

**BIRTH DEFECTS AND OTHER  
ADVERSE PREGNANCY OUTCOMES  
IN ILLINOIS  
1998 – 2002**

**A REPORT ON COUNTY-SPECIFIC  
INCIDENCE**

Illinois Department of Public Health  
Division of Epidemiologic Studies

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## INTRODUCTION

The Illinois Department of Public Health (IDPH) records adverse pregnancy outcomes in infants with congenital anomalies (birth defects) and other serious neonatal conditions (listed in Table 1). Each year in Illinois, IDPH's Adverse Pregnancy Outcomes Reporting System (APORS) obtains information on thousands of such births throughout the state. Information about congenital anomalies and other adverse pregnancy outcomes identified in newborn infants was first collected statewide by APORS in 1989. Table 1 shows the number of cases and observed rates of the different neonatal conditions that make up the APORS case definition for 1998 – 2002. Because multiple adverse outcomes may coexist, it is possible for an infant to be counted in more than one of the categories in Table 1.

**Table 1. Frequency of Infants Meeting APORS Case Criteria, 1998 – 2002**

Infants	5-Year Total	Annual Average	Rate <sup>1</sup>	% APORS Cases
Total APORS Cases	85,147	17,029.4	931.5	100.0
Intensive Care >24 hours (meets no other APORS criteria)	37,883	7,576.6	414.4	44.5
Birth Defects	20,653	4,130.6	225.9	24.3
Very Low Birth Weight	17,574	3,514.8	192.3	20.6
Positive for Controlled Substances	7,252	1,450.4	79.3	8.5
Fetal Deaths	6,267	1,253.4	68.6	7.4
Congenital Infections	4,853	970.6	53.1	5.7
Died During Newborn Hospitalization	4,547	909.4	49.7	5.3
Intrauterine Growth Retardation	2,557	511.4	28.0	3.0
Retinopathy of Prematurity	2,246	449.2	24.6	2.6
Endocrine, Metabolic or Immune Disorder	264	52.8	2.9	0.3
Blood Disorder	193	38.6	2.1	0.2
Fetal Alcohol Syndrome	170	34.0	1.9	0.2
Other Conditions <sup>2</sup>	162	32.4	1.8	0.2

<sup>1</sup> Rate per 10,000 live births

<sup>2</sup> Neurofibromatosis, chorioetinitis, strabismus, endocardial fibroelastosis, occlusion of cerebral arteries, cerebral lipidoses  
Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

Information about adverse pregnancy outcomes is collected for two major reasons. First, infants with a congenital anomaly or other problem often need special services to help assure that they reach their full potential. Therefore, these babies are referred to their local health departments for follow-up services. Second, the data are collected for surveillance and evaluation purposes. These may include describing disease patterns, tracking trends, conducting cluster investigations, and developing education and intervention strategies.

APORS is the most complete source of data on adverse pregnancy outcomes that exists in Illinois. All Illinois hospitals are mandated to report infants born to Illinois women. (Perinatal centers in St. Louis, Mo., voluntarily participate.) APORS is considered a passive surveillance system because reports are sent to IDPH rather than APORS staff going to hospitals to identify children with adverse outcomes. Such passive systems, though economical and relatively easy to operate, are likely to underestimate adverse outcome rates. The Trust for America’s Health (2002) gave APORS a rating of B because of this lack of active surveillance activities. Twenty-one states achieved a rating of B or higher among the 50 U.S. states, the District of Columbia and Puerto Rico.

Birth certificates (maintained by the Department’s Division of Vital Records) are an additional data source, allowing APORS to identify infants with very low birth weights or with certain birth defects, otherwise unreported by the hospitals. The Division of Vital Records also provides information about fetal deaths from the death certificates.

This report is restricted to birth defects identified in newborn infants or fetal deaths. (It differs from some other Division of Epidemiologic Studies reports that have included information obtained through active surveillance projects undertaken between 1998 and 2001.) Information about children whose only APORS case criteria was a stay of more than 24 hours in the intensive care unit is not explored in this report. These children generally go home healthy and, once home, do not need special services. APORS staff believes that the incidence of infants prenatally exposed to controlled substances is subject to testing bias (Fornoff *et al.*, 2001) and so is not discussed here.

This report includes two sections. The first describes the county-specific incidence rates of seven groups of major birth defects. In addition, a listing of the International Classification of Diseases – Ninth Revision Clinical Modification (ICD-9-CM) codes corresponding to each included birth defect is provided, together with a brief description of each defect. The second section provides similar information about other adverse pregnancy outcomes, including most of those listed in Table 1.

## METHODS

### *Calculation and Interpretation of Rates and Confidence Intervals*

Annual incidence rates (per 10,000 live births) for selected adverse pregnancy outcomes identified during the newborn hospital stay or associated with a fetal death were calculated as

$$10,000 \times \frac{\text{number of infants with selected congenital anomaly}}{\text{number of live births}}$$

The numbers of live births were obtained from the IDPH master birth files, provided by the Department's Center for Health Statistics.

Occurrence of a specific adverse outcome is assumed to be a rare event, therefore following a Poisson distribution. Exact confidence intervals were calculated for each rate (Armitage and Berry, 1987, page 134). Where there are a large number of birth defect cases, the confidence interval is narrow, indicating that the rate is stable. Where there are few birth defect cases, the confidence interval becomes very wide, indicating that the rate is not very stable and a small change in the number of infants born with the specific birth defect could result in a large change in the rate.

To compare two rates, it is important to look not just at their values, but also their confidence intervals. As a conservative approximation, if two confidence intervals overlap, then there is no evidence that the two rates are really different. If two confidence intervals do not overlap, then the rates are said to be statistically different. In this report, 95 percent confidence intervals are used; where the confidence intervals do not overlap the rates are statistically different at the 5 percent level ( $p < 0.05$ ).

### ***Multiple Comparisons***

Since this report examines a large number of adverse outcomes, the corresponding statistical tests are subject to the "multiple comparison problem." For a given birth defect, the observed rate is an estimate of the true birth defect rate in the population. When two rates from different times or groups are compared, statisticians will assert that the observed rates are evidence of the groups having differing birth defect rates, if the observed rates are so different that the chance of them coming from the same underlying population is less than 5 percent. The 5 percent type I error rate, however, suggests that when 100 comparisons are made, on average, five will provide statistical evidence that there are two true differing rates, when, in fact, there is no difference between the two groups. Therefore, as more comparisons are made, more may be statistically significant, just by chance. In this report, no explicit corrections of the multiple comparison problem were made; instead, when discussing trends, exact probabilities are reported. The smaller the reported probability, the more likely it is that the difference is not simply the result of chance.

### ***Creating Map Illustrations***

The maps in this report were created using MapInfo® (version 6.5, MapInfo Corporation). The categories were determined by the program using natural break-points in the data. The maps are used to create a visual representation of birth defect incidence rates and do not have any statistical significance associated with them.

## SECTION I

### BIRTH DEFECTS

Birth defects were the leading cause of infant mortality in the United States in 2000, making up more than 20 percent of infant deaths. Birth defects also contribute substantially to childhood morbidity and long-term disability. More than 4,500 different birth defects have been identified.

There are four major categories of known causes:

- chromosomal disorders (either hereditary or arising during conception)
- exposure to an environmental chemical (for example, medications, alcohol, cigarettes, solvents);
- mother's illness during pregnancy, exposing her baby to viral or bacterial infection; and
- lack of required nutrients.

The stage of fetal development at the time of exposure to one of the latter three causes is critical. Fetal development is particularly vulnerable to disruption in the first trimester of pregnancy. Despite an increasing understanding of factors that give rise to birth defects, the causes of about 60 percent of all birth defects remain unknown. The same congenital anomaly may have completely different causes in different individuals.

Because a baby may be born with more than one birth defect, he/she may be counted in more than one birth defect group. A baby may even have more than one birth defect from the same birth defect group. So, the data in this report cannot be used to determine the number of children with a particular group of birth defects. The only exception is the group of central nervous system defects – these defects are mutually exclusive and so the number of birth defects corresponds to the number of babies.

More than 28,500 major birth defects, identified in Illinois newborns between 1998 and 2002, were reported to APORS – a rate of 312.4 per 10,000 live births. In Illinois, heart and circulatory system defects are the most commonly identified; 44.8 percent of all reported major birth defects are heart or circulatory defects.

The life expectancy and quality of life for individuals with many birth defects has improved over the last 40 years. This is a result of —

- Pioneering surgery that corrects certain birth defects before a baby is born
- Neonatal intensive care units that provide specialized care and use advanced technology to treat babies; and
- New tests and treatments that improve the welfare of babies.

## CENTRAL NERVOUS SYSTEM DEFECTS

Central nervous system (CNS) defects involve the brain, spinal cord and associated tissues. These include neural tube defects (anencephaly, spina bifida and encephalocele), microcephalus and hydrocephalus. A description of each defect follows (in ICD-9-CM order), together with Table 2, which gives the five-year incidence rates for each defect for the whole state.

*Anencephaly* is a defect that occurs when the head end of the neural tube fails to close, resulting in the absence of a major portion of the brain, skull and scalp. It includes craniorachischisis in which there is incomplete closure of both the skull and the spinal column. This condition is incompatible with life.

*Encephalocele* is a defect affecting the skull resulting in the protrusion of the meninges and portions of the brain through a bony midline defect in the skull. Infants with this condition are likely to die or to be severely retarded.

*Hydrocephalus* is an abnormal buildup of cerebrospinal fluid in the ventricles of the brain. The fluid is often under increased pressure and can compress and damage the brain. The prognosis depends on the cause of the hydrocephaly; children may be retarded or develop normally after surgery to treat the defect.

*Microcephalus* is an abnormally small head due to failure of brain growth during pregnancy resulting in retardation and developmental delays.

*Spina bifida* is a defect in which part of the spinal cord is exposed because of a bony defect in the vertebral column. It may be associated with hydrocephalus. The degree of disability depends on the extent and location of the malformation.

**Table 2. Total Number and Incidence Rates of Major Central Nervous System Defects in Newborn Infants, Illinois, 1998 – 2002**

Defect	ICD-9-CM Codes	Cases	Rate per 10,000 live births	95% Confidence Interval	
				Lower	Upper
Anencephalus	740.0-740.1	149	1.6	1.4	1.9
Encephalocele	742.0	51	0.6	0.4	0.7
Hydrocephalus <sup>1</sup>	742.3	552	6.0	5.5	6.6
Microcephalus	742.1	241	2.6	2.3	3.0
Spina bifida <sup>2</sup>	741.00-741.93	242	2.6	2.3	3.0

<sup>1</sup> Includes only hydrocephaly without spina bifida

<sup>2</sup> Includes only spina bifida without anencephaly

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

These observed rates may be substantially lower than the true rates because APORS does not collect birth defect information from miscarriages or elective abortions. Because CNS defects are very severe, many affected babies will miscarry early in pregnancy. Additionally, since the defects are detectable in pregnancy either by alpha-fetoprotein testing or ultrasound screening, women may elect to abort a baby with a CNS defect.

**Table 3. Total Number and Incidence Rates of Major Central Nervous System Defects in Newborn Infants, by County of Residence, 1998 – 2002**

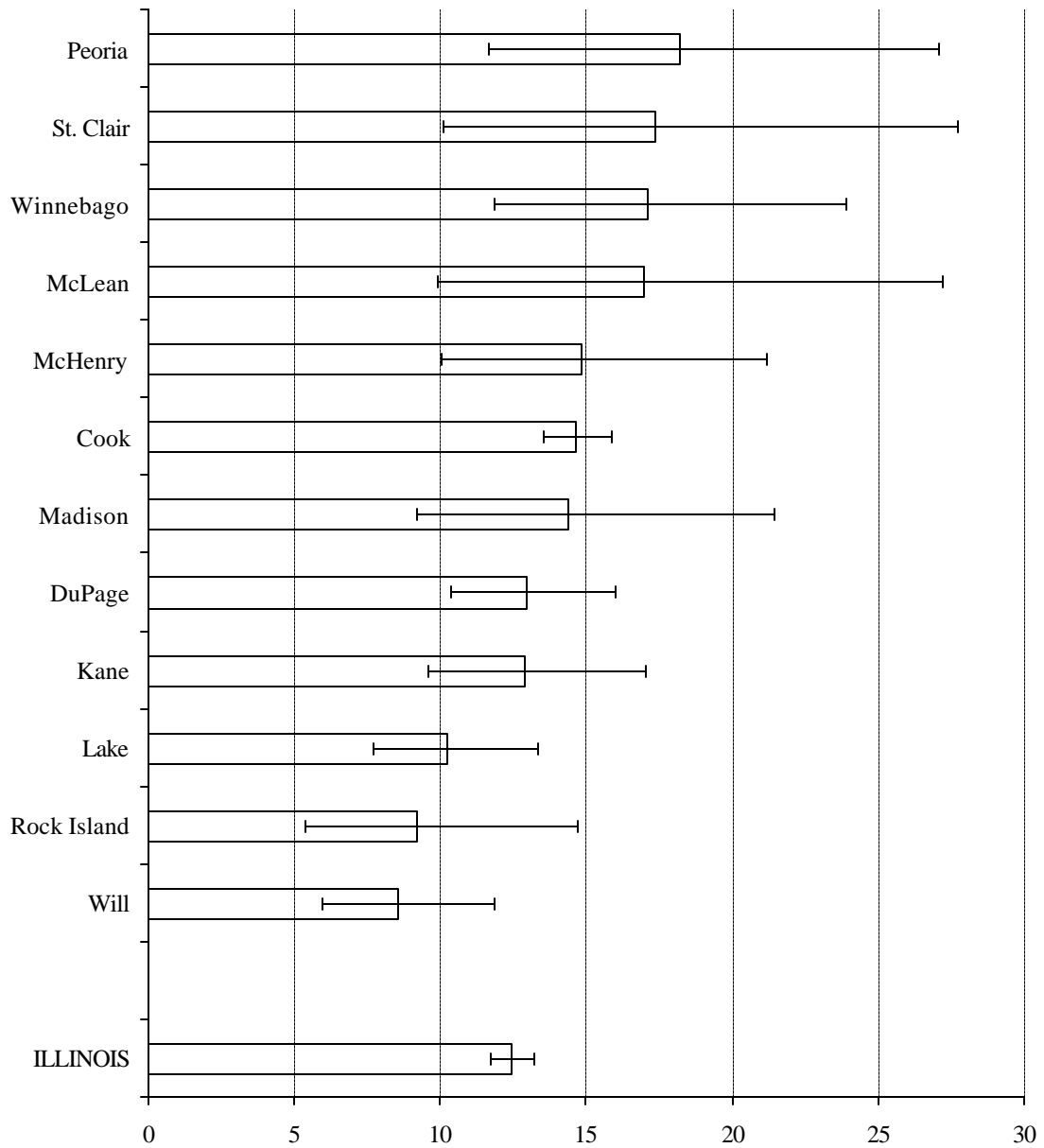
County	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>		County	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>	
			Lower	Upper				Lower	Upper
ILLINOIS	1,235	12.4	11.7	13.2	Lee	2	10.8	1.3	38.9
Adams	5	12.0	3.9	28.1	Livingston	1	4.1	0.1	22.6
Alexander	0	0.0	0.0	56.1	Logan	4	23.7	6.5	60.6
Bond	0	0.0	0.0	39.1	McDonough	3	20.2	4.2	59.0
Boone	6	20.1	7.4	43.7	McHenry	30	14.8	10.0	21.2
Brown	0	0.0	0.0	137.7	McLean	17	17.0	9.9	27.2
Bureau	6	28.6	10.5	62.1	Macon	13	17.5	9.3	29.9
Calhoun	0	0.0	0.0	145.3	Macoupin	1	3.6	0.1	20.2
Carroll	0	0.0	0.0	41.5	Madison	24	14.4	9.2	21.4
Cass	2	20.8	2.5	75.1	Marion	1	3.8	0.1	21.1
Champaign	11	9.9	4.9	17.7	Marshall	2	29.3	3.6	105.5
Christian	2	10.0	1.2	36.0	Mason	2	21.9	2.7	79.0
Clark	0	0.0	0.0	38.6	Massac	0	0.0	0.0	38.8
Clay	1	10.9	0.3	60.7	Menard	0	0.0	0.0	54.9
Clinton	4	20.6	5.6	52.6	Mercer	1	10.5	0.3	58.5
Coles	2	6.7	0.8	24.4	Monroe	1	5.9	0.1	32.9
Cook	619	14.7	13.5	15.9	Montgomery	0	0.0	0.0	21.5
Crawford	1	9.3	0.2	51.9	Morgan	4	19.0	5.2	48.7
Cumberland	0	0.0	0.0	58.4	Moultrie	0	0.0	0.0	38.8
DeKalb	7	12.5	5.0	25.6	Ogle	5	16.5	5.4	38.5
DeWitt	1	9.6	0.2	53.5	Peoria	24	18.2	11.7	27.1
Douglas	4	27.1	7.4	69.2	Perry	2	16.4	2.0	59.1
DuPage	86	12.9	10.4	16.0	Piatt	0	0.0	0.0	42.7
Edgar	1	9.2	0.2	51.3	Pike	1	10.5	0.3	58.4
Edwards	1	26.1	0.7	144.6	Pope	0	0.0	0.0	227.9
Effingham	3	13.0	2.7	38.0	Pulaski	0	0.0	0.0	73.2
Fayette	1	8.0	0.2	44.3	Putnam	0	0.0	0.0	111.5
Ford	1	11.5	0.3	64.0	Randolph	3	15.5	3.2	45.1
Franklin	3	13.0	2.7	37.9	Richland	0	0.0	0.0	37.2
Fulton	3	14.9	3.1	43.3	Rock Island	17	9.2	5.4	14.7
Gallatin	0	0.0	0.0	111.5	St. Clair	17	17.3	10.1	27.8
Greene	0	0.0	0.0	43.9	Saline	5	32.6	10.6	75.9
Grundy	5	20.7	6.7	48.2	Sangamon	14	11.1	6.1	18.6
Hamilton	0	0.0	0.0	81.8	Schuyler	1	26.7	0.7	148.1
Hancock	1	9.0	0.2	50.2	Scott	0	0.0	0.0	118.7
Hardin	0	0.0	0.0	169.3	Shelby	1	8.2	0.2	45.8
Henderson	1	27.0	0.7	149.7	Stark	1	27.0	0.7	149.3
Henry	2	7.0	0.9	25.3	Stephenson	3	10.0	2.1	29.1
Iroquois	2	11.1	1.3	40.1	Tazewell	8	10.1	4.4	19.9
Jackson	6	18.1	6.6	39.2	Union	3	28.9	6.0	84.2
Jasper	0	0.0	0.0	66.1	Vermilion	7	12.1	4.9	25.0
Jefferson	1	4.2	0.1	23.6	Wabash	0	0.0	0.0	52.1
Jersey	1	8.4	0.2	46.9	Warren	4	38.4	10.5	98.1
JoDaviess	0	0.0	0.0	31.2	Washington	2	23.8	2.9	85.5
Johnson	1	14.9	0.4	83.0	Wayne	1	9.8	0.2	54.2
Kane	50	12.9	9.6	17.0	White	1	12.2	0.3	67.5
Kankakee	12	15.6	8.1	27.3	Whiteside	5	13.0	4.2	30.3
Kendall	5	11.2	3.6	26.1	Will	35	8.5	5.9	11.9
Knox	5	15.6	5.1	36.4	Williamson	2	5.6	0.7	20.2
Lake	54	10.2	7.7	13.4	Winnebago	34	17.1	11.9	23.9
LaSalle	10	14.1	6.8	26.0	Woodford	6	27.8	10.2	60.5
Lawrence	1	12.0	0.3	66.8					

<sup>1</sup> Per 10,000 births

<sup>2</sup> 95% confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

**Figure 1. Incidence Rates<sup>1</sup> and 95% Confidence Intervals for Central Nervous System Defects in Newborn Infants by Selected Counties of Residence,<sup>2</sup> 1998 – 2002**



<sup>1</sup> Rates per 10,000 live births

<sup>2</sup> Only counties with 16 or more cases are presented.

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004



## CARDIOVASCULAR SYSTEM DEFECTS

Cardiovascular system defects involve the heart and circulatory systems. They are the most common group of birth defects, with a rate of 106.7 cases per 10,000 live births in Illinois. A description of each major defect follows, together with Table 4, which gives the five-year incidence rates for each defect for the whole state.

