

Background

- Chronic diseases often place significant financial burdens on families
- Health insurance should protect patients from catastrophic medical expenditures
- Financial hardship can have various forms, e.g. high out-of-pocket, medical debt, and forgone/delayed care

AIM

- Examine how different chronic conditions are associated with excess risk of financial hardship in the family
- How types of insurance alleviate excess risk of financial hardship

Methods

Data Sources and Study Sample

- 2018-2019 Medical Expenditure Panel Survey, the Household Component files
- 24,151 samples of insured individuals aged 19-64 living in households without members aged 65 and older, excluding the influence of Medicare

Outcome: Three Measures of Financial Hardship

- High Out-of-Pocket: annual family out-of-pocket expenses exceeding a proportion of the total family income, with the threshold of 10% and 20%
- Medical Debt: whether family members are experiencing inability or difficulty in paying medical bills during the previous year
- Barriers to Care: whether family members had forgone or delayed medical care, dental care, or prescriptions due to affordability concerns
- Any Financial Hardship: whether three measures of financial hardship exist in the family

Variable of Interest: Diagnosis of Chronic Condition

- Arthritis, Asthma, Cancer, COPD, Diabetes, Heart Disease, Stroke: substantial medical expenditures
- Measured at family level: any member in the family was diagnosed

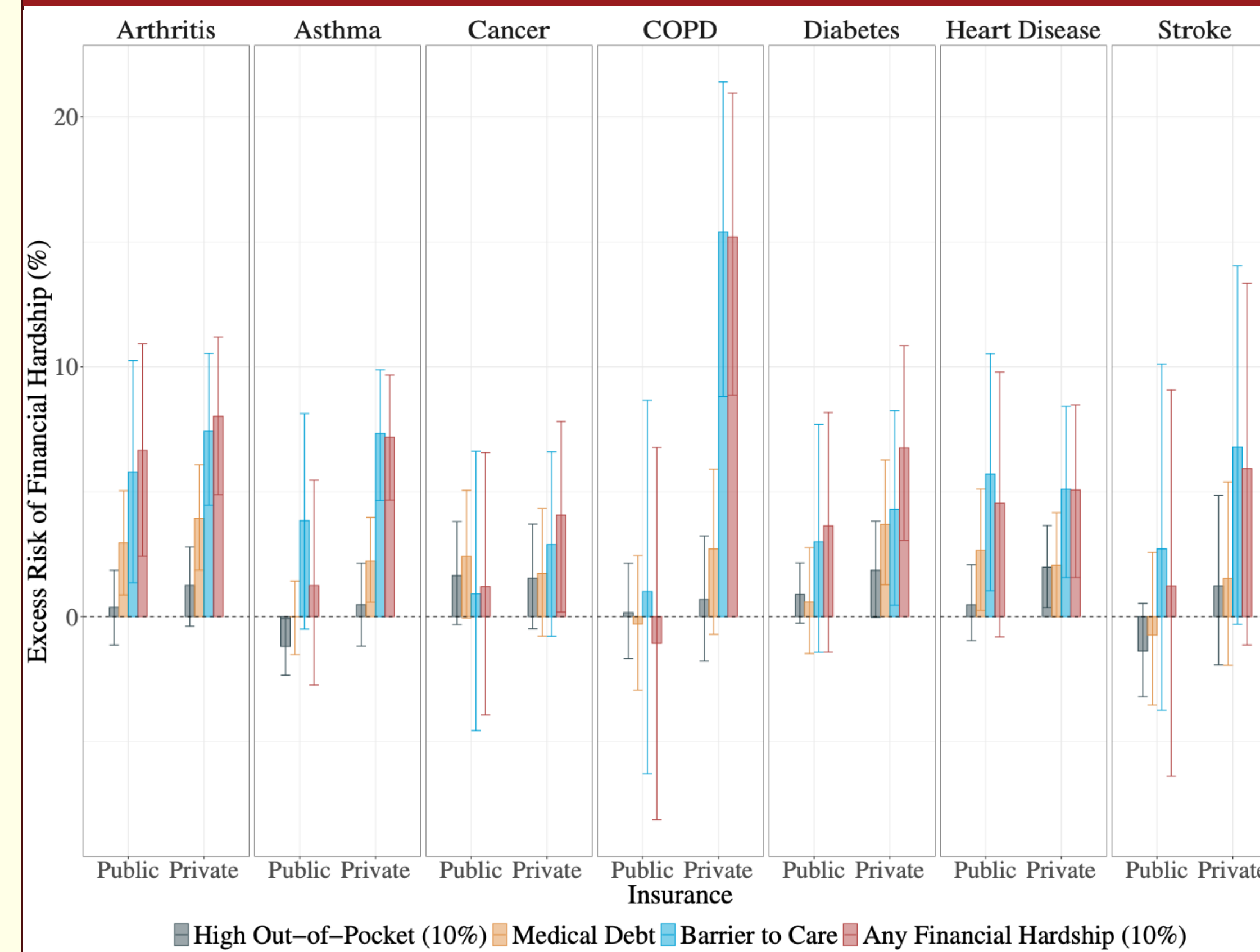
Statistical Analysis

- Condition-specific multivariable logistic regressions
- Analyzed conditional on insurance type and family income
- 1,000 iterations of bootstrapping to compute 95% confidence interval, considering the MEPS survey weights

Sensitivity Analyses

- Replace variable of interest as the total number of chronic conditions in the family

