Extended Abstract:

Socioeconomic disparities in under-five mortality in southern Sweden, 1813 – 1967

Martin Dribe and Omar Karlsson, Lund University - Centre for Economic Demography

martin.dribe@ekh.lu.se

Introduction

Mosley and Chen (1984) proposed a widely used framework for studying determinants of child mortality in low resource settings. Healthy development of children is determined by directly by proximate determinants and indirectly through social and economic determinants. Maternal factors, nutrition, health care, injuries, and environmental contamination (exposures to infections) are proximate determinants of child health which are affected by household economic status. Household economic status and resources improve nutrition and access to health care, and reduce harmful exposures to infectious diseases through more hygienic living environment, for example through less crowding, access to clean water, and sanitary toilet facilities. This paper aims to explore socioeconomic disparities in under-five mortality in five rural and semi-urban parishes and one port-town in southern Sweden, using individual-level longitudinal data from 1813 -1967. As this region, as most of Europe, went through an enormous societal transformation over the period, the changes in socioeconomic disparities in under-five mortality over time are also explored.

Data

This study uses data from the Scanian Economic-Demographic Database (SEDD) which consists of individual-level longitudinal records from 5 rural and semi-urban parishes and one town in southern Sweden. The primary outcome of interest is mortality from birth until age five years old (under-five mortality). Also, the paper explores mortality from birth until age one-year-old (infant mortality), and from age one years old to 10 years old (child mortality).

Methods

This paper first explores socioeconomic disparities in under-five mortality developed between sub-periods; 1) 1813 – 1859, 2) 1860 – 1899, 3) 1900 – 1939, and 4) 1940 – 1967. SES is defined as the occupation of the household head according to the HISCLASS scheme. The HISCLASS are grouped into four SES groups: 1) higher occupations (HISCLASS 1-6); 2) skilled workers (HISCLASS 7); 3) Farmers (HISCLASS 8); 4) lower skilled workers (HISCLASS 9-10); and 5) Unskilled workers (HISCLASS 11-12). The highest SES group is composed of non-manual occupations, while the other four are different levels of manual occupations. Finally a sixth group is defined, for those with missing information on occupation.

Methods

The association between SES and mortality is estimated using Cox proportional hazards models:

$$ln\, h(a) = ln\, h_0(a) + \beta_1(SES * Periods_{1-4}) + \beta_2 Periods_{2-4} + \theta' x$$

$h(a)$ is the hazard of death at age a, and $h_0(a)$ is the baseline hazard. SES is a vector of 5 SES groups (with higher occupations as an omitted reference category). $Periods_{1-4}$ is a vector of four binary

indicator variables, one for each period. $Period_{2-4}$ is a vector of three binary indicator variables for periods two, three, and four with the first period as an omitted reference category[1].

Table 1. Study subjects by period and SES

	Period			
Occupation	1813 - 1859	1860 - 1899	1900 - 1939	1940 - 1967
	Under-five mortality			
All	33,878	59,710	61,186	63,015
Higher occ.	1,391 (4.11%)	4,055 (6.79%)	10,488 (17.14%)	19,027 (30.19%)
Skilled	1,385 (4.09%)	4,564 (7.64%)	9,504 (15.53%)	16,491 (26.17%)
Farmers	18,376 (54.24%)	35,117 (58.81%)	17,279 (28.24%)	2,177 (3.45%)
Lower skilled	8,824 (26.05%)	6,605 (11.06%)	10,757 (17.58%)	15,030 (23.85%)
Unskilled	1,690 (4.99%)	4,847 (8.12%)	9,041 (14.78%)	6,140 (9.74%)
NA	2,212 (6.53%)	4,522 (7.57%)	4,117 (6.73%)	4,150 (6.59%)
	Infant mortality			
All	11,221	16,787	19,617	24,982
Higher occ.	440 (3.92%)	1,072 (6.39%)	3,161 (16.11%)	7,284 (29.16%)
Skilled	454 (4.05%)	1,349 (8.04%)	3,003 (15.31%)	6,655 (26.64%)
Farmers	5,823 (51.89%)	9,252 (55.11%)	4,835 (24.65%)	712 (2.85%)
Lower skilled	2,985 (26.60%)	2,031 (12.10%)	3,921 (19.99%)	6,000 (24.02%)
Unskilled	533 (4.75%)	1,406 (8.38%)	2,937 (14.97%)	2,433 (9.74%)
NA	986 (8.79%)	1,677 (9.99%)	1,760 (8.97%)	1,898 (7.60%)
	Child mortality			
All	51,786	94,161	100,400	89,872
Higher occ.	1,966 (3.80%)	6,572 (6.98%)	18,420 (18.35%)	28,344 (31.54%)
Skilled	2,171 (4.19%)	6,934 (7.36%)	15,823 (15.76%)	22,604 (25.15%)
Farmers	28,628 (55.28%)	56,319 (59.81%)	29,519 (29.40%)	3,770 (4.19%)
Lower skilled	13,817 (26.68%)	9,831 (10.44%)	16,089 (16.02%)	21,075 (23.45%)
Unskilled	2,578 (4.98%)	7,554 (8.02%)	14,662 (14.60%)	8,724 (9.71%)
NA	2,626 (5.07%)	6,951 (7.38%)	5,887 (5.86%)	5,355 (5.96%)

Notes: Subjects (%)

The paper shows estimates from both adjusted and unadjusted models including a vector of controls variables *x*. These control variables are maternal age (linear and squared terms), birth order, year of birth, and indicators for parish, father not present, mother not present, and neither parent present. Maternal age is adjusted for children in households where mother is not present and who have missing information on maternal age using dummy variable adjustment.

[1] Table A2 shows results from an alternative parametrization of eq1: $ln\, h(a) = ln\, h_0(a) + \rho_1(SES * Periods_{2-4}) + \rho_2 SES + \beta_2 Periods_{2-4} + \theta' x$

Cox proportional hazards models rely on the assumption of proportional hazards over the duration period which was tested using Schoenfeld residuals. The test indicates statistically significant non-proportionality for under-five mortality in the second period, for skilled and unskilled workers. The cumulative hazard for higher occupations crosses that of skilled worker at around six months, and unskilled workers at around eight months. Statistically significant non-proportionality was similarly also found for infant mortality, while none was found for child mortality. When the first four months are excluded from the analysis time for under-five mortality, the non-proportionality assumption for under-five mortality does not appear to be violated and is therefore included as a robustness check.

