Rhode Island 2016 Healthy Aging Data Report

TECHNICAL APPENDIX

Overview

This technical appendix contains details about the development of the 2016 Rhode Island Healthy Aging Data Report Community Profiles. This includes technical definitions for all reported, data sources and years of data used, definitions of the geographic units employed for various indicators, and the statistical methods used to estimate indicators derived from micro-level data.

1. Healthy aging indicator definitions

Due to resource limitations all healthy-aging indicators are derived from secondary data sources and limited to those indicators for which secondary data are available for geographic subareas within Rhode Island. Table A-1 contains technical definitions for all the healthy-aging indicators reported in this study. The socio-demographic variables used to describe the population composition of communities rely on standard definitions and, therefore do not require further explanation.

2. Data Sources

Given the complexity of healthy aging we have used multiple data sources in this study. Table A-2 contains a summary of all data sources, and the specific years of data used for population composition and healthy-aging indicators. Estimates of community-level indicators of physical and mental health, chronic disease prevalence, access to care, wellness and prevention health behaviors, service utilization, and nutrition and diet were derived from two major data sources: the Medicare Master Beneficiary Summary File (CMS) and the Behavioral Risk Factor Surveillance System (BRFSS). Population composition measures were drawn from the 5-year (2009-2013) American Community Survey (ACS) produced by the U.S. Census Bureau. These major data sources, and other data sources used for other community, safety, and economic variables, are described below.

<u>Medicare Master Beneficiary Summary File</u>

Medicare claims data from the Centers for Medicare and Medicaid Services (CMS) are a rich source of data for measuring chronic disease prevalence and Medicare service utilization rates for individual cities and towns. The *Master Beneficiary Summary File (MBSF)* is an annual data file constructed by the Chronic Conditions Data Warehouse that includes individual records for all persons eligible for Medicare for at least one month during a calendar year. The MBSF is comprised of three data files containing different types of information:

(1) The *Master Beneficiary Summary File-A/B/D (MBSF-A/B/D)* includes standard Medicare administrative data fields (e.g., sex, race, dates of birth and death),

monthly variables indicating specific months of Medicare eligibility, managed care enrollment, and Medicaid state buy-in status, as well as geographic residence identifiers (state, county, zip code) based on each beneficiary's residence address used for Social Security Administration correspondence.

(2) The *Master Beneficiary Summary File-Chronic Conditions (MBSF-CC)* includes indicators derived from Medicare algorithms applied to diagnostic codes on individual Medicare fee-for-service provider claims for 27 prevalent chronic conditions (e.g., diabetes, stroke, depression, Alzheimer's disease or related dementia, chronic obstructive pulmonary disease, hip fracture, cancer), as well as the earliest date since 1999 that the diagnostic criteria for prevalence were first met.

(3) The *Master Beneficiary Summary File-Cost and Use (MBSF-CAU)* contains aggregated summaries of annual service utilization and reimbursements for various types of Medicare services (e.g., inpatient hospitalizations, physician visits, home health visits, skilled nursing facility stays, emergency room visits, hospital readmissions, and filled Part D prescriptions).

Each beneficiary record contains an encrypted individual identifier so that information from the three data files can be merged together. The three MBSF data files were obtained from CMS for all Medicare beneficiaries who were age 65 years or older on January 1st of the calendar year 2013, and had a state residence code of Rhode Island for 2012 and 2013. The data were obtained under a formal data use agreement required for privacy protection of health information contained in research-identifiable data files

A major strength of the MBSF data is their coverage of 100% of aged Medicare beneficiaries living in Rhode Island. This permits the estimation of health indicators for relatively small individual towns. These rates can be potentially updated annually. The major shortcoming of the MBSF data are that they are derived from Medicare claims data. Since chronic condition prevalence is identified from diagnoses on Medicare claims, rates of chronic disease prevalence and service use can only be measured for Medicare beneficiaries who receive their care from fee-for-service providers. Managed care providers such as Medicare Advantage plans do not submit claims data to Medicare for processing. In addition, beneficiaries whose chronic condition is undiagnosed because they do not have access to a physician will not be identified as having that chronic condition. Finally, the health indicators constructed from MBSF data are limited in scope since they are based on administrative data. Nevertheless, these data are rich with respect to geographic specificity compared to other common data sources for health indicators.

Behavioral Risk Factor Surveillance System (BRFSS)

The Behavioral Risk Factor Surveillance System (BRFSS) is a state-based system of annual health surveys established by the Centers for Disease Control and Prevention (CDC) that collects information on health risk behaviors, preventive health practices,

and health care access, primarily related to chronic disease and injury. The BRFSS provides a rich source of information about individual health behaviors such as smoking, excessive drinking, obesity, preventive health service use, which are relevant for the development of healthy aging indicators. A core set of questions about such health behaviors are included every year. The Rhode Island Department of Public Health (RIDPH) is responsible for collecting BRFSS data for Rhode Island. The RIDPH adds questions beyond the core CDC questions on relevant topics to support health care policy planning, to guide preventive health interventions, and to assess health status and its change over time for Rhode Island residents. Person-level BRFSS data for were obtained from the Rhode Island Department of Public Health under a formal data use agreement required for individual privacy protection of health information.

The BRFSS survey is carried out under a complex survey design intended to enhance the efficiency of using limited sample population to produce reliable state-level estimates of health indicators. Interviews are administered in three alternative languages (English, Spanish, Portuguese) depending upon respondents' preferences. Respondents are oversampled in larger cities in the state under the BRFSS complex survey design to increase the representation of racial/ethnic minority respondents. Before 2008, BRFSS data were obtained entirely through land-line telephone surveys. Because of the rising prevalence of households with only cell-phones, the BRFSS survey design was modified in 2011 to include both land-line and cell phone samples. Furthermore, the method used to derive post-stratification factors was changed in 2011 to a raking procedure that permits finer adjustments to population weights based on multiple population attributes. These changes in the 2011 BRFSS survey design introduce some complexities since data from 2009 and 2010 were used to estimate some BRFSS health indicators. How these changes in survey design are addressed will be discussed later in the description of estimation methods.

A major strength of the BRFSS data is its rich information on health behaviors and quality of life. To our knowledge no other secondary dataset has the range of variables on health behaviors of older Rhode Island residents. The BRFSS has several limitations for small area analyses. The BRFSS survey design was developed for obtaining the state-level estimates. Accordingly, the respondent sample sizes for most individual towns in Rhode Island in any year are far too small to produce reliable estimates for most towns. Even if appropriate weight adjustments are made to compensate for unrepresentative samples for many small towns, small area estimation will require that BRFSS survey data be pooled over multiple years. For example, the number of respondents 60 years or older with valid geographic residence identifiers in the entire state BRFSS Rhode Island sample has ranged from 2,280 in 2012 to 3,028 in 2014. This number is far too small to estimate reliable town-level rates for all 39 cities and towns in Rhode Island.

Because of the small sample size of annual BRFSS surveys, multiple years of survey data were pooled together, and multiple cities and towns were aggregated together to create larger geographic areas containing multiple cities and towns. While most estimates were derived from pooling the three most recent years of BRFSS survey data

(2012-2014), some questions used for indicator estimates are not asked every year. For these indicators, the three most recent years of data with those survey questions (e.g., 2009, 2011, 2013, or 2010, 2012, 2014) were used. Two indicators were estimated with fewer than two years of available data, Table A-2 shows the specific years of data used to derive estimates for each BRFSS indicator. Details about estimation methods are provided later on in the section describing BRFSS estimation methods.

Medicare Compare Access to Care data

Data on Medicare service providers (physicians, hospitals, nursing homes, and home health agencies) were obtained from Medicare website (http://www.medicare.gov\). The number of primary care providers was obtained from the website (http://www.medicare.gov/physiciancompare/search.html) using the search term "city/town name, Rhode Island" and "primary care". The number of hospitals was obtained from the website (http://www.medicare.gov/hospitalcompare/search.html) using the search term "city/town name, Rhode Island". The number of nursing homes was obtained from website (http://www.medicare.gov/nursinghomecompare/search.html) using the search term "city/town name, Rhode Island". For each of these indicators after the initial search with this term, we updated search results by selecting the within 5 miles option. The number of home health agencies was obtained from website (http://www.medicare.gov/homehealthcompare/search.html) using the search term "city/town name, Rhode Island". There was no option for selecting within 5 miles for home health agencies. Instead home health agencies whose geographic service areas contain that city or town are listed.

U.S. Census Bureau

Data on population composition were downloaded from the U.S. Census Bureau Fact Finder website <http://factfinder2.census.gov>. Total population estimates were obtained from 2010 Decennial Census data. All other population estimates reported in the community profiles were derived from American Community Survey data pooled over five years (2009-2013). Data were downloaded for all 39 individual cities and towns. In addition, we downloaded ACS data for seven zip codes (02903, 02904, 02905, 02906, 02907, 02908, and 02909) for Providence. Providence was split into two geographic subareas: 02906 (Providence Northeast) and the remainder of the City of Providence.

Walk Score®

Community-level indicators of geographic access to amenities and the overall walkability of communities were obtained from the Walkscore.com website (http://www.walkscore.com/). The reported Walk Score® was derived from existing proprietary software that creates a score for the walkability for any address. It is based on straight-line distance to various types of place amenities defined as commercial and public facilities (e.g., grocery stores, coffee shops, restaurants, banks) and amenities

(e.g., parks). Points are assigned to each category of place types based on straight-line distance from an address to the site. The most points are assigned to places located within a five-minute walk from an address (operationalized as ¼ mile) with lesser points assigned to more distant places using a distance-decay function. Higher scores indicate greater accessibility by foot. While additional research on its validity is needed, one study has already provided some empirical support for the validity of the current Walk Score as an indicator of walkability (Duncan, Aldstadt, Whalen, Melly, & Gortmaker, 2011),

A total walkability score scaled to range from 0 (least walkable) to 100 (most walkable) was downloaded for individual cities and towns. Since the search term "city/town name, RI" did not produce results for several towns, we used the exact address of the town halls for the 39 cities and towns in Rhode Island as search terms to obtain their walkability scores.   All scores reported in the community profiles were downloaded from the Walk Score website on 10/2/2015. Current scores for some communities may differ from these since Walk scores are updated as commercial or public facilities open or close over time.

Elder Economic Security Standard™ Index

Four measures of geographic comparative cost of living are reported at the county level using the Elder Economic Security Standard™ Index. This index contains county estimates of the minimum income needed by older households to attain a modest standard of living in the community that reflects economic security. "The Elder Index defines economic security as the financial status where elders have sufficient income (from Social Security, pensions, retirement savings, and other sources) to cover basic and necessary living expenses" (Gerontology Institute, University of Massachusetts Boston (2012), p 5). While Elder Index estimates are available at the county-level for 18 different types of community-resident households with a head 65 years or older defined by health status (excellent, good, poor), living situation (alone, couple), housing costs (owner with mortgage, owner without mortgage, renter), we report Elder Index estimates for four types of households in good health (single renters, single owners without mortgages, couple renters, and couple owners without mortgages). Elder indices were provided by the University of Massachusetts Center for Social and Demographic Research on Aging, June 2016. All cities and towns within the same county were assigned the same county estimates. They are available for download from the Wider Opportunities for Women Economic Security Database http://www.basiceconomicsecurity.org/EI/ .

Federal Bureau of Investigation Uniform Crime Reports

Data from 2013 on violent crime and property crime rates were downloaded from the Federal Bureau of Investigation website <http://www.fbi.gov/stats-services/crimestats>. Crime data were not available for Exeter in 2013 or in any of the years from 2009-2012.

Although rates are reported for Providence, separate crime rate data were not available for the two communities within Providence. Crime rate indicators with missing data are reported as NA (not available) in the community profiles.

U.S. Environmental Protection Agency: Air Now

The AirNow website of the U.S. Environmental Protection Agency provides measures of air quality with the Air Quality Index (AQI) with scores ranging from 0 to 500. Higher AQI values reflect greater levels of air pollution and a greater health concern. *AirCompare* provides county-level comparisons of the number of days in a year that AQI values are between 101 and 150 (code orange) and/or exceed 150 (code red) for specific subpopulations. For the subpopulation that includes older persons without specific health concerns and children, the total count of days includes code red days for any pollutant and code orange days for ozone and particulate matter. Values for 2012 were only available for three Rhode Island counties (Providence, Washington, Kent) and were obtained for 2013 from the website (https://www3.epa.gov/cgi-bin/broker?condition=oldyoung&citycounty=county&geocode=44003+44007+44009&_debug=2&_service=aircomp&_program=dataprog.wcj_bymonthyearhealth.sas&submit=Compare+My+Air),. This indicator is reported as NA for all towns in other counties.

Rhode Island Department of Health- Oral Health

City and town level counts of licensed dentists for the indicator on the supply of active dentists per 100,000 persons was obtained from the Rhode Island Department of Health website: (http://www.health.ri.gov/find/oralhealthservices/). The "town name" was used to create a list of licensed dentists for each city and town in the state in August 2016. Counts were derived from these lists. For Providence Northeast, the zip code "02906" was used as the search term. The count of dentists for the rest of Providence was computed by subtracting the count for 02906 from the count for the City of Providence. These counts were divided by total population in each community

 Fatality Analysis Reporting System (FARS)

Data on fatalities related to motor vehicle crashes were downloaded from the National Highway Traffic Safety Administration (NHTSA) website <http://www.nhtsa.gov/FARS>. The Fatality Analysis Reporting System (FARS) is annual data on traffic crashes resulting in at least one fatality occurring within 30 days of the crash. The FARS contains data derived from a census of fatal traffic crashes within 50 states, the District of Columbus, and Puerto Rico. We selected fatal crashes with at least one death of vehicle occupants (e.g. driver or passenger) or non-motorist (e.g. pedestrian) occurring in Rhode Island only from 2009 to 2013. Counts of fatal automobile crashes are reported for each city or town and for the county in which it is located. Fatal crashes could not be counted separately for Providence Northeast and Providence Other. These missing data are reported as NA for these two communities.

3. Geographic Area Definitions of Communities

Data availability limited the geographic specificity of the community definitions for which some healthy aging indicators could be measured. There are two major factors that constrained how finely geographic communities could be defined. The first factor is the relatively small sample size of the RI BRFSS data. The second factor is the sparse actual populations of older persons residing in some RI towns. Even if data were available for all older persons in some of these towns, some populations are too small for public reporting of town-level estimates due to privacy concerns.

In this study we addressed the problems associated with sparsely populated towns by selectively aggregating some smaller towns together into larger geographic areas to increase the sample size used for estimation. The estimates derived for the larger aggregated geographic area are then reported for all individual constituent cities/towns. This is an acknowledged limitation of this study.

