

## Supplementary material

### Income and Outcomes of Patients with Incident Atrial Fibrillation

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**Supplementary figure 1.** Study flow-chart.

**Supplementary figure 2.** Competing risk and Kaplan-Meier's estimates of outcomes among patients with atrial fibrillation according to age strata and quintiles of their maximum personal annual income.

**Supplementary figure 3.** Competing risk and Kaplan-Meier's estimates of outcomes among patients with atrial fibrillation according to age strata and their educational level.

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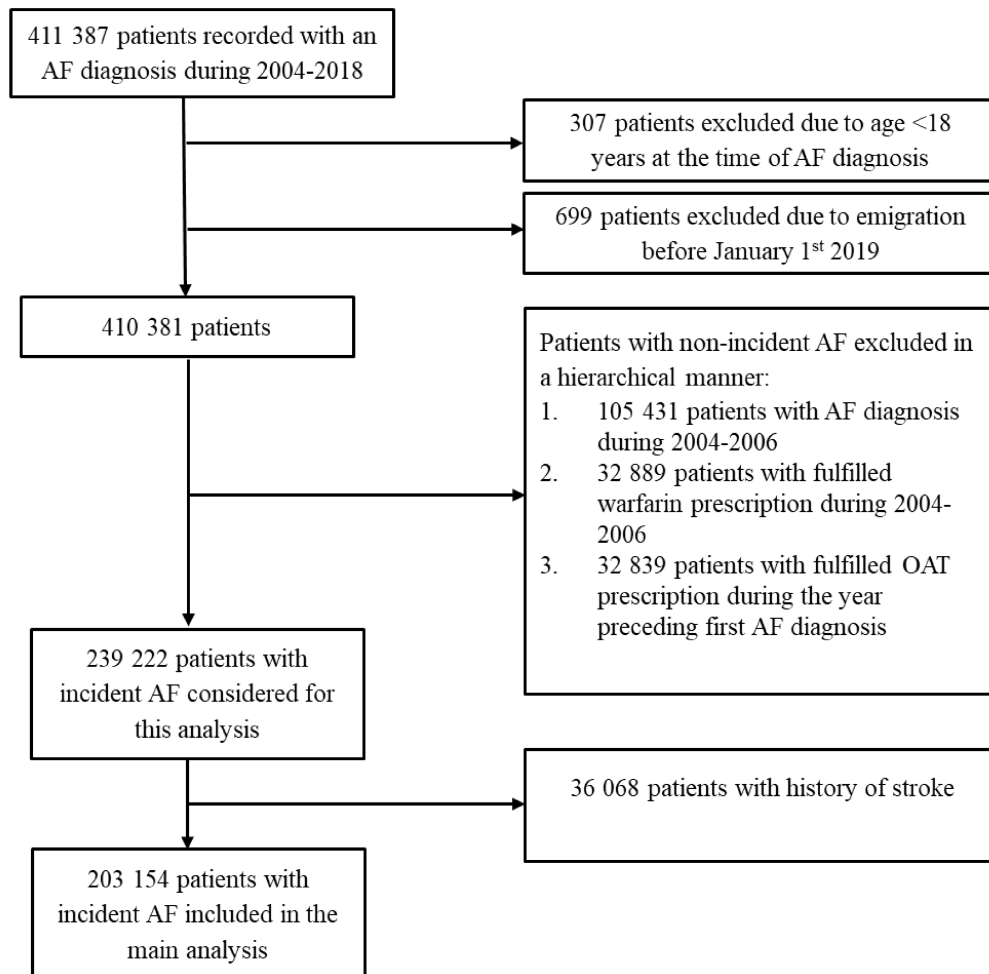
**Supplementary table 7.** Independent predictors of 10-year all-cause mortality in AF patients aged 65-74 years.

