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COAL-MINE ACCIDENTS IN THE UNITED STATES 1936

By

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COAL-MINE ACCIDENTS IN THE UNITED STATES, 1936[1]

By W. W. ADAMS,[2] L. E. GEYER,[3] AND M. G. PARRY[4]

INTRODUCTION

The accident-prevention record of the coal-mining industry in the United States was more favorable in 1936 than in 1935, both from the standpoint of the relative safety of the individual miner on the job and of the price in life and limb that the Nation paid for its year's supply of coal. The increase in relative safety of the individual miner was indicated by a lower death rate and a lower injury rate than in the preceding year per million man-hours of exposure to the hazards of mining; that is, per million hours of work performed by the employees. (See table 1.) A reduction in the price in life and limb that the Nation paid for a year's supply of coal was indicated by a smaller death rate and a smaller injury rate per million tons of coal produced. Thus the individual miner was a better insurance risk, as far as accidents were concerned, in 1936 than in 1935, and a ton of coal used in the homes and industries of the country represented less human suffering than in 1935. The two points of view are distinct, and both should be kept in mind when considering accidents and safety in coal mining or in other industries.

More men were employed in 1936 than in 1935, and more workdays were available for the individual miner. Large gains were also made in the total number of man-shifts and man-hours worked in the industry as a whole. In number of tons of coal mined, 1936 showed large gains over 1935. Moreover, the average output of coal per man-hour worked was higher in 1936 than in 1935. All of these gains were made without lengthening the average number of hours of work per man per day.

In bituminous-coal mining throughout the country the death rate per man-hour of exposure was not only lower in 1936 than in 1935 but was also lower and therefore more favorable than in all but 5 of the 27 years since annual figures for all coal-mining States first became available in 1910. Moreover, the nonfatal-injury rate, covering all injuries that disabled an employee for more than the remainder of the day on which the accident occurred, represented a better record for the safety of the individual miner than since annual figures were first compiled in 1930. Before 1930 comparable figures were not available for nonfatal injuries in coal mines throughout the United

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States, and such figures as were compiled by certain States usually did not cover all lost-time injuries. Hence the injury rate for the industry as a whole could not be determined.

In mining anthracite—that is, "hard coal"—in eastern Pennsylvania the death rate among the miners per man-hour of exposure was more favorable in 1936 than in 1935 and was also lower than in all but 7 years since 1910. The injury rate for anthracite mines, while higher than in the 3 preceding years, was lower than the rates reported for 1930, the first year for which figures are available, to 1932, inclusive.

A discussion of the causes of accidents at all classes of coal mines in 1936 and a comparison of the record of 1936 for each important cause with that of 1935 will be given later in this bulletin. The principal causes of fatal accidents during 1936 were falls of roof and coal, mine cars and locomotives, gas-and-dust explosions, electricity, and explosives. A slightly different order of importance was revealed by reports of nonfatal injuries, for which the leading causes were falls of roof and coal, mine cars and locomotives, handling materials, hand tools, machinery, and falls of persons. (See table 2.)

Figures covering all active mines during 1936 showed a total of 584,582 men and an average of 197 workdays per man. The latter figure does not imply that the indicated number of workdays applied to each workman but rather the number of days on which work was done on the average job in and about the mines, whether by one individual or more than one (as in the case of the death or separation of the individual occupying the job and his replacement by another workman). The reports also showed a total volume of labor equal to nearly 115 million man-shifts or more than 826 million man-hours of work, the weighted average number of hours per shift being 7.19. The weighted average number of hours of work per employee during the entire year was 1,414. These figures and comparable figures for 1935 are given in table 5. The table also shows that accidents during the year caused 1,342 deaths and 69,576 lost-time nonfatal injuries among the employees.

A grading of the various coal-producing States, according to the number of fatal accidents in proportion to the number of man-hours of work done during the year, showed that Texas, Michigan, Alaska, and South Dakota had the best records, as no lives were lost from accidents in the coal mines of these States during 1936. These States, however, do not rank as large producers of coal. Among the larger producers, Maryland occupied the most favorable position, with a fatality rate less than half as high as that for the United States as a whole.

The most favorable position for nonfatal accidents was held by South Dakota, as, according to the operators' reports, coal mining in that State was remarkably low in lost-time injuries during 1936. Wyoming, Alabama, Alaska, and Missouri also occupied favorable positions with respect to nonfatal accidents, as the injury rate for each of these States was only a little more than half as high as the average rate for the United States. (See table 3.)

TABLE 1.—*Comparative accident statistics, 1935 and 1936*

	Bituminous			Anthracite [1]			Total		
	1935	1936	Percent of change in 1936	1935	1936	Percent of change in 1936	1935	1936	Percent of change in 1936
Number of mines	6,332	6,572	+3.8						
Number of employees:									
Underground	389,978	405,027	+3.9	77,629	76,128	−1.9	467,607	481,155	+2.9
Open-cut	8,493	10,901	+28.4	4,244	4,913	+15.8	12,737	15,814	+24.2
Surface	63,883	66,572	+4.2	20,975	21,041	+.3	84,858	87,613	+3.2
Total	462,354	482,500	+4.4	102,848	102,082	−.7	565,202	584,582	+3.4
Man-days:									
Underground	69,024,415	79,698,806	+15.5	14,391,274	14,533,809	+1.0	83,415,689	94,232,615	+13.0
Open-cut	1,625,401	2,073,127	+27.5	931,540	968,839	+4.0	2,556,941	3,041,966	+19.0
Surface	11,641,908	13,489,821	+15.9	3,957,116	4,127,091	+4.3	15,599,024	17,616,912	+12.9
Total	82,291,724	95,261,754	+15.8	19,279,930	19,629,739	+1.8	101,571,654	114,891,493	+13.1
Man-hours:									
Underground	485,341,496	559,733,518	+15.3	114,754,502	115,556,143	+.7	600,095,998	675,289,661	+12.5
Open-cut	11,443,618	15,133,873	+32.2	7,508,812	7,827,731	+4.2	18,952,430	22,961,604	+21.2
Surface	81,726,086	95,033,145	+16.3	31,833,067	33,102,050	+4.0	113,559,153	128,135,195	+12.8
Total	578,511,200	669,900,536	+15.8	154,096,381	156,485,924	+1.6	732,607,581	826,386,460	+12.8
Killed:									
Underground	905	1,034	+14.3	239	222	−7.1	1,144	1,256	+9.8
Open-cut	14	15	+7.1	12	8	−33.3	26	23	−11.5
Surface	49	49		23	14	−39.1	72	63	−12.5
Total	968	1,098	+13.4	274	244	−10.9	1,242	1,342	+8.1
Injured:									
Underground	43,666	46,402	+6.3	15,179	16,090	+6.0	58,845	62,492	+6.2
Open-cut	735	1,208	+64.4	647	553	−14.5	1,382	1,761	+27.4
Surface	3,128	2,904	−7.2	2,220	2,419	+9.0	5,348	5,323	−.5
Total	47,529	50,514	+6.3	18,046	19,062	+5.6	65,575	69,576	+6.1

[1] Open-cut men employed outside the pit are included with surface employees. The accidents for these outside open-cut men are included with surface accidents. Men employed in washery operations are included with surface employees. Accidents to men employed in the washery are included in surface accidents.

TABLE 1.—*Comparative accident statistics, 1935 and 1936*—Continued

	Bituminous			Anthracite			Total		
	1935	1936	Percent of change in 1936	1935	1936	Percent of change in 1936	1935	1936	Percent of change in 1936
Production:									
Underground	348,721,830	409,250,811	+17.4	43,782,876	44,726,506	+2.2	392,504,706	453,977,317	+15.7
Open-cut	23,647,292	27,217,522	+15.1	5,187,072	6,203,267	+19.6	28,834,364	33,420,789	+15.9
Washery				2,702,468	3,193,972	+18.2	2,702,468	3,193,972	+18.2
Dredge				590,467	546,684	−7.4	590,467	546,684	−7.4
Total	372,369,122	436,468,333	+17.2	52,262,883	54,670,429	+4.6	424,632,005	491,138,762	+15.7
Fatality rate (per million man-hours):									
Underground	1.865	1.847	−.1	2.083	1.921	−7.8	1.906	1.860	−2.4
Open-cut	1.223	.991	−19.0	1.598	1.022	−36.0	1.372	1.002	−27.0
Surface	.600	.516	−14.0	.723	.423	−41.5	.634	.492	−22.4
Total	1.673	1.639	−2.0	1.778	1.559	−12.3	1.695	1.624	−4.2
Injury rate (per million man-hours):									
Underground	89.970	82.900	−7.9	132.274	139.240	+5.3	98.059	92.541	−5.6
Open-cut	64.228	79.821	+24.3	86.165	70.646	−18.0	72.919	76.693	+5.2
Surface	38.274	30.558	−20.2	69.739	73.077	+4.8	47.094	41.542	−11.8
Total	82.157	75.405	−8.2	117.109	121.813	+4.0	89.509	84.193	−5.9
Fatality rate (per million short tons):									
Underground	2.595	2.527	−2.6	5.459	4.963	−9.1	2.915	2.767	−5.3
Open-cut	.592	.551	−6.9	1.415	1.290	−8.8	.809	.688	−15.0
Total	2.600	2.516	−3.2	5.243	4.463	−14.9	2.925	2.732	−6.6
Injury rate (per million short tons):									
Underground	125.217	113.383	−9.5	346.688	359.742	+3.8	149.922	137.654	−8.2
Open-cut	31.082	44.383	+42.8	76.297	89.147	+16.8	43.016	52.692	+22.5
Total	127.639	115.733	−9.3	345.293	348.671	+1.0	154.428	141.663	−8.3

TABLE 2.—*Number and causes of fatalities and nonfatal injuries at coal mines, by principal causes, in the United States for the year ended Dec. 31, 1936*

Cause of accident	Fatalities			Nonfatal injuries		
	Bituminous	Anthracite	Total	Bituminous	Anthracite	Total
Underground:						
Falls of roof or face	624	120	744	13,523	3,214	16,737
Mine cars and locomotives	202	26	228	12,099	1,914	14,013
Explosions of gas or coal dust:						
Local explosions	13	7	20	127	158	285
Major explosions	28	9	37			
Explosives	31	20	51	266	169	435
Electricity	44	8	52	587	130	717
Machinery (cutters, loaders, etc.)	36	2	38	3,169	641	3,810
Mine fires	10		10	10	21	31
Miscellaneous	35	24	59	16,490	9,755	26,245
Total underground	1,023	216	1,239	46,271	16,002	62,273
Shaft	11	6	17	131	88	219
Stripping or open-cut mining [1]	15	8	23	1,208	553	1,761
Surface: [2]						
Haulage	19	4	23	709	390	1,099
Machinery	11	1	12	293	222	515
Miscellaneous	19	9	28	1,902	1,807	3,709
Total surface	49	14	63	2,904	2,419	5,323
Grand total	1,098	244	1,342	50,514	19,062	69,576

[1] Includes dredge operations at Pennsylvania anthracite mines.
[2] Includes washery operations at Pennsylvania anthracite mines.

TABLE 3.—*Relative standing of States in 1936 according to their fatality and injury rates per million man-hours of employment*

State	Fatality rate	State	Injury rate
Texas		Other States [1]	12.082
Michigan		South Dakota	22.728
Alaska		Wyoming	40.286
South Dakota		Alabama	44.785
Other States [1]		Alaska	45.942
Maryland	0.788	Missouri	49.712
Alabama	1.153	Arkansas	55.268
Ohio	1.270	Tennessee	56.878
Pennsylvania (bituminous and anthracite)	1.312	Kansas	57.607
		Kentucky	58.686
North Dakota	1.345	New Mexico	63.628
Washington	1.360	Ohio	65.308
Kansas	1.466	Oklahoma	67.898
Kentucky	1.488	Montana	68.467
		Virginia	72.677
United States (average)	1.624	West Virginia	75.391
		North Dakota	78.446
Illinois	1.719		
Tennessee	1.879	United States (average)	84.193
Virginia	1.916		
West Virginia	2.008	Maryland	90.150
Wyoming	2.414	Pennsylvania (bituminous and anthracite)	95.427
Iowa	2.449		
Colorado	2.451	Colorado	99.208
Indiana	2.474	Iowa	104.065
Missouri	2.499	Indiana	106.446
New Mexico	2.905	Michigan	117.437
Arkansas	3.483	Utah	119.154
Utah	3.520	Illinois	119.191
Montana	3.941	Washington	128.107
Oklahoma	4.316	Texas	150.155
United States (bituminous)	1.639	United States (bituminous)	75.405
Pennsylvania:		Pennsylvania:	
Bituminous	1.100	Bituminous	72.727
Anthracite	1.559	Anthracite	121.813

[1] Includes Arizona, California, Georgia, Idaho, and Oregon.

ACKNOWLEDGMENTS

The information presented in this paper, insofar as it relates to 1936, is based mainly upon a study of reports furnished voluntarily to the Bureau of Mines by coal-mining companies throughout the United States. Information from the operators was supplemented by data received from the mine inspectors of the various coal-producing States.

The authors express sincere appreciation to the producing companies and State mine officials for their cooperation in aiding the promotion of safety in coal mines by making possible a presentation of uniform and comparable accident statistics for the industry in all parts of the country.

SCOPE OF STATISTICS

The data presented in this report are intended to cover all coal mines in the United States that produced 1,000 or more tons of coal or employed four or more men during the year ended December 31, 1936, and all fatal and nonfatal lost-time accidents at those mines. Except in the smaller coal-producing States no attempt was made to obtain data for mines with an output of less than 1,000 tons unless accidents were known to have occurred; however, many mines that produced less than the minimum tonnage indicated or had less than the minimum number of men sent in reports, and when such reports were received the figures for these mines were included in the compilation.

The Bureau's statistics of accidents are not intended to cover accidents to office employees, trespassers, or visitors, except where such persons assisted in rescue work after an explosion or other disaster. Deaths from suicide, crime, or natural causes also are excluded.

CLASSIFICATION OF INJURIES

Coal-mine accidents covered by the figures in this bulletin have been classified into four groups, as follows:

Fatalities.—This class is intended to cover all deaths resulting from injuries within the calendar year. The date of the accident rather than the date of death determines the month and year to which the accident is charged. Death may have occurred after the close of the year or at any time prior to the date when the operating company sent its report for the year to the Bureau of Mines.

Permanent total disability.—This class includes loss of both legs or arms, loss of one leg and one arm, total loss of eyesight, paralysis, or other condition permanently incapacitating the workman from doing any work of a gainful character.

Permanent partial disability.—This class includes loss of one foot, leg, hand, or eye; one or more fingers; one or more toes; any dislocation where ligaments are severed; or any other injury known in surgery to be permanent partial disability.

Temporary.—This class includes all other injuries causing disability to the injured employee for more than the remainder of the day on which the accident occurred. (See tables 4, 6, 7, 8, and 9.)

TABLE 4.—*Accident rates per million man-hours, by severity of injury, in 1936*

Severity of injury	Bituminous		Anthracite		Total	
	Number of accidents	Rate	Number of accidents	Rate	Number of accidents	Rate
Fatal	1,098	1.639	244	1.559	1,342	1.624
Permanent total disability	79	.118	14	.089	93	.112
Permanent partial disability	1,717	2.563	114	.729	1,831	2.216
Temporary (1 day or more)	48,718	72.724	18,934	120.995	67,652	81.865
Total nonfatal injuries	50,514	75.405	19,062	121.813	69,576	84.193
Total fatal and nonfatal	51,612	77.044	19,306	123.372	70,918	85.817

MAN-HOURS WORKED IN COAL MINES

Until recent years few coal-mining companies kept records of the number of man-hours of work devoted to the production of coal or to the performance of other kinds of work at their mines. The absence of such records rendered it impossible to determine the amount of human labor that had to be invested to obtain a given quantity of coal; it was equally impossible to determine accurately the number of employees killed or injured by accidents in relation to the number of men employed and the time during which they were exposed to mining hazards.

In the absence of definite data showing the number of man-hours of exposure, the relative frequency of accidents in earlier years was indicated by the number of accidents per thousand men employed. This practice was improved later by adopting a method that gave weight to the number of days during which the mines were in operation; that is, the number of days during which the employees were exposed to mining hazards. The period of operation was determined by the number of days on which the mine tipple was active and coal was being produced. By this method the days on which no coal was brought to the surface were not considered, although on such days men were employed underground in loading coal or in repair or maintenance work. In calculating accident rates the number of days of operation, based on tipple time, were used to convert the average number of employees to the equivalent number of 300-day workers, which was used to determine the accident rates per thousand 300-day employees. This practice was an improvement over that which it displaced, but it was imperfect because no weight was given to variations in the number of hours that constituted a working day at different mines and because no records were kept by which the amount of work done on days when the tipple was not running could be considered.

Many large coal-mining companies now keep records of man-hours worked by their employees, not only on days when coal is being sent over the tipple but also on other days. These records often are as accurate as may reasonably be expected, and where they are available for a given mine they are greatly to be preferred as a basis for calculating accident-frequency rates.

In calculating accident rates for coal mines in 1936 the Bureau of Mines found, as in several previous years, that frequently the operators

had indicated in their reports to the Bureau the number of man-hours during which employees were exposed to their occupational risks. Where such information was supplied it was accepted as the best record obtainable. In some instances, however, a report of man-hours of employment was not furnished, and it was necessary to approximate the true number of man-hours by following the method previously used; that is, by multiplying the average number of employees by the average number of days on which the employees worked, then multiplying the product by 7, 8, or 9 (the number of hours that constituted a working shift at the mine). The number of hours, as thus reported or calculated, has been used as a basis for calculating the accident rates throughout this bulletin, except where otherwise stated.

TABLE 5.—*United States: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*

State	Number of mines	Production, short tons	Men employed				Average days of employment per man	Man-days of employment				Man-hours of employment			
			Underground	Open-cut	Surface	Total		Underground	Open-cut	Surface	Total	Underground	Open-cut	Surface	Total
Alabama	229	12,255,876	17,320	220	2,955	20,495	210	3,661,305	17,980	619,703	4,298,988	25,867,145	125,860	4,374,320	30,367,325
Alaska	3	136,593	64	-------	47	111	245	16,526	-------	10,682	27,208	132,208	-------	85,456	217,664
Arkansas	62	1,621,194	3,502	48	544	4,094	150	527,509	5,842	81,973	615,324	3,691,574	40,894	573,801	4,306,269
Colorado	270	6,810,375	7,580	29	1,454	9,063	185	1,395,944	6,177	277,229	1,679,350	9,791,368	43,239	1,999,136	11,833,743
Illinois	847	50,896,235	36,401	3,042	6,415	45,858	175	6,274,028	604,752	1,161,023	8,039,803	43,966,533	4,326,248	8,120,763	56,413,544
Indiana	182	16,808,893	6,804	2,884	1,337	11,025	181	1,217,362	536,916	244,317	1,998,595	8,536,362	3,894,260	1,717,456	14,148,078
Iowa	316	3,851,938	7,351	248	825	8,424	165	1,219,259	33,398	133,989	1,386,646	8,598,508	254,971	948,104	9,801,583
Kansas	202	2,962,937	2,485	1,154	351	3,990	165	404,560	192,599	61,475	658,634	2,939,356	1,379,540	454,835	4,773,731
Kentucky	527	47,489,572	47,795	32	7,779	55,606	198	9,444,353	5,575	1,537,578	10,987,506	66,407,338	43,900	10,824,786	77,276,024
Maryland	108	1,697,395	2,547	-------	378	2,925	185	473,653	-------	67,083	540,736	3,332,011	-------	472,767	3,804,778
Michigan	13	621,634	1,205	-------	211	1,416	165	198,865	-------	34,695	233,560	1,392,053	-------	242,869	1,634,922
Missouri	250	3,954,397	4,129	970	599	5,698	172	678,223	197,379	103,745	979,347	4,942,965	1,496,175	762,302	7,201,442
Montana	91	2,990,797	1,067	58	299	1,424	200	209,893	14,545	60,045	284,483	1,494,111	116,360	419,698	2,030,169
New Mexico	52	1,594,219	1,887	2	493	2,382	204	377,805	486	108,561	486,852	2,669,733	3,888	768,233	3,441,854
North Dakota	205	2,243,466	706	573	224	1,503	187	128,332	115,243	36,795	280,370	1,002,500	928,497	299,836	2,230,833
Ohio	674	23,590,292	25,005	987	3,239	29,231	180	4,490,383	206,332	572,323	5,269,038	31,539,659	1,490,845	3,978,636	37,009,140
Oklahoma	105	1,531,020	2,577	210	455	3,242	153	387,773	39,648	68,150	495,571	2,710,210	285,286	480,295	3,475,791
Pennsylvania (bituminous)	1,334	109,382,811	112,158	341	15,996	128,495	202	22,587,369	74,378	3,289,864	25,951,611	158,174,095	544,824	23,179,353	181,898,272
South Dakota	13	41,325	17	29	4	50	231	2,716	8,110	733	11,559	22,012	59,630	6,356	87,998
Tennessee	113	5,068,282	6,800	-------	1,528	8,328	197	1,335,501	-------	306,130	1,641,631	9,508,879	-------	2,200,337	11,709,216
Texas	19	844,133	635	31	109	775	199	130,187	3,646	20,443	154,276	1,105,121	29,268	164,273	1,298,662
Utah	40	3,163,833	2,154	-------	726	2,880	183	375,305	-------	151,859	527,164	2,629,013	-------	1,063,691	3,692,704
Virginia	82	11,850,731	12,807	-------	2,082	14,889	199	2,549,503	-------	415,417	2,964,920	17,903,450	-------	2,969,627	20,873,077
Washington	64	1,813,665	2,007	-------	614	2,621	201	394,018	-------	131,517	525,535	2,757,419	-------	919,203	3,676,622
West Virginia	691	117,428,256	96,356	4	17,017	113,377	214	20,447,150	200	3,797,677	24,245,027	143,207,087	1,400	26,612,671	169,821,158
Wyoming	73	5,781,982	3,540	39	864	4,443	212	743,295	9,921	190,863	944,079	5,208,788	68,788	1,350,059	6,627,635
Other States[1]	7	36,482	128	-------	27	155	219	27,989	-------	5,952	33,941	204,020	-------	44,282	248,302
Total bituminous	6,572	436,468,333	405,027	10,901	66,572	482,500	197	79,698,806	2,073,127	13,489,821	95,261,754	559,733,518	15,133,873	95,033,145	669,900,536
Pennsylvania (anthracite)	-------	54,670,429	76,128	4,913	21,041	102,082	192	14,533,809	968,839	4,127,091	19,629,739	115,556,143	7,827,731	33,102,050	156,485,924
Total, 1936	-------	491,138,762	481,155	15,814	87,613	584,582	197	94,232,615	3,041,966	17,616,912	114,891,493	675,289,661	22,961,604	128,135,195	826,386,460
Total, 1935	-------	424,632,005	467,607	12,737	84,858	565,202	180	83,415,689	2,556,941	15,599,024	101,571,654	600,095,998	18,952,430	113,559,153	732,607,581

[1] Includes Arizona, California, Georgia, Idaho, and Oregon.

TABLE 5.—***United States:*** *Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*—Con.

State	Killed	Injured				Rate per million man-hours		Rate per million tons		Tons per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
		Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured				
Alabama	35	1	80	1,279	1,360	1.153	44.785	2.856	110.967	0.404	2.478	7.06	1,482
Alaska				10	10		45.942		73.210	.628	1.594	8.00	1,961
Arkansas	15		1	237	238	3.483	55.268	9.252	146.805	.376	2.656	7.00	1,052
Colorado	29	3	34	1,137	1,174	2.451	99.208	4.258	172.384	.576	1.738	7.05	1,306
Illinois	97	7	151	6,566	6,724	1.719	119.191	1.906	132.112	.902	1.108	7.02	1,230
Indiana	35	6	27	1,473	1,506	2.474	106.446	2.082	89.595	1.188	.842	7.08	1,283
Iowa	24	1	9	1,010	1,020	2.449	104.065	6.231	264.802	.393	2.545	7.07	1,164
Kansas	7		5	270	275	1.466	57.607	2.363	92.813	.621	1.611	7.25	1,196
Kentucky	115	12	286	4,237	4,535	1.488	58.686	2.422	95.495	.615	1.627	7.03	1,390
Maryland	3		9	334	343	.788	90.150	1.767	202.074	.446	2,242	7.04	1,301
Michigan				192	192		117.437		308.863	.380	2.630	7.00	1,155
Missouri	18		8	350	358	2.499	49.712	4.552	90.532	.549	1,821	7.35	1,264
Montana	8		5	134	139	3.941	68.467	2.675	46.476	1.473	.679	7.14	1,426
New Mexico	10		3	216	219	2.905	63.628	6.273	137.371	.463	2.159	7.07	1,445
North Dakota	3		1	174	175	1.345	78.446	1.337	78.004	1.006	.994	7.96	1,484
Ohio	47	2	38	2,377	2,417	1.270	65.308	1.992	102.457	.637	1.569	7.02	1,266
Oklahoma	15	1	7	228	236	4.316	67.898	9.797	154.146	.440	2.270	7.01	1,072
Pennsylvania (bituminous)	200	17	170	13,042	13,229	1.100	72.727	1.828	120.942	.601	1.663	7.01	1,416
South Dakota				2	2		22.728		48.397	.470	2.129	7.61	1,760
Tennessee	22	3	22	641	666	1.879	56.878	4.341	131.404	.433	2.310	7.13	1,406
Texas			1	194	195		150.155		231.006	.650	1.538	8.42	1,676
Utah	13		15	425	440	3.520	119.154	4.109	139.072	.857	1.167	7.00	1,282
Virginia	40	4	111	1,402	1,517	1.916	72.677	3.375	128.009	.568	1.761	7.04	1,402
Washington	5	1	10	460	471	1.360	128.107	2.757	259.695	.493	2.027	7.00	1,403
West Virginia	341	20	703	12,080	12,803	2.008	75.391	2.904	109.028	.691	1.446	7.00	1,498
Wyoming	16	1	21	245	267	2.414	40.286	2.767	46.178	.872	1.146	7.02	1,492
Other States [1]				3	3		12.082		82.232	.147	6.806	7.32	1,602
Total bituminous	1,098	79	1,717	48,718	50,514	1.639	75.405	2.516	115.733	.652	1.535	7.03	1,388
Pennsylvania (anthracite)	244	14	114	18,934	19,062	1.559	121.813	4.463	348.671	.349	2.862	7.97	1,533
Total, 1936	1,342	93	1,831	67,652	69,576	1.624	84.193	2.732	141.663	.594	1.683	7.19	1,414
Total, 1935	1,242	81	1,793	63,701	65,575	1.695	89.509	2.925	154.428	.580	1.725	7.21	1,296

	Men employed	Production	Man-hours	Killed	Injured	Rate per million man-hours	
						Killed	Injured
Underground	405,027	409,250,811	559,733,518	1,034	46,402	1.847	82.900
Open-cut	10,901	27,217,522	15,133,873	15	1,208	.991	79.821
Surface	66,572		95,033,145	49	2,904	.516	30.558
Total, 1936	482,500	436,468,333	669,900,536	1,098	50,514	1.639	75.405
Total, 1935	462,354	372,369,122	578,511,200	968	47,529	1.673	82.157

[1] Includes Arizona, California, Georgia, Idaho, and Oregon.

TABLE 6.—*Coal-mine fatalities during the year ended Dec. 31, 1936, by causes and States*

State	Underground																			Shaft and slope
	1. Falls of roof (rock, coal, or draw slate)	2. Roof fall due to car or machine knocking out post	3. Falls of face or rib	4. Rush of coal, rock, or gob	5. Other falling material or objects (not being handled by injured worker)	6. Falls of persons	7. Handling materials	8. Hand tools	9. Stepping on nails or other sharp objects	10. Striking or bumping against objects	11. Mine cars and mine locomotives	12. Explosions of gas or coal dust	13. Explosives (not including explosions of gas or dust)	14. Electricity (not resulting in explosions)	15. Machinery	16. Suffocation from natural gases (not from fires or explosions)	17. Mine fires (burns, suffocations, etc.)	18. All other accidents underground	Total underground	
Alabama	18		3								5			4	2	2			34	
Alaska																				
Arkansas	2		1									8	2	1					14	
Colorado	13		2	1							1	8	1	1					27	
Illinois	45		6	1			2	1		1	15		4	1			9	2	87	
Indiana	10		3				1			1	5	2	4	3	1				30	2
Iowa	10		1								5		1	2					19	3
Kansas	2												1						5	
Kentucky	61	3	5					1			25			8	7				110	
Maryland	3																		3	
Michigan																				
Missouri	8												1		5	2			16	
Montana	4		1								3								8	
New Mexico	8										2								10	
North Dakota													1						1	1
Ohio	28		1	2							9		3		1	1			45	1
Oklahoma	3										1	4	1	2	1				12	
Pennsylvania (bituminous)	106	2	13	2	2	3	1	1		1	34		5	8	8	2			188	
South Dakota																				
Tennessee	12										7		1	1					21	
Texas																				
Utah	6	1	1								4								12	
Virginia	16	1	1	1	1						12		1	3	2				38	
Washington	1				1						1			1					4	1
West Virginia	167	5	32		2	2		2			71	19	5	9	8		1	1	324	2
Wyoming	9		2	1							2				1				15	1
Other States [1]																				
Total bituminous	532	12	72	8	6	5	4	5		3	202	41	31	44	36	9	10	3	1,023	11
Pennsylvania (anthracite)	97	1	19	3	5	9	3			2	26	16	20	8	2	1		4	216	6
Total, 1936	629	13	91	11	11	14	7	5		5	228	57	51	52	38	10	10	7	1,239	17
Total, 1935	537	7	98	22	7	7	5	3		4	228	49	50	45	35	5	10	9	1,121	23

State	Stripping or open-cut mining and washery and dredge operations															Surface (including tipple, breaker, shops, and yards)											
	20. Falls or slides of coal or overburden	21. Mine cars and locomotives	22. Railway cars and locomotives	23. Explosives	24. Electricity	25. Handling materials	26. Hand tools	27. Falls of persons (stumbling, slipping, etc.)	28. Falling objects, other than coal	29. Power shovels, scrapers, or buckets	30. Drills (power drills of all kinds)	31. Operation of dredge machinery	32. Stepping on or striking objects	33. All other	Total stripping or open-cut	34. Mine cars and mine locomotives	35. Railway cars and locomotives	36. Handling materials	37. Hand tools	38. Falls of persons	39. Falling objects	40. Machinery on surface	41. Electricity	42. Explosives	43. All other surface accidents	Total surface	Grand total
Alabama									1						1												35
Alaska																											
Arkansas																						1				1	15
Colorado																1						1				2	29
Illinois	1				1			1		1					4	1	2					2			1	6	97
Indiana	1		1	1											3												35
Iowa																				1				1		2	24
Kansas				2											2												7
Kentucky																1	1			2			1			5	115
Maryland																											3
Michigan																											
Missouri								1							1							1				1	18
Montana																											8
New Mexico																											10
North Dakota									1						1												3
Ohio																						1				1	47
Oklahoma	1									1					2										1	1	15
Pennsylvania (bituminous)										1					1	4	1	1	1	1		2		1		11	200
South Dakota																											
Tennessee																1										1	22
Texas																											
Utah																	1									1	13
Virginia																						2				2	40
Washington																											5
West Virginia																4	2			3	1	1	2		2	15	341
Wyoming																											16
Other States [1]																											
Total bituminous	3		1	3	1			2	2	3					15	12	7	1	1	7	1	11	3	2	4	49	1,098
Pennsylvania (anthracite)	3		1	1	1					1				1	8	2	2			4	1	1	2		2	14	244
Total, 1936	6		2	4	2			2	2	4				1	23	14	9	1	1	11	2	12	5	2	6	63	1,342
Total, 1935	5		1	5	4		1	3	1	1	1			4	26	16	11	3	1	12	2	9	6	3	9	72	1,242

[1] Includes Arizona, California, Georgia, Idaho, and Oregon.

TABLE 7.—*Coal-mine nonfatal injuries during the year ended Dec. 31, 1936, by causes and States*

State	Underground																		
	1. Falls of roof (rock, coal, or draw slate)	2. Roof fall due to car or machine knocking out post	3. Falls of face or rib	4. Rush of coal, rock, or gob	5. Other falling material or objects (not being handled by injured worker)	6. Falls of persons	7. Handling materials	8. Hand tools	9. Stepping on nails or other sharp objects	10. Striking or bumping against objects	11. Mine cars and mine locomotives	12. Explosions of gas or coal dust	13. Explosives (not including explosions of gas or dust)	14. Electricity (not resulting in explosions)	15. Machinery	16. Suffocation from natural gases (not from fires or explosions)	17. Mine fires (burns, suffocations, etc.)	18. All other accidents underground	Total underground	19. Shaft and slope
Alabama	271	1	101	2	24	27	193	49	7	6	473	5	13	14	85			13	1,284	1
Alaska	3				2		2				1								8	
Arkansas	61		20			2	39	17			54	5			18			3	219	
Colorado	257		145	5	39	50	154	80	6	13	234	1	2	7	87		2	9	1,091	2
Illinois	963	13	415	14	231	307	969	1,015	59	124	1,159	9	18	132	555	3	2	87	6,075	41
Indiana	142	4	90	3	19	51	150	149	4	9	260	9	6	33	117		1	14	1,061	3
Iowa	248	2	65	3	13	33	184	200		5	178	1	5	3	21			9	970	5
Kansas	32		9		4	15	18	19		4	46	3	2	1	6			2	161	
Kentucky	858	12	387	29	85	93	657	323	25	49	1,256	19	42	70	296			53	4,254	7
Maryland	61	1	23		8	15	51	41	5	8	95		3	4	14			3	332	
Michigan	22		29	1	1	7	29	25	2	6	51	1	2		3				179	5
Missouri	94		9		2	7	40	18		3	62				11			2	248	1
Montana	18		9	1	2	4	7	2	1	2	38				24			8	116	1
New Mexico	51		33	3	7	6	28	18		2	50		1	1	7				207	
North Dakota	12		4			11	9	2		4	30		2		8		1	1	84	
Ohio	398	2	201	18	71	80	285	246	12	57	561	22	22	23	164		1	14	2,177	10
Oklahoma	30	1	18	1	2	2	25	15			53	2		1	14			4	168	
Pennsylvania (bituminous)	2,236	43	1,016	37	408	556	1,930	1,270	64	263	3,493	17	43	92	765	4		185	12,422	31
South Dakota																				
Tennessee	151	2	49	5	8	8	79	46	2	7	204	2	6	3	37			4	613	
Texas	31		19		6	6	45	27	6	4	32		6						182	1
Utah	52		79	5	11	13	52	22		4	103		1	4	42			7	395	1
Virginia	366	4	157	6	17	41	265	94	1	10	341	2	6	19	90			12	1,431	1
Washington	87		56	15	12	53	48	48	6	5	69	2	5	1	17			1	425	2
West Virginia	2,463	58	1,259	48	252	413	1,961	844	20	166	3,211	27	80	177	736	1	3	204	11,923	19
Wyoming	59	2	19	3	11	15	9	16	1	5	43		1	2	52			5	243	
Other States [1]	1										2								3	
Total bituminous	8,967	145	4,212	199	1,235	1,815	7,229	4,586	221	756	12,099	127	266	587	3,169	8	10	640	46,271	131
Pennsylvania (anthracite)	1,674	29	1,232	279	1,163	1,340	4,406	1,549	352	312	1,914	158	169	130	641	34	21	599	16,002	88
Total, 1936	10,641	174	5,444	478	2,398	3,155	11,635	6,135	573	1,068	14,013	285	435	717	3,810	42	31	1,239	62,273	219
Total, 1935	10,026	351	5,248	639	2,384	2,934	10,499	5,552	589	1,069	12,859	437	518	770	3,334	73	38	1,284	58,604	241

State	Stripping or open-cut mining and washery and dredge operations																Surface (including tipple, breaker, shops, and yards)										Total surface	Grand total
	20. Falls of slides of coal or overburden	21. Mine cars and locomotives	22. Railway cars and locomotives	23. Explosives	24. Electricity	25. Handling materials	26. Hand tools	27. Falls of persons (stumbling, slipping, etc.)	28. Falling objects, other than coal	29. Power shovels, scrapers, or buckets	30. Drills (power drills of all kinds)	31. Operation of dredge machinery	32. Stepping on or striking objects	33. All other	Total stripping or open-cut	34. Mine cars and mine locomotives	35. Railway cars and locomotives	36. Handling materials	37. Hand tools	38. Falls of persons	39. Falling objects	40. Machinery on surface	41. Electricity	42. Explosives	43. All other surface accidents			
Alabama	1					6	4	5		3					19	9	1	9	6	5	5	9	2		10	56	1,360
Alaska																						1				2	10
Arkansas																4		1	1	5	1	6			1	19	238
Colorado	1	1				1									3	8	5	9	6	13	5	14	1		17	78	1,174
Illinois	6	10	13	5	4	45	15	23	20	35	11	18	6	66	277	35	16	61	26	58	21	30	6	2	75	331	6,724
Indiana	42	7	9	4	9	76	49	46	31	21	5	7	16	68	390	8	4	7	1	8	6	10			8	52	1,506
Iowa	2	2				1	2	1	2	1					12	2	2	1	2	5	1	9			11	33	1,020
Kansas	8	6				11	12	10	4	14	3		4	11	107	1		2		2		3				7	275
Kentucky		3	7	8	9			2					3		9	68	15	34	21	32	9	23		1	62	265	4,535
Maryland				1													1	1	1	3	1	3			1	11	343
Michigan																			1	1	1	1			2	8	192
Missouri	6	2		2	1	19	9	13	7	14	3	2	5	21	104	1		1	1			1	2		1	5	358
Montana		2				1	1	2					1		7	1	1			3	1	3	1		5	15	139
New Mexico																3		4		3	1				2	12	219
North Dakota																3	1	5		3		2				14	175
Ohio	11	9	4		1	7	8	15	1	10	1	1		9	77	3	1	5	1	2						12	2,417
Oklahoma	7	6	4			14	22	13	5	19	3			7	102	27	5	22	11	20	10	14	2		17	128	236
Pennsylvania (bituminous)	2					10	10	5	31	2			1		65	2									1	3	13,229
South Dakota	4	1		3	1	3	2	4	6	1					29	164	31	100	69	151	33	48	8		143	747	
Tennessee					2										2												2
Texas																17	1	8	5	10	5	5			2	53	666
Utah						1	1	1							3			1	4	2	1					9	195
Virginia																9	4	4	4	7	3	8	1		4	44	440
Washington																16	3	19	6	13	6	13	4		9	85	1,517
West Virginia																4	3	8	5	10	2	9	1		2	44	471
Wyoming																178	51	147	65	124	31	76	30	6	153	861	12,803
Other States [1]						1				1					2	3	1	3		6	1	4			4	22	267
Total bituminous	90	49	37	23	27	196	135	140	107	121	26	27	39	191	1,208	564	145	447	234	478	145	293	58	9	531	2,904	50,514
Pennsylvania (anthracite)	18	25	20	6	6	56	35	75	36	58	46	4	17	151	553	272	118	489	232	359	152	222	31	19	525	2,419	19,062
Total, 1936	108	74	57	29	33	252	170	215	143	179	72	31	56	342	1,761	836	263	936	466	837	297	515	89	28	1,056	5,323	69,576
Total, 1935	72	40	56	22	30	219	116	192	129	111	64	7	43	281	1,382	839	334	910	470	786	360	470	87	34	1,058	5,348	65,575

[1] Includes Arizona, California, Georgia, Idaho, and Oregon.

