

**Basic Data on Arthritis
Knee, Hip, and Sacroiliac Joints
in Adults Ages 25-74 Years
United States, 1971-1975**

This report presents basic data on the prevalence of arthritis in the knee, hip, and sacroiliac joints.

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PREFACE

The National Center for Health Statistics has as its mission the collection, analysis, and dissemination of data on the health of the population of the United States. One of the major programs is the Health Examination Survey, in which are conducted extensive examinations of a sample of the U.S. population. Data from this survey have been published periodically in Series 11 reports of *Vital and Health Statistics*.

Historically the published documents in Series 11 present only a small fraction of the available data. In order to make additional data available for users, the Center has for many years had a policy of preparing public use tapes for purchase by persons interested in more detailed analysis or analysis of additional variables not published in Series 11 reports. These data, however, are only easily accessible to persons with computers and support staff who can read, interpret, and analyze the data. In order to make these data more generally accessible to many users and, in particular, to persons not able to directly use data tapes, the Division of Health Examination Statistics, in the autumn of 1977, initiated a program to release, along with the data tapes, basic descriptive summary tables of data contained in those tapes. These tabular summaries have been termed "basic data publications," of which this report is one.

These basic data publications present findings of the Health and Nutrition Examination Survey of 1971-75. For each of the data sets, these publications include information on the methods used to collect the data, a descriptive summary of the tables included, an index to the tables, and the tables themselves. An appendix describes the basic format of the associated data tape. More detailed information on use of the data for additional analysis is available on request from the staff of the Division of Health Examination Statistics.

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SYMBOLS

Data not available-----	---
Category not applicable-----	...
Quantity zero-----	-
Quantity more than 0 but less than 0.05-----	0.0
Figure does not meet standards of reliability or precision-----	*

BASIC DATA ON ARTHRITIS KNEE, HIP, AND SACROILIAC JOINTS IN ADULTS AGES 25-74 YEARS

Kurt Maurer, Division of Health Examination Statistics

INTRODUCTION

In this report the arthritis findings from the first Health and Nutrition Examination Survey of the civilian noninstitutionalized 25-74-year-old population of the United States are summarized. These findings are based upon assessments of X-rays of the hips and knees by expert rheumatologists and upon medical histories. The microdata tapes, including the one from which the findings in this report were prepared, are available for purchase by persons interested in more detailed analysis including analysis of additional variables not presented in this report. The sample distribution of all the variables on the microdata tapes can be found in the respective tape documentation. The plan and operation of this survey are described in publications Series 1, Nos. 10a¹ and 14² and the forms used to collect the data are published in Series 1, Nos. 10b¹ and 14.² Other data from HANES I pertinent to arthritis were also collected on the General Medical History Supplement, Ages 25-74, the General Medical Examination (generally referred to as the "detailed examination") and the Goniometry Examination. In addition, data on arthritis have been published by the National Center for Health Statistics based on the Health Examination Survey of 1960-62.

The Center has also published reports on arthritis based on some of its other surveys: the Health Interview Survey, the National Nursing Home Survey, and the Health Resources Utiliza-

tion Surveys. The Health Interview Survey is a survey of the civilian noninstitutionalized population of the United States, but unlike the Health and Nutrition Examination Survey (HANES I) includes those persons older than 74 years of age. Information on personal and demographic characteristics, illnesses, injuries, impairments, chronic conditions, and other health topics is collected in the survey. In the National Nursing Home Surveys information is gathered relating to the health characteristics of the residents, and their medical, nursing, and personal care, based on national samples of establishments providing these services and samples of the residents or patients. In the Health Resources Utilization Surveys information is collected on the utilization of health manpower and facilities providing long-term care, ambulatory care, hospital care, and family planning services. If the reader is interested in acquiring any published reports from the surveys conducted by the National Center for Health Statistics (NCHS), the "Current Listing and Topical Index to the Vital and Health Statistics Series 1962-1977"³ should be consulted.

The age, sex, and race distribution of the civilian noninstitutionalized U.S. population at the midpoint of the survey and distribution of the probability sample drawn from it are presented in appendix I. Also in appendix I, the statistical design of HANES I and the reliability of the estimates are discussed. Standard error estimates have been presented in tables 1-3, 7, and

13. An illustration of the use of the standard error estimates and a formula for approximating standard errors for estimates shown in other tables of this report are also presented in appendix I. The definitions of demographic terms in this report are found in appendix II. A summary of the contents of the microdata tape used in preparation of this report is found in appendix III.

SOURCES AND LIMITATIONS OF THE DATA

One of the major components of HANES I was a detailed arthritis examination composed of a physician's examination, X-ray films of the hip area and knees, and medical histories. The findings in this report summarize the data from evaluation of X-ray films of the hip area and knees and the medical histories; findings based on the physician's examination will be summarized in another report.

Perhaps the greatest problem encountered in a large examination survey such as HANES I is persuading those persons selected for the sample to participate. The efforts made to persuade sample persons to participate are best described as intensive. In spite of these efforts, some of those selected for the sample cannot be persuaded to participate. Of those invited to participate in the survey, 98.6 percent were interviewed and 70.0 percent were subsequently examined. Because 30 percent of those persons selected for the sample were not examined, there is the possibility that the estimates contained in this report are biased. That is, they may be too low because those with more severe forms of arthritis were not able to participate in the survey or, as indicated in table O of a report⁴ from the first Health Examination Survey of 1960-62, they may be too high. However, it should be noted that a nonresponse adjustment has been made within each primary sampling unit for each of five income groups, as described in appendix I in an attempt to minimize any bias that may result because of nonresponse.

Arthritis Assessment

X-ray films of the hip area were to be taken on all examinees receiving the detailed examina-

tion except on women less than 50 years old; however, 6.0 percent of the X-ray films of the hips were not taken. Unlike the X-ray films taken of the hip area, X-ray films of the knees were to be taken on all examinees receiving the detailed examination; only 2.6 percent of the X-ray films of the knees were not taken.

Each X-ray film was read independently by two rheumatologists for any evidence of abnormality. The X-ray films were read on an ordinal scale generally based on the scale described in the *Atlas of Standard Radiographs*.⁵ If an abnormality was found on one of the first two readings, a final adjudicated reading was made by a third rheumatologist in the presence of the two other readers. A final adjudicated reading was not generally made if no abnormality was found on either of the first two readings. As a check, 1 out of every 20 examinees (343 people) whose X-ray films were read as normal on the first two readings had their X-ray films read once again during a final adjudication session. Of those, only 1 was found to have a severe abnormality and 2 more were found to have lesions of questionable certainty. These reassessments have been incorporated into the findings presented in this report.

The only assessments of the X-ray films presented in this report are the "overall" grades of osteoarthritis which were subjectively synthesized by the rheumatologists from several items.

If an alternative overall grade of osteoarthritis was constructed from the individual items, it is quite possible that different prevalence estimates of osteoarthritis could be derived from the data.

Arthritis History Supplement

The Arthritis History Supplement was administered to the detailed sample examinees by the examining physicians in the same session as the physical examination. The Supplement was only administered to those examinees who had answered positively to one or more screening questions asked at the household interview dealing with significant history of pain, aching, swelling, or stiffness in any of their joints. After an initial period of operation at the beginning of the survey, the examining physician was instructed not to administer the arthritis supplement if questioning of the examinee warranted

changing all positive screening questions to negative. This procedure was followed for most of the survey operation. Consequently, all of those not asked to respond to the Arthritis History Supplement are assumed for the purposes of this report to have had no history of significant joint problems.

Since those without a history of significant joint problems were not asked to respond to the questions in the Arthritis History Supplement, it is quite possible that some of the estimates presented in this report would be higher if those persons had been asked to respond.

HIGHLIGHTS

As can be seen in tables 1-3, the prevalence of severe-moderate osteoarthritis of the knees and hips and the prevalence of severe-moderate sacroiliitis are less than 0.5 percent for men and women under 55 years of age. The sampling errors for such low prevalences are large relative to the estimates themselves. However, the absolute errors are small. Table 1 shows, for example, that an estimate of 0.2 percent of the population 45-54 years of age had severe osteoarthritis of the knees. The standard error of this estimate is 0.17 percent, or 85 percent of the estimate. The true prevalence is likely to be slightly greater than zero but less than 0.5 percent. Interpretations of differences between very small rates or proportions should be made with caution. More discussion of the statistical reliability of the estimates in this report is presented in appendix I.

The prevalence of severe-moderate osteoarthritis of the knees and hips and the prevalence of severe-moderate sacroiliitis are summarized in table A (abstracted from tables 1-3) for men and women ages 55-74 years. The estimates presented in table A are generally less than 3 percent, the only exception being for severe-moderate osteoarthritis of the knees in women ages 65-74 years (6.6 percent). Although these estimates are small and the standard errors of these estimates would likely be relatively large (standard errors of the severe and moderate grades are presented separately in tables 1-3), an estimate of 2.0 percent for men ages 65-74 years with severe-moderate osteoarthritis of the knees (table A), when multiplied by the number of men ages 65-74 years (nearly 5.7 million from table I in appendix I), corresponds to approximately 114,000 people, a substantial number of people with the condition in that particular age-sex group.

