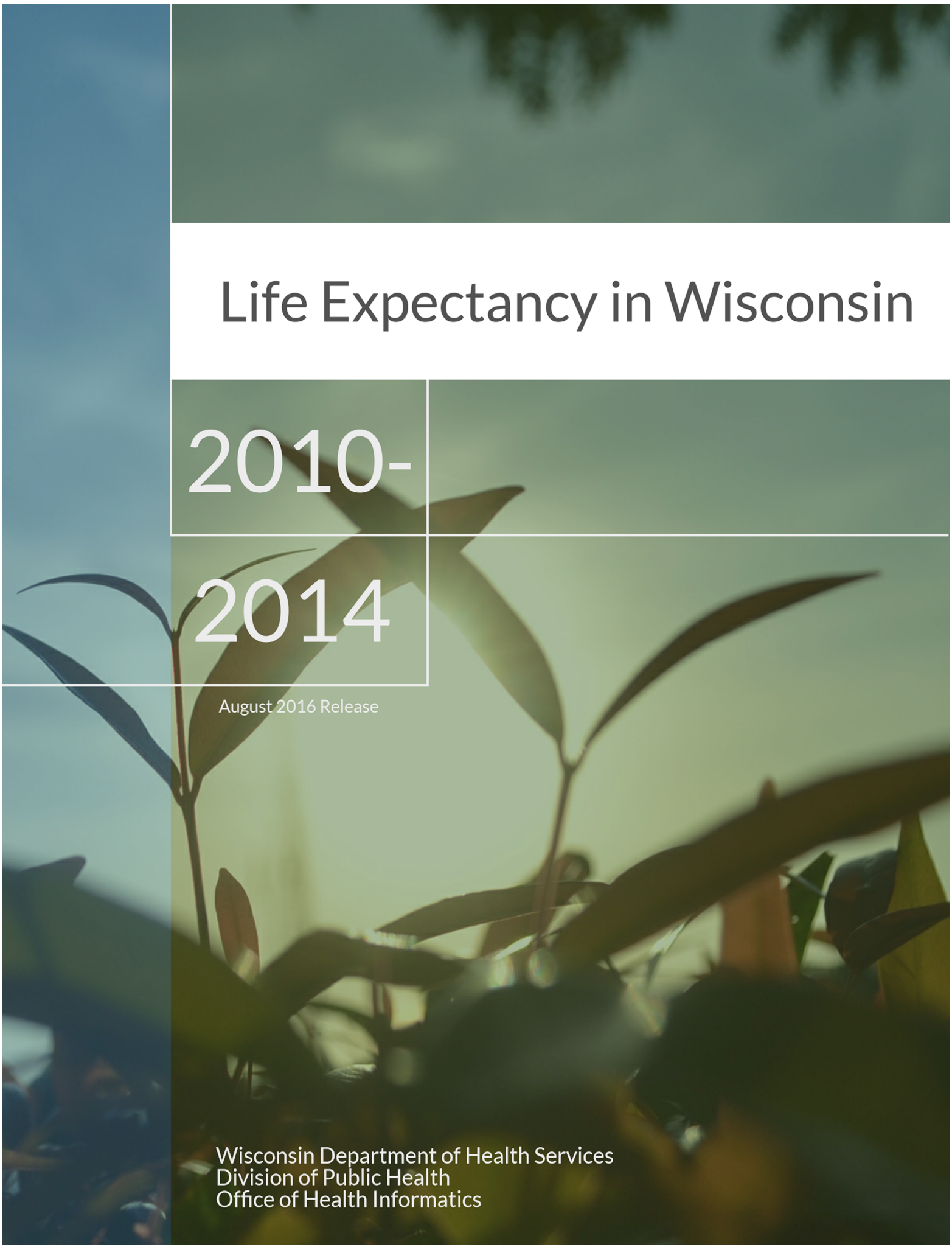
Life Expectancy in Wisconsin

2010-2014

August 2016 Release



Wisconsin Department of Health Services
Division of Public Health
Office of Health Informatics

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Foreword

The Department of Health Services provides reports on vital statistics as a service to the people of Wisconsin and others interested in the state. Life expectancy by county, sex, and race/ethnicity in Wisconsin: 2010-2014 is one of those reports. This report will be published occasionally as new findings about life expectancy in Wisconsin become available.

Additional health-related statistical information for Wisconsin is available through the Internet on the Department of Health Services site, at https://www.dhs.wisconsin.gov/stats/index.htm. Wisconsin Interactive Statistics on Health (WISH) is an online data query system, located at https://www.dhs.wisconsin.gov/wish/index.htm, which will include life expectancy estimates for multiple years, by county, sex, and race/ethnicity soon after the publication of this report.

This publication was prepared by the Office of Health Informatics, Division of Public Health, Wisconsin Department of Health Services. The findings in this report were compiled by Reka Sundaram-Stukel and Karl Pearson in the Office of Health Informatics. Milda Aksamitauskas and Stephanie Hartwig in the Office of Health Informatics edited the report, and Stephanie Hartwig assisted with the graphic design. The report was prepared under the supervision of Oskar Anderson, Director of the Office of Health Informatics, and Milda Aksamitauskas, Section Chief, Health Analytics Section.

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Introduction

The life expectancy of a population describes how long the members of that population are predicted to live, given a particular set of conditions. Life expectancy has applications in a number of areas, including actuarial practice; demography; industrial design and market analysis; and population health. This publication focuses on life expectancy as an indicator of the health of Wisconsin residents and how it relates to the economic aspects of population health in Wisconsin.

Life expectancy is generally estimated by calculating a life table, of which there are two broad types. In a cohort or generation life table, a selected group–such as the population of people born in Wisconsin in 1880–is followed until every member of the group dies. Average life expectancy is calculated based on their experience. For many reasons–cost, time involved, recording of individual deaths, etc.–this approach is rarely used to estimate life expectancy in human populations.

In the second type, named current or period life tables, death rates from a particular time period are applied to a population living during that time period. The assumption is that those death rates remain unchanged for that population, leading to the calculated life expectancies. The life expectancies in this report are based on current or period life table methods.

Life expectancy calculations are also based on abridged life tables. That is, deaths and populations are aggregated into age groups, rather than being calculated by single year of age. Complete life tables generally are reserved for large populations, where the number of deaths for any single year of age are large enough to produce reliable estimates. Since the life expectancies in this report are for counties and race/ethnic groups within counties, abridged tables were calculated to increase the reliability of the estimates.

Differences in life expectancy may be the result of a number of factors, but most directly they are associated with differing infant mortality and crude mortality rates[1]. Since these rates are used to calculate life expectancy and they are both indicators of the health of populations, life expectancy can hence be seen as a valuable summary indicator of population health. This report provides information on life expectancy by sex for all 72 counties in Wisconsin, along with information by race/ethnicity for the state.

