



INTERNAL
CORRESPONDENCE

UNION CARBIDE CORPORATION OLD RIDGEBURY ROAD, DANBURY, CT 06817

To (Name) Susan G. Austin, Sc.D.
Division HS&EA
Location Epidemiology
Area P2

Date October 27, 1982

Originating Dept. HS&EA

Area Epidemiology, P2

Copy to D.H. Glenn, M.D.
T.A. Lincoln, M.D.

Subject Texas Brain Cancer
Mortality Rates

Dear Susan:

I've enclosed additional comparisons of the Texas state and county brain cancer mortality data with the U.S. rates. The requests made in your letter of October 7 are answered here, also.

I'd like to add an observation which is brought out by the graphs included here. It appears as though there is not only an age effect in the rates as you point out, but also a temporal effect. It is particularly evident in the graphs for age groups 30-34, 45-49, 55-59, 60-64, 65-69, and 75-84 that the county rates in the 1970's are elevated with respect to the U.S. and even the state rates. This observation is also consistent with the first two hypotheses you mentioned in your 10/7/82 letter (i.e., increased utilization of CAT scanners, or increased numbers of neurologists in the area). The temporal and age effect taken together would render the third hypothesis (presence of a general brain cancer carcinogen) unlikely unless the carcinogen has since disappeared, leaving the young with comparable brain cancer rates.

The problem certainly is an interesting and intricate one, and is deserving of further study.

Sincerely,

A. Robert Schnatter
BIostatistician

ARS:gac
Enclosure

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COMPARISON OF UNITED STATES, TEXAS, AND TEXAS COUNTY* AGE
SPECIFIC MALIGNANT BRAIN CANCER MORTALITY RATES FOR WHITE MALES (ICDA(8) 191,192) PER 100,000 POPULATION

	1950-54				1955-59				1960-64		
	<u>U.S.</u>	<u>Texas</u>	<u>County*</u>		<u>U.S.</u>	<u>Texas</u>	<u>County*</u>		<u>U.S.</u>	<u>Texas</u>	<u>County*</u>
15-19	1.1	0.9	3.0		1.2	1.3	2.3		1.2	1.1	2.2
20-24	1.3	1.1	0.6		1.2	1.0	0.0		1.1	1.0	1.1
25-29	1.5	1.9	2.1		1.6	1.9	0.0		1.7	1.3	2.2
30-34	2.3	1.9	0.0		2.6	3.1	1.4		2.4	2.7	2.1
35-39	3.2	3.0	2.2		3.4	3.5	5.6		3.2	3.8	1.7
40-44	4.6	4.2	1.2		4.8	5.0	3.2		4.8	4.6	4.6
45-49	7.1	6.0	5.7		6.4	6.9	5.9		7.0	7.8	8.0
50-54	9.2	7.2	13.3		9.8	7.9	7.9		9.9	9.5	12.7
55-59	11.0	9.0	5.9		12.0	10.8	13.8		12.5	12.2	15.0
60-64	11.0	9.4	3.2		13.0	14.2	19.5		14.1	15.5	11.5
65-69	8.7	7.5	6.9		10.0	9.5	16.3		12.6	13.1	10.4
70-74	4.4	3.6	0.0		7.0	7.2	11.1		8.5	9.5	16.0
75-79	3.3	3.6	0.0		4.0	4.1	3.3		6.0	6.6	2.6
80-84	2.4	3.6	0.0		2.4	4.1	3.3		2.7	6.6	2.6
85+	.28	6.0	0.0		1.3	0.0	0.0		1.7	3.8	0.0
Age-adjusted average	4.9	4.6	2.9		5.4	5.4	6.2		6.0	6.6	6.2

* The "Texas County" rate includes Galveston, Harris, and Brazoria Counties.

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Rev. 10/26/82

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MORATLITY RATES FOR MALIGNANT BRAIN CANCER AMONG WHITE MALES
IN A THREE COUNTY AREA IN THE STATE OF TEXAS

Age	1950-54	1955-59	1960-64	1965-69	1970-74	1975-77
0-4	10/262074	8/325404	5/363461	12/370631	8/307217	3/238352
5-9	3/219348	5/297856	2/361138	8/405811	10/328717	4/242438
10-14	3/169678	2/243918	5/316837	4/388143	3/345118	1/263507
15-19	4/132628	4/171246	5/230819	4/316009	3/306087	1/259444
20-24	1/155899	0/156086	2/188809	7/261296	3/268066	3/252351
25-29	4/191862	0/196209	5/228796	5/295896	8/299555	4/286070
30-34	0/188150	3/217769	5/243229	6/263602	6/247572	7/239251
35-39	4/185748	12/216146	4/237261	4/247019	3/212146	6/185473
40-44	2/163909	6/187471	10/215254	8/248197	11/210865	4/162947
45-49	8/140069	10/168626	16/199403	17/232883	20/205211	13/162852
50-54	15/112755	11/139555	21/165584	18/190668	19/176984	14/153546
55-59	5/85212	15/108869	20/133227	28/158442	31/143604	15/122847
60-64	2/62598	15/77026	11/95248	22/118108	25/110187	18/93254
65-69	3/43769	9/55114	7/67087	10/79838	13/74739	16/61326
70-74	0/27692	4/36047	7/43631	6/50266	4/46351	8/40761
75-84	0/023524	1/30686	1/37764	5/44739	10/40953	9/34305
85+	0/3843	0/5198	0/6631	0/8154	1/7814	0/7057
Crude Average per 100,000	2.950	3.990	4.02	4.46	5.34	4.49

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MORATLITY RATES FOR MALIGNANT BRAIN CANCER AMONG WHITE MALES
FOR THE STATE OF TEXAS

Age	1950-54	1955-59	1960-64	1965-69	1970-74	1975-77
0-4	37/2113990	51/2374642	45/2435683	56/2252782	34/1751727	25/1321409
5-9	33/1785014	47/2148347	51/2376811	46/2440434	28/1905153	21/1371723
10-14	13/1503724	20/1870137	28/2183275	35/2431255	21/2065894	23/1528968
15-19	12/1411146	20/1578231	20/1830747	38/2187680	18/2005522	14/1633293
20-24	15/1376463	14/1369253	15/1526201	26/1883803	21/1832282	13/1611787
25-29	26/1401510	26/1372975	19/1426994	25/1581833	31/1504460	20/1390434
30-34	25/1298427	42/1374454	38/1411107	40/1399591	28/1237665	23/1137095
35-39	39/1294183	48/1378118	54/1408668	50/1373994	43/1117598	27/916832
40-44	49/1176977	62/1231321	59/1294125	57/1367273	49/1121205	30/844507
45-49	63/1043567	79/1151311	97/1247520	103/1329632	71/1110782	58/849654
50-54	64/891205	79/1006292	104/1100099	106/1167853	120/1018538	88/833628
55-59	67/744159	92/849539	116/949087	154/1041449	131/896335	96/724727
60-64	56/593640	94/663461	117/754247	137/870625	118/772900	102/616977
65-69	35/469737	51/539433	80/608600	99/677077	108/610541	89/501144
70-74	12/329935	28/391271	42/442334	55/480821	61/425538	73/360351
75-84	11/306120	15/366451	28/423889	26/477847	60/423179	53/344312
85+	3/49850	0/65283	3/79768	3/93148	2/86834	3/75122
Crude Average per 100,000	3.15	3.89	4.26	4.58	4.75	4.72

COMPARISON OF UNITED STATES, TEXAS, AND TEXAS COUNTY* AGE
SPECIFIC MALIGNANT BRAIN CANCER MORTALITY RATES FOR WHITE MALES (ICDA(8) 191,192) PER 100,000 POPULATION

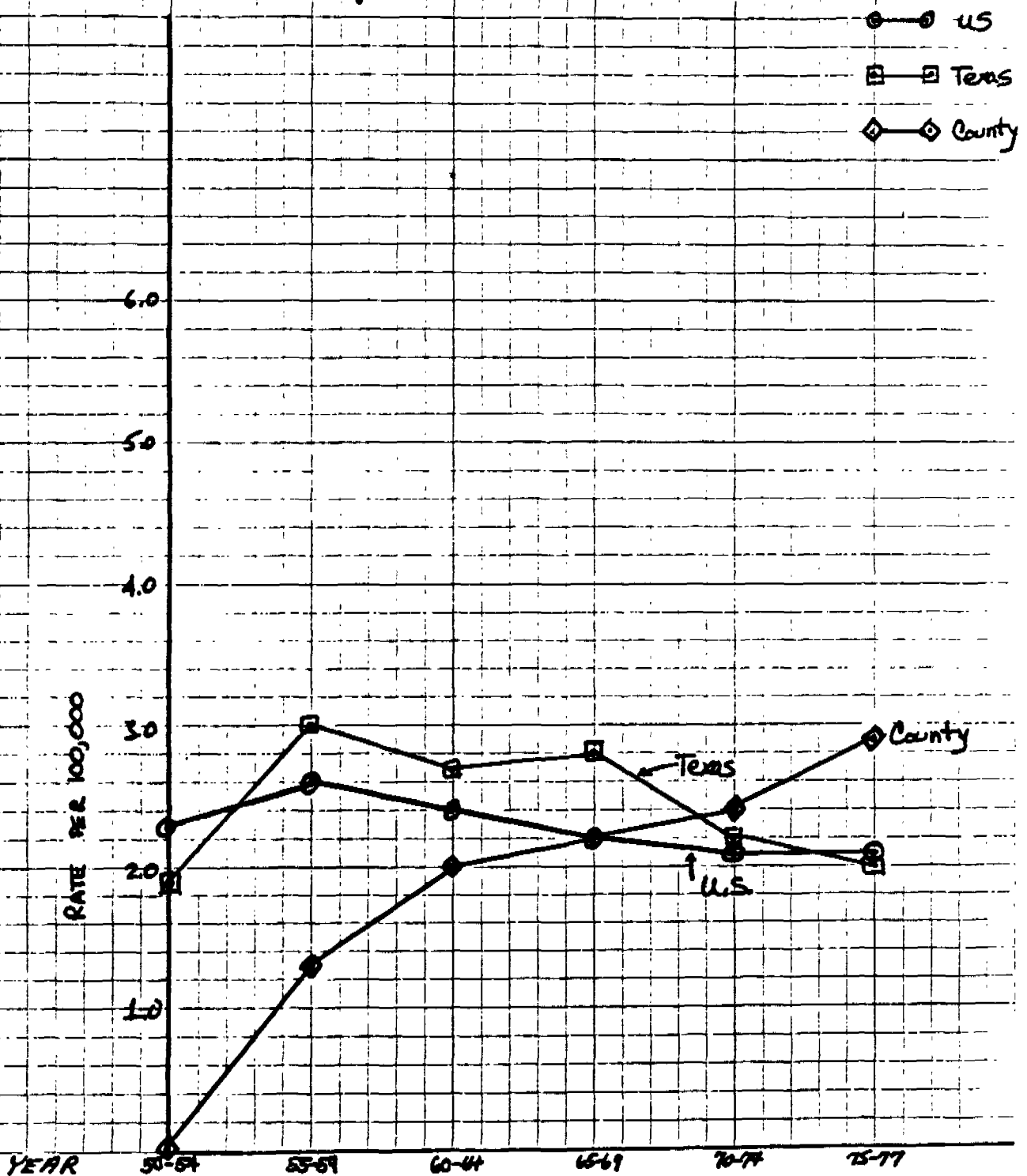
Age	1965-69				1970-74				1975+		
	U.S.	Texas	County*		U.S.	Texas	County*		U.S.	Texas	County*
15-19	1.2	1.7	1.3		1.1	0.9	1.0		0.9	0.9	0.4
20-24	1.2	1.4	2.7		1.2	1.1	1.1		1.0	0.8	1.2
25-29	1.5	1.6	1.7		1.4	2.1	2.7		1.4	1.4	1.4
30-34	2.2	2.9	2.3		2.1	2.3	2.4		2.1	2.0	2.9
35-39	3.3	3.6	1.6		3.2	3.8	1.4		3.1	2.9	3.2
40-44	4.6	4.2	3.2		4.2	4.4	5.2		3.9	3.6	2.5
45-49	6.8	7.7	7.3		6.7	6.4	9.7		6.8	6.8	8.0
50-54	9.8	9.1	9.4		9.7	11.8	10.7		9.3	10.6	9.1
55-59	13.4	14.8	17.7		13.1	14.6	21.6		12.0	13.2	12.2
60-64	15.2	15.7	18.6		16.2	15.3	22.7		16.5	16.5	19.3
65-69	15.8	14.6	12.5		17.5	17.7	17.4		18.0	17.8	26.1
70-74	13.6	11.4	11.9		16.1	14.3	8.6		18.0	20.3	19.6
75-79	8.8	5.4	11.2		13.2	14.2	24.4		16.3	15.4	26.2
80-84	4.7	5.4	11.2		7.3	14.2	24.4		8.2	15.4	26.2
85+	2.8	3.2	0.0		3.8	2.3	12.8		5.5	4.0	0.0
Age-adjusted average	7.0	6.8	7.5		7.8	8.4	11.1		8.2	8.8	10.6

* The "Texas County" rate includes Galveston, Harris, and Brazoria Counties.

