



CANCER PREVENTION &
RESEARCH INSTITUTE OF TEXAS

Breast Cancer in Texas: A Closer Look

(Incidence and Mortality Data by Councils of Government and County)

Revised January 4, 2010

Acknowledgements

CPRIT wishes to thank the Texas Cancer Registry (TCR), Cancer Epidemiology and Surveillance Branch, Texas Department of State Health Services, for providing the tables, maps, and other information included in this document. CPRIT acknowledges the TCR's commitment to collect, maintain, and disseminate the highest quality cancer data that will contribute towards cancer prevention and control, improving diagnoses, treatment, survival, and quality of life for all cancer patients.

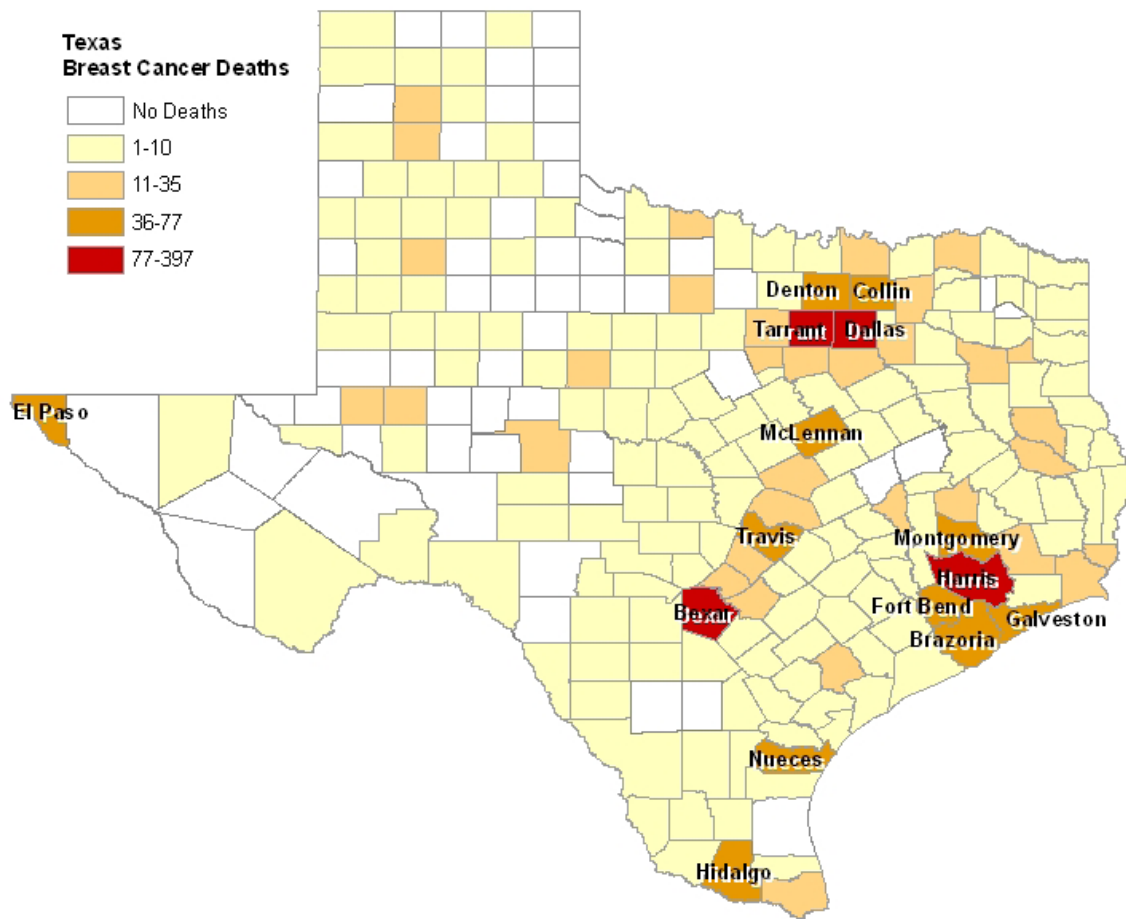
For questions regarding the cancer data provided in this document, or for additional cancer data questions and requests, please visit the TCR's website at www.dshs.state.tx.us/tcr/, email CancerData@dshs.state.tx.us, or call 1 (800) 252-8059.

Female Breast Cancer in Texas

Breast cancer is the most commonly diagnosed cancer in women and second leading cause of cancer deaths in Texas women. In 2009, it is estimated that 15,110 Texas women will be newly diagnosed with invasive breast cancer, and 2,687 will die of the disease.

- From 2002–2006, a total of 61,446 cases of invasive breast cancer were newly diagnosed in Texas women, with an average of 12,289 cases per year.
- Breast cancer killed an average of 2,524 Texans annually from 2002–2006.
- From 2002–2006, non-Hispanic white females had the highest breast cancer incidence rate, while black females had the highest mortality rate.
- Non-Hispanic white and Hispanic women along the Texas-Mexico border had lower incidence and but higher mortality rates than Non-Hispanic whites and Hispanics in non-border counties.
- From 2002–2006, there were higher female breast cancer incidence and mortality rates in urban counties compared to rural counties.

Breast Cancer Deaths in Texas, 2006



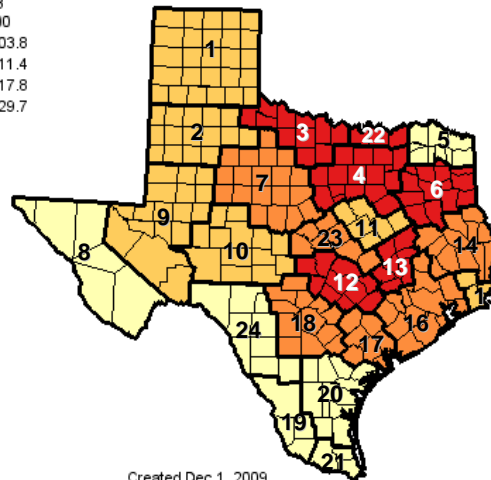
*Counties are labeled if they had 36 or more deaths in 2006.

Prepared by the Cancer Epidemiology and Surveillance Branch, Texas Department of State Health Services. Data request # 09393 11/10/2009.
Mortality source: Center for Health Statistics, DSHS, created 3/31/2009.

The following maps and tables compare breast cancer rates, cases and deaths by Texas Council of Government (COG) groupings, which are made up of multiple counties in regions across the state. COG's were used to provide more stable regional estimates than can be obtained using county-level statistics. Appendices 1-3 provide the major cities in each COG and the COG number for each county.

