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Choice of commuting mode among employees: Do home neighborhood environment, worksite neighborhood environment, and worksite policy and supports matter?

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Abstract

Background—Promoting the use of public transit and active transport (walking and cycling) instead of car driving is an appealing strategy to increase overall physical activity.

Purpose—To quantify the combined associations between self-reported home and worksite neighborhood environments, worksite support and policies, and employees' commuting modes.

Method—Between 2012 and 2013, participants residing in four Missouri metropolitan areas were interviewed via telephone (n = 1,338) and provided information on socio-demographic characteristics, home and worksite neighborhoods, and worksite support and policies. Commuting mode was self-reported and categorized into car driving, public transit, and active commuting. Commuting distance was calculated using geographic information systems. Commuters providing completed data were included in the analysis. Multivariate logistic regression models were used to examine the correlates of using public transit and active commuting.

Result—The majority of participants reported commuting by driving (88.9%); only 4.9% used public transit and 6.2% used active modes. After multivariate adjustment, having transit stops within 10-15 minutes walking distance from home (p=0.05) and using worksite incentive for public transit (p<0.001) were associated with commuting by public transit. Commuting distance (p<0.001) was negatively associated with active commuting. Having free or low cost recreation facilities around the worksite (p=0.04) and using bike facilities to lock bikes at the worksite (p<0.001) were associated with active commuting.

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Conclusion—Both environment features and worksite supports and policies are associated with the choice of commuting mode. Future studies should use longitudinal designs to investigate the potential of promoting alternative commuting modes through worksite efforts that support sustainable commuting behaviors as well as the potential of built environment improvements.

Keywords

Active commuting; public transit; neighborhood environment; worksite support; worksite policy; employees

1. Introduction

Physical activity is associated with lower risk of various chronic diseases, yet levels of physical activity are declining worldwide (Knuth and Hallal, 2009). The World Health Organization's and the US Centers for Disease Control and Prevention's physical activity guidelines both recommend adults to engage in at least 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity physical activity per week, accumulated in bouts of at least 10 minutes (CDC, 2011; World Health Organization, 2010). Only a small portion of adults in the US currently achieve this level (Troiano et al., 2008; World Health Organization, 2010). Adults accumulate daily physical activity from four domains including household, transport, occupation and leisure time (Pratt et al., 2004). Factors influencing different domains of physical activity may be diverse and context-specific. For example, the factors associated with walking to the post office may be different from the factors associated with walking during leisure time. Therefore, behavior- and context-specific interventions may be more effective than interventions targeting overall physical activity (Baranowski et al., 1998).

Walking and cycling are recommended forms of moderate-to-vigorous physical activity (MVPA) that can serve as means of travel to substitute for short car trips. Walking and cycling to work (active commuting) have the potential to be incorporated into commuters' daily routine and might therefore be more easily adopted and maintained than other forms of physical activity (Yang et al., 2012). In addition, active commuting is specifically associated with reduced cardiovascular risk, physical fitness, and weight control in adults (de Geus et al., 2009; Hamer and Chida, 2008; Lusk et al., 2010).

Despite these benefits, active commuting is not widely practiced in the US, where more than 90% of the population use automobiles and less than 10% use other modes of transport, including public transit, walking, and cycling as their usual mode of travel to work (Santos et al., 2011). The proportion of walking and cycling to work in the US is extremely low compared to many European countries, such as Denmark (31%), Germany (32%), the Netherlands (47%), and Switzerland (50%) (Buehler and Pucher, 2012), and continues to decline (Brownson et al., 2005). The use of public transit usually involves walking or cycling to and from bus or train stations and has the potential to contribute to the commuter's overall physical activity level (Rissel et al., 2012). Commuters who use multi-modal transit tend to achieve greater levels of physical activity than those who use only motorized modes

of transport (Sahlqvist et al., 2012). Despite this, public transit and multi-modal transit have been under-studied compared to active commuting.

In order to develop effective interventions to promote more active alternative commuting modes (other than car driving), an understanding of the factors associated with this particular behavior is required (Baranowski et al., 1998; Owen et al., 2004). A few environmental and psychological factors and worksite policies have been shown to be associated with active commuting or the use of public transit, with commuting distance being the strongest and most consistent factor (Badland et al., 2008; Kaczynski et al., 2010; Lemieux and Godin, 2009; Panter and Jones, 2010; Zwald et al., 2014). To our knowledge, no study has examined the combined effect of neighborhood environment, work environment, and worksite supports and policies on employees' commuting mode choices. The objective of the current study was to examine employees' choices of commuting mode in relation to the home neighborhood environment, worksite neighborhood environment, and worksite policies and supports.

