Impact of Government Policy Restrictiveness on COVID-19 Case and Death Rates in the United States

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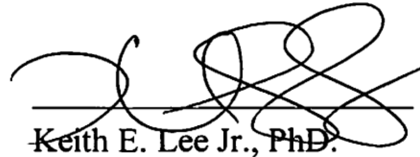

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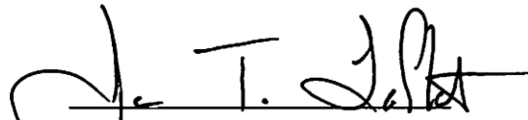

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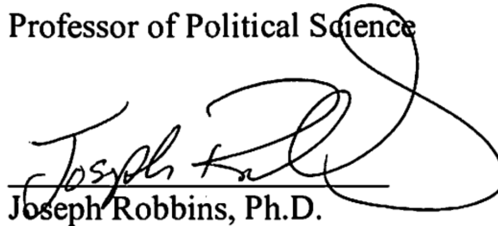

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ABSTRACT

This mixed-methods comparative public policy study examined the restrictiveness of the stay-at-home executive orders issued by U.S governors and the effect those restrictions had on COVID-19 health outcomes. The author extracted 2,789 restrictive phrases from 121 executive orders issued by 46 states to develop a novel Restrictive Measure Index (RMI). The RMI, along with other predictive factors, were compared to COVID-19 case and death rates. The study findings indicate that while COVID-19 policy restrictiveness varied among states, the level of restrictiveness did not appear to have a significant influence on COVID-19 case and death rates. Since COVID-19 responses differed across the U.S., this research also included a case study of two divergent states, California and Florida, to examine the practical application of the concepts outlined in the study. Key findings of the case study indicate that California had a statistically significant lower COVID-19 death rate and a lower case rate than Florida. Public health experts typically lead the response during health emergencies, yet many governors took a more active role during the COVID-19 pandemic by issuing numerous health related executive orders, which created challenges for local public health administrators. These administrators faced intense pressure and had to continuously adapt to a rapidly changing environment. The findings of this study contribute to understanding crisis management policies in the U.S. federalist system during public health emergencies and enrich discourse on intergovernmental relations in pandemic response. Future research into the role of public health experts and effective collaboration models during COVID-19 could benefit responses to future health crises.

Keywords: COVID-19 mitigation, pandemic, stay-at-home restrictions, non-pharmaceutical, American federalism, comparative public policy, mixed-methods, pragmatistic worldview, crisis management, intergovernmental relations

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DEDICATION

I dedicate this dissertation to the COVID-19 pandemic first responders, hospital staff, public health administrators, public health frontline staff, and everyone who worked tirelessly during the pandemic for the good of the communities we serve.

To the friends, families and victims of COVID-19 may you find strength in faith, “Say to those who are of a fearful heart, Be strong, do not fear! Here is your God. He will come with vengeance, with terrible recompense. He will come and save you.” - Isaiah 35:4

TABLE OF CONTENTS

Chapter I INTRODUCTION 1

Significance of the Study 5

Conceptual Framework 10

Research Questions 13

Methodology 13

Clarification of Terms 16

Summary 19

Chapter II REVIEW OF THE LITERATURE 20

American Federalism Governance 20

Intergovernmental Relations 21

Worldwide Public Health Models 25

Emergence of COVID-19 28

Public Health Systems in America 30

United States COVID-19 Response 30

Subnational COVID-19 Mitigation Management 37

State Issued COVID-19 Executive Orders 38

COVID-19 Restrictions, Suspensions, and Enforcement Executive Orders 39

Related Literature 40

Local Public Health COVID-19 Response 41

Societal Effects of COVID-19 42

Summary 44

Chapter III METHODOLOGY 48

Purpose of the Study 48

Research Design 49

Research Questions 51

Data Collection 53

Approval to Conduct Study 53

Study Policy Selection 53

Publicly Available Data Sources. 54

Data Analysis 55

Restrictive Measure Index 55

Inter-reliability 57

Intra-reliability 57

Coding 58

Phrase Exemptions 59

Restrictive Measure Index Score Assignment 59

Variables 60

Statistical Analysis 63

California and Florida Case Study 64

Limitations 66

Delimitations 67

Researcher Bias 67

Summary 68

Chapter IV RESULTS 69

COVID-19 Stay-at-Home Executive Order Study 69

Restrictive Measure Index and COVID-19 70
Restrictive Measure Index and COVID-19 Death Rate. 76
Restrictive Measure Index and COVID-19 Case Rate 77
Governance and COVID-19 Health Outcomes 78
Governance and COVID-19 Death Rate 81
Governance and COVID-19 Case Rate 82
Population Density COVID-19 Health Outcomes 83
Population Density COVID-19 Death Rate 85
Population Density COVID-19 Case Rate 86
Case Study: California and Florida Path Analysis Mediation Model 87
State Characteristics 89
Path Analysis Mediation Model Fit 93
Direct Effect of Independent Variables on COVID-19 Death Rate 94
Mediation Analysis 98
Overview of Results 100
Summary 103
Chapter V DISCUSSION 105
Purpose of the Study 105
Restatement of the Study questions 106
Discussion of Key Findings 107
Population Density Matters 109
Role of Politics in COVID-19 Crisis Management 110

Data Integrity 111

Case Study 112

Implications of the Study 113

Recommendations for Future Research 115

Factors Influencing Restrictive Policy Decisions 115

Impact of Testing Policies on COVID-19 Case Rates 116

Public Compliance with Restrictive Mandates 117

Impact of Essential Workers 119

Impact of Intergovernmental Relations on Public Health 120

Concluding Remarks 120

REFERENCES 123

APPENDIX A: Institutional Review Board Approval 164

APPENDIX B: Publicly Available Data Sources 166

APPENDIX C: COVID-19 Coding Job Aid 168

LIST OF TABLES

Table 1: *Research Public Policy Themes and Key Concepts*…………………………… 11

Table 2: *COVID-19 Viral Mitigation Strategies*..33

Table 3: *Census Bureau Regions of the United States*... 52

Table 4: *COVID-19 Restrictive Measure Index Manifest Content Analysis Process*....... 55

Table 5: C*ategorical Variables*.. 62

Table 6: *Descriptive Statistics* 63

Table 7: *Path Analysis Output* 65

Table 8: *Data, Measurements, and Statistical Tests*...70

Table 9: *Stay-at-Home Executive Orders and Restrictive Phrases* 71

Table 10 *Study Data by State* 73

Table 11: *COVID-19 Case and Death Rates per Capita* 74

Table 12: *COVID-19 Death Rate and Restrictive Measure Index*.. 77

Table 13: *COVID-19 Case Rate and Restrictive Measure Index*... 77

Table 14: *State Governance Demographics*... 79

Table 15: *Death Rate and Governance Factors*..81

Table 16: *Case Rate Governance Factors* 82

Table 17: *COVID-19 Case Rate and State Governance Trifecta* 83

Table 18 *Population Density and Geography Demographics*...84

Table 19: *COVID-19 Death Rate and Population Factors*..86

Table 20: *COVID-19 Case Rate and Population Factors* 87

Table 21: *California and Florida State Characteristics*..90

Table 22: *COVID-19 Death Rate, Two Sample t-Test*..90

Table 23: *COVID-19 Case Rate Two Sample t-Test* 91

Table 24: *Age 65 Years and Older Two Sample t-Test* 91

Table 25: *Chronic Lung Disease Two Sample t-Test* 92

Table 26: *Obesity Two Sample t-Test* 92

Table 27: *Democratic Voter Registration Sample t-Test* 93

Table 28: *Population Density Sample t-Test* 93

Table 29: *Path Analysis Mediation Model Fit* 94

Table 30: *Squared Multiple Correlation Estimates Summary* 95

Table 31: *Independent Variable Strength Guide* 95

Table 32: *Strength of Independent Variables and California Death Rate* 96

Table 33: *Strength of Independent Variables and Florida Death Rate* 96

Table 34: *Strength of Independent Variables and California Case Rate* 97

Table 35: *Strength of Independent Variables and Florida Case Rate* 98

Table 36: *Summary of Direct Effect of COVID-19 Cases on COVID-19 Death Rates* 99

Table 37: *California Mediation Analysis Summary* 99

Table 38: *Florida Mediation Analysis Summary* 100

Table 39: *Summary of Findings: National Study* 101

Table 40: *Summary of Findings: Case Study* 102

LIST OF FIGURES

Figure 1: COVID-19 Study Cycle of Learning Interactions 13

Figure 2: COVID-19 Path Analysis Mediation Model 65

Figure 3: Heatmap Showing the Variation COVID-19 Restrictive Phrases............................. 71

Figure 4: Heatmap Showing the Restrictive Measure Index by State...................................... 72

Figure 5: Heatmap Showing Political Party Strength by State in 2020 78

Figure 6: California Path Analysis Mediation Model Outcomes 88

Figure 7: Florida Path Analysis Mediation Model Outcomes 89

Chapter I

INTRODUCTION

New Year's Eve 2019 was celebrated around the world with hopes of ending a decade filled with political and cultural controversy. Optimistic Americans greeted the beginning of a new decade with great anticipation. Unfortunately, within months, reality set in with the onset of the global COVID-19 health crisis. No one expected what was to come: lockdowns, mandated closures, and forced lifestyle changes. In the U.S., the American way of life changed dramatically, leaving many unsure if they would ever recover from the financial and social impact of the pandemic (Foroni et al., 2022; Schramm et al., 2023; Tamaki et al., 2024).

This comparative public policy research examined the government actions that shaped the global response to the COVID-19 pandemic. Using a mixed-methods approach, the study explored the U.S. federalist intergovernmental relations (IGR) pandemic response and its effect on COVID-19 health outcomes through socially and economically restrictive state-imposed restrictive executive orders (EOs).

The U.S. federal government first declared a public health emergency for COVID-19 on January 31, 2020, in response to the growing threat of the virus (United States Department of Health and Human Services, 2020). The official nationwide emergency declaration by then-President Donald Trump followed on March 13, 2020, under the Stafford Act, allowing federal funding and resources to assist state and local responses to the pandemic (White House, 2020).

The ensuing national response differed significantly among the states due to the federal system of governance, which grants individual states considerable autonomy in managing public

health and safety, including the authority to enact a state declaration of emergency. While the federal government issued guidance, each state's governor had the authority to implement their own EOs, leading to wide variation in approaches to managing the pandemic.

Local government public health administrators were pivotal in managing the pandemic public health crisis. Some succeeded by quickly implementing state issued mandates, while others encountered difficulties due to role delineation concerns, limited resources, political interference, and the constantly changing scientific landscape (Suhrcke & Sutherland, 2021). Many local health departments were already underfunded and understaffed before the pandemic, which meant that public health administrators often had to take on additional responsibilities to cover staffing shortages. These sustained pressures contributed to a continued wave of staff turnover, especially among the public health leadership sector (Leider et al., 2022; Mastro & Szewczyk (2022; SteelFisher et al., 2023).

The state EOs varied depending on each state's political climate, public health philosophy, and leadership priorities. States like California and New York took more aggressive, precautionary measures, while states like Florida, South Dakota, and Texas emphasized personal freedom, individual responsibility, and economic recovery. This patchwork of responses led to different outcomes in terms of infection rates, deaths rates, and personal and economic restrictions, reflecting the diverse political and social landscape of the country during the pandemic (Centers for Disease Control and Prevention [CDC], 2020a; Drezner, 2020; Gostin et al. 2020; Mervosh et al., 2020).

While comparing U.S. pandemic intervention strategies with those of other countries is outside the scope of this study, it is important to understand the COVID-19 etiology, transmission, and global government intervention strategies taken due to the rapid spread of this highly

contagious virus and the influence those strategies may have had on the U.S. response.

The U.S. pandemic response lagged other countries due to how long it took COVID-19 to spread to America. COVID-19 originated in Wuhan, the most populous city in the Hubei Province of the People's Republic of China. Chinese officials reported the first hospitalization December 1, 2019, from a cluster of individuals experiencing similar respiratory symptoms (Shereen et al., 2020). China took about 4 weeks to report the outbreak to the World Health Organization (WHO), and the Chinese government waited another 2 weeks before implementing a centralized response to the pandemic (WHO, 2020, January 5).

Based on the information reported, WHO did not issue any travel or trade restrictions on China at that time (WHO, 2020, February 11). This delay in reporting and in the WHO's response offered little warning to neighboring countries such as Thailand and Japan, which were already experiencing COVID-19 outbreaks. Exacerbating the dire consequences of the lack of communication about the outbreak was the fact that Wuhan was a national and international travel hub—and travel had intensified because the outbreak occurred during the Chinese New Year, a highly celebrated global event (Stratfor Analysis, 2020).

As with the Northeast Asian nations, the Western world was hit hard, too. Italy was one of first European nations to experience a massive COVID-19 outbreak. Italian health authorities reported the first COVID-19 case on February 20, 2020, with cases reaching an alarming 1.84 million during the first year of the outbreak. This ranked Italy as the most disaster-struck nation in Europe. The Italian Health Ministry identified travel between China and Italy as the primary cause of the Italian COVID-19 outbreak (Capano, 2020). In response, Italy's national and regional authorities implemented various levels of travel restrictions. The national government escalated the urgency of compliance by imposing fines for people who disobeyed the compulsory individual

travel restrictions (Capano, 2020).

The restructuring of the Italian health system over the previous 25 years may have had an overall negative impact on the country's pandemic response (Capano, 2020). The challenge facing Italian health responders was that while the nation state had the authority to issue broad-stroke mandates, this authority was juxtaposed with the constitutionally protected ability of local authorities to manage health emergencies falling under their jurisdiction. These IGR created response inconsistencies. On the other hand, Della Rossa et al. (2020) concluded that the regional response was more effective due to regional leadership having a better understanding of the regional healthcare systems and other local nuances.

Like Italy, Spain imposed a nationwide lockdown in response to increases in COVID-19 cases. Spain surpassed South Korea in the number of cases during the third week of March 2020 and then China by the end of that same month, and the country continued to stand as the second most affected by COVID-19 in Europe. Highlighting the heterogeneity of the national government, Rodríguez-Baño (2020) raised concerns about Spain's unclear and inconsistent intervention guidance and the lack of collaboration between the central government and the workers on the front line.

Garcia-Basterio and Legido-Quigley (2020), along with 20 other signatories, called on Spanish government leaders to commission a nongovernmental academic panel to evaluate the country's COVID-19 response. Proposing a no-blame approach to the evaluation, the end game was for the central Spanish government and the regional governments to show unified support for the process. This scholarly group believed that an unbiased evaluation would lead to an improvement in Spanish IGR and therefore contribute to the public health policies needed to contain the virus.

COVID-19 soon made its way to North America. On January 25, 2020, Canada reported its first case of the coronavirus, believed to have been transmitted from a Canadian returning from Wuhan, China (Bronca, 2020). By mid-March 2020, Canadian authorities and some provincial governments began imposing restrictions, including a limit on the number of people at public and private gatherings. (Bronca, 2020; Migone, 2020). Canada closed its border with the U.S. on March 21, 2020, the first time it had done so since 1867.

Canada also imposed air travel restrictions, including verification of a negative COVID-19 test result prior to boarding a plane bound for Canada and a mandatory 2-week quarantine for people entering Canada. Authorities communicated to the public that willful violation of these requirements would result in severe consequences (Steps to Justice, n.d.). Harris, S., (2020) reported on fines issued by Canadian law enforcement that ranged from $275 to $1,275. For flagrant violators, however, the fines increased to upwards of $750,000 and a possible 6-month jail sentence.

The countries discussed in this section provide examples of the initial response to the COVID-19 pandemic. Some countries' actions were dictated by the governance structure in place at the time, while others operated in a state of emergent governmental change. The U.S. was somewhere in between, with its growing national ideological politization and increased economic globalization interests (Conlan, 2017). What was not as obvious was the role the U.S. IGR structure had on effectively reducing COVID-19 case and death rates.

Significance of the Study

The purpose of this study was to evaluate, from an intergovernmental public policy perspective, how U.S. COVID-19 restrictions on community activities and personal freedoms impacted the rates of COVID-19 cases and deaths. Many people lost their lives, and many others

lost friends and loved ones to the SARS-CoV-2 virus, while others continue to live with "long COVID," or the ongoing symptoms following a COVID-19 infection (CDC, 2024). It is critical for decision-makers to build on lessons learned from our national and state responses to prepare for future incidents of this magnitude. On March 13, 2020, President Trump issued a COVID-19 emergency declaration, sparking a debate about the nation's level of preparedness for a global event such as the pandemic (Wilensky, 2021; Yong, 2021). The lack of a cohesive national plan gave rise to inconsistent COVID-19 mitigation strategies across the U.S. The history of U.S. governance, the current level of political divisiveness, and the authority of state emergency powers all played a role in the direction of the COVID-19 pandemic response in America. Yet, it remains unclear which of these drivers had the most or least impact on slowing COVID-19 transmission. The crisis decision-making strategies and IGR actions varied, sometimes conflicting between federal, state, and local authorities (Cigler, 2021; Sandhu, 2021).

The onset of the COVID-19 pandemic spurred a significant amount of preliminary research on the etiology of SARS-CoV-2 virus transmission characteristics to better understand how to manage the pandemic through effective mitigation measures. Several studies explored the actions taken by governments to slow transmission rates and subsequently reduce morbidity. The focus of early policy research centered on the types of mitigation strategies implemented and the timing of the measures taken in relation to COVID-19 case and death rates. Other studies explored the relationship between COVID-19 case and death rates and corresponding mitigation efforts by comparing different countries, regions, and states intervention strategies used to manage the pandemic (Capano, 2020; Della Rossa et al., 2020; Desson et al., 2020; The Royal Society, 2023). A smaller number of studies explored the strictness of policy restrictions, and the monitoring of co-occurring strategies mandated at any given time (Agyapon-Ntra & McSharry, 2023; Chung et al.,

2021). One research team created a U.S. COVID-19 County Policy database, which categorized policies from seven states into three domains: containment/closure, economic support, and public health (Hamad et al., 2022).

This research dissects the initial state-issued stay-at-home EOs to determine the degree of personal behavior restrictions for each state and the impact of those crisis intervention strategies on corresponding state COVID-19 death and case rates. The study period covered the EOs issued from March 1, 2020, through December 31, 2020.

Crisis decision making, especially when lives are at stake, intensifies the burden on government leaders. Varying levels of authority accentuate this dynamic. Boin and Lodge (2021) grouped the COVID-19 responses of four European countries into one of two categories: principled and pragmatic. They defined a principled response as government leaders adopting a "do or die" approach, which, in the case of COVID-19, could translate to a philosophy of prioritizing public safety at all costs. The pragmatic response represents a more "enactment" oriented strategy, with an ongoing assessment of the situation and continual adjustments made as more information becomes available. The goal of a pragmatic, situationally aware approach is to manage a crisis while preserving social norms. In a pandemic, this means balancing the response to maintain economic stability and personal freedoms as much as possible. Crisis decision making within a principled response is less flexible than in a pragmatic approach. Boin and Lodge (2021) concluded that countries that had responded pragmatically shifted toward a principled approach as the COVID-19 crisis intensified. All countries, except for one, then shifted back to a pragmatic approach as they entered the pandemic withdrawal-plan phase. In the U.S., President Trump announced that "the cure cannot be worse than the problem itself" (Haberman & Sanger, 2020), indicating that America was an early adopter of the pragmatic approach, at least at the national

level.

The perception or reality of public compliance and trust falls within the purview of government-initiated actions. Adhikari et al. (2020) categorized early COVID-19 research into one of four domains—epidemiology, causes, clinical manifestations and diagnosis, and prevention and control—with causes being the most studied subject. Missing from Adhikari et al.'s list of domains were studies investigating pandemic management from an IGR perspective and the socioeconomic tolerance of governmental decisions.

Boin and Lodge (2021) argued that the most restrictive measures were taken on a more principled approach by prioritizing public safety at any cost, while the least restrictive states adopted a more pragmatic approach by considering the impact that the actions might have on the economy and personal freedoms. Some researchers argued that specific restrictions, such as social distancing, business closures, interference with religious expression, and event cancellations, damaged the country's economy and cultural norms and, in doing so, threatened democracy (Haberman & Sanger, 2021; Quarcoo, 2021). According to this latter view, protecting people from a deadly disease should be counterbalanced with some level of economic and social preservation. However, Quarcoo (2021) opined that the rise in COVID-19 protests and community innovation gave rise to social activism and, therefore, may have strengthened democracy over time.

Government leaders justified their restrictive actions by assuring the public that the decisions were "data-driven" or "evidence-based" (Kuhl, 2020; Nicola et al., 2020b; White House, 2021), yet government authorities were unable or unwilling to report the impact the restrictions had on COVID-19 mitigation compared to the sacrifices people were being asked to make. These sacrifices included mandated face covering for children, social distancing, economic stress, and education closures (Huang, 2020; Kim-Mozeleski et al., 2023; Simmons-Duffin, 2020; Union of

Concerned Scientists, 2021). When questioned by the Congressional COVID Select Subcommittee (United States House of Representatives, 2024), Dr. Anthony Fauci, the chief White House medical advisor, acknowledged that the six-foot social-distancing standard was not based on science, nor did he find any evidence supporting masking for children.

Evidence-based crisis decision making is challenging during the initial stages of an emerging public health emergency. One reason may be due to the difficulties of assessing the effect of each restriction type independently in real-time. In the case of COVID-19, another factor may have been the aggregate number of restrictions contained in one mandate and the challenge of determining if all, some, or none of the restrictions reduced COVID-19 transmission overall (The Royal Society, 2023). Finally, successfully implementing state mandates at the local government level, monitoring the outcomes, and ensuring public compliance may depend upon the relationship between the state and local governments.

Data collection and reporting are also challenging. For example, the aggregation of data originating from different publicly available data sources with dissimilar intended data purposes and collection methods across all government reporting levels may yield inaccurate results (Khan et al., 2023; Miller et al., 2022). Even so, Miller et al. (2022) concluded that the benefit of the available data monitored by the COVID-19 emergency response decisionmakers far exceeded the level of data inconsistencies found across jurisdictions.

Vito et al. (2022) offered a multi-step solution to crisis public policy setting by prioritizing the availability of up-to-date data for making thoughtful data-driven decisions and to address the intended as well as any anticipated unintended consequences upfront. They also recommended that consideration be given to the concept of digitally enabled policy making so that the public can be involved in the process by participating virtually as well as in person to increase civic participation

(Vito et al., 2022).

Improving public assurances that government health experts are strategically mandating effective personal behavior restrictions may have been accomplished by collapsing the restrictions into one restrictive indicator or a grouping of related indicators and reporting out on those outcomes regularly. This public messaging would have allowed for a higher level of public understanding and acceptance of the restrictions and trusting that decisionmakers were adjusting the actions as appropriate to improve COVID-19 outcomes. In this study, that indicator was “restrictiveness” in totality and the acknowledgement that parsing out coexisting external factors is counter to reality, as each restriction may have a direct or indirect effect on the overall targeted outcome (i.e., reducing COVID-19 cases).

The aim of this study was to explore the influence of restrictive policy mitigation efforts and the effect those strategies had on improving COVID-19 preventative outcomes. In addition to creating a Restrictive Measure Index (RMI), this study examined other factors such as governance, geography, demographics, and health risks to identify independent variables that may have had a predictive effect on COVID-19 health outcomes. The practical application of this study offers a model template for future public health emergency management.

Conceptual Framework

Recognizing the uses and limitations of healthcare typologies in a comparative public policy study, Burau and Blank (2006) found that it is best to use a more flexible organizing framework for nonmedical health policy analysis, such as that found in a community-based policy setting. This study adopted the community-based model by investigating COVID-19 nonmedical mitigation policies.

Dunlop et al. (2020) suggested that public policy administrators should use caution when rapidly implementing policies during times of crisis because they shortcut the normal policy development stages. They also recommended a slower approach to initiating COVID-19 public policy research. The public policy agenda outlined by Dunlap et al. guides public administrators in the work that needs to be done at all levels of governance and throughout the stages of emergency preparedness, not just during an actual crisis. Table 1 lists the themes and concepts as suggested by Dunlap, et al. to consider for COVID-19 comparative public policy research.

