

Online Appendix

**How Does Mortality Contribute to Lifetime Pension Inequality?
Evidence from Five Decades of Swedish Taxation Data**

Jiixin Shi and Martin Kolk

Section 1: Overview of pension systems of the cohorts studied

For the cohorts in our study (those born 1920 and 1925), the first pillar of the Swedish pension systems consisted of a universal guarantee pension (folkpension) and an earnings-related part (Allmän Tilläggspension or ATP). The ATP was more important than the guarantee pension, and it was targeted to contribute 60% of the average of the highest-earning 15 years out of a 30-year working period (30 years is the requirement for full pension). Later, a supplemental part was added to the ATP pension for those with very low ATP pensions. For a more detailed description, see Hagen (2013). The ATP-system was introduced in 1960 (Hagen 2013). The cohorts in this study were entirely covered retroactively. In practice, therefore, full retirement required fewer than 30 years, making the system more generous. Both systems were defined-benefit (DB) systems, funded as PAYGO systems. In the 1980s, political actors saw this pension system as unsustainable, leading to the introduction of a Notional-Defined Contribution (NDC) system which was an early example of pension reforms (Hagen 2013; Palme 2005). The NDC system differs in substantial ways from the pension system we describe above but is not of relevance for the cohorts in our study.

Importantly, together with the public pension, over 90% of all workers in Sweden are also covered by the second-pillar, sector-wide collective agreement pensions negotiated between labor unions and employers (Lindquist and Wadensjö 2009). The characteristics of the collective agreement pensions vary a lot (for our cohorts they were mostly DB plans). The collective agreement pensions could contribute substantially to the pensions of, in particular, high earners and government workers (rising up to 50% of all pension earnings for the highest-earnings decile), as the ATP system had an income ceiling (Hagen 2013). The different collective agreement pensions (second pillar) were introduced gradually over the 1970s and 1980s covering a large share of the labor force (mostly being funded DB schemes that have been gradually replaced with funded defined contribution schemes). They were generally more generous for private sector white-collar workers with higher earnings than blue-collar workers (Olofsson, 1993). A typical target was often that workers would receive 80% of their pre-retirement salary (if they had worked for 30 years) through the combination of all pensions described above, though it could be either higher or lower (Hagen 2013). These pensions are also included in our variables.

Private savings (e.g. capital investments, savings in bank accounts, or housing) for old age in Sweden are usually different from any formal pension-like savings or annuity. In other words, they are not related to monthly payments as from an annuity or a pension, where the total payment is linked to length of life. We do not consider such private savings in this study, as it is not possible to distinguish them from overall wealth. Unlike pension, wealth will often be bequeathed to children. However, we included private pension incomes, which are often not lifetime annuities but paid out as temporary annuities (Palmer 2008). It is noteworthy that such private pension incomes account only a limited share of the total pension payments at the population level (Hagen 2013). In 2018, private pensions constituted less than 2% of all pension payments for cohorts born before 1928 (Pensionsmyndigheten 2020). Private pensions are arguably more important at younger ages, as they are mostly paid out in a short period of 5 or 10 years (Palmer 2008). Hence, the small amount and the short payout length together suggest that private pensions only have a minor impact on our overall pension variable.

References

- Hagen, J. (2013). *A History of the Swedish Pension System*. Department of Economics, Uppsala University.
- Lindquist, G. S. & Wadensjö, E. (2009). Retirement, Pensions and Work in Sweden. *The Geneva Papers on Risk and Insurance-Issues and Practice*, 34, 578–590.
- Olofsson, G. (1993). Det svenska pensionssystemet 1913–1993: historia, struktur och konflikter [The Swedish pension system 1913–1993: history, structure and conflicts]. *Arkiv för studier i arbetarrörelsens historia*, (58–59), 29–84
- Palme, J. (2005). Features of the Swedish Pension Reform. *The Japanese Journal of Social Security Policy*, 4, 42–53.
- Palmer, E. (2008). *The market for retirement products in Sweden* (Policy Research Working Paper No. WPS 4748). Washington, DC: World Bank Group.
- Pensionsmyndigheten. (2020). *Swedish Pension Agency on Source of pension by cohort for the year 2018* (Table). Stockholm, Sweden: Pensionsmyndigheten, Pension Statistics. Available from <https://www.pensionsmyndigheten.se/statistik/pensionsstatistik/?domain=tab-6&report=report-6-1>

Section 2: Tables

Table A1 Percentages of men with years of zero earnings at ages 50–59

	Number of Years of Zero Earnings											<i>N</i>
	0	1	2	3	4	5	6	7	8	9	10	
1920 Cohort												
Total	86.6	9.3	1.7	0.8	0.4	0.4	0.3	0.4	0.1	0.0	0.1	51,088
By Education												
Primary	85.7	9.4	1.9	0.9	0.5	0.5	0.4	0.5	0.1	0.0	0.1	34,757
Secondary	87.9	9.5	1.3	0.7	0.2	0.1	0.1	0.1	0.1	0.0	0.0	13,086
Tertiary	91.1	7.2	0.8	0.2	0.3	0.1	0.0	0.1	0.0	0.0	0.0	3,245
By Earnings												
Lowest	61.6	19.1	7.4	3.9	2.1	1.8	1.4	1.8	0.5	0.1	0.3	10,218
Second	90.1	9.4	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10,217
Third	93.2	6.6	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10,218
Fourth	94.2	5.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10,217
Highest	93.7	5.9	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10,218
1925 Cohort												
Total	97.1	1.5	0.8	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	40,368
By Education												
Primary	96.6	1.6	1.1	0.3	0.1	0.1	0.0	0.1	0.0	0.0	0.1	25,486
Secondary	97.9	1.2	0.4	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	11,328
Tertiary	98.3	1.2	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	3,554
By Earnings												
Lowest	87.9	5.4	3.9	1.1	0.5	0.4	0.1	0.2	0.1	0.1	0.2	8,074
Second	99.2	0.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8,073
Third	99.7	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8,074
Fourth	99.6	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8,073
Highest	99.2	0.6	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8,074

Source: Authors' calculation based on linked administrative data from Statistics Sweden.

Table A2 Percentages of women with years of zero earnings at ages 50–59

	Number of Years of Zero Earnings											<i>N</i>
	0	1	2	3	4	5	6	7	8	9	10	
1920 Cohort												
Total	57.8	10.5	4.2	3.2	3.0	2.9	3.0	2.6	2.2	2.2	8.3	52,624
By Education												
Primary	54.4	10.5	4.4	3.5	3.2	3.2	3.3	3.0	2.5	2.5	9.4	41,128
Secondary	67.2	10.5	3.5	2.5	2.4	2.1	2.1	1.5	1.4	1.5	5.3	9,363
Tertiary	81.3	9.0	2.3	1.4	1.5	0.7	0.6	1.0	0.7	0.6	1.2	2,133
By Earnings												
Lowest	3.4	3.0	2.8	3.2	4.0	5.1	6.7	8.6	10.4	11.2	41.6	10,525
Second	33.0	16.2	10.4	9.4	9.0	8.7	7.9	4.6	0.6	0.0	0.0	10,525
Third	72.0	16.9	5.6	2.9	1.6	0.6	0.3	0.0	0.0	0.0	0.0	10,524
Fourth	86.9	10.5	1.6	0.7	0.2	0.1	0.0	0.0	0.0	0.0	0.0	10,525
Highest	93.7	5.7	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10,525
1925 Cohort												
Total	79.2	4.5	3.0	1.9	1.5	1.2	1.1	1.0	1.0	1.2	4.4	41,706
By Education												
Primary	76.2	4.9	3.4	2.1	1.6	1.4	1.3	1.1	1.2	1.4	5.3	31,049
Secondary	86.0	3.9	2.0	1.2	1.1	0.7	0.7	0.7	0.6	0.7	2.4	8,300
Tertiary	94.4	1.9	0.8	0.6	0.3	0.5	0.4	0.1	0.2	0.2	0.6	2,357
By Earnings												
Lowest	23.0	8.2	6.5	6.9	6.1	5.5	5.6	4.7	5.1	6.1	22.2	8,341
Second	78.5	10.2	7.4	2.1	1.1	0.5	0.1	0.0	0.0	0.0	0.0	8,341
Third	95.9	3.1	0.7	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	8,341
Fourth	99.0	0.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8,341
Highest	99.5	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8,342

Source: Authors' calculation based on linked administrative data from Statistics Sweden.

Table A3 Percentages of 50-year-old individuals dying before age 60

	Men		Women	
	1920 Cohort	1925 Cohort	1920 Cohort	1925 Cohort
Total	7.4	7.6	4.1	4.0
By Education				
Primary	7.9	8.2	4.2	4.2
Secondary	6.8	7.1	3.7	3.5
Tertiary	4.8	4.9	3.3	3.2
By Earnings				
Lowest	13.8	11.8	5.7	5.2
Second	7.2	7.5	5.3	4.9
Third	5.3	6.5	3.6	3.7
Fourth	5.2	5.9	3.2	2.9
Highest	4.9	6.2	2.5	3.3

Notes: In the main analysis, individuals were selected conditional upon surviving to age 60. Earnings quintiles were classified based on average year income between ages 50 and 59. Here, we used the same earnings cut-points as those used in the main analysis. For individuals who died between 51 and 59, we used average yearly earnings between age 50 and the age in the year prior to death.

Source: Authors' calculation based on linked administrative data from Statistics Sweden.

Table A4 Mean and standard deviation of average yearly earnings between ages 50 and 59

	Men				Women			
	1920 Cohort		1925 Cohort		1920 Cohort		1925 Cohort	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Total	264.1	165.1	268.1	148.7	108.8	91.9	138.7	90.1
By Education								
Primary	222.1	109.0	223.8	98.4	93.6	78.0	122.4	78.5
Secondary	315.3	183.1	306.1	149.6	144.0	98.1	165.0	90.5
Tertiary	507.2	279.4	464.5	230.6	249.1	139.7	260.4	114.2
By Earnings								
Lowest	116.6	44.9	127.4	44.8	4.2	5.7	19.7	19.5
Second	202.7	12.7	210.1	10.8	43.3	14.6	86.3	15.0
Third	239.0	9.7	243.6	9.6	95.9	15.0	133.5	13.3
Fourth	284.1	18.3	289.3	18.8	153.0	18.7	185.9	16.4
Highest	478.0	247.6	470.0	207.5	247.8	69.2	268.1	60.4

Notes: Means and standard deviations are shown in SEK 1,000 \approx US\$125. Inflation was adjusted to the 2018 level.

Source: Authors' calculation based on linked administrative data from Statistics Sweden.

