Appendix

Mortality atlas of the main causes of death for the elderly population (≥75 years) in Switzerland during 2010–2020

https://doi.org/10.57187/s.3433

Table S1. Definition of the causes of death by ICD-10 code.

Cause of death		ICD-10 code
Cardiovascular disease	Heart diseases	I11, I13, I20–I25, I26–I27, I5–I9, I30–I52
	Cerebrovascular disease	I60–I69
	Hypertensive diseases (hypertension and hypertensive renal disease)	I10, I12, I15
	Atherosclerosis	I70–I79
All cancers	Brain cancer	C71
	Breast cancer	C50
	Colorectal cancer	C18–C21
	Gynaecological cancers	C53–C56
	Liver cancer	C22
	Lung cancer	C33–C34
	Melanoma and skin cancer	C43–C44
	Oesophageal and stomach cancer	C15–C16
	Pancreatic cancer	C25
	Prostate cancer	C61
	Urinary tract cancer	C64–C68
	Non-Hodgkin's lymphoma	C82–C85
	Leukaemia	C91–C95
External causes	Intentional self-harm	X60–X84
	Falls	W0–W19
Additional causes	COVID-19	U07.1–U07.2, U10.9
	Chronic respiratory diseases	J40–J47
	Dementia	F01, F03, F05.1, G30
	Diabetes	E10–E14
	Influenza and pneumonia	J9–J18, J69
	Gastroenteritis and other intestinal infections	A4, A8–A9
	Intestinal diseases	K55–K64
	Liver diseases	K70–K74
	Multiple sclerosis	G35
	Parkinson's	G20–G22
	Renal failure	N17–N19
	Senility	R54
	Sepsis	A41
	Spinal muscular atrophy	G12

Figure S1. The effect of covariates on the standardised mortality rate (SMR) using the Bayesian spatial model for different causes. Reference levels are: German (Language) and rural (Urbanisation). One unit of net income per capita is CHF 10,000. Covariates are considered statistically important if the 95% BCI for the MRR does not include 1.
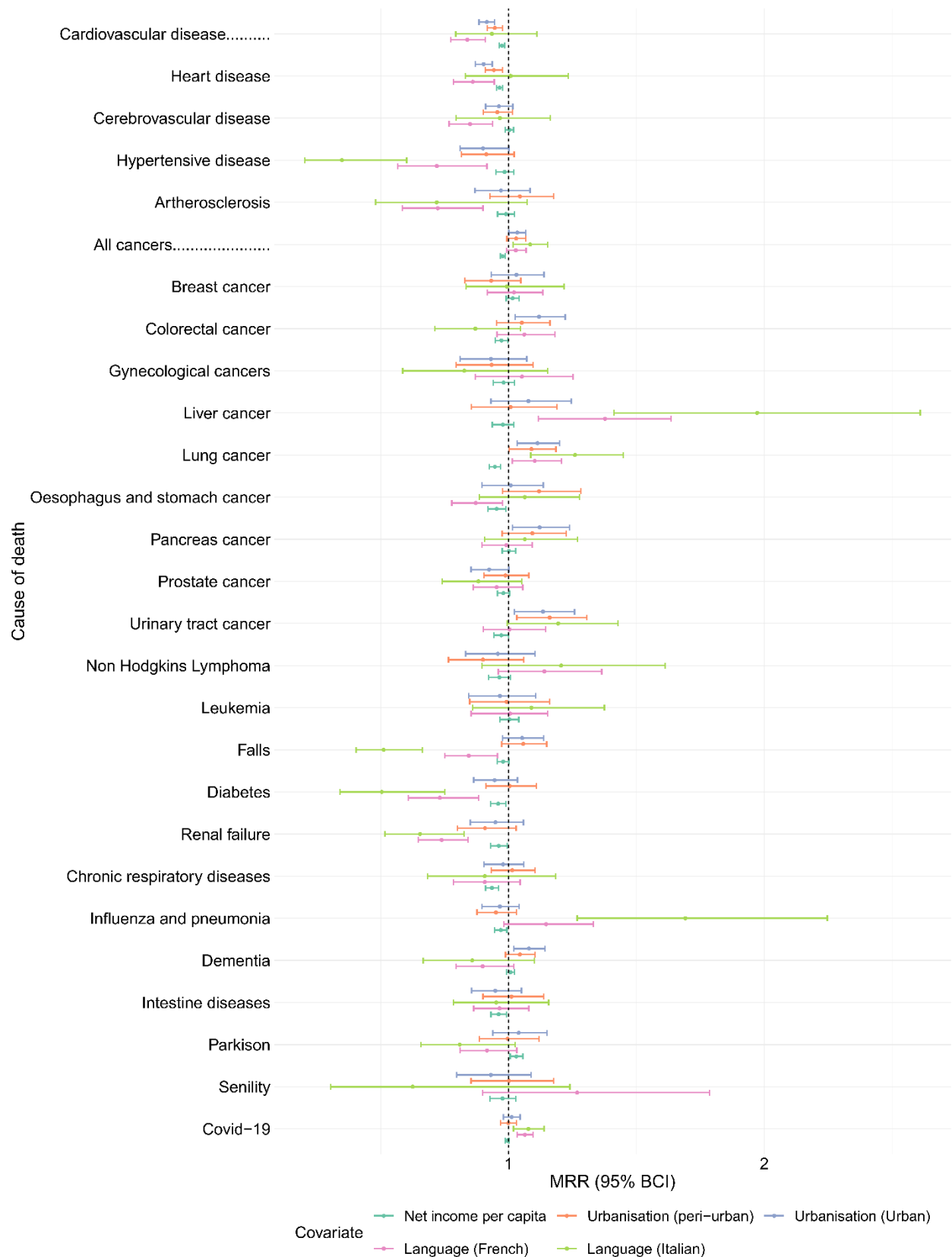
Figure S2. Spatial distribution of all-cause mortality for the elderly (≥75 years) in Switzerland for the period 2010–2014 adjusted for age and sex. Estimates represent posterior means (PM) of standardised mortality rate (SMR) obtained from a Bayesian conditionally autoregressive (CAR) model without covariates. The black borders delineate the different cantons.
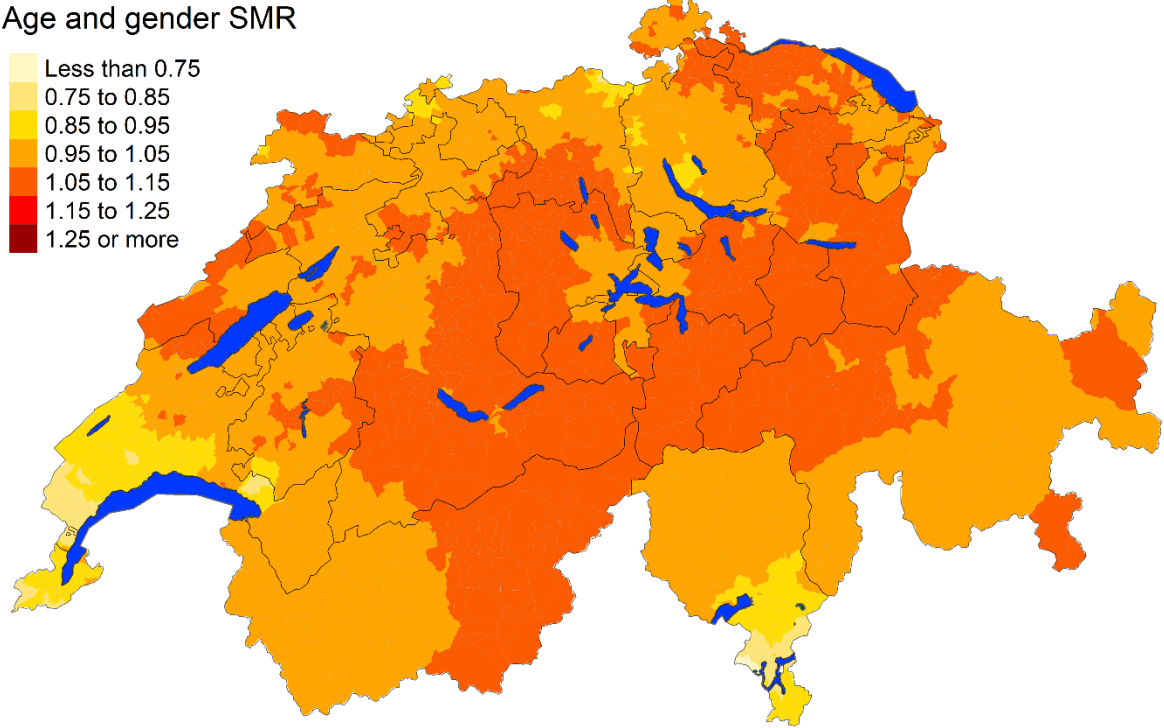
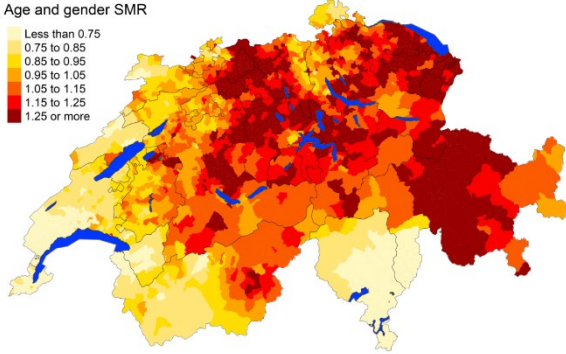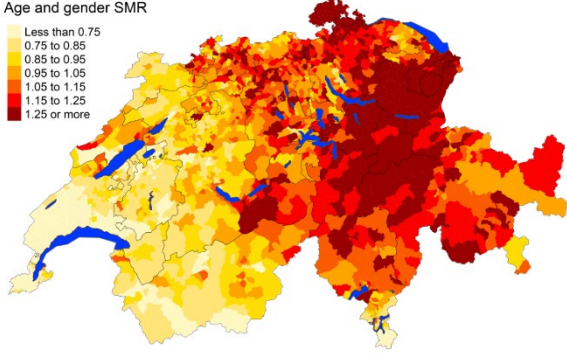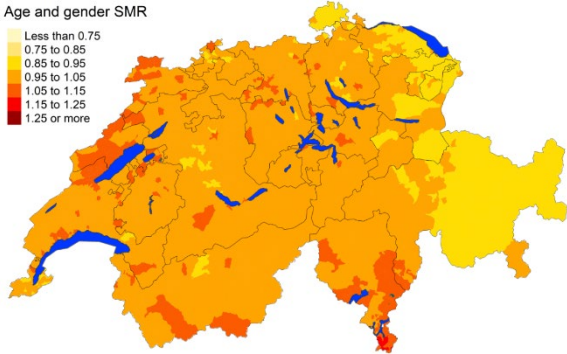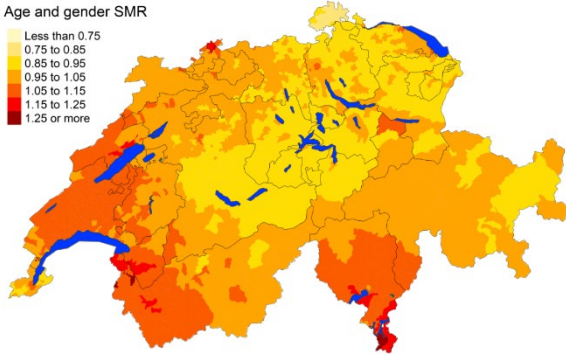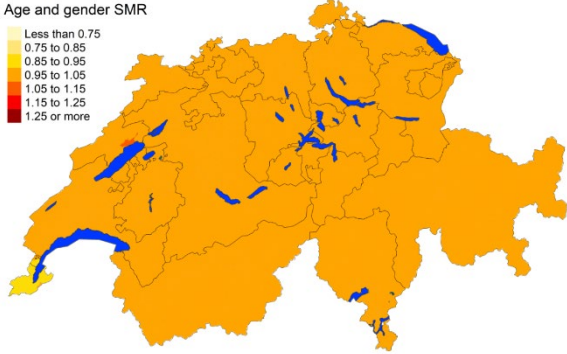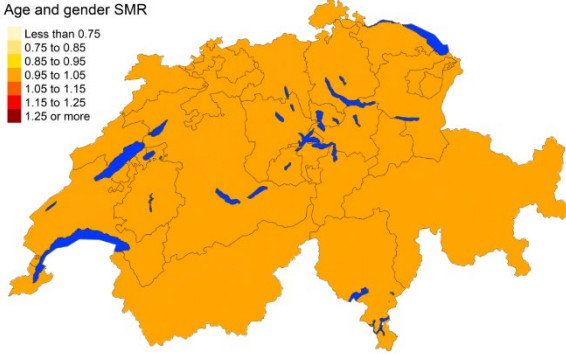**Figure S3.** Spatial distribution of cardiovascular disease mortality for the elderly (≥75 years) in Switzerland for the period 2010–2014 adjusted for age and sex. Estimates represent posterior means (PM) of standardised mortality rate (SMR) obtained from a Bayesian conditionally autoregressive (CAR) model without covariates. The black borders delineate the different cantons.