Table 1

Public Policy Research Themes and Key Concepts

Public Policy Theme	Key Concepts
Policy design and instruments	• Categorize and compare the policy tools implemented by governments.
Policy learning and evaluation	• Include both evidence-based research but also lessons learned and takeaways (Dunlop & Radaelli, 2021b; Vagionaki & Trein, 2020). • Include reflection over time and conscious engagement in thinking about the problem at hand (Rietig, 2018). • Be cognizant of potential policymakers' cognitive heuristics (Dunlop et al., 2017). • Do not assume that policy learning is linear and incremental, as in the case of a novel policy problem (Dunlop & Radaelli, 2021).
Public service and its publics	• Research on the impact of the essential workers on the front lines who continue to do their jobs at risk to themselves (Dunlap et al., 2021).
Organizational capacity	• Analyze organizational capacity in relation to policy design and governance performance.
Public governance	• Focus COVID-19 research on opportunities to reshape public governance.
Administration traditions and policy responses	• Study the roles that administrative traditions, codified infrastructure, and cultural influence play in COVID-19 response.
Public sector in multi-level governance	• Research the impact of American federalism (i.e., intergovernmental relations) and the COVID-19 pandemic response.

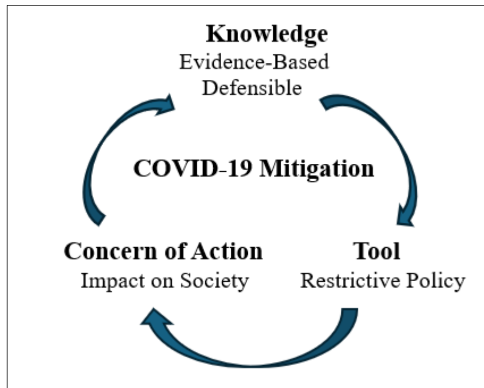
This research included components of the public policy themes identified by Dunlap et al. (2020). However, the two themes *public sector in multi-level governance* and the *policy design and instruments* best describe the framing of this study in the context of the COVID-19 IGR response. Since state governors exercised their emergency authority and issued public health EOs from their offices, it is important to understand the impact that the COVID-19 public policy setting had within American federalism (Rocco et al., 2020). Did the relationship between the federal, state, and local public health jurisdictions mimic the fragmented characteristics of the nation-state IGR in the delivery of public health services in the U.S.? In addressing this question, this study provides insights through a pragmatic theoretical framework.

The knowledge gained through studying the impact of government actions within the context of public policy crisis decision making and governance interrelations is characteristic of a pragmatic worldview. The ontology of pragmatism is action justified through experimentation; an approach consistent with this study design. The pragmatist explores interactions with external realities rather than studying external reality through representation or conceptualization—again, consistent with this study model (Paul, 2005). Pragmatic epistemology focuses on action, with knowledge being gained and modified through people's actions and interactions (Breault, 2014).

Dewey's pragmatic theory of knowledge articulates that when seeking knowledge, it is important to be accurate in the scientific experimentation process but to also focus on the central concern of what the action will do and who it will impact (Breault, 2014; Stanford Encyclopedia of Philosophy, n.d.). The methods used in this study were designed to maximize accuracy through application of academically acceptable data sources along with the appropriate statistical analysis for each data type. Figure 1 displays the concept of the cycle of COVID-19 interactions between knowledge and practice within a continuum of learning and response.

Figure 1

COVID-19 Cycle of Learning



Research Questions

The following research questions framed the purpose of the study.

1. To what extent did the level of restrictiveness in COVID-19 stay-at-home policy mandates issued by state governors vary across different states?
2. Was there an association between the COVID-19 stay-at-home policy restrictiveness and COVID-19 case and death rates?
3. What role did government characteristics, regional, and population demographics have on COVID-19 case and death rates?
4. Was there a difference in the predictive effect of selected independent variables on COVID-19 death rates and case outcomes between California and Florida?

Methodology

Using a mixed-methods approach, this comparative public policy research examined the state-level stay-at-home EOs issued from the period beginning March 1, 2020, through December 31, 2020. This period fell within the COVID-19 pre-vaccine environment since the vaccines became available in December 2020, thus eliminating any significant vaccination bias that may skew the outcome data. Since types of state-established public health systems differ,

ranging from centralized to decentralized, it is imperative to know if the type of IGR impacts the effectiveness of the public health emergency response to events such as the COVID-19 pandemic.

The criteria for the study's public policy selection process were restricted to stay-at-home policies issued by state governors' offices. These policies or mandates are characterized by some level of restriction or directive on businesses, individuals, and/or local governments regarding activities that are typically allowed during non-pandemic times. These types of policies are executed outside the normal state legislative process and are typically called "executive orders." COVID-19 public health orders issued by health officials were excluded to ensure consistency among the levels of authority of the policy-issuing agents across all states, with governors representing the highest level.

The institutional grammar tool (IGT) process was used to extract the study phrases needed to compare policy syntax based on specific predetermined parameters rather than a title or category of any given policy. These parameters included:

- an attribute, or who will perform the policy actions;
- an object, or who is the receiver of the action;
- deontic, or the stringency of the policy action; and,
- punitive, or the consequence of not complying with the policy. (Frantz & Siddiki, 2020; Siddiki et al., 2011; Siddiki et al., 2012).

Comparing the COVID-19 EOs by title (e.g., stay-at-home orders) limits the analysis to only the words in the title. Yet, contextually, these policies may differ in action, intent, and enforcement. The IGT analysis expanded the comparative measures by coding each part of each EO to a predefined set of statement options (Curley & Federman, 2020; Frantz & Siddiki, 2020).

In this study, the phrases extracted from the policies were those that included the model verbs *may, should, must,* and *shall*. The extracted phrases were coded based on the level of restriction or directive.

Curley and Federman (2020) developed an IGT tool to evaluate differences in the types of COVID-19 EOs issued by states based on EO category. They deconstructed the COVID-19 EO verbiage to find and score specific phraseology - for example, to identify who was affected by the EO and the conditions of the order, including the specific actions and level of punitive action(s) for noncompliance. They applied the quantitative score to compare two or more EOs in the same category. Building upon Curley and Federman's (2020) study, this research assigned an IGT coding score to each restrictive phrase extracted from the stay-at-home EOs analyzed in this study. Each state received an overall Restrictive Measure Index score based on the coding results.

The data analyzed for this study included the novel RMI and secondary, publicly available data sources. The predictor variables included:

- RMI;
- Governance - governor political party, strength of state political authority with a trifecta being the strongest political lean (i.e., one political party holding the office or majority in governorship, state senate, and house of representatives/state assembly), and type of public health infrastructure; and,
- Population - total population and population density

In addition to evaluating the state stay-at-home EOs, this study included a case study to provide a practical application of the study elements among two politically and regionally antithetical states: California and Florida. A path analysis was conducted to investigate the

patterns of effect within the system of variables. This linear model examined the association of predictor variables and the dependent variables COVID-19 death rates and COVID-19 case rates (mediator variable). The path analysis evaluated the relationships (both direct and mediated) effect among predictor independent variables and the response variable COVID-19 deaths and the mediated variable COVID-19 case rates. The results of this analysis provide a focused comparison of two states' respective pandemic responses and COVID-19 outcomes. In doing so, the case study offers a practical application of the study concept outlined in this research.

The data for the case study came from secondary data sources and included:

- COVID-19 case and COVID-19 death rates;
- Democratic Voter Registration;
- Underlying conditions include age 65 and older, obesity, and chronic lung disease; and,
- Population Density

The analytic procedures for this study were modeled from the methods used by Kubota et al. (2020) and Della Rossa et al. (2020). Kubota et al. (2020) investigated COVID-19 infections based on multiple drivers, while Della Rossa et al. (2020) analyzed a national regional model. For consistency, the approach of this study aligns with these selected peer-reviewed studies, including the type of descriptive analysis, assumption and fit model testing, and multiple regression and ANOVA statistics.

Clarification of Terms

- *American Federalism*: the constitutional division of power between state governments and the federal government in the U.S.

- *Comparative Public Policy*: an area of interdisciplinary study that uses public policy as its major unit of analysis for comparison across different systems and institutions, usually countries or governments.
- *COVID-19*: the initial SARS-CoV-2 pandemic variant. This study did not discern between the other COVID variants that emerged during the pandemic.
- *COVID-19 Health Outcome*: a COVID-19 infection resulting in either a COVID-19 case and/or a COVID-19 death.
- *COVID-19 Mitigation*: efforts to minimize the effects of COVID-19 on vulnerable populations and strategies to lower the virus transmission rate among people.
- *Healthcare:* Healthcare refers to the institution or system of medical services rather than the specific health care of an individual provided by a health professional or worker (Osmond, n.d.).
- *Home Rule*: Within the American Federalism hierarchy, this refers to the local government, within a state, within the U.S. federal government. Home rule governance confers the inherent authority for local public responsibilities vital to local democracy. The terms of authority are derived at the state level and are usually set forth in each state's constitution. (National League of Cities, 2020; Sokolov, 2006).
- *Intergovernmental Relations (IGR)*: include the units of government at the federal, state, and local levels. IGR the complexities and interdependencies of these forms of government, which affect formal and informal working relationships and the ability to manage complexity (Wright, 1974).
- *Institutional Grammer Tool (IGT)*: a policy theory and analytical process aimed at providing insight into the institutional analysis and development framework. The

purpose of IGT is to comprehensively examine the textual syntax of policy documents. These efforts comprise a micro-level analysis of syntax and institutional statements according to specified rules (Chen et al., 2023; Dunlap et al., 2019).

- *Long COVID-19*: a multisystemic condition comprising often severe symptoms that follow a severe COVID-19 acute respiratory infection. Long COVID encompasses multiple adverse outcomes, with common new-onset conditions including cardiovascular, thrombotic, and cerebrovascular symptoms that can last for years (Davis et al., 2023).
- *Non-pharmaceutical COVID-19 Interventions*: actions that help reduce the COVID-19 spread but do not include medical or medication interventions. Examples include social distancing, face coverings, business and event closures, school closures, curfews, enhanced surface and environment sanitation, and self-quarantine and isolation strategies.
- *Pandemic*: an infectious disease that affects many people at a high prevalence rate spreading globally within a particular period (Goldberg, 2020).
- *Pragmatism*: the philosophical worldview held by those who claim that an ideology or proposition is true if it works satisfactorily, that the meaning of a proposition is to be rejected (McDermid, n.d.).
- *Public Health*: government responsibilities aimed at preventing health-related problems from happening or recurring by implementing educational programs, recommending policies, administering services, and responding to local outbreaks, endemics, and pandemics in partnership with other health professionals.
- *Stay-at-Home Executive Orders*: state governor-issued mandates restricting non-

essential activities and behaviors and other non-clinical interventions that impact businesses and private citizens. In this study, the term "executive order" is interchangeable with the word "policy."

- *Subnational*: in the context of this study, refers to the state governments within the U.S.
- *Therapeutic COVID-19 Interventions*: include medication, respiratory treatment, vaccinations, COVID-19 testing, and healthcare professional patient medical management (hospitalized or non-hospitalized patients).

Summary

This dissertation comprises five chapters. Chapter I introduces the emergence of the global pandemic and the COVID-19 viral mitigation strategies enacted by government leaders. This chapter also describes the study's significance, the conceptual framework, the research questions, the methodology, and a clarification of terms. Chapter II provides a comprehensive review of the literature, including a discussion of governance within a U.S. federalism framework and how that structure may have impacted the COVID-19 pandemic response in America. Chapter III describes the study's methodology, namely the collection and use of both qualitative and quantitative data, including the novel RMI and the selected secondary, publicly available data sources. Chapter IV presents the research results, findings, and the selection of analytical statistics based on data type. Chapter V summarizes the findings and conclusions drawn from the study results and concludes with recommendations for further research.

Chapter II

Review of Literature

The work of this comparative public policy study explores the response across the U.S. to the COVID-19 pandemic with a focus on the state mandated non-pharmaceutical interventions that restricted individual choices both economically and socially. Often referred to as stay-at-home orders, the goal of the government issued mandates was to save lives by slowing the COVID-19 viral transmission from person to person through minimizing human interactions (Liu et al., 2021).

The intergovernmental relations between state governments and their constitutionally or statutorily defined local health jurisdictions differ across the nation. To frame the context of this study, it is important to understand public health within the structure of the U.S. governance, or more broadly, the uniqueness of American federalism and the shared responsibility to protect the citizens of this country.

American Federalism Governance

The American federalist experiment, while approaching 250 years old, is still evolving. Our founding fathers debated the merits of a nation with shared powers between the states and federal government resulting in a dynamic co-sovereignty model (National Archives, n.d.). At the core of modern American federalism is the inherent design of connectiveness among all government levels and the constitutional or implied delineated authority delegated to each level of government. This framework offers a balance between interstate collaboration with that of state independence (Zimmerman, 2008).

Understanding the need for a centralized constitutional authority, some framers believed that it was necessary to protect national interests, particularly in times of war; however, there was also concern about forming a framework that could open the door to a tyrannical national government (Peterson, 2020). With the underpinnings of a strong distrust of central authority compared to the equal concerns of state encroachment on national authority, America landed on a tenuous platform destined for fragmentation, evolution, and devolution as shifts in power swing the pendulum back and forth between national and state governments (Nagel, 2001). This counterbalanced governance approach created a platform for enhanced coordination and collaboration yet in times of crisis, unfunded mandates, or major policy shifts increase tension through the impact of fiscal costs and coercive cooperation behaviors (Agranoff et al., 2014; Wright, 2003).

Intergovernmental Relations

French historian Alexis de Tocqueville wrote about the efficiencies of America's decentralized democracy. By having a formal division of labor between the federal government and the states, he suggested that the federal government focus on the nation's primary affairs and leave the local business needs to the state governments (Nivola, 2005). While this depiction of governance role delineation may be grossly oversimplified, it is the complex intergovernmental relations between all U.S. governmental entities that afford the opportunity to coalesce to meet the needs of a country.

Whether state governance is in a primary or secondary position, they do have formal authority within the constitutional framework to protect the people of the state. The Constitution of the U.S. delegates police powers of health, education, and welfare to the states as conveyed in the 9th and 10th Amendments (Laws, 2020). Even with these broad constitutional powers to

protect its citizenry, American federalism is intended to curb the influence of power through co-sovereign authority.

States have increasingly used their political influence to gain support from lobbyists and affiliated associations to increase political leverage. States continue to challenge the federal government by looking to the courts to further legitimize the assertion of state sovereignty on issues such as emergency response, healthcare, gun control, and medicinal and recreational marijuana use among other topics (Dinan, 2011; U.S. Senate Committee on the Judiciary, 2013). In addition, state court decisions may set a precedent for other states to follow which may or may not align with other states or the federal political agenda (Matthews, 2017).

Local level governance was not as clearly articulated in the U.S. Constitution, but the Supreme Court did establish the framework for local governance in the early 1900s, primarily through the reiteration of an earlier Iowa Supreme Court decision by Justice Dillon, affirming that local governments are extensions of the state with powers expressed in the state constitutions. Home rule, commonly referred to as "local control," is created by each state either constitutionally or by statute. This grants a defined level of authority limiting the level of state infringement under those circumstances (Burke, 2014; Moore, 2020; National League of Cities, 2020; Zerunyan, 2017). Overall, the U.S. is one nation, fifty states, several territories and tribal nations, and countless local entities with varying degrees of authority. It is not surprising that national uniformity on key topics such as healthcare may be challenged and appear disjointed.

The true test of American federalism success is at the local level whereby the public experiences life, liberty, and the pursuit of happiness on public-facing issues such as safety, education opportunities, and the accessibility of healthcare to all (Friedmann, 2020). The crux within this construction is having strong IGR within all levels of governance, particularly when

experiencing momentous events such national disasters. However, the ongoing political incongruence in America, along with pressure from competing special interest groups, strained IGR policy processes and outcomes (Gray et al., 2013). The COVID-19 pandemic has magnified these challenges across all leadership sectors with the unintended consequences of questionable COVID-19 mitigation response outcomes (Carter & May 2020; Wilensky, 2021).

Wright (1988) introduced three models of IGR: coordinate-authority, inclusive-authority, and overlapping-authority. The first two models focused on constitutional and traditional power, respectively, while the overlapping-authority model of governance was more situationally driven through bargaining and negotiations. With an overlapping-authority lens, IGR is viewed as a set of concentric relations between national, state, and local entities. This approach resembles an informal check and balance system diminishing each entity’s autonomous nature collectively (Agranoff et al., 2014; Burke, 2014). Benton (2018) built upon this model by elaborating on IGR as being multifaceted using metaphors to illustrate collaboration, nuanced, fragmented, push-back, and a fend for your own mentality interactions.

Even though American federalism can broadly be characterized as a nation with shared powers between the nation state and subnational governments, the intricacies of these interrelations are complex and anything but static. Goelzhauser and Konisky (2020) surmised that today’s American federalism has evolved into “punitive federalism” or the use of threats and punitive tactics by the central government when states act or institute policies that conflict with the national agenda. This is vastly different from earlier times when intergovernmental relations collaborated more in the cooperative federalism era. Punitive federalism closely aligns with the concept of “executive federalism” where the circle of power lies at the executive branch or

appointee level (Thompson, 2013). Punitive and executive federalism is stronger when political affiliations hold most state and federal elected offices.

Government leadership now relies more on partisanship rather than consensus building for policy initiatives. However, the results of an election can cause a rapid shift in political affiliation and therefore, as leadership changes, so do the policy priorities (Blum, 2020; Goelzhausser & Konisky, 2020; Ketti, 2020; Thompson, 2013). The evolution and devolution of federalism contributes to the disjointed policy setting that weave throughout U.S. history. Healthcare is a good example of the impact of political change on public policy.

In recent years, Americans have experienced various healthcare initiatives championed by former presidents, including Clinton, Obama, and Trump (Gluck & Huberfield, 2018). Take the Affordable Care Act for example. Spearheaded by President Obama, this Act required all Americans to enroll in health or risk paying a penalty. The penalty for not signing up for healthcare increased yearly to discourage individuals from balking at the mandate. However, when President Trump took office, he collaborated with Republican legislators to successfully rescind this mandate. With a lack of understanding, 25% of people surveyed were unaware of this policy revision (Health for California, Covered California, n.d.; Horvath & Ma, 2018). The reality is that changes in healthcare access and insurance requirements are confusing to the public and costly to the healthcare industry (Crowley et al., 2020; Horvath & Ma, 2018; Lagasse, 2018).

Equally concerning is the impact that American governance had on the management of the COVID-19 pandemic. The friction between President Trump and opposition governors illustrated the shortcomings of punitive and executive federalism. Ketti’s (2020) analysis of the U.S. COVID-19 response suggests that the intergovernmental schism between the federal

government and the states missed the mark on consensus building resulting in "fierce battles" over authority and accountability. Falling within the context of American federalism, these ongoing actions exemplify the hyper-partisan malalignment that exists when the national party is confronted with the most extreme political ideology of the counter-party states (MacIntosh, 2020; Miras & Rouse, 2021). In the case of COVID, thrust in the middle was discord within the public health sector, a traditionally bipartisan sector (Jones et al., 2017).

The COVID-19 pandemic is one of the most impactful public health events of modern times. Within a global context, the genesis of our governance and the evolution of our healthcare system is important to understand when assessing the U.S. response to the pandemic.

Worldwide Public Health Models

The state of a nation's public health structure matters. If one of the fundamental goals of a nation is to keep its citizens healthy, then why does America fall short in this area (Aslund, 2019; Relman, 2012)? Journalist T.R. Reid (2009) set out to answer this question by seeking a medical opinion about his own injury from doctors practicing in various healthcare settings across the globe. He concluded that industrial nations, except for the U.S., view healthcare as a moral obligation of the government.

Reid (2009) shared his experience with the services he received from countries with one of the following four general healthcare models; Bismarck, Beveridge, National Health Insurance, and out of pocket. He found that while healthcare systems vary, several commonalities surfaced. These commonalities include the limited power of the health insurance industry and uniformity of models for each nation.

The Bismarck model is a more decentralized form of healthcare. The employers and employees are responsible for funding their health insurance system through "sickness funds"

created by payroll deductions. Private insurance plans also cover every employed person, regardless of pre-existing conditions, and the plans are not profit-based. (Vera Whole Health, 2020). The government controls the pricing and, in some countries, such as France, they created a universal health coverage plan for the unemployed or those people unable to work population (Tikkanen et al., 2020; Vera Whole Health, 2020; Wallace, 2013). The Bismarck model is the basis for the healthcare systems in Germany, Belgium, Japan, Switzerland, the Netherlands, France, and some employer-based healthcare plans in the U.S. (Vera Whole Health, 2020; Wallace, 2013).

The Beveridge model is centralized through the establishment of a national health service (NHS). The government acts as the single payer, eliminating competition in the market to keep costs low and benefits standardized. The NHS controls provider healthcare services and the associated charges. Taxpayers fund for the health system with no out-of-pocket fees for the services they receive. All tax-paying citizens are guaranteed the same access to care. The United Kingdom, Spain, New Zealand, Cuba, Hong Kong, and the Veterans Health Administration in the U.S. are examples of nations that have a Beveridge model within their healthcare system (Vera Whole Health, 2020; Wallace, 2013).

The National Health Insurance (NHI) model has elements of the Beveridge and Bismarck models. Like the Beveridge model, the government acts as the single payer for medical procedures (Chung, 2017). However, like the Bismarck model, providers are private. The NHI model is driven by private providers, but the payments come from a government-run insurance program that every citizen pays for. The NHI model is a type of universal insurance that does not make a profit or deny claims. This model is used in Canada, Taiwan, and South Korea, and in the U.S. under the Medicare health plan. (Vera Whole Health, 2020; Wallace, 2013).

The out-of-pocket model is the most common model in less-developed areas and countries where there are not enough financial resources to create a medical system like the three models above. (Bergerot et al., 2023). In this model, patients pay for their procedures with no government assistance. Healthcare is driven by income. India, China, Africa, South America, and the uninsured or underinsured populations in the U.S. are examples of where we find OP health coverage (Vera Whole Health, 2020; Wallace, 2013).

Since the U.S. incorporates elements of all four of these healthcare models across different population sectors, the result is a disjointed healthcare system driven by costly administrative, medical, pharmaceutical, and insurance costs (Burau & Blank, 2006; Hacker, 2004; Reid, 2009). As fragmented as the U.S. healthcare system may be, healthcare reform has been one of the top priorities of presidents for more than one hundred years (Chung, 2017; Lyford & Lash, 2019; Oberlander, 2019) indicating that healthcare is a priority topic among voters (Zief et al., 2020).

The push for a universal healthcare system suggests that most Americans do see healthcare as a moral obligation of government (Maruthappu et al., 2012; Pies, 2012; Siegel, 2017; Zieff et al., 2020). Pies (2012) defends the moral obligation position by pointing to the religious underpinnings of American history. However, Gonzales (2010) argues that it is the American political culture that stalls healthcare reform efforts despite the implied "will of the people" who elect politicians campaigning on the back of healthcare reform.

The question then remains, why does our healthcare system fail to meet national and international expectations (Madara, 2020; Maruthappu et al, 2012; Ollove, 2020)? One response may be that it is not necessarily the healthcare system per se, but the characteristics of American federalism and the complex intergovernmental relations that add constraints to implementing a

uniform approach to healthcare in America (Blum, 2020; Doonan, 2013).

Sarsak's (2018) suggests that while Reid's work is a good start to a comparative public policy analysis, applying a contextual analysis of healthcare would offer a greater understanding of the strengths and shortcomings of the evolution of the American healthcare system. Within an existing framework, taking a comparative public policy approach to find the commonalities and differences between governance entities heightens awareness about how past failures and successes, particularly during these post-pandemic times, may be used to shape future policies and practices (Burau & Blank, 2006; Collins, 2005; Walt et al., 2008).

Emergence of COVID-19

Emerging from China in late November 2019, the number of COVID-19 related infections escalated in one year from the initial suspected group of forty-four cases to over 83 million confirmed cases worldwide (Sanche, 2020; WHO, n.d.). In the U.S., the number of COVID-19 case reached over fourteen million by December 2020, with 354,391 COVID-9 related deaths (CDC, n.d.a).

