MORTALITY AMONG LUTHERAN CLERGYMEN

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Most studies and statistics of mortality in the clerical profession have shown that clergymen have a lower mortality than males in the general population, or males in medical and legal professions, that mortality among clergymen differs by faith and denomination, marital status, ministerial specialty and age and cause of death, and that the mortality of British clergymen was nearly constant from 1910 to 1953, though a general downward trend was seen for lawyers, physicians and teachers.[1] These considerations led to several mortality studies of ministers, with the primary purpose of systematically examining mortality risks and specific causes of death in the clerical profession. The first in a series of such investigations is reported in this paper.

DATA AND METHODS

Study Population

This study was based on a defined population of 3,914 clergymen, active and retired, who were alive on September 1, 1950, and whose names appeared in the roster of a major Lutheran denomination, the United Lutheran Church in America (known as The Lutheran Church in America after its merger with three other Lutheran churches in 1962). Among the clergymen were 2,825 active minis-

ters with charges, representing about one-fourth of all parish clergymen in various Lutheran denominations in the United States and Canada.[2] The mortality experience of the 3,914 ministers up to August 31, 1960, was examined.

The study group is composed of male clergymen, nearly all white, and 87 per cent of whom were born in the United States; of the foreign-born, about half were from Germany. More than two-thirds of the study subjects lived in the Northeast and North Central regions in the United States (Table 1). Seventy-two per cent were parish ministers and 11 per cent were retired. The remainder, clergymen without charges, included church administrators, foreign missionaries, social mission workers, college teachers, counselors and pastors for students. The study group had a very stable occupational and residential history. Approximately 60 per cent of all retired clergymen had either remained in the same position during their entire ministerial career or changed jobs fewer than three times.

Parish ministers in the United States were classified by the size of the communities they served (Table 2). Only one-third of them served in communities with fewer than 2,500 persons. In the two northern regions, over one-half of the ministers served in communi-

TABLE 1. MINISTERS OF THE UNITED LUTHERAN CHURCH IN AMERICA NUMBER AND PERCENTAGE DISTRIBUTION BY AREA AND MINISTERIAL STATUS, 1950

Area	*Total Number*	*Percentage of Total*		
		Active, With Charge	*Active, Other*	*Retired†*
All areas	3,914	72**	17**	11
United States	3,636	72	17	11
Northeast	1,730	74	16	10
(Pennsylvania)	1,038	83	6	11
North Central	990	74	17	9
South	694	69	18	13
West	222	51	31	18
Canada	161	83	9	8
Other areas*	117	68**	21**	11

* Includes areas outside continental United States, foreign countries and places unspecified.
** Numbers entering into computation for "other areas" are projected figures.
† Includes a negligible number of part-time active ministers.

TABLE 2. PARISH MINISTERS OF THE UNITED LUTHERAN CHURCH IN AMERICA: DISTRIBUTION BY REGION AND POPULATION-SIZE GROUP

Region	All Population-Size Groups		Percentage of All Population-Size Groups				
	Number	Percentage of All Regions	Under 2,500	2,500–9,999	10,000–49,999	50,000–249,999	250,000 and Over
All regions	2,611	100.0	32.9	15.2	18.7	14.0	19.2
Northeast	1,284	49.2	32.2	17.8	16.4	14.3	19.3
(Pennsylvania)	862	33.0	37.7	20.9	15.1	13.8	12.5
North Central	734	28.1	30.8	13.9	20.2	13.2	21.9
South	480	18.4	42.5	12.1	19.4	13.8	12.3
West	113	4.3	13.3	8.8	31.0	17.7	29.2

TABLE 3. DISTRIBUTION OF SOCIAL CHARACTERISTICS OF PARISH MINISTERS IN 15 WHITE PROTESTANT DENOMINATIONS, UNITED STATES, 1964[3]

Social Characteristics	All 15 Denominations*	Lutheran Churches		
		The United Lutheran Church in America	American Lutheran Church	Lutheran Church-Mo. Synod
Father's occupation Classified as professional, official, and managerial	33.1	34.2	32.5	41.0
Full college and beyond	75.0	93.0	93.0	70.0
College and seminary	46.0	48.0	68.0	46.0
College, seminary, and graduate work	29.0	45.0	25.0	24.0
Previous affiliation with other denominations	26.0	14.0	14.0	5.0

*Includes the three Lutheran Churches.

ties of 10,000 and more. This proportion was lower in the South and much higher in the West.

Table 3 summarizes some of the social characteristics of parish clergymen in 15 predominantly white Protestant denominations.[3] Three major Lutheran groups were represented in the sample survey, including the denomination chosen for this study. One-third of the United Lutheran clergymen came from families of high social status. Although that is a distinctive characteristic of all ministerial groups, United Lutheran ministers surpassed clergymen in the 14 other denominations in having more "college, seminary, and post-

graduate training." Less than one-seventh of United Lutheran clergymen were previously affiliated with other denominations, in contrast to one-fourth for the 15 churches combined.

