

# Mortality differentials by religious denominations: Vienna 1999-2003

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\*) Data source for all calculations: Statistics Austria (Population Census, Vital Statistics, Demographic Indicators)

# Availability of data 1

- Vital statistics: Death records incl. cause of death (ICD)
- Religion since at least 1828, but discontinued (WW2 ?)
- Religious affiliation (Religionszugehörigkeit) since 1977:

1 = römisch-katholisch

Roman Catholic

2 = evangelisch

Protestant

3 = altkatholisch

Old Catholic

4 = israelitisch

Jewish

5 = islamisch

Muslim

6 = sonstige gesetzlich anerkannte

Other statutory (acknowledged by law)

7 = keine, unbekannt, ohne Bekenntnis

None, unknown, without affiliation

8 = Jehovas Zeugen (ab 2009)

Jehova's Witnesses (since 2009)

# Availability of data 2

- Decennial Census of population, up to 2001
- Self-reporting, pre-defined tick-boxes
- Religionsbekenntnis (religious denomination):
  - römisch-katholisch Roman Catholic
  - evangelisch AB Protestant (Lutheran)
  - evangelisch HB Protestant (Reformed)
  - altkatholisch Old Catholic
  - Islamisch Muslim
  - Israelitisch Jewish
  - ohne Religionsbekenntnis No religious affiliation
  - anderes (in 2001 to fill in) Other (in 2001 to fill in)
- **7 categories in the STATcube time-series:** Roman Catholic church, Protestant church, Jewish rel. community, Islamic rel. community, Other religion, Without religion, Not indicated