Additional findings are presented below but do not constitute an exhaustive attempt to describe the 27 detailed tables of this report. All estimates presented in this report refer to the civilian noninstitutionalized U.S. population ages 25-74 years, unless otherwise stated.

Knees

In the population, 0.9 percent have severe or moderate and an additional 2.9 percent have minimal osteoarthritis of the knees; 63 percent of those persons who have moderate osteoarthritis of the knees report pain in their knees on

Table A. Estimated percent of the noninstitutionalized U.S. population ages 55-74 with severe-moderate osteoarthritis of the knees or hips or severe-moderate sacroiliitis, by overall grade of condition, sex, and age: HANES, 1971-75

Sex and age	Overall grade of condition		
	Severe-moderate osteoarthritis of the knees	Severe-moderate osteoarthritis of the hips	Severe-moderate sacroiliitis
<u>Men</u>			
Percent of population			
55-64 years	1.0	0.7	2.7
65-74 years	2.0	2.3	0.6
<u>Women</u>			
55-64 years	0.9	1.6	0.3
65-74 years	6.6	1.2	0.4

most days for a period of at least 1 month; 39 percent of those persons who have moderate osteoarthritis report never having been treated for any kind of joint problems (tables 1, 4, and 7).

Hips

The following results are based upon the most severe grade of osteoarthritis in either hip for men ages 25-74 years and women ages 50-74 years; for example, if an examinee has severe osteoarthritis in one hip and minimal osteoarthritis in the other, then he has been coded as having severe osteoarthritis for the purpose of this report. The prevalence of severe or moderate osteoarthritis of the hips increases from about 0.2 percent among men ages 25-34 years to about 2.3 percent among men ages 65-74 years and is about 1.2 percent among women ages 65-74 years; 2.3 percent of men ages 65-74 years and about 1.5 percent of women ages 65-74 years have minimal osteoarthritis of the hips; 28 percent of those with moderate osteoarthritis of the hips report having pain in their hips on most days for at least 1 month; 57 percent of those with moderate osteoarthritis of the hips report never having been treated for any kind of joint problem (tables 2, 5, and 8).

Sacroiliac Joints

The prevalence of severe or moderate sacroiliitis is about 0.4 percent among men ages 25-34 years, about 0.6 percent among men ages 65-74 years, and about 0.4 percent among women ages 65-74 years; about 1.0 percent of men ages 65-74 years and about 0.2 percent of women ages 65-74 years have minimal sacroiliitis; 54 percent of those who have moderate sacroiliitis report never having been treated for any kind of joint problem (tables 3, 6, and 9).

Joint Pain

In the population, 16 percent have had back or neck pain on most days for at least 1 month (9 percent currently); 7 percent have had pain

in or around their hips most days for at least 1 month (3 percent currently); 10 percent have had pain in or around their knees most days for at least 1 month (4 percent currently); 11 percent have had pain in their fingers, wrists, elbows, shoulders, ankles, or feet on most days for at least 6 weeks; 6 percent have had swelling and pain upon touching of the fingers, wrists, elbows, shoulders, ankles, or feet on most days for at least 1 month; 14 percent have had joint or muscle stiffness when first getting out of bed in the morning for at least 1 month (11 percent currently) (tables 10, 12-14 and 16-18).

Treatments, Accidents, and Injuries

Three percent have had an operation for the treatment of hip, knee, or back disease; 12 percent report that their pain, swelling, or stiffness was caused by either an accident or an injury, and 8 percent say that is the cause of their present pain; more people (16 percent) have been treated for joint trouble by a general practitioner than by any other kind of practitioner; hot pack or heating pad (12 percent) and aspirin (14 percent) seem to be the most common treatments used for significant joint trouble (tables 15, 19, 20, and 22).

Limitation of Activity

Between 1 percent and 2 percent of the civilian noninstitutionalized population ages 25-74 years report that they are unable, without the help of someone else or some special device, to do one or more of the following: go up or down stairs, get into or out of a car, use washing facilities, dress or feed themselves, or get into or out of bed; the percent increases from about 1 percent at ages 25-34 to approximately 4 percent at ages 65-74 years; 5 percent report that their physical activity is restricted either "quite a bit" or "a whole lot" because of a joint problem; 9 percent report having moderate or severe joint trouble; 5 percent report a change in job status as a result of a joint condition (tables 23, 24, 27, and 28).



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Table 1. Percent distribution of U.S. population ages 25-74 years by whether they have osteoarthritis of the knees and overall grade of the condition, according to sex and age, with standard errors: HANES, 1971-75

Sex and age	Total	Overall grade of osteoarthritis of the knees										
		Severe	Moderate	Minimal	Questionable	Normal	Severe	Moderate	Minimal	Questionable	Normal	
Both sexes, 25-74 years...		100.0	0.1	0.8	2.9	2.0	94.2	0.06	0.18	0.41	0.36	0.47
			Percent distribution					Standard error in percentage points				
25-34 years	100.0	0.0	-	0.0	0.2	99.8	0.03	-	0.05	0.17	0.19	
35-44 years	100.0	-	0.3	1.3	0.7	97.8	-	0.32	0.74	0.48	0.84	
45-54 years	100.0	0.2	0.2	2.6	1.6	95.4	0.17	0.15	0.79	0.56	0.98	
55-64 years	100.0	0.1	0.8	4.8	3.8	90.5	0.16	0.46	1.20	1.14	1.67	
65-74 years	100.0	0.4	4.2	9.2	6.2	80.0	0.26	1.03	1.73	1.37	1.97	
Men, 25-74 years.....	100.0	0.1	0.4	2.1	1.9	95.5	0.07	0.20	0.41	0.54	0.59	
25-34 years	100.0	-	-	-	0.3	99.7	-	-	-	0.35	0.35	
35-44 years	100.0	-	0.1	1.6	0.7	97.6	-	0.17	1.20	0.71	1.20	
45-54 years	100.0	-	0.2	2.1	1.4	96.3	-	0.27	0.97	0.66	1.15	
55-64 years	100.0	0.3	0.7	3.1	4.2	91.7	0.35	0.63	1.00	2.00	2.21	
65-74 years	100.0	0.2	1.8	6.3	5.3	86.3	0.20	1.05	1.98	1.75	2.48	
Women, 25-74 years.....	100.0	0.2	1.1	3.6	2.1	93.1	0.10	0.30	0.68	0.43	0.76	
25-34 years	100.0	0.0	-	0.1	-	99.9	0.06	-	0.09	-	0.14	
35-44 years	100.0	-	0.5	1.0	0.6	97.9	-	0.60	0.74	0.71	1.11	
45-54 years	100.0	0.3	0.2	3.1	1.8	94.6	0.33	0.17	1.23	0.78	1.36	
55-64 years	100.0	-	0.9	6.4	3.5	89.3	-	0.69	1.98	1.12	2.24	
65-74 years	100.0	0.6	6.0	11.4	6.9	75.1	0.43	1.74	2.33	1.76	2.81	

NOTE: Three expert rheumatologists made the assessments of the overall grade of osteoarthritis from X-ray films of the knees. The overall grade is a subjective synthesis of several items.

Table 2. Percent distribution of men ages 25-74 years and women ages 50-74 years in the U.S. population by whether they have osteoarthritis of the hips and overall grade of the condition, according to sex and age, with standard errors: HANES, 1971-75

Sex and age	Overall grade of osteoarthritis of the hips										
	Severe	Moderate	Minimal	Questionable	Normal	Severe	Moderate	Minimal	Questionable	Normal	
<u>Men</u>		Percent distribution					Standard error in percentage points				
25-34 years.....	0.2	-	0.2	0.3	99.4	0.22	-	0.14	0.40	0.49	
35-44 years.....	-	-	0.1	0.1	99.8	-	-	0.15	0.14	0.29	
45-54 years.....	-	0.1	0.6	0.8	98.5	-	0.14	0.45	0.59	0.78	
55-64 years.....	0.3	0.4	1.9	0.6	96.8	0.26	0.35	1.00	0.44	1.28	
65-74 years.....	1.2	1.1	2.3	1.6	93.8	0.79	0.67	1.15	0.87	1.59	
<u>Women</u>											
50-54 years.....	0.1	-	0.7	0.9	98.3	0.17	-	0.70	0.81	1.13	
55-64 years.....	0.8	0.8	1.2	0.9	96.3	0.48	0.53	0.88	0.86	1.39	
65-74 years.....	0.6	0.6	1.5	1.2	96.1	0.61	0.51	1.06	0.83	1.73	

NOTE: Three expert rheumatologists made the assessments of the overall grade of osteoarthritis from X-ray films of the hips. The overall grade is a subjective synthesis of several items. X-rays of the hips were not done on women less than 50 years old.

