



Wittgenstein Centre

FOR DEMOGRAPHY AND
GLOBAL HUMAN CAPITAL



Projecting the Contribution of Assisted Reproductive Technology to Completed Cohort Fertility

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Use of Assisted Reproduction

- **Increasing shares of babies born as a result of ART**

1%-8% in Europe (Wyns et al. 2020), 5% in Australia (Lazzari et al. 2021)

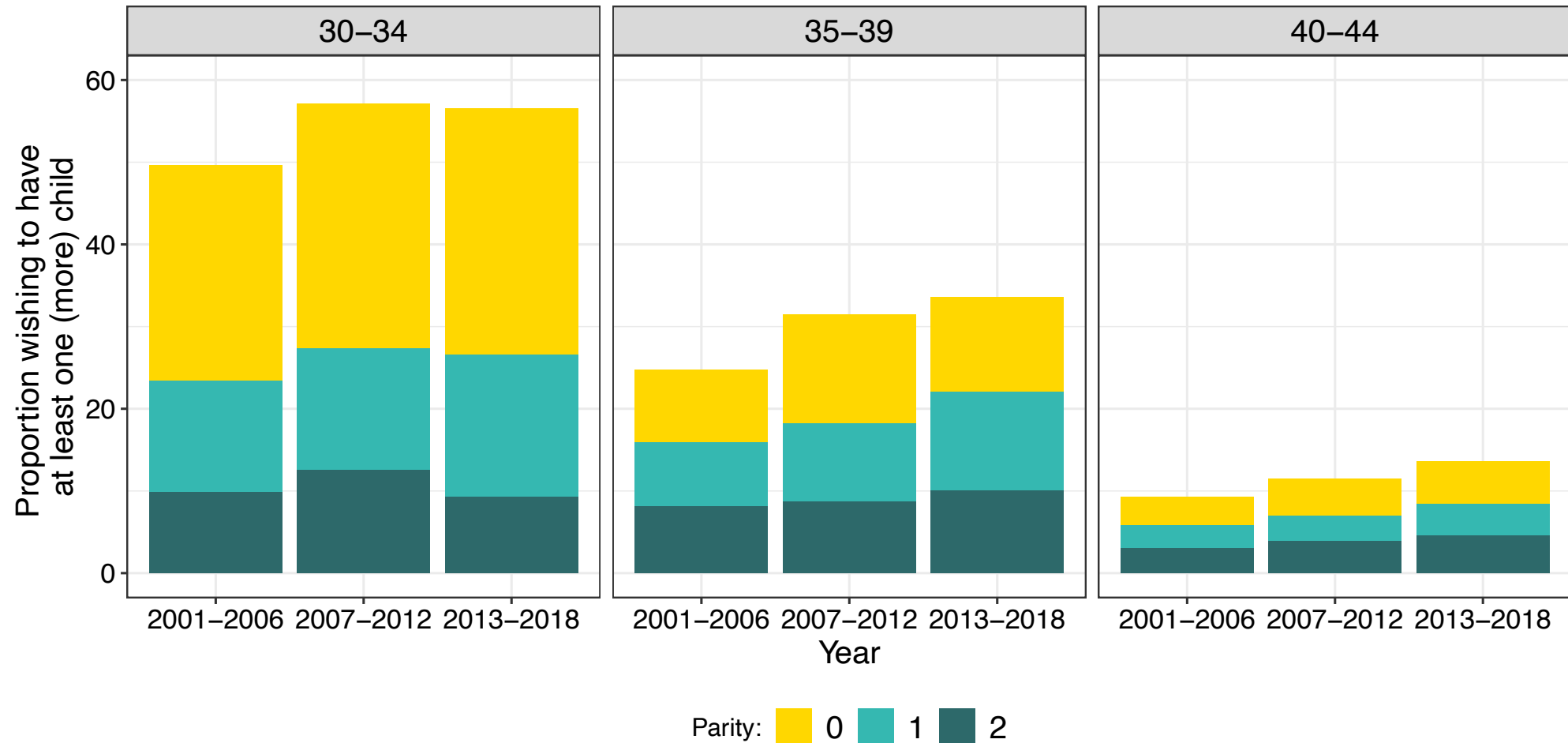
- **Causes**

Increase in fertility desires at older reproductive ages

- **Policy tool?**

One of the ways in which governments can support fertility rates
(Gray et al., 2021; McCurry, 2020; Sobotka et al., 2019)

Childbearing desires at old reproductive ages



Source: HILDA survey, waves 1-18, release 18 (weighted).



