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Home and Workplace Built Environment Supports for Physical Activity

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Background: Physical inactivity has been associated with obesity and related chronic diseases.

Understanding built environment (BE) influences on specific domains of physical activity (PA)

around homes and workplaces is important for public health efforts and interventions to increase

population PA.

Purpose: To examine the association of home and workplace BE features with PA occurring

across specific life domains (work, leisure, and travel).

Methods: Between 2012 and 2013, telephone interviews were conducted with participants in

four Missouri metropolitan areas. Questions included sociodemographic characteristics, home

and workplace supports for PA, and dietary behaviors. Data analysis was conducted in 2013;

logistic regression was used to examine associations between BE features and domain-specific

PA.

Results: In home neighborhoods, seven of 12 BE features (availability of fruits and vegetables,

presence of shops and stores, bike facilities, recreation facilities, crime rate, seeing others active,

and interesting things) were associated with leisure PA. The global average score of home

neighborhood BE features was associated with greater odds of travel PA (AOR=1.99, 95%

CI=1.46, 2.72), leisure PA (AOR=1.84, 95% CI=1.44, 2.34), and total PA (AOR=1.41, 95%

CI=1.04, 1.92). Associations between workplace neighborhoods' BE features and workplace PA

were small, but in the expected direction.

Conclusions: This study offers empirical evidence on BE supports for domain-specific PA.

Findings suggest that diverse, attractive, and walkable neighborhoods around workplaces support

walking, bicycling, and use of public transit. Public health practitioners, researchers, and

worksite leaders could benefit by utilizing worksite domains and measures from this study for

future BE assessments.

Introduction

Physical inactivity is a primary modifiable risk factor for obesity and related chronic diseases.[1]

Evidence shows a steep rise in rates of physical inactivity among urban populations.[2] Fewer than

50% of adults and 40% of youth meet U.S. physical activity (PA) guidelines, with the built

environment (BE) identified as a reason for limited PA.[3-6]

Elements of home neighborhood BE (e.g., streets, sidewalks) have been widely investigated.[7]

However, their impact on specific domains of everyday life in which PA occurs (e.g., at work,

while travelling) needs exploration. Because adults spend about half of their waking hours at

workplaces,[8] the influence of workplace neighborhoods is potentially important. This study

examines relationships between home and workplace BE features, domain-specific PA (work,

travel, leisure), and total PA.

Methods

In 2012–2013, telephone interviews (N=2,015) were conducted with employed adults residing in

four Missouri metropolitan areas: St. Louis, Kansas City, Springfield, and Columbia. Eligibility

criteria included: (1) ability to speak English or Spanish; (2) age 21–65 years; (3) employed in at

least one occupation (20 hours/week) at a single worksite; and (4) worksite has ≥five employees.

Exclusion criteria included: (1) presence of medical condition that interferes with ability to walk;

(2) pregnancy; and (3) self-employment. Given lack of consensus on what defines a unique

neighborhood,[9] census tracts were used as the primary definition. Two samples were drawn: a (1)

representative sample, with oversampling of census tracts in small metropolitan areas; and (2)

high-density/minority sample drawn from census tracts with high population density and high

minority population (% African American, % Hispanic). Detailed study design, participant

recruitment, and sociodemographic characteristics (Appendix Table 1) have been described in

supplementary text and related studies.[10, 11] The IRBs of Washington University in St. Louis and

University of Missouri-Columbia approved study procedures.

Twelve items from the Physical Activity Neighborhood Environment Survey (PANES)[12] (Table

1) were used to measure BE features around homes and workplaces. Items were identical across

both neighborhoods. Reliability of items has been previously established, with reliability

coefficients above 0.60.[10] Four-point Likert scale response options ranging from 1 (strongly

agree) to 4 (strongly disagree) were combined as "agree" (*strongly agree*, *agree*) and "disagree"

(*disagree*, *strongly disagree*). A global average score for home and workplace neighborhood BE

features was constructed using Likert scale responses from all 12 items.

In 2013, a series of multiple logistic regressions were used to identify BE predictors of meeting

CDC-recommended levels (≥150 minutes/week) for work, travel, leisure, and total PA

(dichotomous outcomes) using SPSS, version 21 (IBM Corp., Armonk NY). Pairwise

interactions between PANES items and interactions between home and workplace global average

scores were tested. Physical activity was measured with the International Physical Activity Questionnaire (IPAQ).[13] Models were adjusted for age, sex, race, education, and income. Descriptive statistics (Appendix Tables 2–4) and details on data analysis are provided in the supplementary text.

