

DEMENTIA PROJECTIONS



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STRUCTURE

- Research Question
- Projection Results from Existing Studies
- Data and Method
- Results
 - Prevalence
 - Incidence
 - Mortality
 - Dementia Projection



RESEARCH QUESTION

**HOW WILL THE NUMBER AND
AGE-SPECIFIC PREVALENCE
OF PEOPLE WITH DEMENTIA
DEVELOP IN GERMANY?**



EXISTING STUDIES

Projections of Demented People for Germany (in Million People)

	<u>2000</u>	<u>2030</u>	<u>2040</u>
- Priester 2004 *	0.96	1.74	2.03
- Bickel 2001 **	0.95	1.56	1.81
- Kern 2000 ***	1.4	2.21	

* based on prevalence from Bickel 1999 and 10th population projection from the German Statistical Office

** based on prevalence Bickel 1999 und 9th projection StBA

*** based on prevalence 4. Familienbericht 1986 und 8th projection StBA



DATA



- **3% random sample on the basis of 350 sick funds**

(Stichprobendaten von Versicherten der gesetzlichen Krankenversicherung nach § 268 SGB V für das Jahr 2002)

- 23 regional association of statutory health insurance physicians (Kassenärztlichen Vereinigungen (KV)),
- the German Federal (Social) Insurance Authority (Bundesversicherungsamt (BVA)),
- the National Provider of Social Security Services (Bundesversicherungsanstalt für Angestellte (BfA)),
- and the German Institute of Medical Documentation and Information (Deutsches Institut für medizinische Dokumentation und Information (DIMDI))

participated in the data collection process



DATA



STATISTISCHE ÄMTER
DES BUNDES UND DER LÄNDER
FORSCHUNGSDATENZENTREN

→ 2,301,015 people in the sample who
represent 70.7 million (86%) publicly
insured people in 2002



DATA

Coding of Dementia

ICD 10 WHO

- F00 Dementia in Alzheimer's disease
- F01 Vascular dementia
- F02 Dementia in other diseases
classified elsewhere
- F03 Unspecified dementia

- G30 Alzheimer's disease



INCIDENCE

Incidence of Dementia

- Data for one year 2002, however: differentiated by quarter
- Assumption: people with dementia go to the doctor regularly
Hallauer 2000: - 14 doctor visits per year for people with moderate dementia (MMSE 10-26)
- 5 doctor visits per year for people with severe dementia (MMSE <10)

Person	Q1	Q2	Q3	Q4
1	0	0	9	0
2	1	1	1	1
3	0	0	1	1
4	0	1	1	0

Incidence

Problem

Coding:

9=no doctor visit

0=doctor visit, no dementia

1=doctor visit, DEMENTIA



INCIDENCE

Incidence of Dementia

Person	Q1+Q2	Q3+Q4
	P1	P2
1	0	0
2	1	1
3	0	1
4	1	0

Coding:

9=no doctor visit

0=doctor visit, no dementia

1=doctor visit, DEMENTIA

DOCTOR VISIT PER PERIOD 1/2		N	%
DV P1 & P2, no dementia	00	1504221	65.37
DV P1, no DV P2, no dementia	09	211718	9.2
no DV P1, DV P2, no dementia	90	200480	8.71
no DV P1 & P2	99	354186	15.39
<hr/>			
dementia prevalence P1 & P2	11	17563	0.76
DV P1 no dementia, DV P2 dementia	01	6622	0.29
no DV P1, DV P2, dementia	91	472	0.02
DV P1 dementia; DV P2 no dementia	10	3606	0.16
DV P1 dementia, no DV P2	19	2147	0.09