Evidence so far

Few empirical studies analyse the impact of ART on:

- **Total fertility rates (TFR)** (Habbema et al. 2009; Hoorens et al. 2007; Tierney et al. 2019)
- **Completed cohort fertility rates (CFR)** (Leridon 2017; Leridon and Slama 2008; Sobotka et al. 2008)

In-depth studies of ART use are less common

- In Australia, recent increases in the TFR at age 40+ mostly driven by increasing ART use (Lazzari et al. 2021)

Aims

Estimate the contribution of ART for:

- **Completed cohort fertility** of 1968-86 cohorts
- **Fertility recuperation**

Projection model

- *what-if* scenarios forecasting assisted age-specific fertility rates



Australian Context

- **High ART utilization rate**

In 2017, 1 in 20 babies born as a result of ART – 0.08 of the TFR (Lazzari et al. 2021).

- **Supportive public funding arrangement**

2/3 costs covered by Medicare

No restriction on parental age, previous no. of cycles, parity

- **ANZARD database**

Long data series national coverage (1998-2017)

Projection model

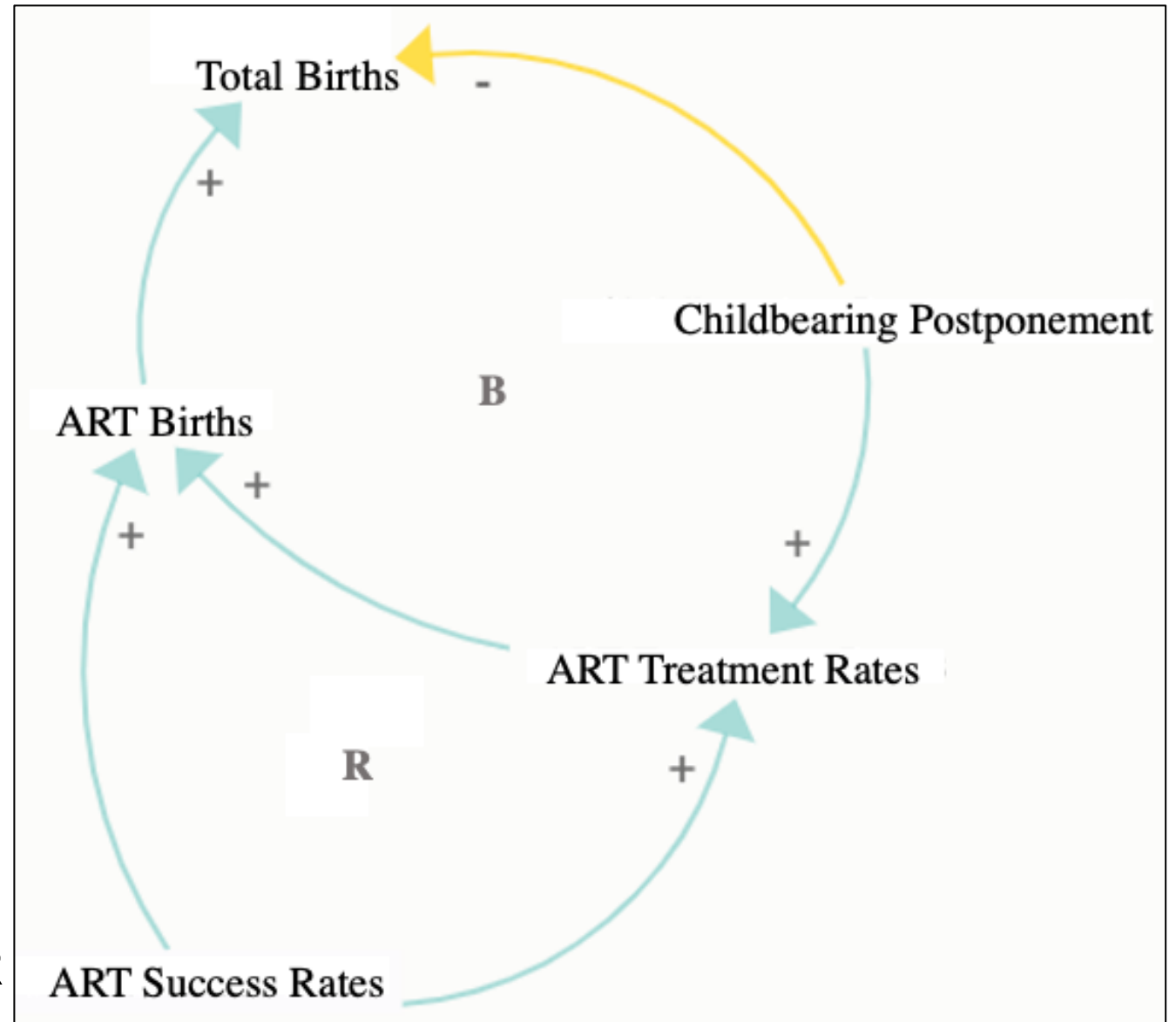
1. Forecasting of non-assisted fertility rates using the 5-year extrapolation method by Myrskylä et al. 2013
2. Extrapolation of ART success rates (SR) and ART treatment rates (TR)