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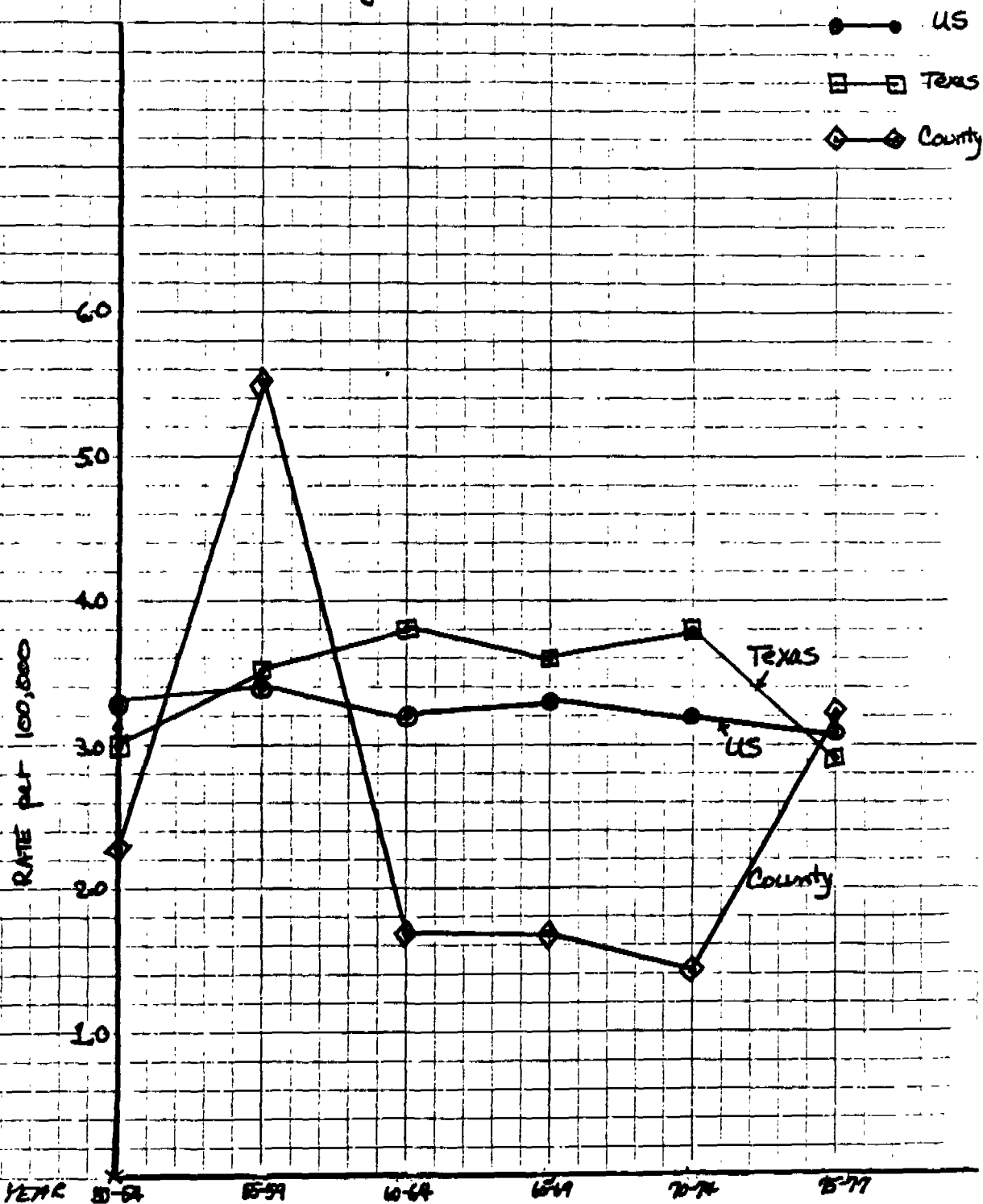
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Rev. 10/25/82

Comparison of U.S., Texas, and County (Galveston, Harris, and Brazoria)
Brain Cancer Mortality Rates for White Males
Age: 30-34

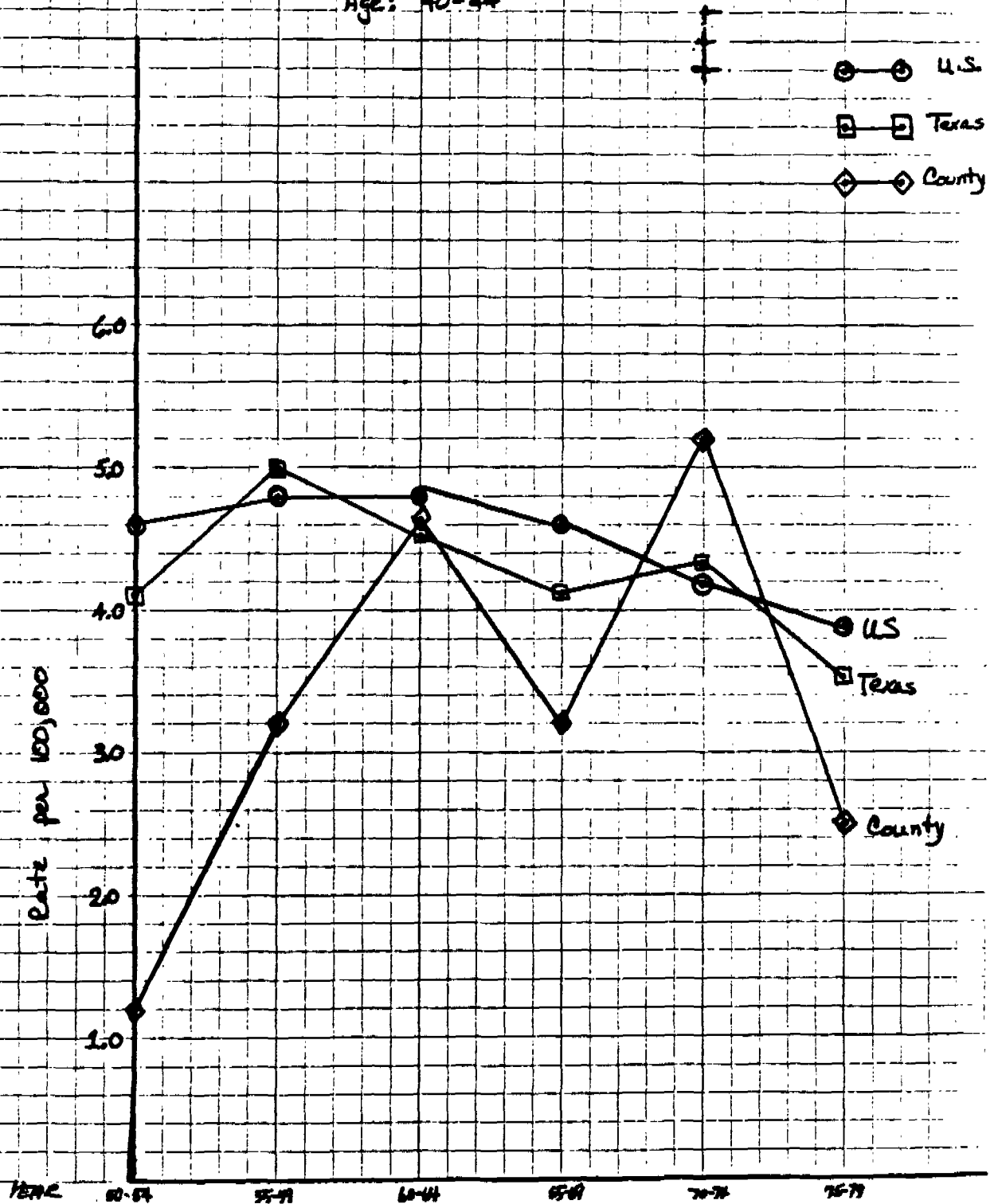


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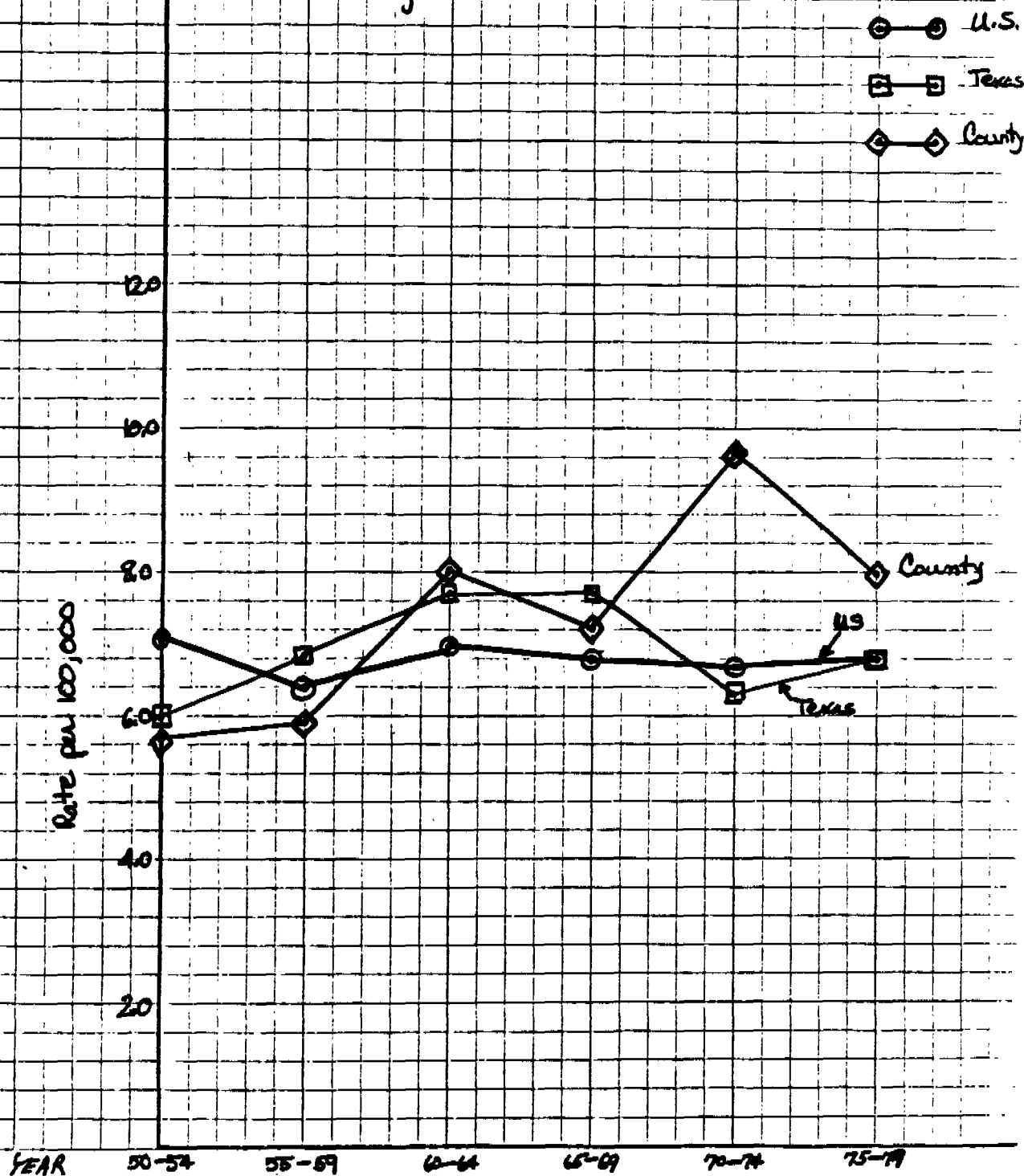
Comparison of U.S., Texas, and County (Galveston, Harris, and Brazoria)
Brain Cancer Mortality Rates for White Males
Age: 35-39



