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Appendix A. Physical Activity Scale for the Elderly and PA outcomes

Physical activity outcomes

1. Total Physical Activity:

The total PASE score is calculated based on question responses and the developed activity weights.¹ The score ranges from 0 to over 400, with higher scores representing greater PA levels. This outcome has shown acceptable test-retest reliability and construct validity (e.g., walking, physical function, general health).² The PASE total score was calculated for all participants with the required information available, rounded to a whole number as per the PASE instruction manual.³

2. Proportion of total score:

The average proportion of total score for each activity was reported. Values range from 0 (do not contribute to total PA score) to 1 (is the sole contributor to total PA score). To determine the proportion of total PA score represented by each activity, each activity score (calculated from weights and question responses) was divided by the total score for each person.

3. Prevalence of activity types:

The percentage of participants who completed each activity in the previous 7-days was calculated.

4. 150-minutes of MVPA guidelines:

The total time spent in walking, moderate recreation, strenuous recreation, and exercise were calculated using the methods by Mayo et al. (2021), details below.⁴ Individuals with at least 150-minutes of MVPA in the last 7-days were said to have met the guideline.

To arrive at the total number of minutes per week of MVPA we first calculated time spent in walking, moderate recreation, strenuous recreation, and exercise activities. Following the methods used by Mayo et al. in their 2021 analysis a median value was created for each frequency and duration range (see table B1.).⁴ Except for the final duration, which does not provide an upper limit, in this case this most conservative estimate was taken (i.e., 4 hours). The amount of time was converted from hours a day to minutes and then multiplied by the frequency. After the minutes per week for each of the four available activities was calculated and summed, a dichotomous outcome was derived.

Table A1.150-minute outcome operationalization

Questionnaire range	value used
Frequency	
Seldom (1-2 days)	1.5 days
Sometimes (3-4 days)	3.5 days
Often (5-7 days)	6 days
Duration	
Less than 30 minutes	15 minutes
30 minutes but less than hour	45 minutes
1 hour but less than 2 hours	90 minutes
2 hours but less than 4 hours	180 minutes
4 hours or more	240 minutes

Table A2. PASE Items and Questions

Activity name	Original Item	Questionnaire wording	Type of question
Walk	Walking	take a walk outside your home or yard for any reason	Frequency and duration
LSport	Light sports or recreational activities	such as bowling, golf with a cart, shuffleboard, badminton, fishing or other similar activities	Frequency and duration
MSport	Moderate sports or recreational activities	such as ballroom dancing, hunting, skating, golf without a cart, softball or other similar activities	Frequency and duration
SSport	Strenuous sports or recreational activities	such as jogging, swimming, snowshoeing, cycling, aerobics, skiing, or other similar activities	Frequency and duration
Exercise	Exercises	any exercises specifically to increase muscle strength and endurance, such as lifting weights or push-ups, etc.	Frequency and duration
Lt indoor	light housework,	such as dusting or washing dishes	Completed yes/no
Hvy indoor	heavy housework or chores	such as vacuuming, scrubbing floors, washing windows or carrying wood	Completed yes/no
Repairs	Home repairs	like painting, wallpapering, electrical work, etc.	Completed yes/no
Hvy Outdoor	Heavy outdoor activity	lawn work or yard care, including snow or leaf removal, wood chopping, etc. (excluding outdoor gardening)	Completed yes/no
Lt Outdoor	Light outdoor activities	outdoor gardening, sweeping the balcony or the stairs	Completed yes/no
Caregiver	caring for another person	such as children, a dependent spouse or other adult	Completed yes/no
Work	Work or volunteer	Option 2. Sitting and standing with some walking (such as cashier or light tool and machinery worker)	Hours and intensity of work (options)

Activity name	Original Item	Questionnaire wording	Type of question
		Option 3. Walking, with some handling of materials generally weighing less than 50 lbs. (such as postal worker, waitress or construction worker) Option 4. Walking and heavy manual work often requiring handling of materials weighing over 50 lbs. (such as lumberjack, stone mason, farm or general labourer)	
Not included	Sitting activities	sitting activities such as reading, watching TV, computer activities or doing handicrafts	According to the PASE instruction manual this question does not contribute to physical activity level
Not included	Work or volunteer	Option 1. Mainly sitting with slight arm movements (such as office worker or bus driver)	According to the PASE instruction manual this question does not contribute to physical activity level

Appendix A References:

1. Washburn R, A., Smith K, W., Jette A, M., Janney C, A. The Physical Activity Scale for the Elderly (PASE): Development and Evaluation. J Clin Epidemiol. 1993;46(2):153-62.
2. D'Amore C, Lajambe L, Bush N, Hiltz S, Laforest J, Viel I, et al. Mapping the extent of the literature and psychometric properties for the Physical Activity Scale for the Elderly (PASE) in community-dwelling older adults: A scoping review BMC Geriatr (submitted). 2024.
3. New England Research Institutes. PASE Physical Activity Scale for the Elderly: Administration and Scoring Instruction Manual. 1991.
4. Mayo A, Sénéchal M, Boudreau J, Bélanger M, Bouchard DR. Potential functional benefits of a comprehensive evaluation of physical activity for aging adults: a CLSA cross-sectional analysis. Aging Clin Exp Res. 2021;33(2):285-9.