(a) Cardiovascular diseases

(b) Heart diseases
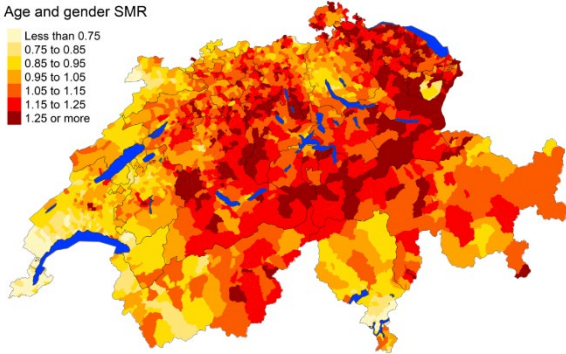
(c) Cerebrovascular diseases
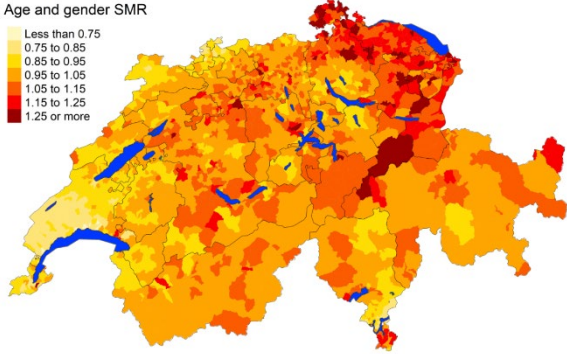
(d) Hypertensive diseases

(e) Atherosclerosis

Figure S4. Spatial distribution of cancer mortality for the elderly (≥75 years) in Switzerland for the period 2010–2014 adjusted for age and sex. Estimates represent posterior means (PM) of standardised mortality rate (SMR) obtained from a Bayesian conditionally autoregressive (CAR) model without covariates. The black borders delineate the different cantons.
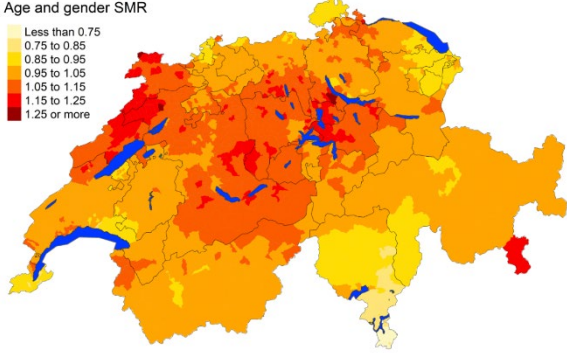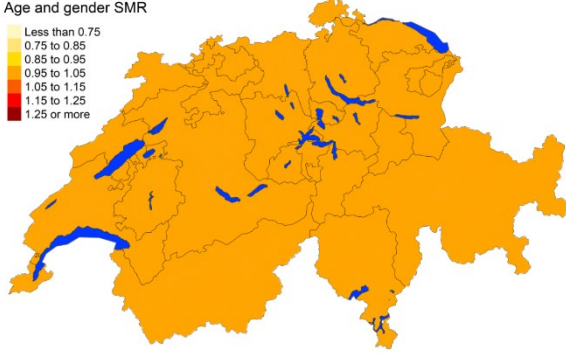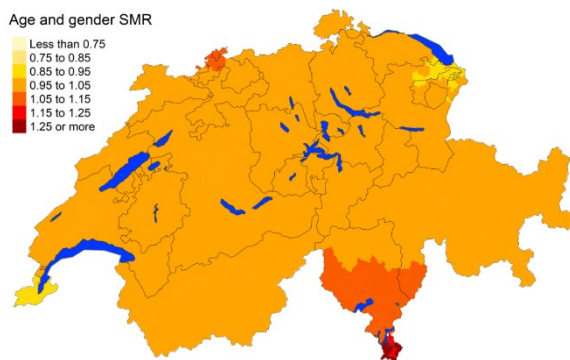
(a) All cancers
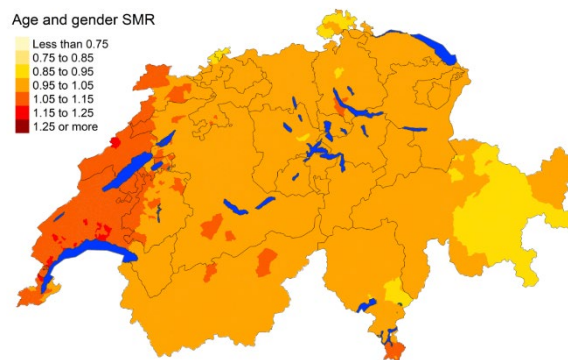
(b) Lung cancer

