Summary on NonCancer NonIHD Results: Facts "Demanding" an Explanation

Section 3 of this book was initiated to find out if Cancer and nonCancer MortRates differ in their response to PhysPop (Chapter 23, Part 1).

Box 1 of this chapter makes it easy to see the "bottom line" of the work in Chapters 23 through 37, and to compare it with the results for Cancer from Chapters 6 through 19, and with the results for Ischemic Heart Disease (IHD) from Chapters 40 and 41.

The results in Box 1 always arise from 1940 PhysPops as the x-variable, even in the three cases when some other PhysPop-year produced a higher correlation (see Breast Cancer, male Genital Cancers, and Female IHD). For Box 1, the 1940 MortRates are always the y-variable, with three exceptions. For All NonCancer NonIHD Causes Combined (Chapter 25), for Hypertensive Disease (Chapter 30), and for Ischemic Heart Disease (Chapters 40 and 41), the MortRates are 1950 --- because MortRates in 1940 are not available. From Box 1:

		R-squared	Coef/ SE	Relationship: MortRates by CensusDiv vs PhysPops by CensusDiv
All NonCancer NonIHD	Male	0.7933	-5.18	Inverse, and very sig.
	Fem	0.7037	- 4.08	Inverse, and very sig.
All Cancers Combined	Male	0.9508	+11.63	Positive, and highly sig.
	Fem	0.8608	+ 6.58	Positive, and highly sig.
Ischemic Heart Disease	Male	0.9475	+11.24	Positive, and highly sig.
	Fem	0.8337	+ 5.92	Positive, and highly sig.

The contrast of Cancer and Ischemic Heart Disease, with All NonCancer NonIHD Causes of Death Combined, is unmistakable. Not only are the correlations spectacular between Cancer MortRates and PhysPop, and between IHD MortRates and PhysPop, but these correlations are POSITIVE in direction while the very significant correlations for All NonCancer NonIHD Causes of Death Combined are NEGATIVE with PhysPop.

These observations are facts --- not interpretations --- and they "demand" an explanation.

The explanation proposed by this book is that physicians, by what they do, are CAUSING both the positive and inverse relationships shown above. Of course, single correlations alone can never PROVE causation, because correlation is a type of circumstantial evidence. But pieces of circumstantial evidence combined with logic can produce arguments "beyond reasonable doubt" for causation, both in science and in everyday experience.

How would the activities of physicians CAUSE the negative and positive correlations listed above?

● - NONCANCER NON-IHD DEATHS: The fact, that age-adjusted nonCancer nonIHD death-rates FALL where physician-density RISES, strongly supports the widespread expectation that "extra" medical attention per 100,000 population should reduce some types of age-adjusted death-rates. In general, the more physicians there are per 100,000 population, the more radiation procedures occur per 100,000 population. The fact, that this aspect of "extra" medical attention does not cause a POSITIVE correlation between PhysPop and nonCancer nonIHD death-rates, is consistent with the "general wisdom" that such deaths are not inducible in patients by ionizing radiation (Chapter 23, Part 1a).

● - CANCER DEATHS: The fact, that age-adjusted Cancer death-rates at mid-century RISE where physician-density RISES, can be readily explained by a few additional facts: (a) Ionizing

radiation is a proven cause of human Cancer in irradiated populations, (b) Physicians irradiate populations, and (c) Physicians at mid-century rarely had effective treatment for Cancers.

● - IHD DEATHS: The fact, that age-adjusted IHD MortRates at mid-century RISE where physician-density RISES, is a startling finding --- especially in view of the contrasting behavior of the nonCancer nonIHD MortRates. The very strong positive correlation for IHD MortRates practically "demands" that the concept of radiation-CAUSATION be taken seriously in medicine and in public health, until and unless a better explanation for this positive correlation is provided.

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Box 1 of Chap. 38
Comparison of Results: All Causes, NonCancers, NonCancers NonIHD, Cancers, IHD.

All the comparisons below are based on the relationship between 1940 PhysPops and 1940 MortRates, except for 3 pairs of 1950 MortRates. "Sig." means statistically significant. When XCoef/SE = 2, then P = roughly 0.05.

