

CANCER DISPARITIES IN DOWNSTATE ILLINOIS

Illinois is the fifth most populous state in the union and its population is similar to the racial ethnic makeup of the nation as a whole.¹ As with many large states, Illinois' population is heavily concentrated in and around large cities (e.g., Chicago metropolitan counties in northern Illinois). The Downstate portion of Illinois is predominately rural with a few small and medium urban areas (See Figure 1 Map). Rural Downstate Illinois includes two geographic regions: "Southern Rural" and "Central Rural". The southernmost sixteen counties of the Southern Rural region are part of the Delta Regional Authority, a federal-state partnership that was created to bring resources to the underserved areas along the Mississippi River Delta (<http://www.dra.gov>).

Southern Illinois University School of Medicine (SIUSM) has a long history of serving the health care needs of the people in central and southern Illinois and is a major source for primary care and the leading source for specialty care in this rural region. Much of the area and population served by SIUSM face significant socioeconomic disadvantages. Demographic characteristics of the rural Downstate Illinois population are described in Table 1. This area has higher rates of poverty than the rest of the state. The rural Delta counties, in particular, have persistent and pervasive poverty rates that are 50% higher than the Illinois average. Southern Illinois Delta residents are at high risk for cancer incidence, morbidity, and mortality. People in these counties have shorter life expectancies and more chronic health problems than the nation. All 16 Illinois Delta counties are designated as Medically Underserved² and/or Health Professional Shortage Areas² (<http://www.dra.gov/about-us/default.aspx>). Likewise, rural Illinois counties, especially the Delta counties, experience significant cancer-related access-to-care disparities. Less than 1% of the medical oncologists in Illinois live in rural areas.³ These disparities were documented in detail in a 2013 report jointly prepared by the Illinois Department of Public Health and SIUSM (http://www.idph.state.il.us/cancer/pdf/ERS14-02_Cancer_in_Downstate_Illinois.pdf).

