



## **Smoke Alarm Installations: Windows of Opportunity and Lessons Learned from a Mostly Volunteer Combination Fire Department**

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### **I. Formative Evaluation – Planning**

A smoke alarm installation program utilizing extensive volunteer firefighter support was implemented to significantly reduce the percentage of homes in Mt. Lebanon, PA without a working smoke alarm. A risk assessment showed that 30% of homes do not have a working smoke alarm, and in two of the five municipal wards, the percentage was even higher at 36%. These two wards are the more densely populated and lower income areas of the municipality, having lower housing values, older housing stock, a greater frequency of structure fires, and a greater number of fire-related civilian injuries. In addition, one of these wards has the highest percentage of people age 65 years and older, and the other has the highest percentage of children under 5 years old.

Approximately 85% of residential structures in Mt. Lebanon are over 50 years old. Mt. Lebanon experienced 4 civilian fire fatalities in the 10 years preceding implementation of the program. There were no working smoke alarms in any of the fatal fires. The program aims to reduce the fire death rate to below national, state, and county levels, as well as reduce the number of civilian fire-related injuries annually.

### **II. Process Evaluation – Implementation**

Funding provided 1,650 smoke alarms for installation in 1,270 homes. Smoke alarms were installed through door-to-door canvassing in the two highest risk wards, and upon request throughout the community. Additionally, post-fire neighborhood canvassing, a fireplace inspection service offered by the fire department, and incidents were utilized, and proven to be particularly effective windows of opportunity for smoke alarm installations.

Canvassing events during weekday evenings reached 27% more people at-home, compared to weekends. Fewer homes refused smoke alarm checks during post-fire canvassing than in general, 11% versus 19%, respectively. Over 50% of the department's volunteer firefighters participated in canvassing events. Four times as many volunteers participated in post-fire canvassing, compared to in general. Personnel are trained annually in standard safety messages to be delivered during home visits.

### **III. Impact Evaluation – Short Term Results**

Community wide, the percentage of homes with a working smoke alarm increased from 70% to 81%. In the targeted wards, the percentage of homes with a working smoke alarm increased from 64% to 84%.

#### **IV. Outcome Evaluation – Long Term Results**

Since smoke alarm canvassing efforts began, there has been a 50% reduction in fire-related injuries. One structure fire occurred in a residence where smoke alarms were installed just five days earlier during a canvassing event. A neighbor heard the smoke alarm, and reported smoke coming from the structure. The fire was confined to the object of origin. There have also been two incidents where carbon monoxide detectors, installed following fire department recommendations during home visits, alerted occupants to life threatening levels. Lastly, the smoke alarm campaign builds public relations. The fire department regularly receives “thank you” letters and donations as a result of the program.

#### **Recommendations for others:**

Seek sufficient resources to install smoke alarms at all recommended locations. Only 34% of homes had working smoke alarms on all levels, and only 8% had working smoke alarms in all bedrooms.

A smoke alarm canvassing program must be a department priority, with the commitment of department leadership, in order to sustain volunteer support. It would be difficult to do the program with prevention staff alone. Further, the department must institutionalize canvassing efforts for long term success. Otherwise, the problem will re-emerge as installed smoke alarms reach the end of their service life.

People are more attentive to a personalized safety message than general messages. Deliver a succinct safety message during the home visit addressing the most prevalent hazard observed (smoking, candles, carbon monoxide alarms, escape planning, extension cords, fireplace ash disposal, etc.). Due to varied experience levels and prevention knowledge, personnel need to be trained to deliver consistent messages.

Smoke alarm installation kits should be placed on each apparatus, so smoke alarms can be installed where needed before clearing an incident. In-demand community services, such as fireplace inspections, are also great opportunities to install smoke alarms. Investigate what may work in your area. Canvassing following a fire is a very effective window of opportunity and yields the most volunteer support. Weekday evenings are the best time for canvassing.

#### **Conclusions:**

Messaging alone is not enough to achieve a significant reduction in the percentage of homes without a working smoke alarm, or ensure that smoke alarms are installed at all recommended locations. Fire departments need to conduct home safety visits to check and install smoke alarms in order to have a measurable impact. Additionally, smoke alarm installation programs do not have to be limited to career departments. Programs that rely on volunteer firefighters can be implemented.