Life expectancy by county and sex

During 2010-2014, life expectancy among Wisconsin counties varied from a low of 72.5 years in Menominee County to a high of 82.0 years in Kewaunee County. For the state as a whole, life expectancy during this time period was 79.6 years. The counties with the five longest and five shortest life expectancies are shown in Table 1.

Table 1. Five counties with longest and shortest life expectancies, 2010-2014

Longest	Life expectancy	Shortest	Life expectancy
Kewaunee	82.0	Menominee	72.5
Ozaukee	81.8	Washburn	76.7
Pierce	81.6	Sawyer	77.1
Waukesha	81.5	Ashland	77.5
Taylor	81.5	Milwaukee	77.6

Source: Wisconsin Department of Health Services, Division of Public Health, Office of Health Informatics

Life expectancy for females during 2010-2014 was 81.8 years, compared to 77.3 years for males. For females, the counties with the five longest and five shortest life expectancies are shown in Table 2, and Table 3 shows the same information for males. Information for all counties in Wisconsin can be found in the appendix.

Table 2. Five counties with longest and shortest life expectancies, females, 2010-2014

Longest	Life expectancy	Shortest	Life expectancy
Lafayette	84.8	Menominee	75.7
Kewaunee	84.2	Sawyer	78.8
Taylor	84.2	Washburn	79.6
Ozaukee	83.6	Kenosha	80.0
Calumet	83.6	Rock	80.1

Source: Wisconsin Department of Health Services, Division of Public Health, Office of Health Informatics

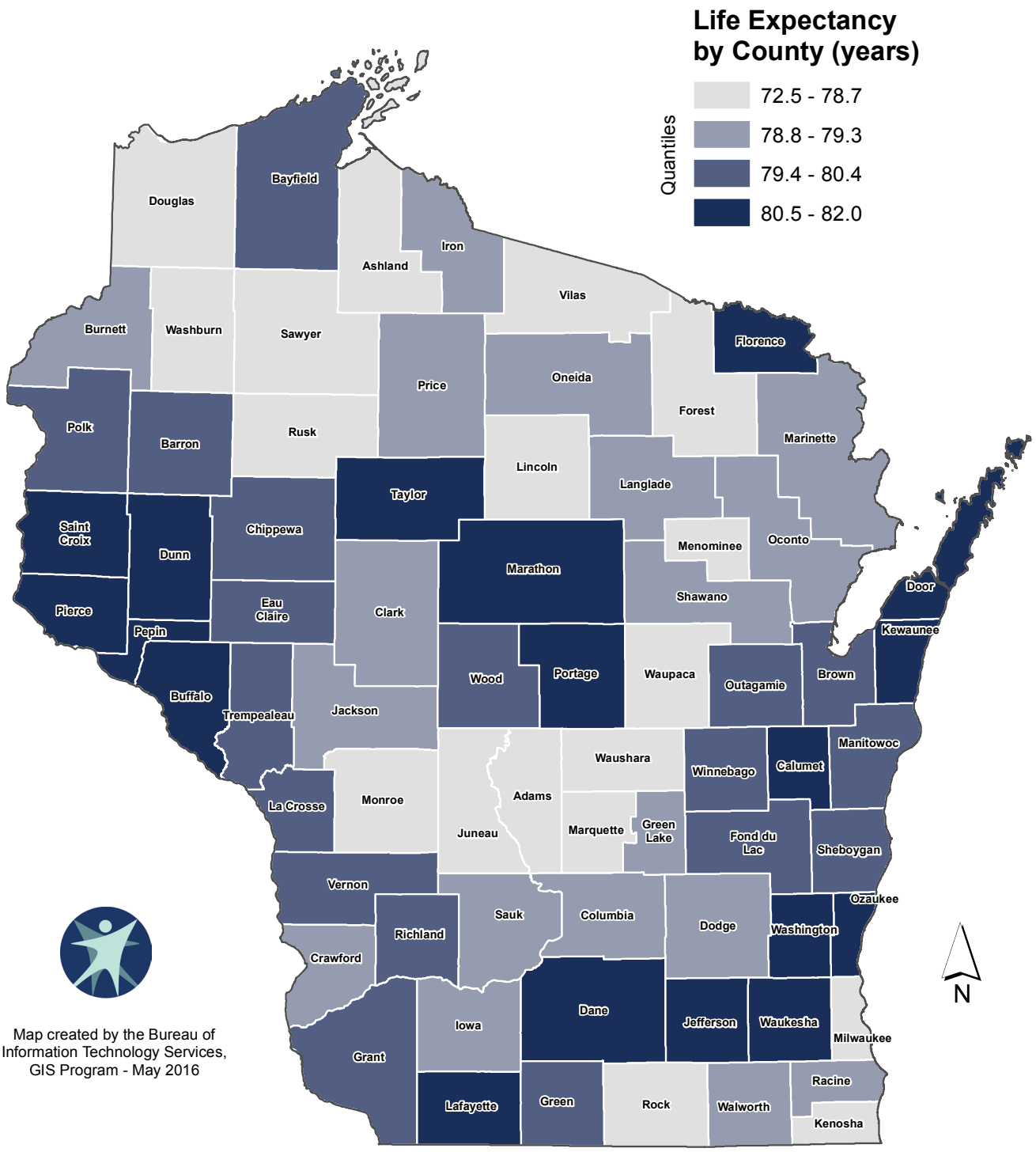
Table 3. Five counties with longest and shortest life expectancies, males, 2010-2014

Longest	Life expectancy	Shortest	Life expectancy
Pepin	80.0	Menominee	69.1
Kewaunee	80.0	Washburn	74.0
Pierce	79.9	Forest	74.6
Ozaukee	79.9	Milwaukee	74.8
Waukesha	79.5	Rusk	74.9

Source: Wisconsin Department of Health Services, Division of Public Health, Office of Health Informatics

