

Industrial Injuries To Women

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LETTER OF TRANSMITTAL

UNITED STATES DEPARTMENT OF LABOR,
WOMEN'S BUREAU,
Washington, March 21, 1947.

SIR: I have the honor to transmit herewith a report on the occurrence of injuries to women in manufacturing and in nonmanufacturing industries. This report is based on data obtained from employers by the Industrial Hazards Division of the Bureau of Labor Statistics. The material was analyzed and the report written by Jennie Mohr of the Research Division of the Women's Bureau.

Respectfully submitted.

FRIEDA S. MILLER, *Director.*

Hon. L. B. SCHWELLENBACH,
Secretary of Labor.

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INDUSTRIAL INJURIES TO WOMEN

INTRODUCTION

The development of adequate safety programs in industry and the control of accidents to workers require a firm basis of factual information. Extensive reports on the occurrence of industrial injuries have provided much of this information on which to build such programs. Injury frequency rates in various industries have been determined on the basis of a large body of data concerning the numbers of injuries and the extent to which workers are exposed to hazards. Systematic reporting of injuries has permitted the study of trends and fluctuations in industrial injury experience.

Relatively little statistical information has been available, however, on injuries to women workers, although a few studies have been made in recent years which report separately industrial injuries occurring to women and to men. Two reports on the subject were published by the Bureau of Labor Statistics during 1945.¹ A summary of relevant findings in various studies is presented in Dr. Baetjer's book, *Women in Industry*, published in 1946.² Workmen's Compensation reports in 18 States give some information on reported or compensated claims by sex. Generally such reports give only the number of claims, although in a few States more detailed figures for men and women separately are given by industry, age of worker, type and cause of injury, or other factors.

The present study has been undertaken to discover the extent of injury to women in various industries and to obtain comparison, on as broad a basis as possible, of the experience of men and women. The Bureau of Labor Statistics regularly collects and publishes injury information from a representative group of manufacturing firms, although such data are not secured for men and women separately. At the request of the Women's Bureau and the Industrial Division of the Children's Bureau (now Child Labor and Youth Employment Branch of the Division of Labor Standards) the Bureau of Labor Statistics asked the group of manufacturing firms which periodically give information on injuries to report this information by sex and age (minors and adults) for one quarter of the year 1945.³ Soon afterward information on injuries by sex and age was also asked by the Bureau of Labor Statistics from a group of nonmanufacturing firms for the year 1945 as a whole.

¹ U. S. Department of Labor, Bureau of Labor Statistics. *Industrial Injuries to Women Workers*, by Max D. Kossoris. *Monthly Labor Review* 60: 311-315, February 1945. *Work Injuries to Women in Shipyards*, by Max D. Kossoris. *Monthly Labor Review* 60: 551-560, March 1945.

² Baetjer, Anna M. *Women in Industry, Their Health and Efficiency*. W. B. Saunders Co., Philadelphia, Pa., 1946. Chs. 8 and 9.

³ In the iron and steel, electrical equipment, and machinery (except electrical) industry groups, some firms gave information for one quarter and some for another. For purposes of this study the records of the two quarters were combined for each of these industries.

Each reporting firm was asked to give information for the period covered on the number and type of injuries to men and to women, and to adults and minors. Manufacturing firms were asked also for separate reports on production and nonproduction workers.

This report presents first a summary of the quarterly reports from the manufacturing firms and second a summary of the annual reports of the nonmanufacturing firms. Injuries to adults and minors are being analyzed by the Child Labor and Youth Employment Branch of the Division of Labor Standards.

The report is based on the replies from 20,000 establishments which were willing to give injury data separately for men and women workers. The numbers of reporting firms are, however, only parts of the total samples of establishments included in Bureau of Labor Statistics reports and may not necessarily be as representative of the country as the total Bureau of Labor Statistics groups. Differences in frequency rates for all workers in manufacturing industries as reported here and as published in the Bureau of Labor Statistics quarterly reports occur because not all of the firms scheduled responded with data by sex and because some closely related industries have been combined in the following pages.

MANUFACTURING INDUSTRIES

EMPLOYMENT OF WOMEN

Over 9,000 manufacturing establishments reported injuries⁴ by sex during one quarter of 1945. Ninety-two percent of those reporting employed women. The total number of workers in all the establishments was 2,843,588, of whom 836,753, or 29 percent, were women. Included in the report are large woman-employing industries, such as textiles, apparel, electrical equipment, leather, and food products, as well as those in which women are a small proportion of the workers—for example, lumber, foundries and the manufacturing of iron and steel products, and heavy machinery. Even in these latter industries, however, women are found in considerable force, despite the fact that they are a small percentage of the workers. More than 116,000 women were employed by the reporting firms in the iron and steel industries—over 26,000 in the manufacture of basic iron and steel and nearly 14,000 in foundries and forgings.

Four major industry groups accounted for over half the women reported: iron and steel, textiles, electrical equipment, and machinery (except electrical). In iron and steel they were predominantly in the manufacture of fabricated metal products and stamped and pressed metal products. Almost 80 percent of the women in textiles were in the manufacture of textiles and cotton yarn, and about 15 percent were in knit goods. The third largest group, women in the electrical equipment industries, were engaged principally in the making of industrial electrical equipment, radios and phonographs, and communication and signaling equipment. Nearly half of the 92,000 women in machine manufacturing were employed on various types of industrial machinery.

Total numbers of workers in the 18 major industry groups represented in the reports are given in table I. Table II presents the employment figures for men and women in 63 industry classifications within these groups.

