Can You Afford to Go Back Home? The Effects of Housing Costs on Nursing Home Diversion

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Abstract

This study examines the effect of the housing market on nursing home diversion and/or transition. Prior evaluations of federally funded diversion/transition efforts indicate that lack of housing may be a significant impediment to diversion policy efforts. We test this charge by examining the transition rate of over 15,000 people from all 351 municipalities in Massachusetts between 2010 and 2014. By accounting for key indicators of housing quality and affordability, including crowding, incomplete kitchen and plumbing facilities, as well as living costs, we focus on housing burden. According to federal standards, citizens begin to bear it when over 30 percent of their income is spent on housing. We also control for the main demographic indicators tracked for diversion customers, as identified by federal options housing standards, which are age, level of frailty and whether seniors live alone. We do not find a significant relationship between housing affordability or quality and nursing home diversion efforts. This fact suggests that diversion customers are not as cost sensitive as expected.
Introduction

The movement to divert and transition older adults and people with disabilities back into their own homes from long-term care facilities, also known as “nursing home diversion and/or transition,” has grown in importance as a public service issue. The U.S. Administration for Community Living (ACL) has increased efforts and programs to aid elders to go back to their homes and the costs of those efforts are rising as the population ages and the baby boomer generation enters retirement. Several public initiatives come together to deliver diversion services, including home care, health care, social work and housing. The effectiveness of this effort has been evaluated by analysts studying elder affairs (Felix et al., 2011, MacMillen et al., 2007, Mehdizadeh, 2007).\textsuperscript{1} The collective findings of the research stress that the main factors that contribute to diversion success are age (James, Wiley & Fries, 2011; Kasper, 2005), level of care needed (Arling et al. 2010, James, Wiley & Fries, 2011) and presence of a caregiver at home (Arling et al. 2010, Gassoumis et al. 2013). While most of these factors have been addressed in the context of affordable housing, surprisingly, there has been very little examination of the effect of the housing market on the success of diversion. The lack of research focused on housing costs is curious because formal evaluations of federally funded efforts frequently cite the lack of housing as a significant obstacle to transitioning individuals out of nursing homes (Bardo et al., 2014; Denny-Brown & Lipson, 2009; Howell et al., 2007, Williams et al., 2012.). Our research addresses this gap in the literature by examining the effect of housing costs on the success of nursing home diversion. We use data from all cities and

towns in Massachusetts for 2010 through 2014 and employ as a dependent variable the percentage of Options Counseling consumers in each city and town that are able to achieve their goal of living in the community. Against it, we regress housing burden, crowding, functionality of domicile, as well as health, age, and family situation to estimate factors that increase the probability of successful transition. The findings suggest that housing costs are not as important as previously hypothesized and we offer a discussion as to whether this represents an emerging change in income and accumulated wealth among older adults in need of long term services and supports.

**Previous Findings**

The Options Counseling program is part of a national nursing home diversion effort supported by ACL. It provides short-term case management to help older adults and people with disabilities in need of long-term support access home- and community-based services that promote their independence. ACL supports and guides the development of Options Counseling through discretionary grants to states, the development of training, an online resource center and educational webinars. Forty states are currently operating an Options Counseling program.\(^2\) In Massachusetts, at the onset of Options Counseling, consumers are asked their personal goals regarding residential setting which, in the vast majority of cases, is to remain or transition home. At the close of each case, Options Counselors track whether the consumer was successful in achieving this goal.

\(^2\) [http://www.acl.gov/NewsRoom/Publications/docs/ADRC_Factsheet.pdf](http://www.acl.gov/NewsRoom/Publications/docs/ADRC_Factsheet.pdf)
The nursing home diversion movement began primarily as a civil rights issue (Desonia, 2003), with Olmstead v. L. C. (1999) declaring that individuals had the right to live in the least restrictive setting possible. The first premise behind the movement is simple—that people prefer living in the community (generally a person’s house, apartment, or Assisted Living unit) to a nursing facility (Arling et. al., 2010; Gassoumis et. al., 2013; Grabowski, 2006; James, Wiley & Fries, 2007; Kaiser, 2007; Kochera, Straight & Guterbock, 2005; Mills et. al., 2013; Pynoos, Caraviello & Cicero, 2009).

The second premise regarding nursing home diversion is more controversial. Proponents believe that it is cheaper for a person to stay in her/his own home, even with the added cost of home care support and services, than to stay in a nursing home (Mor et. al., 2007; Reinhard, 2010). Comparisons of costs of community-based services and institutional care generally focus on two categories of nursing home diversion/transition programs:

- **Money Follows the Person** (MFP) was created by the Deficit Reduction Act of 2005 and is funded by the Centers for Medicare and Medicaid Services (CMS) through discretionary grants to states to provide case management to individuals living in nursing facilities and wishing to transition to the community, and to provide enhanced community services to help them remain there once they have transitioned (Williams et. al., 2012). It is currently operative in 40 states and has helped over 51,000 individuals transition home.

