

# Nursing Facility Payment Review and Redesign

**Building Block #3: Physical Infrastructure**

11.12.2020

# Today's Agenda

- Overview
- Recap
- Questions and brief comment
- Infrastructure
  - Describing Illinois Nursing Facilities
  - Preliminary analysis of COVID's spread in Illinois nursing facilities
  - Potential infrastructure improvements
- Questions and brief comment on today's content
- Next steps and request for content

# Purpose Statement

HFS proposes a structured and transparent approach to develop, deliberate, adopt and implement nursing home payments to achieve improved outcomes and increased accountability with an emphasis on patient-centered care. HFS believes the rate mechanism, funding model, assessment, quality metrics, and staffing requirements can and should be updated in conjunction with any new or additional appropriated funding. Further, additional federal funding should be captured to improve these areas through an increase in the current nursing home bed tax.

# Steps in the Review and Redesign Process

Building blocks in a comprehensive NF payment:

- Staffing (3 meetings)
- Quality (2 meetings)
- Physical Infrastructure
- Rebalancing
- Capacity (facilities and staffing)
- Case Mix, Equity and Demographics
- Modeling (multiple meetings)

Note: COVID has had a profound impact on long term care. Infection control is assumed to be an integral component of each building block.

# Original Objectives and Principles for Reform

## Potentially Relevant to Today's Discussion on Quality:

- Transparent, outcome driven, patient-centered model with increased accountability
- Transition away from RUGS to federal PDPM case-mix nursing component
- **Modify the support and capital rate into a set base rate similar to Medicare non-case-mix rate**
- End the \$1.50 bed fee and increase the occupied bed assessment to create a single assessment program which maximizes federal revenue
- Directly tie funding/rates/incentives to demonstrable and sustained performance on key quality reporting metrics
- Documentation to support, review and validation of level of care coding and appropriateness, outliers, actual patient experiences, etc.
- **Align regulation and payment incentives to the same goals**
- Ensure appropriate incentives for community placement, including both uniform and MCO-specific incentives
- **Recalibrate/rethink payment for nursing home infrastructure to support emerging vision for the industry in the wake of the COVID-19 crisis, including single-occupancy rooms, certified facilities**
- **Integrate emerging lessons and federal reforms related to the COVID pandemic**
- Improved cooperation, support and follow up, data sharing and cross-agency training from other agencies (OIG, IDPH, DoA)
- **Build in flexibility to evolve as the industry evolves and establish ongoing channels of communication for new, proposed, or upcoming changes**

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# CMS' Overall STAR Rating

## Inspections

## Staffing

## Quality

Health  
Inspection Stars



- +1 Star if:**
- Staffing is 4 or 5 Stars; AND
  - Staffing stars > Inspection Stars

- 0 Stars if:**
- Staffing is 2 or 3 Stars; OR
  - Staffing Stars <= Inspection Stars

- 1 Star if:**
- Staffing is 1 Star



- +1 Star if:**
- Quality is 5 Stars; AND
  - A Staffing Star wasn't already added to a 1-Star Inspection Rating

- 0 Stars if:**
- Quality is 2 - 4 Stars;

- 1 Star if:**
- Quality is 1 Star

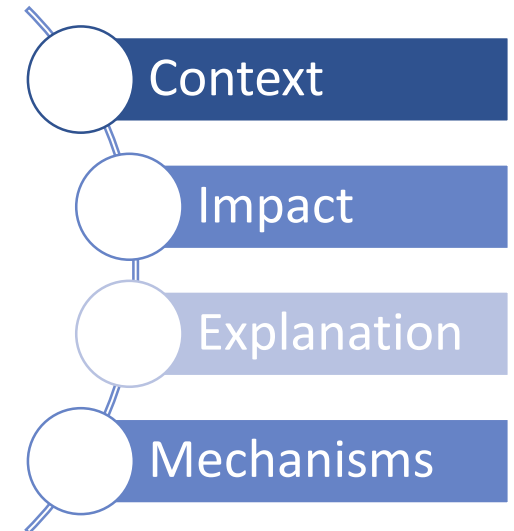
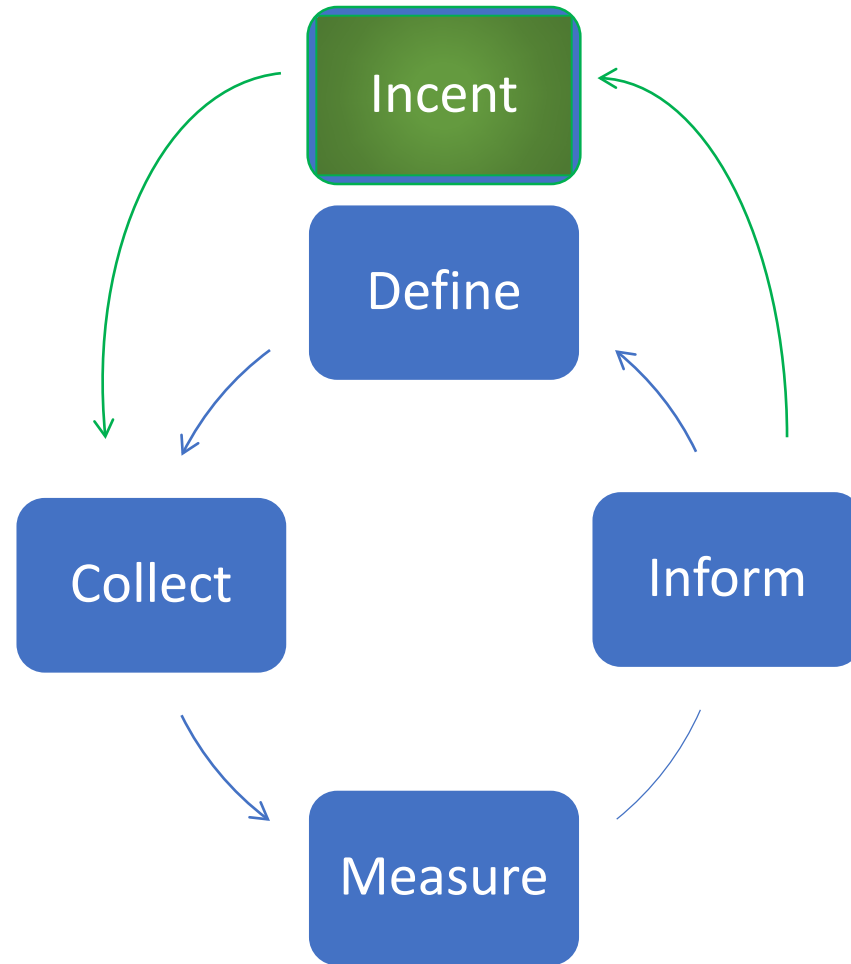


Overall STAR  
Rating (1-5)

# Developing and Using Outcomes

## Implications for new metrics:

- We have **less information** about them, including validation of their impact, an explanation of that impact, and the mechanisms for moving the needle
- NFs also know less, and face **risk** when spending money to move the needle
- In addition, NFs face the economic **incentive to wait** for others to solve the puzzle
- Risk and this '**tragedy of the commons**' predictably lead to collective under-investment
- So what approach should the state take with new metrics?





# Evaluating an Outcome Measure

## Examples of Policy Objectives

Outcome Maturity	Example policy goals in incentive design
New	Coordinate/motivate broad initial investments by NFs
	Learn from investments and varying NF initiatives
Mixed	Improve overall (and top) performance
	Motivate rapid improvement & investment by low-performers
Mature	Maintain target performance; prevent degradation across many outcomes
	Bring all performance up at margin?
	Eliminate remaining under-performance

# Matching Available Levers to Outcomes

## Key Questions

	Description	New Outcomes	Mixed Outcomes	Mature Outcomes	
NF Lever*	Payment Incentive	Dollar or percentage adjustments to (part of) the per diem	Are payment incentives flexible enough to support NF experimentation?	What is the remaining potential for improvement?	
	MCO LTC placement	Influence or incent community v. NF 'A' v. NF 'B' placement		What is the MCOs' role in managing NF/LTC outcomes?	
	CON	Requirements for new investment		Which types of outcomes might fit this lever?	
	Regulatory minimums	\$ Penalties		Which outcomes work best here? Would regulations compliment payment incentives?	
	Medicaid participation	Transition of all current Medicaid residents		Would any such outcome rise to this level of importance?	Which outcome(s) might rise to this level of importance?
	Licensure	Transition of all current residents		Would any such outcome rise to this level of importance?	Which outcome(s) might rise to this level of importance?

\*Not a characterization of current Illinois policy. Some options would require policy changes to be deployed.

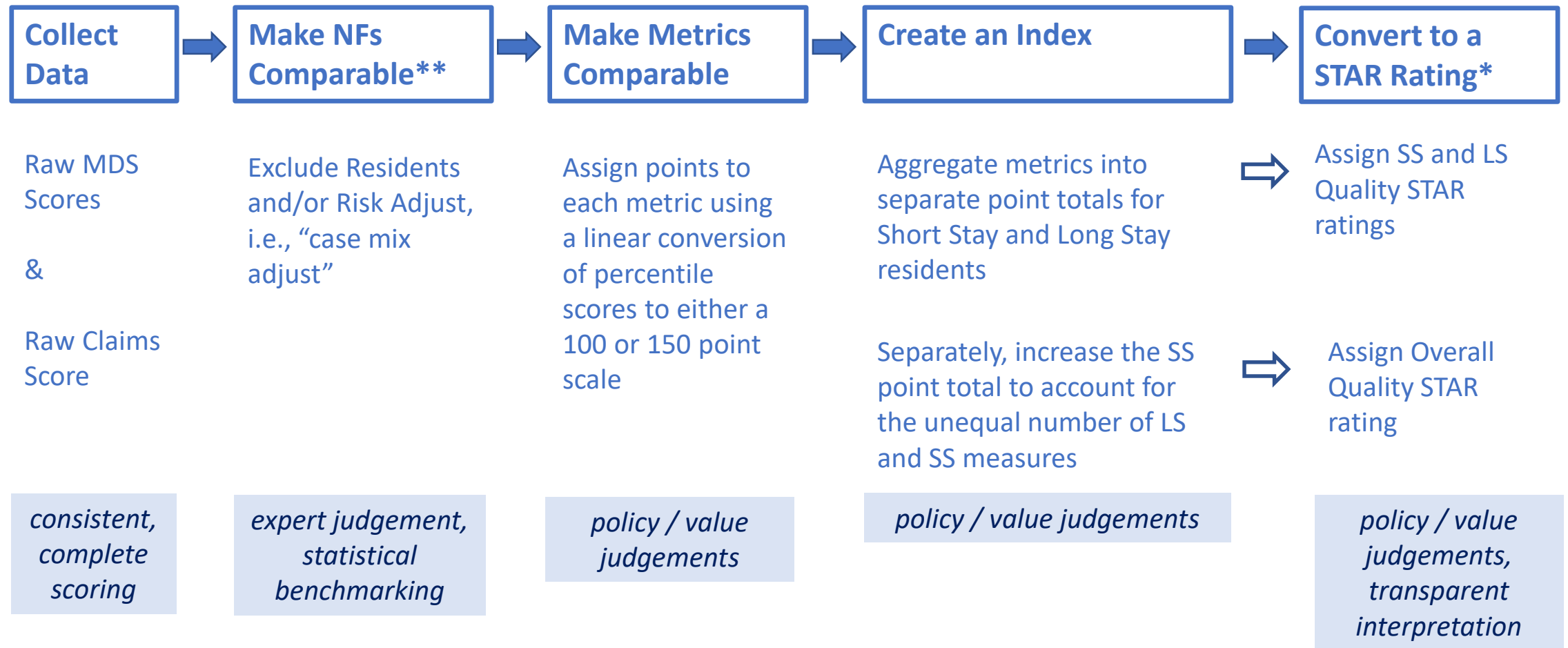
# How Does CMS Make SNF Quality STAR Ratings?

## Metric Selection

- *Note: STAR ratings are the pre-eminent and most sophisticated example found for aggregating NF quality metrics into performance indices. Although Medicare does not use STAR ratings in payment, the final step from index to payment would be computationally straightforward.*
- CMS adds or subtracts quality metrics periodically and currently maintains a list of 34 MDS-based and 5 claims-based metrics
- STAR measures were selected from this list “based on their validity and reliability, the extent to which nursing home practice may affect the measures, statistical performance, and the importance of the measures.” – *Technical User’s Guide October 2019*
  - 15 of the MDS-based metrics are available only to facilities on CMS’ QIES website
  - 24 remaining metrics are included in CMS’ Nursing Home Compare public reporting system
  - Of these, 15 were selected for the Quality STAR Rating

# How Does CMS Make SNF Quality STAR Ratings?

## From Raw Data to a STAR rating



\*See next page

\*\* Example to follow

# COMPARE/STAR Quality Results

## Long Stay Measures

COMPARE Quality Measure	Nation	IL	IL Ranking
Percentage of LS residents whose need for help with daily activities has increased	14.5	13.7	14
Percent of LS Residents Who Lose Too Much Weight	5.5	6.2	33
Percent of Low Risk LS Residents Who Lose Control of Their Bowel or Bladder	48.4	46.1	15
Percent of LS Residents with a Catheter Inserted and Left in Their Bladder	1.8	2.1	26
Percent of LS Residents With a Urinary Tract Infection	2.6	2.9	25
Percent of LS Residents Who Have Depressive Symptoms	5.1	21.9	40
Percent of LS Residents Who Were Physically Restrained	0.23	0.19	18
Percentage of LS residents experiencing one or more falls with major injury	3.4	3.2	16
Percentage of LS residents assessed and appropriately given the pneumococcal vaccine	93.9	89.2	40
Percentage of LS residents who received an antipsychotic medication	14.2	18.3	38
Percentage of LS residents whose ability to move independently worsened	17.1	15.8	10
Percentage of LS residents who received an antianxiety or hypnotic medication	19.7	19.4	25
Percentage of high risk LS residents with pressure ulcers	7.3	7.6	23
Percentage of LS residents assessed and appropriately given the seasonal influenza vaccine	96	93.7	37
Number of Hospitalizations per 1,000 long-stay resident days	1.7	1.8	29
Number of outpatient emergency department visit per 1,000 long- stay resident days	0.96	1.02	25

Source: COMPARE “State US Averages” as of 9/1/2020 (based on 2019 data)

# COMPARE/STAR Quality Results

## Short Stay Measures

COMPARE Quality Measure	Nation	IL	IL Ranking
Percentage of SS residents assessed and appropriately given the pneumococcal vaccine	83.9	74.6	38
Percentage of SS residents who newly received an antipsychotic medication	1.8	2.1	31
Percentage of SS residents who made improvements in function	68	63	36
Percentage of SS residents who were assessed and appropriately given the seasonal influenza vaccine	82.9	74.1	39
Percentage of SNF residents with pressure ulcers that are new or worsened	1.4	1.5	22
Percentage of SS residents who were re-hospitalized after a nursing home admission	20.8	22.1	31
Percentage of SS residents who had an outpatient emergency department visit	10.3	10.1	15
Rate of successful return to home and community from a SNF	N/A	N/A	N/A