2. Methods

Participants were from the Supports at Home and Work for Maintaining Energy Balance (SHOW-ME) study (Hoehner et al., 2013), a cross-sectional study designed to understand environmental and worksite policy influences on employees' obesity status. Census tracts in four Missouri metropolitan areas (St. Louis, Kansas City, Springfield, and Columbia) were used for sampling. Census tracts with a population density less than the 10th percentile of the population density of the study areas and those with more than 50% of inhabitants aged 15-24 years were excluded. A multistage, stratified sampling procedure was used to sample individuals across seven strata, including metro size (large vs. small), and within the large metro size, walkability (low, moderate, and high) and racial/ethnic minority (low vs. high) strata (Frank et al., 2010). Potential participants were recruited using list-assisted telephone random-digit-dialing methods.¹ The first eligible adult in each household that volunteered to participate was sampled. The response rate for interviews was 49%. Between 2012 and 2013, participants were recruited (n=2,015) who met each of the following criteria: between the age of 21 and 65 years; employed outside the home at one primary location; employed for 20 or more hours per week at one site with at least five employees; not pregnant; and having no physical limitation to prevent walking or bicycling in the past week. The telephone-based survey instrument was developed using existing self-reported and environmental assessment instruments as well as input from a Questionnaire Advisory Panel comprised of experts in survey development, nutrition/food environment, physical activity,

¹We used landline phone numbers to recruit participants. First, the study sampling method was based on census tract geography (for purposeful variation in size of metro area, proportion of minority population, and walkability). Due to the portability and transfer of cell phones, it is unlikely that those who own cell phones associated with the switches for particular census tracts will actually live in those census tracts. Second, prior to the start of our data collection period, we consulted the most current data on cell phone use (from NHIS (Blumberg & Luke, 2011 (<http://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless201106.pdf>) and Blumberg, etc., 2011 (<http://www.cdc.gov/nchs/data/nhsr/nhsr039.pdf>)) which showed that ~27.8% of adults in the US live in households with only wireless phones. This percentage was lower for all of Missouri (22.4%) where all study areas are located, but higher for adults age 34 and younger, for racial and ethnic minorities, and for those living in poverty. Despite these differences, our recruitment distribution was monitored throughout the data collection period and did not show any dearth of participants in these categories. We do not know if there are other characteristics of wireless-only households that are not captured through standard demographics, but we have nonetheless attempted to address this potential bias.

transportation, and worksite environmental interventions. Instrument development and telephone interview procedures have been detailed elsewhere (Hoehner et al., 2013). The study design was approved by the Institutional Review Board of Washington University in St. Louis. All participants provided informed consent.

2.1 Measures

2.1.1 Main outcome—The outcome of interest was commuting mode; participants self-reported their usual mode of travel to work. Response options included: drive alone, bus or train, bicycle, walk, carpool, and other modes. Participants could select multiple modes. We asked participants not to report walking to or from a public transit stop or parking place as ‘walk’, unless this walk accumulated at least 10 minutes of activity to account for its health benefits (CDC, 2011; World Health Organization, 2010). We then recoded the commuting mode into three categories: driving alone or carpool; public transit; multi-modal or active commuting (walking & cycling). We grouped those who used multi-modal travel (reported using both active and non-active modes) together with active commuting in order to capture the active components of multi-modal commuters. Those who reported using multi-modal travel that involves only non-active modes were grouped together with driving alone or carpool.

2.1.2 Independent variables and covariates

2.1.2.1 Sociodemographic and individual characteristics: Participants self-reported age, gender, race, marital status, education, household income, number of vehicles in the household, number of children younger than 18 years old in the household, and chronic conditions including heart disease, diabetes, and cancer. The above characteristics were collapsed or categorized into 2 – 4 categories where appropriate (Table 1). Participants self-reported weight and height. Body mass index (BMI) was calculated as weight/height^2 (kg/m^2) and was categorized to under/normal weight ($\text{BMI} < 25 \text{ kg/m}^2$), overweight ($25 \text{ kg/m}^2 \leq \text{BMI} < 30 \text{ kg/m}^2$), and obese ($\text{BMI} \geq 30 \text{ kg/m}^2$) (Bray, 1987).