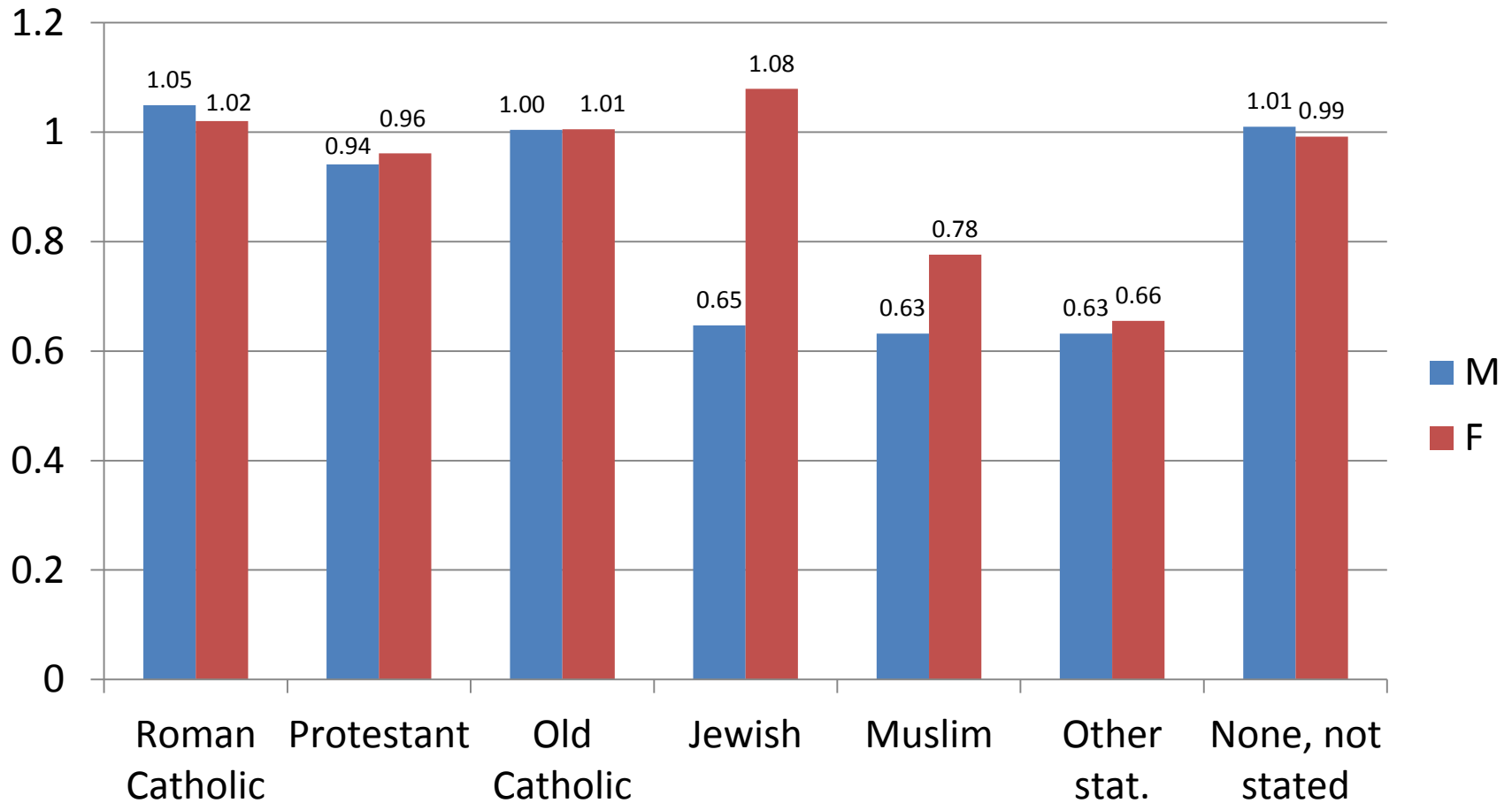
# Availability of data 3

- Record linkage of anonymised population census data 1981, 1991, 2001 with deaths during 12 months from census day (census – mortality follow-up)
- No unique identifier available in both data sources
- Hence statistical matching using date of birth, sex and address (special census-type coding of deaths)
- More than 90 % matched individual records
- Main use for analysis of socioeconomic differentials in mortality and healthy life expectancy

