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Providing quality services is one of the challenges associated with the continued increase in the nation's older adult population. Effective use of needs assessment data can be useful in assessing service need. This study measures the level of perceived need for supportive services among older adults in Mississippi. Using statewide needs assessment data, this study applies the Behavioral Model to measure the perceived need for supportive services among survey participants aged 60 and older (N = 838). Results indicate that age, race, physical health, and subjective well-being were consistent predictors of perceived need for supportive services. Results suggest the importance of understanding the factors associated with the perceived need for supportive services to more effectively plan service delivery.

Keywords: older adults, perceived service need, Behavioral Model, pre-disposing variables, enabling variables, health need variables

Introduction

Providing quality services is one of the many challenges associated with the continued increase in the nation's older adult population. Services for older adults are generally designed to help them remain independent, reflecting the strong preference most have for remaining in their homes and communities (Eckert, Morgan, & Swamy, 2004). Considering the inevitable increase in the number of older adults (Vincent & Velkoff, 2010), it is reasonable to assume that demand for services designed to facilitate independent living for older adults will show a significant increase (Chen & Berkowitz, 2012). Targeting services to the appropriate groups is challenging, due to a lack of service awareness, as well as affordability and funding concerns (Li, 2006).

Needs assessment data can be useful in assessing the need for services for older adults (Beverly, Mcatee, Costello, Chernoff, & Casteel, 2005; Calsyn, Roades, & Klinkenberg, 1998). With this information, program planners can allocate resources for older adults more efficiently and tailor services to their specific target population (Chen, Thompson, Berkowitz, Young, & Ward, 2011).

This is especially important with the changing composition of the older adult population, which is becoming more racially diverse and increasingly rural (Cromartie & Nelson, 2009; Jones, Kandel, & Parker, 2007; Vincent & Velkoff, 2010).

One of the advantages of traditional needs assessment surveys is their ability to collect a wide range of information. With the information derived from needs assessment surveys, specific theoretical models can be tested in an attempt to predict and ultimately explain the relationships between individual characteristics and the need for and possible utilization of supportive services. One such theoretical model found to be very reliable in testing the relationships between individual characteristics and service need is the Behavioral Model (Andersen, 1968).

The strength of the Behavioral Model approach lies in its multiple practical implications. By assessing the level of perceived need for supportive services, the Behavioral Model can be utilized to identify which groups have higher levels of service need. The traditional factors of the Behavioral Model (pre-disposing, enabling, and health need variables) can also be used for constructing client profiles by illustrating which types of individuals may be more likely to ultimately utilize services. An approach such as this, which concentrates on a potential client base could aid program planners in more effectively organizing the provision of appropriate services (Calsyn et al., 1998).

The purpose of this study is to measure the level of perceived need for supportive services among older adults in Mississippi. Using data from a statewide needs assessment, this study applied the Behavioral Model (Andersen, 1995; Andersen & Newman, 2005) to explain which of the model's three traditional factors: (a) pre-disposing variables, which refer to demographic and socioeconomic characteristics, (b) enabling variables, which are related to the logistical aspects of obtaining care, and (c) health need variables, which pertain to perceived (self-reported) or evaluated (professionally diagnosed) health needs of an individual (Andersen & Newman, 2005), best predicted perceived need for supportive services.

In focusing on Mississippi, this study provides an opportunity to contribute to the existing body of work on this topic by looking at a predominately rural state with a significant minority population. Such a study is timely due to the increase in diversity among older adults, with population projections predicting that the proportion of older adults from minority groups will account for approximately 28% of the older adult population by the year 2030 (Administration for Community Living, 2018). It is well documented that older adults from minority groups are more likely to experience higher rates of disability and chronic illness (Clark, 1997; Moody-Ayers, Mehta, Lindquist, Sands, & Covinsky, 2005; Seeman, Merkin, Crimmins, & Karlamangla, 2010), suggesting that the long-term health care needs of minority groups will continue to be a concern (Bradley et al., 2002).

Further, in looking at a predominately rural state like Mississippi, this study may shed light on some of the common service needs of older adults in more sparsely populated areas, where older

adults typically are in greater need of assistance (Li, 2006; Schulenberg & Coward, 1998; Sun, 2011). We argue that identifying factors associated with the perceived need for supportive services among older adults can assist caregivers, policymakers, and service providers in the development, planning, and provision of supportive service programs for older adults.

