

Supplemental Health Insurance and the Use of Mental Health Services in Canada

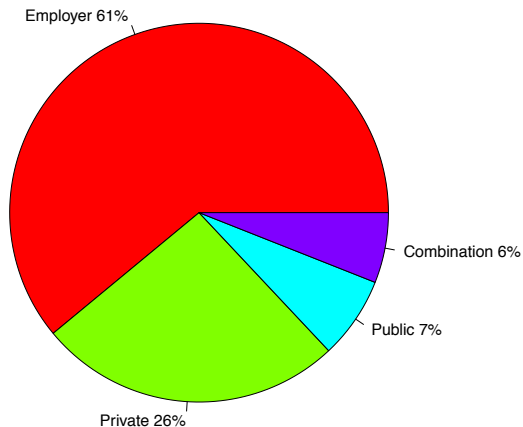
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- Individuals with mental disorders create pressure on society to provide a range of health care and welfare services.
- The heterogeneous nature of mental illness leads to individual treatment plans.
- Treatment may consist of community-based non-physician mental health services (e.g. psychologists and social workers) and prescription medications.

Figure: Pie Chart of Supplemental Insurance Holders (Source: 2014 Canadian Community Health Survey)



- **Question:** What is the effect of having supplemental health insurance on the use of mental health pharmaceuticals in Canada?

- Mulvale and Hurley (2009):
 - 2002 Canadian Community Health Survey
 - Logit specification.
 - Insurance positively affects the use of anti-depressants and anti-psychotics.
 - Income is insignificantly related to mental health pharmaceutical utilization.
- Devlin, Sarma, and Zhang (2011):
 - Used supplementary insurance for prescription drugs as proxy for other services.
 - Physician health care services respond to the presence of insurance.
 - Reduces hospital admissions for ambulatory care sensitive conditions.

- 2012 Canadian Community Health Survey - Mental Health (CCHS-MH)
- Nonparametric conditional density estimator
- Insurance has greater impact on utilization for individuals in low income households than for high income households.

- 2012 Canadian Community Health Survey - Mental Health Component public use file.
- Designed to provide a detailed look at mental health with respect to who is affected by selected mental health disorders as well as positive mental health.
- Contains information on health status, health care utilization, socioeconomic status, and an individual's social support system.
- Canadian citizens aged 15 years of age and older.
- Total of 25,113 valid interviews.

- Utilization is measured as a binary “Yes/No” variable.
 - Did you take Medication Y within in the past 2 days?
- Four medication categories: Any medication, anti-depressants, anti-psychotics, and benzodiazepines
- Utilization of medication is modelled as a function of insurance status, controlling for socioeconomic status, health variables, demographic characteristics, and social support system.
- The models are estimated using nonparametric conditional probability distribution function (CPDF) estimator.

- Outcome variable is binary.
- Estimate $\Pr(\text{Used Medication } Y = \text{YES} | X)$
- Let $f(y, x)$ and $f(x)$ denote the joint density of y and x and the marginal density of x , then:

$$f(y|x) = \frac{f(y, x)}{f(x)}$$

- Let $\hat{f}(y, x)$ and $\hat{f}(x)$ denote nonparametric estimators of $f(y, x)$ and $f(x)$,
- One can obtain method for estimating $f(y|x)$ nonparametrically (Li and Racine, 2007):

$$\hat{f}(y|x) = \frac{\hat{f}(y, x)}{\hat{f}(x)}$$

Table: Percent Change in Probability of Utilization of Medication by Insurance and Gender (Other Variables Held Constant at their Medians/Modes)

Variable	Any	Anti-Depressants	Anti-Psychotics	Benzodiazepines
Insurance Yes	11.05	19.46	155.51	26.44
Gender Female	81.35	87.87	48.24	188.58

