



Guidance Document to Diabetes Prevention and Control Programs

Effective Use of Indicators for Exploring the Social Determinants of Health

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INTRODUCTION

Social Determinants of Health

Health management is a complex issue. The U.S. leads the world in medical research and medical care, yet the overall health of Americans is not improving as might be expected. The prevalence of diabetes in the U.S. has almost doubled in the past 15 years, obesity rates continue to increase, and there has been little change in the participation of leisure-time physical activity in the past decade.

There is increasing evidence that substantial gains in the health of Americans cannot be made until the underlying social factors behind disease are identified and addressed. Most public health programs recognize the importance of individual behavior and choices that can lead to good health. Social Determinants of Health (SDOHs) refer to the idea that where we live, learn, work, and play has a powerful impact on our health, quality of life, and life expectancy. SDOHs highlight the notion that, in addition to personal responsibility, social norms, and values, economic and social policies play a significant role in ensuring individuals are empowered to make healthy choices. Population health will improve as options become more universally available. Economic and social policies can successfully impact the SDOHs.¹

Measuring and understanding SDOHs can be a challenging and frustrating. Limited resources make it difficult to learn about the determinants, to find information and collect data, and incorporate the indicators into program planning. Few public health programs have the capacity on their own to address these underlying factors. New partnerships and innovative ideas will be required to ensure that all individuals in our communities have the opportunity to live long, healthy lives, regardless of their income, education, or ethnic background.

RATIONALE

Addressing SDOHs is a key priority listed in the strategic plan for the National Association of Chronic Disease Directors (NACDD) Diabetes Council. The Diabetes Council has established a goal of helping staff members of Diabetes Prevention and Control Programs (DPCPs) understand and become more competent in collecting data for SDOHs so they can develop more effective programs. A subcommittee of the Diabetes Council, the Act on Data Workgroup, is charged with overseeing this goal. In 2009, the Act on Data Workgroup implemented a series of educational conference calls with DPCPs around SDOH indicators and their use. Due to the interest in SDOH and DPCPs' anticipated need for helpful information and resources around SDOH, the Act on Data Workgroup continued to further address SDOH. This process is detailed in the next section.

This document summarizes the process in moving toward a brief list of SDOH indicators, identifies challenges in obtaining SDOH data, and provides data sources for each of the 12 indicators. It also provides ideas and suggestions for incorporating these

measures into program planning, including actual examples from states. Finally, it illustrates some strengths and weaknesses of available data for each indicator selected.

DPCPs are in a unique position to recommend and promote statewide and community-specific policy changes. They have the ability to reach community members to better understand existing disparities. In fact, according to the ten Essential Public Health Services, DPCPs are commissioned to work with communities to identify and solve health problems and to develop policies and plans that can support both individual and community health efforts.²

PROCESS

SDOH Indicator List

The list of SDOH indicators is numerous and, in fact, a document titled “Data Set Directory of Social Determinants of Health at the Local Level,” written by Marianne Hillemeier and colleagues (with assistance from a large workgroup), identified over 180 different SDOH indicators.³ An ad hoc group from the Act on Data Workgroup formed; their first task was to narrow the original SDOH list from more than 180 indicators to a more workable list of 12. The 12 indicators selected were based on feasibility (extent to which indicator could be measured), mutability (the ability for DPCPs to influence the indicator), consistency with national policy objectives, and availability of data at the county level. At least one SDOH indicator was selected from each of the following frameworks: economic, educational, political, public health, and behavioral.

SDOH Indicator Pilot

Despite narrowing the list of SDOH from over 180 to 12, the Act on Data Workgroup wanted to provide guidance to DPCPs on gathering data for these indicators. The Act on Data Workgroup invited states to participate in a pilot project to test the feasibility of accessing and collecting data at the state/county level from the list of 12 SDOH indicators. Four state DPCP staff volunteered to participate in the pilot project: Florida, Idaho, Utah, and Wyoming. These programs were interested because their states were already addressing SDOH or were discussing how they would start. This ad hoc group met twice by phone to discuss the goal of the pilot project and to determine the process by which they would move forward. A workplan was developed with the following goal and objectives:

Goal: Create a guidance document on accessing and using existing data sources for identified SDOH indicators and distribute it to all DPCPs.

Objective #1: By August 13, 2010, at least two state DPCPs will access and utilize identified data sources for the list of 12 indicators in diabetes prevention program planning, evaluation, and integration opportunities with obesity prevention and other upstream focused programs.

Objective #2: By September 30, 2010, a guidance document will be complete and ready to send to all Diabetes Prevention and Control Programs.

The group determined that it was important to focus on indicators for which data were available, that are related to prevalence of diabetes and its complications, and that can be influenced.

The four pilot state programs collected data on the 12 SDOH indicators individually. Each state reported the methods and sources they used to access the data for each indicator. The ad hoc group reported on the process, difficulties, and limitations to collecting data for each SDOH indicator. Strengths and weaknesses of each data source were also identified. Pilot states also addressed how the findings might influence program decisions and drive interventions.

Results of this pilot project are presented in the following section. Findings are summarized in a table that includes the recommended data sources and challenges with using the data. The “Ease of Accessing” column ranks the groups’ reported ease or difficulty in obtaining and interpreting the data. The table also includes program plans for using the information. More detailed information about each indicator follows the table.

Overall, this process demonstrated the data are available and accessible, but some sources have significant limitations. The outcome of the ad hoc group’s work is this guidance document. It is intended to be a resource to DPCPs for using SDOH indicators to collect data, which can then be used when making program decisions.

TABLE OF SELECTED INDICATORS AND RELEVANT INFORMATION

Note: Additional information on indicators follows this table.

