

Report 2:
OCCURRENCE OF BIRTH DEFECTS IN THE SAN JACINTO RIVER WASTE PITS AREA
COMPARED TO PUBLIC HEALTH REGION 6, 1999-2011

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Peter Langlois PhD, Medical Research Specialist
Birth Defects Epidemiology and Surveillance Branch

BACKGROUND

The original report “Occurrence of Birth Defects in the San Jacinto River Waste Pits Area Compared to the State of Texas” (dated February 5, 2015) was discussed in a conference call with the Community Awareness Committee on February 25, 2015. During that call, a question came up regarding why the occurrence (birth prevalence) of so many birth defects was lower in the San Jacinto River Waste Pits area than the state. The answer was that the Public Health Region of Texas containing the study area (Region 6) has historically had lower levels of birth defect occurrence recorded in the Texas Birth Defects Registry, possibly due in part to under ascertainment. A re-analysis of the data was offered, to compare occurrence in the study area with Region 6. That re-analysis comprises this report.

OBJECTIVE

Compare occurrence of birth defects among deliveries to residents of the designated San Jacinto River Waste Pits (SJRWP) area with their occurrence in Public Health Region 6, both crude and adjusted for maternal age, maternal race/ethnicity, and sex of infant.

WHAT WE DID (METHODS)

(Note: The Methods are identical to the first report, except that here we compare with Region 6 instead of the whole State.)

Data Sources

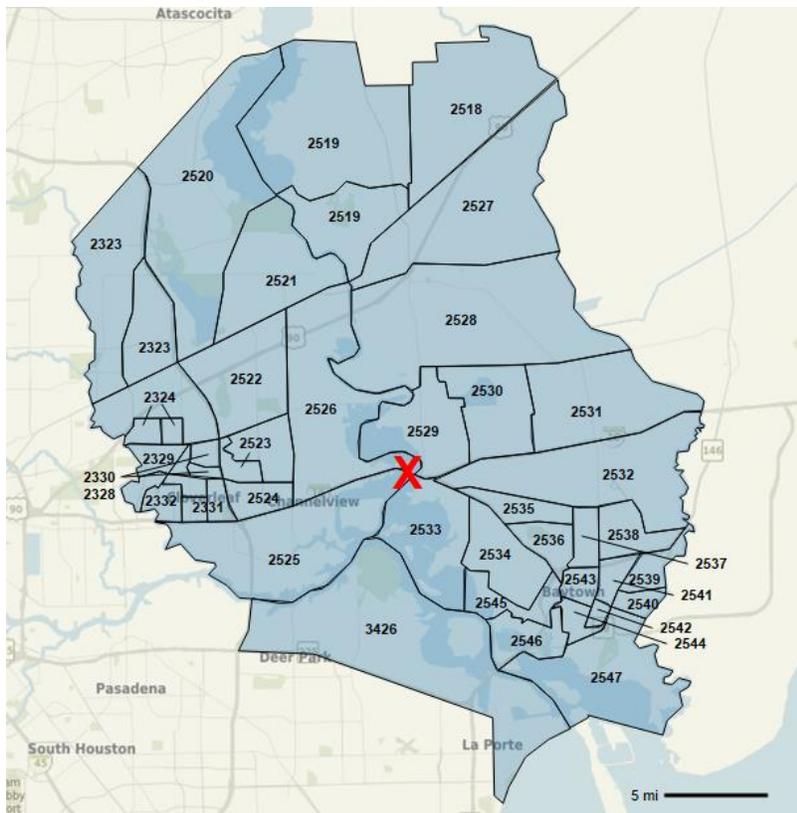
We analyzed data on children and pregnancies affected by birth defects from the Texas Birth Defects Registry (TBDR). This is an active surveillance system, which means staff regularly visit health care facilities to examine medical records instead of relying on facilities to report cases. We looked at data from 1999 (the first year the Registry was statewide) to 2011 (the most recent year of complete cleaned data).

