BIRTH DEFECTS AND OTHER ADVERSE PREGNANCY OUTCOMES IN ILLINOIS 1999 – 2003

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 1999 – 2003. 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, 1999 – 2003

Infants	5-Year Total	Annual Average	Rate[1]	% APORS Cases
Total APORS Cases	83,692	16,738.4	915.7	100.0
Birth Defects	23,529	4,705.8	257.4	28.1
Very Low Birth Weight	17,753	3,550.6	194.2	21.2
Positive for Controlled Substances	7,057	1,411.4	77.2	8.4
Fetal Deaths	6,167	1,233.4	67.5	7.4
Died During Newborn Hospitalization	4,698	939.6	51.4	5.6
Congenital Infections	4,480	893.0	49.0	5.4
Intrauterine Growth Retardation	2,657	531.4	29.1	3.2
Retinopathy of Prematurity	2,403	480.6	26.3	2.9
Endocrine, Metabolic or Immune Disorder	357	71.4	3.9	0.4
Blood Disorder	248	49.6	2.7	0.3
Fetal Alcohol Syndrome	169	33.8	1.8	0.2
Other Conditions[2]	123	24.6	1.3	0.1

[1] Rate per 10,000 live births

[2] Neurofibromatosis, chorioetinitis, strabismus, endocardial fibroelastosis, occlusion of cerebral arteries, cerebral lipidoses

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

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 (2003) 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.

In 2002, APORS began systematic active case verification. APORS staff now review charts for any infant reported to APORS with:

- one or more birth defects
- very low birth weight (< 1500 g)
- death before discharge (births since 2003)
- a diabetic mother
- a disturbance in neonatal tooth eruption

Each of these conditions has a high likelihood of being associated with one or more birth defects. As the charts are reviewed, APORS staff correct and add to the information reported by the hospitals. Since active case verification began, the number of birth defects identified has doubled. More information about active case verification and the other studies is available from APORS.

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.

In previous years, this report has been restricted to birth defects identified in newborn infants or fetal deaths. This year, the report includes birth defects identified during chart review. Consequently, the birth defect numbers in this report are not comparable with the numbers reported in previous versions of this report. In 2003 the case criteria of a stay of more than 24 hours in the intensive care unit was dropped, since these children generally go home healthy and, once home, do not need special services. Thus, this case criterion is no longer included. 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 2002, making up more than 20 percent of infant deaths (MacDorman *et al*.) 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.

Between 1999 and 2003, almost 26,000 major birth defects were identified in Illinois newborns and were reported to, or identified by, APORS – a rate of 283.4 per 10,000 live births. In Illinois, heart and circulatory system defects are the most commonly identified and represent 55.7 percent of all reported major birth 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.

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.

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.

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

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.

Table 2. Total Number and Incidence Rates of Major Central Nervous System Defects in Newborn Infants, Illinois, 1999 – 2003

Defect	ICD-9-CM Codes	Hospital Reporting (HR)			HR + Active Case Verification		
		Cases	Rate	95% CI	Cases	Rate	95% CI
Anencephalus	740.0-740.1	149	1.6	(1.4, 1.9)	161	1.8	(1.5, 2.1)
Spina bifida[1]	741.00-741.93	228	2.5	(2.2, 2.8)	271	3.0	(2.6, 3.3)
Encephalocele	742.0	44	0.5	(0.3, 0.6)	58	0.6	(0.5, 0.8)
Microcephalus	742.1	261	2.9	(2.5, 3.2)	394	4.3	(3.9, 4.8)
Hydrocephalus[2]	742.3	573	6.3	(5.8, 6.8)	651	7.1	(6.6, 7.7)

[1] Includes only spina bifida without anencephaly
[2] Includes only hydrocephaly without spina bifida
Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

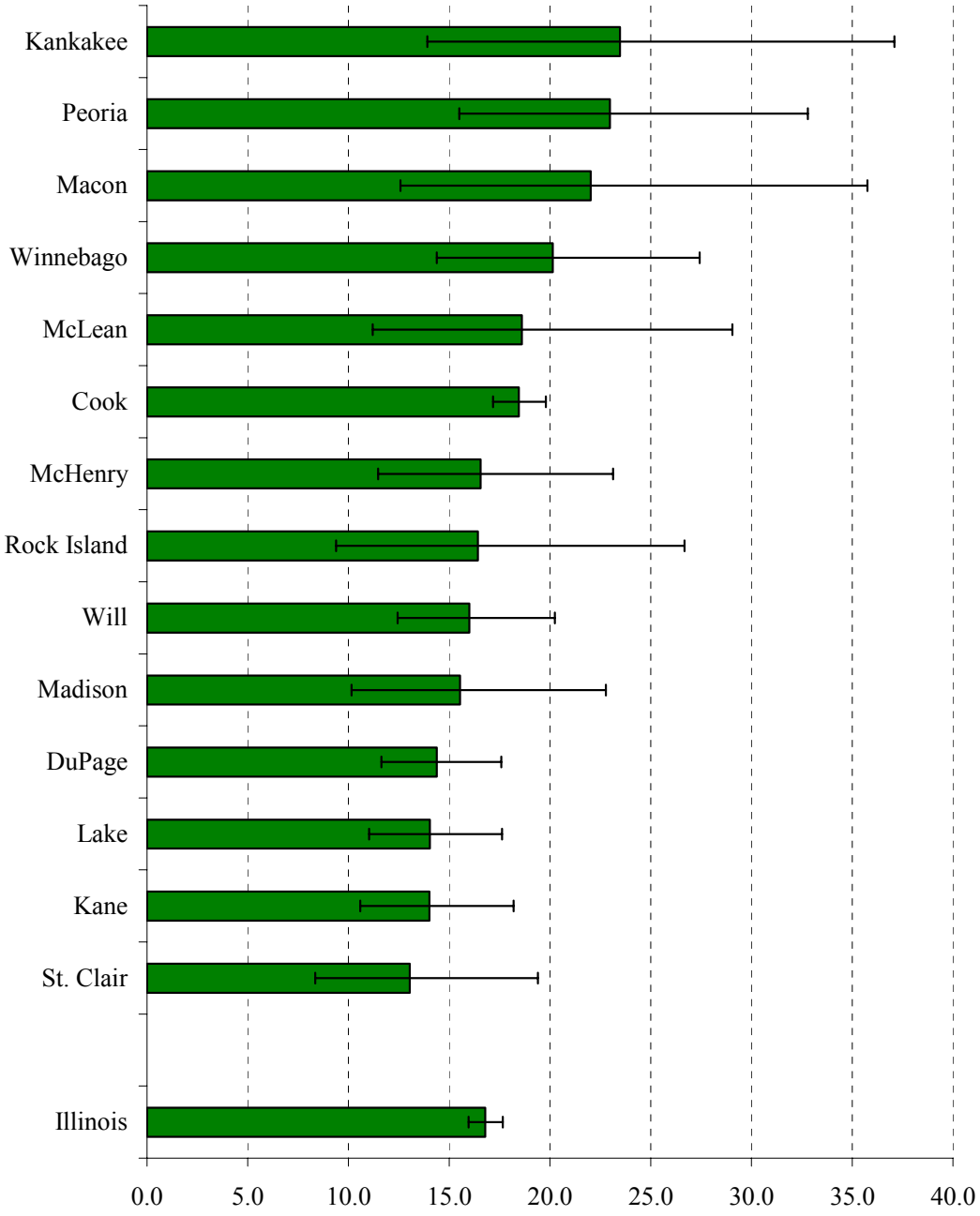
These observed rates may be substantially lower than the true rates because APORS does not collect birth defect information from miscarriages or elective abortions. Because CNS defects are very severe, many affected babies will miscarry early in pregnancy. Additionally, since the defects are detectable 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, 1999 – 2003

County	Cases	Rate[1]	95% CI[2] Lower	95% CI[2] Upper	County	Cases	Rate[1]	95% CI[2] Lower	95% CI[2] Upper
ILLINOIS[3]	1,535	16.8	16.0	17.7	Lee	4	21.7	5.9	55.4
Adams	5	12.2	4.0	28.5	Livingston	3	11.8	2.4	34.4
Alexander	0	0.0	0.0	56.1	Logan	4	24.0	6.5	61.5
Bond	0	0.0	0.0	37.7	McDonough	5	33.7	11.0	78.7
Boone	6	19.3	7.1	42.0	McHenry	34	16.6	11.5	23.1
Brown	0	0.0	0.0	122.6	McLean	19	18.6	11.2	29.1
Bureau	6	28.0	10.3	61.0	Macon	16	22.0	12.6	35.8
Calhoun	0	0.0	0.0	145.8	Macoupin	2	7.1	0.9	25.8
Carroll	1	11.7	0.3	65.2	Madison	26	15.5	10.2	22.8
Cass	1	10.2	0.3	56.9	Marion	1	3.9	0.1	21.5
Champaign	11	9.8	4.9	17.4	Marshall	3	43.5	9.0	127.2
Christian	2	10.1	1.2	36.4	Mason	2	21.5	2.6	77.7
Clark	0	0.0	0.0	39.6	Massac	0	0.0	0.0	38.5
Clay	1	11.1	0.3	62.0	Menard	0	0.0	0.0	53.4
Clinton	4	20.2	5.5	51.8	Mercer	1	10.5	0.3	58.5
Coles	3	10.3	2.1	30.2	Monroe	1	5.7	0.1	31.8
Cook	771	18.4	17.2	19.8	Montgomery	1	5.9	0.1	32.8
Crawford	1	9.7	0.2	54.0	Morgan	4	19.4	5.3	49.6
Cumberland	0	0.0	0.0	58.7	Moultrie	0	0.0	0.0	38.3
DeKalb	9	15.9	7.3	30.1	Ogle	5	16.8	5.5	39.3
DeWitt	0	0.0	0.0	35.6	Peoria	30	23.0	15.5	32.8
Douglas	3	19.7	4.1	57.7	Perry	2	16.4	2.0	59.3
DuPage	95	14.4	11.6	17.6	Piatt	1	11.4	0.3	63.4
Edgar	2	18.9	2.3	68.3	Pike	1	10.6	0.3	59.1
Edwards	1	25.1	0.6	139.6	Pope	0	0.0	0.0	230.6
Effingham	4	17.4	4.7	44.4	Pulaski	0	0.0	0.0	72.6
Fayette	2	16.2	2.0	58.7	Putnam	0	0.0	0.0	113.9
Ford	1	11.5	0.3	64.3	Randolph	5	26.2	8.5	61.2
Franklin	3	12.6	2.6	36.9	Richland	0	0.0	0.0	38.4
Fulton	0	0.0	0.0	18.0	Rock Island	16	16.4	9.4	26.7
Gallatin	0	0.0	0.0	105.4	St. Clair	24	13.0	8.4	19.4
Greene	0	0.0	0.0	42.6	Saline	6	39.2	14.4	85.4
Grundy	5	19.6	6.4	45.7	Sangamon	14	11.0	6.0	18.5
Hamilton	0	0.0	0.0	81.8	Schuyler	0	0.0	0.0	97.1
Hancock	1	9.3	0.2	51.7	Scott	0	0.0	0.0	122.1
Hardin	1	44.4	1.1	247.6	Shelby	1	8.2	0.2	45.7
Henderson	2	56.3	6.8	203.5	Stark	1	27.8	0.7	154.8
Henry	3	10.5	2.2	30.7	Stephenson	4	13.6	3.7	34.8
Iroquois	3	16.9	3.5	49.4	Tazewell	15	18.9	10.6	31.2
Jackson	5	14.8	4.8	34.6	Union	2	19.0	2.3	68.7
Jasper	0	0.0	0.0	63.6	Vermilion	8	14.1	6.1	27.8
Jefferson	1	4.2	0.1	23.6	Wabash	0	0.0	0.0	52.9
Jersey	2	16.9	2.1	61.2	Warren	4	38.9	10.6	99.5
JoDaviess	0	0.0	0.0	31.1	Washington	1	11.8	0.3	65.8
Johnson	1	14.8	0.4	82.5	Wayne	2	19.9	2.4	71.7
Kane	56	14.0	10.6	18.2	White	1	12.2	0.3	67.7
Kankakee	18	23.5	13.9	37.1	Whiteside	7	18.7	7.5	38.4
Kendall	7	14.4	5.8	29.6	Will	69	16.0	12.4	20.2
Knox	8	25.7	11.1	50.6	Williamson	4	11.0	3.0	28.2
Lake	74	14.0	11.0	17.6	Winnebago	40	20.1	14.4	27.4
LaSalle	10	14.2	6.8	26.1	Woodford	6	28.0	10.3	60.9
Lawrence	1	12.2	0.3	67.9					

[1] Per 10,000 births
[2] 95% confidence interval for rate
[3] The number for Illinois includes 10 cases for whom county of residence is unknown
Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

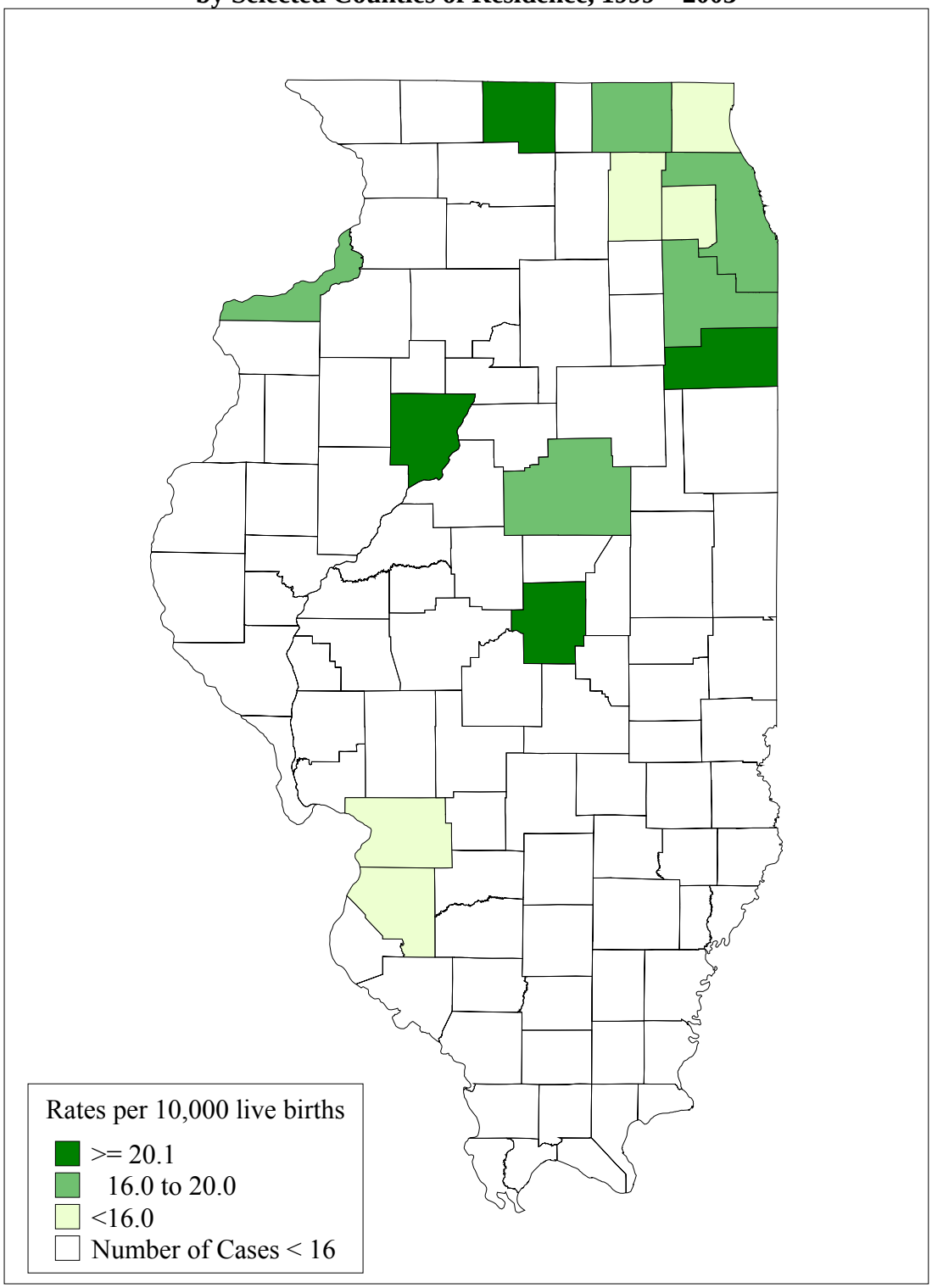
Figure 1. Incidence Rates[1] and 95% Confidence Intervals for Central Nervous System Defects in Newborn Infants by Selected Counties of Residence,[2] 1999 – 2003



[1] Rates per 10,000 live births
[2] Only counties with 16 or more cases are presented.

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

Figure 2. Map of Incidence Rates for Central Nervous System Defects in Newborn Infants, by Selected Counties of Residence, 1999 – 2003



Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

CARDIOVASCULAR SYSTEM DEFECTS

Cardiovascular system defects involve the heart and circulatory systems and are the most common group of birth defects, with a rate of 105.4 identified 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.

Common truncus is the failure of the fetal truncus arteriosus to divide into the aorta and pulmonary artery. 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.

Tetralogy of Fallot is a defect consisting of four abnormalities that result in poorly oxygenated blood being pumped to the body. It can be 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.

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.

Endocardial cushion defect is a spectrum of septal defects arising from imperfect fusion of the endocardial cushions in the fetal heart. These defects can be repaired surgically.

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 can be surgically corrected.

Tricuspid atresia is the absence or pathological narrowing of the valve between the right atrium and ventricle. Severe cases 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 can be corrected surgically.

Aortic valve stenosis is a narrowing or obstruction of the aortic heart valve. This condition can be repaired surgically in some cases.

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 most close spontaneously and cause no problems. Medical or surgical correction may be done if necessary.

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.

Pulmonary artery anomalies are defects in the formation of the pulmonary artery – often obstruction or narrowing of the artery. Treatment options depend on the specific defect.