- **1915(c) Medicaid Waiver.** This federal rule, created under the Omnibus Budget Reconciliation Act of 1981, allows state Medicaid agencies to present CMS with an alternate spending plan that allows expenditure of Medicaid funds in community settings in addition to institutional settings (generally a nursing home or a long-term rehabilitation facility). It limits expenditures to home and community-based services, defined under the Social
Security Act (and throughout this paper) as case management, homemaker services, home health aide services, personal care, adult day health, habilitation, and respite care, and prohibits Medicaid expenditures on housing expenses, such rent or mortgage payments.3

The AARP Public Policy Institute estimates that the Waiver could cover the costs of three individuals to remain in the community at the same cost of keeping one person in a nursing facility.4 A recent meta-analysis, also by AARP Public Policy Institute, of state evaluation reports on home- and community-based services also indicates that at least 11 states demonstrated savings in state Medicaid spending on long-term care due to nursing home diversion programs.5

Savings can be attributed to the low cost of home care relative to nursing home care—$5,243 per person month in 2009 as compared to $1,069 for home care costs for people requiring assistance with activities of daily living (ADLs) (Kaye, Harrington & LaPlante, 2010). The plurality of nursing home costs can be attributed to nursing care (32—48 percent), with housekeeping and board (24—34 percent) and administration and real estate (27—40 percent) accounting for the rest.6

The bulk of the home- and facility-based long-term care costs are public, with Medicaid paying 42 percent as of 2007, Medicare paying 25 percent, private insurance paying 11 percent, and the rest being paid out of pocket by consumers (Ng, Harrington & Kitchener, 2010), with 55

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percent being spent on institutional care and 45 percent on home- and community-based services. While difference in level of frailty accounts for some of this difference in cost, it does not account for all of it. The mean number of ADLs with which nursing home residents need assistance is 3.9, versus 3.5 for individuals receiving services in their home (Kaye, Harrington & LaPlante, 2010). Forty-eight percent of nursing home residents required help with five or more ADLs, versus 36.5 percent of consumers in the community (ibid.). It is possible that the difference in cost may be partially attributable to a higher quality of care in nursing homes, but this has not been documented. One possible measure of quality would be reduced acute care expenditures, but there appears to be no significant difference in this measure between nursing home residents and home care consumers (Newcomer et. al., 2016).

Expenditures on long-term care in the United States are enormous—$79.8 billion on home care and $155.8 billion on nursing home care in 2013—so any savings reaped through a shift toward home- and community-based services would be significant. Much of these savings would be realized by Medicaid, with state and federal government sharing savings proportional to the current federal-state 60-40 split, or 51-49 in Massachusetts. The state match is calculated annually by CMS according to each state’s per capita income, with the poorest states contributing 25 percent and the wealthiest paying 50 percent.

It is not universally agreed upon, however, that this shift would generate any savings. Studies indicate that, while nursing home diversion is successful in reducing long-term care costs

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per person enrolled in home-and community-based services, it may increase overall long-term care spending (Kane *et al.*, 2013; Kaye, Harrington & LaPlante, 2010; Weisset & Frederick, 2013). The first possible reason for this is that, if enrollment in a nursing home goes down but its fixed costs remain the same, the nursing home may raise its cost per person (Kane *et al.*, 2013). This effect could be exacerbated by the fact that consumers who are less frail and, therefore, least costly to care for, are most likely to transition home, leaving nursing homes with the more costly, care-intensive consumers (Kaye, Harrington & LaPlante, 2010).

The second reason why overall Medicaid spending on long-term care may rise even as cost per person goes down is the possibility that people who would not likely enroll in a nursing home will nonetheless utilize home-based services when they are made available at little or no cost to themselves, a phenomenon known as “the woodwork effect.” A 2013 study by University of Michigan compared MDS data, home care assessments, and Medicaid utilization data across seven states and found that nursing facility enrollment went down, but home- and community-based services utilization increased disproportionately due to the woodwork effect, with associated costs outweighing any savings from decreased nursing home enrollment (Kane *et al.*, 2013). This study, however, does not take into account capitated models, which limit the number of dollars spent by state Medicaid programs on home- and community-based services, the number of recipients receiving them, or the eligibility for enrollment (e.g. only those most at risk of nursing home placement), and which had been shown in prior studies to eliminate many of the costs associated with the woodwork effect (Grabowski, 2006).

