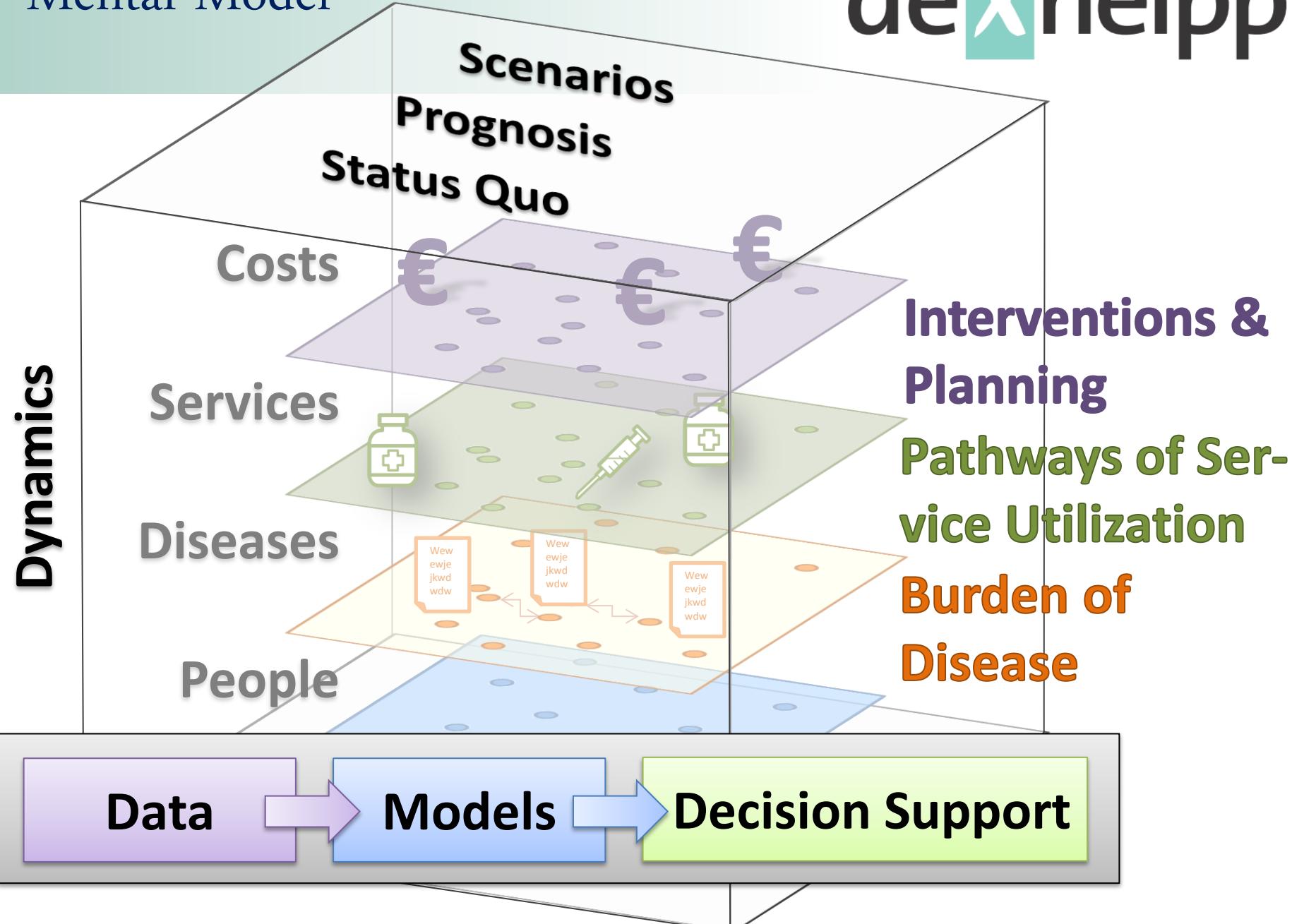




Entwicklung und Umsetzung von Methoden
zur Entscheidungsunterstützung im
österreichischen Gesundheitssystem

