

Supplementary Appendix:

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Figure S3: Association between leisure-time physical activity (LTPA) trajectory and average annual healthcare cost in later life in 1999 to 2008 (Model 2)

Table S1: Sample characteristics stratified by middle-age leisure-time physical activity (LTPA)

Characteristic	Middle-age Leisure Time Physical Activity				
	Overall (N=21,750)	<1h/week (N= 4,916)	1-3 h/week (N=5,635)	4-7 h/week (N=5,774)	>7 h/week (N=5,425)
Mean age (SD) at baseline RFQ	59.9 (3.2)	59.7 (3.2)	59.7 (3.2)	59.9 (3.2)	60.1 (3.1)
Sex (%)					
Male	11,798 (54.2)	2,711 (55.2)	3,071 (54.5)	3,101(53.7)	2,915 (53.7)
Female	9,952 (45.8)	2,205 (44.8)	2,564 (45.5)	2,673 (46.3)	2,510 (46.3)
Race/ethnicity (%)					
White, non-Hispanic	20,609 (94.8)	4,585 (93.3)	5,322 (94.5)	5,520 (95.6)	5,182 (95.6)
Black, non-Hispanic	564 (2.6)	178 (3.6)	161 (2.9)	117 (2.0)	108 (2.0)
Hispanic	215 (1.0)	55 (1.1)	56 (1.0)	55 (1.0)	49 (0.9)
Asian/Pacific Islander	199 (1.0)	55 (1.1)	55 (1.0)	40 (0.7)	49 (0.9)
Unknown	163 (0.8)	43 (0.9)	41 (0.7)	42 (0.7)	37 (0.7)
Education level (%)					
< 8 years schooling	596 (2.7)	175 (3.6)	136 (2.5)	122 (2.7)	163 (3.0)
8-11 years schooling	4,149 (19.1)	986 (20.1)	1,017 (18.1)	1,063 (18.0)	1,108 (20.4)
12+ or completed HS	2,214 (10.2)	519 (10.6)	573 (10.2)	538 (10.0)	543 (10.0)
Post-HS or some college	5,267 (24.2)	1,227 (25.0)	1,334 (23.7)	1,382 (23.9)	1,324 (24.4)
College degree +	9,113 (41.9)	1,924 (39.1)	2,472(43.9)	2,553 (44.2)	2,164 (39.9)
Unknown	411 (1.9)	85 (1.7)	103 (1.8)	100 (1.7)	123 (2.3)
Marital status (%)					
Married	15,718 (72.3)	3,412 (69.4)	4,063 (72.1)	4,210 (72.9)	4,033 (74.3)
Widowed	1,777 (8.2)	421 (8.6)	452 (8.0)	455 (7.9)	449 (8.3)
Divorced	2,796 (12.9)	653 (13.3)	716 (12.7)	767 (13.3)	660 (12.2)
Separated	169 (0.8)	41 (0.8)	43 (0.8)	44 (0.8)	41 (0.8)
Never married	1,197 (5.5)	368 (7.5)	337 (6.0)	276 (4.8)	216 (4.0)
Unknown	93 (0.4)	21 (0.4)	24 (0.4)	22 (0.4)	26 (0.5)
Smoking history ever (%)					
Never smoker	8,261 (38.0)	1,801 (36.6)	2,163 (38.4)	2,231 (38.6)	2,066 (38.1)
Former smoker, <=20/day	5,950 (27.4)	1,210 (24.6)	1,499 (26.6)	1,674 (29.0)	1,567 (28.9)
Former smoker, >20/day	4,308 (19.8)	1,012 (20.6)	1,125 (20.0)	1,106 (19.2)	1,065 (19.6)

Current smoker, ≤20 cigs/day	1,640 (7.5)	441 (9.0)	409 (7.3)	397 (6.9)	393 (7.2)
Current smoker, >20 cigs/day	953 (4.4)	292 (5.9)	278 (4.9)	208 (3.6)	175 (3.2)
Unknown	638 (2.9)	160 (3.3)	161 (2.9)	158 (2.7)	159 (2.9)
SR Health status at RFQ (%)					
Excellent	4,231 (19.5)	565 (11.5)	907 (16.1)	1,235 (21.4)	1,524 (28.1)
Very good	8,498 (39.1)	1,677 (34.1)	2,211 (39.2)	2,356 (40.8)	2,254 (41.6)
Good	7,273 (33.4)	2,039 (41.5)	2,044 (36.3)	1,821 (31.6)	1,369 (25.2)
Fair	1,518 (7.0)	584 (11.9)	399 (7.1)	303 (5.3)	232 (4.3)
Unknown	230 (1.1)	51 (1.0)	74 (1.3)	59 (1.0)	46 (0.9)
Clinical condition at RFQ (%)					
Any Health Problem	7,447 (34.2)	1,950 (39.7)	1,919 (34.1)	1,863 (32.3)	1,715 (31.6)
History of heart disease	2,145 (9.9)	528 (10.7)	561 (10.0)	557 (9.7)	499 (9.2)
History of diabetes	1,424 (6.6)	475 (9.7)	373 (6.6)	318 (5.5)	258 (4.8)
History of osteoporosis	595 (2.7)	137 (2.8)	164 (2.9)	152 (2.8)	142 (2.6)
History of stroke	227 (1.0)	75 (1.5)	47 (0.8)	57 (1.0)	48 (0.9)
BMI Category @ RFQ (%)					
Normal weight (<25 kg m ⁻²)	8,107 (37.3)	1,410 (28.7)	1,925 (34.2)	2,343 (40.6)	2,429 (44.8)
Overweight (25-29.9 kg.m ⁻²)	8,922 (41.0)	1,940 (39.5)	2,378 (42.1)	2,443 (42.3)	2,165 (39.9)
Obese (≥30 kg m ⁻²)	4,397 (20.2)	1,480 (30.1)	1,241 (22.0)	915 (15.9)	761 (14.0)
Unknown	324 (1.5)	86 (1.8)	95 (1.7)	73 (1.3)	70 (1.3)
BMI Category @ age 18 (%)					
Normal weight (<25 kg m ⁻²)	18,052 (83.0)	3,993 (81.2)	4,674 (83.0)	4,818 (83.4)	4,567 (84.2)
Overweight (25-29.9 kg.m ⁻²)	1,988 (9.1)	497 (10.1)	504 (8.9)	523 (9.1)	464 (8.6)
Obese (≥30 kg m ⁻²)	307 (1.4)	106 (2.2)	80 (1.4)	66 (1.1)	55 (1.0)
Unknown	1,403 (6.5)	320 (6.5)	377 (6.7)	367 (6.4)	339 (6.3)
Television viewing (%)					
0-2 hours/day	7,859 (36.1)	1,600 (32.6)	1,997 (35.4)	2,175 (37.7)	2,087 (38.5)
3-4 hours/day	9,872 (45.4)	2,219 (45.1)	2,640 (46.9)	2,613 (45.3)	2,400 (44.2)
5+ hours/day	3,964 (18.2)	1,085 (22.1)	988 (17.5)	969 (16.8)	922 (17.0)
Unknown	55 (0.3)	12 (0.2)	10 (0.2)	17 (0.3)	16 (0.3)
*State of Residence (%)					
California	5,489 (25.2)	1,158 (21.1)	1,377 (25.1)	1,515 (27.6)	1,439 (26.2)
Florida	4,835 (22.2)	993 (20.5)	1,225(25.3)	1,277 (26.4)	1,340 (27.7)

