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# A National Typology of Health Service Regulation in Assisted Living

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## A National Typology of Health Service Regulation in Assisted Living

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## Abstract

### Background and Objectives

State regulating agencies use 350 different licenses and certifications to govern assisted living (AL), resulting in significant variation in regulations governing health services, the scope of practice, and capacity. This lack of standardization makes it difficult to compare and contrast AL operations and residents' outcomes across similarly regulated communities.

### Research Design and Methods

We used qualitative and quantitative methods to empirically develop and describe a typology of state AL regulations that captures inter and intra-state variation. Based on the rules governing health services, we created regulatory specificity scores for five thematic dimensions: medication administration, third-party care, skilled nursing, medication review, and licensed nurse staffing. With these scores, we conducted a K-means cluster analysis to identify groups of AL license types. To differentiate the regulatory types, we calculated standardized mean differences across structure, process, outcome, and resident characteristics of the AL communities licensed under each type.

### Results

We identified six types of AL differentiated by the regulatory provisions governing health services: Housing, Holistic, Hybrid, Hospitality, Healthcare, and Health Support. The types align with previous work and reflect tangible differences in resident characteristics, health service structures, processes, and outcomes.

### Discussion and Implications

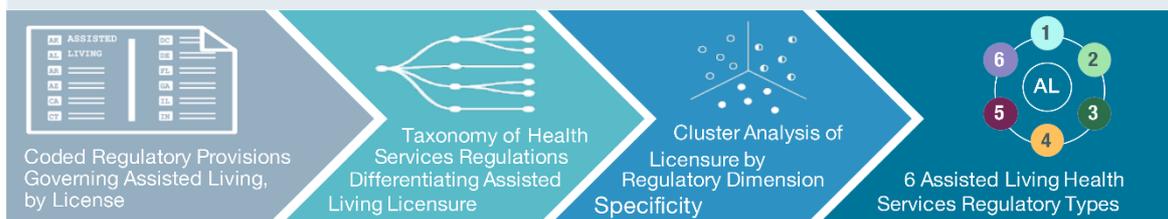
This typology effectively captures differences across regulated dimensions and can inform and support quality of care. Researchers, policymakers, and consumers may benefit from using this typology and acknowledging these differences in AL licensure when designing research studies, developing policies, and selecting an AL community.

### Keywords

Long-term Services and Supports, Home and Community-Based Services, Licensure, Health Policy, Health Services

## Graphical Abstract

### A National Typology of Health Service Regulation in Assisted Living



Describe Differences by Regulatory Specificity, Geographic Distribution, Resident Demographics, Structures, Processes, and Outcomes

| Regulatory Type  | Policy Features  | Prevalence   | Descriptive Characteristics  |
|--|--|--|--|
|  <p><b>Housing</b></p>          | <p>Fewest requirements for health service provision</p> <p>No regulatory specificity (RS) for Licensed Nurse Staffing &amp; Med. Review</p> <p>Low RS for Med. Administration &amp; Third-Party Care</p> | <p>15 States</p> <p>3,082 Assisted Living Communities</p> <p>286,762 Units</p> | <p>Most distinct from other types</p> <p>Most nonprofit &amp; lowest monthly base rate</p> <p>Lower health service provision across all process measures</p> <p>Highest % dual enrolled residents, high % Black residents, highest % Hispanic residents, &amp; highest % Asian, AI/AN, or NHOPI residents</p>                                |
|  <p><b>Holistic</b></p>        | <p>High RS for Med. Review &amp; Administration, Licensed Nurse Staffing</p> <p>Very low RS for Third-Party Care &amp; Skilled Nursing</p>   | <p>13 States</p> <p>2,057 Assisted Living Communities</p> <p>145,899 Units</p> | <p>Opposite from Housing across structure &amp; process measures but similar in resident demographics</p> <p>Most operating with another assisted living &amp; highest base-rate (not total) cost</p> <p>High % dual enrolled residents, highest % Black residents, highest % residents age &lt;65, highest % of residents with dementia</p> |
|  <p><b>Hybrid</b></p>         | <p>Highest RS for Licensed Nurse Staffing</p> <p>High RS for Med. Administration &amp; Third-Party Care</p> <p>No RS for Skilled Nursing</p>   | <p>9 States</p> <p>2,826 Assisted Living Communities</p> <p>214,098 Units</p>  | <p>High % of capacity provides dementia care</p> <p>Most likely to have a medical director</p> <p>Lowest % Black residents, high % Hispanic residents, highest % residents with 7+ chronic conditions</p>  |
|  <p><b>Hospitality</b></p>    | <p>High RS for Third-Party Care and Med. Review</p> <p>Low RS for Med. Administration and Licensed Nurse Staffing</p>  | <p>15 States</p> <p>2,052 Assisted Living Communities</p> <p>150,942 Units</p> | <p>Highest % capacity is individual rooms; low monthly base-rate (not total) cost</p> <p>Lowest rate of hospitalization or nursing home stay, highest resident mortality</p> <p>High % with dementia-specific licensure</p> <p>Highest % residents with 0-2 chronic conditions</p>   |
|  <p><b>Healthcare</b></p>     | <p>High RS for Third-Party Care and Licensed Nurse Staffing</p> <p>Allows Skilled Nursing services</p> <p>Low RS for Med. Review</p>   | <p>11 States</p> <p>2,235 Assisted Living Communities</p> <p>175,673 Units</p> | <p>Highest rate of nursing home stays; low % residents with 7+ chronic conditions</p> <p>Most with dementia-specific licensure</p> <p>Highest average capacity &amp; highest % 50+ units</p> <p>highest % residents age 85+</p>  |
|  <p><b>Health Support</b></p> | <p>Allows Skilled Nursing services</p> <p>Low RS for Med. Review &amp; Administration, Third-Party Care</p>  | <p>11 States</p> <p>1,458 Assisted Living Communities</p> <p>105,104 Units</p> | <p>Highest % operating with an NH/CCRC, lowest average capacity, highest dementia-specific capacity</p> <p>Highest staffing ratio, lowest pharmacy review</p> <p>Highest % of residents with any hospitalization</p> <p>Lowest % dual enrolled residents, high % of residents with dementia</p>  |