Table A5 Three-way decompositions of differences in lifetime pensions between primary and secondary education and between secondary and tertiary education

	Men				Women			
	1920 Cohort		1925 Cohort		1920 Cohort		1925 Cohort	
	Lifetime Pension (in SEK 1,000 ^a)	%	Lifetime Pension (in SEK 1,000 ^a)	%	Lifetime Pension (in SEK 1,000 ^a)	%	Lifetime Pension (in SEK 1,000 ^a)	%
Primary vs. Secondary Education								
Mortality effect	261.1	24.0	305.5	26.9	136.8	18.3	159.7	22.0
Redistribution effect	-1,047.0	-96.1	-895.4	-78.8	-636.6	-85.2	-513.5	-70.8
Earnings effect	1,875.9	172.1	1,725.7	151.9	1,247.1	166.9	1,079.4	148.8
Total	1,090.0	100.0	1,135.8	100.0	747.2	100.0	725.6	100.0
Secondary vs. Tertiary Education								
Mortality effect	341.6	18.4	519.6	25.8	284.0	18.0	243.4	14.2
Redistribution effect	-2,598.8	-140.1	-2,099.3	-104.4	-1,457.9	-92.4	-1,062.3	-61.8
Earnings effect	4,112.0	221.7	3,589.9	178.6	2,751.6	174.4	2,538.3	147.6
Total	1,854.7	100.0	2,010.3	100.0	1,577.8	100.0	1,719.4	100.0

Notes: Mortality effect, redistribution effect, and earnings effect refer to the parts of total lifetime pension differences that are attributable to differences in mortality, differences in the differences between pension income and labor earnings, and differences in labor earnings, respectively.

Source: Authors' calculation based on linked administrative data from Statistics Sweden.

^a Units for absolute differences are in SEK 1,000 \approx US\$125.

Table A6 Three-way decompositions of differences in lifetime pensions between earnings income quintiles

	Men				Women			
	1920 Cohort		1925 Cohort		1920 Cohort		1925 Cohort	
	Lifetime Pension (in SEK 1,000 ^a)	%	Lifetime Pension (in SEK 1,000 ^a)	%	Lifetime Pension (in SEK 1,000 ^a)	%	Lifetime Pension (in SEK 1,000 ^a)	%
Lowest vs. Third Quintiles								
Mortality effect	368.8	27.8	374.9	27.6	8.7	1.4	66.9	7.4
Redistribution effect	-1,346.5	-101.5	-1,311.0	-96.4	-1,629.4	-255.9	-2,033.6	-224.8
Earnings effect	2,304.1	173.7	2,295.8	168.8	2,257.4	354.5	2,871.2	317.4
Total	1,326.4	100.0	1,359.7	100.0	636.8	100.0	904.5	100.0
Second vs. Fourth Quintiles								
Mortality effect	288.1	27.6	317.7	28.1	162.4	14.2	160.9	12.7
Redistribution effect	-881.5	-84.5	-851.0	-75.4	-1,644.1	-143.8	-1,337.0	-105.9
Earnings effect	1,636.0	156.9	1,662.2	147.2	2,625.0	229.6	2,438.5	193.2
Total	1,042.6	100.0	1,128.9	100.0	1,143.3	100.0	1,262.3	100.0
Third vs. Highest Quintiles								
Mortality effect	425.9	17.7	543.4	19.8	105.7	5.5	88.6	4.5
Redistribution effect	-3,053.5	-127.1	-2,798.9	-102.1	-1,982.5	-102.9	-1,618.1	-83.0
Earnings effect	5,029.6	209.4	4,996.4	182.3	3,803.4	197.4	3,478.8	178.5
Total	2,402.0	100.0	2,740.9	100.0	1,926.5	100.0	1,949.3	100.0

Notes: Mortality effect, redistribution effect, and earnings effect refer to the parts of total lifetime pension differences that are attributable to differences in mortality, differences in the differences between pension income and labor earnings, and differences in labor earnings, respectively.

Source: Authors' calculation based on linked administrative data from Statistics Sweden.

^a Units for absolute differences are in SEK 1,000 \approx US\$125.

Table A7 Three-way decompositions of differences in lifetime pensions between primary and tertiary education and between the lowest and highest earnings quintiles, with 2% discount rate

	Men				Women			
	1920 Cohort		1925 Cohort		1920 Cohort		1925 Cohort	
	Lifetime Pension (in SEK 1,000 ^a)	%	Lifetime Pension (in SEK 1,000 ^a)	%	Lifetime Pension (in SEK 1,000 ^a)	%	Lifetime Pension (in SEK 1,000 ^a)	%
Primary vs. Tertiary Education								
Mortality effect	417.1	19.4	556.8	24.8	271.7	16.7	265.1	15.6
Redistribution effect	-2,980.8	-138.8	-2,471.1	-110.1	-1,704.0	-104.5	-1,312.5	-77.1
Earnings effect	4,711.3	219.4	4,159.0	185.3	3,062.9	187.8	2,748.7	161.6
Total	2,147.6	100.0	2,244.7	100.0	1,630.6	100.0	1,701.3	100.0
Lowest vs. Highest Quintiles								
Mortality effect	618.5	22.6	688.8	23.1	67.2	3.5	108.7	5.2
Redistribution effect	-3,573.7	-130.6	-3,357.9	-112.5	-2,886.9	-152.5	-2,894.3	-138.0
Earnings effect	5,691.8	208.0	5,653.6	189.4	4,712.3	249.0	4,883.0	232.8
Total	2,736.6	100.0	2,984.5	100.0	1,892.5	100.0	2,097.4	100.0

Notes: Mortality effect, redistribution effect, and earnings effect refer to the parts of total lifetime pension differences that are attributable to differences in mortality, differences in the differences between pension income and labor earnings, and differences in labor earnings, respectively.

Source: Authors' calculation based on linked administrative data from Statistics Sweden.

^a Units for absolute differences are in SEK 1,000 \approx US\$125.

Table A8 Lifetime pension inequality between primary and tertiary education under policy and mortality scenarios, 1925 cohort

	Men				Women			
	Absolute Difference		Relative Difference		Absolute Difference		Relative Difference	
	Diff. (in SEK 1,000 ^a)	% Change	Ratio	% Change	Diff. (in SEK 1,000 ^a)	% Change	Ratio	% Change
Observed	3,146.0	—	2.05	—	2,444.9	—	2.00	—
Uniform Increase in Retirement Age								
One-year increase	3,006.8	-4.4	2.07	0.7	2,345.3	-4.1	2.01	0.3
Three-year increase	2,730.6	-13.2	2.10	2.2	2,148.5	-12.1	2.02	0.8
Differential Retirement Ages								
Primary education one year earlier	3,009.9	-4.3	1.96	-4.4	2,366.0	-3.2	1.94	-3.1
Primary education three years earlier	2,777.0	-11.7	1.83	-11.0	2,232.4	-8.7	1.84	-8.0
Tertiary education one year later	2,836.5	-9.8	1.95	-5.0	2,233.9	-8.6	1.91	-4.3
Tertiary education three years later	2,230.8	-29.1	1.75	-14.9	1,817.7	-25.7	1.74	-12.8
Pension System More Generous								
Yearly pension SEK 10,000 more to all	3,180.0	1.1	2.00	-2.7	2,471.0	1.1	1.92	-4.1
Yearly pension SEK 20,000 more to all	3,213.9	2.2	1.95	-5.1	2,497.0	2.1	1.85	-7.5
Pension System Less Generous								
Yearly pension SEK 10,000 less to all	3,112.0	-1.1	2.12	3.1	2,418.9	-1.1	2.10	5.0
Yearly pension SEK 20,000 less to all	3,078.1	-2.2	2.19	6.7	2,392.9	-2.1	2.23	11.4
Raising Minimum Pension								
Minimum pension to SEK 80,000	3,143.9	-0.1	2.04	-0.3	2,371.0	-3.0	1.93	-3.5
Minimum pension to SEK 100,000	3,130.2	-0.5	2.03	-0.9	2,253.1	-7.8	1.83	-8.4
Mortality Reduction Scenarios								
10% less for all	3,263.5	3.7	2.04	-0.8	2,523.8	3.2	1.99	-0.3
Primary 10% less, tertiary 0% less	2,986.2	-5.1	1.95	-5.1	2,349.2	-3.9	1.93	-3.8
Primary 0% less, tertiary 10% less	3,423.3	8.8	2.14	4.5	2,619.6	7.1	2.07	3.6

Notes: For the 1925 cohort, the observed lifetime pensions are SEK 2,992,800 for men with primary education, SEK 6,138,800 for men with tertiary education, SEK 2,443,500 for women with primary education, and SEK 4,888,500 for women with tertiary education.

Source: Authors' calculation based on linked administrative data from Statistics Sweden.

^a Units for absolute differences are in SEK 1,000 \approx US\$125.

Table A9 Lifetime pension inequality between the lowest and the highest earnings quintiles under policy and mortality scenarios, 1920 cohort

	Men				Women			
	Absolute Difference		Relative Difference		Absolute Difference		Relative Difference	
	Diff. (in SEK 1,000 ^a)	% change	Ratio	% change	Diff. (in SEK 1,000 ^a)	% change	Ratio	% change
Observed	3,728.3	—	3.32	—	2,563.3	—	2.73	—
Uniform Increase in Retirement Age								
One-year increase	3,545.4	-4.9	3.36	1.0	2,456.6	-4.2	2.74	0.5
Three-year increase	3,184.7	-14.6	3.43	3.2	2,244.1	-12.5	2.77	1.5
Differential Retirement Ages								
Lowest quintile one year earlier	3,671.0	-1.5	3.21	-3.4	2,505.5	-2.3	2.63	-3.8
Lowest quintile three years earlier	3,564.3	-4.4	3.01	-9.3	2,415.1	-5.8	2.48	-9.1
Highest quintile one year later	3,444.3	-7.6	3.14	-5.3	2,383.8	-7.0	2.61	-4.4
Highest quintile three years later	2,890.3	-22.5	2.80	-15.7	2,029.0	-20.8	2.37	-13.2
Pension System More Generous								
Yearly pension SEK 10,000 more to all	3,772.6	1.2	3.12	-6.1	2,571.7	0.3	2.49	-8.8
Yearly pension SEK 20,000 more to all	3,817.0	2.4	2.95	-11.2	2,580.2	0.7	2.31	-15.5
Pension System Less Generous								
Yearly pension SEK 10,000 less to all	3,684.0	-1.2	3.57	7.6	2,554.9	-0.3	3.07	12.4
Yearly pension SEK 20,000 less to all	3,639.6	-2.4	3.90	17.4	2,546.5	-0.7	3.57	30.9
Raising Minimum Pension								
Minimum pension to SEK 80,000	3,673.5	-1.5	3.20	-3.7	2,233.1	-12.9	2.23	-18.5
Minimum pension to SEK 100,000	3,582.3	-3.9	3.03	-8.9	1,890.7	-26.2	1.87	-31.5
Mortality Reduction Scenarios								
10% less for all	3,892.2	4.4	3.28	-1.2	2,652.6	3.5	2.72	-0.4
Lowest quintile 10% less, highest quintile 0% less	3,629.6	-2.6	3.13	-5.8	2,501.0	-2.4	2.62	-4.0
Lowest quintile 0% less, highest quintile 10% less	3,990.9	7.0	3.48	4.9	2,714.9	5.9	2.83	3.7

Notes: For the 1920 cohort, the observed lifetime pensions are SEK 1,606,600 for men in the lowest quintile, SEK 5,334,900 for men in the highest quintile, SEK 1,481,000 for women in the lowest quintile, and SEK 4,044,400 for women in the highest quintile.

Source: Authors' calculation based on linked administrative data from Statistics Sweden.

^a Units for absolute differences are in SEK 1,000 \approx US\$125.