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, 1999 – 2003

Defect	ICD-9-CM Codes	Hospital Reporting (HR)			HR+Active Case Verification		
		Cases	Rate	95% CI	Cases	Rate	95% CI
Common truncus	745.0	32	0.4	(0.2, 0.5)	46	0.5	(0.4, 0.7)
Transposition of great arteries	745.1x	230	2.5	(2.2, 2.9)	281	3.1	(2.7, 3.5)
Tetralogy of Fallot	745.2	208	2.3	(2.0, 2.6)	257	2.8	(2.5, 3.2)
Ventricular septal defect	745.4	1,358	14.9	(14.1, 15.7)	1,637	17.9	(17.1, 18.8)
Atrial septal defect	745.5	1,317	14.4	(13.6, 15.2)	1,911	20.9	(20.0, 21.9)
Endocardial cushion defect	745.6x	184	2.0	(1.7, 2.3)	238	2.6	(2.3, 3.0)
Pulmonary valve atresia and stenosis	746.01, 746.02	333	3.6	(3.3, 4.1)	469	5.1	(4.7, 5.6)
Tricuspid valve atresia/stenosis	746.0	25	0.3	(0.2, 0.4)	40	0.4	(0.3, 0.6)
Ebstein anomaly	746.2	40	0.4	(0.3, 0.6)	46	0.5	(0.4, 0.7)
Aortic valve stenosis	746.3	51	0.6	(0.4, 0.7)	80	0.9	(0.7, 1.1)
Hypoplastic left heart syndrome	746.7	145	1.6	(1.3, 1.9)	169	1.8	(1.6, 2.1)
Patent ductus arteriosus	747.0	1,910	20.9	(20.0, 21.9)	2,702	29.6	(28.5, 30.7)
Coarctation of aorta	747.10	184	2.0	(1.7, 2.3)	234	2.6	(2.2, 2.9)
Pulmonary artery anomalies	747.3	877	9.6	(9.0, 10.3)	1,522	16.7	(15.8, 17.5)

[1] Rate per 10,000 live births
[2] 95% confidence interval for rate
Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

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

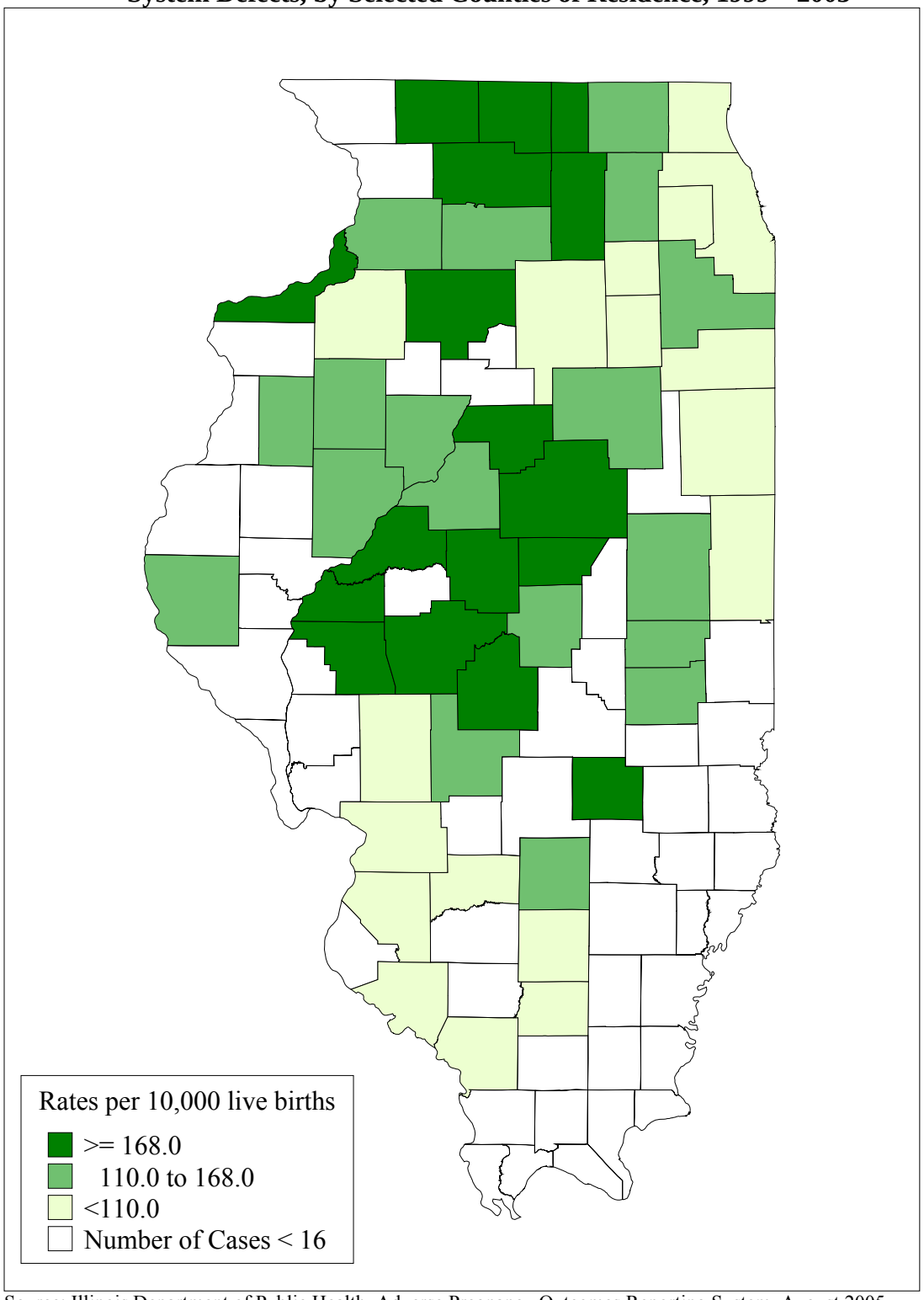
- In the past, many premature infants would have died with undiagnosed heart defects. More survive nowadays as a result of improved care.
- Improved diagnostic techniques allow minor heart defects that are asymptomatic or that would resolve without treatment to be identified.
- Some serious heart defects 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, patent ductus arteriousus, and some ventricular septal and atrial septal defects are not included if they occur in babies of 36 weeks gestation or less since they are part of normal fetal circulation and are therefore expected in these premature infants.

Table 5. Total Number and Incidence Rates of Major Cardiovascular System Defects in Newborn Infants, by County of Residence, 1999 – 2003

County	Cases	Rate[1]	95% CI[2] Lower	95% CI[2] Upper	County	Cases	Rate[1]	95% CI[2] Lower	95% CI[2] Upper
ILLINOIS[3]	9,632	105.4	103.3	107.5	Lee	29	157.0	105.2	225.5
Adams	47	115.0	84.5	152.9	Livingston	31	121.8	82.7	172.8
Alexander	0	0.0	0.0	56.1	Logan	31	186.1	126.4	264.1
Bond	0	0.0	0.0	37.7	McDonough	13	87.7	46.7	150.0
Boone	114	366.8	302.6	440.6	McHenry	284	138.3	122.7	155.3
Brown	2	66.4	8.0	240.0	McLean	225	220.3	192.5	251.1
Bureau	36	168.1	117.7	232.7	Macon	120	165.1	136.9	197.5
Calhoun	0	0.0	0.0	145.8	Macoupin	19	67.9	40.9	106.0
Carroll	15	175.4	98.2	289.4	Madison	135	80.7	67.7	95.5
Cass	17	173.5	101.1	277.7	Marion	29	111.9	75.0	160.7
Champaign	126	111.7	93.1	133.0	Marshall	11	159.7	79.7	285.7
Christian	34	171.4	118.7	239.5	Mason	17	182.8	106.5	292.7
Clark	3	32.2	6.6	94.2	Massac	1	10.4	0.3	58.1
Clay	10	111.4	53.4	204.8	Menard	6	86.8	31.9	189.0
Clinton	20	101.1	61.8	156.2	Mercer	13	136.6	72.7	233.5
Coles	32	110.2	75.3	155.5	Monroe	5	28.5	9.3	66.5
Cook	3,221	77.1	74.4	79.8	Montgomery	24	141.3	90.5	210.2
Crawford	2	19.4	2.3	70.0	Morgan	46	223.0	163.2	297.4
Cumberland	12	191.1	98.7	333.8	Moultrie	6	62.4	22.9	135.8
DeKalb	143	252.1	212.5	297.0	Ogle	86	289.4	231.5	357.4
DeWitt	19	183.6	110.5	286.7	Peoria	216	165.4	144.1	189.0
Douglas	18	118.4	70.2	187.2	Perry	4	32.8	8.9	84.1
DuPage	616	93.3	86.0	100.9	Piatt	2	22.8	2.8	82.2
Edgar	1	9.5	0.2	52.7	Pike	10	106.2	50.9	195.2
Edwards	1	25.1	0.6	139.6	Pope	0	0.0	0.0	230.6
Effingham	40	173.5	124.0	236.3	Pulaski	3	59.1	12.2	172.6
Fayette	6	48.7	17.9	106.1	Putnam	2	61.7	7.5	223.0
Ford	10	115.5	55.4	212.4	Randolph	17	89.1	51.9	142.7
Franklin	20	84.2	51.5	130.1	Richland	8	83.2	35.9	164.0
Fulton	24	117.0	75.0	174.1	Rock Island	195	200.2	173.1	230.3
Gallatin	0	0.0	0.0	105.4	St. Clair	187	101.6	87.5	117.2
Greene	11	127.0	63.4	227.3	Saline	3	19.6	4.0	57.3
Grundy	25	97.9	63.3	144.5	Sangamon	231	182.3	159.5	207.3
Hamilton	3	66.5	13.7	194.4	Schuyler	1	26.3	0.7	146.6
Hancock	11	102.1	51.0	182.7	Scott	2	66.2	8.0	239.2
Hardin	1	44.4	1.1	247.6	Shelby	13	106.7	56.8	182.5
Henderson	2	56.3	6.8	203.5	Stark	6	166.7	61.2	362.8
Henry	26	91.1	59.5	133.5	Stephenson	59	200.3	152.5	258.3
Iroquois	17	95.7	55.8	153.3	Tazewell	119	150.2	124.4	179.7
Jackson	16	47.5	27.1	77.1	Union	9	85.6	39.2	162.6
Jasper	8	137.9	59.5	271.8	Vermilion	62	109.3	83.8	140.1
Jefferson	19	80.5	48.5	125.8	Wabash	1	14.3	0.4	79.9
Jersey	7	59.3	23.8	122.1	Warren	17	165.2	96.2	264.5
JoDaviess	12	101.0	52.2	176.4	Washington	8	94.5	40.8	186.1
Johnson	0	0.0	0.0	54.7	Wayne	11	109.2	54.5	195.5
Kane	547	136.9	125.7	148.9	White	2	24.3	2.9	87.8
Kankakee	81	105.6	83.9	131.3	Whiteside	53	141.3	105.8	184.8
Kendall	53	108.9	81.6	142.4	Will	505	117.1	107.1	127.8
Knox	47	150.8	110.8	200.5	Williamson	12	33.1	17.1	57.8
Lake	401	76.1	68.8	83.9	Winnebago	740	372.6	346.3	400.5
LaSalle	59	83.6	63.6	107.8	Woodford	49	228.4	169.0	302.0
Lawrence	5	60.9	19.8	142.1					

[1] Per 10,000 births
[2] 95% confidence interval for rate
[3] The number of Illinois includes 14 cases for whom county of residence was unknown
Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

Figure 3. Map of Incidence Rates for Newborn Infants with Major Cardiovascular System Defects, by Selected Counties of Residence, 1999 – 2003



Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

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, 1999 – 2003

Defect	ICD-9-CM Codes	Hospital Reporting (HR)			HR + Active Case Verification		
		Cases	Rate	95% CI	Cases	Rate	95% CI
Lung agenesis/hypoplasia	748.5	271	3.0	(2.6, 3.3)	348	3.8	(3.4, 4.2)

[1] Rate per 10,000 live births
[2] 95% confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System , August 2005

A figure is not included because only Cook, DuPage and Kane counties 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, 1999 – 2003

			95% CI[2]					95% CI[2]	
County	**Cases**	**Rate[1]**	**Lower**	**Upper**	**County**	**Cases**	**Rate[1]**	**Lower**	**Upper**
ILLINOIS[3]	348	3.8	3.4	4.2	Lee	0	0.0	0.0	20.0
Adams	2	4.9	0.6	17.7	Livingston	1	3.9	0.1	21.9
Alexander	0	0.0	0.0	56.1	Logan	1	6.0	0.2	33.4
Bond	0	0.0	0.0	37.7	McDonough	1	6.7	0.2	37.6
Boone	1	3.2	0.1	17.9	McHenry	7	3.4	1.4	7.0
Brown	1	33.2	0.8	185.1	McLean	4	3.9	1.1	10.0
Bureau	2	9.3	1.1	33.7	Macon	5	6.9	2.2	16.1
Calhoun	0	0.0	0.0	145.8	Macoupin	4	14.3	3.9	36.6
Carroll	0	0.0	0.0	43.1	Madison	10	6.0	2.9	11.0
Cass	1	10.2	0.3	56.9	Marion	3	11.6	2.4	33.8
Champaign	6	5.3	2.0	11.6	Marshall	1	14.5	0.4	80.9
Christian	2	10.1	1.2	36.4	Mason	0	0.0	0.0	39.7
Clark	1	10.7	0.3	59.8	Massac	0	0.0	0.0	38.5
Clay	0	0.0	0.0	41.1	Menard	0	0.0	0.0	53.4
Clinton	0	0.0	0.0	18.6	Mercer	0	0.0	0.0	38.7
Coles	3	10.3	2.1	30.2	Monroe	0	0.0	0.0	21.0
Cook	120	2.9	2.4	3.4	Montgomery	1	5.9	0.1	32.8
Crawford	0	0.0	0.0	35.7	Morgan	2	9.7	1.2	35.0
Cumberland	1	15.9	0.4	88.7	Moultrie	1	10.4	0.3	57.9
DeKalb	4	7.1	1.9	18.1	Ogle	5	16.8	5.5	39.3
DeWitt	2	19.3	2.3	69.8	Peoria	4	3.1	0.8	7.8
Douglas	0	0.0	0.0	24.3	Perry	1	8.2	0.2	45.7
DuPage	27	4.1	2.7	5.9	Piatt	0	0.0	0.0	42.0
Edgar	0	0.0	0.0	34.9	Pike	0	0.0	0.0	39.2
Edwards	0	0.0	0.0	92.5	Pope	0	0.0	0.0	230.6
Effingham	1	4.3	0.1	24.2	Pulaski	0	0.0	0.0	72.6
Fayette	1	8.1	0.2	45.3	Putnam	0	0.0	0.0	113.9
Ford	0	0.0	0.0	42.6	Randolph	3	15.7	3.2	46.0
Franklin	2	8.4	1.0	30.4	Richland	2	20.8	2.5	75.2
Fulton	2	9.8	1.2	35.2	Rock Island	3	3.1	0.6	9.0
Gallatin	0	0.0	0.0	105.4	St. Clair	8	4.3	1.9	8.6
Greene	1	11.5	0.3	64.3	Saline	1	6.5	0.2	36.4
Grundy	0	0.0	0.0	14.4	Sangamon	9	7.1	3.2	13.5
Hamilton	2	44.3	5.4	160.2	Schuyler	0	0.0	0.0	97.1
Hancock	1	9.3	0.2	51.7	Scott	0	0.0	0.0	122.1
Hardin	0	0.0	0.0	164.0	Shelby	1	8.2	0.2	45.7
Henderson	1	28.2	0.7	156.9	Stark	1	27.8	0.7	154.8
Henry	1	3.5	0.1	19.5	Stephenson	3	10.2	2.1	29.8
Iroquois	0	0.0	0.0	20.8	Tazewell	5	6.3	2.0	14.7
Jackson	0	0.0	0.0	10.9	Union	0	0.0	0.0	35.1
Jasper	0	0.0	0.0	63.6	Vermilion	1	1.8	0.0	9.8
Jefferson	0	0.0	0.0	15.6	Wabash	0	0.0	0.0	52.9
Jersey	1	8.5	0.2	47.2	Warren	0	0.0	0.0	35.8
JoDaviess	0	0.0	0.0	31.1	Washington	4	47.2	12.9	120.9
Johnson	0	0.0	0.0	54.7	Wayne	0	0.0	0.0	36.6
Kane	17	4.3	2.5	6.8	White	0	0.0	0.0	44.8
Kankakee	4	5.2	1.4	13.4	Whiteside	1	2.7	0.1	14.8
Kendall	1	2.1	0.1	11.4	Will	14	3.2	1.8	5.4
Knox	2	6.4	0.8	23.2	Williamson	0	0.0	0.0	10.2
Lake	10	1.9	0.9	3.5	Winnebago	15	7.6	4.2	12.5
LaSalle	2	2.8	0.3	10.2	Woodford	2	9.3	1.1	33.7
Lawrence	0	0.0	0.0	44.9					

[1] Per 10,000 births

[2] 95% confidence interval for rate

[3] 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, August 2005

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.

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.

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.

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

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

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.

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

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.