Mental Model

dexhelpp



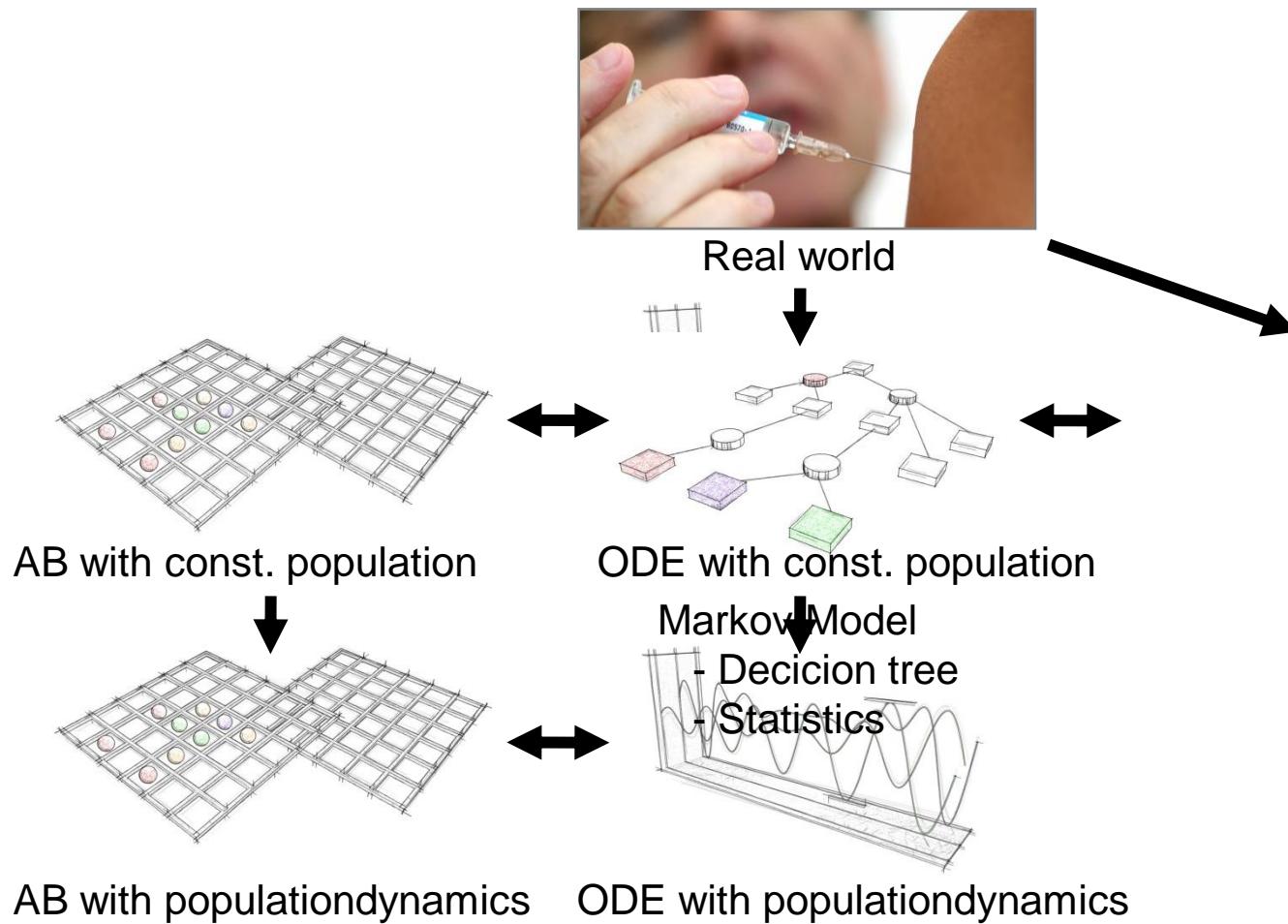
Modelling of infectious diseases: Pneumococcal modelling systems