Literature Review

Benefits of Services for Older Adults

Most supportive services designed for older adults fall under the guise of Home- and community-based services (HCBS). These services are designed to provide assistance to older adults with daily activities in their home or community as opposed to institutional settings (Siegler, Lama, Knight, Laureano, & Reid, 2015; U.S. Department of Health and Human Services, 2017). These services focus on but are not limited to in-home care, home-delivered meals, transportation services, and referral services (Kassner, 2011). Such services are instrumental in helping older adults remain independent in their homes and communities (Ferris, Glicksman, & Kleban, 2014). Multiple studies have found that older adults with unmet service needs are more susceptible to poor health, higher rates of health service use, and placement in assisted living facilities (Chen & Thompson, 2010; Desai, Lentzner, & Weeks, 2001; Komisar, Feder, & Kasper, 2005). Conversely, the ability to access supportive services has been shown to promote healthy lifestyles in older adults, while reducing health care costs (Felix, Mays, Stewart, Cottoms, & Olson, 2011; Grabowski, 2006; Shapiro, Loh, & Mitchell, 2011).

Perceived Need for Services

A major predictor of the probability of seeking services is the individual's perceived need for services (Chen et al., 2011). Traditionally, perceived service need measures ask respondents to report their level of need for services regardless of whether they are currently receiving services (Calsyn & Winter, 2001). Perceived need for services is associated with illness or aging-related functional disabilities (Chen et al., 2011). Levels of subjective well-being and self-reported health also are strong predictors of perceived need (Calsyn et al., 1998).

The Behavioral Model

The Behavioral Model is one of the most widely applied theoretical models used to predict the need for and utilization of supportive services (Andersen, 1968). Originally developed to explain which conditions predict, facilitate, or impede the utilization of medical services, this model has grown in utility. As a result, its focus has been expanded to predict perceived and unmet service needs (Calsyn et al., 1998; Calsyn & Winter, 2001).

Traditionally, this model has centered around three interrelated categories of predictor variables: (a) pre-disposing, (b) enabling, and (c) health need. *Pre-disposing* variables refer to

demographic and socioeconomic characteristics that exist prior to the onset of service utilization (Andersen & Newman, 2005). *Enabling* variables are related to the logistical aspects of obtaining care and the means that make utilization possible, including income and family support (Andersen & Newman, 2005). *Health need* variables are often the strongest predictors of service need. The Behavioral Model breaks health needs into two categories: perceived and evaluated. Perceived need refers to self-reported health problems. In contrast, evaluated need refers to symptoms observed through professional diagnoses (Andersen & Newman, 2005).

The Behavioral Model and Older Adults

Several studies have applied the Behavioral Model when examining the service needs of older adults (Beverly et al., 2005; Bookwala et al., 2004; Calsyn & Roades, 1994; Chen & Thompson, 2010; Sun, 2011). The work of Calsyn et al. (1998) and Calsyn and Winter (2001) in particular relates well to the current study in its ability to identify multiple variables that predicted service need, most notably health factors, race, and income. These studies also found that health factors were the strongest predictors of perceived service need.

The works of Park et al. (2010) and Mattson (2011) serve as examples of how the Behavioral Model can be used to predict the needs for supportive services among older adults. These studies also examine the model's potential for constructing a client profile and the challenges of delivering services in nonmetropolitan settings. In their study of the self-reported difficulties of rural older adults in Alabama, Park et al. (2010) examined the differences between Whites and African Americans. The study found that African Americans were more likely to report difficulties in accessing services. However, race alone was not the only predictor of self-reported difficulties, as factors such as age, gender, income, and depression also were found to be predictors of self-reported difficulties in accessing services (Park et al., 2010).

Mattson (2011) utilized the Behavioral Model to look at how pre-disposing characteristics could be used to predict the transportation needs of older adults in North Dakota, particularly as it related to physical limitations, mobility, and the use of public transportation in rural and small urban areas. Findings from this study indicated that older adults with physical disabilities expressed difficulty with public transportation. The study also found that women were more likely to utilize public transportation services than men (Mattson, 2011).

The Present Study

The goal of this study was to measure the level of perceived need for supportive services among older adults in Mississippi. Through the use of needs assessment data, this study applied the Behavioral Model (Andersen, 1995; Andersen & Newman, 2005) to explain which of the model's three traditional factors (pre-disposing, enabling, and health need) best predicted the perceived need for supportive services among survey participants. Keeping the major features of the Behavioral Model in mind, the following hypotheses were proposed:

1) Increases in age will be associated with increases in perceived need for supportive services.
2) Older adults from minority groups will express higher levels of perceived need for supportive services.
3) Higher levels of self-reported physical health problems will be associated with higher levels of perceived need for supportive services.
4) Higher levels of subjective well-being will be associated with lower levels of perceived need for supportive services.

