Contribution of chronic diseases to the burden of disability in the Netherlands

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Background

Insight in the extent specific diseases contribute to the societal burden of disability is of major importance to set priorities in the field of public health.

Research questions

Which diseases contribute most to the burden of disability in terms of:

1. Prevalence of disability

2. Life expectancy with disability

Methods: data

Pooled cross-sectional data from the Dutch Permanent
Life Situation Survey 2001-2007 (Statistics Netherlands).

Self-reported information on:

-Disease

-Disability (55+)

-Age

-Sex

Disability items

1. walking stairs up and down

2. walking outside

3. entering/leaving house

4. sitting down/getting up from chair

5. moving on the same floor

6. getting in/out of bed

7. eating/drinking

8. getting (un) dressed

9. washing face/hands

10. washing completely

Disability

At least one item answered with 'with major difficulty' or 'only with help'.

Methods: disease groups

#	Disease	Questions
1	**Stroke**	-Ever had cerebral haemorrhage / infarction?
2	**MI**	-Ever had myocardial infarction? -Myocardial infarction last 12 months? -Other severe myocardial disorder last 12 months?
3	**CVD legs/abdomen**	-Narrowing of vessels in legs or abdomen last 12 months?
4	**DM**	-Do you have diabetes?
5	**Backpain**	-Severe back complaints last 12 months?
6	**Arthritis**	-Joint degeneration last 12 months? -Chronic joint inflamation last 12 months?
7	**Neck/upper limb joints**	-Disorder of neck or shoulder last 12 months? -Disorder of elbow, wrist or hand last 12 months?
8	**Cancer (excl. skin)**	-Ever had some form of cancer? -Cancer in last 12 months?
9	**COPD**	-Astma, chronic bronchitis, emphysema or chronic non-specific lungdisease last 12 months?
10	**Other**	-Migraine or severe headache last 12 months? -Severe or persistent disorder of intestine for more than 3 months?

Methods: calculations

Attribution of disability to diseases: multivariate additive regression model yielding cause specific disability by age and sex (Nusselder & Looman; Demography 2004).

The cause specific disability is determined by

1. disease prevalence

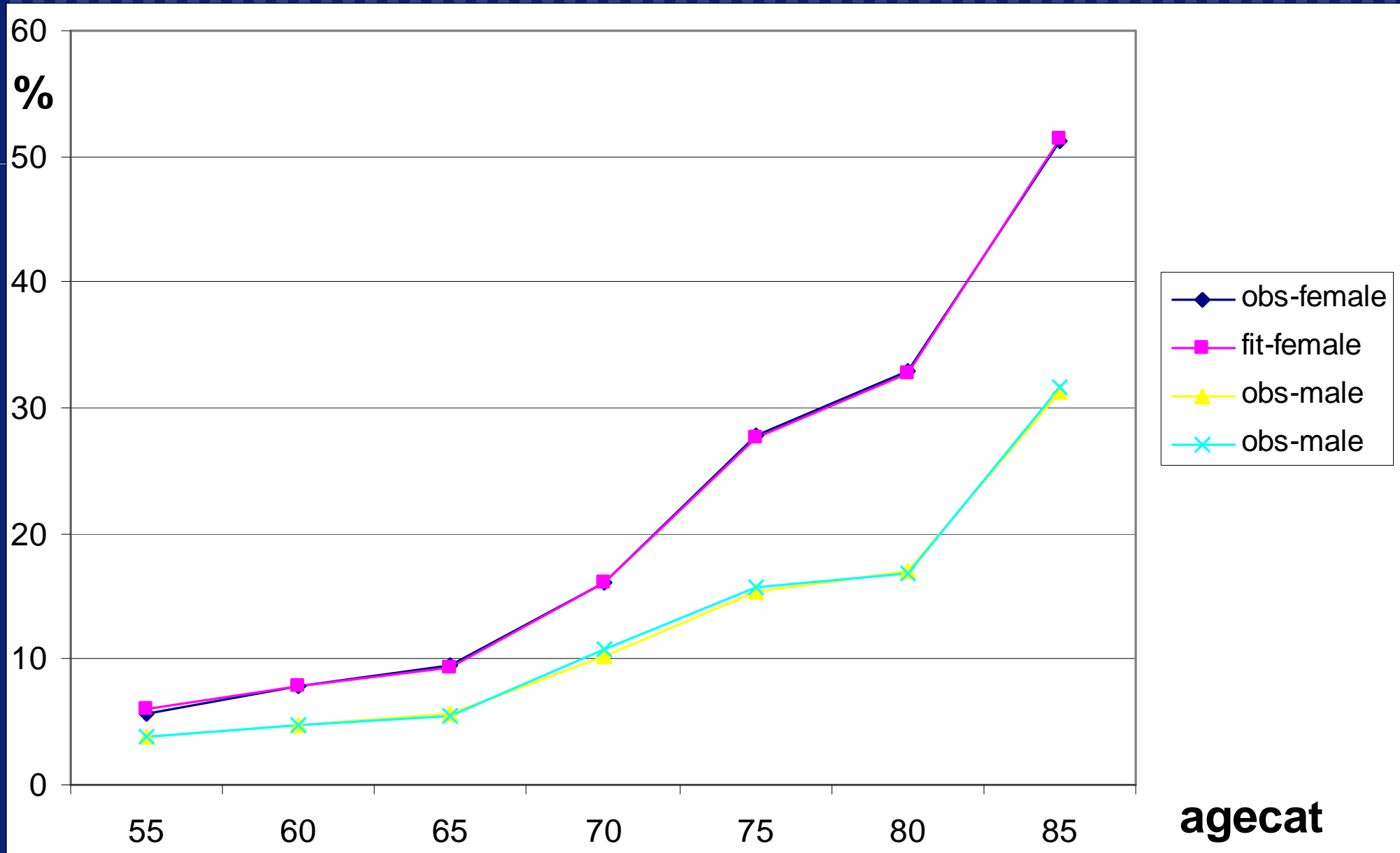2. disabling impact of specific diseases (disability rate if disease is present)