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

Table 8. Total Number and Incidence Rates of Major Alimentary Tract Defects in Newborn Infants, Illinois, 1999 – 2003

Defect	ICD-9-CM Codes	Hospital Reporting			Active Case Verification		
		Cases	Rate	95% CI	Cases	Rate	95% CI
Cleft palate without cleft lip	749.0x	347	3.8	(3.4, 4.2)	382	4.2	(3.8, 4.6)
Cleft lip	749.10-749.25	570	6.2	(5.7, 6.8)	605	6.6	(6.1, 7.2)
Choanal atresia	748.0	86	0.9	(0.8. 1.2)	105	1.1	(0.9, 1.4)
Esophageal atresia/ tracheosophageal fistula	750.3	194	2.1	(1.8, 2.4)	205	2.2	(1.9, 2.6)
Rectal, anal, large intestinal atresia/stenosis	751.2	254	2.8	(2.4, 3.1)	293	3.2	(2.8, 3.6)
Pyloric stenosis	750.5	50	0.5	(0.4, 0.7)	183	2.0	(1.7, 2.3)
Hirschsprung disease	751.3	152	1.7	(1.4, 1.9)	179	2.0	(1.7, 2.3)
Biliary atresia	751.61	14	0.2	(0.1, 0.3)	32	0.4	(0.2, 0.5)

[1] Rate per 10,000 live births
[2] 95% confidence interval for rate
Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

Table 9. Total Number and Incidence Rates of Major Alimentary Tract Defects in Newborn Infants, by County of Residence, 1999 – 2003

County	Cases	Rate[1]	95% CI[2] Lower	95% CI[2] Upper	County	Cases	Rate[1]	95% CI[2] Lower	95% CI[2] Upper
ILLINOIS[3]	1,984	21.7	20.8	22.7	Lee	3	16.2	3.3	47.5
Adams	7	17.1	6.9	35.3	Livingston	6	23.6	8.6	51.3
Alexander	1	15.2	0.4	84.8	Logan	7	42.0	16.9	86.6
Bond	1	10.2	0.3	56.9	McDonough	5	33.7	11.0	78.7
Boone	8	25.7	11.1	50.7	McHenry	48	23.4	17.2	31.0
Brown	0	0.0	0.0	122.6	McLean	38	37.2	26.3	51.1
Bureau	6	28.0	10.3	61.0	Macon	22	30.3	19.0	45.8
Calhoun	0	0.0	0.0	145.8	Macoupin	7	25.0	10.1	51.5
Carroll	1	11.7	0.3	65.2	Madison	24	14.3	9.2	21.3
Cass	5	51.0	16.6	119.1	Marion	8	30.9	13.3	60.8
Champaign	23	20.4	12.9	30.6	Marshall	0	0.0	0.0	53.5
Christian	3	15.1	3.1	44.2	Mason	4	43.0	11.7	110.1
Clark	2	21.5	2.6	77.6	Massac	1	10.4	0.3	58.1
Clay	2	22.3	2.7	80.5	Menard	1	14.5	0.4	80.6
Clinton	9	45.5	20.8	86.4	Mercer	1	10.5	0.3	58.5
Coles	9	31.0	14.2	58.8	Monroe	3	17.1	3.5	50.0
Cook	872	20.9	19.5	22.3	Montgomery	5	29.4	9.6	68.7
Crawford	2	19.4	2.3	70.0	Morgan	5	24.2	7.9	56.6
Cumberland	2	31.8	3.9	115.0	Moultrie	2	20.8	2.5	75.1
DeKalb	8	14.1	6.1	27.8	Ogle	10	33.6	16.1	61.9
DeWitt	0	0.0	0.0	35.6	Peoria	33	25.3	17.4	35.5
Douglas	5	32.9	10.7	76.8	Perry	3	24.6	5.1	72.0
DuPage	135	20.4	17.1	24.2	Piatt	2	22.8	2.8	82.2
Edgar	2	18.9	2.3	68.3	Pike	0	0.0	0.0	39.2
Edwards	0	0.0	0.0	92.5	Pope	0	0.0	0.0	230.6
Effingham	8	34.7	15.0	68.4	Pulaski	1	19.7	0.5	109.7
Fayette	1	8.1	0.2	45.3	Putnam	0	0.0	0.0	113.9
Ford	4	46.2	12.6	118.3	Randolph	4	21.0	5.7	53.7
Franklin	7	29.5	11.9	60.8	Richland	3	31.2	6.4	91.2
Fulton	7	34.1	13.7	70.3	Rock Island	24	24.6	15.8	36.7
Gallatin	0	0.0	0.0	105.4	St. Clair	49	26.6	19.7	35.2
Greene	2	23.1	2.8	83.4	Saline	6	39.2	14.4	85.4
Grundy	4	15.7	4.3	40.1	Sangamon	27	21.3	14.0	31.0
Hamilton	2	44.3	5.4	160.2	Schuyler	0	0.0	0.0	97.1
Hancock	1	9.3	0.2	51.7	Scott	2	66.2	8.0	239.2
Hardin	2	88.9	10.8	321.1	Shelby	2	16.4	2.0	59.3
Henderson	0	0.0	0.0	103.9	Stark	0	0.0	0.0	102.5
Henry	8	28.0	12.1	55.3	Stephenson	6	20.4	7.5	44.3
Iroquois	5	28.2	9.1	65.7	Tazewell	11	13.9	6.9	24.8
Jackson	5	14.8	4.8	34.6	Union	1	9.5	0.2	53.0
Jasper	4	69.0	18.8	176.6	Vermilion	15	26.4	14.8	43.6
Jefferson	8	33.9	14.6	66.8	Wabash	0	0.0	0.0	52.9
Jersey	3	25.4	5.2	74.2	Warren	3	29.2	6.0	85.2
JoDaviess	0	0.0	0.0	31.1	Washington	0	0.0	0.0	43.6
Johnson	0	0.0	0.0	54.7	Wayne	4	39.7	10.8	101.7
Kane	82	20.5	16.3	25.5	White	0	0.0	0.0	44.8
Kankakee	21	27.4	17.0	41.9	Whiteside	9	24.0	11.0	45.5
Kendall	8	16.4	7.1	32.4	Will	89	20.6	16.6	25.4
Knox	4	12.8	3.5	32.9	Williamson	8	22.0	9.5	43.4
Lake	101	19.2	15.6	23.3	Winnebago	55	27.7	20.9	36.1
LaSalle	24	34.0	21.8	50.6	Woodford	4	18.6	5.1	47.7
Lawrence	4	48.7	13.3	124.7					

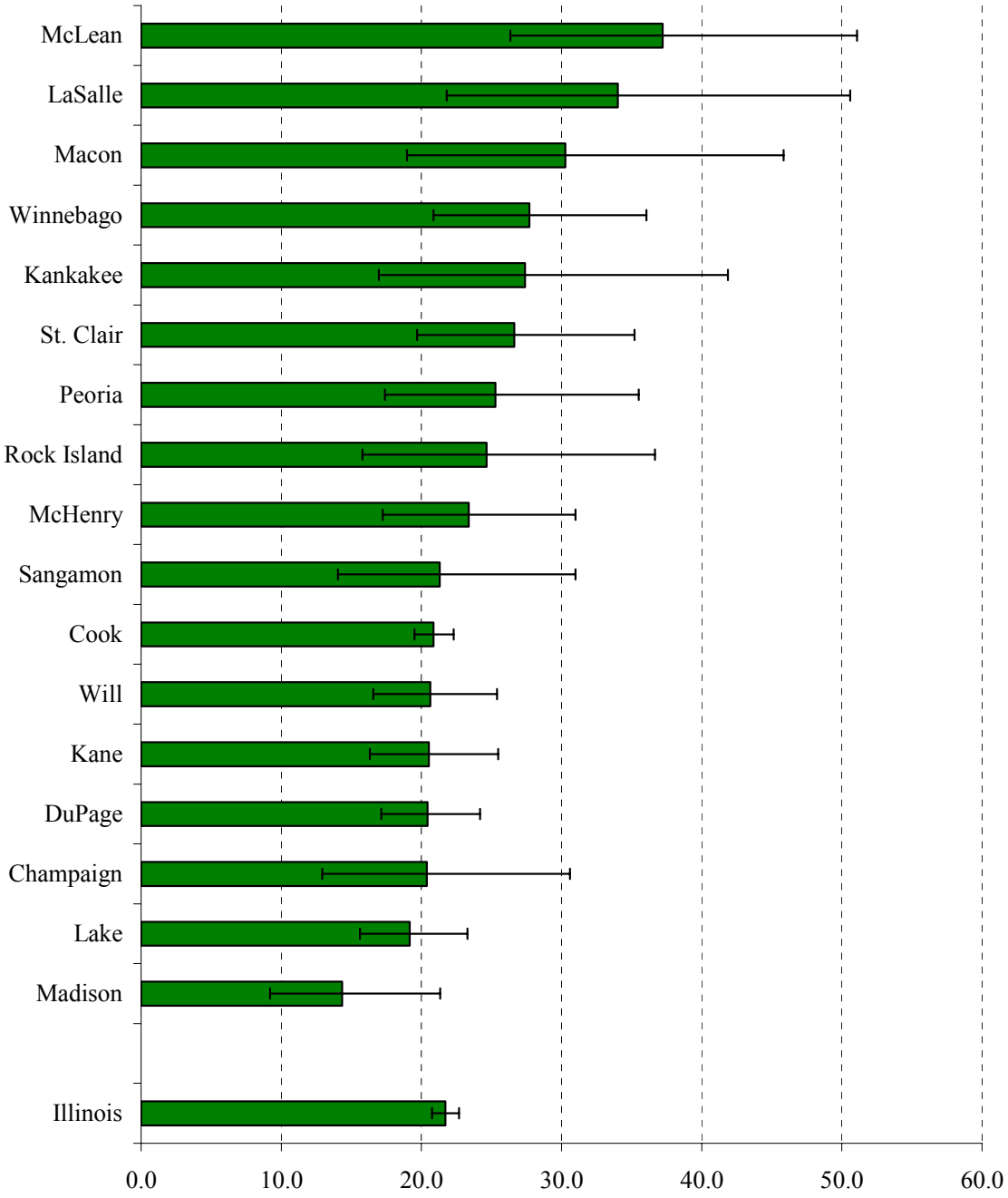
[1] Per 10,000 births

[2] 95% confidence interval for rate

[3] The number for Illinois includes 5 cases for whom county of residence is missing

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

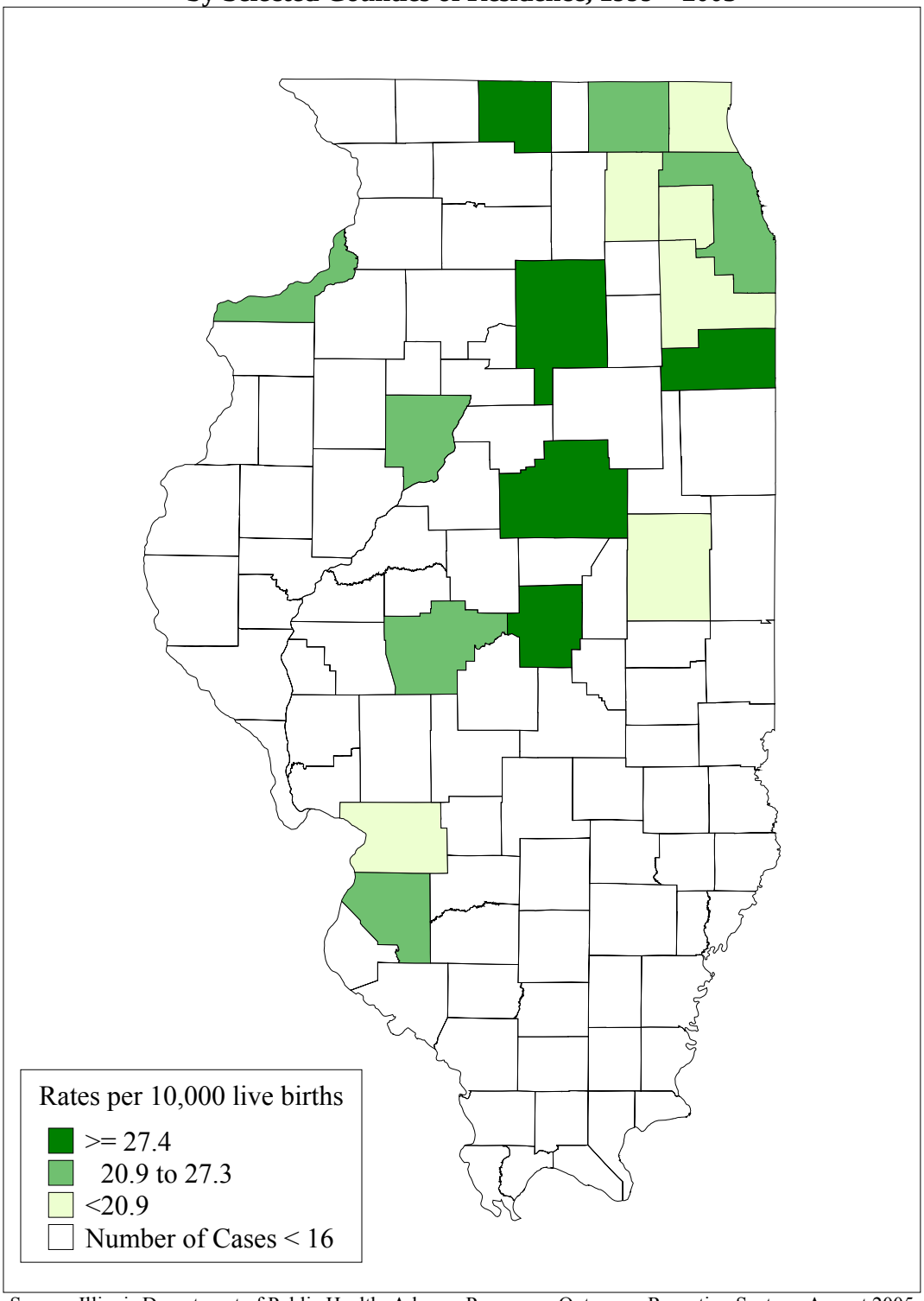
Figure 4. Incidence Rates[1] and 95% Confidence Intervals for Major Alimentary Tract Defects in Newborn Infants by Selected Counties of Residence,[2] 1999 – 2003



[1] Rates per 10,000 live births
[2] Only counties with 16 or more cases are presented.

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

Figure 5. Map of Incidence Rates for Alimentary Tract Defects in Newborn Infants, by Selected Counties of Residence, 1999 – 2003



Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

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.

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.

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.

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.

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.

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.

Table 10. Total Number and Incidence Rates of Major Genitourinary System Defects in Newborn Infants, Illinois, 1999 – 2003

Defect	ICD-9-CM Codes	Hospital Reporting			Active Case Verification		
		Cases	Rate	95% CI	Cases	Rate	95% CI
Renal agenesis/hypoplasia	753.0	183	2.0	(1.7, 2.3)	214	2.3	(2.0, 2.7)
Bladder exstrophy	753.5	23	0.3	(0.2, 0.4)	25	0.3	(0.2, 0.4)
Obstructive genitourinary defect	753.2, 753.6	1,176	12.9	(12.1, 13.6)	1,576	17.2	(16.4, 18.1)
Hypospadias and epispadias	752.61, 752.62	1,215	13.3	(12.6, 14.1)	1,372	15.0	(14.2, 15.8)

[1] Rate per 10,000 live births
[2] 95% confidence interval for rate
Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

Table 11. Total Number and Incidence Rates of Major Genitourinary System Defects in Newborn Infants, by County of Residence, 1999 – 2003

County	Cases	Rate[1]	95% CI[2] Lower	95% CI[2] Upper	County	Cases	Rate[1]	95% CI[2] Lower	95% CI[2] Upper
ILLINOIS[3]	3,187	34.9	33.7	36.1	Lee	8	43.3	18.7	85.3
Adams	19	46.5	28.0	72.6	Livingston	15	58.9	33.0	97.2
Alexander	2	30.4	3.7	110.0	Logan	12	72.0	37.2	125.8
Bond	4	40.9	11.1	104.6	McDonough	7	47.2	19.0	97.3
Boone	11	35.4	17.7	63.3	McHenry	88	42.8	34.4	52.8
Brown	2	66.4	8.0	240.0	McLean	68	66.6	51.7	84.4
Bureau	11	51.4	25.6	91.9	Macon	35	48.2	33.5	67.0
Calhoun	1	39.5	1.0	220.2	Macoupin	20	71.5	43.7	110.4
Carroll	3	35.1	7.2	102.5	Madison	94	56.2	45.4	68.8
Cass	3	30.6	6.3	89.5	Marion	8	30.9	13.3	60.8
Champaign	37	32.8	23.1	45.2	Marshall	5	72.6	23.6	169.4
Christian	11	55.4	27.7	99.2	Mason	2	21.5	2.6	77.7
Clark	4	43.0	11.7	110.0	Massac	1	10.4	0.3	58.1
Clay	6	66.8	24.5	145.4	Menard	1	14.5	0.4	80.6
Clinton	10	50.6	24.2	93.0	Mercer	4	42.0	11.4	107.6
Coles	14	48.2	26.3	80.9	Monroe	10	57.0	27.3	104.8
Cook	1,142	27.3	25.8	29.0	Montgomery	2	11.8	1.4	42.5
Crawford	0	0.0	0.0	35.7	Morgan	11	53.3	26.6	95.4
Cumberland	6	95.5	35.1	208.0	Moultrie	2	20.8	2.5	75.1
DeKalb	19	33.5	20.2	52.3	Ogle	9	30.3	13.8	57.5
DeWitt	3	29.0	6.0	84.7	Peoria	77	59.0	46.5	73.7
Douglas	4	26.3	7.2	67.4	Perry	5	41.1	13.3	95.8
DuPage	265	40.1	35.4	45.3	Piatt	0	0.0	0.0	42.0
Edgar	2	18.9	2.3	68.3	Pike	1	10.6	0.3	59.1
Edwards	0	0.0	0.0	92.5	Pope	1	62.5	1.6	348.2
Effingham	16	69.4	39.7	112.7	Pulaski	1	19.7	0.5	109.7
Fayette	3	24.4	5.0	71.2	Putnam	2	61.7	7.5	223.0
Ford	9	103.9	47.5	197.3	Randolph	4	21.0	5.7	53.7
Franklin	7	29.5	11.9	60.8	Richland	2	20.8	2.5	75.2
Fulton	25	121.9	78.9	179.9	Rock Island	52	53.4	39.9	70.0
Gallatin	0	0.0	0.0	105.4	St. Clair	79	42.9	34.0	53.5
Greene	1	11.5	0.3	64.3	Saline	2	13.1	1.6	47.2
Grundy	10	39.2	18.8	72.0	Sangamon	54	42.6	32.0	55.6
Hamilton	3	66.5	13.7	194.4	Schuyler	0	0.0	0.0	97.1
Hancock	3	27.9	5.7	81.4	Scott	1	33.1	0.8	184.5
Hardin	1	44.4	1.1	247.6	Shelby	7	57.5	23.1	118.4
Henderson	0	0.0	0.0	103.9	Stark	1	27.8	0.7	154.8
Henry	23	80.6	51.1	121.0	Stephenson	10	33.9	16.3	62.4
Iroquois	5	28.2	9.1	65.7	Tazewell	63	79.5	61.1	101.7
Jackson	10	29.7	14.2	54.6	Union	3	28.5	5.9	83.4
Jasper	3	51.7	10.7	151.2	Vermilion	8	14.1	6.1	27.8
Jefferson	5	21.2	6.9	49.5	Wabash	1	14.3	0.4	79.9
Jersey	6	50.8	18.6	110.6	Warren	7	68.0	27.4	140.2
JoDaviess	0	0.0	0.0	31.1	Washington	10	118.1	56.6	217.1
Johnson	1	14.8	0.4	82.5	Wayne	0	0.0	0.0	36.6
Kane	130	32.5	27.2	38.6	White	0	0.0	0.0	44.8
Kankakee	29	37.8	25.3	54.3	Whiteside	9	24.0	11.0	45.5
Kendall	14	28.8	15.7	48.3	Will	183	42.4	36.5	49.0
Knox	26	83.4	54.5	122.2	Williamson	19	52.4	31.5	81.8
Lake	146	27.7	23.4	32.6	Winnebago	75	37.8	29.7	47.3
LaSalle	38	53.8	38.1	73.9	Woodford	12	55.9	28.9	97.7
Lawrence	1	12.2	0.3	67.9					

