Supplementary Table SI. Number of non-local European individuals in Catalonia (Spain), by geographic area and country of origin, as of December 31st, 2019

Geographic area	Country	Number	Geographic area	Country	Number
Low risk*			High risk		
	Andorra	437		Albania	940
	Belgium	3,938		Bosnia and Herzegovina	276
	Denmark	883		Croatia	535
	France	23,922		Czech Republic	1,301
	Gibraltar	1		Estonia	302
	Greenland	1		Hungary	1,308
	Liechtenstein	6		Kazakhstan	325
	Luxembourg	80		Poland	8,641
	Monaco	1		Slovakia	1,142
	Netherlands	6,451		Turkey	969
	Norway	463	Very high risk		
	Switzerland	1,760		Azerbaijan	116
	United Kingdom	15,111		Armenia	3,611
Moderate risk				Bulgaria	9,480
	Austria	968		Belarus	1,347
	Cyprus	127		Georgia	7,374
	Finland	706		Kyrgyzstan	74
	Germany	13,350		Latvia	586
	Greece	1,292		Lithuania	1,785
	Iceland	93		Moldova (Republic of)	3,900
	Ireland	1,705		Montenegro	56
	Italy	46,166		Romania	73,839
	Portugal	10,299		Russian Federation	15,149
	San Marino	3		Serbia	785
	Slovenia	267		Ukraine	18,460
	Sweden	2,110		Macedonia, FYR	151
				Uzbekistan	197

Spain not included as this group was analyzed separately. FYR – former Yugoslavian republic.

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Supplementary Table SII. ICD-9-CM codes used to define each of the relevant risk factors and cardiovascular conditions evaluated

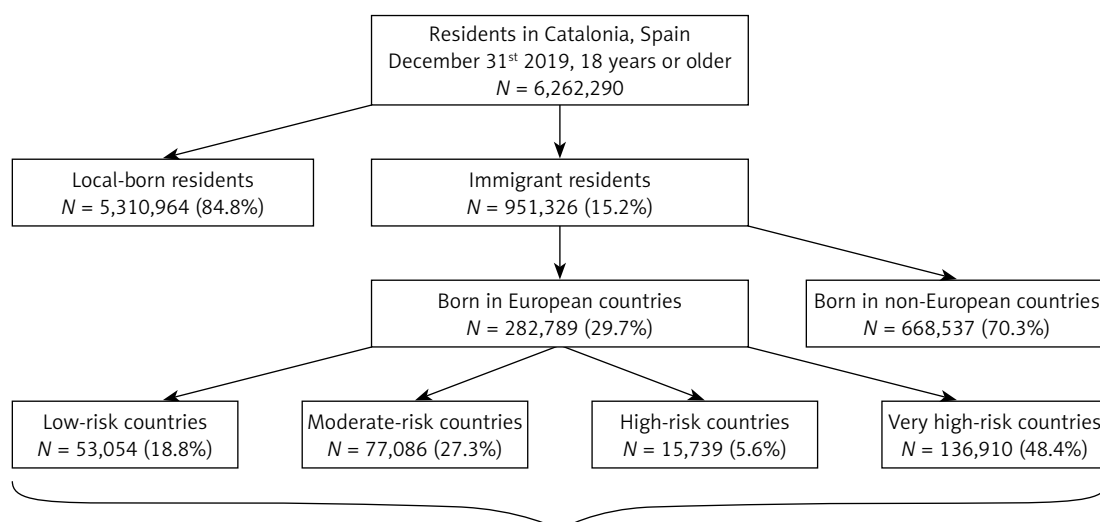| Condition	Codes	Description
Diabetes mellitus:		
	250.xx	Diabetes mellitus
Hypertension:		
	401.xx	Essential hypertension
	402.xx	Hypertensive heart disease
	403.xx	Hypertensive renal disease
	404.xx	Hypertensive heart and renal disease
	405.xx	Secondary hypertension
Hyperlipidemia:		
	272.0x	Pure hypercholesterolemia
	272.1x	Pure hyperglyceridemia
	272.2x	Hyperlipidemia, mixed
	272.3x	Hyperchylomicronemia
	272.4x	Other and unspecified hyperlipidemia
Obesity:		
	278.00	Obesity, unspecified
	278.01	Morbid obesity
	V85.3x	Body mass index 30–39, adult
	V85.4x	Body mass index 40 and over, adult
Tobacco use:		
	305.1	Tobacco use disorder
	649.0x	Tobacco use disorder complicating pregnancy, childbirth, or the puerperium
	989.84	Toxic effect of other substances: tobacco
	V15.82	History of tobacco use
Coronary heart disease:		
	410.xx	Acute myocardial infarction
	411.xx	Other acute and subacute forms of ischemic heart disease
	412	Old myocardial infarction
	413.xx	Angina pectoris
	414.xx	Other forms of chronic ischemic heart disease
	996.03	Mechanical complication, due to coronary bypass graft
	V45.81	Aortocoronary bypass status
	V45.82	Percutaneous transluminal coronary angioplasty status
Cerebrovascular disease:		
	094.87	Syphilitic ruptured cerebral aneurysm
	346.6x	Persistent migraine aura with cerebral infarction
	430	Subarachnoid hemorrhage
	431	Intracerebral hemorrhage
	432.x	Other and unspecified intracranial hemorrhage
	433.xx	Occlusion and stenosis of precerebral arteries
	434.xx	Occlusion of cerebral arteries
	435.xx	Transient cerebral ischemia
	436	Acute, but ill-defined, cerebrovascular disease
	437.0	Cerebral atherosclerosis
	437.1	Other generalized ischemic cerebrovascular disease

Supplementary Table SII. Cont.

