

appalachian rural health institute

arhi



**Chronic Conditions Prevalence and Risk Needs
Assessment: Study Area II**

Prepared by
The Institute for Local Government Administration
and Rural Development at Ohio University's
Voinovich Center for Leadership and Public Affairs

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The search for data was a group adventure, with many eyes searching for data that may or may not have existed. All efforts are appreciated, even those that found that no data existed.

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The research team was led by Susan W. Isaac, MA and Sara Lichtin Boyd, MHA, with research assistance from Ryan Yoder, MS, Graduate Research Associate.

Chronic Conditions Prevalence and Risk Needs Assessment
Study Area 2:
Jackson, Meigs, Morgan, Perry, Ross, Scioto and Washington Counties

Analysis of Existing Data Sources

The Study Area II Chronic Conditions Prevalence and Risk Needs Assessment of the Appalachian Rural Health Research Institute (ARHI) focuses on assessing mortality, prevalence and risk factors for certain chronic diseases as measured by available data and information. The study area included seven Appalachian Ohio counties: Jackson, Meigs, Morgan, Perry, Ross, Scioto and Washington. This report builds upon a foundation established by a similar study undertaken in four adjacent counties (Athens, Hocking, Pike and Vinton) in 2004. Although the emphasis is on diabetes mellitus, information was also collected and analyzed relating to heart disease and cerebrovascular disease. All three categories of chronic diseases have similar risk factors, contribute significantly to premature mortality and often occur together in the same individual. In particular, this assessment intended to discover the availability, accuracy and specificity of existing databases to describe these disease groups, including mortality, prevalence, and presence of risk factors, and to discuss any disparities between the study area and state and national averages.

Study Area Overview

Study Area II (SA-II) is located in predominantly rural southeastern Ohio. Only Washington County is located in a Metropolitan Statistical Area. The seven counties are home to over 320,000 people, with individual counties ranging in size from less than 15,000 to over 75,000¹. Approximately one-quarter (24.7%) of area residents are children under age 18 and 13.9% are age 65 or older. These proportions are similar to the age distributions for the entire state of Ohio.

The area is less racially diverse than average for either Ohio or the nation. Over 95.5% of residents are white as compared with 75.1% nationally and 85% for all of Ohio. The greatest diversity is in Morgan County where 3.4% of the 23,000 residents are black Americans and 2.9% are of mixed racial background.

¹ U.S. Census Bureau, 2005 Population Estimates.

A higher proportion of SA-II residents live in poverty than is generally the case in Ohio. Fifteen percent (48,000) residents had incomes below poverty levels in 1999 as compared with 10.6% in Ohio as a whole. As Figure 1 indicates, this income disparity reaches all age groups. Over 15,000 area children live in poverty, as do 5,000 elder residents.

Figure 1
Proportions of Poverty by Age Group

	Children (<18)		Adults (18-64)		Elders (65+)		All Residents	
	#	%	#	%	#	%	#	%
SA II	15,388	19.9%	25,763	13.6%	5,024	12.1%	46,175	15.0%
Ohio	408,685	14.4%	646,271	9.5%	115,742	8.1%	1,170,698	10.6%

Source: 2000 Census of Population

Figure 2 shows the distribution of poverty among the individual counties. Figure 2 also reveals that a higher proportion of SA-II residents are in the income category often referred to as “working poor” – incomes between 100% and 200% of poverty. Over one-fifth (more than 68,000 people) of SA-II residents are in this income category. Add poverty to the working poor, and over one-third (37.2% or 114,000 people) of SA-II have incomes below 200% of the federal poverty level, as compared with 26.4% for Ohio as a whole.

Figure 2
Comparative Levels of Low Income

	Total Population with Poverty Status Determined	Incomes Below Poverty		Incomes between 100% & 200% Poverty		All Incomes Below 200% Poverty	
		#	%	#	%	#	%
Jackson	32,103	5,286	16.5%	7,246	22.6%	12,532	39.0%
Meigs	22,768	4,506	19.8%	5,683	25.0%	10,189	44.8%
Morgan	14,614	2,691	18.4%	3,624	24.8%	6,315	43.2%
Perry	33,741	3,970	11.8%	7,600	22.5%	11,570	34.3%
Ross	67,870	8,120	12.0%	13,302	19.6%	21,422	31.6%
Scioto	75,683	14,600	19.3%	17,619	23.3%	32,219	42.6%
Washington	61,383	7,002	11.4%	13,326	21.7%	20,328	33.1%
Study Area II	308,162	46,175	15.0%	68,400	22.2%	114,575	37.2%
Ohio	11,046,987	1,170,698	10.6%	1,749,160	15.8%	2,919,858	26.4%

Source: 2000 Census of Population

Income levels have implications for insurance coverage. Despite continuing reductions in eligibility categories, *Medicaid* remains a significant presence in SA-II, with nearly 72,000 residents (23.3%) eligible² in 2005.³ (See Figure 3.) Most Ohio children with incomes below 200% of poverty are eligible for Medicaid, with only 5,000 (6.5%) SA-II children estimated to be uninsured by the 2004 Ohio Family

² Ohio Medicaid applies the term “eligible” to persons receiving healthcare purchased by Medicaid to distinguish them from those who are also “enrolled” in managed care plans.

