

# Impfen im Alter

Marcus Köller

# COI - Offenlegung

Honorare, Kongressunterstützungen

Abbvie

Amgen

Astellas

Lilly

Novartis

Pfizer

Roche

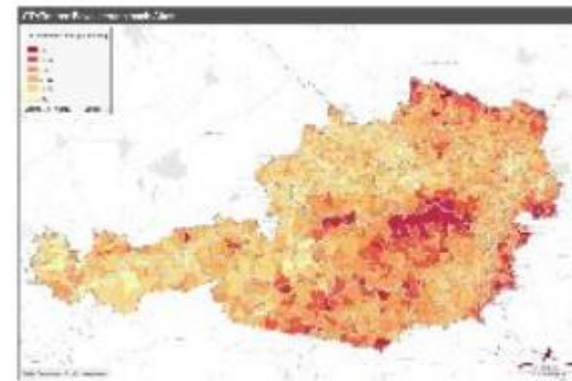
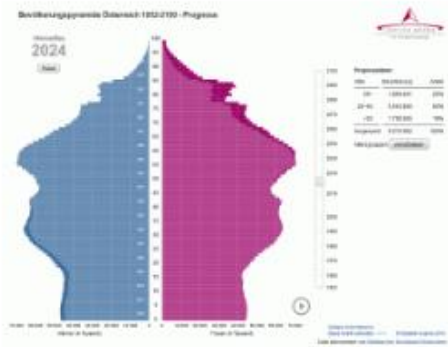
# Wann beginnt das „Alter“ ?



Alter                      Gemäß Weltgesundheitsorganisation (WHO) markiert das Alter von **60–65 Jahren** den Übergang ins *Alter*

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- Differenzierung
- Junge Alte : 60/65-Jährige bis 74-Jährige
  - Betagte und Hochbetagte: 75- bis 89-Jährige
  - Höchstbetagte (90- bis 99-Jährige) und
  - Langlebige (100-Jährige und Ältere)



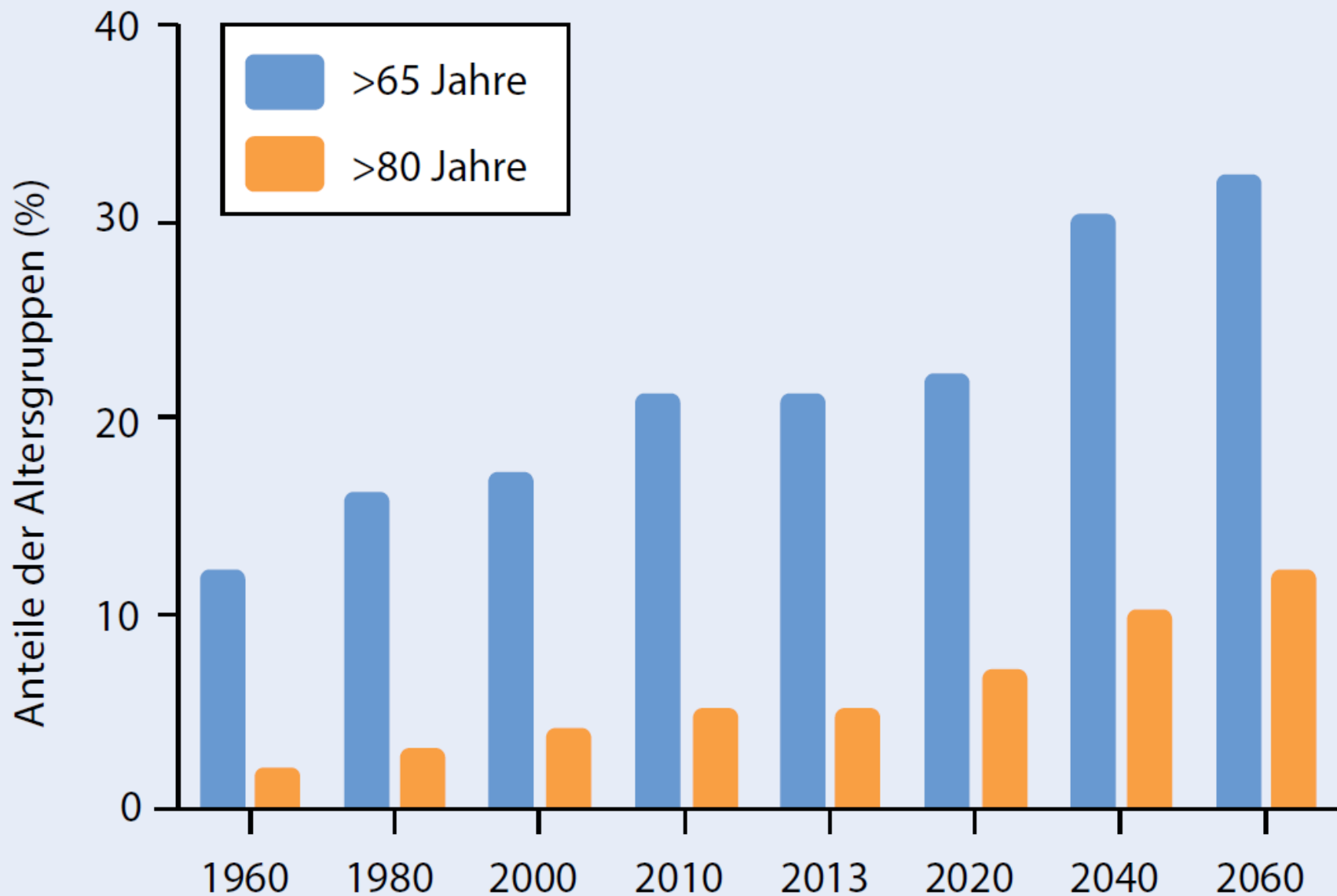
Am 1. Jänner 2020 lebten in Österreich

1.720.915 < 20 a (19,3%)

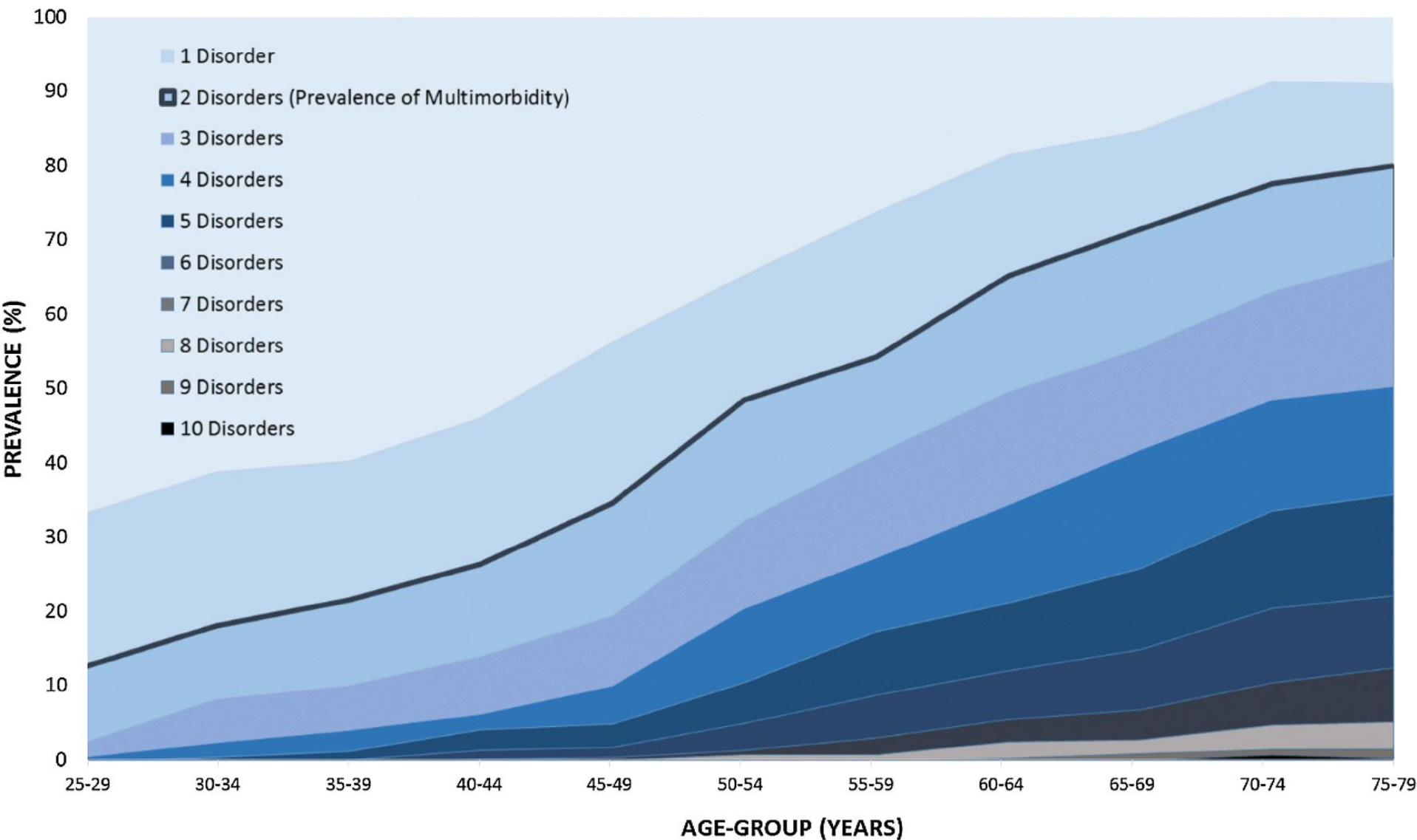
5.486.522 20 bis < 65 a (61,6%)

**1.693.627 ≥ 65 a (19,0%)**

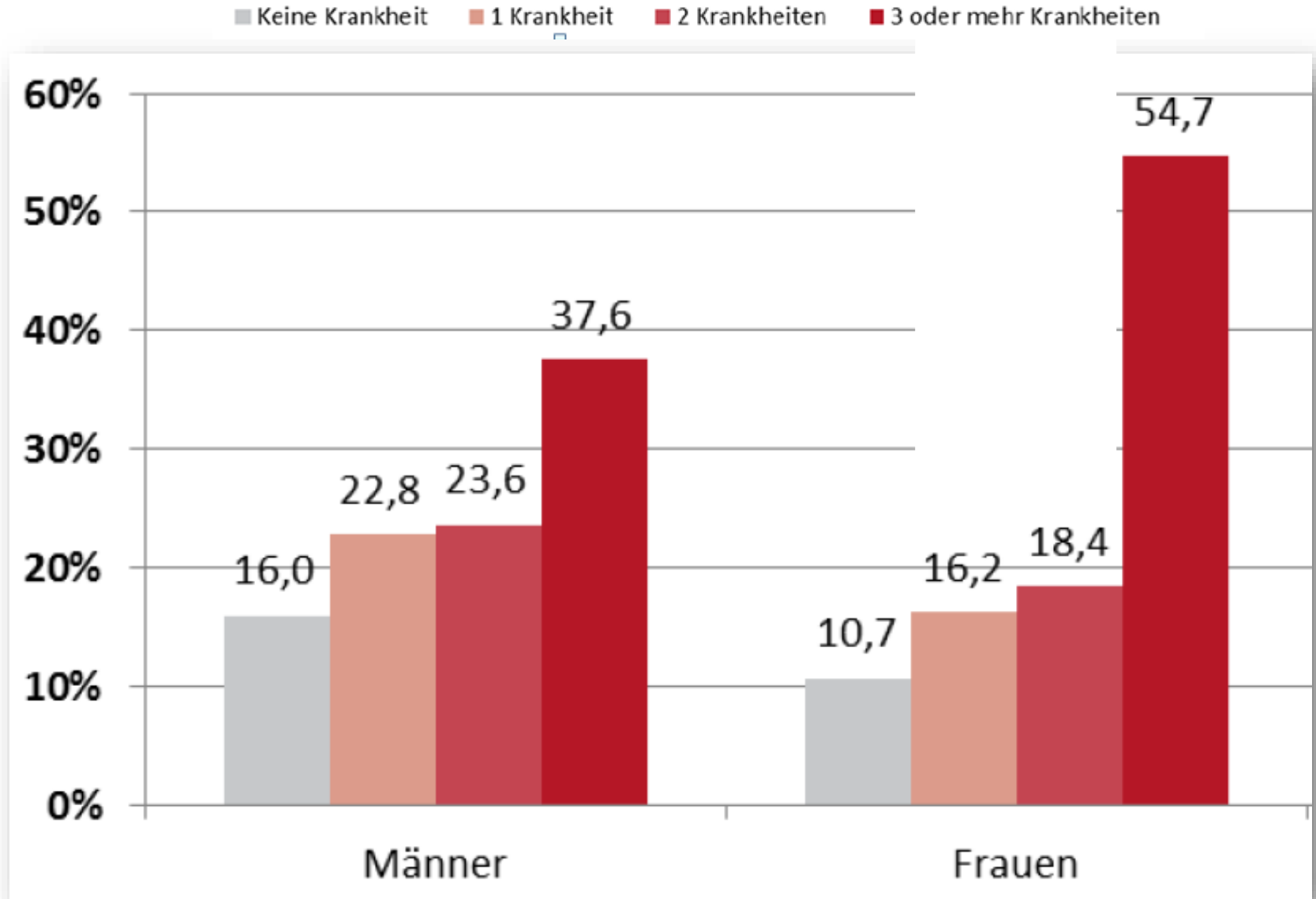
# „Growing Grey“



# PREVALENCE OF MULTIMORBIDITY BY AGE-GROUP



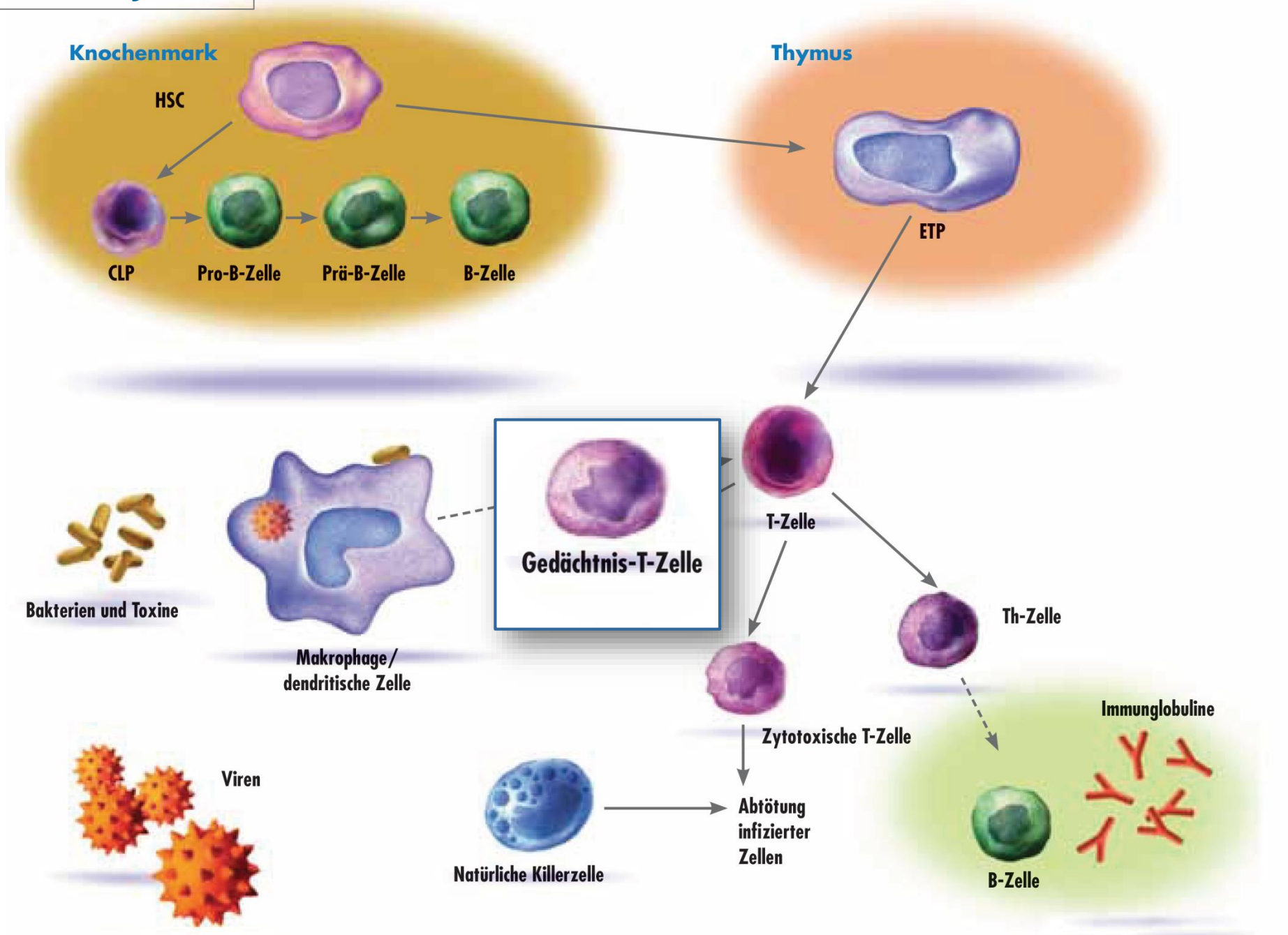
# Genderverteilung der Multimorbidität >65a



n = 1.399.177 (65+)



