

# HCI: Focus Groups and Contextual Inquiry

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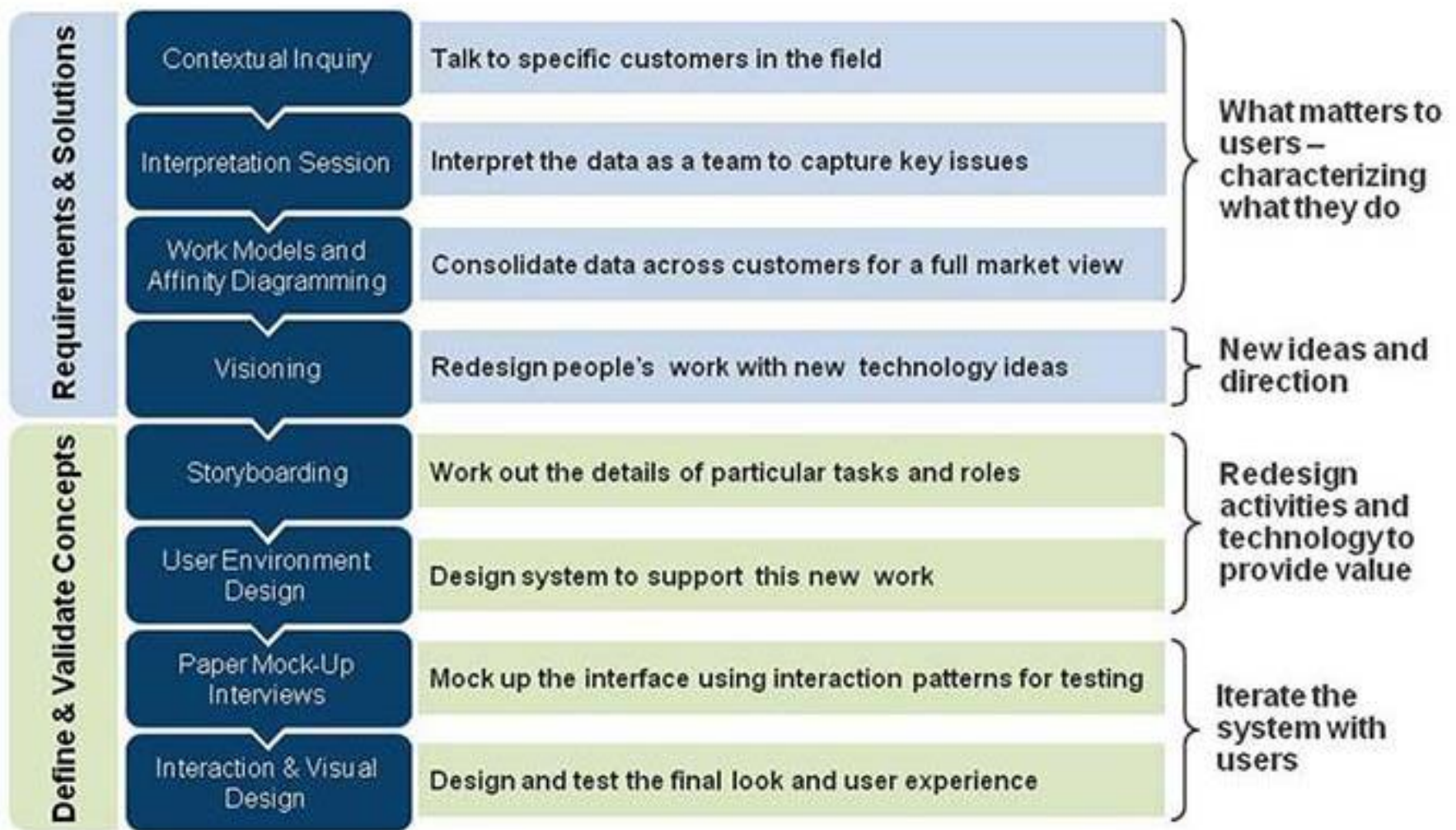
**First, the news ...**

# Contextual Inquiry

# Contextual Inquiry

- An approach to ethnographic study where user is expert, designer is apprentice
- A form of interview, but
  - at users' workplace (workstation)
  - 2 to 3 hours long
- Four main principles:
  - Context: see workplace & what happens
  - Partnership: user and developer collaborate
  - Interpretation: observations interpreted by user and developer together
  - Focus: project focus to understand what to look for

# Contextual design



**“Principle: People are experts at what they do - but are unable to articulate their own work practice.”**

# Example Contextual Inquiry

- I: “I noticed that after putting the order into the system you called the stocking room and told them about the order. Why did you do that?”
- P: “I just wanted to let them know that the order is coming.”
- I: “Why do they need to know that the order is coming?”
- P: “They can’t see the order system and it takes them a few minutes to find items in the stocking room. So when the customer shows up we look unprepared, so I always call down and tell them. Order from this department always look fast!”