Appendix B. Subgroup stratifications

Table B1. Subgroup stratification details

Correlate(s) for subgroup	Number of groups	Details
Age and sex	8	Four age groups (45-54, 55-64, 65-74, 75+) for both males and females
Household income	5	<\$20,000, \$20,000-<\$50,000, \$50,000-<\$100,000, \$100,000-<\$150,000, and \$150,000+
Household income and age	20	Four age groups and five income levels
Education	4	Less than secondary school graduation, No post-secondary education (but graduated from secondary school), Some post-secondary education, and Received a degree/diploma
Material Deprivation	5	Based on the Material and Social Deprivation index which describes the geographical variation in deprivation (six socio-economic indicators) was used to explore the two domains of deprivation, material and social. ^{1,2} Subgroups were based on quintiles representing those with the most privilege (Q1) to the most deprived (Q5)
Social Deprivation	5	
Region and season	16	four geographical regions (British Columbia, Prairies, Central, and Atlantic) and four seasons (Jan-Mar, Apr-Jun, Jul-Sep, Oct-Dec) ³

Table References

1. Institut national de santé publique du Québec (INSPQ). Index of material and social deprivation compiled by the Bureau d'information et d'études en santé des populations (BIESP) from 1991, 1996, 2001, 2006, 2011, 2016 and 2021 Canadian Census data.
2. Pampalon R, Hamel D, Gamache P, Philibert MD, Raymond G, Simpson A. An area-based material and social deprivation index for public health in Québec and Canada. *Can J Public Health*. 2012;103(8 Suppl 2):S17-22.
3. Garriga A, Sempere-Rubio N, Molina-Prados MJ, Faubel R. Impact of Seasonality on Physical Activity: A Systematic Review. *Int J Environ Res Public Health*. 2021;19(1).

Appendix C. Sample, target population and missing variable description

Table C1. Sample and Target Population Descriptors

Variable	Weighted (target population)	Unweighted (sample)
Complete MCQ	12,365,513	47,840
Age mean(SD)	59.783 (SD 10.181)	62.98 (SD 10.35)
Sex (Female)	6,406,677 (51.81%)	24,391 (50.98%)
Cultural/racial background		
European	11,735,186 (95.01%)	45,533 (96.20%)
Non-European	371,511 (3.94%)	1,232 (2.60%)
Multiple origins	129,738 (1.05%)	567 (1.20%)
Had a fall in the previous 12 months		
Yes	1,373,926 (11.12%)	5,449 (11.40%)
Diagnosed with a medical condition (Yes)		
Cancer	1,550,777 (12.56%)	7,301 (18.05%)
Cardiovascular	5,274,612 (42.90%)	21,809 (45.91%)
Diabetes	2,031,030 (16.45%)	8,125 (17.02%)
Musculoskeletal	6,394,538 (52.11%)	25,440 (53.77%)
Neurological	889,916 (7.23%)	3,618 (7.62%)
Respiratory	1,981,558 (16.08%)	7,735 (16.24%)
Number of medications		
None	2,924,394 (23.78%)	8,429 (17.67%)
One	2,140,529 (17.41%)	6,863 (14.39%)
Two	1,721,843 (14.00%)	6,050 (12.68%)
3+	5,510,482 (44.81%)	26,361 (55.26%)
Self-reported general health		
Good or better	10,833,305 (87.68%)	42,879 (89.70%)
Fair/poor	1,522,737 (12.32%)	4,922 (10.30%)
Education		
< secondary school graduation	2435789 (19.77%)	3,152 (6.61%)
No post-secondary education	1718823 (13.95%)	5,182 (10.86%)
Some post-secondary education	1093640 (8.88%)	3,570 (7.48%)
Post-secondary degree/diploma	7074034 (57.41%)	35,815 (75.05%)
Household income		
less than \$20,000	709,763 (6.07%)	2,513 (5.61%)
\$20,000 or more, but less than \$50,000	3,027,389 (25.88%)	11,096 (24.77%)
\$50,000 or more, but less than \$100,000	4,225,053 (36.11%)	16,116 (35.98%)
\$100,000 or more, but less than \$150,000	2,117,014 (18.19%)	8,300 (18.53%)
\$150,000 or more	1,619,917 (13.85%)	6,765 (15.01%)
Type of dwelling		
House (single detached, semi-detached, duplex or townhouse)	10,540,348 (85.26%)	39,153 (81.87%)
Apartment or condominium	1,629,504 (13.18%)	8,029 (16.79%)
Other	193,315 (1.56%)	642 (1.34%)
Marital status		
In a relationship	9,296,749 (75.18%)	32,444 (68.86%)
Widowed	947,741 (7.66%)	4,999 (10.61%)