(c) Colorectal cancer

(d) Breast cancer

(e) Prostate cancer

(f) Pancreas cancer

(g) Urinary tract cancer
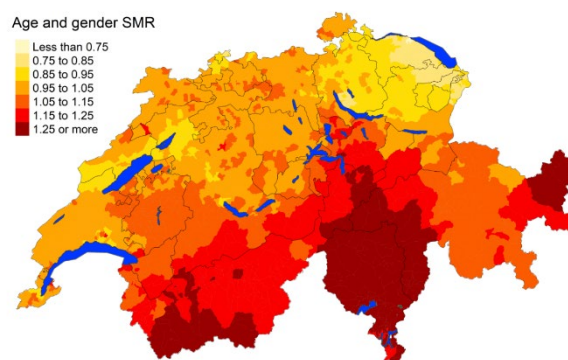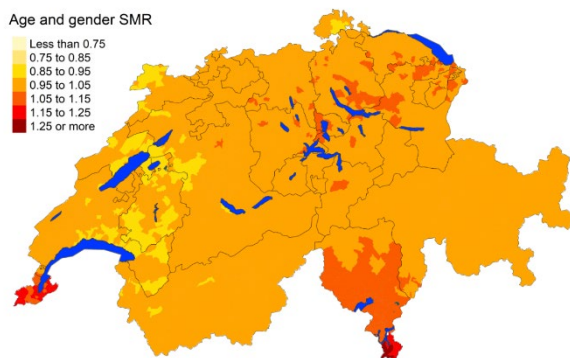

(h) Gynaecological cancer

(i) Leukaemia
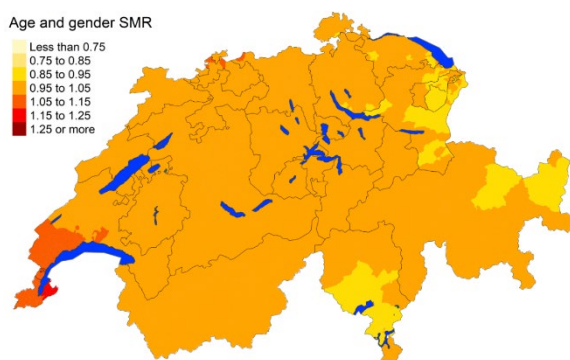
(j) Oesophagus and stomach cancer

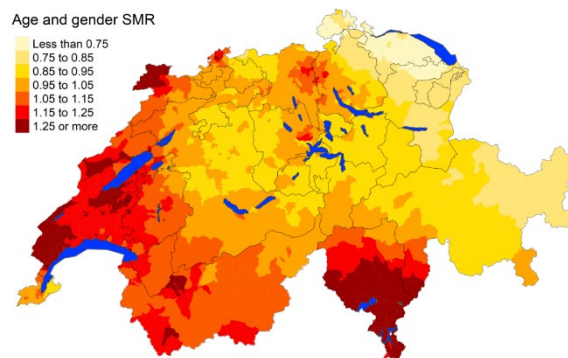## (k) Non Hodgkin lymphoma

(l) Liver cancer

Figure S5. Spatial distribution of additional causes of mortality for the elderly (≥75 years) in Switzerland for the period 2010–2014 adjusted for age and sex. Estimates represent posterior means (PM) of standardised mortality rate (SMR) obtained from a Bayesian conditionally autoregressive (CAR) model without covariates. The black borders delineate the different cantons.
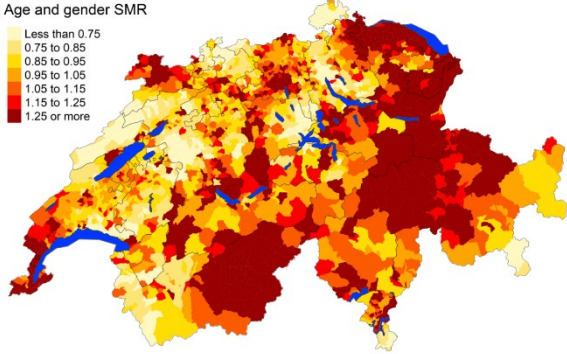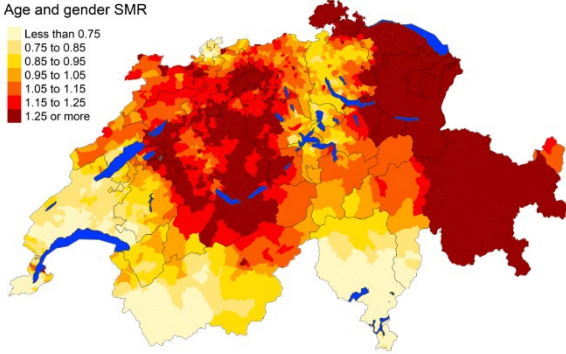
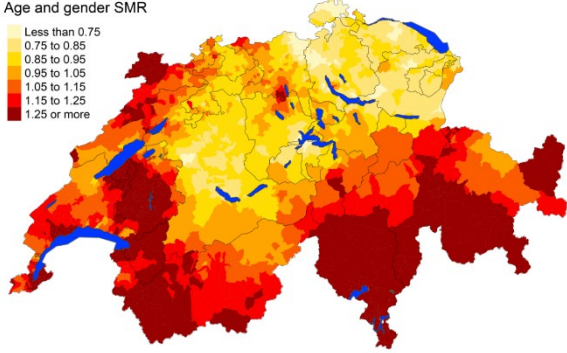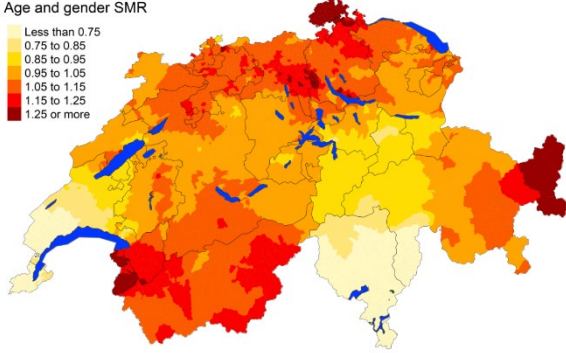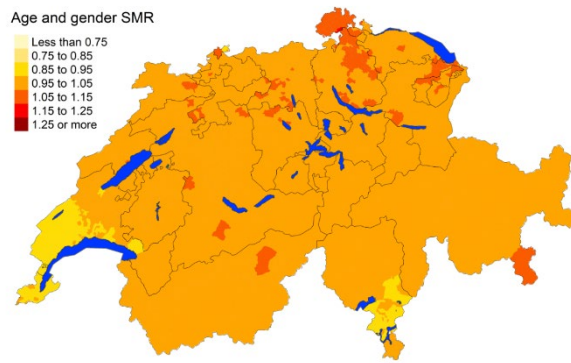(a) Chronic respiratory diseases
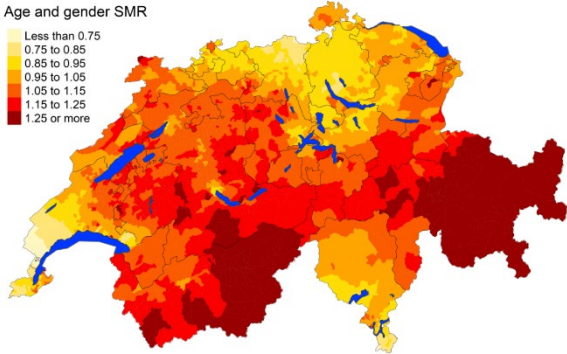
(b) Dementia
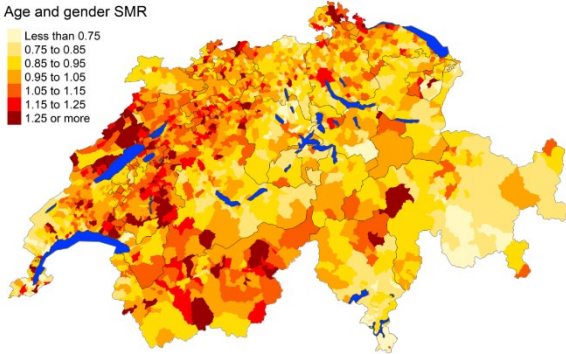
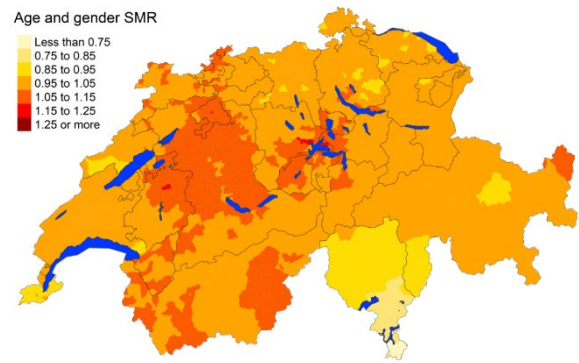(c) Senility

