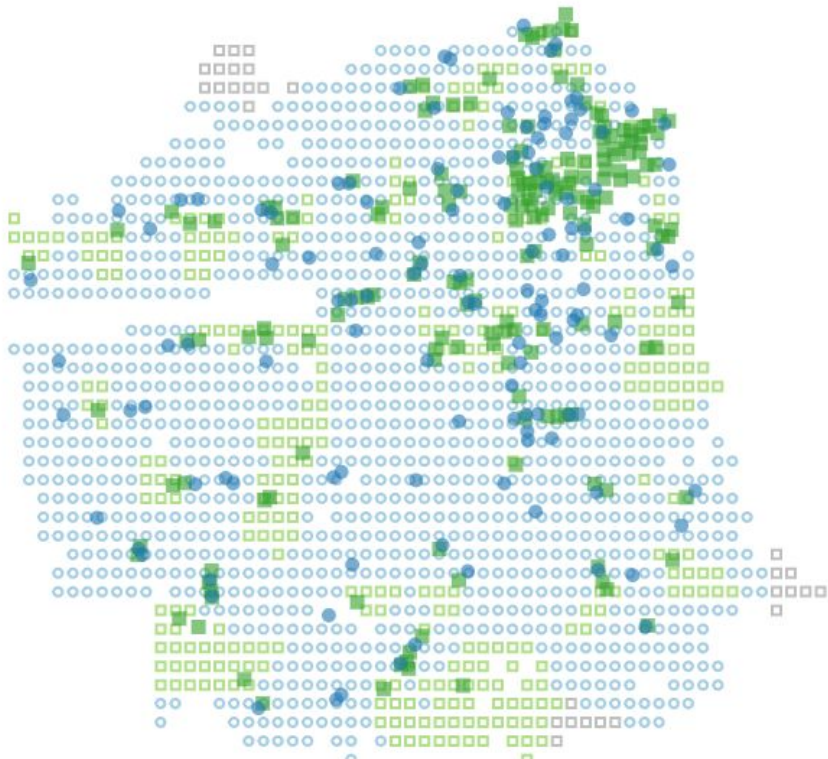




Progress:

Keep going! You have spent 50% of your budget (30% on rezoning and construction subsidy, 20% on transit improvement and subsidy). Goal: 80% choose supermarket. You can also [reset your design and try again](#).



Summary of results:

78% choose supermarket ()

20% choose fast food ()

2% more than 1 mile from either ()

0% 100%

Building subsidy / rezoning:

Left click (or tap) to construct / remove building.

- Supermarket ()
- Fast food ()
- Remove supermarket
- Remove fast food

Transit subsidy / improvement: +20%



Invest in transit to change how much further is someone willing to travel to get to a supermarket relative to the nearest fast food.

Thank you to

Thank you to you

Thank you to Joanne

Thank you to UC Berkeley

Berkeley sits on the territory of Xučyun, the ancestral and unceded land of the Chochenyo Ohlone, the successors of the historic and sovereign Verona Band of Alameda County. This land was and continues to be of great importance to the Ohlone people. We recognize that every member of the Berkeley community has, and continues to benefit from the use and occupation of this land, since the institution's founding in 1868.

Source: <https://jsp-ls.berkeley.edu/legal-studies-undergraduate-program/about-major/land-acknowledgement-statement>



I'm a data scientist, software engineering, information designer.



Sam Pottinger

A more human-centered AI/ML

<https://gleap.org>

UC Berkeley | Data + Environment
EVERY | Data + Synthetic Biology
IDEO | Data + Design
Plenty | Data + Indoor Agriculture
Apple | Data + Engineering
Google | Data + Visualization
LabJack | Data + Hardware

Processing | Data + Love



Data science can become a tool for both **understanding** and **taking action** within systems if activated in a human-centered way through information and game design.

