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Residential Housing Prices, COVID-19 and the Role of the Vaccination Program: Evidence from US State Panel Data

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This paper makes use of residential housing prices across US states, along with COVID-19 confirmed cases and deaths, to explore the impact of COVID-19 on housing prices. The work also investigates the role of the vaccination program on those prices. The panel estimates document the negative impact of COVID-19 metrics on housing prices, but when the vaccination program is underway, this impact disappears. The results are robust across US regions as well.

Keywords

US housing prices, COVID-19, vaccination program, state panel data

JEL: R2, R3, I1, C3

1. Introduction

Due to seriousness of the impact of the COVID-19 pandemic, the literature has extensively investigated its effect on financial asset prices (He et al., 2020), sovereign Eurobonds (Sène et al., 2021), corporate bonds (Haddad et al., 2021; Kargar et al., 2021), and stocks (Baek et al., 2020; Gormsen and Koijen, 2020; Just and Echaust, 2020). However, the literature has remained silent on the nexus between COVID-19 and housing prices. The literature is also lacking any evidence on the role of the vaccination program in affecting asset prices and especially housing prices. Therefore, the goal of this study is to address the research gap and explore the impact of the COVID-19 pandemic on US housing prices across states, as well as for the first time, the role of the vaccination program during the COVID-19 era.

The COVID-19 pandemic has been characterized as an unprecedented negative shock to household incomes, which has led to a significant downward pressure on housing prices due to depressed demand. On the other hand, housing prices can also be higher during COVID-19 due to certain factors, i.e., higher demand for housing resultant of the unprecedented monetary easing of the Central Bank, and lower housing supply due to stagnant new home orders. Only an empirical analysis can really determinate which one of the opposite forces is dominant.

The literature has clearly indicated that economic agents in risk events tend to reduce risk-taking behaviors (Cooper and Faseruk, 2011). More specifically, when housing assets experience risk events, then these agents develop risk expectations, thus leading to lower housing prices. The relevant literature has shown that risk events, such as terrorism (Abadie and Dermisi, 2008; Arbel et al., 2010), violence (Besley and Mueller, 2012), earthquakes (Deng et al., 2015), hurricanes (Hallstrom and Smith, 2005), and nuclear accidents (Zhu et al., 2016) tend to have substantial negative impacts on housing prices. However, the literature is very limited in exploring the effect of pandemic events (and their associated vaccination programs) on housing prices. In particular, Wong (2008) uses 44 housing estates in Hong Kong to document the negative impact of the severe acute respiratory syndrome (SARS) epidemic in 2003 on real estate properties. Similarly, Francke and Korevaar (2021) investigate the effect of the plague in 17th-century Amsterdam and cholera in 19th-century Paris on housing prices, with their results illustrating that both pandemics lowered housing prices by 13% and 10%, respectively. In terms of the impact of COVID-19, a recent study by Ling et al. (2020) provides evidence that higher US COVID-19 confirmed cases depress real estate investment trust (REIT) returns. Similarly, D'Lima et al. (2020) emphasize that housing prices in the US also declined following higher COVID-19 contagion rates, especially during the shutdown periods. Finally, Tian et al. (2021) use the difference in difference (DID) method to examine the impact of this public health crisis on the residential land and housing prices in the Yangtze River Delta region. Their results show that the COVID-19 pandemic has had a substantial and statistically significant negative effect on both urban residential land and house prices.

This paper contributes to certain strands of the literature. In particular, the empirical analysis complements the current literature by offering empirical findings based on an extended data period, while its novelty is studying the role of the vaccination program during the COVID-19 era. Moreover, its contribution to the literature lies in exploring the impact of health crises on housing markets. Finally, the paper contributes to the literature on the general economic effects (real economy) of COVID-19 (Furceri et al., 2018; Bronka et al., 2020; Chen et al., 2020; Correia et al., 2020; Deb et al., 2021).

