A Conceptual Framework for Modelling the Impact of Social Protection on TB Epidemiology

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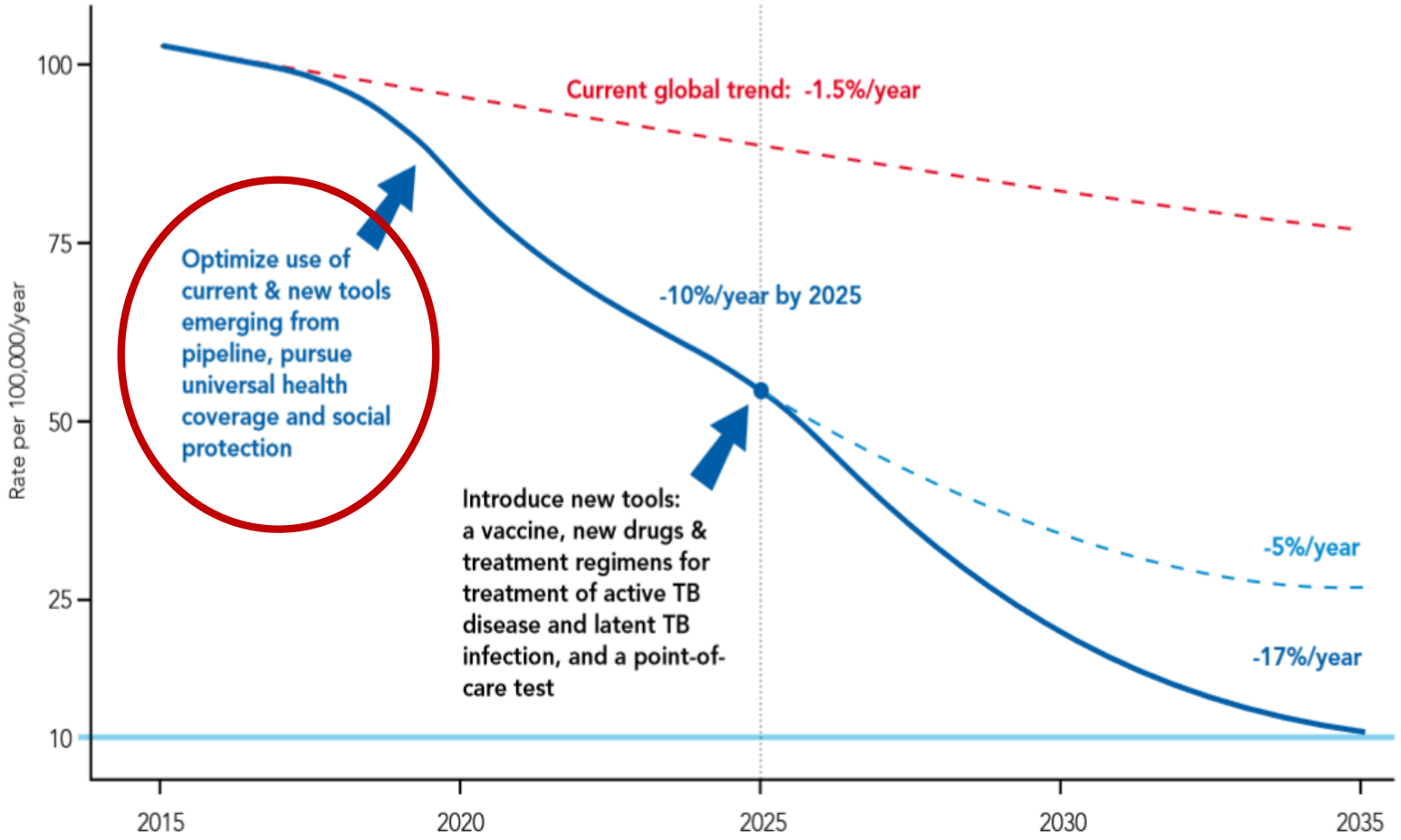
THE END TB STRATEGY