Sam Pottinger

A more human-centered AI/ML

<https://gleap.org>

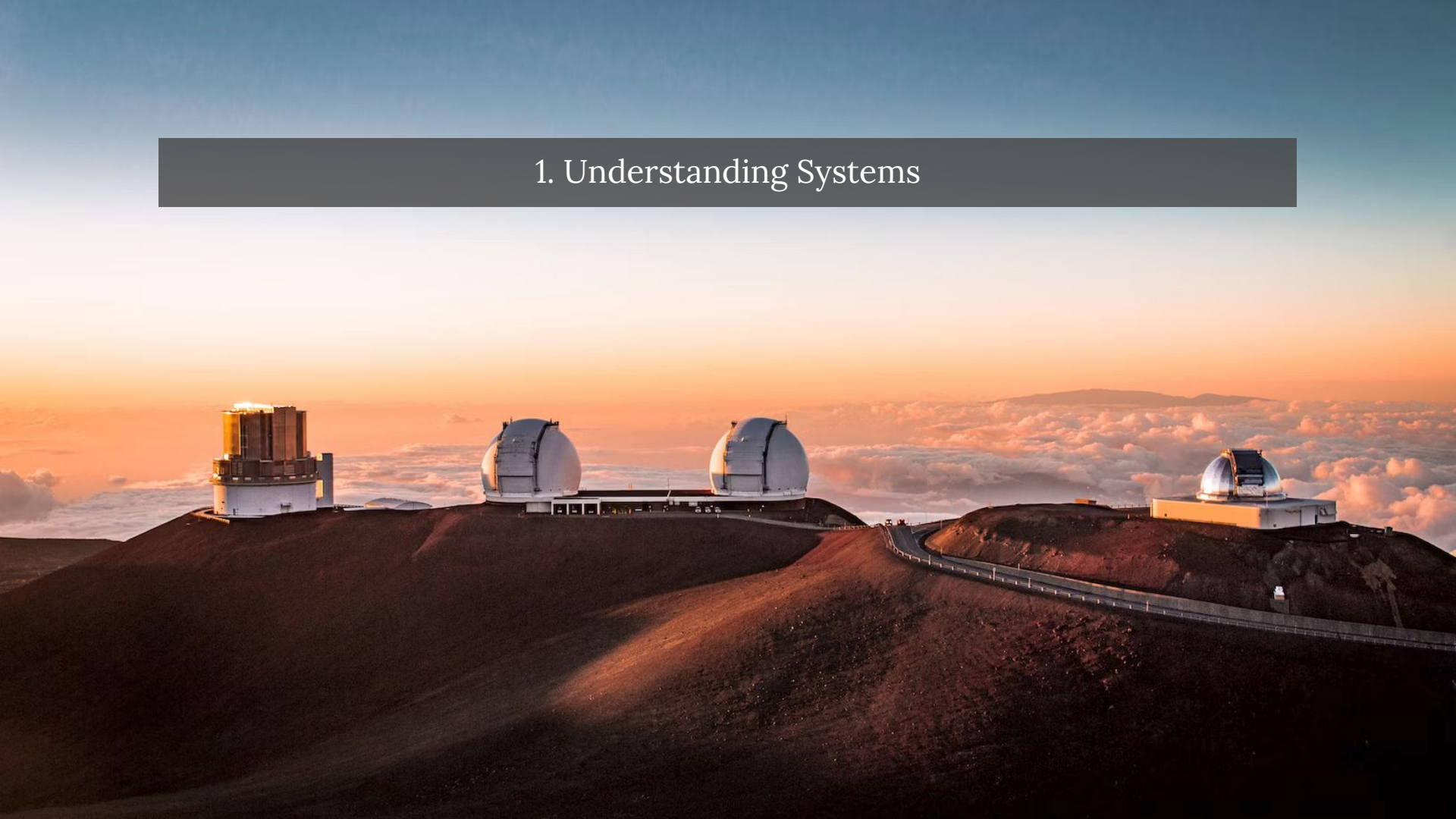
UC Berkeley		Data + Environment
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Processing		Data + Love



Data Science
Understanding

Toy Making
Taking Action

1. Understanding Systems





Qualitative and quantitative approaches are symbiotic. They inform each other and provide complementary perspectives.



Understanding

Action

Conclusion



Qualitative and quantitative approaches are symbiotic. They inform each other and provide complementary perspectives.

To understand systems, we need to understand both.



Understanding

Action

Conclusion

Concepts

Examples

Understanding

Action

Conclusion

This conversation starts with **qualitative research**.