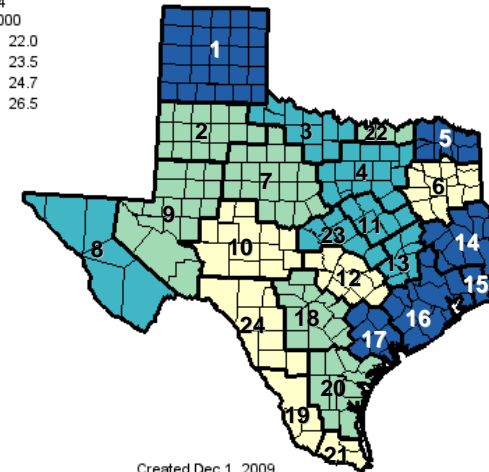
Overall Breast Cancer Incidence and Mortality Rates by Councils of Government (COG), 2002-2006

**Age-Adjusted Invasive Cancer Incidence Rates in Texas
Female Breast, 2002-2006
By Council of Government**
Age-Adjusted to the 2000 U.S. Standard Population
Texas Rate: 114.3
Rate per 100,000



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**Age-Adjusted Cancer Mortality Rates in Texas
Female Breast, 2002-2006
By Council of Government**
Age-Adjusted to the 2000 U.S. Standard Population
Texas Rate: 23.4
Rate per 100,000



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Notes from maps and Table 1:

- The highest incidence rate was found in COG 13 (129.7 per 100,000), which was 14%* higher than the Texas rate.
 - Incidence rates were statistically significantly higher than the Texas rate in COG's 4,6,12,13,16.
- The highest mortality rate was found in COG 15 (26.5 per 100,000), which was 13%* higher than the Texas rate.
 - Mortality rates were statistically significantly higher than the Texas rate in COG's 15,16.
- There were no COG's in the highest quartile for mortality rates that had incidence rates in the highest quartile.
- COG's 4,16,18 (which includes the Dallas-Fort Worth area, Houston and San Antonio) accounted for 56% of breast cancer deaths in Texas.

*From the rate ratio comparing the COG rate to the Texas rate. The rate ratio is greater than 1, meaning the rate is higher in the COG, and was statistically significantly higher.

**Table 1. Invasive Cancer Incidence and Mortality Rates and Rate Ratios by Council of Government in Texas
Female Breast, 2002-2006**

	Population At Risk	Incidence					Mortality				
		Cases	Age-Adjusted Rate	Lower CI	Upper CI	Rate Ratio	Deaths	Age-Adjusted Rate	Lower CI	Upper CI	Rate Ratio
Texas	56,482,729	61,428	114.2	113.3	115.1	Ref	12,621	23.4	23	23.8	Ref
COG 1	1,009,434	1,190	109.9	103.7	116.4	0.96	290	25.3	22.5	28.5	1.08
COG 2	973,323	1,048	106.7	100.3	113.4	0.93	236	23.1	20.2	26.3	0.99
COG 3	554,189	789	119.6	111.2	128.4	1.05	169	24.7	21	28.8	1.06
COG 4	14,630,702	15,705	120.0	118.1	121.9	1.05*	2,978	23.6	22.8	24.5	1.01
COG 5	691,728	862	103.9	96.9	111.2	0.91	224	25.1	21.9	28.8	1.07
COG 6	1,948,433	2,739	119.1	114.6	123.8	1.04*	529	22	20.1	24	0.94
COG 7	794,385	1,081	114	107.1	121.2	1.00	242	23.5	20.5	26.8	1.00
COG 8	1,895,485	1,735	98.4	93.9	103.2	0.86	432	24.5	22.3	27	1.05
COG 9	941,394	1,040	106.5	100.1	113.2	0.93	229	22.9	20	26.1	0.98
COG 10	377,413	453	104.2	94.6	114.4	0.91	93	20.1	16.2	24.8	0.86
COG 11	847,390	1,029	111.4	104.6	118.6	0.98	237	23.8	20.8	27.1	1.02
COG 12	3,775,344	4,008	121.3	117.5	125.1	1.06*	714	22	20.4	23.7	0.94
COG 13	687,551	807	129.7	120.8	139	1.14*	166	24.5	20.8	28.6	1.05
COG 14	913,485	1,203	112.6	106.1	119.3	0.99	297	25.9	23	29.1	1.11
COG 15	947,836	1,174	109.4	103.1	115.9	0.96	298	26.5	23.5	29.7	1.13*
COG 16	13,377,384	14,163	117.8	115.8	119.8	1.03*	2,922	25.2	24.3	26.2	1.08*
COG 17	467,500	637	116.8	107.8	126.4	1.02	146	25.1	21.1	29.7	1.07
COG 18	4,976,691	5,760	115.3	112.3	118.3	1.01	1,170	22.9	21.6	24.2	0.98
COG 19	757,558	558	94.0	86.4	102.2	0.82	94	15.9	12.9	19.5	0.68
COG 20	1,384,965	1,495	103.2	98	108.6	0.90	345	23.3	20.9	25.9	1.00
COG 21	2,666,026	1,918	86.2	82.4	90.2	0.75	375	16.7	15.1	18.5	0.71
COG 22	467,327	682	123.4	114.2	133.3	1.08	134	22.9	19.1	27.3	0.98
COG 23	990,622	1,013	114.8	107.8	122.1	1.01	223	24.6	21.4	28	1.05
COG 24	406,564	339	83.8	75	93.3	0.73	78	18.9	14.9	23.6	0.81

Rates are per 100,000 and age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130) - User standard;

Confidence intervals are 95% for rates.

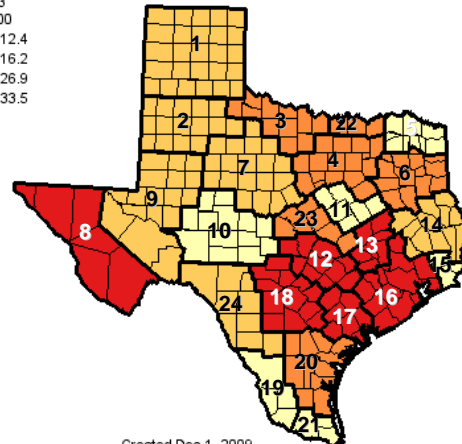
* The rate ratio indicates that the rate is significantly higher than the rate for Texas (p<0.05).

