

KENT COUNTY

OTTAWA COUNTY

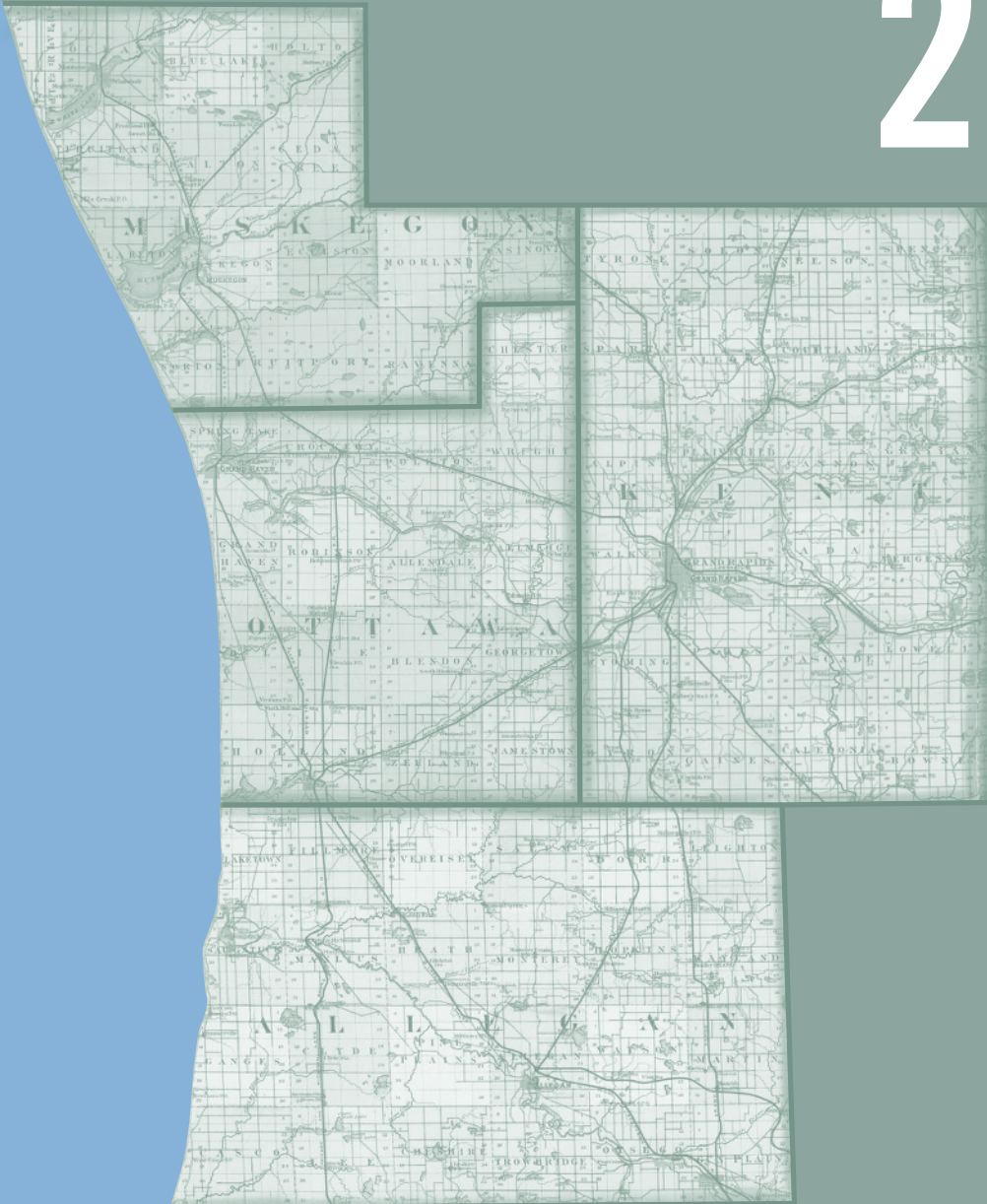
MUSKEGON COUNTY

ALLEGAN COUNTY

Health Check

ANALYZING TRENDS IN WEST MICHIGAN

2016



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Blue Cross Blue Shield of Michigan,
Blue Care Network, and Priority Health.

www.gvsu.edu/vphealth



January 8, 2016

Dear Colleagues,

We are pleased to publish and distribute the seventh edition of *Health Check: Analyzing Trends in West Michigan 2016*. *Health Check 2016* identifies significant health-related trends and issues facing Kent, Ottawa, Muskegon, and Allegan (KOMA) counties. It is intended to inform health care policy and community decisions about the types of health care professionals, services, and delivery systems that could best serve our community. This year, in addition to updates of information presented in the 2015 report, we include the results of a survey of West Michigan residents regarding health insurance coverage and their perspectives on the health care landscape.

According to this year's findings, although Michigan's population growth rate has now returned to prerecession levels, our employment growth continues to lag behind the U.S. as a whole. The employment growth seen in West Michigan has been concentrated primarily in the health care and service industries. In KOMA, the number of individuals in the 45–64 and the over 65 age groups compared to the 20–34 age group continues to increase. This unbalanced age distribution presents challenges to health care resources, policy makers, and insurance programs, such as Medicare. Prior to the opening of the health care exchanges and Medicaid expansion, concerns were expressed that primary care providers would not be able to handle the anticipated influx of new patients. According to this report's Community Survey, primary care services continue to provide access to new patients in West Michigan. The proportion of the population with no health insurance was significantly lower in 2014 than in 2013, as was the percentage of respondents who report having no personal health care provider.

Healthy lifestyles and focus on population health are critical strategies for minimizing the region's individual and community health risk factor profile and health care costs. This report highlights reduced rates of binge drinking and smoking among residents in West Michigan, but two out of every three people in West Michigan are either overweight or obese. Concurrently, the region has a high rate of coronary artery disease and higher reported instances of diabetes and kidney disease than the previous year.

West Michigan's health care organizations, businesses, governmental agencies, foundations, and educational institutions share collective responsibility to improve the health, safety, and vitality of our region. Perseverance toward integrated, cost-effective, safe, quality health care across the lifespan is essential. An important component in addressing the challenges in West Michigan is the development of a population health approach to health care that builds upon the strengths of our current services and health care systems. With our region's continued commitment of substantial resources for health care delivery and health science research, we are in the unique position to collaboratively utilize the resources available to effectively influence positive changes in our community.

Sincerely,



Jean Nagelkerk
Vice Provost for Health

Health Check: Analyzing Trends in West Michigan 2016

Kevin Callison, Ph.D.; Leslie Muller, Ph.D.; Gerry Simons, Ph.D.; Paul Isely, Ph.D.;
and Kathleen Pedres, graduate assistant; editors

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We thank all the participants in the hospital survey for their time and effort.

All the data used in this project (except the hospital survey and the insurance data) are based on primary and secondary sources. We acknowledge our data sources in each section by listing source information; these sources are not duplicated or specifically cited in text discussions to preserve readability.

We are particularly indebted to the following organizations for use of their data:

- American Hospital Association (AHA)
- Behavioral Risk Factor Surveillance System (BRFSS), based on CDC protocol and the Michigan BRFSS
- Bureau of Labor Statistics (BLS)
- Center for Disease Control (CDC)
- Institute of Medicine of the Academies
- Michigan Department of Community Health (MDCH)
- Michigan Health and Hospital Association (MHHA)
- Michigan Labor Market Information (milmi.org as part of michigan.gov)
- U.S. Census Bureau
- U.S. Department of Health and Human Services (ARF file 2011-2012)
- United States Patent and Trademark Office (USPTO)
- World Intellectual Property Organization (WIPO)

Enrollment and graduation data were collected from websites owned by these colleges and universities:

- Albion College
- Andrews University
- Calvin College
- Central Michigan University
- Cornerstone University
- Davenport University
- Ferris State University
- Grand Valley State University
- Kuyper College
- Michigan State University
- Western Michigan University

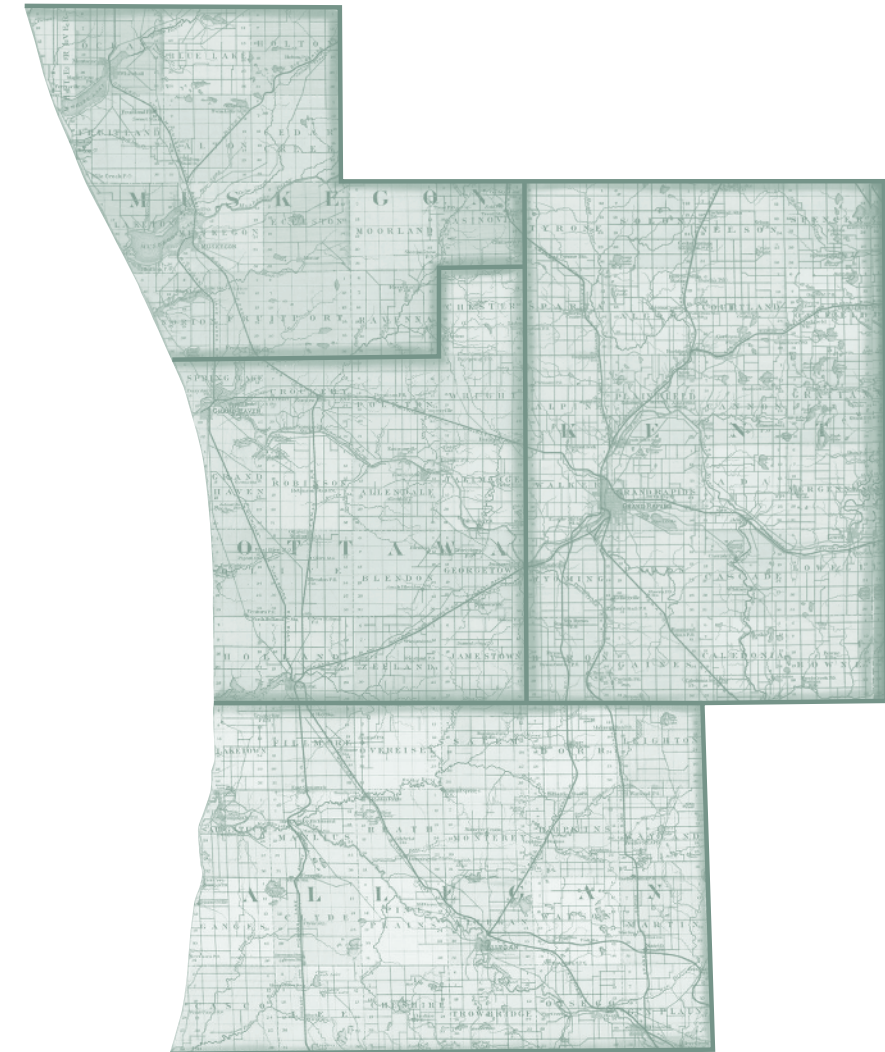


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Executive Summary

Knowledge Foundations

Education and Job Growth

Though employment growth in Michigan continues to lag behind the U.S. as a whole, our growth rate is now back to prerecession levels and continues the positive trend that emerged in early 2010. Additionally, compared to the rest of the state, job growth remains strong in West Michigan. According to data gathered from the Bureau of Labor Statistics (BLS), employment growth in West Michigan has been concentrated primarily in the health care and service industries. Specifically, we see large gains in employment for occupations related to orthotics and prosthetics, home health care, diagnostic medical treatments, and veterinary care. Our analysis indicates that regional educational programs are graduating students at a rate that will meet or, in many cases, exceed projected job growth in many health-related occupations. Finally, we examine wage changes in health care related occupations in West Michigan over the past decade and find that physician assistants as well as family and general practitioners have seen the largest real wage growth. Alternatively, home health aides, occupational therapy assistants, and speech-language pathologists all saw large declines in real wages over the same period.

Medical Patents

Patents are accepted measures of knowledge creation. There has been an increase in medical patent activity since the 1990s and a growing number of new innovators. Patents assigned in Kent County have increased from an annual average of 6.2 from 1990 to 1999, to 10.3 from 2000 to 2009, and to 15.2 patents from 2010 to 2014. However, medical patenting in the region is coming from a small number of companies. Patented medical innovations have a great potential for creating wealth and economic growth in West Michigan, but continued research and development (R&D) support is vital.

Health Care Trends

Demographic Changes

Several of the demographic trends highlighted in previous versions of Health Check remain causes for concern this year. First, in KOMA and the United States, there are larger numbers of people between the ages of 45 and 64 than there are between the ages of 20 and 34 or 35 and 44. This population distribution leads to increases in the cost of employer-sponsored health plans as the workforce ages. Over the past two years, however, we have seen the share of the population between the ages of 20 and 34 begin to trend upward in the KOMA region after years of steady decline. A continuation of this trend would bode well for the cost of employer-sponsored health insurance in West Michigan. Also, in KOMA, Detroit, and the United States, there are now more people over the age of 65 than in the prime working ages of 35 to 44. This trend has serious implications for the financing of the Medicare Part A Trust Fund, which relies on younger workers to subsidize the health care of the elderly.

Health Care Overview

The latest data from the Michigan Behavioral Risk Factor Surveillance System indicate that despite progress in reducing rates of binge drinking and smoking among residents in West Michigan, risk factors associated with being overweight or obese continue to be problematic. Approximately two out of every three people in West Michigan are either overweight or obese. Obesity has been linked to increased rates of diabetes, which is a contributing factor to kidney disease. In fact, we report higher instances of both diabetes and kidney disease in 2014 compared to 2013. Another notable change this year is the improvement on a number of health care access measures in both West Michigan and the Detroit region. We find that the proportion of the population with no health insurance is significantly lower in 2014 than in 2013, as is the share of respondents who report having no personal health care provider. Similarly, in the Detroit region, respondents were less likely to report cost as a barrier to obtaining needed health care in 2014. Finally, self-reported health status has improved in both regions over the past year.

Economic Analysis

Benchmarking Communities

Grand Rapids residents are less likely to be admitted to the hospital relative to residents in a number of comparison communities, and their hospital stays, on average, tend to be shorter. However, Grand Rapids has seen a relatively large increase in the rate of emergency department visits over the past decade and our rate of outpatient visits to hospitals is above the national average. Additionally, hospital expenses per admission have grown more rapidly over the past decade in Grand Rapids than in many of the other comparison regions. When comparing per capita expenditures for Medicare enrollees across the selected peer communities, we find that Grand Rapids appears to be neither a particularly high- nor low-cost region, but instead is positioned near the middle of the group. On a positive note, we investigated several markers of care quality and found that Grand Rapids performs relatively well compared to both the peer communities and national averages.

The Effects of the Affordable Care Act on Michigan Employers

For the second year, we are including a survey of how West Michigan firms are reacting to the Affordable Care Act (ACA), however, we've expanded our sample to include very small firms (fewer than 10 employees) and firms on the east side of Michigan. Results indicate that, for the most part, Michigan firms are addressing the new health insurance climate in similar ways as the rest of the country. The majority of firms are still planning to provide insurance coverage into 2018, but most are using cost-containment measures to keep their costs low. A significant number of firms are increasing their offerings of high deductible plans, passing along more costs to employees, and changing prescription coverage. Over a third of firms are also considering using private health exchanges, which offer more flexibility in plan choice. Michigan firms, however, are not as prepared for the ACA "Cadillac Tax" as are firms nationally. Over one third of firms surveyed do not know if they will be subject to the tax, and of those who will be, only 14 percent are taking steps to get ready for the rollout in 2018.

Community Survey

This year, we are adding a survey of West Michigan residents in which we asked about health insurance coverage, the health care landscape, and how these have changed in the last year. Discussion before the opening of the exchanges and the Medicaid expansion centered on the concern that primary care physicians would not be able to handle the influx of new patients, affecting new insurees' access to care and possibly resulting in longer waiting room times for all patients. These concerns do not appear to have been realized in West Michigan. The majority of respondents report no change in accessing a physician, time spent in waiting rooms, and time with the physician. In fact, more than three quarters of both Medicaid enrollees and those with private insurance report that finding a physician is either easier or there is no change from last year.

Major Medical Conditions: Expenditure Analysis

We used member data provided by Blue Care Network, Blue Cross Blue Shield of Michigan, and Priority Health to examine average annual expenditures for those diagnosed with at least one of the following six chronic conditions: asthma, coronary artery disease (CAD), depression, diabetes, hyperlipidemia, and low back pain. Understanding that, from year to year, small coding changes may affect the composition of the diagnosis categories, we find that expenditures for all conditions have increased this year in KOMA after adjusting for inflation. However, compared to our results from last year, we find that expenditures have increased more rapidly on the east side of the state than on the west. Despite these changes, average annual expenditures for CAD are still greater in KOMA than in the Detroit region. This year, we have included several maps that plot the distribution of expenditures for a number of conditions by zip code. In general, the east side of the state contains more high-expenditure zip codes than the west, but areas to the north and southwest of Grand Rapids are consistently among the highest expenditure zip codes in our sample.

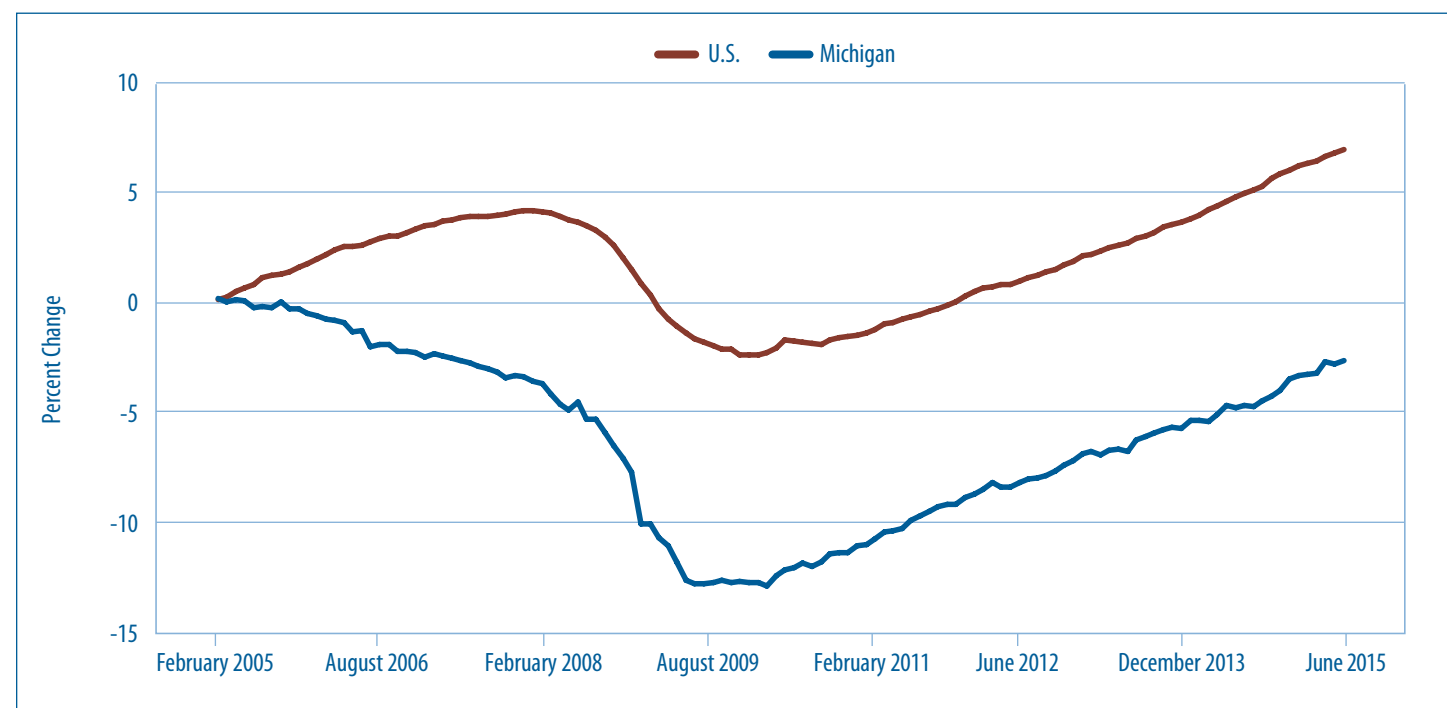
Knowledge Foundations

Education and Job Growth

The Michigan economy continues to improve after the devastating effects of the 2008 recession. **Figure 1** plots growth in nonfarm payroll jobs from February 2005 through July 2015. Clearly, employment in both Michigan and the U.S. as a whole was negatively affected by the recession. However, in late 2009 and early 2010, the impact in Michigan was much more pronounced with employment falling by nearly 13 percent from its February 2005

base. Also apparent from the figure is that the downward trend in employment for Michigan was present long before the recession took effect. While the U.S. economy was consistently gaining jobs from February 2005 to January 2008, employment in Michigan had fallen by nearly 5 percent over the same period. While employment growth in Michigan is no longer negative, we have yet to achieve the prerecession employment levels of early 2005.

Figure 1: Nonfarm Payroll Jobs Percent Change, February 2005–July 2015



Source: U.S. Bureau of Labor Statistics, 2015 State Occupational Employment and Wage Estimates

Figure 2 provides a more detailed analysis of employment changes by examining job growth or losses at the industry level. We plotted data for the Grand Rapids metropolitan statistical area (MSA), Michigan, and the entire United States. Other than jobs related to personal care and service, the largest percentage increase in employment in Grand Rapids over the past decade has been in the health care sector. Health care practitioners, technical occupations, and occupations related to health care support have seen positive and substantial employment growth. In fact, employment for health care practitioners and technical occupations in Grand Rapids grew at nearly twice the statewide rate and 1.5 times the national rate since 2005. Occupations that suffered the largest job loss over this period include construction and extraction, transportation and material moving, and production occupations. Finally, Michigan has had negative job growth in several other fields (including sales and related occupations; education, training, and library occupations; architecture and engineering occupations; and business and financial operations); employment growth in these sectors in Grand Rapids has remained positive.

Given these changes and challenges, we next examined whether universities in the central and western part of the state were producing students equipped with the required skills to meet the health care sector's growing labor demand.

To analyze this issue, we proceeded in three steps:

1. We obtained the 2022 U.S. Bureau of Labor Statistics (BLS) forecasts for different medical and health care related professions in Michigan.
2. We undertook an inventory of health services education programs in colleges and universities in the western and central parts of the state.
3. We made specific predictions for employment demand in the Grand Rapids area for several selected health professions.

Figure 2: Job Growth for Select Major Occupational Groups, 2005–2014



Source: U.S. Bureau of Labor Statistics, 2015 State Occupational Employment and Wage Estimates

Table 1 provides the employment projections for a variety of health care occupations identified in the BLS data for Michigan. We compared historical employment levels in 2012 to projected employment in 2022 and calculated the projected 10-year employment growth rate. The largest projected growth is noted in areas related to orthotics and prosthetics, home health care, diagnostic medical treatments, and veterinary care. Additionally, large projected employment gains in the areas of physical and occupational therapy were noted. Taken together, these projections seem to be influenced by the health needs of an aging population. (See the Demographic Changes section in this publication for further discussion of the implications of the population distribution shift.)

Tables 2 through 5 provide data on enrollment and graduation in health-related fields from several central and west Michigan universities. These data are from a number of different programs and, although likely incomplete, represent our attempt to collect as much information as possible.

Table 6 presents projections specifically for West Michigan by matching the data on graduates with the BLS job projections for various occupations. The projections in **Table 6** for the West Michigan component of the average annual job openings were calculated by applying the West Michigan share of total employment for the entire state (26.7 percent) to the BLS projections of the average number of annual job openings in each field. Consequently, these projections of average annual job openings in West Michigan assumed that the current West Michigan share of employment would remain fixed throughout the next 10 years. In addition, we were unable to account for any gains to the labor pool (persons migrating into the area) or leakages (skilled labor leaving Michigan). Areas where the West Michigan region appears to have more annual graduates than projected available jobs include nursing (both RNs and LPNs), dietitians and nutritionists, speech-language pathologists, and occupational therapists. In contrast, occupations such as EMT and paramedic, dental assistant, and medical assistant show potential job openings in excess of the number of annual West Michigan graduates.

Finally, **Table 7** presents inflation-adjusted growth in annual wages for health professions in the Grand Rapids MSA, Michigan, and the United States. Once again, data for the wage estimates come from the BLS, and we compared changes in these estimates over a 10-year period from 2004 to 2014. We specifically focused on fields in which wages have increased or decreased by more than 7 percent over this time. In Grand Rapids, the occupations with the largest decline in real wages included home health aides, occupational therapy assistants, and speech-language pathologists for which all wage declines on the order of 14 percent were calculated. Note that speech-language

pathologists were identified as one of the most over-supplied fields in **Table 6**, which would tend to put downward pressure on wages for workers in this field. We also noted that LPNs and diagnostic medical stenographers faced double-digit or near double-digit wage reductions during the sample period. Once again, our estimates project that the annual supply of LPNs generated by central and West Michigan universities will far exceed new job openings.

The two occupations that experienced significant wage gains in Grand Rapids over the past decade include physician assistants and family and general practitioners. Data suggest that real wages for these two occupations have grown by more than 20 percent since 2004.

When we compared wage changes in Grand Rapids to those in Michigan and the entire U.S., we saw several similarities, but also several interesting differences. For example, over the past decade, real wages for home health aides have fallen by 14 percent in Grand Rapids, 10 percent in Michigan, and 7 percent in the U.S., while real wages for family and general practitioners have increased by 21 percent in Grand Rapids, 18 percent in Michigan, and 8 percent in the U.S. Alternatively, while physician assistants in Grand Rapids and the U.S. saw large real wage gains over the period, average real wages for the entire state of Michigan only increased slightly. Similarly, while speech-language pathologists in Grand Rapids saw a reduction in real wages of nearly 14 percent, averages in Michigan were down only about 2 percent and had actually grown by 5 percent in the U.S. as a whole.

We emphasize that our estimates are subject to change based on changes in the economy or changes in the regulatory environment in which health care providers and health systems operate. We view our projections as a work in progress. Aligning future graduation rates in a more comprehensive manner with more accurate projections of job growth is a goal for future versions of this publication. Michigan colleges, universities, and most importantly students will be well served if the alignment between graduation rates and projected job growth is analyzed more comprehensively and accurately on a regular basis. Colleges and universities can discern future job growth niches and be more proactive in graduating students with the skills that employers require. In the long run, it is important not only to create educational opportunities in Michigan, but also to adopt policies that encourage graduates to continue their lives and employment in Michigan after graduation. The continued growth and success of the West Michigan region will depend largely on our capacity to create and retain a skilled workforce with the ability to adapt to an evolving labor market.

Table 1: Projected Health Care Professions in Michigan

Occupation	Employment		Projected 10-year Employment Growth Percentage
	2012 Actual	2022 Projected	
Anesthesiologists	600	680	13.33
Athletic Trainers	970	1,170	20.62
Audiologists	390	480	23.08
Biochemists and Biophysicists	640	780	21.88
Biological Scientists, All Other	620	630	1.61
Biological Technicians	3,360	3,700	10.12
Cardiovascular Technologists/Technicians	2,300	2,780	20.87
Chemical Technicians	2,510	2,820	12.35
Chemists	3,710	3,990	7.55
Chiropractors	2,120	2,370	11.79
Clinical/Counseling/School Psychologists	2,870	3,050	6.27
Dental Assistants	8,820	9,760	10.66
Dental Hygienists	9,030	10,660	18.05
Dentists, All Other Specialists	370	390	5.41
Dentists, General	4,490	4,950	10.24
Diagnostic Medical Sonographers	2,330	3,090	32.62
Dietitians and Nutritionists	2,180	2,510	15.14
EMT and Paramedics	7,080	8,070	13.98
Epidemiologists	150	160	6.67
Family and General Practitioners	4,300	4,620	7.44
Health Care Practitioner/Tech Workers, All Other	2,960	3,240	9.46
Health Care Support Workers, All Other	6,140	6,950	13.19
Health Diagnose/Treat Practitioners, All Other	1,290	1,410	9.30
Health Technologists and Technicians, All Other	2,830	3,250	14.84
Home Health Aide	37,600	49,990	32.95
Internists, General	5,110	5,300	3.72
Licensed Practical and Licensed Vocational Nurses	18,800	21,580	14.79
Life Scientists, All Other	210	250	19.05
Massage Therapists	2,500	3,090	23.60
Medical and Clinical Laboratory Technicians	6,980	8,180	17.19
Medical and Clinical Laboratory Technologists	7,220	7,530	4.29
Medical Assistant	21,880	25,170	15.04
Medical Equipment Preparers	1,400	1,540	10.00
Medical Records/Health Info Technicians	4,170	4,680	12.23
Medical Scientists, Except Epidemiologists	2,060	2,300	11.65
Medical Transcriptionists	2,870	2,880	0.35
Microbiologists	210	220	4.76
Nuclear Medicine Technologists	710	780	9.86
Nursing Aides, Orderlies, and Attendants	53,460	60,160	12.53
Obstetricians and Gynecologists	400	420	5.00
Occupational Health and Safety Specialists	1,210	1,280	5.79
Occupational Health and Safety Technicians	270	280	3.70
Occupational Therapists	4,260	5,030	18.08
Occupational Therapist Aides	550	680	23.64
Occupational Therapist Assistants	580	720	24.14

Table 1: Projected Health Care Professions in Michigan (continued)

Occupation	Employment		Projected 10-year Employment Growth Percentage
	2012 Actual	2022 Projected	
Opticians, Dispensing	2,580	2,890	12.02
Optometrist	1,110	1,270	14.41
Oral and Maxillofacial Surgeons	190	210	10.53
Orthodontists	170	190	11.76
Orthotists and Prosthetists	340	460	35.29
Pediatricians, General	630	670	6.35
Pharmacists	9,780	10,460	6.95
Pharmacy Aides	530	560	5.66
Pharmacy Technicians	13,250	14,630	10.42
Physical Therapists	8,020	9,840	22.69
Physical Therapist Aides	940	1,190	26.60
Physical Therapist Assistants	2,830	3,570	26.15
Physician Assistants	3,590	4,450	23.96
Physicians and Surgeons, All Other	11,950	13,300	11.30
Podiatrists	340	400	17.65
Psychiatric Aides	2,180	2,220	1.83
Psychiatric Technicians	730	770	5.48
Psychiatrists	520	560	7.69
Psychologists, All Other	420	460	9.52
Radiation Therapists	800	900	12.50
Radiologic Technologists and Technicians	7,480	8,300	10.96
Recreational Therapists	910	1,000	9.89
Registered Nurses	93,990	104,730	11.43
Respiratory Therapists	3,750	4,180	11.47
Respiratory Therapy Technicians	670	730	8.96
Speech-Language Pathologists	2,660	2,890	8.65
Surgeons	650	730	12.31
Surgical Technologists	3,120	3,740	19.87
Therapists, All Other	1,240	1,380	11.29
Veterinarians	2,180	2,520	15.60
Veterinary Assistant and Lab Animal Caretakers	1,860	2,060	10.75
Veterinary Technologists and Technicians	2,200	2,870	30.45

Source:
Michigan Department of Technology, Management, and Budget, Healthcare Practitioner and Technical Occupations Employment Forecasts 2012-2022

Table 4:
College and University Programs — Master's

Color Key: ■ Students Enrolled Over Last 3 Years ■ Graduates Over Last 3 Years	Andrews University		Davenport University		Calvin College		Central Michigan University		Ferris State University		Grand Valley State University		Michigan State University		Western Michigan University		TOTAL ENROLLMENT	TOTAL GRADUATES
Animal Science													45	19			45	19
Athletic Training																	0	0
Biochemistry and Molecular Biology												3	4				3	4
Biology/Biological Sciences	12	7					99	64			93	33			106	34	310	138
Biomedical Laboratory Science/Operations												31	11				31	11
Biomedical Sciences											39	15					39	15
Biostatistics											108	49	14				122	49
Biosystems Engineering																	0	0
Cell and Molecular Biology											93	32					93	32
Chemical Engineering												12	12	29			41	12
Chemistry							71	29						30	7		101	36
Clinical Laboratory Sciences																	0	0
Clinical Mental Health Counseling	77	27															77	27
Clinical Nurse Specialist																	0	0
Communication Disorders*							37	100					189	92			226	192
Comparative Medicine and Integrative Biology													21	9			21	9
Counseling Psychology															488	120	488	120
Dietetics							35	58									35	58
Epidemiology													36	11			36	11
Exercise Physiology															70	38	70	38
Exercise Science																	0	0
Genetics																	0	0
Health Administration**											182	44					182	44
Health and Risk Communication													45	34			45	34
Human Nutrition																	0	0
Integrative Pharmacology													48	17			48	17
Kinesiology													178	83			178	83
Laboratory Research in Pharmacology and Toxicology													1	1			1	1
Medical and Bioinformatics			22	0							42	12					64	12
Medical Laboratory Sciences	11																11	0
Microbiology																	0	0
Neuroscience							14	3					1	3			15	6
Nurse Practitioner																	0	0
Nursing			71	0					300	63	42	9	533	173	44	15	990	260
Nursing Education	1	3															1	3
Nutrition and Wellness	66	8															66	8
Occupational Therapy			26	0											563	257	940	365
Physician Assistant							256	132			399	114			251	105	906	351
Pathobiology													4	4			4	4
Pharmacology and Toxicology													363	55			363	55
Physics							58	18					5	47	17	17	80	82
Physiology													10	1			10	1
Psychology													149	53	186	89	335	142
Public Health											127	15	634	196			761	211
Rehabilitation Counseling																	0	0
Speech-Language Pathology***					79	24	223	100			115	56			183	87	600	267
Social Work	193	75							32		1,175	474			987	365	2,387	914
Sociology							3	4						14	32	13	35	31
Vision Rehabilitation Therapy															69	47	69	47

Notes:
 * Includes Communicative Sciences and Disorders (MSU)
 ** Includes Health Care Administration
 *** Includes Speech Pathology and Audiology (WMU), Speech Pathology (Calvin College)
 Tables do not include programs with no information readily available and programs with a value of 0 for both enrollment and graduates.

Table 5:
College and University Programs — Doctoral Degree

Color Key: ■ Students Enrolled Over Last 3 Years ■ Graduates Over Last 3 Years	Andrews University		Central Michigan University		Ferris State University		Grand Valley State University		Michigan State University		Western Michigan University		TOTAL ENROLLMENT	TOTAL GRADUATES
									57	12			57	12
			117	38							62	13	179	51
									158	19			158	19
									4	6			4	6
											79	15	79	15
									67	17			67	17
									122	14			122	14
									1	1			1	1
									173	27			173	27
									603	84	102	13	705	97
									8				8	0
									96	10			96	10
	90	2									161	19	251	21
									59	10			59	10
									109	15			109	15
									2	2			2	2
			1	51									1	51
									38	3			38	3
									129	22			129	22
			232						6,204	438			6,436	438
			30	5					87	11			117	16
								241	30				278	40
					442	109			37	10			442	109
									15	4			15	4
									33	5			33	5
					1,724	404							1,724	404
									413	57	86	13	499	70
									29	7			29	7
									113	54	250	23	363	77
	282	131	429	139				449	135				1,160	405
									60	9			60	9
									72	10			72	10
									171	22	90	11	261	33

Note:
*Combined Nursing (GVSU) and Nursing Practice (MSU)
Tables do not include programs with no information readily available and programs with a value of 0 for both enrollment and graduates.

Table 6: Need for Selected Professions

Selected Professions	Average Annual West MI Graduates	Employment 2012	Employment 2022	Projected 10-year Employment Growth	Average Annual Job Openings (includes growth and replacement)	Average Annual West Michigan Component
Dental Assistant	25	8,820	9,760	10.66	276	74
Dental Hygienist	110	9,030	10,660	18.05	394	105
Diagnostic Medical Sonographer	48	2,330	3,090	32.62	108	29
Dietitian and Nutritionist	214	2,180	2,510	15.14	59	16
EMT and Paramedic	18	7,080	8,070	13.98	292	78
Family and General Practitioner	30*	4,300	4,620	7.44	140	37
Home Health Aide	NA	37,600	49,990	32.95	1,953	521
LPN	430	18,800	21,580	14.79	738	197
Medical Assistant	151	21,880	25,170	15.04	746	199
Medical and Clinical Lab Technologist	37	7,220	7,530	4.29	219	58
Nursing Assistant	NA	53,460	60,160	12.53	1,687	450
Occupational Therapy Assistant	17	580	720	24.14	29	8
Occupational Therapist	166	4,260	5,030	18.08	135	36
Optometrist	36	1,110	1,270	14.41	48	13
Physician Assistant	117	3,590	4,450	23.96	151	40
Physical Therapist	135	8,020	9,840	22.69	379	101
Respiratory Therapist	44	3,750	4,180	11.47	97	26
RN	922	93,990	104,730	11.43	2,895	773
Speech-Language Pathologist	162	2,660	2,890	8.65	63	17
Surgical Technologists	20	3,120	3,740	19.87	93	25

Notes:
 *Assumes that 20 percent of medical school graduates are family or general practitioners
 Growth is linear and projected evenly between years.
 West Michigan component is 26.7 percent of total Michigan population in the labor force.
 Graduation rates are based on annual historical data for the entire reporting period.
 No modifications were made for leaving or entering the state.
 Job projections are based on BLS data.