Variable	Weighted (target population)	Unweighted (sample)
Divorced/separated	1,152,216 (9.32%)	6,001 (12.74%)
Single	793,693 (6.42%)	3,675 (7.80%)
Social support (MOS Scale)	82.98 (17.44)	81.93 (17.39)
Functional Social Support (0-100)		
Total PASE score mean (SD)	151.094 (SD 79.11)	141.53 (SD75.17)
Completed 150 minutes of MVPA	7,959,951 (64.80%)	32,152 (67.60%)
PA represent last 12 months		
Agreed	8,691,980 (70.29%)	3,365,512
Neither agree nor disagree	250,285 (2.02%)	(68.82%)
Disagreed	3,365,512 (27.22%)	1,004 (2.11%)
		13,836 (29.07%)

Missing Data Summary

No variable had more than 10% missing data, with the highest being 6% for household income. Compared to individuals who reported household income, those who did not were more likely to be female, older, and have lower total PASE scores. When exploring patterns of missingness, the most common pattern found was participants who were only missing income, with no strong patterns found for combinations of other variables was found.

Table C2. Number of missing values for variables in aim 1 analyses

	Stratification								
	Age	Sex	Household income	Education	Material deprivation scale	Social deprivation scale	Region	Season	Retirement status
Total PASE Score/Proportion of score	633	633	3621	751	2642	2642	633	633	447
150 minutes of MVPA	275	275	3295	549	2278	2278	275	275	447
Walk	69	69	3112	190	2076	2076	69	69	241
Light recreation	22	22	3070	143	2030	2030	22	22	194
Moderate recreation	25	25	3070	146	2033	2033	25	25	197
Strenuous recreation	28	28	3073	149	2036	2036	28	28	200
Exercise	42	42	3086	163	2048	2048	42	42	214
Light indoor housework	17	17	3065	138	2026	2026	17	17	189
Heavy indoor housework	21	21	3068	142	2030	2030	21	21	193

Light outdoor housework	15	15	3061	136	2024	2024	15	15	187
Heavy outdoor housework	19	19	3066	140	2028	2028	19	19	191
Caregiving	36	36	3082	157	2043	2043	36	36	208
Home repairs	36	36	3084	157	2044	2044	36	36	208
Work or volunteer	166	166	3205	286	2166	2166	166	166	338

Table C3. Number of missing values for variables in aim 2 analyses

	Outcome	
	None	Total PA Quintile
Age	0	633
Sex	0	633
Household income	3050	3621
Education	121	751
Cancer	99	732
Cardiovascular	334	967
Diabetes	116	749
Musculoskeletal	530	1149
Neurological	331	956
Respiratory	217	846
Vision	728	1351
Self-reported general health	39	671
ADL/IADL Limitation	55	687
Mobility limitation	0	633
Social participation	0	633
Perceived social standing	0	633
Social support	1562	2145
Rural vs Urban	0	633