Geographic areas for Medicare indicators

Although the MBSF data do not contain information on the city or town of residence for individual Medicare beneficiaries, they do contain the 9-digit zip code or Zip+4 code used by the Social Security Administration (SSA) for all official correspondence sent to beneficiaries via U.S. mail.[1] This zip code information was used to assign Medicare beneficiaries to a city or town of residence in RI. Each Medicare beneficiary was first assigned to an RI city or town based on their SSA zip code with a cross-walk file that assigned each five-digit SSA zip code to a unique city or town. With a few exceptions, the geographic boundaries of the zip codes assigned to specific towns were generally fairly good approximations of their actual jurisdictional boundaries. There were two major exceptions to this general rule: zip codes 02904 and 02905, Although both of these five-digit zip codes are typically assigned to the City of Providence in five-digit zip code cross-walk files, substantial portions of 02904 and 02905 are located in North Providence and Cranston, respectively. For these two zip codes, an expanded cross-walk data file based on Zip+4 codes produced by Geolytics, Inc. was used to assign beneficiaries with either of these two SSA zip codes to North Providence, Providence, or Cranston. There were a small number of Zip+4 codes in the CMS data that could not be matched to the Geolytics cross-walk file. Most of these unmatched Zip+4 codes could be matched to a Zip+4 cross-walk data file created from an older 2006 Zip+4 Geocoding data file produced by SAS, Inc, (http://support.sas.com/rnd/datavisualization/mapsonline/html/geocode.html), and they were subsequently assigned to one of the three RI cities noted above. The few remaining unmatched Zip+4 codes in the MBSF data appeared to have invalid +4

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[1] .For the bulk of Medicare beneficiaries this is the zip code of their community residence at the end of the calendar year. However, for some beneficiaries it may be a post office box rather than the geographic zip code of their actual home. Furthermore, for Medicare beneficiaries who are long-term residents of nursing homes, there is some ambiguity in the geographic location of their SSA zip codes. Their zip codes may refer to their home prior to nursing home admission, the nursing home itself, or the zip code of the individual who serves as their guardian. This is a limitation of the Medicare administrative zip code data field.

codes. Beneficiaries with these Zip+4 codes were treated as having missing zip code data.

We generated town-level estimates from Medicare MBSF data for 41 RI cities and towns for nearly all health indicators derived from MBSF data. This includes 39 RI cities and towns including Providence. The City of Providence was further disaggregated into two communities: (1) Providence Northeast, defined by zip code 02906, and (2) Providence Other, defined as the rest of the city. This was done because the socioeconomic characteristics of older persons living in 02906 in Northeast Providence are very different from those of older persons living elsewhere in Providence.

Although the Medicare MSBF contains individual records for 100% of beneficiaries who are eligible for Medicare in at least month in a calendar year, geographic aggregation of some smaller towns was necessary to generate estimates for several indicators and communities due to data reporting restrictions on research-identifiable Medicare data obtained through a data use agreement with CMS. Prevalence rates cannot be reported for indicators that involve cell counts of fewer than 11 Medicare beneficiaries. In these cases, several towns were aggregated together, the rates were estimated for the aggregated geographic area, and the same indicator estimate was reported for each individual town that was combined together. These cases are summarized below:

- New Shoreham and Narragansett were combined for estimation of four indicators (colorectal cancer, lung cancer, hip fracture, heart attack);

- West Greenwich and Exeter were combined for estimation of three indicators (colorectal cancer, lung cancer, hip fracture);

- Richmond was combined with Hopkinton, and Foster was combined with Gloucester for one indicator (lung cancer).

Geographic areas for BRFSS indicators

Given the small sample sizes of BRFSS respondents it was not feasible to reliably estimate city or town-specific BRFSS indicators for any communities except the largest cities in RI. We aggregated 40 communities (2 Providence communities and 38 other cities and towns) into 14 regions that encompassed the state of RI. We use the term BRFSS areas to describe these regions. Cities and towns were aggregated with the aim of having a sample size of more than 600 BRFSS respondents for each health indicator estimated with three years of BRFSS data. In consultation with our Advisory Board we aggregated communities using the following principles:

1. It is preferable to combine towns that are spatially contiguous to each other.
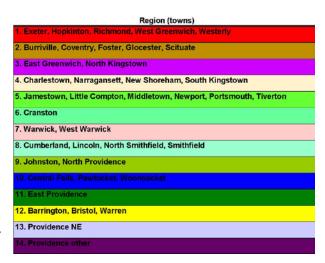2. It is preferable to combine a smaller town with another smaller town rather than a larger town.

3. It is preferable to combine fewer towns rather than more towns together (e.g., a two-town geographic area is preferable to a three-town geographic area).
4. It is preferable to combine towns with more similar population composition in terms of race, education levels, and income.
5. It is preferable to combine towns located within the same county relative to towns in different counties.

Employing these principles and in consultation with our Advisory Board, we defined 14 BRFSS areas or regions for RI. Unfortunately it was not possible to fully satisfy the first guiding principle of spatial contiguity. There were not enough BRFSS respondents living in the city of Woonsocket to serve as a region without any aggregation. The average education and income levels of older persons living in Woonsocket are very different from that of older persons in the towns that border it. Since the fourth principle regarding the desirability of population homogeneity was deemed to be more important than spatial contiguity, Woonsocket was combined with Pawtucket and Central Falls as a BRFSS region. Table A-3 contains a listing of the towns that are included in the 14 BRFSS regions. For all indicators estimated from BRFSS data, the same estimate is reported for all cities and towns that make up the region.

Table A3. List of Towns in 14 BRFSS Regions

Region (towns)
1. Exeter, Hopkinton, Richmond, West Greenwich, Westerly
2. Burriville, Coventry, Foster, Glocester, Scituate
3. East Greenwich, North Kingstown
4. Charlestown, Narragansett, New Shoreham, South Kingstown
5. Jamestown, Little Compton, Middletown, Newport, Portsmouth, Tiverton
6. Cranston
7. Warwick, West Warwick
8. Cumberland, Lincoln, North Smithfield, Smithfield
9. Johnston, North Providence
10. Central Falls, Pawtucket, Woonsocket
11. East Providence
12. Barrington, Bristol, Warren
13. Providence NE
14. Providence other

After aggregating RI cities and towns into larger BRFSS regions, there were still some reporting issues due to privacy concerns. The data release agreement signed with the Rhode Island Department of Health prohibits the reporting of a rate for any indicator with: (1) a cell count of less than 11, or (2) a standard error that exceeds 30 percent of the rate. BRFSS indicators were censored for:

- reports of delayed seeking of care due to cost in BRFSS areas 3 and 13 ,
- having a regular source of care for BRFSS areas 3 and 12,
- injured due to a fall for BRFSS area 3
- 15 or more days with poor mental health last month for BRFSS area 13.

For the BRFSS indicator for the percentage of population 60 years or older who reported to be lesbian, gay, bi-sexual or transgendered (LGBT), sparse data issues would allow the rate to be reported only for towns in one BRFSS region, Since there is a paucity of survey data on the older LGBT population, we employed a modified version of county geographic units for this indicator. Cities and towns were aggregated into five larger regions defined as follows:

Region 1: East Providence and all cities and towns in Bristol and Newport Counties,
Region 2: All cities and towns in Kent County,
Region 3: Cities and towns in Providence County except Providence and East Providence,
Region 4: All cities and towns in Washington County,
Region 5: City of Providence.

Similar to the BRFSS regions, the same estimated rate is reported for all towns that make up these regions.

4. Geographic data sources

Geographic information is used in this report in a variety of ways, ranging from the creation of cross-walk tables between different geographic units (e.g., 5-digit zip code areas to towns) to the mapping of healthy-aging indicator estimates with GIS software. This section summarizes the sources of other geographic data used in the study.

Zip code database

A comprehensive list of valid 5-digit zip codes for the 50 states of the U.S. and Puerto Rico for 2014 in Excel csv format was obtained from the website (http://www.unitedstateszipcodes.org). Rhode Island zip code records were selected from this national data file. For all valid 5-digit zip codes, each individual record contain the city/town, county, and state the zip code is located in, and the latitude and longitude coordinates of the centroid of the zip code area. It also contains an indicator of whether the zip code value represents a standard geographic zip code area, a point zip code (e.g., post office box), or a unique zip code assigned to certain entities such as a university. There are 91 zip code records for Rhode Island in 2014.

Zip code shape file

A zip code shape file used for mapping of 5-digit zip code areas was obtained from the U.S. Census Bureau based on the 2010 Census. The shape file was downloaded from an internet website (http://www.census.gov/geo/maps-data/data/tiger-line.html). Whereas the zip code data base contained 91 records for all types of 5-digit zip codes (standard, point, etc.) in Rhode Island, the Census zip code shape file only contains 74 spatial 5-digit zip code areas. Zip code maps were used to checking the validity of matches between zip codes and towns in BRFSS data, and to make decisions about assignments of certain zip codes to individual towns when located in more than one town. With the exception of 02904 and 02905, when multiple towns shared a 5-digit zip code, the entire zip code is assigned to the most populated town. Data from the zip code data base and zip code shape file were combined using ArcGIS ArcMap V10 software (http://www.esri.com/). A Zip+4 data file obtained from Geolytics, Inc. was used to assign Medicare 9-digit zip code data in zip codes 02904 and 02904 to either North Providence, Providence, or Cranston.

<u>Town, county and road shape files</u>

Shape files for communities in Rhode Island were obtained from Rhode Island Geographic Information System (RIGIS) (http://www.rigis.org). City, town, and county shape files were downloaded from the website: http://www.rigis.org/data/bnd. The Rhode Island roads shape file was downloaded from the website: http://www.rigis.org/data/trans. These shape files were used with ArcGIS ArcMap V10 software to produce various maps of the health indicators and location of fatal crashes in Rhode Island.

5. Estimation Methods for Medicare MBSF indicators

<u>Sample selection criteria</u>

While the Medicare MBSF contains data on all Medicare beneficiaries who have at least one month of Medicare Part A or B eligibility in a calendar year, estimates of chronic condition prevalence and service utilization rates can only be derived for beneficiaries who receive care from fee-for-service providers who submit claims to Medicare for reimbursement. Beneficiaries with prevalent chronic conditions are identified through algorithms applied to the diagnostic codes reported on Medicare claims over a defined surveillance period. Chronic condition prevalence is determined by the presence of one or several claims (depending on the condition) containing appropriate condition-specific diagnostic codes within surveillance period.[2] Most of these claims algorithms scan claims for both Medicare Part A and B covered services. Claims are not submitted to Medicare during any time interval in which an individual is not eligible for Medicare Part A and/or B, and when a beneficiary is enrolled in a Medicare managed care plan that does not submit claims to Medicare for reimbursement. To reliably estimate chronic condition prevalence rates the sample population used for rate estimation should exclude beneficiaries for whom Medicare does not receive claims for services received. If such beneficiaries were retained in the sample this amounts to an implicit assumption that these beneficiaries used no health services when they were not Medicare eligible or enrolled in a Medicare Advantage plan. Hence, rates of chronic condition prevalence and service utilization will generally be underestimated unless such beneficiaries are excluded from the estimation sample.

There are several analytic options for restricting the population sample and rate estimation under these circumstances. O'Donnell, Schneider, and Dean (2008) discuss some of the pros and cons of several options for imposing restrictions on the estimation sample. The most extreme option is to require "full coverage" where the sample is restricted to beneficiaries with a full year of Medicare Part A and B eligibility and who are never enrolled in a Medicare managed care plan during the year. While requiring full

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[2] The diagnostic codes used in the algorithms used to flag Medicare beneficiaries are available from the Chronic Conditions Warehouse web site (https://www.ccwdata.org/web/guest/condition-categories).

coverage ensures that claims were submitted for all Medicare services used by beneficiaries in a calendar year, such a restriction can result in underestimates of chronic condition prevalence rates because some beneficiaries with partial- year coverage have Medicare claims indicating prevalent chronic conditions in those months that claims were submitted. Under the "partial coverage" option, beneficiaries with nearly a full-year of Medicare Parts A and B eligibility and care from fee-for-service providers are retained in the sample. O'Donnell, Schneider, and Dean (2008) further note that "a common recommendation is to allow for a one month break in coverage per year of surveillance. This is an attractive option to avoid losing many cases with the condition of interest (i.e., known cases, as indicated in claims) due to the occurrence of only partial FFS coverage" (O'Donnell, Schneider, & Dean (2008), p 7).

In this study we chose to use this" partial-year coverage" option for estimating population-based chronic condition prevalence and service utilization rates. The sample selection criteria used to apply the partial coverage requirements differ depending on the length of the claims surveillance period employed for the chronic condition of interest. While a one-year claims surveillance period is used for most chronic conditions reported in the Medicare MBSF, for some conditions such as congestive heart failure and diabetes, the claims surveillance period is two years. For Alzheimer's disease or related dementias the claims surveillance period is three years. With only two years of Medicare MBSF data (2012-2013) available to this study, we applied the two-year surveillance sample selection criteria for Alzheimer's disease or related dementia.

Since Part A and B Medicare service utilization rates are based on single-year claims surveillance, the same sample selection criteria are employed for single-year surveillance chronic conditions and all Medicare service utilization rates except for Part D prescription drug utilization.

Determination of chronic condition prevalence: Ever versus current year

For each beneficiary the MBSF contains two flag variables for each chronic condition that indicate whether or not the Medicare claims data diagnostic requirements were met for the condition. First, there is a variable noting whether there is claims data evidence of prevalence during the *current* surveillance period only. This variable reports whether or not full-year surveillance coverage and/or diagnostic requirements from claims data were met for the chronic condition. The four categories are: (1) neither claims diagnosis nor surveillance coverage requirements were met, (2) claims diagnosis requirements were met but surveillance coverage requirements were not met, (3) claims diagnosis requirements were not met but surveillance coverage requirements were met, (4) both claims diagnosis claims and surveillance coverage requirements were met. Current-year prevalence requires that claims diagnosis requirements are met. If partial FFS coverage is used to select beneficiaries meeting surveillance coverage requirements then both (2) and (4) above are used to flag beneficiaries with claims data evidence of prevalence in the *current* year. For each beneficiary there is a second historical flag variable that contains earliest calendar year from 1999 onward that the Chronic

Conditions Warehouse (CCW) Medicare claims data diagnosis requirements for chronic condition prevalence were met.

Although chronic conditions can be managed effectively through medications, surgery, and/or diet and lifestyle changes, unlike acute illnesses they remain prevalent after onset. However, depending on the extent and type of a Medicare beneficiary's service use in any particular calendar year, there may be no *current-year* claims data evidence of chronic condition prevalence even when such claims data evidence exists in previous calendar years. While questions have been raised about the extent to which some prevalent chronic conditions may be missed for beneficiaries due to the brevity of the MBSF surveillance periods used to determine current-year prevalence[3], current-year chronic condition prevalence rates are commonly reported (e.g., see the Medicare Chronic Conditions Dashboard https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Chronic-Conditions/CCDashboard.html).

In this report we have chosen to define chronic condition prevalence based on whether there was any CCW claims data algorithm evidence ever since 1999 rather than only current-year 2013 algorithm evidence. There are several reasons for this choice. First, self-reports of chronic conditions are typically based on questions asking whether a doctor *ever* told a respondent that he/she had a certain condition. The "ever-met" claims algorithm definition of prevalence is more similar to the "ever" time period used in self-reports. Second, while some studies have shown that for some conditions self-reports may result in underestimated prevalence rates (e.g., Porell &Miltiades, 2001), claims-based estimates based on finite surveillance time periods are more likely to understate than overstate prevalence rates (e.g.,Gorina & Kramaroy, 2011).