Table 3. Percent distribution of men ages 25-74 years and women ages 50-74 years in the U.S. population by whether they have sacroiliitis and overall grade of the condition, according to sex and age, with standard errors: HANES, 1971-75

Sex and age	Total	Overall grade of sacroiliitis									
		Severe	Moderate	Minimal	Questionable	Normal	Severe	Moderate	Minimal	Questionable	Normal
Men		Percent distribution					Standard error in percentage points				
25-34 years	100.0	-	0.4	0.6	0.1	98.9	-	0.33	0.63	0.21	0.70
35-44 years	100.0	0.2	0.1	0.6	0.7	98.5	0.17	0.15	0.52	0.53	0.81
45-54 years	100.0	-	-	0.0	0.8	99.2	-	-	0.05	0.68	0.68
55-64 years	100.0	1.0	1.7	0.2	1.6	95.5	0.77	0.88	0.33	1.04	1.62
65-74 years	100.0	0.1	0.5	1.0	0.4	98.0	0.12	0.41	0.67	0.28	0.81
Women											
50-54 years	100.0	0.2	-	-	1.0	98.8	0.28	-	-	0.96	1.01
55-64 years	100.0	0.2	0.1	0.5	0.7	98.6	0.22	0.13	0.48	0.68	0.70
65-74 years	100.0	0.0	0.4	0.2	1.4	97.9	0.06	0.40	0.23	0.97	1.08

NOTE: Three expert rheumatologists made the assessments of the overall grade of sacroiliitis from X-ray films of the hips. The overall grade is a subjective synthesis of several items. X-rays of the hips were not done on women less than 50 years old.

Table 4. Percent distribution of U.S. population ages 25-74 years by whether they have significant pain in their knees on most days for at least 1 month, according to whether they have osteoarthritis of the knees and overall grade of the condition: HANES, 1971-75

Overall grade of osteoarthritis of the knees	Total	Pain in or around knees	
		Yes	No
Percent distribution			
All grades	100.0	10.2	89.8
Severe	100.0	48.2	51.8
Moderate	100.0	62.6	37.4
Minimal	100.0	38.0	62.0
Questionable	100.0	17.8	82.2
Normal	100.0	8.8	91.2

NOTES: This table is based upon the Arthritis History Supplement which was given only to those in the detailed sample who had indicated that they had pain, aching, swelling, or stiffness in any of their joints for at least 1 month or had indicated that they had a history of arthritis or gout. All of those not asked to respond to the Arthritis History Supplement are assumed to have had no history of significant joint problems.

Three expert rheumatologists made the assessments of the overall grade of osteoarthritis from X-ray films of the knees. The overall grade is a subjective synthesis of several items.

Table 5. Percent distribution of men ages 25-74 years and women ages 50-74 years in the U.S. population by whether they have significant pain in their hips on most days for at least 1 month, according to whether they have osteoarthritis of the hips and overall grade of the condition: HANES, 1971-75

Overall grade of osteoarthritis of the hips	Total	Pain in or around hips	
		Yes	No
	Percent distribution		
All grades.....	100.0	6.6	93.4
Severe.....	100.0	56.6	43.4
Moderate.....	100.0	27.8	72.2
Minimal.....	100.0	11.2	88.8
Questionable.....	100.0	7.2	92.8
Normal.....	100.0	7.0	93.0

NOTES: This table is based upon the Arthritis History Supplement which was given only to those in the detailed sample who had indicated that they had pain, aching, swelling, or stiffness in any of their joints for at least 1 month or had indicated that they had a history of arthritis or gout. All of those not asked to respond to the Arthritis History Supplement are assumed to have had no history of significant joint problems.

Three expert rheumatologists made the assessments of the overall grade of osteoarthritis from X-ray films of the hips. The overall grade is a subjective synthesis of several items. X-rays of the hips were not done on women less than 50 years old.

Table 6. Percent distribution of men ages 25-74 years and women ages 50-74 years in the U.S. population by whether they have significant pain in their lower backs on most days for at least 1 month, according to whether they have sacroiliitis and overall grade of the condition: HANES, 1971-75

Overall grade of sacroiliitis	Total	Pain in lower back	
		Yes	No
	Percent distribution		
All grades.....	100.0	10.5	89.5
Severe.....	100.0	2.0	98.0
Moderate.....	100.0	10.5	89.5
Minimal.....	100.0	4.8	95.2
Questionable.....	100.0	18.2	81.8
Normal.....	100.0	11.1	88.9

NOTES: This table is based upon the Arthritis History Supplement which was given only to those in the detailed sample who had indicated that they had pain, aching, swelling, or stiffness in any of their joints for at least 1 month or had indicated that they had a history of arthritis or gout. All of those not asked to respond to the Arthritis History Supplement are assumed to have had no history of significant joint problems.

Three expert rheumatologists made the assessments of the overall grade of osteoarthritis from X-ray films of the hips. The overall grade is a subjective synthesis of several items. X-rays of the hips were not done on women less than 50 years old.

Table 7. Percent distribution of U.S. population ages 25-74 years by whether currently or ever been treated for joint trouble, according to whether they have osteoarthritis of the knees and overall grade of the condition, with standard errors: HANES, 1971-75

Overall grade of osteoarthritis of the knees	Total	Have you ever been treated for joint trouble?					
		Yes, now	Yes, not now	Never	Yes, now	Yes, not now	Never
		Percent distribution			Standard error in percentage points		
All grades	100.0	6.6	17.7	75.7	0.66	1.36	1.60
Severe	100.0	10.8	34.2	55.0	18.13	27.40	28.11
Moderate	100.0	29.3	31.8	39.0	9.89	10.28	11.05
Minimal	100.0	14.9	27.0	58.1	4.43	5.25	5.85
Questionable	100.0	12.5	24.4	63.2	4.44	7.02	7.47
Normal	100.0	6.0	17.2	76.8	0.65	1.33	1.57

NOTES: This table is based upon the Arthritis History Supplement which was given only to those in the detailed sample who had indicated that they had pain, aching, swelling, or stiffness in any of their joints for at least 1 month or had indicated that they had a history of arthritis or gout. All of those not asked to respond to the Arthritis History Supplement are assumed to have had no history of significant joint problems.

Three expert rheumatologists made the assessments of the overall grade of osteoarthritis from X-ray films of the knees. The overall grade is a subjective synthesis of several items.

Table 8. Percent distribution of men ages 25-74 years and women ages 50-74 years in the U.S. population by whether currently or ever been treated for joint trouble, according to whether they have osteoarthritis of the hips and overall grade of the condition: HANES, 1971-75

Overall grade of osteoarthritis of the hips	Total	Have you ever been treated for joint trouble?		
		Yes, now	Yes, not now	Never
		Percent distribution		
All grades	100.0	6.7	17.6	75.7
Severe	100.0	39.1	17.2	43.6
Moderate	100.0	18.0	24.9	57.1
Minimal	100.0	21.2	20.8	58.0
Questionable	100.0	-	28.1	71.9
Normal	100.0	7.1	19.3	73.6

NOTES: This table is based upon the Arthritis History Supplement which was given only to those in the detailed sample who had indicated that they had pain, aching, swelling, or stiffness in any of their joints for at least 1 month or had indicated that they had a history of arthritis or gout. All of those not asked to respond to the Arthritis History Supplement are assumed to have had no history of significant joint problems.

Three expert rheumatologists made the assessments of the overall grade of osteoarthritis from X-ray films of the hips. The overall grade is a subjective synthesis of several items. X-rays of the hips were not done on women less than 50 years old.

Table 9. Percent distribution of men ages 25-74 years and women ages 50-74 years in the U.S. population by whether currently or ever been treated for joint trouble, according to whether they have sacroiliitis and overall grade of the condition: HANES, 1971-75

Overall grade of sacroiliitis	Total	Have you ever been treated for joint trouble?		
		Yes, now	Yes, not now	Never
		Percent distribution		
All grades	100.0	6.7	17.6	75.7
Severe.....	100.0	26.5	23.1	50.4
Moderate.....	100.0	-	45.9	54.1
Minimal.....	100.0	8.0	12.0	80.0
Questionable.....	100.0	12.9	20.2	66.9
Normal.....	100.0	7.2	19.3	73.4

NOTES: This table is based upon the Arthritis History Supplement which was given only to those in the detailed sample who had indicated that they had pain, aching, swelling, or stiffness in any of their joints for at least 1 month or had indicated that they had a history of arthritis or gout. All of those not asked to respond to the Arthritis History Supplement are assumed to have had no history of significant joint problems.

Three expert rheumatologists made the assessments of the overall grade of osteoarthritis from X-ray films of the hips. The overall grade is a subjective synthesis of several items. X-rays of the hips were not done on women less than 50 years old.