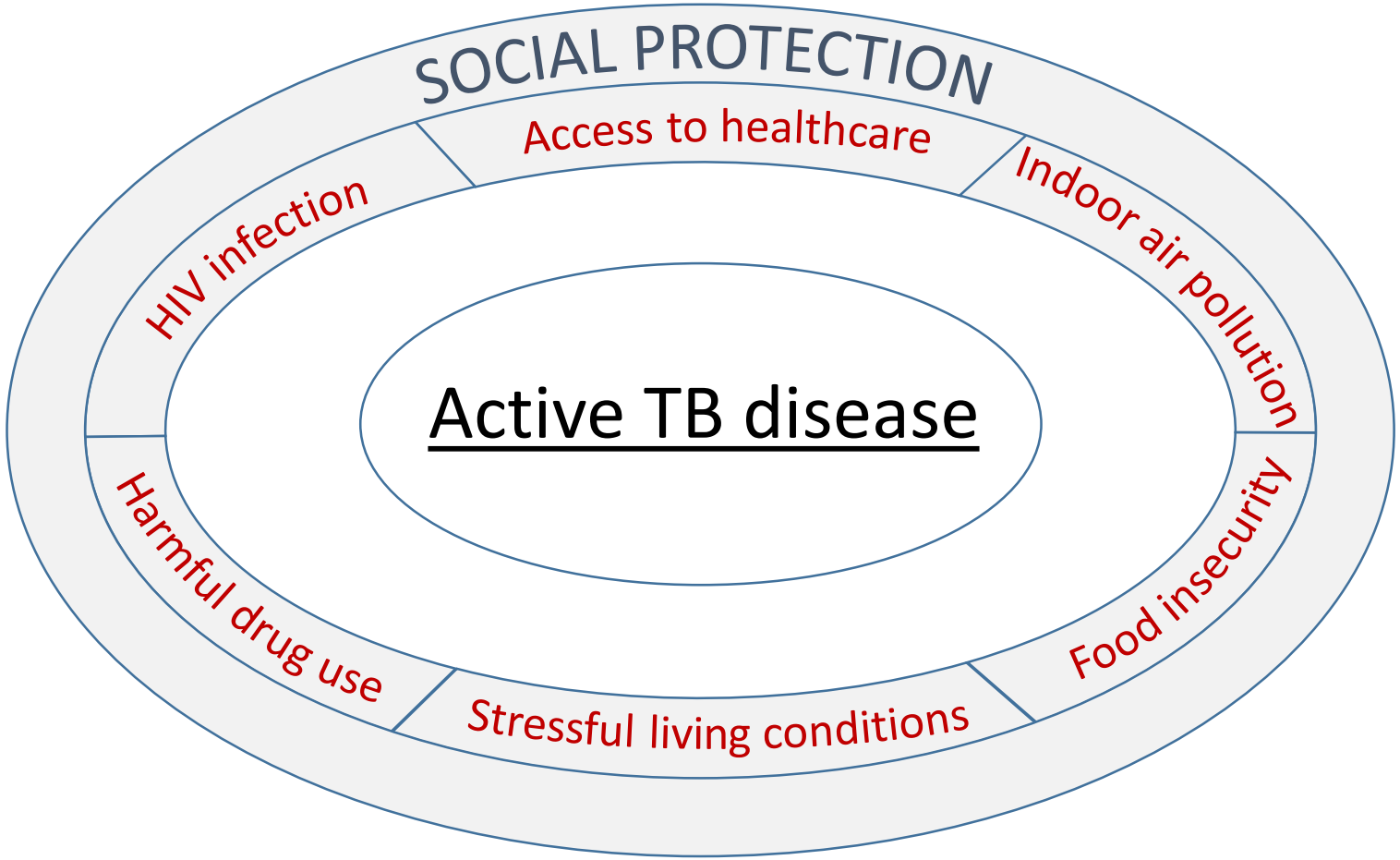
Goal: End the tuberculosis epidemic

Indicators 1 & 2: Reduction in TB incidence rate and number of TB deaths



World Health Organization

THE END TB STRATEGY



Social protection

Models can improve our understanding of….

