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Intermediate Care Facilities for Individuals with Intellectual Disabilities: Does Ownership Type Affect Quality of Care?
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Abstract

Since many large, state-owned Intermediate Care Facilities for Individuals with Intellectual Disabilities have closed or downsized, their average size has fallen markedly, as has the number that are publicly owned. We probe the relationship between ownership type and four measures of care quality in ICF/IIDs. Data on deficiency citations suggest that for-profits underperform other ownership types, although data on complaints show no clear pattern. Meanwhile, data on staffing ratios and restrictive behavior management practices, based mostly on facility self-reports, generally tell the opposite story. Our results lend some credence to concerns regarding inadequate care in for-profit ICF/IIDs, while underscoring the importance of requiring ICF/IID operators to report more comprehensive, longitudinal data that are less prone to error and reporting bias.

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Ownership Type and Quality of Care in Intermediate Care Facilities

In industries that provide health services or personal care to people who are elderly, sick, or disabled, government-owned facilities frequently operate alongside for-profit and nonprofit providers. In recent years, empirical literature on the relationship between ownership type and the quality of healthcare services has proliferated. Some scholars have sought to quantify differences between public and private providers, while others have compared the performance of for-profit and nonprofit companies. In some sectors, such as nursing homes and hospitals, this literature has become extensive enough to support multiple literature surveys and meta-analyses, most of which report negative correlations between for-profit ownership status and quality of care (Comondore et al., 2009; Davis, 1991; Devereaux et al., 2002; Eggleston et al., 2008; Hillmer et al., 2005).

Yet an important healthcare services industry in which the impact of ownership type on quality of care has received virtually no scholarly attention is the long-term services and supports (LTSS) sector that serves individuals with intellectual and developmental disabilities (I/DD). Given the dramatic rise in autism diagnoses (Centers for Disease Control and Prevention, n.d.), the increasing longevity of individuals with I/DD (Taylor, 2016), and the fact that over half of individuals with Down Syndrome will develop Alzheimer's Disease as they age (National Institute on Aging, n.d.), an increasing number of adults with I/DD are likely to require LTSS, which may include residential care (Heller, 2019).

Ensuring that residential LTSS provide high-quality care is a key public policy goal. Yet theoretical accounts of the economic incentives facing for-profit entities (e.g., Hansmann, 1980; Steinberg, 2003), as well as an extensive empirical literature on nursing homes (e.g., Comondore et al., 2009; Grabowski et al., 2013; Hirth et al., 2014) and other healthcare service industries

(e.g., Lien et al., 2008), suggest that for-profit service providers generally deliver lower-quality care than their nonprofit and government-run counterparts.

Meanwhile, a number of recent academic articles (e.g., Geng et al., 2019; Han et al., 2018; Ody-Brasier & Sharkey, 2019; Perraillon et al., 2017; Sharma et al., 2017) and investigative reports (e.g., Lowenstein, 2014; Rau, 2018; Silver-Greenberg & Gebeloff, 2021; Thomas, 2014) have found that information on staffing ratios self-reported by nursing homes to survey teams collecting data for the Centers for Medicare & Medicaid Services (CMS) is often inflated or biased. Moreover, with one exception (Ody-Brasier & Sharkey, 2019), studies examining the relationship between ownership type and reporting bias in the nursing home sector have found that the prevalence and/or magnitude of misreporting (i.e., inflation) of staffing ratios is the highest among for-profit facilities (Geng et al., 2019; Han et al., 2018; Kash et al., 2007; Sharma et al., 2017).

Given these trends, examining the relationship between care quality and ownership type in industries serving individuals with I/DD can provide a more nuanced understanding of the relationship between community integration—a goal that has been enshrined in federal law for over two decades (Americans with Disabilities Act, 1990; Developmentally Disabled Assistance and Bill of Rights Act, 1975; *Olmstead v. L.C.*, 1999)—and alternative forms of industrial organization.

The present study focuses on one type of long-term care setting, Intermediate Care Facilities for Individuals with Intellectual Disabilities (ICF/IIDs), which "provide comprehensive and individualized health care and rehabilitation services to individuals to promote their functional status and independence" (Centers for Medicare & Medicaid Services [CMS], n.d.). Although the exact eligibility (and level of care) criteria vary by state, ICF/IIDs are only

available for individuals "in need of, and, receiving active treatment (AT) services" and for

whom the need for AT "arise[s] from ID [intellectual disability] or a related condition" (CMS,

n.d.). Active treatment refers to "aggressive, consistent implementation of a program of

specialized and generic training, treatment and health services," for individuals who cannot

function without close supervision and a "continuous program of habilitation services" (CMS,

n.d.). While ICF/IIDs vary in size and in ownership type, publicly-owned facilities are generally

larger, with an average of 65.3 residents per facility, as compared to average resident counts of

8.4 and 10.5, respectively, among for-profit and nonprofit facilities (CMS, 2017).

