

# “The Serpent of their Agonies”: Exploitation As Structural Determinant of Mental Illness

## Online Supplement

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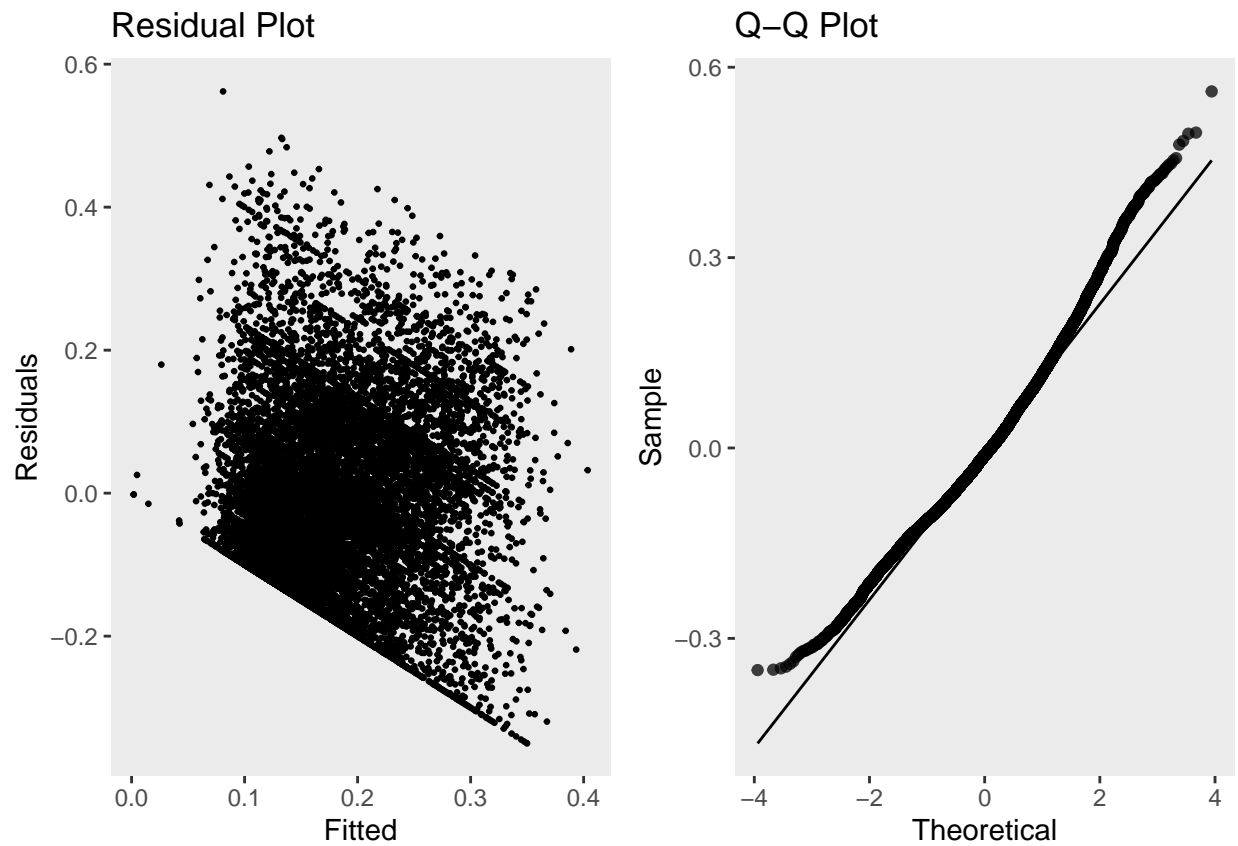
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## Linear IPW Model Diagnostics

Figure S1. Standardized residuals of the exposure conditional on covariates



Residual and Q-Q plots for un concealed exploitation conditional on covariates. Both plots reflect that the exposure is a ratio that ranges from 0 to 1, and that its distribution is right-skewed due to the high number of respondents with values of 0.

## Descriptive Statistics

**Table S1. Time-invariant baseline variables and summary 1983-2003 baseline variables**

The table below presents unweighted descriptive information for the time-invariant baseline covariates and the summary 1983-2003 baseline covariates.

	Value (N=3052)
<b>Annual overtime hours</b>	
meansd	38.18 (69.31)
range	0.00 - 1000.00
<b>Changes in employment status</b>	
meansd	0.85 (1.01)
range	0.00 - 7.00
<b>Changes in industry</b>	
meansd	2.34 (2.68)
range	0.00 - 15.00
<b>Changes in occupation</b>	
meansd	2.95 (2.79)
range	0.00 - 14.00
<b>Depression before age 17</b>	
No	2513 (82.3%)
Unknown	481 (15.8%)
Yes	58 (1.9%)
<b>Drug problem before age 17</b>	
No	2519 (82.5%)
Unknown	481 (15.8%)
Yes	52 (1.7%)
<b>Hours at extra job</b>	
Nmiss	1
meansd	6.92 (30.81)
range	0.00 - 519.00
<b>Income from extra job</b>	
meansd	11616.42 (53786.81)
range	0.00 - 339599.67
<b>Income from interest</b>	
meansd	151.42 (838.93)
range	0.00 - 13250.00
<b>Modal employment status</b>	
Other	1164 (38.1%)
Working	1888 (61.9%)
<b>Modal hourly or salaried</b>	
Hourly	1534 (50.3%)
Inap	48 (1.6%)
Other	261 (8.6%)
Salary	1109 (36.3%)
Unknown	100 (3.3%)
<b>Modal occupation</b>	
Architect/Engineering	16 (0.5%)
Arts/Media/Sports/Entertainment	14 (0.5%)
Building/Grounds/Maintenance	26 (0.9%)
Business Ops Specialists	7 (0.2%)
Community/Social Services	13 (0.4%)

