HEALTH INDEX

FOCUS ON **DIABETES** ▶

Diabetes and the Commercially Insured U.S. Population

The BCBS Health Index is a unique measurement of America's health that quantifies how a range of diseases and conditions impact longevity and quality of life.*

The BCBS Health Index leverages 1.8 billion claims for over 40 million commercially insured Americans under 65, excluding Medicare and Medicaid.

The "*health impact*" of a specific condition (such as diabetes) is the degree to which it reduces optimal health. The Health Index reflects prevalence and severity for that condition as well as the years of life lost due to disability and risk of premature death.

*For more information, see Appendix A.

I.   EXECUTIVE SUMMARY

Diabetes is one of the diseases that most significantly impacts the health of America as reflected by nearly every national metric. Among the over 200 conditions measured by the BCBS Health Index, diabetes is third in terms of its health impact nationally on quality of life, and third in terms of per member cost for the commercially insured population. Its impact on health is even greater when considering common comorbid conditions such as hypertension (present in 93% of diabetics), high cholesterol (81%), obesity (55%) and others.[1]

KEY FINDINGS FROM THE BCBS HEALTH INDEX:

- Diabetes accounts for 9.3% of the health impact of over 200 conditions on commercially insured Americans—greater than heart disease, substance abuse and COPD.

- The impact of diabetes continues to grow and it is increasing most rapidly in the 18-34 age group, corresponding to the fact that this young cohort is experiencing the greatest growth in obesity rates. Obesity is a key contributor to the onset of diabetes.

- Diabetes has the highest health impact on communities in the Southeast and Central South[2]—approximately 50% higher than the national average; the lowest diabetes impact is in New England and the Mountain regions.

[1] NCBI (2017) https://www.ncbi.nlm.nih.gov/pubmed/28358275
[2] See Appendix B for U.S. Department of Health and Human Services definitions of regions

II.   THE HEALTH IMPACT OF DIABETES

When compared to a comprehensive list of over 200 health conditions, diabetes alone accounts for 9.3% of the total health impact across all these conditions on the national commercially insured population.[3] Among the over 200 conditions measured, diabetes is third in terms of health impact—ahead of high cholesterol, substance use disorder, and coronary artery disease. In fact, a view of the relative health impact of the top 20 conditions shows that diabetes has a greater health impact on commercially insured Americans than COPD, breast cancer, and asthma combined.