← Incidence

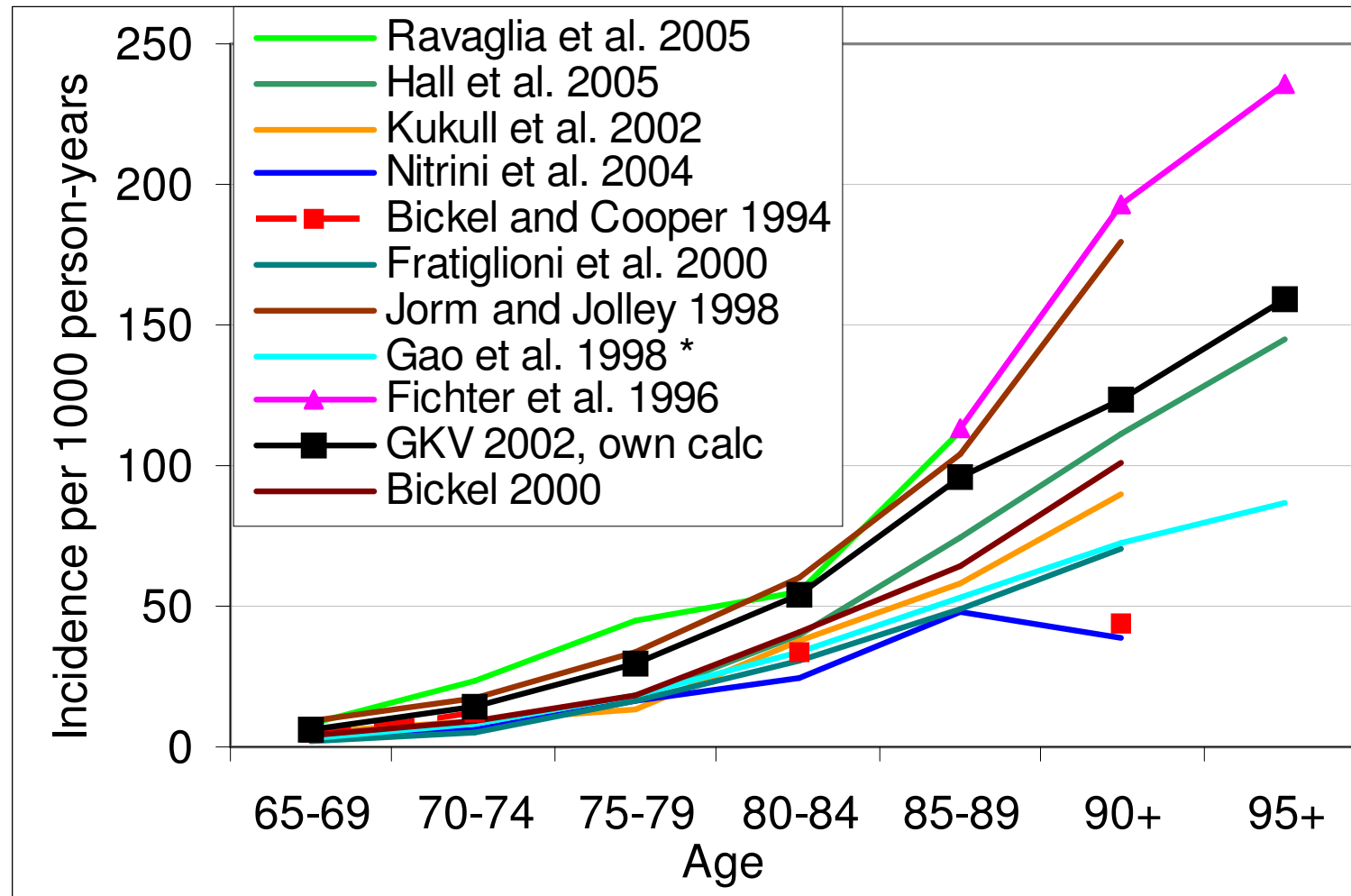


← Problem



INCIDENCE

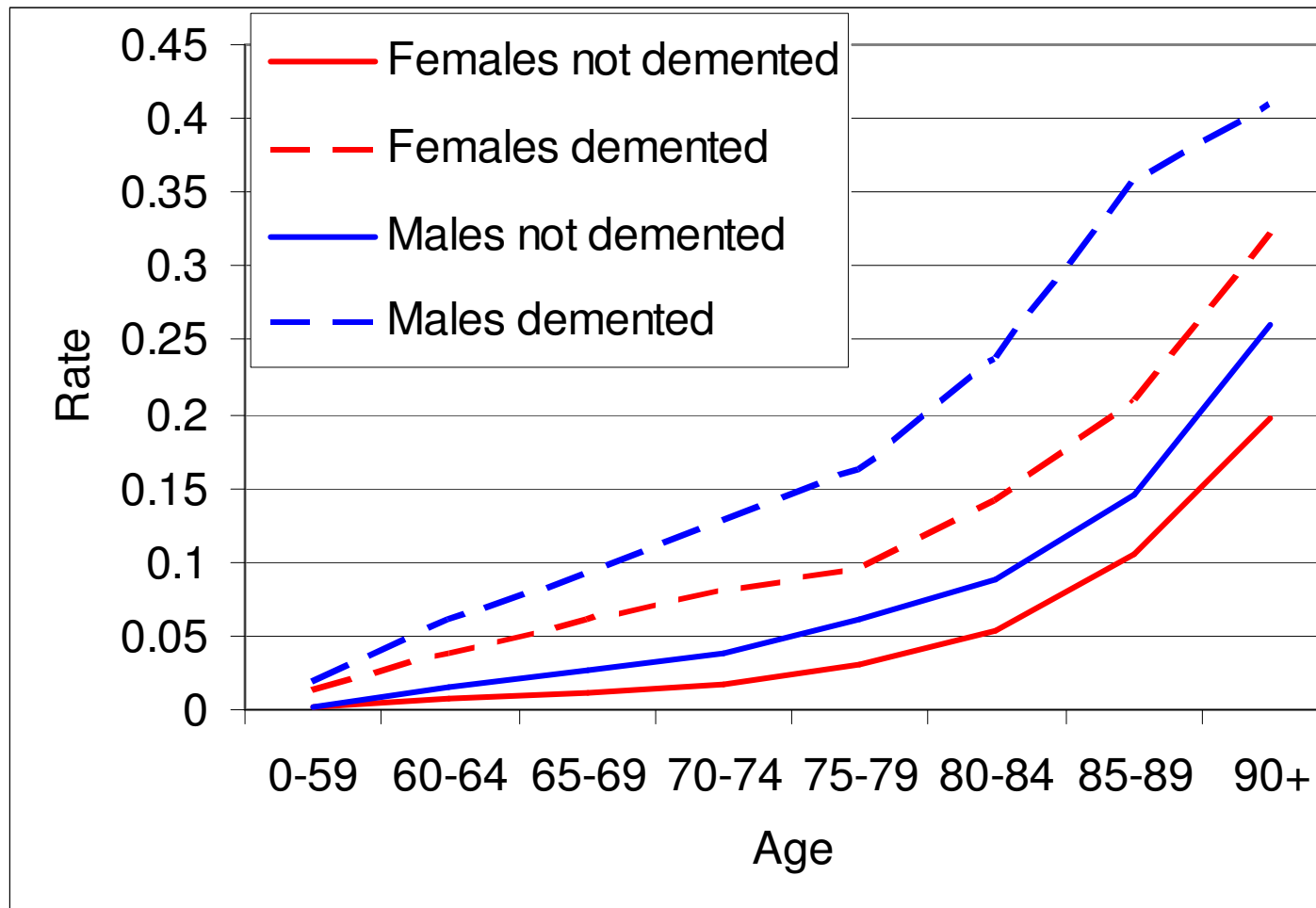
Incidence of Dementia in Meta Analysis and in Germany





MORTALITY

Mortality Rates in Germany 2002, GKV Data





MORTALITY

Rate ratios – the Age-Specific Excess Mortality of People with Dementia

	Females	Males
0-59	10.32	8.15
60-64	5.46	3.90
65-69	5.46	3.56
70-74	4.50	3.41
75-79	3.11	2.61
80-84	2.69	2.72
85-89	1.97	2.45
90+	1.63	1.57

Source: GKV data 2002



MORTALITY

Age-Specific Mortality Rates of Not Demented and Demented People and 5-Year Incidence

