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ANALYSIS OF 17,906 FATAL FARM-WORK ACCIDENTS IN THE UNITED STATES
1940-48 1/

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In the 9 years from 1940 to 1948, accidents killed nearly 18,000 farm people according to records tabulated by State bureaus of vital statistics. This amounted to an average of 1,990 persons annually out of a total farm population of about 28 million. There is reason to believe that most of these fatal accidents occurred in connection with farm work or allied activities.

The wide range among areas in accident-frequency rates per 100,000 farm people, as shown in table 1, also reflects chance variations and reporting failures, along with the real differences attributable to factors such as type of agriculture and extent of mechanization. Moreover, it is not likely that all of the accidents involving the extremely old and the extremely young occurred in connection with farm work. (See table 10.)

But with respect to work accident fatalities to farm people, the data appear to be conservative. For example, the National Safety Council has estimated that farm-work accidents take an average annual toll of about 4,500 lives. Nevertheless, these data should add to our knowledge of the incidence of accidents to farm people and may suggest points to be emphasized in prevention programs.

Frequency

Although admittedly incomplete, the data indicate that for the United States as a whole there were an average of 7.21 fatal accidents per 100,000 farm persons; an average of 18.86 per 100,000 employed; or 33.96 per 100,000 farms (table 1). Based on total farm population, the accident-frequency rate varied from 3.51 per 100,000 in the East and West South Central States to 14.86 in the Mountain States. On the basis of number of farms, the rate was lowest - 17.13 per 100,000 farms - for the West South Central States and highest (72.30) for the Mountain States. Frequency rates based on the average number of farm people employed were also lowest for the West South Central States (8.96 per 100,000 employed) and highest (38.01) for the Mountain States.

Additional data concerning fatal accidents to farm people in Kansas and South Carolina indicate that not all these fatalities are included in reports of vital statistics, perhaps because of lack of information as to occupation and for

1/ National Office of Vital Statistics, Public Health Service, Federal Security Agency.

other reasons. The data for Kansas, covering the period 1930-49, for example, are considered to be highly reliable. They indicate a frequency of fatal farm-work accidents almost 30 percent higher than that shown in table 1 for the West North Central States, which include Kansas (table 2). Likewise, the South Carolina data shown in table 2 for the period 1944-50, though based on newspaper clippings, indicate an accident fatality rate to farm people nearly four times as high as that shown in table 1 for the South Atlantic States.

Table 1.- Frequency of fatal farm-work accidents, by average number of farm people exposed, average number of farms, and average annual number of farm workers, geographic divisions, 1940-48

Division	Number of fatalities		
	Per 100,000 farm people	Per 100,000 farms 1/	Per 100,000 farm workers
	Number	Number	Number
New England	10.57	46.00	28.94
Middle Atlantic	13.07	61.90	34.99
East North Central	9.94	43.44	27.29
West North Central	10.85	45.39	28.05
South Atlantic	3.76	20.09	10.23
East South Central	3.51	17.31	9.19
West South Central	3.51	17.13	8.96
Mountain	14.86	72.30	38.01
Pacific	11.92	50.59	25.04
United States	7.21	33.96	18.86

1/ Analysis based on 1945 census data.

Table 2.- Estimated annual average frequency rates of fatal farm accidents occurring in Kansas and South Carolina per 100,000 farms, per 100,000 farm people, and per 100,000 farm workers
1/

Item	Frequency per 100,000 units		
	Kansas	South Carolina	Both
	Number	Number	Number
Based on number of farms	56.97	96.19	65.93
Based on farm population	14.06	17.17	14.96
Based on farm employment	37.11	34.50	36.20

1/ Data covering 20 years (1930-49) for Kansas and 7 years (1944-50) for South Carolina.

An expansion of these rates (table 2) to a total of 5,700,000 farms in the United States indicates that approximately 3,600 farm people lose their lives in farm accidents annually; that of an annual average of 10,500,000 farm workers, approximately 3,650 farm people are killed; and that, of a total farm population

of 27,800,000, approximately 4,000 farm people are fatally injured each year as a result of accidents.

In effect, these rates indicate that each year an average of one fatality for every 152 farms would be expected to occur; one for every 668 farm people; or one for every 276 persons employed on farms.

Causes

Almost half, or 47.6 percent, of the fatalities included in the vital statistics were associated with the use of machinery; 17.2 percent with animals; and 35.2 percent resulted from miscellaneous causes, such as burns, drownings, and poisons (table 3). Approximately 94 percent of the fatalities occurred to males and only about 6 percent to females.

Table 3.- Number of fatal farm-work accidents, by principal causes and by sex, geographic divisions, 1940-48

Division	Principal cause and sex					
	Machinery		Animals		Miscellaneous	
	Male	Female	Male	Female	Male	Female
	Number	Number	Number	Number	Number	Number
New England	233	10	99	4	265	10
Middle Atlantic	848	55	310	19	662	39
East North Central	1,829	118	517	35	1,168	63
West North Central	2,098	123	644	61	1,178	112
South Atlantic	721	49	349	12	703	52
East South Central	532	29	259	22	618	36
West South Central	597	33	249	19	427	29
Mountain	585	37	269	19	443	33
Pacific	597	29	172	20	444	22
United States	8,040	483	2,868	211	5,908	396

As vital statistics do not show details as to the specific causes of these farm fatalities, the 10 leading causes of farm fatalities in Kansas and South Carolina are presented in order to furnish some idea of the specific agencies or instrumentalities which account for so much loss of life (table 4). As the Kansas data are confined to farm-work fatalities, few accidental deaths from automobiles are reported; however, the South Carolina data, not relating exclusively to farm-work accidents, indicate that automobiles were responsible for most of the deaths in that State. Tractors ranked second, and the handling of farm work stock was third.

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Analysis of 17,906 Farm-Work Accidents in the United States

Table 4.- Distribution of 2,555 fatal farm accidents in Kansas and South Carolina, by leading agency or cause of injury ^{1/}

Agency or cause of injury	Fatal accidents	Percentage
	Number	Percent
Automobiles, including buses	306	12
Tractors	304	12
Horses and mules	235	9
Falls	204	8
Burns	200	8
Vehicles	150	6
Lightning	127	5
Drowning	122	5
Heat (climatic)	114	4
Harvesting machinery and equipment	87	3
All other	706	28

^{1/} Kansas data from Division of Vital Statistics, State Board of Health, covering period 1930-49. South Carolina data from newspaper clippings of fatalities to farm and rural residents covering period 1944-50.