Table A10 Lifetime pension inequality between the lowest and the highest earnings quintiles under policy and mortality scenarios, 1925 cohort

	Men				Women			
	Absolute Difference		Relative Difference		Absolute Difference		Relative Difference	
	Diff. (in SEK 1,000 ^a)	% change	Ratio	% change	Diff. (in SEK 1,000 ^a)	% change	Ratio	% change
Observed	4,100.6	—	3.14	—	2,853.8	—	2.76	—
Uniform Increase in Retirement Age								
One-year increase	3,912.7	-4.6	3.18	1.1	2,737.6	-4.1	2.77	0.5
Three-year increase	3,540.3	-13.7	3.25	3.4	2,507.3	-12.1	2.80	1.5
Differential Retirement Ages								
Lowest quintile one year earlier	4,025.6	-1.8	3.02	-3.8	2,796.3	-2.0	2.67	-3.4
Lowest quintile three years earlier	3,894.0	-5.0	2.84	-9.7	2,704.9	-5.2	2.53	-8.4
Highest quintile one year later	3,796.6	-7.4	2.98	-5.1	2,659.9	-6.8	2.64	-4.3
Highest quintile three years later	3,201.3	-21.9	2.67	-15.0	2,277.1	-20.2	2.40	-12.9
Pension System More Generous								
Yearly pension SEK 10,000 more to all	4,146.9	1.1	2.98	-5.3	2,866.5	0.4	2.53	-8.2
Yearly pension SEK 20,000 more to all	4,193.2	2.3	2.84	-9.8	2,879.1	0.9	2.36	-14.5
Pension System Less Generous								
Yearly pension SEK 10,000 less to all	4,054.3	-1.1	3.35	6.5	2,841.2	-0.4	3.07	11.2
Yearly pension SEK 20,000 less to all	4,008.0	-2.3	3.60	14.5	2,828.5	-0.9	3.52	27.4
Raising Minimum Pension								
Minimum pension to SEK 80,000	4,066.8	-0.8	3.08	-2.1	2,586.5	-9.4	2.36	-14.4
Minimum pension to SEK 100,000	4,001.7	-2.4	2.97	-5.4	2,261.9	-20.7	2.01	-27.1
Mortality Reduction Scenarios								
10% less for all	4,260.6	3.9	3.10	-1.3	2,949.5	3.4	2.75	-0.4
Lowest quintile 10% less, highest quintile 0% less	3,987.4	-2.8	2.97	-5.6	2,787.7	-2.3	2.65	-3.9
Lowest quintile 0% less, highest quintile 10% less	4,373.8	6.7	3.29	4.5	3,015.6	5.7	2.86	3.6

Notes: For the 1925 cohort, the observed lifetime pensions are SEK 1,913,600 for men in the lowest quintile, SEK 6,014,100 for men in the highest quintile, SEK 1,621,400 for women in the lowest quintile, and SEK 4,475,200 for women in the highest quintile.

Source: Authors' calculation based on linked administrative data from Statistics Sweden.

^a Units for absolute differences are in SEK 1,000 \approx US\$125.

Table A11 Distribution of marital status within income quintiles

	Men				Women			
	Married	Divorced	Widowed	Never Married	Married	Divorced	Widowed	Never Married
1920 Cohort								
Lowest	60.5%	8.2%	1.3%	30.0%	97.0%	0.6%	0.3%	2.1%
Second	79.2%	4.8%	1.4%	14.7%	86.0%	4.0%	2.6%	7.4%
Third	85.8%	4.2%	1.2%	8.8%	85.6%	4.6%	5.9%	3.9%
Fourth	91.2%	3.1%	1.2%	4.5%	78.9%	9.0%	5.0%	7.1%
Highest	94.6%	2.2%	0.9%	2.3%	61.3%	12.8%	9.7%	16.1%
1925 Cohort								
Lowest	57.8%	11.8%	1.9%	28.5%	93.7%	1.6%	1.9%	2.8%
Second	71.9%	9.7%	2.3%	16.1%	78.8%	7.4%	7.4%	6.4%
Third	81.3%	8.2%	1.8%	8.6%	83.0%	8.2%	5.1%	3.6%
Fourth	86.8%	6.8%	1.8%	4.6%	68.0%	15.7%	8.9%	7.4%
Highest	90.3%	6.1%	1.6%	2.1%	54.4%	16.2%	15.3%	14.0%

Notes: Marital status was obtained from census data. The 1970 and 1980 census data were used for the 1920 and 1925 cohorts, respectively. Thus, marital status at age 50 was used for the 1920 cohort, and at age 55 was used for the 1925 cohort.

Source: Authors' calculation based on linked administrative data from Statistics Sweden.

Section 3. Figures

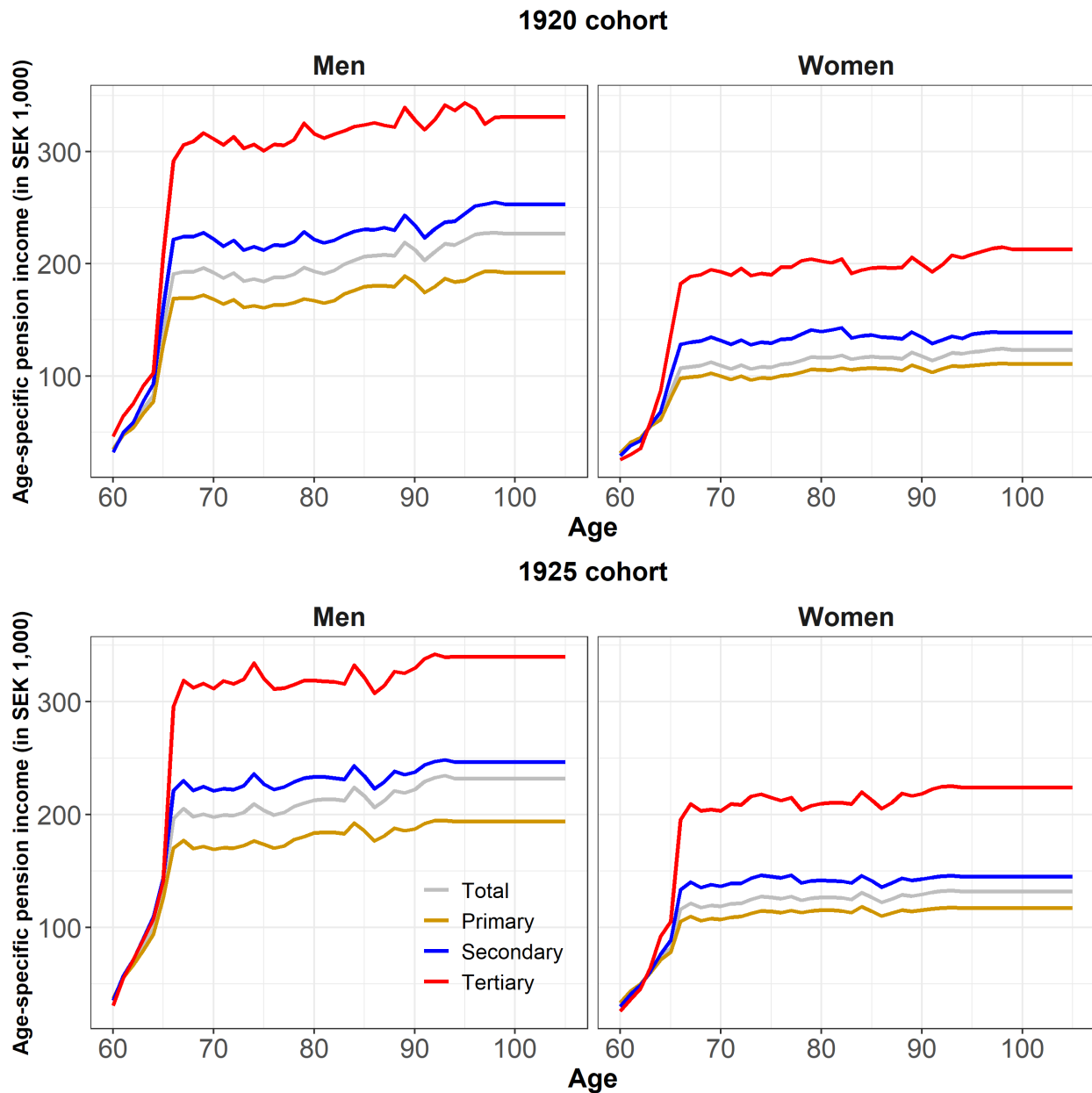


Fig. A1 Age-specific average pension income by education. *Source:* Authors' calculation based on linked administrative data from Statistics Sweden.

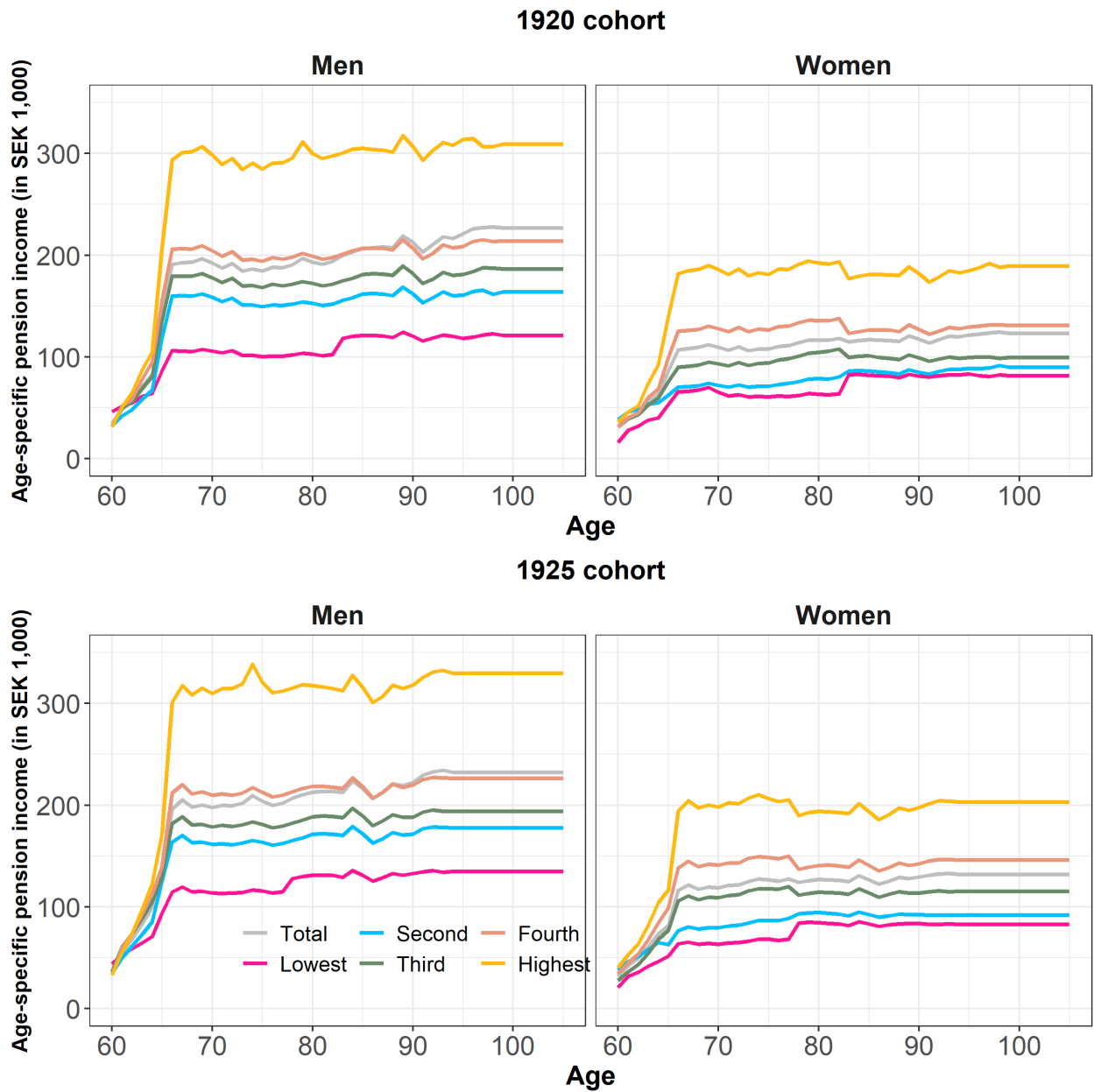


Fig A2 Age-specific average pension income by earnings quintile. *Source:* Authors' calculation based on linked administrative data from Statistics Sweden.