TABLE 8.—*Coal mines: Accidents, by causes and severity of injury, during the year ended Dec. 31, 1936*

Cause of accident	Bituminous-coal mines						Anthracite mines						All coal mines					
	Killed	Injured				Grand total	Killed	Injured				Grand total	Killed	Injured				Grand total
		Permanent total	Permanent partial	Temporary	Total nonfatal			Permanent total	Permanent partial	Temporary	Total nonfatal			Permanent total	Permanent partial	Temporary	Total nonfatal	
UNDERGROUND																		
1. Falls of roof (rock, coal, or draw slate):																		
(a) While mining	179	13	82	2,773	2,868	3,047	17	1	4	745	750	767	196	14	86	3,518	3,618	3,814
(b) While loading by hand	120	9	112	2,709	2,830	2,950	26	1	1	414	416	442	146	10	113	3,123	3,246	3,392
(c) While testing or taking down roof	49	2	30	924	956	1,005	24			140	140	164	73	2	30	1,064	1,096	1,169
(d) While setting or pulling props	64	1	31	724	756	820	17	1	3	187	191	208	81	2	34	911	947	1,028
(e) While moving machinery	18	1	23	425	449	467	1			41	41	42	19	1	23	466	490	509
(f) All other	102	6	34	1,068	1,108	1,210	12		2	134	136	148	114	6	36	1,202	1,244	1,358
2. Roof fall due to car or machine knocking out post	12		8	137	145	157	1			29	29	30	13		8	166	174	187
3. Falls of face or rib:																		
(a) While mining	18	1	20	997	1,018	1,036	4		1	321	322	326	22	1	21	1,318	1,340	1,362
(b) While loading by hand	25	3	21	1,221	1,245	1,270	5		2	194	196	201	30	3	23	1,415	1,441	1,471
(c) While testing or taking down roof	5		5	264	269	274	3			92	92	95	8		5	356	361	369
(d) While setting or pulling props	5	1	6	239	246	251	2		3	110	113	115	7	1	9	349	359	366
(e) Roll of loose coal or rock	10		20	839	859	869	1			386	386	387	11		20	1,225	1,245	1,256
(f) While moving machinery	1	2	4	160	166	167			1	26	27	27	1	2	5	186	193	194
(g) All other	8	1	8	400	409	417	4			96	96	100	12	1	8	496	505	517
4. Rush of coal, rock, or gob	8		4	195	199	207	3		2	277	279	282	11		6	472	478	489
5. Other falling material or objects (not being handled by injured worker):																		
(a) Falling props	4		11	454	465	469	2		4	367	371	373	6		15	821	836	842
(b) Object dropped or thrown by coworker			2	120	122	122				36	36	36			2	156	158	158
(c) Rolling or shifting objects	2		3	299	302	304	3		2	392	394	397	5		5	691	696	701
(d) All other			4	342	346	346				362	362	362			4	704	708	708
6. Falls of persons:																		
(a) Stumbling or slipping	3		19	1,588	1,607	1,610	6		1	1,269	1,270	1,276	9		20	2,857	2,877	2,886
(b) All other (not from cars)	2		1	207	208	210	3			70	70	73	5		1	277	278	283
7. Handling materials:																		
(a) Coal	1	1	24	2,491	2,516	2,517		3	9	2,128	2,140	2,140	1	4	33	4,619	4,656	4,657
(b) Rock or slate		3	33	1,921	1,957	1,957	1	1		780	781	782	1	4	33	2,701	2,738	2,739
(c) Props	2		20	976	996	998		1		879	880	880	2	1	20	1,855	1,876	1,878
(d) Rails		1	18	982	1,001	1,001			1	169	170	170		1	19	1,151	1,171	1,171
(e) All other	1		11	748	759	760	2		1	434	435	437	3		12	1,182	1,194	1,197

8. Hand tools:																		
(a) Picks, in hands of injured worker		1	9	1,147	1,157	1,157			2	226	228	228		1	11	1,373	1,385	1,385
(b) Axes, in hands of injured worker	3		59	549	608	611			2	134	136	136	3		61	683	744	747
(c) Hammers and sledges, in hands of injured worker	1		10	398	408	409			4	113	117	117	1		14	511	525	526
(d) Other tools, in hands of injured worker	1		7	650	657	658				278	278	278	1		7	928	935	936
(e) Tools, in hands of fellow worker		1	3	452	456	456				65	65	65		1	3	517	521	521
(f) Flying particles from hand tools		1	26	1,273	1,300	1,300			5	720	725	725		1	31	1,993	2,025	2,025
9. Stepping on nails or other sharp objects				221	221	221				352	352	352				573	573	573
10. Striking or bumping against objects	3		6	750	756	759	2		1	311	312	314	5		7	1,061	1,068	1,073
11. Mine cars and mine locomotives:																		
A. Struck, run over, or squeezed between cars or locomotives:																		
(a) While coupling	11	3	199	1,820	2,022	2,033	1		4	217	221	222	12	3	203	2,037	2,243	2,255
(b) While switching, spragging, blocking, braking	18		85	1,062	1,147	1,165	2		2	169	171	173	20		87	1,231	1,318	1,338
(c) While pulling or pushing car	5	1	19	916	936	941			1	77	78	78	5	1	20	993	1,014	1,019
(d) While operating or riding trip	44	2	47	766	815	859	3		1	57	58	61	47	2	48	823	873	920
(e) All other	15		26	637	663	678	3		2	124	126	129	18		28	761	789	807
B. Squeezed between car and rib, timber, or roof:																		
(a) While coupling	5		30	518	548	553				74	74	74	5		30	592	622	627
(b) While switching, spragging, blocking, braking	15	1	33	539	573	588	1		1	261	262	263	16	1	34	800	835	851
(c) While pulling or pushing car	2		14	543	557	559	1			60	60	61	3		14	603	617	620
(d) While operating or riding trip	24	2	20	494	516	540	1			39	39	40	25	2	20	533	555	580
(e) All other	13	1	15	437	453	466	2			71	71	73	15	1	15	508	524	539
C. Derailments	17		32	624	656	673	2			68	68	70	19		32	692	724	743
D. Rerailing cars	2		46	701	747	749			2	137	139	139	2		48	838	886	888
E. Pulling or pushing cars by hand, strain from		1	1	712	714	714				113	113	113		1	1	825	827	827
F. Animals on haulage	2	1	4	408	413	415			1	98	99	99	2	1	5	506	512	514
G. Falling from cars (not run over)	1		4	148	152	153				29	29	29	1		4	177	181	182
H. Runaway cars in dips or slopes	25		24	190	214	239	7	1	1	19	21	28	32	1	25	209	235	267
I. Other haulage accidents	3	1	40	932	973	976	3		4	281	285	288	6	1	44	1,213	1,258	1,264
12. Explosions of gas or coal dust ignited by:																		
(a) Open-flame lamp	7		2	27	29	36	3			42	42	45	10		2	69	71	81
(b) Matches, igniters, or smoking	1			6	6	7	1			19	19	20	2			25	25	27
(c) Defective safety lamp or opening same				5	5	5				6	6	6				11	11	11
(d) Electric arc from bare power line				9	9	9				4	4	4				13	13	13
(e) Electric arc from mining machine	5		1	6	7	12				3	3	3	5		1	9	10	15
(f) Electric arc from mechanical loader or scraper										6	6	6				6	6	6
(g) Electric arc from electric drill				7	7	7				6	6	6				13	13	13
(h) Electric arc from motor of auxiliary fan				1	1	1				3	3	3				4	4	4
(i) Electric arc from trolley locomotive	3			10	10	13	3			6	6	9	6			16	16	22
(j) Electric arc from all other				8	8	8				5	5	5				13	13	13
(k) Blasting with black powder	1			11	11	12				5	5	5	1			16	16	17
(l) All other ignitions	24			34	34	58	9			53	53	62	33			87	87	120

TABLE 8.—*Coal mines: Accidents, by causes and severity of injury, during the year ended Dec. 31, 1936*—Continued

Cause of accident	Bituminous-coal mines						Anthracite mines						All coal mines					
	Killed	Injured				Grand total	Killed	Injured				Grand total	Killed	Injured				Grand total
		Permanent total	Permanent partial	Temporary	Total nonfatal			Permanent total	Permanent partial	Temporary	Total nonfatal			Permanent total	Permanent partial	Temporary	Total nonfatal	
UNDERGROUND—continued																		
13. Explosives (not including explosions of gas or dust):																		
(*a*) Premature blast (not short fuse)	2	1	5	25	31	33	2	1	1	10	12	14	4	2	6	35	43	47
(*b*) Premature blast (short fuse)		1		15	16	16	1		1	6	7	8	1	1	1	21	23	24
(*c*) Premature blast (electric wire or stray currents)	3		2	5	7	10	3		2	16	18	21	6		4	21	25	31
(*d*) Charging and tamping	5		3	26	29	34	5		4	6	10	15	10		7	32	39	49
(*e*) Shot breaking through rib or pillar	4		3	24	27	31				6	6	6	4		3	30	33	37
(*f*) Drilling into unexploded holes	2		1	9	10	12	1		1	9	10	11	3		2	18	20	23
(*g*) Delayed blast	4		5	15	20	24		1		7	8	8	4	1	5	22	28	32
(*h*) Unexploded powder in loose coal				5	5	5				4	4	4				9	9	9
(*i*) Sparks from matches or smoking materials	2			7	7	9		1		6	7	7	2	1		13	14	16
(*j*) Open or mud-capped shots		1		2	3	3	1			4	4	5	1	1		6	7	8
(*k*) Suffocation from smoke from explosives	5			13	13	18	2			16	16	18	7			29	29	36
(*l*) All other	4	1	6	91	98	102	5		2	65	67	72	9	1	8	156	165	174
14. Electricity (not resulting in explosions):																		
(*a*) Contact with trolley wire	26		1	95	96	122	3			16	16	19	29		1	111	112	141
(*b*) Contact with machine feed wire, junction box, or switch	1			105	105	106	1			25	25	26	2			130	130	132
(*c*) Contact with haulage locomotive	5		2	87	89	94				9	9	9	5		2	96	98	103
(*d*) Contact with power or lighting circuit	4			68	68	72	1			6	6	7	5			74	74	79
(*e*) Contact with mining machine	1		1	58	59	60				20	20	20	1		1	78	79	80
(*f*) Contact with mechanical shovel, loader, or conveyor				21	21	21				11	11	11				32	32	32
(*g*) Contact with stationary electrical equipment (motor, switches, etc.)	2		1	29	30	32	2			4	4	6	4		1	33	34	38
(*h*) All others from electricity	5		1	118	119	124	1			39	39	40	6		1	157	158	164
15. Machinery (underground, not including items under No. 12 or No. 14):																		
(*a*) Mining machine, caught or run over while moving	8	2	22	284	308	316			3	23	26	26	8	2	25	307	334	342
(*b*) Mining machine, while being set up	2		11	287	298	300			1	30	31	31	2		12	317	329	331
(*c*) Mining machine, jack pipe, bar, or skid	3	1	24	511	536	539			1	40	41	41	3	1	25	551	577	580

(*d*) Mining machine, caught by cutter chain	3	1	24	154	179	182				14	14	14	3	1	24	168	193	196
(*e*) Mining machine, operating	3	2	26	407	435	438			1	34	35	35	3	2	27	441	470	473
(*f*) Mining machine, all other	4		22	311	333	337			1	62	63	63	4		23	373	396	400
(*g*) Mechanical scraper or loader	3	1	13	130	144	147	1			98	98	99	4	1	13	228	242	246
(*h*) Conveyor, loaded mechanically			8	79	87	87				37	37	37			8	116	124	124
(*i*) Conveyor, loaded by hand or hand shovel			5	158	163	163			1	29	30	30			6	187	193	193
(*j*) Power drills (air or electric)	1		11	174	185	186			1	59	60	60	1		12	233	245	246
(*k*) Accidents while moving machinery	1		15	199	214	215			1	72	73	73	1		16	271	287	288
(*l*) All other machinery accidents	8	1	26	260	287	295	1	1	2	130	133	134	9	2	28	390	420	429
16. Suffocation from natural gases (not from fires or explosions)	9			8	8	17	1			34	34	35	10			42	42	52
17. Mine fires (burns, suffocations, etc.)	10			10	10	20				21	21	21	10			31	31	41
18. All other accidents underground	3		14	626	640	643	4		2	597	599	603	7		16	1,223	1,239	1,246
Total underground	1,023	73	1,568	44,630	46,271	47,294	216	13	95	15,894	16,002	16,218	1,239	86	1,663	60,524	62,273	63,512
SHAFT AND SLOPE																		
19. Vertical or inclined shafts (open from the surface):																		
(*a*) Persons falling down shaft	6			15	15	21				9	9	9	6			24	24	30
(*b*) Objects falling down shaft	1		2	28	30	31	1			22	22	23	2		2	50	52	54
(*c*) Struck by cage or bucket	3	1		11	12	15				7	7	7	3	1		18	19	22
(*d*) Caught by car while caging			1	18	19	19				12	12	12			1	30	31	31
(*e*) All other	1	1	6	48	55	56	5			38	38	43	6	1	6	86	93	99
Total shaft	11	2	9	120	131	142	6			88	88	94	17	2	9	208	219	236
STRIPPING OR OPEN-CUT MINING AND DREDGE OPERATIONS																		
20. Falls or slides of coal or overburden	3		1	89	90	93	3			18	18	21	6		1	107	108	114
21. Mine cars and locomotives			1	48	49	49				25	25	25			1	73	74	74
22. Railway cars and locomotives	1			37	37	38	1			20	20	21	2			57	57	59
23. Explosives	3	2	2	19	23	26	1			6	6	7	4	2	2	25	29	33
24. Electricity	1			27	27	28	1			6	6	7	2			33	33	35
25. Handling materials			1	195	196	196				56	56	56			1	251	252	252
26. Hand tools			2	133	135	135			1	34	35	35			3	167	170	170
27. Falls of persons (stumbling, slipping, etc.)	2		4	136	140	142				75	75	75	2		4	211	215	217
28. Falling objects, other than coal	2		2	105	107	109				36	36	36	2		2	141	143	145
29. Power shovels, scrapers, or buckets	3		4	117	121	124	1		2	56	58	59	4		6	173	179	183
30. Drills (power drills of all kinds)			2	24	26	26				46	46	46			2	70	72	72
31. Operation of dredge machinery			1	26	27	27				4	4	4			1	30	31	31
32. Stepping on or striking objects				39	39	39				17	17	17				56	56	56
33. All other				191	191	191	1			151	151	152	1			342	342	343
Total stripping or open-cut	15	2	20	1,186	1,208	1,223	8		3	550	553	561	23	2	23	1,736	1,761	1,784

TABLE 8.—*Coal mines: Accidents, by causes and severity of injury, during the year ended Dec. 31, 1936*—Continued

Cause of accident	Bituminous-coal mines						Anthracite mines						All coal mines					
	Killed	Injured				Grand total	Killed	Injured				Grand total	Killed	Injured				Grand total
		Permanent total	Permanent partial	Temporary	Total nonfatal			Permanent total	Permanent partial	Temporary	Total nonfatal			Permanent total	Permanent partial	Temporary	Total nonfatal	
SURFACE																		
(Including tipple, breaker, shops, and yards)																		
34. Mine cars and mine locomotives:																		
(*a*) Coupling	------	------	5	212	217	217	------	------	3	100	103	103	------	------	8	312	320	320
(*b*) Rerailing same	------	------	4	103	107	107	------	------	------	37	37	37	------	------	4	140	144	144
(*c*) All other	12	------	10	230	240	252	2	------	------	132	132	134	14	------	10	362	372	386
35. Railway cars and locomotives	7	------	10	135	145	152	2	------	1	117	118	120	9	------	11	252	263	272
36. Handling materials	1	1	12	434	447	448	------	------	5	484	489	489	1	1	17	918	936	937
37. Hand tools	1	------	11	223	234	235	------	------	1	231	232	232	1	------	12	454	466	467
38. Falls of persons:																		
(*a*) Stumbling	1	------	6	302	308	309	1	------	------	251	251	252	2	------	6	553	559	561
(*b*) All other	6	------	4	166	170	176	3	------	1	107	108	111	9	------	5	273	278	287
39. Falling objects	1	------	6	139	145	146	1	------	------	152	152	153	2	------	6	291	297	299
40. Machinery on surface	11	------	31	262	293	304	1	1	5	216	222	223	12	1	36	478	515	527
41. Electricity	3	------	1	57	58	61	2	------	------	31	31	33	5	------	1	88	89	94
42. Explosives	2	------	1	8	9	11	------	------	------	19	19	19	2	------	1	27	28	30
43. All other surface accidents	4	1	19	511	531	535	2	------	------	525	525	527	6	1	19	1,036	1,056	1,062
Total surface	49	2	120	2,782	2,904	2,953	14	1	16	2,402	2,419	2,433	63	3	136	5,184	5,323	5,386
Grand total	1,098	79	1,717	48,718	50,514	51,612	244	14	114	18,934	19,062	19,306	1,342	93	1,831	67,652	69,576	70,918

TABLE 9.—*Coal-mine fatalities and nonfatal injuries: Number and percentages, by causes, for the year ended Dec. 31, 1936*

Cause of accident	Fatalities						Nonfatal injuries					
	Bituminous		Anthracite		Total		Bituminous		Anthracite		Total	
	Number	Percent of total	Number	Percent of total	Number	Percent of total	Number	Percent of total	Number	Percent of total	Number	Percent of total
UNDERGROUND												
1. Fallsof roof (rock, coal, or draw slate):												
(*a*) While mining	179	16.30	17	6.97	196	14.63	2,868	5.68	750	3.94	3,618	5.20
(*b*) While loading by hand	120	10.92	26	10.66	146	10.88	2,830	5.60	416	2.18	3,246	4.67
(*c*) While testing or taking down roof	49	4.46	24	9.84	73	5.44	956	1.89	140	.73	1,096	1.57
(*d*) While setting or pulling props	64	5.82	17	6.97	81	6.04	756	1.50	191	1.00	947	1.36
(*e*) While moving machinery	18	1.64	1	.41	19	1.42	449	.89	41	.22	490	.70
(*f*) All other	102	9.29	12	4.91	114	8.49	1,108	2.19	136	.71	1,244	1.79
2. Roof fall due to car or machine knocking out post	12	1.09	1	.41	13	.97	145	.29	29	.15	174	.25
3. Falls of face or rib:												
(*a*) While mining	18	1.64	4	1.64	22	1.64	1,018	2.02	322	1.69	1,340	1.92
(*b*) While loading by hand	25	2.28	5	2.05	30	2.24	1,245	2.47	196	1.03	1,441	2.07
(*c*) While testing or taking down roof	5	.46	3	1.23	8	.60	269	.53	92	.48	361	.52
(*d*) While setting or pulling props	5	.46	2	.82	8	.52	246	.49	113	.59	359	.52
(*e*) Roll of loose coal or rock	10	.91	1	.41	11	.82	859	1.70	386	2.03	1,245	1.79
(*f*) While moving machinery	1	.09			1	.07	166	.33	27	.14	193	.28
(*g*) All other	8	.73	4	1.64	12	.90	409	.81	96	.50	505	.73
4. Rush of coal, rock, or gob	8	.73	3	1.23	11	.82	199	.39	279	1.46	478	.69
5. Other falling material or objects (not being handled by injured worker):												
(*a*) Falling props	4	.37	2	.82	6	.45	465	.92	371	1.95	836	1.20
(*b*) Object dropped or thrown by coworker							122	.24	36	.19	158	.23
(*c*) Rolling or shifting objects	2	.18	3	1.23	5	.37	302	.60	394	2.07	696	1.00
(*d*) All other							346	.69	362	1.90	708	1.02
6. Falls of persons:												
(*a*) Stumbling or slipping	3	.27	6	2.46	9	.67	1,607	3.18	1,270	6.66	2,877	4.13
(*b*) All other (not from cars)	2	.18	3	1.23	5	.37	208	.41	70	.37	278	.40
7. Handling materials:												
(*a*) Coal	1	.09			1	.07	2,516	4.98	2,140	11.23	4,656	6.69
(*b*) Rock or slate			1	.41	1	.07	1,957	3.87	781	4.10	2,738	3.93
(*c*) Props	2	.18			2	.15	996	1.97	880	4.62	1,876	2.70
(*d*) Rails							1,001	1.98	170	.89	1,171	1.68
(*e*) All other	1	.09	2	.82	3	.22	759	1.50	435	2.28	1,194	1.72

TABLE 9.—*Coal-mine fatalities and nonfatal injuries: Number and percentages, by causes, for the year ended Dec. 31, 1936*—Continued

Cause of accident	Fatalities						Nonfatal injuries					
	Bituminous		Anthracite		Total		Bituminous		Anthracite		Total	
	Number	Percent of total	Number	Percent of total	Number	Percent of total	Number	Percent of total	Number	Percent of total	Number	Percent of total
UNDERGROUND—continued												
8. Hand tools:												
(*a*) Picks, in hands of injured worker							1,157	2.29	228	1.20	1,385	1.99
(*b*) Axes, in hands of injured worker	3	.27			3	.22	608	1.20	136	.71	744	1.07
(*c*) Hammers and sledges, in hands of injured worker	1	.09			1	.07	408	.81	117	.61	525	.75
(*d*) Other tools, in hands of injured worker	1	.09			1	.07	657	1.30	278	1.46	935	1.34
(*e*) Tools, in hands of fellow worker							456	.90	65	.34	521	.75
(*f*) Flying particles from hand tools							1,300	2.57	725	3.80	2,025	2.91
9. Stepping on nails or other sharp objects							221	.44	352	1.85	573	.82
10. Striking or bumping against objects	3	.27	2	.82	5	.37	756	1.50	312	1.64	1,068	1.53
11. Mine cars and mine locomotives:												
A. Struck, run over, or squeezed between cars or locomotives:												
(*a*) While coupling	11	1.00	1	.41	12	.90	2,022	4.00	221	1.16	2,243	3.22
(*b*) While switching, spragging, blocking, braking	18	1.64	2	.82	20	1.49	1,147	2.27	171	.90	1,318	1.89
(*c*) While pulling or pushing car	5	.46			5	.37	936	1.85	78	.41	1,014	1.46
(*d*) While operating or riding trip	44	4.01	3	1.23	47	3.50	815	1.61	58	.31	873	1.25
(*e*) All other	15	1.37	3	1.23	18	1.34	663	1.31	126	.66	789	1.13
B. Squeezed between car and rib, timber, or roof:												
(*a*) While coupling	5	.46			5	.37	548	1.09	74	.39	622	.89
(*b*) While switching, spragging, blocking, braking	15	1.37	1	.41	16	1.19	573	1.13	262	1.37	835	1.20
(*c*) While pulling or pushing car	2	.18	1	.41	3	.22	557	1.10	60	.32	617	.89
(*d*) While operating or riding trip	24	2.19	1	.41	25	1.86	516	1.02	39	.20	555	.80
(*e*) All other	13	1.18	2	.82	15	1.12	453	.90	71	.37	524	.75
C. Derailments	17	1.55	2	.82	19	1.42	656	1.30	68	.36	724	1.04
D. Rerailing cars	2	.18			2	.15	747	1.48	139	.73	886	1.27
E. Pulling or pushing cars by hand, strain from							714	1.41	113	.59	827	1.19
F. Animals on haulage	2	.18			2	.15	413	.82	99	.52	512	.74
G. Falling from cars (not run over)	1	.09			1	.07	152	.30	29	.15	181	.26
H. Runaway cars in dips or slopes	25	2.28	7	2.86	32	2.38	214	.42	21	.11	235	.34
I. Other haulage accidents	3	.27	3	1.23	6	.45	973	1.93	285	1.50	1,258	1.81
12. Explosions of gas or coal dust ignited by:												
(*a*) Open-flame lamp	7	.64	3	1.23	10	.75	29	.06	42	.22	71	.10
(*b*) Matches, igniters, or smoking	1	.09	1	.41	2	.15	6	.01	19	.10	25	.04
(*c*) Defective safety lamp or opening same							5	.01	6	.03	11	.02

(*d*) Electric arc from bare power line							9	.02	4	.02	13	.02
(*e*) Electric arc from mining machine	5	.46			5	.37	7	.01	3	.02	10	01
(*f*) Electric arc from mechanical loader or scraper									6	.03	6	.02
(*g*) Electric arc from electric drill							7	.01	6	.03	13	.01
(*h*) Electric arc from motor of auxiliary fan							1		3	.02	4	.01
(*i*) Electric arc from trolley locomotive	3	.27	3	1.23	6	.45	10	.02	6	.03	16	.02
(*j*) Electric arc from all other							8	.02	5	.03	13	.02
(*k*) Blasting with black powder	1	.09			1	.07	11	.02	5	.03	16	.02
(*l*) All other ignitions	24	2.19	9	3.68	33	2.46	34	.07	53	.28	87	.12
13. Explosives (not including explosions of gas or dust):												
(*a*) Premature blast (not short fuse)	2	.18	2	.82	4	.30	31	.06	12	.06	43	.06
(*b*) Premature blast (short fuse)			1	.41	1	.07	16	.03	7	.04	23	.03
(*c*) Premature blast (electric wire or stray currents)	3	.27	3	1.23	6	.45	7	.01	18	.09	25	.04
(*d*) Charging and tamping	5	.46	5	2.05	10	.75	29	.06	10	.05	39	.06
(*e*) Shot breaking through rib or pillar	4	.37			4	.30	27	.05	6	.03	33	.05
(*f*) Drilling into unexploded holes	2	.18	1	.41	3	.22	10	.02	10	.05	20	.03
(*g*) Delayed blast	4	.37			4	.30	20	.04	8	.04	28	.04
(*h*) Unexploded powder in loose coal							5	.01	4	.02	9	.01
(*i*) Sparks from matches or smoking materials	2	.18			2	.15	7	.01	7	.04	14	.02
(*j*) Open or mud-capped shots			1	.41	1	.07	3	.01	4	.02	7	.01
(*k*) Suffocation from smoke from explosives	5	.46	2	.82	7	.52	13	.03	16	.08	29	.04
(*l*) All other	4	.37	5	2.05	9	.67	98	.19	67	.35	165	.24
14. Electricity (not resulting in explosions):												
(*a*) Contact with trolley wire	26	2.36	3	1.23	29	2.17	96	.19	16	.08	112	.16
(*b*) Contact with machine feed wire, junction box, or switch	1	.09	1	.41	2	.15	105	.21	25	.13	130	.19
(*c*) Contact with haulage locomotive	5	.46			5	.37	89	.18	9	.05	98	.14
(*d*) Contact with power or lighting circuit	4	.37	1	.41	5	.37	68	.14	6	.03	74	.11
(*e*) Contact with mining machine	1	.09			1	.07	59	.12	20	.11	79	.11
(*f*) Contact with mechanical shovel, loader, or conveyor							21	.04	11	.06	32	.05
(*g*) Contact with stationary electrical equipment (motor, switches, etc.)	2	.18	2	.82	4	.30	30	.06	4	.02	34	.05
(*h*) All others from electricity	5	.46	1	.41	6	.45	119	.24	39	.20	158	.23
15. Machinery (underground, not including items under No. 12 or No. 14):												
(*a*) Mining machine, caught or run over while moving	8	.73			8	.60	308	.61	26	.14	334	.48
(*b*) Mining machine, while being set up	2	.18			2	.15	298	.59	31	.16	329	.47
(*c*) Mining machine, jack pipe, bar, or skid	3	.27			3	.22	536	1.06	41	.22	577	.83
(*d*) Mining machine, caught by cutter chain	3	.27			3	.22	179	.35	14	.07	193	.28
(*e*) Mining machine, operating	3	.27			3	.22	435	.86	35	.18	470	.68
(*f*) Mining machine, all other	4	.37			4	.30	333	.66	63	.33	396	.57
(*g*) Mechanical scraper or loader	3	.27	1	.41	4	.30	144	.29	98	.51	242	.35
(*h*) Conveyor, loaded mechanically							87	.17	37	.19	124	.18
(*i*) Conveyor, loaded by hand or hand shovel							163	.32	30	.16	193	.28
(*j*) Power drills (air or electric)	1	.09			1	.07	185	.37	60	.32	245	.35
(*k*) Accidents while moving machinery	1	.09			1	.07	214	.42	73	.38	287	.41
(*l*) All other machinery accidents	8	.73	1	.41	9	.67	287	.57	133	.70	420	.60

TABLE 9.—*Coal-mine fatalities and nonfatal injuries: Number and percentages, by causes, for the year ended Dec. 31, 1936*—Continued

Cause of accident	Fatalities						Nonfatal injuries					
	Bituminous		Anthracite		Total		Bituminous		Anthracite		Total	
	Number	Percent of total	Number	Percent of total	Number	Percent of total	Number	Percent of total	Number	Percent of total	Number	Percent of total
UNDERGROUND—continued												
16. Suffocation from natural gases (not from fires or explosions)	9	.82	1	.41	10	.75	8	.02	34	.18	42	.06
17. Mine fires (burns, suffocations, etc.)	10	.91			10	.75	10	.02	21	.11	31	.05
18. All other accidents underground	3	.27	4	1.64	7	.52	640	1.27	599	3.14	1,239	1.78
Total underground	1,023	93.17	216	88.52	1,239	92.33	46,271	91.60	16,002	83.95	62,273	89.50
SHAFT AND SLOPE												
19. Vertical or inclined shafts (open from the surface):												
(*a*) Persons falling down shaft	6	.55			6	.45	15	.03	9	.05	24	.03
(*b*) Objects falling down shaft	1	.09	1	.41	2	.15	30	.06	22	.11	52	.08
(*c*) Struck by cage or bucket	3	.27			3	.22	12	.02	7	.04	19	.03
(*d*) Caught by car while caging							19	.04	12	.06	31	.05
(*e*) All other	1	.09	5	2.05	6	.45	55	.11	38	.20	93	.13
Total shaft	11	1.00	6	2.46	17	1.27	131	.26	88	.46	219	.32
STRIPPING OR OPEN-CUT MINING AND DREDGE OPERATIONS												
20. Falls or slides of coal or overburden	3	.27	3	1.23	6	.45	90	.18	18	.10	108	.15
21. Mine cars and locomotives							49	.10	25	.13	74	.11
22. Railway cars and locomotives	1	.09	1	.41	2	.15	37	.07	20	.11	57	.08
23. Explosives	3	.27	1	.41	4	.30	23	.04	6	.03	29	.04
24. Electricity	1	.09	1	.41	2	.15	27	.05	6	.03	33	.05
25. Handling materials							196	.39	56	.29	252	.36
26. Hand tools							135	.27	35	.18	170	.24
27. Falls of persons (stumbling, slipping, etc.)	2	.18			2	.15	140	.28	75	.39	215	.31
28. Falling objects, other than coal	2	.18			2	.15	107	.21	36	.19	143	.21
29. Power shovels, scrapers or buckets	3	.27	1	.41	4	.30	121	.24	58	.31	179	.26
30. Drills (power drills of all kinds)							26	.05	46	.24	72	.10
31. Operation of dredge machinery							27	.05	4	.02	31	.05
32. Stepping on or striking objects							39	.08	17	.09	56	.09
33. All other			1	.41	1	.07	191	.38	151	.79	342	.49
Total stripping or open-cut	15	1.37	8	3.28	23	1.71	1,208	2.39	553	2.90	1,761	2.53

SURFACE [1]												
34. Mine cars and mine locomotives:												
(*a*) Coupling							217	.43	103	.54	320	.46
(*b*) Rerailing same							107	.21	37	.19	144	.21
(*c*) All other	12	1.09	2	.82	14	1.04	240	.48	132	.69	372	.53
35. Railway cars and locomotives	7	.64	2	.82	9	.67	145	.29	118	.62	263	.38
36. Handling materials	1	.09			1	.07	447	.88	489	2.57	936	1.35
37. Hand tools	1	.09			1	.07	234	.46	232	1.22	466	.67
38. Falls of persons:												
(*a*) Stumbling	1	.09	1	.41	2	.15	308	.61	251	1.32	559	.80
(*b*) All other	6	.55	3	1.23	9	.67	170	.34	108	.57	278	.40
39. Falling objects	1	.09	1	.41	2	.15	145	.29	152	.80	297	.42
40. Machinery on surface	11	1.00	1	.41	12	.90	293	.58	222	1.16	515	.74
41. Electricity	3	.27	2	.82	5	.37	58	.11	31	.16	89	.13
42. Explosives	2	.18			2	.15	9	.02	19	.10	28	.04
43. All other surface accidents	4	.37	2	.82	6	.45	531	1.05	525	2.75	1,056	1.52
Total surface	49	4.46	14	5.74	63	4.69	2,904	5.75	2,419	12.69	5,323	7.65
Grand total	1,098	100.00	244	100.00	1,342	100.00	50,514	100.00	19,062	100.00	69,576	100.00

[1] Includes tipple, breaker, shops, and yards, also washery accidents at Pennsylvania anthracite mines.

ACCIDENTS BY PRINCIPAL CAUSES

FALLS OF ROOF AND COAL

Falls of roof and coal at or near the working face, where the coal is broken down and loaded, ranked first among the causes of both fatal and nonfatal accidents to men employed in the coal mines of the United States in 1936. Accidents of this class usually cause approximately half of all fatalities and about a third of all nonfatal injuries that occur underground in coal mining. In 1936 falls of roof and coal underground, chiefly at or near the working face, caused 744 deaths and 16,737 nonfatal injuries, or 59 and 27 percent, respectively, of the total number of deaths and injuries to coal-mine workers underground during the year. The frequency of such accidents, measured by the number of man-hours during which employees were exposed to underground hazards, was 1.102 for fatalities and 24.785 for injuries per million man-hours of exposure or employment underground. Corresponding rates for 1935 were 1.106 and 27.102, respectively. The lower nonfatal injury rate in 1936 was caused by a decrease in the rate for bituminous-coal mines.

As shown in table 10, most of the accidents caused by falls of roof and coal during 1936 occurred while the employees were engaged in undercutting, shearing, or pulling down the coal or while they were loading the coal onto cars or conveyors. Fewer such accidents occurred while the men were testing or taking down the roof, taking down loose rock, setting or pulling props, or moving machinery that was being used in drilling, cutting, or loading coal.

States having the lowest injury rates due to falls of roof and coal in 1936 were South Dakota, Kansas, and Alabama; those reporting the highest rates were Washington, Utah, and Texas. The relative standing of the States, according to the frequency of accidents of this class per million man-hours of work performed underground, is shown in table 11. The rates shown in table 11 cover nonfatal injuries only, as such accidents are more numerous than fatalities in coal mining and it is believed that they furnish a more reliable basis for comparing the frequency of accidents due to falls of roof and coal in the various States than rates based upon fatal accidents alone. The number of fatal accidents in some States is small, and a difference of one fatality would produce violent and unreliable changes in accident rates based thereon.

TABLE 10.—*Fatal and nonfatal injury rates per million man-hours underground in 1936 from falls of roof and coal*

Cause	Fatality rate			Nonfatal injury rate		
	Bituminous	Anthracite	Total	Bituminous	Anthracite	Total
Falls of roof (rock, coal, or draw slate):						
(*a*) While mining	0.320	0.147	0.290	5.124	6.490	5.358
(*b*) While loading by hand	.214	.225	.216	5.056	3.600	4.807
(*c*) While testing or taking down roof	.088	.208	.108	1.708	1.212	1.623
(*d*) While setting or pulling props	.114	.147	.120	1.351	1.653	1.402
(*e*) While moving machinery	.032	.009	.028	.802	.355	.726
(*f*) All other	.182	.104	.169	1.980	1.177	1.842
Roof falls due to car or machine knocking out post	.022	.009	.019	.259	.251	.257
Falls of face or rib:						
(*a*) While mining	.032	.034	.033	1.819	2.787	1.984
(*b*) While loading by hand	.045	.043	.044	2.224	1.696	2.134
(*c*) While testing or taking down roof	.009	.026	.012	.481	.796	.534
(*d*) While setting or pulling props	.009	.017	.010	.439	.978	.532
(*e*) Roll of loose coal or rock	.018	.009	.016	1.535	3.340	1.844
(*f*) While moving machinery	.002		.002	.296	.233	.286
(*g*) All other	.014	.034	.018	.731	.831	.748
Rush of coal, rock, or gob	.014	.026	.016	.355	2.414	.708
Total, 1936	1.115	1.038	1.102	24.160	27.813	24.785
Total, 1935	1.080	1.220	1.106	27.344	26.082	27.102

TABLE 11.—*Number of nonfatal injuries from* ***falls of roof and coal*** *per million man-hours underground*

State	Injuries	State	Injuries	State	Injuries
South Dakota		Tennessee	21.769	Virginia	29.771
Kansas	13.949	Arkansas	21.942	Illinois	31.956
Alabama	14.497	Alaska	22.692	New Mexico	32.588
Wyoming	15.935	Pennsylvania [1]	23.914	Iowa	36.983
North Dakota	15.960			Michigan	37.355
Oklahoma	18.449	United States [2]	24.785	Colorado	41.567
Montana	18.740			Texas	45.244
Kentucky	19.365	Maryland	25.510	Utah	51.730
Ohio	19.626	West Virginia	26.731	Washington	57,300
Missouri	20.838	Indiana	27.998		

[1] Pennsylvania bituminous, 21.065; Pennsylvania anthracite, 27.813.
[2] United States bituminous, 24.160.

HAULAGE ACCIDENTS UNDERGROUND

Haulage accidents underground caused 18 percent of all fatalities that occurred in underground coal mining in the United States during 1936 and 22 percent of all nonfatal injuries to underground workers. The prevention of haulage accidents is apparently more difficult in bituminous-coal than in anthracite mines, as 20 percent of the fatalities and 26 percent of the nonfatal injuries to underground employees in bituminous-coal mines were caused by accidents connected with the operation of mine cars and locomotives compared with only 12 percent of the fatalities and 12 percent of the injuries in anthracite mines. Further evidence of the relatively greater hazard due to haulage accidents in bituminous-coal than in anthracite mines is furnished by a comparison of the accident rates based upon the number of man-hours of exposure to underground accidents in the two classes of mines. The fatality rate was 0.36 per million man-hours for bituminous-coal and 0.23 for anthracite mining, and the rates for nonfatal injuries were 21.6 and 16.6, respectively.

Reports covering all coal mines in the United States for 1936 showed that 228 men were killed and 14,013 injured by accidents in which mine cars and locomotives were involved. In 45 percent of these accidents the employees were injured by being struck, run over, or squeezed between cars or locomotives. In 23 percent the employees were injured by being squeezed between the cars and sides of the roadways or between the cars and props or roof. Many other employees were injured by cars running off the track and by operations incident to rerailing the cars; a large number were injured while pulling or pushing cars. Specific causes of haulage accidents and their relative importance are shown by the fatality and injury rates in table 12.

South Dakota, with no haulage accidents underground, and Alaska, Wyoming, and Missouri, with low accident rates, had the best records among the various coal-producing States in 1936 for haulage accidents underground. The highest rates were reported by mines in Utah, Michigan, and Indiana. Table 13 shows the injury rates and the relative standing of the States based upon the frequency of haulage accidents to underground employees.

TABLE 12.—*Fatal and nonfatal injury rates per million man-hours underground in 1936 from* ***haulage*** *underground*

Cause	Fatality rate			Nonfatal injury rate		
	Bituminous	Anthracite	Total	Bituminous	Anthracite	Total
Mine cars and mine locomotives:						
A. Struck, run over, or squeezed between cars or locomotives:						
(*a*) While coupling	0.020	0.009	0.018	3.613	1.913	3.322
(*b*) While switching, spragging, blocking, braking	.032	.017	.030	2.049	1.480	1.952
(*c*) While pulling or pushing car	.009	----------	.007	1.672	.675	1.501
(*d*) While operating or riding trip	.079	.026	.070	1.456	.502	1.293
(*e*) All other	.027	.026	.027	1.184	1.090	1.168
B. Squeezed between car and rib, timber, or roof:						
(*a*) While coupling	.009	----------	.007	.979	.640	.921
(*b*) While switching, spragging, blocking, braking	.027	.009	.024	1.024	2.267	1.236
(*c*) While pulling or pushing car	.003	.009	.005	.995	.519	.914
(*d*) While operating or riding trip	.043	.009	.037	.922	.337	.822
(*e*) All other	.023	.017	.022	.809	.615	.776
C. Derailments	.031	.017	.028	1.172	.588	1.072
D. Rerailing cars	.003	----------	.003	1.335	1.203	1.312
E. Pulling or pushing cars by hand, strain from	----------	----------	----------	1.276	.978	1.225
F. Animals on haulage	.003	----------	.003	.738	.857	.758
G. Falling from cars (not run over)	.002	----------	.001	.272	.251	.268
H. Runaway cars in dips or slopes	.045	.060	.047	.382	.182	.348
I. Other haulage accidents	.005	.026	.009	1.738	2.463	1.863
Total, 1936	.361	.225	.338	21.616	16.563	20.751
Total, 1935	.408	.261	.380	22.561	16.635	21.428

TABLE 13.—*Number of nonfatal injuries, from* ***haulage*** *per million man-hours underground*

State	Injuries	State	Injuries	State	Injuries
South Dakota		Virginia	19.047	Washington	25.023
Alaska	7.564	Oklahoma	19.556	Montana	25.433
Wyoming	8.255	Pennsylvania [1]	19.753	Illinois	26.361
Missouri	12.543	Iowa	20.701	Maryland	28.511
Arkansas	14.628			Texas	28,956
Kansas	15.650	United States [2]	20.751	North Dakota	29,925
Ohio	17.787			Indiana	30.458
Alabama	18.286	Tennessee	21.454	Michigan	36.637
New Mexico	18.728	West Virginia	22.422	Utah	39.178
Kentucky	18.914	Colorado	23.899		

[1] Pennsylvania anthracite, 16.563; Pennsylvania bituminous, 22.083.
[2] United States bituminous, 21.616.

HANDLING MATERIALS UNDERGROUND

Although not included among the major causes of fatal accidents in coal mines, "handling materials" was responsible for more nonfatal injuries during 1936 than any other underground hazard except falls of roof and coal and operation of mine cars and locomotives. In fact, in anthracite mines the number of such injuries exceeded that from any other cause.

Reports covering all anthracite and bituminous-coal mines active in 1936 showed that 7 men were killed and 11,635 injured while handling materials in connection with work underground. For each million man-hours of employment underground the fatality rate was 0.010 and the injury rate 17.2. The injury rate represents a reduction from the corresponding rate for 1935. The entire improvement was in bituminous-coal mining. Among 26 coal-producing States, as shown in table 15, the rates for accidents of this class ranged from zero for South Dakota to 40.7 for Texas. Following the no-accident record of South Dakota, the most favorable records were those of Wyoming, Montana, and Kansas. The highest rates, and therefore the least favorable rates, were those reported for Texas, Pennsylvania, and Illinois.

The injury rate for Pennsylvania anthracite mines was considerably higher than that for bituminous-coal mining. The anthracite rate in 1936 was 38.1 compared with a bituminous-coal rate of 12.9. The anthracite rate covers anthracite mines in Pennsylvania and the bituminous-coal rate bituminous-coal mines throughout the country. The rate for bituminous-coal mines in Pennsylvania was 12.2 in 1936, slightly more favorable than the corresponding rate for bituminous-coal mining in all States and less than one-third as high as that for anthracite mining in Pennsylvania.

By far the largest number of accidents due to handling materials, especially in anthracite mines, occur while the miners are handling coal at the working face. In bituminous-coal mines many such accidents occur when the material being handled is rock or slate. Accidents due to handling rock and slate also occur frequently in anthracite mines but not as frequently as those chargeable to handling props.

Table 14 shows the accident rates for each of the subclasses of accidents caused by handling materials and table 15 the relative standing of the States according to their nonfatal injury rates due to accidents of this kind.

TABLE 14.—*Fatal and nonfatal injury rates per million man-hours underground in 1936 from* ***handling materials***

Cause	Fatality rate			Nonfatal injury rate		
	Bituminous	Anthracite	Total	Bituminous	Anthracite	Total
Handling materials:						
(*a*) Coal	0.002		0.001	4.495	18.519	6.895
(*b*) Rock or slate		0.009	.001	3.496	6.759	4.055
(*c*) Props	.003		.003	1.780	7.615	2.778
(*d*) Rails				1.788	1.471	1.734
(*e*) All other	.002	.017	.005	1.356	3.765	1.768
Total, 1936	.007	.026	.010	12.915	38.129	17.230
Total, 1935	.010		.008	13.038	36.347	17.496

TABLE 15.—*Number of nonfatal injuries from* ***handling materials*** *per million-man-hours underground*

State	Injuries	State	Injuries	State	Injuries
South Dakota		Kentucky	9.893	Washington	17.408
Wyoming	1.728	New Mexico	10.488	Indiana	17.572
Montana	4.685	Arkansas	10.565	Utah	19.779
Kansas	6.124	West Virginia	13.693	Michigan	20.833
Alabama	7.461	Virginia	14.802	Iowa	21.399
Missouri	8.092	Alaska	15.128	Illinois	22.039
Tennessee	8.308	Maryland	15.306	Pennsylvania [2]	23.147
North Dakota	8.978	Colorado	15.728	Texas	40.720
Ohio	9.036				
Oklahoma	9.224	United States [1]	17.230		

[1] United States bituminous, 12.915.
[2] Pennsylvania bituminous, 12.202; Pennsylvania anthracite, 38.129.

HAND TOOLS UNDERGROUND

The use of hand tools causes few deaths but many injuries to men working underground in coal mining. In 1936 only 5 deaths were attributed to hand tools, whereas the number of lost-time nonfatal injuries was 6,135. If the frequency of accidents is measured by the number of man-hours of work done underground by all employees, the fatality rate due to accidents caused by hand tools in 1936 was 0.007 per million man-hours of exposure and the nonfatal injury rate 9.1 The annual fatality rates are too small for comparisons; the injury rate of 9.1 for 1936 was slightly more favorable than the rate of 9.3 in 1935. The frequency rate of such injuries was 39 percent less for bituminous-coal mines throughout the country than for the anthracite mines of Pennsylvania.

Table 16 shows a more detailed classification of causes of injuries chargeable generally to hand tools, and table 17 gives the rates for injuries of this class for the individual States. The rates ranged from zero for Alaska and South Dakota to 24.4 for Texas. States with the most favorable rates, following Alaska and South Dakota, were Montana, Alabama, and North Dakota; those with the highest rates, following Texas, were Iowa and Illinois. The relative position of each State is shown in table 17.

TABLE 16.—*Fatal and nonfatal injury rates per million man-hours underground in 1936 from* ***hand tools***

Cause	Fatality rate			Nonfatal injury rate		
	Bituminous	Anthracite	Total	Bituminous	Anthracite	Total
Hand tools:						
(*a*) Picks, in hands of injured worker	----------	----------	----------	2.067	1.973	2.051
(*b*) Axes, in hands of injured worker	0.005	----------	0.005	1.086	1.177	1.102
(*c*) Hammers and sledges, in hands of injured worker	.002	----------	.001	.729	1.013	.777
(*d*) Other tools, in hands of injured worker	.002	----------	.001	1.174	2.406	1.385
(*e*) Tools, in hands of fellow worker	----------	----------	----------	.815	.562	.771
(*f*) Flying particles from hand tools	----------	----------	----------	2.322	6.274	2.999
Total, 1936	.009	----------	.007	8.193	13.405	9.085
Total, 1935	.004	0.009	.005	8.810	11.119	9.252

TABLE 17.—*Number of nonfatal injuries from* ***hand tools*** *per million man-hours underground*

State	Injuries	State	Injuries	State	Injuries
Alaska	----------	Virginia	5.250	Pennsylvania [2]	10.298
South Dakota	----------	Oklahoma	5.535	Maryland	12.305
Montana	1.339	West Virginia	5.894	Washington	17.408
Alabama	1.894	Kansas	6.464	Indiana	17.455
North Dakota	1.995	New Mexico	6.742	Michigan	17.959
Wyoming	3.072	Ohio	7.800	Illinois	23.086
Missouri	3.642	Colorado	8.170	Iowa	23.260
Arkansas	4.605	Utah	8.368	Texas	24.432
Tennessee	4.838				
Kentucky	4.864	United States [1]	9.085		

[1] United States bituminous, 8.193.
[2] Pennsylvania bituminous, 8.029; Pennsylvania anthracite, 13.405.

FALLS OF PERSONS

In addition to accidents caused by persons falling down mine shafts, which constitute a separate class and for which separate figures are given in this bulletin, falls of persons elsewhere underground than in shafts were responsible for 14 deaths and 3,155 nonfatal injuries in 1936. Most of the accidents resulted from the employees stumbling or slipping. This class of accidents is not only numerous among underground workers, but many also occur at open-pit mines and in and around shops and yards connected with underground mines. In open-pit mines such accidents resulted in 2 deaths and 215 injuries in 1936 and in shops and yards at underground coal mines in 11 deaths and 837 injuries.

Reports covering underground mining operations show that accidents due to falls of persons occurred much more frequently at anthracite than at bituminous-coal mines; in fact, the bituminous-coal rate was less than a third as high as the anthracite rate. Perhaps the chief reason for the wide difference in the rates is the fact that the coal beds in bituminous-coal mines are generally flat or nearly so, whereas many of the coal seams in the anthracite region are steep and pitching. It is therefore not to be expected that the accident rate due to falls of persons would be as high for bituminous-coal mining as for anthracite mining. The rates for the two classes of mining are given in table 18.

The injury rate due to falls of persons for all coal mines in the United States was 4.7 in 1936. This rate represented a slight improvement over 1935.

The injury rate at open-pit mines declined in 1936 at anthracite mines but increased at bituminous-coal mines.

The rates for underground mining in the individual States ranged from zero for Alaska and South Dakota, each of which had no injuries from this cause, to 19.2 for the State of Washington. The high rate for Washington is explained, to some extent at least, by the fact that many of the coal beds there are also steeply inclined and therefore more or less comparable to some of the coal beds in the anthracite region of Pennsylvania. Table 19 shows the relative standing of these and other States.

TABLE 18.—*Fatal and nonfatal injury rates per million man-hours in 1936 from falls of persons*

Cause	Fatality rate			Nonfatal injury rate		
	Bituminous	Anthracite	Total	Bituminous	Anthracite	Total
Falls of persons:						
Underground:						
(*a*) Stumbling or slipping	0.005	0.052	0.013	2.871	10.990	4.260
(*b*) All other	.004	.026	.008	.372	.606	.412
Total	.009	.078	.021	3.243	11.596	4.672
Open-cut	.132		.087	9.250	9.581	9.363
Surface	.073	.121	.085	5.029	10.845	6.532

TABLE 19.—*Number of nonfatal injuries from* ***falls of persons*** *per million man-hours underground*

State	Injuries	State	Injuries	State	Injuries
Alaska		Ohio	2.536	Michigan	5.029
South Dakota		Montana	2.677	Kansas	5.103
Arkansas	0.542	Wyoming	2.880	Colorado	5.107
Oklahoma	.738	West Virginia	2.884	Texas	5.429
Tennessee	.841	Iowa	3.838	Indiana	5.974
Alabama	1.044	Maryland	4.502	Pennsylvania [2]	6.927
Kentucky	1.400			Illinois	6.983
Missouri	1.416	United States [1]	4.672	North Dakota	10.973
New Mexico	2.247			Washington	19.221
Virginia	2.290	Utah	4.945		

[1] United States bituminous, 3.243.
[2] Pennsylvania bituminous, 3.515; Pennsylvania anthracite, 11.596.