Descriptive statistics

Table 1 shows the study subjects by Period and SES. In the first two periods, 1813-1859 and 1860-1899, children born to farmers comprised over 50% of the subjects under study. The number of farmers dramatically decreases in the third period, to 28%, and again in the final period, to 3%. Inverse to the farmers are higher occupations which have 4 and 7% in the first and second periods but increase dramatically to 17% in the third, and 30% in the final period. The proportion of skilled workers also increases substantially between the periods going from 4% in 1813-1859 to 26% in 1940-1967. The proportion lower skilled and unskilled does not change monotonically – lower skilled first decrease and then increase, while unskilled increase and then decrease. Table A1 shows person-years at risk and number of failures by SES and Period. A small number of child deaths in the last period, especially for farmers (4), make estimating differences in child mortality problematic.

Results

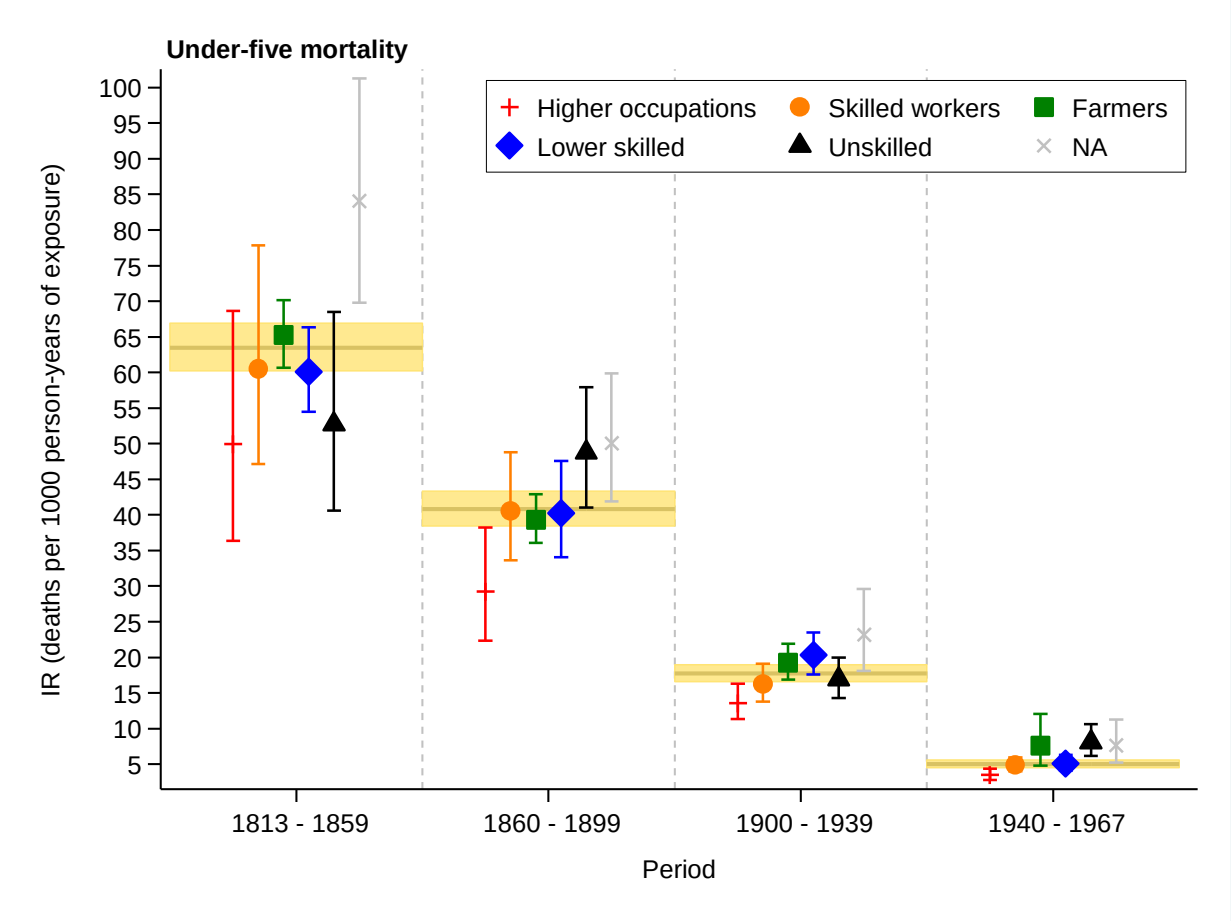
Figure 1 shows the incidence rates for under-five mortality for each SES group and each period. Overall, under-five mortality declined from 60 deaths per 1000 person-years of exposure to 5 deaths between the first and the last period. All SES groups, except the unskilled, show a substantial decrease in under-five mortality between the first two periods. Between the second and third periods as well as the third and the final period there is a substantial decrease in under-five mortality for all SES groups.

Infant mortality declines from 188 deaths per 1000 person-years of exposure in the first period to 20 deaths in the final period (Figure A1). The decline in infant mortality is more even between SES groups than for under-five mortality, while the declines in child mortality are more uneven; especially between the first and the second periods (Figure A2). Unskilled workers have, in fact, a slight increase in child mortality, and lower skilled have practically no changes between the first and the second period. There is a decrease for higher occupations and some decrease for skilled workers, but overall there is a minimal decline in child mortality between the first and the second periods.

Table 2 and Figure 4 show the main results for under-five mortality. Although higher occupations have substantially lower under-five mortality in the first period, the hazard ratios for the other SES groups are not statistically significantly different. In the second period, unskilled workers have a 60% higher risk of dying before the age of 5 than higher occupations, which is statistically significant at the 5% level. The hazard ratio for all other SES groups are similar, ranging from 1.29 – 1.37, all statistically significantly different from the higher occupations at the 10% level, except for skilled workers. In the third period,

lower-skilled workers and farmers have 39 and 40% higher risk of under-five mortality than higher occupations, statistically significant at the 1% level. Unskilled and NA have 25 and 29% higher risk, statistically significant at the 10% level. In the last period, 1940-1967, the higher occupations have a statistically significantly lower risk of under-five mortality than all other SES groups. In the last period, SES differences in under-five mortality appear to have increased substantially. The unskilled workers and the farmers have the highest under-five mortality, or 2.22 and 2.33 greater risk than the higher occupations, respectively, statistically significant at the 1% levels. The skilled workers, the lower skilled workers, and the NA have 1.38, 1.43, and 1.79 greater risk of under-five mortality than the higher occupations, respectively, statistically significant at the 5% levels.

