



U.S. Department of Health and Human Services  
Assistant Secretary for Planning and Evaluation  
Office of Disability, Aging and Long-Term Care Policy

# **REPORT ON THE EFFECTS OF REGULATION ON QUALITY OF CARE:**

## **ANALYSIS OF THE EFFECT OF REGULATION ON THE QUALITY OF CARE IN BOARD AND CARE HOMES**

December 1995

## **Office of the Assistant Secretary for Planning and Evaluation**

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In particular, DALTCP addresses policies concerning: nursing home and community-based services, informal caregiving, the integration of acute and long-term care, Medicare post-acute services and home care, managed care for people with disabilities, long-term rehabilitation services, children's disability, and linkages between employment and health policies. These activities are carried out through policy planning, policy and program analysis, regulatory reviews, formulation of legislative proposals, policy research, evaluation and data planning.

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**REPORT ON THE EFFECTS OF REGULATION ON  
QUALITY OF CARE:  
Analysis of the Effect of Regulation on the Quality  
of Care in Board and Care Homes**

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# SECTION 1. SUMMARY OF RESULTS

A variety of demographic factors and policy initiatives have led to increased demand for residential facilities that offer supportive services for the aged and disabled. Over the past 20 years, board and care homes have emerged as the most common setting for the provision of such care outside nursing homes. As a result, the Office of the Assistant Secretary for Planning and Evaluation (ASPE) in the U.S. Department of Health and Human Services (DHHS) has had a long-standing interest in the potential of board and care homes to meet the needs of aged and disabled persons for residential services.

In line with this interest, ASPE was concerned with reports that raised questions about the effectiveness of State regulation of these homes and about the adequacy of care provided. Thus, in the early 1990s, ASPE initiated a new examination of board and care homes and their role in the long-term care system. The policy interest was threefold:

- To document the characteristics of board and care homes, how much they had grown in the United States since the initial studies of the 1980s, and the role they play in meeting the needs of the disabled for long-term care
- To describe the characteristics of board and care residents, particularly the extent of frailty and disability among residents
- To assess the quality of care received by board and care residents and examine the effect of State regulation on the quality of that care.

The study results reported here deal with the effects of regulation on the quality of care in board and care, or domiciliary care, facilities. The database for the study included data gathered in 512 board and care facilities in 10 States. These data were collected through interviews in 386 licensed homes and 126 unlicensed homes with 512 facility operators, 1,138 facility staff, and 3,257 facility residents.

This report presents the analysis of the effect of regulation and licensure on the quality of care in board and care homes. It also briefly reviews the study purpose and methodology, as well as a description of the homes and residents; however, these topics are addressed in greater detail in two other project reports: *A Description of Board and Care Facilities, Operators, and Residents* (Wildfire et al., 1995) and *Report on Study Methods* (Hawes et al., 1995).

The remainder of the report explores the findings about the effect of regulation and licensure in great detail; Exhibit 1 summarizes those findings. As the data summarized in that exhibit demonstrate, this inquiry found substantial and widespread positive effects of regulation on quality in board and care homes.

## 1. **Reducing Prevalence of Unlicensed Homes**

First, we found that States with extensive regulatory systems had a significantly smaller proportion of unlicensed facilities. Regulation seems to reduce the prevalence of unlicensed homes.

## 2. **Improving Quality of Care**

Second, we found that extensive regulatory systems were associated with better quality of care. Several findings suggest that homes in States with extensive regulatory systems were better prepared to cope with needs of residents who are frail and disabled. For example, homes operating under more extensive regulatory systems were more likely to have operators trained in care of the elderly and disabled, to have lower use of psychotropic drugs, and to have lower use of inappropriate prescriptions for the elderly. Also, staff in licensed homes in States with extensive regulatory systems were more knowledgeable about and more willing to refer residents and families to the long-term care ombudsmen programs. In addition, licensed homes made a wider array of key supportive services available to residents. Finally, both extensive regulation in large homes and licensure in all sizes of homes were associated with greater availability of devices, such as grab-bars in showers, call buttons in bathrooms, and raised toilet seats, that support residents' abilities to function more independently and with greater safety. Thus, both licensure and extensive regulation were associated with key aspects of better quality of care.

## 3. **Improving Quality of Life**

Third, the study found a consistent pattern with respect to many of the features that promote quality of life for residents. Homes in States with extensive regulatory systems, for example, had greater availability of social aids for residents, such as reading materials, a community room, and a working television and radio. Also, contrary to the expectations of some observers who fear that regulation will lead to more "institutional" environments, the study found that neither extensive regulation nor licensure was associated with more institutional environments when one considers such factors as personalization of residents' rooms; diversity in furniture, wall colors, and floor coverings; and lighting in the homes. In fact, extensive regulation and licensure made a facility less likely to have a "low" score on such diversity. Taken together with the positive impact on social and recreational aids, such findings suggest that regulation has a positive effect on key aspects of quality of life in facilities.

## 4. **Improving Safety**

Fourth, like other studies, we found that regulation had a positive effect on the safety of the residents' environment. Licensed facilities had a wider array of the



safety features considered important by residents and others who study the ability of a facility to meet the needs of frail and disabled individuals (Moos and Lemke, 1988). Compared to unlicensed facilities, including apartments, licensed facilities had a higher percentage of safety features, such as smoke detectors, a fire extinguisher in the kitchen, secure handrails on stairs, and supportive devices, such as grab-bars in the shower, call buttons in the bathroom, and grab-bars by the toilet.

## 5. **Preventing the "Worst" Performance**

Fifth, the study found that regulation, mainly through licensure alone, succeeds in what many view as the main role of regulation: preventing homes from being in the lowest range of performance on key aspects of quality. Licensed homes were less likely than were unlicensed homes to have the lowest scores on safety, physical amenities, and social aids. They were also less likely to have low diversity or a very institutional environment.

## 6. **No Positive Effect**

Finally, the study also found that neither extensive regulation nor licensure had a positive effect on some aspects of quality, including a requirement for preservice training of staff and staff knowledge of care and monitoring as well as medication management. Regulation also had no significant effect on the cleanliness of homes and availability of amenities or the likelihood that a home would have any licensed nurses (RNs or LPNs) on staff. Further, there was little variation among homes on such issues as unmet health care needs, residents' rights, and indicators of resident satisfaction.

These findings and their implications for public policy are discussed in detail in the sections that follow.

<b>EXHIBIT 1. Summary of Effects of Regulation on Quality</b>		
<b>Quality Indicator</b>	<b>Extensive Regulation<sup>a</sup></b>	<b>Licensure<sup>b</sup></b>
Likelihood that most homes will be licensed	+	NA
Operator trained in care of elderly & disabled	+	+
Lower use of psychotropic drugs	+ <sup>c</sup>	0
Lower rate of inappropriate drug prescriptions for elderly	+	0
Staff knowledge of/referral to ombudsman program	+ <sup>c</sup>	+ d
Preventing low diversity/very "institutional" environment	+/- <sup>c</sup>	+ d
Availability of social aids (e.g., working TV, radio)	+	+
Availability of supportive devices (e.g., shower grab-bars)	+ <sup>e</sup>	+
Preventing lowest scores on social aids (e.g., working TV, reading materials, card table, outside seating)	+/- <sup>e</sup>	+
Preventing lowest scores on supportive devices	+/- <sup>e</sup>	0
Preventing lowest scores on physical amenities	0	+
Preventing lowest scores on safety	0	+
Resident activity level	+ <sup>e</sup>	-
Availability of key services (e.g., ADL assistance, special diets, activities)	0	+
Prevalence of safety features	0	+
Diverse "homelike" environment (e.g., smaller home size, personalization of rooms)	0	+ <sup>d</sup>
Operator-required training for staff	0	0
Staff knowledge: basic care/monitoring/medication administration	0	0
Cleanliness and attractiveness of home	0	0
Home has amenities (e.g., comfortable chairs, plants, lamps)	0/- <sup>e</sup>	0
Home has licensed nurses (RNs, LPNs)	0	0
<p>NA = Not applicable.  + = The effect is positive, that is, in the direction of better quality.  0 = No association was detected.  - = An effect is negative, that is, in the direction of worse quality.</p> <p>a. Comparison between homes in States with extensive regulatory systems and homes in States with limited systems.  b. Comparison is between licensed and unlicensed homes.  c. Effect varies by whether the home is licensed or unlicensed.  d. Effect varies by whether the home is in a State with limited or extensive regulation.  e. Effect varies by size of home.</p>		

## SECTION 2. STUDY BACKGROUND

Other than nursing homes, the most common form of residential setting with services for people with disabilities is board and care homes. This term is used in a variety of ways across the States. For our purposes, however, "board and care" refers to nonmedical community-based residential settings that house two or more unrelated adults and provide some services such as meals, medication supervision or reminders, organized activities, transportation, or help with bathing, dressing, or other activities of daily living (ADLs).

Over the past 2 decades, the board and care industry has experienced considerable growth. There are now approximately 34,000 licensed board and care homes in the United States with more than 613,000 beds (Clark et al., 1994). Licensed homes fall into one of three basic types of facilities (Clark et al., 1994): (1) licensed homes serving a clientele with mental retardation or developmental disabilities; (2) licensed homes serving a clientele with mental illness; and (3) licensed homes serving a mixed population of physically frail elderly, cognitively impaired elderly, and persons with mental health problems.

In addition, an unknown number of unlicensed facilities provide board and care. By some estimates (U.S. House, 1989), unlicensed homes are as numerous as licensed facilities. Thus, the total number of persons living and receiving long-term care in all types of board and care homes may be as high as 1 million (Clark et al., 1994; Hawes et al., 1993; Moon et al., 1989; U.S. House, 1989). As a point of comparison, there are an estimated 17,000 licensed nursing homes with approximately 1.68 million beds serving more than 1.5 million nursing home residents (DuNah et al., 1993).

While the importance of board and care homes as a source of long-term care has grown, so have questions about the quality of care provided by these facilities. Concerns were raised by the U.S. General Accounting Office, congressional hearings, and studies indicating that some residents were not receiving adequate care and protection from health and safety risks (Avorn et al., 1989; Budden, 1985; GAO, 1989, 1992a, 1992b; Hartzema et al., 1986; U.S. House, 1989). These studies reported evidence of unsafe and unsanitary conditions, widespread use of psychotropic medications, lack of staff knowledge about medication administration, and other health and safety problems. In addition, several reports raised questions about the effectiveness of State regulatory efforts (ABA, 1983; Dobkin, 1989; GAO, 1989; Hawes et al., 1993; Newcomer and Grant, 1988; Reichstein and Bergofsky, 1980; Stone and Newcomer, 1985; U.S. DHHS Inspector General, 1990). There were also assertions that significant numbers of board and care homes were unlicensed and unregulated (U.S. House, 1989).

As a result of its interest in the potential of board and care homes to meet the needs of aged and disabled persons, the Office of the Assistant Secretary for Planning and Evaluation in the U.S. Department of Health and Human Services commissioned a

study in the early 1980s by Denver Research Institute (DRI). The DRI study described board and care homes and residents in five States and investigated the effect of regulation on quality of care (Dittmar and Smith, 1983). In the early 1990s, ASPE initiated a new examination of board and care homes and their role in the long-term care system.

This report, *Analysis of the Effect of Regulation on the Quality of Care in Board and Care Homes*, describes one part of that ASPE initiative. This report, one of a series of four that summarize study findings and methods, presents analyses that examine the effect of licensure status and other aspects of regulation on structural, process, and resident-level aspects of quality in board and care homes.

