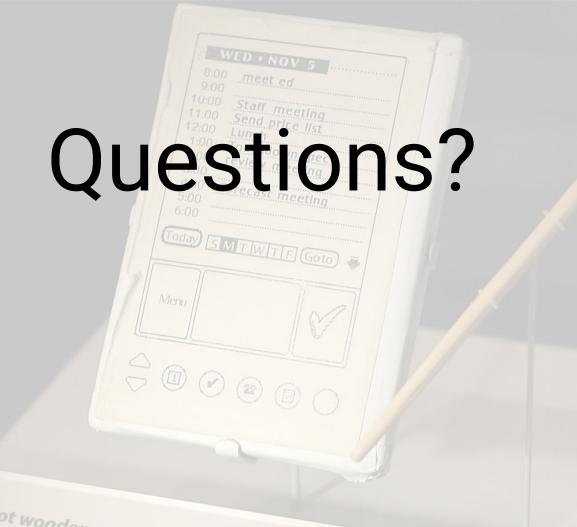
Affinity Diagram - A Method to Synthesize Qualitative Data





PalmPilot wooden model

Logistics

- 1. Quiz 2 due on Sunday
- 2. Assignment 3 due on Sunday
- 3. Get started on final project milestone 1 (Quiz 2 could help with that)

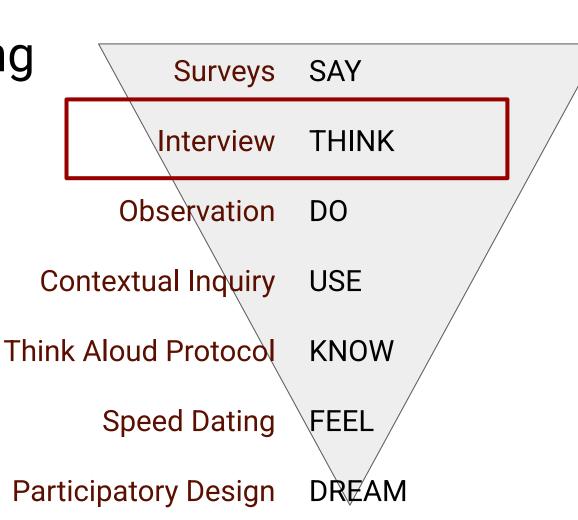
Goals for today:

1. What is affinity diagram?

PalmPilot wooden model

- 2. How can I create affinity diagrams to synthesize qualitative data?
 - a. How do I interpret interview data?
 - b. How do I synthesize insights?

Understanding the User



Semi-Structured Interviews

- A method of asking questions & listening
- Uses a planned interview protocol with open-ended questions
- Ask about what you cannot observe
- Let people tell you what they know about themselves
 - What they do
 - How they do things
 - Their opinions on current activities
 - How much they like one thing compared to another

What happens after an interview?

- Interpret the interview transcripts
- Synthesize Insights

Final Project Milestone 1

- Perform the interviews (reference the examples we provided)
 - What are good interview questions? (See lecture 7 and Quiz 2)
 - A principle is asking about a specific past event, a past experience instead of asking about frequency (e.g., how do you typically do x)
- Analyze the interview (the focus of this lecture!)

Final Project Milestone 1:

Analyze the interview transcripts and create affinity diagrams as a team



Why is qualitative data analysis important?

Consider the example of designing a fitness app:

- What are people's needs around progress tracking?
- What are breakpoints with existing practices/technologies?



Why is qualitative data analysis important?

Consider the example of designing a fitness app:

- What are people's needs around progress tracking?
- What are breakpoints with existing practices/technologies?



What do we know what are the users' most pertinent challenges and strongest needs?

How to avoid cherry picking on things that are unimportant?

Why is qualitative data analysis important?

Consider the example of designing a fitness app:

- What are people's needs around progress tracking?
- What are breakpoints with existing practices/technologies?



With need finding study: People need community support. Possible designs include workout groups, leaderboards, progress sharing Without need finding study: The app focuses solely on individual workouts, missing the social interaction aspect.

