THE PREVALENCE OF CHRONIC DISEASES FROM HMO RECORDS ACROSS AGE AND TIME

Ann L. Gruber-Baldini[1,2], & K. Warner Schaie[1]

[1]Department of Human Development and Family Studies,
The Pennsylvania State University, University Park, PA 16802

[2] Currently at: Institute of Gerontology, The University of Michigan,
Ann Arbor, MI 48109-2007

Introduction

Among people aged 65 and older, over 85% have some form of chronic illness (Butler & Lewis, 1982). Guralnik and associates (Guralnik, LaCroix, Everett, & Kovar, 1989) have examined common chronic conditions in the elderly and found that 78.8% of those 60 and older reported having had at least one of these conditions. Arthritis was the most prevalent condition reported, with 49% of their older subjects reporting this condition.

The increasing prevalence of comorbidity of chronic conditions has also been reported, using self-report measures. An estimated 48.7% of subjects aged 60 and older have 2 or more chronic conditions, and 22.9% are estimated to have 3 or more (Guralnik et al., 1989).

The purpose of the present study is to: 1) calculate prevalence and incidence rates of chronic diseases utilizing physician records from a Health Maintenance Organization (HMO) and to compare these rates to those previously obtained from self-report questionnaires, 2) examine changes in these rates across age, 3) examine changes in rates of prevalence across time (controlling for age), and to 4) examine changes in HMO utilization patterns across time.

Method

Subjects

This study employs an sample of 845 people from the Seattle Longitudinal Study

(SLS, Schaie, 1983). The SLS is a longitudinal-sequential study of cognitive aging

with data collection points every seven years. Participants in this sample entered the

SLS in 1956, 1963, and 1970 and had medical information available up through 1970,

1977, or 1984. A breakdown of the subjects by sex and measurement points is

presented in Table 1. Subjects ranged in age from 22 to 94, a breakdown of the

subjects by age and sex is presented in Table 2. All of the participants were

community dwelling, and most of the subjects were Caucasian.

Measures

Since the SLS recruits subjects from a HMO, medical records were available for

most subjects. Physician records were coded using ICDM-8 diagnostic classifications

(USPHS, 1968). Information on the type of diagnoses, number of physician visits and

hospital days related to that diagnosis, and number of unique disease occurrences

were coded in in 7-year intervals comparable to the SLS points of testing (1956, 1963,

1970, 1977, 1984; see Hertzog, Schaie, & Gribbin, 1978).

Results

Prevalence of Chronic Diseases

Table 3 presents the prevalence rates of major chronic diseases by 7-year age

ranges. Arthritis was the most prevalent chronic disease, followed by vision problems,

benign cardiovascular disease (CVD) and neoplasms (particularly benign

neoplasms). Rates for all chronic diseases, except neoplasms, were higher for those

for people over age 60.

Incidence of Chronic Diseases

Table 4 presents the incidence rates for common diseases across age. The rates are calculated by excluding people who had the disease over the first 7-years of measurement (i.e., rates are calculated from years 7 to 14) Again the highest incidence rates were for arthritis and vision problems. Incidence rates tended to increase with age for all of the diseases.

Comorbidity of Chronic Diseases in the Elderly

Table 5 provides information on the comorbidity of chronic conditions in the total sample, for those people aged 60 and older, and for people under age 60. Of the 12 conditions, only 4.7% of people age 60 or older had no chronic illness, 8% with only one, while 87.3% of the 60 and older sample had 2 or more chronic illnesses (M = 4.1 conditions). Rates of comorbidity were lower in the sample under age 60.

Changes in Rates of Chronic Illness Across Time

Table 6 presents information on changes in prevalence rates for the entire sample and for those aged 60-67 over four times of measurement. In the 60-67 age group, increases in prevalence are seen over time, with a dropoff from the 1978-84 period for many conditions. This may be because participants over age 60 in 1984 were recruited to participate in a training study, which may have lead to a selection of healthier subjects.

Changes in Rates of Comorbidity Across Age and Time

Tables 7, 8, and 9 present information on the average number of chronic conditions over a 7-year period broken down by age and time of measurement. The number of chronic conditions increased as a function of age. The 1957-63 period

exibited the lowest rate of commorbidity when age was controlled for, with an peak rate of commorbidity from 1964-1970.

Number of Physician Visits (HMO Uitilization)

Tables 10,11, and 12 present information on the average number of physician visits and hospital days over a 7-year period broken down by age and time of measurement. The number of physician visits and hospital days increased as a function of age and a function of time of measurement, such that older people had more visits and longer hospital stays, and that the number of physician visits and hopsital days was highest in most recent times of measurement.

Conclusion

Overall, results suggest that rates obtained from HMO records are comparable to self-report results in national surveys. Prevalence and incidence rates were found to vary across age and period of measurement. The number of physician visits and hospital days over 7-year periods was also found to increase with age and in more recent cohorts.

References

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Table 1: Sample Sizes in SLS Medical Files by Cohort, Gender, and Cognitive Testing Occasions

Cohort	Year of birth	Gender	Points of Cognitive Testing								
			1956-63	1956-70	1956-77	1956-84	1963-70	1963-77	1963-84	1970-84	Total[a]
1	1886-92	Male	23	7	7	0	8	8	0	1	32
		Female	20	6	6	0	6	6	1	1	27
2	1893-99	Male	11	3	3	1	22	19	1	1	34
		Female	21	20	20	1	28	24	3	2	51
3	1900-06	Male	20	13	13	6	24	21	5	8	52
		Female	20	15	15	7	24	21	7	4	48
4	1907-13	Male	21	17	17	8	40	30	14	13	74
		Female	19	15	15	12	54	45	23	16	89
5	1914-20	Male	11	11	11	6	41	35	22	19	71
		Female	15	15	15	8	48	37	27	20	83
6	1921-27	Male	9	9	9	8	43	36	16	6	58
		Female	13	13	13	8	51	44	14	3	67
7	1928-34	Male	9	9	9	7	28	23	4	6	43
		Female	11	11	11	7	47	38	15	6	64
8	1935-41	Male					11	9	4	3	14
		Female					27	26	7	0	27
9	1942-48	Male								4	4
		Female								7	7
Total			223	164	164	79	502	422	163	120	845

a Total of unique individuals. Numbers will not add up across rows, since people who are tested in later occasions are included in numbers for prior occasions (e.g., 1956-70 are included in numbers for 1956-63).