(d) Diabetes

(e) Influenza and pneumonia

(f) Falls

(g) Intestine disease

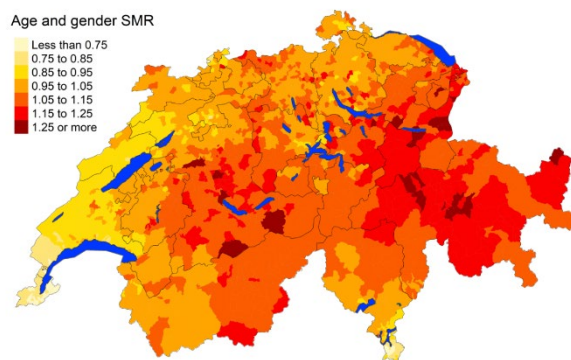## (h) Parkinson's disease

(i) Renal failure

Figure S6. Modal comorbidities for COVID-19. NA represents municipalities with no COVID-19 deaths, or where the mode comorbidity had less than 5% of the total deaths in the municipality, or municipalities whose mode comorbidity was seen in 5 or fewer municipalities.
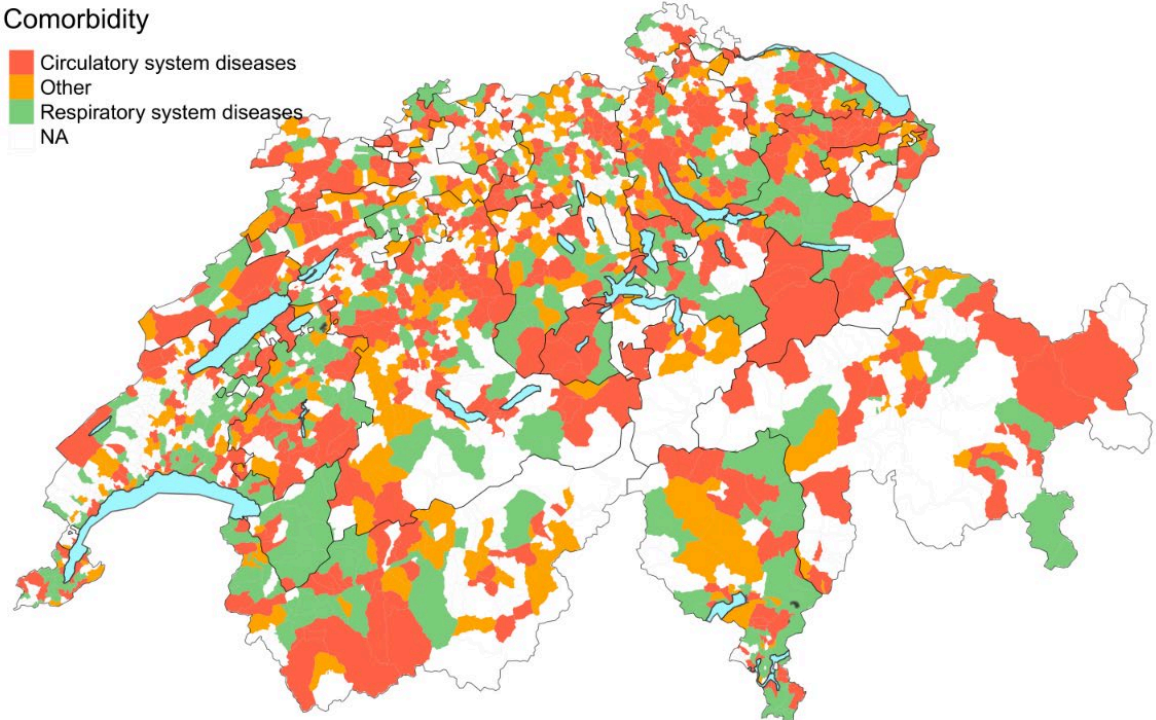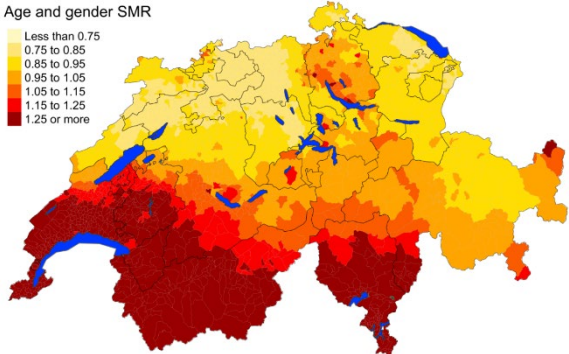
Figure S7. Spatial distribution of mortality for the elderly (≥75 years) from lung and liver cancer as secondary causes in Switzerland for the period 2015–2019 adjusted for age and sex. Estimates represent posterior means (PM) of standardised mortality rate (SMR) obtained from a Bayesian conditionally autoregressive (CAR) model without covariates. The black borders delineate the different cantons.
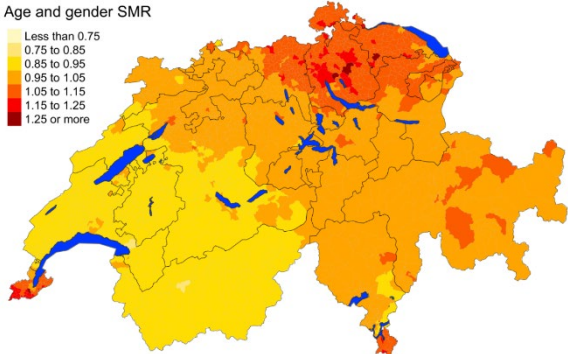
(a) Liver cancer

