

Dementia, Mobility, and Transportation

An Annotated Bibliography

October 2016

Introduction

The following dementia-specific transportation (DST) tools, websites, documents, studies, programs and more are organized into the following seven categories:

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(Note that some resources fit into multiple categories but are placed in the one with the best fit.)

Methodology

A description of the search methods utilized to compile this annotated bibliography.

Multiple platforms and search terms were used to prepare this annotated bibliography. The aim was not to provide comprehensive results but rather to generate a selective bibliography of research, guidelines, and tools that would be useful for people advocating for dementia-capable mobility.

First, a Google search with the terms “mobility and (dementia or Alzheimer’s)” produced results both about the physical nature of mobility itself as well as pieces on tracking technology used to promote the safety of persons with dementia and “support outdoor mobility.” Searches for “dementia friendly transportation,” “dementia specific transportation,” “dementia transportation programs,” and “dementia transportation” produced many items included in this bibliography.

A Social Science Research Network (SSRN) search of “dementia, transportation” produced one result.

A PubMed search of “dementia transportation” produced the most specific and relevant results, which are found in all seven categories of this bibliography.

For Social Isolation section, articles were sourced by PubMed and Google searches. PubMed search of “mobility, loneliness, dementia” yielded four results; “dementia, engagement, transportation” provided another result; and “aging, isolation, transportation” offered 28 results. The Google search string was “dementia, social isolation, transportation, caregivers.”

For Health Equity section, articles were sourced by PubMed search and Google searches. PubMed search of various combinations of “health equity, inequity, dementia, Alzheimer’s, aging, transportation” and a Google search using terms “health equity, dementia, aging, transportation” produced many results.

Contacts at the American Public Health Association (APHA) and Easter Seals suggested a number of the public health resources.

Dementia and Driving Safety

The following articles, websites, resource guides, and other online materials illustrate the links between driving and dementia. The resources provide information and advice on when persons with dementia should stop driving and explore other connections between dementia, mobility, and transportation.

Adler G, Silverstein NM. "At-risk drivers with Alzheimer's disease: recognition, response, and referral," (2008). *Traffic Inj Prev*; Aug;9(4):299-303. doi: 10.1080/15389580801895186. Review.

<http://www.ncbi.nlm.nih.gov/pubmed/18696385>

Excerpt: Drivers with Alzheimer's disease have unique impairments that should be recognized and responded to early on in the disease process, with sensitivity and respect for continued mobility. As the disease progresses and they must stop driving, former drivers and their families could benefit from resource referrals that provide information about transportation alternatives and support services in their communities.

Alzheimer's Association, "Dementia & Driving Resource Center," Website. Accessed March 2016.

<http://www.alz.org/care/alzheimers-dementia-and-driving.asp>

There are a number of resources available in this web-based center, including advice on having the conversation about when to stop driving, signs of unsafe driving, planning for future transportation needs, and a driving assessment, among others.

Amjad, Halima, et al. "Potentially Unsafe Activities and Living Conditions of Older Adults with Dementia," (2016). *Journal of the American Geriatrics Society*. June 2, early view. doi:

10.1111/jgs.14164. <http://onlinelibrary.wiley.com/doi/10.1111/jgs.14164/full>

Excerpt: The prevalence of driving (22.9%), preparing hot meals (31.0%), managing finances (21.9%), managing medications (36.6%), and attending doctor visits alone (20.6%) was lowest in persons with probable dementia; however, but in persons with probable dementia, the covariate-adjusted rates of driving, preparing hot meals, managing finances, managing medications, and attending doctor visits alone were significantly higher in those without reported dementia diagnosis than in those with reported diagnosis (all odds ratios ≥ 2.00 , all $P < .01$). Conclusion: Older adults with probable dementia who are not aware of a dementia diagnosis are more likely to report engaging in potentially unsafe behaviors. Understanding the prevalence of potentially unsafe activities and living conditions can help clinicians focus safety screening and counseling in older adults with diagnosed or suspected dementia.

Eberhard JW. "Safe mobility for people with Alzheimer disease: a commentary," (1997). *Alzheimer Dis Assoc Disord*. Jun;11 Suppl 1:76-7. <http://www.ncbi.nlm.nih.gov/pubmed/9194974>

Family Caregiver Alliance, "Dementia and Driving," Online Article/Fact Sheet. Accessed March 2016.

<https://www.caregiver.org/dementia-driving>

An overview of behavioral signs that driving may no longer be safe with a list of alternative transportation options and advice for individuals and families.

- **Family and Friends.** Family members, friends, and neighbors can offer to drive the individual to social engagements and appointments. Consider making a list with the names, phone numbers, and times of availability of those willing to provide transportation.
- **Public Transportation.** For individuals in the early stage of dementia, public transportation may be a good alternative to driving. It works best for those who are already familiar with the public transportation system in their area. Persons in the later stages of dementia may not be able to

figure out routes and schedules.

- **Taxis.** For individuals in the mild (early) and moderate (middle) stages of dementia who do not have behavior problems, taxis can be a good option if someone meets the individual at both ends of the taxi ride. You may be able to set up a payment account with the taxi company so that the individual with dementia does not have to handle money.
- **Senior and Special Needs Transportation Services.** The Yellow Pages of many telephone books have a special section in the front with the names and addresses of various service organizations. Look under *transportation* or *community services* for the names of agencies that provide transportation for special needs.

Ferrah N., Obieta A., Ibrahim J., Odell M., Yates M., Loff B. (2016). Inequity in health: older rural driving and dementia. *Inj Prev* 22(4): 292-6. doi: 10.1136/injuryprev-2015-041601.

Excerpt: This paper describes the difficulties inherent in addressing the question of when and in what circumstances a diagnosis of dementia might render a person unfit to drive and focuses on those who live in rural areas. We examine the consequences of dementia diagnosis on driving, driver testing requirements and licensing procedures, and the impacts of driving cessation. We then discuss how living in rural areas may alter the level of risk of drivers with dementia and practical implications for licensing policies.

The Hartford, “At the Crossroads: Family Conversations about Alzheimer’s Disease, Dementia & Driving,” Guidebook. Accessed March 2016.

<http://hartfordauto.thehartford.com/UI/Downloads/Crossroads.pdf>

Available for download in PDF format, this guidebook helps families and individuals cope with the decision to stop driving due to a dementia diagnosis.

The Hartford. “Understanding Dementia and Driving,” Online Article. Accessed March 2016. <http://www.thehartford.com/alzheimers>

The MIT Age Lab teamed up with the Hartford Center for Mature Market Excellence to produce this guide to what the changes of Alzheimer’s/dementia mean for diagnosed drivers as well as its impact on family relationships. At the end of the article are links to read more about tips, tools, and advice about how to have positive and productive conversations about the subject, and how to transition from driver to passenger.

LA 4 Seniors.com (2001), “Dangerous Driving and Seniors,” Online Article. Accessed March 2016.

<http://www.la4seniors.com/driving.htm>

Dementia is referenced in this article that presents a broad presentation about the safety of senior drivers. It also outlines the physical and mental changes of aging that make driving less safe. The discussion of ethical and moral concerns recognizes the trauma faced by those who lose the right to drive or must consider giving up driving for the safety of others.

Olsen K, Taylor JP, Thomas A. “Mild cognitive impairment: safe to drive?” (2014).

***Maturitas*; Jun;78(2):82-5. doi: 10.1016/j.maturitas.2014.03.004. Epub 2014 Mar 22. Review.**

<http://www.ncbi.nlm.nih.gov/pubmed/24709165>

Excerpt: This editorial examines current official guidance available to the clinician and problems with existing assessment as well as the current position of research specifically into MCI [mild cognitive impairment] and driving, and considers future direction for research in this field.

Perkinson MA, Berg-Weger ML, Carr DB, Meuser TM, Palmer JL, et al.

“Driving and dementia of the Alzheimer type: beliefs and cessation strategies among stakeholders,” (2005). *Gerontologist*; Oct;45(5):676-85. <http://www.ncbi.nlm.nih.gov/pubmed/16199403>

Excerpt: Education of families, professionals, and transportation specialists is needed to understand the influence of AD [Alzheimer’s disease] severity on driving abilities, identify problem driving behaviors, make appropriate referrals of unsafe drivers, and access available resources for drivers with AD and those most responsible for their safety. Recommendations: “Termination of driving privileges also may have serious consequences for older adults (Foley et al., 2002) and violate individual autonomy (Morris, 1994). A recent study indicated that drivers with AD were taken to fewer driving destinations after driving retirement, even when there was a licensed driver available in the household (Taylor & Tripodes, 2001). More research is needed on the process of finding feasible alternative methods of transportation and maintaining older adults’ connections with the community once driving is terminated. Similarly, the impact of driving cessation on psychological and physical health has not been well studied and also warrants further research. Just as clinicians inquire about diet, exercise, or emotional well-being when treating patients, they should be aware that driving and transportation issues significantly impact access to sources of nutrition, opportunities to engage in physical activity, and opportunities for social engagement, which are critical to overall health in late life. . . . An increase in depressive symptoms has been associated with driving cessation in older adults (Marottoli et al., 1997).”

Dementia-Specific Transportation Research Documenting Burden of Reduced Mobility on Persons with Dementia and Caregivers

Allman RM, Baker PS, Maisiak RM, Sims RV, Roseman JM. "Racial similarities and differences in predictors of mobility change over eighteen months," (2004). *J Gen Intern Med*; 19(11):1118-26. <http://www.ncbi.nlm.nih.gov/pubmed/15566441>

Excerpt: There are significant disparities in baseline mobility between older African Americans and whites, but declines were more likely in whites. Improving transportation access and diabetes care may be important targets for enhancing mobility and reducing racial disparities in mobility.

Berndt A, Clark M, May E. "Dementia severity and on-road assessment: briefly revisited," (2008). *Australas J Ageing*; 27(3):157-60. doi: 10.1111/j.1741-6612.2008.00300.x. <http://www.ncbi.nlm.nih.gov/pubmed/18713176>

Excerpt: This study supports previous recommendations of cessation or continued driving for those in outer margins of dementia severity. Use of severity levels for driving recommendations, in the absence of on-road assessment, risks either continued unsafe driving or premature cessation for individual drivers with very mild or mild dementia.

Brown LB, Ott BR. "Driving and dementia: a review of the literature," (2004). *J Geriatr Psychiatry Neurol*; 17(4):232-40. Review. <http://www.ncbi.nlm.nih.gov/pubmed/15533995>

Excerpt: Based on a review of the literature, several factors were identified that may be useful in differentiating between people with dementia who presently remain safe drivers from those who have progressed to impaired driving. These factors include disease duration and severity, sex, patient self-assessment, family assessment, neuropsychological measures, findings on road evaluations, and driving simulator testing.