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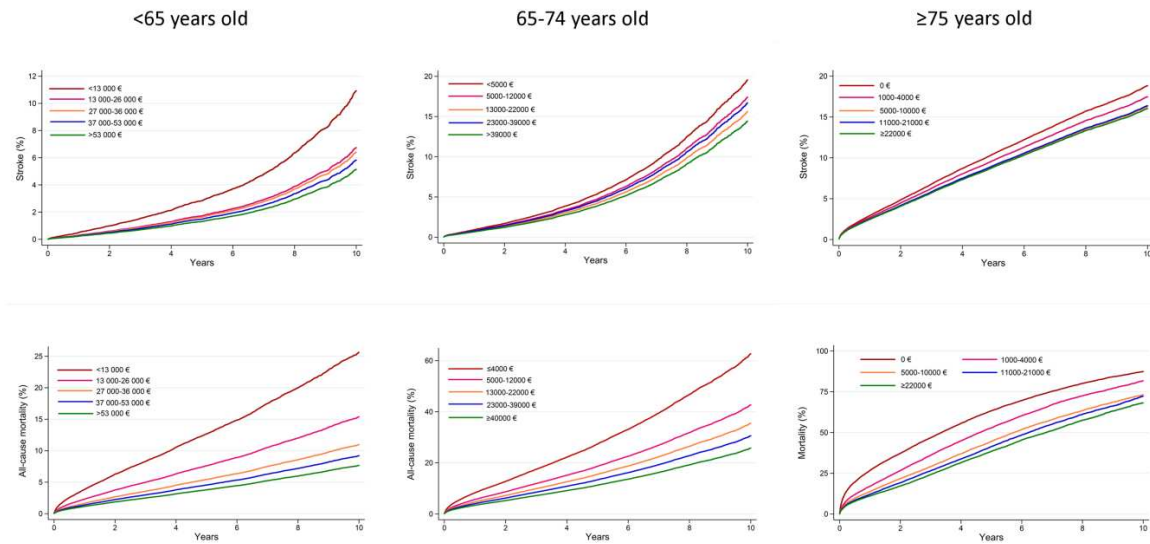
**Supplementary table 9.** Characteristics of patients aged <65 years in unmatched and propensity score matched cohorts according the lowest and highest quintiles of maximum annual income.

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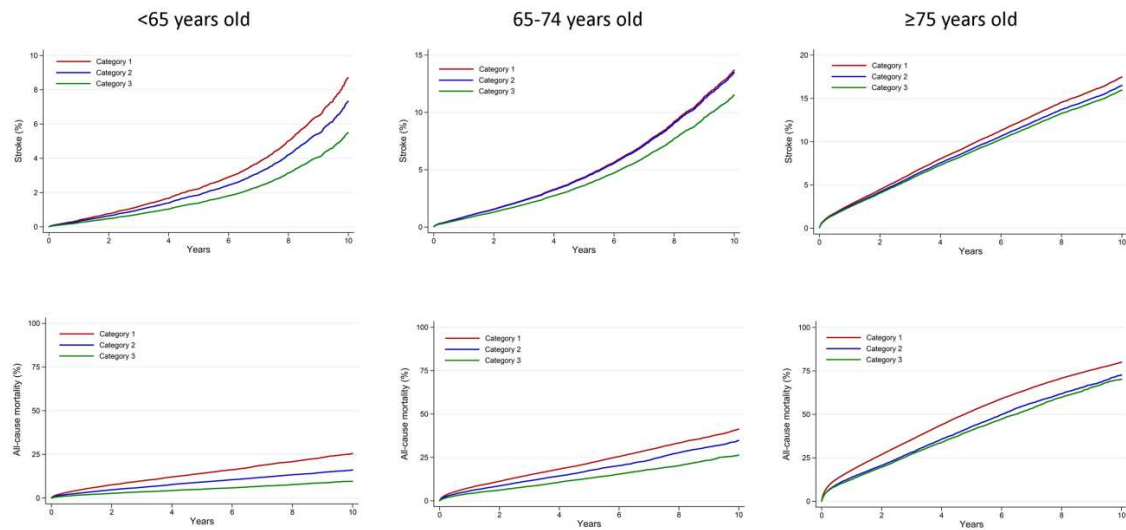
**Supplementary table 11.** Characteristics of patients aged  $\geq 75$  years in unmatched and propensity score matched cohorts according the lowest and highest quintiles of maximum annual income.



**Supplementary figure 1.** Study flow-chart.



**Supplementary figure 2.** Competing risk and Kaplan-Meier's estimates of outcomes among patients with atrial fibrillation according to age strata and quintiles of their maximum personal annual income.



