TRENDS IN THE PREVALENCE OF BIRTH DEFECTS IN ILLINOIS AND CHICAGO 1989 to 1997

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TRENDS IN THE PREVALENCE OF BIRTH DEFECTS IN ILLINOIS AND CHICAGO -1989 to 1997

INTRODUCTION

This report is the sixth in a series of surveillance reports issued by the Illinois Department of Public Health (IDPH), Adverse Pregnancy Outcomes Reporting System (APORS). The purpose of APORS is to monitor birth defects in Illinois. In this report, the prevalence rates of selected birth defect categories for Illinois and Chicago newborns in 1996 and 1997 are described. In addition, long-term trends are summarized for Illinois newborns for the same categories. Prevalence rates among Illinois newborns from 1989 through 1995 and among Chicago newborns from 1993 through 1995 were published in previous surveillance reports.[1,2,3]

METHODS

A description of the Adverse Pregnancy Outcomes Reporting System is found in Appendix A. A total of 46 categories of birth defects were included in this study. A listing of International Classification of Diseases - Ninth Revision Clinical Modification (ICD-9-CM) codes for the selected birth defects is found in Appendix B.

Quarterly rates for selected birth defect rates for newborns were calculated by dividing the number of birth defects identified during the newborn hospital stay by the total number of live births in that quarter. The numbers of live births were obtained from the IDPH master birth files.

Because case finding for APORS is an ongoing process, new cases for earlier years continue to be obtained, and surveillance data are updated. This document presents an updated report of birth defect rates among Illinois newborns in 1996 and the initial report of 1997 Illinois rates. Updated birth defect rates among Chicago newborns in 1996 and the initial 1997 Chicago rates also appear.

Quarterly birth defect rates for Illinois from 1989 to 1997 were evaluated for trends. Linear trend lines were fitted to the data with regression models. T tests for slopes of these lines were performed using the SAS System for Windows®, Release 6.12.[4]

RESULTS AND DISCUSSION

Rates of Birth Defects

Birth defect rates for selected categories among Illinois newborns in 1996 are presented in Table 1; the 1997 rates are presented in Table 2 (the initial report of these data). Table 3 and Table 4 describe the birth defect rates that occurred among Chicago newborns in 1996 and 1997, respectively.

Because the rates for many categories are based upon small numbers of affected newborns, caution should be exercised in their interpretation. All rates for Chicago appear to be lower than those for Illinois. Differentials in hospital reporting may account for at least part of this difference.

Trend Analysis

Statistically significant trends ($p<.05$) were found for 13 birth defect categories (Figure 1). Of the remaining 33 categories, although several appeared graphically to change over time, trends were not significant. This often occurred because there were very few cases.

The birth defects with significant trends included the following:

- *Cardiovascular - Increasing*
  - Ventricular septal defect
  - Atrial septal defect
  - Endocardial cushion defect
  - Pulmonary valve atresia/stenosis
  - Patent ductus arteriosus
  - Coarctation of the aorta
  - Pulmonary artery anomalies

- *Gastrointestinal - Increasing*
  - Pyloric stenosis

- *Geniturinary - Increasing*
  - Obstructive genitourinary defect

- *Musculoskeletal - Increasing*
  - Gastroschisis/Omphalocele

- *Musculoskeletal - Decreasing*
  - Club foot
  - Congenital hip dislocation

- *Chromosomal - Increasing*
  Down syndrome

Although the increasing trends could be real, they more likely resulted from improved diagnostic techniques, better clinical recognition of malformations, expanded reporting by hospital personnel and increased efforts in case ascertainment by APORS staff.

Improved diagnostic techniques and better clinical recognition could certainly account for the increases found in the cardiovascular, gastrointestinal, genitourinary and musculoskeletal defect categories. In addition, beginning in 1996, APORS extended its scope by including voluntarily submitted hospital reports of infants diagnosed with a birth defect during the first year of life. This effort likely increased reporting of diagnoses such as pyloric stenosis that may not have been identified during the birth stay.

The decreasing trends for club foot and congenital hip dislocation cases also could be related to data collection issues. Reporting of minor hip dislocation cases was restricted after 1989, as was reporting of minor club foot cases more recently.

The changing trends found in the prevalence of birth defects in Illinois are consistent with those observed in the Birth Defects Monitoring Program (BDMP), a national effort to track congenital malformations by using hospital discharge data for newborns.[5] The consistency indicates an improving birth defect surveillance system and underscores the importance of such a system in generating crucial data for birth defect control and prevention activities in Illinois.

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1996 Illinois

TABLE 1. SELECTED BIRTH DEFECT CATEGORIES FOR 1996 LIVE BIRTHS, ILLINOIS

SELECTED BIRTH DEFECT GROUPS	FIRST QUARTER		SECOND QUARTER		THIRD QUARTER		FOURTH QUARTER		TOTAL	
	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
A. CENTRAL NERVOUS SYSTEM										
Anencephalus	12	2.69	9	2.02	9	1.85	13	2.88	**43**	**2.35**
Spina Bifida without Anencephalus	21	4.70	11	2.46	18	3.70	14	3.10	**64**	**3.50**
Encephalocele	5	1.12	5	1.12	6	1.23	3	0.66	**19**	**1.04**
Microcephalus	19	4.25	20	4.48	13	2.67	19	4.21	**71**	**3.88**
Hydrocephalus without Spina Bifida	36	8.06	25	5.60	30	6.17	18	3.99	**109**	**5.95**
B. EYE										
Anophthalmia/Microphthalmia	2	0.45	3	0.67	7	1.44	9	1.99	**21**	**1.15**
Congenital Cataract	6	1.34	2	0.45	4	0.82	1	0.22	**13**	**0.71**
Coloboma of the Eye	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
Aniridia	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
C. EAR										
Anotia/Microtia	1	0.22	1	0.22	0	0.00	2	0.44	**4**	**0.22**
D. CARDIOVASCULAR										
Common Truncus	2	0.45	3	0.67	1	0.21	3	0.66	**9**	**0.49**
Transposition of Great Arteries	6	1.34	18	4.03	9	1.85	5	1.11	**38**	**2.08**
Tetralogy of Fallot	11	2.46	12	2.69	11	2.26	12	2.66	**46**	**2.51**
Ventricular Septal Defect	80	17.90	100	22.39	119	24.48	86	19.06	**385**	**21.03**
Atrial Septal Defect	97	21.71	95	21.27	82	16.87	82	18.17	**356**	**19.45**
Endocardial Cushion Defect	7	1.57	12	2.69	6	1.23	11	2.44	**36**	**1.97**
Pulmonary Valve Atresia and Stenosis	15	3.36	16	3.58	14	2.88	17	3.77	**62**	**3.39**
Tricuspid Valve Atresia and Stenosis	2	0.45	2	0.45	1	0.21	2	0.44	**7**	**0.38**
Ebstein's Anomaly	3	0.67	3	0.67	2	0.41	0	0.00	**8**	**0.44**
Aortic Valve Stenosis	4	0.90	2	0.45	4	0.82	4	0.89	**14**	**0.76**
Hypoplastic Left Heart Syndrome	6	1.34	7	1.57	9	1.85	5	1.11	**27**	**1.47**
Patent Ductus Arteriosus	175	39.16	213	47.70	201	41.35	146	32.36	**735**	**40.15**
Coarctation of the Aorta	9	2.01	16	3.58	13	2.67	11	2.44	**49**	**2.68**
Pulmonary Artery Anomalies	70	15.66	54	12.09	55	11.31	45	9.97	**224**	**12.24**
E. RESPIRATORY										
Lung Agenesis/Hypoplasia	6	1.34	12	2.69	12	2.47	10	2.22	**40**	**2.18**

TABLE 1. SELECTED BIRTH DEFECT CATEGORIES FOR 1996 LIVE BIRTHS, ILLINOIS (continued)

