Data Assignment Memo

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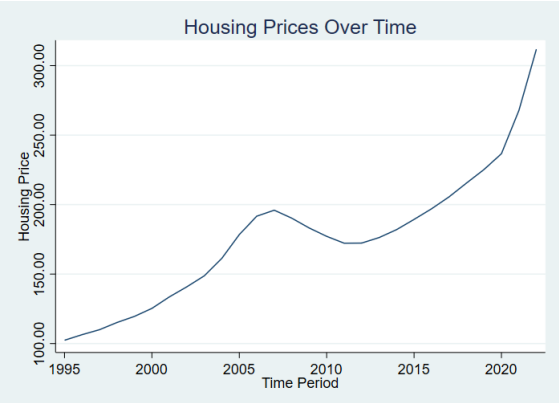
1 Introduction

This memo presents the results of an analysis designed to identify the effects of per capita mortality rates due to Covid-19 at the county level in 2020 on housing prices in 2021. This is an issue of immense interest and importance since the Covid-19 pandemic was a clear and large disruption to normal market and economic workings. The more we come to understand the effects of Covid-19 on the economy, the better we will be able to combat negative consequences of future pandemics and potentially avoid catastrophic failures and mistakes in policy and decision-making.

2 Data

The data that we use in this analysis comes from several sources, including the New York Times for county-level Covid-19 cases and deaths, and the United States Census Bureau for county populations, as well as other government agencies such as the U.S. Department of Housing and Urban Development's Office of Policy Development and Research for county-zip data. We obtained housing price data from the Federal Finance Housing Agency (FHFA).

The following graph illustrates the change in overall housing prices over time.



Furthermore, from our data, we know that the mean number of deaths per county was 14418.7 while the mean number of total Covid-19 cases per county was 536591.9.

3 Analysis

We used the data to estimate the following population equation using ordinary least squares:

$$HousingPriceIndex_t = \beta_0 + \beta_1 PerCapitaMortalityRates_t + \beta_2 HousingPriceIndex_{t-1}.$$

In our data, we only include two time observations: housing price indices in 2020 and in 2021. This is because we only care about the effect of Covid-19 mortality on prices in 2021 and we do not think it necessary to include any other time data in this analysis given that Covid-19 really only had its largest impact in the year 2020 and thereafter.

In the following table, we report the effects of the regression.

Variables	**Coefficient Estimate**	**Std. Dev**
Per Capita Mortality	-16.61	3.601
Lagged Housing Price Index	1.208	.00835
Constant Term	-15.986	1.998

Table 1: Regression results

Observations	R^2
647	0.970

Table 2: Regression results

As can be seen from the table, our results indicate that mortality rates in 2020 due to Covid-19 had a strong negative effect on housing prices in 2021. In fact, the regression gives us coefficient estimates that are very statistically significant. The t-statistic on per capita mortality rates is -4.61 while the t-statistic on the lagged dependent variable is 144.59. Hence, we have statistical significance at less than the 1% level.

4 Conclusion

In conclusion, our analysis indicates an overall negative effect of Covid-19 mortality rates on housing prices. Further analysis with more relevant data could improve the integrity of these results. There are likely many other factors that influenced housing prices in 2021 that could potentially be included in this analysis to further isolate the effects of Covid-19 on housing prices. Though it is estimated that Covid-19 has had a negative effect on housing prices, the data indicates that housing prices have continued to increase regardless, thus suggesting that perhaps Covid-19 has not had as big of

an effect on housing prices as perhaps other variables in the housing market. This is a possibility that is worthy of further investigation.