# 2013 Measure Recommendations for Incentive Program

HFS nursing advisory group's prioritized metrics

Very Important	<ul style="list-style-type: none"> <li>• Staff retention / stability</li> <li>• Consistent assignments</li> <li>• Pressure ulcers (long stay residents)</li> <li>• Re-hospitalizations</li> </ul>
Important	<ul style="list-style-type: none"> <li>• Attendance by Direct Care Staff at Resident Care Plan meetings</li> <li>• Falls</li> <li>• <i>Moderate / Severe Pain (QM)</i></li> <li>• Restraints</li> <li>• Unintended weight loss</li> <li>• Pressure ulcers (short stay residents)</li> <li>• Psychoactive medication use</li> <li>• Resident / family satisfaction</li> <li>• Staff satisfaction</li> <li>• Participation in Advancing Excellence</li> </ul>
Somewhat Important	<ul style="list-style-type: none"> <li>• Catheter use</li> <li>• Person centered approaches (Care, Environment and Community)</li> </ul>

## The nurse advisory group's emphasis in 2013:

- They chose not to focus on inspections
  - Because Medicare already did?
  - Because IDPH oversight mechanisms already did?
- Thought long-stay metrics were more relevant to Medicaid
- Staffing was top of mind by this group of expert practitioners

# Quality Objectives and Incentives

## Reactions

### General topics

Use of RUGS (v. other acuity coding) has had these effects, for example:

- Illinois has increased payment for depressive symptoms (ergo more of these)
- Weight loss also yields higher reimbursement (so also higher #s)

### Use of financial incentives with quality metrics in a new payment methodology

Make sure to avoid negative consequences of payment incentives, e.g., incentives to avoid higher-risk residents

- Incentive design itself matters, e.g., positive v. negative financial incentives for performance

Characterization of the level of payment needed from Medicaid to support NFs in taking on risk to respond to quality incentives

- Full cost, i.e., average cost
- Competitive rates
- More than it does now, i.e., some other benchmark



# Quality Objectives and Incentives

## Reactions

### **Selection of quality metrics**

Measurement is in some cases more sophisticated now than in 2013 when HFS quality initiative brought forward a slate of measures (not adopted for incentives)

There are some concern that ratings based on inspections are unreliable (inconsistent across raters)

Reactions to the potential inclusion of staff retention as a quality metric

- Retention may be especially sensitive to financial limitations that drive NF wages down v. rest of nursing market.
- Staff retention is a tougher metric than consistent assignment, i.e., more sensitive to turbulent Nurse/CNA market.
- Market turbulence differs geographically (markets are local...).
- How can we take staffing quality into account v. retention (retaining low quality?)

Concern was raised about use of the Quality STAR straight-up, without tailoring or adaptation to Illinois

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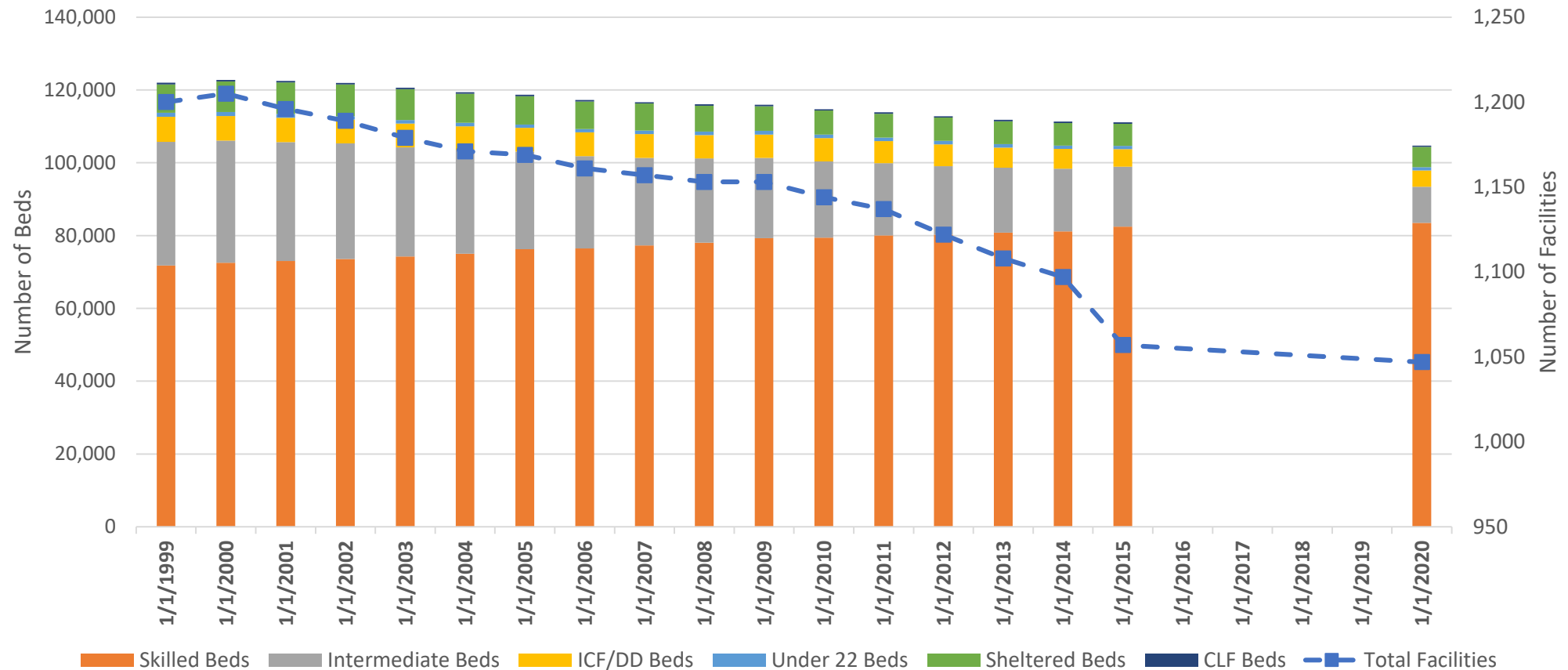
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# Nursing Facility Infrastructure

Change in LTC Facility Licensure over Time

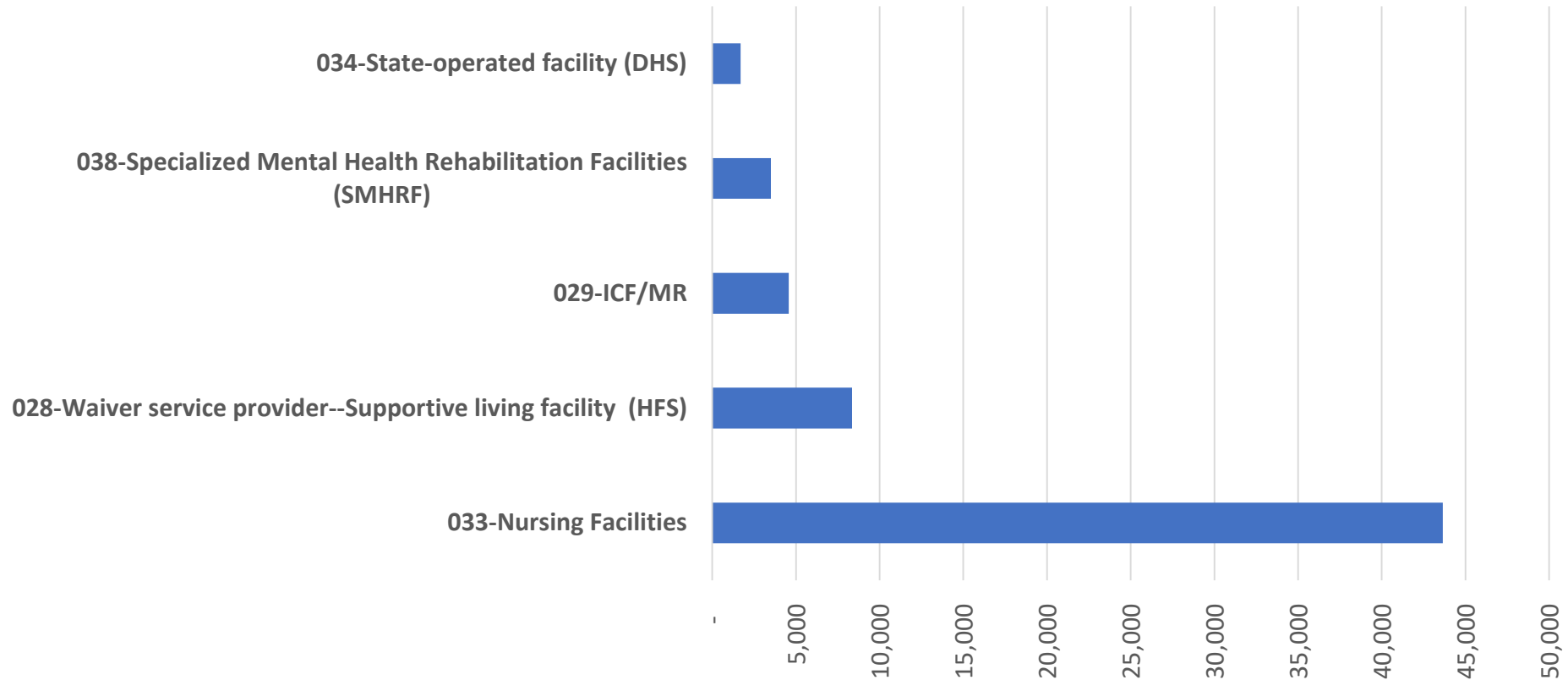
Source: IDPH records 1999-2015



# Nursing Facility Census

## MMIS Medicaid Census as of 9/2/2020

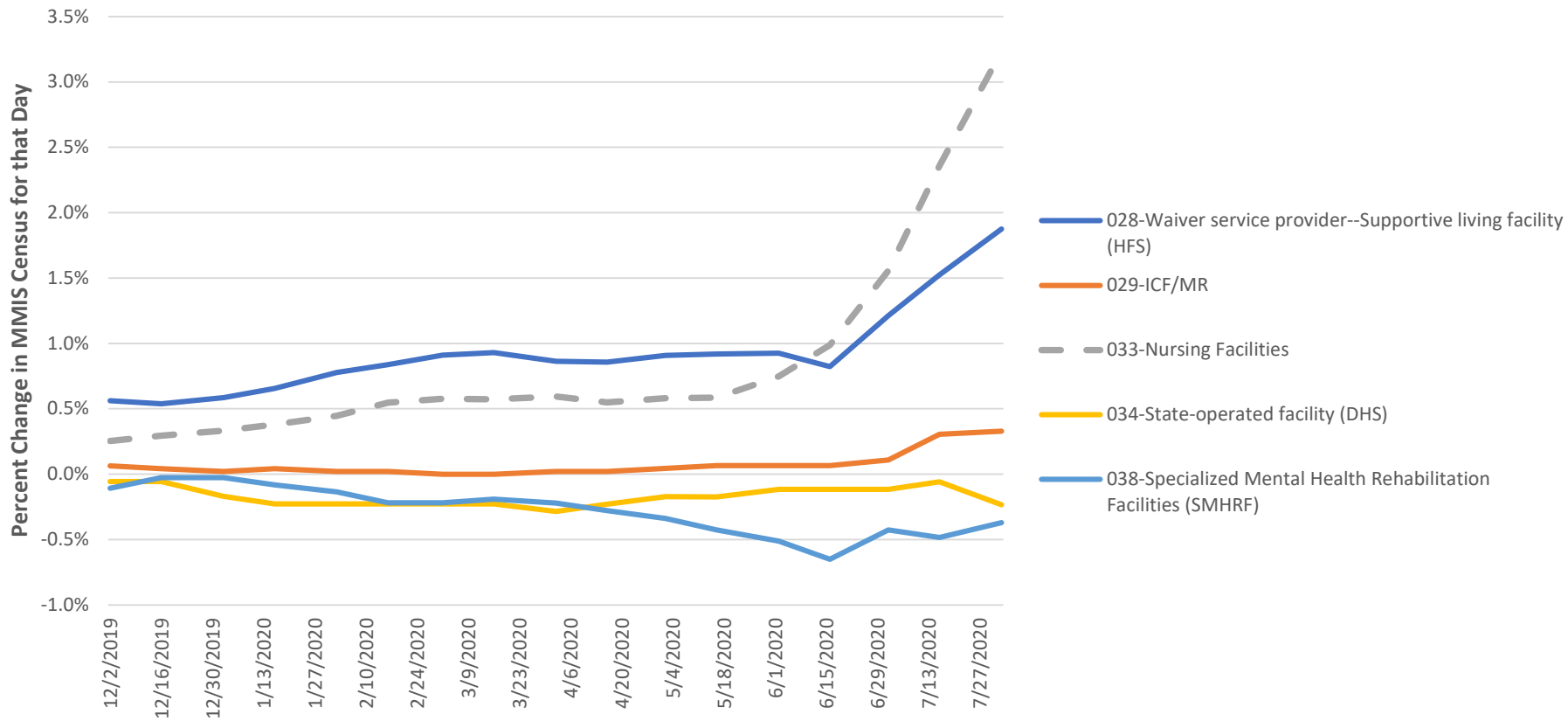
Data run: 11/10/2020



# Nursing Facility Census

## Can recent census counts be trusted?

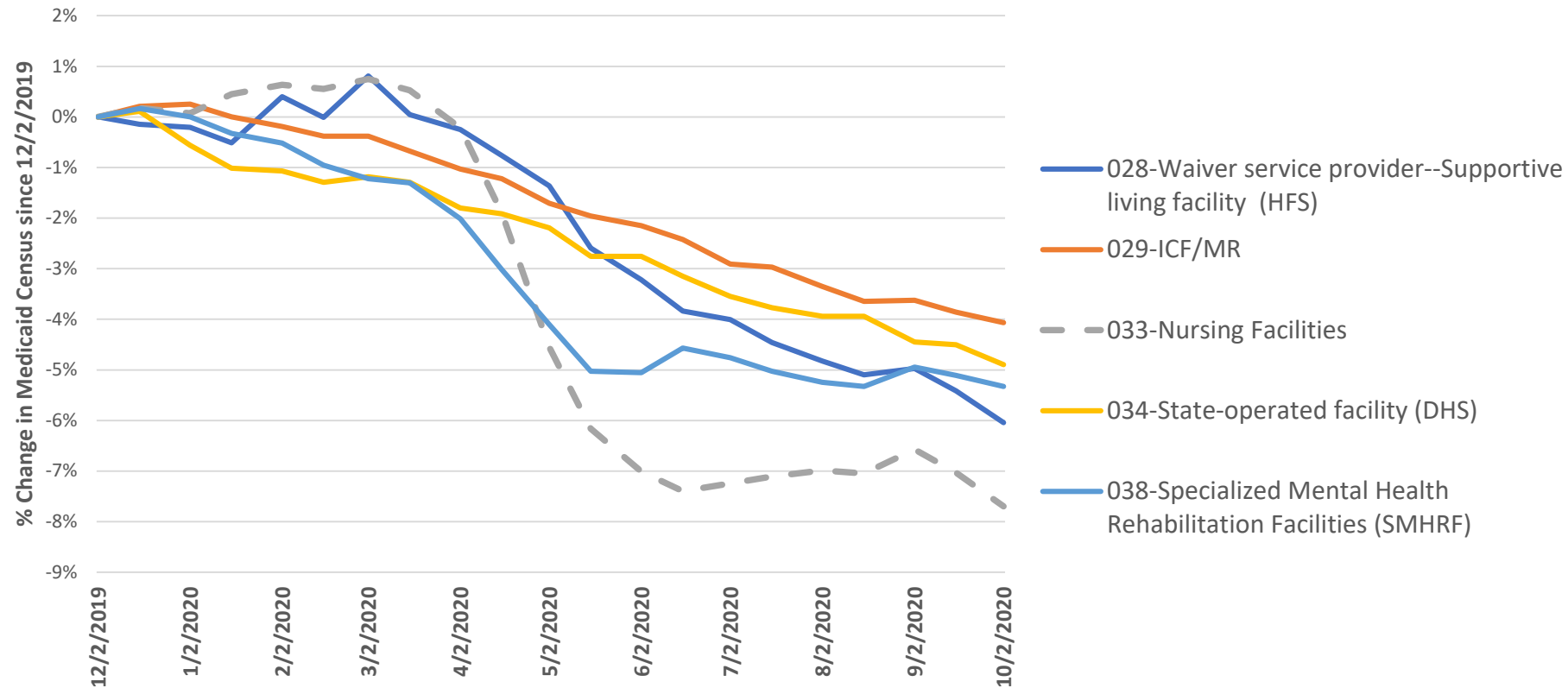
**Cumulative % Change in MMIS Census Tally by Facility Type**  
 11.10.2020 MMIS run v. 8.21.2020 MMIS run