Understanding

Action

Conclusion

- Human <> Machine Coupling
Ergonomics / Mechanical Eng
Oversimplified: Human as component
- Brain <> Machine Exchange
Information / Cognitive Sci
Oversimplified: Human as partner
- Machines and Humans in Context
Anthropology / Ethnography
Oversimplified: Human as center
- ([Participatory Design?](#))

What is Influencing Qualitative Research in Design?

Our understanding of interaction with our built environment has a complex history. We are going to focus on the 3 waves framework to briefly describe the history of HCC approaches at a high level ([Harrison, et al](#)).

- Human <> Machine Coupling
Ergonomics / Mechanical Eng
Oversimplified: Human as component
- Brain <> Machine Exchange
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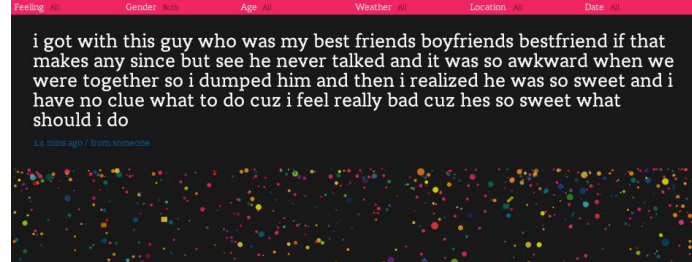
The role of **quantitative research** has often hinged on the philosophy of qualitative research.

What is influencing quantitative research in design?

Quantitative methods in the user research process are a bit more fluid depending on your frame and arguably pre-date computer science as a formalized field but it's important to see some perspectives come together:

- Data as the way of seeing.
 - Rise of quantitative methods in UX (Kohavi et al)
 - Questions of role of human understanding altogether (Anderson).
- Humans and data in conversation.
 - How to convey data (Cleveland and McGill).
 - Creating a way to understand machine decisions (Ribeiro et al).
- Human understanding as experience.
 - Computation and expression (Reas and Fry).
 - Medium of emotion (Kamvar and Harris; Felton).

There are many other perspectives and other thinkers not listed here but it's important to see how much quantitative user research is in cross-disciplinary conversation.



<http://www.wefeelfine.org/>

See also podcastanthropology.com



i got with this guy who was my best friends boyfriends bestfriend if that makes any since but see he never talked and it was so awkward when we were together so i dumped him and then i realized he was so sweet and i have no clue what to do cuz i feel really bad cuz hes so sweet what should i do

14 days ago / from someone

See also podcastanthropology.com

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Understanding

Action

Conclusion



What does this look like in practice?



Understanding

Action

Conclusion

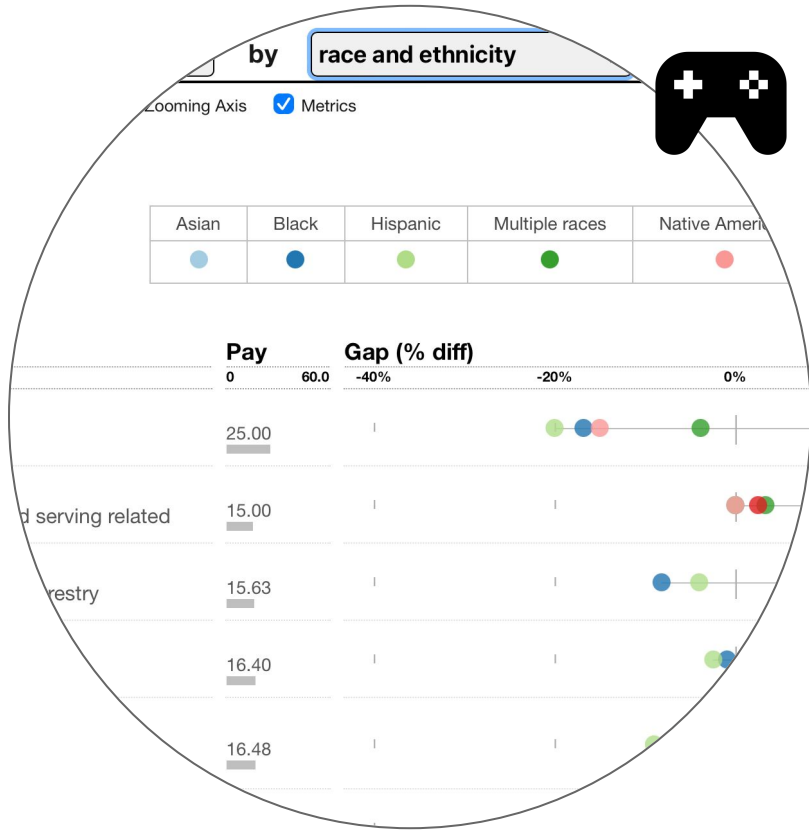
Concepts

Examples

Understanding

Action

Conclusion



Income Gaps

<https://incomegaps.com/>

How might we see the outlines of a system to know who to talk to?