- Aortic valve stenosis* is a narrowing or obstruction of the aortic heart valve. This condition can be repaired surgically in some cases
- Atrial septal defect* is a hole in the wall between the upper chambers of the heart. The openings may resolve without treatment or require surgical treatment.
- Coarctation of the aorta* is a defect in which the aorta is narrowed somewhere along its length. Surgical correction is recommended even for mild defects.
- Common truncus* is the failure of the fetal truncus arteriosus to divide into the aorta and pulmonary artery. It can be corrected surgically.
- Ebstein anomaly* is a deformation or displacement of the tricuspid valve with the septal and posterior leaflets being attached to the wall of the right ventricle. Only disabling cases are corrected surgically
- Endocardial cushion defect* is a spectrum of septal defects arising from imperfect fusion of the endocardial cushions in the fetal heart. These defects are repaired surgically.
- Hypoplastic left heart syndrome* is a form of congenital heart disease in which the entire left half of the heart is underdeveloped. This condition can be surgically repaired in a series of three procedures over a period of one year. Transplantation is also a treatment. This condition is usually fatal in the first month of life if not treated.
- Patent ductus arteriosus* arises when the channel between the pulmonary artery and the aorta fails to close at birth. The vast majority close spontaneously and cause no problems. Medical or surgical correction may be done if necessary.
- Pulmonary artery anomalies* are defects in the formation of the pulmonary artery – often obstruction or narrowing of the artery. Treatment will depend on the specific defect.
- Pulmonary valve atresia and stenosis* is an obstruction or narrowing of the pulmonary heart valve. Mild forms are relatively well tolerated and require no intervention. More severe forms are surgically corrected.
- Tetralogy of Fallot* is a defect consisting of four abnormalities that results in poorly oxygenated blood being pumped to the body. It can be corrected surgically.
- Transposition of great arteries* is a defect in which the position of the aorta and the pulmonary artery is transposed. Immediate surgical correction is needed.
- Tricuspid atresia* is the absence or pathological narrowing of the valve between the right atrium and ventricle. Severe cases are corrected surgically.
- Ventricular septal defect* is a hole in the wall between the lower chambers of the heart. The openings may resolve without treatment or require surgical treatment.

Surgical procedures seek to repair defects as much as possible and to restore circulation to as normal as possible. Some defects can be repaired even before birth; others may require multiple surgical procedures after birth. These procedures can save the lives of critically ill neonates and may eliminate or delay more invasive procedures.

**Table 4. Total Number and Incidence Rates of Major Cardiovascular System Defects in Newborn Infants, Illinois, 1998 – 2002**

Defect	ICD-9-CM Codes	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>	
				Lower	Upper
Aortic valve stenosis	746.3	55	0.6	0.5	0.8
Atrial septal defect	745.5	1,764	19.3	18.4	20.2
Coarctation of aorta	747.10	172	1.9	1.6	2.2
Common truncus	745.0	34	0.4	0.3	0.5
Ebstein anomaly	746.2	39	0.4	0.3	0.6
Endocardial cushion defect	745.6x	173	1.9	1.6	2.2
Hypoplastic left heart syndrome	746.7	133	1.5	1.2	1.7
Patent ductus arteriosus	747.0	3,691	40.4	39.1	41.7
Pulmonary artery anomalies	747.3	882	9.6	9.0	10.3
Pulmonary valve atresia and stenosis	746.01, 746.02	238	2.6	2.3	3.0
Tetralogy of Fallot	745.2	213	2.3	2.0	2.7
Transposition of great arteries	745.1x	208	2.3	2.0	2.6
Tricuspid valve atresia and stenosis	746.0	28	0.3	0.2	0.4
Ventricular septal defect	745.4	1,627	17.8	16.9	18.7

<sup>1</sup> Rate per 10,000 live births

<sup>2</sup> 95% confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

A number of factors impact the reported incidence rate of congenital cardiovascular defects in newborn infants:

§ In the past, many premature infants would have died with undiagnosed heart defects.

More survive nowadays as a result of improved care.

§ Improved diagnostic techniques allow minor heart defects that are asymptomatic or that would resolve without treatment to be identified.

§ Some serious heart defects are asymptomatic at birth, with symptoms first developing days or weeks later. An infant who had been discharged before the onset of symptoms would not be included in the APORS database.

§ In this report, all patent ductus arteriosus defects are included even if they are typical of a premature birth and later resolve without treatment. Other birth defect registries may count these defects differently, factoring in birth weight or gestational age.

**Table 5. Total Number and Incidence Rates of Major Cardiovascular System Defects in Newborn Infants, by County of Residence, 1998 – 2002**

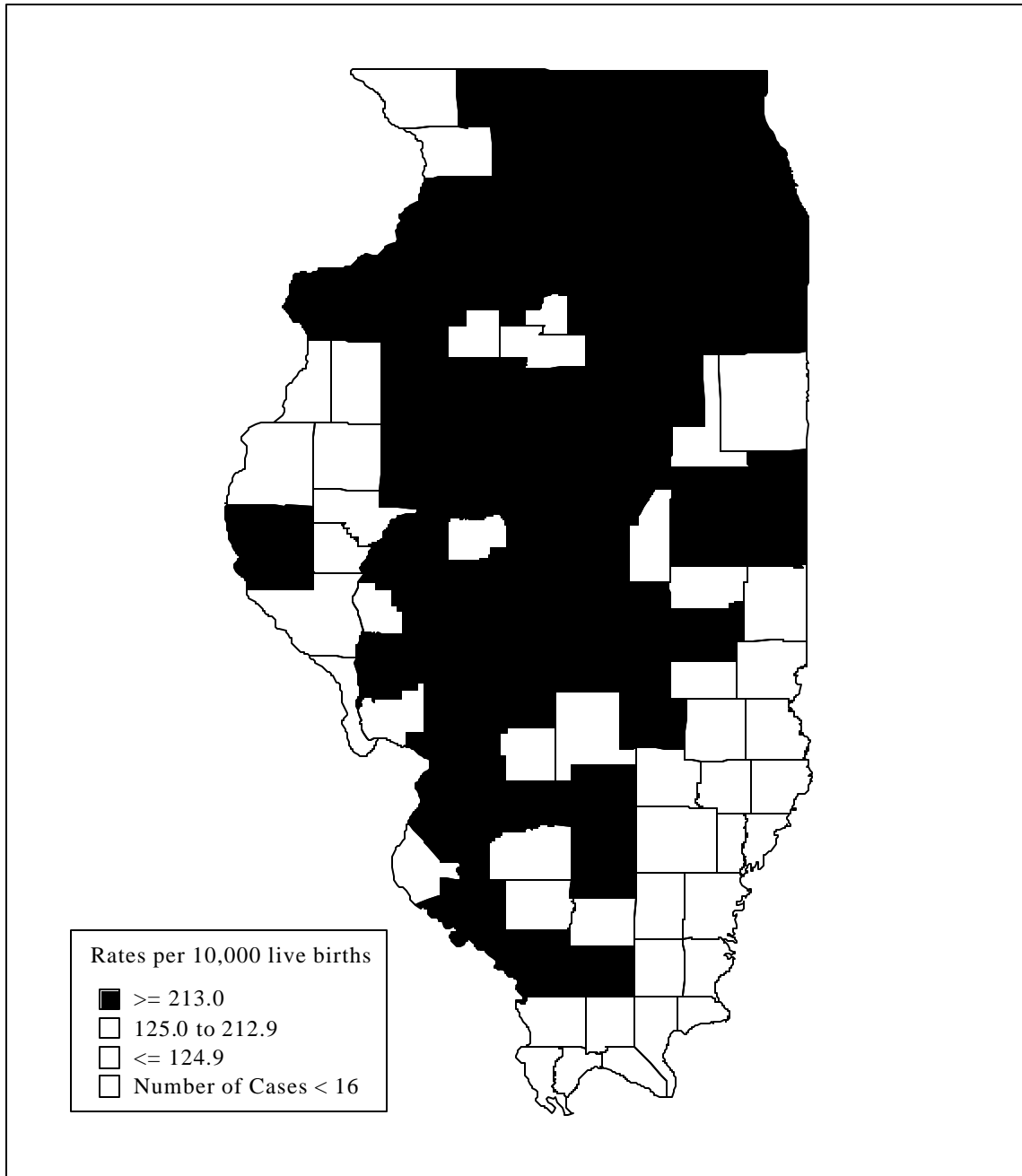
County	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>		County	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>	
			Lower	Upper				Lower	Upper
ILLINOIS	9,257	101.3	99.2	103.3	Lee	34	183.2	127.2	255.1
Adams	52	125.1	93.6	163.8	Livingston	21	85.3	52.9	130.1
Alexander	3	45.7	9.4	133.1	Logan	28	166.1	110.6	239.1
Bond	4	42.5	11.6	108.5	McDonough	15	101.1	56.7	166.2
Boone	83	278.1	222.1	343.5	McHenry	285	141.0	125.2	158.2
Brown	1	37.6	0.9	207.7	McLean	213	213.0	185.6	243.2
Bureau	22	104.7	65.7	158.1	Macon	145	195.3	165.0	229.4
Calhoun	1	39.7	1.0	219.1	Macoupin	36	130.3	91.5	180.0
Carroll	13	146.7	78.3	249.6	Madison	171	102.6	87.9	119.1
Cass	22	229.2	144.2	344.9	Marion	36	136.7	95.9	188.8
Champaign	97	87.2	70.8	106.3	Marshall	15	219.9	123.6	360.2
Christian	44	219.7	160.1	293.8	Mason	18	197.4	117.4	310.1
Clark	2	21.0	2.5	75.5	Massac	1	10.5	0.3	58.5
Clay	11	120.2	60.2	214.1	Menard	5	74.6	24.3	173.3
Clinton	18	92.5	54.9	145.9	Mercer	17	178.9	104.6	285.0
Coles	39	131.6	93.8	179.5	Monroe	14	82.7	45.3	138.4
Cook	2,677	70.5	68.0	73.0	Montgomery	30	175.3	118.6	249.4
Crawford	4	37.3	10.2	95.3	Morgan	48	228.5	168.9	301.8
Cumberland	5	79.4	25.8	184.2	Moultrie	18	189.9	112.9	298.4
DeKalb	142	252.6	213.2	297.0	Ogle	100	330.5	269.7	400.5
DeWitt	20	192.3	117.9	295.5	Peoria	214	162.5	141.6	185.5
Douglas	7	47.4	19.1	97.4	Perry	6	49.2	18.1	106.7
DuPage	577	86.9	80.0	94.2	Piatt	8	92.9	40.2	182.3
Edgar	7	64.6	26.0	132.6	Pike	15	157.7	88.5	258.8
Edwards	3	78.3	16.2	227.2	Pope	0	0.0	0.0	227.9
Effingham	40	173.5	124.3	235.6	Pulaski	4	79.7	21.8	202.8
Fayette	15	119.5	67.0	196.4	Putnam	5	152.0	49.5	351.1
Ford	9	103.6	47.5	195.7	Randolph	17	87.6	51.1	139.9
Franklin	14	60.6	33.2	101.5	Richland	7	70.6	28.4	145.0
Fulton	28	138.6	92.3	199.7	Rock Island	209	213.3	185.6	243.9
Gallatin	1	30.4	0.8	168.2	St. Clair	195	105.5	91.2	121.2
Greene	16	190.9	109.5	308.2	Saline	7	45.7	18.4	93.9
Grundy	24	99.3	63.8	147.4	Sangamon	273	216.0	191.4	242.8
Hamilton	4	89.1	24.3	226.5	Schuyler	1	26.7	0.7	148.1
Hancock	9	81.2	37.2	153.6	Scott	3	97.1	20.1	281.1
Hardin	0	0.0	0.0	169.3	Shelby	17	139.9	81.7	223.1
Henderson	3	81.1	16.8	235.1	Stark	10	269.5	130.0	490.1
Henry	31	108.7	74.0	154.0	Stephenson	71	236.2	184.9	297.0
Iroquois	15	83.3	46.7	137.1	Tazewell	123	155.7	129.6	185.5
Jackson	27	81.2	53.6	118.0	Union	7	67.4	27.2	138.4
Jasper	7	125.9	50.8	257.7	Vermilion	47	81.4	59.9	108.1
Jefferson	16	67.7	38.8	109.8	Wabash	0	0.0	0.0	52.1
Jersey	7	59.1	23.8	121.3	Warren	14	134.5	73.7	224.6
JoDaviess	10	84.6	40.6	155.0	Washington	7	83.1	33.5	170.5
Johnson	1	14.9	0.4	83.0	Wayne	7	68.3	27.5	140.2
Kane	441	113.8	103.5	124.9	White	6	72.9	26.8	158.0
Kankakee	82	106.8	85.0	132.4	Whiteside	54	140.6	105.8	183.0
Kendall	40	89.6	64.1	121.9	Will	442	107.6	97.9	118.1
Knox	29	90.6	60.7	129.8	Williamson	24	67.2	43.1	99.9
Lake	358	67.9	61.1	75.3	Winnebago	739	372.4	346.5	399.7
LaSalle	60	84.7	64.7	108.9	Woodford	31	143.9	97.9	203.6
Lawrence	6	72.1	26.5	156.3					

<sup>1</sup> Per 10,000 births

<sup>2</sup> 95% confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

**Figure 3. Map of Incidence Rates for Newborn Infants with Major Cardiovascular System Defects, by Selected Counties of Residence, 1998 – 2002**



Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

## RESPIRATORY SYSTEM DEFECTS

Birth defects involving the respiratory system (mainly the lungs, trachea and nose) are life-threatening but less common than those involving other major organs. The major defect is lung agenesis or hypoplasia (failure to develop or under-development of one or both lungs). The prognosis depends on whether the defect affects one or both lungs and the degree of underdevelopment. Choanal atresia is included in this category of defects under some grouping schemes, but is included under alimentary tract defects for APORS reports. Table 6 includes the ICD-9-CM code for this condition.

**Table 6. Total Number and Incidence Rates of Major Respiratory System Defects in Newborn Infants, Illinois, 1998 – 2002**

Defect	ICD-9-CM Codes	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>	
				Lower	Upper
Lung agenesis/hypoplasia	748.5	258	2.8	2.5	3.2

<sup>1</sup> Rate per 10,000 live births

<sup>2</sup> 95% confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System , March 2004

A figure is not included because only Cook County had more than 16 newborn cases.

**Table 7. Total Number and Incidence Rates of Major Respiratory System Defects in Newborn Infants, by County of Residence, 1998 – 2002**

County	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>		County	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>	
			Lower	Upper				Lower	Upper
ILLINOIS	258	2.8	2.5	3.2	Lee	1	4.1	0.1	22.6
Adams	3	7.2	1.5	21.1	Livingston	3	17.8	3.7	51.9
Alexander	0	0.0	0.0	56.1	Logan	1	6.7	0.2	37.5
Bond	0	0.0	0.0	39.1	McDonough	6	3.0	1.1	6.5
Boone	2	6.7	0.8	24.2	McHenry	3	3.0	0.6	8.8
Brown	0	0.0	0.0	137.7	McLean	4	5.4	1.5	13.8
Bureau	0	0.0	0.0	17.5	Macon	4	14.5	3.9	37.0
Calhoun	0	0.0	0.0	145.3	Macoupin	9	5.4	2.5	10.2
Carroll	0	0.0	0.0	41.5	Madison	4	15.2	4.1	38.8
Cass	1	10.4	0.3	57.9	Marion	1	14.7	0.4	81.4
Champaign	6	5.4	2.0	11.7	Marshall	0	0.0	0.0	40.4
Christian	2	10.0	1.2	36.0	Mason	0	0.0	0.0	38.8
Clark	1	10.5	0.3	58.3	Massac	0	0.0	0.0	54.9
Clay	0	0.0	0.0	40.2	Menard	0	0.0	0.0	38.8
Clinton	0	0.0	0.0	18.9	Mercer	0	0.0	0.0	21.8
Coles	2	6.7	0.8	24.4	Monroe	2	11.7	1.4	42.2
Cook	81	1.9	1.5	2.4	Montgomery	0	0.0	0.0	17.5
Crawford	0	0.0	0.0	34.4	Morgan	1	10.5	0.3	58.6
Cumberland	0	0.0	0.0	58.4	Moultrie	5	16.5	5.4	38.5
DeKalb	3	5.3	1.1	15.6	Ogle	5	3.8	1.2	8.9
DeWitt	2	19.2	2.3	69.3	Peoria	0	0.0	0.0	30.2
Douglas	0	0.0	0.0	24.9	Perry	0	0.0	0.0	42.7
DuPage	14	2.1	1.1	3.5	Piatt	0	0.0	0.0	38.7
Edgar	0	0.0	0.0	34.0	Pike	0	0.0	0.0	227.9
Edwards	0	0.0	0.0	95.8	Pope	0	0.0	0.0	73.2
Effingham	1	4.3	0.1	24.2	Pulaski	0	0.0	0.0	111.5
Fayette	1	8.0	0.2	44.3	Putnam	3	15.5	3.2	45.1
Ford	0	0.0	0.0	42.4	Randolph	2	20.2	2.4	72.7
Franklin	2	8.7	1.1	31.2	Richland	1	1.0	0.0	5.7
Fulton	2	9.9	1.2	35.7	Rock Island	6	3.2	1.2	7.1
Gallatin	0	0.0	0.0	111.5	St. Clair	1	6.5	0.2	36.3
Greene	1	11.9	0.3	66.3	Saline	9	7.1	3.3	13.5
Grundy	0	0.0	0.0	15.3	Sangamon	0	0.0	0.0	98.1
Hamilton	1	22.3	0.6	123.5	Schuyler	0	0.0	0.0	118.7
Hancock	0	0.0	0.0	33.2	Scott	1	8.2	0.2	45.8
Hardin	0	0.0	0.0	169.3	Shelby	1	27.0	0.7	149.3
Henderson	1	27.0	0.7	149.7	Stark	4	13.3	3.6	34.0
Henry	2	7.0	0.9	25.3	Stephenson	4	5.1	1.4	13.0
Iroquois	0	0.0	0.0	20.5	Tazewell	0	0.0	0.0	35.5
Jackson	0	0.0	0.0	11.1	Union	2	3.5	0.4	12.5
Jasper	0	0.0	0.0	66.1	Vermilion	0	0.0	0.0	52.1
Jefferson	0	0.0	0.0	15.6	Wabash	0	0.0	0.0	35.4
Jersey	1	8.4	0.2	46.9	Warren	3	35.6	7.4	103.8
JoDaviess	0	0.0	0.0	31.2	Washington	0	0.0	0.0	35.9
Johnson	1	14.9	0.4	83.0	Wayne	0	0.0	0.0	44.7
Kane	10	2.6	1.2	4.8	White	1	2.6	0.1	14.5
Kankakee	2	2.6	0.3	9.4	Whiteside	8	1.9	0.8	3.8
Kendall	1	2.2	0.1	12.5	Will	1	2.8	0.1	15.6
Knox	1	3.1	0.1	17.4	Williamson	9	4.5	2.1	8.6
Lake	7	1.3	0.5	2.7	Winnebago	0	0.0	0.0	17.1
LaSalle	2	2.8	0.3	10.2	Woodford	1	4.1	0.1	22.6
Lawrence	0	0.0	0.0	44.2					

<sup>1</sup> Per 10,000 births

<sup>2</sup> 95% confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

## ALIMENTARY TRACT DEFECTS

Alimentary tract defects are made up of orofacial defects (cleft palate and lip, choanal atresia) and gastrointestinal defects (esophageal atresia, rectal and intestinal atresia and stenosis, and pyloric stenosis). Most of these defects can be repaired surgically. A description of each defect follows, together with Table 8, which gives the five-year incidence rates for each defect for the whole state.

*Biliary atresia* is a congenital absence or closure of the major bile ducts that drain bile from the liver.

*Choanal atresia* is the narrowing or blockage of the nasal airway by membranous or bony tissue. Bilateral choanal atresia is a surgical emergency.

*Cleft lip* is the presence of one or two splits in the upper lip resulting from failure of the normal process of fusion of the lip during embryonic development.

*Cleft palate* is a split in the roof of the mouth (the palate) due to a failure of the palatal shelves to fuse fully during embryonic development.

*Esophageal atresia* is a narrowing or obstruction of the esophagus and is usually a surgical emergency. It is often associated with *tracheoesophageal fistula* – a hole between the lower esophagus and the trachea.

*Hirschsprung disease* is the absence of the nerves in the wall of the bowel. This condition is repaired by removing the affected portion of the intestine.

*Pyloric stenosis* is a narrowing of the outlet between the stomach and small intestine.

*Rectal, anal and large intestinal atresia or stenosis* is the absence, abnormal localization or blockage of the rectum, anus or large intestine. It may be corrected surgically or bypassed.