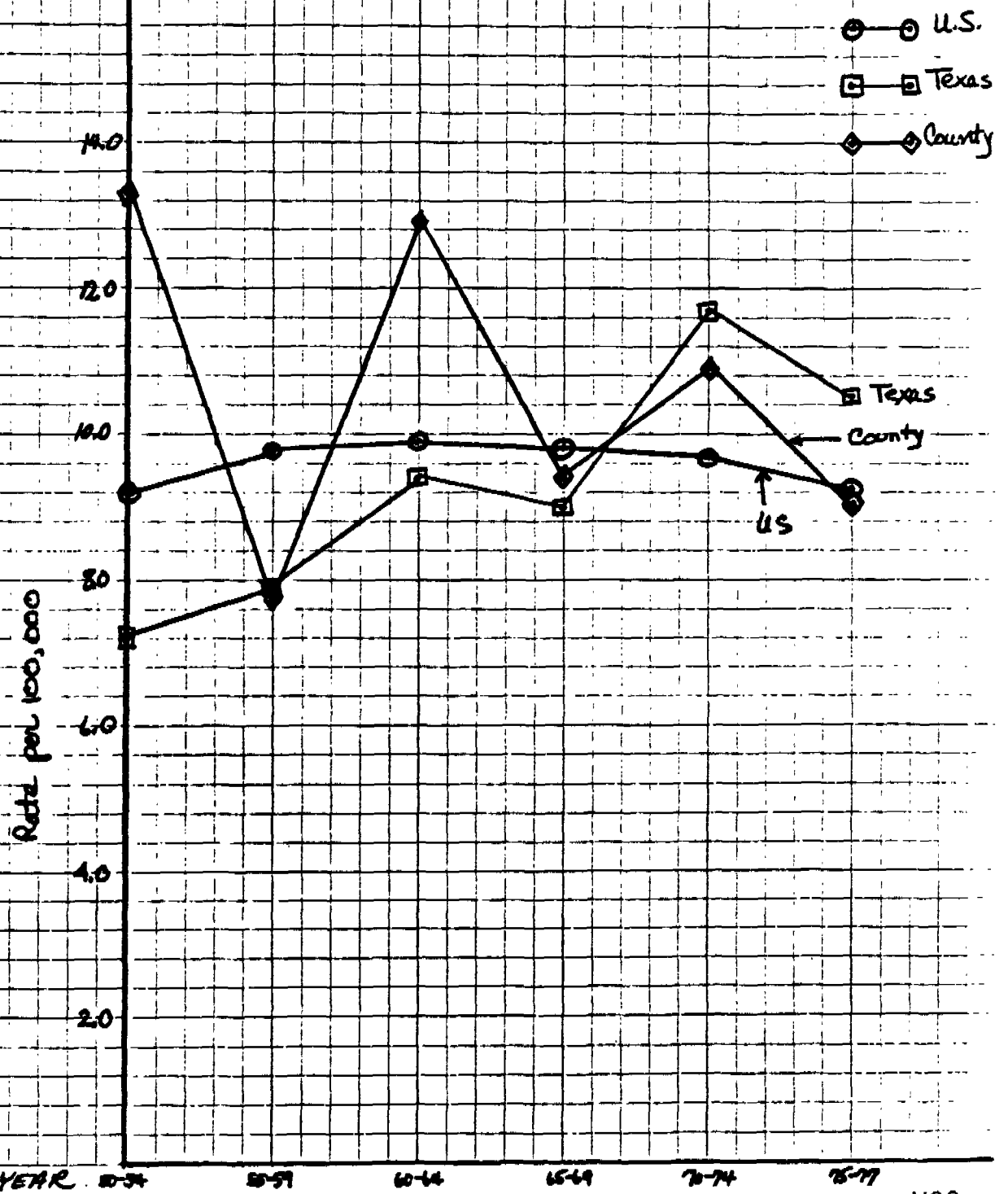
Comparison of U.S., Texas, and County (Galveston, Harris, and Brazoria)
Brain Cancer Mortality Rates for White Males
Age: 40-44



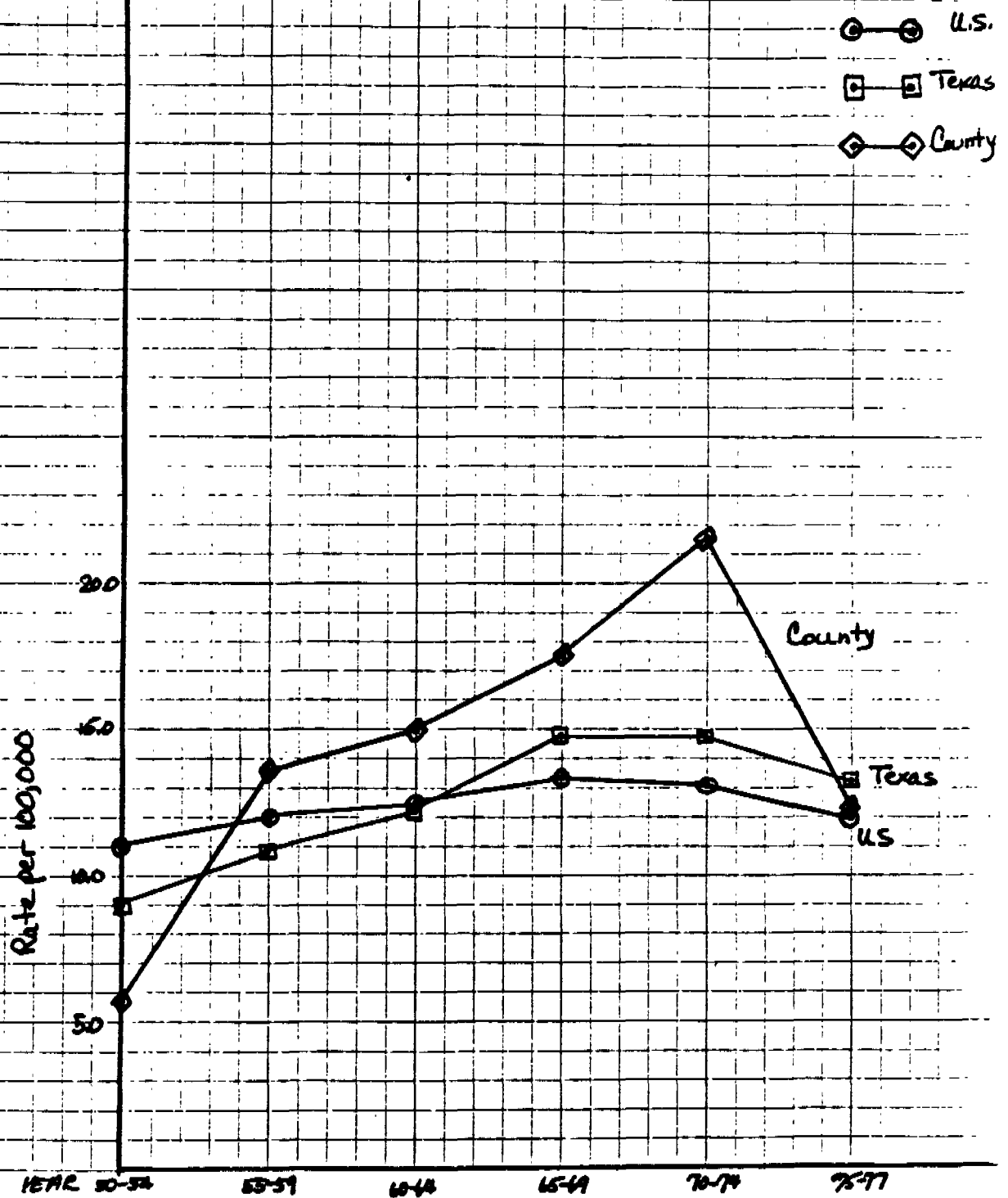
Comparison of U.S., Texas, and County (Galveston, Harris, and Brazoria)
Brain Cancer Mortality Rates for White Males
Age: 45-49



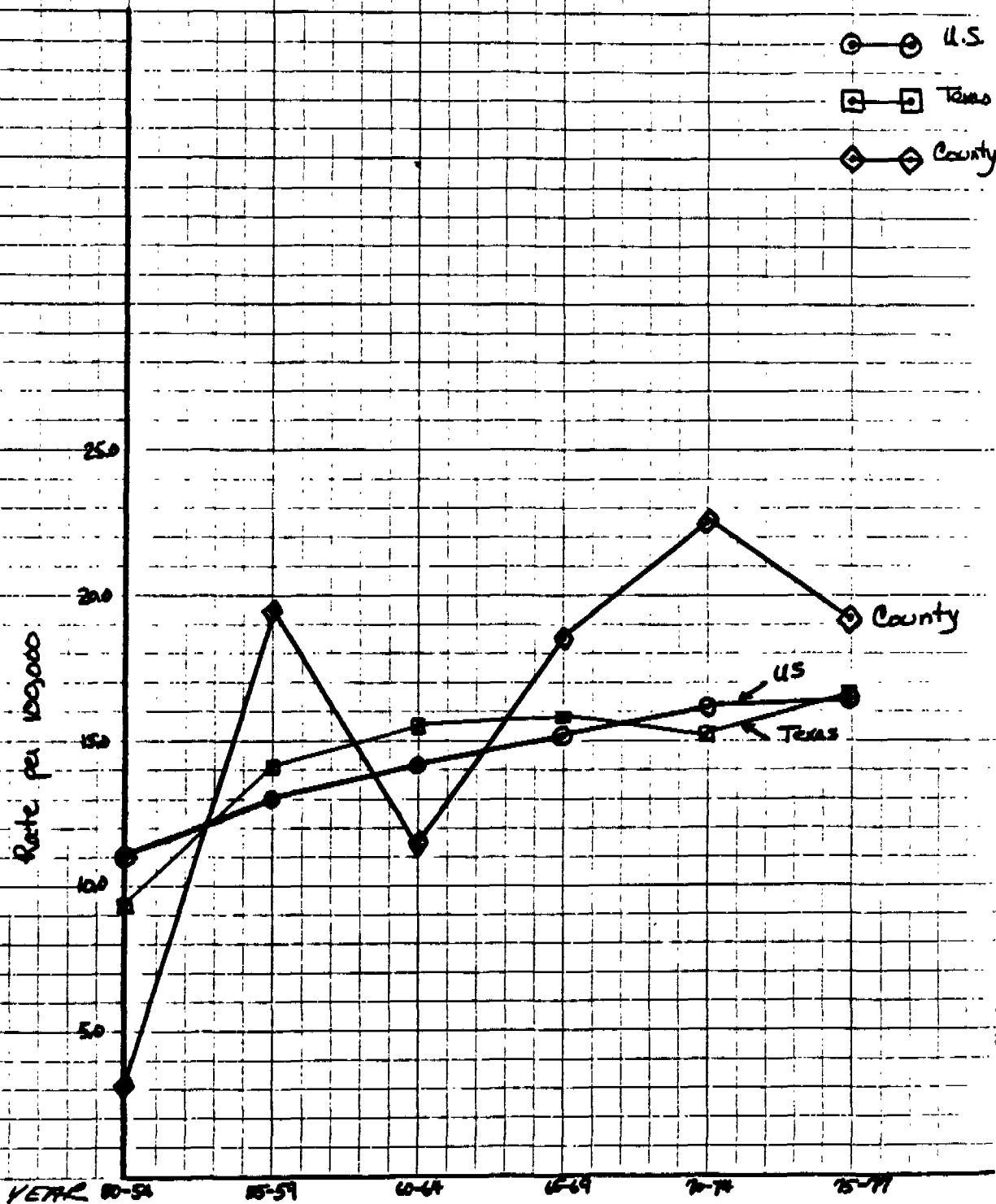
Comparison of U.S., Texas, and County (Galveston, Harris, and Brazoria)
Brain Cancer Mortality Rates for White Males
Age: 50-54



