Addressing Social Determinants of Health and Dementia Risk: A Toolkit for Public Health Agencies

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Table of Contents

Introduction and Toolkit Overview 2

Background 3
SDOH Overview
Review of the Evidence of SDOH and Dementia Risk

Addressing Dementia-Related SDOH in Your Community 5
Step 1: Identification of Needs
Step 2: Partnership Mapping
Step 3: Program and Asset Analysis
Step 4: Implementation and Evaluation

Appendix 14

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Introduction and Toolkit Overview

In 2020, through funding from the Centers for Disease Control and Prevention (CDC), the Public Health Center of Excellence on Dementia Risk Reduction (Center) at the Alzheimer's Association® was established. The aim of the Center is to serve as a national source of information and resources for state, local, tribal and territorial public health agencies in addressing the modifiable risk factors for cognitive decline and dementia. Social determinants of health (SDOH) are an integral part of this work, serving both as direct risk factors for dementia and as barriers to addressing individually modifiable risk factors.

In collaboration with the Wake Forest School of Medicine, the Center reviewed, synthesized, and summarized the current state of the evidence on SDOH related to dementia risk. The Center hosted a workshop with researchers and public health practitioners at the 2022 Alzheimer's Association International Conference® (AAIC®) to gain a better understanding of the state of the science and its implications for public health practice. A subsequent Public Health Roundtable comprised of public health officials from various state and local health departments and dementia researchers identified ways the Center could help public health agencies translate the science into public health action.

This toolkit is a result of those efforts, designed with input and guidance from the Association of State and Territorial Health Officials (ASTHO), the National Association of County and City Health Officials (NACCHO), and the Alzheimer's Association Division of Diversity, Equity, and Inclusion. After providing an overview of SDOH and a brief summary of the evidence of SDOH related to dementia risk, the toolkit includes a step-by-step process for public health agencies to follow, first in identifying dementia-related SDOH affecting their communities and then in implementing actions to address them.

Appendices A-D provide examples through case studies and additional resources and tools that can be used in practice. While the toolkit is designed to be self-executing, further information, advice, and assistance is available by contacting the Center at **CenterOfExcellence@alz.org**.

Background

SDOH OVERVIEW

What are Social Determinants of Health?

Social determinants of health (SDOH), as defined by the CDC[i], are the nonmedical factors that influence health outcomes. SDOH are the conditions in which people are born, grow, work, live, play, and age as well as the systems and structures that people must navigate on a daily basis. As illustrated in the figure below, SDOH can be grouped into five overarching domains: (1) education access and quality; (2) health care access and quality; (3) neighborhood and built environment; (4) social and community context; and (5) economic stability.

SDOH have a tremendous impact on the health and well-being of a population, accounting for up to 66% of the modifiable contributors to health outcomes[ii]. They are also drivers of health disparities, influencing individual and family-level health-related social needs. Unaddressed social needs that are a result of underlying SDOH can have long-term, detrimental effects on population health and are increasingly seen as a priority area for public health and its partners.

REVIEW OF THE EVIDENCE OF SDOH AND DEMENTIA RISK

While many SDOH related to the modifiable risk factors for dementia – including hypertension, diabetes, and obesity – have been studied extensively, the research focused on SDOH, and dementia risk is still relatively new. Despite the novelty of this area of research, there is emerging evidence linking many SDOH to the risk for dementia. The current state of the evidence is summarized below. These brief summaries are intended to provide a foundational understanding of the SDOH related to dementia risk. They should also help to kick-start your thinking around the dementia-related social needs that are ripe for public health action.

Social Determinants of Health

Social Determinants of Health
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Healthy People 2030

Educational Quality

Investment in and access to a quality, formal education has an impact on many aspects of an individual's life, including employment, income, and perceived social standing – and has also been associated with better health and housing throughout the life course. Some of the strongest evidence on risk for dementia involves the amount of

formal education an individual receives[iv,v]. But more recently, studies suggest that the key, especially for Black and Hispanic Americans, may not only be the amount but also the quality of education[vi]. Literacy, independent of education, may also be related to late-life cognition. A longitudinal study found that, among those with very little formal education, individuals with low literacy may be at greater risk for developing dementia[vii].