Cox CB. "Dementia and Social Work Practice: Research and Interventions," editor - 2007 – Springer Social Science. <https://books.google.com/books?isbn=0826101089>

There is a chapter on dementia-friendly transportation options. Counseling is recommended in difficult cases of driving cessation as it relates to independence and autonomy.

Carr DB, Ott BR. "The older adult driver with cognitive impairment: 'It's a very frustrating life,'" (2010). *JAMA*; 303(16):1632-41. doi: 10.1001/jama.2010.481. Erratum in: *JAMA*. 2010 Jun 16;303(23):2357. <http://www.ncbi.nlm.nih.gov/pubmed/20424254>

Excerpt: This article describes the challenges of driving with cognitive impairment for both the patient and caregiver, summarizes the literature on dementia and driving, discusses evidence-based assessment of fitness to drive, and addresses important ethical and legal issues. It also describes the role of physician assessment, referral for neuropsychological testing, screening for functional ability, tools to assess dementia severity, driving evaluation clinics, and Department of Motor Vehicles referrals that may assist with evaluation. Lastly, it discusses mobility counseling (e.g., exploration of transportation alternatives), because health professionals need to address this important issue for older adults who lose the ability to drive. The application of a comprehensive, interdisciplinary approach to the older driver with cognitive impairment will have the best opportunity to enhance patients' social connectedness and quality of life while meeting their psychological and medical needs and maintaining personal and public safety. "Driving cessation has been associated with a decrease in social integration, decreased out-of-home activities, an increase in depressive symptoms in the elderly, anxiety symptoms, and an increased risk of nursing home placement. Planning for driving retirement should occur for all

older adults before their mobility situation becomes urgent. Referral to a social worker may assist with identifying community transportation needs.”

Dauphinot V, Delphin-Combe F, Mouchoux C, Dorey A, Bathsavanis A, et al. “Risk factors of caregiver burden among patients with Alzheimer's disease or related disorders: a cross-sectional study,” (2015). *J Alzheimers Dis*; 44(3):907-16. doi: 10.3233/JAD-142337.

<http://www.ncbi.nlm.nih.gov/pubmed/25374109>

Excerpt: In a population of 548 patients, IADL [independent activities of daily living], neuropsychiatric inventory (NPI), antidepressant drugs, and MMSE [Mini-Mental State Examination] were found to be related to Zarit Burden Index (ZBI), while diagnosed etiology and disease stage were not significant: ZBI decreased by 0.34 point for every unit of IADL, and by 0.03 point for every unit of MMSE; ZBI increased by 0.03 point for every unit of NPI. From the IADL scale, the ability to handle finances, food preparation, responsibility to take medications, mode of transportation, and ability to use the telephone increased the ZBI.

Devlin A, McGillivray J, Charlton J, Lowndes G, Etienne V. “Investigating driving behaviour of older drivers with mild cognitive impairment using a portable driving simulator,” (2012). *Accid Anal Prev*; 49:300-7. doi: 10.1016/j.aap.2012.02.022. Epub 2012 Mar 28.

<http://www.ncbi.nlm.nih.gov/pubmed/23036410>

Excerpt: The specific performance measures included: approach speed, number of brake applications on approach to the intersection (either excessive or minimal), failure to comply with stop signs, and slower braking response times on approach to a critical light change. MCI [mild cognitive impairment] in our sample performed more poorly than controls across a number of variables. However, because the trends failed to reach statistical significance, it will be important to replicate the study using a larger sample to qualify whether the results can be generalised to the broader population.

Duchek JM, Hunt L, Ball K, Buckles V, Morris JC. “Attention and driving performance in Alzheimer's disease,” (1998). *J Gerontol B Psychol Sci Soc Sci*; 53(2):P130-41.

<http://www.ncbi.nlm.nih.gov/pubmed/9520930>

Excerpt: Subjects were administered an on-road driving assessment and three visual attention tasks (visual search, visual monitoring, and useful field of view). The results indicated that error rate and reaction time during visual search were the best predictors of driving performance. Furthermore, visual search performance was predictive of driving performance above and beyond simple dementia severity and several traditional psychometric tests. The results suggest that general cognitive status may be useful for identifying individuals "at risk" for unsafe driving. However, measures of selective attention may serve to better differentiate safe versus unsafe drivers, especially in the dementia of the Alzheimer type population.

Eby DW, Silverstein NM, Molnar LJ, LeBlanc D, Adler G. “Driving behaviors in early stage dementia: a study using in-vehicle technology,” (2012). *Accid Anal Prev*; 49:330-7. doi: 10.1016/j.aap.2011.11.021. Epub 2011 Dec 20. <http://www.ncbi.nlm.nih.gov/pubmed/23036413>

Excerpt: Participants had their vehicles instrumented with a suite of sensors and a data acquisition system, and drove 1-2 months as they would under normal circumstances. Data from the in-vehicle instrumentation were reduced and analyzed, using a set of algorithms/heuristics developed by the research team. Data from the early stage dementia group were compared to similar data from an existing dataset of 26 older drivers without dementia. The early stage dementia group was found to have significantly restricted driving space relative to the comparison group. At the same time, the early stage dementia group (which had been previously cleared by an occupational therapist as safe to drive)

drove as safely as the comparison group. Few safety-related behavioral errors were found for either group. Wayfinding problems were rare among both groups, but the early stage dementia group was significantly more likely to get lost.

Farina E, Fioravanti R, Pignatti R, Alberoni M, Mantovani F, et al. "Functional living skills assessment: a standardized measure of high-order activities of daily living in patients with dementia," (2010). *Eur J Phys Rehabil Med*; 46(1):73-80. <http://www.ncbi.nlm.nih.gov/pubmed/20332730>

Excerpt: FLSA [functional living skills assessment] was conceived to detect functional impairment in very mild to moderate patients and to pick up functional modification due to intervention. Eight areas of interest are evaluated (Resources, Consumer Skills, Public Transportation, Time Management, Money Management, Leisure, Telephone Skills, Self-Care and Health). Subjects included 54 patients with dementia and 36 normal controls.

Hopkins RW, Kilik L, Day DJ, Rows C, Tseng H. "Driving and dementia in Ontario: a quantitative assessment of the problem," (2004). *Can J Psychiatry*; 49(7):434-8.

<http://www.ncbi.nlm.nih.gov/pubmed/15362247>

Excerpt: Increasingly, the responsibility for identifying drivers with dementia has fallen on the health care system, a role for which it was never designed nor equipped to handle. The risks associated with the dramatically increasing number of drivers with dementia demand a psychometrically sensitive and efficient screening procedure.

Huang HL, Shyu YI, Chen MC, Huang CC, Kuo HC, et al. "Family caregivers' role implementation at different stages of dementia," (2015). *Clin Interv Aging*; 10:135-46. doi: 10.2147/CIA.S60574.

eCollection 2015. <http://www.ncbi.nlm.nih.gov/pubmed/25584022>

Excerpt: Family caregivers' caregiving activities were related to patients' stages of dementia. For patients with mild dementia, caregivers provided more assistance in transportation and housekeeping. In addition to these two activities, family caregivers of patients with moderate dementia provided more assistance with mobility and protection. For patients with severe dementia, family caregivers provided more assistance with care, mobility and protection, transportation, and housekeeping. "Caregivers of patients with mild dementia provided more assistance in transportation than caregivers of patients with moderate and severe dementia. This difference might be due to persons with more advanced dementia being more difficult to engage in outside activities, easily resulting in frustrating experiences and shame for caregivers." "Our study findings have several implications for clinical practice and policy making. First, different services and interventions need to be designed for families of patients with dementia according to their specific needs at different stages of dementia. For example, community services should be available to help patients with mild dementia with transportation and housekeeping."

Kamiya M, Sakurai T, Ogama N, Maki Y, Toba K. "Factors associated with increased caregivers' burden in several cognitive stages of Alzheimer's disease," (2014). *Geriatr Gerontol Int*;14 Suppl 2:45-55. doi: 10.1111/ggi.12260. <http://www.ncbi.nlm.nih.gov/pubmed/24650065>

Excerpt: ZBI [Zarit Burden Index] score was higher in patients with lower MMSE [Mini-Mental State Examination] score. Multivariate regression analysis identified that higher Dementia Behavior

Disturbance Scale scores were consistently associated with caregiver burden in all patients; symptoms related to memory deficit were related to caregiver burden in amnesic mild cognitive impairment and that differential IADL [instrumental activities of daily living], such as inability to use a telephone, use **transportation** [emphasis added], manage finances, shop, cook and take responsibility for own medication, were related to caregiver burden.

Liddle J, Bennett S, Allen S, Lie DC, Standen B, Pachana NA. "The stages of driving cessation for people with dementia: needs and challenges," (2013). *Int Psychogeriatr*; 25(12):2033-46. doi:

10.1017/S1041610213001464. Epub 2013 Sep 2. <http://www.ncbi.nlm.nih.gov/pubmed/23992286>

Excerpt: The concept of stages of driving cessation for people with dementia could be used to develop new approaches or adapt existing approaches to driving cessation. Interventions would need to be individualized, optimally timed, and address grief, explore realistic alternative community access, and simultaneously maintain key relationships and provide caregiver support. "Moreover, maintaining independence and mobility, in particular the ability to drive, has been acknowledged as important for both health and quality of life in older adults (Oxley and Whelan, 2008)." "The impact of driving cessation is well documented for older people. It has been associated with increase in depressive symptomatology (Windsor et al., 2007), restricted access to social networks and necessary community services, increased burden for family members (Johnson, 2008) as well as the feeling in the older ex-driver that they are a burden (Finlayson and Kaufert, 2002) and earlier institutionalization (Freeman et al., 2006). Retired drivers spend less time in activities outside the home (Marottoli et al., 2000), in valued roles, and with other people (Liddle et al., 2012). Investigation of driving cessation issues for people with dementia has highlighted similar losses (Jett et al., 2005). Strong emotional responses, individual loss of identity and grief, burden for family members, unsafe and unlicensed driving, and restricted life space are concerns associated with driving cessation for people with dementia (Taylor and Tripodes, 2001; Jett et al., 2005; Perkinson et al., 2005; Byszewski et al., 2010). People with dementia are also noted to have restricted options in terms of transportation without driving (Perkinson et al., 2005; Dobbs et al., 2009)." "In addition to safety issues related to driving, family members and health professionals described high-risk activities related to alternative transportation, including unaccompanied trips on public transportation and risky pedestrian behavior."