Figure 1. Under-five mortality: Incidence rates by period and occupation



Notes: 95% confidence intervals. Yellow lines indicate the overall Incidence rates (IR) in each period.

Excluding the first four months from the analysis time (Figure A4) shows similar results for under-5 mortality, although SES differences appear to be somewhat smaller in the first two periods, while more substantial in the last two periods. Table A1 in the appendix shows the interaction terms for period and SES, which show that the under-five mortality hazard ratio increased over two-fold for the unskilled, and

by 78% for farmers (compared to higher occupations) in the last period compared to the first. The second column in Table 2 shows the results for under-five mortality after adjusting for a set of control variables. Most estimates become slightly smaller and most of the estimates that were statistically significant at the 10% level become non-significant. Some estimates are, however, reduced substantially, for example for farmers in the last two periods.

Table 2. Hazard ratios from Cox PH models, full sample

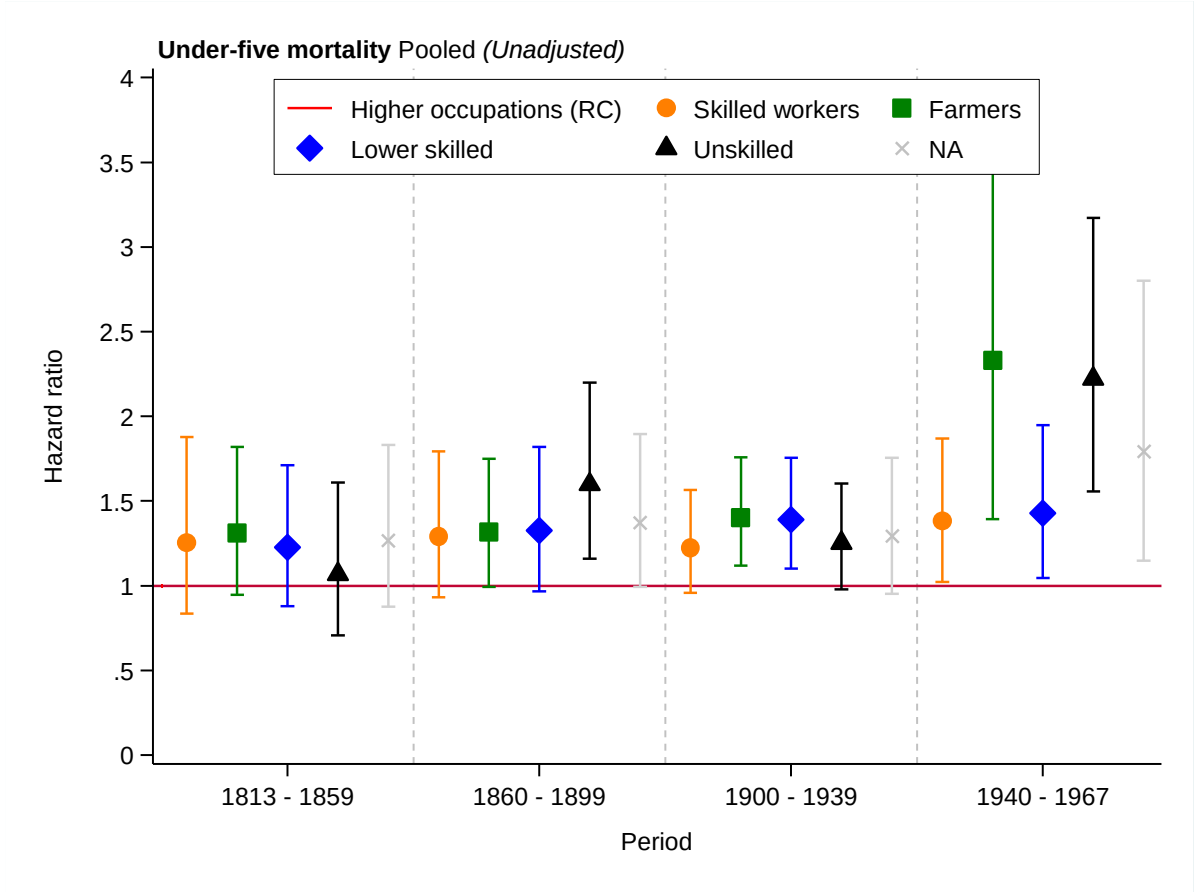
	Under-five mortality		Infant mortality		Child mortality (ages 1 – 10)	
Higher Occ. in 1813 - 1859	**rc**	**rc**	**rc**	**rc**	**rc**	**rc**
Skilled in 1813 - 1859	1.25	1.22	1.14	1.12	1.51	1.42
	(0.26)	(0.25)	(0.31)	(0.30)	(0.43)	(0.41)
Farmers in 1813 - 1859	1.31	1.31	1.43*	1.43*	1.19	1.15
	(0.22)	(0.22)	(0.31)	(0.31)	(0.29)	(0.28)
Lower skilled in 1813 - 1859	1.23	1.15	1.45*	1.35	0.96	0.90
	(0.21)	(0.20)	(0.31)	(0.29)	(0.24)	(0.22)
Unskilled in 1813 - 1859	1.07	1.08	1.27	1.30	0.72	0.71
	(0.22)	(0.23)	(0.33)	(0.34)	(0.24)	(0.24)
NA in 1813 - 1859	1.27	1.13	1.37	1.19	1.29	1.19
	(0.24)	(0.21)	(0.32)	(0.28)	(0.37)	(0.35)
Higher Occ. in 1860 - 1899	**rc**	**rc**	**rc**	**rc**	**rc**	**rc**
Skilled in 1860 - 1899	1.29	1.37*	1.17	1.25	1.76***	1.81***
	(0.22)	(0.23)	(0.28)	(0.30)	(0.37)	(0.38)
Farmers in 1860 - 1899	1.32*	1.30*	1.47*	1.43*	1.43*	1.43*
	(0.19)	(0.19)	(0.30)	(0.29)	(0.27)	(0.27)
Lower skilled in 1860 - 1899	1.33*	1.18	1.47*	1.31	1.47*	1.35
	(0.21)	(0.19)	(0.33)	(0.29)	(0.31)	(0.29)
Unskilled in 1860 - 1899	1.60***	1.63***	1.72**	1.75**	1.67**	1.67**
	(0.26)	(0.27)	(0.39)	(0.40)	(0.36)	(0.36)
NA in 1860 - 1899	1.37*	1.24	1.37	1.22	1.80***	1.63**
	(0.23)	(0.20)	(0.31)	(0.28)	(0.39)	(0.35)
Higher Occ. in 1900 - 1939	**rc**	**rc**	**rc**	**rc**	**rc**	**rc**
Skilled in 1900 - 1939	1.22	1.18	1.12	1.06	1.71***	1.73***
	(0.15)	(0.15)	(0.16)	(0.16)	(0.34)	(0.35)
Farmers in 1900 - 1939	1.40***	1.14	1.22	1.04	2.28***	1.75***
	(0.16)	(0.14)	(0.16)	(0.15)	(0.42)	(0.34)
Lower skilled in 1900 - 1939	1.39***	1.36**	1.32**	1.27*	1.34	1.37
	(0.17)	(0.16)	(0.18)	(0.17)	(0.28)	(0.29)
Unskilled in 1900 - 1939	1.25*	1.22	1.03	1.00	1.85***	1.89***
	(0.16)	(0.16)	(0.16)	(0.15)	(0.37)	(0.38)
NA in 1900 - 1939	1.29*	1.09	1.20	0.98	1.24	1.16
	(0.20)	(0.17)	(0.21)	(0.18)	(0.38)	(0.36)
Higher Occ. in 1940 - 1967	**rc**	**rc**	**rc**	**rc**	**rc**	**rc**
Skilled in 1940 - 1967	1.38**	1.40**	1.37*	1.38*	1.38	1.41
	(0.21)	(0.22)	(0.23)	(0.23)	(0.46)	(0.47)
Farmers in 1940 - 1967	2.33***	1.92**	2.34***	2.10**	2.16	1.50
	(0.61)	(0.52)	(0.67)	(0.62)	(1.21)	(0.85)
Lower skilled in 1940 - 1967	1.43**	1.34*	1.32	1.26	1.87*	1.62
	(0.23)	(0.21)	(0.23)	(0.22)	(0.61)	(0.54)
Unskilled in 1940 - 1967	2.22***	2.01***	1.96***	1.79***	3.27***	2.90***
	(0.40)	(0.37)	(0.39)	(0.36)	(1.18)	(1.04)
NA in 1940 - 1967	1.79**	1.34	1.63**	1.20	3.72***	2.68**
	(0.41)	(0.31)	(0.40)	(0.30)	(1.55)	(1.17)
1813 - 1859	**rc**	**rc**	**rc**	**rc**	**rc**	**rc**
1860 - 1899	0.64**	1.27	0.57**	1.23	0.69	1.11
	(0.14)	(0.28)	(0.16)	(0.36)	(0.20)	(0.34)
1900 - 1939	0.31***	1.51*	0.43***	2.35***	0.18***	0.64