We examined all categories of birth defects with at least five cases among deliveries to residents of the SJRWP area; this approach acknowledged that we do not know what causes most birth defects, and was a balance between trying to be comprehensive but limiting to at least five cases in order to have statistical precision. The result was 100 categories of birth defects, including one category for infants and fetuses with one or more birth defects of any kind.

Data on live births were also taken from 1999-2011, and were originally provided by the Center for Health Statistics.

From consultation with the community, the SJRWP area was defined as the area within the census tracts pictured in Figure 1. Whether a mother lived inside this area was based on her residence at the time of delivery. Because of how the area was defined, we only included records for which the mother's residence at delivery had been successfully assigned to a census tract and could have Region assigned.

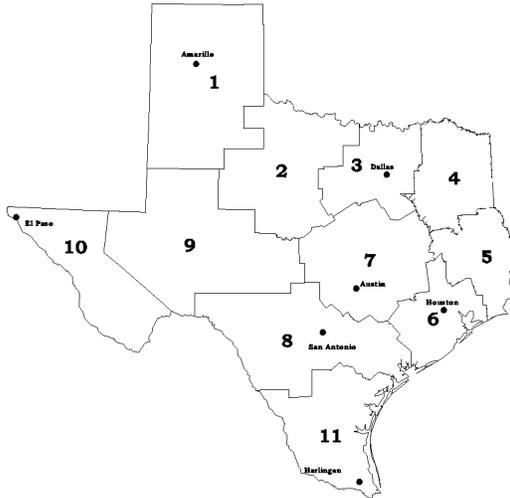
Figure 1. Census tracts (2000) selected for the San Jacinto River Waste Pits Superfund site birth defects investigation for the years 1999-2011.



Some census tracts were subdivided in the 2010 census; these subdivision boundaries are shown. X Indicates waste pits site.

The SJRWP study area was compared with Public Health Region 6. That region (Figure 2) consists of the following 13 counties in the Houston/Galveston area: Austin, Brazoria, Chambers, Colorado, Fort Bend, Galveston, Harris, Liberty, Matagorda, Montgomery, Walker, Waller, and Wharton counties.

Figure 2. Public Health Regions of Texas.



Data Analysis

For each of the 100 categories of birth defects examined, occurrence in the SJRWP area was compared with occurrence in Region 6 using Poisson regression. This approach is commonly used for rare events such as birth defects. The result is called a birth prevalence ratio, which is equivalent to comparing the birth prevalence (the number of cases per 10,000 live births) in the SJRWP area with the birth prevalence in Region 6. If there is no difference, the ratio is 1.00. If a birth defect occurs more frequently among births in the SJRWP area than in Region 6, the ratio is higher than 1.00; if less frequently, the ratio is less than 1.00.

We also calculated the 95% confidence interval (CI) for each birth prevalence ratio. The 95% CI gives the range within which we would expect the true underlying ratio (which we can only estimate from the data) to fall 95% of the time. If the 95% CI does not include 1.00, then we conclude that the birth prevalence ratio is “statistically significantly” different from 1.00; in other words, the occurrence of that birth defect in the SJRWP area differs from Region 6 more than we would expect due to chance alone.

Birth prevalence ratios were calculated both crude (unadjusted) and adjusted for three characteristics that might differ in the two areas and that might explain a difference in birth defect occurrence: mother’s age, mother’s race/ethnicity, and sex of infant.

WHAT WE FOUND (RESULTS)

During 1999-2011, there were 53,896 live births to residents of the SJRWP area, which was 4.6% of the 1,160,433 births to residents of Public Health Region 6 for which census tract was known. The crude (unadjusted) birth prevalence ratio for any monitored congenital anomaly was 1.00 (95% CI 0.95-1.04). This means that birth defects occurred at the same rate among births to residents of the SJRWP area as among births to residents of Region 6; the birth prevalence of infants and fetuses with one or more birth defects in the SJRWP area was 100% of the birth prevalence for Region 6, but the true underlying percentage (which we can only estimate) could have ranged from 95% to 104%.