Table 2: Sample Breakdown by 7-year Longitudinal Age Sequences

Cohort	T1 Year of Birth	Gender	T1-T2 (mean ages)										Total[a]
			25-32	32-39	39-46	46-53	53-60	60-67	67-74	74-81	81-88	88-95	
1	1886-92	Male							23	15	16	1	32
		Female							20	12	14	1	27
2	1893-99	Male						11	22	23	3		34
		Female						21	44	47	6		51
3	1900-06	Male					20	34	42	19			52
		Female					20	36	45	18			48
4	1907-13	Male				21	47	60	35				74
		Female				19	60	76	51				89
5	1914-20	Male			11	46	64	47					71
		Female			15	52	72	55					83
6	1921-27	Male		9	47	51	30						58
		Female		13	57	60	25						67
7	1928-34	Male	9	32	38	17							43
		Female	11	49	55	28							64
8	1935-41	Male	9	12	7								14
		Female	26	26	7								27
9	1942-48	Male	4	4									4
		Female	7	7									7
Total Males			22	57	103	135	161	152	122	57	19	1	382
Total Females			44	95	134	159	177	188	160	77	20	1	463
Total			66	152	237	294	338	340	282	134	39	2	845

[a]Total number of people in sample. Numbers will not add up across rows since individuals may be included in more than one age group.
Totals reflect number of subjects with valid 7-year cognitive and medical data.

Table 3: Frequencies and Percentage Prevalence Rates of Major Chronic Conditions for 7-year Age Ranges

Disease		7-year Age Ranges (midpoint ages)[a]									Total
		25-32	32-39	39-46	46-53	53-60	60-67	67-74	74-81	81-88	
Arthritis	Freq.	13	61	102	150	191	198	146	76	28	575
	Prev.	19.7%	40.1%	43.0%	51.0%	56.5%	58.2%	51.8%	56.7%	71.8%	68.3%
Vision Problems	Freq.	8	34	65	95	135	160	130	70	26	474
	Prev.	12.1%	22.4%	27.4%	32.3%	39.9%	47.1%	46.1%	52.2%	66.7%	56.1%
Benign CVD	Freq.	15	57	105	115	122	133	109	53	15	402
	Prev.	22.7%	37.5%	44.3%	39.1%	36.1%	39.1%	38.7%	39.6%	38.5%	47.6%
Neoplasms (excluding skin)	Freq.	13	48	70	107	126	116	83	40	16	388
	Prev.	19.7%	31.6%	29.5%	36.4%	37.3%	34.1%	29.4%	29.9%	41.0%	45.9%
Malignant Skin Cancer	Freq.	0	2	4	7	17	20	9	10	3	55
	Prev.	0%	1.3%	1.7%	2.4%	5.0%	5.9%	3.2%	7.5%	7.7%	6.5%
Malignant Cancer (except skin)	Freq.	0	1	3	6	16	27	27	13	10	85
	Prev.	0%	0.7%	1.3%	2.0%	4.7%	7.9%	9.6%	9.7%	25.6%	10.1%
Benign Skin Neoplasm	Freq.	2	15	40	60	78	82	68	35	14	248
	Prev.	3.0%	9.9%	16.9%	20.4%	23.1%	24.1%	24.1%	26.1%	35.9%	29.3%
Benign Neoplasm (except skin)	Freq.	13	39	59	94	102	93	66	29	8	316
	Prev.	19.7%	25.7%	24.9%	32.0%	30.2%	27.4%	23.4%	21.6%	20.5%	37.4%
Miscellaneous CVD	Freq.	4	29	43	59	91	117	103	42	22	338
	Prev.	6.1%	19.1%	18.1%	20.1%	27.9%	34.4%	36.5%	31.3%	56.4%	40.0%
Essential Hypertension	Freq.	2	7	20	59	111	110	95	45	15	288
	Prev.	3.0%	4.6%	8.4%	20.1%	32.8%	32.3%	33.7%	33.6%	38.5%	34.1%

(continued)

Table 3: Frequencies and Percentage Prevalence Rates of Major Chronic Conditions for 7-year Age Ranges
(continued)

Disease		7-year Age Ranges (midpoint ages)[a]									Total
		25-32	32-39	39-46	46-53	53-60	60-67	67-74	74-81	81-88	
Atherosclerosis	Freq.	0	1	5	17	55	92	98	56	27	261
	Prev.	0%	0.7%	2.1%	5.8%	16.3%	27.1%	34.8%	41.8%	69.2%	31.9%
Impaired Hearing	Freq.	1	4	16	34	42	61	55	42	17	187
	Prev.	1.5%	2.6%	6.8%	11.6%	12.4%	17.9%	19.5%	31.3%	43.6%	22.1%
Cerebrovascular Disease	Freq.	0	0	3	9	15	29	44	25	9	117
	Prev.	0%	0%	1.3%	3.1%	4.4%	8.5%	15.5%	16.7%	23.1%	13.8%
Depression	Freq.	2	8	46	12	21	26	14	9	3	75
	Prev.	3.0%	5.3%	19.4%	3.4%	6.2%	7.6%	5.0%	6.7%	7.7%	8.9%
Diabetes Mellitus	Freq.	1	2	6	13	14	16	16	12	2	51
	Prev.	1.5%	1.3%	2.5%	4.4%	4.1%	4.7%	5.7%	9.0%	5.1%	6.0%
Osteoporosis or Hip Fracture	Freq.	0	0	1	1	8	16	16	8	4	46
	Prev.	0%	0%	0.4%	0.3%	2.4%	4.7%	5.7%	6.0%	10.3%	5.4%
Obesity[b]	Freq.	12	41	72	86	92	99	80	40	8	294
	Prev.	18.2%	27.0%	30.4%	29.3%	27.2%	29.1%	28.4%	29.9%	20.5%	34.8%
Total Subjects		66	152	237	294	338	340	282	134	39	845

[a] Average age at Time 1 and Time 2. Cohorts broken into 7-year interval.
[b] Based on reported reason for physician visit (reported by physician).