Indicator	Recommended Data Source(s)	Challenges for Using Available Data (accessibility, cost, update, ability to cross tab)	Ease of Accessing
Economic Indicators			
1. Poverty rate (geographic concentration of poverty) Neighborhood and community characteristics influence behavior	Census Bureau; Behavioral Risk Factor Surveillance System (BRFSS)	Census estimates cannot be cross-tabbed with demographic and other information.	Easy
<u>Data Plan:</u> Use census data to identify poverty rates by geographical areas (e.g., counties). Use BRFSS (combined years as needed) to obtain rates of diabetes for adults by the same geographic level. Also, use BRFSS to examine diabetes prevalence by employment status, household income, and education level of respondent.			
2. Percent of families with incomes less than half of the poverty line (measures deprivation association with poverty-level income)	Census Bureau; BRFSS	If using BRFSS, there may be some cost involved in increasing precision of the poverty estimate (More income categories may be needed; family size may need to be added as a state-added question).	Easy
<u>Data Plan:</u> Use BRFSS to obtain a proxy measure of the percentage of families in a geographic area with income less than 50% of poverty. Compare percentage obtained from BRFSS with percentage from census if rates seem comparable. Evaluate how similar the two measures are. We may need to consider adding questions on BRFSS (family size/family income) to assess this measure. Like #1 above, use census data to identify geographical areas and populations in poverty that may benefit from certain types of diabetes interventions.			
3. Cigarette tax (cost of cigarettes may influence smoking behaviors)	Websites: Tax Foundation; American Lung Association State Tax Commission; Campaign for Tobacco-Free Kids; State Quitline/ Quitnet	Several data sources are available online at no cost	Somewhat easy
<u>Data Plan:</u> Observe how changes in cigarette tax affect calls to Tobacco Quitline or Quitnet. Consider adding a question to the quitline survey about callers' diabetes status so the percentage of callers to Quitline who have diabetes can be determined. Use BRFSS to measure the percentage of people with diabetes who smoke and percentage with quit attempts. Measure cigarette consumption, which can be reported as a "per capita" rate for looking at decreases or increases in cigarette consumption while controlling for population size and/or changes in population.			

Educational Indicator			
4. Educational attainment among persons aged ≥ 25 years	Census Bureau; BRFSS	Census information is available online at no cost; educational attainment is a BRFSS core question	Easy
<u>Data Plan:</u> Identify counties with low education rates. Possibly combine with counties in poverty to identify prioritization areas. Use BRFSS to examine diabetes prevalence by education level.			
Political Indicator			
5. Expenditures for health and welfare	Census of Governments	No cost; data are available online but information is outdated.	Difficult
<u>Data Plan:</u> Examine whether prevalence of diabetes decreases as amount of money expended increases for relevant geographic areas. Could potentially use expenditures to indicate percentage of local budget allocated to public health investments.			
Public Health Indicator			
6. Chronic disease control programs	Local Health Department Infrastructure Study, state DOH directory	No cost	Easy
<u>Data Plan:</u> Use this indicator (number of chronic disease control programs) as a proxy measure for state capacity. Examine rates of diabetes, risk factors, and co-morbid conditions by local health department areas. Gather additional information on staffing needs, partnerships and collaborations with other groups and organizations in the state. Examine rates of diabetes, risk factors, and co-morbid conditions by local health district. Use infrastructure information as part of the profile description for local health departments			
Behavioral Indicators			
7. Directory of local smoking cessation programs.	Quitnet National Directory; State Tobacco Prevention and Control Programs	No cost	Easy
<u>Data Plan:</u> Identify geographic areas without tobacco cessation programs. Use BRFSS to identify smoking rates for people with diabetes in geographic areas with and without a tobacco cessation program. Also, obtain a list of diabetes education programs and examine smoking rates (from BRFSS) for people with diabetes by presence or absence of diabetes education programs.			
8. Expenditures on natural resources, parks, and recreation	Census of Governments Other sources ⁴	Available online at no cost	Somewhat Easy
<u>Data Plan:</u> Examine association between natural resources, parks and recreation expenditures and the prevalence of diabetes and its related risk factors (using BRFSS) by geographic areas. Examine association between natural resources, parks and recreation expenditures and the percentage of adults engaging in physical activity (using BRFSS) for adults with or at risk for diabetes.			
9. Type, frequency, and duration of physical activity	BRFSS	Data available in odd years only, in most states	Easy
<u>Data Plan:</u> Examine association between physical activity and diabetes prevalence and complications. Examine association between lack of physical activity and other diabetes risk factors.			

10. Food intake history	BRFSS	BRFSS Data available in odd years only, in most states	Easy
<u>Data Plan:</u> Examine association between fruit and vegetable consumption and diabetes. Examine association between fruit and vegetable consumption and diabetes risk factors.			
11. Number of supermarkets, convenience stores	Economic Census ⁵	Available online at no cost; data are not current.	Somewhat Difficult
<u>Data Plan:</u> Use data obtained from food programs on number of supermarkets by county. Examine supermarket density by fruit and vegetable consumption (using BRFSS); examine convenience store density by fruit and vegetable consumption (using BRFSS); examine ratio of supermarkets per capita to fast food restaurants (See Indicator 12); examine supermarket density and diabetes prevalence; examine convenience store density by diabetes prevalence; examine density of health food stores by diabetes prevalence.			
12. Number of fast food restaurants	Economic Census ⁵	Available online at no cost; data are not current	Somewhat Difficult
<u>Data Plan:</u> Examine fast food restaurant density by obesity rates, diabetes rates, and fruit and vegetable consumption (using BRFSS). Examine ratio of supermarket to fast food restaurant density (see Indicator 11); examine fast food restaurant density and frequency of fast food consumption with BRFSS state-added questions.			

RATIONALE AND DETAILED INFORMATION ON INDICATORS

The following is detailed information for each SDOH indicator, how to access the indicator, and potential barriers and limitations.

1. Poverty rate

Poverty is associated with a host of adverse health conditions, including higher rates of obesity, smoking, certain diseases (e.g., asthma and diabetes), and lack of access to healthcare.⁶ Poverty is one of the most influential determinants of health, but it can be difficult to accurately represent. The official poverty figures, as reported by the U.S. Census, use a complex formula based on income, family size, number of children, and age. Although thresholds are updated annually, the criteria used for the calculation may be outdated and may not reflect poverty status as accurately today as they did years ago when the measure was first developed.