These staggering statistics put into question the overall state of the pandemic preparedness worldwide, including the effectiveness of the U.S. response (Bleich et al., 2020; Bloukh et al., 2020, Wang 2022). While COVID-19 studies to date have analyzed governmental responses based on defined indicators (Hale et al., 2020), few have studied the effectiveness of the U.S. pandemic response based on the public health intergovernmental relations at the state-level authority. While noting frustrations with longstanding IGR tension due to loss of authority, unfunded mandates, and lack of attention to national goals, WHO Director, Dr. Tedros Ghebreyesus, commended New Zealand's COVID-19 response as a success story because of the strong local-central collaboration that emerged from this pandemic crisis (Cooper, 2020; Reid,

2020).

U.S. government public health entities provide protective and preventative healthcare services to individuals and communities across America (Center for Disease Control and Prevention Foundation, n.d.). State public health delivery in the U.S. ranges from a centralized to a decentralized structure depending on the state of authority (Association of State and Territorial Health Officers [ASTHO], 2012b; Woods, 2015). Centralized public health systems receive direction or administrative services directly from a state department while decentralized public health systems more closely resemble the dual governance of the federal-state relationship due to broader local control or home rule decision making authority granted to them. Mixed public health systems vary with characteristics from both categories (ASTHO, 2012b).

In times of crisis, it is pivotal for national and subnational governments to work collaboratively to execute a successful response (Benton, 2020). Lessons learned from this century's devastating disasters, including the 911 World Trade Center attack, fires, typhoons, floods, and earthquakes, all circle back to the effectiveness of the IGR specific to government emergency preparedness (Alper et al., 2020). While the loss of life and economic cost of these types of disasters are tragic, the catastrophe is isolated to an affected area. Unfortunately, with a public health pandemic, the culprit is not easily seen and can rapidly spread before researchers can identify the infectious pathogen. This phenomenon can potentially become an existential threat with a failed coordinated response. Some feared that COVID-19 may fall into this category (Farr, 2020; Tabri et al., 2020). Yet it is the role of public health, at all levels, to respond to public health emergencies in a coordinated manner.

Public Health Systems in America

The ASTHO (2012b) studied the characteristics of all the U.S. state and territorial health systems and clustered them into six homogenous groups: 1) centralized, 2) largely centralized, 3) mixed, 4) shared, 5) decentralized, and 6) largely decentralized. Centralized health systems are primarily led by state employees with the state retaining decision-making authority over key areas including budgetary actions and public health orders. On the other end of the spectrum are the decentralized health systems. They are administered by local government employees with many of the budgetary and public health decision making left to local government authorities (ASTHO, 2012b).

By nature of the authority granted to state governments in a declared emergency, the use of state-issued EOs may be more characteristic of policy initiation and implementation in a centralized public health system than that of a decentralized public health system. In the normal course of operations, centralized health departments receive guidance from the state designated officials while decentralized public health systems have a more local focus. Decentralized public health systems rely on established local collaboratives for successful policy implementation. Inherent in a decentralized public health system is the lag time it takes to get partners on board and to reach consensus. Additionally, there may be a lower level of receptiveness to state-issued EOs simply due to veering away from the traditional policy making process.

United States COVID-19 Response

The COVID-19 pandemic response is a good depiction of Wright's (2003) assessment. While the U.S. response had elements of strong partnerships such as the work between the federal government and industries to rapidly develop and deploy equipment and therapeutics, there were equally increased levels of tension between federal, state, and local actors. This

included the disjointed management of the non-pharmaceutical measures mandated by government officials at both the state and federal government levels forcing local governments to withstand the worst of policy implementation efforts upon their constituents (Benton, 2020). From the beginning, there has been a spotlight on how America managed the COVID-19 crisis under this federalist framework, including interstate and interlocal relations (Downey & Myers, 2020; Greer et al., 2020; Xu & Basu, 2020).

Some researchers argue that the U.S. health system is fractured (Hoffer, 2019; Woolhandler & Himmelstein, 1991), and others go as far to say that the U.S. response to the COVID-19 pandemic is inferior to other countries (Maxeiner, 2020; Rothstein, 2020). Ketti (2020) focused on the divisiveness of American politics and how intergovernmental confusion negatively impacted the U.S. COVID-19 response. He reviewed several studies focused on the international COVID-19 response strategies and concluded that the U.S. had the most friction between the national and subnational governments, the largest gap in public trust in government national and subnational levels, and the highest death rate in the first two months of the pandemic (Ketti, 2020). This was and continues to be problematic for the health of our nation since one of the functions of a public health system within the federalist governance structure is to manage communicable diseases, including infectious disease outbreaks and pandemics.

Many questioned the state of America's emergency preparedness. The U.S. was thrust into a public health crisis that they did not see coming. Public health experts struggled with how to manage the COVID-19 pandemic effectively. Contributing to the rapid, widespread transmission of COVID-19 was the fact that humans had not yet developed antibodies to this strain of coronavirus. Additionally, the incubation period for COVID-19 was longer than earlier severe acute respiratory syndrome coronavirus (SARS) outbreaks. Another contributing factor

was that many COVID-19 hosts have minimal to no symptoms within the first 14 days (about 2 weeks) of the infection. The longer incubation period and the high number of asymptomatic individuals created an epidemiological containment challenge for public health experts in defining and implementing effective response strategies. The world watched as countries fell victim to large numbers of COVID-19-related illnesses and deaths (French & Monahan, 2020).

Some blamed the longstanding inadequacies of our public health infrastructure for a flawed COVID-19 response (Daschle et al., 2021; Disparte, 2021; Johnson, 2020), while others leaned more toward the differing political ideology and subsequent policy setting during the initial phase of the pandemic (Cipriano et al., 2024; Krieger et al., 2022; Lecours et al., 2021; Neelon et al., 2021). America's healthcare system was at the forefront of the pandemic response caught between government mandates and saving lives.

Regardless of the questions surrounding China's initial COVID-19 response, leaders around the world had to react decisively to halt the COVID-19 transmission rate. Bloukh et al. (2020) compared several countries' COVID-19 intervention strategies and raised concerns about the overall lack of government and public health systems preparedness. They surmised that the timing and the type of responses implemented directly affected COVID-19 infection and mortality rates.

Globally, mitigation strategies varied from national to regional lockdowns, business closures, travel bans, emergency supplies stockpile, and a variety of personal accountability mandates such as social distancing, isolation and quarantine orders, enhanced hygiene education, and face coverings. U.S. leaders implemented many if not all these strategies in a whole host of ways. Table 2 lists the most widely used COVID-19 mitigation strategies implemented by international countries (Bloukh et al., 2020; Hale et al., 2020). This untested list of strategies

served as a COVID-19 playbook for government officials around the world, including the U.S. The question then remains, were any of the strategies more effective than others, and if so, were the unintended consequences of those actions acknowledged and therefore deemed acceptable sacrifices by our government elected and appointed officials?

Table 2

COVID-19 Viral Mitigation Strategies

Mitigation Strategies	**Category**[1]
Education closures; online learning	Containment and closure
Workplace closures	Containment and closure
Cancel public events	Containment and closure
Restrictions on gathering size	Containment and closure
Stay at home requirements	Containment and closure
Restrictions on internal movement	Containment and closure
Restrictions on international travel	Containment and closure
Social and physical distancing	Containment and closure
Personal hygiene education and protection equipment	Containment and closure
Isolation and quarantine	Containment and closure
Nationwide closures	Containment and closure
Local lockdowns and curfews	Containment and closure
Work from home	Containment and closure
Workplace policies and guidance for reopening	Containment and closure
Guidelines on family visits	Containment and closure
Perform prayers at home	Containment and closure
Limit vulnerable age groups from shopping areas	Containment and closure
Allow only emergency services	Containment and closure
Debt relief for households and income support	Economic response
Fiscal measures	Economic response
Giving international support	Economic response
Public information and education campaign	Health systems

Table 2 (continued)

COVID-19 testing	Health systems
Contact tracing	Health systems
Emergency investment in healthcare	Health systems
Investment in COVID-19 vaccines	Health systems
Facial coverings	Health systems

Washington State Governor, Jay Inslee, was the first elected official in the nation to issue a COVID-19 declaration of emergency (Inslee, 2020). While states may declare a state of emergency, it is the Secretary of the Department of Health and Human Services (HHS) who has the authority to declare a national public health emergency.

There are two broad categories, 1) a disease state that presents a public health emergency; or 2) significant infectious outbreaks or bioterrorist attacks. This federal action set off a series of actions whereby the states may collaborate with the U.S. government on a variety of mitigation strategies. This includes the use of federal resources, access to funding, and coordination with other states, and territorial authorities to strengthen the emergency response (CDC, 2017).

Successful management of a pandemic requires collaboration among these powers and COVID-19 is no different. The shared powers under American federalism provide the foundation for this success; however, with the evolutionary shift to a more partisan-driven governance, collaboration is not necessarily the driving force. Americans and the world are witnesses to an unprecedented amount of public posturing, blame slinging, and accusations shared between contrary governors and President Trump (Bowling et al., 2020, White House Press Briefing, April 20, 2020). This highly publicized display of non-cohesiveness gives rise to public distrust and cynicism (Harris, P.A, 2020). Downey and Myers (2020) compared federalism and IGR of

Australia and the U.S. They discuss the lack of a congruent American response. Crisis management is a time to come together yet the tension between the U.S. federal-state IGR is much too fragmented. The lack of cooperation between all parties does not offer a platform for collaborative policy setting, nor does it serve the citizens of this country in a positive light.

Governors and state medical health officers have a broad range of statewide authority in a state-declared emergency. While each state law frames the circumstances necessary for a declaration, it is often general in nature. The Association of State and Territorial Health (ASTHO, 2012a) affirms that an emergency considered to cause harm or potentially cause harm to life, or the environment would not be challenged by the public. Once a governor declares an emergency, many actions and delegated authorities kick into play. Key steps include initiating funding streams through mutual aid, activation of a central emergency operations center, and the ability to suspend and waive rules and regulations through the EO process. Local home rule authority is diminished under state declared emergencies (ASTHO 2012a; Woods, 2015).

The U.S. COVID-19 pandemic response focused on two categorical approaches: the use of therapeutic drugs and non- non-pharmaceutical mitigation strategies. Such strategies required all levels of government involvement, federal, state, and local, to secure funding, authorize expedited research approvals, and implement virus mitigation policies and guidelines. Therapeutic measures not only include preventative acute care medication and ventilation aids but long-term efforts such as vaccinations to protect individuals with the goal of reaching population immunity. Non- non-pharmaceutical interventions aim to prevent the spread of the virus through isolation and quarantine efforts as well as instituting other human interaction modification that minimize person to person contact (Ahlers, 2022).

Medical research and pharmaceutical companies aggressively pursued COVID-19 therapeutic solutions. Remdesivir was the first antiviral agent to receive U.S. Food and Drug Administration (FDA) emergency use authorization to treat hospitalized COVID-19 patients (Food and Drug Administration, 2020a). Another important strategy was the development of vaccines to prevent contracting the virus or to minimize the severity of the illness. The U.S. FDA issued emergency use authorizations on December 11, 2020, and December 18, 2020, for the Pfizer-BioNTech and Moderna vaccines, respectively (Food and Drug Administration 2020b). This was believed to be the turning point needed to end the COVID-19 infection surges.

Government leaders and local public health experts also took a highly active role in implementing non-medical mitigation strategies commonly referred to as non-pharmaceutical interventions. A major undertaking early in the outbreak was COVID-19 testing (CDC, 2020b; National Institute on Aging, 2020), not only for individuals with symptoms but to collect community baseline data. These statistics were essential for epidemiologists and health experts to be able to identify the magnitude of the viral spread within any given community or population (CDC, n.d.a). Other important non-pharmaceutical strategies included contact tracing investigations, public messaging on enhanced surface and hand sanitation, social distancing, lockdowns, masking, and business and facility closures (CDC, 2020b; Homeland Security, 2020). Assessing the effectiveness of these non-medical interventions aligns with Burau and Blank (2006) comparative public policy study rationale (Chen et al, 2021; Wang, 2022).

It is crucial that the policy makers from all levels of government work collaboratively with the resources and information needed to take decisive action during an emerging pandemic. Leadership immediacy of response is crucial to minimizing harm and maximizing desired outcomes; therefore, a functional inter-jurisdictional network is paramount to a unified action

plan. Carter and May (2020) outline the shortcomings of a cohesive U.S. national response arguing that the fragmented approach taken undermined the legitimacy and credibility of the serious nature of the COVID-19 pandemic, thus worsening the crisis. Still Madara (2020) reminds us that the COVID-19 pandemic is not to blame for the flailing healthcare system that exists in America today. As local public health authorities ramped up COVID-19 transmission interventions that they believed would be effective in their local jurisdictions, they were being bombarded with a series of muddled COVID-19 mandates handed down by the dueling dual-sovereign governments (Dahle, 2020; Feldman, 2020). Adding to the confusion was the cacophony of messaging from health experts and elected officials through the undisciplined media (Dalhe, 2020; Pazzanes, 2020).

Subnational COVID-19 mitigation management.

During the COVID-19 pandemic, governor-issued EOs aimed at slowing the spread of the virus reached an all-time high, with over 3,300 COVID-19 related EOs issued nationwide (Bowman & McKenzie, 2020; Council of State Governments, n.d.). Curley and Federman (2020) classified EOs as either restrictive, suppressive, or enforcement. They noted that there were differing degrees of policy interpretation and implementation. Inconsistencies among state COVID-19 policies such as the timing of the mitigation action may have contributed to the COVID-19 infection rolling surges nationwide. It is unclear as to whether political motivation had a role in the roll-out of state mitigation strategies (Deslatte, 2020).

Many of the COVID-19 EOs directly affected the work of local public health jurisdictions, most notably through the change in staffing roles and responsibilities (Reid, 2020). Local staff face challenges that come with implementing socially radical changes in a short time while trying to balance the effectiveness of the interventions with public acceptance. This nuance

may be magnified in rural America. Under normal times, rural communities struggle with access to healthcare, worse health status than urban neighbors, significant health staffing shortages, and insufficient resources necessary to run a community public health department (Beck & Boulton, 2015; Ormond et al., 2000; Osborn et al., 2016). The added volume of state-issued EOs only compounds these inherent challenges (Reid, 2020; Wang et al., 2020b).

Since public health systems vary within each state based on how they were originally structured, some health systems are more centralized than others. This includes a broad range of decision-making authorities at the local level. An analysis of the differences in public health systems based on their structure may provide insight on how to improve future pandemic management strategies.

***State Issued COVID-19 executive orders*.**

A state declaration of an emergency allows governors to quickly implement policy making outside of the normal policy decision making process. The issuance of EOs from the governor's office allows for an expedient response to the disaster at hand. The state governors exercised this authority during the COVID-19 pandemic with a massive 3300 EOs issued through December 31, 2020. The Council of State Governments categorizes state issued EOs into forty-four sectors. The top three sectors with the highest number of states issuing EOs are businesses and employment, restaurants, and bars, and stay at home orders (44 states, 44 states, and 39 states, respectively).

The type of EO is also important for implementation administration and monitoring the impact of the intended purpose. Curley and Federman (2020) grouped the COVID-19 EOs from Montana, Ohio, and Florida into one of three groups: restrictions, suspensions, or enforcements. They saw defining nuances between the three states. Montana took a strong centralized EO

approach with policy orders being initiated from the governor's office. Ohio's model had a governor-state administrator approach used to enact EOs. The agency directors in Florida were found to be the primary COVID-19 policy makers in the state. Analyzing the IGR approach taken by studying these three states resembles the interest of this study in identifying any differences in the states COVID-19 mitigation strategies based on the type of public health structure in place (i.e., centralized, decentralized or mixed).

COVID-19 restrictions, suspensions, and enforcement executive orders.

Restrictive EOs regulate businesses, gatherings, and personal responsibility mandates. The most public-facing restrictions include face coverings, places of worship capacity, restaurant and bar closures, stay-at-home orders, and school closures. The majority of the EOs issued fall under the restrictive group (Curley & Federman, 2020).

Suspension EOs temporarily revoke or reduce rules governing public and private actions. Examples of suspension orders include waivers for health care worker certifications, procurement of essential personal protective equipment, election mail-in voting opportunities, and use of technology for public meetings. Researching COVID-19 therapeutics, including the vaccine development process, received FDA emergency use authorization which streamlined the typical lengthy medical research and approval process (Food and Drug Administration 2020b).

Enforcement EOs delegate punitive measures to local enforcement authorities for individuals and businesses that violate state EOs. In some states, local public health authorities were asked to enforce the state issued mandates; however, enforcement policies conflict with the public health mission of health prevention and public education while eroding trust in the public health services overall. COVID-19 violations typically are cited as misdemeanors; however, the severity of the fines vary nationwide. For example, in Maryland, a violation of the state's stay-at-

home order can trigger a fine up to $5,000 while in Wisconsin the fine for the same violation is around $250. Both states do have the option of jail time ranging from about 4 and a half weeks in Wisconsin to one year in Maryland (Pearl, et. al., 2020; White & Fradella, 2020). Molldrem et al. (2021) raise concerns about the use of punitive measures to manage a pandemic. They suggest the vulnerable populations are the most impacted by illness since they are more likely to have limited access to information and services and lack the ability to follow many of the mitigation strategies. Therefore, there may be a disproportionate impact that the punitive actions have on high-risk populations.

Related Research

The Blavatnik School of Government, Oxford University, research team created a substantial pandemic government policy data platform which they referred to as the Oxford COVID-19 Government Response Tracker (OxCGRT). The intent of the OxCGRT project was to collect government COVID-19 mitigation efforts from global nations and subnations for analytical and learning purposes. Using a policy coding system, they created four types of indices, the Government Response Index, Containment and Health Index, Stringency Index, and Economic Support Index (Mathieu, et al., 2020). Each participating country received an Index score for each of the categories based on the policy content. The concept of the Stringency Index relates most closely to this study.

Several researchers studying COVID19 government policies used publicly available data sources such as the OxCGRT. Chung et al. (2021) studied government policies using the OxCGRT Stringency Index to identify which policies had the greatest effective on reducing COVID-19 cases and deaths. The results of the study indicated that COVID-19 testing and contact tracing had an inverse impact on COVID-19 cases. However, the findings were reported

to be inconclusive in identifying the association with policy stringency and COVID-19 outcomes.

Agyapon-Ntra and McSharry (2023) used the OxCGRT and Our World in Data (OWID) publicly sourced data platforms to explore the global effectiveness of policy measures on residential mobility and policy compliance. They concluded that policy timing, restrictive mobility requirements and face covering mandates should result in desirable effects.

Soucy et al. (2020) studied the effect of physical distancing on COVID-19 transmission during the first month of the pandemic. Using the publicly available Citymapper Mobility Index data tracker, they found that a ten percent decrease in mobility led to a decrease in the number of COVID-19 cases by fourteen percent of the forty-one urban cities included in the study. Similarly, Testa, et al. (2021) relied on the Google COVID-19 Mobility Reports to explore compliance to social distancing among subnational governments in Mexico, Brazil, and the U.S. and reported mixed results.

Like the OxCGRT Stringency Index, this study created a COVID-19 state government policy RMI. However, rather than comparing national government policy actions, this study focused on a subnational comparative evaluation. Related to other studies, this study incorporated data collected from publicly available data sources. Combining the novel RMI data with the publicly available data sets provided a cost-effective way to obtain the information needed to respond to the proposed research questions.

Local Public Health COVID-19 Response

Local public health administrators are tasked with not only managing the frontline health response but were also responsible for implementing the numerous COVID-19 policies issued through the state EO order process. This was challenging for the chronically underfunded local

public health jurisdictions. The emergent need to manage a pandemic such as COVID-19 has been draining on resources due to longstanding staffing shortages, and underprepared infrastructure. Recruitment efforts for qualified public health nurses has been difficult due to the lower pay and benefits compared to their clinical nursing counterparts (Rodriguez-Banos, 2020; Wang, 2020b). The politicization of the pandemic has weakened public trust in the public health response. Public health administrators withstand the worst of partisan motives (Deslatte, 2020). Rebuilding trust will require public health administrators to take a front seat approach to policy implementation. Open, honest communication with the public will increase the much-needed trust to successfully manage the COVID-19 pandemic (Testa et al., 2021).

Societal Effect of COVID-19

Every aspect of the U.S. public and private systems has been altered by the aggressive transmission rate of COVID-19, especially when coupled with stringent mitigation strategies. COVID-19 forged a swathe of change that will take years to fully understand. American communities are now experiencing the crippling effects of business closures. Personal choice has transformed into personal responsibility with government mandates like physical distancing and face covering requirements instituted to protect the vulnerable populations. These COVID-19 mitigation strategies are in stark contrast to traditional American social norms (Hogan et al., 2020, Roberts & Tehrani, 2020). Government imposed economic suppression actions and infringements on personal liberties challenge the instant gratification experience and freedoms that our society has grown accustomed to (Hale et al., 2020; Hussain, 2020).

Public acceptance and the perceived effectiveness of elected officials' ability to manage the COVID-19 response varied over time. Pew Research Center (2020) reported that between July 27 and August 2, 2020, 60% of individuals surveyed believed their local elected officials

were doing a good or excellent job responding to the coronavirus outbreak compared to lower approval levels for state elected officials and the federal response (56% and 37%, respectively). Yam et al. (2020), compared political approval in the early months of the COVID-19 outbreak among eleven countries, including the U.S., and found that there may be an association between new daily COVID-19 cases and daily political favorability, yet acknowledged that such results may “decay over time” (pg. 25432). However, as the pandemic reached the one-year mark, public patience began to wane as inconsistent mitigation strategies continue to lead to further public restrictions in many areas of the country (Hale et al., 2020).

Some Americans were living with COVD-19 existential anxiety, or the fear of believing that the unseen virus may be lurking at every corner (Farr, 2020). Yet many Americans engaged in civil disobedience. Some people were openly defying stay at home orders and gathering bans and proudly posting pictures on social media of such defiance. Businesses were willing to pay fines and take the fight to court rather than having their livelihood gone indefinitely (Navarro & Markel, 2021). In addition to their personal plight, people looked to social media as a platform to express their views on political hypocrisy.

The media intensified this dialog, particularly when elected officials were caught engaging in activities that they themselves considered forbidden for the public to partake in. Tension grew in America with some people looking to the courts to halt the flow of EOs coming from state governors (Deane et al., 2020; Hodge et al., 2020).

Authorities need to evaluate and modify policies quickly based on the most current information, which can lead to confusion or inconsistencies in public messaging and implementation effectiveness (WHO, 2020, June 1). When confusion exists, public adherence to policy mandates decreases, especially when there are mixed messages released from authorities

or when misinformation spreads from venues such as mainstream and social media outlets (Bavel et al., 2020). While the intent of this research was to identify the impact of restrictive policy mandates, compliance with those requirements was not within the scope of this study.

Summary

There is a broad range of discourse on the virus's etiology, disease progression, and transmission pathways. Additionally, a review of the literature finds similarities in the type of COVID-19 prevention strategies implemented globally. Several researchers investigated the effectiveness of those strategies by comparing the actions taken on the number of COVID-19 cases and deaths. While there is a wide variation in the effectiveness of those interventions, there is a limited amount of research investigating the IGR of those that legislate the interventions with those that implement such strategies.

State issued EOs are more likely to disrupt the chain of authority in decentralized states than in centralized states since the former structure has systems in place for greater local control. What is not known is to what degree these relations have on the effectiveness of the COVID-19 public health response at the local level. As elected officials marshal the COVID-19 mission, it is the public administrators that endure most of implementing the socially disruptive and at times overreaching policies that elected politicians enact. The transformation from a declared health emergency to local public health policies places the frontline battle against COVID-19 at the local level. The question remains as to what state-local intergovernmental relationship, if any, is most effective in managing the COVID-19 pandemic response.

It is critical to understand the challenges state issued EOs have on the ability of local public health administrators to implement such orders in an impactful way. Evaluating intergovernmental relations based on a centralized verse decentralized model, in addition to the

analysis of regional influences and population density, may lead to answers on how best to manage this and ongoing pandemics.