# Immunsystem







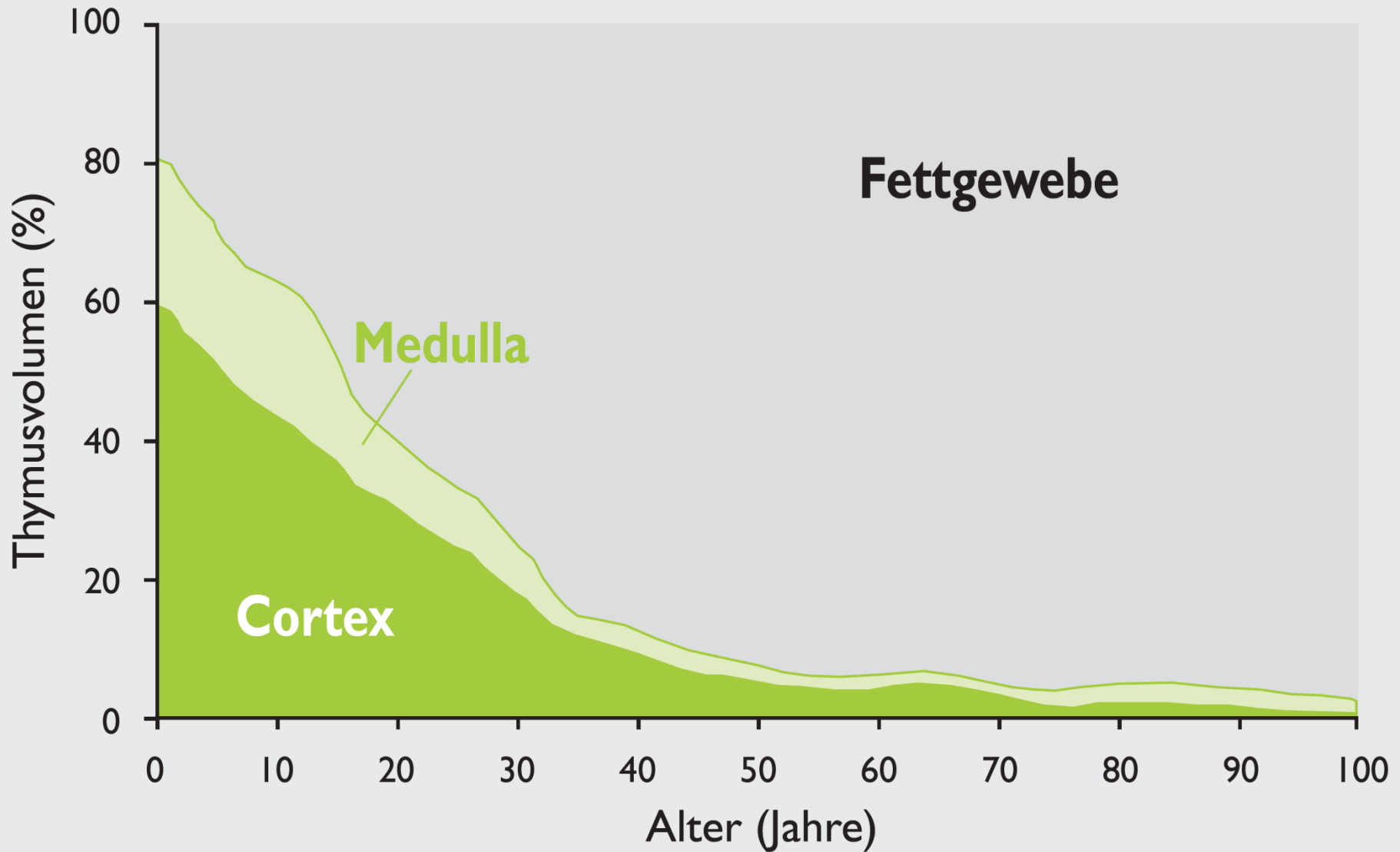
**Roy L. Walford (1924 – 2004)**

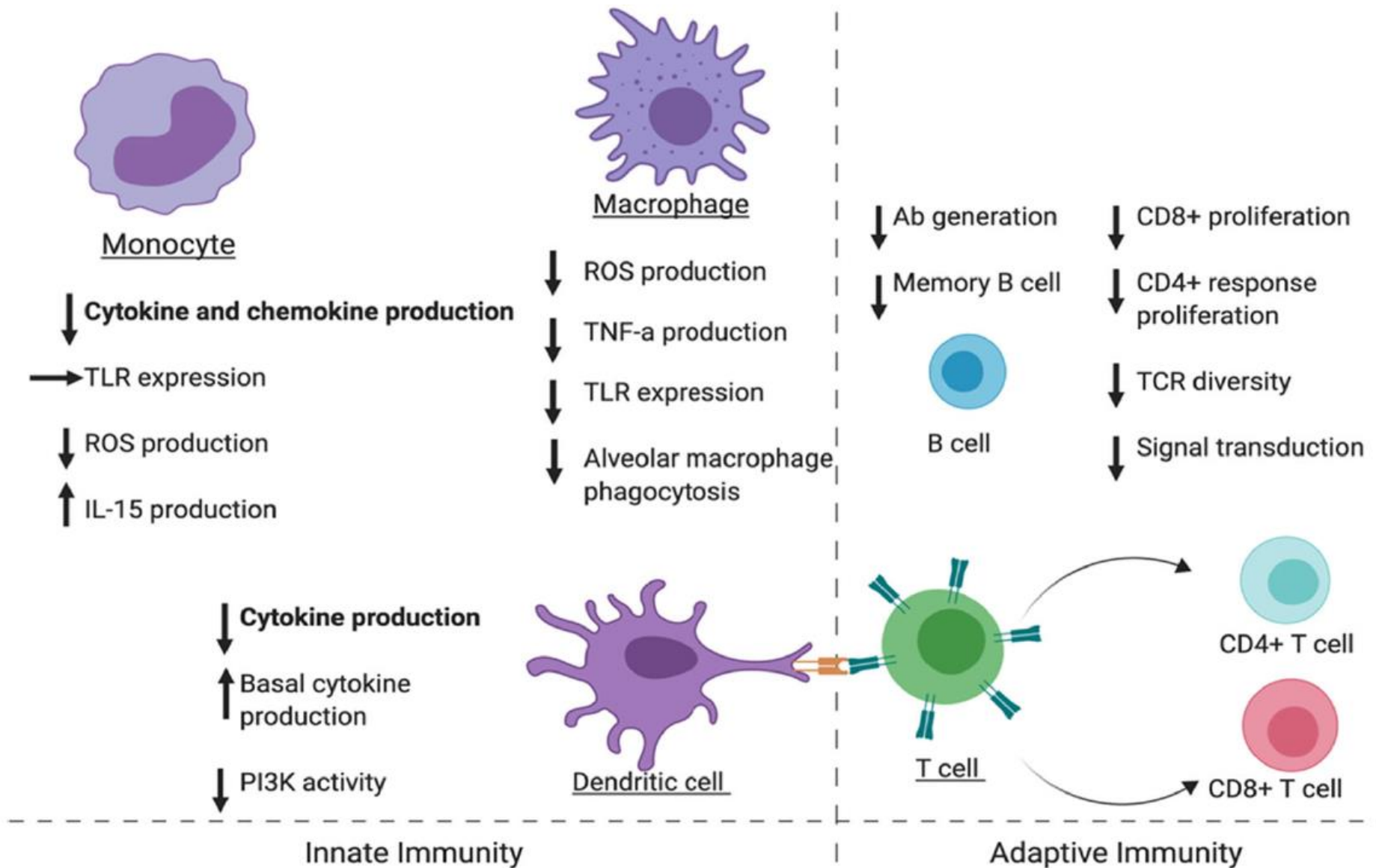
*The immunologic theory of aging.*

Verlag Munksgaard, 1969

**“Immunosenescence”**

# Involution des Thymus mit dem Alter





# Immunkompetenz im Lauf des Alterns

**Normale Immunkompetenz**

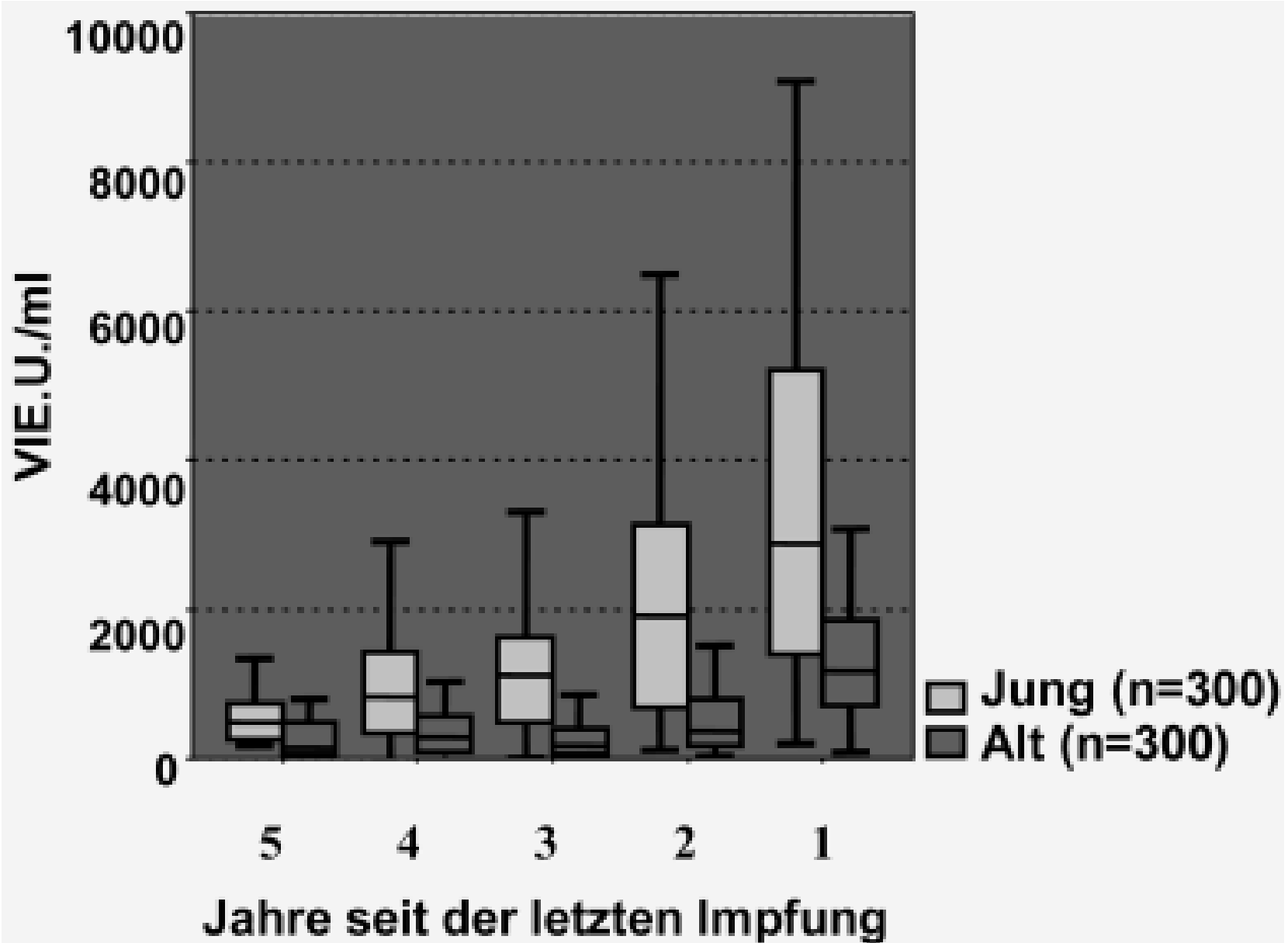
**Abnahme der Immunkompetenz**

**Immunkompetenz**



**Alter**

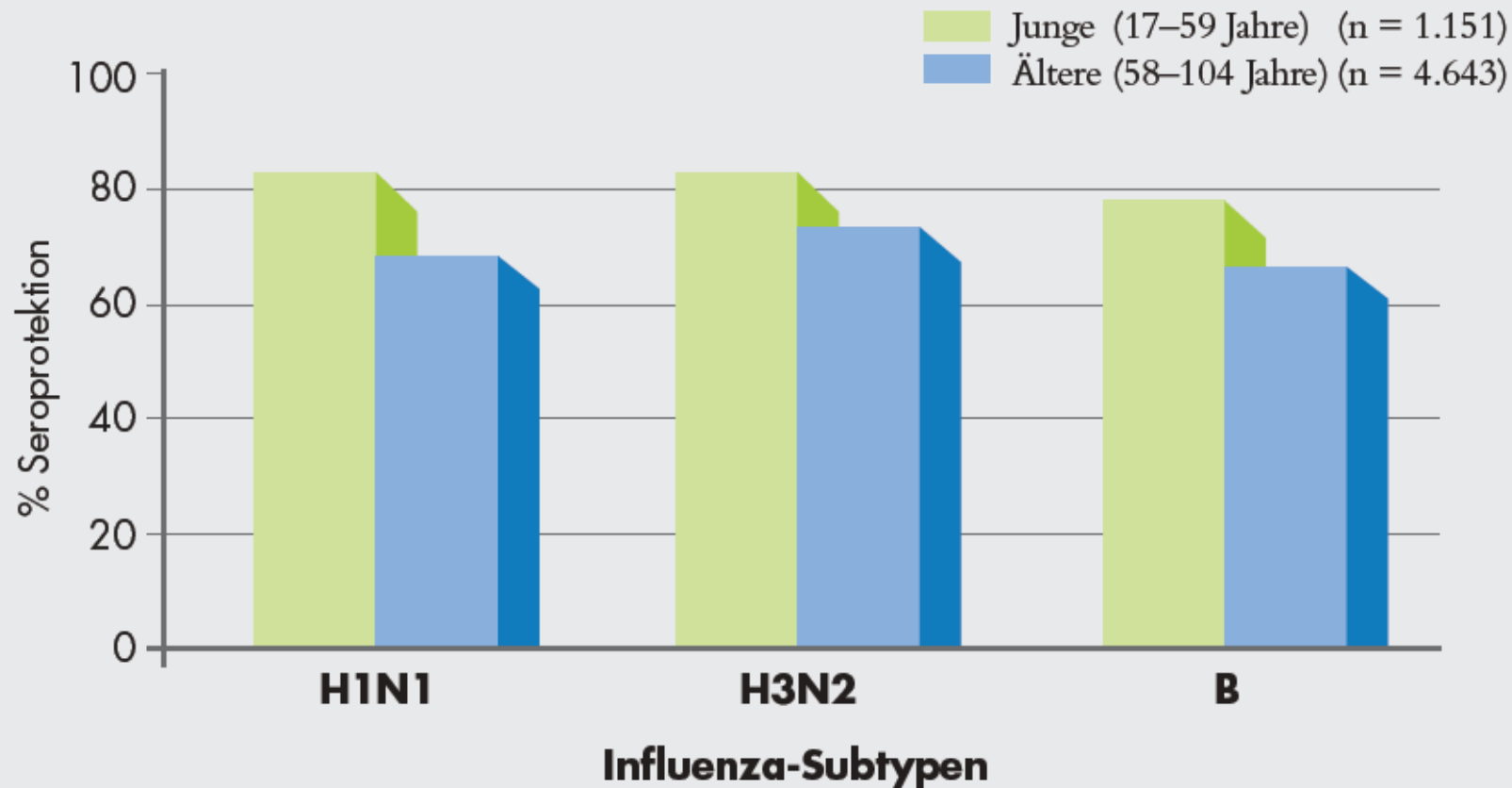
# FSME – Ak-Titer im Alter geringer



# Influenza-Seroprotektion nach Alter und Virus-Subtypen

## Seroprotektion nach Impfung

(Anteil von Probanden mit Hämagglutinin-Inhibitions-(HI-)Ak-Titer  $\geq 40$  1/dil)



