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## CHAPTER 24

### All Causes of Death Except Cancer: Relation with Medical Radiation

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#### MortRates for All Causes of Death Except Cancer

To obtain the MortRates for "All Causes of Death except Cancer," we begin with the MortRates per 100,000 for All-Causes-Combined in Table 23-A, and we subtract the matching rates per 100,000 for All-CANCERS-Combined from Table 6-A (males) or Table 7-A (females). The resulting rates are provided in Table 24-A at the end of this chapter.

Example for Males, 1940, Pacific Census Division: The entry of 1096.9 = (1219.8 from Table 23-A) minus (122.9 from Table 6-A). The National MortRates in Table 24-A are obtained in similar fashion.

#### Box 1: The Summary-Results of All the Regressions

Following the pattern of Chapter 23, we regressed all the MortRates of Table 24-A upon the PhysPops indicated in Box 1, where the results are presented. Figures 24-A and 24-B depict the best-fit line when the 1940 MortRates (male, female) are regressed upon the 1940 PhysPops.

Subtraction of the All-Cancer MortRates, from All Causes of Death Combined, results in considerably stronger correlations (higher R-squared values in Box 1) than in the previous chapter for All Causes Combined. In other words, removal of the cancer rates leaves noncancer mortality rates in 1940 having a stronger relationship with PhysPop than in Chapter 23 --- and the relationship is INVERSE (negative).

By contrast, let us consider Box 1 in Chapters 6 and 7 for All-Cancer mortality. There, a POSITIVE correlation is increasing to highly significant levels, as one approaches the 1940 PhysPops. In relation to PhysPop, the DIFFERENCE in behavior between cancer mortality-rates and noncancer mortality-rates is extremely clear for both males and females.

Box 1 is on the next page.

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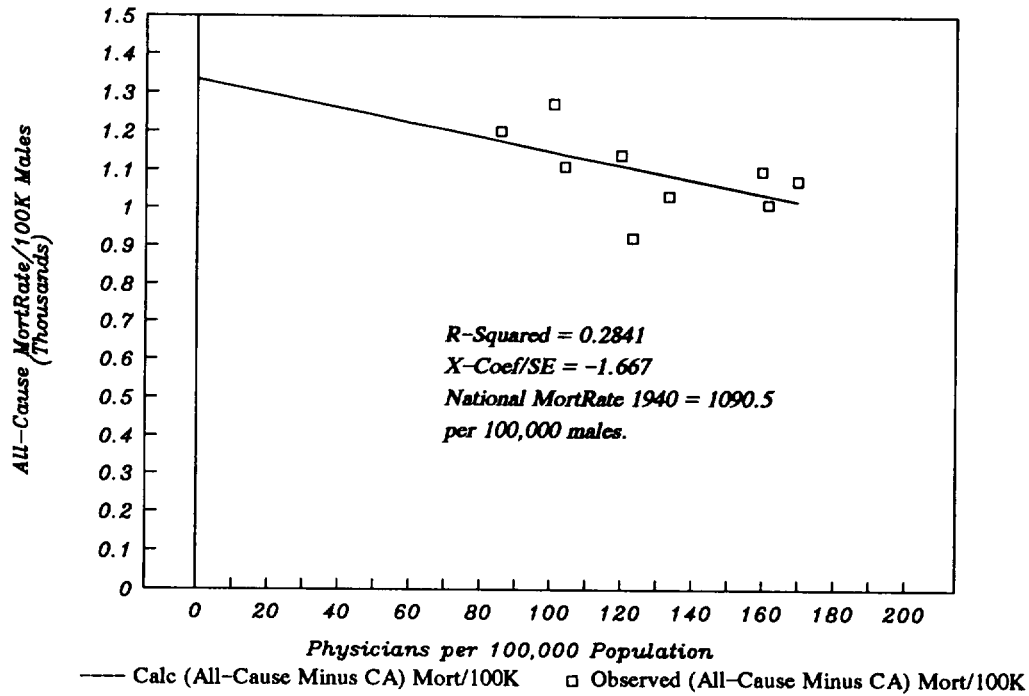
*Box 1 of Chap. 24*  
*Summary: Regression Outputs, All Causes of Death Minus Cancer.*

Below are the summary-results from all the regressions of MortRates upon PhysPops. MortRates are from Table 24-A, and PhysPops are from Table 3-A.