One of the great difficulties in better understanding the farm accident situation is relating the primary agency of injury to its use at the time of injury. For example, an analysis of the Kansas and South Carolina tractor fatalities in relation to the number of tractors on farms indicates that fatality rates per 100,000 tractors are closely allied (table 5). The rate in Kansas was 15.42 per 100,000 tractors compared with 13.54 in South Carolina. There was, however, a striking difference in number of fatalities per 100,000 motor trucks on farms in the two States. In Kansas less than one fatality per 100,000 trucks occurred; but in South Carolina there were nearly 35. Likewise, fatalities per 100,000 automobiles on farms varied widely between the two States. Rates with respect to work animals and cattle were fairly close in the two States. Bulls were reported to be more hazardous than other animals in Kansas, but no deaths caused by bulls were reported in the data for South Carolina.

A further distribution of the causes of fatal accidents to farm people in Kansas and South Carolina indicates that 45 percent were caused by mechanical agencies; 13 percent by animals; and 42 percent by miscellaneous agencies (table 6). More than half of the mechanically caused fatalities were associated with the use of automobiles and tractors. Horses and mules accounted for the largest number of accidental deaths attributed to animals, followed in order by bulls and other cattle. Under the miscellaneous category, falls (a result rather than a cause) accounted for the greatest number of fatalities, followed in order by burns, lightning, and drowning.

In South Carolina, 34 percent of the fatalities caused by automobiles resulted from collisions, principally between automobiles; 32 percent occurred to pedestrians while walking on or crossing highways; and 22 percent occurred when automobiles overturned or crashed (table 7). In only a few cases were

Table 5.- Frequency of fatal farm accidents per 100,000 units of exposure, Kansas and South Carolina ^{1/}

Agency or cause of injury	Frequency per 100,000 units		
	Kansas	South Carolina	Average
	Number	Number	Number
Tractors	15.42	13.54	15.30
Trucks . . . . .	.94	34.79	5.41
Automobiles . . . . .	.03	44.95	8.20
Horses	2.62	.61	2.58
Mules	1.69	1.57	1.63
Bulls	4.69 ^{2/}		^{2/}
Cattle, other than bulls . . . . .	.06	.04	.06
All animals . . . . .	.54	.51	.54

^{1/} Kansas State Board of Health reported 1,704 farm fatalities in 20-year period 1930-49. South Carolina data based on newspaper clippings of farm and rural fatalities for 7-year period 1944-50. Available census figures on property were used for reporting years and estimates made for unreported years.

^{2/} Not available.

mechanical failures, such as tire blowouts or wheels running off axles, given as causes. These data apparently indicate that most automobile accidents are caused by neglect or carelessness, such as failure of pedestrians to walk on the right side of the highway, facing oncoming traffic; driving at excessive speed on curves; and failure to yield the right-of-way to others on the highway.

Lightning was one of the 10 leading causes of death reported in Kansas and South Carolina. More than two-thirds, or 68 percent, of these deaths occurred while the victims were in barns, barn lots, or fields (table 8). A surprisingly high number of the victims (19 percent) were struck while operating tractors. In one accident the driver of a tractor was killed, although a rider on the tractor was unhurt. Thirteen percent of the fatalities occurred in farm homes, most of them on porches or near windows or fireplaces. As chimneys are usually the highest points on most farmhouses and the mortar joints are lined with carbon, which is considered a good conductor of electricity, fireplaces may be the most dangerous areas in homes that are not equipped with adequate lightning rods. The data do not show whether any of the houses struck by lightning were so equipped, but experience would indicate that they were not.

One of the more tragic highlights of the South Carolina data was the number of fatalities caused by burns. Half of the cases involved burns when farm homes were destroyed by fire and rescue was impossible. About a third of these fatalities occurred when small children were left alone in homes while parents were busy elsewhere. Flammable liquids caused 36 percent of the fatalities. The practice of starting or quickening fires with kerosene was particularly pronounced as a cause of these fatalities. In 8 percent of the cases, death followed when clothing caught fire from open fires or hot stoves.

Table 6 - Approximate causes of fatal farm accidents, Kansas and South Carolina 1/

Cause of accident	Fatalities			
	Kansas Number	South Carolina Number	Total Number	Percentage Percent
1. Mechanical agencies	699	450	1,149	45
a. Automobiles	1	305	306	12
b. Tractors	287	17	304	12
c. Vehicles	148	2	150	6
d. Harvesting machinery and equipment	86	1	87	3
e. Cultivating machinery and equipment	60	1	61	2
f. Trucks	9	51	60	2
g. Trains	0	52	52	2
h. Airplanes	2	4	6	0
i. All other mechanical agencies	106	17	123	5
2. Animals	312	24	336	13
a. Horses and mules	216	19	235	9
b. Bulls	62	0	62	2
c. Cattle other than bulls	28	1	29	1
d. All other animals	6	4	10	0
3. Miscellaneous agencies	693	377	1,070	42
a. Falls	185	19	204	8
b. Burns	67	133	200	8
c. Lightning	98	29	127	5
d. Drowning	13	109	122	5
e. Heat (climatic)	114	0	114	4
f. Falling trees, limbs	59	10	69	3
g. Firearms	11	43	54	2
h. Explosions	12	7	19	1
i. Poisons	12	3	15	1
j. Cold (climatic)	13	0	13	1
k. Electricity	7	4	11	0
l. Suffocation	8	2	10	0
m. Gases, vapors, etc.	7	2	9	0
n. All other miscellaneous and not classified	87	16	103	4

1/ Kansas data from Division of Vital Statistics, State Board of Health, covering period 1930-49. South Carolina data from newspaper clippings of fatalities to farm and rural residents covering period 1944-50.

