Emergency Preparation and Evacuation for Employees with Disabilities: Identifying Potential Interventions and Methods for Testing Them

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Be thinking about possible research questions and methods to answer them. We will explore these later in this presentation

Disaster Planning and Disability

According to a November 2001 Harris Poll commissioned by the National Organization on Disability:

- 58% of people with disabilities do not know whom to contact about emergency plans in their community
- 61% of person with disabilities have not made plans to quickly and safely evacuate their homes; and
- Among those people with disabilities employed full or part time, 50% say no plans have been made to safely evacuate their workplace

All percentages in this poll were higher for people with disabilities than their non-disabled counterparts.

Disaster Preparation: Some success stories for People with Disabilities

- After the 1993 WTC bombing, the local emergency management office and the Associated Blind worked with NYFD to develop a comprehensive evacuation plan and drill for their staff, most who have either low or no vision
- On September 11, the entire staff calmly and safely evacuated their building's 9th floor, a success they attribute directly to the customized planning and drills

Source: N.O.D. Guide on the Special Needs of People with Disabilities.

Disaster Preparation: Some success stories for People with Disabilities

On September 11, a wheelchair user who was employed on WTC's 68th floor was carried safely from the building using a a special evacuation chair

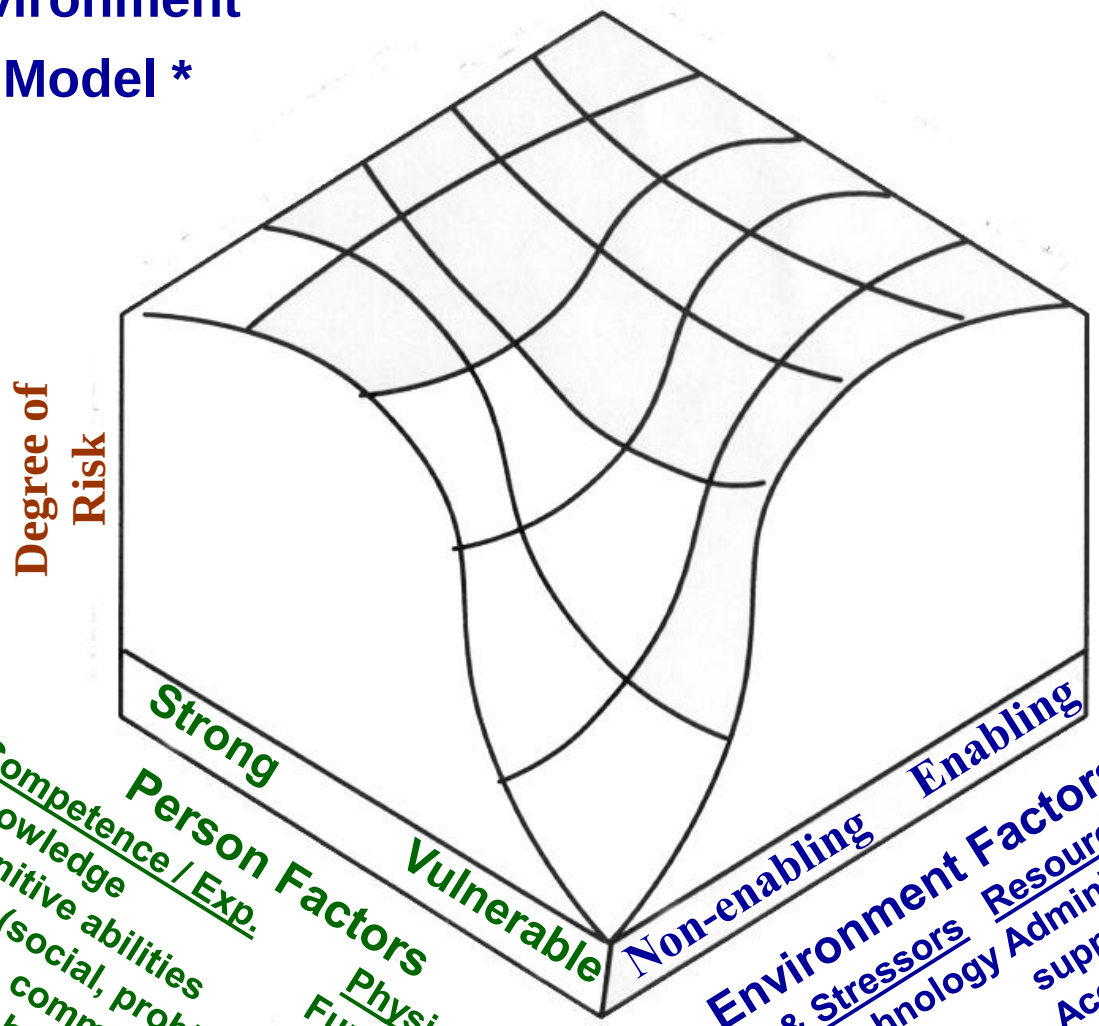
Two WTC employees with prosthetic legs were able to escape because of previous evacuation drill experience; and the technology of their prosthetics allowed them to keep pace with other evacuating employees