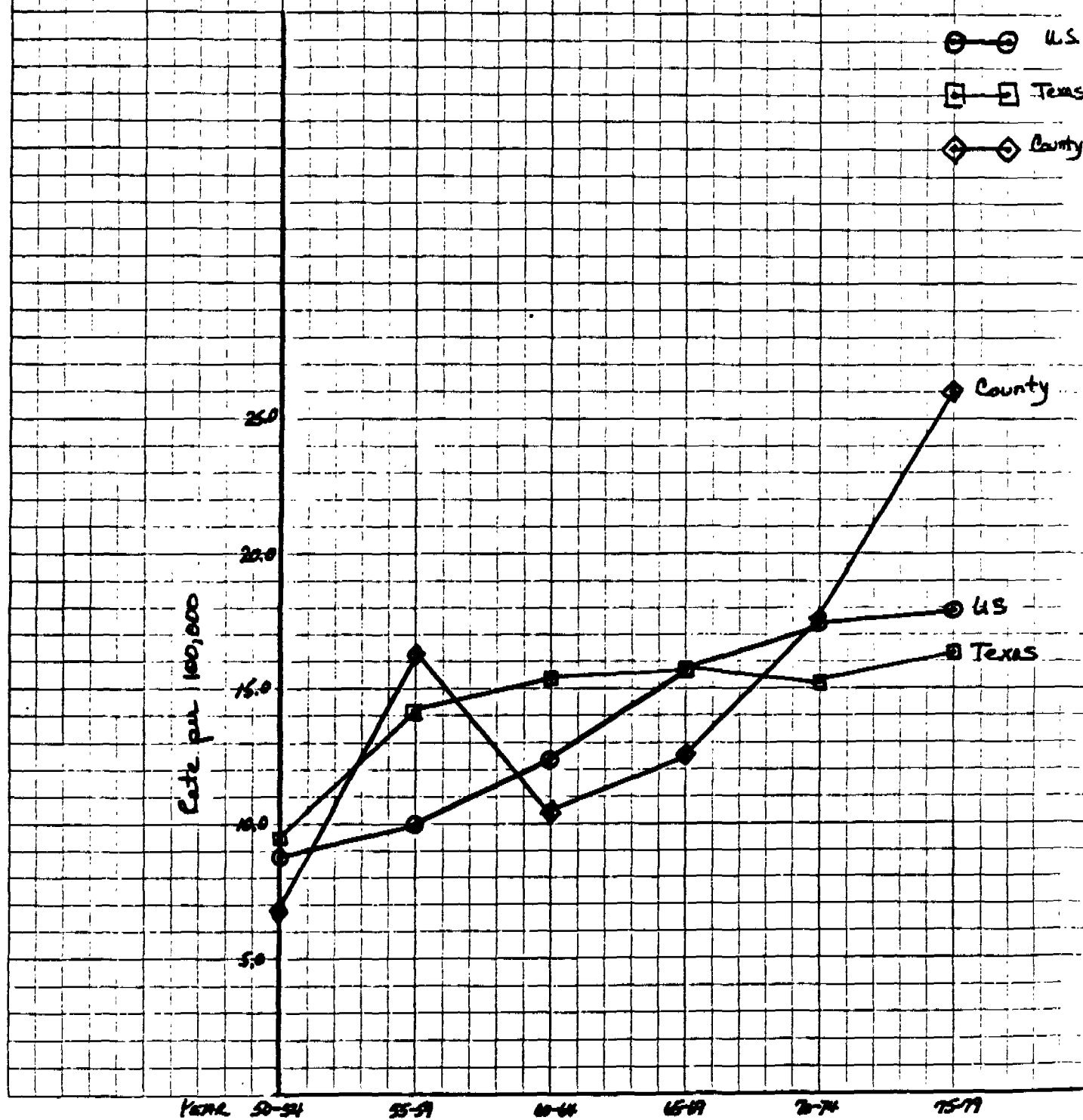
Comparison of U.S., Texas, and County (Galveston, Harris, and Brazoria)
Brain Cancer Mortality Rates for White Males
Age: 55-59



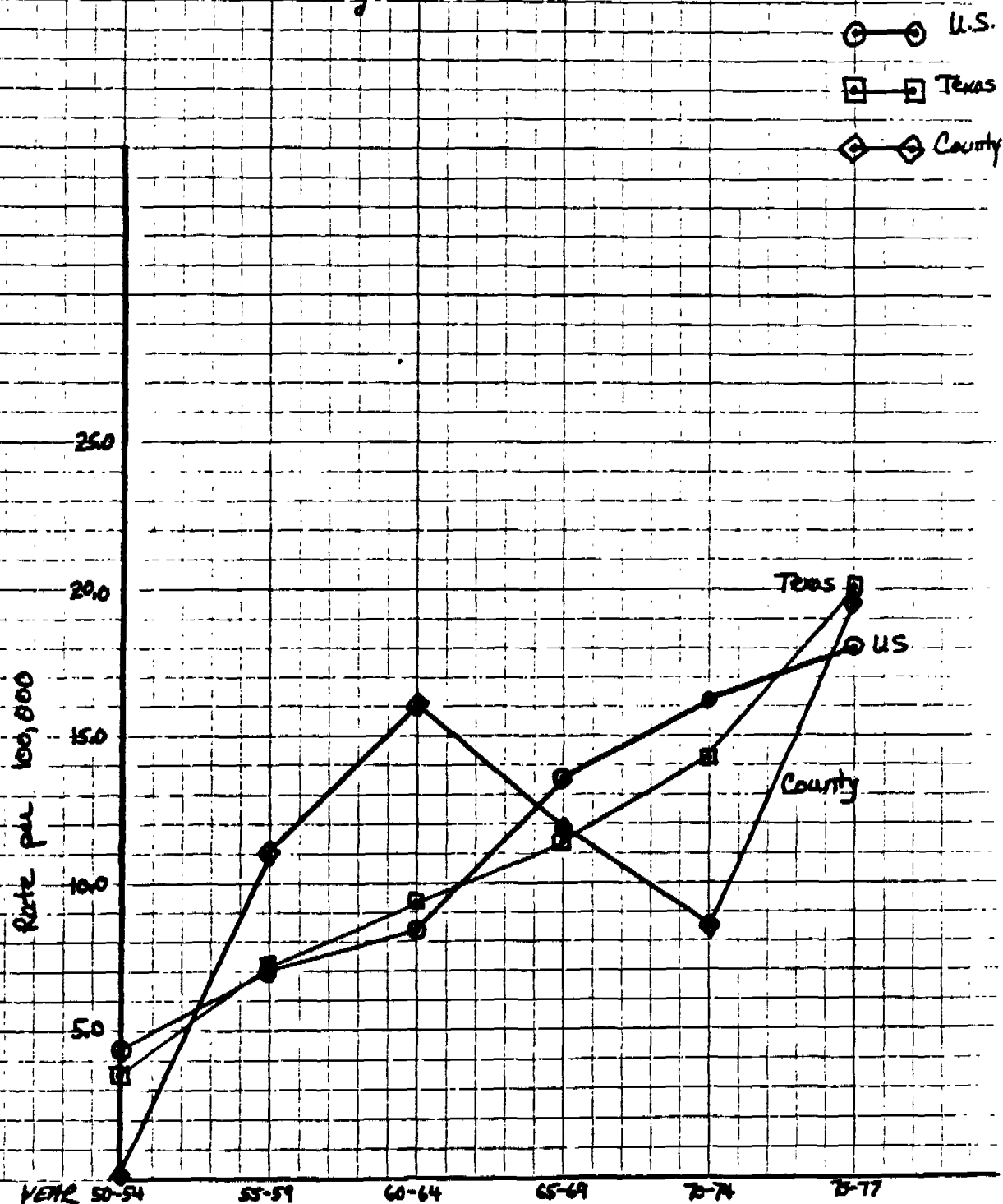
Comparison of U.S., Texas, and County (Galveston, Harris, and Brazoria)
Brain Cancer Mortality Rates for White Males
Age: 60-64



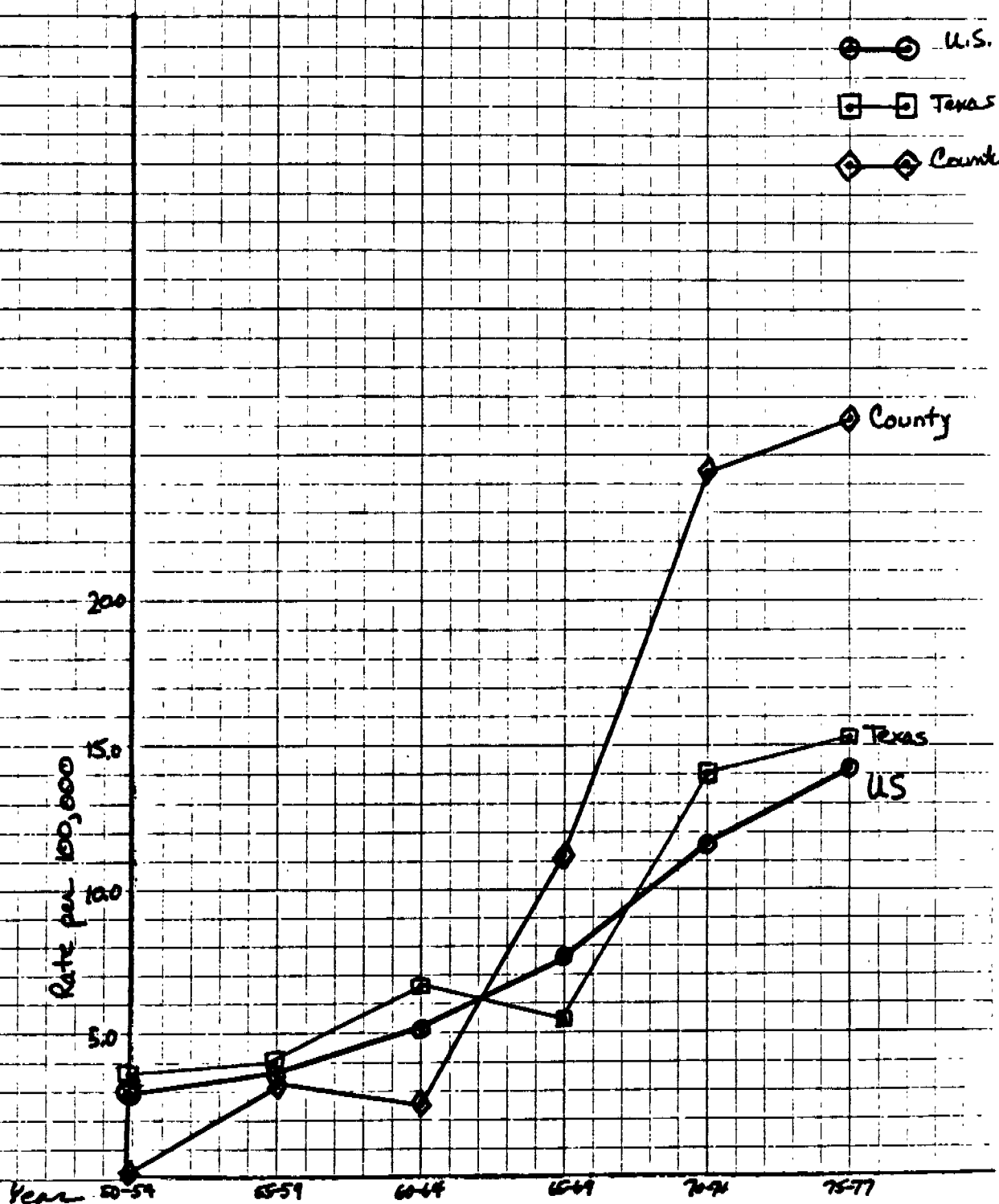
Comparison of U.S., Texas, and County (Galveston, Harris, and Brazoria)
Brain Cancer Mortality Rates for White Males
Age: 65-69