Results: response and number of subjects used in analyses

|	YEAR							total
	2001	2002	2003	2004	2005	2006	2007	
approached	15,664	15,930	16,950	18,122	15,963	14,477	13,660	110,766
response	9,676	9,745	9,876	11,117	10,378	9,607	8,741	69,140 (62%)
N 55+ (%)	2,187	2,337	2,506	2,783	2,673	2,598	2,320	17,404 (25%)
No disease info	418	516	394	365	322	297	264	2,576 (15%)
Used in analysis	1,769	1,821	2,112	2,418	2,351	2,301	2,056	14,828
ADL disabled	291	301	300	392	364	309	297	2,254 (15%)

Results: prevalence of chronic diseases (%)

|	Stroke	MI	CVD legs abdomen	DM	Backpain	Arthritis	Neck/ upper limb joints	Cancer	COPD	Other
all	5.2	11.2	5.3	9.5	14.4	29.1	18.4	8.2	8.9	12.3
sex										
male	6.1	15.3	5.8	10.1	13.3	20.7	14.0	7.1	8.8	8.4
female	4.4	7.3	4.8	8.9	15.5	37.2	22.5	9.3	9.0	16.0
age										
55-64.9	3.4	6.5	2.9	6.6	14.9	22.7	18.8	5.7	7.2	13.6
65-79.9	5.3	12.0	5.6	9.6	11.1	26.6	14.6	8.1	8.3	9.0
>=80	8.8	17.5	9.8	12.9	14.9	44.0	17.5	12.4	11.0	10.8