Georgia (Atlanta)	745 (3.4)	188 (25.2)	178 (23.9)	231 (31.0)	148 (19.9)
Louisiana	876 (4.0)	226 (25.8)	238 (27.2)	196 (22.4)	216 (24.7)
Michigan (Detroit)	1,291 (5.9)	351 (27.2)	365 (28.3)	329 (25.5)	246 (19.1)
North Carolina	2,441 (11.2)	514 (21.1)	639 (26.2)	689 (28.2)	599 (24.5)
New Jersey	3,349 (15.4)	842 (25.1)	888 (26.5)	852 (25.4)	767 (22.9)
Pennsylvania	2,724 (12.5)	644 (23.6)	725 (26.6)	685 (25.2)	670 (24.6)

Source: Authors' analysis of NIH-AARP Diet and Health Survey's Risk Factor Questionnaire linked to Medicare claims. Percentage rounded to one decimal place and may not total 100%.

*State of residence for overall column is N (%). Stratifying by Middle-age LTPA is reported as N and as row percentage.

Table S2: Healthcare cost by middle-age leisure-time physical activity (LTPA) levels overall (N=21,750), males (N=11,798) and females (N=9,952)

Middle-age LTPA Status	Unadjusted		Multivariable-adjusted			
	Healthcare cost difference (95% CI)	Percent Difference (95% CI)	Model 1: Healthcare cost difference (95% CI)	Percent Difference (95% CI)	Model 2: Healthcare cost difference (95% CI)	Percent Difference (95% CI)
Overall						
<1 hour/week	REF		REF		REF	
1-3 hours/week	-\$1,642 (-\$2,206, -\$1,079)	-17.7 (-23.7, -11.6)	-\$1,365 (-\$1,913, -\$815)	-15.0 (-21.0, -9.0)	-\$1,188 (-\$1,726, -\$650)	-13.4 (-19.5, -7.3)
4-7 hours/week	-\$1,888 (-\$2,438, -\$1,338)	-20.3 (-26.2, -14.8)	-\$1,592 (-\$2,130, -\$1,053)	-17.5 (-23.4, -11.6)	-\$1,251 (-\$1,785, -\$718)	-14.1 (-20.2, -8.1)
7+ hours/week	-\$2,255 (-\$2,806, -\$1,704)	-24.2 (-30.2, -18.3)	-\$2,079 (-\$2,613, \$1,546)	-22.8 (-28.7, -17.0)	-\$1,676 (-\$2,213, -\$1,139)	-18.9 (-25.0, -12.9)
Males						
<1 hour/week	REF		REF		REF	
1-3 hours/week	-\$1,744 (-\$2,509, -\$978)	-18.1 (-26.0, -10.1)	-\$1,457 (-\$2,213, -\$701)	-15.3 (-23.2, -7.4)	-\$1,372 (-\$2,120, -\$624)	-14.7 (-22.7, -6.7)
4-7 hours/week	-\$2,039 (-\$2,802, -\$1,276)	-21.1 (-29.0, -13.2)	-\$1,736 (-\$2,497, -\$976)	-18.2 (-26.2, -10.2)	-\$1,564 (-\$2,317, -\$811)	-16.7 (-24.8, -8.7)
7+ hours/week	-\$2,040 (-\$2,809, -\$1,270)	-21.1 (-29.1, -13.2)	-\$1,951 (-\$2,700, -\$1,202)	-20.5 (-28.3, -12.6)	-\$1,746 (-\$2,500, -\$991)	-18.7 (-29.5, -10.6)

Females						
<1 hour/week	REF		REF		REF	
1-3 hours/week	-\$1,510 (-\$2,342, -\$678)	-17.0 (-26.4, -7.6)	-\$1,288 (-\$2,090, -\$481)	-14.5 (-23.6, -5.4)	-\$970 (-\$1,745, -\$195)	-11.7 (-21.0, -2.3)
4-7 hours/week	-\$1,689 (-\$2,480, -\$897)	-19.0 (-27.9, -10.1)	-\$1,456 (-\$2,217, -\$696)	-16.4 (-25.0, -7.8)	-\$904 (-\$1,657, -\$152)	-10.9 (-19.9, -1.8)
7+ hours/week	-\$2,481 (-\$3,266, -\$1,696)	-28.0 (-36.8, -19.1)	-\$2,309 (-\$3,064, -\$1,554)	-26.0 (-34.5, -17.5)	-\$1,644 (-\$2,395, -\$892)	-19.8 (-28.8, -10.7)

Model 1: Adjusted for age, marital status, race/ethnicity, education attainment, smoking status, BMI at age 18, location of residence and television viewing status. Model 2: Includes all variables from Model 1 and BMI at time of risk factor questionnaire. Reference costs - Overall: Unadjusted: \$9,302/year; Model 1: \$9,101/year; Model 2: \$8,855/year. Males: Unadjusted \$9,649/year; Model 1: \$9,526/year, Model 2: \$9,347/year. Females: Unadjusted \$8,876/year; Model 1: \$8,870/year; Model 2: \$8,320/year during 1999-2008. Modified Park Test – Poisson. In female model 1 (N=9,777) and model 2 (N=9,588) observations dropped due to collinearity.