	(0.06)	(0.34)	(0.10)	(0.65)	(0.05)	(0.22)
1940 - 1967	0.08***	0.68	0.12***	1.15	0.03***	0.20***
	(0.02)	(0.18)	(0.03)	(0.37)	(0.01)	(0.08)
Maternal age at birth		0.99		0.99		1.01
		(0.01)		(0.01)		(0.01)
Maternal age at birth squared		1.00		1.00		1.00
		(0.00)		(0.00)		(0.00)
Hög		**rc**		**rc**		**rc**
Kävlinge		1.21**		1.18		1.20*
		(0.10)		(0.12)		(0.13)
Halmstad		1.08		1.04		0.98
		(0.09)		(0.11)		(0.11)
Sireköping		1.14		1.17		1.01
		(0.09)		(0.12)		(0.11)
Kågeröd		1.08		1.12		0.88
		(0.08)		(0.11)		(0.09)
Landskrona		1.01		1.17		0.66***
		(0.10)		(0.14)		(0.10)
Missing		0.55		0.00		1.58
		(0.55)		(0.00)		(1.13)
Year of birth		0.98***		0.98***		0.99***
		(0.00)		(0.00)		(0.00)
Birth order		1.00		1.00		0.99
		(0.01)		(0.01)		(0.02)
No mother present		1.77***		1.91***		1.34**
		(0.19)		(0.27)		(0.20)
No father present		1.21***		1.17**		1.17*
		(0.07)		(0.08)		(0.10)
No mother or Father present		0.87		0.81		1.16
		(0.12)		(0.14)		(0.24)
Male		1.15***		1.19***		1.08
		(0.04)		(0.05)		(0.05)
Observations	217,789	215,904	72,607	71,995	336,219	333,283

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 2 also shows the results for infant (also Figure A4) and child mortality (also Figure A5). Infant mortality shows somewhat greater SES disparities, between the higher occupations and the other groups, than child mortality – except skilled workers. In the second period, most groups have a similar hazard ratio for infant and child mortality – except skilled and NA which have greater child mortality than all other groups – and substantially greater hazard ratio for child mortality than infant mortality. In the third period, skilled workers and especially farmers and unskilled workers have greater hazard ratios for child mortality than for infant mortality. In the last period, lower skilled and especially unskilled and NA have higher hazard ratios for child mortality than for infant mortality.

Figure 2. Under-five mortality: Hazard ratios from Cox PH models



Notes: 95% confidence intervals.

Conclusion

Enormous progress was made in reducing under-five mortality in Southern Sweden from 1813 to 1967. First, infant mortality started to decline rapidly, and later child mortality, causing under-five mortality to go down from 60 deaths per 1000 person-years of exposure in the period 1813-1859 to 5 deaths in 1940-1967. In the beginning, child mortality only declined for the higher SES groups while infant mortality declined for all groups between all periods.

Although under-five mortality declined for all SES groups, the relative mortality-burden was lower in the highest SES group - those in non-manual occupations - compared to all other SES groups - comprising four levels of manual occupations. The hazard ratios between the non-manual and the four manual occupation groups remain similar throughout the periods, except farmers and unskilled workers, for whom the hazard ratios (compared to the higher occupations) increase significantly, but only in the last period. The SES disparities in under-five mortality remain similar in the first three periods, 1813 – 1939, although dramatic changes were taking place in the composition of SES groups over this period.