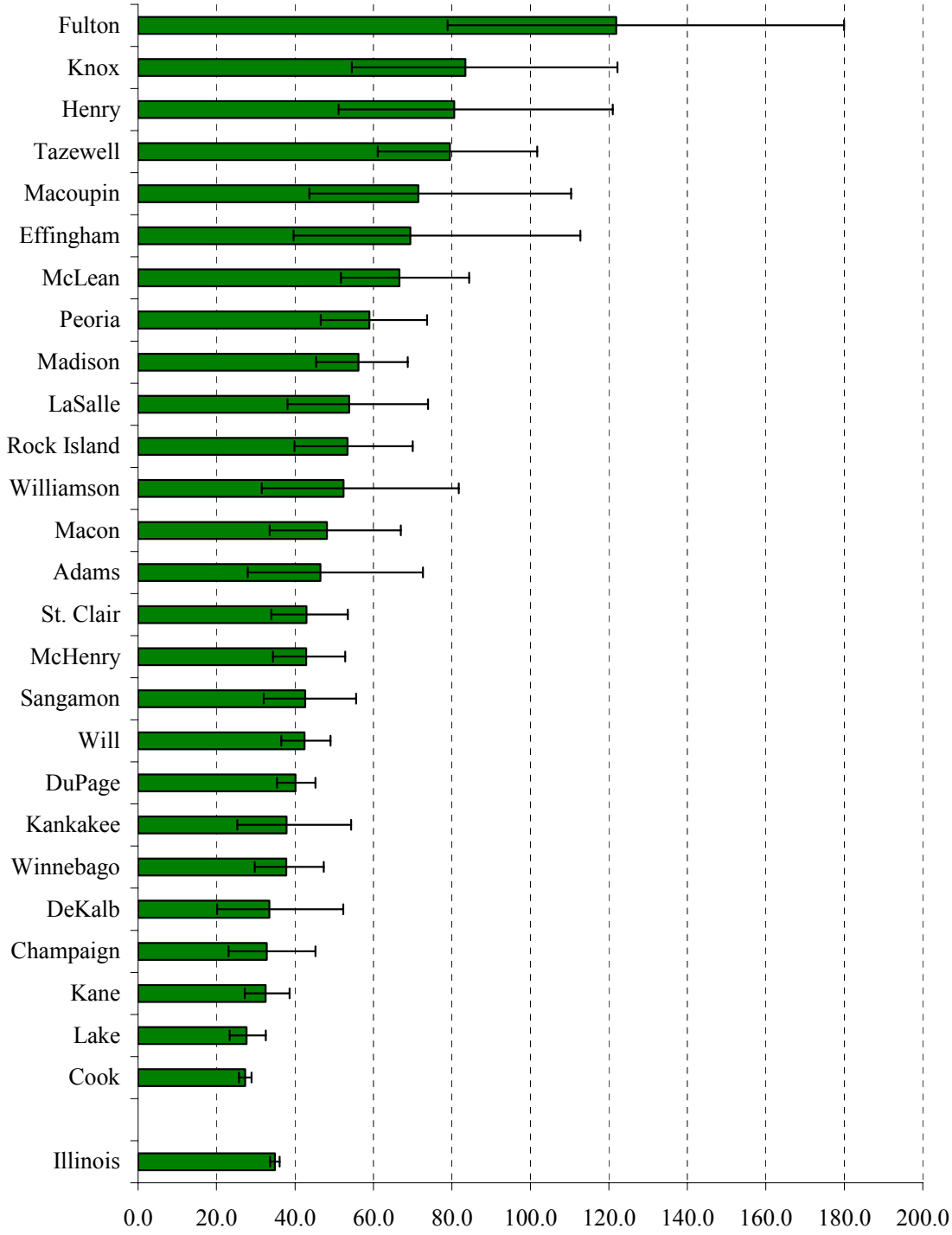
[1] Per 10,000 births

[2] 95% confidence interval for rate

[3] The number for Illinois includes 2 cases for whom county of residence is unknown

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

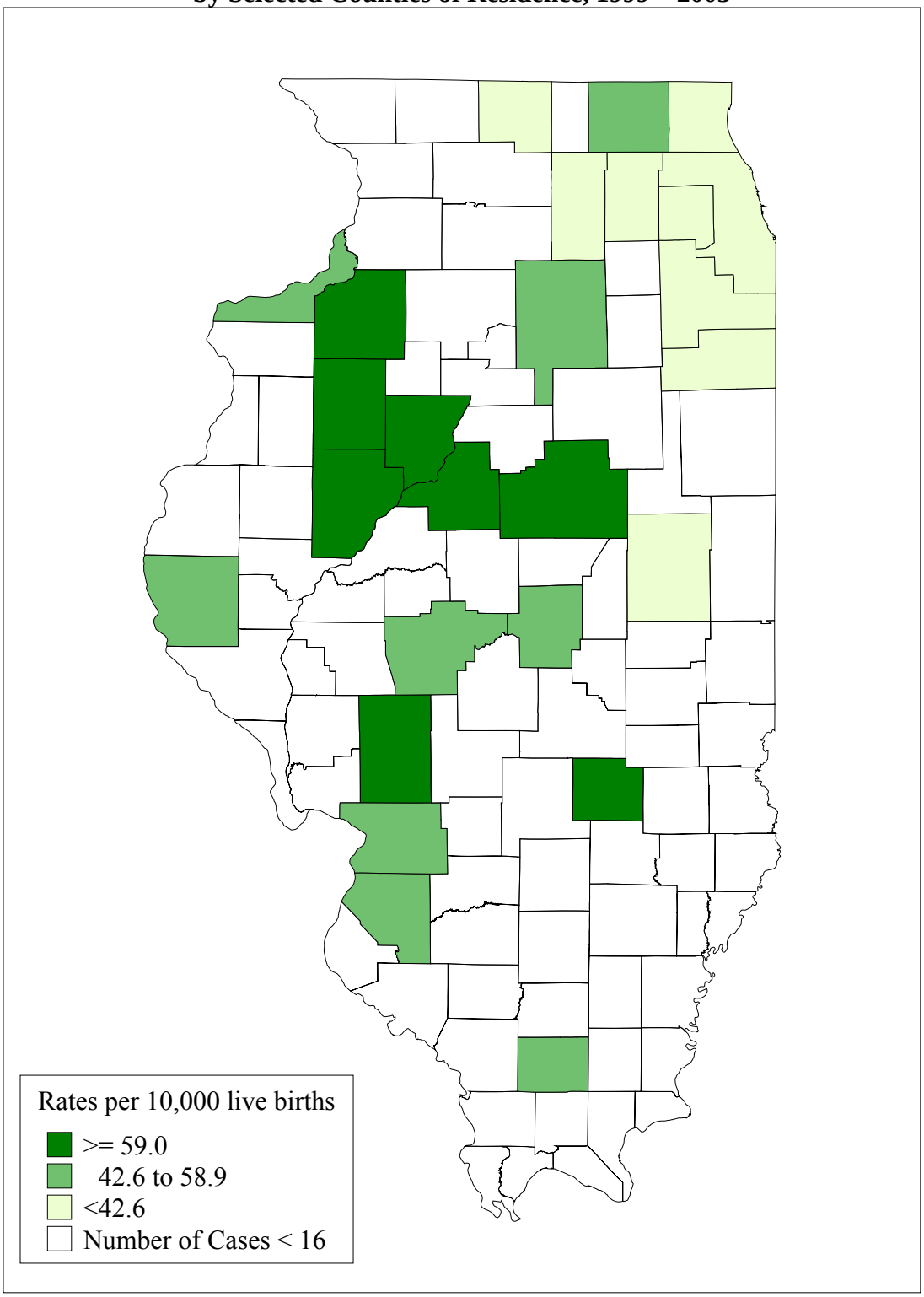
Figure 6. Incidence Rates[1] and 95% Confidence Intervals for Major Genitourinary Tract Defects in Newborn Infants by Selected Counties of Residence[2], 1999 – 2003



[1] Rates per 10,000 live births
[2] Only counties with 16 or more cases are presented.

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

Figure 7. Map of Incidence Rates for Major Genitourinary Tract Defects in Newborn Infants, by Selected Counties of Residence, 1999 – 2003



Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

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.

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

Abdominal wall defects include gastroschisis (a herniation of the abdominal contents through a defect in the abdominal wall) and omphalocele (protrusion of part of the intestine through a physical opening in the abdominal wall into the base of the umbilical cord).

Developmental dysplasia of the hip is an abnormal development of the hip joint, in which a neonate's hips easily become dislocated.

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

Diaphragmatic hernia occurs when contents of the abdomen protrude through a defect in the diaphragm, impeding lung growth.

Table 12. Total Number and Incidence Rates of Major Musculoskeletal Defects in Newborn Infants, Illinois, 1999 – 2003

Defect	ICD-9-CM Codes	Hospital Reporting (HR)			HR + Active Case Verification		
		Cases	Rate	95% CI	Cases	Rate	95% CI
Reduction deformity, upper limbs	755.2x	157	1.7	(1.5, 2.0)	224	2.5	(2.1, 2.8)
Reduction deformity, lower limbs	755.3x	63	0.7	(0.5, 0.9)	108	1.2	(1.0, 1.4)
Abdominal wall defects	756.79	413	4.5	(4.1, 5.0)	447	4.9	(4.4, 5.4)
Developmental dysplasia of the hip	754.30, 754.31, 754.35	198	2.2	(1.9, 2.5)	280	3.1	(2.7, 3.4)
Club foot	754.5x, 754.6x, 754.70, 754.71	928	10.2	(9.5, 10.8)	1251	13.7	(12.9, 14.5)
Diaphragmatic hernia	756.6	247	2.7	(2.4, 3.1)	266	2.9	(2.6, 3.3)

[1] Rate per 10,000 live births
[2] 95% confidence interval for rate
Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

Table 13. Total Number and Incidence Rates of Major Musculoskeletal Defects in Newborn Infants, by County of Residence, 1999 – 2003

			95% CI[2]					95% CI[2]	
County	**Cases**	**Rate[1]**	**Lower**	**Upper**	**County**	**Cases**	**Rate[1]**	**Lower**	**Upper**
ILLINOIS[3]	2,576	28.2	27.1	29.3	Lee	6	32.5	11.9	70.7
Adams	23	56.3	35.7	84.4	Livingston	10	39.3	18.8	72.2
Alexander	3	45.7	9.4	133.4	Logan	9	54.0	24.7	102.5
Bond	4	40.9	11.1	104.6	McDonough	7	47.2	19.0	97.3
Boone	22	70.8	44.4	107.2	McHenry	58	28.2	21.4	36.5
Brown	0	0.0	0.0	122.6	McLean	44	43.1	31.3	57.8
Bureau	12	56.0	28.9	97.9	Macon	44	60.5	44.0	81.3
Calhoun	0	0.0	0.0	145.8	Macoupin	4	14.3	3.9	36.6
Carroll	0	0.0	0.0	43.1	Madison	71	42.4	33.1	53.5
Cass	5	51.0	16.6	119.1	Marion	11	42.5	21.2	76.0
Champaign	33	29.3	20.1	41.1	Marshall	1	14.5	0.4	80.9
Christian	5	25.2	8.2	58.8	Mason	13	139.8	74.4	239.0
Clark	2	21.5	2.6	77.6	Massac	1	10.4	0.3	58.1
Clay	4	44.5	12.1	114.0	Menard	5	72.4	23.5	168.9
Clinton	7	35.4	14.2	72.9	Mercer	6	63.0	23.1	137.2
Coles	15	51.6	28.9	85.2	Monroe	1	5.7	0.1	31.8
Cook	857	20.5	19.2	21.9	Montgomery	1	5.9	0.1	32.8
Crawford	1	9.7	0.2	54.0	Morgan	14	67.9	37.1	113.9
Cumberland	4	63.7	17.4	163.1	Moultrie	4	41.6	11.3	106.5
DeKalb	14	24.7	13.5	41.4	Ogle	16	53.8	30.8	87.4
DeWitt	2	19.3	2.3	69.8	Peoria	46	35.2	25.8	47.0
Douglas	9	59.2	27.1	112.4	Perry	2	16.4	2.0	59.3
DuPage	223	33.8	29.5	38.5	Piatt	3	34.1	7.0	99.7
Edgar	1	9.5	0.2	52.7	Pike	4	42.5	11.6	108.7
Edwards	0	0.0	0.0	92.5	Pope	0	0.0	0.0	230.6
Effingham	8	34.7	15.0	68.4	Pulaski	1	19.7	0.5	109.7
Fayette	4	32.5	8.9	83.2	Putnam	2	61.7	7.5	223.0
Ford	2	23.1	2.8	83.4	Randolph	5	26.2	8.5	61.2
Franklin	4	16.8	4.6	43.1	Richland	1	10.4	0.3	58.0
Fulton	6	29.3	10.7	63.7	Rock Island	41	42.1	30.2	57.1
Gallatin	0	0.0	0.0	105.4	St. Clair	63	34.2	26.3	43.8
Greene	5	57.7	18.7	134.7	Saline	13	85.0	45.2	145.3
Grundy	8	31.3	13.5	61.7	Sangamon	34	26.8	18.6	37.5
Hamilton	0	0.0	0.0	81.8	Schuyler	1	26.3	0.7	146.6
Hancock	4	37.1	10.1	95.1	Scott	0	0.0	0.0	122.1
Hardin	1	44.4	1.1	247.6	Shelby	3	24.6	5.1	72.0
Henderson	2	56.3	6.8	203.5	Stark	3	83.3	17.2	243.5
Henry	9	31.5	14.4	59.9	Stephenson	14	47.5	26.0	79.7
Iroquois	5	28.2	9.1	65.7	Tazewell	26	32.8	21.4	48.1
Jackson	5	14.8	4.8	34.6	Union	0	0.0	0.0	35.1
Jasper	1	17.2	0.4	96.1	Vermilion	14	24.7	13.5	41.4
Jefferson	14	59.3	32.4	99.6	Wabash	0	0.0	0.0	52.9
Jersey	4	33.9	9.2	86.7	Warren	7	68.0	27.4	140.2
JoDaviess	1	8.4	0.2	46.9	Washington	3	35.4	7.3	103.5
Johnson	2	29.6	3.6	107.0	Wayne	4	39.7	10.8	101.7
Kane	112	28.0	23.1	33.7	White	3	36.5	7.5	106.5
Kankakee	24	31.3	20.1	46.6	Whiteside	14	37.3	20.4	62.6
Kendall	15	30.8	17.2	50.8	Will	162	37.6	32.0	43.8
Knox	15	48.1	26.9	79.4	Williamson	15	41.3	23.1	68.2
Lake	127	24.1	20.1	28.7	Winnebago	88	44.3	35.5	54.6
LaSalle	36	51.0	35.7	70.6	Woodford	13	60.6	32.3	103.6
Lawrence	1	12.2	0.3	67.9					

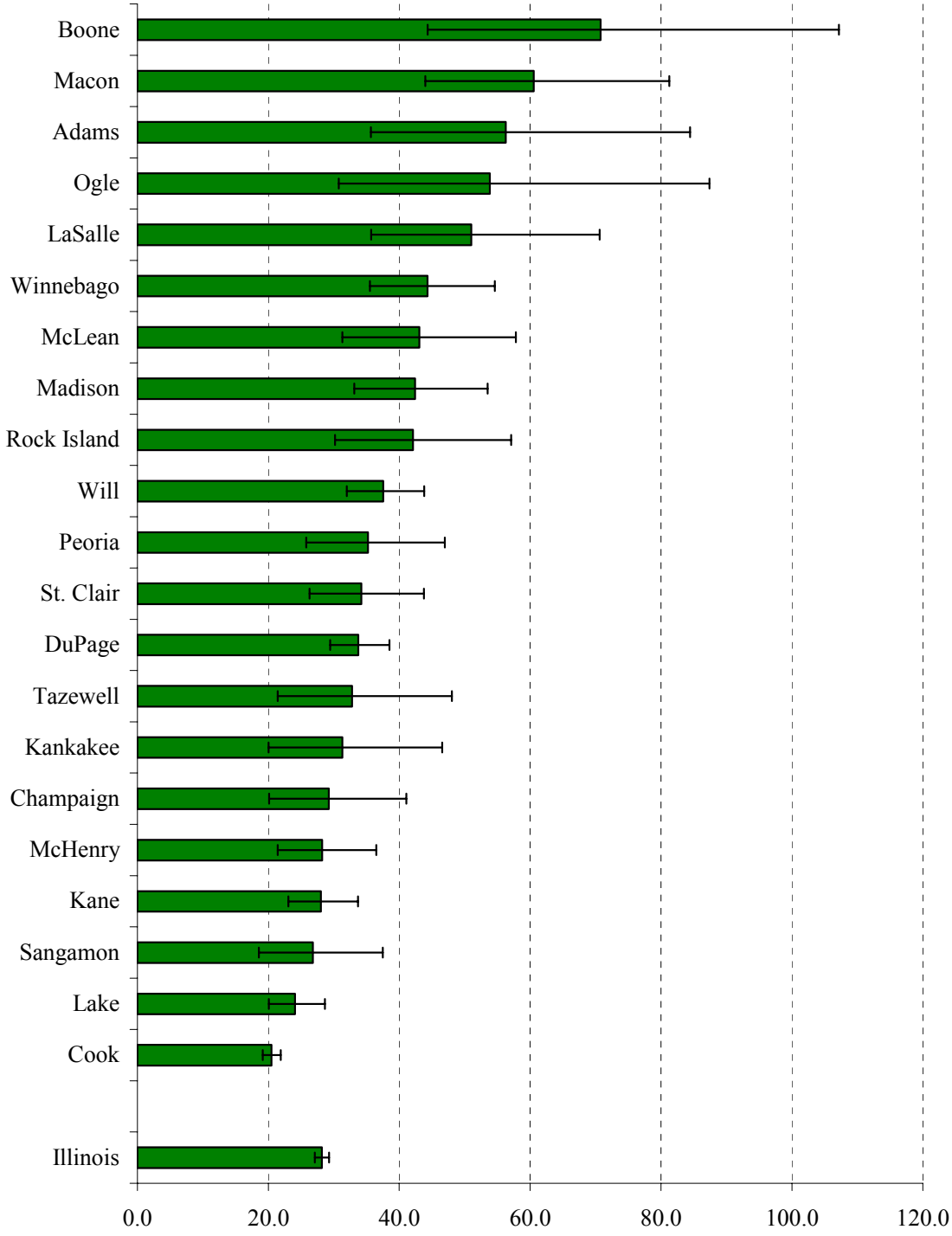
[1] Per 10,000 births

[2] 95% confidence interval for rate

[3]The number for Illinois includes 4 cases for whom county of residence was unknown