(b) Lung cancer

Figure S8. The effect of covariates on the standardised mortality rate (SMR) for secondary causes using the Bayesian spatial model for different causes. Reference levels are: German (Language) and rural (Urbanisation). One unit of net income per capita is CHF 10,000. Covariates are considered statistically important if the 95% BCI for the MRR does not include 1.
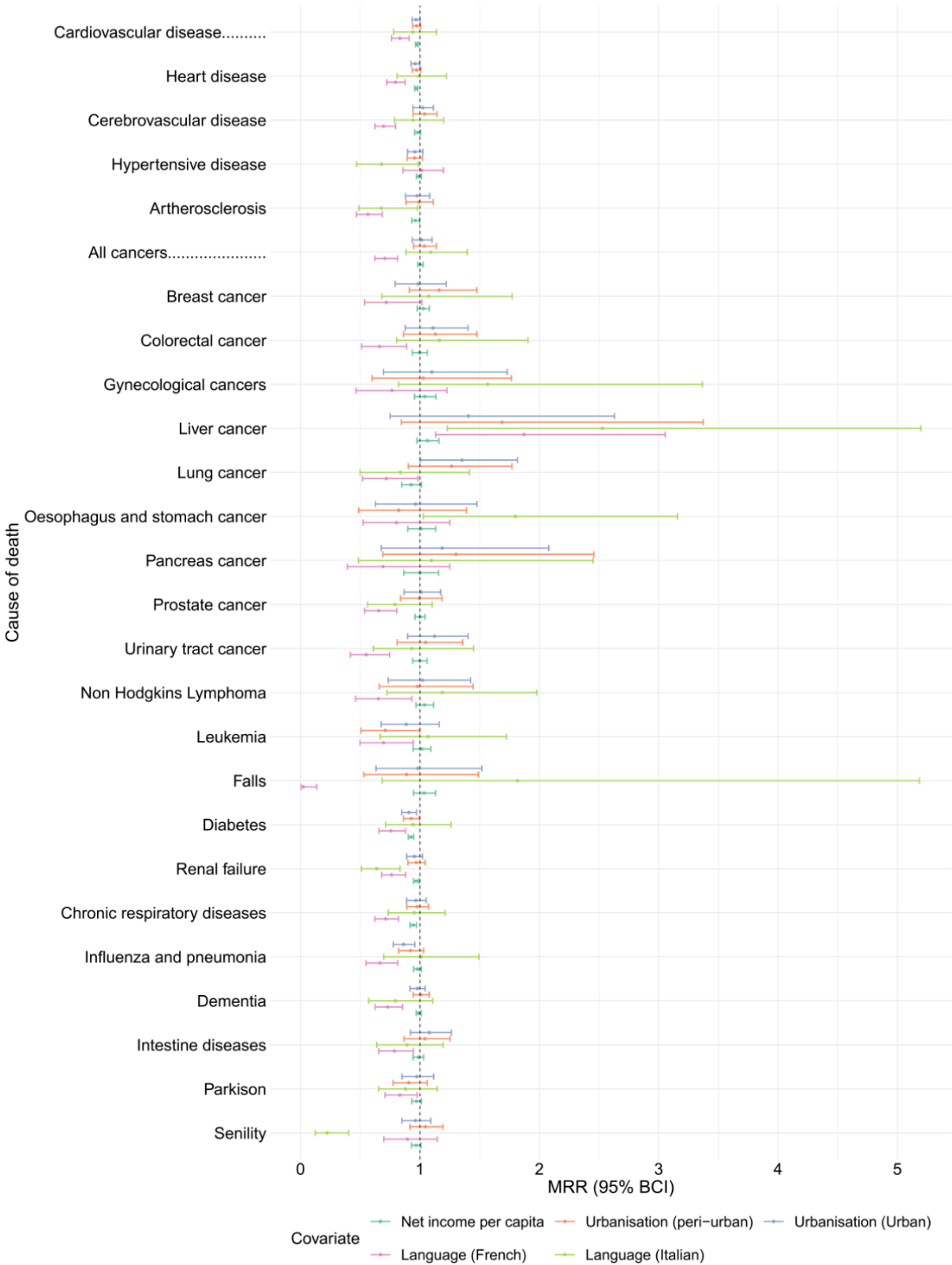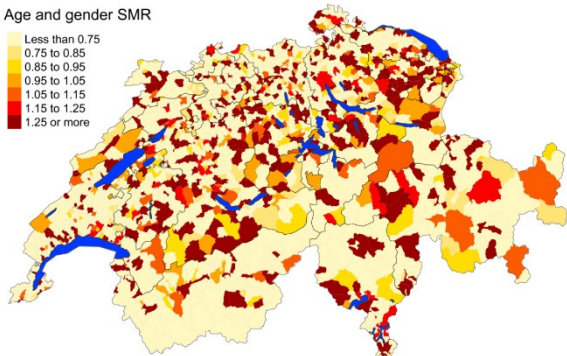
Figure S9. Spatial distribution of mortality for the elderly (≥75 years) from cardiovascular disease and lung cancer using municipality of death in Switzerland for the period 2015–2019 adjusted for age and sex. Estimates represent posterior means (PM) of standardised mortality rate (SMR) obtained from a Bayesian conditionally autoregressive (CAR) model without covariates. The black borders delineate the different cantons.

