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Illinois Department of Public Health

Birth Defects and Other Adverse Pregnancy Outcomes in Illinois 2005-2009

A Report on County-Specific Prevalence

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BIRTH DEFECTS AND OTHER ADVERSE PREGNANCY OUTCOMES IN ILLINOIS 2005 – 2009

A REPORT ON COUNTY-SPECIFIC PREVALENCE

Illinois Department of Public Health
Division of Epidemiologic Studies

October 2013

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BIRTH DEFECTS AND OTHER ADVERSE PREGNANCY OUTCOMES
IN ILLINOIS, 2005 – 2009
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TABLE OF CONTENTS

INDEX OF TABLES

INDEX OF FIGURES

Conditions in Newborn Infants for Selected Counties of Residence, 2005-2009

INTRODUCTION

The Illinois Department of Public Health (the Department) records adverse pregnancy outcomes in infants with congenital anomalies (birth defects) and other serious neonatal conditions (listed in Table 1). Each year in Illinois, the Department'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 rates of the different neonatal conditions that make up the APORS case definition for 2005 – 2009. Since 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 Reported Infants Meeting APORS Case Criteria, 2005 – 2009

Infants	5-Year Total	Annual Average	Rate[1]	% APORS Cases
Total APORS Cases	63,705	12,741.0	717.7	100.0
Birth Defects	38,709	7,741.8	436.1	60.8
Very Low Birth Weight	17,597	3,519.4	198.3	27.6
Positive for Controlled Substances	7,649	1,529.8	86.2	12.0
Fetal Deaths	5,419	1,083.8	61.1	8.5
Died During Newborn Hospitalization	3,747	749.4	42.2	5.9
Intrauterine Growth Retardation	3,594	718.8	40.5	5.6
Congenital Infections	3,527	705.4	39.7	5.5
Retinopathy of Prematurity	2,360	472.0	26.6	3.7
Endocrine, Metabolic or Immune Disorder	550	110.0	6.2	0.8
Blood Disorder	413	82.6	4.7	0.6
Infant Exposed to Alcohol	201	40.2	2.3	0.3

[1] Rate per 10,000 live births

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

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 with adverse pregnancy outcomes

born to Illinois women. (Perinatal centers in St. Louis voluntarily participate.) APORS is considered a passive surveillance system because reports are sent to the Department 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 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, death before discharge, a diabetic mother or 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; these birth defects are included in this report. 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 who were unreported by the hospitals. The Division of Vital Records also provides information about fetal deaths from the death certificates.

APORS staff believes that the prevalence of infants prenatally exposed to controlled substances is subject to testing bias (Fornoff *et al.*) It is important that these infants and their families receive follow-up services, so prenatal drug exposure is still part of APORS case definition. However, since the results are not representative of Illinois newborns, further data is not presented.

This report includes two sections. The first describes the county-specific prevalence 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 prevalence 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 Department's 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, 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. 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 at their confidence intervals as well as their values. 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 be "significantly different," 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 ESRI® ArcMap™ 10.0. The categories were determined using natural break-points in the data. The maps are used to create a visual representation of birth defect prevalence 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 2010, making up more than 20 percent of infant deaths (U.S.Centers for Disease Control and Prevention). 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 or 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.

Between 2005 and 2009, more than 21,000 major birth defects were identified in Illinois newborns and were reported to, or identified by, APORS – a rate of 236.9 per 10,000 live births. In Illinois, heart and circulatory system defects are the most commonly identified; 45.4 percent of all reported major birth defects are heart or circulatory defects.

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

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

CENTRAL NERVOUS SYSTEM DEFECTS

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

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

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

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 have developmental delays after surgery to treat the defect. It is not collected in the presence of spina bifida or anencephaly because it is caused by these conditions, and is not an independent birth defect.

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

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. It is not collected in the presence of anencephaly because they are part of a continuum of neural tube defects.

Table 2. Total Number and Prevalence Rates of Major Central Nervous System Defects in Newborn Infants, Illinois, 2005 – 2009

Defect	ICD-9-CM Codes	Number	Rate	95% CI
Anencephalus	740.0-740.1	126	1.4	(1.2, 1.7)
Spina bifida[1]	741.00-741.93	244	2.7	(2.4, 3.1)
Encephalocele	742.0	65	0.7	(0.6, 0.9)
Microcephalus	742.1	413	4.7	(4.2, 5.1)
Hydrocephalus[2]	742.3	677	7.6	(7.1, 8.2)

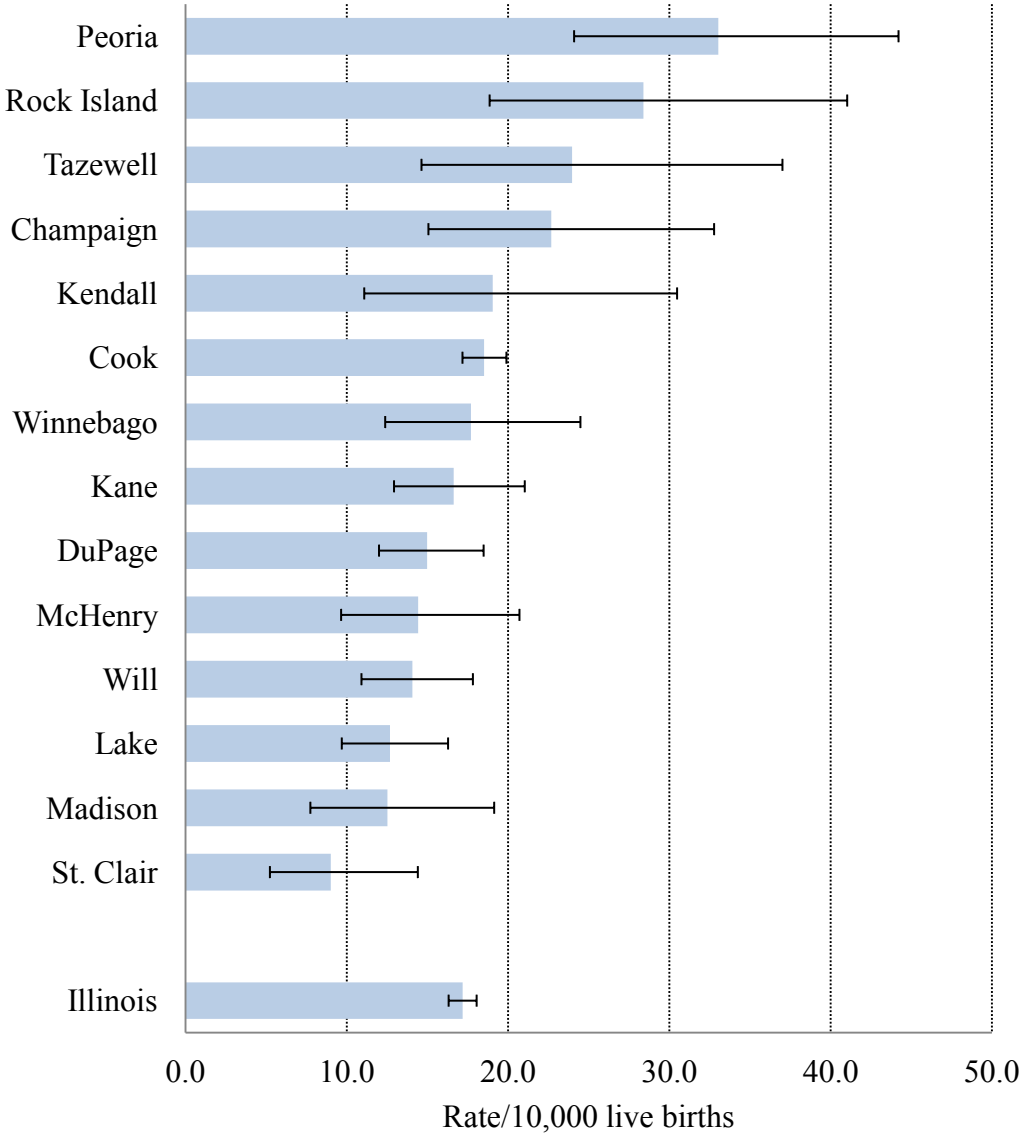
[1] Includes only spina bifida without anencephaly

[2] Includes only hydrocephaly without spina bifida or anencephaly

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

The 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.

Figure 1. Prevalence Rates[1] and 95 Percent Confidence Intervals for Major Central Nervous System Defects in Newborn Infants by Selected Counties of Residence,[2] 2005 – 2009



[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, May 2013

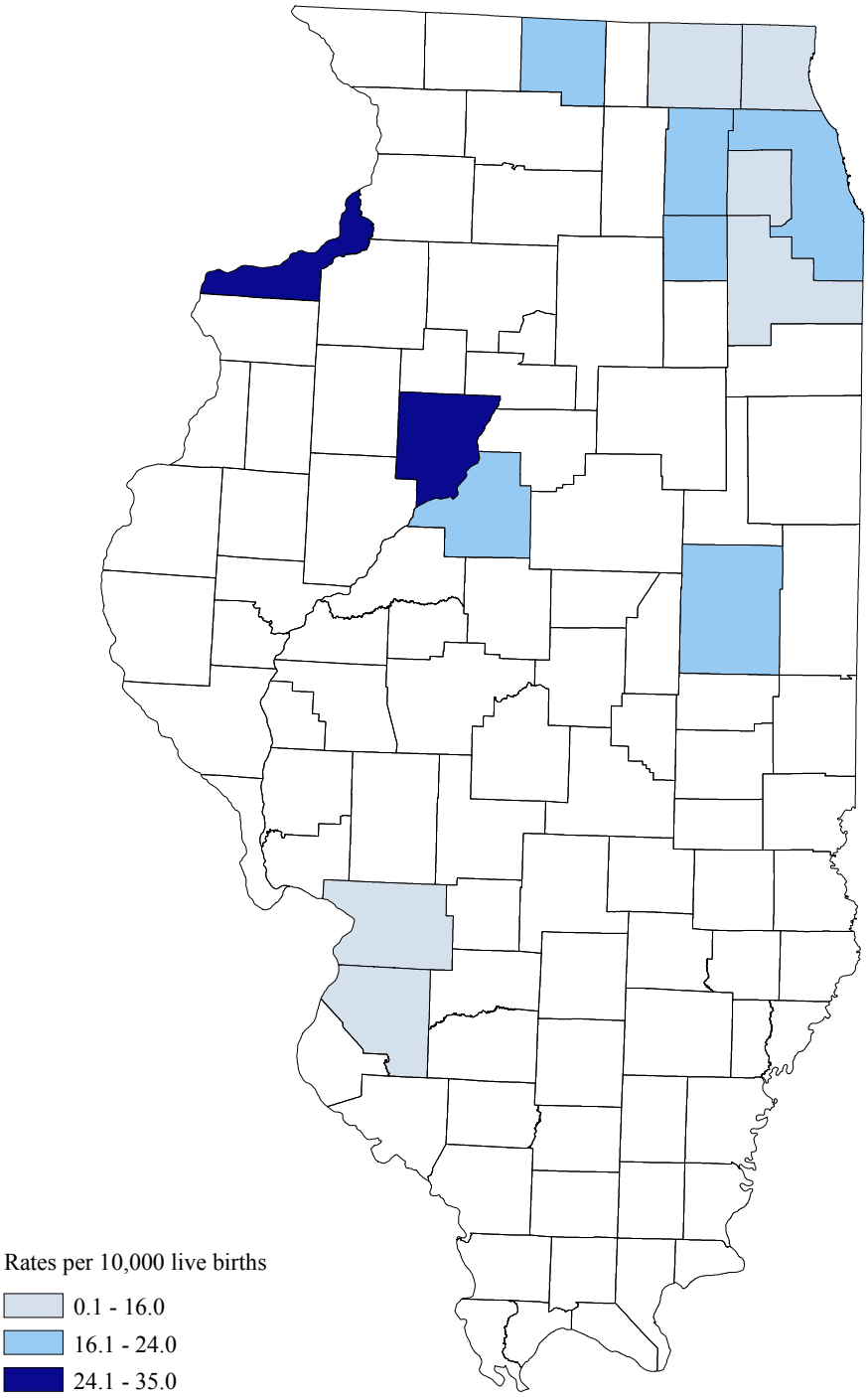
Table 3. Total Number and Prevalence Rates of Major Central Nervous System Defects in Newborn Infants by County of Residence, 2005 – 2009

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]	1,525	17.2	16.3	18.1	Lee	0	0.0	0.0	18.9
Adams	5	11.9	3.9	27.8	Livingston	8	32.0	13.8	63.1
Alexander	0	0.0	0.0	61.1	Logan	4	25.1	6.8	64.3
Bond	0	0.0	0.0	38.4	McDonough	6	40.9	15.0	89.0
Boone	8	22.8	9.8	44.8	McHenry	29	14.4	9.7	20.7
Brown	0	0.0	0.0	123.0	McLean	15	13.7	7.7	22.6
Bureau	8	39.9	17.2	78.7	Macon	13	18.2	9.7	31.2
Calhoun	0	0.0	0.0	134.6	Macoupin	6	22.4	8.2	48.7
Carroll	1	13.7	0.3	76.5	Madison	21	12.5	7.8	19.2
Cass	4	42.8	11.7	109.5	Marion	5	18.9	6.1	44.1
Champaign	28	22.7	15.1	32.8	Marshall	1	14.6	0.4	81.6
Christian	7	33.8	13.6	69.6	Mason	2	25.6	3.1	92.6
Clark	1	11.4	0.3	63.2	Massac	1	10.2	0.3	56.8
Clay	0	0.0	0.0	43.2	Menard	0	0.0	0.0	55.3
Clinton	2	9.5	1.2	34.4	Mercer	0	0.0	0.0	43.0
Coles	3	10.6	2.2	31.0	Monroe	0	0.0	0.0	19.9
Cook	723	18.5	17.2	19.9	Montgomery	4	24.2	6.6	62.0
Crawford	1	10.5	0.3	58.5	Morgan	2	10.4	1.3	37.5
Cumberland	1	14.9	0.4	82.8	Moultrie	0	0.0	0.0	42.5
DeKalb	10	15.5	7.4	28.4	Ogle	2	6.6	0.8	23.9
DeWitt	1	10.5	0.3	58.5	Peoria	45	33.1	24.1	44.2
Douglas	4	28.7	7.8	73.4	Perry	1	8.8	0.2	49.1
DuPage	87	15.0	12.0	18.5	Piatt	4	44.3	12.1	113.4
Edgar	4	39.6	10.8	101.5	Pike	2	20.2	2.4	73.1
Edwards	0	0.0	0.0	108.5	Pope	0	0.0	0.0	212.0
Effingham	0	0.0	0.0	16.1	Pulaski	1	24.3	0.6	135.2
Fayette	3	24.0	4.9	70.0	Putnam	1	34.1	0.9	190.2
Ford	2	25.1	3.0	90.5	Randolph	2	11.0	1.3	39.7
Franklin	4	16.9	4.6	43.3	Richland	3	32.7	6.7	95.6
Fulton	1	5.2	0.1	29.1	Rock Island	28	28.4	18.9	41.0
Gallatin	0	0.0	0.0	117.9	St. Clair	17	9.0	5.2	14.4
Greene	4	49.4	13.5	126.4	Saline	0	0.0	0.0	23.9
Grundy	6	17.0	6.2	36.9	Sangamon	15	12.0	6.7	19.8
Hamilton	0	0.0	0.0	82.7	Schuyler	1	25.8	0.7	144.0
Hancock	2	18.7	2.3	67.5	Scott	0	0.0	0.0	115.6
Hardin	0	0.0	0.0	158.3	Shelby	0	0.0	0.0	30.9
Henderson	0	0.0	0.0	114.9	Stark	1	34.0	0.9	189.5
Henry	8	28.2	12.2	55.5	Stephenson	4	14.7	4.0	37.5
Iroquois	1	6.1	0.2	34.1	Tazewell	20	24.0	14.6	37.0
Jackson	2	5.9	0.7	21.3	Union	0	0.0	0.0	34.8
Jasper	0	0.0	0.0	66.6	Vermilion	10	17.9	8.6	32.8
Jefferson	4	16.1	4.4	41.2	Wabash	0	0.0	0.0	51.7
Jersey	1	8.1	0.2	45.0	Warren	3	29.4	6.1	85.8
Jo Daviess	0	0.0	0.0	34.1	Washington	2	23.5	2.8	85.0
Johnson	0	0.0	0.0	63.7	Wayne	1	9.8	0.2	54.6
Kane	69	16.6	12.9	21.1	White	0	0.0	0.0	42.1
Kankakee	13	16.6	8.8	28.3	Whiteside	3	8.5	1.8	24.9
Kendall	17	19.0	11.1	30.5	Will	68	14.1	10.9	17.8
Knox	11	40.2	20.1	71.9	Williamson	2	5.2	0.6	18.7
Lake	61	12.7	9.7	16.3	Winnebago	36	17.7	12.4	24.5
LaSalle	14	20.9	11.4	35.1	Woodford	7	30.3	12.2	62.5
Lawrence	1	12.2	0.3	68.2					

[1] Per 10,000 births
[2] 95 percent confidence interval for rate
[3] The number for Illinois includes three cases for whom county of residence is unknown.

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

Figure 2. Map of Prevalence Rates for Major Central Nervous System Defects in Newborn Infants by Selected Counties of Residence, 2005 – 2009



Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

CARDIOVASCULAR SYSTEM DEFECTS

Cardiovascular system defects involve the heart and circulatory systems. They are the most common group of birth defects, with a rate of 183.6 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 prevalence 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 may 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 may 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 are 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 are surgically corrected.

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

Ebstein anomaly is a deformation or displacement of the tricuspid valve with the septal and posterior leaflets being attached to the wall of the right ventricle. Only disabling cases are corrected surgically.

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 or treated by transplantation. 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.

Total anomalous pulmonary venous return (TAPVR) occurs when all four pulmonary veins are abnormally connected to the heart. It results in poorly oxygenated blood being pumped to the body, and must be surgically corrected.

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 Prevalence Rates of Major Cardiovascular System Defects in Newborn Infants, Illinois, 2005 – 2009

Defect	ICD-9-CM Codes	Cases	Rate	95% CI
Common truncus	745.0	35	0.4	(0.3, 0.5)
Transposition of great arteries	745.1x	247	2.8	(2.4, 3.2)
Tetralogy of Fallot	745.2	273	3.1	(2.7, 3.5)
Ventricular septal defect	745.4	3,264	36.8	(35.5, 38.1)
Atrial septal defect	745.5	2,179	24.5	(23.5, 25.6)
Endocardial cushion defect	745.6x	392	4.4	(4.0, 4.9)
Pulmonary valve atresia and stenosis	746.01, 746.02	248	2.8	(2.5, 3.2)
Tricuspid valve atresia/stenosis	746.0	133	1.5	(1.3, 1.8)
Ebstein anomaly	746.2	46	0.5	(0.4, 0.7)
Aortic valve stenosis	746.3	101	1.1	(0.9, 1.4)
Hypoplastic left heart syndrome	746.7	166	1.9	(1.6, 2.2)
Patent ductus arteriosus	747.0	1,890	21.3	(20.3, 22.3)
Coarctation of aorta	747.10	240	2.7	(2.4, 3.1)
Total anomalous pulmonary venous return (TAPVR)	747.41	56	0.4	(0.5, 0.8)

[1] Rate per 10,000 live births
[2] 95 percent confidence interval for rate
Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

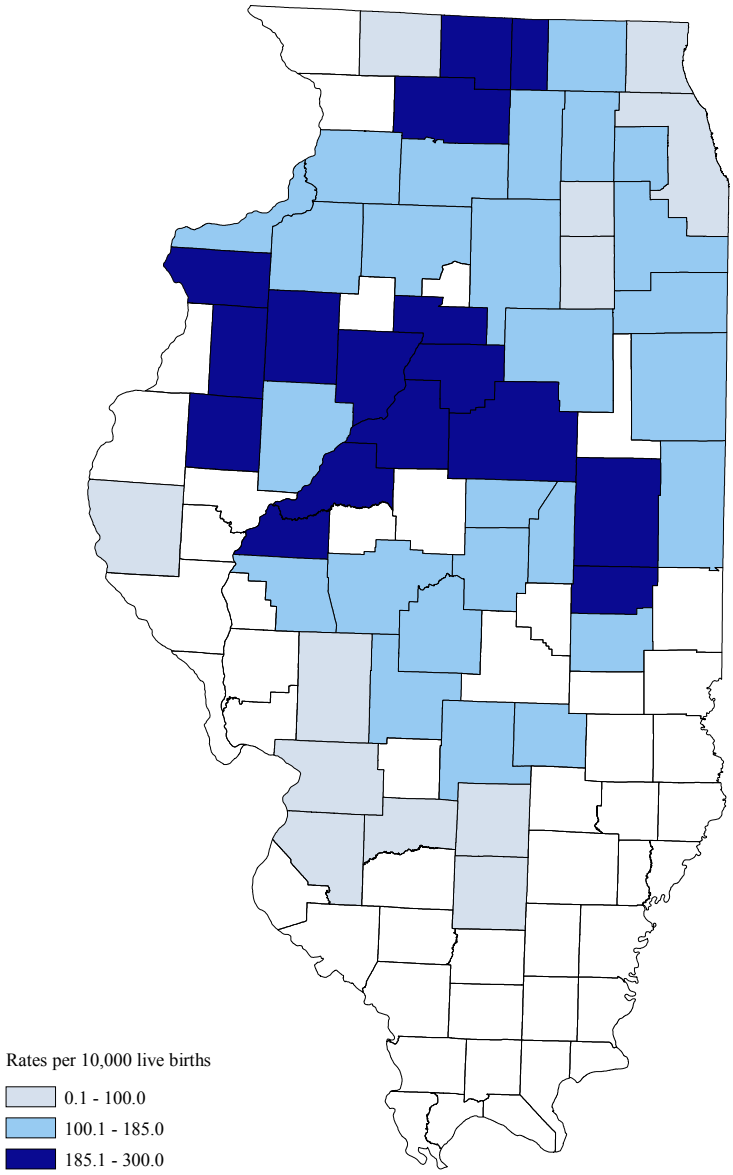
A number of factors impact the ascertained prevalence rate of congenital cardiovascular defects in newborn infants:

- 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 the identification of minor heart defects that are asymptomatic or that would resolve without treatment.
- 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 arteriosus, some ventricular septal and atrial septal defects are not included if they occur in babies with a birth weight of 2,500 grams or less since they are part of normal fetal circulation and are therefore expected in these premature infants.