## SECTION 3. STUDY METHODS

This section of the report provides a brief overview of the study methods. It discusses the study sampling approach, the measurement strategies, and the analytic strategy. Greater detail concerning the database, study methods, and measurement activities is provided in the technical report, *Report on Study Methods* (Hawes et al., 1995). This report also provides greater detail on the testing of the interrater reliability of the instruments used for assessing the environmental features of the homes and on the construction of the quality measures. We describe the creation of the descriptive measures and the descriptive results in *A Description of Board and Care Facilities, Operators, and Residents* (Wildfire et al., 1995).

### 3.1 Sampling

The first sampling task was the selection of 10 States that varied in their regulatory approaches. Within the chosen States, a stratified, three-stage, cluster design was implemented. First-stage sampling units were counties, second-stage units were facilities, and third-stage sampling units were residents and staff in homes. A probability sample of homes was selected from the list of homes that met the criteria for inclusion, stratified by whether they operated under an extensive or limited regulatory system, by licensure status (licensed/unlicensed), and by size (small, medium, and large). From this sample, random samples of residents and staff were selected.

#### 3.1.1 Selecting States

This study was designed to determine whether regulation affects the quality of care in licensed and unlicensed board and care homes. In selecting our 10 study States, we used a "polarized" approach, choosing for study those States with the widest differences in their regulatory systems. Using information from studies by the U.S. DHHS Inspector General (1990) and RTI's 50-State survey for AARP (Hawes et al., 1993), we ranked States by their regulatory environments. In assessing the States' systems, we considered three dimensions of State regulatory environments:

- Licensure standards
- Nature of the inspection process
- Availability and use of compliance or enforcement mechanisms.

We produced a comparative ranking of the regulatory environments among the 50 States. The States in the "extensively" regulated range had **more** stringent regulations and monitoring processes and a wider array of enforcement mechanisms than those on the "limited" end of the continuum. Five States were chosen from among

those with the most extensive regulations. These were: California, Florida, New Jersey, Oklahoma, and Oregon. From the States with more limited regulatory systems, Arkansas, Georgia, Illinois, Kentucky, and Texas were selected.

It is important to note that this is a comparative ranking of the 50 States. The States on the upper end of this continuum have a more extensive regulatory environment than States ranked below them on the continuum. However, we did not compare regulations in any of the States to some "gold standard" of regulation. Because our sample population was selected from the facilities in 10 States that were purposively selected, the results reflect the board and care environment in those 10 States.

### **3.1.2 Selecting Counties**

Across the 10 States, we selected 80 first-stage sampling units. These 80 units were evenly divided between States with limited regulation and States with extensive regulation. A total of 128 counties were included in these 80 first-stage sampling units.

### **3.1.3 Selecting Board and Care Homes**

Within the 128 counties, 386 licensed facilities and 126 unlicensed facilities participated in the data collection. This represented 75 percent of the selected licensed facilities and 72 percent of the selected unlicensed facilities. The overall facility participation rate among those selected was 74.2 percent.

#### **3.1.3.1 *Selecting Licensed Board and Care Homes***

Each study State had different definitions or criteria for licensure of board and care homes. Even within States, there were multiple categories of homes and multiple agencies that licensed homes. Because of this variation, we adopted State-specific decision rules about inclusion and exclusion for both licensed and unlicensed homes. We included in the sample all facilities licensed as board and care homes that served an elderly or mixed elderly/disabled population. Facilities specifically licensed to serve only special populations (e.g., children, substance abusers) were excluded from the study. Thus, facilities licensed by departments of mental health or developmental disabilities to serve clients with mental health problems were also excluded because of their differing licensing standards and funding streams.

#### **3.1.3.2 *Selecting Unlicensed Board and Care Homes***

We developed an operational definition for an eligible unlicensed board and care home based on State licensure requirements. We also defined specific criteria for inclusion of "assisted living" facilities and other places that included apartments, did not provide three meals a day or 24-hour staffing, but did provide key services (e.g., medication reminders or supervision, money management, and assistance with personal care).

### **3.1.4 Selecting Residents and Staff**

Residents and staff were selected so that roughly equivalent numbers would be randomly sampled in small, medium, and large facilities. Interviews were completed with 3,258 residents or their proxies. Proxy respondents were used for residents who were either too cognitively impaired or too physically ill to respond to the interviewer. Facility staff who provided direct care to residents were the proxies for residents. The resident sample included 2,340 residents in licensed facilities and 914 residents in unlicensed facilities. The overall participation rate for residents was 75 percent. The staff sample included 908 staff in licensed facilities and 230 staff in unlicensed facilities. The overall staff participation rate was 74 percent.

## **3.2 Data Collection**

During the summer and early fall of 1993, RTI Field Interviewers (FIs) conducted in-person interviews with operators, staff, and residents in the sampled facilities in the 10 study States. In addition, interviewers followed a protocol to conduct a structured observational "walk-through" of the home, rating various qualities of the facility. We conducted site visits in each of the licensed and unlicensed board and care homes. In all visits, we conducted interviews with operators, staff, and residents, and we observed the physical environment and care of residents.

## **3.3 Measurement**

We developed two basic types of measures: (1) those used to evaluate the quality of care and life in the homes, and (2) indicators describing the residents and facilities that were used as covariates in the analysis of the effect of regulation and licensure on quality. (See Hawes et al., 1995, and Wildfire et al., 1995, for more detail on project study methods and descriptive measures and results, respectively.)

### **3.3.1 Quality Measures**

Donabedian (1966, 1980) and others have articulated the utility of different types of measures of quality, including the use of structure, process, and outcome measures to define quality. Outcomes are considered by some to be the *sine qua non* of measures, which may be true in acute and ambulatory care. However, in long-term care, measures of structure and process quality are especially relevant because residents not only receive care and services but also live in the care environment, often for years (Kane and Kane, 1988; Lohr, 1988).

Moreover, research indicates that the physical and architectural features of group living settings can influence the behavior and well-being of residents and that residents have clear preferences for certain types of physical features in the residential

environment (Brennan et al., 1988; Lawton, 1977; Moore et al., 1986; Moos and Lemke, 1985; Moos et al., 1987; Nasar and Farokhpay, 1985; Newman, 1989; Reigner and Pynoss, 1987). Because of this we have included several measures designed to capture the characteristics of the environment. These represent important features from the perspective not only of experts in environmental design but, more important, from the perspective of residents living in such places as congregate apartments and personal care homes (Moos and Lemke, 1988; Newman, 1989).

Thus, we adopted a strategy that described quality in board and care homes using a variety of structural, process, and resident-level measures. The structural components of quality included:

- **Safety of the physical environment** was shown by Moos and Lemke (1988) to be the most important to residents among a set of seven attributes of residential environments; this measure included lighting, the presence of smoke detectors, and the use of nonskid surfaces on steps and in bathrooms
- **Adequacy of the physical environment** was characterized by three constructs: availability of supportive devices (such as lift bars next to toilet, handrails in bathroom), availability of social/recreational aids (e.g., working television, outdoor furniture, library area/reading materials), and availability of physical amenities (e.g., comfortable furniture, seating area in lounge/community room, small tables in the lounge)
- **Other structural aspects** such as staffing levels and qualifications and staff training.

The process quality measures in our analysis included:

- **"Homelikeness" of the environment**, characterized by an environmental diversity measure that incorporated elements such as presence of personal possessions in the residents' rooms and diversity of style and color of furnishings throughout the facility
- **Physical attractiveness** and cleanliness of the facility
- **Staff knowledge** of basic care procedures, monitoring, and medication administration and of normal processes of aging
- **Staff familiarity** with the ombudsman program
- **Availability of services** such as assistance with ADLs, medication monitoring, nursing care, recreational activities, and transportation.



Resident-level quality measures incorporated items about care needs and resident satisfaction with various aspects of the facility's environment and care. These included:

- **Unmet care needs** for assistive devices, personal care, and health care. The latter two measures showed little variation and were dropped from the multivariate analysis as a result.
- **Resident satisfaction**, for example, with meals or the physical environment
- **Resident autonomy** and choices
- **Residents' rights**
- **Availability of, and participation in**, activities.

Three types of measures were constructed from these indicators. In some instances, individual indicators were used in the analysis (e.g., whether operators had training in care for the elderly and disabled prior to assuming their duties in the facility). In other instances, multiple related items were aggregated into summary scales. Items were not used in a common scale unless the items demonstrated internal consistency (i.e., Cronbach's Alpha for the scale exceeded .6).

In the analyses, these multiple item scales were represented in two ways. For all scales (e.g., safety of the environment), the percent of scale items present was used as the indicator. For some of these scales, facilities in the bottom quintile (20 percent) of the distribution of the scale were identified as "lower quality" facilities and distinguished from the facilities arrayed in the other four quintiles.

### 3.3.2 Covariates

The main goal of the analysis was to examine the effect of extensive regulation and of licensure on quality. Thus, we did not conduct extensive analyses of all factors associated with quality. However, prior research suggested that some facility characteristics might affect our quality measures, independently of the effects of licensure and extensive regulation. Thus, to control for potential confounding factors, we constructed a number of variables for inclusion in the multivariate analyses. These covariates described several characteristics of the homes and residents. For facility- and staff-level analyses, we included variables that characterized the size of the facility and whether the facility contained only apartments. The facility-level covariates included:

- An "**apartments-only**" indicator that characterized the board and care home that had only private apartments
- A **size** variable that indicated whether the home was small (2-10 beds), medium (11-50 beds), or large (51+ beds).

- A **resident-payer mix** indicator that was a three-level categorical variable, with **high-SSI** defined as 80 percent or more of the residents with Supplemental Security Income (SSI) as the payer, **low-SSI** defined as 20 percent or fewer of the residents having SSI as the payer, and a third category as 21 to 79 percent SSI.

In the resident-level analyses we included these facility-level covariates (e.g., size, apartment only, resident payer-mix) and resident-level covariates (e.g., mental health status, cognitive status, age of resident, length of stay in the facility). Resident-level covariates categorize residents by the following characteristics:

- **Elderly** (65 or older) or **non-elderly**
- Having or not having a "**mental, emotional or nervous condition**"
- **Cognitively impaired** or intact
- **Length of stay** less than 1 year or longer than 1 year.

### 3.4 Analysis Strategy

The first steps in the analyses involved developing descriptive statistics on the study population. The second step required the construction of indicators of quality of care. Finally, to study the relationship between regulation, licensure, and quality of care at both the facility and the resident level, we used multivariate modeling techniques that controlled for multiple explanatory variables. For continuous quality measures we fit linear regression models using ordinary least squares (OLS). When an outcome was binary, logistic regression was used.

At the facility and staff level we first fit models that assessed the effects of licensure status, the regulatory environment, and covariates of interest (size of the facility and an indicator of whether the facility contained only apartments). These models also included variables (i.e., interaction terms) that allowed us to determine whether the effects of licensure and regulatory environment differed according to facility size and whether the regulatory environment affected licensed and unlicensed facilities differently.

We assessed the significance of the interaction terms. If they were not significant, then we dropped them from the model and fit a model that included only those indicators representing licensure, regulatory environment, and the covariates. If at least one of the interaction terms was significant, we retained these variables in the models.