After adjusting for mother's age, mother's race/ethnicity, and sex of infant, the birth prevalence ratio for infants and fetuses with one or more birth defects was 1.02 (95% CI 0.96-1.08), still the same in the SJRWP area as in Region 6.

After adjustment, there were three categories of birth defects that occurred more frequently among births in the SJRWP area than in Region 6 (Table 1).

Table 1. Birth defects with statistically significantly higher occurrence in the SJRWP area than in Region 6, 1999-2011, adjusted for maternal age, maternal race/ethnicity, and sex of infant.

BIRTH DEFECT	NUMBER	ADJUSTED BIRTH PREVALENCE	
	OF CASES*	RATIO	95% CONF INTERVAL
Congenital Wolfe-Parkinson-White syndrome	5	3.40	2.33 - 6.95
Spina bifida	26	1.58	1.02 - 2.33
Congenital hypertrophic pyloric stenosis	121	1.27	1.06 - 1.51

* Total number in the SJRWP area, before adjustment.

There were three categories of birth defects with statistically significantly lower occurrence in the SJRWP area than in Region 6 (Table 2).

Table 2. Birth defects with statistically significantly lower occurrence in the SJRWP area than in Region 6, 1999-2011, adjusted for maternal age, maternal race/ethnicity, and sex of infant.

BIRTH DEFECT	NUMBER	ADJUSTED BIRTH PREVALENCE	
	OF CASES*	RATIO	95% CONF INTERVAL
Other specified anomalies of the ear	54	0.72	0.54 - 0.94
Valgus (outward) deformities of the feet	10	0.53	0.31 - 0.83
Other specified anomalies of the skin	12	0.57	0.33 - 0.90

* Total number in the SJRWP area, before adjustment.

Birth defects not shown in Tables 1 or 2 were not statistically significantly different in the SJRWP area than in Region 6. More detailed results can be found in the appendices.

CONCLUSIONS

One hundred categories of birth defects had at least five cases delivered to mothers residing in the SJRWP area, and their occurrence in that area was compared with their occurrence in Public Health Region 6, the Houston/Galveston area.

The occurrence of infants and fetuses with one or more birth defects was the same in the SJRWP area as in Region 6.

Three birth defects were significantly higher in the study area. Congenital Wolfe-Parkinson-White syndrome (WPW) is a condition in which there is an extra electrical pathway of the heart. This can lead to periods of rapid heart rate (tachycardia); WPW syndrome is one of the most common causes of fast heart rate problems in infants and children. Males have this syndrome more frequently than females, some cases may be inherited, and some cases occur together with other birth defects of the heart. Spina bifida is a neural tube defect (NTD). Neural tube defects are higher in Hispanics than in other race/ethnic groups, in female infants, and in offspring of mothers who have not consumed sufficient folic acid, who had a prior NTD, who are diabetic or obese, or who take medication for epilepsy. Evidence for increased risk from occupational or environmental exposures is less consistent. Congenital hypertrophic pyloric stenosis is much higher among male infants than female, and in offspring of mothers who are young. It is lower among Blacks. Reports of associations with maternal use of medications are inconsistent.

Three categories of birth defects were significantly lower in the area as compared to Region 6.

With one hundred comparisons, we would expect roughly 5%, or 5 defects to be statistically significantly higher or lower in the SJRWP area than Public Health Region 6 by chance alone. We found 6 defects, which was close to what we would have expected. Furthermore, the three birth defects that were higher in the SJRWP area are not embryologically related, nor do they share many risk factors in common. Thus it seems unlikely that the same exposure could have caused their apparent increased occurrence there. Because of these considerations, it is my opinion that additional investigation related to birth defects in the SJRWP area is not warranted at this time.

ACKNOWLEDGEMENTS

Thanks to Mary Ethen, MPH, for help in designing the analysis and reviewing the report.