	Value (N=3052)
Computer/Mathematical	16 (0.5%)
Construction/Extraction	59 (1.9%)
Crafts/Kindred	505 (16.5%)
Educ/Training/Library	28 (0.9%)
Farm Laborers/Foremen	36 (1.2%)
Farm/Fish/Forest	33 (1.1%)
Financial Specialists	16 (0.5%)
Food Prep/Serving	30 (1.0%)
Healthcare	30 (1.0%)
Install/Maint/Repair	36 (1.2%)
Laborers	97 (3.2%)
Legal	5 (0.2%)
Life/Phys/Soc Sciences	5 (0.2%)
Management	474 (15.5%)
Office/Admin Support	236 (7.7%)
Operatives	215 (7.0%)
Personal Care	13 (0.4%)
Pro/Tech/Kindred	283 (9.3%)
Production	31 (1.0%)
Protective Services	27 (0.9%)
Sales	179 (5.9%)
Service Workers	193 (6.3%)
Transportation/Material Moving	211 (6.9%)
Unknown	218 (7.1%)
<b>Overtime income</b>	
meansd	11593.80 (53705.83)
range	0.00 - 333333.00
<b>Race</b>	
White	1886 (61.8%)
POC	1045 (34.2%)
Other	44 (1.4%)
Unknown	77 (2.5%)
<b>Sex</b>	
M	2544 (83.4%)
F	508 (16.6%)
<b>Spousal income</b>	
meansd	11653.57 (14552.71)
range	0.00 - 144000.00
<b>Years covered by union</b>	
meansd	1.44 (3.56)
range	0.00 - 18.00
<b>Years of self-employment</b>	
meansd	0.86 (2.75)
range	0.00 - 17.00
<b>Years worked extra job</b>	
meansd	1.29 (2.54)
range	0.00 - 17.00

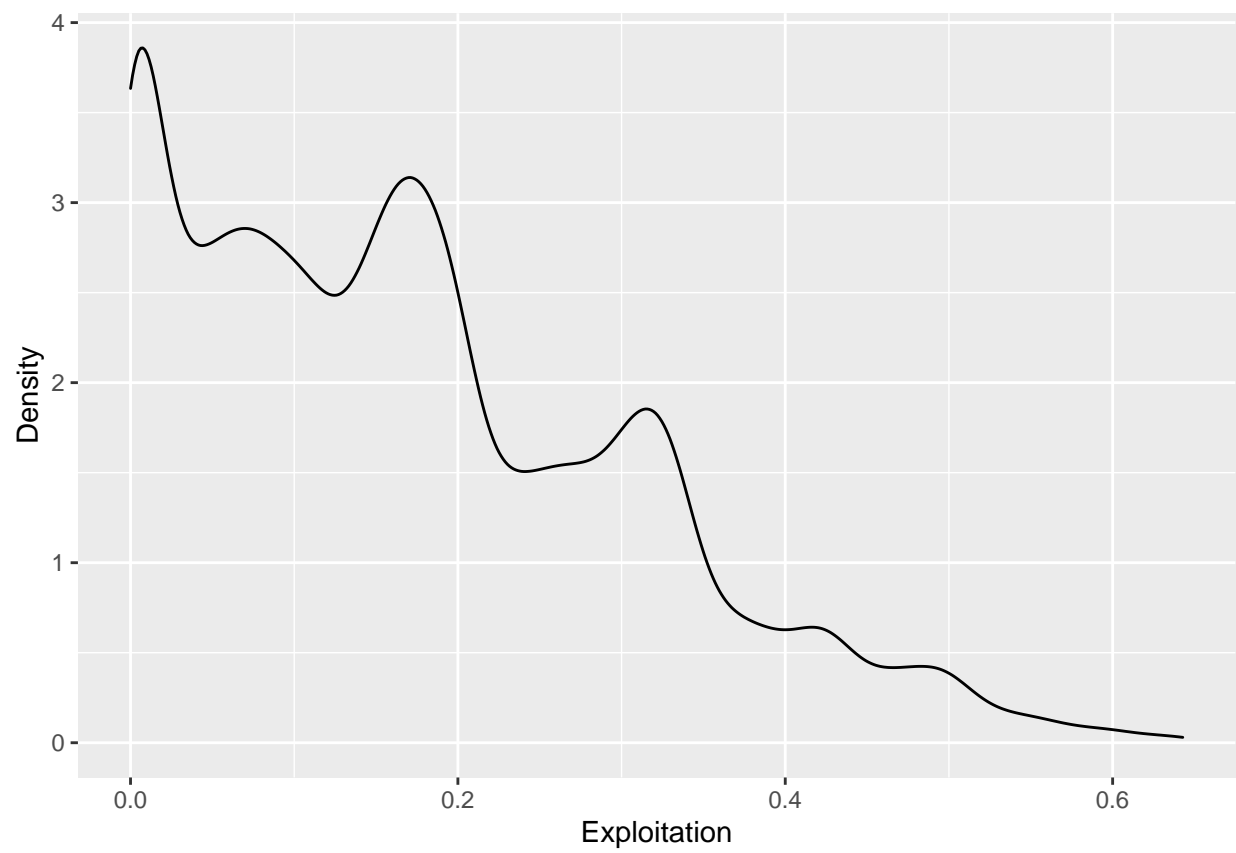
Table S2. Time-varying covariates

	Value (N=24099)
<b>Age</b>	
Nmiss	1
meansd	40.72 (11.55)
range	18.00 - 89.00
<b>Alcohol frequency</b>	
<1perMnth	2607 (10.8%)
>1perMnth	2593 (10.8%)
>1perWeek	3017 (12.5%)
1perMnth	2633 (10.9%)
1perWeek	3200 (13.3%)
EveryDay	967 (4.0%)
Never	6043 (25.1%)
Unknown	3039 (12.6%)
<b>Annual hours worked</b>	
meansd	2586.29 (522.79)
range	2080.00 - 5824.00
<b>Annual overtime hours</b>	
meansd	91.86 (208.43)
range	0.00 - 2570.00
<b>Grades completed</b>	
<HS	1799 (7.5%)
HS	7649 (31.7%)
Some College	6278 (26.1%)
College	4468 (18.5%)
>College	2834 (11.8%)
Unknown	1071 (4.4%)
<b>Hourly or salary</b>	
Hourly	10744 (44.6%)
Other	2286 (9.5%)
Salary	9253 (38.4%)
Unknown	1816 (7.5%)
<b>Income from interest</b>	
meansd	189.40 (3428.37)
range	0.00 - 403000.00
<b>Income from overtime</b>	
meansd	259.70 (1795.33)
range	0.00 - 78000.00
<b>Income from spouse</b>	
meansd	17573.48 (27079.57)
range	0.00 - 420000.00
<b>K6 scale</b>	
Nmiss	3385
meansd	2.95 (3.46)
range	0.00 - 24.00
<b>Mental illness</b>	
Nmiss	3385
meansd	0.23 (0.42)
range	0.00 - 1.00
<b>Occupation</b>	
Architect/Engineering	594 (2.5%)
Arts/Media/Sports/Entertainment	382 (1.6%)

