Nursing Home Affiliated Entity Performance Methodology

Overview

This dataset contains aggregate health, staffing, and quality performance measures for the Centers for Medicare and Medicaid Services (CMS)-certified nursing home associated with affiliated entities. *Affiliated entities* are groups of nursing homes that share at least one individual or organizational owner, officer, or entity with operational/managerial control. Each affiliated entity is assigned a name and a number. These data are collected and aggregated to track the performance of owners and operators across states in promoting resident health and safety, and to give the public a resource to better understand owners' and operators' quality across all of the nursing homes with which they are affiliated.

Background

In 2022, the Biden Administration announced an initiative to increase the transparency of corporate ownership and operation of nursing homes. As part of this initiative, CMS has made available metrics on the performance of groups of nursing homes linked together by common owners or operators. In doing so, CMS plans to fulfill the stated goal to "track and identify owners and operators across states to highlight previous problems with promoting resident health and safety." This information can be used by states to more information about prospective owners and operators of nursing homes, as well giving the public the tools to understand and evaluate the quality of nursing homes with common ownership or operation.

Data sources

Affiliated entities are determined from nursing home ownership data in the Provider Enrollment, Chain, and Ownership System (PECOS). All nursing homes who enroll in Medicare are required to report individuals and organizations that have an ownership stake in the facility, including those who have operational or managerial control, in PECOS. Groups of nursing homes that share at least one individual or organizational owner, officer, or entity with operational/managerial control are known as affiliated entities. Affiliated entities are identified through a process known as network analysis (see below).

As PECOS only contains ownership information for Medicare-enrolled facilities, this dataset does not include affiliated entity data for Medicaid-only facilities. Additionally, as facilities that are currently undergoing a change of ownership (CHOW) or other enrollment updates are not included in public data ownership extracts, affiliation data for these facilities are not included in in this dataset until the CHOW or enrollment update is completed.

For more information about nursing home ownership, please see the Skilled Nursing Facility Enrollments website. For more information about nursing home CHOWs, please see the Skilled Nursing Facility Change of Ownership website.

The primary source for aggregate performance measures is the CMS Five-Star Quality Rating System, which includes health inspections, staffing, and MDS quality measures. For more information about how these measures are calculated for individual nursing homes, please see the Five-Star Users' Guide.

Affiliated entity technical methodology

Nursing homes are assigned to groups of nursing homes called "affiliated entities." In general, each nursing home is assigned to a single affiliated entity, although a few are not assigned to any such entity.

The first step of this assignment involves a hierarchy. For nursing homes that report at least one individual or organizational owner, assignment is based on ownership. For nursing homes that report no individual or organizational owners but do report a board of directors (e.g., non-profit nursing homes), assignment is based on individuals who are reported to be in the "officer" or "director" role. For the remaining nursing homes that report no owners but do report operational/managerial control, assignment is based on that. This data is sourced via PECOS.

Affiliated entities are identified via network analysis. In network analysis, the structure of the relationships between nursing homes is modeled as a network, in which nodes (in this analysis, nursing homes) are linked to each other via edges (in this case, owner PECOS Associate Control [PAC] IDs[1] in PECOS). Specifically, the relationships are modeled as an undirected network, in which nodes are connected by edges, but the directionality of the edges is undefined and edges are unweighted. This is done using the "igraph" package in the statistical software application R v.4.0.0. This methodology is also used to assign nursing homes to the "Top 10 Chains" for the Quality, Certification and Oversight Reports (QCOR).[2]

Affiliated entities are then detected via two methods. The first is via modularity, in which affiliated entities are identified where nodes have dense connections with each other and sparse connections with nodes in other affiliated entities. They are also identified using hierarchical clustering, specifically the Agglomerative Nesting (AGNES) method. After each nursing home is assigned to an affiliated entity, the groupings are manually checked against the list of owners in PECOS for accuracy. Then, each entity is assigned a name if the entity has nursing homes located in at least two states or has at least five nursing homes located in a single state. These names are assigned from one of the following sources, depending on the availability of the data:

- Shared organizational owners in the affiliated entity
- Shared organizational operational/managerial control
- Shared facility names or legal business names (LBNs) (e.g., "The Waters of____", "Symphony ___")
- The shared chain home office in PECOS
- Shared public-facing websites or other public sources

Exceptions to the above rule include nursing homes owned by city or county hospitals in Indiana and Texas.[3]

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[1] The PECOS Associate Control (PAC) ID is a unique 10-digit numeric identifier that is assigned to each individual or organization in PECOS.

[2] https://qcor.cms.gov/main.jsp, accessed 2023-03-01.

[3] Medicaid reimbursement policies in Indiana and Texas allow city and county hospitals in these states to own multiple SNFs with differing operators. In these cases, the affiliated entity is assigned based on one of the following:
- Shared organizational operational/managerial control
- Shared public-facing websites or other public sources

Due the complex structure of the nursing home ownership in PECOS, the affiliated entity analysis cannot account for every ownership relationship or scenario that may exist. Additionally, variables identifying groups of nursing homes are entirely sourced through the ownership data available in PECOS based on information submitted by nursing homes. Data that are not included in the PECOS database are not included in this analysis.

Contact information

For questions about and suggestions for this dataset, please contact the CMS Nursing Home Affiliation Inquiries at NH_affiliation_inquiries@cms.hhs.gov.

- The shared name of the city or county hospital, if the SNF cannot be determined to have external operational control