Table 4: Frequencies of Old and New Incidences of Major Chronic Diseases for 7-year Age Ranges

Disease	Occurrence	7-year Age Ranges (midpoint ages)[a]							
		32-39	39-46	46-53	53-60	60-67	67-74	74-81	81-88
Arthritis	new	8	12	29	32	37	19	16	3
	none	46	64	81	85	99	71	40	10
	old	12	40	58	60	91	69	48	23
	incidence rate[b]	14.8%	15.8%	26.4%	27.4%	27.2%	21.1%	28.6%	30.0%
Vision Problems	new	5	15	28	35	42	31	20	3
	none	53	78	110	107	117	84	47	11
	old	8	23	29	35	68	44	37	22
	incidence rate	8.6%	16.1%	20.3%	24.6%	26.4%	27.0%	29.9%	21.4%
Benign CVD	new	7	9	10	10	23	19	13	3
	none	45	65	94	118	142	89	61	21
	old	14	42	63	49	62	51	30	12
	incidence rate	13.5%	12.2%	9.6%	7.8%	13.9%	17.6%	17.5%	12.5%
Neoplasms (excluding skin)	new	6	9	22	19	23	29	6	6
	none	47	78	111	108	142	101	72	21
	old	13	29	34	50	62	29	26	9
	incidence rate	11.3%	10.3%	16.5%	15.0%	13.9%	22.3%	7.7%	22.0%
Malignant Skin Cancer	new	0	0	2	6	7	3	5	1
	none	66	114	164	166	212	153	96	33
	old	0	2	1	5	8	3	3	2
	incidence rate	0%	0%	1.2%	3.5%	3.2%	1.9%	5.0%	2.9%
Malignant Cancer (except skin)	new	0	1	2	9	12	16	3	6
	none	66	114	164	166	209	137	93	27
	old	0	1	1	2	6	6	8	3
	incidence rate	0%	0.9%	1.2%	5.1%	5.4%	10.5%	3.1%	18.2%
Benign Skin Neopl.	new	6	15	15	20	32	15	6	2
	none	58	93	131	131	162	118	74	24
	old	2	8	21	26	33	26	24	10
	incidence rate	9.4%	13.9%	10.3%	13.2%	16.5%	11.3%	7.5%	7.7%
Benign Neoplasm (except skin)	new	4	11	26	17	18	24	5	2
	none	49	84	114	120	159	111	80	29
	old	13	21	27	40	50	24	19	5
	incidence rate	7.5%	11.6%	18.6%	12.4%	10.2%	17.8%	5.9%	6.5%
Miscellaneous CVD	new	8	10	16	25	25	25	8	13
	none	54	89	126	134	153	91	71	15
	old	4	17	25	18	49	43	25	8
	incidence rate	12.9%	10.1%	11.3%	15.7%	14.0%	21.6%	10.1%	46.4%
Essential Hypertension	new	2	3	24	36	24	25	8	1
	none	63	110	127	116	148	99	66	23
	old	1	3	16	25	55	35	30	12
	incidence rate	3.1%	2.7%	15.9%	23.8%	14.0%	20.2%	10.8%	4.2%

(continued)

Table 4: Frequencies of Old and New Incidences of Major Chronic Diseases for 7-year Age Ranges (continued)

Disease	Occurrence	7-year Age Ranges (midpoint ages)[a]							
		32-39	39-46	46-53	53-60	60-67	67-74	74-81	81-88
Atherosclerosis	new	0	1	5	15	36	37	15	13
	none	66	114	159	151	161	97	59	11
	old	0	1	3	11	30	25	30	12
	incidence rate	0%	0.9%	3.0%	9.0%	18.3%	27.6%	20.3%	54.2%
Impaired Hearing	new	0	6	10	7	22	20	20	2
	none	65	107	146	157	180	122	68	21
	old	1	3	11	13	25	17	16	13
	incidence rate	0%	5.3%	6.4%	4.3%	10.9%	14.1%	22.7%	8.7%
Cerebrovascular Disease	new	0	0	3	4	14	21	12	3
	none	66	116	161	169	208	127	82	27
	old	0	0	3	4	5	11	10	6
	incidence rate	0%	0%	1.8%	2.3%	6.3%	14.2%	12.8%	10.0%
Depression	new	2	6	4	5	9	9	4	1
	none	64	105	159	168	204	149	95	33
	old	2	5	4	4	14	1	5	2
	incidence rate	3.0%	5.4%	2.5%	2.9%	4.2%	5.7%	4.0%	2.9%
Diabetes Mellitus	new	0	2	3	5	4	4	4	2
	none	65	113	160	168	218	148	85	34
	old	1	1	4	4	5	7	7	0
	incidence rate	0%	1.7%	1.8%	2.9%	1.8%	2.6%	4.5%	5.6%
Osteoporosis or Hip Fracture	new	0	0	0	5	7	2	5	2
	none	66	116	166	172	216	150	96	32
	old	0	0	1	0	4	7	3	2
	incidence rate	0%	0%	0%	2.8%	3.1%	1.3%	5.0%	5.9%
Obesity[c]	new	9	12	12	15	20	5	4	2
	none	46	77	119	131	160	115	68	28
	old	11	27	36	31	47	39	32	6
	incidence rate	16.4%	13.5%	9.2%	10.3%	11.1%	4.2%	5.6%	6.7%
Total Subjects[d]		66	116	167	177	227	159	104	36

[a]Average age at Time 2 and Time 3 Cohorts broken into 7-year interval.
[b]Incidence rate was calculated by eliminating people with the disease in the prior 7-year age period (for example, people with an occurrence of Neoplasms from age 25 to age 32, which are listed as "prior occurrence" for group 32-39 were not used in calculating the incidence rates) and dividing new occurrences by total without prior occurrence. Incidence=new/(new+none).
[c]Based on reported reason for physician visit (reported by physician).
[d]Refers to total number of subjects available across the 14 year age range. Total $\underline{n}$=706.