The purpose of implementing COVID-19 mitigation strategies is to prevent the virus's spread and reduce viral infection and the number of COVID-19 related deaths. Government officials rely on evidence-based data to support policy decisions, yet being a novel virus, COVID-19 research is still evolving. The WHO, CDC, and most nation states have real-time COVID-19 data trackers to monitor pandemic trends. This information is relied upon by epidemiologists and policy makers on how best to surveil and contain this highly infectious virus.

A comprehensive review of the literature revealed that most of the COVID-19 studies focus on government efforts to stop community transmission. However, few studies explore the effectiveness of those COVID-19 interventions based on government leadership and that of their community-level partners using a comparative public policy approach. The work of this study will contribute to the body of literature on intergovernmental relations and the use of predictor factors on determining the effectiveness of COVID-19 prevention efforts.

Several researchers have studied the impact of COVID-19 prevention strategies on the number of COVID-19 cases and deaths (Bloukh et al., 2020; Hale et al., 2020). Bloukh et al. (2020) conducted an extensive review of seventeen countries and the effectiveness of their COVID-19 strategies. Specifically, with a focus on the timeliness of those interventions. The research team measured effectiveness by the number of COVID-19 deaths through June 2, 2020. They categorized countries falling into one of the following six groups: under control, hit hard, hit hard and under control, hit hard and ongoing outbreak, ongoing outbreak, hardly under

control. The investigators concluded that public health strategies and the timing of those strategies do affect the number of COVID-19 cases and fatalities.

Hale et al. (2020) used a systematic data tracker to evaluate the progression of government mitigation strategies for COVID-19 containment over time. They concluded there is a significant variation and heterogeneity among the type of government responses to COVID-19. They did note that the variation in government responses decreased over time indicating that as the disease progressed, so did the number of mitigation strategies. Similarly, Kubota et al. (2020) extracted COVID-19 data elements from twenty-three databases, covering response activity from numerous countries and regions (n = 1020). They compared the number of COVID-19 cases with several environmental variables. They concluded the transmission of COVID-19 was significantly correlated with climate, international travel, at-risk populations based on age, and history of malaria infection. They also studied information on the status of individuals who had been vaccinated with the bacillus Clamette-Guérin (BCC) vaccine. The BCC vaccine is an anti-malarial pharmaceutical and thought to have protective measures against COVID-19 and the severity of the disease symptoms. Finally, Della Rossa et al. (2020) studied regional heterogeneity by analyzing COVID-19 intensive care unit hospitalizations across the twenty regions of Italy. The study findings suggest regional diversity relates to COVID-19 mitigation effectiveness. The investigators commented that a regional approach may be more effective than a national approach. They proposed that regional leaders should coordinate efforts with neighboring regions to avoid a national lockdown.

This study focuses on the mitigation efforts of the U.S. subnational leaders and the effectiveness of the strategies used to slow COVID-19 transmission. The scope of this study

limits the study policy selection to the stay-at-home type of EOs issued through the state governor's office.

Chapter III

Methodology

Purpose of the Study

The global response to the COVID-19 pandemic gave rise to a barrage of government directives intended to disrupt the rapid spread of the virus. Parallel to the medical research on COVID-19 rapid testing and the “warp speed” efforts to develop an effective vaccine were the non- non-pharmaceutical interventions that had a significant impact on every sector of human life (Government Accountability Office, 2021; The Royal Society, 2023). Government leaders issued personal behavior restrictions beyond what citizens were accustomed to. Mandates like social distancing, business and event closures, and mask donning requirements pitted individual choice against the moral obligation to protect our most vulnerable populations (Ahn et al., 2020; Donnarumma & Pezzulo, 2021; Woodcock & Schultz, 2021).

Taking a mixed methods approach, this comparative public policy research aims to fill a gap in the literature by bridging the implications of restrictive policy statements derived from COVID-19 governor-issued emergency EOs with the practical consequences associated with requiring such actions. Practical consequences include economic and financial hardship, emotional stress, lack of socialization, and loss of child learning (Donnelly & Patrinos, 2022; Minihan et al., 2020; Trueblood et al., 2023).

Dodds (2018, pg.6) defines comparative public policy research as “any research which either explicitly or implicitly contrasts policy processes, outputs, and outcomes from one or more units.” Wong (2016, pg. 1) further describes comparative public policy as a method of study to

"use public policy as its major unit of analysis for comparison of different systems and institutions, usually countries or governments". Within a pragmatism worldview, comparing policies from different governments provides insight as to why governments choose to take a certain course of action or in some cases no action at all (Creswell & Plano, 2017; Engeli et al., 2014; Leong & Howlett, 2021).

While comparative public policy has scholarly roots in multinational research, there is a growing trend in studying policies at a subnational level (Dodds, 2018; Kleider & Toubeau, 2022). Advantages of a subnational comparative public policy include identifying similarities, nuances, and anomalies in policy choices within a subnational context. Additionally, a subnational approach may unmask intervening variables that might otherwise be overlooked or screened out within a multinational study (Dodds, 2018; Fitzpatrick et al., 2011; Gupta, 2012; Wilder, 2017).

This subnational study compares COVID-19 EOs among the divergent U.S. state governments to better understand the initial COVID-19 pandemic agenda setting and policy implementation decision making across America within a pragmatism framework. This chapter serves as a procedural blueprint by presenting the research design, research questions, data collection, and data analysis in a reproducible manner. Lastly, this chapter addresses the study's limitations and delimitations and concludes with an overall methods summary.

Research Design

An institutional grammar tool inquiry was used to explore the non-pharmaceutical policy actions taken by each state and to analyze the directive-type phrases from the COVID-19 governor-issued EOs. Although there were numerous categories of government-initiated COVID-19 policies, this study protocol limited the study population to the policy directives that

restricted non-essential interactions, often referred to as the stay-at-home orders or in practice, "lockdowns" (Meyerowitz-Katz et al., 2021; Woc-Colburn & Godinez, 2022). Each state had their own policy nuances as to what activities were allowable and not allowable and how those directives would be imposed upon their constituents. Yet the intent was the same, to limit the transmission of the virus from person-to-person by limiting or eliminating those interactions. (Halperin et al., 2021; Moreland et al., 2020).

Currently, there is a large political "divide" in America leading to questions about what, if any, role politics had on the development and implementation of the COVID-19 policies (Hart et al., 2020; Kerr et al., 2021). Kerr et al. (2021), found significant variation in COVID-19 attitudes and behaviors that may have been associated with political orientation and the confounding effect of media reporting. To build upon the Kerr et al. (2021) study, state political demographic information was included to explore the association between political ideology and the level of policy restrictiveness, as well as COVID-19 outcomes.

To further explore the possible differences between states, a case study was conducted to examine two politically dissimilar states, Florida and California. These states were selected not only because their governors often exchanged criticism, but also because they managed the pandemic in significantly diverse ways. Florida's Governor DeSantis was not as stringent with his lockdown directives as California's Governor Newsom was; yet Governor Newsom criticized Governor DeSantis for his approach to the pandemic stating that it would have "killed an additional 40,000 Californians" (Allen & Westervelt, 2021; Dovere & Contorno, 2022). Governor DeSantis countered back with the opinion that "California was letting a coercive biomedical apparatus guide its closure-heavy Covid-19 approach" (Dovere & Contorno, 2022).

To contribute to the California-Florida debate, COVID-19 case and death rates at the county level in each state were compared with selected factors, including underlying health condition rates, population density, and Democratic voter registration. According to public health experts, underlying health conditions such as hypertension, respiratory disease, diabetes, and obesity contributed to an increased risk and severity of a COVID-19 infection (CDC, 2021). Understanding the impact that COVID-19 had on the most vulnerable populations, i.e., those living with adverse health conditions, may provide insight into how best to design a future contagion outbreak policy agenda.

The literature indicates that Democratic leaning states were more restrictive than Republican leaning states (Adolph et al., 2021; Birkland et al., 2021; Schaeffer, 2021). In a 2021 survey, Pew Research Center reported that 82% of the population identifying as Democrats believed that COVID-19 was a major threat to the health of the nation, while only half as many Republicans agreed with that belief (Schaeffer, 2021). Democratic voter registration data was used as an independent predictor variable based on the literature, as California had both a higher RMI and a larger population identifying as Democratic voters compared to Florida.

Research Questions

The methods design of this study applies qualitative and quantitative data sets to identify and compare policy restrictiveness, COVID-19 case rates and COVID-19 death rates, governance characteristics, geographical characteristics, and population density to answer the questions set out in previous chapters.

The first question, "To what extent did the level of restrictiveness in COVID-19 stay-at-home policy mandates issued by state governors vary across different states?" was answered developing the novel RMI and comparing the results among states in rank order. The approach to

answering the second question, “Was there an association between the COVID-19 stay-at-home policy restrictiveness and COVID-19 case and deaths rates?”, built upon the RMI analysis by comparing those results with the COVID-19 case and death rates reported to the CDC in the year 2020.

To assess the independent drivers of governance within the federalist America construct, state political ideology lean, and public health infrastructure was compared to the COVID-19 case and death rates. Also included in the analysis was the use of population demographics including the total population per state, population density (the number of people per square mile), and regional population to identify any population-based association with state COVID-19 case and death rates. The regional data set was derived from the U.S. Census Bureau (n.d.). See Table 3. The results of this analysis contributed to the answering the question “What role did government and regional characteristics have on COVID-19 health outcomes.”

Table 3

Census Bureau Regions of the United States

Region 1 (The Northeast)	
Division 1 (New England)	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont
Division 2 (Mid Atlantic)	New Jersey, New York, and Pennsylvania
Region 2 (The Midwest)	
Division 3: East North Central	Wisconsin, Michigan, Illinois, Indiana, Ohio
Division 4 (West North Central)	North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa
Region 3 (The South)	
Division 5: South Atlantic	Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, District of Columbia, and West Virginia
Division 6: East South Central	Alabama, Kentucky, Mississippi, and Tennessee
Division 7: West South Central	Arkansas, Louisiana, Oklahoma, and Texas
Region 4 (The West)	
Division 8: Mountain	Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming
Division 9: Pacific	Alaska, California, Hawaii, Oregon, and Washington

To apply the findings of this study in a practical context, a case study was designed using a path analysis mediation model to answer the question "Was there a difference in the predictive effect of selected independent variables on COVID-19 death and case outcomes between California and Florida?" The research questions serve as the guiding principles for completion of the data collection, analytics, and discussion on how the findings of this study may contribute to public health emergency preparedness in America.

Data Collection

The data collection section addresses the Institutional Review Board requirement, the study policy selection process, the qualitative and quantitative data indices used in this study, and the statistical analyses used to address the research questions.

Approval to conduct study.

This study met the Valdosta State University Institutional Review Board exemption criteria since no human subjects, living or deceased, participated in this research study, nor was there any identifiable information involved in the data collection, analysis, or reporting processes. See Appendix A for Valdosta State University's (IRB (Institutional Review Board)) Exemption documents.

Study policy selection.

The EOs selected for this study consisted of all the COVID-19 stay-at-home orders issued by the U.S. state governors in 2020. Studying this time frame made sense because the directives were issued during the pre-vaccination phase of the pandemic. Even though the availability of COVID-19 vaccinations became available in mid-December of 2020, the initial vaccination implementation rollout prioritized older populations and those with underlying health conditions. Additionally, to maximize viral protection, the vaccinated individuals needed to complete a two-dose cycle. These factors delayed any notable vaccination health benefits until

early January 2021. Limiting the EOs to only those issued in the first year of the pandemic eliminated any potential vaccination bias on the non- non-pharmaceutical COVID-19 containment strategy outcomes observed in this research study.

The Council of State Governors served as a repository for the COVID-19 state issued EOs and organized the orders into different classifications, including the stay-at-home category. This database served as the primary source for collecting the study EOs However, there were twelve states that did not have a stay-at-home type EO listed in this category. To ensure representation from all states, the state websites of those twelve states were searched to obtain the stay-at-home EOs, which were then included in the study selection process.

All fifty states met this criterion, however, four states, Idaho, Missouri, New Mexico, and Ohio issued their stay-at-home orders through the offices of the public health Director or Medical Health Officer rather than the governor's office. These orders were excluded from the study to ensure consistency in the level of authority of the policy-issuing agents across all states, with governors being the highest level. A suggestion for future study may focus on comparing the policies released from the offices of the state public health authorities. Forty-six states issued one or more EOs from their governor's office in 2020, forming the total study population. Appendix B lists all the policies included in this study.

Publicly available data sources.

This study relied on secondary data sources for all but the RMI independent variable. Appendix B includes a list of the publicly available data sources accessed to obtain the COVID-19 death rate variable and independent variable data sets needed to complete the study analyses. Most of the secondary data sources represented collection dates in the year 2020, however some

of the census data and CDC health prevalence data may include overlapping years due to the data collection and reporting period.

Data Analysis

The data analysis for this study included descriptive data, comparison, correlation, and regression analyses. The software data organization and analysis programs utilized for this study included Microsoft Excel, IBM SPSS, and Minitab Statistical Software (Minitab) programs.

Restrictive Measure Index.

The RMI was created using a manifest content analysis process to explore the regulatory management of personal behavior choice verses the moral obligation to protect vulnerable populations during the COVID-19 pandemic. The governor-issued EOs served as the unit of measure for this study with the regulative syntax extracted from the study COVID-19 EOs serving as the unit of analysis. Regulative statements describe actions associated with specified actors within a contextual framework (Franz & Siddiki, 2020). Having specifically defined phrase verbiage content made the data more "observable" to assist the coders in collecting the data without having to "discern the intent" to find a deeper meaning to the statements (Kleinheksel et al., 2020). Table 4 lists the process concepts of this study from the broad theme concept to the specific coding study elements.

Table 4

COVID-19 Restrictive Measure Index Manifest Content Analysis Process

Broad to Specific	**Theme**	**COVID-19 personal behavior restrictions imposed by state governors.**
	Unit of Measure	Governor issued stay-at-home Executive Orders
	Category	Level of restrictiveness
	Analytical Unit	Statements with the modal verb may, should, must, and shall
	Code	Least restrictive, moderate restrictive, and most restrictive personal behavior mandates

Using the NVivo12 software program, predetermined text were extracted from each of the study EOs that indicated a level of restriction imposed upon individuals, businesses, or local government entities. The specific extracted phrases contained one of the four modal verbs, *may, should, must, and shall*. Trained coders verified the level of restrictiveness of each extracted phrase as either least, moderate, or most restrictive. Phrases not restrictive were identified as exempt and not used in the data analysis. restrictiveness.

The evaluation coding team included one lead evaluator and two evaluators. The researcher served as the lead evaluator. The two evaluators were hired from a local community recruitment effort. The evaluation team met weekly for the first month to resolve any scoring anomalies and to receive further coding guidance and interpretation clarification. Additional communication among the evaluation team continued throughout the coding process until completion of the assignment.

The responsibility of the lead evaluator included:

- Train the members of the evaluation team;
- Track the phrase data sets distributed to each evaluator;
- Provide the evaluation team with ongoing coding updates and guidance;
- Review the study policies for text/phrase intent, as necessary; and,
- Maintain the master coding spreadsheet.

The responsibilities of the evaluators included:

- Refer to the instructions for coding assignments;
- Report scoring questions to the lead evaluator for clarification and/or discussion at the evaluation team meetings; and,
- Complete assigned sets within the agreed upon timeline.

Each evaluator received about four packets of data to score during the coding evaluation process. Each packet included approximately twenty-five pages with twenty percent of those pages being the same. This procedure served as a monitoring tool to check for coding consistency among the code evaluators. As previously noted, the evaluation team discussed coding discrepancies during regular meetings. The lead evaluator referred to the actual state policies, as needed, to ensure correct coding phrases based on the actual context of the phrase within the policy. For example, the phrase "may continue to operate" followed by "but must limit all in-person shopping" elevates a least restrictive action to a higher degree of restrictiveness since the least restriction is conditional.

Inter-reliability.

The lead evaluator monitored the coding results of the randomly selected control pages included in each set. The evaluation team discussed coding discrepancies throughout the process to ensure coding consistency. The lead evaluator maintained a master coding list with the final coding determinations. The lead evaluator used the Excel program search feature to ensure all the changes were logged accurately.

Using a sample of 20 percent of the coded statements (n = 290), the evaluation team reached an agreement of 90%. This percent agreement reflects a strong level of consistency among the team (Lombard et al., 2002). This process served as the data inter-reliability test.

Intra-reliability.

The lead evaluator monitored individual coding results by searching for key terms within the assigned Evaluator data set. The lead evaluator adjusted inconsistencies based on the established coding criteria, notified the Evaluator of the changes, and discussed strategies to

avoid future individual scoring inconsistencies. This process served as the data intra-reliability test.

Coding.

Each evaluator received training, verbal instructions, and a COVID-19 Coding Job Aid to ensure a good understanding of the assignment and assist with accurate coding. A sample of the COVID-19 Coding Job Aid is included in Appendix C. Using a "Guiding Questions" format, the evaluation team used the following coding system:

- Least = the lowest level of restrictive phrases
- Moderate = restrictive phrases that imply options, conditions, difficult to monitor for compliance or enforce
- Most = restrictive phrases that are not optional, can be monitored for compliance, and/or have the highest degree of enforcement with fines and penalties

An example of the Guiding Questions is as follows:

I. Does the phrase indicate a suggested or optional action? If yes, assign a code "Least." Implies an option or at the discretion of the individual or entity.
    - may provide masks to;
    - should not be subject to; or,
    - should offer early hours for.

II. Does the phrase indicate an action that is allowable, or permissive but is conditional or has specific limitations/restrictions? If yes, assign a code "Moderate" Examples include:
    - may continue to operate indoors if;
    - may continue to operate, provided that; or,

- shall avoid, unless.

III. Does the phrase clearly indicate what is not allowed, or what must be done? If yes, assign a code "Most" This is the most restrictive category. Examples include:

- Shall not;
- Must close;
- Must wear; or,
- May not open.

Phrase Exemptions.

There were situations where the phrases were not directive or restrictive in context, for example when the extracted verb "May" is referencing a noun, as in the month of "May." In this case, the phrase was exempt from the final data set. Another phrase exemption included policy start and end dates since including timelines is not unique to COVID-19 EOs. The LE excluded these types of statements from the study.

Restrictive Measure Index score assignment.

4,205 phrases were coded with 2,789 identified as regulative statements, and 1,416 coded as exempt for not meeting the study statement inclusion criteria. Upon completion of the coding verification, each state received an RMI score by tallying the number of restrictive phrases by category for each state, calculating the average for each category based on the total number of restrictive phrases per state, and assigning the RMI by calculating the weighted average using the following scale:

Least restrictive – 0.20

Moderate restrictive – 0.30

Most restrictive – 0.50

The weighted average captures the differing importance of each categorical value in relation to the relevant values in the dataset. Through the quantification of qualitative data, the understanding of COVID-19 government restrictive actions was broadened, transitioning from policy observations to insights on the relationship between those actions and COVID-19 outcomes. This process is like other studies that analyzed COVID-19 policies and either created Indexes based on policy indices or used existing Indexes to build upon existing data sources (Agyapon-Ntra & McSharry, 2023; Groves et al., 2009; Phillips, et al., 2023; Vickery et al., 2022).

Variables.

The COVID-19 health outcome data, case, and death rates, served as the independent variables for this study. While the assumption is that all COVID-19 deaths started out as a COVID-19 case, the two data sets are treated as unique and separate since it is unknown how many of the deaths were identified postmortem and therefore may not have been associated with the reported case counts.

In addition to the novel RMI, the other independent variables for this study were obtained from publicly available secondary data sources for the year 2020. There are two distinct data categories as follows:

1) State political and descriptive information:
   a. Governor political party
      i. Democratic governor
      ii. Republican governor
   b. Trifecta status
      i. Democratic – Democratic Party controls all state government

ii. branches including the governorship, state senate, and house of representatives/or state assembly.

iii. Republican – Republican Party controls state government branches including the governorship, state senate, and house of representatives/or state assembly.

iv. Mixed – The control of the state government is split between different political parties. (Ballotpedia, n.d.)

c. Type of public health infrastructure

i. Centralized – State employees lead local health services.

ii. Decentralized – Local government employees lead local health services.

iii. Mixed – Some of the local health services are provided by state employees and some services are provided by local government employees. Some services are shared by both local and state governments. (ASTHO, 2012b).

2) Population density and geographic characteristics

a. National region assignment (Northeast, Midwest, South, West); and,

b. Population density (total population and people per square mile)

The California and Florida case study expanded the data sets to include county level data. The specific categories included:

a. Democratic voter party affiliation identified by reported voter registration figures;

b. Population density;

c. COVID-19 case and death rate; and,

d. Underlying Conditions (age 65 and older, obesity, and chronic lung disease)

These categorical and empirical data sets were used to evaluate the effect, if any, between the independent predictive variables and the COVID-19 health outcomes. The statistical tests used in this study were selected based on the type of data (i.e., parametric, or nonparametric) and the associated confirming assumption tests (i.e., normal, or non-normal distribution or sample, size).

The categorical data was summarized using the Minitab command *Stat > Tables > Tally Individual Variables.* The specific categorical variables included in the tabulation table include governor, trifecta, public health infrastructure, and state region. Table 5 lists a Summary of Categorical Variables.

Table 5

Categorical Variables

Governor	Count	Trifecta	Count	Public Health	Count	Region	Count
Democratic	23	Democratic	13	Centralized	12	Midwest	9
Republican	23	Divided	15	Decentralized	25	Northeast	9
Total N	46	Republican	18	Mixed	9	South	17
		Total N	46	Total N	46	West	11
						Total N	46

The parametric variables were summarized using the Minitab command *Statistics > Basic Statistics > Display Descriptive Statistics.* The parametric variables descriptive data included COVID-19 case rate, COVID-19 death rate, population density, total population, and the ordinal scale data from the RMI. Table 6 lists a summary of the descriptive statistics for these data elements.

Table 6

Descriptive Statistics

Variable	Total Count	Mean	Standard Deviation	Variance	Coefficient of Variance
C19 Cases	46	0.73	0.26	0.069	36.03
C19 Deaths	46	0.017	0.012	0.0001447	70.12
Population density	46	219.6	281.6	79310.6	128.22
Total Population	46	6924140	7623862	5.81233E+13	110.11
RMI	46	0.356	0.067	0.004529	18.85

Statistical analysis.

The correlation test results were used to respond to the question "To what extent did the level of restrictiveness in COVID-19 stay-at-home policy mandates issued by state governors vary across different states?" The Pearson's correlation coefficient (Pearson's *r*) was used to measure the strength of the linear association between two variables. The Spearman's *r* was used for the data that did not follow a normal distribution or the nonparametric data.

The Analysis of Variance (ANOVA) comparison tests were selected to compare the differences in means, medians, and rankings of scores of two or more groups with the specific test options selected based on the data measure categories.

The results of the regression analysis contributed to responding to the question "Was there an association between the COVID-19 stay-at-home policy restrictiveness, relevant predictor variables, and COVID-19 case rates and deaths?" The regression tests were used to demonstrate whether changes in predictor variables cause changes in an outcome variable included either the simple linear regression or multiple linear regression tests. The generated equation described the statistical relationship between the predictor variables and the response

variables. The regression coefficient describes the size and direction of the relationship between the predictor variable and the response variable.

California and Florida Case Study

For the California vs. Florida case study, a path analysis mediation model was constructed using the IBM SPSS AMOS software program. See Figure 2. The path analysis design determined the effects of independent variables indirectly through a mediator variable, directly, or both. After several iterations of assessing the model, a good model fit was achieved.

