How much are UK adults willing to pay to avoid depression? A contingent valuation study

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Introduction/ Rationale

Making the case for healthier urban design

Urban planning and design can have a significant impact on health:
the challenge is to ensure health receives equal consideration to other tangible costs and benefits (Black et al, 2021).

TRUUD project case study

Working alongside policy makers to inform appraisal of health effects in alternative scenarios for development at regeneration site in Bristol, UK

Stated preference survey: Rationale

19% of the UK adult population was estimated to have symptoms indicating possible mild to moderate depression (ONS, 2019).

Several features of the environment in and around the home have been associated with changes in depression include serious draughts (Blackman, 2001); traffic related noise (Stansfeld, 2021) (Drafta, 2010); neighbourhood walkability (Berke, 2007) (Melis, 2015); accessibility of public transport (Melis, 2015); poverty/ urban deprivation (Jokela, 2015) (Leventhal, 2003) and quality/ accessibility of urban green space (Picavet, 2016)

Policy makers attempting quantification of health impacts often use applied evidence from existing valuation studies, i.e. GLA's London Mental Health Report (2014)

Benefits transfer principles require close similarities between study and policy sites– e.g. similarity of scope, geography, market, income constraints (Johnson et al, 2015) (Kaul, 2013) (Brouwer and Bateman, 2005)

But as we will see there are gaps in valuation evidence for mental health, and existing evidence can be difficult to transfer

LONDON MENTAL HEALTH
The invisible costs of mental ill health

MAYOR OF LONDON

Our contribution

This contingent valuation study aims to estimate values for willingness to pay to avoid the disutility of having the symptoms of depression, towards estimating unit costs for benefits transfer for use in cost-benefit and cost-effective analysis.

We test two elicitation methods: a two-way payment ladder method, and a double bounded dichotomous choice method to elicit values to avoid depression in a representative sample of urban adults, representing the normal distribution of mental health status in the UK.

What we add:

- Values for depression with clearly defined characteristics for benefits transfer to UK context
- Explores interaction between mental health status and WTP for health
- Explore if willingness to pay valuation is sensitive to changes in scope

Valuation literature

General quality of economic valuation evidence relating to mental health in the UK is poor
Singh (2001), McCrone (2011), Parsonage and Naylor (2012), Knapp & Wong (2020)

Burden of Disease studies:
McCrone et al, 2008; *Paying the Price: The Cost of Mental Health Care in England to 2026*
- Total cost of depression in England estimated at £7.5 billion (excluding disutility)
- 1/3 of sufferers do not receive medical services

Contingent valuation studies (all US-based)
- Morey et al (2007): “Magic Pill” for major depressive disorder patients in US (Choice Experiment)
- Unuzter (2003): WTP for primary care treatment for US cohort of depression patients
- Smith (2012): WTP to avoid Depression and Schizophrenia, compared to physical illness (US cohort, no experience of depression)

Values derived from subjective wellbeing and quality of life
- Morriss et al (2016), Cohort of UK Severe Depression patients (Disutility via QALYs only)
- Centre for Mental Health England (2010), “Human Costs” derived from QALY forms 50% of total cost of illness
- Howley (2017): Compensating income variation (Depression £206,261, but excluded from main results because of overlaps between measures of psychological health and life satisfaction)
- HACT & Fujiwara (2018): Subjective Wellbeing valuation of relief from depression/ anxiety £36,766 and Warwick-Edinburgh Mental Wellbeing Scale

Valuation literature

Mental Health is valued less than physical illness

- Smith et al (2012) Mental illness valued 40% less than physical illness with similar impact on quality of life
- Brazier (2008) People experiencing the condition give mental health greater weight than physical health compared to the general population

Perceptions of utility are affected by depression

- Zweifel (2020) shows that people living with mental illness may not be able to express preferences consistently
- Anhedonia effect means that WTP for sufferers to rid themselves of illness may be lower or negative compared to WTA compensation for living with the illness (Morey, 2007)