Appendix 1. Occurrence of birth defects in the San Jacinto River Waste Pits (SJRWP) area compared to Public Health Region 6, 1999-2011: Crude birth prevalence ratios with 95% confidence limits.

defect	cases ¹	prevratio ²	LCL ³	UCL ³	sig ⁴
228.0 Hemangioma, of unspecified site	33	1.04	0.72	1.46	
228.1 Cystic hygroma, lymphangioma any site	5	0.81	0.29	1.78	
426.7 Congenital Wolfe-Parkinson-White syndrome	5	3.17	1.09	7.39	High
524.0 Abnormalities of jaw size - micro/macrognothia	46	0.93	0.68	1.23	
550.9 Inguinal hernia with no obstruction, no gangrene	23	1.19	0.76	1.77	
740.0 Anencephalus	5	0.77	0.27	1.69	
741 Spina bifida	26	1.67	1.09	2.44	High
742.1 Microcephalus	48	1.25	0.92	1.65	
742.2 Reduction deformities of brain	29	1.12	0.75	1.60	
742.3 Congenital hydrocephalus	24	0.79	0.51	1.16	
742.4 Other specified anomalies of brain	42	0.99	0.72	1.33	
742.5 Other specified anomalies of spinal cord	12	1.47	0.77	2.52	
743.1 Microphthalmos	10	0.92	0.45	1.63	
743.3 Congenital cataract and lens anomalies	9	1.08	0.51	1.99	
743.4 Coloboma, other anomalies of anterior segments	6	0.68	0.27	1.41	
743.5 Cong anom of posterior segment	6	0.78	0.31	1.61	
743.6 Cong anom of eyelids, lacrimal system, and orbit	23	1.13	0.72	1.68	
744.0 Anomalies of ear causing impairment of hearing	8	1.18	0.53	2.25	
744.2 Other specified anomalies of ear	54	0.71	0.54	0.92	Low
744.8 Other specified anomalies of face and neck	17	0.91	0.54	1.43	
744.9 Unspecified anomalies of face and neck	35	0.97	0.68	1.34	
745.1 Transposition of great vessels	26	1.03	0.68	1.49	
745.2 Tetralogy of Fallot	16	0.95	0.55	1.52	
745.4 Ventricular septal defect	237	0.92	0.81	1.05	
745.5 Ostium secundum type atrial septal defect	437	1.00	0.91	1.10	
745.6 Endocardial cushion defects	21	1.05	0.66	1.59	
746.0 Anomalies of pulmonary valve	50	1.16	0.86	1.53	
746.1 Tricuspid atresia and stenosis	14	0.78	0.44	1.28	
746.2 Ebsteins anomaly	5	1.56	0.55	3.49	
746.3 Congenital stenosis of aortic valve	9	0.87	0.41	1.59	
746.4 Congenital insufficiency of aortic valve	13	0.88	0.48	1.46	
746.5 Congenital mitral stenosis	25	1.22	0.79	1.78	
746.7 Hypoplastic left heart syndrome	12	1.20	0.63	2.04	
746.8 Other specified anomalies of the heart	157	1.08	0.92	1.27	
746.9 Unspecified anomalies of heart	34	1.31	0.91	1.82	
747.0 Patent ductus arteriosus (PDA)	204	0.94	0.81	1.08	
747.1 Coarctation of aorta	25	1.07	0.70	1.56	
747.2 Other anomalies of aorta	49	0.91	0.68	1.20	
747.3 Anomalies of pulmonary artery	81	1.05	0.83	1.30	
747.4 Anomalies of great veins	18	0.78	0.47	1.21	
747.6 Other anomalies of peripheral vascular system	6	0.90	0.35	1.86	
748.0 Choanal atresia	7	1.33	0.56	2.65	
748.3 Other anomalies of larynx, trachea, and bronchus	11	1.18	0.61	2.07	
748.4 Congenital cystic lung	5	1.06	0.37	2.33	
748.5 Agenesis or aplasia of lung	14	0.88	0.49	1.45	
749.0 Cleft palate alone	30	1.08	0.73	1.53	
749.1 Cleft lip alone with/without cleft palate	51	1.13	0.85	1.49	
750.1 Other anomalies of tongue	16	1.20	0.70	1.93	
750.2 Other specified anomalies of mouth and pharynx	16	1.00	0.58	1.60	