MMIS Census counts for NFs appear to be within about 2% after a month, and within 1% after two months

# Nursing Facility Census

**LTC Facility Census Decline**  
Data Pulled 11.10.2020

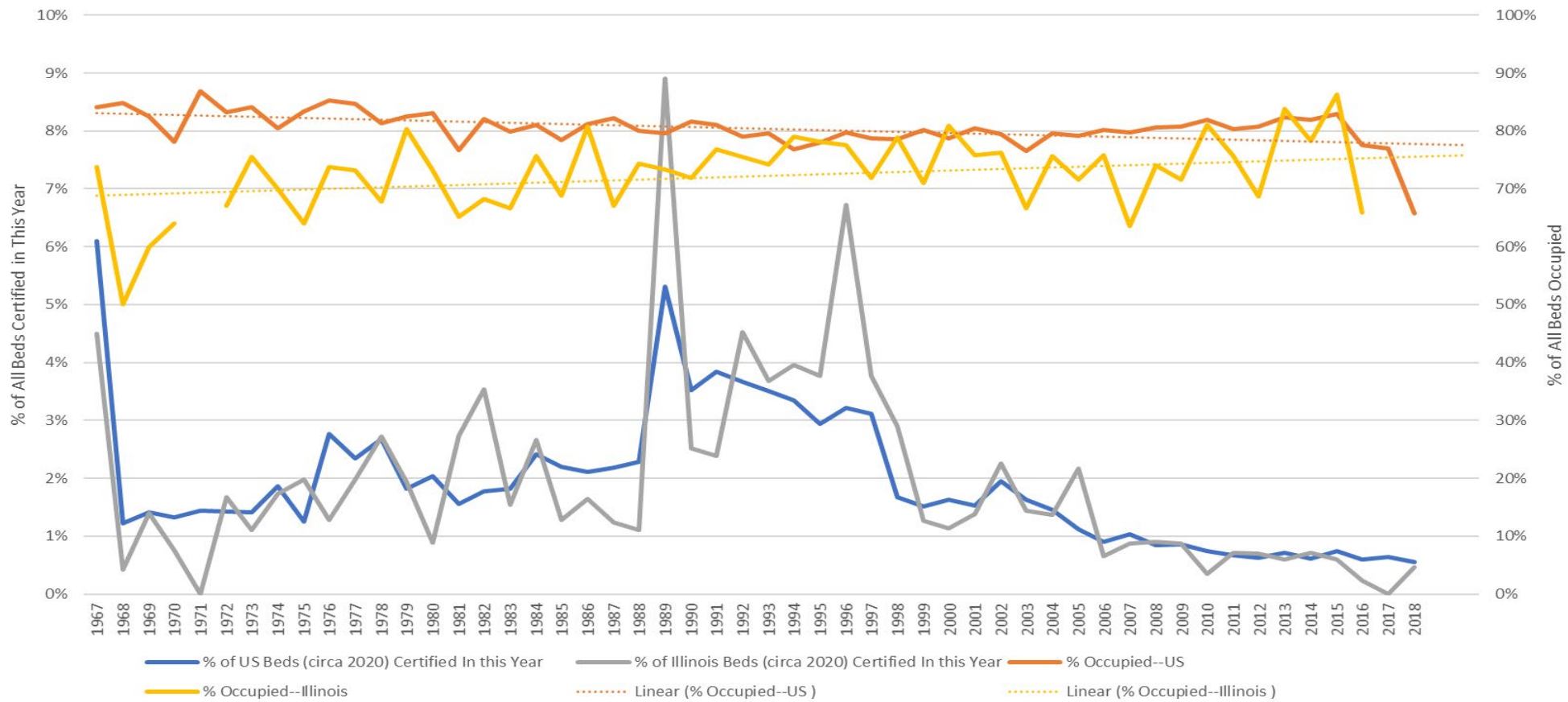


The Medicaid NF census fell with the initial spread and fatal impact of COVID and did not recover during COVID's lull

The drop of ~7-7.5% represents about 3,500 daily Medicaid residents since the beginning of March

# Nursing Facility Occupancy

**Age and Occupancy of NH Beds for US v. Illinois**  
 Age measured by Facility's Initial Medicare Certification



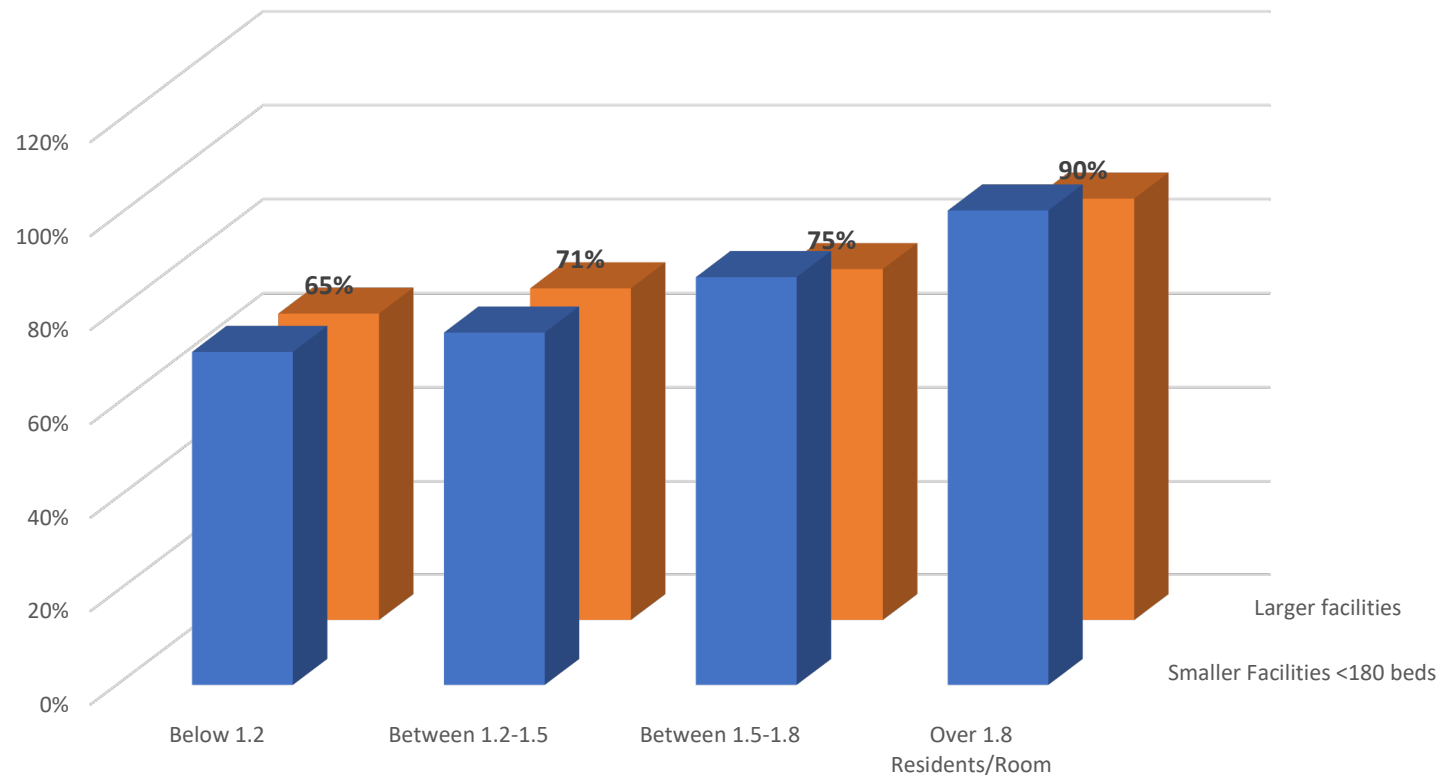
Occupancy increases with more recent Medicare certification in Illinois – but it’s (slightly) the reverse for the US as a whole.

The overall Medicare certification age of NH beds in IL looks the same as the country’s.

What is the best interpretation or meaning of Medicare certification?



# Nursing Facility Occupancy Chicago Area\*



Result: Occupancy and resident density (per room) are highly correlated, as expected

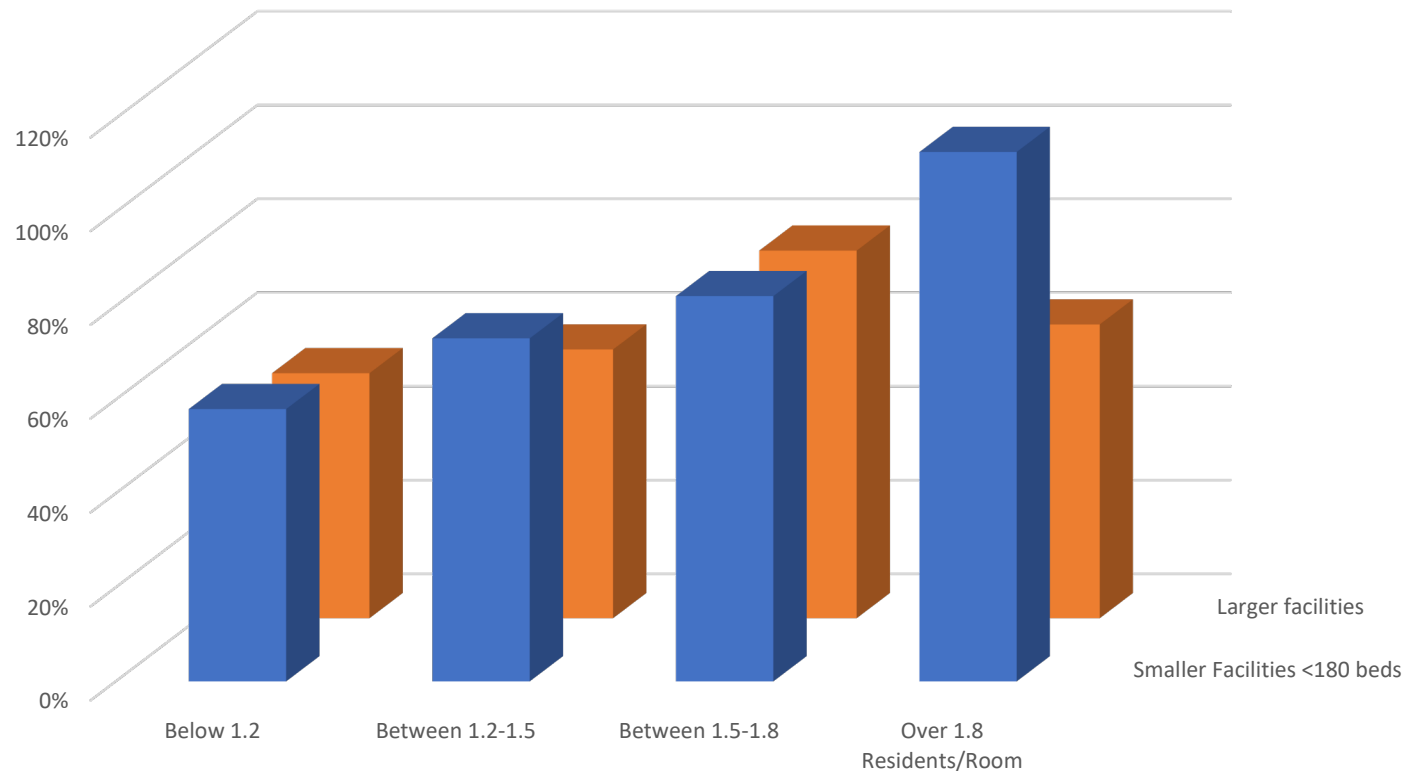
Because the dominant room configuration has 2+ beds, increased census implies filling of 2<sup>nd</sup> or 3<sup>rd</sup> beds in NF rooms.