**EXHIBIT 1 – Top 20 Conditions Impacting the Health of Commercially Insured Americans**

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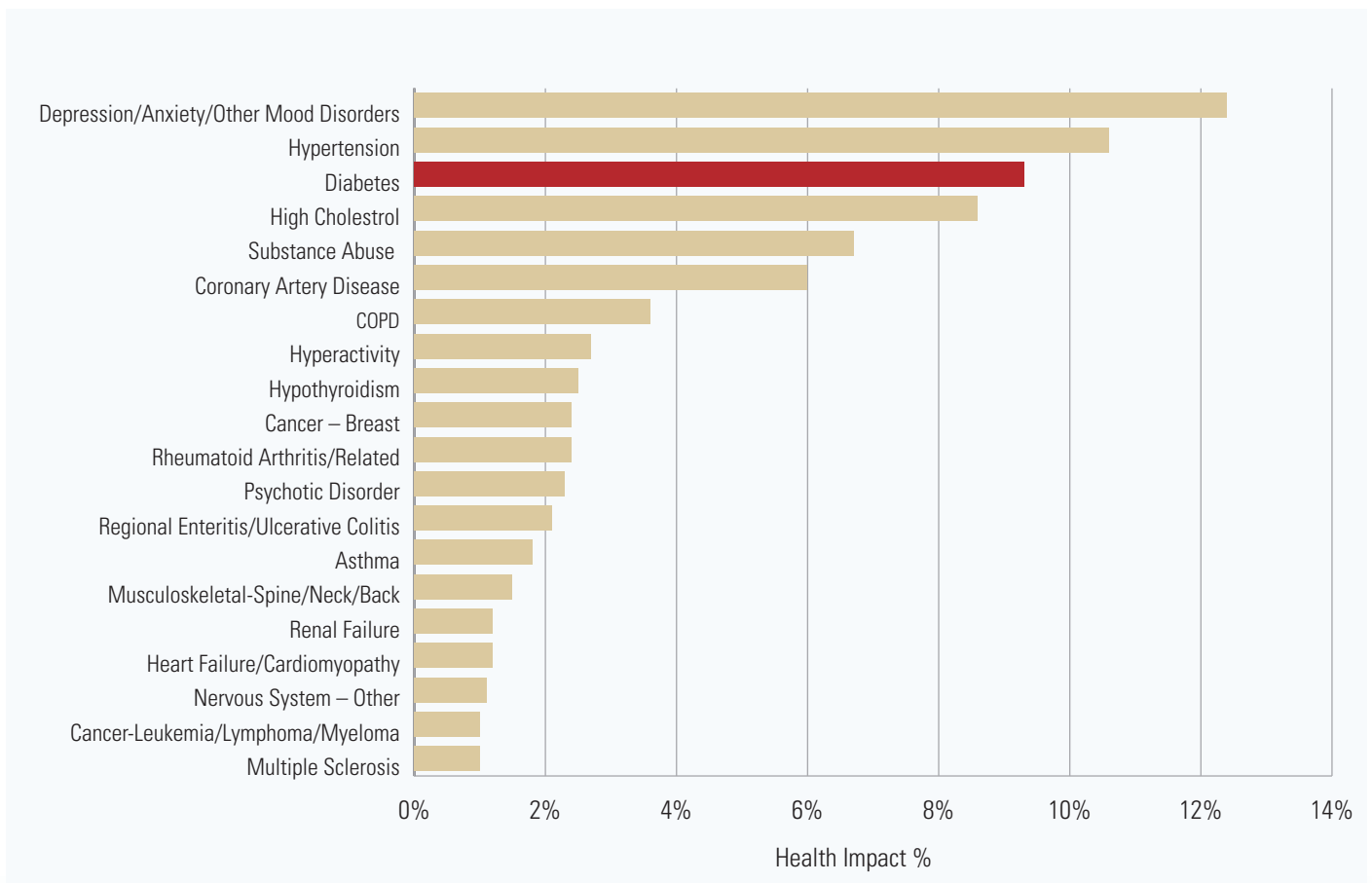
[3] At the individual level, the impact of diabetes is based on its disability and mortality effects on those who have the condition. However, at the level of the commercially insured population, impact is also a function of condition prevalence: the impact of a condition on a population is, in large part, based on the presence of the condition in that population. The difference between the health impact of diabetes (9.3%) and the prevalence rate (7%) is due to the condition severity of diabetes as it is captured in the BCBS Health Index (see Appendix A).
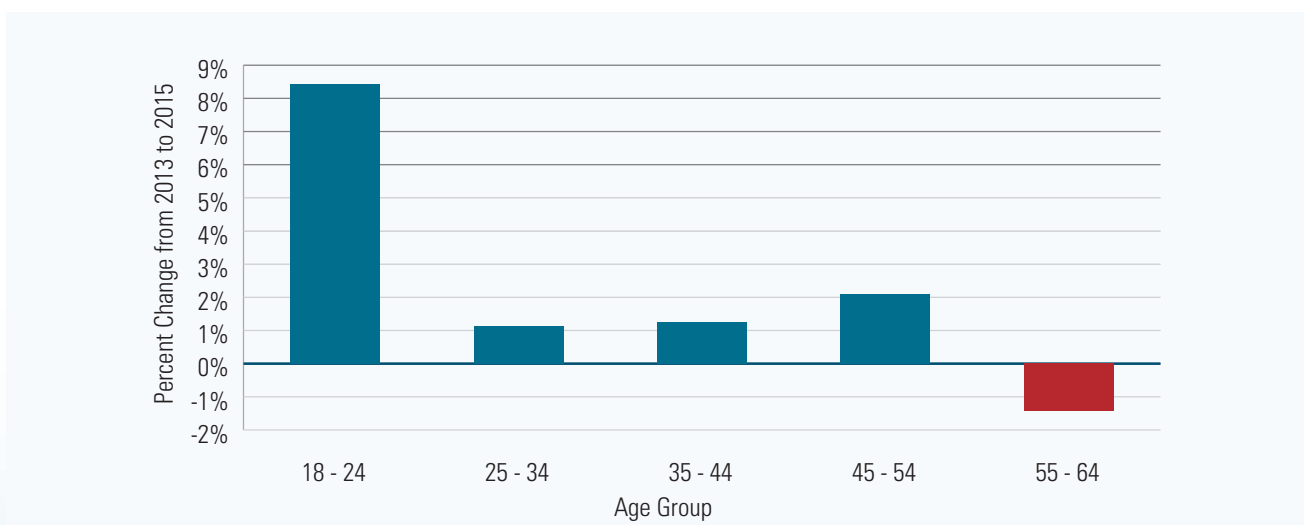
III. DIABETES GROWTH BY AGE GROUP

Trending from 2013-2015 shows that the health impact of diabetes is growing fastest among members between18-34 (see Exhibit 2). At the same time, the health impact of diabetes fell for Americans ages 54-64 during the same period.