MACHINERY UNDERGROUND

The injury rate for accidents caused by machinery underground was slightly more favorable in 1936 than in 1935 for anthracite mines but slightly less favorable for bituminous-coal mines. The rate for the coal-mining industry as a whole increased a little over 1935, as shown in table 20. The number of accidents at mines of both classes included 38 deaths and 3,810 injuries to underground employees. Fewer persons were killed or injured by machinery in open-pit mining or while working in surface shops and yards at underground mines. Table 20 shows the various types of accidents underground and the accident rate per million man-hours worked underground for accidents of each type.

As shown in table 21 the injury rate for machinery accidents in all coal mines was 5.64 per million man-hours of underground work. Three States—Texas, Alaska, and South Dakota—had no accidents of this type. Favorable rates were reported for Kansas, Michigan, and Missouri. The highest rates—more than twice as high as the average rate for the United States—were reported for Montana, Utah, Indiana, and Illinois. These States use machinery much more extensively than the States reporting the lowest rates.

TABLE 20.—*Fatal and nonfatal injury rates per million man-hours underground in 1936 from* ***machinery***

Cause	Fatality rate			Nonfatal injury rate		
	Bituminous	Anthracite	Total	Bituminous	Anthracite	Total
Machinery (underground):						
(*a*) Mining machine, caught or run over while moving	0.014	----------	0.012	0.550	0.225	0.495
(*b*) Mining machine, while being set up	.004	----------	.003	.532	.268	.487
(*c*) Mining machine, jack pipe, bar, or skid	.005	----------	.004	.958	.355	.854
(*d*) Mining machine, caught by cutter chain	.005	----------	.004	.320	.121	.286
(*e*) Mining machine, operating	.005	----------	.004	.777	.303	.696
(*f*) Mining machine, all other	.008	----------	.006	.595	.545	.586
(*g*) Mechanical scraper or loader	.005	0.009	.006	.257	.848	.358
(*h*) Conveyor, loaded mechanically	----------	----------	----------	.155	.320	.184
(*i*) Conveyor, loaded by hand or hand shovel	----------	----------	----------	.291	.260	.286
(*j*) Power drills (air or electric)	.002	----------	.002	.331	.519	.363
(*k*) Accidents while moving machinery	.002	----------	.002	.382	.632	.425
(*l*) All other machinery accidents	.014	.009	.013	.513	1.151	.622
Total, 1936	.064	.017	.056	5.662	5.547	5.642
Total, 1935	.066	.026	.058	5.524	5.690	5.556

TABLE 21.—*Number of nonfatal injuries from* ***machinery*** *per million man-hours underground*

State	Injuries	State	Injuries	State	Injuries
Texas	----------	Maryland	4.202	Washington	6.165
Alaska	----------	Kentucky	4.457	North Dakota	7.980
South Dakota	----------	Arkansas	4.876	Colorado	8.885
Kansas	2.041	Virginia	5.027	Wyoming	9.983
Michigan	2.155	Pennsylvania [1]	5.136	Illinois	12.623
Missouri	2.225	West Virginia	5.139	Indiana	13.706
Iowa	2.442	Oklahoma	5.166	Utah	15.976
New Mexico	2.622	Ohio	5.200	Montana	16.063
Alabama	3.286				
Tennessee	3.891	United States [2]	5.642		

[1] Pennsylvania bituminous, 4.836; Pennsylvania anthracite, 5.547.
[2] United States bituminous, 5.662.

ELECTRICITY UNDERGROUND

The frequency rate for accidents caused by electricity underground at coal mines was lower in 1936 than in 1935; the rate was 1.139, a reduction of more than 16 percent from 1935. The actual number of accidents included 52 fatalities and 717 nonfatal lost-time injuries. In addition to the accidents that occurred underground, 2 persons were killed and 33 injured in mining coal in open pits, and 5 men were killed and 89 injured while working in surface shops and yards at underground mines. The figures for open-pit mining show a frequency rate of 1.524 per million man-hours worked in open-pit mines, a decrease

of 15 percent from the rate for 1935. The rate for accidents at surface shops and yards was 0.734 per million man-hours of work done by all employees engaged in surface work incident to underground mining; it represented an improvement over 1935, being 10 percent lower.

The classification "electricity" in the Bureau of Mines standard list of causes of accidents at coal mines includes only those accidents in which death and injury resulted directly from electric shock or burns but not explosions of gas or coal dust in which electricity may have ignited the gas or dust.

Contact with trolley wires was the principal specific cause of fatal accidents due to electricity in the mines during 1936, but contact with machine feed wires and switches was the main cause of nonfatal injuries. Other kinds of mine equipment, such as haulage locomotives, mining machines, mechanical shovels, loaders, and conveyors were also involved in accidents due to electricity during the year.

Eight States reported no injuries caused by electricity underground. The average injury rate for the whole industry for nonfatal injuries due to electricity underground was 1.062, compared with a rate of 3.866 for Indiana and 3.002 for Illinois.

Table 22 shows the death and injury rates due to accidents caused by electric shock or burns, and table 23 shows the nonfatal injury rates for the same class of accidents in the chief coal-producing States.

TABLE 22.—*Fatal and nonfatal injury rates per million man-hours in 1936 from* ***electricity***

Cause	Fatality rate			Nonfatal injury rate		
	Bituminous	Anthracite	Total	Bituminous	Anthracite	Total
Electricity (not resulting in explosions):						
Underground:						
(*a*) Trolley wire	0.046	0.025	0.043	0.172	0.138	0.166
(*b*) Machine feed wire, junction box, or switch	.002	.009	.003	.188	.216	.193
(*c*) Haulage locomotive	.009	----------	.007	.159	.078	.145
(*d*) Power or lighting circuit	.007	.009	.007	.121	.052	.110
(*e*) Mining machine	.002	----------	.002	.105	.173	.117
(*f*) Mechanical shovel, loader, or conveyor	----------	----------	----------	.037	.095	.047
(*g*) Stationary electrical equipment (motors, switches, etc.)	.004	.017	.006	.054	.035	.050
(*h*) All others from electricity	.009	.009	.009	.213	.338	.234
Total, 1936	.079	.069	.077	1.049	1.125	1.062
Total, 1935	.089	.017	.075	1.238	1.473	1.283
Open-cut	.066	.128	.087	1.784	.767	1.437
Surface	.032	.060	.039	.610	.936	.695

TABLE 23.—*Number of nonfatal injuries from* ***electricity*** *per million man-hours underground*

State	Injuries	State	Injuries	State	Injuries
Missouri	----------	Iowa	0.349	Virginia	1.061
Montana	----------	Washington	.363		
North Dakota	----------	Oklahoma	.369	United States [2]	1.062
Arkansas	----------	New Mexico	.375		
Texas	----------	Wyoming	.384	Maryland	1.200
Michigan	----------	Alabama	.541	West Virginia	1.236
Alaska	----------	Colorado	.715	Utah	1.521
South Dakota	----------	Ohio	.729	Illinois	3.002
Tennessee	0.315	Pennsylvania [1]	.811	Indiana	3.866
Kansas	.340	Kentucky	1.054		

[1] Pennsylvania bituminous, 0.582; Pennsylvania anthracite, 1.125. [2] United States bituminous, 1.049.

EXPLOSIVES UNDERGROUND

The coal mines of the United States used 142,116,175 pounds of explosives during 1936, chiefly for blasting coal but also for such rock blasting as was necessary in connection with mining operations. The quantity of explosives averaged 539,725 pounds per working day at bituminous-coal mines and 186,408 pounds per working day at anthracite mines. As might be expected, therefore, the handling and use of explosives are among the hazards to which miners are exposed.

Reports from mining companies showed that explosives accidents during 1936 caused 51 deaths and 435 injuries to underground employees, 4 deaths and 29 injuries to workers at open-pit mines, and 2 deaths and 28 injuries to employees at surface shops and yards. Premature blasts were the principal cause of explosives accidents, as shown in table 24. In underground mining, where most accidents from explosives occur, bituminous-coal mines reported only about one-third as high an accident rate per man-hour worked as anthracite mines.

As shown in table 25, six States had no accidents due to explosives underground during the year. Notably low rates were reported by Wyoming and Colorado. The average rate for nonfatal injuries for the United States was 0.644 per million man-hours of employment underground. Rates considerably higher than this were reported for Texas, North Dakota, Washington, and Michigan.

Explosives accidents do not include those caused by explosions of gas or coal dust, even though the gas or dust may have been ignited by sparks from explosives; these, if any, are referred to under the general heading "Explosions of gas and dust."

TABLE 24.—*Fatal and nonfatal injury rates per million man-hours in 1936 from explosives*

Cause	Fatality rate			Nonfatal injury rate		
	Bituminous	Anthracite	Total	Bituminous	Anthracite	Total
Explosives (not including explosions of gas or dust):						
Underground:						
(*a*) Premature blast (not short fuse)	0.004	0.017	0.006	0.055	0.104	0.064
(*b*) Premature blast (short fuse)	----------	.009	.002	.028	.060	.034
(*c*) Premature blast (electric wire or stray currents)	.005	.026	.009	.013	.155	.037
(*d*) Charging and tamping	.009	.043	.015	.052	.087	.058
(*e*) Shot breaking through rib or pillar	.007	----------	.006	.048	.052	.049
(*f*) Drilling into unexploded holes	.004	.009	.004	.018	.087	.030
(*g*) Delayed blast	.007	----------	.006	.036	.069	.041
(*h*) Unexploded powder in loose coal	----------	----------	----------	.009	.035	.013
(*i*) Sparks from matches or smoking materials	.004	----------	.003	.013	.060	.021
(*j*) Open or mud-capped shots	----------	.009	.002	.005	.035	.010
(*k*) Suffication from smoke from explosives	.009	.017	.010	.023	.138	.043
(*l*) All other	.007	.043	.013	.175	.580	.244
Total, 1936	.055	.173	.076	.475	1.462	.644
Total, 1935	.064	.166	.083	.707	1.525	.863
Open-cut	.198	.128	.174	1.520	.767	1.263
Surface	.021	----------	.016	.095	.574	.219

TABLE 25.—*Number of nonfatal injuries from* ***explosives*** *per million man-hours underground*

State	Injuries	State	Injuries	State	Injuries
Missouri		Utah	0.380	Kansas	0.680
Montana		Illinois	.409	Ohio	.698
Arkansas		Alabama	.503	Indiana	.703
Oklahoma		West Virginia	.559	Pennsylvania [2]	.774
Alaska		Iowa	.581	Maryland	.900
South Dakota		Tennessee	.631	Michigan	1.437
Wyoming	0.192	Kentucky	.632	Washington	1.813
Colorado	.204			North Dakota	1.995
Virginia	.335	United States [1]	.644	Texas	5.429
New Mexico	.375				

[1] United States bituminous, 0.475.
[2] Pennsylvania anthracite, 1.462; Pennsylvania bituminous, 2.272

EXPLOSIONS OF GAS OR COAL DUST

The death rate from explosions of gas and coal dust was virtually the same in 1936 as in 1935—0.084 per million man-hours of employment underground. The rate for nonfatal injuries dropped from 0.728 to 0.422; both bituminous-coal and anthracite mines shared in the improvement. In bituminous-coal mines 41 men were killed, of whom 23 lost their lives in 3 major explosions as shown in table 76, and 127 men were injured. Anthracite mines in Pennsylvania reported 16 deaths from explosions of gas, including 5 deaths in a major disaster at West Pittston, Pa., on August 24; in addition, 158 nonfatal injuries were reported by mines in the anthracite region. (No coal-dust explosions have been reported for anthracite mines; moreover, it is believed that anthracite dust is nonexplosive under normal mining conditions.) Open-flame lamps were the chief cause of the explosions reported in 1936, as shown in table 26.

The average injury rate in all coal mines for explosions of gas and dust was 0.422 per million man-hours worked underground. Most States had rates much lower than the general average. The highest rates were reported for Arkansas, Indiana, and Kansas. The rates for these and other States are shown in table 27.

TABLE 26.—*Fatal and nonfatal injury rates per million man-hours underground in 1936 from* ***explosions of gas or coal dust***

Cause	Fatality rate			Nonfatal injury rate		
	Bituminous	Anthracite	Total	Bituminous	Anthracite	Total
Explosions of gas or coal dust ignited by—						
(*a*) Open-flame lamp	0.012	0.026	0.015	0.052	0.363	0.105
(*b*) Matches, igniters, or smoking	.002	.008	.003	.011	.164	.037
(*c*) Defective safety lamp or opening same				.009	.052	.016
(*d*) Electric arc from bare power line				.016	.035	.019
(*e*) Electric arc from mining machine	.009		.007	.012	.026	.015
(*f*) Electric arc from mechanical loader or scraper					.052	.009
(*g*) Electric arc from electric drill				.012	.052	.019
(*h*) Electric arc from motor of auxiliary fan				.002	.026	.006
(*i*) Electric arc from trolley locomotive	.005	.026	.009	.018	.052	.024
(*j*) Electric arc from all other				.014	.043	.019
(*k*) Blasting with black powder	.002		.001	.020	.043	.024
(*l*) All other ignitions	.043	.078	.049	.061	.459	.129
Total, 1936	.073	.138	.084	.227	1.367	.422
Total, 1935	.054	.200	.082	.389	2.161	.728

TABLE 27.—*Number of nonfatal injuries from* ***explosions of gas and dust*** *per million man-hours underground*

State	Injuries	State	Injuries	State	Injuries
Wyoming		Colorado	0.102	Pennsylvania [2]	0.639
Missouri		Virginia	.112	Ohio	.698
Utah		Iowa	.116	Michigan	.718
Montana		West Virginia	.189	Washington	.725
North Dakota		Alabama	.193	Oklahoma	.738
Maryland		Illinois	.205	Kansas	1.021
New Mexico		Tennessee	.210	Indiana	1.054
Texas		Kentucky	.286	Arkansas	1.354
Alaska					
South Dakota		United States [1]	0.422		

[1] United States bituminous, 0.227.
[2] Pennsylvania bituminous, 0.107, Pennsylvania anthracite, 1.367.

REVIEW BY STATES

The hazards to which workers in bituminous-coal mines are exposed while at work are revealed by the causes of accidents that result in injury to the employees. Seven principal types of accidents caused 43,656 nonfatal injuries at bituminous-coal mines in 1936, or approximately 85 percent of all accidents, fatal and nonfatal, in and about such mines in the United States during the year. The seven leading classes of nonfatal accidents are shown in table 28, and opposite each class are the injury rates for the United States and for the principal States in which bituminous coal is mined. Each rate represents the number of nonfatal lost-time injuries from the specified cause for each million man-hours of work performed by men employed underground at the mines.

TABLE 28.—*Comparative nonfatal injury rates per million man-hours of employment underground for the 7 leading causes of nonfatal injuries, by States, in 1936*

	United States	Alabama	Arkansas	Colorado	Illinois	Indiana	Iowa	Kansas	Kentucky	Maryland	Michigan	Missouri	Montana	New Mexico
Falls of roof and coal	24.785	14.497	21.942	41.567	31.956	27.998	36.983	13.949	19.365	25.510	37.355	20.838	18.740	32.588
Haulage	20.751	18.286	14.628	23.899	26.361	30.458	20.701	15.650	18.914	28.511	36.637	12.543	25.433	18.728
Handling materials	17.230	7.461	10.565	15.728	22.039	17.572	21.399	6.124	9.893	15.306	20.833	8.092	4.685	10.488
Hand tools	9.085	1.894	4.605	8.170	23.086	17.455	23.260	6.464	4.864	12.305	17.959	3.642	1.339	6.742
Falls of persons	4.672	1.044	.542	5.107	6.983	5.974	3.838	5.103	1.400	4.502	5.029	1.416	2.677	2.247
Machinery	5.642	3.286	4.876	8.885	12.623	13.706	2.442	2.041	4.457	4.202	2.155	2.225	16.063	2.622
Falling objects	3.551	.928	----------	3.983	5.254	2.226	1.512	1.361	1.280	2.401	.718	.405	1.339	2.622

	North Dakota	Ohio	Oklahoma	Pennsylvania (bituminous)	Pennsylvania (anthracite)	Pennsylvania	Tennessee	Texas	Utah	Virginia	Washington	West Virginia	Wyoming	United States (bituminous)
Falls of roof and coal	15.960	19.626	18.449	21.065	27.813	23.914	21.769	45.244	51.730	29.771	57.300	26.731	15.935	24.160
Haulage	29.925	17.787	19.556	22.083	16.563	19.753	21.454	28.956	39.178	19.047	25.023	22.422	8.255	21.616
Handling materials	8.978	9.036	9.224	12.202	38.129	23.147	8.308	40.720	19.779	14.802	17.408	13.693	1.728	12.915
Hand tools	1.995	7.800	5.535	8.029	13.405	10.298	4.838	24.432	8.368	5.251	17.408	5.894	3.072	8.193
Falls of persons	1.097	2.536	.738	3.515	11.596	6.927	.841	5.429	4.945	2.290	19.221	2.884	2.880	3.243
Machinery	7.980	5.200	5.166	4.836	5.547	5.136	3.891	----------	15.976	5.027	6.165	5.139	9.983	5.662
Falling objects	----------	2.251	.738	2.579	10.064	5.739	.841	5.429	4.184	.950	4.352	1.760	2.112	2.206

Alabama.—Alabama (table 29) produced 3 percent of the total output of bituminous coal in the United States and maintained an injury rate for underground and surface employees at coal mines that was 41 percent lower and therefore more favorable than the corresponding rate for bituminous-coal mines in the country as a whole. Alabama did not have an especially low rate in any one class of accidents but maintained a lower rate than the country's average for each of the seven main classes of accidents shown in table 28. Compared with 1935, Alabama made a marked improvement in reducing accidents from falls of roof and coal but suffered a slight increase in its rates for accidents caused by handling materials.

Alaska.—Data on Alaska are given in table 30.

Arkansas.—The injury rate for the coal industry in Arkansas (table 31) was 26 percent better than that for the entire country but was not as favorable as the State's own rate for 1935. The higher rate for 1936 was due chiefly to increased rates for haulage accidents and for accidents resulting from handling materials. Production of coal in Arkansas was less than 1 percent of the total output of the country.

Colorado.—The injury rate for coal mining in Colorado (table 32) in 1936 was more than 31 percent higher than the average rate for all States combined. Nevertheless, it represented an improvement over the rate for Colorado in 1935. Most of the improvement was in accidents caused by falls of roof and coal and hand tools. The mines of the State produced about 1½ percent of the country's output of bituminous coal in 1936.

Illinois.—Coal-mine workers in Illinois (table 33) produced nearly 12 percent of the output of bituminous coal in the United States in 1936 and had an injury rate 58 percent higher than the average rate for bituminous-coal mines in the country as a whole. The rate for the State was higher for each of the seven main causes of accidents in bituminous-coal mines. However, it was more favorable in 1936 than in 1935, the improvement being particularly notable for accidents due to falls of roof and coal, haulage, and handling materials.

Indiana.—Indiana (table 34) reduced its injury rate for coal mining 19 percent in 1936 compared with 1935, but the rate for the State was 41 percent higher than the average rate for bituminous-coal mining in the United States in 1936. The improvement in 1936 was chiefly in accidents attributed to falls of roof and coal and to haulage. Compared with the rates for the country as a whole, the rates for Indiana were high for falls of roof and coal, haulage, hand tools, and machinery. The State contributed 4 percent to the country's output of bituminous coal during the year.

Iowa.—Although the Iowa rate for nonfatal injuries (table 35) was 38 percent higher than the average rate for the entire country in 1936, it was also 5 percent higher than the State's own rate in 1935. The increase over its own rate for 1935 was due chiefly to higher rates for accidents caused by haulage and handling materials. The higher rate for Iowa compared with the United States was chiefly for accidents due to falls of roof and coal, handling materials, and hand tools. The mines of Iowa furnished about 1 percent of the Nation's output of bituminous coal in 1936.

Kansas.—The injury rate for Kansas mines (table 36) was 17 percent lower than that in 1935 and 24 percent lower or better than the

average rate for the bitumous-coal mining industry in all States. The improvement in the State's rate in 1936 compared with 1935 was chiefly in two classes of accidents, namely, hand tools and handling materials. The State's favorable position compared with that of the country as a whole was due to lower rates for six out of the seven leading causes of injuries in coal mines, the only exception being accidents due to falls of persons.

Kentucky.—Kentucky (table 37) produced 11 percent of the total output of bituminous-coal mines in the United States in 1936 and lowered its injury rate 9 percent compared with 1935. Moreover, the injury rate for Kentucky mines in 1936 was 22 percent lower and more favorable than the average rate for the coal-mining industry in the country as a whole. The improvement in the State's injury rate in 1936 was reported for each of the seven principal causes of accidents in coal mines, and the favorable position of the State compared with the United States likewise applied to each of the seven principal causes, especially handling materials and falls of roof and coal.

Maryland.—Although the injury rate for Maryland mines (table 38) in 1936 was 20 percent higher than the average rate for bituminous-coal mines of the Nation, it was 12 percent lower and therefore better than the Maryland rate for 1935. The improvement in the State's rate was due chiefly to a reduction in accidents caused by haulage, falls of persons, and falling objects. The rate for Maryland was higher than the average for the entire country mainly because the mines in Maryland had proportionately more accidents caused by mine cars and locomotives and hand tools. Production of coal in Maryland was less than 1 percent of the total for the entire country.

Michigan.—Although Michigan (table 39) is not a large coal-producing State, its total output in 1936 being less than 1 percent of the country's production, the injury rate for coal mining in the State was relatively high, being 56 percent higher than the national average and 35 percent above the State's rate for the previous year. The increase over 1935 was due to an increase in accidents from four of the seven principal classes of mine accidents, namely, haulage, falls of roof and coal, handling materials, and hand tools. A comparison of the Michigan rates with those for the United States shows higher rates for the State in the same four classes of accidents.

Missouri.—With a production of about 1 percent of the Nation's total output in 1936, the bituminous-coal mines in Missouri (table 40) had an injury rate 44 percent better than the average for the country but 36 percent higher than the State's rate for 1935. The failure to improve its position in 1936 was due to an increase in the number of accidents caused by haulage and falls of roof and coal. The favorable showing of Missouri compared with bituminous-coal mining generally is due to fewer accidents in Missouri mines from the seven leading causes of accidents in coal mines.

Montana.—Injuries in Montana coal mines (table 41) resulted in an accident rate 9 percent better than the general average for the country and 10 percent better than the State's rate for 1935. The progress made in 1936 compared with 1935 is explained by fewer injuries from six of the seven main causes of coal-mine accidents, but when the Montana record is compared with the national record it is found to have been favorable for five of the seven leading causes of coal-mine accidents. Production of coal in Montana was somewhat less than 1 percent of the output for the country as a whole.

New Mexico.—This State (table 42) is one of two Western States (the other being Wyoming) that has been honored by having a coal mine that won the "Sentinels of Safety" trophy in the National Safety Competition, which has been conducted yearly by the Bureau of Mines since 1925. Reports from mines operating in New Mexico in 1936 showed an injury rate 16 percent lower and more favorable than the rate for bituminous-coal mining throughout the country. However, the State's rate was 7 percent higher than in 1935, the increase being due to increases in injuries from haulage accidents and accidents from handling materials. Compared with the record for the United States, that for New Mexico is favorable for six out of the seven leading causes of accidents in coal mines; the only class of accidents in which the record for the State is unfavorable is falls of roof and coal. New Mexico in 1936 produced less than 1 percent of the total output of coal in the country.

North Dakota.—North Dakota (table 43) in 1936 produced less than 1 percent of the total output of bituminous coal in the United States. Although the injury rate for the State was 4 percent higher than the national average it was 13 percent lower than in 1935. The improvement was effected mainly by reducing accidents from falls of roof and handling materials. The slight excess of the North Dakota accident rate over the national average was due to a proportionately larger number of haulage accidents.

Ohio.—This State (table 44) produced between 5 and 6 percent of the total output of bituminous coal in the United States in 1936. The injury rate caused by accidents at the mines was 13 percent lower than the average for the entire country and 12 percent lower than the rate reported for the State in 1935. Progress in accident prevention in 1936 was chiefly in the classes of accidents due to haulage and falls of roof and coal; the favorable position of the State over the Nation as a whole was because there were fewer accidents in Ohio mines in all of the seven principal classes of accidents in bituminous-coal mines except falling objects.

Oklahoma.—Although Oklahoma (table 45) is not a large producer of coal, its output in 1936 being less than 1 percent of that of the country as a whole, the injury rate for coal-mine employees was 10 percent lower or better than the country's average. Nevertheless the State's record was not as favorable as in 1935, the injury rate for 1936 being 31 percent higher than in 1935. Accidents caused by mine cars and locomotives, handling materials, hand tools, and machinery were responsible for the higher injury rate of the mines in 1936.

Pennsylvania.—In combined production of anthracite and bituminous coal, Pennsylvania is the leading coal-producing State in the United States. In production of bituminous coal alone, Pennsylvania with 25 percent of the Nation's output in 1936 was slightly behind West Virginia with 27 percent. The injury rate for accidents at bituminous-coal mines in Pennsylvania (table 46) was 4 percent lower or more favorable than the rate for the country as a whole and 6 percent more favorable than the State's rate for 1935. Improvement in the rate for bituminous-coal mines in the State was made chiefly in three classes of accidents, namely, falls of roof and coal, haulage, and falls of persons.

The injury rate for accidents at anthracite mines in Pennsylvania

(table 47) is normally higher than that for bituminous-coal mines either in Pennsylvania or the country as a whole. In 1936 the injury rate for Pennsylvania anthracite mines was 62 percent higher than the national average for bituminous-coal mines and 67 percent higher than the average for bituminous-coal mines in Pennsylvania. The rate for anthracite mines in the State increased 4 percent in 1936 over 1935. The chief class of accidents for which anthracite mines showed a higher injury rate than bituminous-coal mines was handling materials, with a rate nearly three times as high for anthracite mines. In addition, the injury rates for several other classes of accidents were higher at anthracite mines, namely, accidents charged to falls of roof and coal, hand tools, falls of persons, and falling objects. In one class of accidents (haulage accidents) the rate for anthracite mines was more favorable than that for bituminous-coal mines.

South Dakota.—Data for South Dakota are given in table 48.

Tennessee.—Somewhat more than 1 percent of the output of bituminous coal in the United States during 1936 came from Tennessee mines (table 49). The State had an injury rate for its coal mines that was 25 percent lower and more favorable than the average rate for the entire country but 10 percent higher than the State's rate for 1935. The 10-percent increase was chargeable to an increase in accidents from falls of roof and coal, haulage, handling materials, and hand tools.

Texas.—About 95 percent of the solid fuel produced by Texas mines (table 50) is lignite and about 5 percent bituminous coal. Both classes of fuel are treated as one in this bulletin, in common with coal produced in other States. The combined output of lignite and bituminous coal in Texas in 1936 was larger than in the 1935 but in each year was considerably less than 1 percent of the production of bituminous coal in the United States. The injury rate for bituminous-coal mines in the State, although 3 percent lower than in 1935, was twice as high as the average rate for the United States. The safety record for lignite mines was better than that for bituminous-coal mines within the State, the injury rate being 130.9 for the former and 200.7 for the latter. No accidents due to machinery were reported by mines in Texas in 1936, but each of the other six principal causes of accidents in coal mines resulted in a higher injury rate in Texas than in the United States as a whole.

Utah.—There was virtually no change in the injury rate for Utah coal mines (table 51) from 1935 to 1936, the number of injuries per million man-hours of exposure being 119.2 in both years. Production of coal in Utah was less than 1 percent of the total output of the United States. Compared with the average injury rate for bituminous-coal mines in all States, the rate for Utah mines was high (58 percent above the national average). The Utah rate in 1936 was conspicuously higher than the national rate for each of the seven main causes of mine accidents except hand tools, for which the Utah rate was only slightly higher than the average rate for the United States.

Virginia.—Virginia (table 52) produced slightly less than 3 percent of the total output of coal in the United States in 1936. Accidents at the mines resulted in an injury rate 4 percent lower than the rate for the United States and 22 percent lower or better than the rate for Virginia in 1935. Several classes of accidents, notably falls of roof and coal, haulage, machinery, and falling objects, were responsible for the progress made in accident prevention in 1936 by Virginia mines.

Washington.—Washington mines (table 53) produced less than 1 percent of the country's output of coal in 1936. The injury rate for coal-mine accidents was about 70 percent higher than the national average and about 13 percent higher than the State's rate for 1935. Increases were reported in the rates for accidents from six of the seven principal causes of coal-mine accidents, the exception being falling objects, for which a lower rate was shown by the reports. Compared with the average rates for the United States, the rate for each of the seven main causes was higher for mines in Washington.

West Virginia.—West Virginia (table 54) produced more bituminous coal in 1936 than any other State, slightly leading Pennsylvania, the next largest producer. West Virginia mines yielded 27 percent of the national output compared with 25 percent for mines in Pennsylvania. The injury rate for bituminous-coal mines in West Virginia in 1936 was virtually the same as the average rate for all bituminous-coal mines in the United States and nearly 8 percent lower or better than in 1935. A comparison of the record of West Virginia with that of the United States shows that West Virginia had a lower rate for accidents from hand tools, falls of persons, machinery, and falling objects and a higher rate for accidents from falls of roof and coal, haulage, and handling materials.

Wyoming.—Between 1 and 2 percent of the total production of bituminous coal in the United States in 1936 came from Wyoming mines (table 55) . The injury rate for Wyoming mines was decidedly favorable, having been 47 percent lower than the average rate for the country as a whole. The State's rate for 1936 was 8 percent lower than that for 1935. Improvement in 1936 was shown by a reduction in the injury rates due to accidents from falls of roof and coal, haulage, and hand tools.

TABLE 29.—***Alabama:*** *Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*

County	Number of operators	Number of mines	Production, short tons	Men employed			Average days of employment per man	Man-days of employment			Man-hours of employment		
				Underground	Surface [1]	Total		Underground	Surface [1]	Total	Underground	Surface [1]	Total
Bibb	9	11	606,753	943	251	1,194	211	198,858	52,956	251,814	1,392,006	370,692	1,762,698
Blount	12	13	159,935	333	70	403	214	72,408	13,943	86,351	510,591	98,411	609,002
Cullman	7	9	27,001	86	17	103	200	17,259	3,343	20,602	120,813	23,401	144,214
Jefferson	54	63	7,055,372	9,348	1,444	10,792	220	2,046,556	332,157	2,378,713	14,448,632	2,335,459	16,784,091
Marion	14	14	289,362	556	95	651	191	106,306	18,178	124,484	744,107	127,246	871,353
St. Clair	3	8	843,262	1,080	110	1,190	223	240,690	24,467	265,157	1,687,230	171,749	1,858,979
Shelby	15	18	453,102	911	179	1,090	194	177,036	34,834	211,870	1,243,402	244,564	1,487,966
Tuscaloosa	27	27	152,759	370	66	436	141	51,991	9,383	61,374	363,562	65,556	429,118
Walker	52	60	2,527,061	3,464	903	4,367	193	704,041	140,149	844,190	5,033,682	1,005,191	6,038,873
Etowah, Fayette, Jackson, Winston	6	6	141,269	229	40	269	202	46,160	8,273	54,433	323,120	57,911	381,031
Total, 1936		229	12,255,876	17,320	3,175	20,495	210	3,661,305	637,683	4,298,988	25,867,145	4,500,180	30,367,325
Total, 1935		163	8,500,510	16,174	2,714	18,888	159	2,543,976	459,442	3,003,418	17,854,693	3,268,781	21,123,384

County	Killed	Injured				Rate per million man-hours		Rate per million tons		Ton per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
		Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured				
Bibb	4		1	117	118	2.269	66.943	6.592	194.478	0.344	2.905	7.00	1,476
Blount	2			26	26	3.284	42.693	12.505	162.566	.263	3.808	7.05	1,511
Cullman	1			4	4	6.934	27.737	37.036	148.143	.187	5.341	7.00	1,400
Jefferson	17		56	564	620	1.013	36.940	2.410	87.876	.420	2.379	7.06	1,555
Marion			3	30	33		37.872		114.044	.332	3.011	7.00	1,338
St. Clair	5	1	3	20	24	2.690	12.910	5.929	28.461	.454	2.205	7.01	1,562
Shelby	1		3	87	90	.672	60.485	2.207	198.631	.305	3.284	7.02	1,365
Tuscaloosa				21	21		48.938		137.471	.356	2.809	6.99	984
Walker	5		14	394	408	.828	67.562	1.979	161.452	.418	2.390	7.15	1,383
Etowah, Fayette, Jackson, Winston				16	16		41.991		113.259	.371	2.697	7.00	1,416
Total, 1936	35	1	80	1,279	1,360	1.153	44.785	2.856	110.967	.404	2.478	7.06	1,482
Total, 1935	24	1	33	1,084	1,118	1.136	52.927	2.823	131.522	.402	2.484	7.03	1,118

	Men employed	Production, short tons	Man-hours of employment	Killed	Injured	Rate per million man-hours	
						Killed	Injured
Underground	17,320	12,209,955	25,867,145	34	1,285	1.314	49.677
Open-cut	220	45,921	125,860	1	19	7.945	150.961
Surface	2,955		4,374,320		56		12.802
Total, 1936	20,495	12,255,876	30,367,325	35	1,360	1.153	44.785

[1] Includes open-cut operations.

TABLE 30.—***Alaska:*** *Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*

	Number of operators	Number of mines	Production, short tons	Men employed			Average days of employment per man	Man-days of employment			Man-hours of employment		
				Underground	Surface	Total		Underground	Surface	Total	Underground	Surface	Total
Total, 1936	3	3	136,593	64	47	111	245	16,526	10,682	27,208	132,208	85,456	217,664
Total, 1935	4	4	119,425	60	35	95	250	14,926	8,845	23,771	119,208	70,756	189,964

	Killed	Injured				Rate per million man-hours		Rate per million tons		Ton per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
		Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured				
Total, 1936				10	10		45.942		73.210	0.628	1.594	8.00	1,961
Total, 1935			1	11	12		63,170		100.481	.629	1.591	7.99	2,000

TABLE 31.—*Arkansas: Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*

County	Number of operators	Number of mines	Production, short tons	Men employed			Average days of employment per man	Man-days of employment			Man-hours of employment		
				Underground	Surface [1]	Total		Underground	Surface [1]	Total	Underground	Surface [1]	Total
Johnson	11	11	224,763	669	140	809	116	77,140	16,669	93,809	539,980	116,683	656,663
Logan	16	17	471,931	962	153	1,115	160	154,423	24,104	178,527	1,080,972	168,718	1,249,690
Sebastian	24	24	671,732	1,390	188	1,578	160	220,973	31,218	252,191	1,545,811	218,526	1,764,337
Franklin, Pope, and Scott	10	10	252,768	481	111	592	153	74,973	15,824	90,797	524,811	110,768	635,579
Total, 1936		62	1,621,194	3,502	592	4,094	150	527,509	87,815	615,324	3,691,574	614,695	4,306,269
Total, 1935		65	1,133,279	3,218	525	3,743	121	393,290	59,999	453,289	2,753,030	419,993	3,173,023

County	Killed	Injured				Rate per million man-hours		Rate per million tons		Ton per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
		Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured				
Johnson	1			13	13	1.523	19.797	4.449	57.839	0.342	2.922	7.00	812
Logan	2			102	102	1.600	81.620	4.238	216.133	.378	2.648	7.00	1,121
Sebastian	7			78	78	3.967	44.209	10.421	116.118	.381	2.627	7.00	1,118
Franklin, Pope, and Scott	5		1	44	45	7.867	70.802	19.781	178.029	.398	2.514	7.00	1,074
Total, 1936	15		1	237	238	3.483	55.268	9.252	146.805	.376	2.656	7.00	1,052
Total, 1935	8		1	114	115	2.521	36.243	7.059	101.475	.357	2.800	7.00	848

	Men employed	Production, short tons	Man-hours of employment	Killed	Injured	Rate per million man-hours	
						Killed	Injured
Underground	3,502	1,565,487	3,691,574	14	219	3.792	59.324
Open-cut	48	55,707	40,894				
Surface	544		573,801	1	19	1.743	33.113
Total, 1936	4,094	1,621,194	4,306,269	15	238	3.483	55.268

[1] Includes open-cut operations.

TABLE 32.—**Colorado:** *Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*

County	Number of operators	Number of mines	Production, short tons	Men employed			Average days of employment per man	Man-days of employment			Man-hours of employment		
				Underground	Surface [1]	Total		Underground	Surface [1]	Total	Underground	Surface [1]	Total
Boulder	24	24	503,319	715	120	835	206	148,285	23,670	171,955	1,043,665	166,635	1,210,300
Delta	9	9	69,057	70	19	89	188	13,150	3,572	16,722	95,784	26,696	122,480
El Paso	8	8	291,496	265	46	311	230	60,987	10,660	71,647	433,374	75,689	509,063
Fremont	38	40	495,614	803	150	953	193	156,610	27,006	183,616	1,096,273	189,042	1,285,315
Garfield	11	11	46,356	44	12	56	224	9,757	2,759	12,516	73,576	21,057	94,633
Gunnison	12	13	627,866	533	124	657	197	105,475	24,217	129,692	738,326	169,522	907,848
Huerfano	22	27	759,394	966	220	1,186	195	184,121	46,894	231,015	1,289,407	361,501	1,650,908
Jefferson	6	6	169,487	126	23	149	206	25,827	4,909	30,736	181,389	34,663	216,052
Las Animas	30	31	1,225,154	1,495	240	1,735	183	272,313	45,718	318,031	1,906,752	320,452	2,227,204
Mesa	18	18	64,133	89	23	112	169	15,086	3,836	18,922	106,429	27,079	133,508
Routt	17	18	987,958	974	266	1,240	157	150,009	44,568	194,577	1,035,002	327,002	1,362,004
Weld	20	22	1,480,684	1,391	181	1,572	170	234,141	33,737	267,878	1,640,942	237,085	1,878,027
Elbert and Larimer	7	7	7,395	17	7	24	195	3,229	1,458	4,687	24,453	11,192	35,645
Jackson, Moffat, and Rio Blanco	10	10	37,216	18	33	51	205	3,383	7,090	10,473	24,683	49,942	74,625
LaPlata, Montezuma, Montrose, Pitkin, and San Miguel	26	26	45,246	74	19	93	182	13,571	3,312	16,883	101,313	24,818	126,131
Total, 1936		270	6,810,375	7,580	1,483	9,063	185	1,395,944	283,406	1,679,350	9,791,368	2,042,375	11,833,743
Total, 1935		263	5,910,511	6,823	1,334	8,157	172	1,149,524	249,909	1,399,433	8,086,600	1,764,778	9,851,378

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TABLE 32.—***Colorado:*** *Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*—Con.

County	Killed	Injured				Rate per million man-hours		Rate per million tons		Ton per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
		Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured				
Boulder	10	1	7	127	135	8.262	111.543	19.868	268.220	0.416	2.405	7.04	1,449
Delta				1	1		8.165		14.481	.564	1.774	7.32	1,376
El Paso		1		45	46		90.362		157.807	.573	1.746	7.11	1,637
Fremont	3		3	97	100	2.334	77.802	6.053	201.770	.386	2.593	7.00	1,349
Garfield				2	2		21.134		43.144	.490	2.041	7.56	1,690
Gunnison	1			54	54	1.102	59.481	1.593	86.006	.692	1.446	7.00	1,382
Huerfano	3		4	80	84	1.817	50.881	3.951	110.615	.460	2.174	7.15	1,392
Jefferson			1	15	16		74.056		94.403	.784	1.275	7.03	1,450
Las Animas	6		3	174	177	2.694	79.472	4.897	144.472	.550	1.818	7.00	1,284
Mesa				10	10		74.902		155.926	.480	2.082	7.06	1,192
Routt	3	1	10	295	306	2.203	224.669	3.037	309.730	.725	1.379	7.00	1,098
Weld	3		6	222	228	1.597	121.404	2.026	153.983	.788	1.268	7.01	1,196
Elbert and Larimer				2	2		56.109		270.453	.207	4.820	7.61	1,485
Jackson, Moffat, and Rio Blanco				3	3		40.201		80.610	.499	2.005	7.13	1,463
La Plata, Montezuma, Montrose, Pitkin, and San Miguel				10	10		79.283		221.014	.359	2.788	7.47	1,356
Total, 1936	29	3	34	1,137	1,174	2.451	99.208	4.258	172.384	.576	1.738	7.05	1,306
Total, 1935	25	3	41	1,032	1,076	2.538	109.223	4.230	182.049	.600	1.667	7.04	1,208

	Men employed	Production, short tons	Man-hours of employment	Killed	Injured	Rate per million man-hours	
						Killed	Injured
Underground	7,580	6,787,999	9,791,368	27	1,093	2.758	111.629
Open-cut	29	22,376	43,239		3		69.382
Surface	1,454		1,999,136	2	78	1.000	39.017
Total, 1936	9,063	6,810,375	11,833,743	29	1,174	2.451	99.208

TABLE 33.—***Illinois:*** *Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*

County	Number of operators	Number of mines	Production, short tons	Men employed			Average days of employment per man	Man-days of employment			Man-hours of employment		
				Underground	Surface[1]	Total		Underground	Surface[1]	Total	Underground	Surface[1]	Total
Bureau	7	7	66,960	276	23	299	209	57,532	4,826	62,358	402,724	33,782	436,506
Christian	4	7	4,484,318	1,890	632	2,522	193	362,484	123,562	486,046	2,537,388	864,934	3,402,322
Clinton	4	4	302,913	571	81	652	107	61,086	8,359	69,445	427,602	58,513	486,115
Edgar	3	3	33,954	43	10	53	205	8,922	1,934	10,856	62,016	13,392	75,408
Franklin	7	14	9,374,649	5,850	1,391	7,241	169	957,203	264,006	1,221,209	6,700,418	1,848,043	8,548,461
Fulton	84	88	2,663,964	963	665	1,628	169	143,743	131,569	275,312	1,037,772	928,514	1,966,286
Gallatin	6	6	47,117	61	12	73	183	11,176	2,167	13,343	87,511	16,918	104,429
Grundy	11	12	146,602	187	103	290	129	26,883	10,507	37,390	188,767	69,476	258,243
Henry	27	27	692,946	370	179	549	192	63,731	41,458	105,189	447,849	297,788	745,637
Jackson	23	25	1,803,020	547	326	873	221	123,058	69,598	192,656	861,875	499,717	1,361,592
Knox	24	24	422,438	438	131	569	178	89,418	12,028	101,446	627,253	84,603	711,856
La Salle	26	26	579,893	585	231	816	219	136,936	41,448	178,384	958,549	298,776	1,257,325
Livingston	6	6	15,599	63	14	77	130	8,394	1,580	9,974	58,758	11,060	69,818
Macoupin	8	12	4,173,182	2,473	339	2,812	255	631,064	86,515	717,579	4,417,455	605,603	5,023,058
Madison	30	30	1,834,749	1,579	297	1,876	178	276,185	57,681	333,866	1,894,479	397,969	2,292,448
Menard	10	10	127,853	156	21	177	199	31,077	4,155	35,232	244,031	32,725	276,756
Mercer	9	9	27,394	71	10	81	133	9,450	1,321	10,771	66,150	9,247	75,397
Peoria	51	52	1,643,467	1,522	127	1,649	194	289,674	30,800	320,474	2,049,297	203,327	2,252,624
Perry	26	27	3,292,524	936	903	1,839	183	145,827	191,265	337,092	1,017,957	1,387,972	2,405,929
Randolph	15	15	594,240	724	271	995	104	86,980	16,757	103,737	608,860	117,299	726,159
Rock Island	8	9	62,059	87	16	103	172	15,009	2,673	17,682	105,183	18,711	123,894
St. Clair	59	63	2,925,369	2,823	513	3,336	157	430,348	93,147	523,495	3,008,222	664,094	3,672,316
Saline	26	32	3,686,775	3,338	633	3,971	159	540,417	92,539	632,956	3,784,431	648,298	4,432,729
Sangamon	17	21	2,855,456	3,185	451	3,636	172	546,617	78,678	625,295	3,830,302	551,861	4,382,163
Schuyler	34	34	76,597	193	72	265	193	39,295	11,752	51,047	280,830	84,011	364,841
Shelby	9	12	19,092	103	16	119	153	15,936	2,269	18,205	118,056	16,465	134,521
Stark	12	12	17,730	65	13	78	166	10,825	2,140	12,965	79,835	15,880	95,715
Tazewell	8	8	305,247	437	51	488	153	67,466	7,411	74,877	472,262	51,877	524,139
Vermilion	78	88	2,317,859	2,611	358	2,969	164	427,428	60,959	488,387	2,953,867	422,712	3,376,579
Washington	5	5	339,624	304	74	378	161	46,758	14,252	61,010	329,052	100,152	429,204
Will	3	3	1,496,721	----	491	491	275	----	135,128	135,128	----	945,896	945,896
Williamson	91	98	2,980,629	1,685	596	2,281	172	287,522	105,112	392,634	2,021,929	738,078	2,760,007
Bond, Greene, and Montgomery	15	15	731,455	932	181	1,113	138	130,856	23,172	154,028	914,987	161,909	1,076,896
Crawford, Marion, Wabash, and White	10	12	418,280	439	120	559	161	70,460	19,507	89,967	493,220	136,549	629,769
Hancock, McDonough, and Warren	11	11	16,632	58	12	70	193	11,064	2,418	13,482	85,338	19,246	104,584
Jasper, Jefferson, Jersey, and Monroe	5	5	1,700	18	8	26	97	1,929	593	2,522	13,503	4,231	17,734
Macon and Scott	5	5	165,047	209	21	230	220	46,240	4,470	50,710	324,280	31,490	355,770
Marshall, Putnam, and Woodford	10	10	152,181	609	65	674	108	65,035	8,019	73,054	454,525	55,893	510,418
Total, 1936	----	847	50,896,235	36,401	9,457	45,858	175	6,274,028	1,765,775	8,039,803	43,966,533	12,447,011	56,413,544
Total, 1935	----	724	44,525,469	35,274	8,478	43,752	170	5,851,707	1,603,854	7,455,561	40,989,154	10,971,395	51,960,549

[1] Includes open-cut operations.

