The Pennsylvania State University

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Department of Health Policy and Administration

Disparities in Nursing Homes Across the U.S.:

An analysis of the disparities between source of payment and services received in U.S. nursing homes

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Nursing homes in the United States are seeing an influx in patients, due to the aging of the baby boom population. Medicare and Medicaid are in financial distress and private insurance continues to increase in cost. All three sources of payment play a role in financing nursing home services. The study focused on identifying whether or not the source of a patient's payment influenced the reception receipt of certain nursing home services. Data from the 2004 National Nursing Home Survey was utilized to examine the relation between insurance status and the receipt of hospice care, pain management, incontinence care, dementia care, behavioral management, and restorative services. Controlling for demographic characteristics, we found that the receipt of hospice services and behavioral management services were both influenced by the patient's source of payment.

Contents

Introduction

The first of the baby boom generation, those born between 1945 and 1965, will soon become eligible for Medicare, the federal health insurance program that covers those 65 and older, as well as those disabled. As recently as 2008, Medicare's annual costs represented 3.2% of the national GDP. Long-term projections forecast Medicare's GDP percentage increasing to 11.4 (The Board of Trustees, 2009). The projected year in which Medicare funds will be drastically depleted has decreased over the past 7 years. In 2002, it was projected that Medicare would run out of funds by 2030. As of 2009, it was projected that Medicare funds will be insufficient by 2017 (Goldstein, 2009). With the financial crisis facing Medicare, policy makers are focusing on identifying all cases of fraud, waste, and abuse of the number of services the elderly receive in nursing homes. Policy makers need to ensure that facilities are not abusing the system.

A nursing home, or skilled nursing facility (SNF), is "a private hospital or residence staffed and equipped to care for aged or infirm persons" (Nursing Home, 2009, p. 1). For the purpose of this study, nursing homes will be used in the context of a facility of care, typically for the elderly who are too sick to remain at home but do not need to be in a hospital. The percentage of the elderly living in a nursing home was 7.5% (Goldstein, 2007).

The average nursing home stay in the United States costs approximately $40,000 per year (Feder, 2000). As of 2007, the median income for those 65 and older was $28,305 (U.S. Census Bureau, 2008). This income is almost $12,000 below the yearly cost to reside in a nursing home, implying that in the absence of government or private resources, many elderly persons would not be able to afford nursing home care. As of

2001, almost $100 billion of personal spending on health services went to nursing homes (Grabowski, 2004).

With decreasing Medicare funds, an increasing Medicare population, and a 4% increase in nursing home costs per year, care for the elderly is becoming increasingly studied (Smith, 2005). Since it is estimated that at least 25% of the elderly will enter a nursing home prior to death, the reception of health services in nursing homes should be a concern to many (Kemper, 1991; Murtaugh, 1990; McConnell, 1985).

Motivation and Questions to Be Addressed

The United States is in the midst of a shift in the age structure toward older ages (Aging of Population, 2003). In 2000, less than 13% of the U.S. population was 65 or older. By 2030, 20% of the U.S. population is projected to be 65 or older (Aging of Population, 2003). Since over half of nursing home payment is through government resources, the aging population will likely impact nursing home services (Feder, 2000).

As the older adults in the U.S. enter their senior years, Americans should be concerned with the quality of care they receive in nursing homes. A study by Wetle et al. found that, from the consumer perspective, “patients are often insufficiently addressed by health care professionals” (2003, p. 642). The vagueness of the findings point out the fact that quality of care is subjective and difficult to measure, especially among the elderly with dementia. The focus of this study is to examine differences in nursing home services according to the resident’s source of payment. Specifically, this study will address the difference in services provided to each patient, if they exist, depending on how the nursing home is being paid.

Nursing home services are funded by a variety of payment sources. The majority of Americans who are 65 or older are eligible to receive Medicare insurance. Those with low incomes are eligible for Medicaid. Both Medicare and Medicaid are financed through the government. Meanwhile, private resources may or may not cover more services than Medicare and Medicaid. Private resources entail different payment methods that may alter the continuum of care, including out-of-pocket expenses and private insurance.

As of 1998, 44% percent of nursing home expenditures were paid through Medicaid, followed by 31% out-of-pocket, 14% Medicare, 7% private insurance and 5% other (Feder, 2000). With a distribution in the primary source of payment among nursing home residents, a wide distribution of services received may be expected. The problem is that no study in the past two decades has addressed whether source of payment plays a part in the services received across nursing homes. Liu and Mossey addressed this question in 1980 using the 1976 Survey of Institutionalized Persons (SIP) data. The health care service network has changed drastically since then.

This study will address the question: Do nursing home residents who have different sources of payment receive the same or different services in nursing homes? The results of this study should show which, if any, source of payment results in different health care service utilization in the nursing home.

Prior Research

Nursing Home Payment Sources

Many different sources pay for health care services in the United States. Medicare, Medicaid, private health insurance, and out-of-pocket payments are among the most common sources of payment in nursing homes. Research has examined each source of payment, and basic background information is available.

Medicare

The U.S. Department of Health and Human Services defines Medicare as "health insurance for people 65 or older, under age 65 with current disabilities, and any age with end-stage renal disease" (Centers for Medicare and Medicaid Services, 2008, p. 12). The data set and references to Medicare used in this study refer to Medicare Part A. Medicare Part A only covers inpatient care in hospitals and helps cover costs from skilled nursing facilities, hospice services, and home health care (Centers for Medicare and Medicaid Services, 2008a).

Thirteen percent of nursing home residents rely on Medicare as their primary payment source (Bishop, 1999). In an effort to financially stabilize Medicare, the federal government has changed Medicare regulations. In the Balanced Budget Act of 1997, federal regulations added an interim payment system (IPS) as a part of Medicare reimbursement. The system has been successful in reducing the flow of Medicare funds toward nursing home care (Bishop, 1999). Since IPS's installment, nursing home efficiency has decreased, according to certain measures (Zhang, 2008; U.S. GAO, 2002). An increased number of financial difficulties and bankruptcies were seen within a year of IPS's implementation. Zhang concluded that a possible reason for the

decrease in efficiency is that nursing homes were already operating at the highest level of efficiency believable (Zhang, 2008).