EXHIBIT 2 – Diabetes Health Impact Growth by Age Group (2013-2015)
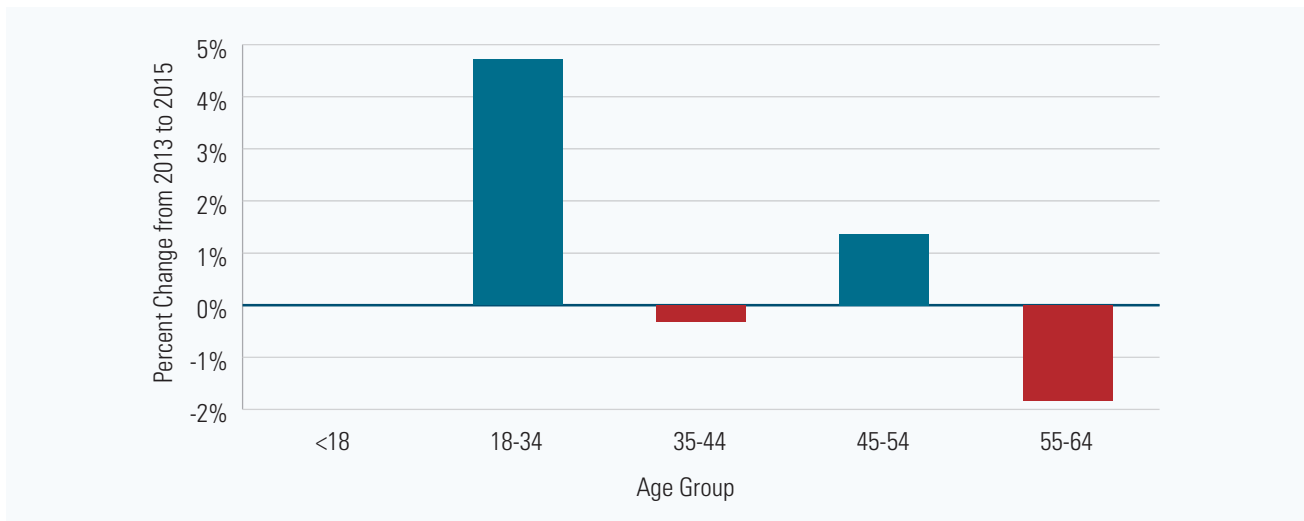
One reason for this increase in the 18-34 age group has been the growing rates of obesity among adolescents, a common risk factor associated with the onset of diabetes. According to the CDC, rates of teenage obesity have risen over 30% from 2001 to 2015.[4] Moreover, recent growth rates of obesity among the youngest adults (18-24) suggest that this growth can be expected to continue for the 18-34 age cohort going forward (see Exhibit 3).

EXHIBIT 3[5] – Obesity Growth Rate by Age Group (2013-2015)

[4] https://www.cdc.gov/healthyschools/obesity/obesity-youth.htm

[5] https://chronicdata.cdc.gov/Nutrition-Physical-Activity-and-Obesity/Nutrition-Physical-Activity-and-Obesity-Behavioral/hn4x-zwk7

Examining results by region reinforces the link between the growing impact of diabetes among young adults and young adult obesity. For the age cohort 18-34, the regions where diabetes has the highest impact tend to be the regions with the highest rates of obesity (see Exhibit 4).