Condition	Codes	Description
	437.8	Other cerebrovascular disease
	437.9	Unspecified cerebrovascular disease
	438.xx	Late effects of cerebrovascular disease
	747.81	Anomalies of cerebrovascular system
	784.3	Aphasia
	997.02	Iatrogenic cerebrovascular infarction or hemorrhage
Heart failure:		
	398.91	Rheumatic heart failure (congestive)
	402.01	Malignant hypertensive heart disease with heart failure
	402.11	Benign hypertensive heart disease with heart failure
	402.91	Unspecified hypertensive heart disease with heart failure
	404.01	Hypertensive heart and chronic kidney disease, malignant, with heart failure and with chronic kidney disease stage I to stage IV, or unspecified
	404.03	Hypertensive heart and chronic kidney disease, malignant, with heart failure and with chronic kidney disease stage V or end stage renal disease
	404.11	Hypertensive heart and chronic kidney disease, benign, with heart failure and with chronic kidney disease stage I to stage IV, or unspecified
	404.13	Hypertensive heart and chronic kidney disease, benign, with heart failure and chronic kidney disease stage V or end stage renal disease
	404.91	Hypertensive heart and chronic kidney disease, unspecified, with heart failure and with chronic kidney disease stage I to stage IV, or unspecified
	404.93	Hypertensive heart and chronic kidney disease, unspecified, with heart failure and chronic kidney disease stage V or end stage renal disease
	428.xx	Heart failure
Atrial fibrillation:		
	427.31	Atrial fibrillation

ICD-9-CM – International Classification of Diseases, Ninth Revision, Clinical Modification.

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Supplementary Table SIII. Mean age at time of first recorded diagnosis, by geographic group

