

# Sex differences in health and mortality

Obtained results and future aims of the  
“cloister study”

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Wittgenstein Centre

FOR DEMOGRAPHY AND  
GLOBAL HUMAN CAPITAL

# Outline

- (1) The starting project: Why do women live longer than men? Analysis of sex differences in life expectancy among catholic order members (1997-2004)
- (2) Open questions: Follow-up project (1) – Analysis of causes of death (2005-2010)
- (3) Extension of the research focus: Follow-up project (2) – ERC Starting Grant project HEMOX (“The male-female health mortality paradox”) (2011-2016)

# The starting project

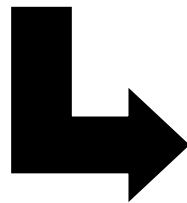
Why do women live longer than men? Analysis of sex differences in life expectancy among catholic order members

# Theories and hypotheses for explaining male excess mortality

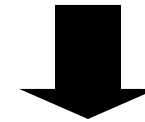
## *Biological explanations*



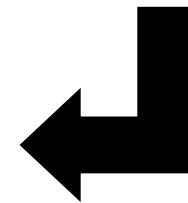
Higher male mortality because of heterogeneous sex chromosomes (males XY – females XX), hormonal differences (estrogen vs. testosterone), shorter telomeres (bigger male body requires more cell divisions)



## *Non-Biological explanations*



Higher male mortality because of excessive cigarette and alcohol consumption, risky behaviour, malnutrition, working in more dangerous jobs, higher socioeconomic stress exposure, risk selection of World Wars, ...



*Multi-causal context*

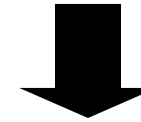
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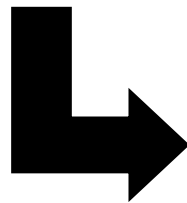


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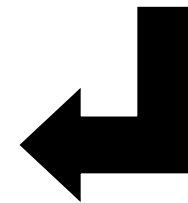
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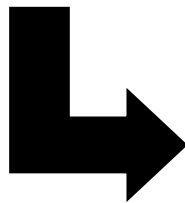


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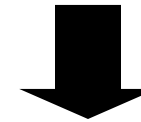
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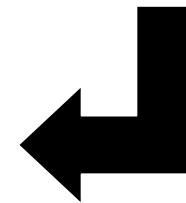
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*Multi-causal context*

# Realization of the study: data and methods

- Sources: Entrance registers (“profess books”), individual records of all monastery members, cemetery registers, monastery and order journals





# Profess book of the Sisters of Mercy of the Holy Cross (Gemünden)

Nro.	Name und Geschlecht.	Primatort. <small>6. unvollständig mit demselben Land</small>	Ordensname.	Geboren.		Eintritt als Kandidatin.	Eintritt in's Kloster.		Profession.	Ort der Professablegung.	Geförder.		Bemerkungen.	
				Jahr.	Monat.		Jahr.	Monat.			Jahr.	Monat.		Jahr.
1283	Anna Winkler	Mora, Amberg, Langen	Opf. M. Wenzel	1895	27. Mär.	1925	9. Juni	1929	12. Juli	1930	28. Juli	Eger	1954 26. Juni Bismarck	
1284	Margareta Schucker	Mühl, Schremsthal, Thun, Lengen	Opf. M. Romka	1911	29. März	1925	9. Juni	1929	22. Juli	1930	28. Juli	Eger	1974 2. März Lengen	
1285	Anna Polland	Falkenau, Falkenau.	Opf. M. Sigismunda	1895	18. März	1925	7. März	1929	22. Juli	1930	28. Juli	Eger	1977 25. Okt. Lengen	
1286	Margareta Schucker	Melch, Warden, Lengen Köllchen, Kapleth, Lengen	Opf. M. Konstantia	1904	27. Okt.	1926	28. Juni	1930	5. Juni	1931	6. Juni	Eger	1978 22. Okt. Lengen	Trennungsbuch Jugendalt. 21. 1. 1932 2. 29. Jugendalt. 21. 1. 1932 2. 29. Lengen
1287	Anna Welek	Spolochan, Slav, Lengen K. M. Kapl. Kapl. Lengen	Opf. M. Boska	1899	12. März	1927	2. März	1930	5. Juni	1931	6. Juni	Eger	1976 31. Okt. Lengen	
1288	Theresia Bleicher	Hallinghofen, Rügenburg, Lengen	Opf. M. Luitberta	1911	2. Nov.	1927	24. Juni	1930	5. Juni	1931	6. Juni	Eger	1978 1. April Lengen	
1289	Ludvicka Kovcik	M. Banzlan, Brankisitz, Lengen	Opf. M. Sima	1902	15. Apr.	1927	27. März	1930	5. Juni	1931	6. Juni	Eger	1978 12. Juni Lengen	
1290	Martha Schwaix	Waldmühl, M. Pollau, Lengen	Opf. M. Teta	1910	12. Sept.	1927	29. März	1930	5. Juni	1931	6. Juni	Eger	1978 1. April Lengen	
1291	Margdalena Höbl	Kaplethof, Burghausen, Lengen	Opf. M. Teterka	1911	2. Okt.	1927	29. März	1930	5. Juni	1931	6. Juni	Eger	1974 3. Okt. Lengen	Jugendalt. 1. 1. 1930 Lengen
1292	Emma Hauer	Waldmühl, Warden, Lengen K. M. Kapl. Kapl. Lengen	Opf. M. Josefa	1909	1. März	1925	2. März	1930	5. Juni	1931	6. Juni	Eger	1978 26. Okt. Lengen	
1293	Anna Prüssinger	Cherbitzbach, Eschenbach, Lengen	Opf. M. Schwaix	1905	26. Aug.	1925	2. März	1930	5. Juni	1931	6. Juni	Eger	1973 1. Juni Lengen	Jugendalt. 21. 1. 1930 Lengen
1294	Martha Krok	Pöhlau, Gleitsch, Lengen	Opf. M. Elise	1905	30. Juni	1925	2. März	1930	5. Juni	1931	6. Juni	Eger	1972 1. April Lengen	Jugendalt. 21. 1. 1930 Lengen
1295	Franziska Robl	Pöhlau, Pöhlau, Lengen Lengen	Opf. M. Florianca	1906	29. Okt.	1925	7. März	1930	5. Juni	1931	6. Juni	Eger	1979 1. Juni Lengen	
1296	Marie Täger	Foschvitz, Falkenau, Lengen	Opf. M. Paulberta	1911	5. Okt.	1925	7. März	1930	5. Juni	1931	6. Juni	Eger	1978 1. Juni Lengen	
1297	Marie Spitzer	Mora, Amberg, Langen	Opf. M. Konstantia	1911	26. Juni	1925	7. März	1930	5. Juni	1931	6. Juni	Eger	1978 13. Sept. Lengen	
1298	Amalie Unger	Kloster, Pöhlau, Lengen Lengen	Opf. M. Bertha	1902	15. Sept.	1925	5. März	1930	5. Juni	1931	6. Juni	Eger	1973 21. Okt. Lengen	
1299	Marie Berger	Waldmühl, Warden, Lengen Lengen	Opf. M. Sigismunda	1908	22. Sept.	1925	27. Juli	1930	5. Juni	1931	6. Juni	Eger	1975 11. Okt. Lengen	
1300	Marie Huchl	Herrmannsdorf, Eschenbach, Lengen	Opf. M. Fernanda	1901	15. Juli	1925	2. Juli	1930	5. Juni	1931	6. Juni	Eger	1971 9. Okt. Lengen	Jugendalt. 21. 1. 1930 Lengen