The result holds for both larger and smaller facilities

\*Here the Chicago area is defined as Cook, DuPage, Lake, Will, and Kane counties

Sources: IDPH room records 9/2020 and Preliminary HFS 2019 Cost Reports

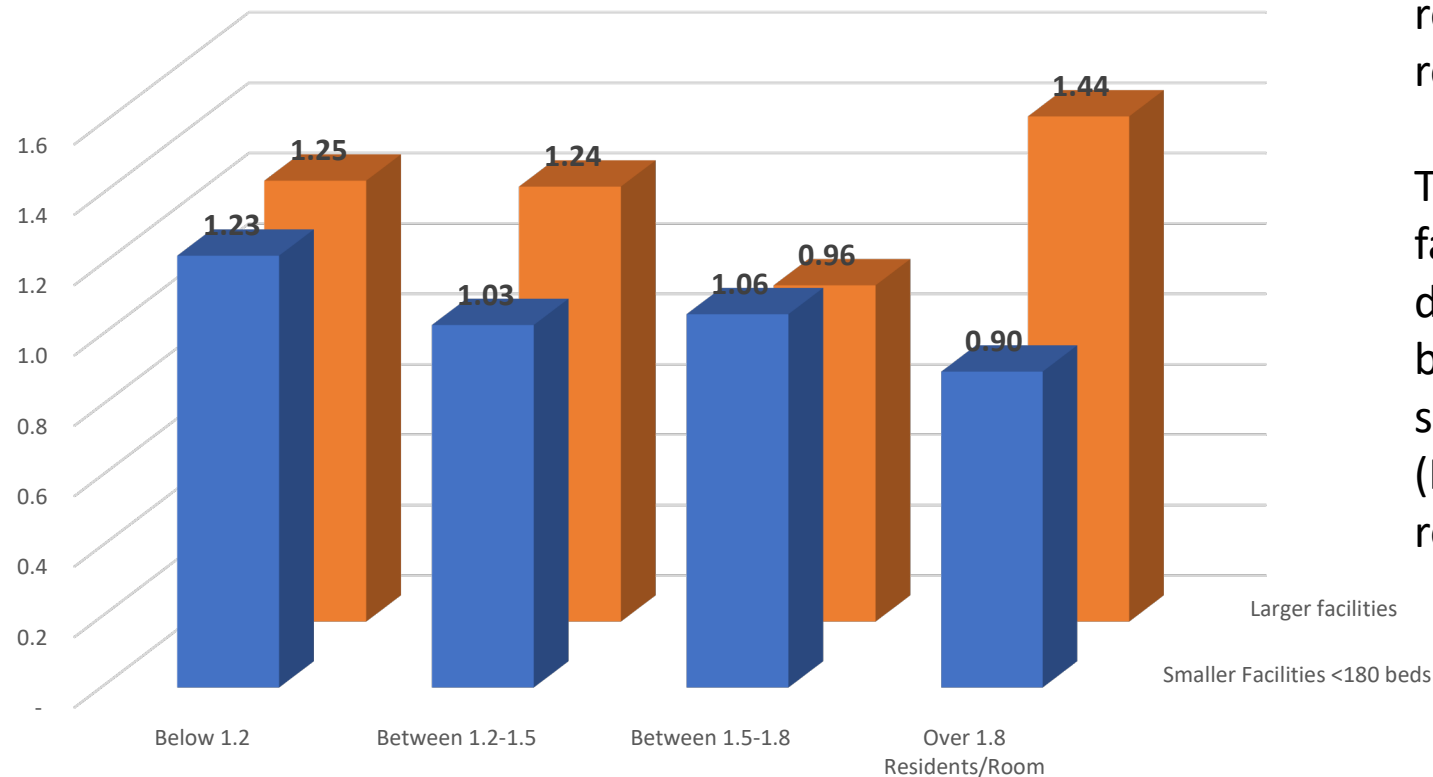
# Nursing Facility Occupancy Downstate



The relationship between occupancy and resident density (per room) is essentially the same downstate

# Nursing Facility Occupancy

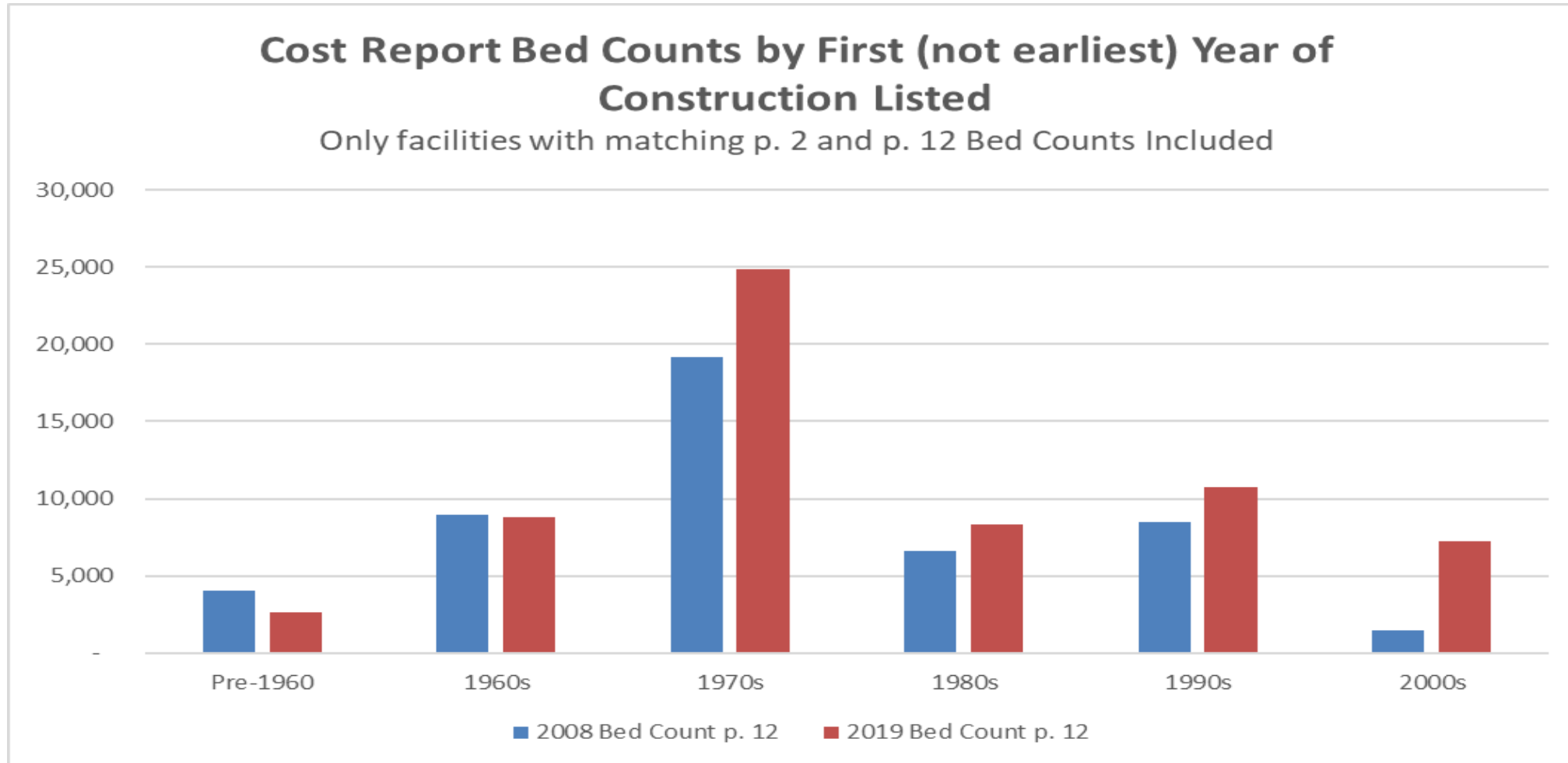
## Chicago Area v. Downstate



Occupancy is *generally* higher in Chicago-area homes regardless of facility size and room composition.

The relationship for larger facilities at higher levels of density may be an exception, but sample sizes are much smaller at this level of detail (NFs sub-grouped by region, room density, and size)

# Nursing Facility Infrastructure Age



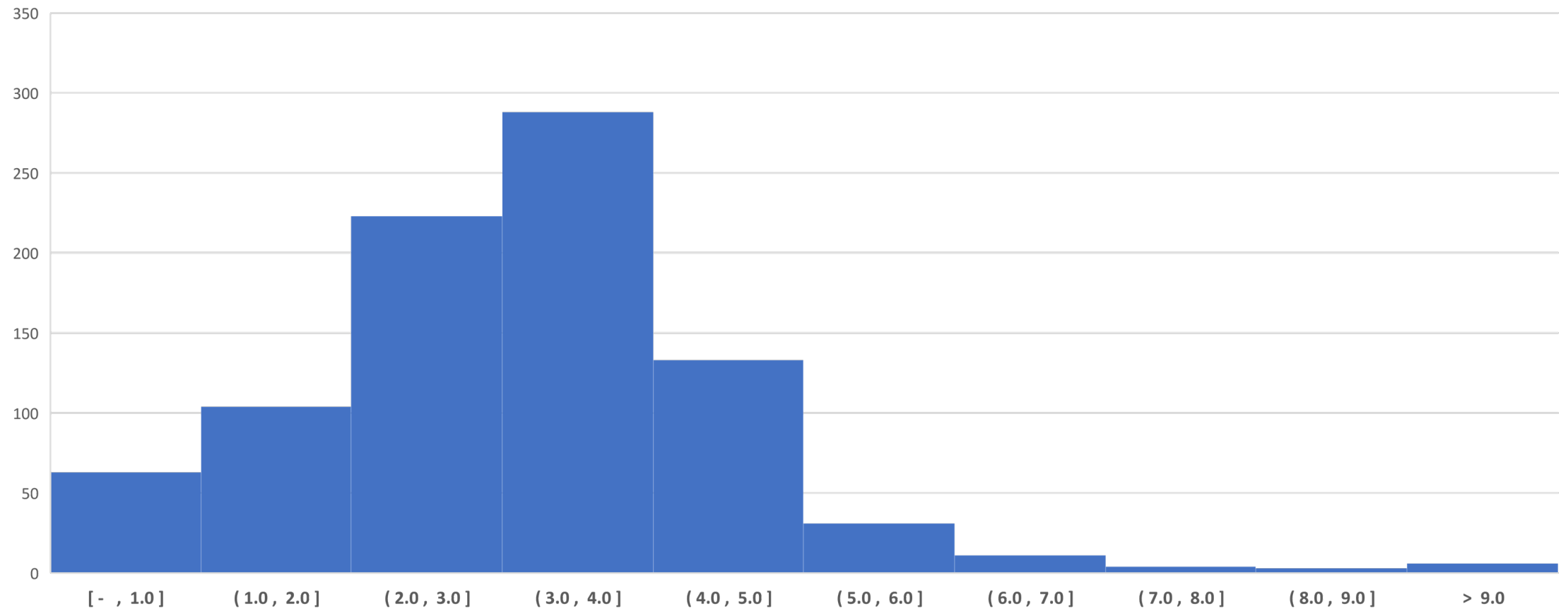
For 2019 622 facilities with 68,210 beds including 2010s and 62,565 without the 2010s.

For 2008 512 facilities and 48,675 beds.

Sources: Completed HFS 2019 Cost Reports

# Concentration of Residents within Nursing Facilities

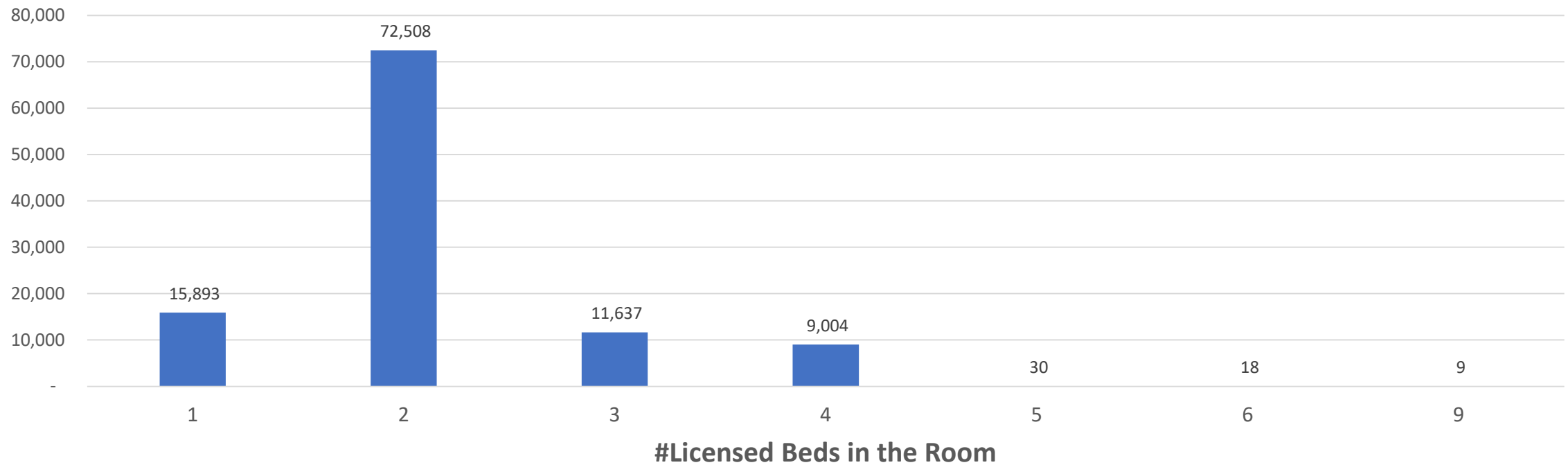
Distribution of Homes by Residents per 1,000 Sq Ft