The role of Medicare in nursing homes is primarily focused on short-term rehabilitation. Due to the focus on rehabilitation, Medicare pays nursing homes an average of $234 per person per day (Moody, 2008). It now covers expenses occurring within the first 100 days of nursing home residency, prior to the minimum of a three day stay in a hospital (Feder, 2000). The future of Medicare is subject to regulation and rule changes, similar to most other federal programs. With current laws, Medicare spending in nursing homes is anticipated to slow to 6% increases per year by 2014 (Heffler, 2005). The 6% anticipated increase is relatively small compared to the 16% average yearly increase experienced between 1999 and 2002 (Smith, 2005). However, Medicare's role in the entire component of long-term care (LTC) is still expected to account for more than $50 billion by 2020 (Feder, 2000).

Medicaid

Medicaid is jointly funded by both the federal and state government. It provides medical expense relief for low-income individuals, as well as people who become poor after spending down their finances and assets on long-term care services. Although it is partially funded through the federal government, the administration of Medicaid insurance is completed at the state level. The eligibility criteria for Medicaid enrollment varies across each state (Centers for Medicare and Medicaid Services, 2006).

Medicaid pays for much of the long-term care costs. It is the primary source of payment for 58% of nursing home residents in the United States (Bishop, 1999) and plays a payment role for two-thirds of nursing home residents (Feder, 2000). As of 1998,

Medicaid was contributing $44 billion a year to nursing homes (Bishop, 1999). The average daily rate Mediaid pays nursing homes per person per day is $85 (Moody, 2008). This represents 44% of nursing home costs nationwide (Feder, 2000). In recent years, Medicaid has had wide fluctuation increases in expenses. In 2003, for instance, 34 states made eligibility for Medicaid stricter, resulting in a 1% increase in Medicaid nursing home expenditures (Smith, 2005). More recently, in 2008, Medicaid expenses in nursing homes rose 8% from the previous year (Smith, 2005) and are expected to continue to increase at 6% by 2014 (Heffler, 2005). Heffler believes the deceleration in Medicaid spending will be a result of a larger role taken by Medicare. Medicaid is a major contributor to all LTC services and is expected to fund $75 billion a year by 2020 (Feder, 2000).

Private Resources

Within nursing homes, private resources include both private health insurance and out-of-pocket expenses. The exact relationship between nursing homes and private pay is not fully known. In 1995, private pay funded about 25% of nursing home residents. This is a dramatic shift in nursing home payment as private pay covered over 40% of residents in 1985 (Bishop, 1999). The average daily rate private resources pay nursing homes varies widely from $100 to $400 per person per day (Moody, 2008).

Private health insurance, a component of private pay, is expected to grow by 4% per year by 2014 (Heffler, 2005). By 2020, private health insurance will spend an estimated $36 billion a year in nursing home care (Feder, 2000). Long-term care insurance, a form of private health insurance, has become more popular in recent years. However, as of 1998, fewer than five million policies were sold across the U.S. (Bishop, 1999).

The full effect of LTC insurance on nursing homes has not been studied directly, but it is likely that as more people purchase and utilize LTC insurance, nursing homes use will decrease. This is probable because LTC insurance will cover a wider range of costs incurred in health care settings, such as assisted living facilities. These costs may be unaffordable to today's elderly (Bishop, 1999).

Nursing Home Services

Regardless of a nursing home resident's source of payment, humanity deems certain services as being necessary. Among the services that encompass a variety and basic care of nursing home residents are: hospice care, pain management, incontinence care, dementia care, behavioral management, and restorative services. Much research exists on these services individually, but studies have not focused on the services as a comprehensive set of geriatric services.

Hospice Care and Pain Management

Hospice services consist of care for the terminally ill. This care is not focused on restoring functional ability, but rather focuses on improving comfort at the end of life (Centers for Medicare and Medicaid Services, 2008b). LTC institutions did not begin to provide hospice services until the late 1980s (Miller, 1998). Specifically in nursing homes, between 1989 and 1995 the hospice population increased from 7% to 17% (Miller, 1998). Altogether, not many elderly pursue hospice care. In fact, as of 2000, only 1% of nursing home residents utilized hospice services (Zerzan, 2000). The 1% of nursing home residents using hospice services account for almost a quarter of total hospice recipients (Miller, 2002). Even nursing home residents who are said to be "dying" do not utilize hospice services to a large extent. Just over 5% of "dying" nursing home residents utilize hospice services (Miller, 2002). Hospice services are considered

to be relatively inexpensive and are funded nearly 75% through Medicare and Medicaid (Zerzan, 2000). Not only are hospice services considered to be less expensive than restorative services, but family members claim that the quality of life experienced during hospice service is tremendously higher than that experienced during restorative services (Baer, 2000).

Many studies have reviewed the use of hospice services, but a scientific consensus has not been reached on the under-utilization of such services. One possible scenario is that hospice services are only preferred when an elderly individual is experiencing pain with his/her illness. The pain levels among patients in nursing homes have not been determined, and the little that has been studied varies from 45% to 80% of nursing home residents experiencing pain (Shapiro, 1994; Ferrell, 1990; Roy, 1986).

Incontinence Management

Urinary incontinence is simply the loss of bladder control (National Library of Medicine, 2009). Incontinence is disruptive and expensive to service in nursing homes. Unfortunately, it is also one of the most common conditions in nursing home residents (Ouslander, 1995). Nursing homes are required by the 1987 Omnibus Budget Act to care for incontinence within their facilities. Incontinence services include pads, bed pans, catheters, and routinely scheduled restroom visits. Nursing homes must assess a resident's incontinence condition and record observations in the patient's medical record (Ouslander, 1995). Urinary incontinence is the primary concern, although 50-75% of the elderly who have urinary incontinence experience episodes of fecal incontinence as well (Ouslander, 1995).

Dementia Care and Behavioral Management

Dementia is among other chronic conditions that have become more prevalent in nursing homes as life expectancy continues to climb. The Omnibus Budget Act of 1987 requires nursing homes to screen for dementia prior to acceptance of a new admits, as well as current residents (Morris, 1990). Roughly half of new nursing home residents have some degree of dementia prior to admittance (Magaziner, 2000). Many studies have focused on dementia in the scope of overall mental health services. The studies of dementia in a mental health capacity have included behavioral symptoms such as elopement and behavioral disturbances (Moore, 2009; Carlson, 1995). They have found that less than 5% of the elderly population, including those non-institutionalized, has some need of mental health services, including dementia (Burns, 1993). Burns also found that mode of payment was not a factor in receiving mental health services (Burns, 1993), but he did not specifically view dementia on its own merits.

