Health and Risk Preferences

Author: Evelyn Morris
Advisor: Donna Gilleskie

THE UNIVERSITY of NORTH CAROLINA at CHAPEL HILL

COLLEGE OF ARTS AND SCIENCES
Economics

Research Question

How do changes in health impact risk preferences?

Theoretical Model

Hypothesis: Income risk preferences are health-state dependent.

$$U(w) = \frac{(w)^{1-\alpha^W(H)}}{1 - \alpha^W(H)}.$$

A finding of a nonzero effect of a health shock or health status on risk preferences will support this hypothesis.

Data

UNC Alumni Heart Study
- Longitudinal study (1986-2014) of 6,298 UNC Alumni

Sample
- 1,507 respondents that answered the risk preference questions.

Risk Preference Measure
- Willingness to pay for hypothetical health insurance with an expected loss of $12,000

Combined Health Shock Measure
- Onset of severe condition in the last year
- Reported traumatic health shock
- Decline in self-reported health status

Sample characteristics
- 100% White
- 64% Male
- 65 Mean Age
- 18 Mean Years of Education
- 19% Experienced a Health Shock

N = 1520
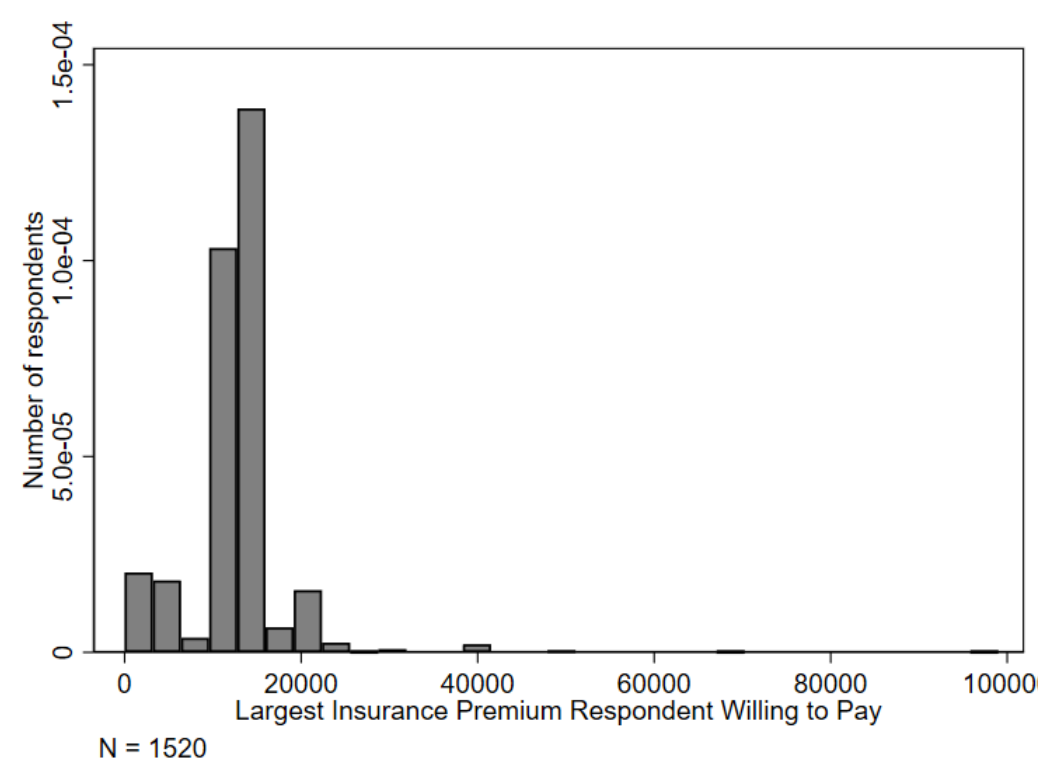
- A relative risk aversion parameter was calculated for every individual, assuming constant relative risk aversion with respect to income. A linear regression of willingness to pay for the hypothetical health insurance supported this assumption.

$$1 * \frac{(Y - x)^{1-\rho}}{1 - \rho} = p_{sick} * \frac{(Y - L)^{1-\rho}}{1 - \rho} + (1 - p_{sick}) * \frac{Y^{1-\rho}}{1 - \rho}.$$

- The mean respondent is risk-averse.
- Novel measurement reveals wider range of risk preferences than previously found.