Table 7: Average Hourly Wages for Select Health Care Jobs

Selected Professions	2004 Wages			2014 Wages			% of Change in Real Wages		
	Grand Rapids	Mich.	U.S.	Grand Rapids	Mich.	U.S.	Grand Rapids	Mich.	U.S.
Dental Assistant	\$18.50	\$18.60	\$17.80	\$18.42	\$16.50	\$17.43	-0.43	-11.29	-2.08
Dental Hygienist	\$30.70	\$33.60	\$36.00	\$28.52	\$28.61	\$34.60	-7.10	-14.85	-3.89
Diagnostic Medical Sonographer	\$30.70	\$30.40	\$33.00	\$27.65	\$28.82	\$32.88	-9.93	-5.20	-0.36
Dietitian and Nutritionist	\$26.40	\$27.50	\$27.40	\$27.85	\$26.38	\$27.62	5.49	-4.07	0.80
EMT and Paramedic	\$17.30	\$17.50	\$16.80	\$15.86	\$15.01	\$16.88	-8.32	-14.23	0.48
Family and General Practitioner	\$80.00	\$73.70	\$83.10	\$96.46	\$87.30	\$89.58	20.58	18.45	7.80
Home Health Aide	\$11.80	\$11.40	\$11.60	\$10.10	\$10.29	\$10.77	-14.41	-9.74	-7.16
LPN	\$21.80	\$22.20	\$21.40	\$19.55	\$21.30	\$20.87	-10.32	-4.05	-2.48
Medical Assistant	\$15.60	\$15.50	\$15.60	\$15.48	\$14.11	\$15.01	-0.77	-8.97	-3.78
Medical and Clinical Lab Technologist	\$26.90	\$28.30	\$28.70	\$27.90	\$27.15	\$29.12	3.72	-4.06	1.46
Nursing Assistant	\$13.80	\$14.00	\$13.20	\$12.70	\$13.27	\$12.62	-7.97	-5.21	-4.39
Occupational Therapy Assistant	\$22.80	\$23.80	\$23.20	\$19.70	\$21.05	\$27.53	-13.60	-11.55	18.66
Occupational Therapist	\$30.90	\$32.00	\$34.70	\$30.74	\$34.25	\$38.46	-0.52	7.03	10.84
Optometrist	\$55.30	\$59.20	\$58.00	\$53.97	\$52.07	\$54.33	-2.41	-12.04	-6.33
Physician Assistant	\$42.90	\$45.00	\$41.30	\$54.42	\$46.01	\$46.77	26.85	2.24	13.24
Physical Therapist	\$38.80	\$39.40	\$38.40	\$37.45	\$39.93	\$40.35	-3.48	1.35	5.08
Respiratory Therapist	\$29.20	\$27.10	\$27.30	\$24.90	\$25.47	\$28.12	-14.73	-6.01	3.00
RN	\$30.60	\$33.40	\$33.50	\$28.62	\$32.30	\$33.55	-6.47	-3.29	0.15
Speech-Language Pathologist	\$40.90	\$37.20	\$34.30	\$35.33	\$36.56	\$36.01	-13.62	-1.72	4.99
Surgical Technologist	\$21.00	\$21.80	\$21.40	\$20.18	\$20.38	\$21.64	-3.90	-6.51	1.12

Medical Patents

A patent is the property right granted to an inventor or assignee for a new or improved product, process, or piece of equipment. Patents are used as indicators of economic growth because of the investment that went into creating the innovations, as well as the investment opportunities that result from the innovations.

However, drawbacks with relying on patent data to measure innovative activity are noted. Some inventors and assignees choose not to register patents for their innovations because doing so will require them to divulge details to competitors. In addition, not all patents have a substantial impact on economic progress. On the whole, though, patents are seen as reflecting significant contributions to society and the economy in general. The use of patents is particularly relevant in the medical field due to the large amount of spending for medical research and development (R&D).

Figure 1 shows the number of medical patents granted by the U.S. Patent and Trademark Office (USPTO) to inventors residing in Kent County, from the year 1990 through 2014. There is a positive trend, with the average annual number of patents increasing from 12.6 in the years 1990 to 1999, to 16.3 in the years 2000 to 2009, and a further increase to an average of 29.6 in the years 2010 to 2014. These data represent a 29.4 percent increase in the average annual number of patents from the 1990s to 2000s and an 81.6 percent increase from the 2000s to 2010s. The steady progress of these innovative activities is indicative of a high potential catalyst for entrepreneurship and emerging businesses in the area.

Figure 2 displays the number of U.S. medical patents assigned to (i.e. owned by) individuals, companies, and organizations located in Kent County from the year 1990 through 2014. Similar to the trend in **Figure 1**, there has been a growth in the average annual number of patents, increasing from 6.2 in the years 1990 to 1999, to 10.3 in the years 2000 to 2009, and to 15.2 patents in the years 2010 to 2014. These data represent a 66.1 percent increase in the average annual number of patents from the 1990s to 2000s and a 47.6 percent increase from the 2000s to 2010s. This growth in medical patents owned by entities in Kent County is an indicator of economic progress, as new discoveries and improvements can result in technological advancements. Over time, such innovations could encourage greater investment and lead to additional job opportunities in the regional economy.

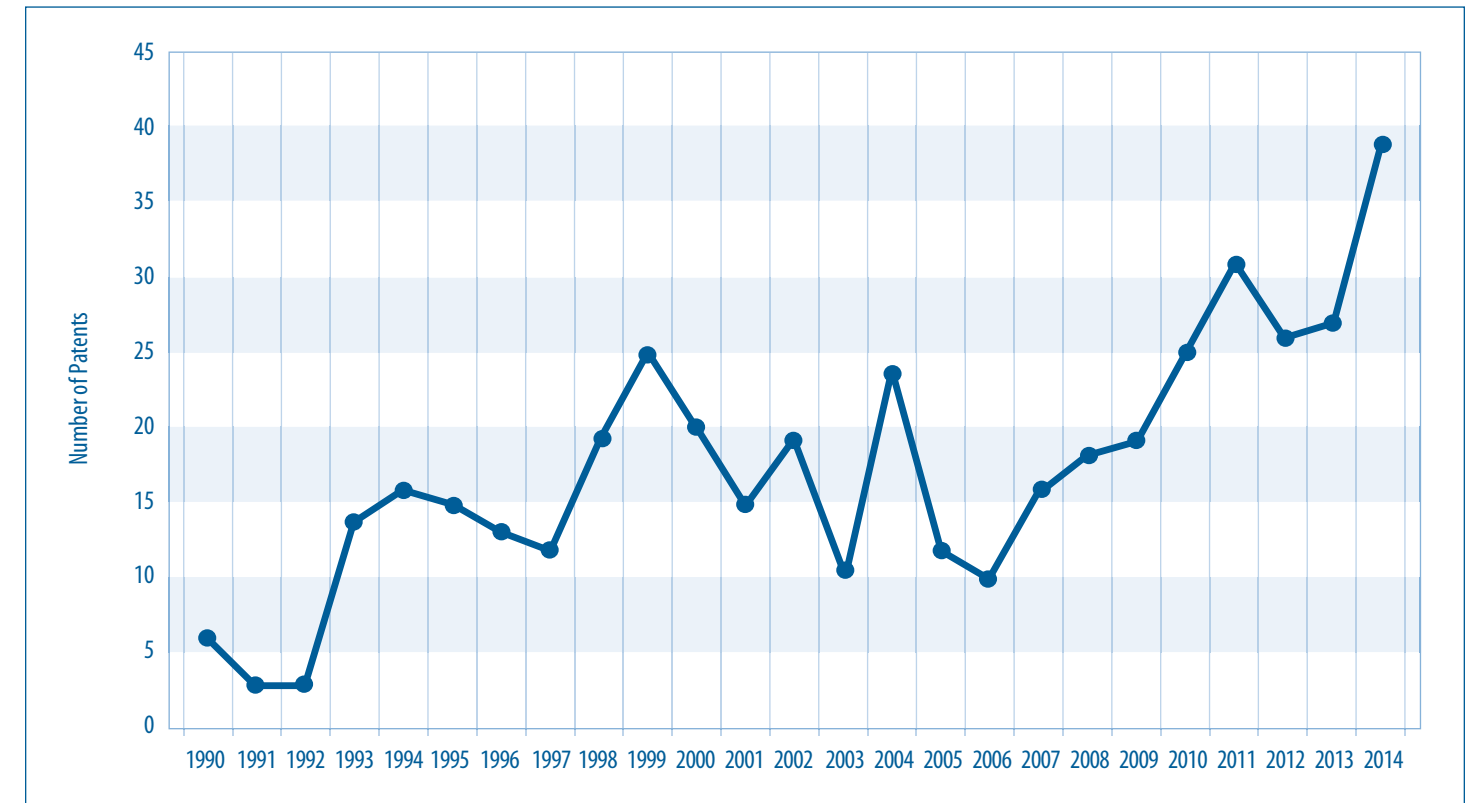
A patent obtained through the USPTO only gives property right protection in the U.S. While this protection is sufficient for some U.S. inventors, others choose to apply for patents in other countries in order to receive property rights there. One way to do this is through the World Intellectual Property Organization (WIPO). Filing an international patent application with the WIPO allows an inventor to then pursue patent rights in up to 148 countries simultaneously.

The number of nonduplicate medical patent applications filed by West Michigan companies at the WIPO and at the USPTO from 2011 through 2014 is shown in **Figure 3**. Since the year 2011, there have been 84 medical patent filings from eight West Michigan companies. However, the majority of these filings come from only three companies, which together are responsible for approximately 69 percent of the total number of filings.

Figure 3 shows that the most prolific companies consistently apply for medical patents over time, but the same is not true for some of the others.

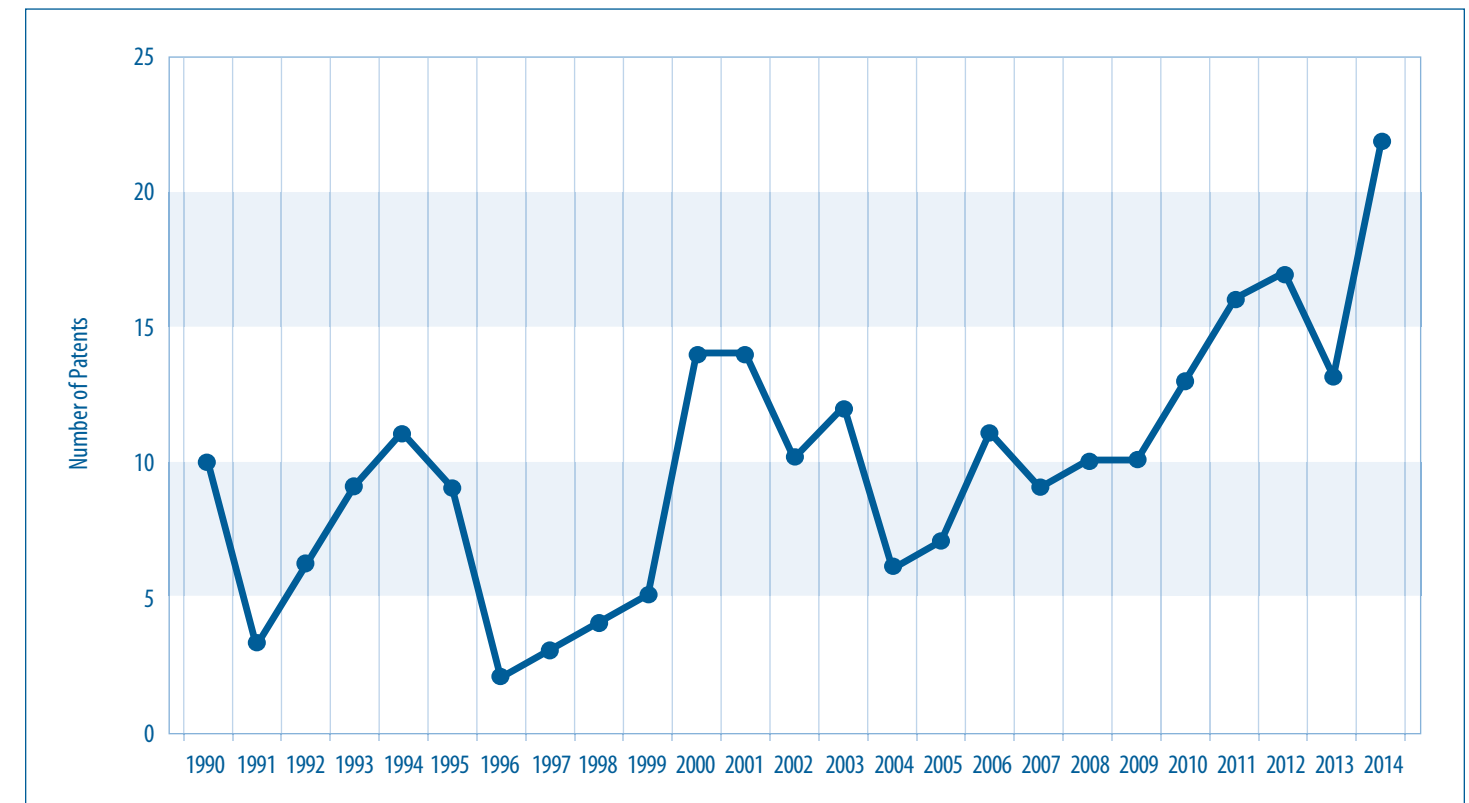
The information shown in these three figures indicates that, although there is a growing rate of overall medical patenting in West Michigan, the level of patenting is relatively modest, with the majority of it being conducted by a small number of regional companies. With increased R&D support, patented medical innovation in West Michigan could become a significant driver of regional economic growth.

Figure 1: Medical Patents by Inventors Living in Kent County



Source: United States Patent and Trademark Office
www.uspto.gov

Figure 2: Medical Patents by Assignee in Kent County



Source: United States Patent and Trademark Office
www.uspto.gov

Health Care Trends



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Demographic Changes

Long-term population and age distribution changes have significant effects on the consumption of health care services. This year, we continued to monitor two trends that have become apparent over the past several years: increased population growth on the west side of the state and a general aging of the population. Since older populations have more complex health care needs than younger populations, an aging demographic can result in increased health care utilization and expenditures. Additionally, geographic shifts in population distribution can affect demand for care and resource allocation in particular localities.

Population Growth

Figure 1 displays population growth rates for Kent, Ottawa, Muskegon, and Allegan counties (KOMA), the Detroit region (Oakland, Macomb, and Wayne counties), the entire state of Michigan, and the U.S. as a whole. Throughout the 1990s, KOMA's population growth exceeded both the growth rate for the state of Michigan and the growth rate for the U.S. However, Michigan was particularly impacted by the recession in the early 2000s and growth rates for both KOMA and the Detroit region fell precipitously. Though KOMA was able to maintain positive population growth throughout the 2000s, the Detroit region experienced a population loss beginning in the early 2000s that lasted for more than a decade. KOMA's population growth rate began escalating again in 2010 and has once again surpassed the national growth rate. Importantly, given the Detroit region's negative to near zero population growth rate over the past 15 years, these trends are indicative of a geographic shift in the population distribution in Michigan from the east side of the state to the west. In fact, from 2000 to 2010, the state center of population shifted nearly a mile to the west. If this trend continues, demand for health care resources and health care infrastructures could be affected. For example, while the share of total state Medicare expenditures fell for both KOMA and the Detroit region from 2008 to 2013, the decline was more than 10 times larger for the Detroit region (Centers for Medicare and Medicaid Services, 2015).

Age Distribution

An important development in demographic trends in the U.S. continues to be the aging of the baby boomers, those born between 1946 and 1964. **Figures 2 through 4** depict population distributions by age for KOMA, the Detroit region, and the U.S. The clear trend in all three figures is the steady aging of the population. While only the third most populous age group in 1990, now persons between the ages of 45 and 64 outnumber all other age groups. Additionally, since 2010, the percentage of the population over the age of 65 has experienced the largest growth of any of the age categories. Due to the aging of the population and the growth in the percentage of those over the age of 45, the populations between the ages of 5 and 19, 20 and 34, and 35 and 44 all account for a smaller percentage of the total population today than they did in 1990. These trends are important for several reasons.

First, health care expenditures are closely related to age. More than 50 percent of lifetime spending on medical care occurs after the age of 65 (Alemayehu & Warner, 2004). Due to the demographic shifts apparent in Figures 2 through 4, the Centers for Medicare and Medicaid Services project total Medicare spending to nearly double between 2013 and 2022. This change will be especially salient for the Detroit region, which compared to the national average has a higher proportion of its population in the 45 to 64 and 65 and over age categories. By contrast, KOMA is in a more favorable position with a population distribution that is slightly younger than the U.S. as a whole. However, increasing medical expenditures associated with an aging population are likely to prove challenging across the entire state.

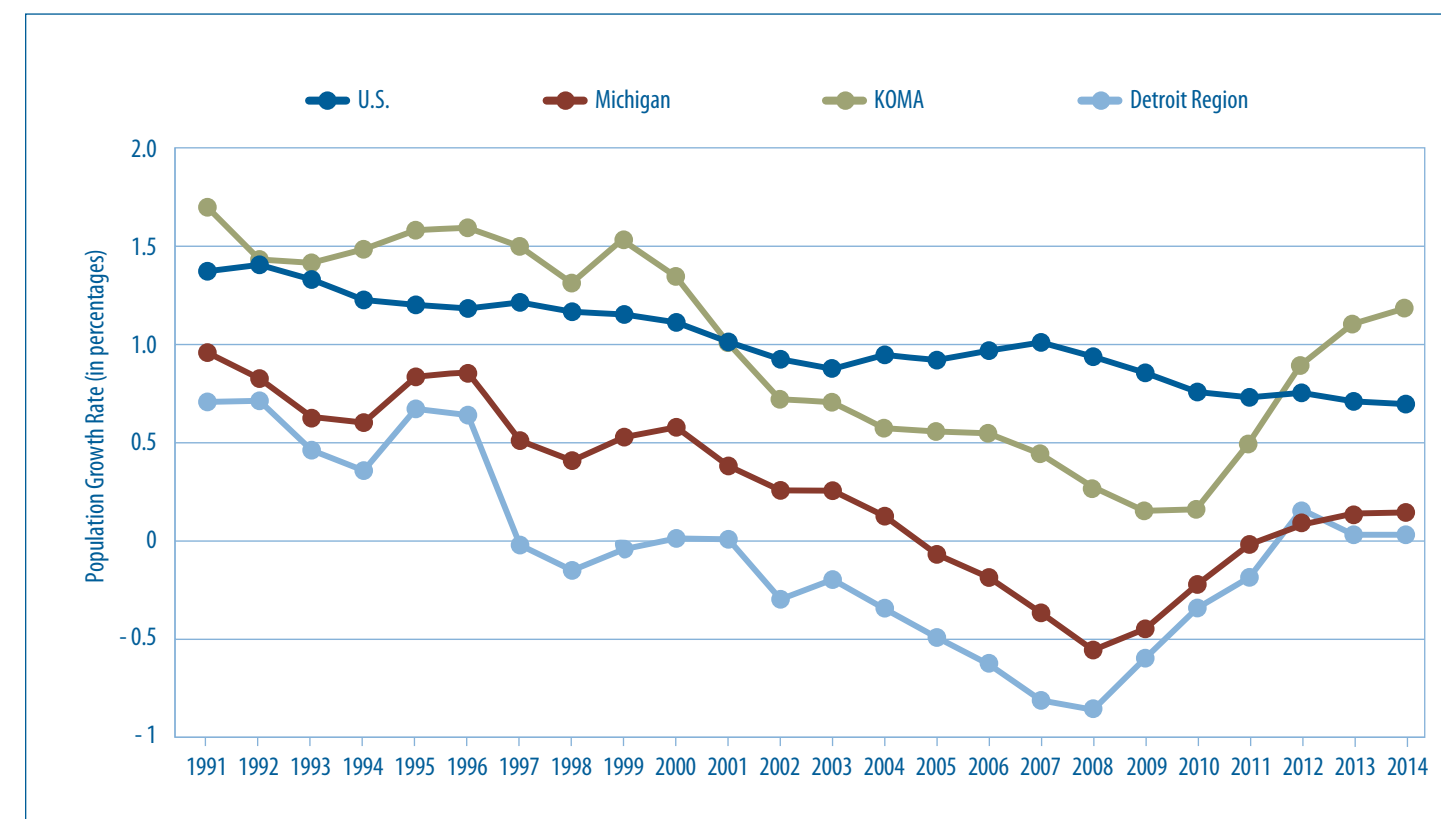
Second, **Figures 2 through 4** indicate that the proportion of those over the age of 65 has already eclipsed the proportion of the population between the prime working ages of 35 and 44. Since the Medicare program is primarily funded through taxes on employment, participants in the labor market effectively subsidize health insurance for the elderly. The number of workers per Medicare beneficiary has fallen steadily since 1995. Whereas in 2000, four workers supported each Medicare enrollee, the number of workers per beneficiary is projected to fall to 2.8 by 2020 (Board of Trustees of the Federal Hospital Insurance and Federal Supplementary Medical Insurance Trust Funds, 2012). The implications for the long-term sustainability of the Medicare Part A trust fund are grim, despite recent declines in Medicare expenditure growth rate projections. The most recent Congressional Budget Office projections of Medicare solvency suggest that the Part A trust fund will be exhausted by 2030 (Congressional Budget Office, 2015).

Finally, the aging of the population has important implications for employer-sponsored health insurance. As the share of the workforce over the age of 45 grows, the cost of private health insurance obtained through employment will likely continue to increase. From 2004 to 2014, average annual employer-sponsored health insurance premiums for family coverage increased 69 percent, from \$9,950 to \$16,834, while real annual wages increased by only 1.8 percent over the same period (Kaiser Family Foundation, 2014). Gains from a steady reduction in the growth rate of health care expenditures since the early 2000s, due in part to reduced income growth and a shift toward high deductible health insurance plans, are likely to be at least partially offset by this shift in the age distribution of workers. (Sisko et al. 2014; Brot-Goldberg et al. 2015).

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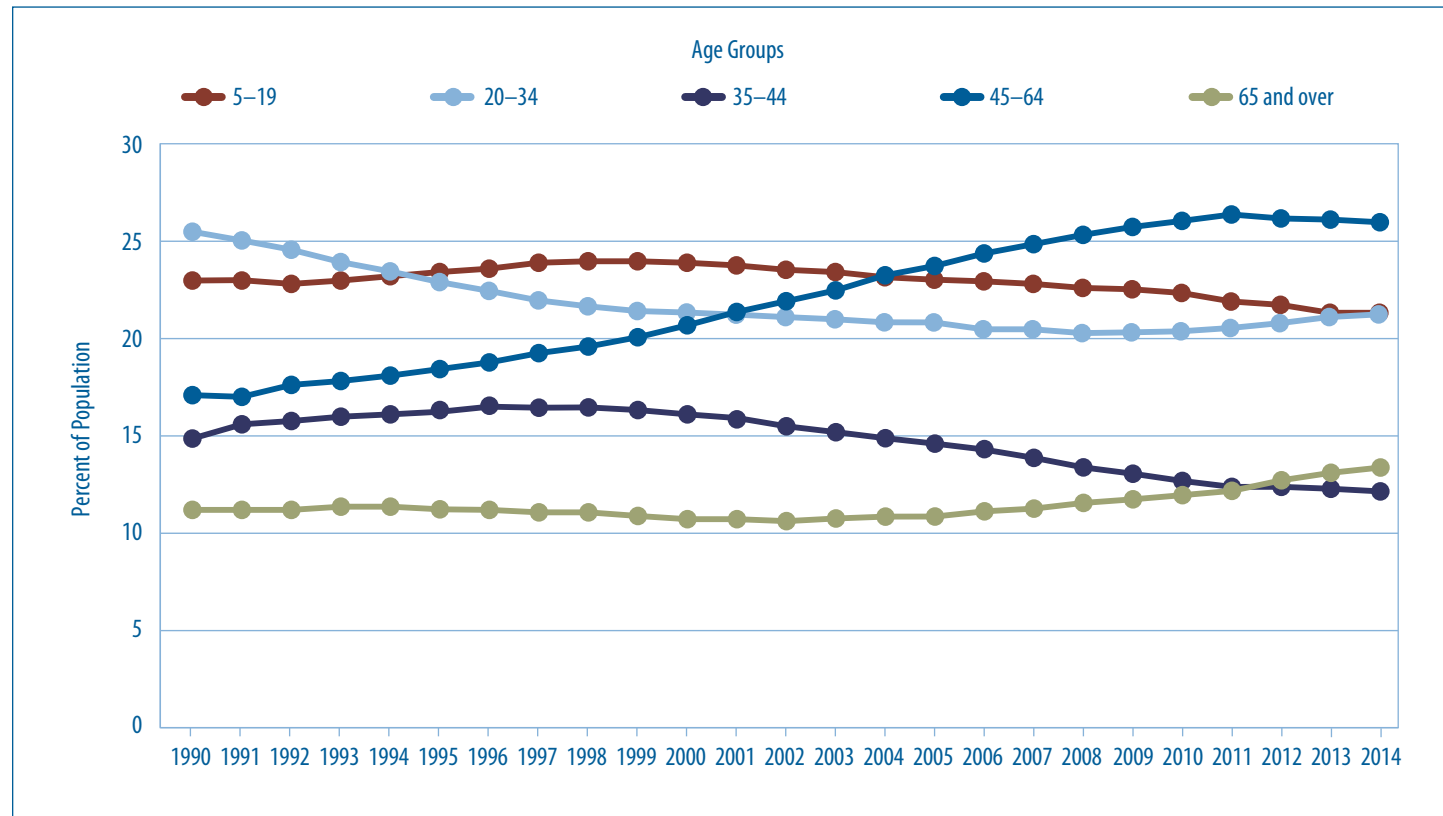
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Figure 1: Annual Population Growth Rate 1991–2014



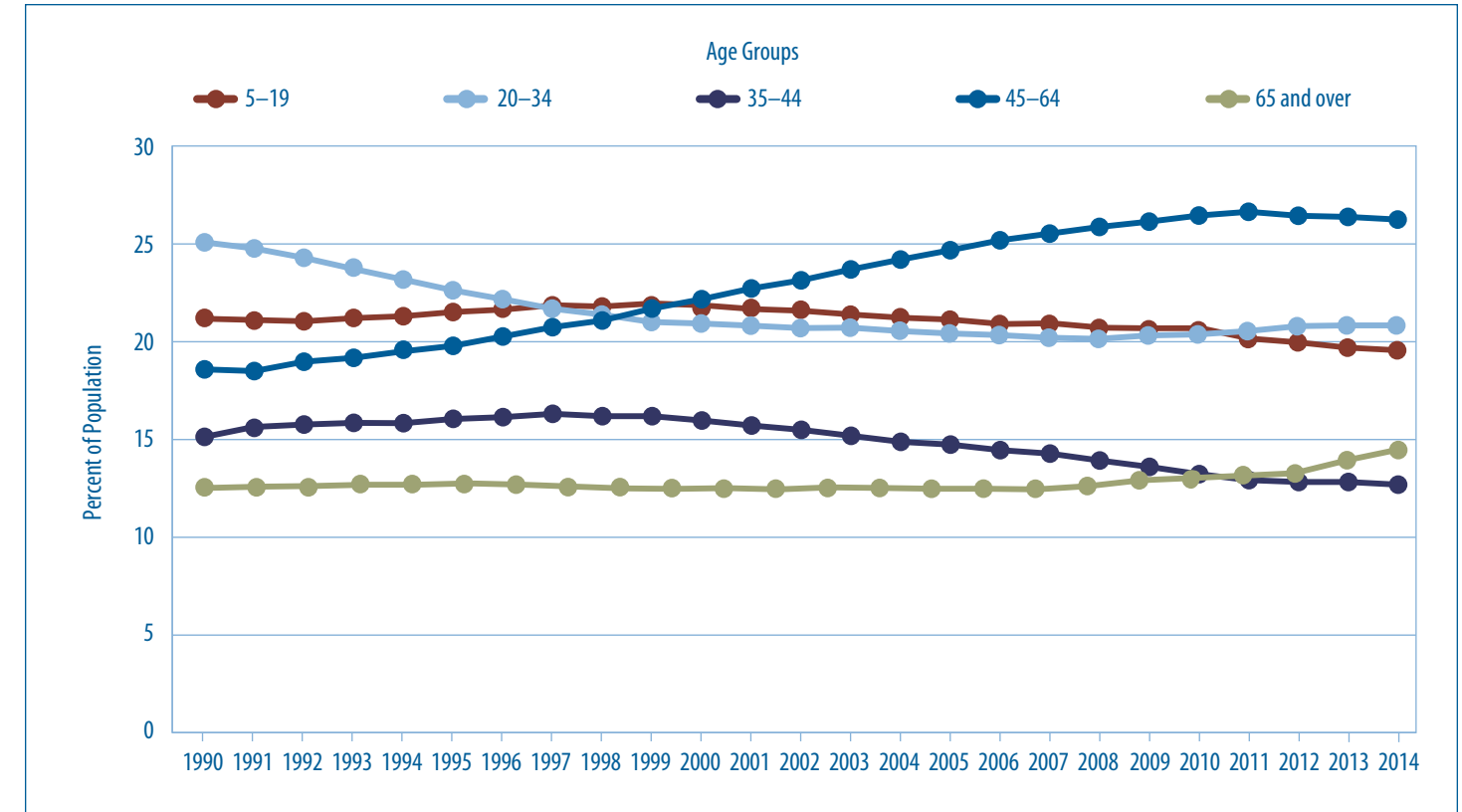
Source: U.S. Census. *Population and housing unit estimates*

Figure 2: Population Distribution as a Percent of KOMA



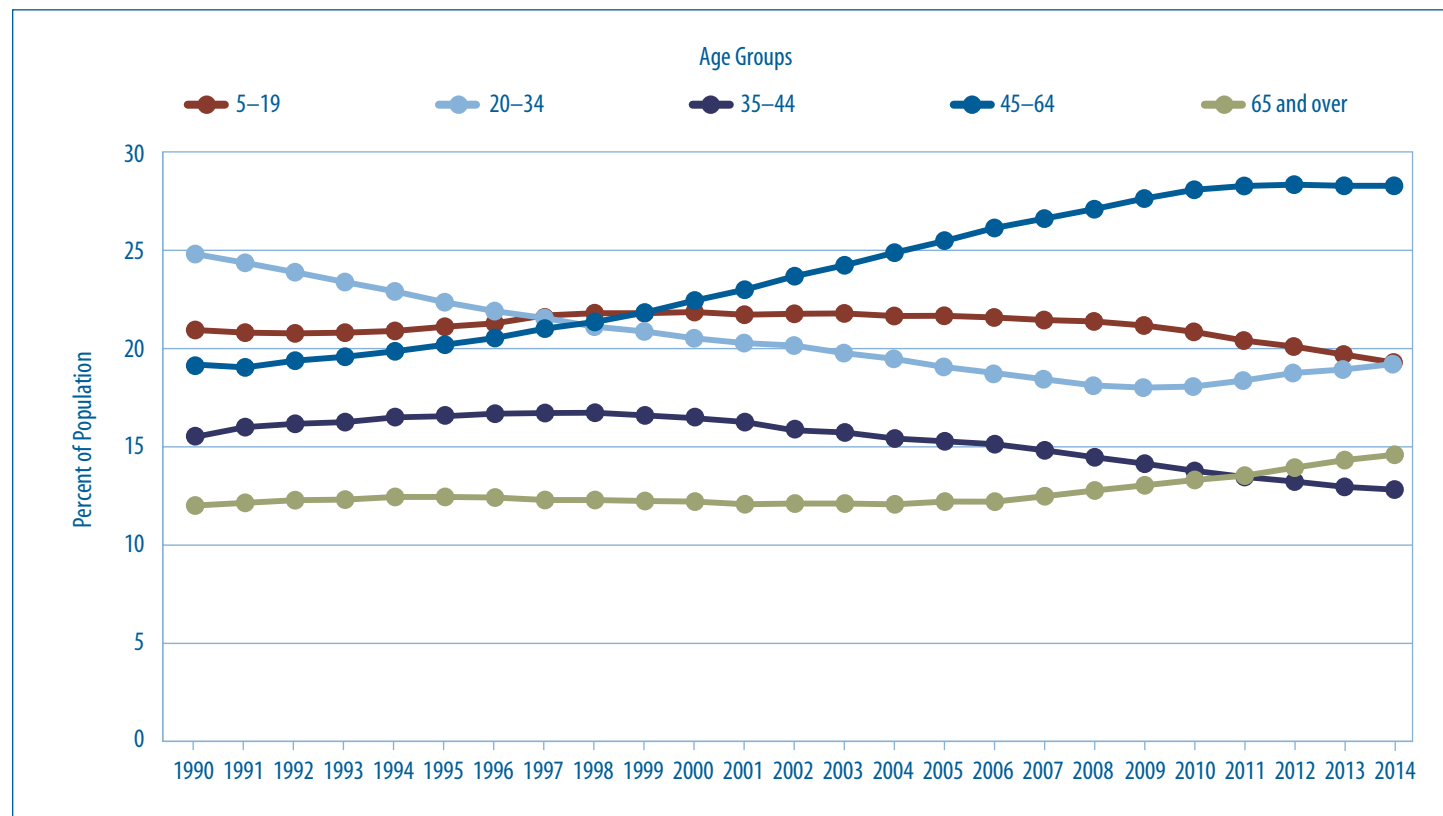
Source: U.S. Census. Population and housing unit estimates

Figure 4: Population Distribution as a Percent of Total United States



Source: U.S. Census. Population and housing unit estimates

Figure 3: Population Distribution as a Percent of the Detroit Region



Source: U.S. Census. Population and housing unit estimates

Health Care Overview

In this section, we consider the impact of risk factors and access to care on several general health outcomes. For each factor, we compare West Michigan (Allegan, Barry, Ionia, Kent, Lake, Mason, Mecosta, Montcalm, Muskegon, Newaygo, Oceana, Osceola, and Ottawa counties) with the Detroit region (Macomb, Oakland, and Wayne counties) and examine changes in trends over time. A caveat about this data: with the exception of low birth weight estimates, all data are based on self-reported surveys. Consequently, the actual incidence and prevalence rates for the factors examined may differ from those reported by respondents. We include confidence intervals in our figures, but our discussion focuses on prevalence estimates and not statistical significance.

Risk Factors

The following risk factors have been shown to contribute to unhealthy outcomes: heavy drinking, binge drinking, smoking, inadequate physical activity, and obesity. **Figures 1 and 2** display results for heavy drinking and binge drinking, respectively. While 2014 data for heavy drinking in the Detroit Region are unavailable, estimates indicate that the proportion of the population in West Michigan engaging in heavy drinking may have declined from 2013 to 2014. Binge drinking rates were comparable between the east and west sides of the state in 2014 and have shown only small changes over the past three years.

Figure 3 provides estimates of the proportion of the population who currently smoke. In 2014, approximately 19 percent of adults in West Michigan and 22.5 percent of adults in the Detroit region were current smokers. Treatment for illness related to smoking and tobacco use can be costly and resource intensive. Therefore, the declining smoking rate over the past three years in West Michigan is a positive sign. Additional reductions in the prevalence of smoking and tobacco use could lead to increases in worker productivity and provide relief for rising health care expenditures (Berman et al., 2014).

Despite potential gains in smoking reductions in West Michigan, **Figure 4** indicates a troubling trend in the proportion of the population that reports no leisure time physical activity. Since 2012, estimates for West Michigan have increased from 20.6% of the population with no leisure time physical activity to 24.3 percent of the population.

In the long run, this trend in reduced physical activity could have implications for outcomes presented in **Figures 5 and 6**, which track the proportion of the population that is overweight or obese. Starting with **Figure 6**, we see that the obesity rate for West Michigan is lower in 2014 at 29.8 percent than in 2013 at 32.8 percent. Partly as a result of this decline in the obese population, the proportion of the population who is overweight in West Michigan, **Figure 5**, has increased by 1.3 percentage points over the past year. Taken together, these figures indicate that approximately two-thirds of the West Michigan population is overweight or obese. This rate is slightly higher than the comparable measurement on the east side of the state, but is in line with national averages (Ogden et al., 2014).

Access to Care

In addition to an examination of the risk factors associated with poor health outcomes, we are also interested in measures involving access to health care services. **Figure 7** plots the percentage of the population in West Michigan and the Detroit region that reports having no health insurance. Over the past year, rates of uninsured persons on both the west and east sides of the state have decreased. In 2013, nearly 1 out of every 5 adults under the age of 64 in the Detroit region was uninsured. That number has fallen to just over 13 percent in 2014. In fact, for the first time, we now see a lower rate of uninsured persons in the Detroit region than in West Michigan despite estimates of the uninsured rate falling by 2.5 percentage points in West Michigan from 2013 to 2014. The obvious explanation for the declining rates of uninsured and the relative difference between the east and west sides of the state is that the Affordable Care Act's (ACA) insurance exchanges and Michigan's Medicaid expansion both took effect in 2014. As of September 2015, nearly 600,000 Michigan residents had enrolled in the Healthy Michigan expansion of the state's Medicaid program (MDHHS, 2015b).

Figure 8 displays the proportion of respondents who do not have anyone they consider to be their personal doctor or health care provider. A primary concern with the ACA's expansion of insurance coverage was that the newly insured would struggle to find providers with available capacity in order to obtain care (Joynt et al., 2015). However, **Figure 8** suggests that this concern may not have come to fruition in Michigan as the proportion of respondents with no health care provider fell in both the West Michigan and Detroit regions.

Figure 9 plots the proportion of respondents who report being unable to see a doctor when they needed care due to the cost. Historically, West Michigan had compared favorably to the Detroit region in this category, but for the first time in 2014, the proportion of those reporting cost as a barrier to care was higher in West Michigan.

Finally, **Figure 10** indicates the share of the population in each region that reports no routine checkup in the past year. Over the past two years, the rate of those with no annual routine checkup has fallen in both the Detroit region and in West Michigan.