## A National Typology of Health Service Regulation in Assisted Living

Assisted living (AL) communities are congregate settings that provide around-the-clock supervision and at least two meals a day. (Sengupta et al., 2022). They are home to more than 900,000 older adults in the United States who need assistance with daily activities (Sengupta et al., 2022). The AL care setting was developed with the philosophy that AL communities should be home-like environments that provide person-centered care (Kane & Wilson, 1993). Their residents have needs for support and health care: over one-third have dementia, approximately 38% experience hospitalization, and over half go to an emergency department annually (Sengupta et al., 2022; Zimmerman, Sloane, & Reed, 2014; Thomas et al., 2020; Hua et al., 2020).

AL communities vary in how they meet their residents' health needs, with some providing only basic medical services and others offering skilled nursing care and specialty testing services (Han et al., 2017; Beeber et al., 2014). This variation has stimulated multiple proposed models of AL. One example is Wilson's 2007 categorization of AL models as Housing, Hospitality, Healthcare, or Hybrid, reflecting approaches informed by board and care homes (a small, older model involving the provision of shelter and assistance to a predominantly low-income population), the hotel industry, the healthcare industry, or a mixture of these (Wilson, 2007; Carder et al., 2006). Another model identified differentiated communities based on resident payment (Medicaid) and impairment (Park et al., 2006). Whether these or other models remain relevant and how these models relate to resident outcomes is unknown.

Unlike nursing homes (NHs), which have a federally determined base level of regulation, AL is licensed and monitored by states to ensure residents' safety, well-being, and access to quality services (Kaskie et al., 2022). State regulations for AL cover various areas, such as resident health services, admission criteria, and requirements for transferring residents to external healthcare facilities (Carder et al., 2017).

Previous research on AL policy has primarily compared differences between state-level rules rather than exploring within-state variation (Carder, 2017; Han et al., 2017; Kaskie et al., 2015; Temkin-Greener et al., 2020). However, recent studies reveal that regulations vary substantially within states, as states provide multiple types of licenses with different corresponding regulations. Our team found that state agencies combined 182 licensure classifications in 350 distinct ways to regulate AL communities differently (Smith et al., 2021). For instance, Florida's mental health and limited nursing certificates have varying staffing requirements (Thomas et al., 2021a).

This variation has real implications for the health outcomes of older adults. For example, research in 22 states revealed that residents with dementia in memory care-licensed AL communities had a lower risk of hospitalization and NH admission than those in general AL (Cornell et al., 2021). Additionally, licenses that permit third-party service provision are associated with higher rates of residents dying in place (Belanger et al., 2021).

In addition, AL licenses vary in regulatory specificity. Higher specificity suggests a strong role by governing agencies, while less specific regulations imply that AL providers have more latitude regarding specific actions (Nævestad et al., 2021). Rules that provide specificity convey credibility (Spiller, 1994), legal security, and implementation effectiveness (Kall, 2014). For example, Arkansas AL Level II requires specific staff-to-resident ratios at different times of the day. However, the Residential Care license only requires one staff member to be present and awake (Ark. Code Ann. §§ 308.2, 504.4). In Oregon, there must be sufficient staff to meet the unscheduled needs of residents (OCLA § 411-054-0070). Regulatory specificity is consequential because, for example, higher

specificity in AL medication administration and direct care worker regulations have been associated with fewer end-of-life transitions and fewer resident hospitalizations, respectively (Wang et al., 2022; Thomas et al., 2021a).

State license types for AL communities are complex and variable, making comparisons between them difficult. This variation poses a challenge for older adults and their families when choosing an AL community, as state agency websites often offer limited information on services and performance, and AL websites are primarily for marketing (Roberts et al., 2020; Zimmerman, Cohen, & Horsford, 2013). Typologies can help make sense of regulatory complexity by defining discrete features associated with different types of entities (Schrefler, 2010).

This study creates a typology of AL license types according to the health service regulations governing them by analyzing an analytic dataset documenting regulations. It then demonstrates variation across types by structures, processes, outcomes, and resident characteristics using Medicare claims data and interviews with AL administrators. The resulting typology of AL licenses can help inform studies on the impact of regulations on resident care outcomes, assist policymakers, and aid consumers in selecting an AL community.

## **Research Design and Methods**

### **Study Design**

We created and validated an AL license typology in three stages. First, we developed a taxonomy to categorize our regulatory dataset and performed a cluster analysis to identify similar licenses (Kaufman & Rousseeuw, 1990). Second, we summarized the resulting typology, policy variations, and geographic distribution of licenses for each type. Third, we used Donabedian's Quality Framework to examine differences among types based on health service structures, AL community processes, resident health outcomes, and resident characteristics (Donabedian, 2003).

### **Data Sources**

Please refer to Section A of the Online Supplementary Material for details regarding the datasets, sample selection, and the AL licenses included.

### **Regulatory Data**

We began with our team's AL regulatory dataset. In previous work, policy analysts used Health Services Regulatory Analysis to standardize the thousands of regulations into a comparable format of ones and zeros reflecting the presence or absence of provisions governing a license (Smith et al., 2021). In this approach, analysts use a qualitative coding process to create a dataset that empirically records differences across regulated settings. Example analytic codes include whether the regulations governing the license type allow for the admission of people on hospice, require a registered nurse on staff, or allow direct care workers to administer medication. For example, using an analytic code regarding specific training requirements, the dataset documents variation in regulations between licenses both across and within states, such as varying requirements for 'Assisted Living' and 'Personal Care Home' licenses in Pennsylvania or 'Assisted Living Programs' with or without an 'Alzheimer's Dementia Unit' in Maine (Carder, 2017; Han et al., 2017; Kaskie et al., 2015; Thomas et al., 2017; Zimmerman et al., 2007).