Fig. A3 Survival curves by education. *Source:* Authors' calculation based on linked administrative data from Statistics Sweden.

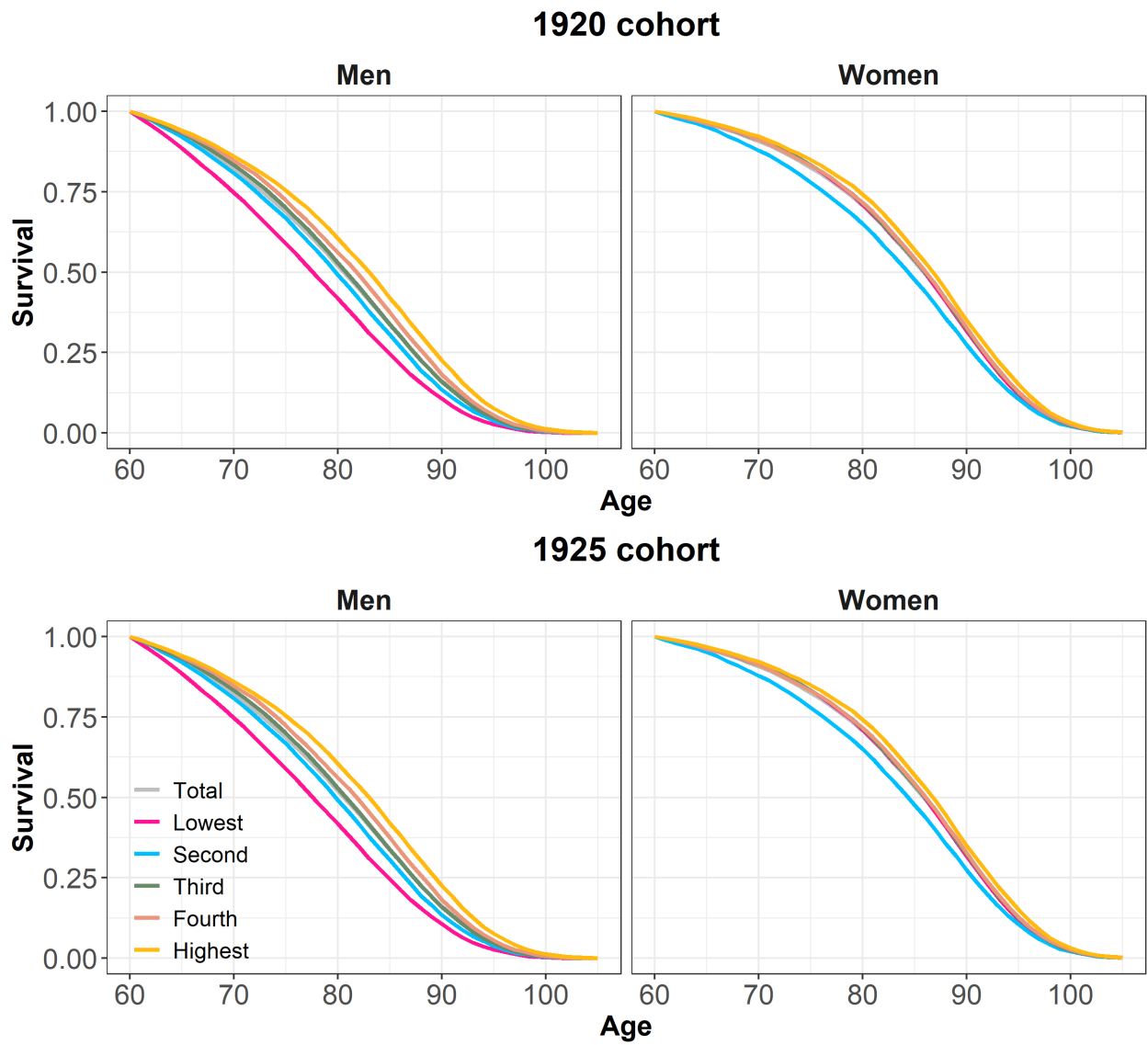


Fig A4 Survival curves by income quintile. *Source:* Authors' calculation based on linked administrative data from Statistics Sweden.

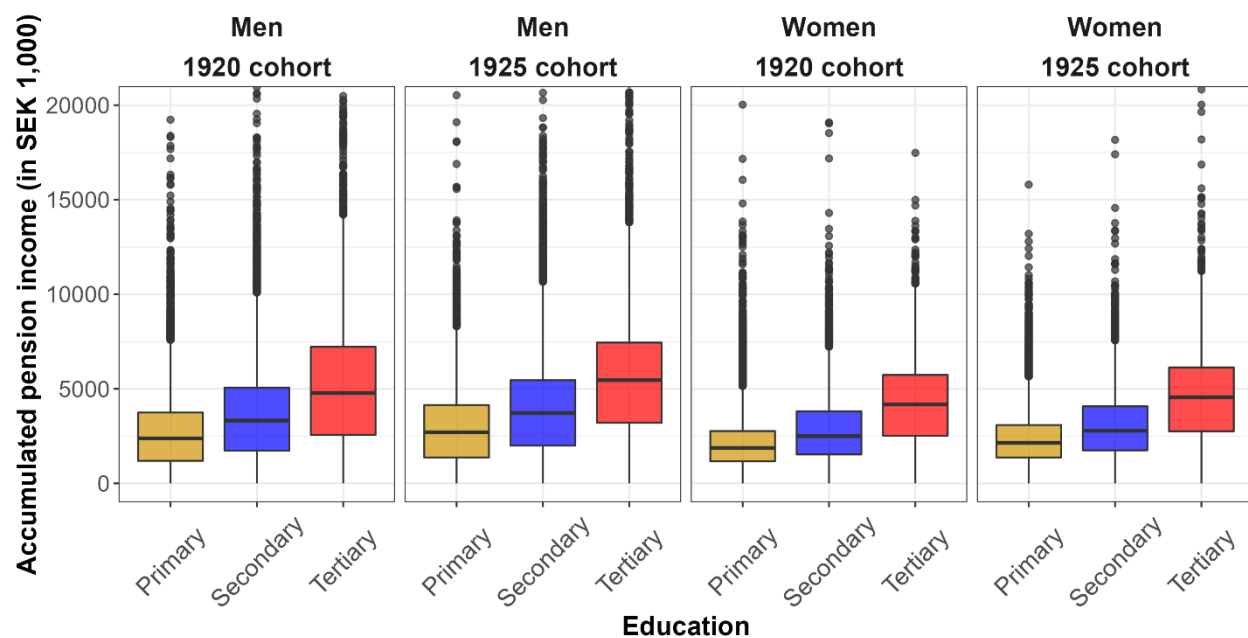


Fig. A5 Boxplots of accumulated pension income until 2018, by education. *Source:* Authors' calculation based on linked administrative data from Statistics Sweden. *Notes:* Accumulated pension income is the sum of pension income from age 60 to 98 for the 1920 cohort, and from age 60 to 93 for the 1925 cohort. Outliers (dots) that are defined as above the $Q3 + 1.5IQR$ are displayed. The y axis is truncated. Extreme outliers and the maximum are not shown.

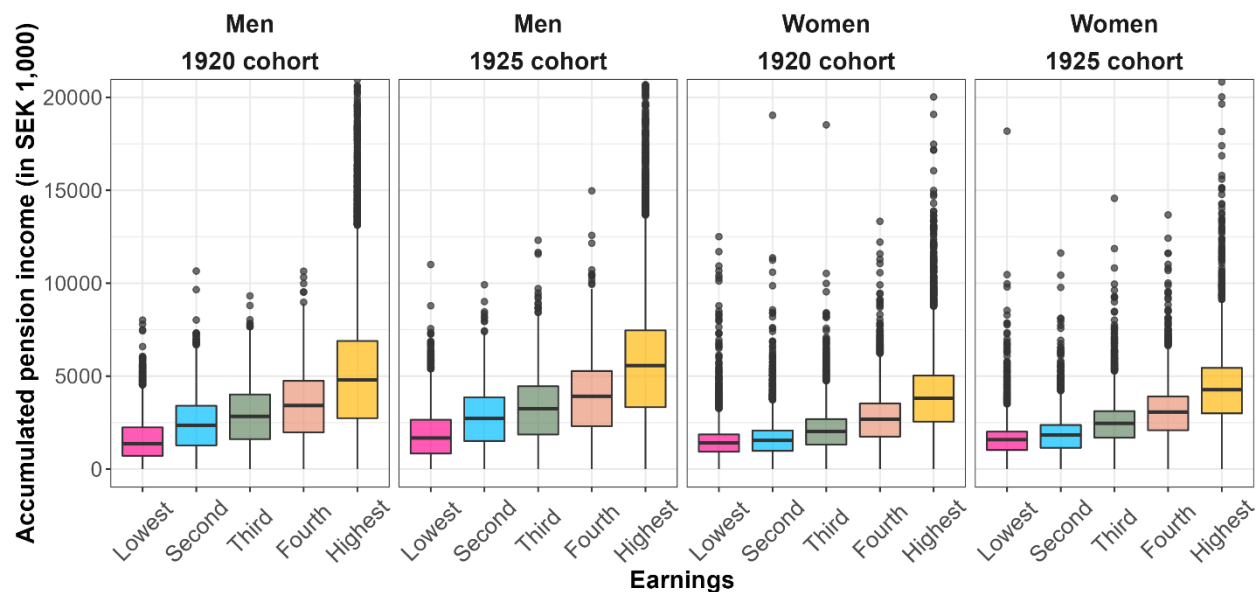


Fig. A6 Boxplots of accumulated pension income until 2018, by earnings. *Source:* Authors' calculation based on linked administrative data from Statistics Sweden. *Notes:* Accumulated pension income is the sum of pension income from age 60 to 98 for the 1920 cohort, and from age 60 to 93 for the 1925 cohort. Outliers (dots) that are defined as above the $Q3 + 1.5IQR$ are displayed. The y axis is truncated. Extreme outliers and the maximum are not shown.