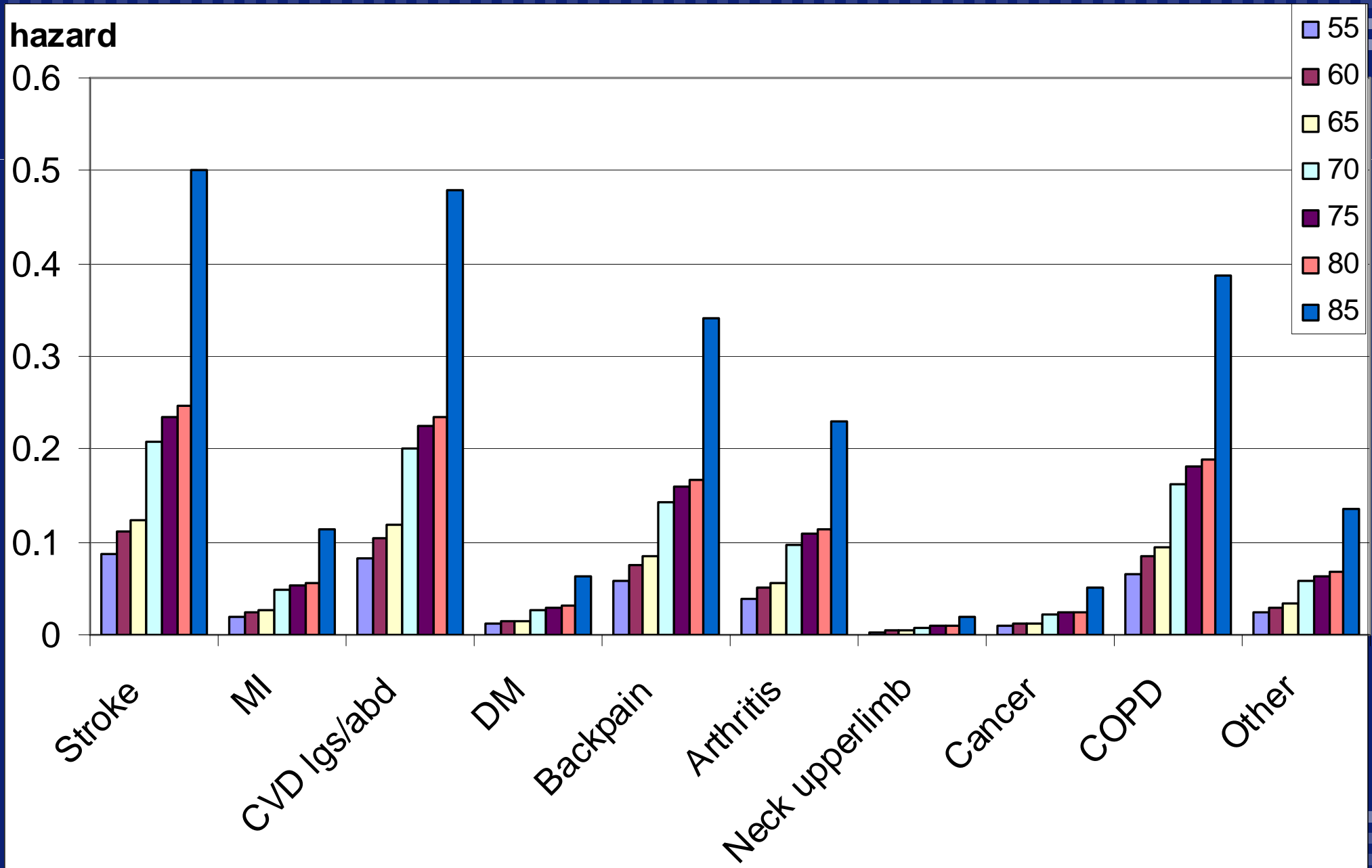# Results: prevalence of disability - observed and fitted

