

The Impact of Catastrophes on Health and Dental Insurance Enrollment

Karolina Zagula, Madelyn Vido, and Professor Born
College of Business

Using county-level Affordable Care Act (ACA) data and Spatial Hazard Events and Losses Database (SHELDUS) 2018–2025, we found major catastrophes were associated with a 16.05% increase in health insurance enrollment and a 3.64% increase in dental enrollment, suggesting that catastrophic events heighten risk awareness and motivate individuals to obtain coverage.

Background & Introduction

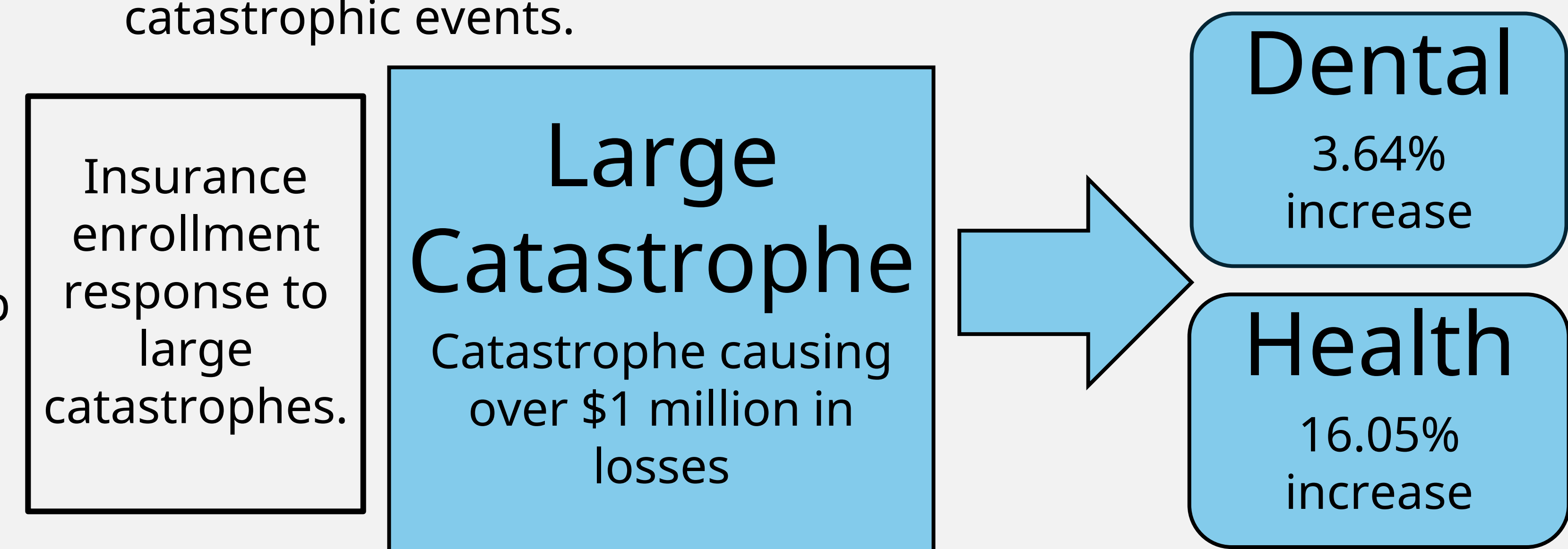
- Natural disasters can disrupt healthcare access and influence insurance decisions. Prior research in Louisiana found disasters were linked to higher health insurance enrollment but did not examine dental coverage or multiple disaster types (Barnes et al., 2023).
- The Affordable Care Act (ACA) expanded Marketplace access, providing an important coverage pathway during periods of instability (Hall & Lord, 2014). Policy efforts also increasingly emphasize integrating dental and medical coverage as oral health is essential to overall health (Ticku et al., 2021).
- Older adults face a disproportionate burden of oral health conditions and historical gaps in dental coverage, making this population particularly relevant (Saunders, 2016).
- Although health insurance enrollment has generally increased, dental enrollment has remained relatively stable. Examining how large catastrophes (>\$1,000,000 in county damage) affect enrollment helps assess access to care after disasters.