Analyses for resident-level quality measures were guided by a similar strategy with one exception: both resident-level and facility-level covariates were included in the models. The facility-level covariates in these resident-level models included size of the facility, whether the facility contained "apartments-only," and a categorical variable that described the payor mix of the resident population. Resident-level covariates represented the age, cognitive status, mental health status, and length of stay in the facility of each resident. We also modified our modeling strategy for the resident level to include one additional step. We first assessed the significance of the covariates to determine whether to include them in the model that included the interaction terms. In a few instances, the modeling strategy deviated from this structure. For those cases, the variation in approach is discussed when the specific results of those analyses are presented.

All hypothesis testing in this analysis was based on a directional (or one-tailed) test of the research hypotheses that licensure and more extensive regulation are associated with better quality of care in board and care homes. A directional test was used because the research question was whether or not regulation had a positive impact on quality--**not** whether regulation had some unspecified effect on quality.

Because the data used in these multivariate analyses were derived from a complex multistage sampling design, we conducted the analysis with the Survey Data Analysis (SUDAAN) software developed by RTL. SUDAAN produces unbiased variance estimates for clustered data.

## **SECTION 4. RESULTS: EFFECTS OF REGULATION ON QUALITY OF CARE**

We present the results of our analyses in the following sections. Section 4.1 presents information on the characteristics of the residents and facilities included in the study. Section 4.2 presents information on the various quality measures used in the study. Section 4.3 presents the results of the multivariate models analyzing the effects of regulation on quality of care.

Section 4.3 is further subdivided into four sections. Section 4.3.1 presents the results of an analysis of the effects of regulation on facilities' licensure. Section 4.3.2 presents the results of the analysis of the effects of regulation on our structural measures of quality. Section 4.3.3 presents the results of analyses of our facility-level process measures. Section 4.3.4 presents the results of our multivariate analyses of the resident-level measures of quality.

### **4.1 Residents and Facilities**

Exhibit 2 presents information on the characteristics of those receiving services in board and care homes in the 10 study States. As that exhibit demonstrates, this is a frail and vulnerable population comprised largely of elderly women. Two-thirds of board and care residents in our 10 States were women. One-third of the residents were 85 years old or older and among what has come to be called the "oldest old." Almost two-thirds of the residents were over 75 years old. Forty percent showed some evidence of cognitive impairment; 29 percent were at least occasionally incontinent of bladder or bowel. Twenty percent of the residents needed assistance in two or more ADLs.

Not only were these residents often physically or cognitively impaired, they were also likely to be unmarried and to be poor. Over half of the residents were widowed. Nineteen percent never married, and 14 percent were separated or divorced. Only 13 percent of the residents were married at the time of the interview. Almost one-third of the residents received Supplemental Security Income. In the elderly population as a whole in the United States in 1992, only 9 percent were poor enough to qualify for Medicaid, and roughly one-third of those were in nursing homes. So, as few as 6 percent of community-dwelling elderly were receiving Medicaid (Health Care Financing Administration, 1995). In our 1993 sample, slightly over one-third of board and care residents received Medicaid services.

<b>EXHIBIT 2. Resident Characteristics</b>		
<b>Resident Characteristics</b>	<b>Percent</b>	<b>SE</b>
<b>Age</b>		
Under 65	22	2.7
65-74	14	0.8
75-84	30	1.6
85+	34	2.0
<b>Female</b>	66	1.1
<b>Marital Status</b>		
Married	13	1.3
Widowed	54	1.9
Never Married	19	2.7
Divorced, Separated	14	0.6
<b>Cognitive Impairment</b>		
None	60	3.5
Moderate	19	3.1
Severe	20	2.2
<b>Mental Health Status</b>		
MR/DD	11	2.6
Other Mental Health Problem	33	3.2
<b>Functional Status</b>		
Received help with		
• 0-1 ADLs	80	2.5
• 2-3 ADLs	13	2.3
• 4-5 ADLs	7	0.8
Bedfast/Chairfast	7	1.0
Any Incontinence	29	2.0
<b>Financial Resources</b>		
Social Security	86	0.9
SSI	31	4.1
Medicaid	34	4.7
VA	9	1.1
SE = Standard error of the estimate.		

Exhibit 3 provides information on health care utilization and health status in our sample. Many of these residents suffer from chronic diseases. One in ten residents was diabetic. Over 40 percent suffered from arthritis or rheumatism, and one-quarter had hypertension. A nontrivial proportion, in the past 12 months, had a relatively serious adverse health event. Six percent had a stroke, and 3 percent had a heart attack.

<b>EXHIBIT 3. Resident Health Status and Utilization</b>		
<b>Resident Characteristics</b>	<b>Percent</b>	<b>SE</b>
<b>Medical Conditions</b>		
Diabetes	11	0.9
Arthritis/Rheumatism	42	1.2
High Blood Pressure	28	1.5
Asthma	11	1.1
Stroke (past 12 months)	6	0.9
Heart Attack (past 12 months)	3	0.7
<b>Assistive Devices</b>		
Glasses	73	1.8
Hearing Aid	13	1.1
Cane	19	1.6
Walker	23	1.5
Wheelchair	15	1.0
<b>Utilization</b>		
Physician Visit Past 12 Months	89	1.4
Hospital Visit Past 12 Months	32	1.1
E.R. Visit Past 12 Months	28	2.0
SE = Standard error of the estimate.		

Many residents also used some type of assistive device. Three-quarters wore corrective lenses, and 13 percent had a hearing aid. A significant number required devices to assist in their mobility: 19 percent used a cane, and 23 percent used a walker.

Given their characteristics, it is not surprising that the residents of board and care facilities were relatively heavy users of health services. Almost 90 percent had a physician visit in the past 12 months. Close to one-third had an overnight stay in a hospital. Twenty-eight percent visited a hospital emergency room (E.R.) in the 12 months prior to their interview.

The facilities that provided care for this frail population showed considerable variation in size and staffing. As Exhibit 4 indicates, 70 percent of the facilities were small (i.e., 2 to 10 beds), 20 percent were medium-sized (i.e., 11-50 beds), and only 10 percent of facilities had more than 50 beds.

There was little variation in ownership arrangement, however. Over 80 percent of facilities operated as for-profit enterprises. In addition, the board and care industry is not immune to the movement toward concentration of ownership that one sees in other areas of long-term care. One-third of the operators in the sample owned or operated more than one board and care facility.

Facilities also demonstrated some measure of specialization in their resident mix. Roughly 20 percent of the facilities in the sample were dedicated to caring almost exclusively for residents with behavior problems. Fifty-six percent had a resident population comprised almost exclusively of the elderly. Roughly one-quarter of the homes had some other type of resident mix.

<b>EXHIBIT 4. Facility Characteristics</b>		
<b>Facility Characteristics</b>	<b>Percent</b>	<b>SE</b>
<b>Size</b>		
Small (2-10)	70	5.1
Medium (11-50)	20	3.3
Large (51+)	10	1.8
<b>For Profit Ownership</b>	82	2.1
<b>Operator Owns/Operates Other Board and Care Facilities</b>	33	4.8
<b>Licensed Nurse on Staff</b>	21	2.6
<b>Case-Mix</b>		
90%+ Behavior Problems	21	4.1
90%+ Elderly	56	4.4
Other	23	2.8
<b>Services Provided by Outside Agencies</b>		
Personal Care	25	3.7
Transportation	55	4.9
Nursing	53	3.5
Case Management	44	3.4
Senior Center/Adult Day Care	34	4.5
Shelter Workshop/Day Activity	32	5.0
SE = Standard error of the estimate.		

Although the facilities in our sample provided room, board, supervision, and some personal assistance, their ability to provide more extensive services appears limited. For example, only one-fifth of the homes had a licensed nurse (e.g., RN, LPN, LVN) on staff. Thus, many of the facilities had residents receiving services from outside agencies. Twenty-five percent of the homes had residents receiving personal care assistance from an outside source. The majority of facilities had residents receiving transportation and nursing care from individuals other than facility staff. Roughly one-third of facilities had residents involved in day activities outside the home, while over 40 percent had residents receiving case management services.

## **4.2 Describing Quality of Care in Board and Care**

A wide range of quality measures were used in this effort. Exhibit 5 presents descriptive statistics for some of those measures. Within the facilities caring for this frail population, a major question is the adequacy of staffing and staff training. As indicated

in Exhibit 4, only 21 percent of facilities have a full- or part-time licensed nurse on staff (RN or LPN). In Exhibit 5, we see that only two-thirds of the operators have had training in care for the elderly and disabled. In addition, fewer than a quarter of the facilities require preservice training of staff. Most staff training in facilities is on-the-job training. However, 20 percent of licensed facilities and one-third of unlicensed facilities have no training requirements for their staff.

<b>EXHIBIT 5. Indicators of Quality in Board and Care</b>		
<b>Quality Indicators</b>	<b>Average Score</b>	<b>SE</b>
<b>Operator and Staff Qualifications</b>		
Operator Trained in Care of Elderly/Disabled	67	2.1
Preservice Training Required for Caregivers	22	3.3
<b>Characteristics of the Physical Environment</b>		
Safety	58	0.9
Amenities	80	0.6
Supportive Devices	65	2.2
Social/Recreational Aids	69	1.8
<b>Staff Knowledge</b>		
Basic Care/Monitoring	66	2.5
Normal Aging	14	1.5
<b>Characteristics of the Care Setting</b>		
Cleanliness	72	0.6
Diversity/Homelikeness	74	1.0
<b>Medication Use</b>		
Psychotropic Drug Use	41	3.0
Inappropriate Prescriptions for the Elderly	24	1.9
<b>Residents' Rights</b>		
Resident Council	44	6.6
Kitchen Access	43	4.6
SE = Standard error of the estimate.		

As part of our survey of staff, we queried them on their knowledge of very basic aspects of care practices and monitoring. If they administered medications, we also asked about proper medication administration. For example, in one such question, we asked whether one should deal with urinary incontinence by giving the resident less fluids. On these items, the average staff member knew the correct answers only two-thirds of the time. When queried about the characteristics of normal aging (e.g., whether incontinence was a "normal" part of aging), the staff were correct on only 14 percent of those items. These results imply that, although staff have some grasp of the specifics of care, they do not have adequate knowledge in some areas; moreover, they lack more general knowledge about the aging process. This lack of knowledge may hinder them in problem identification and in making judgments about referrals for more professional assessment and care.



One of the major concerns related to quality of care in board and care facilities involves medication use. Although many of the residents in board and care homes receive a range of powerful medications, they do so in an environment that is not highly medicalized and is not usually staffed with medical professionals. Previous research indicates very high levels of psychotropic medication use in this population (Avorn et al., 1989). These results are not more reassuring than previous research. Although the potential negative sequelae of such drugs are now well known (Harrington et al., 1992), 41 percent of the residents in our sample were receiving psychotropic medications (see Spore et al., 1995a). In addition, one-quarter of the sample were receiving at least one drug that is inappropriate for use in the elderly (see Spore et al., 1995b).

In constructing many of the quality indicators used in this research, multiple item scales were developed. For many of these scales, the score was a percentage from zero to 100. That score represented the percentage of features in the scale that were present in the home. For example, the average facility in our sample had 58 percent of the safety features (e.g., good lighting, smoke detectors, nonskid surfaces on steps) included in the safety scale. The average facility had 65 percent of the supportive devices (e.g., handrails in bathroom, lift bars next to toilet) included in the scale for supportive devices.