Participants reported their home and work addresses, and these were geocoded using ArcGIS v10.1. Commuting distance was calculated as the shortest distance between home and work, along the modified street network. The length of the route was calculated and categorized into 1-3 miles, 3.1 – 6 miles, 6.1 – 10 miles, and more than 10 miles, approximating quartile cut-off points.

2.1.2.2 Home and worksite neighborhood built environment features: A subset of questions from the Physical Activity Neighborhood Environment Survey (PANES) (Sallis et al., 2010) was used to measure built environment features in the home neighborhood environment. Ten PANES questions were adapted to ask similar questions about the worksite neighborhood environment. A four-point Likert scale was used, ranging from 1 (strongly disagree) to 4 (strongly agree). Reliability of PANES items has been previously established, with reliability coefficients above 0.60 (Hoehner et al., 2013). All responses were collapsed into two categories (disagree and agree) in the analysis. The built environment features by home neighborhood and worksite neighborhood are represented elsewhere (Adlakha et al., 2015; Adlakha et al., In press).

2.1.2.3 Worksite physical activity support and policy: Worksite supports and policies were determined using eighteen questions asking whether specific policies or features supporting physical activity were available at the worksite and if the participants ever used them (Appendix A). These questions showed moderate to almost perfect reliability for measuring worksite environment and policy supports for physical activity (Hoehner et al., 2013).

2.2 Analyses

Chi-square tests were used to assess difference between the commuting modes and socio-demographic and individual characteristics, commuting distance, home and worksite neighborhood built environment features, and worksite physical activity supports and policies. Using driving alone or carpool (car driving) as the reference commuting mode, we built two multiple logistic regression models to examine (1) the correlates associated with using public transit and (2) the correlates associated with using active commuting mode. For each commuting mode (public transit and active commuting) compared to car driving, univariate logistic regression was first carried out to quantify associations between the commuting mode and all variables (i.e., individual characteristics, home neighborhood environment, work neighborhood environment, and worksite policy and supports).

Correlates were kept as candidate variables if the p-value in the univariate logistic regression was 0.25 or less. We then built multiple logistic models separately for three aspects: home neighborhood environment, worksite neighborhood environment, and worksite policies and supports, all adjusting for selected individual correlates. In each multiple logistic model, we checked for multicollinearity among candidate variables. The variable with the strongest association with the outcome (public transit or active commuting) was selected for adjusted models if two variables showed correlations ($r > 0.55$) with each other. We backward dropped variables from the largest p value, leaving those significant based on a threshold of $p = 0.25$ to enter in the final model. Lastly, fully-adjusted multiple logistic regressions were modelled combining chosen correlates in all three aspects, adjusting for individual correlates, for public transit and active commuting, respectively. We backward dropped variables from the largest p value, leaving those significant ($p < 0.05$) in the final adjusted model. Due to the small sample sizes in the public transit and active commuting categories, the odds ratios of each significant correlate was estimated with other correlates modeling as continuous variables in the final fully-adjusted logistic regression models. All analyses were performed using Stata version 12.0 (STATA Corp., College Station, Texas, USA).

3. Results

In total 2,012 participants completed the telephone survey, of which 1,338 (66.5%) participants commuted to work, provided completed data on mode of commuting, and reported addresses for both home and work to calculate their commuting distances.

The sociodemographic and individual characteristics of the participants are compared by commuting mode in Table 1. There were more women (69.3%) than men in our sample. The majority of participants were white (67.0%), and overweight or obese (64.3%). A large

portion of the participants (88.9%) commuted by car, while 4.9% used public transit and 6.2% used multi-modal or active commuting.

Table 2 summarizes the results from the bivariate association (crude odds ratio) and adjusted odds ratios between employees' choice of using public transit and includes home and work related environmental correlates. In the final adjusted models, living within 10-15 minutes walking distance from a transit stop was associated with higher likelihood of using public transit (3.78, CI 95%: 1.00-14.9) than car driving. Employees who reported ever having used a worksite incentive to use public transit had a higher likelihood of using public transit (23.9, CI 95%: 10.4 – 54.8) compared to those who drove a car as their primary mode of transportation to work. These associations were adjusted for employees' age, sex, BMI, education level, and household car ownership.

