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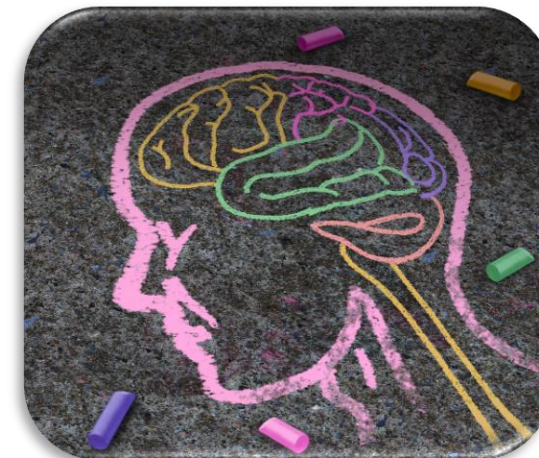
Short-term impacts of Universal Basic Income on mental health inequalities in the UK population

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What is public health?

- "Public health is the science and the art of preventing disease, prolonging life, and promoting physical health and efficiency through organised community efforts for the sanitation of the environment, the control of community infections, the education of the individual in principles of personal hygiene, the organisation of medical and nursing service for the early diagnosis and preventive treatment of disease, and the development of the social machinery which will ensure to every individual in the community a standard of living adequate for the maintenance of health" (Winslow 1920)

- "the science and art of preventing disease, prolonging life, and promoting health through the organised efforts of society" (Acheson 1988)

Winslow CEA. The Untilled Fields of Public Health. *Science* 1920; **51**(1306): 23-33.
Acheson D. Public health in England. London: Department of Health, 1988.

Health in all policies

- Health systems are largely not responsible for health outcomes within a country
- Making non-health sector policies promote improved health and reduced health inequalities is a 'Health in All Policies' approach

Table 3 | Effect of $100 of income, social welfare spending, and healthcare spending on cause specific mortality in 15 EU countries, 1980-2005 (purchasing power parity in $ for 2000)

| Covariate	All cause	Alcohol related	Malignant neoplasms	Cardiovascular disease	Suicide	Tuberculosis
$100 in income per capita	−0.14%** (0.035)	−0.21% (0.12)	−0.034% (0.034)	−0.31%** (0.084)	0.19% (0.20)	−0.59%*** (0.14)
$100 rise in social welfare spending (excluding health care)	−0.99%*** (0.11)	−2.80%*** (0.46)	−0.065% (0.18)	−1.23%** (0.31)	−0.62% (0.49)	−4.34%** (1.27)
$100 rise in healthcare spending	−0.01% (0.43)	0.97% (0.90)	−0.82% (0.47)	−0.28% (0.95)	−3.15% (1.50)	2.11% (2.32)
No of country-years	320	319	319	319	319	318
R^2	0.906	0.773	0.535	0.901	0.239	0.716

Countries were Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, and United Kingdom. Robust standard errors in parentheses clustered by countries to reflect non-independence of sampling.

Stuckler D, Basu S, McKee M. Budget crises, health, and social welfare programmes. *BMJ* 2010; 340: c3311.

HEED: Health Equity and its Economic Determinants

Five year ERC-funded grant:

- Phase 1: Estimate key health effect parameters

- Phase 2: Develop implementation of SimPaths for health

- Phase 3: Conduct UK policy scenario simulations

- Phase 4: Expand to other European countries (three-year time horizon only)

- Underpinned by an evidence synthesis perspective
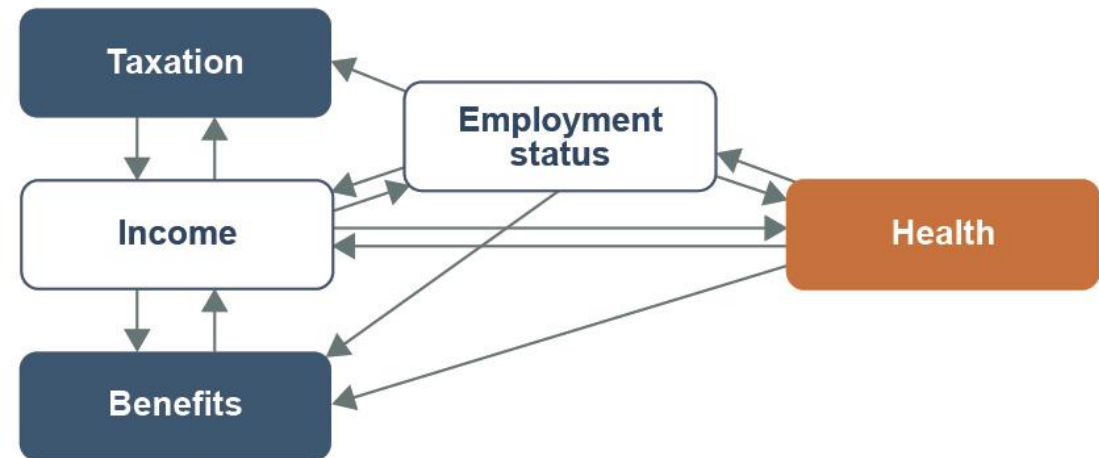
Background: Universal Basic Income

- Universal Basic Income (UBI) is a radical proposal which would provide **all individuals** in a society with an **unconditional**, **regular** payment in **cash**

- Evidence from trials of UBI-like policies suggests potential to improve health, particularly mental health

- However, in high-income countries:

    - Never been tested in full population
    - Never been a trial of a 'true' UBI

- Several notable examples of proposed pilots not progressing due to complexity, politics, or cost

- Policy modelling can test multiple policy options – especially since MH impacts can be difficult to predict. Some effects may be beneficial and others harmful, with differences in effect sizes across popn subgroups

Causal effect estimates on MH

- Systematic review:
  - Poverty has modest MH effects, log income has small effects, with losses having greater effects than gains.

- Effect estimation (marginal structural models and fixed-effects analyses):
  - Employment has large effects on mental health in comparison.

