ARKANSAS MEDICARE DIABETES REPORT

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ACHI is a nonpartisan, independent, health policy center that serves as a catalyst to improve the health of Arkansans.

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Revision History

VERSION	CHANGE MGMT. #	DATE	OWNER	DESCRIPTION
1.0.2016	0	5/27/2016	T. Mac Bird, PhD, University of Arkansas for Medical Sciences (UAMS)	Analytic report using the Arkansas All-Payer Claims Database (APCD) Medicare data
1.0.2016	1	7/27/16	Kenley Money	Incorporate technical edits, map corrections, and final review.

This dynamic document will be reviewed and updated on a periodic basis. Each change will be recorded in the Revision History section.

TABLE OF CONTENTS

INTRODUCTION

As a supplement to the *Arkansas Medicare Chronic Conditions Report*, this report provides a more detailed analysis of diabetes and complications of diabetes in Arkansas. Diabetes is a chronic condition that requires continual maintenance through medication and lifestyle choices. One recommended method of monitoring diabetes control is for all diabetics to have a hemoglobin A1c (HbA1c) test annually, which gives providers information about how well current diabetes management strategies are working. Proper control of diabetes can help many individuals avoid developing medical complications associated with diabetes. The most common complications of diabetes can be categorized as either microvascular (affecting the small blood vessels and capillaries) or macrovascular (affecting the larger blood vessels). The most common microvascular complications include retinopathy, which can lead to blindness; nephropathy, which can lead to kidney failure; and neuropathy, which can lead to amputations of the lower extremities. The most common macrovascular complications include peripheral vascular disease, coronary heart disease, and ischemic stroke.

This report contains county-level maps of diabetes prevalence in Arkansas, as well as county-level maps of the six diabetes complications listed above. These maps show the rates of the diabetes-related complications only for those Medicare patients who have been diagnosed with diabetes and who received some type of medical treatment during the data collection period. This information can indicate how well different areas in the state are controlling diabetes among the Medicare population. This in-depth evaluation of diabetes also provides an example of how the data from the Arkansas All-Payer Claims Database can be used. For instance, this information can be used by policymakers to determine which areas of the state are in greatest need of public health interventions and to determine how well their county is doing compared to neighboring counties and the state as a whole. This information may also be used by researchers to uncover potentially fruitful areas for future research.

DATA AND ANALYSIS

Data for this report came from the Arkansas All-Payer Claims Database (APCD) Medicare claims data for years 2012–2013 (Note: an additional year of data has been incorporated into the this report as compared to the Arkansas Medicare Chronic Conditions Report, therefore the diabetes maps and data will vary slightly between the reports). The Arkansas APCD is a large-scale database that systematically collects healthcare data from a variety of payer sources, including private health insurance carriers with Arkansas members, Arkansas Medicaid, and Arkansas Medicare. The Arkansas APCD is an important vehicle for increased transparency in Arkansas's healthcare system, examinations of quality and cost among healthcare services and providers, and assessment of the impact of state programs and initiatives.

The data used to create the maps in this report were generated when a Medicare beneficiary received a healthcare service from a healthcare provider in 2012 or 2013. Not all Medicare beneficiaries who have a diagnosis of diabetes necessarily visited a healthcare provider during the calendar years examined in this report. Those individuals who did not receive care are not included in the report. All geographic data presented in this report are based on where a Medicare patient lives rather than where the patient received health care. For example, a patient who lives in Searcy County and receives health care in Pulaski County will be counted for Searcy County because that is his/her county of residence. The same logic applies if the patient received care outside of Arkansas, for example in Memphis, Tennessee. Data for all of Arkansas's 75 counties were included in the analyses.

The definition of diabetes comes from the Conditions Algorithm for diabetes published by the Centers for Medicare and Medicaid Services Chronic Conditions Data Warehouse[1]. The ICD and CPT codes used for the initial definitions of diabetes complications included in this report were compiled from a literature review that was then

[1] CMS Chronic Conditions Data Warehouse (CCW) CCW Condition Algorithms, last modified July, 2016, https://www.ccwdata.org/web/guest/condition-categories

refined by clinical expert opinion (see Appendix). The CPT codes used in the definition for the HbA1c test was taken from a Healthcare Effectiveness Data and Information Set (HEDIS) measure modified to conform to the needs of the current report (see Appendix).