Table 3 represents the results from the bivariate association (crude odds ratio) and adjusted odds ratios between employees' choice of active commuting, including home and work related environmental correlates. For multi-modal or active commuting mode, living 10 miles or further from work was associated with a lower likelihood (0.12, CI 95%: 0.05 – 0.29) of using any active mode to commute, compared to commuters who drive. While having free or low cost recreation facilities around the worksite was associated with a higher likelihood (1.85, CI 95%: 1.03 – 3.32) of using active commuting modes compared to car driving. In addition, reporting having ever used a bike facility to lock bikes at the worksite was associated with higher likelihood (9.17, CI 95%: 3.84 – 21.8) of using active commuting mode than commuting by car. The above active commuting correlates were adjusted for age, sex, BMI, and household car ownership.

4. Discussion

4.1 Main findings

This study explored the home neighborhood, worksite neighborhood, and worksite policy and support correlates of commuting mode in a working population in four Midwestern US metropolitan areas. The home neighborhood environment characteristic of having a transit stop nearby was associated with commuting by public transit. The strongest correlate of using public transit to commute was the use of employer-provided free or discounted public transit passes. Commuting distance was not associated with using public transit, but it was negatively associated with the likelihood of active commuting. Having low cost or free recreation facilities around the worksite was also associated with active commuting. Furthermore, employees were more likely to use active commuting modes if they reported the use of bike facilities provided by the worksite.

4.2 Compare with other studies

Approximately 90% of our participants reported commuting by car, which is similar to the national level and to the level found in comparable Midwestern metropolitan areas in a recent American Community Survey study (McKenzie and Rapino, 2011). In terms of other commuting modes, the proportion of public transit users and active commuters in our study sample are also consistent with the national data. In addition, the proportion of obese

participants (34.1%) in the sample is similar to the US population (35.7%) (Flegal et al., 2012).

Our findings on commuting distance are consistent with data from other existing US based studies focusing on active commuting; two studies of university students showed that the further distance (Sisson and Tudor-Locke, 2008) or longer the commuting time (Kaczynski et al., 2012) between home and university, the lower the likelihood of choosing to use an active commuting mode. Our findings are also consistent with United Kingdom (UK) data, which indicate that home-work distance was negatively associated with active commuting (particularly walking) (Dalton et al., 2013; Panter et al., 2011a), despite the different common commuting distances between the US and UK. Furthermore, our findings confirmed previously reported associations between bike storage facilities and active commuting using US data (Hamre and Buehler, 2014; Kaczynski et al., 2010). Although most previous studies of active transport have focused on home neighborhood environment characteristics, our findings indicate that the worksite neighborhood environment might impact employees' choice of commuting mode as well. Having free or low cost recreation facilities, such as parks, walking trails, bike paths, and recreational centers in the worksite neighborhood was associated with higher likelihood of active commuting or multi-modal commuting. Our findings showed that having facilities that are easily accessible around worksites may encourage employees to walk or cycle to work; therefore they may be able to access those facilities before or after work.

Very few studies have focused on using public transit alone, or including public transit and active commuting together. Nevertheless, our findings are consistent with previous studies that indicate a higher likelihood of commuting by public transit among employees that use an employer-sponsored public transit pass (Badoe and Yendeti, 2007; Hamre and Buehler, 2014; Lachapelle and Frank, 2009). In addition to worksite supports and policies, built environment factors such as distance to public transit is also a consistent correlate for using public transit (Dalton et al., 2013), which may be a result of having easily accessible and convenient use of public transit.

4.3 Strengths and limitations

There are a number of strengths and limitations to this study. Unlike previous studies that solely focus on environmental and psychological correlates (Dalton et al., 2013; Panter et al., 2011a; Panter et al., 2011b) or worksite supports and policies (Badland et al., 2010; Kaczynski et al., 2010; Lachapelle and Frank, 2009; Wen et al., 2010), the current analysis is one of the first studies to explore the associations between a range of home environment, work environment, and workplace supports and policies and employees' commuting mode. The findings are particularly informative for organizations and employers looking to create or improve the worksite to support active living for their employees, regardless of the variation between individual characteristics and environmental structure. Furthermore, we included a large sample size of employees in several Midwestern metropolitan areas and examined a range of socio-demographic characteristics in our statistical models. Although the findings may provide limited evidence to determine causality due to the cross-sectional design, the suggested worksite support and policy correlates may be easier to implement and

evaluate in a pre- and post- study design than changing the community-level built environment that requires a long-term and large scale effort. Nevertheless, this analysis is limited by the reliance on self-report data that may contain response bias (Arnold and Feldman, 1981). In addition, due to the sampling strategy and the restricted geographic area, the findings may not be generalizable and need to be replicated in other populations.