Economic Stability

Socioeconomic status can affect many components of life, and recent research suggests that it might also affect risk of cognitive decline and dementia. At the individual level, for example, several studies have shown an increased incidence of dementia among individuals with the lowest wealth[viii,ix]. There is also evidence at the neighborhood level that living in a highly disadvantaged area may be detrimental to brain health. One study showed that children who live in a highly disadvantaged neighborhood, independent of their family's socioeconomic position, have markedly different brain structures[x]. Among those in midlife, a longitudinal study found that those living in the most disadvantaged neighborhoods experience more rapid cognitive decline and accelerated cortical thinning in the brain[xi].

Nutrition and Food Security

Food security means having physical and economic access to a stable source of sufficient and nutritious foods. Not only is this a key component of health equity and well-being, but it may also be protective against cognitive decline. Balanced nutrition – including diets such as the Mediterranean and Dietary Approaches to Stop Hypertension (DASH) diets – is associated with brain health and may help reduce the risk for cognitive decline[xii]. However, those who are experiencing food insecurity report reduced intake of whole grains, fish, and vegetables – key components of balanced nutrition[xiii]. A nationally representative survey found that food insecurity is associated with lower cognitive functioning, and other research has associated food insecurity with increased cognitive impairment and decline[xiv].

Safe and Healthy Environment

There is growing evidence that the built and natural environments may significantly affect health outcomes, including cognitive decline and dementia. Features of the built and natural environments include air quality, population density, availability of green spaces, public resources such as community centers and parks, safety of surroundings, transportation options, and community cohesion. Recent research indicates that increased residential greenspace is associated with higher cognitive functioning and that exposure to air pollution, especially fine particulate matter, may contribute to long-term cognitive decline[xv,xvi]. Other studies have shown that greater physical disorder of a neighborhood coupled with lower neighborhood cohesion is associated with poorer cognitive outcomes[xvii,xviii].

Social Connections

Social connections are defined as meaningful and sustained contact with at least one other person that is intrinsically and mutually beneficial to the self and/or others and pertains to a common interest, activity, or goal. Examples include regular interaction with family and friends, book clubs, gardening groups, church functions, and intergenerational activities. Social connections have been viewed as a key component of healthy aging overall, and some evidence indicates it may be a component of maintaining a healthy brain. For example, one study estimated that frequent social connections may lower the rate of cognitive decline by up to 70% compared with socially inactive individuals[xix]. Social connections may also influence or be influenced by other modifiable risk factors for dementia, including physical exercise and cognitive engagement; however, more research is needed to understand the directional nature of the relationship.

Addressing Dementia-Related SDOH in Your Community

The science on SDOH related to dementia risk, while still relatively new, offers a compelling argument as to the importance of addressing these factors in your community to promote and foster brain health. With this understanding as a foundation, the next section of the toolkit will guide you through the key steps to address these dementia-related SDOH and empower you to make lasting changes to improve the overall well-being of your community.

STEP 1: IDENTIFICATION OF NEEDS

The first step to addressing SDOH related to dementia risk is to understand the most pressing and prevalent social needs in your community. Using a variety of resources – including community and partner input, population-level data, and screening tools – you can assess the prevalence of dementia-related social needs. Understanding the most prevalent needs can help you prioritize those that should be the focus of public health action.

During this process it may also be helpful to consider the priorities previously established during your community health improvement and/or community health assessment (CHIP/CHA) process. The needs determined in that process can help in the prioritization process of addressing dementia-related SDOH.

There are many different vehicles to ascertain the greatest social needs in your community, including your own health department's data and information collected via individual health screeners. Perhaps most significantly, several free population-level data sources are available that can provide information on the prevalence of SDOH in your communities. A few of the most utilized data sources are listed below. You can also find a longer list of SDOH data available at the state-level listed in Appendix C. This resource includes links to SDOH data sources along with relevant dementia-related SDOH categories and corresponding measurement questions.