Table S3: Sample characteristics stratified by leisure-time physical activity (LTPA) trajectories (maintainers and increasers)

Characteristic	Leisure Time Physical Activity Trajectory (N, %)				
	1 4,016 (18.4)	8 5,220 (24.0)	3 2,724 (12.5)	2 1,988 (9.1)	4 1,168 (5.4)
Mean age (SD) at baseline RFQ	59.7 (3.2)	60.1 (3.1)	59.9 (3.1)	60.0 (3.2)	59.8 (3.0)
Sex (%)					
Male	1,856 (46.2)	2,945 (56.4)	1,746 (64.1)	899 (45.2)	354 (30.3)
Female	2,160 (53.8)	2,275 (43.6)	978 (35.9)	1,089 (54.8)	814 (69.7)
Race/ethnicity (%)					
White, non-Hispanic	3,741 (93.2)	4,983 (95.5)	2,612 (95.9)	1,900 (95.6)	1,122 (95.2)
Black, non-Hispanic	152 (3.8)	109 (2.1)	53 (2.0)	39 (2.0)	23 (2.0)
Hispanic	39 (1.0)	44 (0.8)	26 (1.0)	17 (0.9)	17 (1.5)
Asian/Pacific Islander	52 (1.3)	41 (0.8)	20 (0.7)	17 (0.9)	10 (0.9)
Unknown	32 (0.8)	43 (0.8)	13 (0.5)	15 (0.8)	6 (0.5)
Education level (%)					
< 8 years schooling	164 (4.1)	137 (2.6)	57 (2.1)	52 (2.6)	39 (3.3)
8-11 years schooling	929 (23.1)	1,040 (19.9)	392 (14.4)	405 (20.4)	299 (25.6)
12+ or completed HS	419 (10.4)	562 (10.8)	246 (9.0)	190 (9.6)	117 (10.0)
Post-HS or some college	882 (22.0)	1,328 (25.4)	616 (22.6)	454 (22.8)	287 (24.6)
College degree	1,561 (38.9)	2,034 (39.0)	1,366 (50.2)	853 (42.9)	405 (34.7)
Unknown	61 (1.5)	119 (2.3)	47 (1.7)	34 (1.7)	21 (1.8)
Marital status (%)					
Married	2,683 (66.8)	3,905 (74.8)	2,115 (77.6)	1,354 (68.1)	785 (67.2)
Widowed	392 (9.8)	394 (7.6)	171 (6.3)	186 (9.4)	148 (12.7)
Divorced	521 (13.0)	666 (12.8)	295 (10.8)	279 (14.0)	180 (15.4)
Separated	35 (0.9)	44 (0.8)	11 (0.4)	19 (1.0)	11 (1.0)
Never married	361 (9.0)	185 (3.5)	121 (4.4)	142 (7.1)	41 (3.5)
Unknown	24 (0.6)	26 (0.5)	11 (0.4)	8 (0.4)	3 (0.3)
Smoking history ever (%)					
Never smoker	1,660 (41.3)	1,986 (38.1)	1,003 (36.8)	759 (38.2)	518 (44.4)
Former smoker, ≤20/day	1,024 (25.5)	1,449 (27.8)	834 (30.6)	613 (30.8)	314 (26.9)
Former smoker, >20/day	701 (17.5)	968 (18.5)	582 (21.4)	421 (21.2)	167 (14.3)