Table 10. Estimated percent of U.S. population ages 25-74 years ever having significant back or neck pain on most days for at least 1 month, by sex, race, and age: HANES, 1971-75

Location and time of pain in back or neck	Total	Sex		Race		Age in years				
		Male	Female	White	Black	25-34	35-44	45-54	55-64	65-74
		Percent of population								
Total ¹	15.6	13.9	17.2	15.9	14.2	7.8	13.9	19.4	20.8	21.3
<u>Location of pain</u>										
Neck.....	5.9	4.8	7.0	6.1	4.8	2.6	5.0	6.8	8.4	9.6
Upper back.....	2.6	1.8	3.4	2.7	2.1	0.9	1.8	3.2	4.6	3.9
Midback.....	1.9	1.3	2.5	1.9	2.4	0.8	1.1	2.4	2.9	3.8
Lower back.....	10.5	9.4	11.4	10.5	10.1	5.4	9.6	13.3	13.5	13.3
<u>Time of pain</u>										
When resting at night.....	9.3	8.0	10.4	9.3	8.9	4.7	7.6	12.7	11.8	12.1
Awaken from sleep at night.....	7.1	5.9	8.1	7.0	7.6	2.8	6.4	9.2	10.2	8.8
Pain present now.....	8.7	7.1	10.2	8.8	9.0	3.2	7.0	11.4	11.6	14.6

¹The percents in the columns of the table do not add up to the total due to the fact that persons were allowed to designate more than 1 response to the question.

NOTE: This table is based upon the Arthritis History Supplement which was given only to those in the detailed sample who had indicated that they had pain, aching, swelling, or stiffness in any of their joints for at least 1 month or had indicated that they had a history of arthritis or gout. All of those not asked to respond to the Arthritis History Supplement are assumed to have had no history of significant joint problems.

Table 11. Estimated percent of U.S. population ages 25-74 years ever having back or neck injuries or medical treatment of the back or neck or ever been hospitalized for back or neck pain, by sex, race, and age: HANES, 1971-75

Injury or treatment of back or neck	Total	Sex		Race		Age in years				
		Male	Female	White	Black	25-34	35-44	45-54	55-64	65-74
<u>Type of injury</u>		Percent of population								
Sprained back due to physical activity	4.3	5.1	3.6	4.5	2.5	2.3	3.6	5.3	6.3	5.0
Whiplash injury of neck	2.3	1.8	2.8	2.5	0.9	1.3	2.2	3.0	3.2	2.1
Ruptured disc in back or neck	2.5	3.1	2.0	2.8	1.0	0.5	3.0	3.6	3.8	2.5
<u>Type of treatment</u>										
Traction	1.1	1.3	0.9	1.2	0.4	0.1	1.3	1.5	2.0	0.7
Surgery	1.0	1.2	0.8	1.1	0.6	0.1	1.5	1.6	1.3	0.7
Hospitalized for back or neck pain	3.7	4.1	3.4	3.7	3.7	0.8	4.5	4.6	6.6	2.8

NOTE: This table is based upon the Arthritis History Supplement which was given only to those in the detailed sample who had indicated that they had pain, aching, swelling, or stiffness in any of their joints for at least 1 month or had indicated that they had a history of arthritis or gout. All of those not asked to respond to the Arthritis History Supplement are assumed to have had no history of significant joint problems.

Table 12. Estimated percent of U.S. population ages 25-74 years ever having significant pain in their hips on most days for at least 1 month, by sex, race, and age: HANES, 1971-75

Pain in or around hips	Total	Sex		Race		Age in years				
		Male	Female	White	Black	25-34	35-44	45-54	55-64	65-74
<u>Total¹</u>		Percent of population								
Total ¹	6.6	5.6	7.5	6.7	5.9	2.7	5.5	6.9	10.7	10.1
Pain at rest	4.2	3.3	4.9	4.1	4.8	1.5	3.2	4.6	7.5	5.7
Pain present now	3.5	2.8	4.1	3.5	3.1	1.2	3.0	4.1	5.3	5.3

¹The percents in the columns of the table do not add up to the total due to the fact that persons were allowed to designate more than 1 response to the question.

NOTE: This table is based upon the Arthritis History Supplement which was given only to those in the detailed sample who had indicated that they had pain, aching, swelling, or stiffness in any of their joints for at least 1 month or had indicated that they had a history of arthritis or gout. All of those not asked to respond to the Arthritis History Supplement are assumed to have had no history of significant joint problems.

Table 13. Estimated percent of U.S. population ages 25-74 years ever having significant pain in their knees on most days for at least 1 month, by age and sex, with standard errors: HANES, 1971-75

Sex	Total	Age in years				
		25-34	35-44	45-54	55-64	65-74
Percent of population						
Total.....	10.2	5.5	7.8	11.7	13.3	17.6
Men	9.5	5.7	7.4	12.0	11.5	14.9
Women	10.9	5.2	8.1	11.5	15.0	19.7
Standard error in percentage points						
Total.....	0.88	1.14	1.17	1.50	1.73	2.12
Men	1.11	1.42	1.95	2.37	2.54	3.21
Women	1.03	1.49	1.68	1.88	2.18	3.07

NOTE: This table is based upon the Arthritis History Supplement which was given only to those in the detailed sample who had indicated that they had pain, aching, swelling, or stiffness in any of their joints for at least 1 month or had indicated that they had a history of arthritis or gout. All of those not asked to respond to the Arthritis History Supplement are assumed to have had no history of significant joint problems.

Table 14. Estimated percent of U.S. population ages 25-74 years ever having significant pain and other symptoms in their knees on most days for at least 1 month, by sex, race, and age: HANES, 1971-75

Pain in or around knees and other symptoms	Total	Sex		Race		Age in years				
		Male	Female	White	Black	25-34	35-44	45-54	55-64	65-74
Percent of population										
Total ¹	10.2	9.6	10.9	10.0	12.4	5.5	7.8	11.7	13.3	17.6
Pain at rest.....	5.6	4.4	6.6	5.3	8.0	3.2	4.6	6.5	7.7	7.4
Swelling with pain.....	4.4	3.9	4.8	4.1	6.4	2.0	3.3	5.2	6.7	6.7
Locking with pain.....	1.3	1.0	1.7	1.3	1.5	0.9	1.1	1.1	1.4	3.1
Knees given way.....	3.5	3.4	3.5	3.2	6.1	2.0	2.9	4.2	4.3	5.1
Pain present now.....	4.4	3.9	4.9	4.2	7.0	1.6	3.1	5.5	5.8	8.9
Severely twisted knees.....	2.1	2.5	1.8	2.0	2.6	1.6	2.4	2.4	1.8	2.6

¹The percents in the columns of the table do not add up to the total due to the fact that persons were allowed to designate more than 1 response to the question.

NOTE: This table is based upon the Arthritis History Supplement which was given only to those in the detailed sample who had indicated that they had pain, aching, swelling, or stiffness in any of their joints for at least 1 month or had indicated that they had a history of arthritis or gout. All of those not asked to respond to the Arthritis History Supplement are assumed to have had no history of significant joint problems.

Table 15. Estimated percent of U.S. population ages 25-74 years ever having had hip, knee, or back disease treated by an operation, by sex, race, and age: HANES, 1971-75

Operation for hip, knee, or back disease	Total	Sex		Race		Age in years				
		Male	Female	White	Black	25-34	35-44	45-54	55-64	65-74
Percent of population										
Total ¹	2.6	2.9	2.2	2.7	1.4	1.2	2.8	3.1	3.1	3.4
Hip operation.....	0.4	0.3	0.6	0.5	0.0	0.3	0.4	0.1	0.7	1.1
Knee operation.....	0.8	1.1	0.5	0.8	0.7	0.6	0.8	1.1	0.7	1.0
Back operation.....	1.2	1.4	1.1	1.3	0.7	0.2	1.4	1.9	1.8	1.3

¹The percents in the columns of the table do not add up to the total due to the fact that persons were allowed to designate more than 1 response to the question.

NOTE: This table is based upon the Arthritis History Supplement which was given only to those in the detailed sample who had indicated that they had pain, aching, swelling, or stiffness in any of their joints for at least 1 month or had indicated that they had a history of arthritis or gout. All of those not asked to respond to the Arthritis History Supplement are assumed to have had no history of significant joint problems.

Table 16. Estimated percent of U.S. population ages 25-74 years ever having a significant pain in their joints on most days for at least 6 weeks, by sex, race, and age: HANES, 1971-75

Location of joint pain	Total	Sex		Race		Age in years				
		Male	Female	White	Black	25-34	35-44	45-54	55-64	65-74
Percent of population										
Total ¹	11.4	10.2	12.4	11.4	11.2	5.9	7.9	14.7	17.7	13.8
Fingers.....	4.1	2.6	5.5	4.2	3.5	1.3	2.4	4.6	7.8	7.0
Wrists.....	1.8	1.5	2.1	1.8	2.0	0.7	0.6	2.5	3.5	2.5
Elbows.....	2.9	2.7	3.1	2.9	2.4	1.4	3.0	4.3	3.5	2.6
Shoulders.....	4.7	4.6	4.9	4.7	4.7	2.1	3.0	7.0	7.0	5.8
Ankles.....	2.2	1.9	2.5	2.0	4.0	1.0	1.6	2.4	4.0	2.9
Feet.....	1.8	1.3	2.2	1.7	2.0	0.8	0.5	2.2	3.9	2.1

¹The percents in the columns of the table do not add up to the total due to the fact that persons were allowed to designate more than 1 response to the question.