Appendix 1 (continued). Occurrence of birth defects in the San Jacinto River Waste Pits (SJRWP) area compared to Public Health Region 6, 1999-2011: Crude birth prevalence ratios with 95% confidence limits.

defect	cases ¹	prevratio ²	LCL ³	UCL ³	sig ⁴
750.3 T-E fistula, esophageal atresia and stenosis	6	0.65	0.26	1.34	
750.5 Congenital hypertrophic pyloric stenosis	121	1.35	1.12	1.62	High
751.1 Atresia and stenosis of small intestine	7	0.55	0.23	1.07	
751.2 Atr/sten of lg intestine, rectum and anal canal	28	1.00	0.67	1.43	
751.4 Anomalies of intestinal fixation	9	0.77	0.36	1.40	
751.5 Other anomalies of intestine	18	1.22	0.73	1.91	
751.6 Anomalies of gallbladder, bile ducts, and liver	7	1.12	0.47	2.21	
752.0 Anomalies of ovaries	7	1.41	0.59	2.81	
752.4 Anom of cervix, vagina, ext female genitalia	25	0.96	0.63	1.40	
752.5 Undescended testicle	104	1.08	0.88	1.31	
752.6 Hypospadias and epispadias	187	1.04	0.90	1.20	
752.8 Other specified anomalies of male genital organs	61	1.02	0.78	1.31	
753.0 Renal agenesis and dysgenesis	28	1.15	0.77	1.65	
753.1 Cystic kidney disease	30	0.89	0.60	1.26	
753.2 Obstructive defects of renal pelvis and ureter	211	1.04	0.90	1.19	
753.3 Other specified anomalies of kidney	22	0.86	0.54	1.28	
753.4 Other specified anomalies of ureter	32	0.84	0.57	1.17	
753.6 Atresia and stenosis of urethra and bladder neck	5	0.79	0.28	1.74	
753.8 Other specified anomalies of bladder and urethra	7	0.86	0.36	1.69	
754.0 Certain anomalies of skull, face, and jaw	81	0.83	0.66	1.03	
754.3 Congenital dislocation of hip	19	0.95	0.58	1.46	
754.4 Congenital genu recurvatum, bowing of leg bones	10	1.13	0.56	2.03	
754.5 Varus (inward) deformities of feet	33	1.08	0.75	1.51	
754.6 Valgus (outward) deformities of feet	10	0.56	0.28	0.99	Low
754.7 Other deformities of feet	84	1.11	0.88	1.37	
754.8 Other specified cong musculoskeletal deformities	24	0.90	0.58	1.32	
755.0 Polydactyly	121	0.97	0.80	1.16	
755.1 Syndactyly	38	1.10	0.78	1.49	
755.2 Reduction defects of upper limb	16	1.02	0.59	1.63	
755.3 Reduction defects of lower limb	5	0.78	0.28	1.71	
755.5 Other anom of upper limb, inc shoulder girdle	16	0.76	0.44	1.21	
755.6 Other anom of lower limb, inc pelvic girdle	39	0.74	0.53	1.00	Low
755.8 Other specified anomalies of unspecified limb	18	0.93	0.56	1.45	
756.0 Anomalies of skull and face bones	86	1.00	0.80	1.24	
756.1 Anomalies of spine	15	0.82	0.47	1.32	
756.3 Other anomalies of ribs and sternum	8	0.68	0.31	1.28	
756.6 Anomalies of diaphragm	15	1.02	0.58	1.64	
756.70 Omphalocele	10	1.18	0.58	2.11	
756.71 Gastroschisis	30	1.45	0.98	2.06	
756.8 Other spec anom of muscle, tendon, conn tissue	27	0.80	0.53	1.14	
757.3 Other specified anomalies of skin	12	0.58	0.31	0.98	Low
757.5 Specified anomalies of nails	9	0.95	0.45	1.73	
758.0 Down syndrome	44	0.74	0.54	0.99	Low
758.2 Edwards syndrome	7	0.84	0.36	1.65	
758.3 Autosomal deletion syndromes	14	1.17	0.65	1.92	
758.5 Other conditions due to autosomal anomalies	15	1.21	0.69	1.95	
759.0 Anomalies of spleen	6	1.44	0.56	3.01	
759.3 Situs inversus	9	1.46	0.69	2.70	
759.6 Other hamartoses, not elsewhere classified	6	1.48	0.58	3.12	