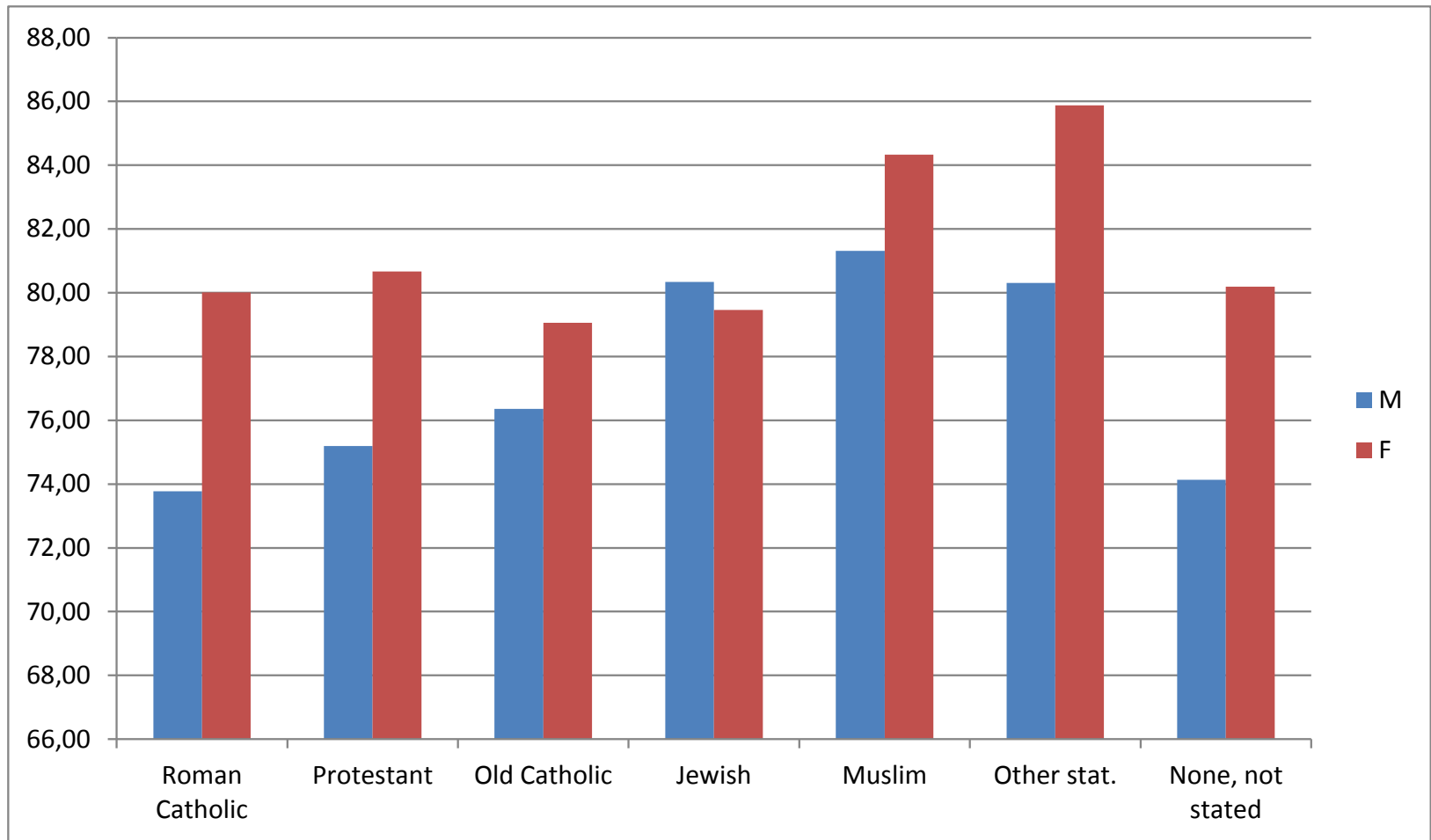
# Indirect method: SMRs Vienna 99/03

Indirect method, using mortality rates by five-year age-groups (0-4, ..., 95+) and sex, years 1999-2003, for the general population of Austria as standard, applied to the census population 2001 by religion, five-year age-groups (0-4, ..., 95+) and sex										
Religion	Census population		Expected deaths		Observed deaths		Observed/expected ratio		O/E ratio normalised*	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Roman Catholic	330.828	431.261	16.756	30.406	18.536	32.263	1,106	1,061	1,049	1,020
Protestant	31.451	41.041	1.647	3.023	1.634	3.023	0,992	1,000	0,941	0,961
Old Catholic	3.135	3.999	279	419	295	438	1,058	1,046	1,004	1,005
Jewish	3.500	3.488	280	237	191	266	0,683	1,123	0,647	1,079
Muslim	67.285	53.864	842	350	561	283	0,666	0,808	0,632	0,776
Other statutory	57.231	59.739	1.228	919	819	626	0,667	0,681	0,632	0,655
None, not stated	237.914	225.387	13.911	12.273	14.810	12.665	1,065	1,032	1,010	0,992
Total	731.344	818.779	34.943	47.626	36.846	49.564	1,054	1,041	1,000	1,000
No affiliation	203.797	193.799	12.618	10.384					* for general mortality	
Rel. not stated	34.117	31.588	1.293	1.888					differential to Austria	