NOTE: This table is based upon the Arthritis History Supplement which was given only to those in the detailed sample who had indicated that they had pain, aching, swelling, or stiffness in any of their joints for at least 1 month or had indicated that they had a history of arthritis or gout. All of those not asked to respond to the Arthritis History Supplement are assumed to have had no history of significant joint problems.

Table 17. Estimated percent of U.S. population ages 25-74 years ever having significant swelling of joints and pain present when joints touched, on most days for at least 1 month, by sex, race, and age: HANES, 1971-75

Location of joint swelling and pain	Total	Sex		Race		Age in years				
		Male	Female	White	Black	25-34	35-44	45-54	55-64	65-74
Percent of population										
Total ¹	6.0	4.8	7.1	6.0	6.6	3.2	4.7	7.5	9.3	7.0
Fingers	2.1	1.1	3.0	2.2	1.7	0.7	1.5	2.3	4.2	2.9
Wrists	0.9	0.5	1.2	0.8	1.4	0.4	0.3	1.3	1.6	0.9
Elbows	0.8	0.6	0.9	0.7	0.8	0.3	0.8	1.0	1.3	0.4
Shoulders	0.6	0.3	0.9	0.5	1.0	0.1	0.3	1.1	1.4	0.4
Hips	0.3	0.1	0.4	0.2	0.4	0.3	0.2	0.4	0.4	0.1
Knees	2.2	1.8	2.5	2.0	3.4	0.8	1.1	3.1	3.7	3.0
Ankles	0.8	0.5	1.0	0.8	0.5	0.4	0.1	1.0	1.8	0.8
Swelling present now in any location	2.0	1.3	2.6	2.0	2.0	0.4	1.1	3.1	3.2	3.4

¹The percents in the columns of the table do not add up to the total due to the fact that persons were allowed to designate more than 1 response to the question.

NOTE: This table is based upon the Arthritis History Supplement which was given only to those in the detailed sample who had indicated that they had pain, aching, swelling, or stiffness in any of their joints for at least 1 month or had indicated that they had a history of arthritis or gout. All of those not asked to respond to the Arthritis History Supplement are assumed to have had no history of significant joint problems.

Table 18. Estimated percent of U.S. population ages 25-74 years ever having significant stiffness in joints and muscles when first getting out of bed in morning, for at least 1 month, by sex, race, and age: HANES, 1971-75

Location and duration of joint-muscle stiffness	Total	Sex		Race		Age in years				
		Male	Female	White	Black	25-34	35-44	45-54	55-64	65-74
Percent of population										
Total ¹	14.4	11.5	17.0	14.4	16.1	4.7	12.7	17.3	21.5	22.5
<u>Location of stiffness</u>										
Fingers	4.3	2.8	5.6	4.4	3.7	0.8	3.0	4.5	8.2	7.8
Wrists	1.9	1.6	2.1	1.9	2.0	0.3	1.7	2.0	2.8	3.9
Elbows	1.9	2.0	1.8	1.9	2.7	0.2	2.4	2.4	2.6	2.8
Shoulders	3.4	3.0	3.7	3.4	3.7	0.3	2.5	4.5	5.2	6.8
Hips	3.9	3.0	4.7	4.0	3.8	0.5	4.2	4.2	5.8	7.6
Knees	7.1	6.0	8.2	6.9	9.6	1.9	5.5	8.2	10.6	14.1
Ankles	3.0	2.4	3.5	2.9	3.9	0.7	3.1	3.2	4.7	4.7
Feet	1.9	1.5	2.3	2.0	1.8	0.2	1.6	2.1	3.6	3.4
Back	6.7	4.9	8.3	6.9	5.4	1.9	6.6	7.8	10.4	9.7
<u>Duration of stiffness</u>										
Lasts less than 15 minutes	4.6	4.2	5.1	4.7	4.5	1.3	5.0	5.6	6.5	6.7
Lasts 15 minutes to half hour	3.5	3.1	3.9	3.6	3.3	1.0	2.8	4.0	6.0	5.4
Lasts half hour but less than all day	4.2	3.0	5.4	4.0	6.7	1.3	3.2	5.2	6.6	7.2
All day	1.1	0.6	1.5	1.1	1.3	0.3	1.0	1.4	1.2	2.0
Stiffness present now	10.9	8.6	12.9	10.8	12.9	2.7	9.8	13.1	16.8	17.5

¹The percents in the columns of the table do not add up to the total due to the fact that persons were allowed to designate more than 1 response to the question.

NOTE: This table is based upon the Arthritis History Supplement which was given only to those in the detailed sample who had indicated that they had pain, aching, swelling, or stiffness in any of their joints for at least 1 month or had indicated that they had a history of arthritis or gout. All of those not asked to respond to the Arthritis History Supplement are assumed to have had no history of significant joint problems.

Table 19. Estimated percent of U.S. population ages 25-74 years ever having pain, swelling, or stiffness in a joint because of an accident or injury, by sex, race, and age: HANES, 1971-75

Accident or injury as a cause of pain, swelling, or stiffness	Total	Sex		Race		Age in years				
		Male	Female	White	Black	25-34	35-44	45-54	55-64	65-74
Percent of population										
Total	12.4	13.3	11.6	12.8	9.6	9.6	12.0	13.3	14.1	14.9
Cause of present pain	8.3	9.4	7.4	8.5	7.3	7.6	8.3	8.8	8.6	8.8

NOTE: This table is based upon the Arthritis History Supplement which was given only to those in the detailed sample who had indicated that they had pain, aching, swelling, or stiffness in any of their joints for at least 1 month or had indicated that they had a history of arthritis or gout. All of those not asked to respond to the Arthritis History Supplement are assumed to have had no history of significant joint problems.

Table 20. Estimated percent of U.S. population ages 25-74 years ever having been treated by selected practitioners for joint trouble, by sex, race, and age: HANES, 1971-75

Practitioner	Total	Sex		Race		Age in years				
		Male	Female	White	Black	25-34	35-44	45-54	55-64	65-74
Percent of population										
General practitioner	15.8	13.7	17.6	16.1	13.6	9.4	12.5	17.4	22.4	22.4
Internist	2.4	1.7	2.9	2.5	1.5	0.7	1.5	3.5	3.4	3.6
Rheumatologist.....	0.6	0.4	0.7	0.6	0.2	0.1	0.4	0.9	0.8	0.8
Orthopedist.....	8.0	8.4	7.7	8.5	4.6	5.0	9.9	9.5	9.2	6.7
Chiropractor	4.7	4.8	4.7	5.2	1.2	2.2	4.5	5.4	6.5	6.7
Osteopath	2.2	2.1	2.3	2.5	0.2	1.0	1.5	2.4	4.0	3.0
Foot doctor	0.7	0.5	0.8	0.7	0.3	0.4	0.2	0.8	1.3	0.8
Physical therapist.....	2.2	2.3	2.1	2.3	1.3	1.1	2.7	2.4	3.1	2.0
Occupational therapist.....	0.1	0.1	0.0	0.1	0.0	-	0.1	-	0.0	0.4
Other	2.5	2.9	2.1	2.6	1.7	1.7	2.4	2.8	3.0	2.8

NOTE: This table is based upon the Arthritis History Supplement which was given only to those in the detailed sample who had indicated that they had pain, aching, swelling, or stiffness in any of their joints for at least 1 month or had indicated that they had a history of arthritis or gout. All of those not asked to respond to the Arthritis History Supplement are assumed to have had no history of significant joint problems.

Table 21. Estimated percent of U.S. population ages 25-74 years currently being treated by selected practitioners for joint trouble, by sex, race, and age: HANES, 1971-75

Practitioner	Total	Sex		Race		Age in years				
		Male	Female	White	Black	25-34	35-44	45-54	55-64	65-74
Percent of population										
Total ¹	6.7	4.8	8.4	6.7	7.0	3.1	5.2	8.1	9.4	10.2
General practitioner	3.5	2.4	4.4	3.4	4.3	1.7	2.2	3.4	5.3	6.9
Internist	0.7	0.4	1.0	0.7	0.8	0.2	0.3	1.4	0.6	1.6
Rheumatologist.....	0.1	0.1	0.1	0.1	0.0	0.1	-	0.2	0.1	0.1
Orthopedist.....	0.9	0.7	1.0	0.9	0.7	0.4	1.2	1.0	1.3	0.4
Chiropractor	0.6	0.5	0.7	0.6	-	0.3	0.8	0.8	0.6	0.3
Osteopath	0.3	0.1	0.4	0.3	0.1	0.1	0.1	0.4	0.7	0.1

¹The percents in the columns of the table do not add up to the total due to the fact that persons were allowed to designate more than 1 response to the question.