Methodology

Data Source

Data were collected through a telephone survey of Mississippi adults aged 55 and older. This study included survey participants who were at least 60 years old at the time of the survey, which is typically the minimum age to be considered eligible for supportive services (Sonnega, Robinson, & Levy, 2017). Survey items focused on a variety of topics, including health status, daily activities, quality of life issues, and service need. The service lists presented to participants were constructed through consultation with the state's department of aging services.

Study Sample

The sample was drawn and stratified based on the organization of the state's 10 Area Agencies on Aging. Overall, 1,025 surveys were completed, with at least 100 completed surveys coming from each of the state's 10 Area Agencies on Aging. Household telephone numbers were selected using random-digit-dialing (RDD) sampling procedures. After drawing the subset of those aged 60 and older, the sample consisted of 838 cases for analysis.

Measures

Service need indices. A 5-point Likert-type rating system measured the need for 27 different supportive services. Higher scores indicated greater need for a particular service. To ensure service items measured a unified construct and to identify patterns in relationships between services, a factor analysis was conducted. Results of the analysis yielded a three-factor solution explaining 50% of the variance for 19 variables. For purposes of this study, a ten-item index was created from the strongest factor, which accounted for 37.28% of the variance, an Eigenvalue of 10.06, and a Cronbach's alpha of .908, indicating high intercorrelation. The ten supportive services used to construct this index included: (a) respite care, (b) ombudsman services, (c) case management, (d) Medicare patrol, (e) insurance counseling, (f) adult day care, (g) congregate meals, (h) support groups, (i) nutrition counseling, and (j) health screening. Scores for each service were added and then divided by 10, resulting in a maximum index score of 5.

Pre-disposing variables. Five pre-disposing variables, (a) age, (b) race, (c) gender, (d) education, and (e) marital status, were used to predict participants' perceived need for services. Table 1 provides descriptive statistics for these variables. Age was treated as a continuous variable. In terms of race, participants were grouped into two categories: White (assigned a code of "0") and African American (assigned a code of "1"). For gender, females were assigned a code of "0," and males were assigned a code of "1." Education was separated into six categories based on the highest level of education completed. Those participants assigned a code of "1" had less than a high school education, while participants assigned a code of "6" had completed a graduate degree. Finally, marital status was grouped into two categories. Those who indicated they were married were assigned a code of "1" while all other marital statuses, which included widowed, divorced, single, separated, and cohabitating, were assigned a code of "0."

Table 1. Descriptive Statistics of Pre-disposing Variables (N = 838)

	n	Percent (%)
Age Group		
60-69	398	47.49
70-79	283	33.77
80 and older	157	18.74
Race		
White	627	74.82
African American	211	25.18
Gender		
Male	222	26.49
Female	616	73.51
Education		
Less than high school	148	17.66
High school/GED	281	33.53
Some college (no degree)	158	18.85
Associate's/technical degree	64	7.64
Bachelor's degree	94	11.22
Graduate degree	93	11.10
Marital Status		
Married	423	50.48
Widowed	250	29.83
Divorced	91	10.86
Single (never married)	70	8.35
Separated	3	0.36
Cohabitating	1	0.12

Enabling variables. Household income, work status, and family proximity served as enabling variables. Table 2 provides descriptive statistics for these variables. Household income was separated into nine categories. Participants assigned a code of "1" reported household incomes of less than $10,000, while participants assigned a code of "9" reported household incomes of over $150,000. Participant work status was grouped into two categories. Those who were currently working were assigned a code of "1." Those who were not working were assigned a code of "0." Family proximity was measured by the number of family members living within 25

miles of the survey participant. Participants with no family members living within 25 miles of their residence were assigned a code of "0," those with 1 to 2 family members living within 25 miles of their residence were assigned a code of "1," those with 3 to 9 family members living within 25 miles of their residence were assigned a code of "2," and those with 10 or more family members living within 25 miles of their residence were assigned a code of "3."

