

ACTIVITY SPACE DESTINATIONS

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Supplemental Tables

Table S1: Classification of destinations using North American Industry Classification System (NAICS) codes into 16 mutually exclusive categories.

Destination Measure	NAICS Codes
Ambulatory health care services	621111, 621112, 621210, 621310, 621320, 621330, 621340, 621391, 621399, 621493, 621498, 621999
Banks/credit unions	522110, 522120, 522130
Community center/neighborhood house	624120, 624190
Convenience stores	445120, 447110
Entertainment	512131, 711110, 711120, 711130, 711190
Food stores	445110, 445210, 445220, 445230, 445299
Gyms and fitness centers	713940
Library	519120
Malls	531120
Museum	712110
Nature/parks/botanical gardens	712130, 712190
Pharmacies/drug stores/personal care	446110, 446120, 446130, 446191, 446199
Religious organizations	813110
Restaurants	722511, 722513, 722514, 722515
Retail shopping	443142, 444130, 448110, 448120, 448130, 448140, 448150, 448190, 448210, 448310, 448320, 451110, 451120, 451130, 451140, 451211, 451212, 452111, 452112, 452990, 453210, 453220, 453310
Services	453110, 812111, 812112, 812113, 812310, 812320, 812921, 812922
Total	All 16 categories together

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Table S2: Density (count/km²) and diversity of destinations^a for two alternate types of activity spaces.

Destination Measure	Standard Deviation Ellipse ^b Median (IQR)	Minimum Convex Polygon Median (IQR)
Densities (count/km ²)		
Ambulatory health care services	11.88 (20.39)	11.98 (16.93)
Banks/credit unions	0.97 (1.41)	1.14 (1.42)
Community center/ neighborhood house	1.34 (2.11)	1.61 (2.85)
Convenience stores	0.15 (0.24)	0.15 (0.23)
Entertainment	0.32 (0.93)	0.42 (0.92)
Food stores	3.05 (4.22)	3.02 (4.49)
Gyms and fitness centers	0.84 (1.25)	1.08 (1.32)
Library	0.08 (0.24)	0.09 (0.23)
Malls	0.06 (0.33)	0.16 (0.41)
Museum	0.02 (0.25)	0.06 (0.35)
Nature/parks/botanical gardens	0.01 (0.12)	0.02 (0.13)
Pharmacies/drug stores/personal care	2.81 (4.17)	3.19 (3.48)
Religious organizations	1.49 (2.02)	1.58 (2.73)
Restaurants	11.17 (16.07)	12.08 (19.00)
Retail shopping	8.81 (17.10)	11.53 (19.79)
Services	5.82 (8.73)	6.48 (8.30)
Total	49.98 (88.28)	60.49 (79.37)
Diversity (number destination types) ^c	13.74 (3.05)	14.53 (2.41)

IQR = Interquartile Range

^aDestinations classified using North American Industry Classification System (NAICS) codes

^bOne standard deviation ellipse

^cMean and standard deviation rather than median and IQR

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Table S3: Correlation between destination densities^a and diversity in different types of neighborhoods.

	Activity Spaces with Traditional Buffers ^b		All Mode Activity Spaces with Pedestrian and Bicycle Activity Spaces ^c	Traditional Buffers with each other ^d
	400-m buffer	800-m buffer		
Densities (count/km ²)				
Ambulatory health care services	0.38	0.42	0.53	0.87
Banks/credit unions	0.18	0.20	0.36	0.71
Community center/ neighborhood house	0.44	0.51	0.59	0.81
Convenience stores	0.26	0.38	0.56	0.56
Entertainment	0.26	0.53	0.66	0.51
Food stores	0.35	0.47	0.49	0.69
Gyms and fitness centers	0.33	0.61	0.66	0.66
Library	0.36	0.37	0.49	0.64
Malls	0.31	0.50	0.60	0.53
Museum	0.36	0.44	0.60	0.59
Nature/parks/botanical gardens	0.21	0.37	0.66	0.74
Pharmacies/drug stores/personal care	0.42	0.43	0.55	0.75
Religious organizations	0.40	0.50	0.54	0.76
Restaurants	0.34	0.49	0.58	0.75
Retail shopping	0.28	0.50	0.56	0.61
Services	0.37	0.44	0.52	0.81
Total	0.40	0.49	0.57	0.86
Diversity (number destination types) ^e	0.22	0.18	0.28	0.85