³ Ohio Department of Job and Family Services, *Public Assistance Monthly Statistics: Calendar Year 2005*, <http://jfs.ohio.gov/pams/Reports/CY2005.pdf>

Health Survey⁴. Over 36,000 non-elderly SA-II adults have incomes below 200% of poverty. Most of these adults are ineligible for public health insurance (e.g. Medicaid), are too young for Medicare, and are likely not covered under commercial insurance. Public health programs report that those persons in this income group that do have insurance usually cannot afford deductibles or co-pays. The 2004 Ohio Family Health Survey reported that 39,400 SA-II adults (17.1%) were uninsured, as compared with 12.5% of all of Ohio adults. In all, 14.4% of SA-II residents were uninsured in 2004. Sixty-eight percent of the uninsured among survey respondents reported incomes below 200% of the poverty level.

Figure 3
Uninsured and Medicaid Eligibility

	2005 Medicaid Eligibles		2004 Uninsured				
	#	%	Adults	% Adults	Children	% Children	All Ages
Jackson	8,287	25.8%	3,300	13.5%	600	7.4%	12.1%
Meigs	5,956	26.2%	2,800	15.6%	400	7.2%	14.1%
Morgan	3,532	24.2%	2,300	20.4%	900	25.4%	21.9%
Perry	7,568	22.4%	4,200	16.7%	800	8.6%	14.8%
Ross	14,808	21.8%	6,900	12.1%	1,000	5.8%	11.6%
Scioto	21,123	27.9%	11,700	19.9%	1,200	6.6%	17.0%
Washington	10,440	17.0%	8,200	17.1%	100	0.4%	13.5%
Study Area II	71,714	23.3%	39,400	17.1%	5,000	6.5%	14.4%
Ohio	1,662,903	14.6%	1,068,000	12.5%	156,000	5.4%	10.7%

Sources: **Public Assistance Monthly Statistics (PAMS) Report**, Ohio Department of Job and Family Services, <http://jfs.ohio.gov/pams/>
2004 Ohio Family Health Survey, Ohio Department of Job and Family Services, as reported at the University of Cincinnati Online Analysis and Statistical Information System (OASIS), http://www.oasis.uc.edu/OASIS_CODE/Templates/Login.cfm

Almost 55,000 SA-II residents are enrolled in *Medicare*, 81% (44,000) of whom are aged and 19% (10,500) disabled. Forty percent (nearly 18,000) of the 44,500 residents age 65 and older have incomes below 200% of poverty. Together, the disabled and the aged population with incomes below 200% yield 55,000 Medicare enrollees -- a group less likely to have supplemental insurance to assist with chronic disease management services.

Mortality

Numbers of deaths and rates of death are the most commonly available measures of the effects of the three chronic diseases. Mortality data are also relatively reliable for consistency of comparisons between geographic areas and for analysis of trends over time. Mortality data are extracted from the information provided on death certificates and represent the attending medical provider or coroner's assessment of the cause of death and any attending circumstances or conditions. The true accuracy of mortality data is dependent upon the opinion and thoroughness of the health professional completing the certificate. Consequently, mortality data must be viewed with some caution. The immediate cause of death (e.g. "heart attack"), may have actually been precipitated by another, underlying disease or condition. Death from diabetes, in particular, is felt to be underreported. According to the Centers for Disease Control and

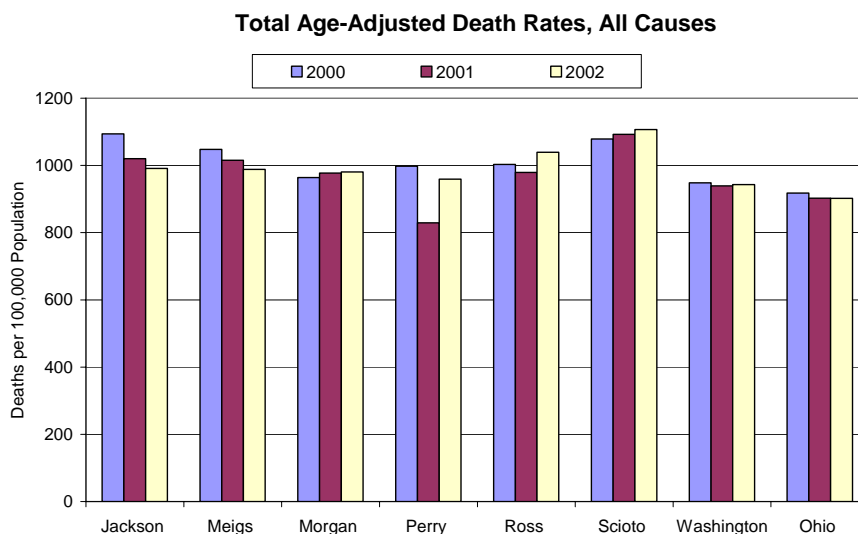
⁴ Ohio Job and Family Services, **Health Insurance Coverage in Ohio, 2004: The Roles of Public and Private Programs in Assuring Access to Health Care**, <http://jfs.ohio.gov/ohp/reports/documents/OhioInsuranceCoverage.pdf>

Prevention (CDC), “only about 35% to 40% of decedents with diabetes have diabetes listed anywhere on the death certificate and only about 10% to 15% have it listed as the underlying cause of death.”⁵

In recent years, the Centers for Disease Control have led a national effort to ensure that mortality data more accurately reflects the true cause of death. This initiative may be contributing to the decreasing rates of reported mortality from heart disease, as described below.