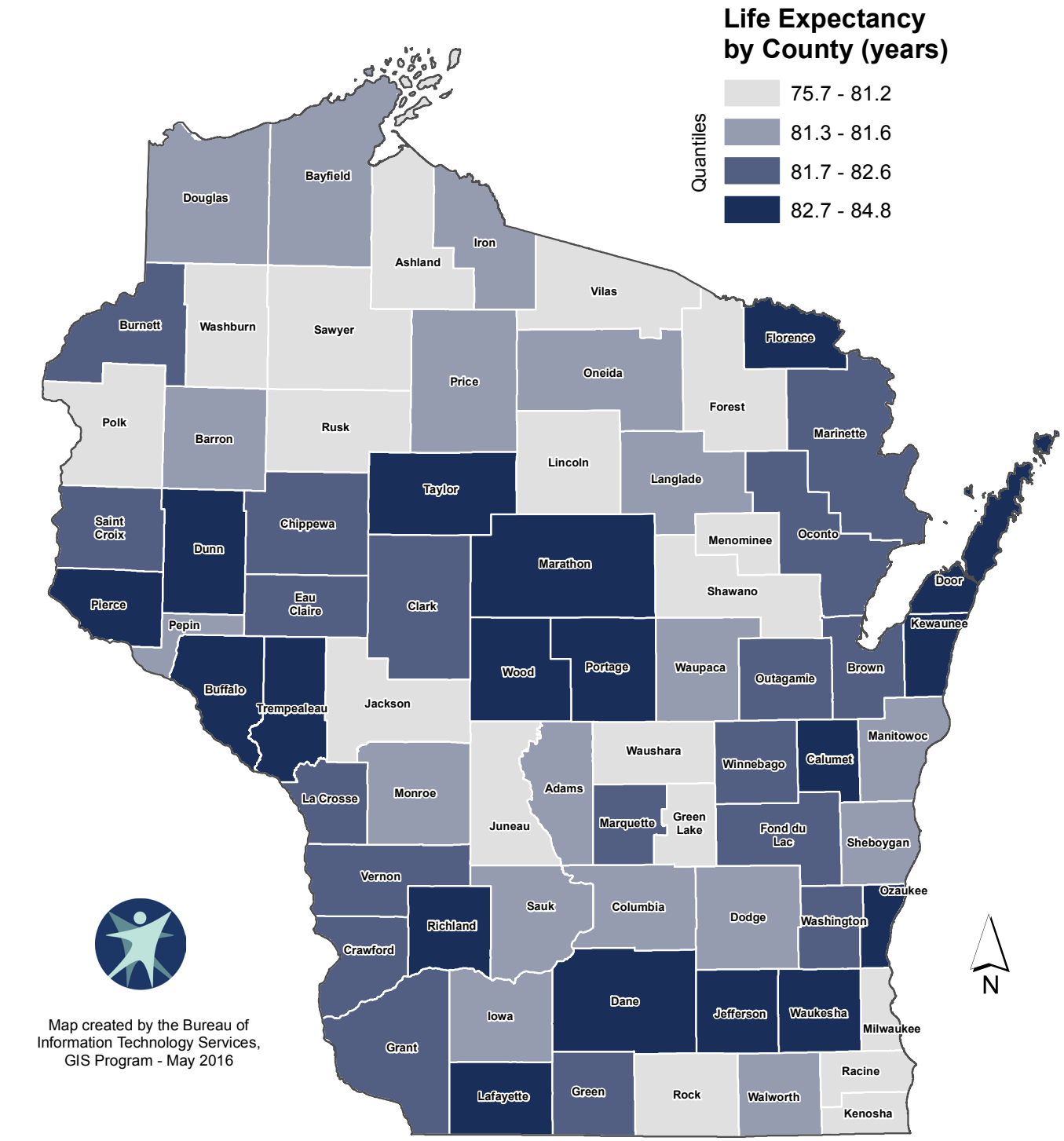
Figures 1, 2, and 3 show that life expectancy for the total population, females, and males is highly correlated. There are 12 counties in the top quartile for all three populations: Buffalo, Calumet, Dane, Door, Dunn, Florence, Kewaunee, Ozaukee, Pierce, Portage, Taylor, and Waukesha. Similarly, there are 10 counties that are in the bottom quartile for all three populations: Ashland, Forest, Juneau, Kenosha, Menominee, Milwaukee, Rock, Rusk, Sawyer, and Washburn.

Figure 1. Wisconsin life expectancy by county, 2010-2014



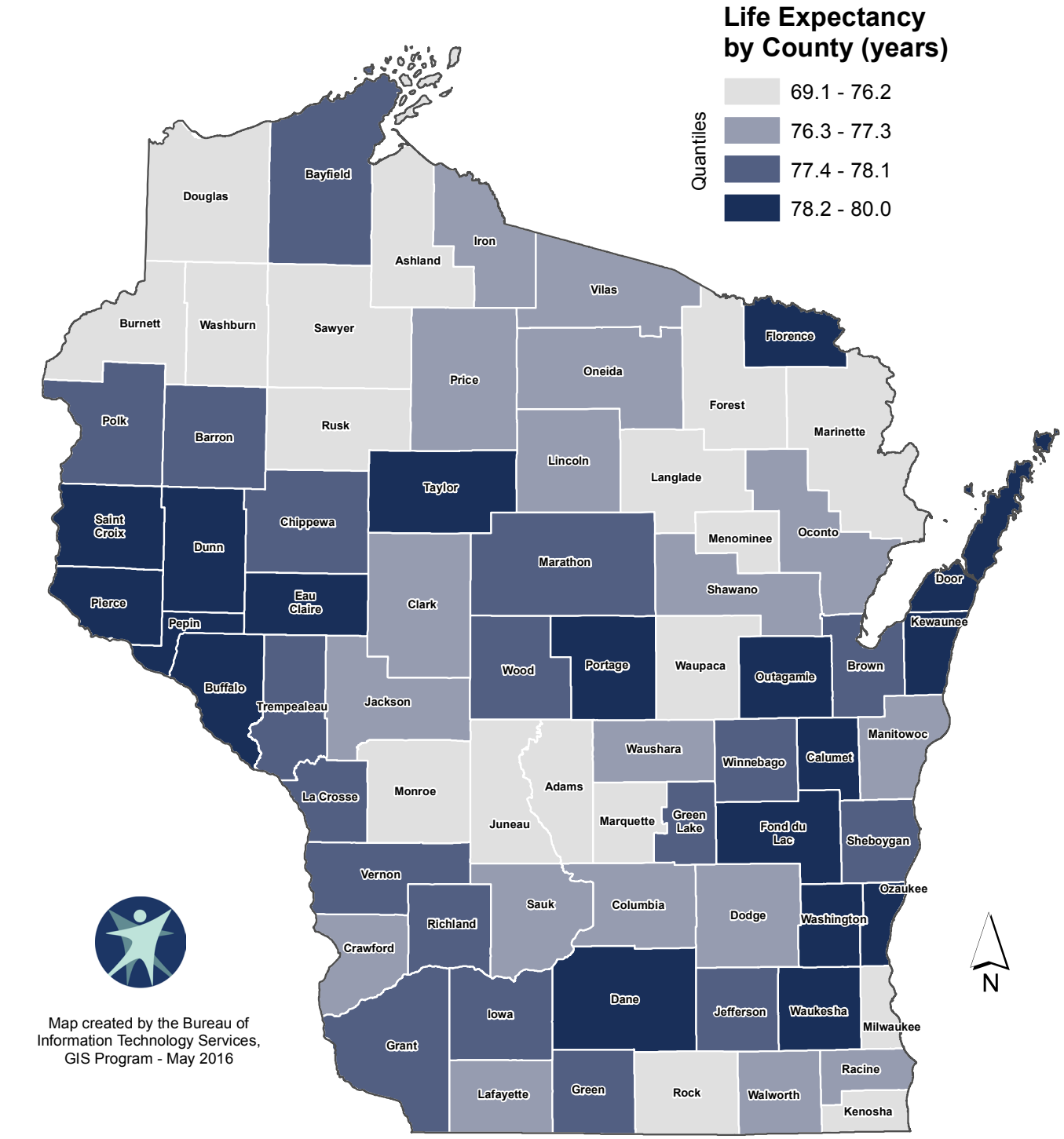
Source: Wisconsin Department of Health Services, Division of Public Health, Office of Health Informatics