The structure of the ICF/IID industry has changed markedly in recent years, as many

large ICF/IID facilities have closed or downsized. Between 2009 and 2016, for example, the total

number of ICF/IIDs in the U.S. fell from 5,457 to 5,003 (CMS, 2009, 2016), while the average

number of residents per facility decreased from 13.7 to 11.6 (CMS, 2017). This decline in the

prevalence and average size of ICF/IIDs has been accompanied by significant shifts in the

ownership structure of the industry. Between 2009 and 2016, the percentage of ICF/IID residents

living in government-owned facilities fell from 33.8% to 25.2%. During the same period, the

share of ICF/IID residents living in nonprofits rose from 38.8% to 43.9% and the percentage

residing in for-profits rose from 24.0% to 27.7% (CMS, 2017).

Although ICF/IIDs and other institutional care facilities are often regarded as a relic of

the past, with the goal of federal and state policy having shifted decisively toward the provision

of LTSS in home- and community-based settings, the changes in the ownership structure of the

ICF/IID industry merit scholarly attention for several reasons. First, as of 2017, approximately

75,000 individuals—roughly 14% of all individuals with I/DD who received LTSS from state

agencies but did not live with family members—resided in ICF/IIDs nationwide (Larson et al.,

2020). Identifying the effect of changing ownership structures on the life experiences of this group of individuals is of intrinsic importance. Secondly, the care provided by ICF/IIDs comes at considerable taxpayer expense: in fiscal year 2017, total government expenditures on ICF/IIDs exceeded 9.75 billion dollars (Larson et al., 2020). Finally, any correlations between ownership type and quality of care observed in the ICF/IID industry could also characterize other industries that provide LTSS to individuals with I/DD, especially if there is significant variation in ownership type among the companies that supply those services. In short, improving policy makers' understanding of the relationship between ownership type and care quality not only could affect the welfare of tens of thousands of individuals living in highly restrictive environments, but also could stimulate research into the effects of changing ownership structures in other, less restrictive forms of LTSS.

Yet to our knowledge, there is only one prior study that examines the relationship between ICF/IID ownership type and care quality. Unfortunately, that analysis is two decades old, utilizes data from only a small subset of the providers then in operation, excludes government-owned facilities from the analysis, and examines a narrow set of quality indicators that are defined inconsistently or not at all (Brown, 2002).

The aims of the present study are threefold: (1) to examine whether there is any correlation between ownership type and quality of care in ICF/IIDs; (2) to assess the strengths and weaknesses of the survey data on ICF/IIDs collected by CMS; and (3) to identify reforms to the current surveillance system that could yield more granular insights into the real-world impact of changing ownership patterns on quality of care in the ICF/IID sector, some of which might apply to other, less restrictive settings. To augment the information presented below, the reader may wish to consult the Online Appendix, which provides a more detailed description of our

methodology and findings, as well as results from additional models designed to check the

robustness of our conclusions. The Online Appendix can be found

at: https://law.stanford.edu/publications/ownership-type-and-care-quality-in-icf-iids/

Methods

Data Sources

The information analyzed in this study encompasses three datasets collected by CMS

through its CASPER (formerly OSCAR) reporting system. The CASPER datasets we use, which

encompass all ICF/IIDs in the U.S., were acquired through the CMS Quality Improvement

Evaluation System and include information on all ICF/IIDs from 2009 through early 2017.

The first dataset contains information from the Intermediate Care Facilities for

Individuals with Intellectual Disabilities Survey Report Form CMS-3070G ("Annual Survey"),

which is collected by state authorities for each ICF/IID approximately once per calendar year

during the ICF/IID (re)certification process (CMS, 2013a; CMS, 2018a). The team that

completes the Annual Survey is required to consult with an ICF/IID staff member, such as an

administrator, nurse, or social worker, to complete the survey (CMS, 2013b). The data recorded

in the Annual Survey are thus heavily reliant on the quality of information supplied by ICF/IID

personnel. The Annual Survey includes information on the number of staff (full-time-equivalent

direct care and nursing staff, respectively), the number of residents, and whether the surveyed

establishment uses drugs, physical restraint and/or time-out rooms (i.e., seclusion) to control

resident behavior.

The other two datasets used in our analysis—a deficiency citations dataset and a

complaints dataset—are compiled by state authorities from information obtained by independent

third parties. Regulatory deficiencies are assessed during unannounced inspections conducted by

state agency officials or CMS regional office representatives in conjunction with the Annual

Survey as part of the ICD-IID (re)certification process. Inspectors' primary method of

information gathering is direct observation, augmented if necessary with interviews or record

reviews (CMS, 2018a). Complaints against ICF/IIDs are submitted by concerned stakeholders—

such as consumers, family members, advocates, or health care providers—to state agencies or

CMS regional offices (CMS, 2019).