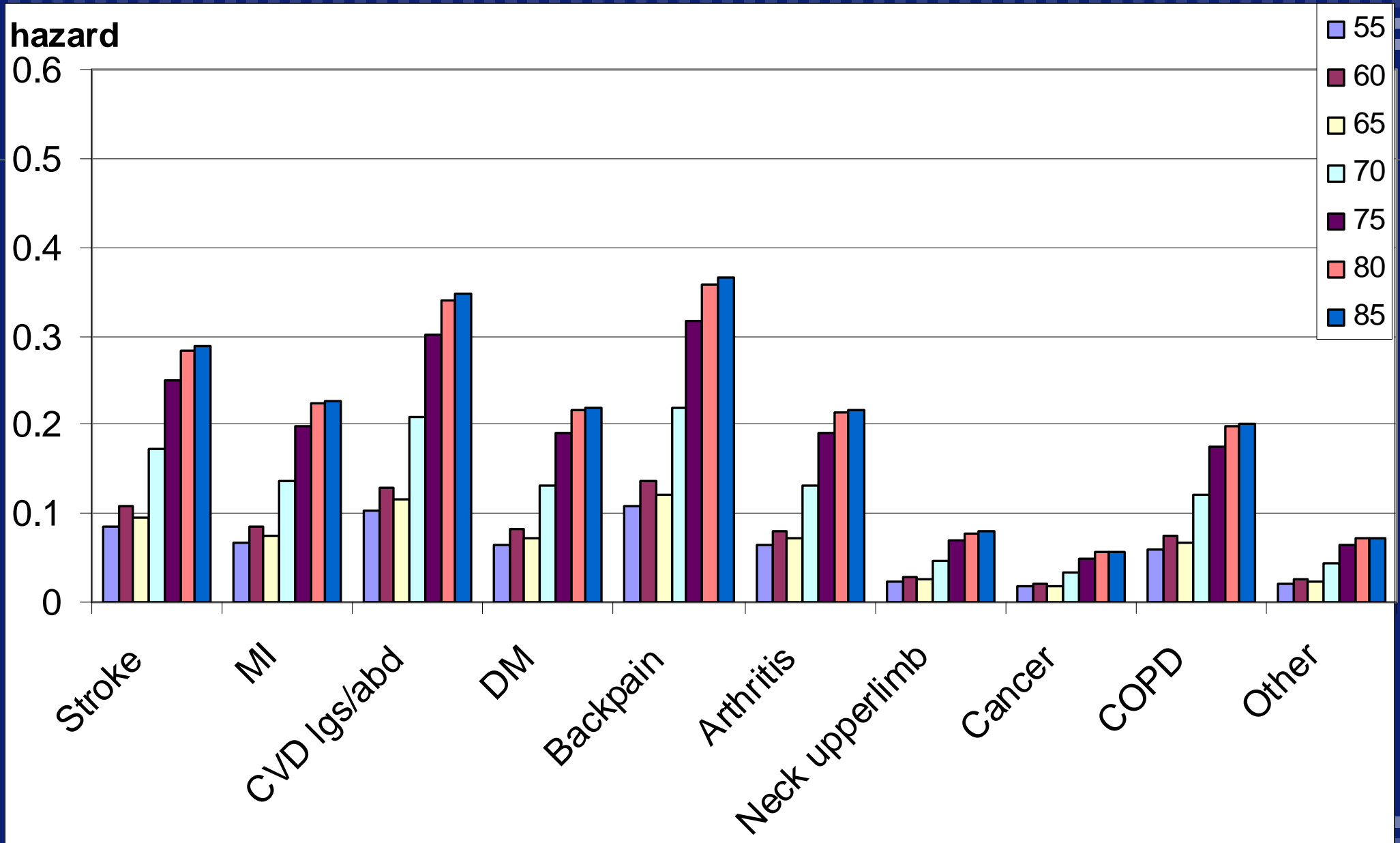**Results: background effect (age effect)**
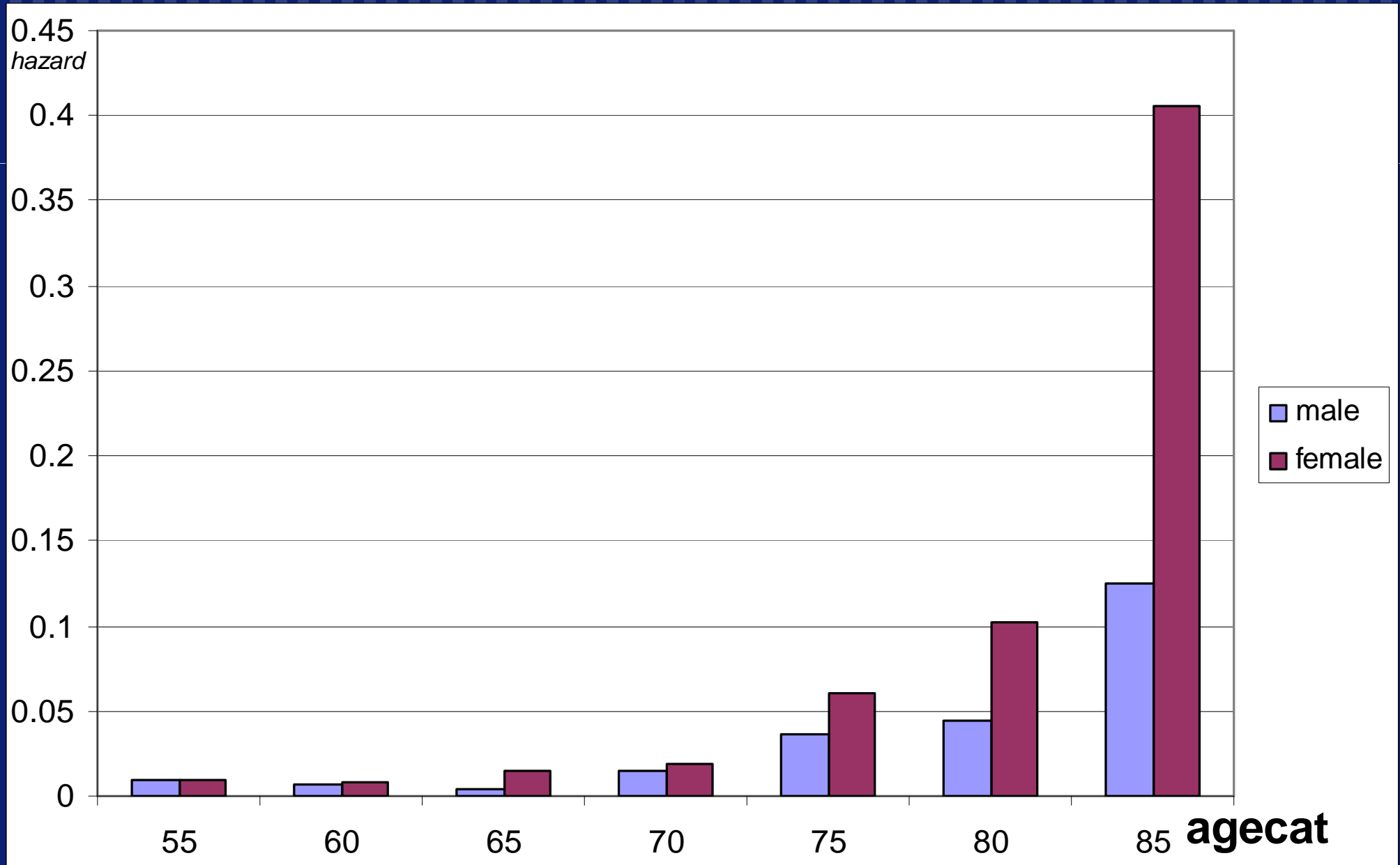
Results: disabling impact estimated for specific diseases