Results

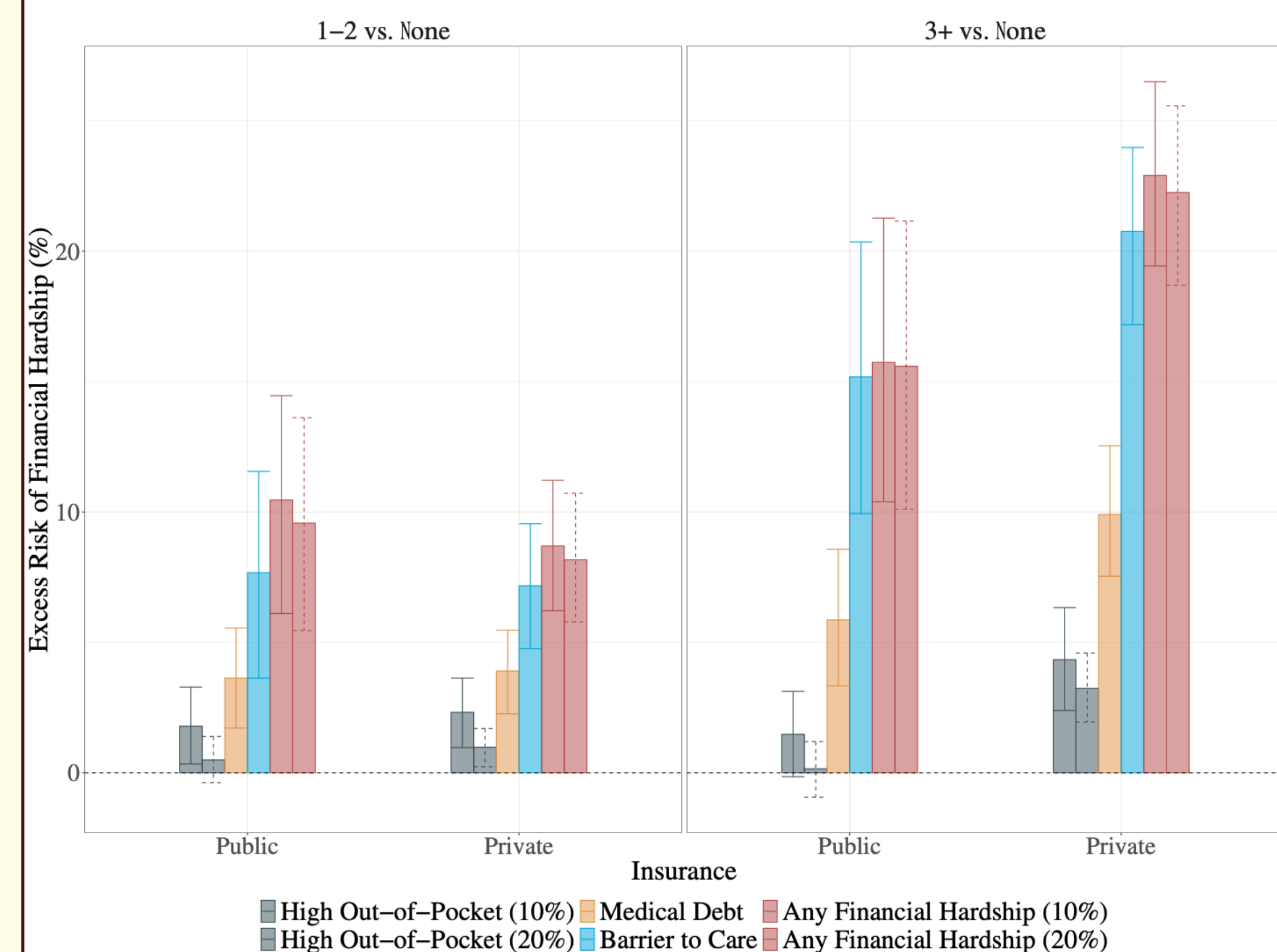


Excess risk of financial hardship associated with the diagnosis of a chronic condition of any family member by insurance