Facilities did somewhat better in other areas. The average facility had 80 percent of the amenities (e.g., comfortable furniture and lounge area with small tables) included in the scale. In the average facility, 69 percent of the identified social and recreational aids (e.g., working TV, reading material) were available. The average facility had a cleanliness score of 72 percent. One of the potential advantages of board and care facilities is their approximation of a homelike environment in contrast to the "institutional" environment that is thought to characterize nursing homes. In our sample, the average facility scored 74 on the diversity/homelikeness scale.

Although there may be some concern about the average facility's ability to provide the care and monitoring needed by its residents, it does seem that the physical environment in most facilities is relatively clean, is somewhat homelike, and contains amenities and recreational aids that may enhance residents' quality of life.

## **4.3 Effects of Regulation on Quality of Care**

### **4.3.1 Relationship Between Licensure and Extensive Regulation**

In the bulk of the analyses that follow, whether a facility is licensed and whether a facility operates in a State with an extensive regulatory system are discussed separately. However, they are not truly independent of one another. Through a combination of network and snowball sampling in the 10 study States, the research team estimated there were 13,189 facilities, both licensed and unlicensed, that met our criteria for inclusion in the sample of board and care facilities (Iannacchione et al., 1994;

Wildfire et al., 1995). As Exhibit 6 indicates, 88 percent of these facilities were licensed. However, the prevalence of licensed facilities varied significantly according to whether a State had an extensive or limited regulatory system for board and care. A facility in a State with extensive regulation was in ore than three times as likely to be licensed as a facility in a State with limited regulation. In States with limited regulation, 25 percent of facilities were unlicensed. In States with extensive regulation, only 5 percent were unlicensed.

<b>EXHIBIT 6. Effects of Regulation on Licensure</b>				
	<b>Number of Homes</b>		<b>Percentage of Homes</b>	
	<b>Licensed</b>	<b>Unlicensed</b>	<b>Licensed</b>	<b>Unlicensed</b>
Ten-State Total	11,634 (403)	1,555 (303)	88	12
States with Limited Regulation	2,718 (143)	929 (270)	75	25
States with Extensive Regulation	8,916 (377)	625 (136)	93	5
() = Standard error of the estimate.				

This relationship emphasizes the fact that licensure is simply one facet of regulation. In the analysis reported below, when one looks for the effect of regulation in general, the effects of both licensure and the extensiveness of the specific regulatory scheme must be considered.

#### **4.3.2 Effects of Regulation on Structural Indicators of Quality**

Structural indicators of quality capture the resources available to provide good care. Thus, our analysis of structural measures of quality focused on the effects of regulation on staff qualifications and the physical environment in which care occurred. The analysis included three measures of staff resources:

- Whether the operator had training in care for the elderly and disabled
- Whether preservice training was required for caregiving staff
- Whether a licensed nurse was on staff in the facility.

Exhibit 7 presents the multivariate results concerning the effects of regulation on staff qualifications. This exhibit reports the adjusted relative odds-ratios and their probability values from the logistic regressions used in this analysis. Regulation had a statistically significant positive effect on only one of the three indicators of staff resources.

Both licensure and extensive regulation independently made it more likely that an operator had training in the care of the elderly and disabled. Operators in licensed homes were over 10 times more likely to report relevant training than were operators in unlicensed facilities. Operators in States with extensive regulations were almost twice

as likely to report care training than were their counterparts in States with limited regulation.

EXHIBIT 7. Effects of Regulation on Staff Qualifications						
Independent Variables	Dependent Variables					
	Operator Training		Staff Preservice Training		Licensed Nurse Available	
	OR	<i>p</i>	OR	<i>p</i>	OR	<i>p</i>
<b>Main Effects</b>						
Licensure	11.1	0.02	2.1	0.10	1.6	0.14
Regulation	1.9	0.01	1.3	0.35	0.8	0.48
Size						
• Small	5.1	0.11	0.6	0.13	0.2	0.01
• Medium	5.7	0.04	0.7	0.46	0.5	0.21
Apartments Only	6.4	0.03	0.5	0.48	1.7	0.34
<b>Interactions</b>						
Licensure and Size	NS	NS	NS	NS	NS	NS
Regulation and Size						
Licensure and Regulation						
NS = Not statistically significant. OR = Adjusted relative odds-ratio. <i>p</i> = Probability of the t value associated with a parameter. Note: Large facilities are the reference category when estimating the effects of size.						

Other factors that affected the likelihood that an operator would have care training were facility size and whether the facility comprised apartments only. Operators in facilities with between 11 and 50 beds were more likely to have training, as were operators of what are basically assisted living settings.

None of the variables in our model has a significant effect on whether a facility required preservice training of caregivers, and only facility size affected the likelihood that a resident would be in a facility with a licensed nurse on staff. Residents residing in small homes with from 2 to 10 beds were only 20 percent as likely as residents in large facilities of more than 50 beds to be in a facility with a licensed nurse on staff.

Our analysis of indicators of structural quality also included an analysis of the effects of regulation on four dimensions of the physical environment in the sampled homes. These included:

- Percentage of safety features available (e.g., smoke detectors, fire extinguishers)
- Percentage of physical amenities in the home (e.g., comfortable furniture, adequate space)

- Percentage of supportive devices available (e.g., handrails, support bars)
- Percentage of social and recreational aids in the home (e.g., television, radio, outdoor furniture).

The results of our analysis are presented in Exhibit 8. Since the dependent variables in these analyses were continuous, or quasi-continuous, ordinary least squares regression models were estimated. The standardized regression coefficients and their probabilities for each variable in our model are displayed in the exhibit.

The degree to which facilities provide appropriate safety features was clearly affected by a facility's licensure status. Licensed facilities had significantly more of these safety features than did unlicensed facilities. The other aspects of regulation (i.e., extensiveness) had no significant effect on safety features. The only other factor that had a significant effect on facility safety was facility size. Smaller and medium-sized facilities had significantly fewer safety features than did large facilities. Those homes that included only apartments were no different from more traditional board and care facilities in their scores on facility safety.

EXHIBIT 8. Effects of Regulation on Facility Environment								
Independent Variables	Dependent Variables: Scales Indicating Presence of							
	Safety Features		Physical Amenities		Supportive Devices		Social/Rec. Aids	
	$\beta$	$p$	$\beta$	$p$	$\beta$	$p$	$\beta$	$p$
<b>Main Effects</b>								
Licensure	8.0	0.01	2.7	0.32	8.8	0.00	12.6	0.01
Regulation	-.02	0.94	a	---	a	---	9.1	0.00
Size								
• Small	-30	0.00	a	---	a	---	-5.8	0.02
• Medium	-16	0.00	a	---	a	---	-4.0	0.52
Apartments Only	6.4	0.44	6.8	0.05	7.1	0.27	4.9	0.22
<b>Interactions</b>								
Licensure and Size	NS	NS					NS	NS
Regulation and Size			a	0.06	a	0.01		
Licensure and Regulation								
$\beta$ = Standardized OLS regression coefficient. NS = Not statistically significant. $p$ = Probability of the t value associated with a parameter. a. Effect varies by size and/or regulatory status, as explained in the text. Note: Large facilities are the reference category when estimating the effects of size.								

The percentage of potential social and recreational aids was also affected by regulation. Both licensed facilities and facilities in States with extensive regulatory systems had significantly more social and recreational aids available for resident use.

Again, size also played a role. Small facilities had significantly fewer social and recreational aids than did large facilities.

Licensure also had a positive impact on the availability of supportive devices. The effect of extensive regulation, however, varied by the size of the facility. Significant differences in the availability of supportive devices did not appear between large and medium-sized facilities in States with extensive regulation and those with limited regulation. However, in the availability of supportive devices, small homes in States with extensive regulation scored 10 percent higher than did small homes in States with limited regulation.

In the availability of physical amenities, apartment settings seemed to have significantly more amenities than traditional board and care homes. However, regulation did not enhance this dimension of quality. Licensed facilities did not differ from unlicensed facilities. And, the results indicate again that the effect of regulation in this domain varied by facility size. In this instance, regulation had a negative effect for some facilities. Medium-sized homes in extensively regulated States scored significantly lower on the physical amenities scale than did comparably sized homes in States with limited regulation ( $\beta=-7.0$ ,  $p=.03$ ).

The results in Exhibit 8 refer to the effects of our independent variables on facilities' average scores on our scales. Inherent in this analysis is the concept that regulation's effect will lower or increase quality in the "average facility." There is an alternative conceptual model for the effects of regulation. Some would argue that regulation's real effect is in setting a "floor" below which quality is not allowed to fall. Exhibit 9 displays the results of an analysis consistent with this alternative concept of regulation's role. In that exhibit, we present the results of logistic regression analyses, estimating the effects of regulation on the likelihood that a facility will fall into the bottom 20 percent on our four measures of the quality of the physical environment.

Both licensure status and size had an effect on how likely a facility was to fall into the bottom quintile on our measure of safety features. Licensed facilities were much less likely to be among those with the poorest safety ratings. Small facilities were much more likely to have the poorest ratings on safety. Licensed facilities, along with facilities comprised of apartments only, were also significantly less likely to be in the bottom quintile of the physical amenities scale. Licensed facilities were also half as likely to have the lowest scores on the availability of social and recreational aids.

Over and above the effects of licensure, regulatory stringency had a relatively complex set of effects on whether facilities scored among the worst scores on our indicators of the quality of the physical environment. Among these indicators, the effects of extensive regulation varied by the size of the facility. Small homes in States with extensive regulation were 50 percent less likely ( $p=.01$ ) to be in the bottom quintile of facilities on our scale indicating the availability of supportive devices. Small and medium-sized facilities in States with extensive regulations were significantly less likely

(OR=0.4,  $p=.00$ ; OR=0.2,  $p=.02$ ; respectively) to have the poorest scores on the availability of social and recreational aids.

EXHIBIT 9. Effects of Regulation on Low Scores on Facility Environments								
Independent Variables	Dependent Variables: Bottom 20% on Scale of							
	Safety Features		Physical Amenities		Supportive Devices		Social/Rec. Aids	
	OR	$p$	OR	$p$	OR	$p$	OR	$p$
<b>Main Effects</b>								
Licensure	0.03	0.00	0.5	0.05	0.4	0.07	0.5	0.01
Regulation	0.8	0.30	0.7	0.19	a	---	a	---
Size								
• Small	21.0	0.01	1.6	0.44	a	---	a	---
• Medium	11.0	0.11	1.5	0.45	a	---	a	---
Apartments Only	1.2	0.85		0.00	0.4	0.44	1.7	0.53
<b>Interactions</b>								
Licensure and Size	NS	NS	NS	NS				
Regulation and Size					a	0.00	a	0.10
Licensure and Regulation								
NS = Not statistically significant. OR = Adjusted relative odds-ratio. $p$ = Probability of the t value associated with a parameter. a. Effect varies by size and/or regulatory status, as explained in the text. Note: Large facilities are the reference category when estimating the effects of size.								

The one somewhat anomalous finding related to regulation arises in the analysis of the availability of supportive devices. On this indicator, large facilities in extensively regulated environments are significantly more likely to score among the lowest 20 percent of facilities. This result may be a function of the inclusion in the sample of large assisted living or multilevel campuses, which are usually located in States with limited regulation. Such facilities may have more supportive devices than the larger traditional board and care facilities.

In general, both the extensiveness of the regulatory structure and licensure had a positive impact on our indicators of structural quality. Licensure's effect was always an "across-the-board" effect that was uniformly positive across the various types of facilities. The extensiveness of the regulatory structure had a more complex effect on these measures. In some instances, such as operator training and the availability of social and recreational aids, the degree of regulation had a uniformly positive effect. More often, however, the effect of the extensiveness of regulations was conditioned by the size of the facility.