Warning: Use caution when interpreting ratios and related statistics as the ratio variable contains overlapping groupings.

Non-Hispanic White - Breast Cancer Incidence and Mortality Rates by COG, 2002-2006

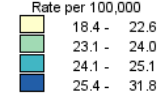
Please note that rates with fewer than 16 cases or deaths are considered unstable.

Age-Adjusted Invasive Cancer Incidence Rates in Texas
Female Breast, Non-Hispanic White, 2002-2006
By Council of Government
 Age-Adjusted to the 2000 U.S. Standard Population
 Texas Rate: 123.3
 Rate per 100,000

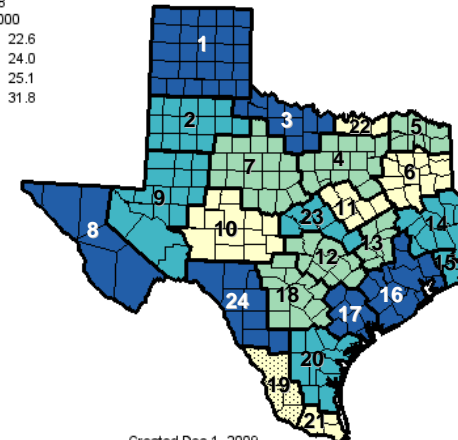


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Age-Adjusted Cancer Mortality Rates in Texas
Female Breast, Non-Hispanic White, 2002-2006
By Council of Government
 Age-Adjusted to the 2000 U.S. Standard Population
 Texas Rate: 23.8
 Rate per 100,000



Unstable



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Notes from maps and Table 2:

- The highest incidence rate was found in COG 8 (131.4 per 100,000) and was 15% higher than the Texas rate.
 - Incidence rates were statistically significantly higher than the Texas rate in COG's 4,8,12,13,16,17,18.
 - Compared to all non-Hispanic whites in Texas, non-Hispanic whites in COG's 4,16,18 had significantly higher rates.
- The highest mortality rate was found in COG 8 (31.8 per 100,000) and was 36% higher than the Texas rate.
 - Compared to all non-Hispanic whites in Texas, non-Hispanic whites in COG's 8 and 16 had significantly higher rates.
- COG's 8,16,17 were in the highest quartiles of both incidence and mortality rates for Texas.
- COG's 1,3,24 were in the highest quartile for mortality rates but in lower quartiles for incidence rates.
- COG's 4 and 16 accounted for 47% of all female breast cancer deaths among non-Hispanic whites in Texas.

**Table 2. Invasive Cancer Incidence and Mortality Rates and Rate Ratios by Council of Government in Texas
Female Breast, 2002-2006, Non-Hispanic Whites**

	Population	Incidence					Mortality				
		Cases	Age-Adjusted Rate#	Lower CI	Upper CI	Rate Ratio*	Deaths	Age-Adjusted Rate	Lower CI	Upper CI	Rate Ratio*
Texas	56,482,729	61,428	114.2	113.3	115.1	Ref	12,621	23.4	23	23.8	Ref
Texas NHW	28,762,660	42,131	123.2	122	124.4		8,497	23.8	23.3	24.3	
COG 1	692,621	1,025	115.6	108.5	123.2	1.01	260	26.7	23.5	30.3	1.14
COG 2	566,815	819	116.2	108.2	124.8	1.02	184	24.2	20.7	28.1	1.03
COG 3	436,899	703	121.2	112.1	130.8	1.06	153	25.4	21.4	30	1.09
COG 4	8,439,947	11,881	126.9#	124.6	129.2	1.11*	2,171	23.2	22.2	24.2	0.99
COG 5	515,939	726	106.5	98.6	114.9	0.93	181	24	20.5	28	1.03
COG 6	1,439,458	2,240	117.0	112	122.1	1.02	413	20.4	18.4	22.5	0.87
COG 7	594,738	907	113.3	105.7	121.4	0.99	213	24	20.7	27.7	1.03
COG 8	287,398	514	131.4	120	143.8	1.15*	132	31.8#	26.4	38	1.36*
COG 9	493,374	758	115.5	107.2	124.3	1.01	173	25.1	21.4	29.2	1.07
COG 10	236,427	354	110.2	98.5	122.9	0.96	77	21.5	16.8	27.3	0.92
COG 11	562,498	808	112.4	104.5	120.7	0.98	180	22.6	19.3	26.4	0.97
COG 12	2,320,305	3,089	127.4	122.9	132	1.12*	566	23.1	21.2	25.1	0.99
COG 13	461,173	629	133.5	123	144.6	1.17*	122	23.3	19.2	28	1.00
COG 14	673,993	1,008	115.1	107.8	122.7	1.01	237	24.8	21.6	28.3	1.06
COG 15	608,611	873	111.7	104.2	119.5	0.98	217	25.1	21.8	28.8	1.07
COG 16	6,221,535	9,113	127.5#	124.9	130.2	1.12*	1,838	25.8#	24.6	27	1.10
COG 17	267,695	480	127.4	115.8	140	1.12*	106	25.6	20.8	31.3	1.09
COG 18	2,039,221	3,354	128.4#	124	132.9	1.12*	670	24	22.2	26	1.03
COG 19	32,684	32	82.2	55.6	117.7	0.72	8	18.4	7.9	38	0.79
COG 20	510,521	783	116.3	108.1	125	1.02	173	24.5	20.9	28.6	1.05
COG 21	290,492	521	103.0	93	113.9	0.90	107	21.5	16.9	27	0.92
COG 22	395,380	620	122.4	112.7	132.7	1.07	115	21.4	17.6	25.9	0.91
COG 23	604,953	781	118.5	110.2	127.2	1.04	173	24.6	21	28.7	1.05
COG 24	69,983	113	112.6	91.7	137.3	0.99	28	26.2	16.9	39.5	1.12

Rates are per 100,000 and age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130) - User standard;

Confidence intervals are 95% for rates.

The rate ratio indicates that the rate is significantly higher than the rate for Texas Non-Hispanic Whites (p<0.05).

* The rate ratio indicates that the rate is significantly higher than the rate for Texas All Races (p<0.05).

Warning: Use caution when interpreting ratios and related statistics as the ratio variable contains overlapping groupings.

Black - Breast Cancer Incidence and Mortality Rates by COG, 2002-2006

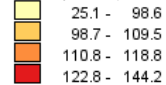
Please note that rates with fewer than 16 cases or deaths are considered unstable.

