0.317)	-0.360 (0.317)	-0.349 (0.317)	
		Urban with adequate transit												
		Urban with limited transit						-0.236 (0.380)	-0.185 (0.380)	-0.258 (0.383)	-0.670 (0.435)	-0.675 (0.435)	-0.684 (0.436)	
		Suburban						-0.042 (0.257)	-0.000 (0.259)	-0.015 (0.260)	-0.428 (0.297)	-0.424 (0.298)	-0.408 (0.299)	
	Daily travel time								0.257 (0.212)	0.269 (0.213)	0.337 (0.235)	0.335 (0.235)	0.302 (0.236)	
		15 - 60 min												
		60 + min							0.707 (0.462)	0.724 (0.469)	0.698 (0.536)	0.708 (0.539)	0.643 (0.535)	
	Target mode is preferred mode									0.566* (0.269)	-0.131 (0.312)	-0.127 (0.313)	-0.180 (0.316)	
	Mode viability										0.691*** (0.082)	0.696*** (0.082)	0.676*** (0.082)	
	Psychographic variables	Health conscious											-0.026 (0.081)	-0.044 (0.083)
Carbon action												0.116 (0.065)		
# Observations			716	716	716	716	716	716	716	716	716	716	716	
# Treated			354	354	354	354	354	354	354	354	354	354	354	
AIC			742	741	740	742.69	747	751	752	749	612	614	613	
Psuedo R squared			0.0035	0.0076	0.0141	0.0157	0.0159	0.0183	0.0223	0.0282	0.2164	0.2165	0.2203	

Parenttheses contain standard errors. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table S16. Heterogeneous treatment effects of air pollution exposure messaging in Experiment 1 (personal gain targeting bus transit)

	All respondents	Respondents with underlying health conditions	Urban residents	Daily commute time above 60 min	Respondents aged 18 to 35	Respondents who believe in the treatment message
Treatment Effect	1.126*	2.298**	3.114***	2.045	1.421*	1.309*
Demographic controls	(0.512)	(0.731)	(0.896)	(1.931)	(0.686)	(0.557)
Travel controls	Yes	Yes	Yes	Yes	Yes	Yes
# Observations	362	224	247	191	230	292
# Treated	181	43	66	10	49	111
AIC	140.29	71.77	75.97	50.89	81.7	114.97
Pseudo R squared	0.1523	0.2347	0.4239	0.3084	0.2816	0.186

*Standard errors in parenthesis are significant to * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$*

Respondents who somewhat agree (=5), agree (=6), or strongly agree (=7) to "I believe this message".

Table S17. Heterogeneous treatment effects of air pollution exposure messaging in Experiment 1 (personal and community benefits targeting bus transit)

	All respondents	Respondents with underlying health conditions	Urban residents	Daily commute time above 60 min	Respondents aged 18 to 35	Respondents who believe in the treatment message
Treatment Effect	1.378** (0.53)	1.376* (0.64)	3.055*** (0.91)	3.770* (1.64)	0.599 (0.88)	1.435* (0.58)
Demographic controls	Yes	Yes	Yes	Yes	Yes	Yes
Travel controls	Yes	Yes	Yes	Yes	Yes	Yes
# Observations	361	228	237	190	220	304
# Treated	180	47	56	9	39	123
AIC	148.95	80.15	72.46	45.54	65.08	122.01
Pseudo R squared	0.1857	0.1942	0.3434	0.4739	0.2568	0.2401

*Standard errors in parenthesis are significant to * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$*

Respondents who somewhat agree (=5), agree (=6), or strongly agree (=7) to “I believe this message”.

Table S18. Heterogeneous treatment effects of air quality improvement messaging in Experiment 2 (personal gain targeting bus transit)

	All respondents	Respondents with underlying health conditions	Urban residents	Daily commute time above 60 min	Respondents aged 18 to 35	Respondents who believe in the treatment message
Treatment Effect	1.538** (0.59)	0.760 (1.01)	2.252** (0.79)	-21.598*** (0.77)	2.658** (0.87)	1.605* (0.63)
Demographic controls	Yes	Yes	Yes	Yes	Yes	Yes
Travel controls	Yes	Yes	Yes	Yes	Yes	Yes
# Observations	360	217	243	190	227	299
# Treated	179	36	62	9	46	118
AIC	117.84	58.34	85.37	40.65	68.15	96.13
Pseudo R squared	0.373	0.283	0.395	0.4236	0.5099	0.3963

*Standard errors in parenthesis are significant to * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$*

Respondents who somewhat agree (=5), agree (=6), or strongly agree (=7) to "I believe this message".

Table S19. Heterogeneous treatment effects of air quality improvement messaging in Experiment 2 (personal and community benefits targeting bus transit)

	All respondents	Respondents with underlying health conditions	Urban residents	Daily commute time above 60 min	Respondents aged 18 to 35	Respondents who believe in the treatment message
Treatment Effect	1.197* (0.61)	0.908 (0.74)	2.670*** (0.74)	-27.180*** (1.12)	1.018 (0.83)	1.220 (0.64)
Demographic controls	Yes	Yes	Yes	Yes	Yes	Yes
Travel controls	Yes	Yes	Yes	Yes	Yes	Yes
# Observations	361	232	235	187	233	299
# Treated	180	51	54	6	52	118
AIC	106.27	57.88	67.2	40.65	58.85	96.84
Pseudo R squared	0.3549	0.4237	0.4386	0.4216	0.4565	0.3364

*Standard errors in parenthesis are significant to * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$*

Respondents who somewhat agree (=5), agree (=6), or strongly agree (=7) to "I believe this message".