1. How much social protection initiatives may a) reduce TB incidence and TB deaths, and b) prevent catastrophic costs
2. Which populations it would be (cost-) beneficial to provide social protection initiatives to
3. Which social protection initiatives should be prioritised in different settings
4. The incremental (cost-) benefits of running social protection initiatives integrated with TB care

Social protection and TB incidence

Th
im
It

1. **Modelling the impact of social protection on tuberculosis: the S-PROTECT project**
2.
3. D. Boccia ✉, W. Rudgard, S. Shrestha, K. Lönnroth, P. Eckhoff, J. Golub, M. Sanchez, E. Maciel, D. Rasella, P. Shete, D. Pedrazzoli, R. Houben, S. Chang & D. Dowdy

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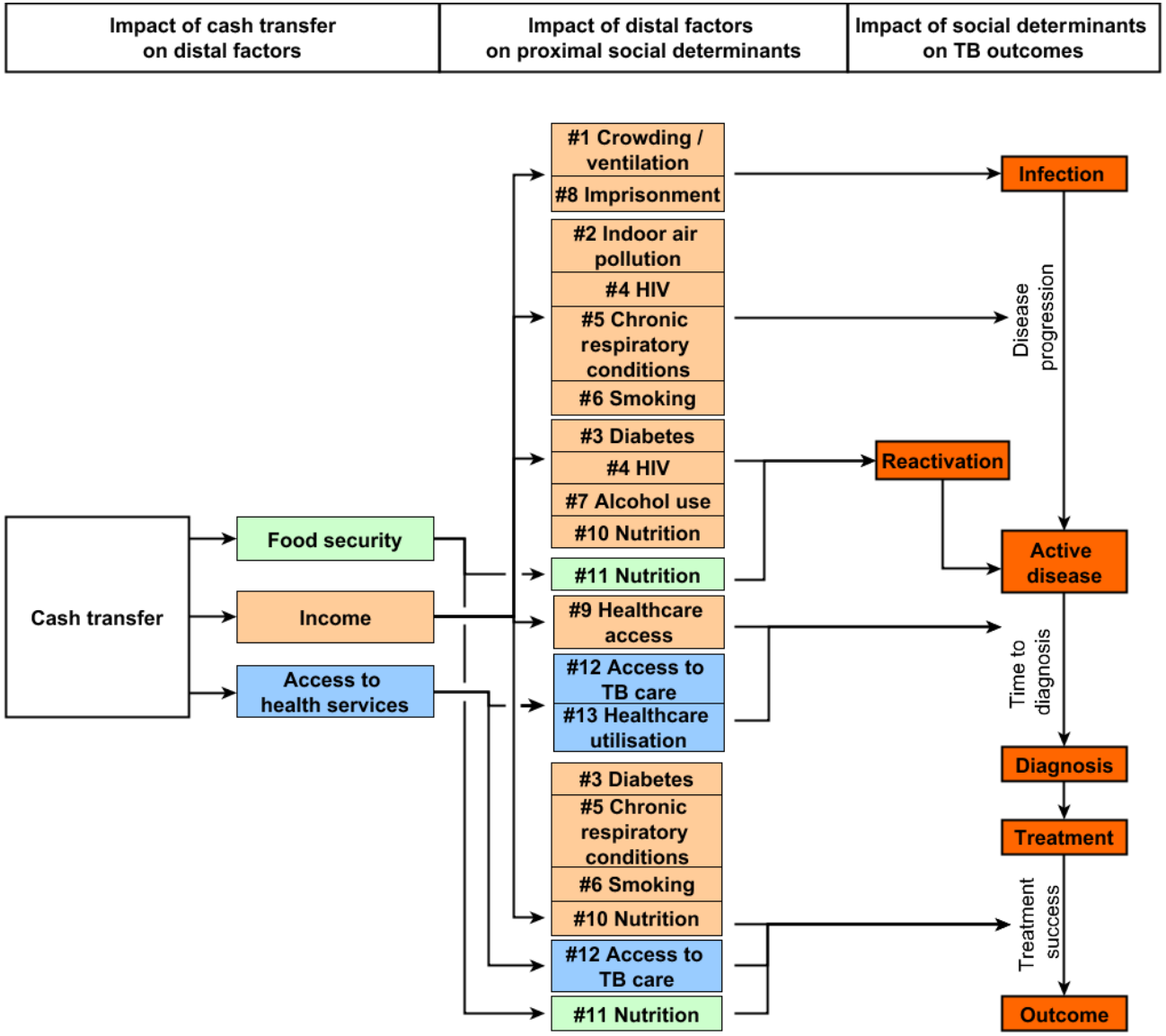
Development of a transmission model

