

Examining Post-Disaster Fluctuations in Marketplace Metal Levels Among Florida Households

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Background

The Affordable Care Act (ACA), signed into law in 2010, is a healthcare reform aimed at increasing health insurance coverage and affordability through the creation of state and federal marketplaces. The ACA is centered around metal status plans, including Bronze, Silver, Gold, and Platinum, which allow individuals to choose coverage based on their financial needs and medical risk.

Abstract

This research investigates how natural disaster losses influence individuals' health insurance decisions within the Florida Health Insurance Marketplace. While natural disasters are traditionally analyzed through property damage, their secondary impact on health insurance remains under-examined. Utilizing a quantitative correlational design and regression analysis of state-level datasets, this study examines whether catastrophic property losses correlate with significant fluctuations in health coverage. Specifically, the analysis explores whether Florida households offset immediate environmental shocks by changing health coverage metal status at a time of heightened vulnerability. By identifying these patterns, we can provide a framework for policy interventions that bridge the gap between disaster relief and healthcare stability.

References

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2. "Spatial Hazard Events and Losses Database for the United States." Center for Emergency Management and Homeland Security, cemhs.asu.edu/sheldus.
3. Salas, Renee N., et al. "Impact of Extreme Weather Events on Healthcare Utilization and Mortality in the United States." *Nature News*, Nature Publishing Group, www.nature.com/articles/s41591-024-02833-x.

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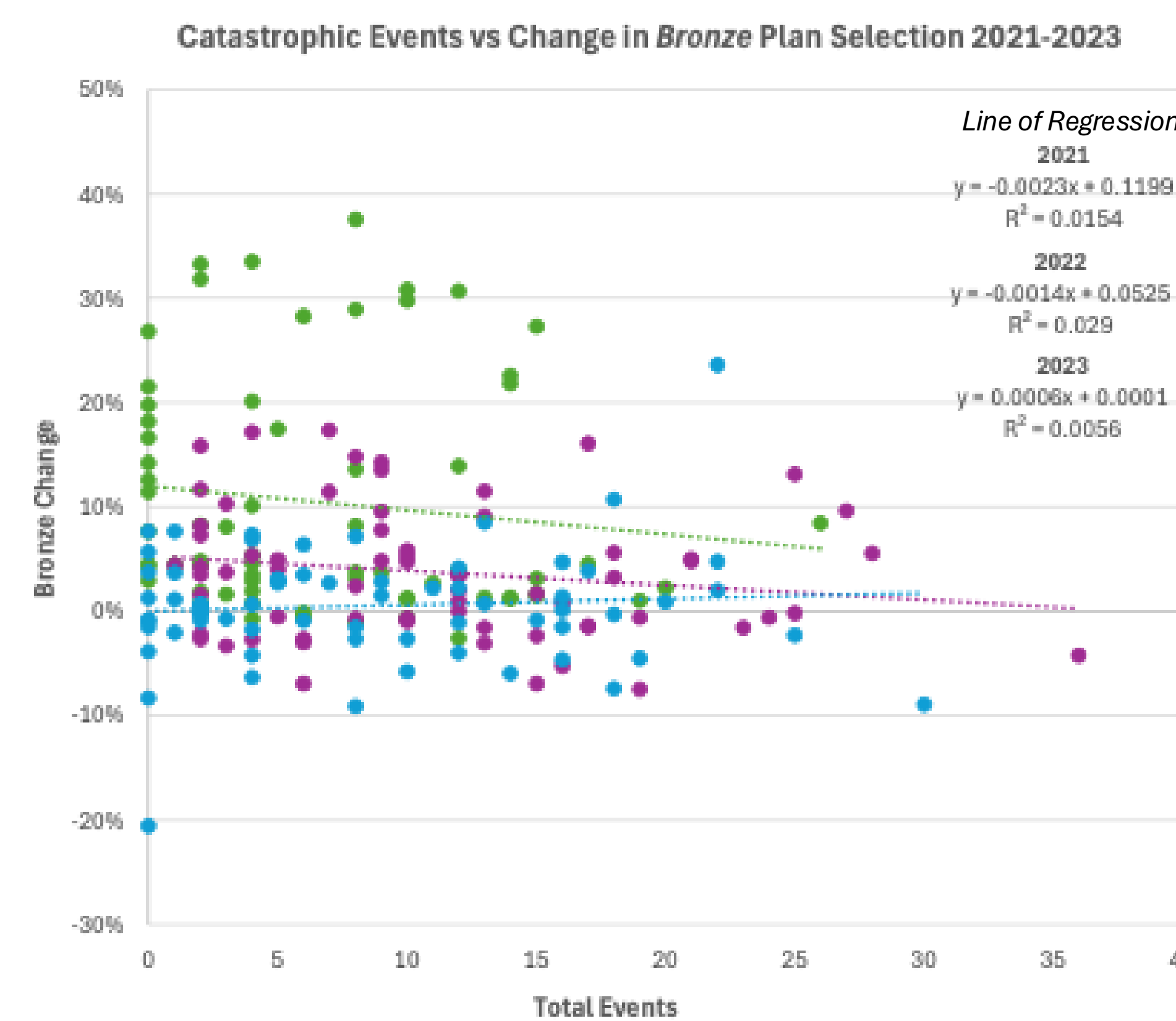