SELECTED BIRTH DEFECT GROUPS	FIRST QUARTER		SECOND QUARTER		THIRD QUARTER		FOURTH QUARTER		TOTAL	
	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
F. OROFACIAL										
Cleft Palate without Cleft Lip	23	5.15	16	3.58	13	2.67	24	5.32	**76**	**4.15**
Cleft Lip with and without Cleft Palate	30	6.71	27	6.05	35	7.20	23	5.10	**115**	**6.28**
Choanal Atresia	1	0.22	4	0.90	6	1.23	6	1.33	**17**	**0.93**
G. GASTROINTESTINAL										
Esophageal Atresia/Tracheosophageal Fistula	14	3.13	10	2.24	14	2.88	13	2.88	**51**	**2.79**
Pyloric Stenosis	37	8.28	35	7.84	45	9.26	21	4.65	**138**	**7.54**
Rectal and Large Intestinal Atresia/Stenosis	15	3.36	7	1.57	11	2.26	10	2.22	**43**	**2.35**
Hirschsprung Disease (congenital megacolon)	4	0.90	5	1.12	11	2.26	6	1.33	**26**	**1.42**
Biliary Atresia	2	0.45	1	0.22	0	0.00	1	0.22	**4**	**0.22**
H. GENITOURINARY										
Renal Agenesis/Hypoplasia	11	2.46	3	0.67	11	2.26	7	1.55	**32**	**1.75**
Bladder Exstrophy	3	0.67	0	0.00	2	0.41	0	0.00	**5**	**0.27**
Obstructive Genitourinary Defect	42	9.40	46	10.30	43	8.85	40	8.87	**171**	**9.34**
Hypospadias and Epispadias	66	14.77	81	18.14	69	14.19	82	18.17	**298**	**16.28**
I. MUSCULOSKELETAL										
Club Foot	67	14.99	60	13.44	69	14.19	44	9.75	**240**	**13.11**
Reduction Deformity, Upper Limbs	12	2.69	9	2.02	10	2.06	7	1.55	**38**	**2.08**
Reduction Deformity, Lower Limbs	4	0.90	2	0.45	5	1.03	3	0.66	**14**	**0.76**
Gastroschisis/Omphalocele	16	3.58	14	3.14	17	3.50	18	3.99	**65**	**3.55**
Congenital Hip Dislocation	11	2.46	9	2.02	4	0.82	3	0.66	**27**	**1.47**
Diaphragmatic Hernia	13	2.91	7	1.57	9	1.85	12	2.66	**41**	**2.24**
J. CHROMOSOMAL										
Down Syndrome	31	6.94	52	11.64	47	9.67	47	10.42	**177**	**9.67**
Patau Syndrome	4	0.90	4	0.90	2	0.41	1	0.22	**11**	**0.60**
Edward Syndrome	9	2.01	8	1.79	10	2.06	8	1.77	**35**	**1.91**
GRAND TOTAL	**1010**	**226.00**	**1041**	**233.11**	**1059**	**217.84**	**894**	**198.14**	**4004**	**218.70**

SOURCE: Illinois Department of Public Health, APORS, April 1999
Cases=Number of live births and fetal deaths; rate is per 10,000 live births

1997 Illinois

TABLE 2. SELECTED BIRTH DEFECT CATEGORIES FOR 1997 LIVE BIRTHS, ILLINOIS

SELECTED BIRTH DEFECT GROUPS	FIRST QUARTER		SECOND QUARTER		THIRD QUARTER		FOURTH QUARTER		TOTAL	
	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
A. CENTRAL NERVOUS SYSTEM										
Anencephalus	9	2.08	8	1.75	10	2.11	4	0.90	**31**	**1.72**
Spina Bifida without Anencephalus	10	2.31	12	2.63	9	1.90	11	2.48	**42**	**2.32**
Encephalocele	2	0.46	1	0.22	7	1.48	1	0.23	**11**	**0.61**
Microcephalus	15	3.47	14	3.07	17	3.59	5	1.13	**51**	**2.82**
Hydrocephalus without Spina Bifida	34	7.86	20	4.38	31	6.54	18	4.06	**103**	**5.70**
B. EYE										
Anophthalmia/Microphthalmia	2	0.46	2	0.44	5	1.06	2	0.45	**11**	**0.61**
Congenital Cataract	2	0.46	1	0.22	3	0.63	1	0.23	**7**	**0.39**
Coloboma of the Eye	0	0.00	1	0.22	1	0.21	2	0.45	**4**	**0.22**
Aniridia	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
C. EAR										
Anotia/Microtia	1	0.23	2	0.44	2	0.42	2	0.45	**7**	**0.39**
D. CARDIOVASCULAR										
Common Truncus	2	0.46	2	0.44	2	0.42	0	0.00	**6**	**0.33**
Transposition of Great Arteries	2	0.46	9	1.97	10	2.11	10	2.25	**31**	**1.72**
Tetralogy of Fallot	11	2.54	11	2.41	7	1.48	7	1.58	**36**	**1.99**
Ventricular Septal Defect	71	16.42	79	17.31	85	17.94	67	15.10	**302**	**16.72**
Atrial Septal Defect	69	15.95	81	17.74	70	14.77	64	14.43	**284**	**15.72**
Endocardial Cushion Defect	4	0.92	10	2.19	12	2.53	12	2.71	**38**	**2.10**
Pulmonary Valve Atresia and Stenosis	7	1.62	13	2.85	9	1.90	5	1.13	**34**	**1.88**
Tricuspid Valve Atresia and Stenosis	2	0.46	3	0.66	3	0.63	1	0.23	**9**	**0.50**
Ebstein's Anomaly	3	0.69	2	0.44	1	0.21	1	0.23	**7**	**0.39**
Aortic Valve Stenosis	4	0.92	7	1.53	2	0.42	0	0.00	**13**	**0.72**
Hypoplastic Left Heart Syndrome	5	1.16	12	2.63	4	0.84	3	0.68	**24**	**1.33**
Patent Ductus Arteriosus	157	36.30	170	37.24	183	38.61	149	33.59	**659**	**36.48**
Coarctation of the Aorta	8	1.85	6	1.31	10	2.11	6	1.35	**30**	**1.66**
Pulmonary Artery Anomalies	37	8.55	42	9.20	38	8.02	32	7.21	**149**	**8.25**
E. RESPIRATORY										
Lung Agenesis/Hypoplasia	16	3.70	8	1.75	21	4.43	15	3.38	**60**	**3.32**

TABLE 2. SELECTED BIRTH DEFECT CATEGORIES FOR 1997 LIVE BIRTHS, ILLINOIS (continued)

SELECTED BIRTH DEFECT GROUPS	FIRST QUARTER		SECOND QUARTER		THIRD QUARTER		FOURTH QUARTER		TOTAL	
	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
F. OROFACIAL										
Cleft Palate without Cleft Lip	17	3.93	18	3.94	12	2.53	8	1.80	**55**	**3.04**
Cleft Lip with and without Cleft Palate	27	6.24	32	7.01	34	7.17	23	5.19	**116**	**6.42**
Choanal Atresia	5	1.16	4	0.88	3	0.63	5	1.13	**17**	**0.94**
G. GASTROINTESTINAL										
Esophageal Atresia/Tracheosophageal Fistula	13	3.01	16	3.50	13	2.74	9	2.03	**51**	**2.82**
Pyloric Stenosis	4	0.92	2	0.44	0	0.00	4	0.90	**10**	**0.55**
Rectal and Large Intestinal Atresia/Stenosis	8	1.85	10	2.19	12	2.53	17	3.83	**47**	**2.60**
Hirschsprung Disease (congenital megacolon)	6	1.39	6	1.31	3	0.63	5	1.13	**20**	**1.11**
Biliary Atresia	2	0.46	0	0.00	2	0.42	0	0.00	**4**	**0.22**
H. GENITOURINARY										
Renal Agenesis/Hypoplasia	6	1.39	5	1.10	7	1.48	3	0.68	**21**	**1.16**
Bladder Exstrophy	1	0.23	1	0.22	3	0.63	5	1.13	**10**	**0.55**
Obstructive Genitourinary Defect	35	8.09	28	6.13	43	9.07	34	7.67	**140**	**7.75**
Hypospadias and Epispadias	53	12.25	51	11.17	62	13.08	64	14.43	**230**	**12.73**
I. MUSCULOSKELETAL										
Club Foot	52	12.02	46	10.08	37	7.81	41	9.24	**176**	**9.74**
Reduction Deformity, Upper Limbs	10	2.31	7	1.53	2	0.42	4	0.90	**23**	**1.27**
Reduction Deformity, Lower Limbs	3	0.69	3	0.66	3	0.63	3	0.68	**12**	**0.66**
Gastroschisis/Omphalocele	20	4.62	24	5.26	22	4.64	30	6.76	**96**	**5.31**
Congenital Hip Dislocation	6	1.39	5	1.10	2	0.42	1	0.23	**14**	**0.77**
Diaphragmatic Hernia	12	2.77	11	2.41	8	1.69	10	2.25	**41**	**2.27**
J. CHROMOSOMAL										
Down Syndrome	45	10.40	45	9.86	51	10.76	49	11.05	**190**	**10.52**
Patau Syndrome	2	0.46	5	1.10	1	0.21	8	1.80	**16**	**0.89**
Edward Syndrome	4	0.92	5	1.10	12	2.53	9	2.03	**30**	**1.66**
GRAND TOTAL	**804**	**185.90**	**840**	**184.00**	**874**	**184.42**	**750**	**169.08**	**3268**	**180.90**

SOURCE: Illinois Department of Public Health, APORS, April 1999
Cases=Number of live births and fetal deaths; rate is per 10,000 live births