Age	MORTALITY RATES				5-YEAR INCIDENCE	
	Females		Males		Females	Males
	No Dem.	Dem.	No Dem.	Dem.		
60-64	0.007	0.038	0.016	0.062	0.014	0.020
65-69	0.011	0.060	0.026	0.093	0.032	0.032
70-74	0.018	0.081	0.038	0.129	0.072	0.069
75-79	0.031	0.097	0.062	0.162	0.141	0.125
80-84	0.053	0.143	0.088	0.238	0.244	0.218
85-89	0.106	0.209	0.146	0.358	0.396	0.328
90+	0.197	0.321	0.261	0.410	0.490	0.445

Source: GKV data 2002



PROJECTION

→ Multi-State Projections of Dementia

3 possible transitions:

- Not demented → demented
- Not demented → Death
- Demented → Death

- No recovery



PROJECTION

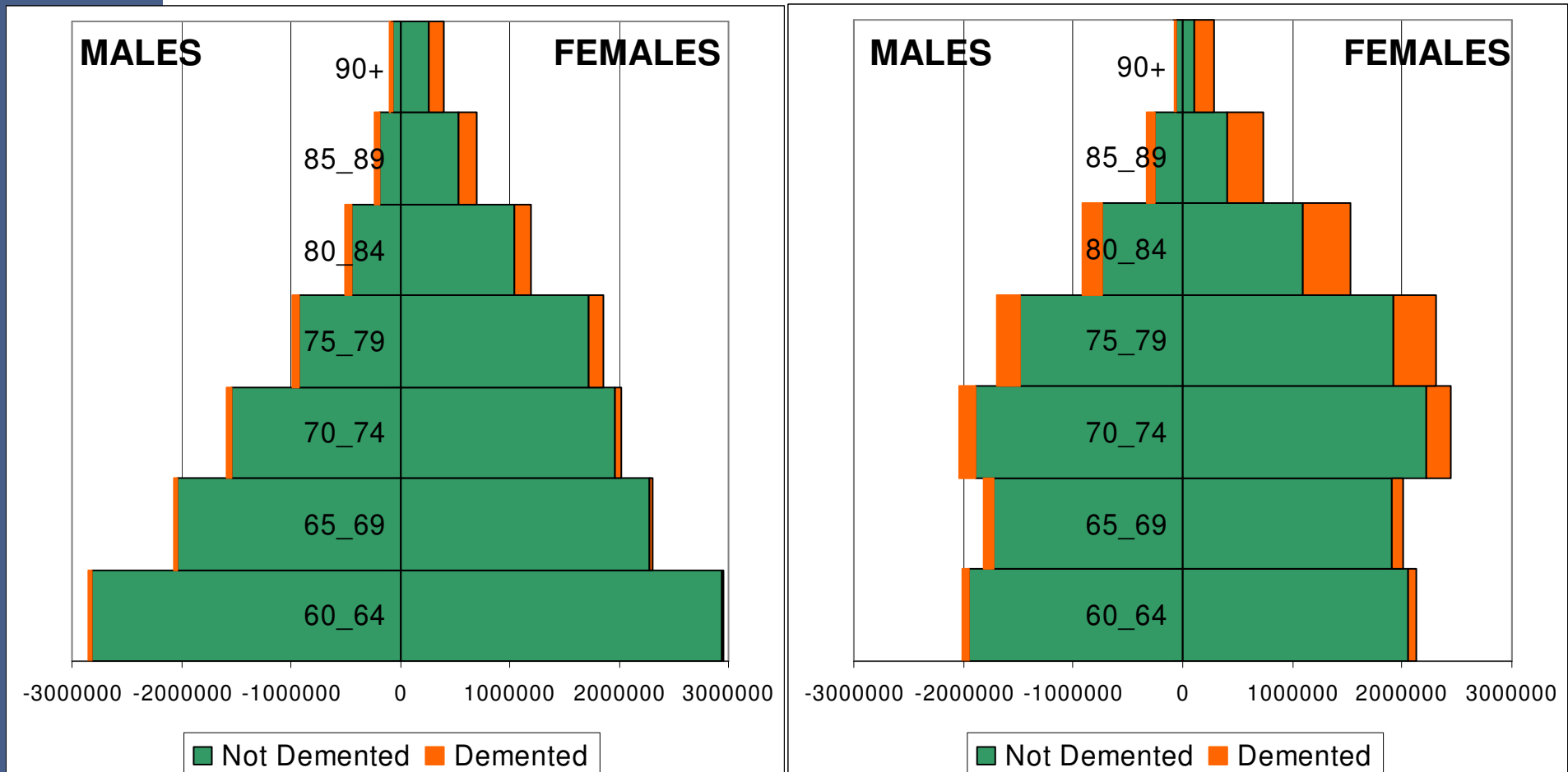
Static, Constant Mortality & Transitions

