

Understanding end-of-life multimorbidity: An analysis of Multiple Causes of Death in Denmark

Cosmo Strozza¹, Elizaveta Ukolova¹, Marie-Pier Bergeron Boucher¹

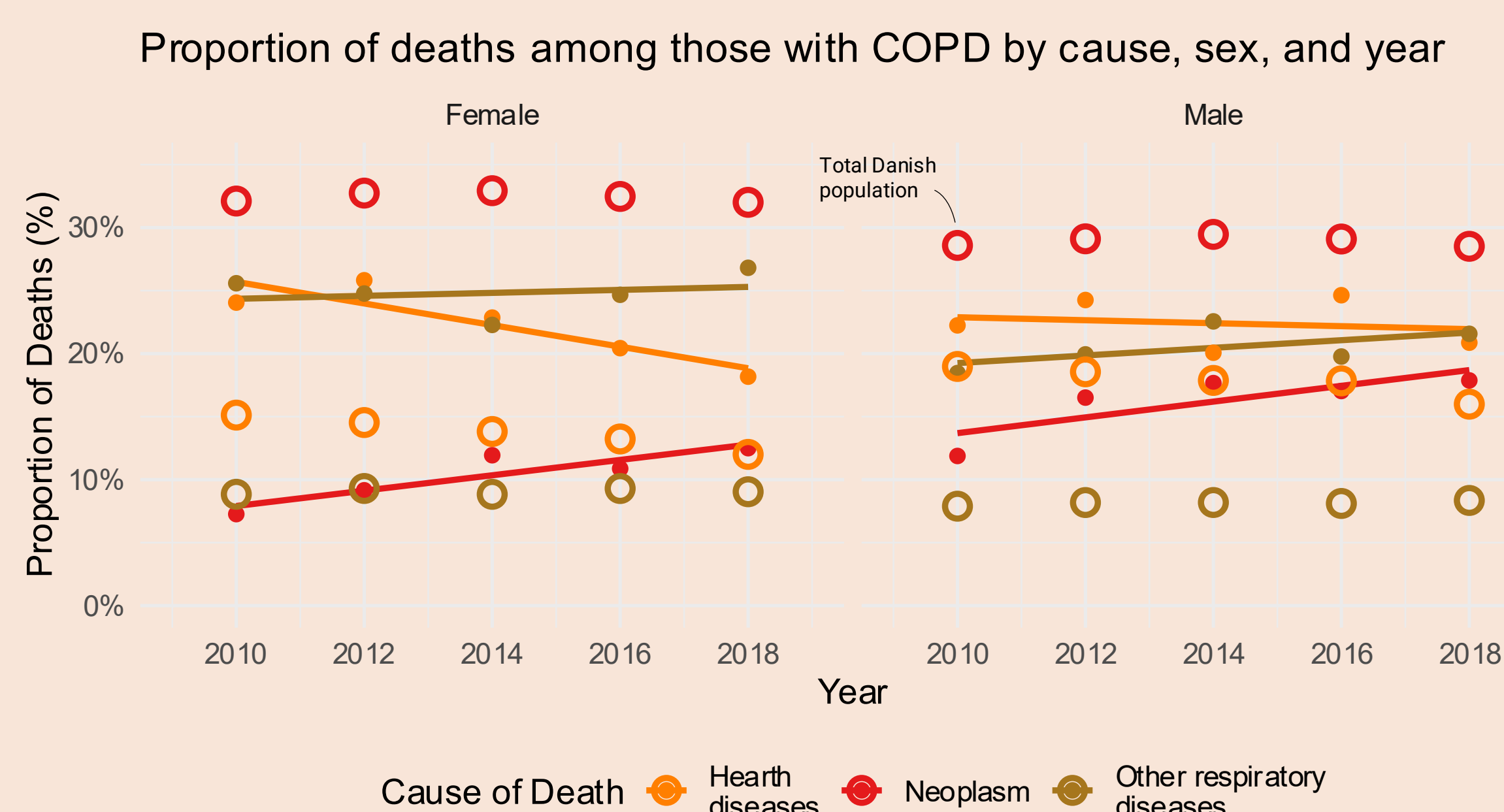
¹Interdisciplinary Centre on Population Dynamics, University of Southern Denmark, Odense, Denmark

Are Multiple Cause of Death (MCoD) data representative of end of life health conditions? No. The chronic disease appears somewhere on the death certificate, at most, half the time (in the case of dementia), but usually less.