Table 7.- Characteristics of 305 fatal accidents resulting from use of automobiles, South Carolina 1/

Cause of accident	Fatalities	
	Number	Percent
1. Pedestrian fatalities	99	32
a. Walking on or crossing highway	97	
b. Victim standing beside automobile	2	
2. Collision fatalities	100	34
a. Collided with another motor vehicle	79	
b. Collided with bicycle	15	
c. Collided with motorcycle	4	
d. Collided with wagon and team	1	
e. Collided with tractor at night	1	
3. Ran off highway, struck obstruction, or overturned	66	22
4. Other	40	12
a. Tire blew out	3	
b. Fell from moving automobile	3	
c. Miscellaneous or not classified	34	
Total	305	100

1/ Newspaper clippings, 1944-50.

Age Groups

The greatest number of farm-work accident fatalities in the United States, as reported in vital statistics, occurred in the age group 60-69, and the second highest in the age group 50-59 (table 10). Of the total of 17,906 fatalities recorded, 16,510 occurred to those of the white race and 1,396 to those of other races. About 51 percent of the victims received hospital treatment. As there was no way to determine the length of time elapsing between injury and death, it was impossible to ascertain how many of these victims might have responded to treatment if it had been available when the accidents occurred.

In the New England, Middle Atlantic, East North Central, West North Central, and South Atlantic States, the greatest number of fatalities occurred in the age group 60-69. The smallest number, because fewer persons were exposed, occurred in the age group 80 and over, except in the New England States, where the smallest number was among children under 10 years of age. In the remaining divisions, East South Central, West South Central, Mountain, and Pacific States, the greatest number of fatalities occurred in the age group 50-59, and the lowest in the age group 80 and over.

Table 8.- Characteristics of fatalities caused by lightning,
Kansas and South Carolina 1/

Cause of accident	Fatalities			
	Kansas	South Carolina	Total	
	Number	Number	Number	Percent
1. In barn, lot, or field	57	5	62	49
2. Driving tractors	22	2	24	19
3. In farm home	0	16	16	13
a. On porch		4	4	
b. At window		3	3	
c. At fireplace		1	1	
d. Radio aerial		1	1	
e. House struck, no details		7	7	
4. Riding or leading horses or mules	7	1	8	6
5. Hauling feed in wagon or hayrack	6	0	6	5
6. Working on combine or threshing machine	2	0	2	2
7. Working in metal brooder house	2	0	2	2
8. Working on windmill	2	0	2	2
9. Walking in open	0	1	1	-
10. Sitting in door of tent	0	1	1	-
11. Clothes line in yard	0	1	1	-
12. Other not classified or unknown	0	2	2	2
	98	29	127	100

1/ Kansas data for 1930-49 from Division of Vital Statistics, State Board of Health. South Carolina data for 1944-50 from newspaper clippings.

Table 9.- Characteristics of fatalities caused by burns,
South Carolina 1/

Cause	Fatalities	
	Number	Percent
1. Burned to death when home destroyed	67	50
a. Small children left in home by parents	23	
b. Died in rescue efforts	6	
c. Other not classified	38	
2. Flammable liquids	48	36
a. Starting fire with kerosene	26	
b. Explosion of kerosene lamp	10	
c. Explosion of stoves	10	
d. Gasoline explosion	2	
3. Clothing caught from open fire	10	8
4. Children playing with matches and fire	3	2
5. Burned in automobile when it caught fire	2	2
6. Forest and grass fires	2	2
7. Fall into hot water	1	0
Total	133	100

1/ Newspaper clippings, 1944-50.

Table 10.- Distribution of fatal farm-work accidents by age group, race, hospitalization, principal cause, and geographic divisions, 1940-48

NEW ENGLAND

Age group	Total	Race		Hos- pi- tal- ized	Principal cause					
		White	Other		Machinery		Animals		Miscellaneous	
					Male	Female	Male	Female	Male	Female
No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Under 5	13	13	0	6	8	2	1	0	2	0
5-9 . .	11	11	0	7	6	1	1	0	2	1
10-14 .	19	18	1	11	9	0	3	0	7	0
15-19 .	24	23	1	12	15	1	1	0	7	0
20-29 .	47	46	1	26	21	1	4	0	21	0
30-39 .	49	48	1	28	23	1	1	0	23	1
40-49 .	61	61	0	33	22	0	10	0	28	1
50-59 .	98	97	1	55	37	2	15	0	43	1
60-69 .	145	145	0	81	54	2	26	1	62	0
70-79 .	118	118	0	67	30	0	25	2	59	2
80 and over .	35	35	0	18	8	0	11	1	11	4
Age not given	1	1	0	0	0	0	1	0	0	0
Total	621	616	5	344	233	10	99	4	265	10

MIDDLE ATLANTIC

Under 5	67	65	2	34	27	17	7	3	10	3
5-9 . .	55	53	2	26	23	7	11	0	11	3
10-14 .	74	72	2	39	45	1	12	1	11	4
15-19 .	92	90	2	45	54	2	9	0	26	1
20-29 .	126	122	4	58	71	2	8	2	40	3
30-39 .	137	136	1	69	75	8	12	1	39	2
40-49 .	217	214	3	119	121	3	27	3	60	3
50-59 .	314	313	1	179	125	5	63	3	111	7
60-69 .	442	438	4	237	169	8	86	2	167	10
70-79 .	319	315	4	192	112	1	53	4	147	2
80 and over .	89	88	1	45	26	1	21	0	40	1
Age not given	1	1	0	1	0	0	1	0	0	0
Total	1,933	1,907	26	1,044	848	55	310	19	662	39

Continued

Table 10.- Distribution of fatal farm-work accidents by age group, race, hospitalization, principal cause, and geographic divisions, 1940-48 - Continued

EAST NORTH CENTRAL

Age group	Total	Race		Hos- pi- tal- ized	Principal cause					
		White	Other		Machinery		Animals		Miscellaneous	
					Male	Female	Male	Female	Male	Female
No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Under 5	137	136	1	54	72	29	5	1	23	7
5-9 . .	113	113	0	68	56	15	16	3	22	1
10-14 .	136	135	1	63	80	11	14	3	25	3
15-19 .	163	163	0	84	97	7	14	0	41	4
20-29 .	250	250	0	128	155	8	10	2	72	3
30-39 .	316	316	0	151	175	13	34	2	84	8
40-49 .	399	393	6	214	210	7	60	6	112	4
50-59 .	686	681	5	374	332	14	96	3	231	10
60-69 .	824	820	4	458	381	8	140	9	271	15
70-79 .	547	545	2	299	217	4	103	5	212	6
80 and over .	155	155	0	85	52	2	24	1	74	2
Age not given	4	3	1	3	2	0	1	0	1	0
Total	3,730	3,710	20	1,981	1,829	118	517	35	1,168	63