Since prevalence rates based on any claims data surveillance evidence since 1999 will naturally include claims evidence from 2013, the prevalence rates reported in this study are higher than those based on current-year surveillance periods. In addition to the "ever diagnosed" prevalence rate estimates reported in the community profiles, we also computed current-year prevalence rates for all reported chronic conditions. These current-year prevalence rate estimates were similar to those reported in the Medicare

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[3] Gorina and Kramaroy (2011) applied Chronic Conditions Warehouse (CCW) claims data algorithms to the Medicare claims of NHANES I Epidemiologic Follow-up Study respondents who were identified has having one or more of five chronic conditions (diabetes, ischemic heart disease, COPD, dementia, arthritis) *prior* to the claims surveillance time periods. Prior-period prevalence was determined from baseline and follow-up interview self-reports by respondents, records from baseline physical examinations conducted by physicians (including X-ray results for arthritis). In the case of dementia, baseline responses to the Mental Status Questionnaire and follow-up interview questions were used to determine prevalence prior to the claims surveillance time period. Among respondents identified as having the chronic condition prior to the claims surveillance period, application of the CCW claims algorithms over defined surveillance periods identified between 17% (arthritis) and 69% (diabetes) of respondent identified as having those conditions from survey information prior to the surveillance period. While Gorina and Kramaroy (2011) acknowledge that there may be errors in pre-surveillance prevalence status based on survey data (e.g., erroneous self-reports of chronic conditions) their empirical results suggest that the CCW chronic condition surveillance time periods are more likely to be too short to identify prevalence for those chronic conditions where there is a lesser need to regularly use Medicare services for management of the condition.

Chronic Conditions Dashboard for RI counties and for RI. For a few conditions (e.g., glaucoma, hip fracture, and cancer) the ever-had prevalence rates are substantially higher than current-year prevalence rates. The reason for the much higher ever-had prevalence rate is clear for a condition such as hip fracture. A hip fracture diagnosis is unlikely to be recorded on Medicare claims long after a recovery period following the injury event causing the hip fracture even when a person with a past hip fracture is likely to have a greater current fall risk than his/her counterpart with no history of hip fracture. In other cases, the reasons for the differences are not as clear. The reader should keep these differences in mind when comparing our reported prevalence rates, which are based on ever meeting the claims data requirements for prevalence since 1999, to rates reported elsewhere, which are commonly based on current surveillance period claims data requirements.

Specific sample selection requirements

Even though chronic condition prevalence is determined on the basis of claims evidence prior to the current surveillance period, the beneficiaries selected to be counted in the denominator for prevalence rate estimation had to meet current-year surveillance rate requirements to avoid substantial under-estimation of prevalence rates because of beneficiaries enrolled in Medicare managed care plans. Below we describe the specific partial-year surveillance coverage requirements employed in rate estimation.

Single-year surveillance chronic conditions and Parts A & B service utilization

We followed the partial-year coverage requirements recommended by O'Donnell, Schneider, and Dean (2008) that differed depending upon whether or not a beneficiary survived the full calendar year. It is important to retain beneficiaries who die during the year in the estimation sample to mitigate potential biases. If a beneficiary dies on the day when a heart attack occurs he/she cannot meet full-year coverage requirement unless the heart attack occurs on December 31st and would not be counted as experiencing a heart attack. The bias of not including beneficiaries who die during the calendar year may be substantial given the high medical costs experienced in the last years of life for many beneficiaries.

For all 2013 single-year surveillance chronic conditions and for all service utilization rates except Part D prescription fills and hospital readmission rates, partial-year coverage for beneficiaries alive at the end of 2013 requires that:

- a beneficiary has at least 11 months of both Medicare Part A and B eligibility and at most one month of Medicare managed care enrollment in 2013.

Beneficiaries who died in 2013 are required to have full coverage (Medicare Part A and B eligibility and no Medicare managed care enrollment) in all months that they were alive in 2013. All beneficiaries are further required to have a valid 5-digit residence zip code recorded in the 2013 Medicare MBSF for residence assignment to towns. For

beneficiaries with 02904 or 02905 residence zip codes, they were required to have valid 9-digit zip codes (i.e., Zip+4 codes) because the last four digits were used to distinguish beneficiaries living in Providence, North Providence, and Cranston in these two five-digit zip code areas. There were 79,998 aged Medicare beneficiaries who met these one-year sample selection requirements.

For the readmission rate indicator, we naturally imposed an additional condition that a beneficiary must have been hospitalized at least once during 2013. There were 14,162 Medicare beneficiaries who met this additional sample selection requirement for hospital readmissions.

Two-year surveillance chronic conditions

For all other 2-year chronic conditions, partial-year coverage for beneficiaries alive at the end of the 2013 required that:

- a beneficiary has at least 22 months of both Medicare Part A and B eligibility and at most two months of Medicare managed care enrollment over the two calendar years 2012-2013.

Beneficiaries who died in 2013 are required to meet the partial-year coverage requirements in 2012 and meet full coverage requirements in the months they were alive in 2013. Beneficiaries are also required to have a valid 5-digit residence zip code recorded in the 2012 Medicare MBSF. There were 71,723 Medicare beneficiaries who met these two-year sample selection requirements.

Since 2012 MBSF data were extracted based on beneficiary residence in Rhode Island in 2013, there are some beneficiaries with records in the 2013 MBSF who did not meet the two-year surveillance sample selection criteria because they did not live in Rhode Island in 2012. Unfortunately these beneficiaries had to be excluded from the two-year surveillance estimation sample. If Medicare beneficiaries who recently moved to Rhode Island tend to have systematically better/worse health status than longer term resident beneficiaries, this difference will not be reflected in the town-level estimated prevalence and service utilization rates.

While beneficiaries younger than 65 years of age can be entitled to Medicare due to disability, most beneficiaries are not entitled to Medicare until they reach 65 years of age under Old Age Survivors Insurance status. Accordingly, to satisfy the one-year surveillance sample selection criteria most beneficiaries must have been 65 years old by February 1st of 2013. The two-year surveillance sample selection criteria require that such beneficiaries be 65 years old as of March 1st of 2012. While we do not make this distinction in our general descriptions of the chronic condition prevalence indicators, the prevalence rates for two-year surveillance period chronic conditions strictly pertain to an older population than the population for single-year conditions and service utilization rates. It is also possible that by employing the two-year sample selection criteria for

Alzheimer's disease or related dementias (with a three-year surveillance period), this may have produced underestimates of prevalence rates for this condition.

Part D prescription drug utilization rates

In contrast to other Medicare covered services the Medicare MBSF contains summary information about Part D prescription drug utilization for both beneficiaries receiving care from fee-for-service providers and Medicare managed care enrollees. Furthermore, some Medicare beneficiaries with Parts A and B eligibility may not have opted to enroll for Part D Medicare coverage. Because of these factors, the sample selection criteria for the Part D prescription drug utilization indicator differ from that employed for other Medicare covered services.

For Part D prescription utilization, partial-year coverage for beneficiaries alive at the end of 2013 requires that:

- a beneficiary has at least 11 months of Medicare Part D coverage in 2013.

Beneficiaries who died in 2013 are required to have Medicare Part D coverage in all months they were alive in 2013. Beneficiaries are also required to have a valid 5-digit residence zip code recorded in the 2013 Medicare MBSF. There were 114,773 Medicare beneficiaries who met these sample selection requirements.

Medicaid dual eligibility and Medicare managed care status

For our estimates of Medicare managed care enrollment status, dual eligibility for Medicare and Medicaid, and Medicaid-financed use of long-term services and supports (LTSS), no additional sample selection criteria are imposed beyond the basic age and state residence requirements used to select beneficiaries contained in the MBSF data for Rhode Island. Beneficiaries had to be 65 years or older on January 1st, 2013, eligible for Medicare for at least one month in 2013, and have a state residence code for Rhode Island. There were 168,126 Medicare beneficiaries who met these sample selection requirements.

One-year age-sex adjusted mortality rates

Although 2013 dates of death are reported for all beneficiaries with at least one month of Medicare eligibility regardless of managed care status, additional sample selection requirements are imposed for estimates one-year mortality rates. We also require that beneficiaries reside in the same town in 2012 as 2013 to mitigate any potential bias associated with beneficiaries whose move to a town in 2013 may have been motivated by health concerns in their last year of life. This may include beneficiaries admitted to a nursing home in a town different from their former town of residence if their SSA zip code was changed to that of the nursing home. There were 153,026 Medicare beneficiaries who met these sample selection requirements.

Post stratification weights

Medicare beneficiaries were assigned to towns based on their 5-digit residence zip code using a cross-walk file that we created to link all valid 5-digit zip codes to a specific city or town.[4] Because of the sample selection criteria that are employed to ensure the potential presence of Medicare claims for all sample beneficiaries during the surveillance period, the age-sex distributions of these estimation samples in towns may differ from that of all aged Medicare beneficiaries actually residing those towns. Post stratification weights were computed for 10 age-sex classes (males 65-69, males 70-74, males 75-79, males 80-84, males 85+, females 65-69, females 70-74, females 75-59, females 80-84, females 85+) for each of the 41 geographic areas in the state defined for Medicare MBSF indicators. Individual beneficiaries in age-sex groups that are under-represented (over-represented) in the town's estimation sample relative to the total town beneficiary population are assigned post-stratification weights greater than (less than 1). These weights are computed so that when these post-stratification weights are applied, the weighted age-sex distribution of the estimation sample in each town matched the actual age-sex distribution of all aged Medicare beneficiaries in the town, including those enrolled in Medicare Advantage plans.

Different town-level post-stratification weights are computed for Medicare indicators depending upon on length of the current surveillance period (single-year versus two-year), and for Medicare Part D versus Medicare Parts A & B service utilization rates. In addition for estimates of state-level prevalence and service utilization rates, another set of post-stratification weights were computed at the state level to ensure that the weighted age-sex distribution of the entire state estimation sample matched the actual beneficiary age-sex distribution for the state. These state-level post-stratification weights did not ensure that the age-sex distribution of the estimation sample in each town matched the town's actual beneficiary age-sex distribution. In other words, the target population for these adjustments is the state rather than the town.

The post-stratification weights for Medicare service utilization rates were applied to beneficiaries in the estimation sample after another adjustment weight was applied. This additional weight is based on the portion of the year that potential claims could have been submitted for Medicare reimbursement. This first adjustment might best be explained with an example. Beneficiary A, who was continuously entitled for Medicare Parts A and B for a full calendar year and was never enrolled in a Medicare Advantage plan, has claims over the full year showing 6 physician visits. These six visits reflect an annual physician visit rate of 6 visits per year. Consider an otherwise identical beneficiary who had six physician visits before his/her death at the end of June. The annualized rate of physician visits for this beneficiary who died before the end of the year is actually 12 visits per year rather than 6 visits per year. However, in contrast to the former beneficiary who survived the full year, the latter beneficiary who died was only at risk for making a physician visit for one-half of a year. Hence the decedent

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[4] As noted earlier, Medicare beneficiaries living in zip codes 02904 or 02905 were required to have valid 9-digit zip codes since the four additional digits were used to assign these beneficiaries to Providence, North Providence, or Cranston.

beneficiary contributed only ½ of a full person-year to the denominator used for calculating a mean physician visit rate for the town.

For all Medicare service utilization rate indicators, the service use reported in the MBSF for beneficiaries in the estimation sample are first annualized to reflect the expected utilization with full-year coverage (12 months). Then individual person-weights are assigned to all sample beneficiaries. These weights are equal to the fraction of the year (i.e., # months of full coverage/12) that they had full coverage. Sampled beneficiaries with full-year coverage are assigned a weight of one (12/12) and beneficiaries with less than full-year coverage are assigned a fractional weight less than one.

The post-stratification town-level weights were also computed differently for the one-year mortality rates. In this case the weights were computed so that the weighted age-sex distribution of the estimation sample in each individual town population matched the state-wide age-sex distribution of all aged Medicare beneficiaries. By computing the post-stratification weights in this manner, the one-year mortality rate in a town reflects the expected mortality rate if its age-sex beneficiary population composition matched that of the entire state.

Some caveats should be noted about what these post stratification weights do and do not do with respect to rate estimation. By applying these weights the prevalence and service utilization rate estimates are adjusted to reflect differences between the age-sex population composition of the estimation sample and that of actual beneficiaries in the town. The age-sex distribution of all aged beneficiaries in each town contains beneficiaries who were excluded from the estimation sample because they did not have a sufficient history of fee-for-service Medicare claims. This includes the exclusion of Medicare Advantage enrollees. If such managed care enrollees are systematically younger than beneficiaries receiving care from fee-for-service providers, younger beneficiaries in the estimation sample will be assigned larger post-stratification weights to reflect their under-representation in the town estimation sample. However, application of these post-stratification weights will not adjust health indicators to reflect any systematic unmeasured health status differences between Medicare Advantage enrollees and fee-for-service beneficiaries within the same age-sex class. Past research has consistently found that Medicare managed care enrollees tend to be healthier than their counterparts receiving care from fee-for-service providers. A recent study suggests that this still is true in the Medicare Advantage program (Morrissey, Kilgore, Becker, Smith, & Delzell 2013).

The reported healthy aging indicators derived from the Medicare MBSF strictly only reflect the health status of fee-for-service Medicare beneficiaries. For this reason we report the percentage of Medicare beneficiaries with at least one month of Medicare Advantage enrollment as a town population composition attribute. The 39.4% Medicare Advantage market penetration rate in Rhode Island is high relative to other New England states. While selection bias in Medicare Advantage enrollment could result in biased estimates for the Medicare indicators generally, the extent of any such bias is unknown and it is unclear whether the high level of Medicare Advantage market

penetration in Rhode Island imposes any bias at all on city and town differences in these health indicators. Nevertheless, some added caution should be exercised in interpreting MBSF indicators for towns where the Medicare Advantage market penetration rate is much higher than the state penetration rate.

<u>Fixed Effects Estimation of Rates</u>

Geographic residence dummy variables were constructed for beneficiaries in the estimation samples defined for the various MBSF indicator groups discussed above. Stata 14.0 was used to estimate separate fixed effects dummy variable ordinary least squares regressions with a suppressed constant on the full beneficiary estimation samples for each MBSF indicator noted in Tables A-1 (definitions) and A-2 (data sources) . Beneficiary cases were weighted with individual population weights equal to the computed post-stratification weights for all MBSF indicators, except for Medicare service utilization rates where an additional partial-year weight adjustment was also made. The estimated dummy variable coefficients correspond to weighted sample mean rates for towns. These estimated coefficients are the estimated MBSF rates reported in the main community profile tables. Robust standard errors were estimated for the coefficient estimates. The 95% confidence intervals for these estimates are the reported margins of error for the estimates. The state-level estimates for the MBSF indicators along with their 95% confidence intervals are similarly estimated on the sample of all beneficiaries in the state estimation sample using different population weights.