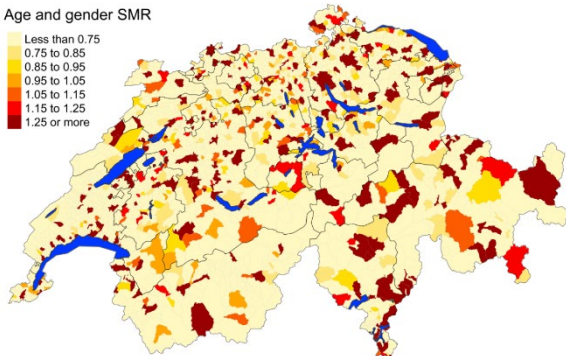(a) Cardiovascular disease

(b) Lung cancer

Figure S10. The effect of covariates on the standardised mortality rate (SMR) based on municipalities of death using the Bayesian spatial model for different causes. Reference levels are: German (Language) and rural (Urbanisation). One unit of net income per capita is CHF 10,000. Covariates are considered statistically important if the 95% BCI for the MRR does not include 1.
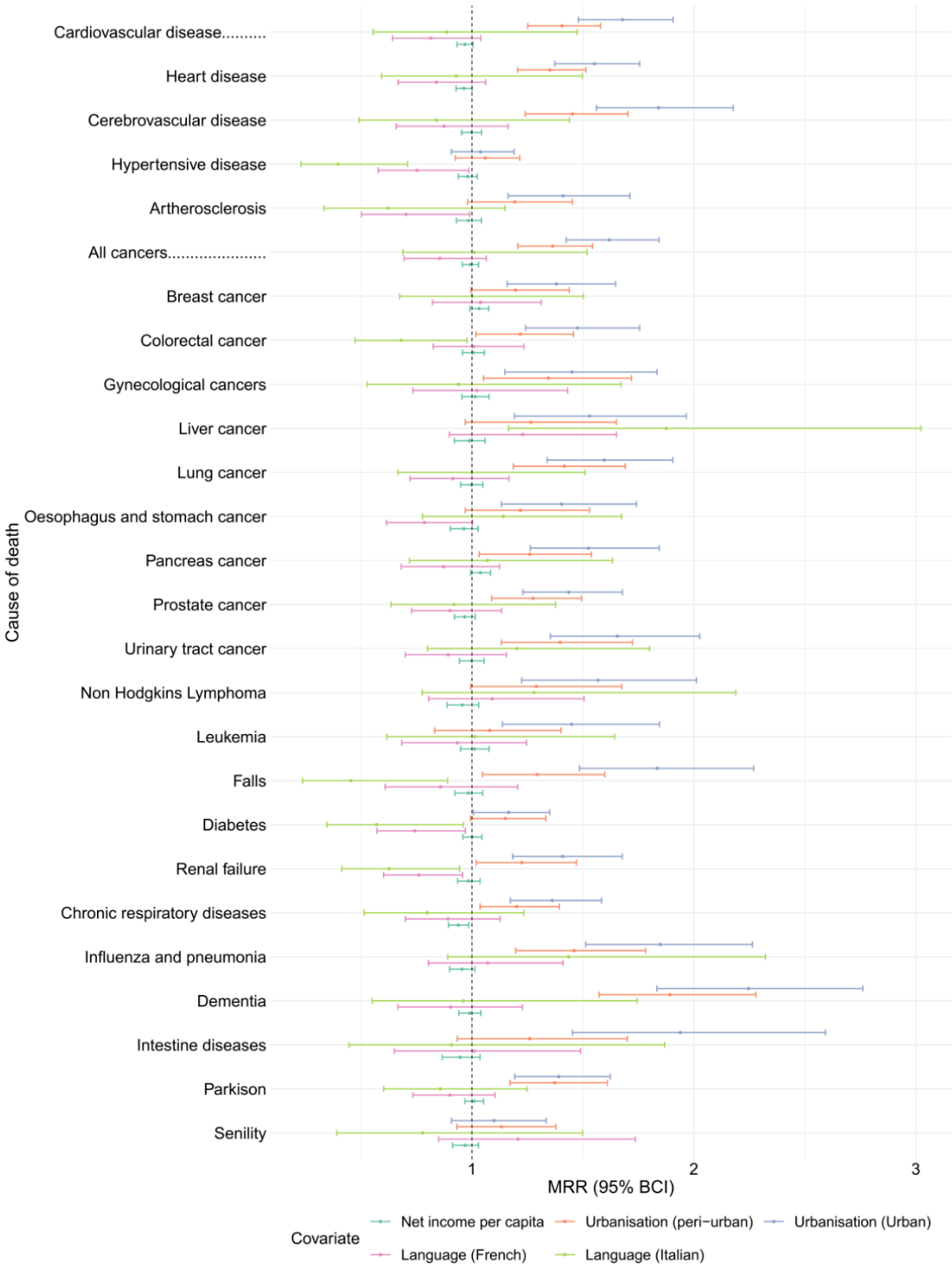
Figure S11. Spatial distribution of all-cause mortality for the elderly (≥75 years) in Switzerland for the period 2015–2019 adjusted for age and sex. Estimates represent posterior means (PM) of standardised mortality rate (SMR) obtained from a Bayesian conditionally autoregressive (CAR) model without covariates. The black borders delineate the different cantons. The colours denote whether the PM of SMR is greater or less than 1 and statistically significant (S) or not (NS).
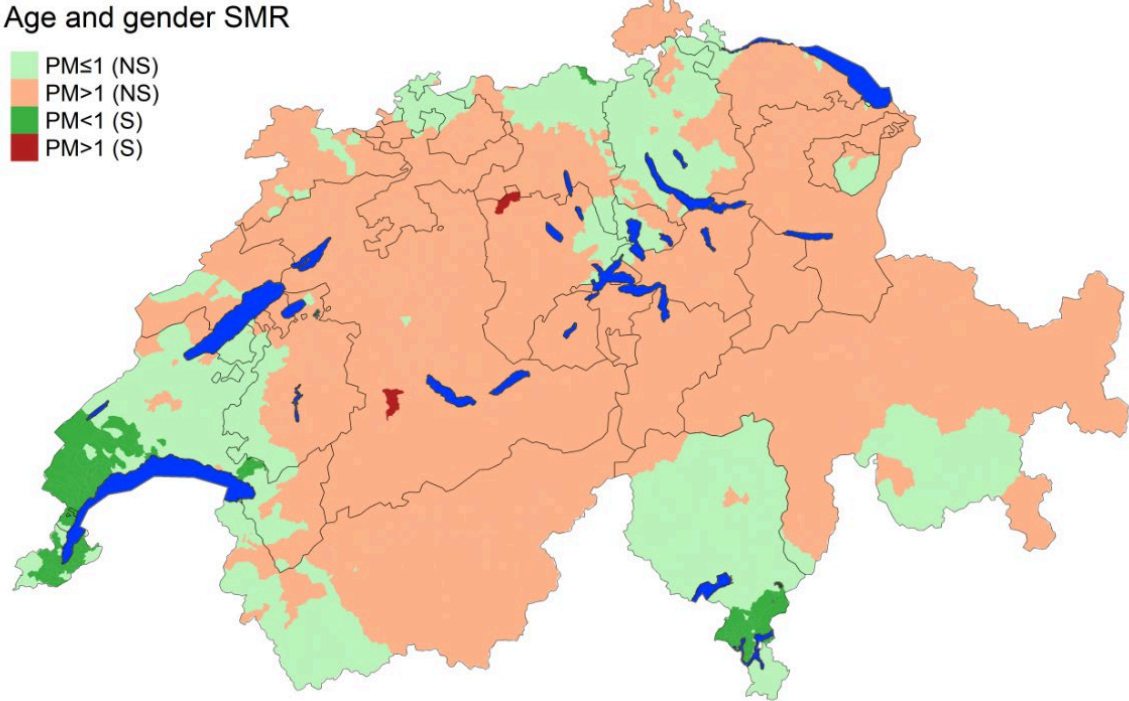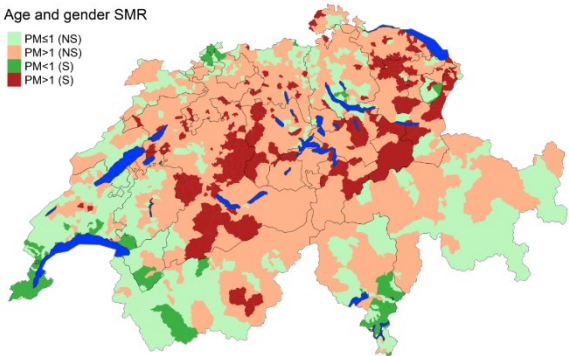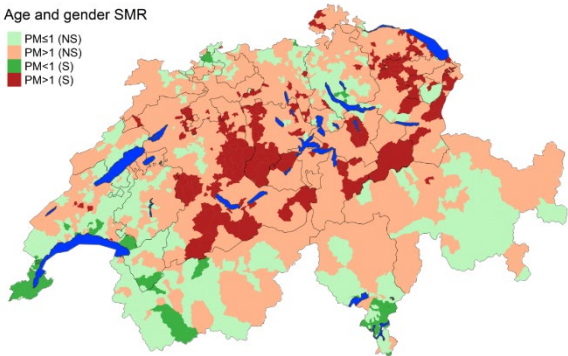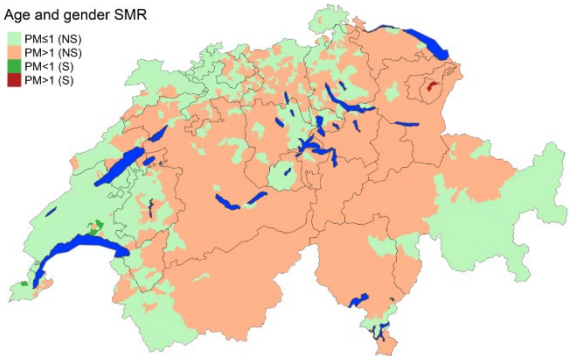
Figure S12. Spatial distribution of cardiovascular disease mortality for the elderly (≥75 years) in Switzerland for the period 2015–2019 adjusted for age and sex. Estimates represent posterior means (PM) of standardised mortality rate (SMR) obtained from a Bayesian conditionally autoregressive (CAR) model without covariates. The black borders delineate the different cantons. The colours denote whether the PM of SMR is greater or less than 1 and statistically significant (S) or not (NS).
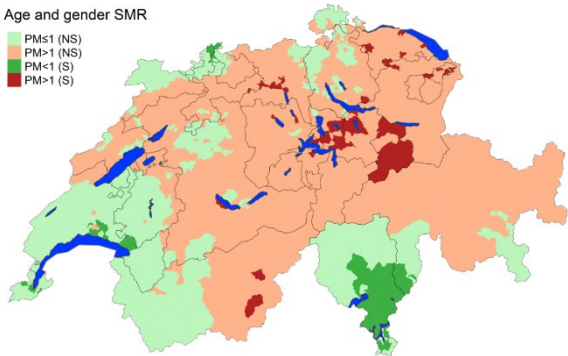
(a) Cardiovascular diseases