Methods

- County-level Open Enrollment Period (OEP) Marketplace Enrollment data (2018–2023) were obtained from government public files and organized in Excel by year.
- Variables included: County FIPS code, state, county name, total health plan selections, standalone dental plan selections, and age-group breakdowns (<18, 18–25, 26–34, 35–44, 45–54, 55–64, ≥65).
- Catastrophe data were collected from SHELDUS database.
- Datasets were merged by County FIPS code and year and analyzed using STATA-18 SE.
- STATA-18 SE is a statistical software platform used to analyze and manage large datasets.
- Panel data methods were applied (xtset FIPS year), percent changes in enrollment were calculated, and regression models were used to examine the relationship between major catastrophes and changes in health and dental enrollment.

Results

- A positive correlation was observed between the occurrence of large catastrophes and increased insurance purchases among older adults in the ACA Marketplace.
- The presence of a major catastrophe was associated with a 3.64% increase in dental insurance enrollment and a 16.05% increase in health insurance enrollment among older adults.
- Comparatively, dental insurance enrollment appeared more stable and less sensitive to external shocks than health insurance, a pattern that persisted even when accounting for catastrophic events.



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    . *reg pctchgenrollees 1.total_losses older45
    . *reg pctchgenrollees total_losses older45 if year<2020
    . reg pctchgenrollees bigcat older45 /* this one was awesome*/
  
```

Source	SS	df	MS	Number of obs	=	3,595
Model	1.18740986	2	.59370493	F(2, 3592)	=	13.39
Residual	159.28027	3,592	.04434306	Prob > F	=	0.0000
Total	160.46768	3,594	.04464877	R-squared	=	0.0074
				Adj R-squared	=	0.0068
				Root MSE	=	.21058

pctchgenro~s	Coefficient	Std. err.	t	P> t	[95% conf. interval]
bigcat	.0364449	.0070678	5.16	0.000	.0225875 .0503023
older45	-.0099804	.0366678	-0.27	0.785	-.0818722 .0619114
_cons	.0615888	.0183768	3.35	0.001	.0255588 .0976188

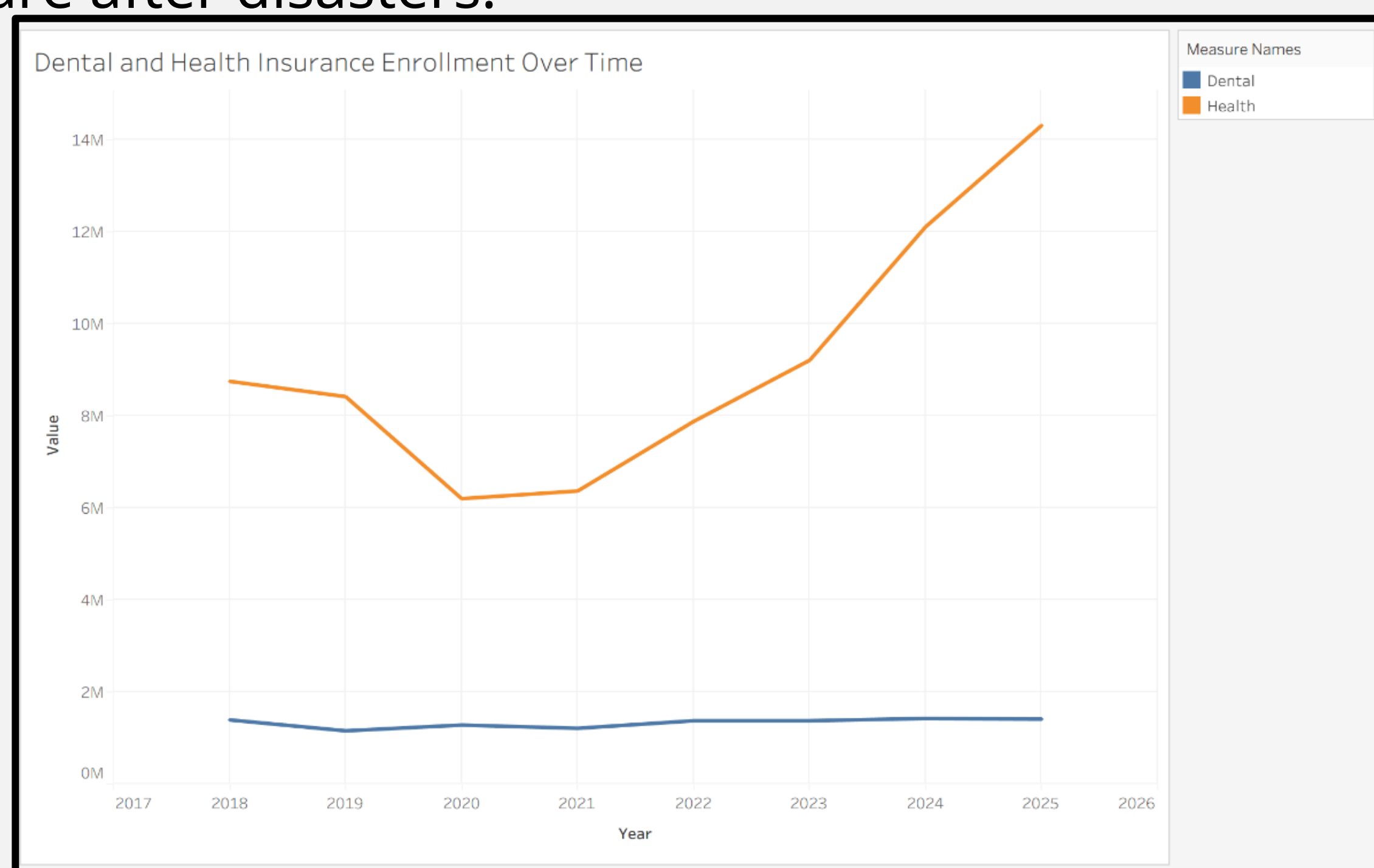

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    . reg pctchgHenrollees bigcat older45 /* this one was awesome */
  