**Age-Adjusted Invasive Cancer Incidence Rates in Texas
Female Breast, Black, 2002-2006
By Council of Government**

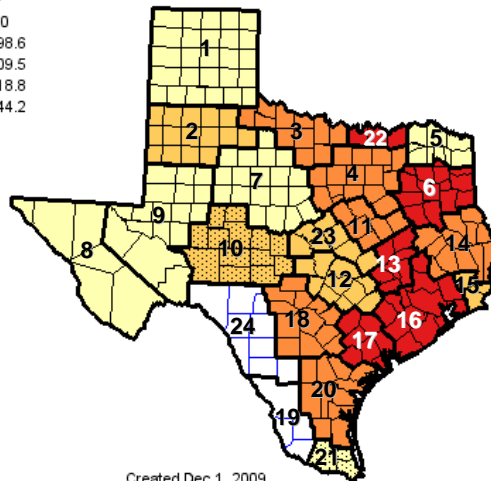
Age-Adjusted to the 2000 U.S. Standard Population

Texas Rate: 116.7

Rate per 100,000



Unstable
Risk Population
less than 1000



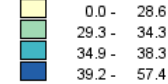
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**Age-Adjusted Cancer Mortality Rates in Texas
Female Breast, Black, 2002-2006
By Council of Government**

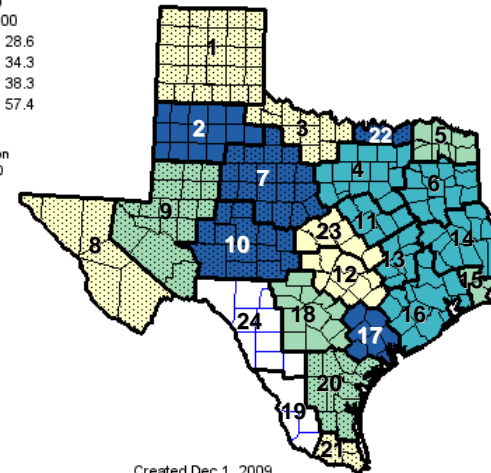
Age-Adjusted to the 2000 U.S. Standard Population

Texas Rate: 34.9

Rate per 100,000



Unstable
Risk Population
less than 1000



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Notes from maps and Table 3.

- The highest incidence rate was found in COG 22 (144.2 per 100,000) but was not statistically different than the Texas rate.
 - There were 36 cases of breast cancer among blacks in COG 22 between 2002-2006.
 - Incidence rates were statistically significantly higher than the Texas rate in COG's 6 and 16.
- The highest mortality rate was found in COG 22 (57.3 per 100,000) and was 2.5 times higher than the Texas rate.
 - There were 15 breast cancer deaths in COG 22 between 2002-2006.
 - Mortality rates were statistically significantly higher than the State rate in COG's 2,4,6,11,14,15,16,17,18,22.
- COG's 17,22 were in the highest quartiles for both incidence and mortality rates.
- Among COG's with stable rates, COG 2 was in the highest quartile for mortality but in the 2nd quartile for incidence.
- COG's 4,6,16 accounted for 71% of all breast cancer deaths among blacks.

**Table 3. Invasive Cancer Incidence and Mortality Rates and Rate Ratios by Council of Government in Texas
Female Breast, 2002-2006, Blacks**

	Population	Incidence					Mortality				
		Cases	Age-Adjusted Rate#	Lower CI	Upper CI	Rate Ratio*	Deaths	Age-Adjusted Rate	Lower CI	Upper CI	Rate Ratio*
Texas	56,482,729	61,428	114.2	113.3	115.1	Ref	12,621	23.4	23.0	23.8	Ref
Texas Blacks	6,965,074	6,701	116.7	113.9	119.6		1,936	34.9	33.3	36.5	
COG 1	43,693	24	70.4	45.1	104.4	0.62	7	20.8	8.4	42.3	0.89
COG 2	66,372	53	98.7	73.9	128.8	0.86	21	39.2	24.2	59.5	1.68*
COG 3	40,669	37	110.9	77.9	152.5	0.97	9	25	11.3	47.5	1.07
COG 4	2,201,514	2,010	117.7	112.3	123.2	1.03	543	34.9	31.9	38.1	1.49*
COG 5	120,742	118	98.6	81.5	118.4	0.86	40	32.8	23.3	44.8	1.40
COG 6	312,570	394	128.8	116.3	142.3	1.13*	111	35.3	28.9	42.6	1.51*
COG 7	38,683	26	85.8	55.9	125.3	0.75	12	41.4	21.4	71.5	1.77
COG 8	57,751	25	58.3	37.4	86.3	0.51	8	20	8.5	38.9	0.85
COG 9	48,919	36	79.2	55.4	109.6	0.69	14	31	16.9	51.8	1.32
COG 10	13,469	12	109.5	55.9	190.7	0.96	4	39.5	10.7	97.4	1.69
COG 11	133,086	142	118.8	100	140.1	1.04	47	38.1	27.9	50.7	1.63*
COG 12	311,105	258	107.2	94.2	121.4	0.94	66	28.2	21.7	36	1.21
COG 13	98,008	116	133.6	110.1	160.6	1.17	36	36.9	25.5	51.5	1.58*
COG 14	148,528	159	111.7	94.9	130.6	0.98	57	38.3	28.9	49.8	1.64*
COG 15	244,807	236	104.3	91.4	118.5	0.91	70	31.2	24.3	39.5	1.33*
COG 16	2,425,465	2,487	122.8#	117.9	127.8	1.08*	726	37	34.3	39.9	1.58*
COG 17	32,985	47	134.8	98.5	180.2	1.18	17	44.8	25.5	73.2	1.91*
COG 18	324,679	318	114.1	101.8	127.4	1.00	91	34.3	27.6	42.1	1.47*
COG 19	4,287	1	52.5	1.3	266.7	0.46	0	0	0	161.7	0.00
COG 20	49,281	49	112.3	83	148.5	0.98	13	29.3	15.5	50	1.25
COG 21	20,758	4	25.2	6.5	68.6	0.22	0	0	0	0	0.00
COG 22	26,410	36	144.2	100.8	199.7	1.26	15	57.3	31.8	95	2.45*
COG 23	197,065	112	106.7	86.2	130.2	0.93	29	28.6	18.5	41.8	1.22
COG 24	4,228	1	31.4	0.8	177.8	0.27	0	0	0	0	0.00

Rates are per 100,000 and age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130) - User standard;

Confidence intervals are 95% for rates.