We need systematic ways to analyze

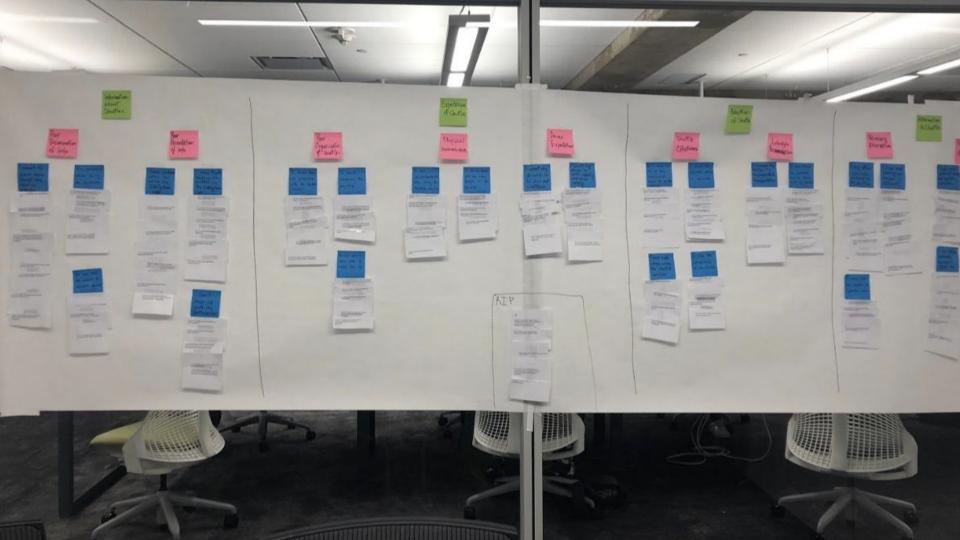
qualitative data and synthesize insights.

Qualitative Analysis Methods - Interpreting Qualitative Data

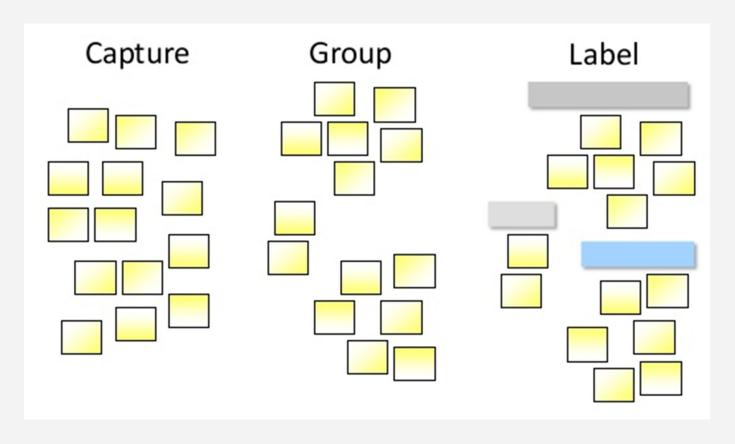
- Build models
 - Flow diagrams
 - User journey map
 - o Etc
- Affinity diagram
 - Our focus in the class
 - Commonly used in teamwork in industry settings
- Grounded theory/Thematic analysis
 - Used in research settings
 - Requires more efforts in data analysis
 - Often include a triangulation step



PalmPilot wooden model



3 STEPS IN AFFINITY DIAGRAMMING



Step 1: Capture / Interpretation

Extracting insights from interview transcripts

Step 1: Capture / Interpretation

Extracting insights from interview transcripts

Purpose:

- For the whole team to come to a common understanding of the interview.
- Convert informal individual notes into a formal set of group notes/models.

Interpretation Notes

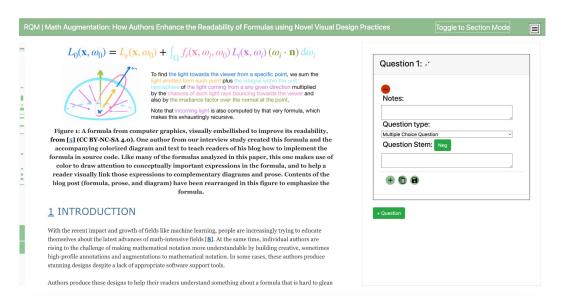
- Profile information should be separated.
- Notes can capture quotes, activities, beliefs, issues, tasks undertaken, body language, insights or extrapolations from the data such as opportunities/ breakdowns, patterns/trends, etc.
- Each note should be a single, self-contained idea.
- Notes will eventually be used in affinity diagramming.
- 10 minute interview = dozens of notes
- Filtering to useful info is the hard part!