Free Population-Level SDOH Data Sources

Area Deprivation Index (ADI)/Neighborhood Atlas
This resource ranks neighborhoods – defined as Census block groups – based on the level of socioeconomic disadvantage. Income, education, employment, and housing quality are all key factors included in this measurement. Among other things, the Index has been used to inform policy decisions and funding allocations.

Chronic Disease Indicators (CDI)
The CDC's Chronic Disease Indicators (CDI) tool provides national and state estimates for a set of key surveillance indicators of chronic diseases and their risk factors. Where applicable, estimates are broken down by sex, race and ethnicity, and age group. CDI includes 12 indicators in the Social Determinants of Health topic area. This information can help guide evidence-based decision-making and development of focused activities, programs, and policies designed to improve population health. Data is available in the form of maps, bar graphs, line graphs, and tables, or through the CDI Data Portal.

County Health Rankings
With numerous measures that comparatively rank the health status of U.S. counties, this resource includes county-level data on several dementia-related SDOH, including the Food Environment Index, food insecurity, access to healthy foods, high school completion rates, unemployment rates, income inequality, social associations, and levels of air pollution.

Agency for Healthcare Research and Quality (AHRQ) Social Determinants of Health Database
This large database includes several key SDOH variables related to the five domains of SDOH discussed on page 3. (Please note: knowledge and experience in data analysis may be required to use this source.)

Behavioral Risk Factor Surveillance System (BRFSS)
The BRFSS is a public health survey conducted annually in every state and territory and includes state-level information on health risk behaviors, health care access, preventive services, and nutrition. Specific dementia-related SDOH information includes measures related to social isolation, educational attainment, and household income. Since 2022, an optional module has been available for states that want to collect more detailed data on SDOH, including social isolation, employment, food insecurity, and economic strain. Through another optional module, states also frequently collect data on individuals experiencing subjective cognitive decline (SCD); and data analysis can now be conducted on the social needs of those with SCD. (Please note: the BRFSS website features several ready-made online tools for estimate generation. However, the tools do not include variables from the optional modules, and knowledge of data analysis software is required to utilize the available raw datasets.)

PLACES + SDOH
Population Level Analysis and Community Estimates (PLACES) is a source of modeled population-level estimates of health measures at local levels, including zip code tabulation areas (ZCTA), counties, and census tracts. PLACES now includes nine SDOH measures, three of which may be especially relevant to dementia risk: percentage with less than a high school education, percentage living in poverty, and percentage unemployed. PLACES has seven health-related social needs measures, including measures on food insecurity and social isolation.

Social Vulnerability Index (SVI)
The CDC's SVI is a tool used to identify and quantify communities experiencing social vulnerability, or the demographic and socioeconomic factors that adversely affect communities. It uses 16 variables from the U.S. census that are categorized into 4 overall themes, which include socioeconomic status, household characteristics, racial and ethnic minority status, and housing type and transportation. The SVI includes several dementia-related SDOH measures including high school completion, employment, and poverty level.

SDOH and Social Needs Screener Tools

There are many different screener tools available to assess and understand the individual-level SDOH needs in your community. Some of these may already be used by community health workers, public health educators, community-based organizations, clinics, and hospitals, and perhaps your own health department. The most common screening tools being used today include:

PRAPARE (Protocol for Responding to and Assessing Patients' Assets, Risks, and Experiences)
PRAPARE is a national standardized social risk assessment protocol that measures individual's needs across key SDOH domains including housing stability, education, employment, and social support. PRAPARE is an evidence-based and actionable tool that is widely used among health departments, providers, community health centers, and payers. The PRAPARE screening tool has been translated into over 25 languages and is standardized across ICD-10 codes.