Restorative Services

Taking medically related actions to ensure that patients are living at the highest level of functioning ability is restorative care (Resnick, 2004). Restorative services can be an extremely expensive within a nursing facility. However, studies have shown that restorative services are only effective for up to six months after treatment (Przybylski, 1996). Many facilities recommend restorative services, rather than hospice services, because of the Omnibus Budget Act of 1987. The act requires that nursing homes provide these services to either maintain or attain a resident's "highest practical physical, mental, and psychosocial well-being" (Remsburg, 2001, p. 2). This is without regards to a cost-benefit analysis.

Framework and Hypotheses

In the United States, health care is treated as a normal good/service where supply intersects demand. This being the case, one would assume that a higher payment to a nursing home would result in more health care services received. In study, the services received in nursing homes will be the outcomes measure, or the supply. They will be evaluated based on the payment method that nursing home residents use, or the demand. The need for these services will be based on predictor characteristics, or conditions that individuals have prior to admission into the nursing home. These pre-existing conditions will serve as the control for the study. A nursing home resident's conditions are determined within the first week of their admission and are recorded on Passar forms (annual nursing home resident evaluations). Since federal programs such as Medicare and Medicaid use different regulation and reimbursement policies than private sources of payment, the question is if having government-based health insurance as a payment method would lead to the reception of fewer services.

Figure 1 in the appendix explains the logical path taken through the health care system for nursing home residents. In this model, the source of payment is the predictor of the supply and demand for nursing home services. The demographic characteristics of the residents are seen in the model to control for differences among different groups of people.

Once expected services are determined, residents will be classified into different source of payment groups. Private health insurance, out-of-pocket expenses, life care, and private pay will be considered equal for the purpose of this study. They are similar in the sense that they are not funded through the government. For the purpose of the analysis

of discrepancies in payment methods, it is best to collapse this group together into the private pay category. Patients whose primary source of payment is Medicare, Medicaid, welfare, or veteran affairs will be classified as government source of payment. A third payment group will be established since many residents have two sources of payment. The resident's two sources of payment will be viewed to form one category encompassing both sources. This will best represent how a resident is paying for their service. The payment classifications will be labeled as government payment, mixed payment or private payment. Individuals who have two sources of payment from the government pay category will be labeled as having government pay. Individuals with two sources of payment from the private pay category will be labeled as having private pay. Individuals who have a mix of one payment source from each category will be labeled as having mixed pay. This overall picture is depicted in Figure 1 in the appendix.

In order to examine the relationship between source of payment and utilization of services among nursing home resident, data from the National Nursing Home Survey will be used to achieve the following specific aims:

> Specific Aim 1: Determine the extent to which nursing home residents receive needed services.
>
> Specific Aim 2: Examine the effect payment source has on the reception of needed services among nursing home residents.

This solid conceptual framework and prior research arises four hypotheses to assess the issue:

H_a: Since the control characteristics are logically associated with certain outcomes, the presence of these characteristics will result in the reception of the particular outcome.

H_b: Since different payment sources pay different amounts for nursing home services, those labeled with government pay will receive services at a different rate than those labeled with private pay. [H_b: $P_{Gov't} - P_{Pvt} \neq 0$]

H_c: Since different payment sources pay different amounts for nursing home services, those labeled with government pay will receive services at a different rate than those labeled with mixed pay. [H_c: $P_{Gov't} - P_{Mx} \neq 0$]

H_d: Since different payment sources pay difference amounts for nursing home services, those labeled with mixed pay will receive services at a difference rate than those labeled with private pay. [H_d: $P_{Mx} - P_{Pvt} \neq 0$]

Methods

Design

The research study question is answered using data from nursing homes across the country. The study uses data that have been recorded from both interviews and nursing home resident medical records. In order to observe conditions prior to treatment of services, the study looks at prior conditions retroactively, although data were collected during one single point in time.

Descriptive data on demographic characteristics are presented first. The prior conditions of residents are then examined as criteria for each expected nursing home service received. For example, in order to determine if a resident should expect to

receive hospice services, a poor primary diagnosis was used as criteria to be part of the specific analysis for the reception of hospice services. This is the control test. The framework and hypothesis section evaluates each service individually and points to which characteristics are studied for each service. Filtering for criteria to receive a specific nursing home service allows for examination of how the source of payment the resident is using effects their outcome measure, which is service received. The source of payment is then compared with other sources of payment.

Data

The data set used in this study is the 2004 National Nursing Home Survey (NNHS). The 2004 survey was conducted through a computer-assisted personal interviewing (CAPI) system, which was loaded on interviewer's laptops. The National Center for Health Statistics (NCHS) conducted the study through the Center for Disease Control (CDC). The data set contains weights, which were used for the duration of the study.

The selection process for eligible participants occurred in two stages. The first was the selection of facilities. All nursing homes in the United States containing at least three beds were eligible for sampling. Nursing homes were then placed into categories based on bed size and geographic location. Systemic sampling was used to select nursing homes proportional to their bed size. A total of 1,500 nursing homes out of a possible 16,628 were chosen to participate in the study. The only nursing homes that were taken out of the potential sample frame were those that refused to participate, were not defined as a nursing home by the CDC or state licensure, or that were a duplicate facility. Facilities and residents together had a 78% response rate, meaning that 78% of combined residents and facilities eligible for the study actually took part. Interviewers

then interviewed 14,017 residents, of whom eight were out of the scope of framework and 502 refused. Residents had a 96% response rate, implying that the response rate of facilities was below 78%.

The following procedure was used in the NCHS data collection process.

1. Every nursing home administrator was asked to fill out a questionnaire on his or her facility prior to an interview
2. An appointment for interviews was made after receiving the questionnaire
3. Eligibility was then determined by the interviewer prior to interviewing residents
4. The interviewer then explained the questionnaire to the facility's staff
5. The facility's staff then administered the survey
6. Survey results were then transmitted from the interviewer's laptop to the contractor's office

The following variables are the contributors to the current study.