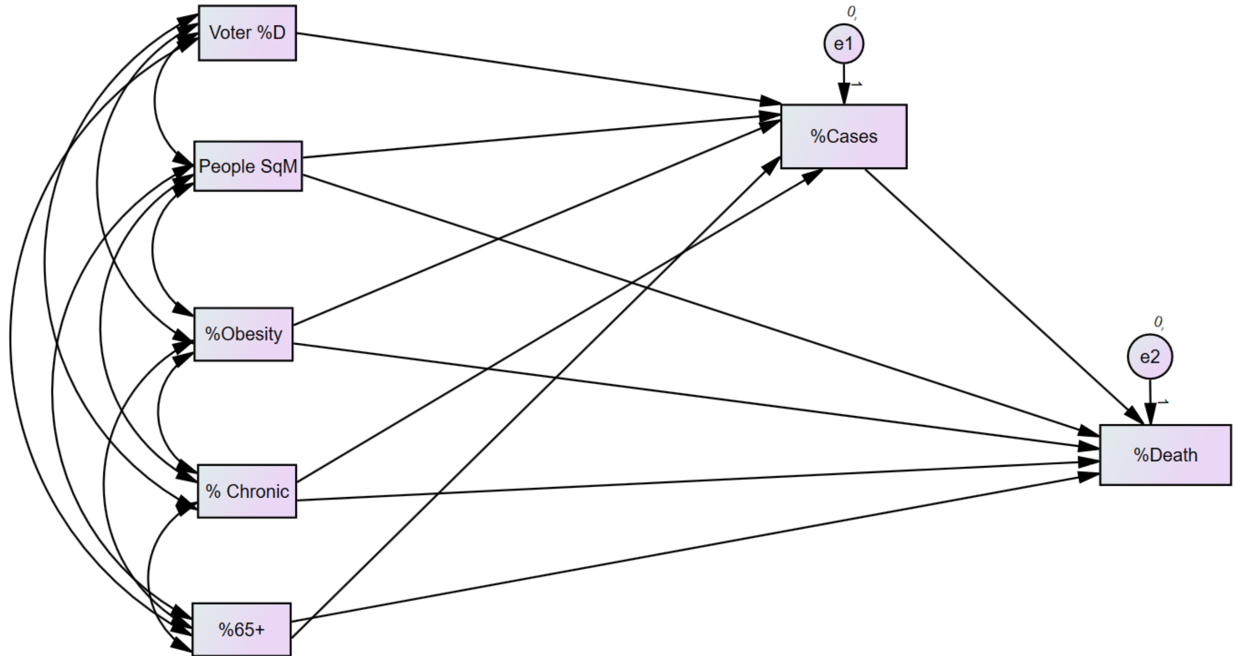
The model depicts the indirect effect of the exogeneous predictor variables, obesity, age 65 and older, chronic lung disease, Democratic voter registration, and Population density indices on the endogenous outcome variable COVID-19 deaths through the mediator variable, COVID-19 case rate. The underlying health conditions, including obesity, and age 65 and older, and chronic lung disease indices were mapped as direct effect predictor variables since they were commonly referred to as underlying health conditions that increased the risk and severity of a COVID-19 infection. The population density independent variable was also mapped as a direct effect predictor to COVID-19 deaths and served as a proxy for social distancing. Democratic voter registration was mapped solely as an indirect predictor variable.

The democratic voter registration independent variable in the path analysis equation was used to explore the influence of the political party on COVID cases. The rationale for selecting the Democratic party affiliation was because California had both a Democratic trifecta and a higher RMI than Florida. This combination best represents the theory that the more restrictive a state is the lower the case rate should be. In addition, the finding from this study's examination of governance and COVID-19 health outcomes revealed that the Republican leaning states had a statistically significant positive association with case rates when compared to the Democratic

leaning states. Democratic voter registration was structured only as an indirect path effect, as political ideology would not directly result in a COVID-19 case or death.

Figure 2

COVID-19 Path Analysis Mediation Model



The SPSS AMOS software program was used to analysis the path analysis. The results were assessed using standardized effect measure outcomes (total, direct, and indirect). A bootstrap procedure was performed and set to five hundred samples with a .95 bias-corrected confidence interval. Table 7 includes the list of the total path analysis tests performed.

Table 7

Path Analysis Output

Estimate Category	Tests Performed
Scalar	Regression weights, Covariances, Correlations, Variance, Squared Multiple Correlation
Matrices	Residual covariances, standard total, direct, and indirect effects
Bootstrap	Two-tailed significance total, direct, and indirect

Limitations

The limitations of this research included the use of publicly available data sources and compliance with the state issued stay-at-home EOs. Much of the data used in this study was obtained through secondary data sources. The limitations include the lack of accuracy of the data and the applied relevance of the data collected to this study. The primary concerns regarding data accuracy include the methods used to collect and report the data, data omissions, and the lack of data agreement between the data sets which may include data elements that are outside of the date range specified in this study (Wickham, 2019). Additional limitations to using secondary data sources include the quality of selected data sets. For example, the data were not collected to answer specific research questions of this study or meet the study design criteria such as representing the 2020 study year (Pederson et al., 2020). To counter those potential conflicts, secondary data sources were collected from credible sources and that were used by state and national governments for a variety of purposes and decision-making actions.

The secondary data sources were generated based on the primary researcher(s) collection, interpretation, and analysis of the data. The use of the data may be different, and therefore, may have some impact on the data analysis results and interpretation of the findings. This issue was mitigated based on secondary data source selection parameters. For this study, the data was obtained from government sources, frequently referenced sources, and sources that had detailed information on the data collection methodology and access to the raw data. Having access to the secondary data sources allowed me to expand the breadth of this study, making the knowledge obtained more meaningful without the exorbitant cost of collecting the data myself.

The cost and time constraints of manually coding the data limited the units of analysis to the stay-at-home EOs category. This category represented approximately three percent of the

total COVID-19 issued EOs (3,873) in 2020. While the stay-at-home EOs represented the greatest impact on individual and business freedoms and behavior choices, there may have been similar type of restrictions embedded in some of the EOs posted on the other forty-six COVID-19 category lists. To make this qualitative data set meaningful and replicable, a robust manual coding process was developed to include ongoing training and oversight to ensure coding consistency.

Delimitations

The scope of this study included only the COVID-19 EOs issued by state governors. Also excluded from this study were the EOs issued from U.S. territories, and federally recognized tribal nations. The rationale for this decision was to control extraneous variables from the study such as sovereignty, geography, and other cultural demographics that may confound the results. Future studies may build upon this study by expanding the study group to include other types and levels of government institutions.

Researcher Bias

During the COVID-19 pandemic, the researcher served as the COVID-19 Joint Agency Co-Incident Commander for a northern California county. To mitigate any potential researcher bias based on my professional involvement with COVID-19 mitigation, the researcher prepared the study design and research procedures prior to conducting any data collection or analysis. In addition, a team approach was used during the coding process to ensure coding consistency and accuracy throughout the data preparation process, including documenting the rationale for data inclusion and/or exclusion decision making. The findings of this study had no influence on the researcher's job responsibilities, nor any employment benefits or risks associated with this research. Additionally, there was no financial interest or gain associated with this research.

Summary

The methodology for this study describes the process for developing a novel COVID-19 RMI based on the directive syntax of state issued stay-at-home EOs. The modal verbs may, should, must, and shall serve as the indicator for the level of restrictiveness scale. The manifest content analysis process included 121 policies from the forty-six states that met the study inclusion criteria (Appendix B). Additional independent variables including governance, geography, and population density were introduced to be able to explain the possible effect that these variables may have had on the COVID-19 case and death rates.

A review of two coastal states, Florida, and California, offers a focused look at two very differing states through a path analysis mediation model. Analyzing county level data, the path analysis compared the selected exogenous predictor variables with endogenous COVID-19 outcome variables by state offering a glimpse into the impact that COVID-19 had based on population and health indicators from one end of the nation to the other.

Chapter IV

Results

This chapter presents the study findings in two parts. The first section focuses on the results of the analysis of state COVID-19 stay-at-home policy restrictions, governance predictors, population-based predictors, and COVID-19 health outcomes. The second part builds upon the study thesis through a case study comparison of California and Florida through a path analysis mediation model.

COVID-19 Stay-at-Home Executive Order Study

This section provides an overview of the study population, followed by the applied statistical analytics, and concludes with a summary of the findings. The study design incorporated data from both quantitative and qualitative data sets including the creation of the RMI using a manifest content analysis process. All the other data included in this study was obtained from secondary public data sources.

The data was organized into three groups. The first data set examined the association between state level policy restrictions with COVID-19 case and death rates. The second data set builds upon the first data set by adding governance predictor factors to identify the association of political influence on COVID-19 health outcomes. The final group included population-based predictor variables to explore the influence of geographic and demographic factors on COVID-19 health outcomes.

COVID-19 death and case rates served as the dependent variables for all the statistical analyses in this section of the study. The data sets included interval, ordinal, and nominal

measurements. The statistical test applied to each data set was determined based on the data measurement type. Various preliminary tests were used to assess normality and goodness-of-fit to ensure that the data analysis would provide meaningful outcomes. Table 8 lists the study variables, measurement type, and statistical test assigned to each grouping.

Table 8

Data Measurements and Statistical Tests

Predictor Variable	Measurement	Outcome Variable	Measurement	Statistical Test
Restrictive Measure Index	Ordinal Scale	COVID-19 Case Rate COVID-19 Death Rate	Interval	• Descriptive Statistics • Comparison of Means Test • Pearson's Coefficient Correlation • Regression • ANOVA • Two tailed *t*-Test
Governor, Governance, Public Health, Region	Nominal	COVID-19 Case Rate COVID-19 Death Rate	Interval	• Tabulated Statistics • ANOVA • Multiple Regression
Population Density, People per Square Mile, Rural	Interval	COVID-19 Case Rate COVID-19 Death Rate	Interval	• Descriptive Statistics • Assumption tests and Conditions • Multiple Regression

Restrictive Measure Index and COVID-19

Of the 121 stay-at-home EOs issued in the U.S. by state governors, 4,205 restrictive phrases were extracted and coded based on the restriction level of the phrase or coded as "exempt" if the context of the phrase did not meet the study predetermined inclusion criteria. The total number of restrictive phrases included in the study was 2,789 (66%) making up the final

study data set.

There was a broad range between the number of stay-at-home EOs issued among the states ranging from 1 to 6 policies per state (*M* = 2.63, *SD* = 1.61). The number of restrictive phrases per EO ranged from 60.6 to 320 phrases (*M* = 11.3, *SD* = 76.6). Table 9 provides a summary of the descriptive data for the stay-at-home EOs, and the restrictive phrases used in this study.

Table 9

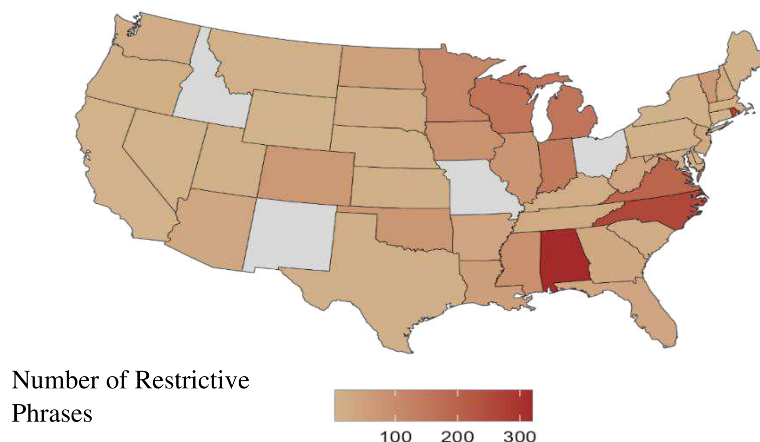
Stay-at-Home Executive Orders and Restrictive Phrases

Variable	N	Mean	SE Mean	St Dev	Minimum	Median	Maximum
Number of EOs	46	2.630	0.24	1.61	1.000	2.000	6.000
Number of Statements	46	60.6	11.31	76.62	3.0	26.5	320.0

Most of the states (59%) issued one or two stay-at-home EOs. The heatmap in Figure 3 illustrates the differences in the number of restrictive phrases among the contiguous states, where darker shades represent a higher number of expressions. The gray shaded states were not included in the study.

Figure 3

Heatmap Showing the Variation in the Number of State COVID-19 Restrictive Phrases



The states Colorado, Mississippi, and North Carolina issued the highest number of EOs at six each. Alabama, Rhode Island, and North Carolina had the highest number of restrictive phrases (320, 272, and 263, respectively) while Nevada and Wyoming issued the least number of restrictive phrases at three each. The RMIs ranged from 0.20 to 0.475. The least restrictive states were Nebraska (0.20), Nevada (0.20), Texas (0.20), and Wyoming (0.20). The most restrictive states were South Carolina (0.44), Georgia (0.45), South Dakota (0.45), and Maryland (0.48). The heatmap in Figure 4 was generated to visualize the RMI variability across the contiguous U.S. The gray shaded states were not included in the study.

Figure 4

Heatmap Showing the Restrictive Measure Index by State

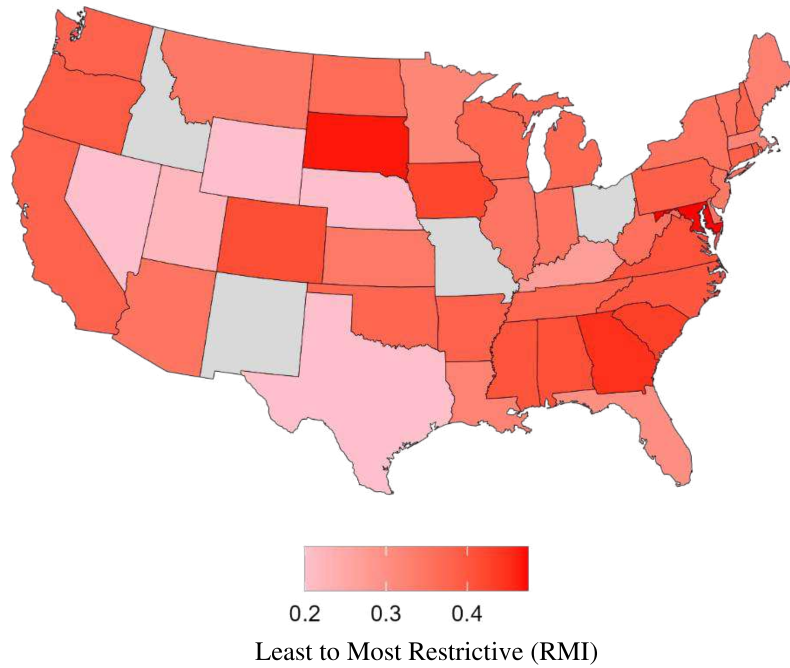


Table 10 summarizes the study population, including the list of states, the number of stay-at-home EOs per state, the number of restrictive/directives phrases, the RMI score, and the mean for each of the three restrictive categories.

Table 10

Study Population Data by State

State	EOs	Statements	RMI	Percentage "Least" Phrases	Percentage "Moderate" Phrases	Percentage "Most" Phrases
Alaska	1	6	0.4250	0.0000	0.3750	0.6250
Alabama	5	320	0.4121	0.0375	0.3781	0.5844
Arkansas	5	37	0.3811	0.1622	0.3514	0.4865
Arizona	2	34	0.3500	0.2059	0.4412	0.3529
California	1	5	0.3800	0.2000	0.2000	0.6000
Colorado	6	69	0.4136	0.0592	0.3432	0.5976
Connecticut	1	6	0.3833	0.1667	0.3333	0.5000
Delaware	1	12	0.3500	0.0000	0.7500	0.2500
Florida	1	37	0.3027	0.4595	0.2973	0.2432
Georgia	2	29	0.4483	0.1034	0.1034	0.7931
Hawaii	2	127	0.3827	0.2441	0.2205	0.5354
Iowa	4	87	0.4246	0.1385	0.1692	0.6923
Illinois	3	76	0.3487	0.2763	0.3421	0.3816
Indiana	3	144	0.3521	0.2153	0.4167	0.3681
Kansas	2	12	0.3417	0.4167	0.1667	0.4167
Kentucky	1	18	0.2718	0.2860	0.5710	0.1430
Louisiana	2	53	0.3226	0.3774	0.3208	0.3019
Massachusetts	2	14	0.3214	0.3571	0.3571	0.2857
Maryland	1	12	0.4750	0.0833	0.0000	0.9167
Maine	2	7	0.3286	0.2857	0.4286	0.2857
Michigan	5	159	0.3717	0.2201	0.2956	0.4780
Minnesota	2	113	0.3168	0.3982	0.3186	0.2832
Mississippi	6	88	0.4034	0.1250	0.2955	0.5795
Montana	1	11	0.3455	0.0909	0.6364	0.2727
Nebraska	1	9	0.2000	1.0000	0.0000	0.0000
New Hampshire	4	24	0.3792	0.2917	0.1667	0.5417
New Jersey	1	30	0.3433	0.1000	0.6333	0.2667
Nevada	1	3	0.2000	1.0000	0.0000	0.0000
New York	1	9	0.3556	0.1111	0.5556	0.3333
North Carolina	6	263	0.4008	0.1179	0.3194	0.5627
North Dakota	5	50	0.3650	0.1200	0.5000	0.3800
Oklahoma	3	72	0.3736	0.2917	0.1944	0.5139
Oregon	1	14	0.3929	0.0714	0.4286	0.5000
Pennsylvania	5	8	0.3857	0.0000	0.5714	0.4286

Table 10 (continued)

Rhode Island	5	272	0.3996	0.1066	0.3419	0.5515
South Carolina	3	19	0.4316	0.1579	0.1053	0.7368
South Dakota	2	20	0.4667	0.0000	0.1667	0.8333
Tennessee	2	23	0.3783	0.2609	0.2174	0.5217
Texas	1	12	0.2000	1.0000	0.0000	0.0000
Utah	2	10	0.2200	0.8000	0.2000	0.0000
Virgina	4	191	0.4073	0.1099	0.2984	0.5916
Vermont	3	67	0.3552	0.2537	0.3433	0.4030
Washington	3	20	0.3800	0.2000	0.3000	0.5000
Wisconsin	3	154	0.3747	0.1623	0.3831	0.4545
West Virgina	2	40	0.3575	0.1250	0.5250	0.3500
Wyoming	2	3	0.2000	1.0000	0.0000	0.0000

The COVID-19 death and case rate data were extracted from the CDC COVID-19 data tracker and filtered by year and by state (CDC, n.d.a). The data tracker site offered several data downloadable options. For this study, the raw data was downloaded into an Excel spreadsheet to be able verify the data elements by state and year.

South Dakota (1.19%) and North Dakota (1.26%) had the highest percent of COVID-19 cases, while Vermont (0.12%) and Maine (0.17%) had the lowest percent of COVID-19 cases. New Jersey had the highest percent of COVID-19 deaths (0.06%) followed by Massachusetts (0.05%) and Connecticut (0.05%). Table 11 lists the 2020 death and case rates for each of the study states using data from the COVID-19 Data Tracker (CDC, n.d.a).

Table 11

COVID-19 Case and Death Rates per Capita

State	Cases	Death
Alaska	0.5557	0.0028
Alabama	0.9380	0.0152
Arkansas	0.8920	0.0195

Table 11 (continued)

Arizona	0.9600	0.0213
California	0.6475	0.0110
Colorado	0.6268	0.0138
Connecticut	0.7009	0.0449
Delaware	0.7703	0.0241
Florida	0.8728	0.0177
Georgia	0.8788	0.0189
Hawaii	0.2139	0.0045
Iowa	1.0648	0.0153
Illinois	0.9328	0.0250
Indiana	0.7664	0.0206
Kansas	0.7949	0.0097
Kentucky	0.5979	0.0087
Louisianna	1.0972	0.0368
Massachusetts	0.7708	0.0457
Maryland	0.6835	0.0214
Maine	0.1697	0.0038
Michigan	0.6151	0.0266
Minnesota	0.7655	0.0163
Mississippi	1.0089	0.0281
Montana	0.6789	0.0080
Nebraska	0.9555	0.0148
New Hampshire	0.2916	0.0108
New Jersey	0.9312	0.0612
Nevada	0.8589	0.0150
New York	0.4335	0.0177
North Carolina	0.6599	0.0113
North Dakota	1.2558	0.0174
Oregon	0.2882	0.0044
Pennsylvania	0.5337	0.0226
Rhode Island	0.9643	0.0348
South Carolina	0.8344	0.0176
South Dakota	1.1907	0.0143
Tennessee	0.9411	0.0116
Texas	0.7875	0.0148
Virgina	0.5549	0.0112
Vermont	0.1240	0.0040
Washington	0.4082	0.0092
Wisconsin	0.9295	0.0106
West Virgina	0.3857	0.0069
Wyoming	0.6659	0.0054

The analysis of COVID-19 case and death rates among the states reveals a statistically significant positive correlation between the two variables ($R^2 = 0.18$, $p = .004$). This suggests that approximately 18% of the variance in state-level death rates can be explained by case rates. Although the relationship is significant, the relatively low R^2 value indicates that other factors not included in this model likely contribute to the remaining 82% of the variation in death rates. The positive correlation implies that higher case rates are generally associated with higher death rates across states.

Restrictive Measure Index and COVID-19 Death Rate

The simple regression analysis of the RMI predictor independent variable and the COVID-19 death dependent variable were selected to identify the relationship between these two variables. The Pearson's *r* was applied to capture the strength and direction of the linear relationship. Recognizing that the RMI was created using ordinal data, the statistical assignment was based on the precedent established by other research teams studying COVID-19 policies (Agyapon-Ntra & McSharry, 2023; Robitzsch, 2020). For example, Robitzsch (2020) discusses the use of regression analytics to ordinal indexes, referencing the indexes created by the research team from the Blavatnik School of Government, University of Oxford.

To explain the effect of the RMI as a predictor variable of COVID-19 death rates, an ANOVA test was completed. The ANOVA results reveal that the independent variable only accounts for half a percentage point of the variance in the dependent variable ($R^2 = 0.0052$). The predictor variable, RMI, is not statistically significant ($F = 0.23$, $p = 0.633$), indicating that it does not have a meaningful impact on the response variable. See Table 12 for a summary of results.

Table 12

COVID-19 Death Rate and Restrictive Measure Index

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Regression	1	0.000034	0.000034	0.23	0.633
RM	1	0.000034	0.000034	0.23	0.633
Error	44	0.006475	0.000147		
Lack-of-Fit	39	0.006402	0.000164	11.16	0.007
Pure Error	5	0.000074	0.000015		
Total	45	0.006509			

Restrictive Measure Index and COVID-19 Case Rate

Using the same statistical analysis as was used in the previous RMI analysis, the results of the RMI independent variable as a predictor variable of COVID-19 case rates indicates that the association was not significant. The regression analysis shows that the RMI explains only 0.10% of the variance in the COVID-19 case rate ($R^2 = 0.001$). The F-value of 0.04 and the p-value of 0.835 indicate that the predictor is not statistically significant, revealing that there is no meaningful relationship between the predictor variable, RMI and COVID-19 case rate outcome variable. The error term accounts for 99.90% of the total variance, suggesting that the model does not effectively explain the variation in the data. See Table 13 for a summary of results.

Table 13

COVID-19 Case Rate and Restrictive Measure Index

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Regression	1	0.00312	0.003115	0.04	0.835
RM	1	0.00312	0.003115	0.04	0.835
Error	44	3.12465	0.071015		
Lack-of-Fit	39	3.03341	0.077780	4.26	0.055
Pure Error	5	0.09124	0.018247		
Total	45	3.12776			

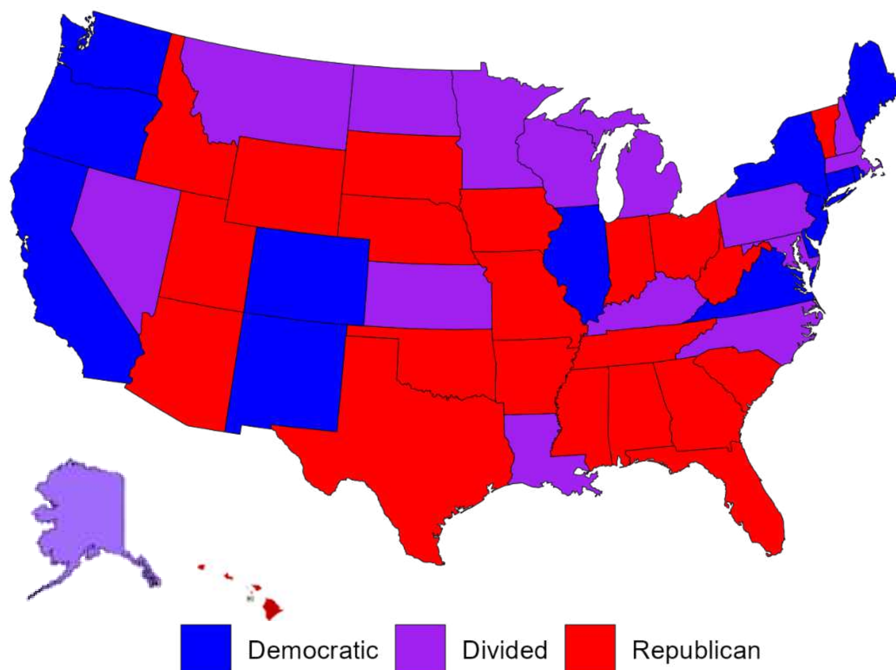
These findings suggest that the RMI was not found to be statistically significant in predicting the COVID-19 case rate.