^aDestinations classified using North American Industry Classification System (NAICS) codes, densities expressed as counts/km²

^bCorrelation between all mode GPS-based activity space (Daily Path Area at 200 meters) and Euclidean residential buffers (400-m buffer; 800-m buffer)

^cCorrelation between all mode GPS-based activity spaces (Daily Path Area at 200 meters) and pedestrian and bicycling GPS-based activity space

^dCorrelation between 400-m and 800-m Euclidean residential buffers

^ePearson's instead of Spearman's correlation coefficients

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Table S4: Association between destinations^a within neighborhoods and objectively measured physical activity for two alternate types of activity spaces.

Destination Measure	Standard Deviation Ellipse ^b Mean difference or OR (CL)	Minimum Convex Polygon Mean difference or OR (CL)
Total Densities (10% difference)		
Total physical activity (min/day) ^c	-0.02 (-0.23, 0.18)	-0.01 (-0.22, 0.20)
Daily step count	1.38 (-6.76, 9.51)	1.94 (-6.26, 10.13)
Meeting recommended daily steps	1.01 (1.00, 1.03)	1.02 (1.00, 1.04)
Diversity (1 additional number destination type)		
Total physical activity (min/day) ^c	-2.80 (-8.90, 3.29)	-1.12 (-8.80, 6.55)
Daily step count	-56.58 (-298.42, 185.26)	23.80 (-279.45, 327.06)
Meeting recommended daily steps	0.94 (0.78, 1.17)	1.00 (0.78, 1.39)

CL = 95% Confidence Limits

* = p<0.1; ** = p<0.05

^aDestinations classified using North American Industry Classification System (NAICS) codes

^bOne standard deviation ellipse

^cActiGraph accelerometry (GT3X+, 60s epoch); includes both light physical activity (100-1951 counts per minute) and moderate-to-vigorous physical activity (≥ 1952 counts per minute) (Freedson, Melanson, & Sirard, 1998)

ACTIVITY SPACE DESTINATIONS

Table S5: Association between destination densities^a within neighborhoods and total physical activity^b.