Employment of both men and women was largely concentrated in production tasks. Of the women employed in these firms, 76.5 percent were production workers. The proportion ranged from over 90 percent in the manufacture of clothing, boots and shoes, textiles and cotton yarns, and pottery to approximately 40 percent in the manufacture of paints and varnishes, motor vehicles, and tanks.

No classification by occupation is available, other than the breakdown between production and nonproduction workers. For this reason, exposure to hazards is not known except in general terms relating to the character of the industry and of the production processes it involves.

The data on injuries presented in the following section are primarily in terms of all men or women in particular industries. For about half of the industries valid injury data could also have been presented separately for production workers, but since these data

⁴ Only injuries which result in disability are reported. A disabling injury is one which causes death, permanent impairment, or an inability to work extending beyond the day or shift on which the injury occurred.

were not statistically significant for all the industries or groups of industries considered, major emphasis has been put on the comparison of data regardless of the proportion of production to nonproduction workers.

TABLE I.—Distribution of Employment by Sex in 9,154 Manufacturing Establishments, Classified by Industry Group, for One Quarter of 1945

Industry group	Number of workers		
	Total	Women	Men
Total.....	2,843,588	836,753	2,006,835
Apparel.....	104,247	78,553	25,694
Chemicals.....	110,407	33,589	76,818
Electrical equipment.....	258,929	109,423	149,506
Food.....	87,310	31,724	55,586
Furniture and lumber products.....	39,948	8,223	31,725
Iron and steel.....	646,283	116,186	530,097
Leather.....	57,896	28,798	29,098
Lumber.....	34,926	3,977	30,949
Machinery, except electrical.....	466,190	92,197	373,993
Nonferrous metals.....	51,988	13,781	38,207
Ordinance.....	70,409	15,488	54,921
Paper.....	135,187	35,002	100,185
Printing.....	4,759	1,821	2,938
Rubber.....	83,480	28,384	55,096
Stone, clay, and glass.....	43,080	14,125	28,955
Textiles.....	235,361	111,830	123,531
Transportation equipment.....	348,365	85,649	262,716
Miscellaneous manufacturing.....	64,823	28,003	36,820

Differences in the proportion of production to nonproduction workers in an industry make important differences in the proportion of workers in each of the various types of occupations; and the degree of hazardousness of the men's versus the women's occupations effects differences in the proportion of injuries to men and the proportion to women. Since, however, the data on injury experience of men and women are not available by occupation, no comparisons of accident experience of men and women on the same job, under similar conditions of work, are possible.

The report does show what has been the injury experience of women in selected manufacturing industries as a whole and how the experience of women in these industries compares with the experience of men. In other words the facts show how hazardous is an industry to women, on their jobs, as compared with its hazardousness to men on theirs, and how great is the danger in one industry for its women workers compared to the danger in other industries for the women they employ.

NUMBER OF INJURIES

The 836,753 women employed in the reporting firms received 4,072 injuries out of the total of 27,063. These figures show that the women, who were 29 percent of the total number of workers, received but 15 percent of the injuries. Approximately 1 woman in 205 was injured during the quarter of the year covered by reports, whereas 1 man in 85 had been injured. The fact that women were thus injured less than men undoubtedly results in large measure from the fact that women are largely on less heavy or hazardous jobs than the men. The number of injuries in each industry classification is shown in table II.

TABLE II.—Distribution of Employment and Injuries by Sex in 9,154 Manufacturing Establishments, Classified by Industry, for One Quarter of 1945

Industry	Number of establishments reporting	Employment						Injuries						Percent women are of all workers	Percent injuries to women are of all injuries
		Number of women			Number of men			Number of injuries to—			Injury frequency rates for—				
		Total	Production workers	Non-production workers	Total	Production workers	Non-production workers	Total	Women	Men	Total	Women	Men		
Apparel:															
Clothing and accessories.....	707	68,940	63,944	4,996	17,833	14,758	3,075	223	148	75	4.7	4.0	7.7	79.4	66.4
Trimmings and fabricated textile products, not elsewhere classified.....	75	9,613	8,533	1,080	7,861	6,735	1,126	150	56	94	14.4	10.0	19.7	55.0	37.3
Chemicals:															
Drugs, toiletries, and insecticides.....	72	13,353	9,600	3,753	10,493	7,304	3,189	228	80	148	16.1	10.2	23.4	56.0	35.1
Paints, varnishes, and colors.....	48	2,278	950	1,328	7,483	5,790	1,693	119	7	112	20.2	5.3	24.5	23.3	5.9
Synthetic textile fibers.....	10	6,300	5,112	1,188	10,798	8,986	1,812	131	53	78	13.6	15.1	12.8	36.8	40.5
Other.....	291	11,658	6,191	5,467	48,044	38,981	9,063	558	44	514	15.2	6.3	17.3	19.5	7.9
Electrical equipment:															
Electrical equipment for industrial use.....	229	59,299	42,974	16,325	96,664	74,394	22,270	695	192	503	7.8	5.7	9.1	38.0	27.6
Radios and phonographs, communication and signaling equipment.....	153	35,718	28,246	7,472	33,113	22,594	10,519	227	81	146	6.0	4.1	8.1	51.9	35.7
Batteries.....	18	3,213	2,848	365	3,443	2,943	500	74	24	50	17.9	11.9	23.7	48.3	32.4
Insulated wire and cable.....	19	2,923	2,361	562	7,068	6,033	1,035	93	11	82	15.5	6.3	18.3	29.3	11.8
Other.....	50	8,270	6,688	1,582	9,218	6,948	2,270	87	27	60	8.7	5.7	11.5	47.3	31.0
Food:															
Baking and confectionery.....	52	6,342	5,603	739	7,762	6,717	1,045	148	40	108	17.1	10.4	22.5	45.0	27.0
Canning and preserving.....	36	3,976	3,401	575	3,952	3,125	827	190	29	161	26.7	11.9	41.5	50.2	22.3
Slaughtering and meat packing.....	377	10,931	8,894	2,037	29,188	24,598	4,590	842	165	677	35.5	25.9	39.0	27.2	19.6
Other.....	89	10,475	8,435	2,040	14,684	12,692	1,992	240	53	187	15.5	8.3	20.5	41.6	22.1
Furniture and lumber products:															
Furniture, wood.....	64	2,763	2,074	689	7,912	6,980	932	174	35	139	28.4	22.8	30.3	25.9	20.1
Wooden containers.....	245	3,089	2,631	458	13,913	12,932	981	315	36	279	31.1	19.9	33.5	18.2	11.4
Other.....	138	2,371	1,827	544	9,900	8,985	915	153	19	134	20.9	13.7	22.6	19.3	12.4
Iron and steel:															
Fabricated structural steel and ornamental metal work.....	212	3,196	1,838	1,358	25,614	22,246	3,368	462	12	450	25.8	6.4	28.1	11.1	2.6
Fabricated metal products.....	412	31,105	23,835	7,270	77,385	68,267	9,118	1,269	201	1,068	18.4	10.5	21.4	28.7	15.8
Forgings and foundries.....	564	13,663	8,042	5,621	120,716	109,486	11,230	2,856	119	2,737	34.6	14.6	36.8	10.2	4.2
Heating equipment and plumbers' supplies.....	67	4,489	2,874	1,615	18,448	16,343	2,105	256	30	226	17.7	10.9	19.3	19.6	11.7
Iron and steel.....	140	26,285	18,635	7,650	190,588	172,501	18,087	1,395	111	1,284	10.3	6.9	10.8	12.1	8.0