Nearly 3,500 SA-II residents die each year from a variety of causes⁶. “Age-adjusted” rates are calculations that mathematically convert “crude” deaths-to-population ratios to control for the proportion of elderly among residents of a geographic area. The age-adjusted overall mortality rate in the area is noticeably higher than state averages. (See Figure 4.) For the three years shown (2000-2002), only Perry County posted an age-adjusted mortality rate below state averages in one year (2001). All other counties were above the state for all three years. Scioto, Jackson and Ross Counties have the highest disparities with a mortality rates above 1,000 deaths per 100,000 population for at least two of the three years shown. Although Ohio’s total mortality declined slightly over the three year period, the Scioto mortality rates increased each year, reaching 1,106 per 100,000 population in 2002 as compared with 902 per 100,000 in Ohio as a whole.

Figure 4

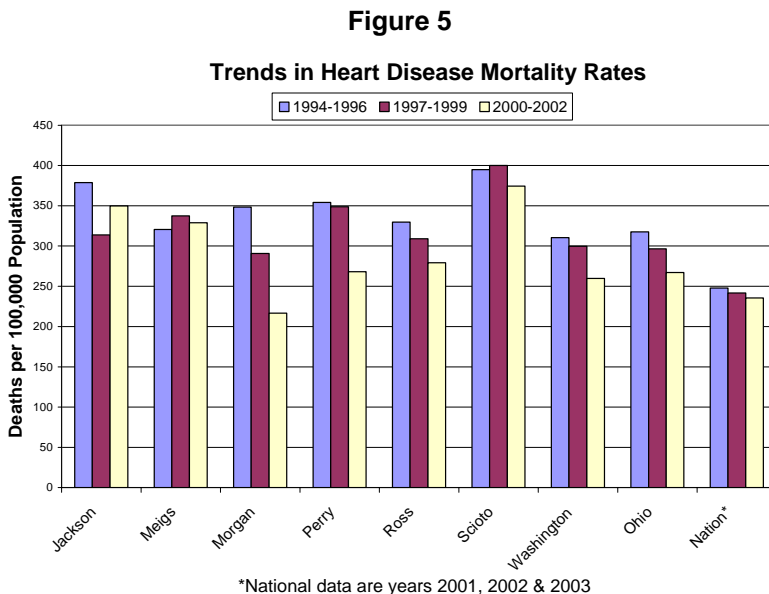


Source: Ohio Department of Health, Health Information Warehouse,
<http://dwhouse.odh.ohio.gov>

⁵ Centers for Disease Control and Prevention, **National Diabetes Fact Sheet**. Atlanta, GA: U.S. Department of Health and Human Services, 2005 update, http://www.cdc.gov/diabetes/pubs/pdf/ndfs_2005.pdf.

⁶ Ohio Department of Health, **Vital Statistics**, <http://dwhouse.odh.ohio.gov/datawarehousev2.htm>

Heart Disease: Heart disease is the leading cause of death at national, state and local levels, with a national 2003 age-adjusted mortality rate of 235.6 per 100,000 population⁷. Deaths from heart disease tend to be higher among males and black Americans, with black males having the highest death rate (479.1/100,000 in 2003). Although rates have been declining in recent years at most geographic levels, Ohio's rates of death from heart disease are persistently above national averages. Between 1999 and 2003, the national rate of death from heart disease declined from 266.5 to 232.3 per 100,000. Ohio's rate declined in the same period from 296.7 to 267.1 per 100,000. (See Figure 5.)



Sources: Ohio Department of Health, *Vital Statistics*, <http://dwhouse.odh.ohio.gov/datawarehousev2.htm>
Centers for Disease Control and Prevention, *National Vital Statistics Reports*, various years.

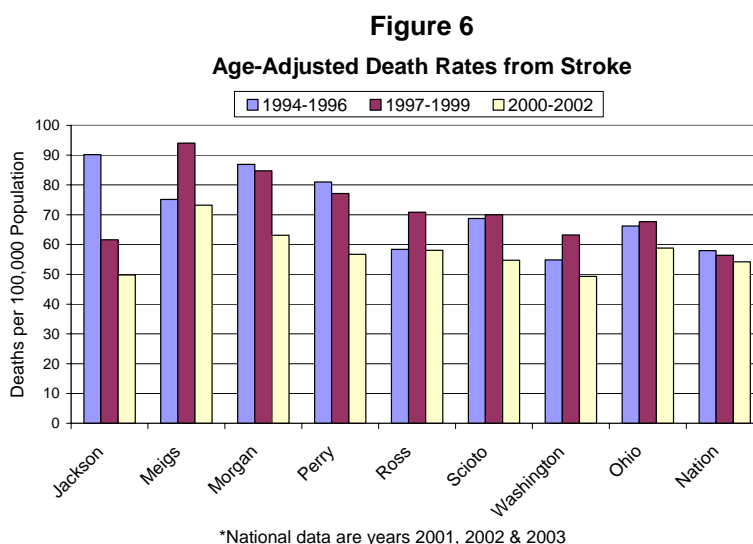
SA-II averages nearly 3,400 deaths annually from heart disease. Only two SA-II counties (Morgan and Washington) posted age-adjusted death rates below the state average in the three year period 2000-2002. Scioto County persistently posts much higher rates of death from heart disease than state or national averages. The 2000-2002 Scioto mortality rate was the highest among all Ohio counties with 374.4 deaths per 100,000. Both Jackson and Meigs Counties had rates above 300/100,000 during the same time period, ranking third and sixth among Ohio counties, respectively. Of particular interest are deaths from heart disease among younger populations. In 2000-2002, over 19% of SA-II heart disease deaths were among residents under age 65 as compared with 16% statewide.⁸

⁷ Centers for Disease Control and Prevention, National Center for Health Statistics, *National Vital Statistics Reports*, Vol. 54, No. 13, CDC/NCHS, April 2006, http://www.cdc.gov/nchs/data/nvsr/nvsr54/nvsr54_13.pdf.