National Association of States United for Aging and Disabilities. "The changing landscape of aging and disability information and referral/assistance," (2015), Report, Accessed August 2016.

<http://www.nasuad.org/sites/nasuad/files/2015%20I%26RA%20Survey%20Report.pdf>

Excerpt: In the 2015 survey, the top ten most frequently requested services reported by aging and disability I&R/A agencies in rank order are: housing assistance, **transportation**, financial assistance, homemaker services, home delivered meals, health insurance counseling, personal care, benefits analysis/assistance, family caregiver support, and utility assistance. The top ten most frequently identified unmet service needs in rank order are: **transportation**, dental care, financial assistance, housing assistance, home modifications, utility assistance, mental health services, homemaker services, long-term care/long term services and supports, and respite care. Distressingly, the top three most frequently requested services—housing assistance, transportation, and financial assistance—are also among the top most frequent unmet service needs, with **transportation** being the 2nd most requested service, and the number one unmet service need. This finding suggests potentially significant service gaps in addressing the housing, transportation, and financial assistance needs of those served by aging and disability I&R/A networks.

National Center for Mobility Management. "Older Adults," Website/Resource List. Accessed September 2016. <http://nationalcenterformobilitymanagement.org/by-topic-older-adults/>

The National Center for Mobility Management, an initiative of the United We Ride program, is supported through a cooperative agreement with the Federal Transit Administration and brings together the shared expertise of the American Public Transportation Association, the Community Transportation Association of America, and Easter Seals. Their mission is to facilitate communities to adopt transportation strategies and mobility options that empower people to live independently, and advance health, economic vitality, self-sufficiency, and community. This section of their website contains

a wide list of resources addressing mobility and transportation in the aging population. While some resources listed mention dementia or cognitive impairment directly, most address disability in general.

O'Connor ML, Edwards JD, Bannon Y. "Self-rated driving habits among older adults with clinically-defined mild cognitive impairment, clinically-defined dementia, and normal cognition," (2013). *Accid Anal Prev*; 61:197-202. doi: 10.1016/j.aap.2013.05.010. Epub 2013 May.

<http://www.ncbi.nlm.nih.gov/pubmed/23769114>

Excerpt: Thus, older adults with clinically-defined MCI [mild cognitive impairment] as well as those with dementia, avoided some complex driving situations more than cognitively intact adults. However, all diagnostic groups had similar rates of driving cessation and frequency. Future research should examine the safety implications of such findings.

Ouchi Y, Akanuma K, Meguro M, Kasai M, Ishii H, Meguro K. "Impaired instrumental activities of daily living affect conversion from mild cognitive impairment to dementia: the Osaki-Tajiri Project," (2012). *Psychogeriatrics*; 12(1):34-42. doi: 10.1111/j.1479-8301.2011.00386.x.

<http://www.ncbi.nlm.nih.gov/pubmed/22416827>

Excerpt: Persons who converted from mild cognitive impairment to dementia of Alzheimer type diagnosis had lower baseline scores on the 'bed making' and '**mode of transportation**' items compared with the non-converters; the former item was significant after a stepwise logistic regression analysis that excluded age and Mini-Mental State Examination effects. In gender analysis, female converters had lower baseline scores on the 'bed making' and 'cleaning' items. For male participants, no items were found to have such an effect.

Razani J, Kakos B, Orieta-Barbalace C, Wong JT, Casas R, et al. "Predicting caregiver burden from daily functional abilities of patients with mild dementia," (2007). *J Am Geriatr Soc*; 55(9):1415-20.

<http://www.ncbi.nlm.nih.gov/pubmed/17767684>

Excerpt: Of the seven tasks assessed using the DAFS (Direct Assessment of Functional Status), impairments in orientation, communication, financial, and **transportation** skills in patients were associated with greater time-dependence and developmental burden and greater feelings of hostility in caregivers. *Time-dependence* is the perceived burden due to restrictions on a caregiver's time imposed by the demands of caring for the patient. *Developmental burden* includes perceived feelings by the caregiver that they are "out of sync" with their peers or feelings of missing out on life. Impairment in financial skills in patients was the strongest predictor of time-dependence burden and hostility in caregivers, whereas impairment in patient transportation skills was the best predictor of developmental burden.

Rowe MA, Glover JC. "Antecedents, descriptions and consequences of wandering in cognitively-impaired adults and the Safe Return (SR) program," (2001). *Am J Alzheimers Dis Other Demen*; 16(6):344-52. <http://www.ncbi.nlm.nih.gov/pubmed/11765859>

Excerpt: Unattended wandering is a major problem in cognitively impaired (CI) individuals and can result in those individuals becoming lost in the community. The purpose of this study was to identify important characteristics of unattended wandering and important prevention strategies. Data were compiled from registration files and missing and discovery reports collected through the Safe Return (SR) program. These data were analyzed to determine where individuals were found, who found them, from what setting they left, what mode of transportation they used, and what circumstances surrounded the unattended wandering. The study highlights the unpredictable and varied nature of unattended wandering. Recommendations are provided for communities to develop strategies to minimize

unattended wandering and to determine effective methods of locating CI individuals when they become lost.

Siren A, Meng A. "Cognitive screening of older drivers does not produce safety benefits.," (2012). *Accid Anal Prev*; 45:634-8. doi: 10.1016/j.aap.2011.09.032. Epub 2011 Oct 5. <http://www.ncbi.nlm.nih.gov/pubmed/22269551>

Excerpt: The primary data used came from the Danish road accident register. The present study compared the number of fatal accidents before and after the implementation of screening for cognitive impairment. There were two main findings. First, there was no statistically significant difference in the number of older drivers involved in fatal accidents before and after the implementation of the screening process, indicating that the screening had no effect on the safety of older drivers. Second, there was a significant increase in the number of unprotected older (but not younger) road users who were killed between the two periods of observation, suggesting that the screening process produced a modal shift among older persons from driving to unprotected, significantly less safe modes of transportation.

Sun F, Roff LL, Klemmack D, Burgio LD. "The influences of gender and religiousness on Alzheimer disease caregivers' use of informal support and formal services," (2008). *J Aging Health*; 20(8):937-53. doi: 10.1177/0898264308324652. <http://www.ncbi.nlm.nih.gov/pubmed/18936242>

Excerpt: Data were from a sample of 720 family caregivers of AD [Alzheimer's disease] patients who participated in the Resources for Enhancing Alzheimer's Caregiver Health (REACH I) study sites in Birmingham, Boston, Memphis, and Philadelphia. Results. Female caregivers were less likely to use in-home services than males (M = 0.83 vs. M = 1.06, $p < .01$) but reported more use of transportation services (21.6% vs. 12.7%, $p < .01$) and more use of informal support (M = 13.9 vs. M = 10.7, $p < .01$).

Taylor BD, Tripodes S. "The effects of driving cessation on the elderly with dementia and their caregivers," (2001). *Accid Anal Prev*; 33(4):519-28. <http://www.ncbi.nlm.nih.gov/pubmed/11426682>

Excerpt: In addition, some caregivers reported that they frequently missed work or stopped working entirely in order to care for and chauffeur people in the former drivers' household. Overall, these findings reinforce the importance of both developing transportation policies to support the functioning of informal transportation structures and in improving the range of alternative transportation options for those individuals with particular disabilities--like dementia--who are not well served by either informal arrangements or by formal transportation services for the disabled.

Werner S, Auslander GK, Shoval N, Gitlitz T, Landau R, Heinik J. "Caregiving burden and out-of-home mobility of cognitively impaired care-recipients based on GPS tracking," (2012). *Int Psychogeriatr*; 24(11):1836-45. doi: 10.1017/S1041610212001135. Epub 2012 Jul 3. <http://www.ncbi.nlm.nih.gov/pubmed/22874772>

Excerpt: The strongest predictors of burden were care-recipients' lower cognitive status and more time spent walking out-of-home. An interaction was found between cognitive status and time spent walking in relation to caregiver burden. The relationship between walking and burden was stronger among caregivers of care-recipients with dementia than caregivers of care-recipients with no cognitive impairment or mild cognitive impairment. Care-recipients' behavioral and emotional states were also positively related to caregiver burden. The findings stress the importance of maintaining older persons' out-of-home mobility during cognitive decline.

Dementia-Specific Transportation Best Practices and Emerging Innovations

The following articles and websites outline programs, solutions, and best practices in providing transportation alternatives for persons with dementia.

Beverly Foundation & TRIP Program. “The TurnKey Kit: A Web-Based Resource for Volunteer Driver Programs,” (2005). Washington, DC: Beverly Foundation & AAA Foundation for Traffic Safety. Accessed March 2015. <http://www.beverlyfoundation.org/turnkeykit/>

Easter Seals. “Transportation Solutions for Caregivers: A Starting Point,” Resource Guide, Accessed March 2016. http://es.easterseals.com/site/DocServer/Transportation_Solutions.pdf?docID=2081
Excerpt: A nearly 20-page guide to resources in the community for caregivers. As it was created in the early 2000s, some of the resources may be outdated.

Florida Department of Elder Affairs, “Transportation Alternatives for Floridians with Dementia: A Report of Issues, Best Practices and Resources,” May 2008.

[http://elderaffairs.state.fl.us/doea/Evaluation/Transportation Alternatives for Floridians with Dementia.pdf](http://elderaffairs.state.fl.us/doea/Evaluation/Transportation_Alternatives_for_Floridians_with_Dementia.pdf)

Excerpt: At least 20% of people with dementia who live in the community are living alone, with estimates reaching 44% in some geographic regions. Moreover, about 30 to 45% of persons with dementia continue to drive for about three to four years following diagnosis. The concern is not simply that individuals with dementia should or should not drive, but that driving skills predictably worsen.

Foley DJ, Heimovitz HK, Guralnik, MJ. “Dementia, Aging, and Intellectual Disabilities: A Handbook,” Transportation Programs. Chicago, IL: author.

<https://books.google.com/books?id=gGMsTYn3j0IC&pg=PA304&lpg=PA304&dq=dementia+transportation+programs&source=bl&ots=k06zLqduy2&sig=hd53z0rXC2OA0XHNf223gMuaWql&hl=en&sa=X&ei=rWBvVdjjG6PkATA8IGQDQ&ved=0CFMQ6AEwCQ>

Excerpt: This book has a chapter on dementia transportation programs.

