

# Survivor Benefits After Disaster: An Actuarial Analysis

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*Every day, in all parts of the country, families whose wage earners have died are awarded monthly survivor benefits under the old-age and survivors insurance program that, for many of them, are the only source of income. The importance of these benefits is dramatically brought out when an area suffers a major disaster, such as the tornadoes that swept three cities in the early summer of 1953. Actuarial analysis of the survivor benefits awarded in these cities shows what the benefits will mean to the survivor families over the years.*

THREE hundred and eighteen persons lost their lives in May and June of 1953, when tornadoes struck the cities of Flint, Michigan; Waco, Texas; and Worcester, Massachusetts. Although many of those killed were children, 151 or almost half of the total number had sufficient wage credits to be insured under old-age and survivors insurance. Benefits that may eventually amount to \$1.2 million will be paid to the widows, children, and other dependents of these workers. The monthly payments, while modest in amount for the individual beneficiary families, will be an important source of income for most of them.<sup>1</sup>

The first of the cities to suffer was Waco. On May 11, during the late afternoon, a tornado swept the city and took the lives of 114 persons, of whom 73 were insured under the old-age and survivors insurance program (table 1). In the early evening of June 8, 116 persons in Flint were killed by a tornado. Fifty-one of the victims were children; 41 of the 65 older persons were insured. Two of those killed in Flint were on the old-age and survivors insurance rolls at the time of their death. The tornado that hit Worcester one day later, on June 9, resulted in the deaths of 88 persons—many of them women and children, since the area affected was a residential section, and the time was

late afternoon; thirty-seven of those who were killed were insured under old-age and survivors insurance.

Of the men killed in the three disasters who had insured status under old-age and survivors insurance, 69 left widows; 39 of these widows had at least one child under age 18. In addition, there were 11 families in which the deceased insured worker left at least one child, but in which no surviving widow is receiving benefits.

A higher proportion of the tornado victims were insured under the old-age and survivors insurance program in Waco, where the business district was struck, than in the other two cities, where the areas in the path of the storm were primarily residential. About half the insured deaths in Flint and Waco were insured married men, while in Worcester this proportion was appreciably lower (25 percent). In all three cities, about two-thirds of the widows left by the insured men were eligible for immediate monthly benefits because they had children under age 18 or were themselves aged 65 or over. Worcester had not only the lowest proportion of married men among the insured deaths but the lowest proportion of orphaned children. The average number of children awarded benefits in families with such children was highest in Waco (2.1 per family).

## Benefits Awarded

For the insured deceased individuals, the average primary insurance amount (which is based on the average monthly wage and from which all

other benefits are determined) was about \$67 in Flint, \$56 in Waco, and \$62 in Worcester. These figures reflect the differences in the sex, marital, and familial composition of the groups and in their average wage and the wage levels of their communities.

In Waco the median age of the widows whose husbands were insured was slightly more than 40 years (table 2). Three widows were over age 65 and so were immediately eligible for widow's benefits. Most of those who were under age 40 and one woman over age 50 had children in their care and could receive mother's benefits. Benefits were awarded to 56 children under age 18, 23 of whom were under age 5 (table 3).

More than these 56 children were orphaned as a result of the tornado. Claims were not filed for a number of the children since it is rarely worthwhile for more than three or four children in a family to file for benefits. A provision in the law limits the maximum family benefit to \$168.75 or 80 percent of the primary insurance amount, whichever is smaller. In Waco there are a number of Mexican families with many children. As a result, this situation—more children

Table 1.—Summary data on deaths in the Flint, Waco, and Worcester tornadoes

Item	Flint	Waco	Worcester
Total number of deaths.....	116	114	88
Insured deaths:			
Number.....	41	73	37
Percent of all deaths.....	35	64	42
Widows of insured men:			
Number.....	21	38	10
Percent of all insured deaths.....	51	52	27
Widows awarded monthly benefits:			
Number.....	14	25	6
Percent of all widows.....	67	66	60
Families with children awarded monthly benefits:			
Number.....	18	27	5
Percent of all insured deaths.....	44	37	13
Children awarded monthly benefits:			
Number.....	29	56	10
Average number per insured death.....	.7	.8	.3
Average number per family with children.....	1.6	2.1	2.0

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<sup>1</sup> For analyses of the benefits payable to survivors of the Texas City and West Frankfort disasters, see the *Bulletin*, September 1947 and April 1952.

orphaned than the number actually filing claims for benefits—exists to a much greater extent in Waco than in Flint or Worcester.

In 11 of Waco's 73 insured deaths, the survivor benefits are based on the maximum primary insurance amount of \$85. Five families are receiving the maximum dollar benefit prescribed in the law—\$168.75 a month. The average benefit being paid to widows is about \$51 a month. The average benefit for children (\$35) is relatively low because a few families with a large number of children filed claims for all the children, and the provisions governing the maximum family benefit reduced the individual benefits payable. Two surviving dependent mothers are receiving a parent's benefit; the average is \$38 a month. Lump-sum death benefits, paid to the survivors of all insured persons, averaged \$167 for each death.