The estimates for health indicators derived from Medicare MBSF data and their margins of error are reported for 39 Rhode Island cities and towns, and for two subareas within Providence on the community profiles available for download. We took a conservative approach in distinguishing those indicators where the difference between the town rate and the state rate is statistically significant at the 5% level. We only distinguish those indicators where the 95% confidence interval of the town estimate does not overlap with the 95% confidence interval of the state estimate as ones where the difference is estimated with enough precision so that the reported difference is unlikely to be due to chance associated with sampling variation. For those indicators where a higher (lower) rate than the state average has negative (positive) implications toward a community's population health, a W (B) is used to denote those worse (better) than their corresponding state average. Asterisks are used to distinguish community-level Medicare service utilization rates that are higher or lower than state averages.

6. Estimation Methods for BRFSS indicators

While there are some similarities in the methodologies used to obtain estimates from Medicare MBSF and Rhode Island BRFSS data, there were some important differences due to the complex survey design of the BRFSS and the much smaller respondent samples in the BRFSS.

<u>Sample selection criteria</u>

The selection criteria for the estimation samples used to estimate BRFSS indicators were straightforward. The estimation samples included all BRFSS respondents who were 60 years or older with a valid residence zip code or town code. These selection criteria were applied to BRFSS data from 2009 through 2014.

 Assignment of respondents to geographic areas

As noted earlier, there were 14 BRFSS geographic areas or regions defined for estimation of BRFSS indicators. Before assigning respondents to their appropriate BRFSS area we examined the correspondence between the 5-digit residence zip codes and the town codes reported in the BRFSS data for all respondents satisfying the age requirement for the estimation samples. Using a zip code-to-town crosswalk file described earlier, we identified a relatively small number of cases where the reported zip codes and towns did not match those recorded in the zip code cross-walk data file. The respondent's self-reported town was accepted over the reported zip code in these situations. If a respondent's town code was missing but a valid five-digit zip code was reported, the zip code-to-town cross-walk file was used to assign the respondent to a RI city or town.

1. Respondents were assigned to the Rhode Island residence town reported in the BRFSS data.

2. If this town code was invalid or missing and the respondent's residence five-digit zip code was valid, his/her zip code was used to assign them to a city or town.

3. Respondents were then assigned to one of 14 BRFSS areas using a cross-walk linking each town to a unique BRFSS area. For BRFSS respondents assigned to the City of Providence, those with a residence zip code of 02906 were assigned to BRFSS Area 13, or Providence Northeast. All other Providence respondents were assigned to the residual BRFSS Area 14, or Providence Other.

The estimation samples for specific BRFSS indicators varied depending upon whether the questions were asked of all respondents every year, to all respondents every other year, to a subset of respondents based on gender (e.g., mammogram use by women). Due to occasional missing data for individual respondents, the sample sizes of the estimation samples also varied among indicators when the same years of BRSS data were used for estimation. For BRFSS indicators based on the three years of data for both men and women without restrictions, the estimation sample sizes generally exceeded 7,500 respondents. Sample sizes were smaller for indicators where the sample was restricted for various reasons. The CDC screening goal indicator, which required complete data on multiple preventive care indicators, had an estimation sample of 5,298. The indicator for injury from a fall had the smallest estimation sample of 2,752 respondents. It was estimated on one year of data because of changes in the wording of the questions about falls. The LGBT indicator was estimated on only two years of

data with an estimation sample of 4,958. The estimation samples were also smaller for the mammogram indicator for females (4,828), the pneumonia vaccine indicator restricted to persons 65 or older (5,213), and for the community engagement indicators (ranging from 5,925 to 6,856) since these questions were not asked of all BRFSS respondents.

<u>Survey design and post –stratification weights</u>

The BRFSS data are derived from telephone surveys of the non-institutionalized adult population in Rhode Island. Since the BRFSS has a complex survey design in with unequal probabilities of respondent selection, statistical analyses of BRFSS data require the application of design weights to account for different probabilities of selection. The BRFSS uses disproportionate stratified sampling in its landline telephone surveys where the sampling rate differs depending on telephone density. There is also geographic stratification in the Rhode Island BRFSS sampling where some geographic areas are sampled at a higher rate than other ones. The probabilities of selection differ among BRFSS respondents due to this stratification, telephone availability, type of phone (cell versus landline after 2010), number of adults in the household, number of telephones in the household, and rates of nonresponse by households. Since these factors can affect the representativeness of the sample data, survey design weights are produced to adjust for these factors in statistical analyses of BRFSS survey data.

In addition to these survey design weights, post stratification weights (before 2011) or raking weights (2011 and later) are computed so that summed counts of weighted BRFSS respondents match known state population totals along population characteristics such as age, sex, and race/ethnicity. The 2014 Rhode Island raking weights are also based on telephone source, education level, marital status, and renter/owner status.

The change from using post-stratification weights to raking weights and the addition of cell phone surveys since the 2011 BRFSS introduce some issues for comparisons of indicators based on pre-2011 and more recent BRFSS data.[5] However, the change from post-stratification to raking weights in 2011 did not really add many additional complications in this study because we are employing BRFSS data to derive estimates for geographic subareas within Rhode Island. The "ready-to-use" post-stratification and raking weights provided with BRFSS data are only suitable for state-level estimates and could not be employed for estimation for regions within Rhode Island. Since we had to compute our own post-stratification weights to derive estimates for BRFSS areas within the state, these weights could be computed the same way for BRFSS data from all years 2009-2014.[6]

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[5] See Centers for Disease Control and Prevention (2013) and Pierannunzi, Town, Garvin, Shaw, & Balluz (2012) for further discussion of the BRFSS sample design and changes made in 2011.

[6] In personal communication with Carol Pierrannunzi of the Centers for Disease Control and Prevention and Anthony Roman of the University of Massachusetts Boston Survey Research Center it was suggested that it was reasonable for us to address the problem of pooling 2011 BRFSS data with earlier

Town-level population estimates for 12 age-sex classes (males 60-64, males 65-69, males 70-74, males 75-79, males 80-84, males 85+, females 60-64, females 65-69, females 70-74, females 75-59, females 80-84, females 85+) were obtained from the 2009-2013 ACS for all cities, towns, and selected zip code tabulation areas within Rhode Island (http://factfinder2.census.gov). These population counts were aggregated yielding population counts for the larger 14 BRFSS areas described earlier. For each BRFSS region an age-sex distribution was computed by dividing its population counts in each age-sex cell by the total ACS estimate of persons 60 years or older for the region. These percentage region-level age-sex population distributions served as the target population matrix for computation of post-stratification weights. Post-stratification weights were computed directly for all age-sex categories in each region by dividing the region's ACS target percentages for each of the 12 age-sex categories described above by the corresponding percentages of respondents in the multi-year BRFSS samples before any attrition due to missing data. Individual BRFSS respondents in age-sex groups that were under-represented (over-represented) in the BRFSS sample data in their BRFSS area relative to the ACS population distribution in the same area were assigned inflation weights greater than (less than 1). When these post-stratification weights are applied, the weighted age-sex distribution of the BRFSS estimation samples matched the ACS age-sex distribution in each BRFSS area.

Different post-stratification weights were computed for groups of indicators depending upon how many years and which years of BRFSS data were pooled together for the estimation sample. As noted earlier depending upon the health indicator, between one and three years of BRFSS data were pooled together over the years 2009-2014. For state-level BRFSS estimates another set of post-stratification weights were computed at the state level to ensure that the sum of weighted age-sex counts of the entire estimation sample matched the ACS age-sex distribution for the state of Rhode Island. These state-level post-stratification weights did not ensure that the age-sex distribution of the estimation sample for each BRFSS area matched its ACS age-sex population distribution. In other words, the target population for these latter adjustments was the age-sex distribution for the entire state rather than individual BRFSS areas.

The final population weights for individual BRFSS respondents were computed by multiplying each respondent's BRFSS survey design weight by our computed post-stratification weight based on the 2009-2013 ACS age and sex population composition of either individual BRFSS areas or the entire state.

Fixed Effects Estimation of Rates

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years by only using the supplied BRFSS survey design weights and to compute our own post-stratification weights the same way depending upon the years of BRFSS data used. Regarding the issue of cell-phone survey respondents in 2011 we speculate that this will not have much of an effect on our rate estimation since our estimation sample is limited to BRFSS respondents 60 years or older.

Geographic residence dummy variables were constructed for each respondent in the various sample populations used to estimate the set of BRFSS indicators. Because of the complex survey design of the BRFSS, a survey design effect regression procedure in Stata 14.0 "svy: regress" was used for parameter estimation. Separate fixed effects dummy variable ordinary least squares regressions with a suppressed constant are estimated on appropriate estimation samples for all BRFSS indicators shown in Table A-1 and A-2.[7] The estimated coefficients for the geographic dummy variables from the regression models are the estimated rates for the BRFSS areas. The same estimated rates are reported for all individual cities and towns comprising each BRFSS area reported in Table A-3. The 95% confidence intervals for these estimates reflect the margins of error of the estimates. State-level estimates for each BRFSS indicator along with their 95% confidence intervals were similarly estimated using weighted data from the full state estimation samples.

The estimates for health indicators derived from BRFSS data and their confidence intervals are reported for all cities and towns and for the two subareas within Providence on the community profiles with confidence intervals available for download. We take a conservative approach in distinguishing those indicators where the difference between the modified ASAP rate and the state rate is statistically significant at the 5% level. We distinguish those indicators as significant where the ASAP area 95% confidence interval does not overlap with the state 95% confidence interval as ones where there the difference between the ASAP area and state estimates is unlikely to be due to chance associated with sampling variation.

Due to the relatively small sample sizes used to estimate BRFSS health indicators, relatively few of the community estimates are different from state estimates for some indicators. Since there was only very modest overlaps in the community and state margins of errors for some of these health indicators, we also estimated 90% confidence intervals for the community and state rates. Similar to the reporting of estimates for health indicators based on beneficiary-level Medicare data, we use capital letters "B" and "W" to distinguish community estimates that are better and worse that state estimated rates based on 95% confidence intervals. Due to the smaller samples used to estimate BRFSS indicators, we use lower-case letters "b" and "w" to distinguish community estimates that differ from state estimates based on 90% confidence intervals. While we are not as confident about the differences distinguished by 90% confidence intervals as 95% confidence intervals, differences distinguished with 90% confidence intervals are still very unlikely to be due to chance. Margins of errors based on 90% confidence intervals are routinely reported for published American Community Survey estimates.

Some caution should be exercised in interpreting differences between the BRFSS indicators reported for individual towns for several reasons. First, rates for which there is no distinction made regarding the statistical significance of the difference between the

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[7] Weighted ordinary least squares regression was also used to obtain estimates with robust standard errors without the standard Stata regress procedure. These estimates were virtually identical to those obtained with the Stata svy procedure.

town and the state rate may be due to sampling variation. Second, data from multiple towns were pooled together to obtain estimates for the larger BRFSS areas and the same estimates are reported for all constituent towns within the larger geographic area. Actual BRFSS indicators are likely vary among individual towns that compose the BRFSS areas. Unfortunately the BRFSS samples were simply too small to generate town-level estimates for most individual cities and towns.

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Table A-1: Healthy Aging Indicator Definitions

Indicator	Definition
POPULATION CHARACTERISTICS	
Total population all ages	The number of total population of all ages.
Population 60 years or older as % of total population	The percentage of persons 60 years or older over total population.
Total population 60 years or older	The number of persons 60 years or older.
Population 65 years or older as % of total population	The percentage of persons 65 years or older over total population.
Total population 65 years or older	The number of persons 65 year or older.
% 65-74 years	The percentage of persons age 65-74 among population over age 65.
% 75-84 years	The percentage of persons age 74-84 among population over age 65.
% 85 years or older	The percentage of persons age 85 or older among population over age 65.
Gender (65+ population) % female	The percentage of female among population over age 65.
Race/Ethnicity (65+ population)	Race and Ethnicity among population over age 65.
% White	The percentage of White among population over age 65.
% African American	The percentage of African American among population over age 65.
% Asian	The percentage of Asian among population over age 65.
% Other	The percentage of other race among population over age 65.
% Hispanic/Latino	The percentage of Hispanic/Latino among population over age 65.
Marital Status (65+ population)	Marital status of population over age 65.
% married	The percentage of married persons among population over age 65.
% divorced/separated	The percentage of divorced or separated persons among population over age 65.
% widowed	The percentage of widowed persons among population over age 65.
% never married	The percentage of never married persons among population over age 65.
Education (65+ population)	Education attainment among population over age 65.
% with less than high school education	The percentage of persons with less than high school education among population over age 65.
% with high school or some college	The percentage of persons with high school diploma, some college, or associate's degree among population over age 65.
% with college degree	The percentage of persons with Bachelor's degree or Graduate or professional degree among population over age 65.
% of 60+ LGBT	The percentage of persons 60 years or older who did not respond "heterosexual" to the question: "Do you consider yourself to be: Heterosexual that is straight; Homosexual that is gay or lesbian; Bisexual; or Other?"
% of 65+ population living alone	The percentage of persons living alone among population over age 65.

Indicator	Definition
% of 65+ population who speak only English at home	The percentage of persons 65 years or older reporting that no language other than English was spoken at home.
% of 65+ population who are veterans of military service	The percentage of persons 65 years or older reported the respondent served in the military forces for the United States (Army, Navy, Air Force, Marine Corps, or Coast Guard) in time of war or peace.
Age-sex adjusted 1-year mortality rate	The percentage of Medicare beneficiaries 65 years or older on January 1st. 2012 who lived in the same community for both 2012 and 2013 and who died in 2013 (beneficiary population is weighted to match state age-sex distribution of aged Medicare beneficiaries.
Geographic Migration (65+ population) % moved within same county	The percentage of persons 65 years or older reporting to have changed residence within same county in RI since a year ago.
% moved from different county in Rhode Island	The percentage of persons 65 years or older reporting to have changed residence between different counties in RI since a year ago.
% moved from different state	The percentage of persons 65 years or older reporting to have changed residence between states since a year ago.
% 60+ lived at same address 25 years or more	The percentage of persons 60 years or older who reported living at their current address for 25 years or more.
WELLNESS and PREVENTION	
% any physical activity within last month	The percentage of persons 60 years or older who answered yes to the question- "During the past month, (other than your regular job) did you participate in any physical activities such as running, calisthenics, golf, gardening or walking for exercise?"
% injured by a fall within last year	The percentage of persons 60 years or older reporting to have fallen at least once in the past 12 months resulting in injury (defined as causing one to limit regular activities for at least a day or to go see a doctor).
% ever had a hip fracture	The percentage of Medicare beneficiaries 65 years or older in 2013 who ever met the claims-based criteria indicating a hip/pelvic fracture since 1999. These criteria are having at least 1 inpatient or skilled nursing facility Medicare claim with appropriate diagnosis codes during a 1-year period.
% with self-reported fair or poor health status	The percentage of persons 60 years or older reporting fair or poor to question: Would you say that in general your health is: excellent, very good, fair, poor?
% with 15+ physically unhealthy days last month	The percentage of persons 60 years or older reporting at least 15 days to the question- "Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good? "
% with physical exam/check-up in past year	The percentage of persons age 60 years or older who reporting seeing a doctor for a regular check-up within the past year.
% met CDC preventive health screening goals	The percentage of persons age 60 or older who were up to date on Centers for Disease Control and Prevention health screening goals for flu shot, colorectal cancer screening, pneumonia vaccine, and mammograms (women only).
% flu shot past year	The percentage of persons age 60 years or older who answered yes to the question- "During the past 12 months, have you had a seasonal flu shot or seasonal flu vaccine that was sprayed in your nose?"
% pneumonia vaccine	The percentage of persons age 65 years or older who reported ever having a pneumonia vaccination.