Table 5: Frequency of 12 Chronic Conditions[a] for Total Sample, for People Under Age 60, and for People over Age 60 in 1977

Number of Conditions	Total Sample		Over Age 60		Under Age 60	
	Freq	%	Freq	%	Freq	%
0	45	6.3%	21	4.7%	24	9.2%
1	100	14.1%	36	8.0%	64	24.5%
2	143	20.2%	61	13.6%	82	31.4%
3	134	18.9%	91	20.3%	43	16.5%
4	116	16.4%	89	19.9%	27	10.3%
5	88	12.4%	77	17.2%	11	4.2%
6	49	6.9%	41	9.2%	8	3.1%
7	27	3.8%	25	5.6%	2	0.8%
8	5	0.7%	5	1.1%	0	
9	2	0.3%	2	0.4%	0	
Total	709		448		261	

[a] Conditions include: arthritis, vision problems, benign CVD, neoplasms, miscellaneous CVD, essential hypertension, atherosclerosis, impaired hearing, cerebrovascular disease, depression, diabetes mellitus, and osteoporosis or hip fracture.

Table 6: Frequencies and Percentage Prevalence Rates of Major Chronic Conditions Across Time of Measurement

Disease		Time of Measurement					Ages 60-67				
		1957-63	1964-70	1971-77	1978-84	Total[a]	1957-63	1964-70	1971-77	1978-84	Total
Arthritis	Freq.	64	142	155	26	575	14	50	92	37	198
	Prev.	28.7%	21.3%	22.0%	7.2%	68.3%	43.8%	71.4%	67.6%	36.3%	58.2%
Vision Problems	Freq.	44	105	163	41	474	13	30	84	32	160
	Prev.	19.7%	15.8%	23.1%	11.3%	56.1%	40.6%	42.9%	61.8%	31.4%	47.1%
Benign CVD	Freq.	55	106	81	30	402	9	36	62	25	133
	Prev.	24.7%	15.9%	11.5%	8.3%	47.6%	28.1%	51.4%	45.6%	24.5%	39.1%
Neoplasms (excluding skin)	Freq.	40	105	100	49	388	10	20	56	30	116
	Prev.	17.9%	15.8%	14.6%	13.5%	45.9%	31.3%	28.6%	41.2%	29.4%	34.1%
Benign Skin Neoplasm	Freq.	25	73	82	39	248	10	34	19	3	79
	Prev.	11.2%	11.0%	11.6%	10.8%	29.3%	31.3%	48.6%	14.0%	2.9%	23.2%
Benign Neoplasm (excluding skin)	Freq.	34	80	78	35	316	19	32	20	5	111
	Prev.	15.2%	12.0%	11.0%	9.7%	37.4%	59.4%	45.7%	14.7%	4.9%	32.6%
Malignant Skin Cancer	Freq.	4	13	22	13	55	2	6	4	3	17
	Prev.	1.8%	2.0%	3.1%	3.6%	6.5%	6.3%	8.6%	2.9%	2.9%	5.0%
Malignant Cancer (except skin)	Freq.	4	80	35	17	85	1	5	5	4	17
	Prev.	1.8%	12.0%	5.0%	5.0%	10.1%	3.1%	7.1%	3.7%	3.9%	5.0%
Miscellaneous CVD	Freq.	27	87	116	39	338	6	31	53	26	117
	Prev.	12.1%	13.1%	16.4%	10.8%	40.0%	18.8%	44.3%	39.0%	25.5%	34.4%
Essential Hypertension	Freq.	21	68	133	32	288	7	10	58	35	110
	Prev.	9.4%	10.2%	18.8%	8.8%	34.1%	21.9%	14.3%	42.6%	34.3%	32.3%
Atherosclerosis	Freq.	22	75	105	38	261	5	17	48	22	92
	Prev.	9.9%	11.3%	14.9%	10.5%	31.9%	15.6%	24.3%	35.9%	21.6%	27.1%
Impaired Hearing	Freq.	12	52	63	45	187	3	5	28	25	61
	Prev.	5.4%	7.8%	8.9%	12.4%	22.1%	9.4%	7.1%	20.6%	24.5%	17.9%
Cerebrovascular Disease	Freq.	11	34	48	15	117	3	6	16	4	29
	Prev.	4.9%	5.1%	6.8%	4.1%	13.8%	9.4%	8.6%	11.8%	3.9%	8.5%
Depression	Freq.	1	18	28	14	75	2	1	11	12	26
	Prev.	0.4%	2.7%	4.0%	3.9%	8.9%	6.3%	1.4%	8.1%	11.8%	7.6%
Diabetes Mellitus	Freq.	1	19	20	7	51	1	2	7	6	16
	Prev.	0.4%	2.9%	2.8%	1.9%	6.0%	3.1%	2.9%	5.1%	5.9%	4.7%
Osteoporosis or Hip Fracture	Freq.	5	14	16	6	46	1	2	11	2	16
	Prev.	2.2%	2.1%	2.3%	1.7%	5.4%	3.1%	2.9%	8.1%	2.0%	4.7%
Total Subjects		223	666	706	362	845	32	70	136	102	340

aNumbers may not add up across rows because of occurrences in 1956 or at points prior to entry in SLS.

Table 7: Mean Number of Chronic Conditions by Age, Cohort, and Time of Measurement