Thirteen of the 41 insured persons who lost their lives in the Flint tornado were women, three of whom left children to whom monthly benefits are payable. Twenty-one of the 28 men who died were survived by widows, 14 of whom had at least one child under age 18.

Women widowed by the Flint disaster were, on the average, 40 years old; the oldest was aged 63. Children orphaned by the tornado who were awarded child's benefits numbered 29. Ten of the children were very young (under age 5), and six were aged 5-9.

Benefits based on the maximum primary insurance amount of \$85 were awarded to survivors of 14 persons, and two families receive the maximum dollar benefit of \$168.75 a month. The average payment to widows is slightly more than \$53 a month; for children it is almost \$47 a month. The lump-sum payments, based on the wage records of the 41 insured victims, averaged about \$200.

Because the Worcester tornado struck a residential area during the afternoon, relatively fewer women were widowed by the disaster in that city than in Waco. The insured workers who were killed left 10 widows, only three of whom had children under age 18. The women's median age was more than 50 years; three were over age 65 and thus were im-

**Table 2.—Number of monthly benefit awards to widows of insured persons who died in the Flint, Waco, and Worcester tornadoes, by age**

Age of widow	Flint		Waco		Worcester	
	Total	Number with children	Total	Number with children	Total	Number with children
Total....	21	14	38	22	10	3
Under 30...	3	3	9	7	1	1
30-39.....	8	7	9	8	1	1
40-49.....	4	2	9	6	2	1
50-64.....	6	2	8	1	3	0
65 and over.	0	0	3	0	3	0

mediately eligible for benefits. Ten children whose fathers or mothers had acquired insured status were orphaned by the disaster, and six of these children were aged 10 or over.

In seven of the 37 insured deaths in Worcester, the benefits are based on the maximum primary insurance amount of \$85. None of the families, however, receive the maximum family benefit. The largest monthly benefit, payable to a widow and two children, is \$165.40. The average payment to widows is slightly more than \$43 a month; for children, it is more than \$40 a month. A dependent mother is receiving a monthly benefit of \$63.80, which is the maximum payment to parents. Lump-sum death payments based on the wage records of the 37 insured victims of the Worcester tornado averaged \$185.

### Potential Benefits

An actuarial analysis of the benefits payable as a result of the three disasters has been prepared, with calculations made of the total amount of survivor benefits that may eventually be payable and of the present value of these benefits, discounting the payments at 3-percent interest. These calculations take into consideration the mortality of the women, on the basis of the rates of the United States White Female Life Table for 1939-41, but they disregard the relatively very low mortality of the children. If current mortality rates were used, the resulting figures would be about 5 percent higher. All benefits, including the deferred benefits payable to widows at age 65, are considered in the computations. No allowance is made, however, for the withholding of or

reduction in the benefits because of the beneficiary's covered employment or because a widow receives an old-age benefit in her own right, or for the termination of benefits because of the widow's remarriage or the marriage or death of the children. On this basis, for the entire survivor group, about \$1,217,000 is potentially payable; the present value of the benefits is about \$839,000. Table 4 shows the totals separately for the three cities.

These figures represent, in effect, the maximum potential benefits payable. Allowance for possible withholding or reduction of benefits would particularly affect widow's benefits and mother's benefits (with a reduction of perhaps 50 percent) and, to a lesser degree, child's benefits (with a possible reduction of 5 percent). If such an allowance were made, the total amount payable would drop to about \$830,000, with a present value of \$600,000. In some families, of course, where the maximum benefit provisions had applied, the withholding or termination of the mother's benefits would be offset, at least in part, by an increase in the benefits paid to the children.

The present value of the maximum potential benefits payable averages \$7,100 for each insured death in Flint, \$6,300 in Waco, and \$2,200 in Worcester. The average is lowest for Worcester, where the insured deaths included a low proportion of married men and persons with children. The average was higher for Flint than for Waco, despite the fact that the two cities had about the same proportions of married men and children per insured death, because of the higher average primary insurance amount of the Flint victims.

### Two Survivor Families

To indicate what the old-age and survivors insurance program will mean to the individual families in these cities, the cases of two families—one typical and one unusual—are outlined here. The widows in both families have given permission for publication of the facts concerning their claims.

The family of Lorne Robinson is typical of those in which there are surviving children. Mr. Robinson, aged 39, and his 4-year-old daughter,

**Table 3.—Number of monthly benefit awards to children of insured persons who died in the Flint, Waco, and Worcester tornadoes, by age**

Age of child	Number of children		
	Flint	Waco	Worcester
Total.....	29	56	10
0-4.....	10	23	1
5-9.....	6	10	3
10-14.....	9	13	3
15-17.....	4	10	3

Barbara, were killed by the tornado that struck Flint. Surviving are his widow, Dorothy, aged 35, and two daughters—Delores, aged 16, and Marilyn, aged 6. The primary insurance amount based on Mr. Robinson's wage credits is \$79.80.