Health Outcomes

The remaining figures in this section focus on the incidence of several common diseases and summary measures for population health. It is important to note that a change in the prevalence rate for these ailments could be due to changes in the illness burden among the population, but could also be due to changes in diagnosis rates. For example, if the reduction in the rate of uninsurance observed in **Figure 7** leads to more physician visits, then diagnosis rates could rise even though the actual disease burden is unchanged. **Figure 11** displays the rate of cardiovascular disease for both the Detroit region and West Michigan. While there has been relatively little change in cardiovascular disease rates over time, rates tend to be higher in the Detroit region than in West Michigan.

Figures 12 and 13 focus on diabetes and kidney disease, both of which could be influenced by high rates of overweight and obesity reported earlier. Both regions have experienced minimal changes in diabetes rates or the prevalence of kidney disease since 2012. Estimates suggest that diabetes is slightly more common in the Detroit region while kidney disease rates are higher in West Michigan. Kidney disease is expensive to treat, and, in many cases, can be prevented through improved diet, weight loss, and exercise (NKF, 2015).

Finally, we conclude by examining two summary measures of population health including self-reported health status and the proportion of low weight births. **Figure 14** indicates the proportion of respondents who report their health status as either "fair" or "poor". Compared to 2013, the share of those in fair or poor health in West Michigan in 2014 declined by more than 3 percentage points, while a slightly smaller decline was observed for those in the Detroit region. Comparing health status between the two regions we once again see that those in West Michigan are less likely to report being in fair or poor health than those in the Detroit region.

Figure 15 plots the proportion of births below 2,500 grams in each region. While the Detroit region has held steady for the past few years with approximately 9 percent of all births less than 2,500 grams, we see a small increase in the proportion of low weight births in West Michigan since 2011. Low birth weights are associated with added health care expenditures that have been estimated at more than \$675,000 over an entire lifetime (Almond et al., 2005). Addressing the causes of the rise in the proportion of low weight births in West Michigan should be a priority for policymakers looking to reduce health expenditure growth rates in the region.

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Health Care Overview Process Model

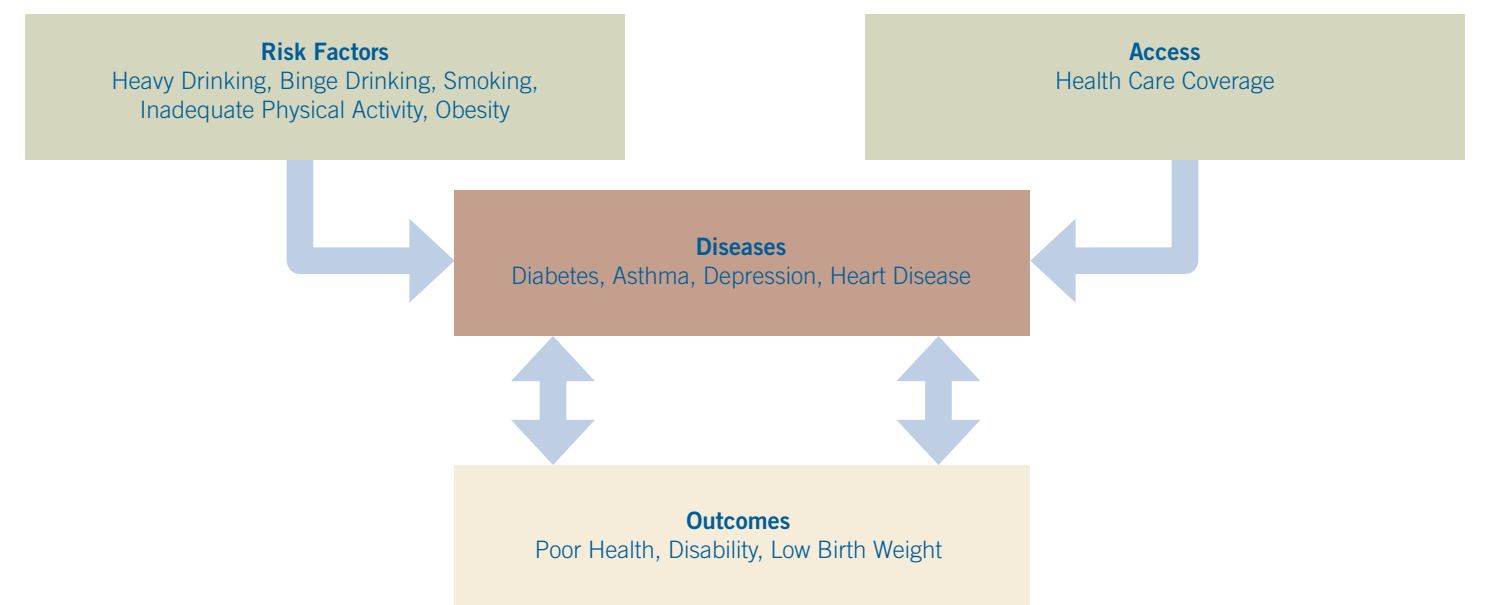
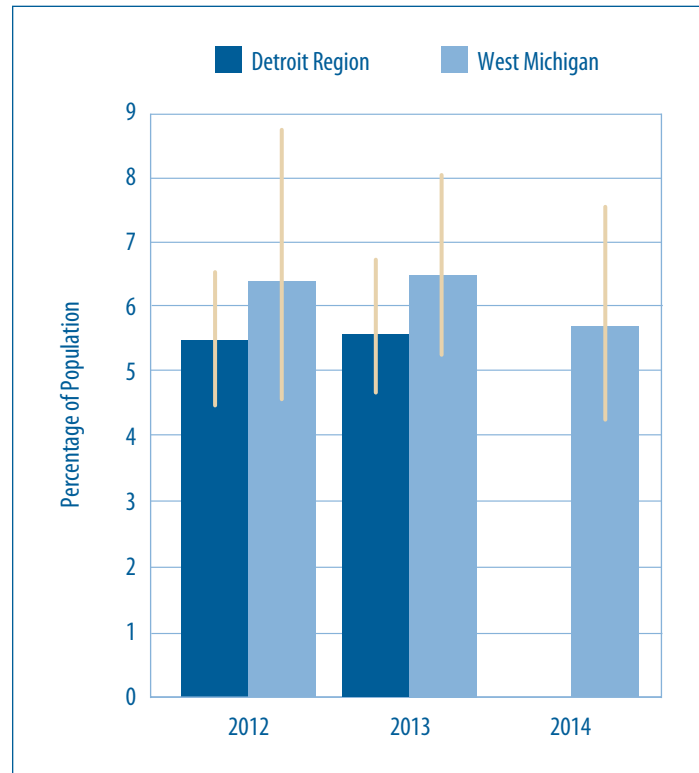
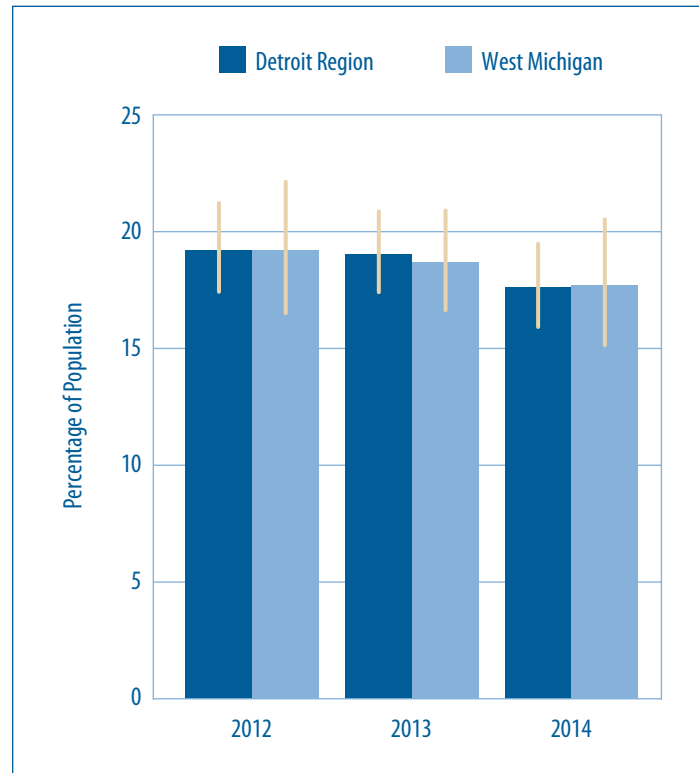


Figure 1: Heavy Drinking



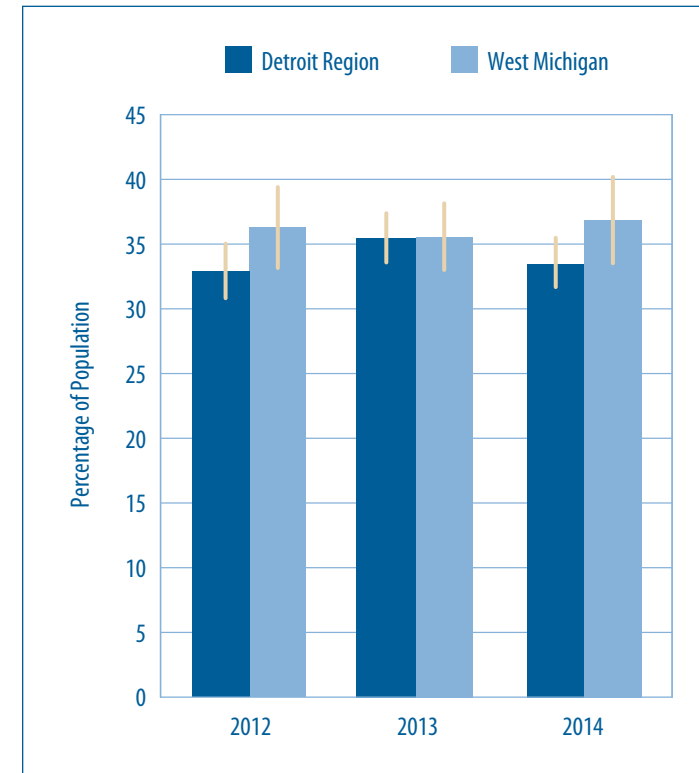
Source: MDHHS, 2015a
 Definition: Among all adults, the proportion who reported consuming an average of more than two alcoholic drinks per day for men or more than one per day for women
 Note: 2014 data for the Detroit Region are unavailable.

Figure 2: Binge Drinking



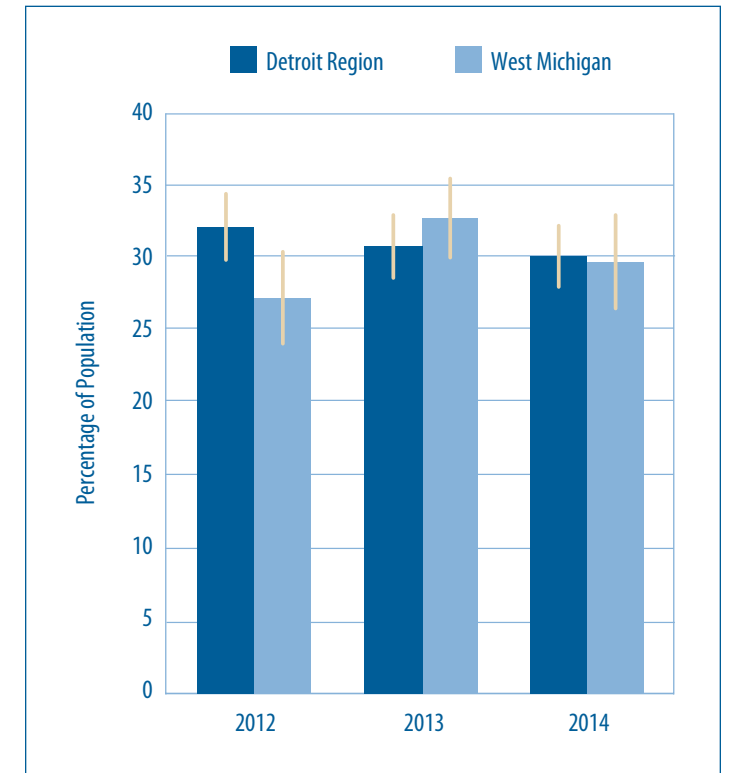
Source: MDHHS, 2015a
 Definition: Among all adults, the proportion who reported consuming five or more drinks per occasion for men or four or more drinks per occasion for women at least once in the previous month

Figure 5: Overweight



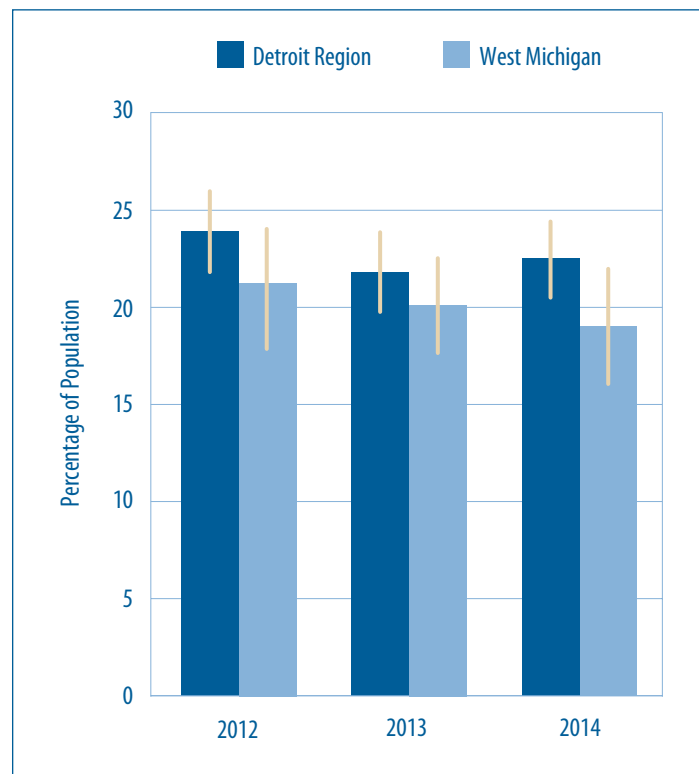
Source: MDHHS, 2015a
 Definition: Among all adults, the proportion of respondents whose Body Mass Index (BMI) was greater than or equal to 25 but less than 30

Figure 6: Obesity



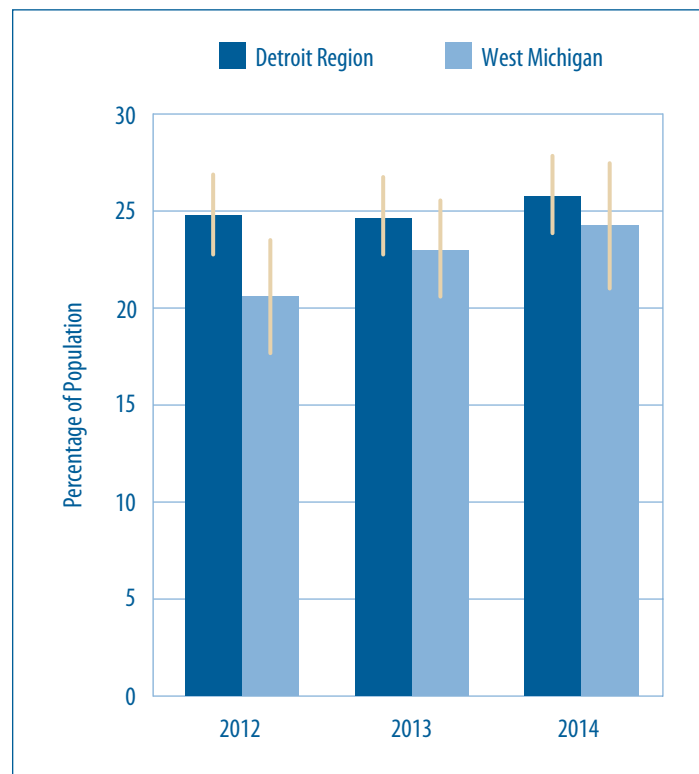
Source: MDHHS, 2015a
 Definition: Among all adults, the proportion of respondents whose Body Mass Index (BMI) was greater than or equal to 30

Figure 3: Current Smokers



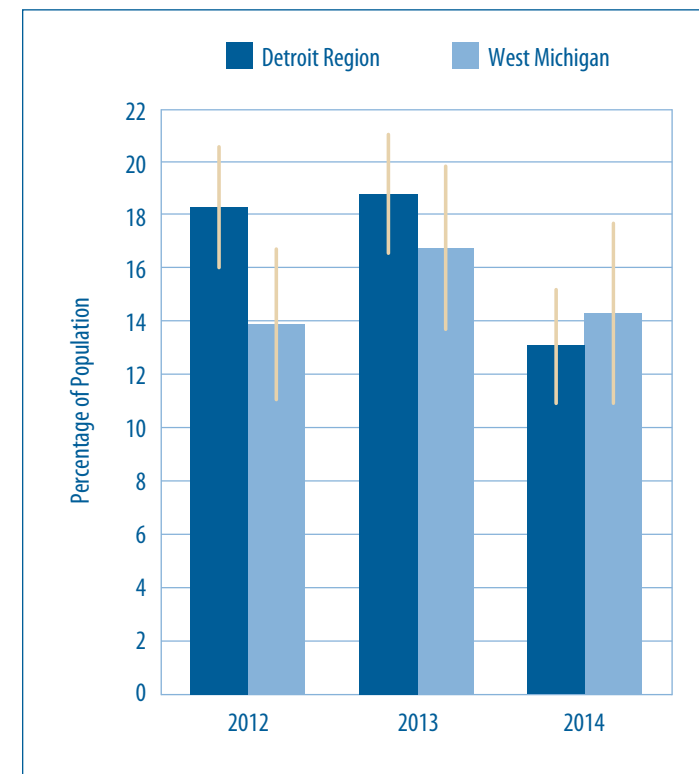
Source: MDHHS, 2015a
 Definition: Among all adults, the proportion who reported that they had ever smoked at least 100 cigarettes in their life and that they smoke cigarettes now, either every day or some days

Figure 4: No Leisure-Time Physical Activity



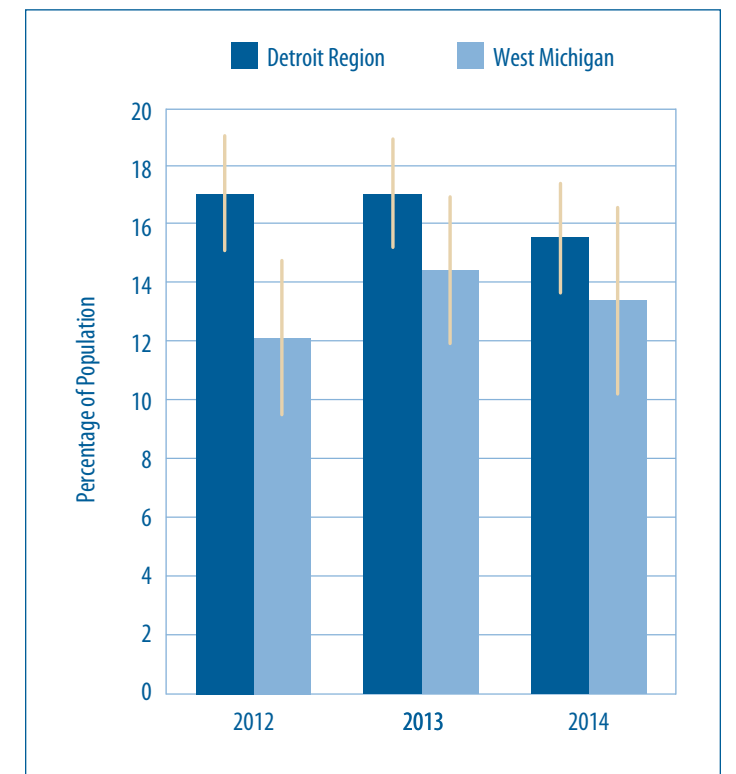
Source: MDHHS, 2015a
 Definition: Among all adults, the proportion who reported not participating in any leisure-time physical activities or exercise such as running, calisthenics, golf, gardening, or walking during the past month

Figure 7: No Health Insurance



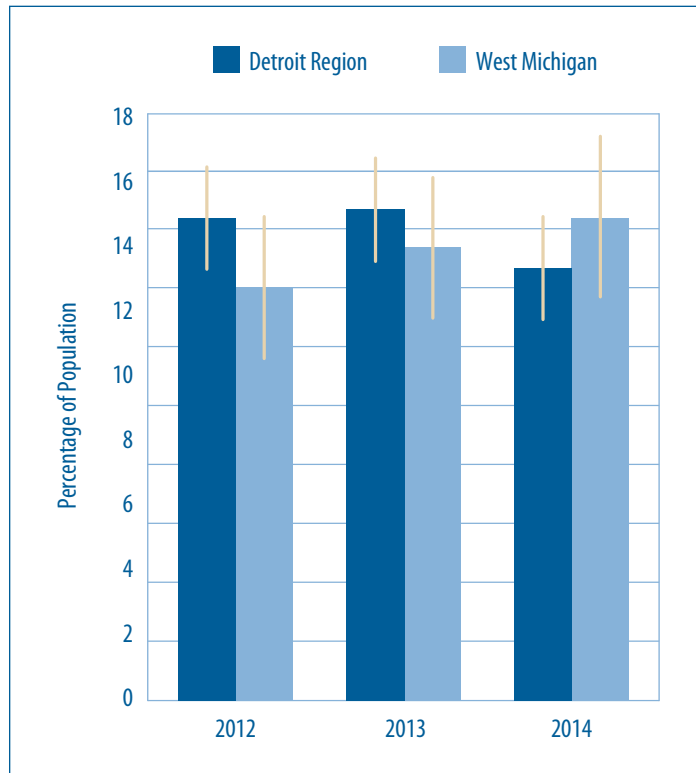
Source: MDHHS, 2015a
 Definition: Among adults aged 18-64 years, the proportion who reported having no health care coverage, including health insurance, prepaid plans such as HMOs, or government plans, such as Medicare or Medicaid

Figure 8: No Personal Health Care Provider



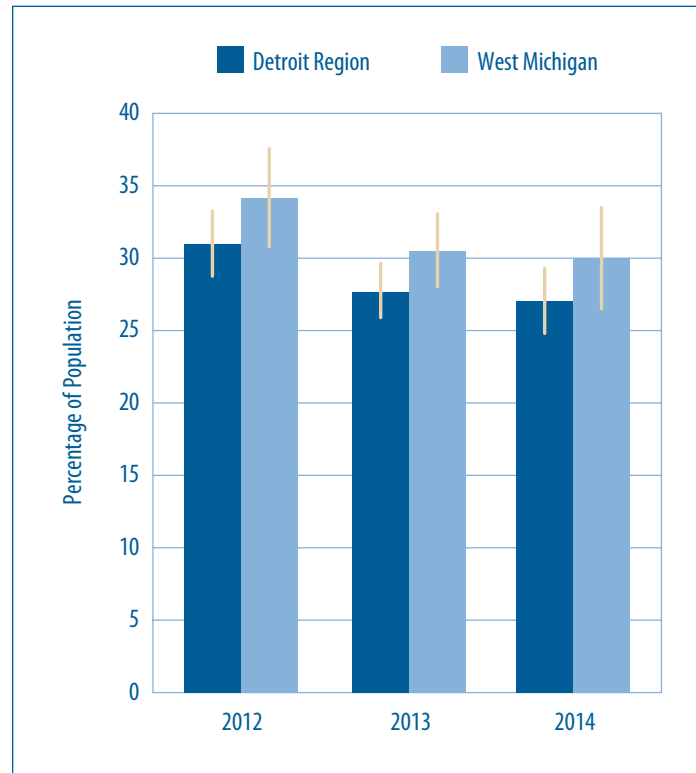
Source: MDHHS, 2015a
 Definition: Among all adults, the proportion who reported that they did not have anyone that they thought of as their personal doctor or health care provider

Figure 9: No Health Care Access Due to Cost



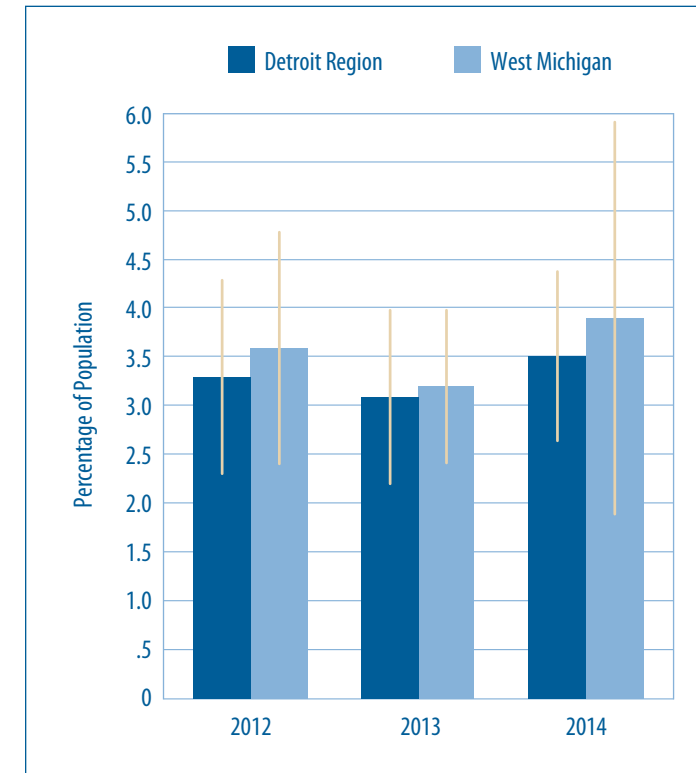
Source: MDHHS, 2015a
 Definition: Among all adults, the proportion who reported that in the past 12 months, they could not see a doctor when they needed to due to the cost

Figure 10: No Routine Checkup in Past Year



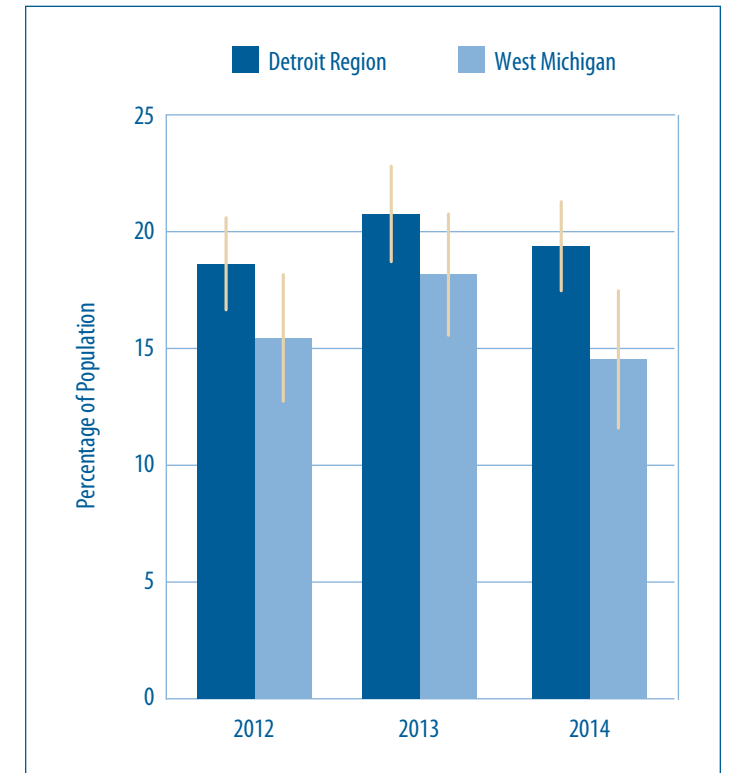
Source: MDHHS, 2015a
 Definition: Among all adults, the proportion who reported that they did not have a routine checkup in the past year

Figure 13: Kidney Disease



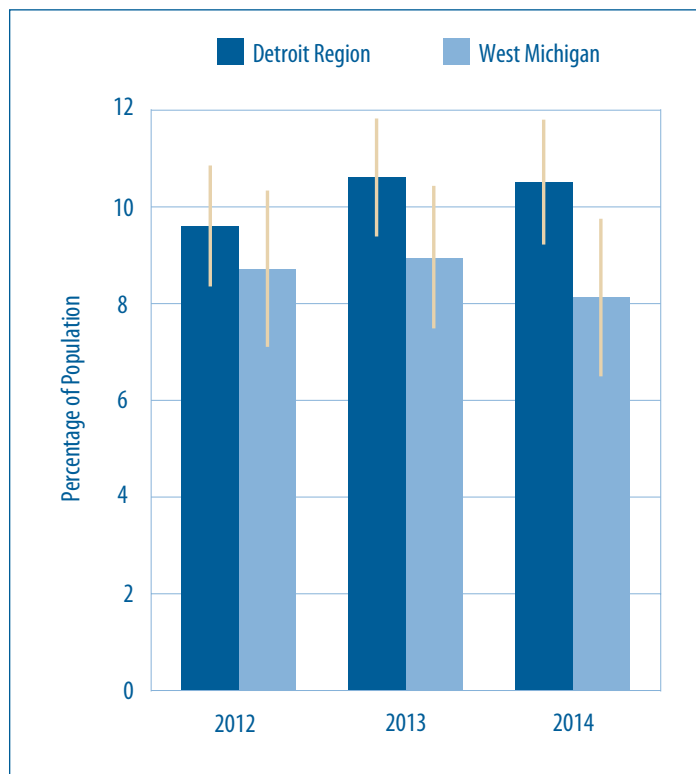
Source: MDHHS, 2015a
 Definition: Among all adults, the proportion who reported ever being told by a doctor that they had kidney disease

Figure 14: Health Status — Fair or Poor Health



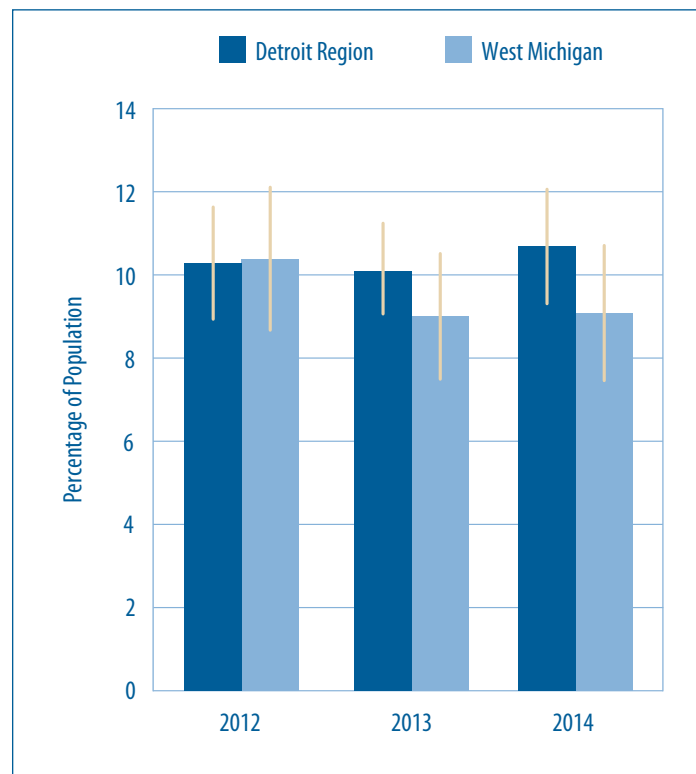
Source: MDHHS, 2015a
 Definition: Among all adults, the proportion who reported that their health, in general, was either fair or poor

Figure 11: Cardiovascular Disease



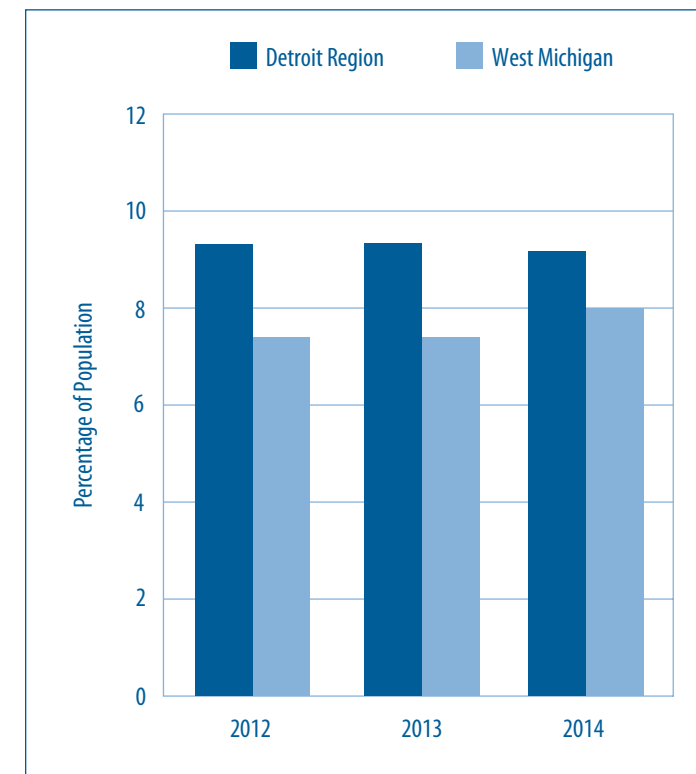
Source: MDHHS, 2015a
 Definition: Among all adults, the proportion who had ever been told by a doctor that they had a heart attack, coronary heart disease, or a stroke

Figure 12: Diabetes



Source: MDHHS, 2015a
 Definition: Among all adults, the proportion who reported that they were ever told by a doctor that they had diabetes

Figure 15: Low Birth Weight



Source: MDHHS, 2015a
 Definition: Babies born weighing less than 2,500 grams, represented as a percentage of total births
 The data is not self-reported and represents actual incidences of low birth weight.
 Note: Error bars are unavailable for birth weight data.

Economic Analysis



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Benchmarking Communities

In this section, we compare the Grand Rapids combined statistical area to several metropolitan areas to examine differences in the supply of hospital services, hospital expenses, and Medicare expenditures.¹ Once again this year, we use the peer communities of Rochester, NY; Louisville, KY; and Buffalo, NY, as comparison regions for the Grand Rapids area. These regions were selected based on a variety of regional metrics including population density, earnings estimates, unemployment rates, and population age and race distributions. In addition, we retain the metro areas of Cleveland, OH; Milwaukee, WI; Portland, OR; and Akron, OH, which have been used as comparisons for Grand Rapids in earlier versions of this publication.

Figures 2–10 use data from the American Hospital Association's *Hospital Annual Statistics* publication. These data include all payers and are based on the location in which treatment was received and consequently include any non-residents of the Grand Rapids combined statistical area who come to Grand Rapids to seek care. Alternatively, for those seeking care outside of their region of residence, data in **Figures 11–19** are based on patients' region of residence and not where care was sought. In addition, **Figures 11–19** represent the Fee-for-Service (FFS) Medicare population only and do not include data on those enrolled in Medicare Advantage plans.

Figure 1 displays the population of each metropolitan statistical area (MSA) in 2003 and 2013. While Grand Rapids is smaller than Cleveland, Milwaukee, and Portland, the population growth rate in Grand Rapids exceeded nearly every other comparison community over the past decade.

The Supply and Utilization of Hospital Services

Figures 2–8 provide a detailed examination of both hospital capacity and utilization across Grand Rapids and the seven comparison communities. Beginning with **Figure 2**, we examine the number of hospital beds per 1,000 residents in each community. Only Cleveland increased capacity for inpatient care over the period, likely stemming from the area's population decline. Of the comparison communities, only the Grand Rapids and Portland regions have fewer hospital beds per person than the national average.

Per capita hospital admissions are highlighted in **Figure 3**. Other than Portland, Grand Rapids residents experience the fewest hospital admissions per capita, and its admission rate is

significantly less than the national average. However, as **Figure 4** indicates, despite relatively few per capita inpatient admissions in Grand Rapids, we see a high volume of outpatient visits to hospitals.²

Only Rochester and Cleveland have higher rates of outpatient hospital visits than Grand Rapids, and the growth in outpatient visits in Grand Rapids has eclipsed all other comparison communities. There are several potential explanations for the increase in hospital-based outpatient visits in Grand Rapids over the past ten years. For example, evidence indicates that there has been a recent increase in the number of patients from outside the region seeking care in Grand Rapids. Since values in **Figure 4** are calculated as the ratio of outpatient visits to the number of area residents, those coming from outside the Grand Rapids combined statistical area are included in the numerator, but not in the denominator. Therefore, large changes from 2003 to 2010 could be driven, in part, by changes in the inflow of patients to the area. Another potential explanation for the rise in outpatient visits to hospitals is greater use of provider-based billing practices. Under a provider-based billing model, visits to certain non-hospital outpatient settings include a facility fee that traditionally had been reserved for hospital care. For this reason, as physicians have increasingly aligned themselves with hospital systems, the prevalence of provider-based billing has increased (Neprash et al. 2015). Consequently, what looks to be an increase in outpatient visits to hospitals could be explained by a rise in provider-based billing. Finally, as fewer services are performed in an inpatient setting and hospitals increase their utilization of observation status we are likely to see a substitution between inpatient and outpatient hospital visits (Feng et al. 2012).

In **Figure 5**, we examine an additional component of hospital utilization by plotting per capita emergency department (ED) visits for Grand Rapids and each of the comparison communities. Reflecting the trend seen in **Figure 4**, Grand Rapids has experienced large growth in ED utilization over the past 10 years. In fact, other than Louisville, Cleveland, and Akron, Grand Rapids has a higher rate of ED visits per capita than any other comparison region. Additionally, Grand Rapids is slightly above the national average in this category. This is a clear area for improvement as ED utilization is generally more costly than care provided in alternative settings and many visits to the ED are for nonemergent conditions (Baker & Baker, 1994; Weinick et al., 2010).