**Supplementary figure 3.** Competing risk and Kaplan-Meier's estimates of outcomes among patients with atrial fibrillation according to age strata and educational level.

**Supplementary table 1.** Nosological codes of comorbidities.

	ICD-10	ICPC-2	Reimbursement code	ATC code
Hypertension	I10-I15	K85, K86, K87	205	C03A, C03B, C03DB, C03EA, C07A, C08CA, C08D, C09
Dyslipidemia	E78	T93	206	C10
History of heart failure	I50, I11.0, I13.0, I13.2	K77	201	
Diabetes	E10-E14	T89, T90	103, 215	A10
Previous stroke	I63, I64, I69.3-I69.8	K90		
Vascular disease	I20-I25, I65-I66, I67.2, I70	K74, K75, K76, K91, K92	206	
Bleeding history	D50.0, D62, D68.3, I60-I62, I69.0-I69.2, I85.0, I86.4, J94.2, K22.1, K22.3, K22.6, K25.0, K25.2, K25.4, K25.6, K26.0, K26.2, K26.4, K26.6, K27.0, K27.2, K27.4, K27.6, K28.0, K28.2, K28.4, K28.6, K29.0, K62.5, K63.1, K63.3, K92.0-K92.2, N02, R04, R31, R58, S06.2-S06.6, S06.8			
Alcohol abuse	F10			
Renal failure or dialysis	N18, Z49			
Liver cirrhosis or failure	K70.2-K70.4, K71.7, K71.8, K72, K74			
Dementia	F00-F03, G30			
Psychiatric disorders	F04-F99			

Abbreviations: ATC, anatomic therapeutic chemical; ICD-10, International Classification of Diseases, Tenth Revision;

ICPC-2, International Classification of Primary Care, Second Edition.

**Supplementary table 2.** Impact of educational level on stroke and all-cause mortality in different age strata.

Outcomes	Events (%)	Patient years	Incidence/year (%)	Unadjusted risk estimates	Adjusted risk estimates
<b>&lt;65 years old</b>					
Stroke					
Educational level					
Category 1	590 (4.5%)	75092	0.8 (0.7-0.9)	Reference	Reference
Category 2	756 (3.2%)	125268	0.6 (0.6-0.6)	0.835, 0.750-0.930	0.974, 0.872-1.088
Category 3	419 (2.4%)	95721	0.4 (0.4-0.5)	0.620, 0.548-0.703	0.922, 0.803-1.057
All-cause mortality					
Educational level					
Category 1	2305 (17.6%)	75404	3.1 (2.9-3.2)	Reference	Reference
Category 2	2353 (10.1%)	125558	1.9 (1.8-2.0)	0.608, 0.574-0.644	0.881, 0.831-0.935
Category 3	1010 (5.9%)	95847	1.1 (1.0-1.1)	0.343, 0.319-0.370	0.800, 0.737-0.867
<b>65-74 years old</b>					
Stroke					
Educational level					
Category 1	1632 (6.5%)	117478	1.4 (1.3-1.5)	Reference	Reference
Category 2	868 (5.3%)	68263	1.3 (1.2-1.4)	0.983, 0.906-1.068	0.995, 0.916-1.082
Category 3	609 (4.5%)	58798	1.0 (1.0-1.1)	0.832, 0.758-0.912	0.944, 0.851-1.048
All-cause mortality					
Educational level					
Category 1	6244 (24.8%)	118697	5.3 (5.1-5.4)	Reference	Reference
Category 2	2838 (17.3%)	68716	4.1 (4.0-4.3)	0.781, 0.747-0.816	0.921, 0.881-0.964
Category 3	1758 (13.1%)	59136	3.0 (2.8-3.1)	0.564, 0.535-0.595	0.882, 0.831-0.936
<b>≥75 years old</b>					
Stroke					
Educational level					
Category 1	6809 (10.4%)	215813	3.2 (3.1-3.2)	Reference	Reference
Category 2	1484 (9.0%)	54340	2.7 (2.6-2.9)	0.938, 0.888-0.993	0.985, 0.931-1.042
Category 3	1096 (8.6%)	42333	2.6 (2.4-2.7)	0.905, 0.849-0.964	0.962, 0.895-1.035
All-cause mortality					
Educational level					
Category 1	34453 (52.8%)	221339	15.6 (15.4-15.7)	Reference	Reference
Category 2	6646 (40.3%)	55471	12.0 (11.7-12.3)	0.770, 0.750-0.791	0.959, 0.934-0.985
Category 3	4856 (37.8%)	43148	11.3 (10.9-11.6)	0.723, 0.702-0.746	1.057, 1.021-1.095

Risk estimates are subdistributional hazard ratios or hazard ratios with 95% confidence interval.