Governance and COVID-19 Health Outcomes

This data set included both qualitative and quantitative variables. The categorical data variables included the governor political party affiliation (Democratic, Republican), party strength of state governance (trifecta being the strongest), and public health infrastructure (centralized, decentralized, mixed). A heatmap was generated (Figure 5) to illustrate state political party strength during the first year of the pandemic.

Figure 5

Heatmap of Political Party Strength in 2020



The quantitative data, COVID-19 case rate and COVID-19 death rate were the response variables. The ANOVA general linear model test was used to explore the association and

relationship of the predictor variables with the response variables. The following guidelines were considered to ensure that the results were valid:

- Data selection was appropriate for the statistical test (i.e., categorical, quantitative, or mixed;
- The dependent variable COVID-19 death, and case rates, were intervals;
- Each observation was independent from all other observations; and,
- Multicollinearity was not an issue.

The results of the descriptive statistics for this group showed an even split between governorship, Democratic governors (n = 23) and Republican governors (n = 23). The political strength of each state was captured by analyzing the combination of the branches of state government. In this study, the Democratic trifecta was the smallest group (28.3%, n = 13) followed by those states having a divided governance (32.6%, n = 15), and the largest group were the states with a Republican trifecta (39.1%, n = 18).

Of the three groups, the decentralized public health system consisted of 54.4% of the state public health systems (n = 25). Centralized public health systems consisted of 26.1% of the total public health types (n = 12). The smallest group of public health systems is the mixed model at 19.5% (n = 9). Table 14 summarizes the governance factors by state (ASTHO, 2012b; Ballotpedia, n.d.a; National Governors Association, n.d.).

Table 14

State Governance Factors

State	Governor	State Branch Governance	Public Health Type
AK	Republican	Divided	Mixed
AL	Republican	Republican	Centralized
AR	Republican	Republican	Centralized
AZ	Republican	Republican	Decentralized

Table 14 (continued)

CA	Democratic	Democratic	Decentralized
CO	Democratic	Democratic	Centralized
CT	Democratic	Democratic	Decentralized
DE	Democratic	Democratic	Centralized
FL	Republican	Republican	Mixed
GA	Republican	Republican	Mixed
HI	Democratic	Democratic	Centralized
IA	Republican	Republican	Decentralized
IL	Democratic	Democratic	Decentralized
IN	Republican	Republican	Decentralized
KS	Democratic	Divided	Decentralized
KY	Democratic	Divided	Mixed
MA	Republican	Divided	Decentralized
MD	Republican	Divided	Mixed
ME	Democratic	Democratic	Mixed
MI	Democratic	Divided	Decentralized
MN	Democratic	Divided	Decentralized
MS	Republican	Republican	Centralized
MT	Republican	Divided	Decentralized
NC	Democratic	Divided	Decentralized
ND	Democratic	Divided	Decentralized
NE	Republican	Republican	Decentralized
NJ	Democratic	Democratic	Decentralized
NV	Democratic	Divided	Decentralized
NY	Democratic	Democratic	Decentralized
OK	Republican	Republican	Mixed
OR	Democratic	Democratic	Decentralized
PA	Democratic	Divided	Mixed
RI	Democratic	Democratic	Centralized
SC	Republican	Republican	Centralized
SD	Republican	Republican	Centralized
TN	Republican	Republican	Mixed
TX	Republican	Republican	Decentralized
UT	Republican	Republican	Decentralized
VA	Democratic	Democratic	Centralized
VT	Republican	Republican	Centralized
WA	Democratic	Democratic	Decentralized
WI	Democratic	Divided	Decentralized
WV	Republican	Republican	Decentralized
WY	Republican	Republican	Centralized

Governance and COVID-19 death rate.

The model summary of the regression analysis of the dependent variable COVID-19 death rate with the independent variables RMI, governor, trifecta, and public health was S = 0.123581, R^2 = 0.085 (n = 46), and the adjusted R^2 = 0.00. The R^2 value of .085 indicates that the model explains approximately 8.50% of the variance in the dependent variable. However, the adjusted R^2 is 0.00%, suggesting that after accounting for the number of predictors, the model's explanatory power is negligible. The results indicate that the ANOVA analysis did not reveal a statistically significant proportion of variance, as indicated by the overall regression $F(6, 39) = 0.60$, $p = 0.726$ suggesting that the predictor variables, as a group, do not significantly predict the outcome. The small p-values indicate that none of the factors had a statistically significant effect on the outcome variable. Overall, the model does not support the theory that these factors have a meaningful influence on the COVID-19 death rate. See Table 15 for a summary of results.

Table 15

COVID-19 Death Rate and Governance Factors

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Regression	6	0.000553	0.000092	0.60	0.726
RM	1	0.000064	0.000064	0.42	0.521
Governor	1	0.000001	0.000001	0.00	0.949
Trifecta	2	0.000060	0.000030	0.19	0.824
PH	2	0.000266	0.000133	0.87	0.427
Error	39	0.005956	0.000153		
Lack-of-Fit	37	0.005954	0.000161	185.56	0.005
Pure Error	2	0.000002	0.000001		
Total	45	0.006509			

Governance and COVID-19 case rate.

The model summary of the regression analysis of the dependent variable COVID-19 case rate with the independent variables RMI, governor, trifecta, and public health was S = 0.248241, R^2 = 0 .232, and the adjusted R^2 = 0.223. These results indicate a moderate fit between the model. The R^2 value indicates that the model explains 23% of the variability in the dependent variable.

The ANOVA was conducted to evaluate the relationship between the individual predictor variables RMI, governor, trifecta, and public health and the COVID-19 case rate dependent variable. The RMI was not a significant predictor, $F(1, 39) = 0.79$, $p = 0.380$ which is consistent with previous analyses; governor was non-significant, F-value of 2.40, $p = 0.130$, and public health was not a significant predictor, $F(2, 39) = 0.88$, $p = 0.422$. However, the trifecta predictor variable did have a significant predictor result, $F(2, 39) = 4.31$, $p = 0.020$, indicating that this variable had a statistically significant positive effect on the dependent variable. The lack-of-fit test was not statistically significant, $F(37, 2) = 2.99$, p = 0.282, suggesting that there was no significant lack of fit in the model. See Table 16 for a summary of the findings.

Table 16

COVID-19 Case Rate and Governance Factors

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Regression	6	0.72444	0.12074	1.96	0.095
RM	1	0.04868	0.04868	0.79	0.380
Governor	1	0.14768	0.14768	2.40	0.130
Trifecta	2	0.53134	0.26567	4.31	0.020
PH	2	0.10878	0.05439	0.88	0.422
Error	39	2.40333	0.06162		
Lack-of-Fit	37	2.36059	0.06380	2.99	0.282
Pure Error	2	0.04274	0.02137		
Total	45	3.12776			

N = 46

A focused analysis of the association between COVID-19 case rates and state trifecta status was conducted using ANOVA with a post-hoc Tukey test. The results indicated that the trifecta variable had a statistically significant effect on COVID-19 case rates ($R^2 = 0.14$, $p = 0.038$). The Tukey test further identified significant differences in case rates between states with Republican and Democratic trifectas, highlighting a statistically significant higher interaction between Republican state governance and COVID-19 case rates than that of the Democratic governance states indicating a statistically significant positive association with COVID-19 cases and strong Republican leaning states. Table 17 provides a summary of the grouping information using the Tukey method and 95% confidence.

Table 17

ANOVA Tukey Post Hoc: COVID-19 Case Rate and State Governance Trifecta

Trifecta	N	Mean	Grouping	
Republican	18	0.8292	A	
Divided	15	0.7393	A	B
Democratic	13	0.5879		B

Population Density and COVID-19 Health Outcomes

Using the ANOVA, multiple and simple regression statistic tests, the predictor variables, state region, population, and population density were analyzed with the response factors, COVID-19 death, and case rates. To ensure valid results, the appropriate data assumptions were evaluated, including the type of data (interval), having a large enough sample size ($n \geq 25$) and the data sets were assessed for distribution normality. A summary of the data sets per state is displayed in Table 18 (United States Census Bureau, n.d.; World Population Review, n.d.).

Table 18

Population Density and Geography Demographics

State	Region[5]	Population[6]	People per Square Mile[6]
AK	West	733378	1.3
AL	South	5024356	99.2
AR	South	3011555	57.9
AZ	West	7151507	62
CA	West	39538245	253.0
CO	West	5773733	55.7
CT	Northeast	3605942	744.7
DE	South	989957	508.0
FL	South	21538226	401.0
GA	South	10711937	185.6
HI	West	1455273	226.6
IA	Midwest	3190372	57.1
IL	Midwest	12812545	230.8
IN	Midwest	6785668	189.4
KS	Midwest	2937847	35.9
KY	South	4505836	114.1
LA	South	4657749	107.8
MA	Northeast	7029949	901.2
MD	South	6177213	636.2
ME	Northeast	1362341	44.2
MI	Midwest	10077325	178
MN	Midwest	5706504	71.7
MS	South	2961288	63.1
MT	West	1084197	7.4
NC	South	10439414	214
ND	Midwest	10439388	214.0
NE	West	1961489	25.5
NH	Northeast	1377518	153.9
NJ	Northeast	9289031	1263
NY	Northeast	20201230	428.7
OK	South	3959346	57.7
OR	West	4237291	44
PA	Northeast	13002689	290.6
RI	Northeast	1097371	1061.4
SC	South	5118429	170.3
SD	South	887799	11.7
TN	South	6910786	167.6
TX	South	29145428	111.6

Table 18 (continued)

UT	West	3271614	39.7
VA	South	8631384	218.6
VT	Northeast	643085	69.8
WA	West	7705247	115.9
WI	Midwest	5893725	108.8
WV	South	1793755	74.6
WY	West	576837	2.0

Population Density and COVID-19 death rate.

The regression analysis was conducted to examine the effects of the independent variables including population, population density, and region on the dependent variable, COVID-19 death rate.The $R^2 = 0.663$ indicates that the independent variables in the model only account for 66% of the variability in the dependent variable. Of the predictor variables, total population ($p = 0.757$) was not statistically significant suggesting that total population does not have a meaningful impact on the dependent variable in this model. However, population density ($p < 0.001$) was found to be a significant predictor in this model. The positive coefficient indicates that higher population density is associated with an increase in the COVID-19 death rate.

Among the regions, the West region had a statistically significant negative association with the COVID-19 death rate when compared to the Midwest region (reference region). There were no statistically significant findings from the the Northeast, $p = 0.191$, or the South, p = .314 regions.

The results of this analysis suggest that population density is a significant predictor of the dependent variable, with a positive relationship indicating that more densely populated areas are associated with higher COVID-19 death rates.. Additionally, the West region was found to be significant, indicating that being located in the Western region is associated with a lower

COVID-19 death rate when compared to other regions. See Table 19 for a summary of the findings.

Table 19

COVID-19 Death Rate and Population Factors

Term	N	Coef	SE Coef	95% CI	T-Value	P-Value	VIF
Constant		0.01368	0.00262	(0.00838, 0.01899)	5.21	0.000	
Population	46	-0.000000	0.000000	(-0.000000, 0.000000)	-0.23	0.822	1.05
PopDens	46	0.000035	0.000005	(0.000025, 0.000045)	6.92	0.000	1.66
Region	46						
Midwest	9	0.000000	0.000000	(0.000000, 0.000000)	*	*	*
Northeast	9	-0.00543	0.00416	(-0.01383, 0.00297)	-1.31	0.199	2.28
South	17	-0.00335	0.00310	(-0.00962, 0.00292)	-1.08	0.287	1.88
West	11	-0.00699	0.00334	(-0.01373, -0.00024)	-2.09	0.043	1.70

Population Factors and COVID-19 case rate.

The regression analysis examined the relationship between COVID-19 case rates and population factors such as total population, population density, and U.S. region. The $R^2 = 0.377$ ($n = 46$), indicating that the model explains about 38% of the variability in the outcome, which indicates a moderate fit. The results show that population size does not significantly affect the COVID-19 case rate ($p = 0.859$), with a near-zero coefficient. In contrast, population density has a significant positive impact on case rates ($\beta = 0.000415$, $p = 0.009$), indicating that states with higher population densities tend to experience higher case rates.

Regarding regional effects, the model reveals that compared to the Midwest (the reference category), the Northeast has statistically significant lower case rates ($\beta = -0.530$, $p = 0.000$), as does the West ($\beta = -0.2607$, $p = 0.012$). However, the South does not show a statistically significant difference from the Midwest ($p = 0.237$). See Table 20 for a summary of the results.

Table 20

COVID-19 Case Rate and Population Factors

Term	N	Coef	SE Coef	95% CI	T-Value	P-Value	VIF
Constant		0.8531	0.0782	(0.6951, 1.0112)	10.91	0.000	
Population	46	-0.000000	0.000000	(-0.000000, 0.000000)	-0.18	0.859	1.05
PopDens	46	0.000415	0.000151	(0.000110, 0.000719)	2.75	0.009	1.66
Region	46						
Midwest	9	0.000000	0.000000	(0.000000, 0.000000)	*	*	*
Northeast	9	-0.530	0.124	(-0.780, -0.279)	-4.28	0.000	2.28
South	17	-0.1110	0.0925	(-0.2979, 0.0760)	-1.20	0.237	1.88
West	11	-0.2607	0.0994	(-0.4617, -0.0598)	-2.62	0.012	1.70

Case Study: California and Florida Path Analysis Mediation Model

Building upon the concept of using predictor variables to assess COVID-19 health outcomes, a case study was included utilizing a path analysis mediation model. The case study explored selected predictor variables and COVID-19 health outcomes between California and Florida, two extremely different states in terms of geography and political ideology. This offers a statistical comparison between two states.

The independent predictor variables included population density, obesity, age 65 and older, chronic lung disease, and Democratic voter registration. The mediation variable was the COVID-19 case rate, and the direct variable was the COVID-19 death rate. The path analysis was designed to test for the presence of mediation by estimating the indirect effect of the independent variables through the mediation variable COVID-19 case rate, on the dependent variable. The Democratic voter registration independent variable was selected based on previous research indicating that Democratic leaning voters tended to be more compliant to COVID-19 mobility restrictions than other political party associations (Allcott et al. 2020; Grossman et al.

2020; Hsiehchen, et al., 2020; Testa, et al. 2021). Population density, obesity, age 65 and older, and chronic lung disease were mapped as direct predictor variables to the dependent variable.

These independent variables were selected based on health experts' suggestions that such factors may increase the risk and severity of a COVID-19 infection (CDC, 2021). Population density served as a proxy for social distancing with the remaining factors representing underlying health conditions.

The Democratic voter registration independent variable was excluded from mapping as a direct predictor variable since it is improbable that a political ideological preference would contribute to a health condition without other confounding conditions. Figure 6 illustrates the COVID-19 path analysis mediation model results for California and Figure 7 illustrates the COVID-19 path analysis mediation model for Florida.

Figure 6

Path Analysis Mediation Model Outcomes for California and Florida

California

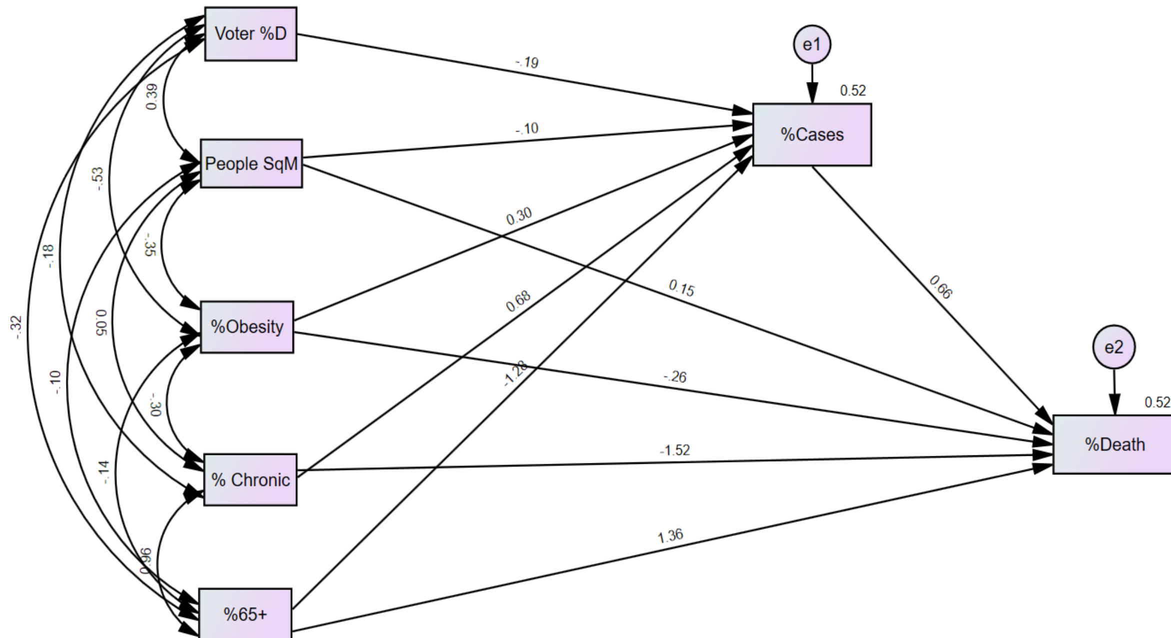
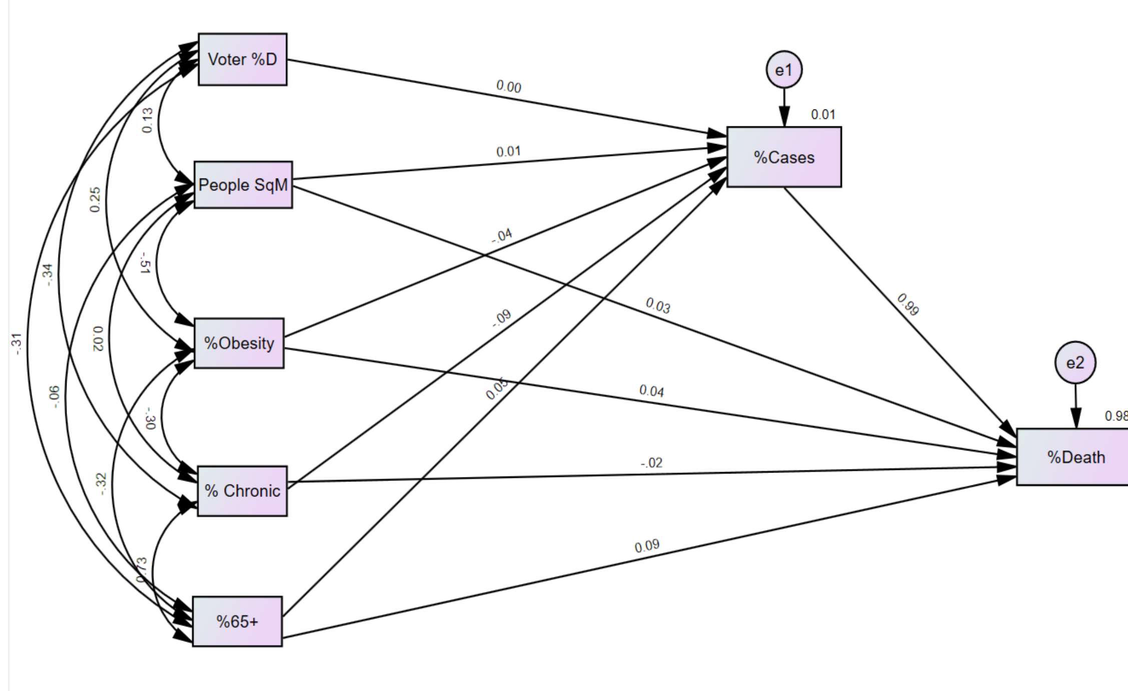


Figure 7

Path Analysis Mediation Model Outcomes for Florida

Florida



State Characteristics

The governance of California and Florida differed significantly during the pandemic. California was led by a Democratic governor and had a Democratic majority in both the state House of Representatives and the state Senate. In contrast, Florida was governed by a Republican governor and held Republican majorities in both legislative branches. Additionally, Florida governs sixty-seven counties, while California has fifty-eight counties.

California has the largest population in the United States. Florida, which ranks third, has nearly half of California's population (45%). Florida also has an older population, with 21.6% of its residents age 65 or older, compared to 14.8% in California. California's stay-at-home executive orders had an RMI index of 0.38, while Florida's RMI was 0.30. Table 21 provides a summary of the California and Florida state characteristics.

Table 21

California and Florida State Characteristics

Indicator	California	Florida
Governor	Democratic	Republican
State Government	Democratic Trifecta	Republican Trifecta
Population	39,538,245	21,538,226
Number of Counties	67	58
Population age 65 and older	14.8%	21.6%
COVID-19 Death Rate	0.011	0.018
COVID-19 Case Rate	0.64	0.87
Restrictive Measure Index	0.38	.30

The findings reveal that there was a significant difference in the COVID-19 death rate (p =.040) between the two states, with California (M = .00057) having a lower death rate than Florida (M = .0015). Table 22 summarizes the COVID-19 death rate data for the two states.

Table 22

COVID-19 Death Rate, Two Sample t-Test

	California	Florida
Mean	0.000565562	0.001521837
Variance	0.0000002	0.000012
Observations	58	67
Hypothesized Mean Difference	0	
df	123	
t Stat	-2.076953282	
P(T< = t) two-tail	0.0398	
t Critical two-tail	1.979438685	

California also had a lower COVID-19 case rate (M = 0.05) than Florida (M = 0. 083). However, the data analysis revealed that the differences in the COVID-19 case rate were not found to be statistically significant (p = .131). Table 23 provides a summary of the data related to COVID-19 case rates by state.

Table 23

COVID-19 Case Rate Two Sample t-Test

	California	Florida
Mean	0.0514	0.083
Variance	0.00068	0.0295
Observations	58	67
Hypothesized Mean Difference	0	
df	70	
t Stat	-1.526310665	
P(T< = t) two-tail	0.1314	
t Critical two-tail	1.994437112	

When exploring the differences in the population age of the two states, the findings reveal a significant difference between the two states with California having a lower percentage of the age 65 years and older population than Florida (19% and 23% respectively, $p < .004$). Table 24 summarizes the age 65 years and older results.

Table 24

Age 65 Years and Older Two Sample t-Test

	California	Florida
Mean	0.19518	0.23070
Variance	0.00350	0.00590
Observations	58	67
df	123	
t Stat	-2.8603675	
P(T< = t) two-tail	0.0049733	
t Critical two-tail	1.9794386	

The findings show that chronic lung disease is more prevalent in Florida than in California (*M* = 0.117, M = 0.105 respectively). The difference between the two states is statistically significant (p < .000). Table 25 provides a summary of the two-sample *t*-test statistic test.

Table 25

Chronic Lung Disease Two Sample t-Test

	California	Florida
Mean	0.105672517	0.117941791
Variance	2.93065E-05	0.000110941
Observations	58	67
Df	123	
t Stat	-8.000670002	
P(T< = t) two-tail	7.79552E-13	
t Critical two-tail	1.979438685	

A comparison of the prevalence of obesity differed significantly between California and Florida (M = .27, and M = .31 respectively, $p = .000$). The results of the two-sample test are summarized in Table 26.

Table 26

Obesity Two Sample t-Test

	California	Florida
Mean	0.2744	0.3120
Variance	0.0032	0.0031
Observations	58	67
Df	123	
t Stat	-3.72691	
P(T< = t) two-tail	0.000	
t Critical two-tail	1.979438	

Democratic voter registration was explored to serve as the proxy for the political influence of the state population. The results of the two-sample *t*-test revealed a significant difference among the population of each state identifying as registering as a Democratic voter ($p = 0.004$). A higher number of people living in California register as Democrats. A summary of the statistics is listed in Table 27.