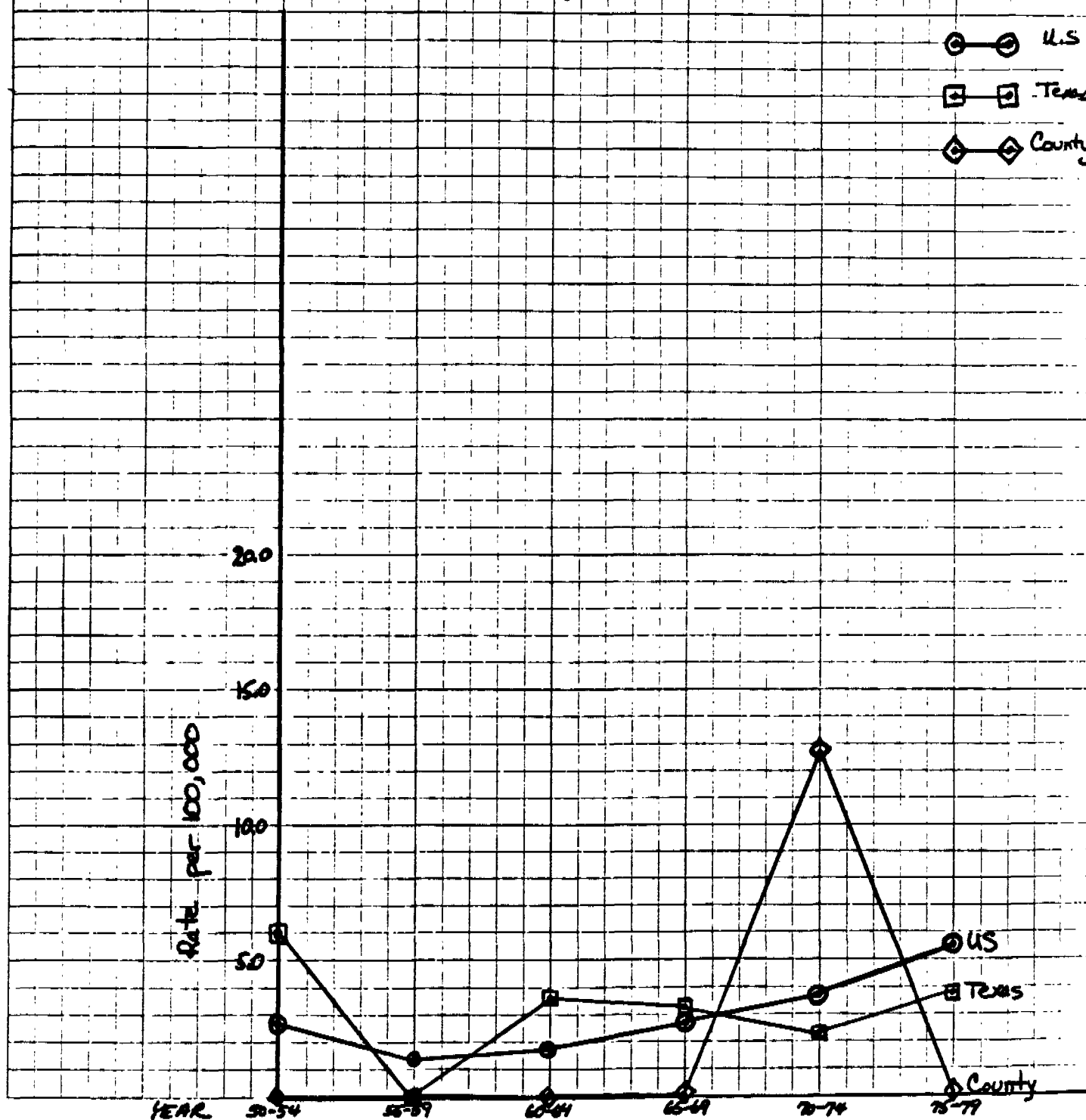
Comparison of U.S., Texas, and County (Galveston, Harris, + Brazoria)
Brain Cancer Mortality Rates for White Males
Age: 70-74



Comparison of U.S., Texas, and County (Galveston, Harris, and Brazoria)
Brain Cancer Mortality Rates for White Males
Age: 75-84



Comparison of U.S., Texas, and County (Galveston, Harris, & Brazoria)
Brain Cancer Mortality Rates for White Males
Age: 85 and over

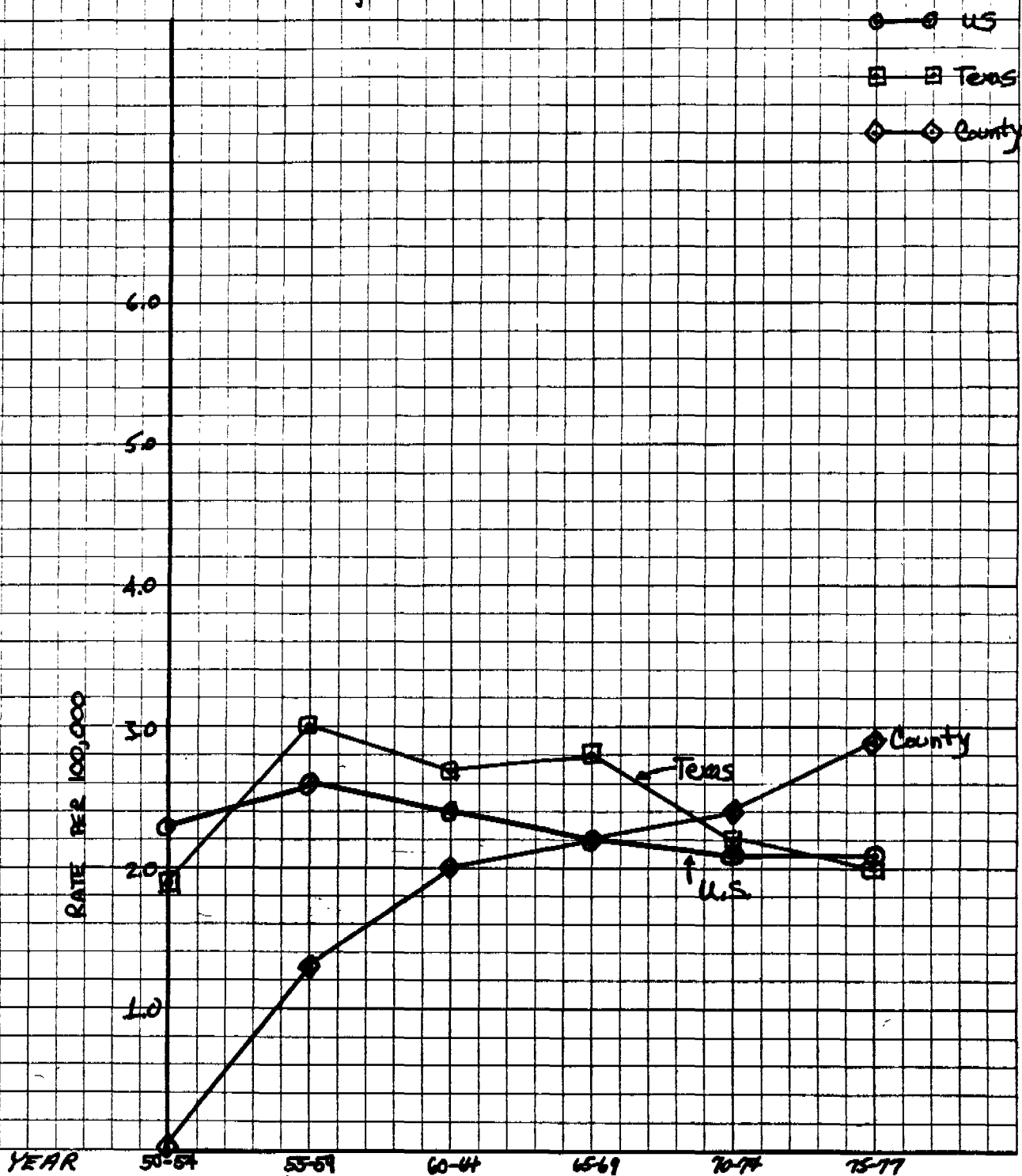


Texas City Malignant Brain Tumor Rates $\left(\frac{\# \text{deaths}}{\text{person years}}\right)$ thru 1977

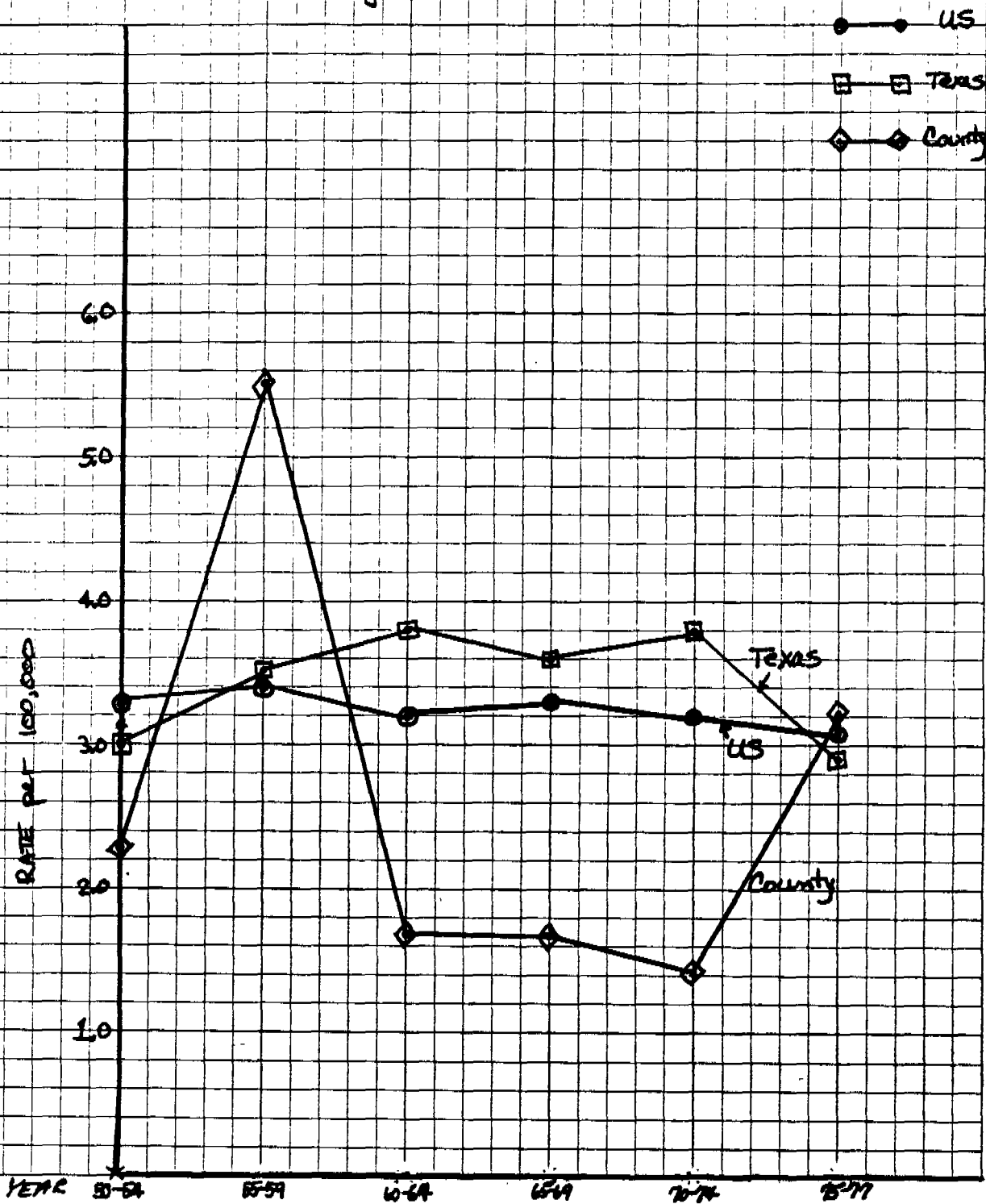
Age	Year				
	55-59	60-64	65-69	70-74	75+
30-34	<u>1</u> 5061.5	0	0	0	0
35-39	0	0	0	0	0
40-44	0	0	0	<u>1</u> 3248.4	0
45-49	0	0	0	0	<u>1</u> 2239.5
50-54	0	<u>1</u> 1875.5	0	<u>1</u> 4638.6	0
55-59	0	0	<u>1</u> 1775.3	<u>2</u> 3005.3	0
60-64	0	0	0	<u>2</u> 1630.9	0
65-69	0	0	<u>1</u> 348.6	0	0
70-74	0	0	0	<u>1</u> 261.0	0
75-79					