2. Methodology and Data

Given that the goal of the analysis is to evaluate the impact of COVID-19 on housing prices over the period of January 2020 to August 2021, the baseline model is based on the method recommended by Beck et al. (2010):

$$HP_{it} = \alpha + \beta\ COVID19_{it} + \gamma\ X_{it} + u_i + \lambda_t + \varepsilon_{it} \tag{1}$$

where the dependent variable HP denotes the natural logarithm of the monthly average housing price of state i at month t (for single-family homes), while COVID19 is the primary independent variable defined as either the log of the total confirmed cases or the log of the total confirmed deaths from COVID-19. The coefficient, β, therefore, indicates the impact of COVID-19 on housing prices. u_i denotes the state fixed effects and λ_t the month fixed effects. X_{it} is a set of housing price control variables, such as the age (Housing Age- natural logarithm of the years from house completion time to year 2020), greening ratio (Greening Ratio- ratio of green land area to total land area of the state), elevator status (Elevator- dummy variable that equals 1 if the state has elevators and zero otherwise), terms of property rights (Property Rights- log of number of years with property rights), population density (Density- ratio of permanent resident population to land area of the state in 2019), real gross domestic product per capita (GDPPC- natural logarithm of GDPPC per state), and the invested amount in the real estate industry (Investment- natural logarithm of investment in the real estate industry of the state in 2019). In addition, the set of control variables includes credit conditions proxied by fixed mortgage rates (30-year conventional mortgage rate in nominal terms).

Data on housing prices are obtained from the Federal Housing Financing Agency while fixed-rate mortgage rates are obtained from the Federal Reserve Bank of St. Louis, both on a monthly basis. Data on per capita GDP and the two COVID-19 metrics are taken from the Datastream database. Data on the number of those vaccinated in each state are also obtained from Datastream. The data on per capita GDP are on a monthly basis, while those on COVID-19 and vaccination measures are on a daily basis. Finally, data for the control variables are sourced from the realtor.com residential listings database and also on a monthly basis. The analysis is implemented for the US states presented in the Appendix. All data span the period of January 2020 to August 2021 (except those on vaccination programs that span the period of December 20, 2020 – August 31, 2021). Table 1 reports some of the descriptive statistics.

Table 1 Descriptive Statistics

Variable	Mean	SD	Min	Max
HP (price index)	308.17	21.58	282.19	348.36
COVID19-cases	71,368.99	71,536.30	0	638,328
COVID19-deaths	1,129.38	968.32	0	4,460
Housing Age (in months)	49.14	38.95	6.00	71.59
Greening Ratio				
Elevator	1.00	0.01	1.00	1.00
Property Rights (in years)	3.21	2.33	3.01	3.40
Density (persons per square mile-2019)	395.77	198.71	1.28	11,685.51
GDPPC	56,464	2,179.32	52,314	58,478
Investment (thousands of units-2019)	1,292	102.67	1,142	1,547
Fixed-rate mortgage rate	3.03	0.263	2.65	3.72
# of vaccinated people	131.005,766.7	6,887,429.46	556,208	214,332,261
No. of housing indexes observations:				1,020
No. of COVID-19 cases and deaths observations:				31,059
No. of vaccinated people observations:				12,393

***Notes*:** SD = Standard Deviation

3. Empirical Analysis

First, the empirical analysis makes use of the cross-sectional dependence (CD) statistic developed by Pesaran (2004) to test the cross dependence of our panel. Under the null hypothesis of cross-sectional independence, the CD test statistic follows asymptotically a standard two-tailed normal distribution. The results, reported in Table 2, all reject the null hypothesis of cross-section independence, thus providing evidence of CD in the data, given the statistical significance of the CD statistic.

Next, a second-generation panel unit root test is employed to determine the degree of integration of the respective variables. The Pesaran (2007) panel unit root test does not require the estimation of factor loading to eliminate the CD. The null hypothesis is a unit root for the Pesaran (2007) test. The results of this test are reported in Table 3 and support the presence of a unit root across all of the panel variables.

Table 2 Cross-Dependence Test

Variable	**p-value**
HP (price index)	[0.00]
COVID19-cases	[0.00]
COVID19-deaths	[0.00]
Housing Age (in months)	[0.00]
Greening Ratio	[0.00]
Density (persons per square mile-2019)	[0.00]
GDPPC	[0.00]
Investment (thousands of units-2019)	[0.00]
Fixed-rate mortgage rate	[0.00]
# of vaccinated people	[0.00]

Table 3 Panel Unit Root Test

Variable	**CIPS test**	
	Level	1st differences
HP (price index)	-1.125	-6.019***
COVID19-cases	-1.096	-6.238***
COVID19-deaths	-1.063	-6.094***
Housing Age (in months)	-1.238	-6.736***
Greening Ratio	-1.118	-5.995***
Density (persons per square mile-2019)	-1.331	-6.483***
GDPPC	-1.274	-6.139***
Investment (thousands of units-2019)	-1.230	-6.418***
Fixed-rate mortgage rate	-1.108	-5.883***
# of vaccinated people	-1.077	-6.683***