Data Collection

Personal data on the 3,914 study subjects for the ten-year period, September 1, 1950, to August 31, 1960, were abstracted from the central files of the denomination, supplemented by information given in the church yearbooks for the same period. Death certificates or certified letters for the 609 clergymen who died during the study period were obtained from state and city health departments in the United States and from health offices in other countries. The seventh revision of the International List was used to classify the causes of death.

Because of the extremely low mortality ratios observed in the study group, it seemed necessary to verify the survival information. A random sample of 106 persons was selected from the 3,273 study subjects who were still on the church rolls at the end of the study period (August 31, 1960). They were matched against the clergy list in the 1965 church yearbook. Nine had died or transferred their church affiliation after August 31, 1960, and 97 were found still living as of October 1, 1964. The vital status of these 97 subjects was further checked against other church documents for its accuracy and was confirmed. The authors are therefore confident that the survival data are accurate.

Methods of Analysis

For the purpose of computing mortality rates, "person-years of exposure" were ascertained for each single year of age and each five-year age class during the ten-year study period. Inasmuch as the results for one-year and five-year age classes were almost identical, only the latter are given here. Table 4 shows the age distribution of the study group on September 1, 1950, and the number of withdrawals (by deposition or death) and person-years of exposure over the following ten years.

Three series of Standardized Mortality Ratios were computed,

TABLE 4. MINISTERS OF THE UNITED LUTHERAN CHURCH IN AMERICA LIVING AND DEPOSITION AND DEATH AT AGE INDICATED, AND PERSON-YEARS OF EXPOSURE

			September 1, 1950 to August 31, 1960					
	Living as of September 1, 1950		*Deposition at Age Indicated*		*Death at Age Indicated*		*Person-Years of Exposure*	
Age	*Number*	*Per cent*	*Number*	*Per cent*	*Number*	*Per cent*	*Number*	*Per cent*
20 and over	3,914	3,735 = 100*	132	45 = 100*	609	605 = 100*	35,549.0	34,240 = 100*
20–24	76	2.0	0		0		190.0	0.6
25–29	314	8.4	1	2.2	1	0.2	1,165.0	3.6
30–34	402	10.8	5	11.1	2	0.3	2,750.0	8.0
35–39	416	11.1	5	11.1	6	1.0	3,795.0	11.1
40–44	482	12.9	11	24.4	3	0.5	4,237.5	12.4
45–49	439	11.8	9	20.0	7	1.2	4,497.5	13.1
50–54	346	9.3	7	15.6	19	3.1	4,185.0	12.2
55–59	315	8.4	3	6.7	36	6.0	3,447.5	10.1
60–64	253	6.8	3	6.7	56	9.3	2,827.5	8.3
65–69	219	5.9	0		75	12.4	2,282.5	6.7
70–74	189	5.1	1	2.2	79	13.1	1,852.5	5.4
75–79	155	4.2	0		98	16.2	1,417.5	4.1
80–84	105	2.8	0		105	17.3	1,015.0	3.0
85 and over	24	0.6	0		118	19.5	577.5	1.7
Unspecified	179		87		4		1,309.0	

* Excludes cases for which ages are unspecified.

because no single standard would permit all comparisons of interest to be made. In the first series, Standard A, the expected number of deaths entering into mortality ratios for Lutheran ministers who died at age 20 and above, was computed on the basis of mortality experience of United States white males of comparable ages in 1955,[4] the midpoint year of the study period. This population was chosen as standard for reasons of common racial background and the availability of mortality rates for persons age 65 and above. The expected deaths were calculated by multiplying person-years of exposure for each five-year age-class by the corresponding age-specific death rate of United States white males, and then summing the number of deaths in each age-class to yield the total number of deaths expected. The standardized mortality ratio is the ratio of the number of deaths observed to the number expected.

A second series of standardized mortality ratios, Standard B, was computed for Lutheran ministers whose deaths occurred during ages 20 to 64, on the basis of age-specific death rates in 1950 of total United States males with work experience.[5] This was to contrast the mortality experience of the Lutheran ministers with that of clergymen and other professions in the United States.

The third series of mortality ratios, Standard C, was computed for Lutheran ministers who died between age 20 and 64, using mortality rates for the United States white clergy in 1950 as standard.[6] This standard was selected to permit direct contrasts between the study group and the group of all white clergymen.

Analysis of disease patterns was concentrated on the two most common causes of death, major cardiovascular-renal conditions and malignant neoplasms. Detailed study of mortality from less common causes of deaths was not undertaken because of the smaller number of deaths.

No tests of statistical significance have been attempted because observational data such as these do not meet the requirements of independence and freedom from bias or selection.