Grafik nach einer Metaanalyse von 31 Studien zur Grippe-Impfung zwischen 1986 und 2002

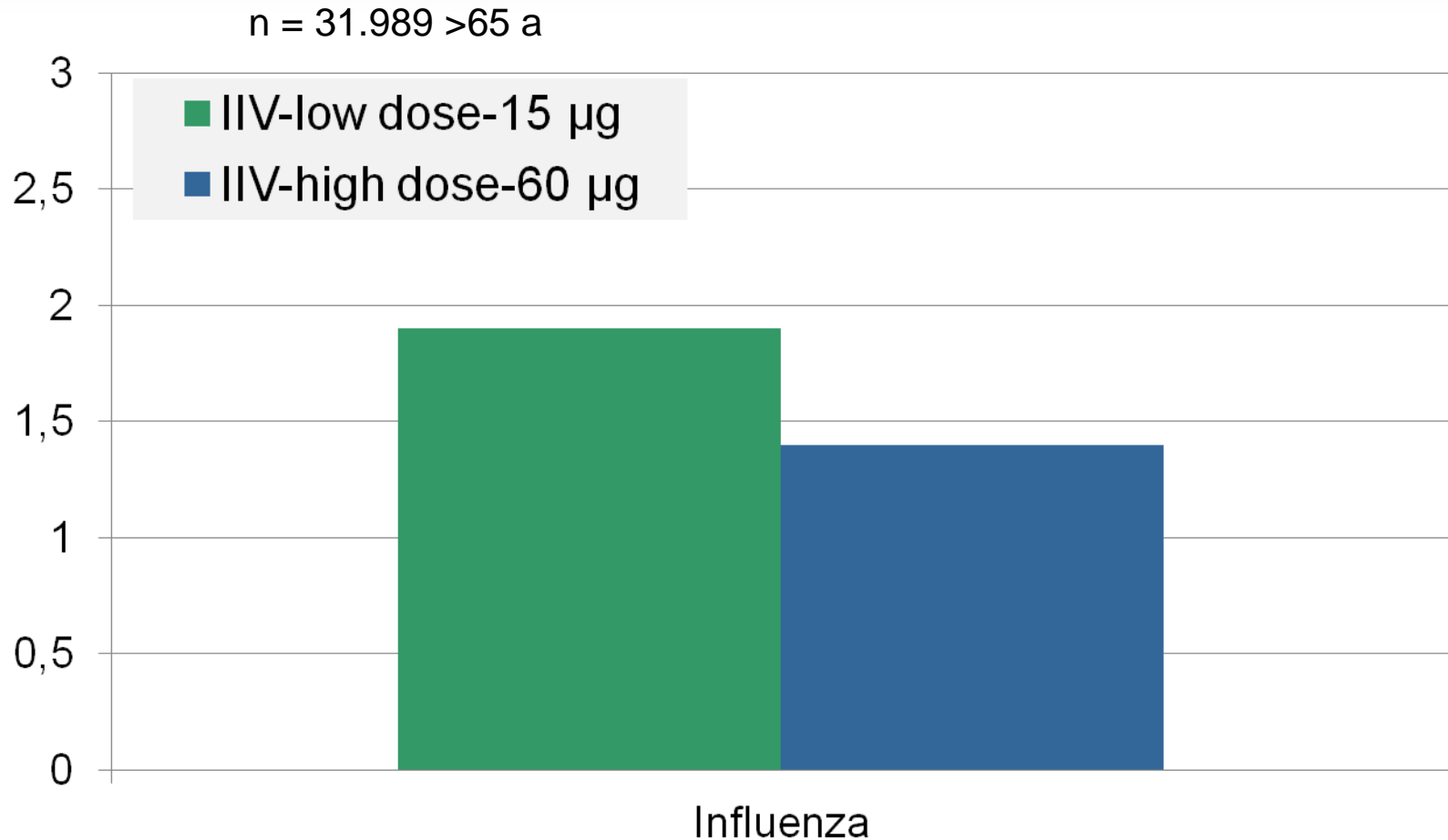
## Impferfolg und Alter - HZV (LAV)

Age	Efficacy after ~ 3 a
60–69 years	64%
70–79 years	41%
≥80 years	18-20%

≥ 60-Jährige: Wirksamkeit 30.6% nach 6 Jahren



# Efficacy of High-Dose versus Standard-Dose Influenza Vaccine in Older Adults



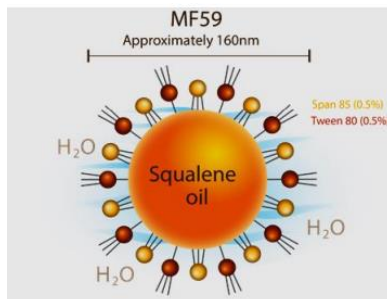
# Erhöhung Immunogenität - Adjuvans

Review

Effectiveness of MF59-adjuvanted seasonal influenza vaccine in the elderly: A systematic review and meta-analysis

**MF59<sup>®</sup>**: oil-in-water emulsion adjuvant

Vaccine 35 (2017) 513–520



Review

**Recent clinical experience with vaccines using MPL- and QS-21-containing Adjuvant Systems**

Expert Rev Vaccines. 2011; 10:10.

**AS01B:**

3-O-desacyl-4 $\alpha$ -monophosphoryl lipid A (MPL)

**QS-21:**

Saponin aus *Seifenrindenbaum* (Quillaja Saponaria Molina, fraction 21)

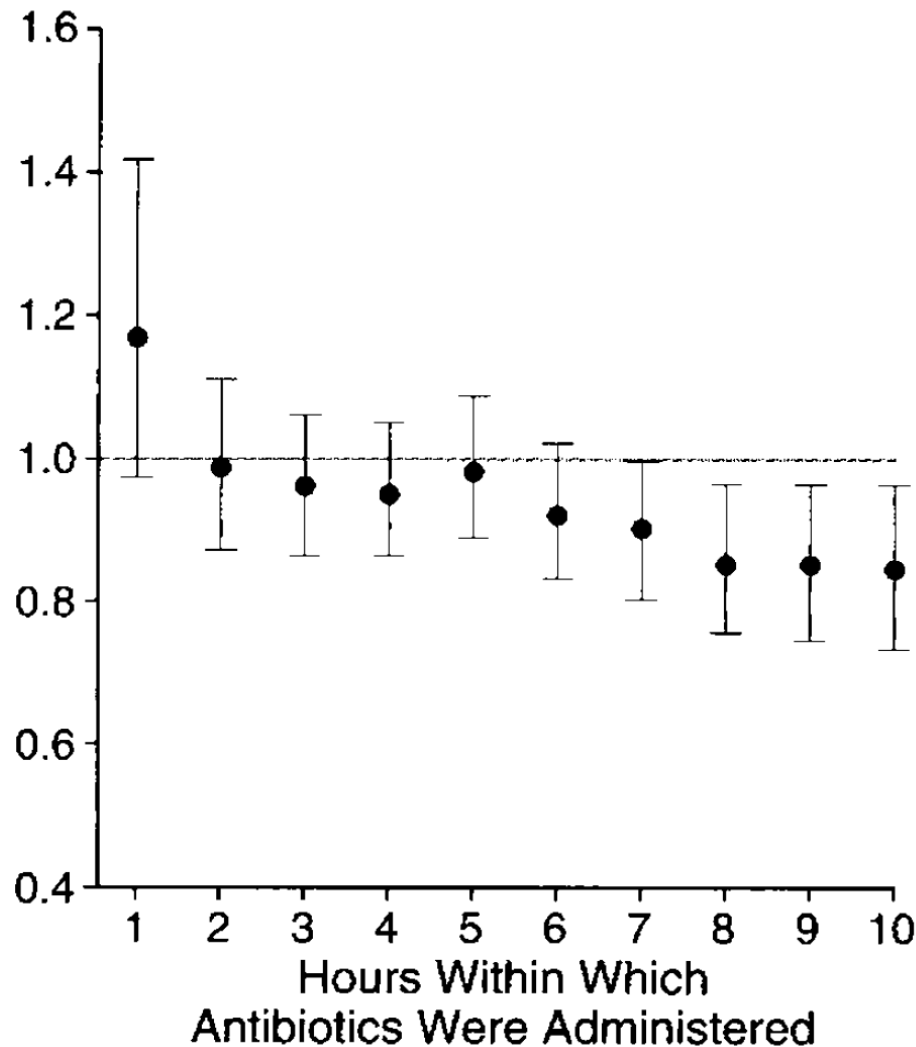
# Quality of Care, Process, and Outcomes in Elderly Patients With Pneumonia

Thomas P. Meehan, MD, MPH; Michael J. Fine, MD, MSc; Harlan M. Krumholz, MD; Jeanne D. Scinto, PhD, MPH; Deron H. Galusha, MS; Joyce T. Mockalis, RN; Georgina F. Weber, BSN; Marcia K. Petrillo, MA; Peter M. Houck, MD; Jonathan M. Fine, MD