The rate ratio indicates that the rate is significantly different than the rate for Texas Blacks (p<0.05).

* The rate ratio indicates that the rate is significantly different than the rate for Texas All Races (p<0.05).

Warning: Use caution when interpreting ratios and related statistics as the ratio variable contains overlapping groupings.

Hispanic - Breast Cancer Incidence and Mortality Rates by COG, 2002-2006

Please note that rates with fewer than 16 cases or deaths are considered unstable.

**Age-Adjusted Invasive Cancer Incidence Rates in Texas
Female Breast, Hispanic, 2002-2006
By Council of Government**

Age-Adjusted to the 2000 U.S. Standard Population

Texas Rate: 86.0

Rate per 100,000

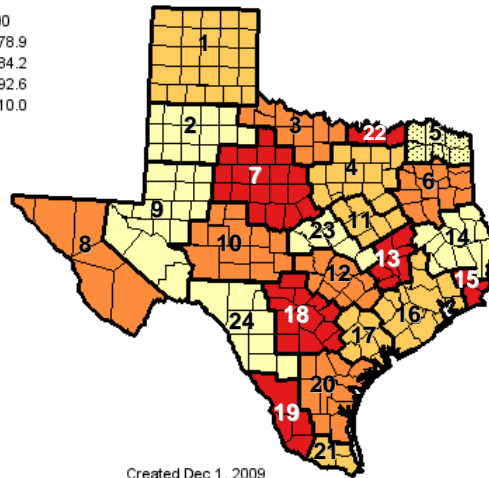
33.3 - 78.9

80.0 - 84.2

88.6 - 92.6

93.2 - 110.0

Unstable



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**Age-Adjusted Cancer Mortality Rates in Texas
Female Breast, Hispanic, 2002-2006
By Council of Government**

Age-Adjusted to the 2000 U.S. Standard Population

Texas Rate: 17.3

Rate per 100,000

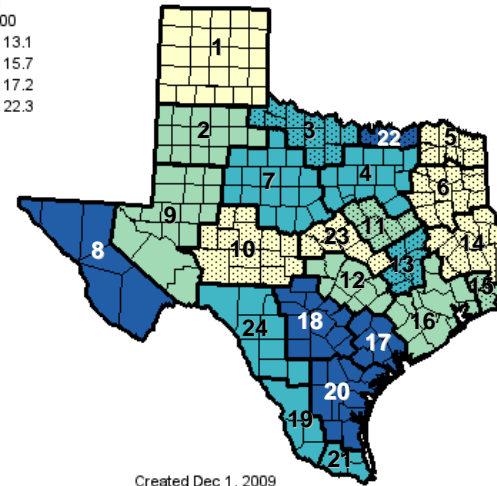
5.3 - 13.1

13.6 - 15.7

15.8 - 17.2

17.3 - 22.3

Unstable



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Notes from maps and Table 4:

- The highest incidence rate was found in COG 13 (102.4 per 100,000) but was 10% *lower* than the Texas rate.
 - There were no COG's with incidence rates higher than the Texas rate.
 - Compared to all Hispanics in Texas, Hispanics in COG's 18 and 19 had statistically higher rates.
- The highest mortality rate was found in COG 8 (22.3 per 100,000) but was 5% *lower* than the Texas rate.
 - There were no COG's with mortality rates higher than the Texas rate.
 - Compared to all Hispanics in Texas, Hispanics in COG's 8,18,20 had statistically higher rates.
- Among COG's with stable rates, COG 18 was in the highest quartiles for incidence and mortality rates.
- COG's 4,8,16,18,20,21 account for 80% of all breast cancer deaths among Hispanics.

**Table 4. Invasive Cancer Incidence and Mortality Rates and Rate Ratios by Council of Government in Texas
Female Breast Cancer, 2002-2006, Hispanics**

	Population	Incidence					Mortality				
		Cases	Age-Adjusted Rate#	Lower CI	Upper CI	Rate Ratio*	Deaths	Age-Adjusted Rate	Lower CI	Upper CI	Rate Ratio*
Texas	56,482,729	61,428	114.2	113.3	115.1	Ref	12,621	23.4	23	23.8	Ref
Texas Hisp.	18,945,764	10,834	86	84.3	87.7		2,026	17.3	16.5	18.1	
COG 1	256,959	127	84.2	69.2	101.4	0.74	19	12.4	7.3	19.6	0.53
COG 2	330,933	169	72.9	62	85.2	0.64	30	14.9	9.8	21.5	0.64
COG 3	65,005	36	89.2	61.5	124.4	0.78	6	16.6	6	35.6	0.71
COG 4	3,316,527	1,291	80.4	75.5	85.6	0.70	208	15.8	13.4	18.4	0.68
COG 5	48,055	8	33.3	13.1	69.5	0.29	2	13.1	1.5	44.6	0.56
COG 6	179,676	75	88.6	67.6	113.8	0.78	4	5.3	1.2	14.3	0.23
COG 7	152,842	99	93.3	75.4	113.9	0.82	17	17.2	9.8	27.6	0.74
COG 8	1,537,102	1,186	90	84.9	95.2	0.79	287	22.3#	19.8	25	0.95
COG 9	391,489	222	78.9	68.6	90.2	0.69	42	15.7	11.2	21.3	0.67
COG 10	123,700	87	92.6	74	114.3	0.81	10	10.6	5	19.5	0.45
COG 11	142,896	64	82.1	62.5	105.5	0.72	10	13.6	6.4	24.8	0.58
COG 12	996,295	506	90.3	82	99.2	0.79	78	15.6	12.1	19.7	0.67
COG 13	110,328	54	102.4	75.7	134.6	0.90	8	16.4	6.8	31.9	0.70
COG 14	82,718	19	49.0	28.5	77.5	0.43	3	8.3	1.5	24	0.35
COG 15	74,018	51	104	76.8	137.3	0.91	7	14	5.6	28.7	0.60
COG 16	4,034,396	1,889	82	78	86.2	0.72	303	15.2	13.3	17.2	0.65
COG 17	163,594	105	80.2	65.5	97.1	0.70	22	17.3	10.8	26.1	0.74
COG 18	2,534,932	1,981	97.3#	93	101.7	0.85	397	20.3#	18.3	22.4	0.87
COG 19	719,660	523	94.8#	86.9	103.3	0.83	86	15.8	12.6	19.4	0.68
COG 20	808,587	647	90.7	83.8	97.9	0.79	156	21.9#	18.6	25.7	0.94
COG 21	2,347,663	1,378	80.0	75.8	84.4	0.70	266	15.8	13.9	17.8	0.68
COG 22	37,093	19	110	58.8	184.1	0.96	3	20.5	3.3	62.2	0.88
COG 23	161,380	74	78.5	60.2	100.2	0.69	13	12	6.2	21.2	0.51
COG 24	329,916	224	74.7	65.2	85.1	0.65	49	16.1	11.9	21.3	0.69

Rates are per 100,000 and age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130) - User standard;

Confidence intervals are 95% for rates.