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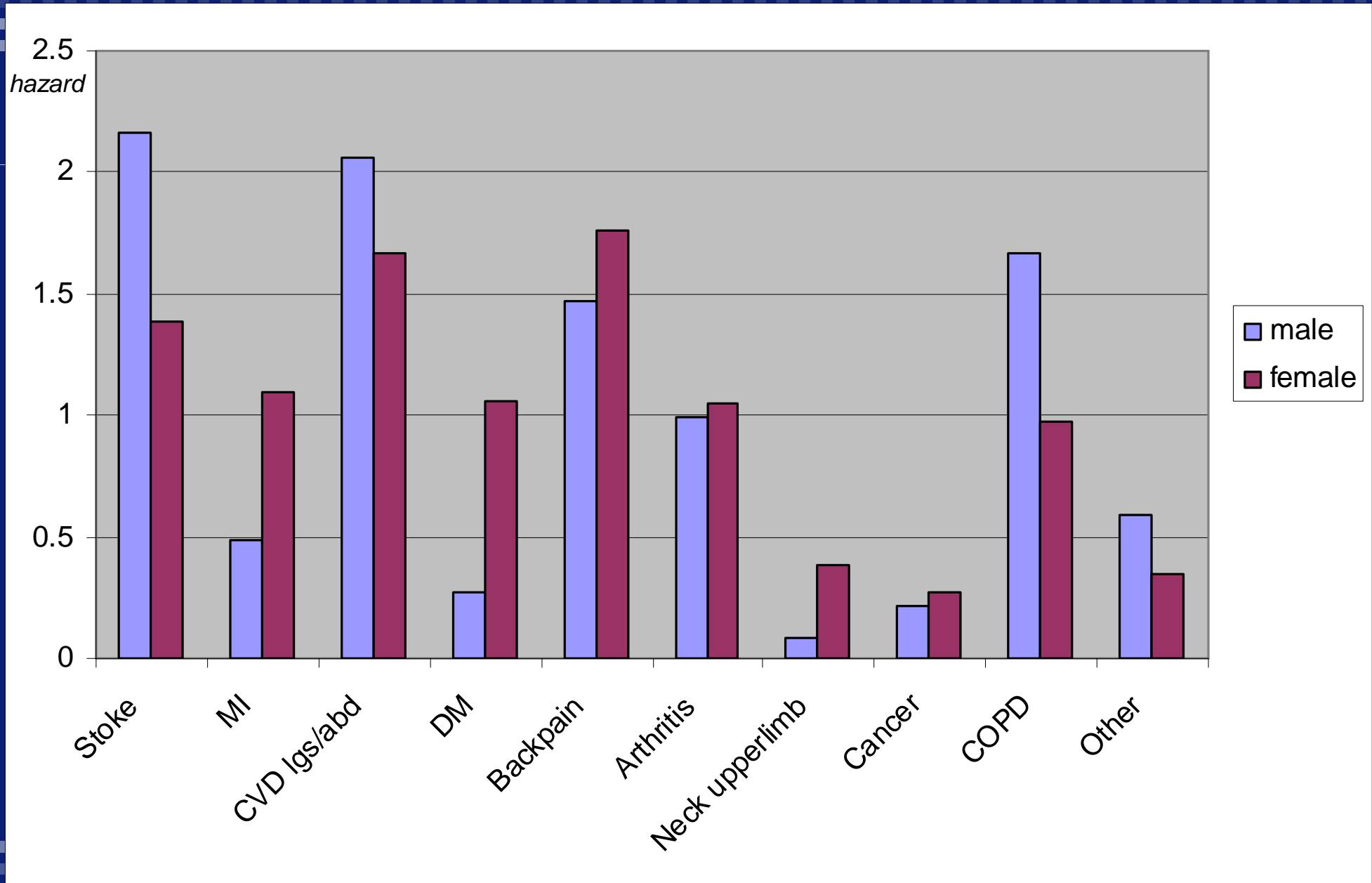
Results: disabling impact by age - male