“What can these tools tell us but also do they leave out?”



Outline



Mechanics



Actors



Context

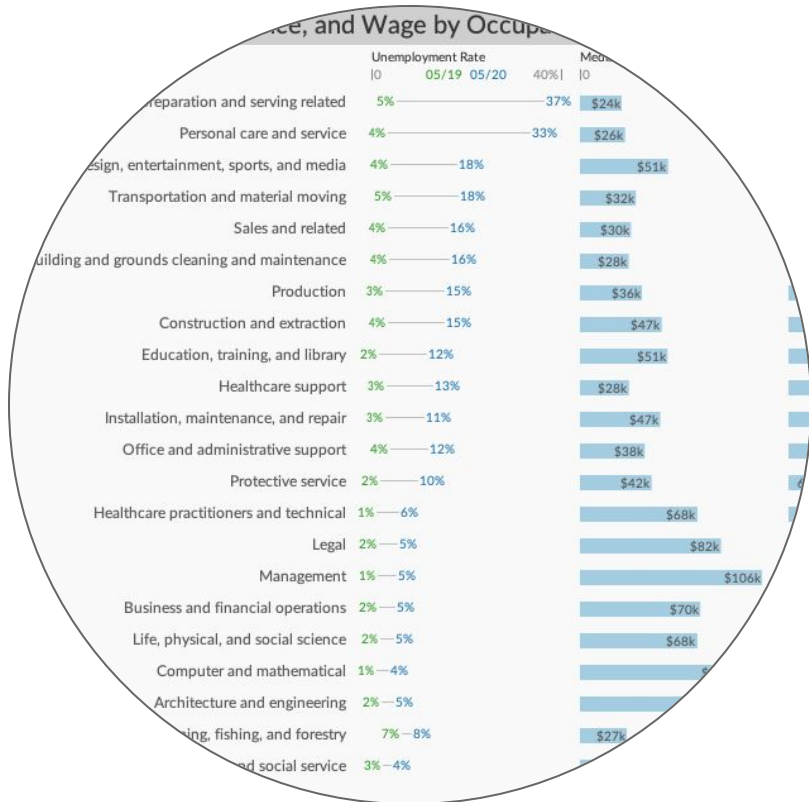


Individual

Understanding

Action

Conclusion



COVID Unemployment

[Image on gleap.org](https://gleap.org)

How might we understand the forces at play in the system to know what to ask?

“What can you know from someone using this tool versus talking to them?”