Variable Name	Values	Description
Sex	Male Female	Represents the sex of the individual
Age at Interview	#0-99	The age of the individual at the time of interview
Age at Admission	#0-99	The age of the individual at the time of admissions
Race	White African American Other	The race of the individual
Level of Bowel Control	Continent Incontinent	The condition of bowel continence
Level of Bladder Control	Continent Incontinent	The condition of bladder continence
ADL Use	0-5	The number of Activities of daily living the individual is able to perform on their own
Presence of Pain	Yes	Whether or not the individual is

	No	experiencing pain
Primary Payment Source	Private Government Mixed	The first source of payment the individual is using for their current nursing home stay
Secondary Payment Source	Private Government Mixed	The second source of payment the individual is using for their current nursing home stay
Primary Diagnosis	#ICD-9 Code	The primary diagnosis of an individual's health condition expressed as an ICD-9 code
Behavioral Problems	Yes No	Whether or not the individual is experiencing behavioral problems
Services Received	Hospice Behavioral Continence Dementia Restorative Pain	The type of service(s) the individual is receiving during their current nursing home stay

Analysis Plan

Descriptive statistics and demographic variables examine the distribution of risk factors among the sample of nursing home residents. To assess the bivariate relationship between each service outcome and demographic independent variable, a Chi-square analysis was used for race, and sex while and a T-tests is used for age at interview and age at admission. The computer software SAS version 9.2 is used for survey procedures to account for survey weights and sampling design.

Analysis for Demographic Variables

The raw sex variable had responses of male or female. This variable was not altered during the course of the study. The race variable had responses of American Indian / Alaskan Native, Asian, African American, Native Hawaiian or Pacific Islander, White, or Other. Due to a low percentage of American Indian / Alaskan Native, Asian, and Native Hawaiian or Pacific Islander responses, these values were collapsed and integrated with the category 'other'. The resulting values of race are White, African American, or

other. Age at admission and age at interview are continuous variables and were treated as such. These variables were not altered during the course of the study. Descriptive statistics for the demographic variables can be found in Table 1 in the Appendix. Both the weighted and un-weighted frequencies appear in the table. The weighted frequencies were used in the analysis.

Analysis for Specific Aim 1

The dependent variables are hospice, pain management, behavioral management, incontinence care, dementia care and restorative services. All outcome variables were altered to be binomial. Responses such as "I Don't Know" and "N/A" were treated as missing for both outcome variables and predictor variables. Logistic regression models were run separately for each outcome variable. The independent variables are age at admission, age at interview, sex, and race. For the second part of the analysis, the pre-existing conditions such as primary diagnosis, presence of pain, level of bowel and bladder control, the presence of behavior symptoms and the number of ADL's used by a resident are the independent variables.

Primary diagnosis was used to evaluate dementia services as well as hospice services. ICD-9 codes, corresponding to a diagnosis of dementia, were re-coded and collapsed into one group as either having dementia or not having dementia. ICD-9 codes corresponding to cancer, congestive heart failure, various renal diseases and Alzheimer's disease were re-coded and collapsed into one group as either having a terminally ill condition or not having a terminally ill condition.

The level of bowl and bladder control was also collapsed to simplify the analysis. The two variables were combined and being frequently incontinent or completely incontinent for either measure was coded as being incontinent. Responses of being continent,

usually continent, or occasionally incontinent were combined and coded as being continent.

The number of ADL's a resident is able to perform was reported on a range of zero to five. The analysis grouped together individuals able to perform at least three ADL's as not requiring restorative services. Individuals who could perform only one, two, or zero ADL's were grouped together as requiring restorative services.

The predictor variables of being in any pain and having behavioral problem symptoms were binary response variables after re-coding for missing data. These variables were not manipulated. The descriptive statistics for all of the outcome variables can be found in Table 2 in the appendix. The descriptive statistics for all of the predictor variables can be found in Table 3 in the appendix. The weighted frequencies for the predictor and outcome variables were used for the remainder of the analysis.

Analysis for Specific Aim 2

The dependent variables are once again hospice care, pain management, behavior management, incontinence care, dementia care and restorative services. Logistic regression models were run separately for each outcome variable. The independent variables consist of the payment categories.

Responses having a combination of primary and secondary payments of private insurance, out-of-pocket, or life care were combined and re-coded as being a private pay resident. Responses having a combination of primary and secondary payments of Medicare, Medicaid, Veteran Affairs, or Welfare were combined and re-coded as being a government pay resident. Responses having a combination of primary and secondary payments between the two groups were combined and re-coded as being mixed pay residents. In this analaysis, the payment type of government pay, mixed pay, or private

pay are the payment categories. Residents who payed using a mixed payment method were used as the reference variable for the analysis. Descriptive statistics for the payments categories can be found in Table 4 in the Appendix. The weighted frequencies for the payment categories were used for the remainder of the analysis.

Results

All data analyzed is weighted. The sample is comprised of 28.85% males and 71.15% females. The majority of nursing home residents (81.83%) are white, 12.17% are black and 6% are of another race. The mean age at the time of interview is 80.39 and the mean age at the time of admissions is 88.88. Among the predictor statistics 70.50% of residents are on government pay, 16.11% are using a mixed payment method, and 13.39% are strictly private pay.

Hospice Services

The age at admission (p=.0061) and the age at interview (p<.0001) both had a significant influence on the reception of hospice services. Of the weighted sample, 17.53% (N=13,506) had a diagnosis which classifies as a hospice diagnosis. Having a hospice diagnosis leads to the reception of nursing home services 2.146 times that of not having a hospice diagnosis (p<.0001), after controlling for the age at admissions and the age at interview. Therefore, the results fail to reject to null hypothesis H_a. Among those who have a hospice diagnosis, those on private pay are 2.33 times as likely as those on mixed payment to receive the services (p=.0007) and 3.45 times as likely as those on government pay (p=.0007). Therefore, the results fail to reject the null hypothesis H_b and the null hypothesis H_d. Those on government pay are .68 times as

likely as those on mixed pay to receive the service (p=.0048). Therefore, the results fail to reject the null hypothesis H_c.