Sources: Completed HFS 2018 Cost Reports

# Concentration of Residents within Nursing Facilities

**Distribution of Beds by Licensed Room Capacity  
(Statewide Totals)**

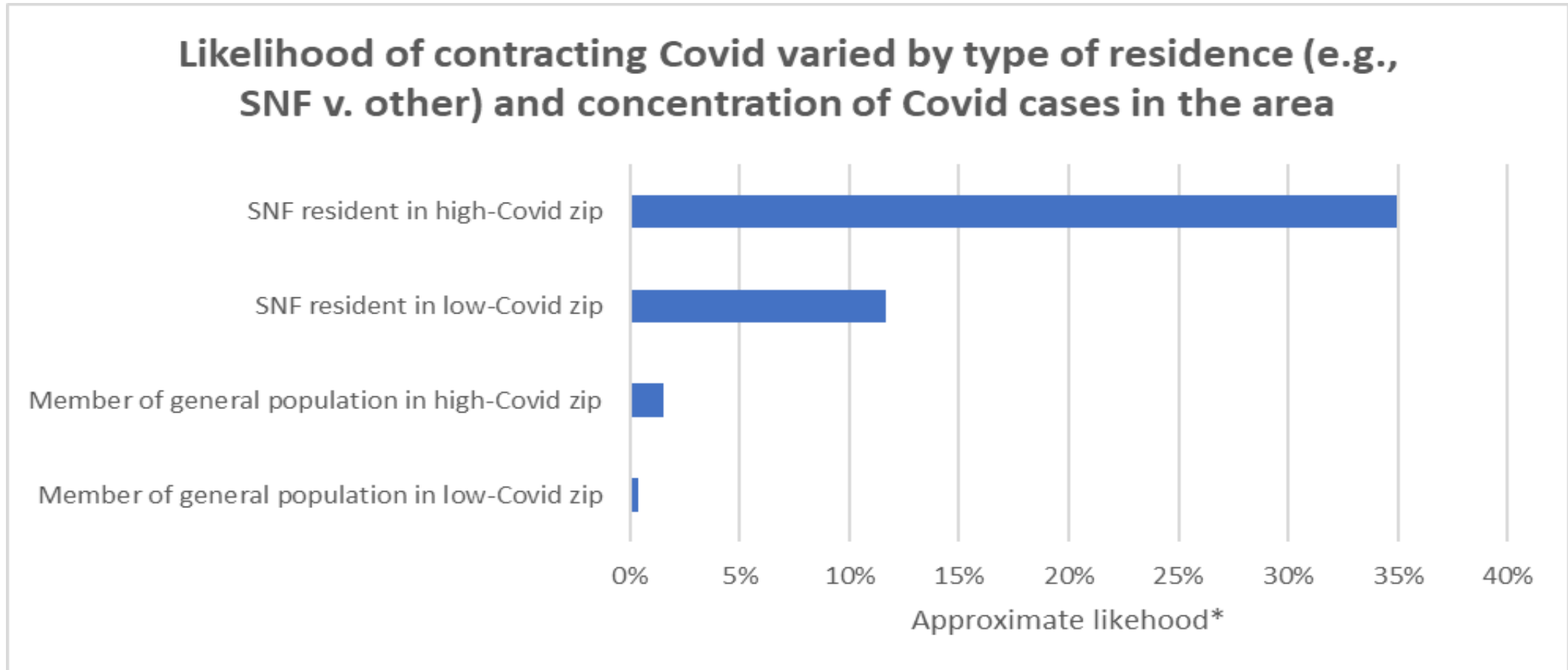


Source: IDPH Room count 9/2020

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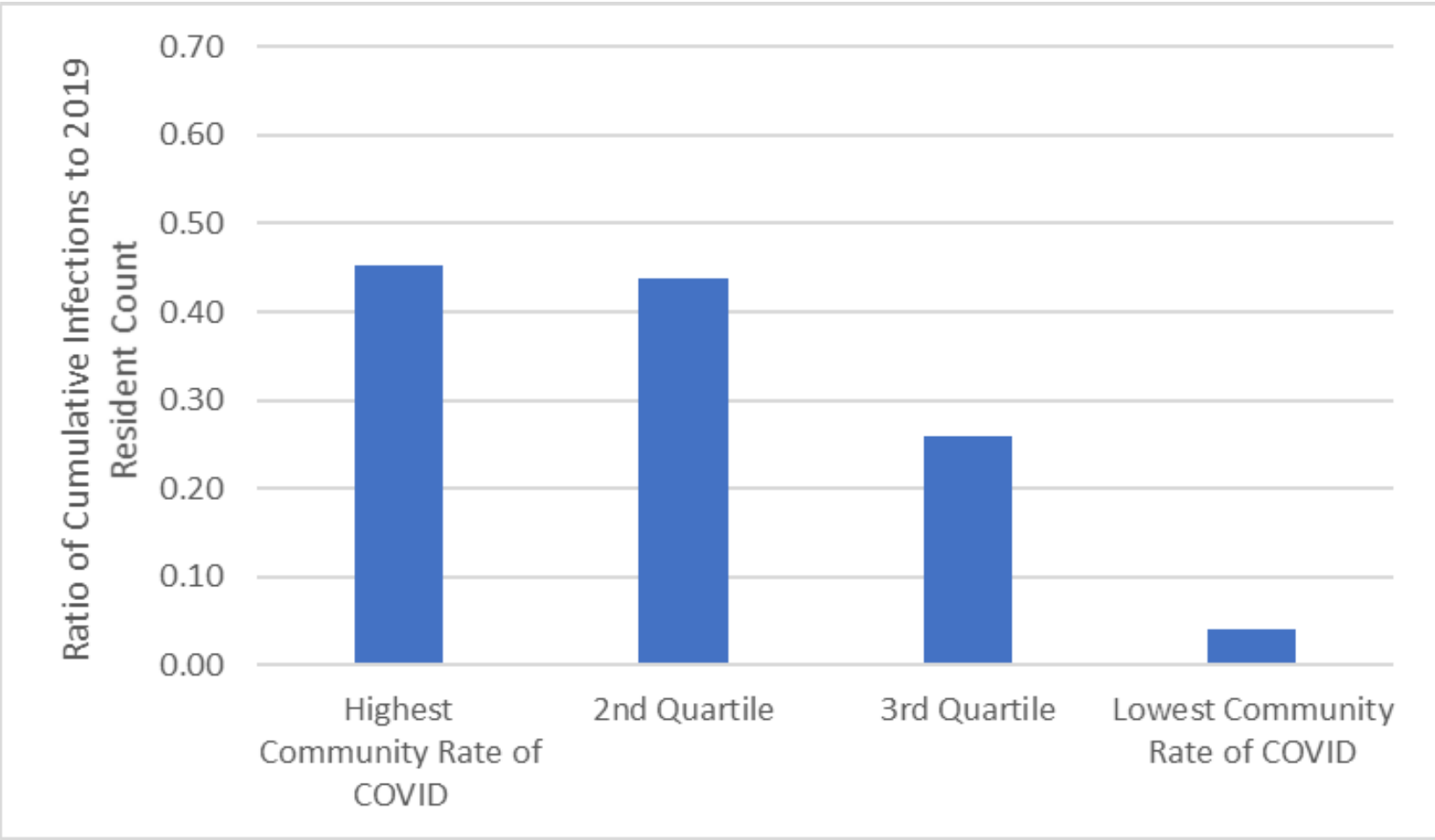
# COVID's Impact on Illinois Nursing Facility Residents in Wave 1



\*"High" is above-average, "Low" is below. Aggregated IDPH Covid data from 6.26 for facilities and 5.29 for general population. Missing Covid data treated as zeros. Numerator is cumulative cases, not point in time. Denominator for SNF residence is bed count, not occupancy.



# COVID Infections in Illinois Nursing Homes by Community Rate of Infection (May 2020)



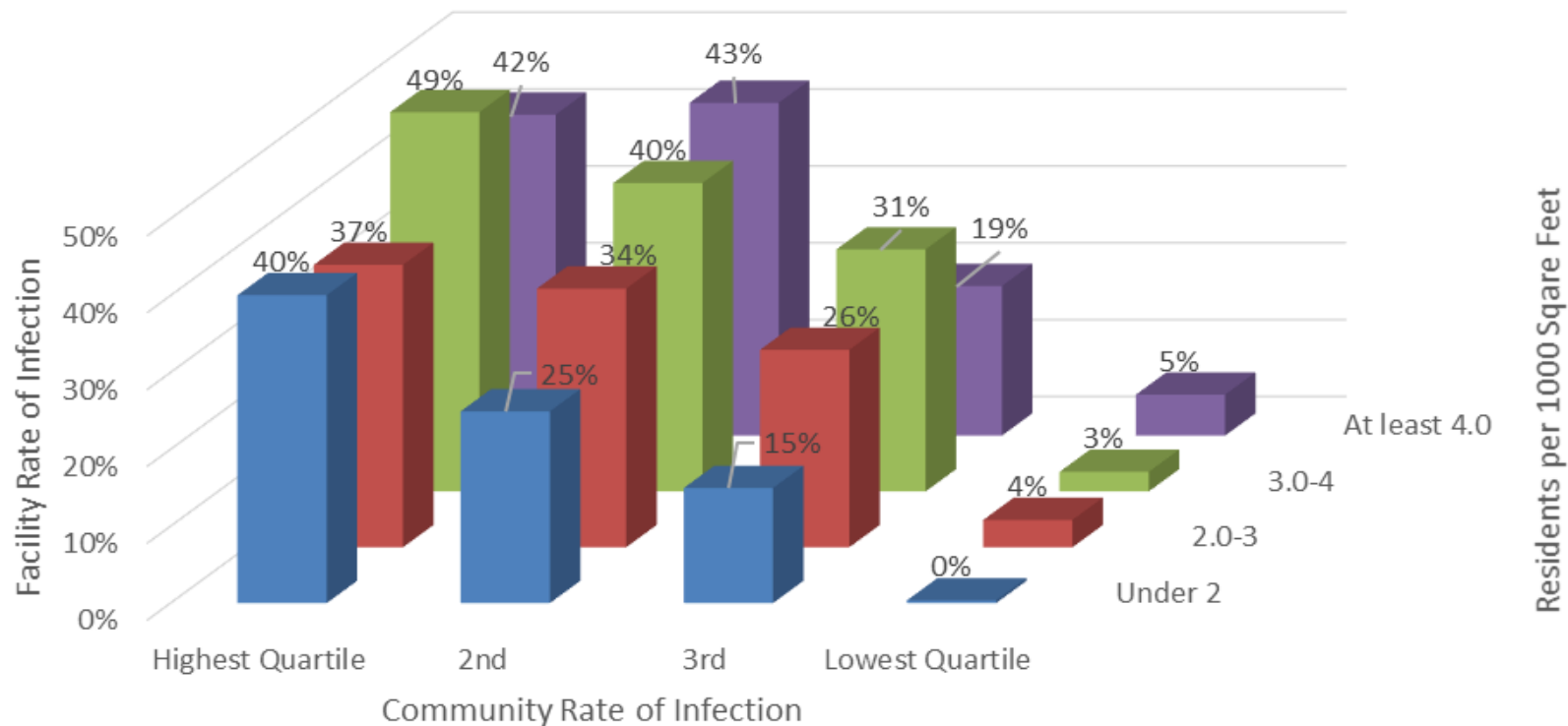
The ratio of COVID infections to average daily census in 2019 varied more than ten-fold according to the community rate of infection in their zip code.

*Note: grouping nursing homes into 4 equally-populated groups of zip codes enables categorical analysis but depresses the overall level of variation.*

Sources: IDPH Aggregated COVID Records 5/2020; Preliminary HFS 2019 Cost Reports

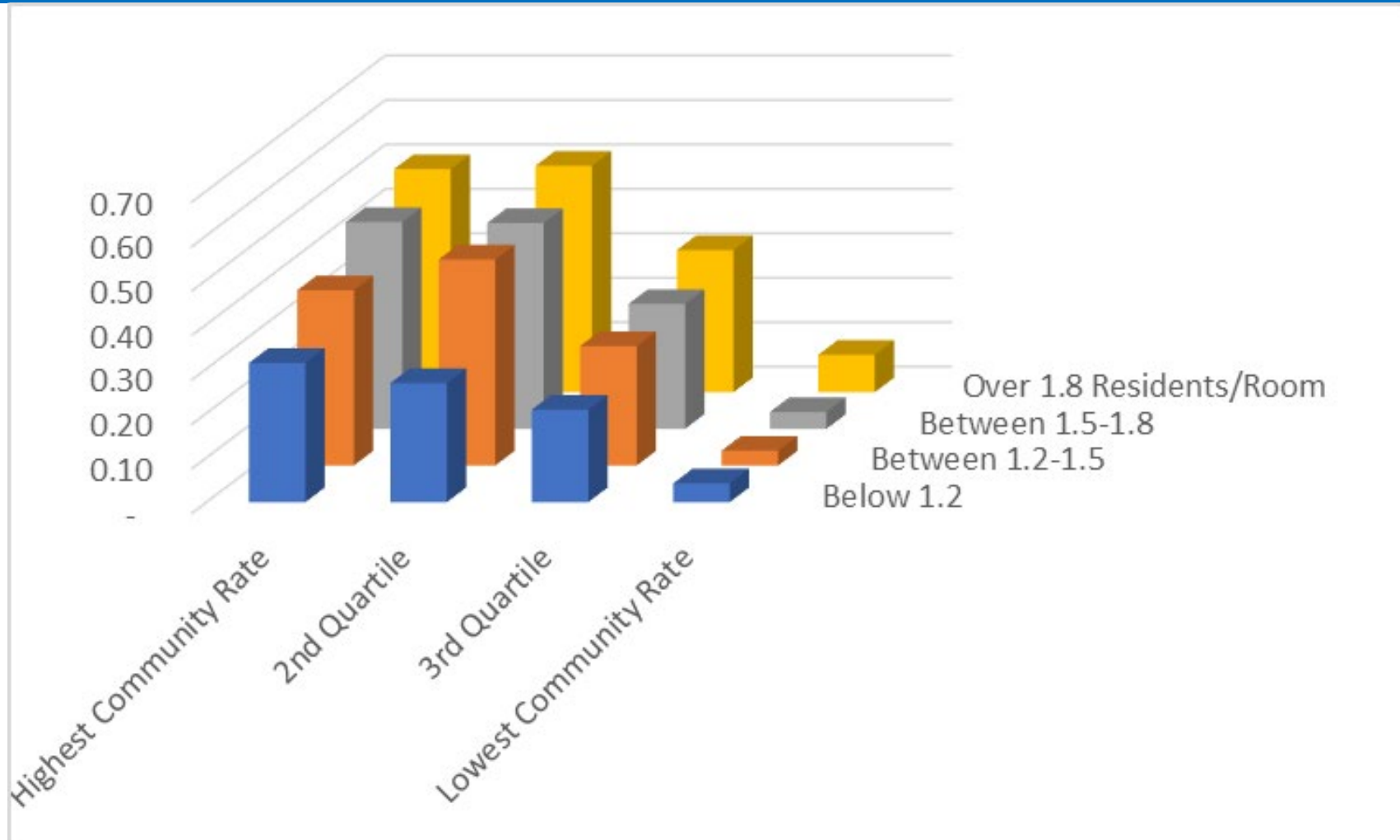
# COVID Infections in Illinois Nursing Homes: All Skilled Nursing Facilities

Facility COVID Infection Rates Generally Rose With Both Community Rates of Infection and Resident Density (#per 1000 square feet)



Both the community rate of infection and average total square footage of facility space per resident appear to have mattered in the spread of COVID in Wave 1

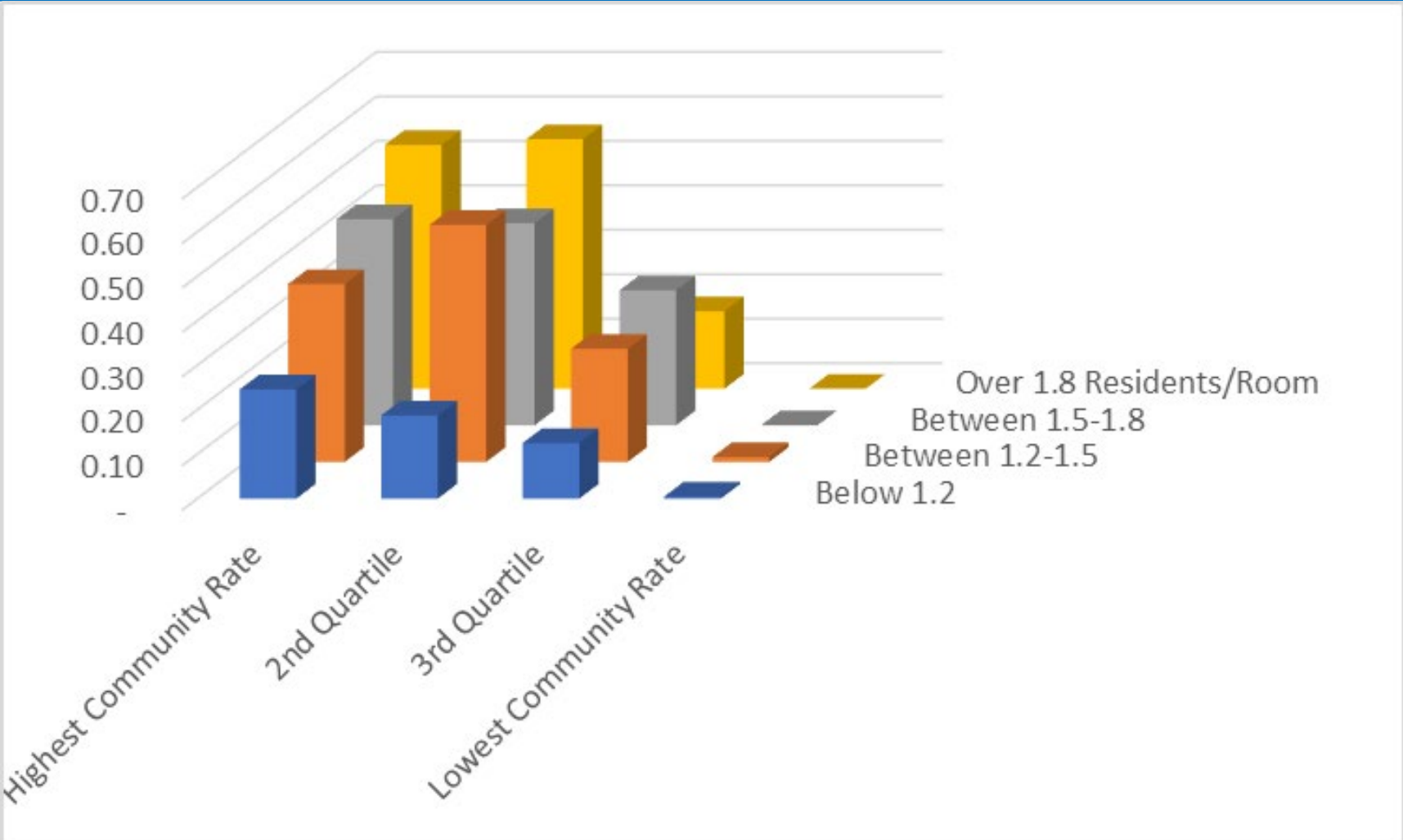
# COVID Infections in Illinois Nursing Homes: All Skilled Nursing Facilities



The average number of residents per room appears to explain Covid's Wave 1 spread somewhat better than total square footage.

