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An Analysis of the Special Focus Facility Program and Nursing Home Quality

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A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University.

by

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Abstract

The Special Focus Facility Program is an intensive program meant to rapidly support 88 of the lowest quality nursing homes in the United States, as determined by the Five-Star Quality Ranking system. There are also 435 facility candidates which are similarly low performing but not enrolled in the program. Academic literature has largely ignored this program, and the existing grey literature is more than a decade old and does not include COVID-19 data. Applying a political economy of aging framework and using a case matching methodology, Special Focus Facilities (SFF), Special Focus Facility Candidate (SFFc) nursing homes, and 5-star nursing homes were compared on various organizational, structural, and COVID-19 outcomes. The results showed that SFF and SFFc are significantly more likely to be larger and for-profit than 5-star facilities. SFFc have improved staffing as compared to SFF and SFF and SFFc have nearly identical deficiency scope and severity. The intent of this research is to increase understanding of the efficacy of the Special Focus Facility program. More research is needed to understand if the SFF program ultimately increases quality of care. This research supports quality improvement in nursing homes.

Keywords: Nursing Home, Special Focus Facility, Quality Improvement, COVID-19

Chapter I: Introduction

Chapter Overview

This chapter contains an overview of the project proposed in this dissertation and essential information on the nursing home industry structure, residents, as well as regulatory and quality mechanisms. This chapter details the Centers for Medicare and Medicaid Services (CMS) Special Focus Facility program and justifies why researching this program is essential. A summary impact of the COVID-19 pandemic on nursing homes in 2020 is presented. The chapter concludes with definitions, acronyms, delimitations, and assumptions.

Nursing Home Overview

In the United States, nearly 16,000 nursing homes serve as the social and physical safety net for more than 1.4 million (0.46% of the total U.S. population) medically complex, disabled residents (Centers for Disease Control and Prevention, 2022; Kaiser Family Foundation, 2020a). Most nursing home residents are "long-stay" (more than 100 days) and are over the age of 65, female, and non-Hispanic White (National Center for Health Statistics, 2019). Nursing homes collect revenue from various payor sources, but more than six in 10 long-stay residents rely on Medicaid to pay for care (Harrington et al., 2018; Kaiser Family Foundation, 2020b; National Center for Health Statistics, 2019). Among long-stay residents, 58.9% have a dementia diagnosis, 53% have a diagnosis of depression, and 75% have cardiovascular disease (National Center for Health Statistics, 2019). Nursing homes provide onsite nursing care, 24-hour supervision, and various medically focused services (National Institute on Aging, 2017). It is the most costly non-acute care setting, with an average cost of $7,756/month, compared to $4,300/month for assisted living or $4,576/month for home health (Genworth Financial, 2020).

Nursing homes' performance and operating criteria are federally codified (Requirements for States and Long Term Care Facilities). However, federal and state governments share the responsibility of quality enforcement. Individual states are typically responsible for nursing home oversight, including licensing and surveying (inspections). (Institute of Medicine, 1986). Federal authorities set the standards and have specialty surveying teams. Individual states may opt to add additional, more stringent regulations for certain aspects of nursing home operations, such as staffing minimums (Harrington, 2008).

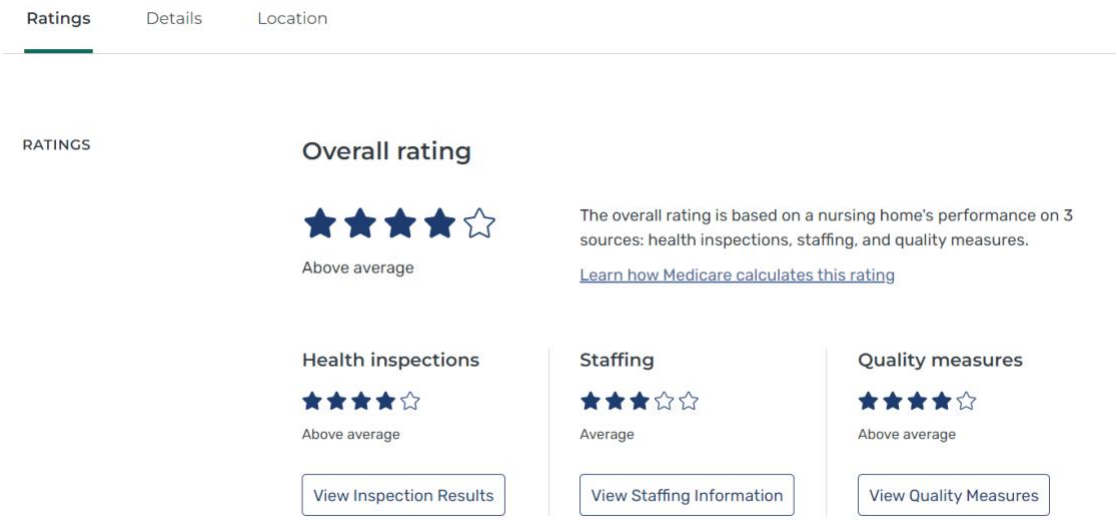
Nursing Home Quality Reporting and the Five-Star Quality Rating System

Each nursing home receiving reimbursement from Medicare or Medicaid reports data as a part of the Nursing Facility Quality Reporting Program (QRP) (Centers for Medicare and Medicaid Services , 2022a). The QRP compiles data on structural and operational traits of nursing homes and then uses that data and the "Five-Star Quality Rating System" methodology (Center for Medicaid and State Operations/Survey and Certification Group , 2008) to assign nursing homes “star ratings,” which support consumers and advocates in their decision-making regarding nursing homes. More than 96% of nursing homes participate in these programs (Harrington et al., 2018). The "Star Rating" is a computed score calculated using staffing ratios, survey performance, and specific resident outcomes. Nursing homes receive an overall “Star Rating” and individual ratings for staffing, quality of care, and performance on surveys. Per CMS, a one- star rating indicates a very below-average ranking. A five-star rating indicates very above average. Quality ranking information is publicly available on Care Compare, a website maintained by The Centers for Medicare and Medicaid Services (CMS). Figure 1 displays a nursing home’s overall and subcategory ratings of a nursing home. For comprehensive research,

data archives for the QRP are available for download and use by researchers. Archives include datasets, data dictionaries, and details on the equations for calculating the composite scores.

Figure 1

Star ratings of a Nursing Home-Displayed on Nursing Home Compare



A survey is a comprehensive onsite inspection of a nursing home by a multidisciplinary team of professionals representing the licensing authority; the purpose is to assess compliance with federal regulations (Office of Evaluation and Inspections, 1999). There are different types of surveys: standard surveys assess overall compliance, and complaint surveys follow up and investigate a complaint from a resident or staff member (Grimm, 2020). Before the pandemic, the frequency at which state or federal surveys occurred was variable but, by law, should occur no less than every 15 months. (Grimm, 2020; Social Security Act, 2013). During surveys, the licensing authority may cite a nursing home if operations are not compliant with regulations. These citations are called "deficiencies." Deficiencies are weighted by the number of residents impacted (scope) and the potential for harm (severity). More severe deficiencies are calculated in the nursing home QRP, resulting in lower star ratings (See table 1). A complete list of citations is

in Appendix A. All standard surveys were halted on March 23rd, 2020, due to COVID-19. Select complaint surveys were permitted, and CMS began conducting targeted infection control surveys (Grimm, 2020)

Special Focus Facilities and Special Focus Facility Candidates

The state licensing authority (typically the state health department) is authorized to designate a certain number of low-quality rated nursing homes in each state as "Special Focus Facilities Candidates" (SFFc) or "Special Focus Facilities" (SFF). The average nursing home receives six to seven deficiencies on each survey. Generally, SFF or SFFc have around twice as many (Centers for Medicare and Medicaid Services , 2017). Though not all deficiencies are care-related, SFF struggle with resident care, receiving double the care-related deficiencies of their non-SFF peers (Pittman, 2021).

The Special Focus Facility Program is a quality improvement program for a small number of nursing homes (see Figure 2) that have severe, ongoing quality concerns (*Special Focus Facility ("SFF") Initiative - Background*, n.d.). The program intends to stimulate rapid improvement in nursing home quality via increased oversight and escalating penalties for substandard care. Quality problems which are not corrected are subject to escalating punitive action, including dismissal from the Medicare or Medicaid program or closure of the nursing home (Centers for Medicare and Medicaid Services , 2017; Government Accountability Office, 2010).

Table 1

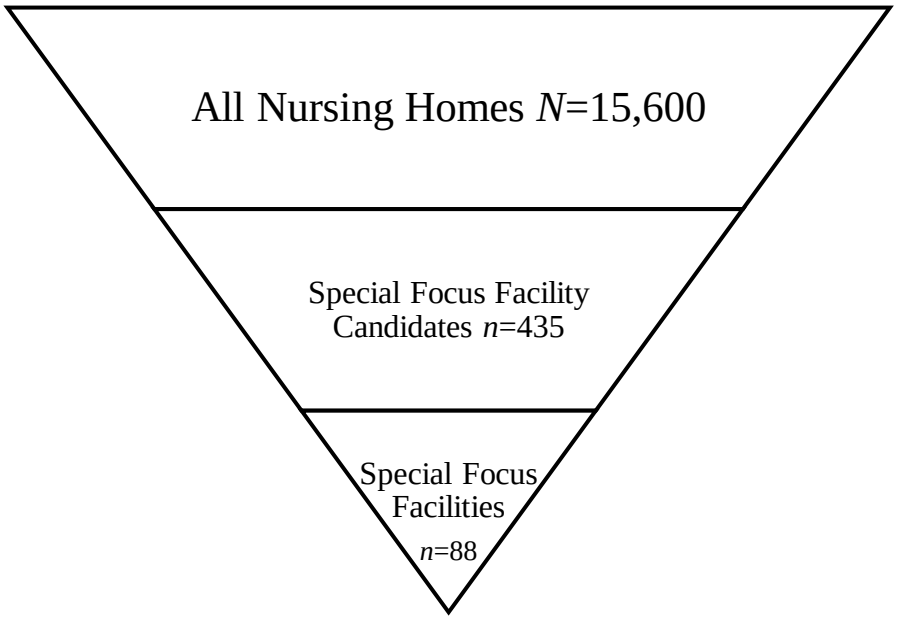
Scope and Severity of Nursing Home Deficiencies

Severity	Scope		
	Isolated	Pattern	Widespread

Immediate jeopardy to resident health or safety	J 50 points* (75 points)	K 100 points* (125 points)	L 150 points* (175 points)
Actual harm that is not in immediate jeopardy	G 20 points	H 35 points (40 points)	I 45 points (50 points)
No actual harm with potential for more than minimal harm that is not immediate jeopardy	D 4 Points	E 8 Points	F 16 Points (20 Points)
No actual harm with potential for minimal harm	A 0 Points	B 0 Points	C 0 Points

Note. Shaded areas constitute substandard quality of care
Source. Nursing Home Compare Technical Users Guide

Figure 2
The Number of Nursing Homes, Special Focus Facility Candidates, and Special Focus Facilities



The Five-Star Quality Rating System methodology determines if a nursing home qualifies for the Special Focus Facility program (Government Accountability Office, 2009). There is a lookback period of three consecutive prior standard surveys. By law, standard surveys

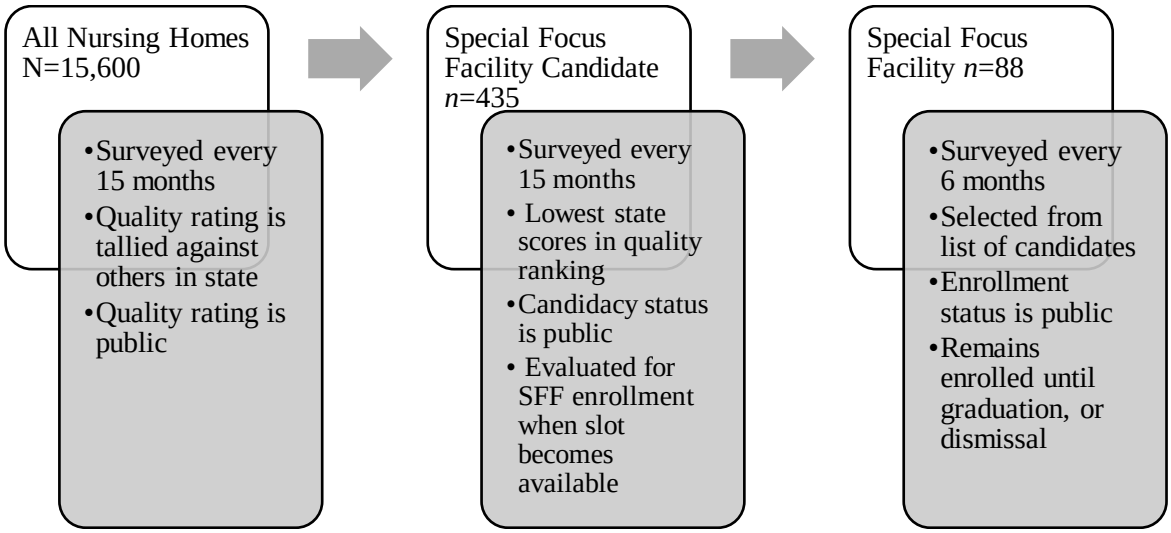
occur at least every 15 months[1] (Social Security Act, 2013). To qualify for the Special Focus Facility program, surveyors have identified numerous deficiencies, and authorities have determined that minimum quality and safety standards are unmet and substandard care is present. If, over the lookback period, a nursing home has not substantially complied with regulations, that nursing home qualifies for entry into the Special Focus Facility program. The ultimate determination is at the discretion of the licensing authority and is dependent on the availability of slots in the SFF program. CMS limits how many SFFc and SFF can be in each state. The Special Focus Facility Program is resource-intensive for regulators; nursing homes enrolled in the program are surveyed by licensing authorities twice as frequently as non-SFFs. While candidates, SFFc, are not subject to additional oversight or regulation; however, their candidacy status is public information.

Participation in the Special Focus Facility program is compulsory if the licensing authority enrolls a nursing home. As shown in Figure 3, once a slot becomes available, a nursing home is selected from the candidate list and enrolled in the SFF program. Eighty-eight of the lowest-performing nursing homes are SFF (Centers for Medicare and Medicaid Services , 2017). While categorized as an SFF, nursing homes are subject to more frequent surveys (a minimum of 2 per calendar year) and progressively more punitive action (known as "enforcement remedies"). Enforcement remedies vary widely depending on the deficiency and the discretion of licensing authority. Remedies include civil monetary penalties (CMPs), denial of payment for new admissions (DPNAs), and termination from the Medicare and Medicaid program (Centers for Medicare and Medicaid Services , 2017; Government Accountability Office, 2010; U.S. Senators for Pennsylvania, 2019). A complete list of enforcement remedies is in Appendix B.

[1] Standard Surveys were suspended between March and August 2020, due to COVID-19 (Office of Evaluation and Inspections, 2021)

Figure 3

Process and Differences in Special Focus Facility and Special Focus Facility Candidate Nursing Homes



Note. Adopted from Government Accountability Office 2010

The SFF program provides oversight of struggling nursing homes beyond what is typically provided by regulatory authorities. Each SFF is categorized by CMS as either "Newly Added," "Not improved," or "Facilities that have shown improvement." Listings are updated monthly. Each state has limited slots for SFF and SFFc (Centers for Medicare and Medicaid Services , 2017). There can be up to 435 SFFc at any time (five to 30 per state) and a max of 88 SFF at any time (one to six per state). Limits of candidacy and enrollment slots for all states are in Appendix C. Policymakers have raised concerns that because SFFc and SFF have similar performance on surveys during the lookback period, these nursing homes are likely indistinguishable in quality (U.S. Senators for Pennsylvania, 2019). Only SFF are subject to punitive enforcement and more frequent oversight. Recent calls for improved transparency and expanded oversight have had mixed effects. In 2019, CMS began disclosing the list of nursing homes on the candidate list, resulting in improved transparency for advocates and consumers (U.S. Senators for Pennsylvania, 2019). The proposed but not adopted 2021 Nursing Home

Reform Modernization Act would have expanded the program, directly enrolling any nursing home on the candidate list (Congressional Research Service, 2021).

Figure 4 outlines the pathways for an SFF. The Government Accountability Office (GAO), a nonpartisan congressional watchdog, notes that the program lacks manualization. The program administration is highly discretionary by the licensing authority, raising concerns from a research and quality improvement perspective. Licensing authorities are not required to enroll the lowest-ranked nursing home on the Five-Star Quality Rating System. The lowest-rated nursing homes on the candidate list are only transitioned from the candidate list into the program an estimated 17% of the time (Government Accountability Office, 2010). Once enrolled, SFF will achieve one of the following outcomes within 18-24 months (Centers for Medicare and Medicaid Services , n.d.):

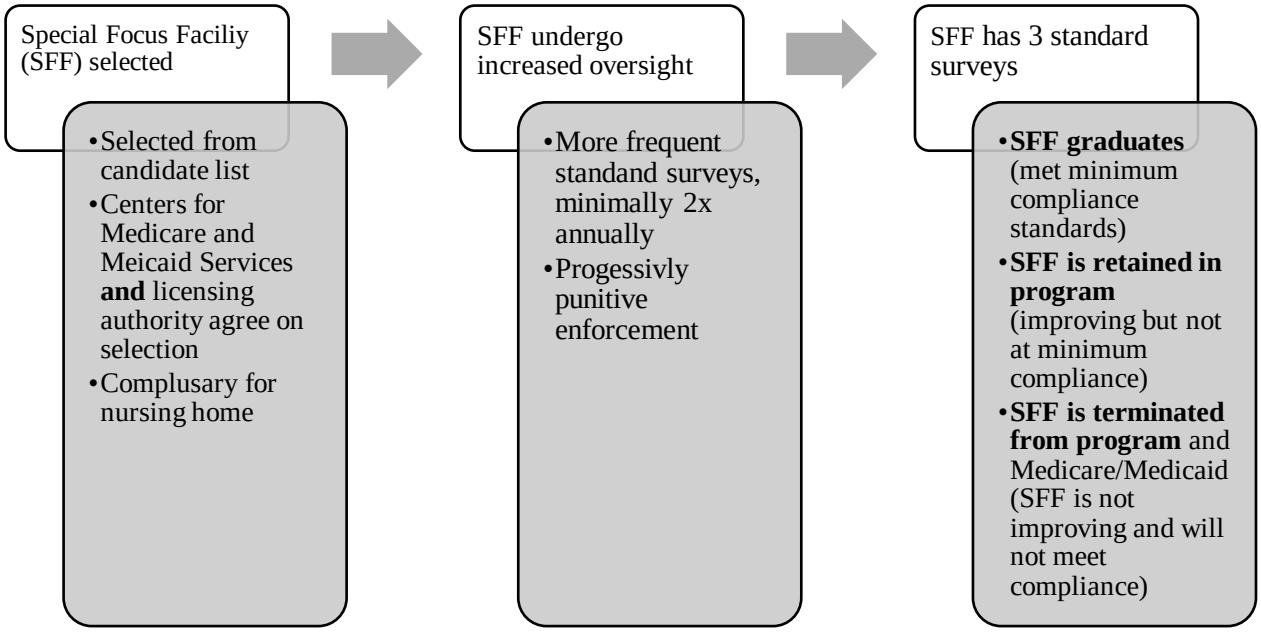
1. Graduate because of significant improvements in the quality of care[2].
2. Be terminated from Medicare and Medicaid eligibility.
3. Be provided with additional time to improve because of promising progress.

According to CMS, around 50% of SFF significantly improve their care within 24-30 months, and 16% are eliminated from Medicare or Medicaid (Centers for Medicare and Medicaid Services , n.d.). CMS does not comment on the other 34% of SFF. There is no specific outcomes research on SFFc because these nursing homes do not receive additional oversight or enforcement. Researchers and advocates can use data archives to research quality outcomes.

[2] Significant improvements in the quality of care defined as: Completion of two consecutive standard surveys with no deficiencies cited at a scope and severity level of "F" or greater (or "G" or greater for life safety code deficiencies) and has no complaint surveys with deficiencies cited at "F" or greater (or "G" or greater for life safety code deficiencies) in between those two standard surveys. However, if the only "F" level deficiency is for food safety requirements (Requirements for long term care facilities, 42 CFR §483.60(i), tag F371), the facility may graduate from the SFF program at the discretion of the RO. F371 deficiencies at "G" level or greater will prevent the facility from graduating from the SFF program (Centers for Clinical Standards and Quality, 2017)

Figure 4

Special Focus Facility Candidate to Enrollment Process



Note. Adapted from Government Accountability Office, 2010

COVID-19 Pandemic

COVID-19 is a highly communicable respiratory disease (Arora et al., 2020), with a case fatality rate (CFR) approximately 30 times higher than influenza (Ruan, 2020). Cases are particularly deadly in frail adults and those with pre-existing medical conditions (Andrew et al., 2020; Maltese et al., 2020; Owen et al., 2020; Pranata et al., 2020; Ssentongo et al., 2020). COVID-19 was the third leading cause of death in the United States in 2020 (Ahmad & Anderson, 2021), a primary cause of the 17.7% increase in mortality from 2019.

The pandemic's impact is disproportionate and painfully visible in long-term care. Nursing homes are sites of frequent COVID-19 outbreaks, with devastating fatality rates (McMichael et al., 2020). Between January 2020-March 2021, an estimated one in 10 nursing home residents died from COVID-19 (The COVID Tracking Project). The impact of COVID-19 upon individual nursing homes is variable. Research from the GAO found that during the first year of the pandemic, the average nursing home had three outbreaks, each lasting five weeks.

Only 64 nursing homes (<0.5%) avoided COVID-19 in 2020 (Government Accountability Office, 2021a). Analyzing nursing homes' unique environmental, organizational, and regulatory factors increases understanding and may prevent or limit future infectious disease outbreaks (Government Accountability Office, 2021b). COVID-19 exacerbated long-standing concerns about nursing home quality and brought new questions about infection control and pandemic preparedness (Abbasi, 2020; Government Accountability Office, 2020b; Grabowski & Mor, 2020). Notably, there may be a discordance between the Five-Star Quality Rating of a nursing home and the performance with infection control and prevention, particularly in COVID-19 management (Sugg et al., 2021).

Project Description and Problem Statement

In this dissertation, public data from the *Nursing Home COVID-19 Public File* (Centers for Disease Control, 2021b), acquired from the National Healthcare Safety Network (NHSN) Long Term Care Facility Data are joined with public data obtained from CMS data archives and analyzed to evaluate the relationship between quality ratings, structural and operational traits, and outcomes by contrasting SFF/SFFc and a comparison group of highly rated nursing homes. This dissertation aims to increase comprehension of the efficacy and administration of the Special Focus Facility program. The research will examine the relationship between SFFc and SFF, how SFFc and SFF performed during 2020 (the first year of the COVID-19 pandemic),and explicate trait and quality factors that licensing authorities may consider when making SFF/SFFc enrollment decisions. This research begins to fill many gaps. No recent academic study compares SFF and SFFc as separate categories, and there has been very little evaluation of SFF or SFFc in pandemic care.

Since its inception in 1998, it has been challenging to research the Special Focus Facility program. Participating facilities were updated monthly, and candidate lists were not publicly available. Recent comparative research became feasible due to CMS reporting changes and the COVID-19 pandemic, which froze program enrollment from March to August 2020[3]. This freeze created static cohorts, which are the groups for this research. Measuring the differences between SFF and SFFc may create a foundation for improved clinical and regulatory outcomes and correct the information asymmetry with which nursing home consumers and advocates contend.

In 2020, COVID-19 disproportionately impacted nursing home residents. The data from this period provides significant opportunities for research and insight into how nursing home care could improve. The Special Focus Facility Program is one such opportunity for research. It is unknown if special focus facility status (SFF vs. SFFc vs. not affiliated) predicts differences in COVID-19 prevention or outbreak severity. Also unknown is how SFF and SFFc differ from highly rated nursing homes in COVID-19 infection prevention and control. Identifying quantifiable differences within these categories is essential to improve nursing home quality and inform future Special Focus Facility program policy changes.

[3] According to the Office of evaluation and inspections, however, the author's research revealed that the program was dynamic with enrollment changes throughout 2020 (See chapters 5 and 6)

Definitions

- *Ageism:* Prejudice or discrimination on the grounds of a person's age.
- *Almshouse*: A house in which the poor live.
- *Assisted Living*: Housing for disabled people that provides nursing care, housekeeping, and prepared meals as needed.
- *Centers for Medicare and Medicaid Services*: A federal agency that administers the nation's foremost healthcare programs, including Medicare and Medicaid.
- *Civil Monetary Penalties*: A civil monetary is a penalty, an amount that may be imposed on a health care provider who commits a violation. Penalties intend to deter repeat violations by the same provider and reduce the likelihood of future violations by other providers.
- *Congregate Care Setting:* A placement setting providing 24-hour supervision.
- *COVID-19 (Coronavirus):* A respiratory illness caused by the virus SARS-CoV-2.
- *Enforcement Remedy*: Correctional action imposed by CMS or state licensing authority when a facility is out of compliance with federal requirements
- *Five-Star Quality Rating for Nursing homes*: A tool that uses information from health care surveys, quality measures, and staffing to evaluate nursing homes.
- *Immunosenescence*: Dysregulated immune function contributing to infection vulnerability.
- *National Healthcare and Safety Network*: A secure, internet-based surveillance system managed by the Centers for Disease Control and Prevention.
- *Nursing Home Compare*: A database in which consumers, advocates, and researchers can find information on each certified nursing home's Five-Star Quality Rating.
- *Nursing Home*: A facility that meets the requirements of sections 1819(a), (b), (c), and (d) of the Social Security Act or a facility that meets the requirements of sections 1919(a), (b), (c) and (d) of the Social Security Act. Also referred to as a "Skilled Nursing Facility" or "Nursing Facility."
- *Omnibus Budget Reconciliation Act of 1987* (OBRA 1987): A Nursing Home Reform Act that set forth federal standards for providing residents' care.
- *Political Economy of Aging*: A systematic theory that assumes old age can only be understood in the context of social conditions and issues of the higher order.
- *Productive Aging***:** An older adult's obligation to provide labor, produce goods or services for the family unit or community, and maintain independence.
- *Public Use Files:* A dataset generated from a survey, administrative, or mixed data collection method that is suitable for use by public researchers.
- *Quality:* The degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge.
- *Special Focus Facility Candidate:* A nursing home that persistently underperformed in required inspections has been identified as eligible for the Special Focus Facility Program but is awaiting a slot.
- *Special Focus Facility*: A nursing home that persistently underperforms in surveys and is enrolled in the Special Focus Facility Program.
- *SARS-CoV-2:* The virus that causes the illness, COVID-19 or Coronavirus.

- *Substantial Compliance:* A level of compliance with participation requirements such that any identified deficiencies pose no greater risk to resident health or safety than the potential for causing minimal harm.
- *Successful aging:* (1) Low probability of disease and disease-related disability, (2) high cognitive functional capacity, and (3) active engagement in life.
- *Tibble:* Tibble is a package in R programming used to manipulate and print data frames.

Commonly Used Acronyms

- *ANOVA*: Analysis of Variance
- *ANCOVA*: Analysis of Covariance
- *CM*: Case Mix
- *CMP*: Civil Monetary Penalty
- *CMS*: Centers for Medicare and Medicaid Services
- *CDC*: Centers for Disease Control
- *DPNA*: Denial of Payment for New Admissions
- *GAO*: Government Accountability Office
- *IOM:* Institute of Medicine
- *IRB:* Institutional Review Board
- *HPRD:* Hours per Resident Day
- *KFF*: Kaiser Family Foundation
- *LPN*: Licensed Practical Nurse
- *NHSN*: National Healthcare Safety Network
- *OBRA '87*: Omnibus Budget Reconciliation Act of 1987
- *OEI*: Office of Evaluation and Inspections
- *OIG*: Office of the Inspector General
- *PEA*: Political Economy of Aging
- *PUF*: Public Use File
- *RN*: Registered Nurse
- *RQ*; Research Question
- *SFFc:* Special Focus Facility Candidate
- *SFF*: Special Focus Facility

Delimitations

The delimitations for this dissertation are listed below

- CMS certified nursing homes operating within the United States. No other congregate care settings will be included in this research.
- The target population, and conclusions made about the population, are nursing homes –not individual staff or residents who reside or work wherein.
- The timeline of this research is 2020, during the emergence of the COVID-19 pandemic.
- Only facilities which were SFF or SFFc for the entirety of 2020 are included in the analysis.

Assumptions

This research assumes that the secondary data provided for public use is accurate. This research assumes that Five-Star facilities will outperform SFF and SFFc in all weighted quality metrics (Staffing, gross complaints, and complaint severity).

Chapter II: Literature Review

Introduction

This chapter reviews the current literature and research gap. The Special Focus Facility program began in 1998, but there has been very little academic research on this program. This chapter contains an overview of the history of nursing homes in the United States and a brief examination of relevant quality improvement laws and initiatives. Relevant academic and grey literature on the Special Focus Facility Program is presented. The research questions, hypotheses, and specific aims are introduced at the end of the chapter in Table 2.

History of Long-Term Care in the United States

The philosophical concept of western nursing home care originates in Elizabethan era poor law. The earliest manifestations of nursing homes were almshouses, which existed in colonial America (Gendron, 2022; Giacalone, 2001). The contemporary nursing homes model emerged over the 20th century (Holstein & Cole, 1996; Kaffenberger, 2001; Ogden & Adams, 2008). Almshouses (known as poorhouses, workhouses, or county homes) functioned as the social safety net for indigent individuals without family support systems. Funding came from a "poor tax" paid by area residents. The right of residency in an almshouse was considered a public good, granted by a judge or another official, but typically was only provided to those who had been judged to have a need that was not a result of moral or spiritual failing (Holstein & Cole, 1996; Ogden & Adams, 2008; Williamson, 1984). These "deserving poor" generally had chronic mental or physical illnesses and were wards of the state (Vladeck, 1980). Although funded through public investment, almshouses- and their residents- were scorned by society (Quincy, 1812; Kaffenberger, 2001). As one report stated, "[almshouses] serve as residences and receptacles" (Kaffenberger, 2001; Massachusetts Board of State Charities, 1864), and often

the conditions were abysmal (Hawes & Phillips, 1986; “Tewksbury Almshouse Investigation,” 1883; Wagner, 2005). Throughout the 19th century, journalism on almshouses revealed the horrific conditions to the general public, and advocates began calling for specialized, more humane care for children and those deemed insane. Although almshouses once housed people with various disabilities, the resident population became highly concentrated with physical disabilities, and predominantly served older adults. By 1925 70% of almshouse residents were over age 55 (Subcommittee on Long Term Care, 1975; Vladeck, 1980).

In the late 19th century, voluntary "homes for the aged" opened. Operated by private, religious, or philanthropic charities and funded by donations or charging rent. There was finally an alternative to the almshouse (Giacalone, 2001; Ogden & Adams, 2008). Popular opinion favored these private homes, as the publicly operated almshouses were universally abhorred; however, cost and scarcity put residency out of reach for most. The Social Security Act of 1935 included means-tested financial support for elders. However, anyone already residing in an almshouse was ineligible. Private homes were more attractive than public almshouses, and elders, eager to avoid the almshouse and newly able to afford room and board, were eager to be admitted. A typical home provided healthcare services, including nursing care and oversight by physicians and clergy, with rent. Although preferred to the almshouses, conditions in private homes were inconsistent, with reports of frequent abuse and insufficient oversight (Holstein & Cole, 1996). Private homes exercised discretion in admittance, opting for wealthier, healthier residents (Barsukiewicz et al., 2010; Giacalone, 2001; Hynes & Vladeck, 1981; Ogden & Adams, 2008). Consequently, the public almshouses and lower-quality private homes had a concentrated population of medically complex and impoverished elders. Despite

the wide acknowledgment that the conditions in almshouses were dangerous, most states did not close almshouses because there was no place to relocate residents (Ogden & Adams, 2008).

As the private care industry grew, increasing pressure for standardization helped build momentum for more robust federal support. In 1950, an amendment to the Social Security Act directed each state to license and oversee nursing homes and created a system that allowed nursing homes and other medical vendors to receive direct payments from the government. In 1954, following a congressional survey that found long-term care facilities to be “seriously inadequate” (Holstein & Cole, 1996; Markus, 1972), an amendment to the Hill-Burton act provided government loans to construct new nursing homes under the provision that each newly built facility partnered with a hospital and met quality standards (Giacalone, 2001). In 1965 nursing homes became eligible to receive reimbursement from the newly enacted Medicare and Medicaid-- provided quality of care standards were met. In December 1966, of the nearly 6,000 nursing homes that applied for reimbursement, only 740 met quality minimums (Institute of Medicine, 1986). The quality minimum had little practical utility because it was difficult to enforce. Regulators and nursing home lobbyists agreed on "Substantial Compliance," in which nursing homes that substantially but not fully met the quality of care standards could operate, participate, and receive reimbursement from Medicare and Medicaid. An additional 3,210 nursing homes were granted into the Medicare program (Institute of Medicine, 1986; Lidz et al., 1992).

Quality Improvement Efforts

Moss Committee

By the late 1960s, the nursing home industry had formalized. Concerns that there would not be enough beds translated into a time when the construction of new nursing homes was

prioritized over quality assurance. (Hawes & Phillips, 1986; Holstein & Cole, 1996). Standards focused primarily on the physical environment rather than the provision of care. In 1968 a collection of laws known as the "Moss Amendments" required nursing homes to disclose ownership, financial interests, drug dispensing, dietary services, and sanitation; A Life Safety Code, with standards for building safety, was also codified (Vladeck, 1980). Additionally, licensing authorities were directed to withhold federal payments (Medicare or Medicaid) from nursing homes out of compliance (Institute of Medicine, 1986; Vladeck, 1980).

Although nursing homes were federally regulated, authorities relied upon individual states to license and enforce quality standards within individual nursing homes (IOM, 1986). Challenges to enforcing compliance included: attitudes toward enforcement, federal and state rules and procedures, state variations in enforcement, and inadequate federal and state resources in enforcement (IOM, 1986, p. 147). Despite the mounting evidence that regulatory standards were not upheld, there was rarely any corrective action from licensing authorities (Holstein & Cole, 1996; Vladeck, 1980). Nursing homes continued to be licensed by the states and reimbursed by the federal government. The primary reasons for allowing nursing homes to participate in Medicare and Medicaid, despite deficiencies in providing the standard of care, are summarized in a 1974 Moss committee hearing:

1. Enforcement meant the closure of facilities, already in short supply, with no place to put the dispossessed patients.
2. States have few weapons other than the threat of license revocation to bring a home into compliance.
3. The license revocation itself was of very little use because of the protracted administrative or legal procedures required.