Table 2. Descriptive Statistics of Enabling Variables (N = 838)

	n	**Percent (%)**
Household Income		
Less than $10,000	113	13.48
$10,000 to $20,000	115	13.72
$20,000 to 30,000	340	40.57
$30,000 to 40,000	80	9.55
$40,000 to $50,000	58	6.92
$50,000 to $75,000	71	8.47
$75,000 to $100,000	33	3.94
$100,000 to $150,000	19	2.27
Over $150,000	9	1.07
Work Status		
Currently working	141	16.83
Retired	608	72.55
Unemployed	25	2.98
Disabled (unable to work)	64	7.64
Family Proximity (# within 25 Miles)		
0	93	11.10
1-2	240	28.64
3-9	289	34.49
10 or more	216	25.78

Health need variables. Self-reported health scores, health interference scores, and a Subjective Well-Being Index were used to measure the health needs of participants (see Table 3). Self-reported health was measured through the use of a 5-point Likert-type scale. Higher scores indicated better overall perceived health. Health interference scores also were measured through the use of a 5-point Likert-type scale. In contrast to self-reported health scores, higher scores on this measure indicated that a participant's physical health was more of a detriment to completing everyday tasks, which are often referred to as activities of daily living (Rippon & Steptoe, 2018).

The Subjective Well-Being Index (SWB) was based on a combination of four self-reported measures: life satisfaction, depression, loneliness, and boredom. This measure was developed by the authors, accounting for several traditional indicators of psychological well-being (Bowling, Farquhar, & Browne, 1991) and is consistent with past studies that emphasize the importance of self-assessment in rating well-being (Bowling, 1995). This index had been used in previous work as a dependent variable in studies that focused on aging anxiety (Adams-Price, Turner, & Warren, 2015) and the link between religiosity and well-being (Wilmoth, Adams-Price, Turner, Blaney, & Downey, 2014).

Responses to the life satisfaction question were self-reported on a scale of 1 to 5, with "1" indicating the most negative score possible and "5" indicating the most positive score possible. Responses to the remaining three items also were self-reported on a scale of 1 to 5, but with "1" indicating that the item (e.g., boredom) was not a problem and "5" indicating that it was a major problem; items related to depression, loneliness, and boredom were reverse coded for purposes of analysis, so that a score of "5" indicated the most positive score possible, staying consistent with the coding used for the life satisfaction question. These four items were combined to create the SWB Index. The Cronbach's coefficient alpha for this index (α =.793) indicated high intercorrelation and adequate internal reliability for further analysis.

Table 3. Descriptive Statistics of Health Need and Service Awareness Variables (N = 838)

	n	**Percent (%)**
Self-reported Health		
1 – Poor health	45	5.37
2 – Fair health	75	8.95
3 – Good health	259	30.91
4 – Very good health	289	34.49
5 – Excellent health	170	20.29
Health Interference Scores		
1 – No interference	333	39.74
2 – Little interference	153	18.26
3 – Some interference	180	21.48
4 – Moderate interference	94	11.22
5 – High interference	78	9.31
Subjective Well-Being Index		
1 – Low SWB	0	0.00
2	30	3.58
3	76	9.07
4	154	18.38
5 – High SWB	578	68.97

Results

A three-step hierarchical regression model was used to determine what types of potential clients were most likely to express need for supportive services. With each step, a new group of variables from the Behavioral Model was introduced into the regression model. Step I included the pre-disposing variables only. In subsequent steps, enabling and health need variables were added to the model. Attention was paid to which set of variables made the most significant contribution to the model's explained variance. Table 4 displays the results of this analysis.

Step I introduced the pre-disposing variables into the model. Age (β = -.14, t = -3.94, $p < .001$) and being married (β = -.09, t = -2.38, $p < .05$) were negative predictors of perceived need for personal services. Race was a positive predictor of perceived need for personal services (β = .17, t = 4.79, $p < .001$), indicating that African American participants expressed greater need for personal services than White participants. Step I explained 6.1% of the variance.

Table 4. Hierarchical Regression Analysis Predicting Perceived Need for Personal Services (N = 838)

Variable	Step I			Step II			Step III		
	B	**SE B**	**β**	**B**	**SE B**	**β**	**B**	**SE B**	**β**
Pre-disposing Variables									
Age	-0.01	0.18	-.14***	-0.01	0.18	-.14***	-0.01	0.00	-.09*
Race (1 = African American)	0.21	0.04	.17***	0.20	0.04	.16***	0.22	0.04	.17***
Gender (1 = Male)	0.04	0.04	.04	0.06	0.04	.05	0.03	0.04	.02
Education	-0.01	0.01	-.02	0.00	0.01	.01	0.02	0.01	.05
Marital Status (1 = Married)	-0.10	0.04	-.09*	-.080	0.04	-.07	-0.05	0.04	-.05
Enabling Variables									
Income				-0.02	0.01	-.08	-0.01	0.01	-.03
Work Status (1 = Working)				0.03	0.05	.02	0.07	0.05	.05
Family Proximity				0.03	0.02	.05	0.04	0.02	.06*
Health Need Variables									
Self-Reported Health							-0.02	0.02	-.05
Health Interference Score							0.03	0.02	.08*
Subjective Well-Being Score							-0.15	0.03	-.22***
R squared	0.061			0.066			0.136		
F	10.76***			7.35***			11.84***		
df	(5, 832)			(8, 829)			(11, 826)		