In all of our regressions, the unit of analysis is the Annual Survey, conducted at each

facility approximately once per calendar year, which we call the *facility-survey*. Because the

timing of Annual Surveys can be erratic, some facilities have more than one survey in a given

calendar year (in January and December of the same year, for example) or no surveys at all in a

given calendar year (the facility may have a survey in December of one year and one in the

January thirteen months later, for example). In general, however, facility-surveys occur about

once every 12 months.

Dependent Variables

The CASPER database includes information on four measures that at least arguably shed

light on quality of care in ICF/IIDs: (1) the number of deficiency citations issued by state

inspectors; (2) the numbers of total and substantiated complaints filed against the facility; (3) the

per-resident ratios of total (full-time equivalent) direct-care staff and registered nursing staff,

respectively, reported on the Annual Survey; and (4) whether facilities report using controversial

techniques—drugs, physical restraint, and time-out rooms, respectively—to control behavior. To

gain as complete a picture as possible of the quality of care provided, we analyze outcomes along

all of these dimensions.

For most of these measures, we cannot detect data entry errors because if any relevant

regulatory guidance exists, it takes the form of general standards rather than explicit minimum

thresholds. (For example, each facility is required to "employ or arrange for licensed nursing services sufficient to care for clients' health needs" [CMS, 2018a, p. 184].) Therefore, even if ICF/IIDs accidentally report incorrect values, or surveyors incorrectly enter them into the database, there is no way for us to detect such errors in our dataset.

There is one aspect of care quality, however, to which the regulations apply clear numeric thresholds: the number of direct-care staff. With reference to these thresholds, we identified facility-surveys that reported implausibly high (or low) ratios of direct-care staff. For example, some facilities reported direct-care staffing ratios that exceeded the most stringent regulatory requirements by more than a factor of ten, while others fell far below even the least stringent statutory requirements (reporting, for example, a ratio of less than 0.001 direct-care staff per resident). Moreover, some facilities reported direct-care staff ratios in one year that were more than twice (or less than half) as large as the values reported in adjacent years, without any (reported) change in the number of residents. These extreme outliers, which we deemed to be very likely miscoded, comprised about 3.34% of all facility-surveys in our dataset. As is described more extensively in the Online Appendix, we removed these facility-surveys from the direct-care staff model presented here to avoid biasing our results, but included them in all of our other models (which do not include any information on direct-care staff ratios).

Finally, although a necessary precondition for estimating our complaints models was controlling for facility-level characteristics, the complaints dataset contains no such information but only an alphanumeric code identifying the facility about which the complaint was filed. Therefore, it was necessary to "match" each complaint to the nearest facility-survey to take advantage of the covariates reported in the Annual Survey. The Online Appendix describes in detail the methodology used to complete this matching process.

Covariates

Our covariate of interest is *ownership type*, which encompasses for-profit, nonprofit, and government-owned facilities. Before conducting any statistical analysis, however, we carefully examined the quality of the ownership type field. As with the direct-care staff ratio, our examination suggested that the field was susceptible to some coding error. For example, one might expect to see some facilities change ownership type during the sample period, such as a for-profit facility that converts to nonprofit status, or vice versa. Yet given the significant legal and administrative costs associated with changing ownership type, one would *not* expect a facility to change ownership type for a single year and then immediately revert back to its original status—for example, operate as a nonprofit for several years, then as a for-profit for a single year, and then as a nonprofit for all remaining years. Yet there were 436 facilities in our dataset (roughly 7% of the total number) that displayed this seemingly implausible pattern at some point during the study period.

Here again, to ensure that data entry errors were not tainting the quality of the dataset— and in turn biasing our results—we implemented a data cleaning procedure in an effort to improve the accuracy of the ownership type field. Specifically, depending on the pattern observed, we adjusted or dropped facility-surveys for which ownership type seemed very likely miscoded. In so doing, we attempted to strike a reasonable balance between retaining as much data as possible and eliminating probable coding errors. (The Online Appendix describes the cleaning procedure in detail.) We used the resulting dataset, which we refer to as the "cleaned" dataset, for all of the specifications presented here. As a robustness check, however, we estimated all of the same models on the original ("uncleaned") version of the dataset, the results for which are included in the Online Appendix.

In addition to ownership type, all of our models include an extensive set of covariates. These controls includes dummies for facility size (7-15 residents; 16-34 residents, and >34 residents; for which <7 residents is the omitted category); the percentage of residents under age 22; the percentage of residents over age 65; the percentage of male residents; the respective percentages of residents who have severe/profound ID, have autism, have cerebral palsy, have epilepsy, have a language impairment, have a hearing impairment, have a visual impairment, are non-ambulatory, and have a medical care plan; state fixed effects (encompassing all 50 states and the District of Columbia except for three states--Alaska, Michigan, and Oregon—that have no observations); and year fixed effects (encompassing the period 2009-2017, with 2009 as the omitted variable). The complaints models additionally control for the period (i.e., number of days) during which complaints were matched to each facility-survey. The Online Appendix provides a more complete description of the provenance and construction of each independent variable.