TABLE 33.—***Illinois:*** *Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*—Contd.

County	Killed	Injured				Rate per million man-hours		Rate per million tons		Tons per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
		Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured				
Bureau			1	66	67		153.492		1,000.597	0.153	6.519	7.00	1,460
Christian	8		2	1,097	1,099	2.351	323.015	1.784	245.076	1.318	.759	7.00	1,349
Clinton	1		2	34	36	2.057	74.057	3.301	118.846	.623	1.605	7.00	746
Edgar				17	17		225.440		500.677	.450	2.221	6.95	1,423
Franklin	20	3	32	841	876	2.340	102.475	2.133	93.443	1.097	.912	7.00	1,181
Fulton	2		2	181	183	1.017	93.069	.751	68.695	1.355	.738	7.14	1,208
Gallatin				4	4		38.304		84.895	.451	2.216	7.83	1,431
Grundy			1	32	33		127.787		225.099	.568	1.762	6.91	890
Henry			6	66	72		96.562		103.904	.929	1.076	7.09	1,358
Jackson	14		5	101	106	10.282	77.850	7.765	58.790	1.324	.755	7.07	1,560
Knox	1			66	66	1.405	92.715	2.367	156.236	.593	1.685	7.02	1,251
La Salle			3	182	185		147.138		319.024	.461	2.168	7.05	1,541
Livingston				3	3		42.969		192.320	.223	4.476	7.00	907
Macoupin	5		2	367	369	.995	73.461	1.198	88.422	.831	1.204	7.00	1,786
Madison	1		4	294	298	.436	129.992	.545	162.420	.800	1.249	6.87	1,222
Menard				6	6		21.680		46.929	.462	2.165	7.86	1,564
Mercer				6	6		79.579		219.026	.363	2.752	7.00	931
Peoria	3		7	183	190	1.332	84.346	1.825	115.609	.730	1.371	7.03	1,366
Perry	3		1	203	204	1.247	84.791	.911	61.959	1.369	.731	7.14	1,308
Randolph	3		1	75	76	4.131	104.660	5.048	127.894	.818	1.222	7.00	730
Rock Island	1			6	6	8.071	48.428	16.114	96.682	.501	1.996	7.01	1,203
St. Clair	4		5	226	231	1.089	62.903	1.367	78.964	.797	1.255	7.01	1,101
Saline	8		38	529	567	1.805	127.912	2.170	153.793	.832	1.202	7.00	1,116
Sangamon	5		3	800	803	1.141	183.243	1.751	281.216	.652	1.535	7.01	1,205
Schuyler				7	7		19.186		91.387	.210	4.763	7.15	1,377
Shelby				20	20		148.676		1,047.559	.142	7.046	7.39	1,130
Stark				1	1		10.448		56.402	.185	5.398	7.38	1,227
Tazewell	1	1	2	62	65	1.908	124.013	3.276	212.942	.582	1.717	7.00	1,074
Vermilion	7		3	371	374	2.073	110.763	3.020	161.356	.686	1.457	6.91	1,137
Washington	1			25	25	2.330	58.247	2.944	73.611	.791	1.264	7.03	1,135
Will				46	46		48.631		30.734	1.582	.632	7.00	1,926
Williamson	6	3	11	242	256	2.174	92.753	2.013	85.888	1.080	.926	7.03	1,210
Bond, Greene, and Montgomery	1		18	171	189	.929	175.504	1.367	258.389	.679	1.472	6.99	968
Crawford, Marion, Wabash, and White	1		1	103	104	1.588	165.140	2.391	248.637	.664	1.506	7.00	1,127

Hancock, McDonough, and Warren				2	2		19.123		120.250	1.590	.629	7.76	1,494
Jasper, Jefferson, Jersey, and Monroe										.096	10.432	7.03	682
Macon and Scott				37	37		104.000		224.179	.464	2.156	7.02	1,547
Marshall, Putnam, and Woodford	1		1	94	95	1.959	186.122	6.571	624.257	.298	3.354	6.99	757
Total, 1936	97	7	151	6,566	6,724	1.719	119.191	1.906	132.112	.902	1.108	7.02	1,230
Total, 1935	80	5	272	6,383	6,660	1.540	128.174	1.797	149.577	.857	1.167	6.97	1,188

	Men employed	Production, short tons	Man-hours of employment	Killed	Injured	Rate per million man-hours	
						Killed	Injured
Underground	36,401	41,746,892	43,966,533	87	6,116	1.979	139.106
Open-cut	3,042	9,149,343	4,326,248	4	277	.925	64.028
Surface	6,415		8,120,763	6	331	.739	40.760
Total, 1936	45,858	50,896,235	56,413,544	97	6,724	1.719	119.191

[1] Includes open-cut operations.

TABLE 34.—***Indiana:*** *Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*

County	Number of operators	Number of mines	Production, short tons	Men employed			Average days of employment per man	Man-days of employment			Man-hours of employment		
				Underground	Surface [1]	Total		Underground	Surface [1]	Total	Underground	Surface [1]	Total
Clay	29	34	1,059,261	218	508	726	174	36,153	90,338	126,491	259,319	649,297	908 616
Gibson	4	4	1,080,327	546	175	721	186	103,269	30,925	134,194	722,887	216,475	939,362
Greene	23	25	2,198,662	369	687	1,056	193	81,801	121,964	203,765	563,213	891,482	1,454,695
Knox	9	10	1,963,252	864	207	1,071	208	178,055	44,918	222,973	1,246,385	314,426	1,560,811
Parke	10	10	104,294	147	32	179	172	25,169	5,607	30,776	182,543	40,309	222,852
Pike	10	10	3,110,455	79	929	1,008	200	19,394	182,033	201,427	135,759	1,291,289	1,427,048
Sullivan	14	15	1,853,899	1,528	390	1,918	146	231,344	49,595	280,939	1,619,408	349,163	1,968,571
Vanderburgh	3	3	154,038	258	44	302	123	31,€56	5,446	37,102	221,592	38,122	259,714
Vermillion	8	9	829,284	755	116	871	188	142,012	22,043	164,055	994,084	154,301	1,148,385
Vigo	32	32	2,941,429	1,741	638	2,379	187	314,422	130,674	445,096	2,211,042	957,884	3,168,926
Warrick	18	18	1,259,651	236	387	623	187	42,120	74,275	116,395	292,336	529,343	821,679
Daviess, Perry, and Spencer	7	7	43,568	50	13	63	184	9,117	2,453	11,570	67,519	18,261	85,780
Fountain and Owen	5	5	210,773	13	95	108	220	2,850	20,962	23,812	20,275	161,364	181,639
Total, 1936		182	16,808,893	6,804	4,221	11,025	181	1,217,362	781,233	1,998,595	8,536,362	5,611,716	14,148,078
Total, 1935		188	15,754,214	7,283	4,066	11,349	170	1,188,747	746,237	1,934,984	8,310,422	5,231,003	13,541,425

County	Killed	Injured				Rate per million man-hours		Rate per million tons		Tons per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
		Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured				
Clay	2		1	47	48	2.201	52.828	1.888	45.315	1.166	0.858	7.18	1,252
Gibson	5		3	82	85	5.323	90.487	4.628	78.680	1.150	.870	7.00	1,303
Greene	2		1	190	191	1.375	131.209	.910	86.871	1.511	.662	7.14	1,378
Knox	6		7	147	154	3.844	98.667	3.056	78.441	1.258	.795	7.00	1,457
Parke	2			13	13	8.975	58.335	19.177	124.648	.468	2.137	7.24	1,245
Pike			6	86	92		64.469		29.578	2.180	.459	7.08	1,416
Sullivan	9	4	3	321	328	4.572	166.618	4.855	176.924	.942	1.062	7.01	1,026
Vanderburgh				27	27		103.961		175.281	.593	1.686	7.00	860
Vermillion	4		2	124	126	3.483	109.719	4.823	151.938	.722	1.385	7.00	1,318
Vigo	5	2	2	338	342	1.578	107.923	1.700	116.270	.928	1.077	7.12	1,332
Warrick			2	64	66		80.323		52.395	1.533	.652	7.06	1,319
Daviess, Perry, and Spencer				1	1		11.658		22.953	.508	1.969	7.41	1,362
Fountain and Owen				33	33		181.679		156.567	1.160	.862	7.63	1,682
Total, 1936	35	6	27	1,473	1,506	2.474	106.446	2.082	89.595	1.188	0.842	7.08	1,283
Total, 1935	36	1	36	1,744	1,781	2.659	131.522	2.285	113.049	1.163	.860	7.00	1,193

	Men employed	Production, short tons	Man-hours of employment	Killed	Injured	Rate per million man-hours	
						Killed	Injured
Underground	6,804	9,855,332	8,536,362	32	1,064	3.749	124.643
Open-cut	2,884	6,953,561	3,894,260	3	390	.770	100.147
Surface	1,337		1,717,456		52		30.277
Total, 1936	11,025	16,808,893	14,148,078	35	1,506	2.474	106.446

[1] Includes open-cut operations.

TABLE 35.—***Iowa:*** *Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*

County	Number of operators	Number of mines	Production, short tons	Men employed			Average days of employment per man	Man-days of employment			Man-hours of employment		
				Underground	Surface [1]	Total		Underground	Surface [1]	Total	Underground	Surface [1]	Total
Adams	18	18	31,380	185	22	207	134	24,487	3,208	27,695	179,679	23,772	203,451
Appanoose	65	70	650,535	1,762	172	1,934	139	245,862	23,298	269,160	1,730,249	164,308	1,894,557
Boone	14	15	440,702	967	85	1,052	180	173,485	15,536	189,021	1,215,935	108,862	1,324,797
Dallas	4	4	399,261	638	47	685	184	117,181	8,532	125,713	820,265	59,722	879,987
Greene	5	5	53,423	77	26	103	140	10,665	3,751	14,416	74,655	27,607	102,262
Guthrie	6	6	28,006	123	12	135	141	17,463	1,537	19,000	124,358	11,130	135,488
Jasper	9	9	58,850	167	25	192	110	18,470	2,679	21,149	129,290	18,753	148,043
Lucas	5	6	559,483	668	64	732	190	127,598	11,545	139,143	895,489	81,694	977,183
Mahaska	29	29	143,919	152	121	273	139	22,394	15,549	37,943	162,775	115,511	278,286
Marion	47	47	328,586	514	154	668	175	89,184	27,392	116,576	633,060	201,003	834,063
Monroe	11	11	222,880	373	43	416	171	63,810	7,216	71,026	446,670	50,512	497,182
Page	5	5	46,139	117	9	126	222	25,974	2,002	27,976	184,842	14,230	199,072
Polk	18	18	523,755	901	108	1,009	187	168,717	20,146	188,863	1,181,378	141,270	1,322,648
Wapello	31	31	97,807	230	40	270	136	31,364	5,345	36,709	224,828	38,433	263,261
Warren	9	9	134,329	188	65	253	160	33,258	7,290	40,548	235,006	52,883	287,889
Webster	8	8	48,910	59	26	85	202	12,668	4,540	17,208	88,676	34,468	123,144
Davis, Jefferson, Keokuk, and Van Buren	12	12	38,625	75	35	110	143	10,894	4,822	15,716	82,018	37,164	119,182
Taylor and Wayne	13	13	45,348	155	19	174	165	25,785	2,999	28,784	189,335	21,753	211,088
Total, 1936	316	316	3,851,938	7,351	1,073	8,424	165	1,219,259	167,387	1,386,646	8,598,508	1,203,075	9,801,583
Total, 1935	264	264	3,650,163	6,998	1,040	8,038	162	1,146,378	156,279	1,302,657	8,050,244	1,101,693	9,151,937

County	Killed	Injured				Rate per million man-hours		Rate per million tons		Ton per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
		Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured				
Adams				4	4		19.661		127.470	0.154	6.483	7.35	983
Appanoose	1		4	139	143	0.528	75.479	1.537	219.819	.343	2.912	7.04	980
Boone	6			153	153	4.529	115.489	13.615	347.173	.333	3.006	7.01	1,259
Dallas				86	86		97.729		215.398	.454	2.204	7.00	1,285
Greene				2	2		19.558		37.437	.522	1.914	7.09	993
Guthrie				5	5		36.904		178.533	.207	4.838	7.13	1,004
Jasper				18	18		121.586		305.862	.398	2.516	7.00	771
Lucas	2	1	1	72	74	2.047	75.728	3.575	132.265	.573	1.747	7.02	1,335
Mahaska	1		1	12	13	3.593	46.715	6.948	90.329	.517	1.934	7.33	1,019
Marion	3			62	62	3.597	74.335	9.130	188.687	.394	2.538	7.15	1,249
Monroe	2		2	178	180	4.023	362.040	8.973	807.609	.448	2.231	7.00	1,195
Page				17	17		85.396		368.452	.232	4.315	7.12	1,580
Polk	4			216	216	3.024	163.309	7.637	412.407	.396	2.525	7.00	1,311
Wapello	2			10	10	7.597	37.985	20.448	102.242	.372	2.692	7.17	975
Warren	1			19	19	3.474	65.998	7.444	141.444	.467	2.143	7.10	1,138
Webster	1			7	7	8.121	56.844	20.446	143.120	.397	2.518	7.16	1,449
Davis, Jefferson, Keokuk, and Van Buren				7	7		58.734		181.230	.324	3.086	7.58	1,083
Taylor and Wayne	1		1	3	4	4.737	18.949	22.052	88.207	.215	4.655	7.33	1,213
Total, 1936	24	1	9	1,010	1,020	2.449	104.065	6.231	264.802	.393	2.545	7.07	1,164
Total, 1935	14		10	897	907	1.530	99.105	3.835	248.482	.399	2.507	7.03	1,139

	Men employed	Production, short tons	Man-hours of employment	Killed	Injured	Rate per million man-hours	
						Killed	Injured
Underground	7,351	3,598,394	8,598,508	22	975	2.559	113.392
Open-cut	248	253,544	254,971	12			47.064
Surface	825		948,104	2	33	2.109	34.806
Total, 1936	8,424	3,851,938	9,801,583	24	1,020	2.449	104.065

[1] Includes open-cut operations.

TABLE 36.—***Kansas:*** *Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*

County	Number of operators	Number of mines	Production, short tons	Men employed			Average days of employment per man	Man-days of employment			Man-hours of employment		
				Underground	Surface [1]	Total		Underground	Surface [1]	Total	Underground	Surface [1]	Total
Cherokee	33	33	325,693	169	138	307	161	21,828	27,669	49,497	155,362	195,781	351,143
Crawford	70	75	2,344,928	1,294	941	2,235	164	202,142	164,015	366,157	1,416,155	1,166,242	2,582,397
Franklin	13	13	22,296	100	26	126	116	12,092	2,478	14,570	86,004	17,618	103,622
Linn	16	16	35,476	75	56	131	118	8,452	6,946	15,398	59,309	52,039	111,348
Osage	44	47	87,010	407	161	568	108	47,104	14,332	61,436	334,532	101,501	436,033
Bourbon, Cloud, Coffey, Labette, and Leavenworth	18	18	147,534	440	183	623	243	112,942	38,634	151,576	887,994	301,194	1,189,188
Total, 1936		202	2,962,937	2,485	1,505	3,990	165	404,560	254,074	658,634	2,939,356	1,834,375	4,773,731
Total, 1935		177	2,686,164	2,436	1,460	3,896	162	416,228	216,644	632,872	2,932,321	1,536,209	4,468,530

County	Killed	Injured				Rate per million man-hours		Rate per million tons		Ton per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
		Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured				
Cherokee			1	27	28		79.740		85.971	0.928	1.078	7.09	1,144
Crawford	5		4	182	186	1.936	72.026	2.132	79.320	.908	1.101	7.05	1,155
Franklin										.215	4.648	7.11	822
Linn				1	1		8.981		28.188	.319	3.139	7.23	850
Osage	2			17	17	4.587	38.988	22.986	195.380	.200	5.011	7.10	768
Bourbon, Cloud, Coffey, Labette, and Leavenworth				43	43		36.159		291.458	.124	8.060	7.85	1,909
Total, 1936	7		5	270	275	1.466	57.607	2.363	92.813	.621	1.611	7.25	1,196
Total, 1935	10		1	309	310	2.238	69.374	3.723	115.406	.601	1.664	7.06	1,147

	Men employed	Production, short tons	Man-hours of employment	Killed	Injured	Rate per million man-hours	
						Killed	Injured
Underground	2,485	943,160	2,939,356	5	161	1.701	54.774
Open-cut	1,154	2,019,777	1,379,540	2	107	1.450	77.562
Surface	351		454,835		7		15.390
Total, 1936	3,990	2,962,937	4,773,731	7	275	1.466	57.607

[1] Includes open-cut operations.

TABLE 37.—***Kentucky:*** *Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*

County	Number of operators	Number of mines	Production, short tons	Men employed			Average days of employment per man	Man-days of employment			Man-hours of employment		
				Underground	Surface [1]	Total		Underground	Surface [1]	Total	Underground	Surface [1]	Total
Bell	38	42	1,633,488	2,323	384	2,707	181	426,805	64,178	490,983	3,011,039	453,577	3,464,616
Boyd	13	13	35,460	102	26	128	109	11,046	2,856	13,902	78,672	20,342	99,014
Breathitt	4	4	58,013	124	23	147	164	20,448	3,630	24,078	143,136	25,410	168,546
Butler	15	15	22,275	97	19	116	88	8,468	1,717	10,185	59,944	12,186	72,130
Carter	11	11	29,713	57	12	69	172	10,190	1,680	11,870	74,510	12,060	86,570
Christian	3	4	87,312	103	37	140	180	18,304	6,888	25,192	128,128	53,091	181,219
Clay	10	10	105,118	172	45	217	158	29,337	4,915	34,252	215,759	35,605	251,364
Daviess	18	19	108,847	163	29	192	148	24,159	4,227	28,386	188,702	33,952	222,654
Floyd	23	28	4,549,898	4,739	800	5,539	207	957,595	186,708	1,144,303	6,708,331	1,311,280	8,019,611
Harlan	44	53	15,082,933	12,635	1,836	14,471	239	3,009,868	443,832	3,453,700	21,092,952	3,111,115	24,204,067
Henderson	13	13	145,915	317	51	368	115	35,822	6,462	42,284	252,026	45,936	297,962
Hopkins	36	41	3,770,992	3,333	504	3,837	189	634,796	90,722	725,518	4,459,518	644,243	5,103,761
Jackson	16	16	144,879	235	44	279	158	37,221	6,899	44,120	295,689	54,851	350,540
Johnson	3	3	805,882	861	127	988	215	185,310	26,886	212,196	1,297,170	188,202	1,485,372
Knott	3	4	373,080	394	80	474	160	62,979	12,852	75,831	440,853	89,964	530,817
Knox	10	10	578,047	579	131	710	225	130,511	29,430	159,941	983,582	215,360	1,198,942
Laurel	18	18	26,522	100	22	122	105	10,510	2,345	12,855	81,840	18,230	100,070
Letcher	14	23	4,745,076	4,901	617	5,518	210	1,031,321	126,989	1,158,310	7,219,246	888,919	8,108,165
McLean	4	4	40,410	95	13	108	96	9,096	1,257	10,353	65,122	9,099	74,221
Martin	3	3	269,532	300	50	350	149	44,759	7,451	52,210	313,313	52,157	365,470
Muhlenberg	33	36	1,443,918	2,592	464	3,056	104	267,037	51,128	318,165	1,869,255	358,656	2,227,911
Ohio	9	9	180,246	686	122	808	57	37,411	8,532	45,943	262,278	59,823	322,101
Perry	30	38	4,476,297	4,257	826	5,083	189	805,133	155,439	960,572	5,635,931	1,088,063	6,723,994
Pike	27	33	5,192,187	4,599	844	5,443	203	932,065	174,687	1,106,752	6,591,405	1,233,979	7,825,384
Union	7	8	707,760	753	138	891	171	128,644	24,161	152,805	904,358	170,227	1,074,585
Webster	12	15	1,858,358	1,619	218	1,837	203	326,602	46,076	372,678	2,289,214	323,032	2,612,246
Whitley	11	13	326,721	599	160	759	162	97,869	25,015	122,884	685,176	175,155	860,331
Crittenden, Greenup, Lawrence, Lee, Leslie, McCreary, Magoffin, Menifee, Pulaski, Rockcastle, Wayne, and Wolfe	35	41	690,693	1,060	189	1,249	142	151,047	26,191	177,238	1,060,189	184,172	1,244,361
Total, 1936		527	47,489,572	47,795	7,811	55,606	198	9,444,353	1,543,153	10,987,506	66,407,338	10,868,686	77,276,024
Total, 1935		495	40,760,939	44,849	7,492	52,341	181	8,124,957	1,373,748	9,498,705	57,211,632	9,683,392	66,895,024
Western district, 1936		165	8,366,833	9,761	1,596	11,357	152	1,490,489	241,220	1,731,709	10,479,595	1,710,595	12,190,190
Eastern district, 1936		362	39,122,739	38,034	6,215	44,249	209	7,953,864	1,301,933	9,255,797	55,927,743	9,158,091	65,085,834

County	Killed	Injured				Rate per million man-hours		Rate per million tons		Ton per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
		Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured				
Bell	8		4	227	231	2.309	66.674	4.897	141.415	0.471	2.121	7.06	1,280
Boyd				1	1		10.100		28.201	.358	2.792	7.12	774
Breathitt	1			3	3	5.933	17.799	17.238	51.713	.344	2.905	7.00	1,147
Butler										.309	3.238	7.08	622
Carter				3	3		34.654		100.966	.343	2.914	7.29	1,255
Christian		1		35	36		198.655		41.231	.482	2.076	7.19	1,294
Clay				29	29		115.371		275.880	.418	2.391	7.34	1,158
Daviess				7	7		31.439		64.310	.489	2.046	7.84	1,160
Floyd	19	1	78	454	533	2.369	66.462	4.176	117.145	.567	1.763	7.01	1,448
Harlan	36	3	71	1,071	1,145	1.487	47.306	2.387	75.914	.623	1.605	7.01	1,673
Henderson				12	12		40.274		82.240	.490	2.042	7.05	810
Hopkins	4		2	340	342	.784	67.009	1.061	90.692	.739	1.353	7.03	1,330
Jackson				22	22		62.760		151.851	.413	2.420	7.95	1,256
Johnson	1	1	11	151	163	.673	109.737	1.241	202.263	.543	1.843	7.00	1,503
Knott	2		9	38	47	3.768	88.543	.536	125.978	.703	1.423	7.00	1,120
Knox	1		3	44	47	.834	39.201	1.730	81.308	.482	2.074	7.50	1,689
Laurel										.265	3.773	7.78	820
Letcher	7	2	38	329	369	.863	45.510	1.475	77.765	.585	1.709	7.00	1,469
McLean				1	1		13.473		24.746	.544	1.837	7.17	687
Martin				39	39		106.712		144.695	.737	1.356	7.00	1,044
Muhlenberg	4			122	122	1.795	54.760	2.770	84.492	.648	1.543	7.00	729
Ohio			1	16	17		52.778		94.316	.560	1.787	7.01	399
Perry	9	2	33	517	552	1.338	82.094	2.011	123.316	.666	1.502	7.00	1,323
Pike	13	1	29	422	452	1.661	57.761	2.504	87.054	.664	1.507	7.07	1,438
Union	1		1	53	54	.931	50.252	1.413	76.297	.659	1.518	7.03	1,206
Webster	2		1	198	199	.766	76.180	1.076	107.084	.711	1.406	7.01	1,422
Whitley	1	1	1	15	17	1.162	19.760	3.061	52.032	.380	2.633	7.00	1,134
Crittenden, Greenup, Lawrence, Lee, Leslie, McCreary, Magoffin, Menifee, Pulaski, Rockcastle, Wayne, and Wolfe	6		4	88	92	4.822	73.934	8.687	133.200	.555	1.802	7.02	996
Total, 1936	115	12	286	4,237	4,535	1.488	58.686	2.422	95.495	.615	1.627	.7.03	1,390
Total, 1935	124	5	198	4,134	4,337	1.854	64.833	3.042	106.401	.609	1.641	7.04	1,278
Western district, 1936	11	1	5	784	790	.902	64.806	1.315	94.420	.686	1.457	7.04	1,073
Eastern district, 1936	104	11	281	3,453	3,745	1.598	57.539	2.658	95.724	.601	1.664	7.03	1,471

[1] Includes open-cut operations.

TABLE 37.—***Kentucky:*** *Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*—Con.

	Men employed	Production, short tons	Man-hours of employment	Killed	Injured	Rate per million man-hours	
						Killed	Injured
Underground	47,795	47,457,440	66,407,338	110	4,261	1.656	64.165
Open-cut	32	32,132	43,900		9		205.011
Surface	7,779		10,824,786	5	265	.462	24.481
Total. 1936	55,606	47,489,572	77,276,024	115	4,535	1.488	58.686

TABLE 38.—***Maryland:*** *Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*

County	Number of operators	Number of mines	Production, short tons	Men employed			Average days of employment per man	Man-days of employment			Man-hours of employment		
				Underground	Surface	Total		Underground	Surface	Total	Underground	Surface	Total
Allegany	66	81	1,166,748	1,837	260	2,097	194	356,935	49,063	405,998	2,507,117	345,162	2,852,279
Garrett	26	27	530,647	710	118	828	163	116,718	18,020	134,738	824,894	127,605	952,499
Total, 1936		108	1,697,395	2,547	378	2,925	185	473,653	67,083	540,736	3,332,011	472,767	3,804,778
Total, 1935		114	1,678,059	2,611	351	2,962	179	473,483	57,845	531,328	3,321,236	407,128	3,728,364

County	Killed	Injured				Rate per million man-hours		Rate per million tons		Ton per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
		Permanent total disabliity	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured				
Allegany	3		4	226	230	1.052	80.637	2.571	197.129	0.409	2.445	7.03	1,360
Garrett			5	108	113		118.635		212.948	.557	1.795	7.07	1,150
Total, 1936	3		9	334	343	.788	90.150	1.767	202.074	.446	2.242	7.04	1,301
Total, 1935	7		6	374	380	1.877	101.921	4.171	226.452	.450	2.222	7.02	1,259

	Men employed	Production, short tons	Man-hours of employment	Killed	Injured	Rate per million man-hours	
						Killed	Injured
Underground	2,547	1,697,395	3,332,011	3	332	0.900	99.640
Surface	378		472,767		11		23.267
Total, 1936	2,925	1,697,395	3,804,778	3	343	.788	90.150

TABLE 39.—***Michigan:*** *Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*

County	Number of operators	Number of mines	Production, short tons	Men employed			Average days of employment per man	Man-days of employment			Man-hours of employment		
				Underground	Surface	Total		Underground	Surface	Total	Underground	Surface	Total
Bay	3	3	92,940	246	47	293	136	32,623	7,304	39,927	228,359	51,132	279,491
Saginaw	5	5	144,921	301	75	376	155	46,867	11,521	58,388	328,069	80,647	408,716
Midland, Shiawassee, and Tuscola	5	5	383,773	658	89	747	181	119,375	15,870	135,245	835,625	111,090	946,715
Total, 1936		13	621,634	1,205	211	1,416	165	198,865	34,695	233,560	1,392,053	242,869	1,634,922
Total, 1935		21	628,384	1,230	241	1,471	158	191,040	41,391	232,431	1,377,758	293,025	1,670,783

County	Killed	Injured				Rate per million man-hours		Rate per million tons		Ton per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man pe day	Average hours of employment per man per year
		Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured				
Bay				25	25		89.448		268.991	0.333	3.007	7.00	954
Saginaw				18	18		44.040		124.206	.355	2.820	7.00	1,087
Midland, Shiawassee, and Tuscola				149	149		157.386		388.250	.405	2.467	7.00	1,267
Total, 1936				192	192		117.437		308.863	.380	2.630	7.00	1,155
Total, 1935	5			145	145	2.993	86.786	7.957	230.751	.376	2.659	7.19	1,136

	Men employed	Production, short tons	Man-hours of employment	Killed	Injured	Rate per million man-hours	
						Killed	Injured
Underground	1,205	621,634	1,392,053		184		132.179
Surface	211		242,869		8		32.940
Total, 1936	1,416	621,634	1,634,922		192		117.437

TABLE 40.—***Missouri:*** *Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*

County	Number of operators	Number of mines	Production, short tons	Men employed			Average days of employment per man	Man-days of employment			Man-hours of employment		
				Underground	Surface [1]	Total		Underground	Surface [1]	Total	Underground	Surface [1]	Total
Adair	12	12	185,727	300	43	343	191	57,395	8,182	65,577	448,990	64,756	513,746
Barton	10	10	742,600	23	237	260	182	3,944	43,448	47,392	31,248	337,266	368,514
Bates	7	7	733,610	48	282	330	229	8,555	67,141	75,696	60,925	474,459	535,384
Boone	23	23	33,253	149	32	181	118	17,686	3,743	21,429	133,044	28,452	161,496
Callaway	13	13	58,465	96	33	129	164	15,081	6,086	21,167	114,988	47,818	162,806
Clay	5	5	112,672	312	46	358	189	59,024	8,537	67,561	413,168	59,759	472,927
Henry	14	14	561,355	73	308	381	181	13,009	55,793	68,802	98,474	452,093	550,567
Lafayette	30	34	344,744	1,020	83	1,103	163	165,480	14,773	180,253	1,164,845	103,986	1,268,831
Linn	4	4	60,272	203	27	230	173	34,253	5,557	39,810	272,584	44,216	316,800
Macon	10	10	65,509	131	19	150	219	28,744	4,096	32,840	211,958	30,422	242,380
Putnam	19	19	47,375	168	31	199	145	24,331	4,426	28,757	186,639	34,120	220,759
Randolph	30	30	533,529	296	170	466	193	54,248	35,775	90,023	396,961	254,081	651,042
Ray	42	42	293,898	1,057	119	1,176	148	156,110	17,366	173,476	1,093,630	122,514	1,216,144
Vernon	7	7	122,636	86	70	156	187	14,675	14,440	29,115	117,400	115,520	232,920
Audrain, Howard, Lincoln, Ralls, and Warren	9	9	10,877	41	14	55	146	5,883	2,126	8,009	46,396	16,734	63,130
Dade, Jasper, Johnson, and St. Clair	6	6	17,114	12	27	39	165	1,325	5,129	6,454	10,175	37,803	47,978
Daviess, Grundy, Harrison, and Schuyler	5	5	30,761	114	28	142	162	18,480	4,506	22,986	141,540	34,478	176,018
Total, 1936		250	3,954,397	4,129	1,569	5,698	172	678,223	301,124	979,347	4,942,965	2,258,477	7,201,442
Total, 1935		203	3,645,996	4,072	1,642	5,714	156	606,248	287,493	893,741	4,372,795	2,110,539	6,483,334

[1] Includes open-cut operations.

TABLE 40.—***Missouri:*** *Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*—Con.

County	Killed	Injured				Rate per million man-hours		Rate per million tons		Tons per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
		Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured				
Adair				9	9		17.518		48.458	0.362	2.766	7.83	1,498
Barton	1			35	35	2.714	94.976	1.347	47.132	2.015	.496	7.78	1,417
Bates			2	31	33		61.638		44.983	1.370	.730	7.07	1,622
Boone	4			2	2	24.768	12.384	120.290	60.145	.206	4.857	7.54	892
Callaway	4			6	6	24.569	36.854	68.417	102.626	.359	2.785	7.69	1,262
Clay				38	38		80,351		337.262	.238	4.197	7.00	1,321
Henry			1	16	17		30.877		30.284	1.020	.981	8.00	1,445
Lafayette	1		1	80	81	.788	63.838	2.901	234.957	.272	3.681	7.04	1,150
Linn	1			8	8	3.157	25.253	16.591	132.732	.190	5.256	7.96	1,377
Macon	1		1	2	3	4.126	12.377	15.265	45.795	.270	3.700	7.38	1,616
Putnam	1			7	7	4.530	31.709	21.108	147.757	.215	4.660	7.68	1,109
Randolph	3		2	29	31	4.608	47.616	5.623	58.104	.820	1.220	7.23	1,397
Ray	2		1	59	60	1.645	49.336	6.805	204.152	.242	4.138	7.01	1,034
Vernon				12	12		51.520		97.851	.527	1.899	8.00	1.493
Audrain, Howard, Lincoln, Ralls, and Warren				5	5		79.202		459.686	.172	5.804	7.88	1,148
Dade, Jasper, Johnson, and St. Clair				1	1		20.843		58.432	.357	2.803	7.43	1,230
Daviess, Grundy, Harrison, and Schuyler				10	10		56.812		325.087	.175	5.722	7.66	1,240
Total, 1936	18		8	350	358	2.499	49.712	4,552	90.532	.549	1.821	7.35	1,264
Total, 1935	9		5	232	237	1.388	36.555	2.468	65.003	.562	1.778	7.25	1,135

	Men employed	Production, short tons	Man-hours of employment	Killed	Injured	Rate per million man-hours	
						Killed	Injured
Underground	4,129	1,499,431	4,942,965	16	249	3.237	50.375
Open-cut	970	2,454,966	1,496,175	1	104	.668	69.511
Surface	599		762,302	1	5	1.312	6.559
Total, 1936	5,698	3,954,397	7,201,442	18	358	2.499	49.712

TABLE 41.—***Montana:*** *Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*

County	Number of operators	Number of mines	Production, short tons	Men employed			Average days of employment per man	Man-days of employment			Man-hours of employment		
				Underground	Surface [1]	Total		Underground	Surface [1]	Total	Underground	Surface [1]	Total
Carbon	11	11	342,374	203	80	283	182	35,890	15,703	51,593	251,940	110,046	361,986
Cascade	17	17	419,452	272	39	311	229	62,446	8,707	71,153	438,060	61,271	499,331
Musselshell	12	12	908,969	432	145	577	198	84,820	29,368	114,188	598,692	200,716	799,408
Blaine, Chouteau, Fergus, Gallatin, Golden Valley, Hill, Judith Basin, Park, Pondera, and Toole	25	25	39,752	84	20	104	165	13,789	3,407	17,196	102,095	25,115	127,210
Daniels, Dawson, Powder River, Richland, Roosevelt, Rosebud, Sheridan, Valley, and Wibaux	26	26	1,280,250	76	73	149	204	12,948	17,405	30,353	103,324	138,910	242,234
Total, 1936		91	2,990,797	1,067	357	1,424	200	209,893	74,590	284,483	1,494,111	536,058	2,030,169
Total, 1935		81	2,758,906	1,172	401	1,573	185	215,004	76,517	291,521	1,526,868	560,433	2,087,301

County	Killed	Injured				Rate per million man-hours		Rate per million tons		Tons per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
		Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured				
Carbon	2		1	20	21	5.525	58.013	5.842	61.336	0.946	1.057	7.02	1,279
Cascade	3			27	27	6.008	54.072	7.152	64.370	.840	1.190	7.02	1,606
Musselshell	3		4	61	65	3.753	81.310	3.300	71.510	1.137	.879	7.00	1,385
Blaine, Chouteau, Fergus, Gallatin, Golden Valley, Hill, Judith Basin, Park, Pondera, and Toole				3	3		23.583		75.468	.312	3.200	7.40	1,223
Daniels, Dawson, Powder River, Richland, Roosevelt, Rosebud, Sheridan, Valley, and Wibaux				23	23		94.950		17.965	5.285	.189	7.98	1,626
Total, 1936	8		5	134	139	3.941	68.467	2.675	46.476	1.473	.679	7.14	1,426
Total, 1935	3		4	155	159	1.437	76.175	1.087	57.632	1.322	.757	7.16	1,327

[1] Includes open-cut operations.

TABLE 41.—***Montana:*** *Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*—Con.

	Men employed	Production, short tons	Man-hours of employment	Killed	Injured	Rate per million man-hours	
						Killed	Injured
Underground	1,067	1,761,752	1,494,111	8	117	5.354	78.307
Open-cut	58	1,229,045	116,360		7		60.158
Surface	299		419,698		15		35.740
Total, 1936	1,424	2,990,797	2,030,169	8	139	3.941	68.467

TABLE 42.—***New Mexico:*** *Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*

County	Number of operators	Number of mines	Production, short tons	Men employed			Average days of employment per man	Man-days of employment			Man-hours of employment		
				Underground	Surface [1]	Total		Underground	Surface [1]	Total	Underground	Surface [1]	Total
Colfax	11	14	818,775	734	180	914	192	137,771	38,003	175,774	968,211	267,753	1,235,964
McKinley	15	17	606,691	798	198	996	210	163,551	45,202	208,753	1,150,371	318,155	1,468,526
Lincoln, Santa Fe, and Socorro	4	7	127,161	273	95	368	223	60,992	21,056	82,048	428,784	148,272	577,056
Rio Arriba, Sandoval, and San Juan	13	14	41,592	82	22	104	195	15,491	4,786	20,277	122,367	37,941	160,308
Total, 1936	52	52	1,594,219	1,887	495	2,382	204	377,805	109,047	486,852	2,669,733	772,121	3,441,854
Total, 1935	49	49	1,388,877	1,891	464	2,355	179	333,043	87,577	420,620	2,337,580	614,358	2,951,938

County	Killed	Injured				Rate per million man-hours		Rate per million tons		Ton per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
		Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured				
Colfax	2		3	62	65	1.618	52.591	2.443	79.387	0.662	1.510	7.03	1,352
McKinley	4			123	123	2.724	83.757	6.593	202.739	.413	2.421	7.03	1,474
Lincoln, Santa Fe, and Socorro	3			29	29	5.199	50.255	23.592	228.057	.220	4.538	7.03	1,568
Rio Arriba, Sandoval, and San Juan	1			2	2	6.238	12.476	24.043	48.086	.259	3.854	7.91	1,541
Total, 1936	10		3	216	219	2.905	63.628	6.273	137.371	.463	2.159	7.07	1,445
Total, 1935	9		4	172	176	3.049	59.622	6.480	126.721	.470	2.125	7.02	1,253

	Men employed	Production, short tons	Man-hours of employment	Killed	Injured	Rate per million man-hours	
						Killed	Injured
Underground	1,887	1,593,441	2,669,733	10	207	3.746	77.536
Open-cut	2	778	3,888				
Surface	493		768,233		12		15.620
Total, 1936	2,382	1,594,219	3,441,854	10	219	2.905	63.628

[1] Includes open-cut operations.

TABLE 43.—*North Dakota: Number of men employed, production, number of accidents, etc., at lignite mines during the calendar year 1936*

County	Number of operators	Number of mines	Production, short tons	Men employed			Average days of employment per man	Man-days of employment			Man-hours of employment		
				Underground	Surface [1]	Total		Underground	Surface [1]	Total	Underground	Surface [1]	Total
Burke	10	10	255,460	-------	112	112	233	----------	26,146	26,146	----------	229,538	229,538
Burleigh	8	8	250,684	33	58	91	243	5,706	16,368	22,074	46,368	124,021	170,389
Divide	6	7	233,294	12	57	69	226	2,316	13,312	15,628	18,498	94,508	113,006
McLean	18	20	154,731	65	100	165	150	10,383	14,402	24,785	83,038	115,210	198,248
Mercer	12	12	575,477	210	159	369	180	38,443	28,080	66,523	290,694	232,000	522,694
Stark	8	8	89,801	48	25	73	209	11,291	3,945	15,236	90,328	31,560	121,888
Ward	32	32	483,757	151	101	252	220	30,462	25,061	55,523	241,476	206,477	447,953
Williams	26	26	42,852	48	36	84	154	7,425	5,508	12,933	58,157	43,480	101,637
Adams, Bowman, Hettinger, and Slope	34	34	60,299	59	59	118	159	11,168	7,560	18,728	88,520	60,586	149,106
Grant and Morton	21	21	58,116	46	38	84	131	6,088	4,894	10,982	46,734	38,652	85,386
Billings, Dunn, Golden Valley, McKenzie, Mountrail, and Oliver	27	27	38,995	34	52	86	137	5,050	6,762	11,812	38,687	52,301	90,988
Total, 1936	----------	205	2,243,466	706	797	1,503	187	128,332	152,038	280,370	1,002,500	1,228,333	2,230,833
Total, 1935	----------	161	1,955,510	668	697	1,365	188	121,340	135,063	256,403	902,725	980,163	1,882,888

County	Killed	Injured				Rate per million man-hours		Rate per million tons		Tons per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
		Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured				
Burke				15	15		65.349		58.718	1.113	0.899	8.78	2,049
Burleigh	1			12	12	5.869	70.427	3.989	47.869	1.471	.680	7.72	1,872
Divide				8	8		70.793		34.291	2.064	.484	7.23	1,638
McLean				17	17		85.751		109.868	.780	1.281	8.00	1,202
Mercer				64	64		122.443		111.212	1.101	.908	7.86	1,417
Stark	1			22	22	8.204	180.494	11.136	244.986	.737	1.357	8.00	1,670
Ward			1	24	25		55.809		51.679	1.080	.926	8.07	1,778
Williams				1	1		9.839		23.336	.422	2.372	7.86	1,210
Adams, Bowman, Hettinger, and Slope				3	3		20.120		49.752	.404	2.473	7.96	1,264
Grant and Morton	1			7	7	11.712	81.981	17.207	120.449	.681	1.469	7.78	1,017
Billings, Dunn, Golden Valley, McKenzie, Mountrail, and Oliver				1	1		10.990		25.644	.429	2.333	7.70	1,058
Total, 1936	3		1	174	175	1.345	78.446	1.337	78.004	1.006	.994	7.96	1,484
Total, 1935			5	164	169		89.756		86.422	1.039	.963	7.34	1,379

	Men employed	Production, short tons	Man-hours of employment	Killed	Injured	Rate per million man-hours	
						Killed	Injured
Underground	706	864,220	1,002,500	2	84	1.995	83.791
Open-cut	573	1,379,246	928,497	1	77	1.077	82.930
Surface	224		299,836		14		46.692
Total 1936	1,503	2,243,466	2,230,833	3	175	1.345	78.446

[1] Includes open-cut operations.

TABLE 44.—***Ohio:*** *Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*

County	Number of operators	Number of mines	Production, short tons	Men employed			Average days of employment per man	Man-days of employment			Man-hours of employment		
				Underground	Surface [1]	Total		Underground	Surface [1]	Total	Underground	Surface [1]	Total
Athens	25	32	2,778,152	4,329	546	4,875	141	609,336	78,782	688,118	4,265,551	551,578	4,817,129
Belmont	34	41	7,009,858	7,290	767	8,057	194	1,412,628	146,672	1,559,300	9,881,318	1,043,334	10,924,652
Carroll	15	15	221,533	263	34	297	200	52,682	6,682	59,364	369,546	46,787	416,333
Columbiana	24	24	251,068	207	105	312	189	37,826	21,175	59,001	265,758	152,158	417,916
Coshocton	40	42	215,361	289	65	354	158	44,230	11,530	55,760	310,070	82,480	392,550
Gallia	4	4	40,128	79	11	90	215	16,980	2,374	19,354	127,920	17,792	145,712
Guernsey	24	27	1,075,681	1,281	116	1,397	199	248,267	29,466	277,733	1,785,191	168,494	1,953,685
Harrison	22	22	2,713,260	1,494	574	2,068	213	342,061	97,392	439,453	2,398,487	711,151	3,109,638
Hocking	31	32	209,122	236	48	284	176	41,205	8,685	49,890	286,635	60,435	347,070
Holmes	15	15	55,063	51	28	79	197	10,245	5,349	15,594	73,815	40,983	114,798
Jackson	26	26	231,351	206	96	302	206	39,587	22,613	62,200	283,083	160,723	443,806
Jefferson	39	44	4,188,453	3,283	714	3,997	209	686,822	147,933	834,755	4,830,889	1,025,938	5,856,827
Lawrence	22	24	73,854	127	25	152	185	23,629	4,536	28,165	175,364	33,340	208,704
Mahoning	22	22	86,805	164	29	193	171	28,057	4,856	32,913	198,660	34,227	232,887
Meigs	21	22	209,682	686	69	755	78	51,775	6,987	58,762	363,515	49,151	412,666
Muskingum	45	45	758,038	656	191	847	175	114,479	33,600	148,079	803,624	235,619	1,039,243
Noble	3	3	375,627	408	28	436	190	70,664	12,360	83,024	494,798	86,520	581,318
Perry	57	58	844,824	1,159	175	1,334	157	182,369	27,607	209,976	1,276,063	192,389	1,468,452
Stark	44	45	758,119	775	212	987	195	145,082	47,549	192,631	1,019,046	335,482	1,354,528
Summit	5	5	24,059	58	11	69	161	9,340	1,750	11,090	65,780	12,350	78,130
Tuscarawas	89	93	1,066,159	1,238	223	1,461	187	235,685	38,068	273,753	1,649,714	269,432	1,919,146
Vinton	13	13	79,075	80	72	152	116	8,128	9,430	17,558	58,296	66,290	124,586
Medina, Portage, and Wayne	12	12	35,974	61	17	78	144	8,529	2,741	11,270	59,433	18,954	78,387
Morgan, Scioto, and Washington	7	8	289,046	585	70	655	124	70,777	10,518	81,295	497,103	73,874	570,977
Total, 1936		674	23,590,292	25,005	4,226	29,231	180	4,490,383	778,655	5,269,038	31,539,659	5,469,481	37,009,140
Total, 1935		737	21,153,151	25,373	4,155	29,528	160	4,002,058	718,857	4,720,915	28,136,848	5,068,812	33,205,660

[1] Includes open-cut operations.