**Supplementary table 3.** Independent predictors of 10-year stroke in AF patients <65 years old.

Covariates	SHR, 95%CI
Cohort entry year	1.286, 1.260-1.312
Age	1.052, 1.044-1.062
Female gender	1.145, 1.025-1.279
Hypertension	1.119, 1.001-1.245
Congestive heart failure	1.241, 1.073-1.436
Alcohol abuse	1.312, 1.072-1.606
Vascular disease	1.216, 1.042-1.419
Maximum annual income	
≤12000 €	Reference
13000-26000 €	0.693, 0.606-0.793
27000-36000 €	0.712, 0.615-0.824
37000-53000 €	0.668, 0.572-0.781
≥54000 €	0.600, 0.504-0.713

SHR=subdistributional hazard ratio; CI=confidence interval.

**Supplementary table 4.** Independent predictors of 10-year stroke in AF patients 65-74 years old.

Covariates	SHR, 95%CI
Cohort entry year	1.110, 1.094-1.127
Age	1.046, 1.033-1.060
Female gender	1.116, 1.034-1.205
Diabetes	1.152, 1.056-1.256
Bleeding event	1.300, 1.162-1.454
Alcohol abuse	1.445, 1.206-1.731
Vascular disease	1.124, 1.020-1.239
Dementia	1.322, 1.011-1.730
Psychiatric disorder	1.186, 1.038-1.354
Maximum annual income	
≤4000 €	Reference
5000-12000 €	0.879, 0.795-0.973
13000-22000 €	0.780, 0.700-0.870
23000-39000 €	0.840, 0.747-0.945
≥40000 €	0.716, 0.625-0.820

SHR=subdistributional hazard ratio; CI=confidence interval.

**Supplementary table 5.** Independent predictors of 10-year stroke in AF patients  $\geq 75$  years old.

Covariates	SHR, 95%CI
Cohort entry year	0.950, 0.943-0.957
Age	1.022, 1.018-1.026
Female gender	0.892, 0.853-0.933
Hypertension	1.060, 1.006-1.116
Congestive heart failure	0.887, 0.845-0.932
Diabetes	1.100, 1.047-1.156
Kidney failure	0.889, 0.799-0.989
Bleeding event	1.113, 1.044-1.608
Alcohol abuse	1.336, 1.144-1.608
Dementia	0.914, 0.846-0.988

SHR=subdistributional hazard ratio; CI=confidence interval.

**Supplementary table 6.** Independent predictors of 10-year all-cause mortality in AF patients <65 years old.

Covariates	HR, 95% CI
Cohort entry year	0.989, 0.979-0.100
Age	1.049, 1.045-1.053
Female gender	1.798, 1.684-1.920
Diabetes	1.484, 1.389-1.585
Dyslipidemia	0.786, 0.736-0.839
Congestive heart failure	2.182, 2.044-2.329
Kidney failure	2.497, 2.242-2.781
Bleeding event	1.605, 1.482-1.585
Liver disease	2.695, 2.316-3.136
Vascular disease	1.321, 1.257-1.389
Alcohol abuse	1.114, 1.013-1.225
Dementia	1.403, 1.022-1.925
Psychiatric disorder	1.834, 1.693-1.986
Maximum annual income	
$\leq 12000$ €	Reference
13000-26000 €	0.600, 0.560-0.644
27000-36000 €	0.428, 0.392-0.468
37000-53000 €	0.359, 0.326-0.396
$\geq 54000$ €	0.299, 0.268-0.334
Educational status	
Primary school	Reference
Secondary school	0.881, 0.831-0.935
Higher education	0.800, 0.737-0.867

HR=hazard ratio; CI=confidence interval.