Figure 2. Wisconsin life expectancy by county, females, 2010-2014



Source: Wisconsin Department of Health Services, Division of Public Health, Office of Health Informatics

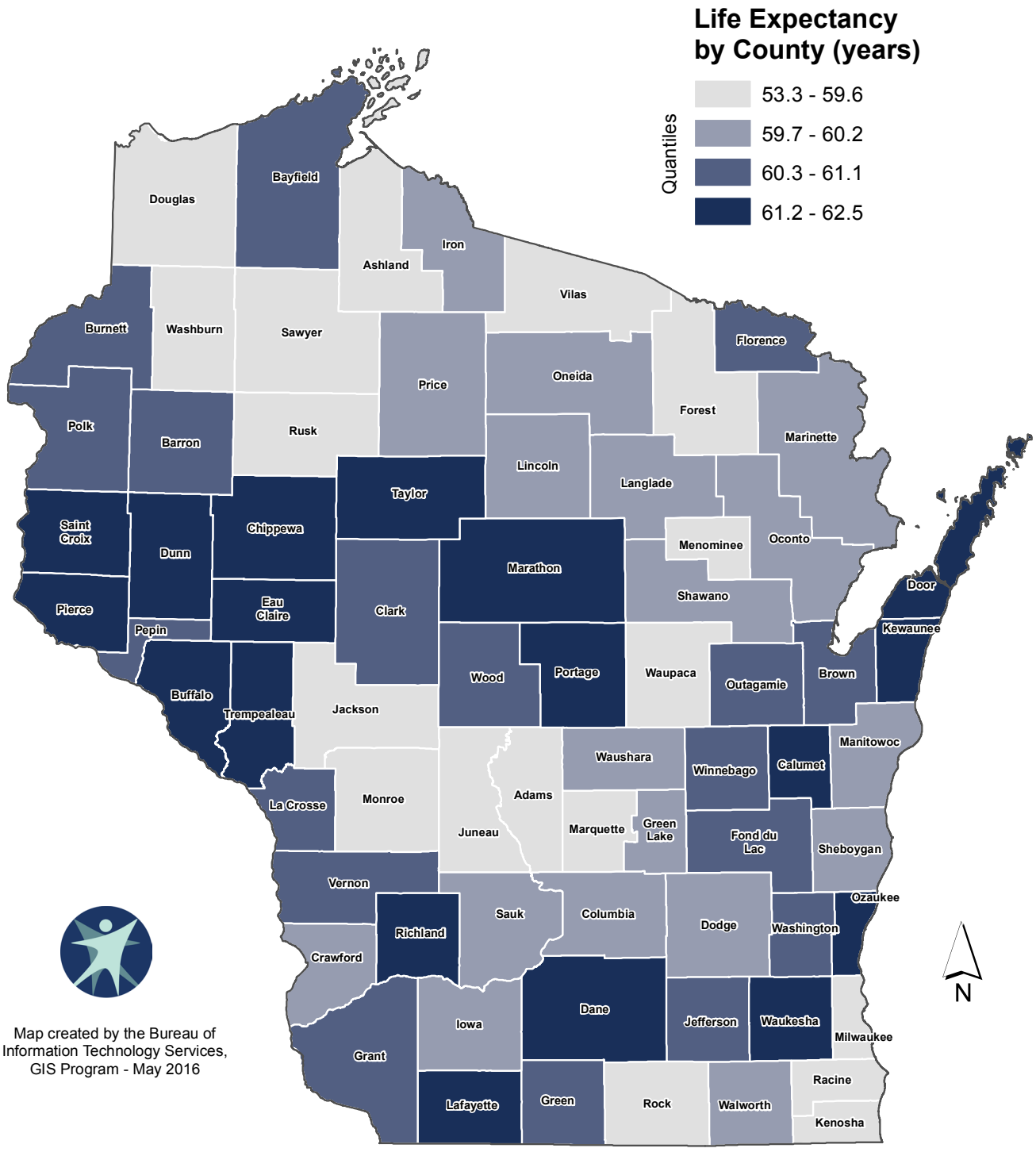
Figure 3. Wisconsin life expectancy by county, males, 2010-2014



Source: Wisconsin Department of Health Services, Division of Public Health, Office of Health Informatics

Figure 4 shows life expectancy at age 20. Life expectancies at this age provide a picture of populations that have not succumbed to infant mortality, accidents, and other major causes of death for younger age groups.

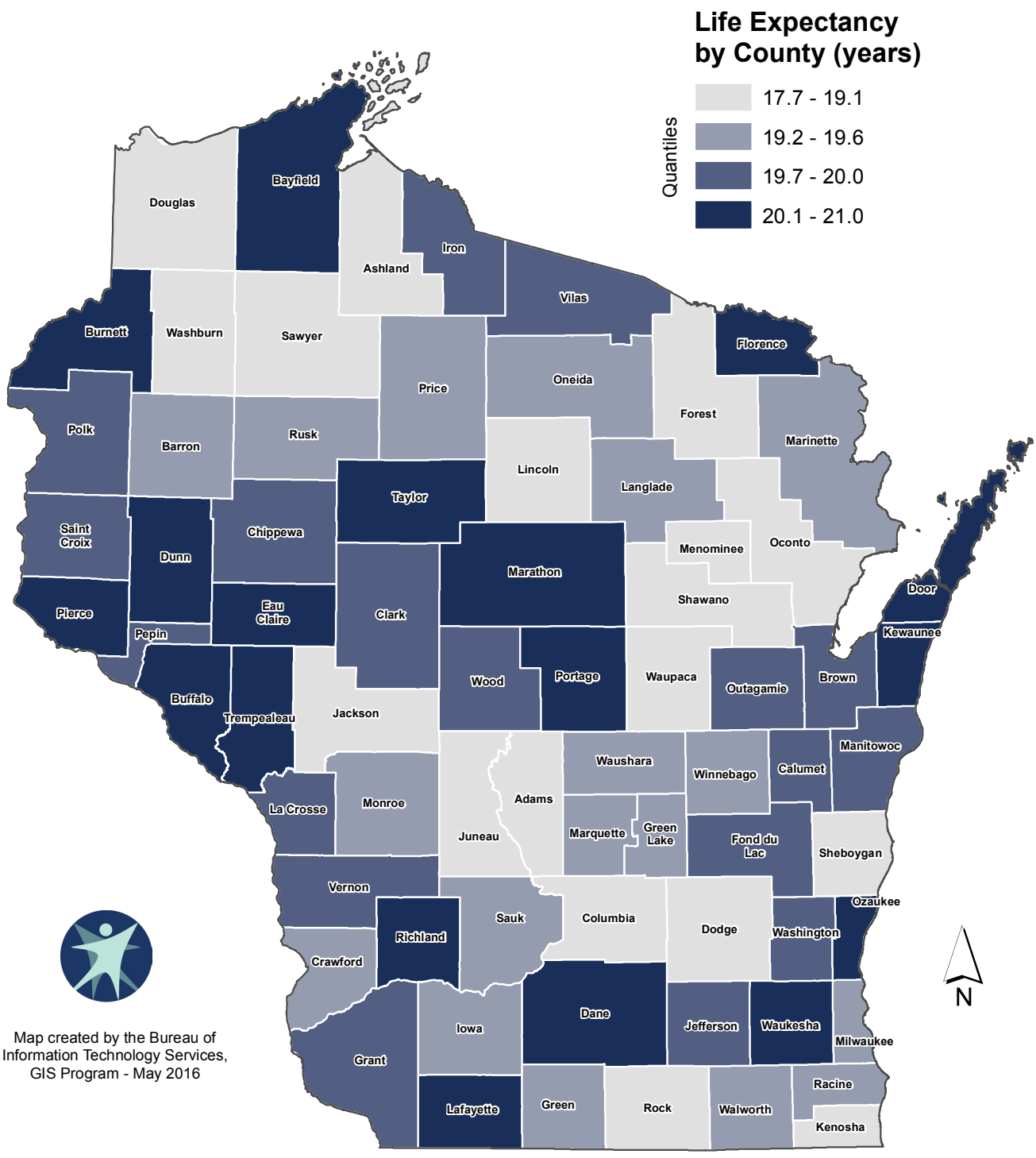
Figure 4. Wisconsin life expectancy at age 20, 2010-2014