Kerschner H, Silverstein NM. “Senior Transportation Abstracts: A Focus on Options,” (2011). *Gerontology Institute Publications*. Paper 61.

http://scholarworks.umb.edu/gerontologyinstitute_pubs/61

Excerpt: This collection of abstracts represents a publication of importance for understanding the needs, challenges, solutions, and/or everyday issues related to senior driver safety, the collection’s primary purpose is to present a holistic approach to transportation options for older adults. Such a collection is timely because, although the practice of providing transportation to older adults is not new, research and preparation of practical informational and technical materials related to older adult transportation service needs and service delivery are quite recent.

Martin AJ, Marottoli R, O’Neill D. “Driving assessment for maintaining mobility and safety in drivers with dementia,” (2013). *Cochrane Database Syst Rev*; 8:CD006222. doi:

10.1002/14651858.CD006222.pub4. Review. <http://www.ncbi.nlm.nih.gov/pubmed/23990315>

Excerpt: In an area with considerable public health impact for drivers with dementia and other road users, the available literature fails to demonstrate the benefit of driver assessment for either preserving transport mobility or reducing motor vehicle accidents. Driving legislation and recommendations from

medical practitioners require further research that addresses these outcomes in order to provide the best outcomes for both drivers with dementia and the general public. The importance of transportation to health and social inclusion of older people, and in particular, older people with dementia, must be recognised. Helpful studies in this regard are [Taylor 2001](#), which showed an unmet shortfall in transport requirement and provision for drivers with dementia who stop driving, and a public health paper by [Freeman 2006](#), which found that after controlling for other factors, driving cessation was associated with a higher risk of entry to nursing home. This relative lack of attention to transportation may also have societal roots, as indicated by a review of newspaper articles on older drivers, whereby the overwhelming emphasis was on safety rather than mobility ([Martin 2005](#)).

National Highway Traffic Safety Administration, “Community Mobility and Dementia” Literature Review, [Accessed Aug 31, 2016.

<http://www.nhtsa.gov/people/injury/olddrive/CommMobilityDementia/index.htm>

Excerpt:

The focus of concern surrounding transportation for those with dementia has until recently been on driving cessation. However, while it is important to be aware of issues related to driver screening and assessment, equal attention should be devoted to cessation counseling and helping the driver move to the passenger seat. Currently, alternative modes of transportation are not very “elder-friendly,” let alone “dementia-friendly.” This paper reviews the available literature on community mobility and dementia, beginning with driving and concluding with community-mobility options. The document provides a starting point for addressing the policy, program, and research issues implicit in finding ways to meet the community mobility needs of a population for whom driving is no longer safe..

National Transportation Resources www.alz.org/documents_custom/national_transportation.doc

[Via the Alzheimer’s Association Website]

This four-page list of national resources will help you drill down and find transportation alternatives.

Wheatley CJ, Carr DB, Marottoli RA; National Highway Traffic Safety Administration; American Occupational Therapy Association; Association for Driver Rehabilitation Specialists. “Consensus statements on driving for persons with dementia,” (2014). *Occup Ther Health Care*; 28(2):132-9. doi: 10.3109/07380577.2014.903583. <http://www.ncbi.nlm.nih.gov/pubmed/24754761>

Excerpt: This paper offers evidence and discussion that affirm eight consensus statements related to drivers with dementia and the impact of dementia on the driving task. These statements offer guidance for occupational therapy practitioners when addressing driving and community mobility, a valued instrumental task of daily living.

Public Health Views of Transportation

The following articles and websites emphasize public health views of transportation and how these views contribute to the need for dementia-specific transportation solutions.

AARP. “AARP Livability Index” Website, Accessed August 2016. <https://livabilityindex.aarp.org/>

Excerpt: The AARP Public Policy Institute developed the Livability Index as a web-based tool to measure community livability. Users can search the Index by address, ZIP Code, or community to find an overall livability score, as well as a score for each of seven major livability categories: housing, neighborhood, transportation, environment, health, engagement, and opportunity. Users also can customize the Index to place higher or lower emphasis on the livability features of most importance to them. The Livability Index website provides resources to help consumers and policymakers use livability scores to effect change in their communities. It is the first tool of its kind to measure livability broadly at the neighborhood level for the entire country, and it is intended to inform and encourage people to take action to make their communities more livable.

American Planning Association, Planning and Community Health Center, Webinars. Accessed March 2016. <https://www.planning.org/nationalcenters/health/webinars/>

Excerpt: Among the webinars of interest: “Building Bridges Towards Healthy Transportation” and “Promoting Health Through the Planning Process.”

American Public Health Association, “Building the Bridge Between Transportation and Health,” Webinar. Accessed March 2016. <http://apha.org/events-and-meetings/apha-calendar/webinar-events/building-the-bridge>

Excerpt: This webinar discussed the connection between transportation and health and gave insight into the specific process one community used to fund programs and how the programs are implemented from start to finish. It also highlighted how advocacy and community organizing are used to move projects forward.

American Public Health Association. “Transportation Issues from the Public Health Perspective,” Website, Accessed March 2016. <https://www.apha.org/topics-and-issues/transportation>

Available via this link are reports and fact sheets, a transportation toolkit, transportation resources, and featured research on the access points between transportation and public health. Excerpt: “The resources below provide additional information on the links between public health, equity and transportation and APHA’s advocacy efforts to ensure that transportation policy helps, rather than hinders, public health.”

Arai A, Mizuno Y, Arai Y. “Implementation of municipal mobility support services for older people who have stopped driving in Japan,” (2011). *Public Health*; 125(11):799-805. doi:

10.1016/j.puhe.2011.09.016. Epub 2011 Oct 22. <http://www.ncbi.nlm.nih.gov/pubmed/22019359>

Excerpt: Data from 1027 (56.8%) municipal governments were analysed. The present study demonstrated that mobility support measures for older residents, particularly dementia sufferers, were not sufficiently developed in municipalities. Moreover, the analyses showed that the following three characteristics of municipalities were related to the implementation of mobility support measures for healthy older residents: longer roads, low percentage of older residents per unit of road length, and low population density. These findings provide insight into the possible incentives for implementing mobility support for healthy older residents and indicate the prospective mobility needs of driving retirees,

including dementia sufferers.

Bailey, L. "Aging Americans: Stranded Without Options," (2004). Surface Transportation Policy Project: Washington, DC. Accessed March 2016. <http://www.transact.org/report.asp?id=232>

Brinig MF, Wilkinson ME, Daly JM, Jogerst G, Stone EM. "The Public Choice of Driving Regulations," (2005). *U Iowa Legal Studies Research Paper No. 05-27*. <http://ssrn.com/abstract=822187>

Excerpt: This paper evaluates state driving rules, obtained from laws, regulations, and driver's manuals, tests, based upon Department of Transportation data, whether the type of laws affects driving and accident rates for those over 64 and suggests a uniform scheme combining self-reporting of driving problems, on-the-road tests of drivers who fall below safe driving standards, and individualized restrictions where these can enable drivers to safely operate vehicles.

Burton E. "Streets ahead? The role of the built environment in healthy ageing," (2012). *Perspect Public Health*; 132(4):161-2. doi: 10.1177/1757913912449570.

<http://www.ncbi.nlm.nih.gov/pubmed/22729004>

Excerpt: A description of planning approaches in the built environment, some of its evidence base and how demographic change is shaping new ideas and strategies.

CDC Healthy Community Design. "Transportation and Health," Website, Accessed March 2016.

<http://www.cdc.gov/healthyplaces/healthtopics/transportation/default.htm>

On this website is information on the links between transportation and health, including the following resources: a transportation and health impact assessment, transportation and health planning tools, transportation health policy and practice, peer-reviewed articles, and data sources.

Environment and Public Health Clearinghouse, Website, Accessed March 2016.

<http://bephc.gatech.edu>

Excerpt: This extensive web-based clearinghouse includes links to data and assessment, planning resources, transportation engineering resources, current happenings and projects, funding opportunities, webinars, and more.

Federal Highway Administration, Health in Transportation Working Group, Website, Accessed March 2016. http://www.fhwa.dot.gov/planning/health_in_transportation/workgroup/

A voluntary group of the US Department of Transportation formed in early 2012 and aimed to:

- Develop a common understanding of health in transportation;
- Identify aspects of existing USDOT programs that relate to health; and
- Address stakeholder's health-related concerns and communicate these concerns within the agency.

Annual reports from 2013, 2014 and 2015 are available on the website.

Federal Highway Administration. "Metropolitan Area Transportation Planning for Healthy Communities," (2012), Report/White Paper.

http://www.planning.dot.gov/documents/Volpe_FHWA_MPOHealth_12122012.pdf

Excerpt: Though there is no mention of dementia in the entire report, it may provide valuable insights on transportation planning as it pertains to improving health outcomes in the community.

Federal Highway Administration. "Transportation and Health Tool," Website, Accessed March 2016.

http://www.fhwa.dot.gov/planning/health_in_transportation/resources/health_tool/

A toolbox designed by the Centers for Disease Control and Prevention (CDC) and the US Department of Transportation (USDOT) to “help transportation decision-makers understand how their community or state compares to their peers in terms of key health and transportation indicators.” The tool provides data on a set of transportation and public health indicators for each US state and metropolitan area that describe how the transportation environment affects safety, active transportation, air quality, and connectivity to destinations. You can use the tool to quickly see how your state or metropolitan area compares with others in addressing key transportation and health issues. It also provides information and resources to help agencies better understand the links between transportation and health and to identify strategies to improve public health through transportation planning and policy.

Georgia Tech, Plan4Health, Website. Accessed March 2016. <http://www.plan4health.us/>

Excerpt: Through an overarching collaborative strategy that brings together members of the [American Planning Association](#) (APA) and the [American Public Health Association](#) (APHA), the Plan4Health project aims to build local capacity to address population health goals and promote the inclusion of health in non-traditional sectors. The Plan4Health community envisions the full integration of planning and public health where we live, work, and play.

The National Academies of Science, Engineering and Medicine. “Exploring Data and Metrics of Value at the Intersection of Health Care and Transportation: Proceedings of a Workshop.” Report, Accessed October 2016.

<http://nationalacademies.org/hmd/Reports/2016/exploring-data-metrics-at-intersect-of-transit-and-healthcare-proceedings.aspx>

Excerpts: The Health and Medicine Division and the Transportation Research Board, program divisions of the National Academies of Sciences, Engineering, and Medicine, jointly conducted a two-day workshop intended to examine the relationship between the health care and transportation sectors. The workshop aimed to showcase models of transportation services that facilitate individuals’ access to health care providers; discuss data sources and information technology obstacles and solutions from and across the health care and transportation perspectives; and explore opportunities to ascertain if the value realized by transportation providers, health systems, and funders/payers of providing transportation services results in improved health outcome. This publication is a factual synopsis of what occurred at the workshop.