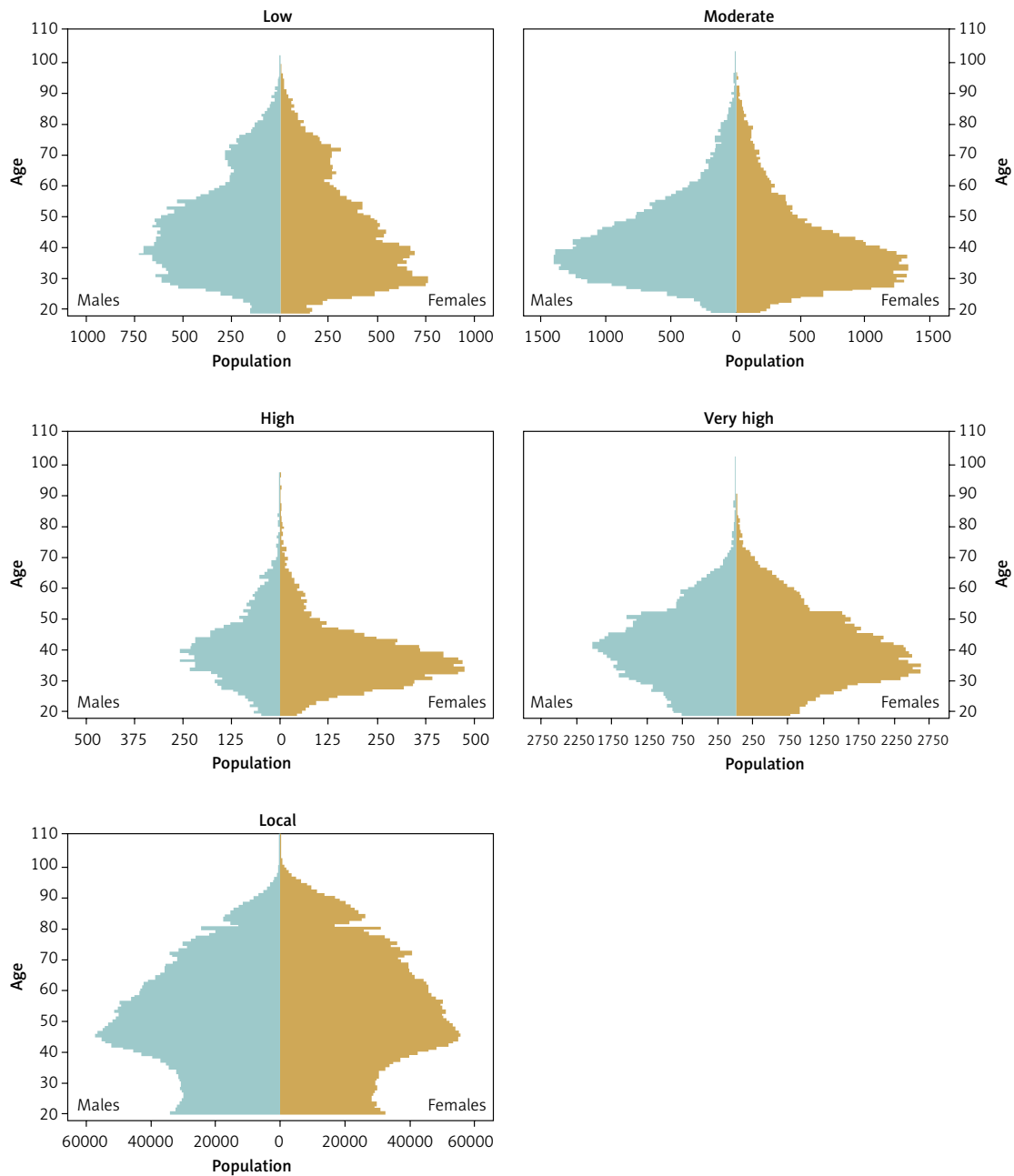| Parameter	Local	Low risk	Moderate risk	High risk	Very high risk
Prevalent diagnoses:					
Diabetes	59.7 (13.5)	59.1 (14.2)	55.0 (14.5)	48.7 (13.4)	49.2 (11.7)
Hypertension	58.4 (12.9)	59.0 (12.8)	54.1 (13.7)	46.1 (11.7)	48.1 (11.3)
Dyslipidemia	58.7 (14.1)	57.3 (13.6)	51.3 (14.2)	45.1 (11.1)	45.9 (11.3)
Obesity	52.1 (18.3)	54.3 (15.7)	46.6 (16.1)	41.4 (12.8)	42.7 (13.2)
Tobacco use	43.8 (16.8)	44.3 (15.7)	39.7 (14.2)	35.7 (11.5)	35.6 (11.6)
Coronary heart disease	64.6 (12.7)	63.1 (11.8)	59.6 (13.0)	52.2 (11.6)	53.8 (11.4)
Cerebrovascular disease	65.8 (16.0)	63.2 (15.0)	58.7 (16.6)	47.4 (13.5)	49.3 (14.7)
Atrial fibrillation	70.9 (12.6)	67.8 (12.4)	65.1 (14.9)	54.7 (13.3)	56.7 (13.4)
Heart failure	70.9 (16.1)	67.5 (15.8)	63.0 (17.7)	47.6 (15.7)	50.9 (17.2)
Incident diagnoses:					
Diabetes	63.9 (14.2)	60.3 (15.8)	55.3 (16.5)	52.8 (12.5)	51.6 (12.5)
Hypertension	60.3 (14.1)	60.5 (14.1)	55.2 (15.0)	48.3 (11.5)	51.1 (12.0)
Dyslipidemia	62.3 (15.3)	59.6 (14.2)	52.2 (15.4)	46.3 (10.4)	48.3 (11.5)
Obesity	56.2 (15.9)	54.9 (15.4)	46.9 (14.0)	44.6 (11.2)	45.8 (12.3)
Tobacco use	54.3 (17.6)	48.7 (17.1)	42.6 (14.5)	40.6 (11.2)	41.1 (12.6)
Coronary heart disease	69.6 (13.8)	66.0 (13.0)	60.7 (14.8)	54.5 (11.5)	55.4 (11.9)
Cerebrovascular disease	72.6 (14.9)	66.7 (16.5)	61.2 (17.7)	49.2 (12.5)	53.5 (14.1)
Atrial fibrillation	76.2 (12.4)	69.7 (13.7)	68.7 (15.8)	56.4 (13.2)	60.0 (13.7)
Heart failure	79.9 (11.3)	76.0 (11.8)	73.2 (13.6)	58.3 (19.0)	61.0 (13.2)

Data presented as mean (standard deviation), in years. Cells shaded in grey represent the group with the lowest mean age across groups for each cardiovascular risk factor/condition. All p-values for differences between groups < 0.001.
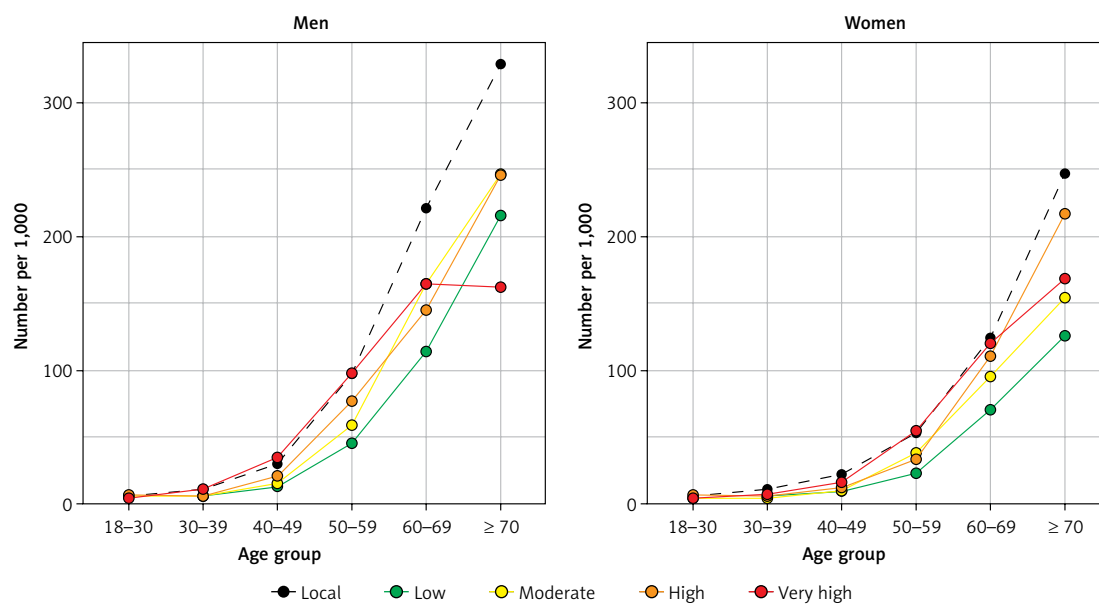
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┌─────────────────────────────────────┐
│     Residents in Catalonia, Spain    │
│  December 31st 2019, 18 years or older│
│           N = 6,262,290              │
└─────────────────────────────────────┘
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Local-born residents
N = 5,310,964 (84.8%)