Statistical Analyses

Our general estimation strategy is to compare for-profit facilities to nonprofit and government-owned facilities along each of the dimensions discussed above that (at least arguably) shed light on quality of care in ICF/IIDs. For each stage of the analysis, we use a modeling strategy suited to the distribution of the dependent variable being analyzed.

Our preferred models estimated the respective numbers of deficiency citations and complaints using ordinary least squares (OLS). The most appropriate way to define the dependent variable, however, is open to debate. If the likelihood of an additional complaint or citation increases by a relatively fixed amount for each additional resident, it would be best to define the dependent variable as a *rate*, that is, the number of citations or complaints per

resident. On the other hand, if the likelihood of an additional complaint or citation increases little, or not at all, with increases in facility size, it might make more sense to model the dependent variable as a *count*. Unfortunately, information available from CMS does not resolve this question. It is clear that some deficiency citations and complaints are framed broadly and pertain, on their face, to general practices that affect most, if not all, residents. For example, a facility may be cited for serving unpalatable food regardless of whether it serves 20 or 200 residents. Moreover, in the case of annual (re)certifications of ICF/IIDs, the survey team is required to check for every possible type of regulatory deficiency, regardless of facility size. By this logic, it might be appropriate to use the total number of citations/complaints as a proxy for quality of care.

At the same time, it stands to reason that the number of (real or perceived) problems that come to light would increase with the number of individuals served. For example, the admission of an additional resident creates new opportunities for that resident's family members, case manager, or other stakeholders (including the resident him/herself) to witness or experience disturbing incidents that may culminate in the filing of a complaint. By this logic, it might make more sense to use the total number of citations/complaints *per resident* as a proxy for quality of care.

Given this empirical uncertainty, we present two sets of specifications: one that models the *number* of deficiency citations and complaints associated with a given facility-survey, and one that models the *rate* (number per resident) of deficiency citations and complaints.

Our estimation strategy for the other dependent variables is more straightforward. To compare staffing ratios, we use OLS models in which the dependent variable is the number of (full-time equivalent) registered nurses and direct-care staff per resident. Finally, to model

whether a facility reported using drugs, physical restraint, or time-out rooms (respectively) to control behavior, we used probit models because of the binary nature of these dependent variables. In all models, standard errors are clustered at the facility level.

In theory, one might also examine the effect of changes in ownership type *within* individual ICF/IIDs using a difference-in-differences (DD) modeling strategy. Yet because so few ICF/IIDs in our dataset underwent changes to or from for-profit ownership during the study period, estimation of DD models not feasible. (The models were not well-powered enough to detect even very large differences in care quality.) The scarcity of facilities that changed ownership type likewise precluded us from using facility-level fixed effects in our models. This is an important limitation of the study design, since the absence of facility-level fixed effects prevents us from accounting for the possibility that unobservable characteristics of ICF/IIDs (such as the management team's commitment to patient safety) are driving *both* the choice of ownership type *and* one or more of the outcomes tracked in the CASPER database. Our specifications therefore should be construed as capturing differences in quality *between* different types of facilities rather than the effect of an ownership change *within* a given facility.

The final methodological challenge we sought to address arises from the fact that regression models can produce misleading results when there is poor covariate balance among the groups being compared (King & Zeng, 2006). In our setting, this concern arises from the fact that government-owned ICF/IIDs typically support many more individuals than for-profit or nonprofit ICF/IIDs, creating imbalance in the average number of residents per facility. Here again, we sought to ensure that our results were not driven by idiosyncratic features of the dataset. The baseline results presented here were obtained from models estimated on the "unadjusted" dataset, in which we made no effort to improve covariate balance (after

implementing the cleaning procedure described above). Yet to check the robustness of our findings, we re-ran all of our models on three alternative datasets that were manipulated to lessen the degree of covariate imbalance. These manipulations were accomplished either by dropping a small number of outlying observations (King et al., 2017), resulting in what we call a "pruned" dataset; or by using one of two different statistical procedures that accord different weights to different observations to achieve the same goal, yielding what we call "weighted datasets" (Sävje et al., 2020). Results obtained from these three alternative datasets, as well as those obtained from models run on the uncleaned dataset, are presented in the Online Appendix.

Table 1 presents summary statistics for all of the outcome variables used in our models, as well as the covariates of interest (i.e., the distribution of ownership types). The table also presents information on the composition of the data by displaying the average numbers of residents, and respective total numbers and percentages of facilities, facility-surveys, and residents, by ownership category. These statistics are presented separately for two different datasets: the original (raw) version generated by the CASPER system, and the cleaned dataset that we used to obtain the results presented in the paper. Summary statistics from the three alternative datasets described above, which we adjusted to improve covariate balance, are available in the Online Appendix.