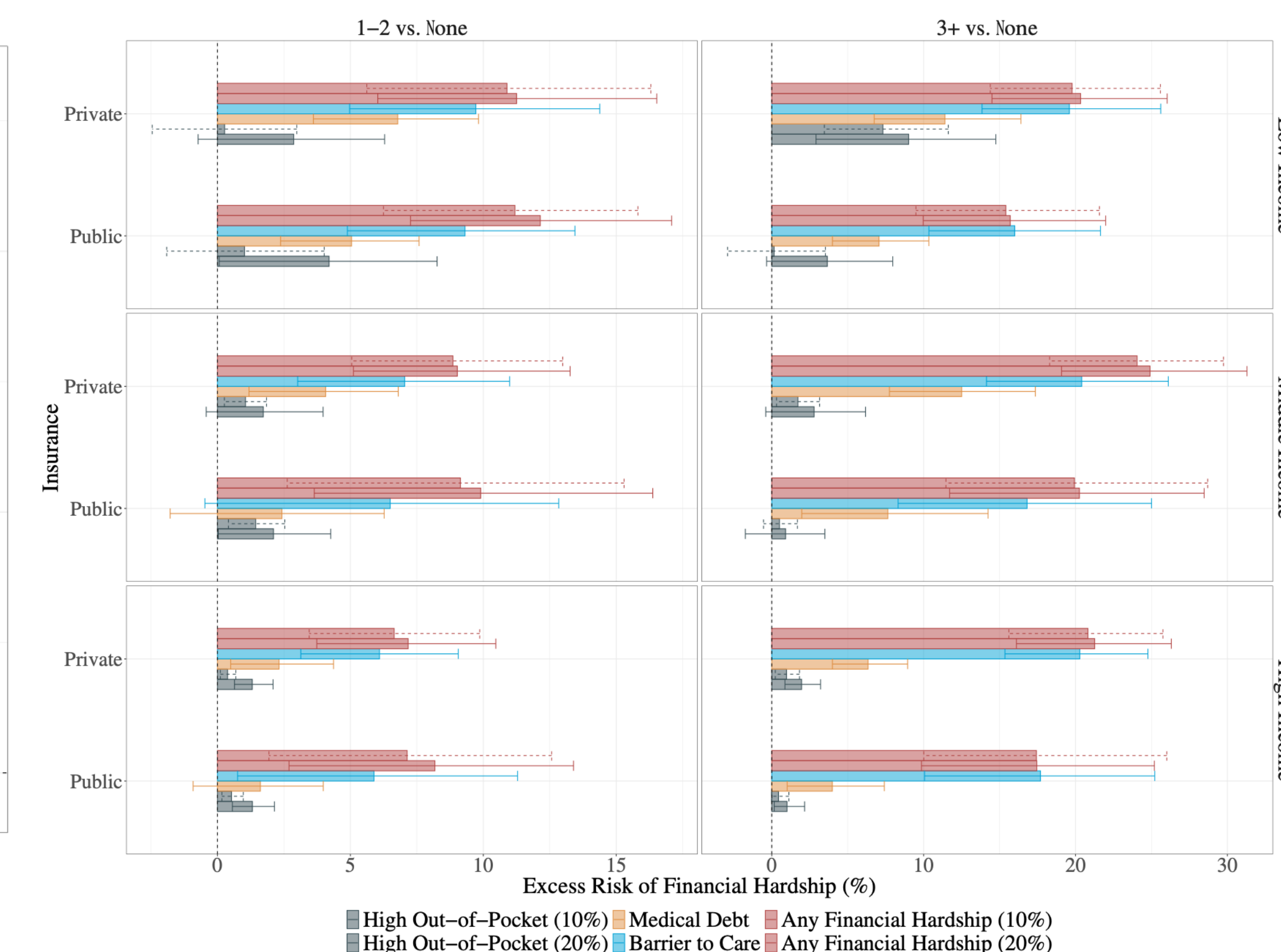
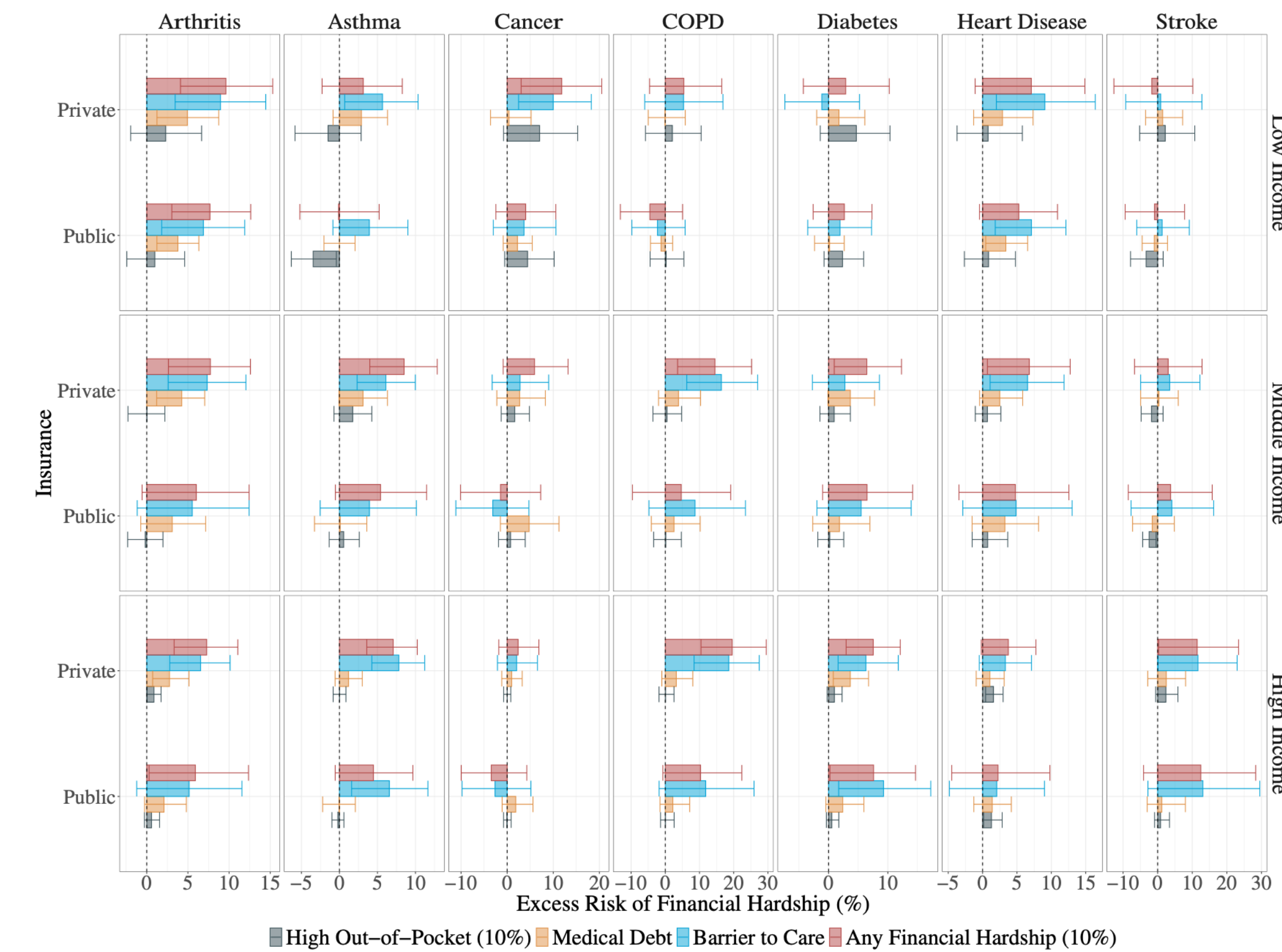
- Chronic diseases may result in an excess risk of financial hardship under various conditions and forms of financial hardship, although most of these effects were not statistically significant
- Private insurance performed notably worse with a significantly high excess risk of barrier to care due to COPD
- Arthritis, Asthma, and Diabetes were associated with an excess risk of medical debt and barrier to care, where individuals with private insurance suffered statistically significant while public insurance did not