Physician Reporting and Ethics of Driving and Dementia

A collection of current practices evaluating the difficult role of physicians, family members and other community partners when it comes to driving with dementia.

Adler G, Rottunda SJ. "The driver with dementia: a survey of physician attitudes, knowledge, and practice," (2011). *Am J Alzheimers Dis Other Demen*; 26(1):58-64. doi: 10.1177/1533317510390350. <http://www.ncbi.nlm.nih.gov/pubmed/21282279>

Excerpt: The purpose of this project was to investigate the attitudes, knowledge, and practices of physicians toward drivers with dementia. The sample was comprised of 239 physicians who worked with persons with dementia. Respondents who were aware of the Physician's Guide to Assessing and Counseling Older Drivers, had a strong perceived role regarding driving, were older, and believed it was important to address driving were more likely to engage in driving discussions.

Aschkenasy MT, Drescher MJ, Ratzan RM. "Physician reporting of medically impaired drivers," (2006). *J Emerg Med*; 30(1):29-39. <http://www.ncbi.nlm.nih.gov/pubmed/16434332>

Excerpt: Six (12%) of the states had mandatory reporting laws, 25 (49%) had permissive reporting laws, and 20 (39%) had no laws regarding physician reporting. There was a significant difference between the distribution of laws by year. There was no uniformity on a national level concerning such legislation.

Bacon D, Fisher RS, Morris JC, Rizzo M, Spanaki MV. "American Academy of Neurology position statement on physician reporting of medical conditions that may affect driving competence," (2007). *Neurology*; 68(15):1174-7. <http://www.ncbi.nlm.nih.gov/pubmed/17420399>

Cable G, Reisner M, Gerges S, Thirumavalavan V. "Knowledge, attitudes, and practices of geriatricians regarding patients with dementia who are potentially dangerous automobile drivers: a national survey," (2000). *J Am Geriatr Soc*; 48(1):14-7. <http://www.ncbi.nlm.nih.gov/pubmed/10642015>

Excerpt: More than 28% of all geriatricians (95% CI, 24.3%-32.7%) do not know how to report patients with dementia who are potentially dangerous drivers.... More than 75% (95% CI, 71.5%-79.5%) of all geriatricians agreed that physicians are responsible for reporting patients. More than 86% (95% CI, 83.2%-89.6%) of all geriatricians would contact state authorities despite the objections of the patient, and 72.9% (95% CI, 68.7%-77.1%) would contact authorities despite the objections of the patient's family.

Dobbs BM, Shergill SS. "How effective is the Trail Making Test (Parts A and B) in identifying cognitively impaired drivers?," (2013). *Age Ageing*; 42(5):577-81. doi: 10.1093/ageing/aft073. Epub 2013 Jul 28. <http://www.ncbi.nlm.nih.gov/pubmed/23896609>

Excerpt: The medical community plays an important role in identifying drivers who may no longer be competent to drive due to illnesses such as dementia. Several office-based cognitive screening tools are currently used by the medical community, e.g., Mini-Mental State Examination, Trail Making Test (TMT), to assist in the identification of cognitively impaired (CI) at-risk drivers. However, the predictive validity of these tools is questionable.

Drickamer MA, Marottoli RA. "Physician responsibility in driver assessment," (1993). *Am J Med Sci*; 306(5):277-81. <http://www.ncbi.nlm.nih.gov/pubmed/8238080>

Excerpt: Seventy-four percent of physicians thought that after a certain age individuals should be screened for their ability to drive. Overall, 59% of physicians thought it was their responsibility to report

unsafe drivers to the Department of Motor Vehicles and the primary reasons for reporting were that driver safety was a public health issue and that potentially unsafe drivers posed a risk to themselves or to others. It was concluded that physicians recognize that driving safety is an important public health issue that needs better-defined legal and medical guidelines.

Jang RW, Man-Son-Hing M, Molnar FJ, Hogan DB, Marshall SC, et al. "Family physicians' attitudes and practices regarding assessments of medical fitness to drive in older persons," (2007). *J Gen Intern Med*; 22(4):531-43. <http://www.ncbi.nlm.nih.gov/pubmed/17372806>

Excerpt: Family physicians lack confidence in performing driving assessments and note many negative consequences of reporting unsafe drivers. Education about assessing driving fitness and approaches that protect the physician-patient relationship when reporting occurs are needed.

Kryworuk PW, Nickle SE. "Mandatory physician reporting of drivers with medical conditions: legal considerations," (2004). *Can J Cardiol*; 20(13):1324-8. Review. <http://www.ncbi.nlm.nih.gov/pubmed/15565195>

Note: Though this is not about dementia, there may be some interesting applications in terms of the legal considerations for mandatory physician reporting.

Leinberger RL, Janz NK, Musch DC, Niziol LM, Gillespie BW. "Discussing driving concerns with older patients: I. vision care providers' attitudes and behaviors," (2013). *JAMA Ophthalmol*; 131(2):205-12. <http://www.ncbi.nlm.nih.gov/pubmed/23544207>

Excerpt: While VCPs [vision care providers] view that advising patients about driving is an important responsibility, further attention should be given to addressing barriers, providing resources, and devising communication strategies between VCPs and other members of the health care team.

Rapoport MJ, Naglie G, Herrmann N, Zucchero Sarracini C, Mulsant BH, et al. "Developing physician consensus on the reporting of patients with mild cognitive impairment and mild dementia to transportation authorities in a region with mandatory reporting legislation," (2014). *Am J Geriatr Psychiatry*; 22(12):1530-43. doi: 10.1016/j.jagp.2013.12.002. Epub 2013 Dec 8. <http://www.ncbi.nlm.nih.gov/pubmed/24406250>

Excerpt: This study supports existing international guidelines that recommend specialized on-road testing when driving safety is uncertain for patients with MCI and emphasizes the importance of assessing executive dysfunction and caregiver concern about driving.

Rapoport MJ, Herrmann N, Haider S, Sarracini CZ, Molnar F, et al. "Physician sex is a predictor of reporting drivers with mild cognitive impairment and mild dementia to transportation authorities," (2014). *J Am Geriatr Soc*; 62(1):201-3. <http://www.ncbi.nlm.nih.gov/pubmed/25180390>

Simpson CS, Hoffmaster B, Mitchell LB, Klein GJ. "Mandatory physician reporting of drivers with cardiac disease: ethical and practical considerations," (2004). *Can J Cardiol*; 20(13):1329-34. Review. <http://www.ncbi.nlm.nih.gov/pubmed/15565196>

Note: Though this is not about dementia, the ethical and practical considerations may share commonalities, as cardiac disease can have equally unpredictable outcomes that may jeopardize driving ability and safety.

Excerpt: What are the harms done to patients who are restricted from driving? What are the costs of the mandatory reporting system? How can the scientific/technical assessment of risk be reconciled with the social/ethical view of risk assessment? Until these issues are addressed, important questions about the ethics, efficacy and cost of mandatory physician reporting will remain unanswered.

Snyder KM, Ganzini L. "Outcomes of Oregon's law mandating physician reporting of impaired drivers," (2009). *J Geriatr Psychiatry Neurol*; 22(3):161-5. doi: 10.1177/0891988709332943. Epub 2009 Mar 23. <http://www.ncbi.nlm.nih.gov/pubmed/19307323>

Excerpt: Drivers older than 80 years of age were six times less likely to regain privileges compared to drivers 59 years or younger. In summary, Oregon's law resulted in loss of driving privileges in a small number of licensed drivers. Over half were aged 80 years or older, with chronic or progressive cognitive impairments. Further study is needed to determine whether this law reduces crashes and crash-related fatalities.

Soderstrom CA, Scottino MA, Joyce JJ, Burch C, Ho SM, Kerns TJ. "Police referral of drivers to the Maryland Motor Vehicle Administration's Medical Advisory Board," (2009). *Ann Adv Automot Med*; 53:105-16. <http://www.ncbi.nlm.nih.gov/pubmed/20184837>

Excerpt: The most frequently mentioned medical conditions, diabetes and seizure, were associated with being under 60 years of age. All mentions of dementia were in senior adult drivers. Compared with younger drivers, drivers 60 years of age or older were less often summoned for driving violations, being 33.0% vs 53.5% ($p < 0.01$), respectively. The threshold for the issuance of fewer citations was lower for men (40 to 59 years of age) compared to women (60 years of age or greater). Studies are needed to correlate specific traffic violations and/or crashes to specific medical conditions.

Impact of Transportation Options on Social Isolation and Dementia

The following articles demonstrate the link between the health impacts of social isolation on dementia and the role that transportation plays within that relationship. Due to limited dementia-specific research, some sources relate to the broader category of aging or caregivers.

AARP Foundation, “Framework for Isolation in Adults over 50,” (2012). Report.

http://www.aarp.org/content/dam/aarp/aarp_foundation/2012_PDFs/AARP-Foundation-Isolation-Framework-Report.pdf

Excerpt: This report presents the results of the first phase of the AARP Foundation Isolation Framework Project by ResearchWorks. The following objectives were accomplished: • Establish a more thorough understanding of the current state of research related to isolation across multiple disciplines, including the major gaps in our understanding of isolation, with a special focus on research related to adults aged 50+. • Synthesize the literature, resulting in a unifying definition of isolation. • Delineate the various measures and indicators of isolation and risk for isolation. • Identify promising directions and needs for future research. • Inform future study of isolation within the 50+ population. The report lists both loss of cognitive function (dementia) and limited or no access to transportation as potential triggers to isolation.

Byles JE, Leigh L, Vo K, Forder P, & Curryer C. (2014). “Life space and mental health: A study of older community-dwelling persons in Australia.” *Aging & Mental Health*, 19(2), 98-106.

doi:10.1080/13607863.2014.917607

<http://www.tandfonline.com/doi/full/10.1080/13607863.2014.917607>

Excerpt: Objectives: The ability of older people to mobilise within and outside their community is dependent on a number of factors. This study explored the relationship between spatial mobility and psychological health among older adults living in Australia. Methods: The survey sample consisted of 60 community-dwelling men and women aged 75–80 years, who returned a postal survey measuring spatial mobility (using the Life Space Questionnaire) and psychological health (using the SF36 Health Related Quality of Life Profile). From the Life Space Questionnaire, participants were given a life-space score and multinomial regression was used to explore the potential effect of mental health on life-space score. Results: The study found a significant association between mental health and life space. However, gender, physical functioning, and ability to drive were most strongly associated with the extent of life space and spatial mobility. Compared to men, older women are more likely to experience less spatial mobility and restricted life space, and hence are more vulnerable to social isolation. Conclusion: Mental health and life space were associated for the older people in this study. These findings have important implications for health policy and highlight the need to support older persons to maintain independence and social networks, and to successfully age in place within their community. This study also highlights the utility of the Life Space Questionnaire in terms of identifying older persons at risk of poorer mental health.