## Pneumonie

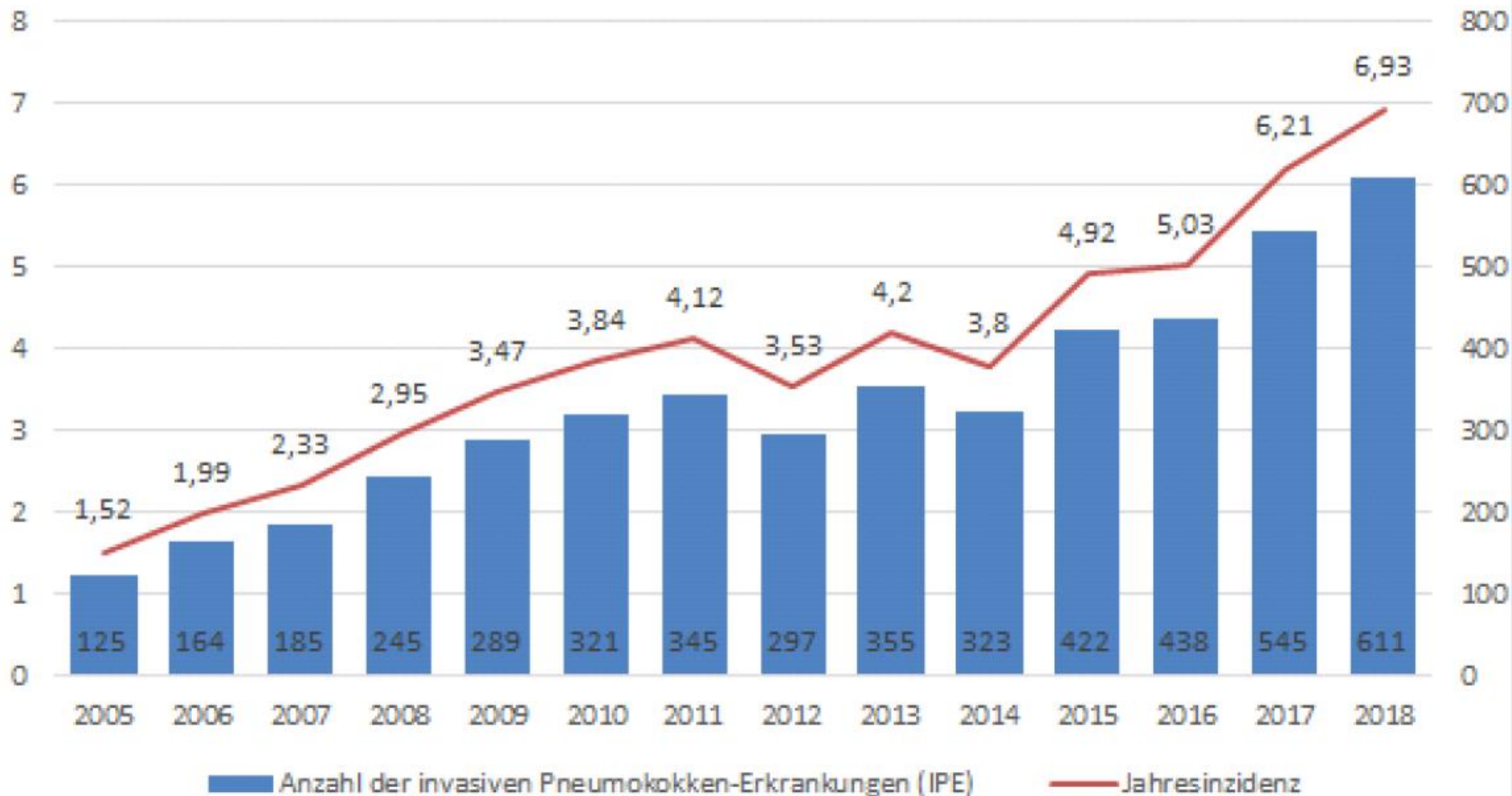
## Unterschätzte Gefahr

### Zeitpunkt AB-Gabe und 30-d-Überleben (OR)



# Invasive Pneumokokken-Erkrankungen (IPD)

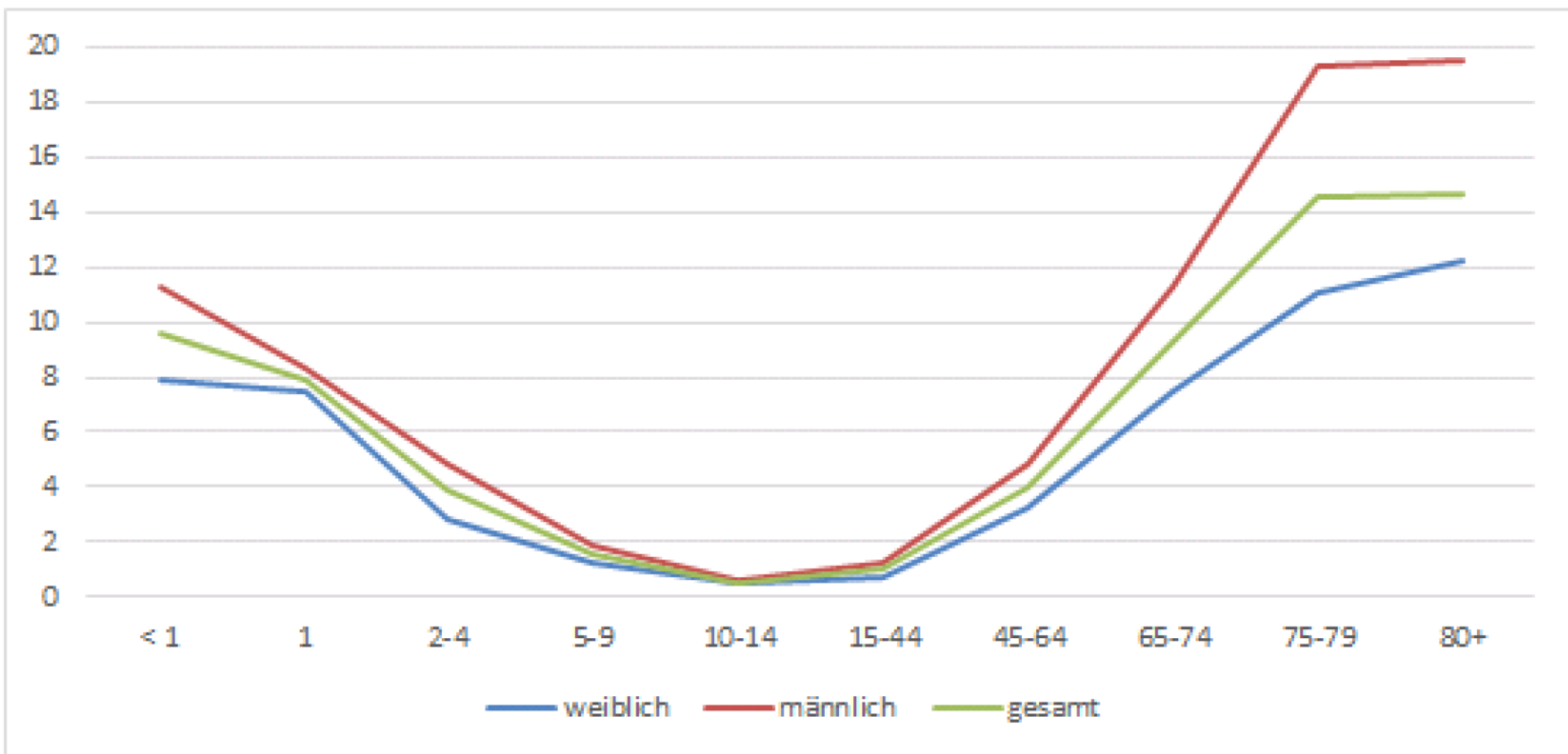
2005-2018



# Invasive Pneumokokken

*Alter*

2005-2018



# Invasive Pneumokokken

Alter

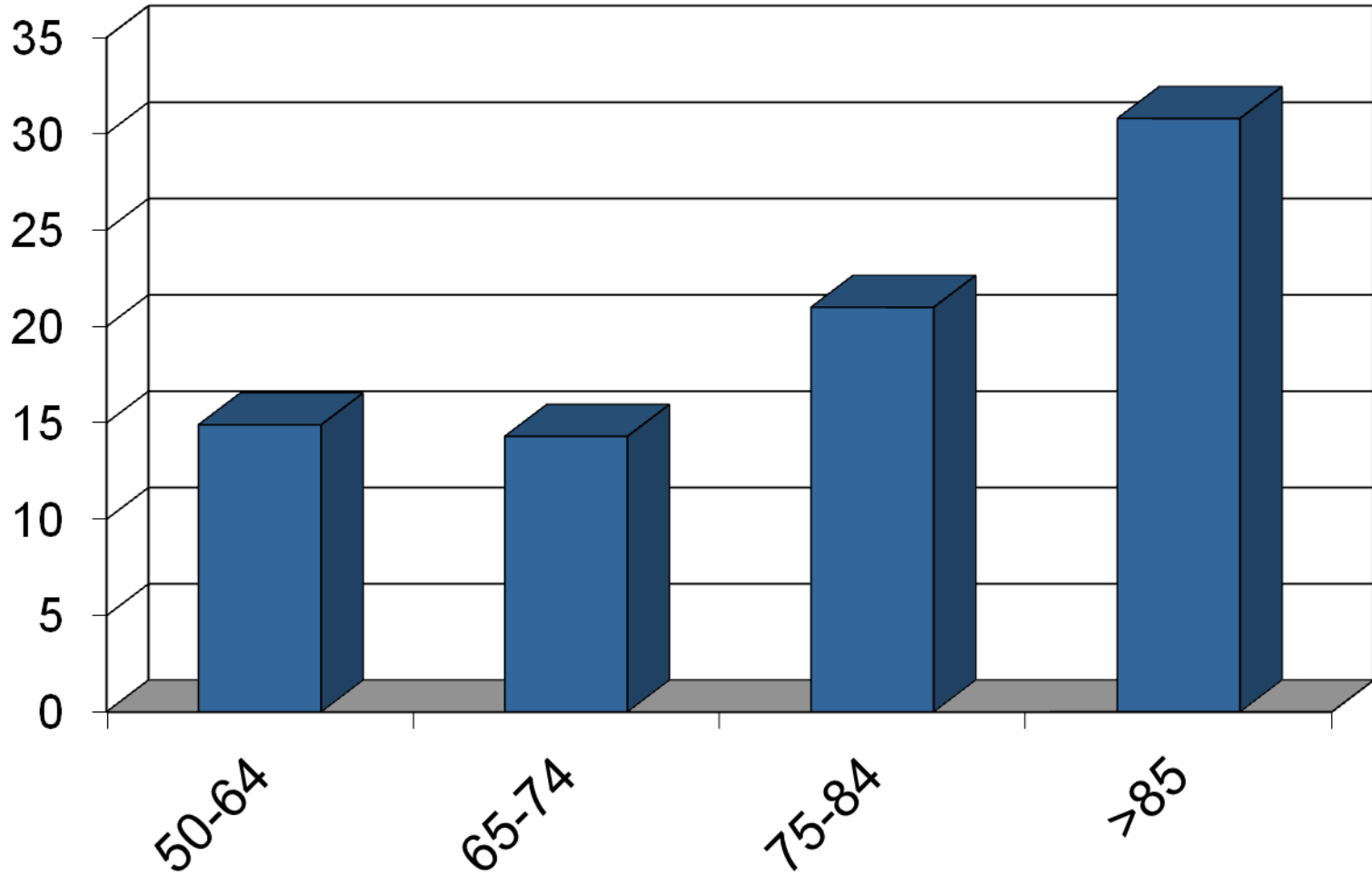
2018

N=611; 44.7 %♀ - 55.3 %♂

Alter	Anzahl der Fälle	%	Inzidenz/100.000 Personen
<1	8	1,3	9,3
1	7	1,2	7,9
2-4	13	2,1	5,1
5-9	4	0,7	1,0
10-14	2	0,3	0,5
15-44	50	8,2	1,5
45-64	175	28,6	6,9
65-74	140	22,9	16,9
75-79	74	12,1	19,3
80+	138	22,6	31,7