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 INDUSTRIAL INJURIES TO WOMEN

TABLE II.—Distribution of Employment and Injuries by Sex in 9,154 Manufacturing Establishments, Classified by Industry, for One Quarter of 1945—Continued

Industry	Number of establishments reporting	Employment						Injuries						Percent women are of all workers	Percent injuries to women are of all injuries
		Number of women			Number of men			Number of injuries to—			Injury frequency rates for—				
		Total	Production workers	Non-production workers	Total	Production workers	Non-production workers	Total	Women	Men	Total	Women	Men		
Iron and steel—Continued															
Metal coating, engraving, and vitreous enamel products.....	70	2,436	2,102	334	3,628	3,290	338	84	18	66	23.2	12.7	29.9	40.2	21.4
Plate fabrication and boiler-shop products.....	136	4,261	2,497	1,764	23,377	20,119	3,258	541	30	511	30.8	11.5	34.1	15.4	5.5
Stamped and pressed metal products.....	198	15,443	13,005	2,438	25,890	22,652	3,238	564	203	361	21.9	21.5	22.1	37.4	36.0
Wire and wire products.....	126	8,472	6,759	1,713	22,180	19,400	2,780	396	76	320	20.7	14.7	22.9	27.6	19.2
Other.....	94	6,836	5,475	1,361	22,271	20,277	1,994	389	47	342	21.4	11.0	24.6	23.5	12.1
Leather:															
Boots and shoes.....	240	26,164	23,852	2,312	23,051	21,037	2,014	270	135	135	9.7	9.1	10.3	53.2	50.0
Other.....	39	2,634	2,334	300	6,047	5,644	403	139	22	117	26.1	14.5	30.8	30.3	15.8
Lumber: Sawmills, planing mills, plywood mills, and veneer mills.....	425	3,977	3,016	961	30,949	28,243	2,706	708	60	648	34.4	26.0	35.5	11.4	8.5
Machinery, except electrical:															
Agricultural machines, tractors.....	45	7,969	4,844	3,125	38,887	31,269	7,618	509	52	457	17.3	10.5	18.7	17.0	10.2
Construction and mining machinery.....	98	7,678	3,717	3,961	41,362	35,105	6,257	602	26	576	19.7	5.7	22.2	15.7	4.3
Commercial and household machinery.....	47	10,647	6,447	4,200	29,489	22,941	6,548	335	38	297	13.5	6.0	16.1	26.5	11.3
Engines and turbines.....	42	6,132	2,680	3,452	31,036	24,938	6,098	266	17	248	12.5	4.9	13.9	16.5	6.4
General industrial machinery.....	853	44,442	24,471	19,971	183,478	154,919	28,559	2,245	197	2,048	16.1	7.5	18.0	19.5	8.8
Special industrial machinery.....	91	4,600	2,521	1,979	20,184	16,851	3,333	287	16	271	18.8	6.0	21.5	18.2	5.6
Other.....	184	10,829	7,307	3,522	29,557	22,448	7,109	340	46	294	14.5	7.4	17.0	26.8	13.5
Nonferrous metals:															
Watches, clocks, jewelry, and silverware.....	15	3,222	2,712	510	3,510	3,022	488	34	15	19	8.7	8.1	9.3	47.9	44.1
Other.....	313	10,559	7,812	2,747	34,697	30,514	4,183	539	66	473	20.2	10.5	23.2	23.3	12.2
Ordnance:															
Ammunition.....	76	10,463	7,953	2,510	26,451	22,632	3,819	347	47	300	16.2	7.6	19.6	28.3	13.5
Guns.....	17	2,175	1,335	840	12,559	10,935	1,624	141	6	135	17.5	5.0	19.7	14.8	4.3
Tanks and tank components (military).....	14	993	398	595	6,366	4,794	1,572	60	2	58	12.6	(1)	14.0	13.5	3.3
Other.....	29	1,857	795	1,062	9,545	7,459	2,086	85	2	83	13.4	2.0	15.6	16.3	2.4
Paper:															
Paper and pulp.....	316	19,558	14,998	4,560	81,735	73,107	8,628	1,425	104	1,321	22.9	9.0	26.2	19.3	7.3
Paper boxes and other products.....	336	15,444	13,100	2,344	18,450	16,121	2,329	392	88	304	19.4	9.8	27.2	45.6	22.4
Printing: Printing, book and job.....	25	1,821	1,387	434	2,938	2,445	493	27	6	21	9.6	5.6	12.1	38.3	22.2