The pilot group recommends two ways to obtain information on poverty. The U.S. Census publishes the number of people in poverty in its profile sheets (see www.census.gov). Profiles provide the percentage of the population in poverty by a number of geographical areas, including national, state, county, and larger metropolitan areas. It is also possible to download the information contained in the profile sheets as a dataset so limited manipulation can be done. Census information is readily available and accessible at no cost.

Census estimates on the profile sheet cannot be combined with other indicators or examined in relationship to other factors (e.g., age). The American Community Survey (an ongoing survey conducted by the U.S. Census) collects information annually on income for the state, as well as for cities and counties with populations of 65,000 or more.⁷

An alternative method to collect poverty information is to use Behavioral Risk Factor Surveillance System (BRFSS) income data to calculate poverty. This method has limitations, however. BRFSS estimates for income are collected by category, not single dollar increments, and estimates can only be roughly calculated. Furthermore, there is not much discrimination in the upper income categories (i.e., BRFSS collects income in \$5,000 increments up to \$75,000, and all income \$75,000 and over is collapsed into a single category). Poverty is based on family size but it is not possible to tell family size from BRFSS. While BRFSS asks about children living in the respondent's household, there is no way to find out about children in the family who do not live in the household, or whether or not the children living in the household are members of a single family. Some states suggest a reasonable proxy measure for poverty would be to use the household income midpoint for income and sum the number of children and adults living in the household for total number in the family. Some states use smaller categories for income in the core BRFSS income question to obtain a more precise measurement.

2. Percentage of families with incomes less than half of the poverty line

The percentage of families with incomes less than half of the poverty line is used to indicate level of deprivation associated with poverty-level income. The Census uses this measure to estimate the economic status of a community, which often reflects social characteristics and values of its members.

Information on the percentage of families with income less than half of the poverty line is collected through the American Community Survey and is available on the Census website (See: <http://factfinder.census.gov>) It is available at national, state, county, and sub-county levels (e.g., metropolitan areas, school districts, public use microdata area, and others). Updated income data from the American Community Survey is limited to states and the most populous counties.

Using census data does not allow for combinations or cross-tabulations with other variables. It does, however, provide data on multiple educational categories.

An alternative method to consider is using BRFSS data. The limitations for using BRFSS for this indicator are the same as for estimating the poverty rate. BRFSS does not collect single-unit income, and there is a lag time of a year or more from the time data are collected until they are available for use.

3. Cigarette tax

Since 2002, the average state cigarette tax has increased from 43.4 cents to \$1.45 a pack. In 2009, the federal government passed a 62-cent increase in the federal cigarette tax to provide additional funds to the State Children's Health Insurance Program (SCHIP).⁸

Increasing the cigarette tax has been an effective way to reduce smoking among both youth and adults. A ten-percent increase in the price of cigarettes can reduce cigarette consumption by about four percent.⁹ According to the Campaign for Tobacco-Free Kids, a cigarette tax increase is a "WIN, WIN, WIN solution for governments." An increase in cigarette taxes can reduce smoking, save lives, raise revenue, and reduce health care costs.¹⁰ Increases are also generally viewed favorably by the public.¹¹

There are a number of online data sources for this information. The Campaign for Tobacco-Free Kids website (<http://www.tobaccofreekids.org/reports/prices>) links to state-level tax information, federal and state fact sheets, and more.

Another source is the American Lung Association (<http://slati.lungusa.org/default.asp>), which has links for fact sheets, reports, and resources, and links for state laws and policies.

The Tax Foundation site (<http://www.taxfoundation.org>) has broader information about all types of taxes and information by state is also available. However, the pilot group found this website was not easy to navigate, and data were not as current as other sources.

One barrier to utilizing tobacco tax data is the lack of regional tax estimates. This information would be beneficial for examining if a tax increase in one state tended to increase consumption in neighboring states with a lower tax. Also, it is difficult to tie this information directly to the diabetes population; therefore, it might have limited use for looking at per capita declines in smoking among persons with diabetes.

The pilot group recommends working with state tobacco programs to assess how changes in the cigarette tax affect calls to the state Quitline. All states using Free&Clear as their Quitline contractor should have data available about registrants with diabetes, as its part of the Free&Clear intake protocol. At least one state (Florida) added a question to the Quitline asking if callers had been diagnosed with diabetes or another chronic disease. This information will help determine if the percentage of people with diabetes who smoke and the percentage with quit attempts can be measured.

4. Educational attainment among persons aged \geq 25 years

Education is positively associated with better health. A study from the Robert Wood Johnson Foundation found people with higher levels of education enjoyed better health, independent of race or ethnicity.¹² Most studies use age 25 as the cut-off point for measuring education, as a large proportion of individuals have completed the major part of their education by that age. Educational attainment is readily available from BRFSS every year as one of the core questions. These data are readily available in every state and can be cross-tabbed with other variables, including age, gender, and diabetes status. BRFSS also collects education information in six categories.

Educational attainment is also available on the Census site, but it uses different categories than BRFSS. (FactFinder: <http://tiny.cc/4zsc4>). Census profiles are provided for all counties at the census tract level; however, only two categories of education are available (high school degree and 4-year degree). Educational attainment data are updated annually through the American Community Survey and information is available in multiple education categories. As for income data, updated educational level data is only available for the most populous counties, and is not available below the county level for some states.

A third possible source for education data is the Current Population Survey, also produced by the U.S. Census. The fact sheet is available at: <http://www.census.gov/population/www/socdemo/education/FS-educatt.html> and compares the American Community Survey with the Current Population Survey.

5. Expenditures for health and welfare (percentage of local budget for public health)

Assessing regional variations in expenditures for health and welfare is important before informed policy decisions can be made. There is some evidence that residents of areas where a lower percentage of the local budget is dedicated to public health have poorer health status.¹³ Information on expenditures for health and welfare is available online at: <http://www.census.gov/prod/2005pubs/gc02x43.pdf>.

