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1:1 interview, user observation, AEIOU

1:1 interviews

During the first week, our project on fire prevention has had much progress. We used 1:1 interview, user observation, and AEIOU as our key research methods to gain insights from users. 1:1 interview and user observation provide us the most valuable raw insights directly from users, and they complement each other since user observation can provide non-verbal information that 1:1 interviews aren't able to provide. We have interviewed firefighters at fire station 2 in Berkeley. The key takeaways from those interviews are,

a), most homes in Berkeley don't have proper fire prevention devices, i.e. sprinklers, extinguishers, and smoke alarms, and it's difficult to install them (especially sprinklers) because most buildings here are 100+ years old,

b), people all have priorities, and fire prevention is not a major one for many, especially those who are struggling to put food on the table,

c), the most deadly fires happen at night, and people with disabilities (especially deaf and blind people) are the most vulnerable.



Through the Looking Glass, Ed Roberts Campus, Berkeley

We also interviewed a staff member at Through the Looking Glass at Ed Roberts Campus, which is a NPO center for people with disabilities. We found that a big issue for deaf people in case of fires is the communication problem. While deaf people are able to see and detect fire, their vulnerabilities come from the lack of speedy communication with the fire department, as they have to rely on relay system.

Disabled people who live independently are also extremely vulnerable because of their mobility issues. These people usually have attendants who only serve them during the daytime. However, when a night fire happens, they have to get up from their beds and move into their wheelchair by themselves, which is extremely challenging.

The staff member also mentioned that it is not only a kind of problem to design a robot or intelligent device. It really needs a cooperation between fire department and personal electronic devices.

To continue our research and our project, we need to focus on people with disabilities first, since they are likely to be our early adopters or extreme users. We'd like to solve the communication problem using mobile devices and mobile sensing. On the other hand, people who have not yet had their basic needs (food and housing) met aren't likely to be our early adopters.

Notes from User Observation:

- Outlets are sometimes really close to flammable things such as bed sheets and clothes (see below)
- Some outlets were overwhelmed with plugs, could be dangerous in the event of a surge (see below)
- Food is not always cleaned regularly from stove and so leaves flammable material near a very hot source. (see below)
- Fire extinguisher is usually left in or near kitchen - could be hard to access in event of a fire elsewhere..
- Outside of homes have significant amounts of dead leaves and grass which can easily spread fire.
- Some windows were always left open which can cause hot embers to fly in and spread fire inside.
- Not everyone could instantly identify where their fire extinguisher was
- Not everyone knew how to properly stop kitchen fires
- Paper and cardboard scattered around room - could help spread fire
- Some people are very clean (low fire risk) and some have flammable things such as paper and clothes everywhere (high fire risk)
- Apartment recycle area contains large pile of old cardboard - very flammable.
- Dorm has fire suppression system activated by large amount of heat but the amount of heat required implies that the fire is already very large.
- Melted dryer seen in dorm - may have burned clothes inside (see below)
- Sprinklers are not effective when there are massive stacks of objects near walls or corners, as most sprinklers are located at the center of the room.



Overloaded outlets near a bed



Uncleaned stovetop



Flammable paper and cardboard near stove and oven



Burned dryer in Foothill

User observation

Insights:

- People who live in messy houses could care less and would be less likely to buy fancy fire prevention system.
- There are several locations where a small fire can start and should be quickly put out before given a chance to spread.

Results: We to be able to prevent small fires in every room autonomously so that people who are sleeping or incapacitated will still be safe.

AEIOU

We chose AEIOU because we needed a method to organize the data we collect from our other two methods, and this method was more relevant to our project than POSTAS or POEMS. From the data and user observation we collected, we have compiled the following AEIOU chart to help us understand the systems in this project.

With AEIOU, we realized that assets and valuable goods destroyed in fire can be big problems for homeowners, especially if those objects are of great financial or sentimental values. For our next step, we can work with insurance companies to help protect users' assets.