**Table 8. Total Number and Incidence Rates of Major Alimentary Tract Defects in Newborn Infants, Illinois, 1998 – 2002**

Defect	ICD-9-CM Codes	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>	
				Lower	Upper
Biliary atresia	751.61	13	0.1	0.1	0.2
Choanal atresia	748.0	87	1.0	0.8	1.2
Cleft lip	749.10-749.25	542	5.9	5.4	6.4
Cleft palate without cleft lip	749.0x	332	3.6	3.3	4.0
Esophageal atresia/tracheoesophageal fistula	750.3	200	2.2	1.9	2.5
Hirschsprung disease	751.3	151	1.7	1.4	1.9
Pyloric stenosis	750.5	49	0.5	0.4	0.7
Rectal, anal, large intestinal atresia/stenosis	751.2	260	2.8	2.5	3.2

<sup>1</sup> Rate per 10,000 live births

<sup>2</sup> 95% confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

**Table 9. Total Number and Incidence Rates of Major Alimentary Tract Defects in Newborn Infants, by County of Residence, 1998 – 2002**

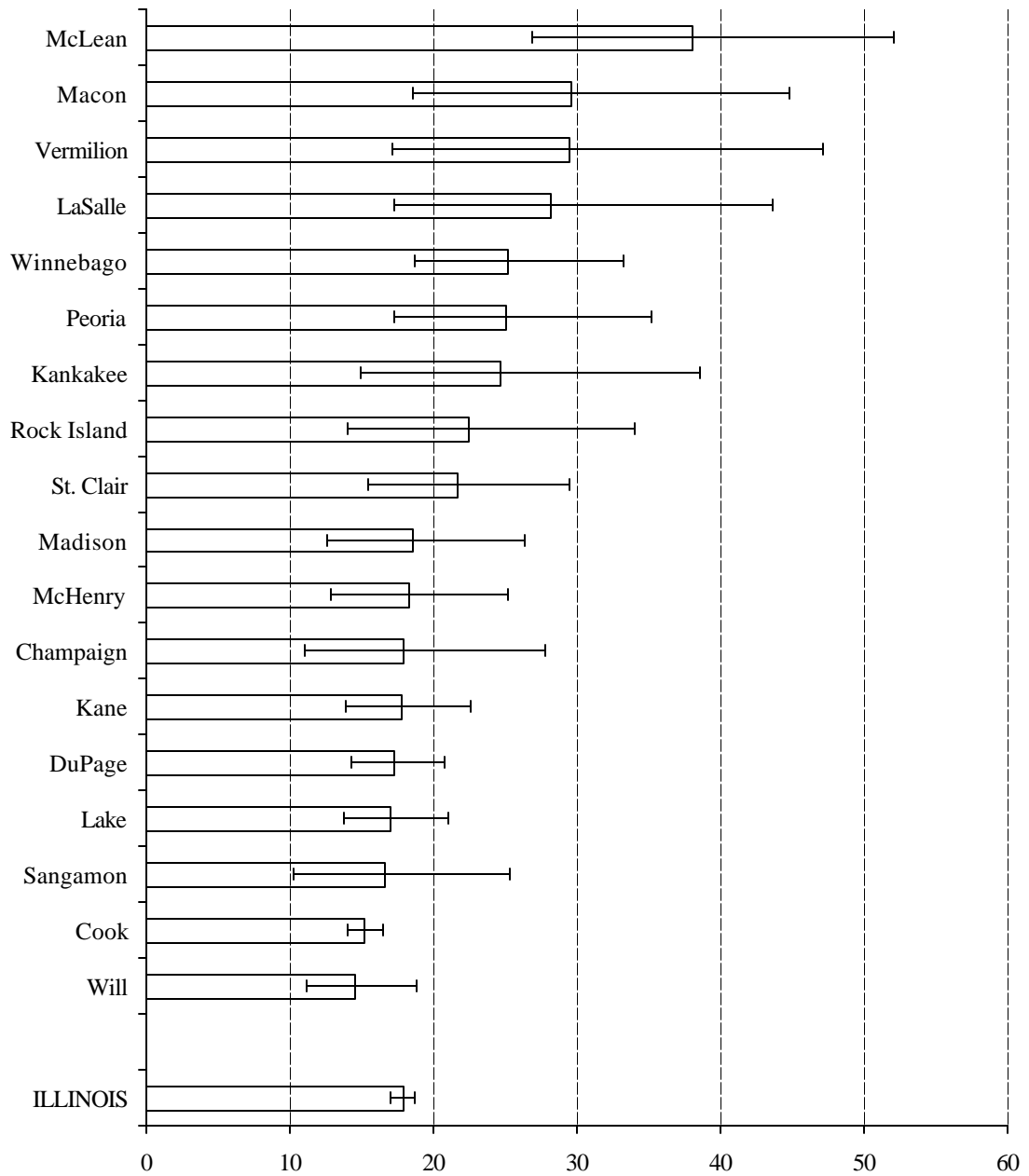
County	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>		County	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>	
			Lower	Upper				Lower	Upper
ILLINOIS	1,634	17.9	17.0	18.8	Lee	4	21.6	5.9	55.1
Adams	7	16.8	6.8	34.7	Livingston	5	20.3	6.6	47.3
Alexander	2	30.5	3.7	109.7	Logan	5	29.7	9.6	69.1
Bond	2	21.3	2.6	76.6	McDonough	3	20.2	4.2	59.0
Boone	5	16.8	5.4	39.0	McHenry	37	18.3	12.9	25.2
Brown	0	0.0	0.0	137.7	McLean	38	38.0	26.9	52.1
Bureau	6	28.6	10.5	62.1	Macon	22	29.6	18.6	44.8
Calhoun	0	0.0	0.0	145.3	Macoupin	5	18.1	5.9	42.2
Carroll	1	11.3	0.3	62.7	Madison	31	18.6	12.6	26.4
Cass	6	62.5	23.0	135.5	Marion	7	26.6	10.7	54.7
Champaign	20	18.0	11.0	27.8	Marshall	1	14.7	0.4	81.4
Christian	1	5.0	0.1	27.8	Mason	3	32.9	6.8	95.8
Clark	2	21.0	2.5	75.5	Massac	1	10.5	0.3	58.5
Clay	2	21.9	2.6	78.7	Menard	1	14.9	0.4	82.9
Clinton	6	30.8	11.3	67.0	Mercer	3	31.6	6.5	92.0
Coles	9	30.4	13.9	57.6	Monroe	3	17.7	3.7	51.7
Cook	643	15.2	14.1	16.5	Montgomery	3	17.5	3.6	51.2
Crawford	2	18.7	2.3	67.3	Morgan	5	23.8	7.7	55.4
Cumberland	2	31.7	3.8	114.2	Moultrie	3	31.6	6.5	92.2
DeKalb	5	8.9	2.9	20.7	Ogle	7	23.1	9.3	47.6
DeWitt	0	0.0	0.0	35.4	Peoria	33	25.1	17.3	35.2
Douglas	3	20.3	4.2	59.2	Perry	3	24.6	5.1	71.7
DuPage	115	17.3	14.3	20.8	Piatt	2	23.2	2.8	83.7
Edgar	4	36.9	10.1	94.2	Pike	0	0.0	0.0	38.7
Edwards	1	26.1	0.7	144.6	Pope	0	0.0	0.0	227.9
Effingham	10	43.4	20.8	79.6	Pulaski	1	19.9	0.5	110.5
Fayette	1	8.0	0.2	44.3	Putnam	0	0.0	0.0	111.5
Ford	3	34.5	7.1	100.6	Randolph	4	20.6	5.6	52.7
Franklin	6	26.0	9.5	56.4	Richland	2	20.2	2.4	72.7
Fulton	10	49.5	23.8	90.9	Rock Island	22	22.5	14.1	34.0
Gallatin	0	0.0	0.0	111.5	St. Clair	40	21.6	15.5	29.4
Greene	3	35.8	7.4	104.3	Saline	4	26.1	7.1	66.7
Grundy	3	12.4	2.6	36.2	Sangamon	21	16.6	10.3	25.4
Hamilton	3	66.8	13.8	194.0	Schuyler	0	0.0	0.0	98.1
Hancock	0	0.0	0.0	33.2	Scott	2	64.7	7.8	231.8
Hardin	2	92.6	11.2	330.5	Shelby	2	16.5	2.0	59.3
Henderson	0	0.0	0.0	99.2	Stark	1	27.0	0.7	149.3
Henry	6	21.0	7.7	45.7	Stephenson	5	16.6	5.4	38.8
Iroquois	5	27.8	9.0	64.7	Tazewell	15	19.0	10.6	31.3
Jackson	6	18.1	6.6	39.2	Union	1	9.6	0.2	53.6
Jasper	3	54.0	11.1	156.9	Vermilion	17	29.4	17.2	47.1
Jefferson	13	55.0	29.3	93.9	Wabash	0	0.0	0.0	52.1
Jersey	1	8.4	0.2	46.9	Warren	5	48.0	15.6	111.7
JoDaviess	0	0.0	0.0	31.2	Washington	0	0.0	0.0	43.7
Johnson	0	0.0	0.0	55.0	Wayne	3	29.3	6.0	85.3
Kane	69	17.8	13.9	22.5	White	0	0.0	0.0	44.7
Kankakee	19	24.7	14.9	38.6	Whiteside	9	23.4	10.7	44.4
Kendall	6	13.4	4.9	29.2	Will	60	14.6	11.2	18.8
Knox	8	25.0	10.8	49.2	Williamson	6	16.8	6.2	36.5
Lake	90	17.1	13.7	21.0	Winnebago	50	25.2	18.7	33.2
LaSalle	20	28.2	17.3	43.6	Woodford	5	23.2	7.5	54.1
Lawrence	3	36.1	7.4	105.0					

<sup>1</sup> Per 10,000 births

<sup>2</sup> 95% confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

**Figure 4. Incidence Rates<sup>1</sup> and 95% Confidence Intervals for Major Alimentary Tract Defects in Newborn Infants by Selected Counties of Residence,<sup>2</sup> 1998 – 2002**

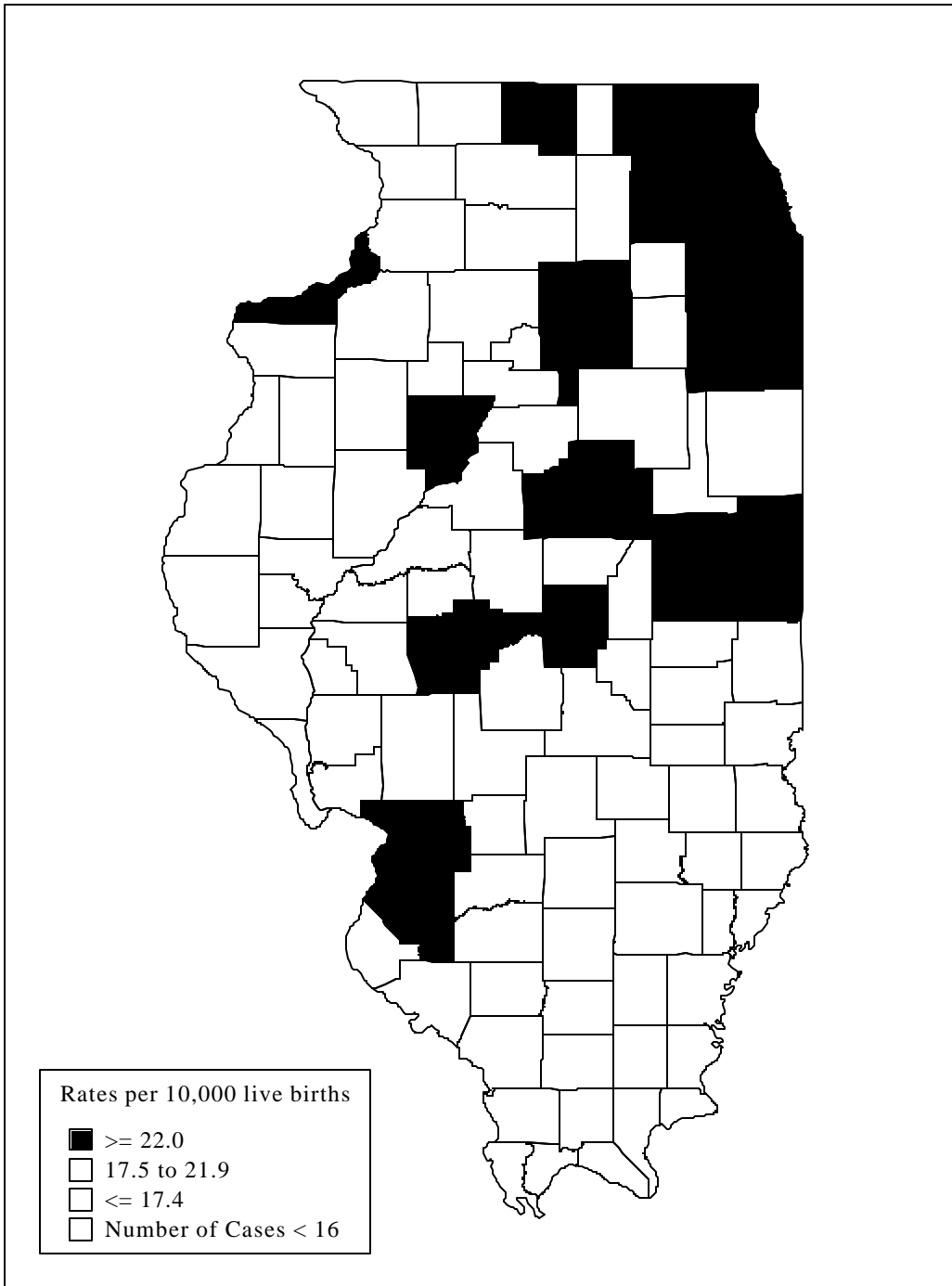


<sup>1</sup> Rates per 10,000 live births

<sup>2</sup> Only counties with 16 or more cases are presented.

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

**Figure 5. Map of Incidence Rates for Alimentary Tract Defects in Newborn Infants, by Selected Counties of Residence, 1998 – 2002**



Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

## GENITOURINARY TRACT DEFECTS

These defects affect the male and female reproductive organs and urinary tracts. Some are relatively minor, fairly common defects that may be readily repaired by surgery. Others are more serious and potentially life-threatening malformations. A description of each defect follows, together with Table 10, which gives the five-year incidence rates for each defect for the whole state.

*Bladder exstrophy* occurs when the bladder is turned inside out like a rubber glove.

Part of the abdominal wall and bladder wall are missing. This condition is usually repaired surgically.

*Epispadias* is a rare congenital defect in which the urethra opens on the top surface of the penis. Surgical correction is aimed at correcting incontinence and permitting sexual functioning.

*Hypospadias* is a relatively common abnormality that appears as an abnormal penile opening on the under side of the penis rather than at the end. The condition may be surgically corrected if needed for cosmetic, urologic or reproductive reasons.

*Obstructive genitourinary defect* is the obstruction of the ureter, renal pelvis, urethra or bladder neck. Severity of the defect depends largely upon the level of the obstruction. Urine accumulates behind the obstruction and damages the organs. It is corrected surgically, either prenatally or after birth.

*Renal agenesis/hypoplasia* is the absence or maldevelopment of the kidneys; it may be bilateral or unilateral. Newborns with bilateral renal agenesis often die of respiratory failure within a few hours of birth. Unilateral renal agenesis is often not detected during the perinatal period.

**Table 10. Total Number and Incidence Rates of Major Genitourinary System Defects in Newborn Infants, Illinois, 1998 – 2002**

Defect	ICD-9-CM Codes	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>	
				Lower	Upper
Bladder exstrophy	753.5	25	0.3	0.2	0.4
Hypospadias and epispadias	752.61, 752.62	883	9.7	9.0	10.3
Obstructive genitourinary defect	753.2, 753.6	935	10.2	9.6	10.9
Renal agenesis/hypoplasia	753.0	167	1.8	1.6	2.1

<sup>1</sup> Rate per 10,000 live births

<sup>2</sup> 95% confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

**Table 11. Total Number and Incidence Rates of Major Genitourinary System Defects in Newborn Infants, by County of Residence, 1998 – 2002**

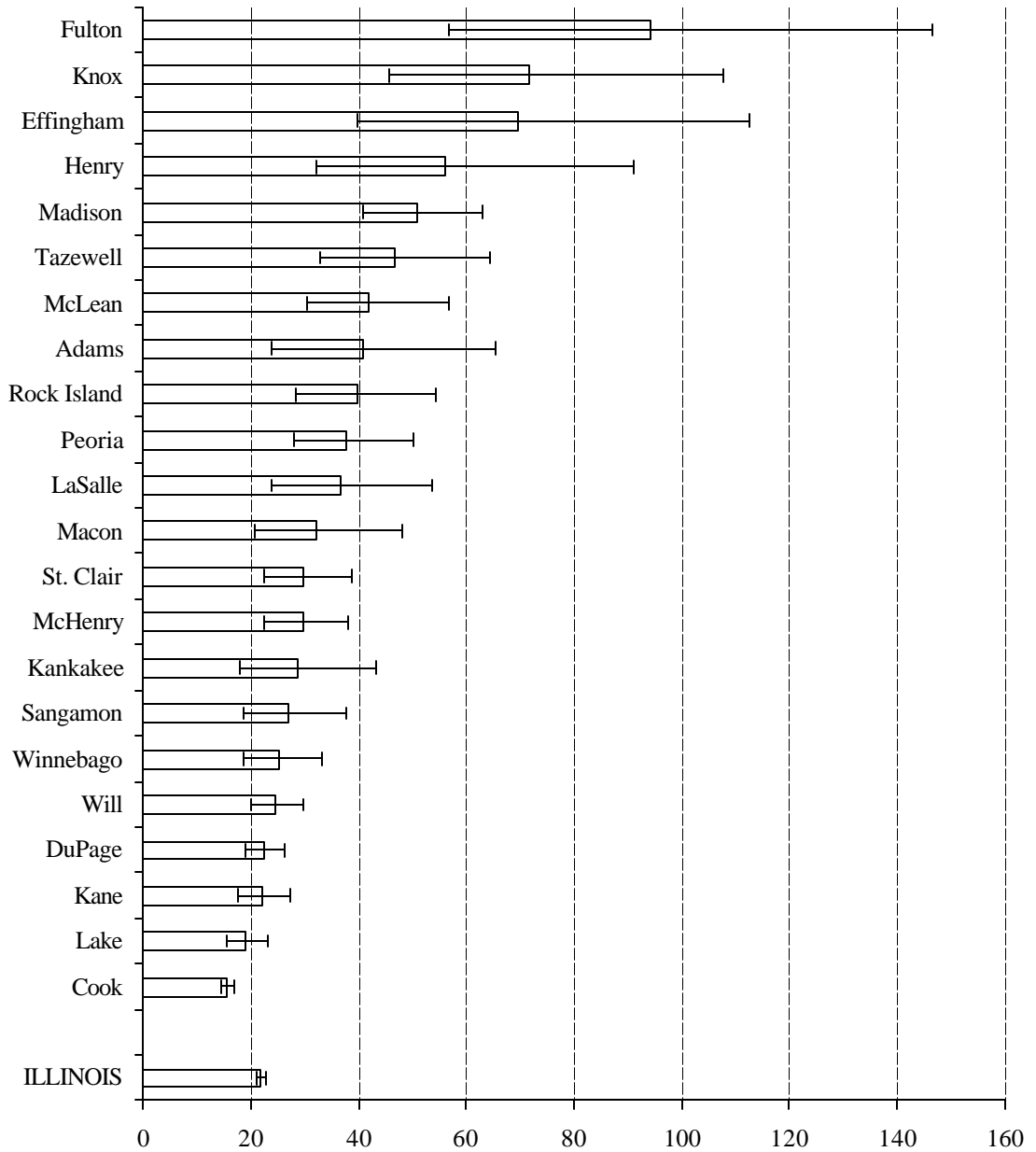
County	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>		County	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>	
			Lower	Upper				Lower	Upper
ILLINOIS	2,010	22.0	21.0	23.0	Lee	4	21.6	5.9	55.1
Adams	17	40.9	23.8	65.4	Livingston	10	40.6	19.5	74.6
Alexander	2	30.5	3.7	109.7	Logan	7	41.5	16.7	85.4
Bond	5	53.1	17.3	123.6	McDonough	5	33.7	11.0	78.5
Boone	10	33.5	16.1	61.5	McHenry	60	29.7	22.7	38.2
Brown	1	37.6	0.9	207.7	McLean	42	42.0	30.3	56.7
Bureau	3	14.3	2.9	41.7	Macon	24	32.3	20.7	48.0
Calhoun	1	39.7	1.0	219.1	Macoupin	9	32.6	14.9	61.8
Carroll	3	33.9	7.0	98.6	Madison	85	51.0	40.8	63.0
Cass	2	20.8	2.5	75.1	Marion	6	22.8	8.4	49.5
Champaign	12	10.8	5.6	18.8	Marshall	4	58.7	16.0	149.5
Christian	8	39.9	17.3	78.5	Mason	3	32.9	6.8	95.8
Clark	2	21.0	2.5	75.5	Massac	0	0.0	0.0	38.8
Clay	1	10.9	0.3	60.7	Menard	2	29.9	3.6	107.4
Clinton	10	51.4	24.7	94.4	Mercer	2	21.1	2.6	75.8
Coles	9	30.4	13.9	57.6	Monroe	7	41.4	16.6	85.1
Cook	659	15.6	14.5	16.9	Montgomery	4	23.4	6.4	59.7
Crawford	1	9.3	0.2	51.9	Morgan	5	23.8	7.7	55.4
Cumberland	2	31.7	3.8	114.2	Moultrie	2	21.1	2.6	76.0
DeKalb	13	23.1	12.3	39.5	Ogle	7	23.1	9.3	47.6
DeWitt	0	0.0	0.0	35.4	Peoria	50	38.0	28.2	50.0
Douglas	2	13.5	1.6	48.8	Perry	5	41.0	13.3	95.4
DuPage	149	22.4	19.0	26.3	Piatt	0	0.0	0.0	42.7
Edgar	0	0.0	0.0	34.0	Pike	1	10.5	0.3	58.4
Edwards	0	0.0	0.0	95.8	Pope	0	0.0	0.0	227.9
Effingham	16	69.4	39.7	112.5	Pulaski	1	19.9	0.5	110.5
Fayette	3	23.9	4.9	69.7	Putnam	4	121.6	33.2	308.4
Ford	4	46.0	12.6	117.4	Randolph	2	10.3	1.3	37.2
Franklin	5	21.6	7.0	50.4	Richland	1	10.1	0.3	56.1
Fulton	19	94.1	56.7	146.5	Rock Island	39	39.8	28.3	54.4
Gallatin	0	0.0	0.0	111.5	St. Clair	55	29.7	22.4	38.7
Greene	1	11.9	0.3	66.3	Saline	0	0.0	0.0	24.0
Grundy	9	37.3	17.0	70.6	Sangamon	34	26.9	18.6	37.6
Hamilton	2	44.5	5.4	160.0	Schuyler	1	26.7	0.7	148.1
Hancock	1	9.0	0.2	50.2	Scott	1	32.4	0.8	179.0
Hardin	1	46.3	1.2	255.2	Shelby	4	32.9	9.0	84.1
Henderson	0	0.0	0.0	99.2	Stark	0	0.0	0.0	98.9
Henry	16	56.1	32.1	91.0	Stephenson	10	33.3	16.0	61.1
Iroquois	4	22.2	6.1	56.8	Tazewell	37	46.8	33.0	64.5
Jackson	3	9.0	1.9	26.4	Union	1	9.6	0.2	53.6
Jasper	2	36.0	4.4	129.3	Vermilion	7	12.1	4.9	25.0
Jefferson	4	16.9	4.6	43.3	Wabash	1	14.2	0.4	78.7
Jersey	7	59.1	23.8	121.3	Warren	3	28.8	5.9	84.0
JoDaviess	1	8.5	0.2	47.0	Washington	6	71.3	26.2	154.4
Johnson	1	14.9	0.4	83.0	Wayne	0	0.0	0.0	35.9
Kane	86	22.2	17.8	27.4	White	0	0.0	0.0	44.7
Kankakee	22	28.6	18.0	43.3	Whiteside	7	18.2	7.3	37.5
Kendall	8	17.9	7.7	35.3	Will	101	24.6	20.0	29.9
Knox	23	71.8	45.6	107.6	Williamson	14	39.2	21.5	65.7
Lake	101	19.2	15.6	23.3	Winnebago	50	25.2	18.7	33.2
LaSalle	26	36.7	24.0	53.7	Woodford	8	37.1	16.0	73.0
Lawrence	2	24.0	2.9	86.6					