The pilot group found obtaining data for this indicator challenging. The data were not up-to-date (latest data were from 2002) and the page listed in the Data Set Directory had been changed. Data were not specific enough. For example, dollar amounts were reported for all county governments combined rather than for specific counties. Data were not broken down by type of health expenditure. The list included public welfare and health, but nothing was termed “public health.” Only the amount of the expenditure was provided, and the actual percentage had to be calculated by dividing the amount into the total expenditure. The pilot group also felt that incorporating the use of this indicator for program planning for diabetes would be difficult.

6. Chronic disease control programs

Chronic disease control programs exist because they have been shown to prevent chronic diseases and reduce the prevalence of their risk factors.¹⁴ The CDC’s National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP) supports state public health programs and their efforts to conduct surveillance and research and develop tools.

The pilot group found collecting data as listed in the Data Set Directory for this indicator to be challenging. Data were not up-to-date and users had to register to obtain access to the data. Users had to open links for each of the programs listed on the state site to determine whether or not the programs were chronic disease-related. Additionally, several links on the page were unavailable.

The pilot group recommends using alternative sources to the one listed in the Data Set Directory. Most states have their own directories for chronic disease control programs. For example, Wyoming has a Preventive Health and Safety Division Directory that includes chronic disease control programs.

This information may be obtained through state action plans, such as the Healthy Communities, Healthy People (HCHP) action plans that are available in all states, at different levels of funding. HCHP is a comprehensive, community-based health promotion and wellness initiative designed to reduce major behavioral risk factors associated with chronic diseases through policy and environmental change. This program is administered by the state health offices and is implemented through local and county health departments.

The pilot group felt it was difficult to come up with an applied, practical use for this indicator. The group suggested that the number of chronic disease programs might be an appropriate proxy measure for state capacity, but there was still no way to determine what the “right” amount of capacity should be, or how the data might be applied to program planning.

7. Directory of smoking cessation programs

Smoking cessation programs are a critical component of the health care system. Individuals who have a history of smoking may need special assistance to quit beyond what they can receive from their physicians or other health professionals. Smoking cessation programs have been shown to be one of the most cost-effective public health interventions.¹⁵ BRFSS data can be used to identify geographic areas or populations where smoking rates are highest. Assessing gaps in availability of programs can identify areas where more resources are needed. Some programs may come and go quickly due to funding availability, and maintaining the directory may take more resources than are available.

All states have a Tobacco Quitline, a telephone hotline that connects callers who want to quit smoking to a Quitcoach. The National Quitline Consortium recommends that all states include a question about chronic disease history that is asked to all Quitline callers. Most, if not all, states adhere to this standard, so it should be fairly simple to learn the percentage of Quitline callers who have been diagnosed with diabetes. Smoking cessation program information can be obtained by consulting directly with state Tobacco Prevention and Control Programs. In some states, the directory may be available through online local resources index. For example, Florida’s Quitline information is available at: <http://floridaquitline.com>.

One of the states in the pilot group noted an interesting way to use this indicator. In Wyoming, there is a smoking cessation program available in every county, but use of the cessation program may be encouraged by diabetes educators. Counties with a diabetes education program may expect to see a higher proportion of smokers with diabetes access the smoking cessation program. The DPCP could examine smoking rates for counties with and without a diabetes education program. For additional information on Wyoming’s program, see: <http://www.health.wyo.gov/mhsa/prevention/wyoquittobacco.html>.

8. Expenditures on natural resources, parks and recreation

Built environments can have a tremendous impact on community levels of physical activity.^{16, 17} Studies show that parks, recreational facilities, and open spaces increase opportunities to engage in physical activity, but policies and funding must be in place to support and sustain them. Built environments have no direct ties to diabetes, but data on the built environment can be used to support physical activity opportunities for people with and at risk for diabetes. The pilot group suggests examining the association

between expenditures for and availability of natural resources, parks, and recreation in different communities with the prevalence of diabetes and related risk factors. Interventions aimed at increasing engagement in physical activity may not be effective if the resources are not available. DPCPs may then choose to focus on policies to increase opportunities as part of their physical activity interventions. DPCPs may wish to review the six strategies put forth by the U.S. National Physical Activity Plan for ideas in this area.¹⁸

Data on expenditures are available online for each state and its counties at: <http://www.census.gov/prod/2005pubs/gc02x43.pdf>. The pilot group noted some challenges with using this measure. The definition of “natural resources, parks, and recreation” measure is not clearly defined on the census website. Also, the data may be out-dated. (At the time this document was written, the most recent data were from 2002).

9. Type, frequency and duration of physical activity

Type, frequency, and duration of physical activity are components of the Healthy People 2010 and proposed for Healthy People 2020. This indicator measures engagement in recommended physical activity. This information is readily available from the BRFSS Physical Activity Module. However, most states use the module in odd years only, and if questions are needed for even years, adding questions can be expensive. As for all BRFSS items, questions on physical activity are self-reported and subject to inaccuracy. Respondents may have different perceptions of “moderate” and “vigorous,” even though it is explained during the interview. This high degree of subjectivity limits the accuracy for the data.

The pilot group also noted the lack of control DPCPs have on the physical activity questions asked on BRFSS. Questions may change (and have changed) over time. For example, the entire physical activity module that has been used since 2001 has been changed for the 2011 BRFSS. A strength training question has been added to the Physical Activity Module and the activity questions have been changed to the questions asked in 2000. While these changes may improve the information obtained on physical activity, unfortunately, there will be a gap in trending physical activity levels between 2000 and 2011.