```

Source	SS	df	MS	Number of obs	=	3,596
Model	23.3333997	2	11.6666998	F(2, 3593)	=	196.90
Residual	212.891908	3,593	.059251853	Prob > F	=	0.0000
Total	236.225308	3,595	.065709404	R-squared	=	0.0988
				Adj R-squared	=	0.0983
				Root MSE	=	.24342

pctchgHenr~s	Coefficient	Std. err.	t	P> t	[95% conf. interval]
bigcat	.1605331	.0081694	19.65	0.000	.1445159 .1765503
older45	-.0897985	.0422424	-2.13	0.034	-.17262 -.0069771
_cons	.0819638	.0211765	3.87	0.000	.0404446 .1234829

Graph illustrating the percent change in enrollment and statistical significance following major catastrophes.



Graph displaying health and dental insurance enrollment trends over time (2018–2025).

Goals

- Examine whether major catastrophic events impact health insurance enrollment.
- Examine whether major catastrophic events impact dental insurance enrollment.
- Compare insurance enrollment patterns before and after disasters.

Discussion

- These findings suggest that the Affordable Care Act plays an important role in supporting insurance access after major catastrophes, as older adults increased Marketplace enrollment despite financial hardship.
- While health insurance showed a stronger response, dental enrollment followed the same positive pattern, though more modestly, indicating growing recognition of dental coverage.
- Other factors: including unemployment rates, type of catastrophe, geographic differences, and healthcare availability (e.g., number of physicians)—may also influence enrollment and warrant further study.

Acknowledgments & References

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