- Causal mediation analysis:
  - Income explains only a small percentage of the total protective effect of work for mental health.
  - Income explains less of the relationship for those under 40, for job gains, and for those already in poverty

- Lot of uncertainty around all of these estimates, accounted for during modelling

UBI scenario design

- Wanted to model implementation of a population-wide UBI, examining potential impacts on mental health and inequalities in working-age population

- Modelled three UBI scenarios for the analysis using UKMOD:

  1. A **Partial UBI** set at the amount of existing unemployment benefits, with retention of means-tested benefits for disability, housing, childcare, and limited capability for work

  2. A **Full UBI** meeting the Minimum Income Standard for living in the UK

  3. A **Full+ UBI** meeting the Minimum Income Standard with retention of means-tested benefits for disability, housing, childcare, and limited capability for work

Simulation of mental health effects

- Done using SimPaths, a dynamic, stochastic, discrete-time microsimulation model

- Takes a representative sample of UK population from survey data and progresses them through various life processes to simulate one year of life

- Includes structural labour supply module – this allows households to 'decide' how many hrs to work based on disposable income

- MH module modifies likelihood of common mental disorder (CMD) for working-age adults based on changes in poverty & employment status
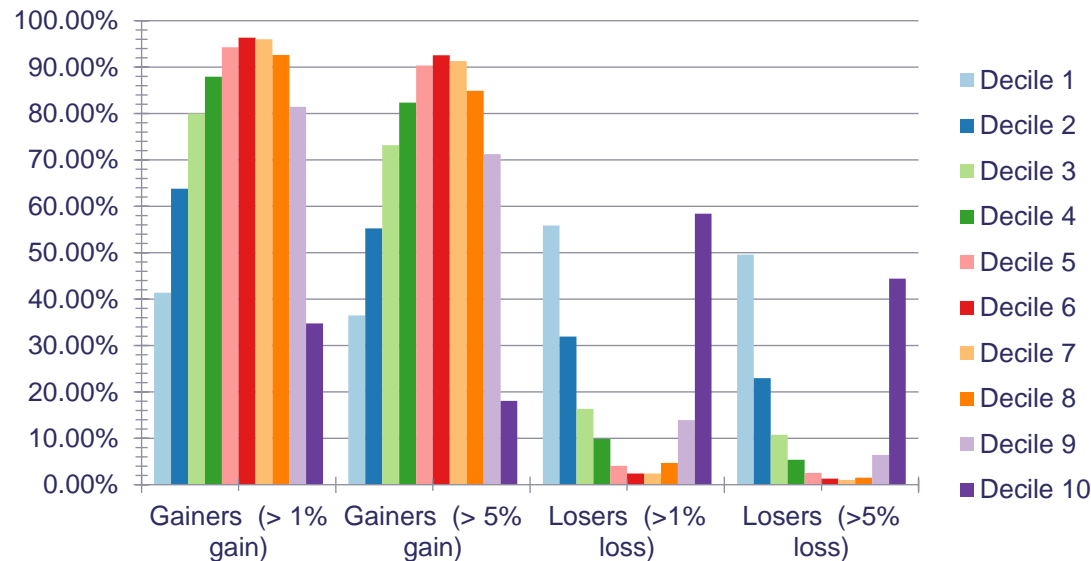

SIMPATH S MODEL STRUCTURE
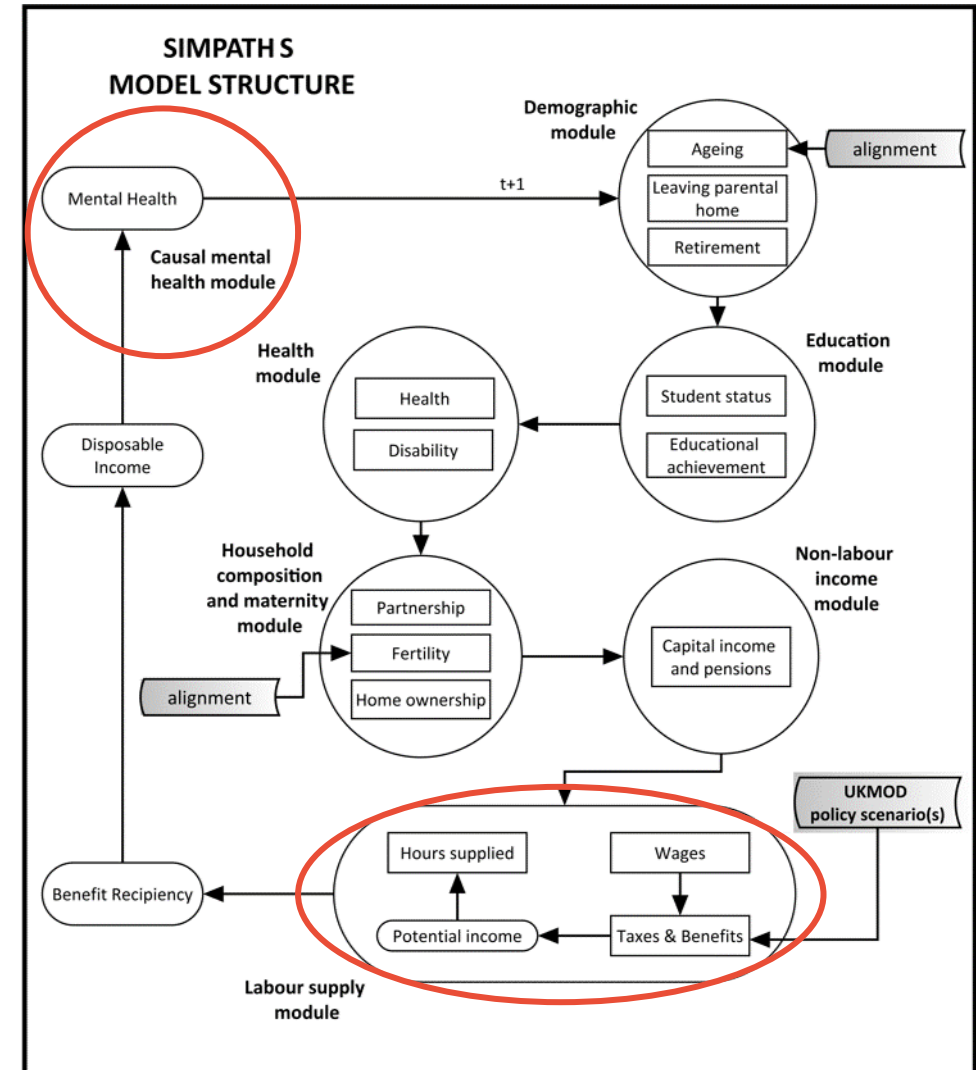
Analyses

- **Primary analysis**: Running SimPaths from 2022 to 2026, comparing three UBI policy scenarios (introduced from 2023) with baseline scenario of planned tax/benefit policies

