Defeat Diabetes:

Disparities and Opportunities in Missouri's Commercially Insured Population

Brought to you by the Midwest Health Initiative

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Introduction

Epidemiologists have long noted disparities in diabetes prevalence and health outcomes related to poverty, education and race. The Missouri Department of Health and Senior Services *2019 Diabetes Department Report* to the Missouri legislature[i] confirms that these disparities exist in Missouri. Their report used survey and other public health data to estimate diabetes prevalence across all adult populations for Missouri statewide and in its individual counties. The Department reported a 2017 statewide prevalence of 10.4 percent, with higher prevalence among populations who are poorer, older, African American, and those who have attained less education. The Department also reviewed known opportunities to prevent diabetes and prediabetes to improve health outcomes for people with diabetes.

Employers provide health benefits to their employees, contributing significantly to the health and health security of a large proportion of the American public. Because one or more household members in this population is healthy enough to work full-time, has an income and health care coverage, this population is thought to fare better when it comes to a chronic illness like diabetes. However, the presence of disparities in health outcomes related to social factors is not well researched or understood in commercially insured populations.

Focusing solely on commercially insured people in Missouri with type 2 diabetes, this Midwest Health Initiative (MHI) report explores the disparities and opportunities that exist in a population where all members receive health benefits through an employer or labor union. It seeks to identify if social economic factors such as those found in the Department's report also influence health outcomes in Missouri's commercially insured population. Increasingly aware of the impact of social factors on health outcomes, employers seek to better understand their impact on the health and wellbeing of their population and their overall impact on health care spending.

Data Sources

Findings in this report are based on information from the Midwest Health Initiative multi-payer commercial dataset and the Robert Graham Center's Social Deprivation Index (SDI) which incorporates findings from the American Community Survey data.[ii] Details about the MHI dataset can be found in the About the MHI Dataset portion of this report.

Observations from the MHI Data

MHI data was used to observe findings at the county and zip code level in 2019 for commercially insured adults, ages 18 to 64, residing in Missouri. Detailed findings at the county level are provided in the Appendices. An Excel file of findings at the zip code level can be requested from the MHI Website.

Prevalence

MHI found that Missouri's 2019 prevalence of type 2 diabetes among commercially insured adults 18 to 64 years of age was 5.2 percent (95% CI (5.2% - 5.3%), as indicated in Appendix 1. This rate varies in counties with a range of 9.7 percent in

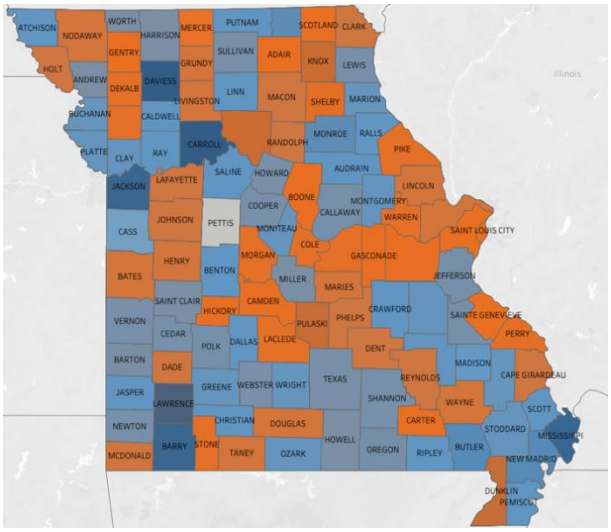
Pemiscot County to 3.9 percent in Boone County, which is the home of the University of Missouri.

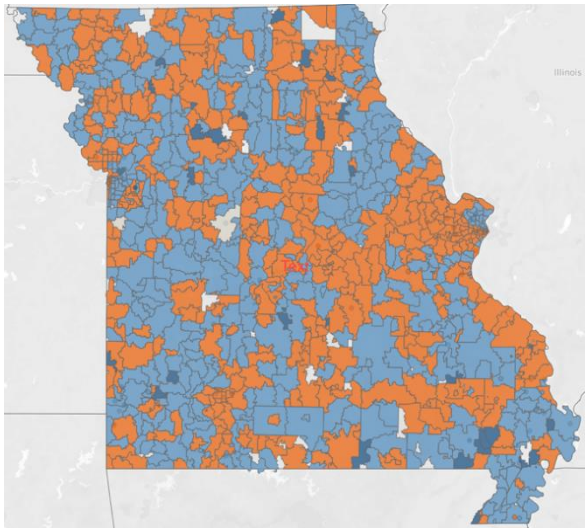
Age

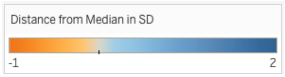
Age is an important consideration in any analysis of diabetes prevalence, as chronic conditions increase with age[iii]. The average age of the subset of the MHI dataset studied in this report is 40 years and the average age of the people with type 2 diabetes in Missouri is 54 years, a difference of 14 years. With this in mind, MHI used age as a variable in all analyses, to control for potential age differences.

Geography

Prevalence of type 2 diabetes varies by county. The maps below show the difference in prevalence by county (left) and then by zip code (right). The blue colored counties have prevalence greater than the median prevalence in the state, and those in orange have a lower prevalence. The intensity of the blue or orange colors indicates the distance from the median in standard deviations from the median value (4.99%, SD=5.0%). The county level data shows higher prevalence in the southeast, southwest, and western regions of the state (Kansas City), with lower prevalence in the eastern region (St. Louis). However, the zip code analysis reveals that the northern portion of Saint Louis County has a higher prevalence than the rest of the county, which was masked by county-level analysis. The zip code analysis provides a more granular view of variance that can inform community health planning and interventions.







Obesity

Being obese is a leading risk factor for type 2 diabetes and a common co-morbidity. Researchers at Harvard's School of Public Health, Willett and colleagues, were among the first to document the connection between weight and diabetes, reporting that being slightly overweight increased the rate of diabetes fivefold and being seriously overweight increased the rate of diabetes 60 times.[iv] They further clarified that, while

about only 30 percent of obese individuals have diabetes, about 90 percent of people with diabetes are overweight. The United States Centers for Disease Control and Prevention defines being overweight as having a body mass index (BMI) of 25 to 30, and being obese, as having a BMI of 30 or greater. [v]

Given this close connection between excess weight and diabetes, MHI sought to estimate weight status. However, the type and structure of MHI's data did not support valid analysis. The claims data shows that only 14.2 percent of adults age 18 to 64 have been diagnosed as being overweight or obese, which is substantially lower than expected rates from population-based research. For example, prior research indicates that more than 2 out of 3 adults in the U.S. are overweight or obese.[vi] The Behavior Risk Factor Surveillance System (BRFSS) finds that 66.9 percent of Missourians reported being overweight or obese in 2018. Coding obesity or overweight as a diagnosis in medical records is an inconsistent practice. Given the importance of obesity as a disease and a risk factor for other diseases, like diabetes, improving the use of the ICD-10 codes related to obesity and body mass index (BMI) is warranted.

