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Nursing Homes Reported Wide-Ranging Challenges Preparing for Public Health Emergencies and Natural Disasters

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Key Results

Although most nursing homes met Federal emergency preparedness requirements, an estimated 77 percent reported challenges with preparedness activities intended to ensure that resident care needs are met during an emergency. The most frequently cited concerns among nursing homes were ensuring proper staffing during emergencies and transporting residents during evacuations.

In June 2022, an estimated 77 percent of nursing homes located in areas at greater risk for natural disasters reported experiencing challenges with emergency preparedness activities. Administrators reported concerns across seven topic areas, with activities related to ensuring proper staffing during emergencies and transporting residents during evacuations being the most problematic. An estimated 62 percent of nursing homes reported at least one challenge regarding staffing and an estimated 50 percent noted at least one challenge regarding transportation. Other challenges reported by some nursing homes related to securing beds for evacuated residents and planning for infection control and quarantine during emergencies.

We found that even those nursing homes that meet the Federal requirements for emergency preparedness face challenges with critical aspects of emergency preparedness. Specifically, we found that only 24 percent of nursing homes in areas at high risk for disasters received a deficiency for not meeting emergency preparedness requirements established by the Centers for Medicare & Medicaid Services (CMS) during their most recent compliance survey—but an estimated 77 percent

of nursing homes reported at least one challenge with preparedness activities.

We also found that nursing homes reporting challenges had lower community resilience compared to other nursing homes, indicating that availability of community resources may be a factor in nursing homes' experience with preparedness activities. Further, an estimated one in five nursing homes reported difficulties coordinating preparedness activities with multiple community partners.

Why OIG Did This Review

OIG has identified emergency preparedness and nursing home safety as priorities. Nursing home failures to adequately plan for and respond to public health emergencies and natural disasters have led to tragic results. Although such outcomes were not typical, they point to the need to identify the source of breakdowns and to strengthen nursing home preparedness efforts.

How OIG Did This Review

We surveyed a random sample of 199 nursing homes located in geographic areas rated by the Federal Emergency Management Agency (FEMA) as having a very high or relatively high risk for natural hazards. We received responses from 168 nursing homes and projected the results to all nursing homes in the FEMA risk areas. Respondents rated how challenging each of 49 preparedness activities were for their facility. The activities covered seven topic areas related to emergency preparedness capabilities that are important for ensuring safety of residents during emergency events.

RESULTS

Costly and devastating disasters are increasing in the United States.¹ The average number of disasters in which damages exceed \$1 billion dollars has increased from about 7 per year during 2000–2009 to 20 per year from 2020–2022.² These natural disasters and other public health emergency events (hereinafter referred to as emergencies) often have significant implications for nursing homes, given that residents are typically elderly and have medical conditions that make them particularly vulnerable during disruptions in care. Residents and their families rely on nursing homes to plan and execute appropriate procedures during emergency events. However, prior Office of Inspector General (OIG) work found that although nursing homes often met the Centers for Medicare & Medicaid Services (CMS) requirements for emergency planning, many failed to follow their own plans or failed to apply sufficient efforts.^{3, 4}

CMS requires nursing homes that participate in the Medicare and Medicaid programs to meet a broad range of emergency preparedness requirements.⁵ The requirements include (1) having and maintaining an all-hazards emergency preparedness plan that incorporates a facility- and community-based risk assessment, as well as plans for continuity of operations; (2) establishing policies and procedures to be followed in the event of an emergency; (3) maintaining a communication plan to ensure that affected individuals and oversight groups receive needed information; and (4) having a program for training staff and conducting exercises to ensure that the plans will be effective in the event of an emergency. State survey agencies survey nursing homes on an annual basis to assess compliance with these and other Federal requirements.⁶

On the basis of prior OIG work and other research, we identified 49 preparedness activities intended to ensure that nursing homes can meet resident care needs during an emergency. The 49 activities are not delineated in CMS’s emergency preparedness requirements, yet the activities are important steps in developing nursing home response capabilities. These preparedness activities may present challenges to nursing homes even when they meet CMS requirements. We divided the 49 activities across seven topic areas plus an “other” category for activities that did not fit into one of the topic areas.

We analyzed **seven** broad **topic areas** of emergency preparedness:

- 1) Ensuring proper **staffing**
- 2) **Transporting residents** during evacuations
- 3) Maintaining a comprehensive **communication plan**
- 4) **Infection control** and **quarantine**
- 5) **Securing locations** to evacuate residents and staff
- 6) **Collaborating** with community partners
- 7) Managing **medical records**

To identify the prevalence and severity of challenges associated with the preparedness activities, we sent a survey to 199 nursing homes in geographic areas that are at a significant risk for experiencing a natural hazard.⁷ In the survey, issued in June 2022, we asked nursing home administrators to rate each of the 49 activities in terms of how much of a challenge they perceived it to be for their facility. We counted the top two levels—“major challenge” and “moderate challenge”—collectively as “challenges” and determined the prevalence of those challenges. We received responses from 168 nursing homes and projected the results to the 3,097 nursing homes located in areas rated by the Federal Emergency Management Agency (FEMA) as having a very high or relatively high risk for natural hazards. See the Methodology on page 15 for a full description of our analyses and the Appendix on page 18 for point estimates and 95-percent confidence intervals for all projections.

Most nursing homes (77 percent) reported challenges when preparing for emergencies

Most nursing homes (an estimated 77 percent) reported that at least one of the 49 preparedness activities was a “major” or “moderate” challenge for their facility. An additional 20 percent of nursing homes reported at least one minor challenge among the preparedness activities, meaning that nearly all nursing homes located in areas with a very high risk or relatively high risk for natural hazards (an estimated 96 percent) reported challenges in preparing for emergencies.

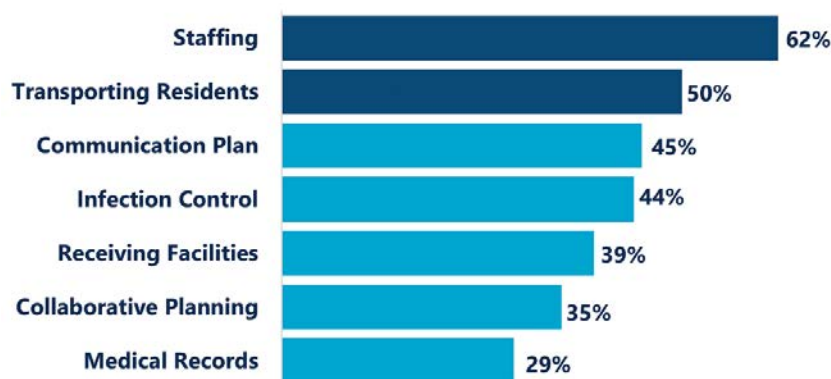
Even those nursing homes that meet the minimum requirements for emergency preparedness set out by CMS face challenges with critical aspects of emergency preparedness. Seventy-seven percent of nursing homes reported at least one preparedness challenge, but only about a quarter of these nursing homes (24 percent) received a deficiency for emergency preparedness in their most recent CMS compliance survey.^{8, 9}