Figure: Predicted $Pr(ANY = YES|X)$ versus Age Group

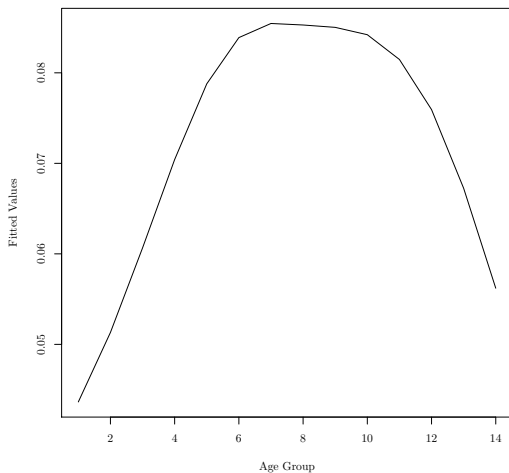


Figure: Predicted $Pr(ANTID = YES|X)$ versus Age Group

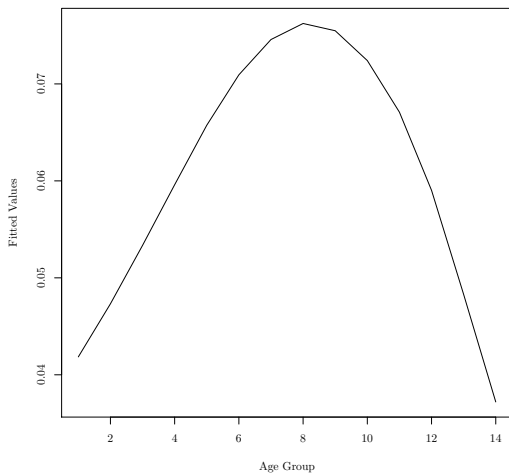


Figure: Predicted $Pr(ANTIP = YES|X)$ versus Age Group

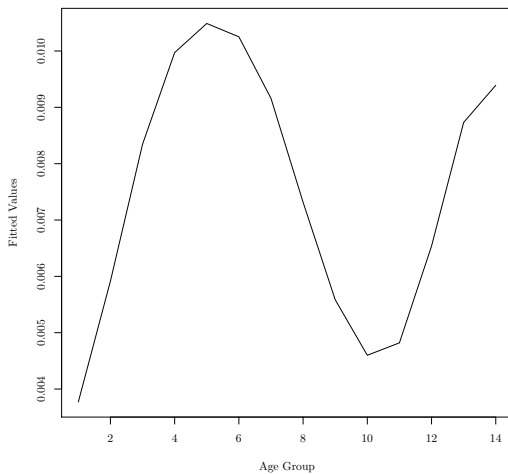


Figure: Predicted $Pr(BENZO = YES|X)$ versus Age Group

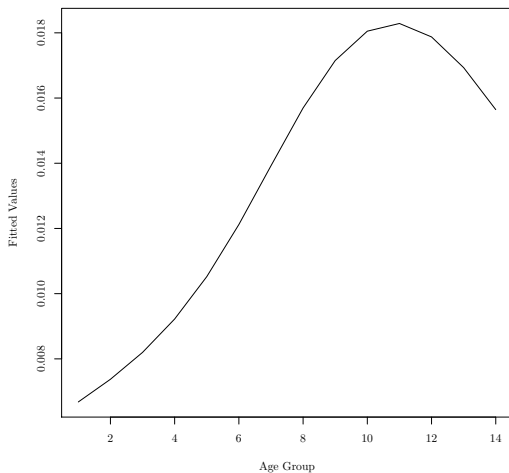


Figure: Predicted $Pr(ANY = YES|X)$ versus Social Provision Score

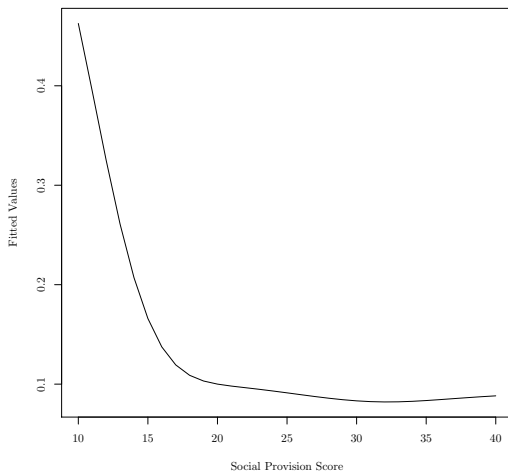


Figure: Predicted $Pr(ANTID = YES|X)$ versus Social Provision Score

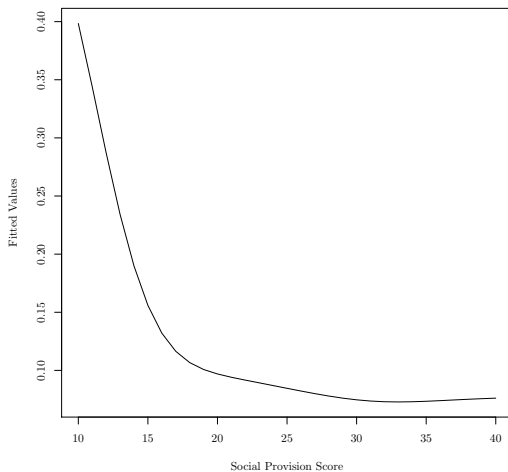


Figure: Predicted $Pr(ANTIP = YES|X)$ versus Social Provision Score

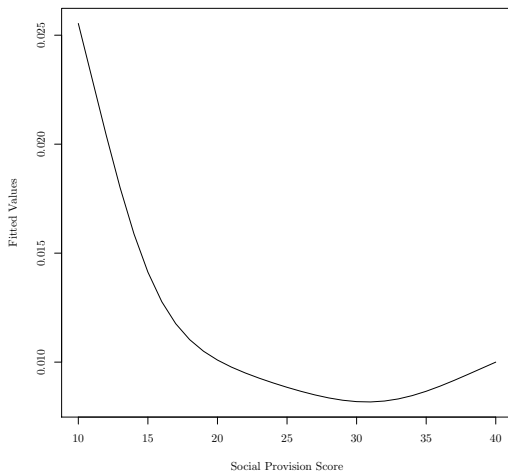


Figure: Predicted $Pr(BENZO = 1|X)$ versus Social Provision Score [here](#)

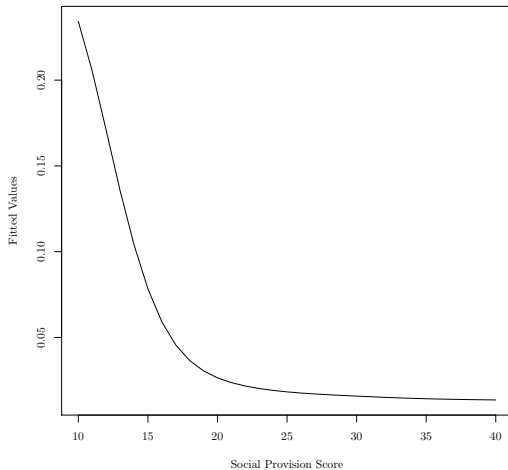


Table: Percent Change in Probability of Utilization of Medication Due to change in Insurance Status by Income Group

Income	Any		Anti-Depressants	
	CPDF	Logit	CPDF	Logit
0 to 19,999	52.6	61.4	31.9	63.9
20,000 to 39,999	41.7	65.2	24.9	67.4
40,000 to 59,999	41.7	65.9	28.1	67.6
60,000 to 79,999	35.7	66	24.5	67.2
80,000 and over	31.6	66.1	25.1	67.3

Table: Percent Change in Probability of Utilization of Medication Due to change in Insurance Status

Income	Anti-Psychotic		Benzodiazepine	
	CPDF	Logit	CPDF	Logit
0 to 19,999	428.6	128.7	38.4	56
20,000 to 39,999	64.9	129.9	28.5	56.3
40,000 to 59,999	54.3	130.6	25.2	56.4
60,000 to 79,999	69	130.5	26.4	56.6
80,000 and over	44.1	130.9	17.1	56.6

Conclusions

- Insurance positively affects the use of anti-depressants, anti-psychotics, and benzodiazepines.
- Negative gradient between percentage change in insurance status and income group.
- Strong social support system reduces likelihood of using mental health pharmaceutical.
- This suggests that there is room to improve access to these much-needed medications for treatment of serious mental illness.
- **Moving forward:** Look at number of medications used as well as non-physician services.