Care Management

Medical experts recommend that everyone with or at risk for diabetes have a routine source of primary care and regularly receive recommended screenings and care oversight. Four recommendations include assessments of HbA1c (blood sugar), kidney function, cholesterol levels, and a retinal exam. The first three of these are commonly provided under the medical benefit and reflected in medical claim data, such as MHI's dataset. Retinal exams are often not. MHI has applied the National Committee for Quality Assurance (NCQA) standardized measure criteria for recommended diabetes screenings, to determine how often commercially insured adults with type 2 diabetes in Missouri receive recommended care.

Across Missouri, 93 percent of patients diagnosed with type 2 diabetes and evaluated by a provider during the year, received at least one HbA1c test to assess their blood sugar levels and risk for long-term complications. Only 84 percent of patients received a recommended kidney function test, even though diabetes is a leading cause of kidney failure and 80 percent had their cholesterol level checked.

Table 1. Care Management

People with Type 2 Diabetes, Ages 18 - 64 with a Provider Visit During the Year	
Had HbA1c Test (Blood Sugar)	93%
Had Kidney Screening (nephropathy)	84%
Had Cholesterol Test	80%
Had all Three Tests Listed Above	70%

Each screening is important to the long-term wellbeing for people with diabetes. Of people diagnosed with diabetes that were evaluated by a provider during the year, 70 percent received all three recommended screenings. Inversely, 30 percent of those diagnosed with diabetes did not receive all three screenings. Those missed opportunities have consequences. The opportunity for improvement is greater when considering potential gaps in care for those who did not have a medical evaluation during the year. County level data about these three screenings can be found in Appendix 2.

Medication Adherence

Doctors often prescribe medications to help control type 2 diabetes. However, MHI data shows that many patients do not refill those medications on time. MHI looked at adults with type 2 diabetes in Missouri and found that 32 percent did not consistently refill their blood pressure medications, while 40 percent did not consistently refill their cholesterol medications, and 26 percent did not refill their prescription for anti-diabetes medications. Adherence is defined as possession of a medication for 80 percent of the days prescribed. The reasons for a lack of medication adherence are varied. It may be due to the precipitous rise in prescription drug costs or employee cost sharing, a lack of understanding or commitment on the part of patients, or a patient's inability to tolerate a medication, among other reasons. When adherence to drug therapy is poor, the risk of unfavorable outcomes and costs rise.

ED Use and Hospitalizations among People with Diabetes

MHI observed that commercially insured people with type 2 diabetes are 1.97 ($p<0.001$, 95% CI 1.91-2.02) times more likely to have an emergency department (ED) visit than people of a similar age and health risk score. This is a statistically significant difference in ED visits. Making similar adjustments for age and health risk, it was found that people with type 2 diabetes are 2.69 ($p<0.001$, 95% CI 2.59-2.78) times more likely to be admitted to the hospital during a year compared to people without diabetes.

Higher hospital admissions and ED visits by people with diabetes may indicate that the individual's disease is not well controlled. Other research has shown that uncontrolled diabetes results in higher cost, higher rates of complications, more ED visits and a diminished quality of life. [vii] Conversely, successful management of diabetes can result in reduced morbidity, improved quality of life and lower health care costs.

Relationship of Recommended Screenings to ED Visits

Receiving appropriate care, such as recommended screenings is thought to prevent diabetes complications and the need for emergent care. The odds ratio for ED use among people with diabetes who received all recommended screenings compared to those who did not was .998, (95% CI .96-1.03). This suggests that receiving all recommended screenings is not associated with ED use. People with diabetes who did and did not receive all recommended screenings visited the emergency department with equal frequency. Approximately 17 percent of all people with diabetes visited the emergency room at least once. It should be noted, that receiving a screening is not indicative of having diabetes in control. It may be an indicator of outpatient medical care access and quality.

Cost of Diabetes Treatment

The American Diabetes Association estimates the direct cost of treating people with diabetes in Missouri at $4.9 billion in 2017. [viii] Looking at annual per person healthcare costs for adults with diabetes, MHI data shows an average 2019 statewide cost of $14,791 for adults with diabetes, as compared to $5,568 for those without diabetes, or 2.6 times less. Variations in annual spending by county for people with and without diabetes are notable and can be found in Appendix 4.

MHI calculated the median cost of diabetes spending per county and found that as age increases, so does cost. Delaying or preventing the development of diabetes has the potential to reduce healthcare spending while improving quality of life. Given the number of people with diabetes, even small reductions in prevalence have the potential to add up to large savings.

Analysis of Socioeconomic Factors

To gain insight into the relationship of socioeconomic factors to diabetes prevalence and outcomes within communities, MHI supplemented its data with findings from the American Community Survey (ACS), maintained by the U.S. Census Bureau. ACS is an ongoing, annual survey that provides vital information on a yearly basis about the people of the United States. Among other things, the survey results are used to help determine how federal and state funds are distributed. ACS findings were incorporated through the use of a social deprivation index.

Social Deprivation Index

Understanding the impact of social determinants on health outcomes is central to reducing disparities and to effectively managing the health of a population. Yet, a challenge with understanding the individual relationships between social factors such as race, income, and education is that they are often interrelated. Researchers have recognized and overcome this challenge by blending relevant social factors into an index. The Social Deprivation Index (SDI) created by the Robert Graham Center in Table 2 blends ten variables across seven domains from the American Community Survey for analytical purposes.

Table 2. Robert Graham Center Social Deprivation Index (SDI)

DOMAIN	VARIABLE
Income	Percent population less than 100% FPL
Education	Percent population 25 years or more with less than 12 years of education
Employment	Percent non-employed Percent unemployed
Housing	Percent population living in renter occupied and crowded housing units
Household Characteristics	Percent single-parent households with dependents < 18 years
Transportation	Percent population with no car
Demographics	Percent population black Percent high needs population- under 5 years and, 65 years and over

MHI used the SDI to assess how these blended social variables are associated with diabetes. Doing so enabled a clearer understanding of how social deprivation factors predict: the percentage of people in an area who have diabetes and the percent of people with diabetes that receive recommended diabetes screenings.

MHI analysis found little impact of these factors at a county level. Therefore, SDI scores and findings at the zip code level were tested. The SDI rankings were available for 1,012 zip codes across the state. MHI restricted the zip codes used to those that had at least 20 people represented in the MHI dataset. This reduced the analysis to 921 zip codes (91% of total zip codes with SDI information).

Impact of Social Factors on Diabetes Prevalence

MHI used a weighted least squares regression analysis to examine whether higher SDI levels (more social deprivation) are predictive of higher diabetes prevalence by zip code

to understand the relationship between the prevalence of diabetes in a community and the social deprivation index. Age was also included in the regression model, using average age of the MHI population in the zip code of interest. Age and SDI were both significant predictors such that older age, and a higher SDI indicated higher prevalence of diabetes in the zip codes.