Choi NG, & Dinitto DM. (2015). “Depressive symptoms among older adults who do not drive: association with mobility resources and perceived transportation barriers.” *Gerontologist*, 56(3), 432-443. doi:10.1093/geront/gnu116

<http://gerontologist.oxfordjournals.org/content/early/2015/01/18/geront.gnu116.full.pdf+html>

Excerpt: The purpose of this study was to examine alternative means of mobility that non-driving older adults rely on and their impact on well-being. Data from the 2011 (T1, N = 6,680) and 2012 (T2, N = 5,413) interview waves of the National Health and Aging Trends Study were used to examine sample

characteristics by driving status, use of alternative mobility resources, and perceived transportation-related barriers among ex-drivers and non-drivers, and their association with depressive symptoms. Results show that a majority of non-drivers relied on their informal support system and/or paid assistance to drive them to places. About half reported walking/using a wheelchair or scooter. A significant proportion of never-drivers also used public transportation and van/shuttle services, whereas a smaller proportion of ex-drivers used them. Non-drivers who walked for transport had lower depressive symptoms than those who did not walk at either T1 or T2, and perception of transportation barriers to visiting friends/family was associated with higher depressive symptoms at T1 only. Older adults' mobility needs should be met through increasing walkability, public and paratransit transportation, supplemental senior transportation, and increasing informal caregivers-transportation providers' ability to aid older adults.

Garrett MD, Baldrige D, Benson W, Crowder J, & Aldrich N. (2015). "Mental health disorders among an invisible minority: depression and dementia among American Indian and Alaska Native elders." *Gerontologist*, 55(2), 227-236. doi:10.1093/geront/gnu181

<http://gerontologist.oxfordjournals.org/content/early/2015/02/14/geront.gnu181>

Excerpt: According to the 2010 Census, 5.2 million people identified themselves as American Indian or Alaska Native (AIAN) in the United States. This was an increase of 39% from the prior Census, making AIANs one of the nation's fastest growing populations. The health and social programs reaching them, however, have experienced documented devastating shortfalls. Decades of inadequate resources have resulted in significant health and socioeconomic disparities. AIANs are often considered an "invisible minority." In 2012, there were 266,000 AIAN elders 65 or older who claimed one race alone. That number is projected to almost triple by 2030—when the nation's baby boomers move into the ranks of the older population. This article provides an overview of two primary mental health issues—depression and dementia—that will confront this emerging AIAN elder population. Although other health and social issues exist, this article addresses depression and dementia because they are hidden from the community and from health care agencies. This paper focuses both on the unique characteristics of the AIAN population and why it is important to address depression and dementia. The conclusion explores pragmatic policy recommendations for improving the health and long-term mental health care status of AIAN elders.

Gonzales E, Matz-Costa C, & Morrow-Howell N. (2015). "Increasing opportunities for the productive engagement of older adults: a response to population aging." *Gerontologist*, 55(2), 252-261. doi:10.1093/geront/gnu176

<http://gerontologist.oxfordjournals.org/content/early/2015/02/14/geront.gnu176.full.pdf+html>

Excerpt: "Productive aging" puts forward the fundamental view that the capacity of older adults must be better developed and utilized in activities that make economic contributions to society—working, caregiving, volunteering. It is suggested that productive engagement can lead to multiple positive ends: offsetting fiscal strains of a larger older population, contributing to the betterment of families and civil society, and maintaining the health and economic security of older adults. Advocates claim that outdated social structures and discriminatory behaviors limit participation of older adults in these important social roles as well as prevent the optimization of outcomes for older adults, families, and society. We ask two important questions: (a) How can we shape policies and programs to optimally engage the growing resources of an aging population for the sake of society and older adults themselves? and (b) How can policies pertaining to productive engagement reduce health and economic disparities? We answer these questions by first describing the current state of engagement in each of the three productive activities and summarize some current policies and programs that affect

engagement. Next we highlight challenges that cross-cut productive engagement. Finally, we provide policy recommendations to address these challenges.

Holt-Lunstad J, Smith TB, Baker M, Harris T, & Stephenson D. (2015). "Loneliness and social isolation as risk factors for mortality: a meta-analytic review." *Perspectives on Psychological Science*, 10(2), 227-237. doi:10.1177/1745691614568352

<http://pps.sagepub.com/content/10/2/227.abstract>

Excerpt: Actual and perceived social isolation are both associated with increased risk for early mortality. In this meta-analytic review, our objective is to establish the overall and relative magnitude of social isolation and loneliness and to examine possible moderators. We conducted a literature search of studies (January 1980 to February 2014) using MEDLINE, CINAHL, PsycINFO, Social Work Abstracts, and Google Scholar. The included studies provided quantitative data on mortality as affected by loneliness, social isolation, or living alone. Across studies in which several possible confounds were statistically controlled for, the weighted average effect sizes were as follows: social isolation odds ratio (OR) = 1.29, loneliness OR = 1.26, and living alone OR = 1.32, corresponding to an average of 29%, 26%, and 32% increased likelihood of mortality, respectively. We found no differences between measures of objective and subjective social isolation. Results remain consistent across gender, length of follow-up, and world region, but initial health status has an influence on the findings. Results also differ across participant age, with social deficits being more predictive of death in samples with an average age younger than 65 years. Overall, the influence of both objective and subjective social isolation on risk for mortality is comparable with well-established risk factors for mortality

Hughes TF, Flatt JD, Fu B, Chang CC, & Ganguli M.(2016). "Engagement in social activities and progression from mild to severe cognitive impairment: the MYHAT study." *Int Psychogeriatr*, 25(4):587-95. doi: 10.1017/S1041610212002086.

<https://www.cambridge.org/core/journals/international-psychogeriatrics/article/engagement-in-social-activities-and-progression-from-mild-to-severe-cognitive-impairment-the-myhat-study/E51AE6C7A8CE984F3EE84A8236816BF6>

Excerpt: It is of considerable public health importance to prevent or delay the progression of mild cognitive impairment (MCI) to more severely impaired cognitive states. This study examines the risk of progression from mild to severe cognitive impairment in relation to engagement in social activities while mildly impaired and the concurrence of subsequent change in engagement with MCI progression. Participants were 816 older adults with cognitively defined MCI (mean age 78.0 (standard deviation or SD = 7.4) years) from the Monongahela-Youghiogheny Healthy Aging Team (MYHAT) Study--a prospective cohort study of MCI in the community. Over three years of follow-up, 78 individuals progressed from MCI to severe cognitive impairment, while 738 did not progress. Risk of progression was estimated using discrete time survival analyses. The main predictors were standardized composite measures of the variety and frequency of engagement in social activities. Lower risk of progression from mild to severe cognitive impairment was associated with both a greater level of frequency of engagement in social activities while mildly impaired (OR = 0.72, 95% CI: 0.55-0.93, p = 0.01) and also with a slower rate of decline in the variety of activities over time (OR = 0.01, 95% CI: <0.001-0.38, p = 0.02). Greater engagement in social activities may potentially be beneficial for preventing or delaying further cognitive decline among older adults with MCI. Alternatively, lesser engagement in social activities may be a marker of impending cognitive decline in MCI.

Klug MG, Halaas GW & Peterson ML. (2014). "North Dakota Assistance Program For Dementia Caregivers lowered utilization, produced savings, and increased empowerment." *Health Affairs* 33(4): 605-612.

<http://content.healthaffairs.org/content/33/4/605.abstract>

Excerpt: North Dakota's state-funded Dementia Care Services Program provides individualized assistance to caregivers of persons with dementia. Caregivers can contact program representatives at any time and may continue to contact them throughout the years they are caring for the person with dementia. During the program's first forty-two months of operation (January 2010 to June 2013), care consultants assisted 1,750 caregivers, primarily family members, of 951 persons with dementia. In survey responses and other self-reported data, the unpaid caregivers credited the assistance program with helping them feel more empowered, consider their charges less likely to be placed in long-term care, and use less potentially avoidable medical services such as hospitalizations and 911 calls. The program's estimated potential savings were \$39.2 million from delayed long-term care placement and \$0.8 million from reduced use of medical services, and its two-year costs were \$1.2 million. The program's success with its rural service population, for which travel tends to be difficult and resources limited, provides a model for others to adapt. It also encourages further research on impacts of individualized support programs on persons with dementia and their caregivers.

Lai M, Lein S, Lau S, & Lai M. (2016). "Modeling age-friendly environment, active aging, and social connectedness in an emerging Asian economy." *Journal of Aging Research*, 2016, 1-14.

doi:10.1155/2016/2052380

<https://www.hindawi.com/journals/jar/2016/2052380/>

Excerpt: This paper empirically tested eight key features of WHO guidelines to age-friendly community by surveying 211 informal caregivers and 402 self-care adults (aged 45 to 85 and above) in Malaysia. We examined the associations of these eight features with active aging and social connectedness through exploratory and confirmatory factor analyses. A structural model with satisfactory goodness-of-fit indices (CMIN/df = 1.11, RMSEA = 0.02, NFI = 0.97, TLI = 1.00, CFI = 1.00, and GFI = 0.96) indicates that transportation and housing, community support and health services, and outdoor spaces and buildings are statistically significant in creating an age-friendly environment. We found a statistically significant positive relationship between an age-friendly environment and active aging. This relationship is mediated by social connectedness. The results indicate that built environments such as accessible public transportations and housing, affordable and accessible healthcare services, and elderly friendly outdoor spaces and buildings have to be put into place before social environment in building an age-friendly environment. Otherwise, the structural barriers would hinder social interactions for the aged. The removal of the environmental barriers and improved public transportation services provide short-term solutions to meet the varied and growing needs of the older population.