The availability of community resources may factor into how many challenges nursing home faces with preparedness activities. Nursing homes that reported challenges were more likely to be located in communities with lower community resilience, as measured in FEMA’s National Risk Index, compared to other nursing homes.^{10, 11} Community resilience is a measure of how well a community can prepare for natural hazards, adapt to changing conditions, and recover rapidly from any disruptions.¹² Factors that influence this resilience include home ownership, temporary housing availability, access to physicians, high-speed internet infrastructure, flood insurance coverage, and local food supplies.^{13, 14}

Nursing homes reported a wide range of challenges with emergency preparedness activities, most often related to ensuring proper staffing and transporting residents during evacuations

Nursing homes located in areas with a very high risk or relatively high risk for natural hazards reported concerns across the seven topic areas, with preparedness activities related to staffing during emergencies and transporting residents during evacuations being the most problematic. We estimated that, on average, nursing homes that experienced challenges reported having issues with 14 of the 49 preparedness activities. An estimated 62 percent of nursing homes reported at least one challenge related to staffing during emergencies and an estimated 50 percent reported at least one challenge related to transporting residents during evacuations. Preparing for the use of medical records appeared to be the least problematic, with an estimated 29 percent of nursing homes reporting a challenge. (See Exhibit 1.)

Exhibit 1: Nursing homes cited challenges with ensuring proper staffing during emergencies and transporting residents during evacuations most frequently.



Source: OIG analysis of survey data, 2022. See Table A-1 in the Appendix for confidence intervals.

Staffing: More than half of nursing homes reported at least one challenge with their plans to ensure proper staffing during emergencies. An estimated 62 percent of nursing homes reported that at least one staffing activity posed a challenge. The most commonly reported challenges were receiving commitments from enough staff to assist with evacuations and mitigating or addressing staff burnout in the event of an emergency. (See Exhibit 2 on the next page for the percentage of nursing homes that reported a challenge with each staffing-related preparedness activity.)

Nursing homes explained that some of the challenges associated with emergencies were rooted in broader staffing shortages that existed year-round and were compounded by the COVID-19 pandemic. Some nursing homes described ongoing

difficulties with staffing shortages, such as having to rely on external staffing agencies to fill vacancies, which is very expensive. An administrator in one nursing home reported that 75 percent of the facility’s nurses were contracted staff. Current research has also called attention to staffing shortages in nursing homes and has described the problem as pervasive and more widespread than in any other health care setting (e.g., hospitals).^{15, 16, 17} These underlying staffing challenges raise concerns about how nursing homes will be able to effectively respond to an emergency.

“We have a staffing plan, but it would be dependent upon the staff [we have] at the time due to nationwide staffing shortages.”
 – Nursing Home Administrator

Exhibit 2: Nursing homes reported challenges with planning for proper staffing during emergencies.

Staffing Challenges	Percentage of Nursing Homes
Receiving commitments from enough staff to assist with evacuations (e.g., staff to travel with residents to evacuation sites) during an emergency	48%
Mitigating or addressing staff burnout and/or emotional stress during an emergency	48%
Receiving commitments from enough staff to care for residents when sheltering in place during an emergency	42%
Ensuring that staff can take on expanded responsibilities during an emergency that may go beyond their regular duties	35%
Ensuring adequate space and resources to shelter staff and their families during an emergency	33%
Training new and temporary staff on emergency procedures	28%
Ensuring that staff can obtain passes that will allow them to move through roadblocks to get to the facility during an emergency	20%
Ensuring staff participation in emergency preparedness activities (e.g., drills, training)	15%
Nursing homes reporting at least one challenge with staffing	62%

Source: OIG analysis of survey data, 2022. See Table A-1 in the Appendix for confidence intervals.

Transportation: Half of the nursing homes reported at least one challenge with establishing agreements with transportation companies. CMS requires nursing homes to have policies and procedures that identify emergency transportation services that meet the specific needs of their residents, yet nursing homes have repeatedly experienced challenges with transportation companies not meeting their commitments during emergency events.^{18, 19} (See Exhibit 3 on the next page.) These challenges have sometimes resulted in nursing home residents being stranded during an emergency because of a lack of available vehicles and vehicles not having specialized equipment needed for some residents.^{20, 21}

An estimated 50 percent of nursing homes reported transportation-related challenges. The most commonly cited transportation challenge was ensuring that agreements with transportation companies were exclusive so that they would not be “double-booked” with other nearby facilities during emergencies. Nursing homes also reported concerns about whether transportation companies could meet the needs of their residents during an emergency (e.g., buses equipped to transport bedridden residents). One nursing home administrator voiced the concern that community partners such as local emergency managers did not recognize the need to provide special transportation equipment: “I do not think that most outside agencies understand the difficulty that most skilled nursing patients have with ambulation...”

“Transportation is always a major concern. We have contracts for bus service, and pay retainers, but at the last hour often the buses are pulled, and we are told they are not available.”

– Nursing Home Administrator

Exhibit 3: Nursing homes reported challenges establishing agreements with transportation companies.

Transportation Challenges	Percentage of Nursing Homes
Establishing agreements with transportation companies that will be exclusive with the facility, to ensure that they are not “double-booked” with nearby nursing homes	45%
Establishing agreements with transportation companies that meet their potential needs during an emergency (e.g., buses equipped to transport bedridden residents)	41%
Finding transportation companies that are affordable	35%
Ensuring that agreements with transportation companies address potential reimbursement or liability concerns that may arise during an evacuation	35%
Nursing homes reporting at least one challenge with transportation	50%

Source: OIG analysis of survey data, 2022. See Table A-1 in the Appendix for confidence intervals.

The survey results indicate that more than one-third of nursing homes did not have agreements with transportation companies to transport residents during emergencies. Instead, most of these nursing homes reported that they planned to use their own vehicles or rely on residents’ families for transportation. The nursing homes without transportation agreements were more likely to be located in rural areas, suggesting that not having an agreement might be because there are not many (or any) transportation companies in those areas.²² Although all nursing homes are within the geographic boundaries of a health care coalition (HCC), an estimated 27 percent of nursing homes did not participate with their HCC. The HCCs receive grants from the Administration for Strategic Preparedness and Response (ASPR) to improve

emergency preparedness and response among the health care organizations within their boundaries.²³ HCCs can assist with resource coordination and management, such as identifying transportation companies that can help with evacuations.²⁴ We found that nursing homes without transportation agreements were less likely to be participating members of an HCC. Specifically, we found that an estimated 38 percent of the nursing homes without transportation agreements were not participating members compared to an estimated 20 percent of those with transportation agreements.²⁵

Communication Plan: Nearly half of nursing homes reported at least one challenge related to developing and maintaining a comprehensive communication plan.

