

## **Effect of Building Damage on Bomb Related Casualties**

An injury pattern analysis of the casualties resulting from the bombing of the Alfred P. Murrah Federal Office Building is presented. The purpose of the investigation is to verify existing predictive models for injuries caused by explosions using the injury database compiled by the Oklahoma State Department of Health.

The Oklahoma State Department of Health has compiled a database of casualties for the Oklahoma City Bombing that is unusual in the number of injured included and level of detail acquired.

This presentation addresses the injuries to the occupants of the five buildings listed below, which were in the immediate vicinity of the weapon:

1. Alfred P. Murrah Federal Office Building
2. The Oklahoma Water Resources Board Building
3. Journal Record Building
4. Young Men's Christian Association building (YMCA)
5. Regency Towers apartment building

The database for these five buildings consists of over one hundred separate factors concerning the types, severity and location of injuries and other information for over a thousand persons. Physical location of victims was recorded on architectural floor plan drawings for each of the buildings. The data were compiled from a variety of sources, including medical examiner records, hospital records, a physician survey and a survivor survey.

These data are compared with the results of predictive injury models from the technical literature. The focus of this report is on the injuries caused by failed building components. Topics addressed include the effects of the explosion, building damage, injury patterns observed and predicted, and a discussion areas of further research.

Results show that the injuries are due in part to direct air-blast effects of the explosion and in part to the indirect effects caused by the impact of projectiles. Furthermore, the patterns observed provide new information not currently found in the technical literature.