60+ 19.7 mio; 1.05 demented

2005

60+ 20.4 mio; 2.54 demented

2045

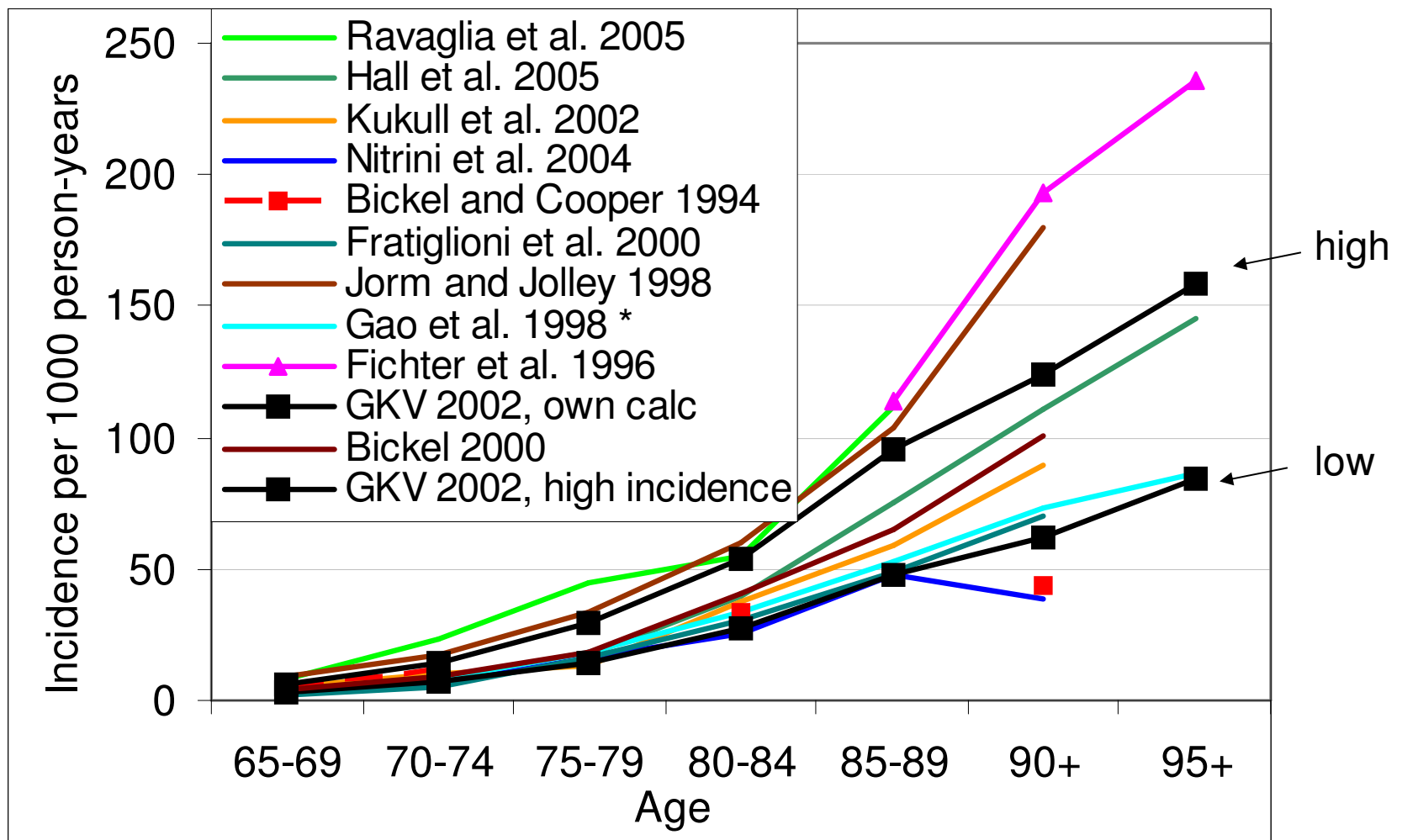


Source: GKV data 2002, Human Mortality Database (HMD)



PROJECTION