Pain Management

Race was the only significant demographic characteristic to affect the reception of pain management services (p<.0001). African Americans are .61 times as likely to receive pain management services as their white counterparts (p=.0786, CI=.452-.821). Being of another race did not influence the reception of pain management. Among the weighted sample, 26.04% are in the presence of pain. Only 6.24% (N=13,416) of nursing home residents receive pain management services. Being in the presence of pain leads to the reception of pain management services 4.41 times as often as not being in the presence of pain after controlling for race (P<.0001). Therefore, the results fail to result the null hypothesis H_a. There were no significant relationships between payment source and the reception of pain management services after controlling for race and the presence of pain. Therefore, the results reject the null hypotheses H_b, H_c, and H_d.

Incontinence Care

The age at admission (p=.0023), age at interview (p<.0001), and the individual's sex (p=.0149) all influenced the reception of incontinence care. In the weighted sample 37.64% (N=13,399) experience incontinent episodes. Among nursing home residents 90.29% receive incontinence care. After controlling for the age at admissions, the age at interview, and the sex of the individual there was no significant association between experiencing incontinent episodes and receiving incontinence care. Therefore, the results reject the null hypothesis H_a. Furthermore, there are no significant associations between the source of payment and the reception of incontinence care among those

experiencing incontinent episodes after controlling for influential factors. Hence, the results reject the null hypotheses H_b, H_c, and H_d.

Dementia Care

The age at interview ($p<.0001$), the individual's sex ($p=.0280$), and the individual's race ($p=.0004$) all have a significant influence on the reception of dementia care. Among the weighed sample 11.15% (N=13506) have a dementia diagnosis and 85.52% are receiving dementia care. After controlling for influential demographic characteristics, an individual with a dementia diagnosis is 25.312 times more likely than an individual without a dementia diagnosis to receive dementia services ($p=.0015$). Therefore, the results fail to reject the null hypothesis H_a. Among those with a dementia diagnosis those on government pay are .188 times as likely as those on private pay to receive the service ($p=.0042$). Hence, the results fail to reject the null hypothesis H_b. However, no other significant associations between payment source and the reception of dementia services are found. Consequently, the results reject the null hypotheses H_c, and H_d.

Behavioral Management

The resident's age at interview was the only demographic characteristics that has an influence on the reception of behavioral management services ($p<.0001$). Among the weighted sample, 28.03% (N=13,352) have behavioral problem symptoms. Only 5.56% of residents in the weighted sample are receiving behavioral management services. After controlling for the age of resident's at the time of interview having behavioral problem symptoms lead to the reception of behavioral management services 4.41 times as often as those who do not have the symptoms ($p<.0001$). So, the results fail to reject the null hypothesis H_a. Among those who present behavioral problem symptoms, individuals who pay privately for nursing home services are 1.55 times as likely to

receive behavioral management services as those who have a mixed payment method after controlling for influencing characteristics (p=.0241). The same individuals are 1.517 times as likely to receive the service compared to those on government payment methods (p=.0241). Therefore, the results fail to reject the null hypotheses H_b and H_d. There was no significant relationship between mixed payment methods and government payment methods. Consequently, the results reject the null hypothesis H_c.

Restorative Services

The age of residents at the time of interview (p=.0253) and the race of the residents (p<.0001) had an influence on the reception of restorative services. African Americans are .352 as likely as whites to receive restorative services (p=.073, CI=.181-.688). Among the weighted sample 1.88% of residents can only perform one ADL, 7.15% can perform two, and 6.48% can perform three. Among the 280,770 weighted residents 94.96% are receiving restorative services. After controlling for the age at interview and the individual's race, there was no significant association between the number of ADLs an individual can perform and the reception of restorative services. There was no significant association between payment source and the reception of nursing home services. Consequently, the results reject the null hypotheses H_a. H_b, H_c, and H_d.

Limitations

There are several limitations within the scope of the study. The most important limitation to recognize is the selection of the control criteria. The criterion selected is limited and extremely narrow. There are many factors which may classify as established need for a particular service. Specifically the choice to use select ICD-9 codes to establish a control variable for hospice services is a limitation on the study.

There are many diseases which are considered terminally-ill that were not included in the criterion due to the complex nature of choosing which diseases should and should not count. Also, the choice to use ADL use as a criterion for restorative services is a limitation on the study. Restorative services include a wide range of services from therapy to exercise which attempts to prevent stagnation. Therefore, the criteria and the actual outcome were not perfect in answering the research question.

The formation of payment categories presents another limitation in the use of the results of the study. The first problem is that Medicare patients are extremely different than other nursing home patients because they are strictly in the nursing home for rehabilitation purposes and not long-term stay. Unfortunately, this study not only included Medicare in the design and results, but also grouped Medicare and Medicaid patients together. While there were benefits to doing this, it does limit the scope of the findings. Private insurance patients and private pay patients being grouped together also poses a limit on the study. While the two groups are similar, they are not identical and ideally evaluating the two separating would not have limited the study.

There are many different services received within the nursing home. The choice to only choose six to evaluate limits the overall question of the study. While six services provide a general understanding of the possibility of payment discrepancies, it does not provide a comprehensive suggestion encompassing all nursing home services.

Lastly, the data collected by the Center for Disease Control was done so during a single point in time. However, the data was evaluated and categorized throughout multiple

places in time and studied retroactively. This did pose slight limitations on the findings and framework of analysis.

Discussion

There is nothing surprising about the demographic makeup of the weighted data sample. Females have a longer life expectancy than males; therefore there are a substantially higher number of females in the data set. Also, whites make up the largest portion of the sample, most likely due to the proportion of whites in the U.S. as well as socio-demographic characteristics such as income, health statistics, and social culture. It is surprising that the mean age at interview is substantially lower than the mean age at admission. One possible explanation is that the coding was done incorrectly.

The control sample is lower than anticipated. This could be attributed to the fact that the data is collected during one point in time, but the original source of the data came from the time of admissions for the resident. Therefore, a resident may be receiving a service during the time of the interview, but not upon admission.

As anticipated through previous research, nearly three fourths of the nursing home population is on government pay. The remaining is nearly split between mixed pay and private pay.

The reception of hospice services is affected by the source of payment. Individuals with private pay are more likely than those on mixed pay or government pay to receive hospice services. The only other services private pay was statistically significant in affecting the reception of services against both government and mixed pay was behavioral management. It is not surprising that both behavioral management and

hospice service are driven by source of payment. In regards to hospice services, Medicare restricts restorative health services during hospice treatment. However, private insurance may have more flexible rules, and private pay does not require any restrictions at all. Likewise, Medicare may view a mental health condition associated with behavioral management much differently than private insurance. Once again, private pay is not subjected to any type of utilization restrictions. While dementia services appeared to be more common among those on mixed pay than government pay, results are inconclusive, although highly likely. The reception of pain management, incontinence care, and restorative services does not appear to be driven by source of payment.