Results: disabling impact by age - female

Results: disability prevalence (%) by cause - male

				age			
male	55	60	65	70	75	80	85
Stroke	0.3	0.4	0.7	1.3	2.3	2.1	2.8
MI	0.1	0.3	0.5	0.9	1.1	1.1	2.1
CVD lgs/abd	0.3	0.4	0.7	1.3	1.8	1.8	3.2
DM	0.1	0.1	0.2	0.3	0.3	0.4	0.4
Backpain	0.9	1.1	0.9	1.3	1.7	1.4	3.1
Arthritis	0.6	0.9	1.1	2.0	2.3	3.0	5.1
Neck upperlimb	0.1	0.1	0.1	0.1	0.1	0.1	0.2
Cancer	0.0	0.1	0.1	0.2	0.2	0.3	0.6
COPD	0.4	0.6	0.7	1.5	2.1	2.2	2.6
Other	0.2	0.2	0.2	0.4	0.4	0.4	1.1
Background	0.9	0.7	0.4	1.5	3.3	4.1	10.3

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Results: disability prevalence (%) by cause - female

female	age 55	60	65	70	75	80	85
Stroke	0.2	0.4	0.3	0.8	1.3	1.6	1.4
MI	0.2	0.3	0.6	1.0	1.8	2.0	2.3
CVD lgs/abd	0.2	0.3	0.5	0.9	1.7	2.2	1.8
DM	0.3	0.5	0.6	1.3	1.9	2.2	1.7
Backpain	1.4	1.8	1.7	2.4	4.5	3.8	4.6
Arthritis	1.6	2.3	2.5	4.9	7.4	8.5	7.9
Neck upperlimb	0.5	0.6	0.6	0.8	1.2	1.3	1.1
Cancer	0.1	0.2	0.2	0.3	0.4	0.6	0.3
COPD	0.4	0.5	0.6	1.1	1.4	1.5	1.0
Other	0.4	0.4	0.3	0.5	0.7	0.7	0.5
Background	0.8	0.8	1.4	1.8	5.1	8.3	28.7