Incidence of Dementia in Meta Analysis and in Germany – High and Low Incidence





PROJECTION

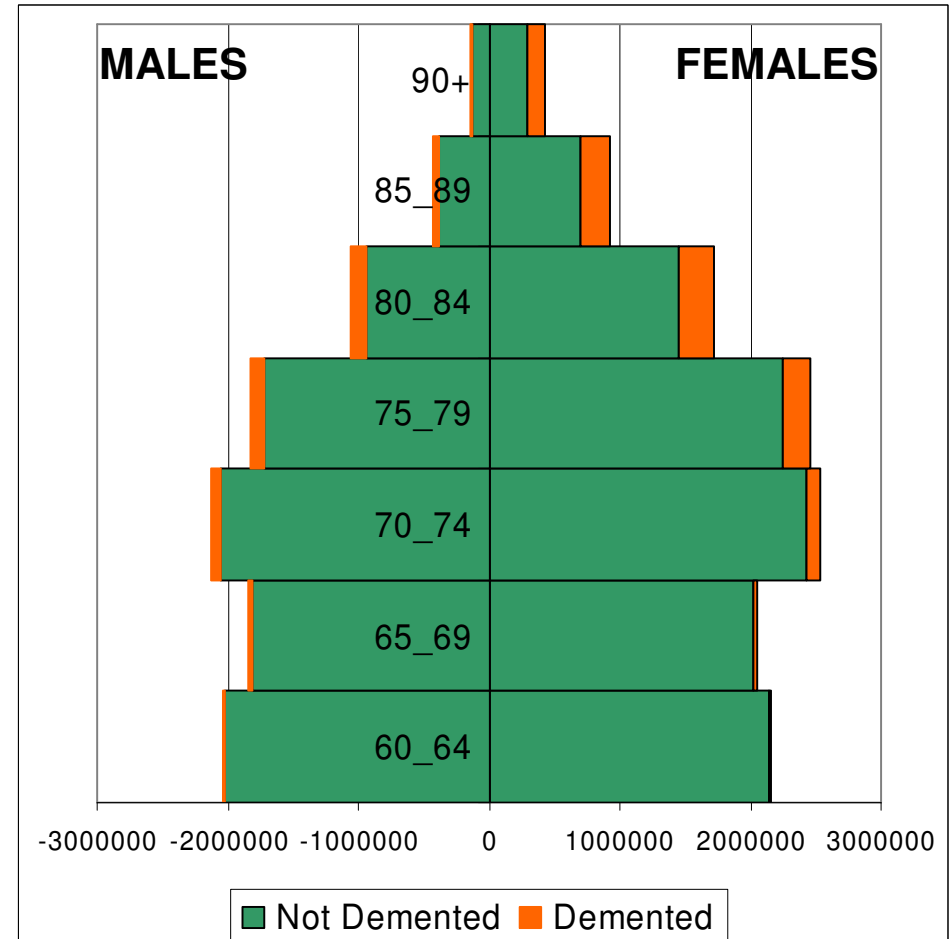
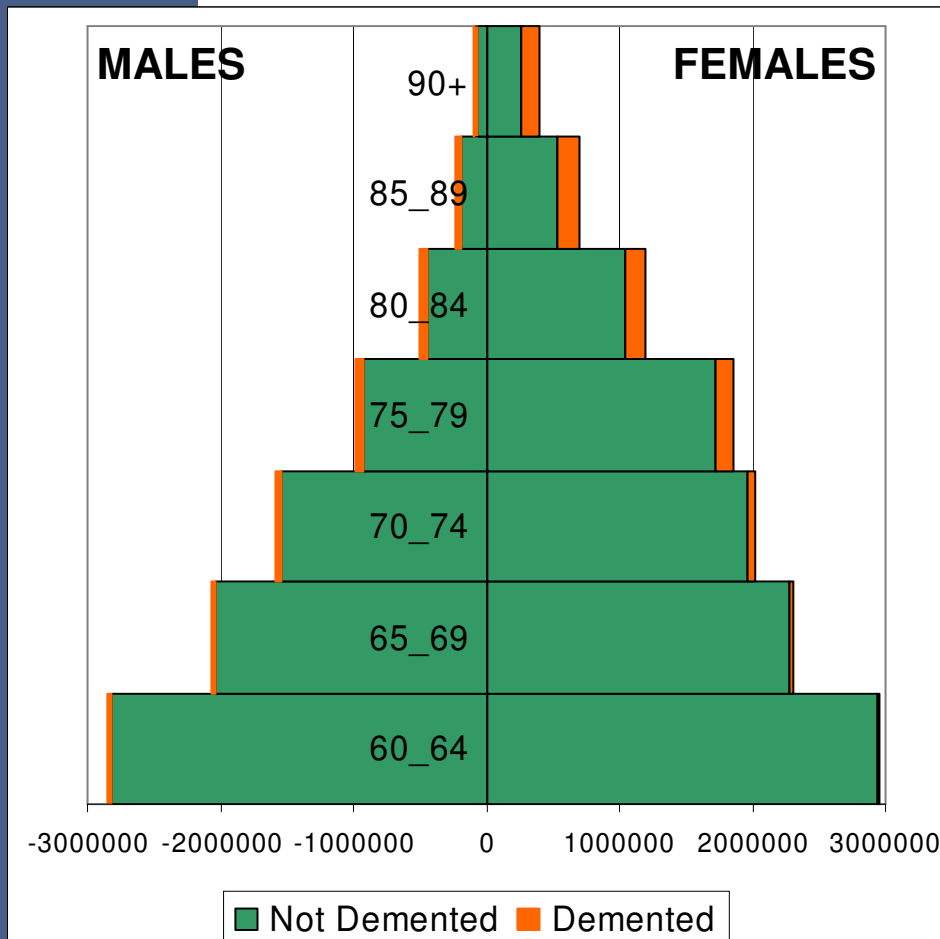
Static, Constant Mortality & TR, Low Incidence