County	Killed	Injured				Rate per million man-hours		Rate per million tons		Ton per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
		Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured				
Athens	5		3	375	378	1.038	78.470	1.800	136.062	0.577	1.734	7.00	988
Belmont	18	1	7	523	531	1.648	48.606	2.568	75.750	.642	1.558	7.01	1,356
Carroll			1	47	48		115.292		216.672	.532	1.879	7.01	1,402
Columbiana			2	36	38		90.927		151.353	.601	1.665	7.08	1,339
Coshocton	1			14	14	2.547	35.664	4.643	65.007	.549	1.823	7.04	1,109
Gallia				5	5		34.314		124.601	.275	3.631	7.53	1,619
Guernsey	1			97	97	.512	49.650	.930	90.175	.551	1.816	7.03	1,398
Harrison	2		3	196	199	.643	63.995	.737	73.344	.873	1.146	7.08	1,504
Hocking	1			4	4	2.881	11.525	4.782	19.128	.603	1.660	6.96	1,222
Holmes				2	2		17.422		36.322	.480	2.085	7.36	1,453
Jackson	1			15	15	2.253	33.799	4.322	64.837	.521	1.918	7.14	1,470
Jefferson	5		7	303	310	.854	52.930	1.194	74.013	.715	1.398	7.02	1,465
Lawrence	1			4	4	4.791	19.166	13.540	54.161	.354	2.826	7.41	1,373
Mahoning				10	10		42.939		115.201	.373	2.683	7.08	1,207
Meigs				22	22		53.312		104.921	.508	1.968	7.02	547
Muskingum	1		10	96	106	.962	101.997	1.319	139.835	.729	1.371	7.02	1,227
Noble			1	45	46		79.131		122.462	.646	1.548	7.00	1,333
Perry	2		2	174	176	1.362	119.854	2.367	208.327	.575	1.738	6.99	1,101
Stark	2			151	151	1.477	111.478	2.638	199.177	.560	1.787	7.03	1,372
Summit	1			5	5	12.799	63.996	41.564	207.822	.308	3.247	7.05	1,132
Tuscarawas	2	1	2	174	177	1.042	92.229	1.876	166.017	.556	1.800	7.01	1,314
Vinton	1			6	6	8.027	48.160	12.646	75.877	.635	1.576	7.10	820
Medina, Portage, and Wayne	2			6	6	25.514	76.543	55.596	166.787	.459	2.179	6.96	1,005
Morgan, Scioto, and Washington	1			67	67	1.751	117.343	3.460	231.797	.506	1.975	7.02	872
Total, 1936	47	2	38	2,377	2,417	1.270	65.308	1.992	102.457	.637	1.569	7.02	1,266
Total, 1935	44	3	48	2,421	2,472	1.325	74.445	2.080	116.862	.637	1.570	7.03	1,125

	Men employed	Production, short tons	Man-hours of employment	Killed	Injured	Rate per million man-hours	
						Killed	Injured
Underground	25,005	21,271,866	31,539,659	46	2,187	1.458	69.341
Open-cut	987	2,318,426	1,490,845		102		68.418
Surface	3,239		3,978,636	1	128	.251	32.172
Total, 1936	29,231	23,590,292	37,009,140	47	2,417	1.270	65.308

TABLE 45.—***Oklahoma:*** *Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*

County	Number of operators	Number of mines	Production, short tons	Men employed			Average days of employment per man	Man-days of employment			Man-hours of employment		
				Underground	Surface [1]	Total		Underground	Surface [1]	Total	Underground	Surface [1]	Total
Coal	5	5	23,737	92	13	105	162	14,829	2,198	17,027	103,803	15,386	119,189
Haskell	3	3	68,161	53	43	96	190	8,583	9,687	18,270	60,081	75,559	135,640
Latimer	9	9	42,045	143	23	166	133	19,352	2,730	22,082	135,164	19,035	154,199
Le Flore	28	32	431,257	998	189	1,187	147	146,015	28,237	174,252	1,018,544	199,848	1,218,392
Okmulgee	19	19	320,789	607	102	709	139	84,761	14,089	98,850	594,767	98,803	693,570
Pittsburg	17	19	252,905	517	91	608	169	87,700	15,166	102,866	611,719	106,804	718,523
Tulsa	5	5	72,463	135	19	154	170	23,044	3,096	26,140	162,029	21,981	184,010
Craig, Muskogee, Rogers, and Wagoner	12	13	319,663	32	185	217	166	3,489	32,595	36,084	24,103	228,165	252,268
Total, 1936		105	1,531,020	2,577	665	3,242	153	387,773	107,798	495,571	2,710,210	765,581	3,475,791
Total, 1935		95	1,229,398	2,491	660	3,151	122	294,235	89,042	383,277	2,071,316	638,231	2,709,547

County	Killed	Injured				Rate per million man-hours		Rate per million tons		Tons per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
		Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured				
Coal				2	2		16.780		84.257	0.199	5.021	7.00	1,135
Haskell				9	9		66.352		132.040	.503	1.990	7.42	1,413
Latimer				2	2		12.970		47.568	.273	3.667	6.98	929
Le Flore	8		4	38	42	6.566	34.472	18.550	97.390	.354	2.825	6.99	1,026
Okmulgee	2			45	45	2.884	64.882	6.235	140.279	.463	2.162	7.02	978
Pittsburg	2		1	53	54	2.783	75.154	7.908	213.519	.352	2.841	6.99	1,182
Tulsa				20	20		108.690		276.003	.394	2.539	7.04	1,195
Craig, Muskogee, Rogers, and Wagoner	3	1	2	59	62	11.892	245.770	9.385	193.954	1.267	.789	6.99	1,163
Total, 1936	15	1	7	228	236	4.316	67.898	9.797	154.146	.440	2.270	7.01	1,072
Total, 1935	5		10	130	140	1.845	51.669	4.067	113.877	.454	2.204	7.07	860

	Men employed	Production, short tons	Man-hours of employment	Killed	Injured	Rate per million man-hours	
						Killed	Injured
Underground	2,577	1,177,900	2,710,210	12	168	4.428	61.988
Open-cut	210	353,120	285,286	2	65	7.011	227.842
Surface	455		480,295	1	3	2.082	6.246
Total, 1936	3,242	1,531,020	3,475,791	15	236	4.316	67.898

[1] Includes open-cut operations.

TABLE 46.—***Pennsylvania:*** *Number of men employed, production, number of accidents, etc., at bituminous mines during the calendar year 1936*

County	Number of operators	Number of mines	Production, short tons	Men employed			Average days of employment per man	Man-days of employment			Man-hours of employment		
				Underground	Surface [1]	Total		Underground	Surface [1]	Total	Underground	Surface [1]	Total
Allegheny	144	169	16,278,061	13,712	1,980	15,692	222	3,035,151	446,235	3,481,386	21,285,120	3,159,933	24,445,053
Armstrong	38	43	2,566,953	3,155	424	3,579	164	520,368	67,270	587,638	3,710,374	477,841	4,188,215
Beaver	17	19	185,433	203	75	278	201	40,687	15,194	55,881	288,632	131,385	420,017
Bedford	22	24	448,550	639	124	763	184	114,788	25,322	140,110	806,169	177,280	983,449
Blair	10	17	234,124	423	86	509	188	79,298	16,452	95,750	555,086	115,164	670,250
Butler	34	37	851,195	1,233	179	1,412	198	244,027	35,395	279,422	1,718,994	249,445	1,968,439
Cambria	155	203	14,428,664	17,659	2,560	20,219	202	3,552,468	532,062	4,084,530	24,928,568	3,715,779	28,644,347
Centre	38	41	565,935	895	130	1,025	209	187,692	26,694	214,386	1,417,731	187,437	1,605,168
Clarion	36	43	1,281,502	1,668	182	1,850	208	346,719	37,244	383,963	2,432,972	262,745	2,695,717
Clearfield	94	108	3,152,331	4,695	603	5,298	174	817,432	104,258	921,690	5,705,275	730,065	6,435,340
Clinton	12	12	54,013	62	19	81	219	13,279	4,429	17,708	100,026	33,209	133,235
Elk	14	19	768,370	1,000	154	1,154	210	208,606	33,787	242,393	1,460,184	235,809	1,695,993
Fayette	50	88	19,636,270	17,112	2,804	19,916	199	3,387,957	566,826	3,954,783	23,144,455	3,981,150	27,125,605
Greene	13	14	3,947,843	3,227	626	3,853	204	645,766	138,362	784,128	4,609,722	1,035,100	5,644,822
Huntingdon	13	17	521,486	835	125	960	180	149,612	23,411	173,023	1,054,118	171,331	1,225,449
Indiana	49	61	6,520,295	6,513	874	7,387	188	1,225,273	160,821	1,386,094	8,702,544	1,138,959	9,841,503
Jefferson	42	42	2,107,985	2,463	277	2,740	211	523,146	55,201	578,347	3,732,780	395,082	4,127,862
Lawrence	7	9	241,857	393	49	442	214	79,287	15,182	94,469	552,913	107,547	660,460
Lycoming	8	8	64,056	147	24	171	197	28,833	4,782	33,615	207,224	34,126	241,350
Mercer	15	15	423,254	583	98	681	222	125,454	25,412	150,866	888,342	180,608	1,068,950
Somerset	93	123	5,165,409	6,545	1,096	7,641	172	1,115,667	199,713	1,315,380	7,814,877	1,399,800	9,214,677
Tioga	14	15	157,088	406	100	506	143	59,274	13,082	72,356	416,074	92,210	508,284
Washington	61	75	18,898,227	17,969	2,042	20,011	224	4,014,566	476,629	4,491,195	28,120,394	3,296,993	31,417,387
Westmoreland	100	120	10,691,508	10,323	1,654	11,977	196	2,015,750	328,956	2,344,706	14,113,711	2,329,006	16,442,717
Bradford, Fulton, McKean, and Venango	12	12	192,402	298	52	350	194	56,269	11,523	67,792	407,810	86,173	493,983
Total, 1936		1,334	109,382,811	112,158	16,337	128,495	202	22,587,369	3,364,242	25,951,611	158,174,095	23,724,177	181,898,272
Total, 1935		1,369	91,404,670	108,794	15,327	124,121	180	19,555,398	2,789,386	22,344,784	137,121,694	19,629,932	156,751,626

County	Killed	Injured				Rate per million man-hours		Rate per million tons		Ton per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
		Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured				
Allegheny	23	1	9	1,622	1,632	0.941	66.762	1.413	100.258	0.666	1.502	7.02	1,558
Armstrong	6		1	393	394	1.433	94.073	2.337	153.489	.613	1.632	7.13	1,170
Beaver	1			34	34	2.381	80.949	5.393	183.355	.441	2.265	7.52	1,511
Bedford	3		1	66	67	3.050	68.128	6.688	149.370	.456	2.193	7.02	1,289
Blair				50	50		74.599		213.562	.349	2.863	7.00	1,317
Butler	5		5	220	225	2.540	114.304	5.874	264.334	.432	2.313	7.04	1,394
Cambria	28	3	46	2,186	2,235	.978	78.026	1.941	154.900	.504	1.985	7.01	1,417
Centre				146	146		90.956		257.980	.353	2.836	7.49	1,566
Clarion	1		4	235	239	.371	88.659	.780	186.500	.475	2.104	7.02	1,457
Clearfield	4		5	469	474	.622	73.656	1.269	150.365	.490	2.041	6.98	1,215
Clinton				7	7		52.539		129.598	.405	2.467	7.52	1,645
Elk	4		3	168	171	2.359	100.826	5.206	222.549	.453	2.207	7.00	1,470
Fayette	28	3	20	1,621	1,644	1.032	60.607	1.426	83.723	.724	1.381	6.86	1,362
Greene	1		3	341	344	.177	60.941	.253	87.136	.699	1.430	7.20	1,465
Huntingdon	1		1	60	61	.816	49.778	1.918	116.973	.426	2.350	7.08	1,277
Indiana	16		12	945	957	1.626	97.241	2.454	146.773	.663	1.509	7.10	1,332
Jefferson	4		3	473	476	.969	115.314	1.898	225.808	.511	1.958	7.14	1,507
Lawrence		3		54	57		86.303		235.676	.366	2.731	6.99	1,494
Lycoming				34	34		140.874		530.786	.265	3.768	7.18	1,411
Mercer		1		97	98		91.679		231.539	.396	2.526	7.09	1,570
Somerset	12		10	882	892	1.302	96.802	2.323	172.687	.561	1.784	7.01	1,206
Tioga	1		1	73	74	1.967	145.588	6.366	471.074	.309	3.236	7.02	1,005
Washington	33	6	32	1,588	1,626	1.050	51.755	1.746	86.040	.602	1.662	7.00	1,570
Westmoreland	28		12	1,252	1,264	1.703	76.873	2.619	118.225	.650	1.538	7.01	1,373
Bradford, Fulton, McKean, and Venango	1		2	26	28	2.024	56.682	5.197	145.529	.389	2.567	7.29	1,411
Total, 1936	200	17	170	13,042	13,229	1.100	72.727	1.828	120.942	.601	1.663	7.01	1,416
Total, 1935	174	9	179	11,934	12,122	1.110	77.333	1.904	132.619	.583	1.715	7.02	1,263

	Men employed	Production, short tons	Man-hours of employment	Killed	Injured	Rate per million man-hours	
						Killed	Injured
Underground	112,158	108,672,073	158,174,095	188	12,453	1.189	78.730
Open-cut	341	710,738	544,824	1	29	1.835	53.228
Surface	15,996		23,179,353	11	747	.475	32.227
Total, 1936	128,495	109,382,811	181,898,272	200	13,229	1.100	72.727

[1] Includes open-cut operations.

TABLE 47.—***Pennsylvania:*** *Number of men employed, production, number of accidents, etc., at* ***anthracite*** *mines during the calendar year 1936*

	Production, short tons	Men employed				Average days of employment per man	Man-days of employment				Man-hours of employment			
		Underground	Open-cut	Surface	Total		Underground	Open-cut	Surface	Total	Underground	Open-cut	Surface	Total
DISTRICTS														
Lehigh	8,692,043	12,597	1,654	4,986	19,237	172	2,123,323	319,569	859,688	3,302,580	16,350,787	2,575,972	6,809,606	25,736,365
Schuylkill	17,820,222	17,561	2,763	6,677	27,001	203	3,514,401	550,571	1,427,532	5,492,504	28,085,949	4,433,089	11,527,870	44,046,908
Wyoming	27,936,966	45,622	496	9,249	55,367	194	8,835,447	98,699	1,818,426	10,752,572	70,621,425	818,670	14,589,178	86,029,273
Sullivan County	221,198	348		129	477	172	60,638		21,445	82,083	497,982		175,396	673,378
Total, 1936	54,670,429	76,128	4,913	21,041	102,082	192	14,533,809	968,839	4,127,091	19,629,739	115,556,143	7,827,731	33,102,050	156,485,924
FIELDS														
Eastern Middle	6,108,116	8,524	1,015	3,490	13,029	184	1,540,085	224,070	631,512	2,395,667	11,685,298	1,792,560	4,984,198	18,462,056
Western Middle	13,442,079	13,807	2,162	4,709	20,678	205	2,790,493	406,356	1,041,648	4,238,497	22,323,816	3,262,821	8,440,441	34,027,078
Southern	6,962,070	7,827	1,240	3,464	12,531	172	1,307,146	239,714	614,060	2,160,920	10,427,622	1,953,680	4,912,837	17,294,139
Northern (including Sullivan County)	28,158,164	45,970	496	9,378	55,844	194	8,896,085	98,699	1,839,871	10,834,655	71,119,407	818,670	14,764,574	86,702,651
Total, 1936	54,670,429	76,128	4,913	21,041	102,082	192	14,533,809	968,839	4,127,091	19,629,739	115,556,143	7,827,731	33,102,050	156,485,924
Total, 1935	52,262,883	77,629	4,091	21,128	102,848	187	14,391,274	910,712	3,977,944	19,279,930	114,754,502	7,329,471	32,012,408	154,096,381

	Killed	Injured				Rate per million man-hours		Rate per million tons		Ton per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
		Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured				
DISTRICTS													
Lehigh	28	1	25	2,202	2,228	1.088	86.570	3.221	256.326	0.338	2.961	7.79	1,338
Schuylkill	48	1	25	3,713	3,739	1.090	84.887	2.694	209.818	.405	2.472	8.02	1,631
Wyoming	168	12	64	12,832	12,908	1.953	150.042	6.014	462.040	.325	3.079	8.00	1,554
Sullivan County				187	187		277.704		845.396	.328	3.044	8.20	1,412
Total, 1936	244	14	114	18,934	19,062	1.559	121.813	4.463	348.671	.349	2.862	7.97	1,533
FIELDS													
Eastern Middle	25		18	1,540	1,558	1.354	84.389	4.093	255.070	.331	3.023	7.71	1,417
Western Middle	41	1	11	3,105	3,117	1.205	91.604	3.050	231.884	.395	2.531	8.03	1,646
Southern	10	1	21	1,270	1,292	.578	74.707	1.436	185.577	.403	2.484	8.00	1,380
Northern (including Sullivan County)	168	12	64	13,019	13,095	1.938	151.033	5.966	465.052	.325	3.079	8.00	1,553
Total, 1936	244	14	114	18,934	19,062	1.559	121.813	4.463	348.671	.349	2.862	7.97	1,533
Total, 1935	274	21	276	17,749	18,046	1.778	117.109	5.243	345.293	.339	2.948	7.99	1,498

	Men employed	Production, short tons	Man-hours of employment	Killed	Injured	Rate per million man-hours	
						Killed	Injured
Underground	76,128	44,726,506	115,556,143	222	16,090	1.921	139.240
Open-cut	4,667	6,203,267	7,503,301	(1)	(1)	(1)	(1)
Dredge	246	546,684	324,430		8		24.659
Culm-bank washery	(1)	3,193,972	(1)	(1)	(1)	(1)	(1)
Surface	21,041		33,102,050	22	2,964	.665	89.541
Total, 1936	102,082	54,670,429	156,485,924	244	19,062	1.559	121.813

[1] Included in surface figures.

TABLE 48.—***South Dakota:*** *Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*

	Number of operators	Number of mines	Production, short tons	Men employed			Average days of employment per man	Man-days of employment			Man-hours of employment		
				Underground	Surface [1]	Total		Underground	Surface [1]	Total	Underground	Surface [1]	Total
Total, 1936		13	41,325	17	33	50	231	2,716	8,843	11,559	22,012	65,986	87,998
Total, 1935		17	13,243	21	34	55	98	2,360	3,050	5,410	18,210	24,350	42,560

	Killed	Injured				Rate per million man-hours		Rate per million tons		Ton per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
		Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured				
Total, 1936				2	2		22.728		48.397	0.470	2.129	7.61	1,760
Total, 1935										.311	3.214	7.87	774

	Men employed	Production, short tons	Man-hours of employment	Killed	Injured	Rate per million man-hours	
						Killed	Injured
Underground	17	7,814	22,012				
Open-cut	29	33,511	59,630		2		33.540
Surface	4		6,356				
Total, 1936	50	41,325	87,998		2		22.728

[1] Includes open-cut operations.

TABLE 49.—***Tennessee:*** *Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*

County	Number of operators	Number of mines	Production, short tons	Men employed			Average days of employment per man	Man-days of employment			Man-hours of employment		
				Underground	Surface [1]	Total		Underground	Surface	Total	Underground	Surface	Total
Anderson	14	17	1,041,705	903	343	1,246	197	177,972	67,346	245,318	1,246,074	471,512	1,717,586
Campbell	26	30	1,333,965	1,857	321	2,178	186	346,748	57,471	404,219	2,427,236	417,528	2,844,764
Claiborne	9	9	1,010,269	1,330	253	1,583	198	263,518	50,539	314,057	1,844,626	353,773	2,198,399
Cumberland	3	3	46,164	60	15	75	243	14,618	3,644	18,262	116,944	29,152	146,096
Fentress	3	3	362,899	356	98	454	229	81,126	22,844	103,970	567,882	159,908	727,790
Hamilton	9	9	21,932	52	12	64	132	6,925	1,539	8,464	48,565	10,803	59,368
Marion	4	4	316,336	480	141	621	211	101,507	29,603	131,110	710,549	207,221	917,770
Morgan	15	17	333,977	692	157	849	268	184,439	43,066	227,505	1,425,370	337,381	1,762,751
Scott	3	3	60,286	79	21	100	193	15,270	4,045	19,315	106,890	28,315	135,205
Bledsoe, Grundy, and Sequatchie	6	8	421,485	642	108	750	168	106,341	19,353	125,694	744,387	135,471	879,858
Overton, Putnam, and White	7	7	96,647	306	50	356	103	31,330	5,475	36,805	226,060	39,905	265,965
Rhea, Roane, and Van Buren	3	3	22,617	43	9	52	133	5,707	1,205	6,912	44,296	9,368	53,664
Total, 1936		113	5,068,282	6,800	1,528	8,328	197	1,335,501	306,130	1,641,631	9,508,879	2,200,337	11,709,216
Total, 1935		105	4,137,802	6,294	1,241	7,535	181	1,132,547	228,899	1,361,446	7,820,819	1,635,987	9,456,806

[1] Includes open-cut operations.

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TABLE 49.—***Tennessee:*** *Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*—Con

County	Killed	Injured				Rate per million man-hours		Rate per million tons		Ton per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
		Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured				
Anderson	5		3	123	126	2.911	73.359	4.800	120.956	0.606	1.649	7.00	1,378
Campbell	7	2	4	154	160	2.461	56.244	5.248	119.943	.469	2.133	7.04	1,306
Claiborne	4	1	10	123	134	1.820	60.953	3.959	132.638	.460	2.176	7.00	1,389
Cumberland				5	5		34.224		108.310	.316	3.165	8.00	1,948
Fentress	1			34	34	1.374	46.717	2.756	93.690	.499	2.005	7.00	1,603
Hamilton	1			1	1	16.844	16.844	45.595	45.595	.369	2.707	7.01	928
Marion				40	40		43.584		126.448	.345	2,901	7.00	1,478
Morgan	3		1	92	93	1.702	52.758	8.983	278.462	.189	5.278	7.75	2,076
Scott	1			8	8	7.396	59.169	16.588	132.701	.446	2.243	7.00	1,352
Bledsoe, Grundy, and Sequatchie			3	47	50		56.827		118.628	.479	2.088	7.00	1,173
Overton, Putnam, and white			1	1	2		7.520		20.694	.363	2.752	7.23	747
Rhea, Roane, and Van Buren				13	13		242.248		574,789	.421	2.373	7.76	1,032
Total, 1936	22	3	22	641	666	1.879	56.878	4.341	131.405	.433	2.310	7.13	1,406
Total, 1935	12		17	473	490	1.269	51.815	2.900	118.420	.438	2.285	6.95	1,255

	Men employed	Production, short tons	Man-hours of employment	Killed	Injured	Rate per million man-hours	
						Killed	Injured
Underground	6,800	5,068,282	9,508,879	21	613	2.208	64.466
Surface	1,528		2,200,337	1	53	.454	24.087
Total, 1936	8,328	5,068,282	11,709,216	22	666	1.879	56.878

TABLE 50.—***Texas:*** *Number of men employed, production, number of accidents, etc., at bituminous and lignite mines during the calendar year 1936*

	Number of operators	Number of mines	Production, short tons	Men employed			Average days of employment per man	Man-days of employment			Man-hours of employment		
				Underground	Surface [1]	Total		Underground	Surface [1]	Total	Underground	Surface [1]	Total
Bituminous [2]	4	4	40,921	179	70	249	182	31,922	13,454	45,376	251,776	107,032	358,808
Lignite [2]	12	15	803,212	456	70	526	207	98,265	10,635	108,900	853,345	86,509	939,854
Total, 1936	19	18	844,133	635	140	775	199	130,187	24,089	154,276	1,105,121	193,541	1,298,662
Total, 1935	18	18	757,529	658	134	792	175	118,826	19,661	138,487	1,042,206	179,074	1,221,280

	Killed	Injured				Rate per million man-hours		Rate per million tons		Ton per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
		Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured				
Bituminous [2]				72	72		200.664		1,759.488	0.114	8.768	7.91	1,441
Lignite [2]			1	122	123		130.871		153.135	.855	1.170	8.63	1,787
Total, 1936			1	194	195		150.155		231.006	.650	1.538	8.42	1,676
Total, 1935			2	187	189		154.756		249.495	.620	1.612	8.82	1,542

	Men employed	Production, short tons	Man-hours of employment	Killed	Injured	Rate per million man-hours	
						Killed	Injured
Underground	635	760,483	1,105,121		183		165.593
Open-cut	31	83,650	29,268		3		102.501
Surface	109		164,273		9		54.787
Total, 1936	775	844,133	1,298,662		195		150.155

[1] Includes open-cut operations.
[2] **Bituminous:** Brewster, Palo Pinto, and Webb Counties; **lignite:** Bastrop, Bexar, Harrison, Henderson, Milam, Titus, and Wood Counties.

TABLE 51.—***Utah:*** *Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*

County	Number of operators	Number of mines	Production, short tons	Men employed			Average days of employment per man	Man-days of employment			Man-hours of employment		
				Underground	Surface	Total		Underground	Surface	Total	Underground	Surface	Total
Carbon	23	29	2,836,105	1,953	665	2,618	182	339,057	136,654	475,711	2,373,775	956,793	3,330,568
Emery	6	6	254,598	141	48	189	192	24,114	12,130	36,244	168,798	84,910	253,708
Grand, Iron, Kane, Summit, and Uintah	5	5	73,130	60	13	73	208	12,134	3,075	15,209	86,440	21,988	108,428
Total, 1936		40	3,163,833	2,154	726	2,880	183	375,305	151,859	527,164	2,629,013	1,063,691	3,692,704
Total, 1935		41	2,946,918	2,065	689	2,754	180	366,112	128,840	494,952	2,571,388	910,594	3,481,982

County	Killed	Injured				Rate per million man-hours		Rate per million tons		Ton per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
		Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured				
Carbon	12		15	412	427	3.603	128.206	4.231	150.559	0.852	1.174	7.00	1,272
Emery				4	4		15.766		15.711	1.004	.997	7.00	1,342
Grand, Iron, Kane, Summit, and Uintah	1			9	9	9.223	83.004	13.677	123.069	.674	1.483	7.13	1,485
Total, 1936	13		15	425	440	3.520	119.154	4.109	139.072	0.857	1.167	7.00	1,282
Total, 1935	8		23	392	415	2.298	119.185	2.715	140.825	.846	1.182	7.03	1,264

	Men employed	Production, short tons	Man-hours of employment	Killed	Injured	Rate per million man-hours	
						Killed	Injured
Underground	2,154	3,163,833	2,629,013	12	396	4.564	150.627
Surface	726		1,063,691	1	44	.940	41.365
Total, 1936	2,880	3,163,833	3,692,704	13	440	3.520	119.154

TABLE 52.—***Virginia:*** *Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*

County	Number of operators	Number of mines	Production, short tons	Men employed			Average days of employment per man	Man-days of employment			Man-hours of employment		
				Underground	Surface	Total		Underground	Surface	Total	Underground	Surface	Total
Buchanan	13	14	2,232,760	2,034	364	2,398	197	404,525	67,710	472,235	2,831,676	473,971	3,305,647
Dickenson	6	7	1,334,786	1,212	176	1,388	230	279,047	40,317	319,364	1,954,284	282,410	2,236,694
Lee	9	12	1,347,749	1,677	220	1,897	208	349,060	45,375	394,435	2,443,420	322,527	2,765,947
Russell	6	8	615,029	781	176	957	159	123,892	27,967	151,859	869,026	196,244	1,065,270
Tazewell	7	12	3,197,983	3,205	521	3,726	218	694,186	118,761	812,947	4,859,302	870,235	5,729,537
Wise	15	23	2,922,808	3,531	494	4,025	179	630,927	87,783	718,710	4,419,014	615,306	5,034,320
Montgomery and Pulaski	6	6	199,616	367	131	498	192	67,866	27,504	95,370	526,728	208,934	735,662
Total, 1936		82	11,850,731	12,807	2,082	14,889	199	2,549,503	415,417	2,964,920	17,903,450	2,969,627	20,873,077
Total, 1935		85	9,667,018	11,035	2,010	13,045	188	2,075,136	382,353	2,457,489	14,574,368	2,686,535	17,260,903

County	Killed	Injured				Rate per million man-hours		Rate per million tons		Ton per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
		Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured				
Buchanan	5	3	25	203	231	1.513	69.880	2.239	103.459	0.675	1.481	7.00	1,379
Dickenson	4		9	132	141	1.788	63.039	2.997	105.635	.597	1.676	7.00	1,611
Lee	7	1	28	186	215	2.531	77.731	5.194	159.525	.487	2.052	7.01	1,458
Russell	2		5	52	57	1.877	53.508	3.252	92.679	.577	1.732	7.01	1,113
Tazewell	10		26	553	579	1.745	101.055	3.127	181.052	.558	1.792	7.05	1,538
Wise	12		18	215	233	2.384	46.282	4.106	79.718	.581	1.722	7.00	1,251
Montgomery and Pulaski				61	61		82.919		305.587	.271	3.685	7.71	1,477
Total, 1936	40	4	111	1,402	1,517	1.916	72.677	3.375	128.009	0.568	1.761	7.04	1,402
Total, 1935	30	10	88	1,510	1,608	1.738	93.159	3.103	166,339	.560	1.786	7.02	1,323

	Men employed	Production, short tons	Man-hours of employment	Killed	Injured	Rate per million man-hours	
						Killed	Injured
Underground	12,807	11,850,731	17,903,450	38	1,432	2.122	79.985
Surface	2,082		2,969,627	2	85	.673	28.623
Total, 1936	14,889	11,850,731	20,873,077	40	1,517	1.916	72.677

TABLE 53.—***Washington:*** *Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*

County	Number of operators	Number of mines	Production, short tons	Men employed			Average days of employment per man	Man-days of employment			Man-hours of employment		
				Underground	Surface	Total		Underground	Surface	Total	Underground	Surface	Total
King	22	24	641,311	801	258	1,059	195	156,081	50,465	206,546	1,092,337	352,996	1,445,333
Kittitas	8	15	743,260	643	206	849	222	134,625	53,483	188,108	942,175	373,337	1,315,512
Lewis	11	11	39,303	66	19	85	116	7,623	2,228	9,851	53,087	15,490	68,577
Pierce	10	10	135,514	285	77	362	168	48,228	12,549	60,777	337,593	87,836	425,429
Thurston and Whatcom	4	4	254,277	212	54	266	227	47,461	12,792	60,253	332,227	89,544	421,771
Total, 1936		64	1,813,665	2,007	614	2,621	201	394,018	131,517	525,535	2,757,419	919,203	3,676,622
Total, 1935		56	1,559,206	1,765	510	2,275	190	332,507	100,541	433,048	2,309,437	698,054	3,007,491

County	Killed	Injured				Rate per million man-hours		Rate per million tons		Ton per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
		Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured				
King	2	1	2	228	231	1.384	159.825	3.119	360.200	0.444	2.254	7.00	1,365
Kittitas	2		1	124	125	1.520	95.020	2.691	168.178	.565	1.770	6.99	1,549
Lewis				10	10		145.821		254.434	.573	1.745	6.96	807
Pierce			6	67	73		171.591		538.690	.319	3.139	7.00	1,175
Thurston and Whatcom	1		1	31	32	2.371	75.871	3.933	125.847	.603	1.659	7.00	1,586
Total, 1936	5	1	10	460	471	1.360	128.107	2.757	259.695	.493	2.027	7.00	1,403
Total, 1935	5		14	326	340	1.663	113.051	3.207	218.060	.518	1.929	6.94	1,322

	Men employed	Production, short tons	Man-hours of employment	Killed	Injured	Rate per million man-hours	
						Killed	Injured
Underground	2,007	1,813,665	2,757,419	5	427	1.813	154.855
Surface	614		919,203		44		47.868
Total, 1936	2,621	1,813,665	3,676,622	5	471	1.360	128.107

TABLE 54.—***West Virginia:*** *Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*

County	Number of operators	Number of mines	Production, short tons	Men employed			Average days of employment per man	Man-days of employment			Man-hours of employment		
				Underground	Surface [1]	Total		Underground	Surface [1]	Total	Underground	Surface [1]	Total
Barbour	18	18	1,552,313	1,483	180	1,663	177	264,030	30,357	294,387	1,852,547	213,234	2,065,781
Boone	14	16	3,843,071	3,059	497	3,556	223	665,610	127,851	793,461	4,735,022	876,873	5,611,895
Braxton	5	5	31,970	42	9	51	133	5,522	1,241	6,763	38,654	8,687	47,341
Brooke	14	15	1,461,741	1,284	187	1,471	216	278,080	39,064	317,144	1,946,078	273,288	2,219,366
Clay	6	7	884,519	727	153	880	254	182,265	40,822	223,087	1,284,923	285,754	1,570,677
Fayette	40	69	12,977,167	12,387	1,890	14,277	218	2,668,720	439,797	3,108,517	18,567,445	3,069,686	21,637,131
Gilmer	4	4	18,655	43	13	56	89	3,871	1,090	4,961	27,095	7,629	34,724
Greenbrier	12	12	1,787,756	1,720	220	1,940	193	331,540	42,120	373,660	2,320,784	294,839	2,615,623
Hancock	4	4	22,517	42	8	50	269	11,420	2,046	13,466	82,725	15,207	97,932
Harrison	26	28	3,611,881	3,054	436	3,490	163	490,607	77,755	568,362	3,435,331	544,284	3,979,615
Kanawha	27	42	6,719,332	5,909	890	6,799	219	1,291,857	198,839	1,490,696	9,043,315	1,400,728	10,444,043
Logan	37	65	15,980,929	10,417	2,043	12,460	212	2,208,661	438,669	2,647,330	15,440,095	3,081,723	18,521,818
McDowell	44	73	22,697,762	17,086	3,657	20,743	225	3,815,201	860,552	4,675,753	26,708,801	6,043,018	32,751,819
Marion	14	22	8,310,017	6,068	814	6,882	209	1,246,651	191,715	1,438,366	8,683,306	1,335,226	10,018,532
Marshall	6	6	768,467	919	135	1,054	198	187,578	21,243	208,821	1,316,054	150,014	1,466,068
Mason	5	5	81,259	112	20	132	187	20,787	3,881	24,668	144,459	27,017	171,476
Mercer	11	17	3,769,768	3,126	854	3,980	218	675,629	191,538	867,167	4,729,408	1,340,771	6,070,179
Mineral	16	17	323,350	483	97	580	209	104,117	17,087	121,204	728,622	119,387	848,009
Mingo	18	24	3,940,654	3,162	592	3,754	207	655,776	122,079	777,855	4,590,435	854,552	5,444,987
Monongalia	28	30	6,023,680	3,648	658	4,306	241	879,568	159,913	1,039,481	6,155,509	1,118,836	7,274,345
Nicholas	6	7	65,909	126	31	157	133	15,991	4,885	20,876	112,540	34,387	146,927
Ohio	12	13	2,091,911	1,910	167	2,077	255	486,240	42,534	528,774	3,403,679	297,739	3,701,418
Preston	22	29	609,784	1,049	143	1,192	131	137,946	18,583	156,529	966,423	130,213	1,096,636
Putnam	3	3	538,515	597	72	669	220	131,383	15,830	147,213	923,681	111,610	1,035,291
Raleigh	58	84	14,014,106	12,295	2,255	14,550	217	2,643,637	511,411	3,155,048	18,516,924	3,584,025	22,100,949
Randolph	16	17	711,666	813	160	973	174	135,600	33,710	169,310	946,153	235,509	1,181,662
Taylor	13	14	709,230	796	116	912	146	114,528	18,695	133,223	803,937	131,345	935,282
Tucker	3	7	547,759	603	75	678	189	113,412	14,759	128,171	793,883	103,316	897,199
Upshur	5	5	224,157	269	53	322	145	38,613	8,227	46,840	284,782	62,285	347,067
Webster	9	13	811,523	974	163	1,137	177	172,810	27,885	200,695	1,213,258	196,069	1,409,327
Wyoming	13	14	2,274,505	2,095	426	2,521	221	463,988	92,973	556,961	3,369,393	661,482	4,030,875
Grant, Lewis, Summers, and Wayne	6	6	22,383	58	7	65	96	5,512	726	6,238	41,826	5,338	47,164
Total, 1936		691	117,428,256	96,356	17,021	113,377	214	20,447,150	3,797,877	24,245,027	143,207,087	26,614,071	169,821,158
Total, 1935		746	99,179,061	93,450	15,771	109,221	190	17,678,429	3,049,270	20,727,699	124,632,034	21,286,189	145,918,223

[1] Includes open-cut operations.

TABLE 54.—***West Virginia:*** *Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*—Con.

County	Killed	Injured				Rate per million man-hours		Rate per million tons		Ton per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per day	Average hours of employment per man per year
		Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured				
Barbour	3		3	143	146	1.452	70.675	1.933	94.053	0.751	1.331	7.02	1,242
Boone	10	1	25	261	287	1.782	51.141	2.602	74,680	.685	1.460	7.07	1,578
Braxton				4	4		84.493		125.117	.675	1.481	7.00	928
Brooke	8		4	167	171	3.605	77.049	5.473	116.984	.659	1.518	7.00	1,509
Clay	2		1	130	131	1.273	83.404	2.261	148.103	.563	1.776	7.04	1,785
Fayette	50	1	102	1,272	1,375	2.311	63.548	3.853	105.955	.600	1.667	6.96	1,516
Gilmer				2	2		57.597		107.210	.537	1.861	7.00	620
Greenbrier	9			250	250	3.441	95.580	5.034	139.840	.683	1.463	7.00	1,348
Hancock				3	3		30.634		133.233	.230	4.349	7.27	1,959
Harrison	4		11	180	191	1.005	47.995	1.107	52.881	.908	1.102	7.00	1,140
Kanawha	20		37	856	893	1.915	85.503	2.976	132.900	.643	1.554	7.01	1,536
Logan	50	6	110	1,543	1,659	2.700	89.570	3.129	103.811	.863	1.159	7.00	1,487
McDowell	68	2	135	2,813	2,950	2.076	90.071	2.996	129.969	.693	1.443	7.00	1,579
Marion	18		21	542	563	1.797	56.196	2.166	67.750	.829	1.206	6.97	1,456
Marshall	4		1	69	70	2.728	47.747	5.205	91.090	.524	1.908	7.02	1,391
Mason	1			11	11	5.832	64.149	12.306	135.370	.474	2.110	6.95	1,299
Mercer	11		19	658	677	1.812	111.529	2.918	179.587	.621	1.610	7.00	1,525
Mineral	2			56	56	2.358	66.037	6.185	173.187	.381	2.623	7.00	1,462
Mingo	10	1	26	365	392	1.837	71.993	2.538	99.476	.724	1.382	7.00	1,450
Monongalia	10	1	32	421	454	1.375	62.411	1.660	75.369	.828	1.208	7.00	1,689
Nicholas				6	6		40.837		91.035	.449	2.229	7.04	936
Ohio			12	126	138		37.283		65.968	.565	1.769	7.00	1,782
Preston			1	54	55		50.153		90.196	.556	1.798	7.01	920
Putnam	4		1	60	61	3.864	58.921	7.428	113.274	.520	1.922	7.03	1,548
Raleigh	36	8	133	1,441	1,582	1.629	71.581	2.570	112.886	.634	1.577	7.00	1,519
Randolph	4		4	111	115	3.385	97.321	5.621	161.593	.602	1.660	6.98	1,214
Taylor	1		2	61	63	1.069	67.359	1.410	88.829	.758	1.319	7.02	1,026
Tucker	2		1	53	54	2.229	60.187	3.651	98.584	.611	1.638	7.00	1,323
Upshur	1			11	11	2.881	31.694	4.461	49.073	.646	1.548	7.41	1,078
Webster	2		1	126	127	1.419	90.114	2.465	156.496	.576	1.737	7.02	1,240
Wyoming	11		21	285	306	2.729	75.914	4.836	134.535	.564	1.772	7.24	1,599
Grant, Lewis, Summers, and Wayne										.475	2.107	7.56	726
Total, 1936	341	20	703	12,080	12,803	2.008	75.391	2.904	109.028	.691	1.446	7.00	1.498
Total, 1935	315	21	499	11,385	11,905	2.159	81.587	3.176	120.035	.680	1.471	7.04	1,336

	Men employed	Production, short tons	Man-hours of employment	Killed	Injured	Rate per million man-hours	
						Killed	Injured
Underground	96,356	117,426,733	143,207,087	326	11,942	2.276	83.390
Open-cut	4	1,523	1,400				
Surface	17,017		26,612,671	15	861	.564	32.353
Total, 1936	113,377	117,428,256	169,821,158	341	12,803	2.008	75.391

TABLE 55.—***Wyoming:*** *Number of men employed, production, number of accidents, etc., at coal mines during the calendar year 1936*

County	Number of operators	Number of mines	Production, short tons	Men employed			Average days of employment per man	Man-days of employment			Man-hours of employment		
				Underground	Surface [1]	Total		Underground	Surface [1]	Total	Underground	Surface [1]	Total
Carbon	13	13	606,300	274	87	361	242	65,687	21,807	87,494	461,784	156,195	617,979
Fremont	3	4	47,466	37	13	50	126	4,674	1,643	6,317	32,718	11,501	44,219
Hot Springs	6	6	227,483	276	83	359	185	51,109	15,364	66,473	358,053	107,693	465,746
Lincoln	7	9	495,897	452	94	546	206	93,199	19,378	112,577	652,389	137,477	789,866
Sheridan	6	7	665,414	263	91	354	181	47,427	16,567	63,994	332,351	116,059	448,410
Sweetwater	7	17	3,584,583	2,188	485	2,673	219	471,463	113,916	585,379	3,300,241	805,053	4,105,294
Big Horn, Park, and Uinta	4	4	17,708	19	4	23	259	4,886	1,076	5,962	34,202	7,532	41,734
Campbell, Converse, Crook, Johnson, and Natrona	13	13	137,131	31	46	77	206	4,850	11,033	15,883	37,050	77,337	114,387
Total, 1936		73	5,781,982	3,540	903	4,443	212	743,295	200,784	944,079	5,208,788	1,418,847	6,627,635
Total, 1935		68	5,177,142	3,101	865	3,966	217	671,048	190,533	861,581	4,714,924	1,355,812	6,070,736

County	Killed	Injured				Rate per million man-hours		Rate per million tons		Tons per man-hour of employment	Man-hours of employment per ton	Average hours of employment per man per year	Average hours of employment per man per day
		Permanent total disability	Permanent partial disability	Temporary	Total	Killed	Injured	Killed	Injured				
Carbon	1		1	9	10	1.618	16.182	1.649	16.493	0.981	1.019	7.06	1,712
Fremont				3	3		67.844		63.203	1.073	.932	7.00	884
Hot Springs	1	1	10	39	50	2.147	107.355	4.396	219.797	.488	2.047	7.01	1,297
Lincoln	4			48	48	5.064	60.770	8.066	96.794	.528	1.593	7.02	1,447
Sheridan			3	24	27		60.213		40.576	1.484	.674	7.01	1,267
Sweetwater	10		7	120	127	2.436	30.936	2.790	35.430	.873	1.145	7.01	1,536
Big Horn, Park, and Uinta										.424	2.357	7.00	1,815
Campbell, Converse, Crook, Johnson, and Natrona				2	2		17.485		14.585	1.199	.834	7.20	1,486
Total, 1936	16	1	21	245	267	2.414	40.286	2.767	46.178	.872	1.146	7.02	1,492
Total 1935	20	2	20	243	265	3.294	43.652	3.863	51.187	.853	1.173	7.05	1,531

	Men employed	Production, short tons	Man-hours of employment	Killed	Injured	Rate per million man-hours	
						Killed	Injured
Underground	3,540	5,661,824	5,208,788	16	243	3.072	46.652
Open-cut	39	120,158	68,788		2		29.075
Surface	864		1,350,059		22		16.296
Total, 1936	4,443	5,781,982	6,627,635	16	267	2.414	40.286

[1] Includes open-cut operations.