Results

In home neighborhoods, seven of 12 BE features (availability of fruits and vegetables, presence of shops and stores, bike facilities, recreation facilities, crime rate, seeing others active, and interesting things to look at) were associated with leisure PA (Table 1). Six home neighborhood BE features significantly predicted travel PA. Except for crime, no clear associations of individual home neighborhood BE features with workplace PA or total PA were observed. The global average score of home neighborhood BE features predicted significant increases in adjusted odds of engagement in travel PA (AOR=1.99, 95% CI=1.46, 2.72), leisure PA (AOR=1.84, 95% CI=1.44, 2.34), and total PA (AOR=1.41, 95% CI=1.04, 1.92).

A smaller number of associations between workplace neighborhood BE features and workplace PA were significant. Three of 12 workplace neighborhood BE features (bike facilities, interesting things to look at, and crime rate) significantly predicted workplace PA (Table 2). Although other workplace BE features were not significant, overall adjusted odds of engagement in workplace PA were in the expected direction. Certain BE features in workplace neighborhoods (e.g.,

healthy restaurants, bicycle and recreation facilities) significantly supported travel and leisure PA. Bike facilities and presence of interesting things in workplace neighborhoods were significantly associated with PA across all domains. Sidewalks and walkable access to transit were significantly associated with total PA around workplaces.

Similar to home neighborhoods, global average score of workplace BE features was associated with travel PA (AOR=2.13, 95% CI=1.62, 2.80), leisure PA (AOR=1.34, 95% CI=1.09, 1.64), and total PA (AOR=1.30, 95% CI=1.00, 1.68). However, the association between global average score of workplace neighborhood supports with workplace PA was weak and insignificant (AOR=1.01, 95% CI=0.82, 1.25). No significant interactions (pairwise, global average scores) were found between home and workplace BE features.

Discussion

This study is among the first to examine associations between home and workplace BE features (individual, global average) and PA domains around homes and workplaces. Previous studies have demonstrated significant associations between individual BE features and total PA,[14-16] predominantly in home neighborhoods.

The presence of physically active people and interesting things around homes improved odds of leisure and travel PA. Three BE features around workplaces (presence of shops and stores, bicycle facilities, and recreation facilities) were associated with travel PA, implying higher

engagement in active travel. Bicycling facilities around workplaces increased odds of

engagement in travel PA. Interesting things around workplaces resulted in a greater likelihood of

engagement in PA across all domains. Around workplaces, public transit access and presence of

sidewalks were significantly associated with total PA, while healthy restaurants promoted leisure

and travel PA. These associations imply diverse, attractive, and walkable workplace

neighborhoods can serve as incentives for walking, bicycling, and active commuting.

Cumulatively, BE features predicted increased odds of travel, leisure, and total PA around homes

and workplaces, providing additional evidence of BE supports for specific PA domains.

Crime is a frequently cited barrier to PA.[17] However, its association with PA was inconsistent in

this analysis. Previous studies have yielded similar inconclusive results acknowledging that the

impact of perceived safety from crime on walking in residential neighborhoods needs careful

examination.[14, 17] This may relate to the complexity of measuring crime (e.g., time of occurrence,

people's perceptions, and coping mechanisms influence PA differently).[14]

The cross-sectional study design limits causal inference.[18] Certain census tracts were

oversampled to increase variability by race/ethnicity and walkability, but this was not adjusted

for in statistical models. Self-reported PA and neighborhood measures are subject to bias (e.g.,

social desirability of PA; physically active people may notice more neighborhood destinations).

Another limitation of this study and PA literature in general is a lack of consensus on measuring

workplace PA (e.g., lack of tested items, inadequate details on types of workplace PA).[19, 20] The

IPAQ measure of workplace PA is meant to capture only work-related PA.[21, 22] However,

without a clear description of workplace PA, study participants could be reporting time spent in

PA during work hours (e.g., walking or bicycling to a restaurant during lunch) as workplace,

leisure, or travel PA.

Data on BE characteristics to support PA across specific domains (work, travel, and leisure)

provide information to guide design decisions for healthy living around homes and

workplaces.[23, 24] Addition of key worksite domains can guide the development of objective

measures of worksite PA to explore combined effects of BE around homes and workplaces.

Additional research is needed to advance measurement and evaluation of workplace PA.

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Acknowledgements

References

1.   Brownson RC, Hoehner CM, Day K, Forsyth A, Sallis JF. Measuring the built environment for physical activity: state of the science. Am J Prev Med 2009;36(4S):S99–123.e12.