60+ 19.7 mio; 1.05 demented

2005

60+ 21.7 mio; 1.41 demented

2045



Source: GKV data 2002, Human Mortality Database (HMD)



PROJECTION

VARIANTS

- 1 high incidence, mortality for all decreases by 1%
- 2 low incidence, mortality for all decreases by 1%

	<u>2005</u>	<u>2045</u>
e_0 males	75.7	83.3
e_0 females	82.3	88.2

Variant	2005		2045	
	60+	demented	60+	demented
	(million people)		(million people)	
1	19.7	1.05 (5.3%)	25.96	5.02 (19.3%)
2	19.7	1.05	27.30	2.92 (11.9%)



STRENGTHS AND WEAKNESSES

EARLIER STUDIES

- Strengths
 - attention towards topic, neurologists, MRT, brain scan
- Weaknesses
 - small data sets for estimation of incidence
 - different scales of dementia

GKV DATA

- Strengths
 - Large data set: precise prevalence & mortality
 - ICD 10
- Weaknesses
 - Incidence rates difficult to measure (for institutionalized people?)



FUTURE RESEARCH

- **Improve Incidence Rates**
- **Costs of Dementia by Age, Sex and Duration to Death**



THANK YOU!
COMMENTS OR QUESTIONS?

www.demogr.mpg.de

<http://www.wiwi.uni-rostock.de/~esf/index.html>