Appendix D. Age and sex stratification

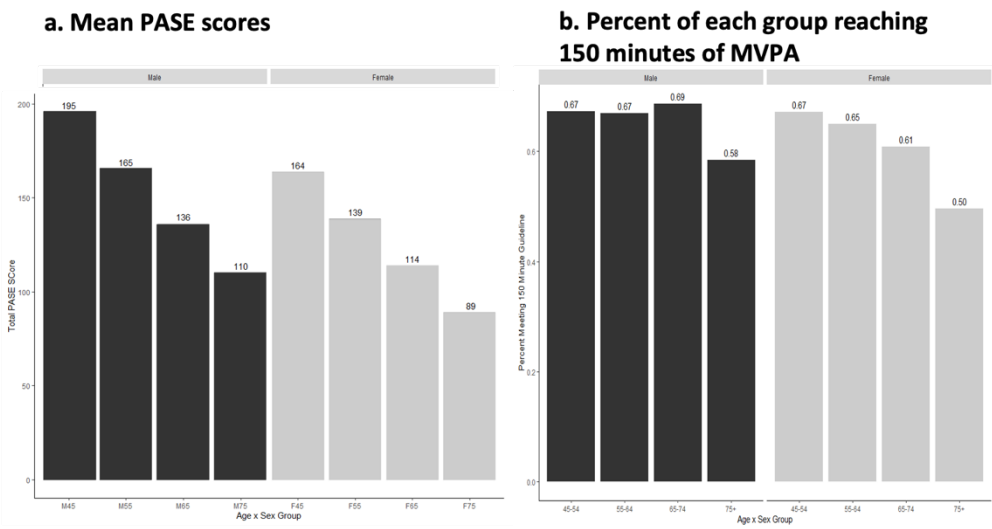


Figure D1. Amount of physical activity sex and age stratification

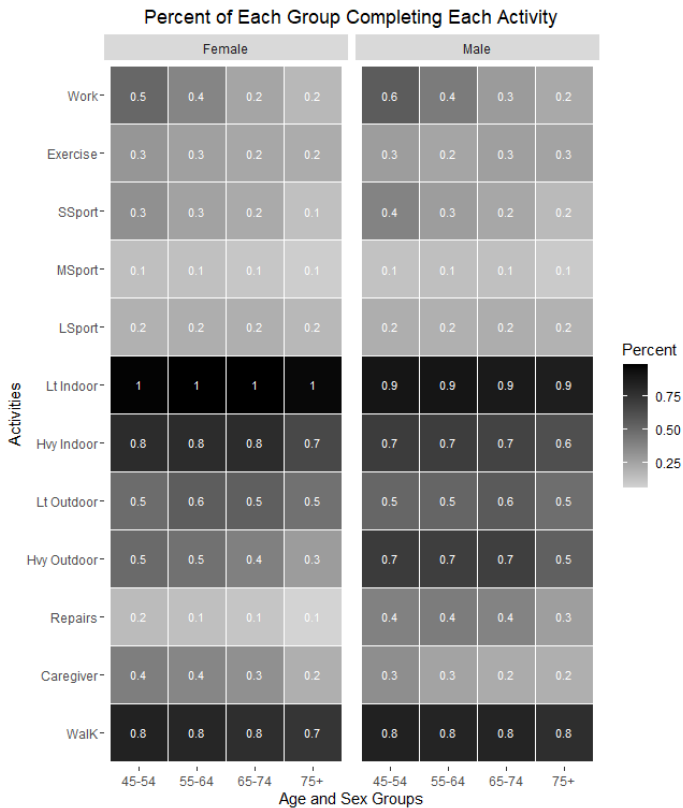


Figure D2. Percentage of each sex and age group participating in activity types

Appendix E. Household Income Stratification

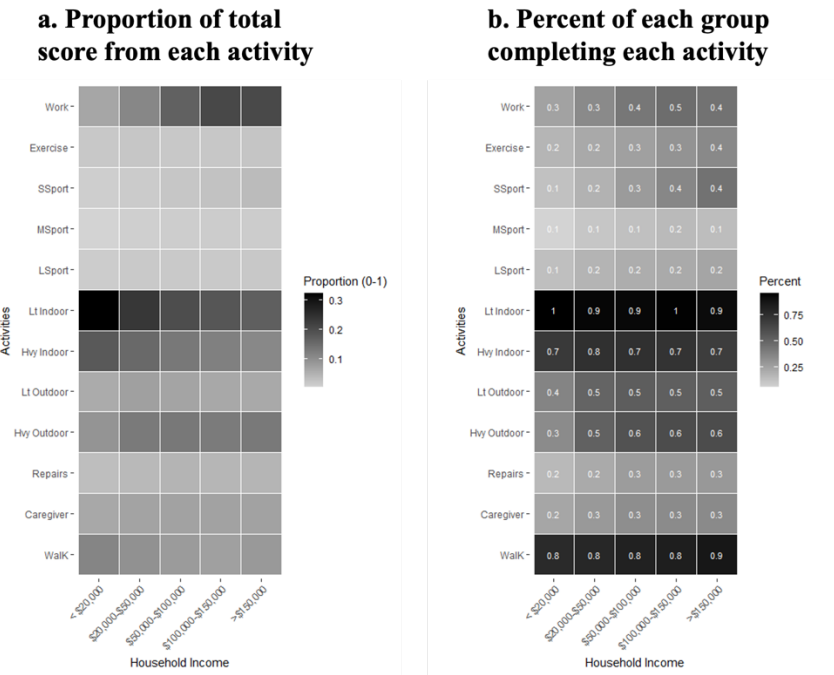


Figure E1. Activity type heat maps for household income