Table 3. Multiple Regression Results, Diabetes Prevalence, Zip Code

Diabetes Prevalence	B	95% CI LB	95% CI UB	SE B	Beta	R2 adj.
Model						
Constant	-8.246	-11.011	-5.482	1.409		
Age	0.289	0.224	0.353	0.033	0.274	
SDI	0.027	0.021	0.032	0.003	0.296	0.131

Note: Model= Enter in SPSS statistics B= unstandardized regression coefficient; CI= Confidence Interval

LB= Lower Bound; UB= Upper Bound; SE B= standard error of coefficient; Beta= standardized coefficient; R2= coefficient of determination (adjusted).

Adherence to Recommended Screenings

To understand the impact of SDI on the adherence to recommended screenings among people with diabetes, we first determined the percentage of the diabetes population in each zip code that had received all recommended screenings according to the measure definitions and exclusions. Because this measure is only for individuals who have been diagnosed with diabetes, there are fewer zip codes with at least 20 individuals in with diabetes. 346 zip codes were included in this analysis. A weighted least squares regression was completed, with age, and SDI as predictors of the percent of people in each zip code who received 100 percent of recommended screenings.

The overall model was significant (R^2_{adj}=0.073, F=14.55, p<0.001) and accounted for 7.3 percent of the total variance in the percent of persons who received all recommended screenings. Both age and SDI were significant predictors, such that older age and higher SDI scores predicted a lower percentage of the diabetes population in the zip code who received all of the recommended screenings indicated for them.

Table 4. Multiple Regression Results for Care Quality, Zip Code

% Received All Indicated Care	B	95% CI LB	95% CI UB	SE B	Beta	R2 adj.
Model		79.83				
Constant	108.829	8	137.82	14.739		
Age	-0.852	-1.542	-0.162	0.351	-0.131	
SDI	-0.102	-0.14	-0.064	0.019	-0.287	0.073

Note: Model= Enter in SPSS statistics B= unstandardized regression coefficient; CI= Confidence Interval

LB= Lower Bound; UB= Upper Bound; SE B= standard error of coefficient; Beta= standardized coefficient; R2= coefficient of determination (adjusted).

Not everyone with diabetes has a regular primary care doctor or receives these important screenings each year. The results of this analysis point to the importance of community environments, as social and structural determinants of health have an impact on all members of the community.

Emergency Department Use and Hospitalizations

MHI used the SDI factors to understand whether these might play a role in the percent of people in each zip code who have an ED visit or hospitalization, regardless of diabetes status. Then, MHI sought to understand whether adherence to recommended screenings was associated with ED use or hospital admissions.

MHI used weighted least squares regression and using zip codes with at least 20 persons; 929/1012 (92%) zip codes. The overall model was significant (R^2_{adj}=0.069, F=35.15, p<0.001) and accounted for 6.9 percent of the total variance in ED use. While age was not a significant predictor of ED use, SDI was. We observed that higher SDI scores were associated with higher percentages of persons who utilized ED services in zip codes. Future analyses could assess whether this may be explained by reduced access to primary care in zip codes with a higher social deprivation index.

Table 5. Multiple Regression Results for ED Use, Zip Code

ED Use	B	95% CI LB	UB	SE B	Beta	R2 adj.
Model						
Constant	4.419	-0.056	8.894	2.28		
Age	0.077	-0.028	0.182	0.053	0.046	
SDI	0.04	0.031	0.049	0.005	0.269	0.069

Note: Model= Enter in SPSS statistics B= unstandardized regression coefficient; CI= Confidence Interval

LB= Lower Bound; UB= Upper Bound; SE B= standard error of coefficient; Beta= standardized coefficient; R2= coefficient of determination (adjusted).

This method was repeated for the percent of people in the MHI dataset who had a hospital admission. There were 886 (88%) zip codes with at least 20 persons for whom hospital admissions data was available. The overall model was not significant, indicating that neither age, nor SDI are significant predictors of hospital admissions.

Policy Considerations

Employment and health insurance coverage do not protect Missourians from type 2 diabetes or assure high quality care. The same underlying socioeconomic factors that predict higher prevalence in other populations also apply to those with commercial insurance. This report on a commercially insured population tells us that policymakers and healthcare leaders would be well served to consider diabetes prevalence and health outcomes in relation to socioeconomic factors within communities. Local social factors, such as those measured by the SDI, influence outcomes for commercially insured

people. This study affirms that social factors are associated with disease prevalence, health outcomes and health care costs.

Neighborhoods Matter

Analyzing data at small geographical areas more closely approximating neighborhoods offers the granularity needed to identify opportunities and focus resources to prevent and treat type 2 diabetes and support environmental and lifestyle changes. Interventions at this level hold promise for reducing disparities and diminishing unwarranted variations in population health across Missouri communities. By understanding disease prevalence, gaps in care, and spending by county, policymakers, public health agencies, employers, and civic leaders will be able to target resources to areas with the greatest opportunities for improvement. They can also measure the impact of their interventions over time. County level data is provided for this purpose in the Appendix of this report. Data for Missouri zip codes with adequate sample sizes may be requested by visiting the MHI website.

Tackling Obesity, the Problem Upstream

"As obesity increases, so does diabetes," says Glenn Studebaker, Diabetes and Heart Disease Coordinator for the Missouri Department of Health and Senior Services. Reducing Missouri's diabetes prevalence and morbidity will require tackling obesity. A starting point would be to increase the practice of diagnosing and reporting obesity and BMI on medical claims. Medical groups, professional associations, and public and private health plans all have a role to play in supporting providers to use the available medical codes and help people understand the increased risk of diabetes that comes with excess weight. Reducing and delaying weight gain can reduce the number of new cases and minimize complications after diagnosis.

Adherence to Care Guidelines

About 30 percent of commercially insured people with a diagnosis of diabetes that undergo an evaluation by provider failed to receive three recommended screenings for evidenced-based care management. While some of these gaps in care may be due to provider oversight, patients may also fail to get screenings advised by their provider due to cost, convenience or an incomplete appreciation of their importance. There are many benefits to increasing public awareness of diabetes as a preventable, controllable, or reversible disease. Public health campaigns linked to the recommended screenings are actionable by employers, providers and health plans. They can promote specific behaviors of people with diabetes, such as getting a screening for kidney disease or checking cholesterol levels.

Expanding and Advancing Primary Care

Patients with a regular source of primary care are more likely to receive recommended preventive services and screenings, advice about healthy life choices, and care resulting in early detection of disease and evidence based treatments.[ix] Research shows that having a primary care relationship is associated with positive health outcomes. [x] However, not everyone is so fortunate. In many Missouri communities, including the St. Louis region, establishing a relationship with a primary care provider as a new patient

can be a lengthy process. Many employers are taking steps to ensure their employees have guaranteed access to primary care through onsite or near site clinics or other service relationships. Health plans, health systems, and policymakers also have different levers to influence primary care access. Collectively and creatively, opportunities exist to expand and advance primary care services across Missouri.