AHC HRSN (Accountable Health Communities Health-Related Social Needs)
The HRSN screening is a tool developed for the Centers for Medicare & Medicaid Services (CMS) AHC Model, an initiative testing the impact of systematically identifying and addressing the health-related social needs of Medicare and Medicaid beneficiaries. Although designed for the AHC model, this tool is appropriate to use across a variety of health system settings. This screening covers several topics relevant to dementia risk, including access to food, finances and employment, and education.

SS-DIAD (Social and Structural Determinants Influencing Aging and Dementia Battery)
The Knight Alzheimer's Disease Center at Washington University in St. Louis developed a comprehensive tool to assess the social and structural determinants of health and how they interplay with and influence cognitive health. This tool was tested across those living with and without cognitive impairment. Examples of measures within this assessment include subjective neighborhood quality and safety, education and schooling, perceived discrimination, adverse childhood experiences, and social support.

Once the prevalence of SDOH has been assessed and the needs of your community have been identified, you should then prioritize which SDOH and social needs will be the focus of your efforts. When prioritizing, it is important to consider the resources, programs, and partners available to support you in the work.

STEP 2: PARTNERSHIP MAPPING

After determining your prioritized areas of focus, the next step is to map out the different partners and coalitions in the community that may be able to assist in addressing the priorities.

While identifying your key partners, it is crucial to "shift your mindset" regarding the types of partners you are seeking to work with. For many, when they hear the words "dementia" or "Alzheimer's," their minds instantly focus on the older adult population and partners such as long-term care facilities, Area Agencies on Aging, and senior centers. While these are all important partners, when addressing risk factors for cognitive decline and dementia – especially SDOH related to dementia risk – risk can accumulate across the lifespan and throughout a lifetime. Therefore, the older population is not the primary target audience.

Instead, you should prioritize partners not based on a connection to dementia but on a connection to your prioritized areas of focus. This might include the school system, faith-based organizations, parks and recreation departments, economic development agencies, and farmers markets. In addition, inclusivity must be at the forefront of your partnerships to ensure diverse voices are represented in the work. Relevant partners that are representative of the community in which you are working will help ensure successful, sustainable, and equitable programs.

An example of a mapping guide is included below for a priority action focused on increasing accessibility to healthy foods. This tool can assist you and your team in considering the appropriate partners in the community based on their area of impact, current programs offered, level of influence in the community, and the envisioned ongoing role in the SDOH work.

Objective: Increase accessibility/consumption of nutritious foods				
Partner	**Contact Person**	**Area of Impact**	**Level of Influence in Community**	**Potential Role**
Local Elementary School	School Nurse	Educating children in the community	High. They regularly hold community events and know community members well.	School gardening/nutrition classes
Convenience Store	Store Manager	Sell food and other items to the public	High. They have been in the community for years and are one of the only grocery stores in the area.	Offering subsidized fruits and vegetables
Online Grocery Delivery Services	Regional Sales Manager	Could provide healthy meals to under resourced areas	Low. They are a national company and have not yet entered this market.	Combat food deserts through meal delivery

STEP 3: PROGRAM AND ASSET ANALYSIS

The next step in addressing dementia-related SDOH and social needs is to understand and identify the resources or assets available in your community that may aid your SDOH-focused work. This should also highlight gaps and areas of opportunity where new programs, interventions or initiatives may be appropriate.

One helpful tool is the Community Health Improvement Matrix (CHIM) from the National Association of County and City Health Officials (NACCHO). The CHIM is designed specifically to help communities address SDOH. It is organized by both prevention level (primary, secondary, and tertiary) and intervention level (individual, interpersonal, organizational, community, and public policy).

For each priority SDOH you have chosen to address, use the tool with your partners to list the different programs and activities that fit within each prevention and intervention level. Once complete, you should have a greater understanding of the current activities available to help address your SDOH priorities. An example of a CHIM is shown below. More information about the CHIM and how to use it in your community is available on the NACCHO website. To complete your own CHIM, please utilize the template linked in Appendix B.