Indicator	Definition
% shingles vaccine	The percentage of persons age 60 years or older who answered yes to the question: "Have you ever had the shingles or zoster vaccine?
% cholesterol screening	The percentage of persons age 60 years or older who had their cholesterol checked within past year.
% mammogram within last 2 years (women)	The percentage of women 60 -74 years whose last mammogram was two years ago or less.
% colorectal cancer screening	The percentage of persons age 60 years or older whose last proctoscopic exam (sigmoidoscopy or colonoscopy) was five years ago or less.
Oral Health	
% with complete tooth loss	The percentage of persons 60 years or older reporting to have had 6 or more teeth removed because of tooth decay, gum disease, or infection.
% with annual dental exam	The percentage of persons age 60 years or older who reporting visiting a dentist or dental clinic within the past year.
# dentists per 100,000 persons (all ages)	A count of licensed dentists per 100,000 persons in the city/town.

NUTRITION/DIET

Indicator	Definition
% with 5 or more servings of fruit or vegetables per day	The percentage of persons 60 years or older reporting to have eaten five or more servings of fruit or vegetables per day in the last month.
% obese	The percentage of persons 60 years or older with a body mass index of 30 or higher.
% high cholesterol	The percentage of Medicare beneficiaries 65 years or older in 2013 who ever met the claims-based criteria indicating high cholesterol since 1999. These criteria are having at least one inpatient, hospital outpatient or Part B Medicare claim with appropriate diagnosis codes during a 2-year period.
% current smokers	The percentage of persons 60 years or older reporting to have ever smoked at least 100 cigarettes and who now smoke on some or all days.
% excessive drinking	The percentage of persons 60 years or older reporting excessive alcoholic drinking during the past month. For men excessive drinking is defined as consuming more than two alcoholic drinks per day in the past month or consuming 5 or more alcoholic drinks on at least one occasion during the past month. For women excessive drinking is defined as consuming more than one alcoholic drink per day in the past month or consuming 4 or more alcoholic drinks on at least one occasion during the past month. One drink is equivalent to a 12-ounce beer, a 5-ounce glass of wine, or a drink with one shot of liquor.

MENTAL HEALTH

Indicator	Definition
% with 15+ days poor mental health last month	The percentage of persons 60 years or older reporting at least 15 days to the question- "Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?"
% 60+ talked with family or friends almost daily	The percentage of persons 60 years or older who responded "at least daily" to the question: "Not counting people you live and work with, how often do you talk to friends or family?
% ever diagnosed with depression	The percentage of Medicare beneficiaries 65 years or older in 2013 who ever met the claims-based criteria indicating

Indicator	Definition
	depression since 1999. These criteria are having at least one inpatient, skilled nursing facility, home health, outpatient or Part B Medicare claim with appropriate diagnosis codes during a 1-year period.
CHRONIC DISEASE	
% with Alzheimer's disease or related dementias	The percentage of Medicare beneficiaries 66 years or older in 2013 who ever met the claims-based criteria indicating Alzheimer's disease or related dementia since 1999. These criteria are having at least one inpatient, skilled nursing facility, home health, hospital outpatient or Part B Medicare claim with appropriate diagnosis codes during a 3-year period.
% with diabetes	The percentage of Medicare beneficiaries 66 years or older in 2013 who ever met the claims-based criteria indicating diabetes since 1999. These criteria are having at least one inpatient, skilled nursing facility, home health Medicare claims, or at least two hospital outpatient or Part B Medicare claims with the appropriate diagnosis codes during a 2-year period.
% with stroke	The percentage of Medicare beneficiaries 65 years or older in 2013 who ever met the claims-based criteria indicating a transient ischemic attack (stroke) since 1999. These criteria are having at least one inpatient Medicare claim or at least 2-hospital outpatient or Part B Medicare claim with appropriate diagnosis codes during a 1-year period.
% with chronic obstructive pulmonary disease	The percentage of Medicare beneficiaries 65 years or older in 2013 who ever met the claims-based criteria indicating chronic obstructive pulmonary disease since 1999. These criteria are having at least one inpatient, skilled nursing facility, or home health Medicare claim or at least 2 hospital outpatient or Part B Medicare claims with appropriate diagnosis codes during a 1-year period.
% with asthma	The percentage of Medicare beneficiaries 65 years or older in 2013 who ever met the claims-based criteria indicating asthma since 1999. These criteria are having at least one inpatient, skilled nursing facility, or home health Medicare claim or at least 2 hospital outpatient or Part B Medicare claims with appropriate diagnosis codes during a 1-year period.
% with hypertension	The percentage of Medicare beneficiaries 65 years or older in 2013 who ever met the claims-based criteria indicating hypertension since 1999. These criteria are having at least one inpatient, skilled nursing facility, or home health Medicare claim or at least 2 hospital outpatient or Part B Medicare claims with appropriate diagnosis codes during a 1-year period.
% ever had a heart attack	The percentage of Medicare beneficiaries 65 years or older in 2013 who ever met the claims-based criteria indicating an acute myocardial infarction (heart attack) since 1999. These criteria are having at least one inpatient, skilled nursing facility, or home health Medicare claim or at least 2 hospital outpatient or Part B Medicare claims with appropriate diagnosis codes during a 1-year period.
% with ischemic heart disease	The percentage of Medicare beneficiaries 66 years or older in 2013 who ever met the claims-based criteria indicating ischemic heart disease since 1999. These criteria are having at least one inpatient, skilled nursing facility, or home health,

Indicator	Definition
	hospital outpatient or Part B Medicare claim with appropriate diagnosis codes during a 2-year period.
% with congestive heart failure	The percentage of Medicare beneficiaries 66 years or older in 2013 who ever met the claims-based criteria indicating congestive heart failure since 1999. These criteria are having at least one inpatient, hospital outpatient or Part B Medicare claim with appropriate diagnosis codes during a 2-year period.
% with atrial fibrillation	The percentage of Medicare beneficiaries 65 years or older in 2013 who ever met the claims-based criteria indicating hypertension since 1999. These criteria are having at least one inpatient, skilled nursing facility, or home health Medicare claim or at least 2 hospital outpatient or Part B Medicare claims with appropriate diagnosis codes during a 1-year period.
% with osteoarthritis/rheumatoid arthritis	The percentage of Medicare beneficiaries 65 years or older in 2013 who ever met the claims-based criteria indicating osteoarthritis/rheumatoid arthritis since 1999. These criteria are having at least 2 inpatients, skilled nursing facility, home health, hospital outpatient, or Part B Medicare claims (or any combination of claim types at least one day apart) with appropriate diagnosis codes during a 1-year period.
% with osteoporosis	The percentage of Medicare beneficiaries 65 years or older in 2013 who ever met the claims-based criteria indicating osteoporosis since 1999. These criteria are having at least one inpatient, skilled nursing facility, home health Medicare claims or at least 2 hospital outpatient or Part B Medicare claims with appropriate diagnosis codes during a 1-year period.
% with glaucoma	The percentage of Medicare beneficiaries 65 years or older in 2013 who ever met the claims-based criteria indicating glaucoma since 1999. These criteria are having at least one Part B Medicare claims with appropriate diagnosis codes during a 1-year period.
% with cataract	The percentage of Medicare beneficiaries 65 years or older in 2013 who ever met the claims-based criteria indicating cataract since 1999. These criteria are having at least one Part B Medicare claims with appropriate diagnosis codes during a 1-year period.
% women with breast cancer	The percentage of female Medicare beneficiaries 65 years or older in 2013 who ever met the claims-based criteria indicating breast cancer since 1999. These criteria are having at least one inpatient or skilled nursing facility Medicare claims or at least 2 hospital outpatient or Part B Medicare claims (or any combination of outpatient or Part B claims at least a day apart) with appropriate diagnosis codes during a 1-year period.
% with colorectal cancer	The percentage of Medicare beneficiaries 65 years or older in 2013 who ever met the claims-based criteria indicating colon cancer since 1999. These criteria are having at least one inpatient or skilled nursing facility Medicare claims or at least 2 hospital outpatient or Part B Medicare claims (or any combination of outpatient or Part B claims at least a day apart) with appropriate diagnosis codes during a 1-year period.
% men with prostate cancer	The percentage of male Medicare beneficiaries 65 years or older in 2013 who ever met the claims-based criteria indicating prostate cancer since 1999. These criteria are

Indicator	Definition
	having at least one inpatient or skilled nursing facility Medicare claims or at least 2 hospital outpatient or Part B Medicare claims (or any combination of outpatient or Part B claims at least a day apart) with appropriate diagnosis codes during a 1-year period.
% with lung cancer	The percentage of male Medicare beneficiaries 65 years or older in 2013 who ever met the claims-based criteria indicating lung cancer since 1999. These criteria are having at least one inpatient or skilled nursing facility Medicare claims or at least 2 hospital outpatient or Part B Medicare claims (or any combination of outpatient or Part B claims at least a day apart) with appropriate diagnosis codes during a 1-year period.
% with hypothyroidism	The percentage of Medicare beneficiaries 65 years or older in 2013 who ever met the claims-based criteria indicating hyperthyroidism since 1999. These criteria are having at least one inpatient, skilled nursing facility, or home health Medicare claim or at least 2 hospital outpatient or Part B Medicare claims with appropriate diagnosis codes during a 1-year period.
% with anemia	The percentage of Medicare beneficiaries 65 years or older in 2013 who ever met the claims-based criteria indicating anemia since 1999. These criteria are having at least one inpatient, skilled nursing facility, or home health Medicare claim or at least 2 hospital outpatient or Part B Medicare claims with appropriate diagnosis codes during a 1-year period.
% with benign prostatic hyperplasia	The percentage of Medicare beneficiaries 65 years or older in 2013 who ever met the claims-based criteria indicating benign prostatic hyperplasia since 1999. These criteria are having at least one inpatient, skilled nursing facility, or home health Medicare claim or at least 2 hospital outpatient or Part B Medicare claims with appropriate diagnosis codes during a 1-year period.
% with chronic kidney disease	The percentage of Medicare beneficiaries 66 years or older in 2013 who ever met the claims-based criteria indicating chronic kidney disease since 1999. These criteria are having at least one inpatient, skilled nursing facility, or home health Medicare claim or at least 2 hospital outpatient or Part B Medicare claims with appropriate diagnosis codes during a 1-year period.
Summary chronic disease measures	
% with 4+ chronic conditions	The percentage of Medicare beneficiaries 66 years or older in 2013 who ever met the claims-based criteria indicating at least 4 of 15 chronic conditions since 1999. The 15 chronic conditions include Alzheimer's disease or related dementia, asthma, atrial fibrillation, cancer (breast, colorectal, lung, and prostate), chronic kidney disease, chronic obstructive pulmonary disease (COPD), depression, diabetes, congestive heart failure, hypertension, hyperlipidemia (cholesterol) ischemic heart disease, osteoporosis, osteoarthritis/rheumatoid arthritis, and stroke.
% with 0 chronic conditions	The percentage of Medicare beneficiaries 66 years or older in 2013 who never ever met the claims-based criteria indicating any of 15 chronic conditions since 1999.

Indicator	Definition
LIVING WITH DISABILITY	
% 65+ with hearing difficulty	The percentage of persons age 65 or older reported whether the respondent is deaf or has serious difficulty hearing.
% 65+ with vision difficulty	The percentage of persons age 65 or older reported whether the respondent is blind or has serious difficulty seeing even with corrective lenses.
% 65+ with cognition difficulty	The percentage of persons age 65 or older reported whether the respondent has cognitive difficulties (such as learning, remembering, concentrating, or making decisions) because of a physical, mental, or emotional condition.
% 65+ with ambulatory difficulty	The percentage of persons age 65 or older reported whether the respondent has a condition that substantially limits one or more basic activities, such as walking, climbing stairs, reaching, lifting, or carrying.
% 65+ with self-care difficulty	The percentage of persons age 65 or older reported whether the respondent has any physical or mental health condition that has lasted at least 6 months and makes it difficult for them to take care of their own personal need, such as bathing, dressing, or getting around inside the home.
% 65+ with independent living difficulty	The percentage of persons age 65 or older reported whether the respondent has any physical, mental, or emotional condition lasting six months or more that makes it difficult or impossible to perform basic activities outside the home alone.
ACCESS TO CARE	
Medicare (65+ population)	
% Medicare managed care enrollees	The percentage of Medicare beneficiaries age 65 years or older enrolled in a Medicare managed care plan (Medicare Advantage) for at least 1 month in 2013.
% dually eligible for Medicare and Medicaid	The percentage of Medicare beneficiaries age 65 years or older with at least one month of full or restricted Medicaid entitlement in 2013. (Beneficiaries with restricted Medicaid entitlement are only entitled to some Medicaid benefits (e.g., drug coverage only, and/or premium/copayments for services).
% with a regular doctor	The percentage of persons 60 years or older reporting to have a personal doctor or health care provider.
% did not see a doctor when needed due to cost	The percentage of persons 60 years or older responding yes to the question-"Was there a time during the last 12 months when you needed to see a doctor but could not due to the cost?"
# of primary care providers (within 5 miles)	A count of primary care provider (i.e., family practice, general practice, geriatric medicine, and internal medicine) in city/town within 5 miles of the center of the city/town.
# of hospitals (within 5 miles)	A count of hospital in city/town within 5 miles of the center of the city/town.
# of nursing homes (within 5 miles)	A count of nursing home in city/town within 5 miles of the center of the city/town.
# of home health agencies (in same town)	A count of home health agency serving patients living in the city/town.
SERVICE UTILIZATION	
Physician visits per year	Average Part B physician office visit evaluation and management services received in 2013 by Medicare beneficiaries 65 years or older
Emergency room visits/1000 persons 65+ years per year	Average number of emergency department visits (where