Figure 3. Map of Prevalence Rates for Major Cardiovascular System Defects in Newborn Infants by Selected Counties of Residence, 2005 – 2009



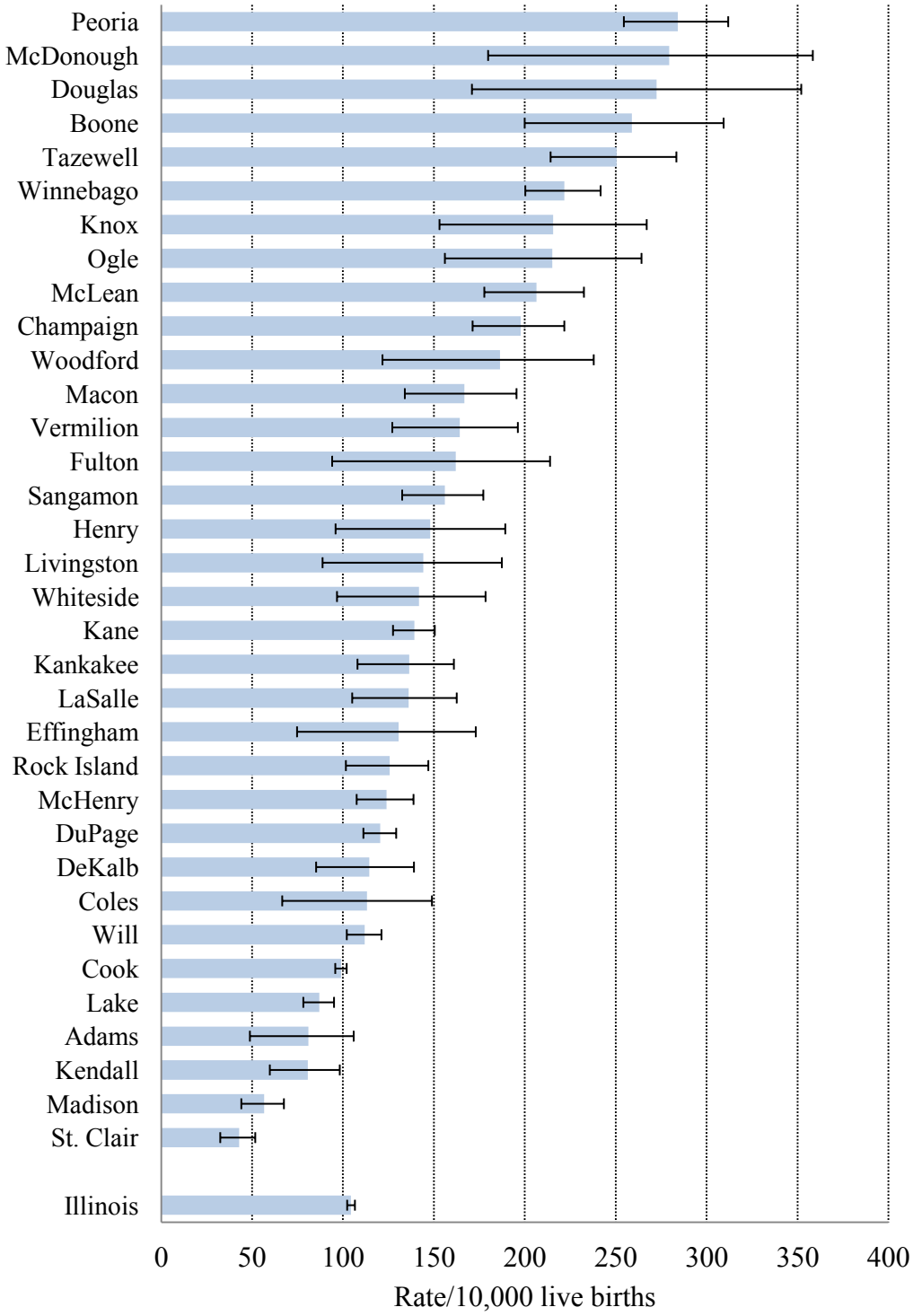
Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

Table 5. Total Number and Prevalence Rates of Major Cardiovascular System Defects in Newborn Infants by County of Residence, 2005 – 2009

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]	9,270	104.4	102.3	106.6	Lee	22	112.6	70.6	170.5
Adams	34	81.0	56.1	113.1	Livingston	36	144.2	101.0	199.6
Alexander	7	115.9	46.6	238.8	Logan	11	69.1	34.5	123.6
Bond	5	52.1	16.9	121.5	McDonough	41	279.5	200.6	379.1
Boone	91	258.9	208.4	317.9	McHenry	249	123.9	109.0	140.3
Brown	1	33.3	0.8	185.7	McLean	226	206.5	180.4	235.2
Bureau	27	134.7	88.8	196.0	Macon	119	166.8	138.2	199.6
Calhoun	5	182.5	59.3	425.9	Macoupin	20	74.7	45.6	115.3
Carroll	6	82.4	30.2	179.4	Madison	95	56.7	45.9	69.3
Cass	20	213.9	130.7	330.4	Marion	21	79.4	49.1	121.4
Champaign	244	197.7	173.7	224.1	Marshall	16	234.3	133.9	380.4
Christian	22	106.2	66.5	160.8	Mason	19	243.6	146.7	380.4
Clark	0	0.0	0.0	41.9	Massac	0	0.0	0.0	37.6
Clay	4	46.9	12.8	120.1	Menard	11	164.9	82.3	295.1
Clinton	16	76.2	43.5	123.7	Mercer	16	186.7	106.7	303.2
Coles	32	113.2	77.4	159.7	Monroe	2	10.8	1.3	39.0
Cook	3,863	98.9	95.8	102.1	Montgomery	17	103.0	60.0	164.9
Crawford	7	73.5	29.5	151.3	Morgan	25	129.9	84.0	191.7
Cumberland	2	29.7	3.6	107.4	Moultrie	3	34.6	7.1	101.1
DeKalb	74	114.4	89.9	143.7	Ogle	65	215.1	166.0	274.1
DeWitt	16	168.1	96.1	272.9	Peoria	387	284.2	256.6	314.0
Douglas	38	272.4	192.8	373.9	Perry	4	35.3	9.6	90.3
DuPage	699	120.5	111.7	129.8	Piatt	16	177.2	101.3	287.7
Edgar	11	109.0	54.4	195.1	Pike	3	30.3	6.3	88.6
Edwards	3	88.2	18.2	257.9	Pope	0	0.0	0.0	212.0
Effingham	30	130.5	88.1	186.4	Pulaski	1	24.3	0.6	135.2
Fayette	19	151.8	91.4	237.0	Putnam	4	136.5	37.2	349.5
Ford	12	150.4	77.7	262.7	Randolph	9	49.4	22.6	93.8
Franklin	6	25.4	9.3	55.3	Richland	6	65.4	24.0	142.4
Fulton	31	162.0	110.0	229.9	Rock Island	124	125.8	104.6	149.9
Gallatin	2	63.9	7.7	230.8	St. Clair	81	42.9	34.1	53.3
Greene	11	135.8	67.8	243.0	Saline	1	6.5	0.2	36.2
Grundy	22	62.2	39.0	94.1	Sangamon	195	156.0	134.9	179.6
Hamilton	4	89.7	24.4	229.6	Schuyler	2	51.7	6.3	186.7
Hancock	12	112.0	57.9	195.7	Scott	4	125.4	34.2	321.1
Hardin	5	214.6	69.7	500.8	Shelby	6	50.3	18.5	109.6
Henderson	1	31.2	0.8	173.6	Stark	3	102.0	21.0	298.2
Henry	42	147.9	106.6	200.0	Stephenson	23	84.3	53.4	126.5
Iroquois	21	128.5	79.6	196.5	Tazewell	209	250.5	217.7	286.9
Jackson	8	23.6	10.2	46.6	Union	4	37.7	10.3	96.5
Jasper	2	36.1	4.4	130.4	Vermilion	92	164.3	132.5	201.5
Jefferson	18	72.4	42.9	114.5	Wabash	1	14.0	0.4	78.0
Jersey	7	56.5	22.7	116.5	Warren	22	215.3	134.9	325.9
Jo Daviess	4	37.0	10.1	94.7	Washington	3	35.3	7.3	103.1
Johnson	0	0.0	0.0	63.7	Wayne	3	29.4	6.1	86.0
Kane	578	139.3	128.2	151.2	White	0	0.0	0.0	42.1
Kankakee	107	136.4	111.8	164.8	Whiteside	50	141.8	105.3	187.0
Kendall	72	80.7	63.1	101.6	Will	541	111.9	102.7	121.8
Knox	59	215.6	164.1	278.1	Williamson	9	23.3	10.7	44.2
Lake	418	86.9	78.8	95.7	Winnebago	451	221.7	201.7	243.1
LaSalle	91	136.0	109.5	167.0	Woodford	43	186.4	134.9	251.1
Lawrence	5	61.2	19.9	142.8					

[1] Per 10,000 births
[2] 95 percent confidence interval for rate
[3] The number of Illinois includes five cases for whom county of residence was unknown.
Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

Figure 4. Prevalence Rates[1] and 95 Percent Confidence Intervals for Major Cardiovascular System Defects in Newborn Infants by Selected Counties of Residence,[2] 2005 –2009



[1] Rates per 10,000 live births
[2] Only counties with 30 or more cases are presented.
Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

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. Table 6 gives the five-year prevalence 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 6. Total Number and Prevalence Rates of Major Alimentary Tract Defects in Newborn Infants, Illinois, 2005 – 2009

Defect	ICD-9-CM Codes	Cases	Rate	95% CI
Cleft palate without cleft lip	749.0x	428	4.8	(4.4, 5.3)
Cleft lip	749.10-749.25	780	8.8	(8.2, 9.4)
Choanal atresia	748.0	88	1.0	(0.8, 1.2)
Esophageal atresia/ tracheosophageal fistula	750.3	185	2.1	(1.8, 2.4)
Rectal, anal, large intestinal atresia/stenosis	751.2	317	3.6	(3.2, 4.0)
Pyloric stenosis	750.5	40	0.5	(0.3, 0.6)
Hirschsprung disease	751.3	91	1.0	(0.8, 1.3)
Biliary atresia	751.61	15	0.2	(0.1, 0.3)

[1] Rate per 10,000 live births
[2] 95 percent confidence interval for rate
Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

Table 7. Total Number and Prevalence Rates of Major Alimentary Tract Defects in Newborn Infants by County of Residence, 2005 – 2009

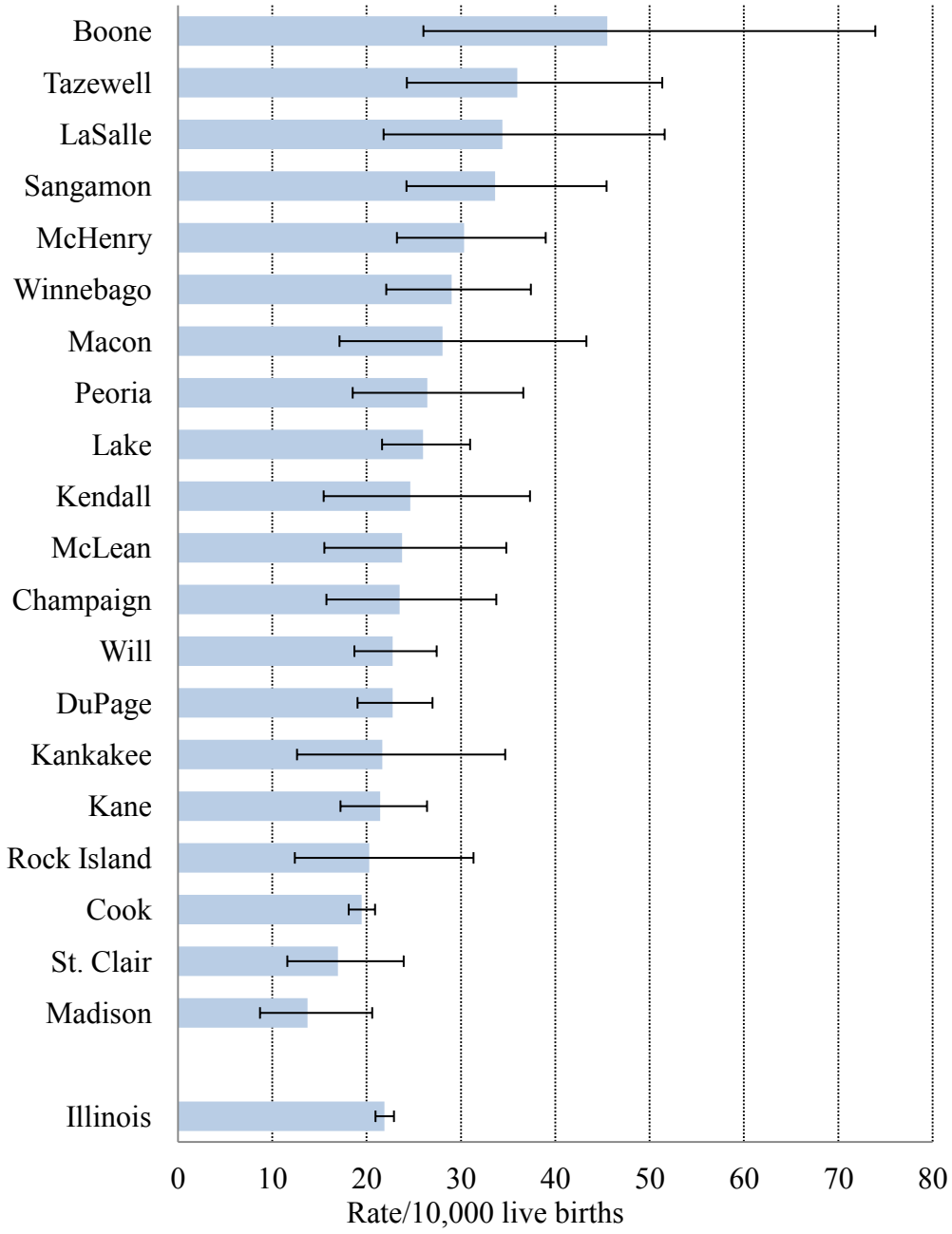
			95% CI[2]					95% CI[2]	
County	Cases	Rate[1]	Lower	Upper	County	Cases	Rate[1]	Lower	Upper
ILLINOIS	1,944	21.9	20.9	22.9	Lee	7	35.8	14.4	73.8
Adams	13	31.0	16.5	52.9	Livingston	7	28.0	11.3	57.8
Alexander	1	16.6	0.4	92.2	Logan	8	50.3	21.7	99.0
Bond	5	52.1	16.9	121.5	McDonough	1	6.8	0.2	38.0
Boone	16	45.5	26.0	73.9	McHenry	61	30.3	23.2	39.0
Brown	0	0.0	0.0	123.0	McLean	26	23.8	15.5	34.8
Bureau	4	20.0	5.4	51.1	Macon	20	28.0	17.1	43.3
Calhoun	2	73.0	8.8	263.7	Macoupin	7	26.1	10.5	53.8
Carroll	0	0.0	0.0	50.7	Madison	23	13.7	8.7	20.6
Cass	4	42.8	11.7	109.5	Marion	6	22.7	8.3	49.4
Champaign	29	23.5	15.7	33.7	Marshall	0	0.0	0.0	54.0
Christian	4	19.3	5.3	49.4	Mason	2	25.6	3.1	92.6
Clark	1	11.4	0.3	63.2	Massac	1	10.2	0.3	56.8
Clay	4	46.9	12.8	120.1	Menard	2	30.0	3.6	108.3
Clinton	3	14.3	2.9	41.7	Mercer	1	11.7	0.3	65.0
Coles	5	17.7	5.7	41.3	Monroe	1	5.4	0.1	30.1
Cook	760	19.5	18.1	20.9	Montgomery	2	12.1	1.5	43.8
Crawford	2	21.0	2.5	75.8	Morgan	3	15.6	3.2	45.5
Cumberland	0	0.0	0.0	54.8	Moultrie	2	23.1	2.8	83.3
DeKalb	14	21.7	11.8	36.3	Ogle	11	36.4	18.2	65.1
DeWitt	2	21.0	2.5	75.9	Peoria	36	26.4	18.5	36.6
Douglas	3	21.5	4.4	62.8	Perry	2	17.6	2.1	63.7
DuPage	132	22.8	19.0	27.0	Piatt	1	11.1	0.3	61.7
Edgar	0	0.0	0.0	36.6	Pike	4	40.4	11.0	103.6
Edwards	0	0.0	0.0	108.5	Pope	1	57.5	1.5	320.2
Effingham	5	21.8	7.1	50.8	Pulaski	2	48.5	5.9	175.4
Fayette	6	47.9	17.6	104.3	Putnam	0	0.0	0.0	125.9
Ford	1	12.5	0.3	69.8	Randolph	3	16.5	3.4	48.1
Franklin	1	4.2	0.1	23.6	Richland	6	65.4	24.0	142.4
Fulton	2	10.4	1.3	37.7	Rock Island	20	20.3	12.4	31.3
Gallatin	1	31.9	0.8	178.0	St. Clair	32	17.0	11.6	23.9
Greene	4	49.4	13.5	126.4	Saline	3	19.5	4.0	56.9
Grundy	8	22.6	9.8	44.6	Sangamon	42	33.6	24.2	45.4
Hamilton	0	0.0	0.0	82.7	Schuyler	1	25.8	0.7	144.0
Hancock	1	9.3	0.2	52.0	Scott	0	0.0	0.0	115.6
Hardin	0	0.0	0.0	158.3	Shelby	0	0.0	0.0	30.9
Henderson	0	0.0	0.0	114.9	Stark	3	102.0	21.0	298.2
Henry	6	21.1	7.8	46.0	Stephenson	5	18.3	5.9	42.8
Iroquois	5	30.6	9.9	71.4	Tazewell	30	36.0	24.3	51.3
Jackson	3	8.9	1.8	25.9	Union	1	9.4	0.2	52.5
Jasper	2	36.1	4.4	130.4	Vermilion	13	23.2	12.4	39.7
Jefferson	2	8.0	1.0	29.1	Wabash	0	0.0	0.0	51.7
Jersey	1	8.1	0.2	45.0	Warren	1	9.8	0.2	54.5
Jo Daviess	0	0.0	0.0	34.1	Washington	2	23.5	2.8	85.0
Johnson	1	17.3	0.4	96.2	Wayne	2	19.6	2.4	70.8
Kane	89	21.5	17.2	26.4	White	0	0.0	0.0	42.1
Kankakee	17	21.7	12.6	34.7	Whiteside	13	36.9	19.6	63.1
Kendall	22	24.6	15.4	37.3	Will	110	22.8	18.7	27.4
Knox	7	25.6	10.3	52.7	Williamson	6	15.5	5.7	33.8
Lake	125	26.0	21.6	31.0	Winnebago	59	29.0	22.1	37.4
LaSalle	23	34.4	21.8	51.6	Woodford	12	52.0	26.9	90.9
Lawrence	2	24.5	3.0	88.4					