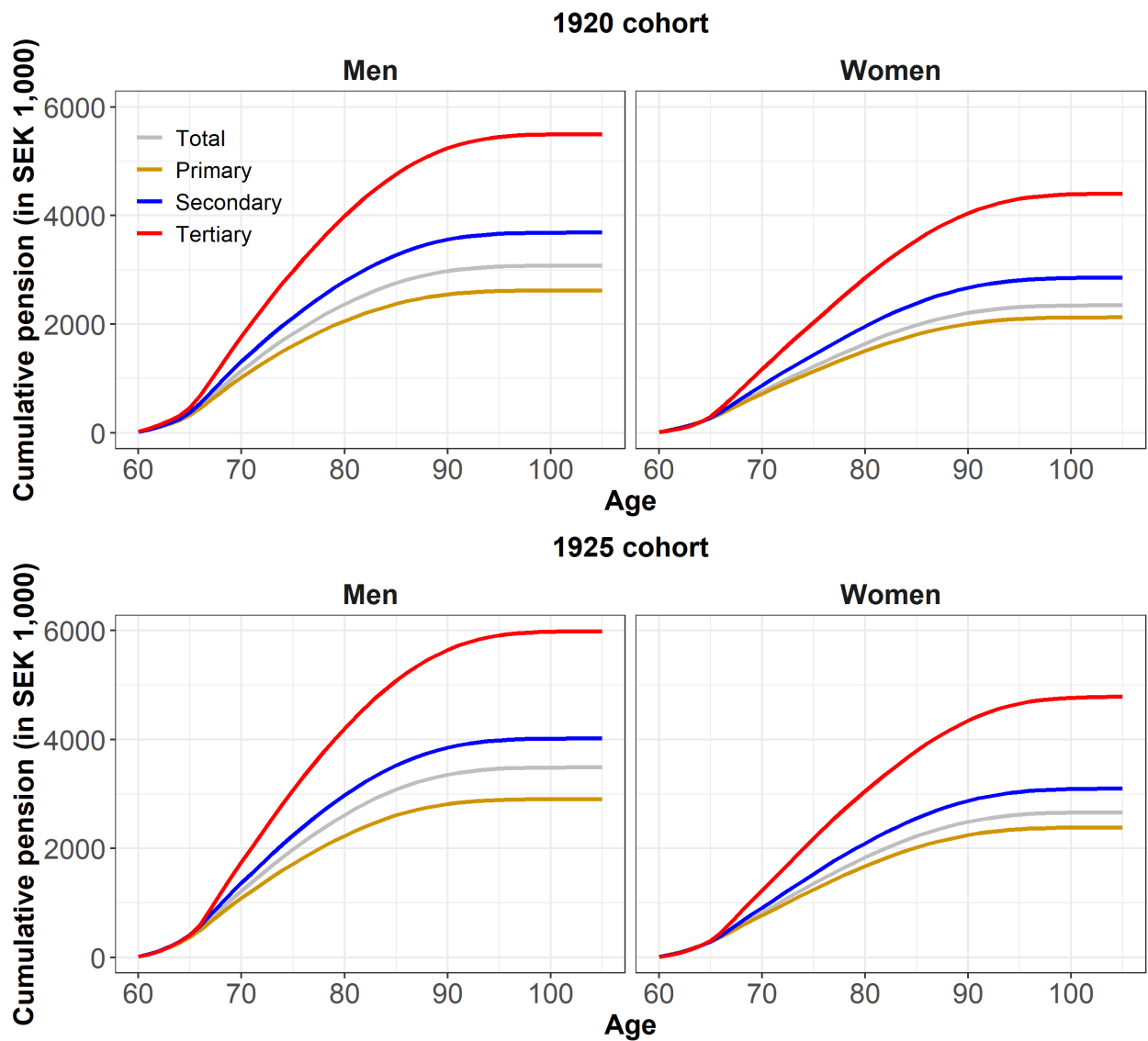


Fig. A7 Age-specific cumulative pension income, by education. *Source:* Authors' calculation based on linked administrative data from Statistics Sweden. *Notes:* Age-specific average accumulated pension income refers to the expected value of pension between age 60 and x along the age axis. The values at the end points of the lines are equivalent to the values of group specific lifetime pension incomes.

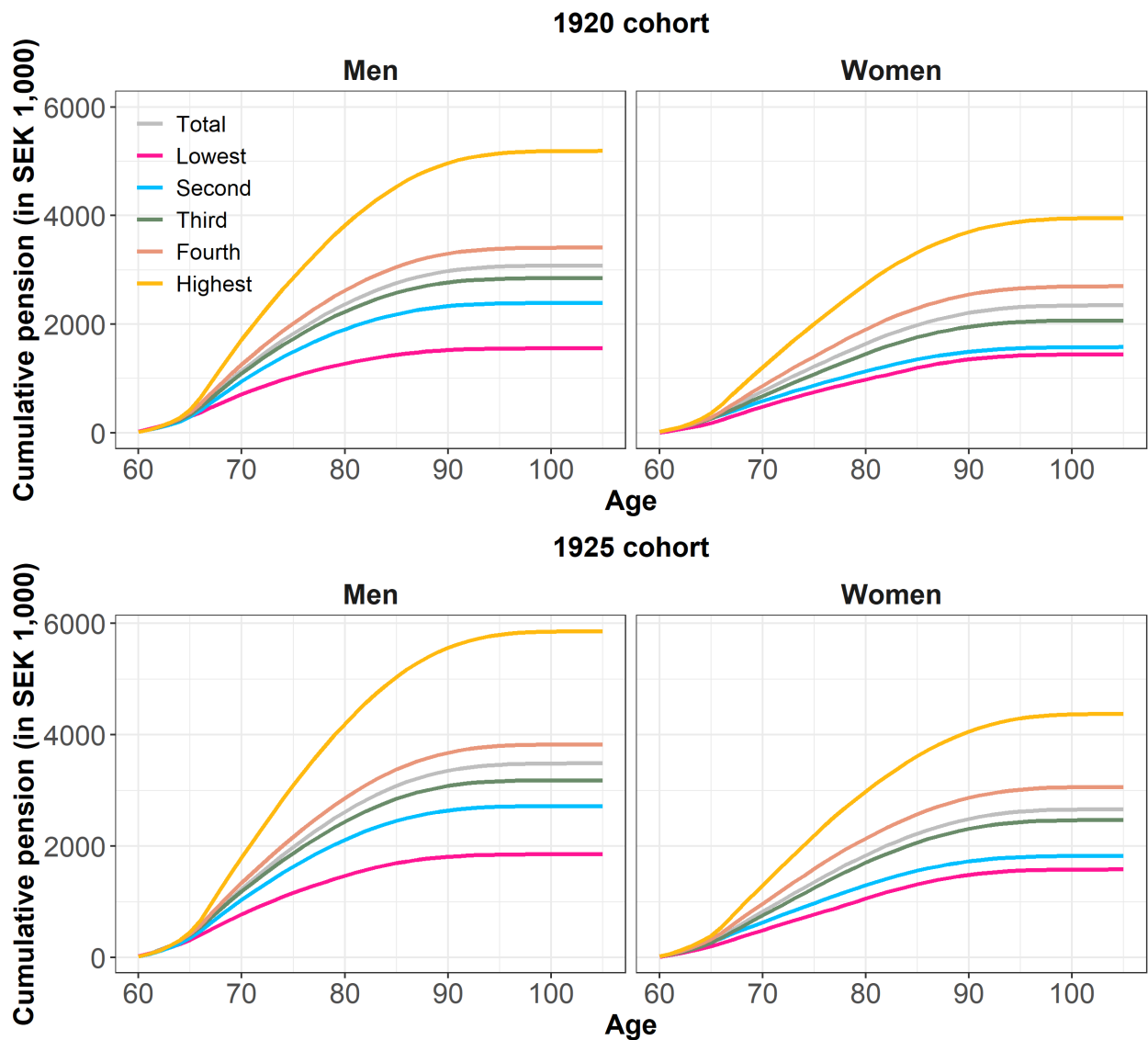


Fig. A8 Age-specific cumulative pension income, by earnings. *Source:* Authors' calculation based on linked administrative data from Statistics Sweden. *Notes:* Age-specific average accumulated pension income refers to the expected value of pension between age 60 and x along the age axis. The values at the end points of the lines are equivalent to the values of group specific lifetime pension incomes.

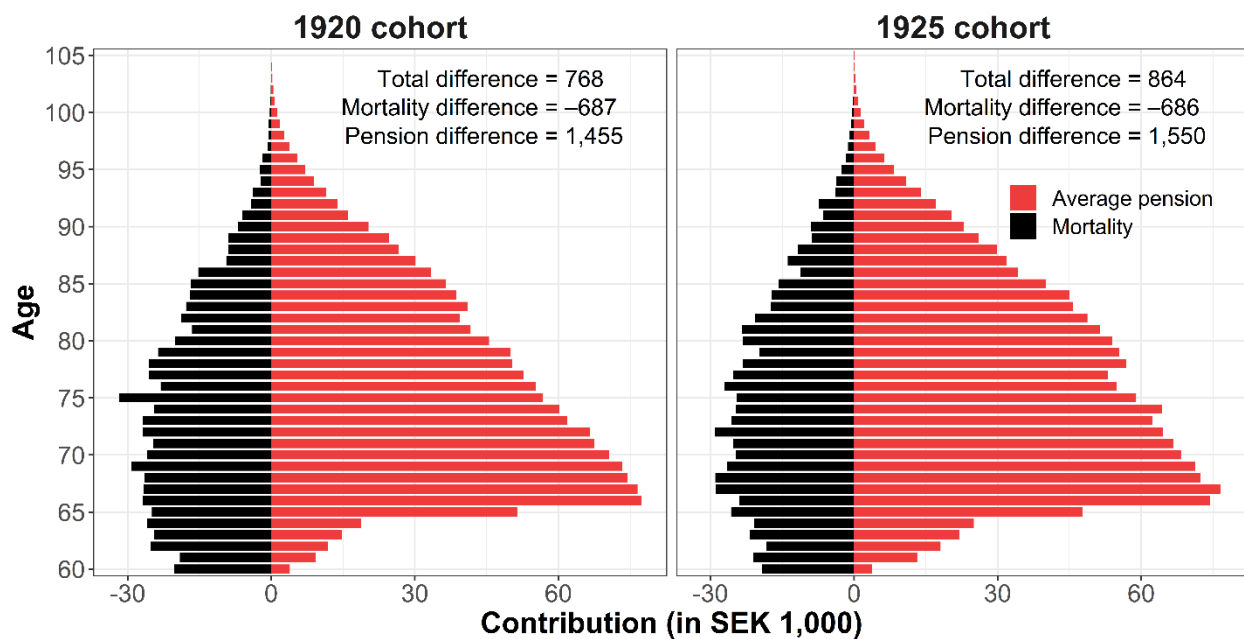


Fig. A9 Decomposition of total lifetime pension differences between men and women into differences explained by mortality and yearly pension. SEK 1,000 \approx US\$125. *Source:* Authors' calculation based on linked administrative data from Statistics Sweden.