NOTE: This table is based upon the Arthritis History Supplement which was given only to those in the detailed sample who had indicated that they had pain, aching, swelling, or stiffness in any of their joints for at least 1 month or had indicated that they had a history of arthritis or gout. All of those not asked to respond to the Arthritis History Supplement are assumed to have had no history of significant joint problems.

Table 22. Estimated percent of U.S. population ages 25-74 years, by use and effectiveness of selected types of treatments for joint trouble: HANES, 1971-75

Type of treatment for joint trouble	Treatment used	Do treatments help?		
		Yes	No	
		Percent of population		
Splints.....	2.1	1.9	0.2	
Braces.....	3.2	2.4	0.7	
Diathermy or paraffin.....	2.1	1.7	0.4	
Hot pack or heating pad.....	11.8	10.0	1.8	
Cold pack or ice.....	1.4	1.1	0.3	
Rest.....	9.6	8.6	1.1	
Traction.....	3.4	2.6	0.8	
Exercise or physical therapy.....	6.8	5.8	1.0	
Aspirin.....	13.9	11.6	2.3	
Cane.....	1.5	1.4	0.1	
Crutch.....	1.8	1.7	0.1	
Stiff mattress.....	6.4	5.5	0.8	
Bedboard.....	4.3	3.6	0.7	
Injections into any joints.....	7.0	5.9	1.1	
Cortisone-like medicine by mouth.....	2.6	1.9	0.8	
Butazolidin.....	1.0	0.8	0.2	
Darvon or Tylenol.....	5.1	3.7	1.4	
Indocin.....	2.0	1.4	0.6	

NOTE: This table is based upon the Arthritis History Supplement which was given only to those in the detailed sample who had indicated that they had pain, aching, swelling, or stiffness in any of their joints for at least 1 month or had indicated that they had a history of arthritis or gout. All of those not asked to respond to the Arthritis History Supplement are assumed to have had no history of significant joint problems.

Table 23. Estimated percent of U.S. population ages 25-74 years unable to perform various activities without the help of someone else or the help of some special device, by sex, race, and age: HANES, 1971-75

Activity requiring assistance	Total	Sex		Race		Age in years					
		Male	Female	White	Black	25-34	35-44	45-54	55-64	65-74	
		Percent of population									
Go up or down stairs.....	1.7	1.6	1.8	1.8	0.9	1.1	1.7	1.7	1.3	3.7	
Get into or out of a car.....	1.6	1.4	1.7	1.6	0.7	1.1	1.5	1.3	1.4	3.5	
Use washing facilities.....	1.4	1.4	1.4	1.5	0.3	1.0	1.4	1.4	1.2	2.5	
Dress self.....	1.5	1.5	1.5	1.6	0.3	1.0	1.4	1.5	1.5	2.4	
Feed self.....	1.3	1.3	1.3	1.4	0.3	1.0	1.4	1.3	1.1	2.3	
Get into or out of bed.....	1.4	1.4	1.4	1.4	0.4	1.0	1.4	1.3	1.1	2.4	

NOTE: This table is based upon the Arthritis History Supplement which was given only to those in the detailed sample who had indicated that they had pain, aching, swelling, or stiffness in any of their joints for at least 1 month or had indicated that they had a history of arthritis or gout. All of those not asked to respond to the Arthritis History Supplement are assumed to have had no history of significant joint problems.

Table 24. Estimated percent of U.S. population ages 25-74 years currently having their physical activity restricted because of a joint condition, by sex, race, and age: HANES, 1971-75

Degree of current restriction of physical activity	Total	Sex		Race		Age in years				
		Male	Female	White	Black	25-34	35-44	45-54	55-64	65-74
Percent of population										
Very little	27.9	26.3	29.3	28.8	21.5	18.0	28.0	30.8	33.5	35.6
Quite a bit.....	3.9	3.4	4.3	3.9	4.3	1.0	2.1	4.8	5.8	9.0
A whole lot.....	1.6	1.4	1.7	1.4	3.2	0.5	1.5	2.1	2.5	2.0

NOTE: This table is based upon the Arthritis History Supplement which was given only to those in the detailed sample who had indicated that they had pain, aching, swelling, or stiffness in any of their joints for at least 1 month or had indicated that they had a history of arthritis or gout. All of those not asked to respond to the Arthritis History Supplement are assumed to have had no history of significant joint problems.

Table 25. Estimated percent of U.S. population ages 25-74 years ever having stayed in bed at home for long periods or overnight in a hospital because of joint trouble, by sex, race, and age: HANES, 1971-75

Bed or hospital stay	Total	Sex		Race		Age in years				
		Male	Female	White	Black	25-34	35-44	45-54	55-64	65-74
Percent of population										
In bed at home for long period	5.5	4.6	6.4	5.4	7.0	3.0	5.5	7.0	6.5	7.0
In hospital overnight.....	6.6	7.0	6.3	6.7	6.6	3.4	6.5	8.3	8.9	7.5

NOTE: This table is based upon the Arthritis History Supplement which was given only to those in the detailed sample who had indicated that they had pain, aching, swelling, or stiffness in any of their joints for at least 1 month or had indicated that they had a history of arthritis or gout. All of those not asked to respond to the Arthritis History Supplement are assumed to have had no history of significant joint problems.

Table 26. Estimated percent of U.S. population ages 25-74 years ever having mild, moderate, or severe joint trouble, by sex, race, and age: HANES, 1971-75

Reported condition of joint trouble	Total	Sex		Race		Age in years				
		Male	Female	White	Black	25-34	35-44	45-54	55-64	65-74
Percent of population										
Mild	24.2	23.4	25.0	25.0	18.8	15.9	23.7	26.8	28.4	32.5
Moderate.....	7.0	6.0	7.8	7.1	6.1	3.0	6.0	8.8	8.9	10.9
Severe	2.2	1.9	2.5	2.0	4.1	0.6	1.7	2.2	4.4	3.3

NOTE: This table is based upon the Arthritis History Supplement which was given only to those in the detailed sample who had indicated that they had pain, aching, swelling, or stiffness in any of their joints for at least 1 month or had indicated that they had a history of arthritis or gout. All of those not asked to respond to the Arthritis History Supplement are assumed to have had no history of significant joint problems.

Table 27. Estimated percent of U.S. population ages 25-74 years whose joint condition has necessitated a change in job status, by sex, race, and age: HANES, 1971-75

Reported change in job status as result of joint condition	Total	Sex		Race		Age in years				
		Male	Female	White	Black	25-34	35-44	45-54	55-64	65-74
	Percent of population									
Total ¹	5.4	5.1	5.8	5.5	5.6	2.7	4.4	6.8	7.3	8.1
Retired because of disability	1.1	1.4	0.8	1.0	1.2	0.0	0.4	1.0	2.4	2.6
Unemployed	0.4	0.4	0.4	0.4	0.9	0.2	0.5	0.6	0.4	0.7
Changed to easier job	1.1	1.4	0.8	1.1	1.2	0.9	1.2	1.2	1.2	0.6
Working	0.9	1.1	0.7	0.9	0.5	0.5	1.0	1.7	0.8	0.1
Housewife with partial duties.....	0.9	...	1.7	0.9	0.6	0.3	0.6	1.0	1.1	2.2
Housewife with no duties.....	0.2	...	0.3	0.2	0.1	0.1	0.1	0.1	0.3	0.5

¹The percents in the columns of the table do not add up to the total due to the fact that persons were allowed to designate more than 1 response to the question.

NOTE: This table is based upon the Arthritis History Supplement which was given only to those in the detailed sample who had indicated that they had pain, aching, swelling, or stiffness in any of their joints for at least 1 month or had indicated that they had a history of arthritis or gout. All of those not asked to respond to the Arthritis History Supplement are assumed to have had no history of significant joint problems.

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APPENDIX I

STATISTICAL NOTES

Survey Design

The sample design for HANES I is basically a three-stage, stratified, probability sample of loose clusters of persons in land-based segments. The sample was designed to be representative of the civilian noninstitutionalized population, ages 1-74 years, living within the coterminous United States, with the exception that all persons residing upon reservation lands set aside for the use of American Indians would be excluded.

In the first stage of the design, 100 primary sampling units (PSU's) were selected with probability proportional to size from the approximately 1,900 PSU's into which the United States has been divided. (Ten of the PSU's were selected into the sample twice, so that in fact, there were only 90 distinct PSU's selected.) A PSU consists of a county, a small group of contiguous counties, or a standard metropolitan statistical area. Before selecting the 100 PSU's for inclusion in HANES I, the approximately 1,900 PSU's were first grouped into 40 strata of which 15 contained only 1 PSU, consisting of a single large metropolitan area with a population of more than 2 million. All 15 of the largest PSU's and 3 PSU's from each of the other 25 strata were selected.

At the second stage of the design a sample of segments, consisting of approximately six households each, was systematically selected within each selected PSU. Although the 1970 census data were used as the frame for sampling within PSU's when they became available, the calendar of operations required that the 1960 census data be used for the first 44 selected

PSU's. Generally, three types of segments were used:

1. Segments from the Census Listing Books that were created in taking the population census.
2. Area segments that are defined geographically.
3. Permit segments, using updated lists of building permits issued in sample PSU's since January 1970.