BITUMINOUS MINES OPERATED WITHOUT FATALITIES

Although 1,098 men were killed by accidents at bituminous-coal mines in 1936, according to Bureau of Mines records covering 6,572 active mines, the returns from operating companies and State inspectors showed that all of the fatalities occurred in 785 mines, thus revealing the interesting fact that 5,787 mines were operated without a fatality. The mines that had no fatalities during the year produced 51.5 percent of the total output of bituminous coal and accounted for 56.5 percent of all men employed at bituminous-coal mines and 52.7 percent of the total number of man-hours worked in the industry. Many of the mines that had no fatalities were relatively small. The average number of workers per mine for this group was 47 compared with 267 employees per mine for mines that had fatalities. Nevertheless it is significant that so large a section of the mining industry should be free of fatal accidents. As shown in table 57 some smaller coal-producing States also had no fatal accidents in coal mines. Tables 57 to 59 show the standing of the States according to the proportion of their coal-mining industry that was free of fatal accidents during 1936, and table 56 shows summarized figures for all States.

TABLE 56.—*Comparative fatal and nonfatal accident data for bituminous-coal mines in the United States in 1936*

	Mines that had no fatal accidents	Mines that had fatal accidents	All bituminous-coal mines
Number of mines	5,787	785	6,572
Production—short tons	224,702,380	211,765,953	436,468,333
Proportion of total tonnage—percent	51.5	48.5	100
Number of employees	272,735	209,765	482,500
Proportion of total employees—percent	56.5	43.5	100
Number of employees per mine	47	267	74
Man-days worked	50,086,765	45,174,989	95,261,754
Average worked per man—days	184	215	197
Man-hours worked	352,874,789	317,025,747	669,900,536
Average work per man—hours	1,294	1,511	1,388
Production per man-hour—tons	0.637	0.668	0.652
Number of men killed		1,098	1,098
Number of men injured	26,176	24,338	50,514
Death rate per million man-hours		3.46	1.64
Injury rate per million man-hours	74.18	76.77	75.41

TABLE 57.—*Bituminous-coal mines: Number of men employed in 1936*

State	At mines that had fatalities	At mines that had no fatalities	Employees represented by mines that had no fatalities, percent	State	At mines that had fatalities	At mines that had no fatalities	Employees represented by mines that had no fatalities, percent
Michigan		1,416	100	Tennessee	2,794	5,534	66.5
Texas		775	100	Wyoming	1,657	2,786	62.7
Other States [1]		155	100	Alabama	8,610	11,885	58.0
Alaska		111	100	Illinois	19,547	26,311	57.4
South Dakota		50	100	Pennsylvania (bituminous)	54,866	73,629	57.3
North Dakota	89	1,414	94.1	Kentucky	23,778	31,828	57.2
Maryland	209	2,716	92.9	United States (bituminous)	209,765	272,735	56.5
Missouri	412	5,286	92.8				
Oklahoma	457	2,785	85.9				
Washington	389	2,232	85.2				
Iowa	1,481	6,943	82.4				
Kansas	809	3,181	79.7	New Mexico	1,065	1,317	55.3
Arkansas	1,063	3,031	74.0	Utah	1,353	1,527	53.0
Colorado	2,570	6,493	71.6	Montana	751	673	47.3
Ohio	8,787	20,444	69.9	West Virginia	66,520	46,857	41.3
Indiana	3,347	7,678	69.6	Virginia	9,211	5,678	38.1

[1] Includes Arizona, California, Georgia, Idaho, and Oregon.

TABLE 58.—*Bituminous-coal mines: Number of man-hours worked in 1936*

State	At mines that had fatalities	At mines that had no fatalities	Man-hours represented by mines that had no fatalities, percent	State	At mines that had fatalities	At mines that had no fatalities	Man-hours represented by mines that had no fatalities, percent
Michigan		1,634,922	100	Wyoming	2,426,337	4,201,298	63.4
Texas		1,298,662	100	Tennessee	4,634,051	7,075,165	60.4
Other States [1]		248,302	100	Pennsylvania (bituminous)	82,770,371	99,127,901	54.5
Alaska		217,664	100	Illinois	25,880,223	30,533,321	54.1
South Dakota		87,998	100	Utah	1,728,742	1,963,962	53.2
Missouri	544,170	6,657,272	92.4	Alabama	14,302,089	16,065,236	52.9
Maryland	324,884	3,479,894	91.5				
North Dakota	193,957	2,036,876	91.3	United States (bituminous)	317,025,747	352,874,789	52.7
Oklahoma	477,442	2,998,349	86.3				
Washington	668,786	3,007,836	81.8				
Kansas	930,258	3,843,473	80.5				
Iowa	2,016,453	7,785,130	79.4	Kentucky	36,863,601	40,412,423	52.3
Arkansas	1,295,743	3,010,526	69.9	New Mexico	1,670,645	1,771,209	51.5
Colorado	3,723,037	8,110,706	68.5	Montana	1,062,579	967,590	47.7
Indiana	4,796,304	9,351,774	66.1	West Virginia	104,373,417	65,447,741	38.5
Ohio	12,622,635	24,386,505	65.9	Virginia	13,720,023	7,153,054	34.3

[1] Includes Arizona, California, Georgia, Idaho, and Oregon.

TABLE 59.—*Bituminous-coal mines: Number of tons of coal produced in 1936*

State	At mines that had fatalities, tons	At mines that had no fatalities, tons	Percent of State's tonnage represented by mines that had no fatalities	State	At mines that had fatalities, tons	At mines that had no fatalities, tons	Percent of State's tonnage represented by mines that had no fatalities
Texas		844,133	100	Ohio	7,937,045	15,653,247	66.4
Michigan		621,634	100	New Mexico	577,794	1,016,425	63.8
Alaska		136,593	100	Tennessee	1,888,902	3,179,380	62.7
South Dakota		41,325	100	Montana	1,148,110	1,842,687	61.6
Other States [1]		36,482	100	Alabama	5,629,018	6,626,858	54.1
Maryland	110,712	1,586,683	93.5	Pennsylvania (bituminous)	52,089,293	57,293,518	52.4
Missouri	286,584	3,667,813	92.8	Kentucky	22,814,320	24,675,252	52.0
Oklahoma	163,380	1,367,640	89.3				
North Dakota	298,727	1,944,739	86.7				
Kansas	503,966	2,458,971	83.0	United States (bituminous)	211,765,953	224,702,380	51.5
Iowa	731,991	3,119,947	81.0				
Washington	353,903	1,459,762	80.5				
Arkansas	464,628	1,156,566	71.3	Utah	1,585,926	1,577,907	49.9
Wyoming	1,707,074	4,074,908	70.5	Illinois	25,624,715	25,271,520	49.7
Colorado	2,135,532	4,674,843	68.6	West Virginia	72,063,593	45,364,663	38.6
Indiana	5,572,094	11,236,799	66.9	Virginia	8,078,646	3,772,085	31.8

[1] Includes Arizona, California, Georgia, Idaho, and Oregon.

COAL-MINE FATALITIES, BY MONTHS

As previously shown, 1,342 men were killed by accidents at coal mines in the United States during 1936. Table 60 shows these fatalities, distributed by months in which the accidents occurred, for each coal-producing State. Similar information for the United States but not for the individual States, is summarized for the 7-year period 1930–36 in table 61, which gives the fatal-accident rates per million tons of coal produced by months and the number of fatal accidents. Corresponding rates per million hours of exposure are not available, as the number of man-hours worked is not reported monthly, but only annually, to the Bureau of Mines. These figures are presented to aid safety engineers and others interested in the study of the seasonal occurrence of accidents at coal mines.

TABLE 60.—*Coal-mine fatalities, by months and States, during 1936*

State	January	February	March	April	May	June	July	August	September	October	November	December	Total
Alabama	5	4	3	4	1	4		1	5	1	3	4	35
Alaska													
Arkansas	2		1	2			2	1			5	2	15
Colorado	13	2	1				2	1	4	3	1	2	29
Illinois	9	6	4	6	2	5	8	15	7	12	7	16	97
Indiana	4	6		2		3	6	4	2	2	2	4	35
Iowa	3	4	1	3				1	1	4	3	4	24
Kansas		3		1	2			1					7
Kentucky	9	10	7	12	12	6	12	11	10	10	6	10	115
Maryland		1						1				1	3
Michigan													
Missouri	1	1		2		1		7		1		5	18
Montana	2	1								3	1	1	8
New Mexico	2		1			1	1	3		1	1		10
North Dakota	1	1								1			3
Ohio	6	4	3	1	1	2	7	1	1	9	5	7	47
Oklahoma	4	2		1		1	3	1	1	1	1		15
Pennsylvania (bituminous)	16	17	12	17	11	9	13	7	23	14	24	37	200
South Dakota													
Tennessee	1	3	2	1	1	1	2	2	1	4	3	1	22
Texas													
Utah	1	1		3				1	1	2	2	2	13
Virginia	2	3	2	4	2	4	2	6	4	5	4	2	40
Washington							1				1	3	5
West Virginia	23	24	28	31	17	26	19	25	45	29	36	38	341
Wyoming	1	2	1	1	1		2	1	1	4	1	1	16
Total bituminous	105	95	66	91	50	63	80	90	106	106	106	140	1,098
Pennsylvania (anthracite)	32	37	21	15	16	26	15	24	12	6	17	23	244
Total 1936	137	132	87	106	66	89	95	114	118	112	123	163	1,342

TABLE 61.—*Coal-mine fatalities and fatality rates per million tons, by months and years, 1930–36*

FATALITIES

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Bituminous:													
1930	189	132	150	130	118	103	119	117	103	157	199	102	1,619
1931	139	76	93	81	77	72	97	89	84	98	92	82	1,080
1932	88	112	79	51	50	41	65	65	68	85	76	178	958
1933	66	69	47	37	53	71	79	103	91	73	63	81	833
1934	68	90	85	66	75	54	94	85	77	80	91	93	958
1935	86	83	92	54	82	74	72	77	77	89	83	99	968
1936	105	95	66	91	50	63	80	90	106	106	106	140	1,098
Anthracite:													
1930	51	40	30	33	34	26	37	47	38	49	29	30	444
1931	41	42	25	45	38	23	21	30	35	43	15	25	383
1932	15	20	25	33	12	12	16	18	16	22	22	38	249
1933	26	16	23	15	5	13	15	20	19	29	29	21	231
1934	27	32	28	24	26	14	16	16	17	28	20	20	268
1935	44	21	20	20	30	28	22	13	23	18	23	12	274
1936	32	37	21	15	16	26	15	24	12	6	17	23	244
Bituminous and anthracite:													
1930	240	172	180	163	152	129	156	164	141	206	228	132	2,063
1931	180	118	118	126	115	95	118	119	119	141	107	107	1,463
1932	103	132	104	84	62	53	81	83	84	107	98	216	1,207
1933	92	85	70	52	58	84	94	123	110	102	92	102	1,064
1934	95	122	113	90	101	68	110	101	94	108	111	113	1,226
1935	130	104	112	74	112	102	94	90	100	107	106	111	1,242
1936	137	132	87	106	66	89	95	114	118	112	123	163	1,342

RATES

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Bituminous:													
1930	3.75	3.30	4.14	3.58	3.24	3.02	3.38	3.24	2.63	3.51	5.15	2.54	3.46
1931	3.57	2.39	2.72	2.81	2.69	2.44	3.22	2.88	2.60	2.72	3.02	2.68	2.83
1932	3.11	3.95	2.42	2.48	2.68	2.28	3.59	2.85	2.55	2.57	2.45	5.65	3.09
1933	2.38	2.47	1.93	1.86	2.35	2.78	2.66	2.99	3.06	2.41	2.02	2.67	2.50
1934	2.03	2.76	2.21	2.68	2.73	2.09	3.78	3.09	2.76	2.42	2.94	2.86	2.67
1935	2.32	2.36	2.36	2.44	3.04	2.45	3.20	2.93	3.04	2.33	2.46	2.76	2.60
1936	2.63	2.30	2.09	2.98	1.75	2.14	2.49	2.70	2.83	2.43	2.51	3.03	2.52
Anthracite:													
1930	7.29	6.54	6.63	6.75	5.75	5.05	6.58	7.64	7.22	6.51	5.60	4.96	6.40
1931	6.63	7.78	5.26	7.88	7.58	5.05	5.30	6.94	8.02	6.55	3.62	5.34	6.42
1932	3.81	4.92	5.17	5.80	3.62	4.66	5.24	5.14	3.85	4.16	5.10	7.39	4.99
1933	6.81	3.73	5.08	5.17	1.68	3.30	4.07	4.54	3.79	6.14	6.01	4.73	4.66
1934	4.42	5.40	4.38	4.98	4.97	3.36	4.66	4.48	4.29	5.94	4.80	4.27	4.69
1935	7.60	4.51	6.20	4.20	5.86	4.89	6.28	4.23	5.59	4.36	6.70	2.59	5.25
1936	6.01	5.31	6.87	3.15	3.13	6.05	3.83	6.86	3.10	1.30	3.93	4.66	4.46
Bituminous and anthracite:													
1930	4.18	3.72	4.42	3.96	3.59	3.28	3.83	3.88	3.18	3.94	5.21	2.85	3.84
1931	3.99	3.18	3.03	3.65	3.42	2.79	3.46	3.38	3.25	3.31	3.09	3.03	3.31
1932	3.20	4.07	2.77	3.20	2.83	2.58	3.83	3.16	2.73	2.79	2.77	5.89	3.36
1933	2.92	2.64	2.43	2.29	2.27	2.85	2.82	3.16	3.17	2.91	2.55	2.93	2.78
1934	2.40	3.16	2.52	3.05	3.09	2.26	3.89	3.25	2.95	2.86	3.16	3.04	2.94
1935	3.03	2.61	2.65	2.75	3.49	2.83	3.61	3.06	3.40	2.53	2.85	2.75	2.93
1936	3.02	2.74	2.51	3.00	1.96	2.64	2.64	3.10	2.86	2.32	2.64	3.19	2.73

TABLE 61.—*Coal-mine fatalities and fatality rates per million tons, by months and years, 1930–36*—Continued

PRODUCTION

	January	February	March	April	May	June	July
Bituminous:							
1930	50,414,000	40,060,000	36,230,000	36,318,000	36,413,000	34,145,000	35,158,000
1931	38,951,000	31,738,000	34,228,000	28,778,000	28,614,000	29,492,000	30,104,000
1932	28,261,000	28,384,000	32,677,000	20,568,000	18,627,000	17,984,000	18,093,000
1933	27,868,000	27,915,000	24,413,000	19,805,000	22,531,000	25,461,000	29,675,000
1934	33,462,000	32,695,000	38,574,000	24,665,000	27,459,000	25,947,000	24,937,000
1935	37,055,000	35,122,000	39,020,000	22,151,000	27,070,000	30,365,000	22,523,000
1936	39,986,000	41,289,000	31,648,000	30,580,000	28,625,000	29,467,000	32,121,000
Anthracite:							
1930	6,996,000	6,120,000	4,524,000	4,887,000	5,911,000	5,152,000	5,624,000
1931	6,183,000	5,400,000	4,754,000	5,709,000	5,013,000	4,552,000	3,960,000
1932	3,940,000	4,064,000	4,842,000	5,692,000	3,314,000	2,578,000	3,055,000
1933	3,818,000	4,287,000	4,532,000	2,899,000	2,975,000	3,939,000	3,688,000
1934	6,102,000	5,930,000	6,394,000	4,819,000	5,230,000	4,168,000	3,430,000
1935	5,832,000	4,616,000	3,158,000	4,925,000	5,641,000	5,781,000	3,623,000
1936	5,324,000	6,964,000	3,056,000	4,765,000	5,112,000	4,299,000	3,918,000
Bituminous and anthracite:							
1930	57,410,000	46,180,000	40,754,000	41,205,000	42,324,000	39,297,000	40,782,000
1931	45,134,000	37,138,000	38,982,000	34,487,000	33,627,000	34,044,000	34,064,000
1932	32,201,000	32,448,000	37,519,000	26,260,000	21,941,000	20,562,000	21,148,000
1933	31,686,000	32,202,000	28,945,000	22,704,000	25,506,000	29,400,000	33,363,000
1934	39,564,000	38,625,000	44,968,000	29,484,000	32,689,000	30,115,000	28,367,000
1935	42,887,000	39,738,000	42,178,000	27,076,000	32,111,000	36,146,000	26,146,000
1936	45,310,000	48,253,000	34,704,000	35,345,000	33,737,000	33,766,000	36,039,000

	August	September	October	November	December	Total
Bituminous:						
1930	36,117,000	39,126,000	44,714,000	38,609,000	40,222,000	467,526,000
1931	30,859,000	32,256,000	36,077,000	30,427,000	30,581,000	382,105,000
1932	22,786,000	26,662,000	33,109,000	31,037,000	31,522,000	309,710,000
1933	34,421,000	29,715,000	30,294,000	31,184,000	30,349,000	333,631,000
1934	27,527,000	27,847,000	32,896,000	30,940,000	32,419,000	359,368,000
1935	26,380,000	25,245,000	38,679,000	33,679,000	35,680,000	372,369,000
1936	33,278,000	37,462,000	43,659,000	42,215,000	46,138,000	436,468,000
Anthracite:						
1930	6,153,000	5,261,000	7,531,000	5,176,000	6,050,000	69,385,000
1931	4,324,000	4,362,000	6,561,000	4,149,000	4,679,000	59,646,000
1932	3,504,000	4,154,000	5,292,000	4,319,000	5,146,000	49,900,000
1933	4,409,000	5,007,000	4,725,000	4,825,000	4,437,000	49,541,000
1934	3,570,000	3,962,000	4,711,000	4,165,000	4,687,000	57,168,000
1935	2,655,000	4,275,000	4,385,000	3,238,000	4,734,000	52,263,000
1936	3,498,000	3,867,000	4,601,000	4,327,000	4,939,000	54,670,000
Bituminous and anthracite:						
1930	42,270,000	44,387,000	52,245,000	43,785,000	46,272,000	536,911,000
1931	35,183,000	36,618,000	42,638,000	34,576,000	35,260,000	441,751,000
1932	26,290,000	30,816,000	38,401,000	35,356,000	36,668,000	359,610,000
1933	38,830,000	34,722,000	35,019,000	36,009,000	34,786,000	383,172,000
1934	31,097,000	31,809,000	37,607,000	35,105,000	37,106,000	416,536,000
1935	29,035,000	29,520,000	42,464,000	36,917,000	40,414,000	424,632,000
1936	36,776,000	41,329,000	48,260,000	46,542,000	51,077,000	491,138,000

COST OF ACCIDENTS AT COAL MINES

Because of variations in the accident-compensation laws of coal-producing States, no information is available to show the comparative costs of accidents among coal miners in different sections of the United States. The laws of the several States are not uniform as to classes of mines to which they apply, period of time that must elapse before the right to compensation begins, or maximum allowable compensation for identical degrees of bodily disability. Moreover, even when other factors are the same for accidents in two or more States, there may be differences existing in the wage scales on which compensation allowances are computed.

Fortunately, comparative figures showing the actual number of deaths and injuries at coal mines in all States are made available by the Bureau of Mines through the courtesy of the mine operators and the official inspectors of coal-producing States. With this information as a basis, a uniform cost per accident may be assumed, and this average cost may then be applied to the accidents that have occurred. For comparison, a standard cost of $5,000 per fatality and $100 per nonfatal injury has been assumed, and the resulting accident costs per ton and per man-hour of work are shown in table 62. The costs are expressed in cents. The reader is cautioned not to infer that the assumed figures represent, even approximately, the actual costs of compensation paid under the laws of any State; they represent only what accidents would have cost if uniform laws and wages had prevailed in all States and if the payments as compensation for injuries had averaged $5,000 for each fatality and $100 for each nonfatal lost-time injury.

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TABLE 62.—*Theoretical comparative cost of accidents at coal mines in 1936* [1]

State	Accidents per million man-hours	State	Accidents per million tons	State	Accident cost per man-hour, cents	State	Accident cost per ton, cents	State	Production, millions of tons
Other States [2]	12.08	South Dakota	48.40	Other States [2]	0.12	South Dakota	0.48	Pennsylvania	164.05
South Dakota	22.73	Wyoming	48.95	South Dakota	.23	Alaska	.73	West Virginia	117.43
Wyoming	42.70	Montana	49.15	Alaska	.46	Other States [2]	.82	Pennsylvania (bituminous)	109.38
Alabama	45.94	Alaska	73.21	Alabama	1.02	North Dakota	1.45	Pennsylvania (anthracite)	54.67
Alaska	45.94	North Dakota	79.34	Michigan	1.17	Montana	1.80	Illinois	50.90
Missouri	52.21	Other States [2]	82.23	Pennsylvania (bituminous)	1.28	Wyoming	1.85	Kentucky	47.49
Arkansas	58.75	Indiana	91.68	Ohio	1.29	Indiana	1.94	Ohio	23.59
Tennessee	58.76	Missouri	95.08	Maryland	1.30	Ohio	2.02	Indiana	16.81
Kansas	59.07	Kansas	95.18	Kansas	1.31	Kansas	2.11	Alabama	12.26
Kentucky	60.17	Kentucky	97.92	Kentucky	1.33	Pennsylvania (bituminous)	2.12	Virginia	11.85
New Mexico	66.53	Ohio	104.45	North Dakota	1.46	Kentucky	2.17	Colorado	6.81
Ohio	66.58	West Virginia	111.93	Texas	1.50	Illinois	2.27	Wyoming	5.78
Oklahoma	72.21	Alabama	113.82	Tennessee	1.51	Texas	2.31	Tennessee	5.07
Montana	72.41	United States (bituminous)	118.25	United States (bituminous)	1.57	United States (bituminous)	2.42	Missouri	3.95
Pennsylvania (bituminous)	73.83	Pennsylvania (bituminous)	122.77	Wyoming	1.61	Alabama	2.54	Iowa	3.85
Virginia	74.59	Virginia	131.38			West Virginia	2.54	Utah	3.16
United States (bituminous)	77.04	Illinois	134.02	United States average	1.65			Montana	2.99
West Virginia	77.40	Tennessee	135.75			United States average	2.78	Kansas	2.96
North Dakota	79.79	Utah	143.18	Virginia	1.68			North Dakota	2.24
		New Mexico	143.64	Missouri	1.75	Maryland	2.90	Washington	1.81
United States average	85.82			West Virginia	1.76	Virginia	2.97	Maryland	1.70
		United States average	144.40	Washington	1.96	Michigan	3.09	Arkansas	1.62
Maryland	90.94			Pennsylvania (anthracite)	2.00	Missouri	3.18	New Mexico	1.59
Colorado	101.66	Arkansas	156.06	Illinois	2.05	Utah	3.45	Oklahoma	1.53
Iowa	106.51	Oklahoma	163.94	New Mexico	2.09	Tennessee	3.48	Texas	.84
Indiana	108.92	Colorado	176.64	Colorado	2.22	Colorado	3.85	Michigan	.62
Michigan	117.44	Maryland	203.84	Iowa	2.26	Washington	3.98	Alaska	.14
Illinois	120.91	Texas	231.01	Arkansas	2.29	New Mexico	4.51	South Dakota	.04
Utah	122.67	Washington	262.45	Indiana	2.30	Pennsylvania (anthracite)	5.72	Other States [2]	.04
Pennsylvania (anthracite)	123.37	Iowa	271.03	Montana	2.65	Iowa	5.76	United States total	491.14
Washington	129.47	Michigan	308.86	Oklahoma	2.84	Arkansas	6.09	United States (bituminous)	436.47
Texas	150.16	Pennsylvania (anthracite)	353.13	Utah	2.95	Oklahoma	6.44		

[1] The cost figures in cents per man-hour and per ton are entirely arbitrary and have been prepared for illustrative and comparative purposes only. Uniform figures of comparative compensation payments for all lost-time accidents in different States are not available. In this table a fatality has been assigned an assumed cost of $5,000 and a nonfatal lost-time accident $100.

[2] Includes Arizona, California, Georgia, Idaho, and Oregon.

RELATIVE STANDING OF COAL STATES ACCORDING TO ACCIDENT RATES, 1932–36

Three classes of accidents—falls of roof and coal, haulage, and gas or dust explosions—comprise the principal causes of deaths among coal miners from accidents in mines.

The relative standing of the various coal-producing States in these three major causes of fatalities is shown in table 63, which covers the 5-year period 1932–36. A 5-year period was selected for obtaining representative figures for each State, as the number of fatalities from these causes in some States is too small in a single year to represent the usual experience of the State. The fatality rate for the United States from each of these causes of accidents is shown in the table and is represented by an index figure of 100. The corresponding fatality rate for each State is represented by an index number indicating what percentage the State's fatality rate was of the fatality rate of the United States. Similar information, based upon nonfatal lost-time injuries, is given in table 64.

TABLE 63.—*Index numbers, comparing coal-mine fatality rates per million man-hours underground, for different States, with the average rate for the United States, 1932–36*

Falls of roof and coal		Haulage (underground)		Gas or dust explosions		Miscellaneous (underground) including shaft		Total underground (including shaft)	
State	Index No.	State	Index No.	State	Index No.	State	Index No.	State	Index No.
Other States [1]		Arkansas		Tennessee		Maryland		Alaska	
Alaska		Texas		Iowa		Texas		Texas	43
Michigan	57	Other States [1]		Missouri		Alaska		Pennsylvania (bituminous)	63
Alabama	65	Alaska		Kansas		Utah	48	Alabama	66
Washington	65	Maryland	18	Utah		Pennsylvania (bituminous)	50	Maryland	74
Pennsylvania (bituminous)	70	Missouri	25	North Dakota		Tennessee	62	Ohio	83
Texas	73	Pennsylvania (bituminous)	68	Montana		Ohio	73	Iowa	88
North Dakota	75	Alabama	72	Michigan		Alabama	81	Tennessee	94
Iowa	84	Pennsylvania (anthracite)	74	Texas		West Virginia	91	Other States [1]	94
Ohio	85	Oklahoma	76	Other States [1]		Montana	93		
Illinois	97	Kansas	84	Alaska		Kentucky	95	United States (1.867)	100
		Virginia	85	Pennsylvania (bituminous)	21				
United States (1.093)	100	Iowa	95	Alabama	24	United States (0.313)	100	Michigan	101
				Ohio	30			Pennsylvania (anthracite)	102
Kentucky	101	United States (0.340)	100	Maryland	50	Illinois	120	Kentucky	102
Pennsylvania (anthracite)	105			West Virginia	58	Pennsylvania (anthracite)	121	Illinois	112
Arkansas	106	Ohio	105	Pennsylvania (anthracite)	98	Iowa	127	Missouri	116
Virginia	108	Kentucky	106			Virginia	138	West Virginia	120
Tennessee	109	Colorado	106	United States (0.121)	100	Arkansas	163	North Dakota	120
Maryland	115	Tennessee	108			New Mexico	190	Washington	126
Oklahoma	119	Illinois	112	Indiana	112	Michigan	201	Arkansas	133
West Virginia	126	North Dakota	120	Wyoming	116	Wyoming	209	Kansas	141
Missouri	127	Wyoming	123	Kentucky	117	Colorado	215	Colorado	145
Colorado	134	Washington	139	Washington	131	Missouri	221	Wyoming	150
Indiana	143	West Virginia	152	Colorado	179	Kansas	250	Virginia	159
Kansas	143	Indiana	167	Illinois	232	Oklahoma	277	Montana	163
Wyoming	145	Michigan	185	Arkansas	661	Indiana	326	Indiana	176
New Mexico	155	New Mexico	225	Oklahoma	859	North Dakota	326	Oklahoma	186
Montana	173	Montana	256	Virginia	879	Washington	327	Utah	191
Utah	208	Utah	334	New Mexico	983	Other States [1]	563	New Mexico	227

[1] Includes Arizona, California, Georgia, Idaho, Oregon, and South Dakota.

TABLE 64.—*Index numbers, comparing coal-mine nonfatal rates per million man-hours underground, for different States, with the average rate for the United States, 1932–36*

Falls of roof and coal		Haulage (underground)		Gas or dust explosions		Miscellaneous (underground) including shaft		Total underground (including shaft)	
State	Index No.	State	Index No.	State	Index No.	State	Index No.	State	Index No.
Other States [1]	43	Other States [1]	9	Utah		Other States [1]	7	Other States [1]	21
Alabama	65	Alaska	35	North Dakota		Arkansas	29	Arkansas	48
Alaska	67	Arkansas	45	Alaska		Tennessee	39	Missouri	56
Kansas	70	Missouri	50	Maryland	11	Alabama	41	Alabama	57
Tennessee	74	Wyoming	57	Missouri	24	Missouri	46	Tennessee	59
North Dakota	78	Kansas	79	Pennsylvania (bituminous)	28	New Mexico	48	Wyoming	61
Missouri	79	Oklahoma	79	Michigan	30	Wyoming	51	Kansas	68
Kentucky	80	Pennsylvania (anthracite)	82	New Mexico	32	Oklahoma	56	Kentucky	72
Wyoming	80	New Mexico	84	Texas	37	Kentucky	59	Alaska	73
Arkansas	80	Alabama	85	Tennessee	46	Kansas	59	Oklahoma	78
Pennsylvania (bituminous)	88	Tennessee	87	West Virginia	50	Virginia	67	Ohio	81
Ohio	91	Virginia	88	Montana	55	West Virginia	71	New Mexico	81
Pennsylvania (anthracite)	97	Iowa	91	Colorado	59	Ohio	71	Pennsylvania (bituminous)	84
Maryland	99	Kentucky	92	Alabama	59	Pennsylvania (bituminous)	74	North Dakota	86
United States (26.675)	100	Ohio	94	Ohio	64	Montana	79	Virginia	87
Montana	104	Washington	95	Kentucky	74	North Dakota	83	West Virginia	88
West Virginia	106	Montana	97	Illinois	85	Maryland	88	Montana	90
Oklahoma	113	United States (20.487)	100	United States (0.531)	100	Alaska	94	Maryland	95
Virginia	121	Pennsylvania (bituminous)	105	Wyoming	114	United States (47.905)	100	United States (95.598)	100
Illinois	137	West Virginia	106	Iowa	122	Colorado	102	Iowa	116
New Mexico	138	North Dakota	108	Virginia	130	Washington	108	Colorado	126
Iowa	146	Maryland	110	Arkansas	192	Iowa	110	Washington	126
Indiana	158	Colorado	124	Oklahoma	196	Michigan	115	Pennsylvania (anthracite)	139
Michigan	167	Illinois	140	Washington	208	Utah	128	Michigan	140
Colorado	172	Utah	149	Pennsylvania (anthracite)	251	Indiana	142	Utah	146
Utah	180	Texas	164	Indiana	299	Texas	163	Illinois	151
Washington	182	Michigan	165	Kansas	361	Illinois	164	Indiana	154
Texas	240	Indiana	174	Other States [1]	664	Pennsylvania (anthracite)	186	Texas	184

[1] Includes Arizona, California, Georgia, Idaho, North Carolina, Oregon, and South Dakota.

SUMMARIZED ACCIDENT DATA FOR COAL MINES

Although records of the quantity of coal produced in the United States have been collected yearly by the Federal Government for two generations, it was not until 1911 that uniform records were obtained which showed the number of miners killed by accidents in the mines, and not until 1930 did the Federal Government begin to collect uniform data relating to nonfatal injuries to men engaged in mining coal. Before the Federal Government began to collect uniform figures showing the causes of accidents and the number of miners killed and injured at coal mines, certain State governments had collected data concerning accidents at mines within their borders. Such figures for one State usually were not comparable with those for another State because of differences in State laws which often resulted in differences in the classes of mines and classes of accidents for which reports were collected. Records of different States were reasonably comparable for fatal accidents, but wide differences in the definition of a nonfatal injury in the State law virtually destroyed the value of the figures for making State-to-State comparisons of the frequency of nonfatal accidents in proportion to the number of men employed. Moreover, the States had no uniform procedure for determining the volume of employment or exposure to mining hazards, hence comparable accident rates for all States could not be computed on the basis of State records.

As already stated, uniform records for all nonfatal and fatal lost-time accidents at coal mines in the United States begin with 1930; in that year the Bureau of Mines collected reports of nonfatal and fatal accidents directly from mining companies in all States on standard forms prepared by the Bureau. Such reports made it possible to compile, for the first time, uniform and comparable figures showing the number and causes of nonfatal injuries in the entire coal-mining industry of the United States and to relate the number of accidents to the number of employees and man-hours worked. The reports supplied valuable information to supplement the fatal-accident reports that had previously been and are still being received monthly by the Bureau of Mines from the official mine inspectors of all coal-producing States. Thus, through the cooperation of the mining companies and the State mine inspectors, the Bureau can supply the industry, and others interested, with reliable and comparable accident rates for all mines or for any group or class of mines, as a basis for the promotion of safety programs and as a yardstick for measuring the effectiveness of accident-prevention work.

Uniform figures covering the number and causes of fatal and nonfatal injuries in and about coal mines from 1932 to 1936, inclusive, are presented in table 65.

Table 66 shows the number and principal causes of fatal accidents at bituminous-coal mines from 1906 to 1936. The first 5 years covered by the table relate to a period preceding the organization of the statistical work of the Bureau of Mines; the figures for those years were extracted from published reports of State mine inspectors for all States having a State mining department; the figures for all years after 1910 were furnished directly to the Bureau of Mines by the inspectors in States having a mine-inspection department and by mining companies in States having no inspection service. As previously indicated, the

data for the years beginning with 1930 were received from mining companies in all States and those for fatalities from State inspectors also; the data from the inspectors were received monthly, and those from the companies were received after the close of the year. The monthly reports are necessarily subject to revision, because accidents during a given month may not prove fatal until after the monthly report has been received. The two sources of information furnish what is probably the most complete count that can be made of fatal accidents in coal mining. Table 67 is a companion table to table 66 and shows the accident rates that result when the number of accidents, shown in table 66, is related to the number of man-hours of employment at bituminous-coal mines.

Tables 72 and 73 summarize salient facts concerning accidents and employment at coal mines, by States, for the period 1930–36, inclusive, for which data are available for nonfatal injuries as well as fatalities. Tables 74 and 75 summarize similar data for fatal injuries for the United States as a whole.

TABLE 65.—*Number of fatalities and nonfatal injuries at coal mines in the United States for the years 1932–36*

FATALITIES

Cause of accident	Bituminous					Anthracite					Total				
	1932	1933	1934	1935	1936	1932	1933	1934	1935	1936	1932	1933	1934	1935	1936
Underground:															
Falls of roof or face	466	458	539	524	624	161	119	150	140	120	627	577	689	664	744
Mine cars and locomotives	146	162	168	198	202	33	32	29	30	26	179	194	197	228	228
Explosions of gas or coal dust:															
Local explosions	17	20	23	17	18	7	13	12	10	11	24	33	35	27	29
Major explosions	145	7	17	9	23				13	5	145	7	17	22	28
Explosives	21	24	21	31	31	15	10	15	19	20	36	34	36	50	51
Electricity	42	46	53	43	44	5	7	3	2	8	47	53	56	45	52
Machinery (cutters, loaders, etc.)	27	23	27	32	36	1	2	4	3	2	28	25	31	35	38
Mine fires		1	8	10	10							1	8	10	10
Miscellaneous	18	21	29	28	35	11	15	21	12	24	29	36	50	40	59
Total underground	882	762	885	892	1,023	233	198	234	229	216	1,115	960	1,119	1,121	1,239
Shaft	13	10	9	13	11	2	6	4	10	6	15	16	13	23	17
Stripping or open-cut mining [1]	11	9	8	14	15	4	4	4	12	8	15	13	12	26	23
Surface:[2]															
Haulage	17	16	15	17	19	5	8	9	10	4	22	24	24	27	23
Machinery	11	13	15	6	11	2	4	1	3	1	13	17	16	9	12
Miscellaneous	24	23	26	26	19	3	11	16	10	9	27	34	42	36	28
Total surface	52	52	56	49	49	10	23	26	23	14	62	75	82	72	63
Grand total	958	833	958	968	1,098	249	231	268	274	244	1,207	1,064	1,226	1,242	1,342

NONFATAL INJURIES

Cause of accident	Bituminous					Anthracite					Total				
	1932	1933	1934	1935	1936	1932	1933	1934	1935	1936	1932	1933	1934	1935	1936
Underground:															
Falls of roof or face	12,168	12,878	13,199	13,271	13,523	3,042	2,798	3,442	2,993	3,214	15,210	15,676	16,641	16,264	16,737
Mine cars and locomotives	8,695	9,427	10,661	10,950	12,099	2,424	1,611	2,157	1,909	1,914	11,119	11,038	12,818	12,859	14,013
Explosions of gas or coal dust:															
Local explosions / Major explosions	205	123	163	189	127	136	175	81	248	158	341	298	244	437	285
Explosives	318	268	315	343	266	165	107	138	175	169	483	375	453	518	435
Electricity	651	652	589	601	587	202	174	151	169	130	853	826	740	770	717
Machinery (cutters, loaders, etc.)	2,361	2,800	2,896	2,681	3,169	621	345	471	653	641	2,982	3,145	3,367	3,334	3,810
Mine fires	16	5	23	28	10	5	20	19	10	21	21	25	42	38	31
Miscellaneous	11,373	13,750	14,872	15,465	16,490	10,377	7,855	11,378	8,919	9,755	21,750	21,605	26,250	24,384	26,245
Total underground	35,787	39,903	42,718	43,528	46,271	16,972	13,085	17,837	15,076	16,002	52,759	52,988	60,555	58,604	62,273
Shaft	136	149	128	138	131	285	183	77	103	88	421	332	205	241	219
Stripping or open-cut mining [1]	766	856	725	735	1,208	114	427	439	647	553	880	1,283	1,164	1,382	1,761
Surface:[2]															
Haulage	731	683	837	755	709	481	1,161	557	418	390	1,212	1,844	1,394	1,173	1,099
Machinery	244	296	303	296	293	184	337	219	174	222	428	633	522	470	515
Miscellaneous	1,688	2,059	2,271	2,077	1,902	1,584	2,174	1,897	1,628	1,807	3,272	4,233	4,168	3,705	3,709
Total surface	2,663	3,038	3,411	3,128	2,904	2,249	3,672	2,673	2,220	2,419	4,912	6,710	6,084	5,348	5,323
Grand total	39,352	43,946	46,982	47,529	50,514	19,620	17,367	21,026	18,046	19,062	58,972	61,313	68,008	65,575	69,576

[1] Includes dredge operations at Pennsylvania anthracite mines.
[2] Includes washery operations at Pennsylvania anthracite mines.

TABLE 66.—*Bituminous-coal mines: Fatalities, by principal causes, 1911–36*[1]

Year	Roof and coal	Haulage	Gas or dust explosions	Explosives	Electricity	All other underground	Total underground	Shaft	Underground and shaft	Surface[2]	Grand total
1906	826	192	219	115	52	27	1,431	73	1,504	77	1,581
1907	911	260	911	134	49	99	2,364	59	2,423	111	2,534
1908	829	229	320	109	53	97	1,637	53	1,690	77	1,767
1909	975	240	264	122	52	312	1,965	37	2,002	73	2,075
1910	1,061	295	477	113	76	46	2,068	60	2,128	92	2,220
1911	1,007	294	331	72	92	44	1,840	31	1,871	86	1,957
1912	943	296	255	70	75	44	1,683	39	1,722	96	1,818
1913	1,007	344	464	63	79	82	2,039	32	2,071	96	2,167
1914	903	309	305	56	86	55	1,714	41	1,755	104	1,859
1915	818	269	270	76	85	35	1,553	30	1,583	100	1,683
1916	850	330	183	60	81	49	1,553	34	1,587	84	1,671
1917	965	433	319	55	76	60	1,908	44	1,952	162	2,114
1918	1,052	446	103	85	77	76	1,839	41	1,880	149	2,029
1919	878	310	149	57	64	79	1,537	39	1,576	112	1,688
1920	937	342	124	82	70	72	1,627	34	1,661	120	1,781
1921	782	275	62	74	76	71	1,340	25	1,365	83	1,448
1922	780	286	298	55	71	56	1,546	36	1,582	102	1,684
1923	948	347	330	66	70	64	1,825	31	1,856	97	1,953
1924	846	299	486	46	72	56	1,805	17	1,822	84	1,906
1925	910	310	302	49	80	76	1,727	30	1,757	77	1,834
1926	994	384	373	46	94	62	1,953	27	1,980	85	2,065
1927	924	309	187	48	94	70	1,632	22	1,654	88	1,742
1928	825	313	347	41	82	54	1,662	13	1,675	54	1,729
1929	922	349	168	45	75	56	1,615	17	1,632	73	1,705
1930	856	285	234	31	63	68	1,537	9	1,546	73	1,619
1931	624	194	68	15	62	44	1,007	19	1,026	54	1,080
1932	466	146	162	21	42	45	882	13	895	63	958
1933	458	162	27	24	46	45	762	10	772	61	833
1934	539	168	40	21	53	64	885	9	894	64	958
1935	524	198	26	31	43	70	892	13	905	63	968
1936	624	202	41	31	44	81	1,023	11	1,034	64	1,098

[1] Figures for 1906–9 cover only States having complete records of fatal accidents. These represent 98 to 99 percent of the total production of coal in the United States. Figures for 1910 to date represent the entire bituminous industry.

[2] Includes open-cut operations.

TABLE 67.—*Bituminous-coal mines: Fatality rates*[1] *by principal causes, per million man-hours,*[2] *1911–36*

Year	Roof and coal	Haulage	Gas or dust explosions	Explosives	Electricity	All other underground	Total underground	Shaft	Underground and shaft	Surface[3]	Grand total
1906	1.113	0.259	0.295	0.155	0.070	0.036	1.928	0.098	2.026	0.666	1.843
1907	1.025	.293	1.025	.151	.055	.111	2.660	.066	2.726	.802	2.467
1908	1.145	.316	.442	.150	.073	.134	2.260	.073	2.333	.682	2.111
1909	1.166	.287	.316	.146	.062	.373	2.350	.044	2.394	.560	2.147
1910	1.167	.324	.525	.124	.084	.051	2.275	.066	2.341	.650	2.113
Average, 1906–10	1.1222	.2965	.5343	.1446	.0688	.1417	2.3080	.0688	2.3768	.6731	2.1472
1911	1.140	.333	.375	.081	.104	.050	2.083	.035	2.118	.621	1.915
1912	1.028	.322	.278	.076	.082	.048	1.834	.043	1.877	.670	1.714
1913	1.019	.348	.470	.064	.080	.083	2.064	.032	2.096	.618	1.895
1914	1.060	.363	.358	.066	.101	.064	2.012	.048	2.060	.797	1.892
1915	.967	.318	.319	.090	.101	.041	1.836	.035	1.871	.760	1.722
1916	.900	.349	.194	.063	.086	.052	1.644	.036	1.680	.486	1.495
1917	.953	.428	.315	.054	.075	.059	1.884	.044	1.928	.759	1.724
1918	1.043	.442	.102	.084	.076	.076	1.823	.040	1.863	.616	1.622
1919	1.095	.387	.186	.071	.080	.098	1.917	.048	1.965	.628	1.722
1920	.999	.364	.132	.087	.075	.077	1.734	.036	1.770	.617	1.572
1921	1.148	.404	.091	.109	.112	.104	1.968	.037	2.005	.717	1.818
1922	1.169	.429	.447	.082	.106	.084	2.317	.054	2.371	.843	2.137
1923	1.092	.400	.380	.076	.081	.074	2.103	.036	2.139	.642	1.917
1924	1.150	.407	.661	.063	.098	.076	2.455	.023	2.478	.693	2.225
1925	1.139	.388	.378	.061	.100	.095	2.161	.038	2.199	.596	1.975
1926	1.120	.432	.420	.052	.106	.070	2.200	.030	2.230	.591	2.002
1927	1.168	.391	.236	.061	.119	.088	2.063	.028	2.091	.696	1.899
1928	1.113	.423	.468	.055	.111	.073	2.243	.017	2.260	.462	2.015
1929	1.197	.453	.218	.059	.097	.073	2.097	.022	2.119	.596	1.910
1930	1.321	.440	.361	.048	.097	.105	2.372	.014	2.386	.715	2.158
1931	1.223	.380	.133	.029	.122	.086	1.973	.037	2.010	.631	1.812
1932	1.153	.361	.401	.052	.104	.111	2.182	.032	2.214	.837	1.998
1933	.966	.342	.057	.050	.097	.095	1.607	.021	1.628	.676	1.476
1934	1.086	.338	.081	.042	.107	.129	1.783	.018	1.801	.676	1.621
1935	1.080	.408	.054	.064	.089	.144	1.838	.027	1.865	.676	1.673
1936	1.115	.361	.073	.055	.079	.145	1.828	.019	1.847	.581	1.639

[1] Rates for underground based on underground man-hours. Rates for surface based on surface man-hours. Rates for grand total based on total man-hours.

[2] Figures for 1906–9 cover only States having complete records of fatal accidents. These represent 98 to 99 percent of the total production of coal in the United States. Figures for 1910 to date represent the entire bituminous industry.

[3] Includes open-cut operations.