Mrs. Robinson receives \$59.90 a month, since the widow's benefit is three-fourths of the primary amount. Each of the children receives \$49.90 a month (half the primary insurance amount, plus 25 percent of that amount divided between them). The total family benefit is \$159.70 a month, which will be continued until Delores attains age 18. (It is assumed that the three beneficiaries do not engage in substantial covered employment.) After that time Marilyn's benefit will be increased to \$59.90, and the total family benefit will then be \$119.80.

When Marilyn attains age 18, the monthly benefits will be discontinued. Mrs. Robinson will again receive her benefit of \$59.90, however, when she attains age 65, if she has not remarried or earned an old-age benefit in her own right through her own covered employment. If Mrs. Robinson remarries before her children attain age 18, she will no longer receive her monthly benefit, but the children will continue to receive the amounts described. In addition to the monthly benefits, a lump-sum death payment of \$239.40 was immediately available to Mrs. Robinson.

The total benefits payable to Mrs. Robinson and her two children may be calculated for them just as they were for the entire group of survivors in each city. These calculations have been made on the "gross" basis described earlier. The total benefits payable to the family over the years amount to \$27,600 and the present

value, based on a 3-percent interest rate, is \$19,700, as the following tabulation shows.

Type of benefit	Total payable	Present value
Total.....	\$27,600	\$19,700
Widow's (age 65).....	7,400	2,400
Mother's.....	8,100	6,900
Child's.....	11,900	10,200
Lump-sum.....	240	240

The "unusual case" occurred in Waco. Cristino C. Romo, aged 36, was a victim of the tornado there, and left a family consisting of his widow Lucy, aged 35, and seven children between the ages of 1 and 11. The birth of another child was expected in about a month.

The primary insurance amount based on Mr. Romo's wage record was \$67.20, so that the maximum family benefit that can be paid is \$144.80. Only the widow and the three youngest children filed for benefits, since the maximum amount was then payable. If Mrs. Romo or one of the children should later cease to be entitled, because of death or marriage, one of the other children could file, and the family would continue to receive the maximum benefit amount as long as enough children were under age 18 and otherwise eligible. The maximum benefit would also continue to be payable even though the widow were to go to work in covered employment and have her benefit suspended, since an additional child could then file for benefits.

Thus the family benefit amount of

\$144.80 will be payable as long as Mrs. Romo and at least three children are eligible. When only the widow and two children are eligible, the amount will be reduced to \$134.80; when there are only the widow and one child, the benefit will be \$100.80. After the youngest child is age 18, the monthly benefits to Mrs. Romo will be discontinued, but she will again receive a benefit of \$50.40 when she attains age 65—assuming that she has not remarried or earned an old-age benefit in her own right. In addition to the monthly benefits, a lump-sum death payment of \$201.60 was immediately available to Mrs. Romo.

The total benefits payable over the years to Mrs. Romo and her children, as well as the present value of the benefits, discounting the payments at 3 percent, have also been calculated. The same factors were considered, and the same ones disregarded, as in the calculations for the entire group and for Mrs. Robinson and her children. The maximum potential benefits payable, when mortality is taken into account, will total about \$36,000; the benefits have a present value of about \$26,000.

What old-age and survivors insurance means to the survivors of the insured men and women killed in these three tornadoes illustrates vividly the protection that the program affords the workers of the country and their families. More than 69 million workers are now insured, and more than 1 million families in which the wage earner has died are currently receiving monthly survivor benefits.

**Table 4.—Maximum potential benefits payable<sup>1</sup> to dependents of insured persons who died in the Flint, Waco, and Worcester tornadoes, and present value<sup>2</sup> of benefits**

Type of benefit	[In thousands]					
	Flint		Waco		Worcester	
	Maximum potential benefit	Present value	Maximum potential benefit	Present value	Maximum potential benefit	Present value
Total.....	\$424	\$292	\$673	\$462	\$120	\$85
Widow's.....	156	69	239	102	67	38
Mother's.....	101	83	160	130	11	10
Child's.....	159	132	252	210	30	26
Parent's.....	0	0	10	8	5	4
Lump-sum.....	8	8	12	12	7	7

<sup>1</sup> Estimates take into account mortality (except for children), using the rates of the United States White Female Life Table for 1939-41. No allowance made for possible withholding or reduction of benefits because of the beneficiary's covered employment,

receipt of old-age benefit in own right, or termination of benefits because of the widow's remarriage or children's marriage or death.

<sup>2</sup> Discounts payments at 3-percent interest.