Appendix 1 (continued). Occurrence of birth defects in the San Jacinto River Waste Pits (SJRWP) area compared to Public Health Region 6, 1999-2011: Crude birth prevalence ratios with 95% confidence limits.

defect	cases ¹	prevratio ²	LCL ³	UCL ³	sig ⁴
759.8 Other specified anomalies and syndromes	15	0.88	0.50	1.42	
888.8 Any monitored congenital anomaly ⁵	1826	1.00	0.95	1.04	

Appendix 1 footnotes:

1. Cases: Number of infants and fetuses with the specified birth defect in the SJRWP area
2. Prevratio: Crude (unadjusted) birth prevalence ratio (birth prevalence in the SJRWP area divided by birth prevalence for Region 6)
3. LCL = Lower 95% confidence limit for the crude birth prevalence ratio; UCL = Upper 95% confidence limit for the crude birth prevalence ratio. The interval from the LCL to the UCL is the 95% confidence interval for the crude birth prevalence ratio.
4. Sig: Low = Crude birth prevalence is statistically significantly lower in the SJRWP area than in Region 6; High = Crude birth prevalence is statistically significantly higher in the SJRWP area than in Region 6.
5. Infants and fetuses with one or more birth defects

Appendix 2. Occurrence of birth defects in the San Jacinto River Waste Pits (SJRWP) area compared to Public Health Region 6, 1999-2011: Birth prevalence ratios adjusted for maternal age, maternal race/ethnicity, and sex of infant, with 95% confidence limits.