- Two **structural sensitivity analyses**:

    1. *What if people don't leave the labour force in response to a UBI?* Changes labour market assumptions in Full/Full+ UBI years so that unemployment levels match baseline scenario (i.e., people don't stop working in response to Full UBI)

    2. *What if unemployment following UBI introduction is different?* Uses causal effect estimates for entering economic inactivity for those who become 'unemployed' in Full/Full+ UBI years (i.e., voluntarily stopping work because you got Full UBI is like stopping work to retire/study)

- One **analytical sensitivity analysis**:

    1. *What if my causal effect estimates are inaccurate?* Uses causal effect estimates for poverty and employment transitions from systematic reviews

- **Outcome** was prevalence of CMD in working-age adults 25-64 years, and relative/slope indices of inequality in mental health by education

- Stratified all results by gender, education, age, and household structure
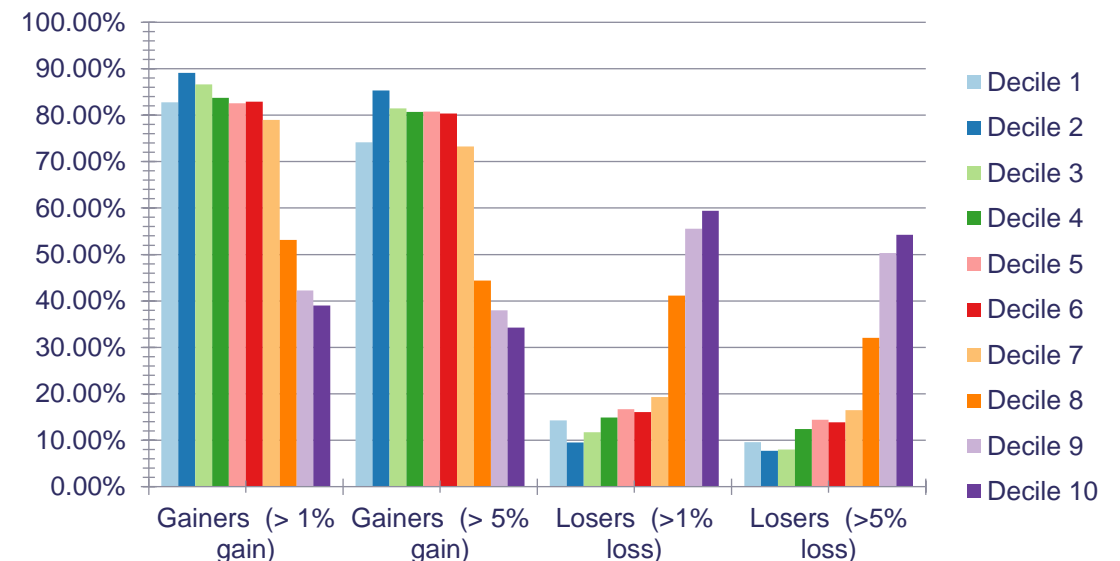
Economic impacts of UBI scenarios

	Baseline	Partial UBI	Full UBI	Full+ UBI
UK Govt. income tax revenue	£451.7bn	£543.3bn (+£91.6bn)	£1,061.2bn (+£609.6bn)	£1,062.4bn (+£610.8bn)
UK Govt. benefit expenditure	£251.3bn	£438.5bn (+£187.2bn)	£891.8bn (+£640.5bn)	£927.2bn (+£676.0bn)
UBI-related deficit	n/a	£95.6bn	£30.9bn	£65.2bn
Gini coefficient	0.3052	0.2664 (-0.0388)	0.1578 (-0.1473)	0.1443 (-0.1609)