Do MCoD data better represent the chain of events leading to death? Maybe. The appearance rate is much higher when looking at specific underlying causes of death associated with the chronic disease. However, this is not the case for diabetes.

Results: COPD

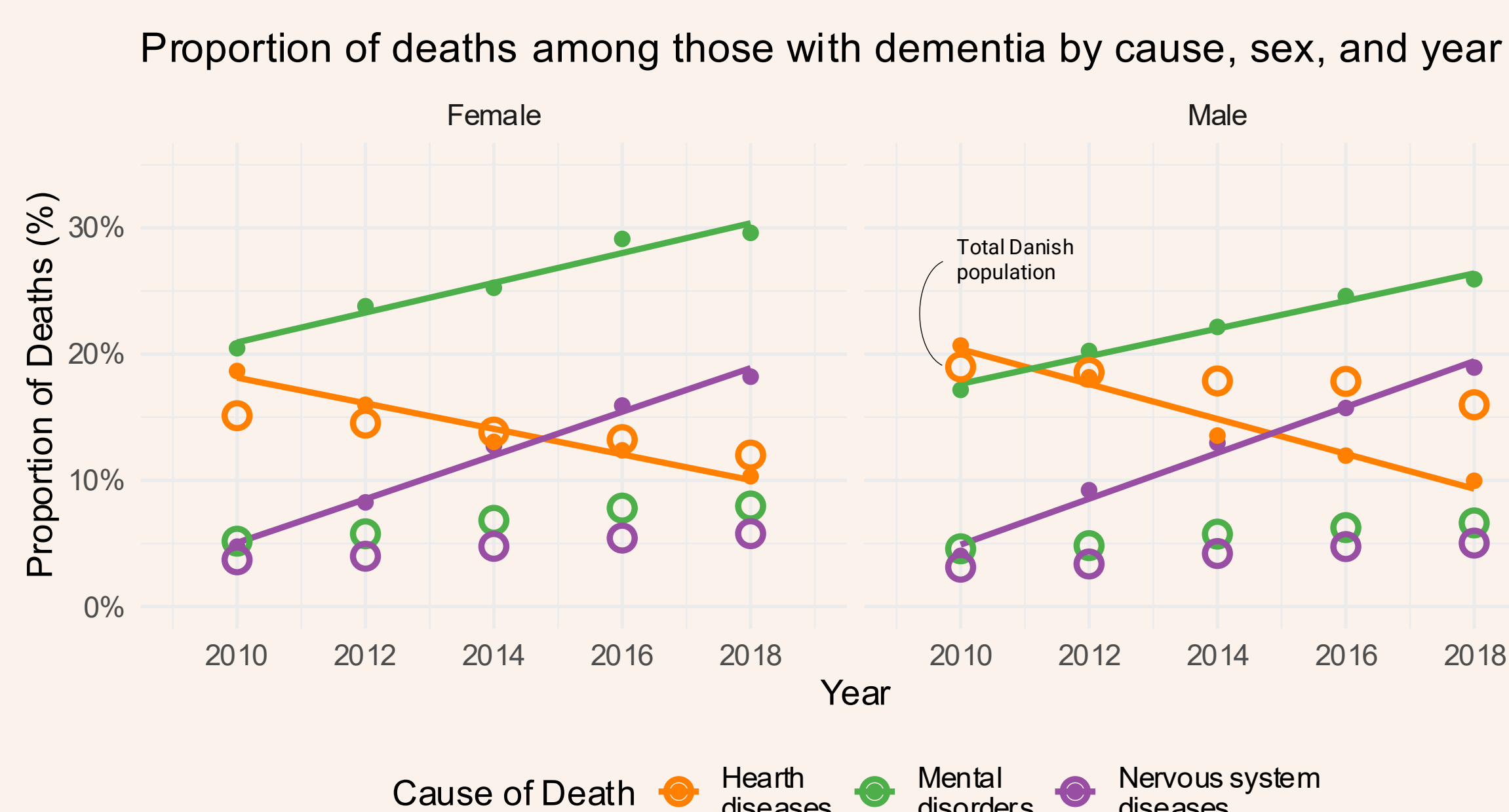
How many people with COPD had it listed on their death certificate?			
Has COPD	n		%
No	15739		64,9
Yes	8496		35,1
Placement on death certificate			
Primary: 1.a	645		7,6
Primary: 1.b	1347		15,9
Primary: 1.c	518		6,1
Primary: 1.d	1488		17,5
Secondary: 2.1	2929		34,5
Secondary: 2.2	1075		12,7
Secondary: 2.3	356		4,2
Secondary: 2.4	133		1,6