Table 27

Democratic Voter Registration Sample t-Test

	California	Florida
Mean	0.393	0.339
Variance	0.011	0.009
Observations	58	67
df	123	
t Stat	2.894	
P(T< = t) two-tail	0.0044	
t Critical two-tail	1.979	

The results of the analysis of Population density do not indicate a statistically significant difference between the two states (M = 730.6 and M = 384.5, p = .27). See Table 28.

Table 28

Population Density Sample t-Test

	California	Florida
Mean	730.6137931	384.5134328
Variance	6280450.153	329598.4772
Observations	58	67
df	123	
t Stat	1.098267942	
P(T< = t) two-tail	0.274232733	
t Critical two-tail	1.979438685	

Path Analysis Mediation Model Fit

The path analysis mediation model was evaluated to ensure a good fit. This was accomplished by analyzing the chi-square divided by degrees of freedom (CMIN/DF), goodness of fit index (GFI), Tucker-Lewis's index (TLI), comparative fit index (CFI), and root mean square error of approximation (RMSEA). Since path analysis differs from traditional analysis in both flexibility and a lack of specific significant tests, Multiple tests were selected to ensure a

good model fit (Smith & McMillan, 2001; Suhr, 2006). The model fit results indicate a reasonable to excellent fit on the tests evaluated except for the RMSEA, which was slightly below acceptable fit (Newsom, 2023). Table 29 provides a summary of the model fit results.

Table 29

Path Analysis Mediation Model Fit

Explication	Accepted Fit	Result Fit
Chi-square divided by degrees of freedom	≤ 3 indicates acceptable fit. ≤ 5 indicates reasonable fit.	1.25 Reasonable fit
Goodness of fit Index	≥ 0.90 indicates reasonable fit. ≥ 0.95 considered an excellent fit	0.995 Excellent fit
Tucker-Lewis Index	≥ 0.90 indicates reasonable fit. ≥ 0.95 considered an excellent fit	0.991 Excellent fit
Comparative fit Index	≥ 0.90 indicates reasonable fit. ≥ 0.95 considered an excellent fit	0.999 Excellent fit
Root means square error of approximation	≤ 0.05 considered excellent. ≤ 0.08 considered acceptable.	.091 slightly below acceptable fit

Direct Effect of Independent Variables on COVID-19 Death Rate

The squared multiple correlation coefficient results for California and Florida (R^2 = 0.521 and R^2 = 0.971 respectively) were used to understand the estimated proportion of the variance of the dependent variable explained by the independent variables. Notably, the Florida dataset included a large outlier (Volusia County), which was subsequently removed to reassess its impact on the analysis. After removal, the R^2 value adjusted to 0.773 ($n = 66$, $p < .001$), confirming a statistically significant strong correlation between COVID-19 case and death rates in Florida.

Table 30 displays the summary for both the COVID-19 death rate dependent variable and the mediation variable, COVID-19 case rate.

Table 30

Squared Multiple Correlation Estimates Summary

California (n = 58)	**R^2**	**Florida (n = 67)**	**R^2**
Cases	.52	Cases	.005
Deaths	.521	Deaths	.979

These squared multiple correlation values were used to calculate the strength of the independent variables by excluding each independent variable individually and assessing each independent variable for the strength effect of that variable. Table 31 lists the acceptable margins for assigning strength effect (Kumar, 2021).

Table 31

Independent Variable Strength Guide

Effect Size	**Independent Variable Strength**
Less than 0.15	Weak
Between 0.15 and 0.35	Moderate
Greater than 0.35	Strong

For California, the strength of the relationship between the independent variables on the COVID-19 death rate was evaluated using the formula $R_1^2 = .521$, $1 - R_I^2 = .479$. The California COVID-19 case rate was the strongest independent variable effect on predicting COVID-19 death rate. Chronic lung disease and age 65 and older indices indicate a moderate independent variable effect strength, and the population density and obesity factors indicate a weak independent variable effect strength in this model. Table 32 summarizes the strength of the independent variables and the California death rate.

Table 32

Strength of Independent Variables and California Death Rate

Independent Variable	**R_E^2**	**$(R_I^2 – R_E^2)$**	**$\frac{(R_I^2 – R_E^2)}{(1 – R_I^2)}$**	**IV Effect Strength**
Case	.319	.202	.422	**Strong**
Population Density	.506	.015	.031	Weak
Obesity	.484	.037	.077	Weak
Chronic Lung Disease	.418	.103	.215	**Moderate**
Age 65 and Older	.441	.080	.167	**Moderate**
Democratic Voter Registration	.521	0	0	Weak

The formula to calculate the IV strength effect for Florida was $R_1^2 = .979$, $1 - R_1^2 = .021$. The Florida model indicated that COVID-19 case rate had the strongest direct effect for predicting the COVID-19 death rate. All other independent variables indicated a weak effect. Table 33 summarizes the strength of the independent variables and the Florida death rate.

Table 33

Strength of Independent Variables and Florida Death Rate

Independent Variable (n = 67)	**R_E^2**	**$(R_I^2 – R_E^2)$**	$\frac{(R_I^2 – R_E^2)}{(1 – R_I^2)}$	**IV Effect Strength**
Covid-19 Case rate	.009	0.970	46.19	**Strong**
Population Density	0.979	0	0	Weak
Obesity	0.978	.001	0.048	Weak
Chronic Lung Disease	0.979	0	0	Weak
Age 65 and older	0.976	0.003	0.143	Weak
Democratic Voter Registration	.979	0	0	Weak

COVID-19 case rate, as the mediation variable was also a dependent variable. The formula to calculate the IV strength effect for California case rate was

$R_I^2 = .536$, $R_I^2 - R_E^2 = .464$. The California model indicates that the age 65 and older independent variable had a moderate direct effect on predicting COVID-19 cases rates. All other independent variables indicated a weak effect. Table 34 summarizes the strength of the independent variables and the California case rate.

Table 34

Strength of Independent Variables and California Case Rate

Independent Variable (n = 58)	R_E^2	$(R_I^2 - R_E^2)$	$\frac{(R_I^2 - R_E^2)}{(1 - R_I^2)}$	**IV Effect Strength**
Population Density	.530	.006	.013	Weak
Obesity	.489	.047	.101	Weak
Chronic Lung Disease	.512	.024	.052	Weak
Age 65 and Older	.453	.083	.179	Moderate
Democratic Voter Registration	.529	.007	.015	Weak

The formula to calculate the IV strength effect for Florida case rate was R2 = .018, $R_I^2 - R_E^2 = .982$. The Florida model indicated that the independent variables indicated a weak effect for predicting COVID-19 case rate. Table 35 summarizes the strength of the independent variables and the Florida case rate.

Table 35

Strength of Independent Variables and Florida Case Rate

Independent Variable (n = 67)	R_E^2	$(R_I^2 - R_E^2)$	$\frac{(R_I^2 - R_E^2)}{(1 - R_I^2)}$	IV Effect Strength
Population Density	.017	.001	.001	Weak
Obesity	.017	.001	.001	Weak
Chronic Lung Disease	.013	.005	.005	Weak
Age 65+	.016	.002	.002	Weak
Democratic Voter Registration	.008	.010	.010	Weak

Mediation Analysis

The path analysis in this study includes a mediation variable, COVID-19 case rate, as an intermediary factor to assess if the independent variables had a direct effect on the response variable, COVID-19 deaths, or a partial mediation effect, or both. The COVID-19 case rate data s was also mapped as a direct effect on COVID-19 death rate. To determine the independent variable on the dependent variable through the mediation variable, the unstandardized indirect effects and direct effects results were used. The results of the relationship between the COVID-19 case rates on COVID-19 death rates were significant for both California and Florida. The results are summarized in Table 36.

Table 36

Summary of Direct Effect of COVID-19 Cases on COVID-19 Death Rates

Relationship	Direct Effect	Confidence Interval		P-value	Conclusion
		Lower Bound	Upper Bound		
California Cases->Death (n = 58)	0.011	0.003	0.222	0.004	Full Effect
Florida Cases->Death (n = 67)	0.020	0.010	0.020	0.003	Full Effect

For the California model, the analysis of the mediating role of COVID-19 case rate on the relationship between independent variables on COVID-19 death rate revealed a partial and significant indirect effect of the impact of the age 65 and older and obesity independent variables on COVID-19 death rate ($b = -0.006$, $p = 0.026$, $b = 0.002$, $p = 0.040$, respectively). The remaining independent variables, Population density, chronic lung disease, and Democratic voter registration did not reveal a positive or significant indirect effect on COVID-19 death rate. Table 37 provides a summary of the mediation analysis.

Table 37

California Mediation Analysis Summary

Relationship	Direct Effect	Indirect Effect	Confidence Interval		P-value	Mediation Conclusion
n = 58			Lower Bound	Upper Bound		
Age 65 over>Cases->Death	0.010	-0.006	-0.015	-0.001	0.026	Partial Effect
PopDensity>Cases->Death	0.000	0.000	0.000	0.000	0.114	No Significant Effect
Obesity>Cases->Death	-0.260	0.002	0.001	0.006	0.044	Partial Effect
ChrLgD->Cases->Death	-0.002	0.037	-0.033	0.114	0.117	No Significant Effect
VoterD->Cases->Death	N/A	-0.001	-0.001	0.000	0.004	No Significant Effect

The Florida mediation analysis indicates that the relationship between the independent variables on COVID-19 death rate through the mediation variable were not statistically significant for any of the independent variables evaluated. The results are summarized in Table 38.

Table 38

Florida Mediation Analysis Summary

Relationship	Direct Effect	Indirect Effect	Confidence Interval		P-value	Conclusion
n = 67			Lower Bound	Upper Bound		
Age 65 and older->Cases->Death	0.86	0.047	-.817	3.006	0.770	No Significant Mediation
Population density->Cases->Death	0.029	0.009	-0.311	0.196	0.841	No Significant Mediation
Obesity>Cases->Death	0.035	-0.040	-0.308	0.172	0.688	No Significant Mediation
ChrLgD->Cases->Death	-0.022	-0.092	-3.038	0.637	0.206	No Significant Mediation
VoterD->Cases->Death	N/A	0.002	-0.144	0.637	0.985	No Significant Mediation

Overview of Results

This study focused on identifying the relationship and association of independent variables on the response variables COVID-19 case and death rates. The independent variables included the novel RMI created to represent the level of COVID-19 policy restrictions per state. The independent variables, governance, population, and geography indices were collected from

secondary data sources from government or reliable independent organizations. Table 39 summarizes the findings of the study.

Table 39

Summary of Findings: National Study

Independent Variable	**Conclusion**
Restrictive Measure Index	The RMI was not found to be statistically significant in determining an association with COVID-19 health outcomes.
Governor Political Party Affiliation	Political Party Affiliation was not found to be statistically significant in determining an association with COVID-19 health outcomes.
State Government Political Lean	The Republican trifecta states had a **statistically significant** higher COVID-19 Case Rate than the Democratic state governance models.
Public Health Structure	The type of Public Health structure was not found to be statistically significant in determining an association with COVID-19 health outcomes.
Population	State population was not found to be statistically significant in determining an association with COVID-19 health outcomes.
State Region	The West Region had a **statistically significant** lower COVID-19 death rate than the other regions. The West and Northeast regions both had a s**tatistically significant** lower COVID-19 case rate than the Midwest and South regions.
Population Density	The Population Density factor was s**tatistically significant** for both the COVID-19 case and death rates.

The case study expanded upon the concept of this study by comparing the COVID-19 health outcomes of two states with different population and geographical differences. The addition of underlying health conditions as independent variables provided a basis for comparing the health of the two different states to determine if the overall health of a state makes a difference in public health crisis management decision making. The addition of adding

Democratic voter registration as a study variable was included to tease out the impact of political party affiliation on COVID-19 health outcomes at the community level. Table 40 provides a summary of the case study findings.

Table 40

Summary of Findings: Case Study

Variable	**Conclusion**
COVID-19 Case and Death Rates	California had a **statistically significant** lower COVID-19 death rate than Florida; however, the difference in the COVID-19 case rate was not found to be statistically significant.
Age 65 years and older	California had **a statistically significant** lower percent of the population being aged 65 and older than Florida.
Chronic Lung Disease	Florida had a **statistically significant** higher prevalence of chronic lung disease than California.
Obesity	California had a **statistically significant** lower prevalence of obesity than Florida.
Democratic Voter Registration	California had a **statistically significant h**igher percent of people registering as a Democratic voter than Florida.
Population Density	There was not a statistically significant difference of population density between California and Florida.
Strength of the COVID-19 Case Rate Predictor Variable	**California** and **Florida** had a **strong** association between the strength of the COVID-19 case rate as a predictor of the COVID-19 death rate.
Strength of the Chronic Lung Disease Predictor Variable	**California** had a **moderate** association between chronic lung disease independent variable and COVID-19 case and death rate. Florida had a weak association between these variables.

Table 40 (continued)

Strength of the Age 65 and Older Predictor Variable	**California** had a **moderate** association between age 65 and older and the COVID-19 death rate. **Florida** had a **weak** association between these variables.
Strength of Democratic Voter Registration	California and Florida had no statistically significant association between Democratic voter registration and the COVID-19 death rate.
Mediation COVID-19 case rate < COVID-19 death rate	Full mediation for both California and Florida
Mediation of Age 65 and Older < COVID-19 death rate	California had a partial mediation effect; Florida did not have a statistically significant mediation effect.
Mediation Obesity < COVID-19 death rate	California had a partial mediation effect: Florida did not have a statistically significant mediation effect.
People per Square Mile < COVID-19 death rate Chronic Lung Disease < COVID-19 death rate Democratic Voter Registration < COVID-19 death rate	These independent variables did not have a statistically significant indirect effect on COVID-19 death rates.

Summary

This chapter includes the presentation of data analyses from the newly created RMI factor and secondary data sources. The indices from the secondary data were obtained from government supported platforms or well recognized, reliable non-profit entities. The results of the data also include the results of the case study, designed to demonstrate the practical application of the research concepts.

The data analysis was organized to response to the proposed research questions. The primary focus was to establish and compare the degree of restrictiveness among the states stay-at-home executive orders and explore the association of those findings with COVID-19 case and

death rates. The secondary goal was to compare COVID-19 relevant factors such as governance, geography, and population indices with COVID-19 outcome data to identify any exogenous predictors that may benefit future mitigation strategies. Finally, this research includes a case study designed to apply the study concept and tools to compare two states using a path analysis mediation model.

The following chapter includes a restatement of the purpose of this study, the research questions, and a summary of the findings. The chapter concludes with the implications of this study and recommendations for future research.

Chapter V

Discussion

The 2020 COVID-19 pandemic rattled the world. The rapid spread of the virus and the number of deaths nations were experiencing required government leaders to act both quickly and decisively. The ensuing lockdowns left us with media images of people from all areas of the globe rebelling from not being able leave their homes (Locker & Hoffman, 2020; Reuters, 2020). The world viewed government orders as restrictive in the most sense of the word. It was not long before Americans experienced facsimiles of such government-imposed actions in their own states and communities (Deane, et al., 2021). It is imperative that government authorities identify the strengths of the pandemic response, and what could have been done better in preparation for the next public health disaster.

Purpose of the study

The aim of this study was to identify the level of restrictiveness of the governor issued stay-at-home EOs and compare those measures with the associated state COVID-19 health outcomes. Other study indices including political ideology, population characteristics, and geography were also explored to understand other potential factors that may have influenced the COVID-19 health outcomes.

Of the fifty states, forty-six governors released 121 stay-at-home EOs with varying degrees of restrictiveness during the first year of the pandemic. Extracted restrictive phrases were coded as being least, moderate, or most restrictive in tone and directive. Each state received an RMI score which served as an Index reference for comparing states for their overall restrictive

level of the COVID-19 non- non-pharmaceutical pandemic response actions. Other than the novel RMI, this study relied on secondary publicly available data sources for the independent and response variables.

This study includes a case study. The purpose of the case study was to assess the practical application of using the research concepts as a tool to compare differing government approaches with COVID-19 outcomes. This in turn will offer an additional option to consider when making crisis management decisions. California and Florida were selected as the case study subjects since they broadly differ on factors such geography, political ideology, and population-based indicators.

Combined, these research goals contribute to the body of literature on pandemic response strategies and assessment tools for future consideration. Additionally, understanding crisis decision making within an American federalism government structure may also prove valuable to health officials (Rocco et al., 2020).

Restatement of the Study Questions

The following four research questions serve as the guiding principles for completion of the data collection, analytics, and discussion on how the findings of this study may contribute to public health emergency preparedness in America.

1. To what extent did the level of restrictiveness in COVID-19 stay-at-home policy mandates issued by state governors vary across different states?
2. Was there an association between the COVID-19 stay-at-home policy restrictiveness and COVID-19 case and deaths rates?
3. What role did government characteristics and regional demographics have on COVID-19 health outcomes?

4. “Was there a difference in the predictive effect of selected independent variables on COVID-19 health outcomes between California and Florida?

Discussion of Key Findings

Throughout the pandemic, there were numerous debates and concerns raised about the impact of government-imposed restrictions on civil liberties, including privacy rights, freedom of movement, and freedom of assembly. Those concerns were particularly pronounced in countries where strict lockdown measures were enforced for prolonged periods (Human Rights Watch, 2020; Kontorovich & Goodwin, 2020; Milano, 2020). Most agree that aggressive COVID-19 mitigation efforts were needed to save lives but less agreement on reconciling those actions with the societal sacrifices that were required to be made (Stokes et al, 2022). Crisis management decision makers faced this conundrum differently across America. The information obtained from this study contributes to this debate.

The results of this study indicate that the COVID-19 stay-at-home EOs differed in the level of restrictiveness across the nation contributing to the response to the question “To what extent did the level of restrictiveness in COVID-19 stay-at-home policy mandates issued by state governors vary across different states?” The restrictiveness level ranged from 0.20 (least restrictive) to 0.475 (most restrictive). Yet, overall, in both the national analysis and the California and Florida case study, the findings indicated that the COVID-19 policy restrictions did not have a statistically significant impact with the corresponding state COVID-19 case and death rates. These findings provide insight into the study question, “Was there an association between the COVID-19 stay-at-home policy restrictiveness and COVID-19 case and deaths rates?”

While the lack of a significant finding among stay-at-home EOs level of restrictiveness and the effect on COVID-19 case and death was surprising, it is not insignificant. The disruption the response to the pandemic had on everyday life; financial hardship, and personal post-pandemic trauma needs to be addressed. People lost lives, and people lost their livelihood. Children learning has been severely compromised and fear of COVID-19 remains. Reconciling these factors warrant serious reflection, contemplation, and understanding of what worked and what improvements in a future public health response can be made. The results of this study are a steppingstone to that learning process, starting with further confirmatory research to build upon these findings.

There are a few other studies that were similar in concept to this study. Those studies examined variations of the impact of COVID-19 restrictions on health outcomes, with varying conclusions regarding effectiveness of the restrictions. For instance, Stockenhuber (2020) reported that stringent restrictions implemented quickly resulted in fewer deaths, emphasizing the importance of actions such as lockdowns and social distancing. Spiliopoulos (2022) reported that early and targeted interventions were more effective than prolonged, indiscriminate lockdowns. Spiliopoulos (2022) also found that the effectiveness of lockdowns and restrictions varied significantly across different regions and countries emphasizing the need for balanced measures rather than extreme lockdowns. While Herby et al. (2022) reported that stay-at-home orders had only a modest effect when other interventions were already in place. In a study of 130 countries, Stokes et al. (2022) concluded that compulsory school and workplace closures appeared to have been an effective mitigation strategy, however, less damaging interventions should be considered in future epidemics. These studies suggest the importance of targeted

interventions to minimize the impact of the economic and social costs of strict lockdowns. The findings of this study support that assumption.

Population Density Matters

The analysis of population density is predicated upon isolation or quarantine strategies, i.e., reducing or eliminating the distance between the non-infected individuals with the infected population, to mitigate the spread of contagious diseases. The practice of quarantining sick individuals is not new, dating back to ancient times and has evolved significantly over centuries (Rothstein et al., 2003; Tognotti, 2013).

The results of this study support the actions associated with social distancing as evidenced by the finding that the number of people per square mile had a statistically significant positive association with COVID-19 case and death rates among the states. Hamidi et al., (2020) reports comparable results of a relationship between population density and COVID-19 transmission. They found significant differences in COVID-19 incidence and mortality rates between urban and rural areas. Urban areas generally experienced higher rates of infection and mortality compared to rural areas (Hamidi, et al., 2020; Upshaw et al., 2021).

Interestingly, the results of this study revealed no significant difference in the association between the total state population and COVID-19 case and death rates. This is indictive of the distinction between the number of total people verses population density i.e., the number of people per a specific area. The standard six-foot distance measurement of social distancing universally applied across America was not founded upon scientific research (United States House of Representatives, 2024) and should therefore be given greater consideration in determining a more reliable measurement based on the transmission characteristics of future contagions.

Of significance was the finding that the Western region states, collectively, had a statistically significant lower COVID-19 case and death rates than the other regions. In addition to the West, the Northeastern region also had a statistically significantly lower COVID-19 case rate than the Midwest and South regions as well.

Several factors contribute to lower COVID-19 case rates in less densely populated areas. These include reduced person-to-person contact and more natural social distancing, both of which limit opportunities for the virus to spread. In such areas, individuals are more likely to practice greater social distancing compared to those in densely populated urban regions.

The case study results align with these findings. In California, a state in the West region, there was a statistically significant relationship between population density and lower COVID-19 case rates. However, in Florida, a state in the South region, no strong association was found between population density and COVID-19 case rates. When assessing COVID-19 death rates in relation to population density, California was found to have a statistically lower death rate than Florida.

Role of Politics in COVID-19 Crisis Management

Assessing the effectiveness of COVID-19 crisis management is challenging given the multitude of factors related to a SARS Co-V2 infection. However, due to the heightened level of rhetoric, this study included an assessment of the impact of state political ideology and the associated state COVID-19 case and death rates.

The findings of this study did not reveal a statistically significant association between state governorship or the type of state public health infrastructure in place and the associated COVID-19 death rates. However, the findings indicate that states with a Republican trifecta had a statistically higher COVID-19 case rate than the Democratic or mixed state governance models.

In a similar study, Rothwell and Zelizer (2020) analyzed the correlation between state political affiliation and COVID-19 health outcomes. They found that states with a higher percent of Republican voters or Republican-led governments experienced higher rates of COVID-19 case and death rates when compared do Democratic leaning states. At the county-level data one study also found that Republican leaning counties tended to have higher COVID-19 case and death rates than non-Republican leaning counties (Hswen et al., 2021).

Curley and Federman (2020) examined the motivations behind state executive orders issued in response to the COVID-19 pandemic in the U.S. Studies found that enforcement decisions varied widely, influenced by political considerations and inter-governmental tensions within states (Curley & Federman, 2020; Federman, & Curley, 2022). These research studies highlight the complex decision-making processes governors faced, balancing public health concerns with political and economic pressures.

Collectively, these studies provide insight into how political factors may intersect with COVID-19 outcomes at the state and county levels in the U.S. While there is research suggesting a plausible correlation between political factors and COVID-19 outcomes (Curley & Federman, 2020; Federman & Curley, 2022; Hswen et al., 2021), the situation is complex and influenced by numerous variables. Public health responses, individual behaviors, healthcare infrastructure, and demographic characteristics all contribute to the overall impact of the pandemic in different regions. It is also important to note that correlation does not necessarily imply causation, and there are confounding factors that influence both political leanings and COVID-19 outcomes.

Data Integrity

The variation in the results of the current COVID-19 study may be a result of the challenges researchers face when conducting social science research. Related studies exploring

COVID-19 outcomes through a comparative public policy approach note the data collection and interpretation challenges when assessing COVID-19 government intervention strategies (Farivar, 2021; Kerr et al., 2021; The Royal Society, 2023).

During the COVID-19 pandemic, most of the research on COVID-19 mitigation efforts relied on national and international secondary data sources. While this is an efficient and effective way to rapidly obtain data, the collection process may not be congruent with the needed research considerations of the current research with that from the original source (Bryman & Bell, 2015; Graves et al., 2009; King et al., 1994). However, access to government funded COVID-19 data trackers provided researchers access to real time COVID-19 health outcome numbers offering data consistency across studies.