Destination Measure	Traditional Residential Buffers		GPS-Defined Activity Spaces			
	400-m Buffer ^c	800-m Buffer ^c	Standard Deviation Ellipse ^d	Minimum Convex Polygon	Daily Path Area ^e	Daily Path Area (Ped/Bike) ^e
	Mean difference (CL)	Mean difference (CL)	Mean difference (CL)	Mean difference (CL)	Mean difference (CL)	Mean difference (CL)
Densities (10% difference)						
Ambulatory health care services	0.02 (-0.04, 0.07)	0.02 (-0.06, 0.09)	-0.05 (-0.21, 0.11)	-0.02 (-0.24, 0.20)	0.06 (-0.83, 0.96)	0.05 (-0.05, 0.15)
Banks/credit unions	-0.01 (-0.07, 0.05)	0.02 (-0.04, 0.08)	-0.05 (-0.16, 0.07)	0.05 (-0.09, 0.20)	0.21 (-0.82, 1.24)	0.08 (0.01, 0.14)**
Community center/neighborhood house	-0.01 (-0.07, 0.04)	0.01 (-0.06, 0.07)	0.00 (-0.15, 0.14)	0.04 (-0.13, 0.21)	-0.02 (-0.26, 0.21)	0.03 (-0.05, 0.11)
Convenience stores	0.00 (-0.07, 0.07)	0.04 (-0.02, 0.10)	-0.03 (-0.11, 0.04)	-0.02 (-0.11, 0.08)	-0.02 (-0.10, 0.07)	0.06 (0.00, 0.12)*
Entertainment	-0.01 (-0.09, 0.07)	0.02 (-0.04, 0.07)	-0.02 (-0.10, 0.07)	0.00 (-0.11, 0.11)	0.04 (-0.10, 0.17)	0.05 (-0.01, 0.11)
Food stores	-0.02 (-0.08, 0.04)	0.08 (-0.01, 0.17)	-0.06 (-0.20, 0.08)	0.00 (-0.23, 0.23)	0.29 (-0.66, 1.24)	0.04 (-0.04, 0.12)
Gyms and fitness centers	-0.02 (-0.08, 0.03)	0.01 (-0.06, 0.08)	-0.06 (-0.18, 0.07)	-0.05 (-0.23, 0.12)	-0.09 (-0.34, 0.15)	0.02 (-0.04, 0.09)
Library	0.01 (-0.07, 0.08)	0.04 (-0.02, 0.10)	0.03 (-0.04, 0.10)	0.04 (-0.05, 0.12)	-0.02 (-0.12, 0.07)	0.06 (0.00, 0.12)**
Malls	-0.05 (-0.14, 0.05)	0.04 (-0.02, 0.10)	-0.02 (-0.09, 0.04)	-0.02 (-0.09, 0.06)	-0.02 (-0.10, 0.06)	0.01 (-0.05, 0.07)
Museum	-0.05 (-0.17, 0.06)	-0.02 (-0.09, 0.06)	-0.02 (-0.08, 0.05)	-0.02 (-0.08, 0.05)	-0.03 (-0.10, 0.03)	-0.02 (-0.09, 0.05)
Nature/parks/botanical gardens	-0.03 (-0.12, 0.06)	0.01 (-0.07, 0.09)	-0.03 (-0.10, 0.03)	-0.03 (-0.10, 0.04)	-0.06 (-0.12, 0.00)*	-0.04 (-0.12, 0.03)
Pharmacies/drug stores/personal care	-0.04 (-0.09, 0.02)	0.02 (-0.04, 0.09)	-0.06 (-0.20, 0.08)	-0.01 (-0.23, 0.22)	0.14 (-0.84, 1.11)	0.02 (-0.07, 0.10)
Religious organizations	0.04 (-0.02, 0.10)	0.00 (-0.09, 0.10)	-0.02 (-0.13, 0.08)	0.05 (-0.10, 0.19)	0.30 (-0.89, 1.50)	-0.01 (-0.08, 0.07)
Restaurants	0.00 (-0.06, 0.06)	0.08 (-0.01, 0.18)	-0.05 (-0.21, 0.11)	0.01 (-0.21, 0.22)	0.16 (-0.68, 0.99)	0.06 (-0.04, 0.16)
Retail shopping	0.00 (-0.06, 0.06)	0.00 (-0.12, 0.11)	-0.06 (-0.22, 0.10)	-0.01 (-0.23, 0.21)	-0.03 (-0.79, 0.73)	0.01 (-0.08, 0.11)
Services	-0.01 (-0.08, 0.05)	0.11 (0.01, 0.21)**	-0.06 (-0.23, 0.10)	-0.01 (-0.23, 0.22)	0.10 (-0.85, 1.05)	0.03 (-0.08, 0.14)

CL = 95% Confidence Limits

* = p<0.1; ** = p<0.05

^aDestinations classified using North American Industry Classification System (NAICS) codes. Estimates are for a 10% difference.

^bActiGraph accelerometry (GT3X+, 60s epoch); includes both light physical activity (100-1951 counts per minute) and moderate-to-vigorous physical activity (≥1952 counts per minute) (Freedson et al., 1998)

^cEuclidean residential buffers

^dOne standard deviation ellipse

^eTrip-based lines buffered 200 meters

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Table S6: Association between destination densities^a within neighborhoods and daily steps.