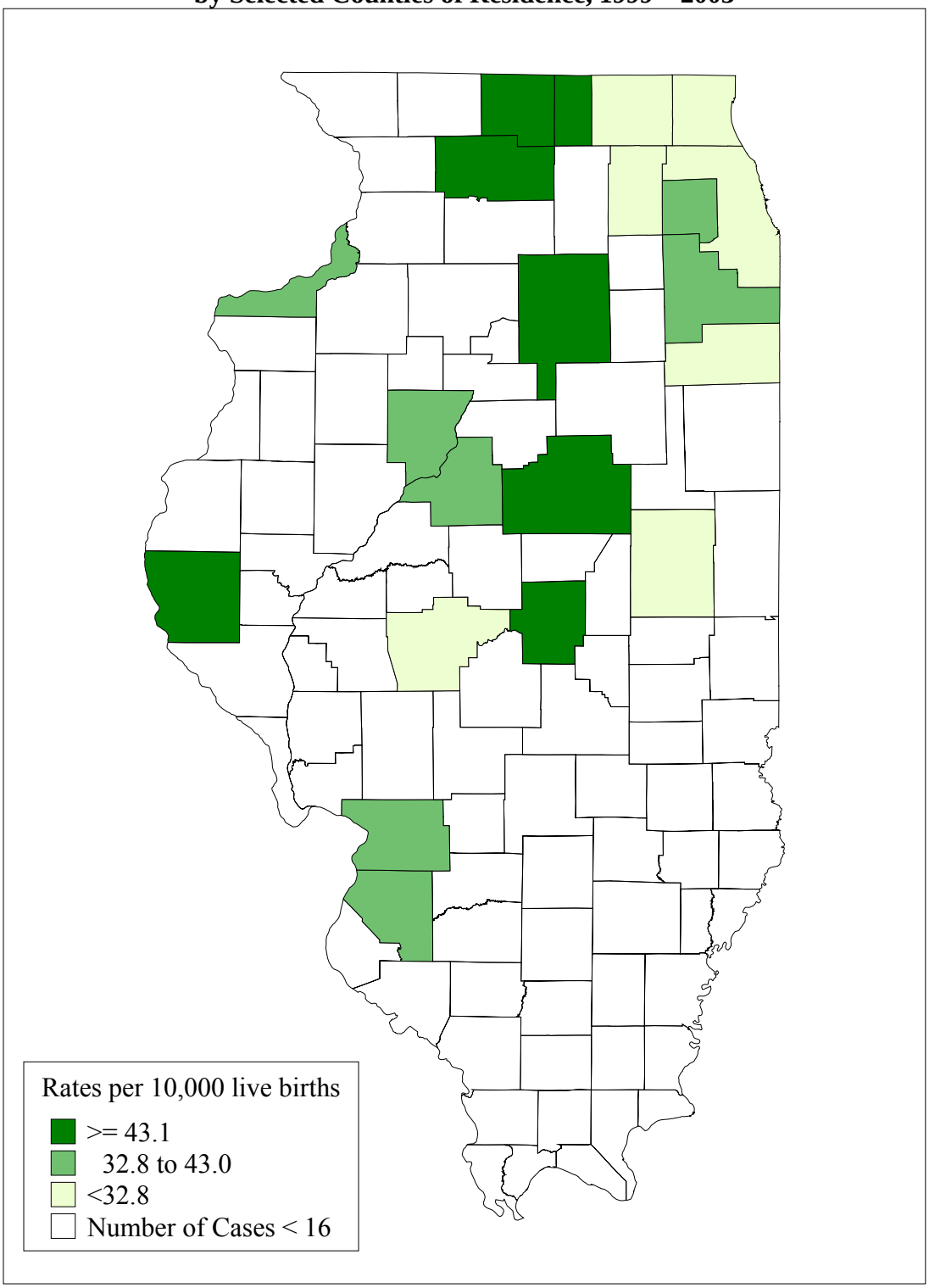
Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

Figure 8. Incidence Rates[1] and 95% Confidence Intervals for Major Musculoskeletal Defects in Newborn Infants by Selected Counties of Residence,[2] 1999 – 2003



[1] Rates per 10,000 live births
[2] Only counties with 16 or more cases are presented.
Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

Figure 9. Map of Incidence Rates for Major Musculoskeletal Defects in Newborn Infants, by Selected Counties of Residence, 1999 – 2003



Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

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.

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.

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, heart defects and blood vessel malformations.

Table 14. Total Number and Incidence Rates of Major Chromosomal Defects in Newborn Infants, Illinois, 1999 – 2003

Defect	ICD-9-CM Codes	Hospital Reporting (HR)			HR + Active Case Verification		
		Cases	Rate	95% CI	Cases	Rate	95% CI
Patau syndrome (trisomy 13)	758.1	78	0.9	(0.7, 1.1)	87	1.0	(0.8, 1.2)
Down syndrome (trisomy 21)	758.0	1,038	11.4	(10.7, 12.1)	1,144	12.5	(11.8, 13.3)
Edward syndrome (trisomy 18)	758.2	215	2.4	(2.0, 2.7)	229	2.5	(2.2, 2.9)

[1] Rate per 10,000 live births
[2] 95% confidence interval for rate
Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

Table 15. Total Number and Incidence Rates of Major Chromosomal Defects in Newborn Infants, by County of Residence, 1999 – 2003

			95% CI[2]					95% CI[2]	
County	**Cases**	**Rate[1]**	**Lower**	**Upper**	**County**	**Cases**	**Rate[1]**	**Lower**	**Upper**
ILLINOIS[3]	1,459	16.0	15.2	16.8	Lee	2	10.8	1.3	39.1
Adams	3	7.3	1.5	21.4	Livingston	6	23.6	8.6	51.3
Alexander	0	0.0	0.0	56.1	Logan	1	6.0	0.2	33.4
Bond	0	0.0	0.0	37.7	McDonough	1	6.7	0.2	37.6
Boone	7	22.5	9.1	46.4	McHenry	44	21.4	15.6	28.8
Brown	1	33.2	0.8	185.1	McLean	17	16.6	9.7	26.7
Bureau	3	14.0	2.9	40.9	Macon	10	13.8	6.6	25.3
Calhoun	1	39.5	1.0	220.2	Macoupin	1	3.6	0.1	19.9
Carroll	1	11.7	0.3	65.2	Madison	19	11.4	6.8	17.7
Cass	4	40.8	11.1	104.5	Marion	6	23.2	8.5	50.4
Champaign	20	17.7	10.8	27.4	Marshall	3	43.5	9.0	127.2
Christian	0	0.0	0.0	18.6	Mason	1	10.8	0.3	59.9
Clark	2	21.5	2.6	77.6	Massac	1	10.4	0.3	58.1
Clay	0	0.0	0.0	41.1	Menard	1	14.5	0.4	80.6
Clinton	4	20.2	5.5	51.8	Mercer	2	21.0	2.5	75.9
Coles	0	0.0	0.0	12.7	Monroe	2	11.4	1.4	41.2
Cook	679	16.2	15.0	17.5	Montgomery	0	0.0	0.0	21.7
Crawford	2	19.4	2.3	70.0	Morgan	2	9.7	1.2	35.0
Cumberland	0	0.0	0.0	58.7	Moultrie	1	10.4	0.3	57.9
DeKalb	4	7.1	1.9	18.1	Ogle	4	13.5	3.7	34.5
DeWitt	3	29.0	6.0	84.7	Peoria	31	23.7	16.1	33.7
Douglas	5	32.9	10.7	76.8	Perry	1	8.2	0.2	45.7
DuPage	134	20.3	17.0	24.0	Piatt	0	0.0	0.0	42.0
Edgar	1	9.5	0.2	52.7	Pike	1	10.6	0.3	59.1
Edwards	1	25.1	0.6	139.6	Pope	0	0.0	0.0	230.6
Effingham	6	26.0	9.6	56.7	Pulaski	1	19.7	0.5	109.7
Fayette	0	0.0	0.0	30.0	Putnam	0	0.0	0.0	113.9
Ford	0	0.0	0.0	42.6	Randolph	3	15.7	3.2	46.0
Franklin	1	4.2	0.1	23.5	Richland	2	20.8	2.5	75.2
Fulton	3	14.6	3.0	42.7	Rock Island	17	17.5	10.2	27.9
Gallatin	0	0.0	0.0	105.4	St. Clair	17	9.2	5.4	14.8
Greene	1	11.5	0.3	64.3	Saline	0	0.0	0.0	24.1
Grundy	3	11.7	2.4	34.3	Sangamon	16	12.6	7.2	20.5
Hamilton	0	0.0	0.0	81.8	Schuyler	0	0.0	0.0	97.1
Hancock	3	27.9	5.7	81.4	Scott	0	0.0	0.0	122.1
Hardin	0	0.0	0.0	164.0	Shelby	1	8.2	0.2	45.7
Henderson	1	28.2	0.7	156.9	Stark	1	27.8	0.7	154.8
Henry	5	17.5	5.7	40.9	Stephenson	2	6.8	0.8	24.5
Iroquois	2	11.3	1.4	40.7	Tazewell	13	16.4	8.7	28.1
Jackson	2	5.9	0.7	21.4	Union	1	9.5	0.2	53.0
Jasper	0	0.0	0.0	63.6	Vermilion	7	12.3	5.0	25.4
Jefferson	4	17.0	4.6	43.4	Wabash	0	0.0	0.0	52.9
Jersey	1	8.5	0.2	47.2	Warren	1	9.7	0.2	54.1
JoDaviess	1	8.4	0.2	46.9	Washington	0	0.0	0.0	43.6
Johnson	0	0.0	0.0	54.7	Wayne	0	0.0	0.0	36.6
Kane	71	17.8	13.9	22.4	White	1	12.2	0.3	67.7
Kankakee	6	7.8	2.9	17.0	Whiteside	4	10.7	2.9	27.3
Kendall	8	16.4	7.1	32.4	Will	78	18.1	14.3	22.6
Knox	0	0.0	0.0	11.8	Williamson	3	8.3	1.7	24.2
Lake	88	16.7	13.4	20.6	Winnebago	41	20.6	14.8	28.0
LaSalle	6	8.5	3.1	18.5	Woodford	2	9.3	1.1	33.7
Lawrence	1	12.2	0.3	67.9					

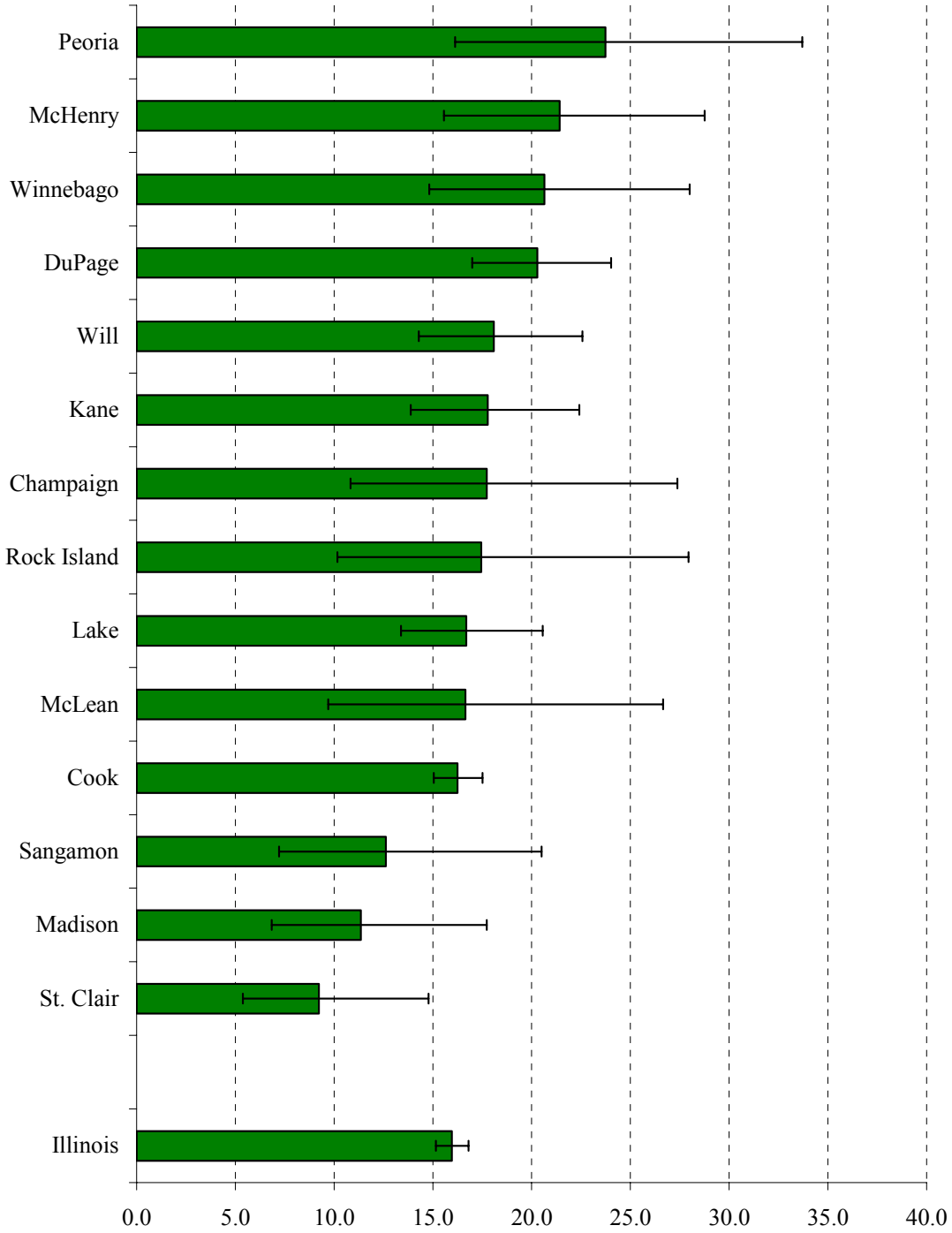
[1] Per 10,000 births

[2] 95% confidence interval for rate

[3] The number for Illinois includes 3 cases for whom county of residence is unknown

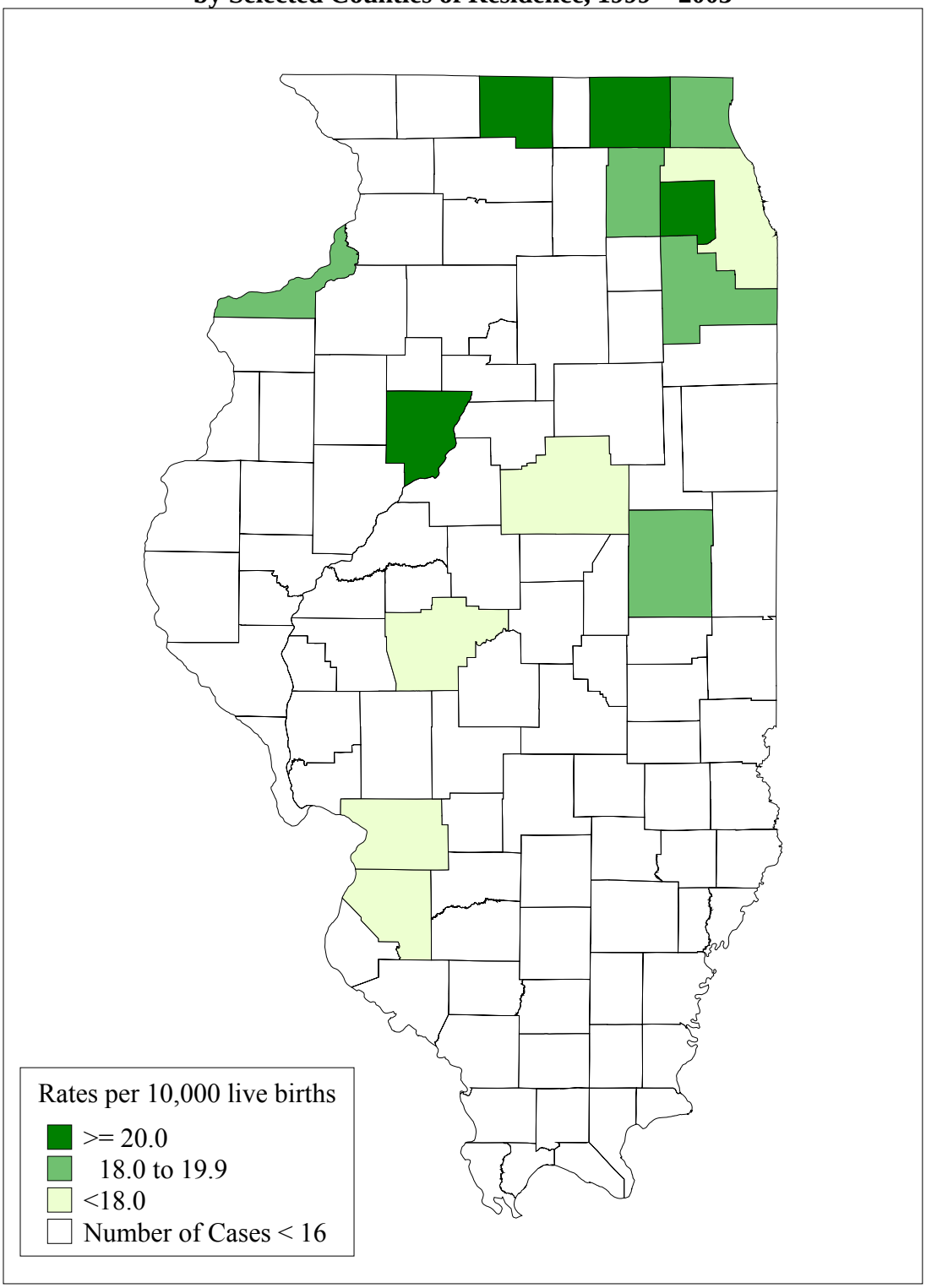
Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

Figure 10. Incidence Rates[1] and 95% Confidence Intervals for Major Chromosomal Defects in Newborn Infants by Selected Counties of Residence,[2] 1999 – 2003



[1] Rates per 10,000 live births
[2] Only counties with 16 or more cases are presented.
Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

Figure 11. Map of Incidence Rates for Major Chromosomal Defects in Newborn Infants, by Selected Counties of Residence, 1999 – 2003



Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

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 before birth 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.*, 2003)

Infants who survive have more chronic conditions, more limitations in daily activities and poorer overall health in their first few years of life than newborns with normal birth weights. 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 also are 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, 1999 – 2003