## ***AL Community Records***

Information on AL communities came from a 2019 national directory previously compiled from state licensing agencies. For details and specific license types included, see Online Supplementary Material, Section A.

## ***Medicare Claims Data***

To examine potential differences among resident characteristics for each regulatory type, we described AL residents' age groups, dual-eligibility status, race/ethnicity, and chronic conditions using the Medicare Master Beneficiary Summary File. We described AL residents' healthcare utilization (including hospitalizations and nursing home stays) and death using the Resident History File (Intrator et al., 2011). To identify AL community residents, we employed an established methodology that utilizes the 9-digit ZIP codes reported in the Enrollment Database (Thomas et al., 2020). Consistent with previous work, this methodology necessitates excluding individuals who were not in AL on December 31, 2017, and who were enrolled in Medicare Advantage. The final dataset included 272,783 beneficiaries residing in an AL community with 25+ beds on December 31, 2017 (see Online Supplementary Material, Section A for details).

## ***Survey Data***

To examine potential differences in AL characteristics, we included data from interviews with a random sample of administrators in 250 AL communities representing seven states and 24 license types between October 2016 to November 2018 (Zimmerman et al., 2022a; Thomas et al., 2021b). Responses informed characteristics including AL structure (profit status; joint operation with another AL community, NH, or continuing care retirement community; size; dedicated dementia care; private rooms; monthly base-rate cost) and processes (presence of a medical director; formal cognitive assessments; pharmacy reviews; and personal care assistant to resident ratio).

## ***Mixed-methods Analysis***

### ***Taxonomy of Regulatory Specificity***

We began by identifying analytic codes associated with meaningful variation across license types specific to health services. We identified analytic codes specific to health service provision that were analytically distinct (i.e., did not consistently co-occur with another code) and varied across and within states (Elman, 2009). Our team (composed of two geriatricians, four doctoral-trained gerontologist health services researchers, and three graduate public health students) met bi-monthly over six months to discuss the merit of specific analytic codes and their relation to one another. After in-depth consideration, our team identified 17 analytic codes to differentiate health service regulation in AL embedded within five thematic dimensions related to health service provision with theoretical consistency and similar variation: medication review, licensed nurse staffing, direct-care-worker medication administration, skilled nursing provision, and third-party care.

Next, recognizing that not all analytic codes have equal importance for resident access to health services, we assessed the degree of regulatory specificity for each thematic dimension by examining how much the code directs the actions of AL operators (Nævestad et al., 2021). Drawing on an established framework for classifying rules and regulations (Ostrom & Crawford, 2005), we identified three properties of each code: what is being regulated, who is responsible, and when or under what

conditions the provision is applicable (Online Supplementary Material, Section B). The result of this effort is the hierarchical taxonomy (a classification system of empirical cases) illustrated in Figure 1. The taxonomy describes aspects of the regulations specific to an AL license and how they contribute to differentiating licenses from one another, specific to health services (Bailey, 1994).

## Specificity Scores and Cluster Analysis

We created a specificity score for each thematic dimension that averaged presence (1) or absence (0) response to the analytic codes for each license based on the taxonomy (Figure 1), resulting in five specificity scores for each of the 350 different license types (Online Supplementary Material, Section B). For example, the “allow third-party care” dimension has two components: what type of third-party care is allowed (including three components—hospice, home health, exceeding admission/retention criteria) and when (including two components – at admission, when determining retention). Imagine an AL license in which home health is allowed (1) for those already receiving care at the AL (1) but not for those upon initial admission (0). Additionally, the license has no provisions regarding hospice (0) or reference to services if an individual exceeds the care limits of the community (0); thus, the third-party specificity score for this license is 0.4.

We conducted a cluster analysis to identify groups of license types with similar combinations of regulatory specificity values across dimensions, which we carried out using the R statistical environment (Kaufman & Rousseeuw, 1990; Jain, 2010; R Foundation for Statistical Computing, 2020). We used the K-means clustering method using the ‘factoextra’ package, which relies upon a machine-learning algorithm (Kassambara & Mundt, 2020; Syakur et al., 2018).

To determine the validity of the cluster analysis results, we calculated silhouette coefficients to measure the cohesion and separation of clusters and assigned AL communities to the resulting clusters based on license (Aranganayagi & Thangavel, 2007). See Online Supplementary Material, Section B for a more detailed explanation of the cluster analysis and assessment method.

## Differentiating Types

We assessed the typology’s validity using qualitative and quantitative means. First, our team considered face and content validity—whether our findings were congruent with existing literature and expert knowledge. Then, we tested for discriminant validity, the extent to which categories differ (Drost, 2011). We used standardized mean differences (SMD), a statistical measure that describes the extent to which there are differences between groups, regardless of sample size. Using this approach, an SMD of 0 indicates no difference between samples, and according to Cohen, a difference of 0.2 or greater reflects a substantial difference. As this measure does not rely upon sample size, it can more effectively capture differences in large datasets (1988).

We calculated the SMD for each type by calculating the difference between the mean for the type and all other types, divided by the pooled standard deviation for each type across the three datasets: license structure, based on licensure records; resident health characteristics, demographics, and outcomes based on Medicare enrollment and claims data; and AL community structure and process measures from surveys of a sample of AL communities. The Brown University, University of North Carolina Chapel Hill, and Portland State University institutional review boards approved all respective study procedures.

## Results

The results are divided into two sections: first, we describe the results of the cluster analysis (i.e., the six types of health services typologies we identified), followed by an application and validity test of the typology using two secondary data sources (Medicare claims and the survey data).