Table S20. Heterogeneous treatment effects of active lifestyle messaging in Experiment 3 (personal gain targeting walking)

	All respondents	Respondents with underlying health conditions	Urban residents	Daily commute time between 30 and 60 min	Daily commute time above 60 min	Respondents aged 18 to 35
Treatment Effect	1.073*** (0.22)	1.279*** (0.31)	0.982*** (0.28)	1.332*** (0.31)	0.807 (0.61)	1.067*** (0.28)
Demographic controls	Yes	Yes	Yes	Yes	Yes	Yes
Travel controls	Yes	Yes	Yes	Yes	Yes	Yes
# Observations	1079	674	713	646	562	689
# Treated	536	131	170	103	19	146
AIC	665.55	343.29	396.24	365.19	257.13	391.01
Pseudo R squared	0.1953	0.2133	0.1731	0.1402	0.1859	0.1673
<i>Standard errors in parenthesis are significant to * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$</i>						

Table S21. Heterogeneous treatment effects of active lifestyle messaging in Experiment 3 (personal and community benefits targeting walking)

	All respondents	Respondents with underlying health conditions	Urban residents	Daily commute time between 30 and 60 min	Daily commute time above 60 min	Respondents aged 18 to 35
Treatment Effect	1.163*** (0.21)	1.068** (0.33)	1.249*** (0.28)	1.184*** (0.30)	0.527 (0.77)	1.084*** (0.28)
Demographic controls	Yes	Yes	Yes	Yes	Yes	Yes
Travel controls	Yes	Yes	Yes	Yes	Yes	Yes
# Observations	1082	657	711	662	566	693
# Treated	539	114	168	119	23	150
AIC	710.35	344.19	418.93	368.49	267.28	397.15
Pseudo R squared	0.1759	0.1376	0.1837	0.1661	0.1537	0.1634
<i>Standard errors in parenthesis are significant to * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$</i>						

Table S22. Heterogeneous treatment effects of different active lifestyle messaging in Experiment 3 targeting walking

Treatment messages	All active lifestyle messages targeting walking		Personal gain active lifestyle messages targeting walking		Heart health messaging targeting walking	
	All respondents	Respondents with underlying health conditions	All respondents	Respondents with underlying health conditions	All respondents	Respondents with underlying health conditions
Treatment Effect	1.128*** (0.15)	1.212*** (0.24)	1.073*** (0.22)	1.279*** (0.31)	0.967*** (0.26)	1.282*** (0.37)
Demographic controls	Yes	Yes	Yes	Yes	Yes	Yes
Travel controls	Yes	Yes	Yes	Yes	Yes	Yes
# Observations	1982	1291	1079	674	720	448
# Treated	896	205	536	131	358	86
AIC	1248.18	652.79	665.55	343.29	459.69	239.74
Pseudo R squared	0.172	0.1715	0.1953	0.2133	0.1665	0.2031

*Standard errors in parenthesis are significant to * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$*

Table S23. Heterogeneous treatment effects of calories burned messaging for commuters with varying daily travel times in Experiment 3 (targeting walking)

	All respondents	Respondents with underlying health conditions	Urban residents	Daily commute time between 30 and 60 min	Daily commute time above 60 min	Respondents aged 18 to 35
Treatment Effect	1.362*** (0.26)	1.185** (0.39)	1.491*** (0.34)	1.733*** (0.34)	-7.129*** (0.53)	1.638*** (0.31)
Demographic controls	Yes	Yes	Yes	Yes	Yes	Yes
Travel controls	Yes	Yes	Yes	Yes	Yes	Yes
# Observations	720	437	469	443	373	462
# Treated	358	75	107	81	11	100
AIC	497.32	235.83	292.11	278.19	170.72	293.7
Pseudo R squared	0.1872	0.1562	0.1893	0.165	0.1692	0.1898

*Standard errors in parenthesis are significant to * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$*

Table S24. Summary statistics of stated mode choice by treatment group

Category	Information Type	Target Mode	N	Car (%)	Bus (%)	Walk (%)	Bike (%)
Control group			181	59.67	2.76	7.18	30.39
Personal gain							
Air quality impacts	Exposure to air pollutants	Bus	181	69.06	7.73	7.18	16.02
	Air quality improvement	Walk	179	69.27	2.23	15.64	12.85
		Bike	180	52.78	2.22	10	35
		Bus	179	60.34	9.50	9.50	20.67
Active lifestyle	Step counts	Walk	179	58.66	2.79	16.76	21.79
	Calories burned	Walk	177	58.19	2.26	18.64	20.90
		Bike	178	57.87	2.81	7.30	32.02
	Heart health	Walk	180	58.33	1.11	17.78	22.78
		Bike	180	61.11	2.22	7.22	29.44
Personal gain + Community benefit							
Air quality impacts	Exposure to air pollutants	Bus	180	62.22	9.44	8.89	19.44
	Air quality improvement	Walk	178	61.80	2.81	15.73	19.66
		Bike	181	55.25	1.66	9.94	33.15
		Bus	180	66.11	7.22	7.22	19.44
Active lifestyle	Step counts	Walk	180	62.78	2.78	16.22	18.33
	Calories burned	Walk	181	49.17	2.21	24.86	23.76
		Bike	178	58.99	0	6.18	34.83
	Heart health	Walk	178	61.24	0.56	16.85	21.35
		Bike	176	57.39	2.76	7.18	30.39

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