

Environmental Features of Shopping Malls and Other Public Spaces Used by Older Adults for Walking

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Introduction

Shopping malls are recommended to older adults as places ideally suited for walking, HOWEVER, there is limited research on the environmental features that contribute to their walkability, or characteristics of the walkers themselves.

Methods



Our evaluation was guided by the RE-AIM (reach, effectiveness, adoption, implementation and maintenance) framework and ecological theory.

Site Selection Criteria:

- Shopping malls and other public spaces that seniors were using for walking,
- Located in Alaska, Illinois, Missouri, Washington, & West Virginia,
- Designated walking times established outside of regular business hours,
- Primary business purpose is NOT physical activity,
- Potential to reach geographically and racially diverse seniors.

Excluded: fitness facilities and tracks.

Measures

“Above all, do not lose your desire to walk: every day I walk myself into a state of well-being and walk away from every illness...”
Soren Kierkegaard, letter to Jette (1847)

Results

Observed Environmental Features from Mall Environmental Audit (subset of HAN walking audit)

Audit Domains	Environment Features	Audit Results		
		Malls (n=10)	Other Spaces (n=6)	p-value ^a
External Environment	Public Transit Stops	100%	67%	.12
	marked walkway to entrance	50%	17%	.86
	distance in feet to entry, average (SD)	220 (230)	303 (206)	.54
	Parking Available on Site	80%	83%	.64
	well lit	70%	67%	.64
	traffic control near walkways	40%	67%	.61
Internal General	Aesthetically pleasing	30%	67%	.30
	Physical disorder ^b	40%	0%	.23
	Wayfinding aids	80%	67%	.60
	benches	100%	83%	.38
	drinking fountains (working)	50%	83%	.31
Walking Environment	handrails on stairs	50%	50%	1.0
	Restrooms Available	100%	100%	1.0
	clearly marked	100%	67%	.12
	well lit	90%	67%	.52
	clean/maintained	90%	100%	1.0
	Physical Disorder ^c	30%	33%	1.0
	Doors unlocked during non-business hours for walkers	100%	50%	.04
	Designated Walking route	50%	83%	.31
	circuit	90%	80%	1.0
	trip/fall hazards	30%	50%	.61
lighting issues along route	50%	17%	.31	
Walking Environment	structured program ^d	40%	50%	1.0
	other walkers	90%	100%	1.0
	building security visible	70%	17%	.12
	welcoming	60%	67%	1.0
	no competing use	50%	50%	1.0

Note. ^aP-value from two-sided Fisher's Exact Test (some cells were too small for chi-square test) or t-test. ^bPhysical Disorder (external) defined as graffiti; abandoned cars; broken/boarded windows; drug paraphernalia; broken glass, liquor bottles/cans; litter on mall property or walkways. ^cPhysical Disorder (internal) defined as graffiti; stores shuttered; debris or overflowing trash cans. ^dStructured program defined as a formal walking program beyond unlocked doors before business hours; could include registration, progress tracking, motivational signage, exercise stations.

Walking sites:
N=16

All sites:
public transit stops;
accessible parking;
level flooring.

Most sites (≥80%):
Circuitous route;
benches on route;
well-maintained public restrooms

Sites varied:
hours of access,
programming,
parking lot traffic control, and lighting.



Walkers:

Mall Walkers (n=443); Other Spaces Walkers (n=87)
Walkers at malls were observed to be older ($p<.001$) & more racially diverse ($p=.003$) than at non-mall sites.

Conclusions

Despite diversity in location, size, and purpose, all of the audited sites shared numerous environmental features known to promote walking in older adults and few barriers to walking.

Future research should study the impact of community interventions to encourage use of malls and other public spaces for walking.

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SOPARC WALKING ROUTE CODING FORM FOR MALLS AND OTHER INDOOR PUBLIC VENUES

Date: _____ Venue ID: _____ Observer ID: _____ Route Number: _____
Start Time: _____ End Time: _____

Age Group: Child = from infancy to 12 years of age; Teen = from 13 to 20 years of age; Adult = from 21 to 59 years of age; Senior = 60 years of age and older as seniors.
Ethnicity: White (W), Non-White (NW) [any person who appears Black, Hispanic, Asian, Alaska Native/American Indian, Other Racial or Ethnic group]
Activity Level: Sedentary (S) = lying down, sitting, or standing in place; Walking (W) = walking at a casual pace; Vigorous (V) = engaged in an activity more vigorous than an ordinary walk (e.g., increased breathing, sweating, pace is brisk or race walking; or walking with ankle or wrist weights)

Mobility aides: 1 = using an assistive device including a cane, walker, scooter, wheelchair (do NOT include trekking poles if no visible mobility impairment)

Person	Gender		Age Group				Ethnicity			Activity Level		Mobility Aid		NOTES
	Female	Male	Child	Teen	Adult	Senior	W	NW	S	W	V	Code		
1.														
2.														
3.														
4.														
5.														
6.														
7.														
8.														