TABLE 5. MINISTERS OF THE UNITED LUTHERAN CHURCH IN AMERICA: OBSERVED AND EXPECTED DEATHS AND STANDARDIZED MORTALITY RATIOS (S.M.R.), BY AGE AND SPECIFIED DISEASE CATEGORIES

	All Causes			*Major Cardiovascular-renal Diseases (330–334; 400–468; 592–594)**			*Malignant Neoplasms (140–205)*			*All Other Causes, Residual*		
Age	*Observed Deaths*	*Expected Deaths***	*S.M.R.*	*Observed Deaths*	*Expected Deaths*	*S.M.R.*	*Observed Deaths*	*Expected Deaths*	*S.M.R.*	*Observed Deaths*	*Expected Deaths*	*S.M.R.*
20–44	12	34.66	35	3	11.94	25	7	4.37	160	2	18.35	11
45–54	26	79.56	33	15	40.97	37	6	13.82	43	5	24.77	20
55–64	92	136.79	67	57	78.88	72	18	26.98	67	17	30.93	55
65–74	154	201.57	76	106	126.83	84	30	36.74	82	18	38.00	47
75–84	203	260.93	78	144	180.82	80	27	35.45	76	32	44.66	72
85 and over	118	115.17	102	92	85.07	108	13	10.09	129	13	20.71	63
Unspecified	4			3			0			1		
All ages	609	829.38	73	420	524.51	80	101	127.45	79	88	177.42	50

* Number in parentheses are the categories in the International Classification of Diseases, Injuries and Causes of Death (seventh revision)

** Based on age-specific death rates of United States white males, 1955.

TABLE 6. MINISTERS OF THE UNITED LUTHERAN CHRUCH IN AMERICA: NUMBER OF DECEDENTS AND STANDARDIZED MORTALITY RATIOS (S.M.R.), BY STANDARD POPULATION AND BROAD DISEASE CATEGORY, 1950–1960

Cause of Death	Age 20 and Over		Age 20–64		
	Number of Decedents	S.M.R. Standard A*	Number of Decedents	S.M.R. Standard B*	S.M.R. Standard C*
All causes	609	73	130	44	53
Major cardiovascular-renal diseases (330–334; 400–468; 592–594)**	420	80	75	49	50
Diseases of cardiovascular system (330–334; 400–468)	416	81	73	49	50
Vascular lesions affecting central nervous system (330–334)	82	84	10	48	46
Diseases of heart and rheumatic fever (400–402; 410–443)	302	79	60	49	51
Rheumatic fever and chronic rheumatic heart disease (400–402; 410–416)	1	12	1	16	20
Arteriosclerotic heart disease, including coronary disease (420)	219	76	52	61	56
Arteriosclerotic heart disease, so described (420.0)	80	77	8	58	59
Other diseases of coronary arteries (420.1; 420.2)	139	76	44	60	57
Nonrheumatic chronic endocarditis and other myocardial degeneration (421–422)	35	84	1		
Other diseases of heart (430–434)	14	113	2		
Hypertension with heart disease (440–443)	33	99	4	29	41
Hypertension without mention of heart (444–447)	1	17	1	46	56
General arteriosclerosis (450)	22	94	1	80	73
Chronic and unspecified nephritis and other renal sclerosis (592–594)	4	51	2	42	44
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues (140–205)	101	79	31	69	84
Digestive system (150–156a; 157–159)	41	84	14		
Stomach (151)	6	41	1	17	24
Intestine and rectum (152–154)	19	97	8	126	86
Intestine (152–153)	13	102	6		
Rectum (154)	6	89	2		
Pancreas (157)	12	175	4		
Respiratory system (160–164)	8	33	2		
Lung and bronchus (162–163)	6	27	1	11	24
Male genital organs (177–179)	19	116	3		
Prostate (177)	16	102	0	0	0

TABLE 6. (CONTINUED)

Urinary organs (180–181)	7	87	1	37	43
Bladder and other urinary organs (181)	6	110	1	66	194
Leukemia and aleukemia (204)	8	160	4	211	248
Lymphoma (200–203; 205)	4	74	2	77	104
All other malignant neoplasms	14	78	5		
Tuberculosis, all forms (001–019)	1	12	0	0	0
Syphilis and its sequelae (020–029)	1	52	0	0	0
Diabetes mellitus (260)	5	48	1	30	20
Influenza and pneumonia, except pneumonia of newborn (480–493)	11	53	0	0	0
Pneumonia, except pneumonia of newborn (490–493)	10	51	0	0	0
Hyperplasia of prostate (610)	6	77	1		
Accidents (E800–E962)	22	58	5	21	53
Motor vehicle accidents (E810–E835)	11	78	3		
All other accidents (E800–E802; E840–E962)	11	46	2		
Suicide (E963; E970–E979)	5	45	2	25	44
All other causes	37	47	16		

* S.M.R.'s for the three standards A, B and C are computed on the basis of age-specific death rates of United States white males, age 20 and over, 1955, United States total males with work experience, age 20–64, 1950, and United States white clergymen, age 20–64, 1950, respectively.

** Numbers in parentheses are the categories in the International Classification of Diseases, Injuries and Causes of Death (Seventh Revision).

MAJOR FINDINGS

Total Mortality

Table 5 gives the number of deaths in the study group by age and the expected number of deaths in comparison with Standard A. Data are given for deaths from all causes and for three broad disease categories. If mortality rates were the same as in the general population of United States white males, about 829 deaths would be expected to occur in the study group followed over a ten-year period, but only 609 were observed. Thus the standardized mortality rate is 609/829.38, or 73 per cent, indicating a 27 per cent deficit in mortality. Observed mortality for Lutheran ministers was below the expected mortality in each age group except the oldest, with the greatest relative differences under the age of 50 years. The standardized mortality ratio for Lutheran ministers under age 65 was even lower (Table 6, Standard B).