# Differential SMR by religion, Vienna 1999/2003

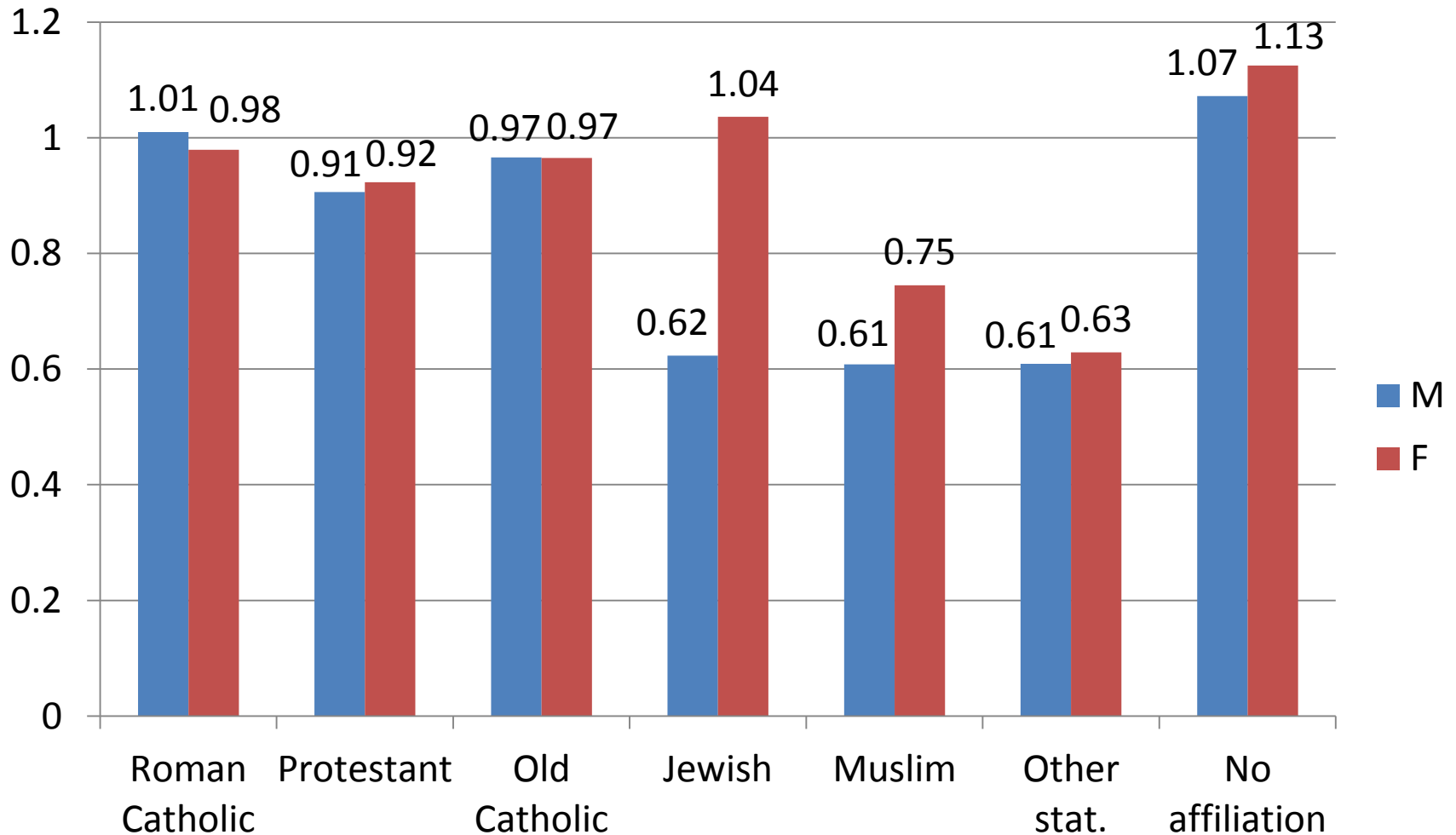