≥65a: 57,6%

# Sterblichkeit an IPD





# IPD und Komorbiditäten

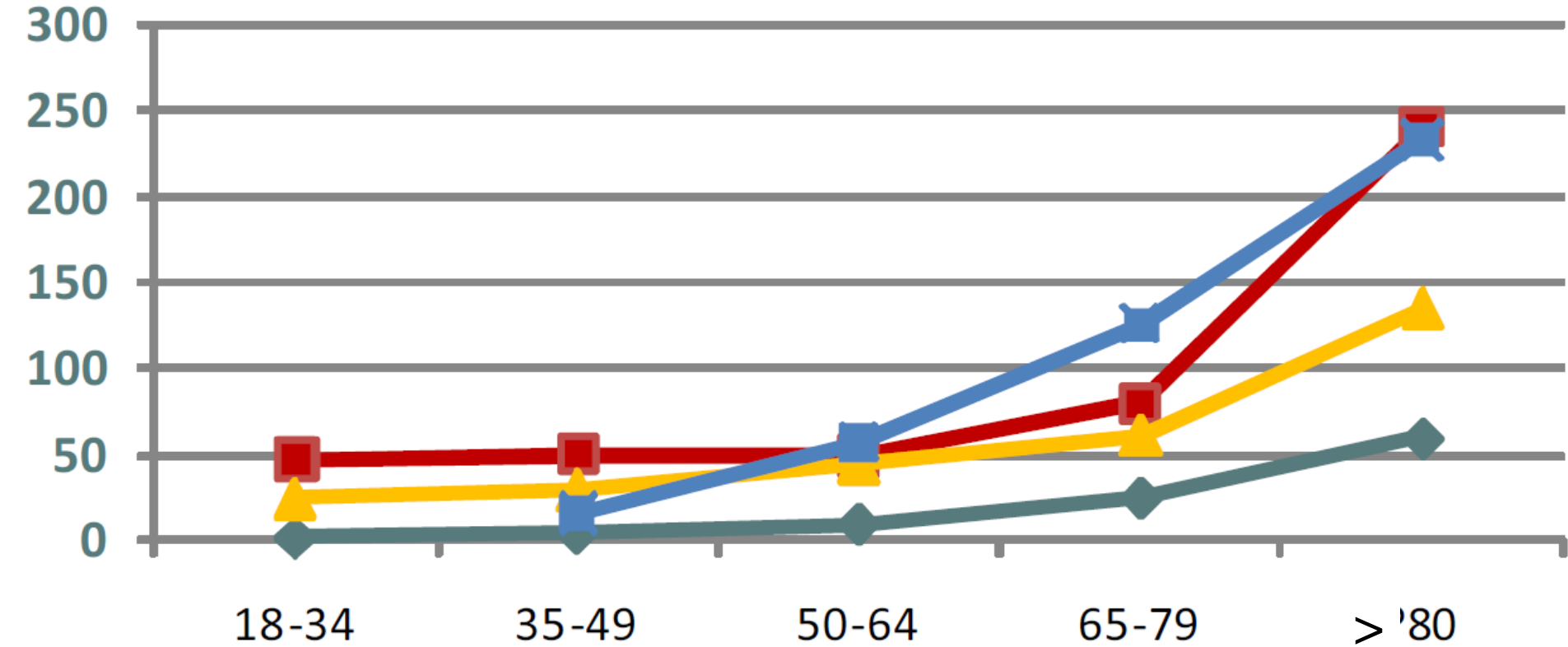
sonst gesund

**Herzerkrankungen**

**Diabetes**

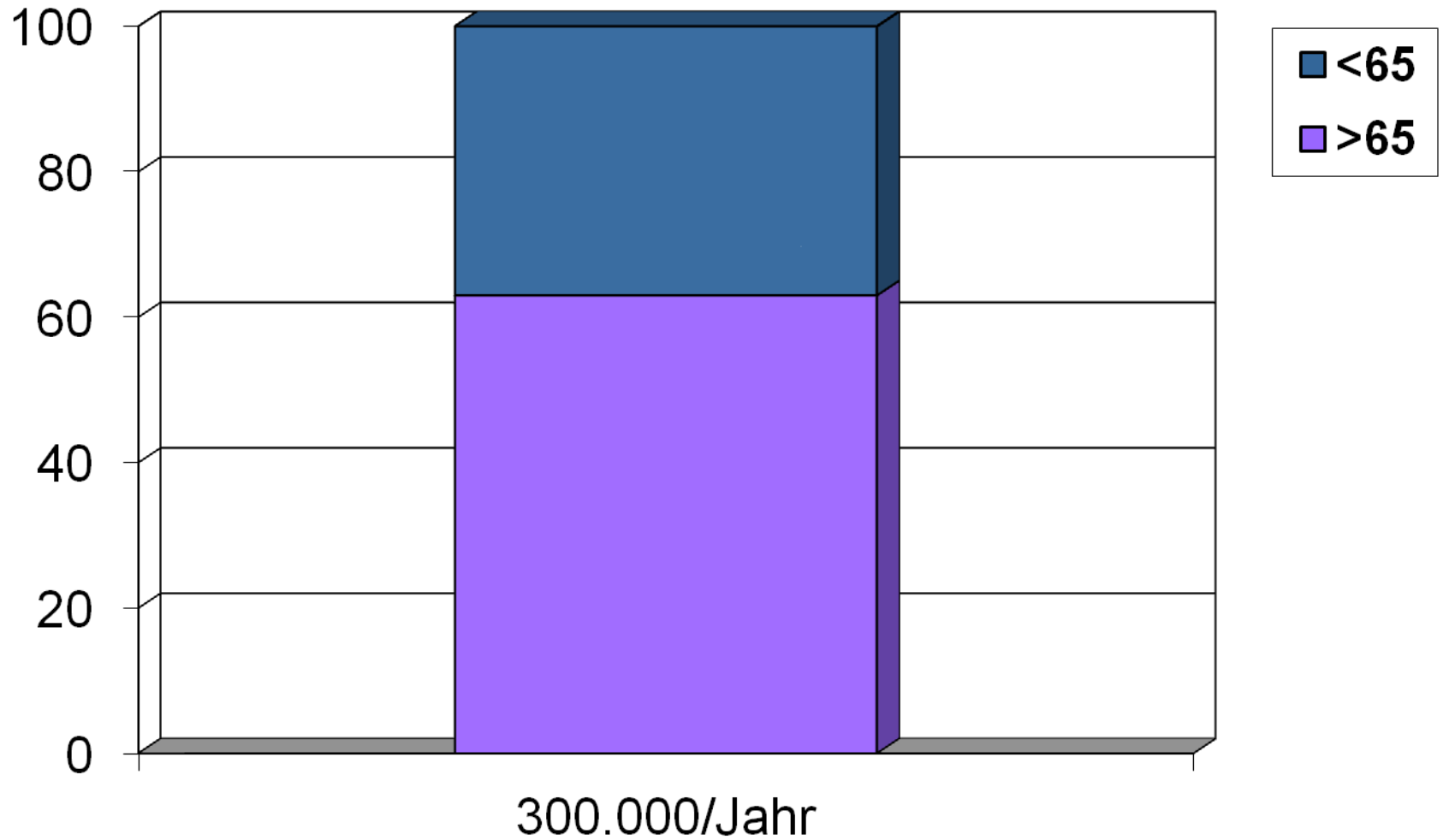
**Lungenerkrankungen**

pro 100.000

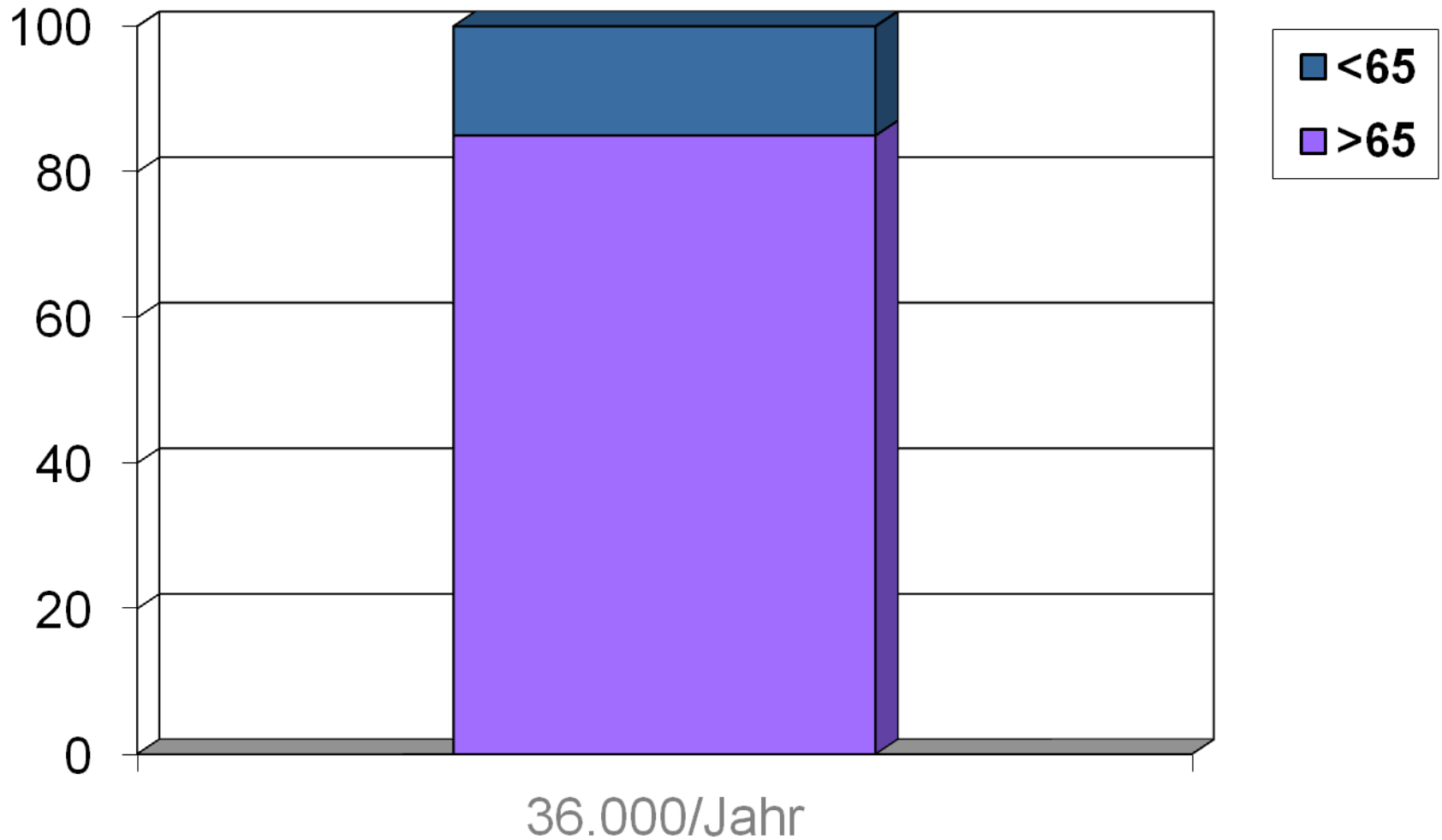


# Influenza

## *Hospitalisation*

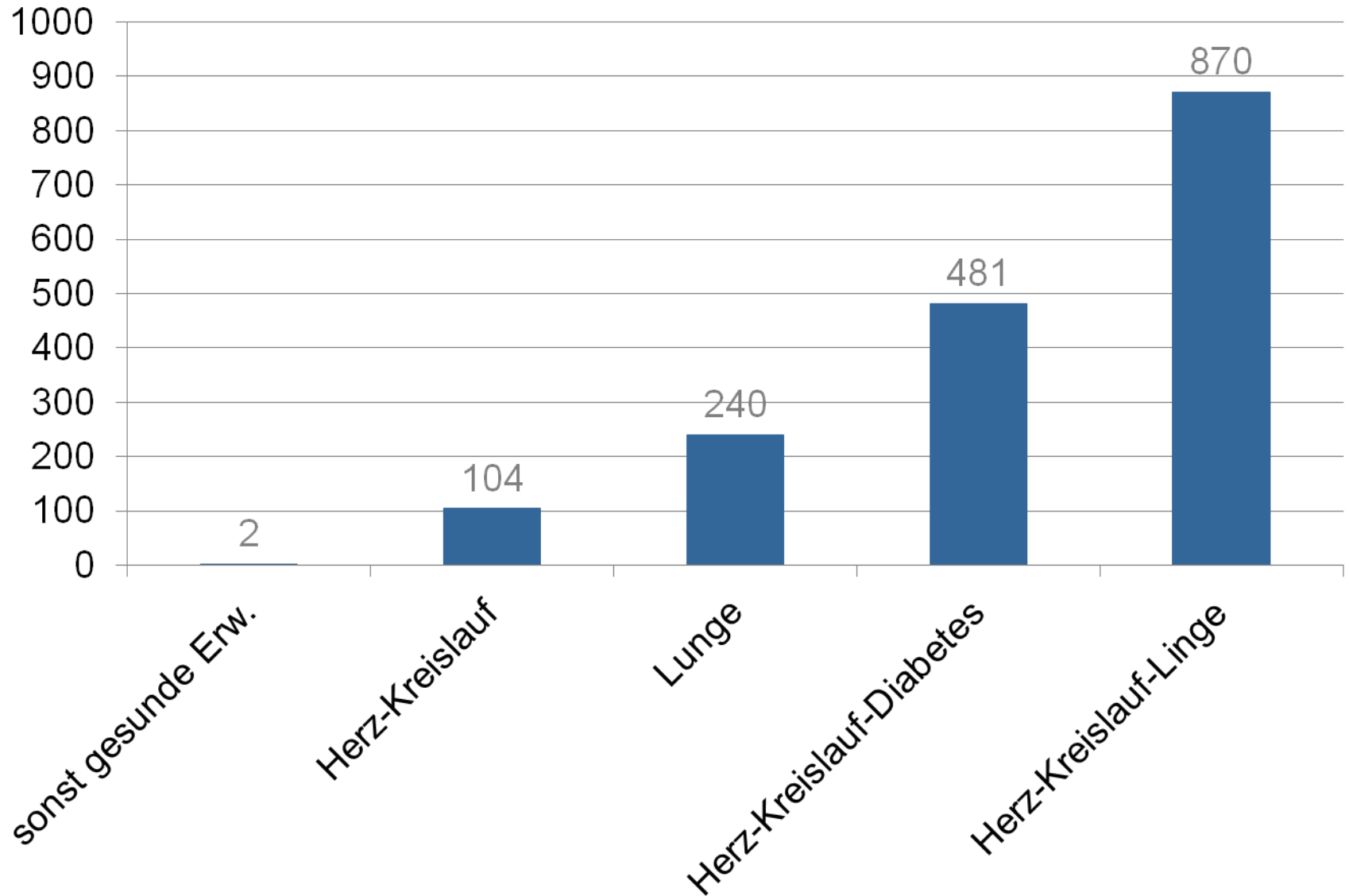


# Influenza Todesfälle



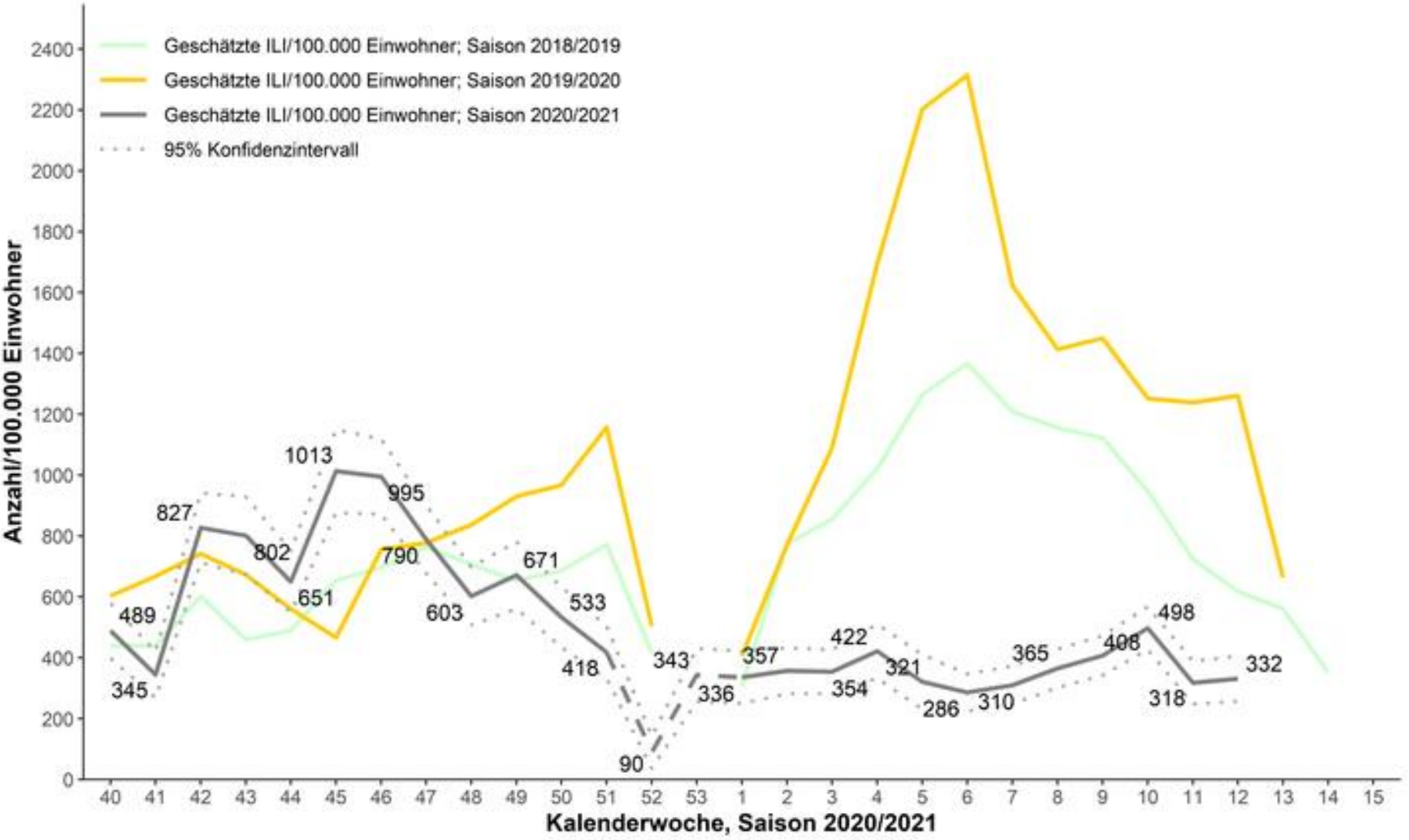
# Sterblichkeit an Influenza

Todesfälle/100.000

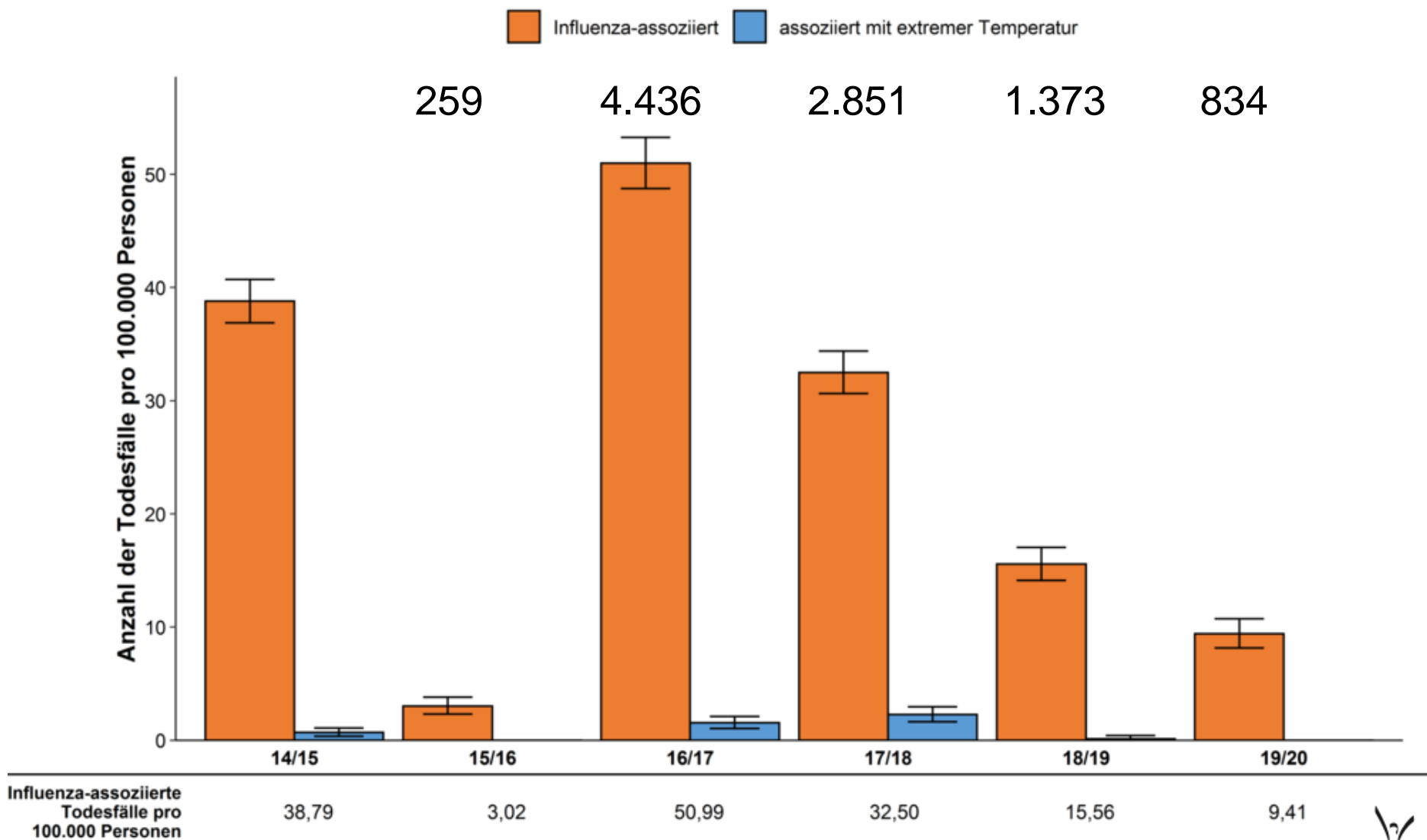


# Geschätzte Anzahl von Grippe/Grippeähnlichen Erkrankungen 2018-2021

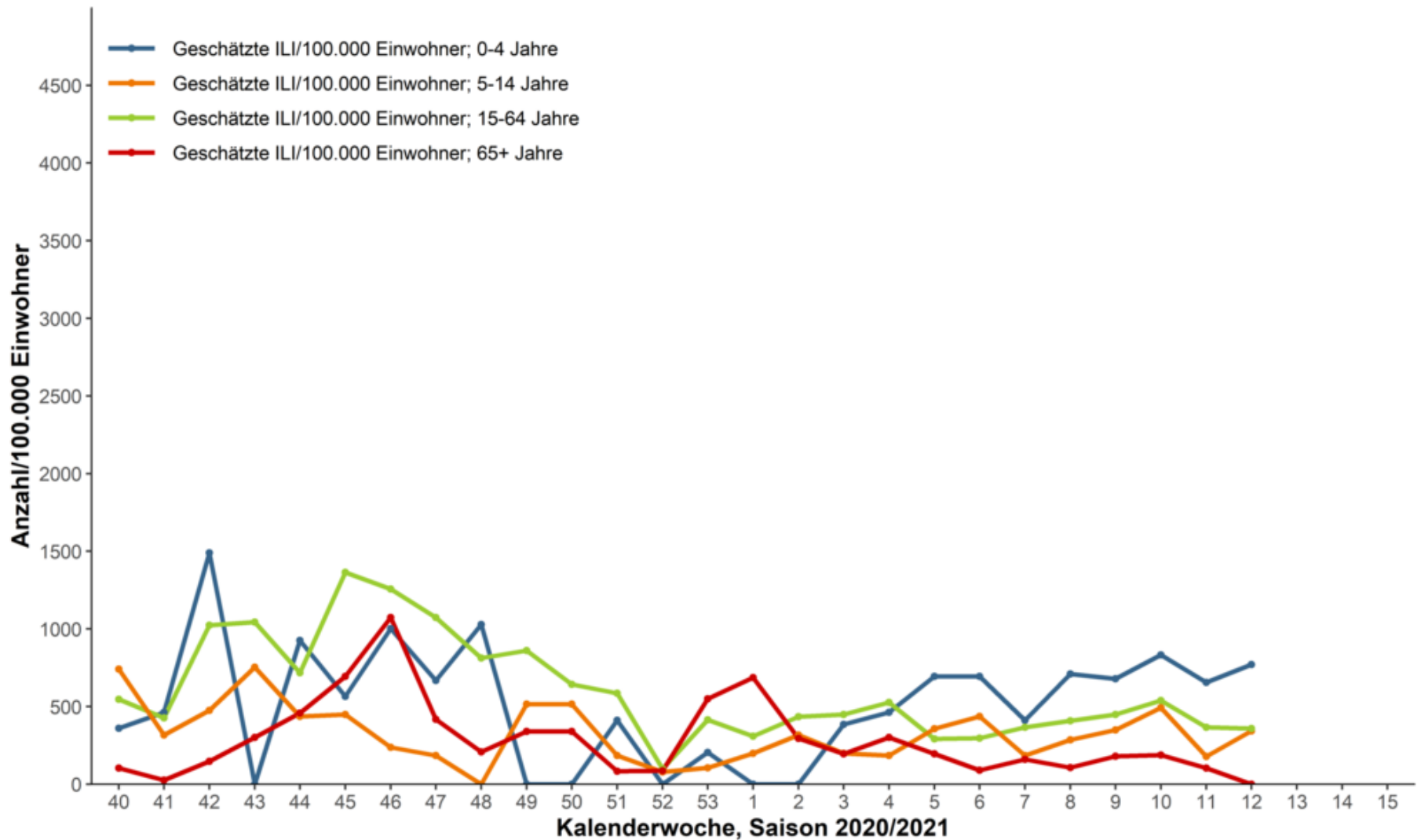
(ILI /100.000 Ew und Alter)