<sup>1</sup> Per 10,000 births

<sup>2</sup> 95% confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

**Figure 6. Incidence Rates<sup>1</sup> and 95% Confidence Intervals for Major Genitourinary Tract Defects in Newborn Infants by Selected Counties of Residence<sup>2</sup>, 1998 – 2002**

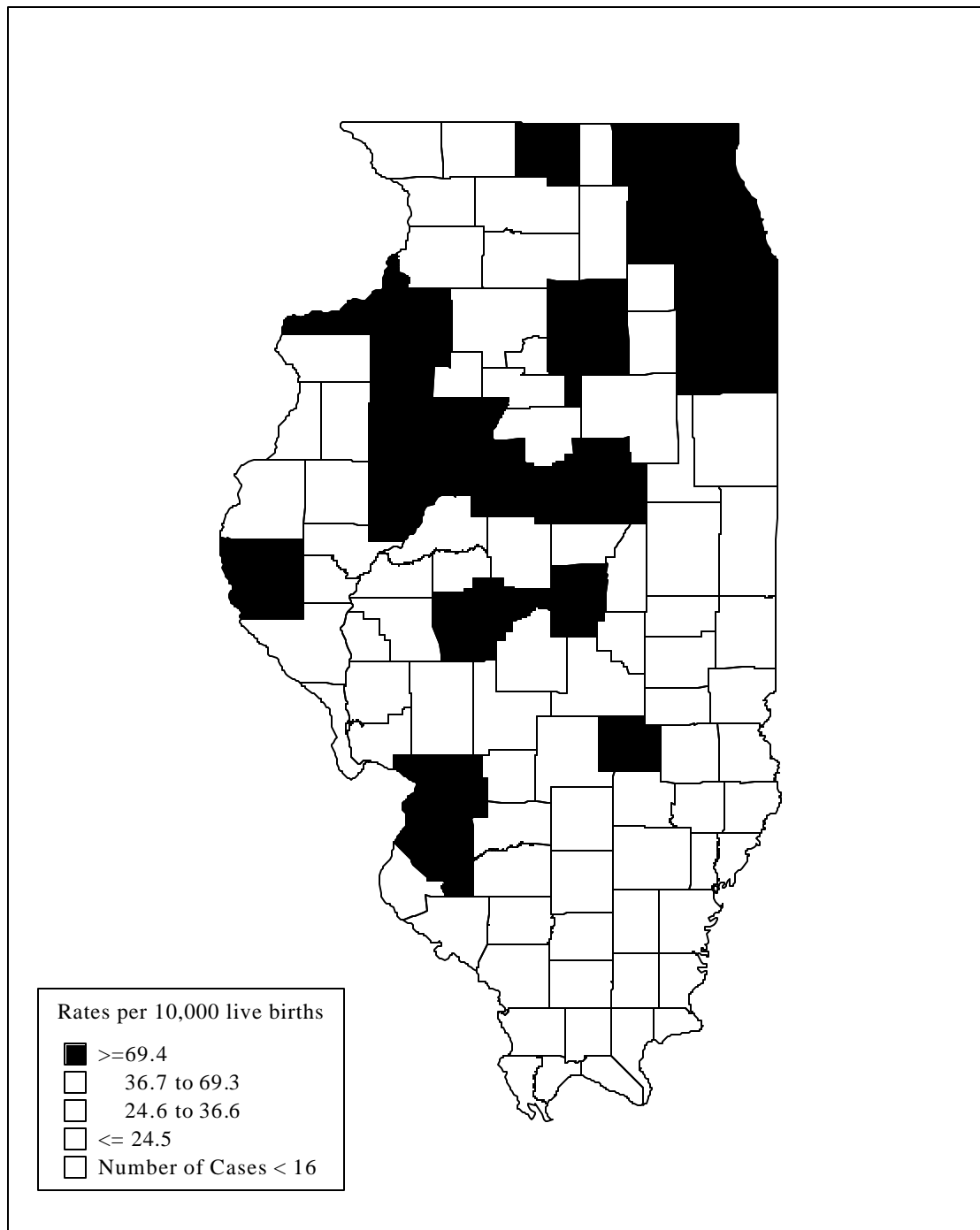


<sup>1</sup> Rates per 10,000 live births

<sup>2</sup> Only counties with 16 or more cases are presented.

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

**Figure 7. Map of Incidence Rates for Major Genitourinary Tract Defects in Newborn Infants, by Selected Counties of Residence, 1998 – 2002**



Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

## MUSCULOSKELETAL DEFECTS

These malformations make up a diverse group of defects that includes club foot and congenital dislocation of the hip – relatively common disorders – and several more rare and serious conditions. A description of each defect follows, together with Table 12, which gives the five-year incidence rates for each defect for the whole state.

*Club foot* is a congenital structural foot deformity that may involve the lower leg, ankle and foot joints, ligaments and tendons.

*Congenital hip dislocation* is a disorder in which the head of the femur does not fit properly in it's socket.

*Diaphragmatic hernia* occurs when the diaphragm does not form completely and part of the abdominal contents move into the chest cavity.

*Gastroschisis* is a herniation of the abdominal contents through a defect in the abdominal wall.

*Omphalocele* occurs when part of the intestine protrudes through a physical opening in the abdominal wall into the base of the umbilical cord.

*Reduction deformities* may affect upper or lower limbs. They may result in a shortening or absence of one or both limbs.

**Table 12. Total Number and Incidence Rates of Major Musculoskeletal Defects in Newborn Infants, Illinois, 1998 – 2002**

Defect	ICD-9-CM Codes	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>	
				Lower	Upper
Club foot	754.5x, 754.6x, 754.70, 754.71	822	9.0	8.4	9.6
Congenital hip dislocation	754.30, 754.31, 754.35	134	1.5	1.2	1.7
Diaphragmatic hernia	756.6	254	2.8	2.4	3.1
Gastroschisis/omphalocele	756.79	330	3.6	3.2	4.0
Reduction deformity, lower limbs	755.3x	63	0.7	0.5	0.9
Reduction deformity, upper limbs	755.2x	142	1.6	1.3	1.8

<sup>1</sup> Rate per 10,000 live births

<sup>2</sup> 95% confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

**Table 13. Total Number and Incidence Rates of Major Musculoskeletal Defects in Newborn Infants, by County of Residence, 1998 – 2002**

County	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>		County	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>	
			Lower	Upper				Lower	Upper
ILLINOIS <sup>3</sup>	1,745	19.1	18.2	20.0	Lee	3	16.2	3.3	47.2
Adams	16	38.5	22.0	62.4	Livingston	10	40.6	19.5	74.6
Alexander	1	15.2	0.4	84.6	Logan	9	53.4	24.4	101.1
Bond	3	31.9	6.6	92.9	McDonough	8	53.9	23.3	105.9
Boone	14	46.9	25.7	78.6	McHenry	32	15.8	10.8	22.3
Brown	0	0.0	0.0	137.7	McLean	27	27.0	17.8	39.3
Bureau	9	42.8	19.6	81.2	Macon	32	43.1	29.5	60.8
Calhoun	0	0.0	0.0	145.3	Macoupin	4	14.5	3.9	37.0
Carroll	0	0.0	0.0	41.5	Madison	48	28.8	21.3	38.2
Cass	4	41.7	11.4	106.3	Marion	15	57.0	31.9	93.8
Champaign	17	15.3	8.9	24.5	Marshall	2	29.3	3.6	105.5
Christian	3	15.0	3.1	43.7	Mason	4	43.9	12.0	111.9
Clark	0	0.0	0.0	38.6	Massac	1	10.5	0.3	58.5
Clay	3	32.8	6.8	95.5	Menard	2	29.9	3.6	107.4
Clinton	6	30.8	11.3	67.0	Mercer	6	63.2	23.2	137.0
Coles	12	40.5	20.9	70.6	Monroe	1	5.9	0.1	32.9
Cook	608	14.4	13.3	15.6	Montgomery	1	5.8	0.1	32.5
Crawford	1	9.3	0.2	51.9	Morgan	13	61.9	33.0	105.6
Cumberland	1	15.9	0.4	88.1	Moultrie	4	42.2	11.5	107.7
DeKalb	6	10.7	3.9	23.2	Ogle	9	29.7	13.6	56.4
DeWitt	4	38.5	10.5	98.2	Peoria	32	24.3	16.6	34.3
Douglas	6	40.6	14.9	88.2	Perry	1	8.2	0.2	45.6
DuPage	132	19.9	16.6	23.6	Piatt	2	23.2	2.8	83.7
Edgar	2	18.5	2.2	66.5	Pike	4	42.1	11.5	107.3
Edwards	0	0.0	0.0	95.8	Pope	0	0.0	0.0	227.9
Effingham	7	30.4	12.2	62.5	Pulaski	1	19.9	0.5	110.5
Fayette	5	39.8	13.0	92.7	Putnam	2	60.8	7.4	217.9
Ford	2	23.0	2.8	82.9	Randolph	5	25.8	8.4	60.0
Franklin	2	8.7	1.1	31.2	Richland	0	0.0	0.0	37.2
Fulton	6	29.7	10.9	64.5	Rock Island	29	29.6	19.8	42.5
Gallatin	0	0.0	0.0	111.5	St. Clair	42	22.7	16.4	30.7
Greene	2	23.9	2.9	85.9	Saline	8	52.2	22.6	102.6
Grundy	5	20.7	6.7	48.2	Sangamon	28	22.2	14.7	32.0
Hamilton	1	22.3	0.6	123.5	Schuyler	1	26.7	0.7	148.1
Hancock	2	18.1	2.2	65.1	Scott	1	32.4	0.8	179.0
Hardin	0	0.0	0.0	169.3	Shelby	3	24.7	5.1	72.0
Henderson	0	0.0	0.0	99.2	Stark	1	27.0	0.7	149.3
Henry	10	35.1	16.8	64.4	Stephenson	8	26.6	11.5	52.4
Iroquois	3	16.7	3.4	48.6	Tazewell	20	25.3	15.5	39.1
Jackson	3	9.0	1.9	26.4	Union	0	0.0	0.0	35.5
Jasper	1	18.0	0.5	99.8	Vermilion	7	12.1	4.9	25.0
Jefferson	12	50.8	26.3	88.6	Wabash	0	0.0	0.0	52.1
Jersey	4	33.8	9.2	86.2	Warren	5	48.0	15.6	111.7
JoDaviess	0	0.0	0.0	31.2	Washington	1	11.9	0.3	66.0
Johnson	2	29.9	3.6	107.6	Wayne	2	19.5	2.4	70.3
Kane	63	16.3	12.5	20.8	White	2	24.3	2.9	87.5
Kankakee	11	14.3	7.2	25.6	Whiteside	10	26.0	12.5	47.8
Kendall	8	17.9	7.7	35.3	Will	104	25.3	20.7	30.7
Knox	11	34.4	17.2	61.4	Williamson	6	16.8	6.2	36.5
Lake	79	15.0	11.9	18.7	Winnebago	57	28.7	21.8	37.2
LaSalle	33	46.6	32.1	65.4	Woodford	10	46.4	22.3	85.2
Lawrence	2	24.0	2.9	86.6					

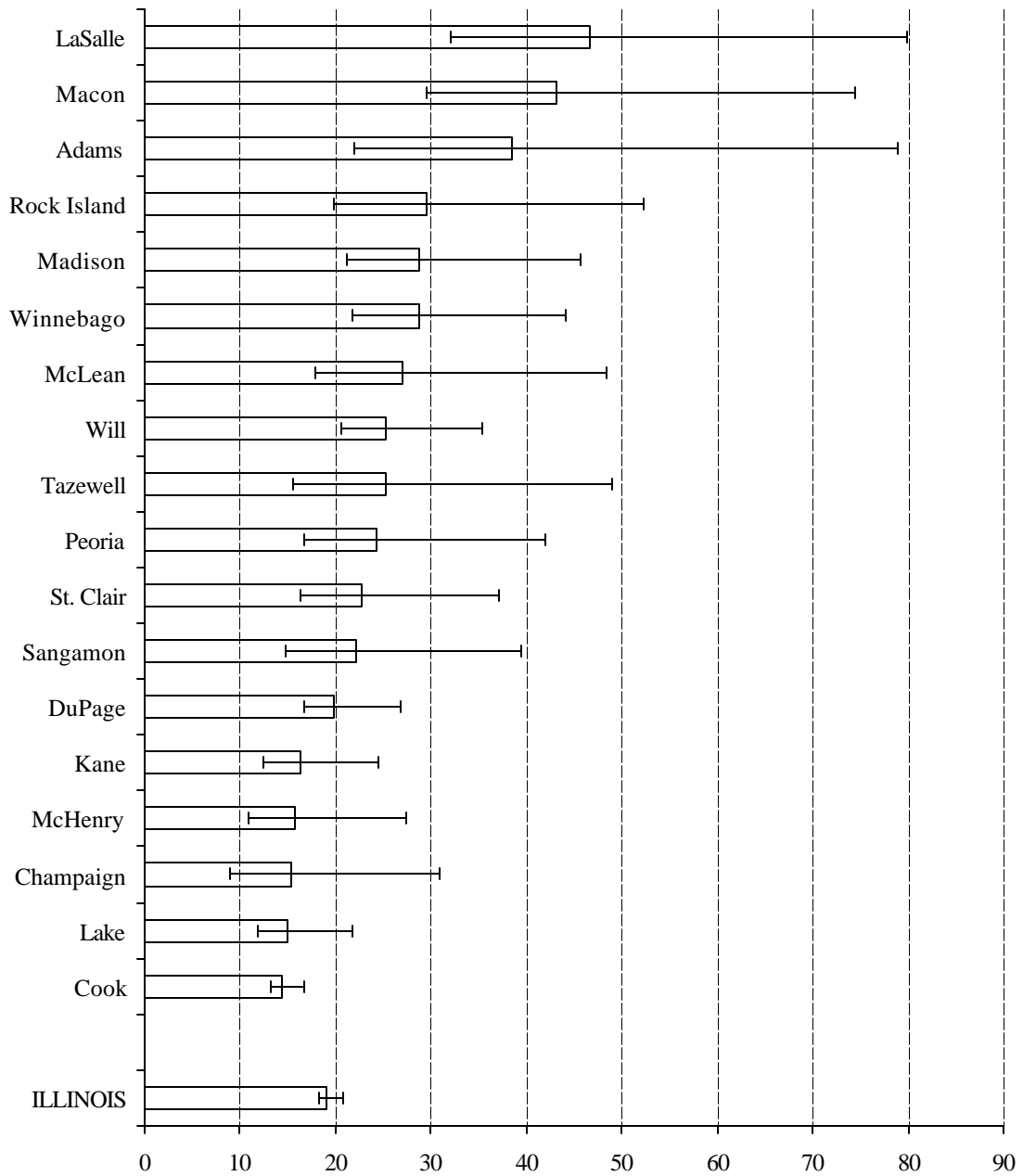
<sup>1</sup> Per 10,000 births

<sup>2</sup> 95% confidence interval for rate

<sup>3</sup>The number for Illinois includes 2 cases for whom county of residence was unknown

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

**Figure 8. Incidence Rates<sup>1</sup> and 95% Confidence Intervals for Major Musculoskeletal Defects in Newborn Infants by Selected Counties of Residence,<sup>2</sup> 1998 – 2002**

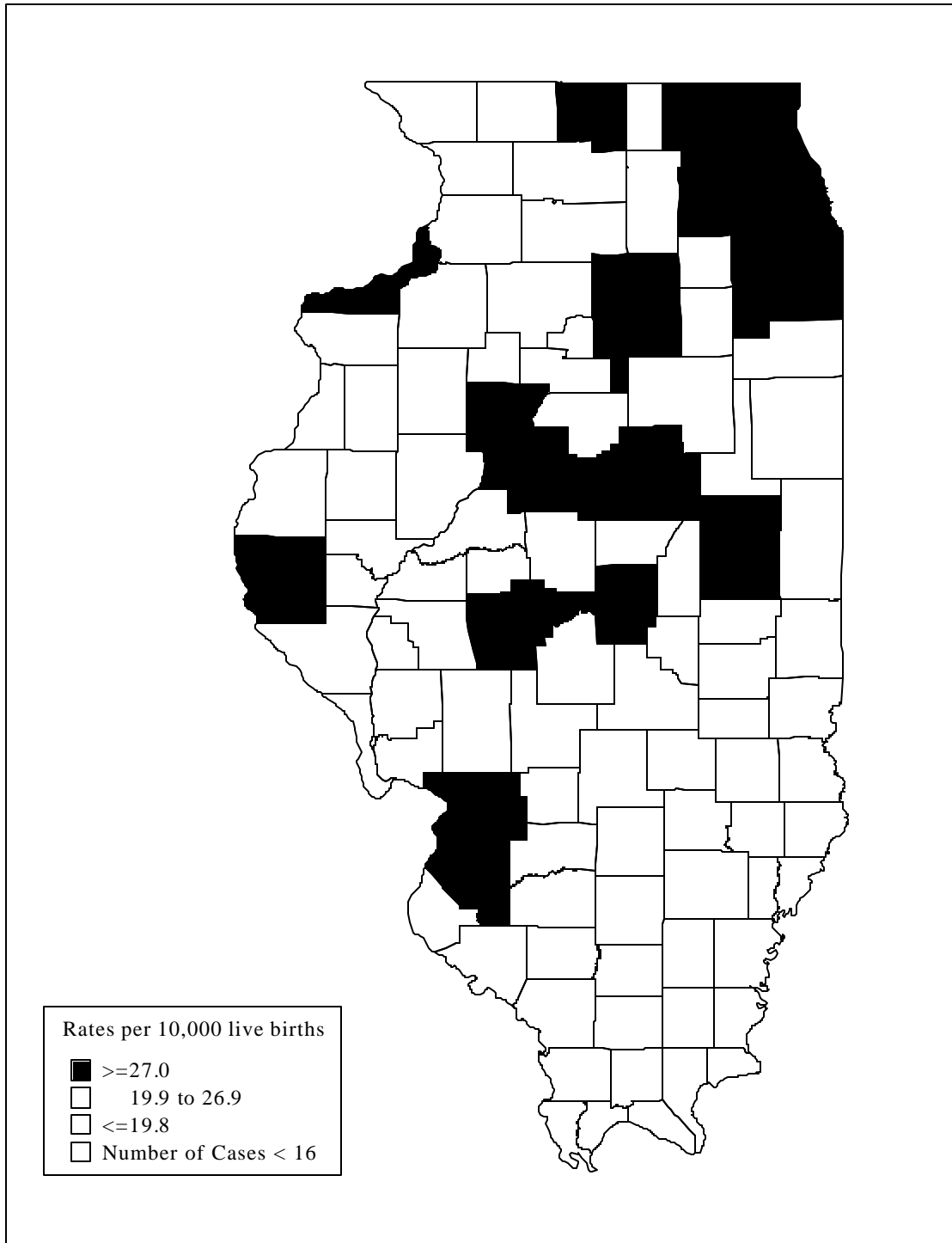


<sup>1</sup> Rates per 10,000 live births

<sup>2</sup> Only counties with 16 or more cases are presented.