1996 CHICAGO

TABLE 3. SELECTED BIRTH DEFECT CATEGORIES FOR 1996 LIVE BIRTHS, CHICAGO

SELECTED BIRTH DEFECT GROUPS	FIRST QUARTER		SECOND QUARTER		THIRD QUARTER		FOURTH QUARTER		TOTAL	
	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
A. CENTRAL NERVOUS SYSTEM										
Anencephalus	3	2.29	0	0.00	1	0.70	1	0.78	**5**	**0.95**
Spina Bifida without Anencephalus	5	3.82	2	1.59	4	2.80	1	0.78	**12**	**2.27**
Encephalocele	2	1.53	2	1.59	1	0.70	3	2.33	**8**	**1.51**
Microcephalus	12	9.16	12	9.55	9	6.31	8	6.20	**41**	**7.76**
Hydrocephalus without Spina Bifida	11	8.40	6	4.78	10	7.01	1	0.78	**28**	**5.30**
B. EYE										
Anophthalmia/Microphthalmia	0	0.00	1	0.80	3	2.10	2	1.55	**6**	**1.14**
Congenital Cataract	0	0.00	0	0.00	1	0.70	0	0.00	**1**	**0.19**
Coloboma of the Eye	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
Aniridia	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
C. EAR										
Anotia/Microtia	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
D. CARDIOVASCULAR										
Common Truncus	0	0.00	0	0.00	0	0.00	2	1.55	**2**	**0.38**
Transposition of Great Arteries	1	0.76	4	3.18	2	1.40	1	0.78	**8**	**1.51**
Tetralogy of Fallot	1	0.76	1	0.80	2	1.40	1	0.78	**5**	**0.95**
Ventricular Septal Defect	5	3.82	13	10.35	17	11.91	19	14.73	**54**	**10.22**
Atrial Septal Defect	14	10.69	12	9.55	8	5.61	10	7.75	**44**	**8.33**
Endocardial Cushion Defect	2	1.53	2	1.59	2	1.40	3	2.33	**9**	**1.70**
Pulmonary Valve Atresia and Stenosis	1	0.76	2	1.59	2	1.40	2	1.55	**7**	**1.32**
Tricuspid Valve Atresia and Stenosis	1	0.76	1	0.80	1	0.70	1	0.78	**4**	**0.76**
Ebstein's Anomaly	2	1.53	0	0.00	0	0.00	0	0.00	**2**	**0.38**
Aortic Valve Stenosis	0	0.00	1	0.80	1	0.70	0	0.00	**2**	**0.38**
Hypoplastic Left Heart Syndrome	0	0.00	2	1.59	1	0.70	0	0.00	**3**	**0.57**
Patent Ductus Arteriosus	37	28.25	40	31.84	39	27.33	25	19.38	**141**	**26.69**
Coarctation of the Aorta	0	0.00	1	0.80	4	2.80	2	1.55	**7**	**1.32**
Pulmonary Artery Anomalies	6	4.58	6	4.78	4	2.80	2	1.55	**18**	**3.41**
E. RESPIRATORY										
Lung Agenesis/Hypoplasia	1	0.76	1	0.80	2	1.40	1	0.78	**5**	**0.95**

TABLE 3. SELECTED BIRTH DEFECT CATEGORIES FOR 1996 LIVE BIRTHS, CHICAGO (continued)

SELECTED BIRTH DEFECT GROUPS	FIRST QUARTER		SECOND QUARTER		THIRD QUARTER		FOURTH QUARTER		TOTAL	
	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
F. OROFACIAL										
Cleft Palate without Cleft Lip	6	4.58	2	1.59	4	2.80	5	3.88	**17**	**3.22**
Cleft Lip with and without Cleft Palate	8	6.11	5	3.98	5	3.50	5	3.88	**23**	**4.35**
Choanal Atresia	0	0.00	0	0.00	2	1.40	2	1.55	**4**	**0.76**
G. GASTROINTESTINAL										
Esophageal Atresia/Tracheosophageal Fistula	4	3.05	1	0.80	5	3.50	3	2.33	**13**	**2.46**
Pyloric Stenosis	3	2.29	4	3.18	2	1.40	1	0.78	**10**	**1.89**
Rectal and Large Intestinal Atresia/Stenosis	7	5.34	3	2.39	1	0.70	4	3.10	**15**	**2.84**
Hirschsprung Disease (congenital megacolon)	1	0.76	3	2.39	2	1.40	3	2.33	**9**	**1.70**
Biliary Atresia	1	0.76	0	0.00	0	0.00	0	0.00	**1**	**0.19**
H. GENITOURINARY										
Renal Agenesis/Hypoplasia	1	0.76	2	1.59	3	2.10	0	0.00	**6**	**1.14**
Bladder Exstrophy	1	0.76	0	0.00	0	0.00	0	0.00	**1**	**0.19**
Obstructive Genitourinary Defect	12	9.16	11	8.76	5	3.50	15	11.63	**43**	**8.14**
Hypospadias and Epispadias	8	6.11	7	5.57	5	3.50	15	11.63	**35**	**6.62**
I. MUSCULOSKELETAL										
Club Foot	5	3.82	12	9.55	12	8.41	11	8.53	**40**	**7.57**
Reduction Deformity, Upper Limbs	1	0.76	2	1.59	2	1.40	1	0.78	**6**	**1.14**
Reduction Deformity, Lower Limbs	0	0.00	0	0.00	2	1.40	0	0.00	**2**	**0.38**
Gastroschisis/Omphalocele	3	2.29	3	2.39	5	3.50	8	6.20	**19**	**3.60**
Congenital Hip Dislocation	1	0.76	2	1.59	0	0.00	1	0.78	**4**	**0.76**
Diaphragmatic Hernia	3	2.29	4	3.18	3	2.10	0	0.00	**10**	**1.89**
J. CHROMOSOMAL										
Down Syndrome	12	9.16	10	7.96	13	9.11	10	7.75	**45**	**8.52**
Patau Syndrome	0	0.00	1	0.80	0	0.00	0	0.00	**1**	**0.19**
Edward Syndrome	1	0.76	1	0.80	3	2.10	3	2.33	**8**	**1.51**
GRAND TOTAL	**182**	**138.95**	**182**	**144.89**	**188**	**131.75**	**172**	**133.30**	**724**	**137.04**

SOURCE: Illinois Department of Public Health, APORS, April 1999
Cases=Number of live births and fetal deaths; rate is per 10,000 live births

1997 CHICAGO

TABLE 4. SELECTED BIRTH DEFECT CATEGORIES FOR 1997 LIVE BIRTHS, CHICAGO

SELECTED BIRTH DEFECT GROUPS	FIRST QUARTER		SECOND QUARTER		THIRD QUARTER		FOURTH QUARTER		TOTAL	
	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
A. CENTRAL NERVOUS SYSTEM										
Anencephalus	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
Spina Bifida without Anencephalus	4	3.24	3	2.35	1	0.76	0	0.00	**8**	**1.57**
Encephalocele	0	0.00	1	0.78	2	1.52	0	0.00	**3**	**0.59**
Microcephalus	9	7.29	6	4.71	9	6.82	4	3.12	**28**	**5.48**
Hydrocephalus without Spina Bifida	6	4.86	9	7.06	11	8.34	4	3.12	**30**	**5.87**
B. EYE										
Anophthalmia/Microphthalmia	0	0.00	1	0.78	1	0.76	0	0.00	**2**	**0.39**
Congenital Cataract	1	0.81	0	0.00	1	0.76	1	0.78	**3**	**0.59**
Coloboma of the Eye	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
Aniridia	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
C. EAR										
Anotia/Microtia	0	0.00	1	0.78	0	0.00	1	0.78	**2**	**0.39**
D. CARDIOVASCULAR										
Common Truncus	2	1.62	0	0.00	2	1.52	0	0.00	**4**	**0.78**
Transposition of Great Arteries	0	0.00	2	1.57	3	2.27	3	2.34	**8**	**1.57**
Tetralogy of Fallot	1	0.81	1	0.78	4	3.03	1	0.78	**7**	**1.37**
Ventricular Septal Defect	10	8.10	12	9.41	12	9.10	12	9.35	**46**	**9.00**
Atrial Septal Defect	15	12.15	13	10.20	5	3.79	8	6.23	**41**	**8.02**
Endocardial Cushion Defect	0	0.00	2	1.57	4	3.03	5	3.90	**11**	**2.15**
Pulmonary Valve Atresia and Stenosis	1	0.81	0	0.00	0	0.00	0	0.00	**1**	**0.20**
Tricuspid Valve Atresia and Stenosis	1	0.81	1	0.78	2	1.52	0	0.00	**4**	**0.78**
Ebstein's Anomaly	1	0.81	0	0.00	0	0.00	1	0.78	**2**	**0.39**
Aortic Valve Stenosis	0	0.00	1	0.78	0	0.00	0	0.00	**1**	**0.20**
Hypoplastic Left Heart Syndrome	1	0.81	0	0.00	0	0.00	0	0.00	**1**	**0.20**
Patent Ductus Arteriosus	37	29.97	40	31.38	41	31.08	25	19.48	**143**	**27.98**
Coarctation of the Aorta	3	2.43	0	0.00	4	3.03	1	0.78	**8**	**1.57**
Pulmonary Artery Anomalies	6	4.86	5	3.92	10	7.58	3	2.34	**24**	**4.70**
E. RESPIRATORY										
Lung Agenesis/Hypoplasia	3	2.43	3	2.35	7	5.31	0	0.00	**13**	**2.54**