4. Even if the revocation procedure was implemented, judges were reluctant to close a facility when the operator claimed that the deficiencies were being corrected.
5. Nursing home inspections were geared to surveying the physical plant rather than assessing the quality of care (IOM, 1986, p. 241).

OBRA ‘87

Despite gains in the Moss Amendments, nursing home quality continued to be poor and regulatory action inadequate in the 1970s (Vladeck, 1980) and the 1980s (Estes & Swan, 1993). The cost of caring for the ever-growing resident population far outstripped all previous estimates (Holstein & Cole, 1996). Nursing home reform was urgently needed. In 1987 congress passed the Nursing Home Reform Act, a component of the Omnibus Budget Reconciliation Act of 1987 (Weiner et al., 2007). Colloquially referred to as OBRA '87, this legislation updated nursing home quality standards and laid the framework for quality and oversight still in use today. Several components of OBRA '87 are relevant to this dissertation. OBRA '87 established an enforcement system for addressing nursing homes that were non-compliant with federal quality standards (Hawes, 1996). Special Focus Facility relies upon the authority of CMS to dictate harsh and escalating enforcement remedies to bring a nursing home into compliance swiftly. OBRA '87 ended the state-specific nursing home regulations by creating standardized "Requirements of Participation" (ROPs) for all nursing homes. These standardized requirements make comparative research possible between nursing homes across time points[4].

[4] CMS updates polices for nursing home operations, and the methodology for the rating system has evolved over time, so comparative research across time points needs to account for these factors.

The RoPs refocused quality standards from being primarily building/environment focused to a model that focused on the health and safety of residents. Staffing competencies and a timeline for regular surveys were established (Weiner et al., 2007). OBRA '87 also formally directed nursing homes to develop and maintain an infection control and prevention program:

OBRA '87 states that a skilled nursing facility must:

1. Establish and maintain an infection control program designed to provide a safe, sanitary and comfortable environment in which residents reside and help to prevent the development and transmission of disease and infection and
2. be designed, constructed, equipped, and maintained in a manner to protect the health and safety of residents, managers, and the general public (Requirements for States and Long Term Care Facilities, 1987).

The oversight mandated in OBRA '87 has generated abundant data regarding staffing, surveys, and infection prevention (Kahn et al., 2014) standardized across time points[5].

Special Focus Facility Program

[5] In response to persistent infection control problems in nursing homes and amid the increasing rates of multidrug-resistant infections and healthcare-associated infections across all clinical environments, additional regulation on infection prevention was added to the federal code in 2016**. (**Requirements for Long Term care facilities, 2016_**)** Final Rule 42 CFR § 483.80

Infection prevention managers must:

1. Have primary professional training in nursing, medical technology, microbiology, epidemiology, or other related field;
2. Be qualified by education, training, experience or certification;
3. Work at least part-time at the facility; and
4. Have completed specialized training in infection prevention and control (Requirements for States and Long-Term Care Facilities, 2016)

The Special Focus Facility program was established in 1998 to address poor survey performance in nursing homes (Government Accountability Office, 2010). An SFF is, by definition, out of substantial regulatory compliance for a minimum of three standard surveys. Per program guidelines, SFF are to be surveyed more often than non-SFF, to support rapid quality improvement: at least once every six months (Centers for Medicare and Medicaid Services , n.d.). However, this regulation is not always met (Government Accountability Office, 2010; Office of Evaluation and Inspection, 2021;Special Committee on Aging, 2022). The program aims to support poor-performing nursing homes to reach substantial compliance and deliver better care within 18-24 months (Centers for Medicare and Medicaid Services , 2017). An evaluation of the SFF program by the GAO determined that both the guidance and execution are vague, contributing to inconsistent outcomes. Specifically: SFF do not always improve, frequently remain in the SFF program for longer than permitted by the guidelines, or are released before meeting graduation minimums (Government Accountability Office, 2010). On average, SFF receive nearly double the number of citations for quality of care than non-SFF (Pittman, 2021). Generally, they are in the lowest 10% of all nursing homes and have the highest numbers of deficiencies for quality-of-life citations, such as contractures and restraints (Castle & Engberg, 2010).

The SFF program may influence quality in the short term (Castle et al., 2010), but there is no robust evidence to suggest that participation in the program sustains improvement in the long term (Castle & Engberg, 2010; Government Accountability Office, 2010). The program is limited in size by federal and state resource constraints, with 88 enrollment slots and 435 candidate slots across the country (See Appendix C). The program size has been capped at 88 enrollment slots since 2014, when it was reduced from 136 nursing homes (Centers for Medicare

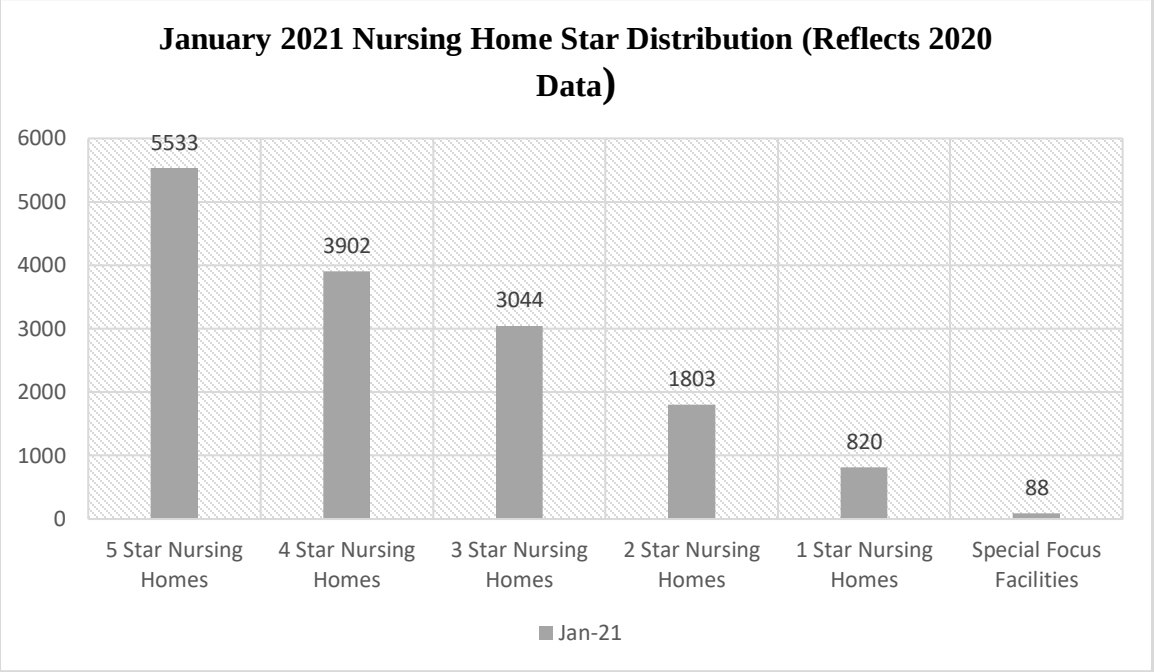
and Medicaid Services , 2017). The GAO estimates that 4% of nursing homes (approximately 580) could be considered "poorly performing," indicating that the SFF program size is not adequate (Government Accountability Office, 2010).

Nursing Home Rating Methodology

Nursing home quality is assessed by CMS using a methodology known as the Five-Star Quality Rating System, which premiered in 2008. The purpose of the system is to support consumers, residents, and advocates in distinguishing between high and low-performing nursing homes (Centers for Medicare and Medicaid Services , 2022). A one-star rating indicates that a nursing home is low performing, and a Five-Star rating indicates high performance on quality metrics. Since its premiere, the methodology of the rating system has been periodically updated with changes in 2012, 2015, 2018, and 2019 (Centers for Medicare and Medicaid Services , 2019; Stefanacci, 2019). Both consumer and provider advocacy groups caution that flaws in the quality measurement and calculations result in ratings that do not accurately reflect the care delivered in the nursing home (Çalkoğlu et al., 2012; Turner, 2008; Williams et al., 2016). Studies have shown that the Five-Star Quality Rating System ranks nursing homes inconsistently based on quality and patient safety measures. Rankings are not evenly distributed, and approximately 61% of nursing homes were classified as four or five-star facilities between December 2020 and January 2021 (Sreenivas & Leitson, 2021).

Figure 5

Star Distribution of Nursing Homes



Note. Adapted from: The Center for Health Policy Evaluation in Long-Term Care, 2021

A rating is calculated using a mix of the nursing home's reported data and survey inspectors' findings. Full details regarding the methodology are publicly available for researchers and consumers. Ratings incorporate data from:

1. Measures based on outcomes from health inspections (Reported by survey inspectors).
2. Measures based on staffing levels (Reported by the nursing home).
3. Quality Measures for long and short-stay residents (Reported by the nursing home).

CMS provides an overall ranking for the nursing home and health inspection, staffing, and quality measures. The exact equation and methodology for ranking in the Technical Users Guide for Care Compare (Centers for Medicare and Medicaid Services , 2020).

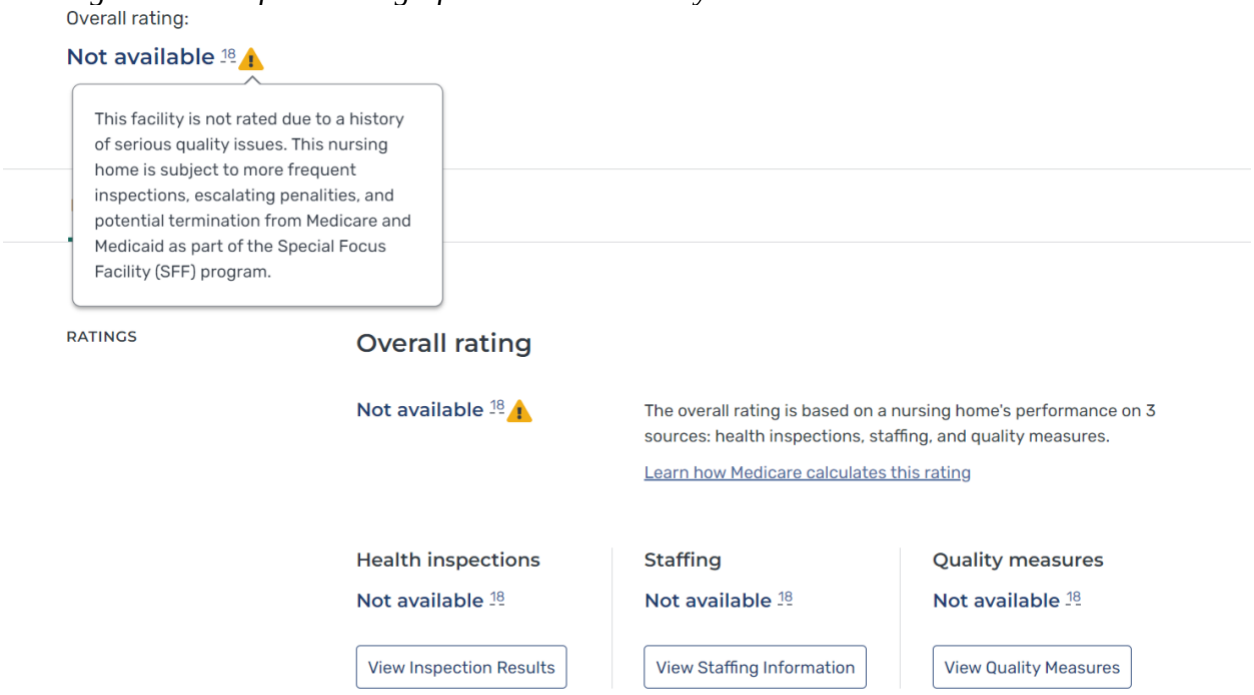
Nursing Home Compare

Nursing Home Compare is a CMS-maintained web database that stores and provides nursing homes' quality information. Consumers, researchers, and advocates can access information about ownership, penalties, Medicare or Medicaid participation, staffing, survey results, the quality of resident care, SFF status, and facility traits. The Nursing Home Compare website presents the most currently available information (generally two calendar quarters behind), and CMS maintains PUF historical data archives for all nursing homes. This availability of current and historic nursing home information helps to correct the asymmetric informational imbalance between consumers and providers regarding nursing home quality (Chou, 2002; Hirth, 1999) and supports better care outcomes by increasing market competition (Castle et al., 2008; Castle & Ferguson, 2010; Grabowski & Town, 2011). Nursing homes with low or non-existent quality ranking scores (such as SFFc and SFF) generally take action to improve their quality rating (Mukamel et al., 2007; Perraillon et al., 2019). In 2009 74% of SFF were one-star nursing homes, compared to 22% of other nursing homes[6] (Government Accountability Office, 2010). SFF are no longer given a star rating, and an enrolled nursing home is publicly marked as participating in the Special Focus Facility program (see Figure 6).

[6] SFFs are no longer given a "Star Rating" due to changes in the "5-Star Quality System"

Figure 6

Nursing Home Compare Rating-Special Focus Facility



Nursing Home Quality and Infection Prevention

Many quality measurements are directly or indirectly related to infection prevention in the nursing home. Measures that impact rankings include the percentage of residents with urinary tract infections, infection control deficiencies, and staffing hours per resident day (HPRD). Staffing has been linked to infections because lower staffing levels are linked to higher rates of infectious disease outbreaks in nursing homes (Harrington et al., 2020; Harrington, 2021). Widespread, persistent infections in nursing homes are an ongoing and poorly controlled issue exacerbated by COVID-19. Residents are more likely than the general population to be predisposed to infection due to immunosenescence and comorbidities (Juthani-Mehta & Quagliarello, 2010). Prior to COVID-19, thousands of outbreaks and between 1.6 and 3.8 million singular infections occurred each year within nursing homes, at an estimated cost of over $1 billion annually (Strausbaugh & Joseph, 2000). The high incidence of infections is partly but not fully attributed to a nursing home's structural design and operation, which has inherent traits

conducive to contracting and transmitting infectious diseases. Residents' daily life centers on communal dining, activity, and living spaces. There is a constant flow of visitors and staff entering and exiting the building, allowing for the continuous introduction of infectious organisms (Strausbaugh et al., 2003).

Nursing homes exercise considerable autonomy in executing facility infection control programming. Therefore, the efficacy and outcomes of these programs are inconsistent. A 2014 survey found that 61% of infection prevention managers in nursing homes lacked specialized infection prevention training, and 54% had at least two additional responsibilities independent of duties running an infection control program (Herzig et al., 2016). Between 2013 and 2017, 82% of nursing homes (approximately 12,300 facilities) were cited for infection control deficiencies by the licensing authority (Government Accountability Office, 2020b, 2021a). The lack of qualified infection professionals struggling with competing priorities and insufficient resources contribute to the consistently poor outcomes in infection prevention (Herzig et al., 2016; Mody et al., 2005; P. W. Smith et al., 2008). Nursing homes with lower quality rankings have higher nosocomial infections, poorer post-acute surgical care, and more hospital readmissions (Bui et al., 2020; Gucwa et al., 2016; Kimball et al., 2018; Paredes et al., 2019).

Infection Prevention and COVID-19

COVID-19 is a highly communicable disease, and cases are particularly deadly for frail adults and those with pre-existing medical conditions. In these populations, the mortality rate can be as high as 60% (Andrew et al., 2020; Maltese et al., 2020; Owen et al., 2020; Pranata et al., 2020; Ssentongo et al., 2020). The COVID-19 pandemic disproportionately impacts nursing homes. An estimated 76.9% of nursing homes had at least one resident death by January 2021 (Williams et al., 2021). The impact of COVID-19 on residents, staff, and facilities is inconsistent

(Gorges & Konetzka, 2020). Some nursing homes experience fewer outbreaks or limit the spread of an outbreak (Shea et al., 2020); others experience repeated, devastating outbreaks with high mortality (Li et al., 2020; McMichael et al., 2020). Prior research has shown that nursing home performance on the Five-Star Quality Rating methodology may correlate with COVID-19 outcomes in nursing homes (Bui et al., 2020; Das Gupta et al., 2021; He et al., 2020; Williams et al., 2021); however, this is not a consistent result, there is a need for further exploration (Sugg et al., 2021). The relationship may be partly explained by the correlation between increased clinical staffing and fewer outbreaks (Das Gupta et al., 2021; Gorges & Konetzka, 2020; Harrington, 2020; Li et al., 2020).

Conclusion/Impact Statement

The nursing home industry has regulatory and quality challenges exacerbated by COVID-19. Some of the difficulties in achieving quality can be explained by the function of the nursing home industry, which provides different care (custodial and rehabilitative vs. acute) than a hospital setting and has different philosophical origins. Notably, the nursing home population is exclusively people who are disabled, many of whom are frail, older, and impoverished. Historically, the cultural values placed on the lives and comfort of these subgroups of people have not been a priority (Krahn et al., 2015). Little is known about the impact of COVID-19 within SFF, and the author could locate no studies which studied SFFc as their own category, although the GAO has compared SFFc and SFF in previous research. At the time of this review, the author could find very little research on the Special Focus Facility program and COVID-19. Early research found that in Massachusetts, SFF had an initially higher rate of COVID-19 among residents and staff, but this difference was not sustained throughout the pandemic (Lipsitz et al., 2020; Williams et al., 2021).

Table 2
Research Questions, Hypotheses, and Aims

Research Question	Hypotheses	Specific Aim
RQ_1: What are the trait differences between Special Focus Facilities, Special Focus Facility Candidates, and nursing homes with a 5- star quality rating?	$H_{1a:}$ SFF and SFFc will both be more likely to be chain affiliated, than nursing homes that have a 5-star quality rating. H_{1b}: SFF and SFFc will both be more likely to be for-profit than nursing homes that have a 5-star quality rating. $H_{1c:}$ SFF and SFFc will both be larger in size than nursing homes that have a 5-star quality rating. $H_{1d:}$ There will be no significant differences in chain affiliation between SFF and SFFc. $H_{1e:}$ There will be no significant differences in size between SFF and SFFc $H_{1f.}$ There will be no significant differences in profit status between SFF and SFFc.	Identify factors in the nursing home monitoring system that licensing authorities may use to make decisions to transition nursing homes from candidate status to the Special Focus Facility Program.
RQ_2: What are the differences between Special Focus Facilities and Special Focus Facility Candidates measured in the Five-Star Quality Rating System methodology?	H_{2_a}: Between SFF and SFFc, there will be no difference in the number of deficiencies per survey.	Compare SFF and SFFc as separate categories using the Five-Star-Quality rating category to see if there are significant differences.

H_{2b}: Between SFF and SFFc, there will be no difference in the severity of cited deficiencies per survey.

H_{2c}: Between SFF and SFFc, there will be no difference in aide staffing ratios

H_{2d}: Between SFF and SFFc, there will be no difference in aide staffing ratios, adjusted for resident acuity

H_{2e}: Between SFF and SFFc, there will be no difference in practical nurse staffing ratios

H_{2f}: Between SFF and SFFc, there will be no difference in practical nurse staffing ratios, adjusted for resident acuity.

H_{2g}: Between SFF and SFFc, there will be no difference in registered nurse staffing ratios.

H_{2h}: Between SFF and SFFc, there will be no difference in registered nurse staffing ratios, adjusted for resident acuity.

H_{2i}: Between SFF and SFFc, there will be no difference in total staffing ratios.

	H_{2j}: Between SFF and SFFc, there will be no difference in total staffing ratios, adjusted for resident acuity.	
RQ_3: What are the differences between SFFs, SFFc, and 5-star facilities in COVID-19 outcomes?	$H_{3a:}$ SFF and SFFc will have no significant difference in COVID-19 resident total cases. $H_{3b:}$ SFF and SFFc will have no significant difference in COVID-19 staff total cases. $H_{3c:}$ SFF and SFFc will have no significant difference in COVID-19 resident total case fatality rate/1000 cases. $H_{3d:}$ SFF and SFFc will have no significant difference in COVID-19 staff fatalities. H_{3e}: SFF and SFFc will have significantly more COVID-19 resident cases than nursing homes that have a 5-star quality rating H_{3f}: SFF and SFFc will have significantly greater staff total COVID-19 cases than nursing homes that have a 5-star quality rating. H_{3g}: SFF and SFFc will have significantly greater COVID-19 resident fatality rates/1000 than nursing homes that have a 5-star quality rating	Explore how quality ratings interact with COVID-19 outcomes.

H_{3h}: SFF and SFFc will have significantly more COVID-19 staff fatality rates than nursing homes that have a 5-star quality rating

Chapter III: Theory

Introduction

This chapter is an overview of the Political Economy of Aging (PEA), the theoretical framework for this dissertation. After introducing PEA, this chapter contextualizes constructs of the theory as they relate to the research questions. The prevailing cultural attitudes toward disabled adults and formal caregivers influence practical and regulatory aspects of nursing home care. Therefore, the influence of current and historic social and economic factors should be considered to evaluate nursing home quality. The Political Economy of Aging (Estes, 1980, 2014; Minkler & Estes, 1991) proposes that old age and the issues of old age can only be fully understood through the lens of social conditions and issues of the higher-order (Estes, 2001) which include economic, cultural, regulatory, historical, and contemporary circumstances. Unlike traditional gerontological theory, PEA contextualizes the aging experience as a structural rather than an individual experience (Minkler & Estes, 1991). One application of the theory is to extract specific pieces of the aging experience and relate them to broader societal trends and the distribution of social goods (Estes, 1991, p. 19). Nursing home care, specifically the Special Focus Facility Program, is resource-intensive and has complex regulations. The historical trends have bolstered older adults as the primary consumers of nursing home care. The industry is intertwined with the broader cultural and political influences of the United States. Therefore, PEA is well suited to provide theoretical backing that contextualizes the research questions. The following sections will discuss PEA from economic, cultural, and regulatory perspectives and how the COVID-19 pandemic has altered these influences.

Economic

The nursing home industry has elements of socialism and capitalism, just like the broader US economy. Like other formal care networks, nursing homes have become increasingly pressured by capitalism and profit, as demonstrated by the current dominance of for-profit companies in an industry that historically had been exclusively occupied by public or charitable providers (Grabowski & Stevenson, 2008; Jeurissen et al., 2021). An industry's economy helps explain the potential motivations of all actors entering or exiting that industry. In 1984, L.F. Lane wrote, "this capitalization of the [nursing home] profession by prudent real estate businessmen seeking a secured return on their investment helps to explain the proprietary nature of the industry" (Hawes & Phillips, 1986 p. 496; Lane, 1984). The influence and reliance on money in nursing homes have bolstered a regulatory structure in which profit is the incentive for quality, and loss of profit is the primary enforcement mechanism for compliance with quality standards.

The harshest enforcement remedies for non-compliance are typically financial. The most common enforcement remedy is a CMP (National Academies of Sciences, Engineering, and Medicine, 2022; Office of Evaluation and Inspection, 2005), but others, such as denial of payment, are also used (see Appendix B). The public availability of results from the Five-Star Quality Rating System, including enrollment in The Special Focus Facility program, is a free-market response to quality assurance. Regulators hope that the enrollment of a nursing home in the SFF program (accompanied by increased oversight and public stigmatization, and lower quality ratings) will threaten admissions, therefore incentivizing nursing homes to correct quality problems and encourage other facilities to keep quality high enough to avoid enrollment in the program (Castle et al., 2008).

The profit motivators in the nursing home industry, including in the SFF program, overlook the cultural and regulatory issues that interplay with the economy of nursing home care. Relying on a free-market response as the corrective mechanism assumes equality in the ranking system, that all nursing homes that perform equally poorly will have an equal chance of being enrolled in an SFF program. Program size constraints prohibit all poorly performing nursing homes from participating (Centers for Medicare and Medicaid Services, 2017; Government Accountability Office, 2009). The free-market response also assumes that nursing homes are reimbursed at a rate that can reasonably cover the cost of resident care and that nursing homes will apply reimbursement toward the provision of care. However, reimbursement for long-term custodial care may be too menial to cover the resident care costs (Gandhi et al., 2021), or nursing homes may not be incentivized to put income toward care costs because it reduces net profit (Jaffe, 2021; Kennedy, 2014). Nursing homes are forced to recoup losses in long-term custodial care, potentially by undercutting quality, underpaying, and reducing the workforce (Bowblis & Applebaum, 2017), focusing on short-term rehabilitative care instead of long-term custodial care. The result perpetuates a profitable industry that neglects older persons' safety and quality of life (Estes, 2001, p. 196; Harrington et al., 2007). This is measured objectively, such as the number of citations (Harrington et al., 2001), and subjectively in how residents and care partners perceive care delivery. Being a larger and for-profit nursing home is associated with more negative perceptions of care and lowered satisfaction (You et al., 2016). It is unlikely that the issue can be fixed merely by increasing reimbursement rates, as higher nursing home reimbursement rates do not always equate to an improvement in residents' quality of life (Xing et al., 2016), potentially because of the conflicting motivators by nursing home owners to provide care and retain profit.

The free market hypothesis also assumes an information equilibrium in which consumers (residents and families) exercise voice and choice in nursing home admission. Nursing home consumers are often at an acute disadvantage in the information disparity and may be unable or disempowered to make rational decisions about nursing home placement (Hawes & Phillips, 1986; Konetzka et al., 2021). Like other health services, nursing home care cannot exist in competitive equilibrium and does not lend itself to the free-market approach (Arrow, 1963). Therefore, mechanisms that rely on the free market and information equilibrium to ensure quality will be ineffective.

Cultural

Summarizing the cultural milieu of nursing homes in the United States is difficult. The definition of culture is challenging, and each nursing home, resident, and staff member is unique. Applying a PEA lens to analyze the distribution of resources and societal trends can be extracted to help contextualize nursing homes within the broader cultural fabric of the United States. Specifically, ageism, and ableism, rooted in the expectation of productivity and provision of labor throughout life, are prominent in nursing homes and popular culture today, just as in the almshouses. Ableism and ageism perpetuate the medical model, bolstering biomedicalization, which (quite literally) treats old age as a medical condition.

Ageism

Systemic ageism is in policy and resource allocation. One prominent example is how independent and home-based supportive living is encouraged for younger adults, but nursing home care is proffered to older adults. Older adults are four times as likely to be placed in a nursing home or other institution-based care than their younger peers (Reaves & Musumeci, 2015). This routine diversion is neither cost-effective (Genworth Financial, 2020) nor person-

centered. Independent of age, most adults prefer to receive care and supportive services in a home-based environment (Binette, 2018.; Boland et al., 2017; AARP, 2011; Gendron, 2022). Older adults end up in nursing homes more often because that is the care setting they are offered (Buttigieg et al., 2018; Kane RL & Kane RA, 2005).

The diversion of elders into institutional environments, away from Home and Community-Based Services, is encouraged in national policy. The landmark 1999 *Olmstead v L.C.* Supreme Court Hearing found that, under Title II of the Americans with Disabilities Act, public entities must provide community-based services to persons with disabilities when appropriate, not opposed, and consider available resources and the needs of others (Americans with Disabilities Act of 1990, 1990.; Department of Justice, n.d.). In a 2012 Olmstead Act enforcement hearing, Ricardo Thorton, Sr. testified: "people need to have high expectations for people with disabilities because then they'll give them opportunities to learn and grow. People don't grow in…" institutions""(Thorton, 2012). The Olmstead Act has become one of the tenants of deinstitutionalization, but embedded ageism supports the prioritization of younger people with disabilities over older people. A Senate report from 2013 reporting on the Olmstead Act expresses explicitly ageist sentiment. Quotes include "People younger than 65 are increasingly being isolated in nursing homes." and "Current data shows that there are still more than 200,000 individuals younger than 65 in nursing homes-almost 16 percent of the total population." (Health, Education, Labor, and Pensions Committee, 2013). This language is a concession to the stifling and isolating environment of the nursing home and a tacit endorsement of the nursing home environment for older adults.

Productive and Successful Aging

Productive aging theory (Butler & Gleason, 1985) has two constructs, (1) an older adult's obligation to provide labor, goods, or services to the family unit or community and (2) an [older adult's] obligation to maintain independence (Bass et al., 1993, Chapter 1; Herzog et al., 1989). Productive aging is related yet distinct from the theory of successful aging (Rowe & Kahn, 1997), which defines "successful aging" as (1) a low probability of disease and disease-related disability, (2) high cognitive functional capacity, and (3) active engagement in life. The successful aging theory puts the locus of control in the hands of the individual and does not integrate the broader factors which influence the aging trajectory. "Far more than is usually assumed, successful aging is in our own hands" (Rowe & Kahn, 1999, p. 18). Productive aging implies that older adults are obligated to provide labor (even unpaid) and maintain functional and cognitive capacities. Successful aging states that old-age dependence is avoidable and individually controlled. Productive and successful aging theories create a narrative that the functional, cognitive, and financial outcomes of old age are in the control of the aging individual and that old age disability is avoidable. When productive aging is expected, and successful aging is achievable, the resulting cultural attitude is that "society does not have to provide support for those who fail at aging" (Dillaway & Byrnes, 2009, p. 708).

Biomedicalization of Aging

The biomedicalization of aging construes the aging process as a medical problem. It became the gold standard for medical practice in the early 20th century (Duffy, 2011; Gendron, 2022), dominating policy, research, and nursing home care through the 20th century (Estes & Binney, 1989; Kaufman et al., 2004; Minkler & Estes, 1991). Nursing homes became cemented with the biomedical model when construction and funding were explicitly linked to hospital care

in the Hill-Burton Act (Giacalone, 2001). Biomedicalization can create barriers to quality of life because it overemphasizes the medical aspects of care while undercutting personhood (Vertinsky, 1991). Medicalizing aging undermines the heterogeneity of the process and assumes that disease is inevitable and caused by chronological age. Chronological age is frequently a non-significant marker of health (Lloyd-Sherlock et al., 2012; Lowsky et al., 2014), and older adults in many different age strata experience a wide variety of age-health trajectories (Lowsky et al.).

Of all long-term care modalities, nursing home care is most thoroughly grounded in the medical model, making the linkage with biomedicalization most pronounced (Giacalone, 2001; Harrington et al., 2007; Kane, 1996). The emphasis on profit and biomedicalization neglects older persons' safety and quality of life (Estes, 2001, p. 196). The consistent prioritization of commerce over consumer protection and profit over quality of life, combined with the expectation and myth of productive aging, creates an obstacle and an explanation for the consistent lack of meaningful improvement in aging services (Estes, 2001). In SFF and SFFc, this impact is compounded, as these communities are more likely to be for-profit (Government Accountability Office, 2010) and, by nature of the enforcement remedies, have been issued a CMP or denial of payment (Committee on the Quality of Care in Nursing Homes et al., 2022; Office of Inspection and Evaluation, 2005), increasing the economic struggles and potentially needing to undercut resident care to recoup costs.

Regulatory

Transitioning a nursing home from a SFFc to a SFF is highly discretionary by the licensing authority (Government Accountability Office, 2010). To qualify as either a SFFc or a SFF, nursing homes must have failed to achieve substantial compliance on three consecutive surveys. However, not all nursing homes that meet this criterion are on the SFFc list or SFF

program because constraints cap the maximum of SFFc and SFF slots in each state, so there could be (and often are) many more homes that meet the criteria for an SFFc which are not on the list for the program (National Academies of Science, Engineering and Medicine et al., 2022 p. 526). The regulatory mechanism is insufficient to encompass all the poorest-performing nursing homes. Integrating the PEA framework and weighing the factors of economy, ageism, productive and successful aging, and biomedicalization, it is logical that society would not invest in or empower the regulators of this program because those who primarily stand to benefit from a robust regulatory structure are the nursing home residents, who have consistently not been prioritized by society.

COVID-19

COVID-19 is the deadliest pandemic in U.S. history; death tolls surpass the 1918 Spanish Flu (*Johns Hopkins Coronavirus Resource Center*, 2021). Nursing homes were not prioritized throughout the pandemic despite the case fatality rate. Although estimates vary, in the early days of the pandemic, prior to vaccinations and effective therapies, approximately 41% of COVID-19 deaths occurred in nursing homes (Ibrahim, 2021). Additionally, for every two resident COVID-19 deaths, a third resident died prematurely of other causes (Sedensky & Condon, 2020). The staggering death toll is explained by the limited options for the treatment of COVID-19, the physical environment of the nursing home, as well as prevailing political and social attitudes toward nursing homes. Personal protective equipment and other supplies were rerouted from nursing homes to hospitals and other care settings (Abbasi, 2020; Van Houtven et al., 2021). Age-based care rationing made a resurgence (Manchanda et al., 2020; Inouye, 2021), despite previously the practice being both unethical (Evans, 1997; Kane RL & Kane RA, 2005; Andre &Velasquez, 1990) and illegal (Affordable Care Act, 2010; Rehabilitation Act of 1973, 1973).

Nursing homes were not equipped to meet the crisis of COVID-19 in part because of the pre-existing, long-standing challenges to emergency preparedness, infection control, and staffing (Werner et al., 2020). The NHSN is the nation's most widely used healthcare-associated infection tracking system (Centers for Disease Control, 2021a). The data compiled in this surveillance system has been crucial for identifying significant trends in COVID-19 (Wu et al., 2021). The NHSN began enrolling long-term care facilities in 2012 when the "Long term care facility component" was launched. The component contains multiple modules and reporting mechanisms to track salient LTC infection concerns. Before COVID-19, the component's primary aim was to track the incidence of multidrug-resistant organisms leading to urinary tract infections in long-term care (Palms et al., 2018). Prior to May 2020, nursing homes' enrollment and participation in the NHSN were encouraged but not required (Dick et al., 2019). Nursing homes' involvement in the NHSN became mandatory on Friday, May 8, 2020. When CMS issued an interim final rule mandating that all licensed nursing homes begin inputting COVID-19 data into the NHSN database (Centers for Medicare and Medicaid Services, 2020), prior to this time, there had been no centralized, coordinated standardized mechanism for reporting or tracking COVID-19 in nursing homes, even though the infrastructure for infectious disease reporting had existed for more than a decade.

