

Mental health and the response to incentives

Claryn Kung, David Johnston, Michael Shields
Centre for Health Economics, Monash University

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Mental ill-health

- Approx. one-in-five Australians report mental illness during past year. Almost half will experience mental illness in their lifetime.

Most common are anxiety, depressive and substance use disorders. Often occur in combination.

- Common symptoms are:
 - feelings of sadness and hopelessness
 - persistent and excessive worry or fear
 - loss of energy

Can cause loss of interest in and pleasure from daily activities (anhedonia), & false perceptions that others are passing harsh judgments on behaviour.

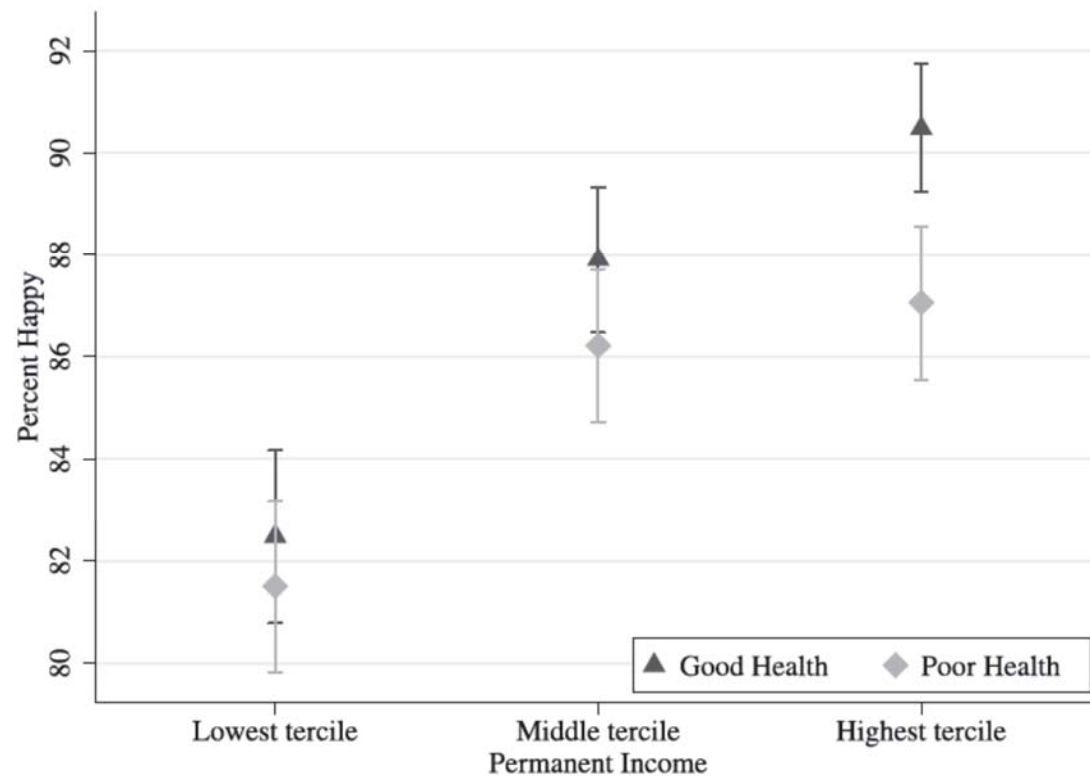
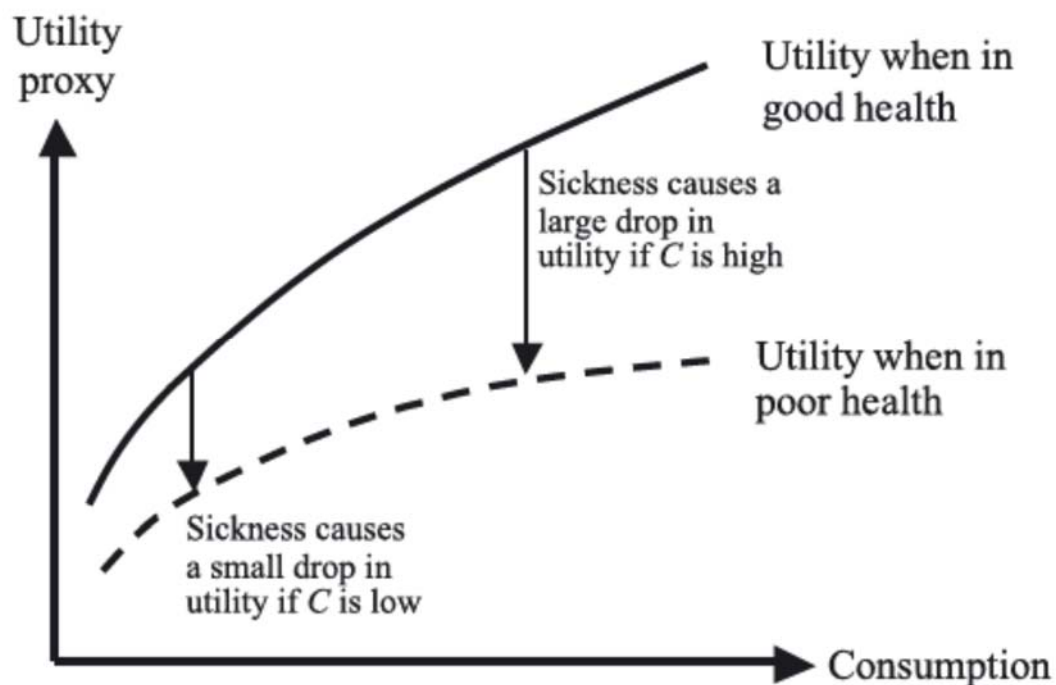
- Do these symptoms affect how individuals respond to financial incentives?