**Supplementary table 7.** Independent predictors of 10-year all-cause mortality in AF patients 65-74 years old.

Covariates	HR, 95%CI
Cohort entry year	0.980, 0.973-0.988
Age	1.054, 1.046-1.061
Female gender	1.779, 1.706-1.856
Diabetes	1.403, 1.342-1.467
Congestive heart failure	2.033, 1.942-2.128
Kidney failure	2.133, 1.972-2.306
Bleeding event	1.438, 1.358-1.522
Liver disease	2.271, 1.960-2.630
Vascular disease	1.321, 1.257-1.389
Dementia	2.327, 2.068-2.618
Psychiatric disorder	1.573, 1.473-1.680
Maximum annual income	
≤4000 €	Reference
5000-12000 €	0.681, 0.647-0.717
13000-22000 €	0.567, 0.536-0.599
23000-39000 €	0.488, 0.457-0.521
≥40000 €	0.411, 0.382-0.443
Educational status	
Primary school	Reference
Secondary school	0.921, 0.881-0.964
Higher education	0.882, 0.831-0.936

HR=hazard ratio; CI=confidence interval.

**Supplementary table 8.** Independent predictors of 10-year all-cause mortality in AF patients ≥75 years old.

Covariates	HR, 95%CI
Cohort entry year	0.968, 0.965-0.971
Age	1.096, 1.094-1.098
Female gender	1.407, 1.379-1.436
Diabetes	1.230, 1.203-1.258
Congestive heart failure	1.689, 1.656-1.724
Kidney failure	1.658, 1.596-1.722
Bleeding event	1.249, 1.215-1.283
Liver disease	2.275, 1.960-2.639
Alcohol abuse	1.119, 1.030-1.215
Vascular disease	1.125, 1.100-1.151
Prior myocardial infarction	1.262, 1.223-1.302
Dementia	1.782, 1.731-1.835
Psychiatric disorder	1.222, 1.183-1.263
Maximum annual income	
<1000 €	Reference
1000-4000 €	0.841, 0.820-0.863
5000-10000 €	0.730, 0.709-0.751
11000-21000 €	0.690, 0.670-0.711
≥22000 €	0.611, 0.590-0.632
Educational status	
Primary school	Reference
Secondary school	0.959, 0.934-0.985
Higher education	1.057, 1.021-1.095

HR=hazard ratio; CI=confidence interval.

**Supplementary table 9.** Characteristics of patients aged <65 years in unmatched and propensity score matched cohorts according the lowest and highest quintiles of maximum annual income.

	Maximum annual income ≤12000 € n=10768	Maximum annual income ≥54000 € n=10152	Standardized differences	Maximum annual income ≤12000 € n=4237	Maximum annual income ≥54000 € n=4237	Standardized differences
<b>Demographics</b>						
Mean age, years	56.4±9.2	53.6±8.7	0.303	55.1±10.9	54.9±8.1	0.002
Female gender	3675 (36.2)	1451 (13.5)	0.545	681 (16.1)	787 (18.6)	0.066
Mean cohort entry year	2012±3	2013±3	0.318	2012±3	2012±3	0.025
<b>Highest educational level</b>						
			1.383			0.050
Category 1	4648 (45.8)	1192 (11.1)		1275 (30.1)	1181 (27.9)	
Category 2	4517 (44.5)	2824 (26.2)		2029 (47.9)	2112 (49.8)	
Category 3	987 (9.7)	6752 (62.7)		933 (22.0)	944 (22.3)	
<b>Comorbidities</b>						
Abnormal liver function	159 (1.6)	30 (0.3)	0.135	23 (0.5)	25 (0.6)	0.006
Abnormal renal function	373 (3.7)	125 (1.2)	0.164	79 (1.9)	78 (1.8)	0.002
Alcohol abuse	1901 (18.7)	300 (2.8)	0.532	144 (3.4)	261 (6.2)	0.130
Diabetes	2211 (21.8)	1099 (10.2)	0.320	602 (14.2)	608 (14.3)	0.004
Dyslipidemia	3324 (32.7)	2905 (27.0)	0.126	1285 (30.3)	1245 (29.4)	0.021
Heart failure	1525 (15.0)	544 (5.1)	0.336	358 (8.4)	347 (8.2)	0.009
Hypertension	6307 (62.1)	5631 (52.3)	0.200	2393 (56.5)	2362 (55.7)	0.015
Prior bleeding	1051 (10.4)	445 (4.1)	0.242	247 (5.8)	250 (5.9)	0.003
Prior myocardial infarction	643 (6.39)	341 (3.2)	0.149	225 (5.3)	198 (4.7)	0.029
Vascular disease	1869 (18.4)	977 (9.1)	0.274	600 (14.2)	572 (13.5)	0.019
Dementia	74 (0.7)	8 (0.1)	0.104	5 (0.1)	8 (0.2)	0.018
Psychiatric disorder	3740 (36.8)	758 (7.0)	0.772	464 (11.0)	593 (14.0)	0.092
CHA <sub>2</sub> DS <sub>2</sub> -VASc score	1.5±1.1	0.9±0.9	0.643	1.1±0.9	1.1±0.9	0.010
OAC before stroke occurrence	6017 (59.3)	5956 (55.3)	0.080	2598 (61.3)	2555 (60.3)	0.021