TABLE 4. SELECTED BIRTH DEFECT CATEGORIES FOR 1997 LIVE BIRTHS, CHICAGO (continued)

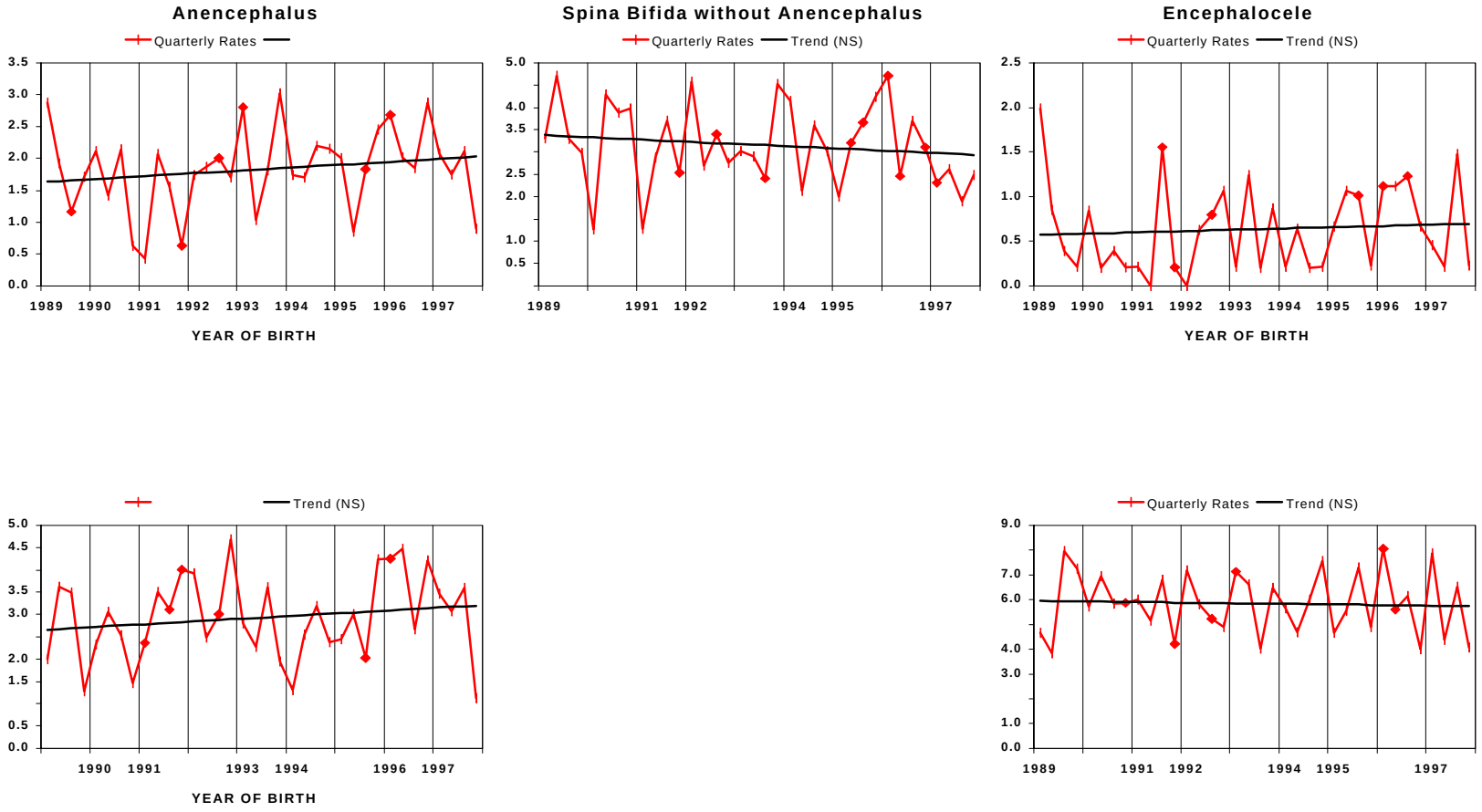
SELECTED BIRTH DEFECT GROUPS	FIRST QUARTER		SECOND QUARTER		THIRD QUARTER		FOURTH QUARTER		TOTAL	
	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
F. OROFACIAL										
Cleft Palate without Cleft Lip	4	3.24	5	3.92	2	1.52	2	1.56	**13**	**2.54**
Cleft Lip with and without Cleft Palate	4	3.24	4	3.14	10	7.58	5	3.90	**23**	**4.50**
Choanal Atresia	4	3.24	0	0.00	0	0.00	0	0.00	**4**	**0.78**
G. GASTROINTESTINAL										
Esophageal Atresia/Tracheosophageal Fistula	6	4.86	3	2.35	3	2.27	3	2.34	**15**	**2.93**
Pyloric Stenosis	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
Rectal and Large Intestinal Atresia/Stenosis	2	1.62	2	1.57	5	3.79	6	4.68	**15**	**2.93**
Hirschsprung Disease (congenital megacolon)	2	1.62	2	1.57	2	1.52	1	0.78	**7**	**1.37**
Biliary Atresia	1	0.81	0	0.00	0	0.00	0	0.00	**1**	**0.20**
H. GENITOURINARY										
Renal Agenesis/Hypoplasia	1	0.81	2	1.57	1	0.76	0	0.00	**4**	**0.78**
Bladder Exstrophy	0	0.00	0	0.00	2	1.52	2	1.56	**4**	**0.78**
Obstructive Genitourinary Defect	6	4.86	6	4.71	13	9.85	11	8.57	**36**	**7.04**
Hypospadias and Epispadias	8	6.48	10	7.84	8	6.06	10	7.79	**36**	**7.04**
I. MUSCULOSKELETAL										
Club Foot	10	8.10	8	6.28	6	4.55	7	5.46	**31**	**6.06**
Reduction Deformity, Upper Limbs	1	0.81	1	0.78	0	0.00	1	0.78	**3**	**0.59**
Reduction Deformity, Lower Limbs	2	1.62	0	0.00	0	0.00	0	0.00	**2**	**0.39**
Gastroschisis/Omphalocele	8	6.48	9	7.06	4	3.03	10	7.79	**31**	**6.06**
Congenital Hip Dislocation	5	4.05	1	0.78	0	0.00	0	0.00	**6**	**1.17**
Diaphragmatic Hernia	5	4.05	2	1.57	2	1.52	1	0.78	**10**	**1.96**
J. CHROMOSOMAL										
Down Syndrome	10	8.10	8	6.28	12	9.10	12	9.35	**42**	**8.22**
Patau Syndrome	0	0.00	0	0.00	0	0.00	0	0.00	**0**	**0.00**
Edward Syndrome	1	0.81	0	0.00	2	1.52	2	1.56	**5**	**0.98**
GRAND TOTAL	**181**	**146.59**	**164**	**128.66**	**191**	**144.78**	**142**	**110.67**	**678**	**132.64**

SOURCE: Illinois Department of Public Health, APORS, April 1999
Cases=Number of live births and fetal deaths; rate is per 10,000 live births

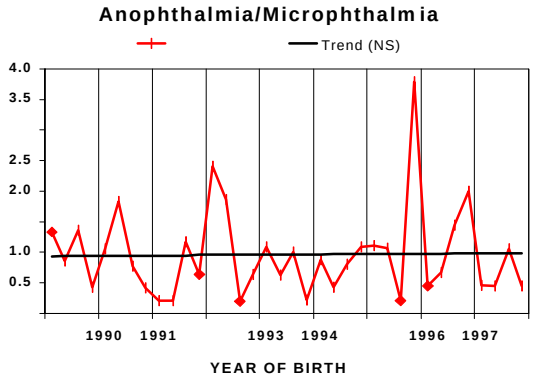
TRENDS
1989 TO 1997

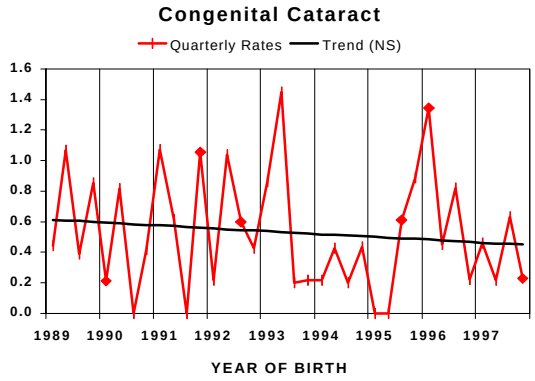
FIGURE 1. QUARTERLY TRENDS IN THE REPORTED PREVALENCE RATES OF BIRTH DEFECTS PER 10,000 LIVE BIRTHS 1989-1997