⁸ Ohio Department of Health, *Vital Statistics*, <http://dwhouse.odh.ohio.gov/datawarehousev2.htm>

Cerebrovascular Disease/Stroke: Stroke is the third leading cause of death at national and state levels and in most smaller geographic areas, following heart disease and cancer. Although nationwide mortality from stroke is higher in males (54.1/100,000) than females (52.3/100,000), the difference is much less than with heart disease. As with heart disease, black American males have notably higher rates of death from stroke (79.5/100,000) than any other race/gender group.⁹

Rates of death from stroke have been declining at the national level, reaching 54.2/100,000 in 2003. As illustrated in Figure 6, Ohio's stroke death rates (58.8/100,000 in 2000-2002) are generally above national rates and most SA-II counties continue to post higher mortality rates from stroke than state and national levels¹⁰. For the most recent time period published (2000-2002), Meigs and Morgan Counties posted the highest mortality rates from stroke in SA-II (73.2/100,000 and 63.2/100,000, respectively), approaching national death rates for black Americans of both genders (74.3/100,000). (See Figure 6.)



Sources: Ohio Department of Health, *Vital Statistics*, <http://dwhouse.odh.ohio.gov/datawarehousev2.htm>
CDC/NCHS, National Vital Statistics System, Mortality, http://www.cdc.gov/nchs/data/dvs/mortfinal2003_work293.pdf

As with heart disease, SA-II generally posts higher proportions of deaths attributed to younger populations than average in Ohio. An average of 650 SA-II residents die from stroke each year. Nearly 11% of Ohio's stroke deaths occur among residents under age 65. Nearly 16.5% of SA-II deaths from stroke occur among these younger populations.

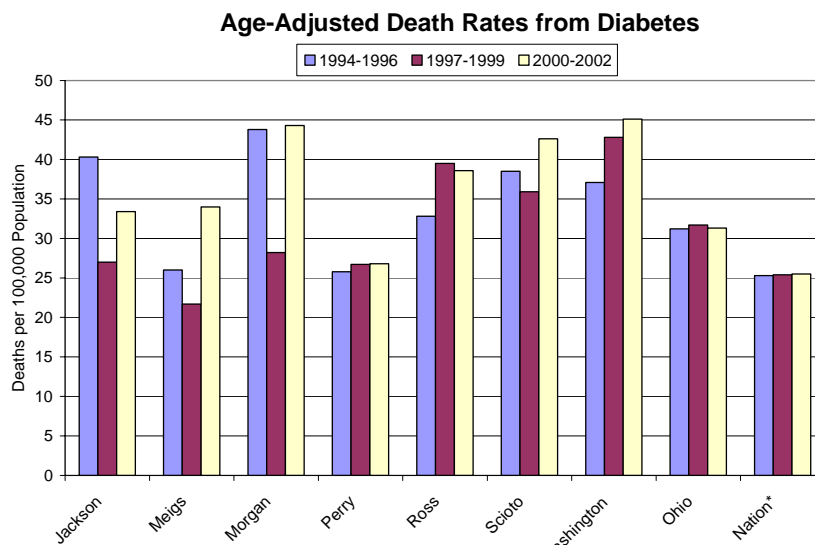
Diabetes: Diabetes is the sixth leading reported cause of death at both national and state levels. As noted above, national researchers believe mortality from diabetes to be underreported by as much as 60-65%. Since 1994, state and national death rates from diabetes have remained relatively stable, with

⁹ CDC/NCHS, National Vital Statistics System, Mortality, http://www.cdc.gov/nchs/data/dvs/mortfinal2003_work293.pdf

¹⁰ Ohio Department of Health, *Vital Statistics*, <http://dwhouse.odh.ohio.gov/datawarehousev2.htm>

national averages around 25/100,000 and Ohio slightly above 31/100,000.¹¹¹² As with stroke and heart disease, black American males have higher death rates from diabetes (50.7/100,000) than national averages (25.3/100,000) and any other major race/gender group. Ohio's rates of death from diabetes lead the national averages. The national diabetes mortality rate in 2003 was 25.3/100,000, while the Ohio rate for the three-year period 2000-2002 was 31.3/100,000. (See Figure 7.)

Figure 7



*National data are years 2001, 2002 & 2003

Sources: Ohio Department of Health, *Vital Statistics*, <http://dwhouse.odh.ohio.gov/datawarehousev2.htm>
Centers for Disease Control and Prevention, *National Vital Statistics Reports*, various years.

All SA-II counties have death rates from diabetes that exceed national averages, although Perry County rates are below state averages and very close to national rates. The variations among SA-II counties may be either true reflections of variations in death or may reflect unknown variations in the attribution of causes of death. That is, some attending physicians may be more or less likely to note diabetes as the primary cause of death when a person dies of diabetic complications.