***Notes*:** CIPS denotes cross-sectional Im, Pesaran, and Shin, and ***: $p \leq 0.01$.

We estimate Equation (1) by using the systems general method of moments (GMM) estimator set forth by Arellano and Bover (1995) and Blundell and Bond (1998). The key merit of the GMM estimator approach is the allowance for state-specific effects, which may reflect the differences across states in their level of the COVID-19 picture. We also employ a cluster-robust estimator to allow for arbitrary heteroscedasticity and autocorrelation in the error term. An additional advantage of the GMM method is that it generates unbiased results by avoiding potential endogeneities (i.e., reverse causality) between the dependent variable and at least one of the control variables. For instance, the literature argues that house prices play an important role in fuelling the growth or decline of the economy (Bostic et al., 2009). An important channel through which house prices could impact economic growth is the wealth effect (Lettau and Ludvigson, 2004; Buiter, 2008). Friedman's permanent income hypothesis suggests that households would change their desired consumption if house price changes affect their expected life time wealth. Furthermore, the literature proposes a collateral effect of house prices where house price increases help to relax the borrowing constraints of homeowners and increase their actual consumption since housing wealth is easy to collateralize (Campbell and Cocco, 2007; Lustig and Van Nieuwerburg, 2005).

The GMM results are reported in Table 4. The estimates point out that there is a negative association between COVID-19 metrics and house prices, with the results remaining consistent across both definitions of the pandemic variable. These findings imply that in cases of risk events, households have a risk perception that compels them to reduce risk-taking behaviors (Cooper and Faseruk, 2011). Therefore, when house properties experience such risk events (as in the pandemic case), these households anticipate risk, and thus house prices will decrease. Ling et al. (2020) validate these arguments by providing solid evidence that the COVID-19 pandemic has a detrimental impact on REIT returns. Overall, risk expectations tend to reduce the value of houses, which lead to lower housing prices. At the same time, the risks associated with infectious diseases are related to the local infection level and medical treatment conditions; in that sense, households are expected to have higher risk perceptions due to the higher levels of local infection or more strained medical treatment systems, thus, leading again to lower house prices.

In terms of the economic significance of these estimates, we can infer that a 1% increase in the COVID-19 confirmed cases and deaths leads to a 2.14% and 2.97% reduction in house prices, respectively. The results confirm the findings reported in the literature that are relevant to other pandemic events. In particular, these include the 44 Hong Kong housing estates in Wong (2008) as evidence that the average housing price declined with the outbreak of SARS in 2003. Similarly, Francke and Korevaar (2021) find that the plague in 17th-century Amsterdam and cholera in 19th-century Paris impacted housing prices. Both cases show that outbreaks produced declines in housing prices. In terms of the COVID-19 pandemic event, the findings of our paper corroborate those reported by Ambrus et al. (2020), Ling et al. (2020) and D'Lima et al. (2020), thus implying the presence of reductions in current or future income and increases in uncertainty (related to both economic and health-related concerns) that discourage people to buy houses (a reduction in housing demand) (Baker et al., 2020).

In terms of the remaining control variables, the results highlight that all the controls except Housing Age and Fixed Mortgage Rate, are positively and significantly correlated with Housing Prices. Relevant diagnostics are also

Table 4 GMM Results: January 2020 – August 2021

Variable	(1)	(2)
ΔHP(-1)	0.625***	0.642***
	[0.00]	[0.00]
ΔCOVID-19	-0.0214**	-0.0297***
	[0.02]	[0.01]
ΔHousing age	-0.0694***	-0.0679***
	[0.00]	[0.00]
ΔHousing age(-1)	-0.0158*	-0.0152*
	[0.06]	[0.06]
ΔGreening ratio	0.0237***	0.0250***
	[0.00]	[0.00]
Elevator	0.210***	0.272***
	[0.01]	[0.00]
Property Rights	0.256***	0.240***
	[0.00]	[0.00]
ΔDensity	0.0489***	0.0510***
	[0.00]	[0.00]
ΔGDPPC	0.0399***	0.0397***
	[0.00]	[0.00]
ΔGDPPC(-1)	0.0298***	0.0284***
	[0.01]	[0.01]
ΔInvestment	0.0183***	0.0179***
	[0.00]	[0.00]
ΔInvestment	0.0117*	0.0109*
	[0.08]	[0.09]
ΔFixed-mortgage rate	-0.096*	-0.063*
	[0.08]	[0.09]
Diagnostics		
R^2-adjusted	0.65	0.70
No. of instruments	23	22
AR(1)	[0.00]	[0.00]
AR(2)	[0.45]	[0.52]
Hansen test	[0.54]	[0.57]
Difference in Hansen test	[0.44]	[0.49]
State fixed effects	YES	YES
Month fixed effects	YES	YES
No. of obs. (houses)	1,020	1,020
No. of obs. (COVID-19)	31,059	31,059