Outcome: % reduction in TB prevalence

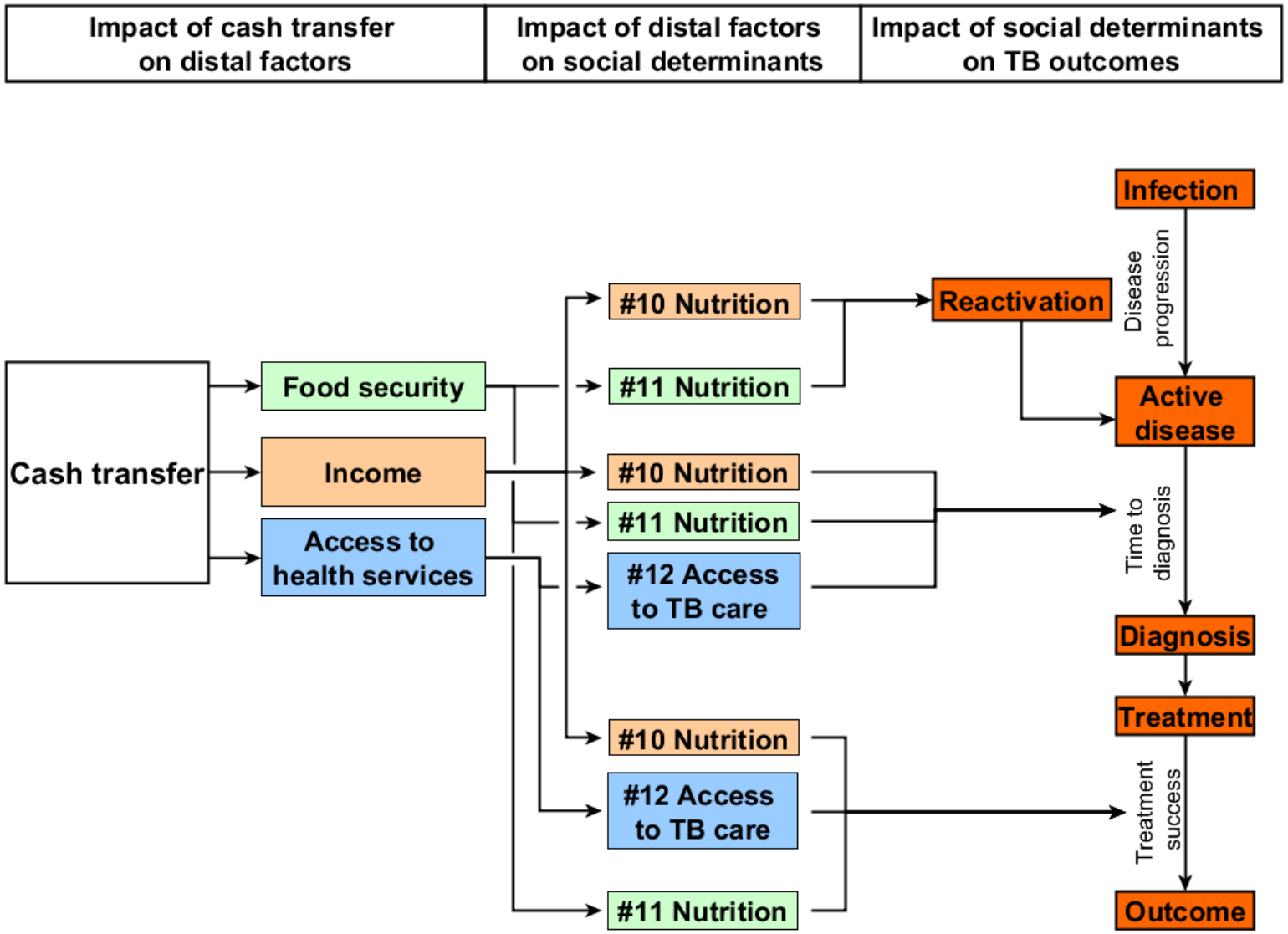
Study setting: Brazil where anti-poverty cash transfers are available to poor and extremely poor households