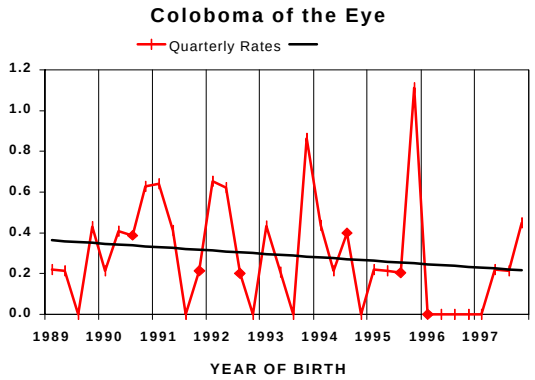
A. CENTRAL NERVOUS SYSTEM



PER 10,000 LIVE BIRTHS
1989-1997







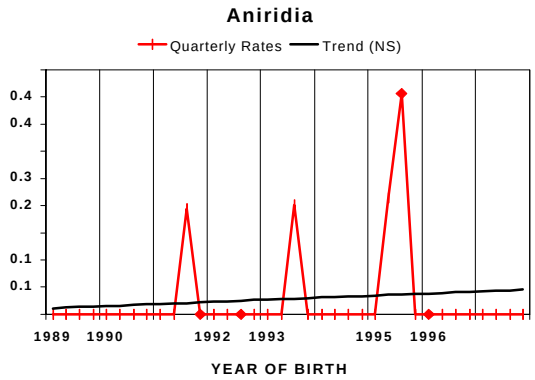
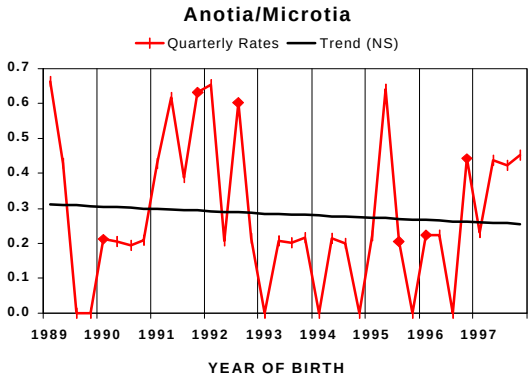
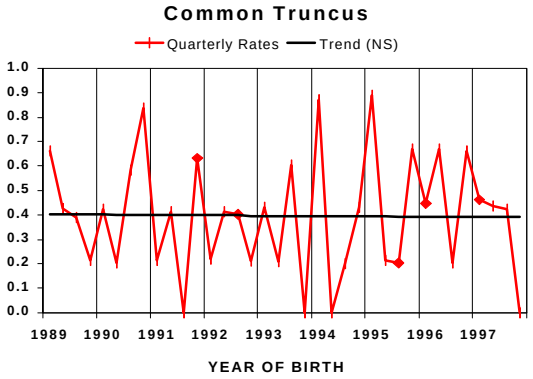


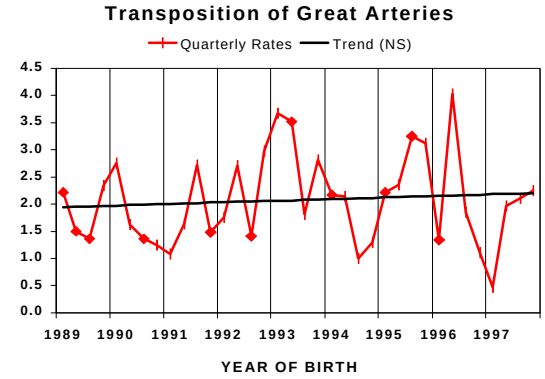
FIGURE 1. QUARTERLY TRENDS IN THE REPORTED PREVALENCE RATES OF BIRTH DEFECTS PER 10,000 LIVE BIRTHS 1989-1997

C. EAR



D. CARDIOVASCULAR, PART I





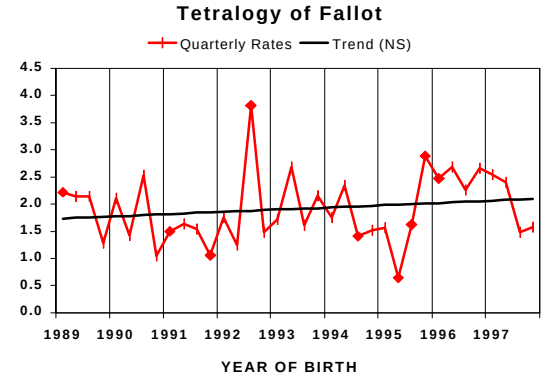


FIGURE 1. QUARTERLY TRENDS IN THE REPORTED PREVALENCE RATES OF BIRTH DEFECTS PER 10,000 LIVE BIRTHS 1989-1997

D. CARDIOVASCULAR, PART II

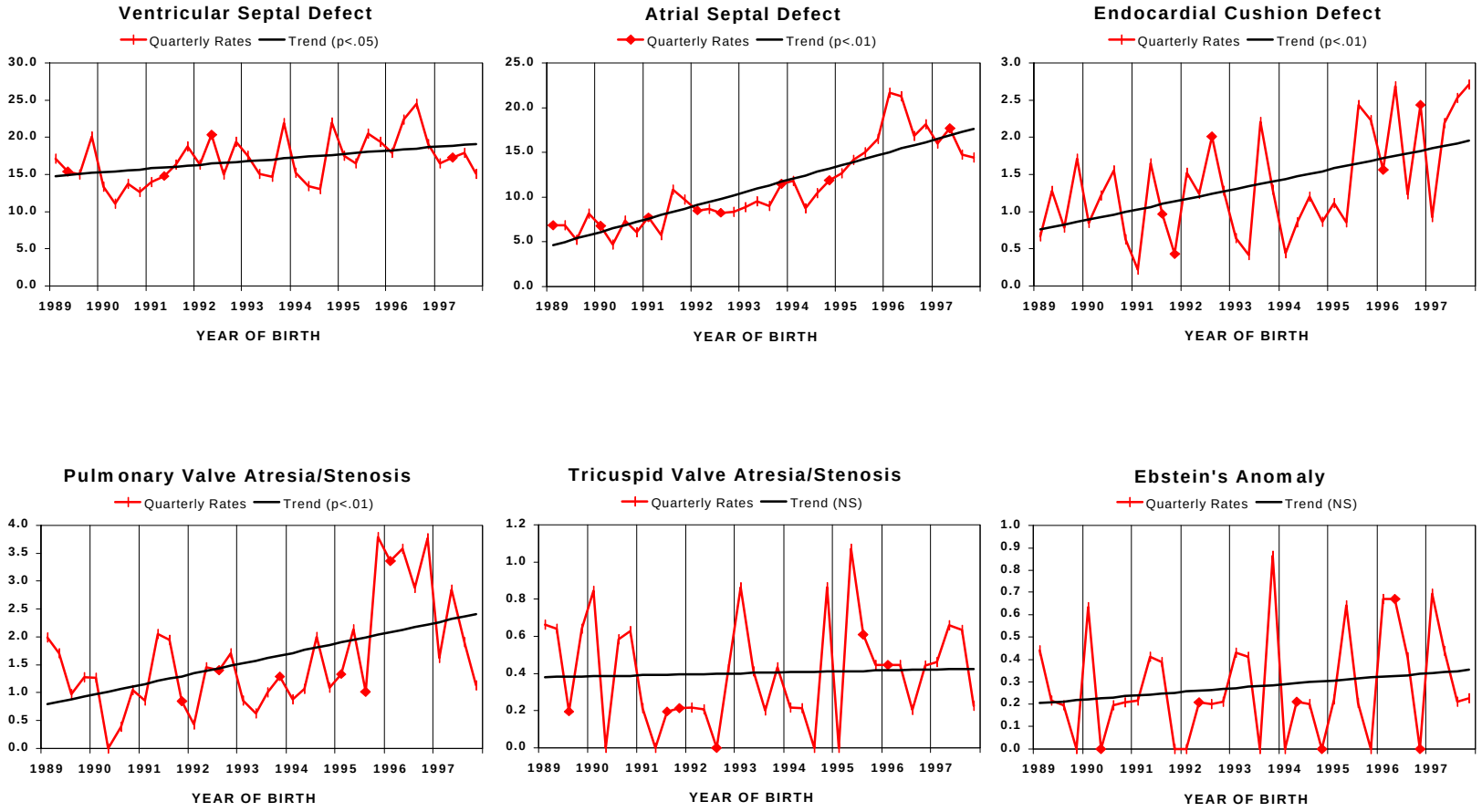
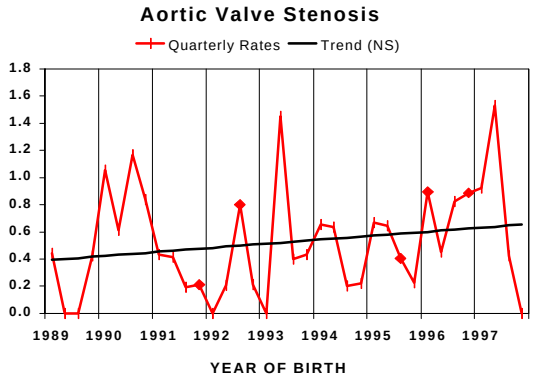
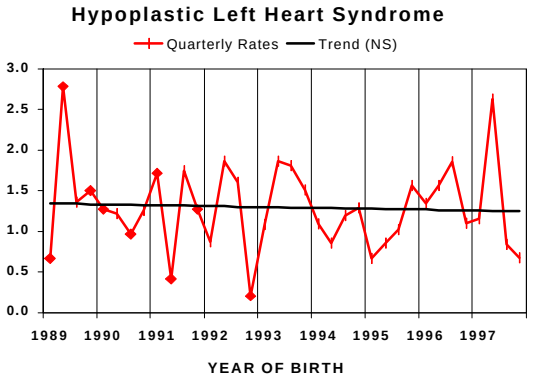
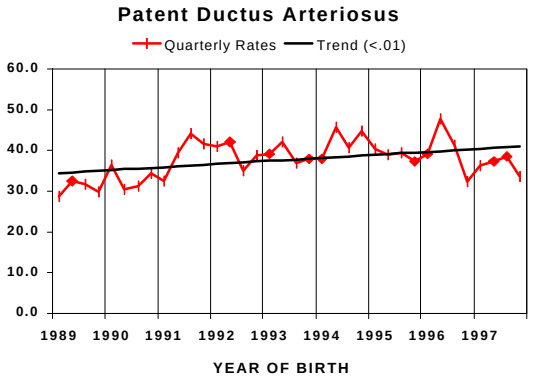