Financial incentives

- Financial incentives are a key tool used by policy-makers, and every day individuals face financial incentives aimed at influencing behaviour.
 - Penalties for poor driving
 - Taxes on tobacco and alcohol aimed at reducing consumption
 - Incentivising work through changes in welfare benefits
 - Reducing health care usage through co-payments
- Also important are non-financial incentives, such as intrinsic motivation, reciprocity and social approval.
- Links between mental illness and economic outcomes may be partly determined by differential response to incentives.

Evidence: effect of health on the marginal utility of consumption

Finkelstein et al. (JEEA; 2013) conclude from estimating happiness regressions that marginal utility of consumption declines with chronic illness.



From: Finkelstein, A., Luttmer, E. F., & Notowidigdo, M. J. (2013). What good is wealth without health? The effect of health on the marginal utility of consumption. *Journal of the European Economic Association*, 11(suppl_1), 221-258

Evidence: Do the mentally ill behave rationally? Evidence from Health Insurance Behavior

- Sun and Bhattacharya (2018) examine how privately insured U.S. patients behave around the deductible.
 - Prior to deductible: marginal cost is \$1
 - After deductible: marginal cost is less (e.g, \$0.20)
 - Creates incentive to schedule elective services after reaching the deductible
- Uses IV approach to control for endogeneity of reaching deductible
- Preliminary Results:
 - Mentally healthy people substantially increase elective services and health care spending after reaching deductible.
 - Persons with mental illness, however, are no more likely to use elective services.

Survey Incentives Experiment

- We analyse data from the survey incentives experiment conducted on the Innovation Panel of the UK Understanding Society Survey.
- Experiment induced survey participation through randomised financial incentives and by appealing to intrinsic motivation to engage in prosocial behaviour.
- Our sample includes 2385 responding individuals in Wave I (2008).
- In the survey incentives experiment, each household randomly assigned an incentive condition (high-street gift vouchers):

LOW: receive £5

HIGH: receive £10

SOCIAL: receive £5 + £5 if all adults in household participate

Survey Incentives Experiment

- Prior to survey participation decision, individuals received a letter that contained their voucher.
- Letter also contained a document requesting participation in the survey

It made clear that participation is “completely voluntary”, but emphasised that participation is important: will help “to improve everyone’s lives”.

- Interviews attempted with all adult household members. Interviewer was expected to make multiple visits.
- Participation defined as completing the individual interview; on average 32min.

Non-participation defined as refusing to complete the interview.

Out of experiment for that wave if deceased, moved, no contact able to be made, too elderly, ill.