Stigma surrounding mental illness prevents people seeking treatment

- Significant numbers of non-treated sufferers means that valuations should include treated and non-treated populations (Luppa, 2007) (Viavettene & Priest, 2020)

Inequalities in valuations of mental health are often overlooked

- Gender, ethnicity, religion, and other differences between groups may affect WTP (Knapp & Wong, 2020)

Stated preference survey design

We now ask you to take part in our experiment. We will give you a description of an illness and ask you to react as if you have been diagnosed with this condition. This is a hypothetical situation, but we ask that you answer as truthfully as you can.

Please read the following description of your illness.

Your Symptoms

You feel sad, hopeless and lose interest in things you used to enjoy. These symptoms are bad enough to cause distress and interfere with your work, social life and family life every day.

You may also experience these symptoms:
- having low self-esteem
- feeling tearful
- feeling guilt-ridden
- feeling irritable and intolerant of others
- having no motivation or interest in things
- finding it difficult to make decisions
- not getting any enjoyment out of life
- feeling anxious or worried
- having suicidal thoughts or thoughts of harming yourself

There can be physical symptoms too, such as feeling constantly tired, sleeping badly, having no appetite or sex drive, and various aches and pains.

How often
You are likely to experience these symptoms for most of the day, nearly every day.

How long
These symptoms will probably last for around 12 months, and then you will recover.

Impact
You experience most of the symptoms above, and the symptoms make it almost impossible to get through daily life. This affects your personal, family, social, educational, occupational, and/or other important areas of functioning. You may also experience episodes of psychosis (hallucinations or delusional thinking).

Please imagine that you have started experiencing the symptoms above, and have been diagnosed with severe depression by your doctor.

Next

New 10 minute stated preference survey, using a contingent valuation experiment based on a hypothetical question about a potential treatment which will reduce symptoms of depression.

Details of depression symptoms derived from World Health Organisation and NHS England, tested with health colleagues

Population will be a representative sample of 1,500 UK adults from all regions of the UK, conducted online.

Content includes:
1. Assessment of current mental and physical health
2. WTP Experiment
3. Debrief questions around motivation and attitudes to depression
4. Demographic information and experience of depression

Main data gathering: July 2022

The survey has been pre-tested with colleagues and individual 1:1s, and will be pre-tested via a pilot of around 10% of the final sample.

Two-stage elicitation method

Now, imagine that there is a "magic pill" which could eliminate all of these symptoms for you with no side effects at all. If you don't take it, you will continue to have some or all of the symptoms of depression. You will have to pay for it out of your own income, as it is not available on the NHS.

How much would you be willing to pay for this pill, if you had the diagnosis of depression you have just read?

Please indicate on the scale below how much you would **certainly be** willing to pay **per month** for this pill.

Please indicate on the scale below how much you would **definitely NOT** be willing to pay **more than**.

To be clear: you will have to pay this **every month** for the rest of your life in order to avoid the symptoms of depression. You can at any point decide not to pay and the symptoms of depression will return instead. Please don't agree to pay an amount if you think you can't afford it, if you feel there are more important things to spend your money on, or if you are not sure about being prepared to pay or not.

Although this is a hypothetical experiment, when giving your answer please consider how much you can really afford and try to be as realistic as possible. Paying this amount will mean you have less to spend on other items such as food, clothes, childcare, savings or recreation.

Please adjust the scales if you need to, and then move on to the next question.