4.4 Implications and further research

Sallis and colleagues (Sallis et al., 1998; Sallis et al., 2009) highlighted the potential to shift physical activity behavior through organizational and community-level strategies that target policy and the physical environment. The current analyses indicate that both environment and policy may impact employees' commuting mode choice, after adjusting for numerous individual socio-demographic characteristics. While an improvement to the community-level built environment may require long-term effort, worksite supports and policies may be more modifiable in the short term. For example, a previous study conducted in the United States showed significant positive effect on promoting a modal shift from car driving to active commuting through a worksite policy cashing-out program, which requires employers to offer employees the option to choose cash in lieu of any parking subsidy (Shoup, 1997a, b). That study, however, is now almost 20 years old. Other recent interventions to promote modal shift through worksite support and policy have mostly been conducted in Australia, the UK, and other western European countries (Ogilvie et al., 2004; Wen et al., 2010). As described earlier, the prevalence of active commuting in the US, as well as in our study sample, is noticeably lower than in many European countries. Thus there is a potential to implement and evaluate the cost-effectiveness of worksite supports and policies aimed at promoting alternative commuting modes other than car driving, as well as the longitudinal impact on wider health outcomes and productivity. These studies could be ideally carried out using robust designs including control groups and precise measures for commuting mode with a wide range of outcomes.

The worksite supports and policies in our study were measured by self-report, therefore our data measure the awareness among the employees. For example, only 17.4% of our sample was aware of worksite-provided incentives to use public transit, and 5.3% ever used the incentive. Yet the actual proportion of worksites providing incentives might have been higher. One previous study showed that simply promoting the awareness of the existing infrastructure was effective in promoting cycling as a commuting mode (Yang et al., 2010). Thus there might be potential to encourage a commuting mode shift (from car driving) through promoting employees' awareness of the worksite support and policy, such as incentives to use public transit. The effectiveness may also be enhanced by incorporating individualized travel plans (Yang et al., 2010) to inform the employees' commuting choices.

We did not include a range of individual and psychosocial variables in our study. Therefore, future longitudinal studies should consider combining such measures to study the psychological mechanisms of commuting behavior change and how it is patterned among employees of different age groups, occupational types, and socio-economic status.

5. Conclusions

Our study adds to the body of research evidence concerning the promotion of alternative commuting modes, other than car driving, in order to promote physical activity in the employed population. Both environmental factors and worksite supports and policies appear to be associated with the use of public transit and active commuting. While changing the physical environment may be challenging, worksite policies such as incentives and safe bike storage are relatively easy to implement. Our study provides a set of potential leverage points for implementation and evaluation in future applied research projects. These interventions will seek to shift organizational supports thus establishing an organizational culture to support sustainable active commuting behavior among employees.

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- 11.1% of employed Missourians commuted to work via active commuting, public transportation, or multi-modal mode.
- Commuters are more likely to use public transit if there is a stop within 15 minute walk of their home.
- Commuters are more likely to use public transit if their worksite offers incentives for doing so (e.g., reduced transit fare).
- Active commuting was most likely when the worksite included cycling facilities (e.g., bike racks) and the employee lived within 10 miles of the worksite.
- Free or low cost recreational facilities nearby worksite may encourage active commuting or multi-modal mode among employee lived within 10 miles of the worksite.

Table 1

Socio-demographic characteristics of participants in the Supports at Home and Work for Maintaining Energy Balance study by commuting mode, Missouri, United States, 2012-2013.