$* p < .05, ** p < .01, *** p < .001.$

In Step II, no enabling variables were found to be statistically significant predictors of perceived need for personal services. In this step, marital status became statistically insignificant, while age (β = -.14, t = -3.67, p < .001) and race (β = .16, t = 4.43, p < .001) remained as statistically significant predictors of perceived need for personal services. In Step II, explained variance increased to 6.6%.

In Step III, health need variables were added. Health interference scores (β = .08, t = 2.00, p < .05) and subjective well-being scores (β = -.22, t = -5.80, p < .001) were both significant predictors of the perceived need for personal services. The pre-disposing variables of age (β = -.09, t = -2.50, p < .05) and race (β = .17, t = 5.03, p < .001) remained statistically significant predictors of perceived need for personal services. Among the enabling variables, family proximity (β = .06, t = 1.97, p < .05) became a significant predictor of perceived need for personal services. In Step III, explained variance increased to 13.6%, a statistically significant change from Step II ($\Delta R2$ = .07, F(11, 826) = 22.31, p < .001).

Discussion

The purpose of this study was to measure the level of perceived need for supportive services among older adults in Mississippi. Using data from a statewide needs assessment, this study applied the Behavioral Model (Andersen, 1995; Andersen & Newman, 2005) to explain which of the model's three traditional factors (pre-disposing, enabling, and health need) best predicted perceived need for supportive services among survey participants.

This study proposed four major hypotheses, which predicted that age, minority status, and physical health problems would be associated with higher levels of perceived service need, while higher levels of subjective well-being would be associated with lower levels of perceived service need. Factor analyses were conducted to group services more appropriately. Finally, a hierarchical regression analysis was applied to determine which Behavioral Model variables were the strongest predictors of perceived service need.

Evaluation of Findings

Age and perceived service need. Older participants showed lower levels of perceived service need, which was in opposition to what was predicted. Since a greater likelihood of disability tends to accompany advanced age, it may seem counterintuitive that increased age was related to decreased service need. One explanation for the lower levels of perceived need may be that this particular sample was relatively healthier than a typical sample of older adults. Indeed, the data related to self-reported health from this sample revealed that, in general, survey participants were likely to report more positive views of their current health situation. Another explanation for lower levels of perceived need may be a lack of service awareness for those in older age groups. Finally, the perceived lack of need for services among survey participants might also be related to the tendency of older adults to be content to stay at home (Wiles, Leibing, Guberman, Reeve,

& Allen, 2012). In other words, some survey participants may have reported lower levels of perceived need because they do not think they should be engaging in community activities or they are content allowing family members to help them meet their basic needs.

Minority status and perceived service need. This study identified African American respondents as being in greater need for services when compared to White respondents, lending support to the study's hypothesis. These findings are consistent with past research. In their study of rural older adults in Alabama, Park et al. (2010) found that African Americans were more likely than Whites to report difficulties in accessing services. Other studies related to the service needs of minority older adults have found that African Americans, who tend to be challenged with poorer health and lower incomes, may need more health-related services (Roff & Klemmack, 2003). Like past research, the current study revealed that race alone does not predict service need (Park et al., 2010). Therefore, it can be argued that a diverse range of factors must be considered when determining to what groups services should be targeted.

Physical health and perceived service need. Problems with physical health (or health interference) was a significant predictor of perceived service need, following its hypothesized direction. This finding provides further evidence that physical health can limit older adults' ability to access personal services. The fact that physical health was one of the strongest predictors of service need in this study supports past research that reported similar results (Calsyn et al., 1998).

Subjective well-being and perceived service need. Subjective well-being was found to be the strongest predictor of perceived service need. This marks the third study involving this study's authors in which this index has played a role in identifying statistically significant relationships with regard to the health and well-being of older adults. This study shows the versatility of this index, as it was the first example of this index being utilized as a predictor variable. The ability of this index to effectively predict perceived need for supportive services lends support to the notion that perceived health needs can act as a predictor of service need (Andersen & Newman, 2005).