Mortality by Cause: Standard A

The number of deaths from specific diseases and the corresponding standardized mortality ratios with respect to Standards A, B and C are shown in Table 6. As shown by the standardized mortality ratios, observed mortality from cardiovascular-renal diseases was 80 per cent of the expected mortality. Malignant neoplasms accounted for the second largest number of deaths, with a ratio of 79 per cent. Although the standardized mortality ratios for some specific forms of cardiovascular-renal diseases deviated substantially from those for all such conditions, all of these differences could be explained by sampling variation in the small number of deaths. Mortality from hyperplasia of the prostate seemed excessive.

Mortality ratios from cancer of the lung and bronchus and from stomach malignancy were considerably lower than in the general population, while those from leukemia and cancer of the pancreas were higher. It is likely that these are real differences and not sampling variations.

Mortality from tuberculosis, diabetes, accident, suicide and some other causes of death was also low, but the expected number of deaths in each group was small.

Mortality by Cause: Standard B and Standard C

When Lutheran ministers aged 20 to 64 were compared with total United States males with work experience at these ages (Standard B), the mortality differentials were even greater than with Standard A (United States white males at all ages over 20). This was reflected in the much-depressed mortality risk for Lutheran ministers for the more common causes of death such as vascular lesions affecting the central nervous system and arteriosclerotic heart disease. However, leukemia was more common than expected.

Standard C compares the mortality of Lutheran ministers at ages 20 to 64 with that for the total group of U.S. white clergymen of comparable ages. Although mortality among all white clergymen in the United States was below average, it was still almost twice as high as in the study group. For all causes of death combined, the mortality ratio for Lutheran ministers compared with all United States white clergymen was 53 per cent;[7] deviations from this figure for specific disease categories could be due entirely to sampling variation in the small number of deaths.

Age-Specific Mortality

Table 5 presents age-specific mortality for Lutheran ministers. The computed ratios for all causes of death combined and for the two common causes of death, adjusted to age-specific death rates of United States white males, indicated that the mortality risk for Lutheran ministers under age 55 was generally between 30 and 40 per cent of that for the standard population, but increased to 80 per cent at ages 55 to 84. By the age of 85, the mortality ratio of Lutheran ministers reached that for United States white males. Thus the low mortality of the study group was largely a reflection of the extremely low death rates of young Lutheran ministers.

Comparison with Other Professions

Table 7 presents mortality ratios of selected causes of death for five United States professional groups and for Lutheran ministers (Standard B). Mortality of the Lutheran clergy for most causes of death was not much different from that of teachers and college

TABLE 7. STANDARDIZED MORTALITY RATIOS (S.M.R.)† FOR MALES 20 TO 64 YEARS OLD IN SELECTED PROFESSIONS, BY OCCUPATION LEVEL AND SPECIFIED CAUSE OF DEATH,†† UNITED STATES, 1950[5]

Cause of Death	Occupation Level II[a]			Occupation Level I[b]					Ministers of The United Lutheran Church in America S.M.R. (Standard B)†††
	All Techn., Admin., and Manag. Workers (White) S.M.R.	Clergymen (White) No. of Deaths	Clergymen (White) S.M.R.	Teachers (Total) S.M.R.	All Professional Workers (Total) S.M.R.	Lawyers, Judges (Total) S.M.R.	Physicians, Surgeons (Total) S.M.R.	College Presidents, Professors, Instructors (Total) S.M.R.	
All causes	84	1,023	83	61	83	90	91	52	44
Major cardiovascular-renal diseases (330–334; 400–468; 592–594)*	94	607	98	71	98	106	111	65	49
Diseases of cardiovascular system (330–334; 400–468)	95	587	98	71	98	106	112	66	49
Vascular lesions of nervous system (330–334)	79	89	106	67	87	89	102	[d]	48
Diseases of heart and rheumatic fever (400–402; 410–443)	98	477	97	70	101	110	115	70	49
Rheumatic fever and chronic rheumatic heart disease (400–402; 410–416)	88	22	85	66	94	91	94	[d]	16
Arteriosclerotic heart disease, including coronary disease (420)	109	372	108	76	115	123	135	77	61
Arteriosclerotic heart disease so described (420.0)	94	55	102	63	106	117	115	81	58
Other diseases of coronary arteries (420.1; 420.2)	112	317	109	78	116	124	138	77	60
Hypertension with heart disease (440–443)	73	39	72	77	75	100	80	[d]	29
Chronic and unspecified nephritis and other renal sclerosis (592–594)	72	20	100	73	73	83	[d]	[d]	42
Malignant neoplasms (140–205)	91	158	86	65	89	96	81	48	69
Intestine and rectum (152–154)	107[e]	39	156	70	124[e]	148	103	[d]	126
Tuberculosis (001–019)	40	22	39	29	36	[d]	46	[d]	0
Diabetes mellitus (260)	99	21	162	[d]	98	[d]	147	[d]	30

TABLE 7. (CONTINUED)

Accidents (E800–E962)	68	72	63	49	50	58	61	35	21
Not while at work and not stated	70	60	69	58	58	72	72	43	**
Suicide (E963; E970–E979)	86	13	37[c]	72	90	84	114	59[c]	25

* Numbers in parentheses are the categories in the International Classification of Diseases, Injuries and Causes of Death (seventh revision for the Lutheran group and sixth revision for other groups).