### 4.3.3 Effects of Regulation on Indicators of Process Quality

The process quality indicators addressed in our analysis dealt with staff knowledge of the ombudsman program, of basic care and monitoring, and of the normal aging process. Staff qualifications and training were considered structural measures of quality, but these knowledge indicators are classified as measures of process quality. Although training and qualifications may translate into different processes of care, the nexus between differential knowledge and differences in the process of care is much stronger. So, we have placed these indicators among our measures of process quality, although we recognize that some might argue that they belong elsewhere.

Licensure's effect on knowledge of the ombudsman program varied relatively dramatically by the nature of the regulatory environment in which the facility operated. Staff in licensed homes in States with extensive regulation were over 18 times more likely to know about the ombudsman program than were staff in unlicensed facilities in States with limited regulation of the board and care industry (OR=18.4,  $p=0.00$ ). There were no significant differences in the knowledge levels of staff in licensed and unlicensed homes in States with limited regulation (OR= 1.6,  $p=.43$ ). Staff in smaller facilities were twice as likely to know about the ombudsman program than were staff in either medium-sized or large facilities. In addition, staff in assisted living (i.e., apartment only) settings were significantly more likely to be aware of the ombudsman programs (Exhibit 10).

EXHIBIT 10. Effects of Regulation on Staff Knowledge						
Independent Variables	Dependent Variables: Staff Knowledge of					
	Ombudsman Program		Basic Care/Monitoring Training		Normal Aging Process	
	OR	$p$	OR	$p$	OR	$p$
<b>Main Effects</b>						
Licensure	a	---	1.2	0.44	0.5	0.01
Regulation	a	---	0.7	0.19	0.7	0.16
Size						
• Small	2.1	0.00	0.4	0.00	1.5	0.23
• Medium	1.2	0.47	0.5	0.02	1.2	0.57
Apartments Only	4.2	0.02	1.8	0.05	0.6	0.48
<b>Interactions</b>						
Licensure and Size						
Regulation and Size						
Licensure and Regulation	a	0.00				
NS = Not statistically significant. OR = Adjusted relative odds-ratio. $p$ = Probability of the t value associated with a parameter. a. Effect varies by size and/or regulatory status, as explained in the text. Note: Large facilities are the reference category when estimating the effects of size.						

Staff knowledge of basic care, monitoring, and medication administration was unaffected by any aspect of regulation. Facility characteristics, however, played a significant role in staff knowledge in this area. Staff in larger facilities were roughly twice as likely to possess this knowledge than were staff in medium-sized or small facilities. Staff in apartment-only settings were almost twice as likely to have this knowledge than were staff in more traditional board and care homes.

The only factor that had a significant effect on knowledge of the normal aging process was the licensure status of the facility. Staff in licensed facilities were significantly less likely to understand the normal aging process. Though the differences in case-mix between licensed and unlicensed homes were relatively complex, it may be that staff in licensed homes see a more impaired elderly population than do staff in unlicensed facilities. This may somewhat distort their perceptions of the normal course of aging.

The three other indicators of the quality of the process of care used in the analysis were multiple item scales that reflected the cleanliness or attractiveness of the homes, the services available for residents, and the diversity of the environment. The indicators of diversity included in our scale referred to the degree to which the environment in the home diverged from what one would expect in an "institutional" setting and converged with one's expectations for a more homelike setting.

The only factor that seems to have had a significant effect on the cleanliness and attractiveness of facilities was their size. Larger facilities were significantly cleaner and more attractive. The diversity of the environment in the home, however, was unaffected by facility size. Instead, as one might expect, facilities that included only apartments developed significantly more homelike settings.

Since many observers fear that regulation and licensure lead to a more "institutional," less homelike environment, we examined the impact of licensure on environmental diversity. Using criteria established by Moos and Lemke (1978), licensure was not significantly associated with a more institutional environment. In fact, licensed facilities in States with extensive regulations had overall environmental diversity scores almost 15 percent higher than unlicensed facilities ( $p=0.00$ ). In States with limited regulation, there was no significant difference between the environmental diversity of licensed and unlicensed homes (Exhibit 11).

Service availability was significantly lower in facilities with only 2 to 10 beds and in unlicensed facilities.



EXHIBIT 11. Effects of Regulation on Cleanliness, Diversity, and Services						
Independent Variables	Dependent Variables					
	Cleanliness/ Attractiveness		Environmental Diversity		Services Available	
	$\beta$	$p$	$\beta$	$p$	$\beta$	$p$
<b>Main Effects</b>						
Licensure	-1.2	0.67	a	---	0.6	0.01
Regulation	1.2	0.56	a	---	0.2	0.14
Size						
• Small	-6.2	0.11	3.3	0.43	-1.0	0.00
• Medium	-7.4	0.00	-7.8	0.08	-0.3	0.07
Apartments Only	1.1	0.77	7.8	0.03	0.1	0.65
<b>Interactions</b>						
Licensure and Size	NS	NS			NS	NS
Regulation and Size						
Licensure and Regulation			a	0.00		
$\beta$ = Standardized OLS regression coefficient. NS = Not statistically significant. $p$ = Probability of the t value associated with a parameter. a. Effect varies by size and/or regulatory status, as explained in the text. Note: Large facilities are the reference category when estimating the effects of size.						

As with the earlier scales representing structural quality, with these scales related to process quality we also tested to determine effects of regulation on facilities' likelihood of falling into the bottom 20 percent of the sample. These results are presented in Exhibit 12. With cleanliness and attractiveness, medium-sized facilities were significantly more likely than other facilities to have poorer scores on the scale. Also, those facilities comprised of only apartments were more likely to have the poorest scores on cleanliness and attractiveness. Neither the extensiveness of regulation nor licensure had a significant effect on the likelihood that homes would have among the poorest scores on attractiveness/cleanliness.

The effects of licensure and regulation on low scores on environmental diversity were not uniform across all settings. But again, one finds the least likelihood that a facility will have a relatively poor score on diversity among those facilities in which some would expect the most institution-like setting. In extensively regulated States, licensed facilities were significantly less likely (OR=0.2,  $p=0.00$ ) to have the lowest scores on environmental diversity. Also, homes with between 11 and 50 beds were, in general, two and one-half times more likely to score relatively poorly on environmental diversity.

<b>EXHIBIT 12. Effects of Regulation on Cleanliness and Environmental Diversity</b>				
<b>Independent Variables</b>	<b>Dependent Variables: Low Score On</b>			
	<b>Cleanliness/ Attractiveness</b>		<b>Environmental Diversity</b>	
	<b>OR</b>	<b>p</b>	<b>OR</b>	<b>p</b>
<b>Main Effects</b>				
Licensure	0.7	0.18	a	---
Regulation	0.7	0.36	a	---
Size				
• Small	1.4	0.60	0.8	0.66
• Medium	2.2	0.00	2.5	0.04
Apartments Only	7.0	0.00	0.4	0.06
<b>Interactions</b>				
Licensure and Size	NS	NS		
Regulation and Size				
Licensure and Regulation			a	0.00
NS = Not statistically significant. OR = Adjusted relative odds-ratio. p = Probability of the t value associated with a parameter. a. Effect varies by size and/or regulatory status, as explained in the text. Note: Large facilities are the reference category when estimating the effects of size.				

In reviewing the effects of licensure and regulation on our indicators of process quality, the picture is somewhat more complex than that seen with the measures of structural quality. None of the positive effects of regulation are simple, direct effects. Instead, positive effects in this area seem to most often result from the combined effects of licensure and extensive regulation. Neither dimension of regulation, in isolation, has a significant positive effect on our indicators of process quality.

#### 4.3.4 Effects of Regulation on Resident-Level Quality Indicators

In analyzing the effects of regulation on our resident-level quality indicators, we first focused on medication use. With our other resident-level measures, the emphasis was on resident needs, their satisfaction, their involvement in activities, and their ability to exercise their rights. The models used in these analyses differ somewhat from our earlier models, which focused more heavily on facility characteristics. With these models, it was important that a number of individual-level covariates be added to the models. Our outcome measures are largely individual characteristics or attitudes and, as such, demand that individual attributes be added to the models to control for individual differences.

A variety of major concerns about the process of care in board and care homes have arisen around the use and potential misuse of medications. Previous research has demonstrated that psychoactive medications are quite prevalent in board and care homes (Avorn et al., 1989; Dittmar, 1989; Williams et al., 1992). There has also been concern about the general prescribing patterns and medication management for the

elderly as a whole (Beers and Ouslander, 1989; Cooper 1991; Montamat and Cusack, 1992) and in board and care facilities in particular (Avorn et al., 1989; Eckel and Crawley, 1971; Williams et al., 1992). A major issue, then, is the effect of regulation on medication use in our study sample.

The results of our analysis of the effects of regulation on psychotropic drug use are presented in Exhibit 13. The model for this analysis differed somewhat from that used in other analyses. First, these analyses were limited to residents in licensed facilities. Regulatory stringency was expected to affect drug prescription and use patterns in licensed facilities more heavily. Also, the greater number of degrees of freedom offered by focusing only on residents in licensed facilities allowed greater flexibility in choosing covariates to adjust for differences among residents that might affect their likelihood of receiving a psychotropic drug. As the results in Exhibit 13 indicate, residents with a current mental health condition, cognitive impairment, or a previous stay in a psychiatric hospital were two and one-third times more likely to receive a prescription for psychotropic medications than were other residents. Younger residents were slightly less likely to receive these drugs. Gender had no effect on the likelihood that one would receive a psychotropic drug.

<b>EXHIBIT 13. Effects of Regulation on Prescription of Psychotropic Medications</b>		
<b>Independent Variables</b>	<b>OR</b>	<b>p</b>
Male	0.78	NS
Age in Years	0.96	0.00
Current Mental Health Condition, Cognitive Impairment, Prior Psychiatric Hospitalization	2.33	0.00
Limited Regulation	1.85	0.00
NS = Not statistically significant. OR = Adjusted relative odds-ratio. p = Probability of the t value associated with a parameter.		

The results also indicate that, in States with more limited regulatory structures, residents in licensed facilities were almost twice as likely to receive psychotropic medication. The odds of residents receiving a psychotropic drug in States with limited regulation are 85 percent higher than the odds of similar residents in States with extensive regulation receiving a prescription for such a drug.

Inappropriate drug prescription patterns in general were also investigated. The identification of such patterns is difficult. In our research, we used two different sets of criteria to identify inappropriate drug 'prescription patterns. The first of these was suggested by Beers et al. (1991). Using an expert-based consensus process that focused on inappropriate drug use for elderly nursing home residents, drugs that should be avoided entirely or are inappropriate because of dosage or duration of use were identified. The second set of criteria was developed by Stuck et al. (1994) for use with community-dwelling elders. However, the latter set of criteria contains only drugs that should be avoided entirely. For simplicity, these two sets of criteria will simply be called the Beers' and Stucks' criteria.

Exhibit 14 presents the percentage of prescriptions found using each set of criteria for residents in facilities in States with limited regulation and residents in facilities in States with extensive regulation. Using both sets of criteria, extensive regulation seemed to reduce the residents' risk of receiving a prescription for an inappropriate drug. Residents in facilities in States with more extensive regulation were less likely to receive inappropriate medications. However, the differences were statistically significant only for the somewhat more inclusive Beers' criteria, which include drugs that are contraindicated entirely for the elderly and those contraindicated in relation to dosage. With the Beers' criteria, the raw difference of 7.0 percent between residents living in different regulatory environments indicates that the prevalence of residents with an inappropriate prescription is 31 percent higher in States with limited regulation.