Values denote n (%) or mean (standard deviation). Abbreviations: CHA<sub>2</sub>DS<sub>2</sub>-VASc, congestive heart failure, hypertension, age ≥75 years, diabetes, history of stroke or transient ischemic attack, vascular disease, age 65-74 years, sex category (female); OAC, oral anticoagulant.

**Supplementary table 10.** Characteristics of patients aged 65-74 years in unmatched and propensity score matched cohorts according the lowest and highest quintiles of maximum annual income.

	Maximum annual income ≤4000 € n=10663	Maximum annual income ≥40000 € n=11098	Standardized differences	Maximum annual income ≤4000 € n=4470	Maximum annual income ≥40000 € n=4470	Standardized differences
<b>Demographics</b>						
Mean age, years	70.3±2.8	69.1±2.8	0.432	69.5±2.8	69.4±2.8	0.034
Female gender	6401 (60.0)	2695 (24.3)	0.777	1648 (36.9)	1499 (33.5)	0.070
Mean cohort entry year	2012±3	2014±3	0.618	2013±3	2013±3	0.070
<b>Highest educational level</b>						
Category 1	7119 (66.8)	2434 (21.9)	1.000	2264 (50.6)	2292 (51.3)	0.065
Category 2	3009 (28.2)	2388 (21.5)		1674 (37.4)	1735 (38.8)	
Category 3	535 (5.0)	6276 (56.6)		532 (11.9)	443 (9.9)	
<b>Comorbidities</b>						
Abnormal liver function	79 (0.7)	74 (0.7)	0.009	37 (0.8)	34 (0.8)	0.008
Abnormal renal function	429 (4.0)	300 (2.7)	0.073	157 (3.5)	164 (3.7)	0.008
Alcohol abuse	714 (6.7)	347 (3.1)	0.165	252 (5.6)	227 (5.1)	0.025
Diabetes	2849 (26.7)	2316 (20.9)	0.134	1117 (25.0)	1132 (25.3)	0.008
Dyslipidemia	5136 (48.2)	5517 (49.7)	0.031	2235 (50.0)	2226 (49.8)	0.004
Heart failure	1977 (18.5)	868 (7.8)	0.321	571 (12.8)	545 (12.2)	0.018
Hypertension	7820 (73.3)	8021 (72.3)	0.024	3267 (73.1)	3293 (73.7)	0.014
Prior bleeding	1084 (10.2)	942 (8.5)	0.060	433 (9.7)	454 (10.2)	0.002
Prior myocardial infarction	892 (8.4)	706 (6.4)	0.077	333 (7.4)	332 (7.4)	0.000
Vascular disease	2850 (26.7)	2259 (20.4)	0.151	1093 (24.5)	1068 (23.9)	0.013
Dementia	183 (1.7)	61 (0.5)	0.110	44 (1.0)	43 (1.0)	0.002
Psychiatric disorder	1983 (18.6)	925 (8.3)	0.305	600 (13.4)	575 (12.9)	0.017
CHA <sub>2</sub> DS <sub>2</sub> -VASc score	3.0±1.0	2.4±1.0	0.600	2.6±1.0	2.6±1.0	0.027
OAC before stroke occurrence	8031 (75.3)	9252 (83.4)	0.200	3636 (81.3)	3600 (80.5)	0.021

Values denote n (%) or mean (standard deviation). Abbreviations: CHA<sub>2</sub>DS<sub>2</sub>-VASc, congestive heart failure, hypertension, age ≥75 years, diabetes, history of stroke or transient ischemic attack, vascular disease, age 65-74 years, sex category (female); OAC, oral anticoagulant. Vascular disease: prior myocardial infarction and/or peripheral vascular disease.