Efforts to improve the efficiency and reach of nursing home diversion will continue to be critical in order to alleviate the growing strain on the long-term care system. The number of adults in the U. S. aged 80 and over—those most likely to need long-term services and
supports—is expected to triple from almost 6 million in 2012 to almost 18 million in 2050 (Ortman, Velkoff & Hogan, 2014). Long-term care costs increased four-fold between 1980 and 2005, to over $200 billion, and are predicted to quadruple again by 2050 (Lehning & Austin, 2010). As policy makers strive for the right formula of targeting, capitation and other efficiencies to establish nursing home diversion as an alternative to nursing home care that is not only preferred by consumers but also truly cost-effective, it will be important to learn whether lack of housing is hindering these efforts.

Factors that Affect Successful Nursing Home Diversion

Several studies have attempted to pinpoint the characteristics most associated with a successful diversion of a nursing home resident back to the community. Notable studies include:

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Methods</th>
<th>Principal indicators of successful diversion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holup <em>et. al.</em></td>
<td>2015</td>
<td>Generalized linear regression on MDS data</td>
<td>• Occupancy rates at facility (high)</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>• Tax status of facility (for profit)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Medicaid status of resident (unenrolled)</td>
</tr>
<tr>
<td>Gassoumis <em>et. al.</em></td>
<td>2013</td>
<td>Logistic regression on MDS records from nursing homes in four counties in Southern California</td>
<td>• Caregiver at home</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Gender (female)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Lack of behavioral health issues</td>
</tr>
<tr>
<td>Arling <em>et. al.</em></td>
<td>2010</td>
<td>Analysis of admissions data on all Minnesota nursing homes in 2005/2006</td>
<td>• Level of care needed (low)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Caregiver at home</td>
</tr>
<tr>
<td>James, Wiley &amp; Fries</td>
<td>2007</td>
<td>Bivariate and multivariate analysis of MDS data of 111 individuals transitioned from Arkansas</td>
<td>• Age (younger)</td>
</tr>
</tbody>
</table>
nursing homes, and a sample of 1,000 other residents from those facilities.

- Level of care needed (low)
- Absence of cognitive deficit

<table>
<thead>
<tr>
<th>Study</th>
<th>Year</th>
<th>Description</th>
<th>Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kasper</td>
<td>2005</td>
<td>Analysis of a sampling of 1999 National Nursing Home Survey</td>
<td>• Age (younger)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Length of stay (less than 30 days)</td>
</tr>
<tr>
<td>Jette, Warren &amp; Wirtalla</td>
<td>2004</td>
<td>Analysis of administrative data in 68 nursing homes</td>
<td>• High staff/resident ratio</td>
</tr>
<tr>
<td>Chapin et. al.</td>
<td>1998</td>
<td>Logistical regression on admission data for nursing home residents</td>
<td>• Age (younger)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Lack of dementia</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Medicaid status (unenrolled)</td>
</tr>
<tr>
<td>Mehr, Williams &amp; Fries</td>
<td>1997</td>
<td>Logistical regression on diagnostic and admission data on Virginia nursing</td>
<td>• Level of care needed (low)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>home residents</td>
<td>• Age (younger)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Receipt of rehabilitation services during stay</td>
</tr>
</tbody>
</table>

Interestingly, while most of these studies find that people with a caretaker living at home are more likely to transition out of a nursing home, Howell et al. (2007) find that people living alone are less likely to be readmitted once discharged, possibly due to the fact that these people are less likely to be discharged in the first place unless they have few long-term care needs. Also interesting is the fact that Gassoumis et al. (2013), inexplicably and contrary to other studies, find that age is not a factor in discharge.

**Housing and Nursing Home Diversion**

The challenge of securing affordable housing is limited to neither older adults nor people at risk of nursing home placement. The gap for housing that is affordable to extremely low-
income households—those earning less than 30 percent of the area mean—doubled between 2003 and 2013, with between 28 and 34 affordable units available for every 100 renters (Leopold, Getsinger, & Blumenthal, 2015). For those making between 30 percent and 50 percent of the area mean, there were just 58 affordable units for every 100 renters (ibid.). The number of renters considered to be “housing burdened,” spending more than 30 percent of their incomes on housing, reached an all-time high in 2013, with just under half of all renters experiencing housing burden, according to the Harvard Joint Center for Housing Studies\textsuperscript{11}, over double the percentage in 1960 (Sullivan & Power, 2013).

While nationally, the rate of housing burden is slightly lower for older adults than for the population as whole—44 percent (Engelhart, Eriksen & Greenhalgh-Stanley, 2013)—in Massachusetts, the rate is higher—53 percent for renters and 33 percent for owners aged 60 and older, versus 48 and 29 percent for younger people, which according to the U.S. Census Bureau are the national averages.\textsuperscript{12} This fact may be due to lower overall income levels. Also, older adults, while less likely to live below the poverty line than people under age 60, are more likely to live just above the poverty line (Gonyea, Mills-Dick & Bachman, 2010). This is reflected in Massachusetts, where 8.3 percent of older adults live between 100 and 150 percent of the poverty line, versus 6.8 percent for those under age 60.