Transformation of Risk preferences

Range of Utility Functions
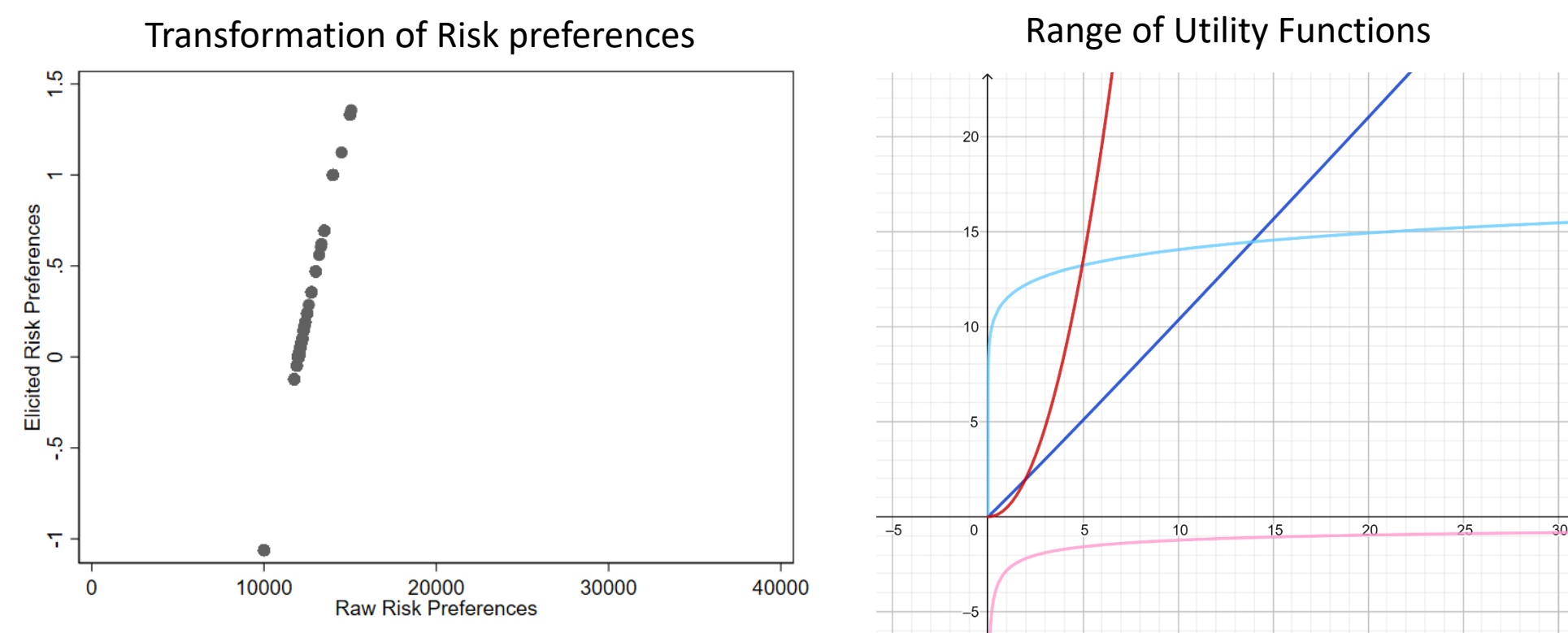
Empirical Model
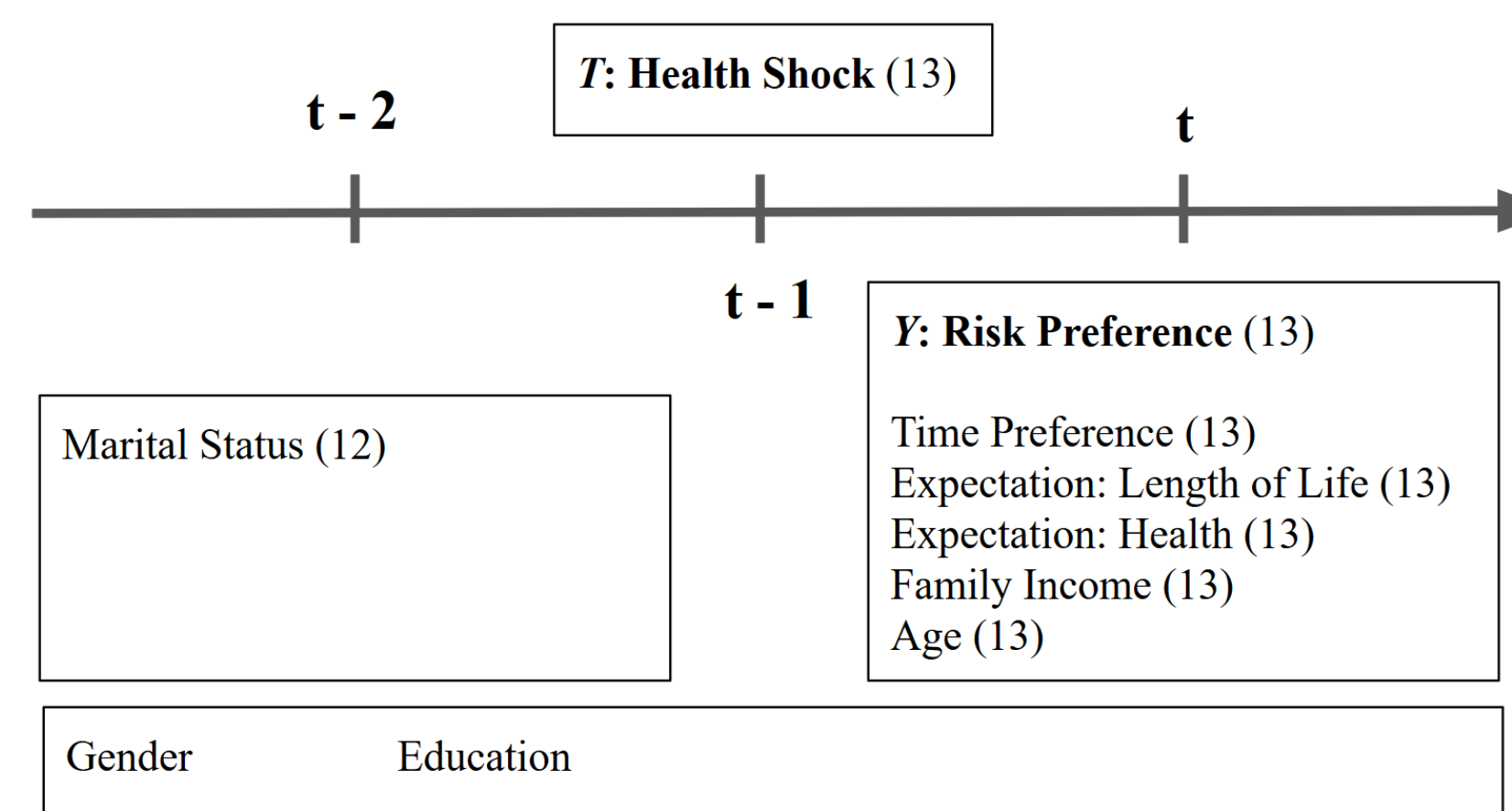
- Aims to identify the marginal effect of a health shock and health status on relative income risk aversion.
- Health shocks are assumed to be missing randomly conditional on gender. Confirmed with a logistic regression
- An instrumental variables model used to test endogeneity of income and health found both to be exogenous.
- Thus, ordinary least squares model with robust standard errors used for primary results.