Results: Prevalence of disability by cause

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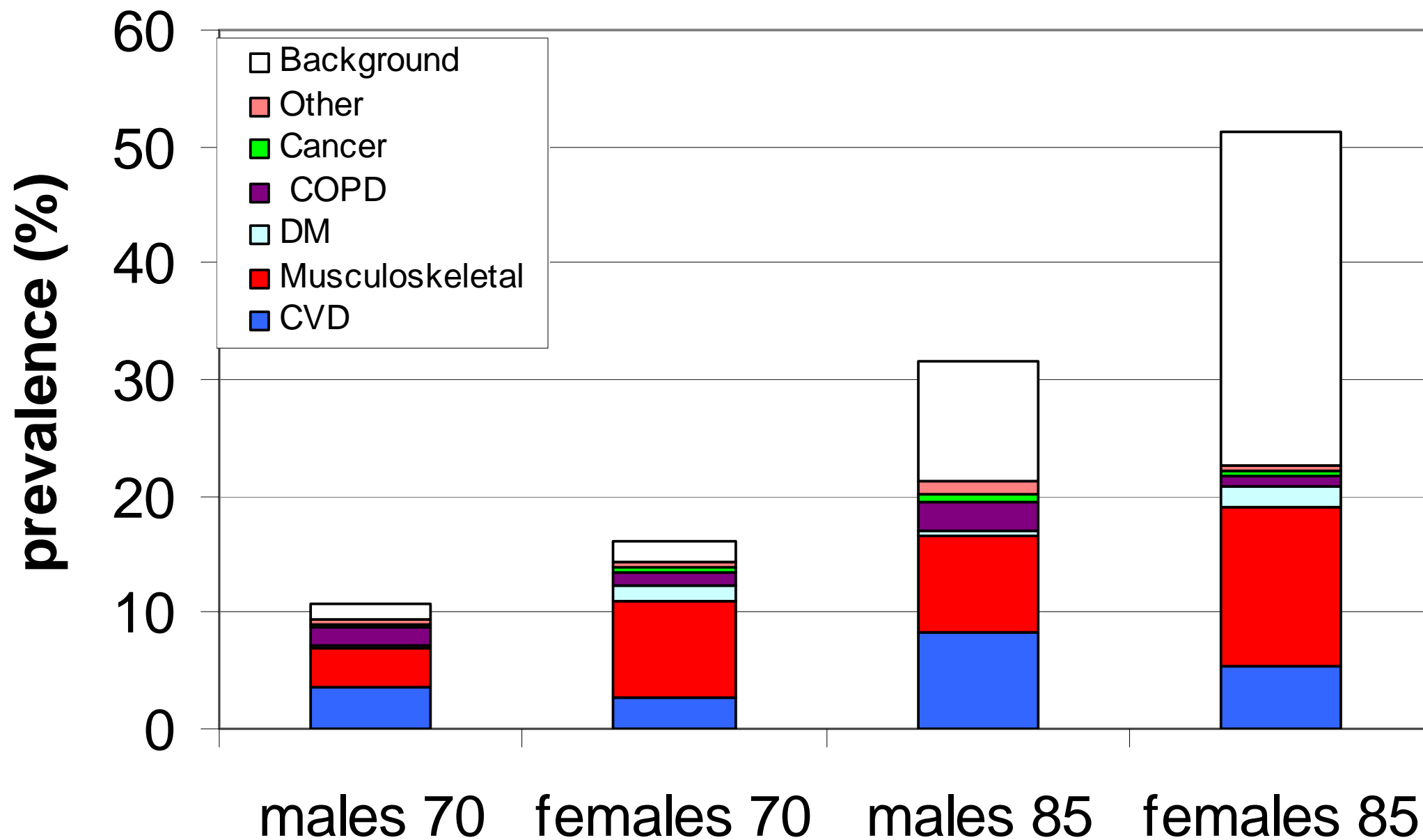
Results: LED at age 55 by cause
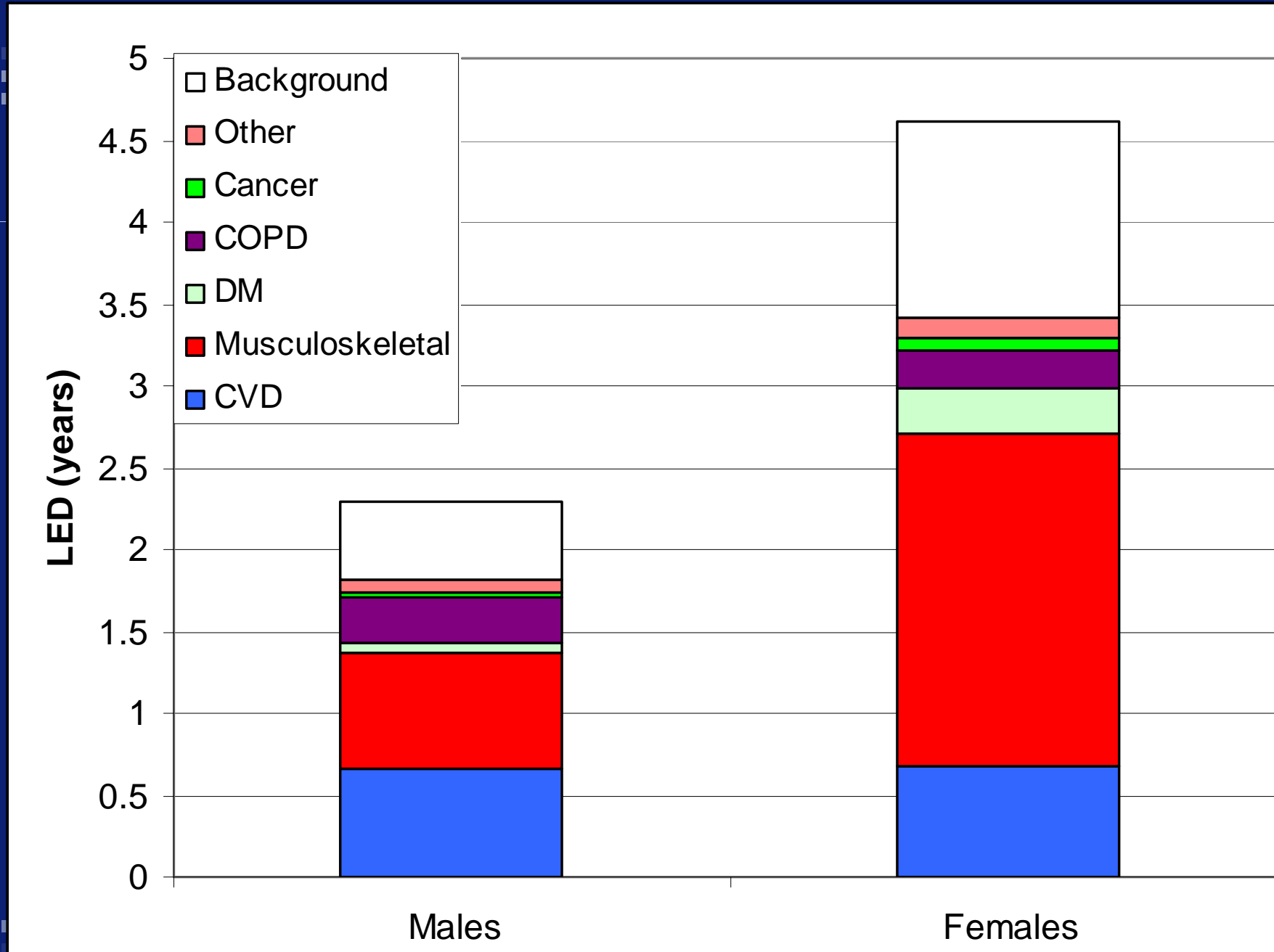
Conclusions