Simplifying complexity



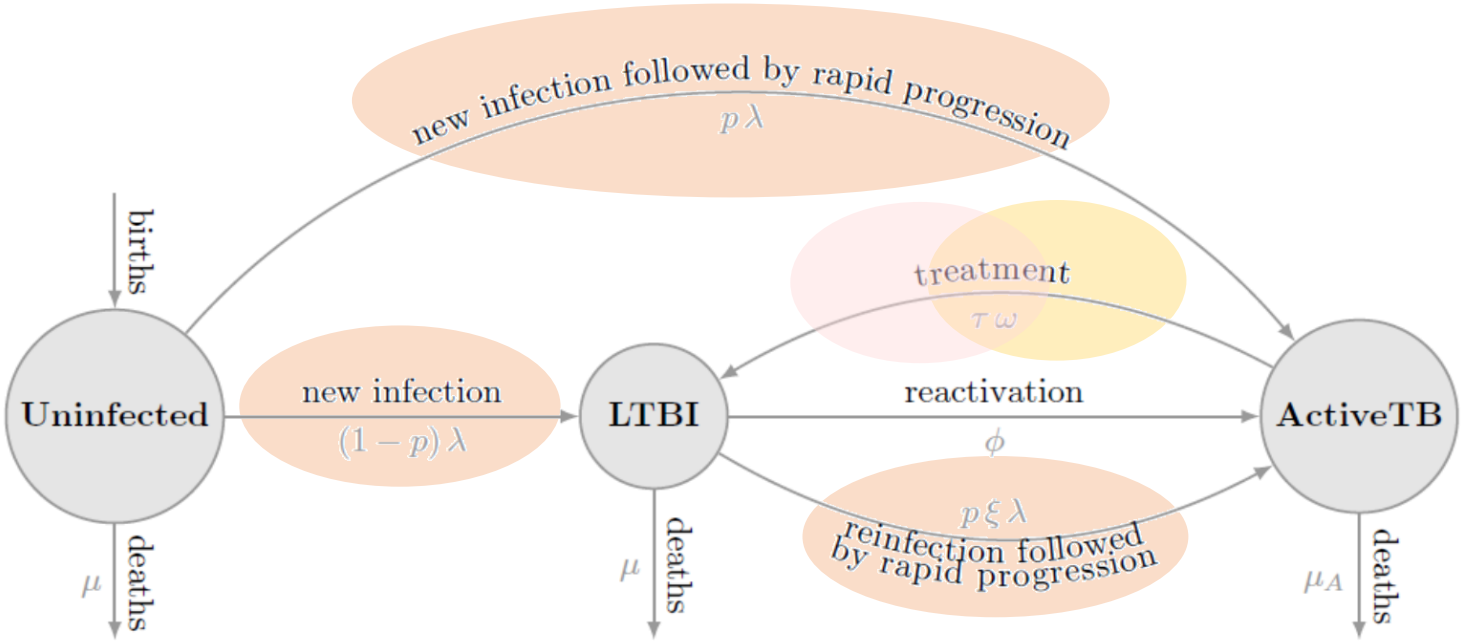
High priority pathways

3.