EXHIBIT 4 – Diabetes Impact and Obesity Rate by Region, Age Group 18-34 (2015)
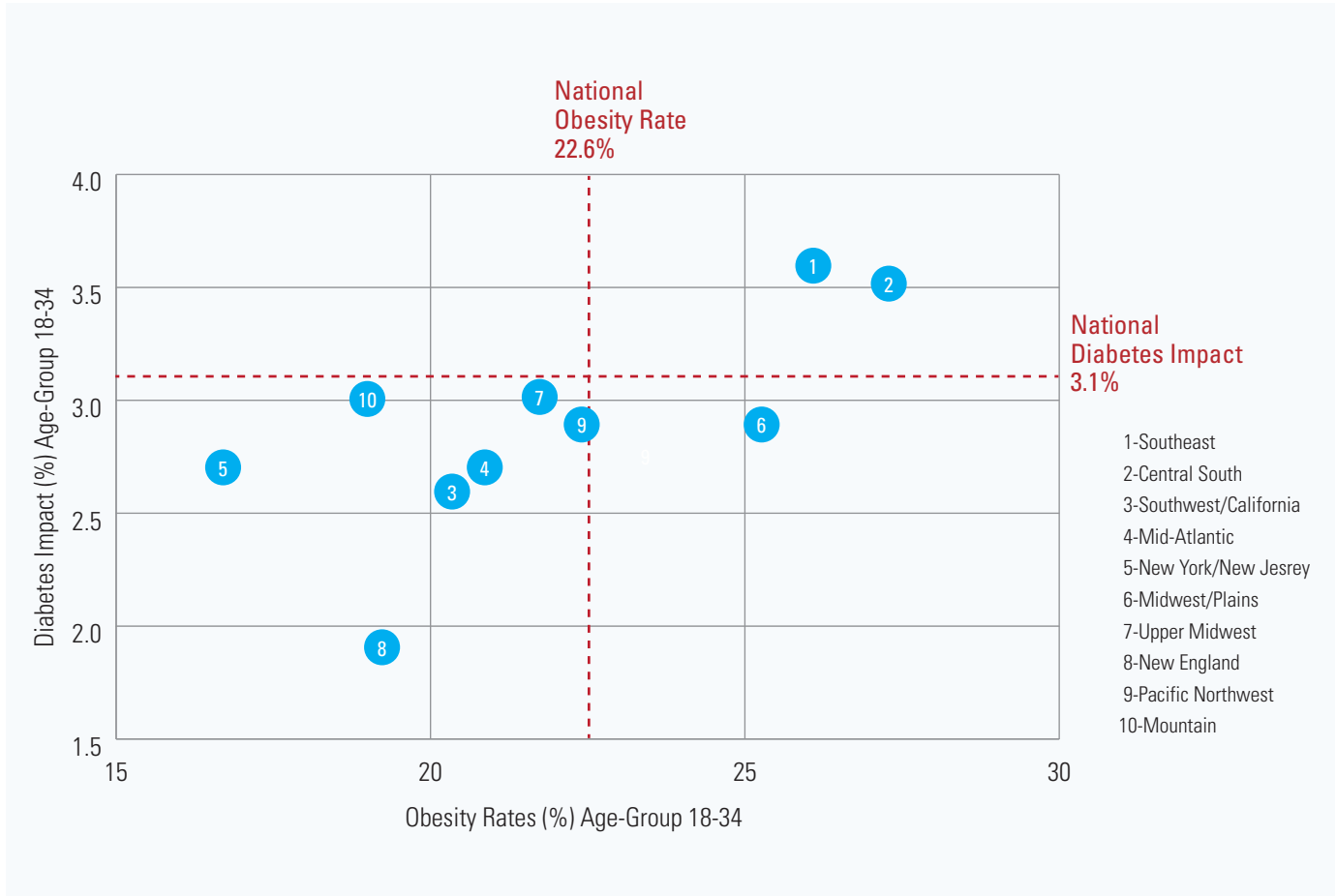
IV.   REGIONAL IMPACT OF DIABETES

While diabetes contributes to 9.3% of health impact in the commercially insured population nationally, the range of its impact varies across regions of the country (see Exhibit 5). For purposes of this analysis, the report focuses on 10 regions as defined by the Department of Health Human Services (see Appendix B).