Next

Respondents in the UK are not used to paying for medical care, so we may see a high number of protest responses in this experiment (Freeman, 2014)

Payment Vehicle: "Magic Pill" to avoid issues relating to NHS provision

First stage: "*If you had been given this diagnosis of depression, and there was a treatment available which could restore your health back to your original state, would you be willing to pay something for this?*

Helps to identify protest votes and true zero responses

Second stage: Two way payment ladder

Scale: £1-1,000 (starting point randomised to avoid bias)

WTP elicited as an interval between maximum and minimum willingness to pay, with an area of uncertainty between the two values

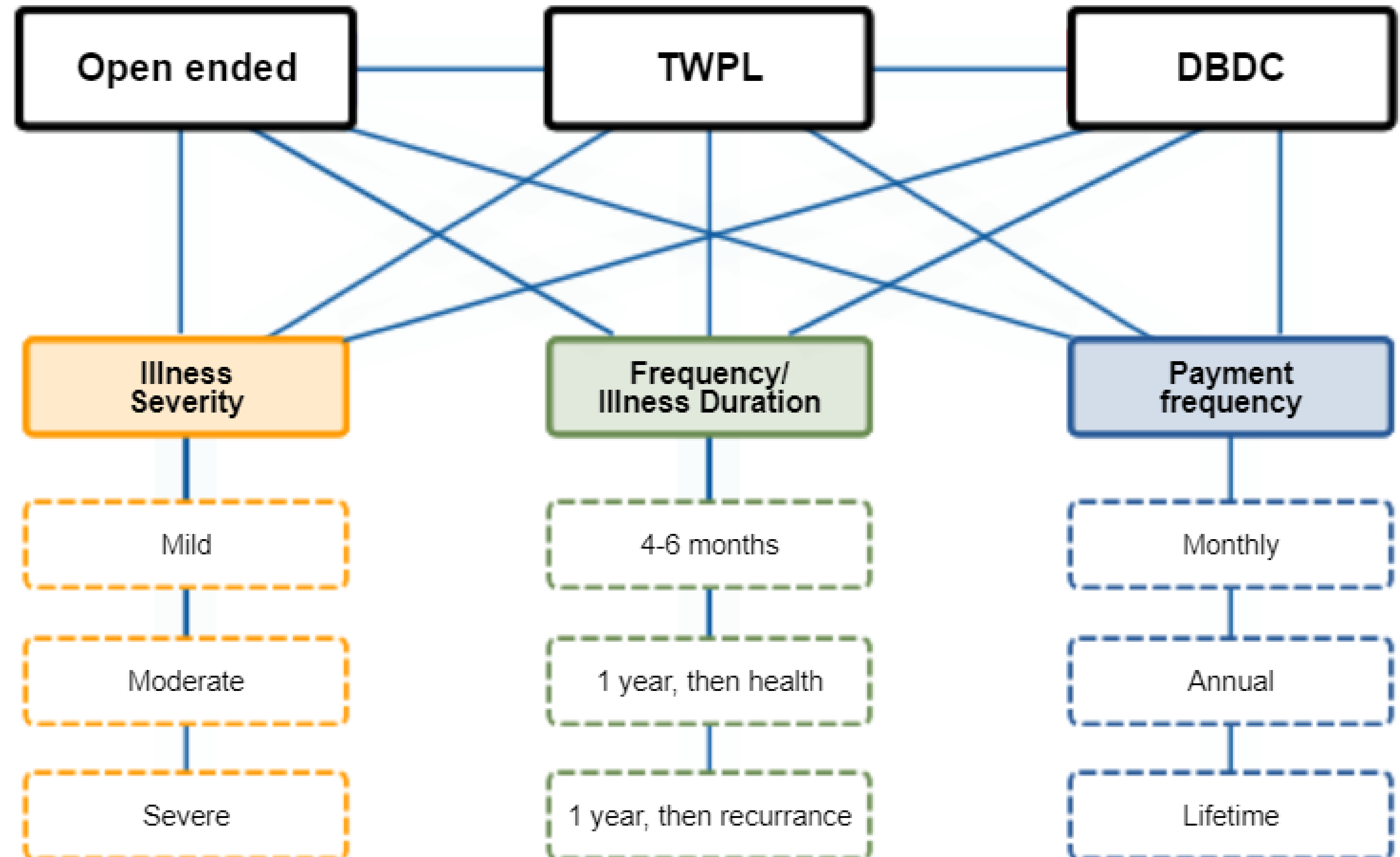
Method provides richer data on upper and lower bound of WTP per respondent
May be easier for people to give unfamiliar values as a range (Hanley, 2002)