How to write interpretation notes?

- An interpretation note should be read independently (self-containing)
- An interpretation note should only contain 1 idea.
- An interpretation note contains information that suggests motivation, issue, insight, etc. - It should be useful for creating affinity diagrams.
- First pronouns are encouraged when appropriate to show it's a human-centered process.

Examples from a recent interpretation session

Context: We developed a tool to help instructors design quiz questions. We performed think-aloud studies with instructors to see how they use the tool.



It's a different data collection method. But the way of analyzing transcripts is the same.

Speaker 1:



When I'm designing quiz questions, I want to divide the questions into easy, medium, and hard.

Speaker 1:



I try to design questions of varying difficulty.

Speaker 1:



An instructor designs 10 questions, 3 really hard, 3 really easy, 4 medium level of difficulty.

Speaker 1:



Hard questions are those that require extensive amount of time for students to answer.

Speaker 1:

Speaker 1:

It was way faster, for sure. Because the sections were already there on the right hand side. It's like from abstract to the overall resource section. For me, it's just like, I have to read the paper beforehand, if I need to design quiz questions, because I need to be familiar with the paper itself. But sometimes it happens that we have so much a lot of work to do for the research process itself. So actually reading the paper in detail will go in vain. And we might, you know, end up using the same paper for three academic years. It doesn't really make sense if you have the new technology out there. So this is really helpful.



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Speaker 1:

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Using the tool to create questions is faster for me.

Speaker 1:

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I don't have enough time to read the paper beforehand and design the quiz questions.

Speaker 1:

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Speaker 1:

I do think it's important that for these paraphrasing tools which are there, to have one more read about that. Not to just blindly rely on these [the paraphrasing result generated by AI]. Right? So I was already selecting one of the question stems, and then going for one of the options and selecting the paraphrasing result. I'll try to make sure that the question is correct. And the following options are also correct. So that means not to just select itself. So that was really nice.



I think it's necessary to give a second read of the AI outcome before using it.

Speaker 1:

I do think it's important that for these paraphrasing tools which are there, to have one more read about that. Not to just blindly rely on these [the paraphrasing result generated by AI]. Right? So I was already selecting one of the question stems, and then going for one of the options and selecting the paraphrasing result. I'll try to make sure that the question is correct. And the following options are also correct. So that means not to just select itself. So that was really nice.

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In practice (there are many qualitative data analysis software)

And sometimes I noticed they're getting a lot of these questions wrong. So like, I don't know, if they didn't do the readings, or they just forgot by them, or, you know, so I think it might be useful to like, sort of assessing their comprehension, making sure they're closely reading the text, because I think for some things, I'm sure they're skimming some places, I'm sure they're like, or even if they're reading it, they're not like fully digesting. Sometimes there's a lot of names, and things like that, like the reading I sent you. There's like a lot of information there. And, and so yeah, I think it could be useful. I'm I don't know, like, if I would want to do it. For all the readings are like in place of, I guess my main hesitation for changing things. And the way I do it is like, if I add more, it might be too much for students. But if I so it's like a question of like, do I want to remove, you know, guiding questions, for example? Or if it's, but it sounds like this might be readings, for example? Or like, right after some say it's something I could consider.

Researcher2 8:48

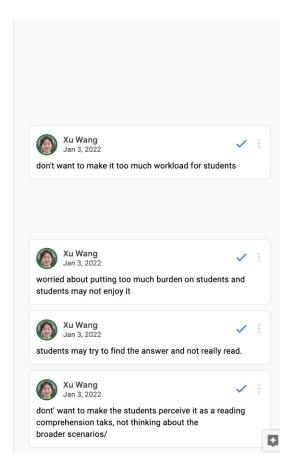
Thank you. And to see, what what are some of the risks that you see in this approach?