The Southeast region incurs the highest health impact resulting from diabetes (13% higher than the national average) followed by the Central South (11% higher than the national average). In contrast, the New England, the Pacific Northwest, and Mountain regions have an impact nearly 20% lower than the national average (represented by the dashed line).[6]
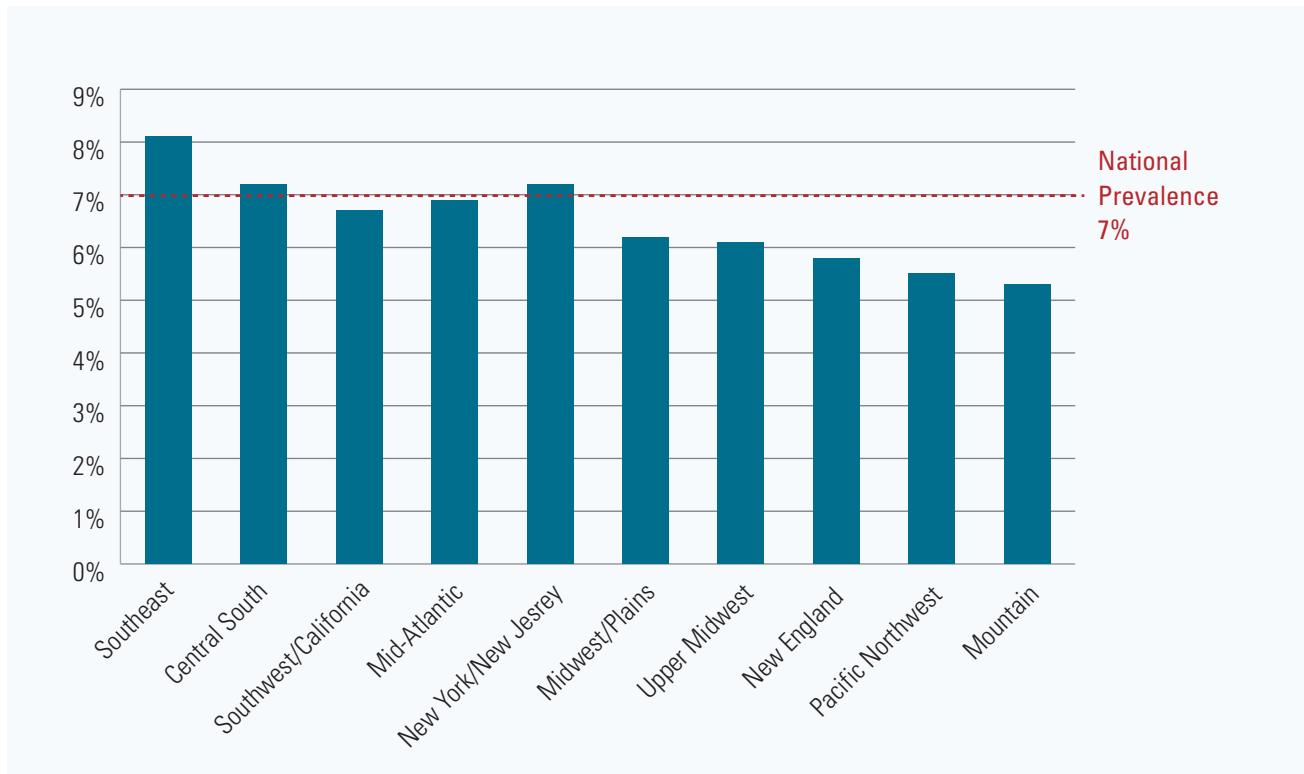
EXHIBIT 5 – Diabetes Health Impact by Region (Benchmarked to Nation – 2015)