Partial UBI

Full+ UBI

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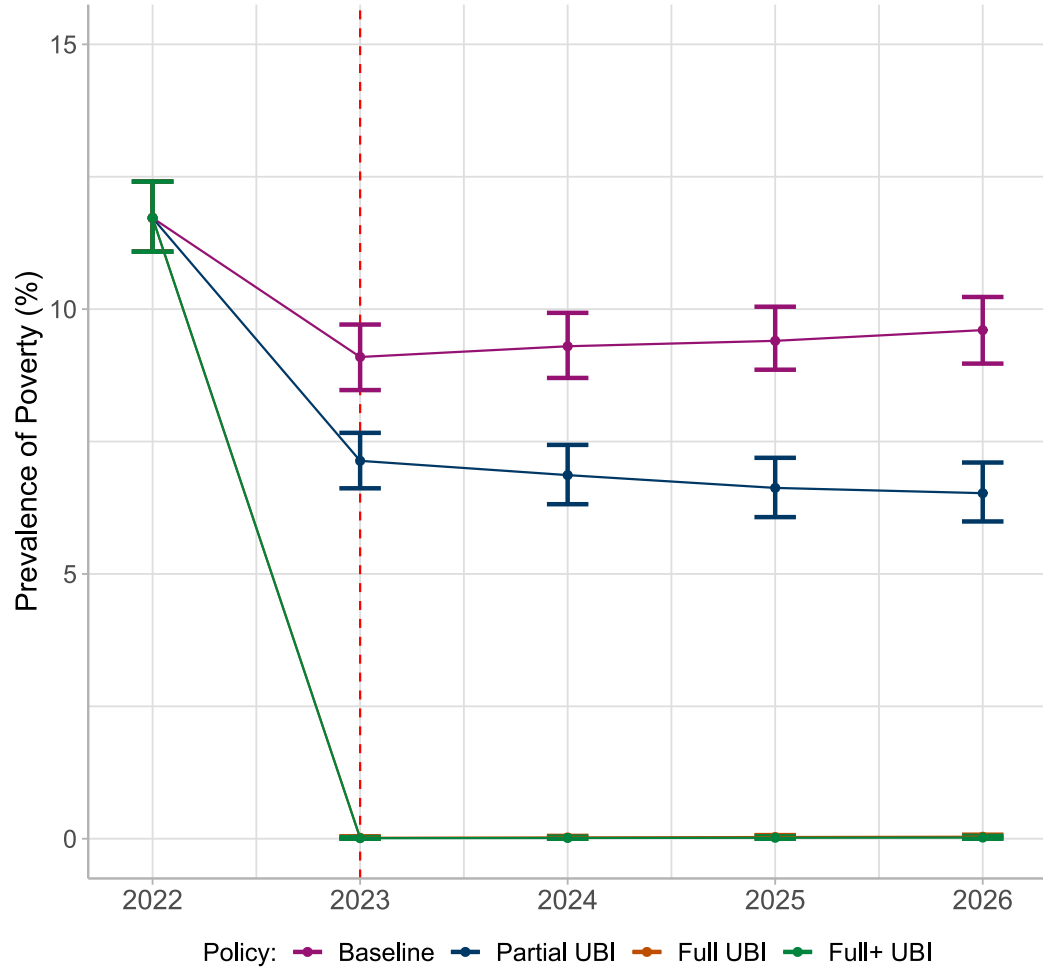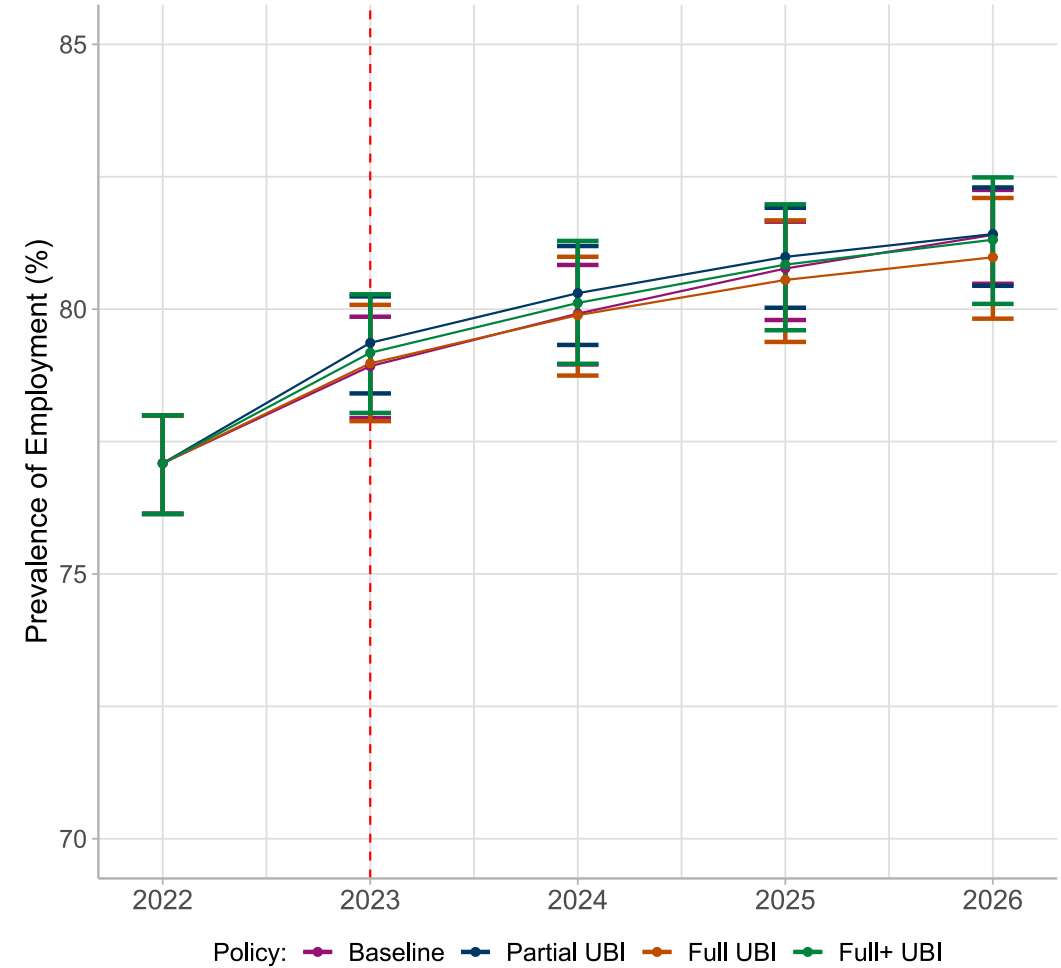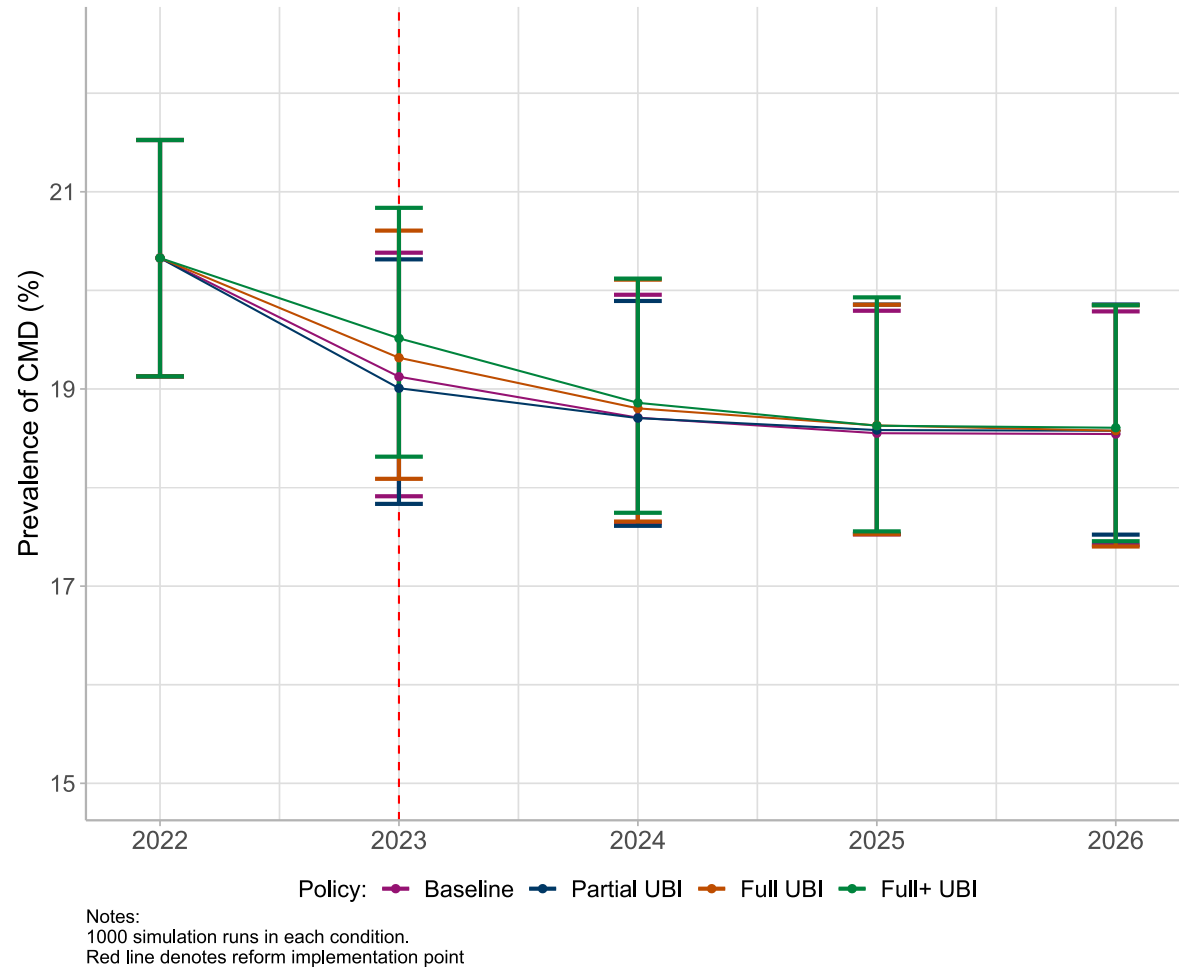
Poverty and employment effects of UBI