Outline



Mechanics



Actors



Context



Individual

Understanding

Action

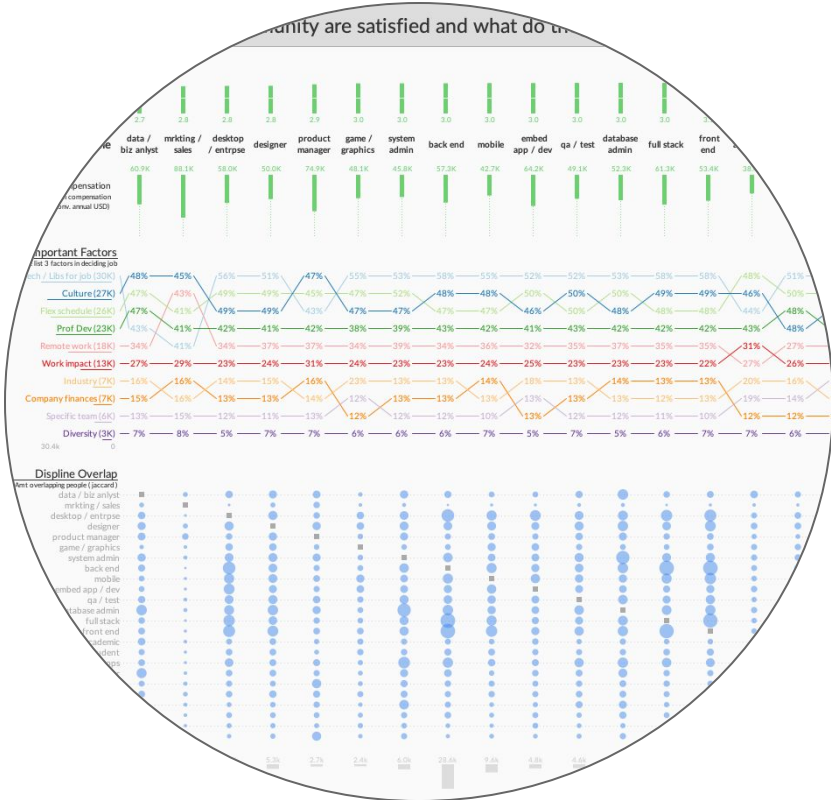
Conclusion

Tech Satisfaction

[Image on gleap.org](https://gleap.org)

How might we understand the stated perspectives of different groups to know about group-specific questions?

“What can these data tell you about motivations? What does it leave out?”



Outline



Mechanics



Actors



Context

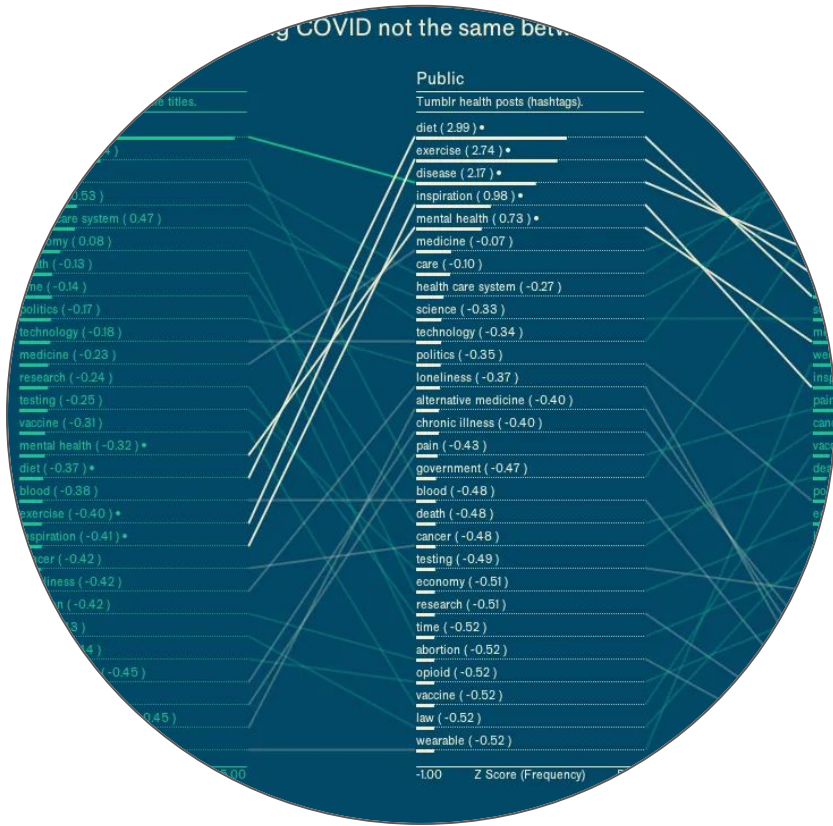


Individual

Understanding

Action

Conclusion



COVID Conversations

[Article on Medium](#)

Credit: Sam Pottinger, Joanne Cheung, IDEO CoLab

How might we situate what we are hearing in a broader conversational context?

“What can someone say about their experience and what is hard for them to articulate that data can see?”