A comprehensive communication plan that includes community partners, staff, and family members of residents is critical for ensuring continuous care for residents during emergencies. An estimated 45 percent of nursing homes reported difficulty with these plans. The most cited challenge was ensuring that there would be alternative means for communicating during an emergency (e.g., satellite phone) in the event of phone/email service disruption (see Exhibit 4 on the next page). Many nursing homes also had problems obtaining advanced equipment, such as an automated emergency notification system for contacting interested parties (e.g., staff, families, community partners). Additionally, a small percentage of nursing homes reported challenges with maintaining up-to-date emergency contact information with community partners. Nursing homes with these emergency contact challenges were more likely to be affiliated with a chain or network compared to nursing homes that did not report a challenge.²⁶

Exhibit 4: Nursing homes reported challenges with developing and maintaining a communication plan for use in an emergency.

Communication Plan Challenges	Percentage of Nursing Homes
Ensuring alternative means for communicating during an emergency (e.g., satellite phone) in the event of telephone/email service disruption	32%
Obtaining an automated emergency notification system to share information with interested parties during emergencies (e.g., staff, families, community partners)	23%
Maintaining clear procedures for communicating with Federal, State, or local incident command systems during emergencies	18%
Maintaining clear procedures for communicating with State or local authorities about mandatory evacuations	16%
Maintaining up-to-date contact information for staff, families, residents, residents' physicians, or volunteers	14%
Maintaining up-to-date emergency contact information for community partners	12%
Keeping emergency chain of command up to date	6%
Nursing homes reporting at least one challenge with communication plan	45%

Source: OIG analysis of survey data, 2022. See Table A-1 in the Appendix for confidence intervals.

Infection Control: Nearly half of nursing homes reported at least one challenge planning for infection control and quarantine during emergencies. The COVID-19 pandemic brought unprecedented infection control challenges for nursing homes. A recent OIG study found that more than 1,300 nursing homes had an infection rate of 75 percent or higher during COVID-19 surges in 2020.²⁷ Not surprisingly, in this survey, an estimated 44 percent of nursing homes reported difficulty developing infection control and quarantine protocols for emergencies. More than one-third of nursing homes (an estimated 36 percent) reported challenges with preparing to isolate contagious residents during transport or at a receiving facility (see Exhibit 5 on the next page). The next most challenging infection control activity was preparing to track resident exposures to contagious infections that occur during emergencies.

Exhibit 5: Nursing homes reported challenges planning for infection control and quarantine during emergencies.

Infection Control Challenges	Percentage of Nursing Homes
Isolating contagious patients during transport or at receiving facilities during emergencies	36%
Tracking resident exposures to contagious infections that occur during emergencies	27%
Maintaining sterile environments to perform patient care and minor procedures during emergencies	25%
Ensuring sufficient stockpiles of supplies to maintain infection control practices during emergencies (e.g., personal protective equipment (PPE), disinfectants)	16%
Screening and testing residents and staff for COVID-19 or other infectious diseases during emergencies	13%
Ensuring that staff are trained and knowledgeable about infection control and quarantine protocols during emergencies (e.g., use of PPE)	11%
Nursing homes reporting at least one challenge with infection control	44%

Source: OIG analysis of survey data, 2022. See Table A-1 in the Appendix for confidence intervals.

Receiving Facilities: More than one-third of nursing homes reported at least one challenge with securing locations to evacuate residents and staff. Some nursing homes have struggled to provide adequate care for residents at the receiving facilities to which residents and staff are evacuated. In September 2021, at least five nursing home residents in Louisiana died following a botched evacuation for Hurricane Ida, in which residents were evacuated to an overcrowded warehouse later deemed unsafe and unsanitary.²⁸ Several years earlier in 2005, following Hurricane Katrina, nearly 6 percent of nursing homes that evacuated had residents who died from causes related to the relocation.²⁹

An estimated 39 percent of nursing homes reported challenges establishing agreements with other facilities to temporarily house their residents in the event of an evacuation. The most cited challenge was ensuring that agreements with receiving facilities would meet their potential needs during an emergency. (See Exhibit 6 on the next page.) For example, receiving facilities need to have the capacity to accept the number of residents being relocated and have the capability to provide high-acuity care in some cases. Many nursing homes also faced challenges with ensuring reimbursement for the care of evacuated residents. Smaller nursing homes were more likely to report certain challenges establishing agreements with receiving facilities. For example, smaller nursing homes had more difficulty finding options for receiving facilities located within reasonable driving distances.³⁰ Smaller nursing homes also had more challenges ensuring that their agreements would be exclusive so that the receiving facility would not accept evacuated residents from other nearby nursing homes, which could compromise their ability to meet the needs of the evacuated facilities.³¹

Exhibit 6: Nursing homes reported challenges with securing locations to evacuate residents and staff.

Receiving Facilities Challenges	Percentage of Nursing Homes
Ensuring that agreements with receiving facilities meet the nursing home's potential needs during an emergency	29%
Ensuring reimbursement for the care of evacuated residents (e.g., Medicaid payments across State lines)	25%
Ensuring that agreements with receiving facilities will be exclusive to the nursing home during an emergency, so they are not "double-booked" with other nearby nursing homes	23%
Paying for expensive retainer fees at receiving facilities	18%
Establishing that agreements with multiple facilities to ensure accommodations are available for all residents during an evacuation	17%
Establishing agreements with receiving facilities located within a reasonable driving distance	17%
Nursing homes reporting at least one challenge with receiving facilities	39%

Source: OIG analysis of survey data, 2022. See Table A-1 in the Appendix for confidence intervals.

Collaborative Planning: More than one-third of nursing homes reported at least one challenge collaborating with community partners to plan for emergencies.

A smaller percentage of nursing homes (an estimated 35 percent) reported challenges with collaborative planning and raised a number of concerns. The most common challenge was infrequent collaboration on community-wide activities, such as drills. (See Exhibit 7 on the next page.) CMS requires nursing homes to conduct exercises twice per year that test their emergency plan, including participation in at least one full-scale exercise that is community-based.³² When a community-based exercise is not available, CMS allows nursing homes to conduct a facility-based exercise to meet this requirement.³³ Administrators from several nursing homes explained that coordinating with community partners for exercises was difficult and that community partners did not include their facility or residents in their plan. Additionally, some administrators explained that their nursing homes lacked the staff and time to adequately build and nurture their relationships with community partners.

*"Most community partners do not understand long-term care; therefore, internal emergency needs are not recognized when doing community drills. They are usually for emergency medical services and acute care hospitals."
– Nursing Home Administrator*

Other challenges reported by some administrators included the perception that community partners would not prioritize or fully recognize the needs of their facility during emergencies. The types of services that raised the most concern for not being

prioritized included supplemental staffing and volunteers (reported by an estimated 20 percent of nursing homes) and restoration of water supply in the event of a disruption (reported by an estimated 13 percent of nursing homes). Nursing homes that perceived that their facility would not be prioritized, or their needs would not be fully recognized, were more likely to have lower community resilience scores, which suggests that their communities are less equipped to prepare for and recover quickly from disasters.^{34, 35}

Exhibit 7: Nursing homes reported challenges with collaborating with community partners to plan for emergencies.