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Rubber:																
Tires and tubes.....	23	9,071	6,472	2,599	25,734	21,794	3,940	255	22	233	11.8	3.9	14.5	26.1	8.6	
Rubber boots and shoes, and other rubber products.....	79	19,313	16,024	3,289	29,362	25,070	4,292	372	82	290	12.5	7.0	16.0	39.7	22.0	
Stone, clay, and glass:																
Glass.....	25	5,933	4,976	957	12,505	11,106	1,399	167	26	141	15.6	7.6	19.4	32.2	15.6	
Pottery and related products.....	26	2,680	2,526	154	3,675	3,326	349	73	16	57	20.8	11.0	27.7	42.2	21.9	
Other.....	65	5,512	4,240	1,272	12,775	11,017	1,758	226	19	207	20.3	5.7	26.5	30.1	8.4	
Textiles:																
Textiles and cotton yarns.....	325	88,543	83,368	5,175	99,390	92,144	7,246	1,418	475	943	12.9	9.2	16.2	47.1	33.5	
Dyeing and finishing.....	43	4,534	3,537	997	14,148	12,899	1,249	153	18	135	14.0	6.9	16.2	24.3	11.8	
Knit goods.....	65	15,732	14,034	1,698	5,701	4,667	1,034	91	48	43	7.5	5.4	13.2	73.4	52.7	
Other.....	25	3,021	2,677	344	4,292	3,749	543	62	25	37	14.2	14.0	14.4	41.3	40.3	
Transportation equipment:																
Aircraft.....	18	31,920	20,294	11,626	61,141	38,087	23,054	315	89	226	5.5	4.5	6.1	34.3	28.3	
Aircraft parts.....	133	26,973	19,110	7,863	78,167	59,722	18,445	643	125	518	10.2	7.8	11.1	25.7	19.4	
Motor vehicles.....	75	11,487	4,482	7,005	52,962	37,728	15,234	509	24	485	13.2	3.6	15.3	17.8	4.7	
Motor vehicles parts.....	55	10,560	6,794	3,766	37,779	31,839	5,940	522	90	432	17.5	13.8	18.6	21.8	17.2	
Railroad equipment.....	35	4,709	2,803	1,906	32,667	27,914	4,753	324	33	291	14.2	11.7	14.5	12.6	10.2	
Miscellaneous manufacturing:																
Scientific instruments and supplies, optical and related products.....	84	11,964	8,354	3,610	17,382	13,262	4,120	109	23	86	6.3	3.3	8.5	40.8	21.1	
Miscellaneous manufacturing, not elsewhere classified.....	201	16,039	13,254	2,785	19,438	16,377	3,061	275	65	210	13.0	6.9	17.9	45.2	23.6	

1 Less than 1 million hours of exposure.

The comparison of women's and men's injury experience is shown in the last two columns of table II, which give for each industry the proportion of workers who are women and the proportion of injuries that occur to women. A few industries show an unusually close relationship between the proportion of women and proportion of injuries received by women. In the manufacture of stamped and pressed metal products, women's injuries and women's employment were in almost the same proportion—36 and 37 percent, respectively. In the boot and shoe industry 53 percent of the workers were women, and 50 percent of the injuries were women's. Similar figures for the manufacture of watches, jewelry, etc., were 48 and 44 percent; and for synthetic textile fibers, in which women had a higher injury frequency rate than men, the percentages of women's employment and women's injuries were 37 and 40, respectively.

On the other hand, women experienced a disproportionately low percentage of the injuries in the tire and tube industry; comprising more than one-fourth of the workers they received less than one-tenth of the injuries. Similarly, in the manufacture of general industrial machinery women were reported to be about 20 percent of the workers and to have received less than 9 percent of the injuries; in paper and pulp, 19 percent of the workers, receiving 7 percent of the injuries; and in paints, varnishes, and colors, 23 percent of the workers, with 6 percent of the injuries in the industry.

The similarities and differences between the injury experience of men and women indicated above point up sharply the desirability of obtaining information on the occupations of the workers, by sex, in reporting firms. It would then be possible to determine the way in which the injury rates are related to the specific occupations of men and women.

The injury experience of women not only differed from that of men in the same industries; it varied among the women themselves from industry to industry. A comparison of the employment of women in the major industry groups with the occurrence of injuries to women in those groups shows a few outstanding differences between the proportion of all women employed by an industry and the proportion of all injuries sustained by those women. Women in iron and steel were 14 percent of all the women workers reported, but they suffered 21 percent of all the injuries to women. The food industries, with slightly less than 4 percent of all the women, reported 7 percent of all their injuries. Slaughtering and meat packing, as might be expected, accounted for well over half of the injuries to women in the food industries. The apparel industry, on the other hand, showed 5 percent of all the women's injuries among the women in this group, who were somewhat more than 9 percent of all women; and the women in the electrical equipment industries, 13 percent of the total, experienced only 8 percent of the injuries to women.