Source: N.O.D. Guide on the Special Needs of People with Disabilities.

Disaster Preparation and Emergency Planning in the Workplace

PxE

Person-Environment Interaction Model *



* adapted from Gowen, 1952; Horowitz, 1987

RTC FPIL

Disaster Preparation and Emergency Planning in the Workplace

- An increased understanding of both person factors and environment factors will help identify specific behaviors and environmental conditions to increase the margin of safety for those most at risk
- Person factors include participatory action planning, training, and feedback
- Environment factors include access compliance, assistive technology, and programs, practices, and procedures

Person Factors: Employees

- Use an individualized approach for evacuation contingencies that fits the person
- Meet with Human Resources and Building/ Safety staff to pre-plan emergency contingencies
- Assess the specific needs of the employee with a disability; the types of emergencies that may occur; and the location of the employees during these emergencies
- Update and transfer the plan to wherever the employee may be transferred within the company

Person Factors: Staff

There are basically two approaches to training staff to assist employees with disabilities:

- The “buddy system” where one employee is responsible for another employee with a disability during an emergency
- A cross-training system in which all employees help fellow employees with disabilities, using one method for those who have visual limitations, another for those with mobility issues, etc.

Training protocols could instruct employees to follow pre-assigned (and pre-rehearsed) functions, and refine their responses based on feedback from emergency drills

Environment Factors

- The National Business & Disability Council has just published a new manual entitled "Emergency Evacuation Preparation Checklist to Include People with Disabilities" (2002)
- This manual contains a checklist of environment and person factors that are assessed to determine the ADA access compliance level for employees with disabilities in their work environment.
- Safety officers should conduct an inventory of building features such as accessible emergency signal devices, alarms, and pathways of travel to exits that are free of obstacles

Environment Factors: Assistive Technology

- Accessible storage units for Evac-Chairs should be placed in easy-to-access locations to assist mobility-limited persons to safely descend the stairs.
- There are several types of evacuation chairs to assist with vertical descent during emergencies:
  - Garaventa Evacu-Track
  - Evac+Chair
  - LifeSlider
  - Scalamobile/Scalaport
  - Evacuchair

Environment Factors: Assistive Technology

- Garaventa Evacu-Track is a tread chair that uses caterpillar-like action to move people with mobility limitations down the stairs.

Environment Factors: Assistive Technology

- Evac+Chair uses a cantilevered design that places the seat and passenger inches above the stairs for easier manuverability and leverage as the individual is moved down the stairs.

Video

Environment Factors: Assistive Technology

- LifeSlider is a compact flat-bottomed, toboggan-type design that allows the person with a disability to be moved down narrow stairs down the stairs in a slide-like motion

Environment Factors: Assistive Technology

- **Scalamobile/Scalaport** is a motorized device that locks onto an existing wheelchair and can transport people with mobility limitations downstairs at the rate of 16 steps per minute.