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

**Figure 9. Map of Incidence Rates for Major Musculoskeletal Defects  
in Newborn Infants,  
by Selected Counties of Residence, 1998 – 2002**



Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

## CHROMOSOMAL DEFECTS

Chromosomal anomalies are disorders that usually arise from abnormal numbers of chromosomes or from breaks or deletions in specific fragments of the chromosomes. The defects collected by APORS are the most important abnormalities in this group. Each is associated with a characteristic pattern of defects that arises as a consequence of the underlying chromosomal abnormality. Congenital heart defects (especially septal defects) are very common among these infants and are a major cause of death. A description of each defect collected by APORS follows, together with Table 14, which gives the five-year incidence rates for each defect for the whole state.

*Down syndrome* is associated with the presence of a third number 21 chromosome. It results in mental retardation, distinctive malformations of the head and face, and other abnormalities. The severity of these problems varies greatly among affected individuals.

*Edward syndrome* is associated with the presence of a third number 18 chromosome. It causes major physical abnormalities and severe mental retardation. Few children afflicted with this disease survive beyond a year because of abnormalities of the lungs and diaphragm, and heart defects and blood vessel malformations.

*Patau syndrome* is associated with the presence of a third number 13 chromosome. Newborns have numerous internal and external abnormalities, including profound retardation. Most die in the first few days of life because of respiratory difficulties, heart defects and sometimes severe defects involving other organ systems.

**Table 14. Total Number and Incidence Rates of Major Chromosomal Defects in Newborn Infants, Illinois, 1998 – 2002**

Defect	ICD-9-CM Codes	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>	
				Lower	Upper
Down syndrome (trisomy 21)	758.0	969	10.6	9.9	11.3
Edward syndrome (trisomy 18)	758.2	192	2.1	1.8	2.4
Patau syndrome (trisomy 13)	758.1	79	0.9	0.7	1.1

<sup>1</sup> Rate per 10,000 live births

<sup>2</sup> 95% confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

**Table 15. Total Number and Incidence Rates of Major Chromosomal Defects in Newborn Infants, by County of Residence, 1998 – 2002**

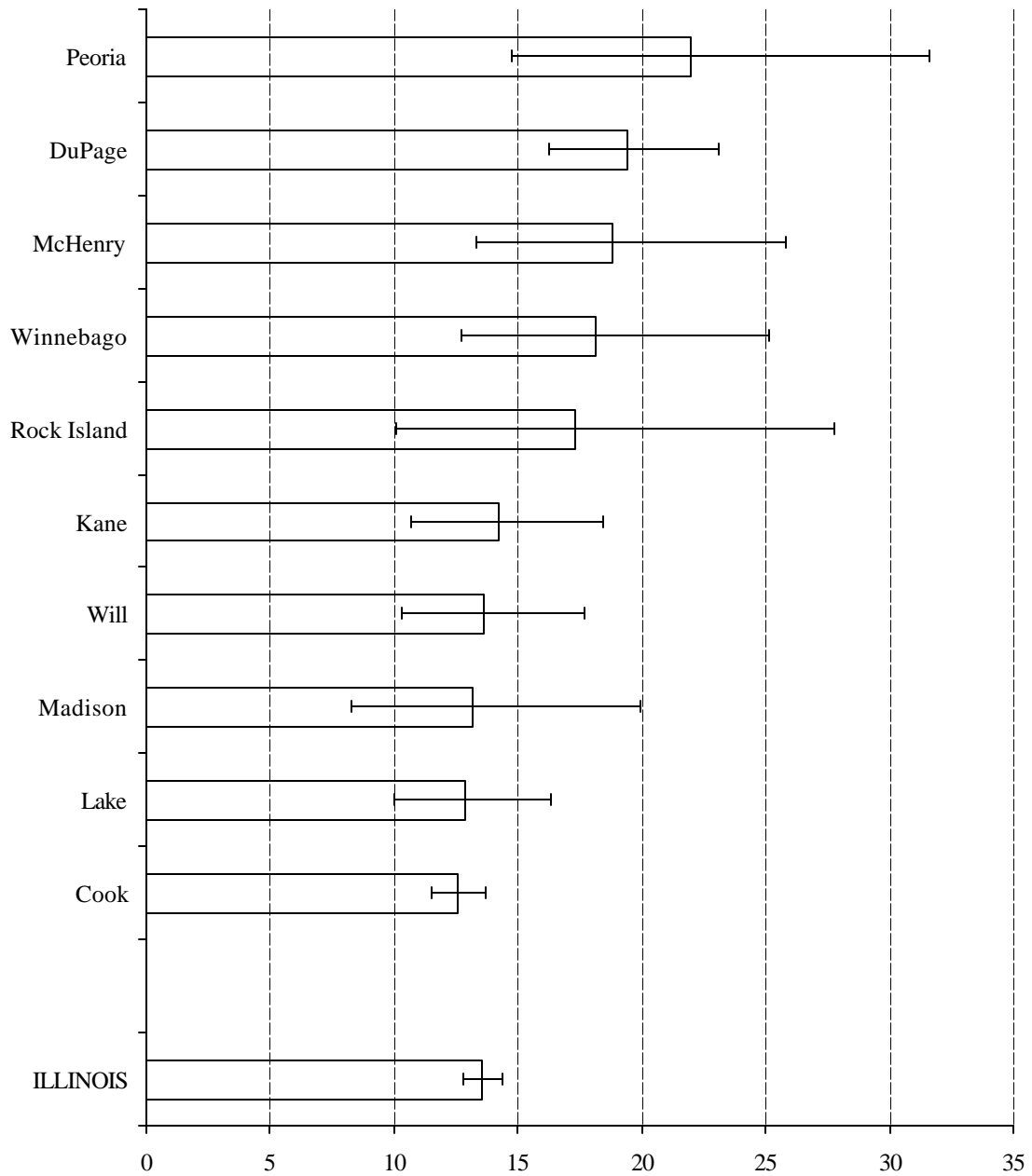
County	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>		County	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>	
			Lower	Upper				Lower	Upper
ILLINOIS	1,240	13.6	12.8	14.3	Lee	3	16.2	3.3	47.2
Adams	4	9.6	2.6	24.6	Livingston	5	20.3	6.6	47.3
Alexander	0	0.0	0.0	56.1	Logan	1	5.9	0.1	33.0
Bond	0	0.0	0.0	39.1	McDonough	1	6.7	0.2	37.5
Boone	7	23.5	9.4	48.3	McHenry	38	18.8	13.3	25.8
Brown	1	37.6	0.9	207.7	McLean	15	15.0	8.4	24.7
Bureau	2	9.5	1.2	34.3	Macon	14	18.9	10.3	31.6
Calhoun	1	39.7	1.0	219.1	Macoupin	1	3.6	0.1	20.2
Carroll	1	11.3	0.3	62.7	Madison	22	13.2	8.3	20.0
Cass	2	20.8	2.5	75.1	Marion	6	22.8	8.4	49.5
Champaign	13	11.7	6.2	20.0	Marshall	3	44.0	9.1	128.0
Christian	1	5.0	0.1	27.8	Mason	2	21.9	2.7	79.0
Clark	1	10.5	0.3	58.3	Massac	1	10.5	0.3	58.5
Clay	0	0.0	0.0	40.2	Menard	0	0.0	0.0	54.9
Clinton	3	15.4	3.2	45.0	Mercer	3	31.6	6.5	92.0
Coles	1	3.4	0.1	18.8	Monroe	3	17.7	3.7	51.7
Cook	530	12.6	11.5	13.7	Montgomery	0	0.0	0.0	21.5
Crawford	3	28.0	5.8	81.6	Morgan	2	9.5	1.2	34.3
Cumberland	0	0.0	0.0	58.4	Moultrie	3	31.6	6.5	92.2
DeKalb	5	8.9	2.9	20.7	Ogle	4	13.2	3.6	33.8
DeWitt	4	38.5	10.5	98.2	Peoria	29	22.0	14.8	31.6
Douglas	5	33.9	11.0	78.8	Perry	0	0.0	0.0	30.2
DuPage	129	19.4	16.2	23.1	Piatt	0	0.0	0.0	42.7
Edgar	2	18.5	2.2	66.5	Pike	2	21.0	2.5	75.8
Edwards	1	26.1	0.7	144.6	Pope	0	0.0	0.0	227.9
Effingham	8	34.7	15.0	68.3	Pulaski	0	0.0	0.0	73.2
Fayette	3	23.9	4.9	69.7	Putnam	0	0.0	0.0	111.5
Ford	1	11.5	0.3	64.0	Randolph	3	15.5	3.2	45.1
Franklin	1	4.3	0.1	24.1	Richland	1	10.1	0.3	56.1
Fulton	3	14.9	3.1	43.3	Rock Island	17	17.3	10.1	27.8
Gallatin	0	0.0	0.0	111.5	St. Clair	13	7.0	3.7	12.0
Greene	1	11.9	0.3	66.3	Saline	0	0.0	0.0	24.0
Grundy	3	12.4	2.6	36.2	Sangamon	13	10.3	5.5	17.6
Hamilton	0	0.0	0.0	81.8	Schuyler	0	0.0	0.0	98.1
Hancock	2	18.1	2.2	65.1	Scott	0	0.0	0.0	118.7
Hardin	0	0.0	0.0	169.3	Shelby	2	16.5	2.0	59.3
Henderson	0	0.0	0.0	99.2	Stark	1	27.0	0.7	149.3
Henry	7	24.6	9.9	50.5	Stephenson	3	10.0	2.1	29.1
Iroquois	3	16.7	3.4	48.6	Tazewell	13	16.5	8.8	28.1
Jackson	4	12.0	3.3	30.8	Union	1	9.6	0.2	53.6
Jasper	0	0.0	0.0	66.1	Vermilion	8	13.9	6.0	27.3
Jefferson	4	16.9	4.6	43.3	Wabash	0	0.0	0.0	52.1
Jersey	2	16.9	2.0	60.8	Warren	0	0.0	0.0	35.4
JoDaviess	1	8.5	0.2	47.0	Washington	0	0.0	0.0	43.7
Johnson	0	0.0	0.0	55.0	Wayne	0	0.0	0.0	35.9
Kane	55	14.2	10.7	18.5	White	1	12.2	0.3	67.5
Kankakee	6	7.8	2.9	17.0	Whiteside	6	15.6	5.7	34.0
Kendall	6	13.4	4.9	29.2	Will	56	13.6	10.3	17.7
Knox	0	0.0	0.0	11.5	Williamson	4	11.2	3.1	28.7
Lake	68	12.9	10.0	16.4	Winnebago	36	18.1	12.7	25.1
LaSalle	7	9.9	4.0	20.3	Woodford	2	9.3	1.1	33.5
Lawrence	1	12.0	0.3	66.8					

<sup>1</sup> Per 10,000 births

<sup>2</sup> 95% confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

**Figure 10. Incidence Rates<sup>1</sup> and 95% Confidence Intervals for Major Chromosomal Defects in Newborn Infants by Selected Counties of Residence,<sup>2</sup> 1998 – 2002**

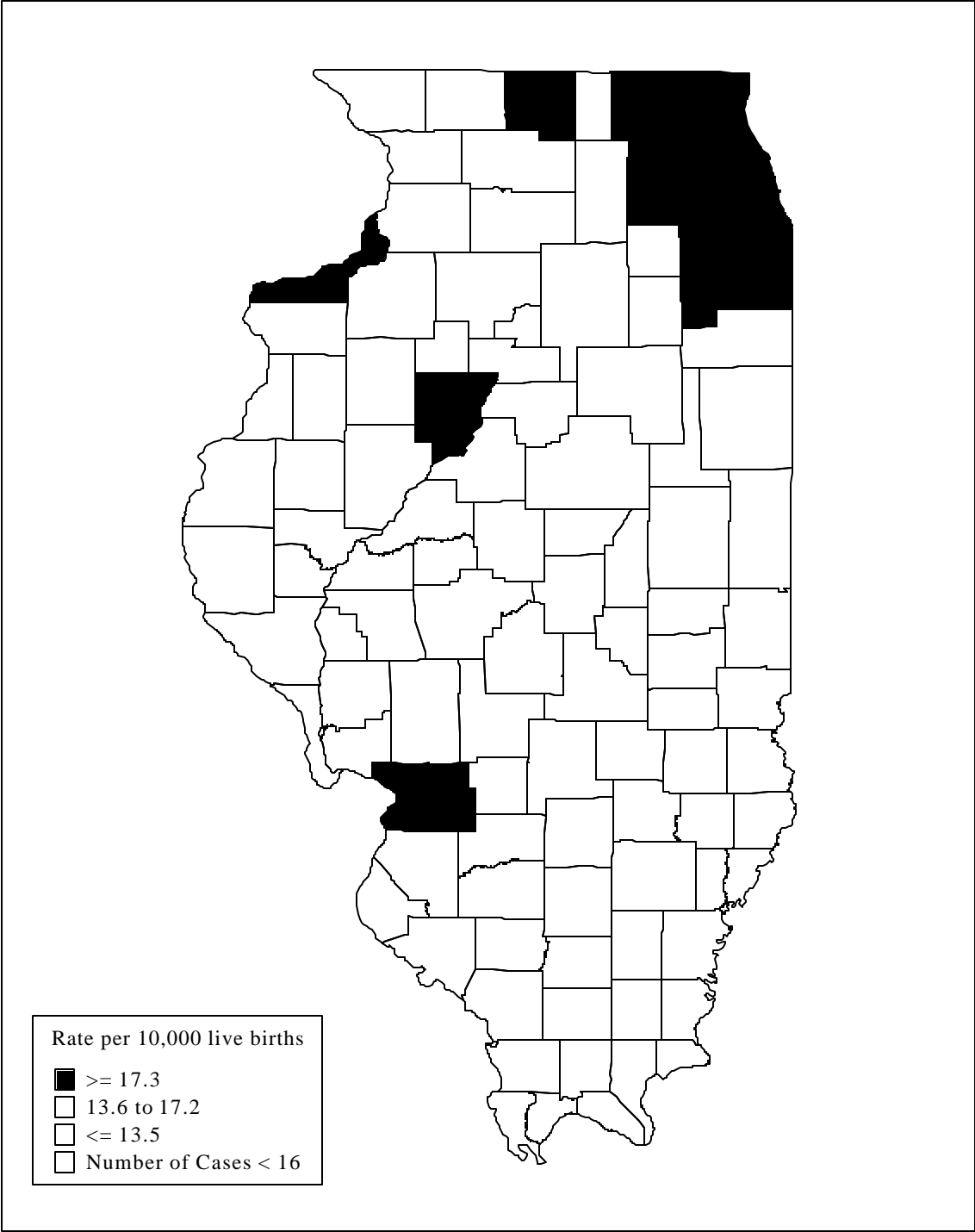


<sup>1</sup> Rates per 10,000 live births

<sup>2</sup> Only counties with 16 or more cases are presented.

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

**Figure 11. Map of Incidence Rates for Major Chromosomal Defects  
in Newborn Infants,  
by Selected Counties of Residence, 1998 – 2002**



Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

## SECTION II

### OTHER ADVERSE PREGNANCY OUTCOMES

#### VERY LOW BIRTH WEIGHT

Children born weighing 1,500 grams (about 3 pounds 5 ounces) or less are considered to have very low birth weights. Medical advances have had particular success in increasing the survival of low birth weight infants. In particular, introduction of surfactants, given to help the baby's lungs expand, and steroid treatment given to the mother for 48 hours beforehand can be crucial in improving post-natal lung function.

Between 1997 and 2001, 1.9 percent of infants born in Illinois had very low birth weights. In 2000, the proportion of infants born in the United States with very low birth weights was 1.4 percent. This rate reflects a slight increase from the 1970s when the rate was 1.2 percent (Martin *et al.*, 2001). Among very low birth weight infants, 244.3 per 1,000 births died in their first year (Mathews *et al.*, 2002)

Infants who survive have more chronic conditions, more limitations in daily activities and poorer overall health than newborns with normal birth weights in their first few years of life. Also, very low birth weight has been associated with poorer receptive language skills (Singer *et al.*, 2001) and with poor behavioral and educational outcomes (Saigal, 2000).

The maternal risk factors for having a baby with very low birth weight include being less than 17 year of age or greater than 34 years of age. African-American women and those who have not had a previous child are more likely to have low birth weight babies. Women who smoke or are of lower socioeconomic status are also more likely to have low birth weight babies. Appropriate prenatal care, especially in the first trimester, is believed to result in improved neonatal birth weight (Kiely JL *et al.*, 1994).

**Table 16. Total Number and Incidence Rates of Infants with Very Low Birth Weights (# 1,500 g), by County of Residence, 1998 – 2002**

County	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>		County	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>	
			Lower	Upper				Lower	Upper
ILLINOIS <sup>3</sup>	17,574	192.3	189.4	195.1	Lee	28	150.9	100.5	217.3
Adams	77	185.3	146.5	231.0	Livingston	34	138.1	95.8	192.4
Alexander	16	243.9	140.0	393.1	Logan	22	130.5	81.9	196.9
Bond	5	53.1	17.3	123.6	McDonough	21	141.5	87.8	215.5
Boone	47	157.5	115.9	208.8	McHenry	262	129.6	114.4	146.1
Brown	9	338.3	155.9	632.5	McLean	125	125.0	104.2	148.8
Bureau	25	119.0	77.1	175.2	Macon	161	216.8	184.9	252.5
Calhoun	2	79.4	9.6	283.7	Macoupin	47	170.2	125.3	225.6
Carroll	14	158.0	86.6	263.7	Madison	239	143.5	125.9	162.7
Cass	16	166.7	95.6	269.2	Marion	40	151.9	108.8	206.3
Champaign	199	179.0	155.1	205.3	Marshall	9	132.0	60.5	249.0
Christian	40	199.7	143.0	271.0	Mason	14	153.5	84.2	256.2
Clark	4	41.9	11.4	107.0	Massac	3	31.6	6.5	92.0
Clay	9	98.4	45.1	185.9	Menard	10	149.3	71.8	272.8
Clinton	21	108.0	67.0	164.6	Mercer	9	94.7	43.4	179.1
Coles	57	192.4	146.0	248.5	Monroe	22	130.0	81.7	196.2
Cook	9,649	228.7	224.2	233.3	Montgomery	23	134.4	85.4	201.0
Crawford	11	102.7	51.4	183.0	Morgan	36	171.3	120.3	236.4
Cumberland	5	79.4	25.8	184.2	Moultrie	18	189.9	112.9	298.4
DeKalb	99	176.1	143.3	214.0	Ogle	39	128.9	91.8	175.8
DeWitt	18	173.1	102.9	272.2	Peoria	274	208.0	184.3	233.8
Douglas	19	128.6	77.6	200.2	Perry	9	73.8	33.8	139.6
DuPage	1,067	160.7	151.2	170.5	Piatt	14	162.6	89.2	271.3
Edgar	9	83.0	38.0	157.0	Pike	17	178.8	104.5	284.7
Edwards	3	78.3	16.2	227.2	Pope	0	0.0	0.0	227.9
Effingham	29	125.8	84.4	180.2	Pulaski	12	239.0	124.1	413.8
Fayette	24	191.2	122.9	283.2	Putnam	3	91.2	18.8	264.2
Ford	18	207.1	123.2	325.4	Randolph	24	123.6	79.4	183.4
Franklin	36	155.8	109.4	215.1	Richland	10	100.9	48.5	184.8
Fulton	32	158.4	108.6	222.9	Rock Island	183	186.8	160.9	215.5
Gallatin	3	91.2	18.8	264.2	St. Clair	393	212.5	192.2	234.4
Greene	14	167.1	91.6	278.7	Saline	18	117.4	69.7	184.9
Grundy	23	95.2	60.4	142.5	Sangamon	223	176.4	154.2	200.9
Hamilton	11	245.0	122.9	434.1	Schuyler	2	53.5	6.5	191.8
Hancock	10	90.3	43.4	165.4	Scott	2	64.7	7.8	231.8
Hardin	3	138.9	28.7	400.5	Shelby	17	139.9	81.7	223.1
Henderson	4	108.1	29.5	274.5	Stark	4	107.8	29.5	273.7
Henry	40	140.3	100.4	190.6	Stephenson	63	209.6	161.4	267.4
Iroquois	13	72.2	38.5	123.2	Tazewell	119	150.7	125.0	180.0
Jackson	50	150.4	111.8	197.8	Union	9	86.7	39.7	163.9
Jasper	5	89.9	29.3	208.6	Vermilion	109	188.7	155.2	227.2
Jefferson	26	110.1	72.0	160.9	Wabash	5	70.8	23.0	164.5
Jersey	10	84.4	40.5	154.6	Warren	23	220.9	140.6	329.7
JoDaviess	8	67.7	29.3	132.9	Washington	11	130.6	65.4	232.6
Johnson	9	134.5	61.7	253.8	Wayne	16	156.1	89.5	252.3
Kane	574	148.2	136.4	160.7	White	18	218.7	130.1	343.5
Kankakee	156	203.1	172.8	237.2	Whiteside	42	109.3	78.9	147.5
Kendall	65	145.7	112.6	185.3	Will	684	166.6	154.4	179.4
Knox	51	159.3	118.8	208.9	Williamson	53	148.5	111.4	193.7
Lake	830	157.5	147.0	168.5	Winnebago	411	207.1	187.8	227.9
LaSalle	96	135.6	109.9	165.3	Woodford	28	129.9	86.5	187.2
Lawrence	8	96.2	41.6	188.6					