Collaborative Planning Challenges	Percentage of Nursing Homes
Infrequent collaboration on community-wide emergency preparedness activities (e.g., risk assessments)	20%
Not having adequate internal resources to develop strong collaborative relationships with community partners (e.g., staff, time)	20%
Community partners not including the nursing home in community-based drills	18%
Community partners not fully recognizing the emergency preparedness needs of the nursing home	16%
Community partners not prioritizing nursing homes during emergencies	16%
Community emergency preparedness activities not focusing on issues relevant to the nursing home’s risk assessment	12%
Nursing homes reporting at least one challenge with collaborative planning	35%

Source: OIG analysis of survey data, 2022. See Table A-1 in the Appendix for confidence intervals.

An estimated one in five nursing homes reported difficulties coordinating preparedness activities with multiple community partners. CMS requires nursing homes to have a process for collaborating with a broad range of stakeholders, including local health care systems and emergency preparedness officials.^{36, 37} The most frequently cited partners with which nursing homes had difficulty coordinating were fire department and/or ambulance followed by local county government and local emergency management. The next most difficult entity to coordinate with, according to nursing homes, was an HCC.

Medical Records: Nearly one-third of nursing homes reported at least one challenge related to preparing for use of medical records during emergencies.

As with collaborative planning, nursing homes reported fewer challenges associated with managing medical records. A prior OIG study found that health care facilities struggled to access medical records of evacuated patients during emergencies.³⁸ In this survey, 29 percent of nursing homes reported that medical record access was a problem. The most cited challenges were ensuring that “last-minute” instructions for resident care and medication are updated during or just before an emergency, and

ensuring that electronic health records can be accessed by receiving facilities. (See Exhibit 8.)

Although fewer nursing homes reported that medical records access was a challenge, an estimated 43 percent of nursing homes reported that it would be helpful if the Federal government established incentives and legal pathways for sharing medical records across health care networks. Access to resident medical records at evacuation sites, including the resident’s current ailments and a list of medications, is necessary for ensuring that residents receive appropriate care during an emergency.

Exhibit 8: Nursing homes reported challenges preparing for the use of medical records during emergencies.

Medical Records Challenges	Percentage of Nursing Homes
Ensuring that “last-minute” instructions for resident care and medication are updated during or prior to an emergency	17%
Ensuring that electronic health records can be accessed by receiving facilities	15%
Ensuring that medical records are available onsite during a power outage	14%
Ensuring that medical records are protected and remain confidential during an evacuation	12%
Ensuring that medical records can be transported with residents to the evacuation site	10%
Nursing homes reporting at least one challenge with medical records	29%

Source: OIG analysis of survey data, 2022. See Table A-1 in the Appendix for confidence intervals.

Other Challenges: An estimated 38 percent of nursing homes reported other challenges with preparing for emergencies. We asked nursing homes about challenges associated with several preparedness activities that did not fit within the seven topic areas. Although this grouping of activities affected a relatively small percentage of nursing homes, they represent additional concerns that should be considered in emergency planning. The most commonly cited challenge among these activities was establishing procedures to address physical and mental trauma of residents during emergencies. (See Exhibit 9 on the next page.) Prior research has shown that relocating nursing home residents, such as during evacuations, puts residents at risk of negative health outcomes and even death.³⁹ In addition, an estimated 15 percent of nursing homes identified “prioritizing planning activities in accordance with [their] risk assessments” as a challenge.

Exhibit 9: Nursing homes reported other challenges preparing for emergencies.

Other Challenges	Percentage of Nursing Homes
Establishing procedures to address physical or mental trauma of residents during emergencies	23%
Prioritizing planning activities for addressing the range of emergency events identified by the risk assessment	15%
Dedicating internal resources to emergency planning activities	14%
Receiving timely reviews and approval of an emergency/evacuation plan to meet State or local requirements	14%
Establishing clear criteria for the decision to evacuate versus shelter in place during an emergency	13%
Developing policies and procedures for tracking the location of residents and staff following an evacuation	10%
Maintaining emergency power systems year-round (e.g., generators)	10%
Nursing homes reporting at least one “other” challenge	38%

Source: OIG analysis of survey data, 2022. See Table A-1 in the Appendix for point estimates and confidence intervals.

CONCLUSION

Natural disasters and public health emergencies, such as the recent COVID-19 pandemic, have had a profound effect on nursing homes and have underscored the need to address the underlying challenges that can hamper emergency preparedness. Prior OIG reports found that nursing homes often faced disasters without adequate staffing, supplies, and transportation, and with emergency plans that were impractical and out of date.⁴⁰ In September 2021, at least five nursing home residents in Louisiana died following a botched evacuation for Hurricane Ida, in which residents were evacuated to an overcrowded warehouse later deemed unsafe and unsanitary.⁴¹ A more recent series of OIG reports found that nursing homes faced considerable challenges responding to the COVID-19 pandemic, including nearly 1,000 additional deaths per day for Medicare beneficiaries during April 2020 compared to April 2019 owing to the pandemic.^{42, 43}

The findings in this report align with prior OIG work and highlight the vulnerabilities in nursing homes' preparedness efforts that may not always be identified during CMS's compliance surveys. We found that the challenges related to ensuring appropriate staffing during emergencies and transporting residents during evacuations ranked as the most problematic issues for nursing homes.

Staffing shortages, in particular, have affected nursing home emergency preparedness in recent years, and other OIG reports have identified several opportunities for CMS to assist nursing homes with staffing challenges. We believe that CMS's efforts to implement these existing OIG recommendations will also help address the emergency preparedness concerns we identified. These recommendations include to (1) re-examine current nursing staff requirements and revise them as necessary; and (2) target nursing homes in most need of infection control intervention, and provide enhanced oversight and technical assistance to these facilities as appropriate.⁴⁴ Additional efforts to improve staffing in nursing homes, such as those included in the White House 2022 plan: Protecting Seniors by Improving Safety and Quality of Care in the Nation's Nursing Homes, may also be beneficial to improving emergency preparedness.

Additionally, many nursing homes reported that they are not participating members in their local HCCs, organizations that could assist with coordination of community resources such as transportation during an emergency response. Communities depend on many of the same resources during emergencies, and collaborative planning could help nursing homes identify potential gaps and issues with their emergency plan, such as whether transportation companies are "double-booked" with other facilities.

METHODOLOGY

This data brief is based on an electronic survey of nursing home administrators or staff responsible for emergency preparedness. We conducted the survey during June–October 2022. In the survey, we asked nursing homes about a wide range of challenges that limit their ability to ensure that resident care needs are met during emergencies. We did not assess nursing homes' compliance with Federal emergency preparedness requirements or the sufficiency of nursing homes' overall emergency preparedness.

In addition to the survey, we used the following data sources: (1) FEMA's National Risk Index (NRI); (2) CMS's Certification and Survey Provider Enhanced Reporting (CASPER) database; (3) the U.S. Department of Agriculture's Rural-Urban Commuting Area database; and (4) CMS's Provider Data Catalog.