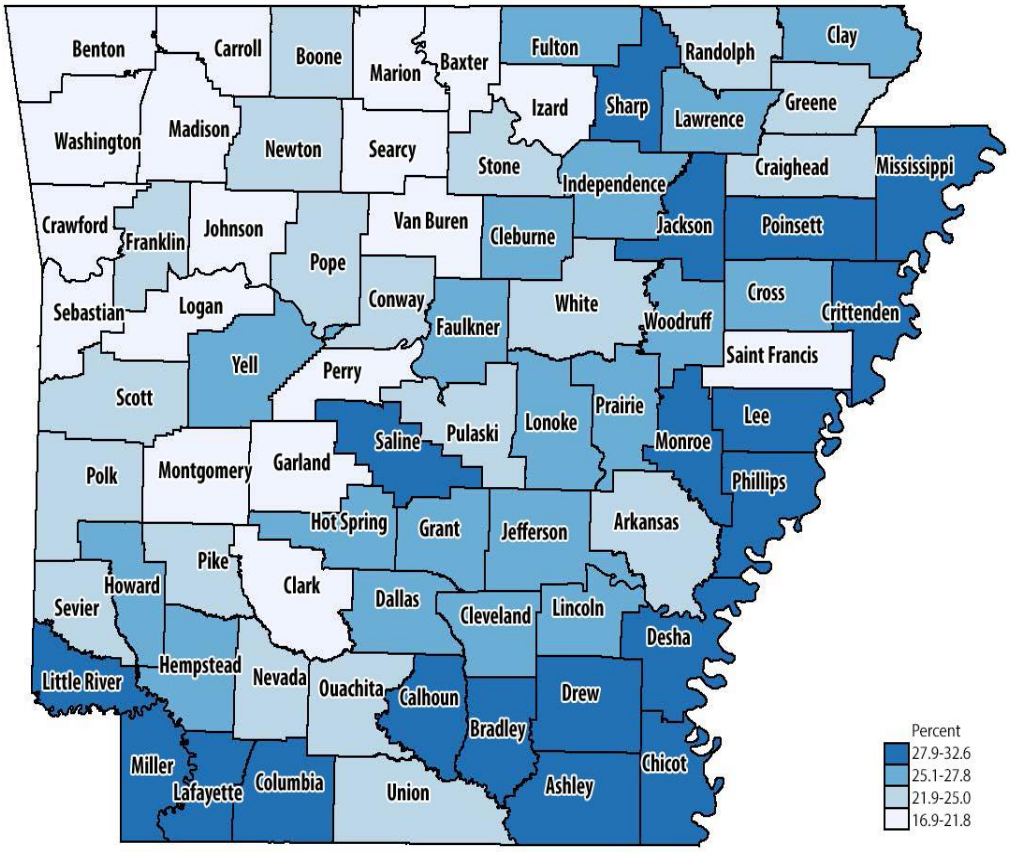
Individuals were eligible for inclusion in the study if they were Medicare beneficiaries residing in Arkansas during the years 2012 and 2013. Individuals were excluded if they did not have 2 years of continuous eligibility, or if they were under the age of 65 years in 2012. A total of 379,617 individuals, of whom 88,897 had been diagnosed with diabetes, were included in the analysis.

DIABETES AND DIABETES COMPLICATIONS MAPS

The eight maps presented below graphically depict the variability in the percentage of Medicare beneficiaries who received treatment for diabetes or a diabetes-related complication across Arkansas at the county level.