# Realization of the study: data and methods

- Sources: Entrance registers (“profess books”), individual records of all monastery members, cemetery registers, monastery and order journals  
⇒ complete registration of the cloistered population

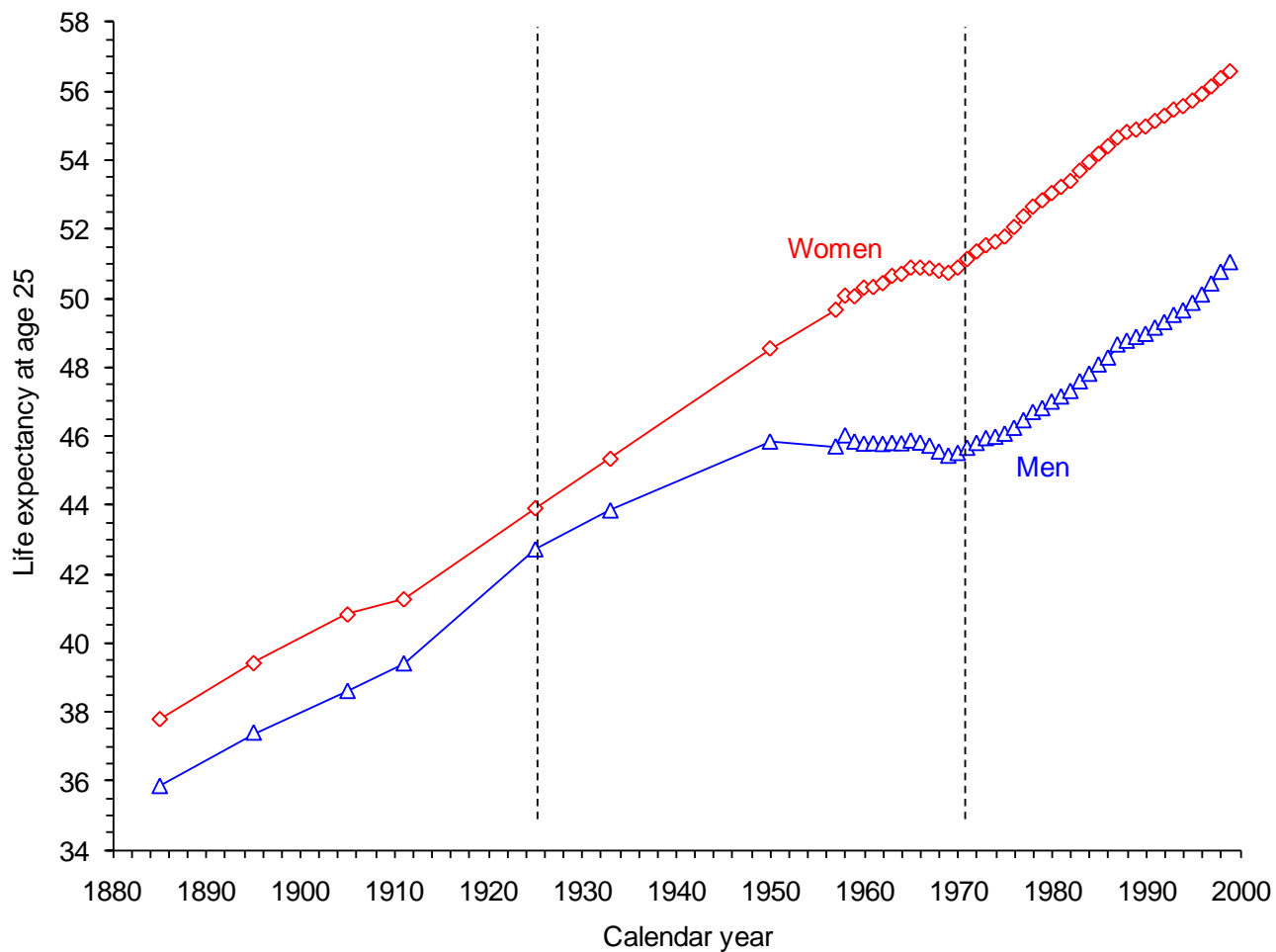


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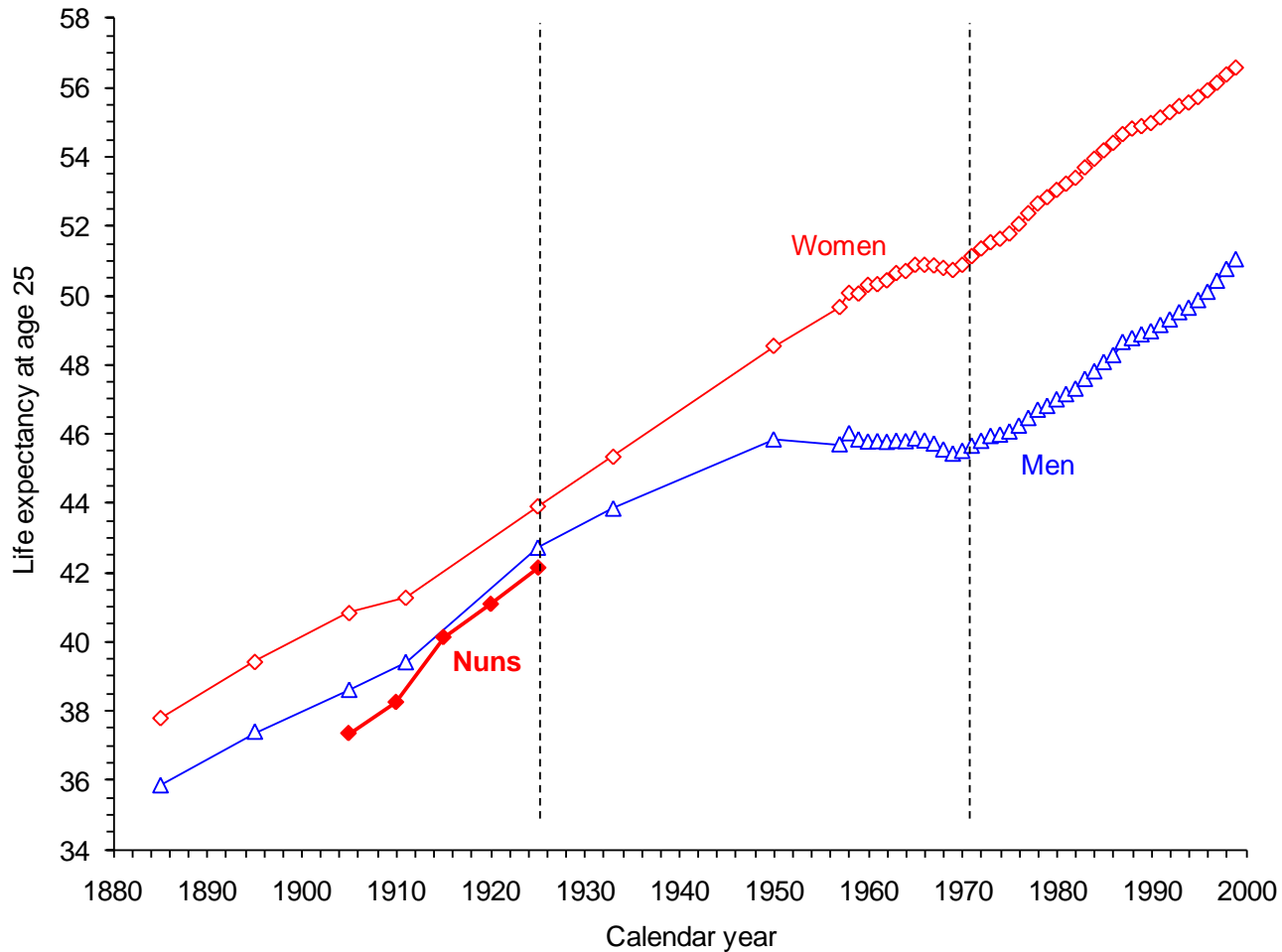