Age[a]	Year	Cohort	n	Mean	S. D	Range
25-32	1971-77	1942-48	11	0.54	0.52	0-1
	1964-70	1935-41	36	1.19	1.06	0-5
	1957-63	1928-34	19	0.42	0.61	0-2
32-39	1978-84	1942-48	11	0.91	0.70	0-2
	1971-77	1935-41	36	1.75	1.20	0-6
	1964-70	1928-34	94	1.47	1.12	0-5
	1957-63	1921-27	24	0.88	0.95	0-3
39-46	1978-84	1935-41	14	1.79	1.12	0-4
	1971-77	1928-34	99	2.18	1.32	0-6
	1964-70	1921-27	114	1.49	1.23	0-6
	1957-63	1914-20	27	0.85	0.86	0-3
46-53	1978-84	1928-34	49	2.71	1.38	0-6
	1971-77	1921-27	115	2.58	1.61	0-7
	1964-70	1914-20	116	1.78	1.32	0-6
	1957-63	1907-13	40	1.13	1.16	0-4
53-60	1978-84	1921-27	55	3.45	1.99	0-10
	1971-77	1914-20	147	3.04	1.65	0-7
	1964-70	1907-13	132	2.28	1.52	0-6
	1957-63	1900-06	41	1.29	1.36	0-5
60-67	1978-84	1914-20	100	4.13	1.84	0-8
	1971-77	1907-13	149	3.64	1.88	0-9
	1964-70	1900-06	84	2.36	1.56	0-8
	1957-63	1893-99	31	2.20	1.28	0-5
67-74	1978-84	1907-13	86	4.69	1.94	0-10
	1971-77	1900-06	77	3.84	1.95	0-9
	1964-70	1893-99	70	2.93	1.55	0-6
	1957-63	1886-92	42	2.33	1.78	0-7
74-81	1978-84	1900-06	37	4.78	2.15	0-10
	1971-77	1893-99	57	4.88	1.65	0-8
	1964-70	1886-92	46	3.50	1.94	0-8
81-88	1978-84	1893-99	10	6.00	1.83	3-9
	1971-77	1886-92	18	4.83	0.99	3-6
88-94	1978-84	1886-92	3	6.67	0.58	6-7

[a]Average (midpoint) age at T1 and T2

There are 12 chronic conditions: arthritis, vision problems, benign CVD, neoplasms (excluding skin cancer), miscellaneous CVD, hypertension, atherosclerosis, impaired hearing, cerebrovascular disease, diabetes mellitus, osteoporosis of hip fracture, and depression.

Table 8: Mean Number of Chronic Conditions Across Time of Measurement (Controlling for Age):

Time	Mean[a]
1957-63	1.45
1964-70	3.08
1971-77	2.84
1978-84	2.95

[a]calculated for ages 32-39 to 67-74, using unweighted means averaged across the 6 age periods

Table 9: Mean Number of Chronic Conditions Across Age (Controlling for Time of Measurement):

Age	Mean[a]
32-39	1.25
39-46	1.58
46-53	2.05
53-60	2.52
60-67	3.08
67-74	3.45

[a]calculated using unweighted means averaged across the 4 measurement periods

Table 10: Mean Number of Physician Visits and Hospital Days over 7-year Periods by Age and Time of Measurement

Age[a]	Year	Cohort	n	Physician Visits			Hospital Days		
				Mean	S. D	Range	Mean	S. D	Range
25-32	1971-77	1942-48	11	25.7	13.3	7- 47	0.4	1.2	0-4
	1964-70	1935-41	36	29.2	28.9	0-105	3.5	4.8	0-18
	1957-63	1928-34	19	23.4	49.0	0-150	18.4	45.1	0-190
32-39	1978-84	1942-48	11	30.3	13.7	8- 61	1.9	3.4	0-10
	1971-77	1935-41	36	25.6	26.9	0-119	3.4	6.6	0-24
	1964-70	1928-34	94	21.7	29.5	0-155	4.7	14.7	0-99
	1957-63	1921-27	24	11.8	19.3	0- 71	2.2	4.3	0-16
39-46	1978-84	1935-41	14	22.4	11.9	12- 47	3.1	9.4	0-35
	1971-77	1928-34	99	24.9	26.7	0-143	3.0	6.9	0-33
	1964-70	1921-27	114	21.3	26.1	0-141	2.5	6.3	0-39
	1957-63	1914-20	27	11.3	19.0	0- 77	1.5	5.3	0-27
46-53	1978-84	1928-34	49	39.0	36.6	3-222	7.8	30.6	0-208
	1971-77	1921-27	115	27.6	30.1	0-210	2.7	6.7	0-35
	1964-70	1914-20	116	16.8	24.5	0-137	6.3	11.7	0-61
	1957-63	1907-13	40	18.0	26.9	0-111	2.9	5.9	0-20
53-60	1978-84	1921-27	55	50.6	42.7	11-210	5.0	11.9	0-70
	1971-77	1914-20	147	32.7	37.5	0-248	8.1	28.1	0-271
	1964-70	1907-13	132	25.8	36.5	0-203	9.6	32.2	0-253
	1957-63	1900-06	41	22.6	23.9	0- 85	4.9	12.9	0-77
60-67	1978-84	1914-20	100	55.6	37.7	0-179	18.6	58.9	0-412
	1971-77	1907-13	149	40.4	38.7	0-216	10.0	25.6	0-221
	1964-70	1900-06	84	30.6	34.3	0-170	12.4	51.5	0-427
	1957-63	1893-99	31	40.6	37.1	0-194	11.6	26.2	0-142
67-74	1978-84	1907-13	86	58.0	34.8	5-170	8.3	16.3	0-99
	1971-77	1900-06	77	37.6	37.2	1-167	16.7	38.5	0-267
	1964-70	1893-99	70	41.5	34.1	0-171	7.5	13.2	0-60
	1957-63	1886-92	42	43.3	31.6	6-136	13.0	26.9	0-117
74-81	1978-84	1900-06	37	76.5	46.7	4-192	27.4	63.4	0-334
	1971-77	1893-99	57	55.9	45.7	3-236	16.5	40.4	0-268
	1964-70	1886-92	46	50.2	37.9	0-174	11.9	19.8	0-103
81-88	1978-84	1893-99	10	81.8	52.0	12-154	17.7	26.4	0-66
	1971-77	1886-92	18	59.4	33.8	9-141	26.0	45.8	0-167
88-94	1978-84	1886-92	3	97.0	25.5	75-125	70.0	55.5	36-134

[a]Average (midpoint) age at T1 and T2

Table 11: Mean Number of Physician Visits and Hospital Days
Across Time of Measurement (Controlling for Age)