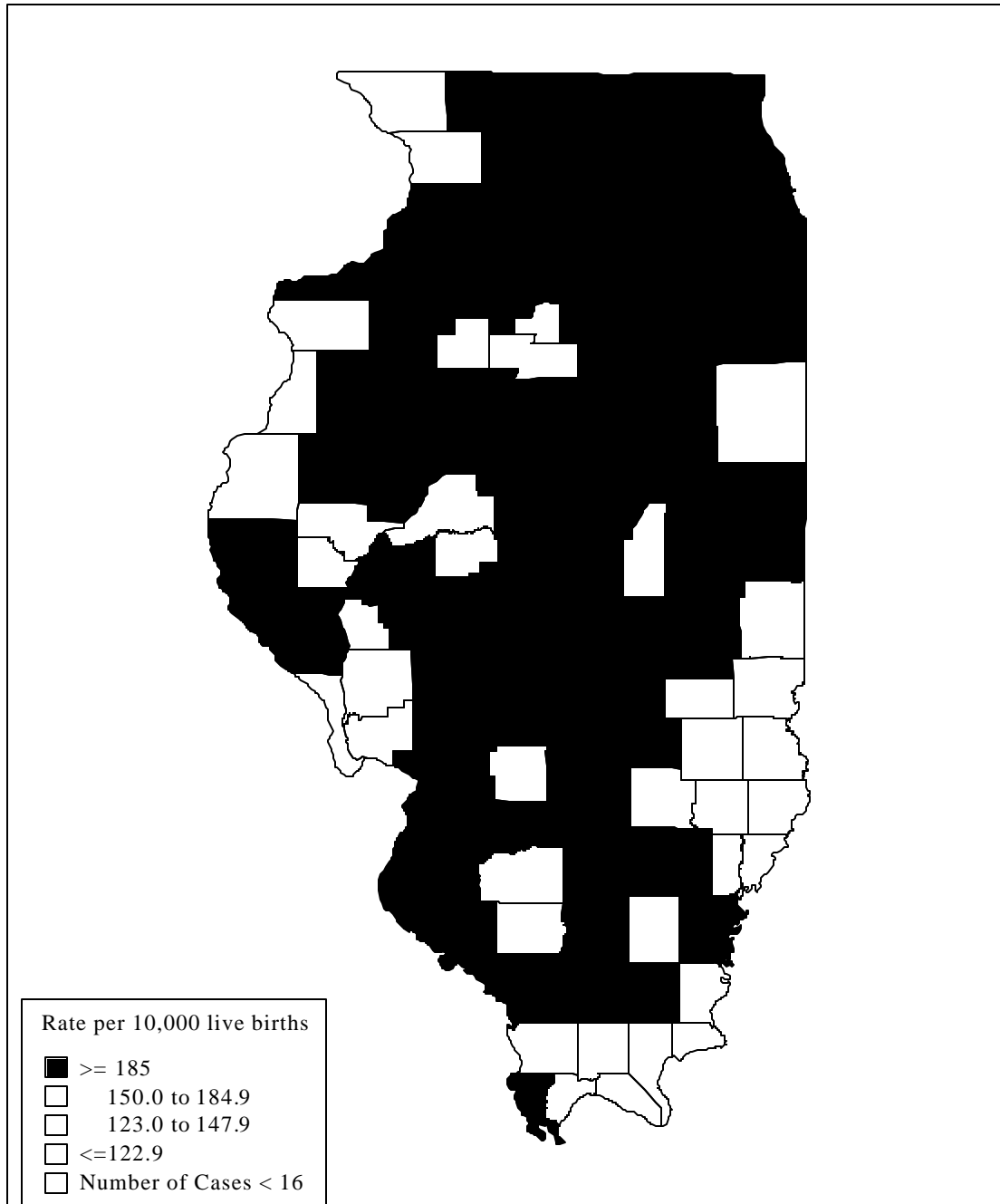
<sup>1</sup> Per 10,000 births

<sup>2</sup> 95% confidence interval for ate

<sup>3</sup>The number for Illinois includes 47 cases for whom county of residence was unknown

Source: Illinois Department of Public Health, Adverse Pregnancy Outcome Reporting System, March 2004

**Figure 12. Map of Incidence Rates for Infants with Very Low Birth Weights (# 1,500 g), by Selected Counties of Residence, 1998 – 2002**



Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

## SERIOUS CONGENITAL INFECTIONS

Congenital infections may be either viral or bacterial; infants may have been exposed *in utero* (by transfer across the placental barrier) or during delivery.

*Chlamydia* bacterial infection can lead to dangerous complications during pregnancy and birth. If a pregnant woman is untreated, her baby has a 50 percent chance of developing conjunctivitis (threatening eyesight) and a 20 percent chance of developing pneumonia. Chlamydia also can lead to premature birth or low birth weight.

*Congenital syphilis* is usually contracted in utero by transplacental passage of bacteria – *Treponema pallidum* – from an infected mother, but infection may occur from contact with an infectious lesion during delivery. In women with untreated early syphilis, 40 percent of pregnancies result in spontaneous abortion, stillbirths, premature delivery or perinatal deaths; intrauterine growth retardation may also occur. Enlargement of the liver and spleen are present in nearly all infants with congenital syphilis. Other common symptoms are jaundice, rhinitis and skin lesions.

*Congenital tetanus* is caused when an infant is exposed to the bacterium *Clostridium tetani* during delivery. The bacteria produce a neurotoxin that selectively blocks inhibitory nerve transmission from the spinal cord to the muscles, allowing the muscles to go into severe spasm. Without treatment, two out of three newborns with tetanus will die.

*Cytomegalovirus* (CMV) is a member of the herpes group of viruses. Congenital CMV can cause abnormal development of the unborn child's central nervous system when the mother catches the virus for the first time during pregnancy. This can result in mental retardation, cerebral palsy, visual impairment, epilepsy and hearing loss.

*Gonorrhea* is caused by the gonococcus bacterium. Gonorrhea can be passed from an infected woman to her newborn infant during delivery. Most states require that the eyes of newborns be treated with silver nitrate or other medication immediately after birth to prevent gonococcal infection of the eyes, which can lead to blindness.

*Group B streptococcus* (GBS) is a bacterium that may cause urinary tract or placental infections in the mother leading to preterm labor and birth. Newborns who become ill with GBS infection may require care in the newborn intensive care unit depending on the severity of the infection and whether the infection causes serious problems such as meningitis or pneumonia.

*Hepatitis B virus* (HBV) can be passed to a baby during delivery. A baby may be asymptomatic, but as he/she grows up, liver damage may be present. About 25 percent of babies who develop lifelong HBV infections die of liver disease or liver cancer. A vaccine has been used since 1982 to prevent hepatitis B.

*Herpes* in a newborn is usually a result of exposure to the herpes simplex virus II (HSV-2) during vaginal delivery. The infection rate is about 50 percent in primary infection and about 5 percent in a recurrent infection. The most common clinical symptom is the presence of cutaneous vesicles. In 20 percent of cases, there is major systemic involvement, central nervous system involvement, or both. Less than 10 percent of babies with neurologic disease develop normally. The overall mortality rate among infants with untreated infection is 65 percent.

*Listeriosis* is caused by an infection with the bacterium *Listeria monocytogenes*; half of all infected newborns will die from the illness. Babies infected during pregnancy are usually born

prematurely, have a blood infection (sepsis) and may have a serious, whole body infection called granulomatosis infantisepticum. When a baby is infected during childbirth, symptoms usually appear about two weeks after birth; these babies typically have meningitis.

*Rubella*, or German measles, is caused by the rubella virus. If a woman contracts this virus during pregnancy, the baby may miscarry or be born with birth defects including deformed limbs, blindness, deafness, abnormally small brain or mental retardation.

*Sepsis* may be a result of any of several infections. It is reportable if the infection is confirmed and is invasive. Once the organism has invaded the bloodstream, the infection may lead to pneumonia, septicemia, arthritis, endocarditis or meningitis.

**Table 17. Total Number and Incidence Rates of Serious Congenital Infections in Newborn Infants, Illinois, 1998 – 2002**

Defect	ICD-9-CM Codes	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>	
				Lower	Upper
Chlamydial infections	079.88, 079.98	21	0.2	0.1	0.3
Confirmed septicemia (sepsis)	771.8	3,224	35.3	34.1	36.5
Cytomegalovirus	771.1	100	1.1	0.9	1.3
Gonococcal infections	098.0 - 098.89	8	0.1	0.0	0.2
Group B streptococcus	041.02	390	4.3	3.9	4.7
Hepatitis B	774.4	44	0.5	0.3	0.6
Herpes	771.2	134	1.5	1.2	1.7
Listeriosis	027.0, 771.2	134	1.5	1.2	1.7
Prenatal exposure to hepatitis B	V01.7B	297	3.2	2.9	3.6
Rubella	771.0	0	0.0	0.0	0.0
Syphilis	090.0 - 090.9	632	6.9	6.4	7.5
Tetanus neonatorum	771.3	3	0.0	0.0	0.1

<sup>1</sup> Rate per 10,000 live births

<sup>2</sup> 95% confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

**Table 18. Total Number and Incidence Rates of Serious Congenital Infections in Newborn Infants, by County of Residence, 1998 – 2002**

County	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>		County	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>	
			Lower	Upper				Lower	Upper
ILLINOIS <sup>3</sup>	4,853	53.1	51.6	54.6	Lee	13	70.0	37.3	119.5
Adams	24	57.7	37.0	85.8	Livingston	9	36.6	16.7	69.3
Alexander	3	45.7	9.4	133.1	Logan	6	35.6	13.1	77.3
Bond	0	0.0	0.0	39.1	McDonough	5	33.7	11.0	78.5
Boone	20	67.0	41.0	103.3	McHenry	58	28.7	21.8	37.1
Brown	0	0.0	0.0	137.7	McLean	46	46.0	33.7	61.3
Bureau	11	52.4	26.2	93.5	Macon	23	31.0	19.6	46.4
Calhoun	0	0.0	0.0	145.3	Macoupin	3	10.9	2.2	31.7
Carroll	5	56.4	18.3	131.2	Madison	63	37.8	29.1	48.4
Cass	3	31.3	6.5	91.1	Marion	11	41.8	20.9	74.6
Champaign	63	56.7	43.6	72.4	Marshall	3	44.0	9.1	128.0
Christian	4	20.0	5.4	51.1	Mason	5	54.8	17.8	127.5
Clark	1	10.5	0.3	58.3	Massac	3	31.6	6.5	92.0
Clay	1	10.9	0.3	60.7	Menard	3	44.8	9.2	130.3
Clinton	6	30.8	11.3	67.0	Mercer	9	94.7	43.4	179.1
Coles	11	37.1	18.5	66.3	Monroe	3	17.7	3.7	51.7
Cook	2,710	64.2	61.9	66.7	Montgomery	2	11.7	1.4	42.2
Crawford	2	18.7	2.3	67.3	Morgan	2	9.5	1.2	34.3
Cumberland	2	31.7	3.8	114.2	Moultrie	4	42.2	11.5	107.7
DeKalb	27	48.0	31.7	69.8	Ogle	22	72.7	45.6	109.9
DeWitt	6	57.7	21.2	125.2	Peoria	88	66.8	53.6	82.2
Douglas	6	40.6	14.9	88.2	Perry	3	24.6	5.1	71.7
DuPage	237	35.7	31.3	40.5	Piatt	2	23.2	2.8	83.7
Edgar	4	36.9	10.1	94.2	Pike	7	73.6	29.6	151.1
Edwards	1	26.1	0.7	144.6	Pope	0	0.0	0.0	227.9
Effingham	9	39.0	17.9	74.0	Pulaski	3	59.8	12.3	173.6
Fayette	4	31.9	8.7	81.4	Putnam	2	60.8	7.4	217.9
Ford	7	80.6	32.4	165.3	Randolph	6	30.9	11.4	67.2
Franklin	12	51.9	26.9	90.6	Richland	1	10.1	0.3	56.1
Fulton	15	74.3	41.6	122.2	Rock Island	113	115.3	95.1	138.5
Gallatin	0	0.0	0.0	111.5	St. Clair	115	62.2	51.4	74.6
Greene	1	11.9	0.3	66.3	Saline	6	39.1	14.4	85.0
Grundy	3	12.4	2.6	36.2	Sangamon	51	40.3	30.1	53.0
Hamilton	1	22.3	0.6	123.5	Schuyler	0	0.0	0.0	98.1
Hancock	4	36.1	9.8	92.2	Scott	0	0.0	0.0	118.7
Hardin	1	46.3	1.2	255.2	Shelby	4	32.9	9.0	84.1
Henderson	0	0.0	0.0	99.2	Stark	4	107.8	29.5	273.7
Henry	18	63.1	37.5	99.6	Stephenson	17	56.6	33.0	90.4
Iroquois	12	66.7	34.5	116.2	Tazewell	35	44.3	30.9	61.6
Jackson	16	48.1	27.5	78.1	Union	4	38.5	10.5	98.4
Jasper	1	18.0	0.5	99.8	Vermilion	36	62.3	43.7	86.2
Jefferson	7	29.6	11.9	61.0	Wabash	4	56.7	15.5	144.4
Jersey	1	8.4	0.2	46.9	Warren	6	57.6	21.2	125.0
JoDaviess	3	25.4	5.2	74.0	Washington	6	71.3	26.2	154.4
Johnson	5	74.7	24.3	173.5	Wayne	2	19.5	2.4	70.3
Kane	183	47.2	40.7	54.8	White	3	36.5	7.5	106.2
Kankakee	33	43.0	29.6	60.3	Whiteside	13	33.8	18.0	57.8
Kendall	10	22.4	10.8	41.2	Will	115	28.0	23.1	33.6
Knox	23	71.8	45.6	107.6	Williamson	17	47.6	27.8	76.1
Lake	158	30.0	25.5	35.0	Winnebago	180	90.7	78.0	104.9
LaSalle	34	48.0	33.3	67.0	Woodford	8	37.1	16.0	73.0
Lawrence	1	12.0	0.3	66.8					

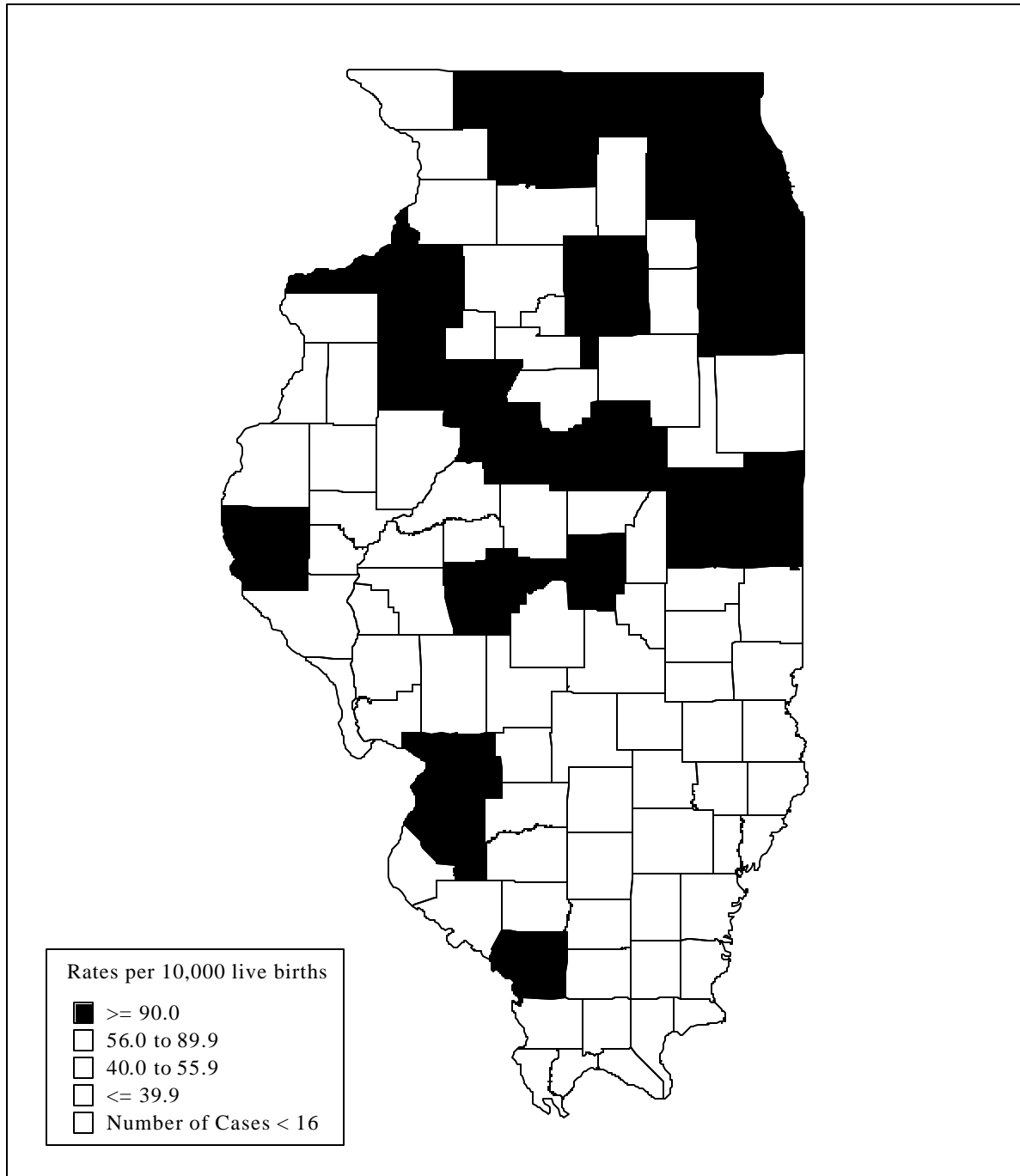
<sup>1</sup> Per 10,000 births

<sup>2</sup> 95% confidence interval for rate

<sup>3</sup>The number for Illinois includes one case for whom county of residence was unknown

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

**Figure 13. Map of Incidence Rates  
for Serious Congenital Infections in Newborn Infants,  
by Selected Counties of Residence, 1998 – 2002**

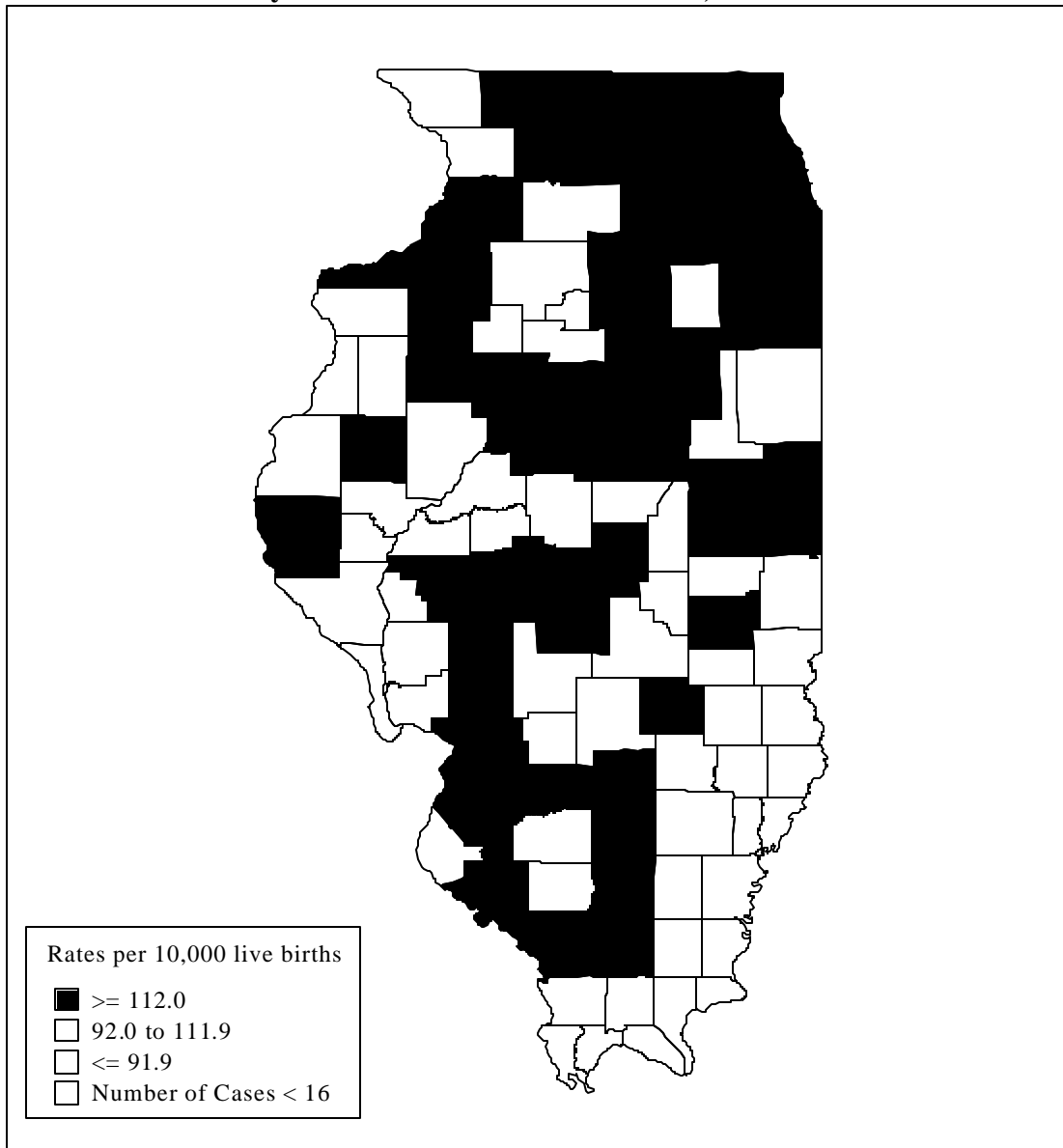


.Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

## PERINATAL DEATHS

Perinatal deaths refer to a combination of fetal deaths of at least 20 weeks gestation and neonatal deaths (under 28 days old). Because of the passive nature of APORS data collection, only neonatal deaths that occur while the baby is still in hospital for the newborn stay are reported to IDPH. The data are further incomplete because elective abortions are not included. Neonatal deaths are reported by hospitals; APORS obtains information about fetal deaths from IDPH's Division of Vital Records.

