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S1: Example of PASE Item Recoding Into Ever- and Often- Variables

For example, Item 4 asks how many times, in the past week, a subject walked outside their home or yard, offering 'never', '1-2 days', '3-4 days', or '5-7 days' as valid responses. If the subject answers anything other than 'never', the subject is further asked the average number of minutes he or she walked on these trips, offering 'less than 30 minutes', '30-60 minutes', or 'more than 60 minutes' as valid responses. For each item assessed with frequency and duration, we first transformed the categorical responses into an estimated number of minutes per week engaging in the activity, treating 1-2 days as 1.5 days, 3-4 days as 3.5 days, and 5-7 days as 6 days, and less than 30 minutes as 15 minutes, 30-60 minutes as 45 minutes, and 60 or more minutes as 75 minutes. For example, a subject who reported walking 3-4 days in the past week for an average of 60 or more minutes would be considered to have walked 3.5 days*75 minutes = 262.5 minutes/week = 37.5 minutes/day on average. If it was also greater than 30, then often-walk was also coded as true. For subjects who answered 'never' to the initial question, both ever-walk and often-walk were coded as false.

R code to perform the re-code:

```
pase_days_ever_columns <- c('lightact_ever',
                            'modact_ever',
                            'strenact_ever',
                            'strenexer_ever',
                            'walk_ever')

pase_days_often_columns <- c('lightact_often',
                             'modact_often',
                             'strenact_often',
                             'strenexer_often',
                             'walk_often')
```

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```
pase_days_cat_to_continuous <- c(0, 1.5, 3.5, 6)

# for days columns, recode 0 (missing) as 1 (in the 0 days category)
for (column in pase_days_columns) {
  dataset[which(dataset[,column] == 0),column] <- 1
}

for (i in 1:length(pase_days_columns)) {
        days_column <- pase_days_columns[i]
        time_column <- pase_time_columns[i]
        ever_column <- pase_days_ever_columns[i]
        dataset[,ever_column] <- FALSE
        dataset[which(dataset[,days_column] > 1 & dataset[,time_column] > 0),ever_column] <-
TRUE
}

for (i in 1:length(pase_time_columns)) {
        time_column <- pase_time_columns[i]
        days_column <- pase_days_columns[i]
        pase_days <- pase_days_cat_to_continuous[dataset[,days_column]]
        pase_time <- dataset[,time_column]
        result_column_name <- paste(time_column, 'pase', sep='_')
        dataset[,result_column_name] <- (pase_days/7) * pmax(((pase_time*.5)-.25),0)
}