[1] Per 10,000 births

[2] 95 percent confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

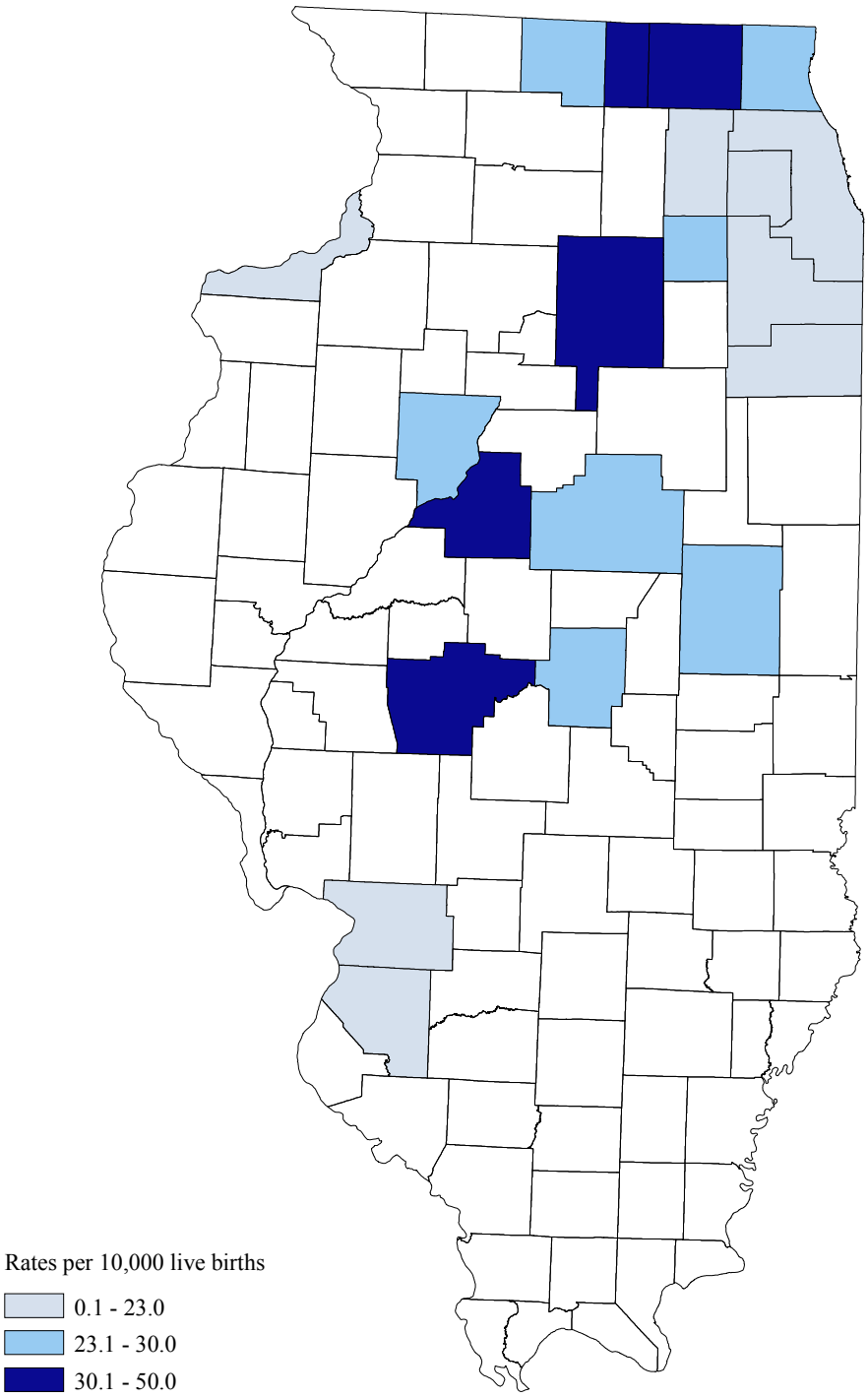
Figure 5. Prevalence Rates[1] and 95 Percent Confidence Intervals for Major Alimentary Tract Defects in Newborn Infants by Selected Counties of Residence,[2] 2005 – 2009



[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, May 2013

Figure 6. Map of Prevalence Rates for Major Alimentary Tract Defects in Newborn Infants by Selected Counties of Residence, 2005 – 2009



Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

GENITOURINARY 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 8, which gives the five-year prevalence 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 underside 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 8. Total Number and Prevalence Rates of Major Genitourinary System Defects in Newborn Infants, Illinois, 2005 – 2009

Defect	ICD-9-CM Codes	Cases	Rate	95% CI
Renal agenesis/hypoplasia	753.0	375	4.2	(3.8, 4.7)
Bladder exstrophy	753.5	22	0.2	(0.2, 0.4)
Obstructive genitourinary defect	753.2, 753.6	2,496	28.1	(27.0, 29.2)
Hypospadias	752.61	2,234	25.2	(24.1, 26.2)
Epidspadias	752.62	90	1.0	(0.8, 1.2)

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

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

Table 9. Total Number and Prevalence Rates of Major Genitourinary System Defects in Newborn Infants by County of Residence, 2005 – 2009

			95% CI[2]					95% CI[2]	
County	Cases	Rate[1]	Lower	Upper	County	Cases	Rate[1]	Lower	Upper
ILLINOIS	5,217	58.8	57.2	60.4	Lee	12	61.4	31.7	107.3
Adams	24	57.2	36.6	85.0	Livingston	24	96.1	61.6	143.0
Alexander	1	16.6	0.4	92.2	Logan	13	81.7	43.5	139.6
Bond	3	31.3	6.4	91.3	McDonough	7	47.7	19.2	98.3
Boone	21	59.7	37.0	91.3	McHenry	101	50.2	40.9	61.1
Brown	3	100.0	20.6	292.2	McLean	82	74.9	59.6	93.0
Bureau	19	94.8	57.1	148.1	Macon	45	63.1	46.0	84.4
Calhoun	0	0.0	0.0	134.6	Macoupin	18	67.2	39.8	106.2
Carroll	1	13.7	0.3	76.5	Madison	83	49.5	39.4	61.4
Cass	5	53.5	17.4	124.8	Marion	18	68.1	40.3	107.6
Champaign	116	94.0	77.7	112.7	Marshall	7	102.5	41.2	211.2
Christian	12	57.9	29.9	101.2	Mason	12	153.8	79.5	268.7
Clark	3	34.1	7.0	99.5	Massac	3	30.6	6.3	89.4
Clay	1	11.7	0.3	65.3	Menard	6	90.0	33.0	195.8
Clinton	6	28.6	10.5	62.2	Mercer	3	35.0	7.2	102.3
Coles	13	46.0	24.5	78.6	Monroe	3	16.2	3.3	47.3
Cook	2,097	53.7	51.4	56.0	Montgomery	13	78.7	41.9	134.6
Crawford	5	52.5	17.0	122.4	Morgan	8	41.6	17.9	81.9
Cumberland	7	104.0	41.8	214.3	Moultrie	6	69.2	25.4	150.6
DeKalb	47	72.7	53.4	96.7	Ogle	29	96.0	64.3	137.8
DeWitt	7	73.5	29.6	151.5	Peoria	196	144.0	124.5	165.6
Douglas	14	100.4	54.9	168.4	Perry	6	52.9	19.4	115.2
DuPage	351	60.5	54.3	67.2	Piatt	6	66.4	24.4	144.6
Edgar	1	9.9	0.3	55.2	Pike	3	30.3	6.3	88.6
Edwards	0	0.0	0.0	108.5	Pope	0	0.0	0.0	212.0
Effingham	17	74.0	43.1	118.4	Pulaski	0	0.0	0.0	89.5
Fayette	8	63.9	27.6	125.9	Putnam	3	102.4	21.1	299.2
Ford	4	50.1	13.7	128.3	Randolph	15	82.3	46.1	135.8
Franklin	5	21.2	6.9	49.4	Richland	1	10.9	0.3	60.8
Fulton	19	99.3	59.8	155.0	Rock Island	49	49.7	36.8	65.7
Gallatin	0	0.0	0.0	117.9	St. Clair	79	41.8	33.1	52.2
Greene	8	98.8	42.6	194.6	Saline	5	32.4	10.5	75.7
Grundy	20	56.5	34.5	87.3	Sangamon	92	73.6	59.4	90.3
Hamilton	5	112.1	36.4	261.6	Schuyler	4	103.4	28.2	264.6
Hancock	15	140.1	78.4	231.0	Scott	0	0.0	0.0	115.6
Hardin	1	42.9	1.1	239.1	Shelby	8	67.1	29.0	132.2
Henderson	0	0.0	0.0	114.9	Stark	3	102.0	21.0	298.2
Henry	24	84.5	54.2	125.8	Stephenson	11	40.3	20.1	72.1
Iroquois	10	61.2	29.3	112.5	Tazewell	117	140.3	116.0	168.1
Jackson	8	23.6	10.2	46.6	Union	5	47.1	15.3	110.0
Jasper	4	72.2	19.7	184.9	Vermilion	37	66.1	46.5	91.1
Jefferson	8	32.2	13.9	63.4	Wabash	0	0.0	0.0	51.7
Jersey	2	16.2	2.0	58.4	Warren	11	107.6	53.7	192.6
Jo Daviess	0	0.0	0.0	34.1	Washington	7	82.4	33.1	169.7
Johnson	1	17.3	0.4	96.2	Wayne	0	0.0	0.0	36.2
Kane	221	53.3	46.5	60.8	White	1	11.4	0.3	63.6
Kankakee	34	43.3	30.0	60.6	Whiteside	26	73.8	48.2	108.1
Kendall	59	66.1	50.3	85.3	Will	268	55.4	49.0	62.5
Knox	32	116.9	80.0	165.1	Williamson	11	28.5	14.2	50.9
Lake	286	59.5	52.8	66.8	Winnebago	136	66.9	56.1	79.1
LaSalle	44	65.8	47.8	88.3	Woodford	30	130.0	87.7	185.6
Lawrence	1	12.2	0.3	68.2					

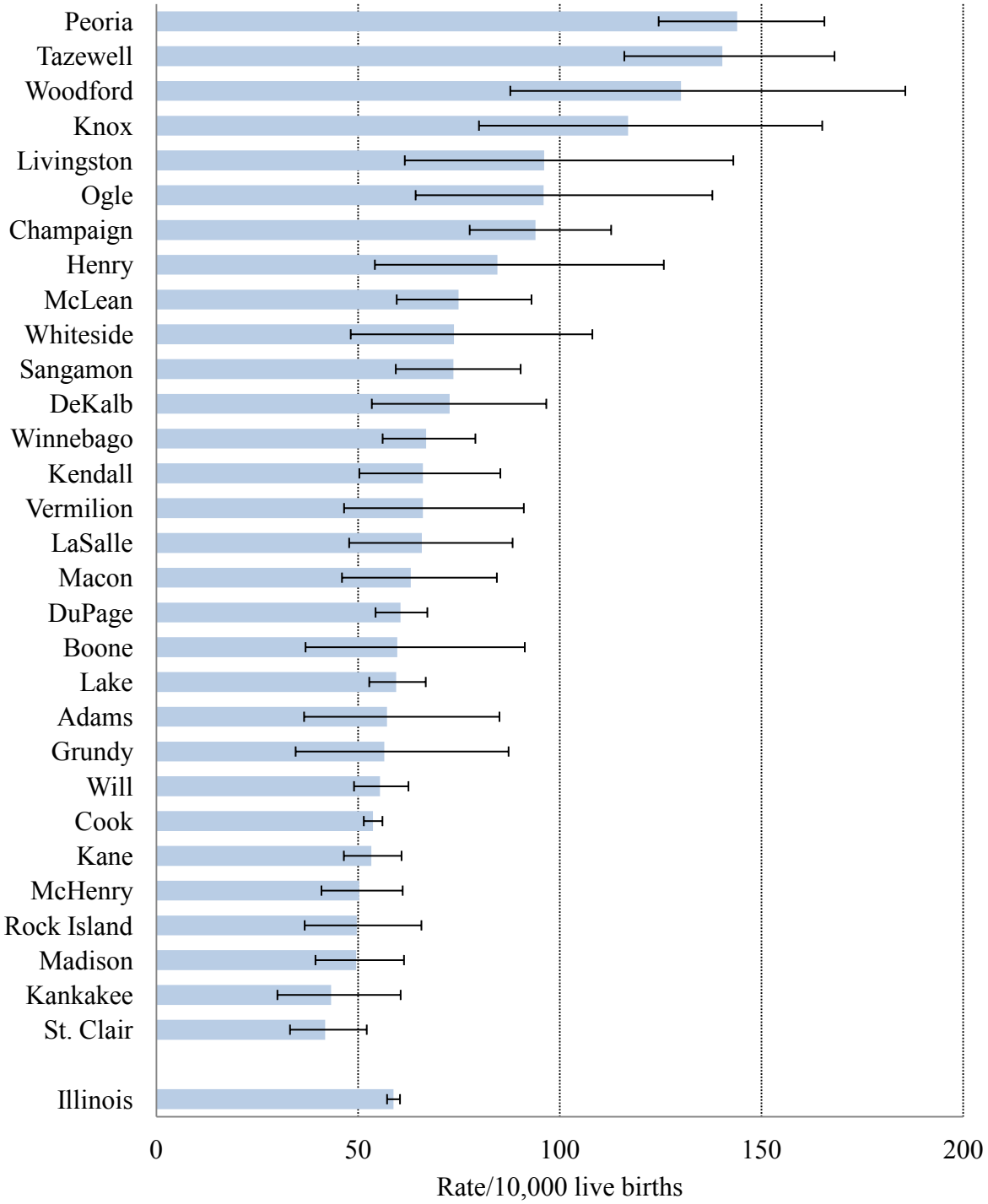
[1] Per 10,000 births

[2] 95 percent confidence interval for rate

[3] The number for Illinois includes one case for whom county of residence is missing.

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

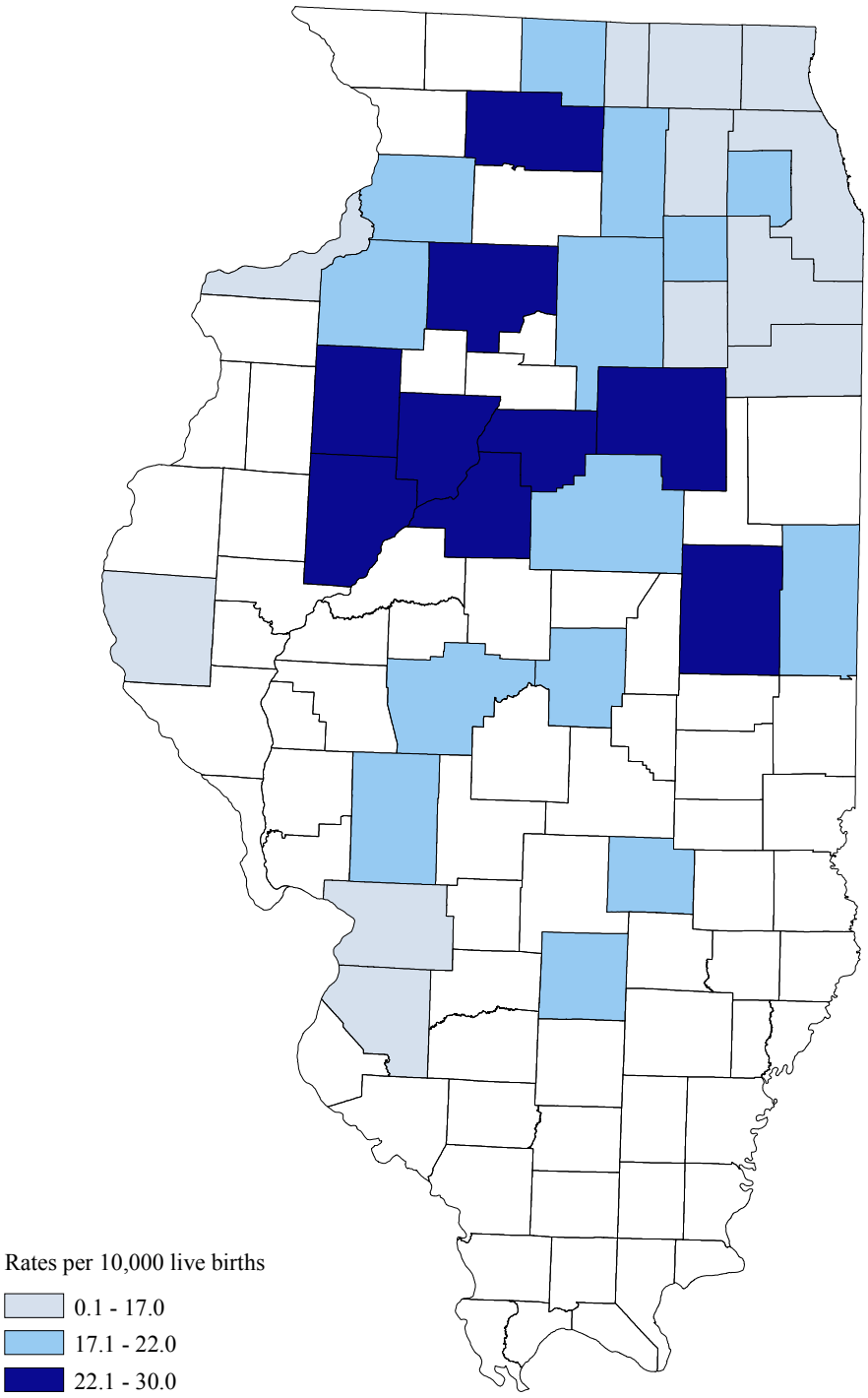
Figure 7. Prevalence Rates[1] and 95 Percent Confidence Intervals for Major Genitourinary Defects in Newborn Infants by Selected Counties of Residence,[2] 2005 – 2009



[1] Rates per 10,000 live births
[2] Only counties with 20 or more cases are presented.

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

Figure 8. Map of Prevalence Rates for Major Genitourinary Defects in Newborn Infants by Selected Counties of Residence, 2005 – 2009



Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

MUSCULOSKELETAL DEFECTS

These malformations make up a diverse group of defects that includes developmental dysplasia of the hip – a relatively common disorder – and several more rare and serious conditions. A description of each defect follows, together with Table 10, which gives the five-year prevalence 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 10. Total Number and Prevalence Rates of Major Musculoskeletal Defects in Newborn Infants, Illinois, 2005 – 2009

Defect	ICD-9-CM Codes	Cases	Rate	95% CI
Reduction deformity, upper limbs	755.2x	276	3.1	(2.8, 3.5)
Reduction deformity, lower limbs	755.3x	138	1.6	(1.3, 1.8)
Gastroschisis	756.79	352	4.0	(3.6, 4.4)
Omphalocele	756.79	136	1.5	(1.3, 1.8)
Developmental dysplasia of the hip	754.30, 754.31, 754.35	294	3.3	(2.9, 3.7)
Diaphragmatic hernia	756.6	207	2.3	(2.0, 2.7)

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

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

Table 11. Total Number and Prevalence Rates of Major Musculoskeletal Defects in Newborn Infants by County of Residence, 2005 – 2009

			95% CI[2]					95% CI[2]	
County	Cases	Rate[1]	Lower	Upper	County	Cases	Rate[1]	Lower	Upper
ILLINOIS[3]	1,403	15.8	15.0	16.7	Lee	5	25.6	8.3	59.7
Adams	5	11.9	3.9	27.8	Livingston	5	20.0	6.5	46.7
Alexander	1	16.6	0.4	92.2	Logan	7	44.0	17.7	90.6
Bond	3	31.3	6.4	91.3	McDonough	2	13.6	1.7	49.2
Boone	12	34.1	17.6	59.6	McHenry	21	10.4	6.5	16.0
Brown	1	33.3	0.8	185.7	McLean	25	22.8	14.8	33.7
Bureau	4	20.0	5.4	51.1	Macon	15	21.0	11.8	34.7
Calhoun	0	0.0	0.0	134.6	Macoupin	5	18.7	6.1	43.6
Carroll	0	0.0	0.0	50.7	Madison	28	16.7	11.1	24.1
Cass	5	53.5	17.4	124.8	Marion	2	7.6	0.9	27.3
Champaign	22	17.8	11.2	27.0	Marshall	2	29.3	3.5	105.8
Christian	2	9.7	1.2	34.9	Mason	3	38.5	7.9	112.4
Clark	0	0.0	0.0	41.9	Massac	2	20.4	2.5	73.6
Clay	1	11.7	0.3	65.3	Menard	1	15.0	0.4	83.5
Clinton	0	0.0	0.0	17.6	Mercer	2	23.3	2.8	84.3
Coles	2	7.1	0.9	25.5	Monroe	0	0.0	0.0	19.9
Cook	563	14.4	13.2	15.7	Montgomery	3	18.2	3.7	53.1
Crawford	1	10.5	0.3	58.5	Morgan	2	10.4	1.3	37.5
Cumberland	0	0.0	0.0	54.8	Moultrie	5	57.7	18.7	134.6
DeKalb	10	15.5	7.4	28.4	Ogle	5	16.5	5.4	38.6
DeWitt	5	52.5	17.1	122.6	Peoria	31	22.8	15.5	32.3
Douglas	5	35.8	11.6	83.6	Perry	2	17.6	2.1	63.7
DuPage	100	17.2	14.0	21.0	Piatt	0	0.0	0.0	40.9
Edgar	0	0.0	0.0	36.6	Pike	6	60.7	22.3	132.0
Edwards	0	0.0	0.0	108.5	Pope	0	0.0	0.0	212.0
Effingham	5	21.8	7.1	50.8	Pulaski	0	0.0	0.0	89.5
Fayette	1	8.0	0.2	44.5	Putnam	0	0.0	0.0	125.9
Ford	1	12.5	0.3	69.8	Randolph	4	22.0	6.0	56.2
Franklin	2	8.5	1.0	30.6	Richland	0	0.0	0.0	40.2
Fulton	8	41.8	18.0	82.4	Rock Island	10	10.1	4.9	18.7
Gallatin	0	0.0	0.0	117.9	St. Clair	28	14.8	9.9	21.4
Greene	1	12.3	0.3	68.8	Saline	2	13.0	1.6	46.9
Grundy	3	8.5	1.7	24.8	Sangamon	24	19.2	12.3	28.6
Hamilton	2	44.8	5.4	162.0	Schuyler	0	0.0	0.0	95.3
Hancock	1	9.3	0.2	52.0	Scott	0	0.0	0.0	115.6
Hardin	1	42.9	1.1	239.1	Shelby	2	16.8	2.0	60.6
Henderson	0	0.0	0.0	114.9	Stark	1	34.0	0.9	189.5
Henry	4	14.1	3.8	36.1	Stephenson	5	18.3	5.9	42.8
Iroquois	4	24.5	6.7	62.7	Tazewell	17	20.4	11.9	32.6
Jackson	3	8.9	1.8	25.9	Union	1	9.4	0.2	52.5
Jasper	0	0.0	0.0	66.6	Vermilion	16	28.6	16.3	46.4
Jefferson	4	16.1	4.4	41.2	Wabash	0	0.0	0.0	51.7
Jersey	0	0.0	0.0	29.8	Warren	0	0.0	0.0	36.1
Jo Daviess	4	37.0	10.1	94.7	Washington	5	58.8	19.1	137.3
Johnson	0	0.0	0.0	63.7	Wayne	0	0.0	0.0	36.2
Kane	71	17.1	13.4	21.6	White	0	0.0	0.0	42.1
Kankakee	12	15.3	7.9	26.7	Whiteside	5	14.2	4.6	33.1
Kendall	10	11.2	5.4	20.6	Will	81	16.8	13.3	20.8
Knox	9	32.9	15.0	62.4	Williamson	7	18.1	7.3	37.3
Lake	67	13.9	10.8	17.7	Winnebago	39	19.2	13.6	26.2
LaSalle	16	23.9	13.7	38.8	Woodford	4	17.3	4.7	44.4
Lawrence	1	12.2	0.3	68.2					