			95% CI[2]					95% CI[2]	
County	**Cases**	**Rate[1]**	**Lower**	**Upper**	**County**	**Cases**	**Rate[1]**	**Lower**	**Upper**
ILLINOIS[3]	17753	194.2	191.4	197.1	Lee	31	167.8	114.3	237.4
Adams	77	185.3	146.5	231.0	Livingston	40	157.1	112.5	213.3
Alexander	16	243.9	140.0	393.1	Logan	24	144.1	92.5	213.6
Bond	5	53.1	17.3	123.6	McDonough	25	168.7	109.5	248.0
Boone	47	157.5	115.9	208.8	McHenry	278	135.4	120.0	152.1
Brown	9	338.3	155.9	632.5	McLean	128	125.3	104.7	148.9
Bureau	25	119.0	77.1	175.2	Macon	158	217.4	185.1	253.6
Calhoun	2	79.4	9.6	283.7	Macoupin	42	150.1	108.4	202.4
Carroll	14	158.0	86.6	263.7	Madison	254	151.8	133.8	171.5
Cass	16	166.7	95.6	269.2	Marion	35	135.1	94.3	187.4
Champaign	199	179.0	155.1	205.3	Marshall	8	116.1	50.3	227.5
Christian	40	199.7	143.0	271.0	Mason	16	172.0	98.7	277.9
Clark	4	41.9	11.4	107.0	Massac	5	52.1	17.0	121.2
Clay	9	98.4	45.1	185.9	Menard	6	86.8	31.9	188.0
Clinton	21	108.0	67.0	164.6	Mercer	9	94.5	43.3	178.7
Coles	57	192.4	146.0	248.5	Monroe	16	91.2	52.2	147.7
Cook	9,649	228.7	224.2	233.3	Montgomery	28	164.8	109.8	237.3
Crawford	11	102.7	51.4	183.0	Morgan	43	208.4	151.2	279.7
Cumberland	5	79.4	25.8	184.2	Moultrie	15	155.9	87.5	255.9
DeKalb	99	176.1	143.3	214.0	Ogle	41	138.0	99.2	186.7
DeWitt	18	173.1	102.9	272.2	Peoria	265	202.9	179.4	228.6
Douglas	19	128.6	77.6	200.2	Perry	6	49.3	18.1	106.9
DuPage	1,067	160.7	151.2	170.5	Piatt	13	147.9	79.0	251.6
Edgar	9	83.0	38.0	157.0	Pike	16	169.9	97.4	274.4
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	8	157.5	68.2	307.9
Fayette	24	191.2	122.9	283.2	Putnam	3	92.6	19.1	268.2
Ford	18	207.1	123.2	325.4	Randolph	26	136.3	89.2	199.0
Franklin	36	155.8	109.4	215.1	Richland	10	104.1	50.0	190.5
Fulton	32	158.4	108.6	222.9	Rock Island	174	178.6	153.3	206.9
Gallatin	3	91.2	18.8	264.2	St. Clair	388	210.8	190.5	232.6
Greene	14	167.1	91.6	278.7	Saline	16	104.6	59.9	169.3
Grundy	23	95.2	60.4	142.5	Sangamon	225	177.5	155.3	202.0
Hamilton	11	245.0	122.9	434.1	Schuyler	1	26.3	0.7	145.7
Hancock	10	90.3	43.4	165.4	Scott	2	66.2	8.0	237.2
Hardin	3	138.9	28.7	400.5	Shelby	12	98.5	51.0	171.5
Henderson	4	108.1	29.5	274.5	Stark	5	138.9	45.2	321.1
Henry	40	140.3	100.4	190.6	Stephenson	62	210.5	161.7	269.0
Iroquois	13	72.2	38.5	123.2	Tazewell	119	150.2	124.6	179.5
Jackson	50	150.4	111.8	197.8	Union	8	76.1	32.9	149.4
Jasper	5	89.9	29.3	208.6	Vermilion	111	195.7	161.3	235.2
Jefferson	26	110.1	72.0	160.9	Wabash	4	57.4	15.7	146.3
Jersey	10	84.4	40.5	154.6	Warren	17	165.2	96.5	263.2
JoDaviess	8	67.7	29.3	132.9	Washington	12	141.7	73.4	246.2
Johnson	9	134.5	61.7	253.8	Wayne	14	139.0	76.2	232.2
Kane	574	148.2	136.4	160.7	White	12	145.8	75.6	253.3
Kankakee	156	203.1	172.8	237.2	Whiteside	45	119.9	87.6	160.2
Kendall	65	145.7	112.6	185.3	Will	802	185.9	173.4	199.1
Knox	51	159.3	118.8	208.9	Williamson	52	143.3	107.2	187.5
Lake	830	157.5	147.0	168.5	Winnebago	425	214.0	194.3	235.1
LaSalle	96	135.6	109.9	165.3	Woodford	29	135.2	90.7	193.6
Lawrence	8	96.2	41.6	188.6					

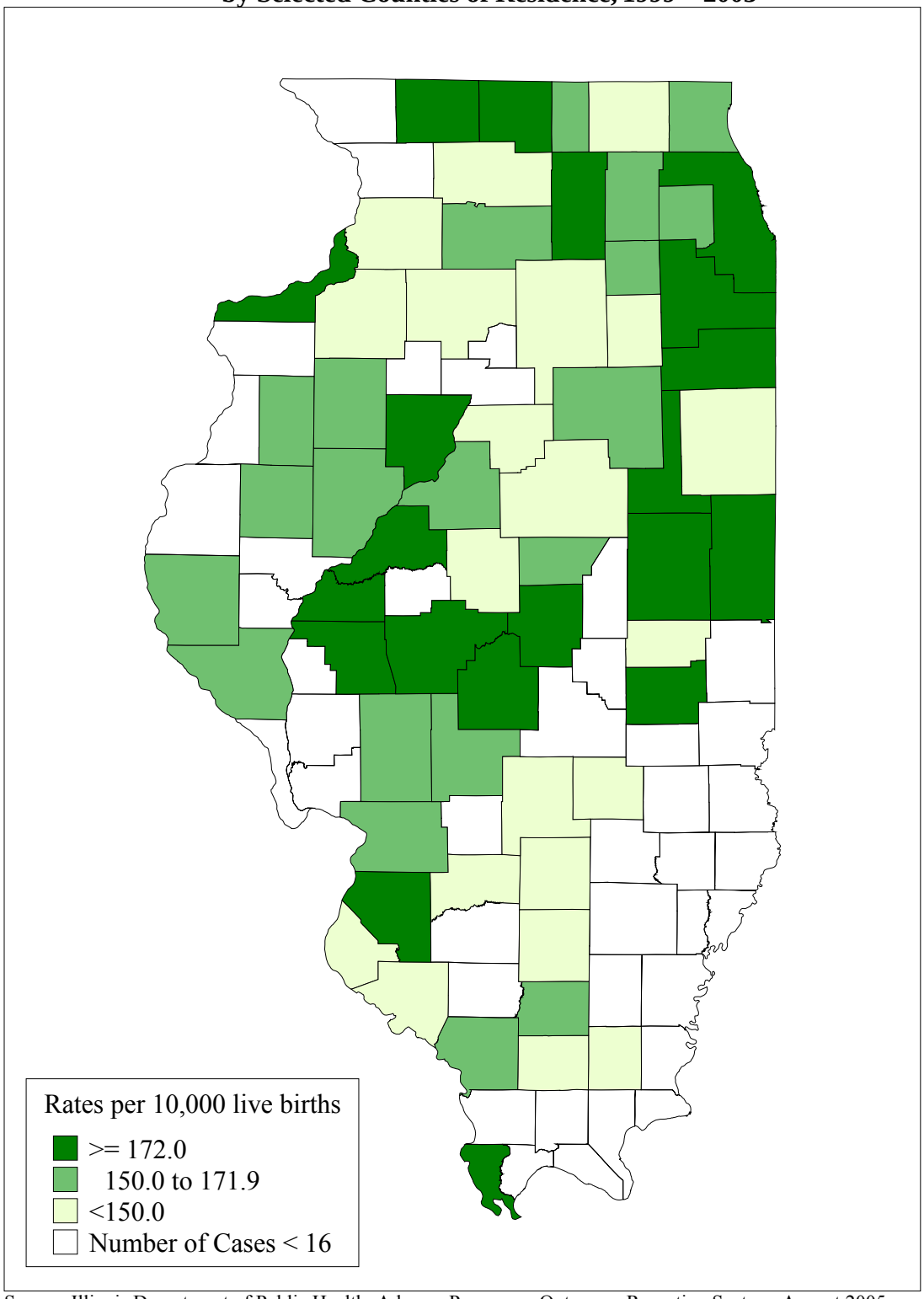
[1] Per 10,000 births

[2] 95% confidence interval for ate

[3]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, August 2005

Figure 12. Map of Incidence Rates for Infants with Very Low Birth Weights (# 1,500 g), by Selected Counties of Residence, 1999 – 2003



Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

SERIOUS CONGENITAL INFECTIONS

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

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, and these babies typically have meningitis.

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.

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 and intrauterine growth retardation also may 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.

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 immediately after birth with silver nitrate or other medication to prevent gonococcal infection of the eyes, which can lead to blindness.

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.

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.

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.

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.

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.

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.

Table 17. Total Number and Incidence Rates of Serious Congenital Infections in Newborn Infants, Illinois, 1999 – 2003

Defect	ICD-9-CM Codes	Cases	Rate[1]	95% CI[2]	
				Lower	Upper
Chlamidial infections	079.88, 079.98	21	0.2	0.1	0.4
Confirmed septicemia (sepsis)	771.8	2,857	31.3	30.1	32.4
Cytomegalovirus	771.1	108	1.2	1.0	1.4
Gonococcal infections	098.0 - 098.89	9	0.1	0.0	0.2
Group B streptococcus	041.02	331	3.6	3.2	4.0
Hepatitis B	774.4	32	0.4	0.2	0.5
Listeriosis	027.0	0	0.0	0.0	0.0
Other congential infections including herpes	771.2	125	1.4	1.1	1.6
Prenatal exposure to hepatitis B	V01.7B	454	5.0	4.5	5.4
Rubella	771.0	2	0.0	0.0	0.1
Syphilis	090.0 - 090.9	536	5.9	5.4	6.4
Tetanus neonatorum	771.3	3	0.0	0.0	0.1

[1] Rate per 10,000 live births
[2] 95% confidence interval for rate
Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

Table 18. Total Number and Incidence Rates of Serious Congenital Infections in Newborn Infants, by County of Residence, 1999 – 2003

County	Cases	Rate[1]	95% CI[2] Lower	95% CI[2] Upper	County	Cases	Rate[1]	95% CI[2] Lower	95% CI[2] Upper
ILLINOIS[3]	4,853	53.1	51.6	54.6	Lee	9	48.7	22.3	92.5
Adams	20	48.9	29.9	75.6	Livingston	9	35.3	16.2	67.1
Alexander	1	15.2	0.4	84.8	Logan	8	48.0	20.7	94.6
Bond	1	10.2	0.3	56.9	McDonough	5	33.7	11.0	78.7
Boone	19	61.1	36.8	95.5	McHenry	57	27.8	21.0	36.0
Brown	0	0.0	0.0	122.6	McLean	41	40.1	28.8	54.5
Bureau	7	32.7	13.1	67.3	Macon	23	31.6	20.1	47.5
Calhoun	2	79.1	9.6	285.6	Macoupin	4	14.3	3.9	36.6
Carroll	3	35.1	7.2	102.5	Madison	62	37.1	28.4	47.5
Cass	2	20.4	2.5	73.7	Marion	9	34.7	15.9	65.9
Champaign	65	57.6	44.5	73.4	Marshall	2	29.0	3.5	104.9
Christian	4	20.2	5.5	51.6	Mason	4	43.0	11.7	110.1
Clark	0	0.0	0.0	39.6	Massac	2	20.9	2.5	75.3
Clay	1	11.1	0.3	62.0	Menard	3	43.4	9.0	126.9
Clinton	5	25.3	8.2	59.0	Mercer	12	126.1	65.1	220.2
Coles	9	31.0	14.2	58.8	Monroe	0	0.0	0.0	21.0
Cook	2575	61.6	59.3	64.0	Montgomery	3	17.7	3.6	51.6
Crawford	2	19.4	2.3	70.0	Morgan	2	9.7	1.2	35.0
Cumberland	2	31.8	3.9	115.0	Moultrie	2	20.8	2.5	75.1
DeKalb	24	42.3	27.1	63.0	Ogle	15	50.5	28.2	83.2
DeWitt	5	48.3	15.7	112.7	Peoria	86	65.9	52.7	81.3
Douglas	5	32.9	10.7	76.8	Perry	0	0.0	0.0	30.3
DuPage	210	31.8	27.6	36.4	Piatt	2	22.8	2.8	82.2
Edgar	4	37.8	10.3	96.8	Pike	7	74.3	29.9	153.1
Edwards	2	50.1	6.1	181.1	Pope	0	0.0	0.0	230.6
Effingham	7	30.4	12.2	62.6	Pulaski	3	59.1	12.2	172.6
Fayette	3	24.4	5.0	71.2	Putnam	2	61.7	7.5	223.0
Ford	6	69.3	25.4	150.8	Randolph	6	31.4	11.5	68.4
Franklin	11	46.3	23.1	82.9	Richland	1	10.4	0.3	58.0
Fulton	16	78.0	44.6	126.7	Rock Island	88	90.3	72.5	111.3
Gallatin	0	0.0	0.0	105.4	St. Clair	101	54.9	44.7	66.7
Greene	1	11.5	0.3	64.3	Saline	7	45.8	18.4	94.3
Grundy	6	23.5	8.6	51.1	Sangamon	46	36.3	26.6	48.4
Hamilton	0	0.0	0.0	81.8	Schuyler	0	0.0	0.0	97.1
Hancock	3	27.9	5.7	81.4	Scott	0	0.0	0.0	122.1
Hardin	1	44.4	1.1	247.6	Shelby	4	32.8	8.9	84.1
Henderson	0	0.0	0.0	103.9	Stark	3	83.3	17.2	243.5
Henry	14	49.1	26.8	82.3	Stephenson	11	37.3	18.6	66.8
Iroquois	8	45.0	19.4	88.8	Tazewell	30	37.9	25.5	54.1
Jackson	12	35.6	18.4	62.2	Union	1	9.5	0.2	53.0
Jasper	1	17.2	0.4	96.1	Vermilion	33	58.2	40.0	81.7
Jefferson	4	17.0	4.6	43.4	Wabash	0	0.0	0.0	52.9
Jersey	1	8.5	0.2	47.2	Warren	6	58.3	21.4	126.9
JoDaviess	3	25.3	5.2	73.8	Washington	6	70.8	26.0	154.2
Johnson	5	74.1	24.1	172.9	Wayne	1	9.9	0.3	55.3
Kane	151	37.8	32.0	44.3	White	2	24.3	2.9	87.8
Kankakee	32	41.7	28.5	58.9	Whiteside	9	24.0	11.0	45.5
Kendall	14	28.8	15.7	48.3	Will	137	31.8	26.7	37.5
Knox	20	64.2	39.2	99.1	Williamson	13	35.8	19.1	61.3
Lake	139	26.4	22.2	31.1	Winnebago	130	65.5	54.7	77.7
LaSalle	32	45.3	31.0	64.0	Woodford	11	51.3	25.6	91.8
Lawrence	1	12.2	0.3	67.9					

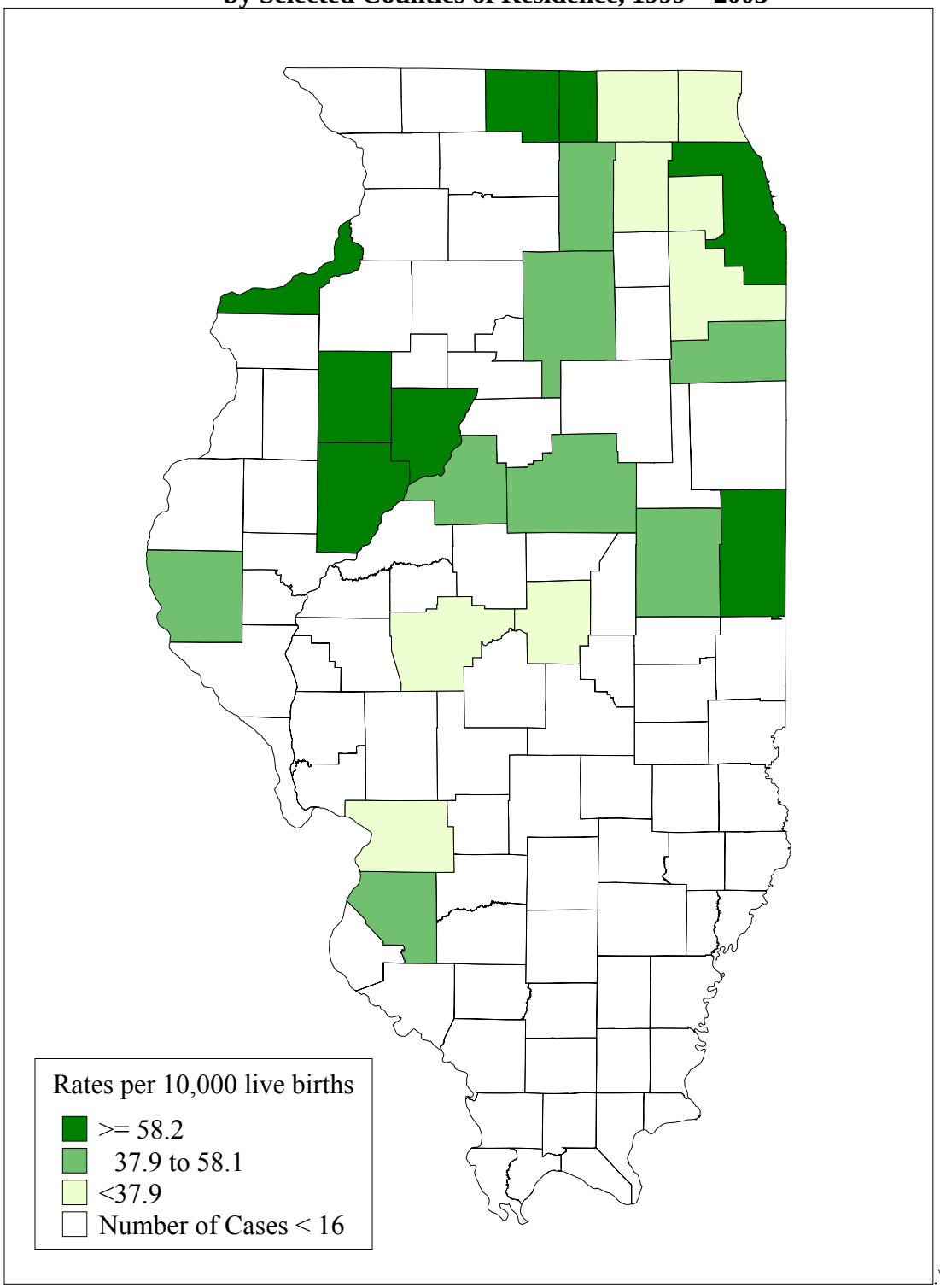
[1] Per 10,000 births

[2] 95% confidence interval for rate

[3]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, August 2005

Figure 13. Map of Incidence Rates for Serious Congenital Infections in Newborn Infants, by Selected Counties of Residence, 1999 – 2003