MALES .....						
Year MortRate	Year PhysPop	R-squared	Constant	X-Coef	Std Err	X-Coef/SE
1940	1921	0.3624	1636.68	-4.0263	2.0184	-1.9947
1940	1923	0.3594	1584.12	-3.7382	1.8861	-1.9819
1940	1925	0.3551	1531.47	-3.4455	1.7550	-1.9632
1940	1927	0.3681	1513.58	-3.3607	1.6643	-2.0193
1940	1929	0.3566	1490.23	-3.2000	1.6246	-1.9696
1940	1931	0.3356	1446.49	-2.8311	1.5057	-1.8803
1940	1934	0.3409	1408.63	-2.5122	1.3202	-1.9029
1940	1936	0.3340	1395.28	-2.3911	1.2763	-1.8735
1940	1938	0.3206	1372.86	-2.1997	1.2103	-1.8175
1940	1940	0.2841	1334.18	-1.8639	1.1184	-1.6667
1950	1950	0.3487	1029.08	-1.0511	0.5429	-1.9360
1960	1960	0.2745	943.07	-0.7938	0.4877	-1.6275
1970	1970	0.2950	820.91	-0.6831	0.3991	-1.7115
1980	1980	0.3591	725.53	-0.6520	0.3293	-1.9803
1990	1990	--	--	--	--	--
FEMALES .....						
Year MortRate	Year PhysPop	R-squared	Constant	X-Coef	Std Err	X-Coef/SE
1940	1921	0.7650	1480.81	-4.9547	1.0378	-4.7742
1940	1923	0.7495	1412.42	-4.5719	0.9990	-4.5763
1940	1925	0.7369	1346.76	-4.2039	0.9494	-4.4279
1940	1927	0.7009	1303.41	-3.9280	0.9698	-4.0505
1940	1929	0.6795	1276.26	-3.7413	0.9712	-3.8520
1940	1931	0.6516	1229.04	-3.3415	0.9235	-3.6184
1940	1934	0.5922	1164.24	-2.8042	0.8796	-3.1882
1940	1936	0.5569	1142.55	-2.6152	0.8817	-2.9659
1940	1938	0.5053	1109.56	-2.3389	0.8747	-2.6738
1940	1940	0.4362	1065.12	-1.9562	0.8406	-2.3271
1950	1950	0.2008	686.511	-0.7124	0.5371	-1.3264
1960	1960	0.0876	568.964	-0.3350	0.4088	-0.8196
1970	1970	0.1168	458.902	-0.2669	0.2774	-0.9622
1980	1980	0.1916	362.017	-0.2530	0.1964	-1.2883
1990	1990	--	--	--	--	--

1940 MortRate, Males, All-Causes Minus Cancer, versus  
1940 PhysPop Values for the 9 Census Divisions, USA.  
Relationship of Borderline Significance.

PhysPop is a surrogate for accumulated dose from medical irradiation.



1940 MortRate, Females, All-Causes Minus Cancer, versus  
1940 PhysPop Values for the 9 Census Divisions, USA.  
Significant INVERSE Relationship