SCENARIO 1: **No-change**

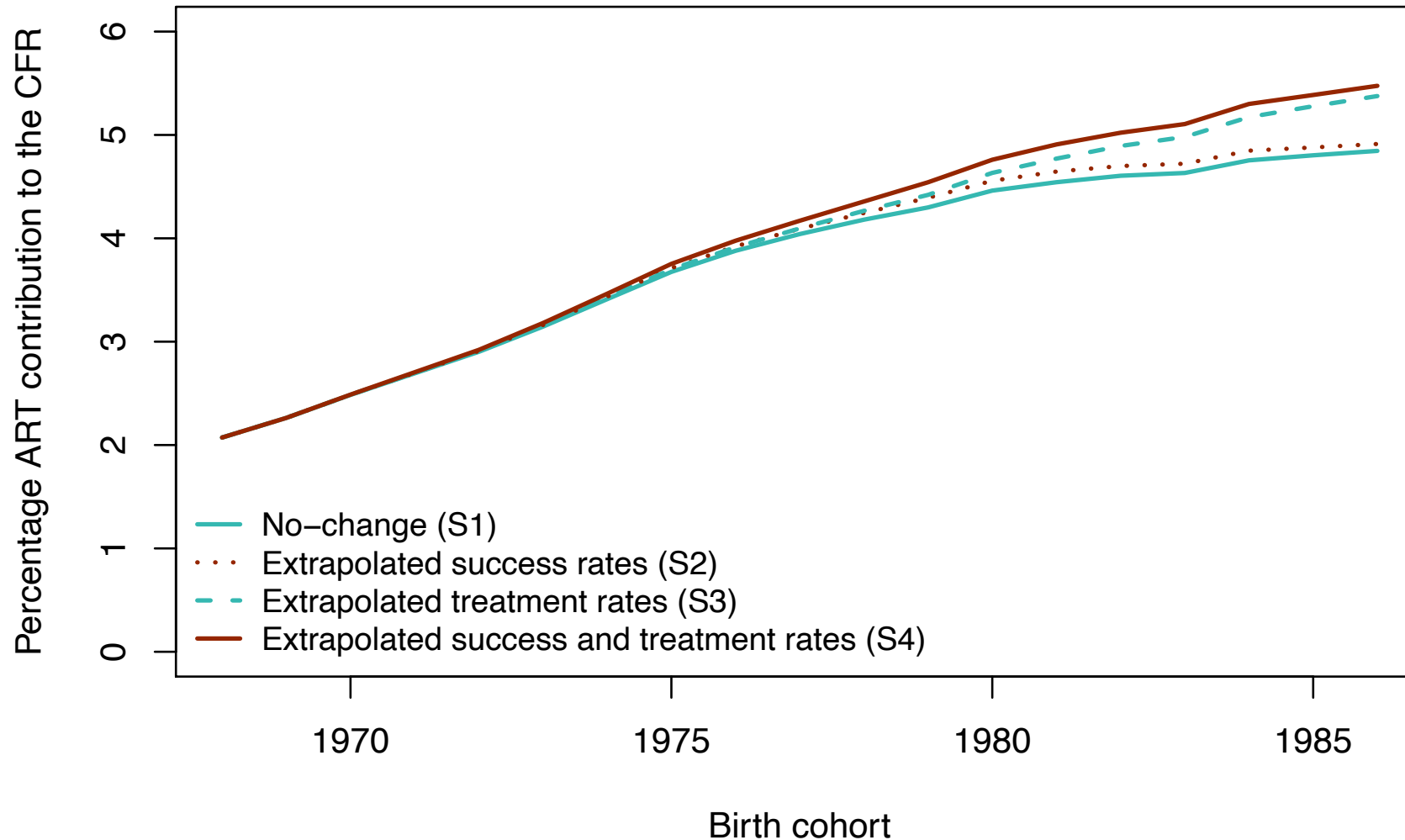
SCENARIO 2: **Extrapolated SR**

SCENARIO 3: **Extrapolated TR**