Figure 1. Map of Illinois with Designated Rural and Urban Counties

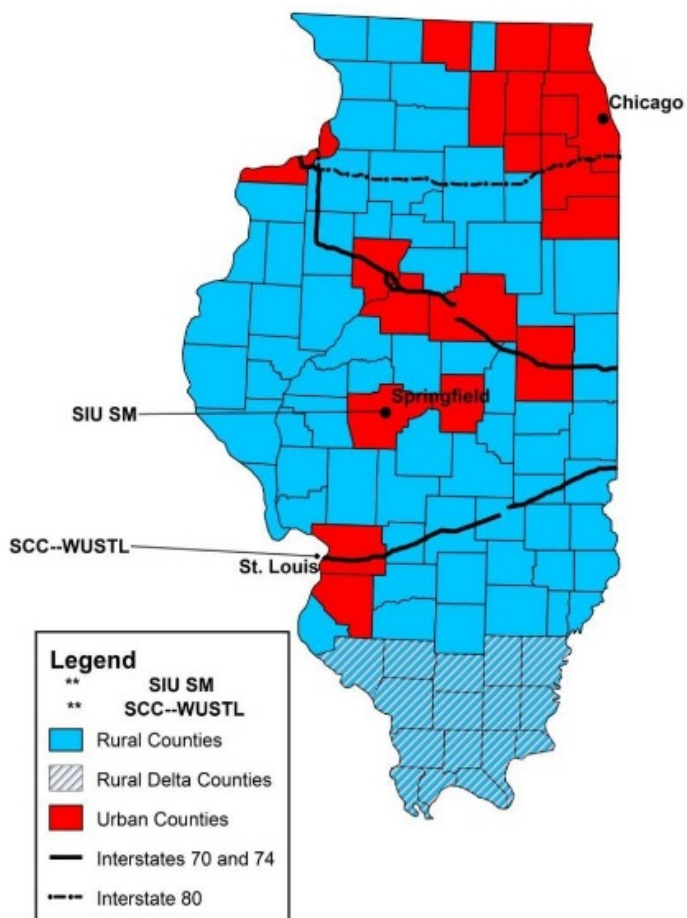


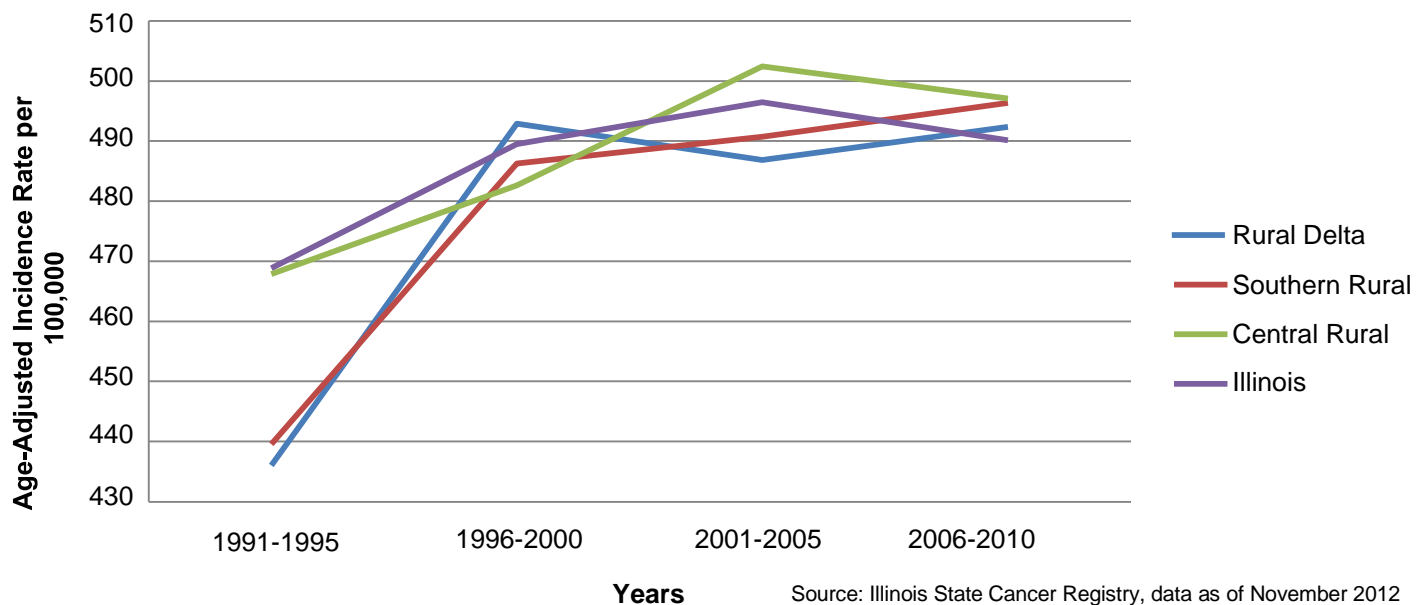
Table 1. Population Estimates of Designated Regions in Illinois

	Rural Delta	Southern Rural (includes Delta)	Central Rural	Illinois
Population per square mile†	56.7	50.8	45.3	231.1
Race††				
Non-Hispanic White	89.5%	92.0%	94.0%	77.9%
Non-Hispanic Black	7.4%	5.5%	3.9%	14.8%
Hispanic	2.6%	2.2%	2.5%	16.3%
Age*				
Aged 65+	16.6%	16.6%	16.9%	13.2%
Poverty*				

Below 100% poverty level	19.1%	15.7%	14.6%	13.7%
Education (age 25+)*				
Less than high school education	14.6%	13.6%	12.3%	12.7%
High school education, GED	32.2%	33.8%	38.7%	27.0%
Some college or Associate's Degree	34.6%	35.0%	31.6%	28.8%
Bachelor's Degree or Higher	18.6%	17.6%	17.4%	31.1%
† 2012 Population Estimates from the U.S. Census Bureau. †† Race data may be above or below 100% due to estimate methodology (multi-racial individuals in each racial group with which they identify) * American Community Survey 2008-2012 - 5 year estimates				