At the third stage of sampling, a list of all eligible persons was made within each selected segment. From this list, persons were then systematically selected for inclusion in HANES I.

A more complete description of the survey design is included in *Vital and Health Statistics*, Series 1, No. 10a¹ and supplemented in Series 1, No. 14.²

Because the design of HANES I is a multi-stage probability sample, it is necessary to use complex procedures in the derivation of estimates. Three basic operations are involved, the results of which are presented in table I.

Inflation by the reciprocal of the probability of selection.—The probability of selection is the product of the probabilities of selection from each step of selection in the design (PSU, segment, and sample person).

Nonresponse adjustment.—The estimates are inflated by a multiplication factor calculated within each PSU for each of five selected income groups. The numerator of these factors consists

Table I. Number of examined persons in the HANES detailed 100-location design and the estimated number of persons in the U.S. population as of February 1974, by sex, race, and age: HANES 1971-75

Age	Total	Sex		Race		Total	Sex		Race	
		Male	Female	White	Black		Male	Female	White	Black
	Number of examined persons					Estimated number of persons in U.S. population				
Total.....	6,913	3,171	3,742	5,968	873	106,639,033	50,586,997	56,052,036	94,885,892	10,656,186
25-34 years.....	1,563	672	891	1,362	175	28,296,796	13,663,092	14,633,704	24,835,350	3,039,000
35-44 years.....	1,216	528	688	1,048	149	22,302,278	10,761,322	11,540,956	19,582,183	2,415,030
45-54 years.....	1,613	746	867	1,396	206	23,548,824	11,288,375	12,260,449	21,053,345	2,357,701
50-54 years.....	811	375	436	707	98	11,812,931	5,733,376	6,079,555	10,717,541	1,042,219
55-64 years.....	1,288	626	662	1,118	161	19,345,852	9,191,996	10,153,856	17,500,480	1,674,111
65-74 years.....	1,233	599	634	1,044	182	13,145,283	5,682,212	7,463,071	11,914,534	1,170,344

NOTE: The numbers in this table constitute estimates and closely approximate the U.S. population as estimated by the U.S. Bureau of the Census as of February 1, 1974.

of the sum of the weights for *sample persons* resulting from the reciprocal of the probability of selection and the denominator consists of the sum of the weights for *examined persons* also resulting from the reciprocal of the probability of selection.

Poststratification by age-sex-race.—The estimates are ratio adjusted within each of 60 age-sex-race cells to an independent estimate, provided by the U.S. Bureau of the Census, of the population of each cell as of the midpoint of the survey. The effect of the ratio-estimating process is to make the sample more closely representative of the civilian noninstitutionalized population by age, sex, and race, which thereby reduces sampling variance.

Reliability of Estimates

Because the statistics presented in this report are based on a sample, they will differ somewhat from the figures that would have been obtained if the survey had been conducted on the complete population. In other words, the statistics are subject to sampling variability.

The standard error is primarily a measure of sampling variability, but may also include part of the variation that arises in the measurement process. The standard errors presented in tables 1-3, 7, and 13 have been calculated by a technique referred to as “balanced repeated replication.” The need for this specialized technique for estimating standard errors arises because of the complexity of the sample design of HANES I

which makes it inappropriate to calculate them by a technique that does not account for the complex sample design. It must be noted that estimates of standard errors are themselves subject to errors that may be large if the number of cases upon which the estimates are based is small.

Standard errors of estimates shown in tables 1-3, 7, and 13 have been computed using the balanced half-sample replication procedure. For percents shown in other tables in this report, standard errors may be approximated from the following formula:

$$\text{Standard error} = 2.25(pq/n)^{1/2}$$

where

p = percent of population with the attribute of interest.

$q = 100 - p$.

n = number of *sample* persons upon which p is based.

For example, from table 11, 5.1 percent of the males said that they have had a sprained back due to physical activity. To compute a standard error estimate for this statistic, the reader should make the following computation:

$$\begin{aligned} \text{Standard error} &= 2.25 (5.1 \times 94.9/3171)^{1/2} \\ &= 0.88 \end{aligned}$$

where

$$p = 5.1$$
$$q = 100 - 5.1 = 94.9$$

from table I,

$$n = 3,171.$$

The reader might then want to make the same calculation for females, resulting in the standard error, 0.68.

If a reader wants to know whether proportionately more males have had sprained backs due to physical activity than females have had, then the following procedure can be used. The procedure used to test the significance of the difference between the percents for males and females consists of dividing the difference between the two percents by the standard error of the difference; that is, a Z -statistic can be computed, where $Z = d/S_d$. An approximation of the standard error of the difference $d = P_m - P_f$ is given by the formula

$$S_d = (S_{P_m}^2 + S_{P_f}^2)^{1/2}$$

where

$$P_m = \text{percent for males,}$$
$$P_f = \text{percent for females,}$$

and S_{P_m} and S_{P_f} are the standard errors, respectively, of P_m and P_f . This estimate might be an overestimate or underestimate of the actual standard error of the difference where two groups or measures are, respectively, positively or negatively correlated.

For our example,

$$Z = \frac{5.1 - 3.6}{(0.88^2 + 0.68^2)^{1/2}}$$
$$= 1.35$$

Because Z is less than 1.96, the difference is not significant at the 95-percent level.

Alternatively, the reader may want to compute a confidence interval (95 percent, for example) around the percent for males. That should be done in the following manner:

$$p \pm 1.96 S_p$$

For $p = 5.1$ and $S_p = 0.88$ the resultant 95-percent confidence interval for the percent of men who have had a sprained back due to physical activity is 3.38 to 6.82. In other words, the probability that the true estimate lies within that interval is 95 percent.

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APPENDIX II

DEMOGRAPHIC TERMS

Age.—Two ages were recorded for each examinee: the age at last birthday at the time of examination and age at the time of the census interview. The age criterion for inclusion in the sample used in this survey was defined as age at time of census interview. The adjustment and weighting procedures used to produce national estimates were based on the age at interview. Data in the detailed tables and text of the report are shown by age at the time of the examination, except that those few who became 75 years by the time of the examination are included in the 65-74-year group.

Race.—Race was recorded as “white,” “Negro,” or “other.” “Other” includes Japanese, Chinese, American Indian, Korean, Eskimo, and all races other than white and Negro. Mexicans were included with “white” unless definitely known to be American Indian or of other non-white race. Negroes and persons of mixed Negro and other parentage were recorded as “Negro.” When a person of mixed racial background was uncertain about his race, the race of his father was recorded.



APPENDIX III

DATA TAPE SUMMARY

SUMMARY OF ARTHRITIS MICRODATA TAPE (HANES Catalog No. 4121)

	<u>Tape positions</u>
CATALOG NUMBER 4121	201
ARTHRITIS HISTORY SUPPLEMENT	
Pain in back or neck on most days for at least 1 month?	225
Has pain been present on any one occasion for at least 6 weeks?	226
Is pain usually located in neck? In upper back? In midback? In lower back?	227
Is pain most intense in neck? In upper back? In midback? In lower back?	231
Pain present when resting at night?	235
Does pain awaken you from sleep at night?	236
Has pain in back ever seemed to spread?	237
Does pain spread to the back of the right leg? To the back of the left leg? Both legs?	238
Does pain spread to the top of the head? To the sides of the body?	241
Has pain in neck ever seemed to spread?	243
Does pain spread to the top and back of the head? To either shoulder area? To the arms or hands? To other locations?	244
Is back or neck pain made worse by coughing, sneezing or deep breathing? With bending or twisting motion? After prolonged activity? By prolonged sitting? After prolonged standing?	248
How old when first experienced recurring back and neck pain?	253
When was last time you had this pain?	254
What is longest episode of back or neck pain you have ever had?	255
Does back or neck pain occur more frequently now than before?	256
Ever had sprained back due to some type of physical activity?	257
Ever had a "whiplash" injury of the neck?	258
Ever had a ruptured disc in either your back or neck?	259
At what age?	260
Were you in traction?	262
Was surgery necessary?	263
Ever stayed in hospital overnight for back or neck pain?	264
Had pain in or around either hip joint most days for at least 1 month?	265
Has pain in hip area been present on any one occasion for at least 6 weeks?	266
Where did you first notice it?	267
In hip area is pain usually most intense in the right buttock? In the left buttock? In both buttocks? In the right groin? In the left groin? In both groins? In the side of right thigh? In the side of left thigh? In the sides of both upper thighs? In other areas?	268
From hip has pain tended to spread to the inside of your leg? To the front of your leg? To the outside of your leg? To the back of your leg?	279
Had pain in or around hip when coughing or sneezing?	282
When hip pain present does it hurt at rest as well as moving?	283