Current smoker, ≤20 cigs/day	322 (8.0)	442 (8.5)	147 (5.4)	99 (5.0)	102 (8.7)
Current smoker, >20 cigs/day	174 (4.3)	219 (4.2)	87 (3.2)	40 (2.0)	35 (3.0)
Unknown	135 (3.4)	156 (3.0)	71 (2.6)	56 (2.8)	32 (2.7)
SR Health status at RFQ (%)					
Excellent	628 (15.6)	1,218 (23.3)	713 (26.2)	523 (26.3)	278 (23.8)
Very good	1,433 (35.7)	2,142 (41.0)	1,118 (41.0)	822 (41.4)	487 (41.7)
Good	1,561 (38.9)	1,535 (29.4)	757 (27.8)	537 (27.0)	335 (28.7)
Fair	354 (8.8)	272 (5.2)	110 (4.0)	90 (5.9)	58 (5.0)
Unknown	40 (1.0)	53 (1.0)	26 (1.0)	16 (0.8)	10 (0.9)
Clinical condition at RFQ (%)					
Any health problem	1,408 (35.1)	1,679 (32.2)	840 (30.8)	676 (34.0)	347 (29.7)
History of heart disease	371 (9.2)	484 (9.3)	280 (10.3)	210 (10.6)	68 (5.8)
History of diabetes	299 (7.4)	255 (4.9)	149 (5.5)	123 (6.2)	44 (3.8)
History of osteoporosis	137 (3.4)	132 (2.5)	46 (1.7)	69 (3.5)	44 (3.8)
History of stroke	44 (1.1)	59 (1.1)	20 (0.7)	19 (1.0)	7 (0.6)
BMI Category @ RFQ (%)					
Normal weight (<25 kg m ⁻²)	1,481 (36.9)	2,015 (38.6)	1,165 (42.8)	963 (48.4)	586 (50.2)
Overweight (25-29.9 kg.m ⁻²)	1,518 (37.8)	2,271 (43.5)	1,169 (42.9)	731 (36.8)	396 (33.9)
Obese (≥30 kg m ⁻²)	939 (23.4)	873 (16.7)	359 (13.2)	263 (13.2)	166 (14.2)
Unknown	78 (2.0)	61 (1.2)	31 (1.1)	31 (1.6)	20 (1.7)
BMI Category @ age 18 (%)					
Normal weight (<25 kg m ⁻²)	3,238 (80.6)	4,399 (84.3)	2,289 (84.0)	1,629 (81.9)	980 (83.9)
Overweight (25-29.9 kg.m ⁻²)	372 (9.3)	459 (8.8)	274 (10.1)	178 (9.0)	70 (6.0)
Obese (≥30 kg m ⁻²)	87 (2.2)	50 (1.0)	22 (1.0)	33 (1.7)	14 (1.2)
Unknown	319 (7.9)	312 (6.0)	139 (5.1)	148 (7.4)	104 (8.9)
Television viewing (%)					
0-2 hours/day	1,467 (36.5)	1,895 (36.3)	1,095 (40.2)	760 (38.2)	477 (40.8)
3-4 hours/day	1,780 (44.3)	2,359 (45.2)	1,193 (43.8)	898 (45.2)	514 (44.0)
5+ hours/day	759 (18.9)	951 (18.2)	429 (45.8)	323 (16.3)	173 (14.8)
Unknown	10 (0.3)	15 (0.3)	7 (0.3)	7 (0.4)	4 (0.3)
*State of Residence (%)					
California (N=5,489)	868 (15.8)	1,366 (24.9)	750 (13.7)	531 (9.7)	280 (5.1)
Florida (N=4,835)	830 (17.2)	1,205 (24.9)	622 (12.9)	494 (10.2)	271 (5.6)

Georgia (Atlanta) (N=745)	132 (17.7)	150 (20.1)	112 (15.0)	75 (10.0)	38 (5.1)
Louisiana (N=876)	171 (19.5)	214 (24.4)	92 (10.5)	61 (7.0)	40 (4.6)
Michigan (Detroit) (N=1,291)	293 (22.7)	260 (20.1)	144 (11.2)	100 (7.7)	68 (5.3)
North Carolina (N=2,441)	470 (19.3)	618 (25.3)	316 (12.9)	211 (8.6)	133 (5.4)
New Jersey (N=3,349)	724 (21.6)	729 (21.8)	376 (11.2)	301 (9.0)	200 (6.0)
Pennsylvania (N=2,724)	528 (19.4)	678 (24.9)	312 (11.5)	215 (7.9)	138 (5.1)

Source: Authors' analysis of NIH-AARP Diet and Health Survey's Risk Factor Questionnaire linked to Medicare claims. Percentage rounded to one decimal place and may not total 100%.

*State of residence for overall column is N (%). Stratifying by Middle-age LTPA is reported as N and as row percentage.

Table S4: Sample characteristics stratified by leisure-time physical activity (LTPA) trajectories (Decreasers)

Characteristic	Leisure Time Physical Activity Trajectory (N, %)			
	5 1,128 (5.2)	6 2,028 (9.3)	7 1,676 (7.7)	9 1,802 (8.3)
Mean age (SD) at baseline RFQ	59.9 (3.2)	60.0 (3.1)	59.5 (3.2)	59.5 (3.2)
Sex (%)				
Male	448 (39.7)	1,250 (61.6)	1,080 (64.4)	1,220 (67.7)
Female	680 (60.3)	778 (38.4)	596 (35.6)	582 (32.3)
Race/ethnicity (%)				
White, non-Hispanic	1,076 (95.4)	1,916 (94.5)	1,574 (93.9)	1,695 (94.1)
Black, non-Hispanic	23 (2.0)	65 (3.2)	46 (2.7)	54 (3.0)
Hispanic	11 (1.0)	20 (1.0)	20 (1.2)	21 (1.2)
Asian/Pacific Islander	8 (0.7)	9 (0.4)	20 (1.2)	22 (1.2)
Unknown	10 (0.9)	18 (0.9)	16 (1.0)	10 (0.6)
Education level (%)				
< 8 years schooling	24 (2.1)	54 (2.7)	28 (1.7)	41 (2.3)
8-11 years schooling	217 (19.2)	334 (16.5)	261 (15.6)	272 (15.1)
12+ or completed HS	107 (9.5)	224 (11.1)	178 (10.6)	171 (9.5)
Post-HS or some college	297 (26.3)	560 (27.6)	411 (24.5)	432 (24.0)
College degree	453 (40.2)	814 (40.1)	773 (46.1)	854 (47.4)
Unknown	30 (2.7)	42 (2.1)	25 (1.5)	32 (1.8)
Marital status (%)				
Married	759 (67.3)	1,454 (71.7)	1,276 (76.1)	1,387 (77.0)
Widowed	119 (10.6)	162 (8.0)	103 (6.2)	102 (5.7)
Divorced	190 (16.8)	285 (14.1)	186 (11.1)	194 (10.8)
Separated	12 (1.1)	17 (0.8)	11 (0.7)	9 (0.5)
Never married	44 (3.9)	100 (4.9)	97 (5.8)	106 (5.9)
Unknown	4 (0.4)	10 (0.5)	3 (0.2)	4 (0.2)
Smoking history ever (%)				
Never smoker	437 (38.7)	638 (31.5)	633 (37.8)	627 (34.8)
Former smoker, <=20/day	303 (26.9)	524 (25.8)	421 (25.1)	468 (26.0)
Former smoker, >20/day	206 (18.3)	471 (23.2)	381 (22.7)	411 (22.8)