Mortality from diabetes is consistently higher in the more populous counties of Washington, Scioto and Ross. Washington (45.1/100,000) and Scioto (42.6/100,000) County mortality rates approach national rates for black Americans of both genders (49.2/100,000). In 2000-2002, Washington County ranked third among all Ohio counties in death rates from diabetes. Approximately 375-400 SA-II residents are reported to die from diabetes each year.¹³

¹¹ CDC/NCHS, National Vital Statistics System, Mortality, http://www.cdc.gov/nchs/data/dvs/mortfinal2003_work293.pdf

¹² Ohio Department of Health, *Vital Statistics*, <http://dwhouse.odh.ohio.gov/datawarehousev2.htm>

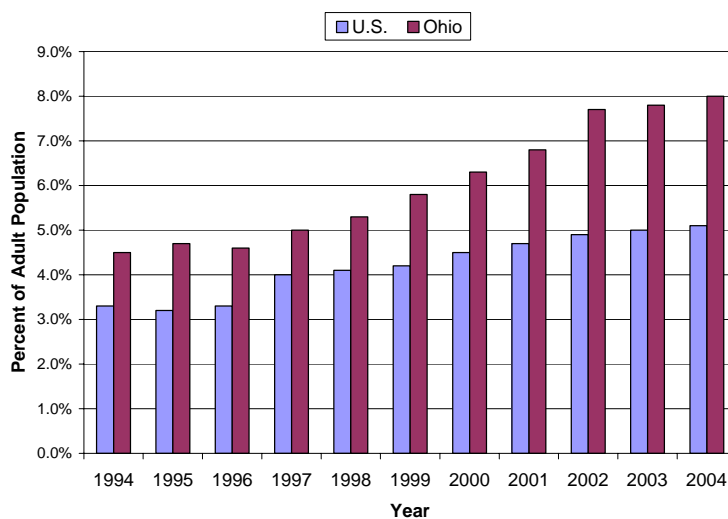
¹³ Ohio Department of Health, *Vital Statistics*, <http://dwhouse.odh.ohio.gov/datawarehousev2.htm>

Prevalence and Incidence of Diabetes

Complete and accurate information regarding the numbers and characteristics of people living with chronic disease (prevalence) and the number of new cases identified each year (incidence) is not as readily available as information on deaths from these diseases. Much of the available data are estimates based on small samples.

Although death rates from diabetes have been relatively stable at state and national levels over the past decade, both prevalence and incidence have been increasing notably. In 1997, 5.1% of adults in the U.S. were newly diagnosed with diabetes.¹⁴ By 2004, the nation was adding new cases at the rate of 7.2% (1.4 million) of adults per year. Although incidence data is not available for Ohio, state prevalence rates have been rising more steeply than at the national level. As seen in Figure 8, Ohio's prevalence among adults increased from 4.5% in 1994 to 8.0% in 2004, while national rates rose from 3.3% to 5.1% over the same time period¹⁵. In 2004, 14.7 million American adults, including over 700,000 Ohioans, were living with diabetes.

Figure 8
1994-2004 Adult Prevalence of Diabetes:
Ohio and U.S.



Source: National Diabetes Surveillance System, *State-specific Estimates of Diagnosed Diabetes among Adults: 1994-2004*, <http://www.cdc.gov/diabetes/statistics/prev/state/tPrevalenceTotal.htm>

¹⁴ Centers for Disease Control and Prevention (CDC), *Crude and Age-Adjusted Incidence of Diagnosed Diabetes per 1000 Population Aged 18-79 Years, United States, 1997-2004*, National Center for Health Statistics, Division of Health Interview Statistics, data from the National Health Interview Survey, <http://www.cdc.gov/diabetes/statistics/incidence/table2.htm>.

¹⁵ National Diabetes Surveillance System, *State-specific Estimates of Diagnosed Diabetes among Adults: 1994-2004*, <http://www.cdc.gov/diabetes/statistics/prev/state/tPrevalenceTotal.htm>.

Diabetes has increased the greatest since 1994 among the residents above age 65, with over one in five of those between 65 and 74 having the disease in 2004¹⁶. Diabetes has also been increasing among middle age Ohioans, with 10.6% of Ohio adults age 45-64 estimated to have diagnosed diabetes. Approximately half of all U.S. adults with diabetes were diagnosed between the ages of 40 and 59, with one-fourth diagnosed younger and one-fourth older. The prevalence of diabetes has been increasing among all age groups, with the steepest climb among persons aged 65 to 74. Prevalence among this age group more than doubled over the past ten years, reaching 22% in 2004. The rapidly rising prevalence among the older age groups may be related to expanded survivability as treatments and management techniques have improved.

Diabetes incidence and prevalence data is not available at the county level as it is not a reportable disease under public health regulations. The most consistently available source of county-level data is hospital inpatient utilization records. The Ohio Hospital Association (OHA) records and reports de-identified data on Ohio hospital discharges by diagnosis, including secondary diagnoses. Residents of SA-II counties generated nearly 47,000 Ohio hospital inpatient stays in 2005, 10,500 of them involving persons with diabetes. Since West Virginia does not reciprocate with hospital use data on Ohio residents, OHA estimates that between 12,000 and 15,000 hospitalizations are missing for all 29 Ohio Appalachian counties¹⁷. The missing information would cause the data reported here to undercount hospital stays, especially in border counties of Meigs and Washington.

Although not a generally accepted measure, the ratio of discharges to the resident population may indicate the relative impact of diabetes in the area. In 2005 there were 32.8 hospital inpatient stays involving persons with diabetes for every 1,000 residents in SA-II as compared with 27 per 1,000 statewide. (See Figure 9.) Scioto County posted the highest ratio with 41.3 hospital discharges per 1,000 county residents. This correlates with the higher rate of deaths from diabetes in Scioto County. Were West Virginia data available, Meigs and Washington Counties' rates of discharges may also have been higher.