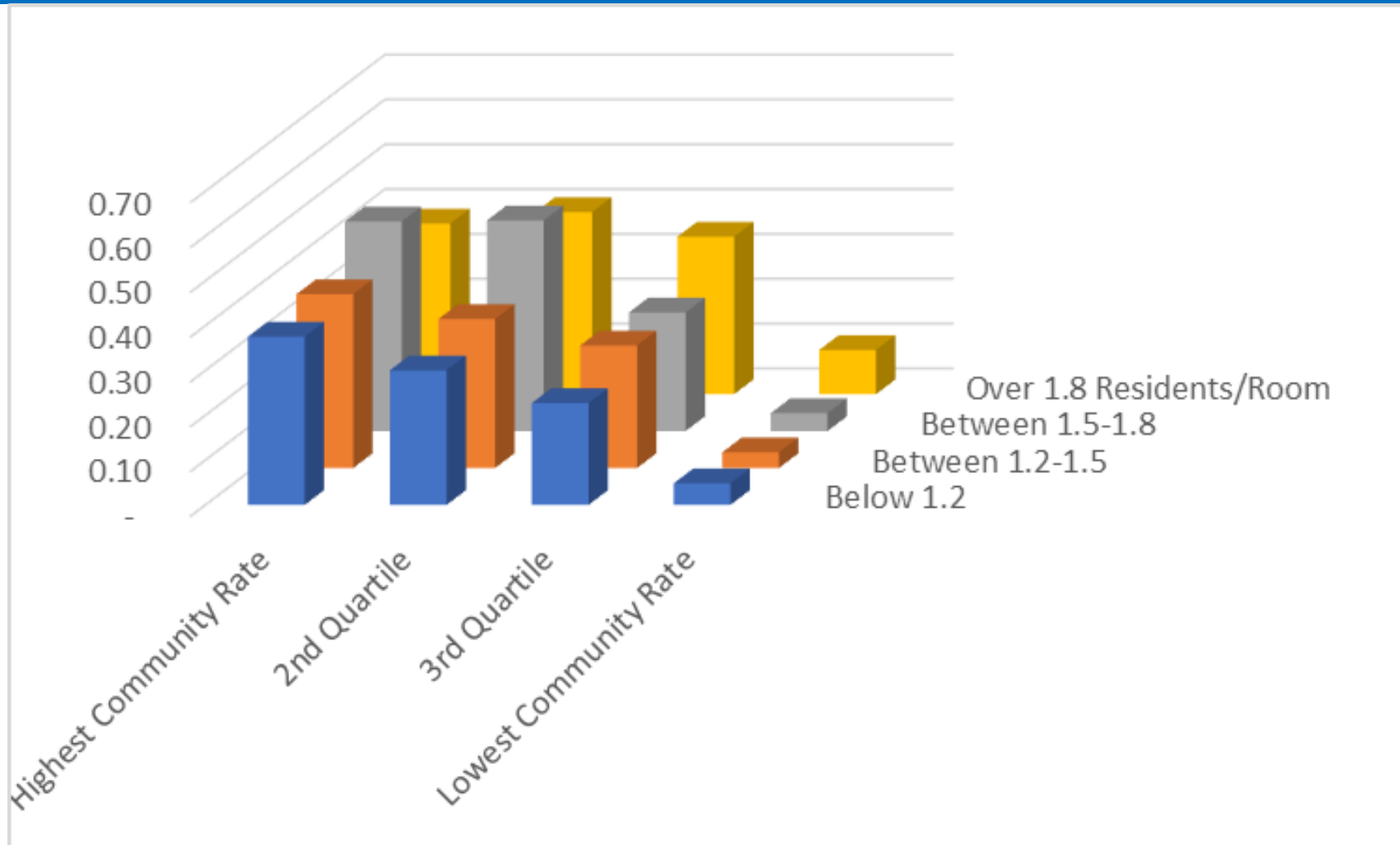
In additional analysis (not shown), it appears that above an average of ~2.1 residents per room, COVID infection ratios may go back down, e.g., to about the level observed for facilities with 1.5-1.8 per room. **In other words, infections may have peaked at 1.8-2.1 residents/room.**

# COVID Infections in Illinois Nursing Homes: Larger Facilities Only (>180 beds)

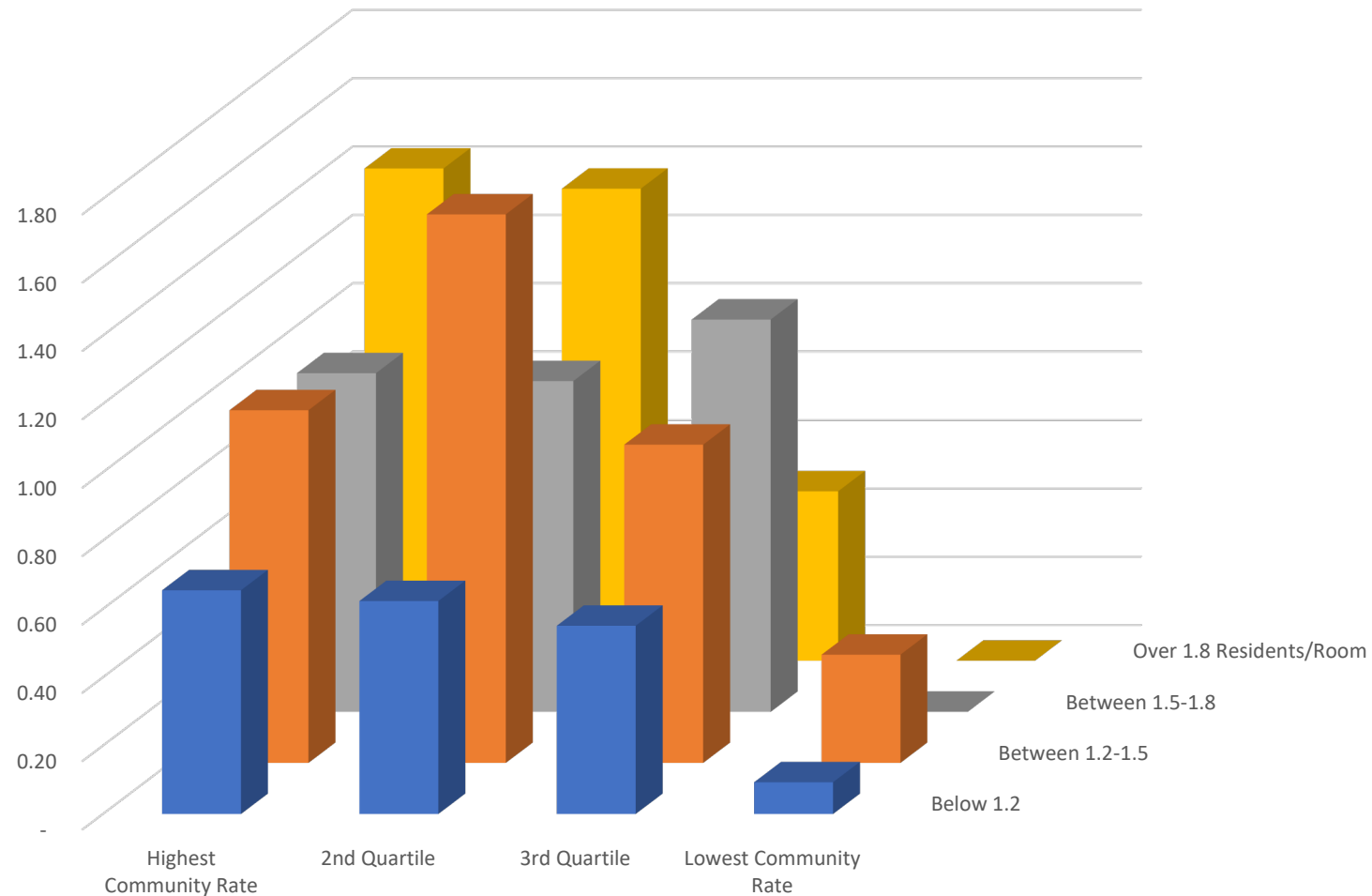


Sources: IDPH Aggregated COVID Records 5/2020; IDPH Room Count 9/2020; Preliminary HFS 2019 Cost Reports

# COVID Infections in Illinois Nursing Homes: Smaller Facilities Only ( $\leq 180$ beds)



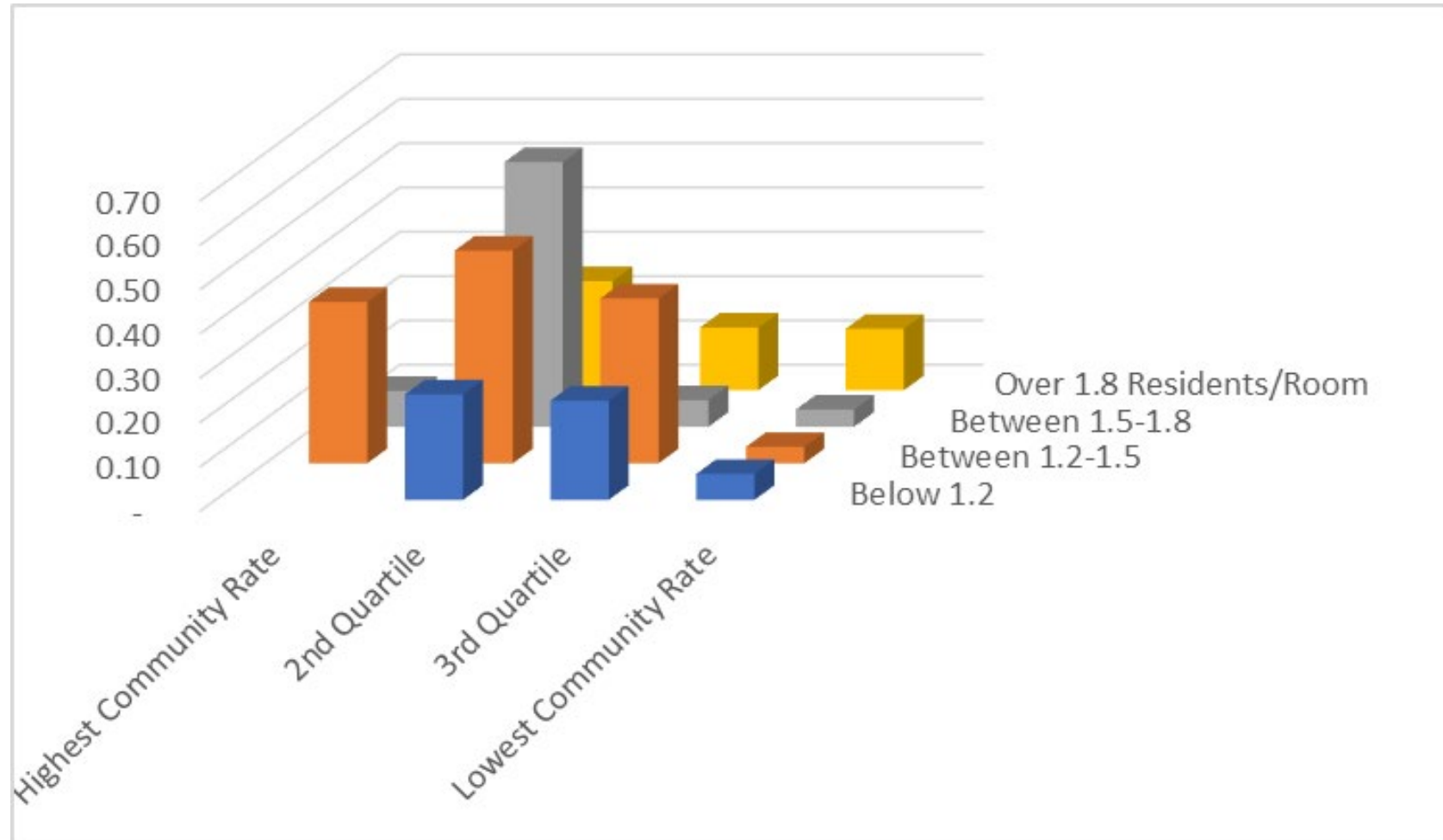
# COVID Infections in Illinois Nursing Homes: Ratio of Larger to Smaller Facilities