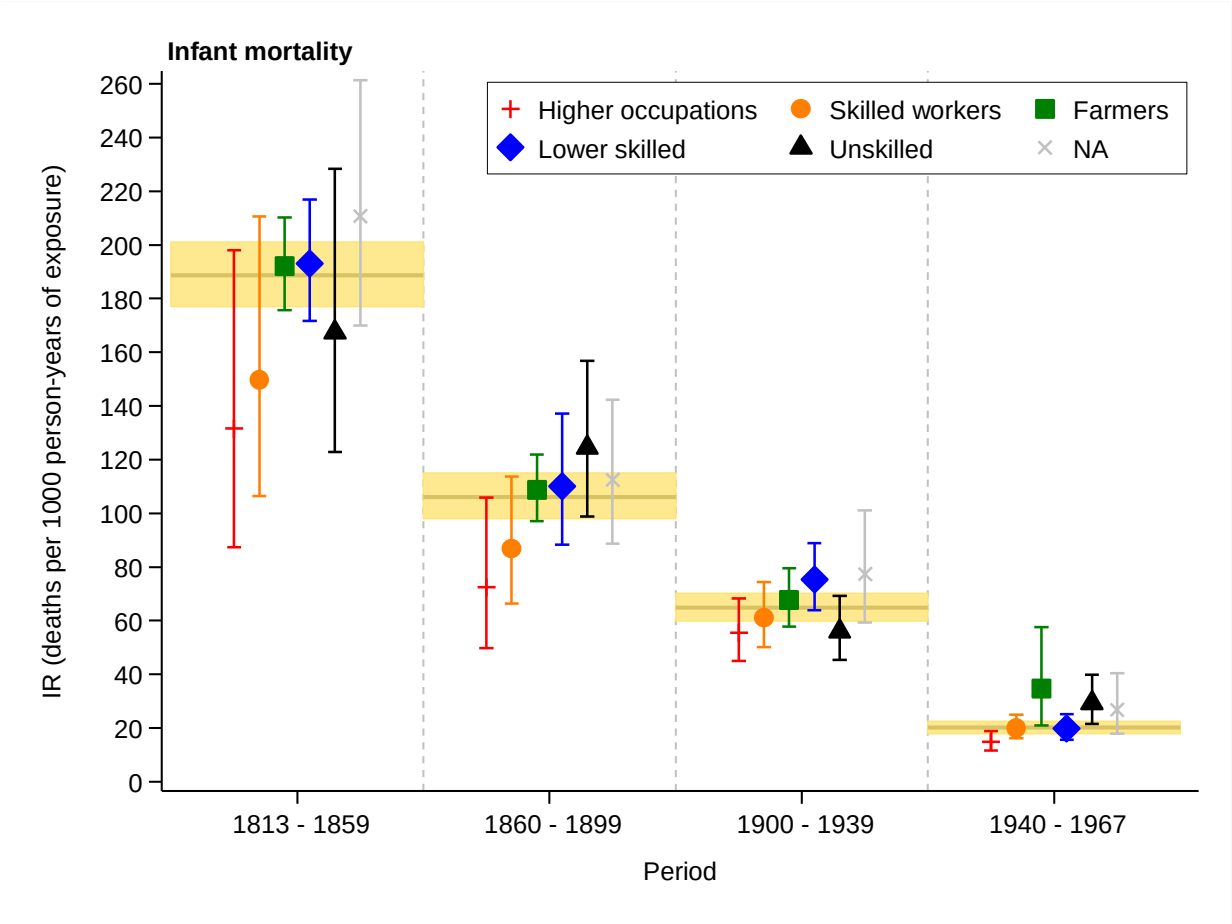
Appendix

Table 1. Person-years of exposure by period, occupation, and outcome

Occupation	Period 1813 - 1859	1860 - 1899	1900 - 1939	1940 - 1967
	Under-five mortality			
Higher occ.	760.88 (38)	1,812.87 (53)	8,381.17 (114)	21,387.14 (75)
Skilled	1,007.49 (61)	2,715.68 (110)	8,814.37 (143)	19,972.99 (97)
Farmers	11,036.46 (720)	13,141.44 (517)	11,589.86 (223)	2,362.55 (18)
Lower skilled	6,619.93 (398)	3,402.69 (137)	9,082.48 (185)	16,680.34 (85)
Unskilled	1,062.19 (56)	2,644.79 (129)	8,153.10 (138)	6,311.03 (51)
NA	1,320.59 (111)	2,396.14 (120)	2,763.11 (64)	3,389.16 (26)
	Infant mortality			
Higher occ.	174.78 (23)	372.12 (27)	1,586.90 (88)	4,374.31 (65)
Skilled	220.45 (33)	610.58 (53)	1,620.54 (99)	4,132.16 (83)
Farmers	2,467.07 (474)	2,732.05 (297)	2,227.04 (151)	432.49 (15)
Lower skilled	1,456.01 (281)	718.27 (79)	1,871.02 (141)	3,482.61 (69)
Unskilled	238.81 (40)	578.28 (72)	1,550.73 (87)	1,364.91 (40)
NA	393.98 (83)	613.95 (69)	698.07 (54)	856.66 (23)
	Child mortality			
Higher occ.	1,176.36 (18)	3,105.00 (31)	16,020.94 (39)	37,647.27 (16)
Skilled	1,657.13 (37)	4,365.96 (79)	16,768.90 (70)	32,727.80 (20)
Farmers	18,294.56 (321)	22,734.16 (323)	21,848.60 (122)	4,613.71 (4)
Lower skilled	11,231.53 (157)	5,741.85 (85)	16,284.52 (55)	28,462.29 (23)
Unskilled	1,585.59 (18)	4,251.00 (74)	14,866.14 (69)	10,493.07 (15)
NA	1,745.77 (36)	3,788.73 (69)	5,034.41 (15)	5,701.11 (9)