		R-Squared	X-Coef.	XCoef/Std Err	Relationship, MortRates w. PhysPops by CensusDiv.
Ch23: All Causes Combined	Male	0.1299	Neg.	-1.02	Inverse, but not sig.
	Fem	0.2823	Neg.	-1.66	Inverse, and marginal.
Ch24: All NonCancer Combined	Male	0.2841	Neg.	-1.67	Inverse, and marginal.
	Fem	0.4362	Neg.	-2.33	Inverse, and significant.
Ch25: All NonCancer NonIHD	Male	0.7933	Neg.	-5.18	Inverse, and very sig.
	Fem	0.7037	Neg.	-4.08	Inverse, and very sig.
Ch26: Appendicitis	Male	0.0179	Neg.	-0.36	None.
	Fem	0.0010	Neg.	-0.08	None.
Ch27: CNS Vascular (Stroke)	Male	0.4000	Neg.	-2.16	Inverse, and significant.
	Fem	0.2882	Neg.	-1.68	Inverse, and marginal.
Ch28: Chronic Nephritis	Male	0.4561	Neg.	-2.42	Inverse, and significant.
	Fem	0.2687	Neg.	-1.60	Inverse, and marginal.
Ch29: Diabetes Mellitus	Male	0.6435	Pos.	3.55	Positive, and quite sig.*
	Fem	0.6005	Pos.	3.24	Positive, and quite sig.*
Ch30: Hypertensive Disease	Male	0.3564	Neg.	-1.97	Inverse, and significant.
	Fem	0.2056	Neg.	-1.35	Inverse, and very marginal.
Ch31: Influenza and Pneumonia	Male	0.8344	Neg.	-5.94	Inverse, and highly sig.
	Fem	0.8849	Neg.	-7.34	Inverse, and highly sig.
Ch32: Fatal Motor Vehicle Accid.	Male	0.0195	Neg.	-0.37	None.
	Fem	0.0003	Neg.	-0.04	None.
Ch33: Other Fatal Accidents	Male	0.0901	Neg.	-0.83	None.
	Fem	0.4440	Neg.	-2.36	Inverse, and significant.
Ch34: Rheum.Fever/Rheum.Heart	Male	0.0021	Pos.	0.12	None.
	Fem	0.0550	Pos.	0.64	None.
Ch35: Syphilis and Sequelae	Male	0.3278	Neg.	-1.85	Inverse, and marginal.
	Fem	--	--	--	—
Ch36: Tuberculosis, All Forms	Male	0.2067	Neg.	-1.35	Inverse, and very marginal.
	Fem	0.6381	Neg.	-3.51	Inverse, and quite sig.
Ch37: Ulcer: Stomach, Duoden.	Male	0.3864	Pos.	2.10	Positive, and significant.**
Ch6+7: All Cancers Combined	Male	0.9508	Pos.	11.63	Positive, and highly sig.
	Fem	0.8608	Pos.	6.58	Positive, and highly sig.
Ch8: Breast Cancer	Male	--	--	--	—
	Fem	0.9153	Pos.	8.70	Positive, and highly sig.
Ch9+10: Digestive-Syst. Cancers	Male	0.9078	Pos.	8.30	Positive, and highly sig.
	Fem	0.7550	Pos.	4.64	Positive, and very sig.
Ch11+12: Urinary-Syst. Cancers	Male	0.9208	Pos.	9.02	Positive, and highly sig.
	Fem	0.9395	Pos.	10.43	Positive, and highly sig.
Ch13+14: Genital Cancers	Male	0.7182	Pos.	4.22	Positive, and very sig.
	Fem	0.0683	Pos.	0.72	None.
Ch15: Buccal & Pharynx Cancers	Male	0.7234	Pos.	4.28	Positive, and very sig.
	Fem	--	--	--	—
Ch16+17: Respiratory-Syst. Canc	Male	0.8673	Pos.	6.76	Positive, and highly sig.
	Fem	0.9625	Pos.	13.40	Positive, and highly sig.
Ch40+41: Ischemic Heart Disease	Male	0.9475	Pos.	11.24	Positive, and highly sig.
	Fem	0.8337	Pos.	5.92	Positive, and highly sig.

* Diabetes Mellitus (DM): After the rules changed in 1949 for reporting the underlying cause of death in diabetics, DM MortRates abruptly fell in half and our R-sq. values dropped abruptly to 0.11 and 0.20 (Chap.29). The significant R-sq. values in 1940 very probably denote a correlation between PhysPop and deaths during 1940 from xray-induced Ischemic Heart Disease in people having diabetes (Chapters 29, 40, 41).

** Ulcer Deaths: The positive correlation between Ulcer Deaths in 1940 and PhysPop might be due to erroneous reporting in 1940 of deaths, truly from Stomach Cancer, as deaths from Stomach Ulcers.