Fire Research Note No. 843

EXETER CHIP PAN SAFETY CAMPAIGN: EFFECT ON FIRE SIZE

by

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SUMMARY

Distribution of a leaflet on chip pan safety appears to have had the effect of reducing average fire size, which then returned gradually to its pre-campaign value.

KEY WORDS : Cooker, cost-benefit, domestic, fire prevention, fire statistics, time series.

DEPARTMENT OF TRADE AND INDUSTRY AND FIRE OFFICES' COMMITTEE
JOINT FIRE RESEARCH ORGANIZATION

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INTRODUCTION

In a previous Note[1], the apparent effect on fire frequency of the widespread distribution of a leaflet was examined.

Because of the small number of fires involved, no actual measurement of the reduction was possible, but a statistically significant change in the right direction was nevertheless apparent about eighteen months after the campaign.

Since the leaflet could have been effective in reducing the size of fires as well as their frequency, a measure of average size has now been examined.

MEASURE OF FIRE SIZE

No convenient record of financial loss is available for the fires concerned. An arbitrary division has therefore been made into those to which the City of Exeter Fire Brigade was called, but that were out on its arrival, and those that required action by the brigade to extinguish them. The former would presumably tend to be smaller.

As will be seen from the statistics in Appendix I, numbers are very small indeed, so it is difficult to determine the real trend in average fire size. A useful measure, because of its sensitivity, is the ratio of the number of fires "out on arrival" to those "extinguished by brigade".

Over a period of $3\frac{1}{2}$ years before the campaign, this ratio was 18/28 ($R_o = 0.64$).

Figure 1 was drawn to examine the hypothesis that the ratio would be increased by the campaign but afterwards return gradually to its pre-campaign value. For convenience, the ratio was normalized by dividing by 0.64, and unity was then subtracted. So as to make the greatest use of the end data,

both annual and semi-annual average ratios are shown; it will be seen that a line drawn through the points representing the averages of the two halves of the period considered ($1\frac{3}{4}$ yr points) is a reasonable fit.

FINANCIAL EQUIVALENT

Statistics from another source[2] suggest that fires of this kind extinguished by the brigade cause an average material damage of something like £200, and those out on arrival something like £40. It should be emphasized that these figures are very approximate, and would in any case depend on the frequency ratio, but for want of any better ones an average size ratio of 5 has been taken.

Applying these values to the line in Fig. 1 produces the average cost curve in Fig. 2.

DISCUSSION

Figure 1 suggests that the campaign produced a sharp increase in the size ratio, (fires out/fires requiring fire-brigade action) which then decreased steadily back to its original value. Because of the amount of statistical manipulation required to illustrate this apparent effect, this conclusion should be treated with some reserve.

The half period of the curve in Fig. 2 is of the order of 1 year.

It will be observed that the area above the curve, representing the apparent saving in fire losses due to the campaign, is of the order of half-a-year's chip pan fire losses.

It should be noted that the increase in the ratio may be due to two quite different effects of the leaflet:

(a) People taking action themselves to reduce the size of fires

(b) People calling the fire brigade to more small fires

It is impossible to distinguish between these effects in this case.

CONCLUSIONS

Distribution of a leaflet on chip pan safety had the apparent effect of immediately reducing average fire size by about a half, the average size returning to the pre-campaign value with a half period of about 1 year. Apparent saving in chip pan fire losses was about half-a-year's losses.

These conclusions should be treated with considerable reserve because of the small numbers involved.

REFERENCES

1. CHAMBERS, E. D. Exeter chip pan safety campaign: Effect on fire frequency. Fire Research Note No. 801. Boreham Wood, March 1970.