The challenges nursing homes face in the wake of COVID-19 will be long-lasting. Financial challenges have increased, there are fewer short-term rehabilitative care residents, and costs for testing and staffing have significantly increased (Grabowski & Mor, 2020; Ouslander & Grabowski, 2020; Werner et al., 2020). PEA is appropriate for evaluating societal trends based on the distribution of goods (Estes, 1991, p. 19). The lack of mandatory infectious disease surveillance, age-based rationing of care, and nursing homes passed over for supplies reflects the

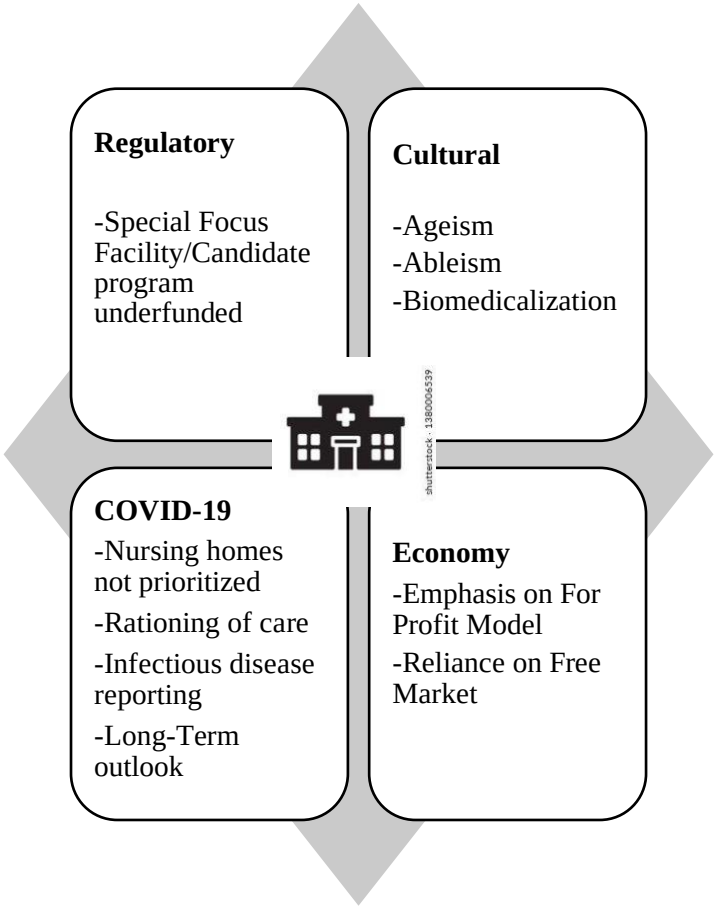
repeated societal trend of older adults, particularly those who are sick or disabled, not being a priority in society.

Conclusion

PEA provides a possible explanation for why a high-quality and robust nursing home system that provides adequate care for residents has been elusive historically and contemporarily. PEA also supports the construction of a complete explanation and examination of older adults' challenges. Specifically, the Special Focus Facility can partially be explained by the current economic and regulatory systems entrenched in the for-profit model that does not provide individual or systems-level support for the well-being or safety of individuals with disabilities. These systems fail because of culturally embraced values of ageism, ableism, and an emphasis on biomedicalization. A historic and highly politicized pandemic has exacerbated these components. Figure 4 illustrates the facets of the political economy of the nursing home.

Figure 4*:*

The Political Economy of the Nursing Home



Chapter IV: Methodology

Introduction

This chapter details the proposed measures and analysis plan (7igures 7, 8, and 9) and outlines the variables, and analyses research questions (RQs) and hypotheses (Figure 10). The purpose statement and proposed aims are included. Data collection, transformation and merging, research design, research analysis, power analysis, ethics, human subject protection plan, population, and limitations are presented.

Purpose and Research Plan

Purpose Statement

The COVID-19 pandemic disproportionately impacted nursing home residents and staff, exposing the long-existing and persistent quality problems in this setting. Nursing home researchers must consider the complexity of intersecting factors in a theoretical framework when constructing hypotheses believed to impact outcomes. Though the pandemic continues to be an evolving situation that disproportionately impacts the nursing home setting, COVID-19 has provided an opportunity for outcomes research on a small subcategory of nursing homes that are candidates for the Special Focus Facility program or are participating in the Special Focus Facility Program. This subcategory of nursing homes is essential to research because the Special Focus Facility Program is resource-intensive with inconsistent outcomes.

Research suggests that nursing home traits and performance on the Five-Star Quality Rating methodology are significant in resident-related outcomes and the Special Focus Facility Program. However, these findings are over a decade old and do not incorporate COVID-19 data. This research aims to compare SFFc and SFF as distinct categories in COVID-19 characteristics, characteristics of the Five-Star Quality Rating System, and trait characteristics found in previous

research to be influential for nursing home outcomes. Little comparative research has been completed about the Special Focus Facility program, likely due to frequent changes in enrollment. Changes to government policy and a program freeze from March-December of 2020 make comparative research feasible. This research methodology supports COVID-19, infection control outcomes in nursing homes, and quality improvement.

Research Design

This study employs a retrospective observational design. The study is non-random and non-experimental. In conceptualization, it was anticipated that the study would have *N=1,046* nursing homes divided into three non-equal groups. Group one would be 88 SFF, group two would be 435 SFFc, and group three would be 523 high-performing nursing homes. High-performing nursing homes would be randomly selected from nursing homes rated four or five-stars from the same state as the equivalent SFF or SFFc during the retrospective study period (ex., there is one SFFc in Alabama and 5 SFFc, so a total of six high-performing facilities will be randomly selected from Alabama as case comparisons). After cleaning and applying inclusion criteria, the final study sample was smaller. Group one was n =50 SFFs, Group 2 was n =197 SFFc, and Group 3 was n = 247 five-star nursing homes, for a total sample of N =494. Nursing homes were retrospectively compared on dependent variables (see Figures 5, 6, and 7).

All data for this study is secondary and obtained from freely available public use files (PUFs). Secondary data is suitable for using existing records to explore new research questions (Hulley, 2013) and identify predictive variables (Polit & Beck., 2017). The logic of the RQs supports the use of separate ANOVAs instead of singular MANOVA for each question. (Huberty & Morris, 1989). Using ANOVAs instead of MANOVAs also avoids dimensionality. Bonferroni adjustments were not used. The analysis plan has an inflated type I error risk using ANOVAs

instead of MANOVAs, but a Bonferroni adjustment inflates type II error risk and artificially suppresses the alternative hypothesis (Perneger, 1998). This research is exploratory and has no immediate clinical impact on patients, so suppressing the alternative hypotheses may harm future research with few benefits.

Data Sources

The data comes from two databases accessed via the Centers for Medicare and Medicaid Services (CMS). The data sources for RQs 1 and 2 are the *2020 Nursing Home Provider Data Archives*. Archives contain repeated measures data, stored in separate zip files and exportable to data analysis software. Data points are a mix of those reported by surveyors and licensing authorities. Archives also contain a technical user guide and data dictionary. Data for RQ 3 is from the *COVID-19 Nursing Home Dataset*, various variables regarding COVID-19 reported by nursing homes to the Centers for Disease Control (CDC); National Healthcare Safety Network (NHSN). The CDC has stated that assessments of COVID-19 in long-term care can be quantified using this dataset (Centers for Disease Control and Prevention, 2021b).

Data Access and Merging

The data was obtained from cms.data.gov and stored on a portable SSD T7 external hard drive with 1 Terabyte of storage. Each dataset includes redundant identifiers for all nursing homes. These identifiers were used as index variables to ensure an accurate merge and analysis. For merging the data sets, the index variables were (1) provider name, (2) provider address, (3) Federal Provider Number (FPN), and (4) provider location. Index variable description and values are in Appendix D. A data transformation regarding dates was unnecessary because research hypotheses examine gross numbers of deaths, cases, and cited deficiencies. Transformations were necessary to aggregate total citations for the study period for RQ 2. Merging used the index

variables from multiple datasets using the joining features in R studio, case counts, and random accuracy checks to ensure that merges did not contain errors.

Data Cleaning and Preparation

CMS engages in cleaning procedures before making data publicly available. However, additional cleaning and preparation were put into place. All index variables were inspected for duplicates. Nursing homes that were not part of the study were eliminated from the data frame. Data was then further cleaned by removing all redundancies.

Data Transformation

Transformations were necessary to aggregate total citations for the study period in RQ 2 and the average HPRD for staffing. The merge used the index variables from multiple datasets using R Studio's rbind() feature. Index variables matched CMS archives and Nursing Home COVID-19 data into one dataset. Case counts and random accuracy checks were completed to ensure that the merge was accurate and complete.

Power Analysis

Using *G*Power* Ver. 3.1.9.4 [Computer Software] *a priori* calculations to ensure sufficient power resulted in a total needed sample size of N=100[7]. ANOVAs with a large effect size of f =0.4 (Salkind, 2010). Medium to large effect sizes is optimal so that any significant findings have the potential to be translated into practice (Sullivan & Feinn, 2012). This study had a sample size of 247 and was sufficiently powered for all research questions.

[7] Sample size was not altered by anticipated covariates in power analysis.

Research Questions

Research Question One

RQ_1: What are the trait differences between Special Focus Facilities, Special Focus Facility Candidates, and nursing homes with a 5- star quality rating?

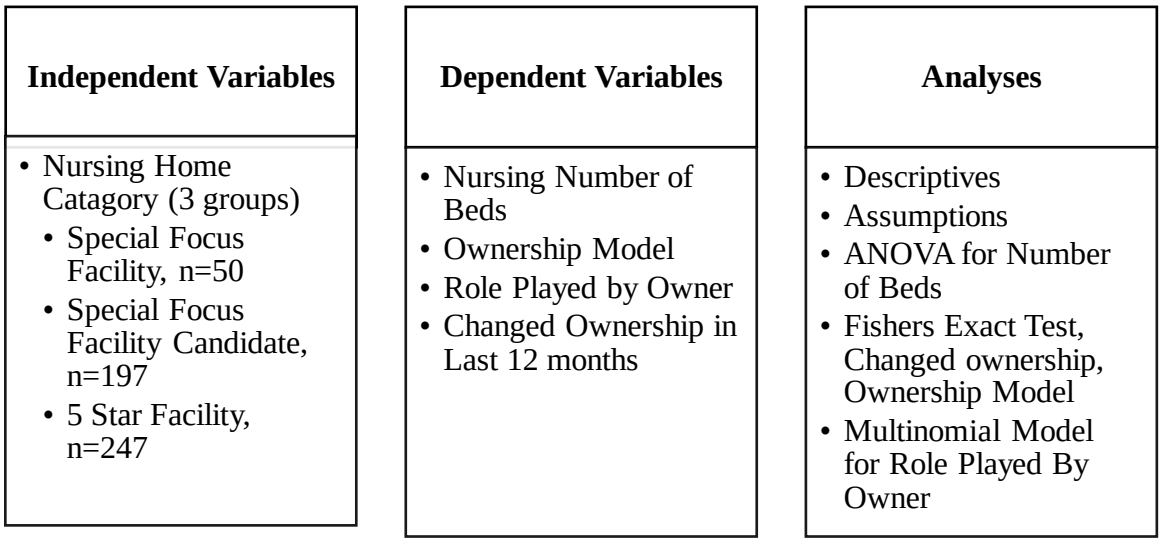
- $H_{1a:}$ SFF and SFFc will both be more likely to be chain affiliated, than nursing homes that have a 5-star quality rating.
- H_{1b}: SFF and SFFc will both be more likely to be for-profit than nursing homes that have a 5-star quality rating.
- $H_{1c:}$ SFF and SFFc will both be larger in size than nursing homes that have a 5-star quality rating.
- $H_{1d:}$ There will be no significant differences in chain affiliation between SFF and SFFc.
- $H_{1e:}$ There will be no significant differences in size between SFF and SFFc
- $H_{1f:}$ There will be no significant differences in profit status between SFF and SFFc.

RQ 1 explored SFFs (n=50), SFFc (n=197), and an equivalent-sized randomly selected group of five-star nursing homes (n=247). The total sample size was N = 494. These groups were compared on structural and operational traits of nursing homes (Profit-status, facility size, see Figure 7), which research has linked to being significant in enrollment in the Special Focus Facility Program. This research question's specific aim is to identify meaningful differences in nursing home characteristics that are currently neutral from a quality ranking perspective. Descriptive statistics were compiled after data merging, cleaning, and transformation. Measures of central tendency are in chapter 5.

Assumptions of independence of observations, outliers, and normal distribution of residuals were checked prior to the primary analyses. After checking assumptions, ANOVA analyses and Fisher's exact tests were conducted for each dependent variable, looking for significant differences between and within groups. Main and interaction effects are reported, as well as expected and actual distributions (See Tables 7,8,9, and 10). Independent variables are the Nursing home groups: (1) SFFs, (2) SFFc, and (3) five-star Facilities. The dependent

variables are (1) nursing home size, (2) ownership model, (3) role played by the owner, and (4) if ownership changed in 2020. A list of all variables and analyses is in Figure 7. The research question examined organizational group traits in the Special Focus Facility Program. A was .05, and the null hypothesis was rejected if $p \leq .05$. A complete list of all variables and data dictionaries is in Appendix D.

Figure 7
Research Question One: Groups, Variables and Analyses



Note. ANOVA=Analysis of Variance

Research Question Two:

RQ$_2$: What are the differences between Special Focus Facilities and Special Focus Facility Candidates measured in the Five-Star Quality Rating System methodology?

- H_{2a}: Between SFF and SFFc, there will be no difference in the number of deficiencies per survey.
- H_{2b}: Between SFF and SFFc, there will be no difference in the severity of cited deficiencies per survey.
- H_{2c}: Between SFF and SFFc, there will be no difference in aide staffing ratios.
- H_{2d}: Between SFF and SFFc, there will be no difference in aide staffing ratios, adjusted for resident acuity.
- H_{2e}: Between SFF and SFFc, there will be no difference in practical nurse staffing ratios.
- H_{2f}: Between SFF and SFFc, there will be no difference in practical nurse staffing ratios, adjusted for resident acuity.

- H_{2g}: Between SFF and SFFc, there will be no difference in registered nurse staffing ratios.
- H_{2h}: Between SFF and SFFc, there will be no difference in registered nurse staffing ratios, adjusted for resident acuity.
- H_{2i}: Between SFF and SFFc, there will be no difference in total staffing ratios.
- H_{2j}: Between SFF and SFFc, there will be no difference in total staffing ratios, adjusted for resident acuity.

RQ 2 is an exploratory research question comparing SFF (n=50) and SFFc (n=197) as separate groups (see Figure 8). The independent variable is the group (SFF vs. SFFc). The dependent variables are: the number of citations, the severity of citations, the HPRD, and the case mix adjusted HPRD. Main and within effects are reported. This research question examines the differences between SFF and SFFc, looking for potential motivators as to why the licensing authority may opt to move a nursing home from the candidacy list to being actively enrolled. Descriptive statistics were calculated after data merging, and transformation measures of central tendency are reported in chapter 5. Assumptions of independence of observations, outliers, and normal distribution of residuals were checked prior to the primary analyses. After checking assumptions, ANOVAs and Fisher's exact tests were conducted. α set at .05, the null hypothesis was rejected if $p \leq .05$. A complete data dictionary is in Appendix D. The analyses and a list of variables are in Figure 8.

Figure 8
Research Question Two: Groups, Variables and Analyses

Independent Variables	Dependent Variables	Analyses
•Nursing Home Catagory (2 groups) •Special Focus Facility n=50 •Special Focus Facility Candidate n=197	• Severity of Citations • -Number of Complaint Citations • -Hours Per Resident Day • (Aide,Licensed Practical Nurse, Registered Nurse) • -Case Mix • (Aide,Licensed Practical Nurse, Registered Nurse)	• Descriptives • Assumptions • Main Effects ANOVA • Between Effects ANOVA

Note: NOVA=Analysis of variance

Research Question Three:

RQ$_3$: What are the differences between SFFs, SFFc, and 5-star facilities in COVID-19 outcomes?

- $H_{3a:}$ SFF and SFFc will have no significant difference in COVID-19 resident total cases.
- $H_{3b:}$ SFF and SFFc will have no significant difference in COVID-19 staff total cases.
- $H_{3c.}$ SFF and SFFc will have no significant difference in COVID-19 resident total case fatality rate/1000 cases.
- $H_{3d.}$ SFF and SFFc will have no significant difference in COVID-19 staff fatalities.
- H_{3e}: SFF and SFFc will have significantly more COVID-19 resident cases than nursing homes that have a 5-star quality rating
- H_{3f}: SFF and SFFc will have significantly greater staff total COVID-19 cases than nursing homes that have a 5-star quality rating.
- H_{3g}: SFF and SFFc will have significantly greater COVID-19 resident fatality rates/1000 than nursing homes that have a 5-star quality rating
- H_{3h}: SFF and SFFc will have significantly more COVID-19 staff fatality rates than nursing homes that have a 5-star quality rating

RQ 3 is an exploratory research question. SFFs (*n*=47) and SFFc (*n*=197) and 5-star nursing homes (n=247) were compared on COVID-19-specific factors. This research investigates if the Special Focus Facility program status relates to COVID-19 outcomes in a nursing home. Confounding from vaccine administration was not a concern, as the study period ended in December 2020, when COVID-19 vaccine administration began in nursing homes (Centers for

Disease Control and Prevention, 2021c). Since the significant reduction in COVID-19 transmission secondary to vaccine efficacy was not observed until January 2021 (Benin et al., 2021), the vaccination status of residents and staff was not included as a confounder or a variable. Measures of central tendency are reported in chapter 5. Prior to the primary analysis, assumptions of independence of observations, outliers, and normal distribution of residuals were checked. After checking assumptions, ANCOVAs were conducted for each dependent variable. The main and interaction effect are reported in chapter 5. Independent variables are the nursing home groups: SFFs, SFFc five-star nursing homes. Dependent variables are: the total (gross) number of resident cases of COVID-19, total (gross) number of staff cases of COVID-19, Case Fatality Rate (CFR) of resident COVID-19, and total (gross) number of staff deaths from COVID-19. α was .05, and the null hypothesis was rejected if $p \leq .05$.

Figure 9
Research Question 3: Groups, Variables and Analysis

Independent Variables	Dependent Variables	Covariates	Planned Analyses
•Nursing Home Catagory (3 groups) •Special Focus Facility, n=50 •Special Focus Facility Candidate, n=197 •5 Star Facility, n=247	•Gross resident cases of COVID-19 in 2020 •Gross staff cases of COVID-19 in 2020 •Case Fatality Rate/1000 Residents in 2020 •Total Number of Staff COVID-19 Deaths in 2020	•Covariates: •Number of Beds •Ownership Model •Role of Owners •Practical Nurse Hours Per Resident Day •Registered Nurse Hours per resident Day •Case Mix Aide HPRD •Case Mix HPRD	•Descriptives •Assumptions • Main Effects ANCOVA x 4 •R^2 to estimate fit of model

Note: ANCOVA=Analysis of covariance, COVID-19=Coronavirus

Justification of Research Design

Although there are advantages and disadvantages to a secondary data set and observational research design, the methods and data are well suited for the novel research questions. Another advantage is that the theoretical framework is flexible, allowing for the examination of clinical, policy, and cultural resources to contextualize findings. The methods are feasible based on the available data and hypotheses. The data used in this analysis has no identifiable patient/resident information. Therefore, there are no human protection, or informed consent concerns. This design conducts necessary nursing home research without disrupting the lives of residents, staff, or families. The data is compiled from PUFs so any findings can be independently confirmed.

Historically, research on nursing home care and quality is complicated. Those who live and work in nursing homes deserve special consideration and protection in research. Primary research and evaluation activities within nursing homes disrupt daily activity and care for residents. This analysis uses previously compiled data to examine trait and quality differences in nursing homes. Therefore, the conclusions and implications are about nursing homes and should not be extended to residents, families, or staff. This research did not burden or harm the nursing home resident or workforce populations.

Importance of Protecting Human Subjects

Protecting live subjects is paramount and takes priority in research. This study was deemed non-human subjects research under the 2018 “Common Rule” by the Institutional Review Board (IRB) of Virginia Commonwealth University. Documentation of the exemption is in Appendix E. There is no anticipated or actual risk, harm, or benefit to any subjects in this research. However, the author recognizes that the people who live and work within nursing homes are inextricably linked to their communities

Strategies for Quantitative Validity

There are inherent validity threats in secondary data sets and retrospective analytic designs. While CMS and NHSN/CDC implemented safeguards for data quality, additional data cleaning protocols were incorporated. These included: eliminating cases that did not pass the quality assurance checks implemented by the NHSN/CDC, eliminating duplicate data, and standardizing processes for analyses. Detailed records were maintained to track cases eliminated from the analysis.

Software Use

All hypothesis testing used R studio for statistical computing. Microsoft Word, Excel, Zotero, G*Power, and Google Drive were used for data storage and communication.

Limitations

As with all research, this analysis has many limitations. The population is limited to CMS Certified Nursing homes operating within the United States. No other congregate care settings were included. The timeline of this research was 2020, during the emergence of the COVID-19 pandemic. The analysis and findings are limited to that period due to the unique cultural and regulatory factors which made this analysis possible. Only nursing homes categorized as SFF or SFFc for the entirety of 2020 were included in the analysis. Nursing homes that closed were

dismissed, graduated, or stopped participating in the program were omitted. Importantly the data set is an amalgamation of information collected by thousands of people and managed by different federal agencies. Because most variables are objective, and the overseeing agencies have guidance and processes to standardize the collection and publishing of this data, this dissertation assumes that the data is reasonably accurate.

Inclusion Criteria

All nursing homes must have been operating for the entire retrospective study period (January-December 2020). All nursing homes must have maintained their group status (SFF, SFFc, or five-star) for the entirety of 2020. Nursing homes must have all identifying variables in datasets (Federal Provider Number, Name, Address) and certified to participate in either Medicaid or Medicare.

Chapter V: Results

Chapter Overview

Nursing home care, including the SFF program, is in the public and political spotlight but remains fragmented and poorly understood. This study's research focus is nursing homes designated as SFF or SFFc and a comparative group of five-star nursing homes. This subcategory of nursing homes is resource-intensive with inconsistent outcomes, yet little research has been done to discern how the program could be improved. To the author's knowledge, this study constituted the first research in more than a decade to thoroughly overview the Special Focus Facility program, and one of the first studies to compare SFF, SFFc, and five-star facilities on multiple COVID-19 outcomes. This chapter presents the timeline and findings of the analysis. Data collection, screening, and cleaning are described, descriptive statistics and findings are presented. The chapter concludes with an overview of how findings relate to the aims and hypotheses of the study.

Review of Data Collection

The IRB approval was not necessary. This project did not constitute human subjects research. Data collection and analyses began on July 12, 2022 (See Appendix E). The author accessed study data from data.cms.gov. The data is publicly available and does not need special permission to obtain. Datasets were downloaded as comma-separated values (.csv) files onto an SSD7 external hard drive. There were approximately 190 million cells of source data in 38 datasets containing information for the more than 15,000 nursing homes in operation in the United States in 2020. A project directory was set up in R studio to store and analyze the data.

Review of Data: Screening and Cleaning

A preliminary analysis examined the data for duplication, errors, and excluded ineligible nursing homes. Data were merged into stacked tibbles using rbind() and join data() functions, matching on index variables to ensure an accurate merge. No duplicate FPNs were identified in the first sweep, although it was discovered that nursing homes did have several owners.

Special Focus Facilities and Special Focus Facility Candidate Selection

The inclusion and exclusion criteria were applied to sort nursing homes into study groups. Group 1 is SFF, and group 2 is SFFc. Multiple cleaning and filtering functions were used to categorize nursing homes. First, a stacked tibble of 2020 provider data was created. Nursing homes were filtered by FPN and Special Focus Facility status (SFF or SFFc). Nursing homes with an FPN that appeared 12x (1 for each month) as an SFF or SFFc were selected for further analysis.

It was confirmed that nursing homes maintained the same status as "SFF" or "SFFc" for 12 months of 2020 and did not change from "SFF" to "SFFc" using a "for-loop" logic statement. A total of 405 SFF and SFFc nursing homes were excluded from the study for not being in the program for 12 months in 2020. The final sample is group 1: *n*= 50 SFF, and group 2: *n* =147 SFFc (see Figure 10). There are 47 states with SFF and SFFc. The data cleaning model for eliminating nursing homes was double-checked using anti_join() functions for errors.

During the research design conceptualization, the projected sample size for the SFF group was 88, and SFFc was 435. However, enrollment changes throughout 2020 predicated the smaller groups of SFF and SFFc in the final analysis. This was necessary to ensure the independence of observations and did not diminish the power of the study[8].

[8] Based on G*Power estimate. Sample size needed to be >100 to be sufficiently powered.

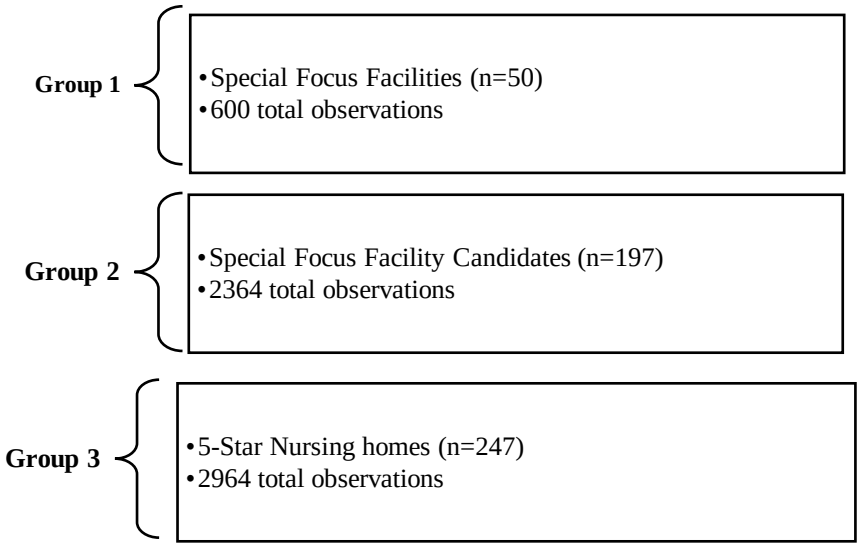
Five-Star Nursing Homes Selection

After finalizing the sample of SFF (n = 50) and SFFc (n = 197), each nursing home was matched with a randomly selected five-star nursing home in the affiliated state. Matching nursing homes by state was necessary because each state has different cut points (Centers for Medicare and Medicaid Services, 2020.), and because each state is responsible for monitoring its own nursing homes. The random matching procedure was completed by indexing all US nursing homes with complete data (n= 15545) by both FPN and state, then filtering five-star facilities using the "Overall quality" variable. A total of 2395 five-star nursing homes in 2020 were identified as possible candidates for inclusion into the five-star group. Using "for-loop" and set.seed logic functions, five-star nursing homes were matched by state to SFF and SFFc. The set.seed function ensured that the same five-star nursing homes would be selected each time the analysis was run.

Final Sample

The final study sample merged the SFF, SFFc, and five-star nursing homes into a single dataset for analysis. Group assignments, including nursing home name, address, state, and FPN is in Appendix F. The final sample is 494 nursing homes (see Figure 10). "For-loop" logic statements ensured that each nursing home had no change in status for the entirety of 2020, meeting the independence of observations and mutual exclusivity assumptions.

Figure 10
Group Assignments for Study



Data Analysis

Descriptive Statistics

CMS compiles monthly data via the nursing home monitoring program for all nursing homes. CMS data was aggregated for Jan-Dec of 2020 unless otherwise noted. Missing values were removed from the analysis using na.rm=TRUE function. Tables 3, 4, 5, 6, 7 and 8 display descriptive statistics.

Table 3
Descriptive Statistics of Numeric Variables

	Group	Mean (SD)	Median	Range
Resident Total	5-Star	72.36 (52.50)	58.00	1.7-429.3
	Candidate	97.89 (68.34)	87.80	20.70-753.10
	Special Focus Facility	93.78 (44.06)	85.40	18.7-233.5
Facility Size	5-Star	88.52(60.05)	74.00	6.0-436.0
	Candidate	130.9(77.35)	120.00	30.0-769

	Special Focus Facility	133(55.74)	120.00	45-290
Complaint Count	5-Star	0.69(.13)	0	0-8
	Candidate	4.76(5.51)	3	0-36
	Special Focus Facility	5.58(17.17)	3	0-32
Aide Hours per Resident Day	5-Star	2.60(.64)	2.48	0-5.94
	Candidate	2.19(.50)	2.10	0.55-4.57
	Special Focus Facility	2.16(.44)	2.13	.94-3.62
Practical Nurse Hours per resident day	5-Star	.91(.57)	.85	0-4.44
	Candidate	.89(.30)	.91	.00-1.88
	Special Focus Facility	.92(.31)	.92	.29-2.18
Registered Nurse hours per resident day	5-Star	1.05(.89)	.83	.14-7.57
	Candidate	.59(.52)	.51	.00-6.15
	Special Focus Facility	.49(.21)	.47	.06-1.55
Total Hours per Resident Day	5-Star	4.57(1.37)	4.23	1.56-13.51
	Candidate	3.68(.80)	3.61	1.6-11.03
	Special Focus Facility	3.58(.66)	3.55	1.64-5.85
Case Mix Aide Hours per Resident Day	5-Star	2.09(.17)	2.1	1.37-2.50
	Candidate	2.01(.14)	2.02	1.30-2.51
	Special Focus Facility	1.98(.13)	1.98	1.58-2.44
Case Mix Practical Nurse Hours per Resident Day	5-Star	.75(.12)	.73	.53-1.34

	Candidate	.74(.07)	.73	.55-1.04
	Special Focus Facility	.73(.06)	.73	.06-.89
Case Mix Registered Nurse Hours per Resident Day	5-Star	.39(.20)	.34	.21-1.90
	Candidate	.37(.12)	.35	.24-1.91
	Special Focus Facility	.37(.08)	.35	.22-.74
Total Case Mix Hours per Resident Day	5-Star	3.24(.44)	3.20	2.18-5.49
	Candidate	3.13(.30)	3.13	2.10-5.47
	Special Focus Facility	3.09(.23)	3.08	2.51-3.77

Note: Reflects 2020 data

Table 4
Ownership Table

	Group	Total	Percent %
For-Profit Corporation	5-Star	92	37
	Candidate	118	60
	Special Focus Facility	33	66
For-Profit Individual	5-Star	9	3
	Candidate	6	3
	Special Focus Facility	9	18
For-Profit Limited Liability Company	5-Star	17	5
	Candidate	26	13
	Special Focus Facility	4	8
For-Profit Partnership	5-Star	6	2
	Candidate	16	32
	Special Focus Facility	5	10
Government-City	5-Star	2	.06
	Candidate	0	0
	Special Focus Facility	0	0
	5-Star	4	1

Government-City/County	Candidate	2	1
	Special Focus Facility	0	0
Government County	5-Star	9	4
	Candidate	2	1
	Special Focus Facility	0	0
Government-Hospital District	5-Star	7	2
	Candidate	3	1
	Special Focus Facility	0	0
Government-State	5-Star	7	2
	Candidate	3	1
	Special Focus Facility	0	0
Non-Profit Church Related	5-Star	12	4
	Candidate	0	0
	Special Focus Facility	0	0
Non-Profit Corporation	5-Star	72	24
	Candidate	16	8
	Special Focus Facility	2	4
Non-Profit Other	5-Star	10	4
	Candidate	3	2
	Special Focus Facility	0	0

Note: Only data from December was used for this analysis, to avoid inflating/duplicating ownership counts. Rounded to nearest percentage point.

Table 5

Changed Ownership Table

	Group	Total	Percent %
Yes	5-Star	3.25	1.3
	Candidate	4.6	2.34
	Special Focus Facility	2.3	4.6
No	5-Star	243.75	98.7
	Candidate	192.33	97.46
	Special Focus Facility	47.4	94

Note: Only data from December was used for this analysis, to avoid inflating/duplicating ownership counts

Table 6

Deficiencies in Nursing Homes

Scope	Group	Total	Percent %	Severity
B	5-Star	6.0	2.11	No actual harm with potential for minimal harm
	Candidate	14	0.92	
	Special Focus Facility	6.0	0.98	
C	5-Star	0.0	0.00	
	Candidate	11	0.72	
	Special Focus Facility	6.0	0.98	
D	5-Star	201	70.52	No actual harm with potential for more than minimal harm that is not immediate jeopardy
	Candidate	847	55.72	
	Special Focus Facility	354	57.75	
E	5-Star	51	17.89	
	Candidate	375	24.67	
	Special Focus Facility	159	25.93	
F	5-Star	23	8.07	
	Candidate	122	8.03	
	Special Focus Facility	43	7.01	
G	5-Star	4	1.40	Actual harm that is not immediate jeopardy
	Candidate	56	3.69	
	Special Focus Facility	24	3.92	
H	5-Star	0.0	0.00	
	Candidate	6	0.39	
	Special Focus Facility	3	0.49	
I	5-Star	0.0	0.00	

	Candidate	2	0.13	
	Special Focus Facility	0.0	0.00	
J	5-Star	0.0	0.00	Immediate jeopardy to resident health or safety
	Candidate	57	3.75	
	Special Focus Facility	10	1.63	
K	5-Star	0.0	0.00	
	Candidate	13	0.85	
	Special Focus Facility	5	0.82	
L	5-Star	0.0	0.00	
	Candidate	17	1.12	
	Special Focus Facility	3	0.49	

Note. Table displays only 2020 deficiencies. No Scope "A" reported in 2020 data, Shaded regions indicate substandard care

Table 7
Role of Ownership Table

Ownership Role	Group	Total	Percent %
5% or Greater Direct Ownership Interest	Special Focus Facility	282	5.23
	5-Star		
	Candidate	329	6.10
	Special Focus Facility	81	1.50
5% or Greater Indirect Ownership Interest	5-Star	341	6.33
	Candidate	610	11.32
	Special Focus Facility	168	3.12
5% or Greater Mortgage Interest	5-Star	12	0.22
	Candidate	6	0.11
	Special Focus Facility	1	0.02
5% or Greater Security Interest	5-Star	12	0.22
	Candidate	35	0.65
	Special Focus Facility	3	0.06
Director	5-Star	869	16.12
	Candidate	226	4.2
	Special Focus Facility	42	0.78
Managing Employee	5-Star	368	6.82
	Candidate	259	4.81
	Special Focus Facility	63	1.17
Officer	5-Star	529	9.81
	Candidate	397	7.37
	Special Focus Facility	81	1.50
Operational/Managerial Control	5-Star	307	5.7
	Candidate	284	5.27

	Special Focus Facility	61	1.13
Partnership Interest	5-Star	5	0.1
	Candidate	19	0.36
	Special Focus Facility	0	0

Note: Table only includes December 2020 ownership to avoid duplication

Table 8
COVID-19 Descriptive Statistics

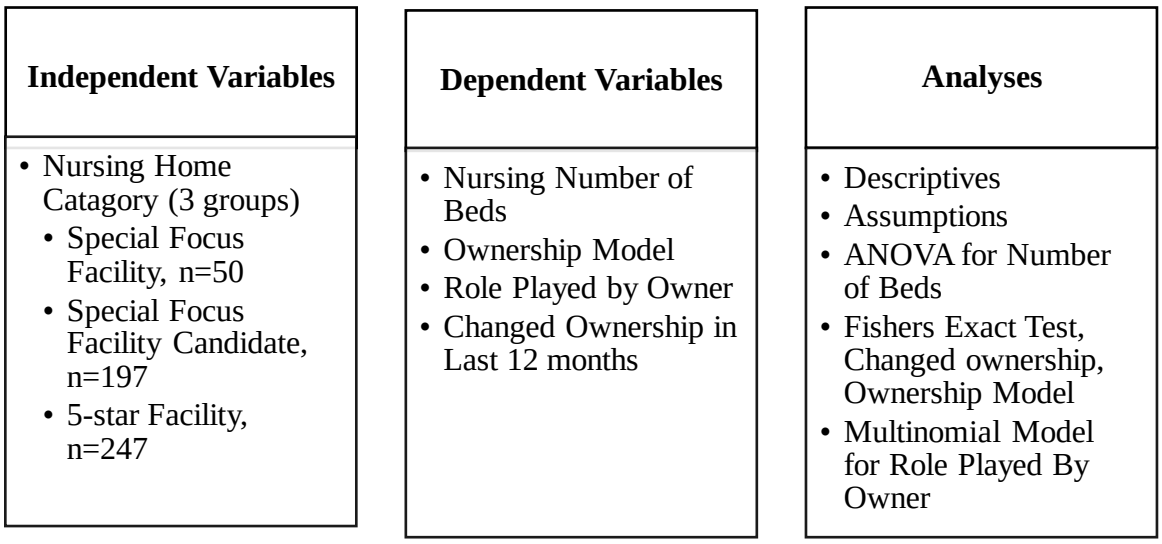
COVID-19 Variable	Group	Mean(SD)	Median	Range
Residents Total Confirmed COVID-19	5-Star	27.08(29.29)	14	0-153
	Candidate	42.72(37.1)	37.50	0-216
	Special Focus Facility	50.67(46.2)	43	0-201
Residents Total COVID-19 Deaths	5-Star	5.1(6.84)	2	0-40
	Candidate	7.93(10.56)	4	0-67
	Special Focus Facility	8.18(9.6)	5	0-39
Resident Case Fatality Rate of COVID/1000 cases	5-Star	80.6(104.43)	41.67	0-666.67
	Candidate	95.31(98.51)	64.52	0-480
	Special Focus Facility	89.81(89.99)	64.52	0-379.31
Staff Total Confirmed COVID-19	5-Star	29.39(26.84)	22	0-207
	Candidate	31.59(23.16)	29	0-133
	Special Focus Facility	38.47(29.8)	29	1-154
Staff Total COVID-19 Deaths	5-Star	0.09(0.36)	0.0	0-4
	Candidate	0.12(0.51)	0.0	0-5
	Special Focus Facility	0.14(0.35)	0.0	0-1

Note. Figures reflect confirmed cases and deaths in 2020
Note. COVID-19 = Coronavirus

Research Question One

After data extraction and the completion of the pre-analyses, hypothesis testing began for RQ 1. The specific aim of RQ 1 is explication the trait differences between SFF, SFFc, and five-star facilities. Nursing home size was analyzed using a fixed ANOVA, ownership model and change in ownership were analyzed via Fisher's exact test, role of owners was analyzed using a multinomial regression. All variables and analyses are displayed in Figure 11.