Indicator	Definition
	beneficiaries were released or admitted to a hospital) in 2013 per 1,000 Medicare beneficiaries 65 years or older.
Part D monthly prescription fills per person per year	Average number of standard 30 days supplies of a filled Part D prescriptions in 2013 by Medicare beneficiaries 65 years or older.
Home health visits per year	Average home health visits in 2013 per Medicare beneficiary 65 years or older.
Durable medical equipment claims per year	Average Part B durable medical equipment services received in 2013 by Medicare beneficiaries 65 years or older.
Inpatient hospital stays/1000 persons 65+ years per year	A count of inpatient hospital discharges in 2013 per 1,000 Medicare beneficiaries 65 years or older.
Inpatient hospital readmissions (as % of admissions)	The percentage of inpatient hospital discharges for Medicare beneficiaries 65 years or older in 2013 which were followed by an admission to an acute care hospital for any cause within 30 days.
Skilled nursing facility stays/1000 persons 65+ years per year	A count of skilled nursing facility discharges in 2013 per 1,000 Medicare beneficiaries 65 years or older.
Total skilled nursing home Medicare beds/ 1000 persons 65+ years	The number of Medicare- certified nursing home beds in the community per 1,000 Medicare beneficiaries age 65 years or older in 2013.
% 65+ getting Medicaid Long Term Services and Supports	The percentage of Medicare beneficiaries age 65 years or older enrolled who had $0 cost-sharing for Medicare Part D for at least 1 month in 2013. (Dual-eligible beneficiaries who are either nursing home residents or who receive Medicaid-financed long term supports and services have $0 Part D cost sharing.
COMMUNITY VARIABLES & CIVIC ENGAGEMENT	
Air Pollution/Air Quality Index	
Annual # of unhealthy days for older adults	The number of days in 2013 where there was an Air Quality Index score classified as "code red" or "code orange for ozone or particulate matter in the county.
Walkability of Community	Walkability of communities based on straight-line distance to commercial and public facilities.
Walkability score (0-100)	Walkability score categories: **90-100 "Walker's Paradise"** Daily errands do not require a car **70-89 "Very Walkable"** Most errands can be accomplished on foot **50-69 "Somewhat Walkable"** Some errands can be accomplished on foot **25-49 "Car-Dependent"** Most errands require a car **0-25 "Car-Dependent"** Almost all errands require a car
% of vacant housing units in community	The percentage of rental and homeowner vacant housing units in community.
% 60+ who are satisfied with neighborhood	The percentage of persons 60 years or older who responded "fairly or very satisfied" to the question "How satisfied are you with your neighborhood as a place to live?
# of registered voters (age 18+)	A count of registered voters aged 18 and older in 2012.
Voter participation rate in 2012 presidential election (age 18+)	The percentage of registered voters aged 18 and older who voted in the 2012 presidential election.
% 60+ who believe local service orgs understand needs	The percentage of persons 60 years or older who responded "understand a lot" to the question: "How much do you think

Indicator	Definition
	service organizations understand the needs of the people living in your community? By service organizations I mean providers of health or social services."
% 60+ who believe he/she can make a difference	The percentage of persons 60 years or older who responded "some or a big difference" to the question: "Do you feel you can make a difference in your community?"
% 60+ who believe working together can make a difference	The percentage of persons 60 years or older who responded "agree or strongly agree" to the question: "To what extent do you agree or disagree with the following statement? By working together, people in my community can influence decisions that affect the community."
% 60+ who volunteer at least once per month	The percentage of persons 60 years or older who worked as a volunteer in their local school, church, senior center, or other community organization at least six times in the last six months.
% 60+ who attend community events (e.g., church, club) at least once per month	The percentage of persons 60 years or older who attended a local community event (e.g., an event at a church, school or community organization, a craft exhibit or fair, a parade, or a musical event) at least six times in the last six month.
SAFETY AND TRANSPORTATION	
Violent crime rate / 100,000 persons	The number of violent crimes (murder and no negligent manslaughter, forcible rape, robbery, and aggravated assault) in 2013 known to law enforcement per 100,000 persons.
Property crime rate / 100,000 persons	The number of property crimes (burglary, larceny-theft, motor vehicle theft, and arson) in 2013 known to law enforcement per 100,000 persons.
# of motor vehicle fatalities involving adult age 60+/ town	The number of motor vehicle fatalities in town involving an adult age 60 or older (driver, passenger, or pedestrian) from 2009 to 2013.
# of motor vehicle fatalities involving adult age 60+/county	The number of motor vehicle fatalities in county involving an adult age 60 or older (driver, passenger, or pedestrian) from 2009 to 2013.
# of alternative transportation programs by county	The number of alternative transportation programs by county obtained from Rides in Sight.
Municipal Senior Transportation Available	Municipal Senior Transportation information obtained from telephone interviews or email requests conducted in April 2016 by Karen Mensel and Maureen Maigret.
Volunteer Driver Programs Available	Volunteer Driver information obtained from telephone interviews or email requests conducted in April 2016 by Karen Mensel and Maureen Maigret.
ECONOMIC AND FINANCIAL	
Poverty (65+ Population)	
% with income below the poverty level past year	The percentage of households with a householder (i.e., the person (or one of the people) in whose name the housing unit is owned or rented (maintained)) age 65 years or older with an annual family income below the appropriate official poverty threshold.
% 60+ receiving food stamps past year	The percentage of the households with a householder age 65 years or older received food stamps/Supplemental Nutrition Assistance Program (SNAP) benefits in the past 12 months.
% 65+ working past year	The percentage of persons 65 years or older who reported working in the past 12 months which include those who were employed, unemployed, and not in labor force.

Indicator	Definition
Household income (65+ householder)	Income of households with a householder (i.e., the person (or one of the people) in whose name the housing unit is owned or rented (maintained) age 65 years or older.
% households with annual income < $20,000	The percentage of households with a householder age 65 years or older with an annual income in 2010 less than $20,000.
% households with annual income $20,000-49,999	The percentage of households with a householder age 65 years or older with an annual income in 2010 between $20,000 and $49,000.
% households with annual income ≥ $50,000	The percentage of households with a householder age 65 years or older with an annual income in 2010 more than $50,000.
% 60+ own home	The percentage of households with a householder age 60 or older are house-owners.
% 60+ homeowners with mortgage	The percentage of home owners whose householders age 60 or older have mortgage (e.g., deeds of trust, contracts to purchase, home equity loans) on their housing units.
COST OF LIVING	
Elder Economic Security Standard Index	
Single, homeowner without mortgage, good health	Annual income needed for a single homeowner with no mortgage in good health to attain a modest standard of living in the county.
Single, renter, good health	Annual income needed for a single renter in good health to attain a modest standard of living in the county.
Couple, homeowner without mortgage, good health	Annual income needed for a couple who are homeowners with no mortgage in good health to attain a modest standard of living in the county.
Couple, renter, good health	Annual income needed for a couple who are renters in good health to attain a modest standard of living in the county.

Rhode Island Healthy Aging Date Report, 2016
Table A2: Years and Data Sources for Community Profile Indicators[1]

Indicator	Source and Years
POPULATION CHARACTERISTICS	
Total population all ages	United States Census Bureau / American FactFinder. "P12: SEX BY AGE." *2010 Census.*U.S. Census Bureau, 2010. Web. 2015. http://factfinder2.census.gov

Population 60 years or older as % of total population
 	
Total population 60 years or older
    Population 65 years or older as % of total population
 	
Total population 65 years or older
    % 65-74 years, % 75-84 years, % 85 years or older
 	
Gender (65+ population)
    % female
	United States Census Bureau / American FactFinder. "B01001: SEX BY AGE." *2009 – 2013 American Community Survey*. U.S. Census Bureau's American Community Survey Office, 2013. Web. 2015. http://factfinder2.census.gov

Race/Ethnicity (65+ population) % White, % African American, % Asian, % Other, % Hispanic/Latino	United States Census Bureau / American FactFinder. "B01001A-B01001I: SEX BY AGE." *2009 – 2013 American Community Survey*. U.S. Census Bureau's American Community Survey Office, 2013. Web. 2015 http://factfinder2.census.gov
Marital Status (65+ population) % married, % divorced/separated, % widowed, % never married	United States Census Bureau / American FactFinder. "B12002: SEX BY MARITAL STATUS BY AGE FOR THE POPULATION 15 YEARS AND OVER." *2009 – 2013 American Community Survey*. U.S. Census Bureau's American Community Survey Office, 2013. Web. 2015 http://factfinder2.census.gov
Education (65+ population) % with less than high school education, % with high school or some college, % with college degree	United States Census Bureau / American FactFinder. "B15001: SEX BY AGE BY EDUCATIONAL ATTAINMENT FOR THE POPULATION 18 YEARS AND OVER." *2009 – 2013 American Community Survey*. U.S. Census Bureau's American Community Survey Office, 2013. Web. 2015 http://factfinder2.census.gov
% of 60+ LGBT	2013-2014 Behavioral Risk Factor Surveillance Survey, Rhode Island Department of Health. http://www.health.ri.gov/data/behaviorriskfactorsurvey/
% of 65+ population living alone	United States Census Bureau / American FactFinder. "B09020: RELATIONSHIP BY HOUSEHOLD TYPE (INCLUDING LIVING ALONE) FOR THE POPULATION 65 YEARS AND OVER." *2009 – 2013 American Community Survey*. U.S. Census Bureau's American Community Survey Office, 2013. Web. 2015. http://factfinder2.census.gov
% of 65+ population who speak only English at home	United States Census Bureau / American FactFinder. "B16007: AGE BY LANGUAGE SPOKEN AT HOME BY ABILITY TO SPEAK ENGLISH FOR THE POPULATION 5 YEARS AND OVER" *2009 – 2013 American Community Survey*. U.S. Census Bureau's American Community Survey Office, 2013. Web. 2015. http://factfinder2.census.gov
% of 65+ population who are veterans of military service	United States Census Bureau / American FactFinder. "B21001: SEX BY AGE BY VETERAN STATUS FOR THE CIVILIAN POPULATION 18 YEARS AND OVER" *2009 – 2013 American Community Survey.* U.S. Census Bureau's American Community Survey Office, 2013. Web. 2015. http://factfinder2.census.gov
Age-sex adjusted 1-year mortality rate	2012& 2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org

Indicator	Source and Years

Geographic Migration (65+ population)
 	
  % moved within same county
  % moved from different county in Rhode Island
  % moved from different state
	United States Census Bureau / American FactFinder. "B07001: GEOGAPHICAL MOBILITY IN THE PAST YEAR BY AGE FOR CURRENT RESIDENCE IN THE UNITED STATE" *2009 – 2013 American Community Survey.* U.S. Census Bureau's American Community Survey Office, 2013. Web. 2015. http://factfinder2.census.gov

% 60+ lived at same address 25 years or more	2012-2014 Behavioral Risk Factor Surveillance Survey, Rhode Island Department of Health. http://www.health.ri.gov/data/behaviorriskfactorsurvey/
WELLNESS and PREVENTION	
% any physical activity within last month	2012-2014 Behavioral Risk Factor Surveillance Survey, Rhode Island Department of Health. http://www.health.ri.gov/data/behaviorriskfactorsurvey/
% injured by a fall within last year	2014 Behavioral Risk Factor Surveillance Survey, Rhode Island Department of Health. http://www.health.ri.gov/data/behaviorriskfactorsurvey/
% ever had a hip fracture	2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
% with self-reported fair or poor health status	2012-2014 Behavioral Risk Factor Surveillance Survey, Rhode Island Department of Health. http://www.health.ri.gov/data/behaviorriskfactorsurvey/
% with 15+ physically unhealthy days last month	2012-2014 Behavioral Risk Factor Surveillance Survey, Rhode Island Department of Health. http://www.health.ri.gov/data/behaviorriskfactorsurvey/
% with physical exam/check-up in past year	2012-2014 Behavioral Risk Factor Surveillance Survey, Rhode Island Department of Health. http://www.health.ri.gov/data/behaviorriskfactorsurvey/
% met CDC preventive health screening goals	2010,2012,2014 Behavioral Risk Factor Surveillance Survey, Rhode Island Department of Health. http://www.health.ri.gov/data/behaviorriskfactorsurvey/
% flu shot past year	2012-2014 Behavioral Risk Factor Surveillance Survey, Rhode Island Department of Health. http://www.health.ri.gov/data/behaviorriskfactorsurvey/
% pneumonia vaccine	2012-2014 Behavioral Risk Factor Surveillance Survey, Rhode Island Department of Health. http://www.health.ri.gov/data/behaviorriskfactorsurvey/
% shingles vaccine	2012,2014 Behavioral Risk Factor Surveillance Survey, Rhode Island Department of Health. http://www.health.ri.gov/data/behaviorriskfactorsurvey/
% cholesterol screening	2009,2011,2013 Behavioral Risk Factor Surveillance Survey, Rhode Island Department of Health. http://www.health.ri.gov/data/behaviorriskfactorsurvey/
% mammogram within last 2 years (women)	2010,2012,2014 Behavioral Risk Factor Surveillance Survey, Rhode Island Department of Health. http://www.health.ri.gov/data/behaviorriskfactorsurvey/
% colorectal cancer screening	2010,2012,2014 Behavioral Risk Factor Surveillance Survey, Rhode Island Department of Health. http://www.health.ri.gov/data/behaviorriskfactorsurvey/

Oral health
 	
  % with complete tooth loss
  % with annual dental exam
	2010,2012,2014 Behavioral Risk Factor Surveillance Survey, Rhode Island Department of Health. http://www.health.ri.gov/data/behaviorriskfactorsurvey/

# dentists per 100,000 persons (all ages)	State of Rhode Island Department of Health. *Find Dental Care, 2016.* Web. August, 2016. http://www.health.ri.gov/find/oralhealthservices/

Indicator	Source and Years
NUTRITION/DIET	
% with 5 or more servings of fruit or vegetables per day	2009,2011,2013 Behavioral Risk Factor Surveillance Survey, Rhode Island Department of Health. http://www.health.ri.gov/data/behaviorriskfactorsurvey/
% obese	2012-2014 Behavioral Risk Factor Surveillance Survey, Rhode Island Department of Health. http://www.health.ri.gov/data/behaviorriskfactorsurvey/
% high cholesterol	2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
% current smokers	2012-2014 Behavioral Risk Factor Surveillance Survey, Rhode Island Department of Health. http://www.health.ri.gov/data/behaviorriskfactorsurvey/
% excessive drinking	2012-2014 Behavioral Risk Factor Surveillance Survey, Rhode Island Department of Health. http://www.health.ri.gov/data/behaviorriskfactorsurvey/
MENTAL HEALTH	
% with 15+ days poor mental health last month	2012-2014 Behavioral Risk Factor Surveillance Survey, Rhode Island Department of Health. http://www.health.ri.gov/data/behaviorriskfactorsurvey/
% 60+ talked with family or friends almost daily	2012-2014 Behavioral Risk Factor Surveillance Survey, Rhode Island Department of Health. http://www.health.ri.gov/data/behaviorriskfactorsurvey/
% ever diagnosed with depression	2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
CHRONIC DISEASE	
% with Alzheimer's disease or related dementias	2012& 2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
% with diabetes	2012& 2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
% with stroke	2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
% with chronic obstructive pulmonary disease	2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
% with asthma	2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
% with hypertension	2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
% ever had a heart attack	2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
% with ischemic heart disease	2012& 2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
% with congestive heart failure	2012& 2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
% with atrial fibrillation	2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
% with osteoarthritis/rheumatoid arthritis	2012& 2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
% with osteoporosis	2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
% with glaucoma	2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
% with cataract	2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
% women with breast cancer	2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org

Rhode Island 2016: Data Sources

Indicator	Source and Years
% with colorectal cancer	2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
% men with prostate cancer	2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
% with lung cancer	2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
% with hypothyroidism	2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
% with anemia	2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
% with benign prostatic hyperplasia	2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
% with chronic kidney disease	2012& 2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
Summary chronic disease measures	2012& 2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
% with 4+ chronic conditions	2012& 2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
% with 0 chronic conditions	2012& 2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
LIVING WITH DISABILITY	
% 65+ with hearing, vision, cognition, ambulatory, self-care, and independent living difficulty	United States Census Bureau / American FactFinder. "B18102-B18107: SEX BY AGE BY HEARING, VISION, COGNITIVE, AMBULATORY, SELF-CARE, & INDEPENDENT DIFFICULTY" *2009 – 2013 American Community Survey.* U.S. Census Bureau's American Community Survey Office, 2013. Web. 2015. http://factfinder2.census.gov
ACCESS TO CARE	
Medicare (65+ population)	
% Medicare managed care enrollees	2012& 2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
% dually eligible for Medicare and Medicaid	2012& 2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
% with a regular doctor	2012-2014 Behavioral Risk Factor Surveillance Survey, Rhode Island Department of Health. http://www.health.ri.gov/data/behaviorriskfactorsurvey/
% did not see a doctor when needed due to cost	2012-2014 Behavioral Risk Factor Surveillance Survey, Rhode Island Department of Health. http://www.health.ri.gov/data/behaviorriskfactorsurvey/
# of primary care providers (within 5 miles)	The number of primary care provider downloaded from <http://www.medicare.gov/physiciancompare/search.html> in November 2015 using the search term "city/town name, Rhode Island" and option for within 5 miles.
# of hospitals (within 5 miles)	The number of hospital downloaded from <http://www.medicare.gov/hospitalcompare/search.html> in November 2015 using the search term "city/town name, Rhode Island" and option for within 5 miles.
# of nursing homes (within 5 miles)	The number of nursing home downloaded from < http://www.medicare.gov/nursinghomecompare/search.html> in November 2015 using the search term "city/town name, Massachusetts" and option for within 5 miles.
# of home health agencies (in same town)	The number of home health agency downloaded from < http://www.medicare.gov/homehealthcompare/search.html> in November 2015 using the search term "city/town name, Rhode Island".