Excess risk of financial hardship associated with the diagnosis of a chronic condition of any family member by insurance and family income

- Arthritis, Cancer, and Heart Disease were associated with higher excess risk of financial hardship among low-income individuals than high-income, whereas Asthma, COPD, Diabetes, and Stroke showed a reverse trend
- Across income levels, private insurance did not perform better in protecting from excess risk of financial hardship than public insurance, although the 95% confidence intervals overlapped



3+ diagnoses of chronic conditions in the family could lead to the larger excess risk of financial hardship, while private insurance performed worse than public insurance



Low and Middle income families could suffer from higher excess risks of financial hardship due to cumulative diagnoses of chronic diseases, while private insurance did worse in 3+ conditions regardless of income

Characteristics of Population

305,047,086 (24,151 samples) national representative individuals **with insurance aged 19-64** in families **without members aged 65 and older** in 2018 and 2019

Selected Characteristics

Conditions	Public Insurance	Private Insurance	Any Financial Hardship (10%)	Any Financial Hardship (20%)
Arthritis	18,825,869 (23.4%)	61,687,072 (76.6%)	35,336,313 (43.9%)	33,859,200 (42.1%)
Asthma	17,690,330 (20.7%)	67,797,906 (79.3%)	34,207,353 (40.0%)	32,851,453 (38.4%)
Cancer	5,748,160 (16.7%)	28,721,622 (83.3%)	13,633,931 (39.6%)	12,928,363 (37.5%)
COPD	4,631,705 (41.3%)	6,582,974 (58.7%)	6,308,848 (56.3%)	6,106,339 (54.4%)
Diabetes	10,500,609 (26.4%)	29,293,969 (73.6%)	18,370,074 (46.2%)	17,334,863 (43.6%)
Heart Disease	10,506,005 (22.4%)	36,335,980 (77.6%)	20,317,040 (43.4%)	19,433,936 (41.5%)
Stroke	3,690,600 (36.2%)	6,500,103 (63.8%)	5,130,875 (50.3%)	4,932,114 (48.4%)
Overall	50,118,096 (16.4%)	254,928,989 (83.6%)	103,747,420 (34.0%)	98,996,201 (32.5%)

Key Takeaways

- Insurance did not prevent individuals living in the family with the chronic diseases from financial hardship under some chronic conditions and measures of financial hardship
- Private insurance performed worse than public insurance in financial hardship protection from chronic diseases, though the differences were not statistically significant
- The uncertainty of the excess risk was large, which could be due to high heterogeneity in disease severity, insurance, and other characteristics
- The cumulative diagnoses of chronic diseases in the family were significantly associated with excess risk of financial hardship

Limitations

- Three measures of financial hardship may capture different time frames or overlapping periods
- Outcome and Diagnoses were self-reported
- Insurance premium, family assets, tax deductions, and other financial factors that could impact the family's budget were not considered
- Underreporting may be more severe among individuals with public insurance and low family income
- Reverse causation was a major issue for the causal interpretation of our findings