2.   Guthold R, Ono T, Strong KL, Chatterji S, Morabia A. Worldwide variability in physical inactivity a 51-country survey. Am J Prev Med 2008;34(6):486–94.

3.   CDC. Division of Nutrition, Physical Activity and Obesity. 2009. www.cdc.gov/nccdphp/dnpa/index.htm.

4.   Saelens BE, Sallis JF, Frank LD. Environmental correlates of walking and cycling: Findings from the transportation, urban design and planning literatures. Ann Behav Med 2003;25(2):80–91.

5.   Saelens BE, Handy SL. Built environment correlates of walking: a review. Med Sci Sports Exerc 2008;40(7S):S550–66.

6.   Heath GW, Brownson RC, Kruger J, Miles R, Powell KE, Ramsey LT. The effectiveness of urban design and land use and transport policies and practices to increase physical activity: A systematic review. J Phys Act Health 2006;3 (Suppl 1):S55–76.

7.   Kaczynski AT, Henderson KA. Environmental correlates of physical activity: a review of evidence about parks and recreation. Leis Sci 2007;29(4):315–54.

8.   U.S. Bureau of Labor Statistics. American Time Use Survey, 2013. http://www.bls.gov/tus/

9.   Foster KA, Hipp JA. Defining Neighborhood Boundaries for Social Measurement: Advancing Social Work Research. Soc Work Res 2011;35(1):25–35.

10.   Hoehner CM, Budd EL, Marx CM, Dodson EA, Brownson RC. Development and

reliability testing of the Worksite and Energy Balance Survey. J Public Health Manag Pract

2013;19(3 Suppl 1):S105–13.

11.   Patterson RE, Colditz GA, Hu FB, et al. The 2011-2016 Transdisciplinary Research on

Energetics and Cancer (TREC) initiative: rationale and design. Cancer Causes Control

2013;24(4):695–704.

12.   Sallis JF, Kerr J, Carlson JA, et al. Evaluating a brief self-report measure of neighborhood

environments for physical activity research and surveillance: Physical activity

neighborhood environment scale (PANES). J Phys Act Health 2010;7(4):533–40.

13. IPAQ. International physical activity questionnaires. IPAQ: short last 7 days telephone

format. http://www.ipaq.ki.se/questionnaires/IPAQ_SHORT_LAST_7_TELEPHONE-

revised_8-23-02.doc

14.   Ding D, Adams M, Sallis J, et al. Perceived neighborhood environment and physical

activity in 11 countries: Do associations differ by country? Int J Behav Nutr Phys Act

2013; 10:57. doi: 10.1186/1479-5868-10-57.

15.   Adams M, Ding D, Sallis J, et al. Patterns of neighborhood environment attributes related

to physical activity across 11 countries: a latent class analysis. Int J Behav Nutr Phys Act

2013; 10:34. doi: 10.1186/1479-5868-10-34.

16.   Moore K, Diez Roux AV, Auchincloss A, et al. Home and work neighbourhood

environments in relation to body mass index: the Multi-Ethnic Study of Atherosclerosis

(MESA). J Epidemiol Community Health 2013;67(10):846–53.

17. Foster S, Giles-Corti B. The built environment, neighborhood crime and constrained physical activity: an exploration of inconsistent findings. Prev Med 2008;47(3):241–51.

18. Glass TA, Goodman SN, Hernan MA, Samet JM. Causal inference in public health. Annu Rev Public Health 2013;34:61–75.

19. Steele R, Mummery K. Occupational physical activity across occupational categories. J Sci Med Sport 2003;6(4):398–407.

20. Wood TM. Issues and Future Directions in Assessing Physical Activity: An Introduction to the Conference Proceedings. Research Q for Exerc Sport 2000;71(2):ii–iv.

21. Hagströmer M, Oja P, Sjöström M. The International Physical Activity Questionnaire (IPAQ): a study of concurrent and construct validity. Public Health Nutr 2006;9(06):755–62.

22. Alexander A, Bergman P, Hagstromer M, Sjostrom M. The IPAQ environmental module (Reliability testing). J Publ Health 2006;14(2):76–80.

23. Brownson RC, Boehmer TK, Luke DA. Declining rates of physical activity in the United States: what are the contributors? Annu Rev Publ Health 2005;26:421–43.