Case Study

California and Florida are different in many ways. During the first year of the pandemic, California had a lower COVID-19 case rate per capita compared to Florida. California's COVID-19 death rate was also lower per capita than Florida. This difference was found to be statistically significant. California had a strong Democratic leaning governance contrasted with Florida's strong Republican governance lean. California had a younger population with approximately 15% of the population being age 65 and older compared to 22% of Florida's population from the same age category. California had a lower percent per capita of chronic lung disease and obesity than Florida.

This comparison demonstrates that health matters. Health experts identified several underlying health conditions that increased the risk and severity of a COVID-19 infection. When comparing the two divergent states, including the underlying health parameters, the California

population had a lower prevalence of underlying health conditions among the population that contribute to COVID-19 health outcomes than Florida.

The findings of this case study suggest that understanding the most vulnerable populations and the factors that exacerbate contracting contagions should be given a higher level of consideration when issuing restrictive mandates. This strategy is consistent with the findings and recommendations of other studies (CDC, 2021; Williamson, 2020; Yancy (2020).

Implications of The Study

Disasters change lives. Whether it be through lived experience or stories passed down to family members, widescale disasters disrupt social norms. Individuals who lived through events such as the Great Depression, the catastrophic 911, and now, COVID-19, have reset their socio-economic frame of reference to align with the timing of the incident and their personal associated physical and mental health experiences (Alper et al., 2020; Nicola et al., 2020a; Vowels et al., 2022). The implication of this study underscores the importance of understanding the impact of implementing pandemic type crisis interventions when the public is being asked to make considerable changes in their lives for their own protection and the betterment of all.

Disaster lived experience may lead to lifelong trauma depending on the severity of the impact on the individual and family unit. Psychology experts have yet to agree on the inclusion of COVID-19 as meeting the clinical definition of trauma, though most clinicians agree that COVID-19 may lead to a new type of trauma. For example, hoarding-like behaviors increased during the pandemic This was evidenced by the panic buying of food and consumables witnessed in both the Great Depression and the 2020 COVID-19 pandemic, for fear of not being able to provide basic family needs (Andrade et al., 2022; Hansel et al., 2022; Fontenelle et at., 2021; Mathews, 2020; Zhao et al., 2022). Fitzpatrick et al. (2020), surveyed U.S. adults across the

nation finding that fear and anxiety were positively correlated in areas of high COVID-19 case rates. They also reported that individuals experiencing social vulnerabilities had a higher level of perceived distress.

One year post the end of the COVID-19 declaration of emergency, many individuals chose to continue to practice the COVID-19 restrictions even though the pandemic has officially ended. Today, people still wear face coverings and practice social distancing. Not that all self-protection is a terrible thing, it is just that healthy people take it too far by still wearing masks and eye shield protection as well as donning gloves. One observation was at a gas station where a young man pulled up on a motorcycle and was wearing a mask under his helmet questioning the safety of riding a motorcycle with a life threatening COVID-19 infection. Xia et al., (2023) reported that among college student study participants, mask wearing intentions during the post-COVID-19 pandemic was directly and positively associated with the fear of COVID-19.

Commonly, people now greet each other with a fist bump rather than extend their hand for a traditional handshake (Reynolds, 2020). While short-term imposed behavior restrictions may be appropriate during an active emergency, ongoing fear following the event may lead continued behaviors out of a perceived fear.

This study signals to decision makers that consideration must be given to the possible long-term consequences of those short-term mandated actions and the importance of information accuracy, transparency, and societal transitioning to a non-pandemic state to prevent potential lifelong trauma, particularly among children.

The COVID-19 personal restrictions imposed upon Americans altered economic stability, devastated small business owners, and caused children a level of learning loss to a degree never seen before (Andrade et al., 2022; Betthauser et al., 2023; Donnelly & Patrinos, 2021; Katare et

al., 2021; Kuhfeld et al., 2022). It is important to recognize the socially accepted balance between lives and livelihood for emergency incident command center decision making.

Including evidenced based decision making through real-time data tracking, simulation, and robust modeling may provide the public with the confidence they need to trust their government leaders (Araz et al., 2012; Lavis, et al., 2023; Testa et al., 2021). A publicly accessible accurate data dashboard would allow people to track various indices for their own personal monitoring interests. Cumulatively, these types of modifications may improve community members' call-to-action during a prolonged public health disaster.

Recommendations For Future Study

The primary focus of this study was to explore the effect of state-level COVID-19 policy restrictions on COVID-19 case and death rates. This section offers several recommendations for future studies that can build upon these findings, including the use of the RMI database.

Factors influencing restrictive policy decisions.

One may argue that the more stringent the restrictions are, the lower the case and death rate should be. The findings of this study did not statistically demonstrate that association. However, the impact of mandated executive orders is still important. This study showed variability in state-level RMI results, suggesting that the factors driving these restrictive actions are worth further examination. Understanding the reasons behind government restrictive mandates could offer valuable insights. Further research aimed at exploring influencing factors on the RMI may include political pressures, community demands, evidence-based data, lobbying from the pharmaceutical and medical industries, and the spread of misinformation through media and social media.

Another factor to consider for future study is the fiscal impact of the pandemic on policy development decision making. The business community lobbied extensively for pandemic financial relief to counter the economic disruptions, focusing on direct financial support, payroll assistance, tax relief, and regulatory easing. These efforts contributed to the creation of large taxpayer-funded relief packages, such as the CARES Act, aimed at stabilizing the economy and supporting struggling businesses (Amberg et al., 2021; Miller & Jackson, 2020). A comparative fiscal analysis could examine the extent to which business lobbying, through mechanisms such as campaign donations and state-specific allocations, influenced policy restrictiveness at the state level (Chen, 2021 Collins et al., 2022).

Impact of testing policies.

Equally insightful was that the findings did not suggest a strong association between COVID-19 case rates and death rates, particularly as shown in the California-Florida case study. California exhibited a weaker link between case and death rates than Florida, where a stronger correlation was observed. Intuitively, one might expect that since every COVID-19 death begins as a COVID-19 case, the case rate would strongly predict the death rate. However, it is not realistic to assume that all cases can be identified through clinical testing before a diagnosis.

Examining testing policies at the regional or subnational levels could offer valuable insights into how restrictive policies influenced outcomes across the U.S. For example, in 2020, the U.S. faced significant challenges in COVID-19 testing, which led to the underdiagnosis and underreporting of cases (Behnam et al., 2020; Wang et al., 2020a; Wu et al., 2020). However, what about the impact of over-testing, particularly when it involves mandated testing of low-risk populations, such as children and healthy individuals? Excessive testing, especially positive results in asymptomatic or mild cases that are unlikely to lead to a death may obscure the

apparent relationship between COVID-19 case rates and death rates, or at a minimum, diminish the value of the data for comparative analysis among states or regions. Examining variability in testing policies across states or building upon the comparative study of California and Florida, could shed light on these dynamics, guiding future public health resource allocation and policy decisions.

Public compliance with restrictive mandates.

Government imposed policy restrictions do not necessarily equate to policy compliance. One significant factor not included in this study that may have had an influence on the RMI and COVID-health outcomes was public compliance with the mandated requirements. Public authorities face numerous challenges when making crisis response decisions during an emergency, including decisions that impact personal freedoms and liberties as experienced during the COVID-19 pandemic. Feng et al. (2020) explored compliance with the COVID-19 mandated restrictions in North America and Europe and reported that mask mandates and social distancing measures were met with resistance and varying degrees of compliance. Bavel et al. (2020) emphasized that public trust in government plays a critical role in compliance.

To complement the results of this study, more research needs to be done to explore public compliance with government-imposed restrictions including the perception of being compliant. Americans are not accustomed to being told how to live their lives; when and where they can work, who they may gather with, and mandating social distancing and face coverings (Benzell et al., 2022; Brodeur et al., 2021). One strategy used to explore social interactions during COVID-19, was Google maps and cellular phone data to study population mobility as an indicator for compliance to stay-at-home restrictions. Preliminary findings suggest that states with COVID-19 stay-at-home orders had a 10% lower mobility rate than states with no or limited stay-at-home

restrictions (Jacobsen & Jacobsen, 2020). Another study found that overall people traveled less than they did during the pandemic than during pre-COVID-19 times, apart from travel to parks and beaches which did not differ significantly during these times (Hamidi & Zandiatashbar, 2021).

Research on individual adherence to COVID-19 mitigation strategies would assist future crisis management teams with developing evidence-based strategies to establish realistic behavior change recommendations during a public health emergency. One example might be to study the social tolerance to various levels of disaster mitigation efforts following a public education campaign. Including cultural traditions and beliefs would also contribute to understanding ways to improve compliance among diverse cultural groups.

A reasonable strategy to learn more about individual compliance to COVID-19 personal behavior mandates would be to add questions to existing national surveys such as the National Health and Nutrition Examination Survey (NHANES) and the Behavioral Risk Factor Surveillance System (BRFSS). The NHANES conducts an annual health and nutrition assessment by conducting personal interviews and complete physical examinations on a nationally represented sample (CDC, n.d.b) The BRFSS collects information on self-reported risk behaviors and preventive health practices through telephone surveys (CDC, n.d.b).

The CDC already added pandemic questions to the 2021-2023 NHANES survey. The additional questions focused on COVID-19 symptoms, testing, and vaccination history. The recent survey also conducted a COVID-19 test during the physical examination portion of the data collection process. Adding additional questions to elicit compliance to the personal behavior mandates using these types of surveys would provide a firsthand account of participants' perception of their own compliance actions during COVID.

***Impact on essential workers*.**

More research is needed to address the high turnover intentions among public health experts during the pandemic. For example, an investigation on how the pandemic has affected morale, job satisfaction, and retention rates of public health professionals over time. Further studies could assess factors contributing to burnout and turnover. Other studies may focus on the influences of different leadership styles in public health during the pandemic by analyzing how various approaches affected team dynamics, employee engagement, cross-agency collaboration, and overall effectiveness in crisis management.

Like government leadership, public trust in local public health administration wavered causing additional stress and tension for those individuals assigned to navigate the pandemic through various levels of authority. Research exploring the stories of these individuals may lead to a training platform that prepares future public health administrators for any impending public or political turbulence they may encounter during their crisis management community service term. Public trust in health agencies has shifted due to the pandemic at some level and how this has impacted public health administrators would serve to a better understanding of the relationship between trust and health behaviors to improve future communication and crisis management strategies (SteelFisher et al., 2023).

Another area for future studies is to evaluate the impact that the pandemic had on the essential worker workforce. The list of potential target populations may include health care providers, public health clinic and non-clinical staff, first responders, essential business employees, and public administrators. Many individuals working during COVID-19 experienced an unusually elevated level of stress and anxiety, leading to burnout and fatigue. Rebuilding the post-pandemic workforce is critical to strengthening our nation's state of emergency

preparedness. (Martin et al., 2023). Identifying the level of disaster post-traumatic stress may improve staff crisis management preparedness throughout an emergency event. Gaitens, et al. (2021) conducted a narrative review of forty-two studies and concluded that protecting essential workers physical and mental health remains essential but that not all employment sectors are given similar consideration. For example, health care workers received the designation of "hero" status while other essential workers, such as grocery clerks may have felt more expendable.

Impact of intergovernmental relations on public health.

Finally, it is imperative that the U.S. improve the public health intergovernmental relations between the federal, state, and local levels. Concerns about the challenges of America's current public health system is not a new topic. Prior to the pandemic, Hoornbeek et al. (2019) suggested consideration be given to a merger or consolidation of local health departments to improve public health efforts. Other researchers have raised concerns relating to the level of funding for our current public health system and the ability to sustain the necessary public health workforce needs to be able to systematically respond to a public crisis (Harper et al., 2023; Kaufman, et al. 2014; Liang, et al., 2023). Further studies are needed to assess the role of public health in emergency situations and the ongoing preventative measures needed to ensure public health safety and improve the overall health of America.

Concluding Remarks

Globally, government leaders had to take immediate action to respond to the COVID-19 pandemic for government. This included implementing several actions that forced restrictions on community businesses and individual activities. Similar to other countries, the personal restrictions imposed upon Americans altered economic stability, devastated small business owners, and caused children a level of learning loss to a degree never seen before (Betthauser et

al., 2023; Katare et al., 2021; Kufield et al., 2022). The balance between saving lives and preserving freedoms was tenuous at best.

In the context of the federalist American framework, this study examined the COVID-19 stay-at-home restrictions mandated at the subnational levels to determine the state level of restrictiveness and the impact to COVID-19 case and death rates. Since crisis decision making requires a central command or authority to ensure continuity in developing and implementing mitigation strategies, one could posit that a centralized structured government would be more deliberate in the actions that needed to be taken. In America, that model could be replicated by having political alignment between the federal, state, and local government entities. However, for the first year of the pandemic, the U.S. had a Republican president, and a party split among the fifty states. County government political ideology differs between and across states which only adds another layer of potential strife.

The findings suggest that the level of community and individual restrictions may not have had a statistically significant impact on lowering the COVID-19 case and death rates among the states. This is a crucial finding in the sense that if true, then some individuals may consider the massive disruption to our society to be done in vain. However, from a principled approach, one life saved validates the inconvenience of all. Realistically, community change through policy is a slow process. This is even more evident in a federalist society. The ability of the U.S. to pivot, expand, or retract emergency policies and procedures rapidly within the multiple levels of authority is challenging. Equally challenging is the complexity of human nature. Without widespread public trust in government decision making, compliance with imposed actions may be diminished. This is particularly evident when a high degree of compliance is needed to make an impact on the threat.

Emergency preparedness has been a cornerstone of public health and safety at all levels of government. However, the COVID-19 pandemic raised the bar to a new level by forcing government decision makers to quickly implement interventions strategies without having the time to fully vet the impact of the most restrictive strategies. Ongoing efforts to improve our nation's response to a public health emergency with evidence-based, peer reviewed research will strengthen future response efforts and rebuild public trust. For public administrators, being able to articulate the rational for policy decisions would positively impact policy development, acceptance, and implementation during a public health crisis.

This study contributes to the body of literature on crisis management, intergovernmental relations, and emergency policy implications.

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APPENDIX A: Institutional Review Board Approval

Institutional Review Board (IRB)
For the Protection of Human Research Participants

PROTOCOL EXEMPTION REPORT

Protocol Number: 04208-2021 **Responsible Researcher(s):** Barbara Longo

Supervising Faculty: Dr. Keith Lee

Project Title: *Effect of State and Local Public Health Intergovernmental Relations on COVID-19 Management.*

INSTITUTIONAL REVIEW BOARD DETERMINATION:

This research protocol is **exempt** from Institutional Review Board (IRB) oversight under 45 CFR 46.101(b) of the federal regulations **category 4**. If the nature of the research changes such that exemption criteria no longer apply, please consult with the IRB Administrator (irb@valdosta.edu) before continuing your research study.

ADDITIONAL COMMENTS:

- *Upon completion of the research study, collected data must be securely maintained (locked file cabinet, password protected computer, etc.) and accessible only by the researcher for a minimum of 3 years. At the end of the required time, collected data must be permanently destroyed. If applicable, Pseudonym lists are to be kept in a separate secure file from corresponding name lists., email addresses, etc.*

☒ ***If this box is checked, please submit any documents you revise to the IRB Administrator at irb@valdosta.edu to ensure an updated record of your exemption.***

Elizabeth Ann Olphie 08.19.2021
Elizabeth Ann Olphie, IRB Administrator

Thank you for submitting an IRB application.
Please direct questions to irb@valdosta.edu or 229-253-2947.

Revised: 06.02.16

APPENDIX B: Publicly Available Data Sources

Publicly Available Data Sources

Indicator	Year	Source
Governor Political Party	2020	https://www.nga.org/former-governors/
2020 COVID-19 Executive Orders	2020	https://CSG.org
State Political Ideology (Trifecta)	2020	https://ballotpedia.org/States#State_governments
State Public Health Structure	2012	https://www.astho.org/Research/Major-Publications/ASTHO-NORC-Governance-Classification-Report/.
State Region	2020	https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us_regdiv.pdf
Population Density/People per Square Mile, State and County	2020	https://www.census.gov/quickfacts/fact/table/
COVID-19 Case and Death Data	2020	https://covid.cdc.gov/covid-data-tracker/#datatracker-home
State and County Health Data, California, and Florida	2020	www.cdc.gov/diabetes/data https://www.countyhealthrankings.org/ https://www.cdc.gov/chronicdisease/stats/ https://www.flhealthcharts.gov/ChartsReports/rdPage.aspx?rdReport=ChartsProfiles.CountyHealthSummary https://www.cdc.gov/datastatistics/index.html https://www.cdc.gov/copd/data-and-statistics/county-estimates.html
California Specific State Data	2020	https://efaidnbmnnnibpcajpcglclefindmkaj/https://elections.cdn.sos.ca.gov/sov/2020-general/ssov/pres-summary-by-county.pdf
Florida Specific State Data Florida Specific State Data	2020 2020	https://dos.fl.gov/elections/data-statistics/voter-registration-statistics/bookclosing/ https://www.flhealthcharts.gov/ChartsReports/rdPage.aspx?rdReport=ChartsProfiles.CountyHealthSummary

APPENDIX C: COVID-19 Coding Job Aid

COVID-19 Coding Job Aid

COVID-19 Stay-at-Home Policy Research

Phraseology Data Coding for Directive and Tonal Strength

Overview

You are being asked to assist in evaluating COVID-19 policies issued by state governors during the first year of the pandemic. The purpose of this assignment is to identify any differences in the level of tone and directiveness of the intervention strategies ordered by state officials to stop the spread of the virus. The study design includes a search of the stay-at-home policies issued across this nation since these types of policies that had the greatest impact on individuals, businesses, and local governments freedoms, liberties, and local level decision making authorities.

You play a key role in this research endeavor. Your work will contribute to the findings of this study which may lead to additional research, a better understanding of best practices for implementing health interventions strategies, and an improved response to health emergencies such as the COVID-19 pandemic.

To complete this evaluation, you will be tasked with assigning a code (score) to specifically selected phrases from each of the study policies. The phrases were extracted using NVivo12, a qualitative data analysis software program. Each phrase contains one of the four selected directive modal verbs (may, should. must, and shall). This Job Aid will provide you with instructions on how to determine phrase code assignments.

The evaluation coding team includes one lead evaluator and two evaluators. The lead evaluator is also the researcher for this study. This group will is referred to as the evaluation team. The evaluation team will meet regularly to resolve any scoring anomalies and to receive further coding guidance and interpretation clarification.

The responsibility of the lead evaluator includes:

- Train the members of the evaluation team;
- Track study sets distributed to each evaluator;
- Provide the evaluation team with ongoing coding updates and guidance;
- Review actual policies for intent, as necessary;

- Search master data spreadsheet for key words or short phrases and update as needed to ensure coding agreement when scores change based on additional clarification; and,
- Maintain the master coding spreadsheet.

The responsibilities of the Evaluators include:

- Refer to the instructions for coding assignments;
- Report scoring questions to the lead evaluator for clarification and/or discussion at the team meetings; and,
- Complete assigned sets within the agreed upon timeline.

Each evaluator will receive approximately four packets of data to score over the course of the evaluation process. Each packet includes approximately twenty pages of phrases assigned to each evaluator, and approximately five of the same pages to all evaluators for a total of approximately thirty pages per set. Each evaluator will code approximately 100 pages each. There are about twenty phrases per page.

As previously noted, the evaluation team will discuss coding discrepancies during our regular meetings. The lead evaluator will refer to the actual state policies, as needed, to ensure that the phrases are coded based on the actual context of the phrase within the policy.

Inter-reliability

The lead evaluator will monitor the coding results of the same pages included in each set. Coding discrepancies will be discussed and/or clarified and shared with each evaluator. The lead evaluator will update the master coding list with the final coding determination. The lead evaluator will use the Excel search feature to ensure all the changes were captured accurately. This process serves as the inter-reliability test.

Intra-reliability

The lead evaluator will monitor the coding results of each coder by searching key terms within the assigned evaluator data set. The lead evaluator will adjust any inconsistencies based on the established coding criteria and notify the Evaluator of the changes and discuss strategies to avoid scoring inconsistencies within the evaluator's data set(s). This process serves as the intra-reliability test.

Both processes, inter and intra-reliability, serve as the strategy used to validate the data set for accuracy and reliability.

Phrase Text Coding Criteria - Instructions

The following instructions provide guidance on how to score the assigned phrases. The evaluators are asked to note any coding questions. The evaluation team will discuss specific phraseology clarification at the regularly scheduled team meetings.

Guiding Questions:

Does the phrase indicate a directive, suggestion, or requirement type of action?

If yes, assign a coding score as follows:

Lease Restrictive Category – Assign a "Least" code for the phrases that indicate what the individual, business or local governmental entity may do, what is allowable, and/or what is permissible. The code assignment of "1"is the least restrictive directive phrase and pertains mostly to the modal verbs "may" and "should", however, there are statements with the usage of the modal verbs "must" and "shall" that fit into this group.

Examples include:

- may continue to operate as normal
- should not be subject to
- may be reopened
- should continue and serve the
- may not need to
- in the absence or rules should take reasonable steps to comply
- may provide
- may leave to provide
- may continue to sell
- should be done by phone
- may remain
- may include
- may not be subject to
- may engage
- shall not apply to
- shall not be restricted from
- nor shall the person be required to

- nothing shall restrict, limit, or supersede
- officers enforcing this order should use their discretion
- may enforce
- should be enforced

Moderate Restrictive Category – Assign a “Moderate” code for the phrases that indicate an action that is allowable, or permissive but is conditional or has specific limitations/restrictions.

Examples include:

- stay home unless they must go to work
- shall also take the following actions
- should take steps to the greatest extent possible
- as long as they are consistent with
- may continue to operate indoor and only if
- may be open provided that
- may continue to operate, provided that
- shall avoid if
- shall be invalid, however, if
- should be delayed when
- may be reopened if
- may allow up to
- may resume activities as soon as
- may be sentenced to a definite
- under certain circumstances may criminally be prosecuted
- may be enforceable by state and local law enforcement
- may cite a business or individual

Most Restrictive Category – Assign a “Most” code for the phrases that indicate what is not allowed, or what must be done that is restrictive in tone. The code assignment pertains mostly to the modal verbs “must” and “shall”, however, there are statements with the usage of modal verbs “may” and “should” that fit into this group.

Examples include:

- in-person sales must adhere to
- must limit
- shall not knowingly allow
- must also
- shall be limited
- must be subject to
- shall postpone
- shall not operate after
- shall be no service of
- shall take precautions as directed by
- shall not come within six feet
- must wear cloth face coverings
- must maintain a distance of
- shall ensure social distance of
- shall remain home
- no individual who is sick may go to the
- may not require
- may cite a business or individual
- shall execute and enforce”
- shall include enforcement provisions
- must be punished by a fine

Phrase Exemptions (“0” code)

Assign a “0” score to phrases as described below. These phrases will not be included in the final data set but may be discussed in the results section as either descriptive data or areas for further study.

Does the phrase indicate a date or time implementation date or sunset date?

Since all policies have some form of an effective start and/or end date, all phrases referring to a day or time will be assigned a “0” code.

- Phrases that address the month of “May” will receive a “0” code since the word in this context is not a verb.

Does the phrase indicate the need to develop a plan or reporting procedure?

- All policies typically have some form of plan development, approval, and or reporting components, these types of phrases will be assigned a "0" code.

Does the phrase provide direction on posting signage?

- Posting is a regularly required of business and government entities. These types of phrases will be assigned a "0" code.

Does the phrase indicate acquisition or procurement guidance or instruction?

- The pandemic did give rise to procurement processes outside of the normal generally accepted accounting principles and practices; this is outside the scope of this study and may be considered for future study. These types of phrases will be assigned a "0" code.

Does the phrase refer to a suspension from a state level agency?

- Suspensions that are not at the discretion of the local government may find the suspension counterproductive to the local community. A suspension may benefit one sector and be harmful/detrimental to another. Examples include rent suspensions; this puts the burden of financial risk to the landlord as costs are still incurred.