Immigrant residents
N = 951,326 (15.2%)

Born in European countries
N = 282,789 (29.7%)

Born in non-European countries
N = 668,537 (70.3%)

Low-risk countries
N = 53,054 (18.8%)

Moderate-risk countries
N = 77,086 (27.3%)

High-risk countries
N = 15,739 (5.6%)

Very high-risk countries
N = 136,910 (48.4%)

Based on the ESC 2021 regional classification of cardiovascular risk.

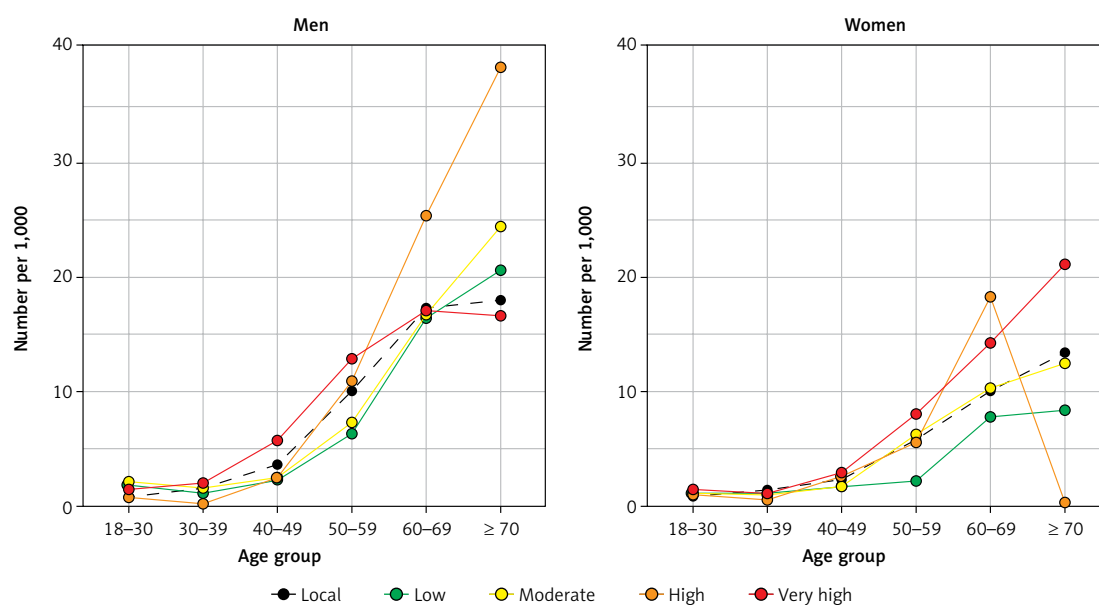**Supplementary Figure S1.** Classification of participants included in the analysis, by region of origin