WEST NORTH CENTRAL

Under 5	219	218	1	84	112	45	17	13	21	11
5-9 . .	145	142	3	72	73	20	19	9	19	5
10-14 .	186	185	1	91	92	9	34	2	46	3
15-19 .	206	202	4	83	117	7	21	1	56	4
20-29 .	334	330	4	163	211	6	28	0	85	4
30-39 .	409	403	6	174	244	8	41	3	105	8
40-49 .	461	456	5	233	259	8	63	8	118	5
50-59 .	704	699	5	358	344	13	127	8	196	16
60-69 .	787	779	8	441	390	3	129	9	234	22
70-79 .	568	566	2	300	215	2	126	3	199	23
80 and over .	193	193	0	99	41	2	39	5	97	9
Age not given	4	4	0	3	0	0	0	0	2	2
Total	4,216	4,177	39	2,101	2,098	123	644	61	1,178	112

Continued

Table 10.- Distribution of fatal farm-work accidents by age group, race, hospitalization, principal cause, and geographic divisions, 1940-48 - Continued

SOUTH ATLANTIC

Age group	Total	Race		Hos- pi- tal- ized	Principal cause					
		White	Other		Machinery		Animals		Miscellaneous	
					Male	Female	Male	Female	Male	Female
No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Under 5	58	38	20	19	30	13	5	1	5	4
5-9 . .	70	47	23	32	41	11	10	3	5	0
10-14 .	108	71	37	47	37	4	32	0	32	3
15-19 .	133	83	50	52	57	4	26	0	45	1
20-29 .	178	121	57	87	79	4	20	1	69	5
30-39 .	203	136	67	108	73	2	31	0	93	4
40-49 .	255	172	83	142	103	6	33	1	109	3
50-59 .	280	180	100	154	97	1	69	2	100	11
60-69 .	302	231	71	169	106	4	61	4	117	10
70-79 .	239	196	43	124	89	0	48	0	95	7
80 and over	59	44	15	29	9	0	13	0	33	4
Age not given	1	0	1	1	0	0	1	0	0	0
Total	1,886	1,319	567	964	721	49	349	12	703	52

EAST SOUTH CENTRAL

Under 5	47	34	13	23	18	4	11	2	9	3
5-9 . .	55	41	14	19	24	8	11	1	10	1
10-14 .	98	74	24	29	37	3	31	1	26	0
15-19 .	113	76	37	47	41	2	22	1	43	4
20-29 .	134	90	44	56	51	2	16	1	62	2
30-39 .	176	125	51	70	66	3	23	1	77	6
40-49 .	181	138	43	92	72	0	26	2	77	4
50-59 .	225	159	66	113	88	3	29	3	98	4
60-69 .	217	166	51	110	60	1	42	3	103	8
70-79 .	193	150	43	82	62	2	36	4	86	3
80 and over	54	48	6	24	13	0	11	3	26	1
Age not given	3	1	2	3	0	1	1	0	1	0
Total	1,496	1,102	394	668	532	29	259	22	618	36

Continued

Table 10.- Distribution of fatal farm-work accidents by age group, race, hospitalization, principal cause, and geographic divisions, 1940-48 - Continued

WEST SOUTH CENTRAL

Age group	Total	Race		Hos- pi- tal- ized	Principal cause					
		White	Other		Machinery		Animals		Miscellaneous	
					Male	Female	Male	Female	Male	Female
No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	
Under 5	57	48	9	24	21	9	10	2	13	2
5-9 . .	67	52	15	29	34	7	13	1	10	2
10-14 .	84	72	12	34	43	2	13	4	16	6
15-19 .	103	80	23	46	48	1	18	3	31	2
20-29 .	138	110	28	59	69	0	16	0	50	3
30-39 .	156	123	33	72	79	4	20	1	45	7
40-49 .	164	125	39	78	64	3	26	2	65	4
50-59 .	214	179	35	102	102	4	43	0	65	0
60-69 .	198	159	39	84	81	2	47	4	63	1
70-79 .	137	117	20	63	47	1	33	0	55	1
80 and over	33	28	5	11	8	0	9	2	13	1
Age not given	3	2	1	1	1	0	1	0	1	0
Total	1,354	1,095	259	603	597	33	249	19	427	29

MOUNTAIN

Under 5	71	68	3	20	33	14	10	1	7	6
5-9 . .	61	61	0	25	27	4	17	3	8	2
10-14 .	78	74	4	34	28	3	21	2	21	3
15-19 .	108	101	7	57	46	3	20	1	35	3
20-29 .	126	123	3	66	51	2	25	0	45	3
30-39 .	136	131	5	60	56	2	26	0	48	4
40-49 .	160	152	8	95	74	5	24	0	56	1
50-59 .	259	249	10	150	104	2	48	7	93	5
60-69 .	237	230	7	134	102	2	48	2	83	0
70-79 .	123	120	3	64	55	0	25	3	36	4
80 and over	27	27	0	11	9	0	5	0	11	2
Age not given	0	0	0	0	0	0	0	0	0	0
Total	1,386	1,336	50	716	585	37	269	19	443	33

Continued

Table 10.- Distribution of fatal farm-work accidents by age group, race, hospitalization, principal cause, and geographic divisions, 1940-48 - Continued

PACIFIC

Age group	Total	Race		Hos- pi- tal- ized	Principal cause					
		White	Other		Machinery		Animals		Miscellaneous	
					Male	Female	Male	Female	Male	Female
No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Under 5	49	46	3	12	27	10	1	2	5	4
5-9	38	38	0	20	15	6	1	2	11	3
10-14	49	47	2	25	26	4	3	1	13	2
15-19	66	65	1	30	40	1	7	3	15	0
20-29	104	100	4	49	54	1	6	2	39	2
30-39	144	141	3	71	69	2	13	1	58	1
40-49	170	167	3	87	82	2	25	2	57	2
50-59	261	251	10	126	120	2	39	2	96	2
60-69	236	229	7	131	106	1	43	1	83	2
70-79	131	129	2	77	49	0	27	3	49	3
80 and over	35	34	1	17	9	0	6	1	18	1
Age not given	1	1	0	0	0	0	1	0	0	0
Total	1,284	1,248	36	645	597	29	172	20	444	22