Outline



Mechanics



Actors



Context

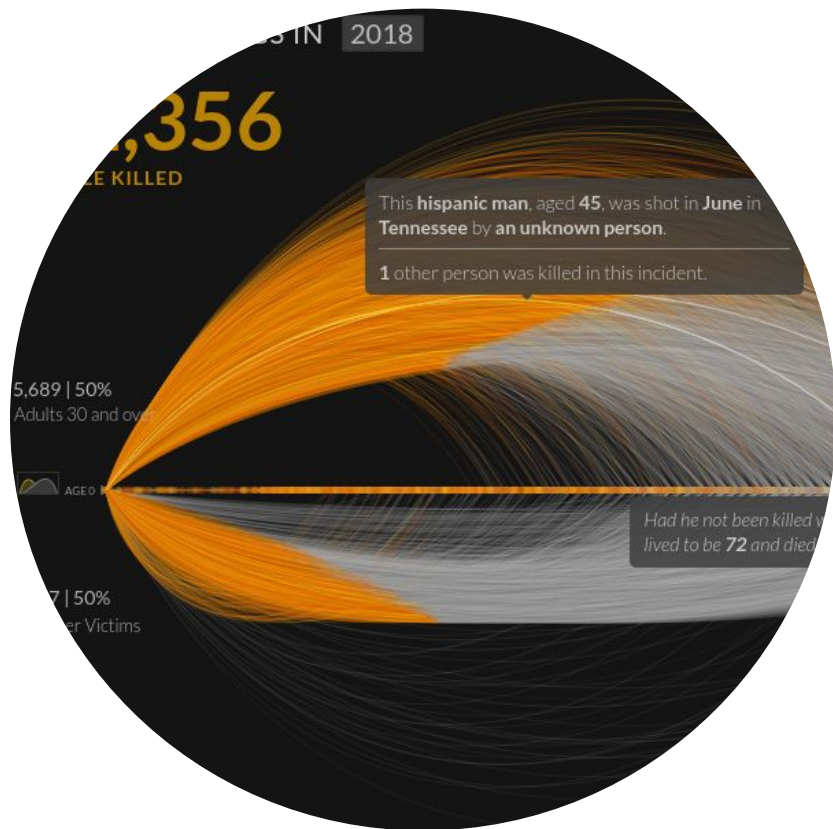


Individual

Understanding

Action

Conclusion



Periscope Guns Visualization

<https://guns.periscope.com>

Credit: Periscope, Kim Rees

How might we give visibility to the individuals in the data?

“How can showing individuals in data help but also how can it hurt?”



Outline



Mechanics



Actors



Context

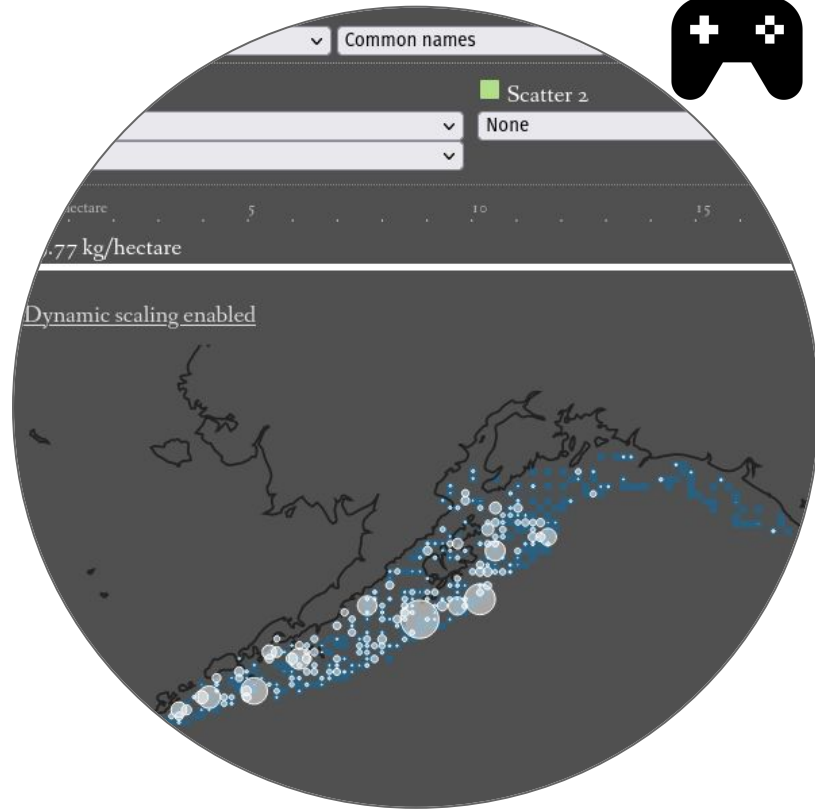


Individual

Understanding

Action

Conclusion



Pyafscgap

<https://app.pyafscgap.org/>

How might we turn these data to insight?