Understanding Society

Last year you kindly agreed to be interviewed for *Living in Britain*, a study conducted by researchers at the University of Essex. You may remember we sent you a short report of some of the initial findings a few months ago under the study's new name, *Understanding Society*.

As the study is concerned with how people's lives change over time, we would very much like to interview you again.

Understanding Society covers important subjects such as our health, our opinions, our families and our work. The findings from *Understanding Society* will help us build up a detailed picture about the lives, experiences, behaviours and beliefs of people across the UK in the 21st century and provide an important understanding of diversity within the population. It will help us understand the long term effects of social and economic change in the UK and assist in future decision-making.

Your help in the past was very much appreciated and we would like you and your household to take part in the next stage of the study, which is being carried out by NatCen. An interviewer will be in touch with you to arrange a convenient time for an interview that should last around half an hour.

As a token of our thanks, your £5 gift voucher for this year's interview is enclosed.

If you have children aged 10 – 15 we hope you will allow them to complete a short self-completion questionnaire about their hobbies, friends, school-life and hopes for the future. Each child will receive a £3 gift voucher as a thank you for completing the questionnaire.

Survey Incentives Experiment

Numbers of individuals and [% participating] per incentive group and wave

	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Waves 2-5
Low £5	738	1589	1753	995	886	5223
	[100%]	[80.6%]	[76.7%]	[72.7%]	[78.1]	[77.0%]
High £10	834	407	207	707	710	2031
	[100%]	[86.3%]	[84.8%]	[77.6%]	[82.1]	[82.7%]
Social £5-£10	813	389	383	331	0	1103
	[100%]	[81.2%]	[78.4%]	[65.2%]	[-]	[75.4%]
Total	2385	2385	2343	2033	1596	8357
	[100%]	[81.8%]	[77.8%]	[73.0%]	[79.9%]	[78.2%]

Across Waves 2-5 participation rate in high £10 group was 5.7 percentage points higher than in low £5 group (t-stat = 3.70)

Measures of health

- From wave 1 use the 12-item Short-Form Health Survey (SF-12).

Contains eight scales, each comprising one or two items: physical functioning, role physical, bodily pain, general health, vitality, social functioning, role emotional, and mental health.

Derive standardised physical component summary (PCS) and mental component summary (MCS) scores.

- Low MCS driven by often feeling “downhearted and depressed” and rarely feeling “calm and peaceful” and “having a lot of energy”.
- Among individuals in the bottom MCS quartile at Wave 1, 45% of their future MCS scores are also in bottom quartile.

All others have 15% of their future MCS scores in bottom quartile.

Regression approach

- To test for MCS-related heterogeneity in effects of incentives, we estimate:

$$p_{it} = \beta_1 high_{it} + \beta_2 social_{it} + \beta_3 mcs_{i1} + \beta_4 (high_{it} \cdot mcs_{i1}) \\ + \beta_5 (social_{it} \cdot mcs_{i1}) + X'_{it}\gamma + \varepsilon_{it}$$

- The low £5 group is the omitted category. Therefore:
 - β_1 and β_2 equal differences in participation for individuals with mean mental health who received £10 and £5+£5 incentives
 - β_3 equals effect of mental health on participation for individuals who received £5 incentive
 - $\beta_3 + \beta_4$ equals effect of mental health on participation for individuals who received £10 incentive
- Expand specification to include interactions with PCS and characteristics (sex, age, education, household composition).

Main Results

Estimated effects of incentives, mental health and their interactions from OLS regressions models of participation (N = 6954)

	Basic Covariates	Expanded Covariates	Expanded Interactions
High £10 incentive	0.042***	0.043***	0.015
Social £5-£10 incentive	-0.025	-0.005	0.076
Mental health score	-0.019**	-0.019**	-0.018**
Physical health		0.006	0.008
High incentive x mental health	0.030**	0.033**	0.029**
Social incentive x mental health	-0.006	-0.006	-0.003
High incentive x physical health			0.001
Social incentive x physical health			-0.009

Basic X = interview mode and wave

Expanded X = physical health, male, age, years of education, employment, # of adults, # of children

Main Results

- A person with mean mental health given £10 incentive is 4.2 %-points more likely to participate than a person with mean mental health given £5 incentive.