**Figure 14. Map of Incidence Rates for Perinatal Deaths, by Selected Counties of Residence, 1998 – 2002**



.Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

**Table 19. Total Number and Incidence Rates of Perinatal Deaths,  
by County of Residence, 1998 – 2002**

County	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>		County	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>	
			Lower	Upper				Lower	Upper
ILLINOIS <sup>3</sup>	10,814	118.3	116.1	120.5	Lee	12	64.7	33.5	112.7
Adams	51	122.7	91.5	161.0	Livingston	22	89.4	56.1	135.0
Alexander	6	91.5	33.6	198.0	Logan	15	89.0	49.9	146.3
Bond	3	31.9	6.6	92.9	McDonough	23	155.0	98.5	231.7
Boone	35	117.3	81.8	162.7	McHenry	162	80.1	68.3	93.4
Brown	3	112.8	23.3	326.0	McLean	88	88.0	70.6	108.3
Bureau	9	42.8	19.6	81.2	Macon	97	130.6	106.0	159.1
Calhoun	1	39.7	1.0	219.1	Macoupin	28	101.4	67.5	146.2
Carroll	8	90.3	39.1	177.1	Madison	156	93.6	79.6	109.4
Cass	15	156.3	87.7	256.4	Marion	20	76.0	46.5	117.1
Champaign	120	107.9	89.5	128.9	Marshall	10	146.6	70.5	268.0
Christian	23	114.8	72.9	171.8	Mason	12	131.6	68.2	228.7
Clark	4	41.9	11.4	107.0	Massac	4	42.1	11.5	107.5
Clay	7	76.5	30.8	157.0	Menard	8	119.4	51.7	233.9
Clinton	17	87.4	51.0	139.6	Mercer	6	63.2	23.2	137.0
Coles	38	128.2	90.9	175.6	Monroe	14	82.7	45.3	138.4
Cook	5,875	139.3	135.8	142.8	Montgomery	15	87.7	49.2	144.2
Crawford	5	46.7	15.2	108.6	Morgan	18	85.7	50.9	135.1
Cumberland	5	79.4	25.8	184.2	Moultrie	10	105.5	50.7	193.1
DeKalb	58	103.2	78.4	133.2	Ogle	17	56.2	32.8	89.8
DeWitt	9	86.5	39.6	163.6	Peoria	150	113.9	96.5	133.5
Douglas	15	101.6	56.9	167.0	Perry	8	65.6	28.3	128.8
DuPage	672	101.2	93.7	109.1	Piatt	7	81.3	32.7	166.8
Edgar	4	36.9	10.1	94.2	Pike	9	94.6	43.4	178.9
Edwards	1	26.1	0.7	144.6	Pope	0	0.0	0.0	227.9
Effingham	23	99.8	63.4	149.3	Pulaski	4	79.7	21.8	202.8
Fayette	15	119.5	67.0	196.4	Putnam	5	152.0	49.5	351.1
Ford	7	80.6	32.4	165.3	Randolph	17	87.6	51.1	139.9
Franklin	26	112.6	73.7	164.5	Richland	13	131.2	70.0	223.3
Fulton	13	64.4	34.3	109.8	Rock Island	122	124.5	103.5	148.5
Gallatin	1	30.4	0.8	168.2	St. Clair	215	116.3	101.3	132.8
Greene	11	131.3	65.7	233.6	Saline	12	78.3	40.5	136.3
Grundy	15	62.1	34.8	102.2	Sangamon	131	103.6	86.7	122.9
Hamilton	4	89.1	24.3	226.5	Schuyler	4	107.0	29.2	271.6
Hancock	6	54.2	19.9	117.5	Scott	3	97.1	20.1	281.1
Hardin	2	92.6	11.2	330.5	Shelby	12	98.8	51.1	171.9
Henderson	1	27.0	0.7	149.7	Stark	5	134.8	43.9	311.7
Henry	34	119.3	82.7	166.3	Stephenson	25	83.2	53.9	122.5
Iroquois	15	83.3	46.7	137.1	Tazewell	88	111.4	89.5	137.1
Jackson	36	108.3	76.0	149.6	Union	8	77.1	33.3	151.3
Jasper	6	107.9	39.7	233.4	Vermilion	75	129.9	102.3	162.5
Jefferson	19	80.4	48.5	125.3	Wabash	2	28.3	3.4	102.0
Jersey	7	59.1	23.8	121.3	Warren	13	124.9	66.7	212.6
JoDaviess	4	33.8	9.2	86.4	Washington	8	95.0	41.1	186.4
Johnson	8	119.6	51.8	234.3	Wayne	9	87.8	40.2	166.0
Kane	367	94.7	85.3	104.9	White	3	36.5	7.5	106.2
Kankakee	97	126.3	102.5	153.9	Whiteside	33	85.9	59.2	120.4
Kendall	42	94.1	67.9	127.0	Will	447	108.8	99.0	119.4
Knox	30	93.7	63.3	133.5	Williamson	34	95.2	66.0	132.8
Lake	493	93.5	85.5	102.1	Winnebago	213	107.3	93.5	122.7
LaSalle	63	89.0	68.4	113.7	Woodford	20	92.8	56.8	143.0
Lawrence	5	60.1	19.5	139.7					

<sup>1</sup> Per 10,000 births

<sup>2</sup> 95% confidence interval for rate

<sup>3</sup>The number for Illinois includes 48 cases for whom county of residence was unknown.

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

## ENDOCRINE, METABOLIC OR IMMUNE DISORDERS

*Adrenogenital syndrome* is a group of disorders that lead to an overproduction of androgens. Female newborns have ambiguous genitalia; male newborns have no obvious abnormality, but appear to enter puberty as early as 2 to 3 years of age. Some forms are more severe – in the salt-losing form, newborns develop symptoms (vomiting, dehydration, electrolyte changes and cardiac arrhythmias) soon after birth. Untreated, this condition can lead to death within 14 days.

*Cystic fibrosis* is a genetic disease that causes the body to produce an abnormally thick, sticky mucus, due to the faulty transport of sodium and chloride within cells lining organs such as the lungs and pancreas. The thick mucus also obstructs the pancreas, preventing enzymes from reaching the intestines to help digest food, leading to malnutrition and growth stunting.

*Immune deficiency diseases* occur when one or more parts of the immune system are missing. There are more than 70 known forms of congenital immune deficiencies (HIV infections do not fit in this category). Many children with immune deficiencies have to avoid contagious situations. If a child is diagnosed at birth or soon after with a severe combined immune deficiency, he or she can receive a bone marrow transplant with hopes of reconstituting the missing immune system.

*Inborn errors of metabolism* include hundreds of genetic disorders affecting metabolism. These errors interfere with the synthesis of proteins, carbohydrates, fats and enzymes. Absence or excesses of normal or abnormal metabolites can lead to disease and death. Many inborn errors of metabolism are untreatable; others require restrictions or extremely high dosages of certain nutrients.

*Neonatal hypothyroidism* is characterized by the absence of the baby's thyroid gland at birth. If untreated, hypothyroidism leads to severe defects including poor vision, mental retardation, muscle weakness and severe lethargy. If diagnosed and treated soon after birth, growth and mental development can proceed relatively normally.

**Table 20. Total Number and Incidence Rates of Endocrine, Metabolic or Immune Disorders in Newborn Infants, Illinois, 1998 – 2002**

Defect	ICD-9-CM Codes	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>	
				Lower	Upper
Adrenogenital syndrome	255.2	44	0.5	0.3	0.6
Cystic fibrosis	277.00, 277.01	31	0.3	0.2	0.5
Hypothyroidism	243	82	0.9	0.7	1.1
Immune deficiency disease	279.2	1	0.0	0.0	0.1
Inborn errors of metabolism	270.0 - 273.9	106	1.2	0.9	1.4

<sup>1</sup> Rate per 10,000 live births

<sup>2</sup> 95% confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

There is no figure illustrating the data since only Cook, DuPage and Madison counties had more than 16 cases.

**Table 21. Total Number and Incidence Rates of Endocrine, Metabolic or Immune Disorders In Newborn Infants, by County of Residence, 1998 – 2002**

County	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>		County	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>	
			Lower	Upper				Lower	Upper
ILLINOIS	264	2.9	2.6	3.3	Lee	0	0.0	0.0	19.9
Adams	1	2.4	0.1	13.4	Livingston	2	8.1	1.0	29.3
Alexander	0	0.0	0.0	56.1	Logan	0	0.0	0.0	21.9
Bond	0	0.0	0.0	39.1	McDonough	2	13.5	1.6	48.6
Boone	5	16.8	5.4	39.0	McHenry	7	3.5	1.4	7.1
Brown	0	0.0	0.0	137.7	McLean	1	1.0	0.0	5.6
Bureau	1	4.8	0.1	26.5	Macon	1	1.3	0.0	7.5
Calhoun	0	0.0	0.0	145.3	Macoupin	1	3.6	0.1	20.2
Carroll	1	11.3	0.3	62.7	Madison	18	10.8	6.4	17.1
Cass	0	0.0	0.0	38.4	Marion	2	7.6	0.9	27.4
Champaign	6	5.4	2.0	11.7	Marshall	0	0.0	0.0	53.9
Christian	0	0.0	0.0	18.4	Mason	1	11.0	0.3	60.9
Clark	0	0.0	0.0	38.6	Massac	0	0.0	0.0	38.8
Clay	0	0.0	0.0	40.2	Menard	0	0.0	0.0	54.9
Clinton	0	0.0	0.0	18.9	Mercer	0	0.0	0.0	38.8
Coles	1	3.4	0.1	18.8	Monroe	0	0.0	0.0	21.8
Cook	100	2.4	1.9	2.9	Montgomery	1	5.8	0.1	32.5
Crawford	0	0.0	0.0	34.4	Morgan	1	4.8	0.1	26.5
Cumberland	0	0.0	0.0	58.4	Moultrie	0	0.0	0.0	38.8
DeKalb	4	7.1	1.9	18.2	Ogle	2	6.6	0.8	23.9
DeWitt	1	9.6	0.2	53.5	Peoria	3	2.2	0.5	6.7
Douglas	0	0.0	0.0	24.9	Perry	0	0.0	0.0	30.2
DuPage	23	3.5	2.2	5.2	Piatt	0	0.0	0.0	42.7
Edgar	0	0.0	0.0	34.0	Pike	0	0.0	0.0	38.7
Edwards	0	0.0	0.0	95.8	Pope	0	0.0	0.0	227.9
Effingham	2	8.7	1.1	31.3	Pulaski	0	0.0	0.0	73.2
Fayette	0	0.0	0.0	29.3	Putnam	0	0.0	0.0	111.5
Ford	0	0.0	0.0	42.4	Randolph	0	0.0	0.0	19.0
Franklin	1	4.3	0.1	24.1	Richland	0	0.0	0.0	37.2
Fulton	1	5.0	0.1	27.6	Rock Island	4	4.1	1.1	10.4
Gallatin	0	0.0	0.0	111.5	St. Clair	7	3.8	1.5	7.8
Greene	1	11.9	0.3	66.3	Saline	1	6.5	0.2	36.3
Grundy	0	0.0	0.0	15.3	Sangamon	3	2.4	0.5	6.9
Hamilton	0	0.0	0.0	81.8	Schuyler	0	0.0	0.0	98.1
Hancock	0	0.0	0.0	33.2	Scott	0	0.0	0.0	118.7
Hardin	0	0.0	0.0	169.3	Shelby	0	0.0	0.0	30.3
Henderson	0	0.0	0.0	99.2	Stark	0	0.0	0.0	98.9
Henry	0	0.0	0.0	12.9	Stephenson	2	6.7	0.8	24.0
Iroquois	1	5.6	0.1	30.9	Tazewell	2	2.5	0.3	9.1
Jackson	1	3.0	0.1	16.8	Union	0	0.0	0.0	35.5
Jasper	0	0.0	0.0	66.1	Vermilion	3	5.2	1.1	15.2
Jefferson	1	4.2	0.1	23.6	Wabash	0	0.0	0.0	52.1
Jersey	0	0.0	0.0	31.1	Warren	1	9.6	0.2	53.4
JoDaviess	0	0.0	0.0	31.2	Washington	0	0.0	0.0	43.7
Johnson	0	0.0	0.0	55.0	Wayne	0	0.0	0.0	35.9
Kane	14	3.6	2.0	6.1	White	0	0.0	0.0	44.7
Kankakee	0	0.0	0.0	4.8	Whiteside	0	0.0	0.0	9.6
Kendall	0	0.0	0.0	8.3	Will	6	1.5	0.5	3.2
Knox	1	3.1	0.1	17.4	Williamson	1	2.8	0.1	15.6
Lake	14	2.7	1.5	4.5	Winnebago	7	3.5	1.4	7.3
LaSalle	3	4.2	0.9	12.4	Woodford	2	9.3	1.1	33.5
Lawrence	0	0.0	0.0	44.2					

<sup>1</sup> Per 10,000 births

<sup>2</sup> 95% confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

## BLOOD DISORDERS

*Coagulation defects* are a group of inheritable blood disorders (hemophilias) characterized by a defect in one or more of the factors that make up the blood clotting system. Each condition may be severe, moderate or mild. In hemophilia, easy bruising and internal bleeding are characteristic. In the severe forms, repeated bleeding into joints is a problem and can lead to long-term joint damage. Treatment comprises the intravenous injection of the missing clotting factor.

*Constitutional aplastic anemia* is a hereditary, often fatal bone marrow failure disease that occurs when the bone marrow is hypoplastic. Bone marrow transplantation replaces the defective bone marrow of a patient with healthy cells from a normal donor and can cure the disease in about 80 percent of cases where a sibling with identical tissue type is the donor. Growth factors are also being used in treatment.

*Hereditary hemolytic anemia* is a condition characterized by an inadequate number of circulating red blood cells (anemia), caused by premature destruction of red blood cells. There are several types of hereditary hemolytic anemia including sickle cell anemia, hemoglobin SC disease, sickle thalassemia and spherocytosis. Symptoms include fatigue, shortness of breath, rapid heart rate and jaundice.

*Leukemia* is cancer of the blood cells. When it develops, the body produces large numbers of abnormal (usually white) blood cells. Acute lymphocytic leukemia and acute myeloid leukemia are most commonly seen in children. Children with leukemia may have anemia; swollen lymph nodes, liver or spleen; and bone or joint pain. In acute leukemia, the abnormal cells may collect in the central nervous system leading to headaches, confusion, loss of muscle control and seizures. Leukemia also can affect the eyes, skin, testicles, digestive tract, kidneys, lungs or other parts of the body.

**Table 22. Total Number and Incidence Rates of Blood Disorders  
in Newborn Infants, Illinois, 1998 – 2002**

Defect	ICD-9-CM Codes	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>	
				Lower	Upper
Coagulation defects	286.x	68	0.7	0.6	0.9
Constitutional aplastic anemia	284.x	10	0.1	0.1	0.2
Hereditary hemolytic anemia	282.x	101	1.1	0.9	1.3
Leukemia	204.00 - 208.91	2	0.0	0.0	0.1

<sup>1</sup> Rate per 10,000 live births

<sup>2</sup> 95% confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

There is no figure illustrating the data since only Cook County had more than 16 cases.

**Table 23. Total Number and Incidence Rates of Blood Disorders  
in Newborn Infants, by County of Residence, 1998 – 2002**

County	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>		County	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>	
			Lower	Upper				Lower	Upper
ILLINOIS	193	2.1	1.8	2.4	Lee	0	0.0	0.0	19.9
Adams	0	0.0	0.0	8.9	Livingston	0	0.0	0.0	15.0
Alexander	0	0.0	0.0	56.1	Logan	0	0.0	0.0	21.9
Bond	0	0.0	0.0	39.1	McDonough	0	0.0	0.0	24.8
Boone	1	3.4	0.1	18.6	McHenry	1	0.5	0.0	2.8
Brown	0	0.0	0.0	137.7	McLean	4	4.0	1.1	10.2
Bureau	0	0.0	0.0	17.5	Macon	0	0.0	0.0	5.0
Calhoun	0	0.0	0.0	145.3	Macoupin	0	0.0	0.0	13.3
Carroll	0	0.0	0.0	41.5	Madison	3	1.8	0.4	5.3
Cass	0	0.0	0.0	38.4	Marion	0	0.0	0.0	14.0
Champaign	7	6.3	2.5	13.0	Marshall	0	0.0	0.0	53.9
Christian	0	0.0	0.0	18.4	Mason	0	0.0	0.0	40.4
Clark	0	0.0	0.0	38.6	Massac	0	0.0	0.0	38.8
Clay	0	0.0	0.0	40.2	Menard	0	0.0	0.0	54.9
Clinton	1	5.1	0.1	28.6	Mercer	1	10.5	0.3	58.5
Coles	0	0.0	0.0	12.4	Monroe	0	0.0	0.0	21.8
Cook	107	2.5	2.1	3.1	Montgomery	0	0.0	0.0	21.5
Crawford	0	0.0	0.0	34.4	Morgan	1	4.8	0.1	26.5
Cumberland	0	0.0	0.0	58.4	Moultrie	0	0.0	0.0	38.8
DeKalb	1	1.8	0.0	9.9	Ogle	1	3.3	0.1	18.4
DeWitt	0	0.0	0.0	35.4	Peoria	6	4.6	1.7	9.9
Douglas	0	0.0	0.0	24.9	Perry	0	0.0	0.0	30.2
DuPage	6	0.9	0.3	2.0	Piatt	0	0.0	0.0	42.7
Edgar	0	0.0	0.0	34.0	Pike	0	0.0	0.0	38.7
Edwards	0	0.0	0.0	95.8	Pope	0	0.0	0.0	227.9
Effingham	0	0.0	0.0	16.0	Pulaski	0	0.0	0.0	73.2
Fayette	1	8.0	0.2	44.3	Putnam	0	0.0	0.0	111.5
Ford	0	0.0	0.0	42.4	Randolph	1	5.2	0.1	28.7
Franklin	0	0.0	0.0	16.0	Richland	1	10.1	0.3	56.1
Fulton	0	0.0	0.0	18.2	Rock Island	6	6.1	2.2	13.3
Gallatin	0	0.0	0.0	111.5	St. Clair	3	1.6	0.3	4.7
Greene	0	0.0	0.0	43.9	Saline	0	0.0	0.0	24.0
Grundy	0	0.0	0.0	15.3	Sangamon	4	3.2	0.9	8.1
Hamilton	0	0.0	0.0	81.8	Schuyler	0	0.0	0.0	98.1
Hancock	0	0.0	0.0	33.2	Scott	0	0.0	0.0	118.7
Hardin	0	0.0	0.0	169.3	Shelby	0	0.0	0.0	30.3
Henderson	0	0.0	0.0	99.2	Stark	0	0.0	0.0	98.9
Henry	0	0.0	0.0	12.9	Stephenson	1	3.3	0.1	18.5
Iroquois	0	0.0	0.0	20.5	Tazewell	1	1.3	0.0	7.0
Jackson	0	0.0	0.0	11.1	Union	0	0.0	0.0	35.5
Jasper	0	0.0	0.0	66.1	Vermilion	5	8.7	2.8	20.2
Jefferson	2	8.5	1.0	30.6	Wabash	0	0.0	0.0	52.1
Jersey	0	0.0	0.0	31.1	Warren	1	9.6	0.2	53.4
JoDaviess	0	0.0	0.0	31.2	Washington	0	0.0	0.0	43.7
Johnson	0	0.0	0.0	55.0	Wayne	0	0.0	0.0	35.9
Kane	3	0.8	0.2	2.3	White	0	0.0	0.0	44.7
Kankakee	0	0.0	0.0	4.8	Whiteside	0	0.0	0.0	9.6
Kendall	0	0.0	0.0	8.3	Will	7	1.7	0.7	3.5
Knox	0	0.0	0.0	11.5	Williamson	1	2.8	0.1	15.6
Lake	11	2.1	1.0	3.7	Winnebago	4	2.0	0.5	5.2
LaSalle	1	1.4	0.0	7.9	Woodford	0	0.0	0.0	17.1
Lawrence	0	0.0	0.0	44.2					

<sup>1</sup> Per 10,000 births

<sup>2</sup> 95% confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

## FETAL ALCOHOL SYNDROME

Alcohol use or abuse by a pregnant woman subjects her to the same range of risks that alcohol poses for the general population. However, alcohol holds extreme and unique risks for the fetus and is associated with fetal alcohol syndrome (FAS). FAS is the leading known cause of mental retardation. Alcohol ingested by a pregnant woman easily passes across the placental barrier to the fetus. Because of this, drinking alcohol can adversely affect the development of the baby. Multiple birth defects associated with "classical" fetal alcohol syndrome more commonly are associated with heavy alcohol use or alcoholism. Fetal alcohol syndrome consists of the following abnormalities: intrauterine growth retardation, delayed development with decreased mental functioning (mild to severe), facial abnormalities (including microcephaly), heart defects and limb abnormalities of joints, hands, feet, fingers and toes. Table 24 gives the five-year incidence rates for FAS for the whole state.