# Contextual Inquiry

- Ethnographic interviews
- Pros
  - Strong understanding of how a particular user works
  - Deep understanding of the context in which your software will be used
  - Opportunity to build a relationship with a user
- Cons
  - Harder to use on infrequent tasks (like app installs)
  - Limited sample size



**At a prior university the library decided to figure out why researchers were not backing up data. They tried surveying, but people left out important information. So they sent someone around to various research labs to do a contextual inquiry.**

# Where is all the data?



<http://www.csoonline.com/article/2112379/physical-security/the-clean-desk-test-what-s-wrong-with-this-picture.html>

# Example exchange with researcher

- Me: we back up our data onto local servers which are then backed up to an online service.
- Interviewer: What about that? (pointing to the tablet in my hand)
- Me: I have a folder on this which rsyncs (uploads) to my backed up computer once an hour when I am at work
- Interviewer: What about when you travel?
- Me: It doesn't backup, but I consider the risk minimal

# The result

- Researchers were not considering mobile devices like phones and tablets or cameras when describing where their data was
- They were using Dropbox instead of university services to sync to things like mobile devices
- Sources like Google Docs were also not being reported
- Large files like detailed photos or video were all being stored locally
- Some data was being printed and stored in hard copy with no backup

**Contextual inquiry would not be my first choice for understanding app permission decisions. App installation is a rare task and hard to observe in the wild.**

**But if we were going to use contextual inquiry this is how...**

# **Our plan: before the observation**

1. Contact participants ahead of time and ask them to identify an app or set of apps they are considering installing, but have not yet installed
2. Arrange to meet at their home/work/school, wherever they normally are when making these decisions
3. Inform them that you will be video and audio recording and make sure they are ok with this.

# Our plan: during observation

1. Explain how the session will go and that you are there to learn about how they normally do things
2. Ask to go to the room they are normally in
3. Ask them to tell me about their phone and how they normally install apps (easy question)
4. Ask them to tell me about the app they have been thinking about (ok if there are many)
5. Watch them go through and interact with the phone interface
  - a) Ask questions about what they are doing and why
  - b) Take photos of anything that the video camera can't see
6. End with an easy question and thank the participant for their time

# Considerations for data gathering (1)

- Identifying and involving stakeholders: users, managers, developers, customer reps?, union reps?, shareholders?
- Involving stakeholders: workshops, interviews, workplace studies, co-opt stakeholders onto the development team
- 'Real' users, not managers
- Political problems within the organisation
- Dominance of certain stakeholders
- Economic and business environment changes
- Balancing functional and usability demands



# Considerations for data gathering (2)

- Requirements management: version control, ownership
- Communication between parties:
  - within development team
  - with customer/user
  - between users... different parts of an organisation use different terminology
- Domain knowledge distributed and implicit:
  - difficult to dig up and understand
  - knowledge articulation: how do you walk?
- Availability of key people

# Data gathering guidelines

- Focus on identifying the stakeholders' needs
- Involve all the stakeholder groups
- Involve more than one representative from each stakeholder group
- Use a combination of data gathering techniques
- Support the process with props such as prototypes and task descriptions

# Data interpretation and analysis

- Start soon after data gathering session
- Initial interpretation before deeper analysis
- Different approaches emphasize different elements e.g. class diagrams for object-oriented systems, entity-relationship diagrams for data intensive systems

# Quantitative data analysis

# Quantitative vs Qualitative analysis

## Quantitative

- Typically using numbers or clearly defined categories
- Examples: surveys, time measurements, activity order.
- Easier version is counting things
- Harder version involves statistics

## Qualitative

- Data that cannot be trivially measured in a way that produces a number
- Interviews, focus groups, natural language
- Easy version is identifying themes or topics
- Harder version is grounded theory or qualitative coding

**Remember that survey you took on the first day? We are going to use that as an example.**

**Graphs, screenshots, etc., created using R-Studio**

# Quantitative questions

1. What is your gender?

- ☐ Female
- ☐ Male
- ☐ Prefer not to answer
- ☐ Other, please state .....