Financial incentives increase participation.

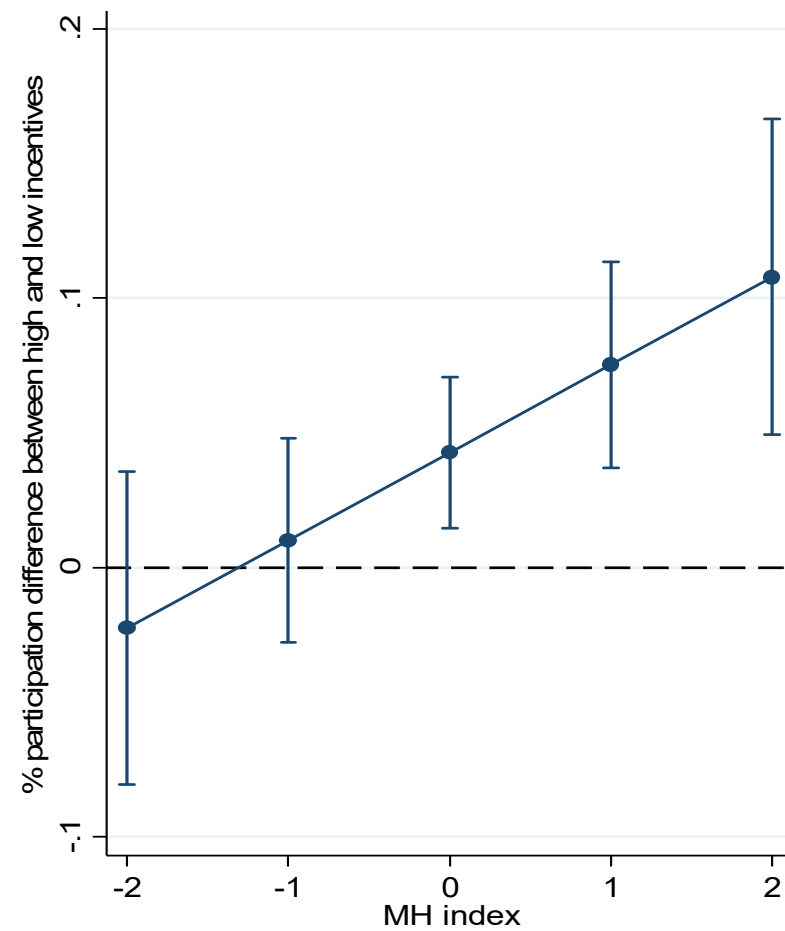
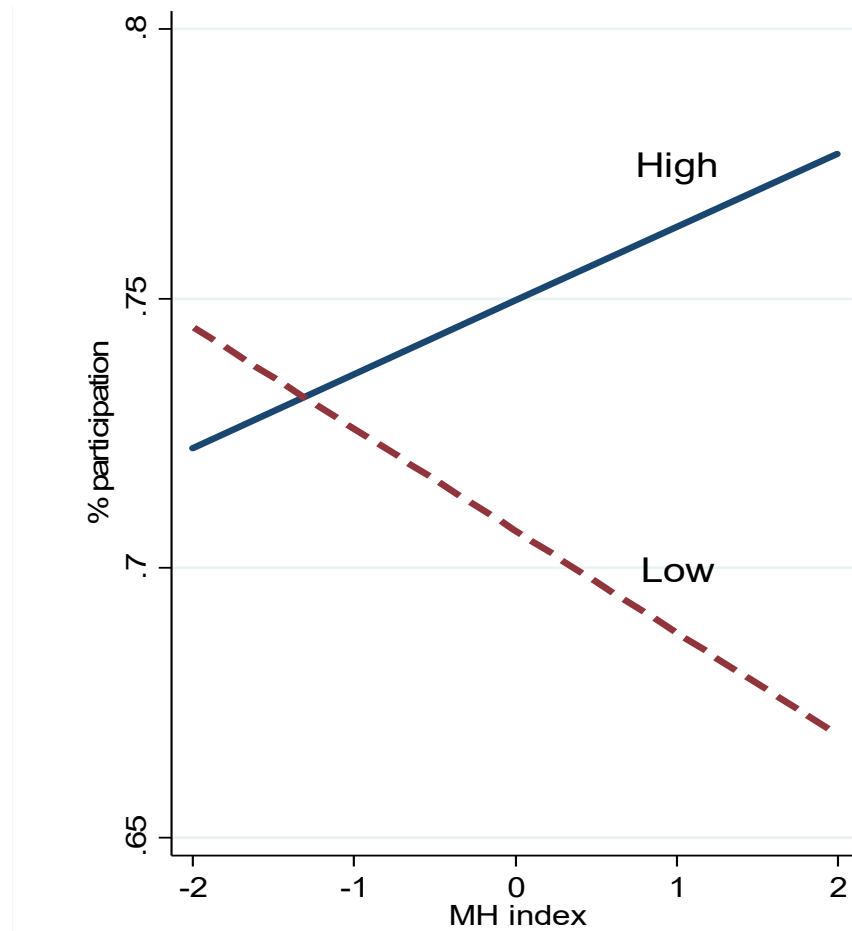
- No difference between £5 incentive and £5+£5 social incentive on average.