COMMUNITY HEALTH IMPROVEMENT METRIC

Objective: Increase accessibilty/consumption of nutritious foods

PREVENTION LEVEL	Individual	Interpersonal	Organizational	Community	Public Policy
Contextual/ Primary	Childhood education about healthy eating	Availability of culturally-tailored, healthy foods to cook with family	Subsidized fruits and vegetables available at all convenience stores	Walkable neighborhoods/ public transit to get to grocery stores	Nutrition standards across all schools and childcare facilities
Secondary	Food prescription programs	Intergenerational healthy cooking classes/ demonstrations	Healthy meal options at all workplaces	Fresh meal delivery services	Expand SNAP benefits
Tertiary	Individualized nutritional counseling	Healthy living support groups	Encourage vending machine suppliers to include healthy food options	Farmers markets in under resourced areas of the community	Calorie counts and menu labeling at all restaurants

INTERVENTION LEVEL

Source: Community Health Improvement Model, National Association of County Health Officials

As you complete this analysis, you may find that to adequately and successfully address the priority area, additional interventions may need to be created and implemented across the community. For example, if food security is one of your priority areas of focus but you found after completing the CHIM that there were few programs addressing food security, steps should be taken to identify relevant interventions that need to be implemented in your community.

Listed below are examples of interventions to address the five dementia-related SDOH discussed above. Healthy People 2030 and The Community Guide are good sources for additional community-level, evidence-based interventions. While selecting the relevant intervention, it will also be important to identify some key evaluation metrics. More detail on this will be provided in the next section. Even though you are addressing SDOH related to risk for dementia, these interventions are general to the specific SDOH issue, which affect more than just dementia. So, you should remember to incorporate brain health messaging in your activities wherever possible. The CDC and National Association of Chronic Disease Directors (NACDD) developed a helpful guide on integrating Alzheimer's Messages into Chronic Disease Programs that can be accessed on the CDC website.

Educational Quality

High School Completion Programs
Develop high school completion programs for at-risk students. Examples of such programs include vocational training, social-emotional skills training, and mentoring.

Out-of-School-Time Academic Programs
Offer math or reading programs outside of school hours to academically at-risk students to improve skills. These programs may also be coupled with sports or counseling.

Economic Stability

Tenant-Based Housing Voucher Programs
Provide vouchers to enable households with low incomes the opportunity to afford safe housing in safe communities.

Transitional Job Programs
Offer temporary jobs to help individuals learn basic work skills and gain work experience.

Nutrition and Food Security

School-Based Gardening
Provide hands-on gardening experiences and nutrition education to children in schools.

Healthy School Meals for All
Offer free, nutritious meals to all students regardless of household income.

Safe and Healthy Environment

Outdoor Exercise Opportunities
Improve existing – and establish new – parks, trails, and greenways; then, use these spaces for community events and group exercise. These are most effective when combined with additional interventions to increase physical activity.

Improve Active Transportation
Designate bike lanes, improve sidewalks, and increase the number of crosswalks.

Social Connections

Social Support Exercise Programs
Create new social networks or leverage established networks to encourage physical activity; this would address social engagement as well as exercise, which is a modifiable risk factor for cognitive decline.

Volunteer Driver Programs
Engage volunteers, especially in rural areas, to serve as drivers in their community to help bring people to community events and other social opportunities.

STEP 4: IMPLEMENTATION AND EVALUATION

After understanding your community's needs, setting priorities, mapping key partners, and identifying programs or interventions, the next step is implementation. The implementation phase engages partners to carry out action plans for dementia-related SDOH. Implementation is often most successful when it is integrated into existing community programs. Embedding brain health actions or risk reduction strategies into ongoing health and social services ensures efficient resource use and extends the program's reach. Aligning these efforts with initiatives like chronic disease prevention, public health equity, or state health plans helps reinforce community health outcomes.