Figure 11
Research Question One: Groups, Variables and Analyses



Multinomial Regression: Role of Ownership

During research conceptualization it was hypothesized that using role of owner information, results could be distilled to specific owners and look for chain affiliation. Prior to primary analysis the descriptive analysis results found that nursing homes had multiple owners and multiple owners in the same category. Hypothesis testing was completed using multinomial logistic regression to identify relationships between the roles of owners and Special Focus Facility enrollment. Using a "for-loop" logic statement, owners with more than 1 category of

ownership (i.e., “Owner” and “Manager”) were condensed into another category called “Multiple Roles” to meet the assumption of mutual exclusivity. Out of 5413 ownership records, 793 were identified as duplicate owners. Multinomial regression showed that the associations between ownership role and Special Focus Facility status (defined as SFF, SFFc, or five-star) were significant (See Table 8). The reference variable was set to “5% or greater indirect ownership interest”. Significance was defined at $p \leq .05$. Significance was assessed using a standard normal (z) distribution two-tailed test.

Role description was significant $p \leq .005$ but only SFF and Director/ 5% or Greater Indirect Ownership Interest. Coefficients were exponentiated for the Odds Ratio (OR) of each variable. Strong OR (>10) was noted for SFFc and Partnership interest, indicating that this relationship is likely not due to chance. (Centers for Disease Control and Prevention, 2004; Polit & Beck, 2017).

Table 9
Coefficients of Owner Role

Owner Role	Group	Coefficients	*p* value	Odds Ratio
5% or Greater Indirect Ownership Interest	5-Star	0.712	<.005	2.04
	Candidate	-0.35	<.005	0.70
	Special Focus Facility	0.33	<.005	1.4
5% Operational/Managerial control	5-Star	-0.53	<.005	0.59
	Candidate	0.37	<.005	1.46
	Special Focus Facility	-0.18	0.28	0.83
Officer	5-Star	-0.06	<.005	0.94
	Candidate	0.3	<.005	1.34
	Special Focus Facility	-0.13	0.38	0.88

Managing Employee	5-Star	-0.19	<.005	0.82
	Candidate	0.21	<.005	1.24
	Special Focus Facility	-0.004	0.98	1.0
5% or Greater Security Interest	5- Star	-2.83	<.005	0.05
	Candidate	-0.3	<.005	0.75
	Special Focus Facility	-0.48	0.42	0.66
Director	5-Star	-0.22	<.005	0.98
	Candidate	1.24	<.005	3.47
	Special Focus Facility	-0.12	<.005	0.62
5% or Greater Mortgage Interest	5-Star	-3.80	<.005	0.02
	Candidate	0.43	<.005	1.54
	Special Focus Facility	-0.12	0.86	0.88
Partnership Interest	5-Star	-7.12	<.005	0.00
	Candidate	2.5	<.005	12.07
	Special Focus Facility	-6.31	0.93	0.00
Ownership Data Not Available	5-Star	-3.34	<.005	0.04
	Candidate	0.66	<.005	1.94
	Special Focus Facility	-0.59	0.4	0.55
Multiple Roles	5-Star	0.42	<.005	1.53
	Candidate	0.22	<.005	1.24
	Special Focus Facility	-0.11	0.41	0.9

Note. “Multiple Roles” category added by author, not in CMS data.

Fishers Exact Test: Ownership Model

As a result of the small sample size, ownership model was collapsed from 12 total ownership categories (See Table 4), into 3, mutually exclusive categories (1) Non-Profit, (2) For-Profit, and (3) Government-Owned to examine associations between Special Focus Facility

status (defined as SFF, SFFc, or five-star) and ownership model (defined as Non-Profit, For Profit or Government owned). Table 9 is a contingency table of expected and actual values.

Table 10
Contingency Table of Actual and Expected Values for Ownership Model

	For-Profit	Non-Profit	Government Owned
5-Star **(Actual)**	124	94	29
5-Star **(Expected)**	171	57	19
Candidate **(Actual)**	169	19	9
Candidate **(Expected)**	136	46	15
Special Focus Facility **(Actual)**	48	2	0
Special Focus Facility **(Expected)**	34	12	4

Fisher's exact test with Monte Carlo simulation[9] was conducted in lieu of a Chi-Square test (Kim, 2017). Results of showed a significant association between Special Focus Facility enrollment and ownership model ($p \leq .005$).

Fishers Exact Test: Change in Ownership

A Fisher's exact test examined associations between Special Focus Facility Status (defined as SFF, SFFc, or five-Star) and "Change in Ownership over the last 12 months". The contingency table with actual and expected values is below in Table 11.

[9] A Monte Carlo simulation was run 2000 times to estimate the *p* value, as the exact value was too small to be calculated by the R studio processor.

Table 11
Contingency Table of Actual and Expected Values

Facility Group	Changed Ownership (No)	Changed Ownership (Yes)
5-Star **(Actual)**	244	3
5-Star **(Expected)**	243	4
Candidate **(Actual)**	193	4
Candidate **(Expected)**	194	3
Special Focus Facility **(Actual)**	49	1
Special Focus Facility **(Expected)**	49	1

Fisher's exact test was conducted in lieu of a Chi-Square test (Kim, 2017). Results showed no significant association between Special Focus Facility Program enrollment and change in ownership over the last 12 months, p =.664.

Analysis of Variance: Nursing Home Size

An ANOVA examined the relationship between nursing home size (defined as number of beds) and Special Focus Facility status (defined as SFF, SFFc, or five-star). Statistical significance was accepted at the $p \leq .05$ level for between and within effects. Each nursing home had 12 observations of facility size (one for each month of 2020). Outliers were defined as being more than three standard deviations from the mean. There were 72 outliers. Data were not normally distributed as assessed by the Anderson-Darling test for normality (p <.001). There was homogeneity of variance as assessed by Levene's test for equality of variances, p = 0.06. There was a statistically significant main effect of nursing home size and Special Focus Facility

Enrollment $F(2,5925) = 301.8$, $p < .001$ (See Table 11). A Tukey test for pairwise comparison showed statistically significant differences between nursing home size in SFF and five-star groups, 95% Confidence Interval (CI) [38.05-46.73], $p < .001$. As displayed in Table 12, SFF are larger than five-star facilities with a difference of 42.87 beds. Statistically significant difference was noted for SFFc and five-star facilities, with SFFc being larger with an average difference of 44.50 beds, 95% CI [37.46-51.55], $p < .001$. No statistical significance was noted for SFF-SFFc $p = 0.76$. Facilities averaged a difference of 2.12 beds, 95% CI [-9.31- 5.07]. The number of beds has a large effect size on SFF status, partial η^2=.08. Figure 12 displays the distribution of nursing home size.

Table 12
Fixed-Effects Table ANOVA Results of Nursing Home Size

Predictor	Sum of Squares	*df*	Mean Square	*F*	*p*	partial η^2	partial η^2 90% CI [LL, UL]
(Intercept)	51178126.50	1	51178126.50	11361.99	<.005	.08	
Group	2718893.60	2	1359446.80	301.81	<.005	≈	[.08, .10]
Error	26688134.47	5925	4504.33				

Note. LL and UL represent the lower-limit and upper-limit of the partial η^2 confidence interval, respectively.

Table 13

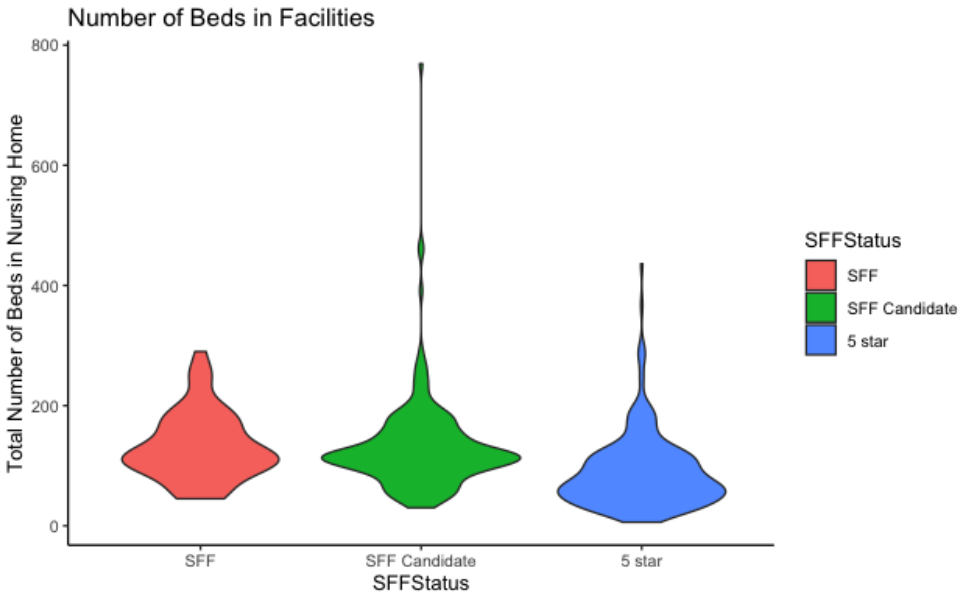
Means, Standard Deviations, and d-values with Confidence Intervals of Nursing Home Size

Variable	*M*	*SD*	1	2
1. 5-Star	88.52	60.06		
2. Candidate	130.90	77.35	0.62 [0.57, 0.68]	
3. Special Focus Facility	133.02	55.75	0.75 [0.66, 0.84]	0.03 [-0.06, 0.12]

Note. M indicates mean. *SD* indicates standard deviation. *d*-values are estimates calculated using formulas 4.18 and 4.19 from (Borenstein et al., 2009). *d*-values not calculated if unequal variances prevented pooling. Values in square brackets indicate the 95% confidence interval for each *d*-value The confidence interval is a plausible range of population *d*-values that could have caused the sample *d*-value (Cumming, 2014).

Figure 12

Violin Plot: Bed Size of Nursing Homes



Note. SFF=Special Focus Facility

Research Question One: Hypotheses Testing

Hypothesis testing was completed via descriptive analyses, fixed ANOVAs, Fisher's exact tests, and multinomial regression. Nursing home size had the strongest relationship with a partial eta of .08. however, as posited in H_{1c} there was no statistically significant difference between SFF and SFFc in the size of nursing homes. Profit status was associated with SFF status as determined by the Fisher's exact test. Hypotheses testing results for RQ 1 are in Table 13. Chain affiliation was not testable due to the contents of the data, so ownership role and change in owner were analyzed as proxy variables and to contextualize foundations for future research.

Table 14
Hypothesis Testing of Research Question 1

RQ	Hypotheses	Accepted/Rejected	*p*
1	$H_{1a:}$ SFF and SFFc will both be more likely to be chain affiliated than nursing homes that have a 5-star quality rating.	Fail to accept or reject	N/A
1	H_{1b}: SFF and SFFc will both be more likely to be for-profit than nursing homes that have a 5-star quality rating.	Accepted: No significant difference noted	0.7478
1	$H_{1c:}$ SFF and SFFc will both be larger in size than nursing homes that have a 5-star quality rating.	Accepted: SFF and SFFc are larger than 5-star	<.05
1	$H_{1d:}$ There will be no significant differences in chain affiliation between SFF and SFFc.	Fail to accept or reject	N/A
1	H_{1e}: There will be no significant differences in size between SFF and SFFc	Accepted: No significant difference noted	0.4458
1	$H_{1f.}$ There will be no significant differences in profit status between SFF and SFFc.	Accepted: No significant differences	.0.764

Note. SFF=Special Focus Facility; SFFc=Special Focus Facility Candidate; H=Hypotheses; RQ=Research Question

Research Question Two

Using fixed ANOVA[10] linear modeling in R studio RQ 2 analyzes differences between SFF (n = 50) and SFFc (n = 197). A fixed ANOVA table with all primary analysis is at the end of this section. All variables and analyses for RQ 2 are in Figure 13.

Figure 13

Independent Variables	Dependent Variables	Planned Analyses
•Nursing Home Catagory (2 groups) •Special Focus Facility, n=50 •Special Focus Facility Candidate, n=197	•Severity of Citations •Immediate Jeopardy, Actual Harm, No Actual Harm with Potential, No Actual Harm with Minimal Potential •-Number of Complaint Citations •-Hours Per Resident Day •(Aide,Licensed Practical Nurse, Registered Nurse) •-Case Mix •(Aide,Licensed Practical Nurse, Registered Nurse)	•Descriptives •Central Tendancy, Skewness, Variance •Assumptions •Anderson-Darling test for normality Outlier Inspection • ANOVA for Number of complaint citations, HPRD and CM-HPRD •ANOVA for Severity of citations •Levene's Test for Equality of Variances

Analysis of Variance: Number of Complaint Citations

An ANOVA was conducted to determine the relationship between Special Focus Facility enrollment (defined as SFF or SFFc) and number of complaint citations. The number of complaint citations is defined as gross complaint citations in 2020. There were three outliers, defined as being greater than three standard deviations from the mean. Statistical significance was accepted at the $p \leq 05$. Data was not normally distributed as assessed by the Anderson-Darling test for normality (p <.001). There was homogeneity of variance as assessed by Levene's test for equality of variances, p = 0.14. There was not a statistically significant effect of the

[10] The author has opted to use the label "ANOVA" in lieu of "T-Test" for flow and continuity with RQ 1 and 3. While less common, this is acceptable practice (Kent State Universty, 2022; Laerd Statistics, 2018)

number of complaints and Special Focus Facility enrollment $F(1,204)=0.714$, p =.399, 95% CI [-2.84- 1.34]. Pairwise comparison show slight differences between SFF and SFFc. SFF having slightly higher gross complaints, as displayed in Table 15.

Table 15
Means, Standard Deviations, and d-values with Confidence Intervals of Complaint Count

Variable	*M*	*SD*	*1*
1. Special Focus Facility	5.56	7.17	
2. Candidate	4.71	5.51	0.14 [-.19-0.48]

Note. M indicates mean. *SD* indicates standard deviation.

Analysis of Variance: Severity of Complaint Citations

Citation severity was condensed, using the five-star quality rating system users guide matrix (Centers for Medicare and Medicaid Services, 2020), (See Table 1) and transformed into ordinal numeric variables for analysis. Scope A, B,C are grouped as "No actual harm with potential for minimal harm", scope D,E, and F are categorized as "No actual harm with potential for more than minimal harm that is not immediate jeopardy", G, H, and I are categorized as "Actual harm that is not immediate jeopardy" and J, K, and L are categorized as "Immediate jeopardy to resident health or safety". Citations were filtered, ensuring that that all 2020 citations were included but not duplicated. Citations must have been categorized as complaint citations to be included in the analysis.

An ANOVA was conducted to examine the relationship between Special Focus Facility enrollment (defined as SFF or SFFc) and the severity of citations. The citations levels are treated as numeric categories. Statistical significance was accepted at $p \leq .05$ level. Data was not normally distributed as assessed by the Anderson-Darling test for normality (p<.001). There was

not homogeneity of variance as assessed by Levene's test for equality of variances, p <.005. There was not a statistically significant main effect of Special Focus Facility Enrollment and severity of complaints $F(1,1004)=3.167$, p =.075, 95% CI [-0.01-.16). As shown in Table 16, SFFc complaint citations were slightly, but not significantly more severe.

Table 16
Means, Standard Deviations, and d-values with Confidence Intervals of Complaint Citation Severity

Variable	*M*	*SD*	1
1. Special Focus Facility	2.14	0.50	
2. Candidate	2.21	0.60	0.13 [-0.01, 0.28]

Note. M indicates mean. *SD* indicates standard deviation. *d*-values are estimates calculated using formulas 4.18 and 4.19 from Borenstein, Hedges, Higgins, & Rothstein (2009). *d*-values not calculated if unequal variances prevented pooling. Values in square brackets indicate the 95% confidence interval for each *d*-value. The confidence interval is a plausible range of population *d*-values that could have caused the sample *d*-value (Cumming, 2014).

Analysis of Variance: Aide Hours Per Resident Day

An ANOVA was conducted to determine the relationship between Special Focus Facility enrollment (defined as SFF or SFFc) and HPRD of care given by aides. There were 41 outliers, defined as a data point being greater than three standard deviations from the mean. Statistical significance was accepted at the $p \leq .05$ level. Data were not normally distributed as assessed by the Anderson-Darling test for normality (p <.001). There was not homogeneity of variance as assessed by Levene's test for equality of variances, p = 0.02. There was not a statistically significant effect of aide HPRD and Special Focus Facility enrollment $F(1,2832)=1.14$, p =.287, 95% CI [-0.02-0.07]. Pairwise comparison showed slight differences in the SFF-and SFFc staffing. SFFc have .02 more aide HPRD (see Table 17).

Table 17
Means, Standard Deviations, of Aide Hours Per Resident Day

Variable	*M*	*SD*
1. Special Focus Facility	2.17	0.45
2. Candidate	2.19	0.51

Note: M indicates mean. *SD* indicates standard deviation.

Analysis of Variance: Case Mix Aide Hours per Resident Day

An ANOVA was conducted to determine the relationship between Special Focus Facility enrollment (defined as SFF or SFFc) and aide HPRD, adjusted for case mix[11] . There were 24 outliers, assessed by being greater than three standard deviations from the mean. Statistical significance was accepted at $p \leq .05$. Data was not normally distributed as assessed by the Anderson-Darling test for normality ($p < .001$). There was homogeneity of variance as assessed by Levene's test for equality of variances, $p = 0.32$. There was a statistically significant main effect of case mix aide HPRD and Special Focus Facility Enrollment $F(1,2832) = 17.17$, $p < .001$, 95% CI [0.01-0.04]. Pairwise comparison showed that SFFc have a slightly higher adjusted case mix of .02 aide HPRD, (See Table 18).

[11] Case mix reflects the relative resources predicted to provide care to a resident. The higher the case mix weight, the greater the resource requirements for the resident (Centers for Medicaid and Medicare Services, 2005)

Table 18
Means, Standard Deviations of Case Mix Aide Adjusted Hours Per Resident Day

Variable	*M*	*SD*	*1*
1. Special Focus Facility	1.99	0.13	
2. Candidate	2.01	0.14	0.20 [0.10-0.29]

Note. M indicates mean. *SD* indicates standard deviation

Analysis of Variance: Practical Nurse Hours per Resident Day

An ANOVA was conducted to determine the relationship between Special Focus Facility enrollment (defined as SFF or SFFc) and Practical nurse HPRD. There were 29 outliers as assessed by being greater than three standard deviations from the mean. Statistical significance was accepted at the $p \leq .05$ level. Data were not normally distributed as assessed by the Anderson-Darling test for normality ($p<.001$). There was not homogeneity of variance as assessed by Levene's test for equality of variances, $p = .009$. There was a statistically significant main effect of practical nurse HPRD and Special Focus Facility enrollment $F(1,2832)=6.47$, $p=.011$, 95% CI [,-0.01-0.07]. As displayed in Table 19, SFFc have approximately .03 fewer practical nurse HPRD.

Table 19
Means, standard deviations of Practical Nurse Hours per Resident Day

Variable	*M*	*SD*
1. Special Focus Facility	0.93	0.31
2. Candidate	0.89	0.30

Note: M indicates mean. *SD* indicates standard deviation.

Analysis of Variance: Case Mix Practical Nurse Hours per Resident Day

An ANOVA was conducted to determine the relationship between Special Focus Facility enrollment (defined as SFF or SFFc) and practical nurse HRPD, adjusted for case mix. There were 12 outliers, assessed as being greater than three standard deviations from the mean. Statistical significance was accepted at $p \leq .05$. Data were not normally distributed as assessed by the Anderson-Darling test for normality ($p<.001$). There was not homogeneity of variance as assessed by Levene's test for equality of variances, $p <0.001$. There was not a statistically significant main effect of case mix practical nurse HPRD and Special Focus Facility enrollment $F(1,2832)=3.231$, $p=.072$, 95% , CI[-0006-0.01]. Pairwise showed no difference in mean of HPRD, displayed in Table 20.

Table 20
Means, Standard Deviations of Case Mix Practical Nurse Adjusted Hours per Resident Day

Variable	*M*	*SD*
1. Special Focus Facility	0.74	0.06
2. Candidate	0.74	0.08

Note. M indicates mean. *SD* indicates standard deviation

Analysis of Variance: Registered Nurse Hours per Resident Day

An ANOVA was conducted to determine the relationship between Special Focus Facility enrollment (defined as SFF or SFFc) and the HPRD of care provided by registered nurses (RN). There were 21 outliers, assessed by being greater than three standard deviations from the mean. Statistical significance was accepted at the $p \leq .05$ level. Data was not normally distributed as assessed by the Anderson-Darling test for normality ($p<.001$). There was not homogeneity of variance as assessed by Levene's test for equality of variances. There was a statistically

significant main effect of Special Focus Facility enrollment and RN HPRD $F(1,2832)=28.31$, p <.005, 95% CI [0.06-0.15]. Pairwise comparison shows SFFc have 0.11 more HPRD of RN care as displayed in Table 21.

Table 21
Means, standard deviations of Registered Nurse Hours per Resident Day

Variable	*M*	*SD*
1. Special Focus Facility	0.49	0.21
2. Candidate	0.60	0.52

Note: M indicates mean. *SD* indicates standard deviation

Analysis of Variance: Case Mix Registered Nurse Hours per Resident Day

An ANOVA was conducted to determine the relationship between Special Focus Facility enrollment (defined as SFF or SFFc) and RN HPRD, adjusted for case mix. There were 25 outliers, assessed by being greater than three standard deviations from the mean. Statistical significance was accepted at the $p \leq .05$ level for between and within effects. Data were not normally distributed as assessed by the Anderson-Darling test for normality (p <.001). There was homogeneity of variance as assessed by Levene's test for equality of variances, p =0.23. There was not a statistically significant main effect of RN HPRD and Special Focus Facility enrollment $F(1,2832)=0.305$, p =.58. Pairwise comparison showed a difference of .01 case mix adjusted RN HPRD, as displayed in Table 22.

Table 22
Means, Standard deviations of Case Mix Registered Nurse Adjusted Hours per Resident Day

Variable	*M*	*SD*	*1*
1. Special Focus Facility	0.37	0.09	
2. Candidate	0.38	0.13	0.03 [-0.07-0.12]

Note. M indicates mean. *SD* indicates standard deviation

Analysis of Variance: Total Hours per Resident Day

An ANOVA was conducted to determine the relationship between Special Focus Facility enrollment (defined as SFF or SFFc) and total HPRD. There were 21 outliers, assessed by being greater than three standard deviations from the mean. Statistical significance was accepted at the $p \leq .05$ level. Data was not normally distributed as assessed by the Anderson-Darling test for normality ($p < .001$). There was homogeneity of variance as assessed by Levene's test for equality of variances, $p = 0.55$. There was a statistically significant main effect of HPRD and Special Focus Facility Enrollment $F(1,2832)=6.94$, $p = .008$, 95%. CI[0.02-0.17]. Pairwise comparison showed a difference of 0.18 HPRD, as displayed in Table 23. SFFc have higher overall staffing HPRD.

Table 23
Means, Standard Deviations of Total Hours per Resident Day

Variable	*M*	*SD*	*1*
1. Special Focus Facility	3.59	0.67	
2. Special Focus Facility Candidate	3.68	0.80	0.13 [0.03-0.22]

Note. M indicates mean. *SD* indicates standard deviation

Analysis of Variance: Case Mix Total Hours per Resident Day

An ANOVA was conducted to determine the relationship between Special Focus Facility enrollment (defined as SFF or SFFc) and total HRPD, adjusted for case mix. There were 22 outliers assessed by being greater than three standard deviations from the mean. Statistical significance was accepted at $p \leq .05$. Data was not normally distributed as assessed by the Anderson-Darling test for normality ($p < .001$). There was not homogeneity of variance as assessed by Levene's test for equality of variances, $p = < .001$. There was a statistically significant main effect of total HPRD, adjusted for case mix and Special Focus Facility enrollment $F(1,2832)=7.399$, $p = .006$, 95% CI[0.01-0.06]. As shown in Table 24 there is a difference of .03 case mix adjusted HPRD, SFFc have higher staffing.

Table 24
Means, Standard Deviations of Case Mix Adjusted Total Hours of Care per Day

Variable	*M*	*SD*
1. Special Focus Facility	3.10	0.23
2. Candidate	3.13	0.30

Note. M indicates mean. *SD* indicates standard deviation

Research Question Two: Hypotheses Testing

The primary interaction effects of all RQ 2 variables are displayed below in Table 25. A statistically significant difference was detected in practical nurse HPRD, RN HPRD, total HPRD, case mix adjusted aide HPRD, and total case mix adjusted HPRD. Often SFFc have favorable staffing ratios. SFFc have higher staffing in total case mix, case mix aide HPRD, total HPRD, and RN HPRD. SFF have higher practical nurse HPRD. The effect size across all variables is small: $\eta^2 = .01$. The significant variables are covariates in analyses of RQ 3. Higher HPRD is associated with improved resident outcomes. Aide staffing is correlated with resident function (Shin, 2013). RN staffing is associated with infection control, as well as pain control, dehydration, physical and chemical restraints and infection prevention (Harrington, Dellefield, et al., 2020; Zimmerman et al., 2002). Practical nurse hours are tied to promoting positive resident outcomes (Bostick et al., 2006). As little as 19 minutes of additional RN care in a resident day and 40 minutes of combined attention from RNs, aides, and practical nurses in a 24-hour period improves resident outcomes (Centers for Medicare and Medicaid Services, 2020; Medicaid and CHIP Payment and Access Commission , 2022).

Table 25
Hypothesis Testing of Research Question 2

RQ	Hypothesis	Accepted/Rejected	*p*
2	H_{2_a}: Between SFF and SFFc, there will be no difference in the number of deficiencies per survey.	Accepted: No significant difference noted	0.399
2	H_{2_b}: Between SFF and SFFc, there will be no difference in the severity of cited deficiencies per survey.	Accepted: No significant difference noted	0.0754 .
2	H_{2c}: Between SFF and SFFc, there will be no difference in aide staffing ratios.	Accepted: No significant difference noted	0.287
2	H_{2d}: Between SFF and SFFc, there will be no difference in aide staffing ratios, adjusted for resident acuity.	Rejected: SFFc has significantly higher aide staffing, adjusted for acuity	<0.001
2	H_{2e}: Between SFF and SFFc, there will be no difference in practical nurse staffing ratios.	Rejected: SFF has significantly higher practical nurse staffing	0.011
2	H_{2f}: Between SFF and SFFc, there will be no difference in practical nurse staffing ratios, adjusted for resident acuity.	Accepted: No significant difference noted	0.0724
2	H_{2g}: Between SFF and SFFc, there will be no difference in registered nurse staffing ratios.	Rejected: SFFc has significantly higher registered nurse staffing	<.001.
2	H_{2h}: Between SFF and SFFc, there will be no difference in registered nurse staffing ratios, adjusted for resident acuity.	Accepted: No significant difference noted	0.581
2	H_{2i}: Between SFF and SFFc, there will be no difference in total staffing ratios.	Rejected: SFFc has significantly higher total staffing	0.00844
2	H_{2j}: Between SFF and SFFc, there will be no difference in total staffing ratios, adjusted for resident acuity.	Rejected: SFFc has significant higher total staffing, adjusted for acuity	0.00656

Note. SFF=Special Focus Facility; SFFc=Special Focus Facility Candidate; H=Hypotheses; RQ=Research Question

There is no difference between the severity or number of surveys between SFF and SFFc. There were significant differences in practical nurse staffing, registered nurse staffing, total HPRD, case mix aide staffing, and case mix total staffing. Therefore, H_{2a} and H_{2b} $H_{2c,}$ $H_{2f,}$ and H_{2h} are accepted. H_{2d}, H_{2e}, H_{2e}, H_{2i}, and H_{2j} are rejected. Table 26 contains all fixed effect values.

Table 26
Fixed-Effects Table ANOVA results of Research Question 2

Criterion	Predictor	Sum of Squares	*df*	Mean Square	*F*	*p*	partial η^2	partial η^2 90% CI [LL, UL]
Severity of citations	(Intercept)	3451.06	1	3451.06	10455.95	.000		
	SFF Status	1.05	1	1.05	3.17	.075	.00	[.00, .01]
	Error	331.38	1004	0.33				
Complaint count	(Intercept)	3584.21	1	3584.21	103.44	**<.005**		
	SFF Status	24.73	1	24.73	0.71	.399	.00	[.00, .03]
	Error	7068.47	204	34.65				
Aide HPRD	(Intercept)	8425.74	1	8425.74	34373.39	**<.005**		
	SFF Status	0.28	1	0.28	1.14	.287	.00	[.00, .00]
	Error	694.19	2832	0.25				
Practical nurse HPRD	(Intercept)	1472.29	1	1472.29	15836.95	**<.005**		

	SFF Status	0.60	1	0.60	6.47	**.011**	.00	[.00, .01]
	Error	263.28	2832	0.09				
Registered nurse HPRD	(Intercept)	527.41	1	527.41	2320.96	**<.005**		
	SFF Status	5.30	1	5.30	23.31	**<.005**	.01	[.00, .01]
	Error	643.54	2832	0.23				
Total HRD	(Intercept)	23448.10	1	23448.10	38622.46	**<.005**		
	SFF Status	4.22	1	4.22	6.95	**.008**	.00	[.00, .01]
	Error	1719.34	2832	0.61				
Case mix adjusted aide	(Intercept)	7102.61	1	7102.61	354336.50	**<.005**		
	SFF Status	0.34	1	0.34	17.17	**<.005**	.01	[.00, .01]
	Error	56.77	2832	0.02				
Case mix adjusted practical nurse	(Intercept)	969.25	1	969.25	169039.91	**<.005**		
	SFF Status	0.02	1	0.02	3.23	.072	.00	[.00, .00]
	Error	16.24	2832	0.01				
Case mix adjusted registered	(Intercept)	251.75	1	251.75	16962.90	**<.005**		

nurse								
	SFF Status	0.00	1	0.00	0.31	.581	.00	[.00, .00]
	Error	42.03	2832	0.01				
Case mix adjusted Total	(Intercept)	17233.51	1	17233.51	204255.29	**<.005**		
	SFF Status	0.62	1	0.62	7.40	**.007**	.00	[.00, .01]
	Error	238.94	2832	0.08				

Note. SFF=Special Focus Facility; HPRD=Hours per Resident Day
Note. LL and UL represent the lower-limit and upper-limit of the partial η^2 confidence interval, respectively.