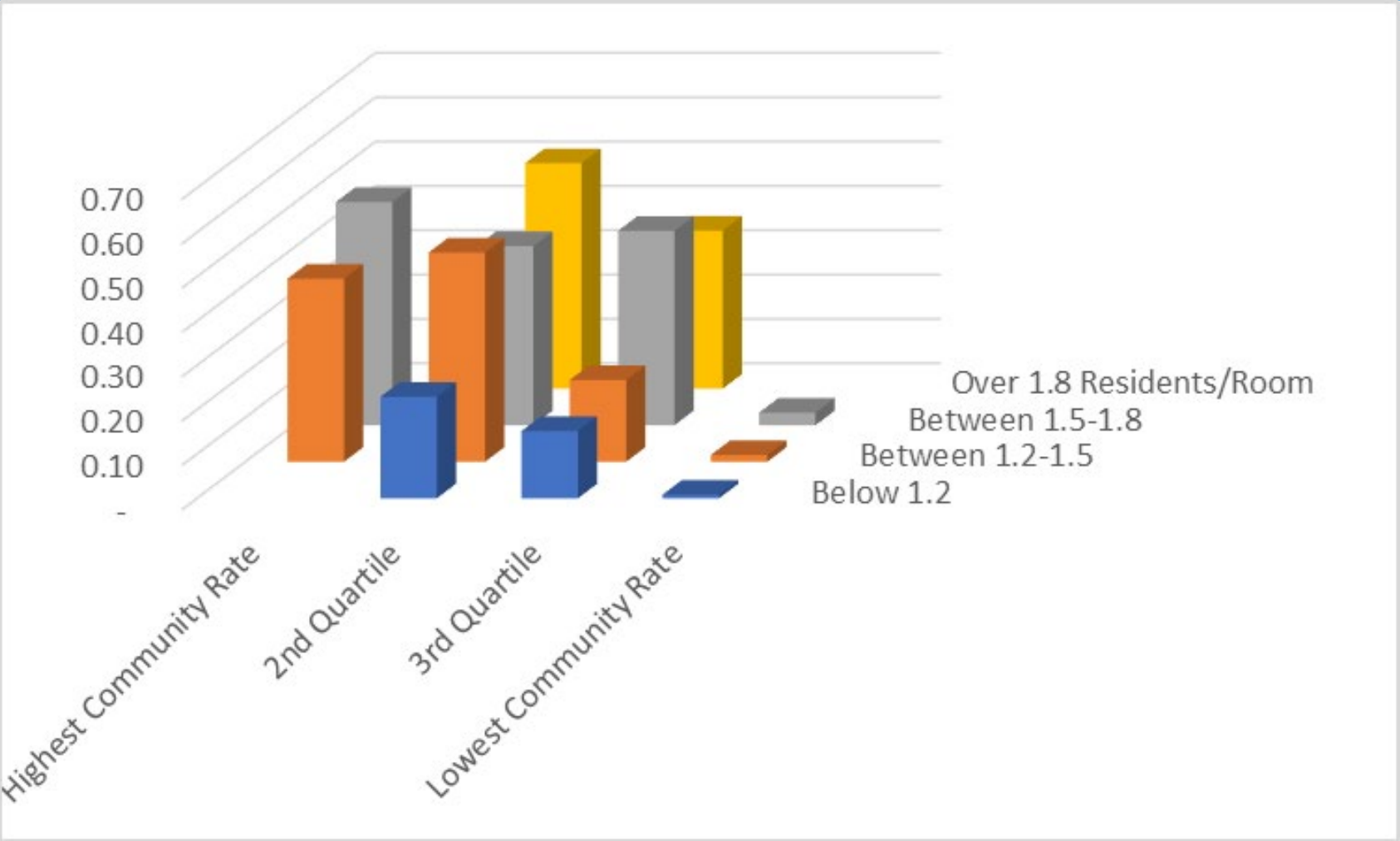
Smaller facilities fared better – even *after* adjusting for community spread and resident density -- except in very low-COVID zones and maybe at very low residents per room.

Overall ratio 2.3-to-1  
Large v. small

# COVID Infections in Illinois Nursing Homes: Single Floor Facilities Only



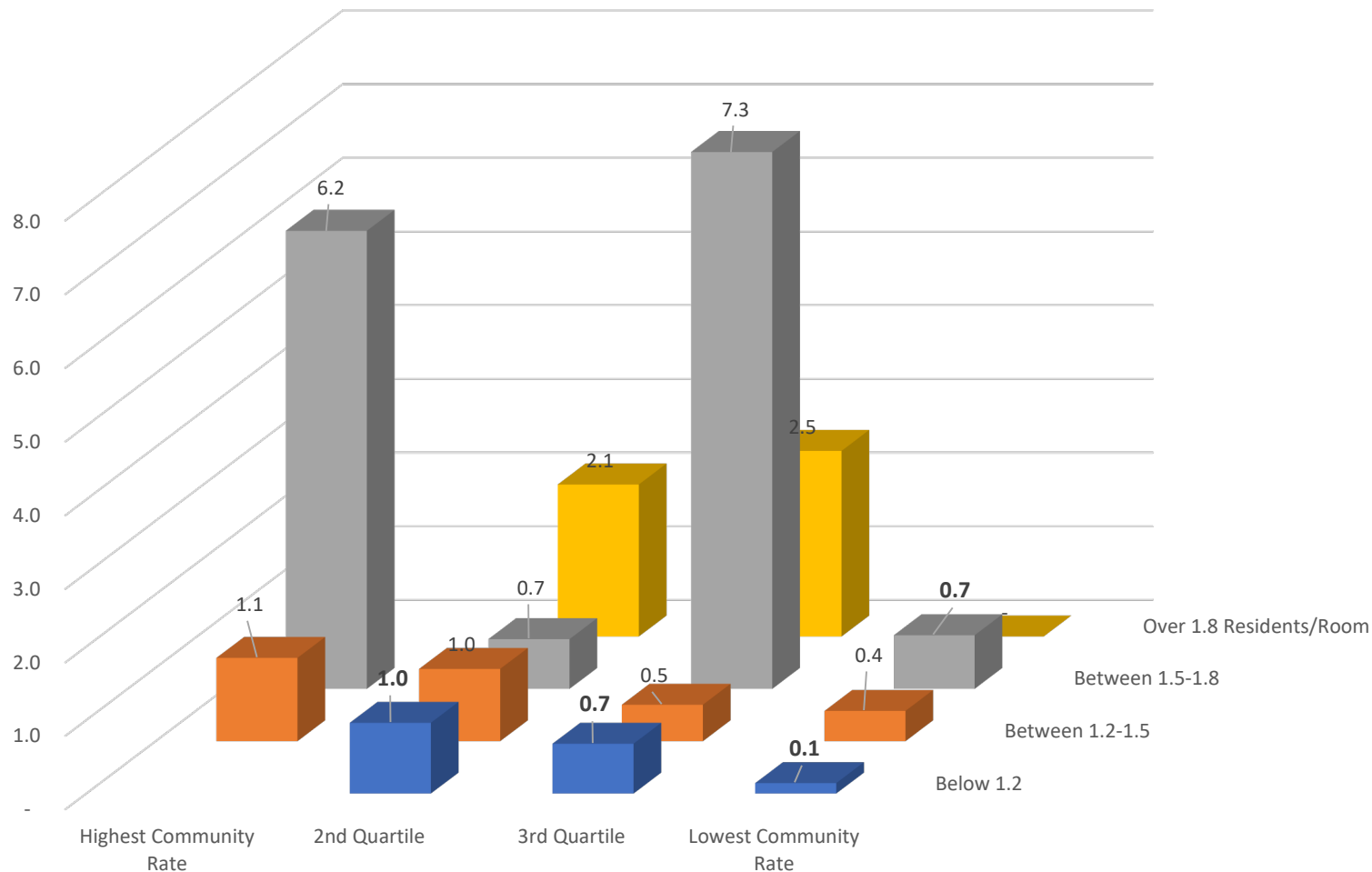
# COVID Infections in Illinois Nursing Homes: Multi-floor Facilities Only



Sources: IDPH Aggregated COVID Records 5/2020; IDPH Room Count 9/2020; Preliminary HFS 2019 Cost Reports



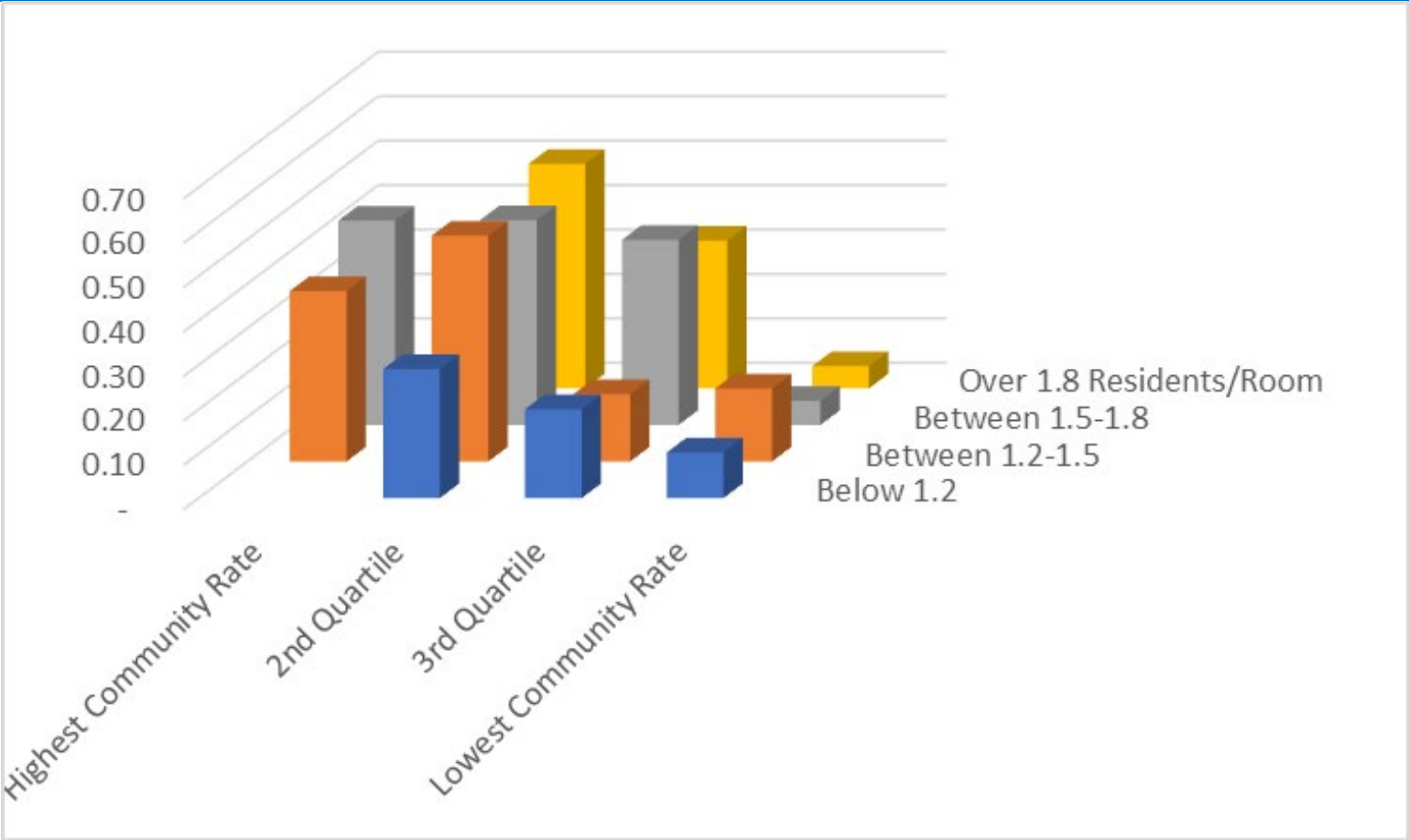
# COVID Infections in Illinois Nursing Homes: Ratio of Multi- to Single Floor Facilities



Overall ratio 1.96-to-1  
Multi- v. single floor

Single-floor facilities appear to have offered more protection from COVID, on average, but not in the lowest-COVID zone (especially for below-average resident density)

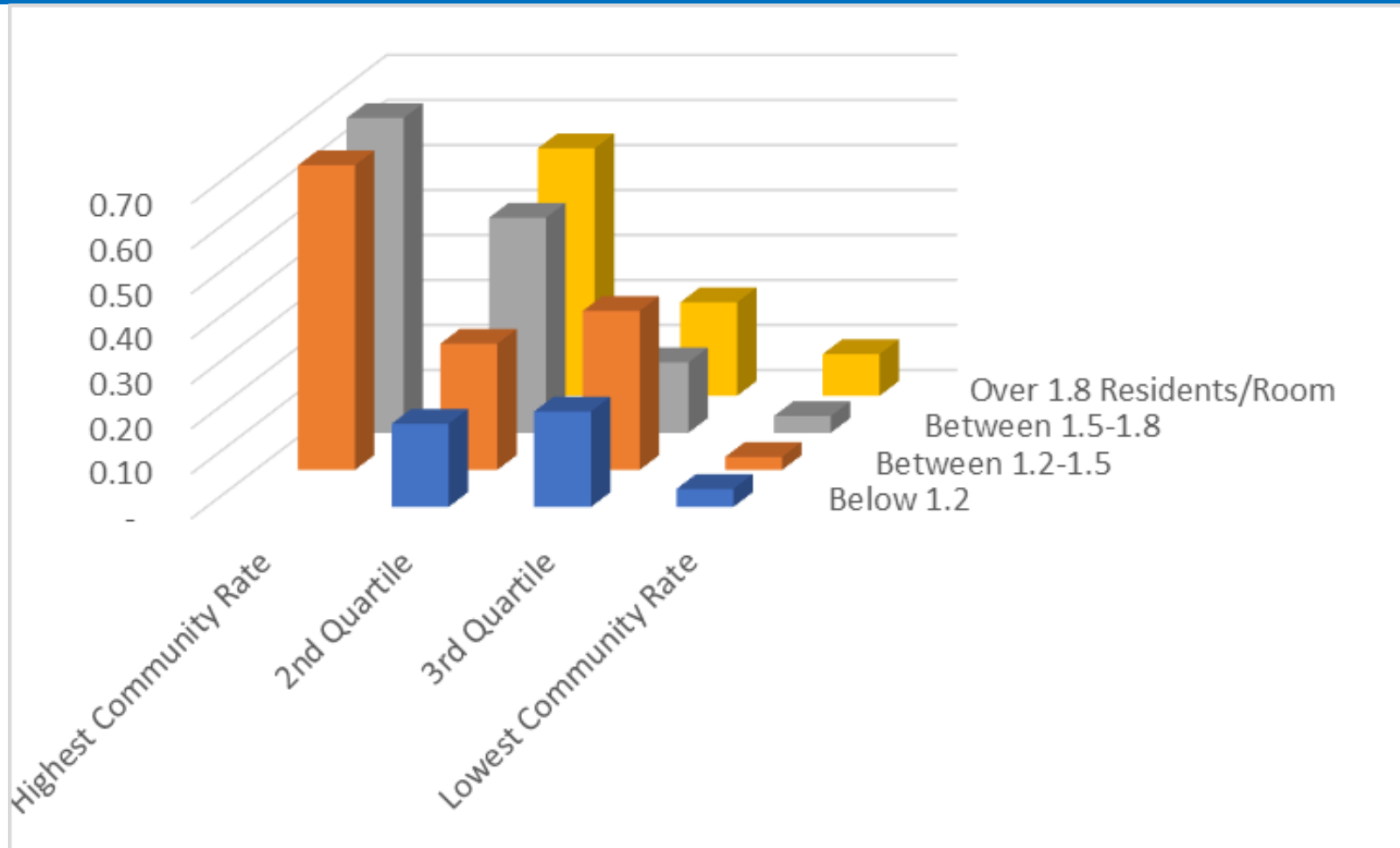
# COVID Infections in Illinois Nursing Homes: Chicago Area\*



\*Here the Chicago area is defined as the following five counties: Cook, DuPage, Lake, Will, and Kane.