“How does this kind of tool change who is given permission to ask questions of the data and what is the impact?”



Outline



Mechanics



Actors



Context

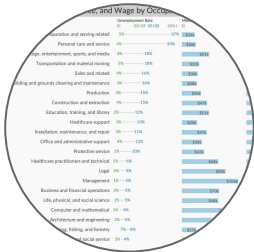
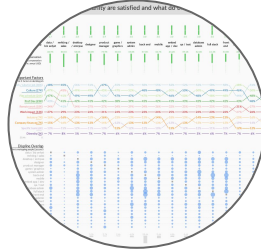
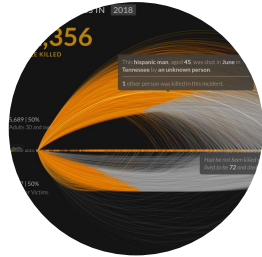
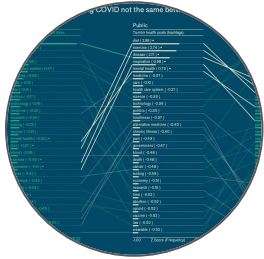
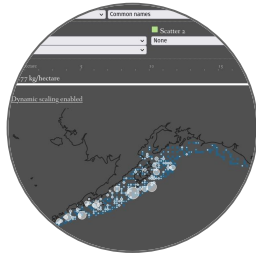
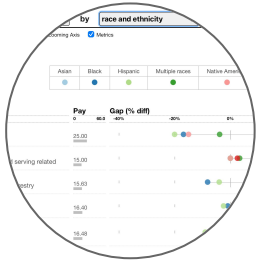


Individual

Understanding

Action

Conclusion



Data science can help us understand systems as they currently exist but the data aren't enough: it becomes informative through **information design**.

It co-exists with and co-informs qualitative approaches to understand a space.

2. Action in Systems



Concepts

Examples

Understanding

Action

Conclusion

The two best selling of 1999 were... (Source: [Ajami](#))



SimCity 3000
(Will Wright, Maxis)



Roller Coaster Tycoon
(Chris Sawyer, Atari)

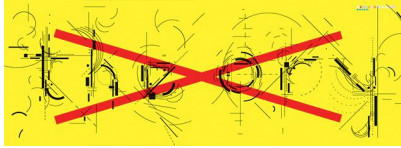
Understanding

Action

Conclusion

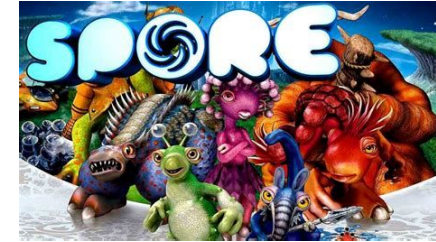
General & Transcendent

End of Theory
([Anderson](#))



Transhumanism
([O'Gieblyn](#); [Thorn](#))

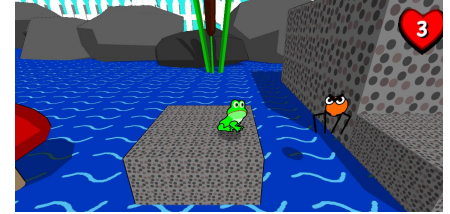
Understanding



Action

Narrow & Situated

[How to make good small games](#) by Far Away Times



[SaTML 2023 - Timnit Gebru - Eugenics and the Promise of Utopia through AGI](#)

Conclusion

General & Transcendent

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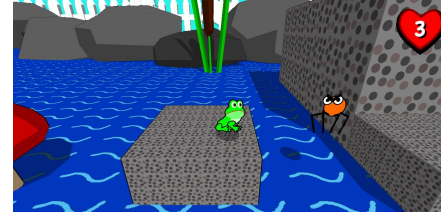


Transhumanism
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Narrow & Situated

[How to make good small games](#) by Far Away Times



[SaTML 2023 - Timnit Gebru - Eugenics and the Promise of Utopia through AGI](#)

Understanding

Action

Conclusion

Why talk about toys?