Complications of Diabetes

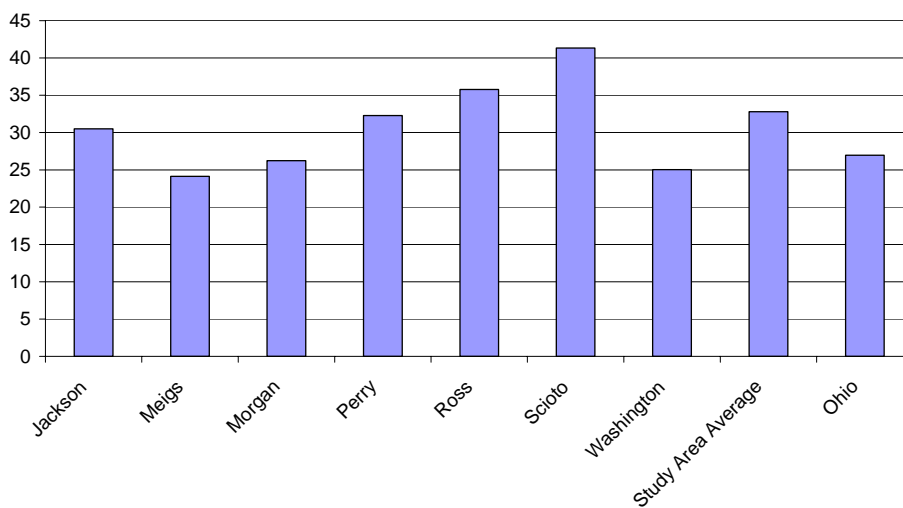
In general, risk of co-occurring conditions and complications increases in persons with less control over their diabetes. The appearance of complications and co-morbidities may indicate less access to appropriate and adequate medical care and self-management supports. Nationwide, fully one third of all

¹⁶ National Diabetes Surveillance System, *State-specific Estimates of Diagnosed Diabetes among Adults: 1994-2004*, <http://www.cdc.gov/diabetes/statistics/prev/state/tPrevalenceTotal.htm>.

¹⁷ Interview with Data Services Division, Ohio Hospital Association, spring, 2006.

persons who developed End-Stage Renal Disease (kidney failure) are diabetic. One in five persons with diabetes has significant visual impairment.¹⁸

Figure 9
Ratio of Diabetes Related Discharges per 1,000 Population
2005



Source: Ohio Hospital Association, custom data report, May 2006.

The risk for developing complications increases with the addition of co-morbidities and unhealthy behaviors.

“In 2003, 17.7% of U.S. adults with diabetes smoked, 37.7% reported being physically inactive, 82.1% were overweight or obese and 48.1% were obese based on self-reported height and weight, 62.5% of U.S. adults with diabetes reported having hypertension, and 55.9% reported that their cholesterol was high.”¹⁹

Ohio’s diabetic residents also display high rates of risky behaviors and co-morbid conditions. In 2003, 26.5% of diabetic Ohioans smoked, 47.1% were obese, 35.0% were inactive physically, 61.6% were hypertensive and 54.0% reported high cholesterol.

Only 6% (626) of the SA-II Ohio hospital stays by persons with diabetes noted diabetes as the primary reason for the hospital stay. Most of the hospital stays were related to conditions that are more common among persons with diabetes, such as heart failure and coronary artery diseases, kidney diseases, and

¹⁸ Center for Disease Control and Prevention, Behavioral Risk Factor Surveillance System, Division of Diabetes Translation, <http://www.cdc.gov/diabetes/statistics/comp/us.htm>

¹⁹ Risk Factors for Complications, Center for Disease Control and Prevention’s Behavioral Risk Factor Surveillance System, Division of Diabetes Translation, <http://www.cdc.gov/diabetes/statistics/comp/us.htm>.

infections. In general, persons with diabetes account for 20% of hospital stays in Ohio. That proportion is somewhat higher in SA-II, reaching over 25% in Scioto County. (See Figure 10.)

Figure 10
2005 Hospital Discharge Data
County Residents to Any Ohio Hospital

	Total Hospital Discharges	Total Diabetes Related Discharges*	Proportion of Total Discharges that are Diabetes Related
Jackson	4,771	1,019	21.4%
Meigs	2,380	562	23.6%
Morgan	1,771	392	22.1%
Perry	5,514	1,131	20.5%
Ross	12,414	2,664	21.5%
Scioto	12,675	3,185	25.1%
Washington	7,306	1,567	21.4%
Study Area II	46,831	10,520	22.5%
Ohio	1,576,823	308,948	19.6%

Source: Ohio Hospital Association custom data report

* All hospital discharges, regardless of reason, that involved a person with diabetes

The cost of diabetes is high. Inpatient hospital charges for diabetic patients from SA-II in one year – 2005 -- reached nearly \$225 million.²⁰ This figure does not include those area residents hospitalized in West Virginia. On-going medical care, prescription medications, medical supplies and equipment and lost productivity would push total financial costs much higher.

Risk Factors for Chronic Disease

Key risk factors for developing diabetes often also increase risk for heart disease and stroke. Overweight and obesity are common risks for all three chronic conditions. In addition, birthweights outside normal range present risks specific to diabetes.

Overweight and obesity: Persons who are overweight, especially those who are obese, are at significantly higher risk for developing many chronic health problems, including Type 2 diabetes. A common measure of overweight and obesity is the Body Mass Index (BMI). The BMI is calculated by dividing a person’s body weight in pounds by the square of his or her height in inches, then multiplying the result by 703. The BMI is more highly correlated with body fat than any other indicator of height and weight.

²⁰ Charges do not perfectly reflect costs or amounts received as many people treated were uninsured or under-insured.