SCENARIO 4: **Extrapolated SR & TR**



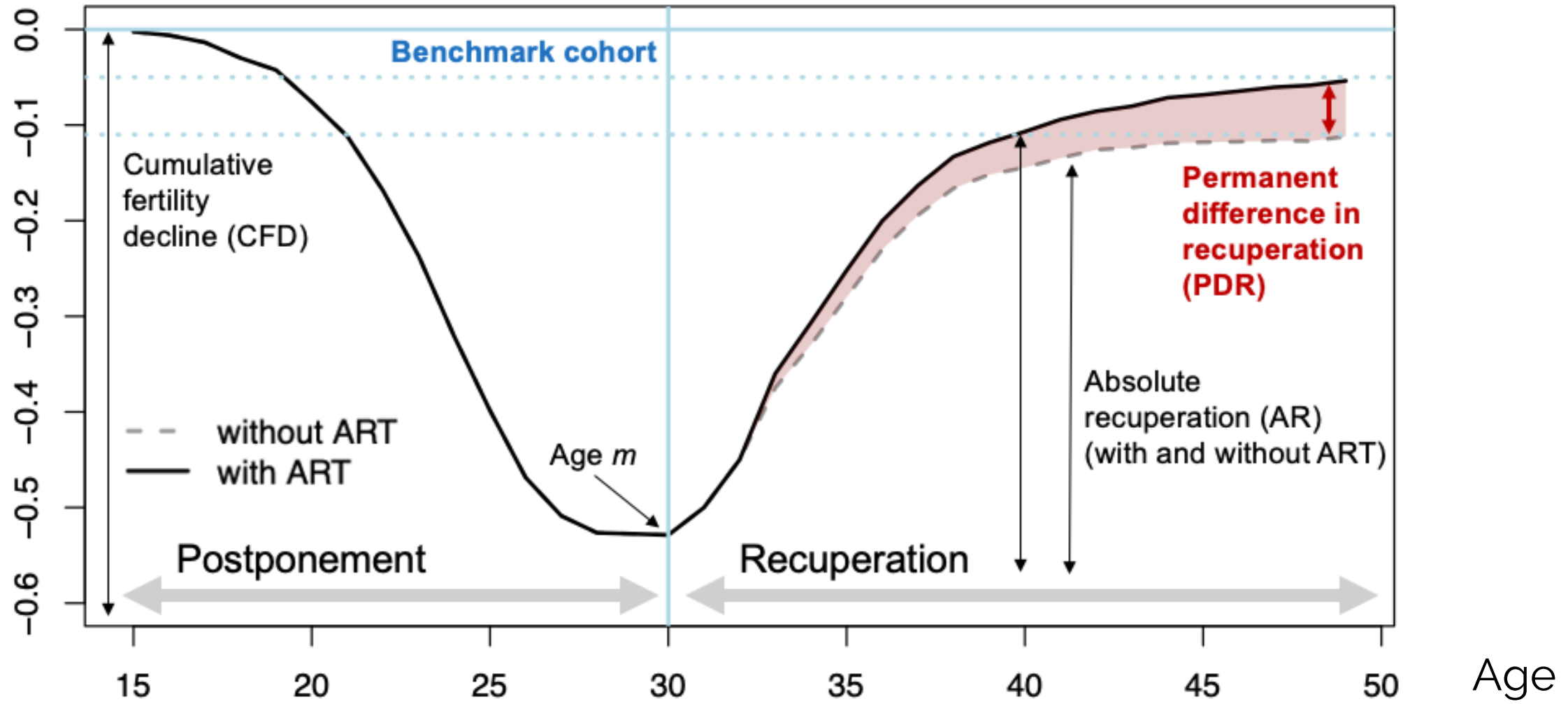
Total contribution to completed fertility



Source: ANZARD and ABS data.