TABLE 68.—*Bituminous-coal mines: Man-hours of employment, 1906–36*[1]

Year	Underground	Surface[2]	Total	Year	Underground	Surface[2]	Total
1906	742,408,300	115,654,500	858,062,800	1921	680,887,700	115,781,500	796,669,200
1907	888,859,500	138,469,100	1,027,328,600	1922	667,274,100	120,929,300	788,203,400
1908	724,269,700	112,828,800	837,098,500	1923	867,872,400	151,059,700	1,018,932,100
1909	836,278,800	130,277,900	966,556,700	1924	735,281,900	121,232,800	856,514,700
1910	909,101,400	141,622,500	1,050,723,900	1925	799,094,000	129,283,400	928,377,400
1911	883,488,300	138,458,400	1,021,946,700	1926	887,716,300	143,931,300	1,031,647,600
1912	917,461,500	143,307,800	1,060,769,300	1927	791,162,100	126,393,300	917,555,400
1913	988,063,400	155,217,500	1,143,280,900	1928	741,070,800	116,988,700	858,059,500
1914	852,064,000	130,465,100	982,529,100	1929	770,118,700	122,427,800	892,546,500
1915	845,919,300	131,548,600	977,467,900	1930	647,986,350	102,162,855	750,149,205
1916	944,417,300	172,970,500	1,117,387,800	1931	510,366,475	85,613,086	595,979,561
1917	1,012,590,000	213,332,600	1,225,922,600	1932	404,181,692	75,265,639	479,447,331
1918	1,008,932,700	242,047,000	1,250,979,700	1933	474,126,679	90,298,487	564,425,166
1919	801,920,300	178,409,200	980,329,500	1934	496,437,114	94,621,483	591,058,597
1920	938,380,400	194,357,400	1,132,737,800	1935	485,341,496	93,169,704	578,511,200
				1936	559,733,518	110,167,018	669,900,536

[1] Figures for 1906–9 cover only States having complete records of fatal accidents. These represent 98 to 99 percent of the total production of coal in the United States. Figures for 1910 to date represent the entire bituminous industry.

[2] Includes open-cut operations.

TABLE 69.—*Data for bituminous and anthracite mines, by years 1911–36, inclusive, showing 5-year periods*

Year	Production	Employees	Active days	Man-shifts	Man-hours	Killed	Killed per million man-hours	Killed per million tons	Ton per man-hour	Hours per man per year
1911	496,371,126	728,348	220	160,236,560	1,302,108,000	2,656	2.04	5.35	0.381	1,788
1912	534,466,580	722,662	225	162,598,950	1,422,694,000	2,419	1.70	4.53	.376	1,969
1913	570,048,125	747,644	238	177,939,272	1,549,294,000	2,785	1.80	4.89	.368	2,072
1914	513,525,477	763,185	207	157,979,295	1,378,437,000	2,454	1.78	4.78	.373	1,806
1915	531,619,487	734,008	209	153,479,495	1,339,279,000	2,269	1.69	4.27	.397	1,825
1911–15	2,646,030,795	3,695,847	220	812,233,572	6,991,812,000	12,583	1.80	4.76	.378	1,892
1916	590,098,175	720,971	235	169,729,816	1,452,788,000	2,226	1.53	3.77	.406	2,015
1917	651,402,374	757,317	251	190,399,680	1,575,863,000	2,696	1.71	4.14	.413	2,081
1918	678,211,904	762,426	258	196,491,984	1,599,854,000	2,580	1.61	3.80	.424	2,098
1919	553,952,259	776,569	209	162,665,023	1,309,155,000	2,323	1.77	4.19	.423	1,686
1920	658,264,932	784,621	230	180,384,942	1,451,162,000	2,272	1.57	3.45	.454	1,850
1916–20	3,131,929,644	3,801,904	237	899,671,445	7,388,822,000	12,097	1.64	3.86	.424	1,943
1921	506,395,401	823,253	173	142,358,691	1,145,738,000	1,995	1.74	3.94	.442	1,392
1922	476,951,121	844,807	144	121,516,822	979,995,000	1,984	2.03	4.16	.487	1,160
1923	657,903,671	862,536	195	168,193,738	1,356,089,000	2,462	1.82	3.74	.485	1,572
1924	571,613,400	779,613	192	149,968,980	1,207,475,000	2,402	1.99	4.20	.473	1,549
1925	581,869,890	748,805	192	144,068,232	1,160,334,000	2,234	1.93	3.84	.501	1,550
1921–25	2,794,733,483	4,059,014	179	726,106,463	5,849,631,000	11,077	1.89	3.96	.478	1,441
1926	657,804,437	759,033	221	167,827,732	1,352,840,000	2,518	1.86	3.83	.486	1,782
1927	597,858,916	759,177	199	150,919,350	1,219,079,000	2,231	1.83	3.73	.490	1,606
1928	576,093,039	682,831	206	140,604,141	1,135,543,000	2,176	1.92	3.78	.507	1,663
1929	608,816,788	654,494	221	144,463,453	1,168,551,000	2,187	1.87	3.59	.521	1,785
1930	536,911,136	644,006	192	123,893,697	1,002,691,781	2,063	2.06	3.84	.535	1,557
1926–30	2,977,484,316	3,499,541	208	727,708,373	5,878,705,000	11,175	1.90	3.75	.506	1,680
1931	441,750,978	589,705	168	99,264,019	804,394,130	1,463	1.82	3.31	.549	1,364
1932	359,565,093	527,623	149	78,745,344	636,391,330	1,207	1.90	3.36	.565	1,206
1933	383,171,877	523,182	171	89,225,732	719,148,559	1,064	1.48	2.78	.533	1,375
1934	416,536,313	566,426	184	103,940,220	769,430,678	1,226	1.59	2.94	.541	1,358
1935	424,632,005	565,202	180	101,571,654	732,607,581	1,242	1.70	2.92	.580	1,296
1931–35	2,025,656,266	2,772,138	171	472,746,969	3,661,972,278	6,202	1.69	3.06	.553	1,321
1936	491,138,762	584,582	197	114,891,493	826,386,460	1,342	1.62	2.73	.594	1,414

TABLE 70.—*Number of active open-cut bituminous-coal mines in the United States, 1930–36*

State	1930	1931	1932	1933	1934	1935	1936
Alabama	11	8	5	5	6	9	4
Arkansas	1	1	1	2	2	2	2
Colorado	1	2	3	4	2	2	1
Illinois	27	43	50	48	72	70	63
Indiana	19	20	25	41	46	54	59
Iowa			14	28	25	26	21
Kansas	44	32	35	42	49	51	57
Kentucky	6	3	1			1	2
Michigan					2	1	
Missouri	28	27	27	24	21	27	27
Montana	2	4	4	2	2	4	3
New Mexico							1
North Dakota	37	41	39	36	46	45	68
Ohio	18	21	18	29	31	40	39
Oklahoma	8	11	10	11	8	8	8
Pennsylvania (bituminous)	7	7	5	6	14	12	14
South Dakota	3	10	10	10	10	5	4
Tennessee	1						
Texas	1	2	4	2	1	1	3
Washington			1				
West Virginia		2		1	2	1	1
Wyoming	1	1	1	2	3	4	3
Total (bituminous)	215	235	253	293	342	363	380

TABLE 71.—*Widows and orphans, 1930–36, resulting from coal-mine fatalities, by States*

State	1930		1931		1932		1933		1934		1935		1936	
	Widows	Orphans	Widows	Orphans	Widows	Orphans	Widows	Orphans	Widows	Orphans	Widows	Orphans	Widows	Orphans
Alabama	39	86	19	18	10	11	12	23	21	27	10	24	21	53
Arkansas			2	3	3	10	2	1			6	8	4	5
Colorado	11	19	12	19	17	36	11	18	15	38	17	29	19	34
Illinois	77	125	69	107	85	149	55	111	66	91	59	89	76	133
Indiana	11	14	14	19	16	20	7	16	4	8	12	20	15	18
Iowa	13	27	7	24	6	2			4	14	9	22	8	15
Kansas	4	5	3	5	6	14	4	10	6	6	8	9	4	
Kentucky	106	276	79	230	66	126	58	158	49	99	63	126	50	126
Maryland	4	4	1	2	3	6	3	1	7	18	5	12	1	
Michigan	1	3							2	6	3	2		
Missouri	7	17	5	7	5	12	2	1	13	39	5	12	5	5
Montana	2	4		1	2	2	2	2	1		2	5	6	9
New Mexico	4	7	4	21	1	6	1	5	5	6	7	2	1	5
North Dakota							2	5	2	1			1	
Ohio	86	200	15	27	21	43	25	57	19	27	26	37	21	35
Oklahoma	45	71	5	2	4	7	4	5	5	9	1	4		
Pennsylvania (bituminous)	163	381	112	283	110	277	70	181	106	249	84	160	108	230
Tennessee	13	22	7	22	3	6	12	23	7	20	6	16	7	11
Texas			1	1			1	1	1	2				
Utah	39	77	9	24	8	18	9	21	8	11	5	15	6	12
Virginia	32	86	25	52	22	72	14	42	29	82	20	58	22	65
Washington	17	29	7	8	9	10	4	6	3	6	5	8	3	3
West Virginia	207	471	158	386	153	368	135	248	140	290	171	440	196	342
Wyoming	15	21	8	9	3	5	6	6	5	8	8	5	11	12
Other States [1]	2	10	2	8							1	2		
Total (bituminous)	898	1,955	564	1,278	553	1,200	439	941	518	1,057	533	1,105	585	1,113
Pennsylvania (anthracite)	202	507	269	669	194	411	107	225	150	301	118	273	108	221
Grand total	1,100	2,462	833	1,947	747	1,611	546	1,166	668	1,358	651	1,378	693	1,334
Total fatalities	2,063		1,436		1,207		1,064		1,226		1,242		1,342	

[1] Includes Arizona, California, Georgia, Idaho, North Carolina, and Oregon.

TABLE 72.—*Number of men employed, man-days and man-hours worked, and total production of coal, by States, during the years ended Dec. 31, 1930 to 1936*

	Men employed								Man-days							
	1930	1931	1932	1933	1934	1935	1936	Total	1930	1931	1932	1933	1934	1935	1936	Total
Alabama	24,393	22,973	20,443	18,237	18,851	18,888	20,495	144,280	4,605,836	3,224,722	2,180,029	2,687,625	3,442,991	3,003,418	4,298,988	23,443,609
Alaska	99	80	120	100	93	95	111	698	29,070	22,170	22,670	20,015	20,164	23,771	27,208	165,068
Arkansas	4,626	4,733	4,325	3,673	3,418	3,743	4,094	28,612	534,052	447,498	396,201	343,961	317,520	453,289	615,324	3,137,845
Colorado	11,091	10,028	8,749	7,910	8,094	8,157	9,063	63,092	1,873,283	1,517,891	1,241,873	1,177,582	1,270,311	1,399,433	1,679,350	10,159,723
Illinois	53,603	49,692	47,597	44,147	46,067	43,752	45,858	330,716	8,362,646	6,850,392	5,312,124	6,254,530	7,384,190	7,455,561	8,039,803	49,659,246
Indiana	13,881	12,311	10,639	11,201	11,177	11,349	11,025	81,583	2,179,834	1,854,335	1,541,112	1,825,950	1,895,082	1,934,984	1,998,595	13,229,892
Iowa	7,901	7,897	8,086	7,703	7,721	8,038	8,424	55,770	1,225,539	1,231,693	1,220,090	1,060,893	1,204,250	1,302,657	1,386,646	8,631,768
Kansas	4,855	3,813	3,591	3,811	3,747	3,896	3,990	27,703	614,142	475,860	465,997	535,719	553,647	632,872	658,634	3,936,871
Kentucky	56,800	47,766	42,267	43,726	49,509	52,341	55,606	348,015	10,641,622	7,658,346	6,530,442	7,428,367	8,889,229	9,498,705	10,987,506	61,634,217
Maryland	3,299	3,224	3,105	2,880	2,976	2,962	2,925	21,371	649,286	612,557	465,846	491,465	523,769	531,328	540,736	3,814,987
Michigan	1,294	1,372	940	1,186	1,556	1,471	1,416	9,235	241,911	131,122	149,679	154,405	244,813	232,431	233,560	1,387,921
Missouri	5,700	5,362	5,677	5,694	5,544	5,714	5,698	39,389	946,018	764,392	914,420	848,349	775,972	893,741	979,347	6,122,239
Montana	2,085	1,672	1,525	1,326	1,590	1,573	1,424	11,195	357,592	259,359	220,418	222,571	250,856	291,521	284,483	1,886,800
New Mexico	2,902	2,830	2,602	2,340	2,342	2,355	2,382	17,753	512,123	448,862	330,939	393,163	367,496	420,620	486,852	2,960,055
North Dakota	1,258	1,300	1,311	1,301	1,518	1,365	1,503	9,556	226,607	219,560	244,384	224,953	263,635	256,403	280,370	1,715,912
Ohio	25,574	25,127	23,280	25,448	29,255	29,528	29,231	187,443	4,824,549	4,391,379	2,965,633	4,314,251	4,869,316	4,720,915	5,269,038	31,355,081
Oklahoma	5,424	4,634	3,063	2,976	3,225	3,151	3,242	25,715	801,092	533,246	368,868	379,314	389,043	383,277	495,571	3,350,411
Pennsylvania (bituminous)	130,150	116,726	104,532	115,461	126,086	124,121	128,495	845,571	25,824,759	20,160,167	16,026,717	18,693,852	22,613,961	22,344,784	25,951,611	151,615,851
South Dakota	43	56	84	147	91	55	50	526	4,695	6,902	10,563	14,697	13,916	5,410	11,559	67,742
Tennessee	7,535	7,448	7,525	7,051	7,308	7,535	8,328	52,730	1,475,574	1,330,718	1,114,278	1,123,723	1,354,300	1,361,446	1,641,631	9,401,670
Texas	1,305	1,148	699	803	805	792	775	6,327	236,373	160,456	106,097	130,137	143,374	138,487	154,276	1,069,200
Utah	3,504	3,268	2,842	2,906	2,807	2,754	2,880	20,961	588,815	486,613	500,852	513,594	412,011	494,952	527,164	3,524,001
Virginia	11,709	11,369	10,376	9,761	12,211	13,045	14,889	83,360	2,341,712	2,101,060	1,490,534	1,799,313	2,444,674	2,457,489	2,964,920	15,599,702
Washington	2,801	2,662	2,816	2,555	2,161	2,275	2,621	17,891	573,951	473,677	451,185	428,252	394,797	433,048	525,535	3,280,445
West Virginia	105,862	97,787	85,765	92,472	105,906	109,221	113,377	710,390	21,633,488	17,226,127	14,332,485	18,145,711	20,837,301	20,727,699	24,245,027	137,147,838
Wyoming	5,216	4,759	4,173	3,753	3,760	3,966	4,443	30,070	981,830	733,483	627,509	635,381	698,473	861,581	944,079	5,482,336
Other States	292	237	248	184	226	212	155	1,554	39,476	26,874	28,679	34,226	42,848	31,902	33,941	237,946
Total bituminous	493,202	450,274	406,380	418,752	458,044	462,354	482,500	3,171,506	92,325,875	73,349,461	59,259,624	69,881,999	81,647,939	82,291,724	95,261,754	554,018,376
Pennsylvania anthracite	150,804	139,431	121,243	104,430	108,382	102,848	102,082	829,220	31,567,822	25,914,558	19,485,720	19,343,733	22,292,281	19,279,930	19,629,739	157,513,783
Grand total	644,006	589,705	527,623	523,182	566,426	565,202	584,582	4,000,726	123,893,697	99,264,019	78,745,344	89,225,732	103,940,220	101,571,654	114,891,493	711,532,159

	Man-hours							
	1930	1931	1932	1933	1934	1935	1936	Total
Alabama	40,820,512	29,065,566	19,987,256	23,756,427	24,978,681	21,123,384	30,367,325	190,099,151
Alaska	233,838	177,360	181,360	160,120	161,312	189,964	217,664	1,321,618
Arkansas	4,290,416	3,579,824	3,177,108	2,755,888	2,497,832	3,173,023	4,306,269	23,780,360
Colorado	15,155,140	12,283,850	10,360,568	9,487,080	9,181,664	9,851,378	11,833,743	78,153,423
Illinois	66,896,201	54,690,715	42,451,790	49,873,191	53,520,589	51,960,549	56,413,544	375,806,579
Indiana	17,443,814	15,374,608	12,329,008	14,577,643	13,740,044	13,541,425	14,148,078	101,154,620
Iowa	9,806,583	9,870,364	9,790,674	8,502,908	8,755,500	9,151,937	9,801,583	65,679,549
Kansas	4,883,477	3,770,199	3,642,294	4,278,576	4,048,573	4,463,530	4,773,731	29,865,380
Kentucky	88,712,693	62,501,735	53,265,308	60,711,231	64,234,560	66,895,024	77,276,024	473,596,575
Maryland	5,421,533	5,053,666	3,726,768	3,923,109	3,786,755	3,728,364	3,804,778	29,444,973
Michigan	1,935,288	1,048,976	1,197,432	1,225,667	1,762,908	1,670,783	1,634,922	10,475,976
Missouri	7,584,193	6,234,990	7,380,081	6,827,638	5,753,452	6,483,334	7,201,442	47,465,130
Montana	2,942,260	2,106,380	1,778,099	1,784,420	1,847,219	2,087,301	2,030,169	14,575,848
New Mexico	4,158,983	3,634,251	2,670,053	3,146,025	2,660,793	2,951,938	3,441,854	22,663,897
North Dakota	1,901,857	1,839,054	2,092,246	1,868,604	1,967,748	1,882,888	2,230,833	13,783,230
Ohio	38,632,014	35,150,856	23,769,326	34,467,586	35,273,788	33,205,660	37,009,140	237,508,370
Oklahoma	6,455,745	4,297,795	2,971,724	3,049,883	2,902,269	2,709,547	3,475,791	25,862,754
Pennsylvania (bituminous)	207,991,199	163,304,365	128,384,312	149,676,855	163,232,997	156,751,626	181,898,272	1,151,239,626
South Dakota	37,560	58,406	90,144	116,748	101,408	42,560	87,998	534,824
Tennessee	12,104,128	10,878,486	9,237,248	9,031,254	9,889,529	9,456,806	11,709,216	72,306,667
Texas	2,020,035	1,363,552	936,305	1,157,305	1,265,837	1,221,280	1,298,662	9,262,976
Utah	4,710,502	3,873,228	4,006,535	4,056,613	2,996,371	3,481,982	3,692,704	26,817,935
Virginia	18,914,980	17,106,042	12,017,248	14,491,982	17,901,718	17,260,903	20,873,077	118,565,950
Washington	4,591,294	3,787,642	3,609,021	3,365,170	2,833,505	3,007,491	3,676,622	24,870,745
West Virginia	174,293,192	138,841,632	115,138,650	146,769,734	150,390,672	145,918,223	169,821,158	1,041,173,261
Wyoming	7,855,360	5,868,304	5,020,465	5,081,773	5,049,640	6,070,736	6,627,635	41,573,913
Other States [1]	356,408	217,715	236,308	281,736	323,233	224,564	248,302	1,888,266
Total bituminous	750,149,205	595,979,561	479,447,331	564,425,166	591,058,597	578,511,200	669,900,536	4,229,471,596
Pennsylvania anthracite	252,542,576	208,414,569	156,943,999	154,723,393	178,372,081	154,096,381	156,485,924	1,261,578,923
Grand total	1,002,691,781	804,394,130	636,391,330	719,148,559	769,430,678	732,607,581	826,386,460	5,491,050,519

[1] Includes Arizona, California, Georgia, Idaho, North Carolina, and Oregon.

TABLE 72.—*Number of men employed, man-days and man-hours worked, and total production of coal, by States, during the years ended Dec. 31, 1930 to 1936*—Continued

	Tons produced							
	1930	1931	1932	1933	1934	1935	1936	Total
Alabama	15,570,058	11,998,781	7,856,939	8,759,989	9,142,117	8,500,510	12,255,876	74,084,270
Alaska	120,100	105,900	102,700	96,467	107,508	119,425	136,593	788,693
Arkansas	1,533,434	1,153,555	1,033,471	882,924	856,432	1,133,279	1,621,194	8,214,289
Colorado	8,196,910	6,604,369	5,598,721	5,229,767	5,210,933	5,910,511	6,810,375	43,561,586
Illinois	53,731,230	44,303,295	33,474,553	37,413,145	41,272,384	44,525,469	50,896,225	305,616,311
Indiana	16,489,962	14,295,165	13,323,573	13,761,052	14,793,643	15,754,214	16,808,893	105,226,502
Iowa	3,892,571	3,388,355	3,862,435	3,194,983	3,366,992	3,650,163	3,851,938	25,207,437
Kansas	2,429,929	1,986,870	1,952,885	2,217,622	2,508,254	2,686,164	2,962,937	16,744,661
Kentucky	51,373,833	39,963,621	35,299,582	36,099,729	38,525,235	40,760,939	47,489,572	289,512,511
Maryland	2,270,593	2,005,773	1,428,937	1,530,748	1,627,112	1,678,059	1,697,395	12,238,617
Michigan	661,113	359,403	446,149	406,584	621,741	628,384	621,634	3,745,008
Missouri	3,853,150	3,620,497	4,069,598	3,432,212	3,352,283	3,645,996	3,954,397	25,928,133
Montana	3,022,004	2,378,052	2,125,225	2,152,207	2,565,702	2,758,906	2,990,797	17,992,893
New Mexico	1,969,433	1,552,822	1,263,386	1,226,236	1,259,323	1,388,877	1,594,219	10,254,296
North Dakota	1,700,157	1,519,307	1,739,658	1,782,272	1,753,888	1,955,510	2,243,466	12,694,258
Ohio	22,551,978	20,417,525	13,909,451	19,588,763	20,690,564	21,153,151	23,590,292	141,901,724
Oklahoma	2,793,954	1,908,394	1,255,466	1,238,244	1,208,289	1,229,398	1,531,020	11,164,765
Pennsylvania (bituminous)	124,462,787	97,658,698	74,775,862	79,295,944	89,825,875	91,404,670	109,382,811	666,806,647
South Dakota	12,810	27,485	49,074	59,375	42,407	13,243	41,325	245,719
Tennessee	5,130,428	4,721,548	3,537,882	3,774,761	4,135,790	4,137,802	5,068,282	30,506,493
Texas	833,872	716,020	636,590	821,878	759,289	757,529	844,133	5,369,311
Utah	4,257,541	3,350,044	2,852,127	2,674,986	2,406,183	2,946,918	3,163,833	21,651,632
Virginia	10,907,377	9,708,080	7,692,180	8,178,642	9,376,681	9,667,018	11,850,731	67,380,709
Washington	2,301,928	1,846,461	1,591,426	1,394,068	1,382,991	1,559,206	1,813,665	11,889,745
West Virginia	121,307,800	101,473,172	85,608,735	94,343,535	98,134,393	99,179,061	117,428,256	717,474,952
Wyoming	6,088,133	4,993,686	4,170,963	4,013,167	4,367,961	5,177,142	5,781,982	34,593,034
Other States [1]	63,214	48,448	52,304	61,233	74,052	47,578	36,482	383,311
Total bituminous	467,526,299	382,105,326	309,709,872	333,630,533	359,368,022	372,369,122	436,468,333	2,661,177,507
Pennsylvania anthracite	69,384,837	59,645,652	49,855,221	49,541,344	57,168,291	52,262,883	54,670,429	392,528,657
Grand total	536,911,136	441,750,978	359,565,093	383,171,877	416,536,313	424,632,005	491,138,762	3,053,706,164

TABLE 73.—*Number of men killed and injured, by States, during the years ended Dec. 31, 1930, to 1936*

	Killed								Injured							
	1930	1931	1932	1933	1934	1935	1936	Total	1930	1931	1932	1933	1934	1935	1936	Total
Alabama	63	29	21	23	35	24	35	230	2,262	1,805	958	1,178	1,396	1,118	1,360	10,077
Alaska									7	5	14	2	7	12	10	57
Arkansas	11	8	4	5	5	8	15	56	194	184	150	96	81	115	238	1,058
Colorado	35	21	28	19	22	25	29	179	1,421	1,172	1,128	1,081	983	1,076	1,174	8,035
Illinois	113	92	119	77	90	80	97	668	9,378	8,309	5,332	6,998	6,251	6,660	6,724	49,652
Indiana	34	57	31	38	21	36	35	252	2,519	1,989	1,882	1,713	1,665	1,781	1,506	13,055
Iowa	20	11	18	6	11	14	24	104	1,184	987	929	967	965	907	1,020	6,959
Kansas	10	5	11	10	11	10	7	64	432	244	290	253	253	310	275	2,057
Kentucky	189	110	102	100	118	124	115	858	7,034	4,533	3,584	3,635	4,068	4,337	4,535	31,726
Maryland	6	6	3	3	10	7	3	38	501	395	222	303	345	380	343	2,489
Michigan	1		3	2	2	5		13	251	90	100	182	295	145	192	1,255
Missouri	11	6	7	11	14	9	18	76	555	424	571	410	323	237	358	2,878
Montana	3	4	3	3	4	3	8	28	247	167	137	117	149	159	139	1,115
New Mexico	15	5	20	4	8	9	10	71	331	236	166	203	196	176	219	1,527
North Dakota	4	6	2	6	6		3	27	223	106	155	144	145	169	175	1,117
Ohio	148	61	36	54	48	44	47	438	3,891	2,851	1,871	2,683	2,466	2,472	2,417	18,651
Oklahoma	66	10	11	7	7	5	15	121	730	517	309	230	268	140	236	2,430
Pennsylvania (bituminous)	303	210	162	144	164	174	200	1,357	20,414	14,614	9,584	11,165	12,513	12,122	13,229	93,641
South Dakota											1		1		2	4
Tennessee	22	17	9	16	19	12	22	117	610	620	395	486	479	490	666	3,746
Texas		1	1	2	1			5	150	192	184	196	204	189	195	1,310
Utah	56	12	10	11	9	8	13	119	891	593	456	409	362	415	440	3,566
Virginia	46	31	74	23	47	30	40	291	1,670	1,400	838	819	1,346	1,608	1,517	9,198
Washington	23	9	9	6	5	5	5	62	600	427	344	298	241	340	471	2,721
West Virginia	414	351	267	253	286	315	341	2,227	14,733	11,389	9,456	10,101	11,698	11,905	12,803	82,085
Wyoming	23	15	6	9	15	20	16	104	956	722	281	273	278	265	267	3,042
Other States[1]	3	3	1	1		1		9	33	4	15	4	4	1	3	64
Total bituminous	1,619	1,080	958	833	958	968	1,098	7,514	71,217	53,975	39,352	43,946	46,982	47,529	50,514	353,515
Pennsylvania anthracite	444	383	249	231	268	274	244	2,093	32,604	26,374	19,620	17,367	21,026	18,046	19,062	154,099
Grand total	2,063	1,463	1,207	1,064	1,226	1,242	1,342	9,607	103,821	80,349	58,972	61,313	68,008	65,575	69,576	507,614

[1] Includes Arizona, California, Georgia, Idaho, North Carolina, and Oregon.

TABLE 74.—*Men employed, equivalent 300-day workers, and tons produced, 1870–1936*

	Bituminous-coal mines						Anthracite mines				Total					
	Employees	Percent of total employees	300-day workers	Production	Percent of total production	Number killed	Employees	300-day workers	Production	Number killed	Employees	Percent of total United States employees	300-day workers	Production	Percent of total United States production	Number killed
1870							35,600		15,664,275	211	35,600			15,664,275	47.42	211
1871							37,488		19,342,057	210	37,488			19,342,057	41.25	210
1872							44,745		24,233,166	223	44,745			24,233,166	47.10	223
1873							48,199		26,152,837	263	48,199			26,152,837	45.40	263
1874	13,750			3,267,585	11.76	29	53,402		24,818,790	231	67,152			28,086,375	53.39	260
1875	15,039			4,864,259	16.29	24	69,966		22,485,766	236	85,005			27,350,025	52.25	260
Average	14,395			4,065,922		27	50,760		23,406,523	233	56,518			25,032,892		243
1876	15,000			3,500,000	11.48	15	70,474		22,793,245	227	85,474			26,293,245	49.35	242
1877	14,300			5,250,000	15.07	31	66,842		25,660,316	194	81,142			30,910,316	51.09	225
1878	25,787			15,120,000	41.72	48	63,964		21,689,682	187	89,751			36,809,682	63.54	235
1879	27,286			16,240,000	42.85	55	68,847		30,207,793	262	96,133			46,447,793	68.20	317
1880	50,363			24,433,758	57.05	72	73,373		28,649,812	202	123,736			53,083,570	74.26	274
Average	26,547			12,908,752	35.40	44	68,700		25,800,170	214	95,247			38,708,921	62.17	259
1881	40,097			24,384,120	45.19	67	76,031	56,010	31,920,018	273	116,128			56,304,138	65.56	340
1882	80,683			43,205,653	63.14	157	82,200	59,732	35,121,256	291	162,883			78,326,909	75.64	448
1883	70,827			43,899,289	56.83	219	91,421	70,699	38,456,845	323	162,248			82,356,134	71.18	542
1884	91,296			50,108,137	60.37	206	101,073	64,687	37,156,847	332	192,369			87,264,984	72.63	538
1885	112,854			54,587,007	74.96	190	100,324	68,220	38,335,974	359	213,178			92,922,981	83.59	549
Average	79,151			43,236,841	60.82	168	90,210	63,870	36,198,188	316	169,361			79,435,029	74.04	483
1886	116,655			55,502,612	74.36	216	103,044	67,322	39,035,446	278	219,699			94,538,058	83.16	494
1887	122,260			61,686,586	69.65	190	106,517	73,852	42,088,197	314	228,777			103,774,783	79.43	504
1888	163,299			83,143,522	81.48	364	122,218	88,812	46,619,564	364	285,517			129,763,086	87.29	728
1889	159,522	84.83		82,328,481	86.04	283	123,676	79,977	45,546,970	385	283,198	90.85		127,875,451	90.54	668
1890	165,217	85.96	124,464	99,723,850	89.60	355	126,000	84,000	46,468,641	378	291,217	91.52	208,464	146,192,491	92.66	733
Average	145,391			76,477,010	80.97	282	116,291	78,793	43,951,764	344	261,682			120,428,774	87.02	625
1891	184,333	89.57	137,021	106,989,544	90.75	528	126,350	85,497	50,665,431	428	310,683	93.54	222,518	157,654,975	93.53	956
1892	188,090	88.35	137,306	113,236,126	89.26	573	129,050	85,173	52,472,504	418	317,140	92.75	224,112	165,708,630	92.40	991
1893	222,147	96.43	151,060	123,648,977	96.31	503	132,944	87,300	53,967,543	455	355,091	97.74	238,360	177,616,520	97.40	958

1894	227,039	92.82	129,412	110,218,498	92.76	513	131,603	83,349	51,921,121	445	358,642	95.33	212,761	162,139,619	94.96	958
1895	233,107	97.14	150,743	132,104,933	97.77	721	142,917	93,372	57,999,337	421	376,024	98.21	244,115	190,104,270	98.44	1,142
Average	210,943	93.04	141,108	117,239,616	93.48	568	132,573	86,938	53,405,187	433	343,516	95.61	228,047	170,644,803	95.43	1,001
1896	231,486	94.74	148,151	130,776,747	95.01	582	148,991	86,415	54,346,081	501	380,477	96.73	234,566	185,122,828	96.43	1,083
1897	258,701	96.32	155,951	142,120,157	96.28	567	149,884	74,942	52,611,680	423	388,585	97.71	231,856	194,731,837	97.25	990
1898	246,337	96.33	173,257	160,351,393	96.25	651	145,504	73,722	53,382,644	411	391,841	97.66	246,979	213,734,037	97.16	1,062
1899	255,999	94.46	199,679	183,575,167	94.96	780	139,608	80,507	60,418,005	461	395,607	96.34	280,186	243,993,172	96.16	1,241
1900	288,242	94.70	224,829	202,796,482	95.52	1,078	144,206	79,794	57,367,915	411	432,448	96.40	304,623	260,164,397	96.47	1,489
Average	252,153	95.28	180,373	163,923,989	95.58	732	145,639	79,076	55,625,265	441	397,792	96.95	259,449	219,549,254	96.67	1,173
1901	335,498	98.61	251,624	223,977,380	99.18	1,061	145,309	94,935	67,471,667	513	480,807	99.02	346,559	291,449,047	99.37	1,574
1902	362,076	97.84	277,592	255,313,471	98.12	1,424	148,141	57,281	41,373,595	300	510,217	98.46	334,873	296,687,066	98.37	1,724
1903	406,098	97.67	304,574	277,457,563	98.13	1,408	150,483	103,332	74,607,068	518	556,581	98.29	407,906	352,064,631	98.52	1,926
1904	417,512	95.36	281,125	266,008,103	95.46	1,400	155,861	103,907	73,156,709	595	573,373	96.58	385,032	339,164,812	96.40	1,995
1905	449,962	97.68	316,473	308,719,393	97.99	1,588	165,406	118,541	77,659,850	644	615,368	98.29	435,014	386,379,243	98.38	2,232
Average	394,229	97.36	286,278	266,295,182	97.72	1,376	153,040	95,599	66,853,778	514	547,269	98.09	381,877	333,148,960	98.17	1,890
1906	467,928	97.81	332,220	324,673,477	97.61	1,581	162,355	105,531	71,282,411	557	630,283	98.36	437,760	405,955,888	98.02	2,138
1907	507,379	98.85	395,756	392,288,224	99.37	2,534	167,234	122,638	85,604,312	708	674,613	99.14	518,394	477,892,536	99.49	3,242
1908	504,699	97.76	324,690	326,041,103	98.04	1,767	174,174	116,116	83,268,754	678	678,873	98.32	440,806	409,309,857	98.43	2,445
1909	499,734	99.99	371,469	379,736,904	99.99	2,075	166,801	118,429	81,070,359	567	666,535	99.99	489,898	460,807,263	99.99	2,642
1910	555,533	100.00	401,836	417,111,142	100.00	2,220	169,497	129,383	84,485,236	601	725,030	100.00	531,219	501,596,378	100.00	2,821
Average	507,055	98.91	365,196	369,970,170	99.08	2,035	168,012	118,419	81,142,214	622	675,067	99.18	483,615	451,112,384	99.24	2,658
1911	554,408	100.00	389,934	405,907,059	100.00	1,957	173,940	142,631	90,464,067	699	728,348	100.00	532,565	496,371,126	100.00	2,656
1912	548,632	100.00	407,816	450,104,982	100.00	1,818	174,030	134,003	84,361,598	601	722,662	100.00	541,819	534,466,580	100.00	2,419
1913	571,899	100.00	442,269	478,523,203	100.00	2,167	175,745	150,555	91,524,922	618	747,644	100.00	592,824	570,048,125	100.00	2,785
1914	583,506	100.00	379,279	422,703,970	100.00	1,859	179,679	146,738	90,821,507	595	763,185	100.00	526,017	513,525,477	100.00	2,454
1915	557,456	100.00	376,397	442,624,426	100.00	1,683	176,552	135,201	88,995,061	586	734,008	100.00	511,598	531,619,487	100.00	2,269
Average	563,180	100.00	399,139	439,972,728	100.00	1,897	175,989	141,826	89,233,431	620	739,169	100.00	540,965	529,206,159	100.00	2,517
1916	561,102	100.00	430,859	502,519,682	100.00	1,671	159,869	134,907	87,578,493	555	720,971	100.00	565,766	590,098,175	100.00	2,226
1917	603,143	100.00	488,332	551,790,563	100.00	2,114	154,174	146,334	99,611,811	582	757,317	100.00	634,666	651,402,374	100.00	2,696
1918	615,305	100.00	511,160	579,385,820	100.00	2,029	147,121	143,813	98,826,084	551	762,426	100.00	654,973	678,211,904	100.00	2,580
1919	621,998	100.00	405,299	465,860,058	100.00	1,682	154,571	136,918	88,092,201	635	776,569	100.00	542,217	553,952,259	100.00	2,317
1920	639,547	100.00	470,090	568,666,683	100.00	1,780	145,074	131,193	89,598,249	491	784,621	100.00	601,283	658,264,932	100.00	2,271
Average	608,219	100.00	461,148	533,644,561	100.00	1,855	152,162	138,633	92,741,368	563	760,381	100.00	599,781	626,385,929	100.00	2,418
1921	663,754	100.00	330,700	415,921,950	100.00	1,448	159,499	143,829	90,473,451	547	823,253	100.00	474,529	506,395,401	100.00	1,995
1922	687,958	100.00	326,268	422,268,099	100.00	1,684	156,849	78,788	54,683,022	300	844,807	100.00	405,056	476,951,121	100.00	1,984
1923	704,793	100.00	419,965	564,564,662	100.00	1,953	157,743	140,681	93,339,009	509	862,536	100.00	560,646	657,903,671	100.00	2,462
1924	619,604	100.00	353,549	483,686,538	100.00	1,906	160,009	146,347	87,926,862	496	779,613	100.00	499,896	571,613,400	100.00	2,402
1925	588,493	100.00	383,195	520,052,741	100.00	1,834	160,312	97,032	61,817,149	400	748,805	100.00	480,227	581,869,890	100.00	2,234
Average	652,920	100.00	362,735	481,298,798	100.00	1,765	158,882	121,335	77,647,899	450	811,803	100.00	484,071	558,946,697	100.00	2,215

TABLE 74.—*Men employed, equivalent 300-day workers, and tons produced, 1870–1936*—Continued

	Bituminous-coal mines						Anthracite mines				Total					
	Employees	Percent of total employees	300-day workers	Production	Percent of total production	Number killed	Employees	300-day workers	Production	Number killed	Employees	Percent of total United States employees	300-day workers	Production	Percent of total United States production	Number killed
1926	593,647	100.00	425,052	573,366,985	100.00	2,065	165,386	134,374	84,437,452	453	759,033	100.00	559,426	657,804,437	100.00	2,518
1927	593,918	100.00	379,018	517,763,352	100.00	1,742	165,259	124,047	80,095,564	489	759,177	100.00	503,065	597,858,916	100.00	2,231
1928	522,150	100.00	352,713	500,744,970	100.00	1,729	160,681	115,967	75,348,069	447	682,831	100.00	468,680	576,093,039	100.00	2,176
1929	502,993	100.00	367,891	534,988,593	100.00	1,705	151,501	113,654	73,828,195	482	654,494	100.00	481,545	608,816,788	100.00	2,187
1930	493,202	100.00	307,753	467,526,299	100.00	1,619	150,804	105,226	69,384,837	444	644,006	100.00	412,979	536,911,136	100.00	2,063
Average	541,182	100.00	366,485	518,878,040	100.00	1,772	158,726	118,654	76,618,823	463	699,908	100.00	485,139	595,496,863	100.00	2,235
1931	450,274	100.00	244,498	382,105,326	100.00	1,080	139,431	86,382	59,645,652	383	589,705	100.00	330,880	441,750,978	100.00	1,463
1932	406,380	100.00	197,532	309,709,872	100.00	958	121,243	64,952	49,855,221	249	527,623	100.00	262,484	359,565,093	100.00	1,207
1933	418,752	100.00	232,940	333,630,533	100.00	833	104,430	64,479	49,541,344	231	523,182	100.00	297,419	383,171,877	100.00	1,064
1934	458,044	100.00	272,160	359,368,022	100.00	958	108,382	74,308	57,168,291	268	566,426	100.00	346,468	416,536,313	100.00	1,226
1935	462,354	100.00	274,306	372,369,122	100.00	968	102,848	64,266	52,262,883	274	565,202	100.00	338,572	424,632,005	100.00	1,242
Average	439,161	100.00	244,287	351,436,575	100.00	959	115,267	70,877	53,694,678	281	554,428	100.00	315,165	405,131,253	100.00	1,240
1936	482,500	100.00	317,539	436,468,333	100.00	1,098	102,082	65,432	54,670,429	244	584,582	100.00	382,972	491,138,762	100.00	1,342

TABLE 75.—*Coal-mine fatality rates for the United States, 1870 to 1936* [1]

[Includes underground and surface accidents]

Year	Bituminous-coal mines			Anthracite mines			Total		
	Per thousand employed	Per thousand 300-day workers	Per million tons mined	Per thousand employed	Per thousand 300-day workers	Per million tons mined	Per thousand employed	Per thousand 300-day workers	Per million tons mined
1870				5.93		13.47	5.93		13.47
1871				5.60		10.86	5.60		10.86
1872				4.98		9.20	4.98		9.20
1873				5.46		10.06	5.46		10.06
1874	2.11		3.88	4.33		9.31	3.87		9.26
1875	1.60		4.93	3.37		10.50	3.06		9.51
Average				4.58		9.94	4.30		9.72
1876	1.00		4.29	3.22		9.96	2.83		9.20
1877	2.17		5.90	2.90		7.56	2.77		7.28
1878	1.86		3.17	2.92		8.62	2.62		6.38
1879	2.02		3.39	3.81		8.67	3.30		6.82
1880	1.43		2.95	2.75		7.05	2.21		5.16
Average	1.66		3.42	3.12		8.31	2.72		6.68
1881	1.67		2.75	3.59	4.87	8.55	2.93		6.04
1882	1.95		3.63	3.54	4.87	8.29	2.75		5.72
1883	3.09		4.99	3.53	4.56	8.40	3.34		6.58
1884	2.26		4.11	3.28	5.12	8.94	2.80		6.17
1885	1.68		3.48	3.58	5.26	9.36	2.58		5.91
Average	2.12		3.88	3.50	4.94	8.72	2.85		6.09
1886	1.85		3.89	2.70	4.13	7.12	2.25		5.23
1887	1.55		3.08	2.95	4.25	7.46	2.20		4.86
1888	2.23		4.38	2.98	4.10	7.81	2.55		5.61
1889	1.77		3.44	3.11	4.81	8.45	2.36		5.22
1890	2.15	2.85	3.56	3.00	4.50	8.13	2.52	3.50	5.01
Average	1.94		3.68	2.96	4.36	7.82	2.39		5.19
1891	2.86	3.85	4.94	3.39	5.01	8.45	3.08	4.30	6.06
1892	3.05	4.17	5.06	3.24	4.91	7.97	3.12	4.42	5.98
1893	2.26	3.32	4.07	3.42	5.21	8.43	2.70	4.03	5.39
1894	2.26	3.96	4.65	3.38	5.34	8.57	2.67	4.50	5.91
1895	3.09	4.78	5.46	2.95	4.51	7.26	3.04	4.68	6.00
Average	2.69	4.02	4.84	3.27	4.99	8.12	2.91	4.38	5.87
1896	2.51	3.92	4.45	3.36	5.79	9.22	2.85	4.62	5.85
1897	2.38	3.64	3.99	2.82	5.64	8.04	2.55	4.27	5.08
1898	2.64	3.75	4.06	2.82	5.57	7.70	2.71	4.28	4.97
1899	3.05	3.91	4.25	3.30	5.72	7.63	3.14	4.40	5.08
1900	3.74	4.79	5.32	2.85	5.15	7.16	3.44	4.87	5.72
Average	2.90	4.06	4.46	3.03	5.58	7.94	2.95	4.50	5.34
1901	3.16	4.21	4.74	3.53	5.40	7.60	3.27	4.54	5.40
1902	3.93	5.13	5.58	2.03	5.25	7.25	3.38	5.15	5.81
1903	3.47	4.63	5.07	3.44	5.01	6.94	3.46	4.72	5.47
1904	3.35	4.98	5.26	3.82	5.73	8.13	3.48	5.17	5.88
1905	3.53	5.02	5.14	3.89	5.43	8.29	3.63	5.14	5.78
Average	3.49	4.81	5.17	3.36	5.38	7.69	3.45	4.95	5.67
1906	3.38	4.76	4.72	3.43	5.28	7.81	3.39	4.87	5.27
1907	4.99	6.40	6.46	4.23	5.77	8.27	4.81	6.25	6.78
1908	3.50	5.44	5.42	3.89	5.84	8.14	3.60	5.54	5.97
1909	4.15	5.58	5.46	3.40	4.79	6.99	3.96	5.35	5.73
1910	4.00	5.53	5.32	3.55	4.65	7.11	3.89	5.30	5.62
Average	4.01	5.57	5.50	3.70	5.25	7.67	3.94	5.48	5.89

[1] Prior to 1910 certain States did not maintain records of accidents. The above rates are based exclusively on tonnage and men employed in States for which accident records are available.