Disability in the Netherlands is caused by a mix of diseases, diseases that contribute the most are:

Young male: backpain; arthritis

Old male   :   also CVD; COPD

Young female: backpain; arthritis

Old female: also CVD; DM (not very important)

Discussion

1. Males: disabling impact at ages >=85 very high.

2. Females: background risk at ages >=85 very high. Could this be due to diseases not included (e.g. dementia) / age?

3. Explanation sex differences disabling impact of diseases?

Thank you!

Example: calculation

Diseases specific impact (not age specific):

TCANCER	THEARSTR	TASTMA
1,37	2,40	1,43

Age pattern:

men low	age pattern dis impact	THEARSTR(*)	TASTMA	background
30-34	0,27	0,66	0,39	0,02
35-39	0,27	0,66	0,39	0,02
40-44	0,27	0,66	0,39	0,14
45-49	0,27	0,66	0,39	0,05
50-54	0,36	0,87	0,52	0,08
55-59	0,36	0,87	0,52	0,19
60-64	0,36	0,87	0,52	0,16
65-69	0,36	0,87	0,52	0,25
70-74	0,70	1,67	1,00	0,39
75-79	0,70	1,67	1,00	0,44
80-84	0,70	1,67	1,00	0,30
85-89	0,70	1,67	1,00	1,42

(*)=Diseases specific impact * age pattern

Rate of disability in men, age 40-44 with heart/stroke and astma=
= 0,66 + 0,39 + 0,14 = 1,18

⇨ Proportion of disability = 1-EXP(-1,18)=0,69

Contribution of individual diseases:
Stroke: 0,66 / 1,18 = 0,55
Astma: 0,39 / 1,18 = 0,33
Background: 0,14 / 1,18 = 0,12

Total = 1

To do

Explanation sex differences: AJPH; demography; picavet; puts; jagger

-Disabling impact MI higher in women: found before?

-find info on disability/health state of women after MI / survival of MI.