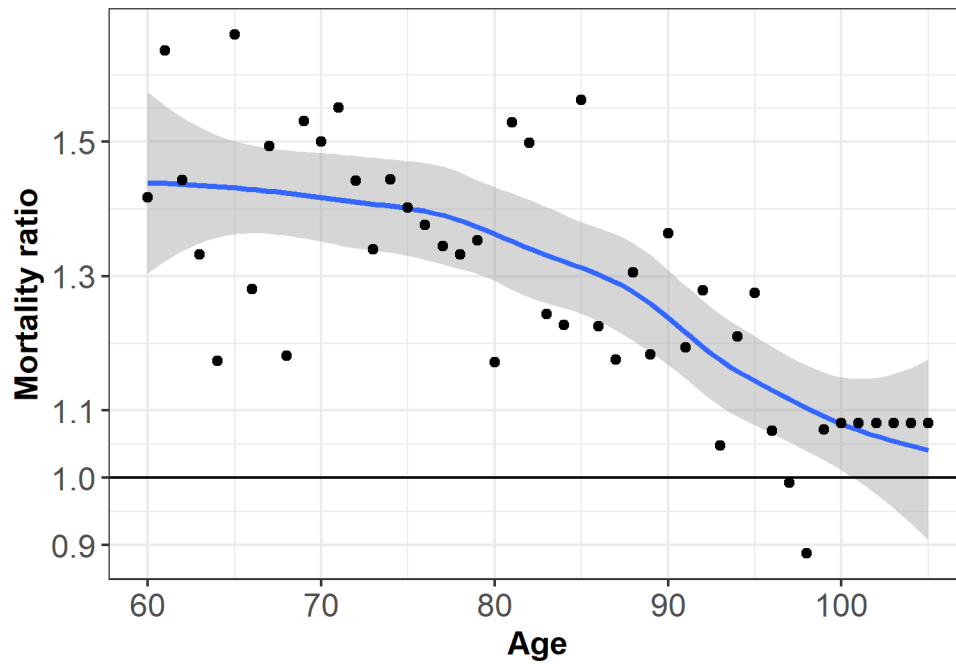


Fig. A10 Mortality ratio between men with primary and tertiary education, 1920 cohort. *Source:* Authors' calculation based on linked administrative data from Statistics Sweden. *Note:* Mortality ratios above age 100 are assumed to be constant as the average over the last three years (i.e., ages 97–99). The smoothed line is estimated using loess regression.

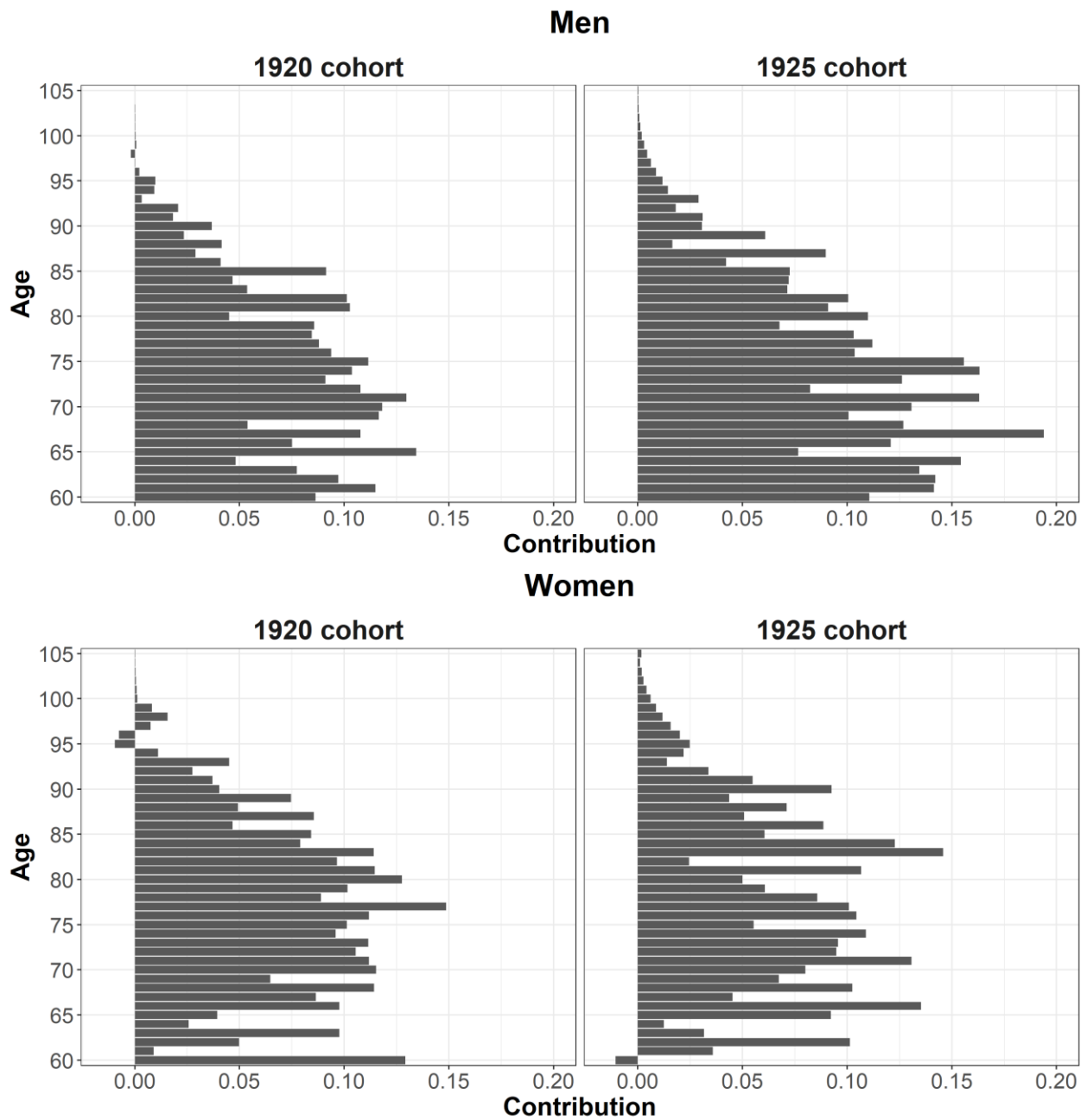


Fig. A11 Decompositions of life expectancy (e_{60}) differences between primary and tertiary education groups into differences explained by differences in age-specific mortality. *Source:* Authors' calculation based on linked administrative data from Statistics Sweden.

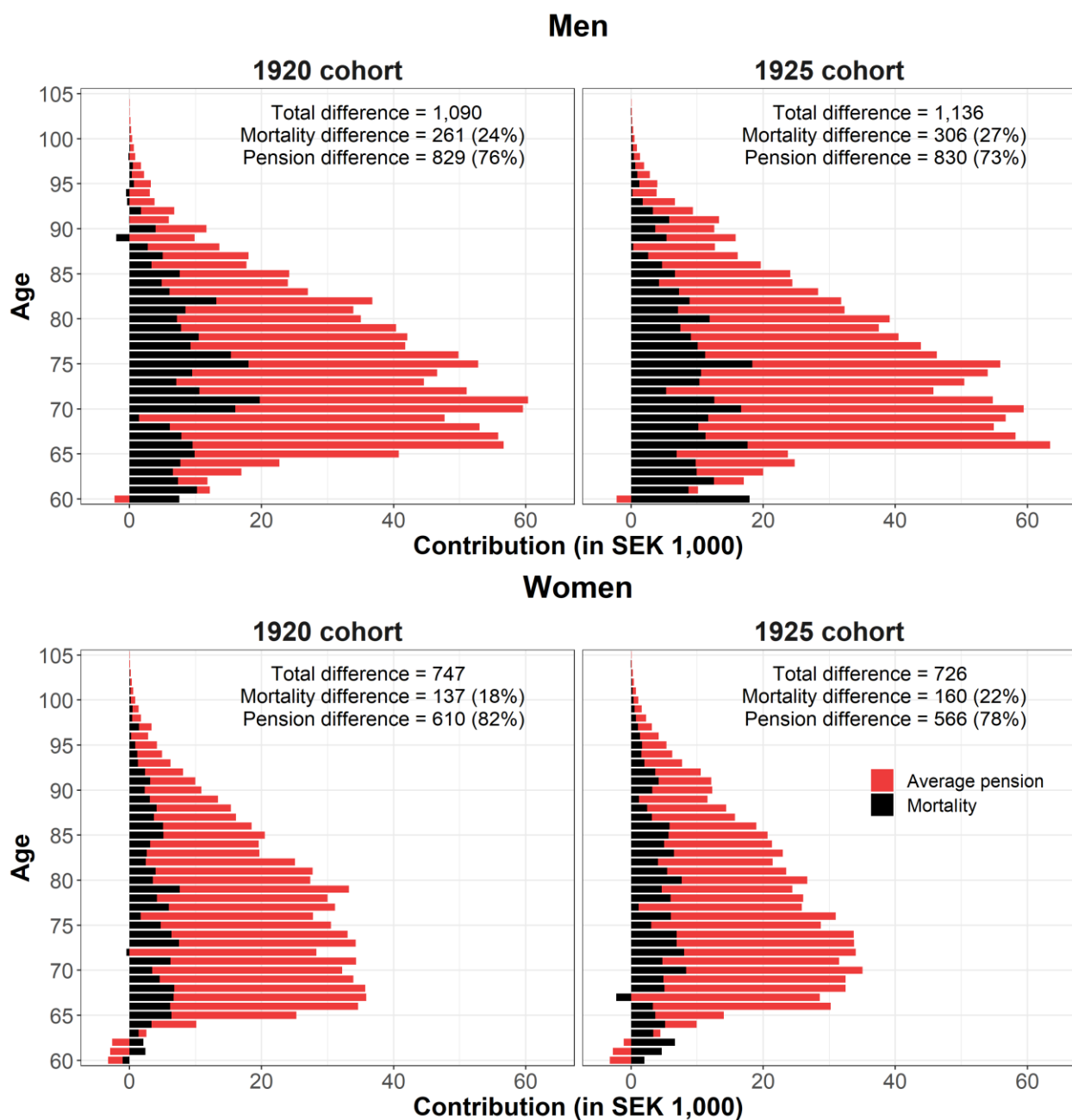


Fig. A12 Decompositions of total lifetime pension differences between primary and secondary education groups into differences explained by mortality and yearly pension. SEK 1,000 \approx US\$125. *Source:* Authors' calculation based on linked administrative data from Statistics Sweden.

