1) Association of Workplace Supports with Active Commuting

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Background:
Active commuting (AC) is the practice of walking or biking to work and offers a promising means to integrate recommended levels of physical activity into daily life routines (Dora, 1999; Tudor-Locke et al., 2001). Indeed, numerous health benefits from AC have been identified, including improvements in VO2max, HDL cholesterol, blood pressure, and insulin levels, and a reduced risk of obesity, cardiovascular disease, stroke, and all-cause mortality (Andersen, et al., 2000; Gordon-Larsen et al., 2009; Hamer & Chida, 2008; Lindstrom, 2008). Moreover, AC has the potential to facilitate positive social, environmental, and economic outcomes (Litman & Doherty, 2009).

Despite these benefits, rates of AC in the U.S. remain low. Data from the 2001 National Household Transportation Survey show that 91% of respondents reported an automobile as their usual mode to work, while only 5% took public transit and 3% walked (Hu & Reuscher, 2004). At the same time, surprisingly little research has examined influences on AC, especially among adults, with distance, motivations to avoid parking hassles, reduce expenses, increase one's health, and reduce air pollution, and an overall 18-item environmental index identified as salient correlates of AC (Craig et al,. 2002; Merom et al., 2008; Ogilvie et al., 2008). However, although research has looked at personal and community-level environmental influences on AC, few, if any, studies have examined how workplace supports are related to the likelihood of walking and biking to work.

Objectives:
The purpose of this study was to examine the association of cultural and physical workplace supports for AC with employee AC behavior.

Methods:
An online survey was conducted from August to December 2008. Participants were recruited through listservs, links from local websites, and fliers provided to large area employers. Eligibility criteria included living and/or working full or part-time in Manhattan, KS and physically able to walk or bicycle. In total, 375 people completed the survey. The mean age was 39.4±12.9 years and participants were primarily White (90%), female (61%), and highly educated (95% high school diploma or greater), which is very representative of the city population. Respondents indicated their gender, age, race, education level, and estimated walking time to work (dichotomized as less or greater than 20 minutes). Cultural supports for AC were measured with two Likert-type questions about i) perceptions that their employer encourages AC (recoded as 'none to a little' vs. 'some to a lot') and ii) the perceived number of co-workers who actively commute to work (recoded as 'none' vs. 'some'). A dichotomous variable was then created specifying participants with neither type of cultural support or those with at least one cultural support. Physical supports for AC were measured with three 'yes/no' questions about the presence of bike parking, bike storage policies, and showers/lockers at the workplace. These variables were summed to designate respondents with zero, one, or two or more of the three types of physical supports. Participants were also asked to indicate the number of times per week they walked and biked to or from work, and a dichotomous

AC outcome variable was created indicating zero trips versus at least one trip by foot or bike. Binomial logistic regression was used to predict the likelihood of AC at least once per week according the presence of cultural and physical workplace supports, with the zero supports category as the reference group for each model.

Results:
About one-quarter (26%) of the sample reported actively commuting to or from work at least once per week. Three-quarters (76%) reported that their workplace possessed at least one (of two) cultural supports for AC. About one-third (30%) reported their workplace had zero (of three) physical supports for AC, while 35% and 36% reported one and two or more physical supports, respectively.

In multivariate models controlling for age, gender, race, education, and perceived walking time to work, persons who reported one or more cultural supports for AC were more likely to actively commute at least once per week (*B*=2.56, CI=1.19, 5.98). Likewise, persons who reported two or more physical supports for AC were significantly more likely to actively commute at least once per week than those who reported none (*B*=2.46, CI=1.10, 5.47), but participants reporting only one physical support were not (*B*=.73, CI=.31, 1.71).

Conclusions:
The present study found that individuals with a more supportive cultural and physical environment were more likely to walk or bike to work, and it thereby suggests possible strategies to increase AC behaviors. Most salient perhaps are some of the recent government policies offering tax breaks or other financial incentives for employers to encourage AC among employees (e.g., provisions in H.R. 1424). Other approaches could target social support and cultural norms around AC within a workplace (Wen et al., 2005). In summary, this study adds to the small body of existing literature concerning AC, and provides understanding about the social-ecological influences on this behavior beyond the individual.

2) Journey to Work by Public Transit and Objective Measures of Physical Activity in the Neighborhood Quality of Life Study (NQLS): Where You Live, Where You Work and How You Get There

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Background:
Many public transit users achieve physical activity recommendations by walking to and from transit.

Objectives:
This paper analyses the relationship between commuting by transit and objectively measured physical activity in different types of neighborhoods with contrasting development patterns. Self-reported numbers of walking trips from home and from work are compared between transit users and non-users to explore the mechanisms associated with more physical activity.