Implications

The results of this study have several implications for many different stakeholders. Most notably, policy makers should be concerned with the outcomes regarding hospice, behavioral management, and dementia services. All three services were received statistically less often for those on government payment. Perhaps policy makers should consider looking at the payment incentives to provide such services.

Nursing home managers and insurance agencies can gain insight from the results of the study as well. While the study addressed the reception of nursing home services from a policy standpoint, managers may be able to see inefficiencies with the process in which services for individuals are chosen. It is possible that hospice, behavioral management, and dementia care are not underserved with government paying patients, but rather over served in non-government paying patients. This may be especially interesting for private insurance companies to evaluate. If they are able to determine that their

patients are being over-treated for medical conditions, new control mechanisms may be in order.

Lastly, patients have a high interest in the study outcome statistics. As a patient, the manner in which healthcare services are paid for is not the fundamental issue at hand. The most important aspect of care, from a patient's perspective, is improving health conditions through the reception of healthcare services. Patients may find it alarming that members of different payment groups receive services at a different rate. There is further implication regarding family inheritance and long-term care decisions. As an individual enters a nursing home, it is important to decide which is more important: paying for healthcare services privately to receive more services, or leaving a larger inheritance to family members. If more evidence points to larger discrepancies in the reception of services based on payment source, there could be a shift in patterns of financial inheritance. Therefore, it is vital for patients to be aware of the dependence of service reception on source of payment.

While much can be taken from the results of the study, much more research is needed to form any substantial policy changes. First, I recommend that state Medicaid data be used to determine if different payment structures and systems result in difference services utilization patterns. Second, I recommend looking into implementing a study where Medicare and Medicare reimbursements are altered in the case group and the results are compared to the control group. Both research methods can lead to further development of reimbursement changes.

Appendix

Figure 1- The Conceptualization Model

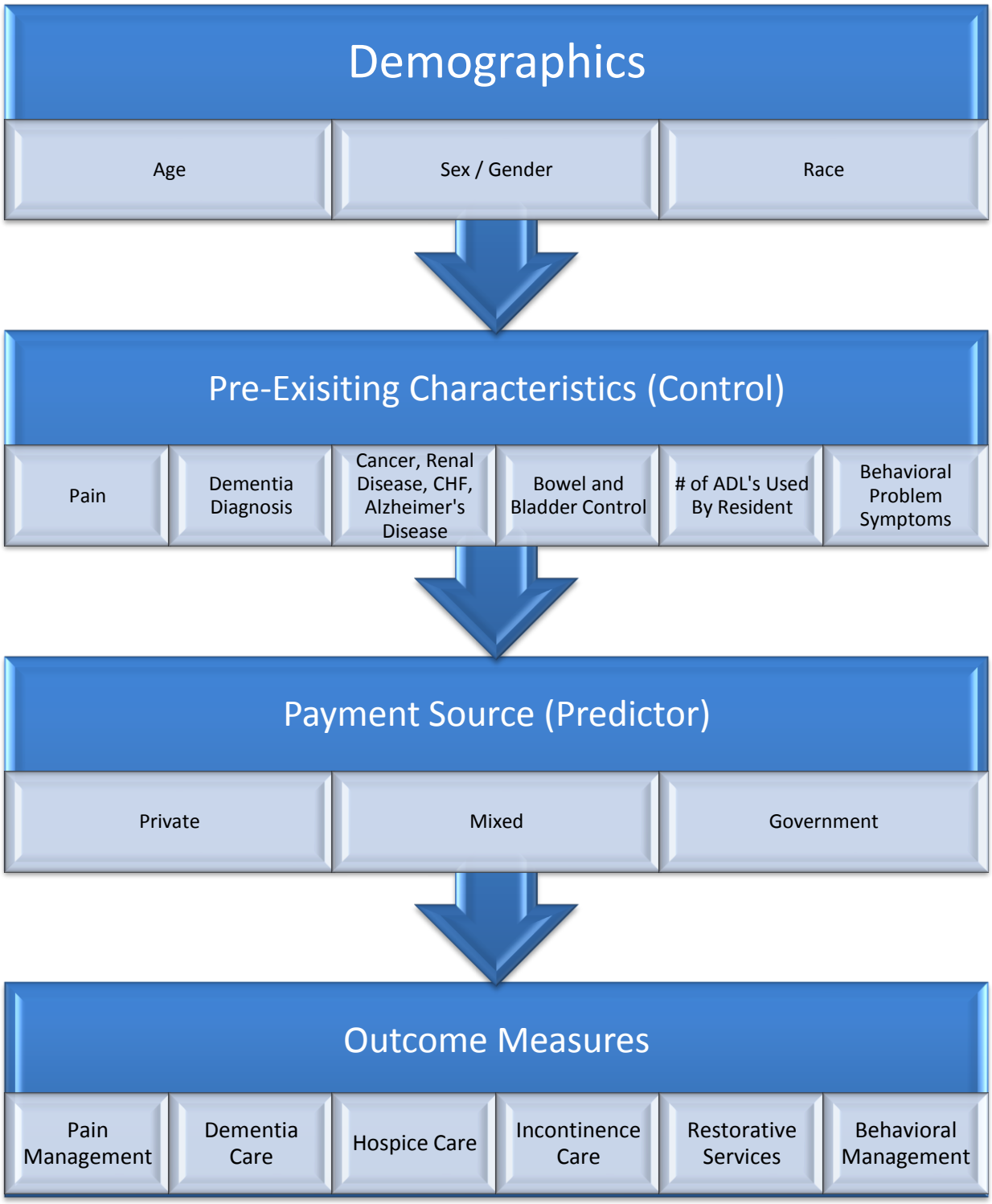

Table 1 - Weighted Demographic Descriptive Statistics

Descriptive Table of Sex					
	Frequency	**Weighted Frequency**	**Standard Dev. of Weighted Freq**	**Percent**	**Standard Error of %**
Female	9638	1061633	7373	71.1493	0.4619
Male	3868	430487	6941	28.8507	0.4619
Total	13506	1492120	3462	100	Missing = 0