**Table 24. Total Number and Incidence Rates of Newborn Infants with Fetal Alcohol Syndrome, Illinois, 1998 – 2002**

Defect	ICD-9-CM Codes	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>	
				Lower	Upper
Fetal alcohol syndrome	760.71	170	1.9	1.6	2.2

<sup>1</sup> Rate per 10,000 live births

<sup>2</sup> 95% confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

There is no figure illustrating the data since only Cook County had more than 16 cases.

**Table 25. Total Number and Incidence Rates of Newborn Infants with Fetal Alcohol Syndrome, by County of Residence, 1998 – 2002**

County	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>		County	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>	
			Lower	Upper				Lower	Upper
ILLINOIS	170	1.9	1.6	2.2	Lee	0	0.0	0.0	19.9
Adams	0	0.0	0.0	8.9	Livingston	0	0.0	0.0	15.0
Alexander	0	0.0	0.0	56.1	Logan	0	0.0	0.0	21.9
Bond	0	0.0	0.0	39.1	McDonough	0	0.0	0.0	24.8
Boone	0	0.0	0.0	12.4	McHenry	2	1.0	0.1	3.6
Brown	0	0.0	0.0	137.7	McLean	0	0.0	0.0	3.7
Bureau	0	0.0	0.0	17.5	Macon	1	1.3	0.0	7.5
Calhoun	0	0.0	0.0	145.3	Macoupin	0	0.0	0.0	13.3
Carroll	0	0.0	0.0	41.5	Madison	5	3.0	1.0	7.0
Cass	0	0.0	0.0	38.4	Marion	0	0.0	0.0	14.0
Champaign	10	9.0	4.3	16.5	Marshall	0	0.0	0.0	53.9
Christian	0	0.0	0.0	18.4	Mason	0	0.0	0.0	40.4
Clark	0	0.0	0.0	38.6	Massac	0	0.0	0.0	38.8
Clay	0	0.0	0.0	40.2	Menard	0	0.0	0.0	54.9
Clinton	0	0.0	0.0	18.9	Mercer	0	0.0	0.0	38.8
Coles	1	3.4	0.1	18.8	Monroe	0	0.0	0.0	21.8
Cook	102	2.4	2.0	2.9	Montgomery	0	0.0	0.0	21.5
Crawford	0	0.0	0.0	34.4	Morgan	0	0.0	0.0	17.5
Cumberland	0	0.0	0.0	58.4	Moultrie	0	0.0	0.0	38.8
DeKalb	0	0.0	0.0	6.6	Ogle	0	0.0	0.0	12.2
DeWitt	0	0.0	0.0	35.4	Peoria	1	0.8	0.0	4.2
Douglas	0	0.0	0.0	24.9	Perry	0	0.0	0.0	30.2
DuPage	1	0.2	0.0	0.8	Piatt	1	11.6	0.3	64.5
Edgar	0	0.0	0.0	34.0	Pike	0	0.0	0.0	38.7
Edwards	0	0.0	0.0	95.8	Pope	0	0.0	0.0	227.9
Effingham	0	0.0	0.0	16.0	Pulaski	0	0.0	0.0	73.2
Fayette	0	0.0	0.0	29.3	Putnam	0	0.0	0.0	111.5
Ford	1	11.5	0.3	64.0	Randolph	0	0.0	0.0	19.0
Franklin	0	0.0	0.0	16.0	Richland	0	0.0	0.0	37.2
Fulton	0	0.0	0.0	18.2	Rock Island	5	5.1	1.7	11.9
Gallatin	0	0.0	0.0	111.5	St. Clair	8	4.3	1.9	8.5
Greene	0	0.0	0.0	43.9	Saline	0	0.0	0.0	24.0
Grundy	0	0.0	0.0	15.3	Sangamon	3	2.4	0.5	6.9
Hamilton	0	0.0	0.0	81.8	Schuyler	0	0.0	0.0	98.1
Hancock	0	0.0	0.0	33.2	Scott	0	0.0	0.0	118.7
Hardin	0	0.0	0.0	169.3	Shelby	0	0.0	0.0	30.3
Henderson	0	0.0	0.0	99.2	Stark	0	0.0	0.0	98.9
Henry	0	0.0	0.0	12.9	Stephenson	0	0.0	0.0	12.3
Iroquois	0	0.0	0.0	20.5	Tazewell	1	1.3	0.0	7.0
Jackson	1	3.0	0.1	16.8	Union	0	0.0	0.0	35.5
Jasper	0	0.0	0.0	66.1	Vermilion	9	15.6	7.1	29.6
Jefferson	1	4.2	0.1	23.6	Wabash	0	0.0	0.0	52.1
Jersey	0	0.0	0.0	31.1	Warren	0	0.0	0.0	35.4
JoDaviess	0	0.0	0.0	31.2	Washington	1	11.9	0.3	66.0
Johnson	0	0.0	0.0	55.0	Wayne	0	0.0	0.0	35.9
Kane	3	0.8	0.2	2.3	White	0	0.0	0.0	44.7
Kankakee	1	1.3	0.0	7.3	Whiteside	3	7.8	1.6	22.8
Kendall	0	0.0	0.0	8.3	Will	3	0.7	0.2	2.1
Knox	0	0.0	0.0	11.5	Williamson	0	0.0	0.0	10.3
Lake	3	0.6	0.1	1.7	Winnebago	3	1.5	0.3	4.4
LaSalle	0	0.0	0.0	5.2	Woodford	0	0.0	0.0	17.1
Lawrence	0	0.0	0.0	44.2					

<sup>1</sup> Per 10,000 births

<sup>2</sup> 95% confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

## OTHER ADVERSE PREGNANCY OUTCOMES

*Cerebral lipidoses* are inherited genetic defects that result in a deficiency in different enzymes involved with fat storage. The absence of the enzyme prevents the lysosome in the cells of the body from performing its natural recycling function, and various materials are inappropriately stored in the cell. This leads to a variety of progressive mental and physical deterioration over time. Some patients survive into adulthood, but others with more severe symptoms or conditions die in their teens or earlier.

*Chorioretinitis* is an inflammation of the uveal tract, which lines the inside of the eye behind the cornea. It almost always affects the retina, usually following an active microbial invasion of the tissues. Toxoplasmosis and cytomegalovirus are the most common causes. Onset is insidious: vision gradually becomes blurred, pain is minimal, mild photophobia is present and the pupil is often constricted and/or irregular in shape. The disease can last months to years, sometimes with remissions and exacerbations, and may cause permanent damage with marked visual loss.

*Endocardial fibroelastosis* (EFE) is a rare heart disorder that affects infants and children. It is characterized by a thickening within the muscular lining of the heart chambers due to an increase in the amount of supporting connective tissue and elastic fibers. The symptoms of EFE are related to the overgrowth of fibrous tissues causing abnormal enlargement of the heart (cardiac hypertrophy), especially the left ventricle. Impaired heart and lung function eventually lead to congestive heart failure.

*Intrauterine growth retardation* (IUGR) occurs when the unborn baby is at or below the 10th weight percentile for his or her gestational age. There are many IUGR risk factors involving the mother and the baby. A mother is at risk for having an infant with IUGR if she has poor weight gain and nutrition during pregnancy, uses substances (like tobacco, narcotics, alcohol) that can cause abnormal development, or if she has preeclampsia or chronic kidney disease. Additionally, an unborn baby may suffer from IUGR if it is exposed to an infection, or has a birth defect, or placenta or umbilical cord defects. Babies who suffer from IUGR are at an increased risk for death, hypoglycemia, hypothermia and abnormal development of the nervous system.

*Neurofibromatosis* (NF) is a genetic disease in which patients develop multiple soft tumors under the skin and throughout the nervous system. NF occurs in about one of every 4,000 births and may cause very high rates of speech impairment, learning disabilities and attention deficit disorder in children or loss of hearing, weakness of facial muscles, headache, poor balance and uncoordinated walking. Cataracts frequently develop at an unusually early age. The chance of brain tumors developing is unusually high.

*Occlusion of cerebral arteries* includes thrombosis (clotting within blood vessels) and embolism (a clot moved from another location). It may include an infarction.

*Retinopathy of prematurity* (ROP) is an eye disease that occurs in some premature babies. The last 12 weeks of a full-term pregnancy are particularly active for the growth of the fetal eye. In premature infants, the normal growth of the retinal vessels stops and abnormal new vessels begin to grow; the infant may become blind. Most infants with mild ROP usually develop normal central vision. However, some

may have late complications , including strabismus, amblyopia, myopia, glaucoma and late onset retinal detachment.

*Strabismus* is a condition in which the eyes do not point in the same direction. Esotropia (crossed eyes) is the most common type of strabismus in infants. Sometimes the eye turn is always in the same eye; however sometimes the turn alternates from one eye to the other. An eye doctor needs to determine whether the eye turn is true or pseudostrabismus. A baby’s eyes should be caused by a defect in muscles or the part of the brain that controls eye movement. It is especially common in children who have disorders that affect the brain.

**Table 26. Total Number and Incidence Rates of Other Adverse Pregnancy Outcomes in Newborn Infants, Illinois, 1998 – 2002**

Defect	ICD-9-CM Codes	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>	
				Lower	Upper
Cerebral lipidoses	330.1	0	0.0	0.0	0.0
Chorioretinitis	363.20 - 363.22	5	0.1	0.0	0.1
Endocardial fibroelastosis	425.3	74	0.8	0.6	1.0
Intrauterine growth retardation	764.90 - 764.99	2,557	28.0	26.9	29.1
Neurofibromatosis	237.70 - 237.72	1	0.0	0.0	0.1
Occlusion of cerebral arteries	434.00 - 434.91	73	0.8	0.6	1.0
Retinopathy of prematurity	362.21	2,246	24.6	23.6	25.6
Strabismus	378.00 - 378.9	9	0.1	0.0	0.2

<sup>1</sup> Rate per 10,000 live births

<sup>2</sup> 95% confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

**Table 27. Total Number and Incidence Rates of Other Adverse Pregnancy Outcomes in Newborn Infants, by County of Residence, 1998 – 2002**

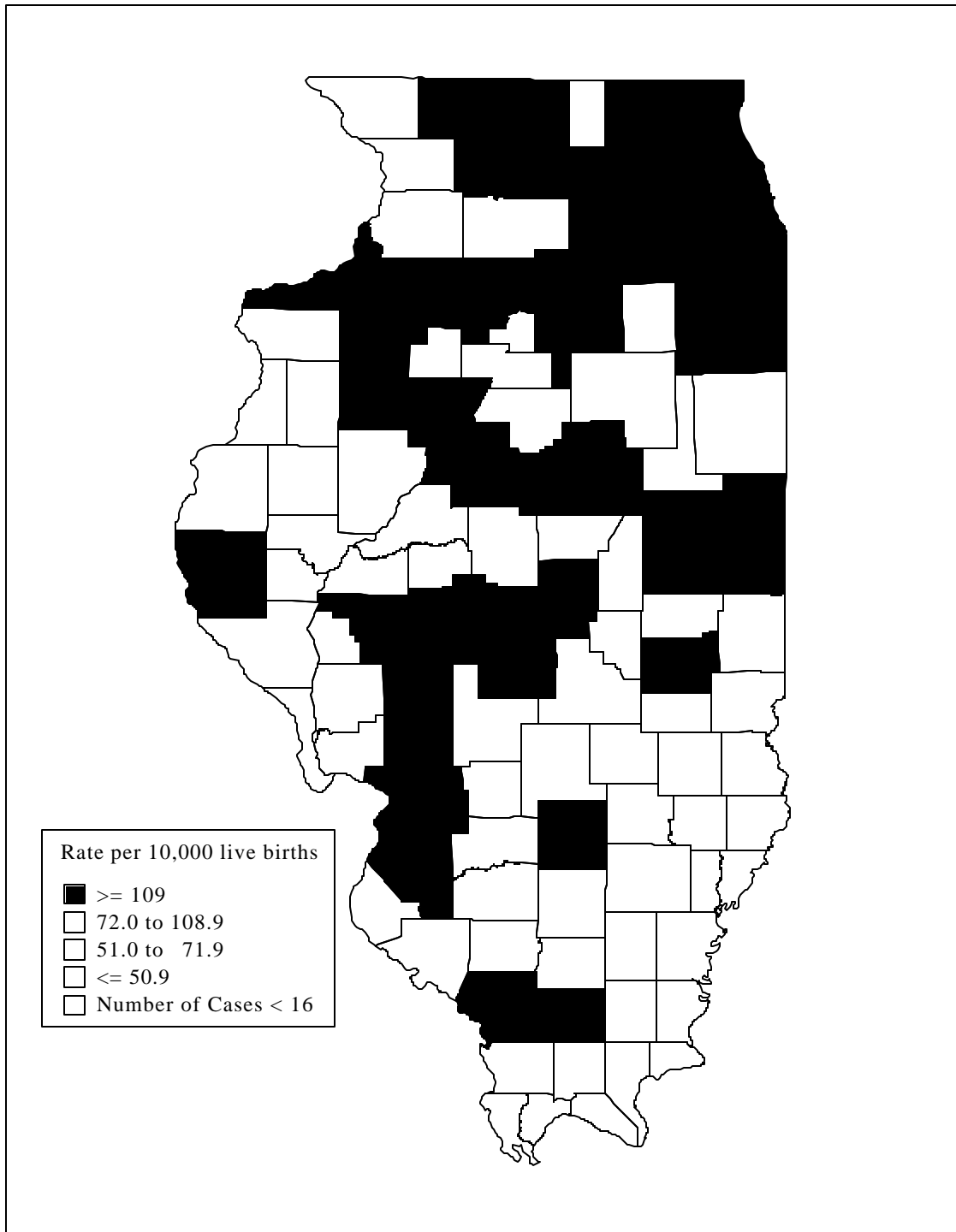
County	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>		County	Cases	Rate <sup>1</sup>	95% CI <sup>2</sup>	
			Lower	Upper				Lower	Upper
ILLINOIS	4,965	54.8	53.3	56.3	Lee	13	70.0	37.3	119.5
Adams	38	91.4	64.8	125.3	Livingston	14	56.9	31.1	95.2
Alexander	4	61.0	16.6	155.4	Logan	12	71.2	36.8	124.0
Bond	2	21.3	2.6	76.6	McDonough	4	27.0	7.3	68.9
Boone	14	46.9	25.7	78.6	McHenry	67	33.1	25.7	42.1
Brown	1	37.6	0.9	207.7	McLean	28	28.0	18.6	40.4
Bureau	16	76.2	43.6	123.4	Macon	65	87.5	67.6	111.4
Calhoun	1	39.7	1.0	219.1	Macoupin	32	115.9	79.4	163.2
Carroll	5	56.4	18.3	131.2	Madison	104	62.4	51.0	75.6
Cass	6	62.5	23.0	135.5	Marion	45	170.9	124.9	228.0
Champaign	90	80.9	65.1	99.4	Marshall	3	44.0	9.1	128.0
Christian	22	109.8	69.0	165.8	Mason	10	109.6	52.7	200.7
Clark	0	0.0	0.0	38.6	Massac	0	0.0	0.0	38.8
Clay	3	32.8	6.8	95.5	Menard	3	44.8	9.2	130.3
Clinton	15	77.1	43.2	126.9	Mercer	4	42.1	11.5	107.5
Coles	18	60.7	36.0	95.8	Monroe	6	35.5	13.0	77.0
Cook	2,183	51.7	49.6	54.0	Montgomery	10	58.4	28.1	107.2
Crawford	3	28.0	5.8	81.6	Morgan	26	123.8	81.0	180.8
Cumberland	2	31.7	3.8	114.2	Moultrie	12	126.6	65.6	220.1
DeKalb	39	69.4	49.4	94.7	Ogle	18	59.5	35.3	93.8
DeWitt	5	48.1	15.6	111.8	Peoria	95	72.1	58.4	88.1
Douglas	10	67.7	32.5	124.2	Perry	6	49.2	18.1	106.7
DuPage	327	49.2	44.1	54.9	Piatt	5	58.1	18.9	135.0
Edgar	4	36.9	10.1	94.2	Pike	11	115.7	57.9	206.0
Edwards	0	0.0	0.0	95.8	Pope	0	0.0	0.0	227.9
Effingham	12	52.1	26.9	90.8	Pulaski	5	99.6	32.4	230.9
Fayette	11	87.6	43.8	156.3	Putnam	0	0.0	0.0	111.5
Ford	14	161.1	88.4	268.8	Randolph	7	36.1	14.5	74.2
Franklin	13	56.3	30.0	96.0	Richland	3	30.3	6.2	88.2
Fulton	10	49.5	23.8	90.9	Rock Island	45	45.9	33.5	61.4
Gallatin	0	0.0	0.0	111.5	St. Clair	167	90.3	77.2	105.0
Greene	3	35.8	7.4	104.3	Saline	12	78.3	40.5	136.3
Grundy	11	45.5	22.8	81.3	Sangamon	121	95.7	79.5	114.3
Hamilton	1	22.3	0.6	123.5	Schuyler	0	0.0	0.0	98.1
Hancock	7	63.2	25.4	129.7	Scott	0	0.0	0.0	118.7
Hardin	2	92.6	11.2	330.5	Shelby	6	49.4	18.1	107.2
Henderson	1	27.0	0.7	149.7	Stark	0	0.0	0.0	98.9
Henry	22	77.2	48.4	116.6	Stephenson	26	86.5	56.6	126.5
Iroquois	9	50.0	22.9	94.7	Tazewell	53	67.1	50.3	87.7
Jackson	21	63.2	39.2	96.4	Union	7	67.4	27.2	138.4
Jasper	1	18.0	0.5	99.8	Vermilion	44	76.2	55.4	102.1
Jefferson	14	59.3	32.4	99.2	Wabash	2	28.3	3.4	102.0
Jersey	7	59.1	23.8	121.3	Warren	10	96.1	46.2	176.0
JoDaviess	4	33.8	9.2	86.4	Washington	4	47.5	13.0	121.2
Johnson	1	14.9	0.4	83.0	Wayne	7	68.3	27.5	140.2
Kane	166	42.8	36.6	49.9	White	12	145.8	75.6	253.3
Kankakee	45	58.6	42.8	78.3	Whiteside	14	36.4	19.9	61.1
Kendall	25	56.0	36.3	82.6	Will	240	58.4	51.2	66.3
Knox	21	65.6	40.6	100.1	Williamson	23	64.4	40.9	96.5
Lake	156	29.6	25.1	34.6	Winnebago	149	75.1	63.6	88.1
LaSalle	24	33.9	21.7	50.4	Woodford	5	23.2	7.5	54.1
Lawrence	1	12.0	0.3	66.8					

<sup>1</sup> Per 10,000 births

<sup>2</sup> 95% confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

**Figure 15. Map of Incidence Rates for Newborn Infants with Other Adverse Pregnancy Outcomes, by Selected Counties of Residence, 1998 – 2002**



Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, March 2004

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