PhysPop is a surrogate for accumulated dose from medical irradiation

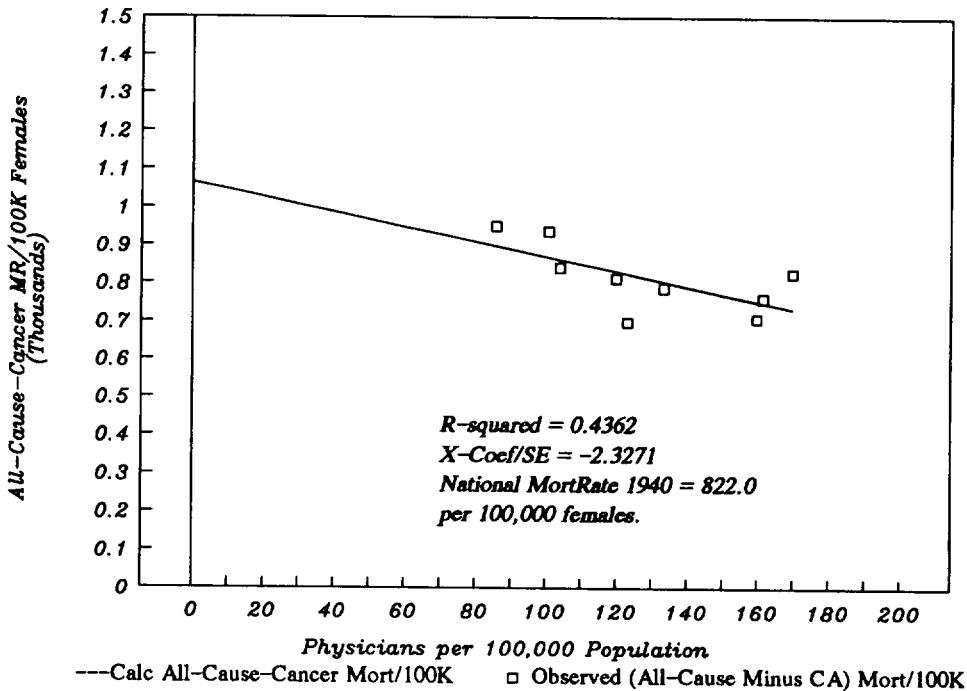


Table 24-A

*All Causes of Death Minus Cancer Death: Rates by Census Divisions and National.*

These rates are the "All Causes of Death" rates in Table 23-A minus the "All-Cancer" rates in Table 6-A (males) or Table 7-A (females). Rates per 100,000 are age-adjusted to the 1940 reference year. There are no exclusions by color or "race."

MALES .....

Census Division	1940	1950	1960	1970	1980	1990
Pacific	1096.9	875.5	793.5	673.5	553.4	--
New England	1008.8	831.2	826.5	689.1	551.7	--
West North Central	920.4	831.8	788.1	671.3	554.5	--
Mid-Atlantic	1072.1	900.9	843.2	725.6	608.0	--
East North Central	1031.8	894.1	836.2	722.2	608.2	--
Mountain	1138.4	912.9	838.9	707.2	575.5	--
West South Central	1109.3	882.0	845.8	742.7	639.5	--
East South Central	1200.2	961.7	910.7	791.0	671.3	--
South Atlantic	1271.4	987.6	916.1	780.9	645.6	--
Average, ALL	1094.4	897.5	844.3	722.6	600.9	--
Average, High-5	1026.0	866.7	817.5	696.3	575.2	--
Average, Low-4	1179.8	936.1	877.9	755.4	633.0	--
Ratio, Hi5/Lo4	0.87	0.93	0.93	0.92	0.91	--

FEMALES .....

Census Division	1940	1950	1960	1970	1980	1990
Pacific	707.9	529.7	483.6	391.0	298.2	--
New England	761.8	570.5	526.3	405.2	284.1	--
West North Central	698.7	555.1	492.0	385.4	278.7	--
Mid-Atlantic	826.0	630.6	550.7	438.9	327.0	--
East North Central	788.1	605.5	532.7	428.7	324.6	--
Mountain	812.1	585.4	499.1	399.3	299.4	--
West South Central	840.1	575.3	516.9	424.8	332.7	--
East South Central	950.0	673.3	579.8	461.4	343.0	--
South Atlantic	936.2	650.7	564.5	449.8	335.1	--
Average, ALL	813.4	597.3	527.3	420.5	313.6	--
Average, High-5	756.5	578.3	517.1	409.8	302.5	--
Average, Low-4	884.6	621.2	540.1	433.8	327.6	--
Ratio, Hi5/Lo4	0.86	0.93	0.96	0.94	0.92	--

NATIONAL RATES .....

Rates are age-adjusted to the 1940 reference year. Both sexes: Deaths per 100,000 population (males + females). Males: Deaths per 100,000 male population. Females: Deaths per 100,000 female population. No exclusions by color or "race."

	1940	1950	1960	1970	1980	1990
Both Sexes	956.9	753.8	682.4	564.3	446.4	--
Males	1090.5	904.3	844.7	724.2	603.6	--
Females	822.0	608.5	533.3	425.6	317.9	--