10. Fresh fruit and vegetable consumption

Daily consumption of fresh fruit and vegetables adds essential vitamins, minerals, and fiber to the diet. There is strong evidence that daily consumption of fruits and vegetables can greatly reduce the risk of cardiovascular disease, stroke, and other chronic diseases.^{19, 20}

The average American consumes less than three servings of fruits and vegetables a day, but the *Dietary Guidelines for Americans* (developed by the Department of Health and Human Services and the Department of Agriculture [USDA]) recommends that most adults should have more than five servings a day.^{21, 22} Information on fruit and vegetable consumption is readily available from the BRFSS Fruit and Vegetable Module. Most states use the module in odd years only. The questions are self-reported and subject to inaccuracy and recall bias. Respondents may have different perceptions of what a “serving” is, leading to over- or under-estimation of fruit and vegetable consumption. They may also have difficulty recalling what they ate in the past day. As with the physical activity questions, DPCPs have no control over the questions asked, and questions will be changed in the 2011 BRFSS. However, questions are similar enough to the current questions that trending may be possible.

Other sources of this information are also available. The Division of Nutrition, Physical Activity, and Obesity State Indicators Report on Fruits and Vegetables 2009 provides information on fruit and vegetable consumption, policies and environmental support for each state. Information is also available online at:

http://www.fruitsandveggiesmatter.gov/health_professionals/data_behavioral.html.

11. Number of supermarkets, convenience stores

Supermarkets carry a large variety of fresh produce, while convenience stores tend to carry snack and convenience foods. Studies have shown that close proximity to convenience stores can be associated with an increase in body mass index.²³ Few studies have been conducted to determine if proximity to grocery stores with a wide array of fruits and vegetables affect consumption, but the RAND Corporation and Hill House Association, with funding from the National Institutes of Health, are beginning a study to see if opening a grocery store in an area of Pennsylvania that has never had a grocery store affects residents’ nutritional status.²⁴ The study lead, Tamara Dubowitz, states “... there is a tremendous gap in our understanding of how changing the neighborhood environment, and specifically geographic access to high quality healthy foods, can potentially affect residents’ health.”

The ratio of convenience stores to supermarkets in a geographic area may account for some of the geographic differences in fruit and vegetable consumption. This information is available on the census (FactFinder) website at: <http://tiny.cc/bumyh>. However, the data are not current and the most recent data available at this time are from 2007. The information may be difficult to access (for example, the proper North American Industry Classification System [NAICS] codes must be identified).

One exciting relatively new source of information is the Food Atlas, available online at <http://maps.ers.usda.gov/FoodAtlas>. This site has an impressive list of state and county resources that include access and proximity to grocery stores, availability of food stores, availability of restaurants, expenditures on food at restaurants, food assistance, food eaten at home, food insecurity, food prices (at stores), food taxes, health (adult diabetes

and obesity rates and low-income preschool obesity rates), local foods, and physical activity data (adult and high school students' physical activity level, recreation and fitness facilities rates per population, and Economic Research Service Amenities Index). The pilot group discovered that many food programs at local health districts can also provide DPCPs with current county level data on the number and locations of grocery and convenience stores.

Food deserts are also becoming a popular way to quantify access to fruits and vegetables. They are usually measured in terms of the physical area they cover (e.g., distance between residential areas and location of fruit and vegetable outlets), but also by intensity, or the degree of challenge people face in accessing a healthy diet (e.g., socio-economic factors that influence eating behaviors).²⁵

Dun & Bradstreet, an organization that houses numerous databases about companies, also provides information on grocery and convenience stores, but databases must be purchased to obtain this information and the cost can be expensive.

The pilot group recommends that DPCPs interested in making policy changes related to supermarket and convenience stores consider establishing a minimum acceptable ratio of grocery stores to convenience stores and propose to city planners to keep this ratio in mind when allowing new stores to open. (See, for example, the study on Retail Food Environmental Index conducted in Canada.²⁶)

12. Number of fast food restaurants

The link between fast food consumption and increased risk of obesity, insulin resistance, and type 2 diabetes is well documented.^{26, 27} Furthermore, fast food consumption increases when restaurants are located close to where people work, study, or live. Students whose high schools are in close proximity to fast food restaurants have higher rates of obesity than those in schools further away.²⁸

Information on fast-fast food restaurant is available on the Census (FactFinder) website at: <http://tiny.cc/bumyh>. However, these census data are not up-to-date.

Dun & Bradstreet may have more current information, but users must purchase databases to obtain the information. DPCPs may wish to check with their local health departments to see if they maintain this information. However, DPCPs should also note that districts may categorize restaurant data differently, which could present challenges for comparing across geographical areas or aggregating data. One state in the pilot project, Utah, added a question of fast- food consumption to the state BRFSS. Information from the Census will be used to plot locations of fast food restaurants and prevalence of consumption in areas with a high density of fast food restaurants will be assessed.

CASE STUDY/EXAMPLE #1: IDAHO

State: Idaho

Indicator: Number of supermarkets, convenience stores

Data Obtained From: Local public health districts, 2010 (current through June)

Goal: Examine counties from the South central region of Idaho (Blaine, Camas, Cassia, Gooding, Jerome, Lincoln, Minidoka, Twin Falls) to determine which county has the highest per capita rate (per 10,000 persons) of grocery stores/supermarkets selling fresh fruit and vegetables.

Barriers: Obtaining data from local health districts may be difficult if rapport hasn't been previously established. Working through the state Food Protection program may streamline the process. Some convenience stores may sell limited fresh fruit so DPCPs will need to decide whether or not to include them. We elected not to include them.

Findings:

	# of grocery stores	2009 Population	Rate / 10,000 population
Blaine	5	22,328	2.24
Camas	1	1,109	9.01
Cassia	7	21,698	3.23
Gooding	5	14,430	3.47
Jerome	2	21,262	0.94
Lincoln	2	4,645	4.31
Minidoka	3	19,226	1.56
Twin Falls	14	75,296	1.80

Brief Discussion: Within this rural area, rates of grocery stores per 10,000 population vary substantially. In addition, the rates for these counties compare favorably to those for more urban counties within the state. This was unexpected as we believed that farming communities would be less reliant on grocery stores. It is possible that a majority of the fruits and vegetables grown in these counties are exported elsewhere.

Plans: We first plan further research in the literature to determine what an acceptable rate of grocery stores per capita might be. In addition, we will look at this indicator in relation to others, such as the number of fast food restaurants and obesity prevalence. As noted in the description of this indicator, an important step will be to establish a minimum ratio of grocery stores to fast food restaurants that can then be used to advocate for more grocery stores in an area.