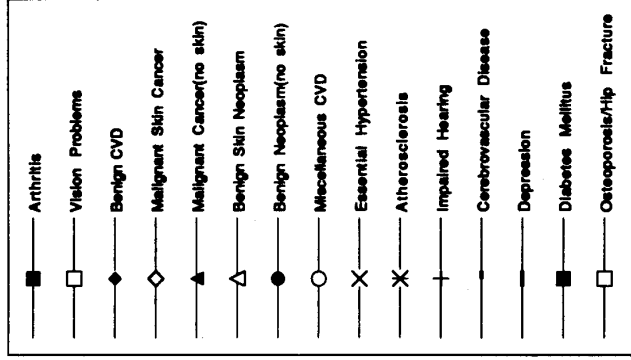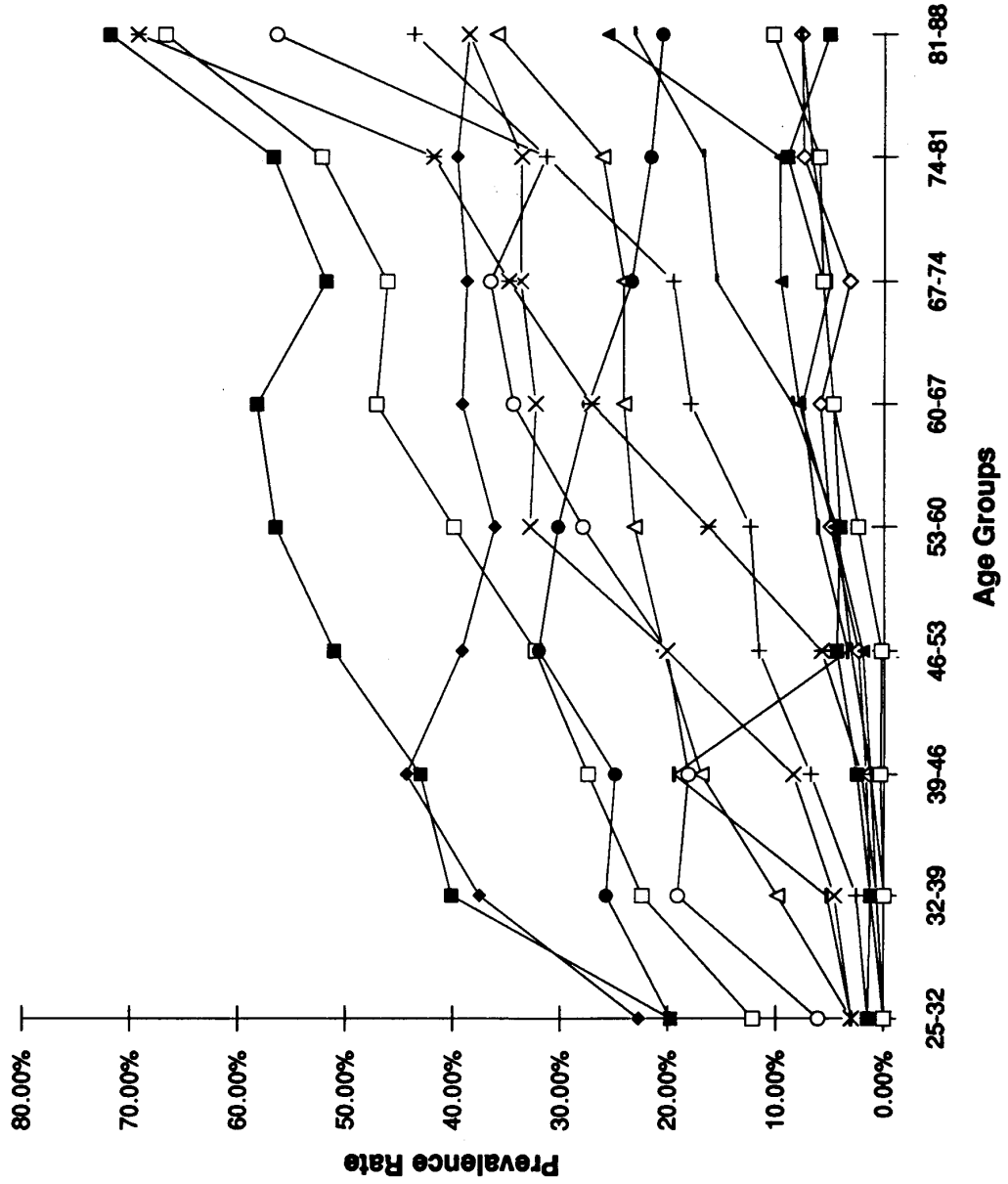| Time	Physician Visits Mean[a]	Hospital Days Mean[a]
1957-63	24.6	6.0
1964-70	26.3	7.2
1971-77	31.5	7.3
1978-84	42.7	7.5

[a]calculated for ages 32-39 to 67-74, using unweighted means averaged across the six age periods