Before launching your program, it is important to define evaluation metrics that align with your community's objectives and support ongoing progress tracking. Use the initial data collected to measure short- and long-term changes over time, such as improvements in stated program outcomes, participation rates, or policy advancements. Regular progress reviews with partners will ensure the program remains adaptable and responsive to emerging needs, while fostering long-term, sustainable impact.

Some examples outcomes for dementia-related SDOH include:

Educational Quality

- Increase the percentage of elementary schools whose students are at or above proficiency levels in math and reading
- Decrease the teacher-student class size ratio, particularly in elementary grades

Economic Stability

- Increase the number of low-income families who have moved into safe housing
- Increase the number of teenagers from neighborhoods without adequate support who participate in summer job programs

Nutrition & Food Security

- Increase the number of children receiving a free, healthy lunch at school
- Increase the percentage of the community that lives near sources that sell healthy foods

Safe and Healthy Environments

- Increase the number of adults and children who walk or bike to school and work
- Increase the percentage of the community with useable sidewalks
- Increase the percentage of the community that lives near greenspaces

Social Connections

- Increase the number of adults enrolled in group-based exercise programs
- Increase the number of group-based programs offered each week by community centers

After determining the outcomes, you will then have a complete action chart, as the example below illustrates, that can guide your work to address dementia-related SDOH. A fillable version of this table can be found in Appendix B.

Outcome: Increase Accessibility/Consumption of Healthy Foods						
Intervention	**Key Action Items**	**Lead**	**Partners**	**Barriers**	**Deadline**	**Evaluation Metric**
Vegetable gardening classes at school	Approval from school Contract with gardening expert and develop curriculum Introduce to students/family	School nurse	School Local garden center PTA	Getting buy in from all parties Negotiating payment with contractor	Introduce by Fall 2025	Number of classes held Number of students in the class Fruit and Vegetable consumption

Evaluation efforts – including data collection, analysis, and plans for continuous program improvement – should include diverse voices and should engage as much of the community as possible. Various types of data collection, including interviews, surveys, focus groups, and quantitative methods may be used to gather information. Some organizations may find it helpful to partner with consultants or other groups that specialize in public health evaluation and progress tracking. For additional guidance on setting up an evaluation plan and logic model, use the CDC Framework for Program Evaluation

Reports, community gatherings, and social media are effective ways to disseminate program results. Sharing this information and lessons learned can help other groups that might be interested in addressing SDOH related to dementia in their own communities. Information sharing can also help to increase the credibility of your program and secure future support and funding for program expansion.

The role of the Center is to help equip public health professionals with practical tools, resources, and strategies to address dementia risk factors, including SDOH, across their communities. By leveraging this toolkit and following its steps, communities can act on SDOH to reduce dementia risk and promote brain health.

For additional information about implementing these steps in your community, a real-world case example, accessing fillable tables mentioned throughout the toolkit, and additional SDOH resources, please refer to Appendices A-D.

Appendix

APPENDIX A:
Case Example: Improving Outdoor Space in Greendale, WI

To foster healthy aging for all people, the village of Greendale, WI, with leadership from the health department, formed SAGE (Successful Aging in Greendale for Everyone), aimed at supporting innovative solutions that promote healthy living for all residents. As a part of these efforts, SAGE developed a plan to address green space in their community that is summarized here through the four-step process.

STEP 1: IDENTIFICATION OF NEEDS

The SAGE group led listening sessions, engaged with community members, and conducted a community assessment and data analysis to identify their priority areas. Their various methods of data collection and assessment revealed that some community members were hesitant to use green space due to poor signage and structure. With this understanding of community need, SAGE selected improvement of outdoor spaces and buildings as one of their priority areas of focus.

STEP 2: PARTNERSHIP MAPPING

SAGE identified and engaged with community members and groups that could help support them in their goal to improve outdoor space. SAGE identified the Department of Public Works and the local Girl Scout Troop as key partners to help assess and implement appropriate solutions.