**Supplementary table 11.** Characteristics of patients aged  $\geq 75$  years in unmatched and propensity score matched cohorts according the lowest and highest quintiles of maximum annual income.

	Maximum annual income $\leq 4000$ € n=21057	Maximum annual income $\geq 40000$ € n=18816	Standardized differences	Maximum annual income $< 1000$ € n=9413	Maximum annual income $\geq 22000$ € n=9413	Standardized differences
<b>Demographics</b>						
Mean age, years	84.9 $\pm$ 5.7	81.8 $\pm$ 5.3	0.553	82.8 $\pm$ 5.2	82.6 $\pm$ 5.4	0.068
Female gender	4725 (22.4)	10689 (56.8)	0.750	3774 (40.1)	4549 (48.3)	0.166
Mean cohort entry year	2012 $\pm$ 3	2014 $\pm$ 3	0.616	2013 $\pm$ 3	2013 $\pm$ 3	0.097
<b>Highest educational level</b>						
Category 1	17928 (85.1)	7032 (37.4)	1.000	6931 (73.6)	6879 (73.1)	0.153
Category 2	2770 (13.2)	3251 (17.3)		2123 (22.6)	2392 (25.4)	
Category 3	359 (1.7)	8533 (45.3)		359 (3.8)	142 (1.5)	
<b>Comorbidities</b>						
Abnormal liver function	50 (0.2)	66 (0.4)	0.021	29 (0.3)	33 (0.4)	0.007
Abnormal renal function	1033 (4.9)	947 (5.0)	0.006	471 (5.0)	490 (5.2)	0.009
Alcohol abuse	235 (1.1)	308 (1.6)	0.045	151 (1.6)	153 (1.6)	0.002
Diabetes	4882 (23.2)	3807 (20.2)	0.072	1977 (21.0)	2056 (21.8)	0.020
Dyslipidemia	8944 (42.5)	10218 (54.3)	0.239	4856 (51.6)	4998 (53.1)	0.030
Heart failure	6850 (32.5)	3382 (18.0)	0.340	2157 (22.9)	2049 (21.8)	0.028
Hypertension	16714 (79.4)	14782 (78.6)	0.020	7477 (79.4)	7471 (79.4)	0.002
Prior bleeding	2387 (11.3)	2396 (12.7)	0.042	1107 (11.8)	1176 (12.5)	0.022
Prior myocardial infarction	2628 (12.5)	1815 (9.6)	0.090	956 (10.2)	994 (10.6)	0.013
Vascular disease	7930 (37.7)	6195 (32.9)	0.099	3240 (34.4)	3337 (35.5)	0.022
Dementia	2321 (11.0)	1223 (6.5)	0.160	737 (7.8)	724 (7.7)	0.005
Psychiatric disorder	2253 (10.7)	1822 (9.7)	0.034	969 (10.3)	981 (10.4)	0.004
CHA <sub>2</sub> DS <sub>2</sub> -VASc score	4.5 $\pm$ 1.1	3.9 $\pm$ 1.1	0.542	4.1 $\pm$ 1.1	4.1 $\pm$ 1.1	0.073
OAC before stroke occurrence	12698 (60.3)	14614 (77.7)	0.382	6931 (73.6)	7056 (75.0)	0.030

Values denote n (%) or mean (standard deviation). Abbreviations: CHA<sub>2</sub>DS<sub>2</sub>-VASc, congestive heart failure, hypertension, age  $\geq 75$  years, diabetes, history of stroke or transient ischemic attack, vascular disease, age 65-74 years, sex category (female); OAC, oral anticoagulant. Vascular disease: prior myocardial infarction and/or peripheral vascular disease.