for (i in 1:length(pase_days_often_columns)) {
        per_day_column <- pase_per_day_columns[i]
        often_column <- pase_days_often_columns[i]
        dataset[,often_column] <- FALSE
        dataset[which(dataset[,per_day_column] > 0.5),often_column] <- TRUE
}
```

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S2: Details of LCAs by Number of Classes

LCA Model fit statistics

Classes	BIC	Entropy	Smallest class
2	39893.79	0.3175	37.5%
3	38776.18	0.5815	18.4%
4	38251.79	0.6741	15.0%
5	37978.72	0.7224	9.2%
6	37971.48	0.7515	4.0%

BIC: Bayesian Information Criteria, lower score indicates better fit; Entropy: a measure of classification certainty, higher score indicates more certainty; Smallest class: the proportion of subjects assigned to the class with the fewest subjects.

Activity Frequency in 3 Class Model

Activity	Domestic/Garden	Least Active	Athletes
N	642	1,872	983
Ever sports/ recreational activities	65%	23%	100%
Ever muscular strength or endurance exercises	42%	21%	59%
Ever walking	97%	81%	97%
Sports/recreational more than 30 minutes/day	33%	0%	67%
Muscular strength or endurance exercises more than 30 minutes/day	9%	2%	10%
Walking more than 30 minutes/day	58%	31%	76%
Light housework	95%	88%	94%
Heavy housework	77%	43%	57%
Home repairs	34%	4%	9%
Lawn work/yard care	78%	2%	4%
Outdoor gardening	85%	3%	9%
Caring for others	45%	24%	33%

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Activity Frequency in 4 Class Model

Activity	Least Active	Domestic/Garden	Athletic Types	Walkers
N	653	525	726	1,593
Ever sports/recreational activities	20%	68%	100%	36%
Ever muscular strength or endurance exercises	19%	44%	61%	26%
Ever walking	49%	97%	98%	100%
Sports/recreational more than 30 minutes/day	1%	36%	83%	0%
Muscular strength or endurance exercises more than 30 minutes/day	2%	10%	12%	2%
Walking more than 30 minutes/day	0%	57%	79%	52%
Light housework	74%	94%	93%	97%
Heavy housework	21%	76%	55%	60%
Home repairs	3%	36%	10%	6%
Lawn work/yard care	0%	86%	5%	4%
Outdoor gardening	2%	91%	11%	7%
Caring for others	14%	45%	31%	33%

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Activity Frequency in 6 Class Model

Activity	Least Active	Domestic/Garden Athlete	Never Walkers	Domestic/Garden	Athlete	Walker
N	317	330	141	430	649	1,630
Ever sports/ recreational activities	11%	100%	35%	32%	100%	36%
Ever muscular strength or endurance exercises	18%	64%	20%	23%	60%	26%
Ever walking	49%	98%	0%	97%	100%	100%
Sports/recreational more than 30 minutes/day	0%	72%	14%	0%	81%	0%
Muscular strength or endurance exercises more than 30 minutes/day	3%	17%	2%	2%	11%	2%
Walking more than 30 minutes/day	0%	67%	0%	48%	81%	46%
Light housework	62%	93%	91%	97%	93%	96%
Heavy housework	0%	73%	58%	77%	54%	56%
Home repairs	0%	36%	7%	28%	9%	5%
Lawn work/yard care	0%	78%	1%	66%	2%	0%
Outdoor gardening	1%	85%	3%	76%	8%	2%
Caring for others	6%	43%	31%	45%	30%	30%

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S3: LCAs Performed Only Among Those Reporting That They Are Capable of Walking a Block (N=2,351)

LCA Model fit statistics

Classes	AIC	BIC	G^2	χ^2	Entropy	Smallest class
2	27191.85	27335.92	2761.354	14538.56	0.3056	41.9%
3	26368.83	26587.81	1912.333	10005.4	0.5746	21.2%
4	26033.27	26327.16	1550.768	33833.36	0.6679	10.7%
5	25955.88	26324.68	1447.377	40537.82	0.7152	11.6%
6	25789.03	26232.75	1254.526	37397.26	0.7461	10.6%

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Activity Frequency in 3 Class Model

Activity	Domestic/Garden	Walk Only	Athletes
N	499	1169	683
Ever sports/ recreational activities	70%	30%	100%
Ever muscular strength or endurance exercises	43%	22%	62%
Ever walking	98%	89%	98%
Sports/recreational more than 30 minutes/day	38%	0%	75%
Muscular strength or endurance exercises more than 30 minutes/day	9%	2%	11%
Walking more than 30 minutes/day	63%	43%	81%
Light housework	94%	92%	93%
Heavy housework	78%	53%	57%