Sample

We used CMS's CASPER database and FEMA's NRI to identify Medicare-certified nursing homes with a very high risk or relatively high risk for natural hazards. CASPER provides current data on all Medicare and/or Medicaid certified provider organizations in the U.S., totaling more than 15,000 nursing homes. FEMA created the NRI to provide emergency planners and managers at the Federal, State, regional, and local levels better information about the relative risk for 18 natural hazards in each U.S. County and census tract.⁴⁵ We selected a random sample of 200 nursing homes from the 3,097 Medicare certified nursing homes in census tracts designated as a very high risk or relatively high risk according to FEMA's NRI. One nursing home in our sample was no longer in business, which reduced our sample to 199 nursing homes. We received responses from 168 nursing homes for a response rate of 84 percent.

Data Collection

Survey. The survey consisted largely of closed-ended questions, using Likert scales and multiple selection lists (i.e., "select all that apply"). The survey also included open-ended questions which allowed nursing homes to provide additional details about their responses. Additionally, we asked nursing homes to provide facility-specific information, such as whether they had experienced an emergency (e.g., hurricane, ice storm, tornado) during the past 3 years; whether they were a participating member of a health care coalition (HCC); and whether they were part of a chain or network.

We identified 49 activities that can limit nursing homes' ability to fully prepare for emergencies. To develop the list, we reviewed prior OIG studies, academic journal articles, and news reports. We also interviewed several nursing home stakeholders,

including a county director of public health emergency preparedness, a nursing home advocate, and representatives from an HCC. We did not seek to assess nursing home compliance with CMS’s emergency preparedness requirements, nor did we assess the sufficiency of nursing homes’ overall emergency preparedness. Instead, we focused on activities that posed problems for nursing homes in preparing for emergencies. In the survey, we grouped the 49 preparedness activities across 7 topic areas and an “other” category for activities that did not fit into the 7 topic areas. The seven topic areas included transporting residents during an evacuation; ensuring proper staffing; securing locations to evacuate residents and staff; infection control and quarantine; maintaining a comprehensive communication plan; collaborating with community partners; and managing medical records.

To ensure a high response rate, we contacted nursing homes prior to sending the survey to identify the most appropriate respondent, obtain their email address, explain the purpose of the survey, and answer any questions they had. We also sent automated reminders and followed up by telephone with the nursing home administrators who did not respond.

Nursing Home and Community Characteristics. We compared nursing home responses regarding the challenges to a variety of facility characteristics. We obtained data about the sampled nursing homes from other sources. We used CMS’s CASPER database to identify several nursing home characteristics such as bed count and geographic location. We used the U.S. Department of Agriculture’s Rural-Urban Commuting Area database to identify the percentage of the population in a census tract that is rural.

Nursing home respondents were predominantly mid-size facilities (with an estimated 74 percent having between 51 and 150 beds). Most (an estimated 73 percent) were participating members of HCCs and more than half (an estimated 61 percent) experienced an emergency during the previous 3 years. The nursing home respondents represented both rural and urban areas and over half were part of a chain or network.

Emergency Preparedness Deficiencies. We captured survey deficiency data from CMS’s publicly available Provider Data Catalog. We used the Survey Summary dataset from February 2023 to examine the three most recent compliance survey results for the 3,097 nursing homes in our sampling frame located in areas that FEMA designated as very high risk or relatively high risk for natural hazards.⁴⁶ The dataset did not have the most recent survey results for 32 of the 3,097 nursing homes.

Analysis

We analyzed survey responses to identify the prevalence and severity of challenges associated with the 49 activities that can facilitate an effective emergency response. We asked nursing homes to rate the challenge from the following five options: (1) major challenge, (2) moderate challenge, (3) minor challenge, (4) not a challenge, and (5) not applicable/not attempted. We counted only the top two levels—“major

challenge” and “moderate challenge”—collectively as a “challenge” for determining the prevalence of challenges. This allowed us to focus the analysis on the activities that nursing homes perceived to be the most challenging. Of the 168 nursing homes that responded to our survey, 129 reported at least one challenge and, on average, they reported having challenges with 14 of the 49 activities. We projected our sample of 168 nursing homes to the 3,097 nursing homes located in areas rated by FEMA as having a very high or relatively high risk for experiencing natural hazards. We provided point estimates and 95-percent confidence intervals for all projections (see the Appendix).

We then ranked the seven topics by the percentage of nursing homes that rated any activity in that topic area as a challenge. We also analyzed nursing homes’ responses to the open-ended and multiple selection list survey questions to gain further insights into the breadth and severity of challenges.

We evaluated nursing home characteristics to determine whether nursing homes that reported specific challenges in their emergency preparedness efforts shared any common characteristics. For nursing home characteristics with continuous variables (e.g., bed count), we performed t-tests to identify statistically significant differences in the proportion of nursing homes that reported challenges. For nursing home characteristics with categorical variables (e.g., membership in an HCC), we used Fisher’s Exact tests to determine if there were non-random associations between the characteristic and whether the nursing home reported a particular challenge. (See the Appendix for results of statistical tests.)

Limitations

This study relies on self-reported data provided by nursing home administrators or staff responsible for emergency preparedness. Many of the survey questions are about the respondents’ perception of how challenging an activity was for their facility. The survey responses from these nursing homes cannot be extrapolated to nursing homes located outside of these geographic areas. The findings only pertain to nursing homes in geographic locations rated as a very high risk or relatively high risk for natural hazards.

Standards

We conducted this study in accordance with the *Quality Standards for Inspection and Evaluation* issued by the Council of the Inspectors General on Integrity and Efficiency.

APPENDIX

Appendix: Nursing Home Responses to OIG Survey Questions and Associated Comparison Tests

The tables below provide point estimates and confidence intervals for all projections included in the body of the report. The tables also include p-values for our tests of statistical significance. “Challenge” refers to survey responses that indicated a “major challenge” or “moderate challenge” and does not include responses that indicated a “minor challenge.”

Table A-1: Point estimates and confidence intervals for the percentage of nursing homes that reported a challenge with each of the 49 preparedness activities

Description	Point Estimate (n=168)	95% Confidence Interval
Staffing Challenges		
Receiving commitments from enough staff to assist with evacuations (e.g., staff to travel with residents to evacuation sites) during an emergency	48.2%	40.4-56.0%
Mitigating or addressing staff burnout and/or emotional stress during an emergency	47.6%	39.9-55.4%
Receiving commitments from enough staff to care for residents when sheltering in place during an emergency	42.2%	34.7-50.1%
Ensuring that staff can take on expanded responsibilities during an emergency that may go beyond their regular duties	34.5%	27.4-42.2%
Ensuring adequate space and resources to shelter staff and families during an emergency	33.3%	26.3-41.0%
Training new and temporary staff on emergency procedures	28.0%	21.3-35.4%
Ensuring that staff can obtain passes that will allow them to move through roadblocks to get to the facility during an emergency	20.2%	14.4-27.1%
Ensuring staff participation in emergency preparedness activities (e.g., drills, training)	15.5%	10.4-21.9%
Nursing homes reporting at least one challenge with staffing	61.9%	54.1-69.3%
Transportation Challenges		
Establishing agreements with transportation companies that will be exclusive with the facility, to ensure that they are not “double-booked” with nearby nursing homes	44.6%	37.0-52.5%
Establishing agreements with transportation companies that meet their potential needs during an emergency (e.g., buses equipped to transport bedridden residents)	41.1%	33.6-48.9%
Finding transportation companies that are affordable	35.1%	27.9-42.9%
Ensuring that agreements with transportation companies address potential reimbursement or liability concerns that may arise during an evacuation	35.1%	27.9-42.9%
Nursing homes reporting at least one challenge with transportation	50.0%	42.2-57.8%