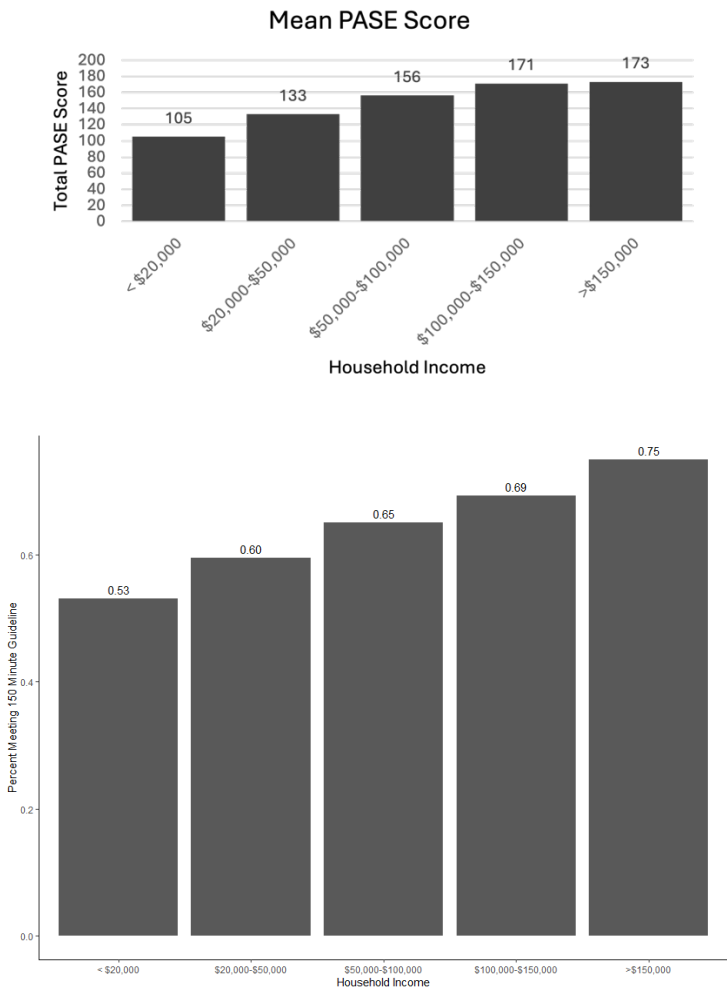


Figure E2. Mean PASE scores by household income

Figure E3. Percent of target population completing 150 minutes of MVPA by household income

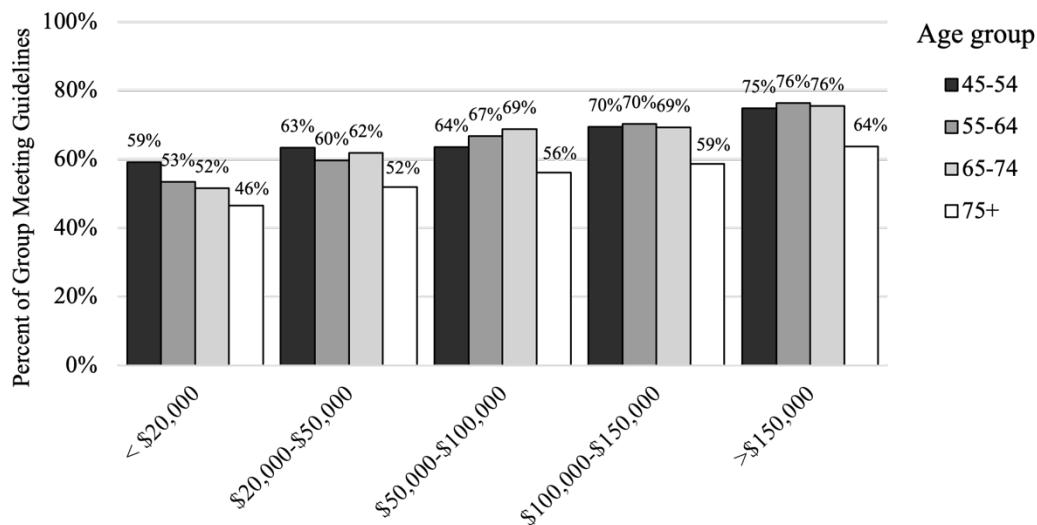


Figure E4. Percent of target population completing 150 minutes of MVPA: Age and income

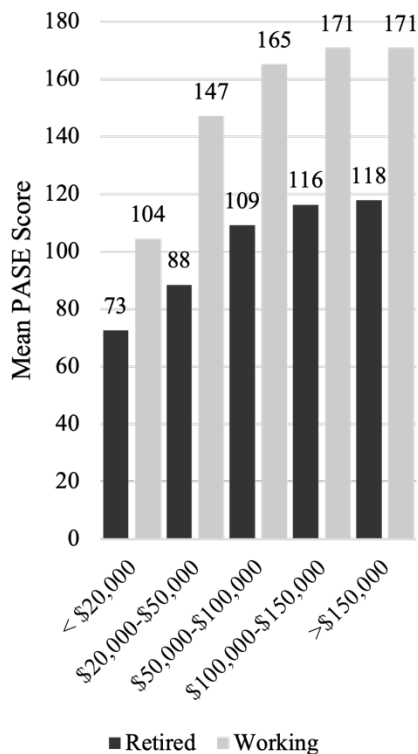


Figure E5. Mean PASE scores comparing retirement status across household income levels