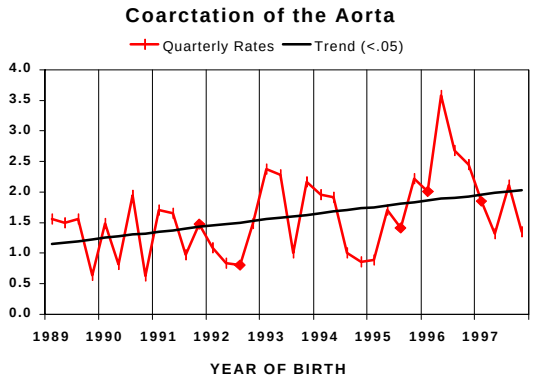
FIGURE 1. QUARTERLY TRENDS IN THE REPORTED PREVALENCE RATES OF BIRTH DEFECTS PER 10,000 LIVE BIRTHS 1989-1997

D. CARDIOVASCULAR, PART III









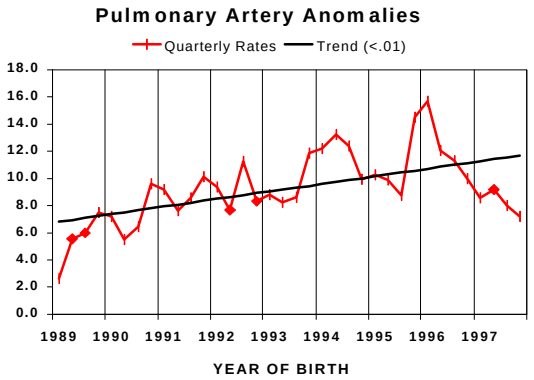
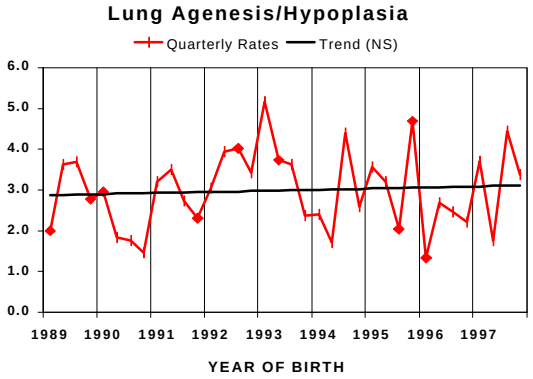
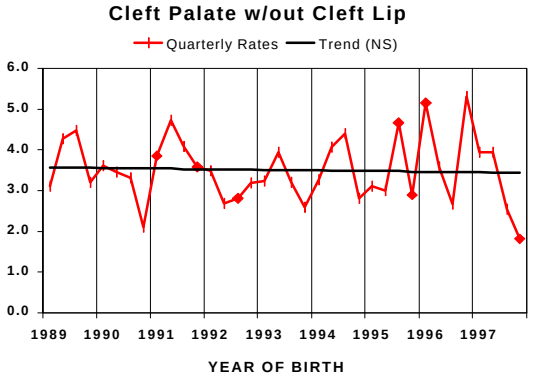


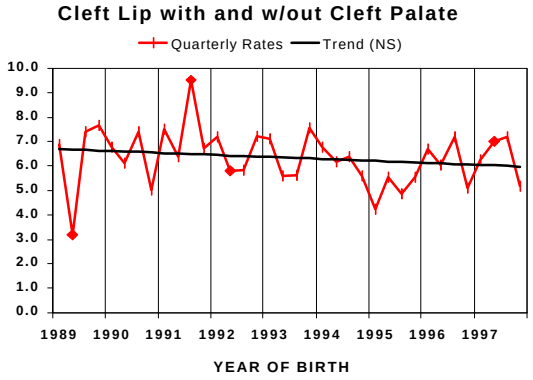
FIGURE 1. QUARTERLY TRENDS IN THE REPORTED PREVALENCE RATES OF BIRTH DEFECTS PER 10,000 LIVE BIRTHS 1989-1997

E. RESPIRATORY



F. OROFACIAL





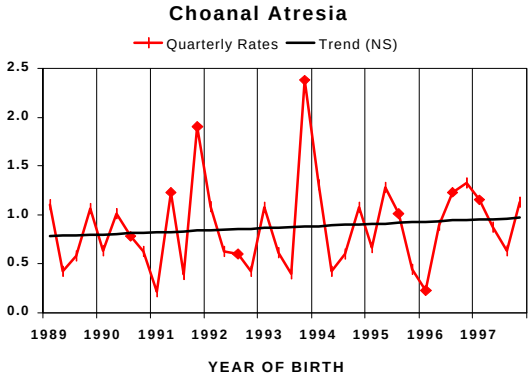
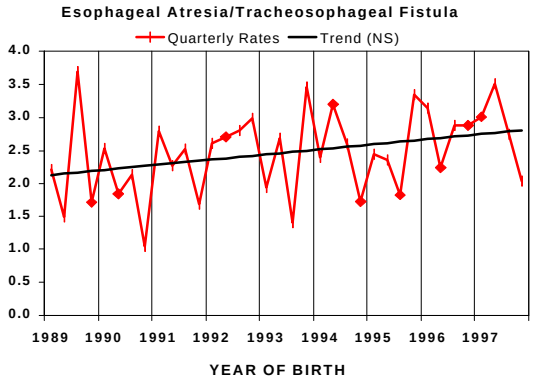
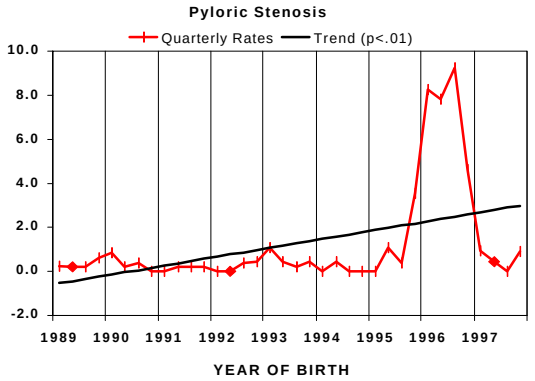
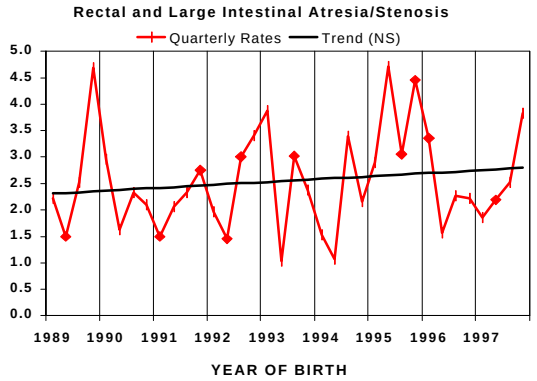