- Sources: Entrance registers (“profess books”), individual records of all monastery members, cemetery registers, monastery and order journals  
⇒ complete registration of the cloistered population
- Data set: 11,980 Individuals (6,199 nuns and 5,781 monks) from 11 different German cloisters
- Nuns born between 1804 and 1985, monks born between 1588 and 1983
- Comparison of sex differences in mortality in the German cloistered population and in the general German population
- Results for several periods before and after the Second World War, using abridged life tables for nuns and monks (30 yrs. periods)

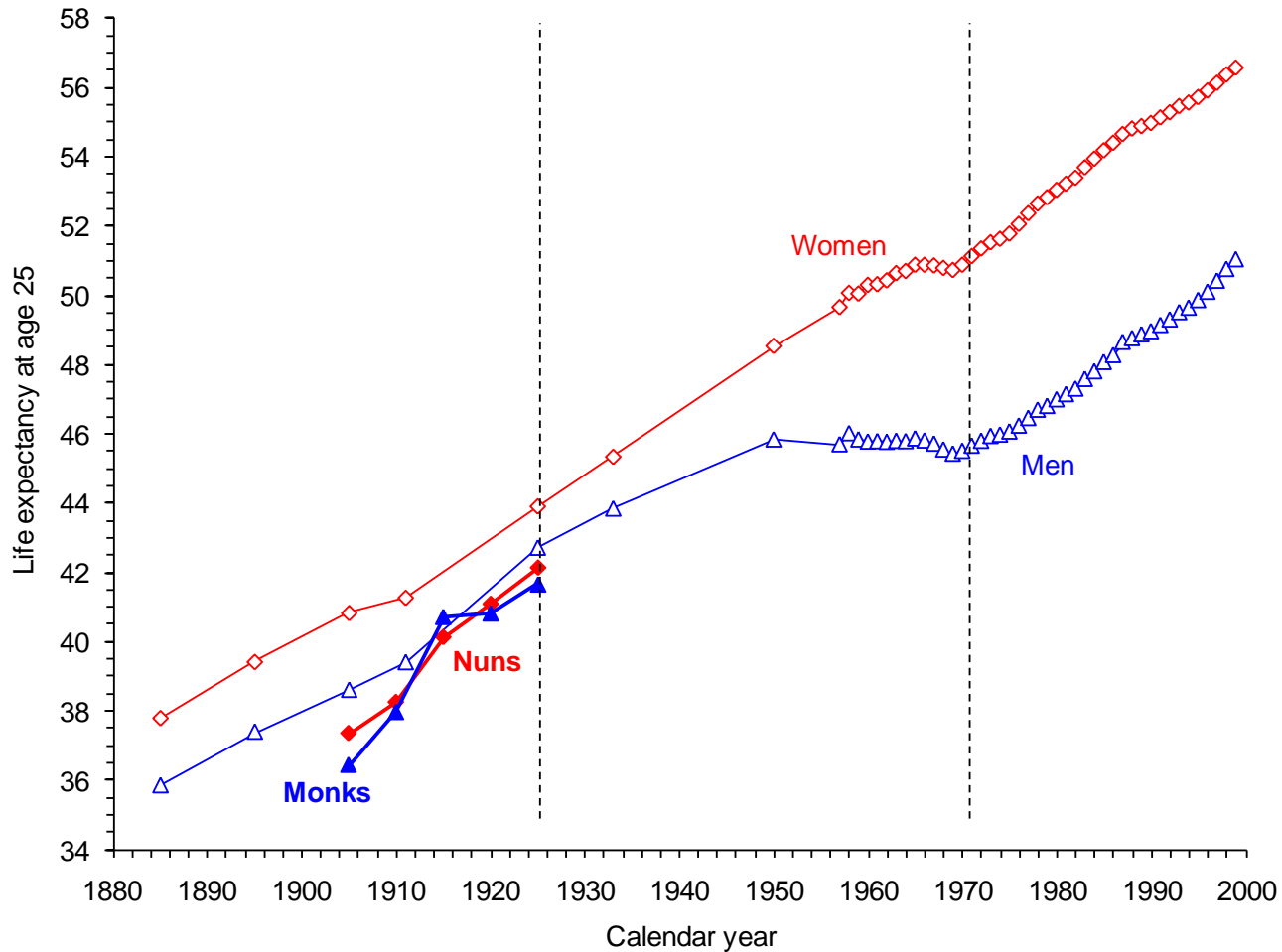
# Trends in life expectancy at age 25 for German women and men and for Bavarian nuns and monks