# Life expectancy at birth by religion, Vienna 1999/2003

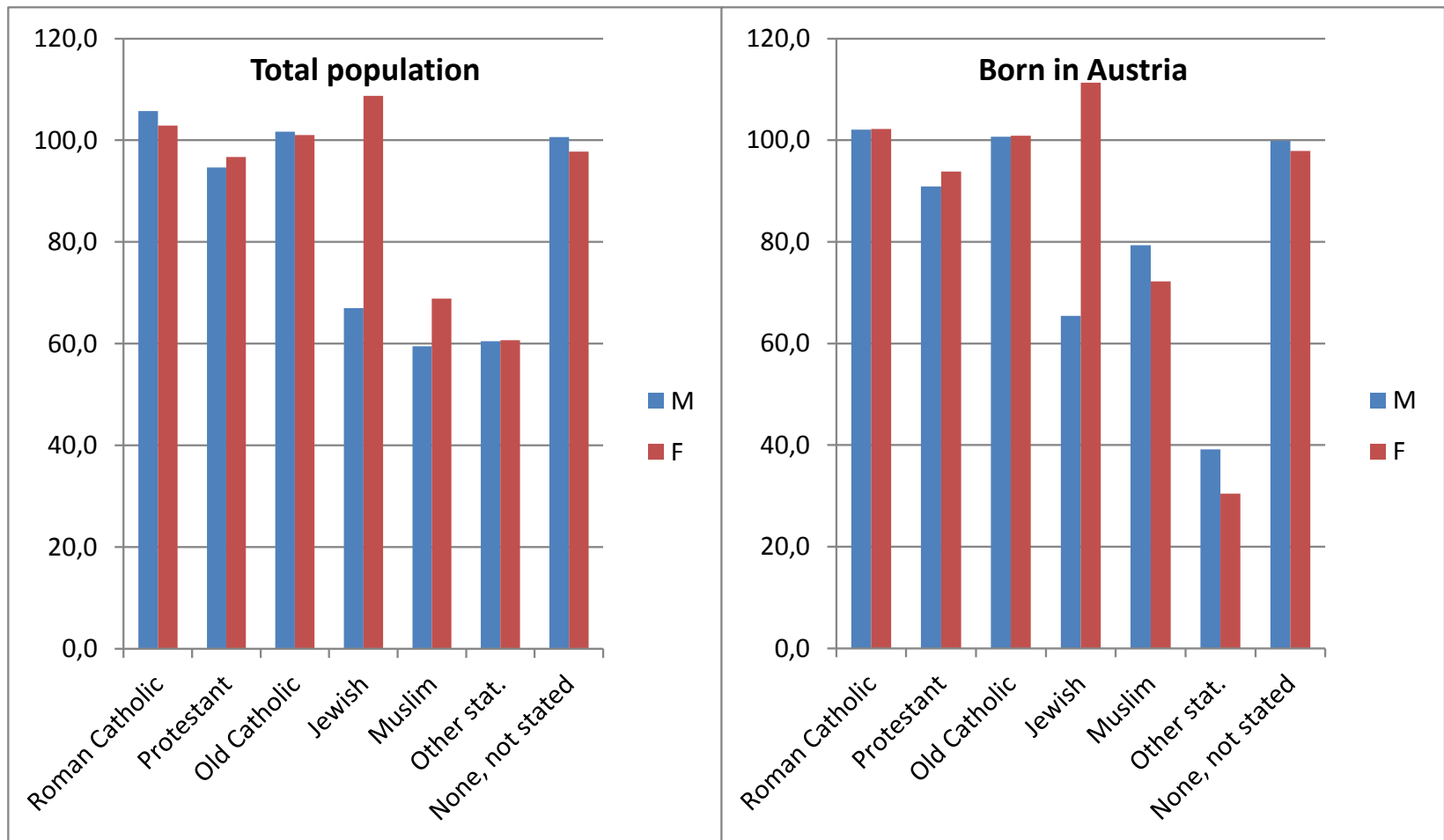