(b) Heart diseases

(c) Cerebrovascular diseases

(d) Hypertensive diseases
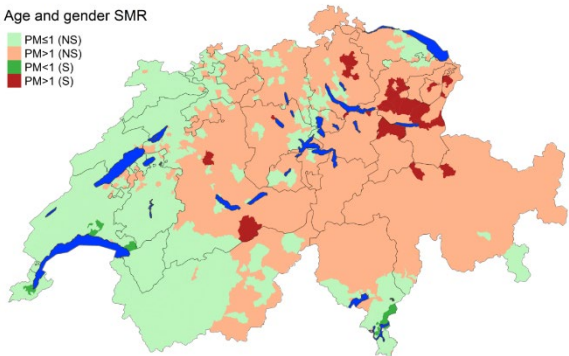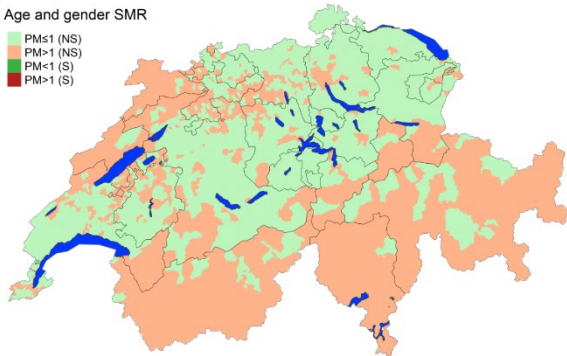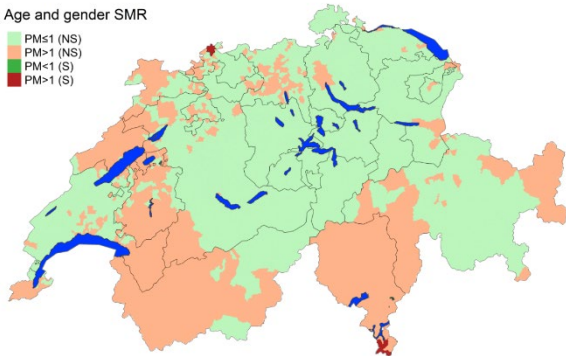

(e) Atherosclerosis

Figure S13. Spatial distribution of cancer mortality for the elderly (≥75 years) in Switzerland for the period 2015–2019 adjusted for age and sex. Estimates represent posterior means (PM) of standardised mortality rate (SMR) obtained from a Bayesian conditionally autoregressive (CAR) model without covariates. The black borders delineate the different cantons. The colours denote whether the PM of SMR is greater or less than 1 and statistically significant (S) or not (NS).
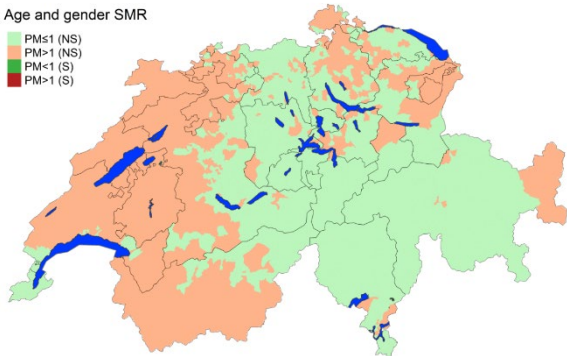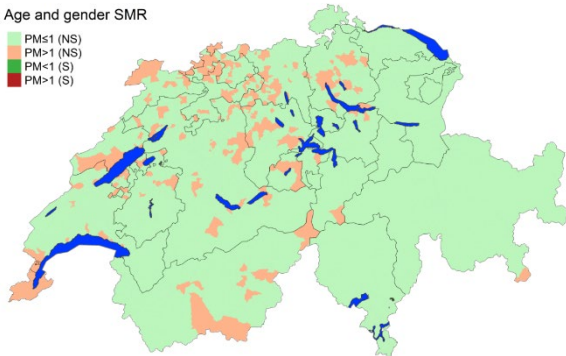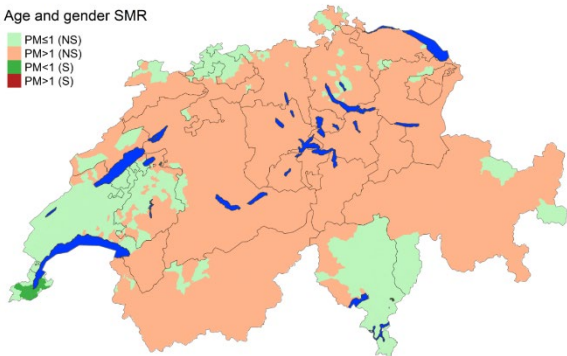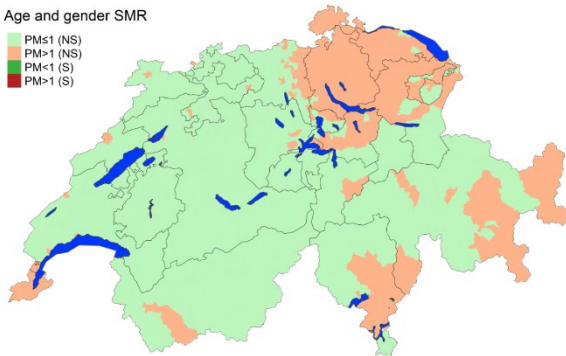
(a) All cancers

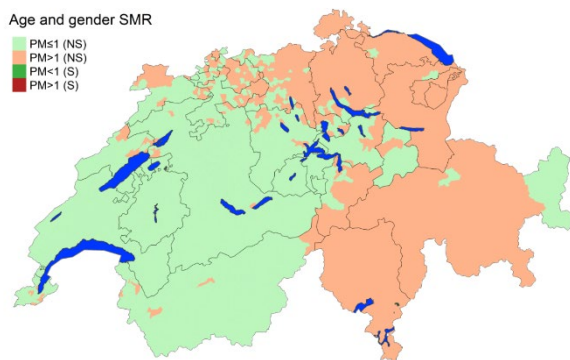(b) Lung cancer

(c) Colorectal cancer
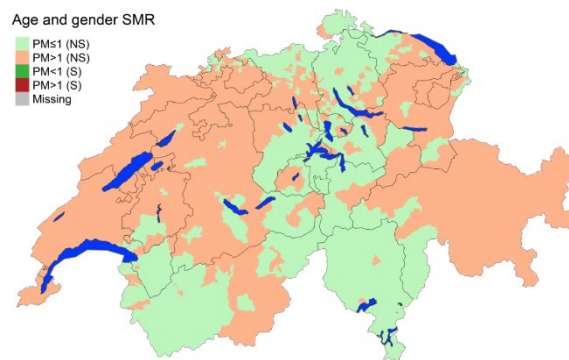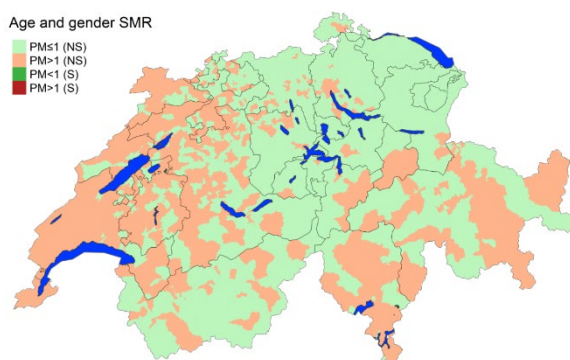

(d) Breast cancer

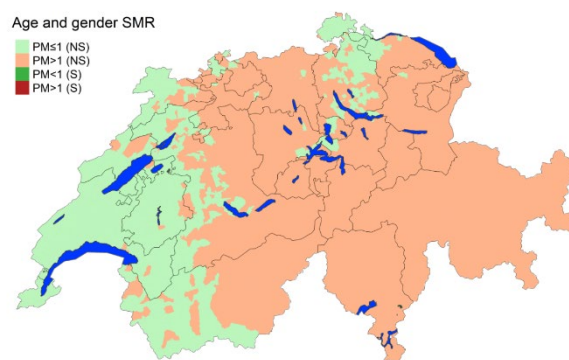(e) Prostate cancer

(f) Pancreas cancer

(g) Urinary tract cancer

Age and gender SMR
- PM≤1 (NS)
- PM>1 (NS)
- PM<1 (S)
- PM>1 (S)

(h) Gynaecological cancer

Age and gender SMR
- PM≤1 (NS)
- PM>1 (NS)
- PM<1 (S)
- PM>1 (S)
- Missing

(i) Leukaemia

Age and gender SMR
- PM≤1 (NS)
- PM>1 (NS)
- PM<1 (S)
- PM>1 (S)

(j) Oesophagus and stomach cancer

Age and gender SMR
- PM≤1 (NS)
- PM>1 (NS)
- PM<1 (S)
- PM>1 (S)