Communication Plan Challenges		
Ensuring alternative means for communicating during an emergency (e.g., satellite phone) in the event of telephone/email service disruption	32.1%	25.2-39.8%
Obtaining an automated emergency notification system to share information with interested parties during emergencies (e.g., staff, families, community partners)	23.2%	17.1-30.3%
Maintaining clear procedures for communicating with Federal, State, or local incident command systems during emergencies	17.9%	12.4-24.5%
Maintaining clear procedures for communicating with State or local authorities about mandatory evacuations	16.1%	10.9-22.5%
Maintaining up-to-date contact information for staff, families, residents, residents' physicians, or volunteers	14.3%	9.4-20.5%
Maintaining up-to-date emergency contact information for community partners	11.9%	7.4-17.8%
Keeping emergency chain of command up to date	6.0%	2.9-10.7%
Nursing homes reporting at least one challenge with communication plan	45.2%	37.6-53.1%
Infection Control Challenges		
Isolating contagious patients during transport or at receiving facilities during emergencies	36.3%	29.0-44.1%
Tracking resident exposures to contagious infections that occur during emergencies	27.4%	20.8-34.8%
Maintaining sterile environments to perform patient care and minor procedures during emergencies	25.0%	18.7-32.3%
Ensuring sufficient stockpiles of supplies to maintain infection control practices during emergencies (e.g., personal protective equipment (PPE), disinfectants)	16.1%	10.9-22.5%
Screening and testing residents and staff for COVID-19 or other infectious diseases during emergencies	13.1%	8.4-19.2%
Ensuring that staff are trained and knowledgeable about infection control and quarantine protocols during emergencies (e.g., use of PPE)	10.7%	6.5-16.4%
Nursing homes reporting at least one challenge with infection control	44.1%	36.4-51.9%
Receiving Facilities Challenges		
Ensuring that agreements with receiving facilities meet the nursing home's potential needs during an emergency	28.6%	21.9-36.0%
Ensuring reimbursement for the care of evacuated residents (e.g., Medicaid payments across State lines)	25.0%	18.7-32.3%
Ensuring that agreements with receiving facilities will be exclusive to the nursing home during an emergency, so they are not "double-booked" with other nearby nursing homes	23.2%	17.1-30.3%
Paying for expensive retainer fees at receiving facilities	18.5%	12.9-25.2%
Establishing that agreements with multiple facilities to ensure accommodations are available for all residents during an evacuation	17.3%	11.9-23.8%
Establishing agreements with receiving facilities located within a reasonable driving distance	16.7%	11.4-23.2%
Nursing homes reporting at least one challenge with receiving facilities	39.3%	31.9-47.1%

Collaborative Planning Challenges		
Infrequent collaboration on community-wide emergency preparedness activities (e.g., risk assessments)	20.2%	14.4-27.1%
Not having adequate internal resources to develop strong collaborative relationships with community partners (e.g., staff, time)	19.6%	13.9-26.5%
Community partners not including the nursing home in community-based drills	17.9%	12.4-24.5%
Community partners not fully recognizing the emergency preparedness needs of the nursing home	16.1%	10.9-22.5%
Community partners not prioritizing nursing homes during emergencies	16.1%	10.9-22.5%
Community emergency preparedness activities not focusing on issues relevant to the nursing home's risk assessment	11.9%	7.4-17.8%
Nursing homes reporting at least one challenge with collaborative planning	35.1%	27.9-42.9%
Medical Records Challenges		
Ensuring that "last-minute" instructions for resident care and medication are updated during or prior to an emergency	17.3%	11.9 -23.8%
Ensuring that electronic health records can be accessed by receiving facilities	14.9%	9.9-21.2%
Ensuring that medical records are available onsite during a power outage	13.7%	8.9-19.8%
Ensuring that medical records are protected and remain confidential during an evacuation	11.9%	7.4-17.8%
Ensuring that medical records can be transported with residents to the evacuation site	10.1%	6.0-15.7%
Nursing homes reporting at least one challenge with medical records	29.2%	22.4-36.7%
Other Challenges		
Establishing procedures to address physical or mental trauma of residents during emergencies	23.2%	17.1-30.3%
Prioritizing planning activities for addressing the range of emergency events identified by the risk assessment	15.5%	10.4-21.9%
Dedicating internal resources to emergency planning activities	14.3%	9.4-20.5%
Receiving timely reviews and approval of an emergency/evacuation plan to meet State or local requirements	14.3%	9.4-20.5%
Establishing clear criteria for the decision to evacuate versus shelter in place during an emergency	12.5%	7.9-18.5%
Developing policies and procedures for tracking the location of residents and staff following an evacuation	10.1%	6.0-15.7%
Maintaining emergency power systems year-round (e.g., generators)	10.1%	6.0-15.7%
Nursing homes reporting at least one "other" challenge	37.5%	30.2-45.3%
Nursing homes reporting at least one challenge with any of the 49 preparedness activities		
Challenge ("major" or "moderate")	76.8%	69.7-82.9%
Challenge ("major," "moderate," or "minor")	96.4%	92.4-98.7%

Table A-2: Point estimates, confidence intervals, and p-values for comparisons that were statistically significant using a t-test

Description	Point Estimate	95% Confidence Interval (p-value)
Nursing homes that reported any challenge with emergency preparedness were more likely to have lower community resilience scores. (n=168)		
Community resilience		
Reported any challenge	54.2	53.8–54.6
Did not report a challenge	55.1	54.4–55.8 (p=0.0274)
Nursing homes that did not have an agreement with a transportation company to evacuate residents during an emergency were located in more rural areas. (n=168)		
Rural percentage		
Had agreement with transportation company	27.4%	19.9-35.0%
Did not have agreement with transportation company	44.8%	34.5-55.0% (p=0.0075)
Nursing homes that reported a challenge with finding receiving facilities within a reasonable driving distance were more likely to have lower bed counts. (n=168)		
Bed count		
Challenge finding nearby receiving facilities	74.6	58.3-90.8
Not a challenge finding nearby receiving facilities	101.9	93.4-110.4 (p=0.0040)
Nursing homes that reported a challenge ensuring that agreements with receiving facilities would be exclusive, so they are not “double-booked” with other facilities, were more likely to have lower bed counts. (n=168)		
Bed count		
Challenge with agreements	78.3	65.5-91.0
Not a challenge with agreements	103.1	94.1-112.2 (p=0.0020)
Nursing homes that reported a challenge with community partners not prioritizing their facility during emergencies had lower community resilience scores. (n=168)		
Community resilience		
Challenge with prioritizing their facility	53.4	52.8-54.1
Not a challenge with prioritizing their facility	54.9	54.2-55.0 (p=0.0049)