	Value (N=24099)
Building/Grounds/Maintenance	762 (3.2%)
Business Ops Specialists	478 (2.0%)
Community/Social Services	370 (1.5%)
Computer/Mathematical	635 (2.6%)
Construction/Extraction	1660 (6.9%)
Educ/Training/Library	840 (3.5%)
Farm/Fish/Forest	354 (1.5%)
Financial Specialists	425 (1.8%)
Food Prep/Serving	788 (3.3%)
Healthcare	1096 (4.5%)
Install/Maint/Repair	1534 (6.4%)
Legal	222 (0.9%)
Life/Phys/Soc Sciences	288 (1.2%)
Management	3190 (13.2%)
Military	0 (0.0%)
Office/Admin Support	1888 (7.8%)
Personal Care	440 (1.8%)
Production	2237 (9.3%)
Protective Services	966 (4.0%)
Sales	2097 (8.7%)
Transportation/Material Moving	2507 (10.4%)
Unknown	346 (1.4%)
<b>Own or rent</b>	
Neither	787 (3.3%)
Owns	14588 (60.5%)
Rents	8724 (36.2%)
<b>Race</b>	
White	15113 (62.7%)
POC	7946 (33.0%)
Other	770 (3.2%)
Unknown	270 (1.1%)
<b>Sex</b>	
M	19634 (81.5%)
F	4465 (18.5%)
<b>Total labor income</b>	
meansd	59150.46 (47292.55)
range	8160.00 - 475000.00
<b>Unconcealed exploitation</b>	
meansd	0.17 (0.13)
range	0.00 - 0.64
<b>Years covered by union</b>	
No	16982 (70.5%)
Unknown	3877 (16.1%)
Yes	3240 (13.4%)
<b>Years worked</b>	
Nmiss	1117
meansd	11.54 (8.52)
range	0.00 - 96.00

Min. 1st Qu. Median Mean 3rd Qu. Max. 8160 30600 45881 59150 70000 475000

**Figure S2. Unweighted distribution of unconcealed exploitation**



**Figure S3. Mean values of unweighted time-varying numeric variables over the study period**

Please note that the *y* axes are on different scales for each variable, for legibility.