Notes:
1000 simulation runs in each condition.
Red line denotes reform implementation point

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Mental health effects of UBI

Notes:
1000 simulation runs in each condition.
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- With maximal employment effects:
  - Not much difference in CMD prevalence for Partial UBI on introduction of policy in 2023: -0.10% (-0.24, 0.02)
  - Slight **worsening** in prevalence for Full UBI: +0.19% (-0.03, 0.47)
  - **Larger** worsening in prevalence for Full+ UBI: +0.38% (0.13, 0.69)
- No significant effect on either measure of CMD inequalities by education
- Effects waned over the simulated period
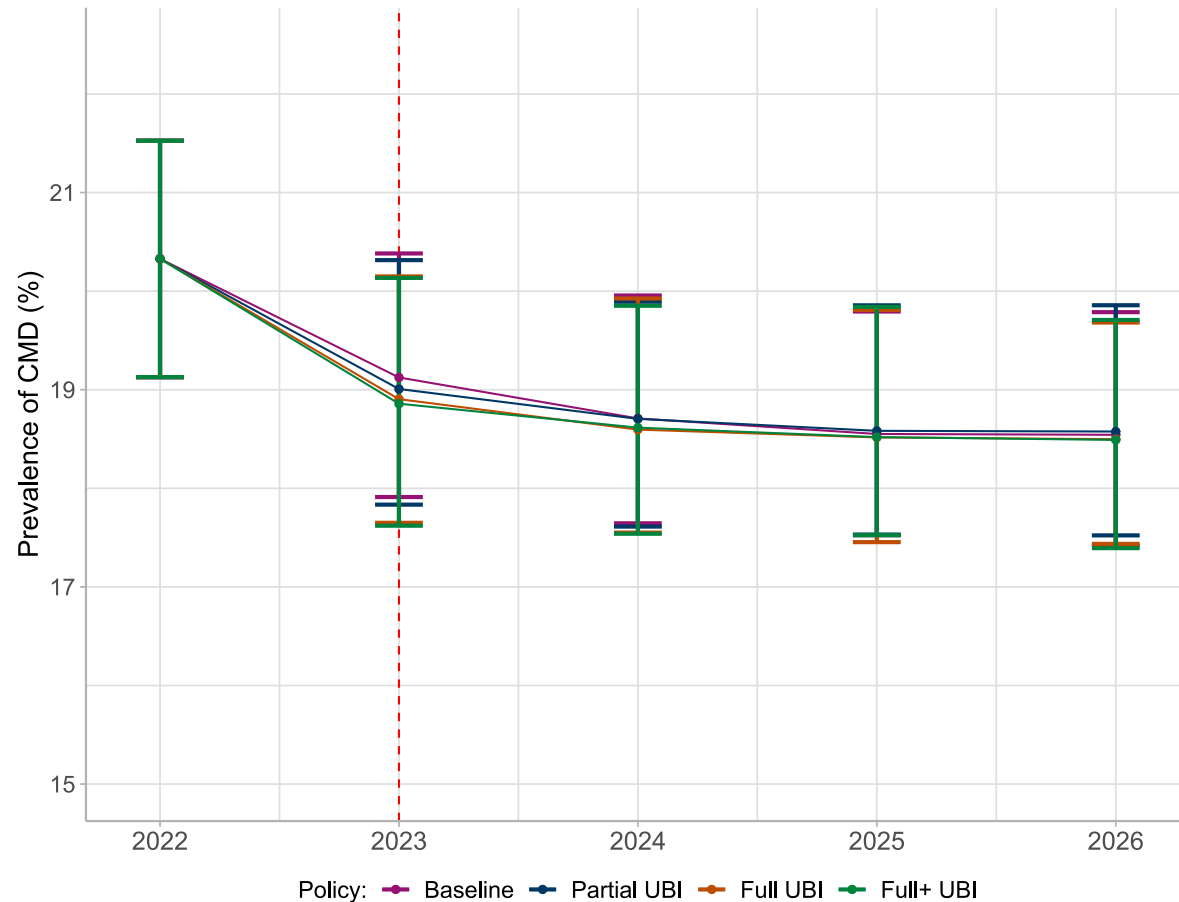- Using systematic review estimates produced similar but smaller effects