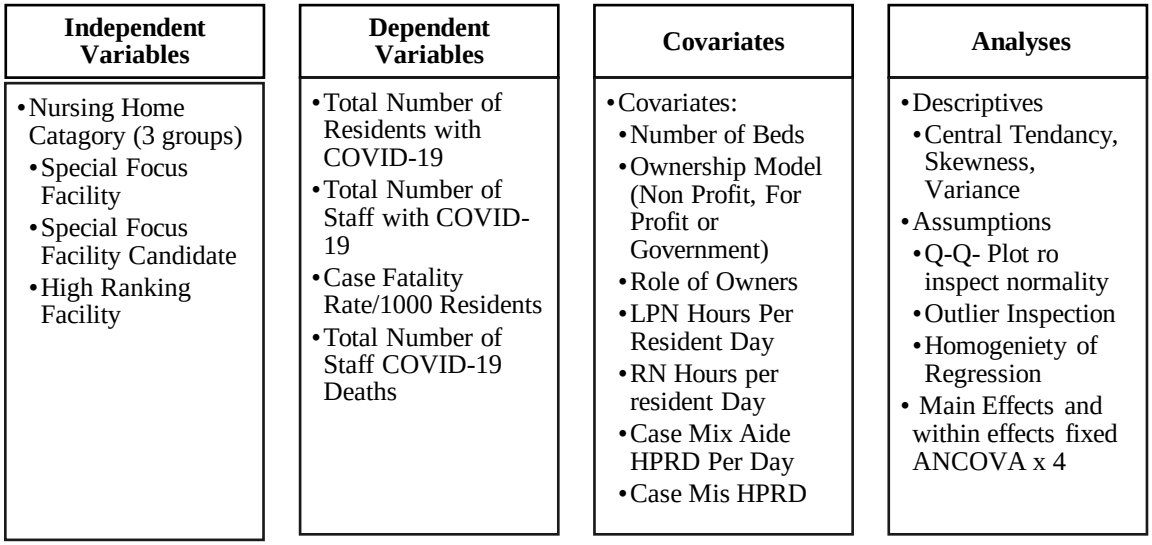
Research Question Three

Significant variables from RQ 1 and 2 were used as covariates during the primary analysis of RQ 3, which analyzed all groups on COVID-19 specific outcomes. Group 1 is SFF (*n*=50), group 2 is SFFc (*n*=197), and group 3 is five-star facilities (*n*=247). Using index variables, all participating nursing homes (*N*=494) were extracted from the Nursing Home COVID-19 database. COVID-19 data was further filtered to only include 2020 data[12]. Practical nurse HPRD, RN HPRD and case mix adjusted aide hours per resident day are "double" covariates as these figures are included in the calculations of total HRPD and case mix HRPD. Removing these covariates would reduce the risk of multicollinearity (Kim, 2019, Smith, 2015) . However, because these variables do not fully overlap and include other numbers, such as therapy HPRD they were left in the analysis.

[12] Due to COVID-19 data being uploaded weekly, COVID-19 data included January 1st, 2020-January 4th,

Figure 14

Research Question 3



Levene's test was inappropriate because covariates were both categorical and numeric, this is not a major concern, as lack of equality of variance is expected in different treatment groups, and reliance upon this assumption may increase the probability of Type I error (Schucany & Ng, 2006).

Analysis of Covariance: Residents with COVID-19

An ANCOVA was conducted to determine the relationship between Special Focus Facility enrollment (defined as SFF, SFFc, or five-star) and total residents with confirmed COVID-19 in 2020. Covariates are facility size, practical nurse HPRD, RN HPRD, total HPRD, case mix adjusted aide HPRD, case mix adjusted total HPRD, role of owners, and ownership type. Statistical significance was accepted at the $p \leq .05$ level for between and within effects. A normal distribution is observed in data, with slight skewness at tails skewed as assessed by a normal Q-Q plot (See Appendix G). There were 39 outliers assessed by being greater than three standard deviations from the mean. There was not homogeneity of regression slopes, $F(2,4199)=13.20.86$, $p < .005$. Tukey pairwise comparisons in Table 27 show statistical significance between groups, prior to incorporating covariates. There was a statistically

significant main effect of total residents with COVID-19 and Special Focus Facility enrollment $F(2,4204)=219.61$, $p < .005$. As displayed in Table 28. Adjusted R^2 is 0.35.

Table 27
Pairwise Comparison: Residents with Coronavirus

Facility Status	Difference	Lower	Upper	*p*
Special Focus Facility by 5-Star	25.86	21.6	30.12	<.005
Special Focus Candidate by 5-star	16.06	13.54	18.6	<.005
Special Focus Facility Candidate by Special Focus Facility	-9.8	-14.15	-5.43	<.005

Note. Not adjusted for covariates

Table 28
Summary of ANCOVA: Residents with Coronavirus

Variable	*df*	Sum of Squares	Mean Square	*F*	*p*
SFF Status	**2**	**343576.094**	**171788.0470**	**219.612**	**<.005**
Number of Beds	1	869082.81	869082.8135	1111.03	<.005
Ownership	2	46805.348	23402.6739	29.92	<.005
Role Description	10	46646.359	4664.6359	5.96	<.005
Practical Nurse HPRD	1	81312.951	81312.9514	103.94	<.005
Registered Nurse HPRD	1	266268.97	266268.971	340.4	<.005
Total HPRD	1	116255.48	116255.48	148.62	<.005
Case Mix aide HPRD	1	7757.45	7757.45	9.92	<.005
Case Mix total HPRD	1	373.83	373.83	0.47	<.005

Note. SFF=Special Focus Facility; HPRD=Hours per Resident Day
Note. SFF Status is the Independent Variable, all other variables are covariates

Analysis of Covariance: Staff with COVID-19

An ANCOVA was conducted to determine the relationship between Special Focus Facility enrollment (defined as SFF, SFFc, or five-star) and total staff with COVID-19 in 2020. Covariates were the facility size, practical nurse HPRD, RN HPRD, total HPRD, case mix adjusted aide HPRD, and case mix adjusted total HPRD, the role of owners, and ownership type. Type III Sum of Squares were used for calculations, so the order of entry of covariates in the model was not impacted. There were 51 assessed by being greater than three standard deviations from the mean. Statistical significance was accepted at the $p \leq .05$ level for between and within effects. Data was slightly skewed as assessed by a normal Q-Q plot (See Appendix G). There was not homogeneity of regression slopes as the interaction was statistically significant $F(2,4201)=57.31$, $p<.005$. There was a statistically significant main effect of total staff with COVID-19 and Special Focus Facility enrollment $F(2,4201)=17.682$, $p <.005$. Prior to adjusting for covariates, Tukey pairwise comparisons showed that SFF had more staff cases, as displayed in Table 29. Table 30 displays the summary of the ANCOVA with all covariates. Adjusted R^2 is 0.29.

Table 29
Pairwise Comparison: Staff with Coronavirus

Facility Status	Difference	Lower	Upper	p
Special Focus Facility by 5-Star	6.8	3.7	9.88	<.005
Special Focus Candidate by 5-star	1.67	-0.15	3.50	0.08
Special Focus Facility Candidate by Special Focus Facility	-5.12	-8.27	-1.97	<.005

Note. Not adjusted for covariates

Table 30
Summary of ANCOVA: Staff with Coronavirus

Variable	*df*	Sum of Squares	Mean Square	*F*	*p*
SFF Status	**2**	**15097**	**7549**	**17.682**	**<.005**
Number of Beds	1				<.005
		520214	520214	1218.536	
Ownership	2	7740	3870	9.065	<.005
Role Description	10	14532	1453	3.404	<.005
Practical Nurse HPRD	1	69663		163.177	<.005
			69663		
Registered Nurse HPRD	1	100764	100764	236.028	<.005
Total HPRD	1	47	47	0.109	0.74
Case Mix Aide HPRD	1	5458	5458	12.784	<.005
Case Mix HPRD	1	12662	12662	29.659	<.005

Note. SFF=Special Focus Facility; HPRD=Hours per Resident Day
Note. SFF Status is the Main independent variable, all other variables are covariates

Analysis of Covariance: Case Fatality Rate/1000 of Residents with COVID-19

An ANCOVA was conducted to determine the relationship between Special Focus Facility enrollment (defined as SFF, SFFc, or five-star) and CFR/1000 residents from COVID-19 in 2020. Covariates are facility size, practical nurse HPRD, RN HPRD, total HPRD, case mix adjusted aide HPRD, and case mix adjusted total HPRD, the role of owners, and ownership type. Type III Sum of Squares were used for calculations, so the order of entry of covariates in the model was not impacted. There were 33 outliers assessed by being greater than three standard deviations from the mean. Statistical significance was accepted at the $p \leq .05$ level for between and within effects. Data is kurtotic as assessed by a normal Q-Q plot (See Appendix G). There is not homogeneity of regression slopes as the interaction was statistically significant F(2,4200)13.69, $p < .005$. There is a statistically significant main effect of CFR of COVID-19 and Special Focus Facility enrollment $F(2,4148)=12.83$, $p <.005$. Pairwise comparisons show that SFF status is significant in CFR, as displayed in Table 30, prior to adjusting for covariates.

A full summary of the ANCOVA is displayed in Table 31, which shows that nursing home size, ownership model, total HPRD and case mix HPRD are significant. Adjusted R^2 is .046.

Table 31
Pairwise Comparison: Case Fatality Rate of Residents with Coronavirus

Facility Status	Difference	Lower	Upper	*p*
Special Focus Facility by 5-Star	16.00	3.16	28.83	<.005
Special Focus Candidate by 5-star	18.76	11.11	26.42	<.005
Special Focus Facility Candidate by Special Focus Facility	2.76	-10.39	15.92	0.87

Note. Not adjusted for covariates

Table 32
Summary of ANCOVA: Case Fatality Rate of Residents with COVID-19

Variable	*df*	Sum of Squares	Mean Square	*F*	*p*
SFF Status	2	253292	126646	12.834	<.005
Number of Beds	1	173107	173107	17.542	<.005
Ownership	2	103632	51816	5.251	<.005
Role Description	10	76241	7624	0.773	0.65
Practical Nurse HPRD	1	33558	33558	3.401	0.06
RN HPRD	1	7463	7463	0.756	0.38
Total HPRD	1	742231	742231	75.216	<.005
Case Mix Aide HPRD	1	353	353	0.036	0.84
Case Mix HPRD	1	825594	825594	83.664	<,.005

Note: SFF=Special Focus Facility, HPRD=Hours per Resident Day
Note: SFF Status is the Main Independent Variable, all other variables are covariates

Analysis of Covariance: Staff Deaths

An ANCOVA was conducted to determine the relationship between Special Focus Facility enrollment (defined as SFF, SFFc, or five-star) and total staff deaths from COVID-19 in 2020, Covariates were the facility size, practical nurse HPRD, RN HPRD, total HPRD, case mix

adjusted aide HPRD, and case mix adjusted total HPRD, the role of owners, and ownership type. Type III Sum of Squares were used for calculations, so the order of entry of covariates in the model was not impacted. There were 58 outliers assessed by being greater than three standard deviations from the mean. Statistical significance was accepted at the $p \leq .05$ level for between and within effects. Data was non-normally distributed as assessed by a normal Q-Q plot (See Appendix G). There was not homogeneity of regression slopes as the interaction was statistically significant $F(2,4194)=9.55$, $p<.005$. A pairwise comparison showed that SFF status had a significant relationship with total staff deaths from COVID-19, as displayed in Table 33. There was a statistically significant main effect of total staff and Special Focus Facility enrollment $F(2,4194)=6.79$, $p<.001$. ANCOVA summary showed all variables to be significant except case mix aide HRPD and case mix HRPD as displayed in Table 34. Adjusted R^2 is .02, $p<.005$. A summary of all fixed effects is in Table 35.

Table 33
Pairwise Comparison: Staff total COVID-19 Death

Facility Status	Difference	Lower	Upper	*p*
Special Focus Facility by 5-Star	0.09	0.03	0.14	<.005
Special Focus Candidate by 5-star	0.04	0.01	0.07	.007
Special Focus Facility Candidate by Special Focus Facility	-0.04	-0.10	0.01	0.15

Note. Not adjusted for covariates

Table 34
Summary of ANCOVA: Staff Total COVID-19 Death

Variable	*df*	Sum of Squares	Mean Square	*F*	*p*
SFF Status	**2**	**2.5**	**1.229**	**6.609**	**.001**
Number of Beds	1	6.0	6.001	32.285	<.005
Ownership	2	2.2	1.089	5.859	.002
Role Description	10	5.3	0.532	2.861	.001
Practical Nurse HPRD	1	2.4	2.360	12.696	<.005
RN HPRD	1	1.8	1.803	9.698	.001
Total HPRD	1	1.8	1.810	9.736	.001
Case Mix aide HPRD	1	0.2	0.157	0.843	.35
Case Mix HPRD	1	0.0	0.02	0.110	.73

Note. SFF=Special Focus Facility; HPRD=Hours per Resident Day
Note. SFF Status is the Main Independent Variable, all other Variables are covariates

Table 35
Fixed Effects ANCOVA Results of Research Question 3

Criterion	Predictor	Sum of Squares	*df*	Mean Square	*F*	*p*	partial η^2	partial η^2 90% CI [LL, UL]
Resident Total COVID-19	SFF Status	343576	2	171788	219.61	<.005	.01	[.01, .02]
	Error	4202421.12	4205	999.39				
Staff Total COVID-19	SFF Status	15097	2	7543	13.82	<.005	.00	[.00,.01]
	Error	2290824	4194					
Resident Total Case Fatality Rate /1000	SFF Status	253292	2	126646	12.72	<.005	.00	[.00,.01]
	Error	4174955	4140					
Staff Death COVID-19	SFF Status	2.5	2	1.228	6.09	.001	.00	[.00, .01]
	Error	758.7	4194	0.18				

Note. SFF=Special Focus Facility; COVID-19=Coronavirus

Research Question Three: Hypotheses Testing

SFF status is significant in all COVID-19 outcomes. SFF and SFFc had significant differences in resident COVID outcomes but SFF and SFFc had no significant difference in total staff cases or staff total COVID -19 deaths. The results are in Table 36.

Table 36
Hypothesis Testing of Research Question 3

Note. SFF=Special Focus Facility; SFFc=Special Focus Facility Candidate; H=Hypotheses; RQ=Research Question

RQ	Hypothesis	Accepted/Rejected	*p*
3	$H_{3a:}$ SFF and SFFc will have no significant difference in COVID-19 resident total cases.	Rejected: SFF have higher total COVID-19 cases	<.001
3	$H_{3b:}$ SFF and SFFc will have no significant difference in COVID-19 staff total cases.	Rejected: SFF have higher staff cases	<.001
3	$H_{3c:}$ SFF and SFFc will have no significant difference in COVID-19 resident total case fatality rate/1000 cases.	Accepted No significant difference in resident total case fatality rate/1000 cases.	0.874
3	$H_{3d:}$ SFF and SFFc will have no significant difference in COVID-19 staff fatalities.	Accepted: No significant difference	0.1551455
3	H_{3e}: SFF and SFFc will have significantly more COVID-19 resident cases than nursing homes that have a 5-star quality rating	Accepted: SFF have higher resident total COVID-19 cases but SFFc do not	SFF-5 Star <.001 SFFc-5 star .211
3	H_{3f}: SFF and SFFc will have significantly greater staff total COVID-19 cases than nursing homes that have a 5-star quality rating.	Rejected: SFF/SFFc have significantly fewer staff total COVID-19 cases	<.001

3	H_{3g}: SFF and SFFc will have significantly greater COVID-19 resident fatality rates/1000 than nursing homes that have a 5-star quality rating	Accepted SFF and SFFc have higher Resident CFR	<.001
3	H_{3h}: SFF and SFFc will have significantly more COVID-19 staff fatality rates than nursing homes that have a 5-star quality rating	Accepted: SFF and SFFc facilities have more staff deaths.	.001

Normality

The departure from normality in the distribution of data is to be expected, due to the large number of observations, and does not significantly alter interpretation (Ghasemi & Zahediasl, 2012). Anderson-Darling was selected over more common tests of normality (Such as K-S or Shapiro Wilk) in RQ 1 and 2 due to the large sample size and more accurately displays true distribution (Seier, 2011). Normal Q-Q plots were chosen to visually inspect normality (Field, 2009; Ghasemi & Zahediasl, 2012) in RQ 3 due to the high number of covariates. The Q-Q plots can be viewed in Appendix G.

Chapter V1: Discussion

Chapter Overview

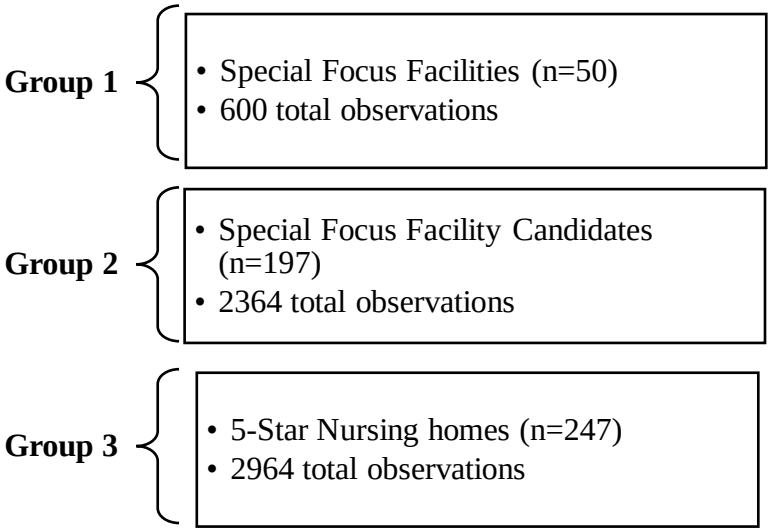
This chapter contains an overview of the problem and a review of the methodology, followed by an in-depth review of the analysis, along with the relevant clinical and policy implications from the findings. Each research question is presented, followed by the hypotheses and results. The chapter concludes with a listing of the limitations, directions for future research and major conclusions

Summary of Problem and Methodology Overview

This research examines the differences and similarities between Special Focus Facility status (defined as SFF, SFFc), and various factors, including facility traits, staffing differences, and COVID-19 outcomes A comparative group of 5-star facilities were analyzed, where appropriate to support the contextualization of the findings. The goal of this research is to increase comprehension of the efficacy and administration of the Special Focus Facility program and glean insight into enrollment decisions of the licensing authorities by comparing SFF and SFFc nursing homes as subcategories and exploring how SFF enrollment interacts with quality. Five-star facilities were used as a reference category for comparison.

This research employs a retrospective design: Using 2020 nursing home data, three groups (see Figure 16) are compared on traits, quality ratings and COVID-19 factors. Hypothesis testing used linear modeling (ANOVA and ANCOVA), Fisher's exact tests, and multinomial regression.

Figure 15
Group Assignments of Nursing Homes



Findings from Hypothesis Testing
Research Question One

RQ 1 explores the trait differences between SFF, SFFc and five-star, using factors in the nursing home reporting system that do not have a bearing on a nursing home's quality rating, but are tied to quality outcomes in the evidentiary body. Hypothesis testing was completed via multinomial modeling, Fisher's exact test and ANOVA linear modeling.

H_{1a}: SFF and SFFc will both be more likely to be chain affiliated, than nursing homes that are high performing.

This hypothesis is **neither rejected nor accepted** because the data did not support robust analysis. It was planned to use regression to associate the owners of nursing homes with Special Focus Facility enrollment (defined as SFF, SFFc, or five-star), however, preliminary analysis of ownership showed that nursing homes often have several owners, therefore the affiliation between nursing homes (i.e., being a "chain" could similarly not be determined). Trends in management were found, 10 (5%) of SFFc and three (6%) are managed by "Genesis Healthcare LLC" compared to 1 (.008%) of five-star facilities, however, because of the lack of transparency around ownership, this hypothesis cannot be conclusively accepted or rejected. Trends in role of owner could not be

used to make any conclusive explanation about chain status. “Partnership Interest” was much more pronounced in SFFc with an OR > 10.

H_{1b}: SFF and SFFc will be more likely to be for-profit than nursing homes that are high performing.

This hypothesis is **accepted.** Using a contingency table and Fisher’s exact test. Findings demonstrated that SFF and SFFc are significantly more likely to be for-profit. In this analysis n=169 (85.7%) of SFFc were for-profit and n=48 (96%) of SFF were for-profit, compared to 69.3% of total nursing homes being for-profit (National Center for Health Statistics, 2019). Profit Status is of interest and importance because while a nursing home is neither penalized nor rewarded for profit status in the nursing home reporting system, profit status has long been associated with care outcomes in nursing homes (Institute of Medicine., 1986; Lu & Lu, 2019). Specifically, having a for-profit status is associated with lower quality outcomes and worse staff wellbeing (Bos et al., 2017; Comondore et al., 2009; Harrington et al., 2001; Hillmer et al., 2005). The correlation between SFF and for-profit status has been documented previously (Government Accountability Office, 2009).

H_{1c}: SFF and SFFc will both be larger in size than nursing homes that have a five-star quality rating.

This hypothesis is **accepted**. Using a fixed ANOVA, the relationship between SFF enrollment and nursing home size (defined as the number of beds) was evaluated. Nursing home size is significantly associated with SFF enrollment, with a η^2 of .08. This is the largest effect η^2 observed throughout the entire study. Currently, within the CMS nursing home reporting system, nursing home size is not a quality indicator, although the body of evidence supports the conclusion that nursing home size and quality are related. Smaller nursing homes are associated with higher quality outcomes for residents (Baldwin et al, 2017). SFF and SFFc had larger facility sizes, both when evaluating the mean (SFF is 133 and SFFc is 130.9) and the median

(SFF and SFFc are both 120), compared to the five-star group (mean of 88.52 beds and a median of 74). The fact that SFF and SFFc were both larger in size when evaluating both the mean and the median supports the conclusion that the correlation between SFF enrollment status and facility size is genuine and not due to outliers.

$H_{1d:}$ There will be no significant differences in chain affiliation between SFF and SFFc.

This hypothesis is **neither accepted nor rejected**. This analysis was not able to confidently include or deduct chain affiliations from the data collected from CMS.

H_{1e}: There will be no significant differences in size between SFF and SFFc

This hypothesis is **accepted**. There is no significant difference in size between SFF and SFFc, this finding is particularly important paired with the acceptance of H_{1c}. Between SFF and SFFc there are no significant differences in nursing home size. SFF and SFFc are nearly identical in size when evaluating measures of central tendency (mean and median), indicating that this is likely due to true similarity and not outliers skewing the mean. Additionally, because the study population comprised the entire population of SFF and SFFc (not a random sample) the similarities between these two sizes should not be ignored. It is reasonable to conclude from the findings of this analysis that nursing home size is a highly relevant factor in nursing home quality (Baldwin et al., 2017).

$H_{1f:}$ There will be no significant differences in profit status between SFF and SFFc.

This hypothesis is **accepted**. There is no significant difference in the profit status of SFF and SFFc based on the results of a Fisher's exact test. Nursing home profit status is statistically significant when comparing five-star and SFF vs SFFc, but there is no difference when comparing SFF and SFFc. It is reasonable to conclude that profit status is not being used as a determination is a highly relevant factor in nursing home quality. This finding aligns with the

current evidentiary body which ties profit status to nursing home quality (Hawes & Phillps, 1986; Institute of Medicine., 1986).

Implications: Research Question One

***Specific Aim:* Identify factors in the nursing home monitoring system that licensing authorities may use to make decisions to transition nursing homes from candidate status to the Special Focus Facility Program."**

The results of RQ 1 contribute and build upon the existing evidentiary body which suggests that trait differences such as nursing home size and profit status are correlative of nursing home quality--despite not being a formal quality measure in the Five-Star Quality Rating System. Nursing home size and profit structure highly correlated with a facility's likelihood of being a five-star but differences were only noticed when comparing to the five-star group. SFF and SFFc are nearly identical in both size and profit status.

The CMS data ultimately did not have adequate information to make confident determination about chain affiliation. The lack of conclusive information in the PUF from CMS emphasizes the information asymmetry with which consumers contend when making decisions about nursing home care (Chou, 2002). Finding information on ownership requires specialty research that is neither easy nor obvious to consumers and advocates. For example, "Genesis Healthcare Inc." is one of the largest nursing home owners and operators in the United States (Stulick, 2022). Genesis Healthcare has several subsidiaries, including Skilled Healthcare Group Inc, Skilled Healthcare LLC, Creekside Hospice II LLC, Skilled LLC, Hallmark Rehabilitation GP LLC, Sun Healthcare Group, SunDance Rehabilitation Agency Inc, SunDance Rehabilitation Corp (Department of Justice, 2017). This is not an inclusive list of all Genesis subsidiaries, and the lack of information on all Genesis Healthcare in the CMS ownership database makes conclusive research about specific chain affiliations impossible.

While there are significant trait differences between five-star and SFF/SFFc, there are minimal trait differences between SFF and SFFc, suggesting that these factors are not used in the determination of a facility being enrolled as an SFF vs SFFc. However, the findings support that trait differences are significant in quality. The lack of conclusive findings in this analysis is in line with July 2022 consensus report, which states " Lack of transparency regarding nursing home finances, operations, and ownership impedes the ability to fully understand how current resources are allocated" (Committee on the Quality of Care in Nursing Homes et al., 2022 p 497).

Research Question Two

H_{2a}: Between SFF and SFFc, there will be no difference in the number of deficiencies per survey.

This hypothesis is **accepted.** SFF and SFFc have nearly identical complaint citations in the study period, SFF have 5.56 complaints per year and SFFc have 4.41. These numbers reflect the 2020 citations. 2020 was a unique time in nursing home care due to the onset of the COVID-19 pandemic. Standard surveys were frozen, so surveyors typically only responded to infection control and complaint surveys. The concept behind the complaint survey is of relative importance because *Ad Hoc* complaints are submitted by advocates and residents about the conditions of the nursing home and are one of the few systems in place in which residents and advocates are empowered to take action against substandard care, though independent monitoring by the Federal Government has found that the nursing home complaint system has many flaws (Government Accountability Office, 1999; Office of Evaluation and Inspections, 2006), including failure to take protective action to act when a criminal offense is suspected (Government Accountability Office, 2020) and investigating 19% of total high priority complaints late (Office of Evaluation and Inspection, 2022).

The similarities in the number of complaints between SFF and SFFc emphasize the similarities between these two groups, though SFFc and SFF are treated vastly differently in a regulatory context. Previous research on deficiencies in SFF has found that these nursing homes experience nearly twice the number of citations as non-SFF peers, including those directly related to the quality of care for residents (Castle & Engberg 2010, Pitman 2021). There is little research regarding complaints in SFFc

H_{2b}: Between SFF and SFFc, there will be no difference in the severity of cited deficiencies per survey.

This hypothesis is **accepted.** There is no significant difference between the severity of citations between SFF and SFFc; this finding should be interpreted alongside the acceptance of H_{1a}: The fact that there is no difference in either severity or number of complaints between SFF and SFFc emphasizes the similarities in the experience and perception of care of residents and care partners in these facilities.

H_{2c}: Between SFF and SFFc, there will be no difference in Aide staffing ratios.

This hypothesis is **accepted.** SFF and SFFc employ nearly identical gross HPRD of aide care. Aide care is vital to resident wellbeing and aides provide 90% of physical and emotional labor in nursing homes (Amateau et al., 2022; Galloro, 2001). Aides hours are correlated with better quality of life for residents (Shin, 2013).

H_{2d}: Between SFF and SFFc, there will be no difference in Aide staffing ratios, adjusted for resident acuity.

This hypothesis is **rejected.** SFFc have a slightly, but significantly higher ration of case mix adjusted aide hours per day. This finding supports the SFF and SFFc do staff differently when accounting for acuity, with SFFc having more favorable ratios for the provision of care.

H_{2e}: Between SFF and SFFc, there will be no difference in practical nurse staffing ratios.

This hypothesis is **rejected.** SFF have slightly, but significantly greater staffing of practical nursing care HPRD.

H_{2f}: Between SFF and SFFc, there will be no difference in practical nurse staffing ratios, adjusted for resident acuity

This hypothesis is **accepted.** When controlling for resident acuity there is no significant difference between SFF and SFFc in practical nurse HPRD. The mean of both SFF and SFF are exactly .74 with very little variance in the SD (.06 and .08 respectively). Though SFF had slightly improved practical nursing staffing, any improvement is negated when controlling for acuity.

H_{2g}: Between SFF and SFFc, there will be no difference in Registered nurse staffing ratios.

This hypothesis is **rejected.** There is a statistically significant difference between SFF and SFFc for RN HRPD, SFFc have significantly improved RN staffing in their facilities.

H_{2h}: Between SFF and SFFc, there will be no difference in Registered nurse staffing ratios, adjusted for resident acuity.

This hypothesis is **accepted.** Between SFF and SFFc there is no significant difference between RN staffing ratios, accounting for acuity, SFFc has .01 increased RN staffing HPRD when compared to SFF.

H_{2i}: Between SFF and SFFc, there will be no difference in total staffing ratios.

This hypothesis is **rejected.** There is a statistically significant difference between SFF and SFFc in total HPRD, with SFFc providing significantly more care.

H_{2j}: Between SFF and SFFc, there will be no difference in total staffing ratios, adjusted for resident acuity.

This hypothesis is **rejected.** there is a significant difference between SFF and SFFc with SFFc providing significantly more care, even when incorporating accounting for resident acuity.

Implications: Research Question Two

***Specific Aim*: Compare SFF and SFFc as separate categories using quality factors rating to see if there are significant differences.**

The specific aim of RQ 2 was the comparison of SFF and SFFc as separate categories to examine significant differences and to glean insight as to what may be relevant for licensing authorities when determining which nursing homes remain an SFFc and which are formally enrolled in the SFF program. This is an important question: SFF and SFFc are similar, sharing traits and providing substandard care. The results of RQ 2 are foundational to future research questions, explicating the variables in the five-star quality rating systems which CMS uses to make enrollment decisions between SFF and SFFc. There are 10 hypothesis tests in RQ 2, 5(50%) resulted in no significant difference between SFF and SFFc, one (10%) had a favorable result for SFF. Four (40%) had a favorable rating for SFFc. Examining staffing HPRD, and accounting for resident acuity, SFFc were consistently and significantly more favorably staffed, although the practical difference for residents is debatable (see Table 36). It is possible that case mix/acuity ratios are used by licensing authorities to determine which nursing homes progress from SFFc to SFF.

Research Question Three

The final RQ takes translates the findings from RQ 1 and RQ 2 by applying significant variables to contextualize COVID-19 outcomes. This is done purposefully to explicate relevant COVID-19 specific outcomes while controlling for what was already known to be significant. RQ 3 analyzes SFF, SFFc and five-star facilities to identify significant associations between SFF enrollment and COVID-19 outcomes.

$H_{3a:}$ SFF and SFFc will have no significant difference in COVID-19 resident total cases.

This hypothesis is **rejected.** SFFc had significantly fewer total COVID-19 resident cases as compared to SFF. This is in line with the current evidentiary body which suggests the RN hours are particularly important in the prevention of COVID-19 in resident cases. (Harrington, Li) SFFc had more gross RN hours, but not statistically significantly more when adjusted for case mix.

$H_{3b:}$ SFF and SFFc will have no significant difference in COVID-19 staff total cases.

This hypothesis is **accepted.** There were no significant differences between SFF and SFFc in staff COVID cases.

$H_{3c:}$ SFF and SFFc will have no significant difference in COVID-19 resident total case fatality rate/1000 cases.

This hypothesis is **rejected.** There are significant differences in COVID-19 case fatality rate between SFF and SFFc. SFF have significantly lower CFR.

$H_{3d:}$ SFF and SFFc will have no significant difference in COVID-19 staff fatalities.

This hypothesis **is accepted**. There is no significant difference noted in the number of staff fatalities between SFF and SFFc.

H_{3e}: SFF and SFFc will have significantly more COVID-19 resident cases than nursing homes that have a five-star quality rating

This hypothesis is **accepted.** There was a significantly higher number of cases in residents between SFF and five-star, although there was not a significant difference between SFFc and five-star.

H_{3f}: SFF and SFFc will have significantly greater staff total COVID-19 cases than nursing homes that have a five-star quality rating.

This hypothesis **is rejected.** There were significantly more staff COVID-19 deaths in high performing facilities. This makes sense because most likely, there would be significantly more staff in these facilities.

H_{3g}: SFF and SFFc will have significantly greater COVID-19 resident fatality rates/1000 than nursing homes that have a five-star quality rating

This hypothesis is **rejected.** There are significantly more deaths difference between CFR in SFF and SFFc than in a five-star facility

H_{3h}: SFF and SFFc will have significantly more COVID-19 staff fatality rates than nursing homes that have a five-star quality rating

This hypothesis is accepted, there are more staff deaths in five-star facilities than in SFF or SFFc.

Implications: Research Question Three

***Specific Aim:* Explore how quality ratings interact with COVID-19 outcomes.**

This research question explores the differential between SFF enrollment and COVID-19. The data analysis was exploratory and used data separate from other data sources; the COVID-19 Nursing Home dataset collected via the NHSN. Because COVID-19 was an emerging situation in 2020, it was unclear who much perceived or actual quality would interact with a virus which was devastating intuitional populations.

The findings of this analysis make sense in the context of the scant evidentiary body and the findings of RQ 1 and RQ 2. SFF and SFFc have poorer resident outcomes, with a higher level of gross cases and deaths. Interestingly, there is an inverse relationship between nursing home quality and staff cases and deaths. This is likely explained by the fact that five-star nursing homes provide more HPRD, meaning they have a greater number of staff to be infected.

Major Findings

Trait similarities between Special Focus Facilities and Special Focus Facility Candidates

The major finding of this analysis is that the distinction between an SFF and SFFc is a regulatory one, not founded in quality or clinical outcomes. Evaluating the "trait" differences (nursing home size and profit structure) SFF and SFFc are similar, facility size and profit status are not penalized or rewarded in the nursing home rating system, however these traits are consistently related to the quality outcomes in residents. Analyzing profit status, 70% of the five-star (or "high quality" facilities) in this study are for profit, but 87% of the SFF or SFFc ("low quality") are for profit. Facility size also was relevant. In 2020, the average nursing home size was 106.4 beds (Kaiser Family Foundation, 2020a). In this study, five-stars had an average size of 88.5 beds, SFF had an average of 133 beds and SFFc had an average of 130 beds. Larger facilities were correlated with both profit status and SFF status. This finding is chilling because, size and profit status are often inherent to a nursing home and are not amenable to quality improvement interventions. Additionally, there are strong, persistent economic undercurrents that encourage nursing homes to operate as for-profit entities (Hawes & Phillps, 1986). This study is retrospective, and only analyzes data collected across one year, so the findings should not be interpreted as causal.

Staffing Differences between Special Focus Facilities and Special Focus Facility Candidates

Staffing HPRD are integrated into the five-star Quality Reporting System, and it was assumed in hypotheses testing that five-star facilities would outperform SFF and SFFc in all quality-related (non-trait) analyses. It was unknown if SFF and SFFc would have meaningful differences in staffing levels. Eight staffing measures were evaluated, and five had significant differences. Of those with a statistically significant difference, four (80%) favored the SFFc. This pattern should be contextualized within the resident experience and best practices in the delivery

of care and the time needed for safety and satisfaction. Statistical significance translates to minute practical difference in a resident's experience (see Table 37). For instance, in the case mix adjusted aide, SFFc provide significantly more care than SFF. Practically, this difference works out to an additional **72 seconds of care per resident day**. This falls far beneath the threshold at which a measurable impact at resident care is observed (Medicaid and CHIP Payment and Access Commission, 2022).