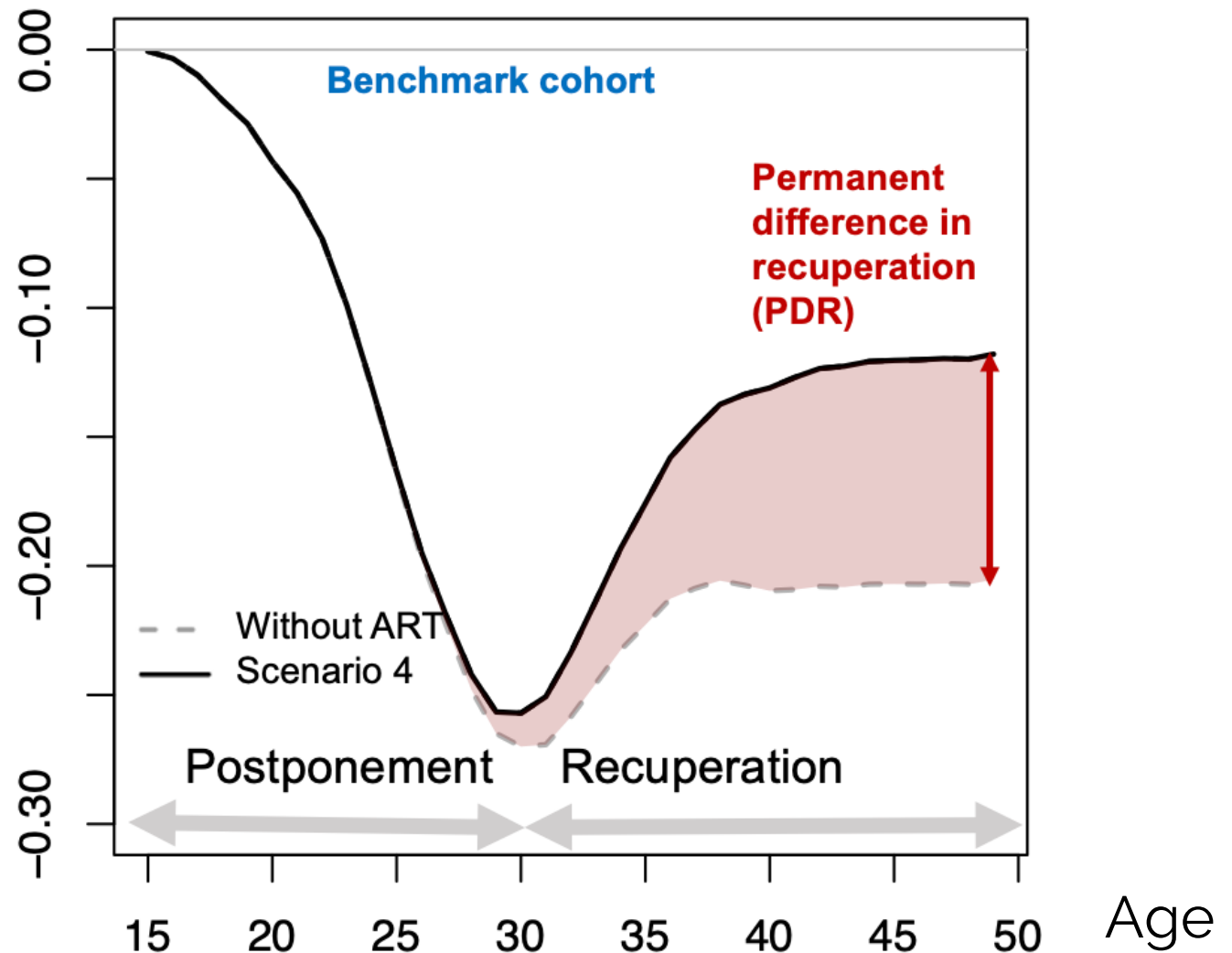
Fertility postponement & recuperation



Note: Design is inspired by Sobotka et al. 2012 (Fig. 1, p. 422)

Fertility postponement & recuperation - 1986 cohort

Percentage recuperation
Without ART: 24 %
With ART (Scenario 4): 59 %



Source: ANZARD and ABS data.



Reasons for caution

- **Premature provision of treatment**
- **Incentive to further delay family formation**
- **Multiple births**



ART and the future of reproduction

Summary of results

- Increase in ART contribution from 2.1% in 1968 to 4.6-5.5% in 1986
- Up to 1 in 3 ART-children at age 45-49 and up 1 in 4 at age 40-44
- Substantial impact on fertility recuperation with births recovered after age 30 increasing from 24% to 54-59%
- Mostly driven by increasing demand for treatment

Future developments

- Elective egg freezing
- ART as a contextual driver of fertility recovery

Thank you!

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Part of the research presented today was developed during the Young Scientist Summer Program at the International Institute for Applied System Analysis (IAASA), Laxenburg, Austria.

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