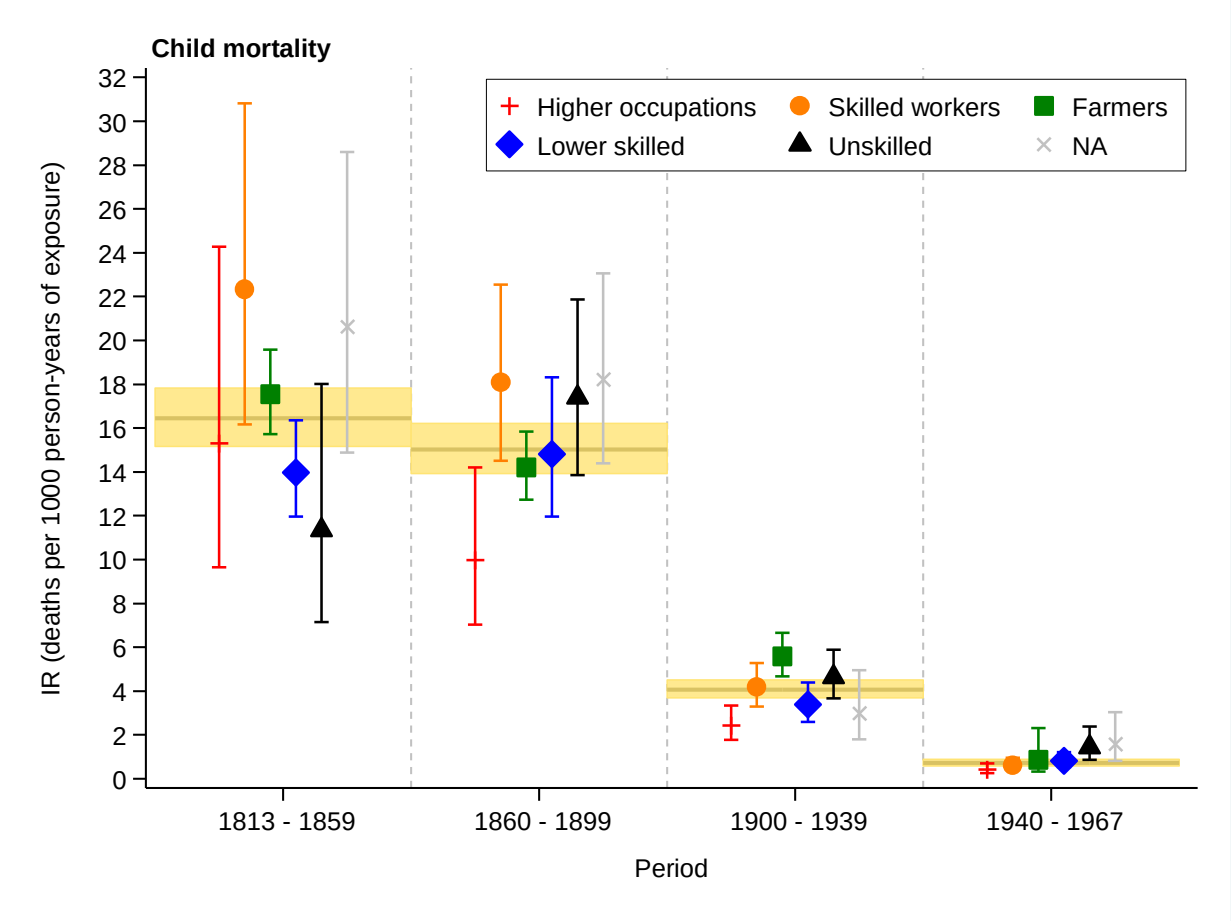
Notes: Person-years(failures)

Figure A1. Infant mortality: Incidence rates by period and occupation



Notes: 95% confidence intervals. Yellow lines indicate the overall Incidence rates (IR) in each period.

Figure A2. Child mortality (ages 1- 10): Incidence rates by period and occupation



Notes: 95% confidence intervals. Yellow lines indicate the overall Incidence rates (IR) in each period.

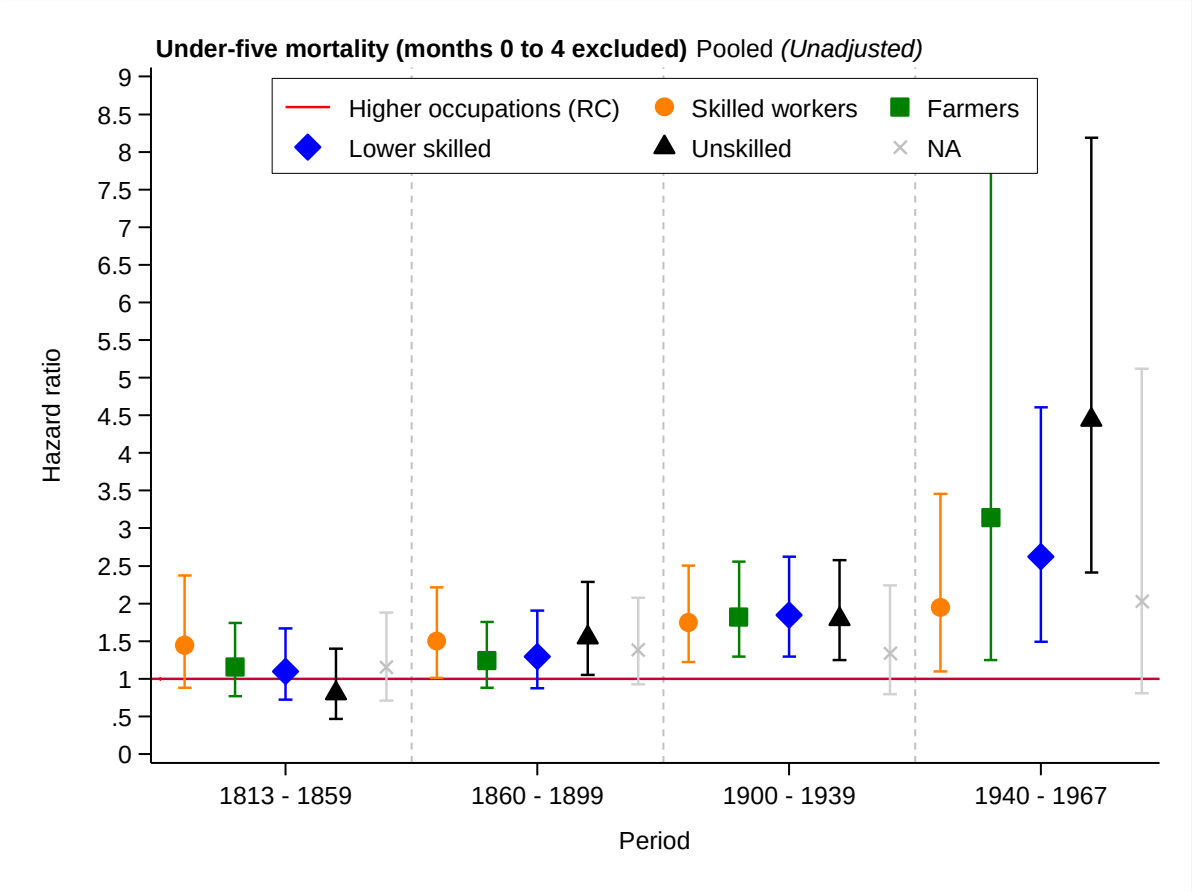
Table A2. Hazard ratios from Cox PH models, alternative parameterization