An adult with a BMI of 25 to 29.9 are considered overweight. However, some athletes who deliberately build higher than average muscle mass may post a similar BMI but not have a lot of body fat. Individuals with a BMI of 30 or more are considered obese and do have excess body fat. According to the NIH Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults, all adults (aged 18 years or older) who have a BMI of 25 or more are considered at risk for premature death and disability as a consequence of overweight and obesity. These health risks increase even more as the severity of an individual's obesity increases.

“When people are or overweight or obese, they are more likely to develop health problems such as the following:

- Hypertension
- Dyslipidemia (for example, high total cholesterol or high levels of triglycerides)
- Type 2 diabetes
- Coronary heart disease
- Stroke
- Gallbladder disease
- Osteoarthritis
- Sleep apnea and respiratory problems
- Some cancers (endometrial, breast, and colon)

“The more overweight a person is, the more likely that person is to have health problems. Among people who are overweight and obese, weight loss can help reduce the chances of developing these health problems. Studies show that if a person is overweight or obese, reducing body weight by 5 percent to 10 percent can improve one's health.”²¹

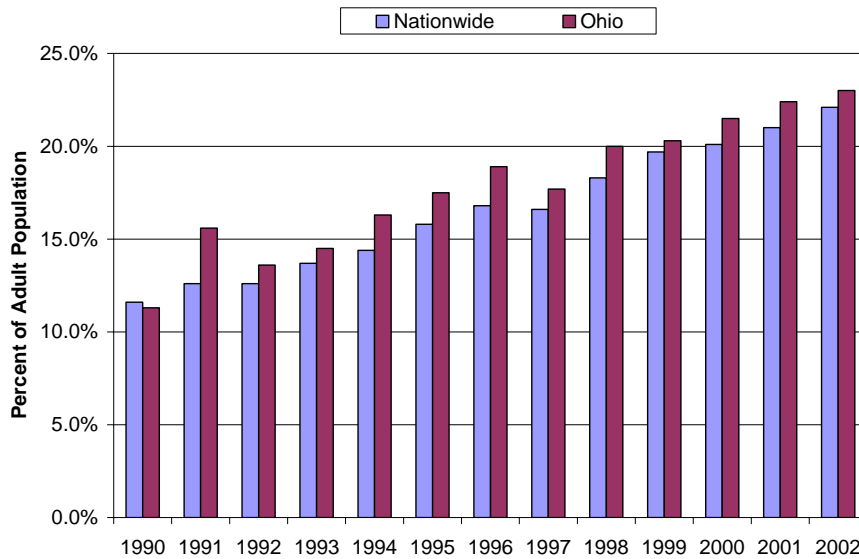
Obesity in particular has been increasing at a rapid rate over recent decades. Since 1990, obesity among U.S. adults has risen from less than 12% to 24.4% in 2005.²² The highest rates are among adults aged 50-59 and 60-69 (26.1% and 25.3%, respectively in 2001).²³ (See Figure 11.) In recent years, Ohio has ranked between 15 and 20 among states in percent of obesity among adults. In 2005, 24.3% of Ohio adults were reported to be obese by BMI calculations.

²¹ Overweight and Obesity: Frequently Asked Questions (FAQs), Centers for Disease Control and Prevention, 2005, <http://www.cdc.gov/nccdphp/dnpa/obesity/faq.htm#children>

²² Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System (BRFSS), <http://apps.nccd.cdc.gov/brfss/index.asp>

²³ Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System (BRFSS), <http://apps.nccd.cdc.gov/brfss/Trends/agechart.asp?qkey=10010&state=US>

Figure 11
Trends in Rates of Obesity among Adults
1990-2002



Accurate data measuring rates of obesity are not generally available at the local level. The Ohio Behavioral Risk Factor Surveillance Survey produces sub-state regional estimates based upon a periodic statewide household sample survey. The regional estimate of adult obesity for southeast Ohio is 22%, while the south-central region (including Ross and Scioto Counties) rate is 23.7%. Both of these rates have wide margins of error.

Of equal concern has been the alarming rise of overweight among children. In the 1960s, 4% of children age 6 to 11 and 5% of adolescents (age 12-19) were overweight in the nation. By 2002, those rates had risen to 16% for both age groups.²⁴

Overweight is also appearing among very young children. The Women, Infants and Children nutrition program (WIC) tracks abnormal weight and development among children under age 5. Preschool children are considered to be overweight if they are in or above the 95th percentile of weight for their age and stature. For the time period 2002-2005, 12.3% of children assessed by Ohio WIC were overweight by this definition.²⁵

²⁴ **Prevalence of Overweight Among Children and Adolescents: United States, 1999-2002**, Center for Disease Control and Prevention, National Center for Health Statistics, February 2005, <http://www.cdc.gov/nchs/products/pubs/pubd/hestats/overwght99.htm>.

²⁵ Center for Disease Control and Prevention, Pediatric and Pregnancy Nutrition Surveillance System, 2002-2004 Pediatric Nutrition Surveillance: Ohio, <http://www.cdc.gov/pednss/index.htm>

Poor nutrition and inadequate physical activity are primary behaviors contributing to obesity. National recommendations in 2003 were for consumption of at least five servings of fruits and vegetables per day. Fewer than one-fourth (22%) of adults at both national and state levels attained that standard. Sub-state regional estimates include 21% for southeast Ohio and 23.7% for south-central Ohio.²⁶ More recent standards recommend up to eight servings per day.

One-fourth of Americans and Ohioans report no leisure time physical activity. Over half of adults do not engage in moderate physical activity, defined as a minimum of 30 or more minutes of moderate physical activity five or more days per week. Only 27% engage in vigorous physical activity for 20 or more minutes three or more days per week.