Methods:
This cross-sectional analysis relied on the Neighborhood Quality of Life Study (NQLS, 2001-2005), a community observational study sampled across four types of neighborhood in Seattle-King County and Baltimore-Washington DC regions. Neighborhoods either had high or low median income and high or low walkability (n=4 neighborhood types X 8 neighborhoods per category=32). Within neighborhoods, adults between age 20 and 65 were randomly selected from lists obtained from marketing companies. Those working outside of home were considered in this analysis (n=1239). Mean daily accelerometer-defined minutes of moderate to vigorous physical activity (MVPA) were regressed on frequent, infrequent and no commute by transit and neighborhood walkability and income in a model adjusting for individual demographic correlates and enjoyment of physical activity. Neighborhood random effects are used to adjust for clustering of respondents within neighborhoods. Models stratified by neighborhood walkability assessed whether the effect of commuting by transit on MVPA varied depending on community design factors. To understand the mechanism behind these relationships, associations between transit use and self-reported number of walking trips to various destinations near home and workplace are examined using chi square tests. Associations are not tested in a regression model because the direction of causality is not assumed.

Results:
A positive relationship between commute by transit and MVPA was found, when controlling for neighborhood walkability and individual-level socio-demographic covariates. Both in high and low neighborhood walkability, those commuting by transit, either frequently or infrequently, cumulated more MVPA, and engaged in more walk trips both near home and near the workplace than non-users of transit. Estimated values with other variables kept constant are for example of approximately 31 min. for no transit commute in low walkability, 42 min. for frequent commute in low walkability and 50 min. for frequent commute in high walkability. Enjoyment of physical activity did

not confound the relationships and there was no evidence of a linear association between more commute by transit and greater enjoyment of physical activity. Transit users also take more walk trips to different services near home and the workplace than their non-user counter-parts, which explains their more active behavior beyond the walk to transit.

Conclusions:
This study demonstrates transit commuters do more objectively measured physical activity than non-transit commuters, adjusting for individual differences. This effect was observed regardless of neighborhood walkability and was not explained by transit users' greater enjoyment of physical activity. Public health professionals could promote transit use with individuals as a means of increasing physical activity. They could also support transit infrastructure development with policy makers as a mean of reducing negative health externalities of auto-centric urban development. Policies to create walkable environments may be more supportive of walking if public transit provides an alternative to automobile travel for activities away from home.

Support:
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3) Safe Routes for Seniors: Improving Walkability for Seniors in New York City

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Background:
Safe Routes for Seniors was initiated to improve the pedestrian environment in New York City as a means of enhancing cardio-vascular health of senior citizens, a rapidly growing population. Walking is one of the easiest, least expensive ways for people to get exercise and reduce their risk of obesity, heart disease and all-cause mortality. Often the built environment does not support walking, even in dense urban metropolitan areas, regarded as desirable places to walk because of the closeness of daily life destinations such as grocery stores, schools and public transit and ample sidewalks. In New York City, seniors suffer disproportionately from pedestrian injuries and fatalities caused by motor vehicle crashes. Seniors are 13% of the population but constitute 33% of pedestrian injuries and fatalities citywide. By 2030, the City will experience a 44.2% increase in the population of senior adult residents 65 and over, above current numbers (938,000).

Objectives:
The four major objectives of the Safe Routes for Seniors program were:

- Work directly with seniors in underserved communities to identify obstacles to walking
- Develop a set of design solutions that would remove obstacles to walking for seniors
- Advocate for and win physical changes on the street
- Advocate for local government adoption of street safety improvements targeted at seniors

Methods:
Over the past six years, Transportation Alternatives worked with senior citizens in eight New York City neighborhoods. In each community, we co-organized meetings with local partners and seniors to better understand specific, local obstacles to walking. Common concerns emerged, such as not having enough time to cross the street during the walk cycle or turning vehicles not yielding. Seniors helped document dangerous walking conditions using maps, measuring wheels, stop watches and disposable cameras. Our presentations and focus groups included a mini-training session on how traffic-calming works and its importance. Each workshop included a survey about the most common destinations for senior citizens. For most neighborhoods, we developed design recommendations to address senior pedestrian needs.

Results:
Common concerns about walking emerged from surveys and workshops. Seniors are very compliant pedestrians; they often cross the street with the walk signal and in the crosswalk. However traffic control devices often inadequately support senior pedestrian needs. For example, there is frequently not enough time for a senior to cross the street because traffic signals are timed for a pedestrian walking at 4 feet per second. Our research found that on average seniors walk at 2.5 feet per second. Another common example is that turning vehicles often do not yield to senior pedestrians in the crosswalk.