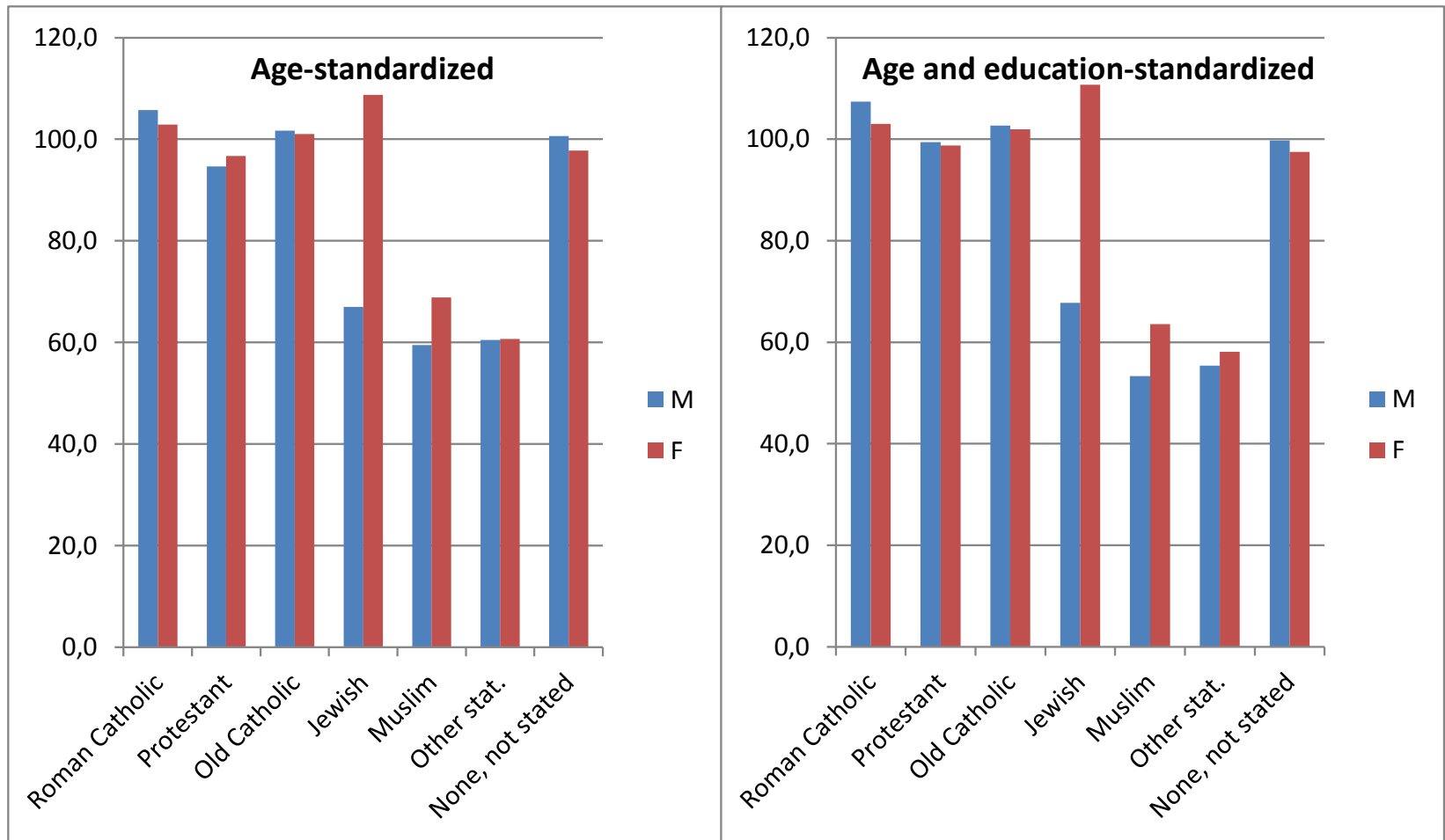
# SMRs Vienna 1999/2003 adjusted for religion not indicated (even distribution)