Date: 10-27-82

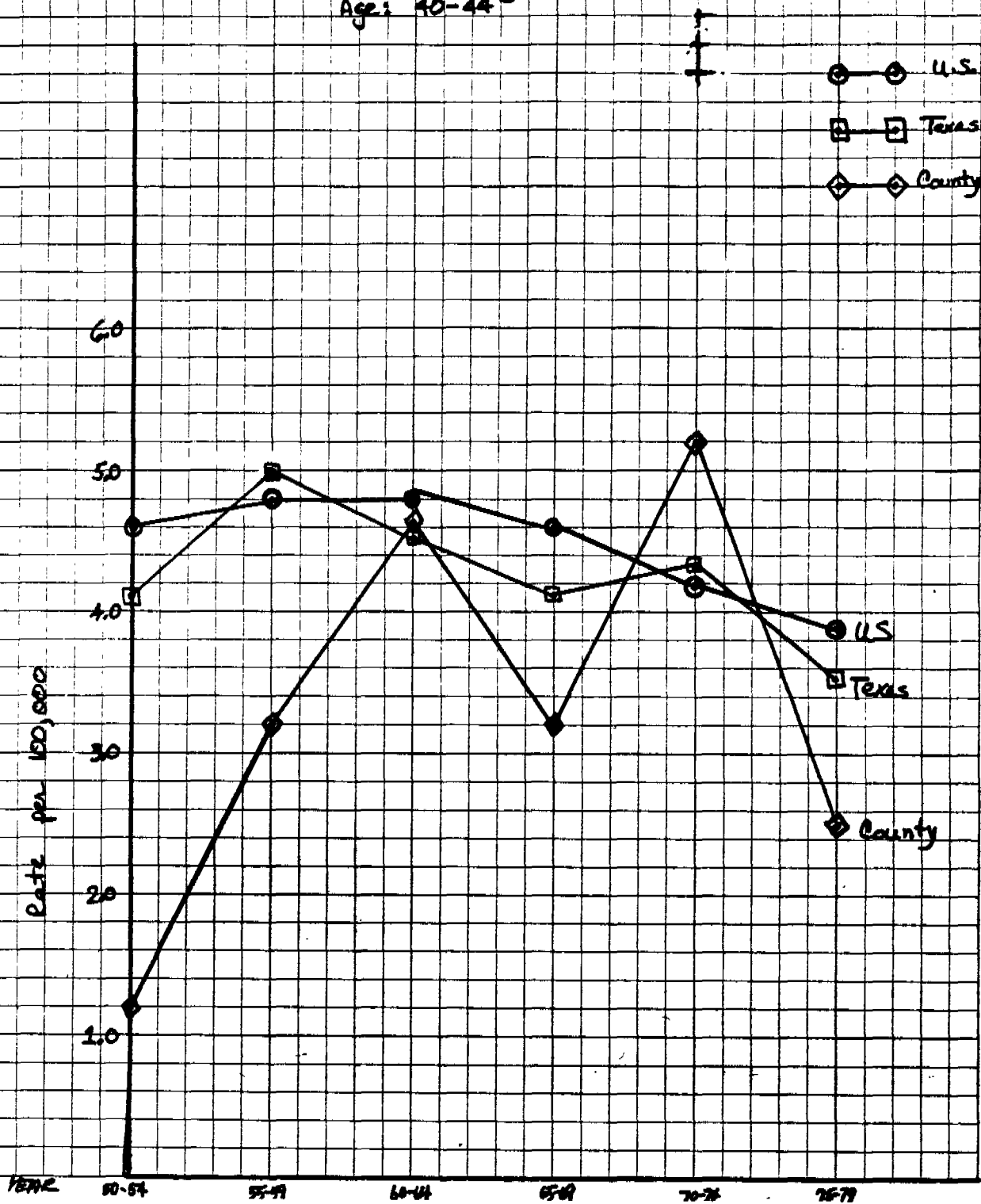
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Age: 30-34



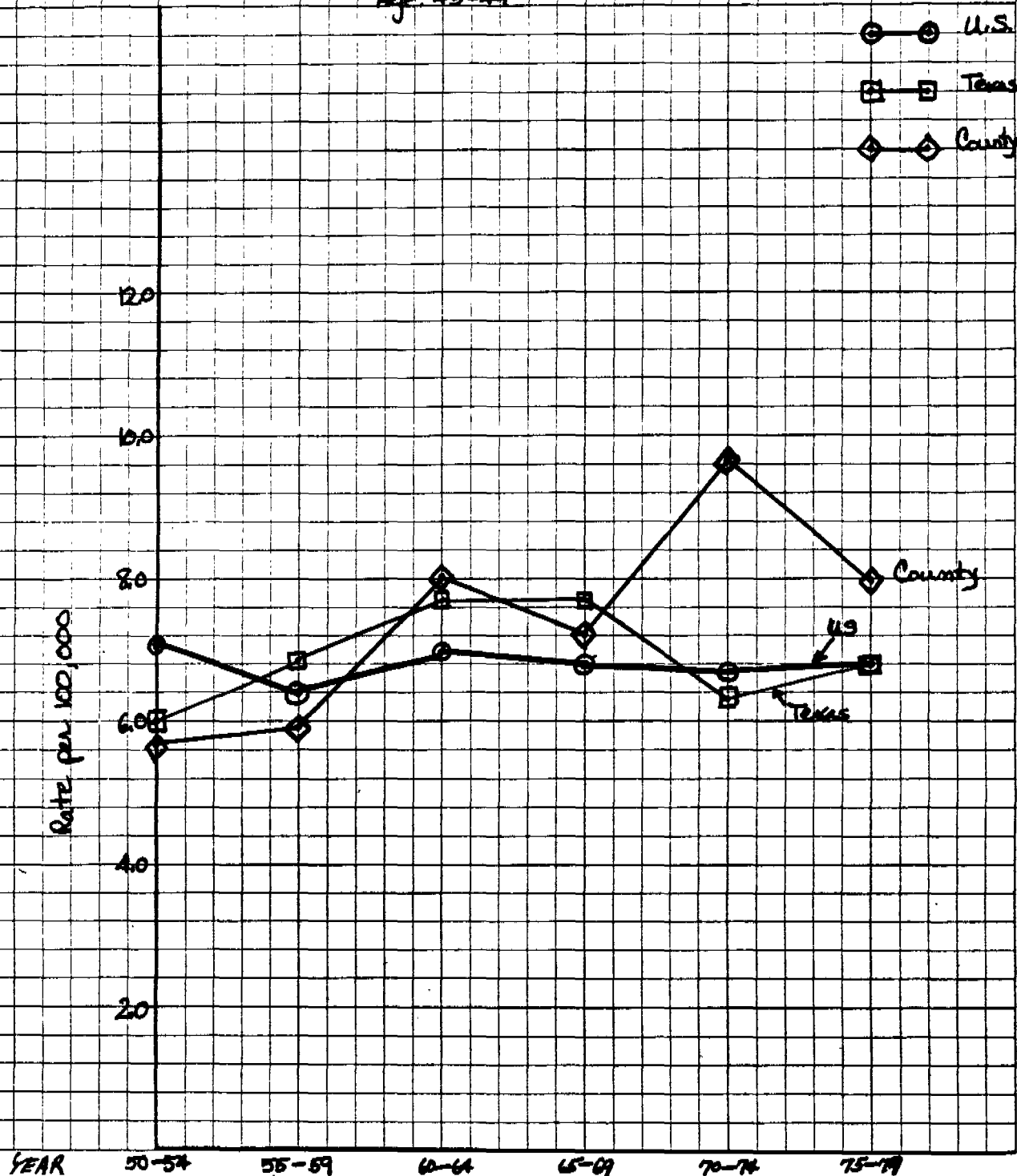
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Age: 40-44

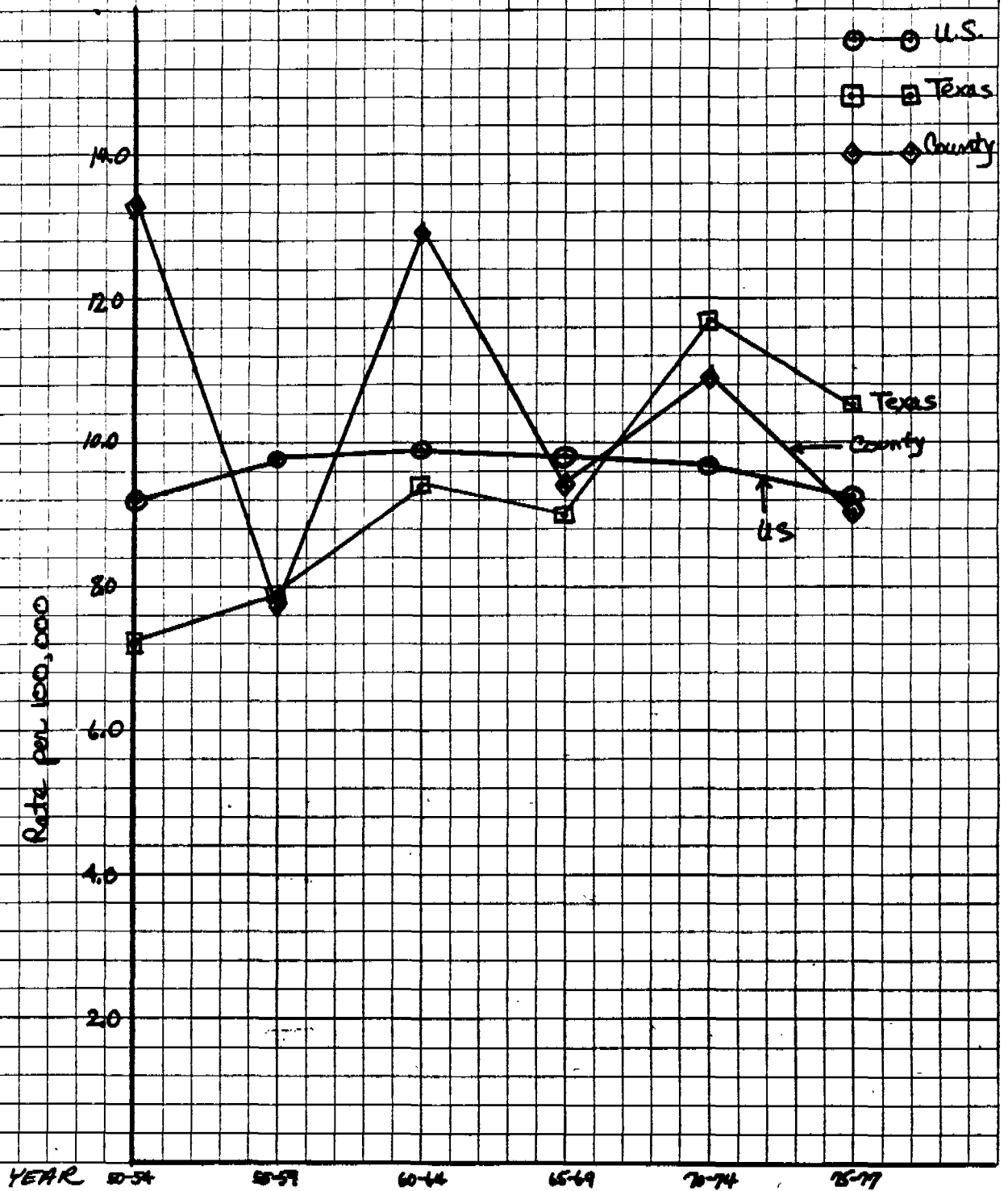


Comparison of U.S., Texas, and County (Galveston, Harris, and Brazoria)
Brain Cancer Mortality Rates for White Males
Age: 45-49