System for Observing Play and Recreation in Communities tool

CDC-Healthy Aging Research Network Environmental Audit

CDC-Healthy Aging Research Network Environmental Audit (cont'd)

WALKING ENVIRONMENT

56. Do the doors unlock in doors during non-business hours for walkers? Yes No

57. If yes to previous question, please list times the site opens for walkers:

AM _____ circle days: _____ weekdays
PM _____ circle days: _____ weekdays
PM _____ circle days: _____ weekdays
PM _____ circle days: _____ weekdays

58. Please list the site's business hours:

Weekdays: AM _____ to PM _____
Saturdays: AM _____ to PM _____
Sundays: AM _____ to PM _____

59. Is there a walking program beyond unlocked doors before business hours? Yes No
If yes, program leader resources: _____
Material: _____ Yes No

60. Is there a walking program leader? Yes No
If yes, name: _____

61. If there is a walking program leader, please list:

62. Walking program features. Check all that apply:

Wayfinding signs
 Motivational signage (e.g., walking distance posted)
 Signage in multiple languages
 Signage providing information on destinations (e.g., store hours, map)
 Designated route or accommodations for slow or fast walkers
 Program book or information table
 Other: _____

63. Please describe walking route features. If none, leave blank:

64. Is there a designated walking route? Yes No
If yes, describe: _____

65. Type of route:
 Circuit
 Trip and back
 Other: _____

66. Route length (feet): _____

67. Time it takes to walk one loop at 2.8 mph:
Under 5 min 5-10 min 10-15 min 15-20 min 20-30 min 30-45 min 45-60 min 60-90 min 90-120 min 120-150 min 150-180 min 180-210 min 210-240 min 240-270 min 270-300 min 300-330 min 330-360 min 360-390 min 390-420 min 420-450 min 450-480 min 480-510 min 510-540 min 540-570 min 570-600 min 600-630 min 630-660 min 660-690 min 690-720 min 720-750 min 750-780 min 780-810 min 810-840 min 840-870 min 870-900 min 900-930 min 930-960 min 960-990 min 990-1020 min 1020-1050 min 1050-1080 min 1080-1110 min 1110-1140 min 1140-1170 min 1170-1200 min 1200-1230 min 1230-1260 min 1260-1290 min 1290-1320 min 1320-1350 min 1350-1380 min 1380-1410 min 1410-1440 min 1440-1470 min 1470-1500 min 1500-1530 min 1530-1560 min 1560-1590 min 1590-1620 min 1620-1650 min 1650-1680 min 1680-1710 min 1710-1740 min 1740-1770 min 1770-1800 min 1800-1830 min 1830-1860 min 1860-1890 min 1890-1920 min 1920-1950 min 1950-1980 min 1980-2010 min 2010-2040 min 2040-2070 min 2070-2100 min 2100-2130 min 2130-2160 min 2160-2190 min 2190-2220 min 2220-2250 min 2250-2280 min 2280-2310 min 2310-2340 min 2340-2370 min 2370-2400 min 2400-2430 min 2430-2460 min 2460-2490 min 2490-2520 min 2520-2550 min 2550-2580 min 2580-2610 min 2610-2640 min 2640-2670 min 2670-2700 min 2700-2730 min 2730-2760 min 2760-2790 min 2790-2820 min 2820-2850 min 2850-2880 min 2880-2910 min 2910-2940 min 2940-2970 min 2970-3000 min 3000-3030 min 3030-3060 min 3060-3090 min 3090-3120 min 3120-3150 min 3150-3180 min 3180-3210 min 3210-3240 min 3240-3270 min 3270-3300 min 3300-3330 min 3330-3360 min 3360-3390 min 3390-3420 min 3420-3450 min 3450-3480 min 3480-3510 min 3510-3540 min 3540-3570 min 3570-3600 min 3600-3630 min 3630-3660 min 3660-3690 min 3690-3720 min 3720-3750 min 3750-3780 min 3780-3810 min 3810-3840 min 3840-3870 min 3870-3900 min 3900-3930 min 3930-3960 min 3960-3990 min 3990-4020 min 4020-4050 min 4050-4080 min 4080-4110 min 4110-4140 min 4140-4170 min 4170-4200 min 4200-4230 min 4230-4260 min 4260-4290 min 4290-4320 min 4320-4350 min 4350-4380 min 4380-4410 min 4410-4440 min 4440-4470 min 4470-4500 min 4500-4530 min 4530-4560 min 4560-4590 min 4590-4620 min 4620-4650 min 4650-4680 min 4680-4710 min 4710-4740 min 4740-4770 min 