Table 12: Mean Number of Physician Visits and Hospital Days Across Age
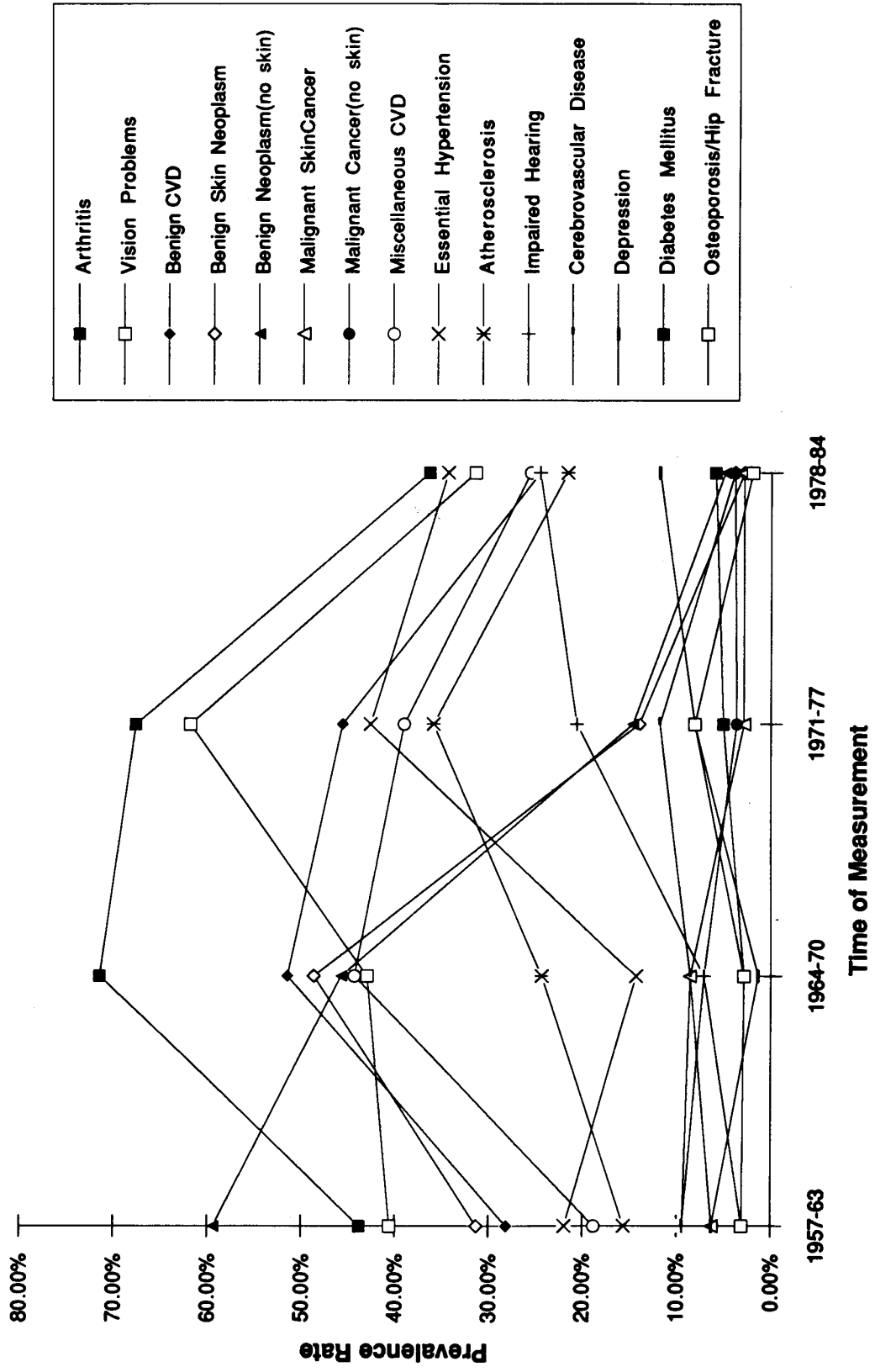(Controlling for Time of Measurement):

Age	Physician Visits Mean[a]	Hospital Days Mean[a]
32-39	22.4	3.1
39-46	20.0	2.5
46-53	25.4	4.9
53-60	32.9	6.9
60-67	41.8	13.2
67-74	45.1	11.4

[a]calculated using unweighted means averaged across the four measurement periods

Prevalence Rates of Chronic Diseases Across Age Groups

Legend:
- Arthritis
- Vision Problems
- Benign CVD
- Malignant Skin Cancer
- Malignant Cancer(no skin)
- Benign Skin Neoplasm
- Benign Neoplasm(no skin)
- Miscellaneous CVD
- Essential Hypertension
- Atherosclerosis
- Impaired Hearing
- Cerebrovascular Disease
- Depression
- Diabetes Mellitus
- Osteoporosis/Hip Fracture

Prevalence Rate (y-axis): 0.00%, 10.00%, 20.00%, 30.00%, 40.00%, 50.00%, 60.00%, 70.00%, 80.00%

Age Groups (x-axis): 25-32, 32-39, 39-46, 46-53, 53-60, 60-67, 67-74, 74-81, 81-88

Figures from Foster

Prevalence Rates for Ages 60-67 Across Time of Measurement

Legend:
- ■ Arthritis
- □ Vision Problems
- ◆ Benign CVD
- ◇ Benign Skin Neoplasm
- ▲ Benign Neoplasm(no skin)
- △ Malignant SkinCancer
- ● Malignant Cancer(no skin)
- ○ Miscellaneous CVD
- ✕ Essential Hypertension
- ✳ Atherosclerosis
- + Impaired Hearing
- | Cerebrovascular Disease
- | Depression
- ■ Diabetes Mellitus
- □ Osteoporosis/Hip Fracture

Y-axis (Prevalence Rate): 0.00%, 10.00%, 20.00%, 30.00%, 40.00%, 50.00%, 60.00%, 70.00%, 80.00%