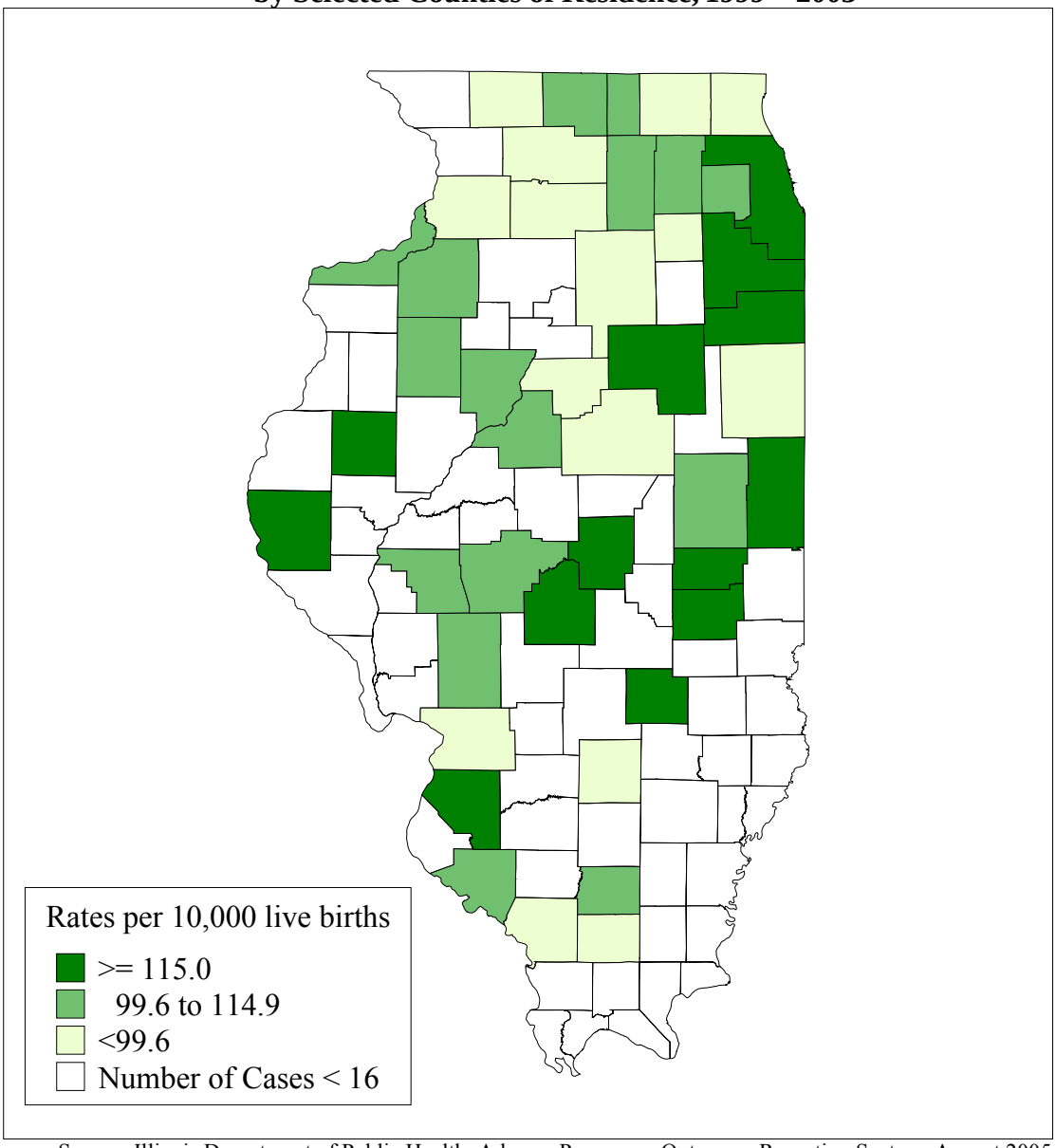


Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

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, 1999 – 2003



Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

Table 19. Total Number and Incidence Rates of Perinatal Deaths, by County of Residence, 1999 – 2003

County	Cases	Rate[1]	95% CI[2] Lower	95% CI[2] Upper	County	Cases	Rate[1]	95% CI[2] Lower	95% CI[2] Upper
ILLINOIS[3]	10,865	118.9	116.6	121.1	Lee	16	86.6	49.5	140.7
Adams	47	115.0	84.5	152.9	Livingston	33	129.6	89.2	182.0
Alexander	5	76.1	24.7	177.6	Logan	10	60.0	28.8	110.4
Bond	5	51.1	16.6	119.2	McDonough	25	168.7	109.2	249.0
Boone	34	109.4	75.8	152.9	McHenry	157	76.4	65.0	89.4
Brown	4	132.9	36.2	340.3	McLean	90	88.1	70.9	108.3
Bureau	11	51.4	25.6	91.9	Macon	97	133.5	108.2	162.8
Calhoun	1	39.5	1.0	220.2	Macoupin	29	103.6	69.4	148.9
Carroll	8	93.6	40.4	184.4	Madison	148	88.5	74.8	103.9
Cass	15	153.1	85.7	252.5	Marion	20	77.2	47.1	119.2
Champaign	121	107.3	89.0	128.2	Marshall	8	116.1	50.1	228.8
Christian	27	136.1	89.7	198.0	Mason	8	86.0	37.1	169.5
Clark	4	43.0	11.7	110.0	Massac	3	31.3	6.5	91.4
Clay	9	100.2	45.8	190.3	Menard	4	57.9	15.8	148.2
Clinton	14	70.8	38.7	118.8	Mercer	7	73.5	29.6	151.5
Coles	39	134.3	95.5	183.5	Monroe	9	51.3	23.5	97.4
Cook	5,844	139.8	136.3	143.5	Montgomery	11	64.7	32.3	115.8
Crawford	6	58.1	21.3	126.5	Morgan	23	111.5	70.7	167.3
Cumberland	9	143.3	65.5	272.1	Moultrie	10	104.0	49.8	191.2
DeKalb	63	111.1	85.4	142.1	Ogle	20	67.3	41.1	103.9
DeWitt	7	67.6	27.2	139.3	Peoria	148	113.3	95.8	133.1
Douglas	18	118.4	70.2	187.2	Perry	7	57.5	23.1	118.4
DuPage	706	106.9	99.1	115.1	Piatt	8	91.0	39.3	179.3
Edgar	5	47.3	15.3	110.3	Pike	7	74.3	29.9	153.1
Edwards	1	25.1	0.6	139.6	Pope	0	0.0	0.0	230.6
Effingham	27	117.1	77.2	170.4	Pulaski	4	78.7	21.5	201.6
Fayette	11	89.4	44.6	159.9	Putnam	3	92.6	19.1	270.6
Ford	7	80.8	32.5	166.5	Randolph	19	99.6	60.0	155.5
Franklin	26	109.5	71.5	160.5	Richland	13	135.3	72.0	231.3
Fulton	11	53.6	26.8	96.0	Rock Island	108	110.9	91.0	133.9
Gallatin	1	28.6	0.7	159.2	St. Clair	217	117.9	102.7	134.7
Greene	12	138.6	71.6	242.1	Saline	12	78.4	40.5	137.0
Grundy	13	50.9	27.1	87.0	Sangamon	129	101.8	85.0	120.9
Hamilton	7	155.2	62.4	319.8	Schuyler	1	26.3	0.7	146.6
Hancock	7	65.0	26.1	133.9	Scott	2	66.2	8.0	239.2
Hardin	1	44.4	1.1	247.6	Shelby	9	73.9	33.8	140.3
Henderson	2	56.3	6.8	203.5	Stark	5	138.9	45.1	324.1
Henry	30	105.2	70.9	150.1	Stephenson	26	88.3	57.7	129.3
Iroquois	16	90.1	51.5	146.3	Tazewell	85	107.3	85.7	132.7
Jackson	33	97.9	67.4	137.5	Union	8	76.1	32.9	150.0
Jasper	6	103.4	38.0	225.2	Vermilion	67	118.1	91.5	150.0
Jefferson	14	59.3	32.4	99.6	Wabash	1	14.3	0.4	79.9
Jersey	5	42.3	13.7	98.8	Warren	10	97.2	46.6	178.7
JoDaviess	5	42.1	13.7	98.2	Washington	10	118.1	56.6	217.1
Johnson	7	103.7	41.7	213.7	Wayne	7	69.5	27.9	143.2
Kane	399	99.9	90.3	110.2	White	2	24.3	2.9	87.8
Kankakee	104	135.6	110.8	164.3	Whiteside	32	85.3	58.3	120.4
Kendall	47	96.6	71.0	128.4	Will	500	115.9	106.0	126.5
Knox	32	102.7	70.2	144.9	Williamson	36	99.2	69.5	137.3
Lake	477	90.5	82.6	99.0	Winnebago	225	113.3	99.0	129.1
LaSalle	61	86.4	66.1	111.0	Woodford	21	97.9	60.6	149.7
Lawrence	1	12.2	0.3	67.9					

[1] Per 10,000 births

[2] 95% confidence interval for rate

[3]The number for Illinois includes 50 cases for whom county of residence was unknown.

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

ENDOCRINE, METABOLIC OR IMMUNE DISORDERS

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.

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.

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 while others require restrictions or extremely high dosages of certain nutrients.

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.

Table 20. Total Number and Incidence Rates of Endocrine, Metabolic or Immune Disorders in Newborn Infants, Illinois, 1999 – 2003

Defect	ICD-9-CM Codes	Cases	Rate[1]	95% CI[2]	
				Lower	Upper
Adrenogenital syndrome	255.2	54	0.6	0.4	0.8
Cystic fibrosis	277.00, 277.01	37	0.4	0.3	0.6
Hypothyroidism	243	120	1.3	1.1	1.6
Immune deficiency disease	279.2	3	0.0	0.0	0.1
Inborn errors of metabolism	270.0 - 273.9	143	1.6	1.3	1.8

[1] Rate per 10,000 live births
[2] 95% confidence interval for rate
Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System , August 2005

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, 1999 – 2003

			95% CI[2]					95% CI[2]	
County	**Cases**	**Rate[1]**	**Lower**	**Upper**	**County**	**Cases**	**Rate[1]**	**Lower**	**Upper**
ILLINOIS	360	3.9	3.5	4.4	Lee	0	0.0	0.0	20.0
Adams	1	2.4	0.1	13.6	Livingston	2	7.9	1.0	28.4
Alexander	0	0.0	0.0	56.1	Logan	0	0.0	0.0	22.1
Bond	0	0.0	0.0	37.7	McDonough	1	6.7	0.2	37.6
Boone	4	12.9	3.5	33.0	McHenry	8	3.9	1.7	7.7
Brown	0	0.0	0.0	122.6	McLean	1	1.0	0.0	5.5
Bureau	1	4.7	0.1	26.0	Macon	3	4.1	0.9	12.1
Calhoun	0	0.0	0.0	145.8	Macoupin	0	0.0	0.0	13.2
Carroll	1	11.7	0.3	65.2	Madison	21	12.6	7.8	19.2
Cass	0	0.0	0.0	37.6	Marion	2	7.7	0.9	27.9
Champaign	7	6.2	2.5	12.8	Marshall	0	0.0	0.0	53.5
Christian	1	5.0	0.1	28.1	Mason	0	0.0	0.0	39.7
Clark	0	0.0	0.0	39.6	Massac	0	0.0	0.0	38.5
Clay	0	0.0	0.0	41.1	Menard	1	14.5	0.4	80.6
Clinton	0	0.0	0.0	18.6	Mercer	0	0.0	0.0	38.7
Coles	1	3.4	0.1	19.2	Monroe	0	0.0	0.0	21.0
Cook	146	3.5	2.9	4.1	Montgomery	1	5.9	0.1	32.8
Crawford	0	0.0	0.0	35.7	Morgan	0	0.0	0.0	17.9
Cumberland	0	0.0	0.0	58.7	Moultrie	0	0.0	0.0	38.3
DeKalb	5	8.8	2.9	20.6	Ogle	2	6.7	0.8	24.3
DeWitt	1	9.7	0.2	53.8	Peoria	5	3.8	1.2	8.9
Douglas	0	0.0	0.0	24.3	Perry	1	8.2	0.2	45.7
DuPage	29	4.4	2.9	6.3	Piatt	0	0.0	0.0	42.0
Edgar	0	0.0	0.0	34.9	Pike	1	10.6	0.3	59.1
Edwards	0	0.0	0.0	92.5	Pope	0	0.0	0.0	230.6
Effingham	2	8.7	1.1	31.3	Pulaski	0	0.0	0.0	72.6
Fayette	0	0.0	0.0	30.0	Putnam	0	0.0	0.0	113.9
Ford	0	0.0	0.0	42.6	Randolph	1	5.2	0.1	29.2
Franklin	1	4.2	0.1	23.5	Richland	0	0.0	0.0	38.4
Fulton	1	4.9	0.1	27.2	Rock Island	6	6.2	2.3	13.4
Gallatin	0	0.0	0.0	105.4	St. Clair	8	4.3	1.9	8.6
Greene	1	11.5	0.3	64.3	Saline	1	6.5	0.2	36.4
Grundy	2	7.8	0.9	28.3	Sangamon	4	3.2	0.9	8.1
Hamilton	0	0.0	0.0	81.8	Schuyler	0	0.0	0.0	97.1
Hancock	0	0.0	0.0	34.3	Scott	0	0.0	0.0	122.1
Hardin	0	0.0	0.0	164.0	Shelby	0	0.0	0.0	30.3
Henderson	0	0.0	0.0	103.9	Stark	0	0.0	0.0	102.5
Henry	0	0.0	0.0	12.9	Stephenson	2	6.8	0.8	24.5
Iroquois	1	5.6	0.1	31.4	Tazewell	1	1.3	0.0	7.0
Jackson	2	5.9	0.7	21.4	Union	0	0.0	0.0	35.1
Jasper	0	0.0	0.0	63.6	Vermilion	3	5.3	1.1	15.5
Jefferson	1	4.2	0.1	23.6	Wabash	0	0.0	0.0	52.9
Jersey	0	0.0	0.0	31.2	Warren	1	9.7	0.2	54.1
JoDaviess	0	0.0	0.0	31.1	Washington	1	11.8	0.3	65.8
Johnson	0	0.0	0.0	54.7	Wayne	2	19.9	2.4	71.7
Kane	13	3.3	1.7	5.6	White	0	0.0	0.0	44.8
Kankakee	0	0.0	0.0	4.8	Whiteside	0	0.0	0.0	9.8
Kendall	3	6.2	1.3	18.0	Will	14	3.2	1.8	5.4
Knox	1	3.2	0.1	17.9	Williamson	1	2.8	0.1	15.4
Lake	19	3.6	2.2	5.6	Winnebago	14	7.1	3.9	11.8
LaSalle	3	4.3	0.9	12.4	Woodford	2	9.3	1.1	33.7
Lawrence	0	0.0	0.0	44.9					

[1] Per 10,000 births

[2] 95% confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

BLOOD DISORDERS

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.

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.

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 also are being used in treatment.

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.