STEP 3: PROGRAM AND ASSET ANALYSIS

SAGE then collaborated with their identified partners to conduct a more thorough assessment of the green space and to identify different interventions that could be implemented to improve the community. SAGE and partners completed a "Walking Audit" of the town and identified several areas for improvement. Results of the audit were presented to the Greendale Board of Health. Based on all of the findings, SAGE and its partners developed a green space improvement plan describing recommendations for improvements and funding requests.

STEP 4: IMPLEMENTATION AND EVALUATION

In developing the improvement plan, SAGE laid out a number of key metrics to evaluate against, including the increase in number of benches and signs within the walking paths. The Greendale Village Board approved funding requests to place 3-5 benches along walking paths. SAGE and partners were also able to install walking path signage and create updated walking maps. To evaluate the improvements, SAGE utilizes an online tool to assess both usage of the news maps and benches as well as satisfaction. These improvements have made outdoor space in Greendale safer and more inclusive for all residents.

Learn more about Greendale's public health efforts, including SAGE, here.

APPENDIX B:
Fillable Activities for Dementia-Related SDOH Planning

STEP 2: PARTNERSHIP MAPPING

Partner	Contact Person	Area of Impact	Level of Influence in Community	Potential Role

COMMUNITY HEALTH IMPROVEMENT METRIC

PREVENTION LEVEL	Individual	Interpersonal	Organizational	Community	Public Policy
Contextual/ Primary					
Secondary					
Tertiary					

INTERVENTION LEVEL

STEP 4: IMPLEMENTATION AND EVALUATION

Intervention	Key Action Items	Lead	Partners	Barriers	Deadline	Evaluation Metric

APPENDIX C:
SDOH Data Sources

Social Determinants of Health: Available Data at the State Level

Category	Question	Source
Economics	Household Income (Categorized)	American Community Survey
		Behavioral Risk Factor Surveillance System
		Current Population Survey
	Employment Status (Categorized)	American Community Survey
		Current Population Survey
	Social Vulnerability Index (Calculated Measure 0-1)	CDC Social Vulnerability Index
		CDC Minority Health Social Vulnerability Index
Social Isolation	Adults Who Live Alone (Y/N)	Behavioral Risk Factor Surveillance System
Food Insecurity	Food Quality/Preference (Categorized)	Current Population Survey
	In last 12 months - worried food would run out before it could be replaced due to money? (Sometimes, Often, Never)	
	In last 12 months - couldn't afford to eat balanced meals? (Sometimes, Often, Never)	
	In last 12 months - food ran out and could not afford more? (Sometimes, Often, Never)	
	In past 12 months - received emergency food from church, food pantry, or food bank? (Y/N)	
	During the past 12 months how often did the food that you bought not last, and you didn't have money to get more? Was that... (Always, Usually, Sometimes, Rarely, Never, Don't know/not sure, Refused)	BRFSS SDOH Optional Module
	Access/Proximity to Grocery Stores (Calculated Measure)	Food Environment Atlas
	Percent Food Insecure (Calculated Measure)	Food Environment Atlas

<table>
<tr><td rowspan="5">Environment</td><td>Walkability Scores for Census Blocks (Calculated Measure)</td><td>EPA National Walkability Index</td></tr>
<tr><td>Air Pollution
(Particulate Matter 2.5)</td><td>EPA AirNow</td></tr>
<tr><td rowspan="3">Air Pollution
(Particulate Matter 2.5)</td><td>National Environmental Public Health Tracking Network</td></tr>
<tr><td>NASA Socioeconomic Data and Applications Center</td></tr>
<tr><td>American Community Survey</td></tr>
<tr><td rowspan="5">Education</td><td rowspan="3">Highest Level of Attainment
Expenditures per Pupil</td><td>Behavioral Risk Factor Surveillance System</td></tr>
<tr><td>Current Population Survey</td></tr>
<tr><td>National Center for Education Statistics</td></tr>
<tr><td>Teacher/Counselor to Student Ratio</td><td>Dept. of Ed. Civil Rights Data Collection</td></tr>
<tr><td>Charges of Employment Discrimination and Resolutions</td><td>US Equal Employment Opportunity Commission</td></tr>
<tr><td rowspan="3">Discrimination</td><td>Has child ever experienced racial/ethnic discrimination?</td><td>Data Resource Center for Child and Adolescent Health</td></tr>
<tr><td>How often do you think about your race? Would you say never, once a year, once a month, once a week, once a day, once an hour, or constantly? (Never, Once a year, Once a month, Once a week, Once a day, Once an hour, Constantly, Don’t know / Not sure, Refused)</td><td rowspan="2">BRFSS Reactions to Race Optional Module</td></tr>
<tr><td>Within the past 12 months, do you feel that in general you were treated worse than, the same as, or better than people of other races? (Worse than other races, The same as other races, Better than other races, Worse than some races, better than others, Only encountered people of the same race, Don’t know / Not sure, Refused</td></tr>
</table>