X-axis (Time of Measurement): 1957-63, 1964-70, 1971-77, 1978-84

Number of Chronic Conditions by Age Group
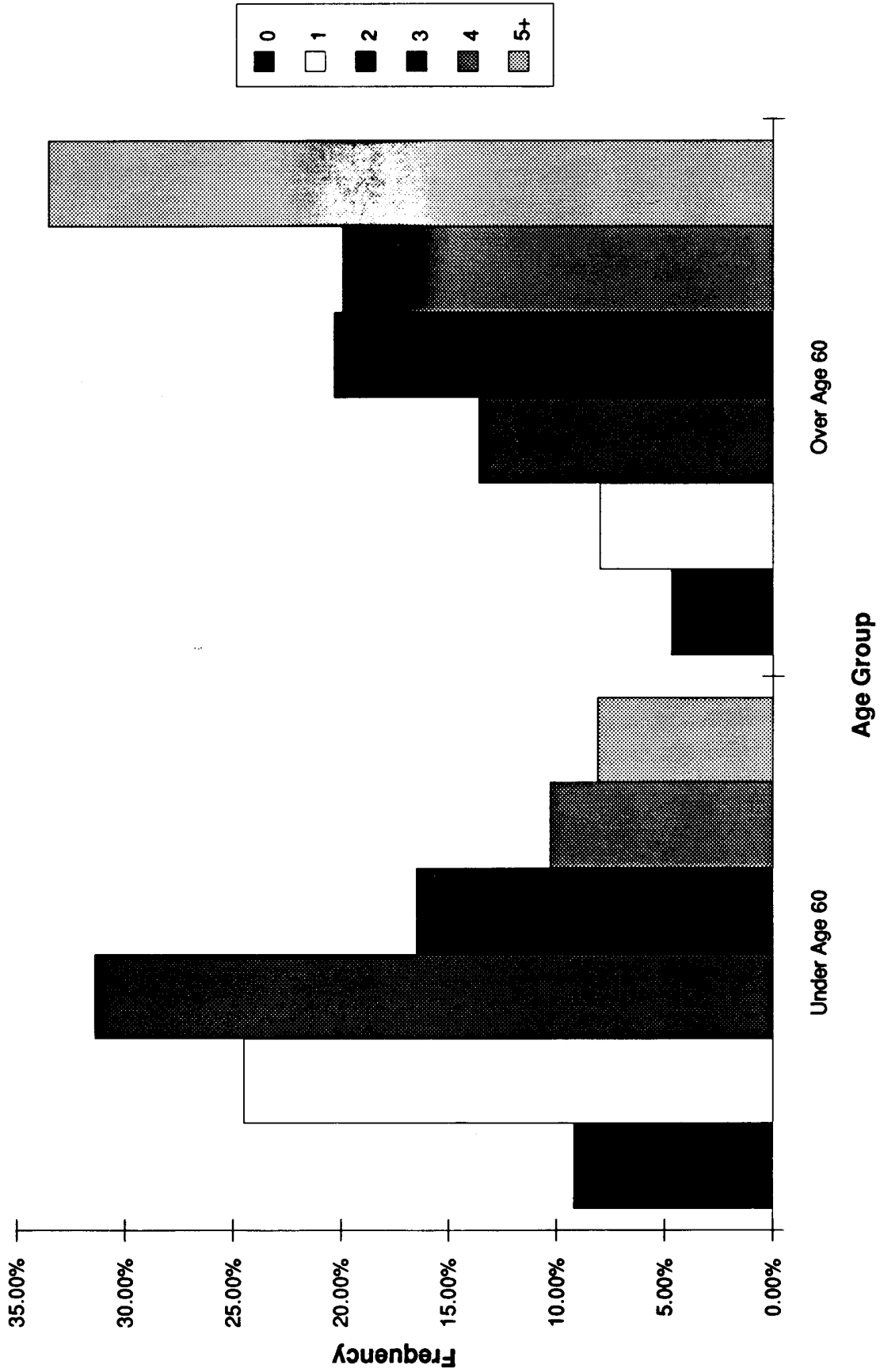
Average Number of Chronic Conditions Across Time and Age Groups
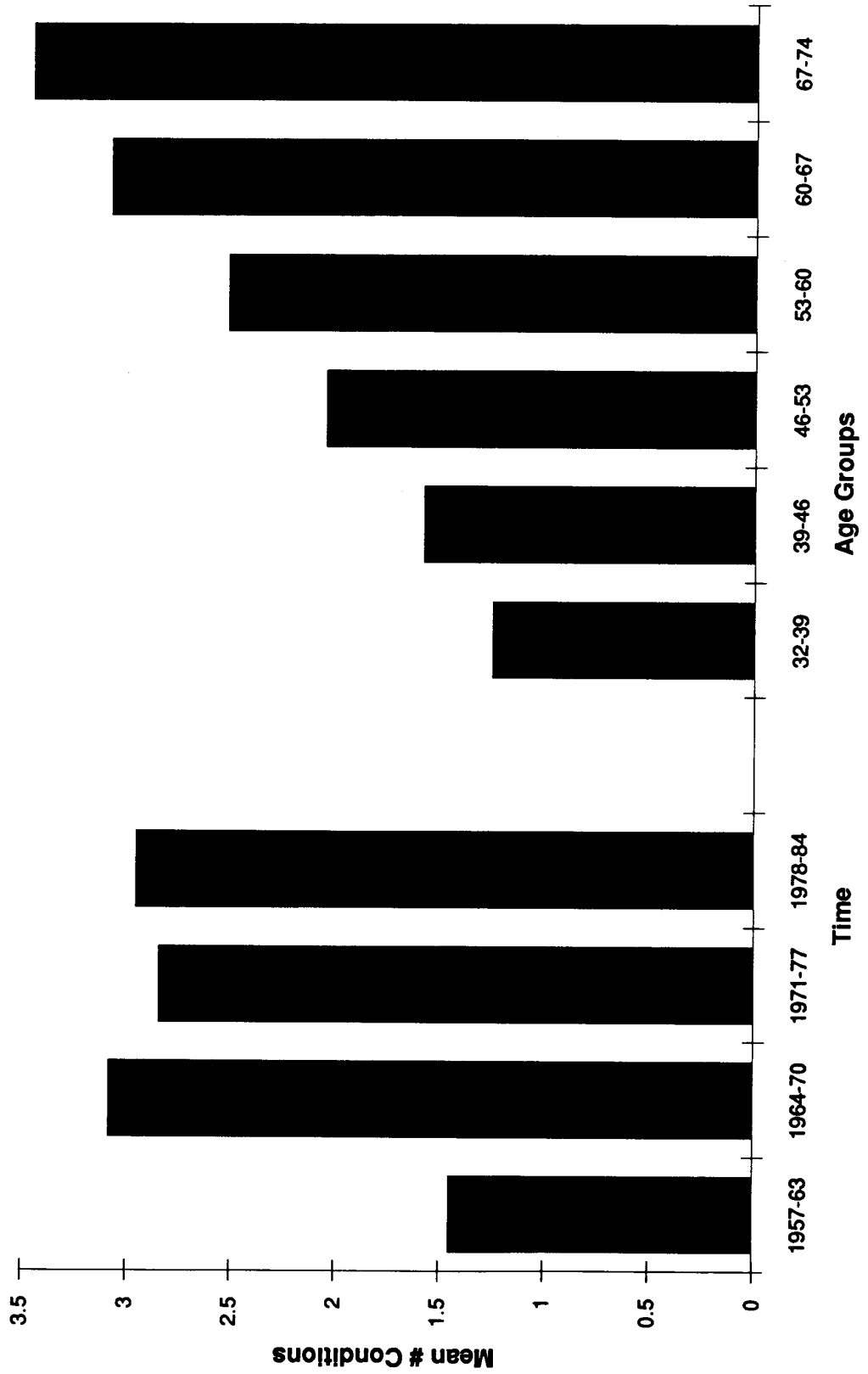
Average Number of Physician Visits and Hospital Days by Time and Age