Unknown Speaker 8:58

I guess the main, I mean, what, I guess it's not really, yeah, I guess one risk is just that, like, adds more work to students. And then just, you know, my class already has like, a thing a lot. So I'm just a little worried that putting too much on too much burden on them. And you know, and they might not enjoy it as much. And I guess the second would be I mean, technically, it's possible, but this, I have the same problem, my guiding questions, but it's possible that they'll just, like look at the questions, and they'll they will like try to just seem to just find the answers and not really read. And, and maybe they would treat like the readings more as like, Oh, they're just certain, you know, it's just like, I have to read this to answer the questions. I guess it depends on how you frame it. Right. And so I think I think that's avoidable, but I think they could perceive it as like a just a reading comprehension kind of thing. And they just have to build to answer these questions and then not really think about the broader question. That's what the guiding questions was to do, but I think maybe a mix of both will be helpful for the students. So I don't think there's too much risk but Also, the main thing for me is just if, if it's more work on the students additional or like additional requirements.

Researcher2 10:08

Yep. Thank you so much. And I think this is the first part oh, maybe have another question is if you are going to assign us this approach. Can you also give some comments on? So we presented three, three students with three different uses usage of this approach. Can you also give some comments about your experience? Do you see? Do you see similar students in your



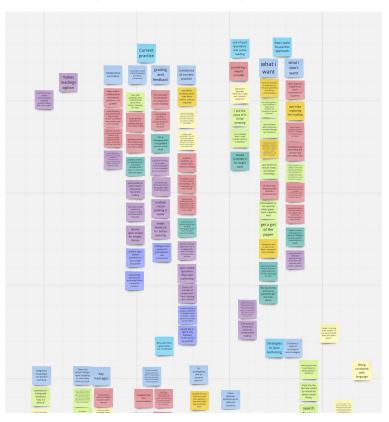
Google Doc or Spreadsheet

Easy and free

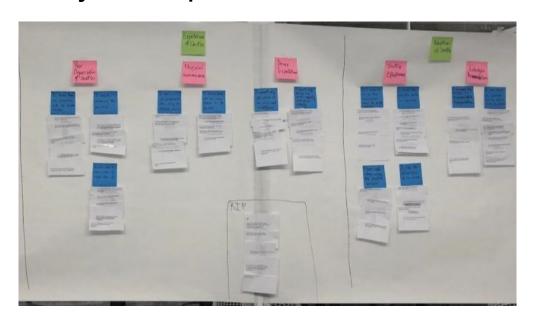
Interpretation note structure

Α	В	С	D	Е	F	G			
Note Number	Note		User Profile						
R1-1	does not know how to use city transportation		R1	Formerly completed PhD and undergrad at CMU					
R1-2	walking to campus is no longer a daily option after moving to new housing	Current faculty at CMU Has lived in Pittsburgh for years Has used shuttle for one year							
R1-3	typically takes shuttle between from 4 to 7 depending on work								
R1-4	planned when to take the shuttle home much earlier before actually leaving								
Q	How do you coordinate with co-travelers?	_		Spouse works at	CMU				
R1-5	often takes shuttle to and from home with spouse		Lives in Shadyside						
R1-6	usually takes shuttle between 7:30 am and 10am								
R1-7	walk on nice days	Reminders!							
R1-8	most days takes the shuttle								
R1-9	drives when in a rush								
R1-10	did not consider the city bus an option	 Can be read independently Contain 1 idea Contain info that suggests motive, issue, insight, etc – useful for the next step! 							
R1-11	The shuttle stops close to the house								
R1-12	Walk to home is about 45 mins which gets worse with weather								
R1-13	aware of andy shuttle app								
R1-14	once decided to go to campus driving because of an emergency but then went back home after not finding parking in their usual parking spot								

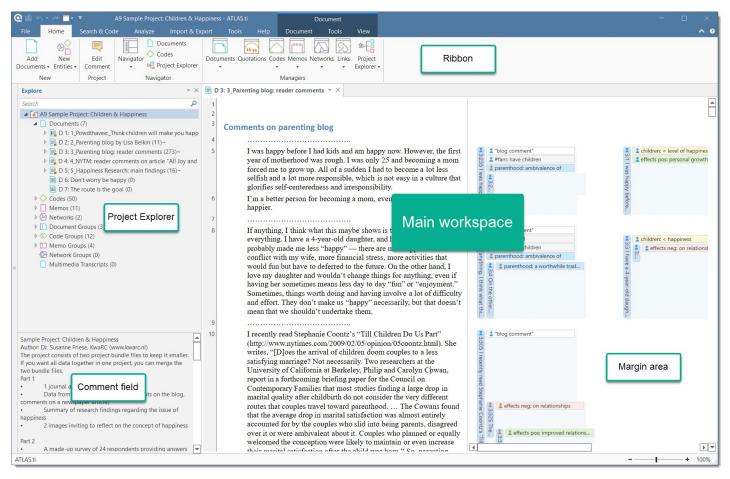
Miro (miro.com)



