Intro

In response to the COVID-19 Pandemic, the Chinese government instated a "Zero-COVID Policy," one that emphasized heavy regulation of personal freedoms with the goal of limiting COVID cases to zero. Much has been said about China's policy-making during this time, including expository journalism[1], research[2], and public protest.[3] Existing literature on China's repsonse to COVID-19 has largely emphasized typical epidemiological effects including COVID-19 prevalence, respiratory outcomes, and more. We identified a gap of longitudinal studies that seek to interrogate how COVID-19 impacted the mental health of Chinese citizens during this time.

As such, we are primarily interested in the following two research questions:

- What was the impact of COVID on depression in China?
- Was that most caused by stringency, public health, or economic downturn?

Data

We combine data from a number of sources. Our foundational data is taken from the China Family Panel Survey (CFPS) out of Peking University. We use its survey waves in 2016, 2018, 2020, and 2022; we only use those individuals who were surveyed at each of these timepoints and were not missing crucial covariates or outcomes ($n = 12806$). Our outcome is given by the CES-D 20 survey, a questionnaire that asks questions about a respondents mental health and produces an output on a 60 point scale. The CFPS collected data on this during each of these waves.

We merge this data with three different continuous treatment variables. First, is the Oxford COVID-19 Government Response Tracker (OxCGRT) which provides data on the stringency of government regulations during COVID. It's data was collected by [BLANK]. Second, are public health indices from the Open COVID Data Portal—specifically, we use BLANK METRIC. Lastly, we use BLANK FOR ECONOMICS.

Our data has five levels: 4 time points nested in 12806 individuals in 7770 families in 3318 communities in 32 provinces.

Methods

Our data have time (month), t, nested in an individual i who belongs to a family f in a community c that is in one of China's provinces p.

Our stringency metric, Treat_{pt}, ranges from 0 to 24 (TO BE UPDATED) and is 0 for all months in surveys taken before 2020. For the 2020 and 2022 surveys, the stringency metric varies across provinces and across months. Our multilevel model is:

$$\text{Level 1 (time within person): } y_{tifcp} = \pi_{ifcp} + \beta_1 \text{Treat}_{pt} + \beta_Z^\top \mathbf{Z}_{tifcp} + \varepsilon_{tifcp},$$

$$\varepsilon_{tifcp} \sim \mathcal{N}(0, \sigma_\varepsilon^2)$$

$$\text{Level 2 (person): } \pi_{ifcp} = \beta_{fcp} + \beta_X^\top \mathbf{X}_{ifcp} + u_{ifcp},$$

$$u_{ifcp} \sim \mathcal{N}(0, \sigma_i^2)$$

$$\text{Level 3 (family): } \beta_{fcp} = \gamma_{cp} + u_{fcp},$$

$$u_{fcp} \sim \mathcal{N}(0, \sigma_f^2)$$

$$\text{Level 4 (community): } \gamma_{cp} = \alpha_p + u_{cp},$$

$$u_{cp} \sim \mathcal{N}(0, \sigma_c^2),$$

$$\text{Level 5 (province): } \alpha_p = \nu + u_p,$$

$$u_p \sim \mathcal{N}(0, \sigma_p^2),$$

where y_{tifcp} is the depression score for individual i in family f, community c, province p at month t, Treat_{pt} is the province-by-month COVID policy stringency index, and $\mathbf{Z}_{tifcp}$ is a vector of time-varying, individual-level covariates (e.g.,LIST SOME HERE age, income, whatever; see Appendix Table A1 DO THE APPENDIX). The coefficient β_1 captures the average association between policy stringency and depression, conditional on other covariates.

where $\mathbf{X}_{ifcp}$ is a vector of time-invariant individual-level covariates (e.g., LIST SOME HERE see Appendix Table A1) and β_X is the corresponding coefficient vector. The random intercept u_{ifcp} captures unobserved, person-specific heterogeneity. We also include u_{fcp} as a family-

level random intercept, u_{cp} as a community-level random intercept, and u_p as a province-level random intercept. ν is the grand mean depression level.

Taken together, this specification allows us to estimate the province-month stringency effect β_1 on individual depression while accounting for time-varying individual covariates, time-invariant person-level covariates, and clustering of observations within persons, families, communities, and provinces.

Results

Discussion

Conclusion

Endnotes

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Notes

[1]Murong Xuecun. (2023, April 18). China's 'zero Covid' policy was a mass imprisonment campaign. The Guardian. https://www.theguardian.com/commentisfree/2023/apr/18/china-zero-covid-policy-xi-jinping

[2]Yan, K., Jiang, S., Xia, L., Jin, T., Dai, A., Gu, C., & Li, A. (2025). China's zero-COVID policy and psychological distress: a spatial quasi-experimental design. Journal of Social Policy, 54(3), 1029–1046. doi:10.1017/S004727942300430

[3]Schifrin, N., & Cebrián Aranda, T. (2022, November 28). Thousands in China protest zero-COVID policy in largest demonstrations in decades. PBS NewsHour. https://www.pbs.org/newshour/show/thousands-in-china-protest-zero-covid-policy-in-largest-demonstrations-in-decades