Percentages may not sum to 100% due to rounding. ESC – European Society of Cardiology, N – number.
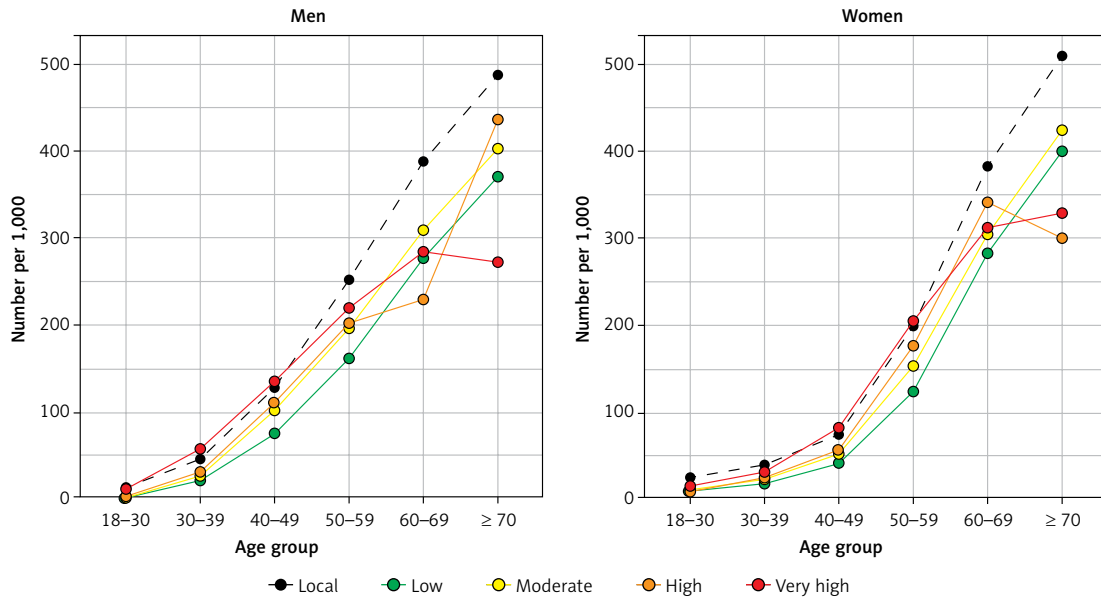
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Supplementary Figure S2. Population pyramids of local and non-local European residents living in Catalonia as of December 31st, 2019
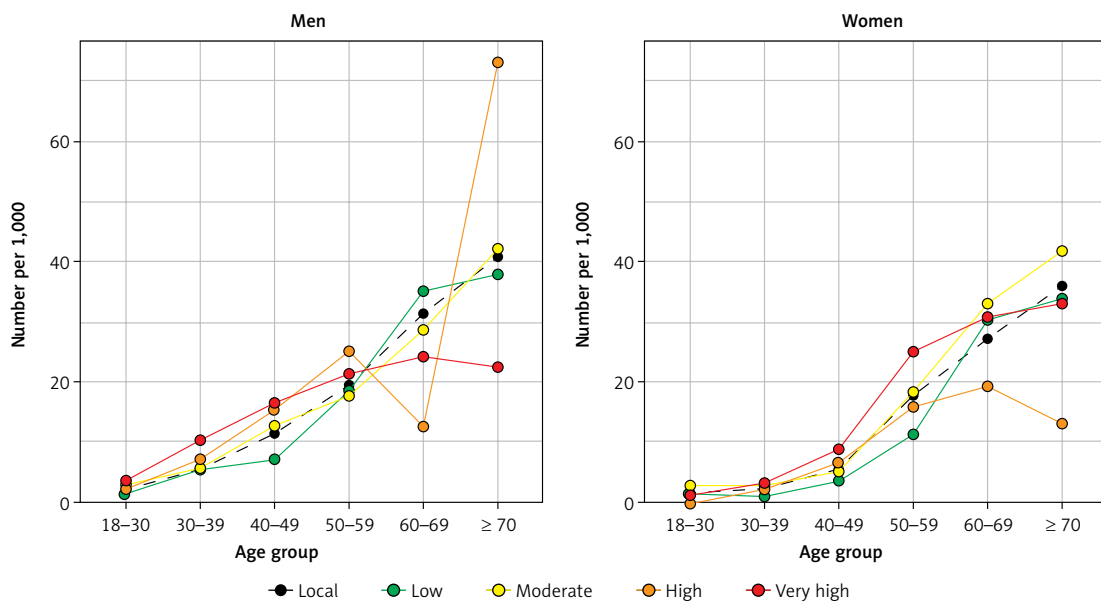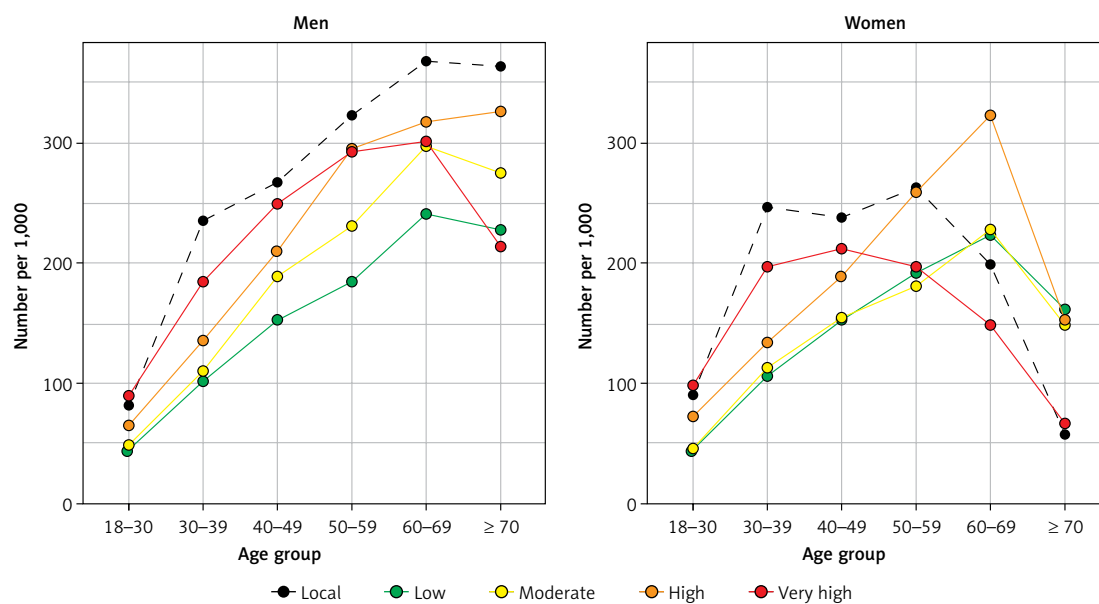
Supplementary Figure S3. Prevalence of diabetes, by sex, age, and geographic origin, Catalonia, December 31st, 2019