	Under-five mortality		Infant mortality		Child mortality	
Skilled in 1860 - 1899	1.03	1.13	1.03	1.12	1.17	1.28
	(0.27)	(0.30)	(0.37)	(0.40)	(0.42)	(0.46)
Farmers in 1860 - 1899	1.00	0.99	1.03	1.00	1.20	1.24
	(0.22)	(0.22)	(0.30)	(0.29)	(0.37)	(0.38)
Lower skilled in 1860 - 1899	1.08	1.03	1.02	0.97	1.53	1.50
	(0.25)	(0.24)	(0.32)	(0.30)	(0.50)	(0.49)
Unskilled in 1860 - 1899	1.50	1.50	1.35	1.35	2.31**	2.34**
	(0.40)	(0.40)	(0.47)	(0.47)	(0.91)	(0.93)
NA in 1860 - 1899	1.08	1.10	1.00	1.03	1.39	1.37
	(0.27)	(0.27)	(0.33)	(0.34)	(0.50)	(0.49)
Skilled in 1900 - 1939	0.98	0.97	0.98	0.95	1.13	1.22
	(0.24)	(0.24)	(0.30)	(0.29)	(0.40)	(0.43)
Farmers in 1900 - 1939	1.07	0.87	0.85	0.72	1.92**	1.52
	(0.22)	(0.18)	(0.22)	(0.19)	(0.58)	(0.47)
Lower skilled in 1900 - 1939	1.13	1.18	0.91	0.94	1.40	1.52
	(0.23)	(0.25)	(0.23)	(0.24)	(0.45)	(0.50)
Unskilled in 1900 - 1939	1.17	1.13	0.81	0.77	2.56**	2.65**
	(0.29)	(0.28)	(0.24)	(0.23)	(1.00)	(1.03)
NA in 1900 - 1939	1.02	0.97	0.88	0.83	0.96	0.98
	(0.25)	(0.24)	(0.26)	(0.24)	(0.40)	(0.41)
Skilled in 1940 - 1967	1.10	1.15	1.20	1.24	0.91	0.99
	(0.28)	(0.30)	(0.38)	(0.39)	(0.40)	(0.44)
Farmers in 1940 - 1967	1.78*	1.47	1.63	1.47	1.81	1.30
	(0.55)	(0.47)	(0.58)	(0.54)	(1.11)	(0.80)
Lower skilled in 1940 - 1967	1.16	1.16	0.92	0.93	1.95	1.80
	(0.27)	(0.27)	(0.25)	(0.26)	(0.80)	(0.75)
Unskilled in 1940 - 1967	2.08***	1.85**	1.54	1.38	4.53***	4.06***
	(0.58)	(0.52)	(0.51)	(0.46)	(2.22)	(1.99)
NA in 1940 - 1967	1.42	1.19	1.20	1.01	2.87**	2.25
	(0.42)	(0.36)	(0.40)	(0.35)	(1.46)	(1.17)
1813 - 1859	**rc**	**rc**	**rc**	**rc**	**rc**	**rc**
1860 - 1899	0.64**	1.27	0.57**	1.23	0.69	1.11
	(0.14)	(0.28)	(0.16)	(0.36)	(0.20)	(0.34)
1900 - 1939	0.31***	1.51*	0.43***	2.35***	0.18***	0.64
	(0.06)	(0.34)	(0.10)	(0.65)	(0.05)	(0.22)
1940 - 1967	0.08***	0.68	0.12***	1.15	0.03***	0.20***
	(0.02)	(0.18)	(0.03)	(0.37)	(0.01)	(0.08)
Higher occ.	**rc**	**rc**	**rc**	**rc**	**rc**	**rc**
Skilled	1.25	1.22	1.14	1.12	1.51	1.42
	(0.26)	(0.25)	(0.31)	(0.30)	(0.43)	(0.41)
Farmers	1.31	1.31	1.43*	1.43*	1.19	1.15
	(0.22)	(0.22)	(0.31)	(0.31)	(0.29)	(0.28)
Lower skilled	1.23	1.15	1.45*	1.35	0.96	0.90
	(0.21)	(0.20)	(0.31)	(0.29)	(0.24)	(0.22)
Unskilled	1.07	1.08	1.27	1.30	0.72	0.71
	(0.22)	(0.23)	(0.33)	(0.34)	(0.24)	(0.24)
NA	1.27	1.13	1.37	1.19	1.29	1.19
	(0.24)	(0.21)	(0.32)	(0.28)	(0.37)	(0.35)
Maternal age at birth		0.99		0.99		1.01
		(0.01)		(0.01)		(0.01)
Maternal age at birth squared		1.00		1.00		1.00
		(0.00)		(0.00)		(0.00)
Hög		**rc**		**rc**		**rc**
Kävlinge		1.21**		1.18		1.20*
		(0.10)		(0.12)		(0.13)
Halmstad		1.08		1.04		0.98
		(0.09)		(0.11)		(0.11)
Sireköping		1.14		1.17		1.01
		(0.09)		(0.12)		(0.11)
Kågeröd		1.08		1.12		0.88
		(0.08)		(0.11)		(0.09)
Landskrona		1.01		1.17		0.66***
		(0.10)		(0.14)		(0.10)
Missing		0.55		0.00		1.58
		(0.55)		(0.00)		(1.13)
Year of birth		0.98***		0.98***		0.99***

		(0.00)		(0.00)		(0.00)
Birth order		1.00		1.00		0.99
		(0.01)		(0.01)		(0.02)
No mother present		1.77***		1.91***		1.34**
		(0.19)		(0.27)		(0.20)
No father present		1.21***		1.17**		1.17*
		(0.07)		(0.08)		(0.10)
No mother or Father present		0.87		0.81		1.16
		(0.12)		(0.14)		(0.24)
Female		1.15***		1.19***		1.08
		(0.04)		(0.05)		(0.05)
Observations	217,789	215,904	72,607	71,994	336,219	333,250