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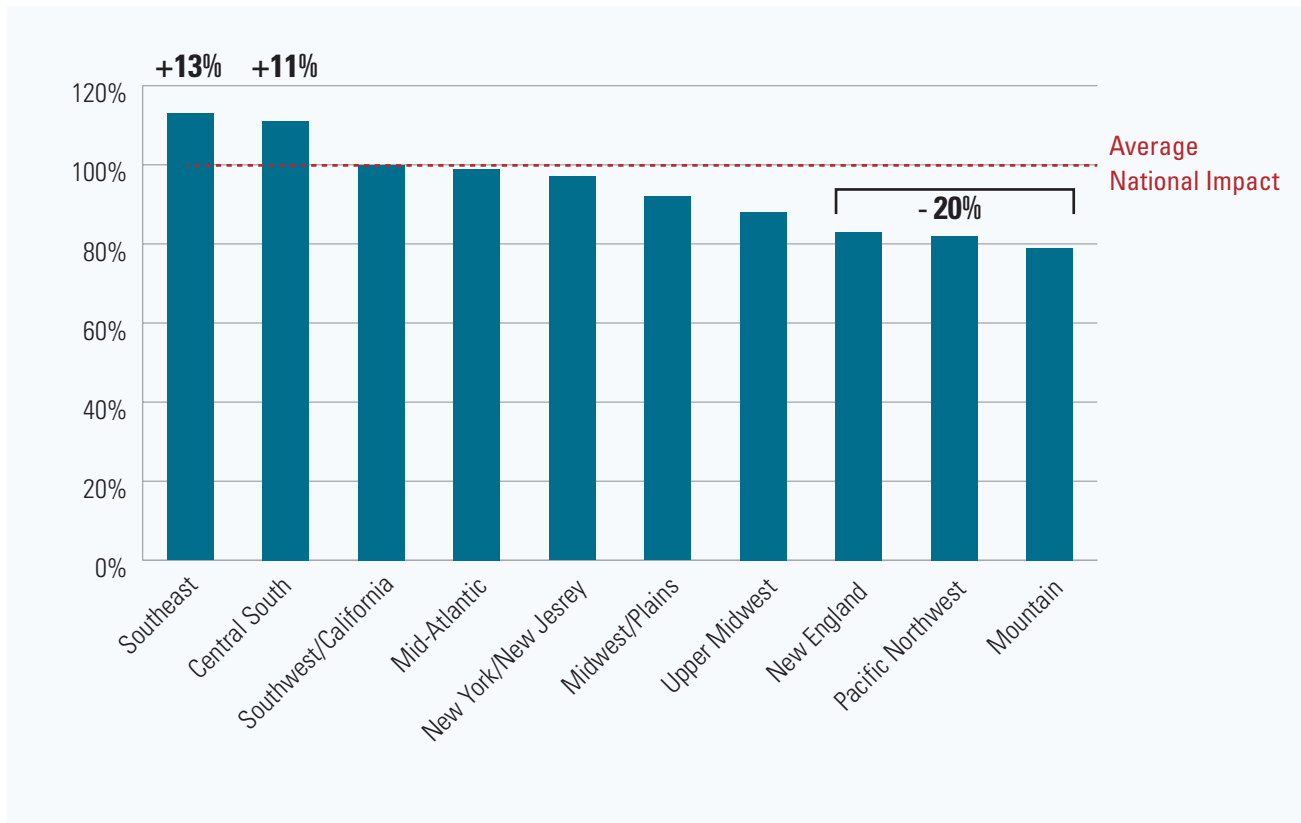
[6] A county-by-county view shows the most affected counties are concentrated primarily in the South, Southwest and parts of the West and Midwest (see Appendix C, Ex. C-1). By contrast, counties in New England and areas of the Upper Midwest and the Northwest show substantially lower levels of impact.

This variation in regional impact is highly correlated with the prevalence of the condition in each region (see Exhibit 6). The Central South region has a prevalence rate lower than expected given the condition's impact. The New York/New Jersey region has a prevalence rate higher than expected given its impact.

EXHIBIT 6 – Diabetes Prevalence by Region (2015)

COST DIFFERENCES BY REGION

The cost of diabetes also varies markedly by region and only aligns somewhat with the health impact of the condition (see Exhibit 7). The two southern regions are highest on cost, consistent with the high level of diabetes impact in those regions. The New York/New Jersey, Midwest and Mountain regions all have somewhat higher than expected costs given their level of condition impact. In contrast, the Southwest/California region has lower than expected costs.[7]

EXHIBIT 7 – Diabetes Per Member Per Year (PMPY) Cost by Region (2015)