***Notes*:** Column (1) reports the results when COVID-19 is measured as confirmed cases, while Column (2) presents the findings when COVID-19 is proxied by confirmed deaths. The number of lags is determined through an Akaike information criterion. AR(1) is the first-order test for residual autocorrelation. AR(2) is the test for autocorrelation of order 2. The Hansen test is an overidentification check to determine the validity of the instruments. The difference-in-Hansen test checks the exogeneity of the instruments. Figures in brackets denote p-values. *: $p \leq 0.10$; **: $p \leq 0.05$; and ***: $p \leq 0.01$.

reported. In particular, for the validity of the instruments, the results need to reject the test for second-order autocorrelation, AR(2), in the error variances. Moreover, they also need to reject the null hypothesis of the difference-in-Hansen tests of the exogeneity of the instruments. The regression has explicitly used 24 instruments, where, as instruments have been used, certain lags and leads from the control variables ensure the validity of the instrument tests. It is evident that both the AR(2) test of disturbances and the difference-in-Hansen tests fail to reject the respective nulls. Thus, these tests support the validity of the instruments used, while the difference-in-Hansen tests imply the exogeneity of the instruments used.

4. Robustness Check: Regional Evidence

In this part of the empirical analysis, we repeat the estimation exercise but this time, we separate our sample into the four different US regions, i.e., Northeast, Midwest, South, and West, with the states being included in each region as indicated in the Appendix. The new findings are presented in Table 5. Due to space limitations, only the results relevant to the link between house prices and COVID-19 metrics are reported (full results are available upon request from the authors). The new findings indicate that the highest impact of the COVID-19 pandemic on house prices is found in the Northeast region, followed by the West and Midwest regions, while the impact is statistically insignificant for the South. In other words, the findings clearly document the asymmetric impacts of COVID-19 on the US regional housing markets.

These findings potentially imply that supply and demand conditions during COVID-19 are characterized by a differentiated behavior, mostly for lower-income households, possibly reflecting the differentiated relaxed liquidity constraints for these household groups. This kind of differentiated behavior can also reflect the behavior of differentiated households in terms of homeownership value and affordability of down payments associated with differentiated savings behavior. Moreover, these differentiated findings document that US regions can also be characterized by different levels of vulnerability of the households, which has a differentiated impact on the demand for housing as these households face differentiated reductions in their current and future income (Wassmer and Baass, 2006; Desmond, 2012, 2015; Rodriguez et al., 2017; Cao and Hickman, 2018). Moreover, the results could potentially provide an informative picture on the nature of certain policies adopted by states in battling the pandemic and to minimize its effects on both the population and the local/regional economy. More specifically, certain studies (Deb et al., 2021; Hartl et al., 2020) document that during the pandemic, US states have adopted differentiated policies related to social distancing measures, as well as other stringent state-level restrictions, such as local lockdowns and mobility restrictions. The reported mobility patterns illustrate that the economic impact of the pandemic is not evenly felt across sectors and regions (Chetty et al., 2020). For instance, aggregated smartphone mobility data indicate residents of northern and southern regional neighborhoods with a higher share of White residents moved more as infection rates increased compared with residents in less White neighborhoods, i.e., the southern region (Paybarah et al., 2020). In addition, other studies emphasize that regions with higher percentages of poor and non-White households experienced more job loss and reduced income due to COVID-19 compared to White households (Parker et al., 2020), thus implying more monetary and fiscal support programs are needed to maintain income levels and general economic activity. This could potentially explain for the stability of housing prices in these neighborhoods. Finally, a report from the Brookings Institutions (American research group) concluded that not all US regions are hit equally hard by the pandemic. In a