2. What is your age in years? .....

3. What what degree program (major) are you in? .....

4. What is your native language? .....

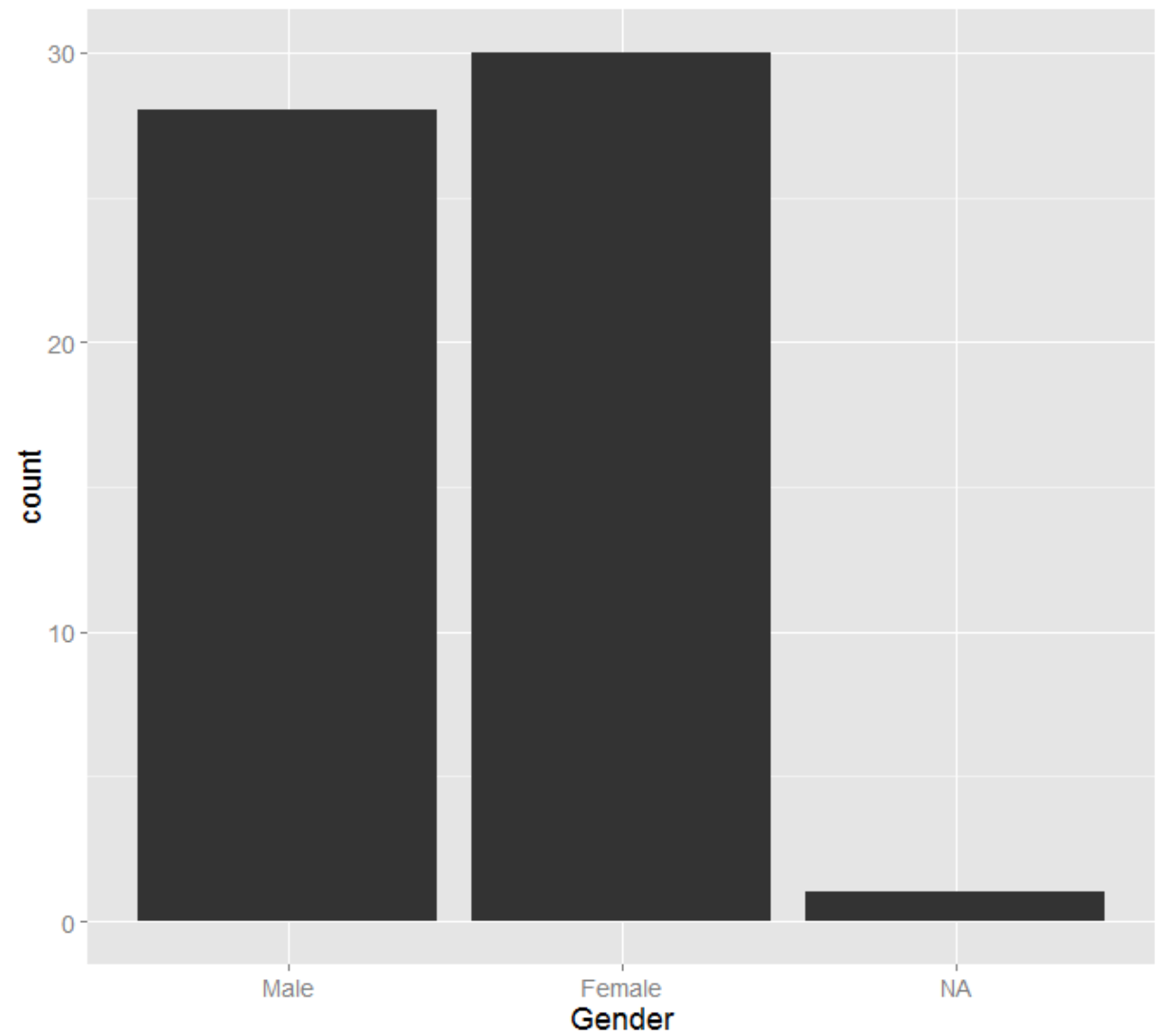
5. Which of the following types of technology do you use?

	Do not have one	Rarely	Weekly	Daily
Smartphone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tablet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gaming Console	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Laptop	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Desktop	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. How often do the following happen?

	Never	Rarely	Sometimes	Often	Always
I ask other people for help with computers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other people ask me for help with computers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Gender





These questions allow free-writing but the answers can be easily categorized/counted so they are Qualitative.

1. What is your gender?

- ☐ Female
- ☐ Male
- ☐ Prefer not to answer
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2. What is your age in years? .....