Limitations and Directions for Future Research

One limitation of this study was the fact that this study focused only on potential clients. This opens up possibilities for future research that could focus on the challenges faced by service providers, which may elaborate on the difficulties related to providing services to older adults. Such a study also may further illustrate the barriers that potential clients face in accessing services.

A further limitation of this study was that only individuals with land-based telephones participated. Because people are moving away from land-based telephone lines to mobile lines, survey researchers relying on land-based telephones will have more problems getting

representative samples (Blumenthal, 2010; Christian, Keeter, Purcell, & Smith, 2010). However, older adults are less likely than young adults to have eliminated their landlines, so this may be less of a problem for the current study (Blumberg & Luke, 2008).

Practical Implications

This study has two major practical implications. First, by assessing the level of perceived need for supportive services, the Behavioral Model could be utilized to construct a client profile by identifying which groups had higher levels of need for supportive services. Such a profile could help service providers allocate limited resources more efficiently. Second, a study of this nature, in a state like Mississippi, can illustrate some of the common service needs of older adults in more sparsely populated areas with a significant minority population. Indeed, past research has demonstrated that older adults in these areas typically lack service access and awareness and also are in greater need of services (Li, 2006; Sun, 2011).

This study yielded several findings that are consistent with previous research. In particular, this study provided further evidence that multiple factors can predict service need. The results of this study also showed support for three of the four major hypotheses. Ultimately, this study provided further evidence of the utility of needs assessment survey instruments for purposes of conducting both applied and basic research. From an applied research perspective, results of this study provide a basis for the argument that identifying factors associated with perceived need for supportive services among older adults can assist policymakers, service providers, and program planners in both the provision of supportive services and the development and planning of services for older adults.

From a basic research perspective, by assessing the level of need for supportive services, this study identified specific groups with higher levels of need for these services. In this case, the application of the Behavioral Model helped construct a potential client profile by predicting which older adult groups in Mississippi reported the highest levels of need for supportive services (i.e., those from minority groups and individuals reporting greater difficulty with their physical health). However, in looking at just one state, it is important to consider matters of both internal and external validity. Indeed, there may be other variables that can be used in the future to strengthen the current analysis. There is also the issue of whether this analysis would have yielded similar results if applied to a different sample of older adults in another region. Nevertheless, this study serves as an example of how future needs assessment projects can serve as an aid to service providers in how they target and tailor services for older adults.

References

Adams-Price, C. E., Turner, J. J., & Warren, S. T. (2015). Comparing the future concerns of early wave baby boomers with the concerns of young-old adults. *Journal of Applied Gerontology, 34*(6), 691–711. doi:10.1177/0733464813493135

Administration for Community Living. (2018). *2017 profile of older Americans*. Retrieved from https://acl.gov/sites/default/files/Aging%20and%20Disability%20in%20America/2017OlderAmericansProfile.pdf

Andersen, R. M. (1968). *A behavioral model of families' use of health services* [Research Series No. 25]. Chicago, IL: Center for Health Administration Studies, University of Chicago.

Andersen, R. M. (1995). Revisiting the behavioral model and access to medical care: Does it matter? *Journal of Health and Social Behavior, 36*(1), 1–10. doi:10.2307/2137284

Andersen, R. M., & Newman, J. F. (2005). Societal and individual determinants of medical care utilization in the United States. *The Milbank Quarterly*, *83*(4), 1–28. doi:10.1111/j.1468-0009.2005.00428.x

Beverly, C. J., Mcatee, R., Costello, J., Chernoff, R., & Casteel, J. (2005). Needs assessment of rural communities: A focus on older adults. *Journal of Community Health, 30*(3), 197–212. doi:10.1007/s10900-004-1958-y

Blumberg, S. J., & Luke, J. V. (2008, May 13). *Wireless substitution: Early release of estimates from the National Health Interview Survey, July-December 2007*. Atlanta, GA: Centers for Disease Control and Prevention, National Center for Health Statistics. Retrieved from https://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless200805.pdf

Blumenthal, M. (2010, May 26). Cell phones and coverage bias. *Huffington Post*. Retrieved from http://www.huffingtonpost.com

Bookwala, J., Zdaniuk, B., Burton, L., Lind, B., Jackson, S., & Schulz, R. (2004). Concurrent and long-term predictors of older adult's use of community-based long-term care services: The Caregiver Health Effects study. *Journal of Aging and Health, 16*(1), 88–115. doi:10.1177/0898264303260448