National Average $137
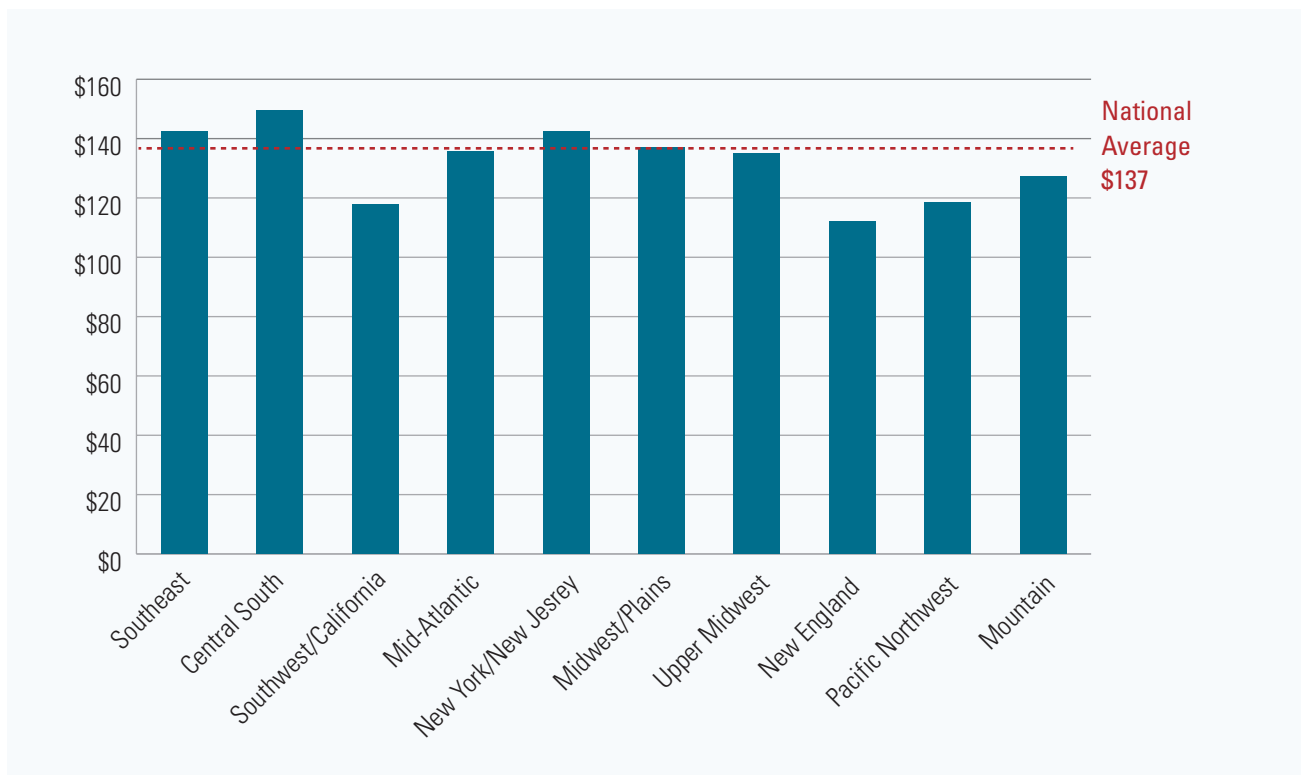
[7] PMPY cost includes allowed amounts for all medical and Rx claims related to the treatment of diabetes among those with the condition. Analysis of the BCBS Health Index data at a county level shows that the cost of treating diabetes ranges from $137 to $750 PMPY. The PMPY cost of the 10% of counties with the lowest diabetes health impact is approximately half the PMPY cost of the 10% of counties with the highest diabetes health impact (see Appendix C, Ex. C-2).

V. CONCLUSION

The BCBS health index analysis of diabetes in the commercially insured population highlights significant variability in the condition's health impact across the country. It also reveals how an increase in the rate of obesity in young adults is presenting challenges for lowering the impact of diabetes in America in the future.

BCBS Plans have developed innovative programs in their local communities to manage and prevent diabetes through enhanced care coordination, workplace nutritional counseling, and behavioral health programs customized to member needs.

Blue Cross Blue Shield is continuing its partnership with Moody's Analytics to measure how variation in social and environmental factors across counties in the U.S. contributes to the health impact of diabetes and other conditions on community health. This research will address reasons for the variations in the impact of conditions like diabetes that were presented in this report. It will also offer more insights to policy makers, local community leaders, and health advocates as they prioritize action steps to address conditions affecting Americans' health and well-being.

APPENDIX A: THE BCBS HEALTH INDEX

Blue Cross Blue Shield companies are committed to improving health in America through data-driven insights. Leveraging our unmatched database of medical claims from over 40 million members, the BCBS Health Index adds a new voice to the discussion of America's most serious health problems. The BCBS Health Index incorporates a comprehensive set of more than 200 health condition categories and quantifies how each condition affects Americans' health, life expectancy and well-being. Focusing on claims and other healthcare data as opposed to aggregated government statistics, the BCBS Health Index provides valuable insights that support national and local discussions about how to improve America's health.

HOW THE BCBS HEALTH INDEX WORKS

Using blinded claims data from more than 40 million commercially insured BCBS members, ICD-9 diagnoses were mapped to over 200 health condition categories. The impact of each condition was determined based on the years lost due to the risk of premature death and the disabling effects of illness or disease. These years of life lost were subtracted from the optimum life expectancy (OLE). The actual life expectancy is then divided by OLE to get an estimate of health between 0 and 1. These individual-level estimates are then aggregated to create a health score for the population of interest.