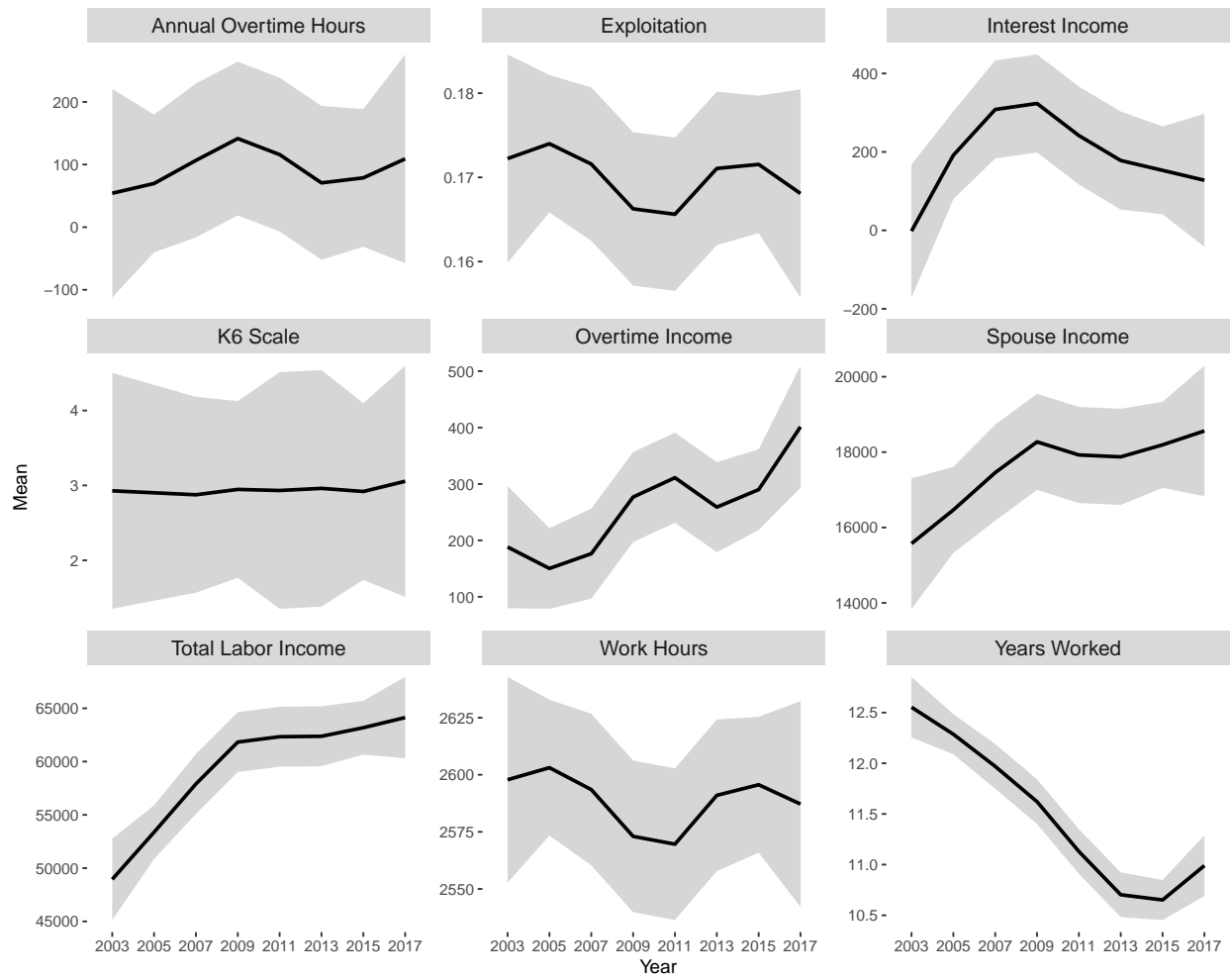




Figure S4. Mental illness

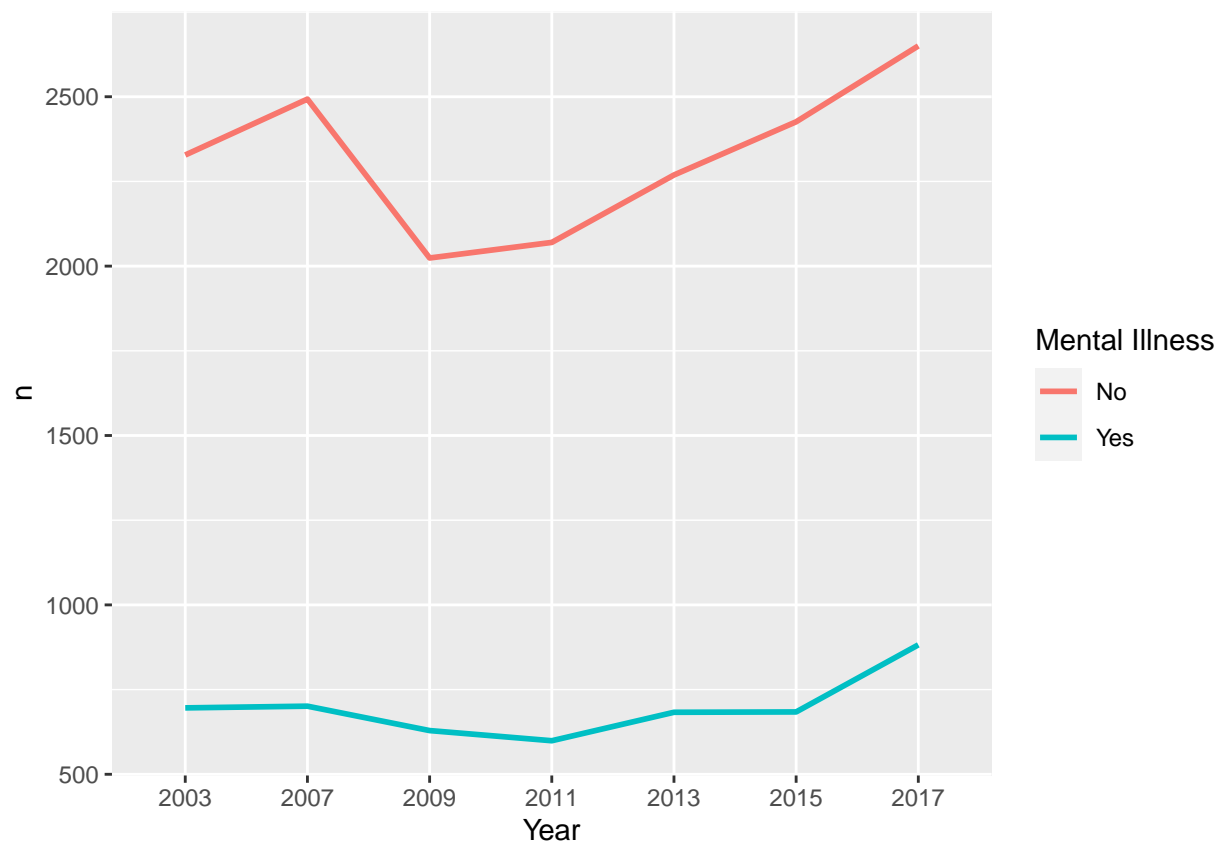


Figure S5. Alcohol frequency