(k) Non Hodgkin Lymphoma

Age and gender SMR
- PM≤1 (NS)
- PM>1 (NS)
- PM<1 (S)
- PM>1 (S)

(l) Liver cancer

Age and gender SMR
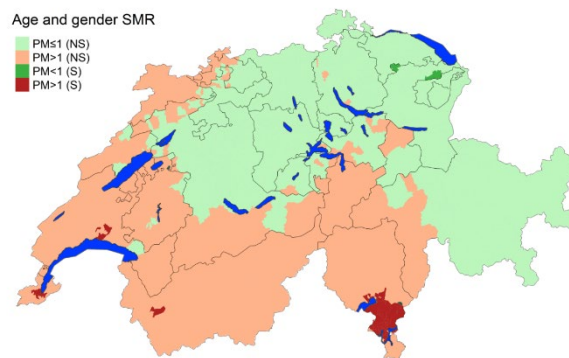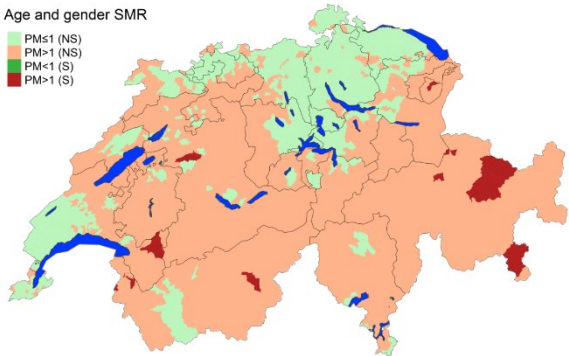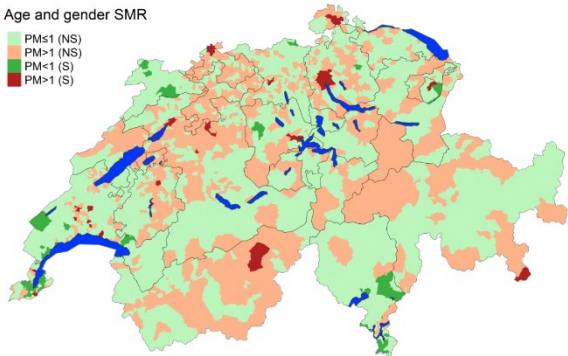- PM≤1 (NS)
- PM>1 (NS)
- PM<1 (S)
- PM>1 (S)

Figure S14. Spatial distribution of additional causes of mortality for the elderly (≥75 years) in Switzerland for the period 2015–2019 adjusted for age and sex. Estimates represent posterior means (PM) of standardised mortality rate (SMR) obtained from a Bayesian conditionally autoregressive (CAR) model without covariates. The black borders delineate the different cantons. The colours denote whether the PM of SMR is greater or less than 1 and statistically significant (S) or not (NS).
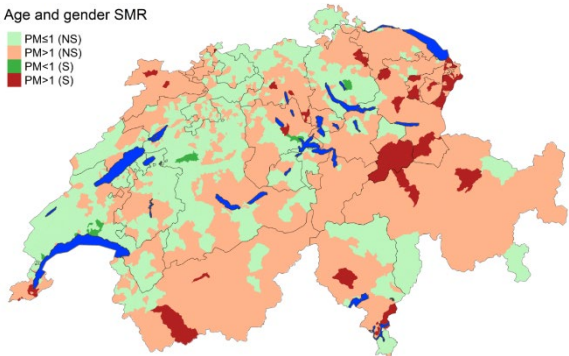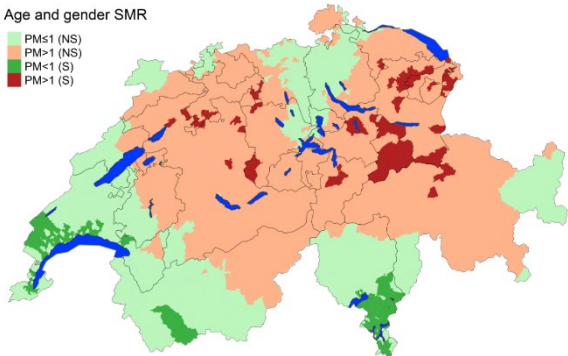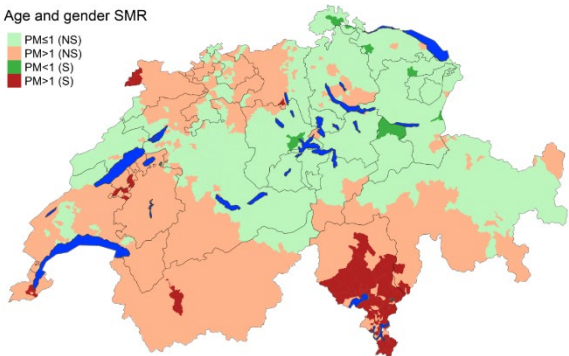
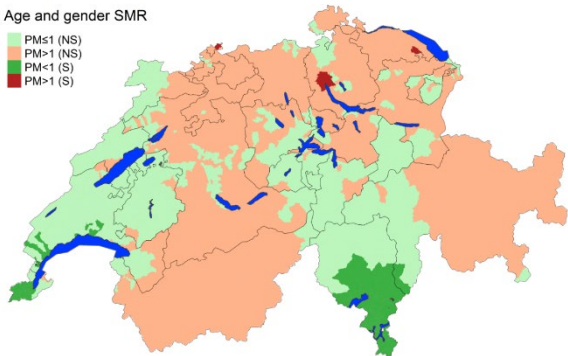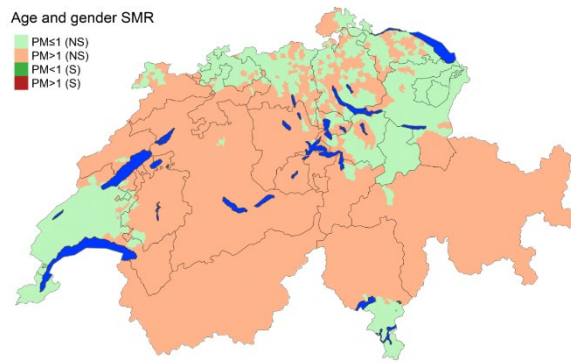(a) Chronic respiratory disease

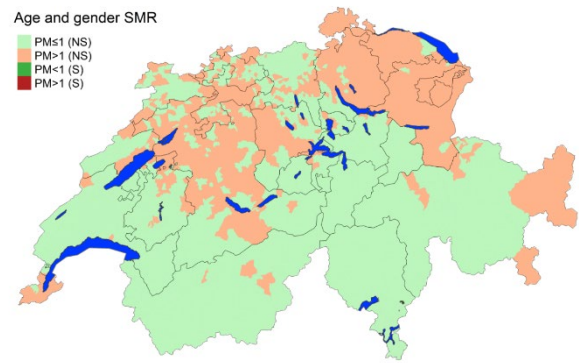(b) Dementia

(c) Senility

(d) Diabetes

(e) Influenza and pneumonia

(f) Falls

(g) Intestine disease

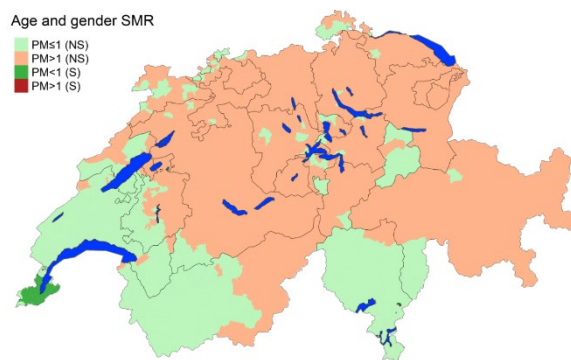## (h) Parkinson's disease

(i) Renal failure

Figure S15. Spatial distribution of COVID-19 mortality for the elderly (≥75 years) in Switzerland for 2020 adjusted for age and sex. Estimates represent posterior means (PM) of standardised mortality rate (SMR) obtained from a Bayesian conditionally autoregressive (CAR) model without covariates. The black borders delineate the different cantons. The colours denote whether the PM of SMR is greater or less than 1 and statistically significant (S) or not (NS).