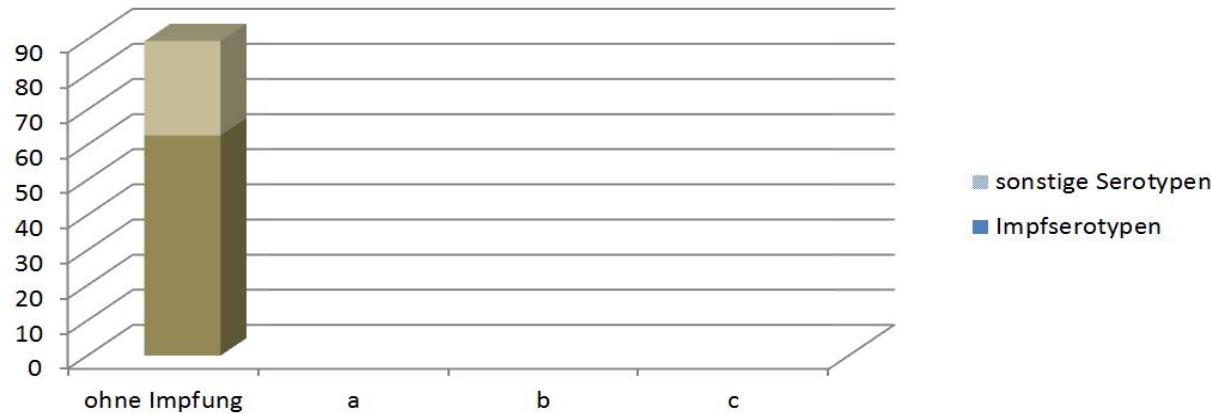
Pneumococcal disease is caused by a bacterium known as *Streptococcus pneumoniae*, or pneumococcus. There are vaccines to prevent pneumococcal disease in children and adults. There are 91 strains of pneumococcal bacteria. Pneumococcal conjugate vaccine (PCV) protects against 7 of them. These 7 strains are responsible for most severe pneumococcal infections among children.

(Zauner et al, 2010 ; Urach, 2009)

Modelling of infectious diseases: Pneumococcal modelling systems



Inzidenz bei Kleinkindern



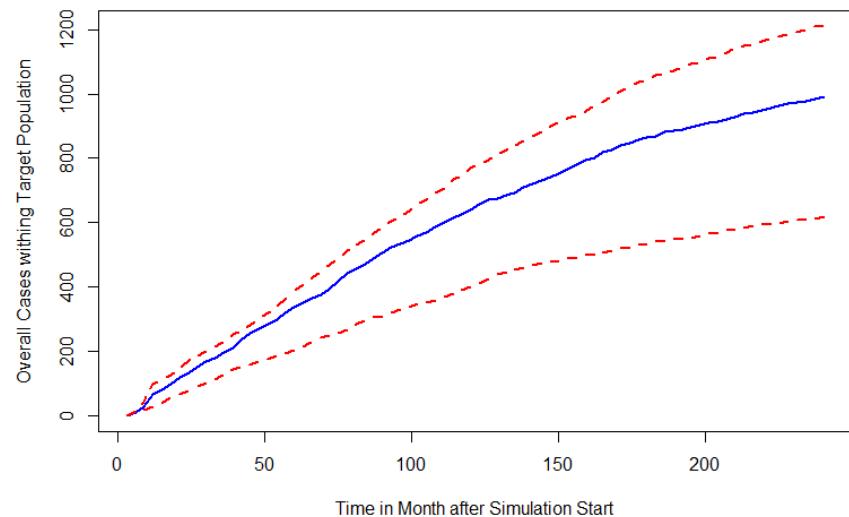
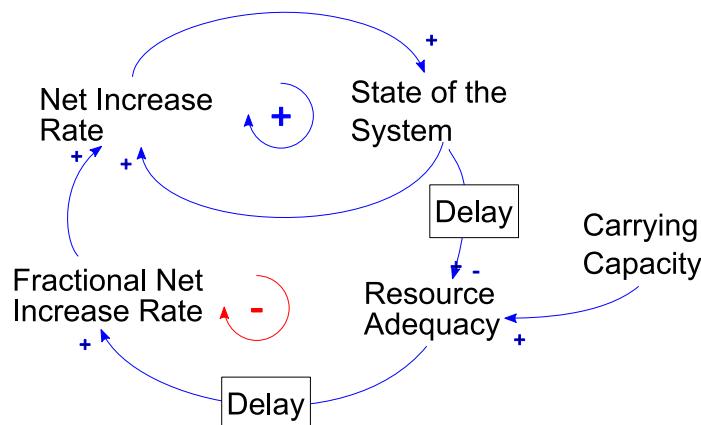
- a) **Gebräuchliche Prognosemodelle (Markov-Modelle, auf Österreich umgerechnet):**
E.D.G. McIntosh, P. Conway, J. Willingham, R. Hollingsworth, and A. Lloyd. The cost-burden of paediatric pneumococcal disease in the UK and the potential cost-effectiveness of prevention using 7-valent pneumococcal conjugate vaccine. *Vaccine*, 2003 Jun 2,21(19-20):2564-72
- b) **Dynamisches Pneumokokkenmodell, 2009 – Simulationsergebnisse:**
u.a.: C. Urach, "Modellierung und Simulation von Impfstrategien gegen Pneumokokkenerkrankungen: Markov- und Differentialgleichungsmodelle im Vergleich" (Diploma Thesis, Inst. f. Analysis und Scientific Computing, Vienna University of Technology, 2009).
- c) **Erhebung aus den USA, 2010 (auf Österreich umgerechnet):**
Hsu KK et al. Changing serotypes causing childhood invasive pneumococcal disease: Massachusetts, 2001–2007. *Pediatr Infect Dis J* 2010 Apr; 29:289