# Influenza assoziierte Todesfälle/100.000 Ew 2014-2020

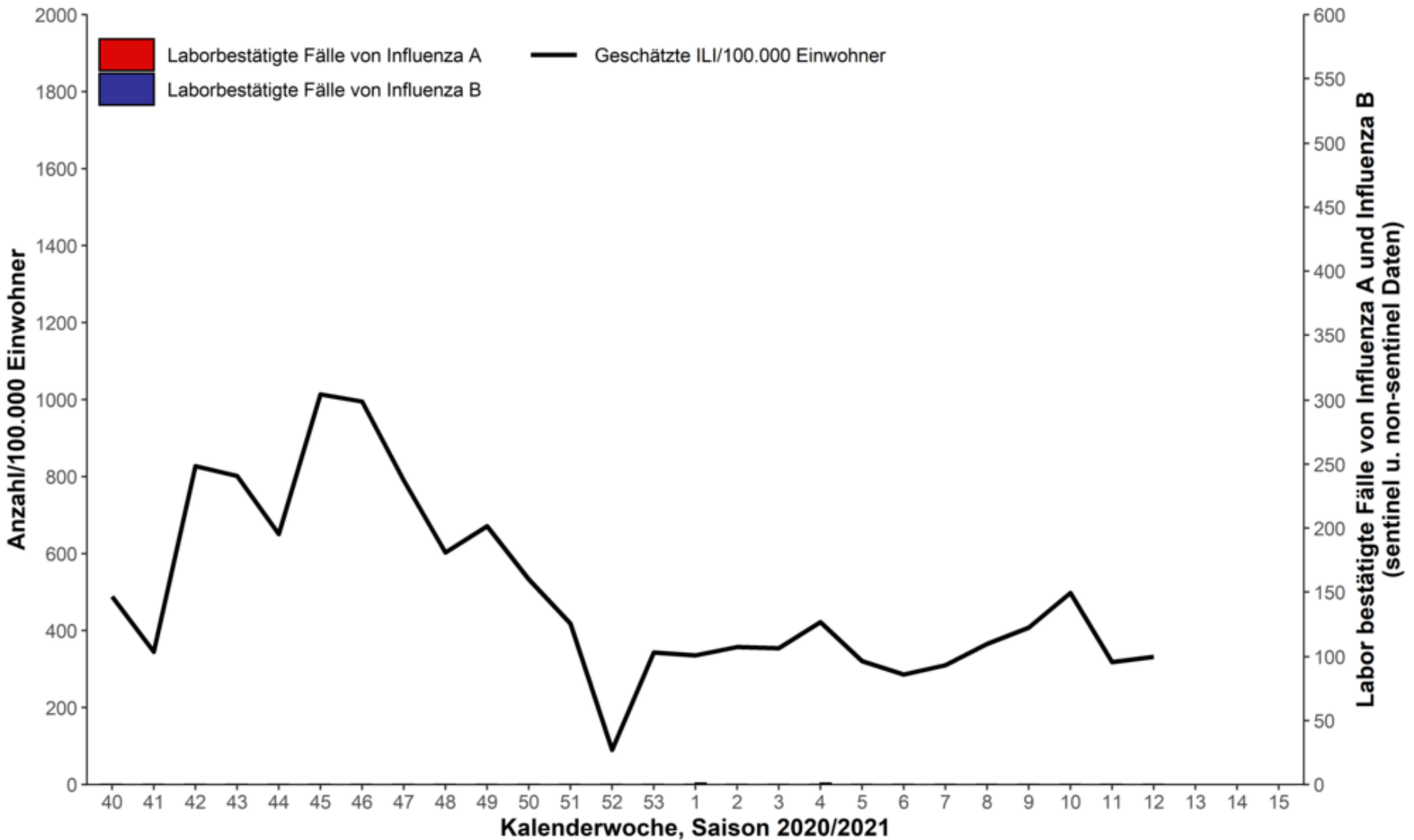


# Geschätzte Anzahl von Grippe/Grippeähnlichen Erkrankungen (ILI /100.000 Ew und Alter)





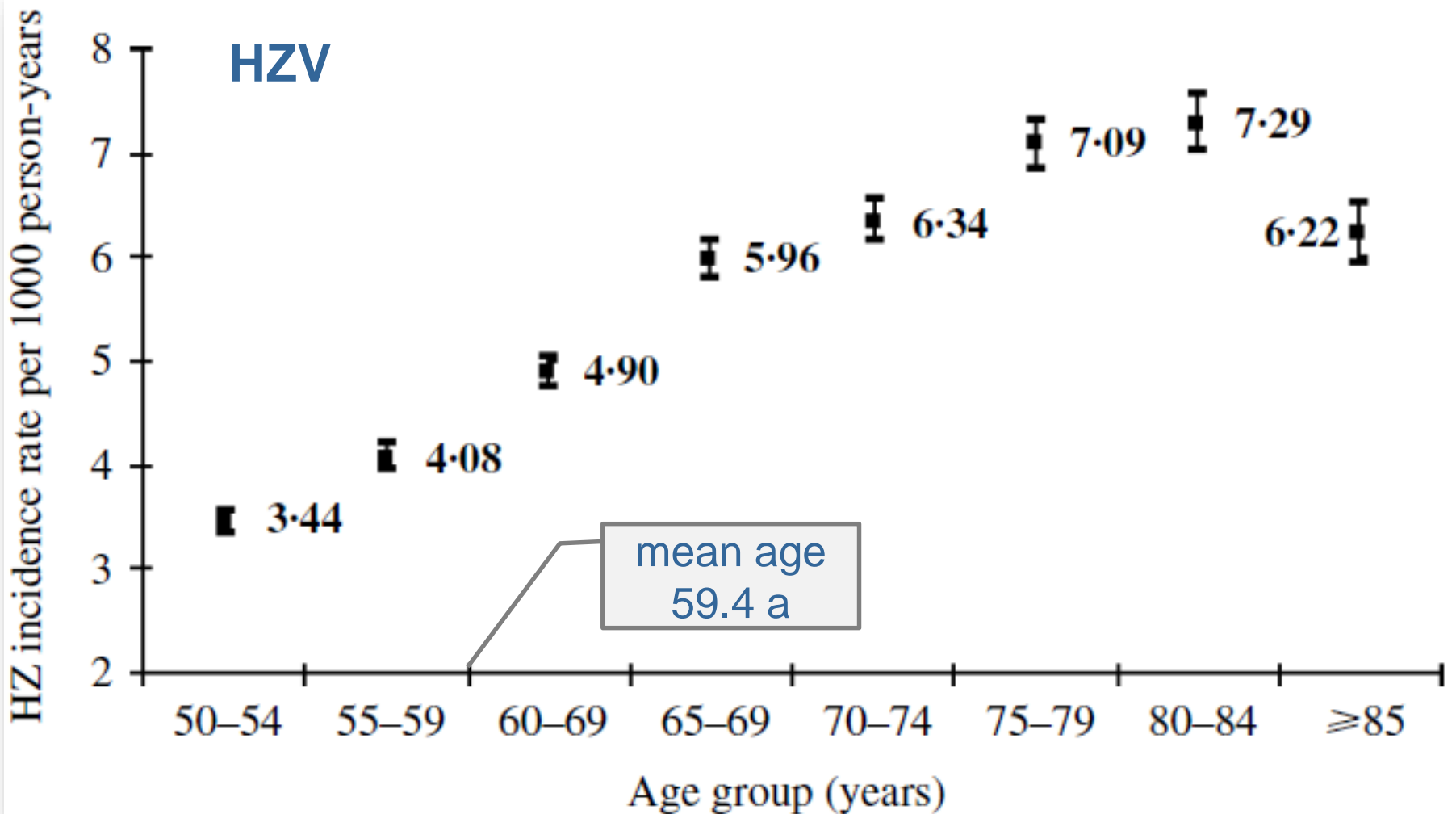
# Gemeldete Fälle (laborbestätigt) Influenza A/B (ILI/100.000 Ew)



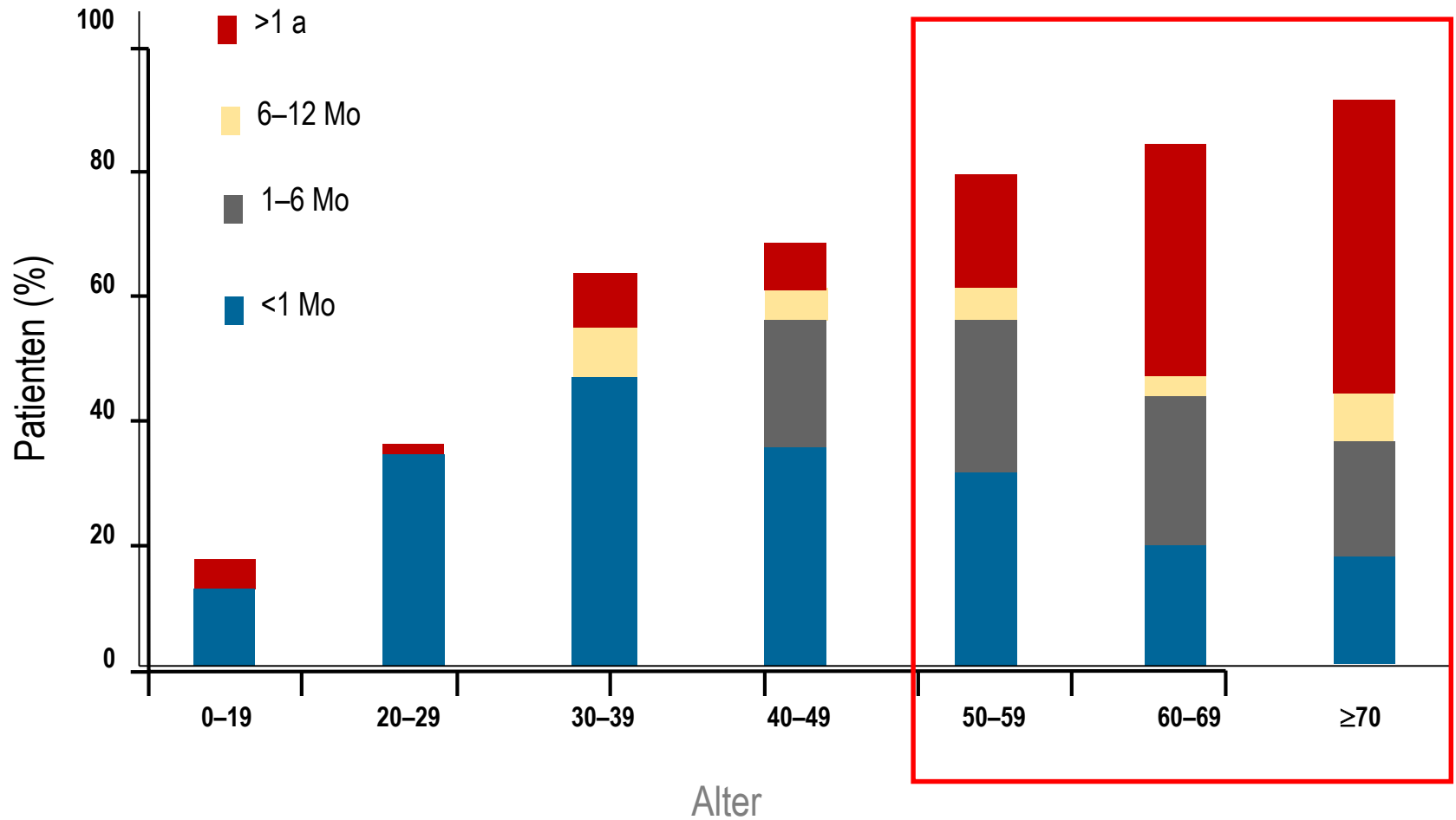
# Herpes zoster Virus (HZV)