Bowling, A. (1995). What things are important in peoples' lives? A survey of the public's judgements to inform scales of health related quality of life. *Social Science and Medicine, 41*(10), 1447–1462. doi:10.1016/0277-9536(95)00113-L

Bowling, A., Farquhar, M., & Browne, P. (1991). Life satisfaction and associations with social network and support variables in three samples of elderly people. *International Journal of Geriatric Psychiatry, 6*(8), 549–566. doi:10.1002/gps.930060803

Bradley, E. H., McGraw, S. A., Curry, L., Buckser, A., King, K. L., Kasl, S. V., & Andersen, R. (2002). Expanding the Andersen model: The role of psychosocial factors in long-term care use. *Health Services Research, 37*(5), 1221–1242. doi:10.1111/hesr.2002.37

Calsyn, R. J., & Roades, L. A. (1994). Predicting perceived service need, service awareness, and service utilization. *Journal of Gerontological Social Work*, *21*(1-2), 59–76. doi:10.1300/j083V21N01_05

Calsyn, R. J., Roades, L. A., & Klinkenberg, W. D. (1998). Using theory to design needs assessment studies of the elderly. *Evaluation and Program Planning, 21*(3), 277–286. doi:10.1016/S0149-7189(98)00017-2

Calsyn, R. J., & Winter, J. P. (2001). Predicting four types of service needs in older adults. *Evaluation and Program Planning, 24*(2), 157–166. doi:10.1016/S0149-7189(01)00006-4

Chen, Y.-M., & Berkowitz, B. (2012). Older adults' home- and community-based care service use and residential transitions: A longitudinal study. *BMC Geriatrics, 12*, Article 44. doi:10.1186/1471-2318-12-44

Chen, Y.-M., & Thompson, E. A. (2010). Understanding factors that influence success of home- and community-based services in keeping older adults in community settings. *Journal of Aging and Health, 22*(3), 267–291. doi:10.1177/0898264309356593

Chen, Y.-M., Thompson, E. A., Berkowitz, B., Young, H. M., & Ward, D. (2011). Factors and home- and community-based services (HCBS) that predict older adults' residential transitions. *Journal of Service Science and Management*, *4*(3), 368–379. doi:10.4236/jssm.2011.43043

Christian, L., Keeter, S., Purcell, K., & Smith, A. (2010, May 20). *Assessing the cell phone challenge*. Retrieved from https://www.pewresearch.org/2010/05/20/assessing-the-cell-phone-challenge/

Clark, D. O. (1997). U.S. trends in disability and institutionalization among older blacks and whites. *American Journal of Public Health, 87*(3), 438–440. doi:10.2105/AJPH.87.3.438

Cromartie, J., & Nelson, P. (2009). *Baby boom migration and its impact on rural America* [Economic Research Report No. ERR-79]. U.S. Washington, DC: U.S. Department of Agriculture, Economic Research Service. Retrieved from https://www.ers.usda.gov/webdocs/publications/46218/9346_err79_1_.pdf?v=41056

Desai, M. M., Lentzner, H. R., & Weeks, J. D. (2001). Unmet need for personal assistance with activities of daily living among older adults. *The Gerontologist*, *41*(1), 82–88. doi:10.1093/geront/41.1.82

Eckert, J. K., Morgan, L. A., & Swamy, N. (2004). Preferences for receipt of care among community-dwelling adults. *Journal of Aging and Social Policy, 16*(2), 49–65. doi:10.1300/J031v16n02_04

Felix, H. C., Mays, G. P., Stewart, M. K., Cottoms, N., & Olson, M. (2011). Medicaid savings resulted when community health workers matched those with needs to home and community care. *Health Affairs, 30*(7), 1366–1374. doi:10.1377/hlthaff.2011.0150

Ferris, R. E., Glicksman, A., & Kleban, M. H. (2014). Environmental predictors of unmet home- and community-based service needs of older adults. *Journal of Applied Gerontology*, *35*(2), 179–208. doi:10.1177/0733464814525504

Grabowski, D. C. (2006). The cost-effectiveness of noninstitutional long-term care services: Review and synthesis of the most recent evidence. *Medical Care Research and Review*, *63*(1), 3–28. doi:10.1177/1077558705283120

Jones, C., Kandel, W., & Parker, T. (2007). *Population dynamics are changing the profile of rural areas*. Washington, DC: U.S. Department of Agriculture, Economic Research Service. Retrieved from https://www.ers.usda.gov/amber-waves/2007/april/population-dynamics-are-changing-the-profile-of-rural-areas