Although concerns exist around anchoring of range of values presented (Bateman, 2002), it has been shown that payment ladders are comparable to multiple bounded choice models where uncertainty arises (Mahieu, 2014)

Survey design: variations

Variations of survey

- Elicitation method
- Severity to reflect range in environmental literature
- Frequency/ Duration to reflect uncertainties in progression of disease
- Payment frequency to test scope sensitivity



Pilot results

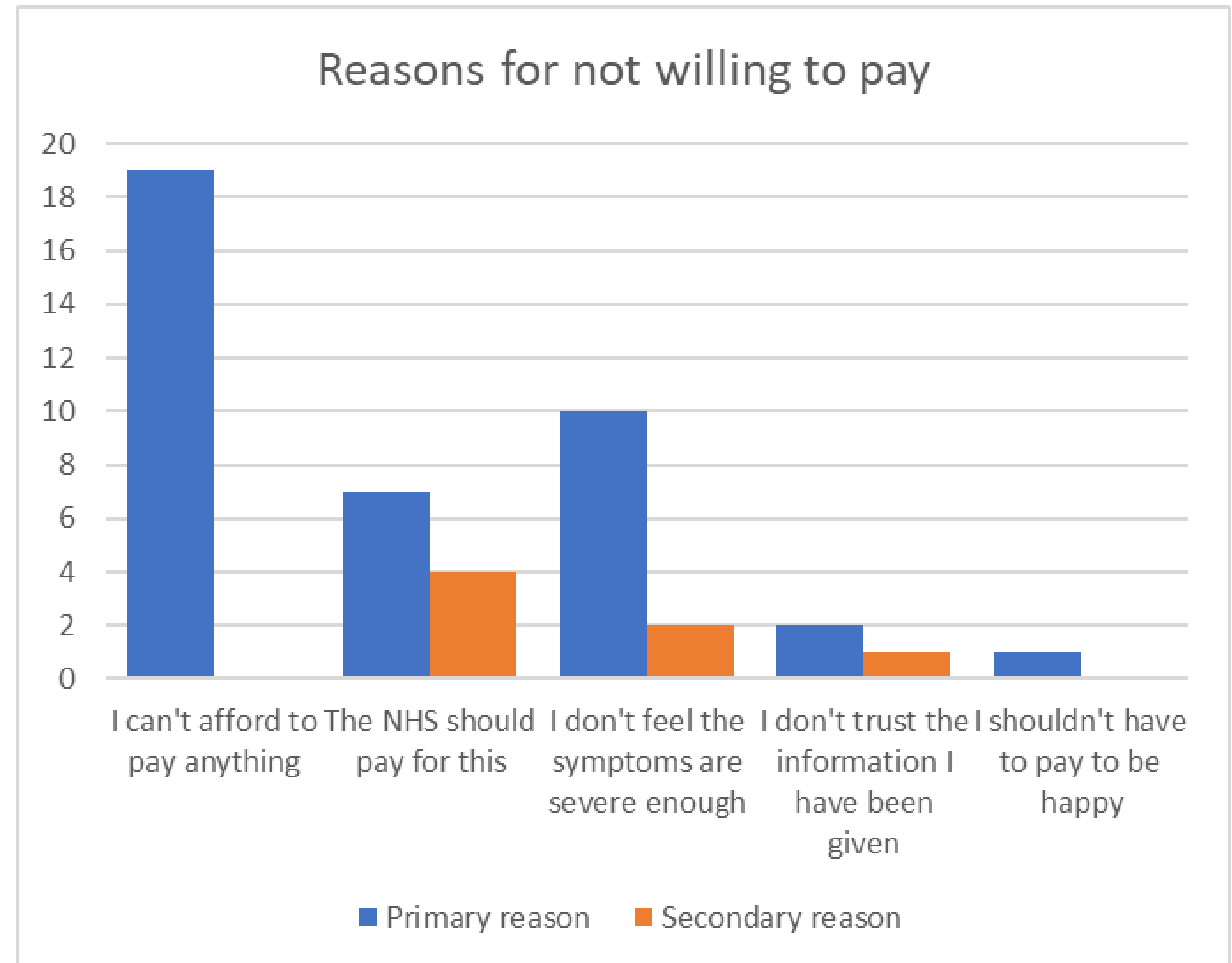
- Survey Pilot with 151 respondents (excluding speeders)
- Data collected online over 24 hours
- Pilot survey only tested open ended and payment ladder formats
- Results are only just in, but we can share a few headline results from the raw data
- Given the number of variations, very small samples of people in each variation category.