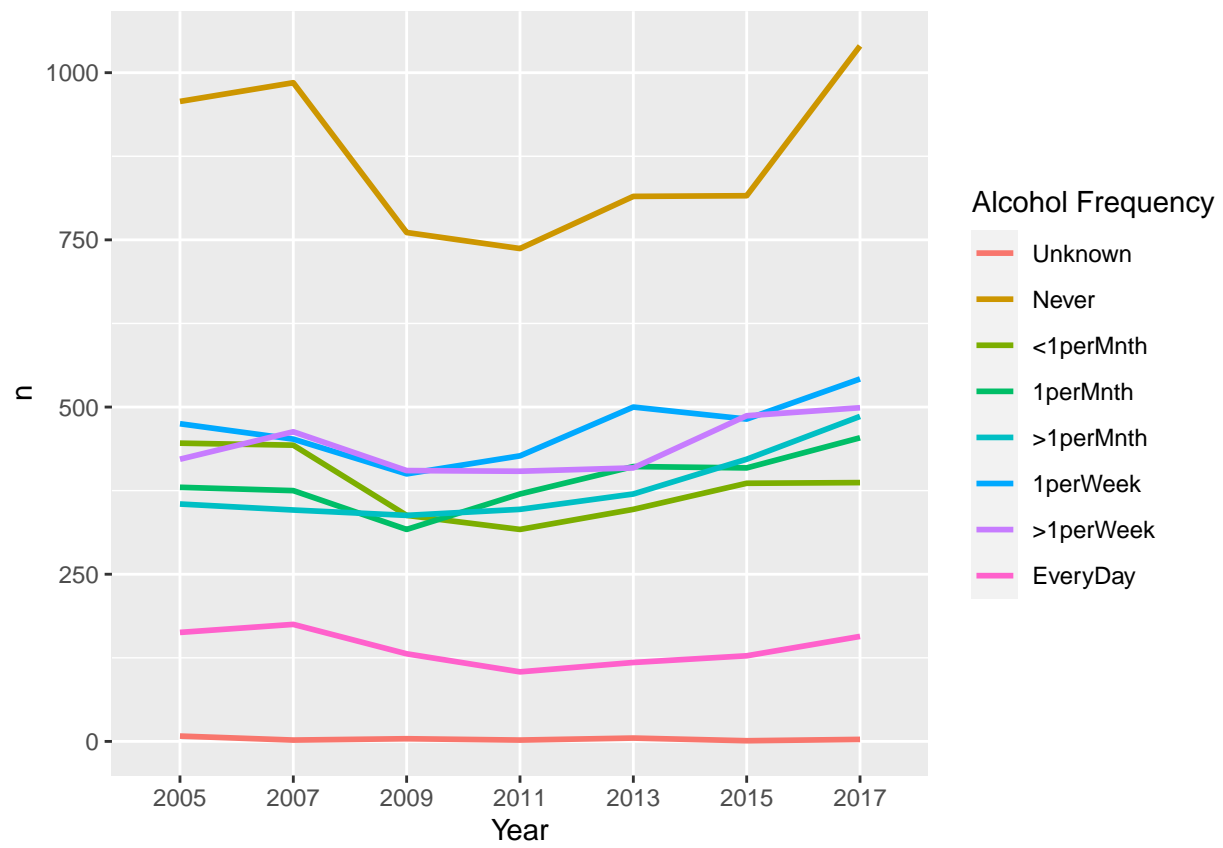


Figure S6. Grades completed

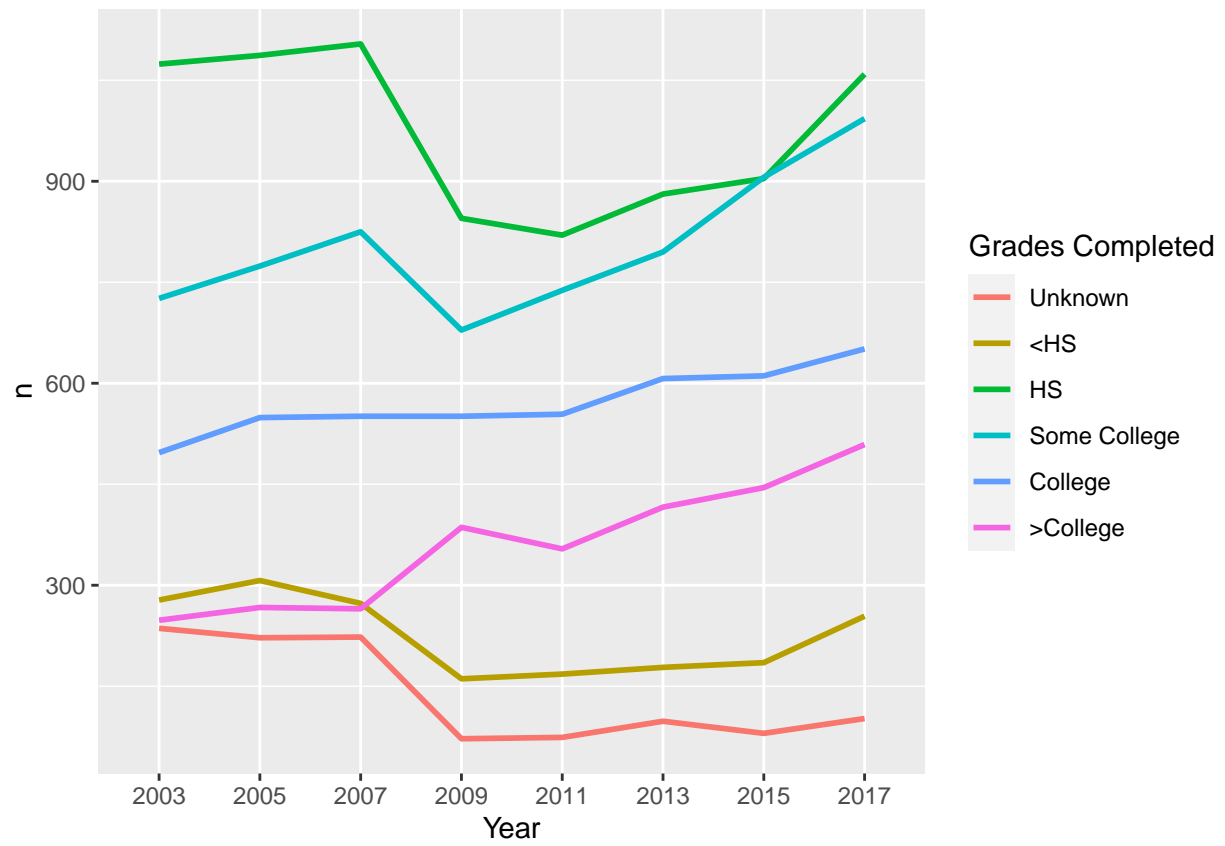


Figure S7. Own or rent