### Health Services Regulatory Typology

We identified six types of AL health services regulation. Recognizing the similarity between four of the types and Wilson's earlier typology (2007), we maintained those naming conventions: Housing, Hybrid, Hospitality, and Healthcare. We named the additional types 'Holistic,' characterized by low third-party service use, and 'Health Support,' which lacks medication review requirements but allows for skilled nursing, indicating a lower level of healthcare responsibility for AL licensees (Figure 2). These types are based on clusters with an average silhouette coefficient of 0.35, reflecting stable groups (see Online Supplementary Material, Section B). Figure 3 shows which states have one or more licenses of each type. We found that the types are distributed across states, with each type used by between 9 and 15 states. Additionally, 21 states have more than one type, reflecting state agencies opting to differentiate AL licenses by health service requirements. Below, we describe the characteristics of each health service regulatory type based on regulatory specificity and geographic distribution.

#### **Housing**

The Housing type comprises licenses for which state agencies provide minimal oversight and allowances for health services. This type has an average regulatory specificity below .5 on all five dimensions, with only medication administration approaching a specificity score of .5. Settings in the Housing type included those with silent regulations (i.e., scored 0) regarding the allowance of skilled nursing and the requirement for medication review. Fifteen states had one or more Housing AL licenses, including the northern plains, some southeast states, California, and New York. Of all the types within any given state, it is most commonly used in conjunction with one or more additional types.

#### **Holistic**

The Holistic type describes licenses requiring in-house healthcare services but not allowing for third-party service provision or skilled nursing. This type has an average regulatory specificity score of over .5 on three regulatory dimensions: direct care worker medication administration, medication review requirements, and licensed nurse staffing requirements, but lacked regulatory specificity allowing third-party or skilled nursing services (averaging just over 0). AL settings in the Holistic type are located in 13 states, primarily in the southeast, plains, and a few mideast states.

#### **Hybrid**

Hybrid license types combine a high allowance for third-party services with a requirement for licensed nurse staffing but do not specifically allow skilled nursing. These settings have an average regulatory specificity score over .5 on four regulatory dimensions: medication review required, direct care worker medication administration allowed, third-party allowed, and licensed nurse staffing required (scores for the latter two were over .9). Settings in this type included those with silent regulations (0) regarding the skilled nursing allowance. This type, found in 9 states, includes states clustered in the northwest, plains, northeast, and southeast.

## **Hospitality**

Hospitality license types have a high allowance for third-party services with few requirements for licensed nurse staffing or medication administration from the AL provider. It has an average regulatory specificity score between .5 and 1.0 on two regulatory dimensions: third-party services and medication review. This type includes settings that scored near .5 on regulatory specificity for the licensed nurse requirement and allow direct-care-workers to administer medications.

Communities in the Hospitality license type had a specificity score just above 0 on the skilled nursing allowance. This type, located in 15 states, is dispersed, including several rocky mountain, plains, and some midwest states.

## **Healthcare**

The Healthcare license type includes settings governed by specific requirements for licensed nurse staffing while allowing for high levels of third-party and skilled nursing care. The average regulatory specificity score was near or above .5 on four regulatory dimensions: third-party services, skilled nursing allowed, licensed nurse staffing required, and medication administration by direct care workers. The fifth regulatory dimension, medication review required, had an average specificity score between 0 and .5. Of the six health-related service types, the Healthcare type had the highest regulatory specificity. This type is found in 11 states, primarily in the plains and northeast.

## **Health Support**

The sixth license type, Health Support, includes AL licenses that require some licensed nursing and allow skilled nursing but do not require medication review. Licenses of this type have an average regulatory specificity score of just over .5 for skilled nursing allowance, and approaching .5 for third-party services, licensed nurse staffing required, and medication administration by direct care workers. The requirement for medication review was nearly zero. This type is present in 11 states, including one rocky mountain state, Alaska, and a few southern and midwest states.

## **Applying the Typology**

We tested the discriminant validity of the health services regulation typology by applying it to existing AL datasets; we observed substantial differences ( $\geq 0.2$ ) across types. Figure 4 presents substantial SMDs between five types for AL community structure and process measures (the Healthcare type was not present in the seven-state survey sample) and substantial SMDs for outcome measures among all six types. Figure 5 illustrates differences across types according to measures of license structure, resident health characteristics, and demographics. Section C of the Online Supplementary Material contains a table with these data and t-tests demonstrating significant differences across types. Variation was greatest for resident demographics and license structure, with an average absolute SMD of 1.4 and 0.8, respectively. Substantial variation was also observed for resident health characteristics (0.3), AL community structure (0.2), process (0.2), and outcome (0.2) measures.

## **License Structure**

Across the 33,040 licensed AL communities with a licensed capacity of 1,264,702 beds, 19% had a dementia-specific license; the mean capacity was 38 beds; 40% had a capacity of 6 or fewer beds; and 29% had a capacity of 50 beds or more (see Figure 5). The Healthcare type has the most AL communities licensed to provide dementia care (27%), and both Healthcare and Holistic have

substantially more large communities (48% and 47%). The Housing type has substantially fewer communities with a capacity greater than 50 beds (18%), licensed to provide dementia care (8%), and more small AL communities (63%).

### ***AL Community Structure***

Substantial variation was evident for all seven AL community structure variables (see Figure 4), where the mean base rate was \$3,860, the average capacity was 39 beds, 19% of beds were dementia-specific, 56% of total capacity was provided via individual rooms, 69% of AL communities were for-profit, 35% operated in conjunction with an NH or continuing-care retirement community, and 36% operated with another AL community. The Hospitality type provided substantially fewer dementia-specific beds (7%), more individual rooms (78%), and a low monthly base rate (\$3,320). The Housing type communities averaged substantially lower than the mean across measures, while the Health Support and Holistic types were higher than the mean on several variables. The mean base monthly rate varied from a low of \$3,000 in the Housing type to \$4,500 in the Holistic type (see Online Supplementary Material, Section C).

### ***Process***

The typology was associated with substantial variation among four process variables, particularly for the Housing type. Housing-licensed AL communities were substantially less likely to have a medical director (10% compared to 28% of all communities), use a cognitive assessment (60% compared to 77% of all communities), conduct pharmacy reviews (62% compared to 81% of all communities), and had a lower personal care assistant to resident ratio (14.4 residents per assistant compared to an average of 11.7).