CASE STUDY/EXAMPLE #2: UTAH

State: Utah

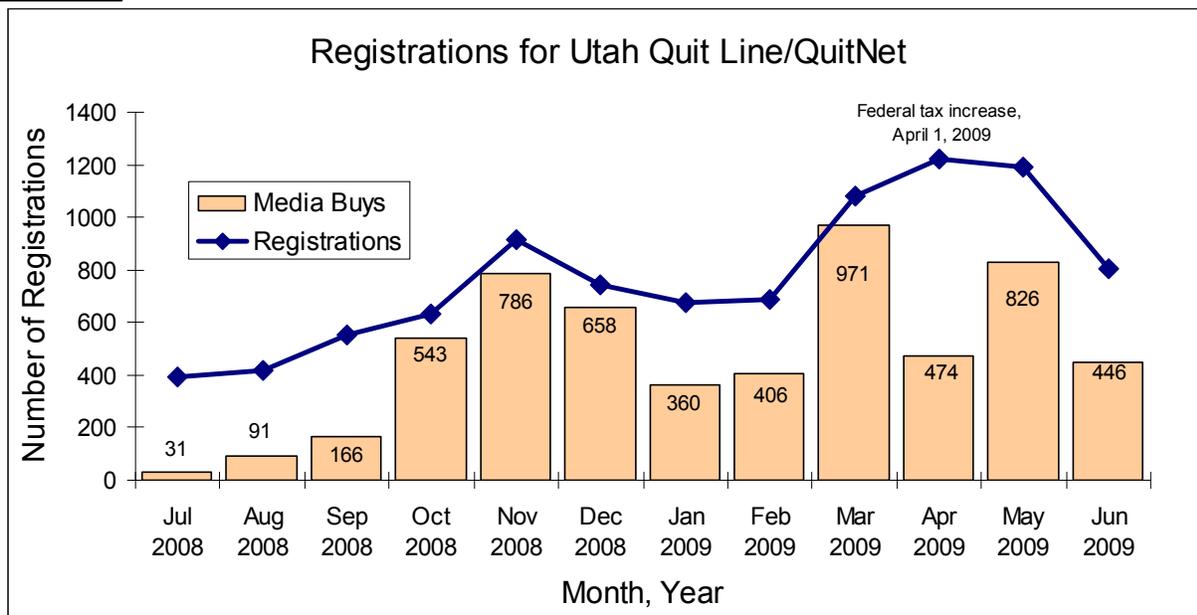
Indicator: Registrations for the Tobacco Quit Line/QuitNet

Data Obtained From: Utah Tobacco Quit Line, Utah QuitNet, and Crowell/Love contractor reports, 2008-2009

Goal: To decrease the smoking rates among Utahns. Cessation efforts can be monitored through Utah Quit Line/QuitNet registrations.

Barriers: Intensity of media advertising, which varies from month to month, can have a substantial impact on Quit Line/QuitNet registrations. It is difficult to determine the degree to which increases in registrations may be due to the number of media buys, the tax increase, or other factors such as broad-scale press coverage.

Findings:



Source: Utah Tobacco Quit Line, Utah QuitNet, and Crowell/Love contractor reports, 2008-2009

Brief Discussion: Smokers seeking services can register by calling the Tobacco Quit Line or going online to register for the QuitNet, the Internet-based smoking cessation service. The highest number of registrations during the fiscal year 2009 coincides with the federal cigarette tax increase in April 2009, despite lower anti-tobacco advertising in that month. Findings suggest that media buys have a substantial effect on registrations, but policy changes (e.g., tax increases) can have an even greater effect.

Plans: Utah has the lowest smoking rate in the nation. Prior to July 2010, Utah ranked in the lowest third of the nation for state-based cigarette taxes. With a \$1.00 tax increase in July 2010, Utah now ranks 17th. The evidence of the impact of increasing cigarette taxes is compelling, and Utah will continue to work with legislators and policy makers to ensure that state taxes on cigarettes are at, or above, the national average. The state will also promote evidence-based cessation programs at no cost to the public.

CASE STUDY/EXAMPLE #3: WISCONSIN

State: Wisconsin

Indicator: Number of fast food restaurants

Data Obtained From: 2007 Economic Census

http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=ECN&_submenuId=&_lang=en&_ts=

Goal: From counties in the Southeastern region of Wisconsin (Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington, and Waukesha), determine the county with the highest rate of fast food restaurants per 100,000 persons. Target this county for specific interventions involving healthier food choices to counter the increased fast food restaurant availability (e.g., increase farmers markets, education, promotion of healthier options).

Barriers:

- Definition of “fast food restaurant” must be clear – using proper NAICS codes – given what you want to address. (The NAICS code used for this example is 7222: limited-service eating places; technical definition: This industry group comprises establishments primarily engaged in providing food services where patrons generally order or select items and pay before eating. Most establishments do not have waiter/waitress service, but some provide limited service, such as cooking to order (i.e., per special request), bringing food to seated customers, or providing off-site delivery.)
- Data was not easily attainable; a separate internet request (using drop down boxes) was necessary for each of the seven counties.
- Data is from 2007; this is the most recent data available.

Findings:

	Number of employer establishments	2007 Population	# establishments / population	Rate / 100,000 population
Kenosha	125	162,921	0.000767243	76.7243
Milwaukee	715	951,252	0.000751641	75.1640
Ozaukee	72	85,602	0.000841102	84.1101
Racine	124	195,099	0.000635575	63.5574
Walworth	85	100,800	0.000843254	84.3253
Washington	97	128,211	0.000756565	75.6565
Waukesha	333	379,333	0.000877857	87.7856

Brief Discussion: Rates of fast food restaurants per 100,000 population were not very different between the seven counties. Furthermore, based on what is known about these seven counties, the rates are not what we would have expected (e.g., in general, Racine County has poorer health outcomes, compared to Waukesha County, which would lead one to think that the rate of fast food restaurants per 100,000 would be higher for Racine County than Waukesha County, and this is not the case). Therefore, using **only** this measure to make major program decisions might not be a good idea.