Though these data indicate that housing is a challenge for older adults, the absence of housing as a factor in the quantitative studies cited in the previous section might lead one to


conclude that it has no role in nursing home diversion. Several qualitative studies, however, indicate otherwise. Many cite the fact that a person may lose her/his home during a prolonged nursing home stay (Denny-Brown & Lipson, 2009; Johnson, Silverman & Coller, 2009; Mills et al., 2013; Nishita et al., 2008; Reinhard & Fahnham, 2006). Anderson, Wiener and O’Keeffe (2006) note that several states have provisions that protect a portion of nursing home residents’ incomes from covering costs of nursing home care so that they may continue to make rent and mortgage payments, but these provisions are uncommon and, where they do exist, only protect this income for a few months. Many spouses of residents whose nursing home costs are covered by Medicaid must move to a smaller home in order to live within Medicaid’s $597 housing allowance\(^{13}\), often making it difficult for their spouses to move back (Fields, Anderson & Dabelko-Schoeny, 2011).

If an older adult loses her/his apartment during a nursing home stay, it may be difficult to regain affordable housing (Denny-Brown & Lipson, 2009; Mills et al., 2013) due to higher levels of poverty described above, and also because many nursing home residents have accrued substantial expenses related to their stay, making it difficult to come up with first and last month rent, security deposit and realtors’ fees upon discharge.

Medicare currently requires that members make a co-payment of $175 per day after the first 20 days in a facility. After 100 days, members must pay for nursing home care out of pocket until they have spent down their assets and qualify for Medicaid (Golden et al., 2011).

Programs to help low-income people find housing, such as Section 8 vouchers, Section 202 Senior Housing and affordable community housing have long waiting lists (Anderson, Wiener &

O’Keeffe, 2006; Eiken, 2003; Gonyea, Mills-Dick & Bachman, 2010; Kasper & O’Malley, 2006), with numbers of available units far outnumbering people waiting (Kochera, 2006; Pynoos, Caraviello & Cicero, 2009).

Several evaluations of state nursing home diversion programs specifically cite lack of housing as an obstacle to nursing home diversion, but do not provide quantitative data (Bardo et al., 2014; Denny-Brown & Lipson, 2009; Howell et al., 2007; Williams et al. 2012). One quantitative study, by Mutchler and Burr (2003), found a positive correlation between available, affordable housing and the likelihood of older adults living in the community in a non-group setting. While that study does not consider nursing transition efforts, it does suggest that favorable housing conditions may be more conducive to nursing home diversion/transition.

Similarly, a least-squares regression study of available nursing home beds covered by Medicaid and affordable assisted living in Florida found availability skewed highly in favor of nursing home beds (Golant & Salmon, 2004). While the study proposed in this paper is concerned with affordability and availability of all types of community-based housing and not just assisted living facilities, Golant and Salmon’s (2004) study does indicate that a shortage of at least one type of community housing is keeping people in nursing homes though they do not want or need to be there. In a separate article, Golant asks:

“At what point do we acknowledge that older persons living in places with an inadequate supply of affordable housing are institutionalized more frequently and with fewer dependencies?” (Golant, 2008, p. 391)

This study set out to answer that question, at least partially, but our data analysis does not support Golant’s (2008) claim. This could be due to changes in the housing market and/or to emerging programs that address the housing needs of transitioning
seniors with limited means. Several states have offered housing vouchers, provided assistance with Section 8 applications and have formed cross-agency coalitions to identify available housing (Eiken, 2003; Kasper & O’Malley, 2006; Poole, Duvall & Wofford, 2006; Reinhard & Farnham, 2006; Williams et. al., 2012). Hawai’i’s “Going Home Plus,” Pennsylvania’s ENDependence and Wisconsin’s Community Options plans provide consumers with housing coordination, housing deposits, utility hookups, essential furniture, household items and initial food stocking (Johnson, Silverman & Koller, 2009; Poole, Duvall & Wofford, 2006).

It is worth noting that Golant's work, as well as the majority of qualitative studies that focus on housing affordability, is from a time when home prices were very high as a result of the housing boom that started in the early 2000s. Since the housing market crash, it is unclear if affordability is still a persistent problem, given the fact that home prices have remained relatively low compared to the boom years.

**Measuring Housing Affordability, Availability and Quality**

Despite the lack of quantitative study regarding the housing market and nursing home diversion, there has been plenty of research regarding the affordability and availability of housing in other contexts. The most widely-used measure of housing affordability is housing burden—the percentage of income spent on housing, with households spending 30 percent or more of their income on housing considered burdened, and those spending more than 50 percent considered severely burdened (Schwartz & Wilson, 2008). This number was derived after much fine-tuning by federal legislation and executive orders, and finally settled upon by a 1981
amendment to the 1968 Housing and Urban Development Act.\textsuperscript{14} It is now used as standard measure of affordability by academics and lending agencies, including Fannie Mae and Freddie Mac (Schwartz & Wilson, 2008).