Birthweights: Women who deliver babies weighing over 9 pounds at birth are at increased risk for developing Type 2 diabetes later in life.²⁷ In 2003, 361,842 births (8.8%) in the U.S. were overweight babies, leaving their mothers at risk for developing diabetes.

Since 1990, there have been over 216,000 births of high weight babies in Ohio.²⁸ Although some women may have birthed more than one overweight baby during that time period, there are still close to 200,000 Ohio women with this elevated risk factor for diabetes. Within the SA-II counties, there have been nearly 6,000 births of babies weighing more than nine pounds between 1990 and 2002. All of these mothers are at risk for developing Type 2 diabetes.

Although risk applies to mothers of high weight babies, low weight babies, themselves, are at increased risk of developing diabetes during their lifetimes.²⁹ After a decline in the 1980s, the percent of total live births that are below 2,500 grams has been increasing in the nation and in Ohio over the past ten to fifteen years. In 2003, 7.9% of all U.S. births were low weight – the highest proportion since 1970.³⁰ Consistently over the past decade, Ohio has posted rates of low weight births that are slightly higher than national rates, reaching 8% of all births in 2002.

Average rates of low weight births within SA-II tend to follow state and national trends. Over 4,000 low weight babies have been born to study area residents between 1990 and 2002. All of these children have an increased risk of developing diabetes during their lifetimes.

²⁶ Ohio Behavioral Health Risk Factor Surveillance Survey, 2003, <http://dwhouse.odh.ohio.gov/>

²⁷ Herman, WH, Smith, PJ, Thompson, TJ, Engelgau, MM, and Aubert, RE. *A new and simple questionnaire to identify people at increased risk for undiagnosed diabetes*. **Diabetes Care**, Vol. 18, Issue 3 382-387.

²⁸ Ohio Health Information Warehouse, Ohio Department of Health, <http://dwhouse.odh.ohio.gov/>.

²⁹ Rich-Edwards, J.W. et al. "Birthweight and the Risk for Type 2 Diabetes Mellitus in Adult Women", **Annals of Internal Medicine**. 1990; 130: 278-284.

³⁰ **National Vital Statistics Reports**, Vol. 53, No. 9, November 23, 2004.

Findings

Available Data: The fundamental finding of the research effort was the continuing limited availability and accuracy of existing data -- especially those needed to measure and track the prevalence of chronic diseases and risk factors in a local population. Such information is crucial to assess needs and trends, design interventions and monitor progress. Without these data, evaluation of success in community and population based initiatives to prevent and reduce death and disability in any community is difficult, if not impossible.

Little data are available to accurately and completely measure the incidence and prevalence of chronic diseases and the extent of the risk factors for developing these diseases. Most of the generally available data have known weaknesses in collection methods that lead to flaws in accuracy. The most consistently collected and reported data concerns causes of death as reported on individual death certificates. Although efforts are being made to ensure that all contributing factors are noted, the most generally available data reports only the immediate cause of death. Underlying chronic conditions that led to the fatal event are frequently masked. Acute events (strokes and heart attacks) can mask an unknown number of deaths caused by chronic conditions which weakened heart muscle, blood vessels or renal functioning.

Data measuring prevalence of diseases, risk factors and unhealthy lifestyles are less reliable than mortality data. Much data reported at the state and national levels are derived from self-report population surveys. Although the sample sizes are usually statistically valid for state or national application, the accuracy of self report information may still be questionable. Survey questions about personal health habits or fitness levels could be especially vulnerable to less than candid responses. Consequently, the available measures may underreport risk factors. Survey data that measures the prevalence of disease has an additional vulnerability: the respondent must know that he/she has the disease. In communities and populations with reduced access to regular medical care, individuals may not know that they have diabetes, hypertension or coronary artery disease. Early symptoms of these diseases are often ignored or overlooked in the absence of regular medical assessment. Low income uninsured populations and persons living in areas with limited geographic access to providers have significant barriers to early diagnosis.

With the exception of mortality and birth data, little measurable information is truly available at the county level, much less at smaller geographic levels. Although the BRFSS data is reported for counties, the measures given are gross estimates derived from survey analysis that is valid only at the state and national levels. The availability of hospital discharge data adds a new measure of prevalence, especially since the Ohio Hospital Association can report contributing diagnoses. As seen with the analysis in this

report of hospital use by persons with diabetes, this information can be very helpful in identifying prevalence of diabetes that has progressed to levels requiring more serious medical interventions. Earlier stage diabetes or evidence of risk factors cannot yet be measured accurately at the local level.

Notable Indicators: Despite the weaknesses and geographic gaps in available data, available data do highlight certain concerns for health status generally and more specifically in Appalachian Ohio.

- Death rates from stroke and heart disease are declining nationally, statewide and within SA-II.
- Although the incidence and prevalence of diabetes are increasing at state and national levels, death rates from diabetes remain relatively stable.
- Age-adjusted death rates from all causes are consistently higher in SA-II than average for Ohio.
- SA-II and Ohio age-adjusted death rates from heart disease are higher than average for the nation.
- Death rates from diabetes are higher in Ohio than in the nation.
- Death rates from diabetes are higher in four SA-II counties than in Ohio.
- Known adult prevalence of diabetes is much higher in Ohio than average for the nation.
- Obesity and overweight, significant risk factors for developing diabetes and artery diseases are increasing steeply at state and national levels.
- SA-II residents generally have higher rates of hospitalizations related to diabetes than average for Ohio, despite incomplete data for some study area counties.