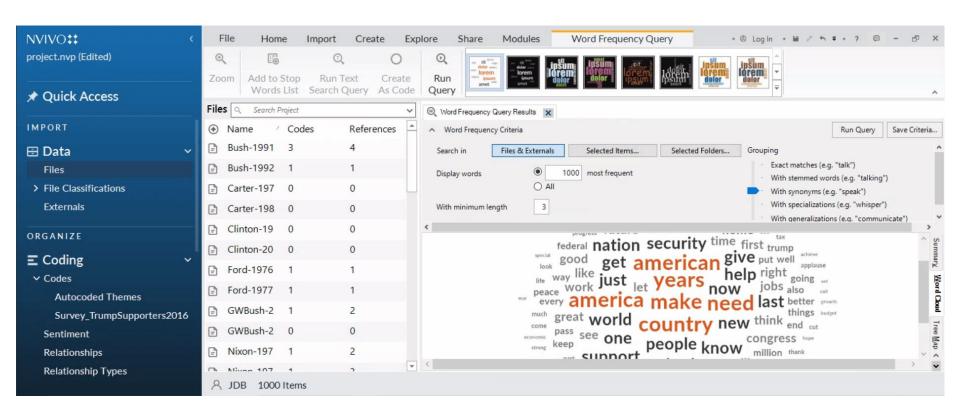
Physical space



Web-based software: https://atlasti.com/

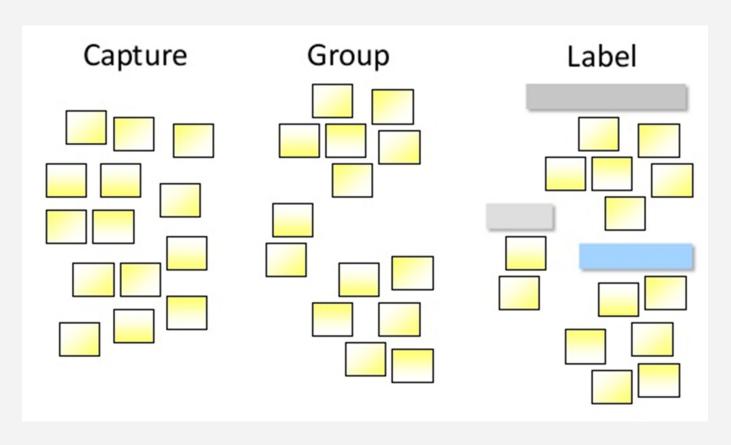


NVivo



"The cafeteria is dirty, and the servers sometimes makes mistakes on students' * orders"						
 "Sometimes" is vague It contains two different concepts "Students" is unnecessary This note is OK 						
"She is a female participant" * The note is OK "She" is unnecessary This should go into user profile Not enough context is provided	"Got a 404 error" * The note should refer to the participant This note is OK The note is not self-contained, e.g., people reading this may be wondering why did the user get the error It contains two different concepts					

3 STEPS IN AFFINITY DIAGRAMMING



Step 1: Interpretation

Extracting insights from interview transcripts

Step 2: Create affinities

Cluster interpretation notes into groups by similar meaning

GROUPING THE WHITE NOTES

- Shuffle the interviews like cards
- Spread out on table or just take a handful
- Post to the wall in groups, look for
 - o patterns
 - themes
 - o structure
- DO NOT group in categories or keywords
- Post, remove, repost
- Move similar groups near each other



"We build it bottoms up."

Karen Holtzblatt

GROUPING THE WHITE NOTES

- Each group 3-7 white notes
 - Consider merging or breaking down
- It's ok to re-use notes only occasionally
- It's ok to trash some white notes



"We build it bottoms up."