Environment Factors: Assistive Technology

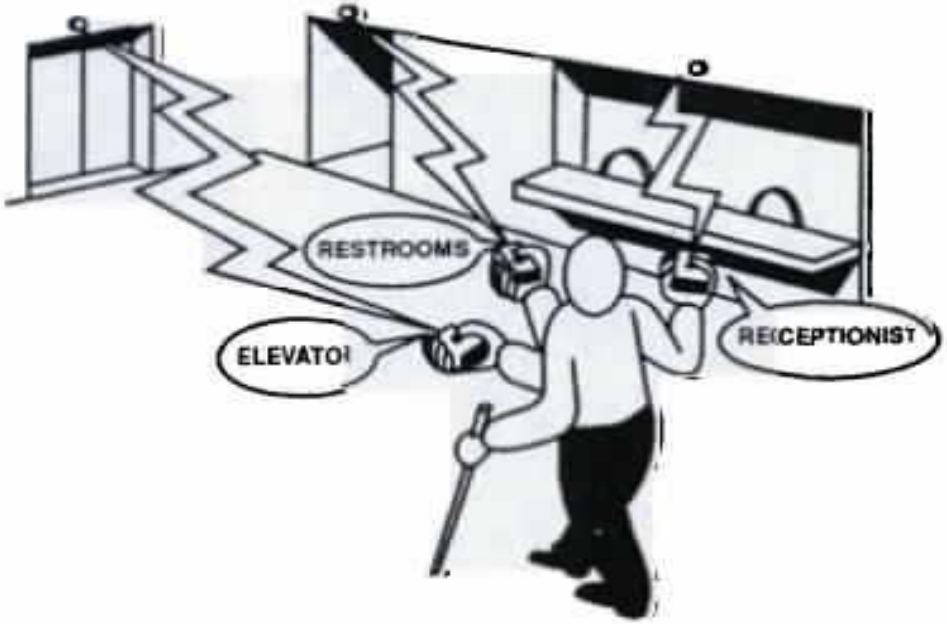
- Evacuchair uses a cantilevered design sling-type seat that allows for easier manuverability and leverage as the individual is moved down the stairs and between stair landings

Environment Factors: Assistive Technology

Electronic and information technology

- **Audible Directional Signage and Audible Pedestrian Systems help inform persons with visual impairments about pathways to building exits through transmission of low power radio waves or infrared beams that provide verbal signals – such as “stairway,” “restroom,” or “elevator” to cue the person when approaching one of these environmental landmarks.**

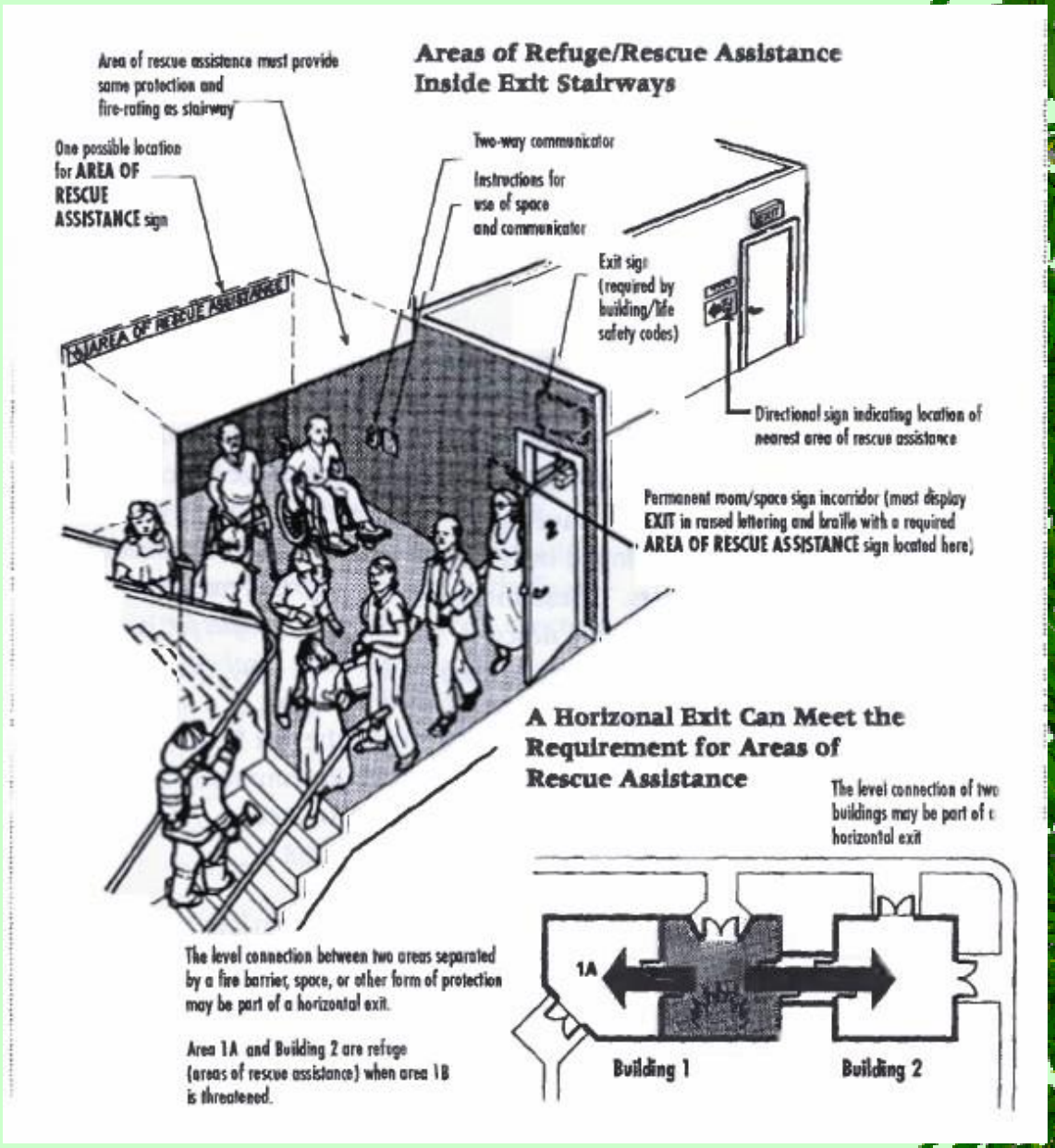
Environment Factors: Assistive Technology