Unmasking Plan Design Barriers

Total health spending by and on behalf of a family of four with employer coverage topped $22,000 in 2018, with the average family responsible for $7,726, analysis by the Peterson Foundation finds.[xi] With a median pretax household income of a little over $63,000,[xii] many workers face tough financial decisions when it comes to meeting their family's health care needs. While few employers have adopted tiered benefit offerings based on worker salaries, findings in this report suggest it may be time to evaluate the cost benefit of this strategy or alternative plan designs that reduce disparities in health outcomes among low wage workers.

Conclusion

MHI's goal is for employers, policymakers and others concerned about population health in Missouri to benefit from information in this report about the prevalence, health outcomes, and social factors impacting type 2 diabetes at the community level. We hope detailed information will attract attention and creative interventions to improve health outcomes for people with or at risk of diabetes. Small changes, community by community, can add up to big improvements in health outcomes across the state. MHI offers its partnership in continuing to monitor the prevalence and predictive factors of type 2 diabetes. Armed with that information, we can learn together the best practices to prevent, identify, treat and support people with diabetes. Together, we can arrive at solutions to the complex and serious physical, emotional, and financial costs of type 2 diabetes in Missouri and nationwide.

About the MHI Dataset

The MHI dataset represents paid claims for about 2.2 million commercially insured people from Missouri and its bordering metropolitan areas annually. Data is contributed by nine data suppliers who submit fully-insured and self-insured claims. Personal identifying information such as patient names and date of birth are removed in keeping with federal privacy laws.

A subset of the dataset representing 1,153,069 adults ages 18 to 64 residing in Missouri during calendar year 2019 was used to assess the prevalence of type 2 diabetes and other findings in this report. There are limitations to using administrative claims data, as it does lack some detail about the population. There is, for example, no information about income or race.

About the Midwest Health Initiative

The Midwest Health Initiative provides a forum for those that provide, pay for, and use health care to join together to solve some of our region's most pressing health care challenges. Created as a nonprofit organization to advance transparency and multi-stakeholder collaboration, MHI stewards the largest multi-payer commercial claims dataset for Missouri and its bordering communities. In this report, MHI examines the personal and economic toll of diabetes in our communities.

Information about local diabetes care providers such as physicians and hospitals, and how often their patients receive recommended tests and treatments, can be obtained by visiting the ChooseWellSTL.org website (http://www.choosewellstl.org/). More information about Diabetes can be found on the Diabetes Basics page of the American Diabetes Association (http://www.diabetes.org/diabetes-basics/).

MHI is grateful to the organizations below for their support of its vision and ongoing commitment to its work.

MHI Champions for Health Care Value

- **Aetna**
- **Anthem Blue Cross and Blue Shield of Missouri**
- **Amgen**
- **Blue Cross and Blue Shield of Kansas City**
- **The Boeing Company**
- **Signature Medical Group**
- **St. Louis Area Business Health Coalition**
- **UnitedHealthcare**

Friends of MHI

- **Arch Resources, Inc.**
- **Graybar Electric Company, Inc.**

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Appendices: Data by County

Appendix 1. Type 2 Diabetes Prevalence by Missouri County, 2019					
County	Number of People in the MHI Dataset in Each County	People with Type 2 Diabetes by County		Confidence Intervals	
		# of People	% of People	95% LB	95% UB
State of Missouri	**822,732**	**43,138**	**5.2%**	**5.2%**	**5.3%**
ADAIR	1,437	77	5.4%	4.2%	6.5%
ANDREW	1,243	81	6.5%	5.1%	7.9%
ATCHISON	555	37	6.7%	4.6%	8.7%
AUDRAIN	2,495	148	5.9%	5.0%	6.9%
BARRY	2,348	151	6.4%	5.4%	7.4%
BARTON	1,247	67	5.4%	4.1%	6.6%
BATES	1,536	96	6.3%	5.0%	7.5%
BENTON	1,277	92	7.2%	5.8%	8.6%
BOLLINGER	1,280	81	6.3%	5.0%	7.7%
BOONE	20,200	786	3.9%	3.6%	4.2%
BUCHANAN	7,262	475	6.5%	6.0%	7.1%
BUTLER	4,820	382	7.9%	7.2%	8.7%
CALDWELL	1,131	79	7.0%	5.5%	8.5%
CALLAWAY	5,415	319	5.9%	5.3%	6.5%
CAMDEN	3,496	172	4.9%	4.2%	5.6%
CAPE GIRARDEAU	13,214	574	4.3%	4.0%	4.7%
CARROLL	843	54	6.4%	4.8%	8.1%
CARTER	223	8	3.6%	1.1%	6.0%
CASS	12,784	841	6.6%	6.1%	7.0%
CEDAR	1,041	61	5.9%	4.4%	7.3%
CHARITON	750	47	6.3%	4.5%	8.0%
CHRISTIAN	9,692	456	4.7%	4.3%	5.1%
CLARK	545	36	6.6%	4.5%	8.7%
CLAY	39,126	2,176	5.6%	5.3%	5.8%
CLINTON	3,017	182	6.0%	5.2%	6.9%
COLE	9,420	485	5.1%	4.7%	5.6%
COOPER	1,686	87	5.2%	4.1%	6.2%
CRAWFORD	1,717	95	5.5%	4.5%	6.6%
DADE	755	61	8.1%	6.1%	10.0%
DALLAS	1,388	106	7.6%	6.2%	9.0%
DAVIESS	766	46	6.0%	4.3%	7.7%
DEKALB	823	48	5.8%	4.2%	7.4%
DENT	741	61	8.2%	6.3%	10.2%
DOUGLAS	626	37	5.9%	4.1%	7.8%
DUNKLIN	1,607	135	8.4%	7.0%	9.8%
FRANKLIN	21,494	1,030	4.8%	4.5%	5.1%