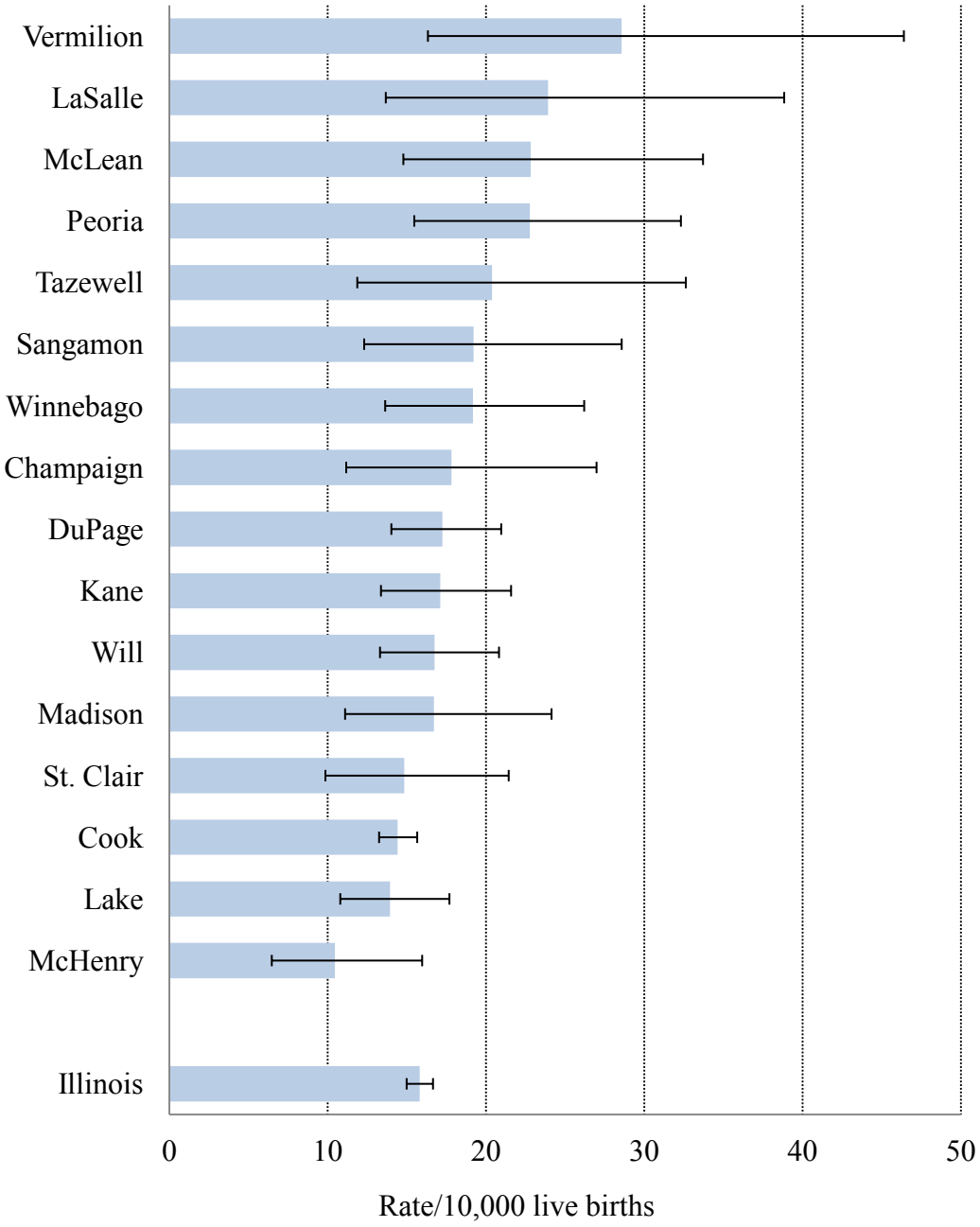
[1] Per 10,000 births

[2] 95 percent confidence interval for rate \

[3] The number for Illinois includes one case for whom county of residence is missing.

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

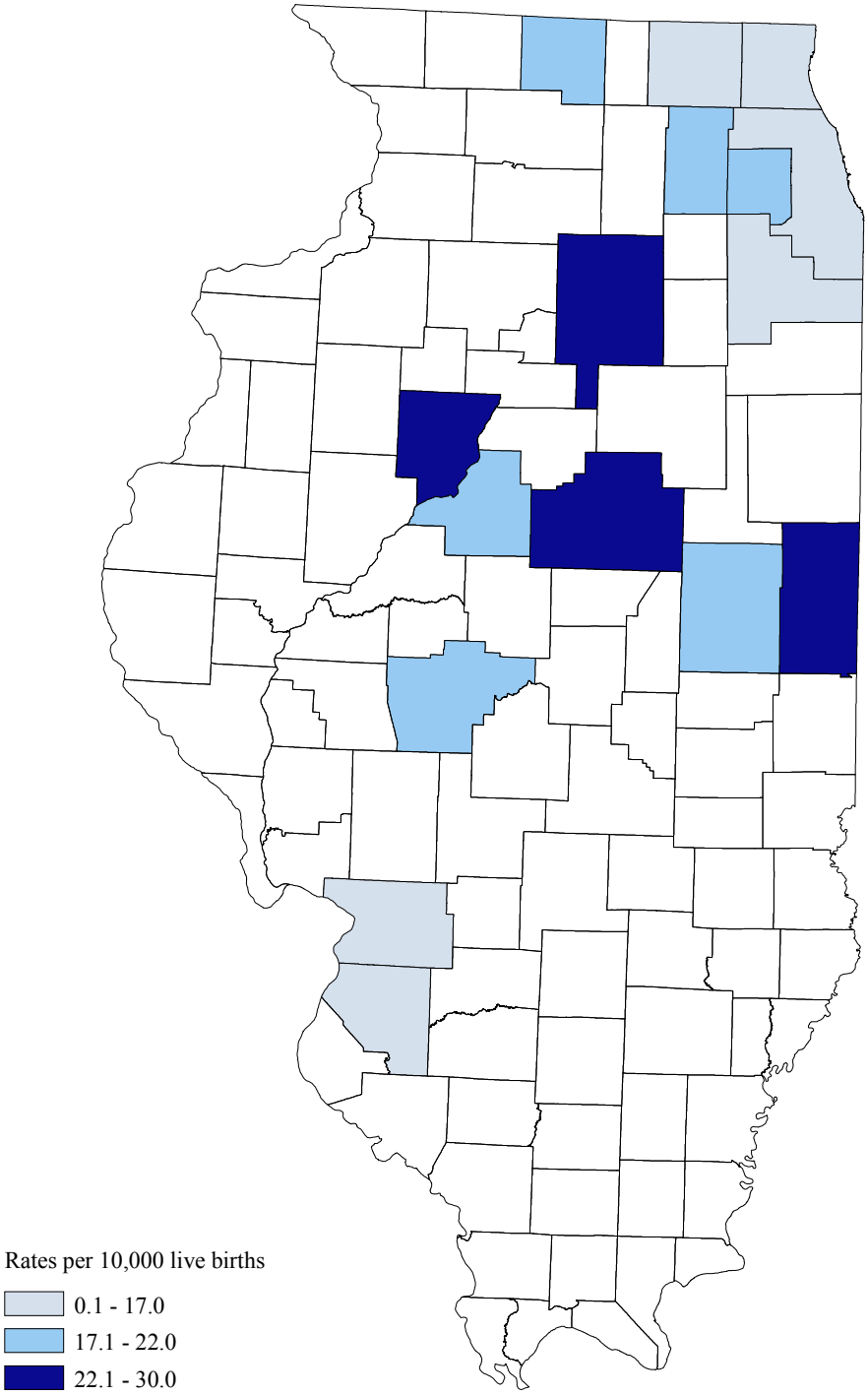
Figure 9. Prevalence Rates[1] and 95 Percent Confidence Intervals for Major Musculoskeletal Defects in Newborn Infants by Selected Counties of Residence,[2] 2005 – 2009



[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, May 2013

Figure 10. Map of Prevalence Rates for Major Musculoskeletal Defects in Newborn Infants by Selected Counties of Residence, 2005 – 2009



Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

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 12, which gives the five-year prevalence 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 developmental disabilities. 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 developmental disabilities, 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 developmental disabilities. Few children afflicted with this disease survive beyond a year because of abnormalities of the lungs and diaphragm, and heart defects and blood vessel malformations.

Table 12. Total Number and Prevalence Rates of Major Chromosomal Defects in Newborn Infants, Illinois, 2005 – 2009

Defect	ICD-9-CM Codes	Cases	Rate	95% CI
Patau syndrome (trisomy 13)	758.1	105	1.2	(1.0, 1.4)
Down syndrome (trisomy 21)	758.0	1,157	13.0	(12.3, 13.8)
Edward syndrome (trisomy 18)	758.2	199	2.2	(1.9, 2.6)

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

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

Table 13. Total Number and Prevalence Rates of Major Chromosomal Defects in Newborn Infants by County of Residence, 2005 – 2009

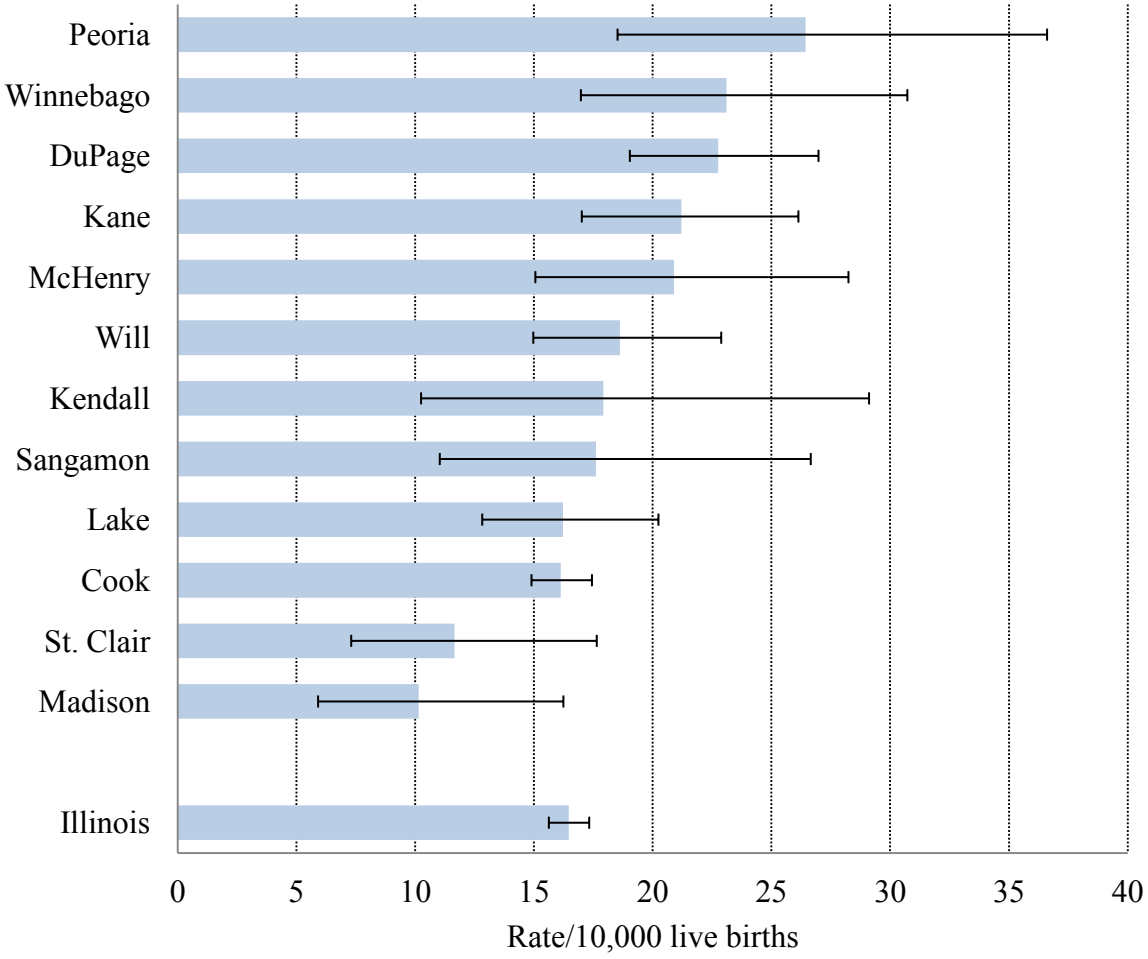
			95% CI[2]					95% CI[2]	
County	Cases	Rate[1]	Lower	Upper	County	Cases	Rate[1]	Lower	Upper
ILLINOIS	1,461	16.5	15.6	17.3	Lee	2	10.2	1.2	37.0
Adams	15	35.7	20.0	58.9	Livingston	3	12.0	2.5	35.1
Alexander	0	0.0	0.0	61.1	Logan	4	25.1	6.8	64.3
Bond	2	20.8	2.5	75.3	McDonough	4	27.3	7.4	69.8
Boone	12	34.1	17.6	59.6	McHenry	42	20.9	15.1	28.2
Brown	1	33.3	0.8	185.7	McLean	9	8.2	3.8	15.6
Bureau	2	10.0	1.2	36.1	Macon	8	11.2	4.8	22.1
Calhoun	1	36.5	0.9	203.3	Macoupin	0	0.0	0.0	13.8
Carroll	0	0.0	0.0	50.7	Madison	17	10.1	5.9	16.2
Cass	0	0.0	0.0	39.5	Marion	2	7.6	0.9	27.3
Champaign	19	15.4	9.3	24.0	Marshall	0	0.0	0.0	54.0
Christian	0	0.0	0.0	17.8	Mason	2	25.6	3.1	92.6
Clark	0	0.0	0.0	41.9	Massac	0	0.0	0.0	37.6
Clay	2	23.4	2.8	84.7	Menard	2	30.0	3.6	108.3
Clinton	1	4.8	0.1	26.5	Mercer	1	11.7	0.3	65.0
Coles	1	3.5	0.1	19.7	Monroe	0	0.0	0.0	19.9
Cook	630	16.1	14.9	17.4	Montgomery	2	12.1	1.5	43.8
Crawford	1	10.5	0.3	58.5	Morgan	4	20.8	5.7	53.2
Cumberland	1	14.9	0.4	82.8	Moultrie	1	11.5	0.3	64.3
DeKalb	11	17.0	8.5	30.4	Ogle	7	23.2	9.3	47.7
DeWitt	1	10.5	0.3	58.5	Peoria	36	26.4	18.5	36.6
Douglas	1	7.2	0.2	39.9	Perry	1	8.8	0.2	49.1
DuPage	132	22.8	19.0	27.0	Piatt	0	0.0	0.0	40.9
Edgar	0	0.0	0.0	36.6	Pike	0	0.0	0.0	37.3
Edwards	0	0.0	0.0	108.5	Pope	0	0.0	0.0	212.0
Effingham	6	26.1	9.6	56.8	Pulaski	0	0.0	0.0	89.5
Fayette	3	24.0	4.9	70.0	Putnam	1	34.1	0.9	190.2
Ford	1	12.5	0.3	69.8	Randolph	1	5.5	0.1	30.6
Franklin	3	12.7	2.6	37.1	Richland	1	10.9	0.3	60.8
Fulton	1	5.2	0.1	29.1	Rock Island	9	9.1	4.2	17.3
Gallatin	0	0.0	0.0	117.9	St. Clair	22	11.7	7.3	17.6
Greene	1	12.3	0.3	68.8	Saline	0	0.0	0.0	23.9
Grundy	4	11.3	3.1	28.9	Sangamon	22	17.6	11.0	26.7
Hamilton	2	44.8	5.4	162.0	Schuyler	0	0.0	0.0	95.3
Hancock	1	9.3	0.2	52.0	Scott	0	0.0	0.0	115.6
Hardin	1	42.9	1.1	239.1	Shelby	3	25.2	5.2	73.6
Henderson	0	0.0	0.0	114.9	Stark	0	0.0	0.0	125.5
Henry	3	10.6	2.2	30.9	Stephenson	2	7.3	0.9	26.5
Iroquois	2	12.2	1.5	44.2	Tazewell	12	14.4	7.4	25.1
Jackson	3	8.9	1.8	25.9	Union	2	18.9	2.3	68.1
Jasper	3	54.2	11.2	158.3	Vermilion	3	5.4	1.1	15.7
Jefferson	0	0.0	0.0	14.8	Wabash	0	0.0	0.0	51.7
Jersey	0	0.0	0.0	29.8	Warren	2	19.6	2.4	70.7
Jo Daviess	0	0.0	0.0	34.1	Washington	1	11.8	0.3	65.5
Johnson	0	0.0	0.0	63.7	Wayne	0	0.0	0.0	36.2
Kane	88	21.2	17.0	26.1	White	0	0.0	0.0	42.1
Kankakee	9	11.5	5.2	21.8	Whiteside	5	14.2	4.6	33.1
Kendall	16	17.9	10.2	29.1	Will	90	18.6	15.0	22.9
Knox	5	18.3	5.9	42.6	Williamson	1	2.6	0.1	14.4
Lake	78	16.2	12.8	20.2	Winnebago	47	23.1	17.0	30.7
LaSalle	15	22.4	12.6	37.0	Woodford	7	30.3	12.2	62.5
Lawrence	0	0.0	0.0	45.2					

[1] Per 10,000 births

[2] 95 percent confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

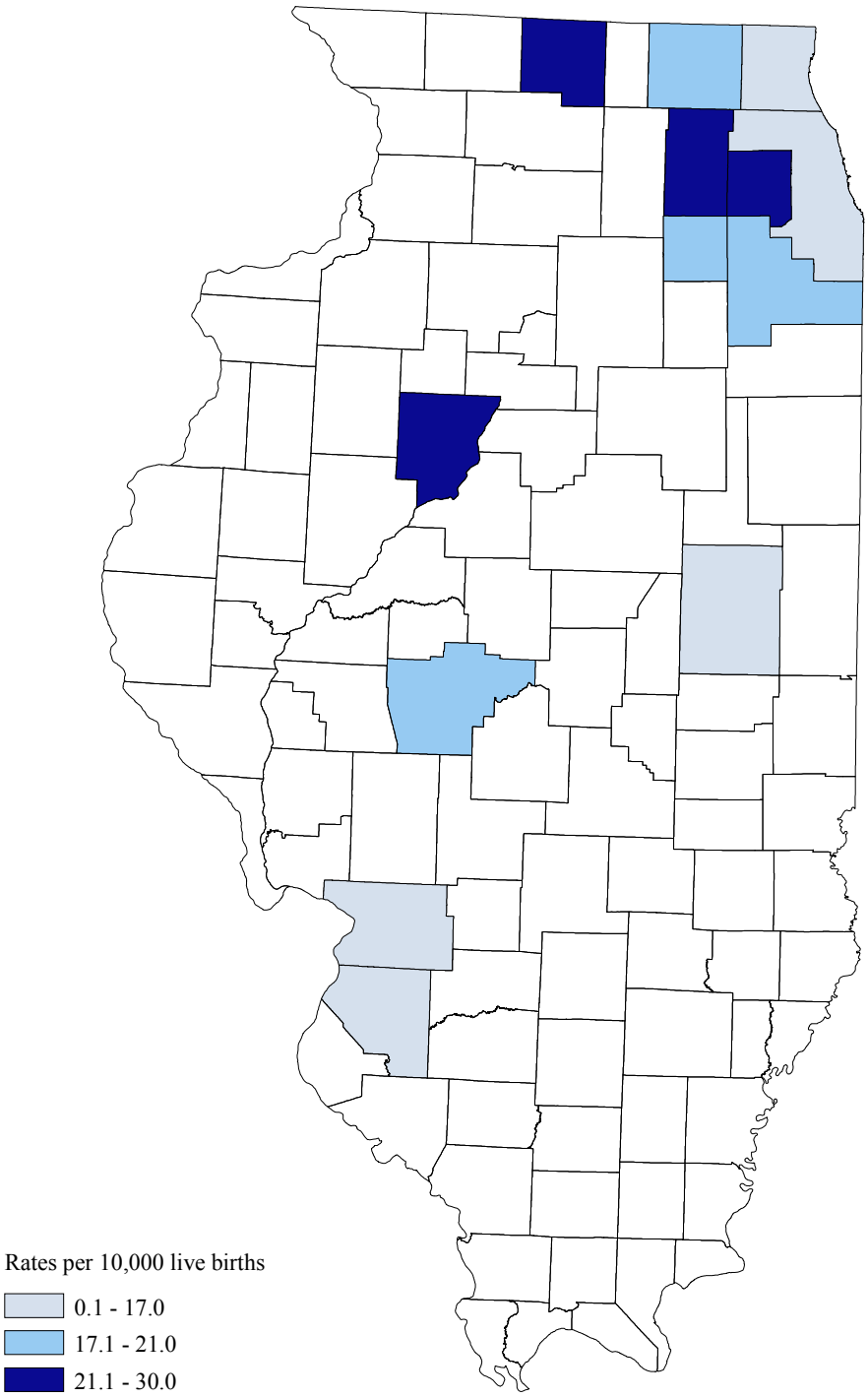
Figure 11. Prevalence Rates[1] and 95 Percent Confidence Intervals for Major Chromosomal Defects in Newborn Infants by Selected Counties of Residence,[2] 2005 – 2009



[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, May 2013

Figure 12. Map of Prevalence Rates for Major Chromosomal Defects in Newborn Infants by Selected Counties of Residence, 2005 – 2009



Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

SECTION II

OTHER ADVERSE PREGNANCY OUTCOMES

VERY LOW BIRTH WEIGHT

Children born weighing less than 1,500 grams (about 3 pounds 5 ounces) 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 delivery can be crucial in improving post-natal lung function. However, disorders relating to short gestation and low birth weight remain the second leading cause of infant death in 2010, accounting for 17.2 percent of these deaths (U.S. Centers for Disease Control and Prevention).