Supplementary Figure S4. Incidence of diabetes by sex, age, and geographic origin, January 1st to December 31st, 2019

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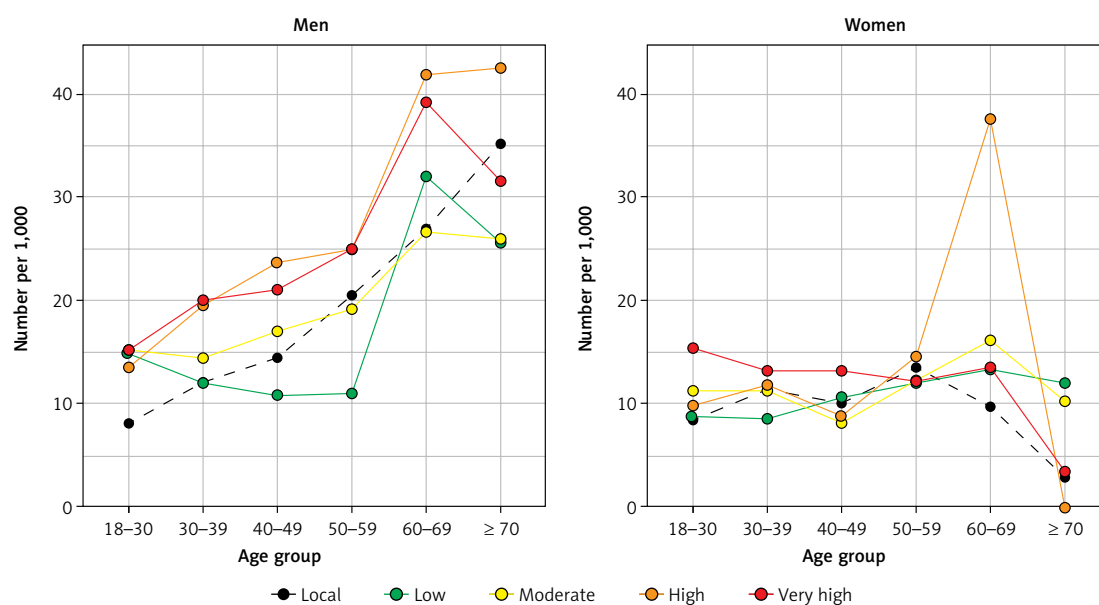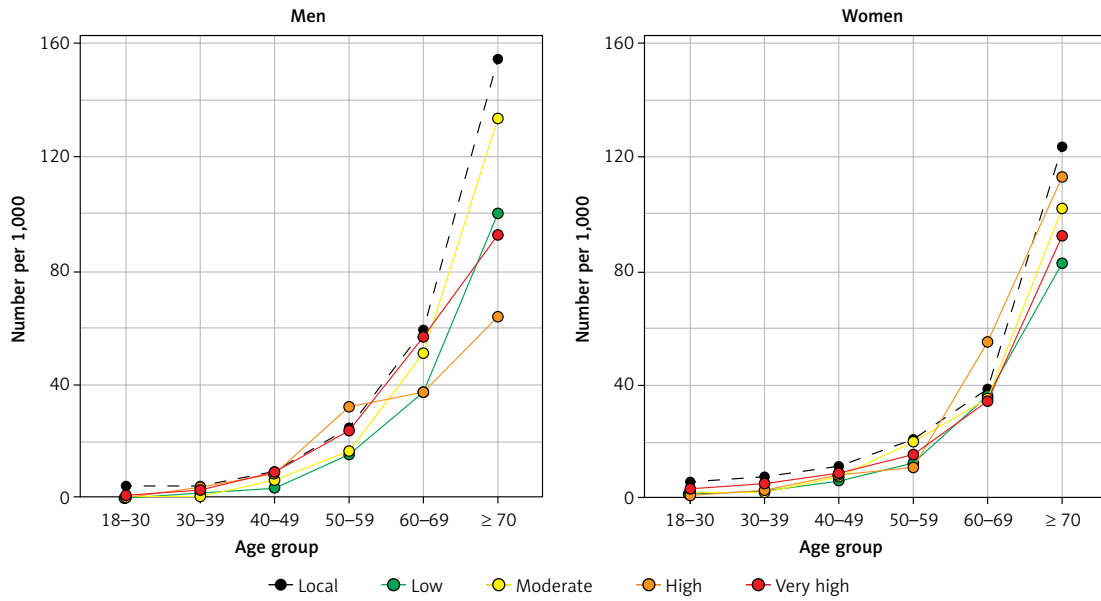
Supplementary Figure S5. Prevalence of hyperlipidemia, by sex, age, and geographic origin, Catalonia, December 31st, 2019