Figure 6 suggests that not only are Grand Rapids residents relatively less likely to be admitted to the hospital than residents in most of the comparison communities, but stays in the hospital tend to be shorter as well. Only Portland and Milwaukee residents experience a shorter average length of stay than those in Grand Rapids with all three communities falling below the national average. Given the expense that accompanies a day in the hospital, minimizing the average length of stay can have a substantial impact on overall costs.

Figure 7 displays the total number of surgeries performed per capita in each region. Here, Grand Rapids is in line with the national average with only hospitals in Portland and Akron performing fewer per capita surgeries.

Finally, **Figure 8** highlights the supply of hospital-based personnel per 1,000 residents in each region. These personnel counts represent the total number of full-time equivalent hospital employees, excluding medical and dental residents, interns, and other trainees. Only Portland reports fewer per capita hospital-based health care personnel than Grand Rapids, and while the rate of employment growth in the hospital industry has generally been positive, Portland, Milwaukee, and Louisville all have fewer per capita hospital personnel in 2013 than in 2003.

Hospital Expenses and Medicare Expenditures

Figure 9 examines payroll and benefits expenses per hospital employee, which is inflation-adjusted to 2013 dollars using the consumer price index. Compensation for hospital workers in Grand Rapids appears comparable to that in Rochester, Louisville, and Akron, while Buffalo and the larger metro areas of Cleveland, Milwaukee, and Portland all have higher per-employee expenses.

Figure 10 indicates that only Cleveland and Portland have higher expenses per hospital admission than Grand Rapids. This is a slight change from last year, as Grand Rapids has now surpassed Milwaukee in this category. It is important to recognize that **Figure 10** is measuring the expenses incurred by the hospital to provide treatment for the average admission. This does not represent patient or insurer expenditures on hospital care. Even after adjusting for inflation, the growth in hospital expenses per admission for a number of the comparison communities over the past 10 years has been substantial. In fact, only Louisville among the comparison communities now exhibits per-admission expenses below the national average. Growth in per-admission hospital expenses could be explained by at least two factors: 1. increasing reliance on advanced technology; and 2. a change in the overall illness level of hospitalized patients. Newer and more advanced health care technology often tends to be cost-increasing rather than cost-reducing (Kumar, 2011). If this technological advancement generates improved outcomes, then the additional expenses may be worthwhile. However, even worthwhile spending raises overall costs. Due to changes in the payment incentives for inpatient care, an existing trend is to provide care for patients outside of the hospital setting (Berenson et al., 2011). As a result, the health of the average patient admitted to the hospital today is likely to be worse than the

health of the average patient admitted 10 years ago. Ultimately, the effect of this change in payment incentives has been to reduce the hospital share of total health expenditures, but increase per admission expenses (Moses et al., 2013). Finally, changes in the inflow of patients to the Grand Rapids area could lead to increased per-capita hospital expenses if the region is attracting patients with serious and costly health conditions.

Figure 11 plots per capita Medicare expenditures for both Fee-for-Service (FFS) and Medicare Advantage (MA) enrollees from 2007 through 2013. These figures represent the average, annual per capita government expenditure for a Medicare beneficiary in each of the comparison communities. Data on FFS Medicare enrollment and expenditures were obtained through the Centers for Medicare and Medicaid Services' (CMS) Geographic Variation Public Use File. Measures of MA plan enrollment were created by using the CMS Monthly Enrollment by Contract/Plan/State/County Files and averaging monthly plan enrollment for each year, while data on plan reimbursements were gathered from the annual CMS Plan Payment Data Files. It is important to note that these data do not include expenditures on prescription medication. Due to the methodology employed by these groups, geographic regions for **Figure 11** are defined as the primary county in the MSA (e.g. estimates for Grand Rapids are specific to Kent County). Expenditures in **Figure 11** are adjusted for regional differences in prices, population age, gender, and race. Additionally, in cases where treatment was received in a county outside of where the patient resides, CMS assigns expenditures to the county in which the patient lived and not the county where the treatment was performed.

A clear pattern for all comparison counties and the U.S. as a whole is one of rising Medicare expenditures through 2009 and then a steady decline from 2010 through 2013. While the cause of this unprecedented reduction in annual per capita Medicare expenditures has been the subject of debate, more recent data suggests that expenditures may once again be on the rise (CBO, 2015). Examining the communities individually, we see that Grand Rapids is near the middle of the group. Per capita Medicare expenditures in Grand Rapids are higher than Rochester, Buffalo, and Portland and lower than expenditures in Louisville, Cleveland, and Akron. Per capita expenditures in Grand Rapids were higher than those in Milwaukee from 2008 through 2012, but fell below Milwaukee's expenditures in 2013. Expenditures in Grand Rapids have been consistently below the national average and have fallen faster than the national average since 2012.

Treatment Intensity

To further understand differences between regions in terms of health care service use and treatment intensity, **Figures 12–16** display rates of surgical procedures that are subject to high levels of patient and physician discretion and variation in their utilization (Birkmeyer et al., 1998). Data for **Figures 12–16** were collected from the Dartmouth Atlas of Health Care, which defines geographic regions as the hospital referral region (HRR) and not the MSA.

¹ Because the Grand Rapids metropolitan statistical area (MSA) definition has recently changed, we use the more consistent definition of the core-based statistical area. All other regions are defined using the MSA.

² The American Hospital Association database defines an outpatient visit as follows: A visit by a patient who is not lodged in the hospital while receiving medical, dental, or other services. Each visit an outpatient makes to a discrete unit constitutes one visit regardless of the number of diagnostic and/or therapeutic treatments that the patient receives. Total outpatient visits should include all clinic visits, referred visits, observation services, outpatient surgeries, and emergency room visits.

Importantly, these data represent procedure rates for the FFS Medicare population and do not include data on Medicare Advantage enrollees. Though data on the Medicare Advantage population are not available, there are several reasons to expect procedure rates to be higher for FFS beneficiaries than for those enrolled in Medicare Advantage. Therefore, an important caveat to keep in mind while examining **Figures 12–16** is that regions with high rates of Medicare Advantage enrollment might also exhibit higher procedure rates among the FFS population.

Figure 12 begins by listing prostatectomy rates per 1,000 male Medicare beneficiaries with prostate cancer under the age of 75 in 2010. Radical prostatectomies are an intensive treatment for prostate cancer that involves the surgical removal of the prostate gland (MedlinePlus, 2015). Only Portland performs more per capita prostatectomy surgeries on Medicare enrollees under 75 than Grand Rapids.

Figure 13 focuses on the rate of inpatient surgical fusions for lumbar spinal stenosis for Medicare beneficiaries in 2010. Spinal fusion is generally a treatment for back pain and is one of the most commonly analyzed procedures when examining unexplained regional variation in surgical intensity (Deyo et al., 2006). The Grand Rapids region performs far more inpatient spinal fusions than the comparison regions and does so at a rate that is more than double the national average. If this extreme rate of spinal fusion surgeries represents a significant number of unwarranted or unnecessary treatments, then this would be another area where potential cost savings could be achieved.

Figure 14 displays the rate of bariatric surgeries per 100,000 Medicare beneficiaries between 2007 and 2011. Only Louisville performs more per capita bariatric surgeries than Grand Rapids.

Similarly, **Figure 15** plots rates of knee replacement surgeries for Medicare enrollees in Grand Rapids and the comparison regions. Like bariatric surgery, knee replacement rates can be a function of the weight distribution of the population, but also is a procedure that is highly preference-driven (Dartmouth Atlas of Health Care, 2007). Once again, Grand Rapids is near the top of the group with only Milwaukee performing more per capita knee replacements.

Finally, **Figure 16** includes rates of cataract surgeries per 1,000 Medicare enrollees. Here Grand Rapids is still above the national average, but the rate of cataract surgeries in Grand Rapids is comparable to rates in Louisville and Akron.

Outcomes

Lastly, we turn to regional differences in several health-related outcomes that are commonly thought to be markers of care quality. In most cases, patients in Grand Rapids demonstrate better outcomes than patients in the comparison communities. For example, Grand Rapids FFS Medicare enrollees with diabetes are more likely to receive the A1C test (**Figure 17**), which is used to measure the effectiveness of diabetes management.

Figure 18 includes the percent of female Medicare FFS enrollees age 67 to 69 who have had at least one mammogram over a two-year period. Once again, Grand Rapids is above the national average and has the highest mammography rate of any of the comparison communities.

In a more comprehensive measure of care coordination, only FFS Medicare beneficiaries in Portland have fewer hospital discharges for ambulatory-sensitive conditions (**Figure 19**). This finding indicates a relatively small degree of potentially preventable hospitalizations in Grand Rapids compared to the comparison communities.

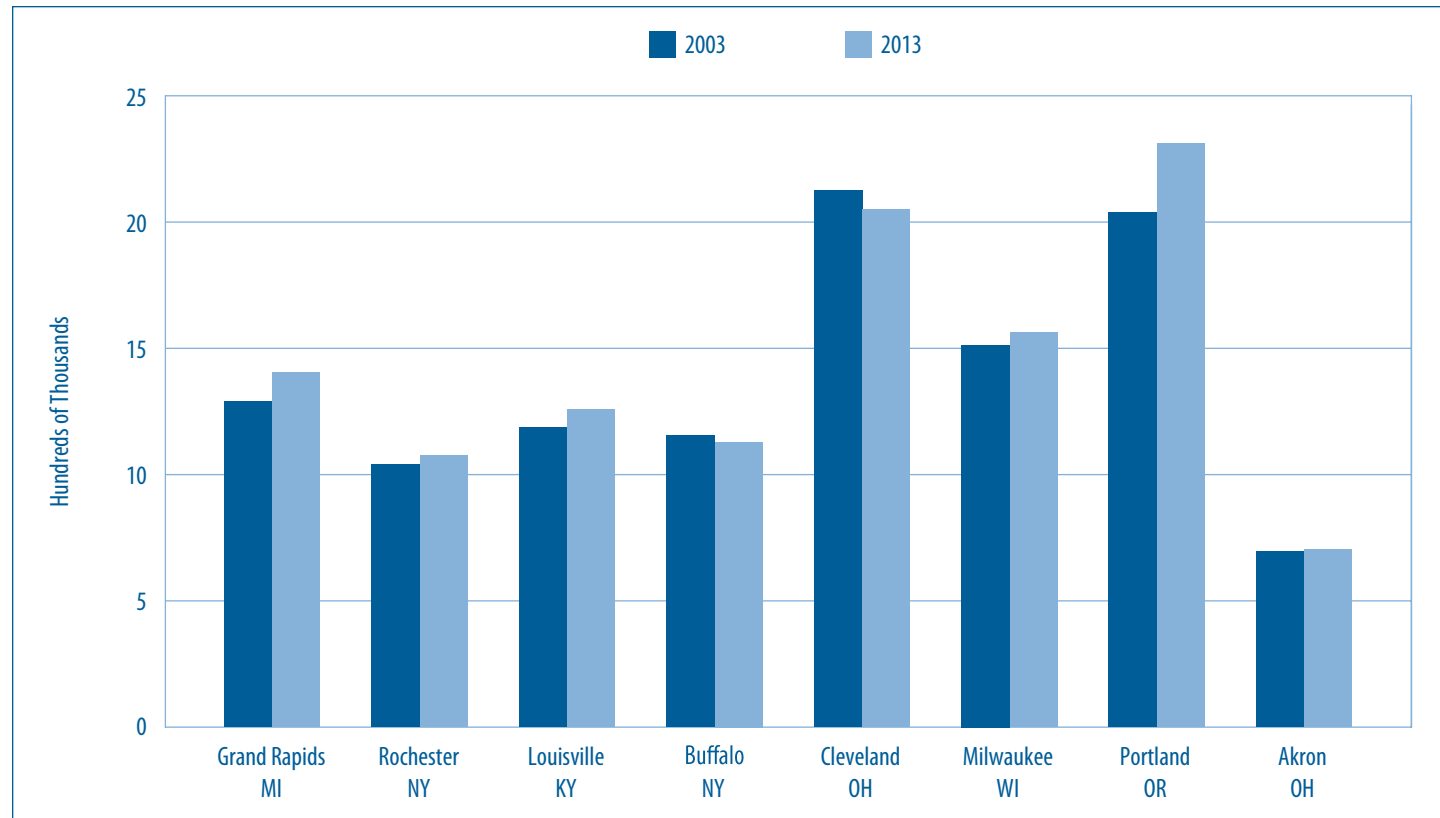
In conclusion, while Grand Rapids compares favorably to many of the comparison communities on metrics associated with the quality of health care services, there are several areas of concern and opportunities for potential improvement highlighted in the previous figures. For example, emergency department visit rates in Grand Rapids are slightly higher than the national average and have grown substantially over the past decade. Total hospital expenses per admission in Grand Rapids are well above the national average and are surpassed by only Cleveland and Portland, among the group of comparison communities. Per capita Medicare expenditures in Grand Rapids are slightly above the U.S. average, and while recent expenditure declines in Grand Rapids are a positive sign, national data suggest that Medicare expenditures are once again trending upward. On several commonly referenced indicators of treatment intensity, physicians in the Grand Rapids region tend to take a more aggressive approach to treatment than those in many of the comparison communities. Since total expenditures on health care in any region are the product of the quantity of services administered and the price of those services, a reduction in treatment intensity, especially for unnecessary or unwarranted treatments, could provide a significant reduction in overall health care expenditures in the region.

Finally, we see that the Grand Rapids region performs quite well on several indicators of care quality. Rates for preventive care measures such as A1C testing for diabetics or mammography for appropriate populations are higher than many of the comparison communities. Similarly, only Portland fares better than Grand Rapids in admissions for ambulatory sensitive care conditions, a marker for poor care coordination. Interestingly, the Grand Rapids region has been able to maintain this high level of care quality while employing fewer hospital-based personnel than the national average and with lower payroll and benefit expenses per hospital employee.

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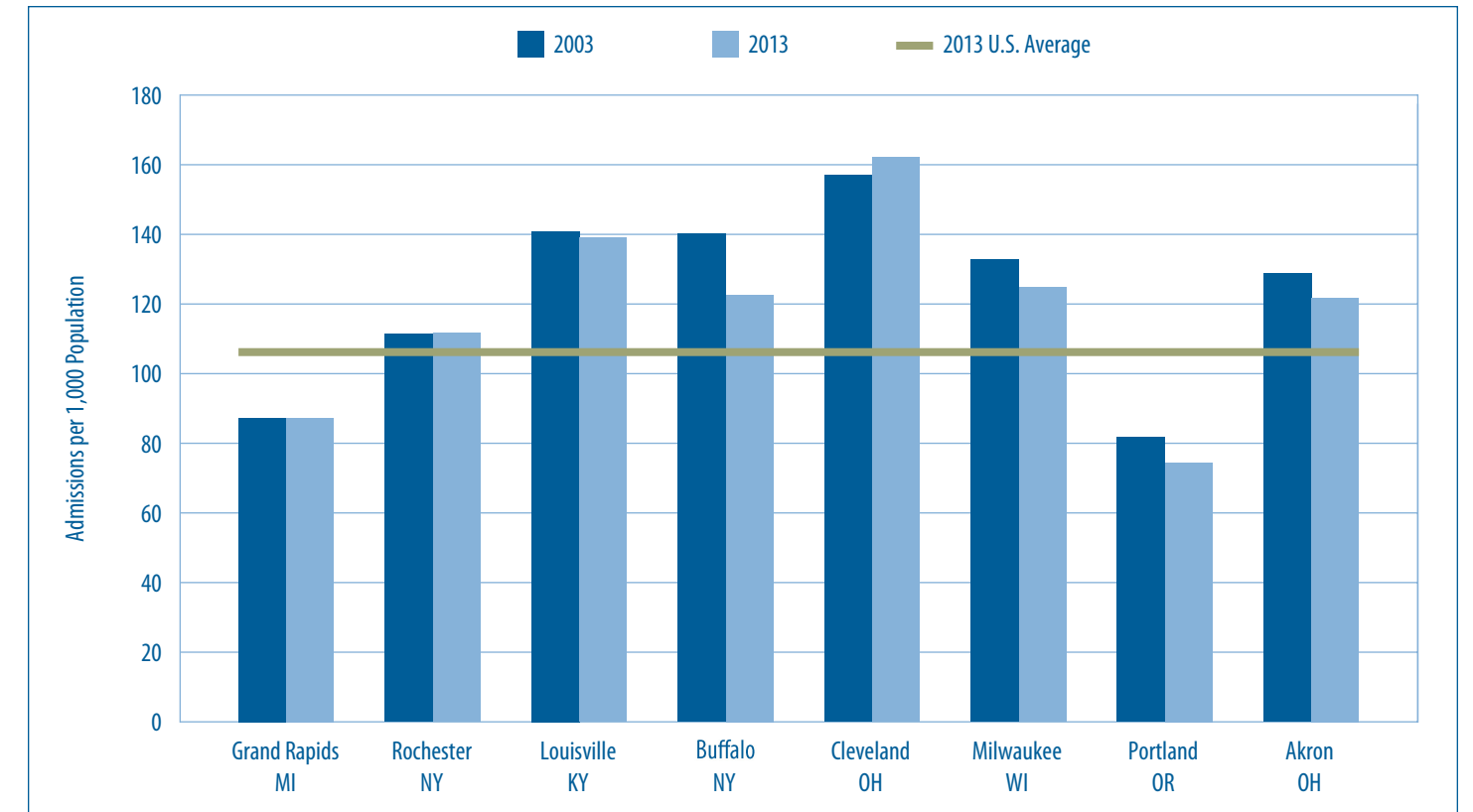
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Figure 1: MSA Population



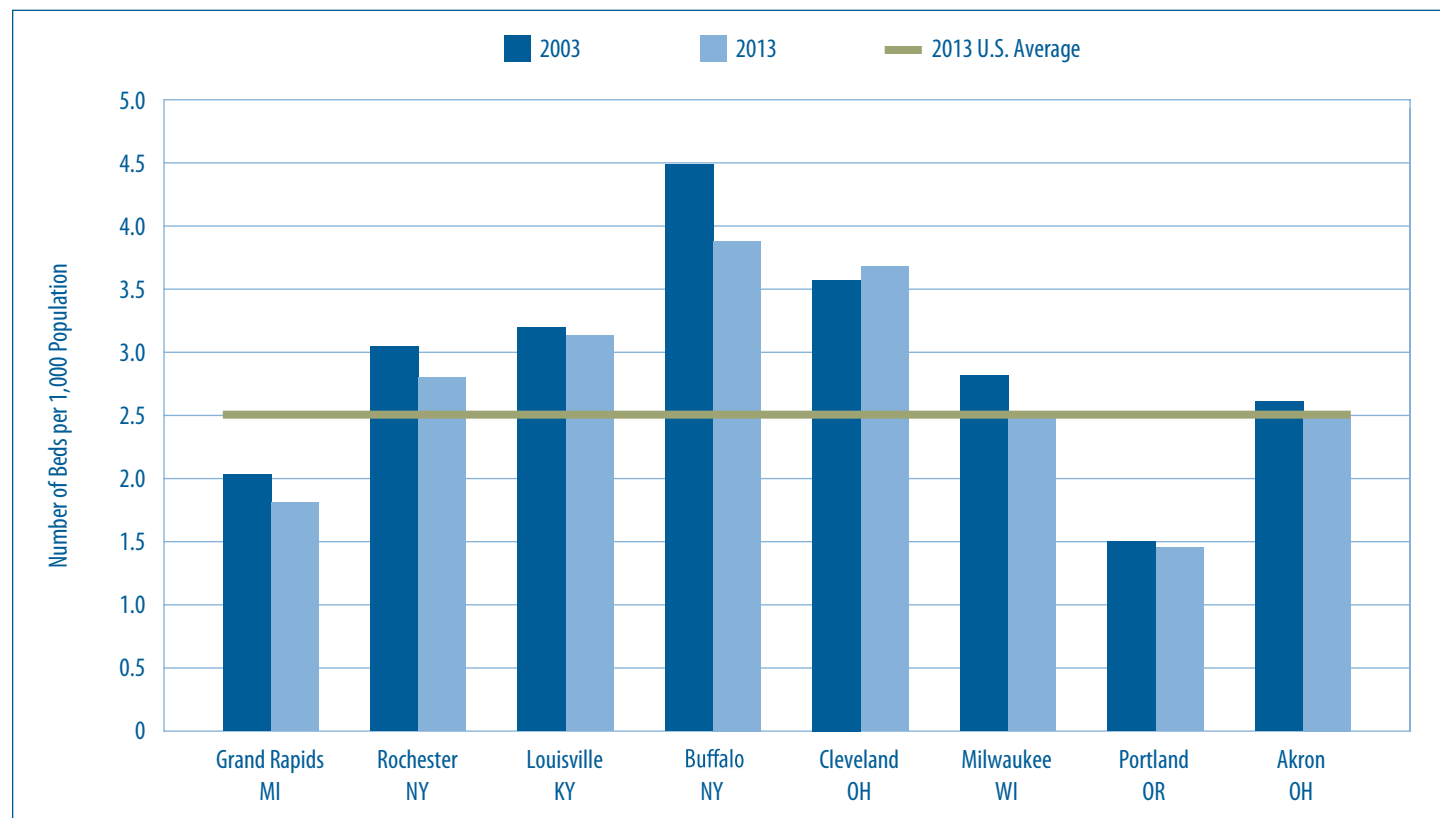
Source: U.S. Census. Bureau population data estimates

Figure 3: Hospital Admissions per 1,000 Population



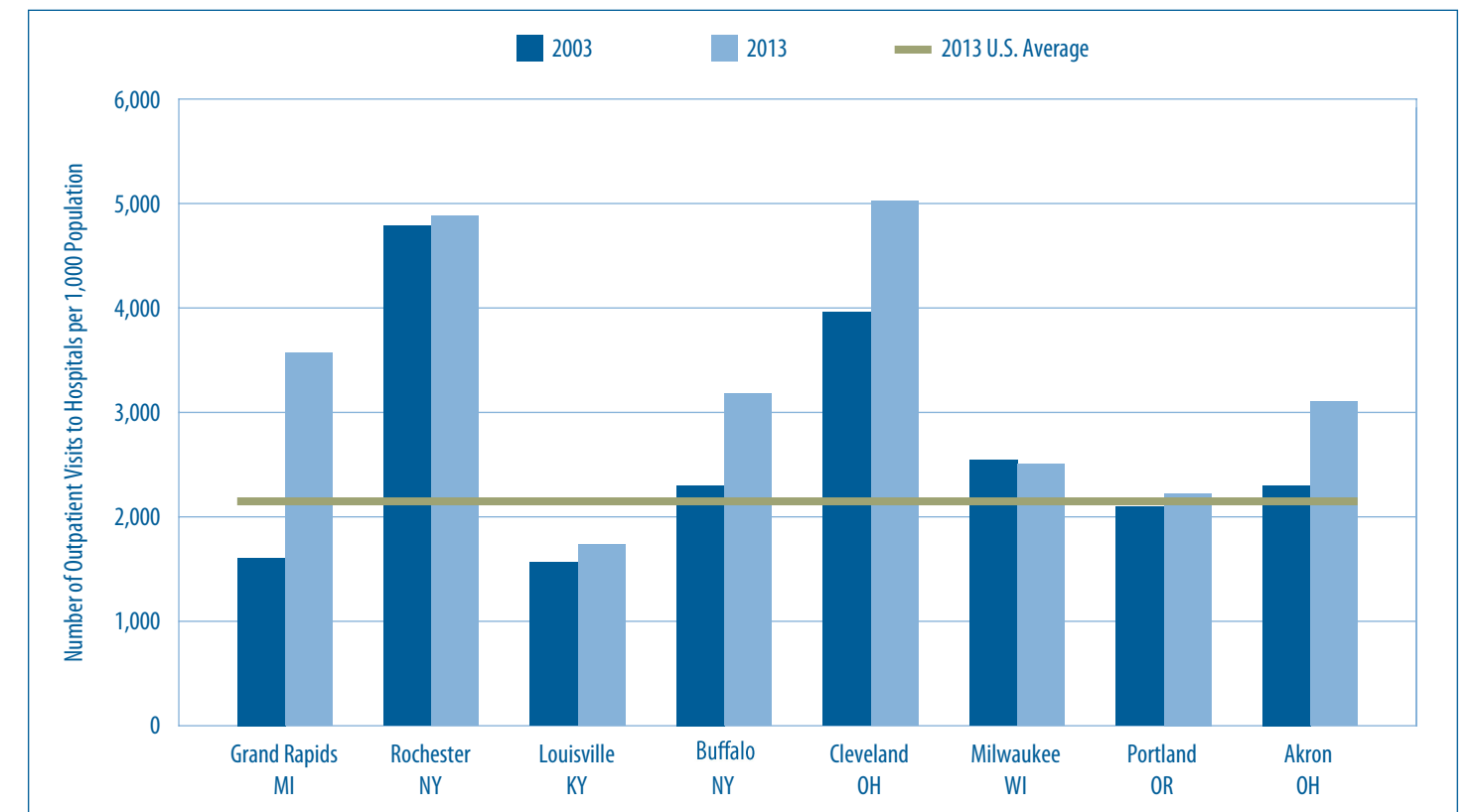
Source: American Hospital Association. AHA hospital statistics, 2015
2003 U.S. average = 120 admissions per 1,000 population

Figure 2: Hospital Beds per 1,000 Population



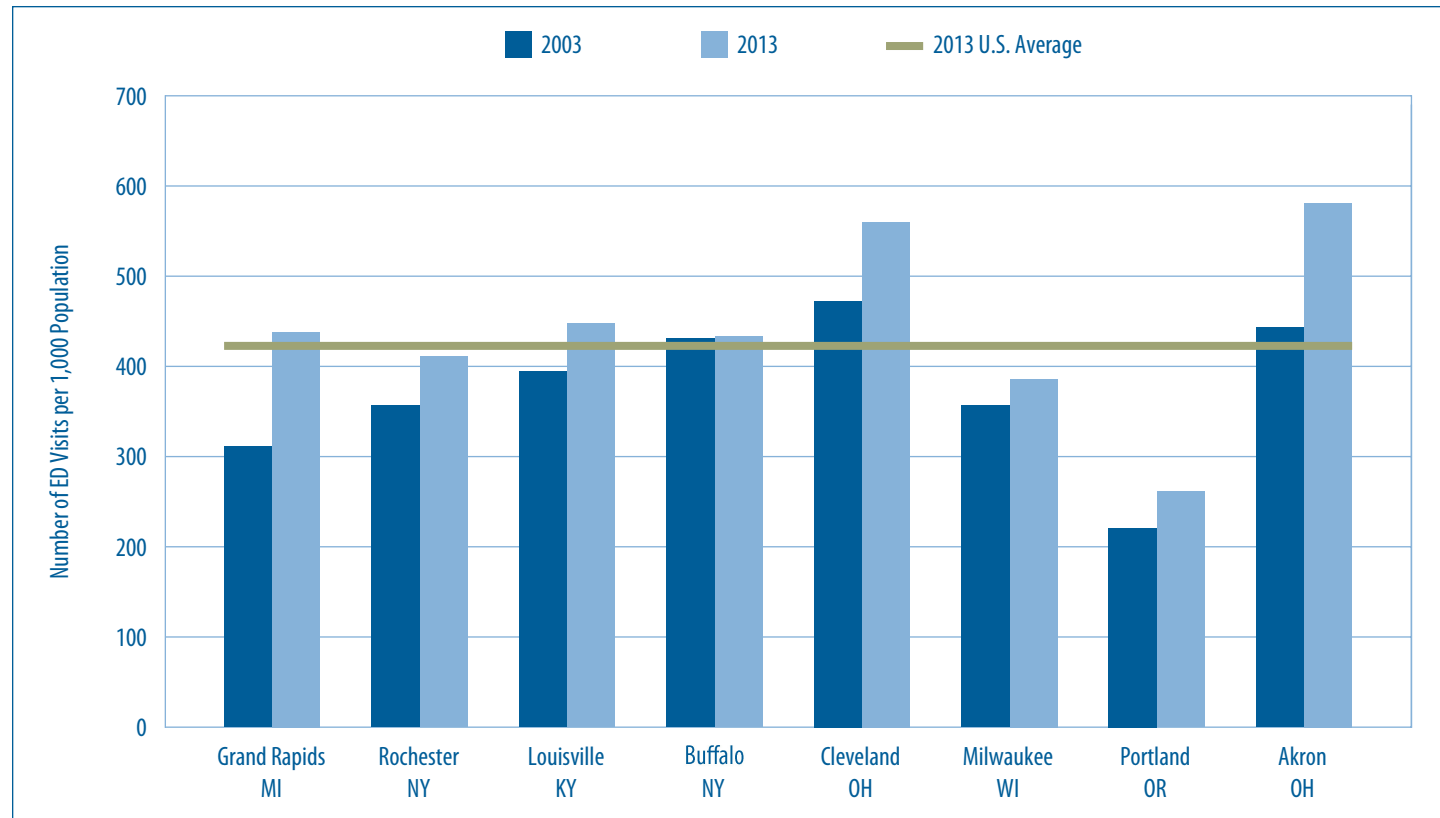
Source: American Hospital Association. AHA hospital statistics, 2015
2003 U.S. average = 2.8 beds per 1,000 population

Figure 4: Outpatient Visits to Hospitals per 1,000 Population



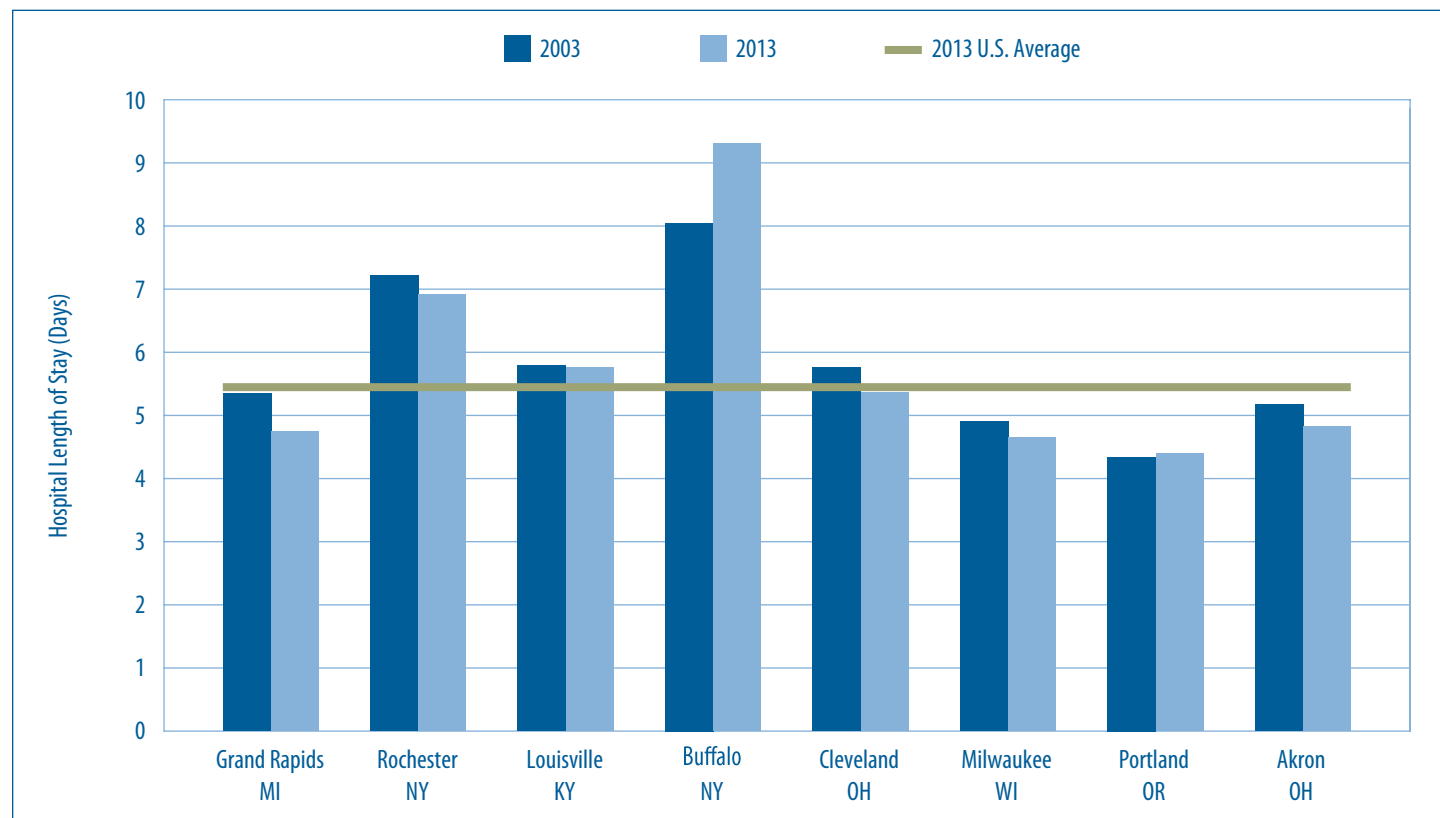
Source: American Hospital Association. AHA hospital statistics, 2015
2003 U.S. average = 1,936 outpatient visits to hospitals per 1,000 population

Figure 5: Emergency Department Visits per 1,000 Population



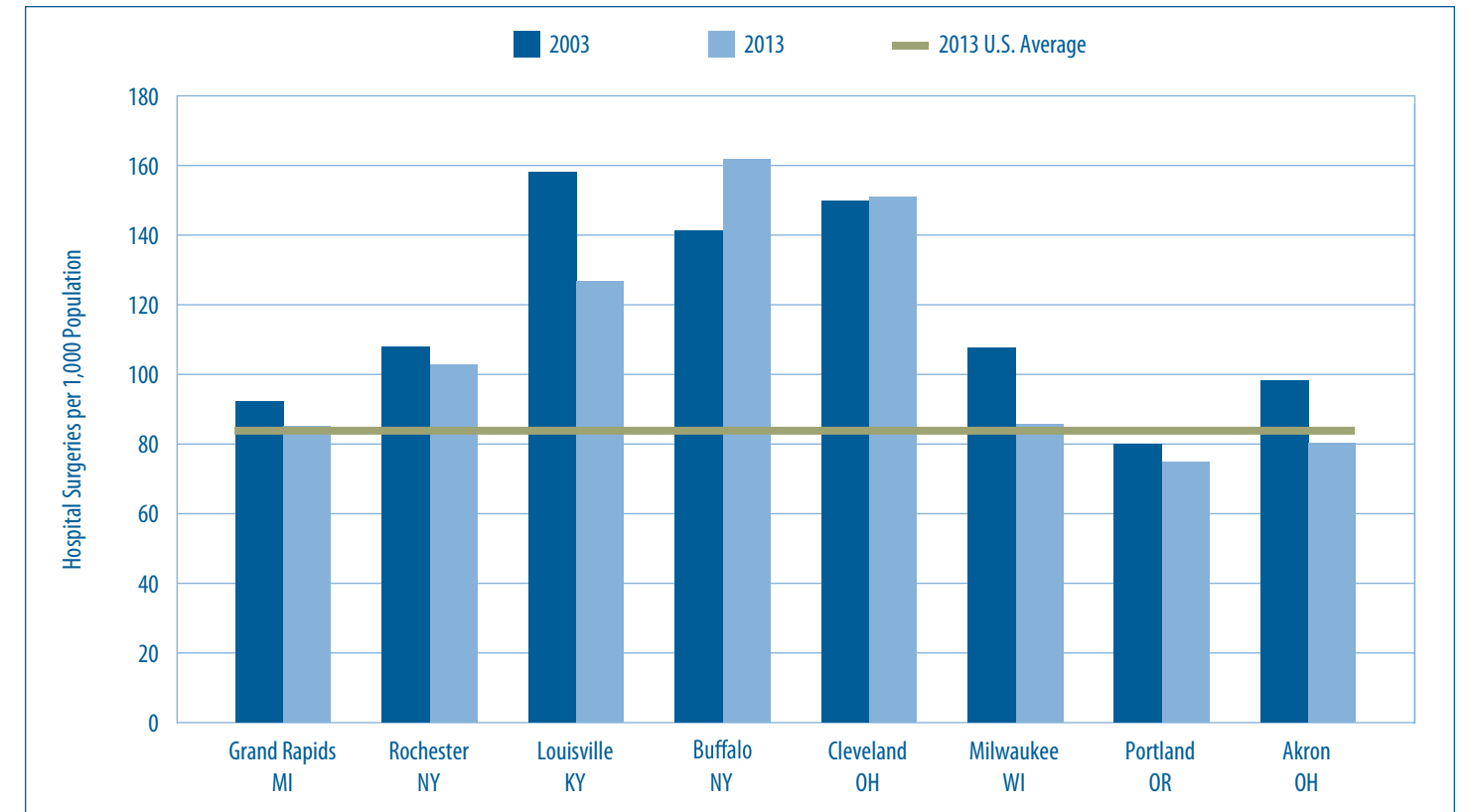
Source: American Hospital Association. *AHA hospital statistics, 2015*
2003 U.S. average = 382 ED visits per 1,000 population