Between 2005 and 2009, 1.2 percent of singleton infants born in Illinois had very low birth weights. (In 2009, the corresponding U.S percentage was 1.1 (Martin *et al.*)). In Illinois, among twin babies, 10.7 percent had very low birth weights, among triplets, 34.4 percent had very low birth weights, while among higher order births, 74.7 percent had very low birth weights. Among very low birth weight infants born in the United States, 23.1 percent died in their first year (Mathews *et al.*)

Women with a history of pre-term birth, African-American women, women with a low body mass index and those with a short cervical length are at increased risk of having premature infants (who often have very low birth weight). Intrauterine bacterial infections have been shown to lead to premature delivery and consequently very low birth weights. Women who smoke are at increased risk for having a baby with growth retardation and very low birth weight (Goldenberg and Culhane.)

Very low birth-weight infants who survive have more chronic conditions (blindness, deafness, mental retardation and cerebral palsy), 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.*) and with poor behavioral and educational outcomes (Saigal).

Table 14. Total Number and Prevalence Rates of Infants With Very Low Birth Weights (< 1500 g) by County of Residence, 2005 – 2009

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]	17,597	198.3	195.3	201.2	Lee	31	158.7	107.8	225.3
Adams	58	138.1	104.9	178.6	Livingston	40	160.2	114.4	218.1
Alexander	12	198.7	102.7	347.0	Logan	34	213.6	147.9	298.4
Bond	14	145.8	79.7	244.7	McDonough	29	197.7	132.4	283.9
Boone	52	147.9	110.5	194.0	McHenry	277	137.8	122.1	155.0
Brown	5	166.7	54.1	388.9	McLean	210	191.9	166.8	219.6
Bureau	17	84.8	49.4	135.8	Macon	168	235.5	201.2	273.9
Calhoun	6	219.0	80.4	476.6	Macoupin	44	164.2	119.3	220.5
Carroll	13	178.6	95.1	305.4	Madison	312	186.1	166.1	208.0
Cass	13	139.0	74.0	237.8	Marion	46	173.9	127.3	232.0
Champaign	233	188.8	165.3	214.6	Marshall	10	146.4	70.2	269.3
Christian	43	207.5	150.2	279.5	Mason	23	294.9	186.9	442.5
Clark	8	90.8	39.2	178.9	Massac	8	81.5	35.2	160.7
Clay	7	82.1	33.0	169.1	Menard	13	194.9	103.8	333.3
Clinton	23	109.5	69.4	164.3	Mercer	11	128.4	64.1	229.7
Coles	37	130.8	92.1	180.3	Monroe	23	124.2	78.7	186.3
Cook	8,945	229.0	224.3	233.8	Montgomery	25	151.4	98.0	223.5
Crawford	23	241.3	153.0	362.1	Morgan	41	213.0	152.8	288.9
Cumberland	14	208.0	113.7	349.0	Moultrie	9	103.8	47.5	197.1
DeKalb	99	153.1	124.4	186.4	Ogle	57	188.6	142.9	244.4
DeWitt	19	199.6	120.2	311.7	Peoria	327	240.2	214.8	267.7
Douglas	20	143.4	87.6	221.4	Perry	17	149.9	87.3	240.0
DuPage	973	167.7	157.3	178.6	Piatt	8	88.6	38.2	174.6
Edgar	21	208.1	128.8	318.1	Pike	11	111.2	55.5	199.0
Edwards	4	117.6	32.1	301.2	Pope	2	114.9	13.9	415.2
Effingham	27	117.5	77.4	170.9	Pulaski	9	218.4	99.9	414.7
Fayette	13	103.8	55.3	177.6	Putnam	1	34.1	0.9	190.2
Ford	14	175.4	95.9	294.4	Randolph	30	164.7	111.1	235.1
Franklin	28	118.5	78.7	171.3	Richland	14	152.7	83.5	256.2
Fulton	29	151.5	101.5	217.6	Rock Island	152	154.2	130.6	180.7
Gallatin	5	159.7	51.9	372.8	St. Clair	398	210.8	190.6	232.6
Greene	17	209.9	122.3	336.0	Saline	28	181.7	120.7	262.6
Grundy	43	121.5	88.0	163.7	Sangamon	258	206.5	182.0	233.3
Hamilton	5	112.1	36.4	261.6	Schuyler	3	77.5	16.0	226.5
Hancock	19	177.4	106.8	277.0	Scott	4	125.4	34.2	321.1
Hardin	3	128.8	26.6	376.3	Shelby	23	193.0	122.3	289.5
Henderson	6	186.9	68.6	406.8	Stark	6	204.1	74.9	444.2
Henry	38	133.8	94.7	183.7	Stephenson	61	223.5	171.0	287.1
Iroquois	16	97.9	56.0	159.0	Tazewell	146	175.0	147.8	205.8
Jackson	64	189.1	145.6	241.5	Union	11	103.7	51.8	185.5
Jasper	8	144.4	62.3	284.5	Vermilion	100	178.6	145.3	217.2
Jefferson	34	136.8	94.8	191.2	Wabash	12	168.1	86.8	293.6
Jersey	15	121.2	67.8	199.8	Warren	12	117.4	60.7	205.1
Jo Daviess	13	120.1	64.0	205.5	Washington	9	105.9	48.4	201.0
Johnson	11	190.0	94.8	339.9	Wayne	4	39.2	10.7	100.4
Kane	665	160.3	148.3	173.0	White	13	148.4	79.0	253.8
Kankakee	161	205.2	174.7	239.5	Whiteside	46	130.5	95.5	174.1
Kendall	123	137.8	114.5	164.4	Will	924	191.1	179.0	203.9
Knox	53	193.6	145.1	253.3	Williamson	60	155.3	118.5	199.9
Lake	779	162.0	150.8	173.8	Winnebago	433	212.8	193.3	233.9
LaSalle	115	171.9	141.9	206.4	Woodford	30	130.0	87.7	185.6
Lawrence	15	183.6	102.8	302.8					

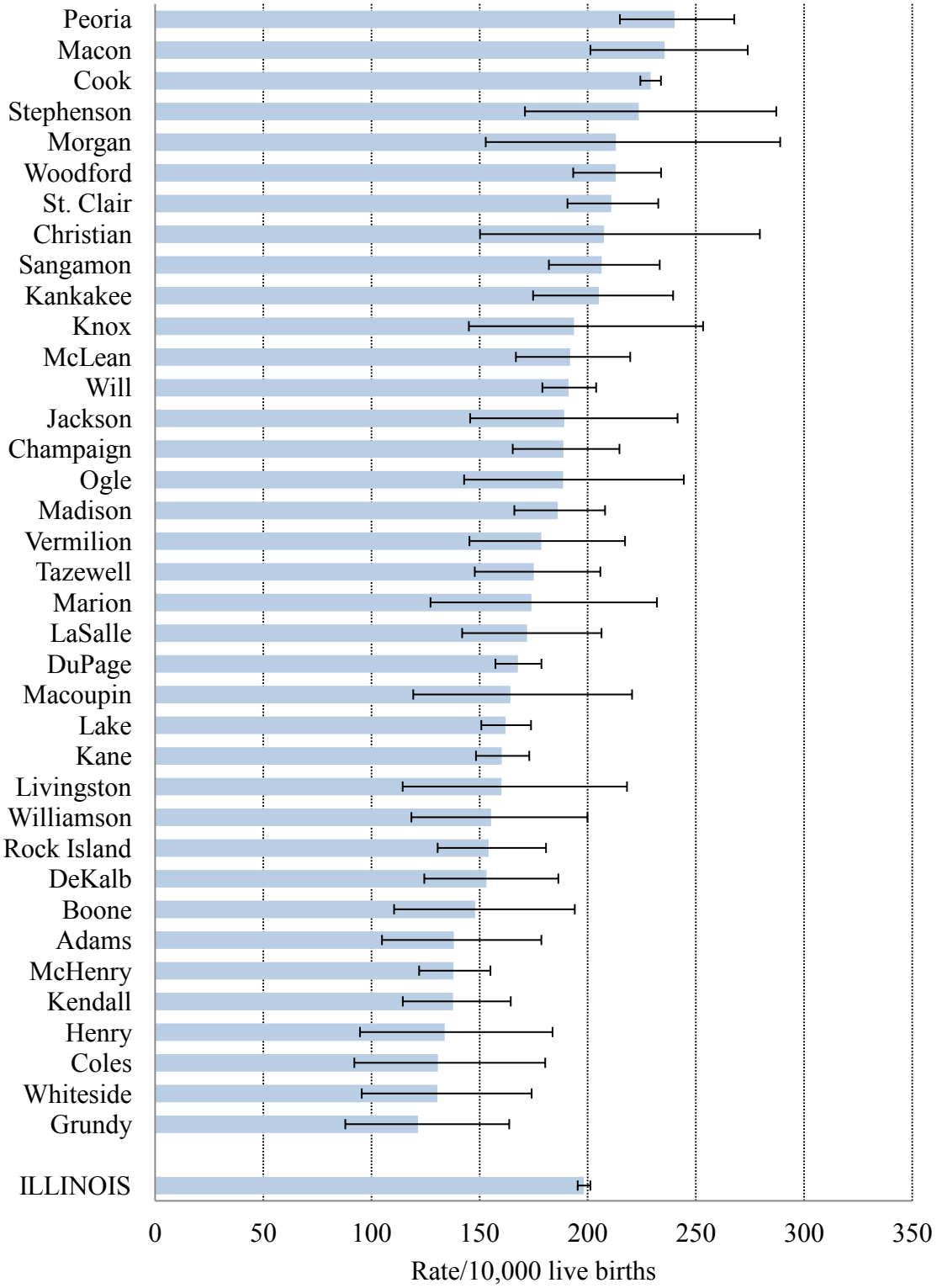
[1] Per 10,000 births

[2] 95 percent confidence interval for rate

[3]The number for Illinois includes 56 cases for whom county of residence was unknown.

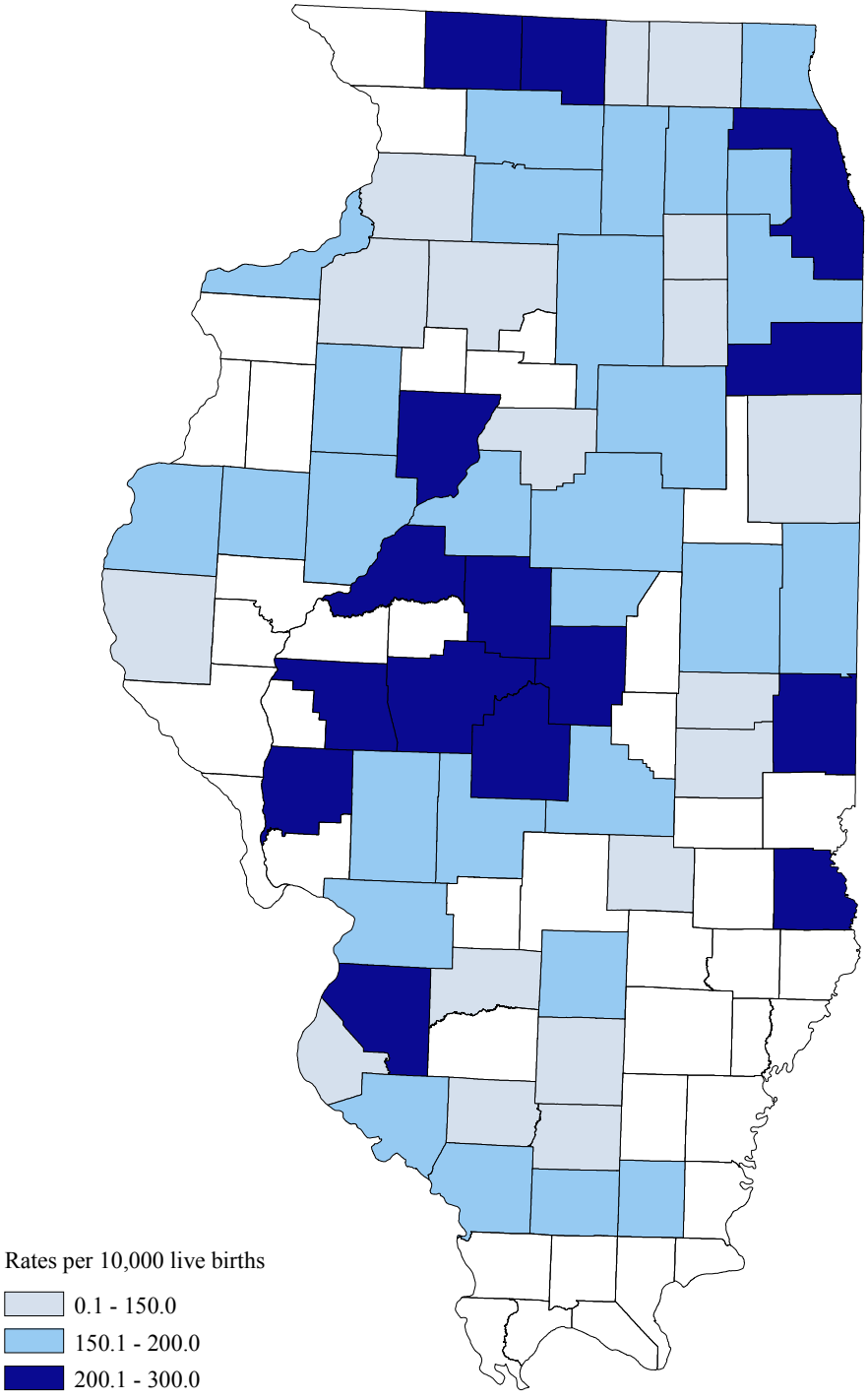
Source: Illinois Department of Public Health, Adverse Pregnancy Outcome Reporting System, May 2013

Figure 13. Prevalence Rates[1] and 95 Percent Confidence Intervals for Very Low Birth Weight Infants by Selected Counties of Residence,[2] 2005 – 2



[1] Rates per 10,000 live births
[2] Only counties with 35 or more cases are presented.
Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

Figure 14. Map of Prevalence Rates for Infants With Very Low Birth Weights (< 1500g), by Selected Counties of Residence, 2005 – 2009



Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

SERIOUS CONGENITAL INFECTIONS

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

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

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 developmental disabilities, cerebral palsy, visual impairment, epilepsy and hearing loss.

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

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

Hepatitis B virus (HBV) can be passed to a baby during delivery. A baby may be asymptomatic, but as he/she grows up, liver damage may be present. About 80 percent of liver cancers are caused by HBV infections. A vaccine has been used since 1982 to prevent hepatitis B.

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

Listeriosis is caused by an infection with the bacterium *Listeria monocytogenes*; half of all infected newborns will die from the illness. Babies infected during pregnancy are usually born prematurely, have a blood infection (sepsis) and may have a serious, whole body infection called granulomatosis infantisepticum. When a baby is infected during childbirth, symptoms usually appear about two weeks after birth; these babies typically have meningitis.

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

Sepsis may be caused by 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.

Syphilis (congenital) is usually contracted in utero by transplacental passage of bacteria – *Treponema pallidum* – from an infected mother. The infection also may occur from contact with an infectious lesion during delivery. In women with untreated early syphilis, 40 percent of pregnancies result in spontaneous abortion, stillbirths, premature delivery or perinatal deaths; intrauterine growth retardation 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.

Tetanus infection in newborns 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.