Discrimination (continued)	Within the past 12 months at work, do you feel you were treated worse than, the same as, or better than people of other races? (Worse than other races, The same as other races, Better than other races, Worse than some races, better than others, Only encountered people of the same race, Don't know / Not sure, Refused)	BRFSS Reactions to Race Optional Module
	Within the past 12 months, when seeking health care, do you feel your experiences were worse than, the same as, or better than for people of other races? (Worse than other races, The same as other races, Better than other races, Worse than some races, better than others, Only encountered people of the same race, Don't know / Not sure, Refused)	
	Within the past 30 days, have you experienced any physical symptoms, for example, a headache, an upset stomach, tensing of your muscles, or a pounding heart, as a result of how you were treated based on your race? (Yes, No, Don't know / Not sure, Refused)	

APPENDIX D:
Additional Resources

SDOH Infographics
The Center released a set of five infographics that showcase information on SDOH related to dementia including education, economics, access to nutritious foods, social connections, and the environment, as well as strategies to address these topics.

AAIC SDOH Workshop Summary
This report summarizes the Center's SDOH workshop that was held at AAIC 2022 in San Diego. This workshop convened researchers and public health officials to discuss SDOH related to dementia risk.

Summaries on the State of the Science: SDOH
In partnership with expert researchers, the Center developed short summaries on the current state of the evidence on a variety of SDOH and their association with dementia. Summaries on the modifiable risk factors for dementia can also be found on alz.org/media/Documents/compiled-evidence-based-reports.pdf.

Suggested Recommendations for State Alzheimer's Plans
This document provides examples of risk reduction-related recommendations, including some related to SDOH, that can be included in state, local, tribal or territorial Alzheimer's plans.

Recording of the May 2023 Risk Reduction Summit
The Center's Dementia Risk Reduction Summit explored how public health can address the risk factors for cognitive decline and dementia across the public health prevention spectrum: from working in partnerships and with health systems to addressing community education and workplace practices. The last session of the Summit included a panel discussion about SDOH. This recording covers all sessions from the two-day event.

Healthy Brain Initiative, State and Local Road Map for Public Health, 2023-2027
The Healthy Brain Initiative Road Map is a guide for state and local public health professionals to address brain health in their communities. This fourth edition of the Road Map builds on progress to date and also includes specific actions related to addressing SDOH to promote health equity across communities.

Alzheimer's Association Health Equity in Dementia Curriculum
This online course titled, *Health Equity in Dementia – Using a Public Health Lens to Advance Health Equity in Alzheimer's and Other Dementia*, focuses on the health equity aspect of Alzheimer's disease from a population-based, life course approach and features helpful information on SDOH. This course is 90 minutes long and is designed for public health students and professionals.

EVALUATION

Thank you for utilizing Addressing Social Determinants of Health and Dementia Risk: A Toolkit for Public Health Agencies from the Alzheimer's Association Public Health Center of Excellence on Dementia Risk Reduction. Please take a moment to provide feedback on your experience by clicking the button or scanning the QR code.

SHARE FEEDBACK

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