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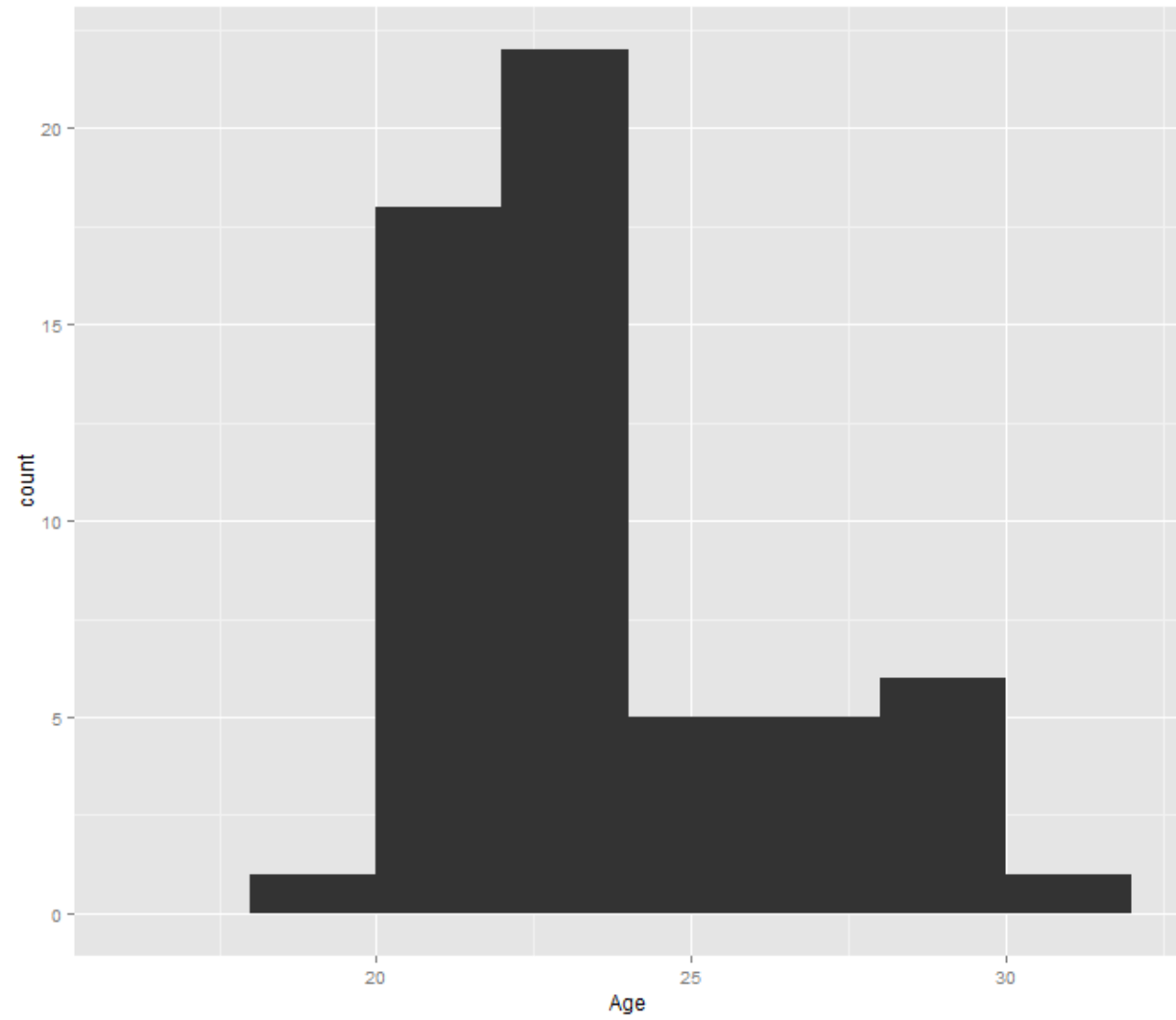
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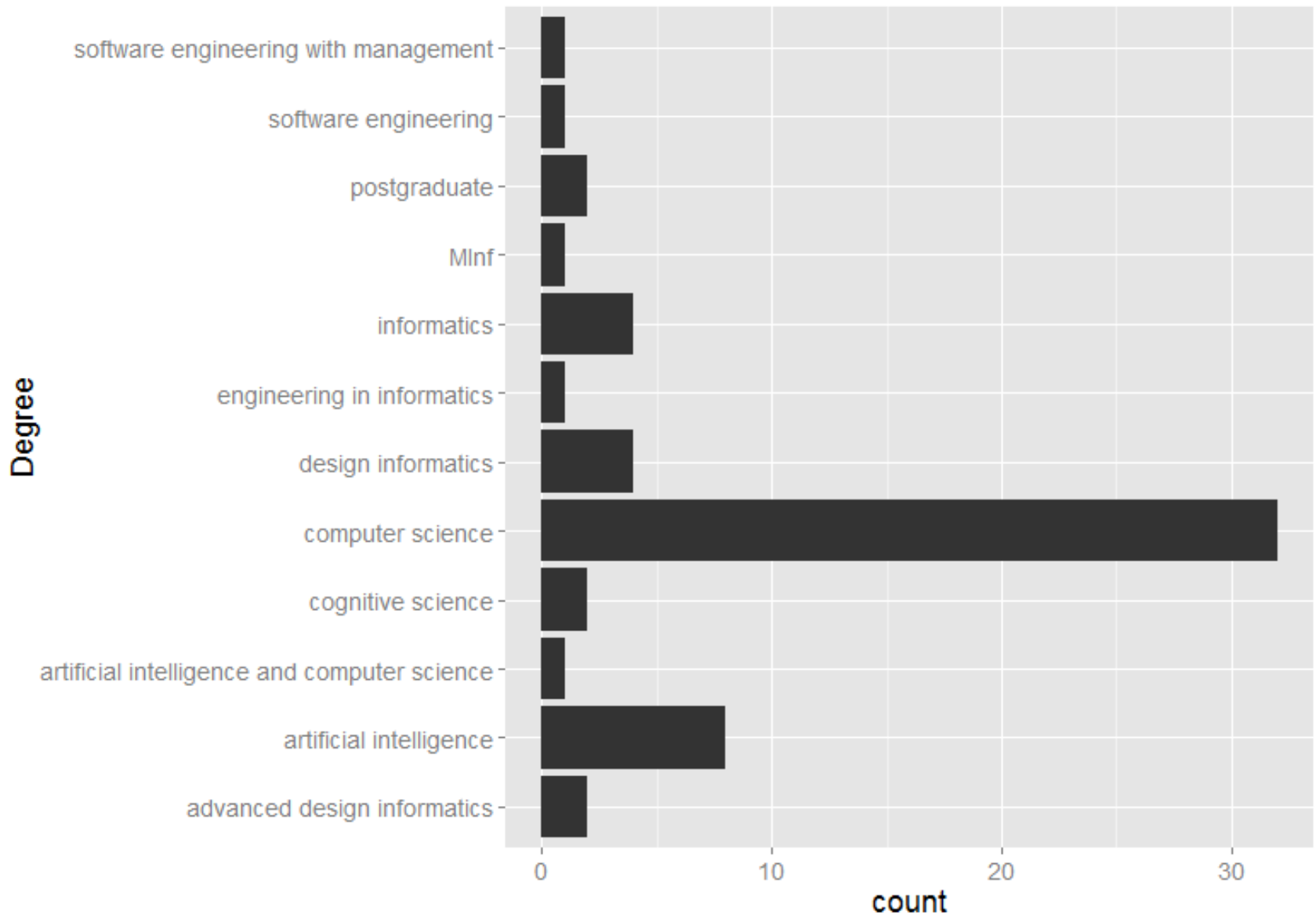
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Other people ask me for help with computers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Age