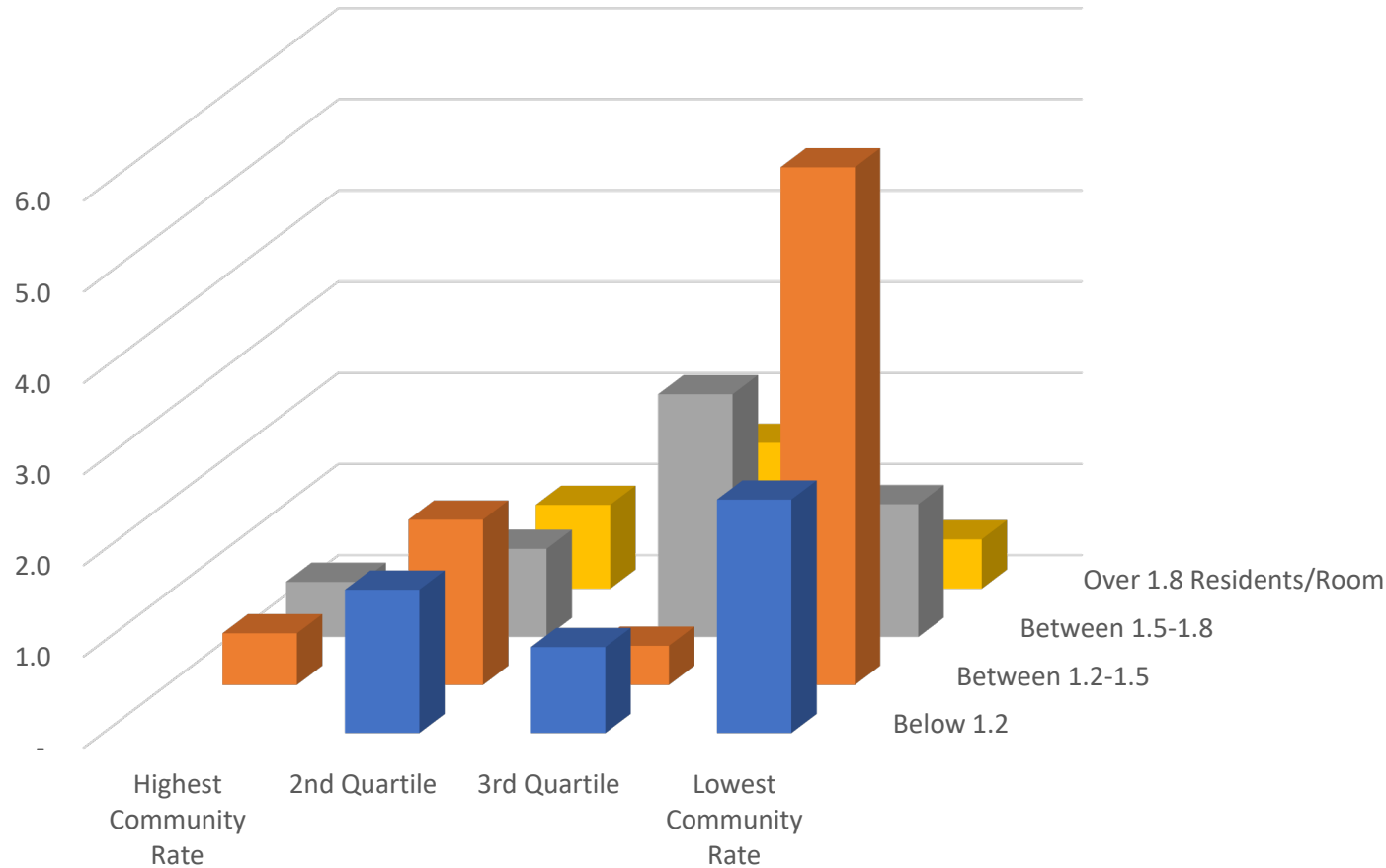
Sources: IDPH Aggregated COVID Records 5/2020; IDPH Room Count 9/2020; Preliminary HFS 2019 Cost Reports

# COVID Infections in Illinois Nursing Homes: Outside the Chicago Area\*



\*Here the Chicago area is defined as the following five counties: Cook, DuPage, Lake, Will, and Kane.  
Sources: IDPH Aggregated COVID Records 5/2020; IDPH Room Count 9/2020; Preliminary HFS 2019 Cost Reports

# COVID Infections in Illinois Nursing Homes: Ratio of Chicago-area\* to Homes in Other Areas



Chicago area homes appear to have higher rates of COVID infection in Wave 1 *at each level of community infection and residents per room* -- but especially in low-COVID communities and low-density homes.

Overall ratio 3.5-to-1.

\*Here the Chicago area is defined as the following five counties: Cook, DuPage, Lake, Will, and Kane.

Sources: IDPH Aggregated COVID Records 5/2020; IDPH Room Count 9/2020; Preliminary HFS 2019 Cost Reports

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# Federal Coronavirus Commission on Nursing Homes

## Findings

### “Section 3.9 **Facilities**

The Commission identified two primary problems associated with nursing home facilities.

1. The physical environment (e.g., structure of resident rooms; architecture and layout of nursing homes; heating, ventilation, and air conditioning [HVAC] systems) of many nursing homes is not optimally designed to limit spread of transmissible diseases.
2. Fundamental design changes are costly and may take longer to implement. but are necessary due to the prolonged risks to residents from COVID-19 and the need to position facilities to manage future epidemics.

As the fall season approaches, design adaptation will take on increased importance and urgency with respect to physical-distancing practices that depend on use of outdoor space. Outdoor visitation, for example, will be neither safe nor practical in colder weather. “

# Federal Coronavirus Commission on Nursing Homes

## Recommendations

**Principal Recommendation 9A:** Identify and share with nursing homes short-term facility design enhancements to address immediate pandemic-related risks that can be implemented at minimal cost.

**Principal Recommendation 9B:** Establish a collaborative national forum to identify and share best practices and recommendations; facilitate real-time learning on how to best use existing physical spaces.

**Principal Recommendation 9C:** Collaboratively establish long-term priorities and seek appropriate funding streams for nursing homes to redesign and/or strengthen facilities against infectious diseases.

# Federal Coronavirus Commission on Nursing Homes

## Action Steps

- Establish a commission or task force, jointly led by industry, safety and consumer organizations, to identify long-term priorities for nursing care with emphasis on the design, redesign, retrofitting, and reconfiguration of nursing homes to be resilient to infectious disease threats. Topics to be considered include, but are not limited to:
  - The ability to designate separate wings for cohorting
  - Separate entrances and exits
  - Separate restrooms and break areas for staff
  - Separate areas to don and doff PPE
  - Ultraviolet light systems for decontamination
  - HVAC upgrades and retrofitting
  - Design considerations that take resident quality of life and leisure into consideration
- Consider forming a public/private partnership that issues a challenge for nursing home redesign.



# IDPH 'Siren' on Building/Indoor Preventive Measures

11.5.2020

**“The Centers for Disease Control and Prevention (CDC) recommends schools, child-care programs, workplaces, congregate living facilities, and other locations consider upgrades or improvements to their HVAC system during the COVID-19 pandemic.”**

IDPH/CDC-recommended measures include:

- “Increase air changes per hour (ACH)
- Increase outside air
  - Use caution in areas where particulate matter or other hazardous air pollutants are a concern
- Disable demand-controlled ventilation (DCV).
- Open outdoor air dampers to reduce or eliminate recirculation
  - This may affect thermal comfort and humidity, especially during extreme weather
- HVAC system filters should be MERV-rated and properly installed
  - A minimum efficiency rating value (MERV) of 13 or higher is recommended
  - Ensure the filters are properly installed and have no gaps to allow air to by-pass them
- Keep systems running longer and, if possible, 24/7
- Consider using portable HEPA filters in areas with high occupant density, as well as:
  - Higher risk areas such as a school nurse’s office
  - Locations with no mechanical ventilation or filtration
  - Poorly functioning HVAC systems to aid the system “

## Questions for discussion:

- \*Do the IDPH recommendations seem achievable? What are the practical considerations for following these new best practice guidelines?
- \*Would funding help by enabling NFs to make immediate plans to adopt one or more of the IDPH/EPA best practices?
- \*Which changes seem feasible by:
  - the end of the year?
  - March 2021, etc.?

# Should the Pandemic (help) Provoke Redesign?

## “Nontraditional nursing homes have almost no coronavirus cases. Why aren't they more widespread?” By Rebecca Tan, *Washington Post*, 11/3/2020

- “[Although Alexandria was hit hard by the coronavirus]...not a single resident has contracted the [coronavirus](#) at Goodwin House’s small residential facility in Northern Virginia, where about 80 seniors live in homey apartments and keep their own sleeping and meal schedules. [Residents live in groups of 10, with a staff-to-resident ratio of 1 to 5.] There’s been just one case at the Woodlands at John Knox Village in Broward County, Fla., where all 140 residents live in private rooms and are cared for by nurses who earn enough not to take a second job.”
- “In 1997, a group of 33 administrators, ombudsmen and geriatricians who had been independently researching alternative models of skilled nursing care ...**outlined what nursing homes should look like: small, localized facilities where employees had enough time and resources to develop personal relationships with each resident.** Staff members would provide support for mental as well as physical health, and let residents make their own decisions when possible. Residents would be seen foremost as people, not patients.” **Emphasis added**

# CMS Efforts to Reduce Multi-Occupancy

## Proposed v. Final Rules in 2015

### Proposed Rule

"Currently, in existing § 483.70(d), the regulations allow for bedrooms that accommodate up to four residents. We believe that this number of residents per room is inconsistent with current common practice, is not person-centered nor supportive of achieving the resident's highest practicable mental, physical and psychosocial well-being and is not an environment that promotes maintenance or enhancement of each resident's quality of life. Therefore, we propose to require in new § 483.90(d)(1)(i) that, bedrooms in facilities accommodate not more than two residents unless the facility is currently certified to participate in Medicare and/or Medicaid or has received approval of construction or reconstruction plans by state and local authorities prior to the effective date of this regulation. ...We believe that semi-private rooms are far more supportive of privacy and dignity. While a facility is not a permanent home for all of its residents, this provision is particularly critical for those residents whose only home is the nursing facility. **We considered, but did not propose to require private rooms.**"

<https://beta.regulations.gov/document/CMS-2015-0083-0001> (*emphasis added*)

### Final Rule

**Physical environment §483.90:** "We are requiring facilities that are constructed, re-constructed, or newly certified after the effective data of this regulation to accommodate no more than two residents in a bedroom. We are also requiring facilities that are constructed, or newly certified after the effective data of this regulation to have a bathroom equipped with at least a commode and sink in each room."

# Multiple occupancy in Illinois' NF Market

## Industry Input

- In general, IDPH (planning commission) doesn't let facilities mothball wings very often because of the requirements to re-open them
  - Do facilities have a marketing incentive to place residents in rooms with extra empty beds?
  - This would tend to keep residents more physically spread out in below-capacity facilities
- Where is the market currently headed with respect to room capacity?
  - Recent (2015) CMS guidance increases the fixed costs of modernizing SNFs that are financially dependent on 3+ person rooms, or 3+ person bathrooms, which are common in Illinois (19% of total SNF bed capacity as of 9.20.2020).
  - How many owners might be financially dependent on multiple occupancy, e.g., with facilities (re-)financed under the assumption of multiple-occupancy?
- How do facilities respond to excess capacity?
  - Are rooms left empty or beds unequally filled within rooms?

# Physical Design and Airflow in Illinois Nursing Homes

## Presumptive Observations for Discussion

Below are some presumptive, ad hoc observations related to the control of airborne infection diseases based on conversations with a number of officials, disparate experts, and selected literature (*not sourced, unofficial, and intended to spur discussion, correction and response*)

- There is no available source of information for
  - The size of each nursing home room in Illinois (assigning minimum sizes to the licensed # beds for each room is the closest we could come)
  - The nature and design of each facility's HVAC system(s)
  - Current performance v. regulatory airflow requirements that apply to new NF construction
  - The number of empty rooms in NFs
- Nursing home construction and design appears to be driven by universal fire code requirements that demand positive pressure in rooms without infectious residents so fire isn't pulled in from hallways.
  - New homes are most likely built precisely to code, e.g., positive pressure rooms with 3 full (outside) air changes per hour.
  - Older homes could look quite different than the modern standard
  - Emerging infection control recommendation for Covid might end up being 5-6 outside air changes per hour
- Air pressure and # air changes per hour are jointly-engineered in combination, as a pair
  - Negative pressure rooms for airborne infection control require 4 times the number of outside air-changes
  - NFs have few negative pressure rooms (i.e., for infection control), forcing transfer of infectious residents to hospitals
  - Methods for increasing the number of outside air changes in positive pressure rooms haven't been engineered, and are a new concept
  - The role of positive v. negative air pressure seems unclear in the context of facility-wide *preventive* infection control
- Homes have radically different HVAC systems, which would make improvements highly idiosyncratic
  - A meaningful number apparently do not have central heat and air
  - The potential for retrofitting NFs to a significantly higher air quality/airflow standard may vary considerably
  - Some commercial/retail solutions for improved air quality may be applicable, e.g., room-sized HEPA filtration devices, but would need to be 'designed' into resident rooms for safety and effectiveness

# Summary of Nursing Home Infrastructure and the Spread of Coronavirus

## Based on existing, though incomplete evidence:

- Community rates of infection appear to have had the greatest impact on resident infections (and presumably deaths)
- Physical characteristics of NFs appear to have had significant impact on COVID's spread
  - Resident density *within* nursing homes, especially in the form of residents/room, also appears to have had a very large impact on resident infections
  - Facility size, multi-floor facilities and Chicago-area location are all also (individually) related to Wave 1 COVID infections
  - All of these facility characteristics are correlated with each other, leaving causation uncertain
  - Resident density is strongly correlated with NF infections after controlling for *each* of the rest
- Little is known about airflow, replacement, and filtering in Illinois nursing homes – three presumptive keys to infection control for the airborne Coronavirus
- Recent guidance from the CDC/OSHA/EPA and IDPH may provide additional mitigation controls, e.g., prior to effective vaccinations

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- Recap
- Questions and brief comment
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  - Describing Illinois Nursing Facilities
  - Preliminary analysis of COVID's spread in Illinois nursing facilities
  - Potential infrastructure improvements
- Questions and brief comment on today's content
- Next steps and request for content

# Questions for Discussion

- Are there NF infrastructure investments that would improve outcomes and/or quality of life that the state should consider supporting in a new rate structure?
  - Reduced room occupancy
  - Infection control measures like HVAC and other building modifications
- What are the key considerations in designing incentives for reduced room occupancy?
  - Should any added funding be devoted to a *general increase* in the capital component coupled with outcomes, quality of life, or occupancy incentives or should it be devoted mostly to *targeted incentives* that help finance this transition more directly for NFs that need it?
  - Should any incentives vary to accommodate NFs that are *economically dependent* upon multiple occupancy or whose facilities are *less adaptable* for improved air quality?
- What are the key considerations in any shift towards lower room occupancy?
  - Apart from capital, what other components of the Medicaid per diem might need adjustment for facilities to continue operating at reduced licensed capacity (reduced room occupancy)?
  - “Indirect” fixed or incompletely variable costs such as insurance, housekeeping, utilities, maintenance, possibly administration, profit (ROR on Capital)?



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