Figure 6: Average Hospital Length of Stay



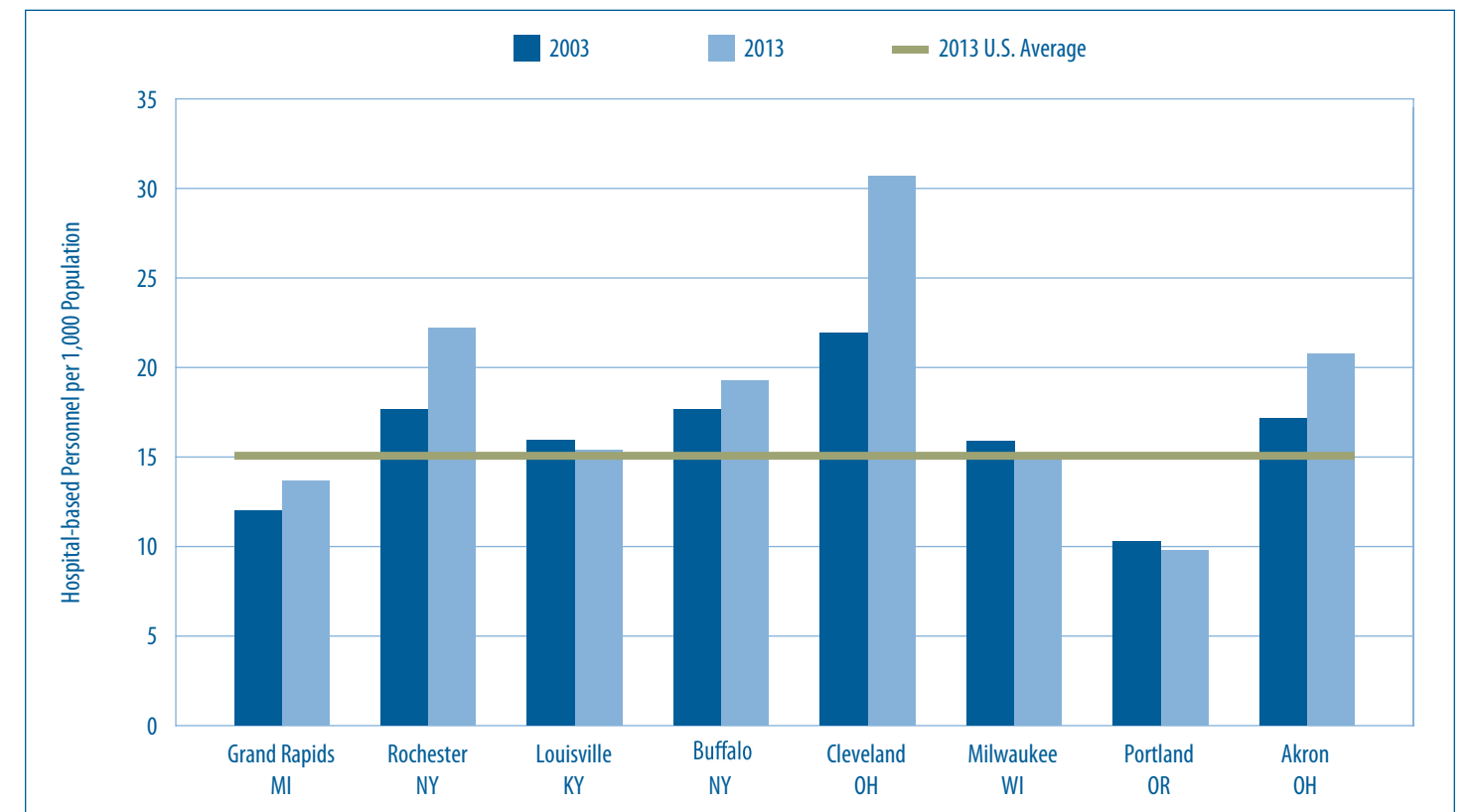
Source: American Hospital Association. *AHA hospital statistics, 2015*
2003 U.S. average = 5.7 days per hospital admission

Figure 7: Hospital Surgeries per 1,000 Population



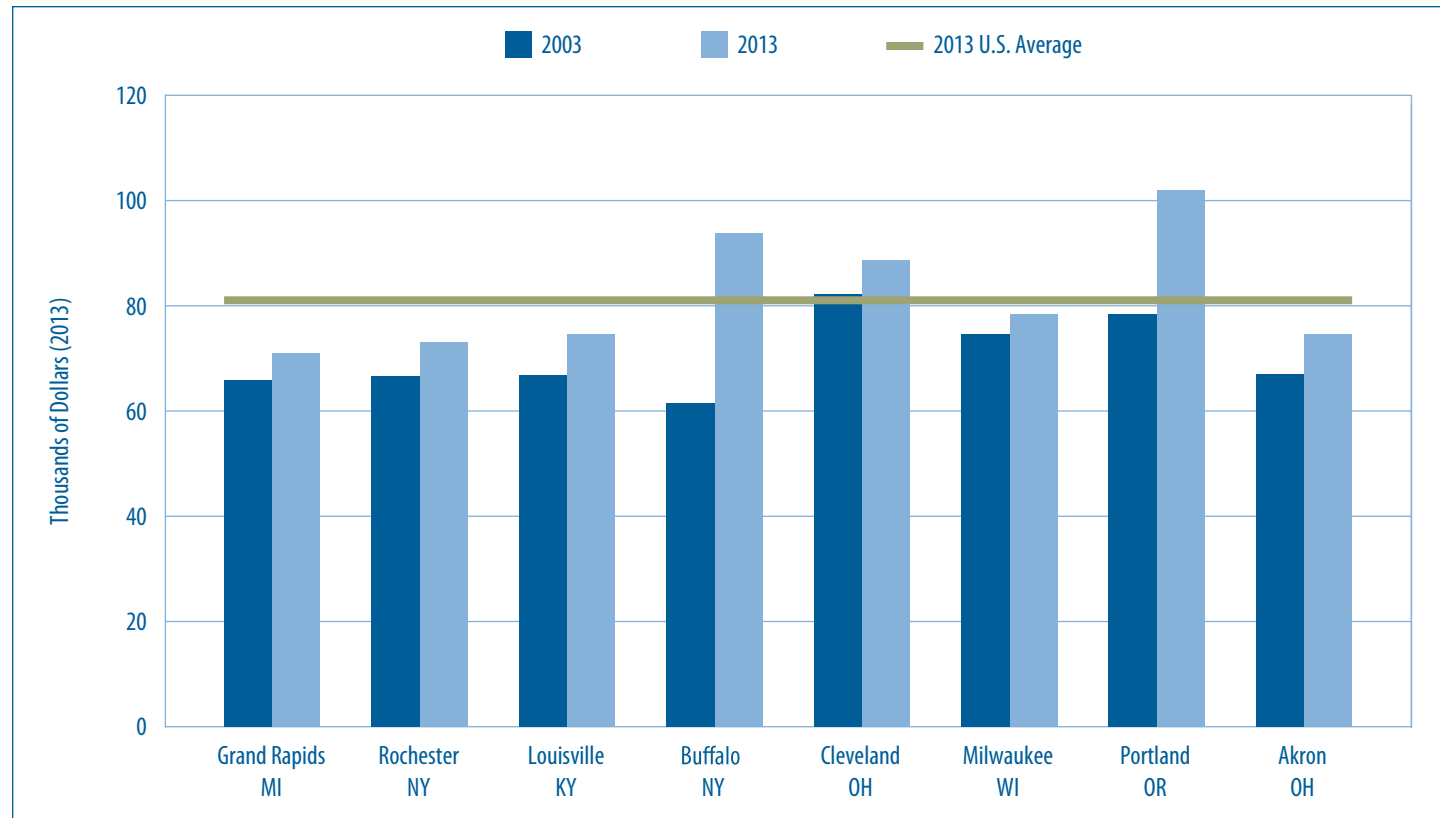
Source: American Hospital Association. *AHA hospital statistics, 2015*
2003 U.S. average = 93.2 hospital surgeries per 1,000 population

Figure 8: Hospital-based Personnel per 1,000 Population



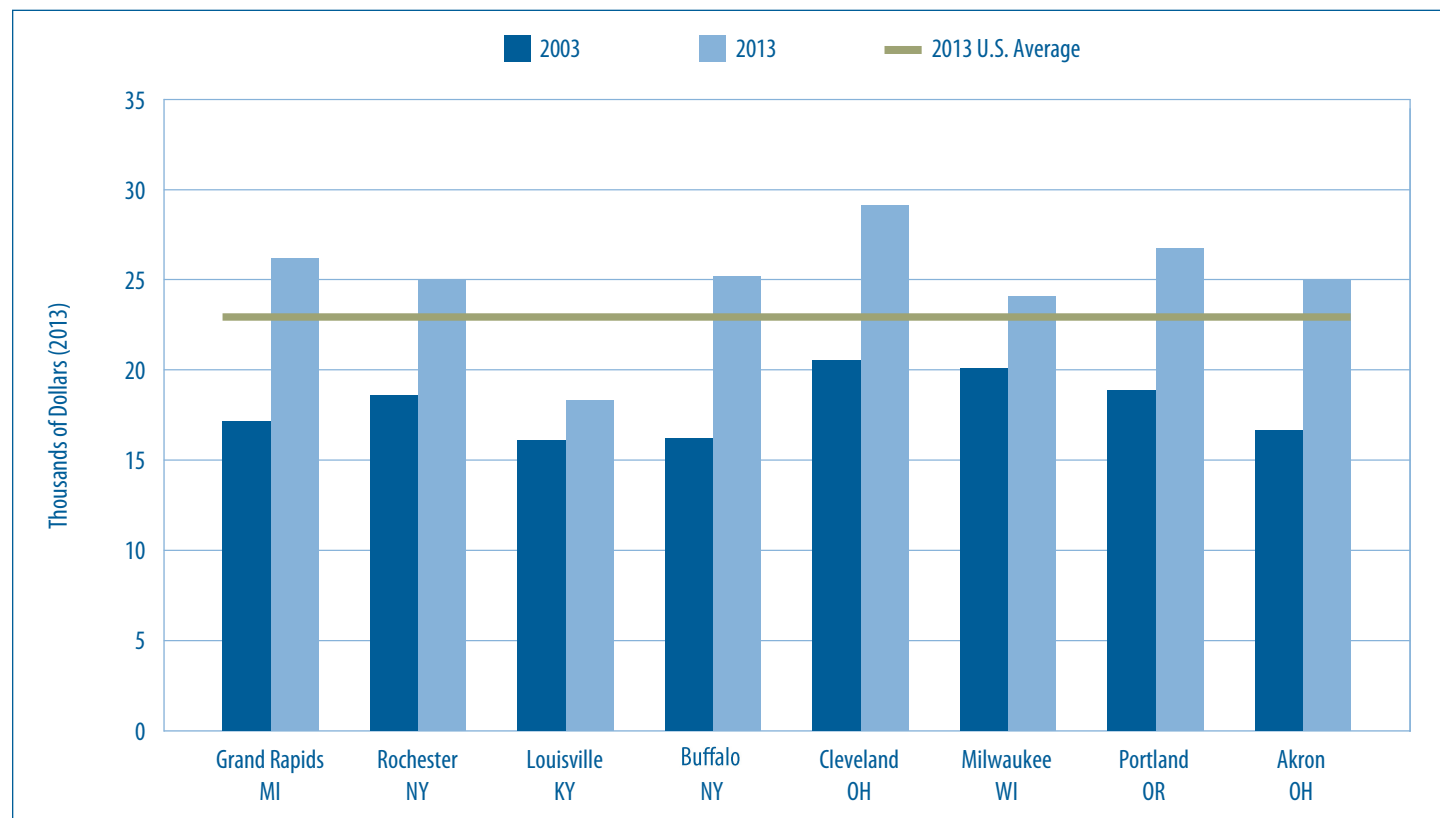
Source: American Hospital Association. *AHA hospital statistics, 2015*
2003 U.S. average = 14.1 hospital-based medical personnel per 1,000 population

Figure 9: Payroll and Benefit Expenses per Hospital Employee



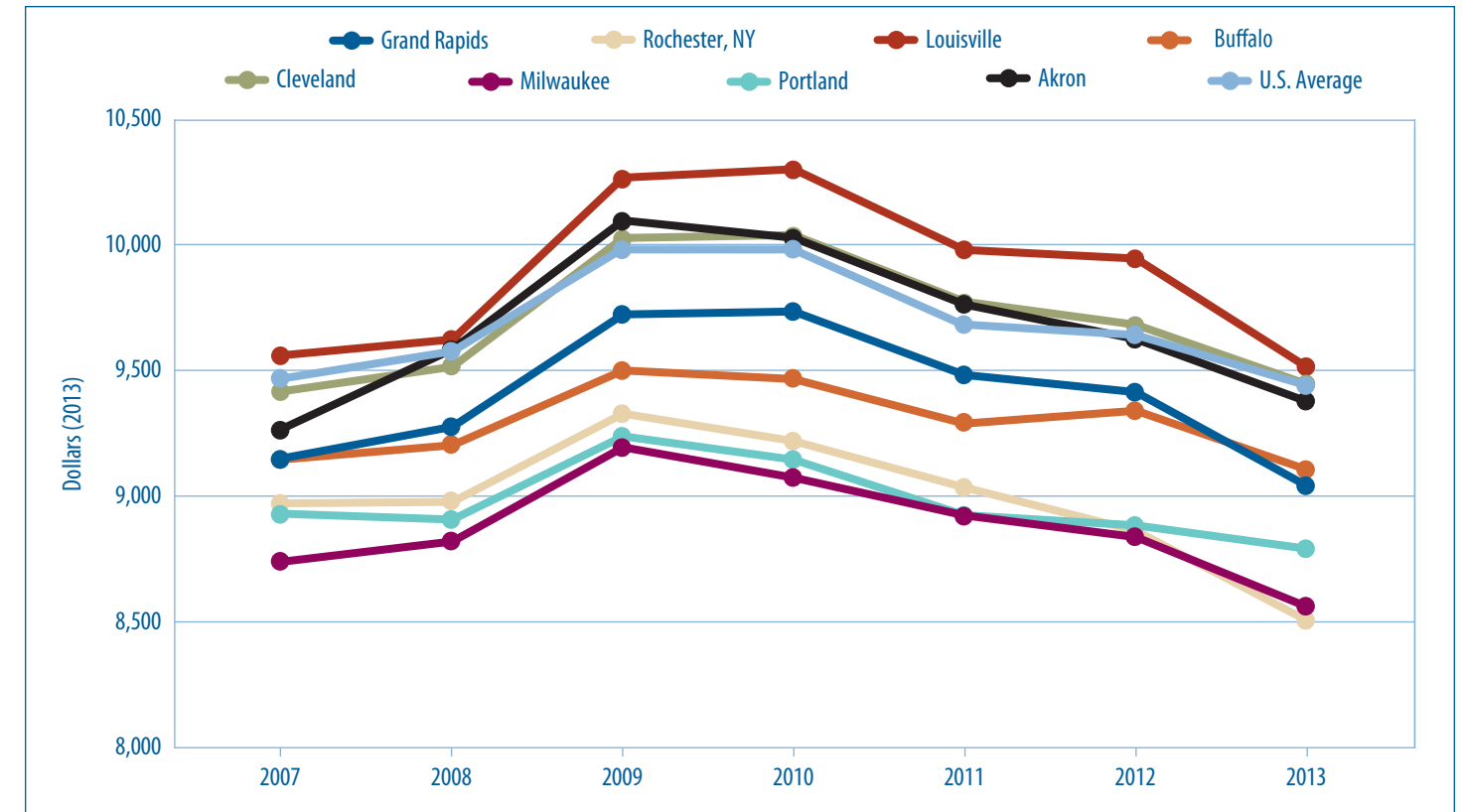
Source: American Hospital Association. *AHA hospital statistics, 2015*
2003 U.S. average = 71.8 thousand dollars (2013)

Figure 10: Total Hospital Expenses per Admission



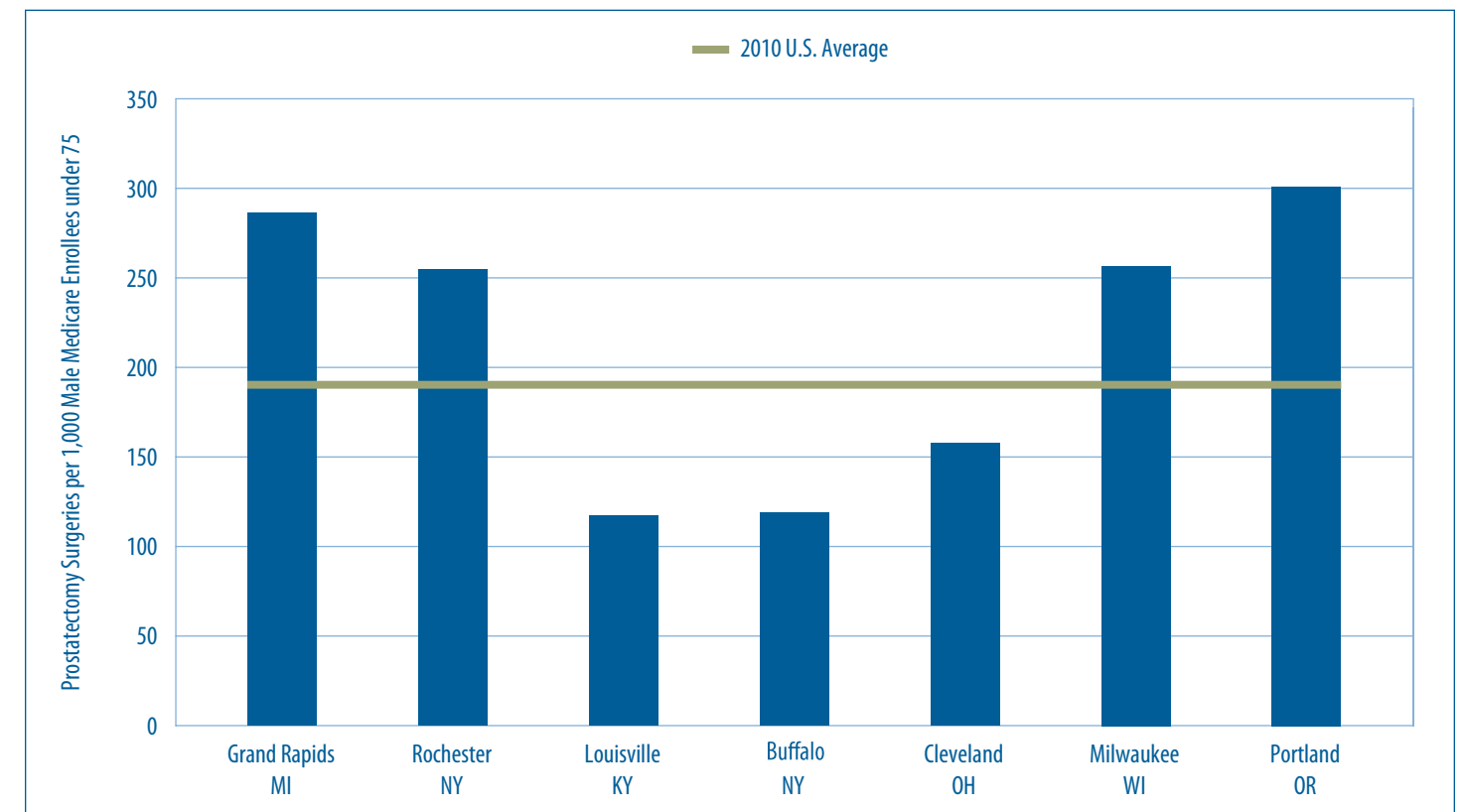
Source: American Hospital Association. *AHA hospital statistics, 2015*
2003 U.S. average = 16.4 thousand dollars (2013)

Figure 11: Adjusted Medicare Expenditures per Medicare Enrollee



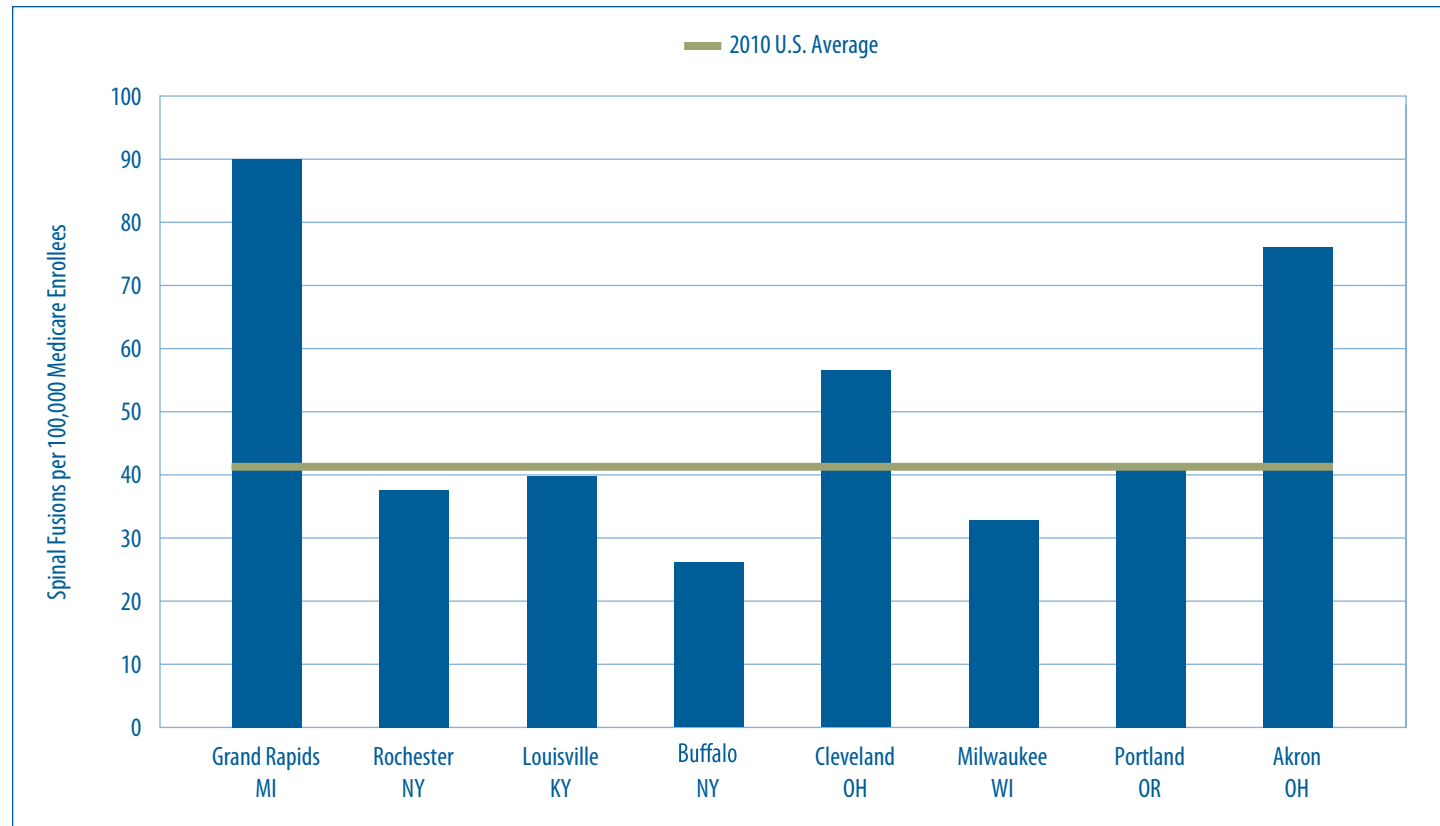
Sources: CMS Geographic Variation Public Use File; CMS Monthly Enrollment by Contract/Plan/State/County Files; CMS Plan Payment Data Files
Note: Figures do not include expenditures on prescription medication.

Figure 12: Prostatectomy Surgeries per 1,000 Male FFS Medicare Enrollees with Prostate Cancer under the Age of 75, 2010



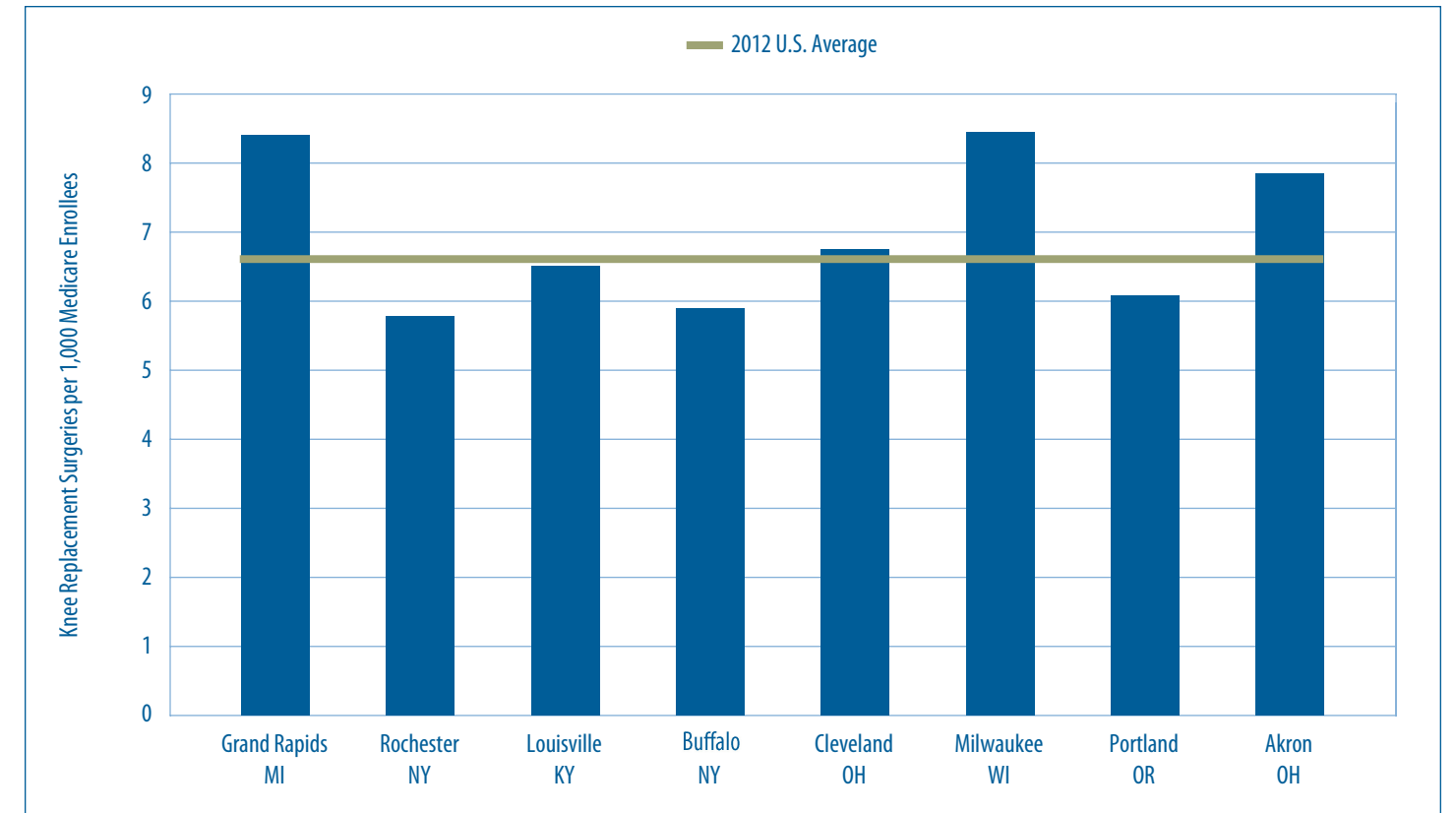
Source: Dartmouth Atlas of Health Care. *Variation in the care of surgical conditions*

Figure 13: Inpatient Fusion for Lumbar Spinal Stenosis per 100,000 FFS Medicare Enrollees, 2010



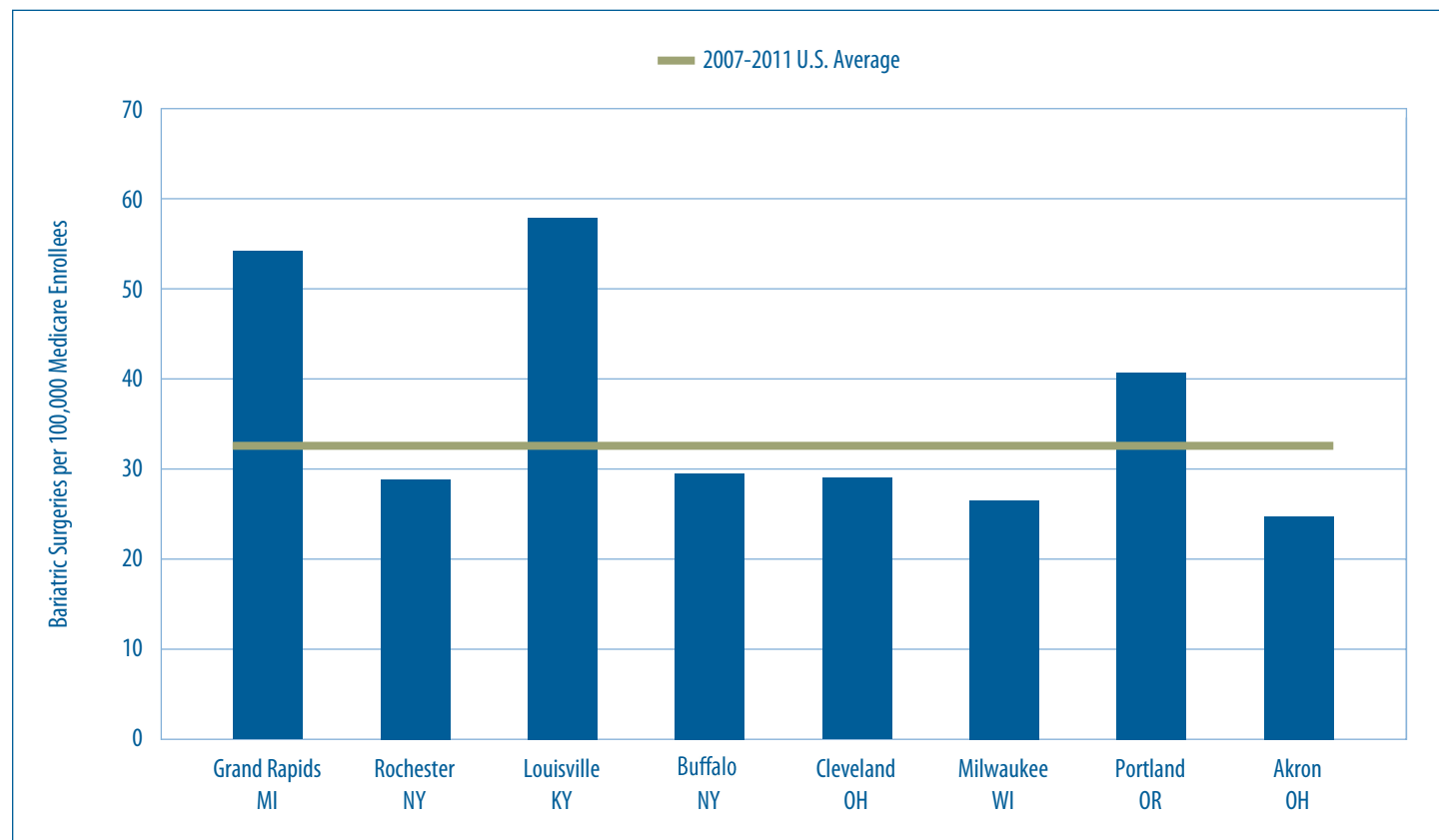
Source: Dartmouth Atlas of Health Care. *Variation in the care of surgical conditions*

Figure 15: Knee Replacement Surgeries per 1,000 FFS Medicare Enrollees, 2012



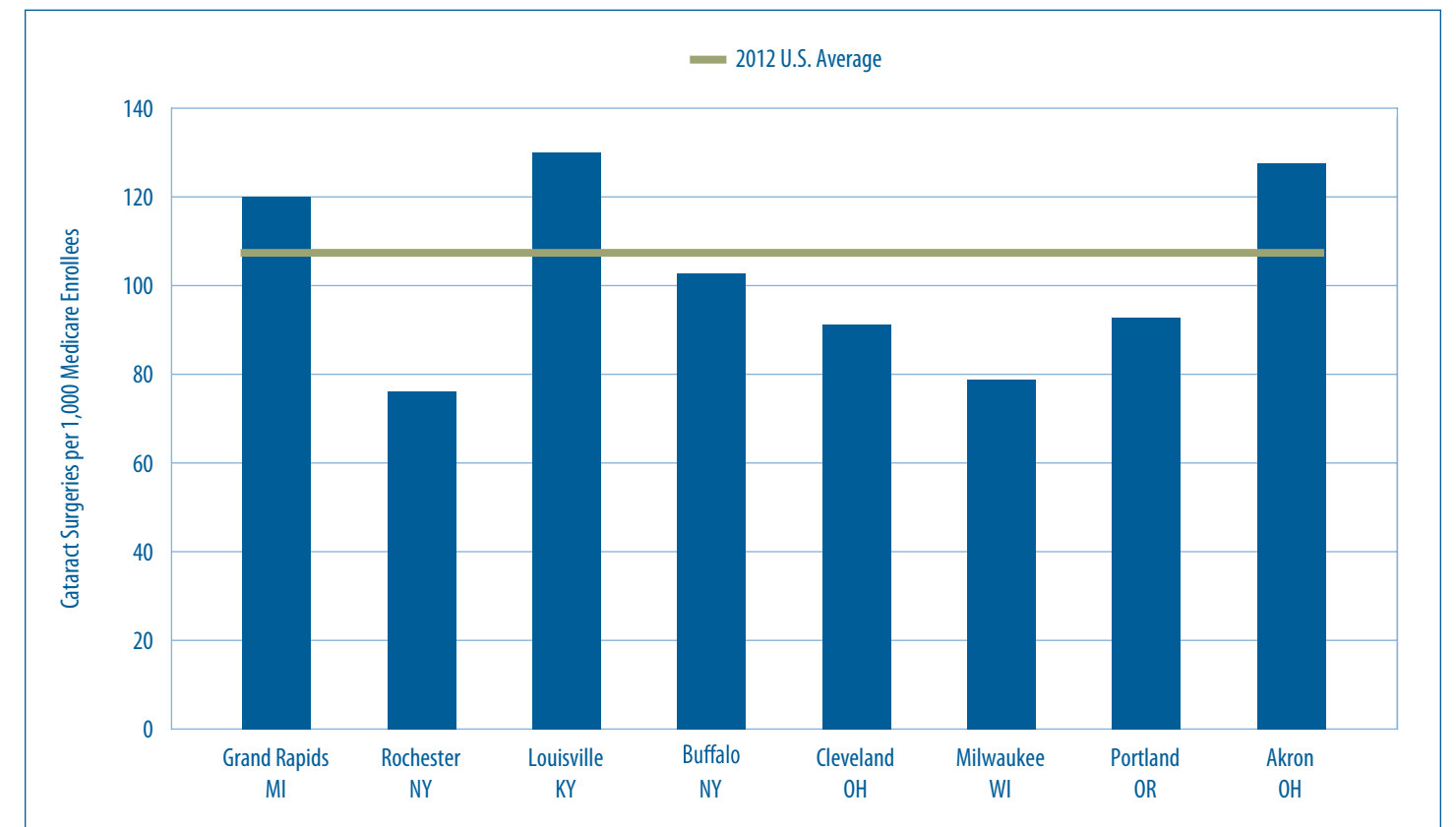
Source: Dartmouth Atlas of Health Care. *Variation in the care of surgical conditions*

Figure 14: Bariatric Surgeries per 100,000 FFS Medicare Enrollees, 2007–2011



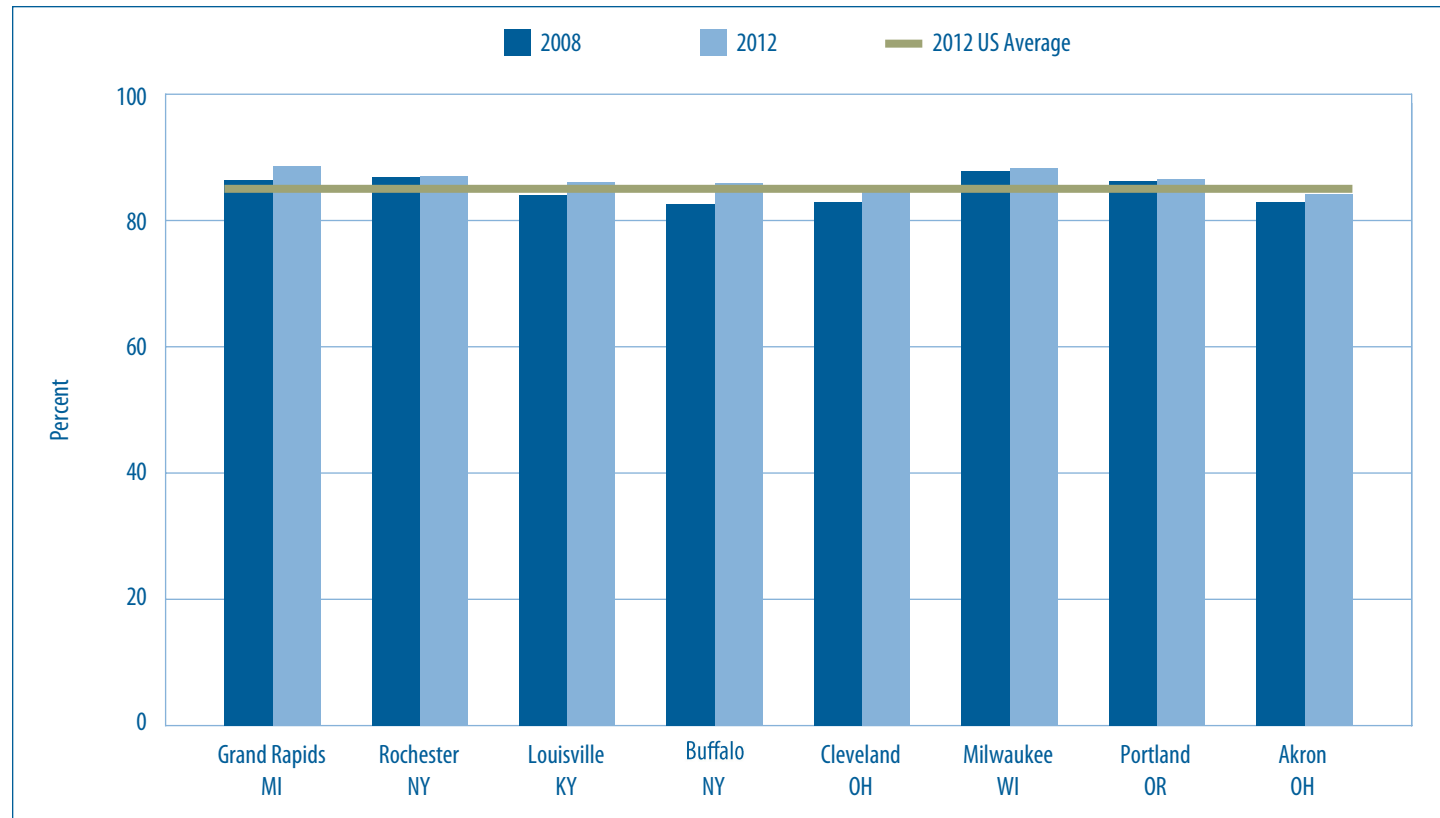
Source: Dartmouth Atlas of Health Care. *Variation in the care of surgical conditions*