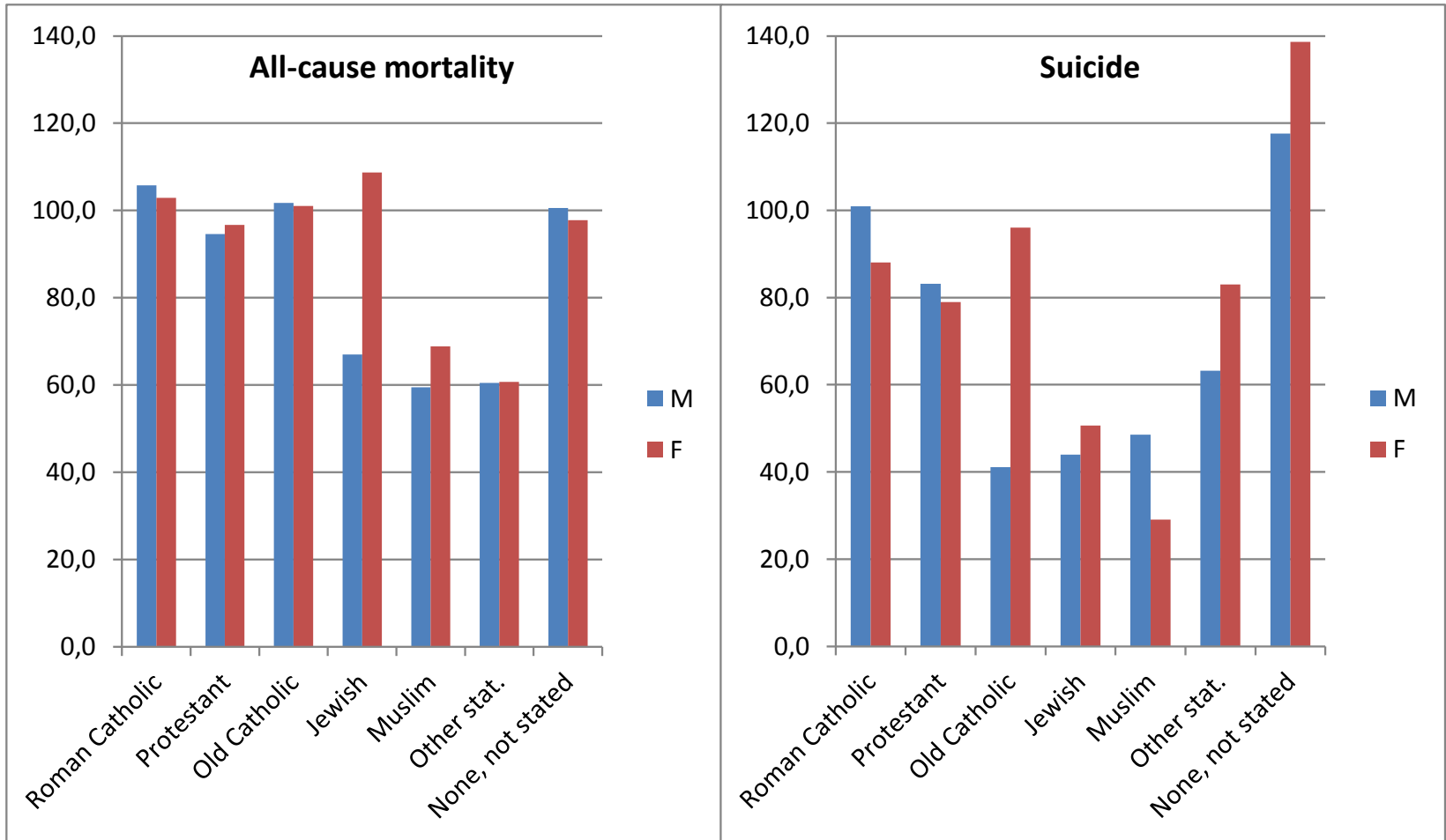
# SMRs Vienna 1999/2003 total population vs. Austrian-born population



