RESEARCH NOTES
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FIRE FREQUENCY AS A MEASURE OF FIRE PREVENTION ACCOMPLISHMENTS

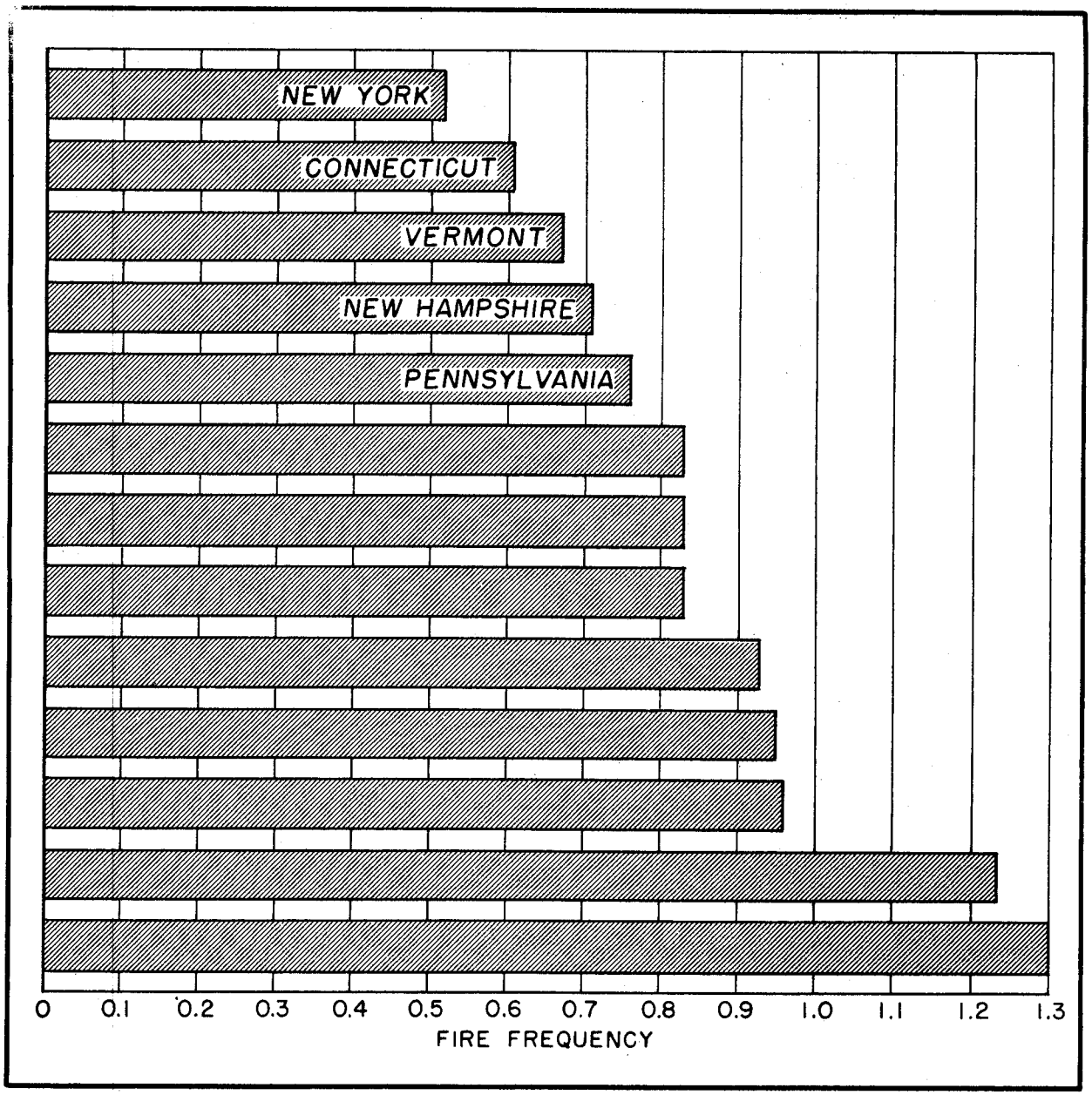
At the end of every year fire organizations regularly tally up the number of fires that burned in their territory and then try to decide whether the record is good or bad. Thirteen northeastern states reported 8,948 fires in 1951 on days of known fire danger, for example. Now the question is: would it have been reasonable to expect a larger or smaller number than 8,948 for the year?

There probably never can be a precise acceptable answer to that question. But fire frequency, a relatively new term, at least gives some good indications as to what a reasonable answer may be. Fire frequency denotes the ratio of the number of fires that burn to the number that might have burned in keeping with the severity of the weather--fire occurrence divided by fire expectance (the number of fires expected according to measured fire danger). For these states the 8,948 fires that burned is a smaller number than the 9,745 fires expected. Hence, fire frequency is 0.92, and a value less than 1.00 indicates that for the whole region fewer fires actually occurred than might reasonably have been expected when the severity of the weather is taken into consideration.

The ratio was not uniform in all states, however. Fire frequency varied from a low of 0.52 to a high of 1.30, as shown in the bar graph. The five states with the lowest frequencies are identified.

Neither unusual concentrations of fires nor unusual weather conditions appear to account for the appreciable differences between states. In all states except one, Connecticut, fire expectance for 1951 approximated the 3-year average. Connecticut expected many more fires than average, so their job may reasonably have been more difficult than usual; yet they had next to the lowest fire frequency. The two states with the highest fire frequency expected a number of fires somewhat less than average, yet they apparently were not able to turn this to their advantage and reduce the fire frequency to 1.00 or less.

The fire expectance figure in these calculations is the product of burning index and the number of fires that occur per unit of burning index, on an average. The averages are calculated by months. For each month the average number of fires per unit of burning index used in calculating fire expectance is based on the 3 out of 5 years when the lowest number of fires occurred per unit of burning index. The calculations are made by months to take into account seasonal fluctuations in risk. Owing to this method of calculating fire expectance whereby months of relatively severe fire occurrence are eliminated from the averages, fire expectance represents the number of fires that will burn if a better than average job of preventing fires

is done. Hence, fire expectance is a goal. It requires more than the usual fire prevention effort to reduce fire occurrence below fire expectance, that is, to hold fire frequency below 1.00. All except 2 of the 13 northeastern states held the fire frequency below 1.00 for 1951.

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