Talking Signs™ provide people who are blind with the directional and usage clues that traditional visual signs provide for sighted persons. By sending information from installed infrared transmitters these signs **speak for themselves.** Hand held sensors pick up information from the transmitters and give verbal directions to the blind individual (see illustration above). These signs are installed in the San Francisco Municipal Railway and Bay Area Rapid Transit District.

Environment Factors: Access

ADAAG requires accessible means of egress, areas of rescue assistance, alarms, and signage in public buildings covered under Title II and Title III of the ADA.



Environment Factors: Access

Area of Rescue and Assistance

- Should have 2-way radios, cell phones, and rechargeable flashlights. (Some suggest two-way communication, with both a visual and audible signal)
- Should have a “hard-wired” intercom for direct communication with the fire department and other first responders
- Rescue assistance areas should be clearly designated with an international symbol of accessibility. Other similar signs should be posted to direct emergency response teams to this safe area

Environment Factors: programs, practices, and procedures

- Involve employees with disabilities in all discussions on disaster preparation in the workplace
- Common elements in evacuation programs
  - Awareness/Preparedness
  - Notification/Warning/Instruction
  - Evacuation/Movement/Transportation
  - Areas of Refuge/Shelter
  - Re-entry

Environment Factors: programs, practices, and procedures

The US Access Board recommends that:

- Organizations take an inventory of employees with disabilities so that as part of the disaster planning process emergency planners know the number, type of disabilities, specific needs of employees with disabilities, and their preferences regarding the evacuation process

Environment Factors: programs, practices, and procedures

Other recommended procedures:

- Posting emergency information in alternate formats
- Posting alarm alert procedures that include specific meeting places for assistance and equipment
- Having assigned stairways for identified personnel
- Establishing floor wardens to assist with the evacuation process

Summary and Future Directions

- The information in this presentation has been derived from publications with descriptive articles, anecdotal reports, and case studies
- The literature in this new and emerging area for people with disabilities has few experimental studies with methodological rigor of reliability, validity, and replicability

Summary and Future Directions

- There is little empirical evidence about how effective person or environment changes or interventions are under applied scientific methodological conditions
- Another weakness in the literature is the paucity of information and skill training for people with cognitive disabilities.
- Most of the documents we have found in our literature search have focused on people with physical or sensory disabilities.