Descriptive Table of Race					
	Frequency	**Weighted Frequency**	**Standard Dev. of Weighted Freq**	**Percent**	**Standard Error of %**
White	11419	1220950	6667	81.8265	0.4045
Black	1378	181638	5163	12.1731	0.3454
Other	709	89532	3770	6.0003	0.2519
Total	13506	1492120	3462	100	Missing = 0

Descriptive Table of Age					
Variable	**N**	**Mean**	**Standard Error of Mean**	**95% CL for Mean**	
Age at Interview	13506	80.3884	0.1356	80.1225	80.6542
Age at Admission	13506	88.6785	0.9808	86.7560	90.6010
					Missing = 0

Table 2 - Weighted Descriptive Control Statistics

Descriptive Table of Incontinent Episodes					
	Frequency	**Weighted Frequency**	**Standard Dev. of Weighted Freq**	**Percent**	**Standard Error of %**
No	8777	920467	7590	62.358	.4978
Yes	4622	555633	7499	37.642	.4978
Total	13399	1476100	3423	100	Missing = 107
Descriptive Table of Presence of Pain					
	Frequency	**Weighted Frequency**	**Standard Dev. of Weighted Freq**	**Percent**	**Standard Error of %**
No	9719	1108046	6760	76.6244	0.4279
Yes	3422	338029	6224	23.3756	0.4279
Total	13141	1446075	3410	100	Missing = 365
Descriptive Table of Behavioral Problem Symptoms					
	Frequency	**Weighted Frequency**	**Standard Dev. of Weighted Freq**	**Percent**	**Standard Error of %**
No	9601	1057837	7192	71.9677	0.4596
Yes	3751	412041	6821	28.0323	0.4596
Total	13352	1469878	3413	100	Missing = 154
Descriptive Table of Dementia Diagnosis					
	Frequency	**Weighted Frequency**	**Standard Dev. of Weighted Freq**	**Percent**	**Standard Error of %**
No	11986	1325685	5559	88.8457	0.3167
Yes	1520	166435	4753	11.1543	0.3167
Total	13506	1492120	3462	100	Missing = 0
Descriptive Table of Hospice Diagnosis					
	Frequency	**Weighted Frequency**	**Standard Dev. of Weighted Freq**	**Percent**	**Standard Error of %**
No	11076	1230604	6293	82.4735	0.3802
Yes	2430	261516	5719	17.5265	0.3802
Total	13506	1492120	3462	100	Missing = 0
Descriptive Table of Number of ADL's Used By Resident					
	Frequency	**Weighted Frequency**	**Standard Dev. of Weighted Freq**	**Percent**	**Standard Error of %**
0	252	24053	1883	1.63	0.1275
1	958	96585	3656	6.5452	0.2476
2	868	88429	3436	5.9925	0.2328
3	893	93272	3596	6.3207	0.2434
4	3809	410116	6733	27.7922	0.4532
5	6621	763199	7780	51.7194	0.508
Total	13401	1475654	3424	100	Missing = 105

Table 3- Weighted Descriptive Outcome Statistics

Descriptive Table of Hospice Services					
	Frequency	**Weighted Frequency**	**Standard Dev. of Weighted Freq**	**Percent**	**Standard Error of %**
No	13084	1441363	4099	97.5232	0.156
Yes	332	36606	2306	2.4768	0.156
Total	13416	1477969	3444	100	Missing = 90
Descriptive Table of Pain Management Services					
	Frequency	**Weighted Frequency**	**Standard Dev. of Weighted Freq**	**Percent**	**Standard Error of %**
No	12510	1385813	4815	93.7647	0.2407
Yes	906	92156	3563	6.2353	0.2407
Total	13416	1477969	3444	100	Missing = 90
Descriptive Table of Behavioral Management Services					
	Frequency	**Weighted Frequency**	**Standard Dev. of Weighted Freq**	**Percent**	**Standard Error of %**
No	12666	1395571	4760	94.4249	0.2319
Yes	750	82398	3431	5.5751	0.2319
Total	13416	1477969	3444	100	Missing = 90
Descriptive Table of Incontinence Care					
	Frequency	**Weighted Frequency**	**Standard Dev. of Weighted Freq**	**Percent**	**Standard Error of %**
No	90	14151	1480	14.0786	1.4544
Yes	837	86363	1527	85.9214	1.4544
Total	927	100514	770.8560	100	Missing = 12579*
Descriptive Table of Dementia Care					
	Frequency	**Weighted Frequency**	**Standard Dev. of Weighted Freq**	**Percent**	**Standard Error of %**
No	90	14151	1490	14.4798	1.5115
Yes	700	83578	1632	85.5202	1.5115
Total	790	97729	908.0611	100	Missing = 12716*
Descriptive Table of Restorative Services					
	Frequency	**Weighted Frequency**	**Standard Dev. of Weighted Freq**	**Percent**	**Standard Error of %**
No	90	14151	1578	5.0401	0.5597
Yes	2527	266619	2045	94.9599	0.5597
Total	2617	280770	1489	100	Missing =10889*

*Missing data is due to a leading question in the data set

Table 4- Weighted Descriptive Predicator Statistics

Descriptive Table of Payment Source					
	Frequency	**Weighted Frequency**	**Standard Dev. of Weighted Freq**	**Percent**	**Standard Error of %**
Private	1625	154595	4273	13.3933	0.3703
Mixed	1643	185926	4927	16.1077	0.4239
Government	7053	813747	6298	70.499	0.5152
Total	10321	1154268	2852	100	Missing = 3185

Table 5- Demographic and Outcome Associations

	Hospice Care	Dementia Care	Restorative Services	Pain Management	Behavioral Management	Incontinence Management
Age (Admission)	*T = - 2.76* *P = .0061*	T = .11 P = .9101	T = .16 P = .8695	T = .17 P = .8675	T = 1.57 P = .1167	*T = -3.06* *P = .0023*
Age (Interview)	*T = - 5.50* *p < .0001*	*T = -3.75* *P < .0001*	*T = -2.27* *P = .0253*	T = - 1.49 P = .1361	*T = 5.10* *P < .0001*	*T = -6.21* *P<.0001*
Sex (Male)	OR =.9332 CI=.(7053, 1.2347) P = .6282	*OR =.5603* *CI=(.3319, .9459)* *P = .0280*	OR =.6743 CI=(.4126, 1.1019) P = .1134	OR =.8435 CI=(.7007, 1.0153) P = .0717	OR =1.1111 CI=(.9183, 1.3444) P = .2782	*OR =.7876* *CI=(.6496 .9549)* *P = .0149*
Race	P = .0090	*P = .0004*	*P = .0044*	*P < .0001*	P = .1938	0.0964