# Epidemiology and cost of herpes zoster and post-herpetic neuralgia in the United Kingdom



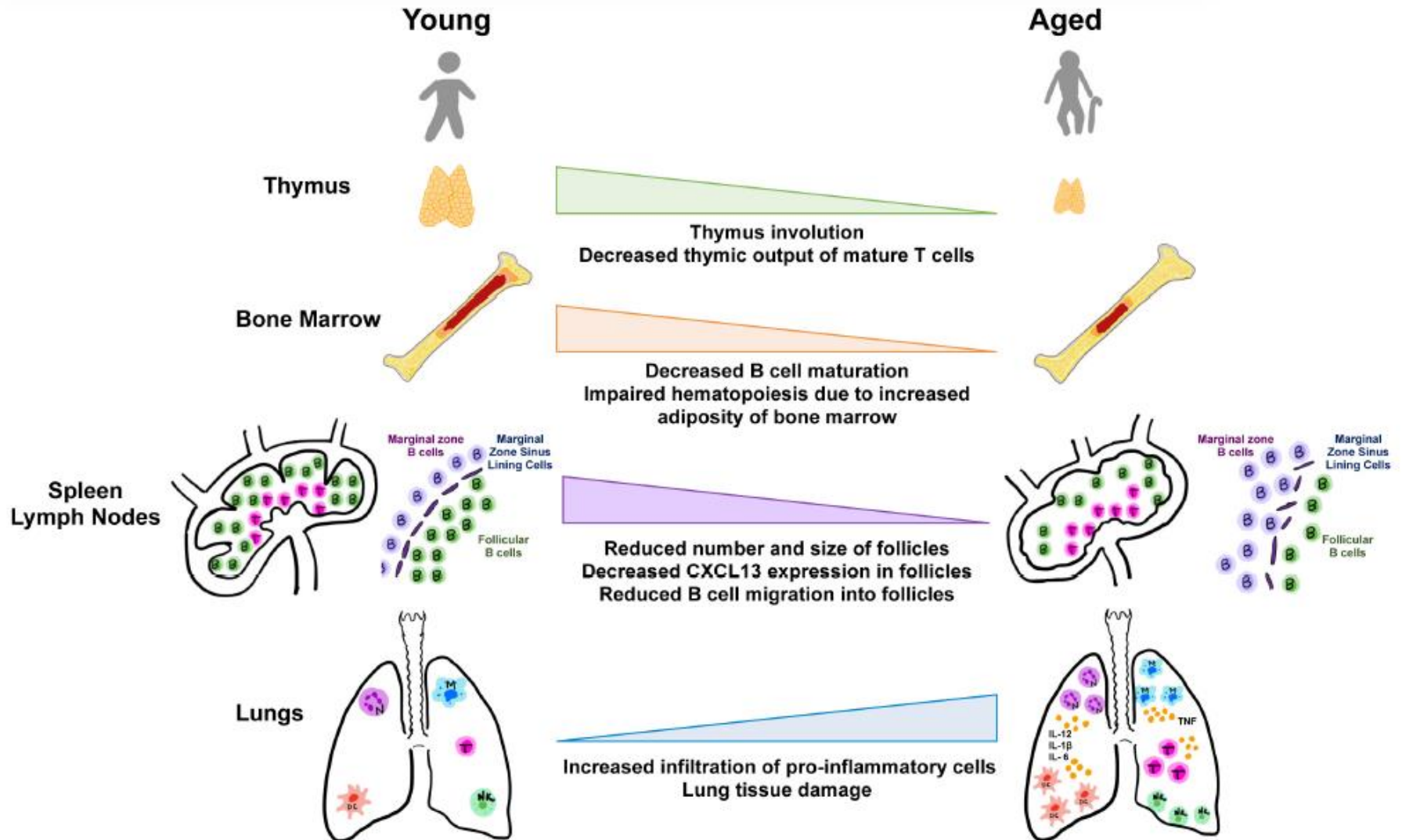
# Post-Zoster Neuralgie



# Efficacy of the Herpes Zoster Subunit Vaccine in Adults 70 Years of Age or Older

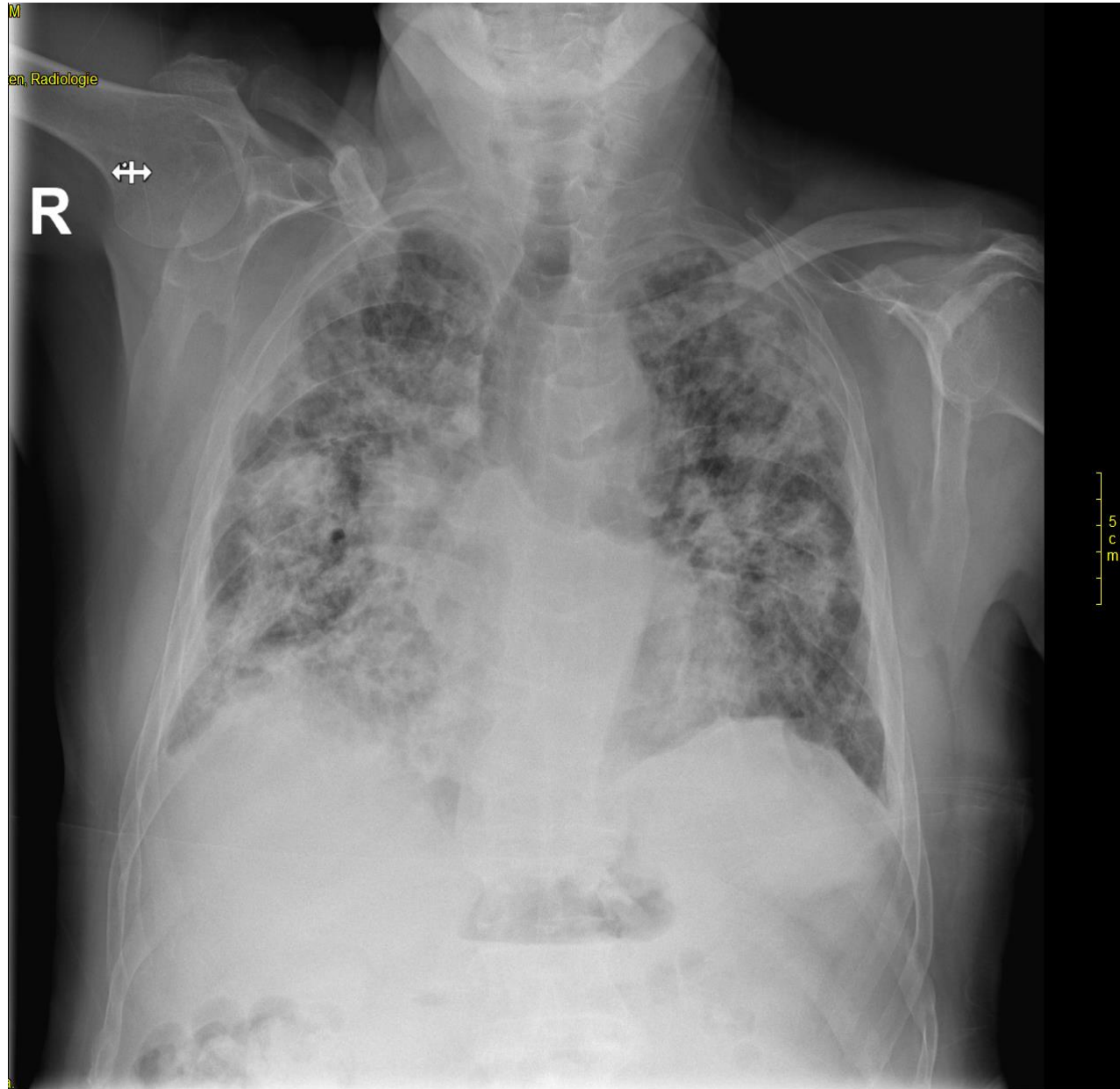
	<b>Efficacy</b>
<i>ZOE-50/70</i> → n=16.596	91.3%
70-79 a	90.0%
≥80 a	89.1%
PZ-Neuralgie (alle)	88.8%

# Aging, Immunity, and COVID-19



# COVID-Pneumonie

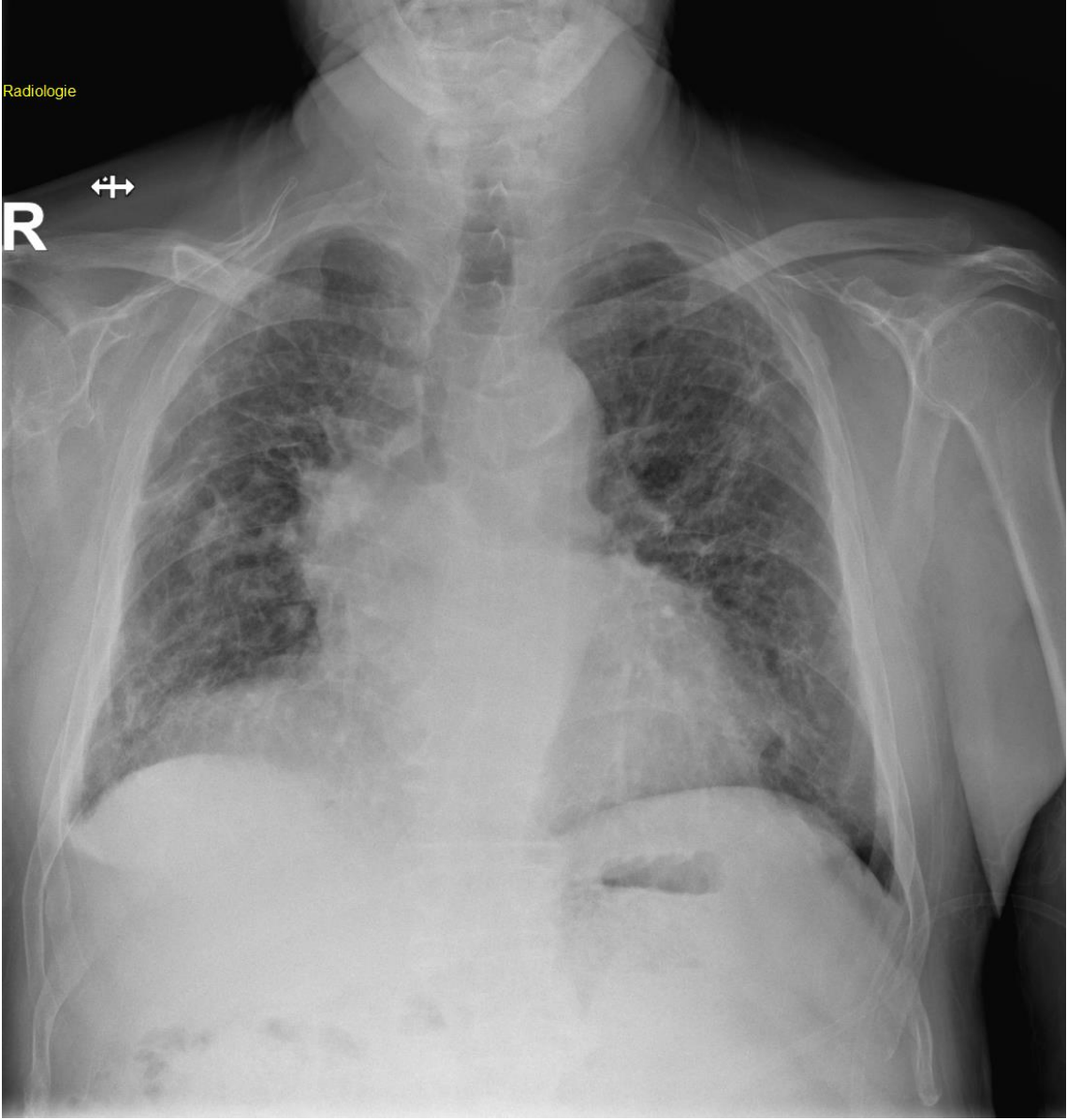
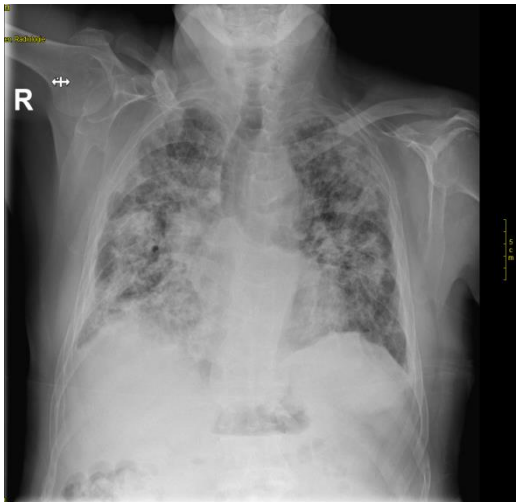
m  
81a





# COVID-Pneumonie

m  
81a



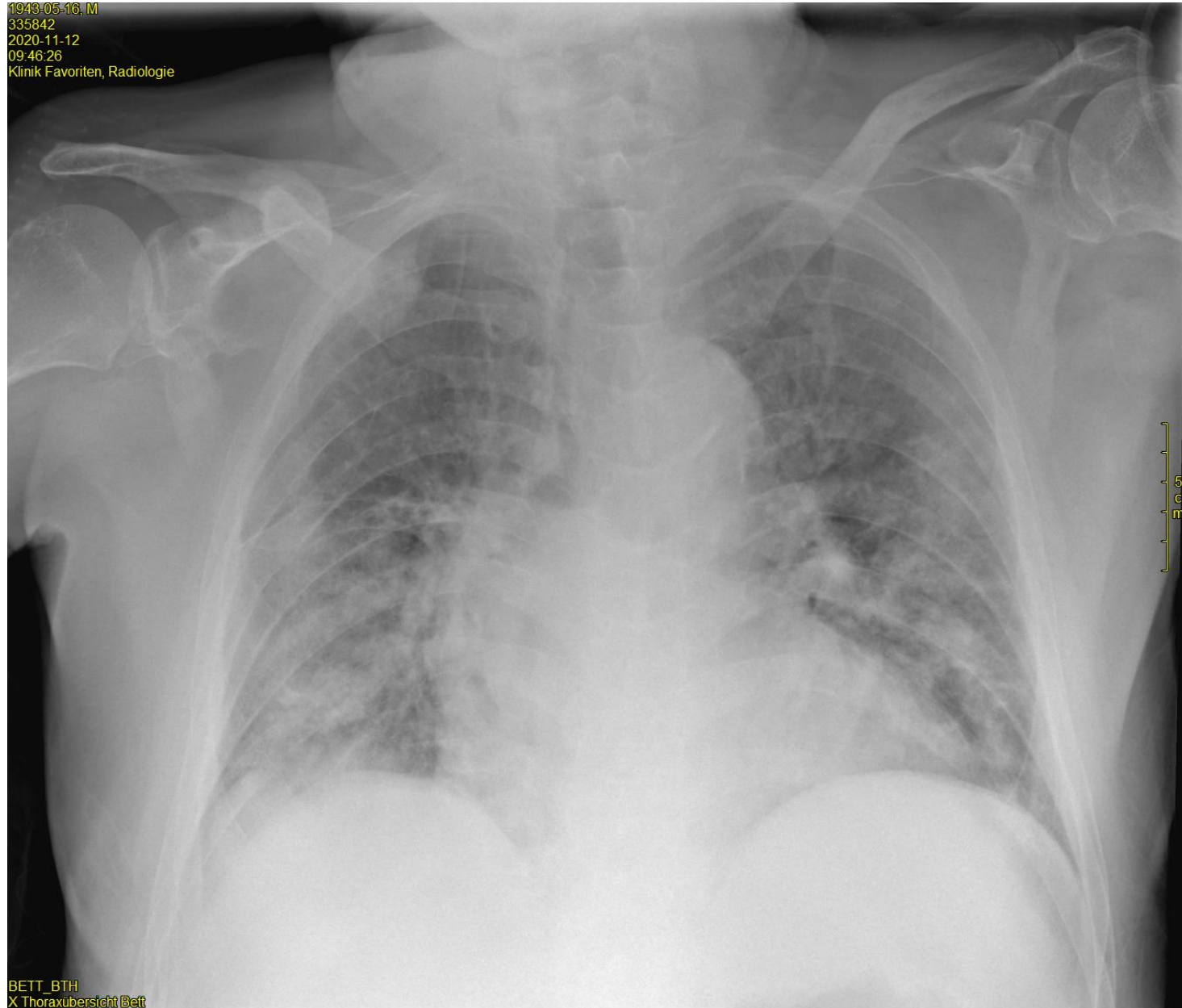


12.11.2020

COVID-Station → AGR

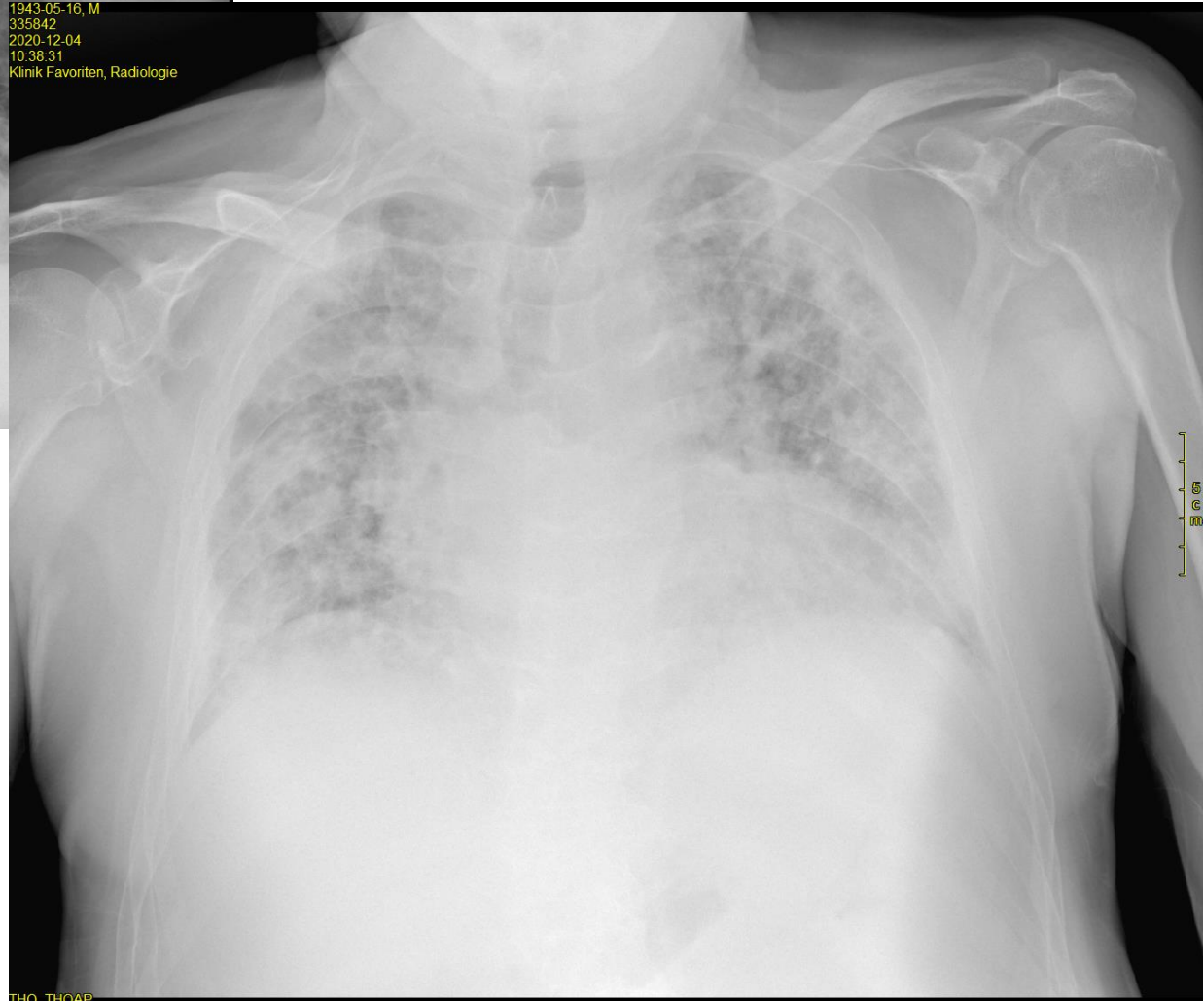
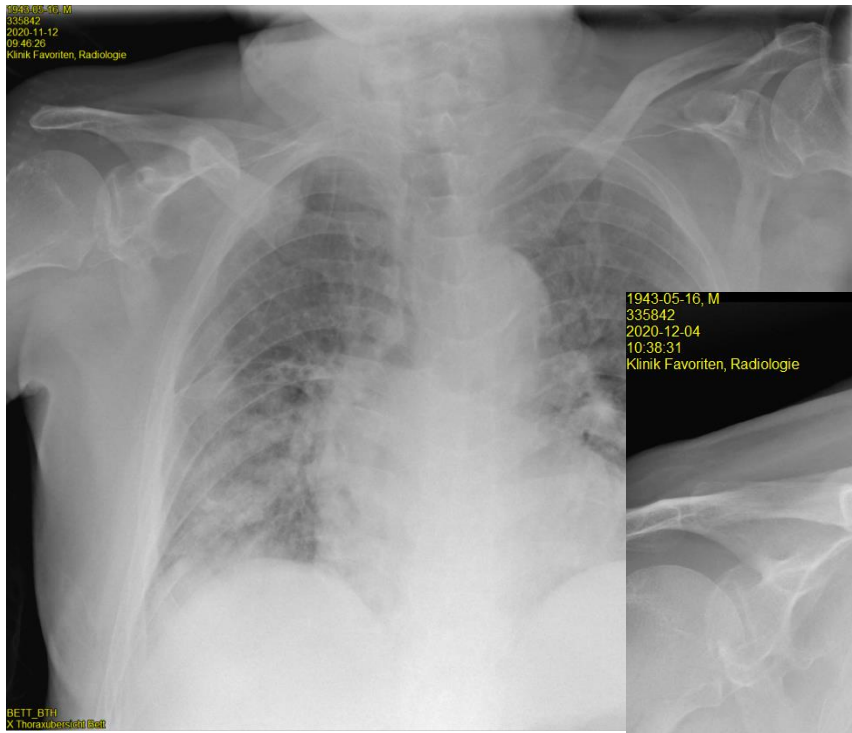
# COVID-Pneumonie