However, the measure is not without its detractors. O’Dell, Smith and White (2004) of the University of Florida, as well as Bogdon and Can (1997) of the Fannie Mae Foundation, argue that housing burden does not account for several factors that may induce a person to spend more than 30 percent of her/his income on housing, such as neighborhood characteristics, quality of structure, and space requirements. Bogdon and Can’s 1997 analysis considers alternate indicators of housing affordability and availability, which includes Shelter Poverty, which occurs when housing expenses exceed the difference between household income and all non-housing-related necessities, and Housing Gap, the difference between number of housing units at different cost brackets and number of households that can afford to pay those costs.

While quality of housing is much more difficult to quantify than affordability, a 1978 report from the U.S. Department of Housing and Urban Development (HUD)\textsuperscript{15} identifies inadequate plumbing, kitchen, sewage, heating, maintenance, public halls, toilet access, and electrical fittings as signs of poor quality housing. This standard has since been used in several scholarly studies (Bianchi, Farley & Spain, 1982; Kutty, 1999; Newman & Schnare, 1988; Newman & Struyk, 1983; Weicher, Yap & Jones, 1982), while others (Newman & Garboden, 2013) argue that these measures compose an inadequate construct of housing quality. Additionally, crowding is cited as measure of quality by a 1997 World Bank study (Malpezzi &


Mayo, 1997), and has been associated with poor physical and mental health, though no causation has been established.

While all of these measures of housing availability, quality and affordability were considered as independent variables for this study, many were not feasible or appropriate for the specific model. Some, such as housing investment and production, were not incorporated because they address long-term housing supply, whereas the needs of the nursing home-eligible population aged 60 and over are generally not long-term. Similarly, data regarding housing loans are not incorporated because older adults, who make up 88 percent of the nursing home population, are not likely to be first time homebuyers.

Home modifications, which came up frequently in previous findings as a critical variable in diversions/transitions in the qualitative analyses discussed above (Bardo, Kunkel & Carpio, 2011; Denny-Brown & Lipson, 2009; Fields, Anderson & Dabelko-Schoeny, 2011; Golant, 2008; Mills et. al., 2013; Pynoos et. al., 2005; Pynoos, Caraviello & Cicero, 2009; Reinhard & Farnham, 2006; Williams et. al., 2012), will not be utilized here due to lack of available data.

Of the measures of quality identified by the 1978 HUD report, the U.S. Census only consistently reports on incomplete kitchen and plumbing facilities on a state and local level (McKee-Huger & Loosemore, 2012). While this limits the measures of quality available as independent variables on a city/town level, Mikesell (2004) a report from the U. S. Department

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17 While no scholarly data is available to confirm this claim, it is supported by the 2015 Home Buyer and Seller Report, based on survey data compiled by the National Association of Realtors, retrieved from http://www.realtor.org/sites/default/files/reports/2015/2015-home-buyer-and-seller-generational-trends-2015-03-11.pdf on November 22, 2015.
of Agriculture argues that incomplete kitchen and plumbing are solid indicators of poor housing quality, and so we regard them as sufficient.

**Data and Methods**

We examine Options Counseling cases in 351 cities and towns in Massachusetts from 2010 to 2014. There were just over 15,000 Options Counseling cases during this period. The time frame is chosen in order to coincide with the U.S. Census’ most recent general housing characteristics data which, at the city and town level, are only available in five-year periods. As the census data are not broken down by individual year, the Options Counseling cases are not broken down by year either.

**Dependent Variable**

The dependent variable is the percentage of Massachusetts Options Counseling consumers in each town that are successful in remaining or transitioning home, which is the goal for over 97 percent of consumers in the program. Examination of Options Counseling allows us to study the effects of housing conditions on nursing home diversion efforts among individuals who have identified institutionalization as a concern, but with a broader population range than Medicaid-based diversion programs like the Waiver or MFP, since the program is available, at no charge, to people of all incomes. Low-income Options Counseling consumers are generally referred to Waiver, MFP or state-funded home- and community-based long-term care, while those whose incomes are too high to qualify for Medicaid or state programs are referred to private-pay services.

Data regarding Options Counseling results were retrieved from the Massachusetts Executive Office of Elder Affairs Senior Information Management System (SIMS) database.
developed by Harmony Information Systems, which tracks consumer characteristics such as age, level of frailty, services utilized, and outcomes. The study excluded consumers who are seeking placement in a nursing facility at the onset of Options Counseling.

The dependent variable was calculated by dividing the total numbers of consumers in each Massachusetts city and town who are documented by SIMS as living at home when their case was closed by the total numbers of consumers in that city or town. Thirty-two cities and towns had no consumers, with the dependent variable calculated at 0.