TABLE 75.— *Coal-mine fatality rates for the United States, 1870 to 1936*— Continued

Year	Bituminous-coal mines			Anthracite mines			Total		
	Per thousand employed	Per thousand 300-day workers	Per million tons mined	Per thousand employed	Per thousand 300-day workers	Per million tons mined	Per thousand employed	Per thousand 300-day workers	Per million tons mined
1911	3.53	5.02	4.82	4.02	4.90	7.73	3.65	4.97	5.35
1912	3.31	4.46	4.04	3.45	4.48	7.12	3.35	4.46	4.53
1913	3.79	4.90	4.53	3.52	4.10	6.75	3.73	4.70	4.89
1914	3.19	4.90	4.40	3.31	4.05	6.55	3.22	4.66	4.78
1915	3.02	4.47	3.80	3.32	4.33	6.58	3.09	4.44	4.27
Average	3.27	4.75	4.31	3.52	4.37	6.95	3.40	4.65	4.76
1916	2.98	3.88	3.33	3.47	4.11	6.34	3.09	3.93	3.77
1917	3.50	4.33	3.83	3.77	3.98	5.84	3.56	4.25	4.14
1918	3.30	3.97	3.50	3.75	3.83	5.58	3.38	3.94	3.80
1919	2.71	4.16	3.62	4.11	4.64	7.21	2.99	4.28	4.19
1920	2.78	3.79	3.13	3.38	3.74	5.48	2.90	3.78	3.45
Average	3.05	4.03	3.48	3.70	4.06	6.07	3.18	4.03	3.86
1921	2.18	4.38	3.48	3.43	3.80	6.05	2.42	4.20	3.94
1922	2.45	5.16	3.99	1.91	3.81	5.49	2.35	4.90	4.16
1923	2.77	4.65	3.46	3.23	3.62	5.45	2.85	4.39	3.74
1924	3.08	5.39	3.94	3.10	3.39	5.64	3.08	4.80	4.20
1925	3.12	4.79	3.53	2.50	4.12	6.47	2.98	4.65	3.84
Average	2.70	4.87	3.67	2.83	3.71	5.80	2.73	4.58	3.96
1926	3.48	4.86	3.60	2.74	3.37	5.36	3.32	4.50	3.83
1927	2.93	4.60	3.36	2.96	3.94	6.11	2.94	4.43	3.73
1928	3.31	4.99	3.45	2.78	3.85	5.93	3.19	4.64	3.78
1929	3.39	4.63	3.19	3.18	4.24	6.53	3.34	4.54	3.59
1930	3.28	5.26	3.46	2.94	4.22	6.40	3.20	5.00	3.84
Average	3.27	4.84	3.42	2.92	3.90	6.04	3.19	4.61	3.75
1931	2.40	4.42	2.83	2.75	4.43	6.42	2.48	4.42	3.31
1932	2.36	4.85	3.09	2.05	3.83	4.99	2.29	4.60	3.36
1933	1.99	3.58	2.50	2.21	3.58	4.66	2.03	3.58	2.78
1934	2.09	3.52	2.67	2.47	3.61	4.69	2.16	3.54	2.94
1935	2.09	3.53	2.60	2.66	4.26	5.24	2.20	3.67	2.92
Average	2.18	3.93	2.73	2.44	3.96	5.23	2.24	3.93	3.06
1936	2.28	3.46	2.52	2.39	3.73	4.46	2.30	3.50	2.73

PRINCIPAL COAL-MINE DISASTERS

In the statistical work of the Bureau of Mines relating to accidents at coal mines an accident that results in the death of 5 employees is termed a "major disaster." Five such disasters occurred during 1936; 4 of them, which caused 32 deaths, were in bituminous-coal mines, and 1 disaster, which caused 5 deaths, was in an anthracite mine. Table 76 gives a list of major disasters from 1931 to 1936, inclusive. A list of major disasters at coal mines from 1839 to 1930, inclusive, appeared in Bulletin 355, entitled "Coal-Mine Accidents in the United States during 1930."

TABLE 76.—*Coal-mine disasters in the United States in which 100 or more men were killed and those during 1931, 1932, 1933, 1934, 1935, and 1936 in which 5 or more men were killed*

Date	Name of mine	Location of mine	Nature of accident	Killed
1869 Sept. 6	Avondale [1]	Plymouth, Pa.	Mine fire	179
1884 Mar. 13	Laurel	Pocohontas, Va.	Explosion	112
1891 Jan. 27	Mammouth	Mount Pleasant, Pa.	do	109
1892 Jan. 2	No. 11	Krebs, Okla.	do	100
1900 May 1	Winter quarters 1 and 4	Scofield, Utah	do	200
1902 May 19	Fraterville	Coal Creek, Tenn.	do	184
1902 July 10	Rolling Mill	Johnstown, Pa.	do	112
1903 June 30	Hanna No. 1	Hanna, Wyo.	Explosion and fire	169
1904 Jan. 25	Harwick	Cheswick, Pa.	Explosion	179
1905 Feb. 20	Virginia City	Virginia City, Ala.	do	108
1907 Dec. 6	Monongah Nos. 6 and 8	Monongah, W. Va.	do	361
1907 Dec. 19	Darr	Jacobs Creek, Pa.	do	239
1908 Nov. 28	Rachel and Agnes	Marianna, Pa.	do	154
1909 Nov. 13	St. Paul No. 2	Cherry, Ill.	Mine fire	259
1911 Apr. 8	Banner	Littleton, Ala.	Explosion	128
1913 Oct. 22	Stag Canon No. 2	Dawson, N. Mex.	do	263
1914 Apr. 28	Eccles Nos. 5 and 6	Eccles, W. Va.	do	181
1915 Mar. 2	Layland No. 3	Layland, W. Va.	do	112
1917 Apr. 27	Hastings	Hastings, Colo.	do	121
1923 Feb. 8	Stag Canon No. 1	Dawson, N. Mex.	do	120
1924 Mar. 8	No. 2	Castle Gate, Utah	do	171
1924 Apr. 28	Benwood	Benwood, W. Va.	do	119
1928 May 19	Mather No. 1	Mather, Pa.	do	195
1931 Jan. 3	Midvale No. 4	Midvale, Ohio	Explosion	5
1931 Jan. 6	No. 2	Beckley, W. Va.	do	8
1931 Jan. 28	Little Betty	Dugger, Ind.	do	28
1931 May 29	Richards Colliery [1]	Mount Carmel, Pa.	do	5
1931 Nov. 3	No. 20	Holden, W. Va.	do	5
1931 Dec. 28	Overton No. 1	Irondale, Ala.	do	5
1932 Jan. 18	Parrott	Parrott, Va.	Explosion	6
1932 Feb. 27	Boissevain	Boissevain, Va.	do	38
1932 June 13	Splashdam No. 6	Splashdam, Va.	do	10
1932 Dec. 7	Jones	Madrid, N. Mex.	do	14
1932 Dec. 9	Zero	Yancey, Ky.	do	23
1932 Dec. 23	Shafer	Moweaqua, Ill.	do	54
1933 Sept. 11	Oakmont	Barking, Pa.	Explosion	7
1934 Mar. 12	No. 10	Wheatcroft, Ky.	Asphyxiation	5
1934 Aug. 6	Derby No. 3	Big Stone Gap, Va.	Explosion	17
1935 Jan. 21	Gilberton [1]	Gilberton, Pa.	Explosion	13
1935 May 7	South Wilkes-Barre [1]	Wilkes-Barre, Pa.	Rock fell down shaft and struck ascending cage.	7
1935 May 11	Barrackville	Barrackville, W. Va.	Fire in hoisting shaft	6
1935 July 17	No. 5	Van Lear, Ky.	Explosion	9
1936 Jan. 30	Monarch No. 2	Broomfield, Colo.	Explosion	8
1936 Aug. 1	Kathleen	Dowell, Ill.	Mine fire	9
1936 Aug. 24	Clear Spring [1]	West Pittston, Pa.	Explosion	5
1936 Sept. 2	Macbeth	Logan, W. Va.	do	10
1936 Nov. 19	No. 1	Bates, Ark.	do	5

[1] Anthracite mine.

EMPLOYMENT AND ACCIDENTS AT COAL MINES OF VARIOUS SIZE CLASSIFICATIONS

More than 60 percent of all commercially operated bituminous-coal mines in the United States are relatively small, each mine having less than 25 men employed underground, according to the reports received from mining companies by the Bureau of Mines for the year 1936. Mines employing less than 5 men each comprised 28 percent of the total number, mines employing from 5 to 9 men each accounted for 19 percent, and mines having 10 to 24 employees each comprised 16 percent. When the brackets of larger mines were reached, mines having 25 to 49 men working underground were found to comprise 8 percent of the total number and those having 50 to 99 employees a little over 9 percent. The next group, those employing 100 to 199 men, likewise accounted for slightly more than 9 percent. Between 4 and 5 percent of all mines employed from 200 to 299 men each, and between 2 and 3 percent employed 300 to 399 men each. A little more than 1 percent of all mines were in the group having 400 to 499 men per mine. Mines having 500 or more employees accounted for about 2 percent of the total number of operating underground mines.

If all bituminous-coal mines are grouped into 2 large classes, those having less than 25 employees underground and those having 25 or more employees underground, the Bureau's study shows that the small mines, numbering 3,906 out of a total of 6,173,[1] produced 4 percent of the Nation's output of coal during the year covered by the investigation. The so-called small mines of less than 25 men also employed about 7 percent of the total number of men employed underground in all bituminous-coal mines and accounted for about 6 percent of the total number of man-hours worked underground.

The study revealed some interesting comparisons between small and large mines concerning the relative safety of men working in the mines. The records for small mines as a group showed that accidents resulted in the death of 117 employees out of a total of 1,034 deaths from accidents in all mines and in nonfatal injuries to 1,752 employees out of a total of 46,402 injuries underground at all mines. The working time in small mines averaged 156 days per full-time employee compared with 200 workdays per employee at the large mines. To produce a ton of coal required 2.13 man-hours of labor in the small mines compared with 1.34 man-hours per ton in the large mines. Likewise the production of coal at small mines was more costly in accidents that resulted in death or injury than at the larger mines. The death rate per million tons was 8.08 and the injury rate 120.9 for small mines compared with 2.32 and 113.1, respectively, for large mines. Measured by man-hours of exposure, the death rate was 3.79 for small mines and 1.73 for large mines for each million man-hours of work underground, and the nonfatal-injury rate was 56.8 for small mines and 84.4 for large mines, a difference in favor of large mines for fatal accidents and small mines for nonfatal accidents.

The small mines scattered throughout the country render a vital service to the homes and industries in their communities. However, it is important that operators of small mines stress the need for greater care in the prevention of accidents, as the figures compiled by the Bureau of Mines showed a fatality rate per ton that was more than

[1] Includes 19 cases in which a single report covered two mines; hence the figures could not be broken down by mines. The actual number of underground bituminous-coal mines active in 1936 was 6,192.

three times as high for small mines as for large mines and a fatality rate per man-hour of exposure that was more than twice as high for small mines as for large mines. The injury rate based upon tons of coal produced was only 7 percent higher for small mines than for large mines, while the rate based upon man-hours of exposure was more favorable for small mines than for large mines, the figures showing a rate of 56.8 for small mines and 84.4 for large mines. As fatalities, however, represent greater losses than do injuries, the higher fatality rates for small mines, both on a tonnage and man-hour basis, indicate the importance of safeguarding the employees in small mines from the accident hazards to which they are exposed.

Table 77 gives a distribution of accidents in bituminous-coal mines in the United States, according to the number of men employed underground in 1936.

TABLE 77.—*Accident data for bituminous-coal mines in the United States, by number of men employed underground, in 1936*

Number of underground employees per mine	Number of mines	Total number of underground employees	Man-hours worked underground	Production of coal (short tons)	Number killed	Number injured	Fatality rate per million man-hours underground	Injury rate per million man-hours underground	Fatality rate per million tons	Injury rate per million tons	Tons of coal produced per man-hour underground (short tons)	Man-hours required to produce 1 ton of coal underground
1 to 4	1,736	4,752	4,928,629	2,433,422	61	108	12.38	21.91	25.07	44.38	0.49	2.03
5 to 9	1,173	7,827	8,435,695	3,707,498	21	398	2.49	47.18	5.66	107.35	.44	2.28
10 to 24	997	15,062	17,485,209	8,347,547	35	1,246	2.00	71.26	4.19	149.27	.48	2.09
25 to 49	504	17,722	19,565,465	11,592,089	38	1,844	1.94	94.25	3.28	159.07	.59	1.69
50 to 99	578	41,743	49,665,336	33,492,869	106	4,830	2.13	97.25	3.16	144.21	.67	1.48
100 to 199	566	81,319	109,091,873	80,803,611	216	9,900	1.98	90.75	2.67	122.52	.74	1.35
200 to 299	275	65,874	90,720,322	68,009,222	174	8,408	1.92	92.68	2.56	123.63	.75	1.33
300 to 399	152	52,394	76,448,384	60,225,316	123	6,602	1.61	86.36	2.04	109.62	.79	1.27
400 to 499	72	32,028	48,178,923	40,467,988	85	4,203	1.76	87.24	2.10	103.86	.84	1.19
500 or more	120	86,306	135,213,682	100,171,249	175	8,863	1.29	65.55	1.75	88.48	.74	1.35

STATE MINE INSPECTORS AND OTHER OFFICIALS CONNECTED WITH THE MINING INDUSTRY OF THE UNITED STATES

[Compiled by V. E. Wrenn]

Name	Designation	Address
ALABAMA		
E. J. McCrossin, Jr	Chief mine inspector	Webb Crawford Bldg., Birmingham.
H. J. Gentry	Associate mine inspector	West Blocton.
Wm. L. Neill	do	Birmingham.
J. A. Fox	do	Do.
John A. Ivie	do	Do.
J. H. Chapman	do	Do.
Dabney Ramseur	do	Jasper.
Frank N. Julian	Superintendent of insurance ex officio, compensation commissioner.	Montgomery.
Walter B. Jones	State geologist	University of Alabama, University.
ALASKA		
B. D. Stewart	Commissioner of mines	Juneau.
ARIZONA		
Tom C. Foster	State mine inspector	Phoenix.
James Malley	Deputy mine inspector	Bisbee.
J. C. Anglin	do	Globe.
Clifford J. Murdock	do	Mayer.
L. C. Holmes	Chairman, industrial commission	Phoenix.
Leo C. Guynn	Acting secretary, industrial commission	Do.
G. M. Butler	Director, State bureau of mines	Tucson.

State mine inspectors and other officials connected with the mining industry of the United States—Continued

Name	Designation	Address
ARKANSAS		
E. I. McKinley	Commissioner, bureau of labor and statistics.	Little Rock.
Mrs. Bess Proctor	Secretary, industrial welfare commission	Do.
J. W. Fitzjarrell	State mine inspector	Fort Smith.
George C. Branner	State geologist	Little Rock.
CALIFORNIA		
T. A. Reardon	Chairman, industrial accident commission	State Bldg., San Francisco.
Frank J. Burke	Secretary, industrial accident commission	Do.
Charles R. Macdonald	Statistician, industrial accident commission.	Do.
C. H. Fry	Chief, bureau of industrial accident prevention.	Do.
J. Wesley Gebb	Assistant chief, bureau of industrial accident prevention.	State Bldg., Los Angeles.
F. L. Lowell	Supervising mine safety engineer and inspector.	State Bldg., San Francisco.
C. E. Johnson	Assistant mine safety engineer and inspector.	Do.
J. C. Hoyt	do	State Bldg., Los Angeles.
Walter W. Bradley	Chief, division of mines	Ferry Bldg., San Francisco.
R. D. Bush	Chief, division of oil and gas	Do.
COLORADO		
John T. Joyce	Commissioner of mines, State of Colorado	State Capitol, Denver.
Metal mines		
George Becker	Inspector, district No. 1	Do.
Herrick McLeod	Inspector, district No. 2	Colorado Springs.
R. J. Murray	Inspector, district No. 3	Salida.
Dan C. McNaughton	Inspector, district No. 4	Silverton.
Coal mines		
Thomas Allen	Chief inspector of coal mines	414 State Office Bldg., Denver.
Geo. C. Dalrymple	Deputy inspector	623 Colorado St., Trinidad.
Hugo H. Machin	do	1021 University Ave., Boulder.
J. J. Roddy	do	Montrose.
Geo. H. Smith	do	El Rio Hotel, Canon City.
Myron D. Williams	do	215 Walsen St., Walsenburg.
Finlay McCallum	do	Steamboat Springs.
Robt. Donaldson	Member, board of examiners	Florence.
Wm. Roberts	do	Durango.
Fred Gulliford	do	Crested Butte.
Fred W. Whiteside	Secretary, board of examiners	214 Johnson Bldg., Denver.
W. H. Young	Chairman, industrial commission	State Capitol, Denver.
Feay B. Smith	Secretary, industrial commission	Do.
M. F. Coolbaugh	Secretary, Geological Survey Board of the State of Colorado.	Golden.
CONNECTICUT		
Leo. J. Noonan	Chairman, board of compensation commissioners.	54 Church St., Hartford.
W. E. Britton	Superintendent, State geological and natural history survey.	Agricultural experiment station, 123 Huntington St., New Haven.
DELAWARE		
Robert K. Jones	President, industrial accident board	306 Equitable Trust Bldg., Wilmington.
Harry V. Lyons	Member, industrial accident board	Do.
Charlie H. Grantland	do	Do.
James B. McManus	Secretary, industrial accident board	Do.
FLORIDA		
Herman Gunter	Assistant supervisor, geological department, Florida State Board of Conservation.	Tallahassee.
Wendell C. Heaton	Chairman, industrial commission	Do.
GEORGIA		
Hal M. Stanley	Chairman of industrial board	Atlanta.
Capt. Garland Peyton	Director, division of mines, mining, and geology.	Do.

State mine inspectors and other officials connected with the mining industry of the United States—Continued

Name	Designation	Address
HAWAII		
Ambrose J. Wirtz	Chairman, industrial accident board for the city and county of Honolulu.	Honolulu.
Paul F. Lada	Chairman, industrial accident board for county of Maui.	Wailuku.
H. B. Elliot	Chairman, industrial accident board for county of Hawaii.	Hilo.
L. L. Patterson	Chairman, industrial accident board for county of Kauai.	Kapaa.
IDAHO		
Frank Langley	Chairman, industrial accident board	Boise.
P. H. Quirk	Secretary, industrial accident board	Do.
A. W. Fahrenwald	Director, bureau of mines and geology	Moscow.
Arthur Campbell	State mine inspector, mining department	Boise.
ILLINOIS		
James McSherry	Director, department of mines and minerals.	Springfield.
Enoch Martin	Assistant director, department of mines and minerals.	447 North Union St., Decatur.
M. K. Herrington	Chief Clerk, department of mines and minerals.	216 East Cauldy St., Springfield.
	Mine inspector, district No. 1	
George H. Deemy	Mine inspector, district No. 2	511 Laura St., Peoria.
F. M. Guthrie	Mine inspector, district No. 3	347 East Fulton St., Farmington.
Harry Roberts	Mine inspector, district No. 4	Box 15, Edinburg.
Thomas McKenna	Mine inspector, district No. 5	1214 East Main St., Danville.
Joseph Firth, Jr	Mine inspector, district No. 6	Benld.
T. Alvin Scully	Mine inspector, district No. 7	Troy.
David T. Stuart	Mine inspector, district No. 8	132A West Main St., Belleville.
Leonard Forester	Mine inspector, district No. 9	Percy.
William J. Johnson	Mine inspector, district No. 10	503 South Thomas St., Christopher.
Michael Taggart	Mine inspector, district No. 11	Eldorado.
Fred Schoonover	Mine inspector, district No. 12	Route 1, Carterville.
Benn Pitts	Economic investigator	Odin.
Homer Harris	Fluorspar inspector	Rosiclare.
Oscar Saunders	Special investigator	Du Quoin.
James McSherry	Chairman ex officio, State mining board	Springfield.
L. A. Watson	Member, State mining board	Harrisburg.
J. W. Starks	do	Box 311, Marion.
Jesse Jackson	do	1201 Benton St., Johnston City.
George A. Knox	Secretary, State mining board	6 Helston Place, Hillsboro.
Edward Maher	President, miners' examining board	624 North McLean St., Lincoln.
Stanley Ingerski	Secretary, miners' examining board	Minonk.
John Rancillio	Member, miners' examining board	320 North Sixteenth St., Herrin.
John B. Schmacker	do	449 South Chestnut St., Collinsville.
Peter J. Angsten	Chairman, industrial commission	205 West Wacker Drive, Chicago.
M. M. Leighton	Chief, State geological survey division	University of Illinois, Urbana.
INDIANA		
Fred Ferguson	Chief mine inspector	Room 403, State Capitol, Indianapolis.
Patrick McGuigan	Assistant mine inspector	Carbon.
Edward Rogers	do	Linton.
Henry S. Wallace	do	Shelburn.
Lee Graves	do	Oakland City.
Ira Snouffer	Chairman, industrial board	432 State Capitol, Indianapolis.
William A. Faust	Member (secretary), industrial board	State Capitol, Indianapolis.
Ralph E. Esarey	State geologist, division of geology	140 North Senate Ave., Indianapolis.

State mine inspectors and other officials connected with the mining industry of the United States—Continued

Name	Designation	Address
IOWA		
Jacob Ritter	President, State board of examiners	Centerville.
William Abrams	Member, State board of examiners	Colfax.
William Anderson	do	Albia, R. F. D. 5.
William Jervis	do	Des Moines, R. F. D. 5.
James Smith	Secretary, State board of examiners	Lovilia.
E. A. Farnsworth	Mine inspector, district No. 1	Centerville.
R. T. Rhys	Mine inspector, district No. 2	Ottumwa.
John E. Jeffreys	Mine inspector, district No. 3	Albia.
Phil R. Clarkson	Secretary, State mine inspectors	Des Moines.
John T. Clarkson	Industrial commissioner, workmen's compensation service.	Albia.
Ora Williams	Secretary, industrial commissioner, workmen's compensation service.	Des Moines.
Milton Peaco	Commissioner of labor	Clinton.
Dr. A. C. Trowbridge	Director, Iowa Geological Survey	Des Moines.
KANSAS		
Dan J. O'Donnell	State mine inspector	Pittsburgh.
William Keegan	Deputy mine inspector	Franklin.
Howard Snodgrass	do	Scammon.
Albert Johnson	do	Scranton.
Mine rescue department		
A. E. Coleman	Superintendent, rescue stations	Arma.
Frank O'Brien	Chairman, department of workmen's compensation.	Topeka.
R. C. Moore	State geologist	University of Kansas, Lawrence.
KENTUCKY		
John F. Daniel	Chief, department of mines and minerals	Lexington.
W. E. Wheeler	Mine and scale inspector	Pikeville.
Harry N. Smith	do	Harlan.
Lawrence Runyon	District mine inspector	Pikeville.
Lindsay Cobb	do	Earlington.
James Fugate	do	Madisonville.
Arthur Guthrie	do	Harlan.
C. E. Linkous	do	Hazard.
D. J. Jones	State geologist, department of mines and minerals.	Lexington.
Sam Stith, Jr	Petroleum engineer, department of mines and minerals.	Do.
W. C. Burrow	Commissioner, department of industrial relations.	Frankfort.
LOUISIANA		
B. W. Cason	Commissioner of labor	Baton Rouge.
W. G. Rankin	Commissioner, department of conservation	New Orleans.
J. A. Shaw	Director, division of mines and minerals	Do.
Cyril K. Moresi	State geologist	Do.
MAINE		
Jesse W. Taylor	Commissioner of labor and industry	Augusta.
Donald D. Garcelon	Chairman, industrial accident commission	Do.
Freeman F. Burr	State geologist	Wayne.
MARYLAND		
John J. Rutledge	Chief mine engineer, Maryland Bureau of Mines.	22 Light St., Baltimore.
Frank T. Powers	District mine inspector	Frostburg.
Clyde J. Rowe	do	Westernport.
L. C. Hutson	Vocational mining instructor	Kitzmiller.
State mine-examining board		
B. H. McCracken	Representing operators	Frostburg.
Lawrence Dunn	Representing miners	Midland.
J. J. Rutledge	Representing State, chairman ex officio	Baltimore.
William F. Broening	Chairman, State industrial accident commission.	Equitable Bldg., Baltimore.
Albert E. Brown	Secretary, State industrial accident commission.	Do.
Edward B. Mathews	State geologist	Johns Hopkins University, Baltimore.

State mining inspectors and other officials connected with the mining industry in the United States—Continued

Name	Designation	Address
MASSACHUSETTS		
Joseph A. Parks	Chairman, department of industrial accidents.	Statehouse, Boston.
Edward P. Doyle	Secretary, department of industrial accidents.	Do.
MICHIGAN		
Geo. A. Krogstad	Labor commissioner, chairman of State department of labor and industry.	Lansing.
Joseph Ashmore	Secretary, State department of labor and industry.	Do.
William Muir	Coal-mine inspector	106 South Mountain St., Bay City.
Louis Guy, Sr	Mine inspector, Baraga County	L'Anse.
Nunzio Giannunzio	Mine inspector, Dickinson County	Iron Mountain.
John B. Tuoro	Mine inspector, Gogebic County	Wakefield.
Matt Ollila	Mine inspector, Houghton County	Calumet.
Gust J. Peterson	Mine inspector, Iron County	Stambaugh.
Edward Snell	Mine inspector, Keeweenaw County	Ahmeek.
John Tilot	Mine inspector, Marquette County	Negaunee.
Victor Koski	Mine inspector, Ontonagon County	Ontonagon.
Dr. Richard A. Smith	State geologist	Lansing.
F. G. Pardee	Mining engineer, appraiser of mines, geological survey division, department of conservation.	Do.
MINNESOTA		
J. D. Williams	Chairman, Minnesota industrial commission.	137 State Office Bldg., St. Paul.
E. D. McKinnon	Secretary, industrial commission	Do.
Edward Smith	Mine inspector, St. Louis County	Eveleth.
John A. Beecroft	Mine inspector, Itasca County	Keewatin.
Louis Erickson	Mine inspector, Crow Wing County	Crosby.
F. A. Wildes	Director, division of lands and minerals	14 State Office Bldg., St. Paul.
W. H. Emmons	Director, Minnesota geological survey	University of Minnesota, Minneapolis.
Joseph Harkness, Jr	Chief, division of workmen's compensation	State Office Bldg., St. Paul.
A. E. Smith	Chief, division of accident prevention, Minnesota industrial commission.	Do.
Peter Wickstrom	do	Duluth.
E. R. Hetting	do	State Office Bldg., St. Paul.
George Wilcox	Chief, division of boiler inspection, Minnesota industrial commission.	Do.
MISSISSIPPI		
Dr. J. W. Dugger	Director, bureau of industrial hygiene and factory inspection.	Jackson.
Anne Alliston	Secretary, bureau of industrial hygiene and factory inspection.	Do.
W. C. Morse	Director, Mississippi geological survey	University.
MISSOURI		
Arnold Griffith	Chief inspector, bureau of mines	Jefferson City.
George E. Callahan	Deputy inspector, lead and zinc mines	Flat River.
Charles Keith	do	Joplin.
Evan Jones	Deputy inspector, coal mines	Higbee.
Frank Bunch	do	Richmond.
Edgar C. Nelson	Chairman, workmen's compensation commission.	Jefferson City.
Spencer H. Givens	Secretary, workmen's compensation commission.	Do.
H. A. Buehler	State geologist	Rolla.
MONTANA		
Edward Davies	State coal-mine inspector	1020 North 29th St., Billings.
Dennis Murphy	State metal-mine inspector	Butte.
Ben Henry	do	822 9th Ave., Helena.
J. Burke Clements	Chairman, State industrial board	Helena.
G. G. Watt	Secretary, State industrial board	Do.
Francis A. Thomson	Director, bureau of mines and geology	Butte.
NEBRASKA		
V. B. Kinney	Commissioner of labor	State Capitol, Lincoln.
F. M. Coffey	Presiding judge, workmen's compensation court.	Do.
G. E. Condra	Dean and director, conservation and survey division, and State geologist.	University of Nebraska, Lincoln.

State mine inspectors and other officials connected with the mining industry of the United States—Continued

Name	Designation	Address
NEVADA		
Matt Murphy	State mine inspector	Carson City.
Jack B. Purdy	Deputy mine inspector	Ely.
P. J. Gallagher	do	Tonopah.
Dan J. Sullivan	Chairman, Nevada industrial commission	Carson City.
Jay A. Carpenter	Acting director, Nevada State bureau of mines.	Reno.
NEW HAMPSHIRE		
John S. B. Davie	Commissioner, bureau of labor	Concord.
NEW JERSEY		
Albert Gamble	State mine inspector	Oxford.
John J. Toohey, Jr.	Commissioner of labor	Statehouse, Trenton.
C. George Kreuger	Deputy commissioner of labor and chief, bureau of explosives.	Do.
John Roach	Deputy commissioner of labor and chief, bureau of mines.	Do.
John J. Toohey, Jr.	Commissioner, workmen's compensation	Do.
Chas. P. Wilber	Director and State forester, department of conservation and development.	Statehouse Annex, Trenton.
Meredith E. Johnson	State geologist	Do.
NEW MEXICO		
Warren Bracewell	State mine inspector	512 West Marquette Ave., Albuquerque
Charles Lembke	Chairman, labor and industrial commission.	Santa Fe.
Carmen Dyche	Secretary, labor and industrial commission.	Do.
E. H. Wells	Director, State bureau of mines and mineral resources of the New Mexico School of Mines.	Socorro.
A. Andreas	Acting State geologist, oil conservation commission.	Santa Fe.
NEW YORK		
Frieda Miller	Industrial commissioner, State department of labor.	80 Center St., New York.
Rose Schneiderman	Secretary, State department of labor	Do.
Eugene B. Patton	Director, statistics and information	Do.
James L. Gernon	Director of inspection	Do.
Gustav Werner	Acting supervising mine and tunnel inspector, bureau of mines, tunnels, quarries, and explosives.	P. O. Box 206, Prince Bay, Staten Island.
E. J. McGrath	Mine inspector, State department of labor	215 Chestnut St., Rochester.
Charles B. Magan	Inspector of mines and tunnels, State department of labor.	R. F. D., Walkill.
S. E. Senior	Acting director, workmen's compensation	150 Leonard St., New York.
D. H. Newland	State geologist, department of education	Albany.
NORTH CAROLINA		
A. L. Fletcher	Commissioner of labor	Raleigh.
F. H. Shuford	Chief inspector, division of standards and inspections, department of labor.	Do.
Murray M. Grier	Safety engineer and mine inspector, department of labor.	Do.
T. A. Wilson	Chairman, industrial commission	Do.
James P. Massenburg	Secretary, industrial commission	Do.
H. J. Bryson	State geologist	Do.
NORTH DAKOTA		
S. A. Binek	State mine inspector	Bismarck.
R. H. Walker	Chairman, workmen's compensation bureau.	Do.
J. E. Pfeifer	Secretary, workmen's compensation bureau.	Do.
Frank C. Foley	State geologist, State geological survey	Grand Forks, University Station.

State mine inspectors and other officials connected with the mining industry of the United States—Continued

Name	Designation	Address
OHIO		
O. B. Chapman	Director, department of industrial relations.	Columbus.
Arnold F. Reiher	Chief statistician, division of labor statistics.	Do.
Thomas P. Kearns	Superintendent, industrial commission of Ohio, division of safety and hygiene.	Do.
James Berry	Chief, division of mines	Do.
Lawrence E. Misner	Inspector, district No. 1	Middleport.
Geo. Gears	Inspector, district No. 2	Murray City.
Andrew Ginnan	Inspector, district No. 3	Jacksonville.
Elmer Sagle	Inspector, district No. 4	Roseville.
Thos. McFarlane	Inspector, district No. 5	Byesville.
Stephen Williams	Inspector, district No. 6	Coshocton.
George H. Foster	Inspector, district No. 7	Massillon.
Lot H. Jenkins	Inspector, district No. 8	Martins Ferry.
John W. Harris	Inspector, district No. 9	Flushing.
Richard McGee	Inspector, district No. 10	Bellaire.
Andrew Mullen	Inspector, district No. 11	Adena.
Thos. G. Reese	Inspector, district No. 12	Salem.
Val E. Brown	Inspector, district No. 13	Pomeroy.
Isaac Vaughn	Inspector, district No. 14	Nelsonville.
Thomas A. Richards	Inspector, district No. 15	Shawnee.
E. W. Smith	Inspector, district No. 16	Cambridge.
John H. Price	Inspector, district No. 17	Midvale.
David J. Coneybeer	Inspector, district No. 18	Carrollton.
Oris W. Brown	Inspector, district No. 19	Ironton.
----------	Inspector, district No. 20	----------
Gilbert E. Archer	Inspector, district No. 21	Dresden.
Thos. E. McCartney	Inspector, district No. 22	Alliance.
P. W. Moore	Superintendent, rescue stations	Columbus.
J. C. Wilson	Oil and gas well inspector	Do.
Wilber Stout	State geologist	Do.
Thomas M. Gregory	Chairman, industrial commission	Do.
Albert D. Caddell	Secretary, industrial commission	Do.
OKLAHOMA		
Robert H. Brown	Chief mine inspector (mines, coal, lead, asphalt, gypsum, clay, etc.)	State Capitol, Oklahoma City.
James Jones	Assistant mine inspector, district No. 1	Colgate.
Tom Woods	Assistant mine inspector, district No. 2	Hartshorne.
Charles E. Bailey	Assistant mine inspector, district No. 3	1118 West 6th St., Okmulgee.
Ivan Fisher	Assistant mine inspector, district No. 4	316 F NW., Miami.
Andrew Fraley	Chairman, industrial commission	State Capitol, Oklahoma City.
Mabel Sherin	Secretary, industrial commission, and custodian of records.	Do.
Robert H. Dott	Director, Oklahoma Geological Survey	Norman.
OREGON		
J. C. Joy	Chairman, State industrial accident commission.	State Office Bldg., Salem.
T. Morris Dunne	Commissioner, State industrial accident commission.	Do.
Roy Buchanan	----do----------	Do.
Earl K. Nixon	Director, State department of geology and mineral industries.	704 Lewis Bldg., Portland.
PENNSYLVANIA		
Joseph J. Walsh	Acting secretary of mines, department of mines.	Harrisburg.
Joseph J. Walsh	Deputy secretary of mines, anthracite division.	Do.
P. F. Nairn	Deputy secretary of mines, bituminous division.	3021 Zephyr Ave., Pittsburgh.
Anthracite inspectors		
James Munley	Mine inspector, districts Nos. 1 and 2	166 Spruce St., Archbald.
L. M. Evans	Mine inspector, district No. 3	621 East Market St., Scranton.
----------	Mine inspector, district No. 4	----------
S. J. Phillips	Mine inspector, district No. 5	220 South Main St., Scranton.
Frank B. Magovern	Mine inspector, district No. 6	117 South Lincoln Ave., Scranton.
Henry R. Owens	Mine inspector, district No. 7	129 South Irving Ave., Scranton.
----------	Mine inspector, district No. 8	----------

State mine inspectors and other officials connected with the mining industry of the United States—Continued

Name	Designation	Address
PENNSYLVANIA—continued		
Anthracite inspectors—Contd.		
Edwin C. Curtis	Mine inspector, district No. 9	52 Poplar St., Kingston.
Joseph C. Hines	Mine inspector, district No. 10	27 James St., Pittston.
John J. Bonner	Mine inspector, district No. 11	421 Adams St., Freeland.
David T. Davis	Mine inspector, district No. 12	584 Simon Long Bldg., Wilkes-Barre.
Frank Kettle	Mine inspector, district No. 13	311 Brooks Bldg., Wilkes-Barre.
Frank A. Gleason	Mine inspector, district No. 14	424 Carey Ave., Wilkes-Barre.
D. J. Roderick	Mine inspector, district No. 15	741 West Diamond Ave., Hazleton.
William R. Bottomley	Mine inspector, district No. 16	66 James St., Hazleton.
William J. Clements	Mine inspector, district No. 17	25 Ruddle St., Coaldale.
James J. Shober	Mine inspector, district No. 18	227 West Ridge St., Box 162, Lansford.
T. A. Ryan	Mine inspector, district No. 19	1243 West Norweigian St., Pottsville.
Bert Golden	Mine inspector, district No. 20	5 East Mahanoy St., Mahanoy City.
	Mine inspector, district No. 21	
Harvey Hilbert	Mine inspector, district No. 22	1919 West Market St., Pottsville.
James Quigley	Mine inspector, district No. 23	45 North Chestnut St., Mount Carmel.
P. J. Friel	Mine inspector, district No. 24	133 East Dewart St., Shamokin.
James J. Grace	Mine inspector, district No. 25	Heckscherville.
Bituminous inspectors		
Alexander McCanch	Mine inspector, district No. 1	636 Chess St., Monongahela.
James D. Walker	Mine inspector, district No. 3	580 2d St., Butler.
Patrick H. O'Neill	Mine inspector, district No. 4	Fort Worth Hotel, DuBois.
Richard Maize	Mine inspector, district No. 5	111 Pennsylvania Ave., Uniontown.
R. D. Joseph	Mine inspector, district No. 6	180 Hamer Ave., Johnstown.
William G. Knapper	Mine inspector, district No. 8	South Center Drive, Philipsburg.
William T. McGee	Mine inspector, district No. 9	58 Wilson Ave., Uniontown.
W. H. Filer	Mine inspector, district No. 10	124 East Triumph St., Ebensburg.
J. J. McDonald	Mine inspector, district No. 11	202 Grant St., Greensburg.
T. J. Lewis	Mine inspector, district No. 12	235 Front St., Punxsutawney.
John V. McKenna	Mine inspector, district No. 13	Waynesburg.
W. J. McGregor	Mine inspector, district No. 14	1100 Woodmont Ave., New Kensington.
Dennis J. Keenan	Mine inspector, district No. 15	Carrolltown.
F. W. Howarth	Mine inspector, district No. 16	67 Tower Hill Road, Republic.
William L. McCoy	Mine inspector, district No. 17	75 Schley Ave., Ingram.
Richard E. George	Mine inspector, district No. 18	2724 5th Ave., Altoona.
John A. Burlas	Mine inspector, district No. 19	301 Walnut St., Irwin.
F. W. Cunningham	Mine inspector, district No. 20	230 South Centre Ave., Somerset.
	Mine inspector, district No. 21	
John F. Bell	Mine inspector, district No. 22	36 Park Ave., Dravosburg.
E. W. Wilkinson	Mine inspector, district No. 23	Sterling Graham Home, Masontown.
Michael W. Thomas	Mine inspector, district No. 24	509 Bedford St., Windber.
George J. Steinheiser	Mine inspector, district No. 25	450 Water St., Indiana.
P. J. Callaghan	Mine inspector, district No. 26	677 Chartiers St., Bridgeville.
George S. McCaa	Mine inspector, district No. 29	1113 De Victor Place, Pittsburgh.
W. B. Wardrop	Mine inspector, district No. 30	964 Philadelphia St., Indiana.
John F. Conrad	Electrical inspector	210 Hiland Ave., Ebensburg.
Ralph M. Bashore	Chairman, industrial board	Harrisburg.
J. S. Arnold	Secretary, industrial board	Do.
David L. Ullman	Chairman, workmen's compensation board.	724 Bankers Security Bldg., Philadelphia.
John R. Torquato	Secretary, workmen's compensation board.	Do.
George H. Ashley	State geologist, topographic and geological survey.	Harrisburg.
Thomas G. Kachuba	Inspector, mines and quarries division, Pennsylvania Department of Labor and Industry.	Do.

State mining inspectors and other officials connected with the mining industry of the United States—Continued

Name	Designation	Address
PHILIPPINE ISLANDS		
Ramon Torres	Secretary, department of labor	Manila.
Rosendo Regalado	Chief, ex officio, division of labor statistics	Do.
PUERTO RICO		
Prudencio Rivera Martinez	Commissioner, department of labor	San Juan.
RHODE ISLAND		
Thomas F. McMahon	Director, department of labor	Providence.
Charles W. Brown	Superintendent, Natural Resources Survey of Rhode Island.	Do.
SOUTH CAROLINA		
J. Roy Jones	Commissioner, department of agriculture, commerce, and industries.	Columbia.
John Dukes	Chairman, industrial commission	Do.
Stephen Taber	State geologist	Do.
SOUTH DAKOTA		
Clair Roddewig	Industrial commissioner	Pierre.
E. P. Rothrock	State geologist, State geological and natural history survey.	Vermilion.
TENNESSEE		
F. G. Scott	Acting commissioner, department of labor.	Nashville.
David Hanley	Superintendent, division of workmen's compensation.	Do.
J. A. Welch	Chief mine inspector	Bon Air.
W. W. Clymer	District mine inspector, eastern division	Knoxville.
Earl H. Hargis	District mine inspector, western division	Crossville.
Walter F. Pond	State geologist	Nashville.
TEXAS		
F. E. Nichols	Commissioner, bureau of labor statistics	Austin.
Otto Studer	Chairman, industrial accident board	Do.
Mrs. Berniece Grieder	Secretary, industrial accident board	Do.
E. H. Sellards	Director, bureau of economic geology	University of Texas, Austin.
UTAH		
William M. Knerr	Chairman, industrial commission	State Capitol, Salt Lake City.
Carolyn I. Smith	Secretary, industrial commission	Do.
John Taylor	State coal-mine inspector	Box 722, Price.
E. A. Hodges	State metal-mine inspector	State Capitol, Salt Lake City.
E. H. Burdick	Consulting geologist and engineer for State land board.	Do.
VERMONT		
Howard E. Armstrong	Commissioner of industries	Montpelier.
Elbridge C. Jacobs	State geologist, University of Vermont	Burlington.
VIRGINIA		
Thomas B. Morton	Commissioner of labor and industry	Richmond.
Mrs. Mary A. Devereux	Secretary, labor and industry	Do.
C. P. Kelly	Chief State mine inspector	Big Stone Gap.
O. F. Gibson	Mine inspector	Jonesville.
W. J. Elgin	do	Richlands.
E. F. Fullen	do	Exeter.
Parke P. Deans	Chairman, industrial commission	Richmond.
W. F. Bursey	Secretary, industrial commission	Do.
Arthur C. Bevan	Director and State geologist, Virginia Geological Survey.	University.
WASHINGTON		
E. Pat Kelly	Director, department of labor and industries.	Olympia.
Roal S. Robinson	Director's secretary, department of labor and industries.	Do.
Ed. Sorger	Supervisor of safety and industrial relations, department of labor and industries.	Do.
J. E. Bergin	Chief mine inspector	314 Insurance Bldg., Seattle.
L. M. Larson	Secretary, chief mine inspector	Do.
Harold E. Culver	Supervisor of geology	Pullman.

State mining inspectors and other officials connected with the mining industry of the United States—Continued

Name	Designation	Address
WEST VIRGINIA		
N. P. Rhinehart	Chief, department of mines	Charleston.
J. E. Morris	Clerk	South Ruffner, Charleston.
William Moore	Inspector at large, districts Nos. 1, 2, and 3	Morgantown.
G. R. Waddell	Mine inspector, district No. 1	Wellsburg.
Alex Bryce	Mine inspector, district No. 2	Mona.
Joseph Bierer	Mine inspector, district No. 3	Morgantown.
P. J. McGraw	Mine inspector, district No. 4	Farmington.
L. S. McGee	Mine inspector, district No. 5	Shinnston.
W. H. Sandridge	Mine inspector, district No. 6	Buckhannon.
Peter F. McLinden	do	Fairmont.
C. L. Milligan	Mine inspector, district No. 7	St. Albans.
R. L. Jenkins	Mine inspector, district No. 8	500 Thompson St., Charleston.
C. O. Morris	Mine inspector, district No. 9	1226 Oakmont Rd., Charleston.
Joe Mulligan	Mine inspector, district No. 10	Montgomery.
H. E. Taylor	do	St. Albans.
J. H. Carter	Mine inspector, district No. 11	Prince.
J. S. Mason	Mine inspector, district No. 12	Oak Hill.
George Bryan	Mine inspector, district No. 13	Do.
I. O. Shumate	Mine inspector, district No. 14	Mt. Hope.
C. M. Meadows	Inspector at large, districts Nos. 15, 16, and 17.	Beckley.
L. E. Allen	Mine inspector, district No. 15	Do.
J. L. Bailey	Mine inspector, district No. 16	Do.
F. S. Houck	Mine inspector, district No. 17	Mullens.
E. L. Chatfield	Inspector at large, districts Nos. 18, 19, 20, and 21.	Welch.
W. C. Sturgill	Mine inspector, district No. 18	Maybeury.
J. W. Hall	Mine inspector, district No. 19	Northfork.
W. W. Jones	Mine inspector, district No. 20	Welch.
Hugh D. Lowe	Mine inspector, district No. 21	Do.
R. H. Tinsley	do	Do.
J. F. White	Inspector at large, districts Nos. 22, 23, 24, and 25.	Logan.
Young Lawson	Mine inspector, district No. 22	Nolan.
James Biggs	Mine inspector, district No. 23	Logan.
R. V. Waldron	Mine inspector, district No. 24	Do.
Walter Pelter	Mine inspector, district No. 25	Sharples.
E. Y. McVey	Mine rescue director	Wheeling.
C. P. Pride	do	Morgantown.
H. P. Farley	do	Logan.
Robert Lilly	do	Mt. Hope.
W. L. Lyons	do	Gary-Welch.
Floyd Gamble	Supply clerk	Charleston.
Kenneth Williams	First-aid director	Clarksburg.
Marvin W. Kessler	do	Ansted-Gauley.
Ray Ellis	do	Logan.
Roy Brown	do	Morgantown.
Stanley H. Mooney	do	Nellis.
F. L. Farley	Inspector of quarries	Alderson.
Joseph F. Kent	Inspector of oil and gas wells	1021 Virginia St., Charleston.
D. G. Courtney	do	161 Oak St., Clarksburg.
Edward A. Brookes	Inspector of scales	1815 Warwood Ave., Wheeling.
J. L. Pauley	do	610 Ohio Ave., Charleston.
A. G. Mathews	Commissioner, workmen's compensation department.	Charleston.
P. R. Harrison, Jr.	Secretary, workmen's compensation department.	Do.
Paul H. Price	State geologist	Morgantown.
H. G. Houtz	Special inspector	2413 Washington St., Charleston.
WISCONSIN		
Voyta Wrabetz	Chairman, industrial commission	Madison.
Helen E. Gill	Administrative assistant, industrial commission.	Do.
R. McA. Keown	Chief engineer, industrial commission	Do.
A. H. Findeisen	Mining engineer, industrial commission	Do.
H. A. Nelson	Director, workmen's compensation, industrial commission.	Do.
E. F. Bean	State geologist, geological division, State geological and natural history survey.	Do.
WYOMING		
Hugh McLeod	State mine inspector	Rock Springs.
Walter H. Walsh	Deputy coal-mine inspector	Do.
Thomas Harrison	do	Sheridan.
J. Kirk Baldwin	State treasurer, workmen's compensation	Capitol Bldg., Cheyenne.
P. J. Coady	Assistant deputy and department manager.	Do.
S. H. Knight	State geologist	University of Wyoming, Laramie.

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