Results

Deficiency Citations

Table 2 reveals that conditional on covariates, nonprofit establishments received fewer deficiency citations per resident (significant at the 0.1% level, i.e., with a p-value of less than 0.001) and total citations (significant at the 5% level) than for-profits. Government-owned facilities likewise received fewer deficiency citations per resident (significant at the 0.1% level)

than for-profits, although there were no statistically significant disparities between for-profit and government-owned facilities in total citations.

Complaints

As is shown in Table 3, nonprofit and government-owned facilities received *more* total and substantiated complaints than for-profits, a finding that was statistically significant at the 1% level. However, none of these disparities retained statistical significance when we divided the dependent variable by the number of residents at the facility.

Staffing Ratios

Table 4 compares the reported numbers of direct-care staff and registered nurses per resident. Notably, government facilities reported significantly *more* direct-care staff and registered nurses per resident than for-profits. Both of these disparities were statistically significant at the 0.1% level. On the other hand, nonprofit facilities reported *fewer* direct-care staff per resident than for-profits (also statistically significant at the 0.1% level), although the respective numbers of registered nurses per resident were statistically indistinguishable.

Use of Drugs, Physical Restraint, and Time-Out Rooms to Control Behavior

Table 5 displays results for the (self-reported) use of drugs, physical restraint, and time-out rooms, respectively, to control behavior. In nearly all regards, our results indicate that nonprofit and government-owned ICF/IIDs are significantly more likely (to at the least the 1% level) than their for-profit counterparts to report using these behavior management techniques. The only exception to this pattern is that government-owned facilities are reportedly less likely to use drugs to control behavior than both for-profit and nonprofits.

Other Model Covariates

While some of our demographic covariates are associated with higher (or lower) quality of care in a particular area, such as substantiated complaints, none was consistently associated with higher (or lower) quality of care in the majority of areas examined. For example, the proportion of residents who are nonambulatory is associated with both higher citations and complaints, but also with higher staffing ratios. Although the frequency of citations and complaints, and the likelihood of using controversial behavior management techniques, were generally higher in larger facilities, no other consistent patterns emerged.

There are also no straightforward time trends. Although the results of our year fixed effects suggest that there was more year-to-year variation in the citations and complaints regressions than in the staffing and behavior control regressions, none of these models displayed a consistent increase (or decrease) in the outcome variable over time. Interestingly, however, the frequency and per-resident rates of citations and (total and substantiated) complaints displayed roughly synchronous fluctuations across the study period: the average respective values of all these metrics across all facility-surveys (as well as the coefficients of the year dummies) dipped in 2011-2012, climbed to a peak in 2014-2016, and declined for the remainder of the study period.

Finally, although a large proportion (roughly half) of state dummies were statistically significant in any given model, the group of states that underperformed (or overperformed) was highly variable across models. Very few states were consistently associated with higher or lower quality of care across multiple domains. Two noteworthy exceptions were California, which was associated with lower quality of care in all domains except in the use of behavior control methods; and New York, which conversely *outperformed* the median state in all domains except the use of behavior control methods.

Discussion

The primary question motivating this study is whether there are compelling grounds for concern that for-profit ICF/IIDs provide lower-quality care than their nonprofit and government-owned counterparts. Our results do not provide a simple answer to this question.

On one hand, the results for deficiency citations show that for-profits are significantly more likely to be cited than nonprofits, regardless of whether one divides the number of citations by the number of residents. For-profits likewise underperform government-owned facilities in this domain, although the disparity is only statistically significant for citations per resident. Because deficiencies are assessed and recorded by an independent survey team that is well-versed in the intricacies of care quality and applies the same set of regulatory criteria to all facilities, one might infer on this basis that care quality is generally lower at for-profit ICF/IIDs, at least relative to nonprofits.

On the other hand, the other outcome measures examined tell a different and far less consistent story. First, total and substantiated complaints show no clear pattern. For-profit status is associated with the lowest number of (total and substantiated) complaints, although this relationship disappears when one compares the number of complaints per resident or, as is shown in the Online Appendix, if the datasets used for analysis have been adjusted to correct for covariate imbalance. (In fact, in some of the alternative models presented in the Online Appendix, for-profit status is associated with significantly *more* total complaints than nonprofit and/or government ownership.) Secondly, for-profits report significantly *more* direct-care staff per resident than nonprofits, although this is not the case for registered nurses or for any staffing ratios reported by government-owned facilities. (As is shown in the Online Appendix, there are no significant disparities in staffing ratios at all in the original, uncleaned dataset.) Finally, if

taken at face value, comparisons of the use of behavior management techniques—all of which

are self-reported by ICF/IID personnel to the survey team—suggest that for-profit facilities

usually *outperform* nonprofits and government-owned facilities.

If deficiency citations are taken to be the most reliable metric of quality, our findings lend

credence to concerns that for-profits are providing poorer care than their nonprofit (and,

arguably, government-owned) counterparts. Yet the equivocal nature of our findings raises

pressing and far-reaching concerns regarding the adequacy of data on ICF/IIDs collected by

CMS.