Appendix 1 Cont. County	Number of People in the MHI Dataset in Each County	People with Type 2 Diabetes by County		Confidence Intervals	
		# of People	% of People	95% LB	95% UB
GASCONADE	2,224	126	5.7%	4.7%	6.6%
GENTRY	560	31	5.5%	3.6%	7.4%
GREENE	26,652	1,388	5.2%	4.9%	5.5%
GRUNDY	1,095	55	5.0%	3.7%	6.3%
HARRISON	689	47	6.8%	4.9%	8.7%
HENRY	2,119	158	7.5%	6.3%	8.6%
HICKORY	534	27	5.1%	3.2%	6.9%
HOLT	591	41	6.9%	4.9%	9.0%
HOWARD	1,179	65	5.5%	4.2%	6.8%
HOWELL	2,891	188	6.5%	5.6%	7.4%
IRON	774	48	6.2%	4.5%	7.9%
JACKSON	86,608	5,487	6.3%	6.2%	6.5%
JASPER	16,533	1,110	6.7%	6.3%	7.1%
JEFFERSON	38,288	2,154	5.6%	5.4%	5.9%
JOHNSON	5,126	328	6.4%	5.7%	7.1%
KNOX	310	20	6.5%	3.7%	9.2%
LACLEDE	3,609	234	6.5%	5.7%	7.3%
LAFAYETTE	3,769	256	6.8%	6.0%	7.6%
LAWRENCE	2,972	192	6.5%	5.6%	7.3%
LEWIS	695	44	6.3%	4.5%	8.1%
LINCOLN	11,521	576	5.0%	4.6%	5.4%
LINN	1,265	93	7.4%	5.9%	8.8%
LIVINGSTON	1,243	66	5.3%	4.1%	6.6%
MACON	1,351	86	6.4%	5.1%	7.7%
MADISON	1,318	100	7.6%	6.2%	9.0%
MARIES	706	32	4.5%	3.0%	6.1%
MARION	2,449	143	5.8%	4.9%	6.8%
MCDONALD	1,274	81	6.4%	5.0%	7.7%
MERCER	492	27	5.5%	3.5%	7.5%
MILLER	2,004	123	6.1%	5.1%	7.2%
MISSISSIPPI	880	79	9.0%	7.1%	10.9%
MONITEAU	1,464	77	5.3%	4.1%	6.4%
MONROE	985	58	5.9%	4.4%	7.4%
MONTGOMERY	1,616	111	6.9%	5.6%	8.1%
MORGAN	1,363	67	4.9%	3.8%	6.1%
NEW MADRID	1,109	87	7.8%	6.3%	9.4%
NEWTON	3,957	246	6.2%	5.5%	7.0%
NODAWAY	2,287	131	5.7%	4.8%	6.7%
OREGON	456	39	8.6%	6.0%	11.1%
OSAGE	1,933	83	4.3%	3.4%	5.2%
OZARK	496	26	5.2%	3.3%	7.2%

Appendix 1 Cont. County	Number of People in the MHI Dataset in Each County	People with Type 2 Diabetes by County		Confidence Intervals	
		# of People	% of People	95% LB	95% UB
PEMISCOT	838	81	9.7%	7.7%	11.7%
PERRY	2,129	104	4.9%	4.0%	5.8%
PETTIS	4,096	235	5.7%	5.0%	6.4%
PHELPS	3,955	161	4.1%	3.5%	4.7%
PIKE	1,823	111	6.1%	5.0%	7.2%
PLATTE	15,675	780	5.0%	4.6%	5.3%
POLK	2,624	164	6.3%	5.3%	7.2%
PULASKI	3,693	189	5.1%	4.4%	5.8%
PUTNAM	682	47	6.9%	5.0%	8.8%
RALLS	657	50	7.6%	5.6%	9.6%
RANDOLPH	2,157	170	7.9%	6.7%	9.0%
RAY	2,536	163	6.4%	5.5%	7.4%
REYNOLDS	386	28	7.3%	4.7%	9.8%
RIPLEY	1,091	83	7.6%	6.0%	9.2%
SAINT CHARLES	89,897	3,569	4.0%	3.8%	4.1%
SAINT CLAIR	559	24	4.3%	2.6%	6.0%
SAINT FRANCOIS	8,242	542	6.6%	6.0%	7.1%
SAINT LOUIS	187,296	8,505	4.5%	4.4%	4.6%
SAINT LOUIS CITY	39,337	1,932	4.9%	4.7%	5.1%
SAINTE GENEVIEVE	2,573	107	4.2%	3.4%	4.9%
SALINE	2,620	169	6.5%	5.5%	7.4%
SCHUYLER	300	18	6.0%	3.3%	8.7%
SCOTLAND	293	11	3.8%	1.6%	5.9%
SCOTT	4,222	263	6.2%	5.5%	7.0%
SHANNON	513	34	6.6%	4.5%	8.8%
SHELBY	875	44	5.0%	3.6%	6.5%
STODDARD	2,567	158	6.2%	5.2%	7.1%
STONE	1,999	124	6.2%	5.1%	7.3%
SULLIVAN	1,266	83	6.6%	5.2%	7.9%
TANEY	3,590	197	5.5%	4.7%	6.2%
TEXAS	1,451	72	5.0%	3.8%	6.1%
VERNON	1,493	91	6.1%	4.9%	7.3%
WARREN	6,585	308	4.7%	4.2%	5.2%
WASHINGTON	2,477	157	6.3%	5.4%	7.3%
WAYNE	1,183	62	5.2%	4.0%	6.5%
WEBSTER	3,943	199	5.0%	4.4%	5.7%
WORTH	201	14	7.0%	3.4%	10.5%
WRIGHT	1,521	90	5.9%	4.7%	7.1%
State of Missouri	822,732	43,138	5.2%	5.2%	5.3%

Appendix 2. Average Age, 3 or More Screenings, Average Risk Score (ERG) by Missouri County, 2019				
County	Average Age with Type 2 Diabetes	Percent 3 or More Diabetes Screenings	Average Risk Score without Diabetes	Average Risk Score with Diabetes
State of Missouri	**54**	**69.8%**	**12.7**	**39.6**
ADAIR	53	63.2%	10.8	43.8
ANDREW	55	74.1%	12.2	37.6
ATCHISON	54	65.7%	11.3	28.8
AUDRAIN	53	75.5%	14.4	39.4
BARRY	54	68.2%	11.2	34.9
BARTON	53	64.1%	11.4	31.8
BATES	54	65.2%	13.1	31.1
BENTON	55	66.9%	12.8	35.2
BOLLINGER	52	68.5%	12.3	28.6
BOONE	54	69.9%	10.4	40.0
BUCHANAN	54	74.4%	13.2	38.3
BUTLER	53	66.9%	14.5	41.7
CALDWELL	55	71.7%	11.2	39.9
CALLAWAY	54	70.2%	12.7	38.0
CAMDEN	54	65.5%	13.0	31.4
CAPE GIRARDEAU	54	62.1%	10.4	33.5
CARROLL	55	64.3%	12.1	43.0
CARTER	50	77.5%	6.0	84.0
CASS	54	75.5%	13.8	37.9
CEDAR	55	67.9%	11.1	40.8
CHARITON	55	70.0%	13.8	34.3
CHRISTIAN	53	73.4%	11.7	31.0
CLARK	55	58.8%	11.8	46.5
CLAY	54	74.7%	14.4	39.3
CLINTON	54	71.0%	13.1	36.4
COLE	54	68.0%	12.2	39.3
COOPER	53	65.4%	11.4	31.4
CRAWFORD	53	72.8%	12.3	40.1
DADE	54	70.5%	12.7	35.9
DALLAS	56	70.5%	13.8	29.2
DAVIESS	53	66.0%	12.1	38.7
DEKALB	56	73.2%	10.5	32.0
DENT	54	57.1%	12.4	29.3
DOUGLAS	55	69.4%	11.6	29.3
DUNKLIN	54	66.3%	13.4	36.2
FRANKLIN	54	69.6%	13.9	43.2
GASCONADE	55	71.5%	13.1	37.9
GENTRY	55	70.9%	12.4	36.2