Summary and Future Directions

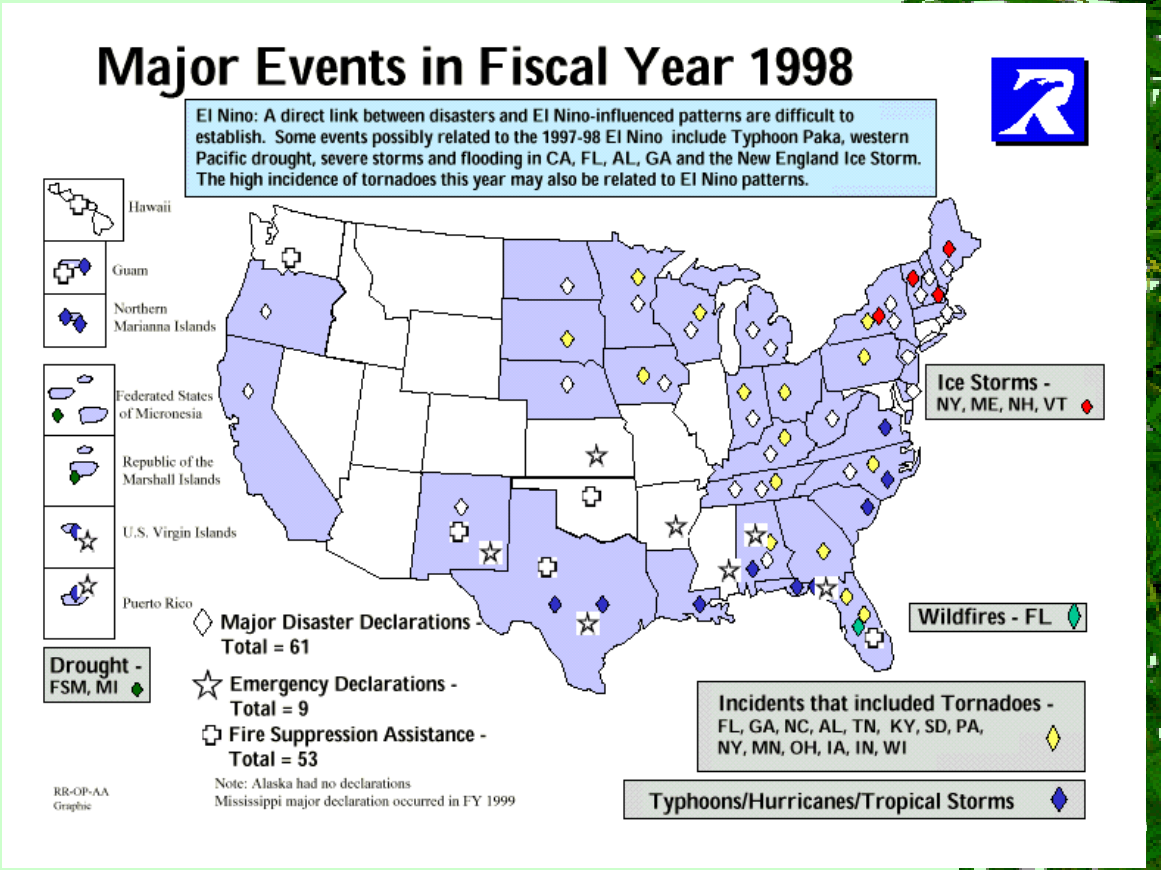
- It remains an empirical question as to how people with various disabilities respond to actual disaster conditions versus analog training conditions.
- Will the evacuation training that involves knowledge and skill acquisition generalize from the training conditions to the actual disaster conditions?

Future Directions

- The Research and Training Center on Full Participation in Independent Living is working on a American Teachers of Preventative Medicine/Centers for Disease Control Project on “Disaster Prevention and Emergency Response.”

Future Directions

- This new project will be analyzing Federal Emergency Management Agency data from 30 randomly selected counties in the US to determine what disaster preparation and emergency response procedures for people with mobility impairments were in place before and following a designated disaster situation.



Future Directions

- Based on our findings and observations of best practices and non-exemplary practices, we hope to develop and test a disaster preparation and emergency response package to promote safe evacuation of people with mobility impairments.

Future Directions

- We are also starting to work with rural fire departments to determine their level of emergency response training for evacuation of people with disabilities, and depending upon our findings, we plan on developing a training package, in consultation with firefighters and people with disabilities

Critical Thinking

Now its your turn…

- **When we think about disaster preparation and emergency response for people with disabilities…**
- **What research questions would be interesting to answer?**
- **What methods could we use to examine the questions?**
- **What would be the advantages and disadvantages?**

Drilling a little deeper

- Research Questions
  - Individual
  - Group
  - Community
  - Societal
- Targets of Change
- Agents of Change

- Research Methods
  - Design
  - Procedures
  - Measurement
    - IV
    - DV
  - Reliability
  - Validity
  - Sustainability
  - PAR

- Potential Issues

Threats to:

- Internal validity
- External validity
- Social Validity

Design Approaches

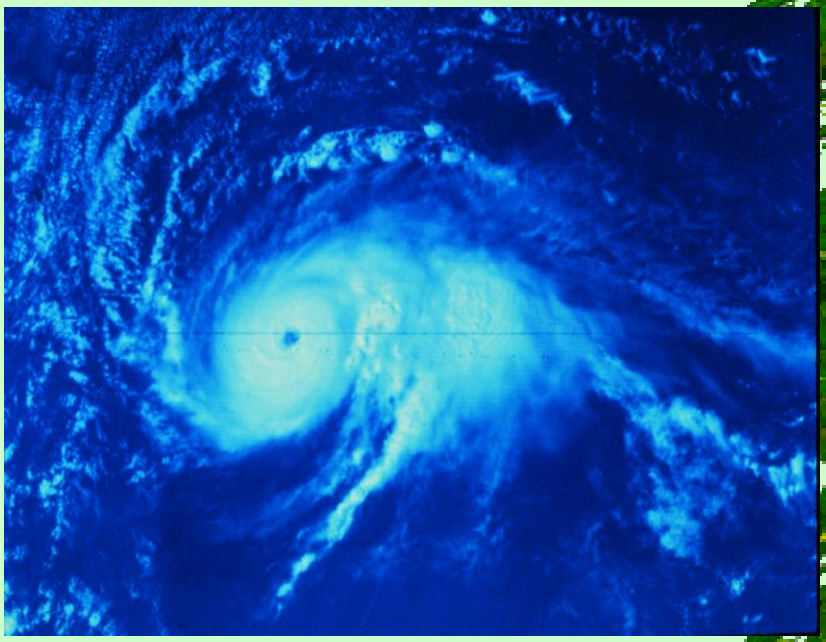
- Ethnographic
- Experimental and control group
- Single subject
- Survey
  - Individual
  - Group
  - Community
  - Societal

- Targets of Change
- Agents of Change
- Settings

Using the Person-Environment Model

Example one:

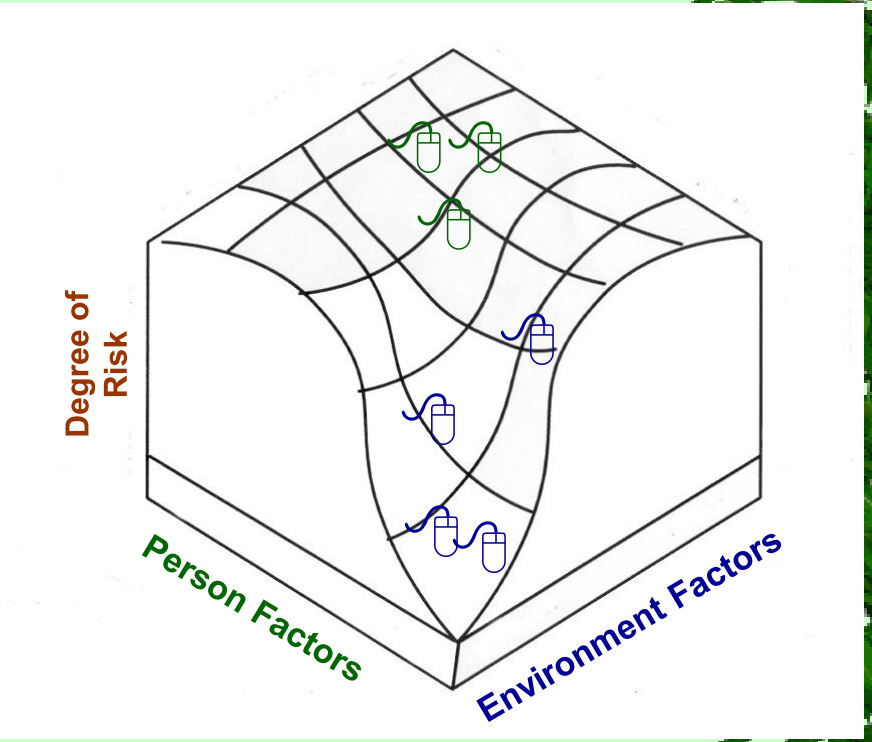
- **Developing and testing a package for personal assistants to help consumers get to "safe areas" during impending disasters.**



Using the Person-Environment Model

Example two:

- A systematic line of research could be conducted to plot person-environment factors and the patterns of risk under various disaster conditions



Sources of Information

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