How many people with COPD had it listed on their death certificate by underlying Cause of Death (CoD)?				
CoD group	CoD name	n		%
1	Infectious diseases	91		18,6
2	Neoplasm	1485		19,7
3	Diseases of blood	22		23,9
4	Endocrine diseases	159		25,2
5	Mental disorders	104		16,6
6	Nervous system diseases	80		16,4
7	Hearth diseases	1115		29,7
8	Cerebrovascular diseases	205		18,9
9	Other circulatory diseases	116		23,1
10	Acute respiratory diseases	19		2,3
11	Other respiratory diseases	4562		87,4
12	Digestive system diseases	285		28,1
13	Skin and musculoskeletal diseases	43		23,5
14	Genitourinary and pregnancy diseases	97		23,7
15	Perinatal and congenital	8		40,0
16	External causes	105		26,4
17	Ill-defined causes	.		.

Results: Dementia

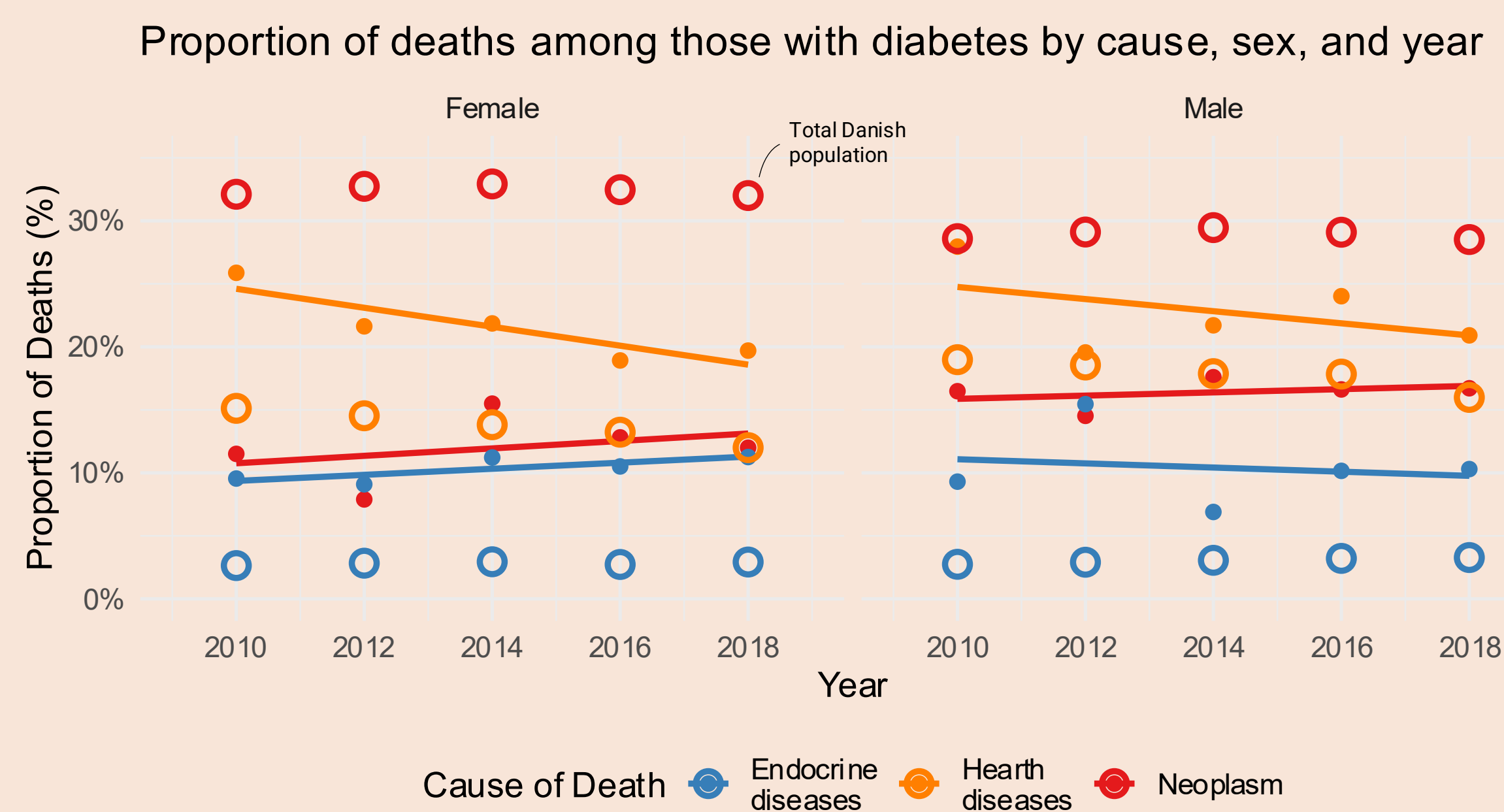
How many people with dementia had it listed on their death certificate?			
Has dementia	n		%
No	20054		44,8
Yes	24665		55,2
Placement on death certificate			
Primary: 1.a	5323		21,6
Primary: 1.b	2694		10,9
Primary: 1.c	779		3,2
Primary: 1.d	3776		15,3
Secondary: 2.1	8752		35,5
Secondary: 2.2	2300		9,3
Secondary: 2.3	745		3,0
Secondary: 2.4	271		1,1