Table 15. Total Number and Prevalence Rates of Serious Congenital Infections in Newborn Infants, Illinois, 2005 – 2009

Defect	ICD-9-CM Codes	Cases	Rate[1]	95% CI[2]	
				Lower	Upper
Chlamidial infections	079.88, 079.98	5	0.1	0.0	0.1
Cytomegalovirus	771.1	130	1.5	1.2	1.7
Gonococcal infections	098.0 - 098.89	2	0.0	0.0	0.1
Group B streptococcus	041.02	235	2.6	2.3	3.0
Hepatitis B	774.4	10	0.1	0.1	0.2
Prenatal exposure to hepatitis B	V01.7B	913	10.3	9.6	11.0
Herpes and other infections	771.2	68	0.8	0.6	1.0
Listeriosis	027.0	0	0.0	0.0	0.0
Rubella	771.0	1	0.0	0.0	0.1
Sepsis (confirmed septicemia)	771.8	1,929	21.7	20.8	22.7
Syphilis	090.0 - 090.9	234	2.6	2.3	3.0
Tetanus neonatorum	771.3	0	0.0	0.0	0.0

[1] Rate per 10,000 live births

[2] 95 percent confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

Table 16. Total Number and Prevalence Rates of Serious Congenital Infections in Newborn Infants by County of Residence, 2005 – 2009

			95% CI[2]					95% CI[2]	
County	Cases	Rate[1]	Lower	Upper	County	Cases	Rate[1]	Lower	Upper
ILLINOIS[3]	3,527	39.7	38.4	41.1	Lee	5	25.6	8.3	59.7
Adams	10	23.8	11.4	43.8	Livingston	9	36.0	16.5	68.4
Alexander	1	16.6	0.4	92.2	Logan	4	25.1	6.8	64.3
Bond	1	10.4	0.3	58.0	McDonough	3	20.4	4.2	59.8
Boone	14	39.8	21.8	66.8	McHenry	46	22.9	16.8	30.5
Brown	2	66.7	8.1	240.8	McLean	32	29.2	20.0	41.3
Bureau	9	44.9	20.5	85.3	Macon	28	39.2	26.1	56.7
Calhoun	0	0.0	0.0	134.6	Macoupin	8	29.9	12.9	58.8
Carroll	1	13.7	0.3	76.5	Madison	29	17.3	11.6	24.8
Cass	3	32.1	6.6	93.8	Marion	4	15.1	4.1	38.7
Champaign	66	53.5	41.4	68.0	Marshall	1	14.6	0.4	81.6
Christian	7	33.8	13.6	69.6	Mason	4	51.3	14.0	131.3
Clark	1	11.4	0.3	63.2	Massac	0	0.0	0.0	37.6
Clay	1	11.7	0.3	65.3	Menard	0	0.0	0.0	55.3
Clinton	3	14.3	2.9	41.7	Mercer	3	35.0	7.2	102.3
Coles	5	17.7	5.7	41.3	Monroe	0	0.0	0.0	19.9
Cook	2,152	55.1	52.8	57.5	Montgomery	2	12.1	1.5	43.8
Crawford	4	42.0	11.4	107.5	Morgan	5	26.0	8.4	60.6
Cumberland	4	59.4	16.2	152.2	Moultrie	2	23.1	2.8	83.3
DeKalb	26	40.2	26.3	58.9	Ogle	6	19.9	7.3	43.2
DeWitt	1	10.5	0.3	58.5	Peoria	75	55.1	43.3	69.1
Douglas	1	7.2	0.2	39.9	Perry	1	8.8	0.2	49.1
DuPage	162	27.9	23.8	32.6	Piatt	1	11.1	0.3	61.7
Edgar	1	9.9	0.3	55.2	Pike	2	20.2	2.4	73.1
Edwards	0	0.0	0.0	108.5	Pope	0	0.0	0.0	212.0
Effingham	3	13.1	2.7	38.2	Pulaski	1	24.3	0.6	135.2
Fayette	6	47.9	17.6	104.3	Putnam	0	0.0	0.0	125.9
Ford	2	25.1	3.0	90.5	Randolph	2	11.0	1.3	39.7
Franklin	0	0.0	0.0	15.6	Richland	1	10.9	0.3	60.8
Fulton	1	5.2	0.1	29.1	Rock Island	51	51.7	38.5	68.0
Gallatin	0	0.0	0.0	117.9	St. Clair	49	26.0	19.2	34.3
Greene	0	0.0	0.0	45.5	Saline	0	0.0	0.0	23.9
Grundy	3	8.5	1.7	24.8	Sangamon	40	32.0	22.9	43.6
Hamilton	0	0.0	0.0	82.7	Schuyler	0	0.0	0.0	95.3
Hancock	4	37.3	10.2	95.6	Scott	1	31.3	0.8	174.7
Hardin	0	0.0	0.0	158.3	Shelby	4	33.6	9.1	85.9
Henderson	0	0.0	0.0	114.9	Stark	0	0.0	0.0	125.5
Henry	12	42.3	21.8	73.8	Stephenson	9	33.0	15.1	62.6
Iroquois	5	30.6	9.9	71.4	Tazewell	40	48.0	34.3	65.3
Jackson	9	26.6	12.2	50.5	Union	0	0.0	0.0	34.8
Jasper	0	0.0	0.0	66.6	Vermilion	22	39.3	24.6	59.5
Jefferson	6	24.1	8.9	52.6	Wabash	0	0.0	0.0	51.7
Jersey	1	8.1	0.2	45.0	Warren	1	9.8	0.2	54.5
Jo Daviess	2	18.5	2.2	66.8	Washington	1	11.8	0.3	65.5
Johnson	1	17.3	0.4	96.2	Wayne	2	19.6	2.4	70.8
Kane	86	20.7	16.6	25.6	White	0	0.0	0.0	42.1
Kankakee	20	25.5	15.6	39.4	Whiteside	10	28.4	13.6	52.2
Kendall	13	14.6	7.8	24.9	Will	145	30.0	25.3	35.3
Knox	7	25.6	10.3	52.7	Williamson	5	12.9	4.2	30.2
Lake	95	19.8	16.0	24.1	Winnebago	100	49.2	40.0	59.8
LaSalle	15	22.4	12.6	37.0	Woodford	4	17.3	4.7	44.4
Lawrence	1	12.2	0.3	68.2					

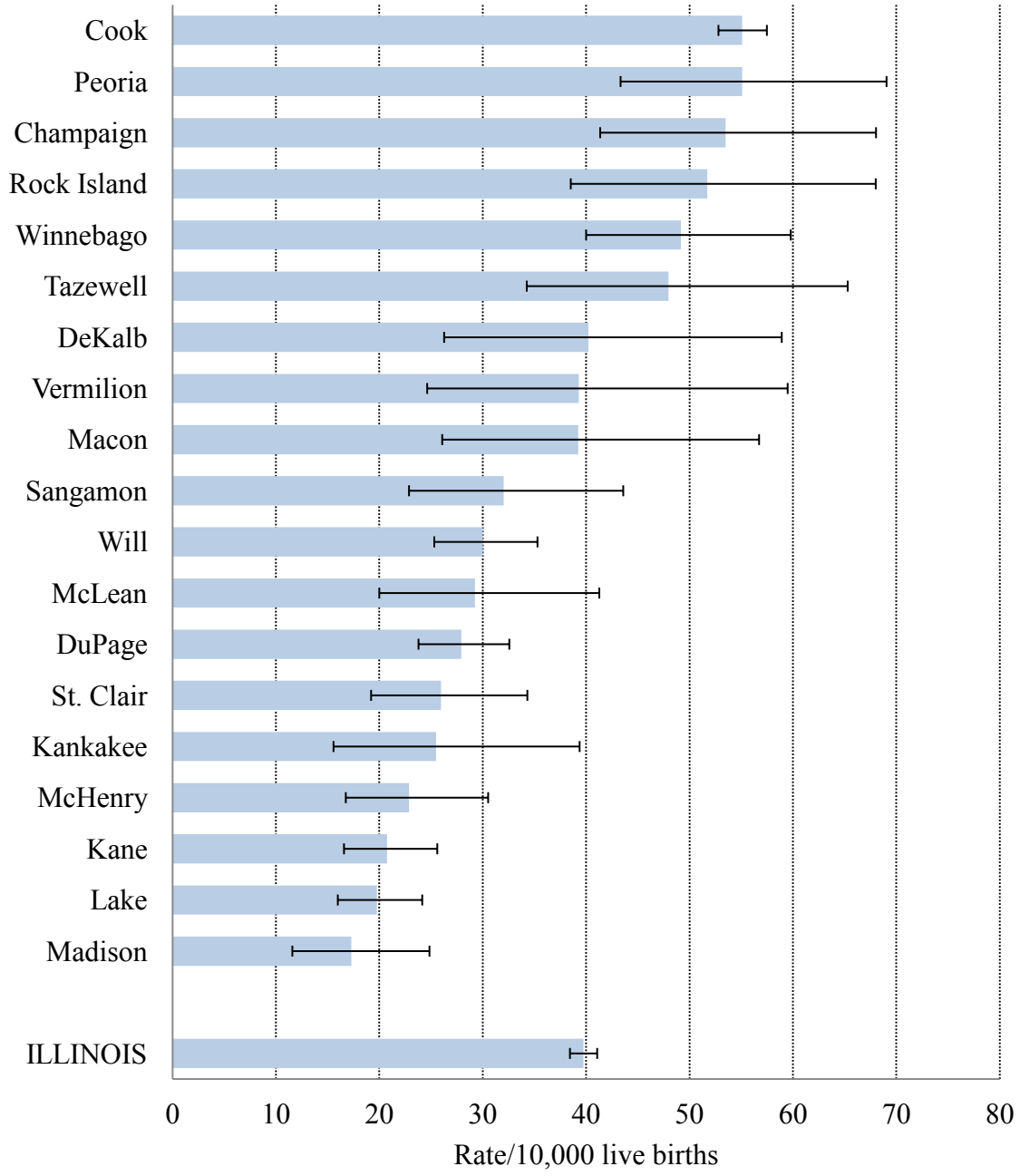
[1] Per 10,000 births

[2] 95 percent confidence interval for rate

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

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

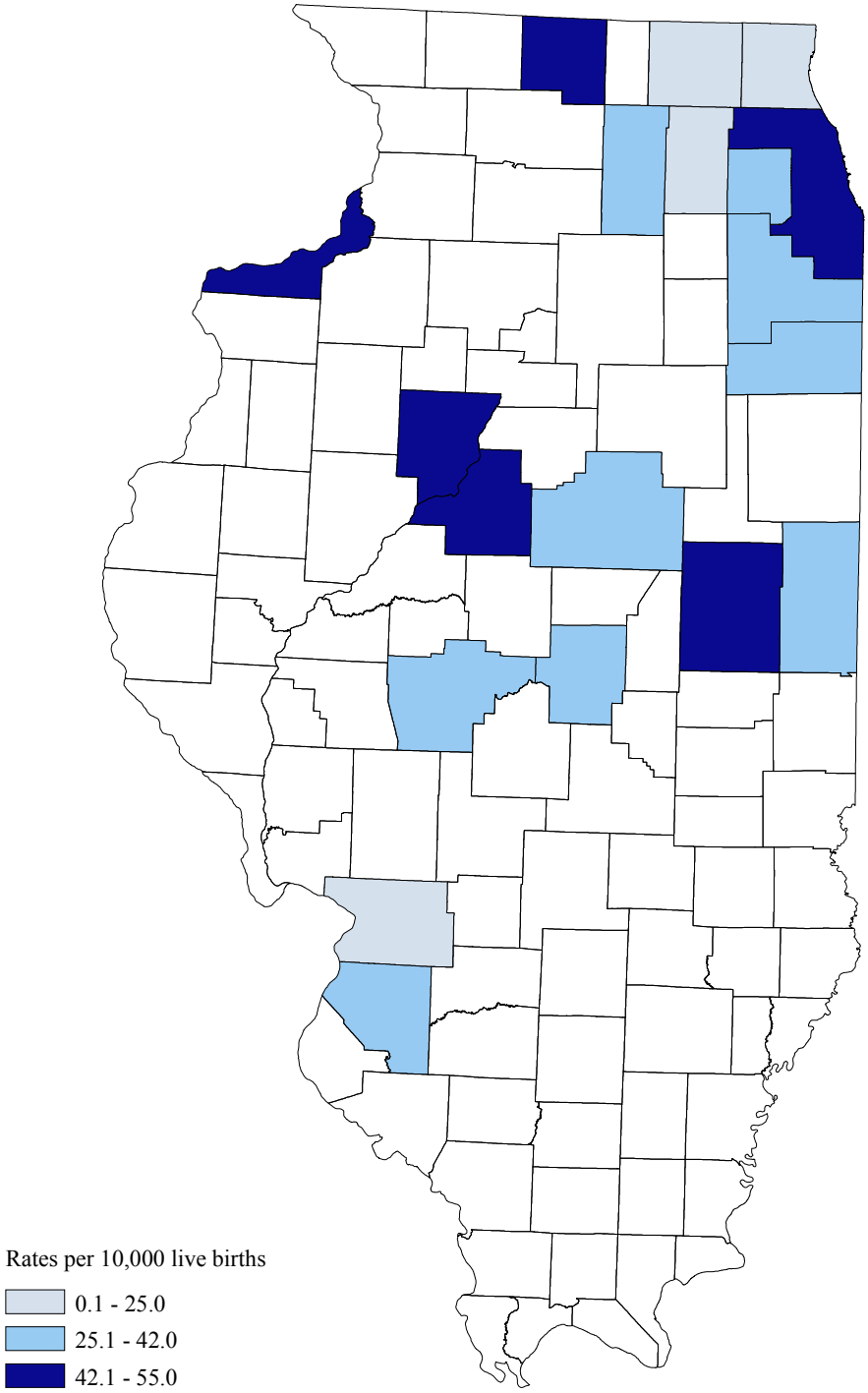
Figure 15. Prevalence Rates[1] and 95 Percent Confidence Intervals for Serious Congenital Infections in Newborn Infants for Selected Counties of Residence,[2] 2005 – 2009



[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, May 2013

Figure 16. Map of Prevalence Rates for Serious Congenital Infections in Newborn Infants by Selected Counties of Residence, 2005 – 2009



Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

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 the Department. The data are further incomplete because elective abortions are not included. Neonatal deaths are reported by hospitals; APORS obtains information about fetal deaths from the Department's Division of Vital Records.

Table 17. Total Number and Prevalence Rates of Perinatal Deaths, Illinois, 2005 – 2009

Defect	Cases	Rate[1]	95% CI[2]	
			Lower	Upper
Fetal deaths	5,419	61.1	59.4	62.7
Deaths during newborn stay	3,747	42.2	40.9	43.6

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

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System , May 2013

Table 18. Total Number and Prevalence Rates of Perinatal Deaths, by County of Residence, 2005 – 2009

			95% CI[2]					95% CI[2]	
County	Cases	Rate[1]	Lower	Upper	County	Cases	Rate[1]	Lower	Upper
ILLINOIS[3]	9,166	103.3	101.2	105.4	Lee	16	81.9	46.8	133.0
Adams	36	85.7	60.0	118.7	Livingston	26	104.1	68.0	152.6
Alexander	5	82.8	26.9	193.2	Logan	19	119.3	71.9	186.4
Bond	10	104.2	50.0	191.6	McDonough	14	95.4	52.2	160.1
Boone	31	88.2	59.9	125.2	McHenry	147	73.1	61.8	86.0
Brown	4	133.3	36.3	341.4	McLean	112	102.3	84.3	123.1
Bureau	13	64.9	34.5	110.9	Macon	98	137.4	111.5	167.4
Calhoun	4	146.0	39.8	373.8	Macoupin	24	89.6	57.4	133.3
Carroll	5	68.7	22.3	160.3	Madison	155	92.5	78.5	108.2
Cass	6	64.2	23.5	139.7	Marion	26	98.3	64.2	144.0
Champaign	116	94.0	77.7	112.7	Marshall	5	73.2	23.8	170.8
Christian	20	96.5	59.0	149.1	Mason	11	141.0	70.4	252.3
Clark	1	11.4	0.3	63.2	Massac	2	20.4	2.5	73.6
Clay	7	82.1	33.0	169.1	Menard	4	60.0	16.3	153.5
Clinton	11	52.4	26.1	93.7	Mercer	5	58.3	18.9	136.2
Coles	19	67.2	40.4	104.9	Monroe	11	59.4	29.6	106.3
Cook	4, 564	116.9	113.5	120.3	Montgomery	17	103.0	60.0	164.9
Crawford	10	104.9	50.3	193.0	Morgan	16	83.1	47.5	135.0
Cumberland	11	163.4	81.6	292.5	Moultrie	9	103.8	47.5	197.1
DeKalb	66	102.1	78.9	129.9	Ogle	31	102.6	69.7	145.6
DeWitt	10	105.0	50.4	193.2	Peoria	173	127.1	108.8	147.5
Douglas	12	86.0	44.4	150.3	Perry	8	70.5	30.5	139.0
DuPage	583	100.5	92.5	109.0	Piatt	8	88.6	38.2	174.6
Edgar	3	29.7	6.1	86.9	Pike	10	101.1	48.5	185.9
Edwards	2	58.8	7.1	212.5	Pope	1	57.5	1.5	320.2
Effingham	15	65.3	36.5	107.7	Pulaski	1	24.3	0.6	135.2
Fayette	7	55.9	22.5	115.2	Putnam	4	136.5	37.2	349.5
Ford	1	12.5	0.3	69.8	Randolph	15	82.3	46.1	135.8
Franklin	10	42.3	20.3	77.8	Richland	6	65.4	24.0	142.4
Fulton	22	114.9	72.0	174.0	Rock Island	70	71.0	55.3	89.7
Gallatin	0	0.0	0.0	117.9	St. Clair	170	90.1	77.0	104.7
Greene	9	111.1	50.8	210.9	Saline	10	64.9	31.1	119.3
Grundy	24	67.8	43.5	100.9	Sangamon	150	120.0	101.6	140.9
Hamilton	5	112.1	36.4	261.6	Schuyler	2	51.7	6.3	186.7
Hancock	7	65.4	26.3	134.7	Scott	0	0.0	0.0	115.6
Hardin	1	42.9	1.1	239.1	Shelby	9	75.5	34.5	143.3
Henderson	3	93.5	19.3	273.1	Stark	3	102.0	21.0	298.2
Henry	18	63.4	37.6	100.2	Stephenson	30	109.9	74.2	156.9
Iroquois	11	67.3	33.6	120.5	Tazewell	67	80.3	62.2	102.0
Jackson	18	53.2	31.5	84.1	Union	4	37.7	10.3	96.5
Jasper	2	36.1	4.4	130.4	Vermilion	61	108.9	83.3	139.9
Jefferson	20	80.5	49.2	124.3	Wabash	0	0.0	0.0	51.7
Jersey	6	48.5	17.8	105.5	Warren	9	88.1	40.3	167.2
Jo Daviess	7	64.7	26.0	133.3	Washington	6	70.6	25.9	153.6
Johnson	5	86.4	28.0	201.5	Wayne	6	58.8	21.6	128.0
Kane	361	87.0	78.3	96.5	White	2	22.8	2.8	82.5
Kankakee	77	98.1	77.4	122.7	Whiteside	28	79.4	52.8	114.8
Kendall	84	94.1	75.1	116.5	Will	508	105.1	96.1	114.6
Knox	30	109.6	74.0	156.5	Williamson	33	85.4	58.8	119.9
Lake	402	83.6	75.6	92.2	Winnebago	230	113.1	98.9	128.7
LaSalle	71	106.1	82.9	133.9	Woodford	18	78.0	46.2	123.3
Lawrence	1	12.2	0.3	68.2					

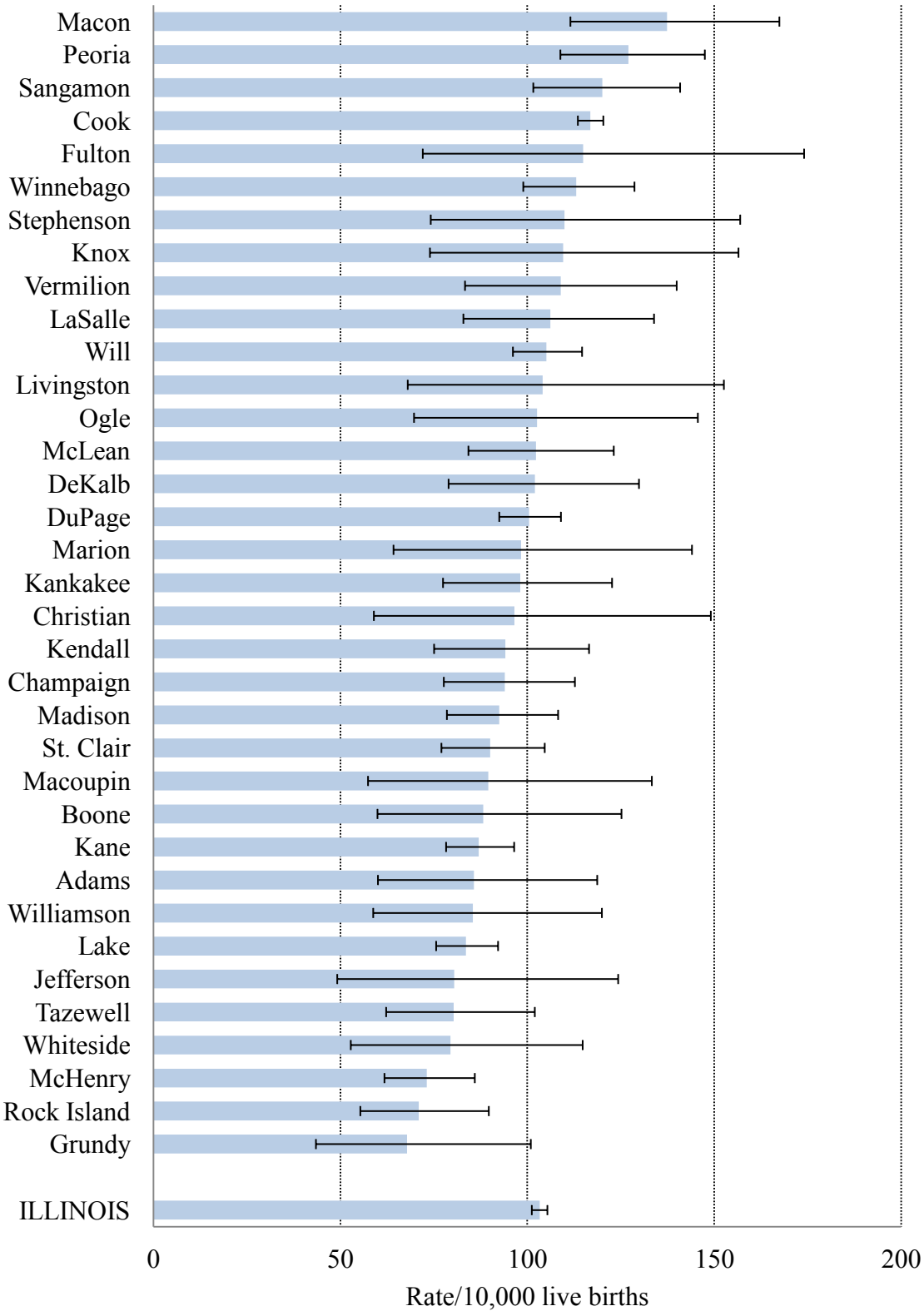
[1] Per 10,000 births

[2] 95 percent confidence interval for rate

[3]The number for Illinois includes 10 cases for whom county of residence was unknown.