Participation with social incentive is lower for large households.

- -0.019^{**} estimate: participation ↓ by 1.9 %-points when mental health ↑ by one std dev, for people in £5 group.
- 0.030^{**} estimate: effect of mental health on participation for people in £10 group is significantly higher than for people in £5 group.
- No physical health effects. Robust to different measures – e.g. using chronic illness indicators as per Finkelstein et al. (2013).

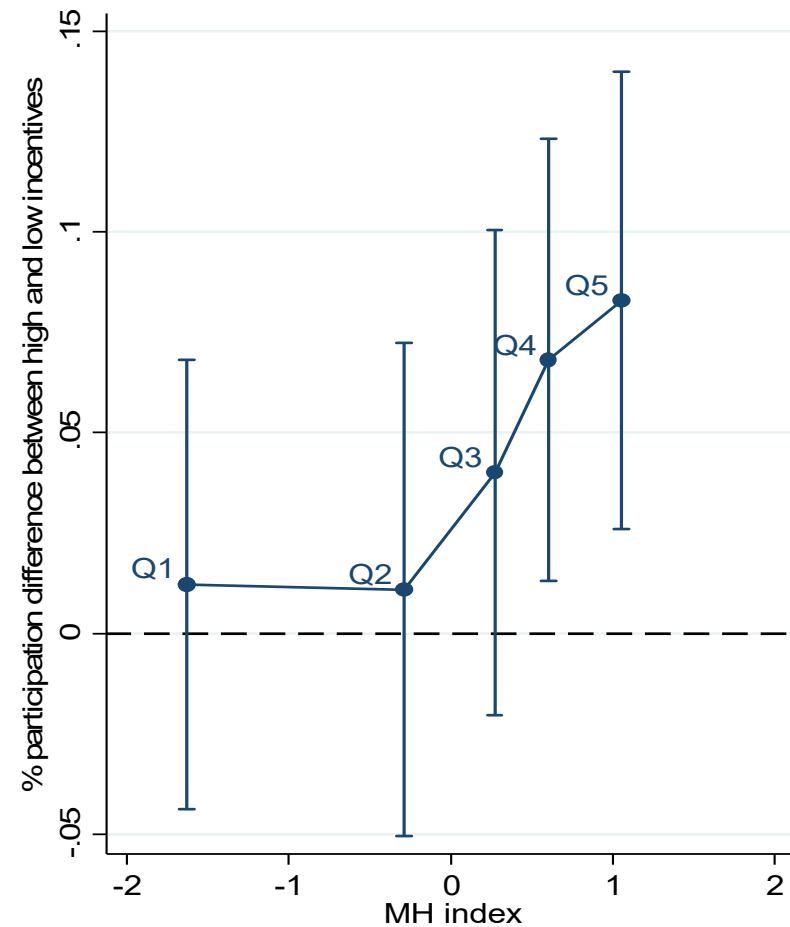
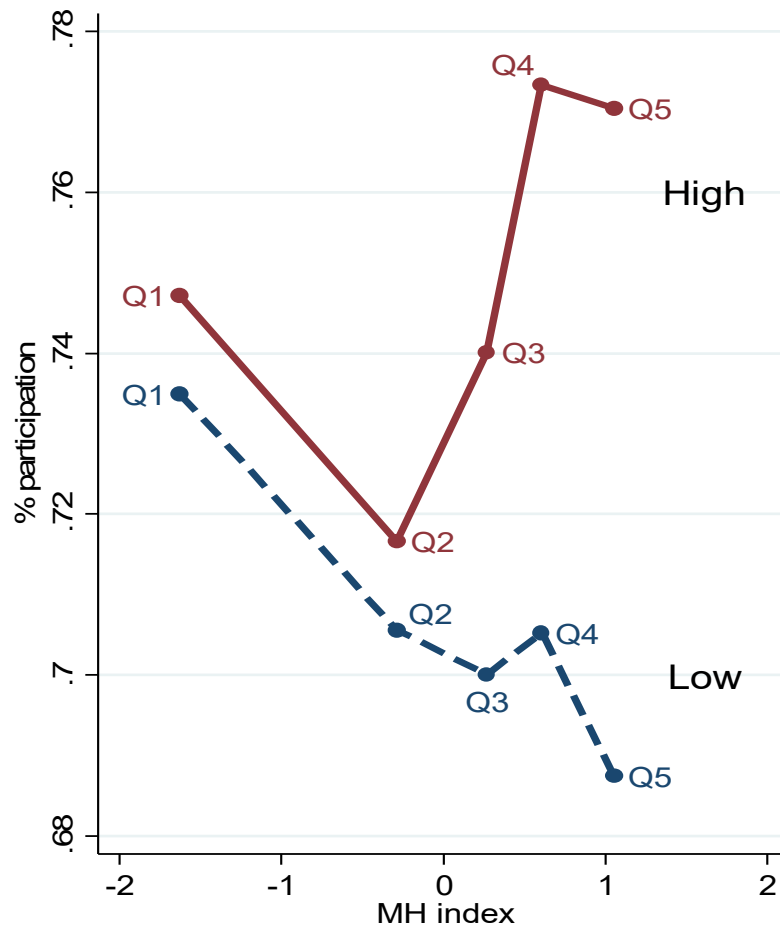
Main Results