Supplementary Figure S6. Incidence of hyperlipidemia by sex, age, and geographic origin, January 1st to December 31st, 2019
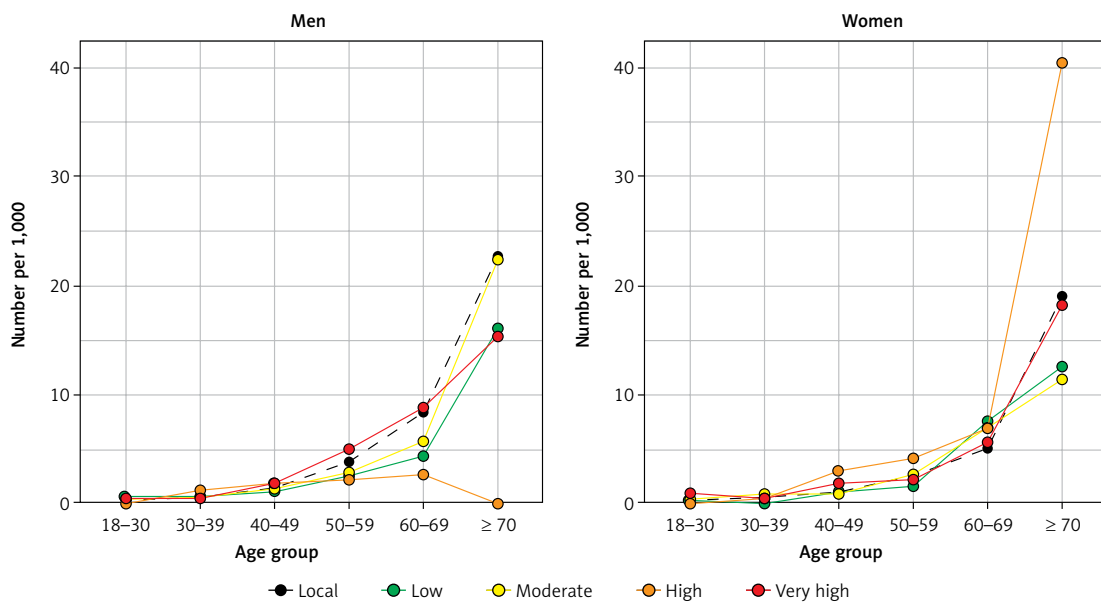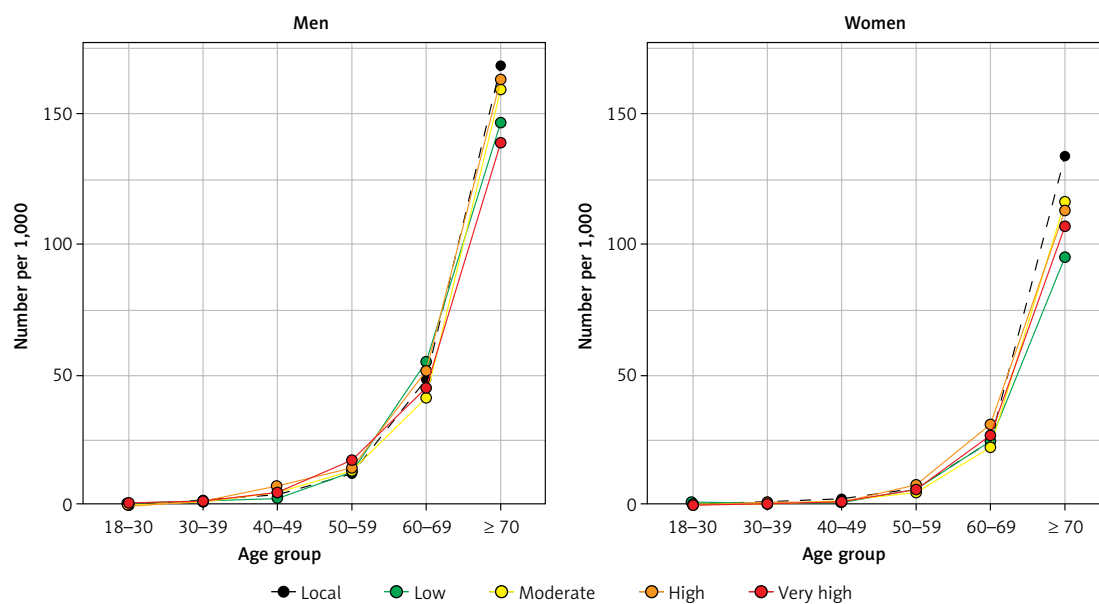
Supplementary Figure S7. Prevalence of tobacco use by sex, age, and geographic origin, Catalonia, December 31st, 2019

Supplementary Figure S8. Incidence of tobacco use by sex, age, and geographic origin, January 1st to December 31st, 2019