Appendix 2 Cont. County	Average Age with Type 2 Diabetes	Percent 3 or More Diabetes Screenings	Average Risk Score without Diabetes	Average Risk Score with Diabetes
GREENE	53	73.9%	11.1	33.6
GRUNDY	54	59.6%	11.7	29.9
HARRISON	55	63.4%	12.7	29.0
HENRY	53	66.9%	12.7	32.2
HICKORY	54	70.4%	12.0	27.4
HOLT	57	74.2%	12.7	30.4
HOWARD	54	75.3%	11.3	39.9
HOWELL	53	60.6%	11.4	29.6
IRON	53	65.7%	16.1	45.8
JACKSON	54	73.8%	13.3	40.6
JASPER	52	67.3%	12.4	33.0
JEFFERSON	54	68.2%	13.9	41.5
JOHNSON	54	74.6%	11.6	36.8
KNOX	57	58.9%	13.9	27.0
LACLEDE	54	70.1%	11.9	34.5
LAFAYETTE	55	71.4%	11.9	34.5
LAWRENCE	54	71.9%	11.5	32.0
LEWIS	54	64.3%	10.4	32.0
LINCOLN	53	68.1%	13.8	42.2
LINN	54	63.5%	10.4	32.4
LIVINGSTON	55	69.8%	11.0	31.9
MACON	55	63.6%	13.0	29.6
MADISON	52	64.8%	13.9	36.6
MARIES	55	72.1%	12.2	56.9
MARION	52	66.4%	12.4	37.5
MCDONALD	52	63.9%	10.3	30.0
MERCER	56	62.5%	9.7	28.3
MILLER	53	66.9%	11.6	33.0
MISSISSIPPI	55	59.9%	13.4	40.6
MONITEAU	52	68.8%	11.3	35.2
MONROE	55	72.0%	12.8	39.2
MONTGOMERY	55	69.0%	12.5	43.2
MORGAN	55	66.2%	13.8	38.4
NEW MADRID	55	67.5%	13.8	27.2
NEWTON	53	63.6%	11.6	31.8
NODAWAY	53	73.4%	11.6	27.9
OREGON	54	62.8%	12.2	37.8
OSAGE	54	69.2%	12.0	44.1
OZARK	53	61.5%	9.5	26.2
PEMISCOT	54	58.8%	14.8	35.5
PERRY	53	71.4%	11.7	36.4

Appendix 2 Cont. County	Average Age with Type 2 Diabetes	Percent 3 or More Diabetes Screenings	Average Risk Score without Diabetes	Average Risk Score with Diabetes
PETTIS	53	66.6%	11.8	31.4
PHELPS	54	65.3%	11.2	44.1
PIKE	55	62.4%	13.8	44.2
PLATTE	54	74.8%	13.7	42.6
POLK	53	72.1%	11.4	28.9
PULASKI	53	62.4%	11.4	39.4
PUTNAM	51	56.7%	12.5	27.5
RALLS	55	58.2%	13.7	30.5
RANDOLPH	54	69.4%	13.7	36.7
RAY	54	70.5%	14.4	41.4
REYNOLDS	56	67.3%	10.6	23.0
RIPLEY	53	67.4%	12.8	34.5
SAINT CHARLES	54	69.5%	12.7	42.2
SAINT CLAIR	52	65.2%	14.0	24.6
SAINT FRANCOIS	53	67.1%	13.9	37.5
SAINT LOUIS	54	69.3%	12.8	44.1
SAINT LOUIS CITY	53	67.7%	11.3	41.5
SAINTE GENEVIEVE	53	66.4%	13.4	37.7
SALINE	54	66.3%	11.8	31.0
SCHUYLER	56	53.9%	14.9	40.0
SCOTLAND	54	39.2%	13.4	29.7
SCOTT	53	66.4%	12.5	33.3
SHANNON	53	53.9%	11.7	20.0
SHELBY	54	67.9%	12.6	36.8
STODDARD	53	62.6%	12.9	32.8
STONE	55	64.0%	12.2	39.7
SULLIVAN	52	57.3%	9.9	24.5
TANEY	55	64.7%	11.2	32.6
TEXAS	53	61.7%	11.7	33.5
VERNON	55	65.4%	12.3	36.1
WARREN	54	71.6%	13.4	39.7
WASHINGTON	54	65.6%	15.2	48.3
WAYNE	55	67.9%	14.0	30.5
WEBSTER	53	72.2%	11.6	33.4
WORTH	57	70.0%	9.4	25.1
WRIGHT	53	70.6%	9.5	28.3
State of Missouri	54	69.8%	12.7	39.6

Appendix 3. Emergency Department Visits and Admissions per 1,000 People and SDI by Missouri County, 2019					
County	ED/1000 without Diabetes	ED/1000 with Diabetes	Admits/ 1000 without Diabetes	Admits/ 1000 with Diabetes	SDI
State of Missouri	**132.2**	**265.0**	**41.9**	**122.8**	**38.1**
ADAIR	111.0	337.7	111.0	337.7	60.0
ANDREW	103.3	209.9	103.3	209.9	28.1
ATCHISON	193.1	351.4	193.1	351.4	34.5
AUDRAIN	159.4	283.8	159.4	283.8	56.4
BARRY	205.7	344.4	205.7	344.4	54.8
BARTON	177.1	403.0	177.1	403.0	51.5
BATES	211.8	395.8	211.8	395.8	48.7
BENTON	130.8	228.3	130.8	228.3	46.2
BOLLINGER	154.3	456.8	154.3	456.8	53.3
BOONE	107.8	279.9	107.8	279.9	44.0
BUCHANAN	142.2	204.2	142.2	204.2	55.2
BUTLER	144.0	293.2	144.0	293.2	68.7
CALDWELL	190.1	253.2	190.1	253.2	40.8
CALLAWAY	152.9	360.5	152.9	360.5	44.0
CAMDEN	167.3	215.1	167.3	215.1	39.1
CAPE GIRARDEAU	116.5	254.4	116.5	254.4	44.4
CARROLL	147.0	463.0	147.0	463.0	42.6
CARTER	83.7	750.0	83.7	750.0	60.4
CASS	185.0	387.6	185.0	387.6	27.2
CEDAR	123.5	213.1	123.5	213.1	63.2
CHARITON	130.9	234.0	130.9	234.0	35.3
CHRISTIAN	119.4	210.5	119.4	210.5	32.6
CLARK	161.1	277.8	161.1	277.8	34.6
CLAY	159.5	246.3	159.5	246.3	27.8
CLINTON	169.0	269.2	169.0	269.2	36.9
COLE	132.5	241.2	132.5	241.2	40.5
COOPER	130.1	195.4	130.1	195.4	43.0
CRAWFORD	153.5	284.2	153.5	284.2	65.8
DADE	138.3	311.5	138.3	311.5	46.7
DALLAS	153.7	169.8	153.7	169.8	62.5
DAVIESS	163.9	500.0	163.9	500.0	36.1
DEKALB	100.6	104.2	100.6	104.2	20.1
DENT	216.2	557.4	216.2	557.4	72.1
DOUGLAS	88.3	81.1	88.3	81.1	62.8
DUNKLIN	125.0	192.6	125.0	192.6	79.1
FRANKLIN	159.7	253.4	159.7	253.4	38.3
GASCONADE	179.7	420.6	179.7	420.6	42.2
GENTRY	172.0	580.6	172.0	580.6	41.2