### ***Outcomes***

The typology was also associated with substantial differences in three health-related outcomes. For our sample of 272,783 Medicare beneficiaries, 30% were hospitalized, and 17% had a nursing home stay, with a mortality rate of 11%. Residents of AL under the Hospitality type were less likely to have a hospitalization (28%) or NH stay (15%) and more likely to have died in 2018 (12%). In contrast, residents of AL in the Health Support type were more likely to experience hospitalization (31%). The Healthcare type had higher rates of NH stays than other types (19%).

### ***Resident Characteristics***

Across all measures compared, resident characteristics were the most different across types (see Figure 5). Housing and Holistic communities had substantially more dual-enrolled residents than all other types (27% and 25% compared to 17% of all beneficiaries). These types also exhibit substantial differences in racial composition, as both have higher percent Black residents (6% and 7% compared to 4% of all beneficiaries). Additionally, Housing has the highest proportion Hispanic or Latino residents (4% compared to 2% of all beneficiaries), though Holistic has the lowest percent Hispanic residents (1%). A marked difference was observed for residents with a dementia diagnosis (31% of beneficiaries), with the lowest share in the Hospitality (29%) and the highest in the Holistic (34%) and Health Support (33%) types.

## Discussion and Implications

This empirical study of states' AL regulatory requirements provides a novel health services typology that may be used to compare licensed AL communities within and across states. This study identified six distinct types of health services requirements defined by states' administrative rules, as evidenced by variation in the services permitted or required. While wide variation in approaches to AL licensing has previously been documented, understanding the specific types of health services regulated in AL communities allows for a more nuanced understanding. This approach is more broadly applicable compared to prior examples (Park et al., 2006; Wilson, 2007) because our empirical data include all AL license types present in all states. Furthermore, we provide the assigned type for each active AL license, enabling others to immediately implement this typology in their work (see Online Supplementary Material, Section A).

This work expands our understanding of inter- and intra-state variation in states' health service requirements for AL. It adds to regulatory theory by conceptualizing regulatory specificity (Spiller, 1995) as necessary for understanding variability among licensed AL communities. It provides a methodological approach that could be useful in other contexts by combining boolean-coded health policy data with qualitative conceptual model-building techniques and cluster analysis (Smith et al., 2021; Bernard et al., 2016, pp. 180-195; Kaufman & Rousseuw, 1990).

Wilson's earlier typology aligns with resident and facility characteristics observed in our study. The Housing license type is distinct due to its low regulatory specificity, similar to Wilson's concept of a type evolved from board and care homes. Our Hybrid type combines regulated healthcare services with third-party flexibility, easily accommodating the Hybrid AL that Wilson describes as purpose-built residences with a philosophy of consumer autonomy. The Hospitality type allows for high third-party provision and minimal nursing staff, reflecting Wilson's hotel-inspired concept. Finally, the Healthcare model aligns with high regulatory specificity across health services, reflecting Wilson's description of AL communities originally designed as nursing facilities (Wilson, 2007).

Our analysis identified two new types, Holistic and Health Support. The term "Holistic" reflects the comprehensive health services these AL communities must provide due to limited third-party allowance and high healthcare service and staffing requirements; they house more residents who are under 85, Black, diagnosed with dementia, and dually eligible for Medicare and Medicaid. We hypothesize that Medicaid waiver programs, which require enrollees meet a nursing home level of care, may contribute to the need for comprehensive health service provision for Holistic AL residents (Ng & Harrington, 2013). "Health Support" reflects the low level of medication oversight combined with an allowance for third-party and skilled nursing. This type provides higher support levels without requiring nurse staffing or medication administration, possibly reflecting a focus on end-of-life care and a palliative approach to dementia care.

States' licensing approaches may fit within one or multiple of the six types. Florida represents the 20 states with multiple AL license types that all fall under a single regulated health services type identified in this typology. That is, all of Florida's eight license categories fit under the Hybrid model. These different licenses vary in the populations they serve and requirements for staff (Street et al., 2009). However, the state regulatory agency did not choose to differentially allow or restrict access to basic health services. All AL communities in Florida have requirements for allowing third-party services, and even in communities licensed to provide limited nursing services, full-time nursing care is not permitted.

Notably, 21 states (including DC) have licensed AL that fit within two or three health services regulatory clusters. The remaining states apply the same health services regulations to all license categories (see Online Supplementary Material, Section A). For example, Arkansas, Georgia, New York, and West Virginia have AL licenses that fit within three health-services clusters. Arkansas's Residential Care license is Housing, AL Level 1 is Health Support, and AL Level 2 is Holistic. Of these license types in Arkansas, only the AL Level 2 license accepts Medicaid. This finding provides validation for our typology as the Holistic type has a higher specificity score for licensed nurse staffing, a high dual-eligible population, and more AL communities that hire registered nurses and review resident medications.

State agencies differentiate AL licenses by memory care, mental health care, resident enrollment in Medicaid, and egress (Smith et al., 2021). Our taxonomy and the resulting typology do not specifically classify care along any of these categories due to the focus on health services allowed and required in AL, not specific to particular resident need or condition. However, as described in the introduction, memory care, in particular, is an important and meaningful classifier for AL communities, and with 45 states now providing some type of dementia-specific licensing mechanism, it should not be ignored when considering types of licensed AL (Cornell et al., 2021).

Interestingly, Holistic, Hospitality, Healthcare, and Health Support were more likely to have a dementia-specific license when compared to all other AL types, and Housing AL communities were less likely to have such a license. However, when the typology was applied to the seven-state survey data, Hospitality reported substantially lower dementia-specific capacity. Future research should investigate the intersections between these types, dementia-specific license classifications, and advertised dementia-specific care.