Current smoker, ≤20 cigs/day	100 (8.9)	188 (9.3)	108 (6.4)	132 (7.3)
Current smoker, >20 cigs/day	57 (5.1)	149 (7.4)	83 (5.0)	109 (6.1)
Unknown	25 (2.2)	58 (2.9)	50 (3.0)	55 (3.1)
SR Health status at RFQ (%)				
Excellent	147 (13.0)	243 (12.0)	275 (16.4)	206 (11.4)
Very good	450 (39.9)	726 (35.8)	632 (37.7)	688 (38.2)
Good	423 (37.5)	784 (38.7)	622 (37.1)	719 (39.9)
Fair	94 (8.3)	247 (12.2)	124 (7.4)	169 (9.4)
Unknown	14 (1.2)	28 (1.4)	23 (1.4)	20 (1.1)
Clinical condition at RFQ (%)				
Any health problem	420 (37.2)	793 (39.1)	628 (37.5)	656 (36.4)
History of heart disease	113 (10.0)	225 (11.1)	189 (11.3)	205 (11.4)
History of diabetes	84 (7.5)	179 (8.8)	136 (8.1)	155 (8.6)
History of osteoporosis	34 (3.0)	52 (2.6)	41 (2.5)	40 (2.2)
History of stroke	13 (1.2)	35 (1.7)	19 (1.1)	11 (0.6)
BMI Category @ RFQ (%)				
Normal weight (<25 kg m ⁻²)	383(34.0)	520 (25.6)	535 (31.9)	459 (25.5)
Overweight (25-29.9 kg.m ⁻²)	441 (39.1)	890 (43.9)	678 (40.5)	828 (46.0)
Obese (≥30 kg m ⁻²)	281 (24.9)	598 (29.5)	430 (25.7)	488 (27.1)
Unknown	23 (2.0)	20 (1.0)	33 (2.0)	27 (1.5)
BMI Category @ age 18 (%)				
Normal weight (<25 kg m ⁻²)	914 (81.0)	1,669 (82.3)	1,419 (84.7)	1,515 (84.1)
Overweight (25-29.9 kg.m ⁻²)	113 (10.0)	206 (10.2)	142 (8.5)	174 (9.7)
Obese (≥30 kg m ⁻²)	17 (1.5)	26 (1.3)	27 (1.6)	31 (1.7)
Unknown	84 (7.5)	127 (6.3)	88 (5.3)	82 (4.6)
Television viewing (%)				
0-2 hours/day	391 (34.7)	582 (28.7)	614 (36.6)	578 (32.1)
3-4 hours/day	533 (47.3)	966 (47.6)	779 (46.5)	850 (47.2)
5+ hours/day	198 (17.6)	478 (23.6)	281 (16.8)	372 (20.6)
Unknown	6 (0.5)	2 (0.1)	2 (0.1)	2 (0.1)
*State of Residence (%)				
California (N=5,489)	285 (5.2)	504 (9.2)	467 (8.5)	438 (8.0)
Florida (N=4,835)	264 (5.5)	443 (9.2)	352 (7.3)	354 (7.3)
Georgia (Atlanta) (N=745)	36 (4.8)	74 (9.9)	72 (9.7)	56 (7.5)

Louisiana (N=876)	40 (4.6)	88 (10.0)	75 (8.6)	95 (10.8)
Michigan (Detroit) (N=1,291)	75 (5.8)	139 (10.8)	91 (7.0)	121 (9.3)
North Carolina (N=2,441)	125 (5.1)	231 (9.5)	159 (6.5)	178 (7.3)
New Jersey (N=3,349)	163 (4.9)	307 (9.2)	239 (7.1)	310 (9.3)
Pennsylvania (N=2,724)	140 (5.1)	242 (8.9)	221 (8.1)	250 (9.2)

Source: Authors' analysis of NIH-AARP Diet and Health Survey's Risk Factor Questionnaire linked to Medicare claims. Percentage rounded to one decimal place and may not total 100%.

*State of residence for overall column is N (%). Stratifying by Middle-age LTPA is reported as N and as row percentage.

Table S5: Distributions of LTPA trajectories by Medicare linkage reason and vital status at end of observation period.

	Maintainers			Increasers		Decreasers			
Trajectory	1 (ref)	8	3	2	4	5	6	7	9
Medicare Linkage Reason (N, %)									
Alive	3,518 (87.6)	4,578 (87.7)	2,414 (88.6)	1,763 (88.7)	1,087 (93.1)	964 (85.5)	1,685 (83.1)	1,457 (86.9)	1,574 (87.4)
Dead	498 (12.4)	642 (12.3)	310 (11.4)	225 (11.3)	81 (6.9)	164 (14.5)	343 (16.9)	219 (13.1)	228 (12.7)
No. of years of Medicare claims (SD)									
Alive	6.2 (2.9)	6.7 (2.8)	6.5 (2.8)	6.5 (2.9)	6.4 (2.9)	6.4 (2.9)	6.4 (2.9)	6.1 (2.9)	6.0 (2.8)
Dead	4.7 (2.4)	5.0 (2.4)	5.0 (2.4)	5.0 (2.4)	5.0 (2.6)	4.6 (2.4)	4.6 (2.4)	4.8 (2.3)	4.7 (2.3)
Vital status at end of observation period - Dec 31 st , 2008 (N, %)									
Alive	3,393 (84.8)	4,414 (84.6)	2,346 (86.1)	1,714 (86.2)	1,061 (90.8)	937 (83.1)	1,615 (80.0)	1,405 (83.8)	1,507 (83.6)
Dead	623 (15.5)	806 (15.4)	378 (13.9)	274 (13.8)	107 (9.2)	191 (16.9)	413 (20.4)	271 (18.6)	295 (16.4)
Deceased at end of observation period by sex (N, % by sex)									
Males	364 (19.6)	511 (17.3)	272 (15.6)	156 (17.7)	40 (11.3)	91 (20.3)	281 (22.5)	201 (18.6)	218 (17.9)
Females	259 (12.0)	295 (12.9)	106 (10.8)	118 (10.8)	67 (8.2)	100 (14.7)	132 (17.0)	70 (11.7)	77 (13.2)