Table 5 GMM Estimates (Regional Results): January 2020 – August 2021

Variable	(1)	(2)
Northeast		
ΔCOVID-19	-0.0318***	-0.0350***
	[0.01]	[0.00]
R^2-adjusted	0.71	0.74
No. of obs. (houses)	180	180
No. of obs. (COVID-19)	5,481	5,481
Midwest		
ΔCOVID-19	-0.0148*	-0.0179**
	[0.09]	[0.03]
R^2-adjusted	0.59	0.62
No. of obs. (houses)	240	240
No. of obs. (COVID-19)	7,308	7,308
South		
ΔCOVID-19	-0.0129	-0.0142*
	[0.12]	[0.10]
R^2-adjusted	0.47	0.51
No. of obs. (houses)	340	340
No. of obs. (COVID-19)	10,353	10,353
West		
ΔCOVID-19	-0.0214**	-0.0250***
	[0.02]	[0.01]
R^2-adjusted	0.67	0.70
No. of obs. (houses)	260	260
No. of obs. (COVID-19)	7,917	7,917

Notes: Column (1) reports the results when COVID-19 is measured as confirmed cases, while Column (2) reports those when COVID-19 is proxied by confirmed deaths. Figures in brackets denote p-values. *: p≤0.10; **: p≤0.05; and ***: p≤0.01.

huge nation made up of diverse regions and different local economies, a look at the geography of highly exposed industries clearly shows that the economic toll of any economic shock can hit different regions in disparate and uneven ways.

A research note from Moody's (https://www.economy.com/economicview/analysis/378644/COVID19-A-Fiscal-Stimulus-Plan) identifies a list of five especially vulnerable sectors: mining/oil and gas, transportation, employment services, travel arrangements, and leisure and hospitality. According to the findings of this note, the most affected areas are construction, manufacturing, retail, education, the motion picture industry, major resorts, leisure, and amusement destinations mostly in the northern and southwest US.

However, we are limited in our ability to elucidate the specific mechanisms by which COVID-19 cases and deaths affect the US regional housing market differently, since we need to quantify other dimensions of this market, such as economic and racial/ethnic dimensions, and spatially disparate data that are relevant to the impact of COVID-19 (Chetty et al., 2020). However, this can be implemented in future research efforts. Such differential effects of the pandemic carry important implications for understanding the role of racial and wealth inequalities in periods of unprecedented social and economic catastrophes.

5. Role of the US COVID-19 Vaccination Program

The US COVID-19 vaccination program was authorized on December 10, 2020, with the vaccinations beginning on December 20, 2020 (Thomas et al., 2020). Therefore, we repeat the analysis by explicitly considering the existence of the vaccination program over the period of January 2021 to August 31, 2021:

$$HP_{it} = \alpha + \beta_1\, COVID19_{it} + \beta_2\, VACC_{it} + \gamma\, X_{it} + u_i + \lambda_t + \varepsilon_{it} \qquad (2)$$

where VACC indicates the number of vaccinated people. The national results are reported in Table 6 and clearly show that the COVID-19 variables have no statistically significant impact on housing prices, with the vaccination variable exerting a positive effect on those prices, thus implying that the presence of less uncertain (health) conditions raises the demand for housing under the impression of more upcoming positive prospects for the entire economy. Table 6 also reports the regional findings which confirm those on a national basis. These findings confirm the cost-effectiveness implications from the vaccination program, such as direct health benefits and medical cost savings, along with certain indirect benefits linked to higher economic growth and productivity gains following lockdown activities and reduced economic uncertainty. Moreover, economists have argued that improvements in health due to vaccination programs are expected to lead to higher economic growth through longer-term mechanisms, such as decreasing fertility rates, greater macroeconomic stability, and improved educational outcomes (Bloom et al., 2004; Belli et al., 2005). All of these positive outcomes are expected to increase the demand for houses, which leads to higher housing prices.