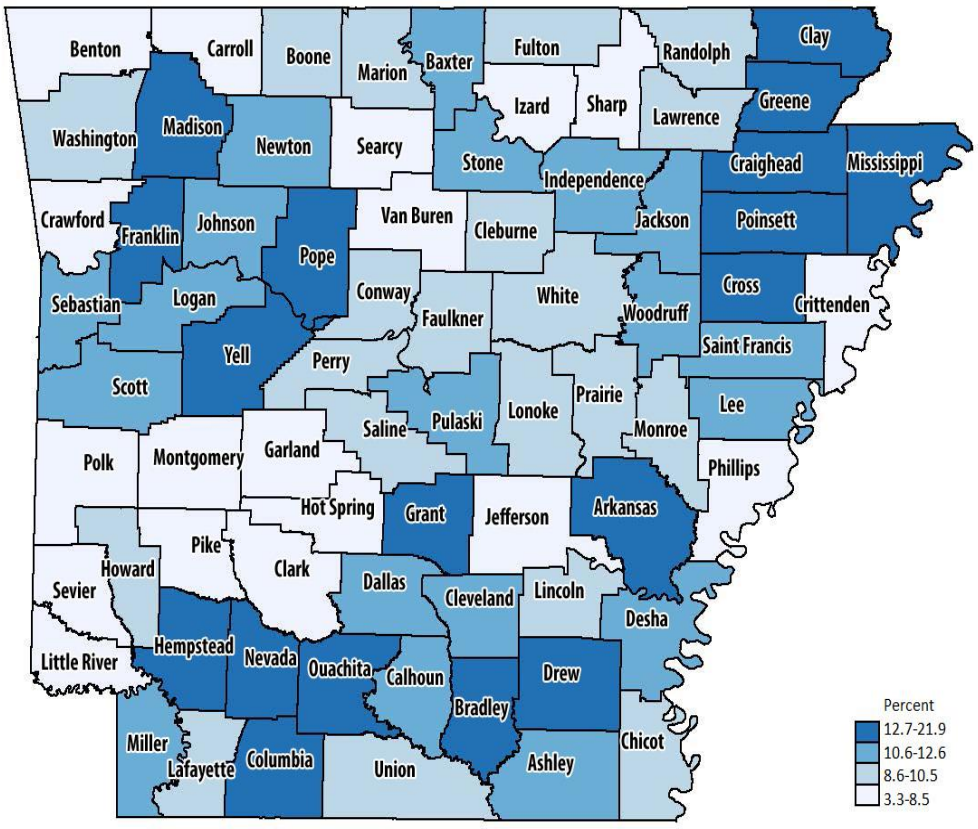
Diabetes

The percent of Arkansas Medicare beneficiaries over the age of 65 years who were diagnosed with diabetes and received healthcare treatment in 2012-2013 is shown by county on the map. Diabetes occurs when the body does not properly create or use insulin, which causes blood sugar levels to be too high. On average, 24.8 percent of Medicare patients in Arkansas have a diagnosis of diabetes. On this map, the counties with the lightest shading have the lowest rates of diabetes and counties with the darkest shading have the highest rates of diabetes. With the rates of diabetes by county ranging from 16.9 percent to 32.6 percent, some counties have almost twice the rate of diabetes as others. Distinct geographic patterns for diabetes in Arkansas show that the counties in the eastern and southern parts of the state generally have the highest rates of diabetes, while those in the western and northern areas generally have the lowest rates.



Possible Research Topic:
Data from the APCD could be used to examine variations in healthcare cost and utilization among the diabetic Medicare population and its association with complications of diabetes. This could help clinicians and policymakers determine areas of over-utilization and under-utilization of healthcare for diabetics in Arkansas.