Home repairs	36%	6%	9%
Lawn work/yard care	83%	3%	3%
Outdoor gardening	88%	6%	9%
Caring for others	44%	29%	30%

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Activity Frequency in 4 Class Model

Activity	Walkers	Athletes	Domestic/Garden Athletes	Domestic/Garden
N	1055	670	251	375
Ever sports/ recreational activities	29%	100%	100%	37%
Ever muscular strength or endurance exercises	22%	61%	63%	22%
Ever walking	88%	98%	98%	98%
Sports/recreational more than 30 minutes/day	0%	72%	78%	0%
Muscular strength or endurance exercises more than 30 minutes/day	2%	10%	17%	1%
Walking more than 30 minutes/day	42%	80%	72%	54%
Light housework	91%	93%	92%	97%
Heavy housework	49%	57%	74%	80%
Home repairs	4%	9%	38%	28%
Lawn work/yard care	0%	1%	84%	63%
Outdoor gardening	1%	8%	85%	73%
Caring for others	27%	31%	41%	47%

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Activity Frequency in 5 Class Model

Activity	Domestic/Garden	Moderate Athletes	Domestic/Garden Athletes	Walk Only	Strong Athletes
N	343	577	273	696	462
Ever sports/ recreational activities	33%	100%	100%	0%	100%
Ever muscular strength or endurance exercises	21%	39%	63%	19%	66%
Ever walking	98%	93%	98%	87%	100%
Sports/recreational more than 30 minutes/day	0%	22%	75%	0%	87%
Muscular strength or endurance exercises more than 30 minutes/day	1%	1%	16%	3%	14%
Walking more than 30 minutes/day	55%	44%	70%	44%	95%
Light housework	97%	93%	92%	91%	93%
Heavy housework	81%	57%	74%	47%	56%
Home repairs	29%	6%	38%	4%	10%
Lawn work/yard care	64%	1%	83%	1%	2%
Outdoor gardening	73%	5%	86%	1%	8%
Caring for others	47%	32%	41%	25%	29%

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Activity Frequency in 6 Class Model

Activity	Moderate Athlete	Domestic/Garden Athlete	Least Active	Domestic/Garden	Never Sports	Strong Athletes
N	712	267	308	338	477	249
Ever sports/ recreational activities	100%	100%	33%	33%	0%	100%
Ever muscular strength or endurance Exercises	41%	63%	21%	21%	20%	100%
Ever walking	100%	98%	63%	98%	100%	99%
Sports/recreational more than 30 minutes/day	47%	76%	4%	0%	0%	90%
Muscular strength or endurance Exercises more than 30 minutes/day	0%	16%	2%	1%	4%	35%
Walking more than 30 minutes/day	72%	71%	0%	53%	68%	92%
Light housework	95%	91%	82%	97%	96%	91%
Heavy housework	61%	74%	36%	80%	54%	52%
Home repairs	8%	39%	5%	29%	4%	7%
Lawn work/yard care	2%	84%	0%	65%	1%	1%
Outdoor gardening	7%	86%	2%	77%	1%	9%
Caring for others	33%	40%	19%	47%	29%	29%

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Relative Risk of Membership of 3,497 New York City Residents Aged 65-75 Surveyed in June-November 2011 in Specified Class Compared to "Walker" Class in Multivariable Model in 4-Class Model Restricted to Those Who Report Being Capable of Walking a Block

	Athletic type			Domestic/ Gardening type			Domestic/Gardening Athletic type		
	Relative risk	95% CI		Relative risk	95% CI		Relative risk	95% CI	
Borough									
Manhattan	1.23	0.88	1.72	1.86	1.08	3.21	0.75	0.45	1.25
Bronx	0.87	0.57	1.32	1.01	0.54	1.86	0.63	0.37	1.07
Brooklyn	0.89	0.64	1.24	0.82	0.53	1.28	0.75	0.52	1.09
Queens	--			--			--		
Staten Island	0.87	0.35	2.16	0.95	0.39	2.31	0.88	0.40	1.94
Home type									
Single family	0.79	0.58	1.07	8.52	5.32	13.64	7.68	5.15	11.45
Low rise apartment	0.80	0.56	1.15	1.55	0.85	2.81	1.24	0.68	2.28
High-rise apartment	--			--			--		
Sex									
Male	--			--			--		
Female	0.84	0.67	1.05	0.65	0.47	0.91	0.92	0.69	1.24
Age group									
65-68	--			--			--		
69-71	1.11	0.82	1.51	0.78	0.50	1.24	1.12	0.75	1.67
72-75	0.89	0.69	1.15	0.86	0.60	1.24	0.93	0.66	1.30
Education									
< High school graduate	0.97	0.65	1.44	0.87	0.46	1.64	0.94	0.57	1.54
High school graduate	--			--			--		
Some college	1.22	0.86	1.74	0.97	0.58	1.63	0.95	0.62	1.47
College graduate	1.45	1.04	2.02	1.42	0.90	2.23	1.06	0.71	1.58
Race/Ethnicity									
Black (non-Hispanic)	1.16	0.87	1.56	0.82	0.53	1.26	0.89	0.62	1.28