Table S6: Association between leisure-time physical activity (LTPA) trajectory and average annual healthcare cost in later life in 1999 to 2008 stratified by sex (Model 1)

Traj Number	Stratified by Sex					
	Males (N=11,798)			Females* (N=9,952)		
	N	Healthcare cost difference (\$) (95% CI)	Percent Difference	N	Healthcare cost difference (\$) (95% CI)	Percent Difference
Maintainers						
1**	1,856	Referent	Ref	2,160	Referent	Ref
8	2,945	-1,334 (-2,167, -501)	-14.9 (-24.1, -5.6)	2,275	-1,076 (-1,859, -294)	-13.1 (-22.6, -3.6)
3	1,746	-1,377 (-2,285 -469)	-15.3 (-25.4, -5.2)	978	-1,397 (-2,374, -420)	-17.0 (-28.9, -5.1)
Increasesers						
4	354	-2,302 (-3,637, -968)	-25.6 (-40.5, -10.8)	814	-1,659 (-2,668, -650)	-20.2 (-32.5, -7.9)
2	899	-505 (-1,630, 621)	-5.6 (-18.2, 6.9)	1,089	-1,130 (-2,133, -127)	-13.7 (-25.9, -1.5)
Decreasers						
6	1,250	-132 (-1,172, 908)	-1.5 (-13.1, 10.1)	778	198 (-1,072, 1,469)	2.4 (-13.0, 17.9)
9	1,220	-574 (-1,617, 469)	-6.4 (-18.0, 5.2)	582	800 (-530, 2,132)	9.7 (-6.4, 25.9)
5	448	-592 (-2,023, 838)	-6.6 (-22.5, 9.3)	680	-1,009 (-1,969, -49)	-12.3 (-24.0, -0.6)
7	1,080	-178 (-1,282, 926)	-2.0 (-14.3, 10.3)	596	-300 (-1,454, 854)	-3.6 (-17.7, 10.4)

Modified Park Test –Poisson.

Model adjusted for age, marital status, race/ethnicity, education attainment, smoking status, BMI at age 18, location of residence and television viewing status. *Collinearity dropped 175 observations in Females **Traj 1 Reference: Males \$8,980/year; Females \$8,221/year

Table S7: Association between leisure-time physical activity (LTPA) trajectory and average annual healthcare cost in later life in 1999 to 2008 stratified by sex (Model 2)

Traj Number	Stratified by Sex					
	Males (N=11,798)			Females* (N=9,952)		
	N	Healthcare cost difference (\$) (95% CI)	Percent Difference	N	Healthcare cost difference (\$) (95% CI)	Percent Difference
Maintainers						
1**	1,856	Referent	Ref	2,160	Referent	Ref
8	2,945	-1,315 (-2,148, -482)	-14.7 (-24.1, -5.4)	2,275	-750 (-1,522, 23)	-9.3 (-18.8, 0.3)
3	1,746	-1,254 (-2,167 -341)	-14.1 (-24.3, -3.8)	978	-1,053 (-2,030, -76)	-13.0 (-25.1, -0.9)
Increasesers						
4	354	-2,209 (-3,559, -859)	-24.8 (-40.0, -9.6)	814	-1,304 (-2,322, -285)	-16.1 (-28.7, -3.5)
2	899	-327 (-1,468, 814)	-3.7 (-16.5, 9.1)	1,089	-713 (-1,731, 305)	-8.8 (-21.4, 3.8)
Decreasers						
6	1,250	-264 (-1,300, 772)	-3.0 (-14.5, 8.7)	778	-23 (-1,245, 1,200)	-0.3 (-15.4, 14.8)
9	1,220	-683 (-1,714, 347)	-7.7 (-19.2, 3.9)	582	547 (-710, 1,805)	6.8 (-8.8, 22.3)
5	448	-645 (-2,073, 783)	-7.2 (-23.3, 8.8)	680	-1,039 (-1,970, -108)	-12.8 (-24.3, -1.3)
7	1,080	-255 (-1,349, 839)	-2.9 (-15.1, 9.4)	596	-426 (-1,534, 681)	-5.3 (-18.9, 8.4)

Modified Park Test – Poisson.

Model adjusted for age, marital status, race/ethnicity, education attainment, smoking status, BMI at age 18, location of residence and television viewing status and BMI at time of risk factor questionnaire. *Collinearity present and therefore dropped 364 observations in model with females **Traj 1 Reference: Males \$8,916/year; Females \$8,096/year

Table S8: Distribution of trajectories after excluding respondents with trajectory assignment probability <80% and excluding the last 12 months of claims data

	Excluding							
	respondents with trajectory assignment probabilities < 80% (N=18,883)				Last 12 months of claims (N=20,234)			
	N (%)	% initial sample	Medicare linkage reason = alive N (%)	No. of years of Medicare claims (SD)	N (%)	% initial sample	Medicare linkage reason = alive N (%)	No. of years of Medicare claims (SD)
Maintainers								
1	3,808 (20.2)	94.8	3,338 (87.7)	6.0 (2.8)	3,686 (18.2)	91.8	3,272 (88.8)	5.5 (2.5)
8	4,897 (25.9)	93.8	4,289 (87.6)	6.4 (2.8)	4,964 (24.5)	95.1	4,414 (88.9)	5.8 (2.5)
3	2,088 (11.1)	76.7	1,852 (88.7)	6.2 (2.8)	2,550 (12.6)	93.6	2,281 (89.5)	5.7 (2.5)
Increasesers								
4	909 (4.8)	97.7	850 (93.5)	6.4 (2.9)	1,098 (5.4)	94.0	1,029 (93.7)	5.8 (2.5)
2	1,943 (10.3)	77.8	1,722 (88.6)	6.3 (2.9)	1,839 (9.1)	92.5	1,649 (89.7)	5.8 (2.5)
Decreasers								
6	1,466 (7.8)	72.3	1,201 (81.9)	6.1 (2.9)	1,880 (9.3)	92.7	1,601 (85.2)	5.5 (2.5)
9	1,774 (9.4)	98.4	1,549 (87.3)	5.8 (2.8)	1,648 (8.1)	91.5	1,455 (83.3)	5.3 (2.6)
5	438 (2.3)	38.8	377 (86.1)	6.3 (3.0)	1,030 (5.1)	91.3	890 (86.4)	5.6 (2.6)
7	1,560 (8.3)	93.1	1,353 (86.7)	5.9 (2.9)	1,539 (7.6)	91.8	1,350 (87.9)	5.3 (2.6)