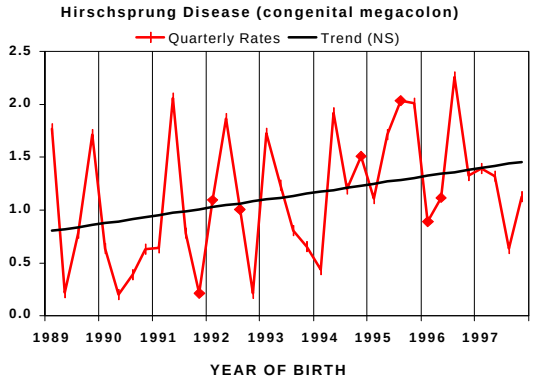
FIGURE 1. QUARTERLY TRENDS IN THE REPORTED PREVALENCE RATES OF BIRTH DEFECTS PER 10,000 LIVE BIRTHS 1989-1997

G. GASTROINTESTINAL









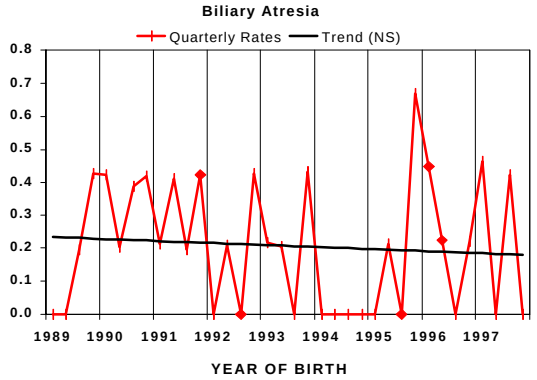
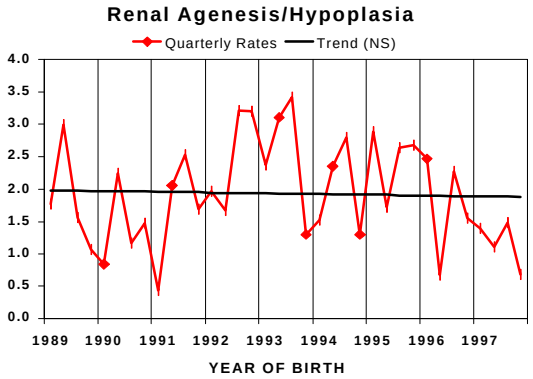
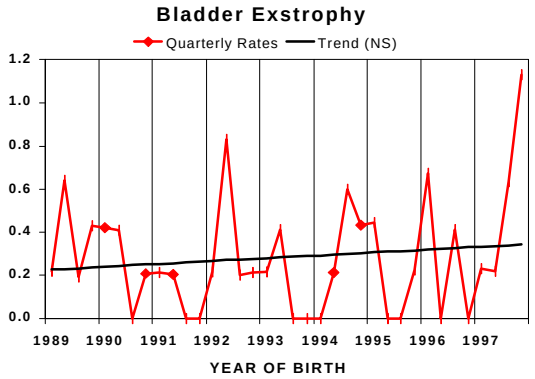
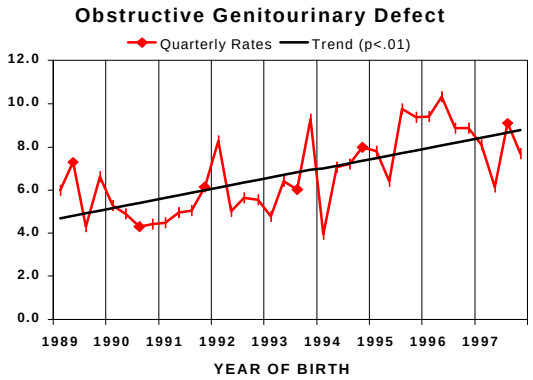


FIGURE 1. QUARTERLY TRENDS IN THE REPORTED PREVALENCE RATES OF BIRTH DEFECTS PER 10,000 LIVE BIRTHS 1989-1997

H. GENITOURINARY







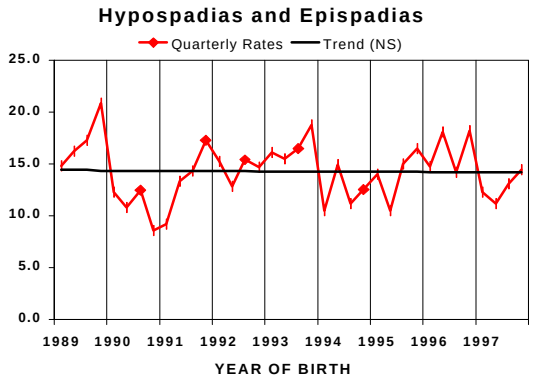
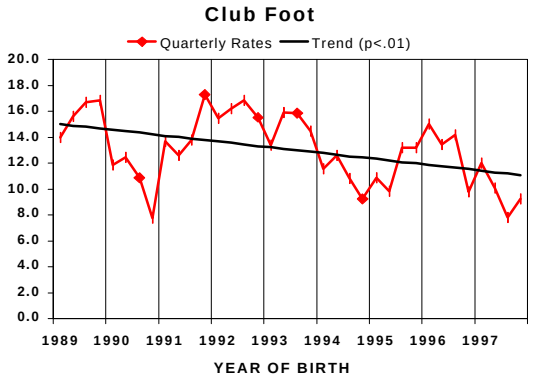
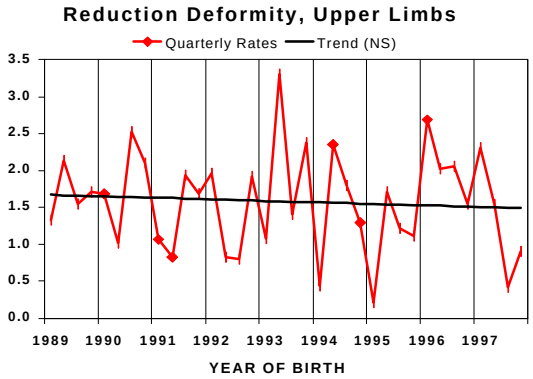


FIGURE 1. QUARTERLY TRENDS IN THE REPORTED PREVALENCE RATES OF BIRTH DEFECTS PER 10,000 LIVE BIRTHS 1989-1997

I. MUSCULOSKELETAL





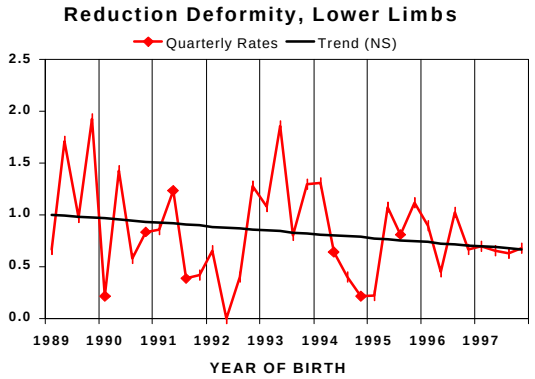
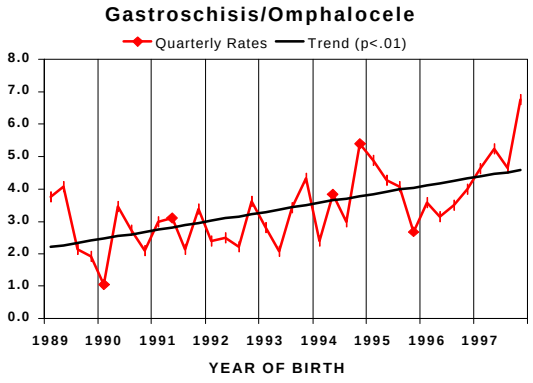
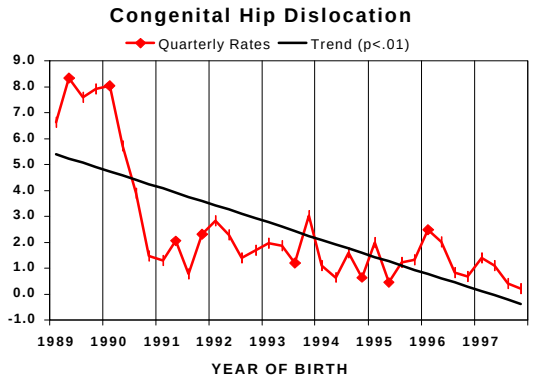
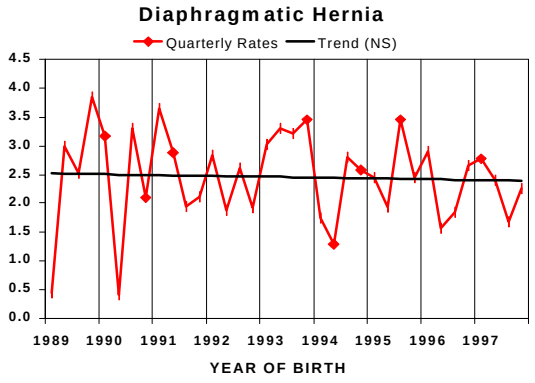