Source: Wisconsin Department of Health Services, Division of Public Health, Office of Health Informatics

Figure 5 shows life expectancy at age 65, around retirement age for much of the population. This may be seen as one indicator of the quality of, and access to, health care services among the elderly.

Figure 5. Wisconsin life expectancy at age 65, 2010-2014

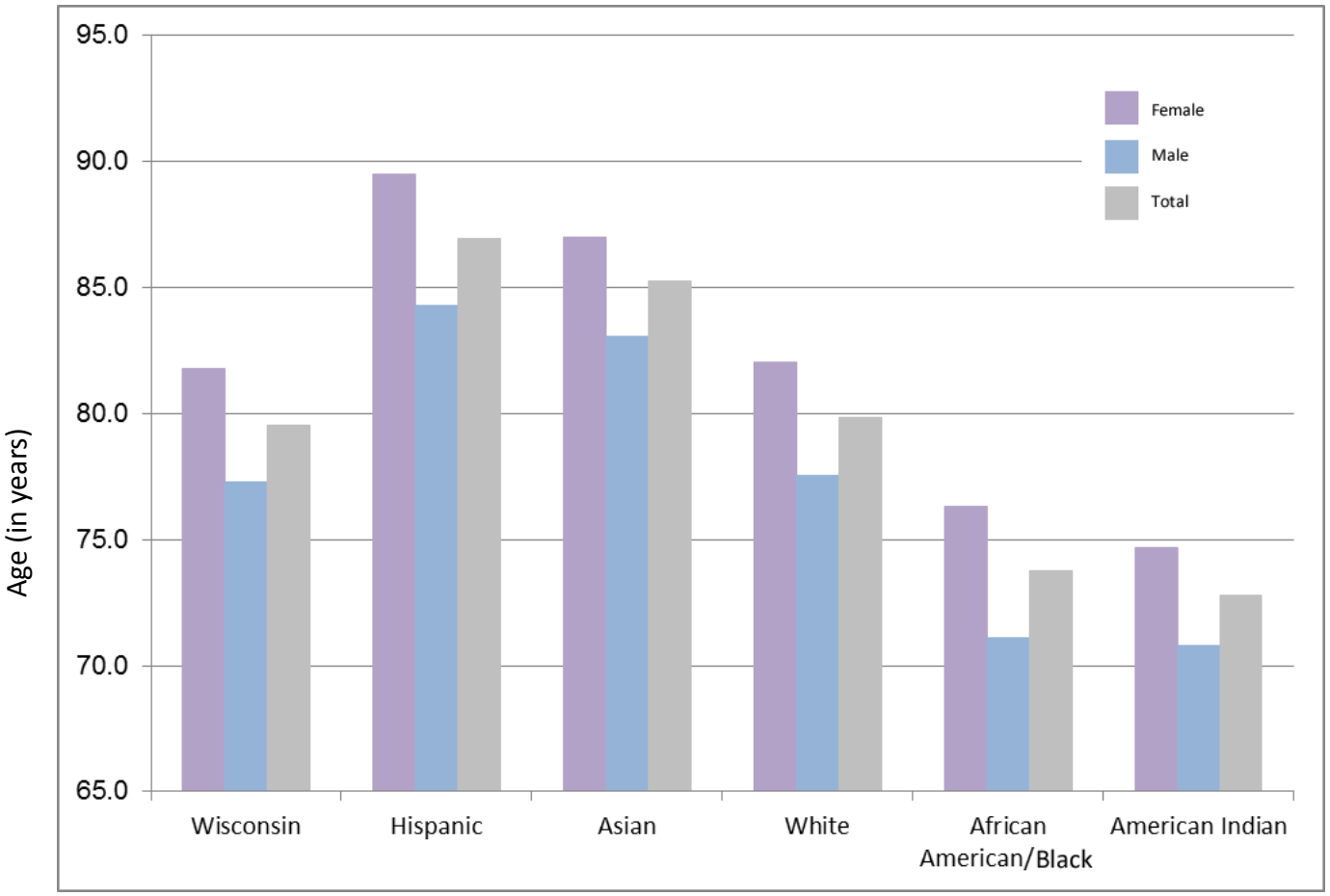


Source: Wisconsin Department of Health Services, Division of Public Health, Office of Health Informatics

Life expectancy by race/ethnicity

The Hispanic population in Wisconsin had a life expectancy of 86.9 years during 2010-2014, the longest of the race/ethnicity groups shown in Figure 6. This is consistent with previous findings from other states and the U.S.[2] Life expectancy among the Asian population was the second longest at 85.3 years, followed by Whites (79.8), African American/Blacks (73.8), and American Indians (72.8).