Mental health effects of UBI

Notes:
1000 simulation runs in each condition.
Red line denotes reform implementation point

- With **minimal** employment effects:
  - Slight **improvement** in prevalence for Full UBI: -0.23% (-0.45, -0.01)
  - **Slightly larger** improvement in prevalence for Full+ UBI: -0.27% (-0.49, -0.05)
- Still no significant effect on either measure of CMD inequalities
- Effects still wane over time
- Similar patterning seen with second sensitivity analysis using economic inactivity causal estimates

Summary of UBI simulation findings

- All forms of UBI tested reduce income inequality, but Full/Full+ UBIs do this much more, effectively eradicating poverty

- Partial UBI seems unlikely to influence mental health in any scenario

- For Full UBI, impacts are highly dependent on the employment effects:

  - If people are less likely to work, mental health might deteriorate in the short term, particularly for men

  - If employment remains unchanged, a small short-term improvement in mental health is predicted, particularly for women and those with least education

- Our 'worst case scenario' would be associated with 166,320 more cases of CMD in the UK working-age population in 2023 (95% CI 58,212 to 282,744)

- Our 'best case scenario' would be associated with 112,266 fewer cases (95% CI 20,790 to 203,742) – a cost of approx. £581k/case avoided with Full+ UBI, or £323k/case avoided with Full UBI

Key limitations of this approach

- Focus only on the short-term effects of poverty and employment transitions, so model can't incorporate mental health effects of long exposure to poverty/unemployment

- Focus on working-age adults, so any effects of UBI on children's outcomes are not incorporated

- Don't currently model how changes in the wider economy as a result of UBI might feed back into the individual effects in our simulation

- By only including causal effects for poverty and employment may be missing important additional pathways through which UBI might influence mental health e.g., security/stability, people returning to or staying in education, increased independence and autonomy
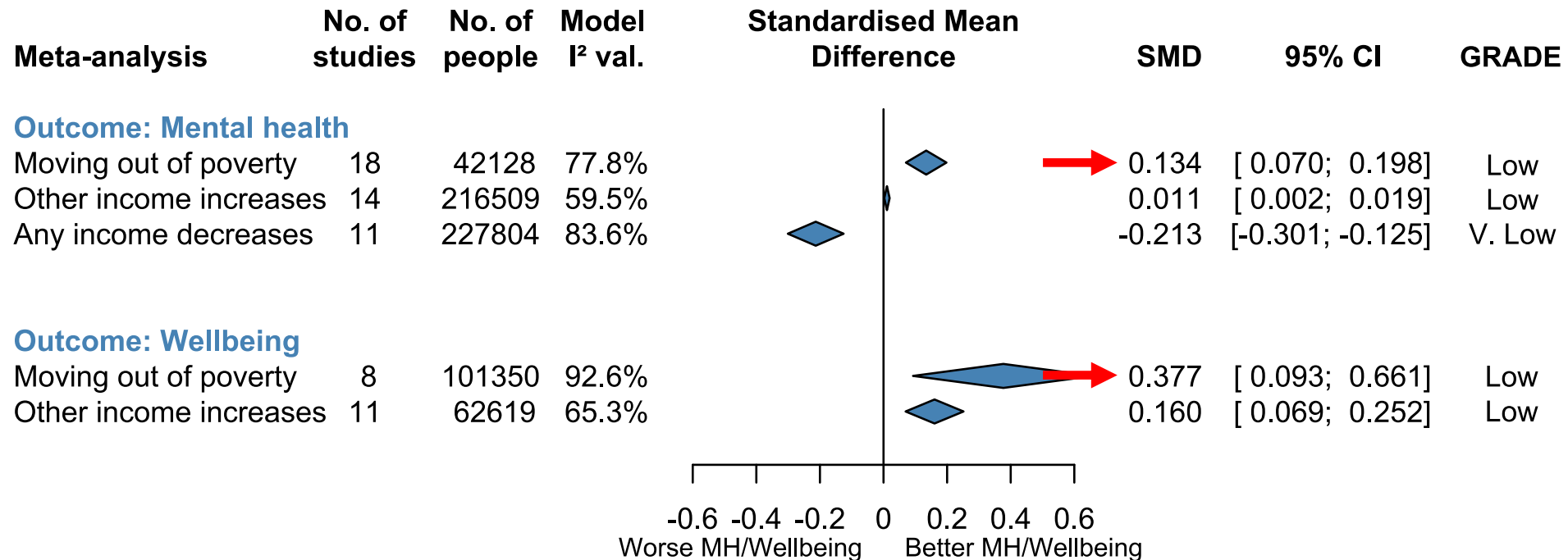
Acknowledgements

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- Bronka P, Van De Wen J, Kopasker D, Katikireddi SV, Richiardi M. SimPaths: an open-source microsimulation model for life-course analysis. Centre for Microsimulation and Policy Analysis 2023; Essex: CeMPA Working Paper.

Systematic review of income and MH

Main meta-analysis findings, including stratification by poverty transitions

Meta-analysis	No. of studies	No. of people	Model I² val.	Standardised Mean Difference	SMD	95% CI	GRADE
Outcome: Mental health							
Moving out of poverty	18	42128	77.8%		0.134	[0.070; 0.198]	Low
Other income increases	14	216509	59.5%		0.011	[0.002; 0.019]	Low
Any income decreases	11	227804	83.6%		-0.213	[-0.301; -0.125]	V. Low
Outcome: Wellbeing							
Moving out of poverty	8	101350	92.6%		0.377	[0.093; 0.661]	Low
Other income increases	11	62619	65.3%		0.160	[0.069; 0.252]	Low

-0.6 -0.4 -0.2   0   0.2 0.4 0.6

Worse MH/Wellbeing   Better MH/Wellbeing

Causal analysis of UK survey data

Average treatment effects for poverty and unemployment on CMD prevalence

Chart showing Poverty and Unemployment (direct effect) percentages:

- Total population: Poverty 2.15%, Unemployment 6.08%
- Loss: Poverty 2.48%, Unemployment 6.29%
- Gain: Poverty -1.48%, Unemployment -5.83%
- Men: Poverty 1.72%, Unemployment 7.83%
- Women: Poverty 2.35%, Unemployment 4.95%
- High education: Poverty 2.14%, Unemployment 5.20%
- Medium education: Poverty 2.14%, Unemployment 6.54%
- Low education: Poverty 2.20%, Unemployment 7.44%
- Younger working-age: Poverty 2.04%, Unemployment 7.11%
- Older working-age: Poverty 2.15%, Unemployment 5.71%

Legend: ■ Poverty   ■ Unemployment (direct effect)

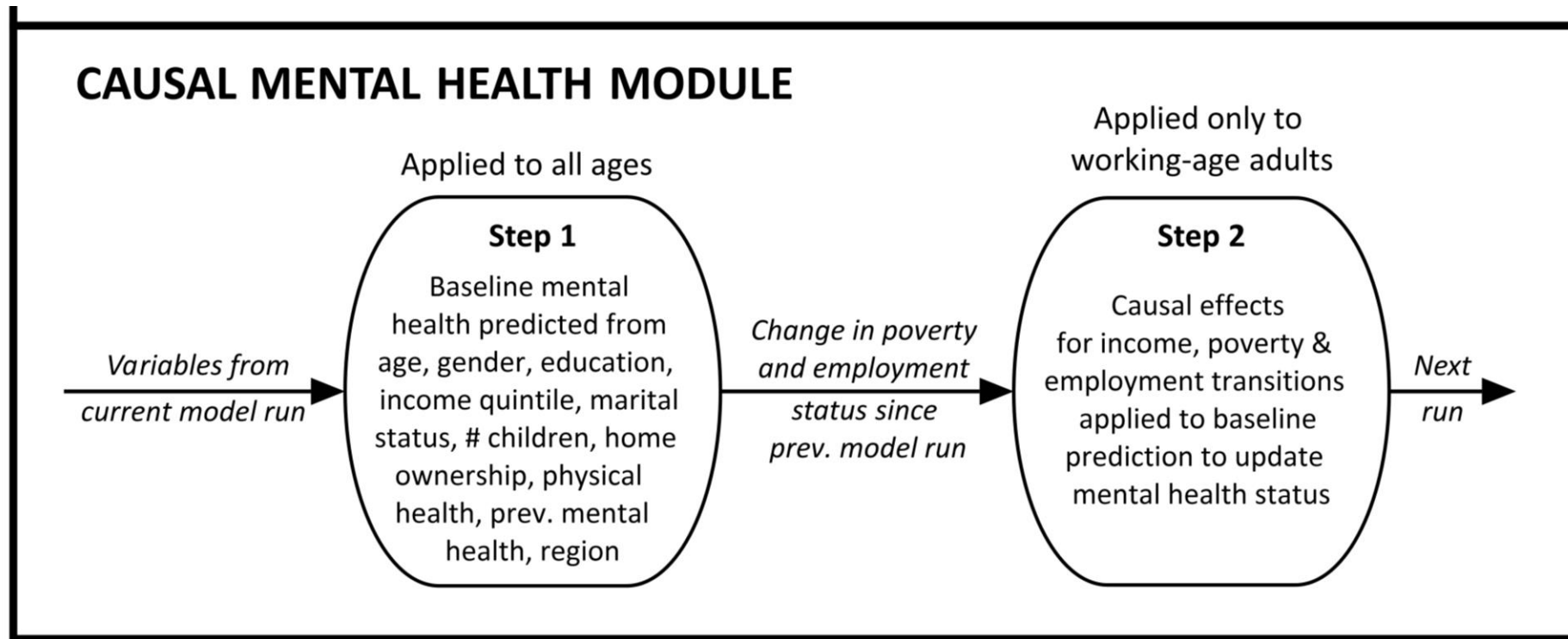**MRC/CSO Social and Public Health Sciences Unit, University of Glasgow**

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Causal analysis of UK survey data

Percentage of total unemployment effect on CMD prevalence mediated by income

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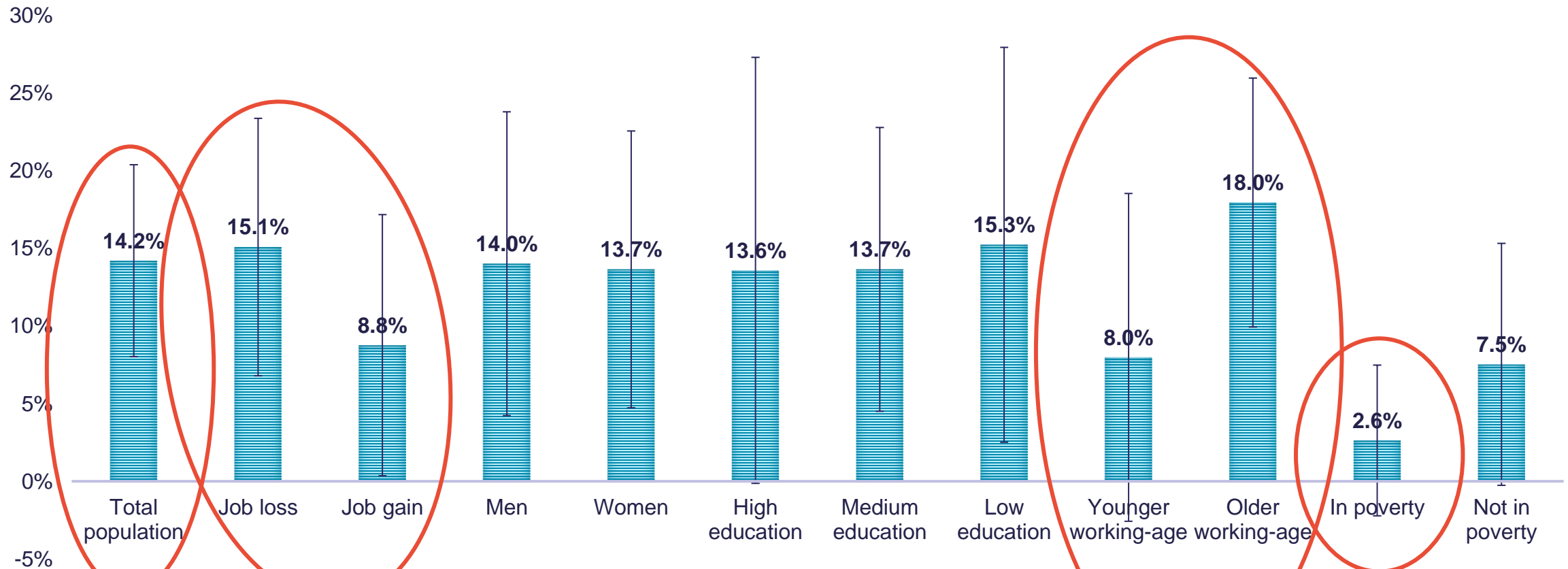
Simulation of mental health effects