Appendix F. Education Level Stratification

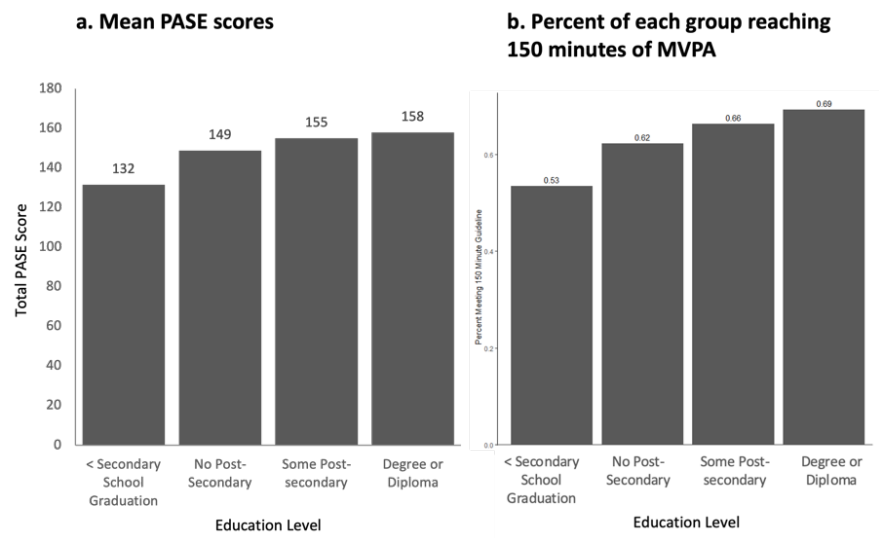


Figure F1. Amount of physical activity by education levels

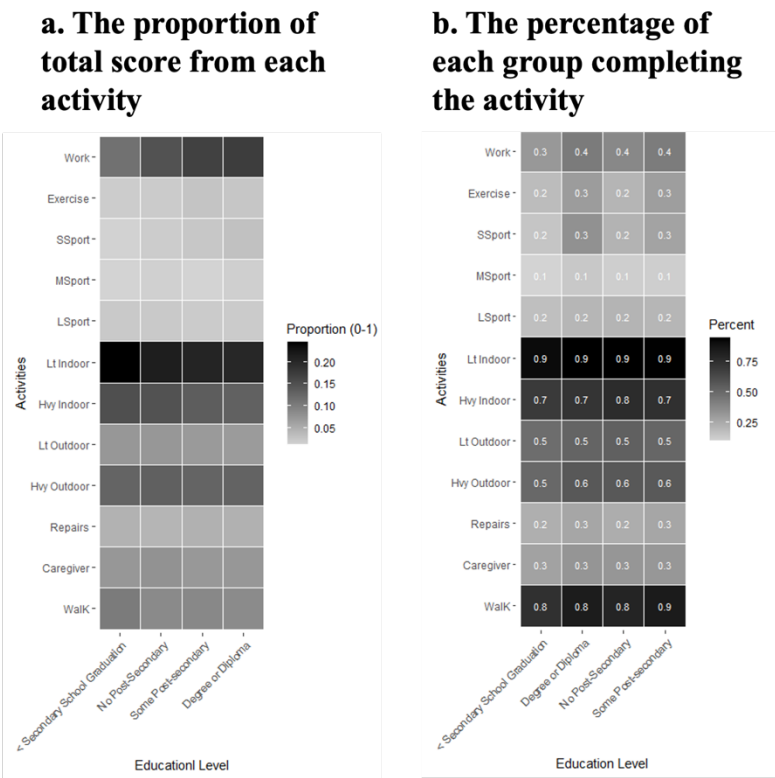


Figure F2. Activity type heat maps by education level

Appendix G. Material and Social Deprivation Stratification

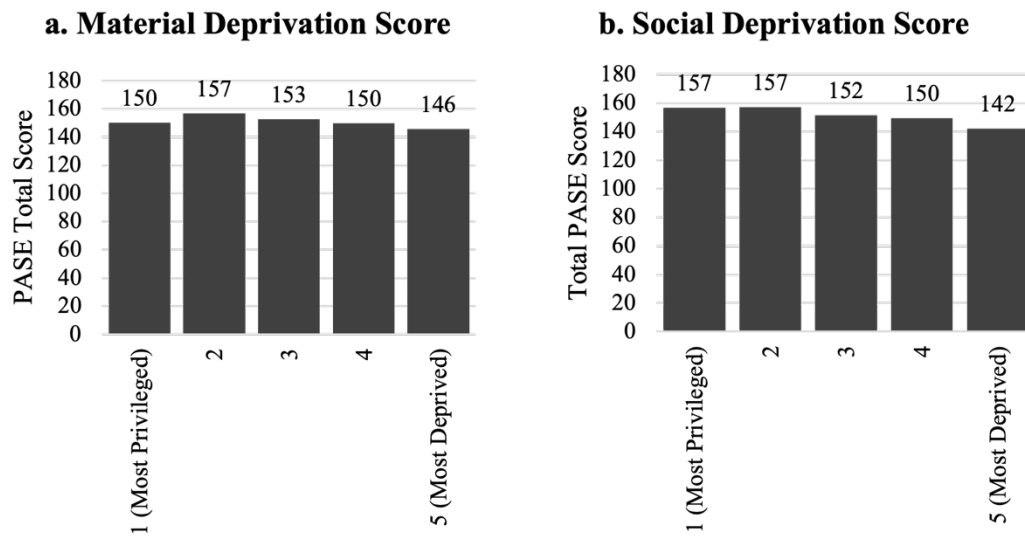