Figure 6. Wisconsin life expectancy by sex and race/ethnicity, 2010-2014



Source: Wisconsin Department of Health Services, Division of Public Health, Office of Health Informatics

*Move cursor over graph to see values

Economic determinants of life expectancy

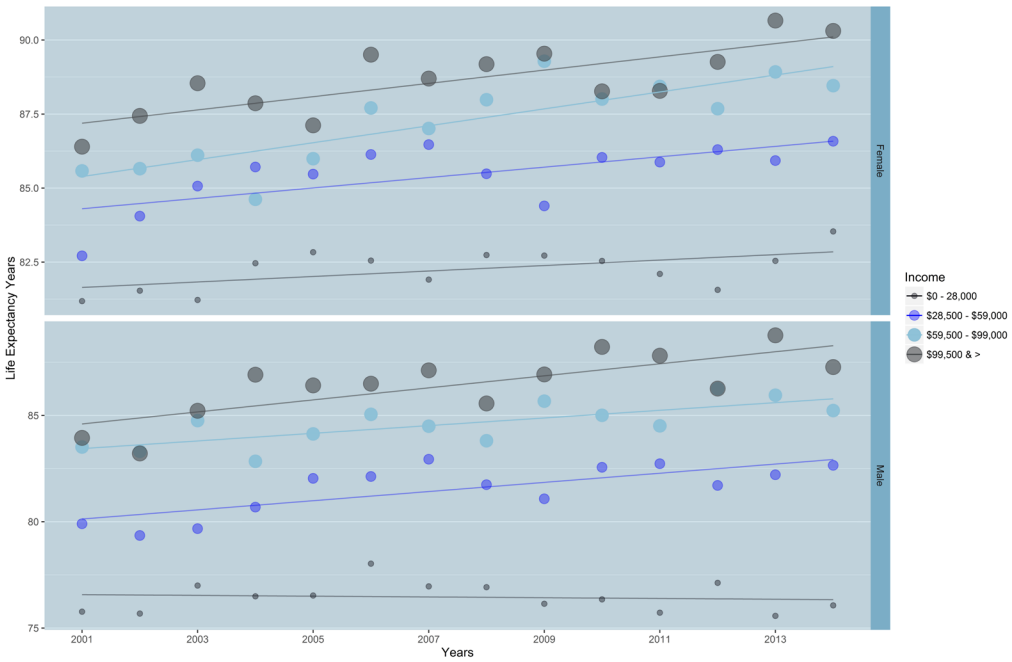
Academic literature in demography and health economics points out four contributing determinants of life expectancy in the U.S. population: socioeconomic status, early childhood health disparities, educational attainment amongst the population, and racial and ethnic disparities[3-15].

Life expectancy data used in this report does not contain socioeconomic information for the deceased. Nationally collected data by the Health Inequality Project (HIP)[16] is used to address the association between income and life expectancy. Behavioral Risk Factor Survey[19] (BRFS) data is used to compute the prevalence of smokers, obesity, physical activity, and mental health.

Income differences in life expectancy

Life expectancy generally increases with income. In the recent decade, nationally, at age 40, the life expectancy gap for the lowest income quartile to highest income quartile[1] is around 6 years for women and 8 years for men (Figure 7). Between 2004 to 2014 projected life expectancy increased by 0.43 years for men and 1.07 years for women in the lowest income quartile. In the highest income quartile projected life expectancy increased 0.36 years for men and 2.45 years for women. In Wisconsin in 2014 women at age 40 in the top income quartile lived 6.78 years longer than women in the bottom income quartile; similarly, men at age 40 in the top income quartile lived 11.21 years longer than men in the lowest income quartile. These results show that people with higher income in Wisconsin have longer life expectancy compared to people with lower income. Nationally, the income-driven life expectancy gap has increased each year from 2001 to 2014, and this is also true for Wisconsin.

Figure 7. Wisconsin life expectancy at age 40 by income, 2001-2014



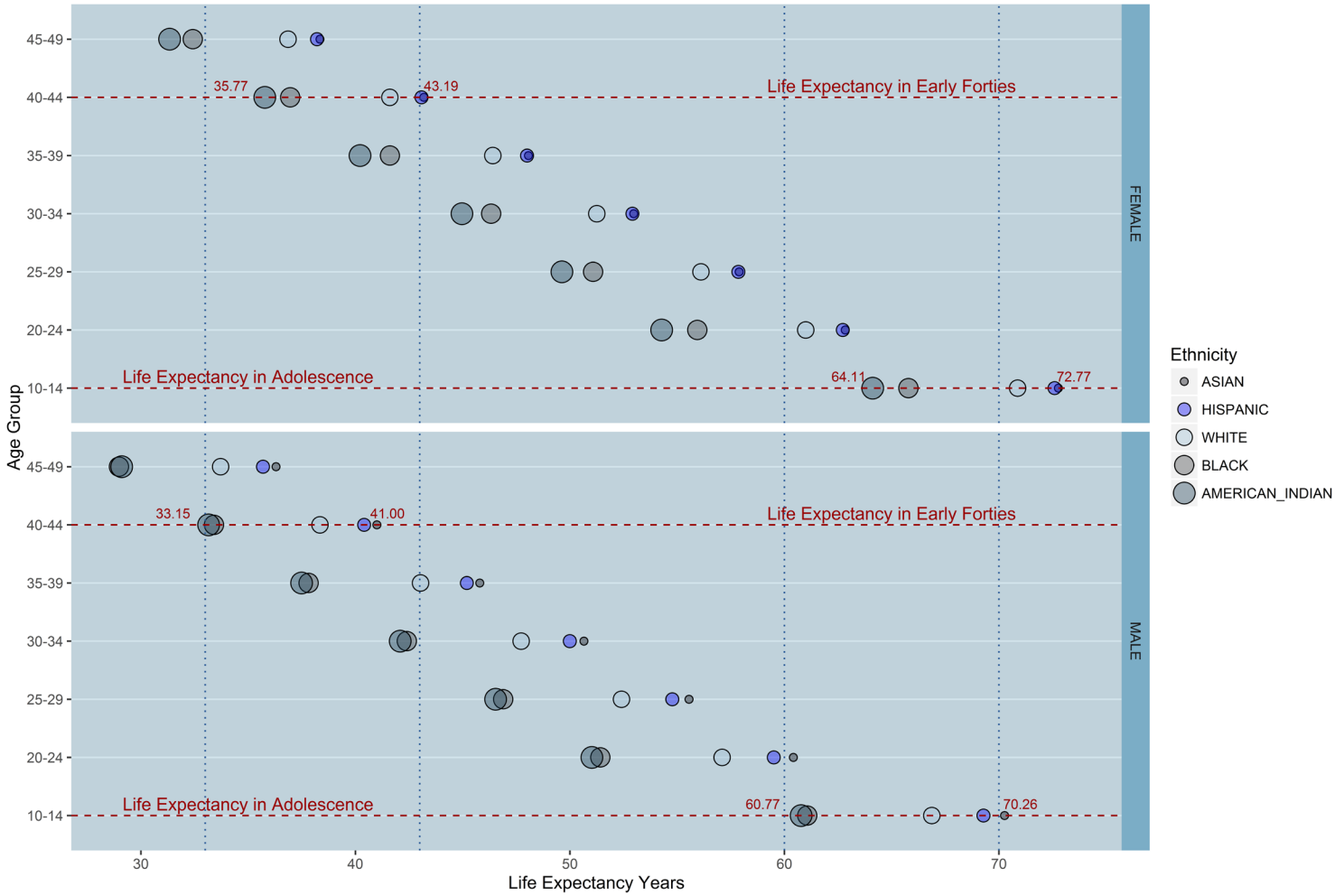
Source: Wisconsin Department of Health Services, Division of Public Health, Office of Health Informatics calculations using data from the Health Inequality Project (https://healthinequality.org/).