** Comparable data not available.

† All S.M.R.'s are computed on the basis of age-specific death rates of total United States males with work experience, age 20–64, 1950. Underlined S.M.R. indicates that the computed Proportionate Mortality Ratio (P.M.R.) not shown in the table for a particular cause and occupation is significantly higher than 100, as compared with the corresponding P.M.R for all men of all occupations combined.

†† Specific causes of death are based on those of United States white clergymen for which S.M.R.'s are available in table source, except suicide.

††† See Table 6.

[a] Technical, administrative and managerial workers, except farm.
[b] Professional workers.
[c] S.M.R. computed by the authors.
[d] S.M.R. is not computed in table source because of inadequacy of data.
[e] Intestine 152–153 only.

faculty members, but substantially below mortality for physicians, lawyers and white clergymen. The most significant exceptions were that the study group had a relatively high mortality ratio for intestinal and rectal malignancies and extremely low ratios for diabetes, accidents and suicide.

Age-specific mortality rates for Lutheran ministers and other United States professions, age 20 to 64, are shown in Figures 1, 2 and 3. These figures show mortality from all causes combined, cardiovascular-renal diseases and malignant neoplasms, respectively. Generally, the mortality from these three disease categories was low among Lutheran ministers of various ages. For all causes combined and for cardiovascular-renal diseases, age-specific mortality differentials between Lutheran ministers and white clergymen or the two teaching professions were generally smaller than between Lutheran clergymen and lawyers or physicians. In most age classes, teachers and college faculty members had a higher death rate than Lutheran ministers for the cardiovascular-renal disease categories and a lower rate for malignant neoplasms.

INTERPRETATION OF FINDINGS

The extremely low mortality of the study group requires more intensive investigation. First, the much-depressed mortality among Lutheran ministers may in part be a reflection of the low mortality rates generally observed in higher socioeconomic classes, although most studies of such groups have not shown mortality differences as large as those noted here. For all causes combined, the mortality level of the study subjects 20 to 64 years old was 44 per cent of that for total United States males with work experience (Standard B), or about half of that reported for the two United States top occupational levels (Table 7).

Much speculation has centered on the causes of low mortality rates among persons in high socioeconomic classes, which would include clergymen. One possibility is that persons not in robust health may be less likely to enter or finish college and seminary training. Another possibility is that occupation itself may influence

FIGURE 1. AVERAGE ANNUAL AGE-SPECIFIC DEATH RATES OF ALL CAUSES, UNITED LUTHERAN MINISTERS, 1950–1960, AND U.S. PROFESSIONALS, 1950.