Nursing homes that reported a challenge with community partners not fully recognizing their facility's emergency preparedness needs had lower community resilience scores. (n=168)

	Community resilience	
Challenge with community partners recognizing their needs	53.2	52.5-53.8
Not a challenge with community partners recognizing their needs	54.6	54.2-55.0
		(p=0.0003)

Table A-3: Point estimates, confidence intervals, and p-values for comparisons that were statistically significant using Fisher's Exact tests

Description	Point Estimate	95% Confidence Interval (p-value)*
Nursing homes without an agreement with a transportation company to evacuate residents during an emergency were less likely to be participating members in a health care coalition (HCC). (n=168)		
	Percentage not member of an HCC	
Had agreement with transportation company	19.6%	12.4-28.7%
Had no agreement with transportation company	37.9%	26.2-50.7%
		(p=0.0123)
Nursing homes that were affiliated with a corporate chain or health care network were more likely to report a challenge with maintaining current emergency contact information for community partners. (n=153)**		
	Percentage affiliated with a chain	
Challenge maintaining contact information	85.0%	62.1-96.8%
Not a challenge maintaining contact information	59.4%	50.5-67.8%
		(p= 0.0278)

*We used a binominal approximation to obtain confidence intervals.

**We excluded 15 "Do not know" responses from this analysis.

Table A-4: Point estimates and confidence intervals for selected nursing home characteristics and survey responses not included in the 49 preparedness activities

Description	Point Estimate	95% Confidence Interval
Select Nursing Home Characteristics		
Bed count (n=168)		
< 50	15.5%	10.4-21.9%
50 to 150	74.4%	67.1-80.8%
> 150	10.1%	6.0-15.7%
Participating member in HCC (n=123)	73.2%	65.9-79.7%
Experienced emergency in prior 3 years (n=103)	61.3%	53.5-68.7%
How concerned are you that your facility will not be prioritized for supplemental staffing and volunteers during an emergency? (n=168)		
Concerned*	20.2%	14.4-27.1%
Not concerned	79.8%	72.9-85.6%
How concerned are you that your facility will not be prioritized for restoration of water supply during an emergency? (n=168)		
Concerned*	12.5%	7.9-18.5%
Not concerned	87.5%	81.5-92.1%
Do you have an agreement with a transportation company to transport residents during an emergency? (n=168)		
Have an agreement	60.7%	52.9-68.2%
Do not have an agreement	39.3%	31.9-47.1%
Can the Federal government better assist your facility in preparing for and responding to an emergency by establishing legal pathways for sharing medical records across health care? (n=168)		
Yes	43.5%	35.8-51.3%
Did not respond	56.6%	48.7-64.2%

*We did not count nursing homes that reported being “a little concerned” as “concerned” for this analysis.

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ENDNOTES

¹ National Oceanic and Atmospheric Administration, National Centers for Environmental Information, "U.S. Billion-Dollar Weather and Climate Disasters (2023)." Accessed at [Billion-Dollar Weather and Climate Disasters | National Centers for Environmental Information \(NCEI\) \(noaa.gov\)](#) on April 3, 2023.

² *Ibid.*

³ OIG, *Nursing Home Emergency Preparedness and Response During Recent Hurricanes*, OEI-06-06-00020, August 2006.

⁴ OIG, *Gaps Continue To Exist in Nursing Home Emergency Preparedness and Response During Disasters: 2007-2010*, OEI-06-09-00270, April 2012.

⁵ 42 CFR § 483.73.

⁶ Sections 1819(g)(2)(A) and 1919(g)(2)(A) of the Social Security Act; 42 CFR §§ 488.308 and 488.330.

⁷ The risk of experiencing a natural hazard was based on FEMA's National Risk Index. Natural hazards are environmental phenomena (e.g., hurricanes, tornadoes) that can negatively impact communities and the environment. A natural disaster occurs when a natural hazard causes widespread damage to a community. See FEMA, "Natural Hazards." Accessed at <https://hazards.fema.gov/nri/natural-hazards> on March 2, 2022.

⁸ The 24-percent figure for nursing homes that received an emergency preparedness deficiency is based on OIG's analysis of CMS's Survey Summary of the 3,097 nursing homes from our sampling frame. Thirty-two nursing homes were missing from this analysis.

⁹ Prior OIG work identified 1,139 areas of noncompliance with CMS emergency preparedness requirements at 150 nursing homes. OIG, *Audits of Nursing Home Life Safety and Emergency Preparedness in Eight States Identified Noncompliance With Federal Requirements and Opportunities for the Centers for Medicare & Medicaid Services to Improve Resident, Visitor, and Staff Safety*, A-02-21-010, July 2022.

¹⁰ Using a t-test, we found a statistically significant difference in the average community resilience scores between nursing homes that did not report any challenges and those that did. This test was conducted with a 95-percent level of confidence and yielded a p-value of 0.0253. See Table A-2 in the Appendix for the point estimate and confidence intervals.

¹¹ The measure of community resilience is based on FEMA's National Risk Index. See FEMA, "Community Resilience." Accessed at <https://hazards.fema.gov/nri/community-resilience> on March 30, 2023.

¹² National Institute of Standards and Technology (NIST), *Community Resilience*, 2020. Accessed at <https://www.nist.gov/community-resilience> on March 2, 2022.

¹³ FEMA, "Community Resilience." Accessed at <https://hazards.fema.gov/nri/community-resilience> on March 30, 2023.

¹⁴ Hazards Vulnerability & Resilience Institute, "Baseline Resilience Indicators for a Community." Accessed at https://www.sc.edu/study/colleges_schools/artsandsciences/centers_and_institutes/hvri/data_and_resources/bric/index.php on March 30, 2023.

¹⁵ American Health Care Association and National Center for Assisted Living, "Historic Staffing Shortages Continue To Force Nursing Homes To Limit New Admissions, Creating Bottlenecks at Hospitals and Reducing Access To Care For Seniors," Press Release, July 14, 2022. Accessed at <https://www.ahcanal.org/News-and-Communications/Press-Releases/Pages/Historic->

[Staffing-Shortages-Continue-To-Force-Nursing-Homes-To-Limit-New-Admissions,-Creating-Bottlenecks-at-Hospitals-and-.aspx](#) on January 27, 2023.

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¹⁸ 42 CFR § 483.73(b)(3).

¹⁹ CMS, "Updated Guidance for Emergency Preparedness – Appendix Z of the State Operations Manual," March 2021, p. 50. Accessed at <https://www.cms.gov/files/document/qso-21-15-all.pdf> on January 27, 2023.