Table S9: Sensitivity analysis excluding respondents with trajectory assignment probability <80% and excluding the last 12 months of claims data (Model 2)

Traj Number	Excluding					
	respondents with trajectory assignment probabilities < 80% (N=18,883)*			last 12 months of claims (N=20,234)		
	N	Healthcare cost difference (\$) (95% CI)	Percent Difference (95% CI)	N	Healthcare cost difference (\$) (95% CI)	Percent Difference (95% CI)
Maintainers						
1	3,808	Referent	Ref	3,686	Referent	Ref
8	4,897	-966 (-1,550, -381)	-11.5 (-18.5, -4.5)	4,964	-618 (-1,008, -227)	-10.4 (-17.0, -3.8)
3	2,088	-1,037 (-1,758, -315)	-12.3 (-20.9, -3.8)	2,550	-812 (-1,249, -376)	-13.7 (-21.0, -6.3)
Increasesers						
4	909	-1,517 (-2,457, -557)	-18.1 (-29.3, -6.6)	1,098	-792 (-1,386, -199)	-13.3 (-23.3, -3.3)
2	1,943	-443 (-1,220, 334)	-5.3 (-14.5, 4.0)	1,839	-300 (-803, 202)	-5.0 (-13.5, 3.4)
Decreasers						
6	1,466	-59 (-942, 824)	-0.7 (-11.2, 9.8)	1,880	-378 (-877, 121)	-6.4 (-14.8, 0.2)
9	1,774	-207 (-990, 576)	-2.5 (-11.8, 6.9)	1,648	-67 (-619, 485)	-1.2 (-10.4, 8.2)
5	438	-957 (-2,031, 117)	-11.4 (-24.2, 1.4)	1,030	-551 (-1,118, 17)	-9.3 (-18.8, 0.3)
7	1,560	-236 (-1,032, 560)	-2.8 (-12.3, 6.7)	1,539	-246 (-767, 275)	4.1 (-12.9, 4.6)

Modified Park Test – Poisson.

Model adjusted for age, marital status, race/ethnicity, education attainment, smoking status, BMI at age 18, location of residence and television viewing status and BMI at time of risk factor questionnaire. * Collinearity present and therefore dropped 279 observations

**Traj 1 Reference: trajectory assignment probabilities < 80% \$8,399; Last 12 months of claims \$5,941

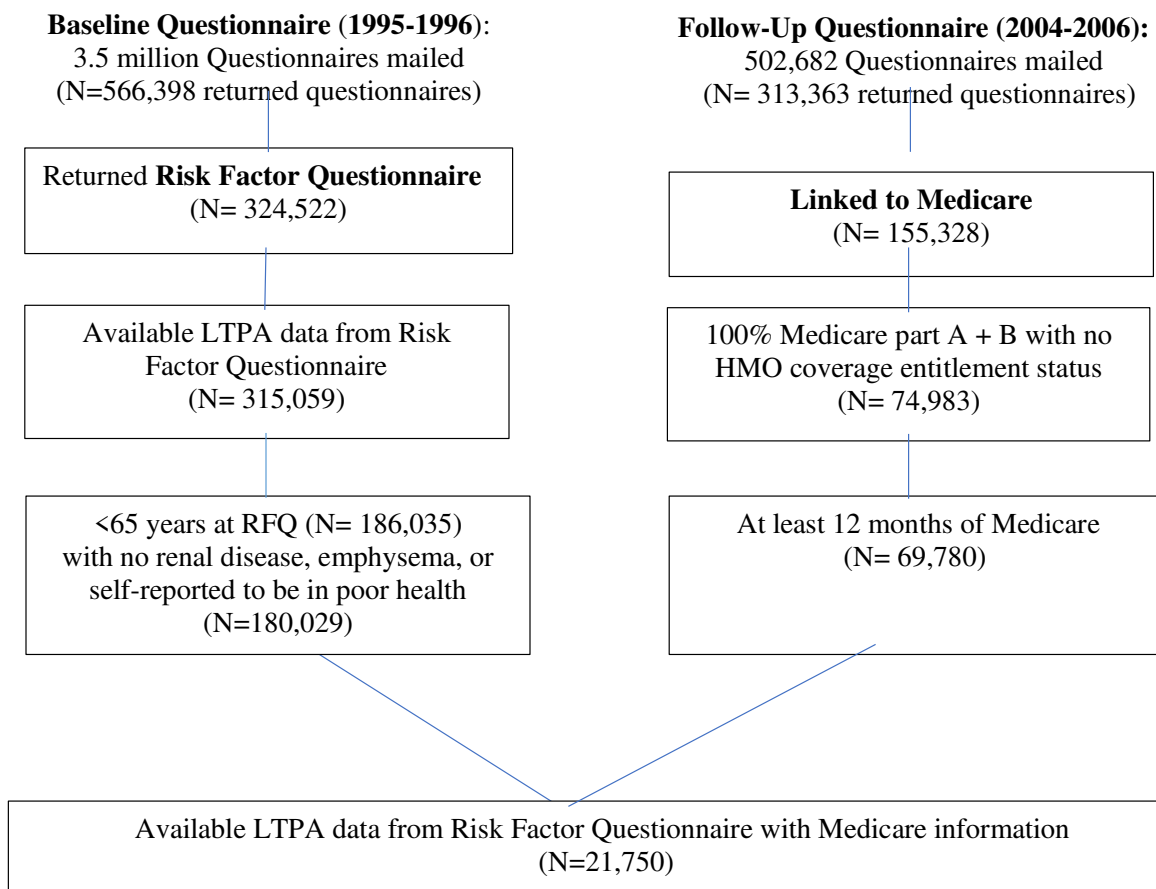


Figure S1: Flow diagram of the exclusion criteria.