m  
78a



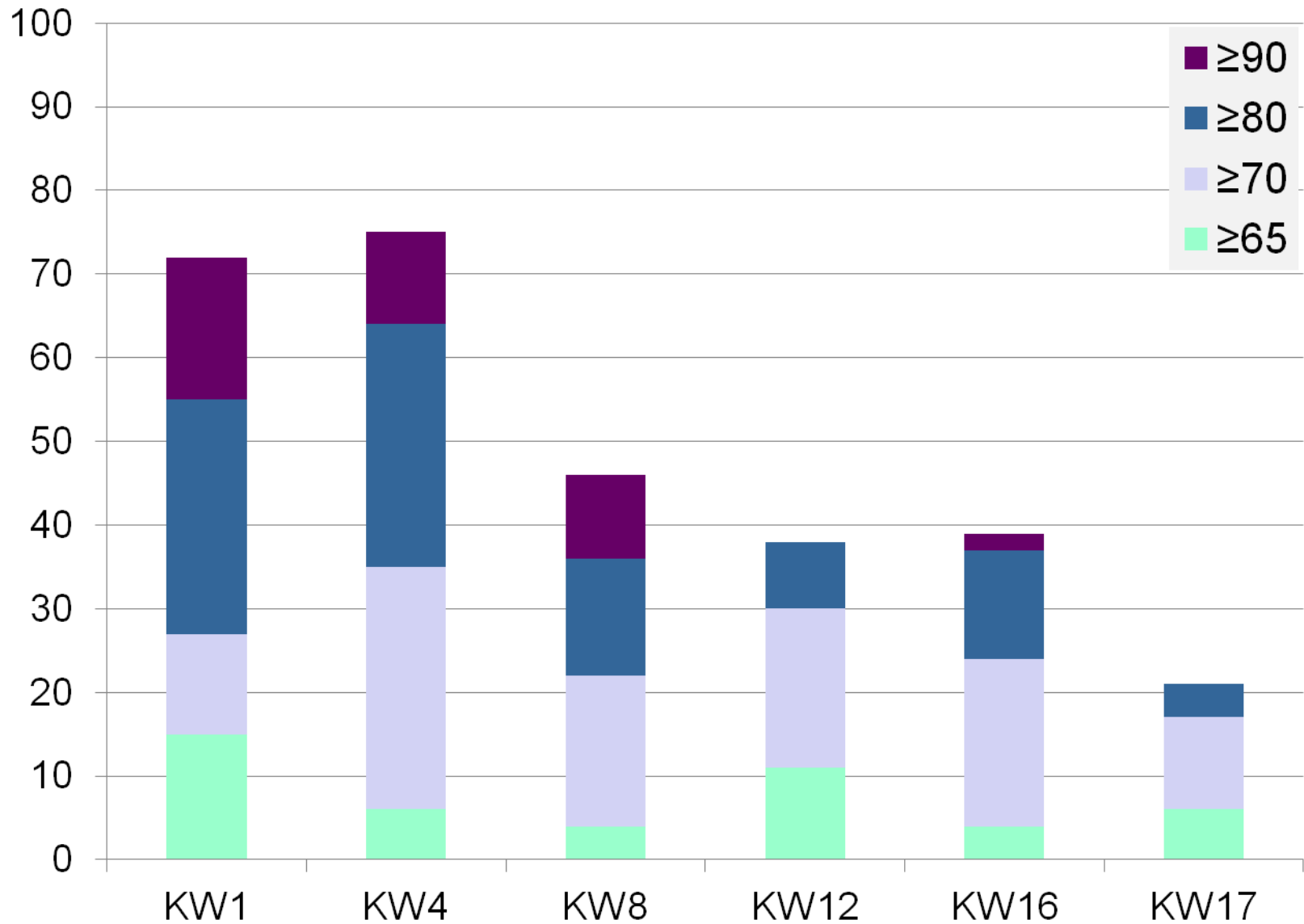
# COVID-Pneumonie

m  
78a



CXR vom  
4.12.2020

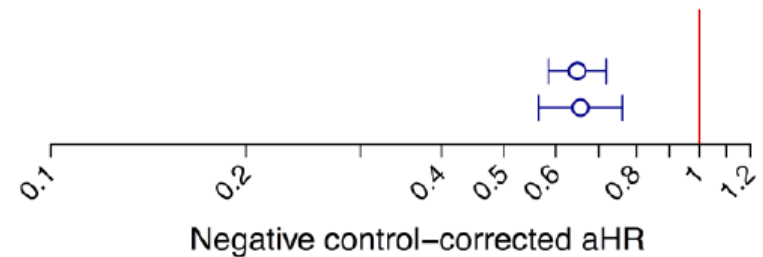
# Altersstruktur COVID-19 Aufnahmen KFN 2021



# Prevention of COVID-19 among older adults receiving pneumococcal conjugate vaccine suggests interactions between *Streptococcus pneumoniae* and SARS-CoV-2 in the respiratory tract □

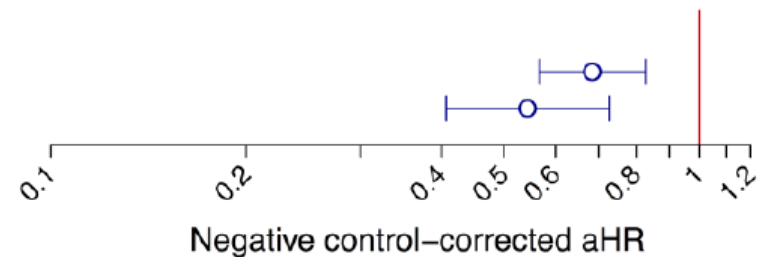
## A) Any COVID-19 diagnosis

	aHR (95% CI)
PCV13	0.65 (0.59, 0.72)
PCV13 and PPSV23	0.66 (0.56, 0.76)



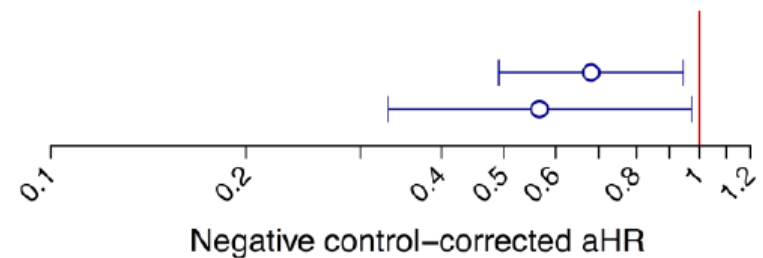
## B) COVID-19 hospitalization

	aHR (95% CI)
PCV13	0.68 (0.57, 0.83)
PCV13 and PPSV23	0.54 (0.41, 0.73)

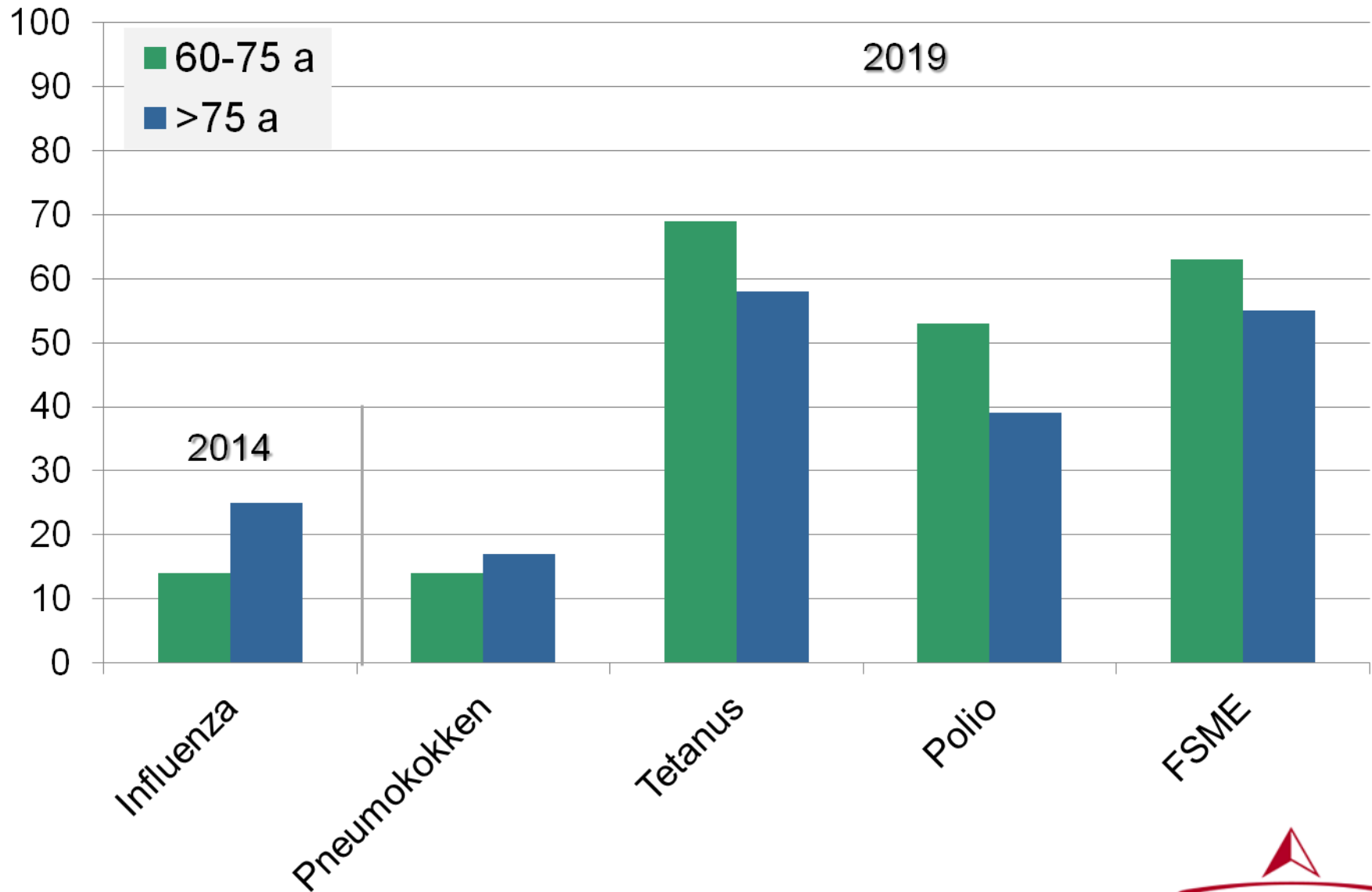


## C) Fatal COVID-19 hospitalization

	aHR (95% CI)
PCV13	0.68 (0.49, 0.95)
PCV13 and PPSV23	0.57 (0.33, 0.97)



# Impfschutz Österreich > 60-Jährige



# Was wird empfohlen ?





# WHO Empfehlung Influenza 4-fach Impfstoff 2021-2022

## *Nord-Hemisphäre*

### **Egg-based Vaccines**

- an A/Victoria/2570/2019 (H1N1)pdm09-like virus;
- an A/Cambodia/e0826360/2020 (H3N2)-like virus;
- a B/Washington/02/2019 (B/Victoria lineage)-like virus; and
- a B/Phuket/3073/2013 (B/Yamagata lineage)-like virus.

### **Cell- or recombinant-based Vaccines**

- an A/Wisconsin/588/2019 (H1N1)pdm09-like virus;
- an A/Cambodia/e0826360/2020 (H3N2)-like virus;
- a B/Washington/02/2019 (B/Victoria lineage)-like virus; and
- a B/Phuket/3073/2013 (B/Yamagata lineage)-like virus.



# Auffrischungen für Erwachsene mit vorliegender Grundimmunisierung

	im 51.–60. Jahr	im 61.–65. Jahr	ab dem 66. Jahr	
Diphtherie	■	■	■	<b>■ Impfung empfohlen</b> nicht kostenfrei
Tetanus	→			
Pertussis	B	← alle 5 Jahre →	B	
Poliomyelitis	■	■	■	<b>■ Nachhol-Impfung empfohlen</b> nicht kostenfrei
Haemophilus influenzae B				
Hepatitis B	■	■		
Pneumokokken		13 → 23	■	
Masern, Mumps, Röteln	■	■	■	<b>■ Nachhol-Impfung empfohlen</b> kostenfrei



# Auffrischungen für Erwachsene mit vorliegender Grundimmunisierung

	im 51.–60. Jahr	im 61.–65. Jahr	ab dem 66. Jahr
FSME g			
Varizellen			
Hepatitis A			
Influenza i			
Herpes Zoster			

-  Impfung empfohlen  
nicht kostenfrei
-  Nachhol-Impfung empfohlen  
nicht kostenfrei

Vaccines licensed for use in older adults.

Infectious agent	Vaccine	Vaccine formulation
Influenza virus	Fluzone <sup>®</sup> High-Dose Quadrivalent Inactivated influenza vaccine (IV)	60 µg HA <sup>a</sup> antigen of each recommended influenza strain
	FLUAD <sup>®</sup> IV with adjuvant	15 µg HA antigen of each recommended influenza strain + MF59 <sup>®</sup> adjuvant
<i>Streptococcus pneumoniae</i>	Pneumovax <sup>®</sup> 23-valent polysaccharide vaccine (PPV23)	25 µg polysaccharide of each serotype
	Prevnar <sup>®</sup> 13-valent conjugated vaccine PCV13	2.2 µg polysaccharide of each serotype conjugated to CRM <sub>197</sub> + 0.125 mg aluminum phosphate
Varicella zoster virus	Zostavax <sup>®</sup> Zoster live vaccine	20,000 Plaque forming Units (PFU) Oka strain
	Shingrix <sup>®</sup> Recombinant zoster vaccine	50 µg VZV <sup>b</sup> glycoprotein E (gE) + AS01 <sub>B</sub> adjuvant

# TAKE HOME MESSAGE