Most importantly, although the Annual Surveys conducted at nursing homes and

ICF/IIDs further similar regulatory objectives, the data on ICF/IIDs are markedly inferior in

multiple regards. First, whereas CASPER data on ICF/IIDs only include information on the

nature of each deficiency, including the specific law or regulation that was violated, the

CASPER data on nursing homes additionally include information on the *scope* (number of

residents affected) and *gravity* (severity of harm) associated with each violation, nuances that are

vital in calculating quality of care (CMS, 2020).

Another comparative weakness of ICF/IID data arises from reforms included in the

Patient Protection and Affordable Care Act (2010). Starting in 2016 (CMS, 2021), nursing

homes were no longer allowed merely to self-report the number of staff during annual

(re)certification surveys. Rather, they were required to provide detailed staffing information to

CMS on a quarterly basis "based on payroll and other verifiable and auditable data in a uniform

format" (CMS, 2018b, p. 1), including the type of work performed by each direct-care staff

member; resident census data; and information on staff turnover, tenure, and hours of care per

resident per day, using an online system called the Payroll-Based Journal (PBJ), whose data can

also be accessed through the CASPER system (CMS, 2018b). CMS audits these filings regularly

to assess their accuracy and completeness (CMS, 2018b). Comparisons of facility-reported

staffing data from CASPER and payroll-based staffing data from PBJ suggest that inflation of

nursing home staffing ratios in the CASPER data has been pervasive, particularly among for-

profit facilities (Geng et al., 2019). In fact, for this very reason, nursing homes have no longer

been required to report staffing information to (re)certification survey teams since June 1, 2018

(Quality, Safety and Oversight Group, 2018).

In short, reforms undertaken by CMS in the past decade have dramatically improved the

quality of data available on the direct-care staff and registered nurses who support nursing home

residents. Since ICF/IIDs were unaffected by these reforms, it is reasonable to infer that staffing

information on ICF/IIDs is far more susceptible to reporting bias than the comparable data now

available for nursing homes.

Another important deficiency of the data on ICF/IIDs is that unlike with data on nursing

homes, they cannot be linked to any dataset with information on individual residents. Since the

passage of nursing reforms as part of the Omnibus Budget Reconciliation Act (1987), spurred in

part by an Institute of Medicine Study that substantiated concerns about poor quality of care and

ineffective regulations in nursing homes (Wiener et al., 2007), all nursing homes funded by CMS

have been required to complete a Resident Assessment Instrument that includes a Minimum Data

Set (MDS) with longitudinal measures of each patient's health status and day-to-day functioning

levels (Lowenstein, 2014). Health scholars have used the MDS to test nuanced hypotheses

regarding the relationship between nursing home ownership type, patient characteristics, and

quality of care (e.g., Grabowski et al., 2013; Hirth et al., 2014). Yet no comparable dataset exists

for ICF/IIDs.

The absence of any individual or longitudinal data on ICF/IID residents is a significant barrier to meaningful reform because some of the correlations reported here could be explained by unobservable differences across ownership types in the populations served. For example, if government-owned facilities disproportionately serve individuals with complex medical needs, or if for-profits decline to serve applicants who engage in aggressive or self-injurious behavior, such differences could explain several of our most perplexing findings (such as the high staffing ratios among government owned facilities, and the relatively infrequent use of drugs, physical restraint and time-out rooms among for-profit facilities). The lack of any data on individual characteristics, or longitudinal data on how individual residents fare over time, makes it virtually impossible to explore such hypotheses.

In short, not only do our results provide some evidence—albeit circumstantial and somewhat equivocal—that for-profit ICF/IIDs deliver lower-quality care than their nonprofit counterparts, but they also underscore deficiencies in the current surveillance system that preclude researchers from ascertaining to what extent, if at all, shifts in the ownership structure of ICF/IIDs correlate with changes in quality of care. Achieving parity between nursing homes and ICF/IIDs in the breadth and quality of data reported to CMS would substantially mitigate this problem. Specifically, mandating that ICF/IID operators submit staffing information that is based on payroll and other auditable data; requiring surveyors to collect data on the scope and gravity of each deficiency citation; and mandating the completion of an annual assessment of each resident would be useful first steps. Importantly, these requirements would need to be modified in ways that account for the unique characteristics of ICF/IIDs residents and the civil rights goals enshrined in federal disability law. For example, a higher fraction of ICF/IID residents than nursing home residents may be employed in the community or participate in day

programs, and in addition to objective measures, it would be critical to include subjective,

person-centered measures of well-being, community inclusion, and quality of life.