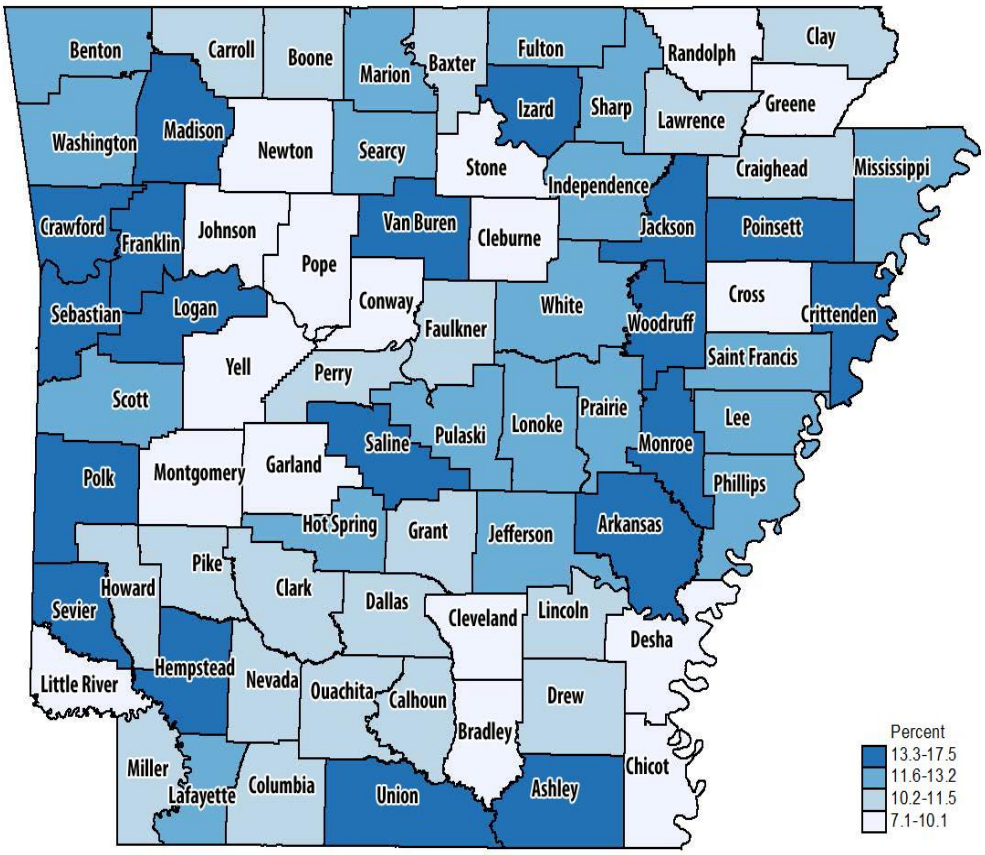
Retinopathy



The percent of diabetic Arkansas Medicare beneficiaries over the age of 65 years who were diagnosed with retinopathy is shown by county on the map. Retinopathy is a condition that affects the retina of the eyes and can lead to vision loss or complete blindness. Retinopathy can result from damage done to the small blood vessels in the eyes a result of high blood sugar levels over time. On average, 11.1 percent of diabetic Medicare patients in Arkansas have a diagnosis of retinopathy. On this map, the counties with the lightest shading have the lowest rates of retinopathy and those with the darkest shading have the highest rates. The rate of diagnosed retinopathy among diabetic Medicare patients ranges across counties from a low of 3.3 percent to a high of 21.9 percent, representing a greater than six-fold difference. Counties in the central part of the state generally have lower rates of retinopathy than other areas of the state. Also, counties with high rates of retinopathy are clustered in the northeast, northwest, and southern areas of the state.

Possible Research Topic:
Retinopathy in diabetic patients can be monitored with proper eye examinations, and early detection can help prevent blindness. Data from the APCD could be used to determine the association between receiving annual eye examinations and a diagnosis of retinopathy, as well as the effect that proximity to an ophthalmologist might have on this association. This information could be used to aid in healthcare workforce planning efforts in the state.

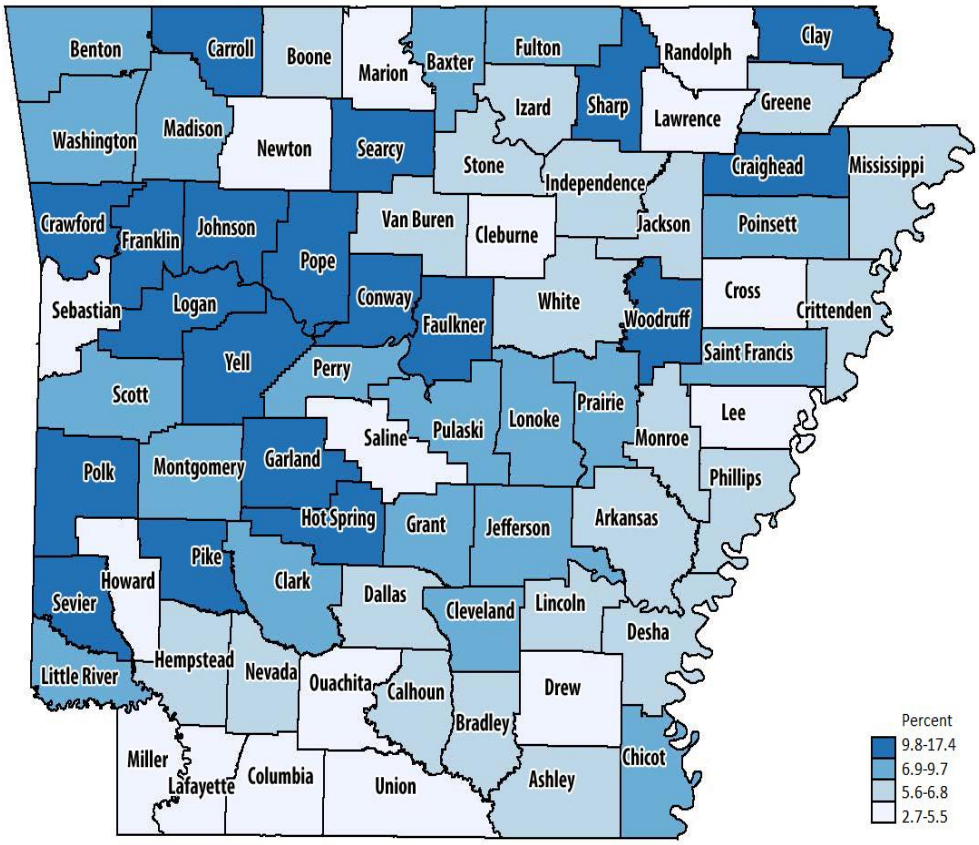
End-Stage Renal Disease



The percent of diabetic Arkansas Medicare beneficiaries, over the age of 65 years who were diagnosed with end-stage renal disease (ESRD) is shown in the map. ESRD, also known as renal failure, can result from damage done to the small blood vessels in the kidneys as a result of high blood sugar levels over time. On average, 11.8 percent of diabetic Medicare patients in Arkansas have a diagnosis of ESRD. The lightest shading on the map represents the lowest county-level rates of ESRD and the darkest shade represents the highest rates. Arkansas's county-level ESRD rates among diabetic Medicare beneficiaries range from 7.1 percent to 17.5 percent. No strong geographic pattern is evident in ESRD rates among diabetics in Arkansas.