** Italics denotes statistical significance*
95% confidence Interval is used

Table 6- Control and Outcome Associations: Controlling for Demographics

Outcome: Hospice Service	**Odds Ratio**	**95% Confidence Interval**	**P**
AGE AT ADMISSION	*1.001*	*1.000 - 1.002*	*0.0164*
AGE AT INTERVIEW	*1.018*	*1.005 - 1.032*	*0.0073*
HOSPICE DIAGNOSIS (YES VS NO)	*2.146*	*1.625 - 2.836*	*< .0001*
Outcome: Pain Management	**Odds Ratio**	**95% Confidence Interval**	**P**
RACE (BLACK VS WHITE)	*0.61*	*.452 - .821*	*0.0786*
RACE (OTHER VS WHITE)	0.697	.461 - 1.054	0.6055
IN PAIN (YES VS NO)	*4.487*	*3.792 - 5.310*	*< .0001*
Outcome: Behavior Management	**Odds Ratio**	**95% Confidence Interval**	**P**
AGE AT INTERVIEW	*0.985*	*.979 - .991*	*<.0001*
BEHAVIOR SYMPTOMS (YES VS NO)	*4.411*	*3.690 - 5.273*	*<.0001*
Outcome: Incontinence Management	**Odds Ratio**	**95% Confidence Interval**	**P**
AGE AT INTERVIEW	*1.014*	*1.006 - 1.022*	*0.0003*
AGE AT ADMISSION	*1.001*	*1.000 - 1.001*	*0.0464*
SEX (MALE VS FEMALE)	0.896	.733 - 1.094	0.2797
INCONTINENT EPISODES (YES VS NO)	1.137	.961 - 1.346	0.135
Outcome: Dementia Care	**Odds Ratio**	**95% Confidence Interval**	**P**
AGE AT INTERVIEW	*1.036*	*1.014 - 1.059*	*0.001*
SEX (MALE VS FEMALE)	0.801	.461 - 1.391	0.4304
RACE (BLACK VS WHITE)	*0.425*	*.209 - .863*	*0.0554*
RACE (OTHER VS WHITE)	0.881	.330 - 2.351	0.5554
DEMENTIA DIAGNOSIS	*25.312*	*3.445 - 185.998*	*0.0015*
Outcome: Restorative Services	**Odds Ratio**	**95% Confidence Interval**	**P**
AGE AT INTERVIEW	1.013	.995 - 1.031	0.1542
RACE (BLACK VS WHITE)	*0.352*	*.181 - .688*	*0.073*
RACE (OTHER VS WHITE)	0.536	.179 - 1.605	0.8543
TOTAL ADL	1.207	.996 - 1.463	0.0549

** Italics denotes statistical significance*

Table 7- Predictor and Outcome Associations: Controlling for Demographics

Outcome: Hospice Service	**Odds Ratio**	**95%Confidence Interval**	**P**	**Odds Ratio**	**95%Confidence Interval**	**P**
PRIVATE PAY	*2.328*	*(1.043, 5.194)*	*0.0007*	*3.450*	*(1.861,6.393)*	*0.0007*
MIXED PAYMENT METHODS	REFERENCE			1.482	(.680,3.187)	0.5395
GOVERNMENT PAY	*0.675*	*(.314,1.451)*	*0.0048*	REFERENCE		
Outcome: Management	**Odds Ratio**	**95%Confidence Interval**	**P**	**Odds Ratio**	**95%Confidence Interval**	**P**
PRIVATE PAY	1.169	(.732, 1.867)	0.6824	1.002	(.693, 1.450)	0.6824
MIXED PAYMENT METHODS	REFERENCE			0.857	(.592, 1.241)	0.4226
GOVERNMENT PAY	1.167	(.806, 1.688)	0.6022	REFERENCE		
Outcome: Behavior Management	**Odds Ratio**	**95%Confidence Interval**	**P**	**Odds Ratio**	**95%Confidence Interval**	**P**
PRIVATE PAY	*1.55*	*(.980, 2.451)*	*0.0241*	*1.517*	*(1.053, 2.185)*	*0.0241*
MIXED PAYMENT METHODS	REFERENCE			0.979	.678, 1.413)	0.2271
GOVERNMENT PAY	1.022	(.708, 1.475)	0.1749	REFERENCE		
Outcome: Incontinence Management	**Odds Ratio**	**95%Confidence Interval**	**P**	**Odds Ratio**	**95%Confidence Interval**	**P**
PRIVATE PAY	1.295	(.751, 2.231)	0.3321	1.186	(.781, 1.800)	0.3321
MIXED PAYMENT METHODS	REFERENCE			0.916	(.592, 1.417)	0.4478
GOVERNMENT PAY	1.092	(.706, 1.690)	0.8062	REFERENCE		
Outcome: Dementia Care	**Odds Ratio**	**95%Confidence Interval**	**P**	**Odds Ratio**	**95%Confidence Interval**	**P**
PRIVATE PAY	0.516	(.101, 2.651)	0.792	2.751	(.809, 9.349)	0.792
MIXED PAYMENT METHODS	REFERENCE			5.326	(1.545, 18.367)	0.0821
GOVERNMENT PAY	*0.188*	*(.054, .647)*	*0.0042*	REFERENCE		
Outcome: Restorative Services	**Odds Ratio**	**95%Confidence Interval**	**P**	**Odds Ratio**	**95%Confidence Interval**	**P**
PRIVATE PAY	0.323	(.018, 5.707)	0.5	0.609	(.055, 6.776)	0.5
MIXED PAYMENT METHODS	REFERENCE			1.887	(.170, 20.928)	0.4635
GOVERNMENT PAY	0.53	(.048, 5.878)	0.9435	REFERENCE		

** Italics denotes statistical significance*

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