Plans: If basing program planning solely on the rates of fast food restaurants per 100,000 population, we would plan projects/interventions specifically in Waukesha County. For example, to counter the increased fast food restaurant availability, the DPCP could work with appropriate groups to increase reach of the farmers market, increase education outreach regarding healthy choices, or even address policy issues (e.g., zoning to prevent new fast food restaurants from entering the county). However, just using this one indicator, perhaps the information is incomplete. It is ideal to look at this indicator with additional indicators and base program planning on a more complete picture of multiple SDOH indicators.

LESSONS LEARNED

Social determinants of health play a powerful role in a population's health, quality of life, and life expectancy. They address individual, social and economic environments, and health systems for addressing preventing and treating disease. These determinants cover a broad range of factors that include poverty, community participation, environment, and government.

The pilot group has several key recommendations based on the findings from this project. First, data are available in some form for almost every determinant, but in some cases, the information may be costly, out-of-date, and difficult to access or interpret. Data are readily available for some indicators but it can be challenging to find information for others. DPCPs may wish to consider the difficulty and cost of obtaining information about the indicator's value and applicability to the program before trying to obtain data. A better understanding of the indicators and the social characteristics that are tied to them may help DPCPs identify new ways to reach the hard-to-reach populations.

The pilot group recommends talking to other programs in your state to see what sources of local data may be available. Local data may be more accessible than data available online. Communicate your work in this area with other programs in your state. There may be considerable interest in this area.

NEXT STEPS /IMPLICATIONS FOR THE FUTURE

The Act on Data Workgroup hopes this guidance document will be a resource to DPCPs that are currently addressing SDOHs, those beginning work in this area, and those who have not yet explored this new area of interest.

The three case studies provided are examples of how DPCPs can use SDOH indicators in their program planning and implementation to address SDOH. These case studies can serve as a springboard or starting point to addressing SDOH or they may serve as examples to begin brainstorming within a DPCP.

DPCPs must be aware of changes to BRFSS. The pilot workgroup encourages DPCPs to consider adding the Social Context Module (Module 26) to their state BRFSS questionnaires. This module includes questions on stress or worry about paying rent /mortgage, paying for nutritious meals, number of hours worked, and whether or not paid by salary or wages, and voting history. All states will include the first question of the module, "Do you own or rent your home?" as part of the core questionnaire.

The pilot workgroup encourages those DPCPs with access to resources to consider using maps (Geographical Information Systems) to illustrate geographic areas with excess rates of the indicators and layer them with prevalence of chronic diseases and their risk factors.

As the Act on Data Workgroup moves forward with dissemination of this guidance document, we hope to collect ideas from DPCPs of how this information might influence decision-making, policy development, and quality improvement

CONCLUSIONS

SDOHs are clearly an extremely important component of health, yet there is little step-by-step guidance available for obtaining data on SDOH and exploring the affect on prevalence of chronic diseases and their risk factors. There is even less information about how this type of data can be used in program planning.

This project was conducted to provide guidance to state DPCPs wishing to enhance capacity in assessing and using SDOHs in program planning. This document provides examples and suggestions for a limited number of indicators. We hope this document will inspire DPCPs to look further into using SDOHs indicator data when making program decisions, with a goal of leading to awareness of the importance of SDOHs as part of the protocol for implementation of policies and programs.

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APPENDIX A: INFORMATION ON GENERAL DATA SOURCES

This appendix provides details about data sources mentioned in this document. It also includes sources that are specific to a particular state.

Social Determinants of Health Resources

Data Set Directory of Social Determinants of Health

http://www.cdc.gov/dhdsp/library/data_set_directory/pdfs/data_set_directory.pdf

This resource was the primary source for information for each of the 12 indicators.

U.S. Census Resources

U.S. Census

www.census.gov

This is the home page for the U. S. Census. Information obtained through this site includes information on people and households, business and industry, geographical sites (maps), news releases, and special topics.

Census Fact Sheets

<http://factfinder.census.gov>

This site allows users to obtain a fact sheet that provides a demographic profile of the population by state, county, city/town, or zip code.

Census of Governments

<http://www.census.gov/govs/index.html>

This site provides information for federal, state and local governments. It has information on government spending at all levels and statistics on taxes.

Finance of County Governments: 2002

<http://www.census.gov/prod/2005pubs/gc02x43.pdf>

This 247-page document provides financial information for state and county governments. It includes a large amount of detail on county finances, such as information as county revenue by source, expenditures of county governments, and percent distributions of expenditures. Tables 7 and 8 (in the Finance of County Governments) are referred to in this guidance document.

Census of Governments

http://www.census.gov/govs/estimate/index.html#state_local.

This site includes statistics on revenue, expenditure, debt, and assets for the U.S. and each of 50 state governments and the District of Columbia. Data can be downloaded in Excel format or text format.

Economic Census

<http://tiny.cc/s0zlk>

This site allows the user to query on a large number of options on economic resources. Information in this guidance document uses information from this site to find the number of restaurants in a geographic location. Use Sector 72 (Accommodation and Food Services) to get the actual number of restaurants.

States may also wish to contact their state tax commissioners to what other type of information may be available.

Behavioral Risk Factor Surveillance System (BRFSS)

Behavioral Risk Factor Surveillance System (BRFSS)

www.cdc.gov/brfss

This site contains the BRFSS questionnaires (In English and Spanish), downloadable databases, links to chronic disease indicators, technical information, operational and user's' guide, and a training module for interviewers.

Tobacco Resources

Campaign for tobacco free kids

<http://www.tobaccofreekids.org/index.php>

This site provides information on tobacco research and initiatives. A link in the left frame allows users to select a state and obtain a quick data summary of tobacco use, mortality, costs and industry influence.

American Lung Association

<http://slati.lungusa.org/default.asp>

This site maintains current information on state tobacco control laws and highlights states with the most recent changes in taxes or policies. It is an online version of State Legislated Actions on Tobacco Issues (SLATI).