Appendix 3 Cont. County	ED/1000 without Diabetes	ED/1000 with Diabetes	Admits/ 1000 without Diabetes	Admits/ 1000 with Diabetes	SDI
GREENE	131.4	261.5	131.4	261.5	45.6
GRUNDY	195.2	254.5	195.2	254.5	52.4
HARRISON	162.0	234.0	162.0	234.0	44.5
HENRY	132.6	145.6	132.6	145.6	49.0
HICKORY	106.5	148.1	106.5	148.1	46.9
HOLT	178.2	219.5	178.2	219.5	36.0
HOWARD	133.8	169.2	133.8	169.2	40.2
HOWELL	158.0	292.6	158.0	292.6	64.7
IRON	225.9	395.8	225.9	395.8	64.2
JACKSON	190.3	373.6	190.3	373.6	44.4
JASPER	138.6	257.7	138.6	257.7	50.5
JEFFERSON	134.3	213.1	134.3	213.1	33.6
JOHNSON	160.3	332.3	160.3	332.3	49.9
KNOX	89.7	100.0	89.7	100.0	43.4
LACLEDE	216.6	551.3	216.6	551.3	63.8
LAFAYETTE	191.0	289.1	191.0	289.1	35.9
LAWRENCE	180.9	375.0	180.9	375.0	50.9
LEWIS	82.9	136.4	82.9	136.4	37.2
LINCOLN	141.4	243.1	141.4	243.1	43.7
LINN	124.6	354.8	124.6	354.8	44.5
LIVINGSTON	138.5	242.4	138.5	242.4	48.7
MACON	107.5	116.3	107.5	116.3	47.2
MADISON	189.7	370.0	189.7	370.0	50.1
MARIES	127.6	437.5	127.6	437.5	57.4
MARION	118.8	321.7	118.8	321.7	62.2
MCDONALD	118.2	123.5	118.2	123.5	65.4
MERCER	144.1	185.2	144.1	185.2	44.6
MILLER	119.1	276.4	119.1	276.4	54.5
MISSISSIPPI	168.5	265.8	168.5	265.8	85.8
MONITEAU	131.2	272.7	131.2	272.7	39.9
MONROE	126.2	293.1	126.2	293.1	34.1
MONTGOMERY	124.3	99.1	124.3	99.1	49.9
MORGAN	165.9	209.0	165.9	209.0	54.9
NEW MADRID	164.4	206.9	164.4	206.9	77.9
NEWTON	135.5	130.1	135.5	130.1	47.3
NODAWAY	121.1	99.2	121.1	99.2	56.4
OREGON	100.7	435.9	100.7	435.9	61.1
OSAGE	116.2	277.1	116.2	277.1	21.3
OZARK	91.5	269.2	91.5	269.2	58.3
PEMISCOT	138.7	172.8	138.7	172.8	84.5
PERRY	127.4	230.8	127.4	230.8	27.9

Appendix 3 Cont. County	ED/1000 without Diabetes	ED/1000 with Diabetes	Admits/ 1000 without Diabetes	Admits/ 1000 with Diabetes	SDI
PETTIS	127.2	208.5	127.2	208.5	60.1
PHELPS	138.1	391.3	138.1	391.3	58.7
PIKE	162.4	252.3	162.4	252.3	54.0
PLATTE	134.9	275.6	134.9	275.6	27.3
POLK	118.7	189.0	118.7	189.0	49.7
PULASKI	130.1	402.1	130.1	402.1	49.2
PUTNAM	151.2	127.7	151.2	127.7	47.5
RALLS	153.2	260.0	153.2	260.0	32.0
RANDOLPH	177.2	194.1	177.2	194.1	52.8
RAY	196.0	319.0	196.0	319.0	36.8
REYNOLDS	209.5	142.9	209.5	142.9	56.8
RIPLEY	147.8	253.0	147.8	253.0	65.3
SAINT CHARLES	93.2	191.1	93.2	191.1	13.6
SAINT CLAIR	157.0	41.7	157.0	41.7	61.0
SAINT FRANCOIS	186.6	250.9	186.6	250.9	62.3
SAINT LOUIS	102.4	224.7	102.4	224.7	27.6
SAINT LOUIS CITY	107.1	280.5	107.1	280.5	72.1
SAINTE GENEVIEVE	182.5	336.4	182.5	336.4	37.6
SALINE	173.4	153.8	173.4	153.8	58.9
SCHUYLER	124.1	222.2	124.1	222.2	50.1
SCOTLAND	212.8	545.5	212.8	545.5	55.9
SCOTT	141.7	285.2	141.7	285.2	60.7
SHANNON	183.7	235.3	183.7	235.3	56.6
SHELBY	122.7	136.4	122.7	136.4	41.5
STODDARD	150.3	208.9	150.3	208.9	54.8
STONE	139.7	298.4	139.7	298.4	44.3
SULLIVAN	166.5	228.9	166.5	228.9	59.4
TANEY	137.0	253.8	137.0	253.8	57.2
TEXAS	160.3	152.8	160.3	152.8	53.2
VERNON	164.8	395.6	164.8	395.6	52.3
WARREN	114.7	204.5	114.7	204.5	50.7
WASHINGTON	181.0	490.4	181.0	490.4	63.8
WAYNE	158.8	145.2	158.8	145.2	54.3
WEBSTER	115.4	271.4	115.4	271.4	40.4
WORTH	48.1	214.3	48.1	214.3	29.6
WRIGHT	107.6	344.4	107.6	344.4	63.9
State of Missouri	132.2	265.0	41.9	122.8	38.1