Each of the six health-services regulatory types is evident in one or more states with multiple license types. This variety lends additional validity to the typology because it indicates that types are not linked to specific states but rather are distributed across and within states. Observations about geographic variation raise questions about the extent to which a given type is a proxy for differences in demographics and long-term care use across states. Our typology reflects historic state policy decisions to license different AL types over time. We lack information on factors influencing policymakers' choice of licensed categories and whether or how residents with specific characteristics are sorted into or choose one type or another. While we cannot explain why residents with specific characteristics (e.g., race, dual eligibility status) are more likely to reside in an AL community that is licensed via one health services regulation type compared to another, future research could examine this observation for evidence of disparities in health outcomes, quality, and access. Research that addresses documented disparities in the availability and quality of AL for Black, Latinx, and socioeconomically disadvantaged communities should guide this future research (Cornell et al., 2021; Shippee et al., 2022).

There are several reasons for differentiating AL types based on health services regulations, one being that AL residents' medical and mental health care needs have increased over time (Zimmerman et al., 2022b). Using this typology, researchers who study health-related services and outcomes can more clearly understand the types of AL residences they are studying, compare AL communities of similar types, and better adjust for differences in populations that reside in each type of community. Researchers can also improve sampling approaches and add context to qualitative or geographically limited studies.

As another application, consumer guides can be developed based on the types of AL available in a state or across state lines, informing prospective residents and family members about questions to ask AL administrators, such as the availability of licensed nurses and third-party services. Such materials may also benefit relations between AL families and staff, given that improved relations are associated with decreased caregiver burden for residents with dementia (Falzarano et al., 2020). In addition, this typology can inform consumer advocates about how to interact with policymakers when promoting policy changes to improve, for example, quality of care, staffing levels, or improved access for low-income populations. Finally, healthcare providers with AL patients often lack an understanding of AL and the health services available to residents (Dys et al., 2020). This typology could prove a useful tool to providers looking to understand what to expect.

While differences in presumed goals across types of licensed settings became apparent during our comparative analysis, some policymakers have assumed that AL communities had the same healthcare capacity as skilled nursing facilities. This assumption put significant unnecessary pressure on AL providers at the beginning of the COVID-19 crisis, such as when public health agencies lacked a nuanced understanding of AL (Dys et al., 2021; Dobbs et al., 2020; Zimmerman et al., 2020). These misunderstandings from public health agencies and other governing entities have implications for administrator burnout (Kyler-Yano et al., 2022). By describing AL according to the specific health services regulated, policymakers may better contextualize AL and create policies that are both supportive and appropriate to the level of care.

Additionally, these types can assist policymakers as they document the unequal capacity of localities to support aging in place, including access to AL communities with sufficient regulated health services to meet the population's needs (Yarker et al., 2023). Future analyses should examine differences in the characteristics of the neighborhoods in which the six types are located, as neighborhood characteristics are known correlates of AL resident connections to the outside community, direct care worker retention, AL regulatory deficiencies, and AL closures (Ciofi et al., 2022; Kennedy et al., 2021; Tunalilar et al., 2022; June et al., 2021).

Our application of the typology to the existing claims and survey datasets is meant to demonstrate the extent to which these types are reflected in real differences across structures, processes, and outcomes. This application is not meant to establish causality, and the outcomes (i.e., hospitalization, nursing home placement, death) presented in Figures 4 and 5 are not risk-adjusted. However, these unadjusted illustrations of the variation lend themselves to hypothesizing for future studies. For example, what characteristics (e.g., staffing, payer source, consumer preference regarding end-of-life care, resident acuity) might explain why Health Support and Holistic types both have higher dementia-specific capacity, while the hospitalization rate is lower in Holistic and higher in the Health Support types?

These results also suggest additional data that could help researchers better understand differences. For example, the Holistic type has the highest base-rate cost. Our team hypothesized that this finding is due to the other types relying more on add-on expenses. In contrast, AL communities seeking Medicaid reimbursement may be more likely to include all costs in the base-rate for state payment. Future research can collect more information about add-on costs to clarify this trend and what it implies for addressing the structural burdens in care navigation faced by older adults and their families (Xie et al., 2023).

## Limitations

This cross-sectional study represents state policies as of 2018 and creates a typology based on state licensure, which may not fully capture the range of services provided by AL settings. The typology only describes groups of similar license types that govern AL, not necessarily the groups that would result based on actual health service provision. Our approach relied on state AL licensing rules to document regulatory requirements and does not account for enforcement or interaction with other acts. Due to our focus on health services, this typology does not encompass all regulatory variation.

Our AL structure and process measures were limited by our sample, which included only seven states and five of the six types. While 38% of AL communities in our national directory were of the housing type, only 17% of AL communities in the seven-state sample were of the housing type (reflecting that the sample was constructed to be representative of each state and may not be nationally representative). Finally, the claims data used for demographic and outcome measures are limited to fee-for-service Medicare enrollees and AL communities with a minimum capacity of 25.

## Conclusion

Since its beginning, AL has spanned the boundary between senior housing and health service provision. The Covid-19 pandemic focused attention on the need for AL residents to have appropriate access to medical care and highlighted misunderstandings among policymakers and consumers about the field, its diversity, and its capabilities (Dobbs et al., 2020; Dys et al., 2021; Shippee et al., 2020; Siegel et al., 2021; Viperman et al., 2021; Zimmerman et al., 2022). By providing a typology of healthcare services permitted or required within specific licensed AL settings, we hope to assist decision-makers at the consumer, community, state, and federal levels. Differentiating AL types allows researchers to better describe and compare AL communities, thereby helping consumers, regulators, and policymakers better understand, respond to, and take advantage of the potential for individualized care offered by diverse AL types in the US.

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## **Conflict of Interest**

We have no conflicts of interest to disclose.

## **Data Availability**

State license data, details regarding the cluster analysis, and tables detailing the discriminatory validity of the typology can be found in the supplemental materials for this paper. Additional data and R code used in this study can be accessed in the Brown University digital repository: <https://repository.library.brown.edu/studio/item/bdr:zgrpetvs/>. This study did not include any work from preregistered studies.