Indicator	Source and Years
SERVICE UTILIZATION	
Physician visits per year	2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
Emergency room visits/1000 persons 65+ years per year	2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
Part D monthly prescription fills per person per year	2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
Home health visits per year	2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
Durable medical equipment claims per year	2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
Inpatient hospital stays/1000 persons 65+ years per year	2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
Inpatient hospital readmissions (as % of admissions)	2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
Skilled nursing facility stays/1000 persons 65+ years per year	2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
Total skilled nursing home Medicare beds/1000 persons 65+ years	Medicare Nursing Home Compare December, 2013 https://data.medicare.gov/data/archives/nursing-home-compare; 2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
% 65+ getting Medicaid Long Term Services and Supports	2013 Master Beneficiary Summary File –A/B/D, CMS Chronic Condition Data Warehouse www.ccwdata.org
COMMUNITY & CIVIC ENGAGEMENT	
Air Pollution/Air Quality Index Annual # of unhealthy days for older adults	United States Environmental Protection Agency. *Air Compare, 2013.* Web. November 2015. <https://www3.epa.gov/aircompare/compare_by_state.htm> Data for State Summarize
Walkability of Community Walkability score (0-100)	Walkability scores downloaded from <http://www.walkscore.com/> on 10/2/2015 using the finder term "Address of City/Town Hall, Rhode Island."
% of vacant housing units in community	United States Census Bureau / American FactFinder. "B25002: OCCUPANCY STATUS" *2009 – 2013 American Community Survey.* U.S. Census Bureau's American Community Survey Office, 2013. Web. 2015. http://factfinder2.census.gov
% 60+ who are satisfied with neighborhood	2012-2014 Behavioral Risk Factor Surveillance Survey, Rhode Island Department of Health. http://www.health.ri.gov/data/behaviorriskfactorsurvey/
# of registered voters (age 18+) Voter participation rate in 2012 presidential election (age 18+)	State of Rhode Island, Board of Election. *Previous Election Results, 2012.* Web. November, 2015 http://www.elections.state.ri.us/elections/preresults/index.php
% 60+ who believe local service orgs understand needs	2012-2014 Behavioral Risk Factor Surveillance Survey, Rhode Island Department of Health. http://www.health.ri.gov/data/behaviorriskfactorsurvey/
% 60+ who believe he/she can make a difference	2012-2014 Behavioral Risk Factor Surveillance Survey, Rhode Island Department of Health. http://www.health.ri.gov/data/behaviorriskfactorsurvey/
% 60+ who believe working together can make a difference	2012-2014 Behavioral Risk Factor Surveillance Survey, Rhode Island Department of Health. http://www.health.ri.gov/data/behaviorriskfactorsurvey/
% 60+ who volunteer at least once per month	2012-2014 Behavioral Risk Factor Surveillance Survey, Rhode Island Department of Health. http://www.health.ri.gov/data/behaviorriskfactorsurvey/
% 60+ who attend community events (e.g., church, club) at least once per month	2012-2014 Behavioral Risk Factor Surveillance Survey, Rhode Island Department of Health. http://www.health.ri.gov/data/behaviorriskfactorsurvey/

Indicator	Source and Years

SAFETY AND TRANSPORTATION

Indicator	Source and Years
Violent crime rate / 100,000 persons	United States Department of Justice, Federal Bureau of Investigation. *Crime in the United States, 2013.* Web. November 2015. <http://www.fbi.gov/stats-services/crimestats>. Data for years 20131 used for reporting of rates.
Property crime rate / 100,000 persons	
# of motor vehicle fatalities involving adult age 60+/town	National Highway Traffic Safety Administration, *Fatal Accident Reporting System*. Downloaded from <http://www.nhtsa.gov/FARS> in November, 2015. Data for years 2009-2013.
# of motor vehicle fatalities involving adult age 60+/county	
# of alternative transportation programs by county	Rides in Sight. Downloaded from <https://www.ridesinsight.org/> in May, 2016 using the search term "county, Rhode Island".
Municipal Senior Transportation and Volunteer Driver Programs Available	Municipal Senior Transportation information obtained from telephone interviews or email requests conducted in April 2016 by Karen Mensel and Maureen Maigret.

ECONOMIC AND FINANCIAL

Indicator	Source and Years
Poverty (65+ Population) % with income below the poverty level past year	United States Census Bureau / American FactFinder. "B17001: POVERTY STATUS IN THE PAST 12 MONTHS BY SEX BY AGE" *2009 – 2013 American Community Survey.* U.S. Census Bureau's American Community Survey Office, 2013. Web. 2015. http://factfinder2.census.gov
% 60+ receiving food stamps past year	United States Census Bureau / American FactFinder. "B22001: RECEIPT OF FOOD STAMPS/SNAP IN THE PAST 12 MONTHS BY PRESENCE PEOPLE 60 YEARS AND OVER FOR HOUSEHOLDS" *2009 – 2013 American Community Survey.* U.S. Census Bureau's American Community Survey Office, 2013. Web. 2015. http://factfinder2.census.gov
% 65+ working past year	United States Census Bureau / American FactFinder. "B23004: WORK STATUS IN THE PAST 12 MONTHS BY AGE BY EMPLOYMENT STATUS FOR THE CIVILIAN POPULATION 65 YEARS AND OVER" *2009 – 2013 American Community Survey.* U.S. Census Bureau's American Community Survey Office, 2013. Web. 2015. http://factfinder2.census.gov

Household income (65+ householder)
 	
   % households with annual income < $20,000
 	
   % households with annual income $20,000-49,999
 	
   % households with annual income ≥ $50,000
	United States Census Bureau / American FactFinder. "B19037: AGE OF HOUSEHOLDER BY HOUSEHOLD INCOME IN THE PAST 12 MONTHS (IN 2013 INFLATION-ADJUSTED DOLLARS)" *2009 – 2013 American Community Survey.* U.S. Census Bureau's American Community Survey Office, 2013. Web. 2015. http://factfinder2.census.gov

% 60+ own home	United States Census Bureau / American FactFinder. "B25007: TENURE BY AGE HOUSEHOLDER" *2009 – 2013 American Community Survey.* U.S. Census Bureau's American Community Survey Office, 2013. Web. 2015. http://factfinder2.census.gov
% 60+ have mortgage on home	United States Census Bureau / American FactFinder. "B25027: MORTGAGE STATUS BY AGE HOUSEHOLDER" *2009 – 2013 American Community Survey.* U.S. Census Bureau's American Community Survey Office, 2013. Web. 2015. http://factfinder2.census.gov

COST OF LIVING

Indicator	Source and Years
Elder Economic Security Standard Index	Elder Economic Security Index data from the University of Massachusetts Boston Center for Social and Demographic Research on Aging, June 14, 2016.

[1] Variable definitions, estimation methodology, geographic units, and geographic data sources are reported elsewhere in this Technical Appendix.

Table A. Comparing Mortality and Chronic Disease Indicators for New England States

Indicators	RI	BW [a]	CT	BW	ME	BW	MA	BW	NH	BW	VT
One-Year Mortality Rate	4.6%	W	4.3%	B	4.8%		4.4%		4.5%		4.7%
High Cholesterol	78.0%	W	75.7%	W	71.6%	W	73.9%	W	71.9%	W	65.6%
Diabetes	35.7%	W	33.9%	W	29.2%	W	31.9%	W	28.5%	W	26.0%
Stroke	12.5%		12.4%	W	11.5%		12.2%	W	11.0%	W	10.9%
Chronic Obstructive Pulmonary Disease (COPD)	24.1%	W	21.3%		24.3%	W	22.1%	W	21.2%	W	19.5%
Asthma	14.0%	W	12.9%	W	11.4%	W	12.3%	W	10.4%	W	10.3%
Hypertension	79.1%	W	77.1%	W	71.7%	W	76.3%	W	71.0%	W	68.2%
Heart Attack	5.4%	W	4.6%	B	6.1%	W	4.7%	W	4.5%	W	5.1%
Ischemic Heart	45.9%	W	43.8%	W	39.0%	W	41.9%	W	35.9%	W	35.2%
Congestive Heart Failure (CHF)	24.8%		24.4%	W	20.7%	W	23.4%	W	18.3%	W	17.7%
Anemia	52.2%	W	51.5%	W	39.7%	W	47.5%	W	38.2%	W	38.5%
Chronic Kidney Disease	23.4%	W	22.7%	W	21.9%	B	24.6%	W	20.9%	W	17.5%
Cancer - Breast	10.7%		10.8%	W	9.1%		10.6%	W	9.4%	W	9.3%
Cancer - Prostate	13.8%		13.3%	W	11.0%		14.1%	W	11.7%	W	11.4%
Cancer - Colorectal	3.2%		3.1%	W	2.7%		3.1%	W	2.6%	W	2.5%
Cancer - Lung	2.1%	W	1.8%	W	1.6%		2.0%	W	1.6%	W	1.5%
Atrial Fibrillation	15.2%	B	16.2%		14.9%	B	15.9%	W	14.4%	W	13.8%
Arthritis	52.1%	W	50.4%	W	47.9%	W	50.8%	W	47.2%	W	47.1%
Osteoporosis	21.0%		21.0%	W	18.0%		21.0%	W	18.2%	W	14.7%
Glaucoma	26.5%	B	28.0%	W	24.4%	W	25.2%	W	22.8%	W	23.8%
Cataract	67.9%	W	65.1%	W	64.6%	W	64.8%	W	60.9%	W	61.1%
Hypothyroidism	21.1%	B	23.6%		21.0%	W	20.5%	W	20.0%	W	18.0%
Benign Prostatic Hyperplasia	40.3%		40.8%	W	36.7%		40.3%	W	36.8%	W	36.8%
Hip Fracture	3.9%		3.9%	W	3.6%		3.8%	W	3.4%	W	3.5%
Depression	30.0%	W	27.1%	B	31.9%		29.7%	W	27.6%	W	28.8%
Alzheimer's Disease or Related Dementias	14.6%		14.9%	W	11.4%	W	13.9%	W	12.4%	W	10.5%
4+ Chronic Conditions	63.9%	W	61.1%	W	57.3%	W	60.3%	W	54.6%	W	51.3%
No Chronic Conditions	8.4%		8.6%	W	11.7%		8.4%	W	11.0%	W	11.6%
Medicare Advantage Enrollment	39.4%	*	25.2%	*	21.8%	*	22.0%	*	7.2%	*	8.7%
Dually Eligible (Medicaid/Medicare)	14.6%	*	20.8%	*	24.4%	*	15.9%	*	7.6%	*	15.5%
% Long Term Services Support (Medicaid)	6.2%	W	5.9%	W	3.0%	W	4.9%	W	3.7%	W	4.1%
% Living in urbanized areas (all ages)	90.7%		88.0%		38.7%		92.0%		60.3%		36.9%

[a] B and W symbols to the left of each state's indicator values distinguish indicators where the RI estimate is better or worse than each of the five other New England states CT, ME, MA, NH, and VT based on nonoverlapping 95% margins of error. An asterisk is used when there is ambiguity as to whether a higher value is better or worse.