National Seniors Council, Government of Canada. "Report on the Social Isolation of Seniors," (2014), Report.

http://www.seniorscouncil.gc.ca/eng/research_publications/social_isolation/page01.shtml

Excerpt: Social isolation also affects the psychological and cognitive health of seniors. It is associated with higher levels of depression and suicide. According to research, 1 in 4 seniors lives with a mental health problem (e.g. depression, anxiety or dementia) or illness, and 10 to 15% of adults 65 years or older and living in the community suffer from depression. The percentage of seniors in residential care who have been diagnosed with depression or showed symptoms of depression without diagnosis is higher at 44%. Approximately 50% of people over the age of 80 report feeling lonely; men over the age of 80 have the highest suicide rate of all age groups. Respondents to the online consultation noted that mental health contributes to social isolation and has an impact on the individual's quality of life. More specifically, respondents expressed that social isolation increases the risk of developing mental health issues, has an impact on the person's self-esteem and confidence, which decreases their connection with the community and inhibits them from accessing health care services, thus perpetuating isolation.

Risk factors of social isolation include: living alone; being age 80 or older; having compromised health status, including having multiple chronic health problems; having no children or contact with family; lacking access to transportation; living with low income; and, changing family structures, younger people migrating for work and leaving seniors behind, and location of residence (e.g. urban, rural and remote). Critical life transitions such as retirement, death of a spouse, or losing a driver's license further increase the risk of becoming socially isolated.

Neri AL, Yassuda MS, Fortes-Burgos AC, Mantovani EP, Arbex FS, de Souza Torres SV, Perracini MR, Guariento ME. "Relationships between gender, age, family conditions, physical and mental health, and social isolation of elderly caregivers," (2012). *Int Psychogeriatr* 24(3):472-83.

doi:10.1017/S1041610211001700

<https://www.cambridge.org/core/journals/international-psychogeriatrics/article/relationships-between-gender-age-family-conditions-physical-and-mental-health-and-social-isolation-of-elderly-caregivers/778454C1222FEE4C234001A030321A44>

Excerpt: In an aging population an increasing number of elderly caregivers will be called upon to provide care over a long period, during which time they will be burdened both by caregiving and by the physiological effects of their own aging. Among them there will be more aged male caregivers, who will probably be less prepared than women to become caregivers. The aim of this study was to investigate the relationship between caregivers' gender, age, family income, living arrangements and social support as independent variables, and depressive symptoms, comorbidities, level of frailty, grip strength, walking speed and social isolation, as dependent variables. 176 elderly people (123 women) were selected from a sample of a population-based study on frailty (n = 900), who had cared for a spouse (79.3%) and/or parents (31.4%) in the past five years (mean age = 71.8 ± 4.86 years; mean monthly family income in minimum wages = 4.64 ± 5.14). The study used questionnaires and self-report scales, grip strength and walking speed tests. 65% of participants evaluated caregiving as being very stressful. Univariate analyses of regression showed low family income as a risk factor for depression; being female and low perceived social support as a risk for comorbidities; being 80 years of age and above for low grip strength; and being male for social isolation indicated by discontinuity of activities and social roles. In multivariate analyses of regression, poverty arose as a risk factor for depression and being female for comorbidities. Gender roles, age, income and social support interacted with physical and emotional health, and with the continuity of social participation of elderly caregivers. Special attention must be given to male caregivers.

Parikh PK, Troyer AK, Maione AM, Murphy KJ. "The impact of memory change on daily life in normal aging and mild cognitive impairment," (2015). *Gerontologist*, 2015:gmv030.

doi: 10.1093/geront/gmv030.

<http://www.ncbi.nlm.nih.gov/pubmed/26035897>

Excerpt: Using a qualitative research design, data were collected from three focus groups of older adults with normal memory changes (n = 23) and two focus groups of older adults with [amnesic mild cognitive impairment] aMCI (n = 14). A thematic analysis using the constant comparative method was used to identify the impacts of memory change on key life domains. Four major themes emerged from the two groups, including changes in feelings and views of the self, changes in relationships and social interactions, changes in work and leisure activities, and deliberate increases in compensatory behaviors. Participants described both positive and negative consequences of memory change, and these were more substantial and generally more adverse for individuals with aMCI than for those with age-normal memory changes. There are similarities and important differences in the impact of mild memory change on the everyday lives of older adults with age-normal memory changes and those with aMCI. Findings underscore the need for clinical interventions that aim to minimize the emotional impact

of memory changes and that increase leisure and social activity in individuals with aMCI. “qualitative and quantitative studies indicate that there are subtle effects of mild memory changes on complex activities of daily living such as managing money, transportation, or medications (De Vriendt et al., 2012; Pernecky et al., 2006; Tuokko, Morris, & Ebert, 2005). . . . Similarly, individuals with mild cognitive impairment report changes in social and family roles, embarrassment and shame, emotionality, burden, frustration with recognized memory problems, loss of self-confidence, and anxiety (Frank et al., 2006; Joosten-Weyn Banningh, Vernooij-Dassen, Rikkert, & Teunisse, 2008). . . . We found evidence that individuals with aMCI are at risk of withdrawing from leisure activities and social interactions. This is consistent with research showing that MCI is associated with decreased life-space, or restricted movement through the environment (James, Boyle, Buchman, Barnes, & Bennett, 2011; Uemura et al., 2013). Given that MCI is a risk factor for dementia, as well as emerging evidence of a positive impact of cognitive and social engagement on memory and dementia (e.g., Flöel et al., 2008; Hertzog, Kramer, Wilson, & Lindenberger, 2009), our findings underscore the need to help clients with aMCI increase their engagement in leisure and social activities.”

Parisi JM, Roberts L, Szanton SL, Hodgson NA, Gitlin LN. (2015). “Valued activities among individuals with and without cognitive impairments: findings from the National Health and Aging Trends Study.” *Gerontologist* 2015:gmv144. doi:10.1093/geront/gmv144

<http://gerontologist.oxfordjournals.org/content/early/2015/11/24/geront.gmv144.abstract>

Excerpt: Using the National Health and Aging Trends Study (NHATS), we examined activity preferences and participation among individuals with and without cognitive impairments. Respondents were classified as having No Dementia (n = 5,264), Possible Dementia (n = 893), or Probable Dementia (n = 518). Respondents rated importance of and actual participation (yes/no) in four activities (visiting friends/family, religious services, clubs/classes, going out for enjoyment). We also examined whether transportation or health limited participation. Overall, visiting friends/family was most important (64.03%); although relative importance of activities varied with cognitive status. Compared to cognitively healthy individuals, those with possible and probable dementia were less likely to indicate activities were important and engage in valued activities (ps < .0001). Additionally, poor health limited participation in activities for those cognitively intact or with possible dementia; this was not true for those with probable dementia. Transportation difficulty limited going out for enjoyment for a greater percentage of those with cognitive impairment than those without impairment. Regardless of cognitive level, older adults highly value activities; however, actual participation may decrease with greater impairment in cognitive and physical health and with transportation challenges. Developing tailored interventions for specific populations to achieve desired activity goals is needed.

Rapacciuolo A, Filardi PP, Cuomo R, Mauriello V, Quarto M, Kisslinger A, . . . Tramontano D. (2016). “The Impact of Social and Cultural Engagement and Dieting on Well-Being and Resilience in a Group of Residents in the Metropolitan Area of Naples.” *Journal of Aging Research*, 2016, 1-11.

doi:10.1155/2016/4768420

<https://www.hindawi.com/journals/jar/2016/4768420/>

Excerpt: Social isolation and exclusion are associated with poor health status and premature death. A number of related isolation factors, inadequate transportation system and restrictions in individuals' life space, have been associated with malnutrition in older adults. Since eating is a social event, isolation can have a negative effect on nutrition. Cultural involvement and participation in interactive activities are essential tools to fight social isolation, and they can counteract the detrimental effects of social isolation on health. To provide data supporting the hypothesis that encouraging participation might represent an innovative preventive and health promoting strategy for healthy living and aging, we developed an ad hoc questionnaire to investigate the relationship between cultural participation, well-

being, and resilience in a sample of residents in the metropolitan area of Naples. The questionnaire includes a question on adherence to diet or to a special nutritional regimen; in addition, the participants are asked to mention their height and weight. We investigated the relationship between BMI [body mass index], adherence to diet, and perceived well-being (PWB) and resilience in a sample of 571 subjects over 60 years of age. Here, we present evidence that engagement into social and cultural activities is associated with higher well-being and resilience, in particular in females over 60 years of age.

Smith JM. (2012). "Toward a better understanding of loneliness in community-dwelling older adults." *Journal of Psychology*, 146(3), 293-311. doi:10.1080/00223980.2011.602132
<https://www.ncbi.nlm.nih.gov/pubmed/22574422>

Excerpt: The purpose of this interpretive phenomenological study was to explore the meaning of loneliness in community-dwelling older adults and to understand their daily practices in coping with loneliness. The sample consisted of 8 women and 4 men. Interviews were conducted with the 12 participants utilizing several tools, including 3 separate interview guides and the UCLA Loneliness Scale, Version 3 (Russell, 1996). A critical finding was that many participants experienced loneliness as a result of disrupted meaningful engagement, due to age-related changes, as well as other losses, including death of spouse, retirement, and giving up the car. Two paradigm cases and themes representing the loneliness and coping experience emerged. Participant coping practices with loneliness included reaching out to others, helping those in need, and seeking companionship with pets. Many older adults are at risk for loneliness because of declining health and other age-related losses that prevent them from remaining engaged in meaningful relationships. Health care professionals can screen for loneliness to identify those at risk and can intervene to help older adults maintain connections. Recommendations for those caring for lonely older adults include active listening, vision and hearing screenings, transportation needs, pet therapy, volunteering, and engagement in social activities.

Strout EH, Fox L, Castro A, Haroun P, Leavitt B, Ross C, . . . Carney JK. (2015). "Access to transportation for Chittenden County, Vermont older adults." *Aging Clinical and Experimental Research*, 28(4), 769-774. doi:10.1007/s40520-015-0476-3

Excerpt: Aging often leads to decreased independence and mobility, which can be detrimental to health and well-being. The growing population of older adults will create a greater need for reliable transportation. The aim of this study was to explore whether and how lack of transportation has compromised areas of daily lives in older adults. 1221 surveys with 36 questions assessing transportation access, usage, and impact on activities were distributed to Chittenden County, Vermont older adults; 252 met criteria for analysis. Chittenden County is the most populous county in Vermont, and includes the city of Burlington. Older adults reported overwhelming difficulty getting to activities considered important, with 69 % of participants delaying medical appointments due to transportation barriers. Although family and friends represent a primary method of transportation, older adults reported difficulty asking them for help. Lack of accessible transportation leads to missed healthcare appointments and social isolation, which may have detrimental effects on older adults' quality of life. The research concludes that many older adults face significant transportation challenges that negatively affect their health and well-being.