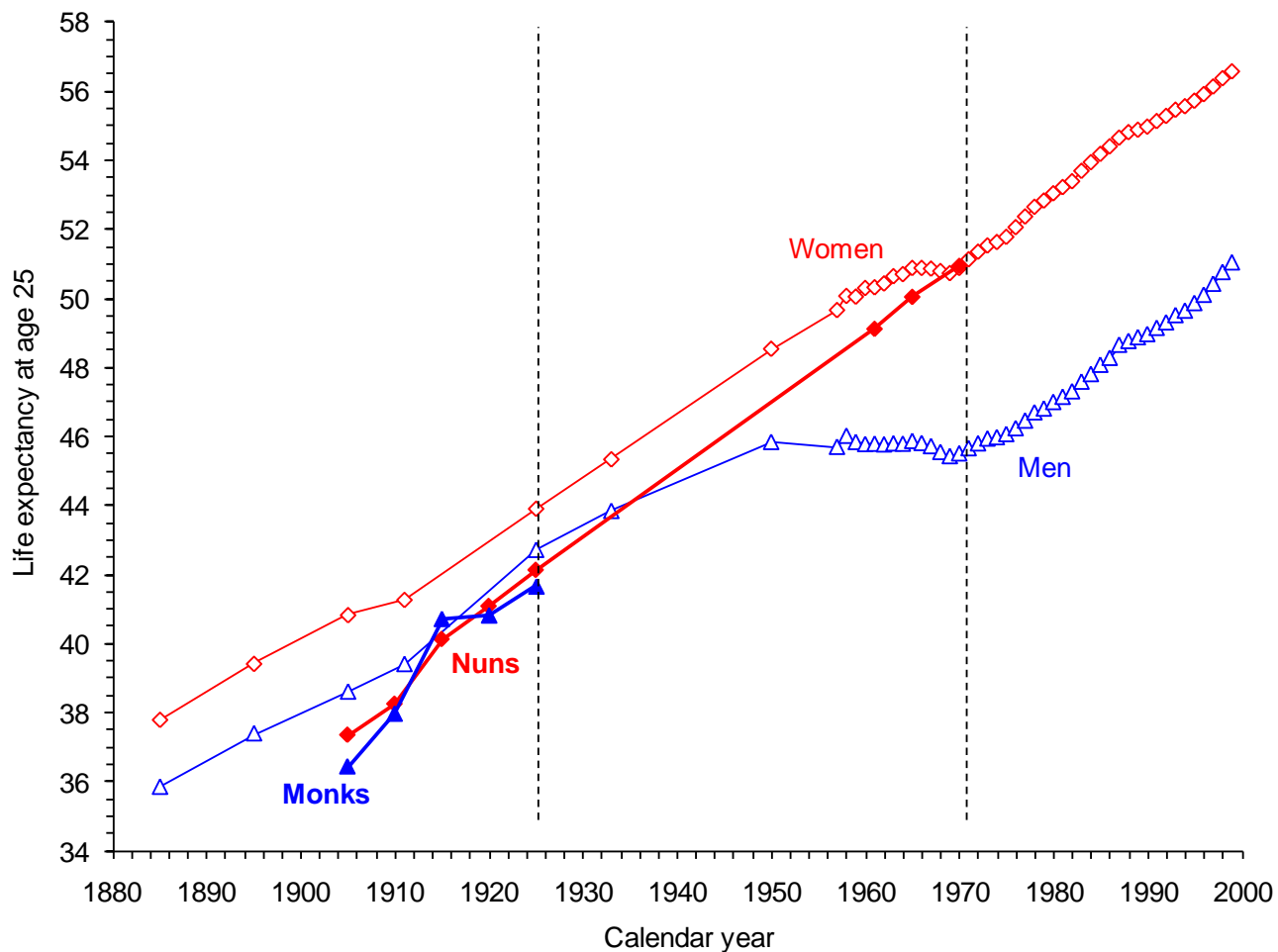
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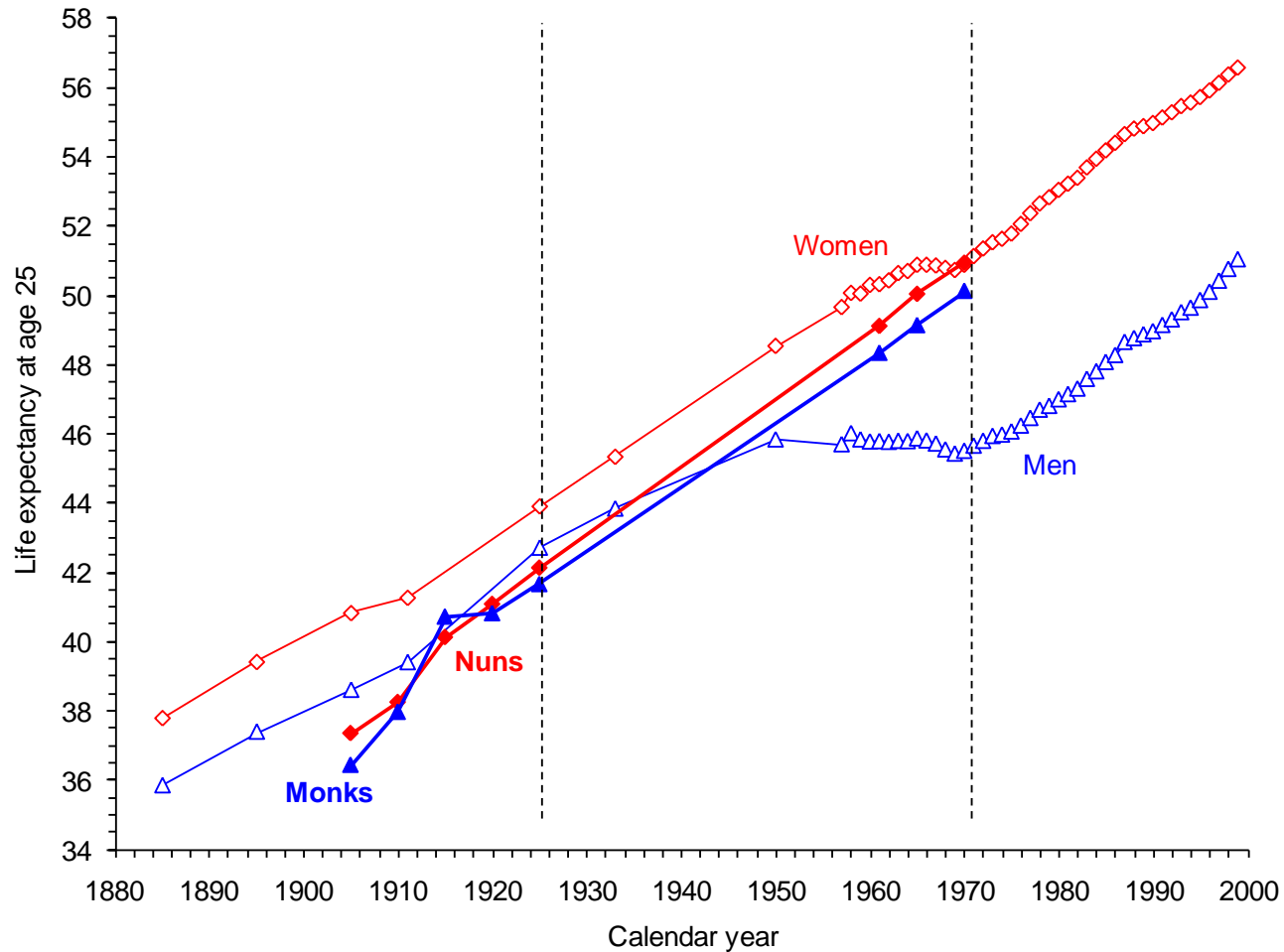
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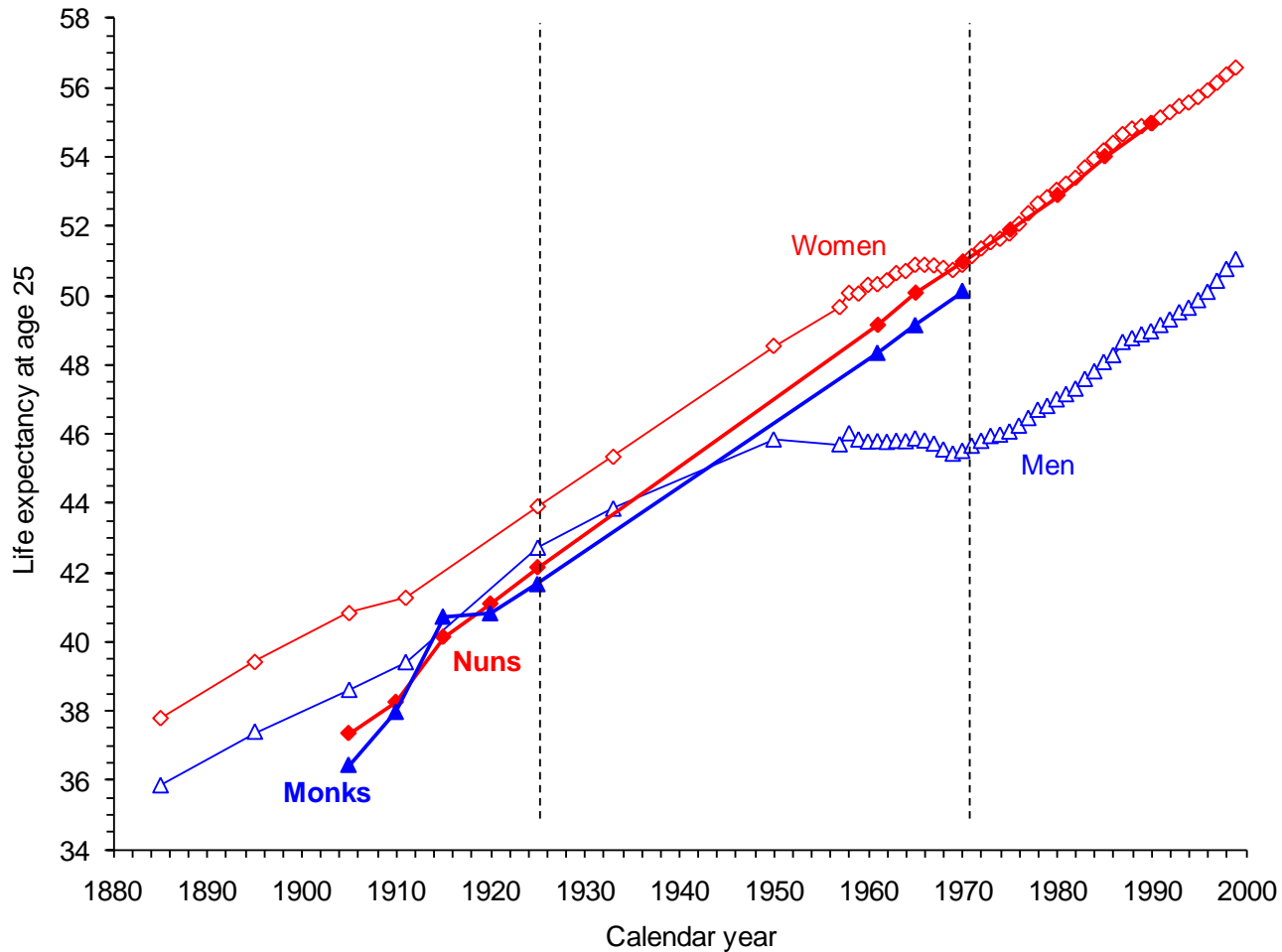