UNITED STATES

Under 5	718	667	51	276	348	143	67	25	95	40
5-9	615	557	58	298	299	79	99	22	98	18
10-14	832	748	84	373	397	37	163	14	197	24
15-19	1,008	883	125	456	515	28	138	9	299	19
20-29	1,437	1,292	145	692	762	26	133	8	483	25
30-39	1,726	1,559	167	803	860	43	201	9	572	41
40-49	2,068	1,878	190	1,093	1,007	34	294	24	682	27
50-59	3,041	2,808	233	1,611	1,349	46	529	28	1,033	56
60-69	3,388	3,197	191	1,845	1,449	31	622	35	1,183	68
70-79	2,375	2,256	119	1,268	876	10	476	24	938	51
80 and over	680	652	28	339	175	5	139	13	323	25
Age not given	18	13	5	12	3	1	7	0	5	2
Grand total	17,906	16,510	1,396	9,066	8,040	483	2,868	211	5,908	396

By Months

The data showed that for the United States as a whole the greater number of fatal farm-work accidents occurred in July, followed rather closely by August, whereas fewer fatalities occurred in January and February (tables 11 and 12 and fig. 1). By geographic divisions, the greatest number of fatalities caused by accidents occurred in July in the Middle Atlantic, East North Central, South Atlantic, and Pacific States; and in August in the New England, West North Central, and Mountain States. In the East South Central States equal numbers occurred during the months of June, July, and September. In the West South Central States equal numbers occurred in June and August. The smallest accident fatalities occurred during January in five geographic divisions; during February in three, and during December in one. The percentage distribution by months is given in table 11.

Although basic data for comparative purposes are not available in detail, it appears that the greatest hazard occurs to farm people aged 80 and over (table 13). The average rate per 100,000 farm workers was 129.06, or nearly 17 times greater than the rate in the age group 20-29. This indicates that many aged persons, although not physically able, are still attempting to do farm work.

The data for South Carolina indicate that nearly half (42 percent) of the fatalities occurred to young people under 20 years of age. This age group also accounted for more than a third (38 percent) of the accident fatalities due to the three principal causes - automobiles, burns, and drowning. Moreover, nearly a third of the pedestrian fatalities from automobiles in South Carolina, and more than half of the fatalities due to burns, occurred to children under 10 years of age. Nearly three-fourths of all fatalities from burns occurred during the fall and winter months.

A total of 1,065 persons were injured in the 728 accidents included in the South Carolina data, or 1.5 injuries and 1.2 fatalities per accident. Of these fatalities, 64 percent were killed instantly, 23 percent lived less than 1 day following their accidents, 9 percent died within the first week, 2 percent died after 7 to 30 days, and 2 percent died after surviving their accidents more than 30 days.

By States

The largest number of fatal farm-work accidents was reported from Wisconsin, followed in order by New York, Iowa, Ohio, Pennsylvania, Minnesota, and Missouri (table 14). Each of these States had an annual average of more than 100 such fatalities during the 9-year period 1940-48. Wisconsin, with 1,001 fatal accidents, averaged 144 yearly. Rhode Island reported only 15 of these fatalities during the period; Delaware 28, and Nevada 49.

Table 11.- Distribution of fatal farm-work accidents by months, geographic divisions, 1943-48

Division	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
United States	589	628	753	974	1,121	1,182	1,534	1,408	1,167	1,147	907	675	12,085
New England	26	20	26	31	42	28	53	62	38	36	30	25	417
Middle Atlantic	48	45	84	83	118	143	221	150	125	108	82	63	1,270
East North Central	103	117	131	195	211	248	354	282	227	237	204	140	2,449
West North Central	136	127	145	236	282	256	338	355	306	289	223	154	2,847
South Atlantic	83	91	105	117	120	120	134	122	107	120	88	87	1,294
East South Central	60	71	81	105	95	106	106	98	106	100	77	62	1,067
West South Central	47	64	69	66	78	90	74	90	81	87	80	51	877
Mountain	36	44	47	79	83	104	134	146	93	83	67	49	965
Pacific	50	49	65	62	92	87	120	103	84	87	56	44	899

Division	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
United States	4.8	5.2	6.2	8.0	9.3	9.3	9.8	12.7	11.7	9.7	9.5	7.5	5.6
New England	6.2	4.8	6.2	7.4	10.1	10.1	6.7	12.7	14.9	9.1	8.7	7.2	6.0
Middle Atlantic	3.8	3.5	6.6	6.5	9.3	9.3	11.3	17.4	11.8	9.8	8.5	6.5	5.0
East North Central	4.2	4.8	5.3	8.0	8.6	10.1	14.5	14.5	11.5	9.3	9.7	8.3	5.7
West North Central	4.7	4.4	5.1	8.3	9.9	9.9	9.0	11.9	12.5	10.8	10.2	7.8	5.4
South Atlantic	6.4	7.0	8.1	9.0	9.3	9.3	9.3	10.4	9.4	8.3	9.3	6.7	6.8
East South Central	5.6	6.7	7.6	9.9	8.9	9.9	9.9	9.9	9.2	9.9	9.4	7.2	5.8
West South Central	5.4	7.3	7.9	7.5	8.9	10.3	10.3	8.4	10.3	9.2	9.9	9.1	5.8
Mountain	3.7	4.5	4.9	8.2	8.6	10.8	13.9	13.9	15.1	9.6	8.6	7.0	5.1
Pacific	5.6	5.4	7.2	6.9	10.2	9.7	9.7	13.4	11.5	9.3	9.7	6.2	4.9

Table 12.- Distribution of fatal farm-work accidents by month of occurrence, race, sex, hospitalization, principal cause, and geographic divisions 1943-48