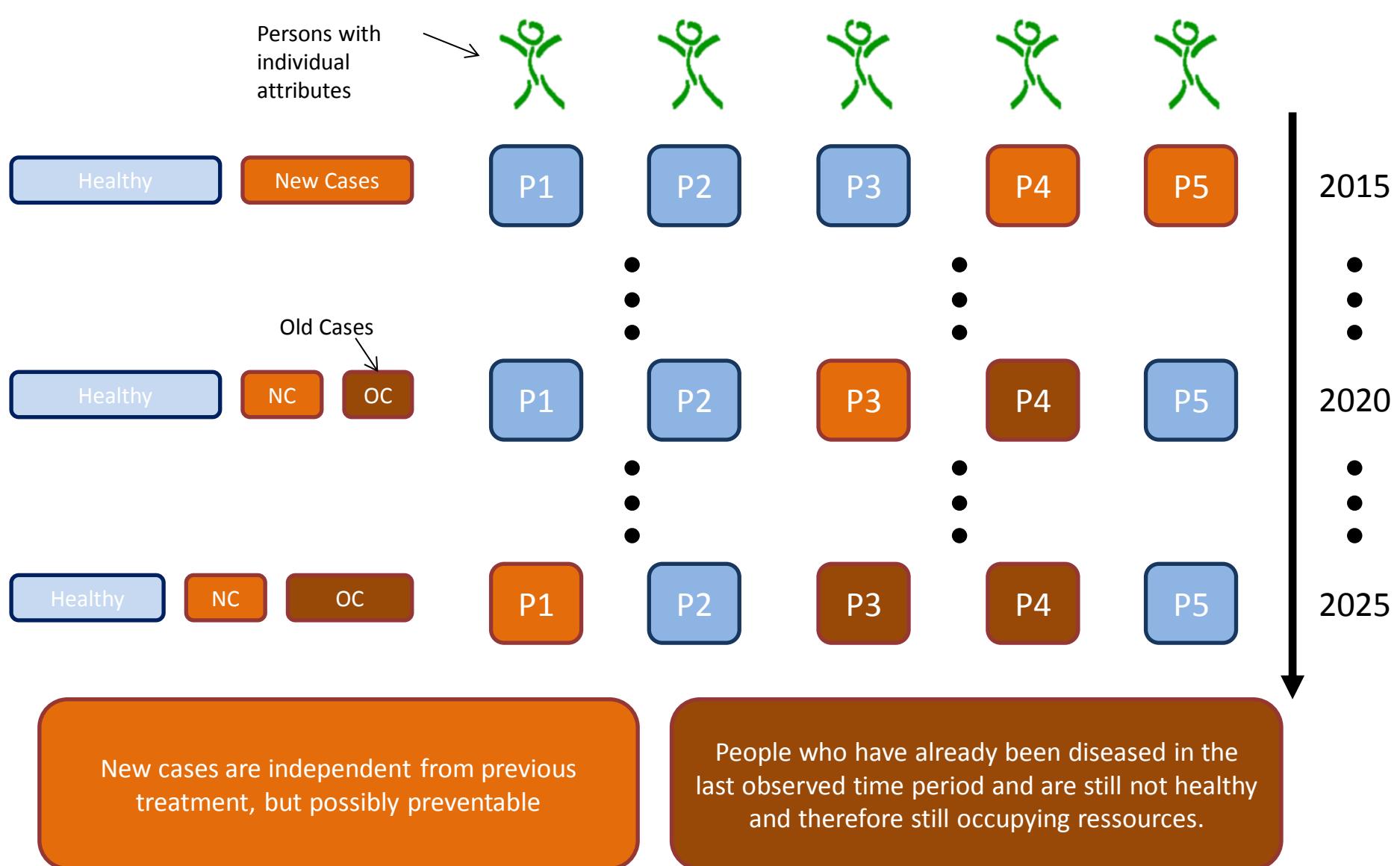
Prognose

Sensitivität von Parametern mit dynamischen Auswirkungen (z.B. Veränderung von Bewegungs- oder Ernährungsgewohnheiten)