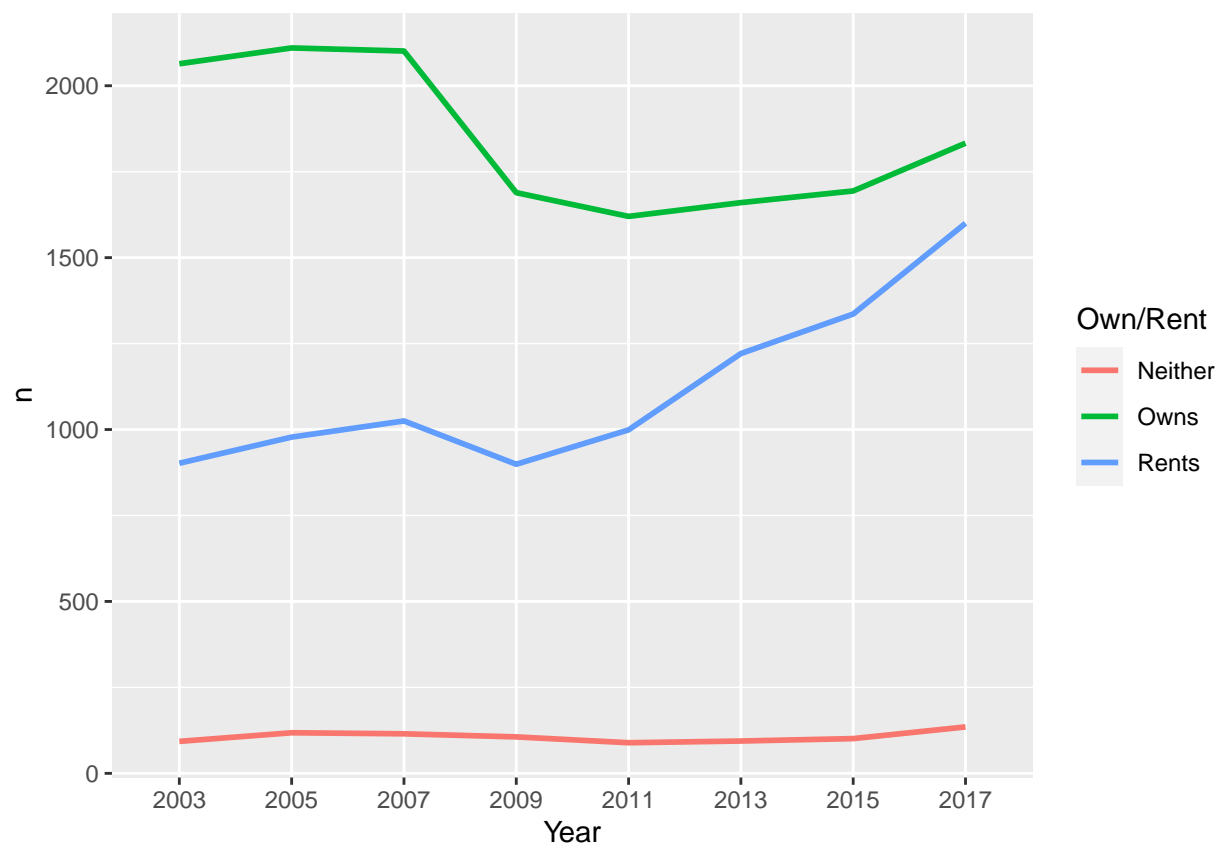


Figure S8. Hourly or salary

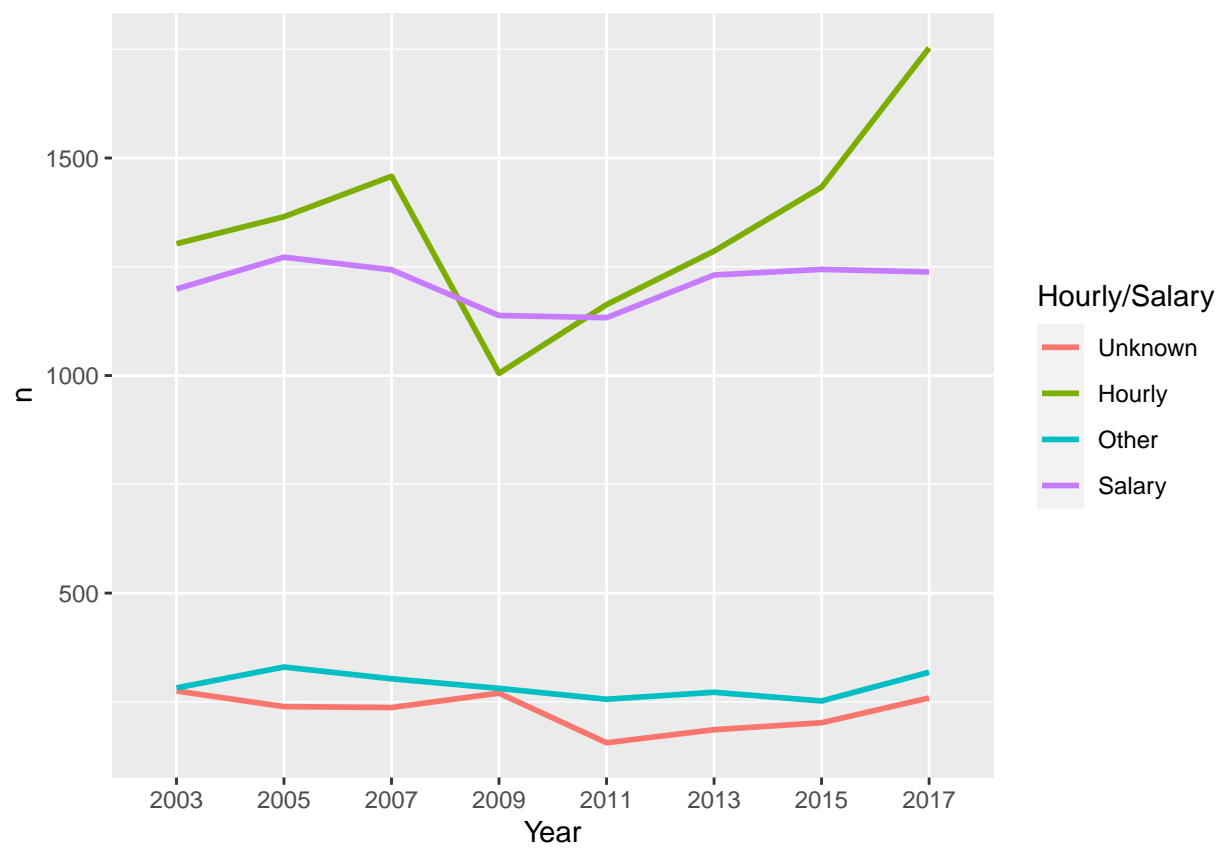


Figure S9. Covered by union