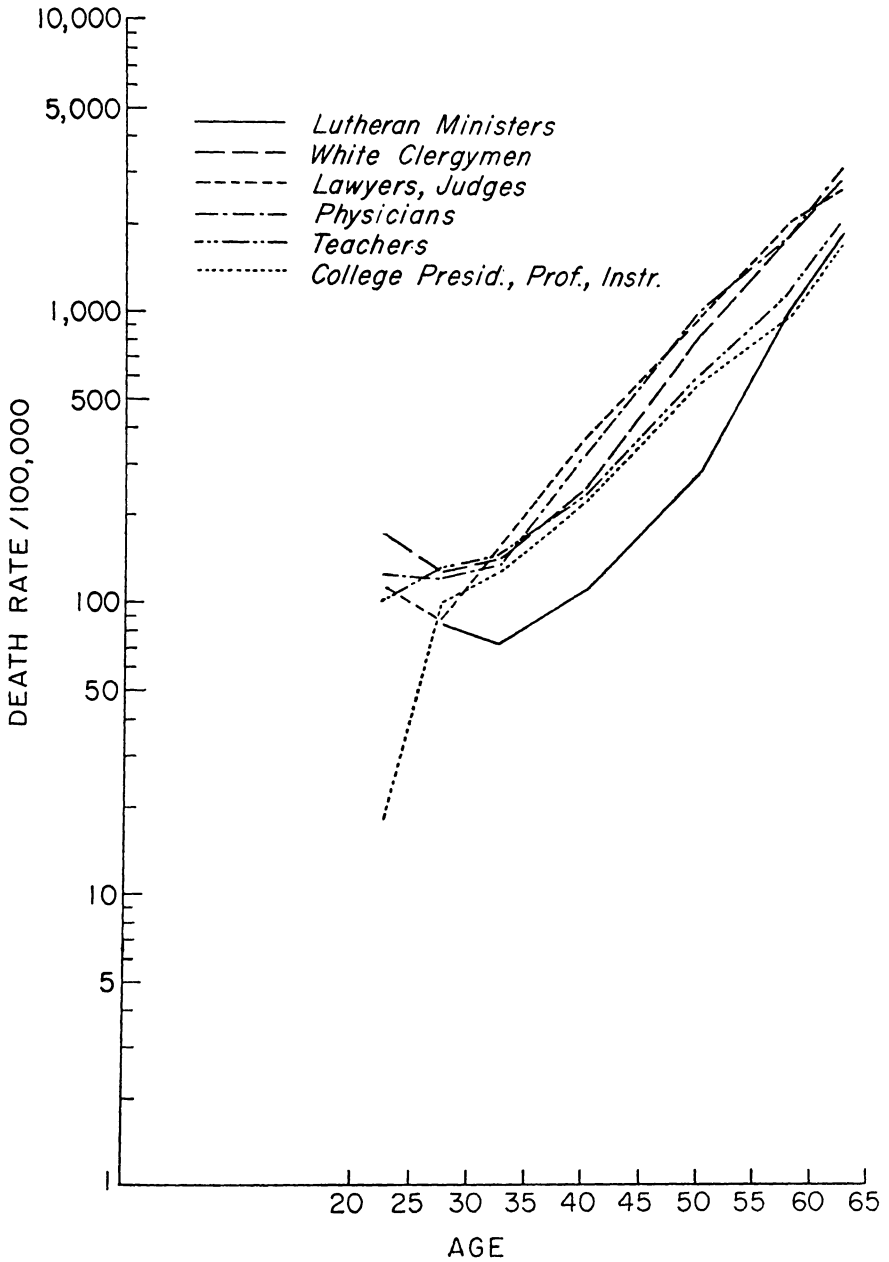


FIGURE 2. AVERAGE ANNUAL AGE-SPECIFIC DEATH RATES FOR MAJOR CARDIOVASCULAR-RENAL DISEASES, UNITED LUTHERAN MINISTERS, 1950–1960, AND U.S. PROFESSIONALS, 1950.