NEW ENGLAND

Month	Total	Race		Sex		Hospi- talized	Principal cause		
		White	Other	Male	Female		Machinery	Animals	Miscellaneous
	Number	Number	Number	Number	Number	Number	Number	Number	Number
January	26	26	0	26	0	19	3	7	16
February	20	20	0	19	1	15	7	3	10
March	26	26	0	25	1	13	8	4	14
April	31	31	0	31	0	16	12	7	12
May	42	42	0	41	1	16	23	7	12
June	28	28	0	26	2	14	11	5	12
July	53	52	1	51	2	38	29	8	16
August	62	61	1	55	7	33	30	8	24
September	38	37	1	35	3	22	16	2	20
October	36	36	0	35	1	19	10	4	22
November	30	30	0	30	0	14	8	7	15
December	25	25	0	25	0	13	6	4	15
Total	417	414	3	339	18	232	163	66	188

MIDDLE ATLANTIC

January	48	48	0	47	1	25	12	15	21
February	45	45	0	40	5	19	10	5	30
March	84	84	0	81	3	32	27	17	40
April	83	82	1	78	5	47	39	11	33
May	118	115	3	109	9	50	72	14	32
June	143	143	0	135	8	76	82	26	35
July	221	216	5	203	18	136	120	36	65
August	150	150	0	139	11	78	78	19	53
September	125	121	4	113	12	65	70	19	36
October	108	107	1	103	5	70	38	18	52
November	82	81	1	78	4	46	29	14	39
December	63	62	1	60	3	34	27	13	23
Total	1,270	1,254	16	1,186	84	678	604	207	459

Continued

Table 12.- Distribution of fatal farm-work accidents by month of occurrence, race, sex, hospitalization, principal cause, and geographic divisions 1943-48 - Continued

EAST NORTH CENTRAL

Month	Total	Race		Sex		Hospi- talized	Principal cause		
		White	Other	Male	Female		Machinery	Animals	Miscellaneous
	Number	Number	Number	Number	Number	Number	Number	Number	Number
January	103	103	0	101	2	57	34	16	53
February	117	117	0	116	1	57	35	19	63
March	131	130	1	123	8	75	48	26	57
April	195	195	0	186	9	79	111	18	66
May	211	209	2	201	10	110	124	36	51
June	248	247	1	222	26	117	156	30	62
July	354	351	3	326	28	199	210	37	107
August	282	280	2	250	32	164	149	32	101
September	227	226	1	212	15	112	109	35	83
October	237	235	2	224	13	118	123	33	81
November	204	202	2	195	9	97	122	17	65
December	140	140	0	131	9	79	61	20	59
Total	2,449	2,435	14	2,287	162	1,264	1,282	319	848

WEST NORTH CENTRAL

January	136	136	0	123	13	74	52	25	59
February	127	126	1	116	11	61	45	17	65
March	145	145	0	133	12	64	58	23	64
April	236	231	5	217	19	109	138	32	66
May	282	280	2	272	10	119	174	44	64
June	256	255	1	237	19	131	139	33	84
July	338	334	4	307	31	169	189	42	107
August	355	351	4	320	35	184	187	55	113
September	306	302	4	282	24	151	186	43	77
October	289	282	7	273	16	148	159	39	91
November	223	223	0	213	10	108	136	31	56
December	154	152	2	144	10	79	68	30	56
Total	2,847	2,817	30	2,637	210	1,397	1,531	414	210

Continued

Table 12.- Distribution of fatal farm-work accidents by month of occurrence, race, sex, hospitalization, principal cause, and geographic divisions, 1943-48 - Continued

SOUTH ATLANTIC

Month	Total	Race		Sex		Hospi- talized	Principal cause		
		White	Other	Male	Female		Machinery	Animals	Miscellaneous
	Number	Number	Number	Number	Number	Number	Number	Number	Number
January	83	58	25	74	9	42	27	8	48
February	91	57	34	89	2	50	33	14	44
March	105	79	26	96	9	53	40	12	53
April	117	89	28	110	7	61	51	25	41
May	120	86	34	114	6	60	46	27	47
June	120	84	36	105	15	68	49	30	41
July	134	88	46	121	13	65	61	29	44
August	122	92	30	116	6	71	48	18	56
September	107	83	24	102	5	54	60	11	36
October	120	87	33	117	3	65	60	24	36
November	88	51	37	82	6	45	42	10	36
December	87	61	26	82	5	41	39	13	35
Total	1,294	915	379	1,208	86	675	556	221	517

EAST SOUTH CENTRAL

January	60	43	17	57	3	25	16	3	41
February	71	50	21	66	5	41	22	4	45
March	81	60	21	77	4	38	31	10	40
April	165	75	30	96	9	48	47	17	41
May	95	74	21	88	7	44	45	25	25
June	106	84	22	101	5	37	48	29	29
July	106	86	20	99	7	42	38	28	40
August	98	73	25	91	7	40	35	17	46
September	106	78	28	99	7	46	47	17	42
October	100	63	37	95	5	52	38	18	44
November	77	61	16	74	3	43	28	10	39
December	62	49	13	60	2	31	23	7	32
Total	1,067	796	271	1,003	64	487	418	185	464

Continued

Table 12.- Distribution of fatal farm-work accidents by month of occurrence, race, sex, hospitalization, principal cause, and geographic divisions; 1943-48 - Continued

WEST SOUTH CENTRAL

Month	Total	Race		Sex		Hospi- talized	Principal cause		
		White	Other	Male	Female		Machinery	Animals	Miscellaneous
	Number	Number	Number	Number	Number	Number	Number	Number	Number
January	47	37	10	45	2	22	21	6	20
February	64	51	13	62	2	25	32	9	23
March	69	59	10	66	3	32	37	11	21
April	66	52	14	64	2	24	34	12	20
May	78	61	17	73	5	29	35	21	22
June	90	80	10	87	3	45	54	17	19
July	74	61	13	67	7	35	30	16	28
August	90	78	12	80	10	45	37	22	31
September	81	60	21	74	7	49	33	16	32
October	87	66	21	83	4	35	44	8	35
November	80	68	12	73	7	36	30	11	39
December	51	44	7	47	4	22	21	7	23
Total	877	717	160	821	56	399	408	156	313