The rate ratio indicates that the rate is significantly different than the rate for Texas Hispanics (p<0.05).

* The rate ratio indicates that the rate is significantly different than the rate for Texas All Races (p<0.05).

Warning: Use caution when interpreting ratios and related statistics as the ratio variable contains overlapping groupings.

Methods

The maps were saved from our Web Query mapping tool available on our website: <http://www.cancer-rates.info/tx/>. Maps and tables were produced looking at Texas overall and separately by race and ethnicity (for races with enough numbers to analyze).

The tables in this report show breast cancer incidence and mortality rates, their 95% confidence intervals, and rate ratios. This ratio is calculated by dividing the age-adjusted rate in the relevant COG by the age-adjusted rate in the entire state of Texas. A relative risk of 1.0 indicates that the incidence or mortality from cancer is the same in each comparison group. If the relative risk is greater than 1.0, the cancer incidence or mortality rate is higher in the COG being studied than in the state as a whole. The differences between these rates were tested for statistical significance. Readers are cautioned that statistically significant variation in rates can occur from a variety of unknown factors, and additional assessment of any significant differences may be needed to determine which differences represent true public health problems, or the overall importance of the result.

Incidence data presented are for Texas resident invasive breast cancer cases first diagnosed between January 1, 2002–December 31, 2006. A “case” is defined for each primary cancer according to the anatomic site recorded as the tissue of origin. The cancers included in this report are those designated by the third edition of the ICD-O-3¹ as C18.0 - C20.9, female breast cancer. Cancer deaths are classified according to the SEER major site groups based on the ICD version 10.² The ICD-10 codes for female breast cancer include C18.0 – C20.9 and C26.0. The race groups used in this report for generating incidence and mortality rates include non-Hispanic Whites, Blacks and Hispanics. The Hispanic designation can be of any race.

Cancer incidence and mortality rates (2002–2006) were age-adjusted using the direct method, and 19 age groups up to age 85+. Age-adjustment enables the direct comparison of incidence or mortality rates by eliminating the effect of differences in the age-distributions between various comparison populations. The 2000 United States standard population was used as the standard for all calculations.

References

1. Fritz A, Percy C, Jack A, Shanmugaratnam K, Sobin L, Parkin D, Whelan S (eds) International Classification of Diseases for Oncology, Third Edition, Geneva: World Health Organization, 2000.
2. World Health Organization. Manual of the International Statistical Classification of Disease, Injuries and Causes of Death. Tenth revision, vol. 1. Geneva: WHO, 1992.
Available online: <http://www.naaccr.org/filesystem/Standards%20Volume%2011.3%20posted%20copy.pdf>

Appendix 1. Major cities by Texas Council of Government (COG) number.

Council of Government (COG) Number	Largest City
1	Amarillo
2	Lubbock
3	Wichita Falls
4	Dallas/Arlington/Fort Worth
5	Texarkana
6	Tyler/Kilgore
7	Abilene
8	El Paso
9	Midland
10	San Angelo
11	Waco
12	Austin
13	Bryan
14	Nacogdoches/Jasper
15	Beaumont
16	Houston
17	Victoria
18	San Antonio
19	Laredo
20	Corpus Christi
21	McAllen
22	Sherman
23	Temple/Belton/Killeen
24	Del Rio

Appendix 2. Council of Government (COG) number by County.

County (FIPs Code)	COG Number		Number
Anderson County (48001)	6	Coke County (48081)	10
Andrews County (48003)	9	Coleman County (48083)	7
Angelina County (48005)	14	Collin County (48085)	4
Aransas County (48007)	20	Collingsworth County (48087)	1
Archer County (48009)	3	Colorado County (48089)	16
Armstrong County (48011)	1	Comal County (48091)	18
Atascosa County (48013)	18	Comanche County (48093)	7
Austin County (48015)	16	Concho County (48095)	10
Bailey County (48017)	2	Cooke County (48097)	22
Bandera County (48019)	18	Coryell County (48099)	23
Bastrop County (48021)	12	Cottle County (48101)	3
Baylor County (48023)	3	Crane County (48103)	9
Bee County (48025)	20	Crockett County (48105)	10
Bell County (48027)	23	Crosby County (48107)	2
Bexar County (48029)	18	Culberson County (48109)	8
Blanco County (48031)	12	Dallam County (48111)	1
Borden County (48033)	9	Dallas County (48113)	4
Bosque County (48035)	11	Dawson County (48115)	9
Bowie County (48037)	5	Deaf Smith County (48117)	1
Brazoria County (48039)	16	Delta County (48119)	5
Brazos County (48041)	13	Denton County (48121)	4
Brewster County (48043)	8	DeWitt County (48123)	17
Briscoe County (48045)	1	Dickens County (48125)	2
Brooks County (48047)	20	Dimmit County (48127)	24
Brown County (48049)	7	Donley County (48129)	1
Burleson County (48051)	13	Duval County (48131)	20
Burnet County (48053)	12	Eastland County (48133)	7
Caldwell County (48055)	12	Ector County (48135)	9
Calhoun County (48057)	17	Edwards County (48137)	24
Callahan County (48059)	7	Ellis County (48139)	4
Cameron County (48061)	21	El Paso County (48141)	8
Camp County (48063)	6	Erath County (48143)	4
Carson County (48065)	1	Falls County (48145)	11
Cass County (48067)	5	Fannin County (48147)	22
Castro County (48069)	1	Fayette County (48149)	12
Chambers County (48071)	16	Fisher County (48151)	7
Cherokee County (48073)	6	Floyd County (48153)	2
Childress County (48075)	1	Foard County (48155)	3
Clay County (48077)	3	Fort Bend County (48157)	16
Cochran County (48079)	2	Franklin County (48159)	5
		Freestone County (48161)	11
		Frio County (48163)	18
County (FIPs Code)	COG		