Possible Research Topic:
Medical research evidence shows that the use of certain medications (such as ACE inhibitors) can decrease the risk of developing ESRD among diabetic patients. Data from the APCD could show whether patients in some counties have a lower use of these medications than those in other counties and whether any observed utilization difference is associated with rates of ESRD.

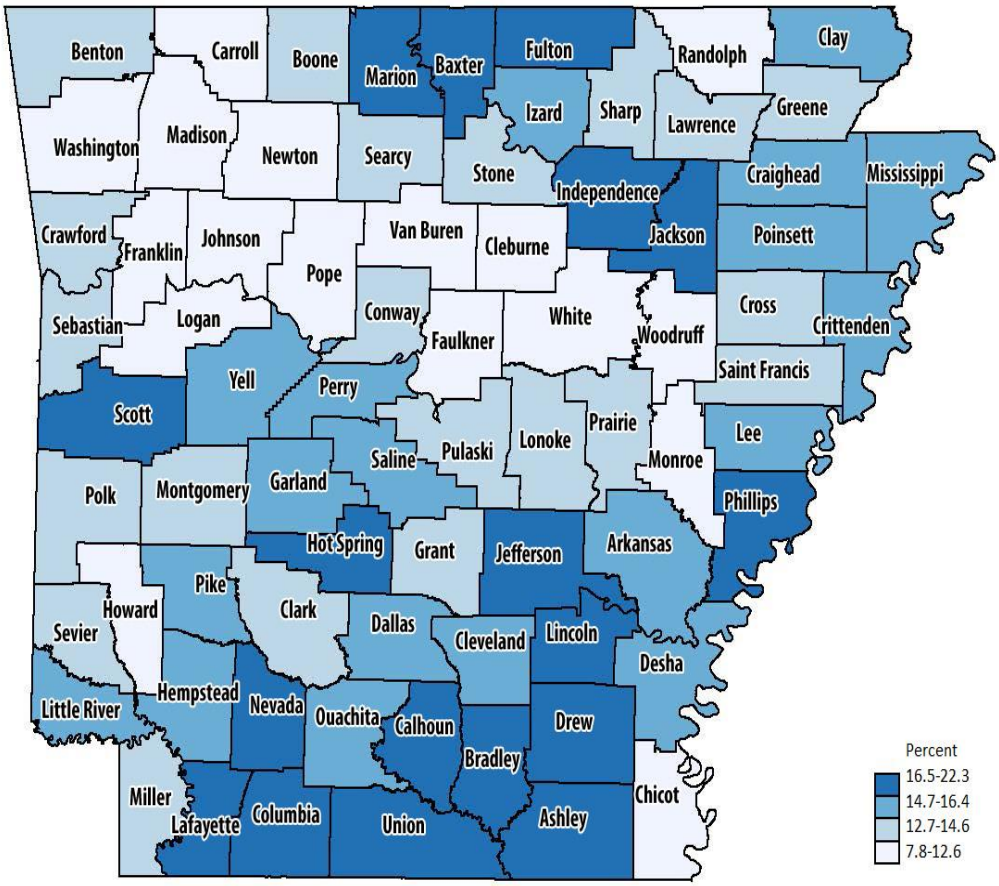
Neuropathy



The percent of diabetic Arkansas Medicare beneficiaries over the age of 65 years who were diagnosed with neuropathy is shown by county in the map. Neuropathy is a condition cause by nerve damage, which makes it more difficult to feel the pain of small injuries to the extremities. This in turn can lead to severe skin sores, especially on the feet. On average, 7.7 percent of diabetic Medicare patients in Arkansas have a diagnosis of neuropathy. On this map, the counties with the lightest shading have the lowest rates of neuropathy and counties with the darkest shading have the highest rates. These rates range from a low of 2.7 percent to a high of 17.4 percent—more than a six-fold difference between counties. Counties in the central and western parts of the state have higher rates of neuropathy than other areas of the state.

Possible Research Topic:
Data from the APCD could be used to explore why there is such a great range of neuropathy diagnosis in this state. For example, is the difference due to coding variation, access to care, or quality of diabetic care?