MOUNTAIN

January	36	34	2	35	1	20	16	6	14
February	44	42	2	43	1	20	12	11	21
March	47	42	5	45	2	23	21	3	23
April	79	76	3	74	5	29	41	13	25
May	83	80	3	76	7	42	43	12	28
June	104	98	6	96	8	57	47	20	37
July	134	129	5	126	8	72	65	21	48
August	146	143	3	131	15	68	72	27	47
September	93	92	1	89	4	55	35	19	39
October	83	80	3	73	8	41	41	12	30
November	67	65	2	64	3	34	31	12	24
December	49	47	2	46	3	22	16	8	25
Total	965	928	37	900	65	483	440	164	361

Continued

Table 12 - Distribution of fatal farm-work accidents by month of occurrence, race, sex, hospitalization, principal cause, and geographic divisions, 1943-48 - Continued

PACIFIC

Month	Total	Race		Sex		Hospi- talized	Principal cause		
		White	Other	Male	Female		Machinery	Animals	Miscellaneous
	Number	Number	Number	Number	Number	Number	Number	Number	Number
January	50	49	1	48	2	19	23	12	15
February	49	47	2	47	2	21	23	7	19
March	65	60	5	60	5	36	30	12	23
April	62	60	2	59	3	27	35	7	20
May	92	92	0	88	4	37	53	8	31
June	87	87	0	84	3	41	38	12	37
July	120	118	2	103	17	61	62	21	37
August	103	99	4	94	9	51	42	9	52
September	84	81	3	83	1	50	41	14	29
October	87	84	3	82	5	43	38	9	40
November	56	55	1	54	2	31	26	10	20
December	44	43	1	43	1	16	21	4	19
Total	899	875	24	845	54	433	432	125	342

UNITED STATES

January	589	534	55	556	33	303	204	98	287
February	628	555	73	598	30	309	219	89	320
March	753	685	68	706	47	366	300	118	335
April	974	891	83	915	59	440	508	142	324
May	1,124	1,039	82	1,062	59	507	615	194	312
June	1,182	1,106	76	1,093	89	586	624	202	356
July	1,534	1,435	99	1,403	131	817	804	238	492
August	1,408	1,327	81	1,276	132	734	678	207	523
September	1,167	1,080	87	1,089	78	604	597	176	394
October	1,147	1,040	107	1,087	60	591	551	165	431
November	907	836	71	863	44	454	452	122	333
December	675	623	52	638	37	337	282	106	287
Total	12,085	11,151	934	11,286	799	6,048	5,834	1,857	4,394

MONTHLY DISTRIBUTION OF FATAL FARM- WORK ACCIDENTS, BY REGIONS, 1943-48

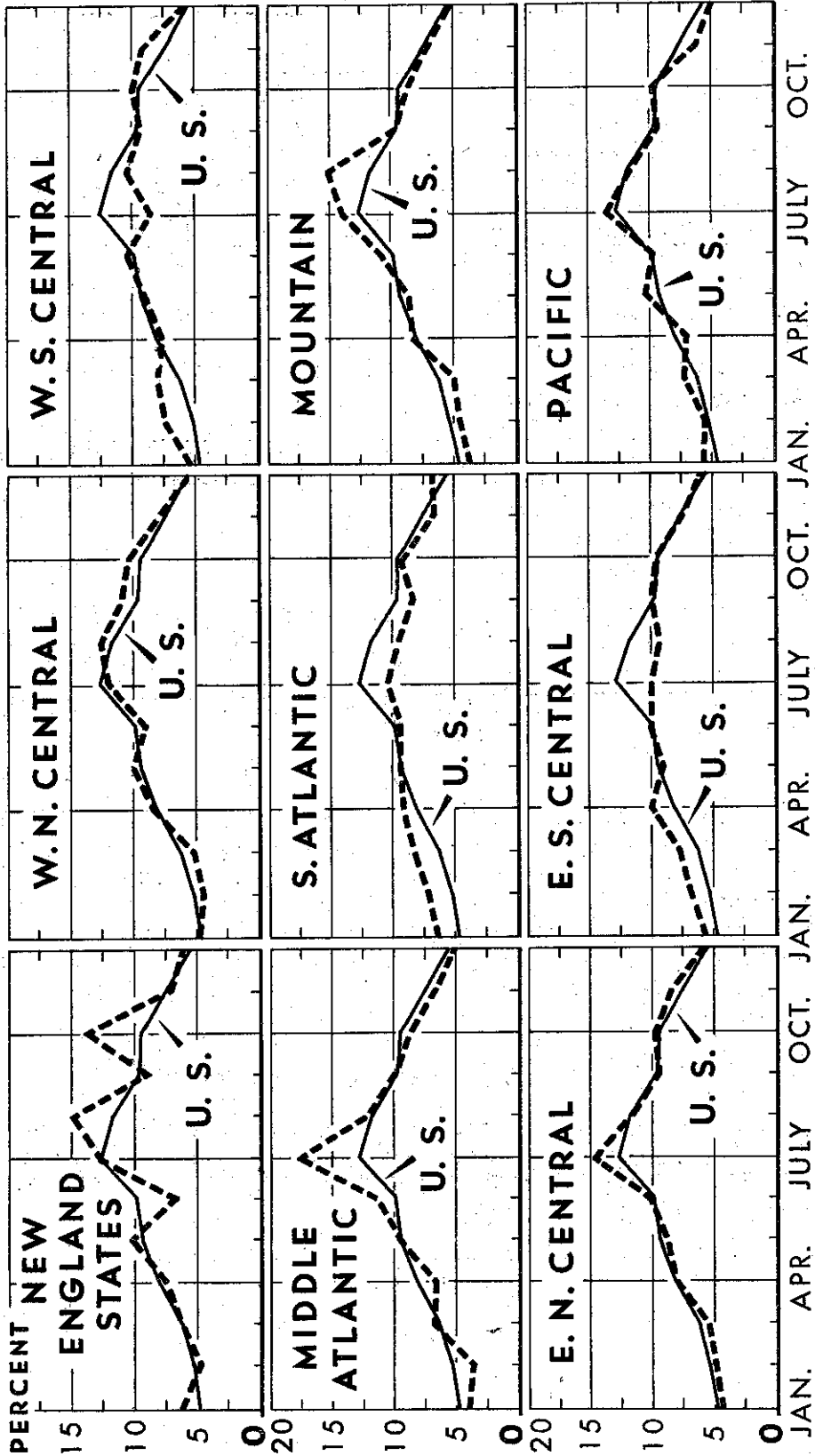


Table 13.- Farm-work accident fatalities per 100,000 farm workers, by age groups, United States, 1944-48 ^{1/}

Age group	Rate per 100,000	Index
	employed	(7.65 = 100)
	<u>Number</u>	
Under 14 years of age	^{2/}	^{2/}
14-19	7.83	102
20-29	7.65	100
30-39	10.40	136
40-49	16.72	219
50-59	37.64	492
60-69	116.75	1,526
70-79	96.36	1,260
80 and over	129.06	1,686
All age groups 14 and over	21.07	275

^{1/} Vital Statistics compared with census of farm workers. Labor Force Bulletins series P-50 no. 2, 1944-46; and no. 13, 1947-48; Census Bureau, Department of Commerce.