Exhibit A: Catastrophic Events vs Change in Bronze Plan Selection

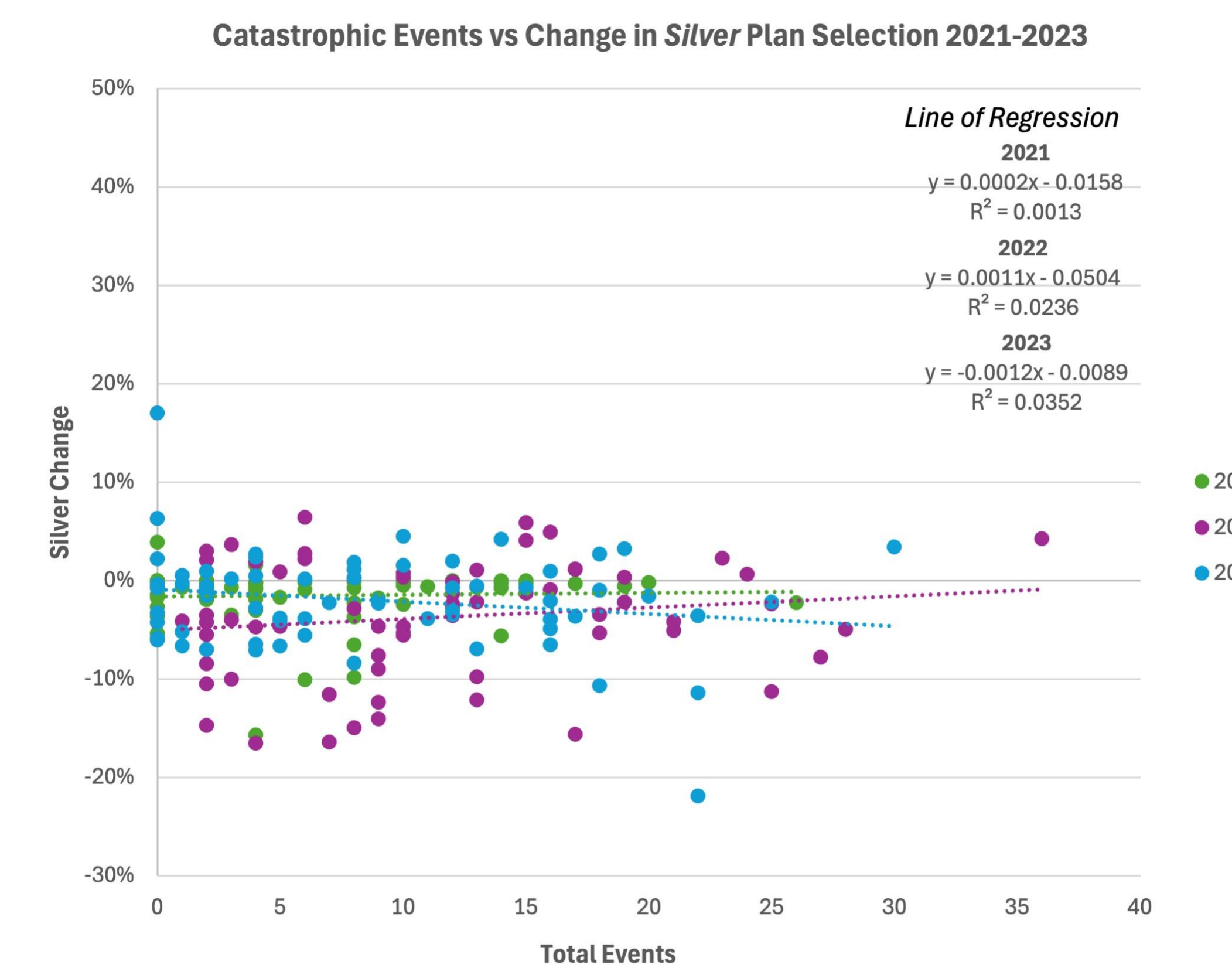


Exhibit B: Catastrophic Events vs Change in Silver Plan Selection

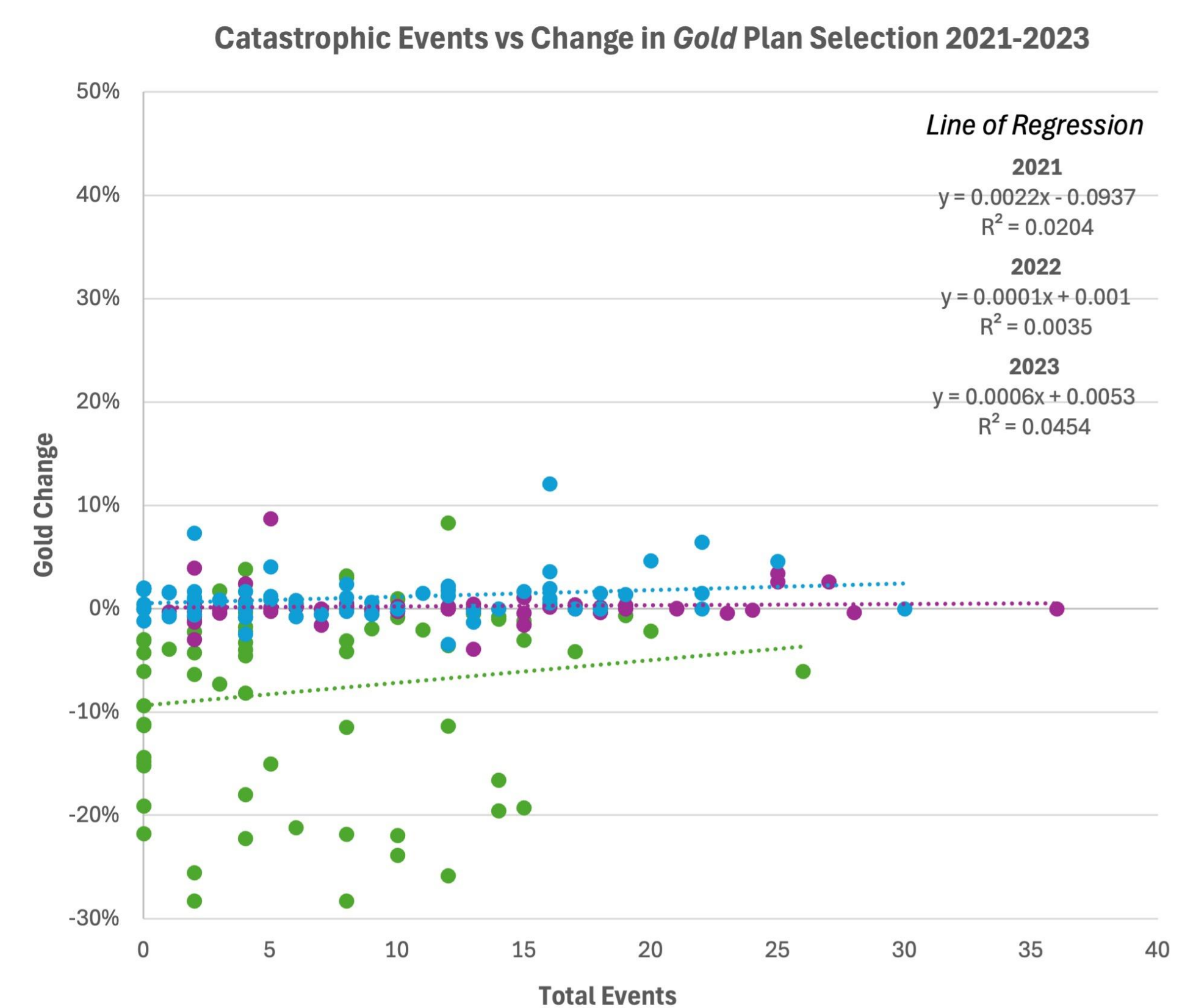


Exhibit C: Catastrophic Events vs Change in Gold Plan Selection

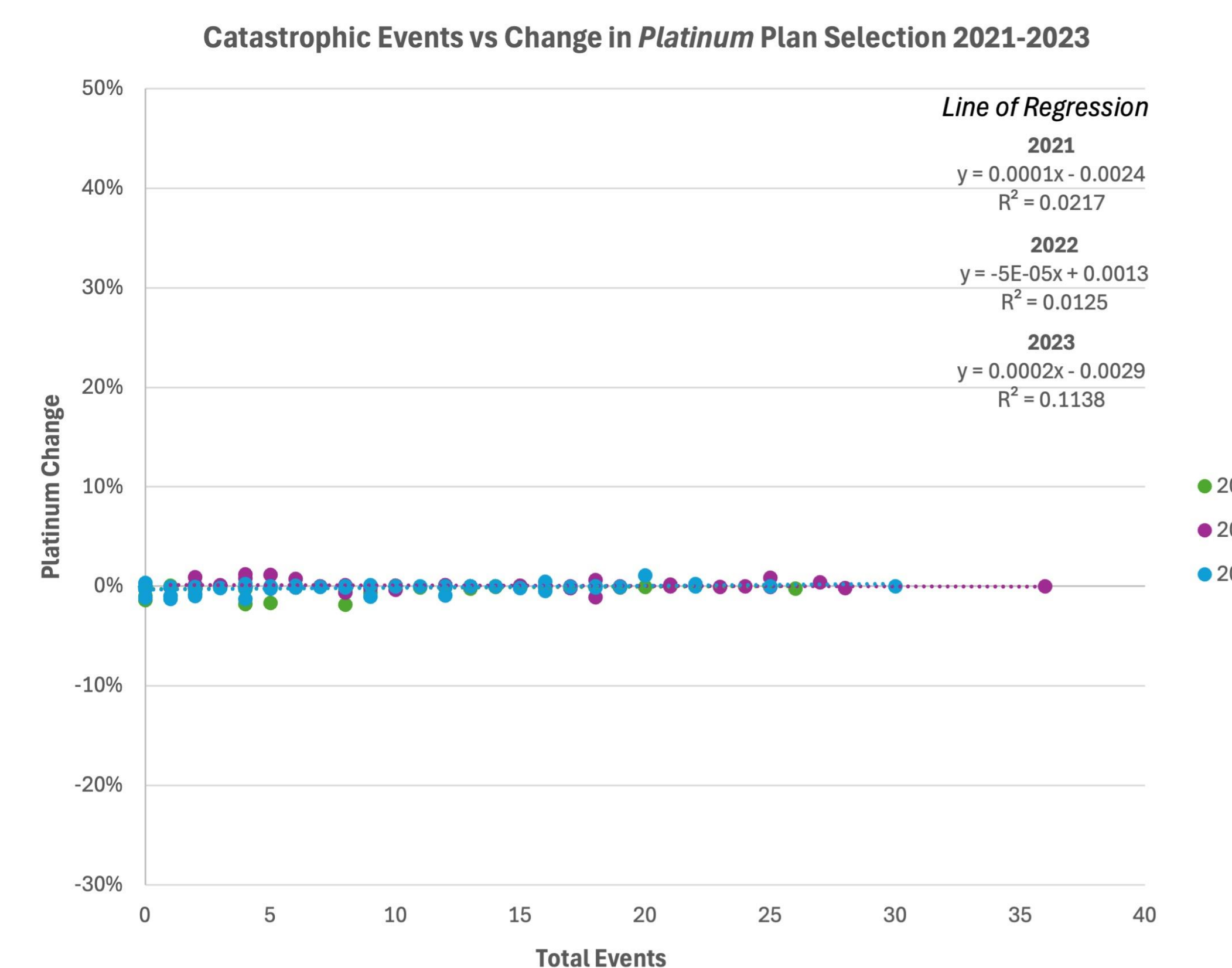


Exhibit D: Catastrophic Events vs Change in Platinum Plan Selection

Data Terminology

Line of Regression: A line that represents the relationship between a dependent and independent variable. It helps predict or estimate the outcome of unknown variables.

Equation: y (predicted value) = a (y-intercept) + b (slope) x

R² (Coefficient of Determination): Measures how well a linear regression model fits a data set. A high R² (closer to 1), means a stronger linear relationship, whereas a low R² (closer to 0), means a weaker linear relationship.

Methodology