Figure 16: Cataract Surgeries per 1,000 FFS Medicare Enrollees, 2012



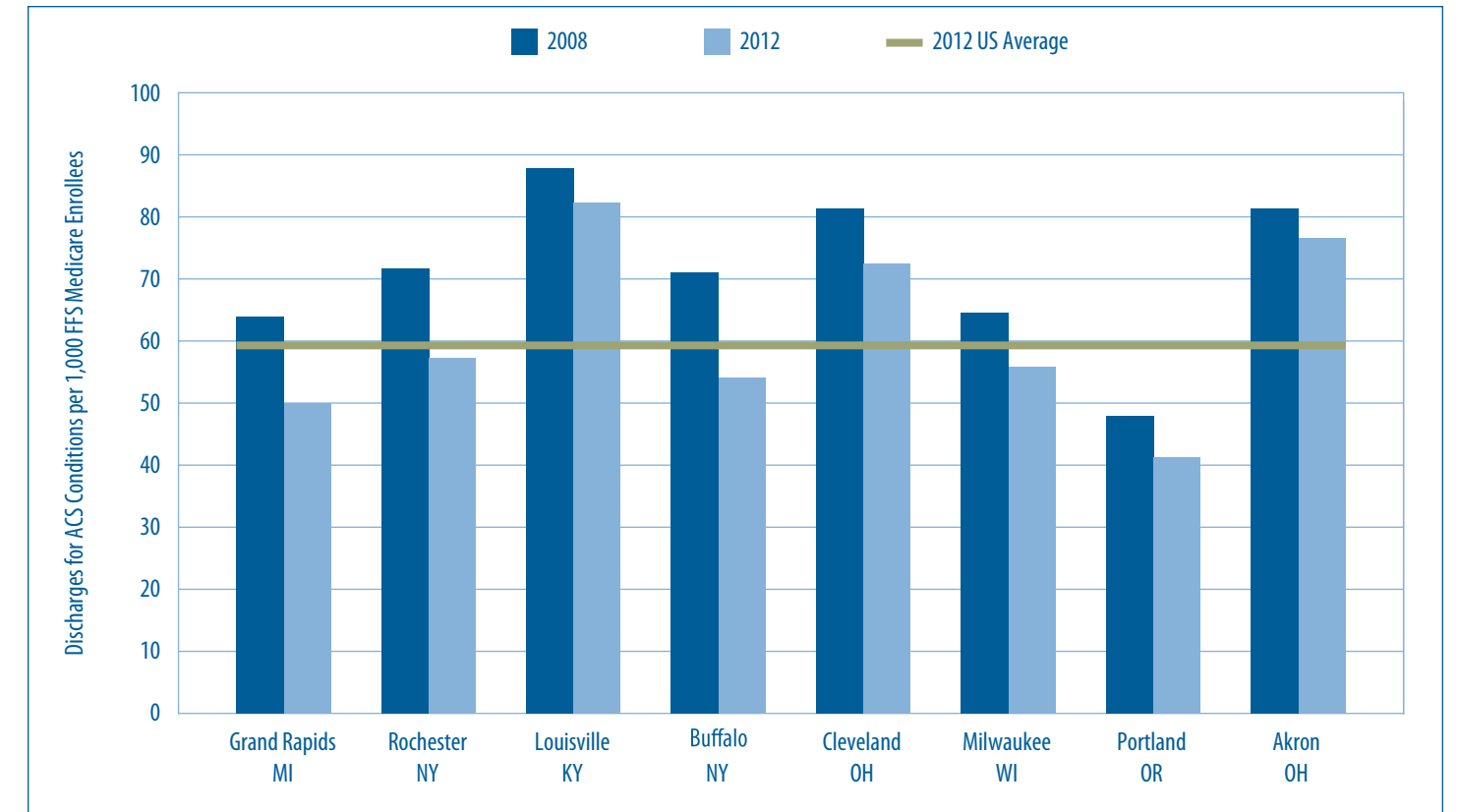
Source: Dartmouth Atlas of Health Care. *Variation in the care of surgical conditions*

Figure 17: Percent of FFS Diabetics Age 65–75 with Hemoglobin A1C Test



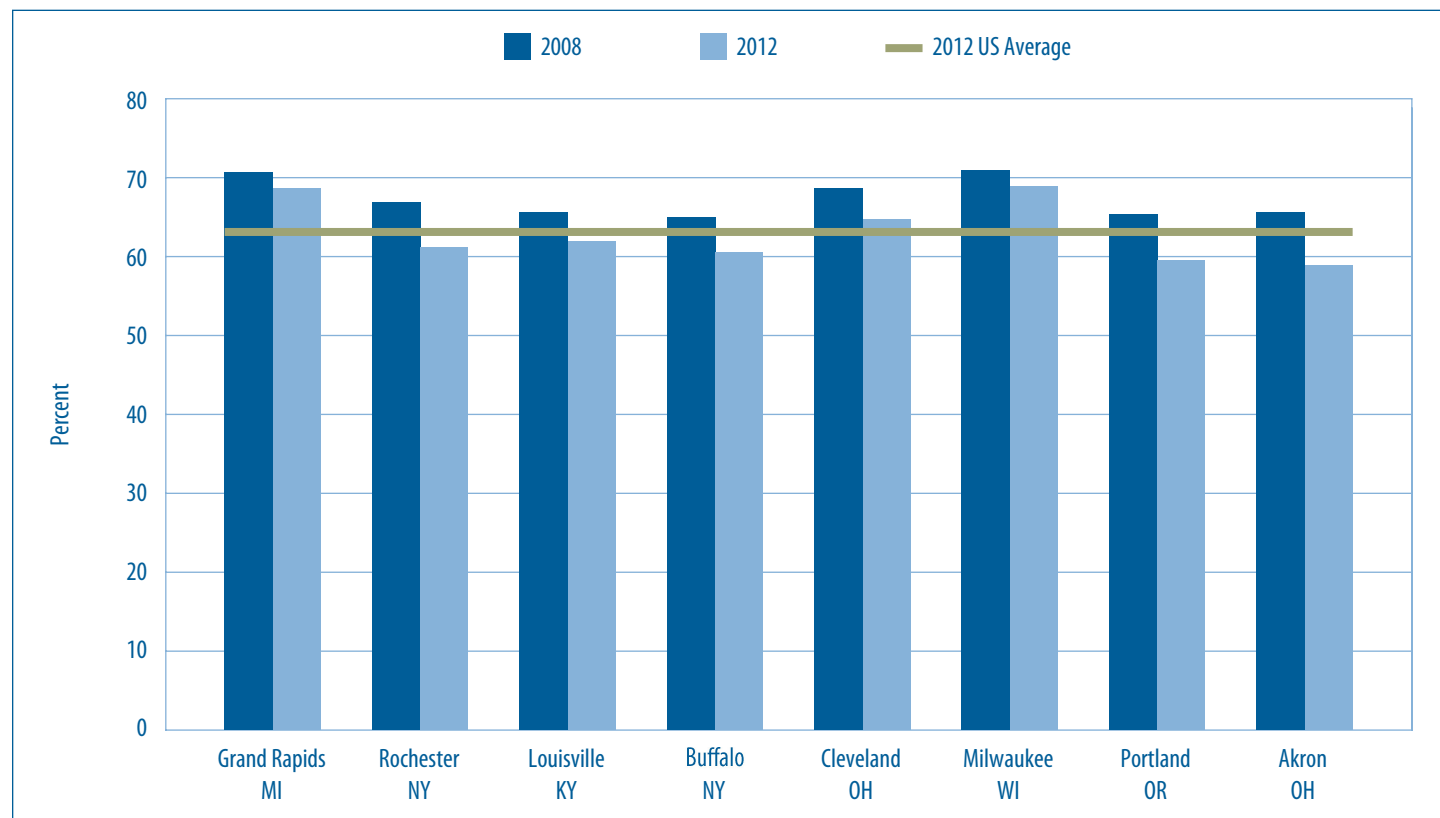
Source: Dartmouth Atlas of Health Care. *Variation in the care of surgical conditions*
2008 U.S. average = 82.7 percent

Figure 19: Discharges for Ambulatory Care Sensitive Conditions per 1,000 FFS Medicare Enrollees



Source: Dartmouth Atlas of Health Care. *Selected measures of primary care access and quality*
2008 U.S. average = 70.5 discharges for ACS conditions per 1,000 FFS Medicare enrollees

Figure 18: Percent of Female Medicare FFS Enrollees Age 67–69 with at Least One Mammogram Over a Two-year Period



Source: Dartmouth Atlas of Health Care. *Variation in the care of surgical conditions*
2008 U.S. average = 65.6 percent

The Effects of the Affordable Care Act on Michigan Employers

Conducted in Collaboration with Priority Health

Firms have seen many changes to the health insurance landscape since the implementation of the Affordable Care Act (ACA) in 2010. After two delays, the employer shared responsibility provisions (Employer Mandate), went into effect in January 2015 for firms with 50 or more full-time equivalent (FTE) employees. In addition, an excise tax on high-cost health insurance plans — known as the “Cadillac Tax” — will go into effect in 2018. The Kaiser Family Foundation (2014) reports that firms are already making changes to their health plans to avoid or minimize the costs associated with this tax.

In this survey we explore the effects of the ACA on health insurance offerings and cost containment measures for 191 firms in West and East Michigan.¹ West Michigan counties surveyed include Kent, Ottawa, Muskegon, and Allegan (KOMA). Macomb, Oakland, and Wayne were surveyed in Eastern Michigan. Firms in West and East Michigan do not differ by firm size or skill level. Furthermore, there is no statistical difference between the percentage of reporting firms in the top industries — construction, manufacturing, and retail — between West and East Michigan. The only firm characteristic that is different between the two regions is the percentage of the work force that is part-time: West Michigan has a slightly higher part time workforce than does East Michigan.²

Results

Health Insurance Offerings

Figure 1 shows the percentage of firms that offered health insurance in both 2014 and 2015. Overall, 77 percent of firms offered at least one plan in both years.³ Of those firms that offered plans, 58 percent offered one plan, 37 percent offered two or three, and 5 percent offered more than three plans (**Figure 2**).

Figure 3 shows firms’ expectations for offering insurance in the next three years, given they offered a plan in 2015. In 2016, 93 percent of employers intend to offer health insurance, with that percentage dropping to 81 percent and 77 percent in 2017 and 2018, respectively. Across all three years, only one firm in the sample said it was going to discontinue insurance in the future. The drop is due to firms being undecided as to whether they are going to offer insurance. As would be expected, the degree of uncertainty increases the further out one projects into the future: six percent of companies are undecided if they will offer insurance in 2016, 18 percent in 2017, and 22 percent in 2018.

¹ Nineteen hundred surveys were sent out, for a response rate of 10 percent.

² Source: Authors’ calculation from survey; not shown in tables

³ All of the firms not offering insurance have fewer than 100 full-time employees.

⁴ Source: Author’s calculations from data; not shown in figure

High Deductible Plans

Figure 4a shows the percentage of employers who offer a high deductible health plan (HDHP), defined as at least \$1,300 for an individual and \$2,600 for a family. Sixty-four percent of firms that offer at least one plan in 2015 offered a HDHP. Furthermore, of firms that offered only one insurance plan, 31 percent were high deductible (not shown in figure).⁴ This trend is evident nationally, as well. Benefits firm, Aon Hewitt, found that 15 percent of employers offered an HDHP as the only health plan option, but that 42 percent of firms are considering this transition in the next three to five years (Aon Hewitt, 2014).

This trend in offering only high deductible plans is intended to help curb health care costs while engaging health care consumers in their care. Premiums tend to be lower for firms, but consumers pay more out-of-pocket costs before receiving certain benefits. To help offset higher out-of-pocket costs, a greater number of firms are offering consumer directed health plans (CDHPs). CDHPs combine a deductible health plan with a tax-advantaged savings option such as a health savings account (HSA), flexible spending account, or health reimbursement account. **Figure 4b** shows that of those firms that offer a HDHP, 62 percent also offer an HSA.

Cost-containment Measures

We asked firms how they are containing rising health care costs. **Figure 5** reports the percentage of firms that have already or are considering increasing the amount of cost-sharing with employees, making changes to prescription coverage, or switching over to private exchanges for their workers.

Eighty-seven percent of firms have already or are considering increasing the employees’ share of medical expenses. The same trend also can be observed at a national level. A Mercer survey of firms reported that 80 percent have or were considering raising their deductibles (Pipes, 2014). Firms are also implementing changes to their prescription drug coverage, with sixty-two percent having already made changes or considering them.

Private health exchanges can be a way of containing costs and is an option that is relatively new to most firms. A private exchange is a marketplace where employers purchase health insurance for their employees, typically up to a predetermined dollar amount, and employees select their health benefits from participating insurance companies. Administrative burdens are typically lower with this structure, and employees often get more plan choices. However, it is still not clear in this early stage whether private exchanges actually decrease costs (Pauly & Harrington, 2013).

Figure 5 also shows the percentage of firms that are already using a private exchange or are considering it. Only 3 percent of firms have already switched, while 36 percent are considering it. This number is in line with national trends, where, by next year, 3 percent of large employers are expected to provide insurance through a private exchange, and 35 percent said they are considering doing so (NBGH, 2015).

Cadillac Tax

In 2018, the ACA’s “Cadillac Tax” will go into effect. Health insurance plans valued at more than \$10,200 for single coverage and \$27,500 for family coverage will incur a 40 percent excise tax on each dollar over these limits. The Kaiser Family Foundation (2014) estimated that 25 percent of employers could be subject to the tax in 2018, 30 percent by 2023, and 42 percent by 2028. These increases result from the fact that the tax threshold is indexed to the Consumer Price Index (CPI) annually, while health care costs have been rising at a much higher rate. In fact, by 2031, it is estimated that the average family health plan will hit the tax threshold (American Policy Institute, 2014). A national Aon Hewitt survey shows that while 25 percent of firms do not know yet if they will be subject to the tax, 62 percent are taking immediate steps to decrease their exposure. Thirty-three percent are increasing out-of-pocket costs, while 10 percent are reducing the number of high-cost plans they offer (Aon Hewitt, 2014).

Figure 6 shows the percentage of firms that will be subject to the tax in 2018. Eight percent of firms say they will, while 56 percent say they will not. Thirty-six percent are not sure if they will be subject to the tax or not. Our 2015 result is higher than the Aon Hewitt survey results, and considering that the Aon study was done a year earlier, we would expect that in 2015 even more firms would know if they will be subject to the tax. **Figure 7** reports the measures firms are taking to prepare for the tax. Firms’ unresponsiveness is much higher than what is reported nationally. While 14 percent of firms are making changes to their benefits, 42 percent are either waiting to make a decision or are unsure about what they should do.

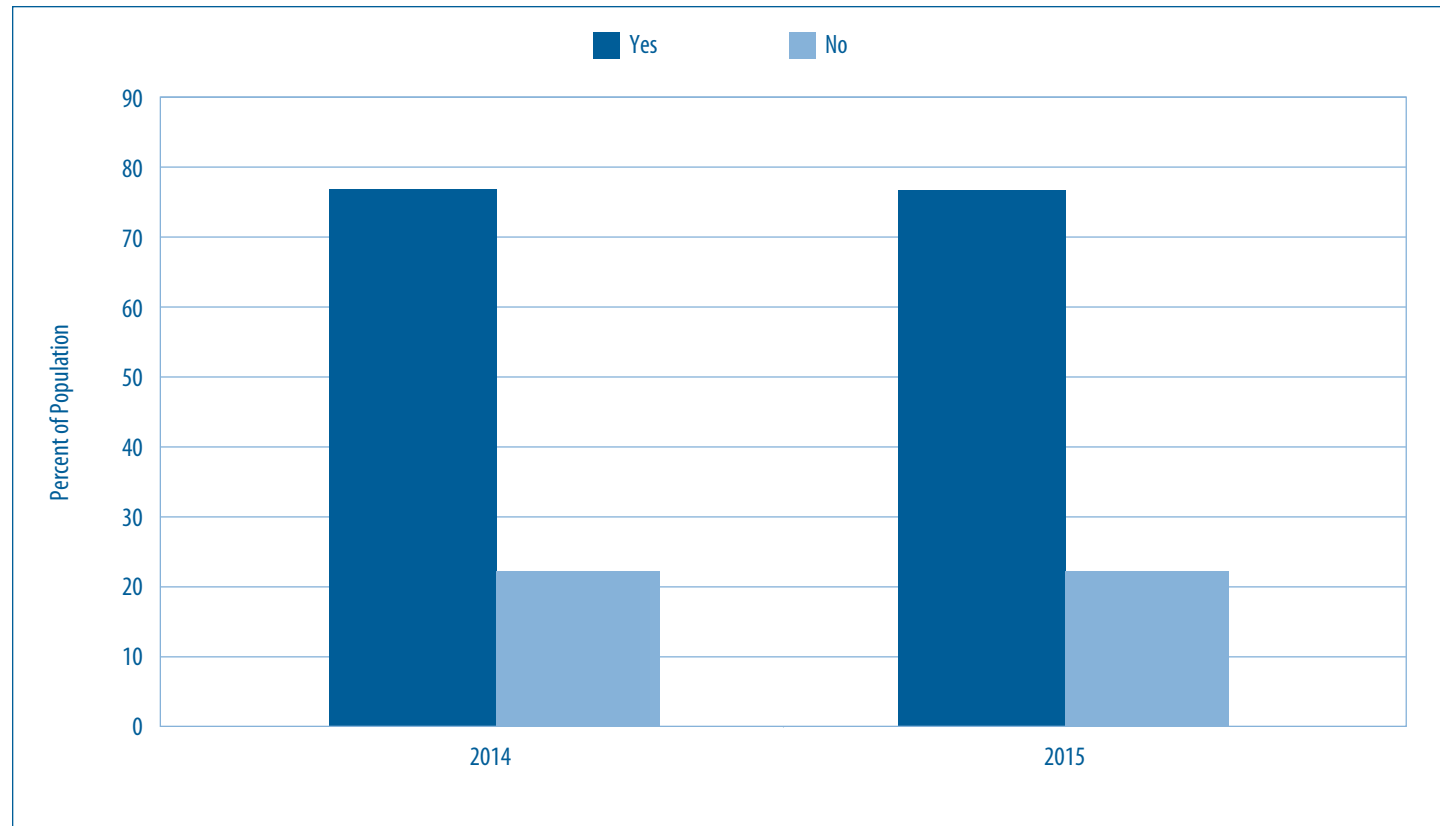
Conclusion

In most respects, Michigan employers appear to be responding to the Affordable Care Act in similar ways to their national counterparts, by increasing their use of high deductible plans and considering switching to private exchanges. They are also containing costs by increasing the share of health insurance costs for employees and making cost-saving changes to prescription coverage. Michigan employers are falling behind in some aspects, however. A third of firms do not know if they will be subject to the 2018 Cadillac Tax, and of those that do, most either do not know how they will prepare to comply, or are taking a “wait-and-see” approach. Whether intentional or not, Michigan employers’ cost-containment efforts are addressing the Cadillac Tax. Firms indicated moving to high deductible health plans and increasing employees’ cost share, both of which are strategies to minimize exposure to the tax. Given that this tax will add to a firm’s health insurance costs, firms cannot afford to be uninformed.

References:

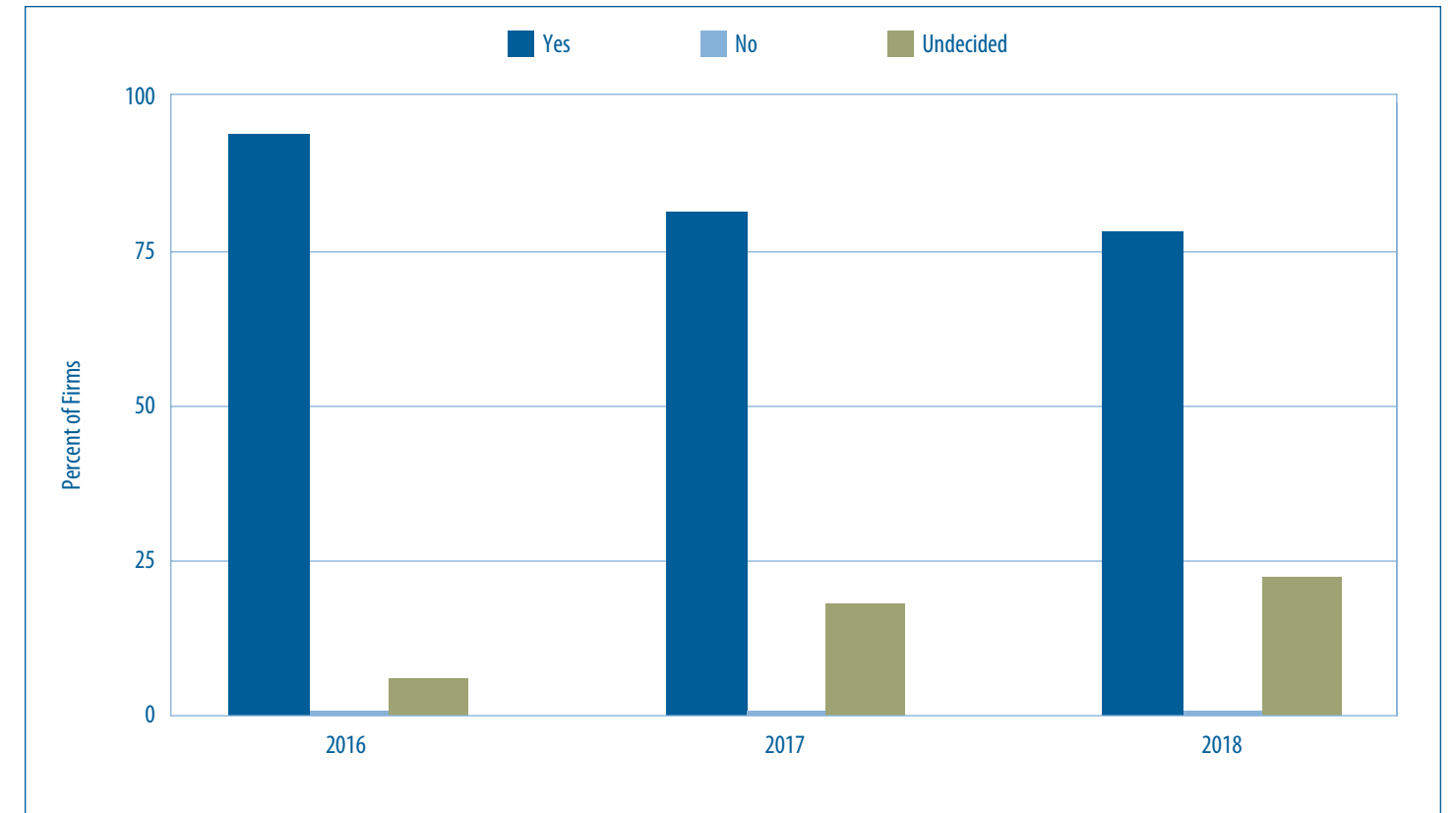
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Figure 1: Percentage of Firms Offering Health Insurance



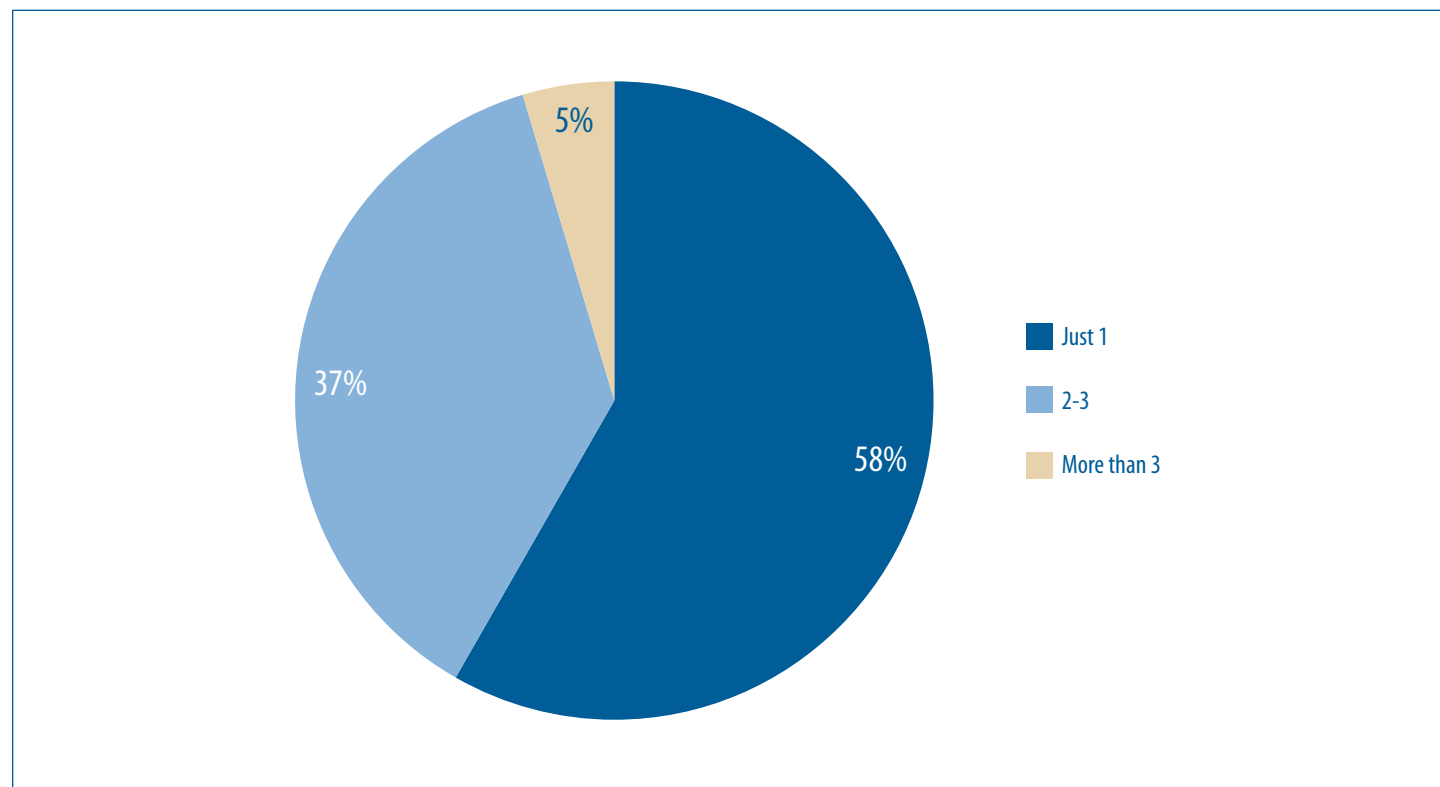
Number of observations: 194
Source: Author's calculations

Figure 3: Percentage of Firms Expecting to Offer Health Insurance



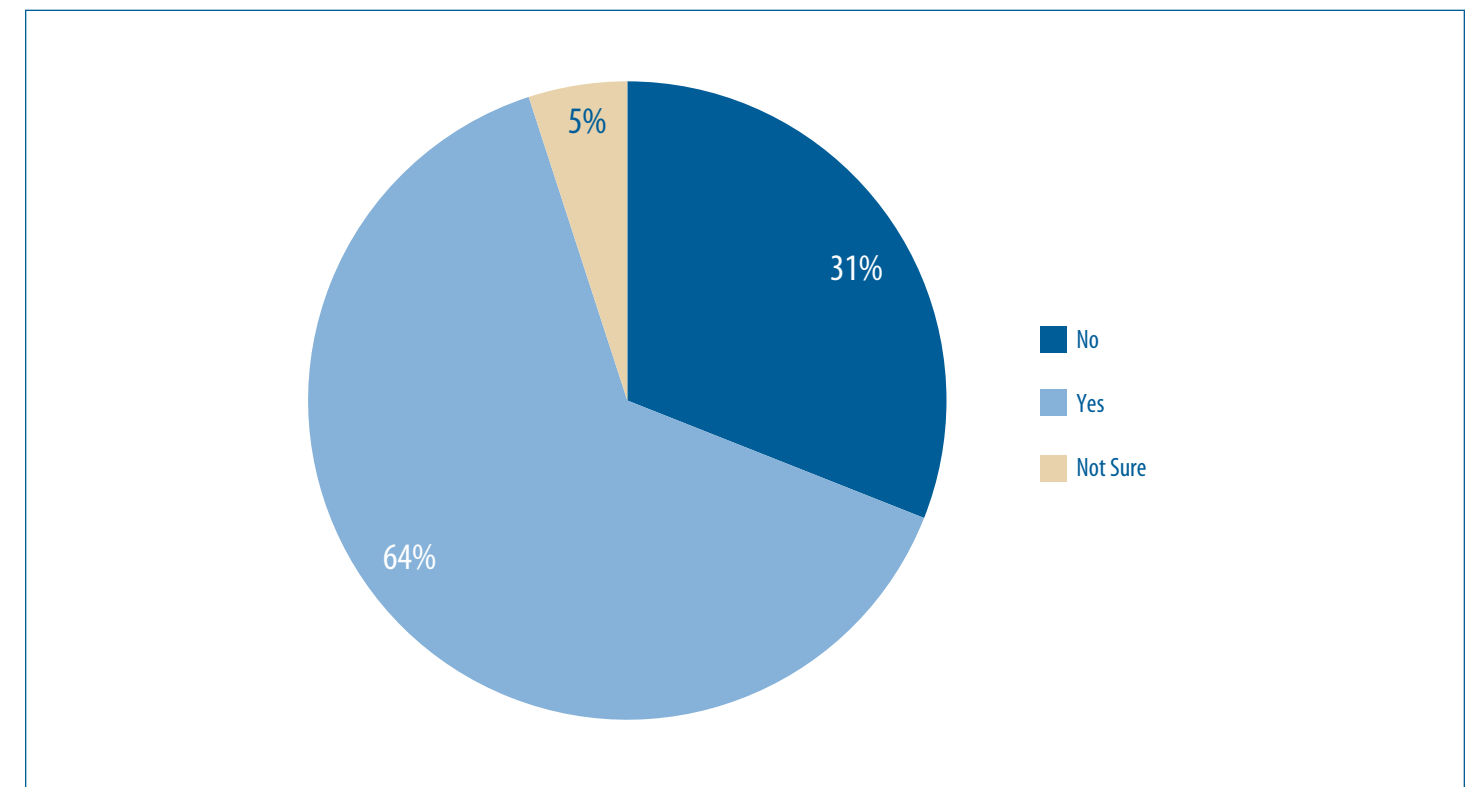
Number of observations, 2016: 151
Number of observations, 2017: 151
Number of observations, 2018: 151
Source: Author's calculations
Note: Denominator is only firms that offer insurance in 2015.

Figure 2: Number of Health Insurance Plans Offered, 2015



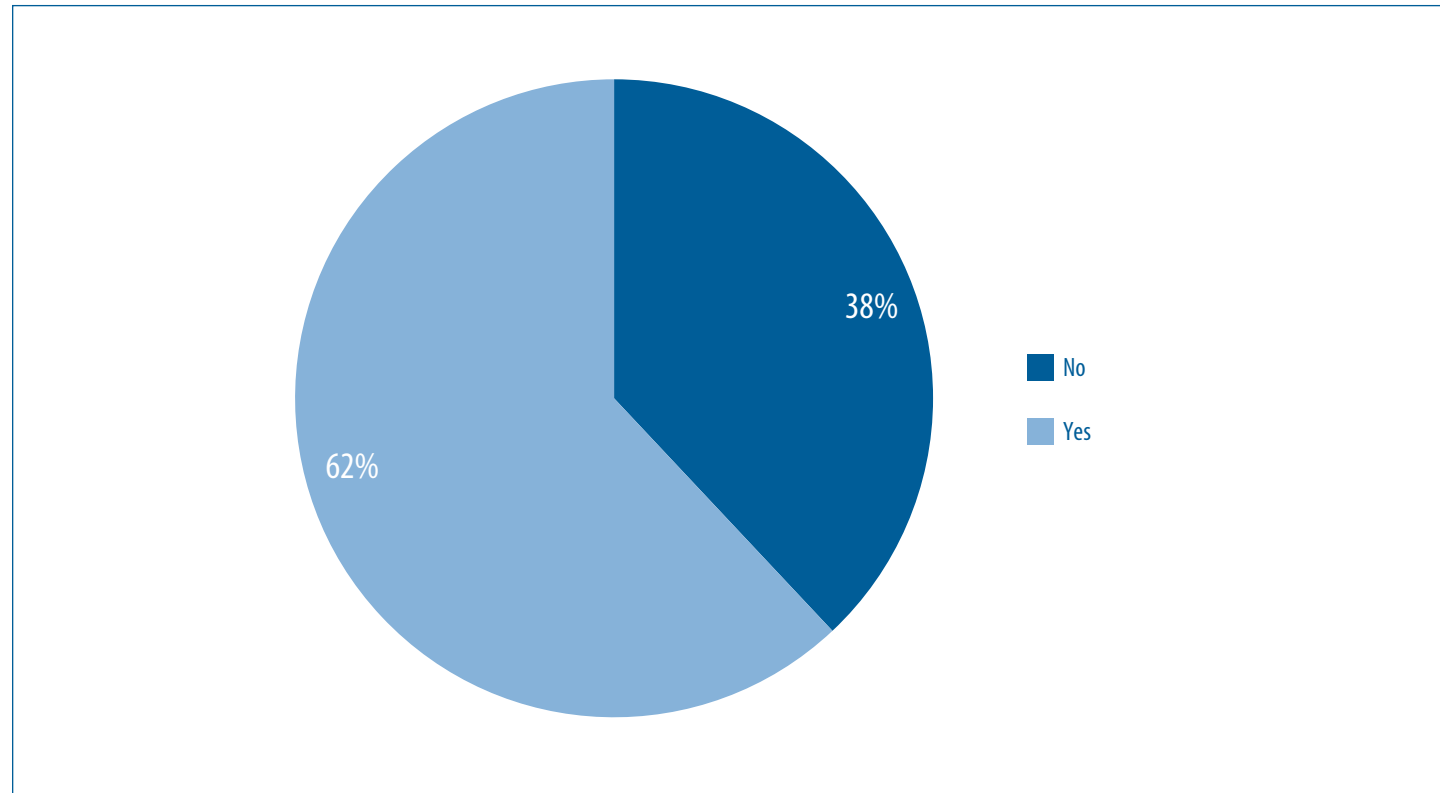
Number of observations: 151
Note: Denominator is only firms that offer insurance in 2015.
Source: Author's calculations