Table 37
Practical Differences in Clinical Staffing

Clinical Staff Member	Special Focus Facility vs Candidates	Practical Differences
Practical nurse	**0.93** vs 0.89	108 seconds additional care in Special Focus Facility
Registered nurse	0.49 vs **0.60**	396 seconds additional care in Candidate
Total care	3.59 vs **3.68**	324 seconds of additional care in Candidate
Case mix aide	1.99 vs **2.01**	72 seconds of additional care in Candidate
Total case mix care	3.10 vs **3.13**	108 seconds additional care in Candidate

Currently, evidence shows that, unadjusted for case mix a minimum of 4.1 total HPRD is needed to adequately care for residents (Feuerberg, 2001; Harrington, et al., 2020). 2.8 HPRD should come from Aides, 0.55 from practical nurses and 0.75 from RNs. In 2020, RN hours of <.317 and total HRPD of <3.108 equated to a “star rating” of one star (Centers for Medicare and Medicaid Services, 2020). Both SFF and SFFc fell beneath the minimum recommendations for RN care, and above the recommendations for practical nurse care, suggesting that there is a substitution effect for RNs and practical nurses in SFF and SFFc.

Although these HPRD fall beneath the best practice recommendations, are “penalized” by CMS in the form of a lower “star rating” it is important to note that staffing levels

which may cause resident harm is allowable from a regulatory standpoint. As of 2020, Only the District of Columbia requires the staffing minimum of 4.1 HPRD as displayed in Table 38 (The National Consumer Voice for Quality in Long Term Care, n.d).

Table 38
Staffing Requirements in States

Total HPRD	No of States	States
4.10+	1	DC
3.50-4.09	6	CA, FL, IL, MA, NY,RI
3.00-3.49	6	AR, CT,DE,MD,VT, WA
2.50-2.99	8	ME,MS,NJ,NM,OH,OK,PA,WI
2.00-2.49	13	CO,GA,IA,ID,KS,LA,MI,MN,OR,SC,TN,WV,WY
1.50-1.99	1	MT
1.00-1.49	0	
<1.00	1	AZ
No Regulation	18	AK, AL, HI, IN, KY, MO, MT, NC, ND, NE, NH, NV, OR, SC, SD, TX, UT, and VA.

Note. Adapted from *The Consumer Voice: State Nursing Home Staffing Standards*
Note. As of August 2020
Note. HPRD=Hours per Resident Day

COVID-19

The COVID-19 analysis was exploratory. The relationship between nursing home quality has been examined in recent studies but remain under-analyzed. However, this analysis showed that SFF status is highly significant in all COVID-19 outcomes, although there was variance not explained by the variables in the ANCOVA.

Major Implications

These results suggest that the difference between very high-quality and low-quality nursing homes is somewhat defined, and the mechanism for identifying these nursing homes is functional. What requires further refining is determining the differences between nursing homes which are similar in quality. Results illuminate that the Special Focus Facility program may not be functioning as the rapid, intensive quality improvement intervention which is intended

(Centers for Medicare and Medicaid Services, 2020). If the program is not effective in stimulating quality improvement there are two primary problems:

- What are effective immediate and long-term solutions to support low-performing nursing homes to protect and care for residents, care partners and staff?
- What innovations are needed in the Special Focus Facility program to make it more effective in improving quality of care?

It is possible that the regulatory authorities make enrollment decisions based on staffing HPRD, but the differences between SFF and SFFc, though statistically significant are small. Adjusted for acuity, residents in a SFFc receive an additional 108 seconds of care across all clinical staff.

Limitations

Anticipated and unanticipated limitations influenced this analysis and subsequently the results of this research. Any application of the findings should be considered in the context of these limitations.

Lack of Previous Research on Special Focus Facilities and Candidates

The lack of previous research on the SFF program is a limitation, best practices in data collection, methods of researching this program is a limitation. There was not a robust evidentiary body on which to build or develop research questions or research methodology. Most evidence and literature on this program are at least 10 years old, and often is grey or white literature, which may not be peer reviewed.

Data Content and Ambiguity

Due to the content of the selected data, 2 hypotheses could not be confidently tested. This is the result of lack of transparency in ownership as well as ambiguity in the role of ownership. Additionally, there is no data on resident care outcomes (Ex. Frequency of pressure ulcers).

Flaws and Limitations in the "Five-Star Methodology" and Nursing Home Quality Reporting Program

Evidence shows that the "Five-Star Quality Rating System" has methodological errors which may not accurately estimate the quality of care and has construct and content validity concerns. The methodology does not confidently predict crucial and objective and subjective quality measures such as: hospital readmission, and experiences of residents and care partners (Çalkoğlu et al., 2012; Turner, 2008; Williams et al., 2016).

Reliability and Data Quality

The source data is an amalgamation of multiple data sources, collected, inputted, and cleaned differently via their respective institutions. The subjectivity of surveyors' (Institute of Medicine., 1986; Lee et al., 2006) and different state regulations impact factors such as complaint deficiencies and nursing home ratings. The design of the research and data cleaning prior to analysis mitigated but did not eliminate this problem. Nursing homes in groups 1 and 2 were matched by state to a 5-star nursing home. This was done because each state has cut points for nursing home quality, so the comparison is not perfect (Centers for Medicare and Medicaid Services, 2020).

Statistical Limitations

Normality

Often, data were non-normally distributed violating the statistical assumption of normality

Multicollinearity and Homogeneity of Regression Slopes

In RQ 3 there is multicollinearity for staffing covariates as well as homogeneity of regression slopes.

Outliers

There are statistical outliers in this research. Due to the novel and exploratory nature of this research, outliers were not transformed or removed.

Missing Values

There were 47 instances of missing values for five-star facilities (1.5%), 81 instances of missing values for SFFc (3.4%) and 49 instances of missing values for SFF (8.1%).

Statistical Power and Error

The multicollinearity in RQ 3 decreased statistical power. The choice to not use Bonferroni corrections increased the risk of Type 1 error.

COVID-19

Although the pandemic is the impetus for this research, COVID-19 significantly altered standard processes in nursing home care. Surveys occurred less frequently, and the focus of surveys changed. Resident and staff health were poor, and data collection processes occurred differently. This means that findings about groups may not be transferable to different years. There is not strong data fidelity for COVID-19 nursing home data before May of 2020.

Generalizability

The findings from the research apply to the nursing home participants in the three groups. The findings do not apply to specific nursing homes within the groups, nursing homes outside of the groups, and nursing homes before or after 2020.

Temporal Relationships between Variables

This is a retrospective study which analyzes 2020 data. As such, causal, temporal, or predictive relationships cannot be concluded from this analysis. Contextualization of some variables can be made based on logic, (The first known case of COVID-19 occurred in a US

nursing home in Kirkland, Washington in February 2020) but cannot be statistically confirmed based on the methods of this analysis.

Reliance on Proximal Variables for Quality of Care

This research used data measuring structural, staffing and complaint data about nursing homes, and applied those variables to contextualize quality in nursing home care. Though the variables selected have been tied to quality in previous research, is still a proximal estimation. No resident, staff or family data was used in this analysis.

Future Research Questions

This analysis has opened the doors to well-founded avenues for future research. This dissertation only conducted a small portion of the potential analyses with this data.

Expanding the Research Timeline

More research should be done to further tease out the differences between SFF and SFFc, including relationships between ownership, and COVID-19 outcomes. Expansion of the research timeline (looking at these nursing homes for more than 1 year), would allow for a potential "Differences and Differences study", providing further evidence about the Special Focus Facility program ability to facilitate or maintain improvement and provide information about SFF and SFFc in a time which was less tumultuous than 2020.

Expanding the Sample and Inclusion Criteria

This research looked at SFF and SFFc, and found very few significant differences. The research inclusion criteria should be expanded to analyze other low quality nursing homes (such as 1-star nursing homes) to examine differences in traits, quality, or outcomes.

Exploring the relationships between the Special Focus Facility Program and Resident Outcomes

Future studies should examine the association of the Special Focus Facility program and direct resident outcomes, such as: use of chemical and physical restraints and inappropriate discharge.

Transparency in Ownership, Chain Affiliation, and Clinical Leadership

Another data source should be created or employed to determine chain affiliations and relationships between the role of owners and the affiliations of owners to chains and medical directors, to examine the relationship between quality and chain affiliation. This will necessitate the incorporation or creation of another dataset and may require innovative methods such as data scraping.

Practical Nurses and Resident Care

Practical nurse (licensed vocational nurse or licensed practical nurse depending on state) HPRD was a statistically significant variable in SFF enrollment, and as members of the clinical team, practical nurses are important. Currently, there is not robust evidentiary body which ties specific resident outcomes to Practical nursing and specific resident measures. The relationship between RN and CNA HPRD has been developed and clearly shown in previous research to have an impact on resident quality of life, infection control, pain, depression, and other conditions (Bostick et al., 2006; Harrington, Dellefield, et al., 2020; Harrington et al., 2000; Konetzka et al., 2007; Kovner et al., 2000). The relationship between practical nursing hours and resident outcomes is not as clear. Practical nurses are a component of the care team, and their presence is significant in SFF status, future research should explore the impact of practical nurse hours on resident quality outcomes, particularly in lieu of the increased clinical workload practical nurses experience in a SFF or SFFc.

Resident and Care Partner Experiences in Special Focus Facilities and Special Focus Facility Candidates

While the basic qualification criteria of a SFF and SFFc, are the same (failure of three consecutive surveys) little is known about the resident experience in these facilities. The similarity in scope and number of complaints, along with the similar HPRD, suggests that residents and care partners experience these facilities in a similar manner. More research should be done into the specific lived experiences of residents, staff, and care partners of these facilities.

Health Equity, Disparities, Payor Mix, and Minority Care in nursing homes

Future research should examine the intersection of health equity and quality of care in nursing homes. Specifically, there is a growing body of evidence that nursing home Residents of Color receive poorer care than residents who are White (Mauldin et al., 2020). Minority populations in nursing homes are growing faster than minority populations in the general public raising questions and concerns about equal access to quality nursing home care, or other long term supportive models (Feng et al., 2011).

Conclusion

As this dissertation analysis was in progress, the National Academies of Sciences, Engineering and Medicine (NASEM) published the first comprehensive consensus report on nursing home care in nearly four decades. The report titled *The National Imperative to Improve Nursing Home Quality: Honoring Our Commitment to Residents, Families and Staff* include the findings and recommendations of the Committee on the Quality of Care in Nursing Homes. The results of this analysis of the Special Focus Facility program concur and reflect the primary conclusion of this consensus report: "**The way in which the United States finances, delivers, and regulates care in nursing homes settings is ineffective, inefficient, fragmented and**

unsustainable and immediate action to initiate fundamental change is necessary" (Committee on the Quality of Care in Nursing Homes et al., 2022 p. 2).

Nursing homes in the Special Focus Facility program are labeled "The poorest performing nursing homes in the country" (Centers for Medicare and Medicaid Services, 2022b). This research was crafted around the idea that the performance of an SFF may not be as rare as the small program size and limited information may be misleading to consumer and advocate stakeholders. One of the goals of the dissertation was to define the difference between an SFF and a SFFc. The conclusion is that SFF and SFFc are more alike than different, particularly in ways that are impactful to residents and care partners including the number and severity of complaints, the size of the nursing home, the number of hours a day of staffing care. While there are differences in staffing, the differences are consistently favorable to the same group (SFF or SFFc). After adjusting for acuity, the staffing differences equate to approximately 108 seconds of additional care in a SFFc. Due to how narrow the difference is between a SFF and SFFc, the realized impact on resident care may be difficult to discern.

The consensus report suggested action steps to improve the SFF program to support nursing home quality, below are some which are salient to the findings of this dissertation.

- Join the SFF program with other state-based quality programs[13].
- Strengthen the oversight and expand the Special Focus Facility Program.
- Denial of new or renewed licensure, imposition of sanctions or other actions when data reveals a pattern of poor care across facilities, attributed to a common owner.

Based on the findings of this dissertation, an additional recommendation is:

- Consider facility traits, such as size or profit status as formal quality indicators as in the Five-Star Quality Rating System.

[13] Based on a 2010 GAO report*: Poorly Performing Nursing Homes: Special Focus Facilities Are Often Improving, but CMS's Program Could Be Strengthened*

CMS announced its intent to reform the SFF program in October of 2022. These proposed changes include: making it harder for SFF to graduate, terminating federal funding for any facility that has multiple “Immediate Jeopardy” citations on survey, increasing the severity of the enforcement actions, and incentivizing improvements. (Centers for Medicare and Medicaid Services, 2022a, 2022c). Staffing regulations have also come under renewed scrutiny by CMS., A comprehensive, government study began in August 2022 to determine minimum appropriate staffing. This analysis found a strong correlation between low staffing and SFF enrollment, and there is a. robust body of literature that links resident care to staffing. Although at the time of this writing there were not yet any codified reforms to staffing or the Special Focus Facility program, it is likely that both of these factors will be determined in near-future rulemaking. (Martin-Karikari & Ingram, 2022).

Nursing home issues related to resident care cannot be fully assessed without a thorough understanding of the entire political economy which impacts and exerts pressure on nursing home care and residents. Financial and policy regulations, workforce, economic and cost burdens and priorities of providers, resident health and culture impact the delivery of care. Subsequently, nursing home improvements and reform must be cognizant and try to address each of these facets. The Special Focus Facility program attempts to stimulate rapid quality improvement in nursing homes via increased oversight and swift, punitive action. The program is limited in its reach and capacity, and not immune from the embedded ageism and ableism in culture. The strains upon the program intersected with the onset of the COVID-19 pandemic in which nursing homes were not prioritized and had to contend with poor public health infrastructure.

The results of this analysis suggest that the Special Focus Facility program does not improve quality, the program attempts to correct substandard care via regulation and policy, but

does not address the entire PEA. It is possible that the increased scrutiny to which a SFF is subjected may correct part of the information asymmetry with which residents also contend. Licensing authorities have increased opportunities to collect and disseminate information on the quality of care in SFF. Additionally, once a nursing home is designated as a SFF the residents and representatives must be notified, therefore alerting consumers to the serious ongoing quality problems. No such mechanisms are in place to support the residents of a SFFc, despite these nursing homes providing similar levels of care. Future quality improvement efforts for the program should consider and attempt to ameliorate pressures which stem from regulation and policy, economics, and culture.

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Appendix A:

List of Revised F Tags

Federal Regulatory Groups for Long Term Care *

Substandard Quality of Care = one or more deficiencies with s/s levels of F, H, I, J, K, or L in Red

** Tag to be cited by Feder al Surveyors Only

	Definition	**483.12**	**Freedom from Abuse, Neglect, and Exploitation**	**483.24**	**Quality of Life**
483.10	**Resident Rights**	F600	*Free from Abuse and Neglect	F675	*Quality of Life
F550	*Resident Rights/Exercise of Rights	F602	*Free from Misappropriation/Exploitation	F676	*Activities of Daily Living (ADLs)/ Maintain Abilities
F551	Rights Exercised by Representative	F603	*Free from Involuntary Seclusion	F677	*ADL Care Provided for Dependent Residents
F552	Right to be Informed/Make Treatment Decisions	F604	*Right to be Free from Physical Restraints	F678	*Cardio-Pulmonary Resuscitation (CPR)
F553	Right to Participate in Planning Care	F605	*Right to be Free from Chemical Restraints	F679	*Activities Meet Interest/Needs of Each Resident
F554	Resident Self-Admin Meds-Clinically Appropriate	F606	*Not Employ/Engage Staff with Adverse Actions	F680	*Qualifications of Activity Professional
F555	Right to Choose/Be Informed of Attending Physician	F607	*Develop/Implement Abuse/Neglect, etc. Policies	**483.25**	**Quality of Care**
F557	Respect, Dignity/Right to have Personal Property	F608	*Reporting of Reasonable Suspicion of a Crime	F684	Quality of Care
F558	*Reasonable Accommodations of Needs/Preferences	F609	*Reporting of Alleged Violations	F685	*Treatment/Devices to Maintain Hearing/Vision
F559	*Choose/Be Notified of Room/Roommate Change	F610	*Investigate/Prevent/Correct Alleged Violation	F686	*Treatment/Svcs to Prevent/Heal Pressure Ulcers
F560	Right to Refuse Certain Transfers	**483.15**	**Admission, Transfer, and Discharge**	F687	*Foot Care
F561	*Self Determination	F620	Admissions Policy	F688	*Increase/Prevent Decrease in ROM/Mobility
F562	Immediate Access to Resident	F621	Equal Practices Regardless of Payment Source	F689	*Free of Accident Hazards/Supervision/Devices
F563	Right to Receive/Deny Visitors	F622	Transfer and Discharge Requirements	F690	*Bowel/Bladder Incontinence, Catheter, UTI
F564	Inform of Visitation Rights/Equal Visitation Privileges	F623	Notice Requirements Before Transfer/Discharge	F691	*Colostomy, Urostomy, or Ileostomy Care
F565	*Resident/Family Group and Response	F624	Preparation for Safe/Orderly Transfer/Discharge	F692	*Nutrition/Hydration Status Maintenance
F566	Right to Perform Facility Services or Refuse	F625	Notice of Bed Hold Policy Before/Upon Transfer	F693	*Tube Feeding Management/Restore Eating Skills
F567	Protection/Management of Personal Funds	F626	Permitting Residents to Return to Facility	F694	*Parenteral/IV Fluids
F568	Accounting and Records of Personal Funds	**483.20**	**Resident Assessments**	F695	*Respiratory/Tracheostomy care and Suctioning
F569	Notice and Conveyance of Personal Funds	F635	Admission Physician Orders for Immediate Care	F696	*Prostheses
F570	Surety Bond - Security of Personal Funds	F636	Comprehensive Assessments & Timing	F697	*Pain Management
F571	Limitations on Charges to Personal Funds	F637	Comprehensive Assmt After Significant Change	F698	*Dialysis
F572	Notice of Rights and Rules	F638	Quarterly Assessment At Least Every 3 Months	F699	*{PHASE-3} Trauma Informed Care
F573	Right to Access/Purchase Copies of Records	F639	Maintain 15 Months of Resident A assessments	F700	*Bedrails
F574	Required Notices and Contact Information	F640	Encoding/Transmitting Resident Assessment	**483.30**	**Physician Services**
F575	Required Postings	F641	Accuracy of Assessments	F710	Resident's Care Supervised by a Physician
F576	Right to Forms of Communication with Privacy	F642	Coordination/Certification of Assessment	F711	Physician Visits- Review Care/Notes/Order
F577	Right to Survey Results/Advocate Agency Info	F644	Coordination of PASARR and Assessments	F712	Physician Visits-Frequency/Timeliness/Alternate NPPs
F578	Request/Refuse/Discontinue Treatment; Formulate Adv Di	F645	PASARR Screening for MD & ID	F713	Physician for Emergency Care, Available 24 Hours

F579	Posting/Notice of Medicare/Medicaid on Admission	F646	MD/ID Significant Change Notification	F714	Physician Delegation of Tasks to NPP
F580	Notify of Changes (Injury/Decline/Room, Etc.)	**483.21**	**Comprehensive Resident Centered Care Plan**	F715	Physician Delegation to Dietitian/Therapist
F582	Medicaid/Medicare Coverage/Liability Notice	F655	Baseline Care Plan	**483.35**	**Nursing Services**
F583	Personal Privacy/Confidentiality of Records	F656	Develop/Implement Comprehensive Care Plan	F725	Sufficient Nursing Staff
F584	*Safe/Clean/Comfortable/Homelike Environment	F657	Care Plan Timing and Revision	F726	Competent Nursing Staff
F585	Grievances	F658	Services Provided Meet Professional Standards	F727	RN 8 Hrs./7 days/Wk., Full Time DON
F586	Resident Contact with External Entities	F659	Qualified Persons	F728	Facility Hiring and Use of Nurse
		F660	Discharge Planning Process	F729	Nurse Aide Registry Verification, Retraining
		F661	Discharge Summary	F730	Nurse Aide Perform Review – 12Hr/Year In- service
				F731	Waiver-Licensed Nurses 24Hr/Day and RN Coverage
				F732	Posted Nurse Staffing Information

483.40	**Behavioral Health**	F811	Feeding Asst -Training/Supervision/Resident	**483.90**	**Physical Environment**
F740	Behavioral Health Services	F812	Food Procurement, Store/Prepare/Serve - Sanitary	F906	Emergency Electrical Power System
F741	Sufficient/Competent Staff-Behav Health Needs	F813	Personal Food Policy	F907	Space and Equipment
F742	*Treatment/Svc for Mental/Psychosocial Concerns	F814	Dispose Garbage & Refuse Properly	F908	Essential Equipment, Safe Operating Condition
F743	*No Pattern of Behavioral Difficulties Unless Unavoidable	**483.65**	**Specialized Rehabilitative Services**	F909	Resident Bed
F744	*Treatment /Service for Dementia	F825	Provide/Obtain Specialized Rehab Services	F910	Resident Room
F745	*Provision of Medically Related Social Services	F826	Rehab Services- Physician Order/Qualified Person	F911	Bedroom Number of Residents
483.45	**Pharmacy Services**	**483.70**	**Administration**	F912	Bedrooms Measure at Least 80 Square Ft/Resident
F755	Pharmacy Svcs/Procedures/Pharmacist/ Records	F835	Administration	F913	Bedrooms Have Direct Access to Exit Corridor
F756	Drug Regimen Review, Report Irregular, Act On	F836	License/Comply w/Fed/State/Local Law/Prof Std	F914	Bedrooms Assure Full Visual Privacy
F757	*Drug Regimen is Free From Unnecessary Drugs	F837	Governing Body	F915	Resident Room Window
F758	*Free from Unnec Psychotropic Meds/PRN Use	F838	Facility Assessment	F916	Resident Room Floor Above Grade
F759	*Free of Medication Error Rate sof 5% or More	F839	Staff Qualifications	F917	Resident Room Bed/Furniture/Closet
F760	*Residents Are Free of Significant Med Errors	F840	Use of Outside Resources	F918	Bedrooms Equipped/Near Lavatory/Toilet
F761	Label/Store Drugs & Biologicals	F841	Responsibilities of Medical Director	F919	Resident Call System
483.50	**Laboratory, Radiology, and Other Diagnostic Services**	F842	Resident Records - Identifiable Information	F920	Requirements for Dining and Activity Rooms
F770	Laboratory Services	F843	Transfer Agreement	F921	Safe/Functional/Sanitary/ Comfortable Environment
F771	Blood Blank and Transfusion Services	F844	Disclosure of Ownership Requirements	F922	Procedures to Ensure Water Availability
F772	Lab Services Not Provided On-Site	F845	Facility closure-Administrator	F923	Ventilation
F773	Lab Svs Physician Order/Notify of Results	F846	Facility closure	F924	Corridors Have Firmly Secured Handrails
F774	Assist with Transport Arrangements to Lab Svcs	F847	Enter into Binding Arbitration Agreements	F925	Maintains Effective Pest Control Program
F775	Lab Reports in Record-Lab Name/Address	F848	Select Arbitrator/Venue, Retention of Agreements	F926	Smoking Policies
F776	Radiology/Other Diagnostic Services	F849	Hospice Services	**483.95**	**Training Requirements**
F777	Radiology/Diag. Svcs Ordered/Notify Results	F850	*Qualifications of Social Worker >120 Beds	F940	{PHASE-3} Training Requirements - General

F778	Assist with Transport Arrangements to Radiology	F851	Payroll Based Journal	F941	{PHASE-3} Communication Training
F779	X-Ray/Diagnostic Report in Record-Sign/Dated	**483.75**	**Quality Assurance and Performance Improvement**	F942	{PHASE-3} Resident's Rights Training
483.55	**Dental Services**	F865	QAPI Program/Plan, Disclosure/Good Faith Attempt	F943	Abuse, Neglect, and Exploitation Training
F790	Routine/Emergency Dental Services in SNFs	F866	{PHASE-3} QAPI/QAA Data Collection and Monitoring	F944	{PHASE-3} QAPI Training
F791	Routine/Emergency Dental Services in NFs	F867	QAPI/QAA Improvement Activities	F945	{PHASE-3} Infection Control Training
483.60	**Food and Nutrition Services**	F868	QAA Committee	F946	{PHASE-3} Compliance and Ethics Training
F800	Provided Diet Meets Needs of Each Resident	**483.80**	**Infection Control**	F947	Required In-Service Training for Nurse Aides
F801	Qualified Dietary Staff	F880	Infection Prevention & Control	F948	Training for Feeding Assistants
F802	Sufficient Dietary Support Personnel	F881	Antibiotic Stewardship Program	F949	{PHASE-3} Behavioral Health Training
F803	Menus Meet Res Needs/Prep in Advance/Followed	F882	Infection Preventionist Qualifications/Role		
F804	Nutritive Value/Appear, Palatable/Prefer Temp	F883	*Influenza and Pneumococcal Immunizations		
F805	Food in Form to Meet Individual Needs	F884	**Reporting – National Health Safety Network		
F806	Resident Allergies, Preferences and Substitutes	F885	Reporting – Residents, Representatives & Families		
F807	Drinks Avail to Meet Needs/P references/ Hydration	F886	COVID-19 Testing-Residents & Staff		
F808	Therapeutic Diet Prescribed by Physician	F887	COVID-19 Immunization		
F809	Frequency of Meals/Snacks at Bedtime	**483.85**	**Compliance and Ethics Program**		
F810	Assistive Devices - Eating Equipment/Utensils	F895	{PHASE-3} Compliance and Ethics Program		

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Appendix B:
Nursing Home Enforcement Remedies

- Termination of the provider agreement
- Temporary management
- Denial of payment for all Medicare and/or Medicaid individuals by CMS;
- Denial of payment for all new Medicare and/or Medicaid admissions;
- Civil money penalties;
- State monitoring;
- Transfer of residents;
- Transfer of residents with closure of facility;
- Directed plan of correction;
- Directed in-service training; and
- Alternative or additional State remedies approved by CMS.

Source: Nursing Home Enforcement-Frequently Asked Questions

Appendix C:

Special Focus Facility Slots in Each State

The number of SFF Slots and candidates list for each state (effective May 1, 2014)

State	Required SFF Slots	Size of Candidate List	State	Required SFF Slots	Size of Candidate List
Alabama	1	5	**Montana**	1	5
Alaska	-	-	**Nebraska**	1	5
Arizona	1	5	**Nevada**	1	5
Arkansas	1	5	**New Hampshire**	1	5
California	6	30	**New Jersey**	2	10
Colorado	1	5	**New Mexico**	1	5
Connecticut	1	5	**New York**	3	15
Delaware	1	5	**North Carolina**	2	10
District of Columbia	-	-	**North Dakota**	1	5
Florida	3	15	**Ohio**	5	20
Georgia	2	10	**Oklahoma**	2	10
Hawaii	1	5	**Oregon**	1	5
Idaho	1	5	**Pennsylvania**	4	20
Illinois	4	20	**Rhode Island**	1	5
Indiana	3	15	**South Carolina**	1	5
Iowa	2	10	**South Dakota**	1	5

Kansas	2	10	**Tennessee**	2	10
Kentucky	1	5	**Texas**	6	30
Louisiana	1	5	**Utah**	1	5
Maine	1	5	**Vermont**	1	5
Maryland	1	5	**Virginia**	1	5
Massachusetts	2	10	**Washington**	1	5
Michigan	2	10	**West Virginia**	1	5
Minnesota	2	10	**Wisconsin**	2	10
Mississippi	1	5	**Wyoming**	1	5
Missouri	3	15	**Total**	88	435

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Appendix D:
Variable Tables

Table 1
Index Variables

Variable Name	Variable Label	Description	Format / Values
PROVNUM	Federal Provider Number	Provider/Nursing Home Number	6 alphanumeric characters
PROVNAME	Provider Name	Provider/ Nursing Home Name	text
ADDRESS	Provider Address	Provider/ Nursing Home Address	text
LOCATION	Location	(Geolocation	Numeric: Renders as latitude and longitude

Table 2

Research Question 1 Variables

Name	Variable Label	Description	Type	Data Description	Values
SFFStatus **(Independent Variable)**	SFFSTATUS	Special Focus Facility Status This column identifies current Special Focus facilities as well as providers that are candidates for the Special Focus program.	Categorical	SFF, SFF Candidate, Not Affiliated	Text
BEDCERT (Dependent Variable)	Number of Certified Beds	Number of Federally Certified Beds	Continuous	Integer	Integer
OWNERSHIP (Dependent Variable)	Ownership Type	Nature of organization that operates a provider of services	Categorical	Not For Profit, Government For-Profit	Text
Role_Desc (Dependent Variable)	Role played by owner or manager in facility	Role Description	Categorical	Ownership Interests[14][15]	Text
Owner Name (Dependent Variable)	Type of Owner Individual or Organization		Categorical	Yes or No	Text

[14] Values for Role Description are: 5% OR GREATER DIRECT OWNERSHIP INTEREST, 5% OR GREATER INDIRECT OWNERSHIP INTEREST, 5% OR GREATER MORTGAGE INTEREST, 5% OR GREATER SECURITY INTEREST, DIRECTOR, MANAGING EMPLOYEE, OFFICER, OPERATIONAL/MANAGERIAL CONTROL, PARTNERSHIP INTEREST, No ownership data available

[15] Additional Value added to collapse multiple owners "Multiple Owners"

Table 3

Research Question 2 Variables

Name	Label	Description	Type	Data Description	Values
SFFStatus **(Independent Variable)**	SFFSTATUS	Special Focus Facility Status This column identifies current Special Focus facilities as well as providers that are candidates for the Special Focus program.	Categorical	SFF, SFF Candidate, Not Affiliated	Text
SCOPE (Dependent Variable)	Scope Severity Code	Indicates the level of harm to the resident(s) involved and the scope of the problem within the nursing home.	Categorical	Indicates the level of harm to the resident(s) involved and the scope of the problem within the nursing home.	Text
TotalDeficences (Dependent Variable)	Total Deficiencies	Number of all Deficiencies found	Continuous	Add all Citations for study period	Integer
Total Complaints (Dependent Variable)	Number of Complaints	Number of Complaints	Continuous	Number of all complaints for study period	Integer
TOTHRD (Dependent Variable)	Reported Total Nurse Staffing Hours per Resident per Day	RN+Nurse Aide+LPN HPRD	Continuous	RN+Nurse Aide+LPN hrpd	Real number
CM_TOTAL (Dependent Variable)	Case-Mix Total Nurse Staffing Hours per Resident per Day	RN+Nurse Aide+LPN HPRD Adjusted for resident acuity	Continuous	RN+Nurse Aide+LPN hrpd, Adjusted for resident Acuity	Real number

Note: SFF=Special Focus Facility

Table 4

Research Question 3 Variables

Name	Label	Description	Data Description
SFFStatus **(Independent Variable)**	SFFSTATUS	Special Focus Facility Status This column identifies current Special Focus facilities as well as providers that are candidates for the Special Focus program.	SFF, SFF Candidate, Not Affiliated
Residents Total Confirmed COVID-19 (Dependent Variable)	residents_total_confirmed_covid_19	Number of residents with laboratory positive COVID-19 (CONFIRMED) Since 1/01/2020 as reported by the provider	Real Number
Residents Total COVID-19 Deaths (Dependent Variable)	residents_total_covid_19_deaths	Number of residents with suspected or laboratory positive COVID-19 who died in the facility or another location (COVID-19 DEATHS) since 1/1/20 as reported by the provider.	Real Number
Staff Total Confirmed COVID-19 (Dependent Variable)	staff_total_confirmed_covid_19	Number of staff and facility personnel with laboratory positive COVID-19 (CONFIRMED) since 01/01/2020 as reported by the provider.	Real Number
Staff Total COVID-19 Deaths (Dependent Variable)	staff_total_covid_19_deaths	Staff and Facility personnel with suspected of laboratory positive COVID-19 who died (COVID-19 deaths) since 01/01/2020 as reported by the provider	Real Number

Note: Covariates will be added from significant variables in Research Questions 1 and 2
SFF=Special Focus Facility

Appendix E:
Notice of IRB Exemption

From: IRBPANELA@VCU.EDU
Subject: Notification: IRB HM20025224 Waters – IRB Correspondence
Date: July 11, 2022 at 2:19:53 PM EDT
To: rhodesas2@vcu.edu
Reply-To: IRBPANELA@VCU.EDU

To be subject to the regulations, a study must meet the definitions for BOTH *"human subject"* AND *"research"*. While your study may fit one of these definitions, it does not fit both. Therefore, your project, as currently described, is not subject to the regulations and no IRB review or approval is required before you proceed with your study.

Section 45 CFR 46.102(l) of the HHS Regulations for the Protection of Human Subjects defines ***research*** as " *a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge. Activities which meet this definition constitute research for purposes of this policy, whether or not they are conducted or supported under a program which is considered research for other purposes.*"Section 45 CFR 46.102€(1) of the HHS Regulations for the Protection of Human Subjects defines a ***human subject*** as *"a living individual about whom an investigator conducting research:*

- *Obtains information or biospecimens through intervention or interaction with the individual, and uses, studies, or analyzes the information or biospecimens; or*
- *Obtains, uses, studies, analyzes, or generates identifiable private information or identifiable biospecimens."*

Thank you for informing us of the project. As this is a final determination, this study cannot be amended, so if additional IRB review is required, a new study must be submitted. If we can be of service with respect to future research studies, please contact us.

If you have any questions, please contact the Human Research Protection Program (HRPP) or the IRB member(s) assigned to this review. Reviewer contact information is available by clicking on the Reviewer's name at the top of the study workspace.

Thank you for your continued collaboration in maintaining VCU's commitment to protecting human participants in research.