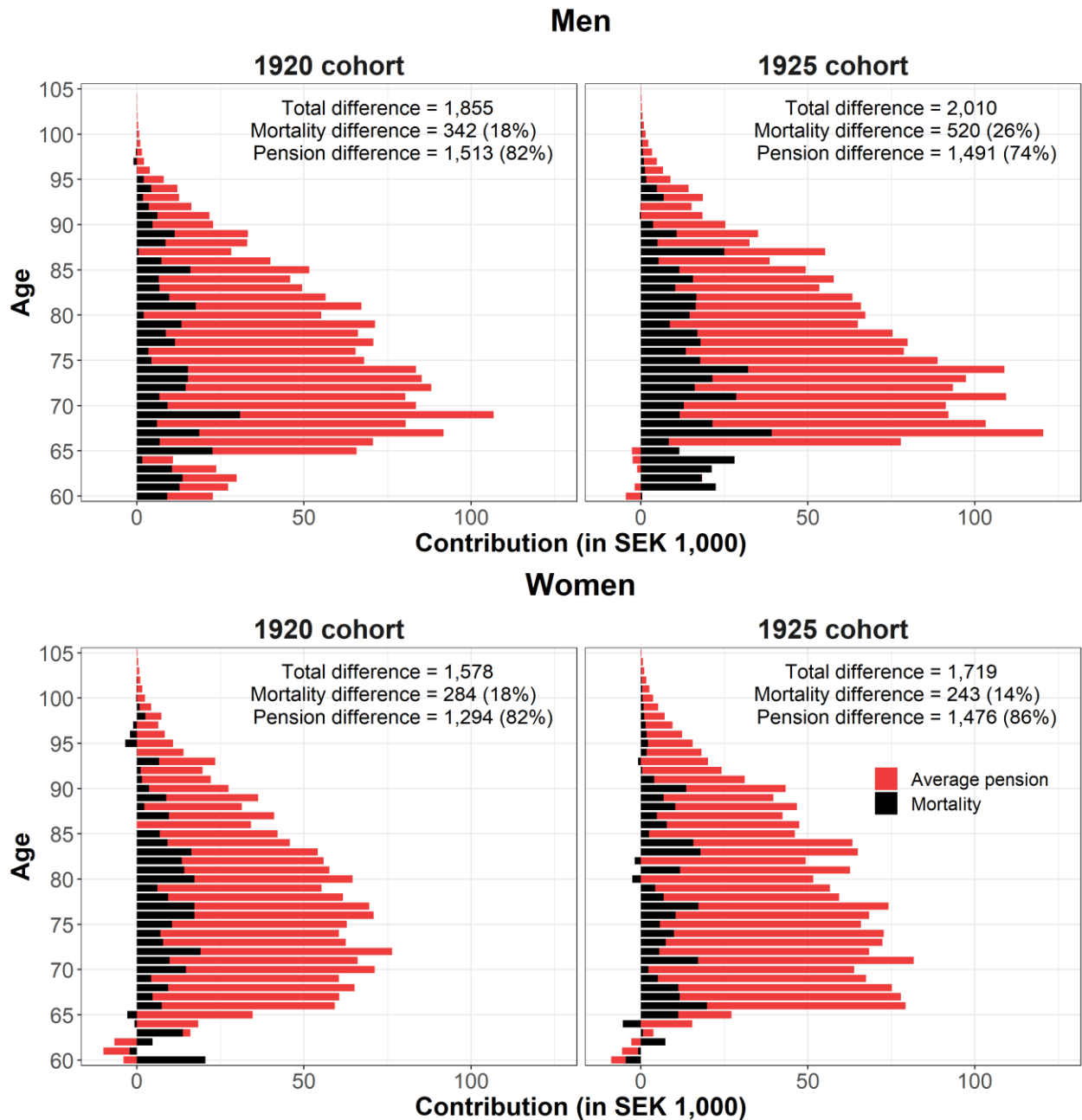


Fig. A13 Decompositions of total lifetime pension differences between secondary and tertiary education groups into differences explained by mortality and yearly pension. SEK 1,000 \approx US\$125. *Source:* Authors' calculation based on linked administrative data from Statistics Sweden.

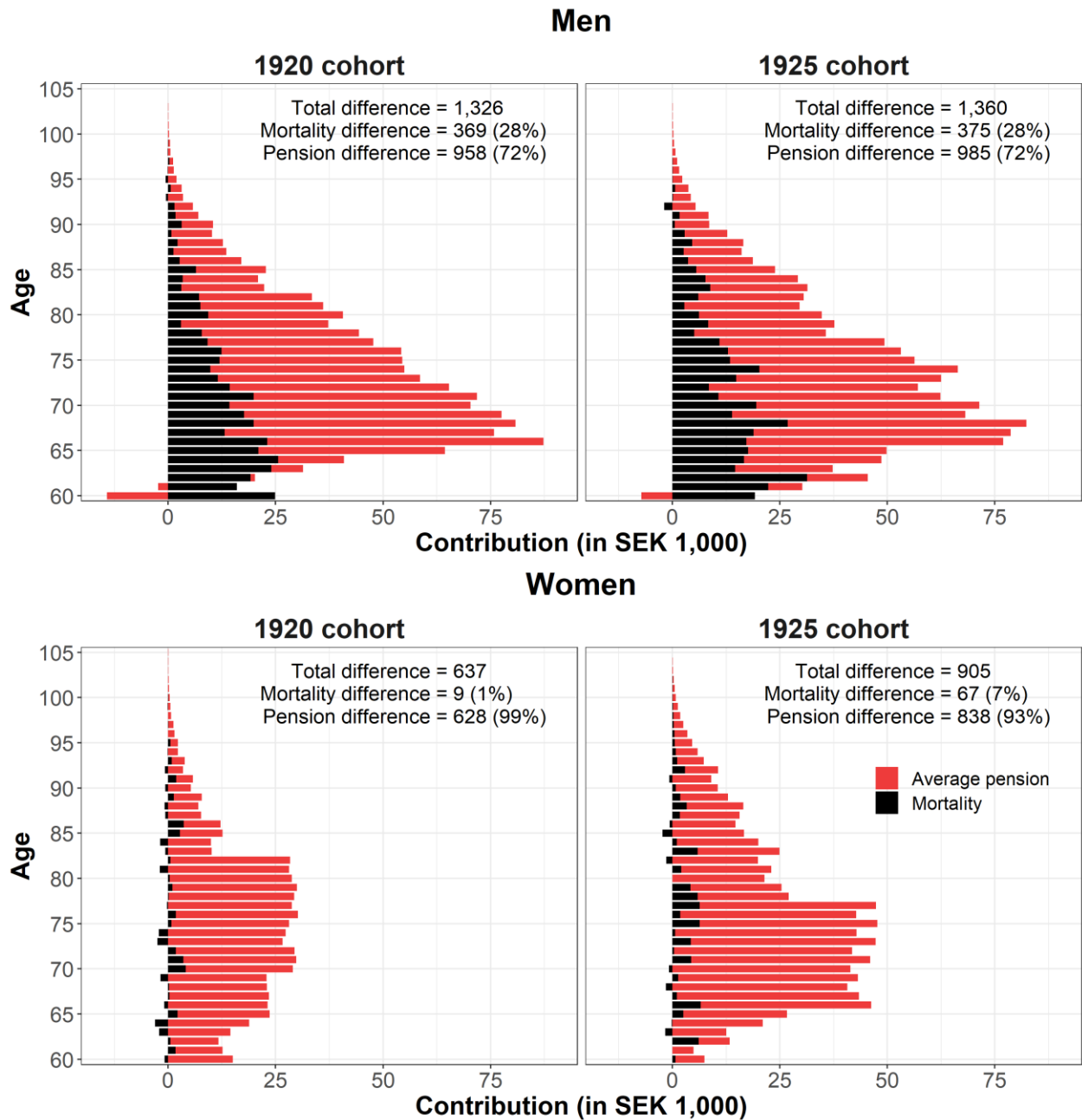


Fig. A14 Decompositions of total lifetime pension differences between the lowest and the third earnings quintiles into differences explained by mortality and yearly pension. SEK 1,000 \approx US\$125. *Source:* Authors' calculation based on linked administrative data from Statistics Sweden.

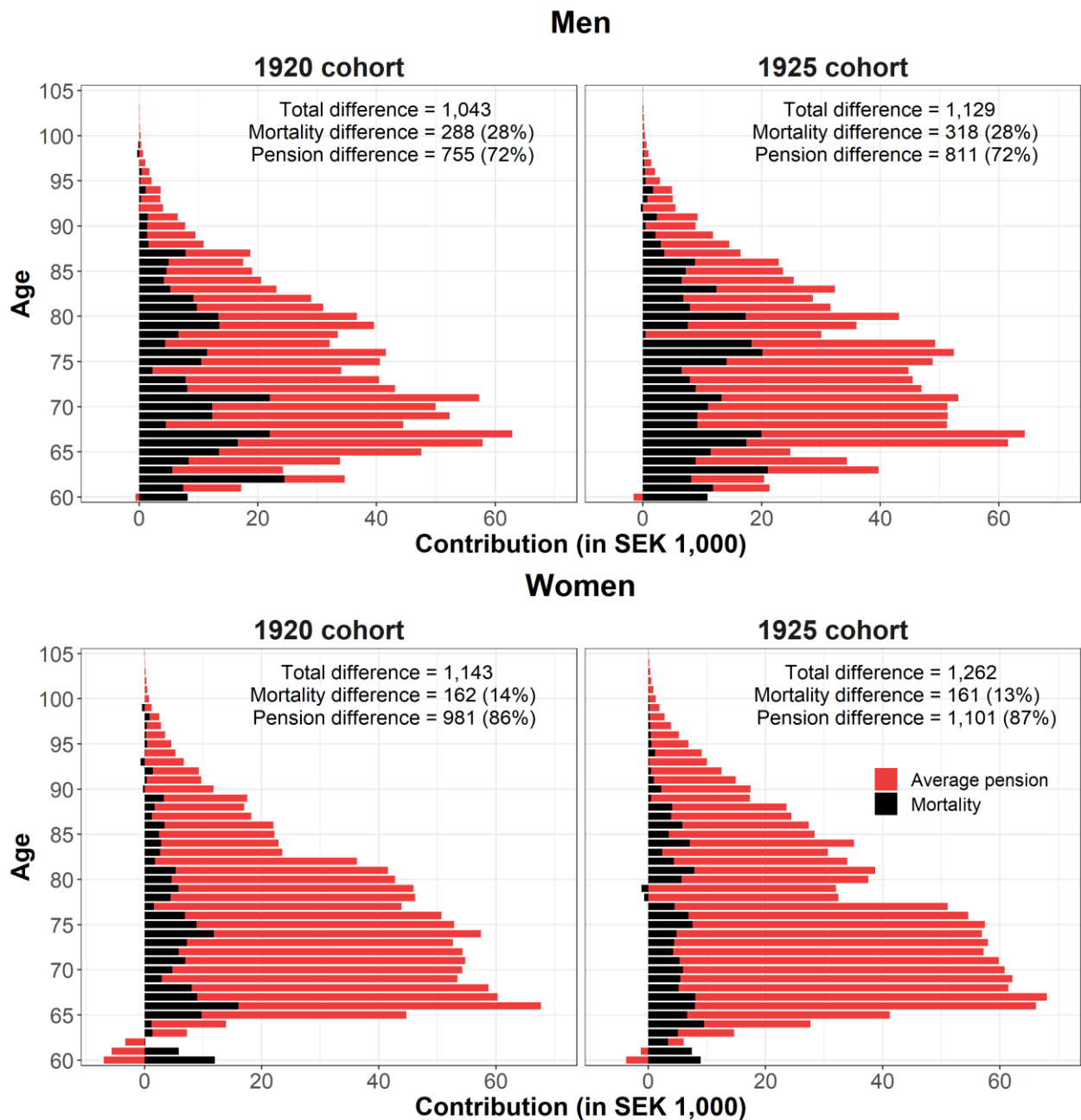


Fig. A15 Decompositions of total lifetime pension differences between the second and the fourth earnings quintiles into differences explained by mortality and yearly pension. SEK 1,000 \approx US\$125. *Source:* Authors' calculation based on linked administrative data from Statistics Sweden.