<b>EXHIBIT 14. Effects of Regulation on Percentage of Residents with Inappropriate Prescriptions</b>			
<b>Criteria Identifying Inappropriate Medications</b>	<b>Regulatory Structure</b>		<b>p Value</b>
	<b>Extensive</b>	<b>Limited</b>	
Stuck et al., 1994	17.1	21.9	0.07
Beers et al., 1991	23.3	30.3	0.02

Exhibit 15 presents the results for three indicators related to resident needs and satisfaction: does the resident indicate a need for any assistive devices; is the resident dissatisfied with meals in the facility; is the resident satisfied with the physical environment in the home. Licensure had no effect on residents' perceived needs for assistive devices. However, residents in facilities with extensive regulation were two and one-half times more likely to indicate that they needed an assistive device, such as eyeglasses, hearing aid, cane, walker, or wheelchair. Although the stringency of regulation had no effect on residents' satisfaction with meals, licensure did have a significant effect. Residents in licensed facilities were more than three times more likely to voice dissatisfaction with meals. Neither regulation nor licensure had a significant effect on residents' satisfaction with their physical environment. In addition, none of the tested interactions involving these variables was significant for any of the three indicators.

The bulk of the factors that affected these measures were individual characteristics. In these three models, nine parameters were statistically significant. Two-thirds of those parameters were related to residents' individual characteristics. The most consistently important indicator was residents' self-reports that they suffered many mental, emotional, or nervous conditions.

<b>EXHIBIT 15. Effects of Regulation and Licensure on Resident Satisfaction and Needs</b>						
<b>Independent Variables</b>	<b>Dependent Variables</b>					
	<b>Resident Needs Assistive Devices</b>		<b>Resident Dissatisfied with Meals</b>		<b>Resident Satisfied with Physical Environment</b>	
	<b>OR</b>	<b>p</b>	<b>OR</b>	<b>p</b>	<b>OR</b>	<b>p</b>
<b>Main Effects</b>						
Licensure	0.8	0.43	3.1	0.02	0.9	0.81
Regulation	2.5	0.03	0.9	0.68	1.1	0.83
Size						
• Small	1.1	0.21	1.4	0.38	1.0	0.99
• Medium	1.0	0.94	1.1	0.76	0.9	0.56
Apartments Only	0.4	0.10	2.4	0.00	1.0	0.92
Age: Over 65 years	b	b	b	b	1.7	0.03
Cognitively Impaired	2.8	0.00	b	b	0.9	0.70
Length of Stay in Home <1 year	b	b	b	b	1.1	0.60
Resident Reports Mental Condition	1.6	0.00	1.7	0.00	0.9	0.00
Facility Payer Mix						
• <20% of residents receive SSI	0.5	0.04	b	b	1.5	0.27
• 20%-80% of residents receive SSI	1.1	0.43	b	b	1.1	0.84
<b>Interactions</b>	NS	NS	NS	NS	NS	NS
Licensure and Size						
Regulation and Size						
Licensure and Regulation						
NS = Not statistically significant. OR = Adjusted relative odds-ratio. p = Probability of the t value associated with a parameter. b. Variable was not included in these models because preliminary analysis results were not significant. Note: Large facilities are the reference category when estimating the effects of size.						

Two other resident-level quality indicators were used to evaluate the effects of regulation on the degree to which residents engaged in activities. One of these measures represents the number of different activities (including both individual and group activities) in which residents were engaged in the 14 days prior to the interview. The other measure reflects whether or not the resident made any trips outside the facility, other than to appointments for health care, during the 2 weeks prior to the assessment.

The results presented in Exhibit 16 indicate that residents in licensed facilities reported significantly lower levels of activity involvement than did those in unlicensed

facilities. Licensure had no effect on activity levels outside the home. Regulatory stringency affected activity pursuits in the larger facilities. Residents in large facilities in extensively regulated States reported greater activity involvement ( $\beta=0.13$ ,  $p=0.02$ ) than residents in large facilities in States with limited regulation. However, these same residents were significantly less likely to report activity outside the home ( $OR=.4$ ,  $p=0.01$ ).

Activity levels are also affected by a number of other variables in the models. Residents are less likely to participate in activities outside the home if they have been in residence for less than 1 year. They participate in more activities in the home if they reside in an apartment-only setting, if they are younger, if they have been in the facility for less than 1 year, and if they are cognitively impaired.

<b>EXHIBIT 16. Effects of Regulation and Licensure on Resident Involvement in Activities</b>				
<b>Independent Variables</b>	<b>Dependent Variables</b>			
	<b>Resident Participates in Activities</b>		<b>Resident Participates in Activities Outside Home</b>	
	$\beta$	$p$	OR	$p$
<b>Main Effects</b>				
Licensure	-0.11	0.00	0.9	0.65
Regulation	a	---	a	---
Size				
• Small	a	---	a	---
• Medium	a	---	a	---
Apartments Only	0.12	0.00	0.8	0.31
Age: Over 65 years	-0.13	0.00	0.7	0.12
Cognitively Impaired	0.10	0.00	b	b
Length of Stay in Home <1 year	-0.06	0.00	0.6	0.01
Resident Reports Mental Condition	b	b	b	b
Facility Payer Mix				
• <20% of residents receive SSI	b	b	b	b
• 20%-80% of residents receive SSI	b	b	b	b
<b>Interactions</b>				
Licensure and Size				
Regulation and Size	a	0.01	a	0.00
Licensure and Regulation				
$\beta$ = Standardized OLS regression coefficient. NS = Not statistically significant. OR = Adjusted relative odds-ratio. $p$ = Probability of the t value associated with a parameter. a. Effect varies by size and/or regulatory status, as explained in the text. b. Variable was not included in these models because preliminary analysis results were not significant. Note: Large facilities are the reference category when estimating the effects of size.				

Perceived respect for residents' rights is largely a function of individual characteristics. As Exhibit 17 indicates, residents in licensed facilities are less likely to have access to the kitchen to fix snacks, but that is the only significant impact for regulation. Living in an apartment is also a significant factor in autonomy, although the results are somewhat mixed. In apartments, residents logically have greater kitchen access, but they report less choice over their daily activities or autonomy in decision making. Facility or home size is also important. In small homes, residents are more likely to have access to the kitchen, but they are less likely to make decisions about their daily routine. Smaller homes are also less likely to have a residents' council. Individual resident characteristics (e.g., mental condition, cognitive status) also play a role in perceived autonomy and kitchen access.

<b>EXHIBIT 17. Effects of Regulation and Licensure on Resident Rights</b>						
<b>Independent Variables</b>	<b>Dependent Variables</b>					
	<b>Resident Autonomy</b>		<b>No Resident's Council</b>		<b>Kitchen Access</b>	
	$\beta$	$p$	OR	$p$	OR	$p$
<b>Main Effects</b>						
Licensure	0.12	0.13	0.5	0.23	0.3	0.01
Regulation	-0.06	0.24	1.1	0.88	0.5	0.11
Size						
• Small	0.19	0.00	21.1	0.00	3.1	0.00
• Medium	0.21	0.00	3.6	0.14	1.9	0.11
Apartments Only	-0.13	0.01	0.3	0.07	4.2	0.01
Age: Over 65 years	-0.13	0.02	0.9	0.75	1.0	0.89
Cognitively Impaired	-0.15	0.00	1.2	0.29	1.0	0.82
Length of Stay in Home <1 year	0.01	0.69	1.4	0.24	0.8	0.18
Resident Reports Mental Condition	0.07	0.01	1.1	0.75	0.6	0.00
Facility Payer Mix						
• <20% of residents receive SSI	-0.01	0.87	0.4	0.14	2.7	0.00
• 20%-80% of residents receive SSI	0.03	0.69	0.4	0.52	1.2	0.60
<b>Interactions</b>						
Licensure and Size	NS	NS	NS	NS	NS	NS
Regulation and Size						
Licensure and Regulation						
$\beta$ = Standardized OLS regression coefficient. NS = Not statistically significant. OR = Adjusted relative odds-ratio. $p$ = Probability of the t value associated with a parameter. Note: Large facilities are the reference category when estimating the effects of size.						

## **SECTION 5. CONCLUSIONS AND IMPLICATIONS**

This section summarizes the major findings of the study of the effect of regulation on board and care home quality and discusses their implications.

### **5.1 Putting Effects of Regulation in Context: Key Descriptive Findings**

Several descriptive findings emphasize how board and care homes have changed over the past decade. These findings also provide a context for the policy implications discussed below.

1. The average resident was significantly older and more disabled than was true a decade ago. This more impaired population presents more complex caregiving challenges to providers and staff and makes issues related to quality assurance more pressing for public policy-makers.
2. Although there is a perception that board and care consists of small, private family homes, most residents lived in fairly large facilities. Although most homes were small, the majority of residents were in places with more than 50 beds. This presents challenges in terms of offering residents a homelike, noninstitutional environment and also raises issues related to safety and staffing requirements.
3. We did find a substantial number of unlicensed homes. In the 10 study States, an estimated 12 percent of the homes and 27 percent of the beds were in unlicensed board and care homes. Addressing the role of these homes and issues related to the needs of residents for the protection afforded by licensure is critical for many States.
4. During the past decade, a new type of unlicensed home emerged: retirement apartments and places called assisted living facilities that provide the same services as licensed homes (meals, protective oversight, and personal care) but are not licensed. They tend to be large, to house mainly elderly residents, and to house few residents who are poor or near poor. Understanding their role in providing long-term care and their potential to meet the needs of a range of persons with disabilities, especially those with moderate and low incomes, is critical.

Each of these factors, discovered during the course of the study, increases the importance of the study's findings on the effect of regulation and the ability of the States to ensure adequate care for the elderly and disabled who reside in board and care homes. In particular, the finding of an increasing disability level among residents makes issues of safety and quality assurance especially pressing. Further, both the presence



of large numbers of unlicensed homes and the emergence of a new type of unlicensed home resurrect questions about the role of the States in extending their regulatory reach to cover these places that provide essentially the same type of care and services to the elderly and disabled as licensed board and care homes.

## **5.2 Summary of Study Findings**

### **5.2.1 Positive Effects of Regulation on Quality**

Regulation was associated with better quality in a number of areas. Four findings are particularly relevant.

**1. Licensure alone was effective in ensuring that homes provided care above a threshold of minimum performance.**

Many observers believe that this prevention of performance below some minimally acceptable level of quality is the main role of regulation. The minimum requirements of licensure, whether in States with extensive or limited regulatory systems, prevented homes from having the worst performance along key quality dimensions, including low prevalence of safety features, social aids, supportive devices, and physical amenities.

**2. Extensive regulatory systems reduced the prevalence of unlicensed homes.**

By having a broad definition of places that required an operating license and by enforcing licensure, States with extensive regulatory systems reduced the prevalence of unlicensed homes.

**3. Extensive regulatory systems and licensure were effective in promoting better safety, quality of life, and quality of care.**

For some aspects of quality, the basic elements of the study States' licensure requirements alone, whether in conjunction with an extensive or limited regulatory system, were sufficient to promote higher quality. For other aspects of quality, the additional components of extensive regulatory systems were needed to achieve better quality.