**Explanatory Variables**

Independent variables were selected based on housing studies that rely on the 30 percent standard for housing burden, but also attempt to incorporate some of the criticism and alternatives summarized in “Previous Findings,” albeit within the constraints of what data is publicly accessible. The four independent variables used to gauge the availability, affordability and quality of housing across Massachusetts’ 351 cities and towns are:

- Percentage of residents experiencing housing burden (>30% of income spent on housing);
- Percentage of households with more than one resident per room;
- Percentage of households without complete kitchen facilities
- Percentage of households without complete plumbing facilities; and
- Crowding

The measures are consistent with data utilized as key indicators of poor housing conditions by U.S. Department of Housing and Urban Development to determine qualification for housing assistance. These data were retrieved from the U. S. Census 2010—2014 Selected
Housing Characteristics report.\textsuperscript{18} Housing burden was calculated by adding the numbers of households in rented units, households in units with mortgages, and households in units without mortgages experiencing housing burden in each city and town and dividing it by the total number of units in that community. Crowding was calculated by adding the two U.S. Census categories of units with more than one occupant per room ([1<N\leq1.5] + [N>1.5]) in each city and town and dividing the sum by the total number of units in that community. Percentage of units with incomplete kitchen and plumbing facilities was retrievable directly from the census report.

\textit{Control Variables}

Additional control variables have been selected based on factors other than housing that have been shown in the literature to affect the likelihood of a person successfully transitioning from a nursing facility and that were accessible from SIMS. They include:

- \textit{Level of frailty of Options Counseling consumers}, as measured by percentages of consumers in each community at FIL levels 1, 2, 3, and 4, which are determined by the number of Activities of Daily Living ("ADLs"—bathing, dressing, eating, toileting, and mobility) and Instrumental Activities of Daily Living ("IADLs"—meal preparation, shopping, laundry, money management, housework, transportation and use of telephone) with which the consumer needs assistance. FIL levels are tracked by SIMS and are determined as follows:
  - FIL 1. Needs assistance with four or more ADLs.
  - FIL 2. Needs assistance with two or three ADLs.

• FIL 3. Needs assistance with six or more combined IADLs and ADLs, but no more than one ADL.

• FIL 4. Needs assistance with four or five combined IADLs and ADLs, but no more than one ADL.

FIL 1 indicates the highest level of frailty, while FIL 4 indicates a relatively low level of frailty. Average number of consumers at each FIL level was calculated for each city and town.

• Presence of an Informal Caregiver at Home. Average number of consumers living alone was calculated for each city and town.

• Age. Average age for each city and town was calculated.

Findings and Analysis

A linear regression was conducted to test the main hypothesis that the percentage of Options Counseling consumers able to transition or remain in the community will be lower in communities where rates of housing burden, crowding and dilapidation are high. The presumption is that people will be less motivated to remain in or transition to the community if the only available affordable housing is dilapidated or crowded. We do not find support for the hypothesis. Results are presented in table 1.

Table 1 (Original Model)

<table>
<thead>
<tr>
<th>DV = % consumers per city able to remain/transition home</th>
<th>Observations = 351</th>
<th>Prob&gt;F = 0.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-Squared = 0.3595</td>
<td>Adjusted R-Squared = 0.3407</td>
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</table>

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>Standard Error</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crowding</td>
<td>0.49</td>
<td>1.10</td>
</tr>
<tr>
<td>Incomplete Plumbing</td>
<td>1.05137</td>
<td>2.392654</td>
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<td>Incomplete Kitchen</td>
<td>1.352573</td>
<td>1.931744</td>
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<td>Housing Burden</td>
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</tbody>
</table>
Age proved to be the most significant predictor of success for nursing home diversion, but, contrary to our prediction and the majority of previous findings, it was higher average age that correlated positively with higher rates of transition/diversion success. This fact is counterintuitive, but may be related to previous work on home quality and supports claims by Evans, Kantrowitz and Eshelman (2002), which asserts that older adults are more attached to their homes when the homes are of high quality. Only FIL level 1 proved to have any significant influence on nursing home diversion success. The relationship is negative, indicating that consumers with extreme levels of frailty are less likely to remain or transition home despite the efforts of the Options Counseling program, which is to be expected.

When age is removed as a factor, some details regarding the remaining variables emerge. Table 2 shows these results.