²⁰ David Dosa, et al., "To Evacuate or Not to Evacuate: Lessons Learned From Louisiana Nursing Home Administrators Following Hurricanes Katrina and Rita," *Journal of American Medical Directors Association*, Vol. 8, Issue 3, March 2007. Accessed at [https://www.jamda.com/article/S1525-8610\(06\)00584-6/fulltext](https://www.jamda.com/article/S1525-8610(06)00584-6/fulltext) on February 13, 2023.

²¹ Gary Blanchard and David Dosa, "A Comparison of the Nursing Home Evacuation Experience Between Hurricanes Katrina (2005) and Gustav (2008)," *Journal of American Medical Directors Association*, Vol. 10, Issue 9, November 2009. Accessed at [https://www.jamda.com/article/S1525-8610\(09\)00247-3/fulltext](https://www.jamda.com/article/S1525-8610(09)00247-3/fulltext) on February 13, 2023.

²² Using a t-test, we found a statistically significant difference in the average percentage of the population that was rural between nursing homes with transportation agreements and those without transportation agreements. This test was conducted with a 95-percent level of confidence and yielded a p-value of 0.075. See Table A-2 in the Appendix for the point estimate and confidence intervals.

²³ ASPR, *Hospital Preparedness Program (HPP)*. Accessed at <https://aspr.hhs.gov/HealthCareReadiness/HPP/Pages/default.aspx> on May 1, 2023.

²⁴ *Ibid.*

²⁵ Using a Fisher's Exact test, we found a statistically significant difference between nursing homes that did not have a transportation agreement and nursing homes that were not a participating member of an HCC. This test was conducted with a 95-percent level of confidence and yielded a p-value of 0.012. See Table A-3 in the Appendix for the point estimate and confidence intervals.

²⁶ Using a Fisher's Exact test, we found a statistically significant difference between nursing homes that reported challenges maintaining up-to-date emergency contact information and nursing homes that were part of a chain or network. This test was conducted with a 95-percent level of confidence and yielded a p-value of 0.0278. See Table A-3 in the Appendix for the point estimate and confidence intervals.

²⁷ The survey process did not identify infection control deficiencies for the majority of the nursing homes with extremely high infection rates; this raises questions about how effective the survey process is in preventing and mitigating the spread of infectious disease in nursing homes. OIG, *More Than a Thousand Nursing Homes Reached Infection Rates of 75 Percent or More in the First Year of the COVID-19 Pandemic; Better Protections Are Needed for Future Emergencies*, OEI-02-20-00491, January 2023.

²⁸ CNN, "Louisiana officials confirm 7 deaths of nursing home residents who were evacuated to hurricane shelter," September 4, 2021. Accessed at <https://www.cnn.com/2021/09/04/us/ida-louisiana-nursing-home-deaths-saturday/index.html> on November 10, 2021.

²⁹ Carmen Castro, et al., "Surviving the Storms: Emergency Preparedness in Texas Nursing Facilities and Assisted Living Facilities," *Journal of Gerontological Nursing*, Vol. 34, No. 8, 2008. Accessed at <https://tcombudsman.org/uploads/files/issues/surviving-the-storm.pdf> on February 14, 2023.

³⁰ Using a t-test, we found a statistically significant difference in the average bed count between nursing homes that reported challenges with establishing agreements with receiving facilities that were located within reasonable driving distances and nursing homes that did not report these challenges. This test was conducted with a 95-percent level of confidence and yielded a p-value of 0.0082. See Table A-2 in the Appendix for the point estimate and confidence intervals.

³¹ Using a t-test, we found a statistically significant difference in the average bed count between nursing homes that reported challenges with ensuring that their agreements with receiving facilities would be exclusive and nursing homes that did not report these challenges. This test was conducted with a 95-percent level of confidence and yielded a p-value of 0.0064. See Table A-2 in the Appendix for the point estimate and confidence intervals.

³² 42 CFR § 483.73(d)(2)(i).

³³ 42 CFR § 483.73(d)(2)(i)(A).

³⁴ FEMA, *National Risk Index Technical Data*, November 2021. Accessed at https://www.fema.gov/sites/default/files/documents/fema_national-risk-index_technical-documentation.pdf on February 14, 2023.

³⁵ We conducted two t-tests regarding community resilience. First, we found a statistically significant difference in the average community resilience score between nursing homes that reported challenges with community partners potentially not prioritizing their facility and nursing homes that did not report these challenges. This test was conducted with a 95-percent level of confidence and yielded a p-value of 0.0237. Second, we found a statistically significant difference in the average community resilience score between nursing homes that reported challenges with the perception that community partners would not fully recognize their facility and nursing homes that did not report these challenges. This test was conducted with a 95-percent level of confidence and yielded a p-value of 0.0028. See Table A-2 in the Appendix for the point estimates and confidence intervals.

³⁶ CMS, "Updated Guidance for Emergency Preparedness – Appendix Z of the State Operations Manual," March 2021, p. 30. Accessed at <https://www.cms.gov/files/document/qso-21-15-all.pdf> on January 28, 2022.

³⁷ 42 CFR §§ 483.73(a)(4) and 483.73(c).

³⁸ OIG, *Hospital Emergency Preparedness and Response During Superstorm Sandy*, OEI-06-13-00260, September 2014.

³⁹ Nicholas Castle and John Engberg, "The Health Consequences of Relocation for Nursing Home Residents Following Hurricane Katrina," *Research on Aging*, Vol. 33, Issue 6, November 2011. Accessed at <https://journals.sagepub.com/doi/abs/10.1177/0164027511412197> on May 16, 2023.

⁴⁰ OIG, *Gaps Continue To Exist in Nursing Home Emergency Preparedness and Response During Disasters: 2007-2010*, OEI-06-09-00270, April 2012.

⁴¹ Janet McConnaughey, "15 deaths among nursing home patients moved to warehouse," *AP News*, September 23, 2021. Accessed at <https://apnews.com/article/hurricane-ida-health-louisiana-new-orleans-storms-cf3dae4997b1736e969e19981f473401> on January 27, 2022.

⁴² OIG, *COVID-19 Had a Devastating Impact on Medicare Beneficiaries in Nursing Homes During 2020*, OEI-02-20-00490, June 2021.

⁴³ OIG, *More Than a Thousand Nursing Homes Reached Infection Rates of 75 Percent or More in the First Year of the COVID-19 Pandemic; Better Protections Are Needed for Future Emergencies*, OEI-02-20-00491, January 2023.

⁴⁴ OIG, *More Than a Thousand Nursing Homes Reached Infection Rates of 75 Percent or More in the First Year of the COVID-19 Pandemic; Better Protections Are Needed for Future Emergencies*, OEI-02-20-00491, January 2023.

⁴⁵ FEMA, "National Risk Index." Accessed at <https://hazards.fema.gov/nri/map> on January 20, 2023.

⁴⁶ The Survey Summary dataset includes the three most recent nursing home and fire safety compliance surveys. The dataset is publicly available from CMS's Provider Data Catalog for Nursing Homes Including Rehab Services. The analysis in this report used the Survey Summary dataset from February 2023. Accessed at <https://data.cms.gov/provider-data/dataset/tbry-pc2d> on July 10, 2023.