- Licensure, regardless of the type of regulatory system, was associated with:
  - A higher percentage of safety features in homes
  - Greater availability of an array of supportive long-term care services, such as personal care, special diets, transportation to medical and dental appointments, and, when needed, nursing care.

- Extensive regulatory systems were associated with important aspects of better quality, including:
  - Lower use of psychotropic drugs
  - Lower use of medications that are inappropriate for use with the elderly
  - Greater availability of social and recreational aids.
- Licensure and extensive regulation combined were associated with:
  - Increased staff knowledge of, and willingness to refer problems to, the ombudsman program
  - Greater likelihood that operators are trained in the care of the elderly and disabled
  - Greater availability of supportive services.

**4. Regulation achieved positive effects on quality without producing an excessively institutional model of care.**

Despite fears that regulation would lead to an institutional model of care, licensed homes and homes in States with extensive regulatory systems were not more likely to be "institutional." Instead, they tended to be smaller, to have greater environmental diversity, and to make more social and recreational aids available to residents.

**5.2.2 Interaction Effects**

As noted, some effects of regulation occur only in specific settings (e.g., occur only in licensed facilities in States with extensive regulatory systems), while others are conditioned by the size of the home. For example, small homes in States with extensive regulatory systems were more likely to make a wider array of supportive devices available to residents compared to small homes in States with limited regulatory systems; however, extensive regulation had no effect on this quality measure in medium or large-sized homes. Such findings suggest that regulatory systems are multifaceted and do not affect all homes in exactly the same way. Sometimes this occurs because of differences in the standards, sometimes because the standards are applied differently by the inspectors or enforcement personnel, and sometimes because intrinsic characteristics of the homes intervene in significant ways. Similarly, the finding that licensure often has an effect only in States with extensive regulatory systems suggests that, in these cases, the basic licensure requirements shared by most or all States are not sufficient to produce the observed difference in quality and that the key factor lies in the standards, inspection, or enforcement provisions. Thus, States that wish to use the study's empirical findings to guide specific policy decisions would do well to examine quite carefully the effects and the interactions between regulation, licensure, and facility size.

### **5.2.3 No Effect of Regulation on Some Aspects of Quality**

Regulation did not produce positive effects on all the aspects of quality we studied. Instead, such factors as home size and whether it was an "apartment-type" board and care home, as well as some resident characteristics, were associated with some differences in quality. Measures on which regulation had no effect include:

- Operator requirements on preservice and in-service training for staff
- Staff knowledge of basic care procedures and appropriate monitoring of health conditions, characteristics of normal aging, and medication administration
- Availability of licensed nurses on staff
- Cleanliness and "attractiveness" of the home
- Availability of physical amenities.

In addition, as noted, there was little variation in measures of unmet care needs, residents' rights, and "satisfaction" with facility performance. The implications of these findings are discussed below.

### **5.3 Limitations of the Study**

The study design has several strengths, the most significant of which is that it enabled us to analyze the components of each State's regulatory system and to categorize States based on key characteristics of their systems for regulating board and care homes. This allowed us to select States at either end of the regulatory continuum so as to maximize the likelihood of detecting the effect of regulation on quality if such an effect were present. Indeed, this may well account for the fact that this study found a wider array of positive effects than prior studies have detected.

At the same time, the study design has some limitations as a result of its focus on assessing the effects of regulation and differences between licensed and unlicensed homes. These too have important implications for policy-makers.

First, our study does not attempt to determine what the "absolute" quality of care is, that is, whether care in board and care homes across the country is excellent, adequate, or very poor. We know that it is "better," on average, in States with extensive regulatory systems and in licensed homes. We do not know, however, what that means in terms of some normative standard of "good quality." This is important, since some of the study findings may raise questions about the adequacy of care and because the cross-sectional nature of the study design prevented us from assessing a full range of quality measures, such as resident outcomes. Further, our measures of unmet care needs and resident-level quality indicators largely depended on resident self-report.

These measures do not address such issues for residents with cognitive impairment. Because such residents represent 40 percent of the study sample and because their impairment makes them particularly vulnerable to unmet care needs and poor care, this is a significant limitation. **Thus, the study does not answer the question of whether care in board and care homes is acceptable, nor whether other important aspects of quality will respond similarly to current regulatory structures.**

Second, the approach of selecting five States with limited regulatory systems and five with extensive regulatory systems means that the study cannot address some questions policy-makers will have. For example, although we can assess the relative effects on quality of extensive versus limited regulatory systems, we cannot address the effects of the mid-range of regulatory systems. In addition, because we rated States on multiple aspects of their regulatory systems (i.e., aspects of licensure, inspections, and enforcement), we cannot say which aspects of regulation had the greatest effect in terms of better quality. **This means that we cannot say with certainty which regulatory features are the most important nor how States should structure their regulatory systems.** Instead, we can suggest only that States wishing to improve quality carefully review all the features of the regulatory systems in the 10 study States (U.S. DHHS, 1990; Hawes et al., 1993) and make reasoned decisions about which system differences are the most likely to produce the biggest changes.

Third, the study design does not fully address the potential effect of other factors on quality differences. As noted above in the discussion of the results and as presented in *Report on Study Methods* (Hawes et al., 1995), we recognized the potential role of such other factors as State supplemental payments (SSP) to board and care homes. Our design did not allow for us to independently assess the effect of this factor; however, we did deliberately select some States with limited regulatory systems and above-average SSP and some States with extensive regulatory systems and below-average SSP. Further, we did attempt to control for the effect of payment level in the analysis by including a covariate on each facility's SSI/SSP utilization rate when estimating the effects of regulation and licensure. As noted, the SSI/SSP utilization level (high/medium/low) did not change the relationships we found between extensive regulation and quality nor between licensure and quality. **This does not mean that there is no relationship between payment policy (level or system type) and facility performance, which is an issue that is beyond the scope of this study.**

## 5.4 Implications of Study Findings

### 5.4.1 General Implications

The study findings have several important implications for key participants in the board and care sector. Study findings point to a board and care population that is considerably older and more frail and disabled than it was a decade ago. Also, the mix of physically frail elderly, cognitively impaired elderly, and residents with mental illness and developmental disabilities, some of whom are non-elderly, presents a complex

caregiving challenge. These factors should prompt a reexamination of the health and safety issues that confront the board and care home providers and the States' systems for regulating the industry. Of primary importance are the range of services, staffing patterns, and staff training and knowledge needed to meet the needs of today's residents.

#### 5.4.2 Implications of Findings About "No Effect"

Several implications can be drawn from the study findings about aspects of quality that were largely unaffected by the nature of the regulatory system or licensure. The first is that traditional measures of satisfaction, for all their current "vogue," may not be useful in assessing quality of care or life in facilities. Two factors support this. First, there is a well-established "positivity bias" among recipients of any services (i.e., there is a strong tendency for recipients to positively value any service when asked about satisfaction). Second, expectations play a key role in determining an individual's report of satisfaction (e.g., the match between expectations and "reality" may be more important than the actual "quality" of the service). In addition, in a time of fiscal constraint, policy-makers may be loathe to allocate increased funds in an effort to increase a resident's rating from "satisfied" to "very satisfied." Thus, one interpretation of some of the findings of little or no effect is that we should be untroubled about the finding and continue to seek more effective ways of capturing residents' own views about the quality of care they receive.

A second interpretation from these findings is that we do not know whether regulation is **incapable** of affecting these aspects of quality or whether the particular regulatory structures currently in place in most board and care facilities are poorly designed to ensure better quality in these areas. For example, the finding on operator training suggests that regulation is capable of ensuring that providers receive more training. On the other hand, the findings about lack of staff knowledge suggest one of two things: either regulations cannot affect this--or the regulatory system is aimed at the wrong target. One might hypothesize that if a State wishes to affect knowledge, it might specify the information and knowledge base a staff caregiver must possess, inspect or test to determine whether this knowledge is acquired and held by staff, and enforce the requirement by penalizing homes that fail to have knowledgeable staff. This sort of requirement stands in contrast to both the lack of specific staff training requirements in some States and also to the "mere" requirements in other States that staff receive a certain number of hours of training (or that, in addition, certain topics must be covered). Further, these are all removed from any requirement that residents receive a certain kind of care that embodies the needed knowledge base (e.g., a requirement that facilities help residents attain and maintain maximum practicable functioning and be treated with respect). Unfortunately, the current study cannot provide an empirical basis for interpreting these findings.

### 5.4.3 Specific Implications of Positive Effects

There are four specific implications from the study.

1. **States can improve many aspects of the quality of care in board and care homes through appropriate regulation.**

The findings show that extensive regulation produced changes in several key areas. Extensive regulatory systems were associated with lower use of psychotropic medications and lower use of medications inappropriate for the elderly. Given the high rates of psychotropic drug use among residents and the potential for adverse effects on their physical and cognitive functioning and risk for falls, this is particularly significant. Given the limited availability of staff who are adequately trained in monitoring residents for adverse effects of medications, regulatory policies that are associated with lower use of potentially harmful or inappropriate medications are especially important.

In addition, in licensed homes, extensive regulation was associated with other positive effects on quality of care in terms of operator training, greater availability of supportive devices and social aids, and increased staff knowledge of the ombudsman program. The greater availability of such devices is key to supporting the safe daily function of residents with physical disabilities, while social aids are a key part of offering residents opportunities for more social interaction, activities, and enhanced quality of life. Links to the ombudsman program are also important since the role of ombudsmen in long-term care is to support both providers and residents in improving quality and also to complement the activities of the regulatory system.

Extensive regulation was also associated with lower prevalence of unlicensed homes. Thus, the positive effects of licensure are extended to a greater proportion of places providing board and care services to persons with disabilities.

These positive effects are especially compelling because the differences between States with extensive regulatory systems and those with limited systems do not appear to be huge. As noted, the study design does not allow us to identify the effects of each of the factors associated with differences between extensive and limited regulatory systems. However, two key differences do appear to be consistent across these States. One key difference is that States with extensive regulatory systems have a more broadly encompassing set of requirements for the types of places that must be licensed. They extend licensure requirements to both small homes and also to places that house residents in apartments if they provide protective oversight and supportive services or house residents needing such care. A second key difference is that States with extensive regulatory systems have and use a wider array of enforcement remedies or sanctions compared to States with more limited systems. Thus, policy-makers should consider these elements if they wish to change their current regulatory systems.

2. **States can improve other aspects of quality by requiring licensure of board and care homes.**

The basic requirements in licensure laws alone--regardless of whether in States with extensive or limited regulatory systems--serve to prevent the worst performance among homes along a number of important dimensions of quality. They also appear to encourage greater safety in homes, greater availability of a range of supportive long-term care services, and better performance in other areas. Thus, one clear implication is that States may be well served by the simple extension of licensure requirements to all places providing "board and care."

3. **The Federal government can support the efforts of States and providers to improve quality of care by developing and disseminating information.**

Although States have traditionally assumed the primary responsibility for the provision of board and care services and for regulating homes, the Federal role remains important. The Federal government can continue to develop and disseminate information about changes in the board and care sector. Information can include the changing role of board and care relative to the rest of the long-term care sector, the characteristics and care needs of residents, and the structure of the industry and its capacity to provide appropriate care. Also, it can provide information about the emergence of new modalities of care, such as assisted living, and the implications for the supply, affordability, and quality of long-term care options.