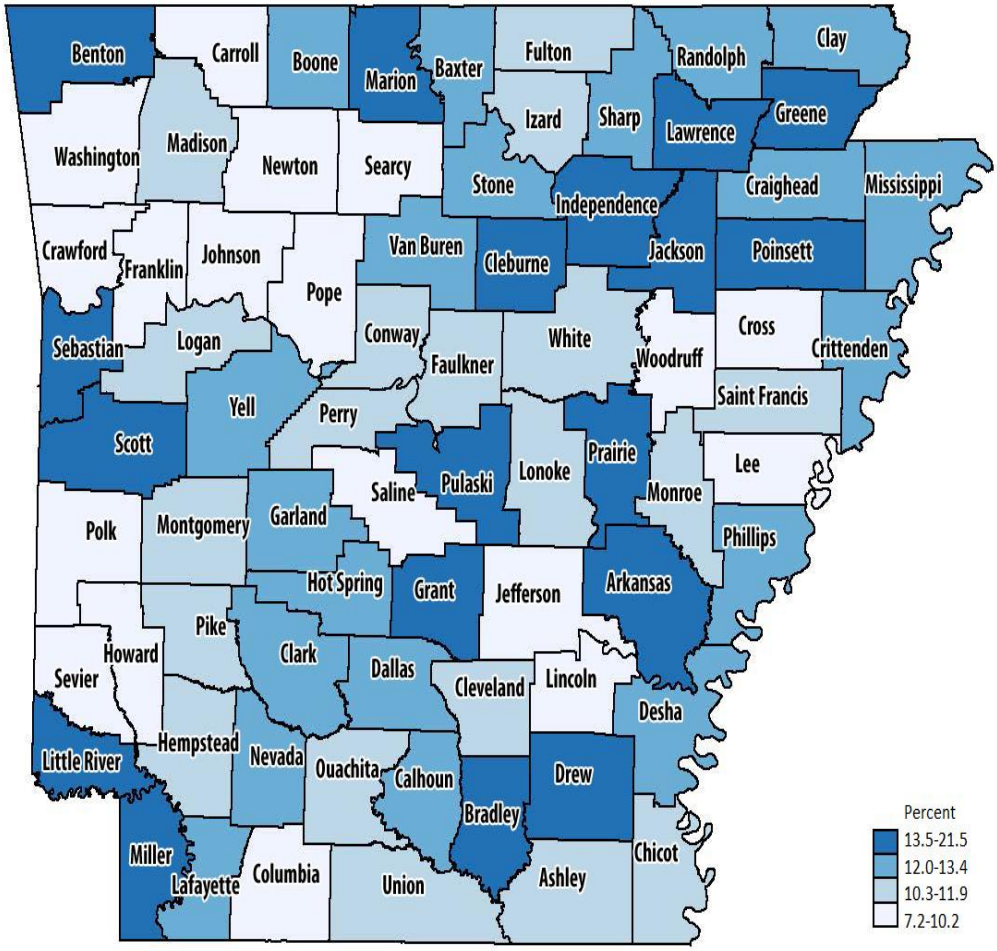
Peripheral Vascular Disease



The percent of diabetic Arkansas Medicare beneficiaries over the age of 65 years who were diagnosed with peripheral vascular disease is shown by county in the map. Peripheral vascular disease is a condition in which the arteries throughout the body get blocked by a fatty buildup. This prevents those areas of the body from getting enough blood flow. On average, 14.7 percent of diabetic Medicare patients in Arkansas have a diagnosis of peripheral vascular disease. Counties on the map with the lightest shading have the lowest rates, and those with the darkest shading have the highest rates of peripheral vascular disease. These rates range from a low of 7.8 percent to a high of 22.3 percent. Some areas across the state have higher rates of peripheral vascular disease than others, with clusters of high rates in the southern half of the state as well as the north-central region.

Possible Research Topic:
Research has shown that diabetic individuals who smoke, are overweight, or have high blood pressure are at an increased risk for peripheral vascular disease. Data from the APCD could be used to identify whether recommended treatments for the contributing factors could reduce the risk of peripheral vascular disease among patients with diabetes.