Gaines County (48165)	9
Galveston County (48167)	16
Garza County (48169)	2
Gillespie County (48171)	18
Glasscock County (48173)	9
Goliad County (48175)	17
Gonzales County (48177)	17
Gray County (48179)	1
Grayson County (48181)	22
Gregg County (48183)	6
Grimes County (48185)	13
Guadalupe County (48187)	18
Hale County (48189)	2
Hall County (48191)	1
Hamilton County (48193)	23
Hansford County (48195)	1
Hardeman County (48197)	3
Hardin County (48199)	15
Harris County (48201)	16
Harrison County (48203)	6
Hartley County (48205)	1
Haskell County (48207)	7
Hays County (48209)	12
Hemphill County (48211)	1
Henderson County (48213)	6
Hidalgo County (48215)	21
Hill County (48217)	11
Hockley County (48219)	2
Hood County (48221)	4
Hopkins County (48223)	5
Houston County (48225)	14
Howard County (48227)	9
Hudspeth County (48229)	8
Hunt County (48231)	4
Hutchinson County (48233)	1
Irion County (48235)	10
Jack County (48237)	3
Jackson County (48239)	17
Jasper County (48241)	14
Jeff Davis County (48243)	8
Jefferson County (48245)	15
Jim Hogg County (48247)	14
Jim Hogg County (48247)	19
Jim Wells County (48249)	20
Johnson County (48251)	4

Jones County (48253)	7
Karnes County (48255)	18
Kaufman County (48257)	4
Kendall County (48259)	18
Kenedy County (48261)	20
Kent County (48263)	7
Kerr County (48265)	18
Kimble County (48267)	10
King County (48269)	2
Kinney County (48271)	24
Kleberg County (48273)	20
Knox County (48275)	7
Lamar County (48277)	5
Lamb County (48279)	2
Lampasas County (48281)	23
La Salle County (48283)	24
Lavaca County (48285)	17
Lee County (48287)	12
Leon County (48289)	13
Liberty County (48291)	16
Limestone County (48293)	11
Lipscomb County (48295)	1
Live Oak County (48297)	20
Llano County (48299)	12
Loving County (48301)	9
Lubbock County (48303)	2
Lynn County (48305)	2
McCulloch County (48307)	10
McLennan County (48309)	11
McMullen County (48311)	20
Madison County (48313)	13
Marion County (48315)	6
Martin County (48317)	9
Mason County (48319)	10
Matagorda County (48321)	16
Maverick County (48323)	24
Medina County (48325)	18
Menard County (48327)	10
Midland County (48329)	9
Milam County (48331)	23
Mills County (48333)	23
Mitchell County (48335)	7
Montague County (48337)	3
Montgomery County (48339)	16
Moore County (48341)	1

Morris County (48343)	5
Motley County (48345)	2
Nacogdoches (48347)	14
Navarro County (48349)	4
Newton County (48351)	14
Nolan County (48353)	7
Nueces County (48355)	20
Ochiltree County (48357)	1
Oldham County (48359)	1
Orange County (48361)	15
Palo Pinto County (48363)	4
Panola County (48365)	6
Parker County (48367)	4
Parmer County (48369)	1
Pecos County (48371)	9
Polk County (48373)	14
Potter County (48375)	1
Presidio County (48377)	8
Rains County (48379)	6
Randall County (48381)	1
Reagan County (48383)	10
Real County (48385)	24
Red River County (48387)	5
Reeves County (48389)	9
Refugio County (48391)	20
Roberts County (48393)	1
Robertson County (48395)	13
Rockwall County (48397)	4
Runnels County (48399)	7
Rusk County (48401)	6
Sabine County (48403)	14
San Augustine County (48405)	14
San Jacinto County (48407)	14
San Patricio County (48409)	20
San Saba County (48411)	23
Schleicher County (48413)	10
Scurry County (48415)	7
Shackelford County (48417)	7
Shelby County (48419)	14
Sherman County (48421)	1
Smith County (48423)	6
Somervell County (48425)	4
Starr County (48427)	19
Stephens County (48429)	7

Sterling County (48431)	10
Stonewall County (48433)	7
Sutton County (48435)	10
Swisher County (48437)	1
Tarrant County (48439)	4
Taylor County (48441)	7
Terrell County (48443)	9
Terry County (48445)	2
Throckmorton County (48447)	7
Titus County (48449)	5
Tom Green County (48451)	10
Travis County (48453)	12
Trinity County (48455)	14
Tyler County (48457)	14
Upshur County (48459)	6
Upton County (48461)	9
Uvalde County (48463)	24
Val Verde County (48465)	24
Van Zandt County (48467)	6
Victoria County (48469)	17
Walker County (48471)	16
Waller County (48473)	16
Ward County (48475)	9
Washington County (48477)	13
Webb County (48479)	19
Wharton County (48481)	16
Wheeler County (48483)	1
Wichita County (48485)	3
Wilbarger County (48487)	3
Willacy County (48489)	21
Williamson County (48491)	12
Wilson County (48493)	18
Winkler County (48495)	9
Wise County (48497)	4
Wood County (48499)	6
Yoakum County (48501)	2
Young County (48503)	3
Zapata County (48505)	19
Zavala County (48507)	24

Appendix 3. Counties by Council of Government (COG) number.

COG	County (FIPs Code)		
1	Armstrong County (48011)	2	Hockley County (48219)
1	Briscoe County (48045)	2	King County (48269)
1	Carson County (48065)	2	Lamb County (48279)
1	Castro County (48069)	2	Lubbock County (48303)
1	Childress County (48075)	2	Lynn County (48305)
1	Collingsworth County (48087)	2	Motley County (48345)
1	Dallam County (48111)	2	Terry County (48445)
1	Deaf Smith County (48117)	2	Yoakum County (48501)
1	Donley County (48129)	3	Archer County (48009)
1	Gray County (48179)	3	Baylor County (48023)
1	Hall County (48191)	3	Clay County (48077)
1	Hansford County (48195)	3	Cottle County (48101)
1	Hartley County (48205)	3	Foard County (48155)
1	Hemphill County (48211)	3	Hardeman County (48197)
1	Hutchinson County (48233)	3	Jack County (48237)
1	Lipscomb County (48295)	3	Montague County (48337)
1	Moore County (48341)	3	Wichita County (48485)
1	Ochiltree County (48357)	3	Wilbarger County (48487)
1	Oldham County (48359)	3	Young County (48503)
1	Parmer County (48369)	4	Collin County (48085)
1	Potter County (48375)	4	Dallas County (48113)
1	Randall County (48381)	4	Denton County (48121)
1	Roberts County (48393)	4	Ellis County (48139)
1	Sherman County (48421)	4	Erath County (48143)
1	Swisher County (48437)	4	Hood County (48221)
1	Wheeler County (48483)	4	Hunt County (48231)
2	Bailey County (48017)	4	Johnson County (48251)
2	Cochran County (48079)	4	Kaufman County (48257)
2	Crosby County (48107)	4	Navarro County (48349)
2	Dickens County (48125)	4	Palo Pinto County (48363)
2	Floyd County (48153)	4	Parker County (48367)
2	Garza County (48169)	4	Rockwall County (48397)
2	Hale County (48189)	4	Somervell County (48425)
		4	Tarrant County (48439)
		4	Wise County (48497)