Appendix 4. Average Annual Spending for People with Type 2 Diabetes by Missouri County, 2019			
County	Average PMPY without Diabetes	Average PMPY with Diabetes	Number of People for which MHI has Cost Data
State of Missouri	**$5,567.91**	**$14,790.84**	**655,392**
ADAIR	$4,062.41	$16,172.31	1,119
ANDREW	$5,764.65	$14,348.81	1,082
ATCHISON	$6,499.00	$12,649.24	479
AUDRAIN	$5,457.20	$14,362.50	2,016
BARRY	$4,650.59	$12,347.96	1,861
BARTON	$4,722.77	$9,261.53	999
BATES	$5,933.37	$13,762.98	1,305
BENTON	$6,588.97	$12,701.85	1,053
BOLLINGER	$5,546.65	$12,143.03	1,056
BOONE	$4,767.75	$14,222.24	14,407
BUCHANAN	$6,255.22	$17,436.79	6,207
BUTLER	$4,987.77	$13,382.09	3,999
CALDWELL	$4,708.58	$16,919.40	964
CALLAWAY	$5,561.19	$12,998.73	4,108
CAMDEN	$5,679.83	$11,069.11	2,673
CAPE GIRARDEAU	$4,789.75	$14,840.45	10,631
CARROLL	$5,939.13	$14,649.39	723
CARTER	$2,489.26	$37,256.86	134
CASS	$6,755.45	$17,085.14	11,126
CEDAR	$4,196.52	$16,994.53	863
CHARITON	$5,578.40	$11,146.43	639
CHRISTIAN	$4,927.27	$10,079.86	8,059
CLARK	$4,370.42	$16,426.62	450
CLAY	$6,313.07	$17,477.20	34,986
CLINTON	$6,005.12	$12,248.26	2,616
COLE	$5,003.91	$10,700.40	7,325
COOPER	$4,947.42	$8,423.70	1,267
CRAWFORD	$5,506.45	$14,571.94	1,209
DADE	$5,365.84	$23,802.93	635
DALLAS	$5,241.07	$10,457.75	1,189
DAVIESS	$5,911.14	$14,924.73	648
DEKALB	$4,541.84	$11,622.02	675
DENT	$5,234.87	$10,122.14	574
DOUGLAS	$5,016.48	$13,717.70	486
DUNKLIN	$5,135.19	$11,794.95	1,276
FRANKLIN	$5,788.66	$14,226.15	17,225
GASCONADE	$5,404.02	$10,803.80	1,737
GENTRY	$5,197.76	$18,746.59	485

Appendix 4 Cont. County	Average PMPY without Diabetes	Average PMPY with Diabetes	Number of People for which MHI has Cost Data
GREENE	$4,798.57	$11,997.43	21,890
GRUNDY	$5,960.53	$17,488.78	905
HARRISON	$4,891.04	$11,690.49	587
HENRY	$5,395.08	$15,681.49	1,787
HICKORY	$4,374.19	$10,283.65	427
HOLT	$4,930.81	$12,053.92	512
HOWARD	$5,521.44	$16,115.53	980
HOWELL	$5,003.30	$12,812.67	2,296
IRON	$7,223.47	$17,638.35	645
JACKSON	$6,239.22	$18,258.14	74,927
JASPER	$5,090.92	$12,421.47	13,769
JEFFERSON	$5,667.65	$14,806.63	30,060
JOHNSON	$5,547.65	$17,360.93	4,323
KNOX	$6,083.99	$13,731.12	264
LACLEDE	$5,340.93	$11,301.58	2,955
LAFAYETTE	$5,713.51	$13,594.08	3,173
LAWRENCE	$4,878.02	$10,639.79	2,415
LEWIS	$4,855.91	$15,904.21	560
LINCOLN	$5,581.16	$14,850.44	8,906
LINN	$5,260.84	$16,489.06	1,056
LIVINGSTON	$5,327.49	$16,034.00	1,053
MACON	$4,557.71	$14,779.12	1,144
MADISON	$5,775.37	$14,490.05	1,095
MARIES	$5,803.17	$19,037.85	522
MARION	$4,825.93	$12,032.11	2,094
MCDONALD	$5,832.27	$14,424.74	975
MERCER	$6,182.18	$12,703.37	372
MILLER	$4,829.52	$17,829.72	1,520
MISSISSIPPI	$5,749.77	$14,386.93	746
MONITEAU	$5,678.44	$12,771.57	1,124
MONROE	$5,790.25	$12,012.04	835
MONTGOMERY	$5,759.34	$15,521.78	1,221
MORGAN	$5,729.73	$11,545.71	1,071
NEW MADRID	$4,247.50	$6,590.25	937
NEWTON	$4,696.14	$12,603.86	3,213
NODAWAY	$5,160.65	$9,570.20	2,041
OREGON	$4,991.96	$17,772.46	357
OSAGE	$4,793.88	$20,369.64	1,514
OZARK	$3,666.47	$10,038.13	412
PEMISCOT	$6,064.50	$13,539.17	694
PERRY	$5,383.93	$14,802.63	1,789
PETTIS	$4,897.36	$13,570.08	3,455

Appendix 4 Cont. County	Average PMPY without Diabetes	Average PMPY with Diabetes	Number of People for which MHI has Cost Data
PHELPS	$5,225.22	$15,011.26	2,647
PIKE	$5,735.18	$13,565.70	1,487
PLATTE	$6,103.70	$17,271.42	13,915
POLK	$4,369.07	$9,650.43	2,175
PULASKI	$4,685.67	$10,458.92	2,462
PUTNAM	$6,064.66	$11,252.46	544
RALLS	$6,376.05	$11,326.83	545
RANDOLPH	$5,247.97	$17,945.76	1,808
RAY	$6,277.48	$16,427.78	2,211
REYNOLDS	$4,053.72	$5,080.16	293
RIPLEY	$4,642.48	$11,109.02	852
SAINT CHARLES	$5,700.18	$15,499.12	67,840
SAINT CLAIR	$6,534.79	$12,143.20	473
SAINT FRANCOIS	$5,136.23	$14,720.42	6,896
SAINT LOUIS	$5,549.89	$14,544.36	142,034
SAINT LOUIS CITY	$5,074.27	$12,825.23	28,239
SAINTE GENEVIEVE	$5,537.75	$14,637.84	2,200
SALINE	$4,786.38	$12,264.05	2,252
SCHUYLER	$5,836.18	$19,449.98	254
SCOTLAND	$8,662.03	$13,106.01	239
SCOTT	$5,279.49	$11,692.23	3,497
SHANNON	$3,622.98	$6,971.55	426
SHELBY	$4,757.21	$12,648.26	782
STODDARD	$4,977.15	$11,690.31	2,072
STONE	$5,498.19	$14,731.61	1,629
SULLIVAN	$4,013.55	$10,629.10	1,003
TANEY	$4,471.31	$11,071.22	2,866
TEXAS	$4,425.04	$7,891.14	1,126
VERNON	$5,308.84	$14,809.75	1,285
WARREN	$5,727.91	$14,733.69	5,020
WASHINGTON	$5,227.35	$13,829.63	1,923
WAYNE	$5,699.20	$11,467.41	949
WEBSTER	$4,466.57	$13,062.34	3,257
WORTH	$4,491.84	$8,160.98	160
WRIGHT	$4,532.29	$10,938.15	1,124
State of Missouri	$5,567.91	$14,790.84	655,392