Tax Foundation

<http://www.taxfoundation.org>

This site provides an overview of current tax issues. It provides information on state and local tax revenues and the size of the tax burden at the state and local levels. It includes information and research on tax policies. The site

<http://www.taxfoundation.org/taxdata/show/26076.html> will take users directly to information for cigarette tax (2010) by state.

Quitnet

<http://www.quitnet.com>

The Quitnet website offers online support for smokers who seek assistance in quitting. It provides a number of tools and allows users access to an online community. Data users

should contact their state Tobacco Prevention and Control Programs for data collected at the state level.

Nutrition and Restaurant Resources

Division of Nutrition, Physical Activity and Obesity
State Indicator Report on Fruits and Vegetables, 2009

<http://www.cdc.gov/nutrition/Fruits and Vegetables Matter>

http://www.fruitsandveggiesmatter.gov/health_professionals/data_behavioral.html

This site is a spreadsheet of state-by-state percentage of adults and adolescents who eat 2 or more servings of fruit a day and 3 or more servings of vegetables a day (based on Healthy People 2010 Objectives 19-5 and 19-6).

Dun & Bradstreet

<http://www.dnb.com/us>

The Dun & Bradstreet Corporation provides credit information on businesses and corporations. Databases are available for purchase.

Food Desert/Food Atlas

<http://maps.ers.usda.gov/FoodAtlas>. This site allows users to map a number of indicators by state. Indicators available for mapping include access and proximity to grocery stores, availability of food stores, availability of restaurants, expenditures on food at restaurants, food assistance, food eaten at home, food insecurity, food prices, food taxes, health (adult diabetes and obesity rates and low-income preschool obesity rates), local foods, and physical activity levels and outlets (adult and high school students' physical activity level, recreation and fitness facilities rates per population, and socioeconomic characteristics. It also allows users to map data with the Economic Research Service Amenities Index, an index that helps to account for changes in population growth through the level of attraction to such natural resources as lakes and mountains.

Local Health Department Infrastructure Study

<http://www.icpsr.umich.edu/icpsrweb/ICPSR/studies/3185/detail>

The Local Health Department Infrastructure Survey was conducted to address data gaps in local public health infrastructure. The survey collected information on local health department characteristics, expenditures, and sources of funding. It examined the ways local public health agencies contribute to well-being of the nation. This website allows users to download the dataset for analyses. Users must register prior to accessing the site.

APPENDIX B: INFORMATION ON STATE-SPECIFIC DATA SOURCES

Each of the four pilot states has unique ways of collecting some types of data. States may want to consider checking within their own states to see if these types of data are already being collected, or they may want to consider implementing new types of data collection.

Florida

Florida Charts

www.floridacharts.com

Florida Charts data is populated from the census data. Florida Community Health Assessment Resource Tool Set (CHARTS) provides access to more than 800 public health indicators at the county and state levels. The unit uses CHARTS for mortality data, morbidity data, population estimates, socioeconomic status indicators, and county profile data.

Idaho

Idaho's QuitNet (Includes directory of smoking cessation programs which can be searched by city or zip code).

Idaho's ITPCP program (Project Filter) does have some smoking cessation programs listed on their website, but it's not comprehensive as it directs visitors to call the Idaho CareLine (211) for more resources.

Idaho QuitLine does assess if registrants have been diagnosed with Diabetes and therefore could theoretically look at % of cessation registrants who have been diagnosed with diabetes, quit rates among those persons with diabetes, etc.

The Idaho Tobacco Prevention and Control Program also recommends the web site, *Campaign for tobacco free kids*. Idaho's State Tax Commission also provides monthly tax revenue reports which are readily available from their website (previous month's excise tax revenues are available on the 16th day of the following month).

<http://tax.idaho.gov/s-results-rep.cfm?doc=EPB00073>

Other possible source: Discovered that local health districts inspect supermarkets/convenience stores via their food programs and thus maintain databases contain names and addresses (which are updated annually) Food programs

- Have much more recent data, but some variability in comprehensiveness (i.e., some LHDs keep better track than others)
- Various districts maintain (and categorize) data differently, presents some challenges to synthesize

Utah

<http://ibis.health.utah.gov/home/Welcome.html>

Utah has developed an online indicator-Based Information System for Public Health. This site allows users to query a number of databases, such as BRFSS, mortality records, birth records, hospital discharge records, and population demographics. It also provides data and text for a number of public health indicators.

The Utah Tobacco Prevention and Control Program will be adding a “yes/no” question on history of chronic disease to its Quitnet registration that new users will be asked as part of the registration process:

Have you ever been told by a doctor that you have any of the following?

- High blood pressure?
- Diabetes?
- Heart attack (within the last six months)?
- Stroke (within the last six months)?
- Overweight diagnosis?
- Obese diagnosis?

Utah also added a question on fast food consumption to the Utah BRFSS. How often do you eat food purchased from a fast-food restaurant? The categories for responses are the same as used for the fruit and vegetable consumption questions. Utah will work with its state Physical Activity, Nutrition and Obesity Program to plot fast food consumption by density of fast food restaurants. This question is also used to examine rates of obesity and diabetes by fast food consumption.

Wyoming

The Wyoming Tobacco Prevention & Control Program generally uses information on cigarette excise taxes from the Campaign for Tobacco-Free Kids. The information includes the tax amount for each state, but also ranks each state from highest tax (New York) to lowest (Missouri). As of 07/01/2010, Wyoming ranked 40th with a tax of only \$0.60 per pack.

A list of chronic disease programs for Wyoming can be found at Wyoming Department of Health Preventive Health and Safety Division Directory at: <http://www.health.wyo.gov/PHSD/programdirectory.html>

A link to Wyoming’s Quitnet can be found at <http://wy.quitnet.com/qnhomepage.aspx?cl=wy>

Data for 2006 expenditures for Wyoming was found at: <http://www.census.gov/govs/state/0651wyst.html>