24. Frank L, Sallis J, Conway T, Chapman J, Saelens B, Bachman W. Many pathways from land use to health: Associations between neighbourhood walkability and active transportation, body mass index, and air quality. J Am Plann Assoc 2006;72(1):75–87.

Table 1. Home neighborhood predictors of meeting CDC recommended levels of work, travel, leisure, and total PA

Variable	Work PA[a] (aOR[b], 95% CI[c])	Travel PA (aOR, 95% CI)	Leisure PA (aOR, 95% CI)	Total PA (aOR, 95% CI)
Large selection of fresh fruits and vegetables	1.06 (0.84-1.35)	1.27 (0.94-1.72)	1.33* (1.05-1.68)	1.23 (0.92-1.63)
Opportunities to purchase fast food	0.77 (0.58-1.02)	1.20 (0.85-1.70)	0.92 (0.70-1.21)	0.77 (0.55-1.09)
Presence of healthy restaurants	0.99 (0.80-1.22)	1.28 (0.98-1.68)	1.12 (0.91-1.39)	1.10 (0.84-1.43)
10-15 minute walk to a transit stop	0.89 (0.70-1.13)	1.06 (0.78-1.45)	1.01 (0.80-1.28)	0.90 (0.66-1.22)
Sidewalks on most streets	0.94 (0.72-1.23)	1.61* (1.11-2.34)	1.23 (0.95-1.59)	1.01 (0.73-1.40)
Shops, stores, or markets	1.08 (0.89-1.32)	1.33* (1.03-1.71)	1.22* (1.01-1.48)	1.16 (0.91-1.49)
Facilities to bicycle	0.90 (0.71-1.09)	1.31* (1.02-1.67)	1.27* (1.05-1.53)	1.09 (0.86-1.39)
Recreation facilities	1.06 (0.84-1.34)	1.46* (1.08-1.97)	1.27* (1.02-1.59)	1.27 (0.96-1.67)
Crime rate makes it unsafe to walk	0.80* (0.64-0.98)	0.99 (0.76-1.27)	1.25* (1.02-1.54)	1.05 (0.81-1.36)
Traffic makes it difficult to walk	0.80 (0.63-1.03)	0.94 (0.70-1.25)	1.23 (0.97-1.56)	1.04 (0.73-1.41)
See people being physically active	1.03 (0.82-1.30)	1.51* (1.13-2.03)	1.59* (1.27-2.00)	1.24 (0.94-1.64)
Interesting things to look at	0.95 (0.77-1.17)	1.31* (1.01-1.70)	1.68* (1.37-2.07)	1.18 (0.92-1.53)
Global Average Home Neighborhood Score	**0.91 (0.71-1.16)**	**1.99* (1.46-2.72)**	**1.84* (1.44-2.34)**	**1.41* (1.04-1.92)**

*denotes statistical significance at p<0.05
[a] Physical Activity
[b] Adjusted Odds Ratios; adjusted for age (continuous), and sex, race, education, income (all categorical).
[c] Confidence Interval
n range: 1784-1862

Table 2. Workplace neighborhood predictors of meeting CDC recommended levels of work, travel, leisure, and total PA

Variable	Work PA[a] (aOR[b], 95% CI[c])	Travel PA (aOR, 95% CI)	Leisure PA (aOR, 95% CI)	Total PA (aOR, 95% CI)
Large selection of fresh fruits and vegetables	1.16 (0.95-1.43)	1.22 (0.95-1.57)	1.23* (1.01-1.50)	1.08 (0.84-1.39)
Opportunities to purchase fast food	0.87 (0.69-1.10)	0.85 (0.63-1.15)	1.01 (0.81-1.27)	1.17 (0.86-1.58)
Presence of healthy restaurants	0.98 (0.79-1.22)	1.53* (1.16-2.02)	1.26* (1.02-1.55)	1.05 (0.83-1.38)
10-15 minute walk to a transit stop	1.21 (0.94-1.56)	1.34 (0.96-1.87)	1.27 (0.99-1.62)	1.36* (1.01-1.84)
Sidewalks on most streets	1.10 (0.88-1.38)	1.30 (0.97-1.74)	1.21 (0.97-1.51)	1.38* (1.05-1.81)
Shops, stores, or markets	1.05 (0.86-1.27)	1.51* (1.19-1.93)	1.14 (0.94-1.38)	1.16 (0.92-1.48)
Facilities to bicycle	1.29* (1.06-1.57)	1.63* (1.28-2.07)	1.33* (1.10-1.61)	1.54* (1.20-1.98)
Recreation facilities	1.15 (0.94-1.40)	1.60* (1.25-2.05)	1.25* (1.03-1.51)	1.20 (0.94-1.53)
Crime rate makes it unsafe to walk	0.76* (0.60-0.96)	1.06 (0.80-1.40)	1.19 (0.96-1.49)	0.92 (0.69-1.22)
Traffic makes it difficult to walk	0.90 (0.74-1.10)	1.15 (0.91-1.47)	1.16 (0.96-1.41)	1.02 (0.80-1.31)
See people being physically active	1.14 (0.94-1.40)	1.44* (1.21-1.86)	1.22* (1.01-1.49)	1.18 (0.92-1.51)
Interesting things to look at	1.22* (1.00-1.59)	1.90* (1.47-2.45)	1.21* (1.00-1.46)	1.33* (1.05-1.70)
Global Average Workplace Neighborhood Score	**1.01 (0.82-1.25)**	**2.13* (1.62-2.80)**	**1.34* (1.09-1.64)**	**1.30* (1.00-1.68)**