defect	prevratio ¹	LCL ²	UCL ²	sig ³
228.0 Hemangioma, of unspecified site	1.06	0.72	1.50	
228.1 Cystic hygroma, lymphangioma any site	0.81	0.36	1.54	
426.7 Congenital Wolfe-Parkinson-White syndrome	3.40	2.33	6.95	High
524.0 Abnormalities of jaw size - micro/macrogathia	0.93	0.70	1.21	
550.9 Inguinal hernia with no obstruction, no gangrene	1.22	0.76	1.85	
740.0 Anencephalus	0.72	0.21	1.78	
741 Spina bifida	1.58	1.02	2.33	High
742.1 Microcephalus	1.20	0.91	1.56	
742.2 Reduction deformities of brain	1.11	0.80	1.50	
742.3 Congenital hydrocephalus	0.78	0.52	1.12	
742.4 Other specified anomalies of brain	1.03	0.69	1.47	
742.5 Other specified anomalies of spinal cord	1.44	0.89	2.20	
743.1 Microphthalmos	0.96	0.50	1.66	
743.3 Congenital cataract and lens anomalies	1.07	0.60	1.77	
743.4 Coloboma, other anomalies of anterior segments	0.68	0.31	1.27	
743.5 Cong anom of posterior segment	0.79	0.40	1.39	
743.6 Cong anom of eyelids, lacrimal system, and orbit	1.15	0.72	1.75	
744.0 Anomalies of ear causing impairment of hearing	1.16	0.59	2.05	
744.2 Other specified anomalies of ear	0.72	0.54	0.94	Low
744.8 Other specified anomalies of face and neck	0.95	0.55	1.51	
744.9 Unspecified anomalies of face and neck	0.99	0.70	1.35	
745.1 Transposition of great vessels	1.05	0.69	1.53	
745.2 Tetralogy of Fallot	1.01	0.57	1.64	
745.4 Ventricular septal defect	0.94	0.80	1.09	
745.5 Ostium secundum type atrial septal defect	1.04	0.93	1.16	
745.6 Endocardial cushion defects	1.13	0.70	1.71	
746.0 Anomalies of pulmonary valve	1.18	0.84	1.60	
746.1 Tricuspid atresia and stenosis	0.83	0.39	1.52	
746.2 Ebsteins anomaly	1.61	0.65	3.30	
746.3 Congenital stenosis of aortic valve	0.84	0.38	1.59	
746.4 Congenital insufficiency of aortic valve	0.90	0.54	1.40	
746.5 Congenital mitral stenosis	1.25	0.83	1.81	
746.7 Hypoplastic left heart syndrome	1.19	0.74	1.83	
746.8 Other specified anomalies of the heart	1.14	0.97	1.34	
746.9 Unspecified anomalies of heart	1.35	0.91	1.92	
747.0 Patent ductus arteriosus (PDA)	0.97	0.81	1.14	
747.1 Coarctation of aorta	1.09	0.76	1.50	
747.2 Other anomalies of aorta	0.95	0.66	1.32	
747.3 Anomalies of pulmonary artery	1.06	0.83	1.34	
747.4 Anomalies of great veins	0.79	0.46	1.26	
747.6 Other anomalies of peripheral vascular system	0.94	0.43	1.76	
748.0 Choanal atresia	1.37	0.69	2.44	
748.3 Other anomalies of larynx, trachea, and bronchus	1.24	0.73	1.95	
748.4 Congenital cystic lung	1.06	0.44	2.12	
748.5 Agenesis or aplasia of lung	0.89	0.49	1.46	
749.0 Cleft palate alone	1.12	0.75	1.60	
749.1 Cleft lip alone with/without cleft palate	1.13	0.80	1.54	
750.1 Other anomalies of tongue	1.22	0.68	2.03	

Appendix 2 (continued). Occurrence of birth defects in the San Jacinto River Waste Pits (SJRWP) area compared to Public Health Region 6, 1999-2011: Birth prevalence ratios adjusted for maternal age, maternal race/ethnicity, and sex of infant, with 95% confidence limits.