- I began by compiling state-level data on catastrophic events and ACA metal plan enrollment (Jan 2020–Dec 2023) from all Florida counties.
- I utilized Stata and Excel to clean and manage the data and to execute the regression models.
- I applied a one-year time lag to the model. This aligns disaster events from one year with the following year's enrollment shift. I further formatted enrollment shifts as percentage changes and ensured the data was uniform for a fair comparison across metal tiers.
- I developed scatter plots for each metal tier to map the relationship between disaster frequency and enrollment changes.
- I applied a linear regression to each year to identify enrollment trends.
- I evaluated the slope of regression lines to determine if disaster exposure correlates with shifts toward higher-coverage or lower-coverage plans.

Findings

1. **Bronze Plans:** As catastrophic events increased, there was a slight decline in Bronze plan enrollment. This suggests a potential shift away from lower-coverage plans when the sense of environmental risk increases.
 2. **Silver Plans:** Enrollment trends for Silver plans remained relatively flat. As the most common plan tier, Silver enrollment appeared resilient to disaster-related fluctuations.
 3. **Gold Plans:** There was a slightly positive trend in Gold plans for some years, suggesting that as the number of catastrophic events increases, there may be a moderate shift toward higher-tier coverage options.
 4. **Platinum Plans:** Platinum enrollment showed no significant response to catastrophic events. This is likely due to the high premium costs and customers whose choices do not change when prices do.
- Overall,** the results suggest that catastrophic events do not strongly influence ACA metal tier enrollment patterns. These findings suggest that while disaster exposure may affect perceptions of risk, other factors likely play a larger role in determining insurance plan selection.