*denotes statistical significance at p<0.05

[a] Physical Activity

[b] Adjusted Odds Ratios; adjusted for age (continuous), and sex, race, education, income (all categorical).

[c] Confidence Interval

n range: 1708-1864

Appendix

Methods

Study Design and Participant Recruitment

Participants were from the Worksite Policies and Neighborhood Influence on Obesity and Cancer Risk study, which is a cross-sectional study designed to understand the environmental and worksite policy influences on employees' obesity status. Study size was determined by calculating statistical power for varying anticipated effect sizes ($r = 0.3$ (medium) - 0.5 (large)) and sample sizes ($n = 500$ to 2000), as recommended for studies of this nature.[25, 26] Participants were recruited using list-assisted telephone random-digit-dialing methods and a total of 2015 participants completed a self-report survey over the telephone.

Survey Development

The telephone survey instrument developed for this study was based on existing self-reported and environmental assessment instruments, and input from a special Questionnaire Advisory Panel (QAP) that included six external researchers and two practitioners with expertise in survey development, nutrition/food environment, physical activity, transportation, and worksite environmental intervention. The survey was edited following their review. Next, volunteers who were representative of the participant population were recruited by telephone from a research registry for cognitive response testing of the survey. Twelve participants consented and participated in telephone interviews with two trained project staff (mean administration time, 53 minutes; range, 37-66 minutes). Cognitive response testing findings led to changes in the interviewer script and instructions to enhance participants' understanding of question intent.

Physical Activity Assessment

Selected questions from the International Physical Activity Questionnaire (IPAQ)[13] were
administered as part of the telephone survey to collect participants' self-reported physical
activity, specifically the frequency and duration of occupational and leisure-time physical
activities. The IPAQ has been extensively tested internationally for reliability (Spearman's rho
clustered ~0.8) and validated with objective measures (median rho ~0.3), which are comparable
to most other self-reported validation studies.[27]

Data Analysis

A series of 26 multiple logistic regressions were conducted using Statistical Package for the
Social Sciences (SPSS) version 21 to identify BE predictors of meeting CDC recommended
levels ($\geq$150 minutes/ week) for work, travel, leisure-time, and total PA (dichotomous
outcomes). One multiple logistic regression for each of the 12 items in the Physical Activity
Neighborhood Environment Survey (PANES) in the home neighborhood and one for each of the
12 PANES items in the work neighborhood was conducted. Two multiple logistic regressions
tested global average neighborhood scores (obtained from PANES) for both home and workplace
neighborhoods. In addition, we also used logistic regression with an interaction term and 95%
confidence interval to test pairwise interactions between PANES items as well as interaction
between global average neighborhood scores for both home and workplace neighborhoods. SPSS
removes missing values in a list wise manner, leaving only cases with all variable data in the
final regression model. All models were adjusted for individual covariates such as age, sex, race,
education, and income. Among these control variables, age was treated as a continuous variable

and the other variables (sex, race, education, and income) were categorical variables. Each

variable used in this analysis had a response rate greater than 93.5%. Age, sex, race, education,

income, and items from PANES were compared for participants missing and not missing the PA

outcome variables using independent samples t-tests. There were no significant differences

between these groups.

References

1. Cohen J. Statistical Power Analysis for the Behavioral Sciences. 2nd ed. L. Erlbaum

   Associates, 1988.