Figure 4a: Percentage of Firms that Offer High Deductible Plans, 2015



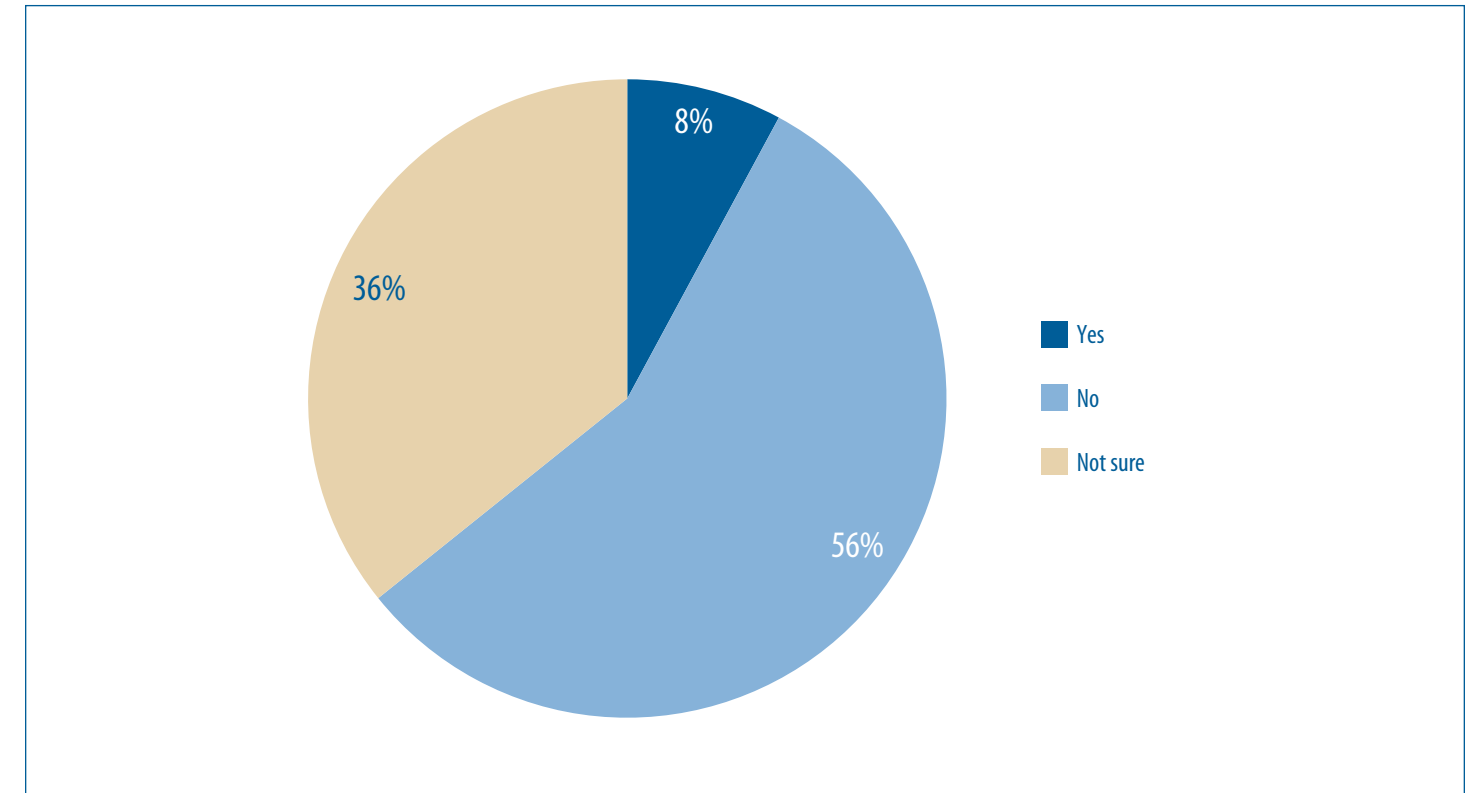
Number of observations: 151
Note: Denominator is only firms that offer insurance in 2015.
Source: Author's calculations

Figure 4b: Percentage of Firms that Offer an HSA with a High Deductible Plan, 2015



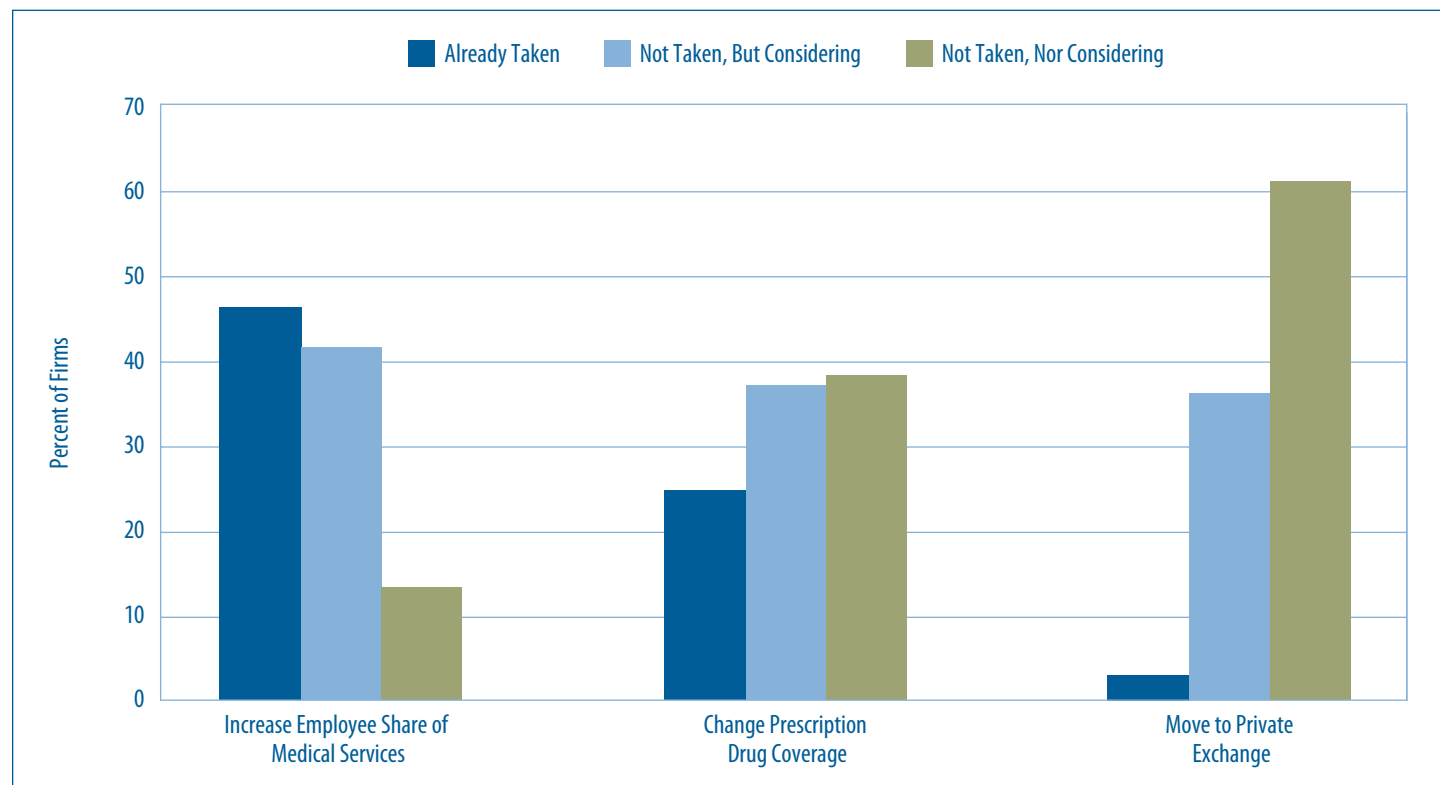
Number of observations: 96
 Note: Denominator is only firms that offer High Deductible Plans.
 Source: Author's calculations

Figure 6: Percentage of Firms Subject to the Cadillac Tax in 2018



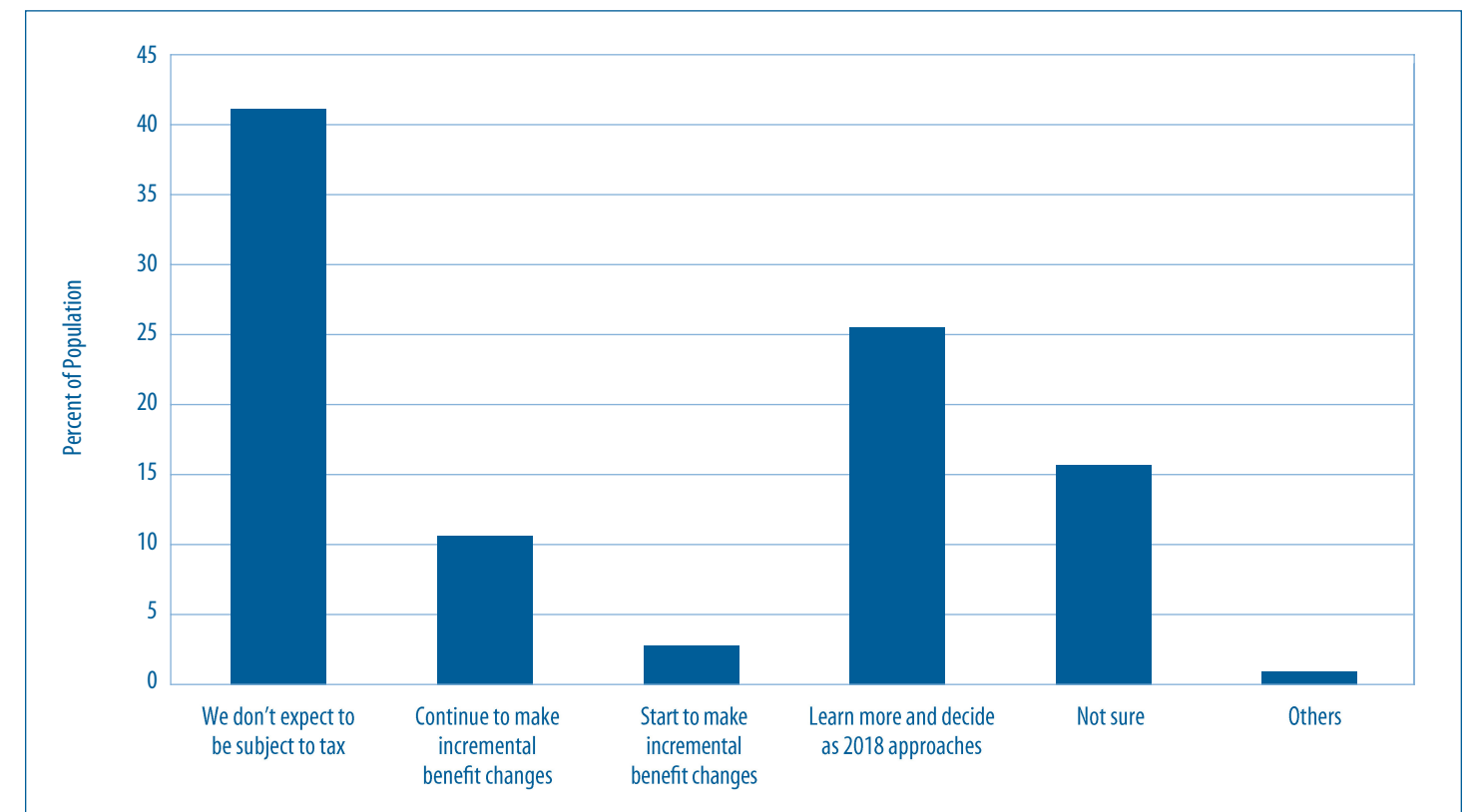
Number of observations: 165
 Denominator is only firms that will offer health insurance in 2018.
 Source: Author's calculations

Figure 5. Percentage of Firms Using Cost Containment Measures, 2015



Number of observations: Increase Employee Share of Medical Services 143, Change Prescription Drug Coverage 137, Move to Private Exchange 133
 Note: Denominator is only firms that offer insurance in 2015.
 Source: Author's calculations

Figure 7: Firm Preparations for the Cadillac Tax



Number of observations: 178
 Source: Author's calculations

The Affordable Care Act and Community Survey

The recent roll out of the Affordable Care Act has changed the health care and health insurance landscape immensely. Michigan opened its public exchange on October 2013 and expanded its Medicaid program in April 2014 to include individuals earning up to 133 percent of the poverty line. Estimates report a 14 percent reduction in the uninsured rate, from the first year of the Medicaid expansion alone (Anderson, 2015). Furthermore, by the end of March 2015, just fewer than 300,000 Michigan residents had secured plans on the public exchange (Norris, 2015).

How have these changes affected health insurance and primary physician care in Western Michigan? We interviewed 502 individuals in July and August 2015 to ask how these changes have affected them. The anonymous survey was administered in person at five events: three took place at free movies on the lawn in downtown Grand Rapids; two were conducted on weekend evenings at an area movie theater. The Grand Valley students administering the surveys were trained in random sampling techniques before surveying took place.

Demographics

We report the characteristics of our sample in **Table 1**. The overwhelming majority of respondents, 96 percent, live in West Michigan. We are confident that our sample is representative by race, with 81 percent of respondents reporting they are white, 8 percent black, and 6 percent Hispanic. According to The Right Place (2015), West Michigan was 82 percent white, 6 percent black, and 8 percent Hispanic in 2014.

Types of Health Insurance

In **Figure 2**, we categorize respondents by type of health insurance coverage. Not surprisingly, the largest source of health insurance is employer-provided insurance (53 percent). Nine percent of individuals are on Medicaid, and 9 percent are uninsured. Eight percent are still on their parents' plan, while 7 percent purchased individual insurance directly from an insurance agent, and six percent of respondents have "other" types of plans (e.g., veterans insurance). Four percent purchase insurance on the ACA marketplace, while covered by Medicare.

In order to gauge whether our sample mirrors that of the U.S., we compared our numbers to the U.S. population. Nationally, 55 percent of individuals had employer-based insurance in 2014, only two percentage points higher than in our survey. Similarly, our uninsured rate is close to the national rate, with 10.4 percent of Americans uninsured in 2014. Our survey shows 11 percent of respondents purchased individual plans, and the national rate was 15 percent. The two areas where we under-sampled populations, however, are Medicare and Medicaid enrollees, who are 16 percent and 20 percent of the population, respectively (Smith & Medalia, 2015). Our sample has 4 percent Medicare and 9 percent Medicaid enrollees.

The Uninsured

Figure 3 shows 2015 coverage for individuals who said they were uninsured in 2014. The results show that the vast majority of uninsured in 2014 (76 percent) obtained some type of insurance by 2015. Twenty-six percent obtained insurance through an employer, 19 percent are now covered by Medicaid, and 10 percent now have a plan from an insurance agent. Nine percent of individuals purchased a plan from the ACA marketplace. This drop in uninsured individuals is not surprising, as the uninsured rate in the U.S. fell from 13.3 percent in 2013 to 10.4 percent in 2014 (Smith & Medalia, 2015).

Frequency of Doctor's Visits

Having health insurance can affect whether an individual sees their primary care provider for preventative visits or seeks care from emergency rooms (ERs). **Figure 4** reports the frequency and circumstances with which individuals see a physician. Overall, 55 percent see their physician for preventative care and 36 percent only see them when they are sick. A much smaller percentage (6 percent) never see a physician and 3 percent use the ER instead of seeing a physician.

Health care is expensive and having health insurance can make the decision to see a physician much easier. Hence, we also report physician visits by insurance status in **Figure 4**. Nineteen percent of uninsured individuals get preventative care versus 58 percent of those with insurance. In addition, 43 percent of the uninsured either never see a doctor or use the ER, while only 6 percent of the insured choose no care.

Primary Care in 2014–2015

One of the most common arguments against the Medicaid expansion was that the influx of new Medicaid patients would cause an over demand for primary care providers, making it difficult for the newly insured — and possibly everyone else — to get access to care. Thus, we explored if primary care services were able to absorb the new patients without increasing wait times.

Figure 5 shows that overall, only 11 percent of respondents reported that waiting room times have gotten longer over the last year. The majority (65 percent) say there has been no change. Additionally, 88 percent of respondents report that there has either been no change or the amount of time with the care provider has actually increased. Finally, we see that the majority of respondents (67 percent) have experienced no change in their ability to pay for medical care, while 17 percent say it is more difficult, and 16 percent report it is easier. Because income, employment, and a host of other factors may affect an individual's ability to pay, connecting this last result directly to the health care climate is difficult.

Figure 6 addresses the issue of access to care after the Medicaid expansion. Overall, only 10 percent report it is more difficult to find a care provider, while 14 percent say it has gotten easier. To see if those with Medicaid are having a harder time finding physicians than are those who are privately insured, we break **Figure 6** down into those insured by Medicaid and those with private health insurance. While 10 percent of the privately insured say it has become more difficult, 12 percent report that it has gotten easier. For those on Medicaid, we actually see a larger percentage saying that finding a physician has become easier this year (27 percent), with 18 percent saying it is more difficult. These results are consistent with a recently released study that shows the ability to find a doctor who will take Medicaid patients has increased by 6 percent from before the expansion. Alternatively, the availability of care for private health insurees fell 2 percent (Tpirneni et al., 2015).

Conclusion

Overall, it appears that while more people became insured in West Michigan in the last year, there has been little change in the health care market with respect to access to care, wait times at the doctor's office, and time with the physician. Although many expected the Medicaid expansion and opening of public exchanges to negatively affect primary care, Medicaid patients actually saw increased access to care, while those with private insurance essentially saw no change.

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¹ West Michigan includes Allegan, Barry, Ionia, Kent, Lake, Mason, Mecosta, Montcalm, Muskegon, Newaygo, Oceana, Osceola, and Ottawa counties.

² We were unable to compare our age statistics with those of West Michigan, since the age categories in our survey differed significantly from those used in the population data.

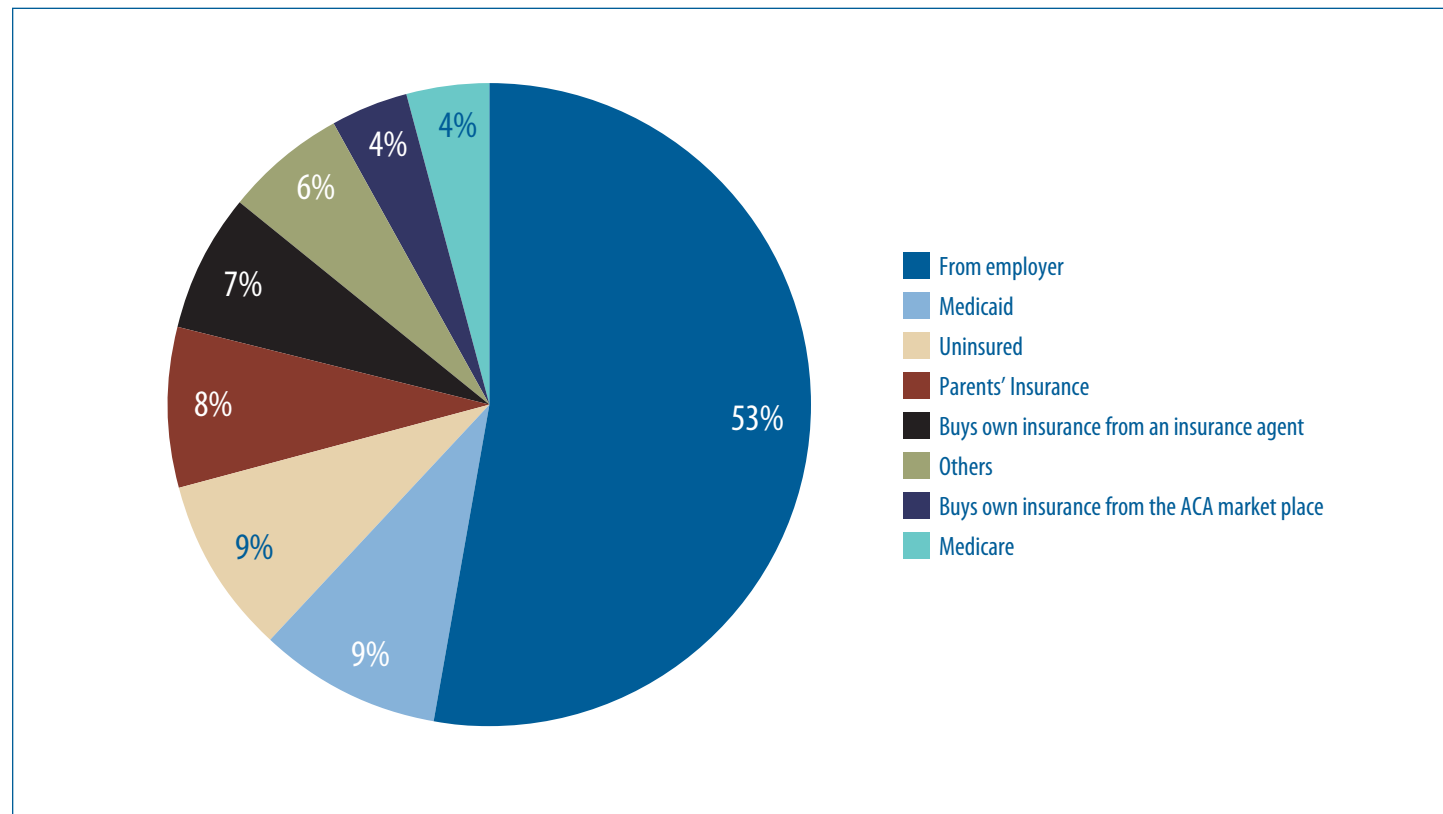
³ Respondents on their parents' plan are between the ages of 18 and 26. The ACA expanded the age individuals can stay on their parents' plan to 26. Because we do not know the nature of these respondents' plans, we created a separate category for them.

Table 1: Age, Race/Ethnicity, Gender, and Location

	Percentage
Age	
18-25	27%
26-35	30%
36-64	39%
Over 65	4%
Race/Ethnicity	
White, Non-Hispanic	81%
Black, Non-Hispanic	8%
Hispanic	6%
Others	5%
Gender	
Female	59%
Male	41%
Zipcode	
KOMA	96%
Non-KOMA	4%

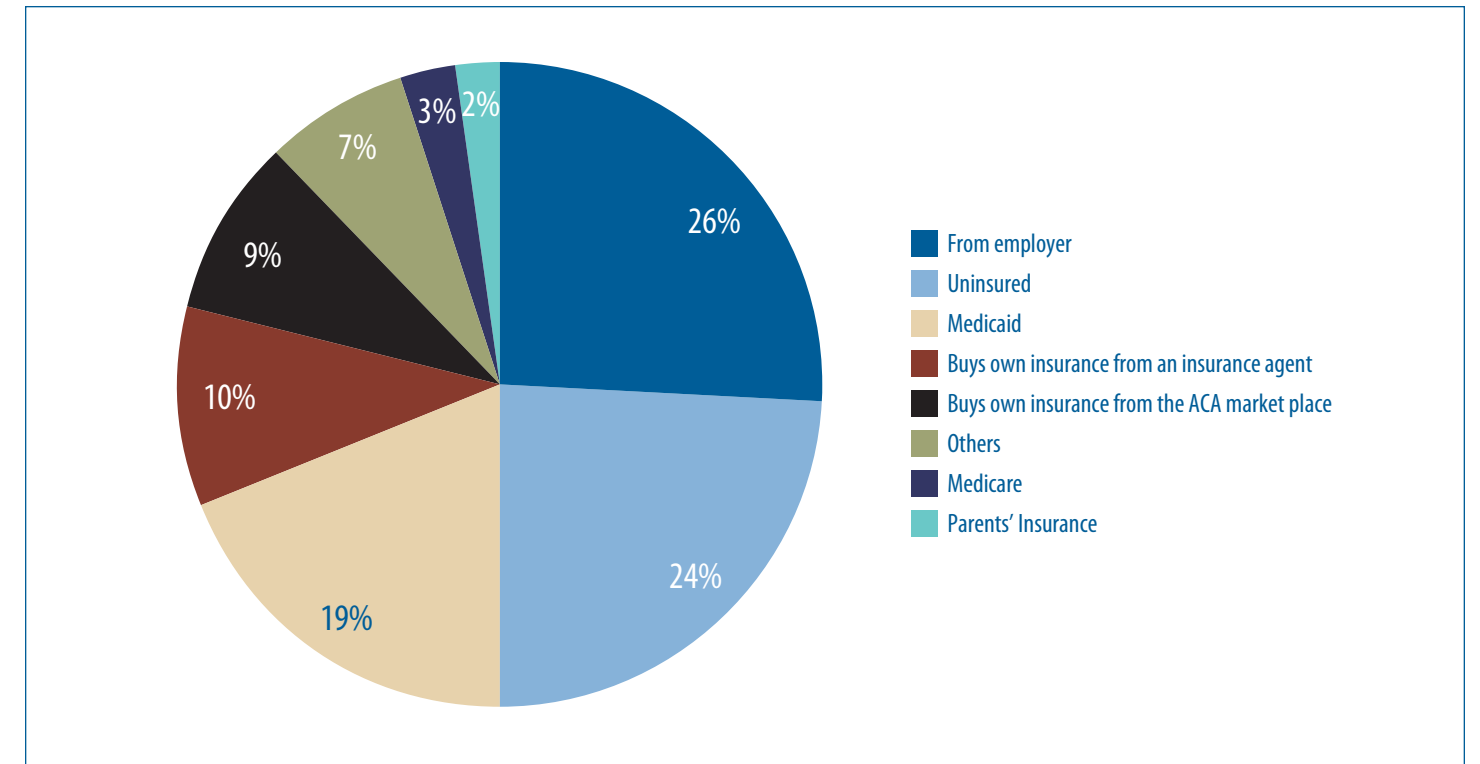
Number of observations: 502
Source: Author's calculations

Figure 2: Health Insurance Source



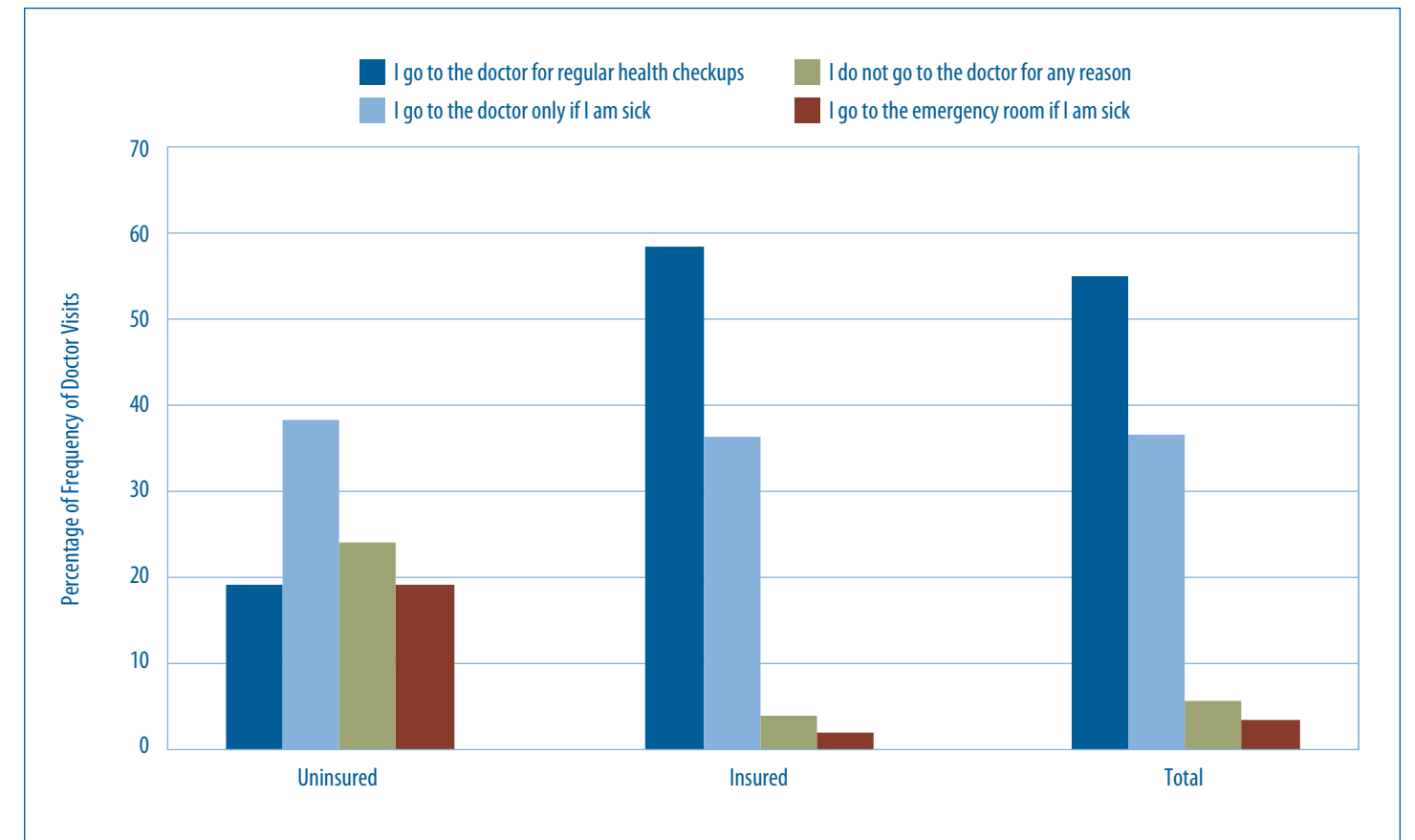
Number of observations: 499
Source: Author's calculations

Figure 3: 2015 Health Insurance Status for Those Uninsured in 2014



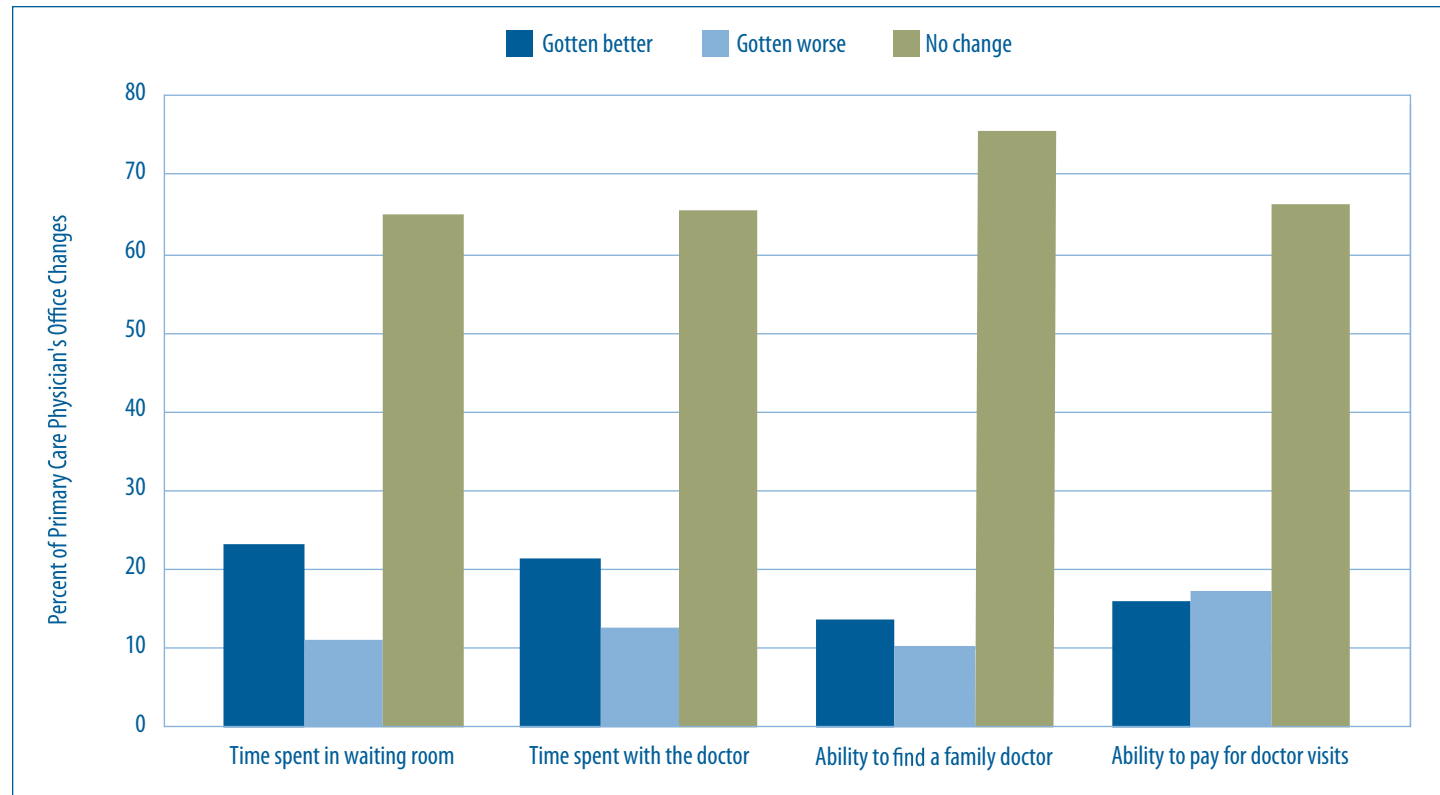
Number of observations: 96
Source: Author's calculations

Figure 4: Frequency of Doctor Visits for the Uninsured vs Insured



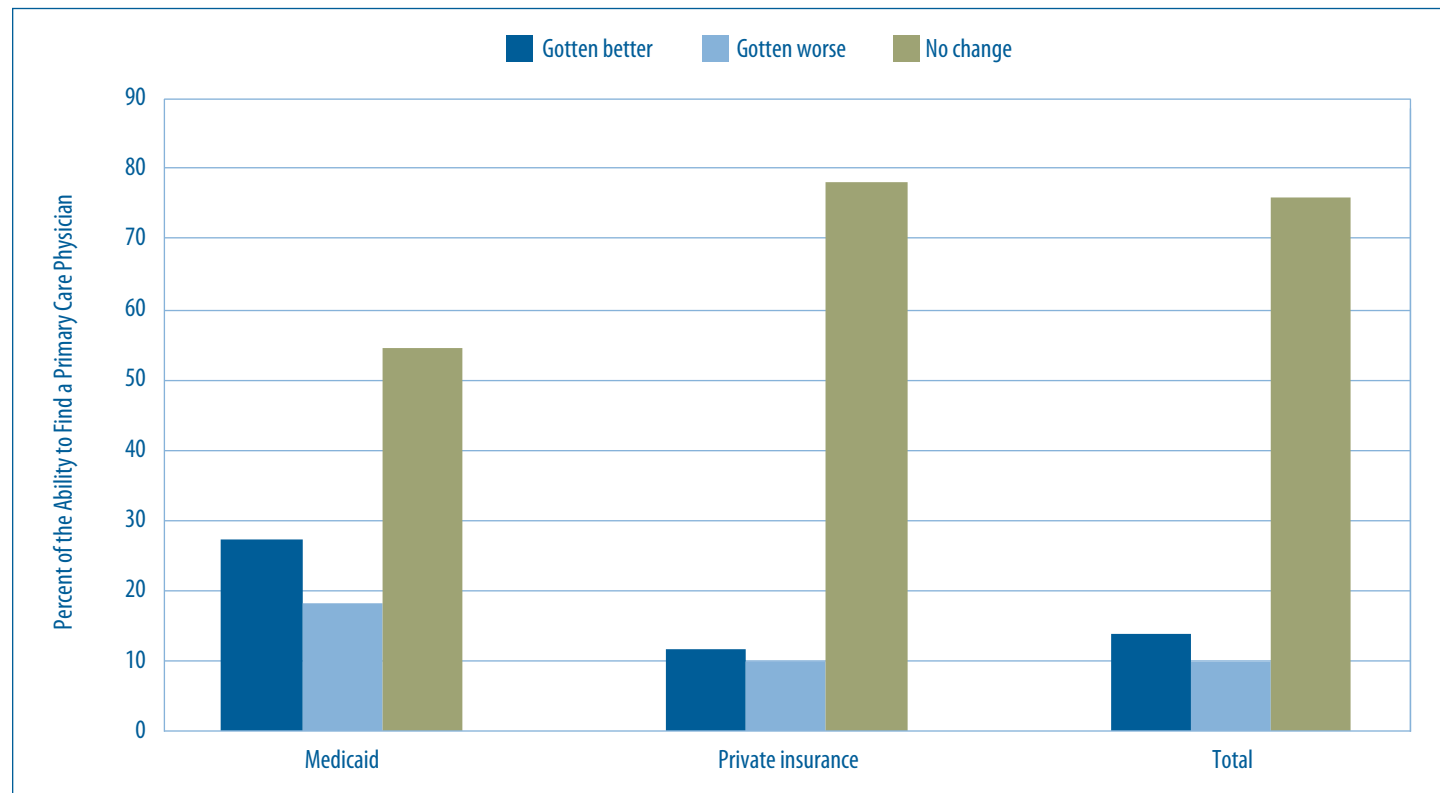
Number of observations: 490
Source: Author's calculations

Figure 5: Primary Care Physician's Office Changes in the Last Year



Number of observations: 487
Source: Author's calculations

Figure 6: Ability to Find a Primary Care Physician — Medicaid and Private Insurance



Number of observations: 483
Source: Author's calculations

Major Medical Conditions: Expenditure Analysis

This analysis provides general information about some of the most prevalent and expensive medical conditions to assist with focusing resources to improve community health. The long-term goal of this analysis is to identify and track health care expenditures for selected chronic health conditions and to examine geographic differences in the cost of care.

The data presented in this section are member expenditures for those enrolled in private health insurance plans administered by Blue Care Network (BCN), Blue Cross Blue Shield of Michigan (BCBSM), and Priority Health (PH) for the year 2014. The following factors should be considered when interpreting our analyses in this section:

- **Differences in benefit structures.** Both BCN and PH offer primarily HMO products, while BCBSM members are predominantly enrolled in PPO plans. HMOs tend to operate through selective contracting and provider referrals, utilizing networks in order to achieve cost savings. PPOs tend to have fewer restrictions on members seeking care, and therefore, usually require additional member cost-sharing in the form of higher premiums, higher coinsurance rates, or higher copays. Because of these differences in benefit structures, evidence suggests that HMO plans are more attractive to enrollees who are healthier, who have less complex medical needs, or who have no longstanding ties to particular providers (Ji & Liu, 2007; Nicholson et al., 2004; Tchernis et al., 2006). However, some research has failed to find a substantial difference in health status for those enrolling in HMO plans (Schaefer & Reschovsky, 2002).
- **Disease selection.** The health status, and thus the expenditures, for members with specific conditions might vary due to differences in demographics and health behaviors. In other words, patients in some counties insured by one payer may be sicker than patients in other counties who are insured by a different payer.
- **Expenditures beyond disease.** In each case, the average patient expenditure data is for services not only related to the specific disease in question, but also for other unrelated medical costs the member may have incurred during the year. Differences in expenditures or treatment intensity for these unrelated issues can result in additional variation in average patient expenditure estimates.

Expenditure estimates from each insurer can vary considerably because of these factors. Thus we average the data for all three insurers to arrive at a more robust estimate of member expenditures.