**Table 2** (Original Model with Age Removed as IV)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crowding</td>
<td>1.911493</td>
<td>1.253</td>
<td>NS</td>
</tr>
<tr>
<td>Incomplete Plumbing</td>
<td>-4.22861</td>
<td>2.678159</td>
<td>NS</td>
</tr>
<tr>
<td>Incomplete Kitchen</td>
<td>4.325281</td>
<td>2.188442</td>
<td>*</td>
</tr>
<tr>
<td>Housing Burden</td>
<td>-0.3189598</td>
<td>0.2119801</td>
<td>NS</td>
</tr>
<tr>
<td>Lives Alone</td>
<td>0.3031676</td>
<td>0.0815755</td>
<td>**</td>
</tr>
<tr>
<td>Fil 1</td>
<td>0.0688966</td>
<td>0.0631658</td>
<td>NS</td>
</tr>
<tr>
<td>Fil 2</td>
<td>0.3076563</td>
<td>0.1293201</td>
<td>*</td>
</tr>
<tr>
<td>Fil 3</td>
<td>0.3207392</td>
<td>0.1313769</td>
<td>*</td>
</tr>
</tbody>
</table>
With 15.7 percent of the influence on diversion/transition success rates accounted for in this model, as compared with 36.0 percent when age is accounted for, FIL Level 1 ceases to be significant, while FIL levels 2, 3 and 4 emerge as significant, indicating that consumers with mild to moderate levels of frailty are more responsive to Options Counseling. If we do not account for age directly, contrary to our prediction and previous findings, the presence of an informal caregiver at home remains a significant influence but in the opposite direction. The results suggest that older adults that live alone, *i.e.*, without an informal caregiver, are more likely to successfully transition home.

Once again the housing affordability and quality variables do not show significance except for incomplete kitchen facilities. To account for housing burden sensitivity difference between owners and renters we run the model after omitting owner-occupied housing units. However, as illustrated in Table 3, this did not significantly change the results of the model.

**Table 3 (Housing Burden for Renters Only)**

<table>
<thead>
<tr>
<th>DV = % consumers per city able to remain/transition home</th>
<th>Observations = 351</th>
<th>Prob&gt;F = 0.00</th>
<th>R-Squared = 0.1515</th>
<th>Adjusted R-Squared = 0.1291</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>Standard Error</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crowding</td>
<td>1.223873</td>
<td>1.182301</td>
</tr>
<tr>
<td>Incomplete Plumbing</td>
<td>-4.031805</td>
<td>2.687798</td>
</tr>
<tr>
<td>Incomplete Kitchen</td>
<td>3.905564</td>
<td>2.178557</td>
</tr>
<tr>
<td>Rental Housing Burden</td>
<td>0.0162877</td>
<td>0.0975746</td>
</tr>
<tr>
<td>Lives Alone</td>
<td>0.3036228</td>
<td>0.0818908</td>
</tr>
<tr>
<td>Fil 1</td>
<td>0.0597075</td>
<td>0.0630994</td>
</tr>
<tr>
<td>Fil 2</td>
<td>0.2903966</td>
<td>0.1292492</td>
</tr>
<tr>
<td>Fil 3</td>
<td>0.3119099</td>
<td>0.1317467</td>
</tr>
<tr>
<td>Fil 4</td>
<td>0.3858499</td>
<td>0.196681</td>
</tr>
</tbody>
</table>
To account for a more direct measure of housing affordability we conduct another test where housing gap rates were substituted for housing burden rates. The housing gap is the ratio between number of units that are affordable to low income (less than 50 percent of the area mean) and extremely low-income (less than 30 percent of the area mean) households, assuming no more than 30 percent of income is spent on housing, and number of households in those income brackets in each community. This data for the 351 cities and towns in Massachusetts is available from the Metropolitan Area Planning Council.\textsuperscript{19} This model yielded comparable results to those in table 2 in terms of living alone and level of frailty. The affordability gap itself, however, along with indicators of housing quality, is not significant. Results are presented in table 4 below.

\begin{table}[h]
\centering
\begin{tabular}{|l|c|c|c|}
\hline
 & Coefficient & Standard Error & Significance \\
\hline
Crowding & 1.03316 & 1.20231 & NS \\
Incomplete Plumbing & -3.967282 & 2.728694 & NS \\
Incomplete Kitchen & 3.879483 & 2.183161 & NS \\
Housing Gap VLI & 0.0472674 & 0.2011658 & NS \\
Housing Gap LI & -0.174794 & 0.2035598 & NS \\
Lives Alone & 0.299313 & 0.0819987 & *** \\
Fil 1 & 0.0602245 & 0.0633378 & NS \\
Fil 2 & 0.290854 & 0.1293052 & * \\
Fil 3 & 0.3095497 & 0.1318786 & * \\
Fil 4 & 0.3917402 & 0.1964775 & * \\
\hline
\end{tabular}
\caption{(Housing Affordability Gap)}
\end{table}

Finally, percentage of units in each city and town that are subsidized, also available from the Metropolitan Area Planning Council, was substituted for housing burden, testing the

\textsuperscript{19} Available at: http://www.mapc.org/smart-growth/housing
responsiveness of Options Counseling consumers to levels of housing assistance in their community. Again, there was no significant change in results with the introduction of this measure.