Table 22. Total Number and Incidence Rates of Blood Disorders in Newborn Infants, Illinois, 1999 – 2003

Defect	ICD-9-CM Codes	Cases	Rate[1]	95% CI[2]	
				Lower	Upper
Coagulation defects	286.x	66	0.7	0.6	0.9
Constitutional aplastic anemia	284.x	16	0.2	0.1	0.3
Hereditary hemolytic anemia	282.x	163	1.8	1.5	2.1
Leukemia	204.00 - 208.91	3	0.0	0.0	0.1

[1] Rate per 10,000 live births

[2] 95% confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

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, 1999 – 2003

			95% CI[2]					95% CI[2]	
County	**Cases**	**Rate[1]**	**Lower**	**Upper**	**County**	**Cases**	**Rate[1]**	**Lower**	**Upper**
ILLINOIS	250	2.7	2.4	3.1	Lee	0	0.0	0.0	20.0
Adams	0	0.0	0.0	9.0	Livingston	0	0.0	0.0	14.5
Alexander	0	0.0	0.0	56.1	Logan	0	0.0	0.0	22.1
Bond	0	0.0	0.0	37.7	McDonough	0	0.0	0.0	24.9
Boone	1	3.2	0.1	17.9	McHenry	2	1.0	0.1	3.5
Brown	0	0.0	0.0	122.6	McLean	3	2.9	0.6	8.6
Bureau	0	0.0	0.0	17.2	Macon	1	1.4	0.0	7.7
Calhoun	0	0.0	0.0	145.8	Macoupin	0	0.0	0.0	13.2
Carroll	0	0.0	0.0	43.1	Madison	3	1.8	0.4	5.2
Cass	0	0.0	0.0	37.6	Marion	0	0.0	0.0	14.2
Champaign	6	5.3	2.0	11.6	Marshall	0	0.0	0.0	53.5
Christian	0	0.0	0.0	18.6	Mason	0	0.0	0.0	39.7
Clark	0	0.0	0.0	39.6	Massac	0	0.0	0.0	38.5
Clay	0	0.0	0.0	41.1	Menard	0	0.0	0.0	53.4
Clinton	1	5.1	0.1	28.2	Mercer	1	10.5	0.3	58.5
Coles	0	0.0	0.0	12.7	Monroe	0	0.0	0.0	21.0
Cook	150	3.6	3.0	4.2	Montgomery	0	0.0	0.0	21.7
Crawford	0	0.0	0.0	35.7	Morgan	0	0.0	0.0	17.9
Cumberland	0	0.0	0.0	58.7	Moultrie	0	0.0	0.0	38.3
DeKalb	3	5.3	1.1	15.5	Ogle	1	3.4	0.1	18.7
DeWitt	0	0.0	0.0	35.6	Peoria	6	4.6	1.7	10.0
Douglas	0	0.0	0.0	24.3	Perry	0	0.0	0.0	30.3
DuPage	8	1.2	0.5	2.4	Piatt	0	0.0	0.0	42.0
Edgar	0	0.0	0.0	34.9	Pike	0	0.0	0.0	39.2
Edwards	0	0.0	0.0	92.5	Pope	0	0.0	0.0	230.6
Effingham	0	0.0	0.0	16.0	Pulaski	0	0.0	0.0	72.6
Fayette	1	8.1	0.2	45.3	Putnam	0	0.0	0.0	113.9
Ford	0	0.0	0.0	42.6	Randolph	1	5.2	0.1	29.2
Franklin	0	0.0	0.0	15.5	Richland	1	10.4	0.3	58.0
Fulton	0	0.0	0.0	18.0	Rock Island	6	6.2	2.3	13.4
Gallatin	0	0.0	0.0	105.4	St. Clair	5	2.7	0.9	6.3
Greene	0	0.0	0.0	42.6	Saline	0	0.0	0.0	24.1
Grundy	0	0.0	0.0	14.4	Sangamon	2	1.6	0.2	5.7
Hamilton	0	0.0	0.0	81.8	Schuyler	0	0.0	0.0	97.1
Hancock	0	0.0	0.0	34.3	Scott	0	0.0	0.0	122.1
Hardin	0	0.0	0.0	164.0	Shelby	0	0.0	0.0	30.3
Henderson	0	0.0	0.0	103.9	Stark	0	0.0	0.0	102.5
Henry	0	0.0	0.0	12.9	Stephenson	1	3.4	0.1	18.9
Iroquois	0	0.0	0.0	20.8	Tazewell	1	1.3	0.0	7.0
Jackson	0	0.0	0.0	10.9	Union	1	9.5	0.2	53.0
Jasper	0	0.0	0.0	63.6	Vermilion	4	7.1	1.9	18.1
Jefferson	1	4.2	0.1	23.6	Wabash	0	0.0	0.0	52.9
Jersey	0	0.0	0.0	31.2	Warren	1	9.7	0.2	54.1
JoDaviess	0	0.0	0.0	31.1	Washington	0	0.0	0.0	43.6
Johnson	0	0.0	0.0	54.7	Wayne	0	0.0	0.0	36.6
Kane	5	1.3	0.4	2.9	White	0	0.0	0.0	44.8
Kankakee	0	0.0	0.0	4.8	Whiteside	0	0.0	0.0	9.8
Kendall	0	0.0	0.0	7.6	Will	10	2.3	1.1	4.3
Knox	0	0.0	0.0	11.8	Williamson	1	2.8	0.1	15.4
Lake	14	2.7	1.5	4.5	Winnebago	6	3.0	1.1	6.6
LaSalle	1	1.4	0.0	7.9	Woodford	0	0.0	0.0	17.2
Lawrence	0	0.0	0.0	44.9					

[1] Per 10,000 births

[2] 95% confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

FETAL ALCOHOL SYNDROME

When a pregnant woman uses or abuses alcohol, she subjects herself 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, 1999 – 2003

Defect	ICD-9-CM Codes	Cases	Rate[1]	95% CI[2]	
				Lower	Upper
Fetal alcohol syndrome	760.71	170	1.9	1.6	2.2

[1] Rate per 10,000 live births
[2] 95% confidence interval for rate
Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

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, 1999 – 2003

			95% CI[2]					95% CI[2]	
County	**Cases**	**Rate[1]**	**Lower**	**Upper**	**County**	**Cases**	**Rate[1]**	**Lower**	**Upper**
ILLINOIS	169	1.8	1.6	2.1	Lee	0	0.0	0.0	20.0
Adams	0	0.0	0.0	9.0	Livingston	0	0.0	0.0	14.5
Alexander	0	0.0	0.0	56.1	Logan	0	0.0	0.0	22.1
Bond	0	0.0	0.0	37.7	McDonough	0	0.0	0.0	24.9
Boone	0	0.0	0.0	11.9	McHenry	3	1.5	0.3	4.3
Brown	0	0.0	0.0	122.6	McLean	0	0.0	0.0	3.6
Bureau	0	0.0	0.0	17.2	Macon	1	1.4	0.0	7.7
Calhoun	0	0.0	0.0	145.8	Macoupin	0	0.0	0.0	13.2
Carroll	0	0.0	0.0	43.1	Madison	5	3.0	1.0	7.0
Cass	0	0.0	0.0	37.6	Marion	1	3.9	0.1	21.5
Champaign	11	9.8	4.9	17.4	Marshall	0	0.0	0.0	53.5
Christian	0	0.0	0.0	18.6	Mason	0	0.0	0.0	39.7
Clark	0	0.0	0.0	39.6	Massac	0	0.0	0.0	38.5
Clay	0	0.0	0.0	41.1	Menard	0	0.0	0.0	53.4
Clinton	0	0.0	0.0	18.6	Mercer	0	0.0	0.0	38.7
Coles	1	3.4	0.1	19.2	Monroe	0	0.0	0.0	21.0
Cook	94	2.2	1.8	2.8	Montgomery	0	0.0	0.0	21.7
Crawford	0	0.0	0.0	35.7	Morgan	0	0.0	0.0	17.9
Cumberland	0	0.0	0.0	58.7	Moultrie	0	0.0	0.0	38.3
DeKalb	0	0.0	0.0	6.5	Ogle	1	3.4	0.1	18.7
DeWitt	0	0.0	0.0	35.6	Peoria	1	0.8	0.0	4.3
Douglas	0	0.0	0.0	24.3	Perry	0	0.0	0.0	30.3
DuPage	1	0.2	0.0	0.8	Piatt	0	0.0	0.0	42.0
Edgar	0	0.0	0.0	34.9	Pike	0	0.0	0.0	39.2
Edwards	0	0.0	0.0	92.5	Pope	0	0.0	0.0	230.6
Effingham	0	0.0	0.0	16.0	Pulaski	0	0.0	0.0	72.6
Fayette	0	0.0	0.0	30.0	Putnam	0	0.0	0.0	113.9
Ford	0	0.0	0.0	42.6	Randolph	0	0.0	0.0	19.3
Franklin	0	0.0	0.0	15.5	Richland	0	0.0	0.0	38.4
Fulton	0	0.0	0.0	18.0	Rock Island	3	3.1	0.6	9.0
Gallatin	0	0.0	0.0	105.4	St. Clair	6	3.3	1.2	7.1
Greene	0	0.0	0.0	42.6	Saline	0	0.0	0.0	24.1
Grundy	0	0.0	0.0	14.4	Sangamon	1	0.8	0.0	4.4
Hamilton	0	0.0	0.0	81.8	Schuyler	0	0.0	0.0	97.1
Hancock	0	0.0	0.0	34.3	Scott	0	0.0	0.0	122.1
Hardin	0	0.0	0.0	164.0	Shelby	0	0.0	0.0	30.3
Henderson	0	0.0	0.0	103.9	Stark	0	0.0	0.0	102.5
Henry	0	0.0	0.0	12.9	Stephenson	1	3.4	0.1	18.9
Iroquois	0	0.0	0.0	20.8	Tazewell	1	1.3	0.0	7.0
Jackson	1	3.0	0.1	16.5	Union	0	0.0	0.0	35.1
Jasper	0	0.0	0.0	63.6	Vermilion	12	21.2	10.9	37.0
Jefferson	1	4.2	0.1	23.6	Wabash	0	0.0	0.0	52.9
Jersey	0	0.0	0.0	31.2	Warren	0	0.0	0.0	35.8
JoDaviess	0	0.0	0.0	31.1	Washington	1	11.8	0.3	65.8
Johnson	0	0.0	0.0	54.7	Wayne	0	0.0	0.0	36.6
Kane	4	1.0	0.3	2.6	White	0	0.0	0.0	44.8
Kankakee	1	1.3	0.0	7.3	Whiteside	3	8.0	1.6	23.4
Kendall	0	0.0	0.0	7.6	Will	4	0.9	0.3	2.4
Knox	0	0.0	0.0	11.8	Williamson	0	0.0	0.0	10.2
Lake	6	1.1	0.4	2.5	Winnebago	5	2.5	0.8	5.9
LaSalle	0	0.0	0.0	5.2	Woodford	0	0.0	0.0	17.2
Lawrence	0	0.0	0.0	44.9					

[1] Per 10,000 births

[2] 95% confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

OTHER ADVERSE PREGNANCY OUTCOMES

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.

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 which may cause blindness. 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.

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 as 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.

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 straight and parallel by 3 or 4 months of age. Strabismus can 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.

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.

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.

Table 26. Total Number and Incidence Rates of Other Adverse Pregnancy Outcomes in Newborn Infants, Illinois, 1999 – 2003

Defect	ICD-9-CM Codes	Cases	Rate[1]	95% CI[2]	
				Lower	Upper
Cerebral lipidoses	330.1	0	0.0	0.0	0.0
Chorioretinitis	363.20 - 363.22	6	0.1	0.0	0.1
Endocardial fibroelastosis	425.3	69	0.8	0.6	1.0
Intrauterine growth retardation	764.90 - 764.99	2658	29.1	28.0	30.2
Neurofibromatosis	237.70 - 237.72	3	0.0	0.0	0.1
Occlusion of cerebral arteries	434.00 - 434.91	68	0.7	0.6	0.9
Retinopathy of prematurity	362.21	2403	26.3	25.3	27.4
Strabismus	378.00 - 378.9	19	0.2	0.1	0.3

[1] Rate per 10,000 live births

[2] 95% confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

Table 27. Total Number and Incidence Rates of Other Adverse Pregnancy Outcomes in Newborn Infants, by County of Residence, 1999 – 2003

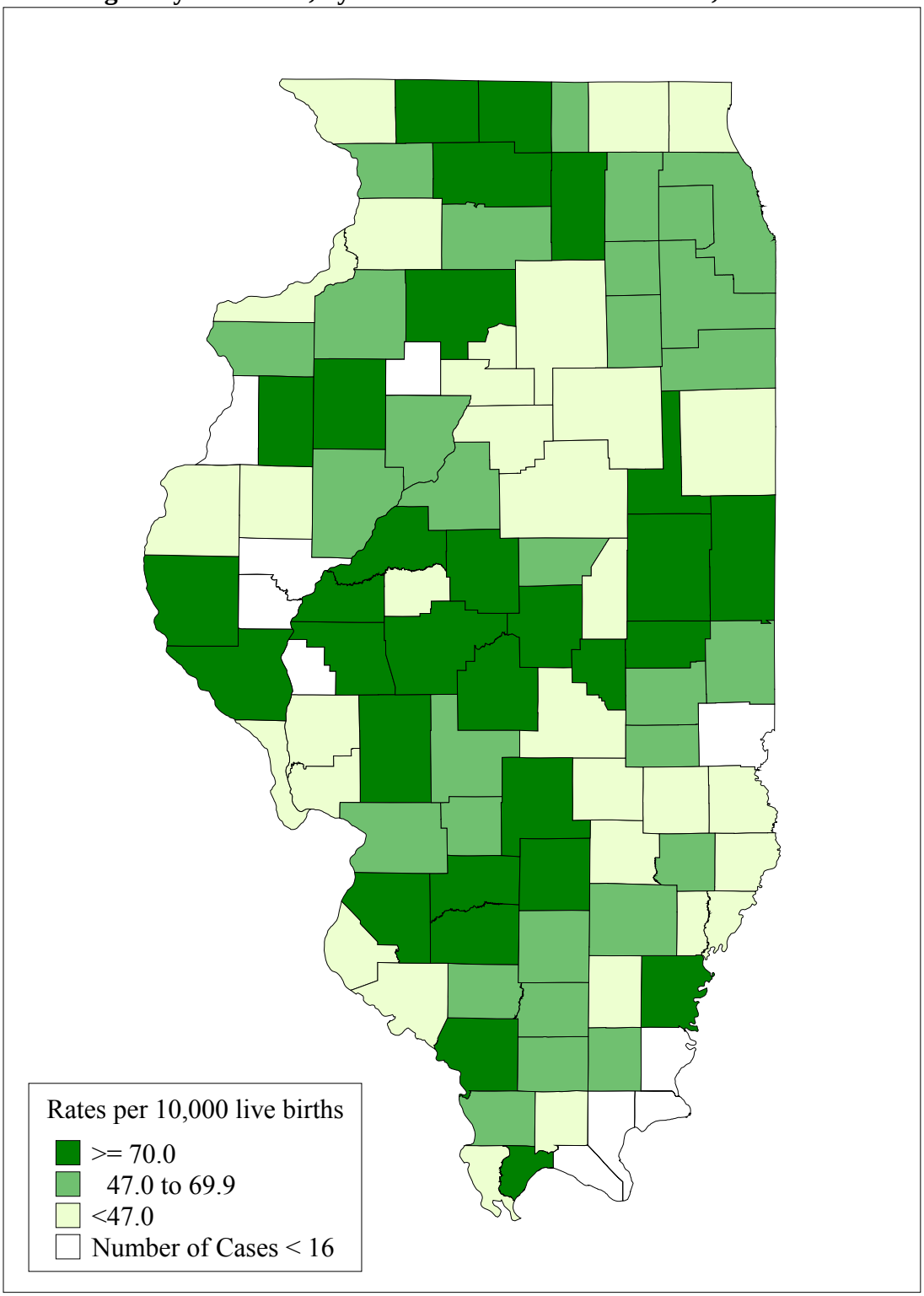
			95% CI[2]					95% CI[2]	
County	**Cases**	**Rate[1]**	**Lower**	**Upper**	**County**	**Cases**	**Rate[1]**	**Lower**	**Upper**
ILLINOIS	5,221	57.1	55.6	58.7	Lee	11	59.6	29.7	106.6
Adams	34	83.2	57.6	116.2	Livingston	7	27.5	11.1	56.6
Alexander	3	45.7	9.4	133.4	Logan	15	90.0	50.4	148.5
Bond	5	51.1	16.6	119.2	McDonough	5	33.7	11.0	78.7
Boone	17	54.7	31.9	87.6	McHenry	92	44.8	36.1	54.9
Brown	0	0.0	0.0	122.6	McLean	38	37.2	26.3	51.1
Bureau	18	84.0	49.8	132.8	Macon	61	83.9	64.2	107.8
Calhoun	1	39.5	1.0	220.2	Macoupin	26	92.9	60.7	136.2
Carroll	5	58.5	19.0	136.5	Madison	108	64.6	53.0	77.9
Cass	7	71.4	28.7	147.2	Marion	35	135.1	94.1	187.9
Champaign	91	80.7	65.0	99.0	Marshall	3	43.5	9.0	127.2
Christian	20	100.8	61.6	155.7	Mason	9	96.8	44.3	183.7
Clark	0	0.0	0.0	39.6	Massac	0	0.0	0.0	38.5
Clay	3	33.4	6.9	97.6	Menard	2	28.9	3.5	104.6
Clinton	17	85.9	50.1	137.6	Mercer	5	52.5	17.1	122.6
Coles	18	62.0	36.7	97.9	Monroe	3	17.1	3.5	50.0
Cook	2,325	55.6	53.4	57.9	Montgomery	9	53.0	24.2	100.6
Crawford	3	29.1	6.0	85.0	Morgan	27	130.9	86.2	190.4
Cumberland	3	47.8	9.9	139.6	Moultrie	10	104.0	49.8	191.2
DeKalb	41	72.3	51.9	98.1	Ogle	22	74.0	46.4	112.1
DeWitt	5	48.3	15.7	112.7	Peoria	91	69.7	56.1	85.6
Douglas	11	72.4	36.1	129.5	Perry	6	49.3	18.1	107.2
DuPage	363	55.0	49.4	60.9	Piatt	4	45.5	12.4	116.5
Edgar	5	47.3	15.3	110.3	Pike	10	106.2	50.9	195.2
Edwards	1	25.1	0.6	139.6	Pope	0	0.0	0.0	230.6
Effingham	9	39.0	17.9	74.1	Pulaski	4	78.7	21.5	201.6
Fayette	11	89.4	44.6	159.9	Putnam	1	30.9	0.8	172.0
Ford	10	115.5	55.4	212.4	Randolph	5	26.2	8.5	61.2
Franklin	16	67.4	38.5	109.4	Richland	5	52.0	16.9	121.4
Fulton	10	48.8	23.4	89.7	Rock Island	43	44.1	31.9	59.5
Gallatin	0	0.0	0.0	105.4	St. Clair	170	92.4	79.0	107.3
Greene	4	46.2	12.6	118.3	Saline	10	65.4	31.3	120.2
Grundy	12	47.0	24.3	82.1	Sangamon	105	82.8	67.8	100.3
Hamilton	1	22.2	0.6	123.5	Schuyler	0	0.0	0.0	97.1
Hancock	4	37.1	10.1	95.1	Scott	0	0.0	0.0	122.1
Hardin	0	0.0	0.0	164.0	Shelby	4	32.8	8.9	84.1
Henderson	0	0.0	0.0	103.9	Stark	0	0.0	0.0	102.5
Henry	18	63.1	37.4	99.7	Stephenson	22	74.7	46.8	113.1
Iroquois	8	45.0	19.4	88.8	Tazewell	47	59.3	43.6	78.9
Jackson	24	71.2	45.6	106.0	Union	5	47.6	15.4	111.0
Jasper	1	17.2	0.4	96.1	Vermilion	46	81.1	59.4	108.2
Jefferson	15	63.6	35.6	104.9	Wabash	2	28.7	3.5	103.7
Jersey	4	33.9	9.2	86.7	Warren	9	87.5	40.0	166.0
JoDaviess	4	33.7	9.2	86.2	Washington	6	70.8	26.0	154.2
Johnson	1	14.8	0.4	82.5	Wayne	6	59.6	21.9	129.7
Kane	188	47.1	40.6	54.3	White	11	133.7	66.7	239.1
Kankakee	38	49.6	35.1	68.0	Whiteside	15	40.0	22.4	65.9
Kendall	33	67.8	46.7	95.2	Will	299	69.3	61.7	77.6
Knox	25	80.2	51.9	118.4	Williamson	20	55.1	33.7	85.1
Lake	165	31.3	26.7	36.5	Winnebago	155	78.1	66.2	91.4
LaSalle	28	39.7	26.4	57.3	Woodford	6	28.0	10.3	60.9
Lawrence	1	12.2	0.3	67.9					

[1] Per 10,000 births

[2] 95% confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

Figure 15. Map of Incidence Rates for Newborn Infants with Other Adverse Pregnancy Outcomes, by Selected Counties of Residence, 1999 – 2003



Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, August 2005

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