KOMA Expenditures

As we have done in previous versions of this publication, we chose to focus on six chronic conditions that are associated with high prevalence rates and high levels of resource utilization: asthma, coronary artery disease (CAD), depression, diabetes, hyperlipidemia, and low back pain. **Figure 1** provides the average annual cost per member for each of these conditions in Kent, Ottawa, Muskegon, and Allegan (KOMA) counties in 2012, 2013, and 2014. In most cases, we identified members in each disease category according to specifications defined by the Healthcare Effectiveness Data and Information Set (HEDIS). We excluded Medicaid and Medicare enrollees from our expenditure estimates. Furthermore, for comparability to previous years, we excluded those with private insurance obtained through the Affordable Care Act (ACA) exchange. Exchange enrollees are included in the remaining figures in this section. Finally, all expenditure estimates in **Figure 1** are reported in 2014 dollars.

We note that even after adjusting for inflation, **Figure 1** indicates that expenditures for each condition have risen over the past three years. This increase is most apparent in members with CAD, who have seen average expenditures rise from \$16,807 per year in 2012 to \$20,912 in 2014, and diabetics, whose average expenditures rose from \$11,114 per year in 2012 to \$12,716 per year in 2014. It is important to note that expenditures are the product of the price of health care services and the intensity of treatment provided to patients. We do not have the data to separate these two components of total expenditures, so therefore we do not know if rising expenditures are due to rising prices or to the increased consumption of care.

Differences in Average Annual Expenditures between KOMA and the Detroit Region

Figure 2 compares average annual per member expenditures in both the KOMA and Detroit regions. We define the Detroit region as Oakland, Macomb, and Wayne counties. Slight differences between expenditure estimates for KOMA in **Figure 1** and **Figure 2** are due to the exclusion of ACA exchange enrollees from **Figure 1**. Additionally, **Figure 2** includes expenditure estimates for “Healthy Members”, those between the ages of 30 and 39 who had not been diagnosed with any of the six chronic conditions listed above and who have total annual expenditures below \$450,000.

Figure 2 indicates that average annual expenditures for members with asthma, depression, hyperlipidemia, and low back pain are all lower in KOMA than in the Detroit region. This is a slight change from last year, when the difference between the two regions in expenditures for asthma and hyperlipidemia were minimal. Similar to last year, average annual expenditures per member are similar in KOMA and the Detroit region for those diagnosed with diabetes,

while expenditures for CAD members are higher in the KOMA region than in the Detroit region. This marks the first time that we have seen higher expenditures for CAD in the KOMA region in two consecutive years of health plan data. However, the magnitude of the expenditure difference between the KOMA and the Detroit regions is smaller this year than last year, as expenditures in Detroit for CAD rose more quickly this past year than expenditures in KOMA. We also note that average annual member expenditures for healthy enrollees are quite similar for both regions at approximately \$3,200 per member per year.

Comorbidities

In this section, we take a closer look at expenditures associated with diabetes and depression by examining the impact of additional diagnoses. **Figure 3** plots average annual member expenditures for those with only a diagnosis of diabetes, those with a diagnosis of diabetes and asthma, diabetes and hypertension, diabetes and depression, and diabetes and CAD. One clear implication of the estimates in **Figure 3** is that the addition of comorbidities greatly impacts the average expenditures associated with a diagnosis of diabetes. For example, expenditures in KOMA for a member diagnosed with diabetes and depression compared to a diagnosis of diabetes alone adds approximately \$13,000 to the annual expenditure estimates. Once again, we compare expenditure estimates for KOMA and the Detroit region. **Figure 3** indicates that average annual expenditures for those with diabetes only are slightly higher in KOMA than in Detroit, however, when combined with asthma, hypertension, or depression, diabetics in Detroit have higher annual expenditures. Again, we see that treatment for CAD tends to be higher on the west side of the state. Diabetics with CAD have average annual expenditures of \$33,389 in KOMA compared to \$28,658 in the Detroit region.

Figure 4 displays the results of a similar analysis that focuses on depression. We find that for depression and depression with asthma, hyperlipidemia, and diabetes, average annual expenditures per member are lower in KOMA than in the Detroit region. However, as was the case with diabetes, average annual expenditures for depression with CAD are significantly higher in KOMA than in the Detroit region.

Geographic Variation in Expenditures

In **Figures 5–8**, we plot expenditure estimates by zip code in order to examine the degree to which expenditures for chronic conditions vary over relatively small geographic areas. For each condition analyzed in this section, we limited our analysis to zip codes with at least 30 members distributed across at least two of the three payers supplying member data. We also adjusted our expenditure estimates for differences in zip code level, population age, income, and education. Therefore, our estimates can be interpreted as a comparison of expenditures for individuals at the same age, with the same income, and the same level of education across different zip codes. On average, over the conditions that we examined, age, income, and education can explain approximately 15 percent of the variation in expenditures at the zip code level.

Expenditures for diabetes are divided into five quantiles and mapped by zip code in **Figure 5**. Those in the lowest quantile have average annual expenditures between \$9,307 and \$12,670, while those in the highest quantile have average annual expenditures between \$14,216 and \$15,674. In both Grand Rapids and Detroit, adjusted expenditures for diabetics appear to be lower in the urban areas and higher in the suburban or outlying rural regions. In West Michigan, areas to the north and southwest of Grand Rapids experience the highest average annual expenditures for members with a diabetes diagnosis.

Figure 6 follows the same methodology in order to map average annual expenditures for depression. In this case, those in the lowest quantile have expenditures ranging from \$7,444 to \$11,582, while expenditures for those in the highest quantile are between \$13,236 and \$16,788. Here we see that the Detroit region contains a greater proportion of high expenditure zip codes than Grand Rapids and its surrounding areas. We also note a similar pattern on the west side of the state for depression and diabetes, in that zip codes to the north and southwest of the city of Grand Rapids tend to experience relatively higher expenditures.

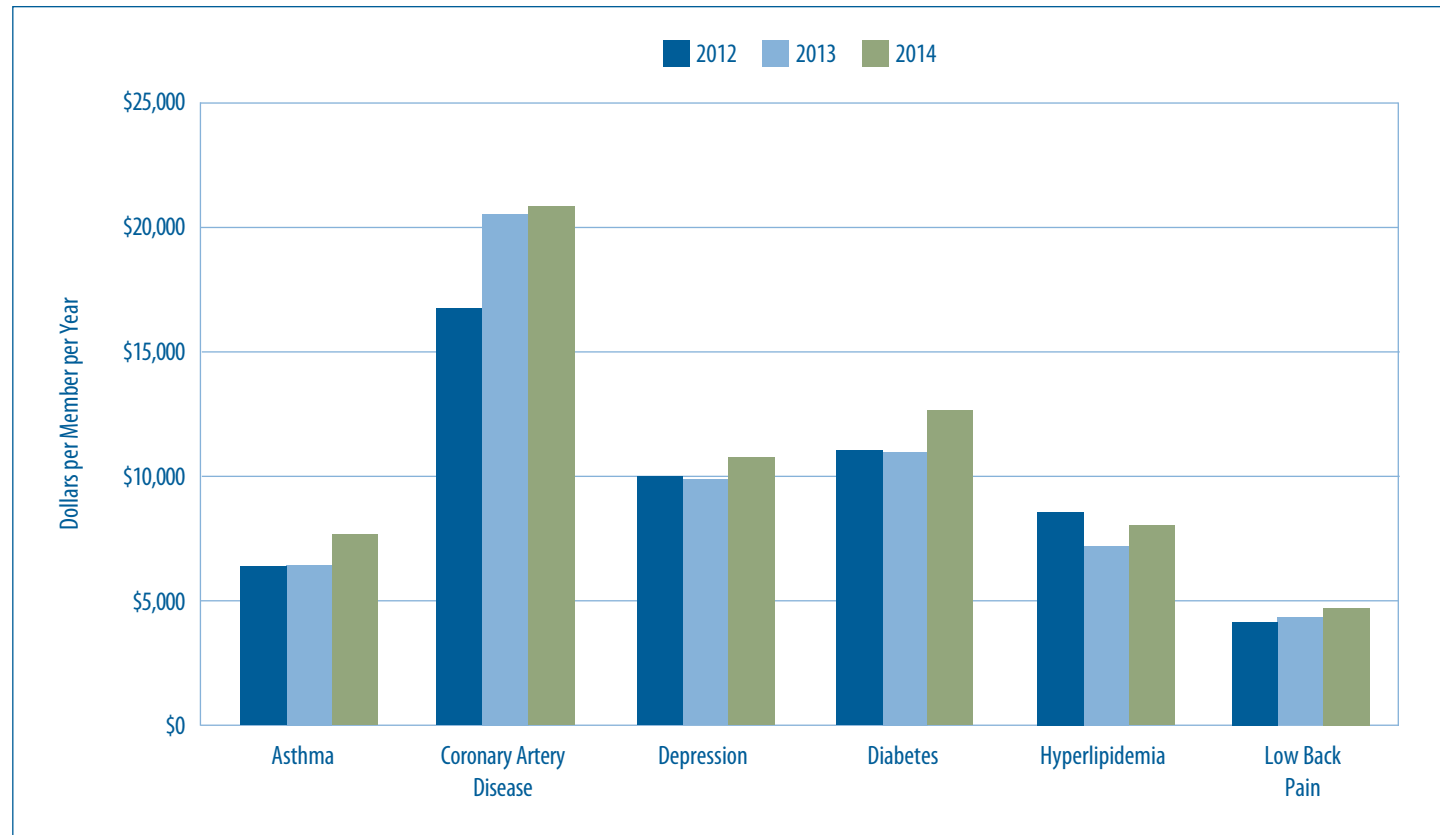
Zip code level estimates for CAD expenditures are mapped in **Figure 7**. Once again, the Detroit region has a higher concentration of high expenditure zip codes. However, we now see that several zip codes within the city of Grand Rapids tend toward the higher expenditure quantiles. Also, despite fewer overall zip codes included in the CAD analysis, we still see that areas to the north and southwest of Grand Rapids seem to contain a number of high expenditure zip codes.

Finally, **Figure 8** plots average annual expenditures at the zip code level for members with low back pain. Generally, treatment for low back pain is thought to depend a great deal on the preferences of patients and their physicians. Therefore, we might expect to see a greater variance in expenditures for low back pain. Here the distinction between expenditures on the west and east side of the state is more stark. With the exception of a few zip codes to the north and southwest of Grand Rapids, all zip codes in the highest quantile of expenditures are on the east side of the state. This pattern may be indicative of the higher concentration of manufacturing jobs that require physical labor on the east side of the state.

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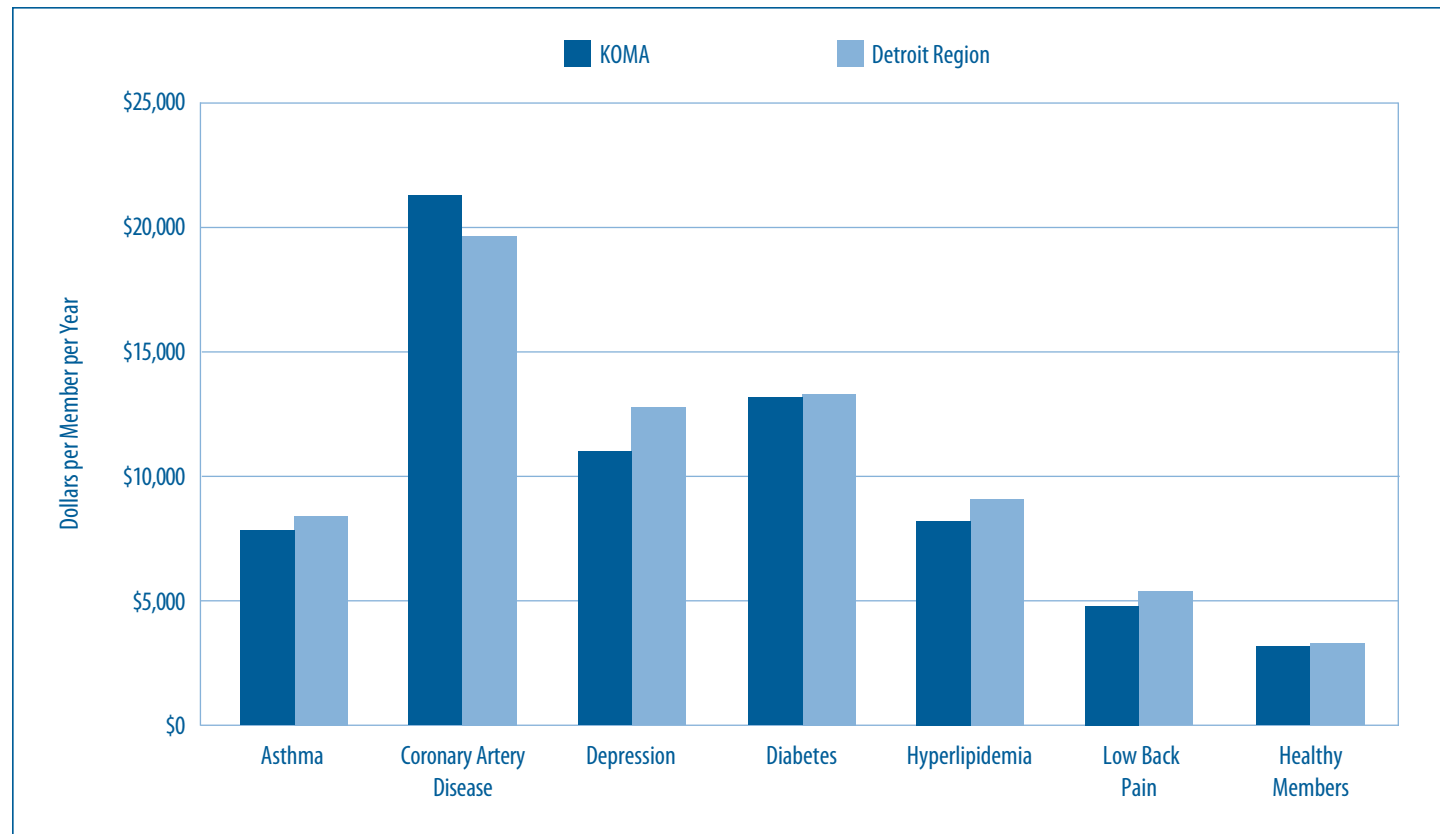
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Figure 1: Average Expenditures per Member in KOMA, 2012–2014



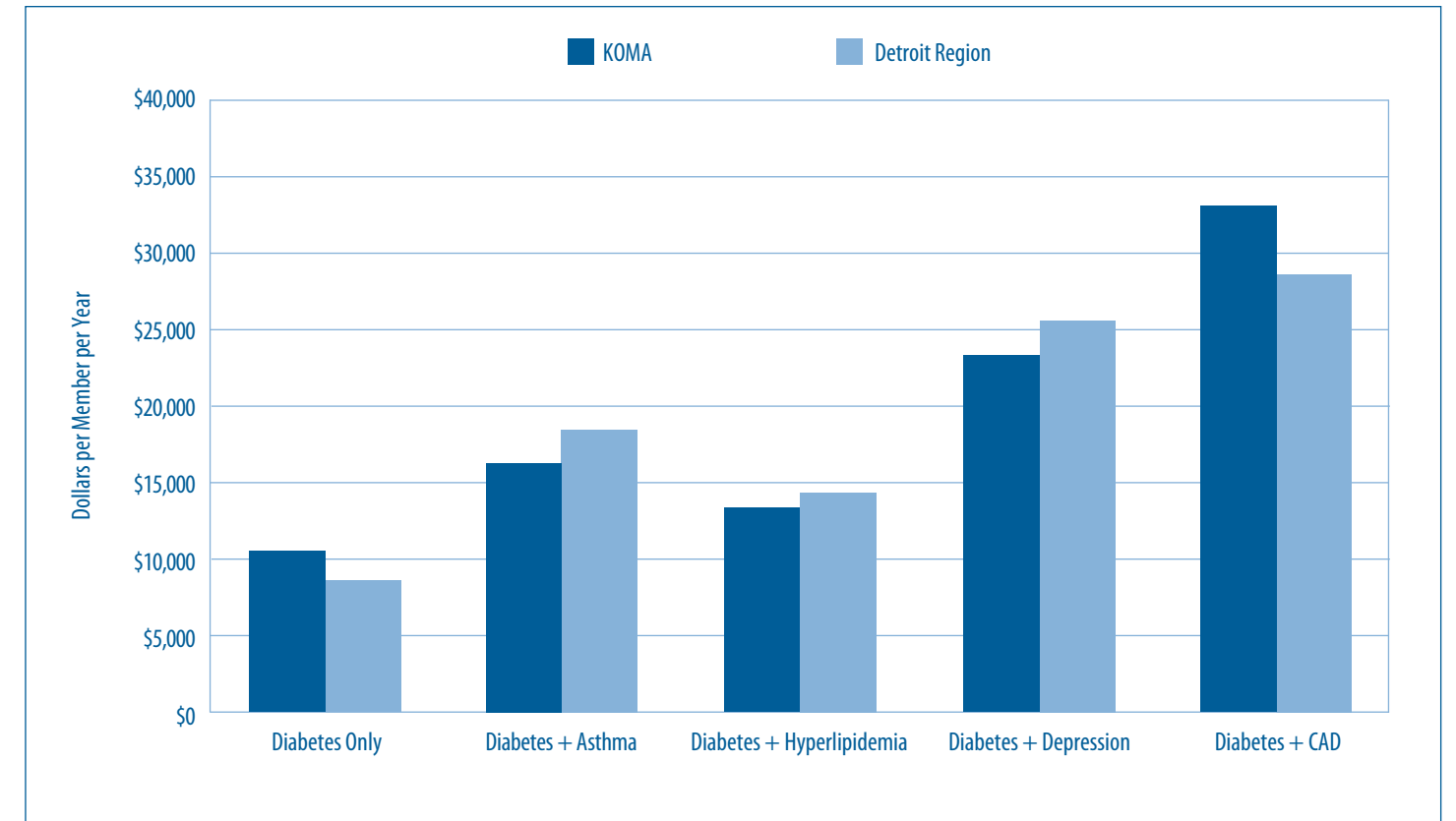
Source: BCBSM, BCN, and Priority Health member data

Figure 2: Average Expenditures per Member, 2014



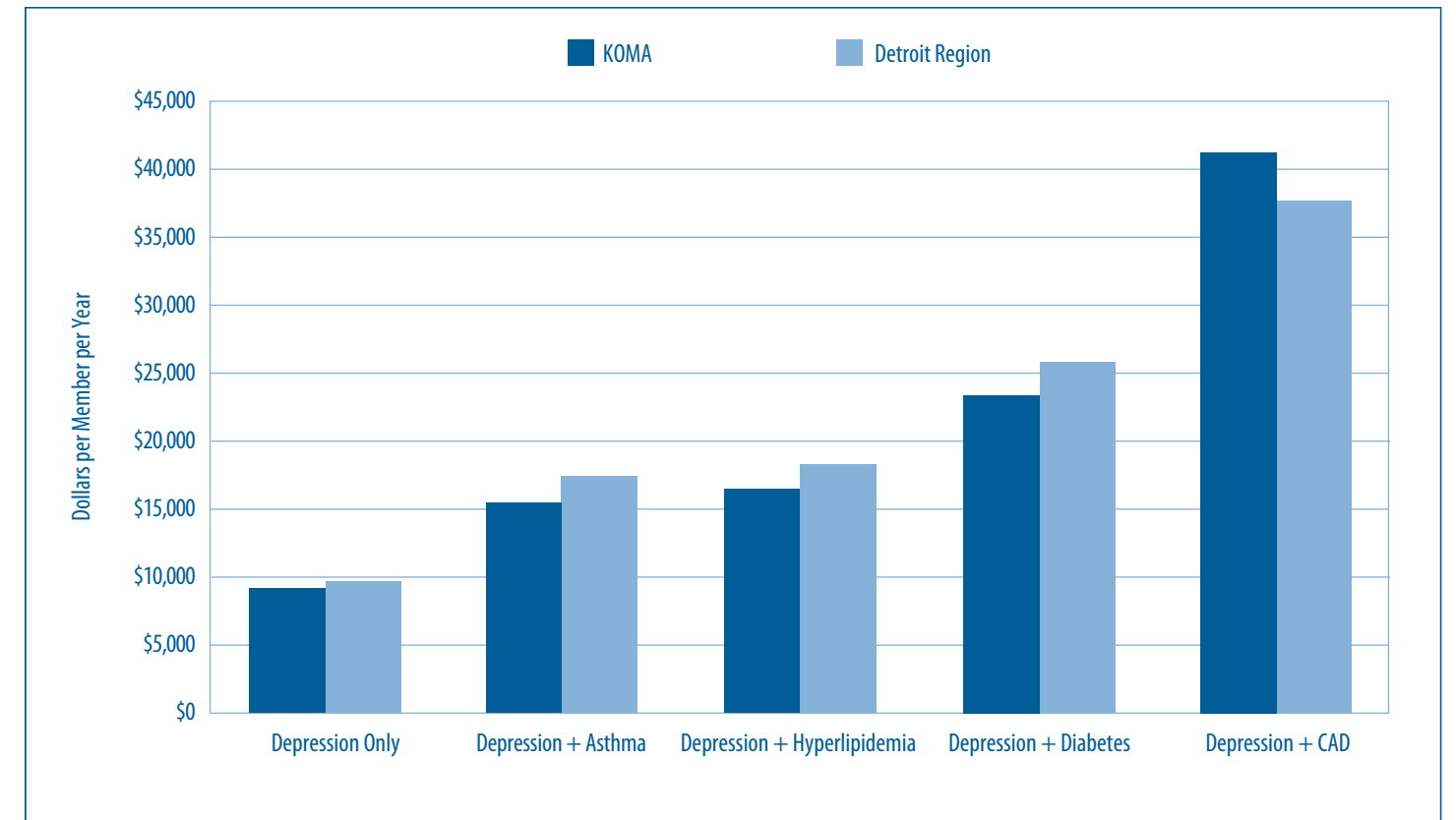
Source: BCBSM, BCN, and Priority Health member data

Figure 3: Expenditures on Members with Diabetes and Comorbidities, 2014



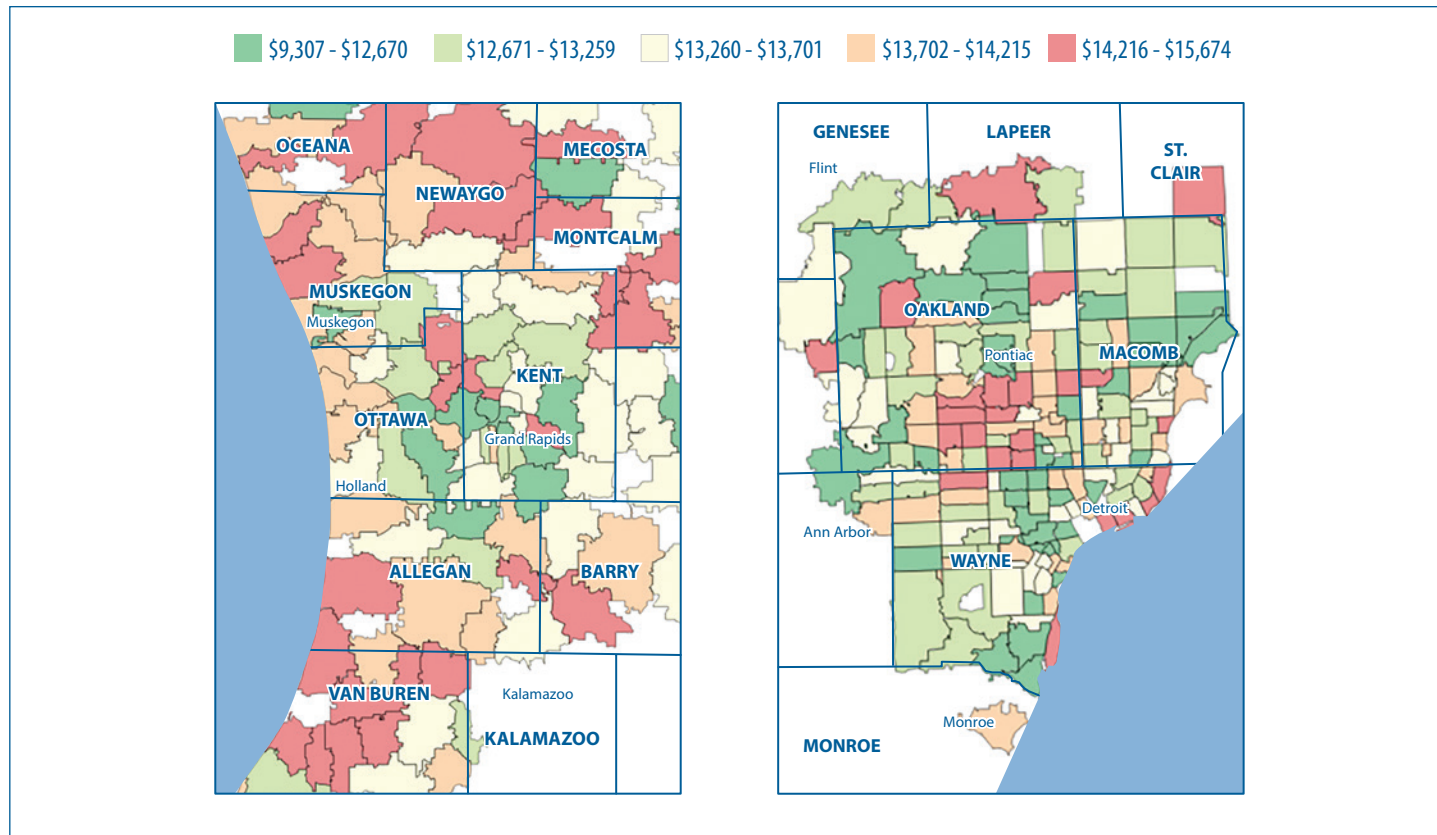
Source: BCBSM, BCN, and Priority Health member data

Figure 4: Expenditures on Members with Depression and Comorbidities, 2014



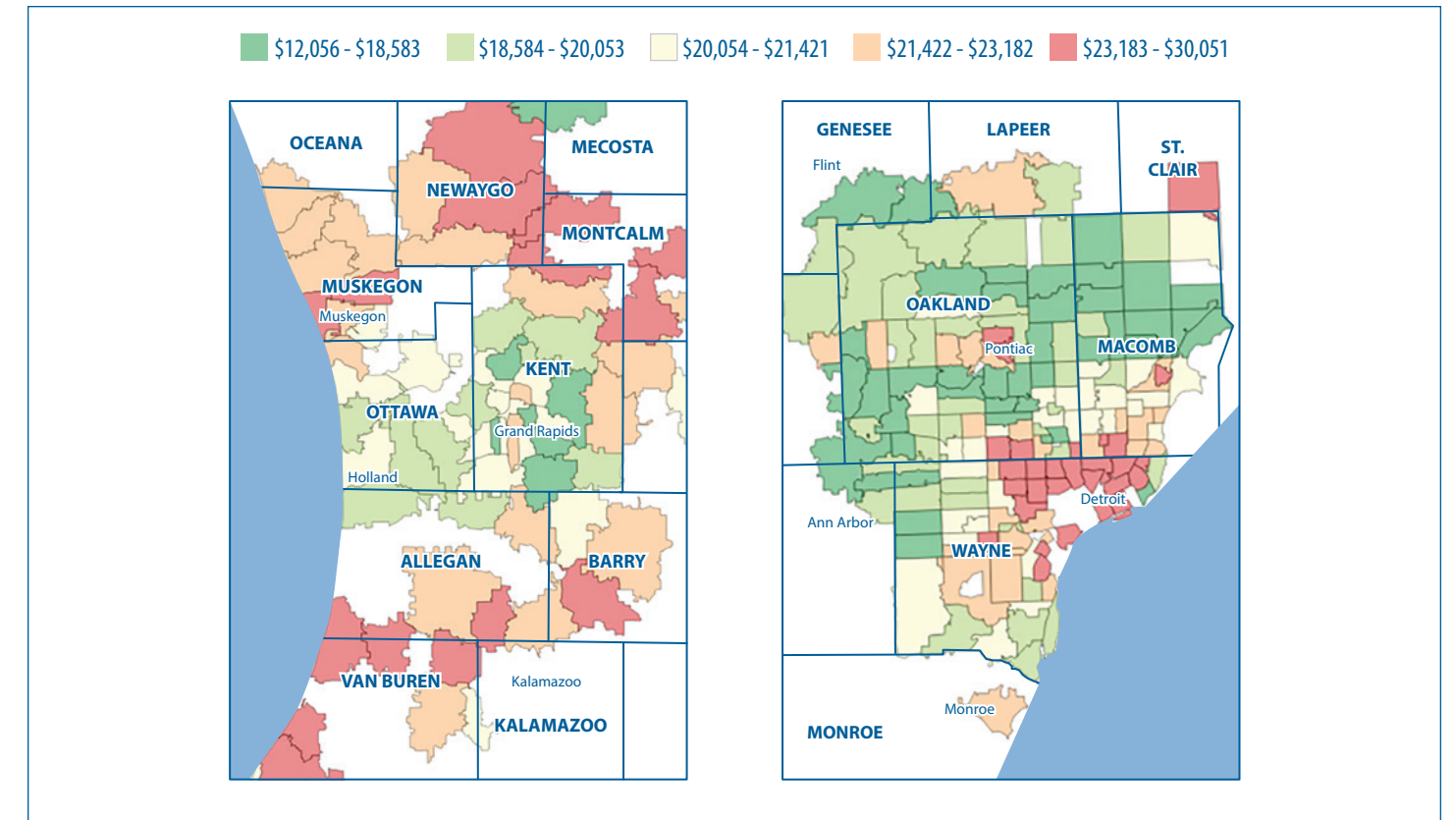
Source: BCBSM, BCN, and Priority Health member data

Figure 5: Distribution of Average Annual Expenditures per Member with Diabetes by Zip Code



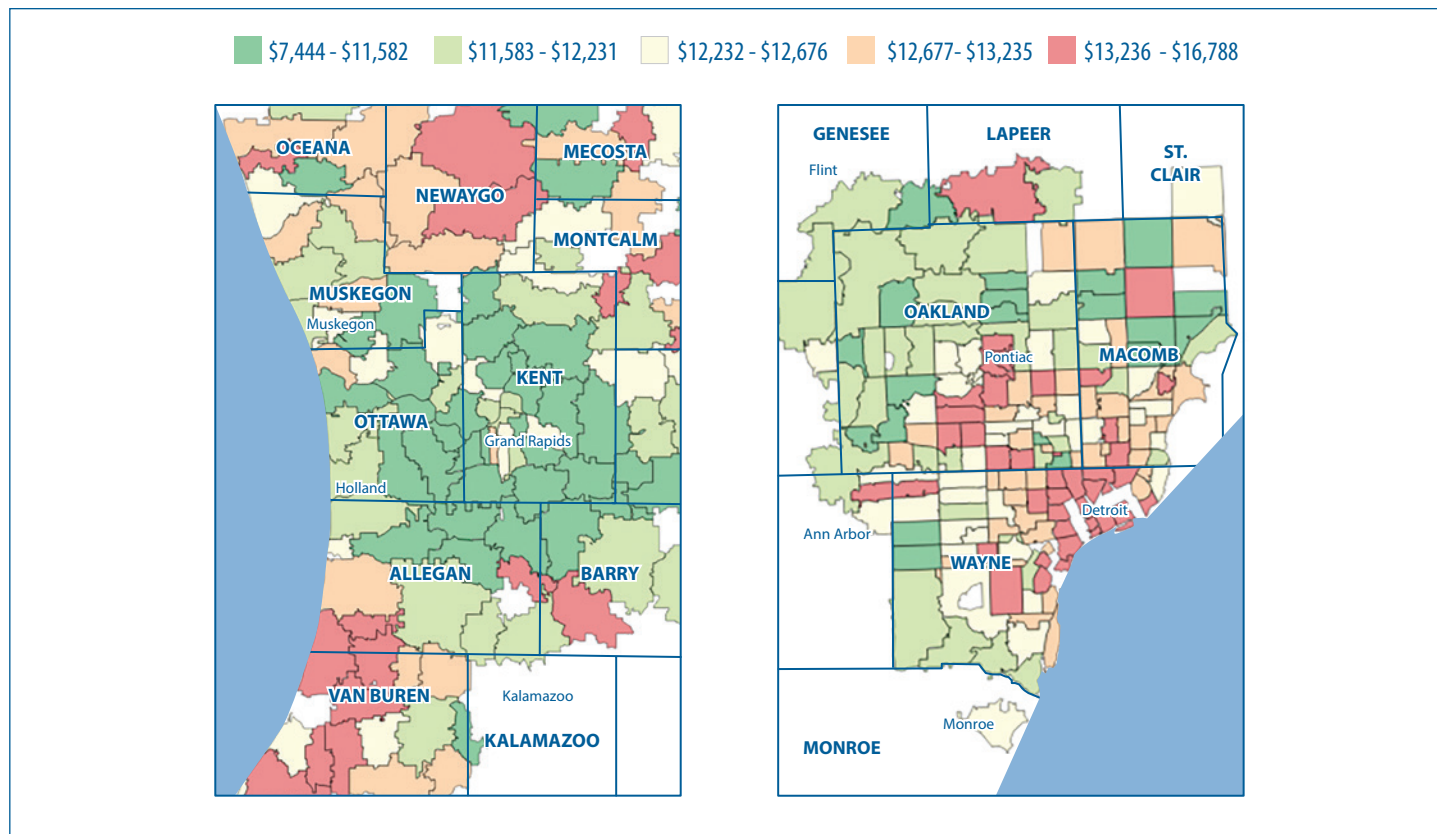
Source: BCBSM, BCN, and Priority Health member data

Figure 7: Distribution of Average Annual Expenditures per Member with Coronary Artery Disease by Zip Code



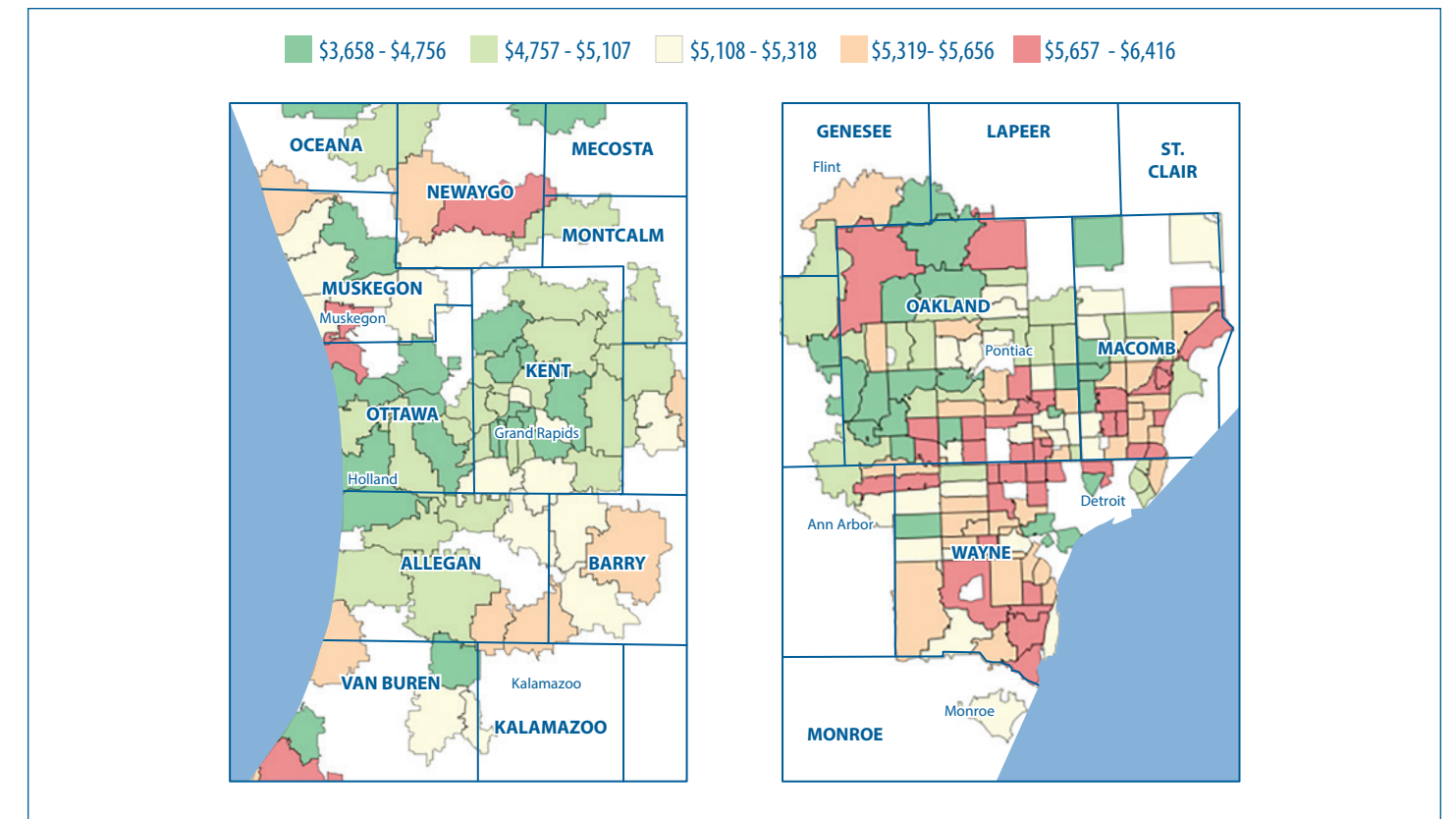
Source: BCBSM, BCN, and Priority Health member data

Figure 6: Distribution of Average Annual Expenditures per Member with Depression by Zip Code



Source: BCBSM, BCN, and Priority Health member data

Figure 8: Distribution of Average Annual Expenditures per Member with Low Back Pain by Zip Code



Source: BCBSM, BCN, and Priority Health member data

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