UBI scenario implementation in UKMOD

	UBI details	Benefit policies retained	Benefit policies suspended	Income tax rates
1. Baseline	Nil	All	None	20% / 40% / 45% Thresholds: £37.7k / £125.1k
2. Partial UBI	0-15 years: £98.84/wk 16+ years: £84.89/wk Pensioners: £196.53/wk	Disability; limited capability for work; housing; childcare; caring; sick pay; maternity pay; student benefits	Unemployment; income support; state pension; child benefits; benefit cap (to avoid interference with UBI)	20% (+0) / 45% (+5) / 60% (+15) Thresholds: £30k (-£7.7k) / £50k (-£75.1k)
3. Full UBI	0-15 years: £149.69/wk 16+ years: £291.62/wk Pensioners: £246.16/wk	Sick pay; maternity pay; student benefits	All other means-tested and non-means-tested benefits	59% (+39) / 70% (+30) / 85% (+40) Thresholds: £30k (-£7.7k) / £50k (-£75.1k)
4. Full+ UBI	0-15 years: £149.69/wk 16+ years: £291.62/wk Pensioners: £246.16/wk	Disability; limited capability for work; housing; childcare; caring; sick pay; maternity pay; student benefits	Unemployment; income support; state pension; child benefits; benefit cap (to avoid interference with UBI)	59% (+39) / 70% (+30) / 85% (+40) Thresholds: £30k (-£7.7k) / £50k (-£75.1k)

Stratified mental health effects of UBI
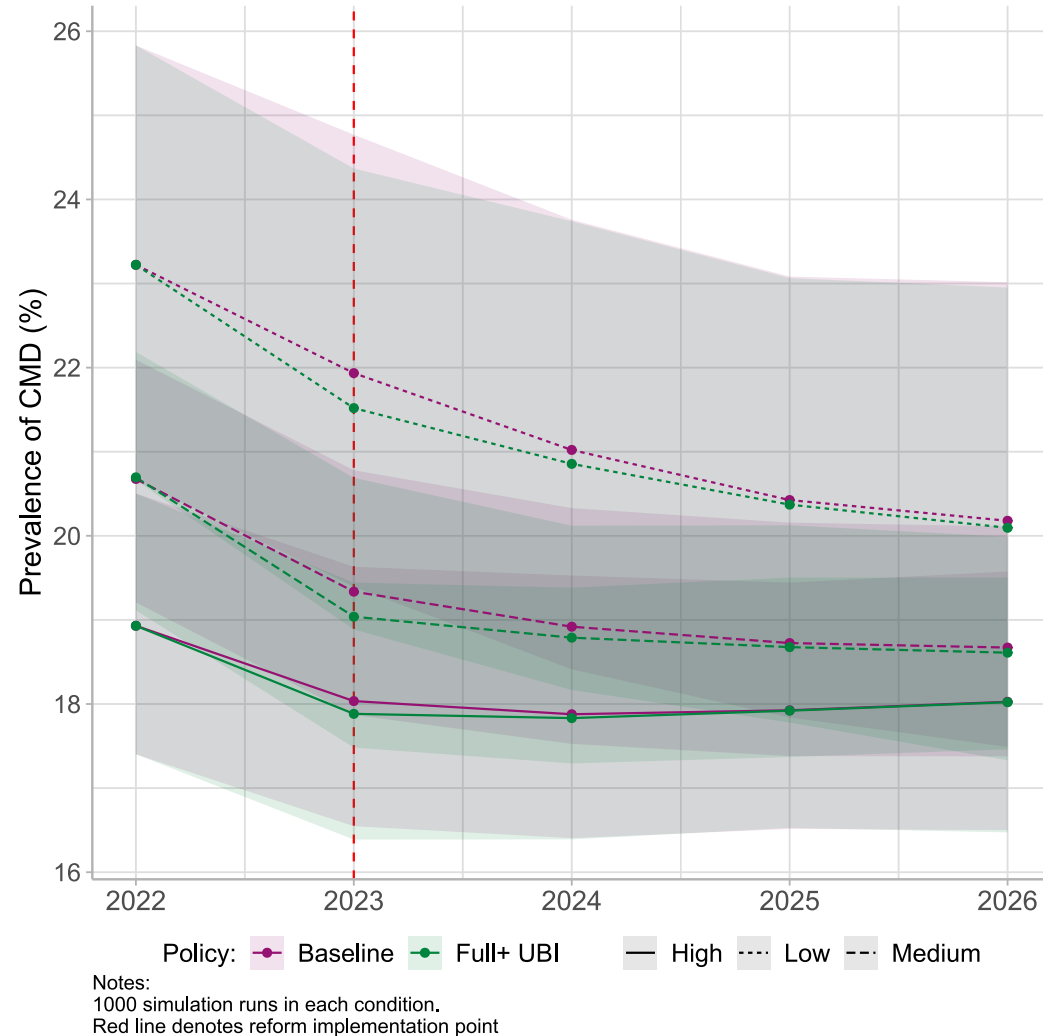
- Graphs compare Baseline (purple) and Full+ UBI (green)

- With maximal employment effects:
  - UBI increased/worsened CMD prevalence more for men than women
  - Gradient by education, with largest increases in those with high education
  - Little difference in effect by age group
  - UBI increased/worsened CMD prevalence more for those with children

- With minimal employment effects patterning of these results was essentially the same, with **women** and those with **least education** seeing the greatest reduction/improvement in CMD prevalence

Policy: — Baseline — Full+ UBI — High ⋯ Low -- Medium

Notes:
1000 simulation runs in each condition.
Red line denotes reform implementation point