	Driving alone or car pool		Public transit		Multi-modal or active commuting		p
	n	%	n	%	n	%	
Age							
21 - 44 years	378	86.5%	27	6.2%	32	7.3%	0.16
45 - 54 years	398	88.0%	26	5.8%	28	6.2%	
55-65 years	403	92.0%	12	2.7%	23	5.3%	
missing	5		0		0		
Sex							
Male	346	84.6%	26	6.4%	37	9.0 %	0.003
Female	838	90.88%	39	4.2%	46	5.0%	
Race							
white	822	92.2%	17	1.9%	53	5.9%	<.001
black	296	81.3%	42	11.6%	26	7.1%	
others	62	88.5%	4	5.7%	4	5.7%	
missing	4		2		0		
BMI							
under & normal weight	417	87.8%	23	4.8%	35	7.4%	0.11
overweight	377	90.6%	13	3.1%	26	6.3%	
obese	390	88.4%	29	6.6%	22	5.0%	
Education							
High school and below	209	77.7%	37	13.8%	23	8.5%	<.001
Some college	313	89.7%	16	4.6%	20	5.7%	
College graduate	404	93.5%	8	1.9%	20	4.6%	
Graduate degree	258	91.5%	4	1.4%	20	7.1%	
Household income							
\$0k - \$39k	292	78.1%	42	11.2%	40	10.7%	<.001
\$40k - \$74k	410	93.0%	12	2.7%	19	4.3%	
\$75k - up	439	94.2%	8	1.7%	19	4%.1	
missing	43		3		5		
Marital status							
Live alone	420	83.5%	38	7.6%	45	8.9%	<.001
Married or live with someone	764	92.1%	27	3.3%	38	4.6%	
Car ownership							
no car	5	10.9%	26	56.5%	15	32.6%	<.001
1 car	264	83.0%	22	6.9%	32	10.0%	
2 cars	554	94.5%	10	1.7%	22	3.8%	
more than 2 cars	361	94.5%	7	1.8%	14	3.7%	
Number of children in the household							
no child younger than 18 years	504	88.3%	27	4.7%	40	7.0%	0.55

	Driving alone or car pool		Public transit		Multi-modal or active commuting		
	n	%	n	%	n	%	<i>p</i>
one child	213	89.9%	11	4.6%	13	5.5%	
2 or more children	295	91.6%	13	4.0%	14	4.4%	
Chronic condition							
No	981	88.7%	53	4.8%	72	6.5%	0.87
Yes	200	89.7%	12	5.4%	11	4.9%	
missing	3						
Employer size							
5-49	348	87.7%	21	5.3%	28	7.0%	0.35
50-200	378	90.7%	18	4.3%	21	5.0%	
200 and up	415	89.2%	23	5.0%	27	5.8%	
missing	43		3		7		

Table 2

Crude and adjusted odds ratios examining the associations between using public transit vs. car driving and home neighborhood, worksite neighborhood, and worksite policy and support in the Supports at Home and Work for Maintaining Energy Balance study, Missouri, United States, 2012-2013.

Reference: Driving (n=1184)	Public Transit (n=65)					
	Unadjusted logistic regressions			Adjusted multiple logistic regressions ^b		
	OR	95% CI	p	aOR ^a	95% CI	p
Home neighborhood environment						
Transit stop within a 10-15 mins walk from home (ref: Disagree)						
Agree	4.09	1.63 - 10.29	0.003	3.78	1.00 - 14.9	0.05
Worksite policy and support						
Worksite Incentive to use public transit (ref: No)						
Yes but not used the incentive	0.76	0.27 - 2.16	0.60	0.81	0.25 - 2.65	0.73
Yes and used the incentive	18.2	9.81 - 33.7	<.001	23.9	10.4 - 54.8	<.001

^a Adjusted for age, sex, race, BMI, education level, and household car ownership

^b Pseudo $r^2 = 0.462$

Table 3

Crude and adjusted odds ratios examining the associations between active commuting vs. car driving and home neighborhood, worksite neighborhood, and worksite policy and support in the Supports at Home and Work for Maintaining Energy Balance study, Missouri, United States, 2012-2013.

Reference: Driving (n=1184)	Multi-modal or AC (n=83)					
	Unadjusted logistic regressions			Adjusted multiple logistic regressions ^b		
	OR	95% CI	<i>p</i>	aOR ^a	95% CI	<i>p</i>
Commuting distance (ref: 1-3 miles)						
3.1-6 miles	0.30	0.17 - 0.51	<.001	0.23	0.12 - 0.42	<.001
6.1-10 miles	0.11	0.05 - 0.27	<.001	0.14	0.06 - 0.35	<.001
>10 miles	0.09	0.04 - 0.19	<.001	0.12	0.05 - 0.29	<.001
Worksite neighborhood environment						
Several free or low cost recreation facilities around worksite (ref: Disagree)						
Agree	4.63	1.55 - 13.8	0.01	1.85	1.03 - 3.32	0.04
Worksite provides place to lock your bike (ref: No)						
Yes but not used the bike facility	1.48	0.87 - 2.52	0.15	1.24	0.69 - 2.24	0.47
Yes and used the bike facility	15.7	7.60 - 32.5	<.001	9.17	3.86 - 21.8	<.001

^a Adjusted for age, sex, BMI, and household car ownership

^b Pseudo $r^2 = 0.328$