INJURY FREQUENCY RATES

The injury frequency rates, defined as the number of injuries received per million employee-hours worked, are shown in table II for the reporting firms in each of 63 industries. Each rate given is based on over one million hours of exposure. The following paragraphs give the range of injury frequency rates derived for women

and a comparison with men's rates. They indicate the industries in which injury frequency was approximately the same for the two sexes, and those in which men's rate of injury was considerably higher than women's.

The injury frequency rates for women range from 2.0 in the manufacture of various ordnance materials (sighting and fire-control equipment, small arms, and ordnance and accessories not elsewhere classified) to 25.9 in slaughtering and meat packing and 26.0 in lumber mills (sawmills, planing mills, plywood mills, and veneer mills). Roughly these frequency rates correspond to the numbers of women injured for every 500 women employed throughout a year. Over half (36) of the frequency rates were under 10. Only 4 were over 20: in addition to the two mentioned above, a frequency rate of 21.5 was found in the manufacture of stamped and pressed metal products, and 22.8 in the manufacture of wooden furniture.

Among the men, on the other hand, only 6 frequency rates under 10 occurred; and 27 were over 20. Maximum rates of 41.5 and 39.0 were found in canning and preserving and in slaughtering and meat packing, respectively. Forgings and foundries showed a rate of 36.8 and lumber mills a rate of 35.5. The minimum frequency rates for men are found in the following industries:

Clothing and accessories.....	7.7
Electrical equipment for industrial use.....	9.1
Radios and allied products.....	8.1
Watches, clocks, jewelry and silverware.....	9.3
Aircraft.....	6.1
Scientific instruments, etc.....	8.5

It is obvious that the injury experience of men is more serious throughout the manufacturing industries than that of women. In only one industry, the manufacture of synthetic textile fibers, was the rate for women higher than that for men: 15.1 as compared with 12.8. In four other industries, the injury rates for women and men are closely comparable. They are:

	<i>Women</i>	<i>Men</i>
Stamped and pressed metal products.....	21.5	22.1
Boots and shoes.....	9.1	10.3
Watches, clocks, jewelry, and silverware.....	8.1	9.3
Textile goods, "other".....	14.0	14.4

Of the 10 industries with the highest injury frequency rates for women, 6 were also among the 10 highest for men. These 6 are slaughtering and meat packing, wood furniture, wooden containers, forgings and foundries, leather and leather products other than boots and shoes, and lumber. For the rest, there is great diversity in the relative positions of the various industries on the frequency-rate scale for men and for women. Such diversity is at least in part reflection of the differences in exposure to hazards due to the differences in occupation or working environment of men and women.

INJURIES TO PRODUCTION AND NONPRODUCTION WORKERS

As already noted, most of the workers, both men and women, were in production jobs. As would be expected injuries were more common among production workers than nonproduction workers. Of the total of 2,843,588 workers, 2,331,199 or 82 percent were in produc-

tion. Of the 836,753 women, the percentage of production workers was 76; and 1,691,201, or 84 percent of the 2,006,835 men workers, were on production jobs. In most of the industries, over 95 percent of the injuries, among both men and women, occurred to production workers.

A number of industries report between 85 and 100 percent of their injuries to women occurring in production, although much smaller proportions of the women in these industries are production workers. In the motor vehicle industry, for example, 61 percent of the women are in nonproduction occupations; but all of the injuries reported were in production. Forgings and foundries report 41 percent of the women workers, and 4 percent of the injuries to women, in nonproduction. General industrial machinery, special industrial machinery, and construction and mining machinery all show comparable figures indicating a much higher than average rate of injuries in production as compared with nonproduction; their figures are 55, 56, and 48 percent of the women in production, respectively, with 93, 100, and 88 percent of the injuries, respectively, occurring in this category.

The textile and apparel industries, on the other hand, showed the proportions of workers and injuries in production to be somewhat more nearly alike than the average. For the former, 99 percent of the injuries to women and 93 percent of the women workers were reported in production. The apparel industry reported the only instance in which the ratio of production to nonproduction workers was slightly higher than the ratio of production to nonproduction injuries: 92 percent of the women workers, who were in production, received 90 percent of the injuries to women.

Whether such deviations from the average distribution of injuries among production and nonproduction workers are characteristic of the industries cannot be determined by a comparison of data for production and nonproduction workers, as in several instances the number of workers involved in each group is too small for statistical analysis.

KINDS OF DISABILITY

For both men and women over 95 percent of the injuries resulted in temporary disabilities. Among the 4,072 injuries to women, 6 were fatalities, 0.2 percent of all women's injuries. There were also 184 permanent disabilities, 4.5 percent of all women's injuries. Comparable figures for men are 85 fatalities and 884 permanent disabilities, which are 0.4 percent and 3.8 percent, respectively, of the total number of injuries.

Of the 6 fatalities to women, 2 occurred in the apparel industry, 2 in iron and steel industries, and 1 each in the electrical equipment and textile groups. The manufacture of stamped and pressed metal products, with the high injury frequency of 21.5 for women, had 1 of the 2 iron and steel fatalities; the other occurred in the making of basic iron and steel, where the frequency rate for women, 6.9, was relatively low. The fatality in the electrical industry occurred in the manufacture of radios and phonographs, and that in textiles in the knit goods industry.