Zero responses and protest votes

39 of 151 respondents indicated they would not pay anything (26%)

15 responses indicate true zero willingness to pay (can’t afford)

Protest votes estimated at 24 or 16% of total



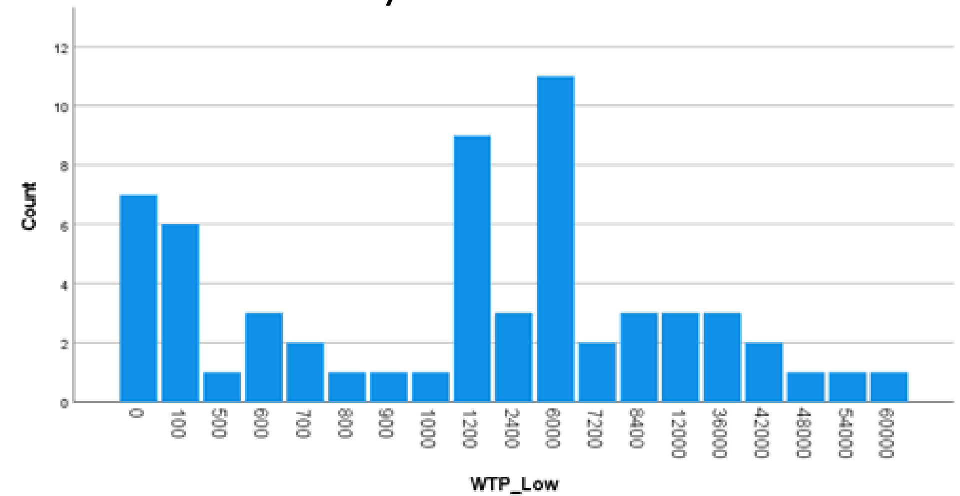
WTP differs sharply with elicitation method

Willingness to pay was high for most respondents:

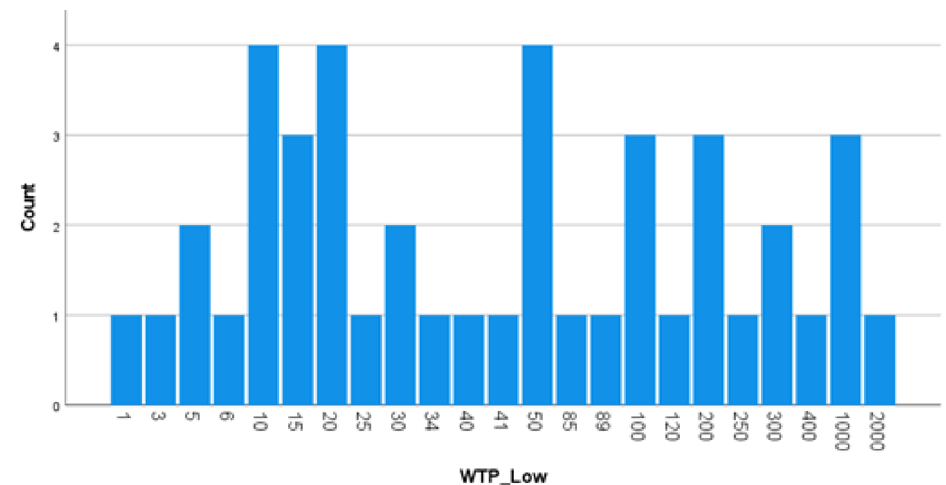
- Mean Annual WTP: £3,480 to 4,785 (Payment Ladder)
- Mean Annual WTP: £197 to 868 (Open ended)