Table B. Best and Worst Rates on Select Indicators

Indicators	Best Rates	Worst Rates
Mortality Rate	West Greenwich Woonsocket Coventry	Charlestown Warren Bristol
Any physical activity past month	Providence NE East Greenwich North Kingstown	Providence Other Woonsocket Pawtucket
CDC Preventive Screenings	Providence NE Cranston Charlestown	Providence Other Scituate Glocester
Obesity	Providence NE North Kingstown East Greenwich	Providence Other Central Falls Pawtucket
Depression	Exeter New Shoreham Jamestown	Central Falls Providence Providence Other
Alzheimer's & Related Dementias	Exeter Jamestown New Shoreham	Central Falls Westerly Providence Other
Stroke	New Shoreham Jamestown Foster	Central Falls Westerly Woonsocket
Diabetes	Jamestown New Shoreham Providence NE	Central Falls Providence Other Johnston
Asthma	Jamestown New Shoreham Westerly	Central Falls Woonsocket Pawtucket
Multiple comorbidities (4+)	Jamestown New Shoreham Exeter	Woonsocket Central Falls North Providence
Ambulatory difficulty	New Shoreham Jamestown Foster	Central Falls Exeter Providence Other

Table C. Counts of Health Indicators with Rates Better/Worse than State Average for Cities and Towns

Town	Health Indicators Better than State Average	Health Indicators Worse than State Average	Lower than Average Medicare Service Use	Higher than Average Medicare Service Use
Most Indicators Better than State Average				
Jamestown	34	1	7	0
Newport	26	2	4	0
Portsmouth	26	1	4	0
Charlestown	25	0	6	0
North Kingstown	25	2	6	0
Providence NE	25	3	5	0
New Shoreham	24	0	7	0
Little Compton	24	1	2	0
Most Indicators Worse than State Average				
Providence Other	9	29	1	4
Woonsocket	2	23	0	5
Central Falls	3	21	1	4
North Providence	2	20	0	4
Johnston	2	20	0	2
Pawtucket	6	18	1	2

Table D. Indicators with the Greatest State-Level Gender Differences (after age-sex adjustment)

Indicators	State Percentage		Female-Male Difference
	Male	Female	
Female Percentage Higher			
% with osteoporosis	4.1%	32.2%	28.1%
% with hypothyroidism	10.7%	28.4%	17.7%
% with osteoarthritis/rheumatoid arthritis	43.2%	57.6%	14.4%
% ever diagnosed with depression	21.8%	35.6%	13.9%
% with cataract	61.1%	71.9%	10.7%
% with 5+ servings of fruits or vegetables per day	17.3%	27.4%	10.1%
% 60+ talked with family or friends daily	70.2%	78.9%	8.7%
% dually eligible for Medicare and Medicaid	9.9%	18.1%	8.2%
% 65+ with independent living difficulty [a]	9.8%	16.5%	6.7%
% 65+ with ambulatory difficulty [a]	16.2%	22.6%	6.4%
% with asthma	10.3%	16.7%	6.4%
% with anemia	48.0%	53.9%	5.9%
% with glaucoma	23.3%	28.4%	5.1%
% pneumonia vaccine	70.9%	76.1%	5.1%
Female Percentage Lower			
% met CDC preventive health screening goals	43.0%	37.7%	-5.3%
% with chronic kidney disease	26.1%	20.5%	-5.6%
% any physical activity within last month	73.9%	67.3%	-6.6%
% with ischemic heart disease	50.9%	40.8%	-10.1%

All rate estimates were age-adjusted with weights so that men and women have the same age distribution in 5-year intervals except for indicators with. [a]

Table E. Counts of Health Indicators with Rates Better than State Average for Cities and Towns

Town	Total Indicators	Serious Chronic Disease [a]	Mild Chronic Disease [b]	Self-reports Physical Health [c]	Self-reports Mental Health [d]	Health Behaviors [e]	Preventive Service Use [f]	Access to Care [g]	Community Engagement [h]
Most Indicators Better than State Average									
Jamestown	34	14	5	2	4	1	1	2	5
Newport	26	9	2	2	4	1	1	2	5
Portsmouth	26	9	2	2	4	1	1	2	5
Charlestown	25	11	2	2	2	1	2	0	5
North Kingstown	25	11	2	3	2	2	2	0	3
Providence NE	25	9	1	3	0	4	5	0	3
New Shoreham	24	10	2	2	2	1	2	0	5
Little Compton	24	8	2	2	3	1	1	2	5
Most Indicators Worse than State Average									
Providence Other	29	6	0	3	4	3	6	2	5
Woonsocket	23	10	3	2	0	2	3	0	3
Central Falls	21	9	0	2	2	2	3	0	3
Johnston	20	10	3	1	1	1	1	0	3
North Providence	20	9	4	1	1	1	1	0	3
Pawtucket	18	7	0	2	1	2	3	0	3

[a] Mortality rate, diabetes, chronic kidney disease, Chronic obstructive pulmonary disease, hypertension, heart attack, stroke, congestive heart failure, asthma, ischemic heart disease, high cholesterol, 4+ chronic conditions, no chronic conditions (low), hip fracture, colorectal cancer, lung cancer

[b] Atrial fibrillation, arthritis, osteoporosis, cataracts, hypothyroidism, benign prostatic hyperplasia, breast cancer, prostate cancer, glaucoma

[c] Self-reported poor/fair health, 15+ days with poor physical health last month, tooth loss, fall injury

[d] 15+ days with poor mental health last month, talk daily with friends or family, depression, Alzheimer's disease and related dementias

[e] 5+ Servings of fruits & vegetables, regular physical activity, excessive drinking, smoking, obesity

[f] Annual physical & dental exams, flu shot, shingles & pneumonia vaccine, cholesterol & colorectal cancer screening, mammogram, met CDC preventive screening goals.

[g] Regular doctor, did not see a doctor due to cost

[h] Feels can make a difference, working together can make a difference, community organizations understand need, volunteer monthly, attend local events regularly, satisfied with community

Table F. Common Regional Gender Differences in Healthy Aging Indicators by Indicator Group

Indicator Group	Male Rate Higher than Female Rate [a]	Female Rate Higher than Male Rate
Serious Chronic Disease	% with chronic kidney disease, ischemic heart disease, heart attack, no chronic conditions,	% with anemia, asthma, and 4+ chronic conditions; Annual rates of Part D prescription fills
Mild Chronic Disease	% with atrial fibrillation	% with cataracts, hypothyroidism, osteoporosis, and osteoarthritis/rheumatoid arthritis
Disability and Later Life Chronic Disease	Mortality rate, % with hearing difficulty	% with glaucoma, Alzheimer's disease or related dementias, independent living difficulty, % ever diagnosed for depression, and hip fracture; % receiving Medicaid long term support services;
Screening and Vaccinations	% colorectal cancer screening, met CDC preventive health screening goals	% pneumonia vaccine
Health Behaviors	% any physical activity within last month, excessive drinking	% with 5+ daily servings of fruits or vegetables
Social Interaction		% talk with family or friends daily

[a] A gender difference in at least 6 out of 14 RI regions. A within-region gender difference required non-overlapping 95% confidence intervals (Medicare indicators), 67% confidence intervals (BRFSS indicators), and 90% confidence intervals (ACS disability indicators).

Tablen G. Healthy Aging Indicators with Differences between State and Region Gender Disparities [a]

Region (towns)	State Female-Male Disparity (Female higher)		State Male-Female Disparity (Male higher)	
	Region Larger	**Region Smaller or Disparity Reversed**	**Region Larger**	**Region Smaller or Disparity Reversed**
1 (Exeter, Hopkinton, Richmond, West Greenwich, Westerly)		*Arthritis,* Toothloss	*Diabetes*	
2 (Burriville, Coventry, Foster, Glocester, Scituate)	*Anemia,* Shingles vaccine*,* Toothloss	15+ days poor health, Attend community events, Annual dental exam, Pneumonia vaccine		
3 (East Greenwich, North Kingstown)	Make a difference in community, Pneumonia vaccine			Organizations understand need
4 (Charlestown, Narragansett, New Shoreham, South Kingstown)		*4+ Chronic conditions*	*Ischemic heart disease, Diabetes*	
5 (Jamestown, Little Compton, Middletown, Newport, Portsmouth, Tiverton)	Shingles vaccine	*Arthritis, High cholesterol*		
6 (Cranston)	Flu shot	5+ fruits & vegetables, Shingles vaccine		
7 (Warwick, West Warwick)	*Depression, Hypothyroidism*	Pneumonia vaccine		
8 (Cumberland, Lincoln, North Smithfield, Smithfield)	Flu shot		Colorectal cancer screening	
9 (Johnston, North Providence)	Satisfied with community	Talk with family or friends daily		
10 (Central Falls, Pawtucket, Woonsocket)	*Hypertension, High cholesterol, Arthritis*		*No chronic conditions* , Organizations understand need	*Ischemic heart disease*
11 (East Providence)	Talk with family or friends daily			
12 (Barrington, Bristol, Warren)	Make a difference in community	Talk with family or friends daily		
13 (Providence NE)	Attend community events, volunteer	*Anemia, Hypothyroidism, Hypertension, High cholesterol*	*Ischemic heart disease, Chronic kidney disease*	*Diabetes, No chronic conditions,* Colorectal cancer screening, CDC screening goals
14 (Providence Other)	*Hypertension, High cholesterol 4+ Chronic conditions, Arthritis* , Annual dentist visit	*Hypothyroidism,* Make a difference in community, Satisfied with community, Flu shot	*Ischemic heart disease*	*Diabetes* , Colorectal cancer screening

[a] List contains those conditions where the gender disparity changed by 3 percentage points or more for CMS indicators and 7 percentage points or more for BRFSS indicators. CMS indicators are *italicized* .

Table H. Counts of Core City Zip Codes with Rates Higher or Lower than the RI State Average [a]

Indicators	Zip codes with rates higher than state average	Zip codes with rates lower than state average
Socio Demographics		
% households with annual income $\geq$ $50,000	1	10
% of 65+ population who speak only English at home	3	10
% with college degree	1	7
% dually eligible for Medicare and Medicaid	9	0
% White	0	6
% married	0	7
% Medicare managed care enrollees	3	4
% with less than high school education	8	4
% with income below the poverty level	7	0
% African American	5	0
% Other race	5	0
% Hispanic/Latino	6	0
% of 65+ population living alone	7	0
Serious Chronic Disease	a	b
% with chronic kidney disease	19	0
% with diabetes	13	1
Annual durable medical equipment claims	12	1
% with 4+ chronic conditions	15	2
% with hypertension	9	1
Monthly Part D prescription fills	11	3
% with asthma	9	0
% with congestive heart failure	9	1
Annual ER visits/1000 persons 65+	10	3
% with anemia	7	2
% with chronic obstructive pulmonary disease	7	3
Mild Chronic Disease		
Adjusted office visits	4	10
% with cataract	2	8
% with glaucoma	1	6
% women with breast cancer	2	6
% with osteoporosis	5	0
% osteoarthritis and rheumatoid arthritis	5	8
% men with prostate cancer	2	6
Disability and Later Life Chronic Disease		
% ever diagnosed with depression	14	0
% 65+ with Medicaid LTSS	10	7

[a] With the exception of the socio-demographic variables, statistical significance is defined to exist when the 90% confidence interval of the zip code estimate does not overlap with the 90% confidence interval for the state estimate. For the socio-demographic variables, a 7 percentage point difference in prevalence rate is required for classification as higher or lower than the state average.

Table I. Counts of Health Indicators with Rates Worse than State and City Averages

Zip code	City	Indicators with rates worse than state average				Indicators with rates worse than city average			
		All	Serious Chronic Disease	Mild Chronic Disease	Disability and Later Life Chronic Disease	All	Serious Chronic Disease	Mild Chronic Disease	Disability and Later Life Chronic Disease
02904	Providence	23	14	5	4	15	8	6	1
02895	Woonsocket	22	14	3	5	0	0	0	0
02886	Warwick	21	15	5	1	4	1	3	0
02863	Central Falls	21	13	0	8	0	0	0	0
02920	Cranston	21	12	6	3	6	3	3	0
02915	East Providence	15	11	0	4	4	2	0	2
02908	Providence	15	7	0	8	2	0	1	1
02860	Pawtucket	12	8	0	4	3	1	0	1
02909	Providence	12	8	0	4	2	3	0	0
02907	Providence	11	7	0	4	4	3	0	1
02903	Providence	10	8	0	2	3	2	0	1
02889	Warwick	10	7	1	2	0	0	0	0
02916	East Providence	6	4	1	1	0	0	0	0
02888	Warwick	4	4	0	0	0	0	0	0
02861	Pawtucket	4	2	0	2	0	0	1	0
02905	Providence	4	2	0	2	1	0	0	0
02921	Cranston	4	1	2	1	0	0	0	0
02906	Providence	4	0	3	1	3	0	3	0
02910	Cranston	1	1	0	0	0	0	0	0
02914	East Providence	1	0	0	1	2	0	0	2
	Total Indicators	**42**	**18**	**10**	**14**	**42**	**18**	**10**	**14**

Table J. Counts of Health Indicators with Rates Better than State and City Averages

Zip code	City	Indicators with rate better than state average				Indicators with rate better than city average			
		All	Serious Chronic Disease	Mild Chronic Disease	Disability and Later Life Chronic Disease	All	Serious Chronic Disease	Mild Chronic Disease	Disability and Later Life Chronic Disease
02906	Providence	19	14	1	4	19	14	0	5
02905	Providence	16	7	7	2	10	4	2	4
02907	Providence	12	4	7	1	7	0	6	1
02909	Providence	12	1	8	3	5	0	4	1
02914	East Providence	8	3	3	2	9	5	2	2
02921	Cranston	7	1	3	3	3	1	1	1
02860	Pawtucket	7	0	6	1	0	0	0	0
02861	Pawtucket	5	1	4	0	3	2	0	1
02888	Warwick	4	2	0	2	4	1	1	2
02889	Warwick	4	0	3	1	0	0	0	0
02863	Central Falls	4	0	4	0	0	0	0	0
02895	Woonsocket	4	0	4	0	0	0	0	0
02908	Providence	3	1	2	0	0	0	0	0
02910	Cranston	2	1	0	1	3	1	1	1
02915	East Providence	2	0	2	0	0	0	0	0
02903	Providence	2	0	2	0	0	0	0	0
02920	Cranston	1	1	0	0	0	0	0	0
02886	Warwick	1	0	0	1	0	0	0	0
02916	East Providence	0	0	0	0	1	1	0	0
02904	Providence	0	0	0	0	1	0	0	1
Total Indicators		**42**	**18**	**10**	**14**	**42**	**18**	**10**	**14**

Table K. Zip Codes Ranked within Cities by Number of Health Indicators Worse than State Average

Zip code	City	Indicators with rate worse than city average	Indicators with rate worse than state average	Indicators with rate better than city average	Indicators with rate better than state average
02863	Central Falls	0	21	0	4
02910	Cranston	0	1	3	2
02921	Cranston	0	4	3	7
02920	Cranston	6	21	0	1
02914	East Providence	2	1	9	8
02916	East Providence	0	6	1	0
02915	East Providence	4	15	0	2
02861	Pawtucket	1	4	3	5
02860	Pawtucket	2	12	0	7
02906	Providence	3	4	19	19
02905	Providence	0	4	10	16
02903	Providence	3	10	0	2
02907	Providence	4	11	7	12
02909	Providence	3	12	5	12
02908	Providence	2	15	0	3
02904	Providence	15	23	1	0
02888	Warwick	0	4	4	4
02889	Warwick	0	10	0	4
02886	Warwick	4	21	0	1
02895	Woonsocket	0	22	0	4

Table L. Counts of Health Indicators Better or Worse than 3 or more Other Providence Zip Codes

Indicators	Better than other zip code							Worse than other zip codes						
	02906	02905	02907	02909	02908	02903	02904	02906	02905	02907	02909	02908	02903	02904
Serious Chronic Disease														
% with COPD	6	4						1						6
% with hypertension	6													3
% with diabetes	6													
% with congestive heart failure	6	4						1						
Part D prescription fills	6	4						1		4				
Annual DME claims	6													
Annual hospital stays	6										4			
% with 4 or more chronic conditions	5	4											4	5
% with chronic kidney disease	5													
Annual ED visits	5										5			
% with anemia	4													5
% with ischemic heart disease	4	3												3
% had heart attack	3												3	
Annual Medicaren SNF stays	3													
% with high cholesterol														5
Mild Chronic Disease														
Annual physician visits			6	4				5			1			5
% of women with breast cancer			5					3						4
% with atrial fibrillation		3	4	3				3				3		3
% osteoarthritis/rheumatoid arthritis			3											4
% with cataracts		3	3	3				5						3
% with hypothyroidism		3	3									3		
% of men with prostate cancer								3					5	4
% with glaucoma		3			1							3		
Disability & Later Life Chronic Disease														
% with Medicaid LTSS	6	5						1	5					
% with cognitive difficulty	5													
% with ambulatory difficulty	4													
% with hip fracture												5		
% with Alzheimer's disease/dementia												3		
Mortality rate		3												
% ever diagnosed with depression		3												
% with colorectal cancer			5											3