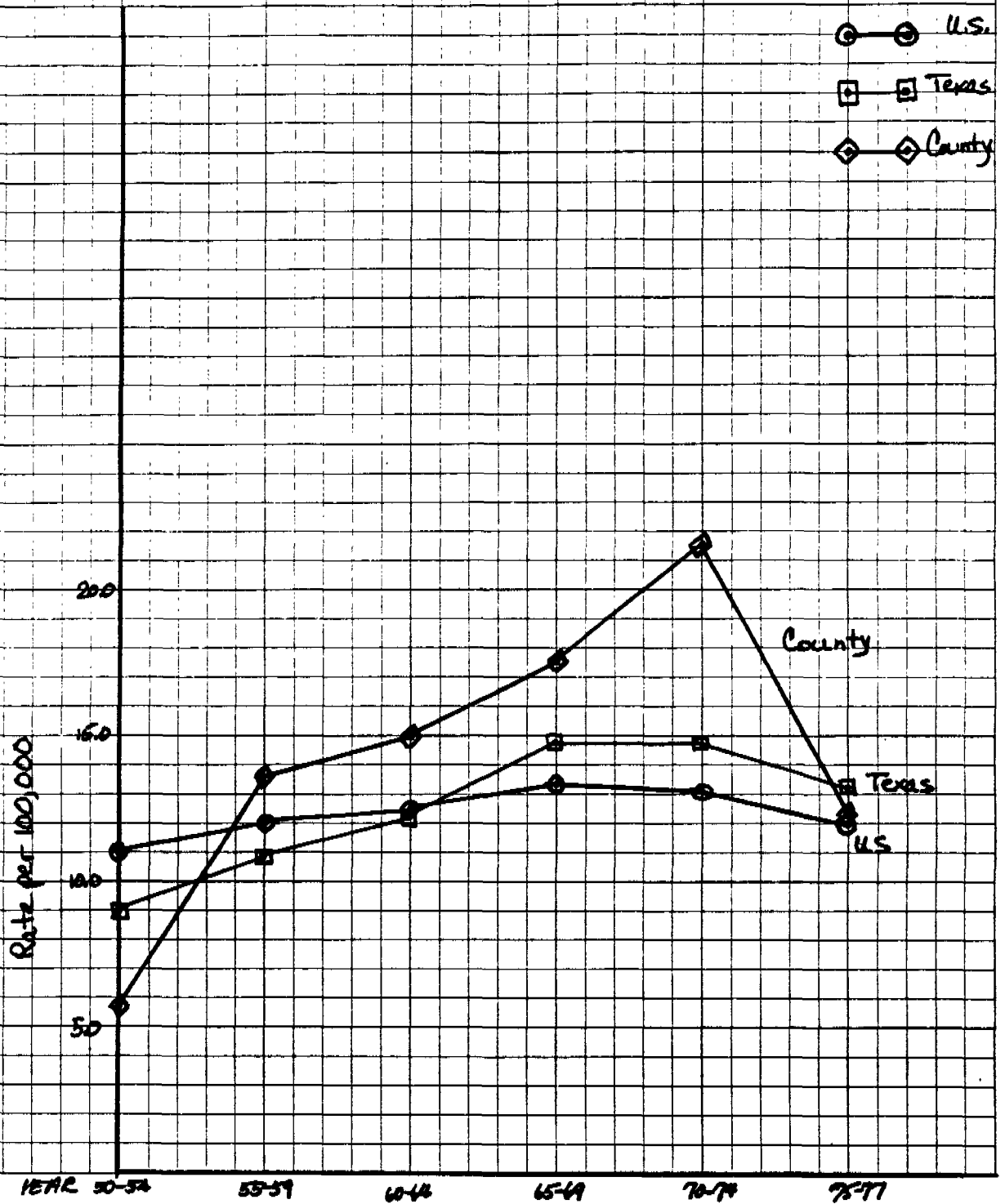


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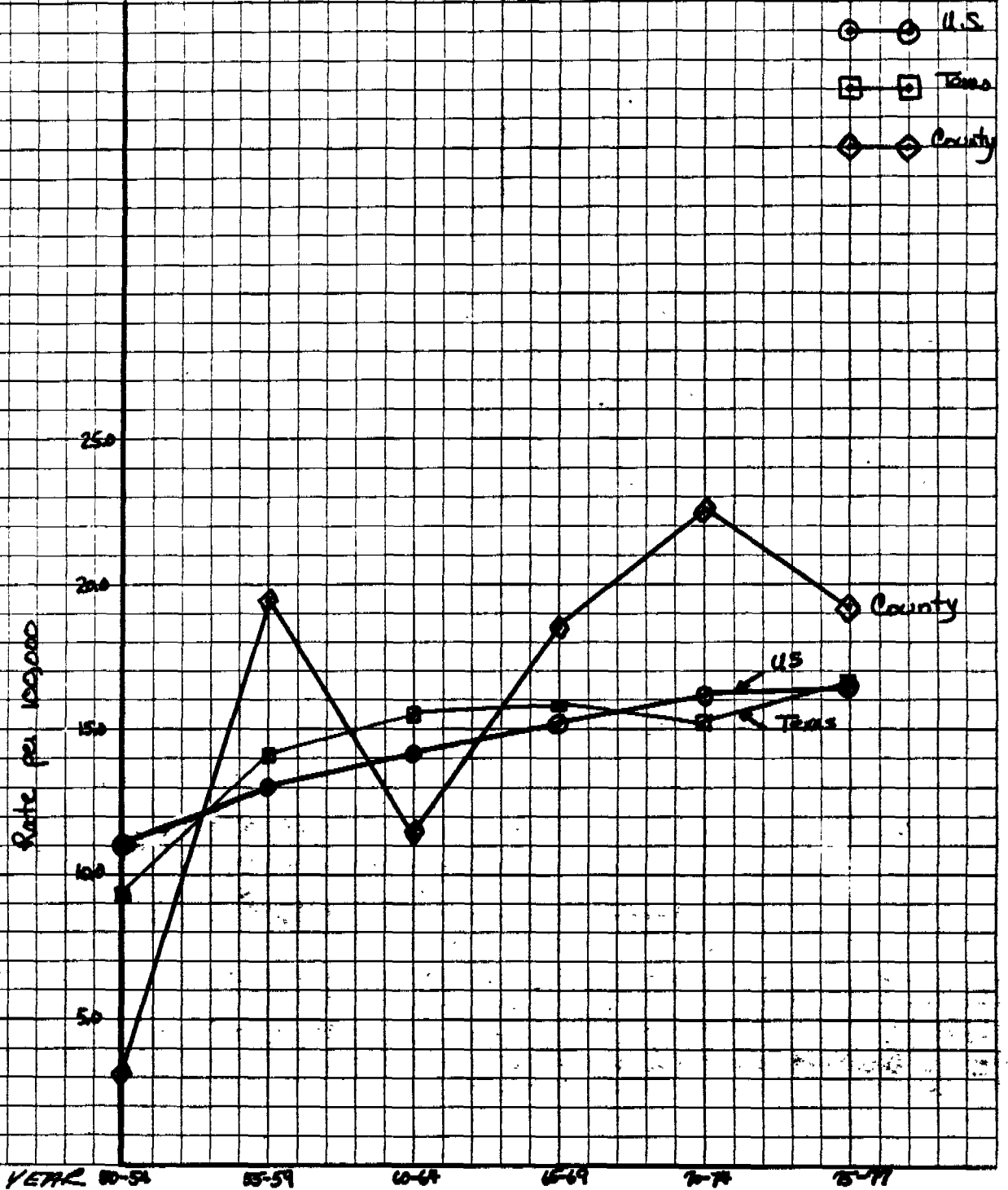
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Brain Cancer Mortality Rates for White Males
Age: 50-54



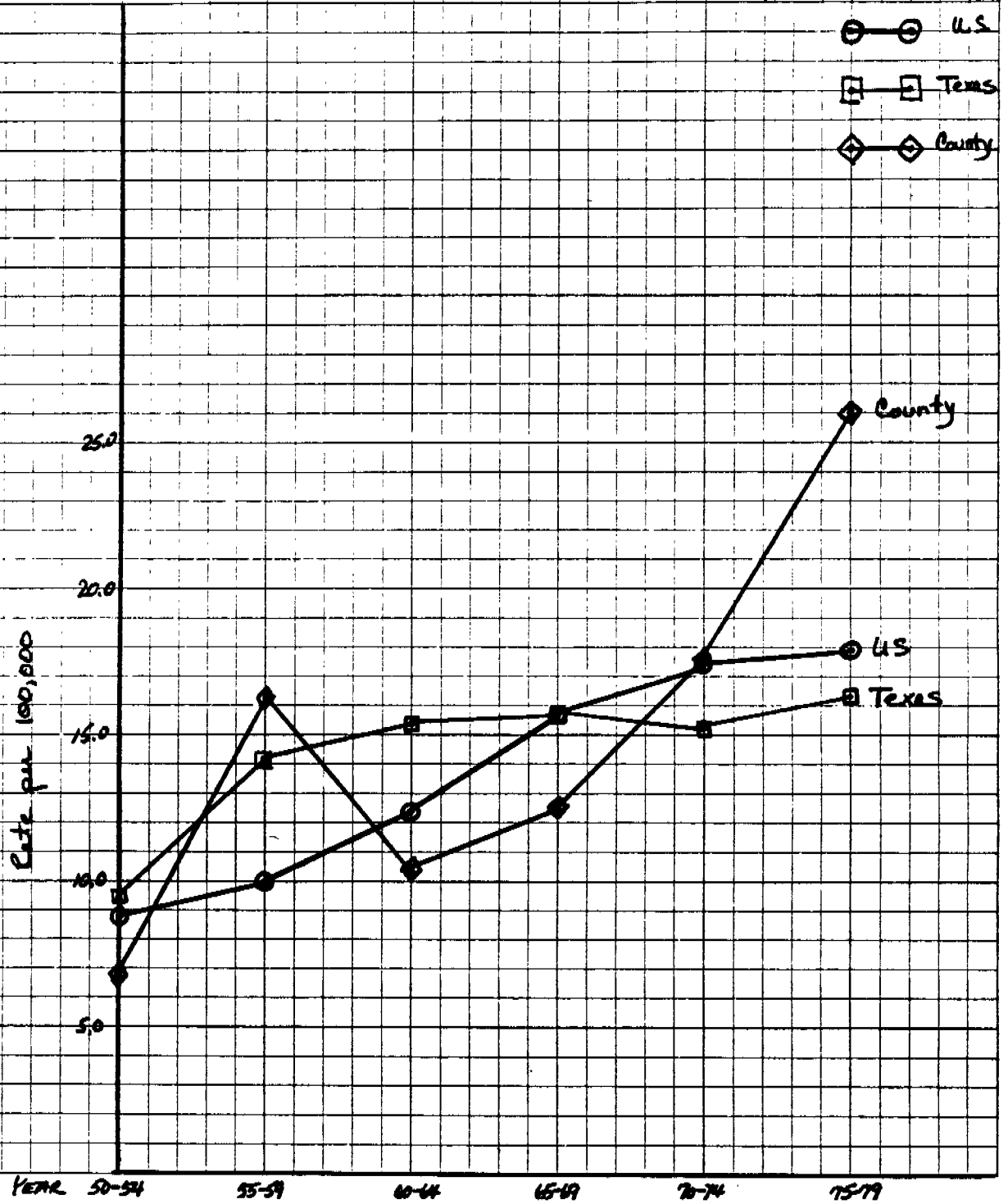
Comparison of U.S., Texas, and County (Galveston, Harris, and Brazoria)
Brain Cancer Mortality Rates for White Males
Age: 55-59