IRB PERFORMANCE SURVEY: We value your feedback! Please take 1-2 minutes to complete the IRB Performance Survey in relation to your experience with this approved submission: https://IRBperformancesurvey.questionpro.com

Appendix F:
Final Sample of Nursing Homes in Study

Provider Number	Provider Name	Address	City	State	Group
15225	BARFIELD HEALTH CARE	22444 HIGHWAY 431	GUNTERSVILLE	AL	5-Star
15390	CAPITOL HILL HEALTHCARE CENTER	520 SOUTH HULL STREET	MONTGOMERY	AL	5- Star
15453	COLUMBIANA HEALTH AND REHABILITATION, LLC	22969 HIGHWAY 25	COLUMBIANA	AL	5- Star
15121	CROWNE HEALTH CARE OF CITRONELLE	19225 NORTH 4TH STREET	CITRONELLE	AL	5-Star
15156	CROWNE HEALTH CARE OF FT PAYNE	403 13TH STREET NORTHWEST	FORT PAYNE	AL	5-Star
35092	BELLA VITA HEALTH AND REHABILITATION CENTER	5125 NORTH 58TH AVENUE	GLENDALE	AZ	5-Star
35174	PARK AVENUE HEALTH AND REHABILITATION CENTER	2001 NORTH PARK AVENUE	TUCSON	AZ	5-Star
555850	ALHAMBRA HOSPITAL MED CTR DP/SNF	100 S RAYMOND AVE	ALHAMBRA	CA	5-Star
555645	AUBURN RAVINE TERRACE	750 AUBURN RAVINE ROAD	AUBURN	CA	5-Star
555362	CASA DE LAS CAMPANAS	18655 W. BERNARDO DRIVE	SAN DIEGO	CA	5-Star
555790	CEDAR CREST NURSING AND REHABILITATION CENTER	797 E FREMONT AVENUE	SUNNYVALE	CA	5-Star
555709	CHAPMAN GLOBAL MEDICAL CENTER D/P SNF	2601 EAST CHAPMAN AVENUE	ORANGE	CA	5-Star
555390	CORONA REGIONAL MEDICAL CENTER D/P SNF	730 MAGNOLIA AVENUE	CORONA	CA	5-Star
05A408	CRESTWOOD TREATMENT CENTER	2171 MOWRY AVENUE	FREMONT	CA	5-Star
555458	GLENWOOD CARE CENTER	1300 NORTH C ST	OXNARD	CA	5-Star
555396	KAWEAH DELTA SKILLED NURSING CENTER	1633 SOUTH COURT STREET	VISALIA	CA	5-Star
555113	LAKE PARK RETIREMENT RESIDENCE	1850 ALICE STREET	OAKLAND	CA	5-Star
555684	LEGACY NURSING AND REHABILITATION CENTER	1790 MUIR ROAD	MARTINEZ	CA	5-Star

55518	NEWPORT NURSING AND REHABILITATION CENTER	1555 SUPERIOR AVENUE	NEWPORT BEACH	CA	5-Star
555857	OAKVIEW SKILLED NURSING	3557 CAMPUS DR	THOUSAND OAKS	CA	5-Star
56207	PACIFIC GARDENS NURSING AND REHABILITATION CENTER	577 S. PEACH AVE.	FRESNO	CA	5-Star
555764	PALOMAR HEIGHTS POST ACUTE REHAB	1260 E OHIO AVENUE	ESCONDIDO	CA	5-Star
55067	PALOMAR VISTA HEALTHCARE CENTER	201 N FIG STREET	ESCONDIDO	CA	5-Star
55192	PROVIDENCE ST ELIZABETH CARE CENTER	10425 MAGNOLIA BLVD	NORTH HOLLYWOOD	CA	5-Star
555735	RICHMOND POST ACUTE CARE	955 23RD STREET	RICHMOND	CA	5-Star
55388	SAN JOSE HEALTHCARE & WELLNESS CENTER	75 N. 13TH STREET	SAN JOSE	CA	5-Star
555766	SIERRA VIEW MEDICAL CENTER	465 W PUTNAM AVE	PORTERVILLE	CA	5-Star
555421	STONEBROOK HEALTHCARE CENTER	4367 CONCORD BOULEVARD	CONCORD	CA	5-Star
555545	THE COVE AT LA JOLLA	7160 FAY AVENUE	LA JOLLA	CA	5-Star
555835	VI AT PALO ALTO	600 SAND HILL ROAD	PALO ALTO	CA	5-Star
555483	VISTA MANOR NURSING CENTER	120 JOSE FIGUERES AVENUE	SAN JOSE	CA	5-Star
55434	WINDSOR GARDENS CARE CENTER OF HAYWARD	1628 B STREET	HAYWARD	CA	5-Star
65382	BROOKDALE SKYLINE	2365 PATRIOTHTS	COLORADO SPRINGS	CO	5-Star
75442	60 WEST	60 WEST STREET	ROCKY HILL	CT	5-Star
75163	BISHOP WICKE HEALTH & REHAB CT	584 LONG HILL AVE	SHELTON	CT	5-Star
75236	NOBLE HORIZONS	17 COBBLE RD	SALISBURY	CT	5-Star
85036	FORWOOD MANOR	1912 MARSH ROAD	WILMINGTON	DE	5-Star
85040	LOFLAND PARK CENTER	715 E. KING STREET	SEAFORD	DE	5-Star
85002	PARKVIEW NURSING	2801 W. 6TH STREET	WILMINGTON	DE	5-Star

85017	WILLOWBROOKE COURT AT COKESBURY VILLAGE	726 LOVEVILLE ROAD	HOCKESSIN	DE	5-Star
105624	BONIFAY NURSING AND REHAB CENTER	306 WEST BROCK AVENUE	BONIFAY	FL	5-Star
105745	CYPRESS VILLAGE	4600 MIDDLETON PARK CIR E	JACKSONVILLE	FL	5-Star
105823	ROHR HOME, THE	2120 MARSHALL EDWARDS DR	BARTOW	FL	5-Star
105961	SHANDS JACKSONVILLE MEDICAL CENTER	580 W 8TH STREET	JACKSONVILLE	FL	5-Star
106101	STEWARD SEBASTIAN RIVER MEDICAL CENTER	13695 US 1	SEBASTIAN	FL	5-Star
105629	SURREY PLACE HEALTHCARE AND REHABILITATION	5525 21ST AVE W	BRADENTON	FL	5-Star
105744	SYLVAN HEALTH CENTER	2770 REGENCY OAKS BLVD	CLEARWATER	FL	5-Star
105770	TRI-COUNTY NURSING HOME	7280 SW STATE RD 26	TRENTON	FL	5-Star
106080	VILLA MARIA WEST SKILLED NURSING FACILITY	8850 NW 122 ST	HIALEAH GARDENS	FL	5-Star
115534	AZALEALAND NURSING HOME	2040 COLONIAL DRIVE	SAVANNAH	GA	5-Star
115324	BAINBRIDGE HEALTH AND REHAB	1155 WEST COLLEGE STREET	BAINBRIDGE	GA	5-Star
115614	LEE COUNTY HEALTH AND REHABILITATION	214 MAIN STREET	LEESBURG	GA	5-Star
115552	LODGE, THE	200 SOUTH KIMBERLY ROAD	WARNER ROBINS	GA	5-Star
115314	PRUITTHEALTH – AUSTELL	1700 MULKEY RD	AUSTELL	GA	5-Star
115353	RIVERSIDE HEALTH AND REHABILITATION	101 OLD TALBOTTON RD	THOMASTON	GA	5-Star
115363	ROME HEALTH AND REHABILITATION CENTER	1345 REDMOND ROAD	ROME	GA	5-Star
115611	VISTA PARK HEALTH AND REHABILITATION	1310 WEST GORDON STREET	DOUGLAS	GA	5-Star

125063	15 CRAIGSIDE	15 CRAIGSIDE PLACE	HONOLULU	HI	5-Star
125011	HALE NANI REHABILITATION AND NURSING CENTER	1677 PENSACOLA STREET	HONOLULU	HI	5-Star
125013	MAUNALANI NURSING AND REHABILITATION CENTER	5113 MAUNALANI CIRCLE	HONOLULU	HI	5-Star
165599	CEDAR MANOR NURSING HOME	1200 MULBERRY STREET	TIPTON	IA	5-Star
165210	GOOD SAMARITAN SOCIETY – SAINT ANSGAR	701 EAST FOURTH STREET	SAINT ANSGAR	IA	5-Star
165566	HIGHLAND RIDGE CARE CENTER, LLC	102 HIGHLAND CIRCLE	WILLIAMS BURG	IA	5-Star
165183	MERCYONE NORTH IOWA MEDICAL SERVICES	910 NORTH EISENHOWER AVENUE	MASON CITY	IA	5-Star
165261	MILL-POND	1201 SE MILL POND COURT	ANKENY	IA	5-Star
165574	PRAIRIE VIEW HOME	610 EASTERN STREET	SANBORN	IA	5-Star
135007	BINGHAM MEMORIAL SKILLED NURSING & REHABILITATION	98 POPLAR STREET	BLACKFOOT	ID	5-Star
135004	BOUNDARY COUNTY NURSING HOME	6640 KANIKSU STREET	BONNERS FERRY	ID	5-Star
135128	LIFE CARE CENTER OF LEWISTON	325 WARNER DRIVE	LEWISTON	ID	5-Star
135139	RIVERVIEW REHABILITATION	3550 WEST AMERICANA TERRACE	BOISE	ID	5-Star
145404	FARMINGTON COUNTRY MANOR	701 SOUTH MAIN STREET	FARMINGTON	IL	5-Star
146116	LA SALLE COUNTY NURSING HOME	1380 NORTH 27TH ROAD	OTTAWA	IL	5-Star
146014	MERCY HARVARD HOSPITAL CARE CENTER	901 SOUTH GRANT P O BOX 850	HARVARD	IL	5-Star
145801	PLEASANT VIEW LUTHER HOME	505 COLLEGE AVENUE	OTTAWA	IL	5-Star
146107	VI AT THE GLEN	2401 INDIGO LANE	GLENVIEW	IL	5-Star
145026	WESTMINSTER PLACE	3200 GRANT STREET	EVANSTON	IL	5-Star

145706	WHITEHALL NORTH, THE	300 WAUKEGAN ROAD	DEERFIELD	IL	5-Star
155373	BLUFFTON REGIONAL MEDICAL CENTER CARE CENTER	303 S MAIN ST	BLUFFTON	IN	5-Star
155473	CHALET VILLAGE HEALTH AND REHABILITATION CENTER	1065 PARKWAY ST	BERNE	IN	5-Star
155689	COURTYARD HEALTHCARE CENTER	2400 COLLEGE AVE	GOSHEN	IN	5-Star
155436	HICKORY CREEK AT WINAMAC	515 E 13TH ST	WINAMAC	IN	5-Star
155651	HOMEVIEW CENTER OF FRANKLIN	651 SOUTH STATE STREET	FRANKLIN	IN	5-Star
155744	LUTHERAN LIFE VILLAGES	351 N ALLEN CHAPEL RD	KENDALLVILLE	IN	5-Star
155766	MAPLE MANOR CHRISTIAN HOME INC	643 W UTICA ST	SELLERSBURG	IN	5-Star
155571	MILLER'S MERRY MANOR	11563 W 300 S	DUNKIRK	IN	5-Star
155589	MILLER'S MERRY MANOR	730 SCHOOL ST	CULVER	IN	5-Star
155757	ROSEGATE VILLAGE	7510 ROSEGATE DR	INDIANAPOLIS	IN	5-Star
155760	WATERFORD CROSSING	1332 WATERFORD CIR	GOSHEN	IN	5-Star
155177	WESTMINSTER VILLAGE – WEST LAFAYETTE	2741 N SALISBURY ST	WEST LAFAYETTE	IN	5-Star
175534	CARITAS CENTER, INC	1400 S SHERIDEN ST	WICHITA	KS	5-Star
175554	CITIZENS MEDICAL CENTER LTCU	1625 S FRANKLIN AVENUE	COLBY	KS	5-Star
175242	LAKEVIEW VILLAGE	13840 W 91ST TERRACE	LENEXA	KS	5-Star
175529	LEISURE HOMESTEAD AT ST JOHN	402 N SANTA FE AVENUE	ST JOHN	KS	5-Star
175530	LEISURE HOMESTEAD AT STAFFORD	405 GRAND AVENUE	STAFFORD	KS	5-Star
175257	SHARON LANE HEALTH AND REHABILITATION	10315 JOHNSON DRIVE	SHAWNEE	KS	5-Star
185378	MASONIC HOME OF SHELBYVILLE	711 FRANKFORT ROAD	SHELBYVILLE	KY	5-Star

195426	ENCORE HEALTHCARE AND REHABILITATION CENTER (THE)	19110 CROWLEY-EUNICE HWY	CROWLEY	LA	5-Star
195159	ST FRANCIS MEDICAL CENTER SNF	309 JACKSON STREET	MONROE	LA	5-Star
225680	ALLIANCE HEALTH AT MARINA BAY	2 SEAPORT DRIVE	QUINCY	MA	5-Star
225248	BEAUMONT REHAB & SKILLED NURSING CTR – NORTHBRIDGE	85 BEAUMONT DRIVE	NORTHBRIDGE	MA	5-Star
225266	ELIZABETH SETON	125 OAKLAND STREET	WELLESLEY	MA	5-Star
225692	EMERSON REHABILITATION & TRANSITIONAL CARE UNIT	OLD ROAD TO NINE ACRE CORNER	WEST CONCORD	MA	5-Star
225704	LIFE CARE CENTER OF WEST BRIDGEWATER	765 WEST CENTER STREET	WEST BRIDGEWATER	MA	5-Star
215360	MARYLAND BAPTIST AGED HOME	2801 RAYNER AVENUE	BALTIMORE	MD	5-Star
215291	NORTHWEST HOSP. CTR. SUB. UNIT	5401 OLD COURT ROAD	RANDALLSTOWN	MD	5-Star
205018	AROOSTOOK HEALTH CENTER	PO BOX 410	MARS HILL	ME	5-Star
235011	IOSCO CO MEDICAL CARE FACILITY	1201 HARRIS AVE	TAWAS CITY	MI	5-Star
235481	LAKE ORION NURSING CENTER	585 EAST FLINT STREET	LAKE ORION	MI	5-Star
245253	CENTRACARE HEALTH PAYNESVILLE KORONIS MANOR CC	200 FIRST STREET WEST	PAYNESVILLE	MN	5-Star
2.40E+151	GRAND AVENUE REST HOME	3956 GRAND AVENUE S0UTH	MINNEAPOLIS	MN	5-Star
24E508	HAYES RESIDENCE	1620 RANDOLPH AVENUE	SAINT PAUL	MN	5-Star
245358	HILLTOP CARE CENTER	410 LUELLA STREET	WATKINS	MN	5-Star
245468	KARLSTAD HEALTHCARE CENTER INC	304 WASHINGTON AVENUE WEST	KARLSTAD	MN	5-Star
245520	REDEEMER RESIDENCE INC	625 WEST 31ST STREET	MINNEAPOLIS	MN	5-Star

265550	ADVANCE NURSING CENTER	315 SOUTH TILLEY STREET	ADVANCE	MO	5-Star
265571	ASH GROVE HEALTHCARE FACILITY	401 NORTH MEDICAL DRIVE, PO BOX 247	ASH GROVE	MO	5-Star
265825	ELSBERRY MISSOURI HEALTH CARE CENTER	1827 HWY B	ELSBERRY	MO	5-Star
265239	HERMITAGE NURSING & REHAB	18599 FIRST STREET, PO BOX 325	HERMITAGE	MO	5-Star
265785	INDIAN HILLS-A STONEBRIDGE COMMUNITY	2601 FAIR STREET	CHILLICOTHE	MO	5-Star
265634	LACOBA HOMES INC	850 HIGHWAY 60, PO BOX 885	MONETT	MO	5-Star
265337	PACIFIC CARE CENTER	105 SOUTH SIXTH STREET	PACIFIC	MO	5-Star
265361	RIVERDELL CARE CENTER	1121 11TH STREET	BOONVILLE	MO	5-Star
26A381	SALEM MEMORIAL DISTRICT HOSPITAL	PO BOX 774, 35629 HIGHWAY 72	SALEM	MO	5-Star
255160	DANIEL HEALTH CARE INC DBA THE MEADOWS	1905 SOUTH ADAMS STREET	FULTON	MS	5-Star
255168	MERIT HEALTH WESLEY	5001 HARDY STREET	HATTIESBURG	MS	5-Star
255251	MS CARE CENTER OF DEKALB	220 WILLOW AVENUE	DE KALB	MS	5-Star
255270	PONTOTOC HEALTH & REHAB CENTER	278 WEST EIGHTH STREET	PONTOTOC	MS	5-Star
275109	BRENDAN HOUSE	350 CONWAY DR	KALISPELL	MT	5-Star
275094	LAKE VIEW CARE CENTER	1050 GRAND AVE	BIGFORK	MT	5-Star
275070	SHERIDAN MEMORIAL NURSING HOME	440 W LAUREL AVE	PLENTYWOOD	MT	5-Star
275093	ST LUKE COMMUNITY NURSING HOME	107 6TH AVE S W	RONAN	MT	5-Star
345446	COLLEGE PINES HEALTH AND REHABILITATION	95 LOCUST STREET	CONNELLY SPG	NC	5-Star
345234	LUMBERTON HEALTH AND REHAB CENTER	1555 WILLIS AVENUE	LUMBERTON	NC	5-Star

345508	UNC REX REHAB & NURSING CARE CENTER OF APEX	911 SOUTH HUGHES STREET	APEX	NC	5-Star
355123	BETHANY ON 42ND	4255 30TH AVE S	FARGO	ND	5-Star
355061	SANFORD HILLSBORO CARE CENTER	12 3RD ST SE	HILLSBORO	ND	5-Star
355117	ST ALEXIUS TRANSITIONAL CARE UNIT	900 E BROADWAY	BISMARCK	ND	5-Star
355049	STRASBURG NURSING HOME	409 S 3RD ST	STRASBURG	ND	5-Star
285190	ALPINE VILLAGE RETIREMENT CENTER	706 JAMES STREET	VERDIGRE	NE	5-Star
285276	BROOKESTONE MEADOWS REHABILITATION AND CARE CENTER	600 BROOKESTONE MEADOWS PLAZA	ELKHORN	NE	5-Star
305065	APPLEWOOD CENTER	8 SNOW ROAD	WINCHESTER	NH	5-Star
305102	COOS COUNTY NURSING HOME	364 CATES HILL RD PO BOX 416	BERLIN	NH	5-Star
3.00E+77	COOS COUNTY NURSING HOSPITAL	136 COUNTY FARM ROAD	WEST STEWARTSTOWN	NH	5-Star
305079	VILLA CREST	1276 HANOVER STREET	MANCHESTER	NH	5-Star
305099	WEBSTER AT RYE	795 WASHINGTON ROAD	RYE	NH	5-Star
315360	EMERSON HEALTH CARE CENTER	100 KINDERKAMACK ROAD	EMERSON	NJ	5-Star
315496	NEW JERSEY VETERANS MEMORIAL VINELAND	524 NORTH WEST BLVD	VINELAND	NJ	5-Star
315503	ROYAL SUITES HEALTH CARE & REHABILITATION	214 WEST JIMMIE LEEDS ROAD	GALLOWAY TOWNSHIP	NJ	5-Star
315133	WOODCLIFF LAKE HEALTH & REHABILITATION CENTER	555 CHESTNUT RIDGE ROAD	WOODCLIFF LAKE	NJ	5-Star
3.20E+28	MINERS COLFAX MEDICAL CENTER	900 SOUTH 6TH STREET	RATON	NM	5-Star
325048	THE MONTEBELLO ON ACADEMY	10500 ACADEMY ROAD NE	ALBUQUERQUE	NM	5-Star
295090	ADVANCED HEALTH CARE OF LAS VEGAS	5840 W SUNSET RD	LAS VEGAS	NV	5-Star

295099	HORIZON RIDGE SKILLED NURSING & REHABILITATION CTR	2855 W. HORIZON RIDGE PARKWAY	HENDERSON	NV	5-Star
295081	NEVADA STATE VETERANS HOME – BOULDER CITY	100 VETERANS MEMORIAL DR	BOULDER CITY	NV	5-Star
335532	AARON MANOR REHABILITATION AND NURSING CENTER	100 ST CAMILLUS WAY	FAIRPORT	NY	5-Star
335451	GOLDEN HILL NURSING AND REHABILITATION CENTER	99 GOLDEN HILL DRIVE	KINGSTON	NY	5-Star
335823	HELEN HAYES HOSPITAL R H C F	51 N RT 9W	WEST HAVERSTRAW	NY	5-Star
335853	JOHN T MATHER MEMORIAL HOSP T C U	75 NORTH COUNTRY ROAD	PORT JEFFERSON	NY	5-Star
335653	MENORAH HOME & HOSPITAL FOR AGED & INFIRM	1516 ORIENTAL BLVD	BROOKLYN	NY	5-Star
335030	MOSHOLU PARKWAY NURSING & REHABILITATION CENTER	3356 PERRY AVENUE	BRONX	NY	5-Star
335770	N Y S VETERANS HOME IN N Y C	178 50 LINDEN BLVD	JAMAICA	NY	5-Star
335800	NOTTINGHAM R H C F	1305 NOTTINGHAM ROAD	JAMESVILLE	NY	5-Star
335402	OASIS REHABILITATION AND NURSING, LLC	6 FROWEIN ROAD	CENTER MORICHES	NY	5-Star
335504	SENECA HEALTH CARE CENTER	2987 SENECA STREET	WEST SENECA	NY	5-Star
335821	ST CATHERINE OF SIENA NRSG AND REHAB CARE CENTER	52 ROUTE 25A	SMITHTOWN	NY	5-Star
335763	ST VINCENT DEPAUL RESIDENCE	900 INTERVALE AVENUE	BRONX	NY	5-Star
365268	ALTERCARE OF WADSWORTH	147 GARFIELD ST	WADSWORTH	OH	5-Star
366316	ARCHBISHOP LEIBOLD HOME	476 RIDDLE ROAD	CINCINNATI	OH	5-Star
366291	ASTORIA HEALTH & REHAB CENTER	300 ASTORIA ROAD	GERMANTOWN	OH	5-Star
366408	ATLANTES THE	776 OLD STATE ROUTE 74	CINCINNATI	OH	5-Star

366431	AVENUE AT AURORA	425 SOUTH CHILLICOTHE ROAD	AURORA	OH	5-Star
365033	CEDARWOOD PLAZA	12504 CEDAR ROAD	CLEVELAND HEIGHTS	OH	5-Star
365781	COMMUNITY CARE CENTER	200 EAST STATE STREET	ALLIANCE	OH	5-Star
366386	DEUPREE COTTAGES	3999 ERIE AVENUE	CINCINNATI	OH	5-Star
365236	HOMESTEAD II	60 WOOD ST	PAINESVILLE	OH	5-Star
366372	KEYSTONE POINTE HEALTH AND REHABILITATION	383 OPPORTUNITY WAY	LAGRANGE	OH	5-Star
366409	KINGSTON REHABILITATION OF PERRYSBURG	345 EAST BOUNDARY STREET	PERRYSBURG	OH	5-Star
366375	MASTERNICK MEMORIAL HEALTH CARE CENTER	5250 WINDSOR WAY	NEW MIDDLETOWN	OH	5-Star
365894	MCV HEALTH CARE FACILITIES, INC	411 WESTERN ROW ROAD	MASON	OH	5-Star
366449	PARK VILLAGE HC NP LLC	1019 OLDTOWN VALLEY ROAD SE	NEW PHILADELPHIA	OH	5-Star
366229	PARKSIDE VILLA	7040 HEPBURN ROAD	MIDDLEBURG HEIGHTS	OH	5-Star
375479	ELK CITY NURSING CENTER	301 NORTH GARRETT	ELK CITY	OK	5-Star
375379	LAKELAND MANOR, INC	604 LAKE MURRAY DRIVE	ARDMORE	OK	5-Star
375560	SPANISH COVE HOUSING AUTHORITY	11 PALM STREET	YUKON	OK	5-Star
375563	TIDWELL LIVING CENTER	900 W RANCHWOOD DRIVE	WILBURTON	OK	5-Star
375547	ZARROW POINTE	2025 EAST 71ST STREET	TULSA	OK	5-Star
385117	FRENCH PRAIRIE NURSING AND REHABILITATION CENTER	601 EVERGREEN ROAD	WOODBURN	OR	5-Star
385183	MARQUIS CENTENNIAL POST ACUTE REHAB	725 SE 202ND AVENUE	PORTLAND	OR	5-Star

385137	MARQUIS PLUM RIDGE POST ACUTE REHAB	1401 BRYANT WILLIAMS DR.	KLAMATH FALLS	OR	5-Star
385200	WILLAMETTE VIEW HEALTH CENTER	13145 SE RIVER ROAD	MILWAUKIE	OR	5-Star
395474	ELMWOOD GARDENS OF PRESBYERIAN SENIORCARE	2628 ELMWOOD AVENUE	ERIE	PA	5-Star
395637	HOLY FAMILY HOME	5300 CHESTER AVENUE	PHILADELPHIA	PA	5-Star
395363	KINZUA HEALTHCARE AND REHABILITATION CENTER	205 WATER STREET	WARREN	PA	5-Star
395797	LANDIS HOMES	1001 EAST OREGON ROAD	LITITZ	PA	5-Star
395138	MIFFLIN CENTER	500 EAST PHILADELPHIA AVENUE	SHILLINGTON	PA	5-Star
395001	PASSAVANT RETIREMENT AND HEALT	105 BURGESS DRIVE	ZELIENOPLE	PA	5-Star
396144	POWERBACK REHABILITATION EXTON	501 THOMAS JONES WAY	EXTON	PA	5-Star
395736	WILLOWBROOKE COURT-GRANITE	1343 WEST BALTIMORE PIKE	MEDIA	PA	5-Star
415020	GRANDVIEW CENTER	100 CHAMBERS STREET	CUMBERLAND	RI	5-Star
415076	JOHN CLARKE RETIREMENT CENTER THE	600 VALLEY ROAD	MIDDLETOWN	RI	5-Star
435117	GOOD SAMARITAN SOCIETY DEUEL COUNTY	913 COLONEL PETE STREET	CLEAR LAKE	SD	5-Star
435097	LAKE ANDES SENIOR LIVING	740 EAST LAKE ST	LAKE ANDES	SD	5-Star
445459	HANCOCK MANOR NURSING HOME	1423 MAIN STREET	SNEEDVILLE	TN	5-Star
445004	NHC HEALTHCARE, DICKSON	812 CHARLOTTE ST	DICKSON	TN	5-Star
445500	PAVILION-THS, LLC	1406 MEDICAL CENTER DRIVE	LEBANON	TN	5-Star
445136	SIGNATURE HEALTHCARE OF PUTNAM COUNTY	278 DRY VALLEY RD	COOKEVILLE	TN	5-Star
675989	BRAZOS VALLEY CARE HOME	605 S AVE F	KNOX CITY	TX	5-Star
455866	BROOKDALE WESTLAKE HILLS	1034 LIBERTY PARK DR	AUSTIN	TX	5-Star
675016	GREAT PLAINS NURSING AND REHABILITATION	315 E 19TH	DUMAS	TX	5-Star

675988	HILLTOP PARK REHABILITATION AND CARE CENTER	970 HILLTOP DR	WEATHERFORD	TX	5-Star
675176	MCCULLOUGH HALL NURSING CENTER INC	603 S W 24TH ST	SAN ANTONIO	TX	5-Star
676303	MIRADOR	5857 TIMBERGATE DR	CORPUS CHRISTI	TX	5-Star
676449	RAPID RECOVERY CENTER OF FORT WORTH	6301 OAKMONT BLVD	FORT WORTH	TX	5-Star
676243	REMINGTON TRANSITIONAL CARE OF RICHARDSON	1350 E LOOKOUT DR	RICHARDSON	TX	5-Star
675832	RISING STAR NURSING CENTER	411 S MILLER	RISING STAR	TX	5-Star
676185	SENIOR CARE OF HARBOR LAKES	1300 2ND ST	GRANBURY	TX	5-Star
675759	SENIOR CARE OF STONEGATE	4201 STONEGATE BLVD	FORT WORTH	TX	5-Star
455965	TEXHOMA CHRISTIAN CARE CENTER INC	300 LOOP 11	WICHITA FALLS	TX	5-Star
676201	TUSCANY VILLAGE	2750 MILLER RANCH RD	PEARLAND	TX	5-Star
676090	WESLEY COURT HEALTH CENTER	2617 ANTILLEY ROAD	ABILENE	TX	5-Star
675593	WISTERIA PLACE	3202 S WILLIS ST	ABILENE	TX	5-Star
465179	COUNTRY LIFE CARE CENTER	13747 SOUTH REDWOOD ROAD	RIVERTON	UT	5-Star
465172	GEORGE E WAHLEN OGDEN VETERANS HOME	1102 NORTH 1200 WEST	OGDEN	UT	5-Star
495214	AUGUSTA MEDICAL CTR SKILLED CA	78 MEDICAL CENTER DRIVE	FISHERSVILLE	VA	5-Star
49A022	CHILDRENS HOSPITAL	2924 BROOK RD	RICHMOND	VA	5-Star
4.90E+51	MOUNTAIN VIEW NURSING HOME	1776 ELLY ROAD	ARODA	VA	5-Star
4.90E+85	THE VIRGINIA HOME	1101 HAMPTON ST	RICHMOND	VA	5-Star
495319	THE VIRGINIAN	9229 ARLINGTON BLVD	FAIRFAX	VA	5-Star
475047	FRANKLIN COUNTY REHAB CENTER LLC	110 FAIRFAX ROAD	ST ALBANS	VT	5-Star

475017	HELEN PORTER HEALTHCARE & REHAB	30 PORTER DRIVE	MIDDLEBURY	VT	5-Star
475023	PINE HEIGHTS AT BRATTLEBORO CENTER FOR NURSING & R	187 OAK GROVE AVENUE	BRATTLEBORO	VT	5-Star
475008	VERNON GREEN NURSING HOME	61 GREENWAY DRIVE	VERNON	VT	5-Star
475056	WAKE ROBIN-LINDEN NURSING HOME	200 WAKE ROBIN DRIVE	SHELBURNE	VT	5-Star
505409	SUMMITVIEW HEALTHCARE CENTER	3801 SUMMITVIEW AVENUE	YAKIMA	WA	5-Star
525377	DOOR COUNTY MEMORIAL HOSPITAL SNF	323 S 18TH AVE	STURGEON BAY	WI	5-Star
525625	LAKELAND HEALTH CARE CTR	1922 CTY RD NN	ELKHORN	WI	5-Star
525671	SCHMITT WOODLAND HILLS	1400 W SEMINARY ST	RICHLAND CENTER	WI	5-Star
525719	WI VETERANS HM AINSWORTH HALL	N2665 CTY RD QQ	KING	WI	5-Star
515193	ARTHUR B HODGES CENTER, THE	300 BAKER LANE	CHARLESTON	WV	5-Star
515110	COLUMBIA ST. FRANCIS HOSPITAL	333 LAIDLEY STREET	CHARLESTON	WV	5-Star
515038	GOOD SHEPHERD NURSING HOME	159 EDGINGTON LANE	WHEELING	WV	5-Star
515188	STONERISE LINDSIDE	10797 SENECA TRAIL SOUTH	LINDSIDE	WV	5-Star
5.10E+151	WAR MEMORIAL HOSPITAL	1 HEALTHY WAY	BERKELEY SPRINGS	WV	5-Star
535053	PLATTE COUNTY LEGACY HOME	100 19TH ST	WHEATLAND	WY	5-Star
535038	ROCKY MOUNTAIN CARE – EVANSTON	475 YELLOW CREEK ROAD	EVANSTON	WY	5-Star
53A050	STAR VALLEY CARE CENTER	130 HOSPITAL LANE	AFTON	WY	5-Star
535023	WESTON COUNTY HEALTH SERVICES	1124 WASHINGTON BLVD	NEWCASTLE	WY	5-Star
15019	MERRY WOOD LODGE CARE AND REHABILITATION CENTER	P O BOX 130	ELMORE	AL	Candidate
15032	DIVERSICARE OF FOLEY	1701 NORTH ALSTON STREET	FOLEY	AL	Candidate

15195	VILLAGE AT COOK SPRINGS SKILLED NURSING FACILITY	415 COOK SPRINGS	PELL CITY	AL	Candidate
15203	ATTALLA HEALTH AND REHAB	915 STEWART AVENUE SOUTHEAST	ATTALLA	AL	Candidate
35207	SPRINGDALE VILLAGE HEALTHCARE	7255 EAST BROADWAY ROAD	MESA	AZ	Candidate
35242	CHINLE NURSING HOME	HIGHWAY 191 & HOSPITAL ROAD	CHINLE	AZ	Candidate
55293	SANTA ANITA CONVALESCENT HOSP	5522 GRACEWOOD AVE.	TEMPLE CITY	CA	Candidate
55364	LONG BEACH HEALTHCARE CENTER	3401 CEDAR AVENUE	LONG BEACH	CA	Candidate
55474	MAGNOLIA REHABILITATION & NURSING CENTER	8133 MAGNOLIA AVENUE	RIVERSIDE	CA	Candidate
56078	LAKEVIEW TERRACE	831 S LAKE STREET	LOS ANGELES	CA	Candidate
56122	MILLBRAE SKILLED CARE	33 MATEO AVENUE	MILLBRAE	CA	Candidate
56361	FORTUNA REHABILITATION AND WELLNESS CENTER, LP	2321 NEWBURG ROAD	FORTUNA	CA	Candidate
65001	LOWRY HILLS CARE AND REHABILITATION	10201 E THIRD AVE	AURORA	CO	Candidate
75210	WATERBURY GARDENS NURSING AND REHAB	128 CEDAR AVENUE	WATERBURY	CT	Candidate
75211	APPLE REHAB ROCKY HILL	45 ELM STREET	ROCKY HILL	CT	Candidate
85006	REGAL HEIGHTS HEALTHCARE & REHAB CENTER	6525 LANCASTER PIKE	HOCKESSIN	DE	Candidate
85010	MILFORD CENTER	700 MARVEL ROAD	MILFORD	DE	Candidate
85039	NEW CASTLE HEALTH AND REHABILITATION CENTER	32 BUENA VISTA DRIVE	NEW CASTLE	DE	Candidate
105008	ARCH PLAZA NURSING & REHABILITATION CENTER	12505 NE 16TH AVE	NORTH MIAMI	FL	Candidate
105262	UNIVERSITY EAST REHABILITATION CENTER	991 E NEW YORK AVE	DELAND	FL	Candidate
105315	ST AUGUSTINE HEALTH AND REHABILITATION CENTER	51 SUNRISE BLVD	SAINT AUGUSTINE	FL	Candidate