Kassner, E. (2011). *Home and community-based long-term services and supports for older people* [Factsheet 222]. Washington, DC: AARP Public Policy Institute. Retrieved from https://assets.aarp.org/rgcenter/ppi/ltc/fs222-health.pdf

Komisar, H. L., Feder, J., & Kasper, J. D. (2005). Unmet long-term care needs: An analysis of Medicare-Medicaid dual eligibles. *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*, *42*, 171–182. doi:10.5034/inquiryjrnl_42.2.171

Li, H. (2006). Rural older adults' access barriers to in-home and community-based services. *Social Work Research, 30*(2), 109–118. doi:10.1093/swr/30.2.109

Mattson, J. W. (2011). Aging and mobility in rural and small urban areas: A survey of North Dakota. *Journal of Applied Gerontology, 30*(6), 700–718. doi:10.1177/0733464811378107

Moody-Ayers, S. Y., Mehta, K. M., Lindquist, K., Sands, L., & Covinsky, K. E. (2005). Black-white disparities in functional decline in older persons: The role of cognitive function. *Journals of Gerontology: Series A*, *60*(7), 933–939. doi:10.1093/gerona/60.7.933

Park, N. S., Roff, L. L., Sun, F., Parker, M. W., Klemmack, D. L., Sawyer, P., & Allman, R. M. (2010). Transportation difficulty of black and white rural older adults. *Journal of Applied Gerontology*, *29*(1), 70–88. doi:10.1177/0733464809335597

Rippon, I., & Steptoe, A. (2018). Is the relationship between subjective age, depressive symptoms and activities of daily living bidirectional? *Social Science and Medicine, 214,* 41–48. doi:10.1016/j.socscimed.2018.08.013

Roff, L. L., & Klemmack, D. L. (2003). Chapter 2: The demographics of aging in rural perspective. *Journal of Gerontological Social Work*, *41*(1-2), 19–35. doi:10.1300/j083v41n01_02

Schulenberg, N. E., & Coward, R. T. (1998). Residential differences in attitudes about barriers to using community-based services among older adults. *Journal of Rural Health*, *14*(4), 295–304. doi:10.1111/j.1748-0361.1998.tb00635.x

Seeman, T. E., Merkin, S. S., Crimmins, E. M., & Karlamangla, A. S. (2010). Disability trends among older adults: National Health and Nutrition Examination surveys, 1988-1994 and 1999-2004. *American Journal of Public Health*, *100*(1), 100–107. doi:10.2105/AJPH.2008.157388

Shapiro, A., Loh, C.-P., & Mitchell, G., II. (2011). Medicaid cost-savings of home- and community-based service programs for older persons in Florida. *Journal of Applied Gerontology*, *30*(1), 3–21. doi:10.1177/0733464809348499

Siegler, E. L., Lama, S. D., Knight, M. G., Laureano, E., & Reid, M. C. (2015) Community-
    based supports and services for older adults: A primer for clinicians. *Journal of
    Geriatrics, 2015*, Article 678624. Retrieved from
    https://www.hindawi.com/journals/jger/2015/678625/

Sonnega, A., Robinson, K., & Levy, H. (2017). Home and community-based service and other
    senior service use: Prevalence and characteristics in a national sample. *Home Health
    Care Services Quarterly, 36*(1), 16–28. doi:10.1080/01621424.2016.1268552

Sun, F. (2011). Community service use by older adults: The roles of sociocultural factors in
    rural-urban differences. *Journal of Social Service Research, 37*(2), 124–135.
    doi:10.1080/01488376.2011.547446

U.S. Department of Health and Human Services. (2017). *Home & community based services*.
    Retrieved from https://www.medicaid.gov/medicaid/hcbs/

Vincent, G. K., & Velkoff, V. A. (2010). *The next four decades: The older population in the
    United States: 2010 to 2050* [Current Population Reports, P25-1138]. Washington, DC:
    U.S. Census Bureau. Retrieved from https://www.census.gov/prod/2010pubs/p25-
    1138.pdf

Wiles, J. L., Leibing, A., Guberman, N., Reeve, J., & Allen, R. E. S. (2012). The meaning of
    "aging in place" to older people. *The Gerontologist, 52*(3), 357–366.
    doi:10.1093/geront/gnr098

Wilmoth, J. D., Adams-Price, C. E., Turner, J. J., Blaney, A. D., & Downey, L. (2014).
    Examining social connections as a link between religious participation and well-being
     among older adults. *Journal of Religion, Spirituality & Aging*, 26(2-3), 259–278.
    doi:10.1080/15528030.2013.867423

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