Figure G1. Mean PASE scores for material and social deprivation quintiles

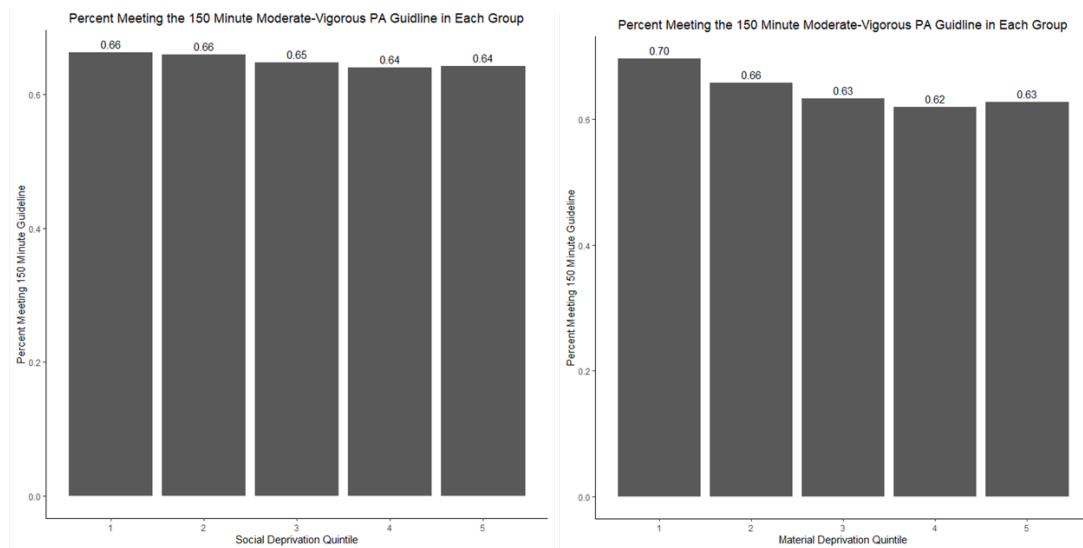


Figure G2. Percent of each quintile reaching 150-minutes of MVPA

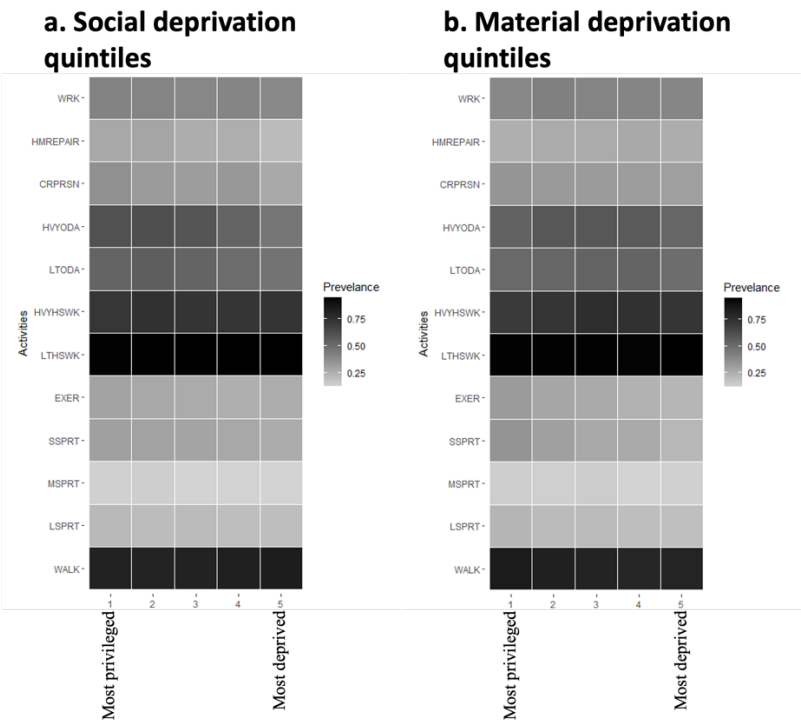


Figure G3. Percentage of each deprivation quintile participating in activities

Appendix H. Region and Season Stratification