^{2/} Not available

Summary and Conclusions

Although these data apparently are incomplete, they point up some of the aspects of fatal farm-work accidents, knowledge of which may be valuable in designing a safety program aimed toward reducing the toll in human life and suffering.

This experience points up the need for safety education in elementary schools as well as in colleges and universities. Leaders of agriculture should support the recent movement of the National Education Association to stimulate colleges and universities to adopt courses in safety instruction. Gradually, as more is learned of the principles of safety and their application, this information can be integrated into normal study courses and disseminated to those who need it on farms. Efforts of the National Safety Council, as well as those of the Department of Agriculture and other interested groups, to collect statistics on farm accidents need to be continued until more precise information can be made available upon which to base safety programs. Only with the aid of facts can accident-prevention work be pinpointed and emphasis be placed where it is most needed.

These data indicate that most accidents result from carelessness or improper handling of machinery and work stock and few of them from mechanical failure. Therefore, the attack must be directed toward guiding human thinking in terms of how to do the job safely.

Table 14.- Number of fatal farm-work accidents, by race, sex, hospitalization, and principal cause by States, 1940-48

State:	Race			Hospitalized	Machinery		Principal causes							
	Total	White	Other		Male	Female	Total	Animals		Miscellaneous				
								Male	Female	Male	Female	Total	Male	Female	Total
Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number
Ala.	266	163	103	115	122	11	133	35	4	39	88	6	94	
Ariz.	108	93	15	53	32	1	33	29	1	30	42	3	45	
Ark.	257	182	75	96	117	7	124	42	5	47	80	6	86	
Calif.	655	623	32	330	320	13	333	85	11	96	213	13	226	
Colo.	310	303	7	156	134	12	146	51	4	55	103	6	109	
Conn.	104	103	1	62	36	2	38	15	1	16	50	0	50	
Del.	28	21	7	18	13	0	13	3	0	3	11	1	12	
Fla.	175	99	76	93	60	4	64	26	0	26	82	3	85	
Ga.	358	208	150	168	128	13	141	72	1	73	133	11	144	
Idaho	255	252	3	129	127	6	133	41	3	44	75	3	78	
Ill.	699	696	3	387	407	19	426	91	4	95	173	5	178	
Ind.	576	572	4	300	260	16	276	79	9	88	202	10	212	
Iowa	904	904	0	459	441	29	470	125	6	131	284	19	303	
Kans.	630	624	6	308	344	19	363	92	11	103	154	10	164	
Ky.	438	412	26	180	125	4	129	80	9	89	205	15	220	
La.	219	116	103	112	87	3	90	42	0	42	83	4	87	
Maine	170	169	1	89	64	5	69	36	1	37	60	4	64	
Md.	166	125	41	89	70	5	75	27	3	30	58	3	61	
Mass.	139	136	3	86	58	0	58	17	2	19	59	3	62	
Mich.	560	553	7	288	277	19	296	61	6	67	191	6	197	
Minn.	795	794	1	421	362	27	389	136	8	144	230	32	262	
Miss.	378	172	206	178	142	8	150	52	5	57	163	8	171	
Mo.	711	696	15	350	290	16	306	129	19	148	234	23	257	
Mont.	290	283	7	153	126	9	135	56	3	59	85	11	96	
Nebr.	503	500	3	252	264	9	273	76	9	85	128	17	145	
Nev.	49	48	1	35	17	0	17	11	1	12	19	1	20	
N. H.	71	71	0	36	25	1	26	8	0	8	37	0	37	
N. J.	146	130	16	89	61	3	64	19	1	20	59	3	62	
N. Mex.	121	116	5	56	42	4	46	26	0	26	43	6	49	
N. Y.	908	905	3	474	375	21	396	161	8	169	329	14	343	
N. C.	404	294	110	229	155	14	169	79	1	80	146	9	155	
N. Dak.	341	337	4	156	206	11	217	42	7	49	69	6	75	
Ohio	894	889	5	479	469	18	487	117	8	125	262	20	282	
Okla.	508	469	39	251	197	12	209	93	10	103	181	15	196	
Oreg.	301	298	3	156	131	10	141	47	7	54	101	5	106	
Pa.	879	872	7	481	412	31	443	130	10	140	274	22	296	
R. I.	15	15	0	11	7	0	7	1	0	1	7	0	7	
S. C.	146	65	81	66	68	4	72	28	0	28	45	1	46	
S. Dak.	332	322	10	155	191	12	203	44	1	45	79	5	84	
Tenn.	414	355	59	195	143	6	149	92	4	96	162	7	169	
Tex.	370	328	42	144	196	11	207	72	4	76	83	4	87	
Utah	133	124	9	71	56	2	58	36	2	38	36	1	37	
Vt.	122	122	0	60	43	2	45	22	0	22	52	3	55	
Va.	418	319	99	208	172	6	178	78	4	82	142	16	158	
Wash.	328	327	1	159	146	6	152	40	2	42	130	4	134	
W. Va.	191	188	3	93	55	3	58	36	3	39	86	8	94	
Wis.	1,001	1,000	1	527	416	46	462	169	8	177	340	22	362	
Wyo.	120	117	3	63	51	3	54	19	5	24	40	2	42	
U.S.	17,906	16,510	1,396	9,066	8,040	483	8,523	2,868	211	3,079	5,908	396	6,304	

