

Supplemental Analyses

Assessment of the Occurrence of Cancer
East Harris County, Texas
1995–2012
December 28, 2015

Citizen concern prompted the Texas Department of State Health Services (DSHS) to examine the occurrence of cancer in east Harris County, Texas. DSHS followed the Centers for Disease Control and Prevention (CDC) and Council of State and Territorial Epidemiologists (CSTE) 2013 guidelines to investigate the occurrence of childhood and adult cancers. Observed numbers of several of the 17 cancers analyzed were statistically significantly greater than expected, while others were statistically significantly less than expected. The full report, “Assessment of the Occurrence of Cancer in East Harris County, TX, 1995-2012,” is available at <http://www.dshs.state.tx.us/epitox/CancerClusters.shtm>.

In accordance with the CDC and CSTE 2013 guidelines, DSHS convened a group of eight subject matter experts to review the results of the assessment and evaluate the feasibility of follow-up epidemiologic study. DSHS facilitated a meeting on July 24, 2015 to determine the feasibility of a follow-up epidemiologic study of the associations between specific cancers and environmental contaminants in the area. Details of this meeting can also be found at <http://www.dshs.state.tx.us/epitox/CancerClusters.shtm>.

These subject matter experts determined that an epidemiologic study of the associations between specific cancers and environmental contaminants in the area investigated is not feasible. However, they suggested that DSHS consider performing several additional analyses. Therefore, DSHS calculated standardized incidence ratios (SIRs) for cancers among adults only (Tables 1 and 2), and SIRs for leukemia and lymphoma subtypes for all ages (Tables 3 and 4), following the methods outlined in the full report.

Results

Adult Cancers

For all census tracts analyzed together, the numbers of brain and cervical cancers among adults were statistically significantly higher than expected. The number of thyroid cancers for adults was statistically significantly lower than expected.

For census tracts analyzed separately, the number of male breast cancer, kidney cancer, lymphoma and leukemia cases among adults were each statistically significantly higher in 1 of the 38 census tracts. The number of liver and brain cancers among adults were higher than expected in two census tracts, while the number of cervical cancer cases among adults was statistically significantly higher than expected in five census tracts. The number of myeloma cases was statistically significantly higher in one, and statistically significantly lower in another, of the census tracts. The number of female breast cancer cases was statistically significantly higher in three, and statistically significantly lower in six of the census tracts.

Lymphoma and Leukemia Subtypes

For all census tracts analyzed together, the number of other leukemia among all ages was statistically significantly higher than expected.

For census tracts analyzed separately, the non-Hodgkin lymphoma and acute myeloid leukemia among all ages were statistically significantly higher than expected in one census tract each. The number of other leukemia among all ages was statistically significantly higher in two census tracts.

Table 1. Standardized Incidence Ratios (SIRs) and 95% Confidence Intervals (CIs) for Selected Cancers Among Adults in 38 East Harris County Census Tracts Analyzed Together, 1995-2012.

Cancer Type	Observed‡	Expected‡	SIR	95% CI
Adults				
Brain	194	161.8	1.20	(1.04, 1.38)*
Female Breast	1887	1914.4	0.99	(0.94, 1.03)
Male Breast	19	13.6	1.40	(0.84, 2.19)
Cervix	225	183.6	1.23	(1.07, 1.40)*
Kidney	477	469.8	1.02	(0.93, 1.11)
Leukemia	383	346.6	1.11	(1.00, 1.22)
Liver	250	220.0	1.14	(1.00, 1.29)
Lymphoma	607	600.8	1.01	(0.93, 1.09)
Myeloma	191	185.6	1.03	(0.89, 1.19)
Thyroid	252	294.1	0.86	(0.75, 0.97)†

*Indicates observed number of cancer cases is statistically significantly **higher** than expected

†Indicates observed number of cancer cases is statistically significantly **lower** than expected

‡For observed case counts less than five, numbers have been suppressed to protect confidentiality

Table 2. Statistically Significant Standardized Incidence Ratios (SIRs) and 95 percent Confidence Intervals (CIs) for Selected Cancers Among Adults in East Harris County by Census Tract, 1995–2012.

Cancer Type	Census Tract	Observed‡	Expected‡	SIR	95% CI
Adult					
Brain	2330	16	7.6	2.09	(1.20, 3.40)*
	2528	10	4.2	2.37	(1.14, 4.37)*
Female Breast	2323	71	90.8	0.78	(0.61, 0.99)†
	2328	21	34.3	0.61	(0.38, 0.94)†
	2331	60	85.0	0.71	(0.54, 0.91)†
	2528	77	59.9	1.29	(1.01, 1.61)*
	2534	9	17.8	0.51	(0.23, 0.96)†
	2538	78	60.3	1.29	(1.02, 1.61)*
	2546	23	35.5	0.65	(0.41, 0.97)†
	2547	32	21.8	1.47	(1.00, 2.07)*
	3426	8	22.6	0.35	(0.15, 0.70)†
Male Breast	2523	≤5	<1.0	5.15	(1.06, 15.05)*
Cervix	2330	19	9.1	2.09	(1.26, 3.26)*
	2518	7	1.4	4.84	(1.95, 9.98)*
	2525	8	3.3	2.46	(1.06, 4.85)*
	2529	13	6.4	2.03	(1.08, 3.48)*
	2534	≤5	<1.0	3.95	(1.28, 9.22)*
Kidney	2529	32	20.9	1.53	(1.05, 2.16)*
Leukemia	2528	20	10.4	1.92	(1.17, 2.97)*
Liver	2524	13	6.7	1.95	(1.04, 3.33)*
	2543	13	5.6	2.32	(1.24, 3.97)*
Lymphoma	2543	27	17.0	1.59	(1.05, 2.31)*
Myeloma	2536	≤5	≤10	0.17	(0.00, 0.97)†
	2540	9	4.1	2.20	(1.01, 4.18)*

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Table 3. Standardized Incidence Ratios (SIRs) and 95% Confidence Intervals (CIs) for Leukemia and Lymphoma Subtypes in 38 East Harris County Census Tracts Analyzed Together, 1995-2012.

Cancer Type	Observed‡	Expected‡	SIR	95% CI
All Ages				
Hodgkin Lymphoma	94	90.0	1.04	(0.84, 1.28)
Non-Hodgkin Lymphoma	553	538.7	1.03	(0.94, 1.12)
Acute Lymphocytic Leukemia	61	71.2	0.86	(0.66, 1.10)
Chronic Lymphocytic Leukemia	122	123.7	0.99	(0.82, 1.18)
Other Lymphocytic Leukemia	13	12.9	1.01	(0.54, 1.72)
Acute Myeloid Leukemia	124	108.1	1.15	(0.95, 1.37)
Chronic Myeloid Leukemia	55	54.0	1.02	(0.77, 1.33)
Other Myeloid Leukemia	9	6.2	1.45	(0.66, 2.75)
Other Leukemia	52	34.8	1.49	(1.12, 1.96)*

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Table 4. Statistically Significant Standardized Incidence Ratios (SIRs) and 95 percent Confidence Intervals (CIs) for Leukemia and Lymphoma Subtypes in East Harris County by Census Tract, 1995–2012.

Cancer Type	Census Tract	Observed‡	Expected‡	SIR	95% CI
All-Ages					
Non-Hodgkin Lymphoma	2543	28	15.6	1.80	(1.19, 2.60)*
Acute Myeloid Leukemia	2544	≤5	≤5.0	3.11	(1.01, 7.25)*
Other Leukemia	2323	6	1.4	4.14	(1.52, 9.02)*
	2521	≤5	<1.0	12.12	(2.50, 35.41)*

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