



RESEARCH FOUNDATION

RESEARCH FOR THE NFPA MISSION

PROJECT SUMMARY

Door Messaging Strategies

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Background: Research has documented that compartmentation, including room doors, is an effective means to slow the spread of fire and smoke in home fires and thus increases the available egress time for home occupants. However, another important factor in home fire safety and safe occupant egress is smoke alarm effectiveness which may be impacted by the barrier to sound created by these doors. Education messaging for home fire evacuation must consider both of these dimensions.

This project will focus on the smoke alarm effectiveness implications of the open/closed sleeping room door scenario. Some of the unanswered questions include: Will a closed door delay early warning from a smoke alarm located outside the sleeping room?; Will a single station smoke alarm, installed in the sleeping room with the door closed, provide early warning to a fire outside the sleeping area to allow for safe escape?; What is the impact of a closed door when the fire originates in the sleeping room and no smoke alarm is present in the room? What may be other human behavior issues associated with a closed bedroom door that may impact evacuation?

Research Goal: The goal of this project is to assess and document the impact of a closed sleeping room door on smoke alarm early notification and home escape in the modern fire environment of residential dwellings.

Project Tasks: This project will consist of the following tasks.

Task 1: Establish Project Oversight. An advisory panel will be appointed and administratively handled by FPRF to provide oversight and guidance over the course of the project in accordance with the Foundation Policies.

Task 2: Development of Baseline Materials. Identify, collect, and organize the baseline information on fire safety implications of sleeping with the door open or closed. This literature review will focus on situations in residential dwellings (i.e., 1 and 2 family homes, apartments, condominiums and mobile homes). The baseline information developed will address the following:

a) **Problem Overview:**

- Provide an overview of statistics and/or anecdotal information in residential fires where an open or closed sleeping room door impacted safety and escape of the occupants.
- Identify and assess all national codes and standards providing guidance information for the sleeping room door open or closed issue.

b) **Fire Dynamics:**

- Provide an overview of previous research and testing on fire behavior in residential occupancies that addresses fire, smoke and heat spread in a home fire, as well as having an

influence on smoke detector activation and notification (e.g., different fire ventilation characteristics in modern residential dwellings).

c) Occupant Notification:

- Provide an overview of previous research testing on early warning notification of occupants and escape, which addresses sleeping with the bedroom door open or closed, including early smoke alarm notification, smoke alarm characteristics, and occupant contributing factors such as age and other risk factors, mobility issues, cultural and response issues.

d) Messaging Strategies:

- Provide a summary of historical messaging for sleeping with a sleeping room door open or closed during a home fire.

Task 3: Stakeholder Workshop. FPRF will host a face-to-face workshop which will seek to clarify, confirm, add or refine detailed information and deep insight on the field experience associated with fire, smoke and heat spread and early warning notification and escape in a home fire. The baseline materials developed in Task 2 will be further evaluated, discussed, and refined during the Stakeholder Workshop. Proceedings documenting the Stakeholder Workshop will be developed and published on the FPRF website.

Task 4: Development of Final Deliverable. A final report that summarizes and documents all aspects of the project will be developed and published on the FPRF website. The report will provide information that can be used to inform messaging strategies to targeted audiences on the recommended door position for sleeping occupants in a residential setting.

Schedule and Implementation: This project is funded by a DHS/FEMA Assistance to Firefighters Grant (AFG) Program and is scheduled to be completed by September 2019. This research project will be conducted under the auspices of the Research Foundation in accordance with the [Foundation Policies](#) and will be guided by a Project Technical Panel of industry stakeholders who will provide input to the project, recommend contractor selection, review periodic reports of progress and research results, and review the final project report.

Intellectual Property: The Research Foundation will retain rights to the project deliverables including the final report which will be published on the Foundation website.