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White (non-Hispanic)	--			--			--		
Other	1.10	0.66	1.86	1.29	0.66	2.50	1.25	0.69	2.27
Hispanic	1.19	0.75	1.90	0.70	0.31	1.63	0.79	0.40	1.55
Safe to walk after dark in neighborhood									
Strongly agree	--			--			--		
Somewhat agree	0.99	0.77	1.27	0.79	0.55	1.14	0.96	0.69	1.33
Somewhat disagree	0.87	0.56	1.36	1.00	0.53	1.90	1.32	0.78	2.23
Strongly disagree	0.78	0.50	1.22	1.07	0.56	2.07	1.30	0.76	2.21
Health									
Excellent	1.57	1.18	2.08	2.09	1.43	3.07	1.32	0.89	1.95
Good	--			--			--		
Fair	0.65	0.48	0.87	0.51	0.31	0.83	0.85	0.59	1.23
Poor	0.51	0.21	1.26	0.23	0.04	1.36	0.59	0.21	1.62
Household income									
<$20,000	--			--			--		
$20,000-$39,999	1.22	0.88	1.69	1.91	1.06	3.41	1.71	1.07	2.75
$40,000-$79,999	1.50	1.03	2.17	1.90	0.99	3.64	1.53	0.91	2.56
$80,000+	1.29	0.86	1.94	1.97	1.10	3.54	1.96	1.17	3.30

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S4: LCA in Which Sports/Recreation Categories Not Compressed

Model Fit

Classes	AIC	BIC	G^2	χ^2	Entropy	Smallest class
2	48242.47	48445.74	7488.379	708321.2	0.376116	0.378610
3	47134.42	47442.40	6346.330	671699.5	0.615387	0.149843
4	46467.00	46879.69	5644.906	280245.9	0.700155	0.143838
5	46042.73	46560.14	5186.636	457275.2	0.744703	0.073778
6	45822.35	46444.48	4932.266	865192.5	0.772031	0.020303
7	45464.44	46191.28	4540.347	295701.6	0.791844	0.022591
8	45285.41	46116.96	4327.319	521374.8	0.806148	0.022305
9	45163.09	46099.36	4170.999	335087.0	0.817266	0.018587

By fit statistics, the 9-class model fits best, but some classes are so granular as to be unhelpful (e.g., class 4, who does endurance exercises and strenuous recreation sports if any or class 6, who does moderate only).

Activity Frequency in 9 Class Model

Activity	1	2	3	4	5	6	7	8	9
Light sports/ recreational activities	9%	100%	100%	7%	8%	1%	100%	87%	11%
Moderate sports/ recreational activities	19%	96%	32%	21%	5%	100%	100%	65%	18%
Strenuous sports/ recreational activities	4%	100%	21%	37%	2%	23%	48%	44%	3%
Ever muscular strength or endurance exercises	18%	77%	57%	91%	18%	38%	68%	66%	19%
Ever walking	100%	100%	94%	99%	46%	98%	99%	97%	96%
Light sports/recreational more than 30 minutes/day	0%	100%	32%	0%	0%	0%	42%	33%	0%
Moderate sports/recreational more than 30 minutes/day	0%	85%	0%	0%	0%	74%	40%	13%	0%
Strenuous sports/recreational more than 30 minutes/day	0%	87%	2%	15%	0%	7%	4%	7%	0%

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Muscular strength or endurance exercises more than 30 minutes/day	0%	47%	6%	45%	2%	7%	8%	16%	0%
Walking more than 30 minutes/day	52%	93%	50%	66%	0%	85%	82%	57%	50%
Light housework	97%	90%	91%	87%	73%	96%	96%	92%	98%
Heavy housework	57%	66%	47%	50%	20%	62%	60%	73%	78%
Home repairs	4%	41%	7%	11%	2%	11%	9%	37%	27%
Lawn work/yard care	0%	40%	2%	4%	0%	17%	5%	87%	63%
Outdoor gardening	0%	47%	10%	8%	2%	18%	11%	91%	76%
Caring for others	31%	51%	23%	38%	14%	39%	33%	42%	45%
Proportion of cohort	30.6%	1.9%	11.2%	2.5%	19.8%	5.2%	11.0%	7.2%	10.8%

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S5: 5-Class LCA Using Expectation Maximization to Account for Missing Data

Activity Frequency in 5 Class Model

Activity	Domestic/Garden Athlete	Walker	Athlete	Domestic/Garden	Least Active
Ever sports/ recreational activities	100%	36%	100%	34%	16%
Ever muscular strength or endurance exercises	74%	0%	80%	0%	1%
Ever walking	63%	26%	61%	24%	18%
Sports/recreational more than 30 minutes/day	99%	100%	98%	97%	48%
Muscular strength or endurance exercises more than 30 minutes/day	18%	2%	11%	2%	2%
Walking more than 30 minutes/day	70%	50%	78%	48%	0%
Light housework	93%	97%	93%	97%	72%
Heavy housework	74%	56%	54%	76%	19%
Home repairs	37%	4%	9%	27%	2%
Lawn work/yard care	81%	0%	2%	62%	0%
Outdoor gardening	84%	1%	8%	73%	2%
Caring for others	43%	30%	31%	45%	13%
Proportion of cohort	10%	22%	37%	13%	17%