Results

- Experiencing a health shock increases risk aversion by 30% of a standard deviation (p=.026) for those with graduate degrees

Average Marginal Effects of A Health Shock with 95% CIs
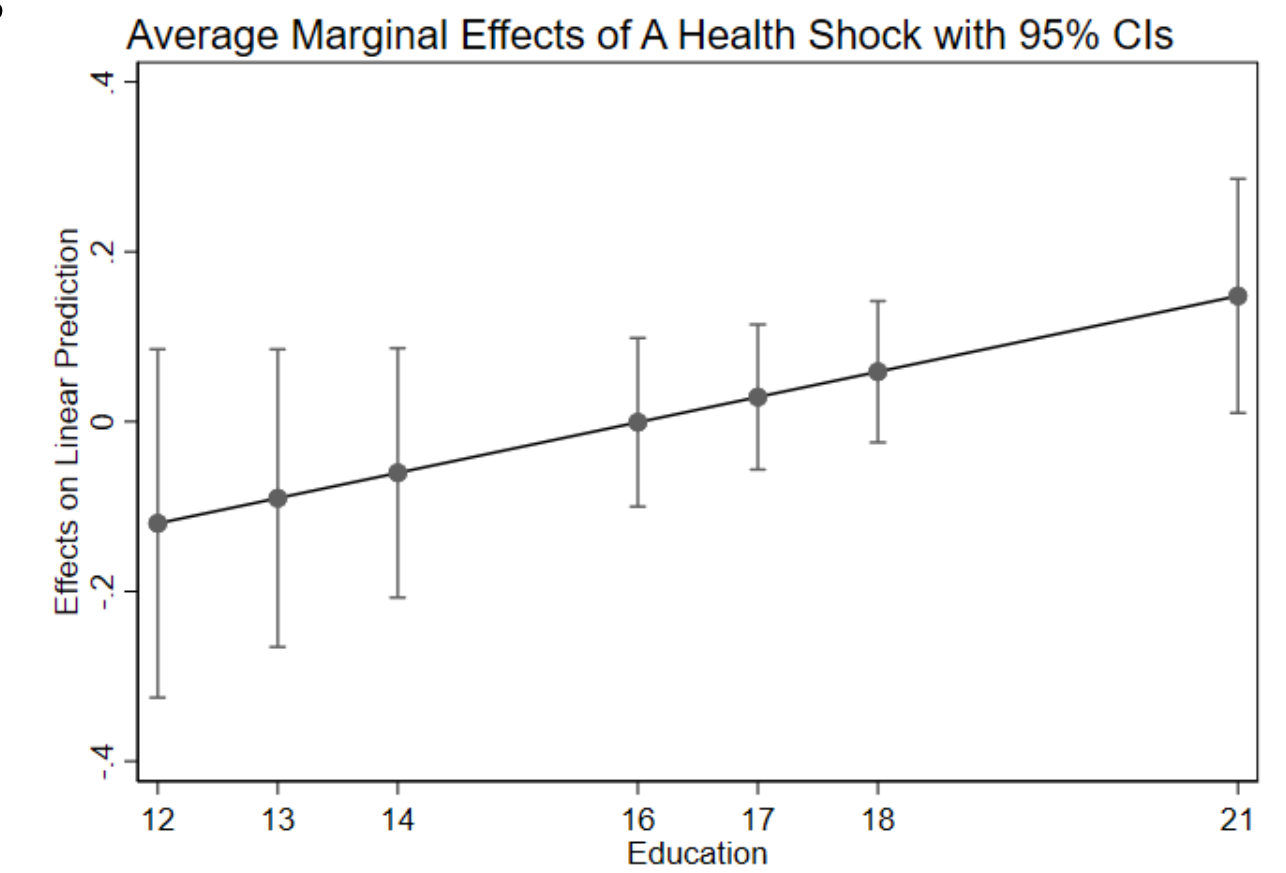
- However, the regression explains only 3% of the variation in risk preferences.
- These findings are not robust to health shock or risk preference measurement.

Conclusion

- Income risk preferences are health-state dependent for individuals with a graduate degree.
- Health and risk preferences are inversely related.
- No strong evidence that health is highly relevant to relative risk aversion.
- Differences in risk preference measurement account for disagreement in the literature.
- Future studies may
  - Test alternate methods of eliciting the risk parameter
  - Allow the effect of health to vary over risk preferences

Acknowledgements