AEIOU chart

A	E	I	O	U
Extinguishing fire	homes/ residential areas	Accidents put house on fire	fire	Homeowners, residents
Fire detection & report/alarm	College dorms	Fire alarm/sprinkler system activated	Fire prevention systems/mechanisms (sprinklers, extinguishers, and smoke detectors)	Firefighters, police
Fire prevention	Assisted living facilities	Homeowners call 911	Homes, buildings	Fire departments, government
evacuation		Firefighters come and put out fire	Assets, valuable goods	
		Homeowners deal with the loss		

Interview quotes and notes

The following quotes are from interviews with Berkeley’s firefighters at Fire Station 2.

“The majority of people aren’t like you. If they are struggling to put food on the table, they aren’t going to care about installing and maintaining the proper fire prevention devices.”

“The most deadly fires happen at night, when most people are asleep. Every year there are about 7-8 fatalities in Berkeley, and all of them were due to night fire...”

People with disabilities are the most vulnerable.”

Interview Transcripts:

Subject 1

When was the last time that you encountered a fire disaster

About 4 years ago

Was it a big fire or a small fire?

It burned down several houses so I'd say it was pretty big.

What caused it?

A hobo got cold and lit some paper in a trash can on fire. The burning paper flew up and lit the trees around him on fire.

Where did the fire occur?

Near La Crescenta (SoCal)

What did you do? Why?

I didn't do anything since it was far away but the sky still turned orange.

What were your initial reactions to the fire?

I don't remember

How did you feel?

I don't remember

What were damaged? Any big losses? Any emotional loss?

A lot of trees and houses burned but I didn't lose anything.

How did you cope with the losses?

I mean, I didn't lose anything

What did you wish you have done to prevent the fire? What would you do to prevent the fire? Why?

I couldn't have prevented it.

Subject 2

When was the last time that you encountered a fire disaster

About 13 years ago.

Was it a big fire or a small fire?

It was a medium sized fire.

What caused it?

A couple of my friends and I were playing with matches and we lit a tarp on fire.

Where did the fire occur?

On the fence between two of my neighbors' houses in India.

What did you do? Why?

My friends and I tried to blow it out because we were really young but that only made it worse so we went inside and pretended we didn't know about it.

What were your initial reactions to the fire?

I was worried I was going to get in trouble.

How did you feel?

I was pretty scared.

What were damaged? Any big losses? Any emotional loss?

No emotional losses but my neighbor's car tarp was destroyed.

How did you cope with the losses?

I pretended I had nothing to do with it.

What did you wish you have done to prevent the fire? What would you do to prevent the fire? Why?

I wish I hadn't played with matches and I probably should have told someone about the fire so that they could have put it out.

Subject 3

When was the last time that you encountered a fire disaster

3 years ago.

Was it a big fire or a small fire?

Small fire, it was in the kitchen

What caused it?

Some oil got too hot and caught fire in the pan

Where did the fire occur?

At my parent's house in Irvine (SoCal)

What did you do? Why?

I put the pan's lid on top of the pan because that's how I was taught to put it out.

What were your initial reactions to the fire?

A little surprised but I knew how to put it out so it wasn't that bad

How did you feel?

I don't know

What were damaged? Any big losses? Any emotional loss?

Nothing was damaged

How did you cope with the losses?

There were no losses.

What did you wish you have done to prevent the fire? What would you do to prevent the fire? Why?

I should've realized that the pan was too hot but I've been more careful since then

Subject 4

When was the last time that you encountered a fire disaster

When I was in like 8th or 9th grade so like 5 or 6 years ago.

Was it a big fire or a small fire?

It was a really small fire, just on some scrap paper.

What caused it?

I was playing with a magnifying glass trying to burn paper and it almost got out of hand.

Where did the fire occur?

On a school bus

What did you do? Why?

I threw it on the ground and stomped it out because blowing on it wasn't working and I didn't want to get in trouble.

What were your initial reactions to the fire?

I was surprised and a little overwhelmed

How did you feel?

A little scared, nervous, I was more afraid of getting caught than the fire.

What were damaged? Any big losses? Any emotional loss?

Nothing was damaged, just the paper I burned

How did you cope with the losses?

There were no losses.

What did you wish you have done to prevent the fire? What would you do to prevent the fire? Why?

In hindsight, I should not have been playing with fire on a school bus full of kids so my prevention would be to just not do something like that in the future.