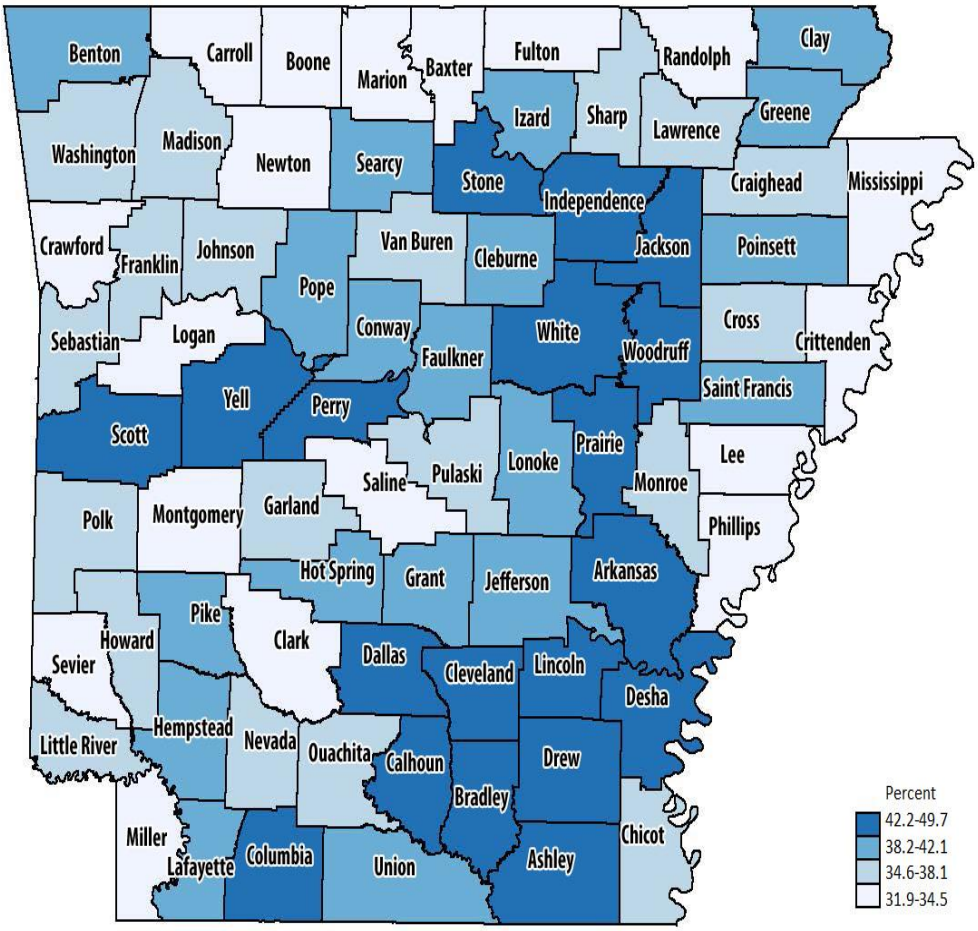
Ischemic Stroke



The percent of diabetic Arkansas Medicare beneficiaries over the age of 65 years who were diagnosed with an ischemic stroke is shown by county in the map. Ischemic stroke is an event during which the brain cannot function properly because of a lack of blood flow to one or more areas of the brain. On average, 12.0 percent of diabetic Medicare patients in Arkansas have received a diagnosis of ischemic stroke. The lightest shading on the map represents the lowest rates of ischemic stroke and the darkest shading represents the highest rates. The county stroke rate ranged from 7.2 percent to 21.5 percent. Stroke diagnosis seems to be more randomly distributed across the state than other conditions in this report; however, the northeastern region appears to generally have the highest rates.

Possible Research Topic:
Data from the APCD could be used to determine if the geographic distribution and capacity of designated "stroke ready" hospitals in Arkansas meet the access needs expected based on county-level population and disease-burden estimates.