Racial differences in life expectancy

For several key economic measures such as overall poverty rate, children in poverty, unemployment rate, highest educational attainment, and incarceration rates,[4] Wisconsin shows disparities by race and ethnicity. Racial and ethnic disparities are strong contributing factors that result in lower life expectancy for Black and Native American populations compared to Asian, Hispanic, and White populations. Hispanic and Asian populations exhibit the highest life expectancy. Figure 6 illustrates the racial and ethnic differences in Wisconsin: at age 40, American Indian women and men show a life expectancy gap close to 7 years less than Asian women and men. This gap increases to 10 years when life expectancy is compared for different racial and ethnic populations in adolescence.

This report does not explore the reasons for such a wide gap in life expectancy for American Indians and Blacks as compared to Whites, Asians, and Hispanics. However, the BRFS American Indian Behavioral Health report[20] provides statistics on high suicide rates among American Indian adolescents and young adults, as well as high levels of alcohol and substance abuse. Death rates from alcoholic liver disease were 21 per 100,000 among American Indians, while African American and White populations had mortality rates of 5.7 and 4.9, respectively.

Figure 8. Wisconsin life expectancy up to midlife by race and sex, 2010-2014



Source: Wisconsin Department of Health Services, Division of Public Health, Office of Health Informatics

Other determinants of life expectancy

Differences in early childhood factors and events, such as nutritional uptake, number of illnesses (including acute ones like rheumatic heart fever), and chronic conditions (such as asthma), need to be considered in adult life expectancy calculations. The human body triggers compensating mechanisms during critical periods of growth. This may lead to favorable growth and function of some organs at the expense of growth and function in other organs. Early childhood mental health problems also contribute to life expectancy. Examples include severe compromise in mental functioning (such as autism) and deviations from emotional stability (such as attention deficit disorders or dysfunctional behavioral responses to stressful or negative events).

Childhood health experiences are important factors to consider because as children age they will need to compete for economic opportunities and will need access to health care.[11-14]

Educational inequities and associated adult life expectancies may originate in health inequalities experienced at early ages. For example, a person in a lower education group experiences the same mortality at age 52 as their higher educated counterpart experiences at age 62. This 10-year life expectancy gap is influenced primarily by education. Studies from the 1990s found that a 25-year-old male college graduate could expect to live another 54 years as compared to a high school dropouts who could only expect to live another 44 years. Smoking rates among the college educated are one third lower than smoking rates among people who only finished high school. Obesity rates are one half those with more education than those with less.[5,8,15]

Economic literature agrees that a healthier aging population keeps health care costs down. Investing in early childhood health and education, as well as reducing racial/ethnic and income inequalities, can help address disparities in life expectancy. This in turn can reduce the high burden of chronic conditions such as smoking and obesity-related ailments. Addressing disparities that influence life expectancy will not only ensure people are living longer, but will also ensure they are living better, healthier lives.

Spotlight: Milwaukee County

Age-adjusted data from BRFS is used to highlight behavioral and mental health patterns for Milwaukee County. This can shed light on some of the other determinants behind life expectancy differences.

Nearly half of all deaths in the U.S. can be attributed to behavioral factors, mostly smoking, obesity, and heavy alcohol intake, which have a large effect on mortality.[14] The CDC estimates that 18% of deaths in the U.S. are attributed to smoking and 15% are attributable to obesity.[9,5]

These findings show that education patterns among the U.S. population may be an important factor mitigating life expectancy, and often serve as a protective factor for physical and mental health.

Behavioral Patterns

	Income	
	Lowest Quartile	Highest Quartile
	<$20,000	$75,000
Smoking %	38 (±5)	8 (±3)
Obesity %	40 (±5)	32 (±5)
Any Exercise %	60 (±5)	92 (±3)

In Milwaukee County, the population in the lowest income quartile is most susceptible to smoking-related health ailments such as emphysema and lung cancer, and tends to exercise less compared to the highest quartile population. However, diet, proxied by obesity percentage, does not display such strong income effects. These results also persist for all of Wisconsin.

Mental Health Patterns

	Income	
	Lowest Quartile	Highest Quartile
	<$20,000	$75,000
Lifetime depression diagnosis %	33 (±5)	16 (±4)
Frequent mental distress %*	26 (±4)	9 (±3)

*14 or more days in the past 30 of bad mental health

In Milwaukee County, residents in the lowest income quartiles are more vulnerable to lifetime depression and mental distress as a function of daily stress than the population in the highest income quartiles. Both behavioral and mental health patterns provide credence to investing in educational outreach programs ranging from behavioral modification to access to mental health services.