The formal calculation is:

BCBS Health Index = [OLE – (Mortality + Disability)] / OLE

Where "OLE" is a person's optimum life expectancy derived from an actuarial life table, "mortality" is years of life lost due to risk of premature death as determined by the Center for Disease Control (CDC), and "disability" is years of living with a disability based on the Institute for Health Metrics and Evaluation's (IHME) disability weights.

APPENDIX B: REGION DEFINITION LEGEND

Report / Chart Naming	HHS Region Name	States
New England	HHS Region 1 - Boston	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont
New York/New Jersey[8]	HHS Region 2 - New York	New Jersey, New York
Mid-Atlantic	HHS Region 3 - Philadelphia	Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, and West Virginia
Southeast	HHS Region 4 - Atlanta	Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee
Upper Midwest	HHS Region 5 - Chicago	Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin
Central South	HHS Region 6 - Dallas	Arkansas, Louisiana, New Mexico, Oklahoma, and Texas
Midwest/Plains	HHS Region 7 - Kansas City	Iowa, Kansas, Missouri, and Nebraska
Mountain	HHS Region 8 - Denver	Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming
Southwest/California[9]	HHS Region 9 - San Francisco	Arizona, California, and Nevada (does not include Hawaii)
Pacific Northwest	HHS Region 10 - Seattle	Alaska, Idaho, Oregon, and Washington

[8] This HHS Region also includes Puerto Rico, and the Virgin Islands; the BCBS Health Index does not include data from these areas.

[9] This HHS Region also includes American Samoa, Commonwealth of the Northern Mariana Islands, Federated States of Micronesia, Guam, Marshall Islands, and Republic of Palau; the BCBS Health Index does not include data from these areas.

APPENDIX C: DIABETES IMPACT AND COST BY COUNTY

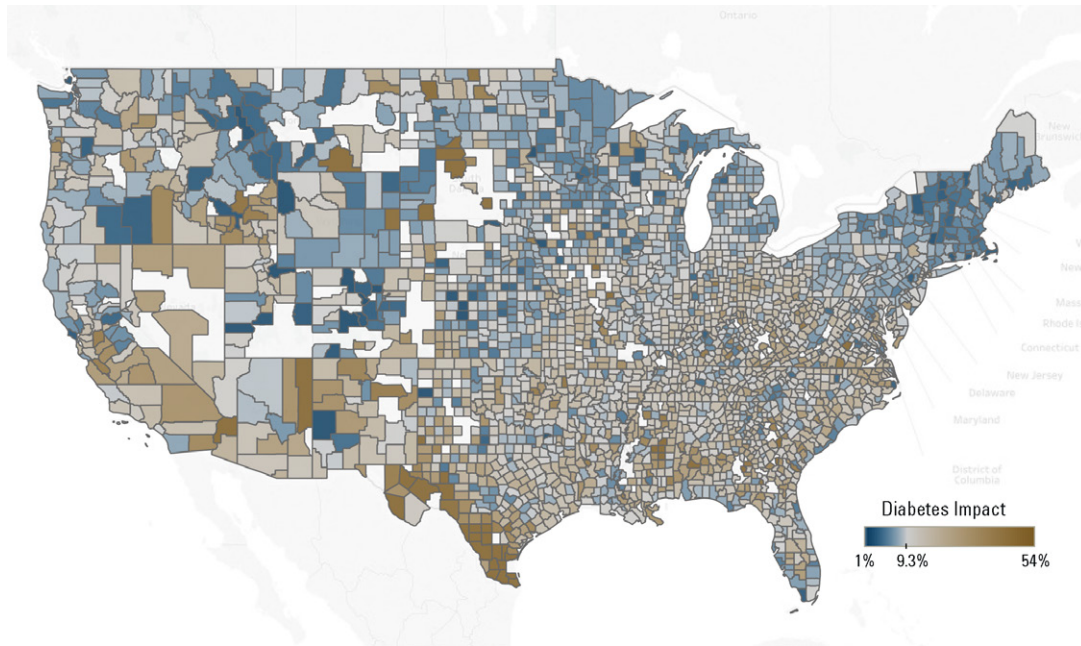**Exhibit C-1: Health Impact of Diabetes on BCBS Health Index by County – Age/Sex Adjusted**

Exhibit C-2: Diabetes PMPY Cost Variability by County – Age/Sex Adjusted