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## Figures

### **Figure 1: Taxonomy of Key Regulatory Provisions Differentiating Health**

#### **Service Provision in Assisted Living Licensure**

Figure 1 Annotation. Analyses indicated five dimensions described by 17 analytic codes, each representing a provision empirically documented as present or absent in the regulations governing a licensed assisted living (AL) community.

### **Figure 2: Regulatory Specificity of Six Health Services Types**

Figure 2 Annotation. Six health service types were identified based on state regulations regarding the specificity of the five domains of health services. The bars indicate the mean score within each domain; values are rounded to the nearest tenth.

### **Figure 3: Distribution of the 6 Types Across the States**

Figure 3: Annotation: These maps display the diversity of states that regulate AL using each of the six types we identified. Thirty states are represented in only one map because all license types within the state take the same approach to basic health service requirements and allowances. The remaining 21 states are represented on two or three maps, as the licenses within the state vary in this respect.

### **Figure 4: Standardized Mean Differences of Types across Community**

#### **Structure, Process, and Outcome Measures**

Figure 4 Annotation: For community structure and process measures, the figure indicates the standardized mean difference (SMD) for the survey responses of AL communities by type (N = 248 communities). For outcome measures, the figure indicates the SMD for residents of AL communities of each type compared to the national sample (N = 272,783 beneficiaries residing in 11,687 AL communities). A difference of 0 indicates no difference across types, and a difference less than 0.2 indicates a less than substantial difference—represented on the graph by the grey-shaded area.

The average or median monthly cost of care is likely considerably higher, particularly in AL communities that rely heavily on third-party, ancillary, or optional services.

NH = Nursing Home; CCRC = Continuing Care Retirement Community

**Figure 5: Standardized Mean Differences of Types across License Structure, Resident Health, and Demographics Measures**

*Figure 5 Annotation:* This figure presents the standardized mean difference (SMD) for three measure categories used to test typology discriminant validity: license structure, resident demographics, and resident health conditions. We analyzed data from 13,710 licensed AL communities and 272,783 beneficiaries associated with 11,687 of these communities. The x-axis represents the range of mean differences between the AL communities and the beneficiaries, expressed in standard deviations.

Notably, the range of mean differences for these categories was greater than those categories represented in Figure 4. As a result, the x-axis ranges from -2 to 2 standard deviations for license structures and resident health characteristics and -8 to 8 standard deviations for resident demographics. A difference of 0 indicates no difference across types, and a difference less than 0.2 indicates a less than substantial difference—represented on the graph by the grey-shaded area.

AI/AN = American Indian or Alaskan Native; NHOPi = Native Hawaiian or Pacific Islander