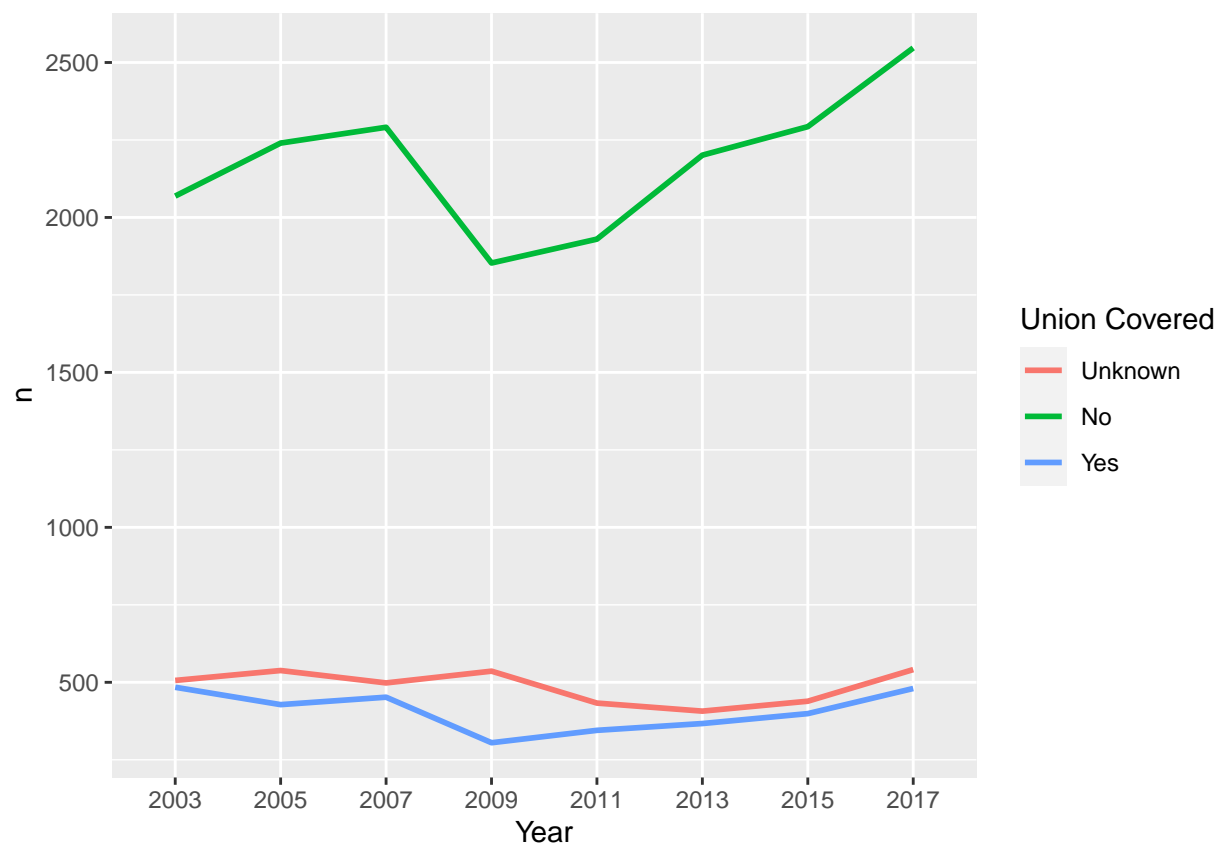


Figure S10. Occupation

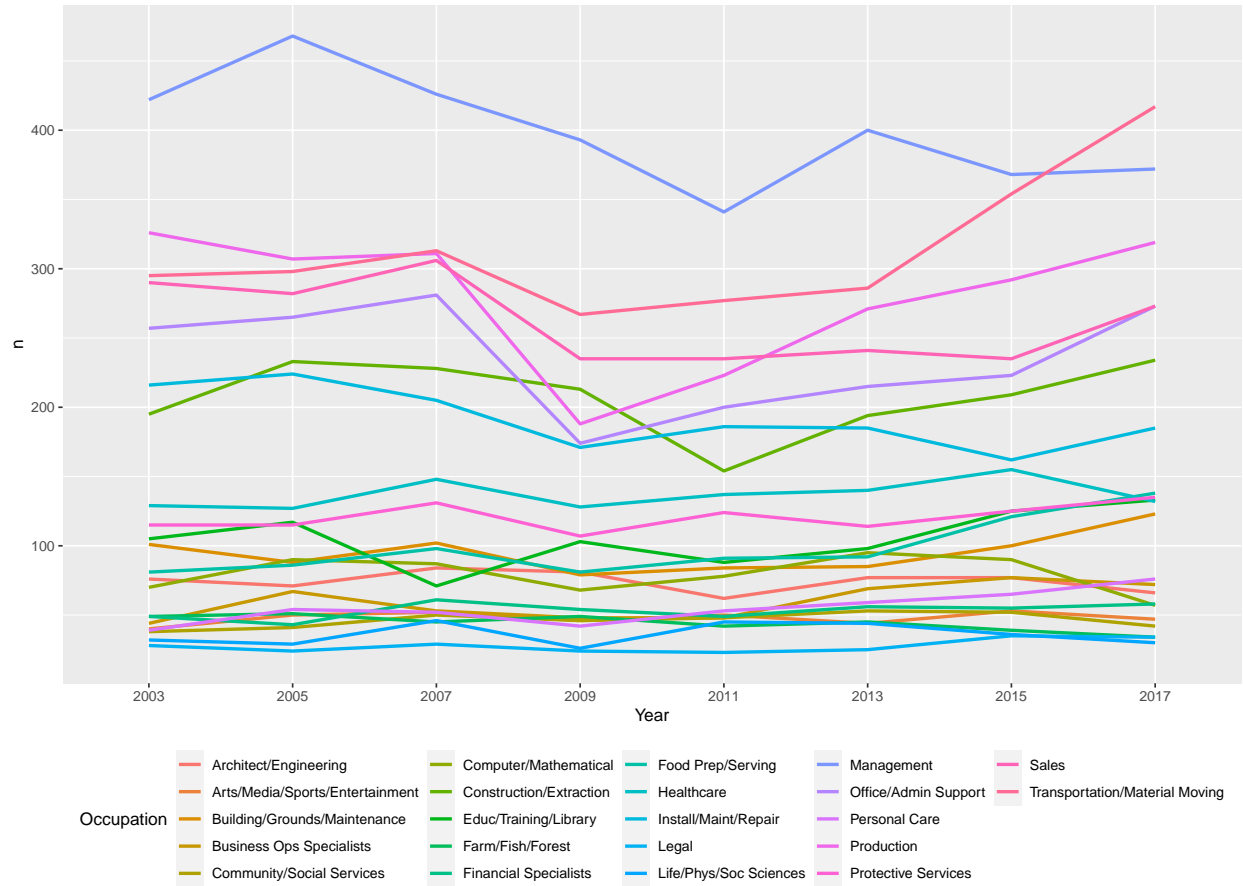
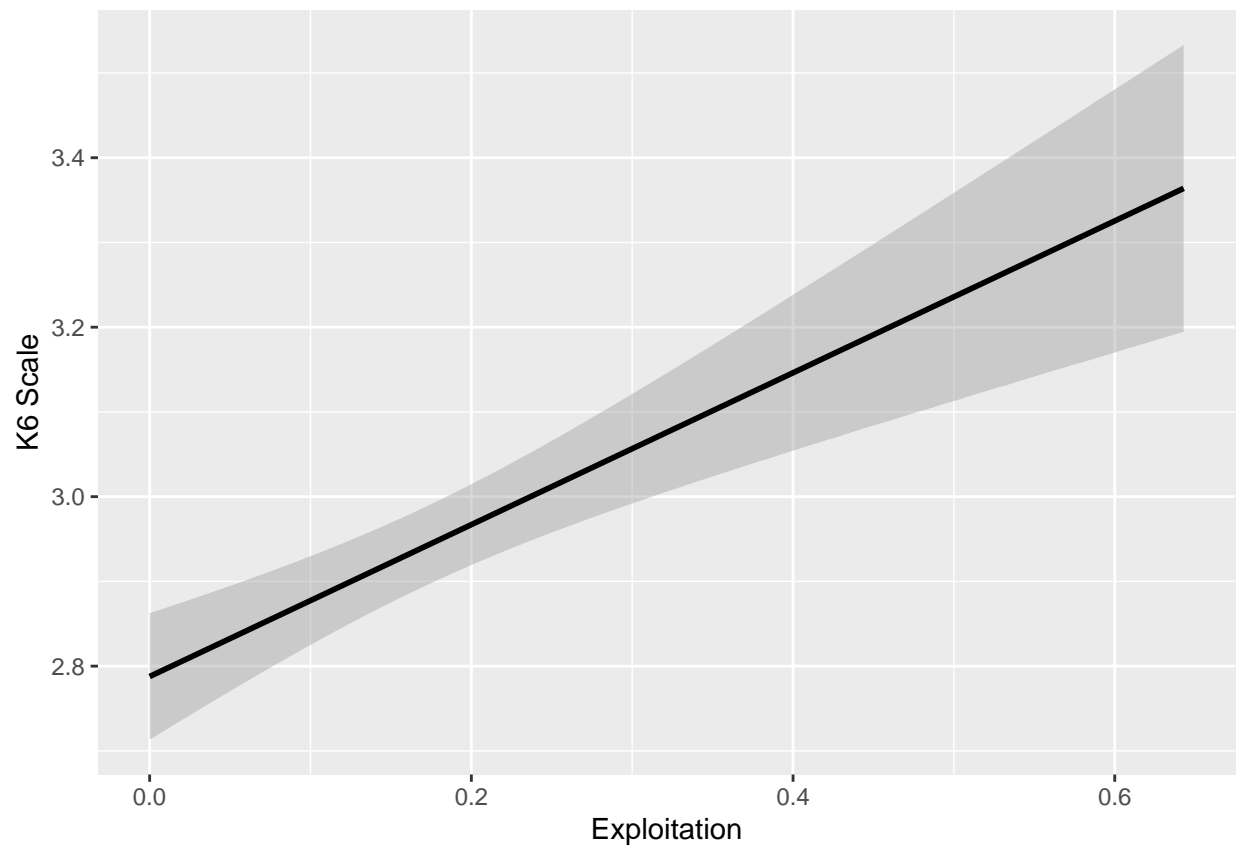