Table 6 GMM Estimates (National and Regional Results): January 2021 – August 2021

Variable	(1)	(2)
National		
ΔCOVID-19	-0.0064	-0.0038
	[0.23]	[0.31]
ΔVACC	0.0360***	0.0403***
	[0.00]	[0.00]
R^2-adjusted	0.68	0.75
No. of obs. (houses)	408	408
No. of obs. (COVID-19)	12,393	12,393
No. of vaccine obs.	12,393	12,393
Northeast		
ΔCOVID-19	-0.0035	-0.0030
	[0.32]	[0.39]
ΔVACC	0.0398***	0.0421***
	[0.00]	[0.00]
R^2-adjusted	0.70	0.76
No. of obs. (houses)	72	72
No. of obs. (COVID-19)	2,187	2,187
No. of vaccine obs.	2,187	2,187
Midwest		
ΔCOVID-19	-0.0055	-0.0061
	[0.28]	[0.24]
ΔVACC	0.0374***	0.0395***
	[0.00]	[0.00]
R^2-adjusted	0.65	0.69
No. of obs. (houses)	96	96
No. of obs. (COVID-19)	2,916	2,916
No. of vaccine obs.	2,916	2,916
South		
ΔCOVID-19	-0.0038	-0.0044
	[0.30]	[0.33]
ΔVACC	0.0356***	0.0372***
	[0.00]	[0.00]
R^2-adjusted	0.50	0.54
No. of obs. (houses)	136	136
No. of obs. (COVID-19)	4,131	4,131
No. of vaccine obs.	4,131	4,131

(Continued…)

(Table 6 Continued)

West		
ΔCOVID-19	-0.0035	-0.0040
	[0.32]	[0.31]
ΔVACC	0.0329***	0.0342***
	[0.00]	[0.00]
R^2-adjusted	0.69	0.74
No. of obs. (houses)	104	104
No. of obs. (COVID-19)	3,159	3,159
No. of vaccine obs.	3,159	3,159

***Notes*:** Column (1) reports the results when COVID-19 is measured as confirmed cases, while Column (2) reports those when COVID-19 is proxied by confirmed deaths. Figures in brackets denote p-values. *: p≤0.10; **: p≤0.05; and ***: p≤0.01.

6 Conclusion

Using housing prices across US states, this study provides evidence that the COVID-19 pandemic has had a detrimental effect on housing prices with a differentiated effect across US regions. Moreover, this study shows that when the vaccination program was well under way, the negative impact of COVID-19 was negligible, while the program itself had a positive effect on US housing prices, with the results remaining robust across regions.

The findings carry some serious policy implications. In particular, policymakers should pay more attention to the impact of COVID-19 on housing prices and consider the heterogeneity of regions. Thus, they should focus on regions with a higher infection level of COVID-19. Moreover, the results suggest that certain stakeholders of the real estate market, such as governments, banks, and investors in private as well as public markets, need to seriously consider the role of infections on housing prices. They should then propose the necessary regulatory reforms, e.g., macroprudential policies, in the lending and borrowing bank markets (the adoption of certain measures that can combine mortgage payment forbearance for borrowers with liquidity facilities for lenders, as well as the temporary adaptation of prudential regulations). This needs to be done in parallel with financial stability conditions during the course of mortgages to ensure the stability and viability of the real estate industry, since the pandemic crisis has probably relaxed certain macroprudential regulations that could potentially undermine the resilience of the real economy. Overall, looking beyond the pandemic, a key lesson at the end of the day could be that housing policies need to be holistic enough to address potential vulnerabilities of the real estate market that the recent pandemic crisis may have exposed. In particular, in an environment where states are not open to coordinating intuitively, the differentiated findings across regions emphasize the importance of instilling policy tools. The federal government can thus use fiscal tools to enhance coordination across states (Rothert et al. 2020).

Finally, future research can expand on the empirical analysis in this study to other countries, and more significantly, to certain types of housing in the industry, such as commercial, logistics, or even rentals and Airbnbs.

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Appendix

US states (for each region)

Northeast	**Midwest**	**South**	**West**
Connecticut	Illinois	Alabama	Alaska
Maine	Indiana	Arkansas	Arizona
Massachusetts	Iowa	Delaware	California
New Hampshire	Kansas	District of Columbia	Colorado
New Jersey	Michigan	Florida	Hawaii
New York	Minnesota	Georgia	Idaho
Pennsylvania	Missouri	Kentucky	Montana
Rhode Island	Nebraska	Louisiana	Nevada
Vermont	North Dakota	Maryland	New Mexico
	Ohio	Mississippi	Oregon
	South Dakota	North Carolina	Utah
	Wisconsin	Oklahoma	Washington
		South Carolina	Wyoming
		Tennessee	
		Texas	
		Virginia	
		West Virginia	