	Tape positions
How old when first experienced recurring pain in hip?	284
Last time you had pain?	285
Longest episode of hip pain you have ever had?	286
Ever had a fractured hip?	287
Which hip was broken?	288
How old when it happened?	289
Was hip in traction?	291
Was there surgery?	292
Ever had a dislocated hip?	293
Which hip dislocated?	294
How old when it happened?	295
Was hip in traction?	297
Was there surgery?	298
Had pain in or around knee most days for at least 1 month?	299
Pain in knee area been present on any one occasion for at least 6 weeks?	300
In which knee did you first have it?	301
How old when first experienced recurring pain in knee?	302
When knee pain present, is it most intense in right knee? In left knee? In both knees? Behind the right knee? Behind the left knee? Behind both knees?	303
When knee pain present, does it hurt at rest as well as moving?	309
When knee pain present, is there also swelling of the knee joint?	310
When pain present, ever had "locking" of the knee?	311
Either knee ever "given way" under you?	312
Which knee gave way?	313
Last time you had this knee pain?	314
Longest episode of knee pain ever had?	315
Ever had a fractured knee?	316
Which knee fractured?	317
Ever had severe twisting of either knee with resultant sprain or swelling lasting more than 2 weeks?	318
Which knee?	319
Ever had any other knee injury?	320
Which knee?	321
Ever had hip, knee or back disease treated by an operation?	322
Which joint?	323
If hip, which hip?	324
If knee, which knee?	325
Had pain or aching in any joint other than hip, back or knee on most days for at least 6 weeks?	326
Were fingers painful? If yes, which fingers?	327
Was wrist painful? If yes, which wrist?	329
Was elbow painful? If yes, which elbow?	331
Was shoulder painful? If yes, which shoulder?	333
Was ankle painful? If yes, which ankle?	335
Was foot painful? If yes, which foot?	337
Any swelling of joints with pain present when joint touched on most days for at least 1 month?	339
Has this swelling been present on any one occasion for at least 6 weeks?	340
Is swelling and tenderness on touching in fingers? If yes, which fingers?	341
Is swelling and tenderness on touching in wrists? If yes, which wrist?	343
Is swelling and tenderness on touching in elbows? If yes, which elbow?	345
Is swelling and tenderness on touching in shoulders? If yes, which shoulder?	347
Is swelling and tenderness on touching in hips? If yes, which hip?	349
Is swelling and tenderness on touching in knees? If yes, which knee?	351
Is swelling and tenderness on touching in ankles? If yes, which ankle?	353
Is swelling and tenderness on touching in feet? If yes, which foot?	355
How old when first experienced swelling of joints?	357

	Tape positions
Last time you had this swelling?	358
Had stiffness in joints and muscles when first getting out of bed in morning on most mornings for at least 1 month?	359
Has stiffness been present on any one occasion for at least 6 weeks?	360
Is morning stiffness usually in fingers? If yes, which fingers?	361
Is morning stiffness usually in wrists? If yes, which wrist?	363
Is morning stiffness usually in elbows? If yes, which elbow?	365
Is morning stiffness usually in shoulders? If yes, which shoulder?	367
Is morning stiffness usually in hips? If yes, which hip?	369
Is morning stiffness usually in knees? If yes, which knee?	371
Is morning stiffness usually in ankles? If yes, which ankle?	373
Is morning stiffness usually in feet? If yes, which foot?	375
Is morning stiffness usually in your back?	377
How long does stiffness last?	379
How old when first experienced morning stiffness of joints?	380
When was last time you had this stiffness?	381
Ever had pain, swelling or stiffness in a joint as a result of accident or injury?	382
Was this the cause of pain, swelling or stiffness mentioned previously?	383
Is this the cause of any pain, swelling or stiffness which might still be present?	384
Have you ever been treated by any of the following for your joint troubles? (General practitioner, internist, rheumatologist, orthopedist, chiropractor, osteopath, foot doctor, physical therapist, occupational therapist, other, never been treated)	385
Are you currently being treated by doctor for troubles just described?	396
What type of doctor?	397
Did he say the problem was one of the following? (Acute arthritis; arthritis of spine, hip, upper and lower extremities; arthritis due to an infection; rheumatoid arthritis, etc.)	398
Did he say the problem was one of the following? (Osteoarthritis and allied conditions; other specified forms of arthritis; arthritis, unspecified, etc.).....	399
Did he say the problem was one of the following? (Rheumatism, polymyositis, and dermatomyositis; rheumatism, etc.)	400
Did he say the problem was one of the following? (Osteocyclitis and periostitis, etc.)	401
Did he say the problem was one of the following? (Other diseases of the musculoskeletal system, etc.)	402
Did he say the problem was something other than listed above?	403
When was the last time you saw him?	404
Who originally referred you to this doctor?	405
When do you usually see him?	406
How long will it be until your next visit with him?	407
Ever used splints or casts for treatment of your joint troubles? Do splints or casts do you any good? If yes to either, do you use splints or casts regularly?	408
Ever used braces for treatment of your joint troubles? Do they do you any good? If yes to either, do you use them regularly?.....	411
Ever used diathermy or paraffin for treatment of your joint troubles? Do they do you any good? If yes to either, do you use them regularly?	414
Ever use hot packs or heating pads for treatment of joint troubles? Do they do you any good? If yes to either, do you use them regularly?	417
Ever use cold packs or ice for treatment of joint troubles? Do they do you any good? If yes to either, do you use regularly?	420
Ever use rest for treatment of joint troubles? Does it do any good? If yes to either, do you rest regularly?	423
Ever use traction for treatment of joint troubles? Does it do any good? If yes to either, do you use it regularly?	426
Ever use exercise or physical therapy for treatment of joint troubles? Does it do any good? If yes to either, do you use it regularly?	429
Ever use aspirin for treatment of joint troubles? Does it do any good? If yes to either, do you use it regularly?	432
Ever use a cane for treatment of joint troubles? Does it do any good? If yes to either, do you use it regularly?	435
Ever use a crutch for treatment of joint troubles? Does it do any good? If yes to either, do you use it regularly?	438
Ever use a stiff mattress for treatment of joint troubles? Does it do any good? If yes to either, do you use it regularly?	441
Ever use a bedboard for treatment of joint troubles? Does it do any good? If yes to either, do you use it regularly?	444
Ever had injections into joints? Did they do any good?	447
Ever taken any cortisone-like medicine by mouth for your joints? If yes, did it do any good?	449
Ever taken any Butazolidin for your joints? If yes, did it do any good?	451

Ever taken Darvon or Tylenol for your joints? If yes, did it do any good?	453
Ever taken Indocin for your joints? If yes, did it do any good?	455
Can you do the following things without the help of someone else or the help of some special device? (Go up and down stairs; get into or out of a car; use washing facilities; dress yourself; feed yourself; get into or out of bed?)	457
At present time, does joint condition restrict your physical activity?	463
Ever had to stay in bed at home for long periods because of joints?	464
Ever stayed overnight in hospital because of joint problems?	465
With respect to your joint trouble, would you say condition is? (Mild/moderate/severe)	466
Job status 1 month before first developing joint condition?	467
As result of joint condition, has there been a change in your job status? What is it now?	468
Days lost during past 12 months as result of joint condition?	470

ARTHRITIS ASSESSMENTS

Quality of film (knees)	471
General abnormal	472
Osteoarthrosis	473
Quality of film (pelvis)	474
Sacroiliac joint — general abnormal	475
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Hips — general abnormal	477
Hips — osteoarthrosis	478
Hip measurement (plus/minus) measurement	479

ARTHRITIS DATA SUMMARY—HANES I

Arthritis assessments	Tape locations		
	First reading	Second reading	Adjudicated reading
<u>Recording Form — KNEES</u>			
Reader number	483	505	—
Osteoarthritis (overall grade)	484	506	527
Joint space narrowing (by location)	485	507	528
Osteophytosis (grade by quadrants)	489	511	532
Tibial spine osteophytes	497	519	540
Bony sclerosis near joint margin	498	520	541
Cysts near joints	499	521	542
Erosions	500	522	543
Osteoporosis	501	523	544
Chondrocalcinosis (right/left)	502	524	545
Loose calcified bodies	504	526	547
<u>Recording Form — HIPS</u>			
Reader number	548	584	—
Osteoarthritis (overall grade—right/left hip)	549	585	620
Joint space narrowing (by location)	551	587	622
Bony sclerosis (by location)	557	593	628
Osteophytosis (by location)	561	597	632
Cysts	575	611	646
Erosions	576	612	647
Osteoporosis	577	613	648
Acetabular abnormalities	578	614	649
Chondrocalcinosis (right)	579	615	650
Chondrocalcinosis (symphysis)	580	616	651
Chondrocalcinosis (left)	581	617	652
Head deformity (primary/secondary)	582	618	653
<u>Recording Form — SACROILIAC JOINTS</u>			
Reader number	655	663	—
Sacroiliitis (overall grade)	656	664	671
Erosions (right/left)	657	665	672
Sclerosis (right/left)	659	667	674
Ankylosis (right/left)	661	669	676



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