Figure S11. Unweighted bivariate association between exploitation and the K6 scale





## Sensitivity analyses: No minimum wage restriction

Table S3. Distribution of weights, no minimum wage restriction

Weight	Mean	SD	Min	Max
Inverse probability of exploitation	0.97	0.01	0.92	1.03
Inverse probability of censoring	1.03	0.27	0.71	11.03

Table S4. Results from inverse probability-weighted marginal structural models of the relationship between unconcealed exploitation and mental health, no minimum wage restriction

	Psychological distress		Mental illness	
	beta	95% CI	OR	95% CI
Exploitation	1.36	(0.48, 2.23)	2.27	(1.21, 4.25)

## Sensitivity analyses: Alternate exploitation measure

Unconcealed exploitation is operationalized as:

$$\frac{Income_{40\text{hours/week}} - Income_{Actual\text{hours/week}}}{Income_{40\text{hours/week}}}$$

Where:

$Income_{40\text{hours/week}}$  does not include overtime pay but  $Income_{Actual\text{hours/week}}$  does.

**Table S5. Distribution of weights, alternate exploitation measure**

Weight	Mean	SD	Min	Max
Inverse probability of exploitation	0.98	0.97	0.53	122.77
Inverse probability of censoring	1.03	0.23	0.59	9.50

**Table S6. Results from inverse probability-weighted marginal structural models of the relationship between unconcealed exploitation and mental health, alternate exploitation measure**

	Psychological distress		Mental illness	
	beta	95% CI	OR	95% CI
Exploitation	1.42	(0.78, 2.07)	2.92	(1.73, 4.92)

# K6 Scale

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## K6+

**Provider:** \_\_\_\_\_

**Provider ID:** \_\_\_\_\_

**Date completed:** \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Please use gummed label if available

Patient or Client Identifier:

\_\_\_\_\_

Surname:

Other names:

Date of Birth:

Sex:

\_\_\_\_ / \_\_\_\_ / \_\_\_\_

Male ☐

Female ☐

Address:

MENTAL HEALTH

The following questions ask about how you have been feeling during the **past 30 days**. For each question, please circle the number that best describes how often you had this feeling.

Q1. During the past 30 days, about how often did you feel ...	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a. ...nervous?	1	2	3	4	5
b. ...hopeless?	1	2	3	4	5
c. ...restless or fidgety?	1	2	3	4	5
d. ...so depressed that nothing could cheer you up?	1	2	3	4	5
e. ...that everything was an effort?	1	2	3	4	5
f. ...worthless?	1	2	3	4	5

K6+ SELF-REPORT MEASURE (1 of 2)

MENTAL HEALTH

Please turn over the page to continue

- Q2.** The last six questions asked about feelings that might have occurred during the past 30 days. Taking them altogether, did these feelings occur More often in the past 30 days than is usual for you, about the same as usual, or less often than usual? (If you never have any of these feelings, circle response option “4.”)

More often than usual			About the same as usual	Less often than usual		
A lot	Some	A little		A little	Some	A lot
1	2	3	4	5	6	7

The next few questions are about how these feelings may have affected you in the past 30 days. You need not answer these questions if you answered “None of the time” to **all** of the six questions about your feelings.

- Q3.** During the past 30 days, how many days out of 30 were you totally unable to work or carry out your normal activities because of these feelings?

\_\_\_\_\_ (Number of days)

- Q4.** **Not counting the days you reported in response to Q3**, how many days in the past 30 were you able to do only half or less of what you would normally have been able to do, because of these feelings?

\_\_\_\_\_ (Number of days)

- Q5.** During the past 30 days, how many times did you see a doctor or other health professional about these feelings?

\_\_\_\_\_ (Number of times)

- |  | All of<br>the<br>time | Most<br>of the<br>time | Some<br>of the<br>time | A little<br>of the<br>time | None<br>of the<br>time |
|--|-----------------------|------------------------|------------------------|----------------------------|------------------------|
| <b>Q6.</b> During the past 30 days, how often have physical health problems been the main cause of these feelings? | 1                     | 2                      | 3                      | 4                          | 5                      |

**Thank you for completing this questionnaire.**

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