TABLE III.—Fatal and Permanently Disabling Injuries to Women in 9,154 Manufacturing Establishments, Classified by Industry, for One Quarter of 1945

Industry ¹	Number of injuries		Industry ¹	Number of injuries	
	Fatal	Permanently disabling		Fatal	Permanently disabling
Clothing and accessories.....	2	-----	Iron and steel, "other".....	-----	5
Drugs, toiletries and insecticides.....	-----	1	Boots and shoes.....	-----	5
Synthetic textile fibers.....	-----	1	Lumber (sawmills, etc.).....	-----	1
Chemicals, "other".....	-----	4	Agricultural machines, and tractors.....	-----	7
Electrical equipment for industrial use.....	-----	15	Construction and mining machinery.....	-----	2
Radio and phonographs, communication and signaling equipment.....	1	5	Commercial and household machinery.....	-----	1
Batteries.....	-----	3	General industrial machinery.....	-----	6
Baking and confectionery.....	-----	1	Machinery, "other".....	-----	1
Canning and preserving.....	-----	1	Watches, clocks, jewelry, and silverware.....	-----	2
Slaughtering and meatpacking.....	-----	5	Nonferrous metals, "other".....	-----	5
Food industries, "other".....	-----	2	Paper and pulp.....	-----	4
Furniture, wood.....	-----	1	Paper boxes and other products.....	-----	5
Wooden containers.....	-----	5	Rubber boots and shoes, and other rubber products.....	-----	7
Fabricated metal products.....	-----	11	Textiles and cotton yarns.....	-----	8
Forgings and foundries.....	-----	4	Knit goods.....	1	-----
Heating equipment and plumbers' supplies.....	-----	2	Textiles, "other".....	-----	2
Iron and steel.....	1	4	Miscellaneous manufacturing, not elsewhere classified.....	-----	1
Metal coating, engraving, and vitreous enamel products.....	-----	2	Aircraft parts.....	-----	3
Stamped and pressed metal products.....	1	32	Motor vehicle parts.....	-----	2
Wire and wire products.....	-----	3	Ammunition.....	-----	14
			Stone, clay, and glass, "other".....	-----	1

¹ Only industries for which fatal or permanently disabling injuries were reported are shown here.

Table III gives the distribution by industry of the fatal and permanently disabling injuries to women. Although for the entire group these more serious injuries constitute less than 5 percent of all injuries, their frequency varies considerably from one industry to another. High on the list is the manufacture of ammunition, with 14 permanent disabilities out of 47 injuries, or nearly 30 percent. Stamped and pressed metal products also showed a high percentage of serious injuries, 16 percent of the total 203 injuries being fatal or permanently disabling. Other industries showing more than 10 percent of women's injuries as fatalities or permanent disabilities are:

Industry	Percent of injuries fatal or permanently disabling
Batteries.....	12
Wooden containers.....	14
Metal coating, engraving, and vitreous enamel products.....	11
Iron and steel, "other".....	11
Agricultural machinery, tractors.....	13
Watches, clocks, jewelry, and silverware.....	13

All of the 6 fatalities and all but 3 of the 184 permanent disabilities occurred among production workers. The 3 permanent injuries to nonproduction workers were found in the manufacture of agricultural machines and tractors, structural clay products (in "other" stone, clay, and glass), and wooden containers.

NONMANUFACTURING INDUSTRIES

Records of industrial injuries by sex of worker have been obtained for the entire year 1945 from 10,665 establishments in nonmanufacturing industries. Of these, 3,019 were in wholesale trade, 6,145 in retail trade, and 1,501 in other nonmanufacturing industries. They employed about 445,000 workers, of whom 52 percent were in retail trade, 20 percent in wholesale trade, and 28 percent in other nonmanufacturing industries. Table IV gives details of the distribution of workers in the 29 industry classifications listed. It also indicates, in showing the number of reporting plants for each industry, that on the average the firms are small. Mail order houses and electric light and power companies are the largest, with average numbers of about 700 and 500 persons per firm, respectively.

As in the case of the manufacturing industries, the data here presented for nonmanufacturing cover only the responding firms, and cannot be taken as necessarily representative of nonmanufacturing industries throughout the country.

EMPLOYMENT OF WOMEN

In the nonmanufacturing firms covered by this survey, women number 195,172 and constitute 44 percent of all employees reported—a considerably larger proportion than is found in the manufacturing industries. In retail trade about half of the workers are women. The wholesale trade firms, on the other hand, report that only 28 percent of their workers are women. (For individual industries see table IV.)

Women predominate in variety and limited-price stores and in mail-order houses, where they are over 80 percent of the workers. Other retail trade industries in which women comprise more than half the workers are apparel, department and general merchandise, and drug stores. Approximately two-thirds of the workers in cleaning and dyeing and in laundries, and slightly over half those in hotels, are women. In the various wholesales trades, women are from one-fifth to two-fifths of the employees.

The following sections will discuss the number of injuries to women, the injury frequency rates, and the types of disability suffered.

NUMBER OF INJURIES

During 1945 the number of injuries reported by the nonmanufacturing firms covered in this survey was 12,095, of which 2,621 occurred to women and 9,474 to men. Thus women, constituting 44 percent of all workers reported, received only 22 percent of all the injuries. In retail trade, they were 49 percent of the workers and had 23 percent of the injuries; in wholesale trade, comprising 28 percent of the workers, they suffered only 9 percent of the injuries. The difference is least in the other nonmanufacturing industries, where women, 45 percent of the workers, received 30 percent of the injuries.