One explanation for the lack of correlations between quality, affordable housing and program success may be that the range of incomes for Options Counseling consumers is too broad. While we originally regarded this as an asset to the study, it is highly possible that people with lower incomes—those on Medicaid-funded programs such as MFP or the Home and Community Based Service Waiver—are more responsive to differences in quality and affordability than the broader population of older adults. SIMS does not track income consistently enough for us to use it as a variable, and we did not have access to MFP or Waiver data. Future studies may find a correlation by focusing on consumers of these programs or otherwise isolating low-income individuals.

Another possibility is that consumers, particularly those seeking to transition to the community from a facility, are not bound to move back to their original community, but rather, can look for housing that fits their income and quality needs from a wide array of cities and towns. For example, a nursing home resident from Cambridge, which has a housing burden rate of 40.1 percent and a crowding rate of 1.8 percent, unless seeking to move in with a hometown acquaintance, can easily transition to neighboring Arlington, which has a housing burden rate of 32.5 percent and a crowding rate of 1.0 percent.

Some discussion is warranted regarding the other variables that did not correlate as expected. The positive correlation between crowding and transition/diversion success, while not significant, may indicate that communities with high rates of occupancy per room are, due to poverty or a culture that values family loyalty over personal comfort, more accepting of tight
living quarters. There is some evidence, for example, that African Americans are less likely to place a family member in a nursing home (Belgrave & Bradsher, 1994; Green & Ondrich, 1990), which might make diversion/transition efforts less responsive to crowding. A large percentage of crowded units may simply indicate a large pool of households with multiple people to assist with caregiving responsibilities, thereby facilitating transition home, although this contradicts the positive correlation between consumers living alone and Options Counseling success found in our data.

The positive correlation with incomplete kitchen facilities, coupled with the negative, though consistently insignificant, correlation of incomplete plumbing facilities with diversion/transition success, remains a mystery. The U.S. Census clearly defines a housing unit as excluding congregate housing, rooming houses and seemingly every other living situation that might involve limited access to complete kitchen facilities, so any tendency of Options Counseling consumers to choose these relatively inexpensive options would not be reflected in the data. It is possible that consumers for whom nursing home placement is a concern are likely to be enrolled in the Title III home delivered meal program, and would be less responsive to lack of working kitchen facilities when choosing housing.

Finally, the correlation between frailty and Options Counseling success also merits some consideration. Severe frailty (FIL level 4) appears to be a significant deterrent to program success, but only when age is also considered. When age is removed as a variable, mild and moderate frailty emerges as a significant asset for Options Counseling consumers, indicating that home- and community-based services are helpful in achieving this goal. While these data

20 https://www.census.gov/construction/nrc/definitions/index.html
suggest that transition/diversion resources would be most effectively directed to the moderately frail, care must be taken to limit services to those most likely to need nursing home-level care in order to avoid the woodwork effect. As states use varying combinations of ADLs and IADLs to determine functional eligibility for nursing home placement (Hendrickson & Kyzr-Sheeley 2008), determining this likelihood will not be an easy task.

While the results of this study suggest that the nursing home diversion and transition success rate is not responsive to the housing market, Mutchler and Burr’s results (2003) and the qualitative data cited throughout this paper indicate that the problem is complicated and that much more refined study is needed. At the very least, our study indicates that housing costs do not play a significant role in diversion/transition efforts in all cases. In order to most effectively use scarce government resources to address a rapidly growing public expense, it will be critical to determine which frail older adults are most affected by housing conditions, and under what circumstances, in order to prevent avoidable spending on nursing home care for people who do not want or need it.

**Conclusion and Implications**

The chief implication of this study is that the ability of consumers to remain in or transition to the community is not responsive to differences in affordability or quality of housing. This is surprising in light of the all of the qualitative data suggesting lack of housing as a significant barrier to diversion/transition efforts, and also in light of Mutchler and Burr’s excellent study (2003) suggesting a significant relationship among affordability, quality and living in non-group settings for older adults. However, the fact that age and presence of an informal caregiver at home correlated unexpectedly, in relation to previous findings, indicates
that there may be something particular about the Massachusetts Options Counseling program, or
the way in which it collects consumer data, which is different from other diversion programs,
such as the Waiver or MFP. Some qualitative approaches, such as focus groups or interviews
with Options Counselors or Options Counseling consumers, could be useful in determining why
communities with higher percentages of Options Counseling consumers who are older or living
alone might have higher rates of success than other communities. Differences in incomes or
quantity of services received could be overshadowing age and presence of a caregiver as an
influence, but these data are not consistently collected within the Options Counseling program.
A different approach to analyzing existing data, such as treating the individual consumer, instead
of the community, as a unit of analysis and treating success in returning/remaining home as a
categorical variable, for example, might help us more accurately determine which consumers
stay in nursing homes.

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