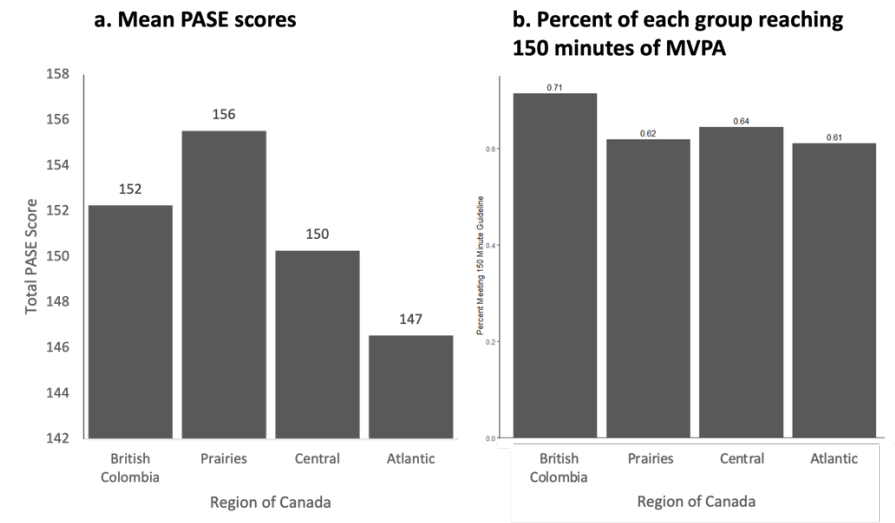


Figure H1. Amount of physical activity by geographical regions in Canada

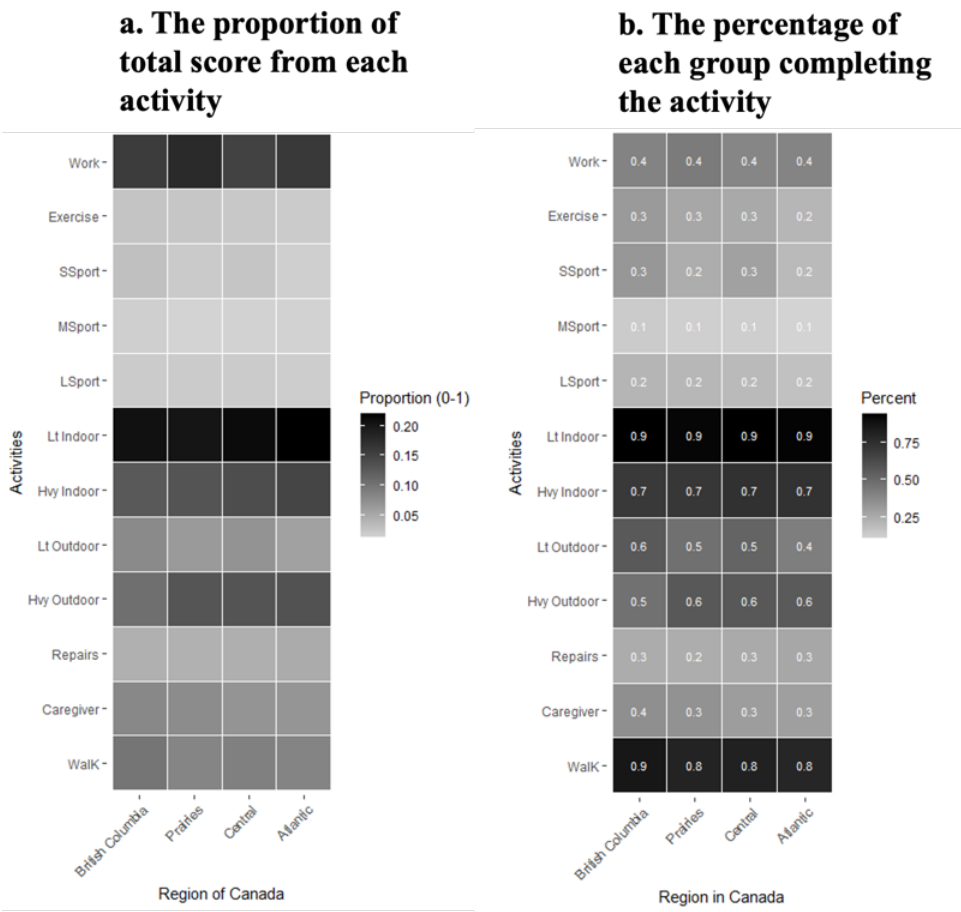


Figure H2. Activity type heat map by region

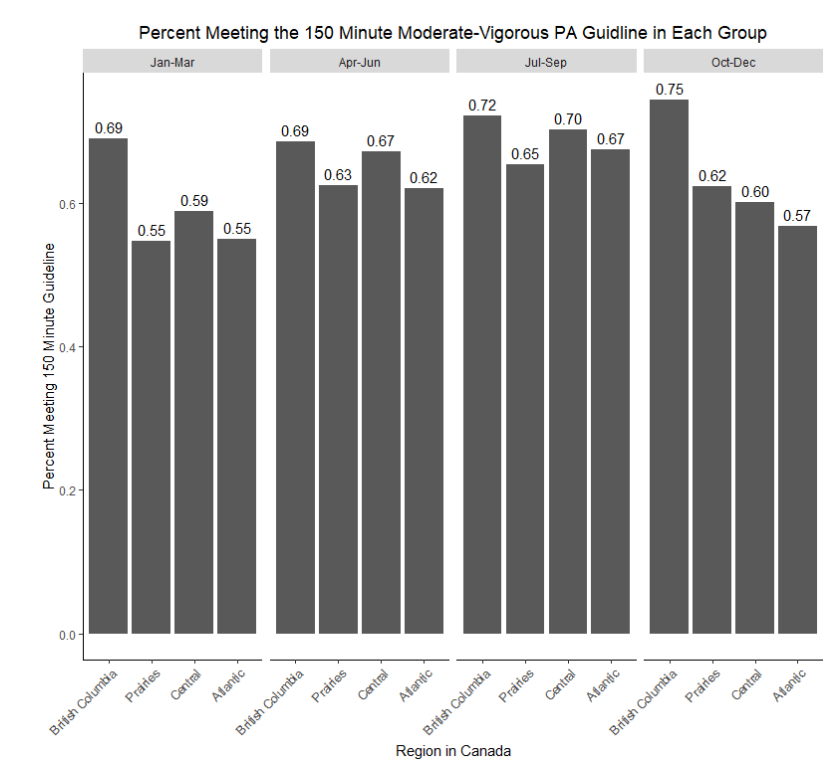


Figure H3. Percentage of each region and season group achieving 150minutes of MVPA