Comparison of U.S., Texas, and County (Galveston, Harris, and Brazoria)
Brain Cancer Mortality Rates for White Males
Age: 60-64

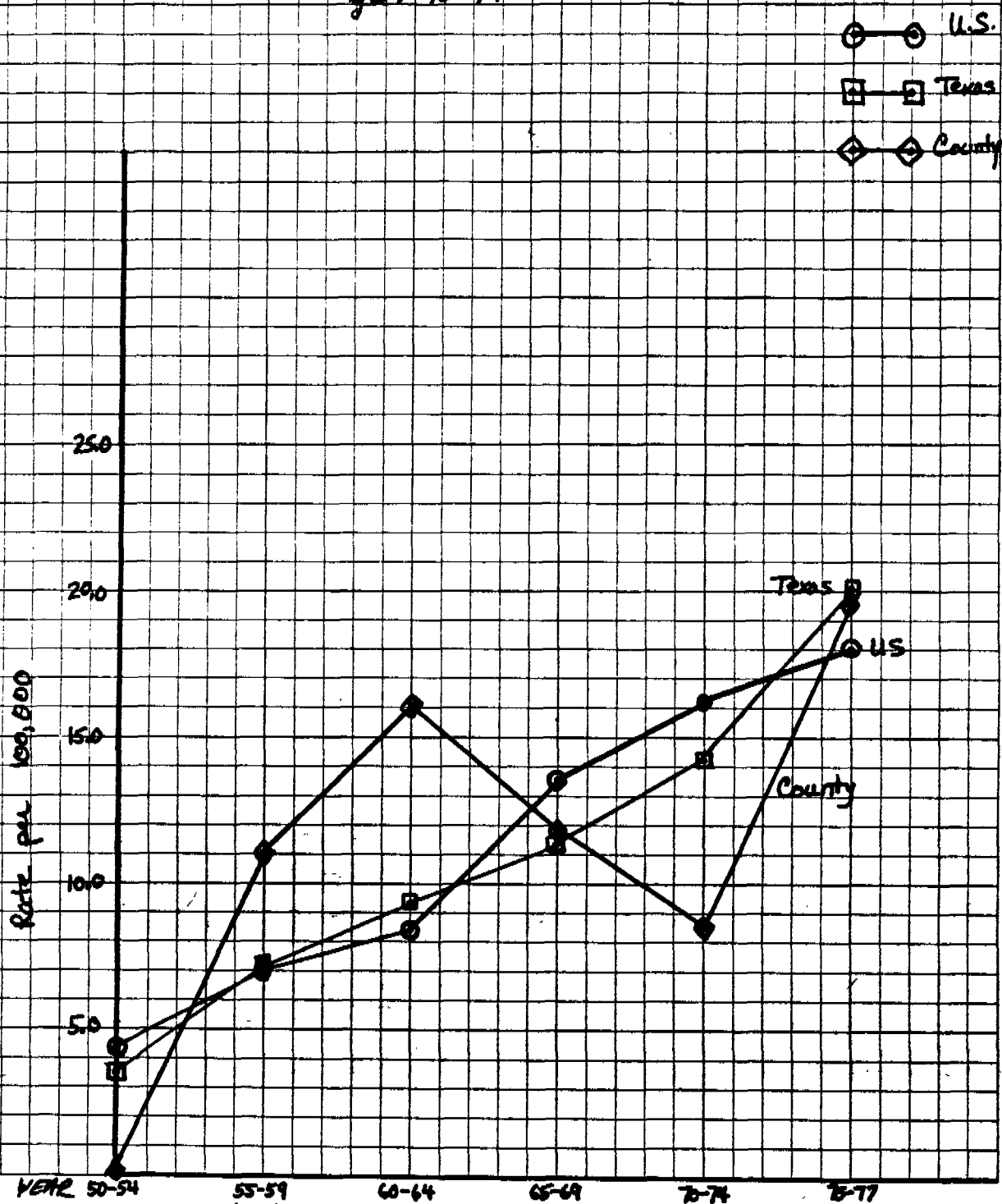


Comparison of U.S., Texas, and County (Galveston, Harris, and Brazoria)
Brain Cancer Mortality Rates for White Males
Age: 65-69

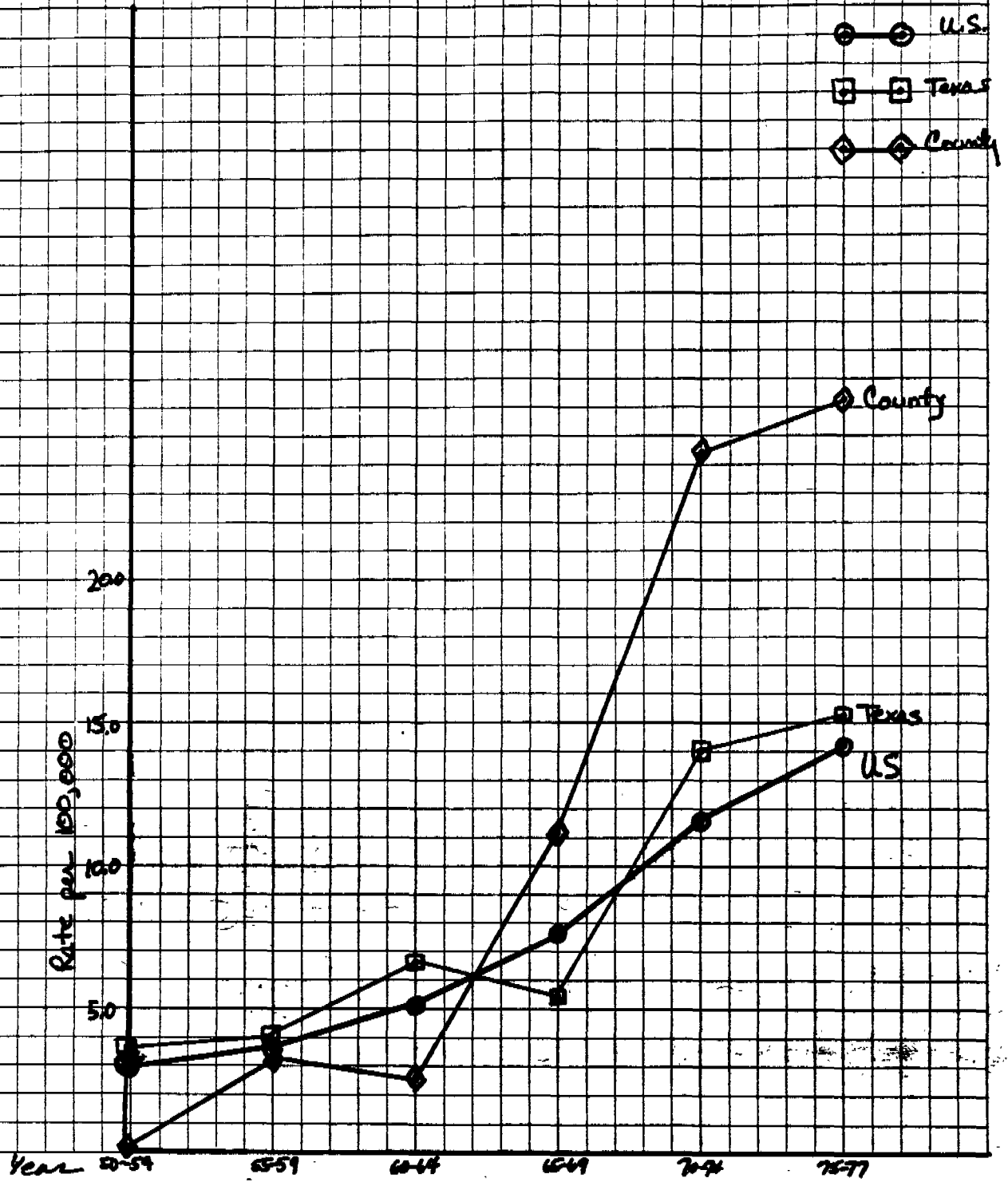


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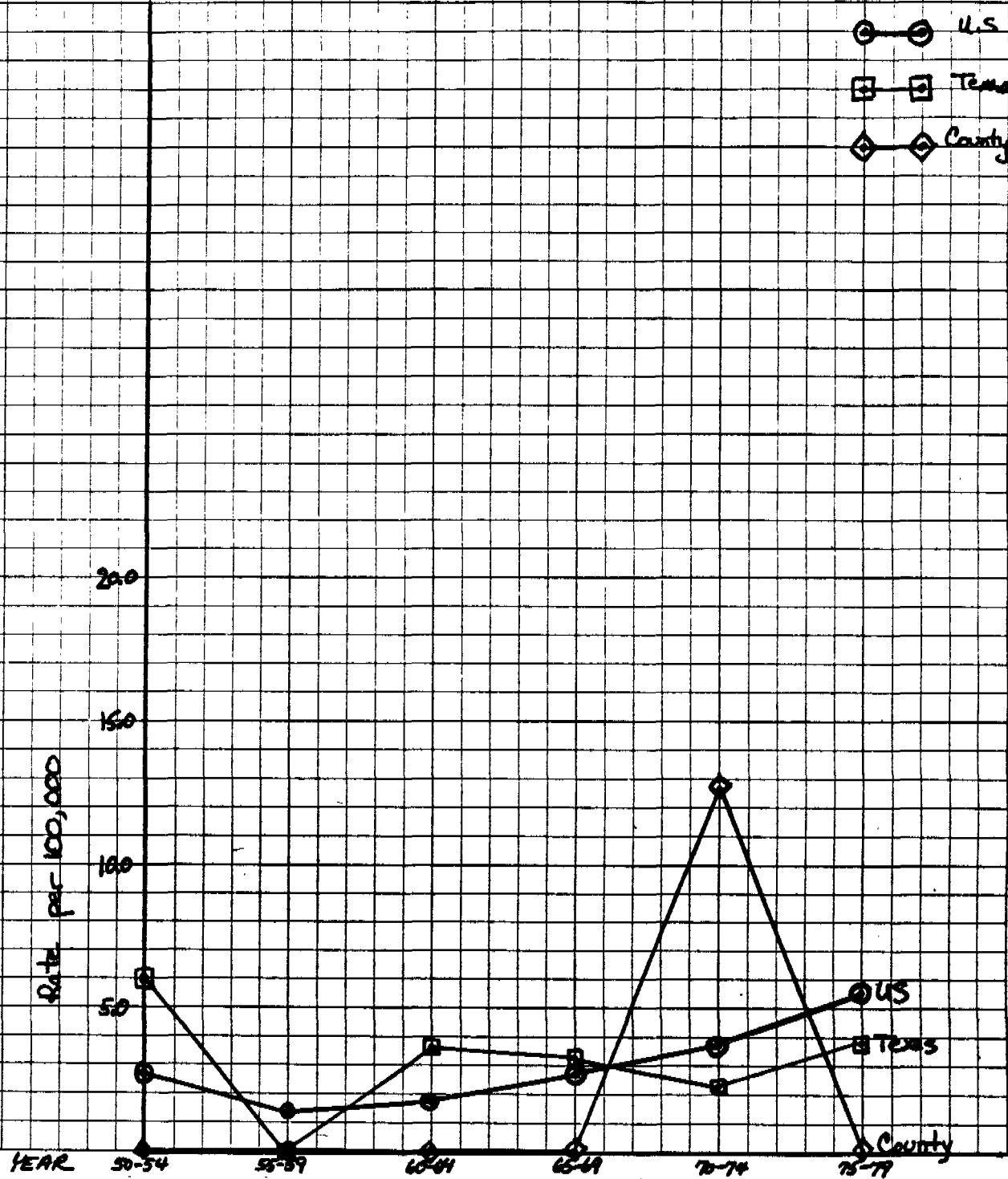
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 Brain Cancer Mortality Rates for White Males
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Comparison of U.S., Texas, and County (Galveston, Harris, and Brazoria)
Brain Cancer Mortality Rates for White Males
Age: 75-84



Comparison of U.S., Texas, and County (Galveston, Harris, + Brazoria)
Brain Cancer Mortality Rates for White Males
Age: 25 and over



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