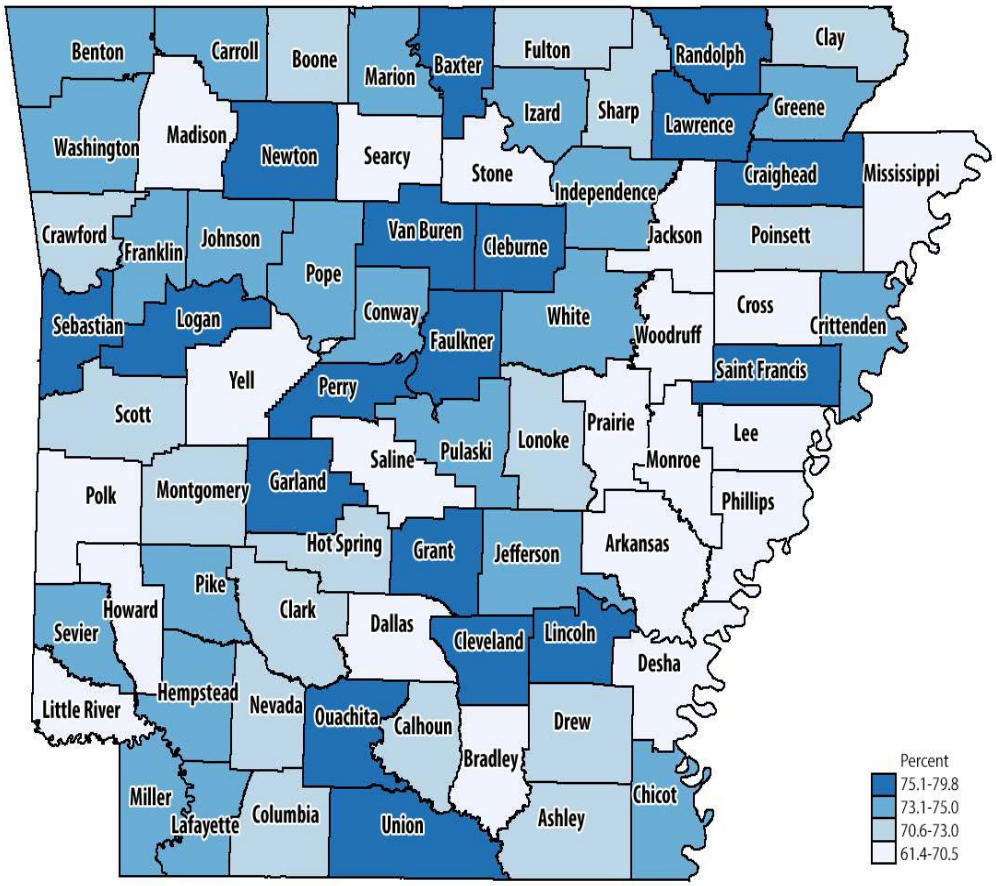
Coronary Heart Disease



The percent of diabetic Arkansas Medicare beneficiaries over the age of 65 years who were diagnosed with coronary heart disease is shown by county in the map. Coronary heart disease is a condition in which the arteries in the heart are blocked by a fatty buildup called plaques. These plaques stop the blood from flowing properly throughout the heart. On average, 38.6 percent of diabetic Medicare patients in Arkansas have a diagnosis of coronary heart disease. Here, the lightest map shading represents the lowest rates of coronary heart disease and the darkest shading represents the highest rates. County rates of coronary heart disease range from a low of 31.9 percent to a high of 49.7 percent. Some areas in Arkansas, like the eastern and southeastern areas, have a higher rate of coronary heart disease than others.

Possible Research Topic:
In addition to diabetes being a risk factor for coronary heart disease, individuals who have a high cholesterol level or high blood pressure also have an increased risk for coronary heart disease. Data from the APCD could be used to determine which treatment options for these contributing conditions are most effective at reducing the risk of coronary heart disease in the diabetic Medicare population.

Hemoglobin A1c Testing Rate



The percent of diabetic Arkansas Medicare patients over the age of 65 years who had an HbA1c test during the calendar year is shown by county. Proper control of diabetes can help many individuals avoid developing medical complications associated with diabetes. One recommended method of monitoring diabetes control is for all diabetics to have an HbA1c test annually. This test indicates how well an individual's blood sugar has been controlled over the past several months. This information informs providers about how well current diabetes management strategies are working. On average, 72.6 percent of diabetic Medicare patients in Arkansas received an HbA1c test in the calendar year. On this map, the lightest shading shows the lowest and the darkest shading the highest rates of annual HbA1c testing. The county rates of annual HbA1c testing range from a low of 61.4 percent to a high of 79.8 percent, with the eastern region of the state generally having the lowest rates.

Possible Research Topic:
Data from the ACPD could be used to compare the use of HbA1c testing between practices required to meet different quality benchmarks. For example, practices that are a Patient-Centered Medical Home or those that are a part of Arkansas's Meaningful Use program are required to meet certain benchmarks for providing the HbA1c test to eligible patients. This information could be used to compare the impact of meeting these quality benchmarks on patient care.

CONCLUSION

This report displays variation in the rate of diabetes in the Arkansas Medicare population across the state at the county level, as well as variations in rates of commonly diagnosed diabetic complications and a monitoring test at the county level. While Arkansas ranks higher than the national average on percentage of adults with diabetes, the maps show that within Arkansas, county rates vary considerably. The rates of diagnosed complications of diabetes across counties in Arkansas also have considerable variation.

The estimates for the rates of diabetes and diabetes complications are given for one of the most vulnerable populations in Arkansas—Medicare beneficiaries over the age of 65. It is anticipated that as the population ages and obesity rates increase, the diabetes and diabetes complication rates for the elderly will also increase over time. The information in this report can aid policymakers in planning public health interventions in targeted areas across the state.

The capabilities of the Arkansas APCD are also demonstrated by the data shown in this report. Data from the APCD, which includes all types of medical, dental, and pharmacy claims across both public and private health insurance providers, has great potential for future research and health policy analyses.

APPENDIX

Claims codes used to operationally define complications of diabetes and lab tests for the Arkansas Medicaid Diabetes Report.

Complication	ICD-9-CM Diagnosis Codes	ICD-9-CM Procedure Codes	CPT Codes
Retinopathy	250.5x, 362.0x, 362.10		
End Stage Renal Disease	556, 556.1, 556.9, 585.5, 585.6, 585.9, 586, V45.1x	39.95, 54.98	90935, 90937
Neuropathy	250.6, 357.2	84.1x	28810, 28820
Peripheral Vascular Disease	250.7x, 440.2x, 440.3x, 440.4, 443.89, 443.9, 785.4, 997.2		
Ischemic Stroke	433.x, 434.x		
Coronary Heart Disease	410.x, 411.x, 412.x, 414.x, V45.81, V45.82		

Lab Test	CPT Codes
HbA1c	83036, 83037, 3044F, 3045F, 3046F