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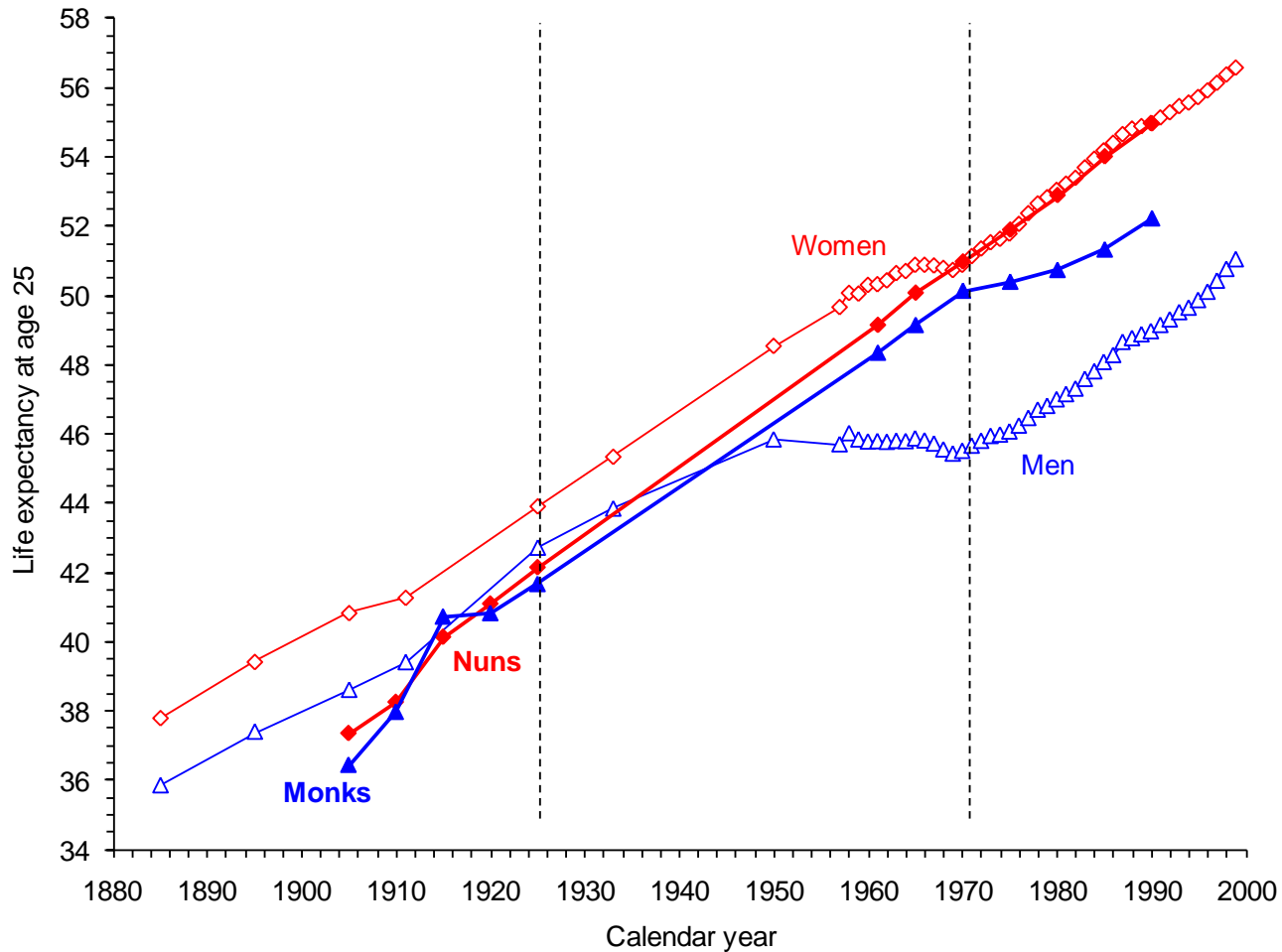




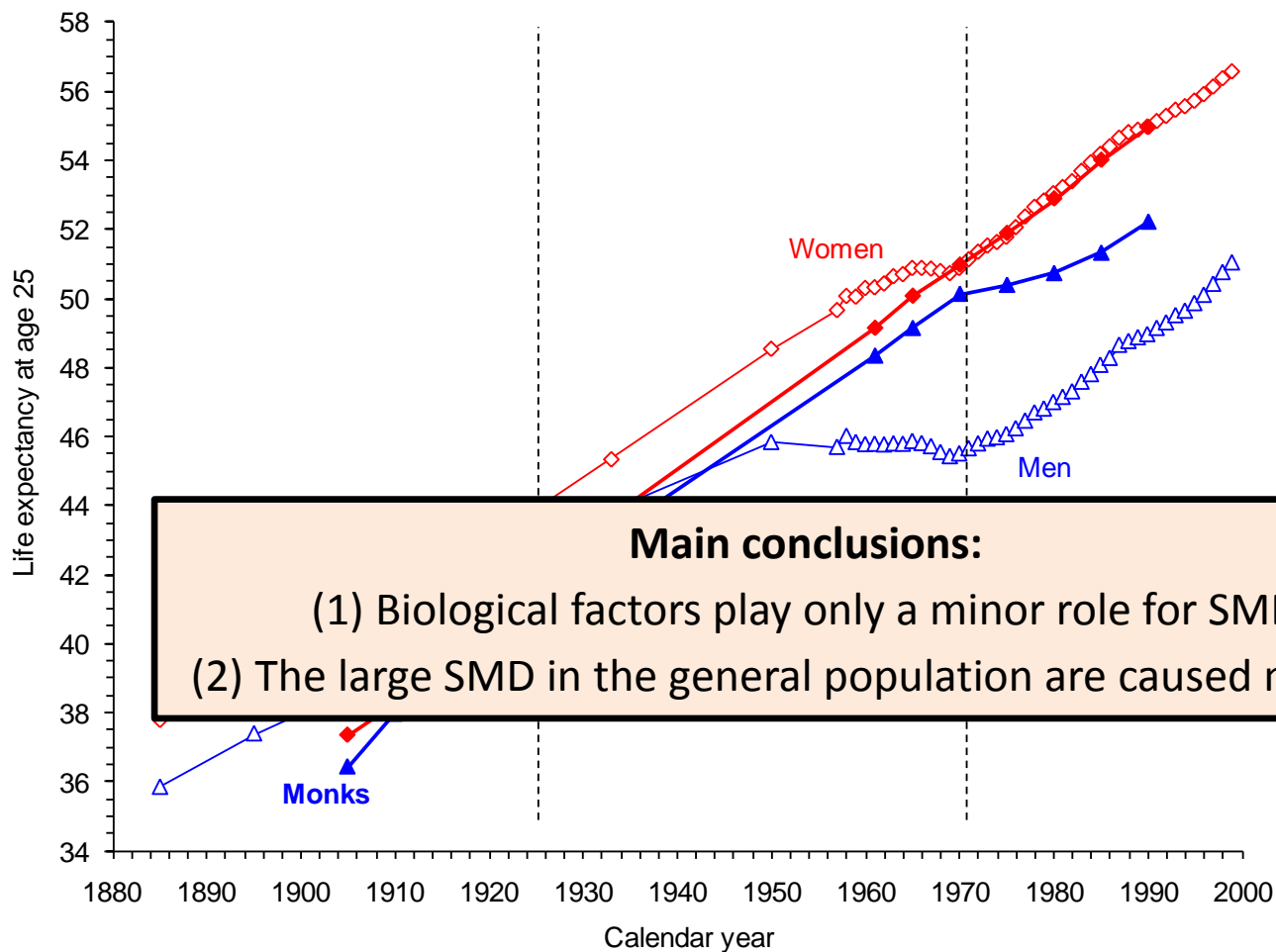
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# Open questions – follow-up study (1)