Example

White notes about people's preferences for exercising

"Exercise is the way I process my feelings" "I drive to the gym on the way home from work"

"I meet with my trainer on my lunch hour" "I love connecting with my coworkers on our lunchtime walks"

"I would like to be able to exercise in the morning before work." "After I had my baby, I started exercising at home so that I could spend more time with her."

"I need to exercise for my mental health."

"I wish I had time to exercise."

"Exercise is the way I process my feelings" "I drive to the gym on the way home from work"

"I meet with my trainer on my lunch hour" "I love connecting with my coworkers on our lunchtime walks"

"I would like to be able to exercise in the morning before work."

"After I had my baby, I started exercising at home so that I could spend more time with her."

"I need to exercise for my mental health."

"I wish I had time to exercise."

I exercise at different times during a day

Morning workouts

"I would like to be able to exercise in the morning before work."

Lunchtime workouts

"I meet with my trainer on my lunch hour" "I love connecting with my coworkers on our lunchtime walks"

Evening workouts

"I drive to the gym on the way home from work"

"Exercise is the way I process my feelings"

"I drive to the gym on the way home from work"

"I meet with my trainer on my lunch hour" "I love connecting with my coworkers on our lunchtime walks"

"I would like to be able to exercise in the morning before work." "After I had my baby, I started exercising at home so that I could spend more time with her."

"I need to exercise for my mental health."

"I wish I had time to exercise."

Exercise is a way for me to connect with others

"After I had my baby, I started exercising at home so that I could spend more time with her."

"I love connecting with my coworkers on our lunchtime walks"

"Exercise is the way I process my feelings"

"I drive to the gym on the way home from work" "I meet with my trainer on my lunch hour" "I love connecting with my coworkers on our lunchtime walks"

"I would like to be able to exercise in the morning before work." "After I had my baby, I started exercising at home so that I could spend more time with her."

"I need to exercise for my mental health."

"I wish I had time to exercise."

There are therapeutic value of exercise

"Exercise is the way I process my feelings"

"I need to exercise for my mental health."

"Exercise is the way I process my feelings" "I drive to the gym on the way home from work" "I meet with my trainer on my lunch hour" "I love connecting with my coworkers on our lunchtime walks"

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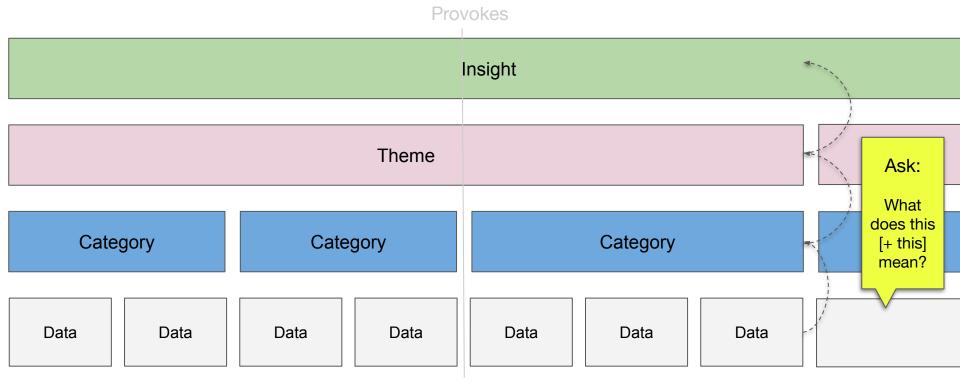
I have time and place desires for exercising

"I would like to be able to exercise in the morning before work."

"After I had my baby, I started exercising at home so that I could spend more time with her."

"I wish I had time to exercise."

Getting to an insight



Informs

Here are 7 white notes from a study to encourage people interact with public art through the use of technology. Please put them into 3 groups, discuss with your partner first.

2/20 people stopped to look at the art

20/20 people wished they "knew about public art"

"I'm interested but I guess I walk past it everyday."

"I wish I knew it was here."

Public art is interspersed throughout the city

People could not recall seeing public art

There are a number of pieces of art downtown

Getting to an insight: Example

Public art is accessible

Public art is being ignored.

People *are* interested in public art

There are a number of pieces of art downtown

Public art is interspersed throughout the city

2/20 people stopped to look at the art People could not recall seeing public art 20/20 people wished they "knew about public art"

"I wish I knew it was here."