2. Cohen J. A power primer. Psychol Bull 1992;112(1):155–9.

3. IPAQ. International physical activity questionnaires. IPAQ: short last 7 days telephone

   format. http://www.ipaq.ki.se/questionnaires/IPAQ_SHORT_LAST_7_TELEPHONE-

   revised_8-23-02.doc

4. Craig CL, Marshall AL, Sjostrom M, et al. International physical activity questionnaire: 12-

   country reliability and validity. Med Sci Sports Exerc 2003;35(8):1381–95.

Appendix Table 1. Descriptive statistics of sample population

Variable	n	%	Mean	Median	SD
Age (continuous)	1995	-	48.15	49.00	18.37
Sex	2013	99.90	0.32	0.00	0.47
Female	1361	67.50			
Male	652	32.40			
Race	2015	100.00	1.46	1.00	0.64
White	1250	62.00			
African American	601	29.80			
Other	164	8.10			
Education	2008	99.70	2.51	3.00	1.05
Grade school or high school	447	22.20			
College or associate degree	513	25.50			
College graduate	634	31.50			
Graduate degree	414	20.50			
Income	1886	93.60	1.79	2.00	0.41
$0K-$29,000	391	19.40			
$>29,000-$75000	1495	74.20			

Appendix Table 2. Descriptive statistics of sample population meeting and those not meeting
CDC recommended levels of work, travel, leisure, and total PA

Variable	n	%
Work PA	1950	100.0
Meeting CDC guidelines	990	50.8
Not meeting CDC guidelines	960	49.2
Travel PA	1995	100.0
Meeting CDC guidelines	386	19.3
Not meeting CDC guidelines	1609	80.7
Leisure PA	1990	100.0
Meeting CDC guidelines	951	47.8
Not meeting CDC guidelines	1039	52.2
Total PA	1922	100.0
Meeting CDC guidelines	1556	81.0
Not meeting CDC guidelines	366	19.0

Appendix Table 3. Descriptive statistics of home neighborhood healthy eating and physical activity features

Variable	n	%
Large selection of fresh fruits and vegetables	1998	100.0
Agree	1584	79.3
Disagree	414	20.7
Opportunities to purchase fast food	2006	100.0
Agree	271	13.5
Disagree	1735	86.5
Presence of healthy restaurants	1997	100.0
Agree	1416	70.9
Disagree	581	29.1
10-15 minute walk to a transit stop	1970	100.0
Agree	1554	78.9
Disagree	416	21.1
Sidewalks on most streets	2011	100.0
Agree	1691	84.1
Disagree	320	15.9
Shops, stores, or markets	2007	100.0
Agree	1220	60.8
Disagree	787	39.2
Facilities to bicycle	2001	100.0
Agree	1156	57.8
Disagree	845	42.2
Recreation facilities	2007	100.0
Agree	1545	77.0
Disagree	462	23.0
Crime rate makes it unsafe to walk	1966	100.0
Agree	1260	64.1
Disagree	706	35.9
Traffic makes it difficult to walk	2003	100.0
Agree	1587	79.2
Disagree	416	20.8
See people being physically active	2006	100.0
Agree	1534	76.5
Disagree	472	23.5
Interesting things to look at	1995	100.0
Agree	1302	65.3
Disagree	693	34.7

Appendix Table 4. Descriptive statistics of workplace neighborhood healthy eating and physical activity features

Variable	n	%
Large selection of fresh fruits and vegetables	2014	100.0
Agree	845	42.0
Disagree	1169	58.0
Opportunities to purchase fast food	2000	100.0
Agree	436	21.8
Disagree	1564	78.2
Presence of healthy restaurants	1989	100.0
Agree	1425	71.6
Disagree	564	28.4
10-15 minute walk to a transit stop	1945	100.0
Agree	1583	81.4
Disagree	362	18.6
Sidewalks on most streets	1999	100.0
Agree	1528	76.4
Disagree	471	23.6
Shops, stores, or markets	2004	100.0
Agree	1035	51.6
Disagree	969	48.4
Facilities to bicycle	1958	100.0
Agree	934	47.7
Disagree	1024	52.3
Recreation facilities	1940	100.0
Agree	1067	55.0
Disagree	873	45.0
Crime rate makes it unsafe to walk	1923	100.0
Agree	1448	75.3
Disagree	475	24.7
Traffic makes it difficult to walk	1988	100.0
Agree	1142	57.4
Disagree	846	42.6
See people being physically active	1987	100.0
Agree	1221	61.4
Disagree	766	38.6
Interesting things to look at	1984	100.0
Agree	1151	58.0
Disagree	833	42.0