Appendix

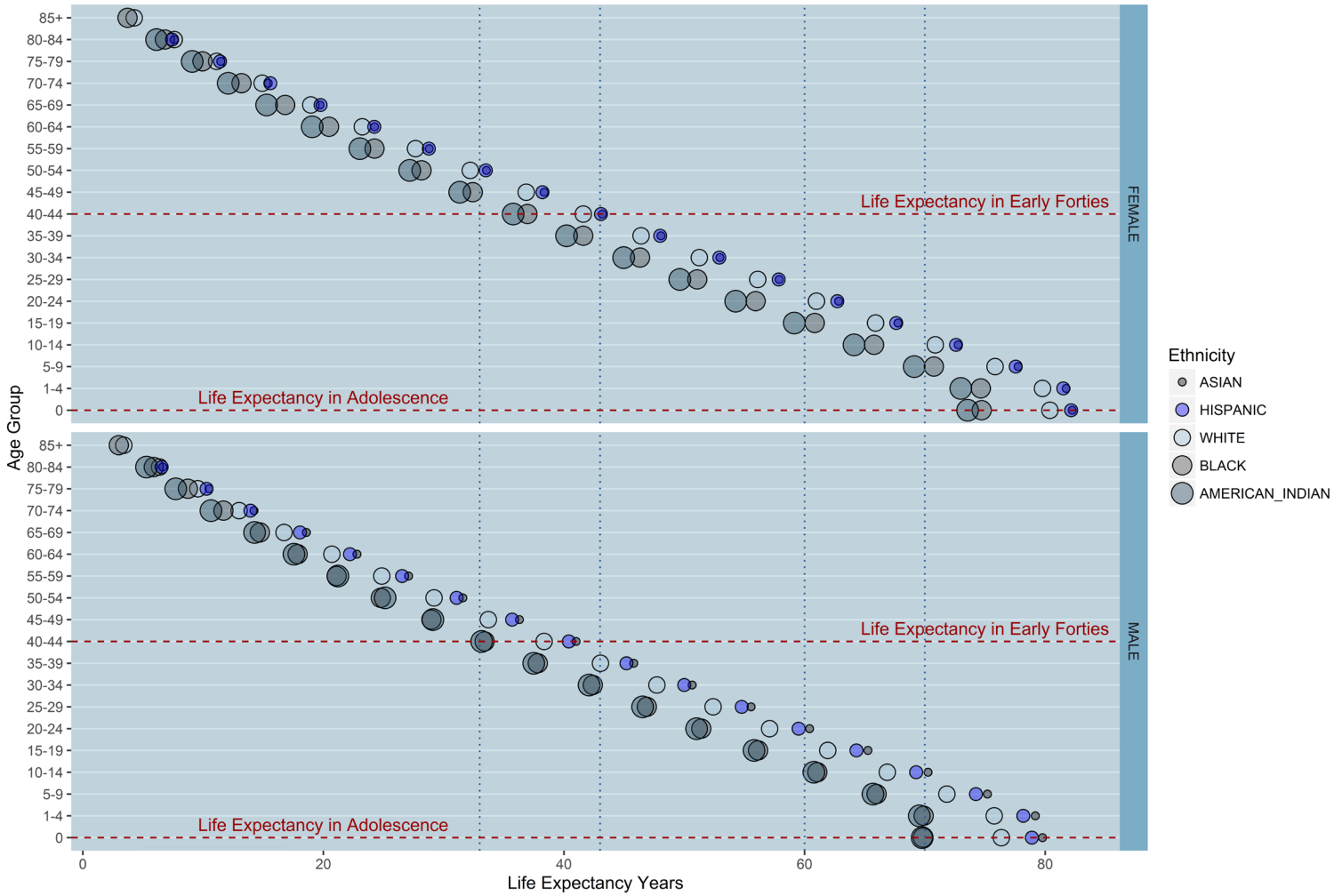
Table 4. Life expectancy in Wisconsin, 2010-2014

County	Total	Male	Female
Adams	78.0	75.2	81.6
Ashland	77.5	75.0	80.2
Barron	79.7	77.8	81.6
Bayfield	79.5	77.6	81.6
Brown	80.1	78.0	82.2
Buffalo	81.3	79.5	83.3
Burnett	79.2	76.1	82.6
Calumet	81.4	79.3	83.6
Chippewa	80.0	77.8	82.4
Clark	79.2	76.6	81.8
Columbia	79.2	77.1	81.3
Crawford	79.0	76.4	81.9
Dane	81.2	79.2	83.1
Dodge	79.1	76.9	81.5
Door	80.9	78.4	83.4
Douglas	78.7	76.1	81.3
Dunn	80.7	78.4	83.0
Eau Claire	80.4	78.3	82.4
Florence	80.7	78.7	82.8
Fond du Lac	80.3	78.3	82.2
Forest	77.6	74.6	81.1
Grant	80.0	77.7	82.2
Green	79.8	77.5	82.2
Green Lake	79.1	77.5	80.9
Iowa	79.3	77.4	81.3
Iron	78.9	76.5	81.5
Jackson	78.9	77.3	80.7
Jefferson	80.5	77.8	83.2
Juneau	78.1	75.9	80.5
Kenosha	77.7	75.3	80.0
Kewaunee	82.0	80.0	84.2
Lacrosse	80.2	78.1	82.2
Lafayette	80.6	76.8	84.8
Langlade	78.8	76.2	81.6

County	Total	Male	Female
Lincoln	78.7	76.5	80.9
Manitowoc	79.4	77.1	81.6
Marathon	80.5	78.1	82.8
Marinette	79.0	76.0	82.2
Marquette	78.2	75.2	81.6
Menominee	72.5	69.1	75.7
Milwaukee	77.6	74.8	80.2
Monroe	78.5	75.7	81.5
Oconto	79.1	76.7	81.8
Oneida	79.1	77.0	81.3
Outagamie	80.3	78.2	82.3
Ozaukee	81.8	79.9	83.6
Pepin	80.7	80.0	81.3
Pierce	81.6	79.9	83.3
Polk	79.6	78.0	81.2
Portage	81.0	78.9	83.0
Price	78.9	76.5	81.6
Racine	78.7	76.3	81.1
Richland	80.3	77.7	82.8
Rock	78.2	76.1	80.1
Rusk	77.8	74.9	80.9
St. Croix	80.6	78.7	82.5
Sauk	79.3	77.0	81.6
Sawyer	77.1	75.5	78.8
Shawano	79.0	76.9	81.1
Sheboygan	79.6	77.6	81.6
Taylor	81.5	78.8	84.2
Trempealeau	80.2	77.7	83.0
Vernon	79.7	77.3	82.1
Vilas	78.4	76.4	80.6
Walworth	79.1	77.0	81.3
Washburn	76.7	74.0	79.6
Washington	80.4	78.4	82.4
Waukesha	81.5	79.5	83.3
Waupaca	78.2	75.7	81.2
Waushara	78.6	76.5	81.1
Winnebago	79.6	77.5	81.7
Wood	80.3	77.6	83.0
State Total	79.5	77.3	81.8

Source: Wisconsin Department of Health Services, Division of Public Health, Office of Health Informatics

Figure 9. Wisconsin life expectancy for all age groups, 2010-2014



Source: Wisconsin Department of Health Services, Division of Public Health, Office of Health Informatics

Note: After age 40, life expectancy starts to converge for all ethnic groups. For this reason, Figure 7 on page 5 is truncated at midlife.

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[2] The so-called "Hispanic paradox" refers to longer life expectancies among Hispanics, even though the Hispanic population has, on average, higher poverty rates and lower educational levels than some other groups. The paradox has yet to be definitively explained, but researchers have investigated a variety of potential causes, including:

i. Lower smoking rates among Hispanics
ii. Cultural factors such as stronger social support networks among Hispanics
iii. Migration patterns, such as the "new immigrant effect" in which immigrants to the U.S. tend to be healthier than non-migrants, and the effects of return migration or, more colloquially, the "salmon bias", in which immigrants with deteriorating health return to their birthplace.

As background, in 2014, according to the American Community Survey, 30 percent of the Hispanic population in Wisconsin was foreign-born, compared to 1.3 percent for Whites, 60 percent among Asians, and 2.9 percent among the African American/Black population. In addition, mortality rates for nearly all major causes of death in Wisconsin during 2010-2014 were significantly lower among Hispanics compared to non-Hispanic race groups (source: Wisconsin Interactive Statistics on Health.) For more information see:

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