55. Read the list of examples of moderate and vigorous activities in the box below.

EXAMPLES OF MODERATE AND VIGOROUS ACTIVITIES:			
Tennis	Heavy gardening	Cheerleading/drill team	Rowing
Golf (walking)	Weight lifting	Handball/racquetball	Aerobics
Biking	Basketball/baseball	Hiking/climbing mountains	Jogging/running
Swimming	Football/soccer	Fast walking/fast dancing	Heavy housework

Think back to the ages and times listed in the table below. Mark the circles that best describe how often you participated in moderate and vigorous activities at the ages and time listed. DO NOT INCLUDE ACTIVITIES THAT YOU REPORTED IN QUESTIONS 48 - 51 ON PAGE 13.

How often did you participate in moderate and vigorous activities at the following ages and time?	HOW OFTEN (MARK ONLY ONE RESPONSE)					
	Never	Rarely	Weekly, but less than 1 hour per week	1-3 hours per week	4-7 hours per week	More than 7 hours per week
15-18 years old	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19-29 years old	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
35-39 years old	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
in the past 10 years	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure S2: Item included in the AARP Risk Factor Questionnaire to assess participation in leisure-time physical activity at ages 15-18 years, 19-29 years, 35-39 years, and in the past 10 years (assumed as 43-64 years).

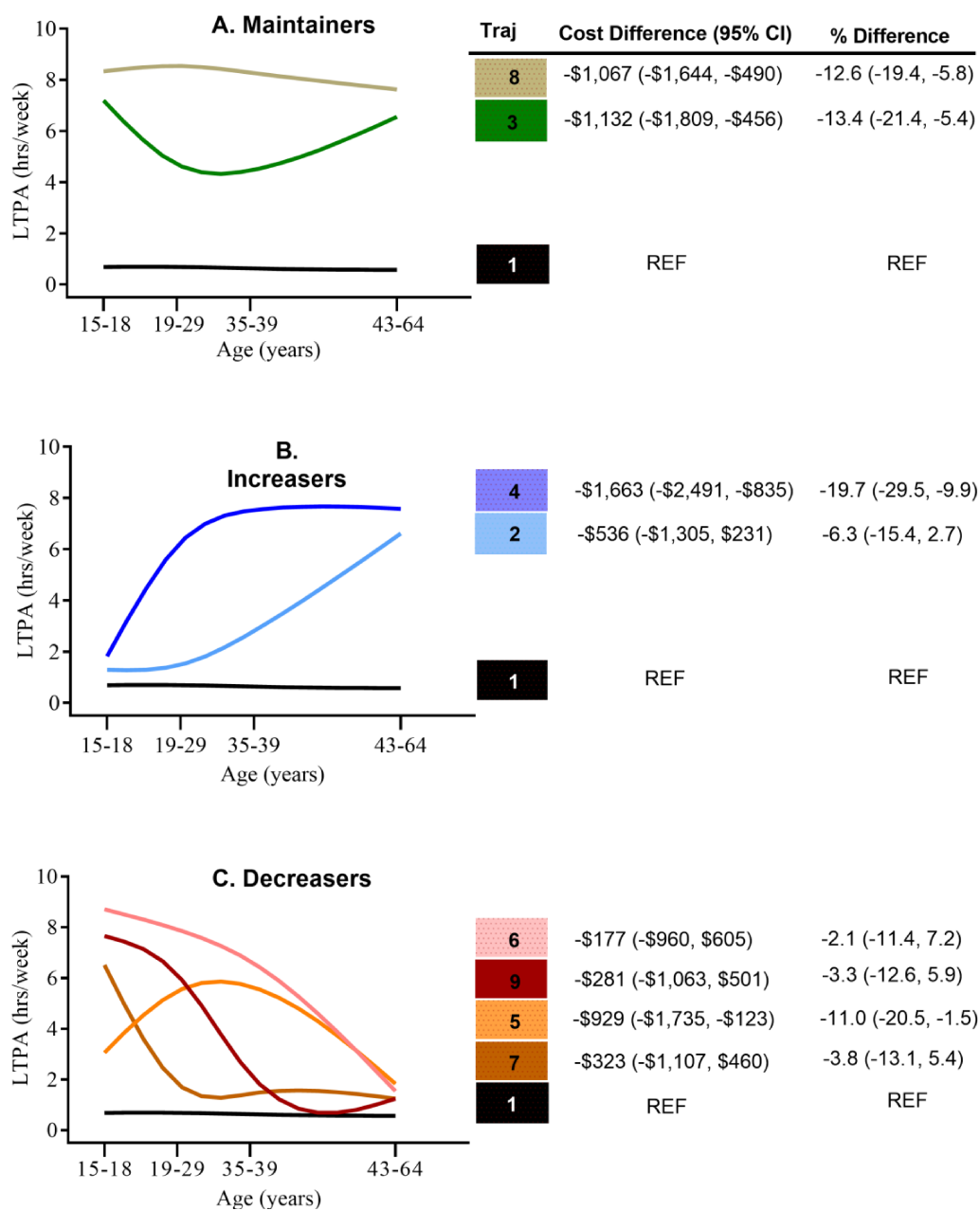


Figure S3: Association between leisure-time physical activity (LTPA) trajectory and average annual healthcare cost in later life in 1999 to 2008 (Model 2)