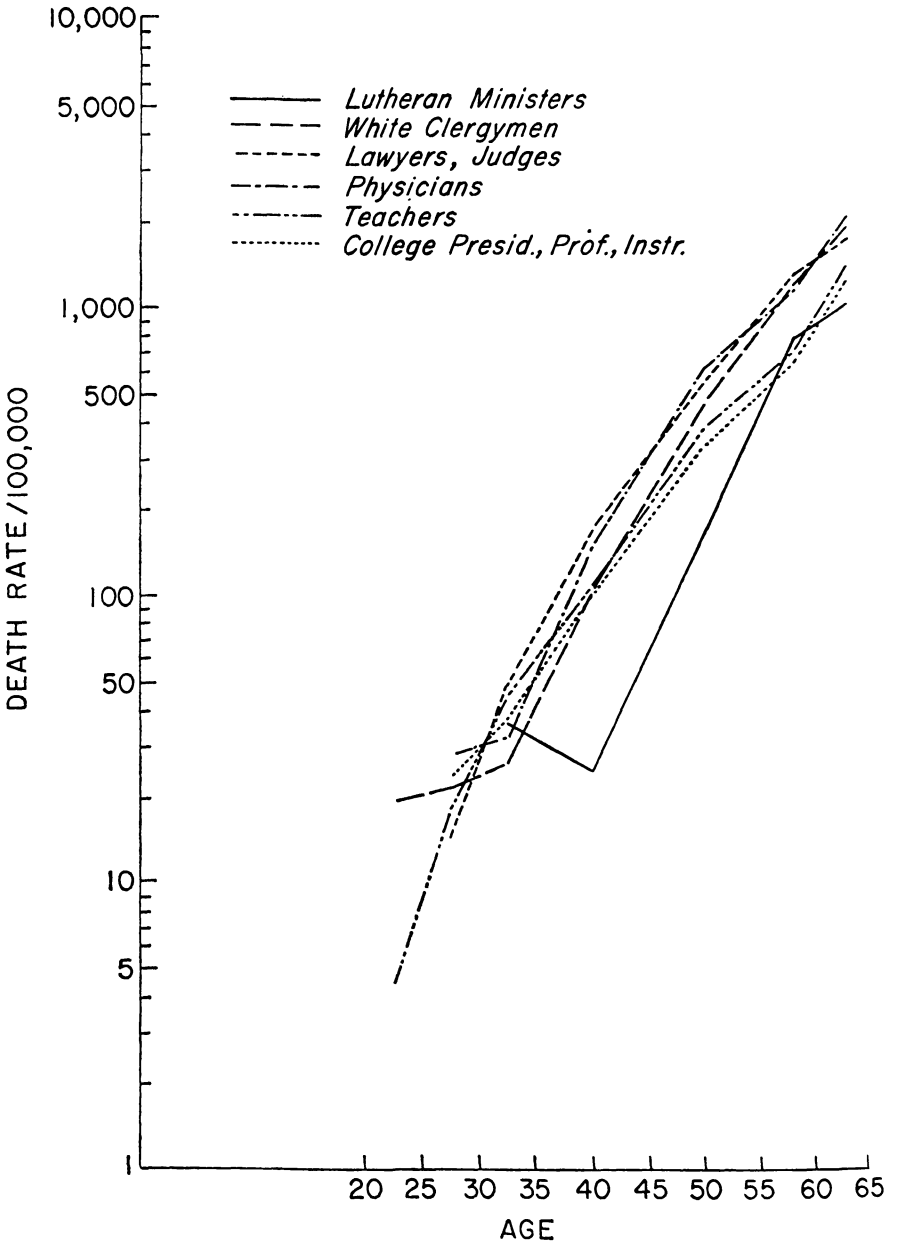
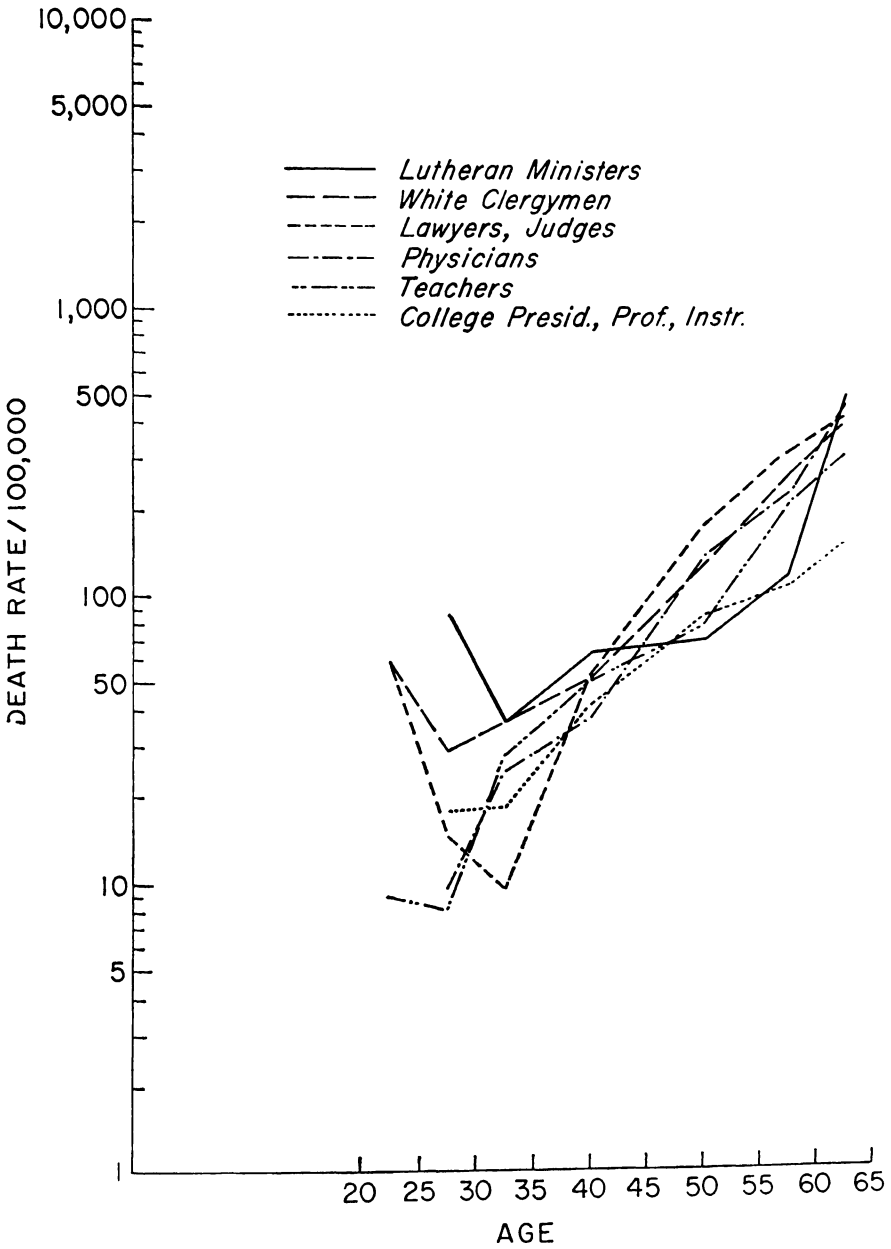


FIGURE 3. AVERAGE ANNUAL AGE-SPECIFIC DEATH RATES FOR MALIGNANT NEOPLASMS, UNITED LUTHERAN MINISTERS, 1950–1960, AND U.S. PROFESSIONALS, 1950.



health and death from many different diseases. Such an inference may be drawn from recent data showing both a lower mortality rate[8] and a lower prevalence of activity-limiting diseases[9] among professional groups than among other occupations.

Differences in racial composition between the study group and the standard populations may account for a part of the discrepancy in standardized mortality ratios (Standard B), but it would be difficult to separate the effect of race from that of socioeconomic status.