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Figure 1

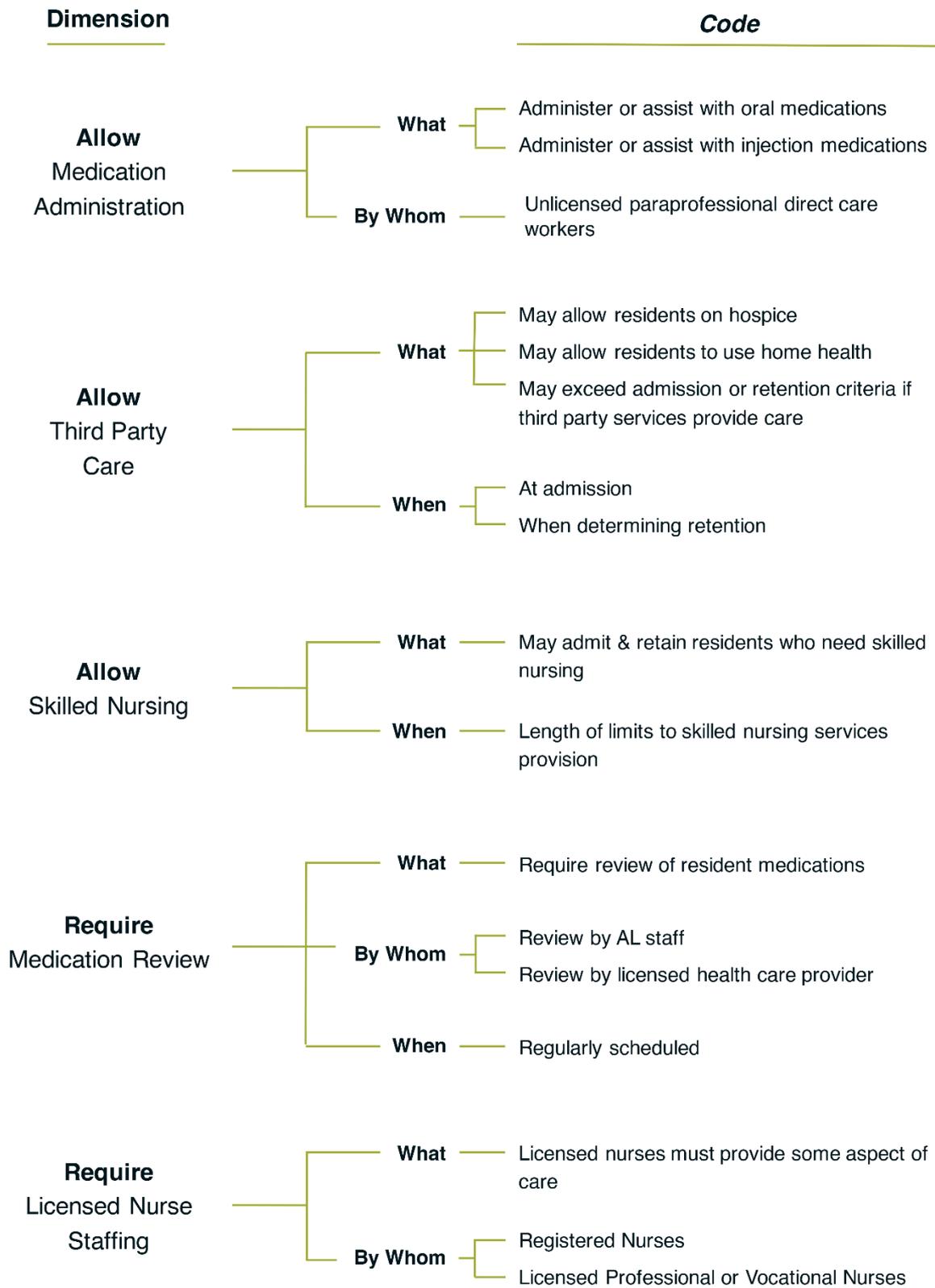
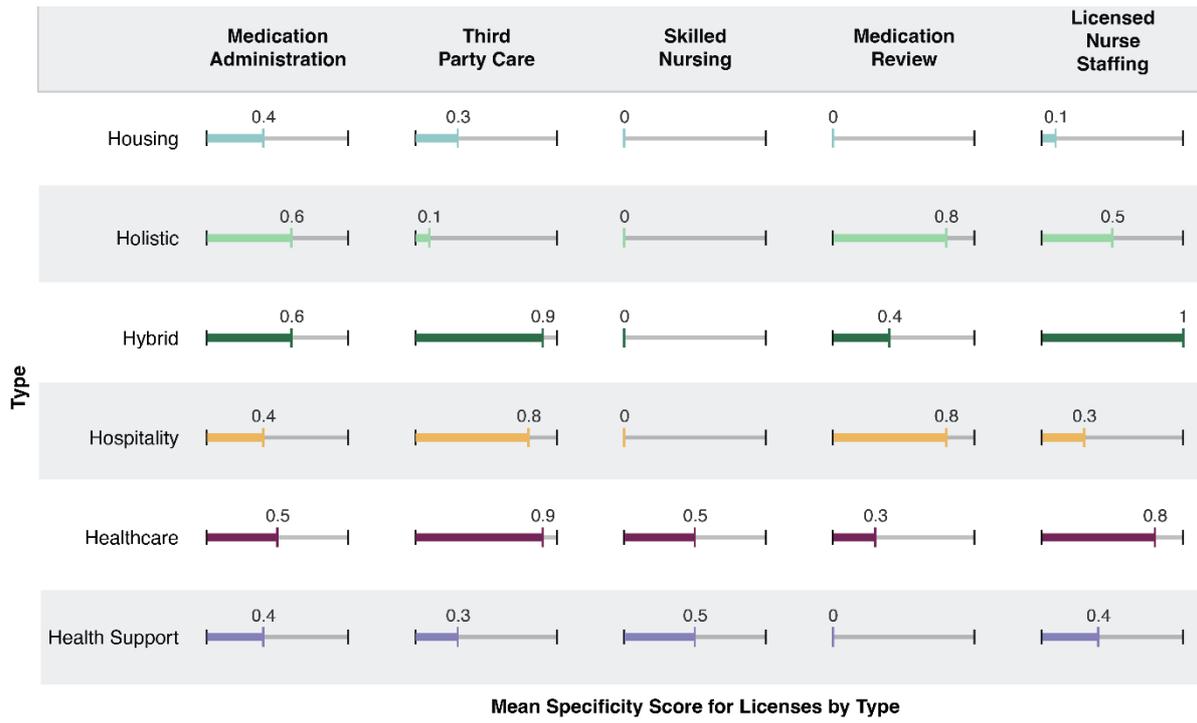
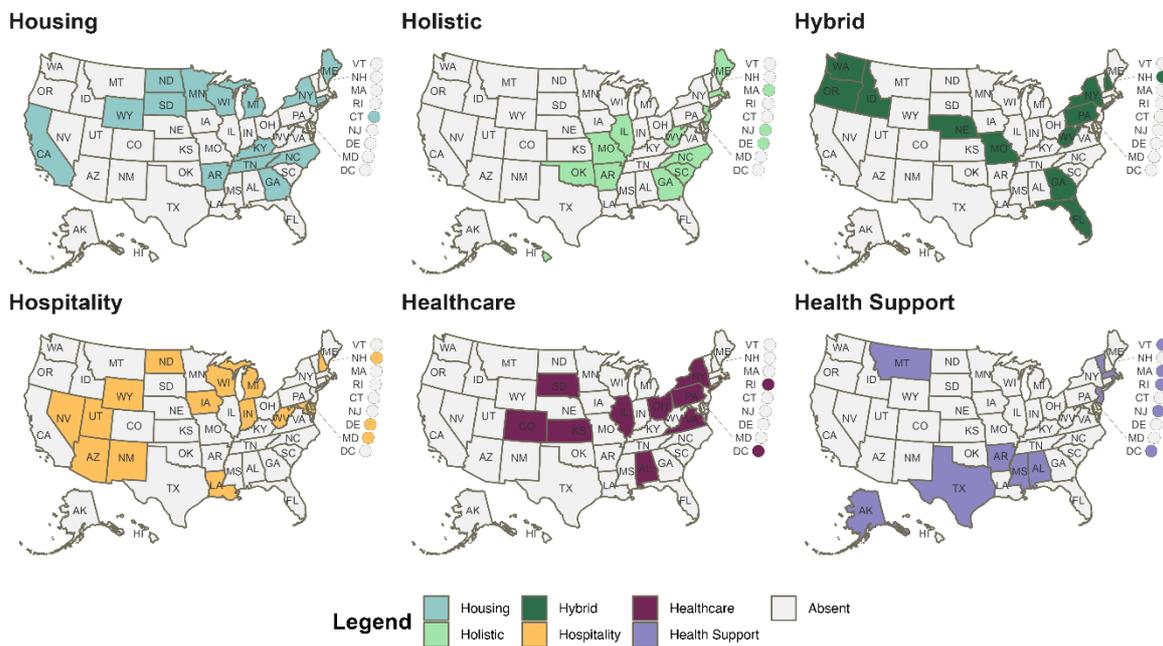


Figure 2



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Figure 3



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Figure 4



\*Survey data for the Healthcare type not available

Figure 5