- (1) Is the impact of biological factors underestimated because of external cause mortality?
- (2) Why do monks live longer than men of the general population?
- (3) Why does the pace of increasing life expectancy among monks decline since 1970?
- (4) Why does cloistered life show no effects among women?

# Collection of causes of death

## (1) Servants of the Holy Childhood of Jesus

No.	Name	Geburtsdatum	Todesdatum		Ursache
			Jahr	Monat	
1793	A. Antonia Schmid	18. März 1901	1986	1986	Herz-Kreislauferkrankung
1794	A. Hilmar Kutz	18. März 1901	1986	1986	Herz-Kreislauferkrankung
1795	A. Antonia Kutz	18. März 1901	1986	1986	Herz-Kreislauferkrankung
1796	A. Antonia Kutz	18. März 1901	1986	1986	Herz-Kreislauferkrankung
1797	A. Antonia Kutz	18. März 1901	1986	1986	Herz-Kreislauferkrankung
1798	A. Antonia Kutz	18. März 1901	1986	1986	Herz-Kreislauferkrankung
1799	A. Antonia Kutz	18. März 1901	1986	1986	Herz-Kreislauferkrankung
1800	A. Antonia Kutz	18. März 1901	1986	1986	Herz-Kreislauferkrankung

Period 01 Jan 1946 – 31 Dec 2005:

- 1,476 individuals
- 1,121 deaths (75.9 %)
- 1,111 causes of death (99.1 %)

## (2) Sisters of Mercy of the Holy Cross

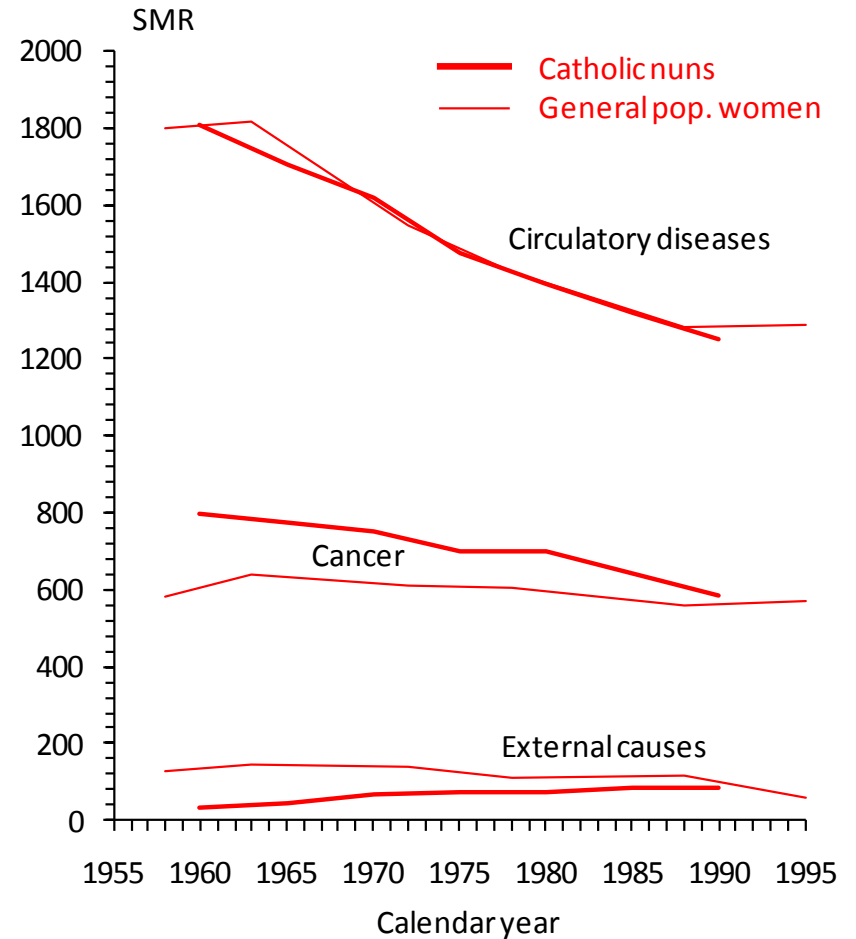
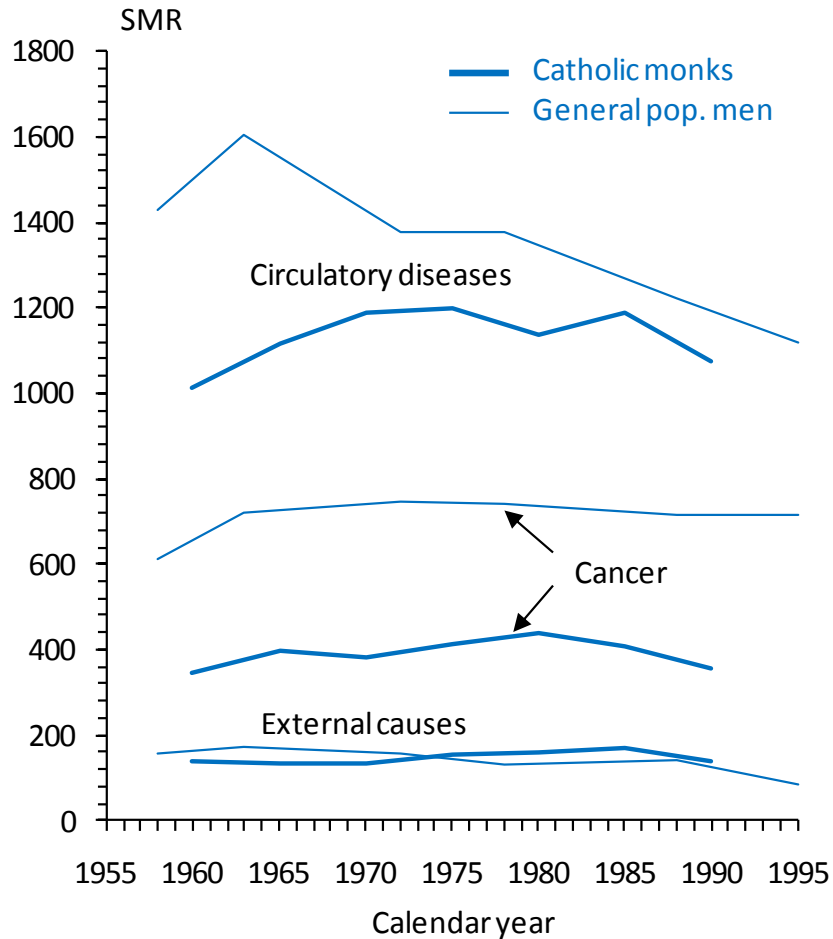
No.	Name	Geburtsdatum	Todesdatum		Ursache
			Jahr	Monat	
1801	A. Antonia Kutz	18. März 1901	1986	1986	Herz-Kreislauferkrankung
1802	A. Antonia Kutz	18. März 1901	1986	1986	Herz-Kreislauferkrankung
1803	A. Antonia Kutz	18. März 1901	1986	1986	Herz-Kreislauferkrankung
1804	A. Antonia Kutz	18. März 1901	1986	1986	Herz-Kreislauferkrankung
1805	A. Antonia Kutz	18. März 1901	1986	1986	Herz-Kreislauferkrankung
1806	A. Antonia Kutz	18. März 1901	1986	1986	Herz-Kreislauferkrankung
1807	A. Antonia Kutz	18. März 1901	1986	1986	Herz-Kreislauferkrankung
1808	A. Antonia Kutz	18. März 1901	1986	1986	Herz-Kreislauferkrankung
1809	A. Antonia Kutz	18. März 1901	1986	1986	Herz-Kreislauferkrankung
1810	A. Antonia Kutz	18. März 1901	1986	1986	Herz-Kreislauferkrankung