How many people with dementia had it listed on their death certificate by underlying Cause of Death (CoD)?				
CoD group	CoD name	n		%
1	Infectious diseases	263		28,6
2	Neoplasm	1598		34,8
3	Diseases of blood	51		31,7
4	Endocrine diseases	446		34,9
5	Mental disorders	10480		98,3
6	Nervous system diseases	5944		84,0
7	Hearth diseases	2111		39,6
8	Cerebrovascular diseases	1387		39,4
9	Other circulatory diseases	175		35,9
10	Acute respiratory diseases	95		5,2
11	Other respiratory diseases	883		34,0
12	Digestive system diseases	435		34,0
13	Skin and musculoskeletal diseases	85		32,7
14	Genitourinary and pregnancy diseases	146		18,9
15	Perinatal and congenital	48		50,0
16	External causes	514		48,2
17	Ill-defined causes	4		0,1

Results: Diabetes

How many people with diabetes had it listed on their death certificate?			
Has diabetes	n		%
FALSE	17381		85,9
TRUE	2855		14,1
Placement on death certificate			
Primary: 1.a	6		0,2
Primary: 1.b	62		2,2
Primary: 1.c	72		2,5
Primary: 1.d	111		3,9
Secondary: 2.1	1287		45,1
Secondary: 2.2	866		30,4
Secondary: 2.3	359		12,6
Secondary: 2.4	90		3,2



How many people with diabetes had it listed on their death certificate by underlying Cause of Death (CoD)?				
CoD group	CoD name	n		%
1	Infectious diseases	51		11,1
2	Neoplasm	679		9,5
3	Diseases of blood	16		18,2
4	Endocrine diseases	498		36,7
5	Mental disorders	102		12,8
6	Nervous system diseases	81		13,3
7	Hearth diseases	544		17,0
8	Cerebrovascular diseases	179		15,6
9	Other circulatory diseases	49		15,2
10	Acute respiratory diseases	70		11,7
11	Other respiratory diseases	321		16,6
12	Digestive system diseases	154		16,3
13	Skin and musculoskeletal diseases	15		12,3
14	Genitourinary and pregnancy diseases	46		15,3
15	Perinatal and congenital	4		20,0
16	External causes	46		12,9
17	Ill-defined causes	.		.

Data

- Danish cause of death and chronic diseases registers via Statistics Denmark
- **Study population:** Danish residents from 2010 who are:
 - 50 years and older
 - Diagnosed with: COPD, dementia, or diabetes

Contact and Acknowledgements

✉ cstrozza@health.sdu.dk
 🦋 @cosmostrozza

SCOR
 FOUNDATION FOR SCIENCE

CPop

SDU

Methods

Exploratory analysis to investigate:

- Number of times (%) each chronic disease appears on the death certificate (in any position)
- Location of the chronic disease on the death certificate (%), for those who have the chronic disease on the death certificate
- Number of times (%) each chronic disease appears on the death certificate (anywhere) by underlying cause of death

Multiple decrement life tables computed by:

- Sex
- Period (2-year): 2010-11 to 2018-19
- Chronic disease: COPD, dementia, and diabetes
- Cause of death: Human Cause of Death Database (HCD), 17 categories