defect	prevratio ¹	LCL ²	UCL ²	sig ³
750.2 Other specified anomalies of mouth and pharynx	1.00	0.58	1.61	
750.3 T-E fistula, esophageal atresia and stenosis	0.67	0.29	1.30	
750.5 Congenital hypertrophic pyloric stenosis	1.27	1.06	1.51	High
751.1 Atresia and stenosis of small intestine	0.56	0.23	1.10	
751.2 Atr/sten of lg intestine, rectum and anal canal	1.03	0.70	1.45	
751.4 Anomalies of intestinal fixation	0.79	0.40	1.38	
751.5 Other anomalies of intestine	1.22	0.74	1.90	
751.6 Anomalies of gallbladder, bile ducts, and liver	1.20	0.58	2.19	
752.0 Anomalies of ovaries	1.48	0.72	2.68	
752.4 Anom of cervix, vagina, ext female genitalia	0.91	0.66	1.22	
752.5 Undescended testicle	1.09	0.92	1.27	
752.6 Hypospadias and epispadias	1.11	0.99	1.25	
752.8 Other specified anomalies of male genital organs	1.10	0.91	1.31	
753.0 Renal agenesis and dysgenesis	1.15	0.74	1.68	
753.1 Cystic kidney disease	0.89	0.57	1.32	
753.2 Obstructive defects of renal pelvis and ureter	1.05	0.91	1.21	
753.3 Other specified anomalies of kidney	0.87	0.48	1.45	
753.4 Other specified anomalies of ureter	0.87	0.57	1.26	
753.6 Atresia and stenosis of urethra and bladder neck	0.83	0.30	1.81	
753.8 Other specified anomalies of bladder and urethra	0.87	0.46	1.48	
754.0 Certain anomalies of skull, face, and jaw	0.91	0.70	1.17	
754.3 Congenital dislocation of hip	0.95	0.56	1.51	
754.4 Congenital genu recurvatum, bowing of leg bones	1.13	0.51	2.17	
754.5 Varus (inward) deformities of feet	1.04	0.74	1.41	
754.6 Valgus (outward) deformities of feet	0.53	0.31	0.83	Low
754.7 Other deformities of feet	1.11	0.90	1.36	
754.8 Other specified cong musculoskeletal deformities	0.90	0.55	1.39	
755.0 Polydactyly	1.00	0.79	1.24	
755.1 Syndactyly	1.11	0.70	1.67	
755.2 Reduction defects of upper limb	0.93	0.55	1.48	
755.3 Reduction defects of lower limb	0.75	0.09	2.78	
755.5 Other anom of upper limb, inc shoulder girdle	0.78	0.46	1.21	
755.6 Other anom of lower limb, inc pelvic girdle	0.75	0.50	1.08	
755.8 Other specified anomalies of unspecified limb	0.88	0.56	1.30	
756.0 Anomalies of skull and face bones	1.03	0.80	1.31	
756.1 Anomalies of spine	0.81	0.49	1.24	
756.3 Other anomalies of ribs and sternum	0.67	0.29	1.28	
756.6 Anomalies of diaphragm	1.03	0.55	1.74	
756.70 Omphalocele	1.23	0.62	2.16	
756.71 Gastroschisis	1.18	0.87	1.57	
756.8 Other spec anom of muscle, tendon, conn tissue	0.93	0.61	1.35	
757.3 Other specified anomalies of skin	0.57	0.33	0.90	Low
757.5 Specified anomalies of nails	0.97	0.43	1.86	
758.0 Down syndrome	0.81	0.59	1.07	
758.2 Edwards syndrome	0.94	0.42	1.79	
758.3 Autosomal deletion syndromes	1.20	0.76	1.80	
758.5 Other conditions due to autosomal anomalies	1.27	0.75	2.02	
759.0 Anomalies of spleen	1.46	0.55	3.13	

Appendix 2 (continued). Occurrence of birth defects in the San Jacinto River Waste Pits (SJRWP) area compared to Public Health Region 6, 1999-2011: Birth prevalence ratios adjusted for maternal age, maternal race/ethnicity, and sex of infant, with 95% confidence limits.

defect	prevratio ¹	LCL ²	UCL ²	sig ³
759.3 Situs inversus	1.46	0.91	2.21	
759.6 Other hamartoses, not elsewhere classified	1.64	0.70	3.26	
759.8 Other specified anomalies and syndromes	0.88	0.51	1.40	
888.8 Any monitored congenital anomaly ⁵	1.02	0.96	1.08	

Appendix 2 footnotes:

1. Prevratio: Adjusted birth prevalence ratio (birth prevalence in the SJRWP area divided by birth prevalence for Region 6, adjusted for maternal age, maternal race/ethnicity, and sex of infant)
2. LCL = Lower 95% confidence limit for the adjusted birth prevalence ratio; UCL = Upper 95% confidence limit for the adjusted birth prevalence ratio. The interval from the LCL to the UCL is the 95% confidence interval for the adjusted birth prevalence ratio.
3. Sig: Low = Adjusted birth prevalence is statistically significantly lower in the SJRWP area than in Region 6; High = Adjusted birth prevalence is statistically significantly higher in the SJRWP area than in Region 6.
4. Infants and fetuses with one or more birth defects