Elicitation method		WTP_Low	WTP_High
Payment Ladder	Mean	8,534	11,798
	N	61	61
	SD	14,703	16,485
Open ended	Mean	187	540
	N	43	44
	SD	381	1,283

Payment Ladder



Open Ended (Actual bids)



Responses appear sensitive to payment frequency

Method		Monthly WTP Low	Monthly WTP High
TWPL	Mean	389	330
	N	18	18
	SD	351	267
Open ended	Mean	15	34
	N	16	16
	SD	9	29

Method		Annual WTP Low	Annual WTP High
TWPL	Mean	3,480	4,785
	N	20	20
	SD	3,038	3,626
Open ended	Mean	197	868
	N	17	17
	SD	235	1,772

Method		Lifetime WTP Low	Lifetime WTP High
TWPL	Mean	19,304	26,870
	N	23	23
	SD	19,564	18,437
Open ended	Mean	444	766
	N	10	11
	SD	674	1,186

Monthly versus annual answers were roughly as to be expected – Open answers around 8% of the annual mean, and TWPL are 11% of annual mean

Values for lifetime responses vary between 2 times annual (open) and 5 times (TWPL)

No sensitivity to severity or duration of illness

No consistent changes in willingness to pay response to descriptions of illness as mild, moderate or severe, or duration of illness between 4-6 months (A), 1 year (B) and 1 year plus recurrence (C)

This was also reflected in ratings of depression as how it might affect the respondent's quality of life

Mean WTP by severity of illness

	Mild	Moderate	Severe	Overall mean
Payment Ladder	9,326	10,231	6,912	8,534
Open Ended	154	224	178	187

Depression_rating * Scenario

Depression_rating

Open_dummy	Scenario	Mean	N	Std. Deviation
.00	A	66.12	34	23.375
	B	64.62	34	25.245
	C	71.03	39	20.519
	Total	67.43	107	22.963
1.00	A	78.06	16	15.994
	B	74.08	13	11.807
	C	68.67	15	16.646
	Total	73.68	44	15.307

Depression_rating * Impact

Depression_rating

Open_dummy	Impact	Mean	N	Std. Deviation
.00	Mild	68.39	31	24.192
	Mod	69.83	30	20.259
	Severe	65.22	46	24.041
	Total	67.43	107	22.963
1.00	Mild	66.33	12	15.102
	Mod	80.43	14	14.324
	Severe	73.33	18	14.576
	Total	73.68	44	15.307

Summary and Conclusions

- This study will help to inform our understanding of the costs of mental illness in the UK
- We explore how variations in severity, scope and duration of payments affects WTP
- We extend current understanding of whether mental health score and experience of depression affects WTP
- Piloting of the two-way payment ladder survey reveals large differences in responses by elicitation method
- Further testing to be carried out with focus groups to explore ranges and perceptions of scope/ severity
- Second phase of survey uses the double-bounded dichotomous choice method, in order to investigate which method provides the most robust estimation

Thank you for your time

Any questions or feedback? Please contact me at e.a.eaton@bath.ac.uk

TRUUD – Tackling the Root causes of Unhealth Urban Development: www.truud.ac.uk

ELEANOR EATON, UNIVERSITY OF BATH, 7 JULY 2022

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