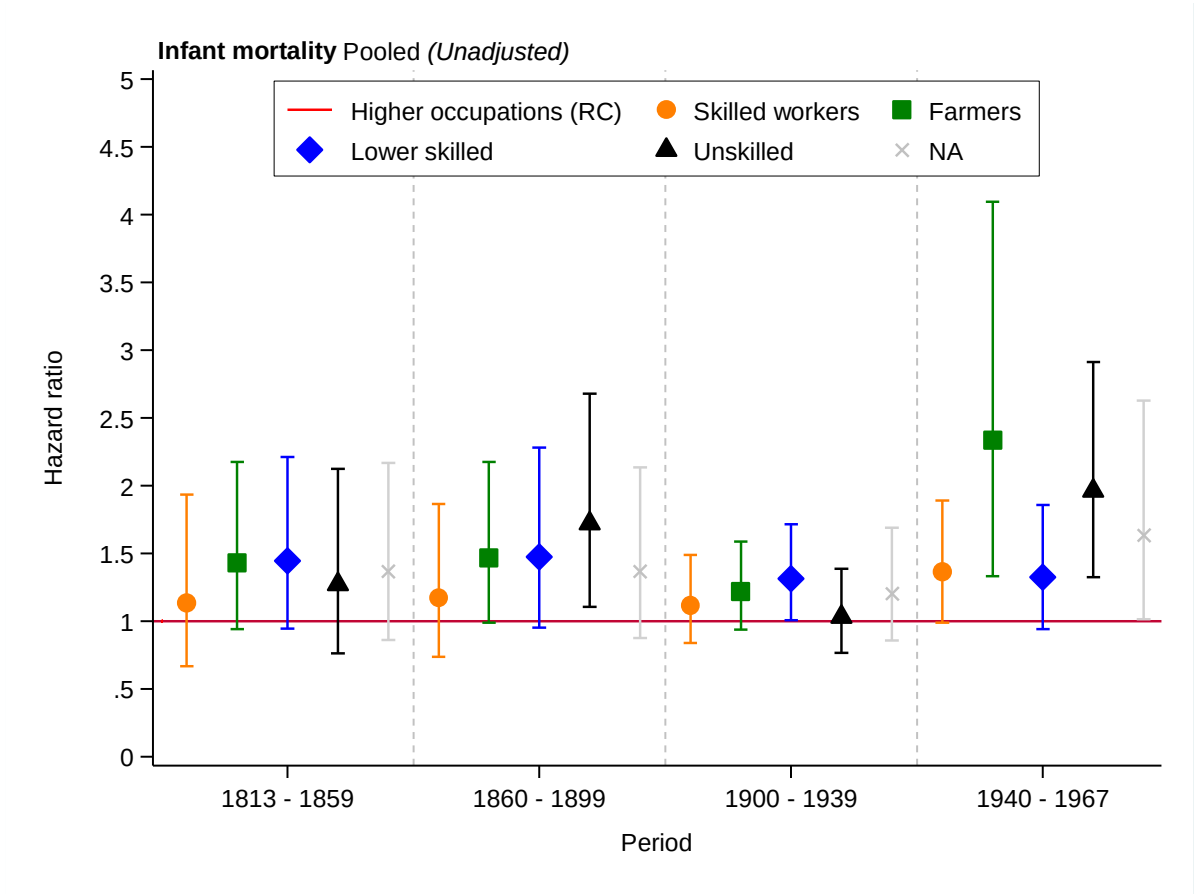
Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Figure A3. Under-five mortality excluding first four months from analysis time: Incidence rates by period and occupation



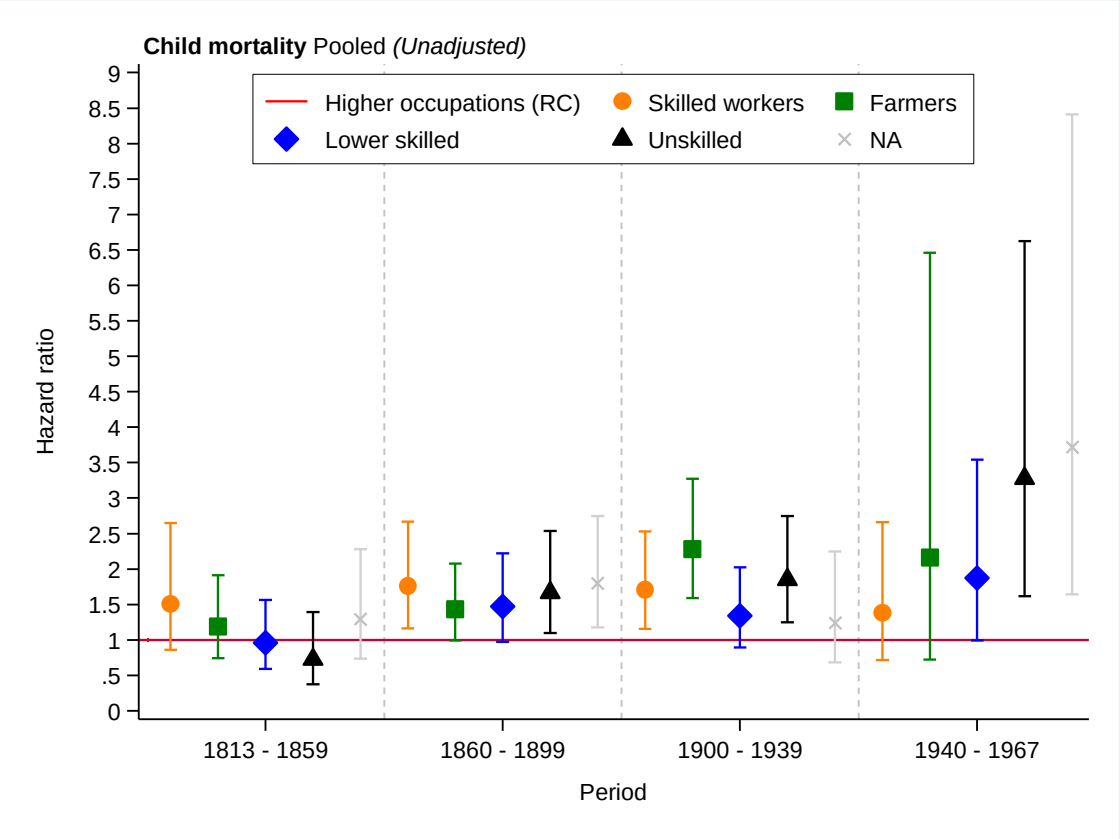
Notes: 95% confidence intervals.

Figure A4. Infant mortality: Hazard ratios from Cox PH models



Notes: 95% confidence intervals.

Figure A5. Child mortality (ages 1- 10): Hazard ratios from Cox PH models



Notes: 95% confidence intervals.