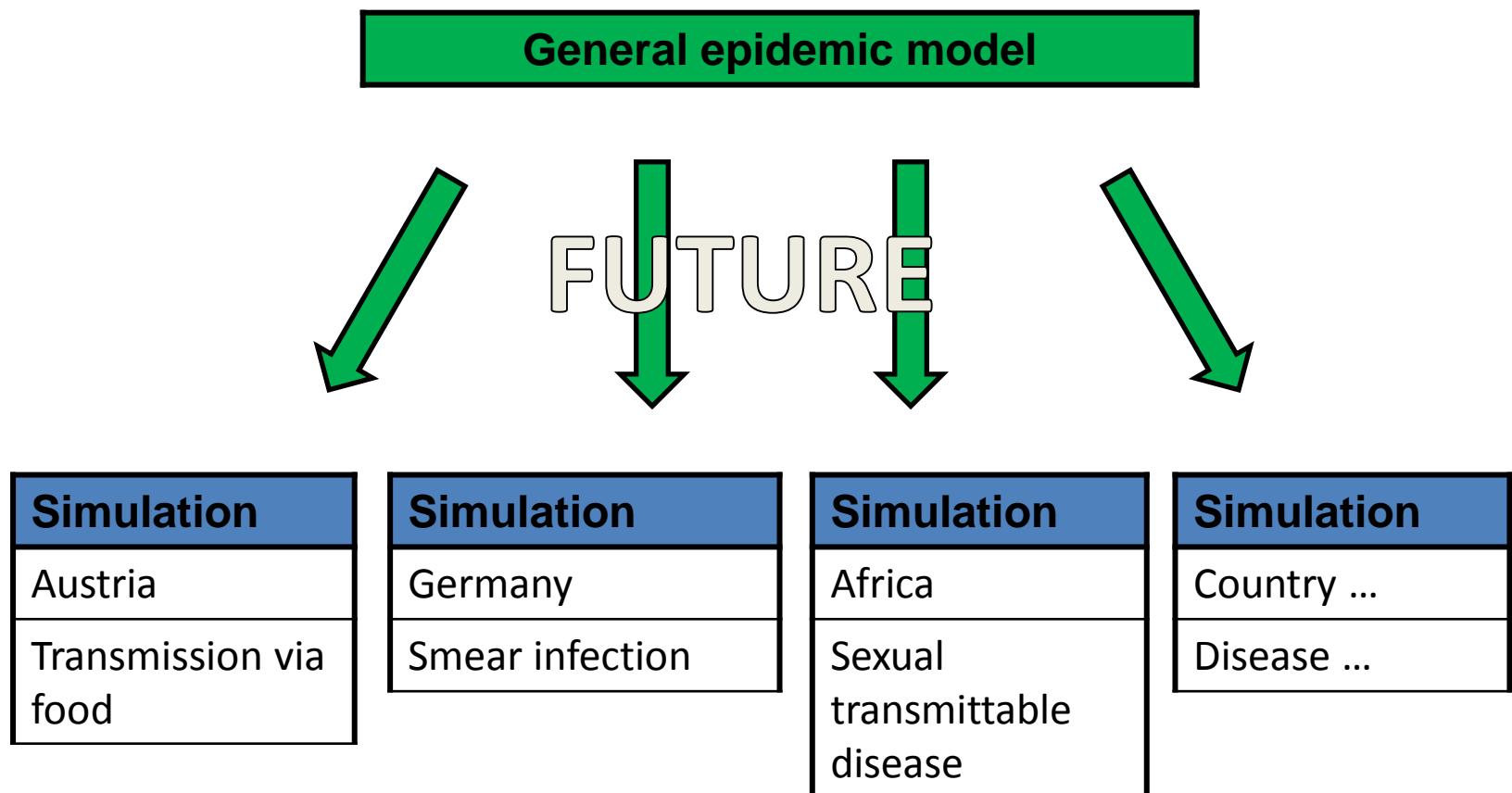


Realistischere Abschätzung in welchem Rahmen sich die Fallzahlen bewegen werden

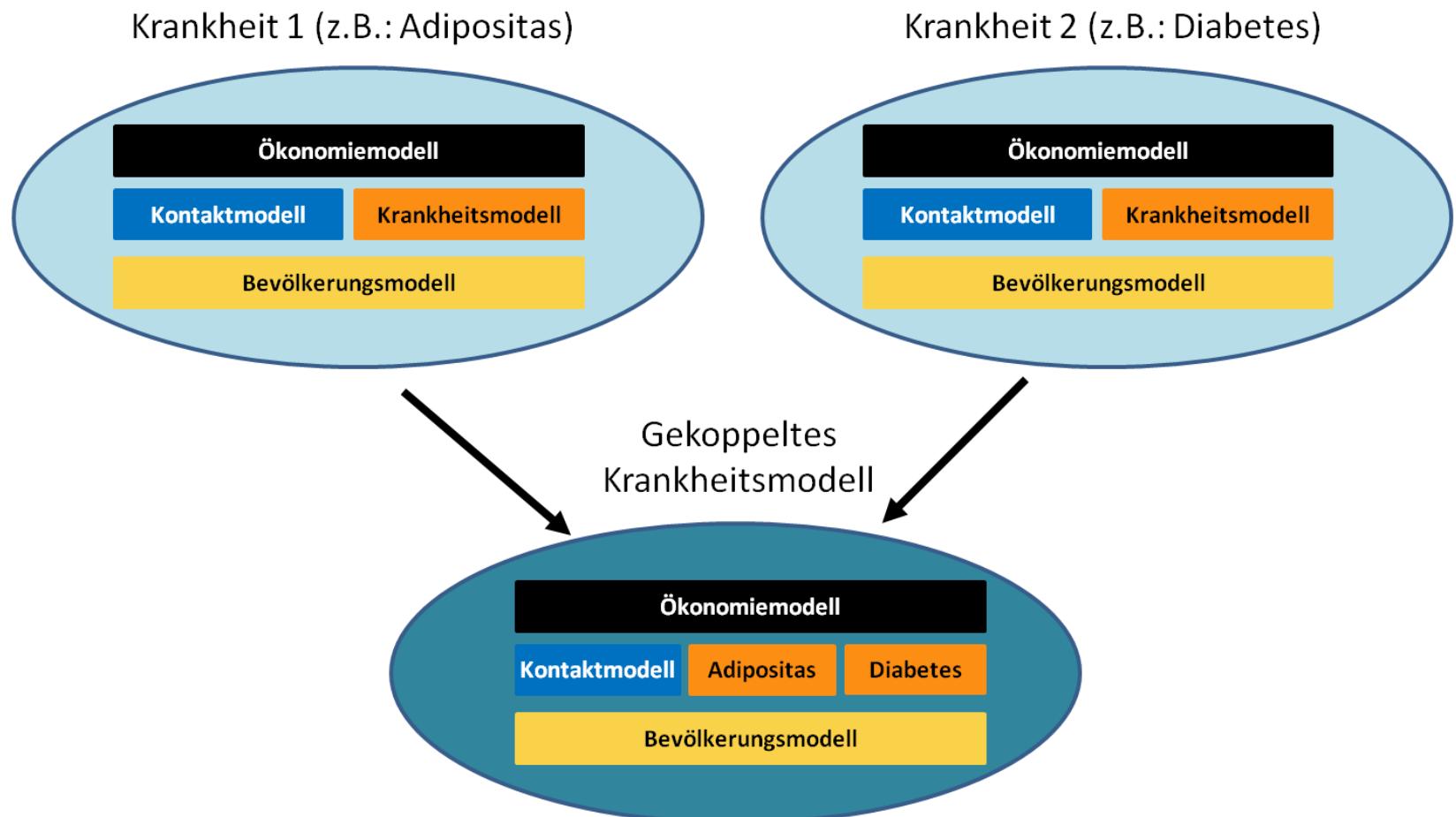




General epidemic model	
Population structure	
Pathogen(s)	
Pneumococcal model (2009) Transmission of the pathogen(s)	Influenza model (2010)
Austrian population	Austrian population
Sicknesses / infection states	Seasonal influenza virus
Competitive serotypes	Contacts between persons for droplet infections
Contacts between persons for droplet infections	Flu sickness cases
Pneumonia, meningitis, etc.	



Kopplung



Veränderte Bevölkerungsstruktur

(Personen können verschiedene Parameter wie Bildungsstatus, Familienstand haben)

Veränderte Resistenzstruktur

(z.B. durch Impfung)

→ Auswirkungen in *allen* Altersklassen