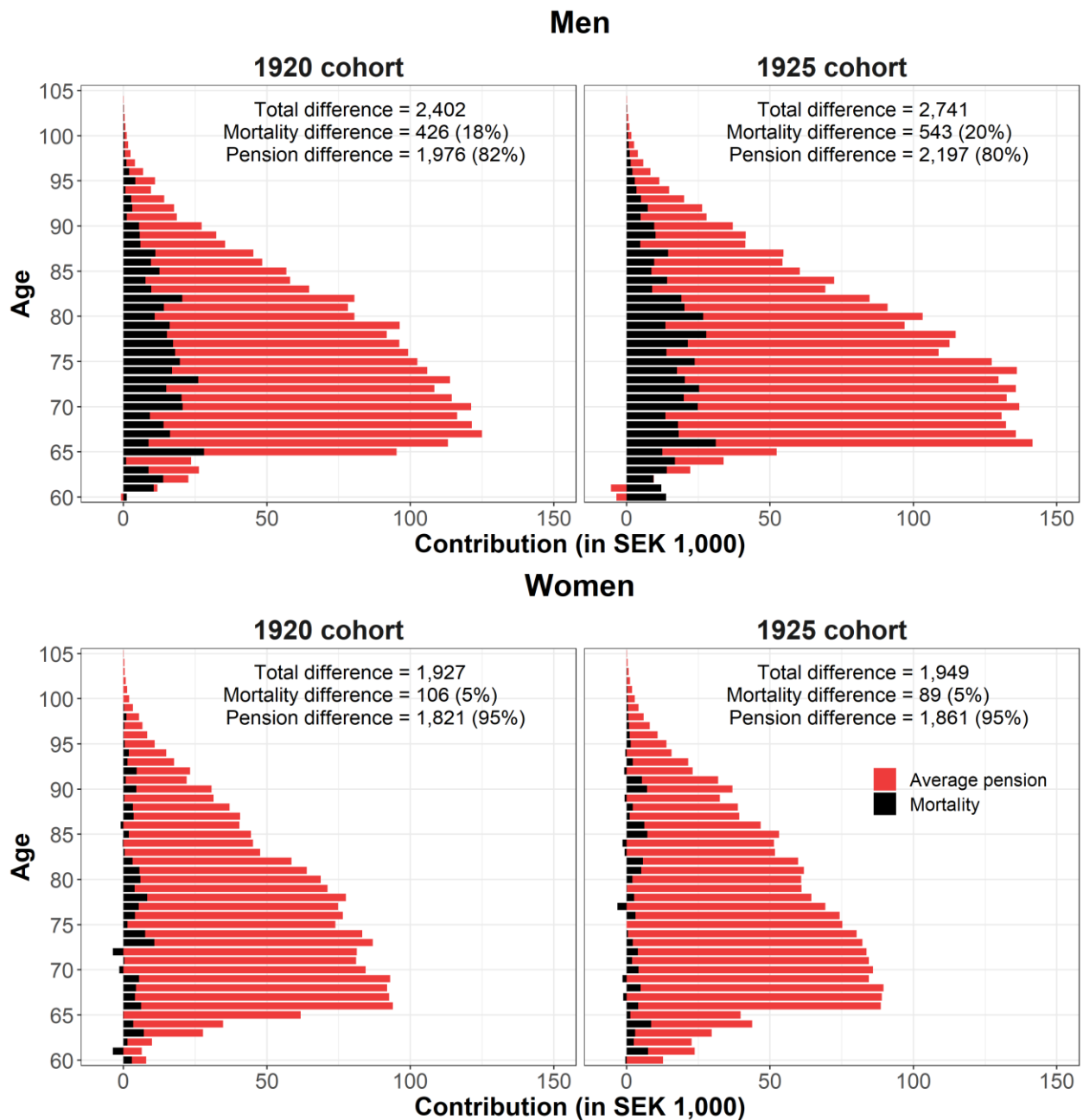


Fig. A16 Decompositions of total lifetime pension differences between the third and the highest earnings quintiles into differences explained by mortality and yearly pension. SEK 1,000 \approx US\$125. *Source:* Authors' calculation based on linked administrative data from Statistics Sweden.

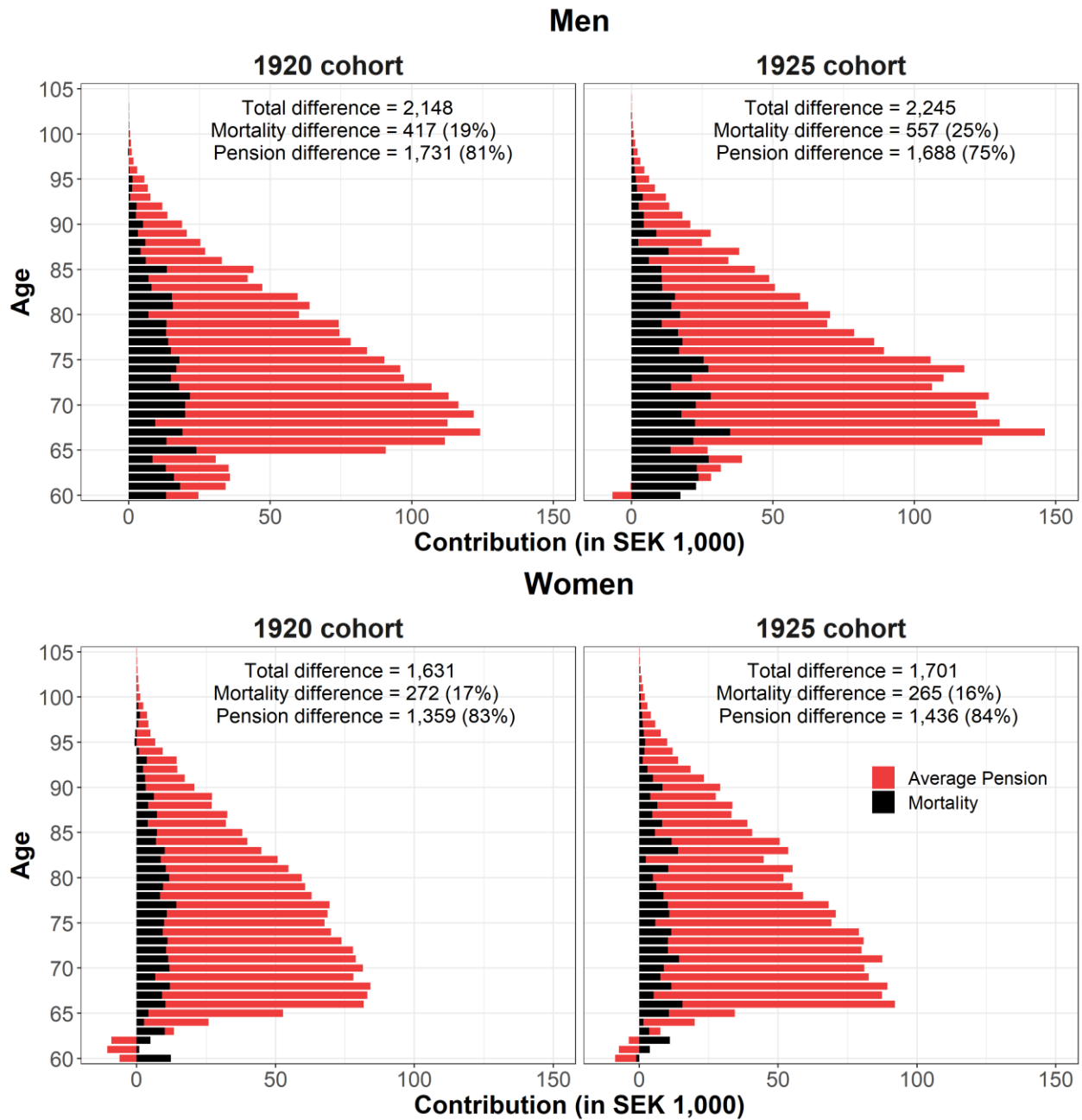


Fig. A17 Decomposition of total lifetime pension differences between primary and tertiary education groups into differences explained by mortality and yearly pension, with a 2% discount rate. SEK 1,000 \approx US\$125. *Source:* Authors' calculation based on linked administrative data from Statistics Sweden.

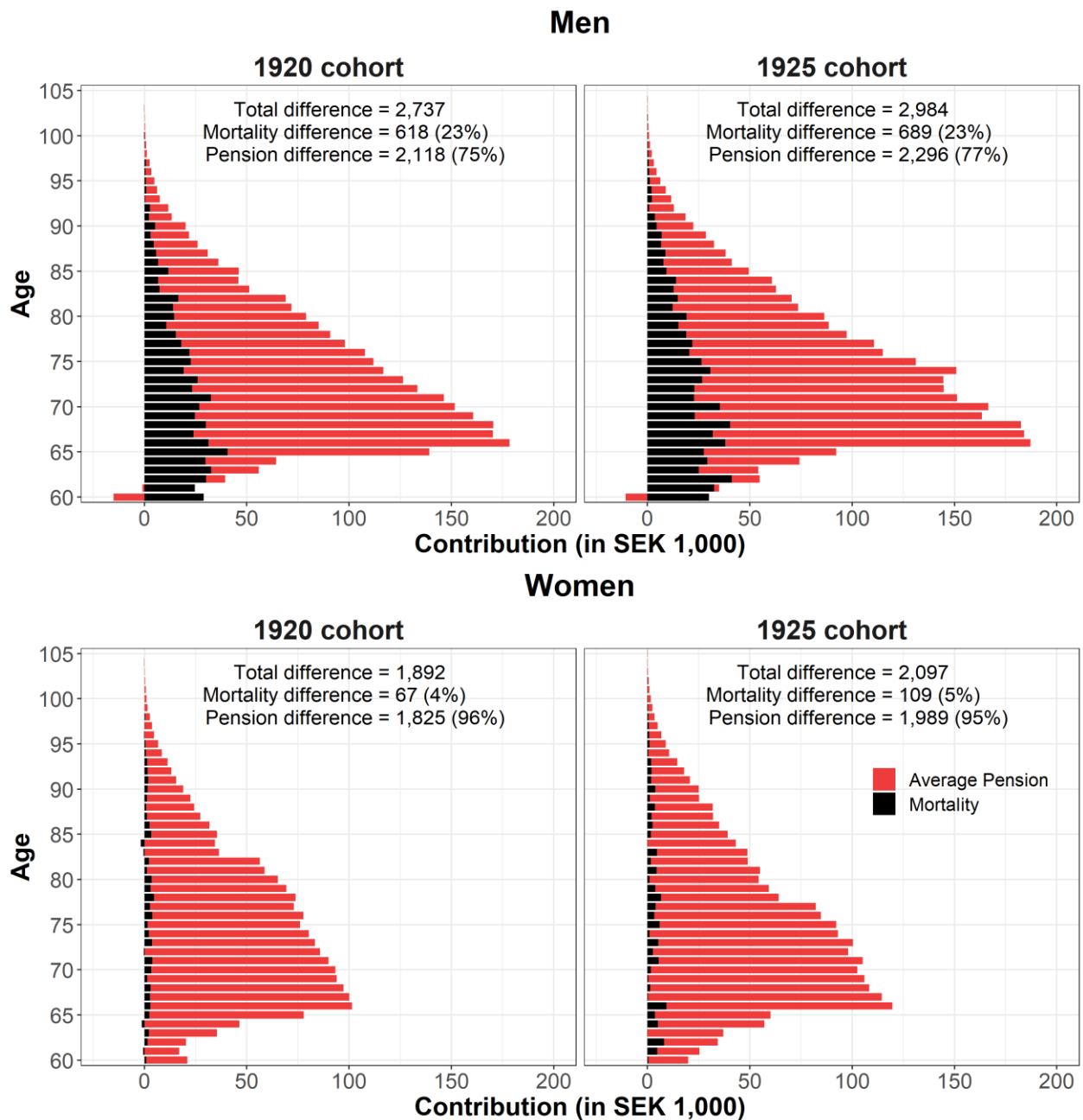


Fig. A18 Decomposition of total lifetime pension differences between the bottom and the top earnings quintile groups into differences explained by mortality and yearly pension, with a 2% discount rate. SEK 1,000 \approx US\$125. *Source:* Authors' calculation based on linked administrative data from Statistics Sweden.