Getting to an insight: Example

Even art-curious people can become blind to public art when they are surrounded by it.

Public art is accessible

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Getting to an insight: Example

Public art has become *just another* part of the environment

Even art-curious people can become blind to public art when they are surrounded by it.

Public art is accessible

Public art is being ignored.

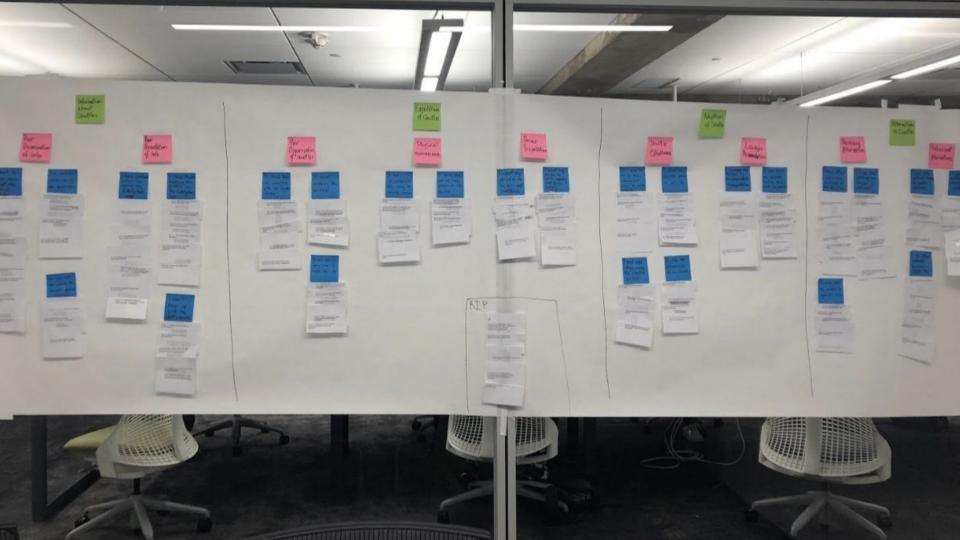
People are interested in public art

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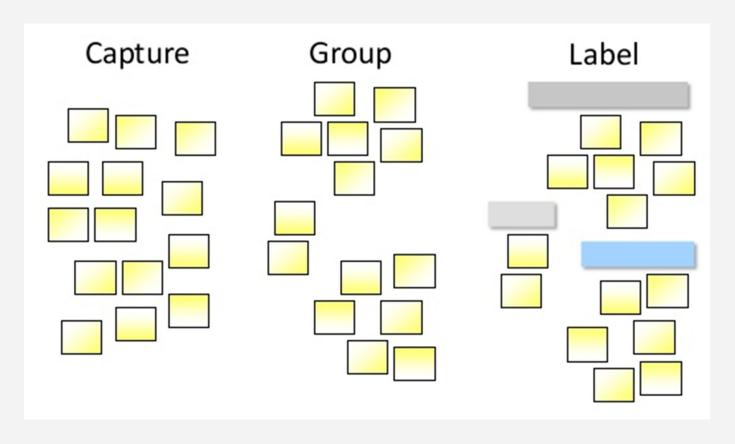
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"I wish I knew it was here."



3 STEPS IN AFFINITY DIAGRAMMING



Step 1: Interpretation

Extracting insights from interview transcripts

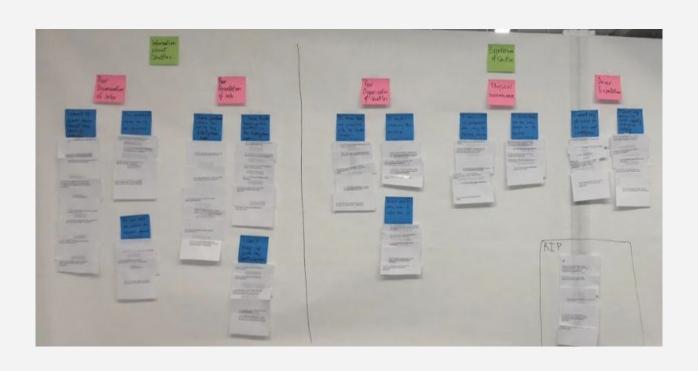
Step 2: Create affinities

Cluster interpretation notes into groups by similar meaning

Step 3: Write labels

Write labels that reflect your users' underlying needs, frustrations, and values

LABELING IS HARD WORK!