Period 01 Jan 1946 – 31 Dec 2005:

- 1,115 individuals
- 872 deaths (78.2 %)
- 613 causes of death (70.3 %)

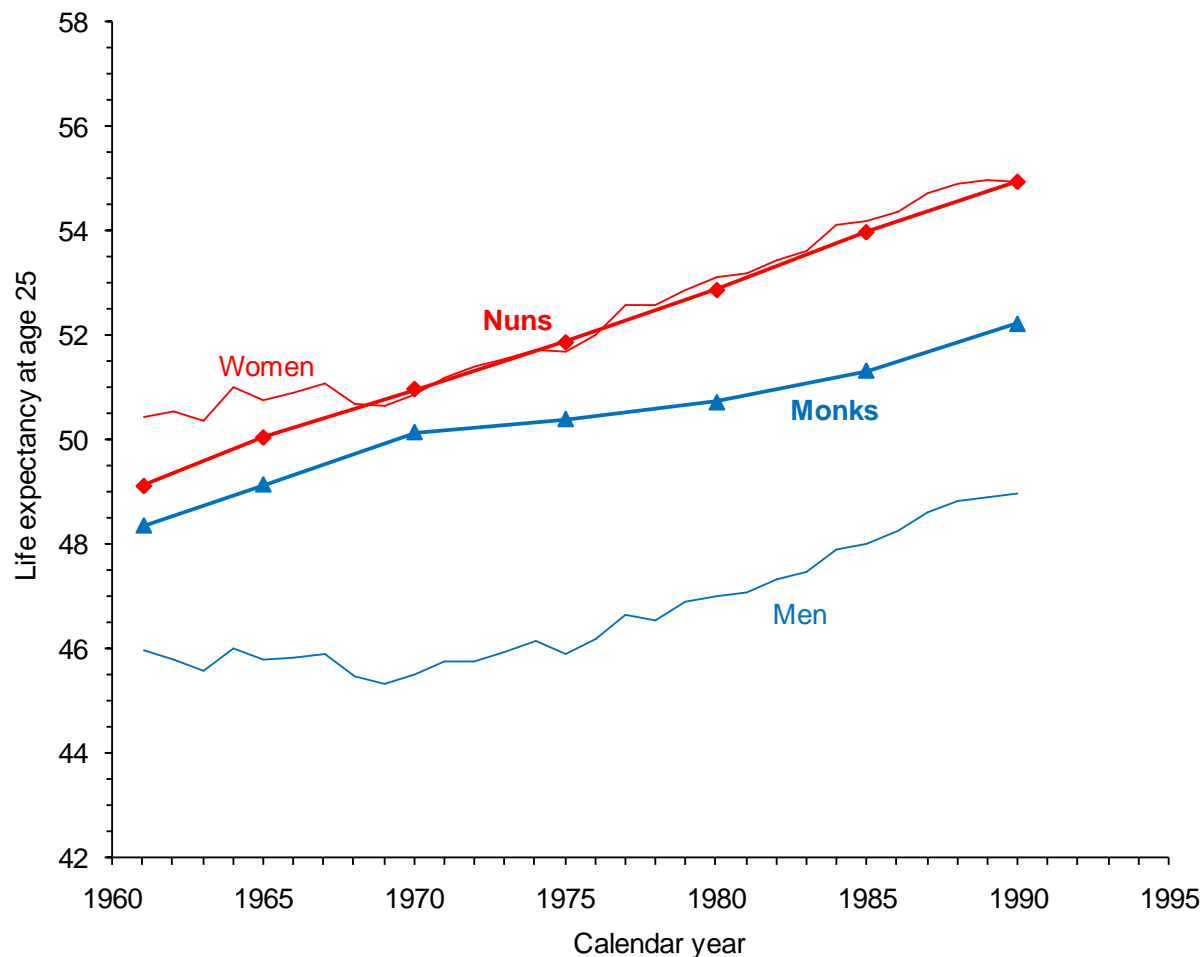


# Trends in age-standardized mortality from main causes of death for ages 45+ for West German women and men and for Bavarian nuns and monks, 1955–1995