The enactment of such reforms would serve two important purposes. First, if ownership

type does in fact correlate with the quality of care provided at ICF/IIDs, such knowledge could

be parlayed by state officials into more targeted oversight and enforcement strategies. More

broadly, the capacity to rigorously analyze the relationship between alternative corporate

structures and individual outcomes could stimulate the development of similar studies in other

industries that serve individuals with I/DD, including LTSS provided in community-based

institutional settings alike.

Conclusion

This study informs the gap in literature on the relationship between ownership type and

care quality in ICF/IIDs, residential facilities that provide long-term care to roughly 14 percent

of LTSS recipients with I/DD who do not reside with family members. At face value, our

empirical findings are remarkably equivocal: some proxies for care quality suggest that for-profit

underperform nonprofits, while others seem to tell the opposite story. Overall, the robust positive

relationship between for-profit ownership and the frequency of deficiency citations, which we

deem to be the most credible metric available, justifies the concern that for-profit facilities

deliver lower-quality care. Yet perhaps more importantly, our findings also highlight deficiencies

in the current surveillance system that make it impossible for researchers to draw compelling

causal inferences regarding the relationship between ownership type and quality of care in the

ICF/IID sector. We propose three concrete reforms—requiring operators to base staffing

information on payroll and other auditable data; collecting data on the scope and gravity of each

deficiency citation; and mandating the submission of individualized assessments on each

ICF/IID resident—that would achieve much-needed parity in the data available on nursing

homes and ICF/IIDs, both of which are funded and overseen by the Centers for Medicare &

Medicaid Services. Such reforms not only could help state regulators prioritize the riskiest

ICF/IIDs for inspection, but also could help promote research on the relationship between

changing forms of industrial organization and the welfare of individuals with I/DD across a wide

range of institutional, home- and community-based settings.

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Table 1

Summary statistics

	Uncleaned dataset			Cleaned dataset		
	For-profit	**Nonprofit**	**Gov.**	**For-profit**	**Nonprofit**	**Gov.**
Dataset composition						
Average no. of residents	8.39 (13.88)	10.54 (16.34)	65.32 (106.2)	8.40 (13.65)	10.53 (15.36)	69.9 (110.66)
No. facilities (%)	2,942 (41.2%)	3,734 (52.3%)	459 (6.4%)	2,258 (40.4%)	2,976 (53.3%)	349 (6.3%)
No. facility-surveys[a] (%)	18,196 (40.9%)	23,632 (53.1%)	2,715 (6.1%)	16,606 (40.5%)	21,983 (53.6%)	2,418 (5.9%)
No. residents (%)	152,624 (26.4%)	249,111 (43.0%)	177,353 (30.6%)	139,529 (25.8%)	231,408 (42.9%)	169,015 (31.3%)
Outcome variables issued by surveyors during (re)certification process						
Total citations	3.88 (4.81)	3.19 (4.06)	4.89 (6.69)	3.88 (4.85)	3.15 (3.99)	5.03 (6.92)
Total citations/resident	0.62 (0.84)	0.44 (0.62)	0.27 (0.47)	0.61 (0.84)	0.43 (0.61)	0.25 (0.44)
Outcome variables reported by stakeholders						
Total complaints	0.90 (2.47)	0.61 (2.53)	4.14 (22.38)	0.91 (2.48)	0.59 (2.35)	4.07 (16.48)
Total complaints/resident	0.13 (0.35)	0.07 (0.23)	0.05 (0.18)	0.13 (0.35)	0.07 (0.22)	0.05 (0.17)
Subst. complaints	0.47 (1.62)	0.29 (1.29)	1.45 (11.33)	0.48 (1.65)	0.28 (1.26)	1.26 (5.97)
Subst. complaints/resident	0.07 (0.23)	0.04 (0.15)	0.02 (0.08)	0.07 (0.24)	0.03 (0.14)	0.02 (0.07)
Outcome variables reported by ICF-IID personnel during (re)certification process						
Direct-care staff/resident	1.35 (4.22)	1.54 (3.32)	1.76 (1.22)	1.20 (0.51)	1.38 (0.55)	1.67 (0.65)
RNs/resident	0.06 (0.24)	0.08 (0.20)	0.16 (0.36)	0.06 (0.25)	0.08 (0.18)	0.17 (0.38)
Use of drugs	0.84 (0.37)	0.88 (0.32)	0.82 (0.38)	0.83 (0.37)	0.89 (0.32)	0.82 (0.39)
Use of physical restraints	0.08 (0.28)	0.2 (0.4)	0.42 (0.49)	0.08 (0.28)	0.21 (0.41)	0.45 (0.5)
Use of time-out rooms	0.00 (0.06)	0.02 (0.14)	0.05 (0.23)	0.00 (0.06)	0.02 (0.15)	0.06 (0.23)

Note. Standard deviations in parentheses unless otherwise specified.

[a]"No. facilities" of a given ownership group is defined as the number of ICF/IIDs that are of that ownership type for at least one facility-survey in the relevant dataset. Because ICF/IIDs can switch ownership type over time, some facilities are thus counted for multiple ownership groups.