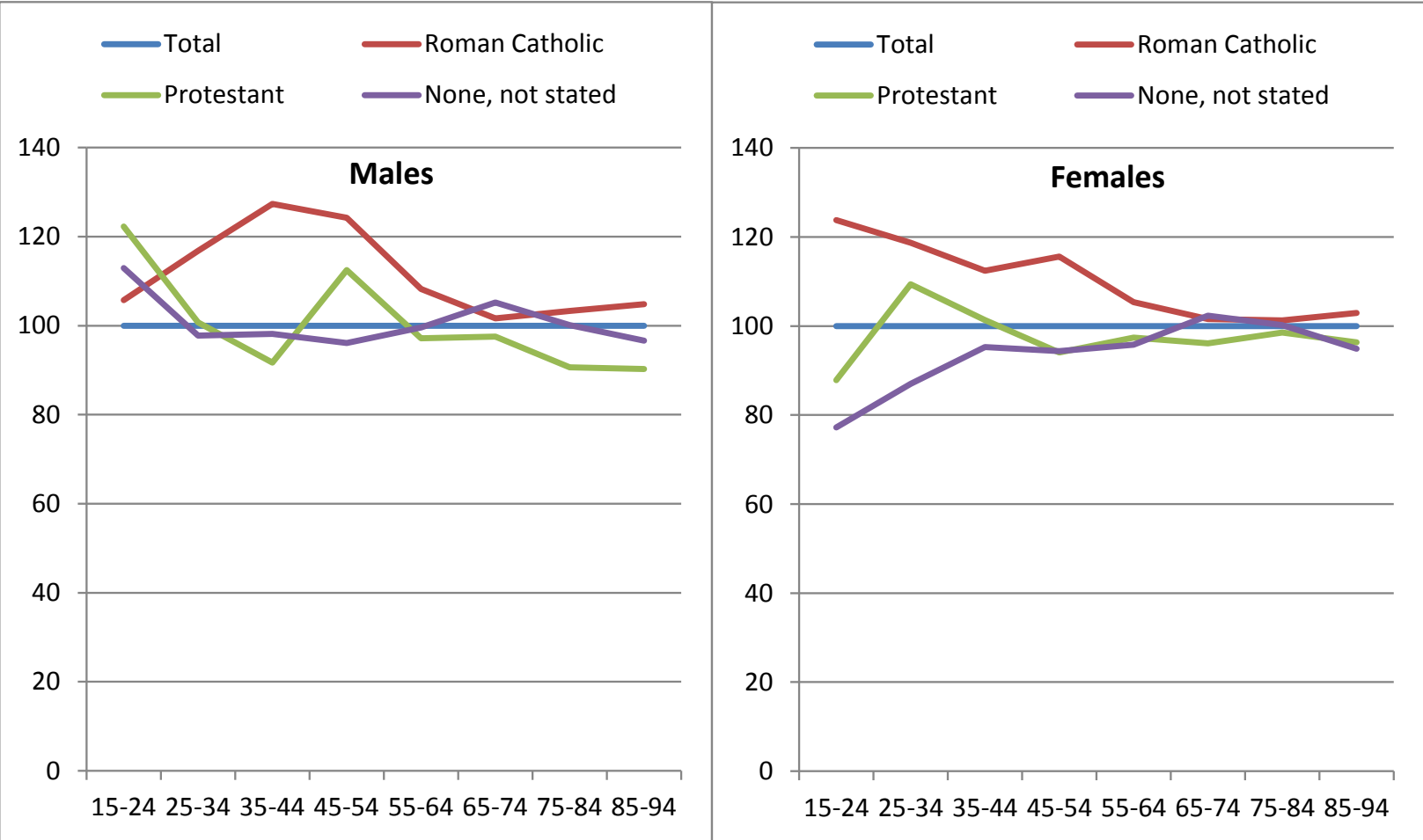
# SMRs Vienna 1999/2003 age-standardized vs. age and education-standardized



# SMRs Vienna 1999/2003 all-cause vs. suicide



# Relative age-specific mortality rates by selected religions, Vienna 1999/2003



# Conclusions

- Significant life expectancy differentials by religion in Vienna
- Problems with unmatched data, in particular with respect to „religion not indicated“ and „other statutory“
- Low mortality of Muslims partly due to „healthy migrant effect“ and/or „salmon bias effect“
- Low mortality of Protestants due to higher educational distribution
- Highest suicide rate among people with no religious affiliation; cause-specific mortality subject to random error
- Excess mortality of Roman Catholics in all age groups

# Outlook

- Additional analyses with indirect method for Austria 2001, 1991, 1981 and provinces, in particular those where „not indicated“ in the census is low
- Analysis of matched census-mortality data by religion and other variables 2001, 1991 and 1981
- Special analysis of matched census-mortality data in order to improve the congruence of religious categories in both sources, in particular to eliminate „not indicated“ in the census
- Develop “inverse (indirect) methods” to estimate stocks from death counts, taking into account age-structure and mortality differentials
- Make use of the vital statistics data from the new Central Civil Status Register (ZPR): more religious detail to become available
- Raise awareness that population stock data by religion are needed and that sample data cannot replace census-type information from official registers (i.e. without double counts)