Estimated effects of mental health on participation in high and low incentive conditions



Allowing non-linearity

Estimated effects of mental health on participation in high and low incentive conditions, using mental health quintile categories



Across time

- Financial incentives increasingly important over time - corresponding to a decline in importance of prosocial behaviour?
- Relevance of wave 1 mental health lowers over time.
- OLS regressions models of participation estimated separately by wave

	Waves 2 & 3	Waves 4 & 5
High £10 incentive	0.038	0.041**
Social £5-£10 incentive	0.031	-0.071**
Mental health score	-0.012	-0.029**
High incentive x mental health	-0.001	0.052***
Social incentive x mental health	0.001	-0.023
Number of observations	3858	3096
Number of individuals	2195	1806

Discussion

- People with poor mental health participate:
 - a) Less often when offered high financial incentives
 - b) More often when offered low financial incentives
- Result (a) suggests people with low MH have low valuation of monetary incentives – e.g. low marginal utility of consumption due to Anhedonia.
- Result (b) can be explained in different ways.

Explanation 1: people in poor MH are especially concerned with how others regard their behaviour – high valuation of pro-sociability.

Explanation 2: people in good MH have low intrinsic motivation due to crowding out effects of non-zero monetary incentives (£5 too low to compensate).

Conclusion

- Attempt to answer an increasingly important question: how does mental ill-health impact economic decision-making?
- Small scale experiment with modest financial incentives.
- Results suggest mental health significantly moderates the impact of intrinsic and extrinsic incentives.
- More work is needed on this topic.
 - Evaluation of government programs, schemes, etc. to determine whether mental illness is a strong predictor of effectiveness.
 - Field experiments with this aim built in to design.
 - Use of administrative data helpful - alleviates selection biases in bespoke surveys and experiments.