Table 2

OLS results for differences in deficiency citations

	Total deficiency citations	Deficiency citations per resident
Nonprofit ownership	-0.254*	-0.0539***
	(0.010)	(0.000)
Government ownership	-0.0753	-0.145***
	(0.778)	(0.000)
P-value: nonprofit vs. government	0.454	0.000***
R-squared	0.155	0.143
Mean in for-profit facilities	3.882	0.615
Number of facility-surveys	41007	41007
Number of facilities	5300	5300

Note. **Covariates besides ownership type**: Facility size dummies: medium (7-15 residents), large (16-34 residents), and very large (35+ residents); state and year fixed effects; proportion of residents: under 22, over 65, who are male, with severe or profound disability, with autism, with cerebral palsy, with epilepsy, with a speech and language impairment, with a visual impairment, who are nonambulatory, and who have a medical care plan.

Presentation of results: Results are presented as untransformed OLS coefficients. P-values of coefficients in parentheses.

*p <0.05, **p <0.01, ***p <0.001.

Table 3

OLS results for differences in total and substantiated complaints

	Complaints		Complaints per resident	
	Total	Subst.	Total	Subst.
Nonprofit ownership	0.515** (0.002)	0.126** (0.007)	0.00310 (0.611)	0.00480 (0.248)
Government ownership	2.941*** (0.001)	0.689** (0.005)	0.00828 (0.253)	0.00268 (0.475)
P-value: nonprofit vs. government	0.001***	0.009**	0.372	0.431
R-squared	0.144	0.158	0.084	0.094
Mean in for-profit facilities	0.909	0.479	0.134	0.073
Number of facility-surveys	40985	40985	40985	40985
Number of facilities	5300	5300	5300	5300

Note. **Covariates besides ownership type**: Facility size dummies: medium (7-15 residents), large (16-34 residents), and very large (35+ residents); number of complaint-days; state and year fixed effects; proportion of residents: under 22, over 65, who are male, with severe or profound disability, with autism, with cerebral palsy, with epilepsy, with a speech and language impairment, with a visual impairment, who are nonambulatory, and who have a medical care plan.

Presentation of results: Results are presented as untransformed OLS coefficients. P-values of coefficients in parentheses.

*p <0.05, **p <0.01, ***p <0.001.

Table 4

OLS results for differences in reported staffing ratios

	Registered nurses per resident	Direct-care staff per resident
Nonprofit ownership	0.00196 (0.630)	-0.0418*** (0.000)
Government ownership	0.0578*** (0.000)	0.309*** (0.000)
P-value: nonprofit vs. government	0.000***	0.000***
R-squared	0.085	0.462
Mean in for-profit facilities	0.059	1.203
Number of facility-surveys	41007	39636
Number of facilities	5300	5291

Note. **Covariates besides ownership type**: Facility size dummies: medium (7-15 residents), large (16-34 residents), and very large (35+ residents); state and year fixed effects; proportion of residents: under 22, over 65, who are male, with severe or profound disability, with autism, with cerebral palsy, with epilepsy, with a speech and language impairment, with a visual impairment, who are nonambulatory, and who have a medical care plan.

Presentation of results: Results are presented as untransformed OLS coefficients. P-values of coefficients in parentheses.

*p <0.05, **p <0.01, ***p <0.001.

Table 5

Probit results for differences in reported use of drugs, physical restraint, or time-out rooms to control behavior

	Drugs	Physical restraint	Time-out rooms
Nonprofit ownership	0.117** (0.002)	0.237*** (0.000)	0.419*** (0.000)
Government ownership	-0.178* (0.024)	0.570*** (0.000)	0.510** (0.009)
Nonprofit ownership: AME	0.0235**	0.0455***	0.0109***
Government ownership: AME	-0.0411*	0.1246***	0.0145**
P-value: nonprofit vs. government	0.000***	0.000***	0.584
Pseudo R-squared	0.090	0.230	0.291
Mean in for-profit facilities	0.834	0.082	0.004
Number of facility-surveys	40892	40954	38192
Number of facilities	5284	5293	4928

Note. **Covariates besides ownership type**: Facility size dummies: medium (7-15 residents), large (16-34 residents), and very large (35+ residents); state and year fixed effects; proportion of residents: under 22, over 65, who are male, with severe or profound disability, with autism, with cerebral palsy, with epilepsy, with a speech and language impairment, with a visual impairment, who are nonambulatory, and who have a medical care plan.

Presentation of coefficient estimates: Untransformed Probit coefficients are presented in the upper portion of the table. P-values of coefficients are in parentheses.

Presentation of average marginal effects: The average marginal effects (AME), presented in the lower portion of the table, are calculated using STATA's *margins* command. The significance level (number of stars) presented alongside each AME corresponds to the significance level of the corresponding Probit coefficient, not the AME itself.

*p < 0.05, **p < 0.01, ***p < 0.001.