5	Bowie County (48037)
5	Cass County (48067)
5	Delta County (48119)
5	Franklin County (48159)
5	Hopkins County (48223)
5	Lamar County (48277)
5	Morris County (48343)
5	Red River County (48387)
5	Titus County (48449)
6	Anderson County (48001)
6	Camp County (48063)
6	Cherokee County (48073)
6	Gregg County (48183)
6	Harrison County (48203)
6	Henderson County (48213)
6	Marion County (48315)
6	Panola County (48365)
6	Rains County (48379)
6	Rusk County (48401)
6	Smith County (48423)
6	Upshur County (48459)
6	Van Zandt County (48467)
6	Wood County (48499)
7	Brown County (48049)
7	Callahan County (48059)
7	Coleman County (48083)
7	Comanche County (48093)
7	Eastland County (48133)
7	Fisher County (48151)
7	Haskell County (48207)
7	Jones County (48253)
7	Kent County (48263)
7	Knox County (48275)
7	Mitchell County (48335)
7	Nolan County (48353)
7	Runnels County (48399)
7	Scurry County (48415)

7	Shackelford County (48417)
7	Stephens County (48429)
7	Stonewall County (48433)
7	Taylor County (48441)
7	Throckmorton County (48447)
8	Brewster County (48043)
8	Culberson County (48109)
8	El Paso County (48141)
8	Hudspeth County (48229)
8	Jeff Davis County (48243)
8	Presidio County (48377)
9	Andrews County (48003)
9	Borden County (48033)
9	Crane County (48103)
9	Dawson County (48115)
9	Ector County (48135)
9	Gaines County (48165)
9	Glasscock County (48173)
9	Howard County (48227)
9	Loving County (48301)
9	Martin County (48317)
9	Midland County (48329)
9	Pecos County (48371)
9	Reeves County (48389)
9	Terrell County (48443)
9	Upton County (48461)
9	Ward County (48475)
9	Winkler County (48495)
10	Coke County (48081)
10	Concho County (48095)
10	Crockett County (48105)
10	Irion County (48235)
10	Kimble County (48267)
10	Mason County (48319)
10	McCulloch County (48307)
10	Menard County (48327)

10	Reagan County (48383)		(48405)
10	Schleicher County (48413)	14	San Jacinto County (48407)
10	Sterling County (48431)	14	Shelby County (48419)
10	Sutton County (48435)	14	Trinity County (48455)
10	Tom Green County (48451)	14	Tyler County (48457)
11	Bosque County (48035)	15	Hardin County (48199)
11	Falls County (48145)	15	Jefferson County (48245)
11	Freestone County (48161)	15	Orange County (48361)
11	Hill County (48217)	16	Austin County (48015)
11	Limestone County (48293)	16	Brazoria County (48039)
11	McLennan County (48309)	16	Chambers County (48071)
12	Bastrop County (48021)	16	Colorado County (48089)
12	Blanco County (48031)	16	Fort Bend County (48157)
12	Burnet County (48053)	16	Galveston County (48167)
12	Caldwell County (48055)	16	Harris County (48201)
12	Fayette County (48149)	16	Liberty County (48291)
12	Hays County (48209)	16	Matagorda County (48321)
12	Lee County (48287)	16	Montgomery County (48339)
12	Llano County (48299)	16	Walker County (48471)
12	Travis County (48453)	16	Waller County (48473)
12	Williamson County (48491)	16	Wharton County (48481)
13	Brazos County (48041)	17	Calhoun County (48057)
13	Burleson County (48051)	17	DeWitt County (48123)
13	Grimes County (48185)	17	Goliad County (48175)
13	Leon County (48289)	17	Gonzales County (48177)
13	Madison County (48313)	17	Jackson County (48239)
13	Robertson County (48395)	17	Lavaca County (48285)
13	Washington County (48477)	17	Victoria County (48469)
14	Angelina County (48005)	18	Atascosa County (48013)
14	Houston County (48225)	18	Bandera County (48019)
14	Jasper County (48241)	18	Bexar County (48029)
14	Jim Hogg County (48247)	18	Comal County (48091)
14	Nacogdoches (48347)	18	Frio County (48163)
14	Newton County (48351)	18	Gillespie County (48171)
14	Polk County (48373)	18	Guadalupe County (48187)
14	Sabine County (48403)	18	Karnes County (48255)
14	San Augustine County	18	Kendall County (48259)

18	Kerr County (48265)
18	Medina County (48325)
18	Wilson County (48493)
19	Jim Hogg County (48247)
19	Starr County (48427)
19	Webb County (48479)
19	Zapata County (48505)
20	Aransas County (48007)
20	Bee County (48025)
20	Brooks County (48047)
20	Duval County (48131)
20	Jim Wells County (48249)
20	Kenedy County (48261)
20	Kleberg County (48273)
20	Live Oak County (48297)
20	McMullen County (48311)
20	Nueces County (48355)
20	Refugio County (48391)
20	San Patricio County (48409)
21	Cameron County (48061)
21	Hidalgo County (48215)
21	Willacy County (48489)
22	Cooke County (48097)
22	Fannin County (48147)
22	Grayson County (48181)
23	Bell County (48027)
23	Coryell County (48099)
23	Hamilton County (48193)
23	Lampasas County (48281)
23	Milam County (48331)
23	Mills County (48333)
23	San Saba County (48411)
24	Dimmit County (48127)
24	Edwards County (48137)
24	Kinney County (48271)
24	La Salle County (48283)
24	Maverick County (48323)

24	Real County (48385)
24	Uvalde County (48463)
24	Val Verde County (48465)
24	Zavala County (48507)