# Degree Program



These questions are intended to be compared to each other.

1. What is your gender?

- ☐ Female
- ☐ Male
- ☐ Prefer not to answer
- ☐ Other, please state .....

2. What is your age in years? .....

3. What what degree program (major) are you in? .....

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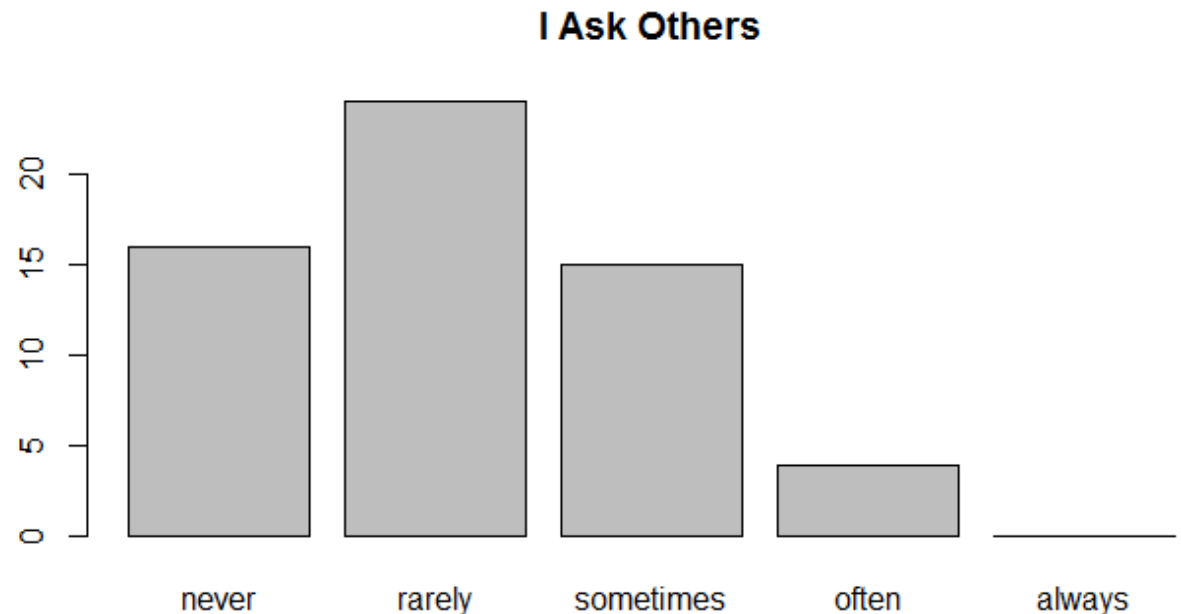
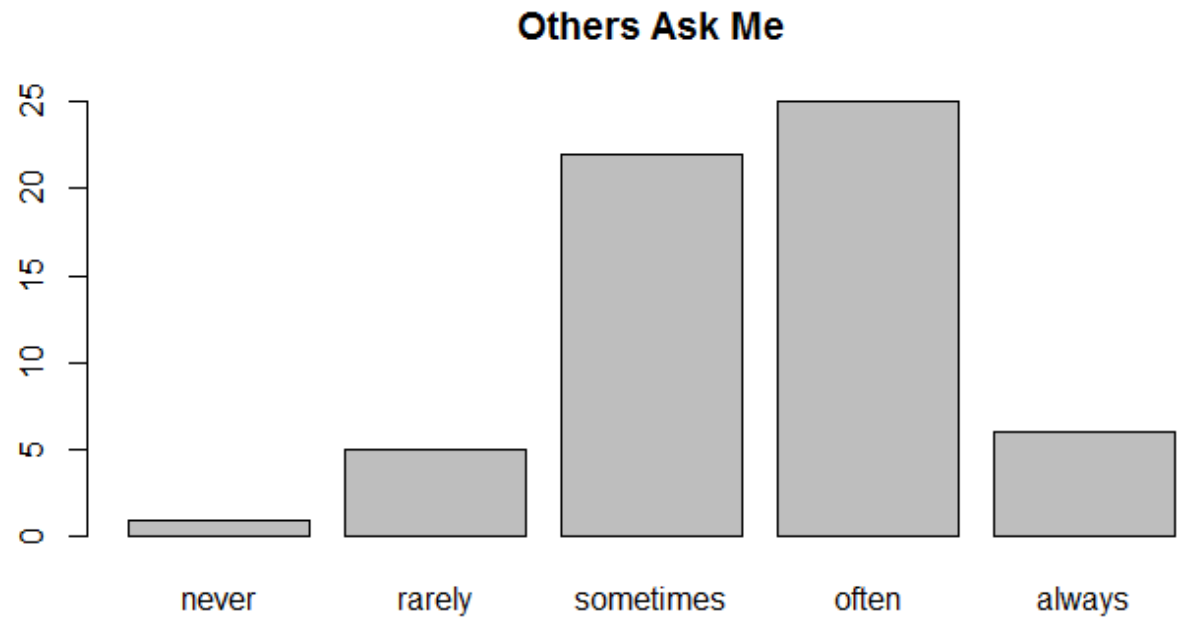
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Think-pair-share

What can we conclude about this population?

What other way could we analyze this data?



# Westin privacy index

7. For each of the following statements, how strongly do you agree or disagree?

	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
Consumers have lost all control over how personal information is collected and used by companies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Most businesses handle the personal information they collect about consumers in a proper and confidential way	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Existing laws and organizational practices provide a reasonable level of protection for consumer privacy today	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# Calculating the index

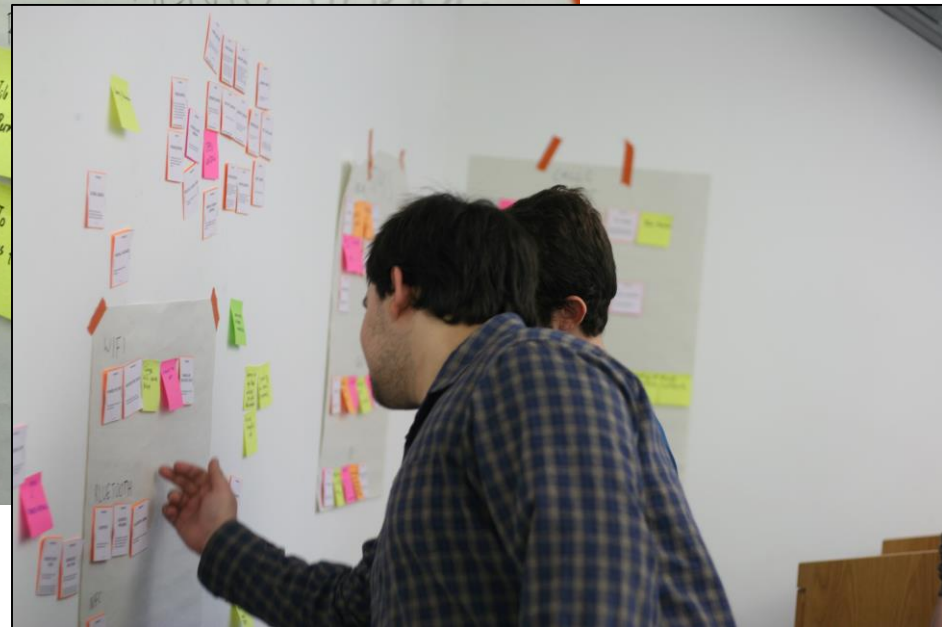
- Convert options to 1-5  
(should be 1-4, but the survey mistaking contained a neutral option)
- Fundamentalists
  - $Q1 > 3$
  - $Q2 < 3$
  - $Q3 < 3$
- Unconcerned
  - $Q1 < 3$
  - $Q2 > 3$
  - $Q3 > 3$
- Pragmatists
  - Other