In proportion to the number of women employed, the records for injuries to women were highest in drug and chain food stores among the retail trades, and in hotels among the other industries. Women working in drug stores comprised only 6 percent of all the women in

TABLE IV.—Distribution of Employment and Injuries by Sex in 10,665 Nonmanufacturing Establishments, Classified by Industry, 1945

Industry	Number of establishments reporting	Employment			Injuries						Percent women are of all workers	Percent injuries to women are of all injuries	
		Total	Number of women	Number of men	Number of injuries to—			Injury frequency rate for—					
					Total	Women	Men	Total	Women	Men			
Retail trade:													
Apparel.....	836	36,452	23,169	13,283	233	136	97	3.2	3.0	3.6	63.6	58.4	
Automotive dealers.....	1,077	20,128	2,113	18,015	798	14	784	17.4	3.3	18.8	10.5	1.8	
Building and household supplies and equipment.....	550	7,203	1,697	5,506	172	9	163	11.0	2.6	13.4	23.6	5.2	
Department and general merchandise stores.....	414	67,252	49,893	17,359	938	533	405	7.0	5.4	11.4	74.2	56.8	
Drug stores.....	352	11,120	6,461	4,659	373	247	126	15.5	17.8	12.3	58.1	66.3	
Dairy products.....	117	12,340	2,017	10,323	796	22	774	26.9	4.9	30.8	16.4	2.8	
Grocery, meat, and vegetable stores—Chain.....	52	13,966	4,765	9,201	684	212	472	24.5	22.5	25.6	34.1	31.0	
Grocery, meat, and vegetable stores—Independent.....	445	6,340	2,207	4,133	232	57	175	18.3	13.7	20.5	34.8	24.5	
Fuel and ice dealers.....	391	9,306	1,029	8,277	762	0	762	38.6	0	43.1	11.1	0	
Furniture stores.....	510	11,318	3,556	7,762	231	20	211	9.1	2.6	12.0	31.4	8.7	
Lumber and building materials, not metal.....	424	7,330	828	6,502	399	3	396	25.7	1.8	28.6	11.3	.7	
Mail-order houses.....	5	3,605	2,891	714	31	14	17	4.5	2.5	12.5	80.2	45.1	
Variety, limited-price stores.....	63	5,100	4,248	852	161	101	60	18.1	13.7	38.9	83.3	62.7	
Other.....	909	19,565	8,484	11,081	346	72	274	9.1	4.6	12.4	43.4	20.8	
Wholesale trade:													
Automotive.....	191	5,578	1,461	4,117	156	16	140	12.2	4.9	14.7	26.2	10.3	
Chemical, drugs and related products.....	143	5,575	2,187	3,388	81	28	53	7.2	6.4	7.7	39.3	34.6	
Dry goods and apparel.....	362	8,111	2,994	5,117	57	11	46	3.6	1.9	4.6	37.0	19.3	
Farm products and supplies.....	363	12,932	3,592	9,340	573	50	523	25.2	11.4	28.5	27.8	8.7	
Groceries and food specialties.....	623	16,902	3,517	13,385	752	39	713	20.5	5.6	24.0	20.8	5.2	
Industrial and household building material, equipment, and supplies.....	644	21,144	6,150	14,994	545	46	499	12.1	3.6	15.5	29.1	8.4	
Paper and paper products.....	174	5,058	1,648	3,410	114	7	107	10.8	2.1	14.8	32.6	6.1	
Other.....	519	12,866	3,620	9,246	600	51	549	21.7	6.8	27.1	28.1	8.5	
Other nonmanufacturing industries:													
Laundries, power.....	244	20,912	14,089	6,823	365	172	193	8.2	5.7	13.4	67.4	47.1	
Cleaning and dyeing.....	178	6,166	4,013	2,153	94	45	49	7.1	5.3	10.4	65.1	47.9	
Hotels, year-round.....	648	56,817	29,495	27,322	1,602	674	928	12.9	10.5	15.3	51.9	42.1	
Banks and brokerage.....	319	7,988	2,874	5,114	29	11	18	1.8	2.0	1.7	35.9	37.9	
Electric light and power.....	39	18,956	3,333	15,623	473	18	455	11.6	2.5	13.6	17.6	3.8	
Manufactured gas production and distribution.....	42	4,025	855	3,170	212	5	207	23.7	2.8	28.9	21.3	2.4	
Natural gas distribution.....	31	10,827	1,986	8,841	286	8	278	12.3	1.9	14.6	18.3	2.8	

INDUSTRIAL INJURIES TO WOMEN

retail trade, but received 17 percent of the injuries in this group; in chain food stores, the figures are respectively 4 and 15 percent. In contrast, the apparel shops employed one-fifth of all the women in retail trade, but experienced less than one-tenth of the injuries to women in retail trade. Hotels employed 52 percent of all women in nonmanufacturing industries, other than trade, which are covered by this report, and they received 72 percent of all the injuries to women in this group. For a comparison between injuries to men and those to women, the last two columns of table IV give for each industry the percentage of workers who are women and the percentage of injuries that occur to women.

INJURY FREQUENCY RATES

Most of the women employed in nonmanufacturing industries are engaged in sales or clerical and other office work. The relatively non-hazardous nature of such work, as compared for instance with certain manufacturing processes, is reflected in the low injury frequency rates for women in most of the nonmanufacturing industries (table IV). Twenty-three of the twenty-nine industries show injury frequency rates of less than 10 for women, and of the 23, 17 show rates of less than 5.

The records show marked differences in injury frequency rates in certain of the retail trades. The rate for women in chain food stores, 22.5, is considerably higher than their rate in independent food stores, 13.7. This difference, to a somewhat smaller degree, is shown also for men in these two industries. Variety and limited price stores also have a relatively high rate for women. Drug stores, with a rate of 17.8 for women and 12.3 for men, report the only instance in this group of a higher injury rate for women than for men.

The variation in injury rates throughout the retail trades probably indicates a wide range of conditions of work, for both women and men. For the former, drug stores, variety stores, and food stores—especially chain stores—offer the greatest risks. For the latter, fuel and ice dealers, variety stores, and dairy products firms show the highest rates. The wide differences between men's and women's rates in the fuel and ice industry and in dairy products probably reflect the fact that men are employed on delivery and other types of relatively hazardous work which women do not do.