In addition, the Federal government can develop and disseminate information about the States' regulatory and payment policies, and it can sponsor additional studies that more fully address the effects of particular aspects of regulation (e.g., enforcement activities) and of payment policies on quality of care. Finally, the Federal government can develop and disseminate information about innovative models, such as ombudsman training programs for staff and operators, formal contracts between board and care homes and home health providers for the provision of services to residents, the development and functioning of "teaching" board and care homes that serve as resources to other facilities, and other new and promising arrangements for providing long-term care services in residential settings.

4. **The board and care home industry should work closely with State governments to improve quality of care.**

This study confirms that there is a well-defined niche or role for board and care homes in the provision of long-term care. Board and care homes fill the niche between residential settings such as congregate apartments and nursing homes. However, the increasing age and disability levels among board and care residents raise health and safety concerns that could best be addressed through

collaborative efforts between States and the industry. Historically, regulatory reform in long-term care has been opposed by an industry fearful of "overregulation" and has come about primarily on the heels of scandals about spectacularly bad care. Such an environment seldom fosters careful consideration of the range of regulatory options available and how policies can be structured to support the efforts of good providers while minimizing the prevalence of bad ones. Those members of the board and care industry who consistently provide good care have much to offer policy-makers about the elements of their structure and care process that contribute to appropriate quality of care and life for residents. By taking a "proactive" role in helping define standards and regulatory approaches that promote better quality and minimize the prevalence of bad operators, the industry can help improve regulation without creating an unresponsive and overly burdensome process.



## SECTION 6. REFERENCES

- ABA (American Bar Association). 1983. *Board and Care Report: An Analysis of State Laws and Programs Serving Elderly Persons and Disabled Adults*. Report to the Department of Health and Human Services, Washington, DC.
- Avorn, J., P. Dreyer, K. Connely, and S.B. Sounerai. 1989. Use of psychoactive medication and the quality of care in rest homes. *New England Journal of Medicine* 320(4):227-232.
- Beers, M.H., and J.G. Ouslander. 1989. Risk factors in geriatric drug prescribing: a practical guide to avoiding problems. *Drugs* 37:105-112.
- Beers, M.H., J.G. Ouslander, I. Rollingher, D.B. Reuben, J. Brooks, and J.C. Beck. 1991. Explicit criteria for determining inappropriate medication use in nursing home residents. *Arch Inter Med* 151:1825-1832.
- Brennan, P.L., R.H. Moos, and S. Lemke. 1988. Preference of older adults and experts for physical and architectural features of group living facilities. *The Gerontologist* 28(1):84-90.
- Budden, F. 1985. Adverse drug reactions in long-term care facility residents. *Journal of the American Geriatrics Society* 33:449-450.
- Clark, R., J. Turek-Brezina, C. Hawes, and C. Chu. 1994. *The Supply of Board and Care Homes: Results from the 1990 National Health Provider Inventory*. Presentation at the Gerontological Society of America, Atlanta, Georgia. November.
- Cooper, J.W. 1991. *Drug-Related Problems in Geriatric Nursing Home Patients*. Pharmaceutical Products Press, New York.
- Dittmar, N.D. 1989. Facility and resident characteristics in board and care homes for the elderly. In M. Moon, G. Gaberlavage, S.J. Newman (eds.). *Preserving Independence, Supporting Needs: The Role of Board and Care Homes*. Public Policy Institute, Washington DC, American Association of Retired Persons, 1-26.
- Dittmar, N.D., and G. Smith. 1983. *Evaluation of the Board and Care Homes: Summary of Survey Procedures and Findings*. Report to the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services, Denver Research Institute. University of Denver, Denver Colorado.
- Dobkin, L. 1989. *The Board and Care System: A Regulatory Jungle*. The American Association of Retired Persons, Washington, DC.

- Donabedian A. 1966. Evaluating the quality of medical care. *Milbank Memorial Fund Quarterly: Health and Society* 44:166.
- Donabedian A. 1980. *Explorations in Quality Assessment and Monitoring, Vol. 1: The Definition of Quality and Approaches to Its Assessment*. Health Administration Press, Ann Arbor, MI.
- DuNah, R., C. Harrington, and B. Bednew. 1993. *Variations and Trends in Licensed Nursing Home Capacity in the States, 1978-1992*. Institute on Health and Aging, University of California, San Francisco, CA.
- Eckel, F.M., and H.K. Crawley III. 1971. A study of pharmacy services in North Carolina rest homes. *J. Am. Phar. Assoc.* 11:387-390.
- GAO (General Accounting Office, United States Congress). 1989. *Insufficient Assurances That Residents' Needs Are Identified and Met. Report to Congressional Requesters*. U.S. Government Printing Office, Washington, DC.
- GAO (General Accounting Office, United States Congress). 1992a. *Board and Care Homes: Elderly at Risk from Mishandled Medications*. Report to House Subcommittee on Health and Long-Term Care. U.S. Government Printing Office, Washington, DC.
- GAO (General Accounting Office, United States Congress). 1992b. *Drug Use and Misuse in America's Board and Care Homes: Failure in Public Policy*. Report to House Select Committee on Aging. U.S. Government Printing Office, Washington, DC.
- Harrington, C., C. Tompkins, M. Curtis, and L. Grant. 1992. Psychotropic drug use in long-term care facilities: a review of the literature. *Gerontologist* 31(6):822-833.
- Hartzema, A.G., N.P. Godbout, S.D. Lee, T.R. Konrad, and F.M. Eckel. 1986. *Evaluation of an Educational Intervention to Reduce Medication Administration Errors in Domiciliary Care Facilities*. Unpublished manuscript. School of Pharmacy, University of North Carolina, Chapel Hill, NC.
- Hawes C., J. Wildfire, and L. Lux. 1993. *The Regulation of Board and Care Homes: Results of a Survey in the 50 States and District of Columbia-National Summary*. American Association of Retired Persons, Washington, DC.
- Hawes C., J. Wildfire, L. Lux, A. Greene, V. Mor, and L. Laliberte. 1995. *Analysis of the Effect of Regulation on the Quality of Care in Board and Care Homes: Report on Study Methods*. Research Triangle Institute, Research Triangle Park, NC.  
[\[http://aspe.hhs.gov/daltcp/reports/stumthes.htm\]](http://aspe.hhs.gov/daltcp/reports/stumthes.htm)

- Health Care Financing Administration. 1995. *Health Care Financing Review. Medicare and Medicaid Statistical Supplement*. HCFA Pub. No. 03348. U.S. Department of Health and Human Services, Baltimore, MD.
- Iannacchione, V., J. Wildfire, L. Lux, and C. Hawes. 1994. Covering the population of unlicensed board and care homes: problems and solutions. In *Proceedings of the Section on Survey Methods*, American Statistical Association. pp. 270-275.
- Kane, R.A., and R.L. Kane. 1988. Long-term care: variations on a quality assurance theme. *Inquiry* 25(1):132-146.
- Lawton, M.P. 1977. The impact of the environment on aging and behavior. In J.E. Birren and K.W. Schale (eds.), *Handbook of the Psychology of Aging*, Van Nostrand Reinhold, New York.
- Lohr, K.N. 1988. Outcome measurement: concepts and questions. *Inquiry* 25(1):37-50.
- Montarnat, S.C., and B. Cusack. 1992. Overcoming problems with polypharmacy and drug misuse in the elderly. *Clin. Geriatr. Med* 8:143-158.
- Moon M., G. Gaberlavage, and S.J. Newman. 1989. *Preserving Independence, Supporting Needs: The Role of Board and Care Homes*. American Association of Retired Persons, Washington, DC.
- Moore, G.T., D.P. Tuttle, and S.C. Howell. 1986. *Environmental Design Research Directions: Process and Prospects*. Praeger, New York.
- Moos, R.H., and S. Lemke. 1985. Specialized living environments for older people. In J.E. Birren and K.W. Schale (eds.), *Handbook of the Psychology of Aging*, Van Nostrand Reinhold, New York.
- Moos, R.H., S. Lemke, and T.G. David. 1987. Priorities for design and management in residual settings for the elderly. In V. Regnier and J. Pynoos (eds.). *Housing the Aged: Design Directives and Policy Considerations*, Elsevier, New York.
- Moos, R.H., and S. Lemke. 1988 Update. *Multiphasic Environmental Assessment Procedure Manual*. NIMH Grant NM 28177. Veterans Administration Health Services Research and Development Service,
- Nasar, J.L., and M. Farokhpay. 1985. Assessment of activity priorities and design preferences of elderly residents in public housing: a case study. *The Gerontologist* 25: 251-257.
- Newcomer, R.J., and L.A. Grant. 1988. *Residential Care Facilities. Understanding Their Role and Improving Their Effectiveness*. Policy Paper 21. Institute for Health and Aging, University of California at San Francisco.

- Newman, S.J. 1989. The bounds of success: what is quality in board and care homes? In M. Moon, G. Gaberlavage and S.J. Newman (eds.). *Preserving Independence, Supporting Needs: The Role of Board and Care Homes*, American Association of Retired Persons, Washington, DC.
- Reichstein, K.J., and L. Bergofsky. 1980. Report on the National Survey of State Administered Dorniciliary Care Programs in 50 States and the District of Columbia. Horizon House Institute, New York, NY.
- Reigner V., and J. Pynoss (eds.). 1987. *Housing the Aged: Design Directives and Policy Considerations*. Praeger, New York.
- Spore, D., V. Mor, E.P. Larrat, J. Hiris, and C. Hawes. 1995a. *Regulatory Environment and Psychotropic Use in Board and Care Facilities: Results of a 10-State Study*. Center for Gerontology and Health Care Research, Brown University, Providence, RI.
- Spore, D.L., V. Mor, E.P. Larrat, C. Hawes, and J. Hiris. 1995b. *Inappropriate Drug Prescriptions for Elderly Residents of Board and Care Facilities*. Center for Gerontology and Health Care Research, Brown University, Providence, RI.
- Stone, R., and R.J. Newcomer. 1985. The state role in board and care housing. In C. Harrington, R.J. Newcomer, C.L. Estes (eds.), *Long Term Care of the Elderly: Public Policy Issues*, Sage Publications, Beverly Hills, CA.
- Stuck, A.E., B.H. Beers, A. Steiner, H.U. Aronow, L.Z. Rubenstein, and J.C. Beck. 1994. Inappropriate medication use in community-residing older persons. *Arch Intern Med*. 154:21952200.
- U.S. DHHS Inspector General (U.S. Department of Health and Human Services, Office of the Inspector General). 1990. *Board and Care*. Regional Inspector General for Region II, Office of Evaluation and Inspection, New York, NY.
- U.S. House of Representatives, Select Committee on Aging. 1989. *Board and Care Homes in America: A National Tragedy*. A report by the Chairman of the Subcommittee on Health and Long-Term Care, House of Representatives, Comm. Pub. No. 10 1 -71 1.
- Wildfire J., C. Hawes, L.Lux, R. Green, V. Mor, A. Greene, V. Wilcox, C.D. Phillips, D. Spore, and V. Iannacchione. 1995. *A Description of Board and Care Facilities, Operators, and Residents*. Research Triangle Institute, Research Triangle Park, NC. [<http://aspe.hhs.gov/daltcp/reports/bcdescs.htm>]

Williams, B.R., M.B. Nichol, B.F. Lowe, et al. 1992. Pharmacist interventions in residential care facilities. In J.W. Rowe, J.C. Ahronheim, and M.P. Lawton (eds.). *Focus on Medications and the Elderly: Annual Review of Gerontology and Geriatrics*. Vol. 12. New York: Springer: 150-162.