	Count
Privacy Fundamentalists	9
Privacy Pragmatists	51
Privacy Unconcerned	0

# Qualitative Analysis



# Affinity diagram



ALLOW TO  
USE  
MICROPHONE

APPS LIKE  
SKYPE  
WOULD NEED  
TO USE YOUR  
MICROPHONE

RECORDING  
AUDIO  
IN  
BACKGROUND

PERMISSION  
RECORD\_AUDIO

Allows an application to record audio.

PERMISSION  
CAPTURE\_AUDIO\_OUTPUT

Allows an application to capture audio output.

RECORDING  
WITH  
MICROPHONE

Need to  
record voice.

Voice

Microphone  
turned on  
without a  
Button Push

DOING SOMETHING  
IN BACKGROUND  
WITHOUT EXPLICIT  
INTENT

CLICK  
BUTTON

USE VOICE  
CHAT

Chatting  
loudly in time  
Cinema

Talking  
in class

~~Data~~  
Anything that  
makes noise

PERMISSION  
MODIFY\_AUDIO\_SETTINGS

Allows an application to modify global audio settings.

PERMISSION  
UPDATE\_DEVICE\_STATS

Allows an application to update device statistics.

PERMISSION  
USE\_SIP

Allows an application to use SIP service.  
Session Initiation Protocol (SIP). This lets you add SIP-based Internet telephony features to your applications.

CONTEXT  
ONTOUCH\_HANDLER

Handles Touch events.

ON\_CLICK  
HANDLER

CONTEXT  
ONCLICK\_HANDLER

Handles Click events.





What factors do users consider when deciding to update or not?