Wholesale trades show a somewhat lower range of injury rates for women than do the retail trades; the average for the wholesale trades of 5.1 compares with 6.5 for the retail trades. The handling of farm products and supplies produced the top rate for women in this group, 11.4, which nevertheless was less than half that for men in the same industry.

In the industries outside of trade, banking and brokerage show a slightly higher injury rate for women than for men, 2.0 as compared with 1.7, though the difference is probably not of significance. Here the occupations of the two sexes are comparable, as far as exposure to hazards is concerned. If anything, the more extensive employment of women than men on bookkeeping, addressograph, and other types of office machinery might expose women to a greater extent to certain

types of hazards. In contrast, great disparity in injury rates is shown in the production and distribution of manufactured gas, in which the rate for men is 10 times as high as the rate for women.

Injury frequency rates for nonmanufacturing as a whole, and for each of the three nonmanufacturing groups, as indicated by these reporting firms, are:

	<i>Total</i>	<i>Women</i>	<i>Men</i>
Nonmanufacturing total.....	13.0	6.7	17.6
Wholesale trade.....	15.8	5.1	19.6
Retail trade.....	12.9	6.5	18.6
Other nonmanufacturing industries.....	11.3	7.7	14.2

KINDS OF DISABILITY

Two women were killed and eight permanently disabled by injuries reported in nonmanufacturing establishments. Both fatalities occurred in hotels. One permanent disability was suffered in each of the following eight industries:

Retail trade.....	Bakeries and caterers. Department stores. Apparel. Drug stores.
Wholesale trade.....	Automotive dealers.
Other nonmanufacturing industries.....	Power laundries. Electric light and power. Hotels.

The fatalities and permanent disabilities together constituted 0.4 percent of all the women's injuries. The greatest numbers of temporary disabilities occurred in hotels, with 671, department and general merchandise stores with 532, drug stores with 247, chain groceries with 212, and power laundries with 171.

The proportion of fatalities and permanent disabilities among injuries occurring to men was higher than that for women—0.5 percent of all men's injuries were fatal and 1.6 percent permanently disabling. Over half of the 52 fatalities among men occurred in four industries: 8 in natural gas distribution, 7 in hotels, and 6 each in electric light and power companies and fuel and ice dealers.

There were 152 permanently disabling injuries to men. Retail trades reported 71, of which 21 occurred among fuel and ice dealers, 11 in dairy products, and 9 each in lumber and building materials and in motor vehicle firms. In wholesale trade, food shops reported 9 and farm products dealers 7 of the 41 permanent injuries to men. Forty occurred in industries other than trade, 18 of them in electric light and power.

SUMMARY AND CONCLUSIONS

The injury experience of women in industry in 1945 has been reported as it is shown in some 20,000 establishments employing about $3\frac{1}{4}$ million workers. Of these workers, over a million, or about 30 percent, were women. These figures represent a larger coverage of injuries by sex of the worker than has hitherto been available and consequently may be expected to yield a broader understanding of the extent of the problem of industrial injuries as it relates separately to men and women.

The actual number of injuries sustained by women and the occurrence of serious injuries point to certain industries as having particular need for safety programs. During one quarter of the year, for example, the 11,000 women working in slaughtering and meat packing received 165 injuries, or 1 for every 67 women. In stamped and pressed metal products, the quarter's record was 1 injury for every 76 women; in fabricated metal products, 1 in 155; and in textiles and cotton yarns, 1 in 186. The annual record in nonmanufacturing industries shows 1 injury for every 22 women in chain groceries; 1 for every 26 in drug stores; 1 in 42 in variety and limited-price stores; 1 in 44 in hotels; 1 in 82 in laundries; and 1 in 94 in department and general merchandise stores. These figures represent a serious accumulation of injuries, a loss of working time and production, and particularly an amount of human distress, that call for remedy.

About 4 percent of the injuries in manufacturing resulted in death or permanent disability. In nonmanufacturing, the proportion was smaller, being less than 1 percent for women and about 2 percent for men. These small percentages, however, represent 91 lives lost and over a thousand people permanently disabled in manufacturing industries during one quarter of 1945; and in nonmanufacturing, 54 workers who died and 160 who were permanently disabled through the year. Based on records covering only a sample of the establishments throughout the country, these figures give but a partial picture of the national loss in lives and productivity.

In general, the frequency of injuries in various industries is considerably lower for women than for men. It is also lower for women working in nonmanufacturing than for those in manufacturing plants; and in manufacturing, lower among nonproduction than among production workers. In the absence of occupational classifications of the workers who were injured, we can only infer from general knowledge of the work of men and women, the comparative risks that men and women face. It is probable that in industries in which rates are found to be comparable for men and women—such as the manufacture of stamped and pressed metal products, jewelry and silverware, and boots and shoes in manufacturing, chain food stores and brokerage and banking firms in nonmanufacturing—the actual jobs and working conditions, with attendant exposure to hazards, are also similar.

The stamped and pressed metal products industries show a high rate for both men and women, indicating special need for a program to improve the record. Other industries also call for special attention—slaughtering and meat packing, furniture and lumber prod-

ucts, and lumber mills, where rates are less comparable but still very high for both men and women; and those industries in which, though women's rates are low, men's rates are seriously high.

In all these industries particular efforts are needed to develop a program that will reduce the material and personal losses incurred through industrial injury.

Recognizing the generally more favorable aspect of women's injury experience as compared with men's we must nevertheless not lose sight of the real problem of high rates wherever they occur, and the necessity to reduce all rates to a minimum. The basic principles of an effective safety program apply throughout industry, regardless of whether the workers affected are men or women.

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Leaflets

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