Another significant factor is that observed deaths in the Lutheran group were distributed over the entire study period 1950 to 1960, during which a general decline in mortality occurred, whereas age-specific death rates of the three standard populations were limited to a single year (1950 for Standards B and C and 1955 for Standard A). The effect of this on the calculated mortality risk for Lutheran clergymen would be difficult to assess, but is probably very small.

Comparison with United States White Clergymen

Socioeconomic characteristics. The factors mentioned above could account for modest mortality differences between Lutheran ministers and United States males in all occupational groups (total or white) or white clergymen, but they are unlikely to explain the large differences observed. The disparity in mortality between the two groups of ministers may be partly explained by subclass mortality differentials, since the United States clergy is composed of persons of heterogeneous socioeconomic standing, and includes many part-time ministers who have other occupations such as storekeeping.

Reporting errors. Errors in the reporting of occupation are at a minimum in a study such as that presented here, but they may have substantial effects both in census data and in mortality statistics.[10] No information is available on the magnitude, or even the net direction of misclassification of occupations, but errors in the basic census and mortality data might explain the mortality differential between Lutheran ministers and the total U.S. white clergy.

Marital status. Reported mortality in the total United States white clergy might be inflated by the inclusion of Catholic priests and monks, since single persons have generally been found to have higher

mortality than married persons. Adjustment for this factor would tend to decrease the differences between Lutheran ministers and the total white clergy, but this effect would be rather small.

Nativity. It was noted before that 13 per cent of Lutheran ministers in the study group were born outside the United States, half of them in Germany. No data on mortality by country of birth are available for the United States clergy, but mortality from coronary or other cardiovascular diseases for German-born white males of all occupations who were living in the Middle Atlantic States was about average for United States whites,[11] and cancer mortality was higher among German-born white males than among United States-born white males living in 35 states.[12] Adjustment of mortality rates for Lutheran clergymen to account for place of birth would probably have a very small effect.

Geographic distribution. As indicated earlier, 49 per cent of Lutheran ministers with charge in the study group resided in the highly urbanized Northeastern region, as compared with only 20 per cent of parish clergymen in a group of 15 Protestant denominations.[13] White males in the Northeast generally have high mortality rates for all causes of death, and for coronary heart disease[14] and malignancy.[15] It is therefore unlikely that the geographic distribution of Lutheran ministers would lower their mortality rates and hence, would not explain the large mortality differences observed.

Church-sanctioned behavior. Certain personal habits of clergymen, including some that are sanctioned by the church, might have beneficial or detrimental effect on health. The use of tobacco and alcohol is permissible for Lutheran clergymen, but no data are available for a comparison of their smoking and drinking habits with those of other clergymen or the general population.

Other factors. Little is known about possible effects of ministerial specialty, personality selection, denominational doctrine (liberalism versus fundamentalism)[16] or church organization (episcopal versus congregational),[17,18] but such factors may account for part of the mortality differential between Lutheran ministers and the total United States white clergy.

AREAS FOR FUTURE RESEARCH

The findings of this study generally corroborate the results of earlier investigations of mortality among clergymen,[19] such as very low ratios for total mortality and for nondegenerative diseases and suicide, a smaller reduction in mortality for cardiovascular-renal diseases and leukemia and relatively inflated mortality from prostatic cancer and hyperplasia of the prostate. However, mortality from diabetes was low and that from cancer of the pancreas high. Comparable data available for Anglican clergymen in England and Wales indicated that the reverse is true for each cause of death.[20] Mortality from diabetes was also high among United States white clergymen, as is shown in Table 7.

A more thorough understanding of occupation-centered health risks in the clergy would require the acquisition of extensive and detailed mortality and morbidity data. In addition to studies of specific impairments to clerical health, it will be necessary to conduct macroscopic mortality or morbidity surveys of various religious bodies, such as the one presented here, and to initiate microscopic health investigations of different types of clergymen in accordance with a theoretically oriented scheme.[21,22]

SUMMARY

Lutheran ministers have a very low overall mortality rate, particularly among those under age 55. Mortality from tuberculosis, diabetes, suicide and accidents was much depressed, and smaller reductions were seen in mortality from cardiovascular-renal diseases and cancer. The low general mortality of Lutheran ministers is interpreted in terms of socioeconomic class, occupational level, race, years of coverage, reporting errors, nativity, geographic distribution, marital status, church-sanctioned behavior and other factors.

In addition to a more extensive knowledge of mortality and morbidity of clergymen in different religious bodies, other needed epidemiologic research includes the study of specific impairments to clerical health, the processes through which occupation-centered

health risks develop among clergymen in general and among those who engage in one type of ministerial work or another, and the changing mortality differences between the clergy and other learned professions.

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[6] *Ibid.*

[7] For a sample of church officials and clergymen aged 45 to 64 who were listed in WHO'S WHO IN AMERICA, Volume 26, the ratio of actual deaths to expected deaths computed from the mortality of all United States white clergymen in 1950, was 56 (*Statistical Bulletin,* Metropolitan Life Insurance Company, 49, January, 1968, Table 3). This implies that mortality among Lutheran ministers aged 20 to 64 at all levels of achievement parallels that among prominent United States clergymen 45 to 64 years of age.

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