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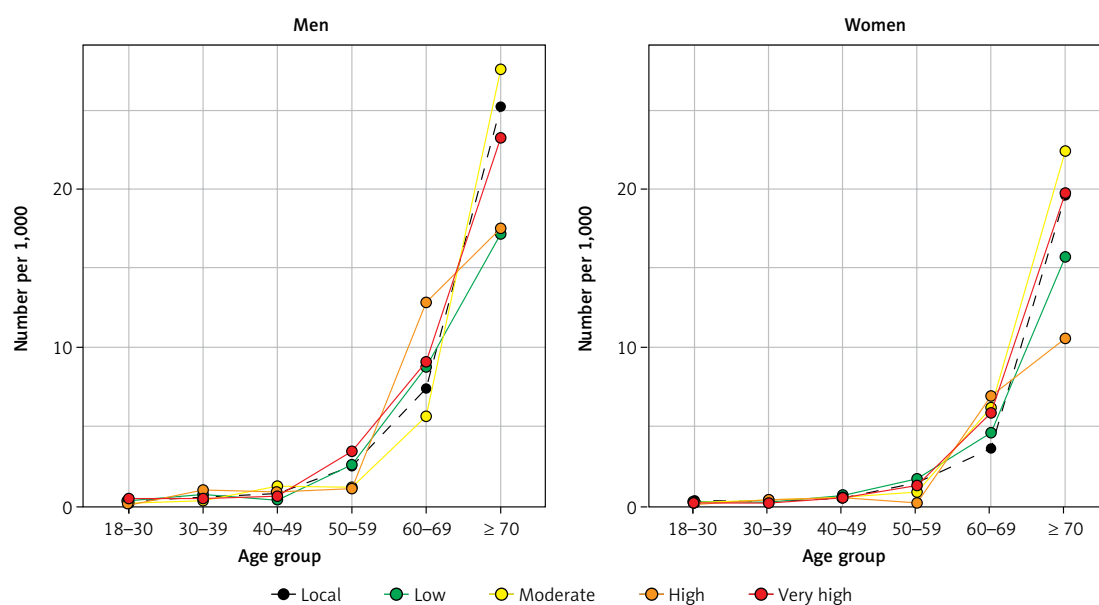
Supplementary Figure S9. Prevalence of cerebrovascular disease by sex, age, and geographic origin, Catalonia, December 31st, 2019

Supplementary Figure S10. Incidence of cerebrovascular disease by sex, age, and geographic origin, January 1st to December 31st, 2019
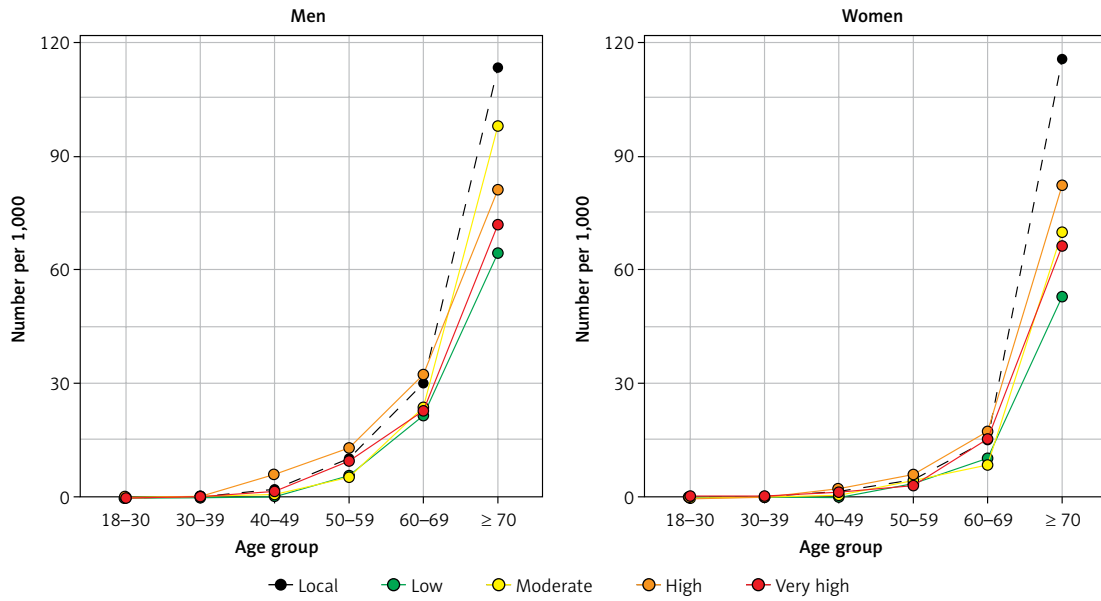
Supplementary Figure S11. Prevalence of atrial fibrillation by sex, age, and geographic origin, Catalonia, December 31st, 2019

Supplementary Figure S12. Incidence of atrial fibrillation by sex, age, and geographic origin, January 1st to December 31st, 2019

Emili Vela, Montse Cleries, Usama Bilal, Maciej Banach, John W. McEvoy, Martin Bødtker Mortensen, Michael Joseph Blaha, Khurram Nasir, Josep Comin-Colet, Josepa Mauri, Miguel Cainzos-Achirica

Supplementary Figure S13. Prevalence of heart failure by sex, age, and geographic origin, Catalonia, December 31st, 2019

Supplementary Figure S14. Incidence of heart failure by sex, age, and geographic origin, January 1st to December 31st, 2019