Destination Measure	Traditional Residential Buffers		GPS-Defined Activity Spaces			
	400-m Buffer ^b	800-m Buffer ^b	Standard Deviation Ellipse ^c	Minimum Convex Polygon	Daily Path Area ^d	Daily Path Area (Ped/Bike) ^d
	Mean difference (CL)	Mean difference (CL)	Mean difference (CL)	Mean difference (CL)	Mean difference (CL)	Mean difference (CL)
Ambulatory health care services	1.19 (-1.10, 3.49)	1.21 (-1.81, 4.24)	0.18 (-6.13, 6.49)	2.05 (-6.57, 10.68)	26.43 (-8.35, 61.22)	3.72 (-0.35, 7.80)*
Banks/credit unions	0.06 (-2.23, 2.34)	0.81 (-1.57, 3.19)	0.53 (-4.13, 5.19)	1.41 (-4.34, 7.17)	37.16 (-2.66, 76.99)*	3.10 (0.44, 5.75)**
Community center/ neighborhood house	-0.06 (-2.29, 2.16)	0.12 (-2.45, 2.69)	-0.44 (-6.11, 5.24)	1.59 (-5.20, 8.37)	1.50 (-7.70, 10.71)	1.98 (-1.19, 5.15)
Convenience stores	0.79 (-2.05, 3.64)	2.20 (-0.09, 4.49)*	-0.61 (-3.60, 2.38)	0.91 (-2.84, 4.66)	0.50 (-2.87, 3.87)	3.26 (0.79, 5.74)**
Entertainment	0.68 (-2.47, 3.83)	0.78 (-1.56, 3.13)	1.32 (-2.01, 4.64)	0.95 (-3.26, 5.17)	1.68 (-3.59, 6.96)	2.10 (-0.44, 4.64)
Food stores	-0.20 (-2.52, 2.12)	3.28 (-0.41, 6.98)*	-1.69 (-7.26, 3.87)	1.97 (-7.04, 10.97)	24.89 (-12.18, 61.96)	2.14 (-1.20, 5.49)
Gyms and fitness centers	0.56 (-1.60, 2.71)	1.37 (-1.29, 4.03)	-1.67 (-6.75, 3.41)	-0.02 (-7.01, 6.98)	-0.24 (-9.99, 9.51)	2.51 (-0.15, 5.16)*
Library	1.23 (-1.59, 4.06)	1.56 (-0.81, 3.92)	1.54 (-1.33, 4.41)	0.39 (-3.09, 3.86)	-1.25 (-4.99, 2.50)	2.25 (-0.25, 4.76)*
Malls	-1.40 (-5.22, 2.42)	2.35 (-0.09, 4.78)*	-0.15 (-2.75, 2.45)	1.27 (-1.70, 4.25)	1.50 (-1.74, 4.74)	0.99 (-1.53, 3.51)
Museum	-1.37 (-5.83, 3.09)	-1.12 (-4.09, 1.86)	-0.70 (-3.17, 1.76)	-0.24 (-2.92, 2.45)	0.00 (-2.58, 2.57)	1.45 (-1.48, 4.38)
Nature/parks/botanical gardens	-1.33 (-4.85, 2.20)	-0.28 (-3.31, 2.75)	-0.76 (-3.45, 1.93)	0.09 (-2.61, 2.78)	-1.01 (-3.41, 1.39)	0.02 (-3.19, 3.23)
Pharmacies/drug stores/personal care	0.13 (-1.98, 2.25)	1.28 (-1.32, 3.88)	-1.25 (-6.83, 4.32)	2.27 (-6.71, 11.26)	27.94 (-10.01, 65.90)	1.76 (-1.71, 5.23)
Religious organizations	0.39 (-1.98, 2.75)	-1.33 (-5.23, 2.56)	-1.59 (-5.83, 2.64)	0.52 (-5.09, 6.13)	9.29 (-38.07, 56.64)	-0.78 (-4.02, 2.45)
Restaurants	0.74 (-1.63, 3.12)	3.53 (-0.18, 7.24)*	-0.28 (-6.57, 6.01)	2.36 (-6.15, 10.87)	22.21 (-10.47, 54.89)	3.19 (-0.85, 7.24)
Retail shopping	0.01 (-2.45, 2.47)	-1.57 (-6.10, 2.96)	-0.34 (-6.66, 5.98)	2.21 (-6.33, 10.75)	18.47 (-11.17, 48.11)	0.76 (-3.16, 4.67)
Services	1.09 (-1.43, 3.61)	4.72 (0.78, 8.66)**	-0.40 (-6.90, 6.10)	1.97 (-6.87, 10.82)	25.32 (-11.72, 62.36)	2.41 (-2.04, 6.86)

CL = 95% Confidence Limits

* = p<0.1; ** = p<0.05

^aDestinations classified using North American Industry Classification System (NAICS) codes. Estimates are for a 10% difference.^bEuclidean residential buffers^cOne standard deviation ellipse^dTrip-based lines buffered 200 meters

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