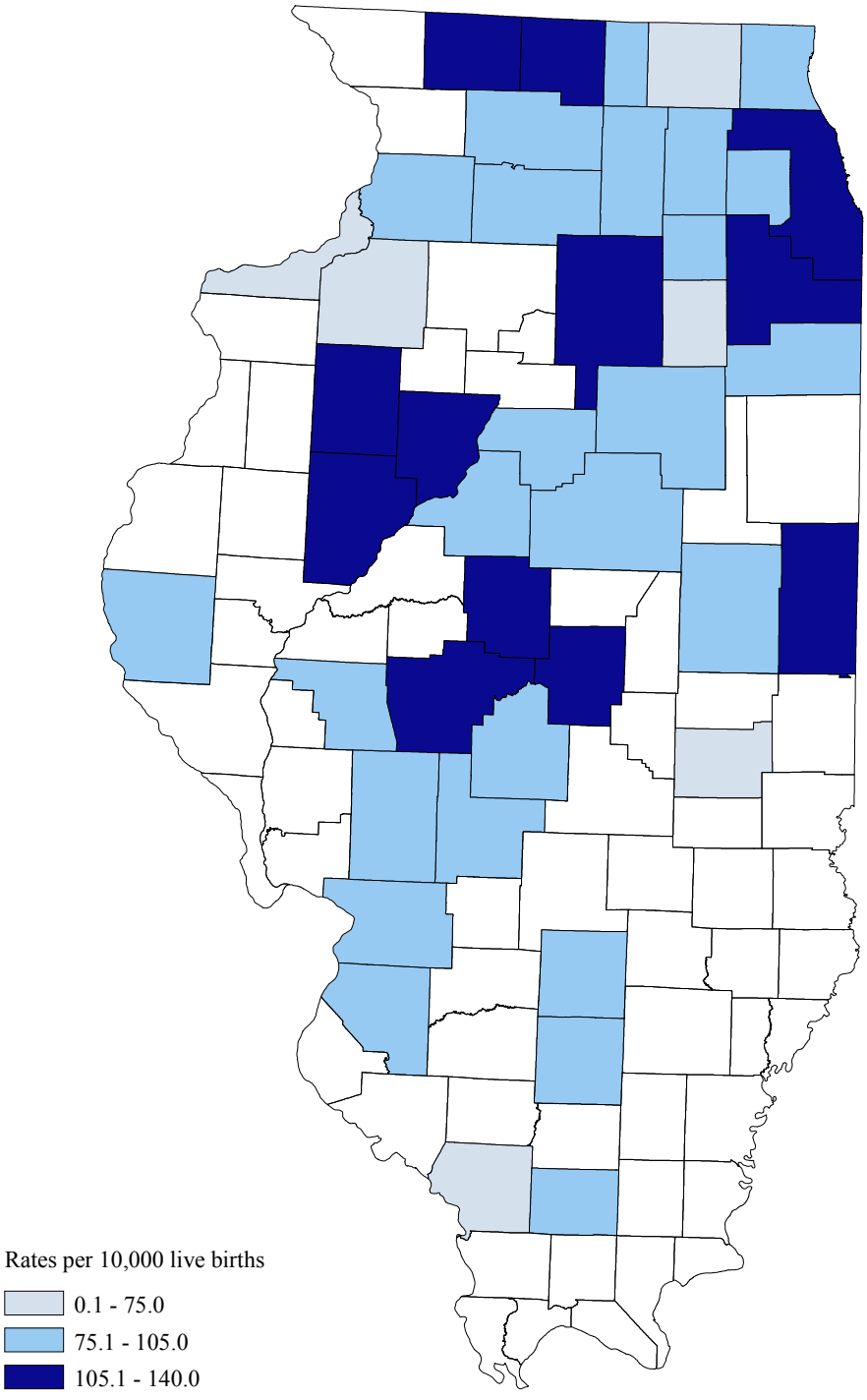
Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

Figure 17. Prevalence Rates[1] and 95 Percent Confidence Intervals for Perinatal Deaths for Selected Counties of Residence,[2] 2005 – 2009



[1] Rates per 10,000 live births
[2] Only counties with 20 or more cases are presented.
Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

Figure 18. Map of Prevalence Rates for Perinatal Deaths by Selected Counties of Residence, 2005 – 2009



Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

ENDOCRINE, METABOLIC OR IMMUNE DISORDERS

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

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

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

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

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

Table 19. Total Number and Prevalence Rates of Endocrine, Metabolic or Immune Disorders in Newborn Infants, Illinois, 2005 – 2009

Defect	ICD-9-CM Codes	Cases	Rate[1]	95% CI[2]	
				Lower	Upper
Adrenogenital syndrome	255.2	42	0.5	0.3	0.6
Cystic fibrosis	277.00, 277.01	95	1.1	0.9	1.3
Hypothyroidism	243	258	2.9	2.6	3.3
Immune deficiency disease	279.2	3	0.0	0.0	0.1
Inborn errors of metabolism	270.0 - 273.9	152	1.7	1.5	2.0

[1] Rate per 10,000 live births

[2] 95 percent confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

Table 20. Total Number and Prevalence Rates of Endocrine, Metabolic or Immune Disorders In Newborn Infants by County of Residence, 2005 – 2009

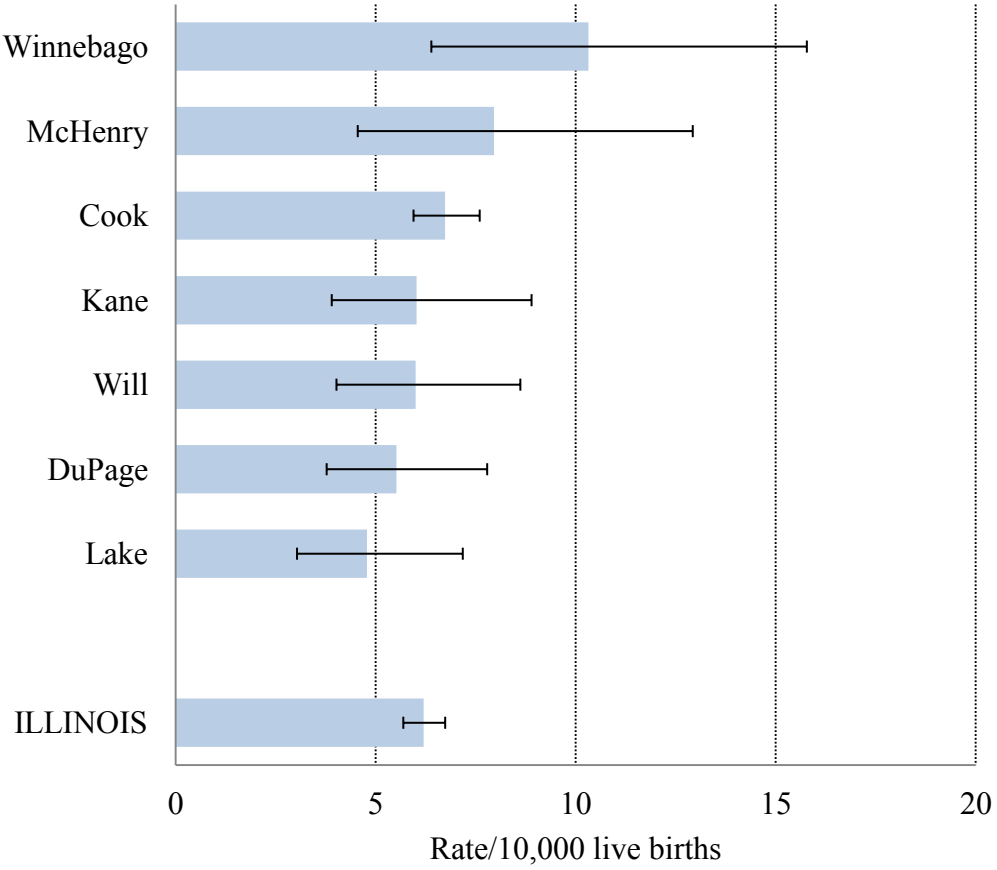
			95% CI[2]					95% CI[2]	
County	Cases	Rate[1]	Lower	Upper	County	Cases	Rate[1]	Lower	Upper
ILLINOIS	550	6.2	5.7	6.7	Lee	0	0.0	0.0	18.9
Adams	1	2.4	0.1	13.3	Livingston	0	0.0	0.0	14.8
Alexander	0	0.0	0.0	61.1	Logan	2	12.6	1.5	45.4
Bond	1	10.4	0.3	58.0	McDonough	1	6.8	0.2	38.0
Boone	1	2.8	0.1	15.9	McHenry	16	8.0	4.5	12.9
Brown	0	0.0	0.0	123.0	McLean	4	3.7	1.0	9.4
Bureau	1	5.0	0.1	27.8	Macon	4	5.6	1.5	14.4
Calhoun	0	0.0	0.0	134.6	Macoupin	2	7.5	0.9	27.0
Carroll	0	0.0	0.0	50.7	Madison	8	4.8	2.1	9.4
Cass	2	21.4	2.6	77.3	Marion	1	3.8	0.1	21.1
Champaign	9	7.3	3.3	13.8	Marshall	0	0.0	0.0	54.0
Christian	0	0.0	0.0	17.8	Mason	0	0.0	0.0	47.3
Clark	1	11.4	0.3	63.2	Massac	1	10.2	0.3	56.8
Clay	0	0.0	0.0	43.2	Menard	0	0.0	0.0	55.3
Clinton	4	19.0	5.2	48.8	Mercer	0	0.0	0.0	43.0
Coles	2	7.1	0.9	25.5	Monroe	0	0.0	0.0	19.9
Cook	263	6.7	5.9	7.6	Montgomery	2	12.1	1.5	43.8
Crawford	1	10.5	0.3	58.5	Morgan	2	10.4	1.3	37.5
Cumberland	1	14.9	0.4	82.8	Moultrie	0	0.0	0.0	42.5
DeKalb	4	6.2	1.7	15.8	Ogle	3	9.9	2.0	29.0
DeWitt	0	0.0	0.0	38.7	Peoria	10	7.3	3.5	13.5
Douglas	1	7.2	0.2	39.9	Perry	0	0.0	0.0	32.5
DuPage	32	5.5	3.8	7.8	Piatt	0	0.0	0.0	40.9
Edgar	0	0.0	0.0	36.6	Pike	0	0.0	0.0	37.3
Edwards	1	29.4	0.7	163.9	Pope	0	0.0	0.0	212.0
Effingham	3	13.1	2.7	38.2	Pulaski	0	0.0	0.0	89.5
Fayette	2	16.0	1.9	57.7	Putnam	1	34.1	0.9	190.2
Ford	0	0.0	0.0	46.2	Randolph	3	16.5	3.4	48.1
Franklin	0	0.0	0.0	15.6	Richland	0	0.0	0.0	40.2
Fulton	3	15.7	3.2	45.8	Rock Island	4	4.1	1.1	10.4
Gallatin	0	0.0	0.0	117.9	St. Clair	10	5.3	2.5	9.7
Greene	0	0.0	0.0	45.5	Saline	0	0.0	0.0	23.9
Grundy	1	2.8	0.1	15.7	Sangamon	7	5.6	2.3	11.5
Hamilton	1	22.4	0.6	124.9	Schuyler	0	0.0	0.0	95.3
Hancock	0	0.0	0.0	34.4	Scott	1	31.3	0.8	174.7
Hardin	0	0.0	0.0	158.3	Shelby	1	8.4	0.2	46.7
Henderson	0	0.0	0.0	114.9	Stark	0	0.0	0.0	125.5
Henry	0	0.0	0.0	13.0	Stephenson	1	3.7	0.1	20.4
Iroquois	0	0.0	0.0	22.6	Tazewell	6	7.2	2.6	15.7
Jackson	1	3.0	0.1	16.5	Union	1	9.4	0.2	52.5
Jasper	0	0.0	0.0	66.6	Vermilion	5	8.9	2.9	20.8
Jefferson	2	8.0	1.0	29.1	Wabash	0	0.0	0.0	51.7
Jersey	0	0.0	0.0	29.8	Warren	0	0.0	0.0	36.1
Jo Daviess	0	0.0	0.0	34.1	Washington	0	0.0	0.0	43.4
Johnson	0	0.0	0.0	63.7	Wayne	1	9.8	0.2	54.6
Kane	25	6.0	3.9	8.9	White	0	0.0	0.0	42.1
Kankakee	3	3.8	0.8	11.2	Whiteside	2	5.7	0.7	20.5
Kendall	3	3.4	0.7	9.8	Will	29	6.0	4.0	8.6
Knox	3	11.0	2.3	32.0	Williamson	0	0.0	0.0	9.5
Lake	23	4.8	3.0	7.2	Winnebago	21	10.3	6.4	15.8
LaSalle	4	6.0	1.6	15.3	Woodford	1	4.3	0.1	24.2
Lawrence	1	12.2	0.3	68.2					

[1] Per 10,000 births

[2] 95 percent confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

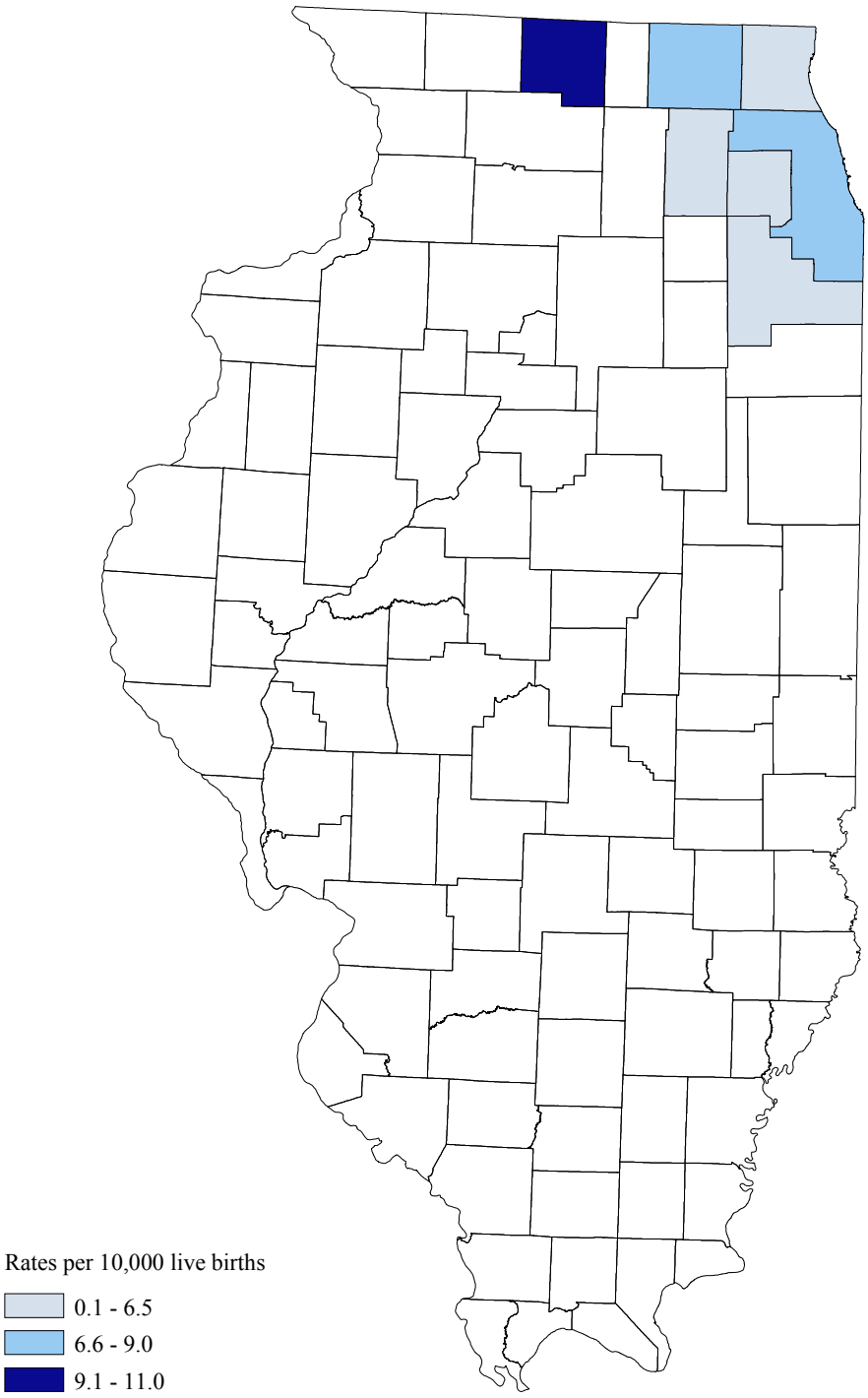
Figure 19. Prevalence Rates[1] and 95 Percent Confidence Intervals For Endocrine, Metabolic and Immune Disorders in Newborn Infants by Selected Counties of Residence,[2] 2005 – 2009



[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, May 2013

Figure 20. Map of Prevalence Rates for Endocrine, Metabolic and Immune Disorders in Newborn Infants by Selected Counties of Residence, 2005 – 2009



Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

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 seen most commonly 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 21. Total Number and Prevalence Rates of Blood Disorders in Newborn Infants, Illinois, 2005 – 2009

Defect	ICD-9-CM Codes	Cases	Rate[1]	95% CI[2]	
				Lower	Upper
Coagulation defects	286.x	55	0.6	0.5	0.8
Constitutional aplastic anemia	284.x	11	0.1	0.1	0.2
Hereditary hemolytic anemia	282.x	338	3.1	3.4	4.2
Leukemia	204.00 - 208.91	9	0.1	0.0	0.2

[1] Rate per 10,000 live births

[2] 95 percent confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

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

Table 22. Total Number and Prevalence Rates of Blood Disorders in Newborn Infants by County of Residence, 2005 – 2009

			95% CI[2]					95% CI[2]	
County	Cases	Rate[1]	Lower	Upper	County	Cases	Rate[1]	Lower	Upper
ILLINOIS	413	4.7	4.2	5.1	Lee	0	0.0	0.0	18.9
Adams	0	0.0	0.0	8.8	Livingston	2	8.0	1.0	28.9
Alexander	0	0.0	0.0	61.1	Logan	0	0.0	0.0	23.2
Bond	0	0.0	0.0	38.4	McDonough	3	20.4	4.2	59.8
Boone	0	0.0	0.0	10.5	McHenry	6	3.0	1.1	6.5
Brown	0	0.0	0.0	123.0	McLean	4	3.7	1.0	9.4
Bureau	1	5.0	0.1	27.8	Macon	13	18.2	9.7	31.2
Calhoun	0	0.0	0.0	134.6	Macoupin	0	0.0	0.0	13.8
Carroll	0	0.0	0.0	50.7	Madison	3	1.8	0.4	5.2
Cass	0	0.0	0.0	39.5	Marion	0	0.0	0.0	13.9
Champaign	13	10.5	5.6	18.0	Marshall	0	0.0	0.0	54.0
Christian	0	0.0	0.0	17.8	Mason	0	0.0	0.0	47.3
Clark	0	0.0	0.0	41.9	Massac	0	0.0	0.0	37.6
Clay	0	0.0	0.0	43.2	Menard	0	0.0	0.0	55.3
Clinton	0	0.0	0.0	17.6	Mercer	0	0.0	0.0	43.0
Coles	2	7.1	0.9	25.5	Monroe	0	0.0	0.0	19.9
Cook	236	6.0	5.3	6.9	Montgomery	0	0.0	0.0	22.3
Crawford	0	0.0	0.0	38.7	Morgan	0	0.0	0.0	19.2
Cumberland	0	0.0	0.0	54.8	Moultrie	0	0.0	0.0	42.5
DeKalb	2	3.1	0.4	11.2	Ogle	0	0.0	0.0	12.2
DeWitt	0	0.0	0.0	38.7	Peoria	5	3.7	1.2	8.6
Douglas	1	7.2	0.2	39.9	Perry	0	0.0	0.0	32.5
DuPage	16	2.8	1.6	4.5	Piatt	0	0.0	0.0	40.9
Edgar	0	0.0	0.0	36.6	Pike	0	0.0	0.0	37.3
Edwards	0	0.0	0.0	108.5	Pope	0	0.0	0.0	212.0
Effingham	1	4.4	0.1	24.2	Pulaski	0	0.0	0.0	89.5
Fayette	0	0.0	0.0	29.5	Putnam	0	0.0	0.0	125.9
Ford	1	12.5	0.3	69.8	Randolph	0	0.0	0.0	20.2
Franklin	0	0.0	0.0	15.6	Richland	0	0.0	0.0	40.2
Fulton	1	5.2	0.1	29.1	Rock Island	5	5.1	1.6	11.8
Gallatin	0	0.0	0.0	117.9	St. Clair	8	4.2	1.8	8.4
Greene	0	0.0	0.0	45.5	Saline	0	0.0	0.0	23.9
Grundy	1	2.8	0.1	15.7	Sangamon	6	4.8	1.8	10.5
Hamilton	0	0.0	0.0	82.7	Schuyler	0	0.0	0.0	95.3
Hancock	0	0.0	0.0	34.4	Scott	0	0.0	0.0	115.6
Hardin	0	0.0	0.0	158.3	Shelby	1	8.4	0.2	46.7
Henderson	0	0.0	0.0	114.9	Stark	0	0.0	0.0	125.5
Henry	0	0.0	0.0	13.0	Stephenson	1	3.7	0.1	20.4
Iroquois	0	0.0	0.0	22.6	Tazewell	2	2.4	0.3	8.7
Jackson	0	0.0	0.0	10.9	Union	0	0.0	0.0	34.8
Jasper	0	0.0	0.0	66.6	Vermilion	7	12.5	5.0	25.8
Jefferson	0	0.0	0.0	14.8	Wabash	0	0.0	0.0	51.7
Jersey	0	0.0	0.0	29.8	Warren	0	0.0	0.0	36.1
Jo Daviess	0	0.0	0.0	34.1	Washington	1	11.8	0.3	65.5
Johnson	0	0.0	0.0	63.7	Wayne	0	0.0	0.0	36.2
Kane	13	3.1	1.7	5.4	White	0	0.0	0.0	42.1
Kankakee	4	5.1	1.4	13.1	Whiteside	1	2.8	0.1	15.8
Kendall	1	1.1	0.0	6.2	Will	23	4.8	3.0	7.1
Knox	0	0.0	0.0	13.5	Williamson	0	0.0	0.0	9.5
Lake	12	2.5	1.3	4.4	Winnebago	14	6.9	3.8	11.5
LaSalle	3	4.5	0.9	13.1	Woodford	0	0.0	0.0	16.0
Lawrence	0	0.0	0.0	45.2					

[1] Per 10,000 births

[2] 95 percent confidence interval for rate

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

FETAL ALCOHOL EXPOSURE

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 developmental disabilities. 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.