Cancer incidence. Statewide Illinois cancer incidence rates are higher than national rates for both men and women,⁴ and higher still in the Downstate region. In the period between 2005-2009, cancer was the second leading cause of death in Illinois next to heart disease. Upstate Illinois has followed the national trend of decreasing incidence rates, yet cancer incidence rates in most of Downstate Illinois have remained relatively unchanged (Figure 2). Compared to Upstate Illinois, men living in Downstate Illinois have significantly higher age-adjusted rates of lung and bronchus (Downstate: 100.9 per 100,000 versus Upstate: 79.4 per 100,000), colorectal (59.3 vs. 52.7), kidney (26.3 vs. 20.9), and melanoma (25.3 vs. 17.9) cancers. Women living in Downstate Illinois have higher levels of lung and bronchus (67.9 vs. 58.5) and melanoma (17.1 vs. 12.7) cancers. Kidney cancer is addressed by our pilot study, which is important given the disparately elevated rates.

Figure 2. Cancer Incidence by Region, 1991-2010



Cancer mortality. Cancer mortality rates in Downstate Illinois counties also lag far behind state and national improvement trends; mortality rates for several cancers remain high in these rural areas. For example, the lung cancer mortality rate for males in Downstate Illinois is 81.7 per 100,000 compared to 64.8 per 100,000 for Upstate males. Cancer mortality rates for women in the Illinois Delta counties are elevated as well. ³ Overall mortality rates have dropped nearly 20% nationally and 17.5% in Illinois, but have decreased 10% or less in Delta, Southern, and Central Rural Counties (Table 2). While the reason for higher mortality has not yet been elucidated, some of the difference may be due to stage at diagnosis. Data from SEER and cancer registries indicate that Illinois has some of the highest rates of late-stage diagnosis in the nation. This is particularly true for colorectal and cervical cancers, both of which are detectable through screening. ⁵ Distribution of stage at diagnosis may reflect lower utilization of screening and less access to diagnostic tools and specialists, both of which have been documented as challenges for rural patients. ⁶

Table 2. Change in Cancer Mortality by Region, 1990-2010 (National data from 1991-2010)			
	All	Male	Female
National *	-20%	N/A	N/A
Illinois †	-17.5%	-23.0%	-
Rural Delta Counties †	-7.4%	-16.3%	+0.9%
Southern Rural Counties †	-8.4%	-14.0%	-7.6%
Central Rural Counties †	-10.8%	-16.4%	-7.1%

*Source: Siegel R, Ma J, Zou Z, Jemal A. Cancer Statistics, 2014. *CA Cancer J Clin.* 2014;64:9-29.
†Source: Calculated from underlying mortality data provided by NCHS (www.cdc.gov/nchs)

1. US Census Bureau S, Economic, amp, Division HS. Small Area Income & Poverty Estimates (SAIPE) main page. 2013; <http://www.census.gov/did/www/saipe/data/interactive/>. Accessed Feb 7, 2013.
2. HRSA. Find Shortage Areas: MUA/P by State and County. *MUA/P* 2013; <http://muafind.hrsa.gov/>.
3. Zahnd W, Mueller G, Garner K, Jenkins W, Steward D. *Cancer in Rural Illinois, 1990-2010 Incidence, Mortality, Staging, and Access to Care*. Springfield, IL: Center for Clinical Research, Southern Illinois University School of Medicine;2014.
4. Siegel R, Ma J, Zou Z, Jemal A. Cancer statistics, 2014. *CA Cancer J. Clin.* Jan-Feb 2014;64(1):9-29.
5. Henley SJ, King JB, German RR, Richardson LC, Plescia M. Surveillance of screening-detected cancers (colon and rectum, breast, and cervix) - United States, 2004-2006. *MMWR Surveill. Summ.* Nov 26 2010;59(9):1-25.
6. Meilleur A, Subramanian SV, Plascak JJ, Fisher JL, Paskett ED, Lamont EB. Rural residence and cancer outcomes in the United States: issues and challenges. *Cancer Epidemiol. Biomarkers Prev.* Oct 2013;22(10):1657-1667. PMID: PMC3814162