FIGURE 1. QUARTERLY TRENDS IN THE REPORTED PREVALENCE RATES OF BIRTH DEFECTS PER 10,000 LIVE BIRTHS

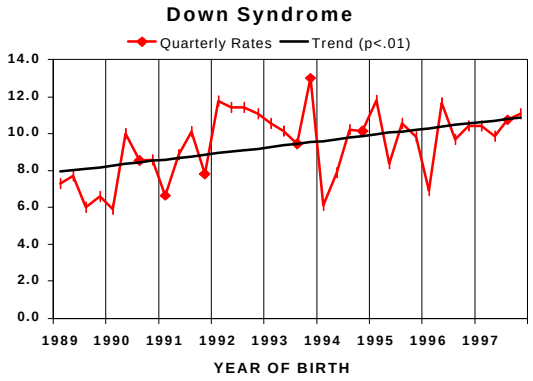


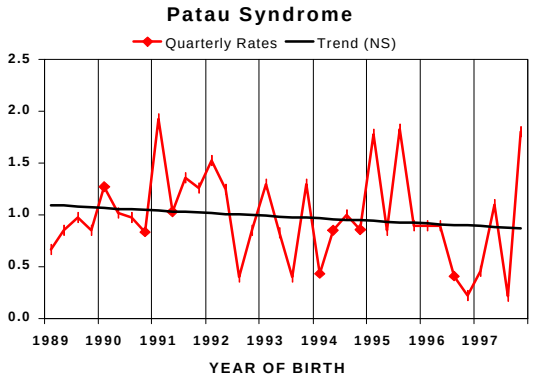


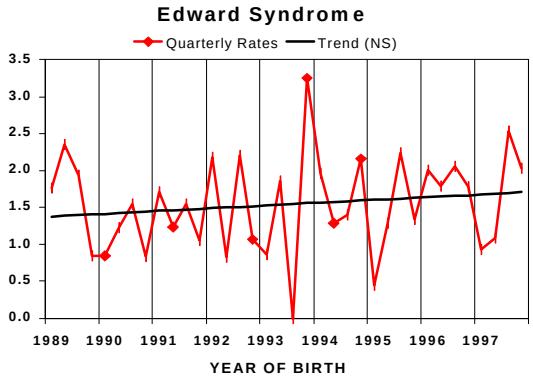


1989-1997

J. CHROMOSOMAL







APPENDICES

Appendix A

The Adverse Pregnancy Outcomes Reporting System (APORS)

The Adverse Pregnancy Outcomes Reporting System (APORS) is the most complete source of data on birth defects that currently exists in Illinois. APORS is a component of the Illinois Health and Hazardous Substances Registry in the Division of Epidemiologic Studies, Illinois Department of Public Health.

APORS Reporting Requirements

All hospitals in Illinois, except federal and military hospitals, are mandated to participate. St. Louis perinatal centers that serve southern Illinois residents voluntarily report infants born to Illinois women. The facilities provide information on any delivery that

a. is discharged from a patient care unit or bassinet(s) designated by the hospital to provide intensive care services requiring constant nursing and cardiopulmonary and other support services for infants with life threatening conditions (stay in unit must exceed 24 hours);
b. is diagnosed prior to hospital discharge as having a positive drug toxicology for any drug and/or showing signs and symptoms of drug toxicity or withdrawal;
c. is diagnosed prior to hospital discharge as having a congenital anomaly (birth defect);
d. is diagnosed prior to hospital discharge as having any of the following:
    - serious congenital infection
        - syphilis
        - other congenital infections
    - endocrine, metabolic, or immune disorder
        - hypothyroidism
        - androgenital syndrome
        - inborn errors of metabolism
        - cystic fibrosis
    - blood disorder
        - leukemia
        - hereditary hemolytic anemia
        - constitutional aplastic anemia
        - coagulation defect;
e. has a birthweight of less than 1501 grams;
f. results in fetal or neonatal death; or
g. has a reportable other condition
    - neurofibromatosis
    - retinopathy of prematurity
    - chorioretinitis
    - strabismus
    - endocardial fibroelastosis
    - occlusion of cerebral arteries
    - fetal alcohol syndrome
    - intrauterine growth retardation
    - cerebral lipidoses.

Objectives

Careful analysis of this reportable APORS information will enable health care professionals

1. to target, develop, evaluate and monitor prevention and intervention programs;
2. to identify and analyze environmental influences on pregnancy outcomes, especially birth defects; and

3. to identify high-risk populations or geographic areas in Illinois that require epidemiologic investigation.

Coverage

Population-based and statewide

Age Covered

Newborns (from birth to hospital discharge) and, beginning in 1996, infants up to 1 year of age

Case Ascertainment

APORS is both a passive and an active surveillance system. While infant discharge records are passively reported by hospitals (as mandated by state law), maternal information is collected actively by APORS field representatives. In addition, beginning in 1996, active case finding for birth defects was performed by reviewing hospital records for patients less than 1 year old who had a birth defect diagnosis (ICD-9-CM codes 740.0 - 759.9).

Case Identification Sources and Coding System

Individual cases with birth defects are identified by hospital staff. The majority of identification is done in the neonatal intensive care unit (NICU). Additional adverse pregnancy outcomes, including infants with drug toxicity, are identified in the labor and delivery units or in the newborn nursery. After identification, an infant discharge record is completed for each case and forwarded to APORS where reports are processed. Copies also are sent to the family's physician and the local public health agency for follow-up.

In addition, beginning with 1996 newborns, APORS staff began conducting case finding studies of birth defects for infants diagnosed in their first year. Hospitals supply lists of infants with birth defect diagnoses who had received services. APORS staff match the list against existing records to identify new cases or additional birth defects among existing cases.

For coding birth defects and other pregnancy outcomes, APORS utilizes the International Classification of Diseases Ninth Revision - Clinical Modification (ICD-9-CM).

APPENDIX B

APORS LIST OF CONDITIONS ANALYZED IN THE TABLES

The following scheme for coding birth defects is consistent with previous reporting by the Illinois Department of Public Health and with reporting requirements of the U.S. Centers for Disease Control and Prevention (CDC).

Birth Defect Group	ICD-9-CM Codes
Central Nervous System	
Anencephalus	740.0 - 740.1
Spina Bifida without Anencephalus	741.0, 741.9 w/o 740.0 - 740.10
Encephalocele	742.0
Microcephalus	742.1
Hydrocephalus without Spina Bifida	742.3 w/o 741.0, 741.9
Eye	
Anophthalmia/Microphthalmia	743.0, 743.1
Congenital Cataract	743.30 - 743.34
Coloboma of the Eye	743.41 - 743.44
Aniridia	743.45
Ear	
Anotia/Microtia	744.01, 744.23
Cardiovascular	
Common Truncus	745.0
Transposition of Great Arteries	745.10, .11, .12, .19
Tetralogy of Fallot	745.2
Ventricular Septal Defect	745.4
Atrial Septal Defect	745.5
Endocardial Cushion Defect	745.60, .61, .69
Pulmonary Valve Atresia and Stenosis	746.01, 746.02
Tricuspid Valve Atresia and Stenosis	746.1
Ebstein's Anomaly	746.2
Aortic Valve Stenosis	746.3
Hypoplastic Left Heart Syndrome	746.7
Patent Ductus Arteriosus	747.0
Coarctation of the Aorta	747.10
Pulmonary Artery Anomalies	747.3
Respiratory	
Lung Agenesis/Hypoplasia	748.5

Birth Defect Group	ICD-9-CM Codes
Orofacial	
Cleft Palate without Cleft Lip	749.00 - 749.04
Cleft Lip with and without Cleft Palate	749.1, 749.2
Choanal Atresia	748.0
Gastrointestinal	
Esophageal Atresia/Tracheosophageal Fistula	750.3
Pyloric Stenosis	750.5
Rectal and Large Intestinal Atresia/Stenosis	751.2
Hirschsprung Disease (congenital megacolon)	751.3
Biliary Atresia	751.61
Genitourinary	
Renal Agenesis/Hypoplasia	753.0
Bladder Exstrophy	753.5
Obstructive Genitourinary Defect	753.2, 753.6
Hypospadias and Epispadias	752.61, 752.62
Musculoskeletal	
Club Foot	754.50 - 754.71
Reduction Deformity, Upper Limbs	755.20 - 755.29
Reduction Deformity, Lower Limbs	755.30 - 755.39
Gastroschisis/Omphalocele	756.79
Congenital Hip Dislocation	754.30, .31, .35
Diaphragmatic Hernia	756.6
Chromosomal	
Down Syndrome	758.0
Patau Syndrome	758.1
Edward Syndrome	758.2

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