# Survey on Mechanical Turk

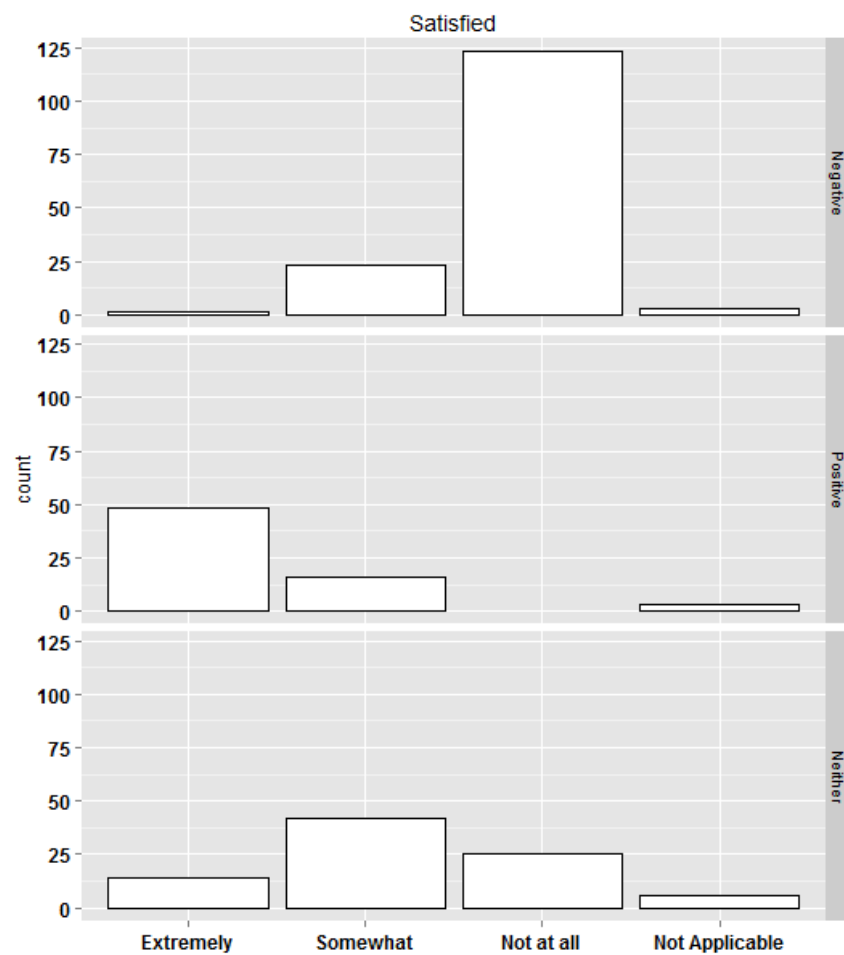
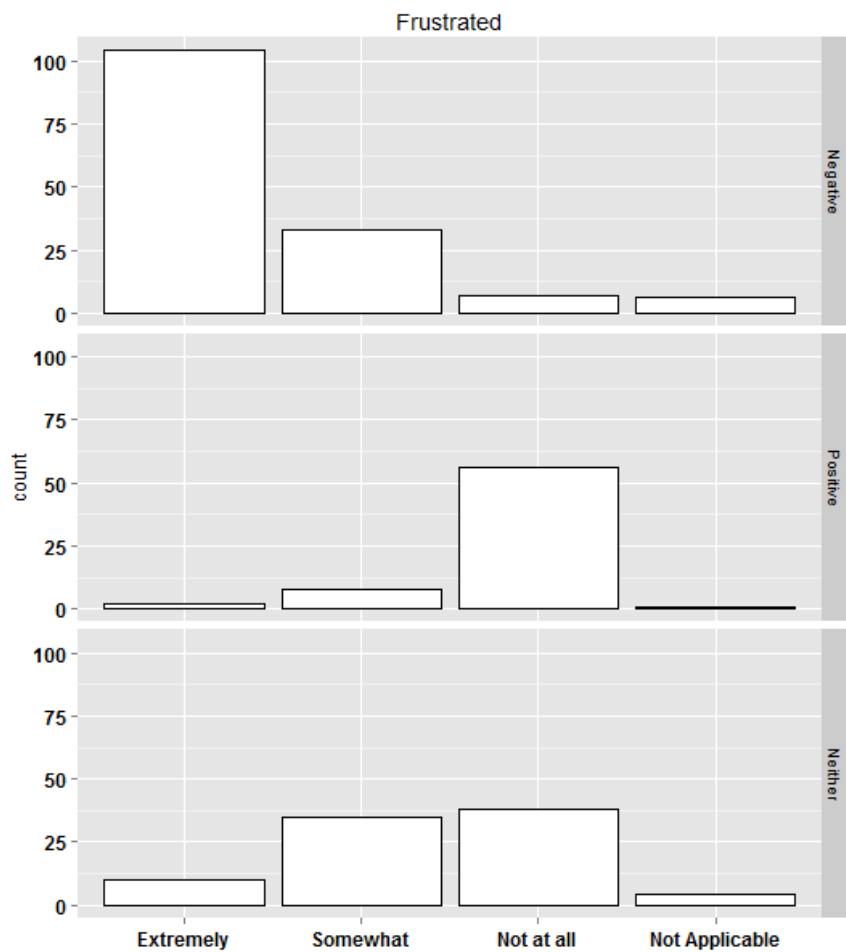
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1. Relate a story
2. Is the story positive/negative/neither
3. Follow-up questions about the story
4. Relate a contrasting second story

# Survey on Mechanical Turk

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- 307 responses
- 592 usable stories
- First stories were:
  - 49% Negative
  - 29% Neutral
  - 21% Positive
- 133 Women, 174 Men
- Mean age 35



# Content coding

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- Prior state
- Initiation
- Installer
  - Time
  - Cost
  - Resources
  - Problems
  - Failure
  - Restart
  - Bundled software
- Expected installer
- Post state
- Expected post state
- Behavior
- Impact



# Content coding

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“I decided that I wasn’t going to install the update because I have heard all the reviews online about how it generally makes your phone slower in every respect.”

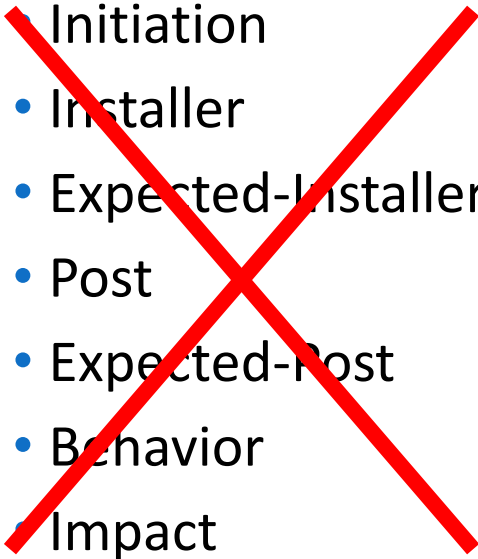
# Content coding

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I decided that I wasn't going to install the update	Behavior : did not update
because I have heard all the reviews online	Behavior : research
about how it generally makes your phone slower in every respect	Expected post state : performance : worse

# Thematic analysis

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- Prior-state
  - Initiation
  - Installer
  - Expected-Installer
  - Post
  - Expected-Post
  - Behavior
  - Impact
- 

1. Awareness
2. Deciding
3. Preparation
4. Installation
5. Troubleshooting
6. Post state

**Questions?**