TB transmission model

Pathway 10: Cash transfers → Income → Nutrition → TB risk and TB treatment



Key assumptions: Homogeneity in mixing, homogeneity in risk of TB (i.e. does not consider HIV), and does not account for the demographic make-up of cash transfer recipients.

Findings for Pathway 10

Potential Effect of Cash Transfers	Best Estimate	Low Estimate	High Estimate
TB prevalence (by ≈ 2050)	**-4%**	**-1%**	**-24%**

Levels of Impact	Best Estimate	Low Estimate	High Estimate
Cash Transfers → Income	+15%	+10%	+20%
Income → Nutrition	0.00013 per US$	0.00011 per US$	0.00014 per US$
Nutrition →			
Incident TB disease	-14% per unit BMI	13% per unit BMI	14% per unit BMI
TB diagnosis	+1% per unit BMI	+1% per unit BMI	+2% per unit BMI
TB treatment failure	-16% per unit BMI	-8 per unit BMI	-23 per unit BMI

Identified challenges

1. Surprising lack of data in certain fields (e.g. Access to TB care)
2. Outcomes measured using different units across different fields

Much needed next steps

Additive effects of pathways

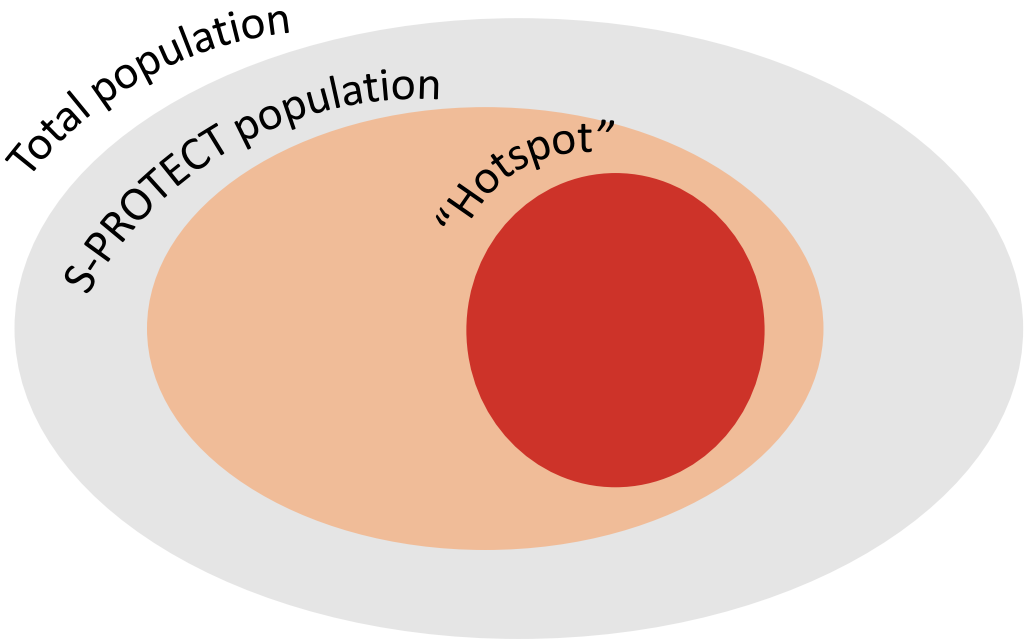
Differential TB risk

1. Slum dwellers
2. Indigenous peoples
3. PLHIV

Differential mixing

Other social protection initiatives

1. Fee waivers
2. Social/ health insurance
3. Disability grants

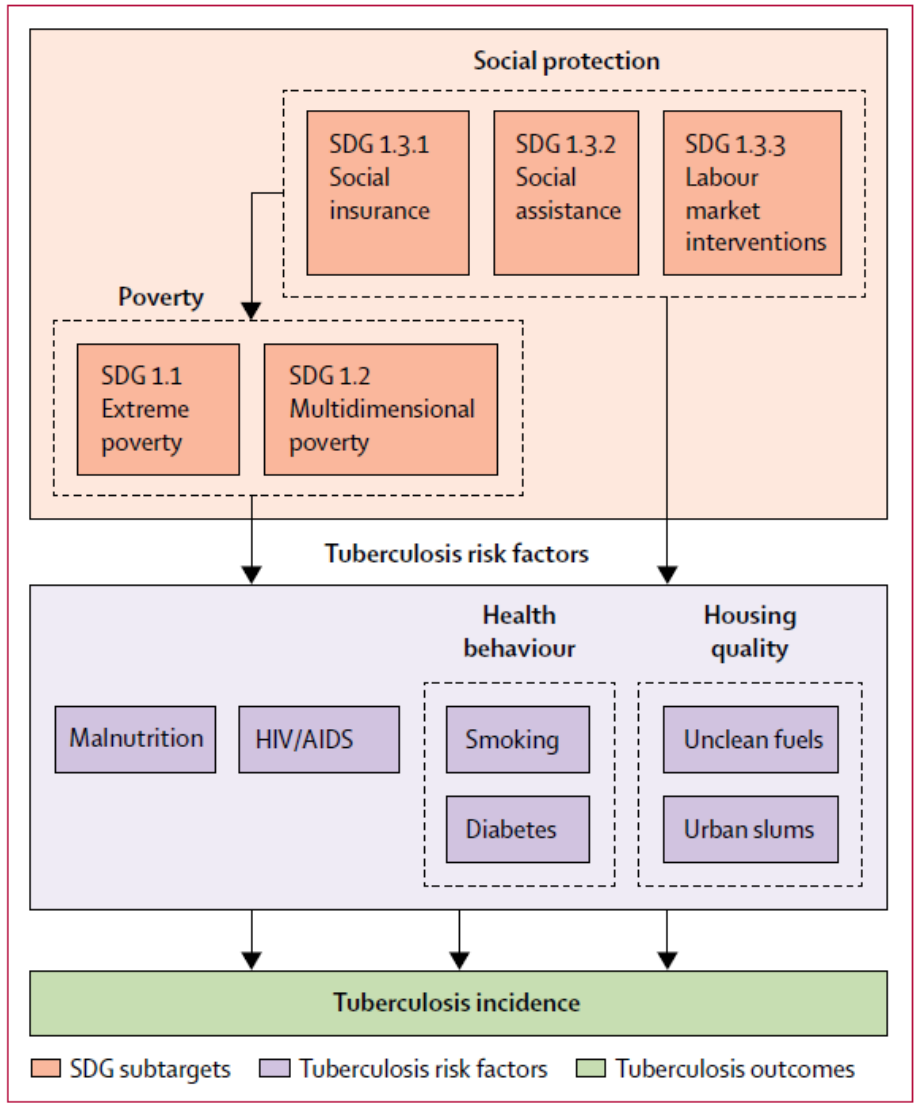


Afterthoughts

SDG 1: End poverty in all its forms

Mediation analysis resulted in a simplified modelling framework

"..the total effect of the SDG subtargets on tuberculosis incidence is [was] representative of the indirect effect through the four tuberculosis risk factor pathways…"



Conclusion – main messages

1. Social protection is acknowledged as key for accelerating TB elimination
2. The S PROTECT project both:
   i. Confirms modellings' potential contribution
   ii. Highlights a number of current challenges
3. Methodological improvements are needed to estimate reliable estimates of effect

Thank you!

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