BLUE, PINKS, GREENS

Public art has become *just another* part of the environment

Even art-curious people can become blind to public art when they are surrounded by it.

Public art is accessible

Public art is being ignored.

People are interested in public art

Write boldly, clearly and concisely

Labels are derived from the data, not preconceived categories

BLUE NOTES

- A higher level insight that's derived from the data
- Not a preconceived category
- Describes notes in the group well
- Reorganize notes if some do not fit the label

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Public art is being ignored.

People are interested in public art

There are a number of pieces of art downtown

Public art is interspersed throughout the city

2/20 people stopped to look at the art People could not recall seeing public art 20/20 people wished they "knew about public art"

"I wish I knew it was here."

PINK NOTES

- Several insights (blue notes) may be similar and point to something more specific.
- A pink note is a specific idea/concept/issue.

Even art-curious people can become blind to public art when they are surrounded by it.

Public art is accessible

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"I wish I knew it was here."

GREEN NOTES

- Multiple issues (pink notes) may be related and define a larger Concept or Area of Concern.
- A green note represents this whole area of concern.

PRINCIPLES OF HEADLINE WRITING (AND AFFINITIES TOO)

- Get attention.
- OPeliver a complete message.
- Informative: show the users' underlying needs, frustration, values.

Examples

"I want to engage in more social activities in college"



"I feel unsafe going home alone at night."

"Photos"

"Transportation"



ADDITIONAL TIPS - WHITE NOTES

STEP	DO NOT
Affinities: Placing the First Notes (White notes)	 Start from a set of categories and try to fit notes in them
(VVIIICE HOLES)	 Write your labels before you start grouping notes
	 Finding the one perfect place for a note
	Sort by a "keyword" in the affinity note
	 Take a lot of time in the initial step of getting the notes up

ADDITIONAL TIPS - LABELS

STEP	DO NOT		
Affinities: Creating Affinity Labels	 Write labels that are too abstract or too 		
(Blue, Pink, Green)	long – it's not a sentence!		
	 Use your own jargon 		
	 Use pre-defined categories 		
	Force a label into a group		
	 Bury distinctions that are potentially important to the design 		

A FEW NOTES

- There should also be a place for all the notes that nobody can understand or which contain no insight - a note "graveyard" - but review if you get too many!
- It's OK to have notes that are not used in the diagram.
- It's very common to build one version, tear it all down and rebuild it again. This is an iterative process.

Comprehension

Interaction

Shared Understanding

Referenceable



Nobody gets to say that the wall is correct, this is a group thinking process.

Use Mural/Miro or create the affinity diagram in a physical space

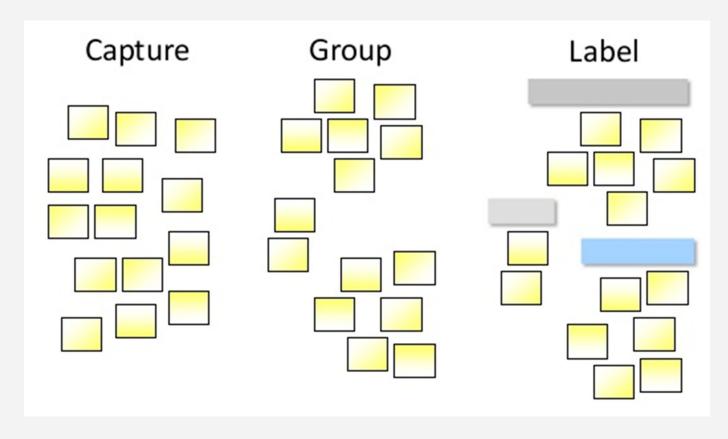
https://www.mural.co/

https://www.miro.com/

```
Bedroom Tour Affinity ... 

All changes saved
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Summary of today: How to create an affinity diagram?



Goals for today:

1. What is affinity diagram?

PalmPilot wooden model

- 2. How can I create affinity diagrams to synthesize qualitative data?
 - a. How do I interpret interview data?
 - b. How do I synthesize insights?