2. CHAMBERS, E. D. Fire brigade attendance at chip pan fires. Fire Research Note No. 708. Boreham Wood, August 1968.

APPENDIX

City of Exeter Fire Brigade :
Fires in which material first ignited was food (fat)

		Out on arrival	Extinguished by brigade
1963	I	0	0
	II	3	2
	III	1	0
	IV	1	2
1964	I	2	3
	II	0	4
	III	0	1
	IV	1	1
1965	I	3	2
	II	1	2
	III	1	3
	IV	5	3
1966	I	0	4
	II	0	1
	III	4	1
	IV	2	0
1967	I	2	1
	II	1	0
	III	2	2
	IV	5	1
1968	I	1	0
	II	1	0
	III	1	2
	IV	2	1
1969	I	4	1
	II	1	4
	III	1	4
	IV	4	2
1970	I	2	5
	II	3	2

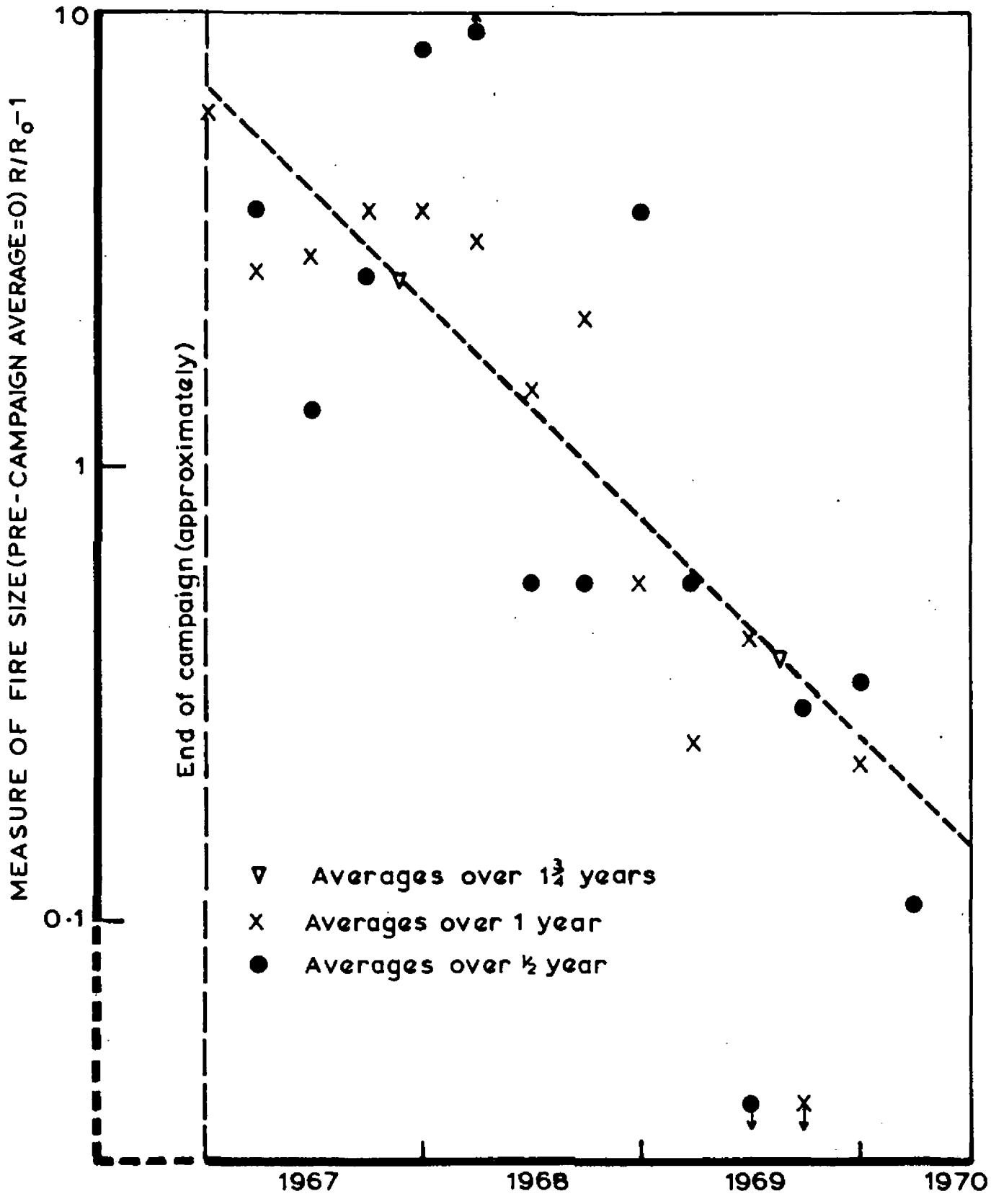

FIG. 1 EXETER CHIP PAN SAFETY CAMPAIGN
APPARENT RETURN OF MEASURE OF AVERAGE
CHIP PAN FIRE SIZE TO PRE-CAMPAIGN VALUE

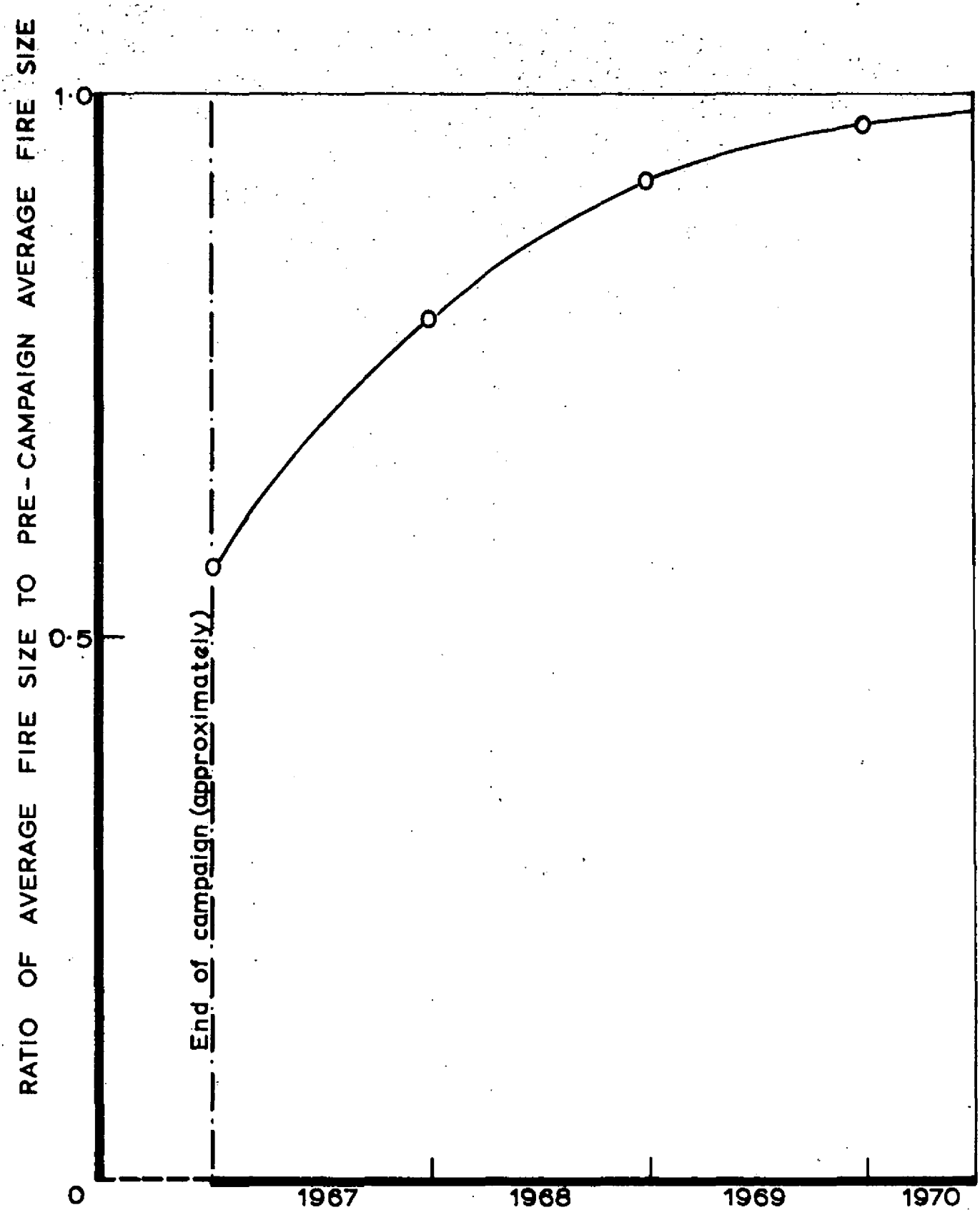

FIG. 2. EXETER CHIP PAN SAFETY CAMPAIGN SUGGESTED EFFECT ON AVERAGE SIZE OF CHIP PAN FIRES REPORTED TO FIRE BRIGADE