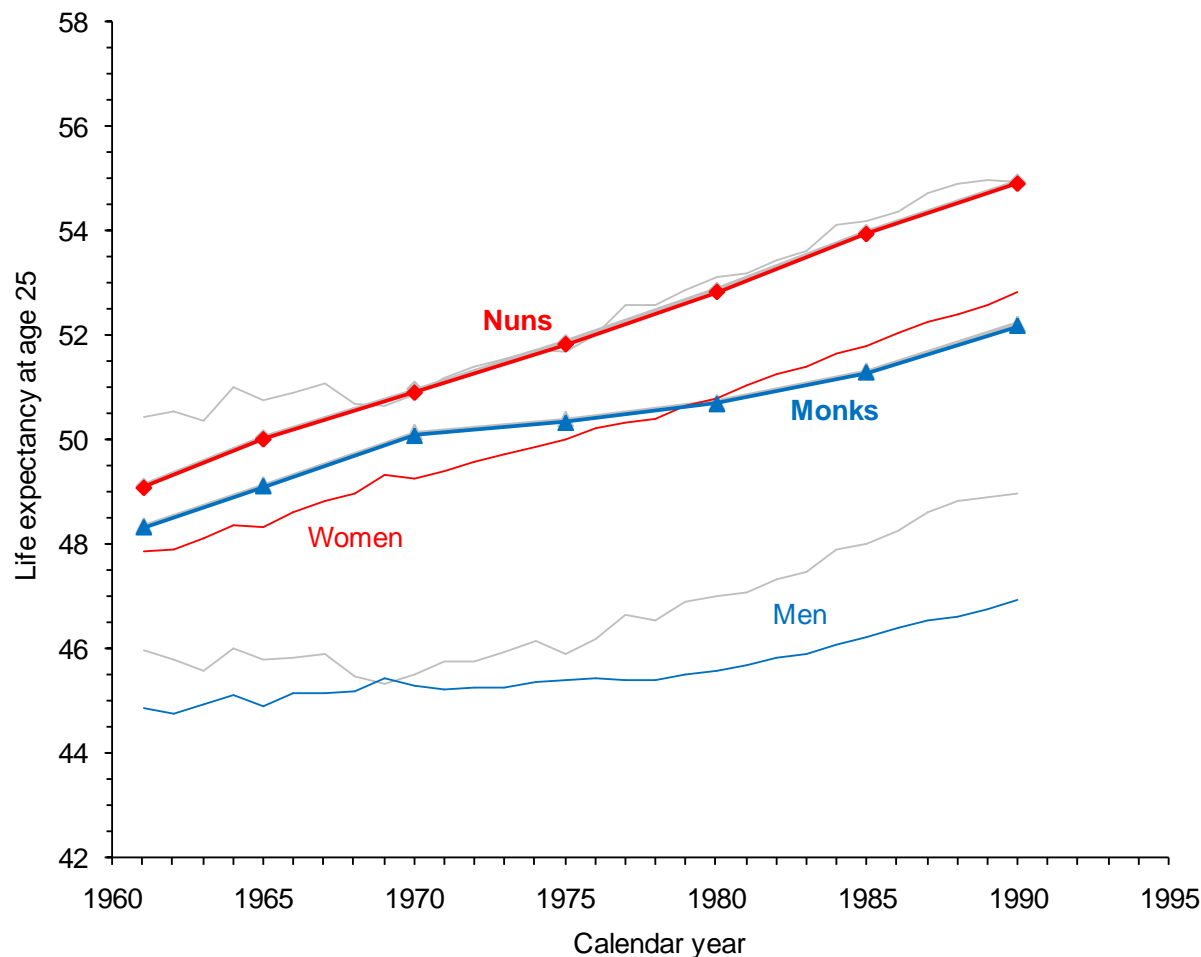




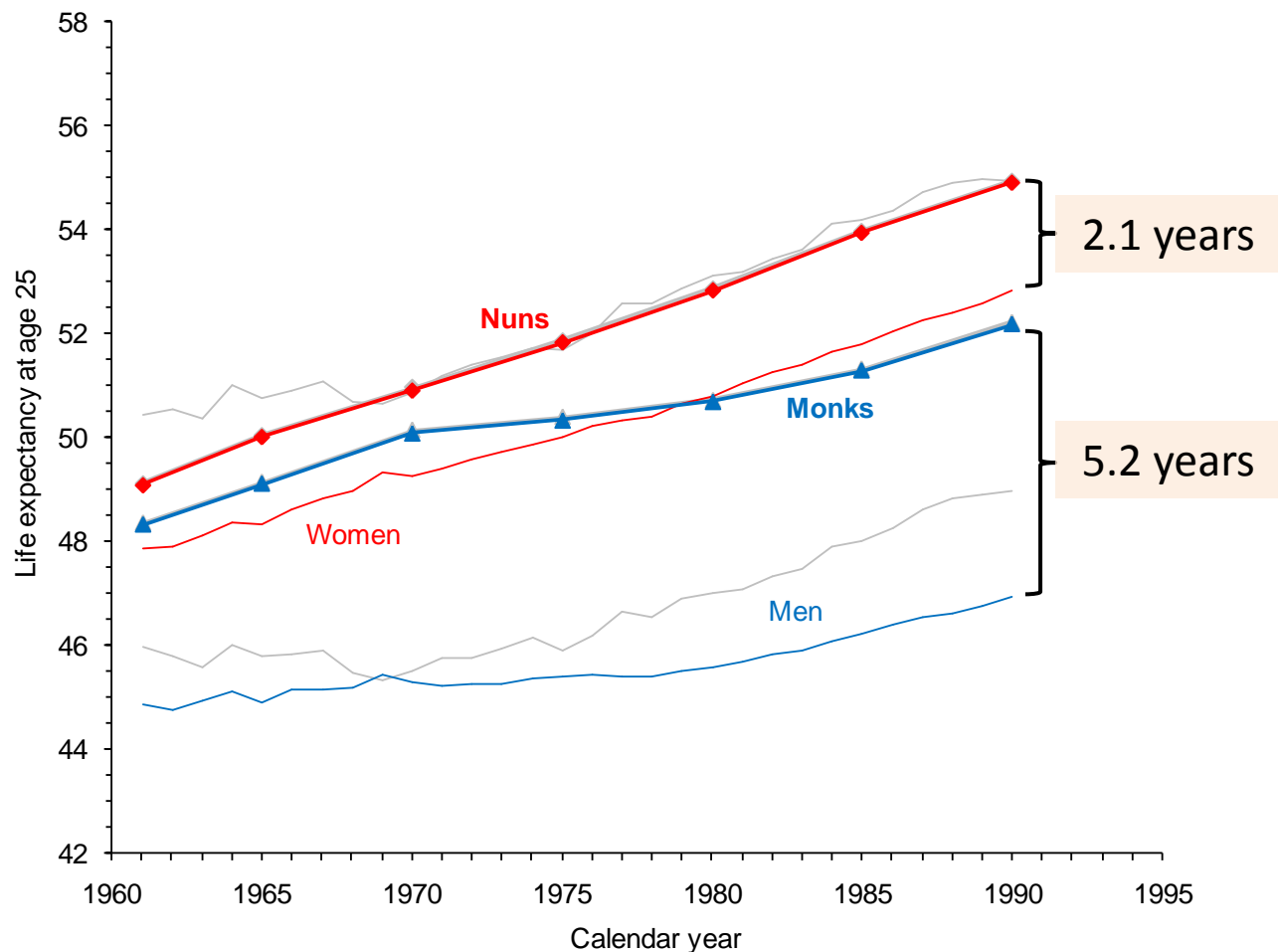
# Trends in life expectancy at age 25 for German women and men and for Bavarian nuns and monks (conventional), 1960-1995



# Trends in life expectancy at age 25 for German women and men and for Bavarian nuns and monks (tempo-adjusted), 1960-1995



# Trends in life expectancy at age 25 for German women and men and for Bavarian nuns and monks (tempo-adjusted), 1960-1995



# Follow-up study (2)

## HEMOX

“The male-female health-mortality paradox”



ERC Research Grant Project

2011-2016

# Data for HEMOX

- Data on Austrian and German general population: *already existing surveys* and official statistics, such as

SHARE, SOEP, BASE, LES, German Aging Survey, Austrian Health Survey, Austrian and German Micro-censuses, HMD, official health statistics

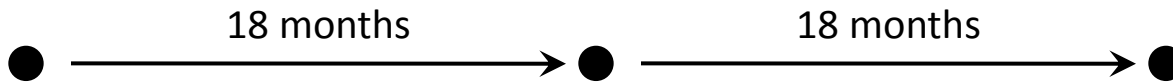
- Data on nuns and monks: *3-wave “mini-panel” survey* among some ~700 nuns and ~800 monks aged 50+ from Austrian and German cloisters, including

(a) a paper & pencil questionnaire and physical performance tests mainly oriented on SHARE

(b) several psychological survey modules

(c) collection of life histories (written sources)

# Time frame of the 3-waves nuns-and-monks survey



## Wave 1:

- Information about life courses,
- trends in life expectancy,
- causes of death,
- current health conditions,
- personality profiles

## Wave 2:

- First information about health transitions and their determinants,
- the health-mortality relationship among nuns and monks

## Wave 3:

- Completion of information from wave 2
- Information about mortality (w.2 → w.3) in relation to previous health transitions (w.1 → w.2)

# Thank you for your attention!

<http://www.marcluy.eu>

<http://www.cloisterstudy.eu>

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