The Relationship between Health Equity, Transportation and Dementia

Health equity, according to the CDC, is achieved when every person has the opportunity to attain his or her full health potential and no one is disadvantaged from achieving this potential because of social position or other socially determined circumstances. Health disparities or inequities are types of unfair health differences closely linked with social, economic or environmental disadvantages that adversely affect groups of people (CDC, 2016). The following articles demonstrate the link between the impact of health equity on dementia and the role that transportation plays within that relationship. Due to limited dementia-specific research, some sources relate to the broader category of aging or do not address all three concepts.

American Public Health Association. “Health Equity,” Website, Accessed September 2016.

[https:// www.apha.org/topics-and-issues/health-equity](https://www.apha.org/topics-and-issues/health-equity)

Available via this link are reports, fact sheets, resources, and featured research on the relationship between health equity and public health. Many of the resources listed address transportation directly.

Brown RT, Hemati K, Riley ED, Lee CT, Ponath C, Tieu L, Guzman D, Kushel MB. (2016). “Geriatric conditions in a population-based sample of older homeless adults.” *Gerontologist* 2016:gnw011. [Epub ahead of print]

<http://gerontologist.oxfordjournals.org/content/early/2016/02/17/geront.gnw011.abstract>

Excerpt: Older homeless adults living in shelters have high rates of geriatric conditions, which may increase their risk for acute care use and nursing home placement. However, a minority of homeless adults stay in shelters and the prevalence of geriatric conditions among homeless adults living in other environments is unknown. We determined the prevalence of common geriatric conditions in a cohort of older homeless adults, and whether the prevalence of these conditions differs across living environments. We interviewed 350 homeless adults, aged 50 and older, recruited via population-based sampling in Oakland, CA. We evaluated participants for common geriatric conditions. Participants stayed in 4 primary environments over the prior 6 months: unsheltered locations (n = 162), multiple locations including shelters and hotels (n = 88), intermittently with family/friends (n = 57), and, in a recently homeless group, rental housing (n = 43). Overall, 38.9% of participants reported difficulty performing 1 or more activities of daily living, 33.7% reported any falls in the past 6 months, 25.8% had **cognitive impairment**, 45.1% had vision impairment, and 48.0% screened positive for urinary incontinence. The prevalence of geriatric conditions did not differ significantly across living environments. Geriatric conditions were common among older homeless adults living in diverse environments, and the prevalence of these conditions was higher than that seen in housed adults 20 years their elders. This article discusses cognitive impairment in a socially disadvantaged population, and discusses elements of both social isolation and lack of access to **transportation** as contributors to the health inequity in the homeless. The article concludes that services that address geriatric conditions and eliminate barriers are needed for older homeless adults living across varied environments.

Byrd L, Fletcher A, Menifield C. (2007). “Disparities in health care: minority elders at risk.” *ABNF J.* 18(2):51-5.

<https://www.ncbi.nlm.nih.gov/pubmed/17608287>

Excerpt: Minority elders are at great risk for missed diagnoses, greater disabilities, and higher death rates unless health care providers acknowledge that disparities in healthcare do exist and adjust their way of providing care. In the next 30 years, the current elderly population of 35 million is predicted to increase to 72 million. Minority elders are expected to account for 50% of this population. Research has

shown that minority elders have a higher incidence of certain diseases but do not receive the same care as their white counterparts (Baldwin, 2003). Differences in the incidence, prevalence, mortality, and burden of disease among minority elders indicate that disparities in healthcare are consistently found in a variety of settings (Jett, 2006). Poor communication and distrust in the health care system have been found to be major factors affecting the quality of healthcare for these individuals. This article discusses healthcare disparities experienced by minority elders, one being that many are non-drivers or lack access to transportation, and suggests ways to curtail this problem, including ways to increase access to healthcare services via alternative transportation. Culturally sensitive care is suggested to save lives and improve quality of life for these vulnerable individuals. Understanding the cultural practices of minority elders and negotiating a plan of care that respects their beliefs will increase patient compliance, improve care, improve outcomes, and decrease healthcare disparities among minority elders.

Dilworth-Anderson P, Pierre G, Hilliard TS. (2012). "Social justice, health disparities, and culture in the care of the elderly." *J Law Med Ethics* 40(1): 26-32. doi: 10.1111/j.1748-720X.2012.00642.x.

<https://oied.ncsu.edu/selc/wp-content/uploads/2013/03/Ditworth-Anderson-Social-Justice-Health-Disparity-and-Culture-in-the-Care-of-the-Elderly.pdf>

Excerpt: Older minority Americans experience worse health outcomes than their white counterparts, exhibiting the need for social justice in all areas of their health care. Justice, fairness, and equity are crucial to minimizing conditions that adversely affect the health of individuals and communities. In this paper, Alzheimer's disease (AD) is used as an example of a health care disparity among elderly Americans that requires social justice interventions. Cultural factors play a crucial role in AD screening, diagnosis, and access to care, and are often a barrier to support and equality for minority communities. The "conundrum of health disparities" refers to the interplay between disparity, social justice, and cultural interpretation, and encourages researchers to understand both (1) disparity caused by economic and structural barriers to access, treatment, and diagnosis, and (2) disparity due to cultural interpretation of disease, in order to effectively address health care issues and concerns among elderly Americans.

Johnstone MJ, Kanitsaki O. (2003). "Ethnic aged discrimination and disparities in health and social care: a question of social justice." *Australas J Ageing* 27(3):110-5. doi: 10.1111/j.1741-6612.2008.00311.x.

<http://onlinelibrary.wiley.com/doi/10.1111/j.1741-6612.2008.00311.x/abstract>

Excerpt: Older overseas-born Australians of diverse cultural and language backgrounds experience significant disparities in their health and social care needs and support systems. Despite being identified as a 'special needs' group, the ethnic aged in Australia are generally underserved by local health and social care services, experience unequal burdens of disease and encounter cultural and language barriers to accessing appropriate health and social care compared to the average Australian-born population. While a range of causes have been suggested to explain these disparities, rarely has the possibility of cultural racism been considered. In this article, it is suggested that cultural racism be named as a possible cause of ethnic aged disparities and disadvantage in health and social care. It is further suggested that unless cultural racism is named as a structural mechanism by which ethnic aged disparities in health and social care have been created and maintained, redressing them will remain difficult.

Marks B, Sisirak J, Hsieh K. (2008). "Health services, health promotion, and health literacy: report from the State of the Science in Aging with Developmental Disabilities Conference." *Disabil Health J.* 1(3):136-42. doi: 10.1016/j.dhjo.2008.04.003.

[http://www.disabilityandhealthjnl.com/article/S1936-6574\(08\)00051-4/abstract](http://www.disabilityandhealthjnl.com/article/S1936-6574(08)00051-4/abstract)

Excerpt: This article summarizes the proceedings of the Health Services, Health Promotion, and Health Literacy work group that was part of the "State of the Science in Aging with Developmental Disabilities: Charting Lifespan Trajectories and Supportive Environments for Healthy Living." Participants aimed to identify unmet needs related to health and health care and to determine training, research, and policy needs addressing the demands for increasing health care services and resources, end-of-life and palliative care, and health literacy. Key issues addressed included (1) major health-related disparities for adults with intellectual and developmental disabilities (I/DD); (2) the impact of internal and external factors on health care services and resources, end-of-life and palliative care, and health literacy for adults with I/DD; and (3) frameworks that can be used for understanding and promoting health care services and resources, end-of-life and palliative care, and health literacy. Health care services for adults with I/DD may occur in a variety of settings including community-based programs, private practices, and community-based agencies supporting persons with disabilities. Major gaps relate to health disparities due to underdiagnosis, misdiagnosis, less chance of receiving prompt treatment, limited access to providers, lack of research information, **transportation barriers**, and lack of accessible medical equipment. Models of care including variables related to translation, sustainability, accessibility (e.g., affordability, availability), acceptability (e.g., culturally relevant, satisfaction), and **equity** need to be developed.

Schoeni RF, Martin LG, Andreski PM, Freedman VA. (2005). "Persistent and growing socioeconomic disparities in disability among the elderly: 1982-2002." *Am J Public Health* 95(11):2065-70.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1449484/pdf/0952065.pdf>

Excerpt: We sought to determine whether socioeconomic and racial/ethnic disparities in prevalence of disability over age 70 have widened or narrowed during the past 2 decades. We used data from the 1982-2002 National Health Interview Surveys, which are nationally representative cross-sectional surveys of the noninstitutionalized population of the United States. Participants included 172227 people aged 70 years and older. The primary outcome measure was the average annual percentage change in the prevalence of 2 self-reported disability measures: the need for help with activities of daily living ("ADL disability") and need for help with either ADL or instrumental activities of daily living ("any disability"). All groups experienced declines in the age- and gender-adjusted prevalence of any disability during the 1982 to 2002 period. However, the average annual percent declines were smaller for the least advantaged socioeconomic groups. Differences in trends across racial/ethnic groups were not statistically significant. ADL disability prevalence decreased for the more advantaged groups but increased among the lowest income and education groups. Non-Hispanic Whites and minorities experienced similar average annual percent declines in ADL disability. Racial/ethnic disparities in old-age disability have persisted over the last 20 years, whereas socioeconomic disparities have increased.

Upstream Public Health. "Transportation Health Equity Principles," Principles Sheet, Accessed September 2016.

<https://www.upstreampublichealth.org/sites/default/files/Transportation%20Health%20Equity%20Principles.pdf>

This principles sheet defines who is impacted by transportation inequities and presents means by which existing equity barriers to transportation can be overcome.

Wallace, S.P. (2015). "Equity and Social Determinants of Health among Older Adults." Article, *Generations, Journal of the American Society on Aging.*

<http://www.asaging.org/blog/equity-and-social-determinants-health-among-older-adults>

Excerpt: When transportation planners only consider the least expensive options in designing regional transportation, they are demonstrating low levels of health literacy because they also are not factoring

in the health benefits of lowered pollution, greater physical activity, and increased access to services by older adults that might come from alternative designs. As we work to reduce health inequalities in our country, it is important to remember that while linguistic and cultural competence are crucial for working with older adults, broader societal patterns that disadvantage elders of color, those with low incomes, and women create conditions that make it difficult for them to enjoy a healthy old age. To reduce health inequities among older adults, we need to create supportive institutions and laws that create healthy environments for older adults and make the healthy choice the easy choice for health behaviors. From a life-course perspective (Ferraro and Shi, 2009), diverse elders will be emotionally and physically healthier when they and their families make a living wage, have decent and affordable housing, and reside in safe and health-promoting neighborhoods in a society that values diversity.