However, fetal alcohol syndrome is rarely diagnosed in newborn infants. The data collected by the APORS program include babies diagnosed with fetal alcohol spectrum disorders as well as those affected by, or significantly exposed to, alcohol as reported by Illinois hospitals. Table 23 gives the five-year prevalence rates for significantly alcohol exposed infants for the whole state.

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

Table 23. Total Number and Prevalence Rates of Newborn Infants With Fetal Alcohol Exposure by County of Residence, 2005 – 2009

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]	201	2.3	2.0	2.6	Lee	0	0.0	0.0	18.9
Adams	0	0.0	0.0	8.8	Livingston	0	0.0	0.0	14.8
Alexander	0	0.0	0.0	61.1	Logan	1	6.3	0.2	35.0
Bond	0	0.0	0.0	38.4	McDonough	0	0.0	0.0	25.1
Boone	7	19.9	8.0	41.0	McHenry	1	0.5	0.0	2.8
Brown	0	0.0	0.0	123.0	McLean	4	3.7	1.0	9.4
Bureau	3	15.0	3.1	43.7	Macon	3	4.2	0.9	12.3
Calhoun	0	0.0	0.0	134.6	Macoupin	0	0.0	0.0	13.8
Carroll	0	0.0	0.0	50.7	Madison	1	0.6	0.0	3.3
Cass	0	0.0	0.0	39.5	Marion	0	0.0	0.0	13.9
Champaign	7	5.7	2.3	11.7	Marshall	0	0.0	0.0	54.0
Christian	0	0.0	0.0	17.8	Mason	0	0.0	0.0	47.3
Clark	1	11.4	0.3	63.2	Massac	0	0.0	0.0	37.6
Clay	0	0.0	0.0	43.2	Menard	0	0.0	0.0	55.3
Clinton	0	0.0	0.0	17.6	Mercer	0	0.0	0.0	43.0
Coles	2	7.1	0.9	25.5	Monroe	0	0.0	0.0	19.9
Cook	35	0.9	0.6	1.2	Montgomery	0	0.0	0.0	22.3
Crawford	0	0.0	0.0	38.7	Morgan	0	0.0	0.0	19.2
Cumberland	1	14.9	0.4	82.8	Moultrie	0	0.0	0.0	42.5
DeKalb	1	1.5	0.0	8.6	Ogle	4	13.2	3.6	33.9
DeWitt	0	0.0	0.0	38.7	Peoria	2	1.5	0.2	5.3
Douglas	0	0.0	0.0	26.4	Perry	0	0.0	0.0	32.5
DuPage	1	0.2	0.0	1.0	Piatt	1	11.1	0.3	61.7
Edgar	0	0.0	0.0	36.6	Pike	0	0.0	0.0	37.3
Edwards	0	0.0	0.0	108.5	Pope	0	0.0	0.0	212.0
Effingham	1	4.4	0.1	24.2	Pulaski	0	0.0	0.0	89.5
Fayette	0	0.0	0.0	29.5	Putnam	0	0.0	0.0	125.9
Ford	0	0.0	0.0	46.2	Randolph	0	0.0	0.0	20.2
Franklin	0	0.0	0.0	15.6	Richland	0	0.0	0.0	40.2
Fulton	0	0.0	0.0	19.3	Rock Island	0	0.0	0.0	3.7
Gallatin	0	0.0	0.0	117.9	St. Clair	1	0.5	0.0	3.0
Greene	0	0.0	0.0	45.5	Saline	0	0.0	0.0	23.9
Grundy	0	0.0	0.0	10.4	Sangamon	2	1.6	0.2	5.8
Hamilton	0	0.0	0.0	82.7	Schuyler	0	0.0	0.0	95.3
Hancock	0	0.0	0.0	34.4	Scott	0	0.0	0.0	115.6
Hardin	0	0.0	0.0	158.3	Shelby	0	0.0	0.0	30.9
Henderson	0	0.0	0.0	114.9	Stark	0	0.0	0.0	125.5
Henry	0	0.0	0.0	13.0	Stephenson	1	3.7	0.1	20.4
Iroquois	0	0.0	0.0	22.6	Tazewell	2	2.4	0.3	8.7
Jackson	0	0.0	0.0	10.9	Union	0	0.0	0.0	34.8
Jasper	0	0.0	0.0	66.6	Vermilion	10	17.9	8.6	32.8
Jefferson	0	0.0	0.0	14.8	Wabash	0	0.0	0.0	51.7
Jersey	0	0.0	0.0	29.8	Warren	0	0.0	0.0	36.1
Jo Daviess	0	0.0	0.0	34.1	Washington	0	0.0	0.0	43.4
Johnson	0	0.0	0.0	63.7	Wayne	0	0.0	0.0	36.2
Kane	1	0.2	0.0	1.3	White	0	0.0	0.0	42.1
Kankakee	0	0.0	0.0	4.7	Whiteside	10	28.4	13.6	52.2
Kendall	0	0.0	0.0	4.1	Will	3	0.6	0.1	1.8
Knox	0	0.0	0.0	13.5	Williamson	1	2.6	0.1	14.4
Lake	18	3.7	2.2	5.9	Winnebago	74	36.4	28.6	45.7
LaSalle	1	1.5	0.0	8.3	Woodford	0	0.0	0.0	16.0
Lawrence	0	0.0	0.0	45.2					

[1] Per 10,000 births
[2] 95 percent 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, May 2013

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; the infant may become blind. Most infants with mild ROP usually develop normal central vision. However, some may have late complications, including strabismus, amblyopia, myopia, glaucoma and late onset retinal detachment.

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

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 24. Total Number and Prevalence Rates of Other Adverse Pregnancy Outcomes in Newborn Infants, Illinois, 2005 – 2009

Defect	ICD-9-CM Codes	Cases	Rate[1]	95% CI[2]	
				Lower	Upper
Cerebral lipidoses	330.1	0	0.0	0.0	0.1
Chorioretinitis	363.20 - 363.22	4	0.0	0.0	0.1
Endocardial fibroelastosis	425.3	24	0.3	0.2	0.4
Intrauterine growth retardation	764.90 - 764.99	3,594	40.5	39.2	41.8
Neurofibromatosis	237.70 - 237.72	6	0.1	0.0	0.1
Occlusion of cerebral arteries	434.00 - 434.91	99	1.1	0.9	1.4
Retinopathy of prematurity	362.21	2,360	26.6	25.5	27.7
Strabismus	378.00 - 378.9	12	0.1	0.1	0.2

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

Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

Table 25. Total Number and Prevalence Rates of Other Adverse Pregnancy Outcomes in Newborn Infants by County of Residence, 2005 – 2009

			95% CI[2]					95% CI[2]	
County	Cases	Rate[1]	Lower	Upper	County	Cases	Rate[1]	Lower	Upper
ILLINOIS[3]	6,099	68.7	67.0	70.5	Lee	12	61.4	31.7	107.3
Adams	45	107.2	78.2	143.4	Livingston	26	104.1	68.0	152.6
Alexander	1	16.6	0.4	92.2	Logan	7	44.0	17.7	90.6
Bond	2	20.8	2.5	75.3	McDonough	18	122.7	72.7	193.9
Boone	18	51.2	30.3	80.9	McHenry	106	52.7	43.2	63.8
Brown	2	66.7	8.1	240.8	McLean	75	68.5	53.9	85.9
Bureau	20	99.8	61.0	154.1	Macon	30	42.1	28.4	60.0
Calhoun	0	0.0	0.0	134.6	Macoupin	11	41.1	20.5	73.5
Carroll	8	109.9	47.4	216.5	Madison	73	43.6	34.1	54.8
Cass	10	107.0	51.3	196.7	Marion	24	90.7	58.1	135.0
Champaign	151	122.3	103.6	143.5	Marshall	5	73.2	23.8	170.8
Christian	14	67.6	36.9	113.4	Mason	4	51.3	14.0	131.3
Clark	5	56.8	18.4	132.4	Massac	2	20.4	2.5	73.6
Clay	6	70.3	25.8	153.1	Menard	6	90.0	33.0	195.8
Clinton	11	52.4	26.1	93.7	Mercer	3	35.0	7.2	102.3
Coles	11	38.9	19.4	69.6	Monroe	3	16.2	3.3	47.3
Cook	3,025	77.5	74.7	80.3	Montgomery	5	30.3	9.8	70.7
Crawford	15	157.4	88.1	259.6	Morgan	20	103.9	63.5	160.5
Cumberland	4	59.4	16.2	152.2	Moultrie	2	23.1	2.8	83.3
DeKalb	29	44.8	30.0	64.4	Ogle	18	59.6	35.3	94.1
DeWitt	8	84.0	36.3	165.6	Peoria	147	108.0	91.2	126.9
Douglas	4	28.7	7.8	73.4	Perry	3	26.5	5.5	77.3
DuPage	376	64.8	58.4	71.7	Piatt	4	44.3	12.1	113.4
Edgar	5	49.6	16.1	115.6	Pike	5	50.6	16.4	118.0
Edwards	0	0.0	0.0	108.5	Pope	0	0.0	0.0	212.0
Effingham	20	87.0	53.2	134.4	Pulaski	2	48.5	5.9	175.4
Fayette	8	63.9	27.6	125.9	Putnam	0	0.0	0.0	125.9
Ford	5	62.7	20.3	146.2	Randolph	6	32.9	12.1	71.7
Franklin	11	46.6	23.2	83.3	Richland	3	32.7	6.7	95.6
Fulton	12	62.7	32.4	109.5	Rock Island	29	29.4	19.7	42.2
Gallatin	0	0.0	0.0	117.9	St. Clair	96	50.9	41.2	62.1
Greene	11	135.8	67.8	243.0	Saline	5	32.4	10.5	75.7
Grundy	19	53.7	32.3	83.9	Sangamon	94	75.2	60.8	92.1
Hamilton	2	44.8	5.4	162.0	Schuyler	3	77.5	16.0	226.5
Hancock	9	84.0	38.4	159.5	Scott	4	125.4	34.2	321.1
Hardin	0	0.0	0.0	158.3	Shelby	7	58.7	23.6	121.0
Henderson	1	31.2	0.8	173.6	Stark	2	68.0	8.2	245.7
Henry	23	81.0	51.4	121.6	Stephenson	67	245.5	190.3	311.8
Iroquois	4	24.5	6.7	62.7	Tazewell	95	113.9	92.1	139.2
Jackson	18	53.2	31.5	84.1	Union	4	37.7	10.3	96.5
Jasper	3	54.2	11.2	158.3	Vermilion	35	62.5	43.5	86.9
Jefferson	8	32.2	13.9	63.4	Wabash	0	0.0	0.0	51.7
Jersey	7	56.5	22.7	116.5	Warren	6	58.7	21.5	127.8
Jo Daviess	7	64.7	26.0	133.3	Washington	7	82.4	33.1	169.7
Johnson	3	51.8	10.7	151.4	Wayne	3	29.4	6.1	86.0
Kane	163	39.3	33.5	45.8	White	1	11.4	0.3	63.6
Kankakee	26	33.1	21.6	48.6	Whiteside	12	34.0	17.6	59.5
Kendall	47	52.7	38.7	70.0	Will	361	74.7	67.2	82.8
Knox	23	84.0	53.3	126.1	Williamson	5	12.9	4.2	30.2
Lake	223	46.4	40.5	52.9	Winnebago	148	72.8	61.5	85.5
LaSalle	53	79.2	59.4	103.6	Woodford	14	60.7	33.2	101.8
Lawrence	2	24.5	3.0	88.4					

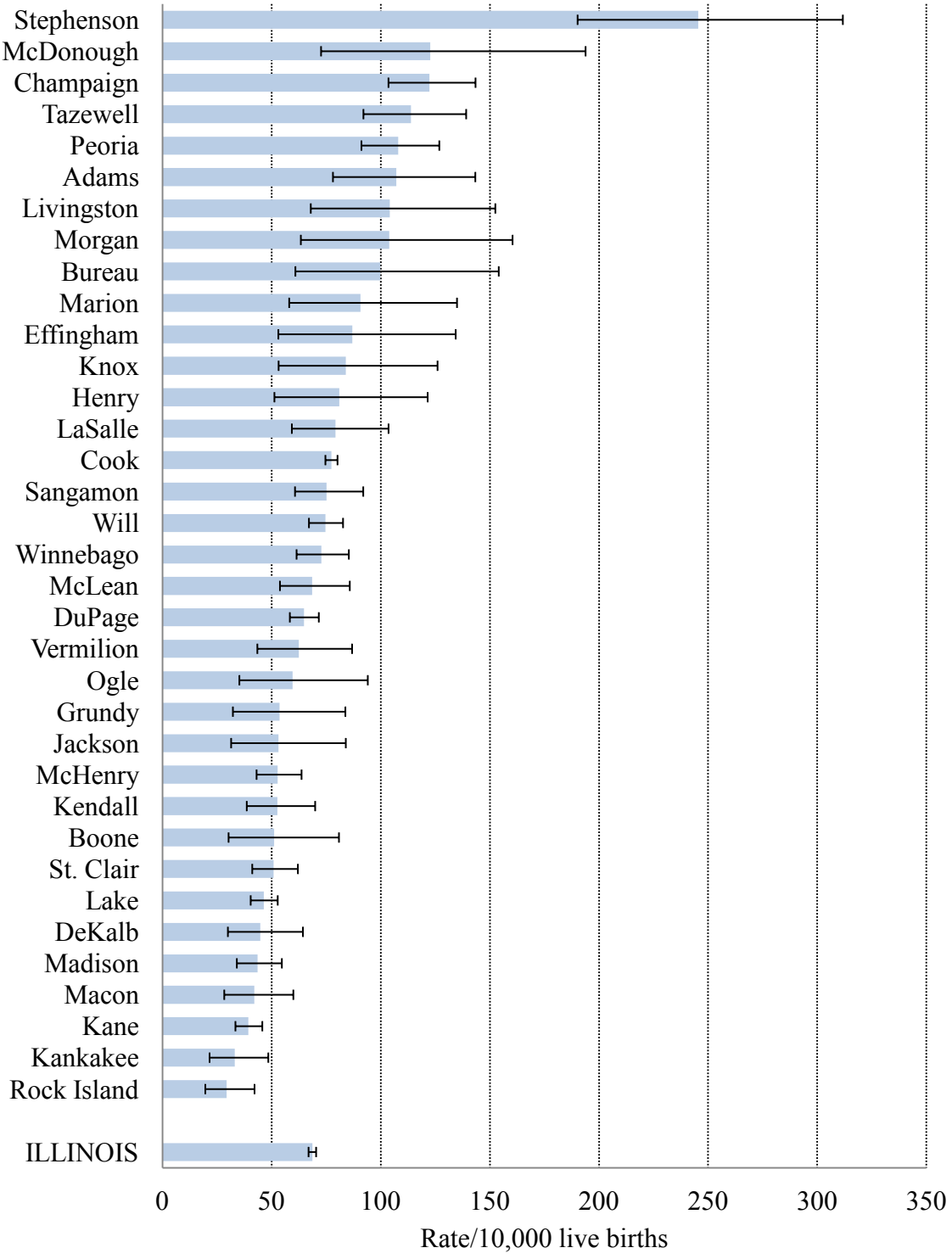
[1] Per 10,000 births

[2] 95 percent confidence interval for rate

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

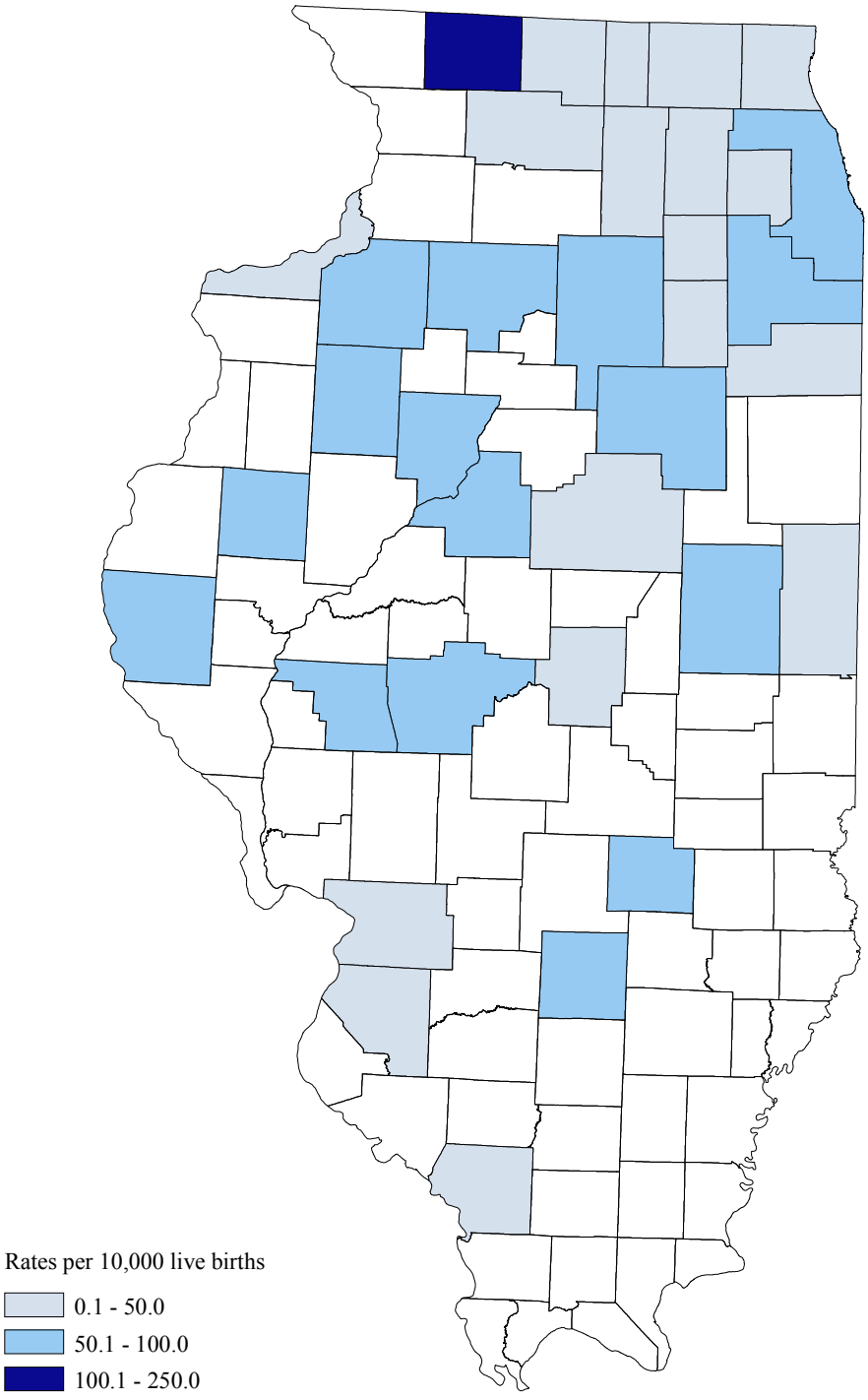
Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

Figure 21. Prevalence Rates[1] and 95 Percent Confidence Intervals for Other Adverse Pregnancy Outcomes in Newborn Infants by Selected Counties of Residence,[2] 2005 – 2009



[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, May 2013

Figure 22. Map of Prevalence Rates for Newborn Infants With Other Adverse Pregnancy Outcomes, by Selected Counties of Residence, 2005 – 2009



Source: Illinois Department of Public Health, Adverse Pregnancy Outcomes Reporting System, May 2013

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