105354	LAKELAND NURSING & REHABILITATION	1919 LAKELAND HILLS BLVD	LAKELAND	FL	Candidate
105465	OAKHURST CENTER	1501 SE 24TH RD	OCALA	FL	Candidate
105764	CONSULATE HEALTH CARE OF TALLAHASSEE	1650 PHILLIPS RD	TALLAHASSEE	FL	Candidate
106074	KEYSTONE REHABILITATION AND HEALTH CENTER	1120 W DONEGAN AVE	KISSIMMEE	FL	Candidate
115270	DUNWOODY HEALTH AND REHABILITATION CENTER	5470 MERIDIAN MARK ROAD, BLDG E	ATLANTA	GA	Candidate
115482	EAST LAKE ARBOR	304 FIFTH AVENUE	DECATUR	GA	Candidate
115578	GREEN ACRES HEALTH AND REHABILITATION	313 ALLEN MEMORIAL DRIVE,SW	MILLEDGEVILLE	GA	Candidate
115628	PRUITTHEALTH – PALMYRA	1904 PALMYRA ROAD	ALBANY	GA	Candidate
115636	FOUNTAIN BLUE REHAB AND NURSING	3051 WHITESIDE ROAD	MACON	GA	Candidate
115674	WESTMINSTER COMMONS	560 ST CHARLES AVE, NE	ATLANTA	GA	Candidate
125026	KUAKINI GERIATRIC CARE, INC	347 NORTH KUAKINI STREET	HONOLULU	HI	Candidate
125043	PEARL CITY NURSING HOME	919 LEHUA AVENUE	PEARL CITY	HI	Candidate
125057	KULANA MALAMA	91-1360 KARAYAN STREET	EWA BEACH	HI	Candidate
135014	CALDWELL CARE OF CASCADIA	210 CLEVELAND BOULEVARD	CALDWELL	ID	Candidate
135053	IVY COURT	2200 IRONWOOD PLACE	COEUR D'ALENE	ID	Candidate
135133	IDAHO STATE VETERANS HOME – LEWISTON	821 21ST AVENUE	LEWISTON	ID	Candidate
135135	LIFE CARE CENTER OF POST FALLS	460 NORTH GARDEN PLAZA COURT	POST FALLS	ID	Candidate
145431	LOFT REHABILITATION & NURSING	700 NORTH MAIN STREET	EUREKA	IL	Candidate

145439	CHAMPAIGN URBANA NRSG & REHAB	302 WEST BURWASH	SAVOY	IL	Candidate
145717	INTEGRITY HC OF COLUMBIA	253 BRADINGTON DRIVE	COLUMBIA	IL	Candidate
145926	GARDENVIEW MANOR	14792 CATLIN TILTON ROAD	DANVILLE	IL	Candidate
146003	PRAIRIE CREEK VILLAGE	2530 NORTH MONROE STREET	DECATUR	IL	Candidate
155064	APERION CARE KOKOMO	3518 S LAFOUNTAIN ST	KOKOMO	IN	Candidate
155145	WASHINGTON NURSING CENTER	603 E NATIONAL HWY	WASHINGTON	IN	Candidate
155156	APERION CARE ARBORS MICHIGAN CITY	1101 E COOLSPRING AVE	MICHIGAN CITY	IN	Candidate
155208	HANOVER NURSING CENTER	410 W LAGRANGE RD	HANOVER	IN	Candidate
155255	ELEVATE SENIOR LIVING – FORT WAYNE	3420 EAST STATE BLVD	FORT WAYNE	IN	Candidate
155404	ESSEX NURSING AND REHABILITATION CENTER	301 W ESSEX ST	LEBANON	IN	Candidate
155508	TRANSCENDENT HEALTHCARE OF BOONVILLE	725 S SECOND ST	BOONVILLE	IN	Candidate
155799	APERION CARE MARION LLC	614 WEST 14TH STREET	MARION	IN	Candidate
155831	BRIARCLIFF HEALTH & REHABILITATION CENTER	5024 WESTERN AVENUE	SOUTH BEND	IN	Candidate
165197	CEDAR FALLS HEALTH CARE CENTER	1728 WEST EIGHTH STREET	CEDAR FALLS	IA	Candidate
165255	CARLISLE CENTER FOR WELLNESS AND REHAB	680 COLE STREET	CARLISLE	IA	Candidate
165265	QHC FORT DODGE VILLA , LLC	2721 10TH AVENUE NORTH	FORT DODGE	IA	Candidate
165299	CRESTVIEW ACRES	1485 GRAND	MARION	IA	Candidate
165497	QHC WINTERSET NORTH, LLC	411 EAST LANE STREET	WINTERSET	IA	Candidate
175077	LIFE CARE CENTER OF OSAWATOMIE	1615 PARKER AVENUE	OSAWATOMIE	KS	Candidate

175407	LIFE CARE CENTER OF WICHITA	622 N EDGEMOOR STREET	WICHITA	KS	Candidate
175471	WESTY COMMUNITY CARE HOME	105 N HIGHWAY 99	WESTMORELAND	KS	Candidate
175522	MEDICALODGES GREAT BEND	1401 CHERRY LANE	GREAT BEND	KS	Candidate
185272	RIVER HAVEN NURSING AND REHABILITATION CENTER	867 MCGUIRE AVENUE	PADUCAH	KY	Candidate
195399	JENA NURSING AND REHABILITATION CENTER, LLC	5877 AIMWELL ROAD	JENA	LA	Candidate
195488	NOTTINGHAM REGIONAL REHAB CENTER	2828 WESTFORK	BATON ROUGE	LA	Candidate
215094	WESTMINSTER HEALTHCARE CENTER	1234 WASHINGTON BOULEVARD	WESTMINSTER	MD	Candidate
215336	HAGERSTOWN HEALTHCARE CENTER	750 DUAL HIGHWAY	HAGERSTOWN	MD	Candidate
225063	MARLBOROUGH HILLS REHABILITATION & HLTH CARE CTR	121 NORTHBORO ROAD	MARLBOROUGH	MA	Candidate
225199	WORCESTER REHABILITATION & HEALTH CARE CENTER	119 PROVIDENCE STREET	WORCESTER	MA	Candidate
225453	CARVALHO GROVE HEALTH AND REHABILITATION CENTER	273 OAK GROVE AVENUE	FALL RIVER	MA	Candidate
225512	WAREHAM HEALTHCARE	50 INDIAN NECK ROAD	WAREHAM	MA	Candidate
235187	CAMBRIDGE EAST HEALTHCARE CENTER	31155 DEQUINDRE	MADISON HEIGHTS	MI	Candidate
235461	CLARKSTON SPECIALTY HEALTHCARE CENTER	4800 CLINTONVILLE RD	CLARKSTON	MI	Candidate
245148	THE ESTATES AT ST LOUIS PARK LLC	3201 VIRGINIA AVENUE SOUTH	SAINT LOUIS PARK	MN	Candidate
245289	CENTENNIAL GARDENS FOR NURSING & REHABILITATION	3245 VERA CRUZ AVENUE NORTH	CRYSTAL	MN	Candidate
245324	THE ESTATES AT BLOOMINGTON LLC	9200 NICOLLET AVENUE SOUTH	BLOOMINGTON	MN	Candidate

245361	MEEKER MANOR REHABILITATION CENTER, LLC	600 SOUTH DAVIS AVENUE	LITCHFIELD	MN	Candidate
245596	SOUTH SHORE CARE CENTER	1307 SOUTH SHORE DRIVE PO BOX 69	WORTHINGTON	MN	Candidate
255109	DIVERSICARE OF SOUTHAVEN	1730 DORCHESTER DR	SOUTHAVEN	MS	Candidate
255140	THE BLUFFS REHABILITATION AND HEALTHCARE CENTER	2850 PORTER'S CHAPEL ROAD	VICKSBURG	MS	Candidate
255163	MEMORIAL WOODLAND VILLAGE NURSING CENTER	5427 GEX ROAD	DIAMOND HEAD	MS	Candidate
265145	SWOPE RIDGE GERIATRIC CENTER	5900 SWOPE PARKWAY	KANSAS CITY	MO	Candidate
265199	GRAND PAVILION AT THE PLAZA	4330 WASHINGTON	KANSAS CITY	MO	Candidate
265419	COUNTRY VIEW NURSING FACILITY, INC	2106 WEST MAIN, PO BOX 330	BOWLING GREEN	MO	Candidate
265476	REDWOOD OF RAYMORE	600 E SUNRISE DRIVE	RAYMORE	MO	Candidate
265607	CRYSTAL CREEK HEALTH AND REHABILITATION CENTER	250 NEW FLORISSANT ROAD SOUTH	FLORISSANT	MO	Candidate
265719	OAKWOOD ESTATES NURSING & REHAB	5303 BERMUDA DRIVE	NORMANDY	MO	Candidate
265721	GREGORY RIDGE HEALTH CARE CENTER	7001 CLEVELAND AVENUE	KANSAS CITY	MO	Candidate
275044	BIG SKY CARE CENTER	2475 WINNE AVE	HELENA	MT	Candidate
275111	LAUREL HEALTH & REHABILITATION CENTER	820 3RD AVE	LAUREL	MT	Candidate
285134	LIFE CARE CENTER OF ELKHORN	20275 HOPPER STREET	ELKHORN	NE	Candidate
295076	LIFE CARE CENTER OF SOUTH LAS VEGAS	2325 E. HARMON AVE.	LAS VEGAS	NV	Candidate
295079	MOUNTAIN VIEW HEALTH & REHAB	201 KOONTZ LANE	CARSON CITY	NV	Candidate
305045	PLEASANT VIEW CENTER, GENESIS HEALTHCARE	239 PLEASANT STREET	CONCORD	NH	Candidate
305055	OCEANSIDE SKILLED NURSING AND REHABILITATION	22 TUCK ROAD	HAMPTON	NH	Candidate

305060	BEDFORD HILLS CENTER	30 COLBY COURT	BEDFORD	NH	Candidate
305064	EXETER CENTER	8 HAMPTON ROAD	EXETER	NH	Candidate
315216	WATERVIEW CENTER	536 RIDGE ROAD	CEDAR GROVE	NJ	Candidate
315224	FOREST MANOR HCC	145 STATE PARK ROAD	HOPE	NJ	Candidate
315229	WANAQUE CENTER FOR NURSING & REHABILITATION, THE	1433 RINGWOOD AVE	HASKELL	NJ	Candidate
325116	MESCALERO CARE CENTER	454 LIPAN AVENUE	MESCALERO	NM	Candidate
335236	ROBINSON TERRACE	28652 STATE HIGHWAY 23	STAMFORD	NY	Candidate
335249	CAYUGA NURSING AND REHABILITATION CENTER	1229 TRUMANSBURG ROAD	ITHACA	NY	Candidate
335338	BISHOP REHABILITATION AND NURSING CENTER	918 JAMES STREET	SYRACUSE	NY	Candidate
335386	THE GRAND REHABILITATION AND NURSING AT MOHAWK	99 SIXTH AVENUE	ILION	NY	Candidate
335488	WESLEY GARDENS CORPORATION	3 UPTON PARK	ROCHESTER	NY	Candidate
335548	ONONDAGA CENTER FOR REHABILITATION AND NURSING	217 EAST AVENUE	MINOA	NY	Candidate
335556	CREEKVIEW NURSING AND REHAB CENTER	525 BEAHAN ROAD	ROCHESTER	NY	Candidate
335640	BUFFALO COMMUNITY HEALTHCARE CENTER	1205 DELAWARE AVENUE	BUFFALO	NY	Candidate
335735	BETHLEHEM COMMONS CARE CENTER	125 ROCKEFELLER ROAD	DELMAR	NY	Candidate
345004	PERSON MEMORIAL HOSPITAL	615 RIDGE ROAD	ROXBORO	NC	Candidate
345307	THE IVY AT GASTONIA LLC	4414 WILKINSON BLVD	GASTONIA	NC	Candidate
345450	WESTWOOD HEALTH AND REHABILITATION	625 ASHLAND STREET	ARCHDALE	NC	Candidate
355024	THE MEADOWS ON UNIVERSITY	1315 S UNIVERSITY DR	FARGO	ND	Candidate

355031	MINOT HEALTH AND REHAB, LLC	600 S MAIN ST	MINOT	ND	Candidate
355032	HEART OF AMERICA CARE CENTER	800 MAIN AVENUE SOUTH	RUGBY	ND	Candidate
365005	THE CHATEAU AT MOUNTAIN CREST NURSING & REHAB CTR	2586 LAFEUILLE AVENUE	CINCINNATI	OH	Candidate
365022	HOSPITALITY CENTER FOR REHABILITATION AND HEALING	1301 NORTH MONROE DRIVE	XENIA	OH	Candidate
365202	CARECORE AT LIMA LLC	599 SOUTH SHAWNEE STREET	LIMA	OH	Candidate
365271	CARRIAGE INN OF STEUBENVILLE	3102 ST CHARLES DRIVE	STEUBENVILLE	OH	Candidate
365435	LOGAN CARE AND REHABILITATION	300 ARLINGTON AVENUE	LOGAN	OH	Candidate
365499	SUMMIT'S TRACE HEALTHCARE CENTER	935 NORTH CASSADY AVENUE	COLUMBUS	OH	Candidate
365559	ROLLING HILLS REHAB AND CARE CTR	68222 COMMERCIAL DRIVE	BRIDGEPORT	OH	Candidate
365780	HEARTLAND OF MARIETTA	5001 STATE ROUTE 60	MARIETTA	OH	Candidate
365795	OASIS CENTER FOR REHABILITATION AND HEALING	850 EAST MIDLOTHIAN BLVD	YOUNGSTOWN	OH	Candidate
365874	HUDSON ELMS NURSING CENTER	563 W STREETSBORO ROAD	HUDSON	OH	Candidate
366130	RIVERSIDE LANDING NURSING AND REHABILITATION	856 SOUTH RIVERSIDE DRIVE	MCCONNELSVILLE	OH	Candidate
366285	CONTINUING HEALTHCARE OF SHADYSIDE	60583 STATE ROUTE 7	SHADYSIDE	OH	Candidate
366323	WAYSIDE FARM INC	4557 QUICK RD	PENINSULA	OH	Candidate
375222	CEDAR CREEK NURSING CENTER	600 24TH AVENUE SOUTHWEST	NORMAN	OK	Candidate
375275	WARR ACRES NURSING CENTER	6501 NORTH MACARTHUR	OKLAHOMA CITY	OK	Candidate

375334	SHADY REST CARE CENTER	210 SOUTH ADAIR	PRYOR	OK	Candidate
375465	COLONIAL MANOR NURSING HOME, INC	1815 EAST SKELLY DRIVE	TULSA	OK	Candidate
385182	CRESWELL HEALTH AND REHABILITATION CENTER	735 SOUTH 2ND STREET	CRESWELL	OR	Candidate
385224	WINDSOR HEALTH & REHABILITATION CENTER	820 COTTAGE STREET NE	SALEM	OR	Candidate
385277	CREEKSIDE REHABILITATION AND NURSING	812 SE 48TH AVENUE	PORTLAND	OR	Candidate
395142	GARDENS AT BLUE RIDGE, THE	3625 NORTH PROGRESS AVE	HARRISBURG	PA	Candidate
395414	LACKAWANNA HEALTH AND REHAB CENTER	108 TERRACE DRIVE	OLYPHANT	PA	Candidate
395454	PARKHOUSE REHABILITATION AND NURSING CENTER	1600 BLACK ROCK ROAD	ROYERSFORD	PA	Candidate
395456	GARDENS AT WYOMING VALLEY, THE	50 N. PENNSYLVANIA AVE.	WILKES BARRE	PA	Candidate
395604	GREENSBURG CARE CENTER	119 INDUSTRIAL PARK ROAD	GREENSBURG	PA	Candidate
395881	MOUNTAIN VIEW CARE AND REHABILITATION CENTER	2309 STAFFORD AVENUE	SCRANTON	PA	Candidate
395892	GROVE AT LATROBE, THE	576 FRED ROGERS DRIVE	LATROBE	PA	Candidate
396133	VIBRA REHABILITATION CENTER	707 SHEPERDSTOWN RD	MECHANICSBURG	PA	Candidate
415106	ST ANTOINE RESIDENCE	10 RHODES AVENUE	NORTH SMITHFIELD	RI	Candidate
435039	AVANTARA NORTON	3600 SOUTH NORTON AVENUE	SIOUX FALLS	SD	Candidate
435115	PALISADE HEALTHCARE CENTER	920 4TH ST	GARRETSON	SD	Candidate
445017	ASBURY PLACE AT MARYVILLE	2648 SEVIERVILLE RD	MARYVILLE	TN	Candidate

445173	DONALSON CARE CENTER	1681 WINCHESTER HIGHWAY	FAYETTEVILLE	TN	Candidate
445439	MT JULIET HEALTH CARE CENTER	2650 NORTH MT JULIET ROAD	MOUNT JULIET	TN	Candidate
455416	THE OAKS AT WHITE SETTLEMENT	8001 WESTERN HILLS BLVD	FORT WORTH	TX	Candidate
455557	THE PALMS NURSING & REHABILITATION	5607 EVERHART RD	CORPUS CHRISTI	TX	Candidate
455618	EDEN HOME INC	631 LAKEVIEW BLVD	NEW BRAUNFELS	TX	Candidate
455646	MARSHALL MANOR NURSING & REHABILITATION CENTER	1007 S WASHINGTON AVE	MARSHALL	TX	Candidate
455930	COUNTRYSIDE NURSING AND REHABILITATION LP	1700 N WASHINGTON	PILOT POINT	TX	Candidate
455974	ROCKPORT NURSING AND REHABILITATION CENTER	1902 FM 3036	ROCKPORT	TX	Candidate
465086	MOUNTAIN VIEW HEALTH SERVICES	5865 SOUTH WASATCH DRIVE	OGDEN	UT	Candidate
475014	BURLINGTON HEALTH & REHAB	300 PEARL STREET	BURLINGTON	VT	Candidate
475019	ST JOHNSBURY HEALTH & REHAB	1248 HOSPITAL DRIVE	SAINT JOHNSBURY	VT	Candidate
475020	BERLIN HEALTH & REHAB CTR	98 HOSPITALITY DRIVE	BARRE	VT	Candidate
475052	GILL ODD FELLOWS HOME	8 GILL TERRACE	LUDLOW	VT	Candidate
495150	THE CITADEL VIRGINIA BEACH LLC	340 LYNN SHORES DRIVE	VIRGINIA BEACH	VA	Candidate
495235	ENVOY OF WILLIAMSBURG, LLC	1235 MT VERNON AVENUE	WILLIAMSBURG	VA	Candidate
495252	BATTLEFIELD PARK HEALTHCARE CENTER	250 FLANK ROAD	PETERSBURG	VA	Candidate
495266	HANOVER HEALTH AND REHABILITATION CENTER	8139 LEE DAVIS ROAD	MECHANICSVILLE	VA	Candidate
505309	CAREAGE OF WHIDBEY	311 NORTHEAST 3RD STREET	COUPEVILLE	WA	Candidate

515060	HERITAGE CENTER	101-13TH STREET	HUNTINGTON	WV	Candidate
515066	DUNBAR CENTER	501 CALDWELL LANE	DUNBAR	WV	Candidate
515089	STONERISE CHARLESTON	3819 CHESTERFIELD AVENUE	CHARLESTON	WV	Candidate
515186	MAPLES NURSING HOME	1600 BLAND STREET	BLUEFIELD	WV	Candidate
525319	EDENBROOK LAKESIDE	2115 E WOODSTOCK PL	MILWAUKEE	WI	Candidate
525442	TOMAH NURSING AND REHAB	1505 BUTTS AVE	TOMAH	WI	Candidate
525498	BRIA OF TRINITY VILLAGE	7500 W DEAN RD	MILWAUKEE	WI	Candidate
525504	AUTUMN LAKE HEALTHCARE AT GREENFIELD	5790 S 27TH ST	MILWAUKEE	WI	Candidate
535013	GRANITE REHABILITATION AND WELLNESS	3128 BOXELDER DRIVE	CHEYENNE	WY	Candidate
535026	SHERIDAN MANOR	1851 BIG HORN AVE	SHERIDAN	WY	Candidate
535034	WESTWARD HEIGHTS CARE CENTER	150 CARING WAY	LANDER	WY	Candidate
555020	LAGUNA HONDA HOSPITAL & REHABILITATION CTR D/P SNF	375 LAGUNA HONDA BLVD.	SAN FRANCISCO	CA	Candidate
555057	LAS FLORES CONVALESCENT HOSPITAL	14165 PURCHE AVE.	GARDENA	CA	Candidate
555099	LAKEWOOD HEALTHCARE CENTER	12023 LAKEWOOD BLVD.	DOWNEY	CA	Candidate
555139	MIRACLE MILE HEALTHCARE CENTER, LLC	1020 SOUTH FAIRFAX AVE	LOS ANGELES	CA	Candidate
555200	VALLEY WEST POST ACUTE	1224 E STREET	WILLIAMS	CA	Candidate
555330	RIVERSIDE POSTACUTE CARE	8781 LAKEVIEW AVENUE	RIVERSIDE	CA	Candidate
555773	YUCCA VALLEY NURSING	57333 JOSHUA LANE	YUCCA VALLEY	CA	Candidate
555776	ORCHARD HOSPITAL D/P SNF	240 SPRUCE STREET	GRIDLEY	CA	Candidate

555823	INTERCOMMUNITY CARE CENTER	2626 GRAND AVENUE	LONG BEACH	CA	Candidate
555827	ATHERTON PARK POST-ACUTE	1275 CRANE STREET	MENLO PARK	CA	Candidate
555852	PARK AVENUE HEALTHCARE & WELLNESS CENTER	1550 NORTH PARK AVENUE	POMONA	CA	Candidate
555892	SELMA CONVALESCENT HOSPITAL	2108 STILLMAN	SELMA	CA	Candidate
675052	LAPORTE HEALTHCARE CENTER	208 SOUTH UTAH	LA PORTE	TX	Candidate
675078	GALLERIA RESIDENCE AND REHABILITATION CENTER	2808 STONEYBROOK DRIVE	HOUSTON	TX	Candidate
675277	CARE INN OF LA GRANGE	457 N MAIN ST	LA GRANGE	TX	Candidate
675365	PASADENA CARE CENTER	4006 VISTA RD	PASADENA	TX	Candidate
675494	LONE STAR RANCH REHABILITATION AND HEALTHCARE CENT	316 GENERAL CAVAZOS BLVD	KINGSVILLE	TX	Candidate
676239	VILLA TOSCANA AT CYPRESS WOODS	15015 CYPRESS WOODS MEDICAL DR	HOUSTON	TX	Candidate
05A021	BETHEL LUTHERAN HOME	2280 DOCKERY AVENUE	SELMA	CA	Candidate
27A052	MONTANA MENTAL HEALTH NURSING HOME	800 CASINO CREEK DR	LEWISTOWN	MT	Candidate
46A064	PINE CREEK REHABILITATION AND NURSING	876 WEST 700 SOUTH	SALT LAKE CITY	UT	Candidate
15144	AHAVA HEALTHCARE OF ALABASTER	850 9TH STREET, NORTHWEST	ALABASTER	AL	Special Focus Facility
56086	LA MARIPOSA CARE AND REHABILITATION CENTER	1244 TRAVIS BLVD	FAIRFIELD	CA	Special Focus Facility
56113	ALEXANDRIA CARE CENTER	1515 N ALEXANDRIA AVE.	LOS ANGELES	CA	Special Focus Facility

75200	REGALCARE AT SOUTHPORT	930 MILL HILL TERRACE	SOUTHPORT	CT	Special Focus Facility
85004	BRANDYWINE NURSING & REHABILITATION CENTER	505 GREENBANK ROAD	WILMINGTON	DE	Special Focus Facility
105302	OAK HAVEN REHAB AND NURSING CENTER	919 OLD WINTER HAVEN RD	AUBURNDALE	FL	Special Focus Facility
105332	WINTER PARK CARE & REHABILITATION CENTER	2970 SCARLETT RD	WINTER PARK	FL	Special Focus Facility
115564	PIONEER HEALTH OF CENTRAL GEORGIA	712 PATTERSON STREET	BYROMVILLE	GA	Special Focus Facility
115635	RIVER BROOK HEALTHCARE CENTER	390 SWEAT STREET	HOMERVILLE	GA	Special Focus Facility
145160	APERION CARE CAPITOL	555 WEST CARPENTER	SPRINGFIELD	IL	Special Focus Facility
146112	APERION CARE BRADLEY	650 NORTH KINZIE	BRADLEY	IL	Special Focus Facility
155243	SIGNATURE HEALTHCARE OF LAFAYETTE	300 WINDY HILL DR	LAFAYETTE	IN	Special Focus Facility

155496	VALLEY VIEW HEALTHCARE CENTER	333 W MISHAWAKA RD	ELKHART	IN	Special Focus Facility
155845	SIMMONS LOVING CARE HEALTH FACILITY	700 E 21ST AVE	GARY	IN	Special Focus Facility
165161	TOUCHSTONE HEALTHCARE COMMUNITY	1800 INDIAN HILLS DRIVE	SIOUX CITY	IA	Special Focus Facility
175157	LIFE CARE CENTER OF ANDOVER	621 W 21ST, PO BOX 100	ANDOVER	KS	Special Focus Facility
175180	OVERLAND PARK REHABILITATION AND HEALTHCARE	5211 W 103RD STREET	OVERLAND PARK	KS	Special Focus Facility
205072	MARSHWOOD CENTER	33 ROGER STREET	LEWISTON	ME	Special Focus Facility
225218	OXFORD REHABILITATION & HEALTH CARE CENTER, THE	689 MAIN STREET	HAVERHILL	MA	Special Focus Facility
245052	MOORHEAD RESTORATIVE CARE CENTER	2810 SECOND AVENUE NORTH	MOORHEAD	MN	Special Focus Facility
255252	MS CARE CENTER OF GREENVILLE	1221 EAST UNION STREET	GREENVILLE	MS	Special Focus Facility

265703	GREEN PARK SENIOR LIVING COMMUNITY	9350 GREEN PARK ROAD	SAINT LOUIS	MO	Special Focus Facility
265733	ST JOHNS PLACE	3333 BROWN ROAD	SAINT LOUIS	MO	Special Focus Facility
275122	CREST NURSING HOME	3131 AMHERST AVE	BUTTE	MT	Special Focus Facility
285238	KEYSTONE RIDGE POST ACUTE NURSING AND REHAB	7501 KEYSTONE DRIVE	OMAHA	NE	Special Focus Facility
295100	SIERRA RIDGE HEALTH AND WELLNESS SUITES	6225 SHARLANDS AVENUE	RENO	NV	Special Focus Facility
305005	GREENBRIAR HEALTHCARE	55 HARRIS ROAD	NASHUA	NH	Special Focus Facility
315104	CORNELL HALL CARE & REHABILITATION CENTER	234 CHESTNUT STREET	UNION	NJ	Special Focus Facility
325044	MISSION ARCH CENTER	3200 MISSION ARCH DRIVE	ROSWELL	NM	Special Focus Facility
335439	THE PEARL NURSING CENTER OF ROCHESTER	1335 PORTLAND AVE	ROCHESTER	NY	Special Focus Facility

335471	UTICA REHABILITATION & NURSING CENTER	2535 GENESEE STREET	UTICA	NY	Special Focus Facility
335518	SARATOGA CENTER FOR REHAB & SKILLED NURSING CARE	149 BALLSTON AVENUE	BALLSTON SPA	NY	Special Focus Facility
355042	WESTERN HORIZONS CARE CENTER	1104 HWY 12	HETTINGER	ND	Special Focus Facility
366202	CRYSTAL CARE OF COAL GROVE	813 1/2 MARION PIKE	COAL GROVE	OH	Special Focus Facility
366313	SCIOTO POINTE	740 CANONBY PLACE	COLUMBUS	OH	Special Focus Facility
375331	HILLCREST NURSING CENTER	2120 NORTH BROADWAY	MOORE	OK	Special Focus Facility
385225	PRESTIGE POST-ACUTE & REHAB CENTER – MCMINNVILLE	421 SE EVANS STREET	MCMINNVILLE	OR	Special Focus Facility
415107	KINGSTON CENTER FOR REHABILITATION AND HEALTH CARE	415 GARDNER ROAD	WEST KINGSTON	RI	Special Focus Facility
445339	BAILEY PARK CLC	2400 MITCHELL STREET	HUMBOLDT	TN	Special Focus Facility

455020	COLONIAL MANOR CARE CENTER	821 US HWY 81 W	NEW BRAUNFELS	TX	Special Focus Facility
455855	KENNEDY HEALTH & REHAB	504 N JOHN REDDITT DR	LUFKIN	TX	Special Focus Facility
475044	PINES REHAB & HEALTH CTR	601 RED VILLAGE ROAD	LYNDONVILLE	VT	Special Focus Facility
495327	ENVOY OF WESTOVER HILLS	4403 FOREST HILL AVENUE	RICHMOND	VA	Special Focus Facility
515140	TRINITY HEALTH CARE OF LOGAN	1000 WEST PARK AVENUE	LOGAN	WV	Special Focus Facility
535042	SHEPHERD OF THE VALLEY REHABILITION AND WELLNESS	60 MAGNOLIA	CASPER	WY	Special Focus Facility
555151	WILLOWS POST ACUTE	320 NORTH CRAWFORD STREET	WILLOWS	CA	Special Focus Facility
555336	KINGSTON HEALTHCARE CENTER, LLC	329 REAL ROAD	BAKERSFIELD	CA	Special Focus Facility
555350	TERRACINA POST ACUTE	1618 LAUREL AVENUE	REDLANDS	CA	Special Focus Facility

555814	SAN FERNANDO POST ACUTE HOSPITAL	12260 FOOTHILL BLVD	SYLMAR	CA	Special Focus Facility
675553	HERITAGE HOUSE HEALTH CARE CENTRE	1026 E GOODE ST	QUITMAN	TX	Special Focus Facility

Appendix G:
Normal QQ Plots to Assess for Normality in Research Question Three

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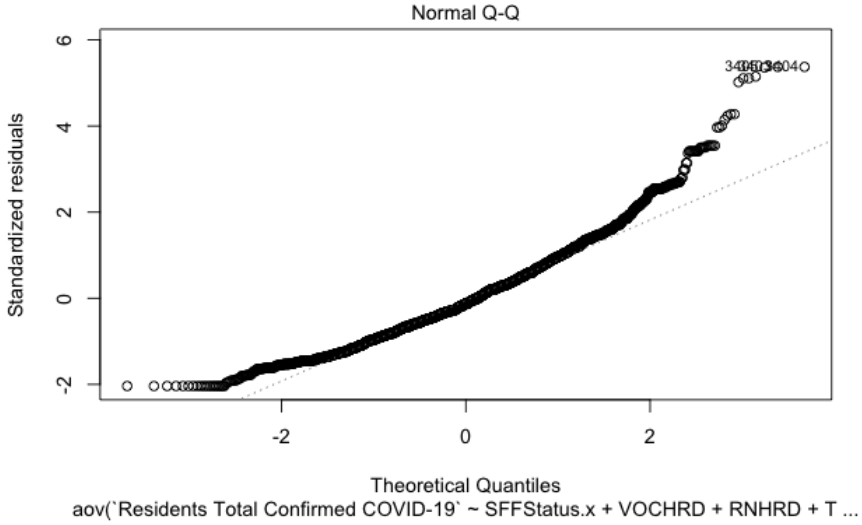
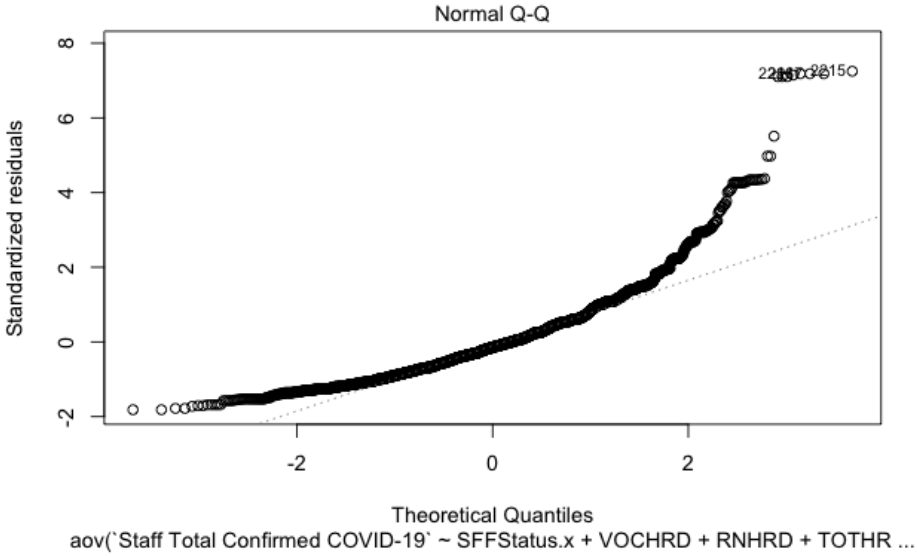
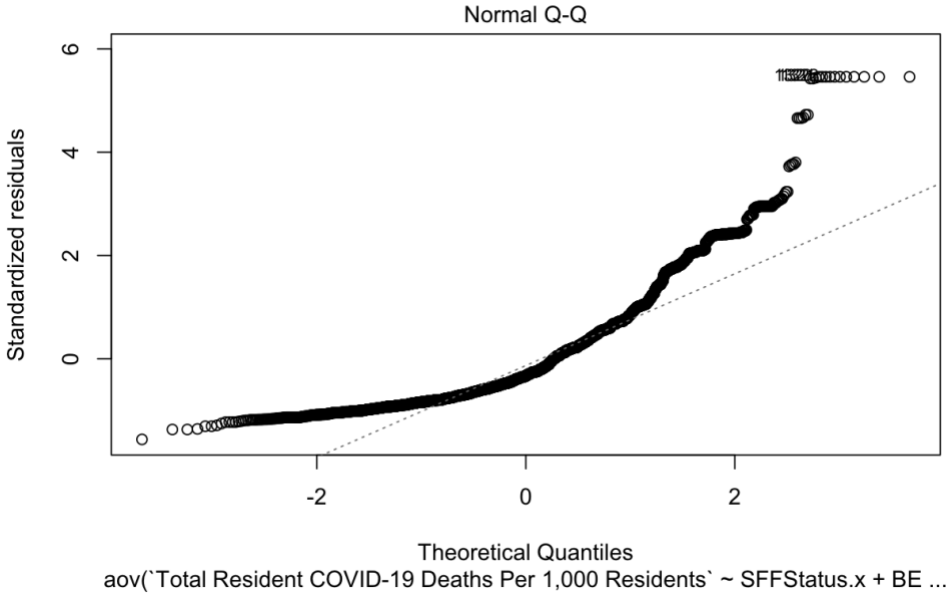
QQ Plot 1: Residents Total COVID-19, with Covariates



QQ Plot 2: Total Staff COVID-19, with Covariates



QQ Plot 3: Resident Case Fatality Rate per 1000



QQ Plot 4: Total Staff Deaths from COVID-19