There are common design solutions to each of the concerns. They are listed below.

Type of Pedestrian Improvement - Number Installed:
ADA-compliant Curb Cut - 21
Bus stop (new) - 09
Stop Bar - 03
Daylighting - 02
School Crossing Signs - 04
Pedestrian Crossing Signs - 05
Leading Pedestrian Interval - 08
Barnes Dance - 01
Bus Bulb - 01
New Pedestrian Signal - 04
Pedestrian Space/Greenstreet - 01
Sidewalk Lighting - 05
Speed Bump - 01

TOTAL PHYSICAL IMPROVEMENTS 65

We assume that seniors living immediately adjacent to the improved intersections benefit from the physical changes because they must cross the street to visit popular daily destinations such as the grocery store or the bus stop. According to 2000 Census tract data, there is an estimated 26,913 seniors who have benefited or will benefit from the safety enhancements we advocated for. Furthermore, these changes make the streets safer for the additional tens of thousands of pedestrians who walk through these intersections every day.

Over six years, nearly 2,000 senior citizens attended our workshops and focus groups. In January 2008, the New York City Department of Transportation adopted a Safe Streets for Seniors program. The NYC DOT has committed to making senior safety improvements in 25 neighborhoods by 2010.

Conclusions:
High density, mixed-use environments with sidewalks are thought to be very walkable environments, but without additional physical traffic controls on the street such environments are not safe enough for all pedestrians. Seniors obey traffic laws as pedestrians yet they still suffer disproportionately from pedestrian severe injuries and fatalities as a result of motor vehicle crashes. The departments of transportation in municipalities have inexpensive, industry-accepted solutions to improve walking environments for senior citizens. Cities should consider adopting a Safe Routes for Seniors program which like Safe Routes for Schools would target physical improvements at a more vulnerable segment of the population as a way of encouraging physical activity.

Support:
Safe Routes for Seniors was funded for six years by the New York State Department of Health's Healthy Hearts program, a program that aims to reduce levels of cardio-vascular disease by targeting funding in prevention programs such as nutrition and physical activity.

4) If You Build It, Will They Come? The Health Impact of Constructing New Bike Lanes in New Orleans, Louisiana

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Background:
People are more physically active in neighborhoods that are well designed for biking and walking. Bicycle lanes have the potential to draw more people to be physically active and improve the safety of cyclists using the lanes. Devastation caused by Hurricane Katrina in 2005 has created a unique opportunity to rebuild New Orleans as a more bike and pedestrian friendly city. The Louisiana Department of Transportation and Development (DOTD) resurfaced three miles of state highway (St Claude Avenue) that connect four neighborhoods within Orleans and St Bernard Parishes. A local planning engineer advocated for including bike lanes in the resurfacing project and created the technical specifications for the state DOTD to use in their planning. The city Department of Public Works and the state DOTD agencies agreed to create the first exclusive use bike lane in New Orleans while resurfacing St. Claude Avenue. The bike lanes constructed extend 3 miles, are 5 feet wide and located between the parking lane and the outside travel lane. The lanes are identified with both signage and pavement markings to alert both motorists and bicyclists to their presence.

Objectives:
Determine whether construction of new bike lanes would increase the number of riders observed and improve the number of riders riding in the correct direction.

Methods:
In November of 2007 and again in November 2008, trained observers conducted manual counts of cyclists riding on St Claude Avenue in New Orleans, LA. The data collected included the number of men, women, adults and children riding a bicycle with traffic, against traffic and on sidewalks. There were 10 baseline observation days and 14 follow-up observation days. Data was gathered hourly for an eight-hour period from 8 am to 5 pm, weekdays and weekends. Cyclists were classified by age group and gender according to standard protocols. A T-test was used to test the differences between means. A p-value <0.05 was considered significant.

Results:
Baseline data showed an average of 77 male riders per day and 12 female riders per day. There were very few children observed riding at both baseline and follow up. Data showed a 57% increase in the average number of bike riders per day ($p<0.000$). There was a 133% increase among adult female riders and a 44% increase among adult male riders. The percentage of cyclists riding in the correct direction, with the flow of traffic, increased from 73% to 82% ($p<0.000$). The average number of riders during weekdays was 92 at baseline and 143 at follow up, while the average number of riders during weekend days was 86 at baseline and 140 at follow up.

Conclusions:
Bike lanes can have a positive impact in creating a healthy physical environment. There were more adults, particularly women, observed biking after the lanes were constructed. Future research should include other streets for comparison purposes and surveys to determine whether riders are substituting biking for non-active forms of transportation.

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