4770-4800 min 4800-4830 min 4830-4860 min 4860-4890 min 4890-4920 min 4920-4950 min 4950-4980 min 4980-5010 min 5010-5040 min 5040-5070 min 5070-5100 min 5100-5130 min 5130-5160 min 5160-5190 min 5190-5220 min 5220-5250 min 5250-5280 min 5280-5310 min 5310-5340 min 5340-5370 min 5370-5400 min 5400-5430 min 5430-5460 min 5460-5490 min 5490-5520 min 5520-5550 min 5550-5580 min 5580-5610 min 5610-5640 min 5640-5670 min 5670-5700 min 5700-5730 min 5730-5760 min 5760-5790 min 5790-5820 min 5820-5850 min 5850-5880 min 5880-5910 min 5910-5940 min 5940-5970 min 5970-6000 min 6000-6030 min 6030-6060 min 6060-6090 min 6090-6120 min 6120-6150 min 6150-6180 min 6180-6210 min 6210-6240 min 6240-6270 min 6270-6300 min 6300-6330 min 6330-6360 min 6360-6390 min 6390-6420 min 6420-6450 min 6450-6480 min 6480-6510 min 6510-6540 min 6540-6570 min 6570-6600 min 6600-6630 min 6630-6660 min 6660-6690 min 6690-6720 min 6720-6750 min 6750-6780 min 6780-6810 min 6810-6840 min 6840-6870 min 6870-6900 min 6900-6930 min 6930-6960 min 6960-6990 min 6990-7020 min 7020-7050 min 7050-7080 min 7080-7110 min 7110-7140 min 7140-7170 min 7170-7200 min 7200-7230 min 7230-7260 min 7260-7290 min 7290-7320 min 7320-7350 min 7350-7380 min 7380-7410 min 7410-7440 min 7440-7470 min 7470-7500 min 7500-7530 min 7530-7560 min 7560-7590 min 7590-7620 min 7620-7650 min 7650-7680 min 7680-7710 min 7710-7740 min 7740-7770 min 7770-7800 min 7800-7830 min 7830-7860 min 7860-7890 min 7890-7920 min 7920-7950 min 7950-7980 min 7980-8010 min 8010-8040 min 8040-8070 min 8070-8100 min 8100-8130 min 8130-8160 min 8160-8190 min 8190-8220 min 8220-8250 min 8250-8280 min 8280-8310 min 8310-8340 min 8340-8370 min 8370-8400 min 8400-8430 min 8430-8460 min 8460-8490 min 8490-8520 min 8520-8550 min 8550-8580 min 8580-8610 min 8610-8640 min 8640-8670 min 8670-8700 min 8700-8730 min 8730-8760 min 8760-8790 min 8790-8820 min 8820-8850 min 8850-8880 min 8880-8910 min 8910-8940 min 8940-8970 min 8970-9000 min 9000-9030 min 9030-9060 min 9060-9090 min 9090-9120 min 9120-9150 min 9150-9180 min 9180-9210 min 9210-9240 min 9240-9270 min 9270-9300 min 9300-9330 min 9330-9360 min 9360-9390 min 9390-9420 min 9420-9450 min 9450-9480 min 9480-9510 min 9510-9540 min 9540-9570 min 9570-9600 min 9600-9630 min 9630-9660 min 9660-9690 min 9690-9720 min 9720-9750 min 9750-9780 min 9780-9810 min 9810-9840 min 9840-9870 min 9870-9900 min 9900-9930 min 9930-9960 min 9960-9990 min 9990-10020 min 10020-10050 min 10050-10080 min 10080-10110 min 10110-10140 min 10140-10170 min 10170-10200 min 10200-10230 min 10230-10260 min 10260-10290 min 10290-10320 min 10320-10350 min 10350-10380 min 10380-10410 min 10410-10440 min 10440-10470 min 10470-10500 min 10500-10530 min 10530-10560 min 10560-10590 min 10590-10620 min 10620-10650 min 10650-10680 min 10680-10710 min 10710-10740 min 10740-10770 min 10770-10800 min 10800-10830 min 10830-10860 min 10860-10890 min 10890-10920 min 10920-10950 min 10950-10980 min 10980-11010 min 11010-11040 min 11040-11070 min 11070-11100 min 11100-11130 min 11130-11160 min 11160-11190 min 11190-11220 min 11220-11250 min 11250-11280 min 11280-11310 min 11310-11340 min 11340-11370 min 11370-11400 min 11400-11430 min 11430-11460 min 11460-11490 min 11490-11520 min 11520-11550 min 11550-11580 min 11580-11610 min 11610-11640 min 11640-11670 min 11670-11700 min 11700-11730 min 11730-11760 min 11760-11790 min 11790-11820 min 11820-11850 min 11850-11880 min 11880-11910 min 11910-11940 min 11940-11970 min 11970-12000 min 12000-12030 min 12030-12060 min 12060-12090 min 12090-12120 min 12120-12150 min 12150-12180 min 12180-12210 min 12210-12240 min 12240-12270 min 12270-12300 min 12300-12330 min 12330-12360 min 12360-12390 min 12390-12420 min 12420-12450 min