https://www.ted.com/talks/will_wright_spore_birth_of_a_game



SimHealth



SimRefinery

The Obscuritory

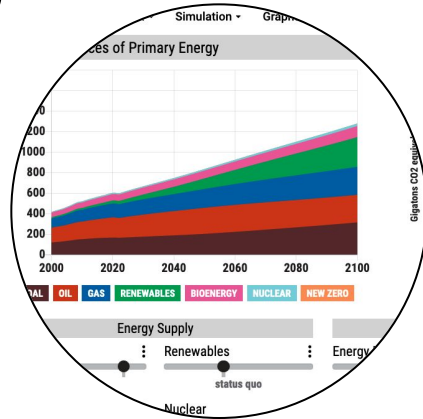
Understanding

Action

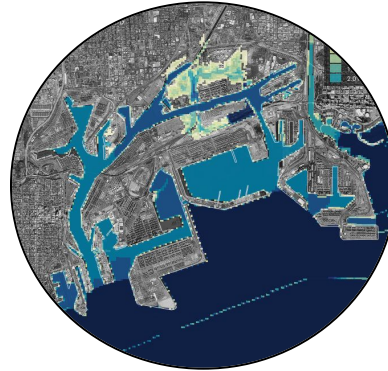
Conclusion



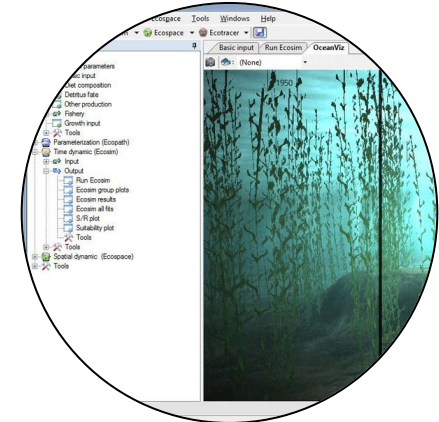
Forio: [Supply Chain](#)



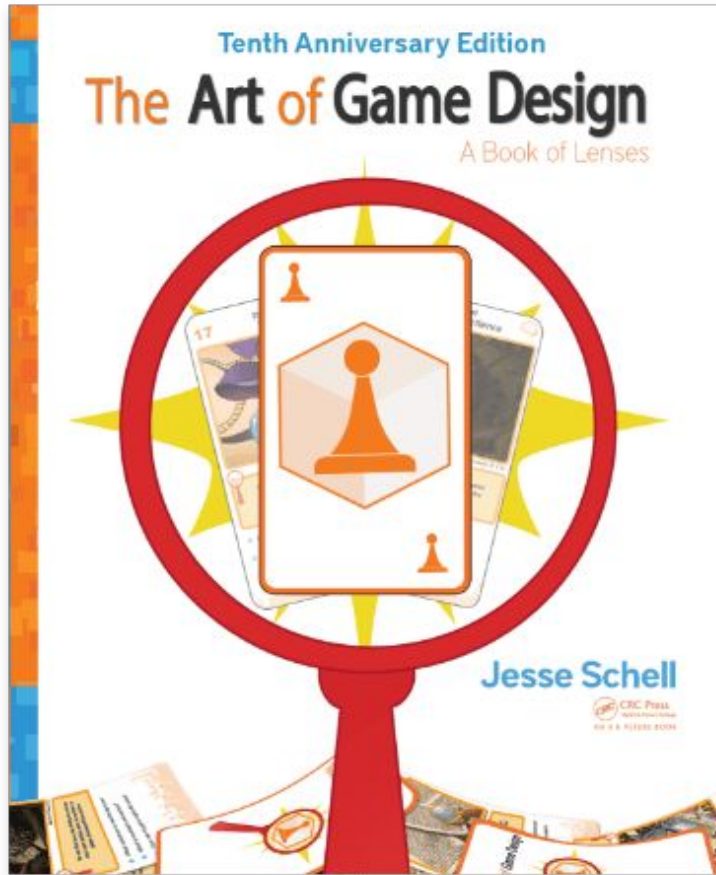
Enroads: [Climate Change](#)



CalAdapt: [Sea Level Rise](#)



GOM: [Ocean Health](#)



Games as a co-created experience between the player and piece of technology / designer.

Understanding

Action

Conclusion



Examples of
**participatory data
science.**

Understanding

Action

Conclusion

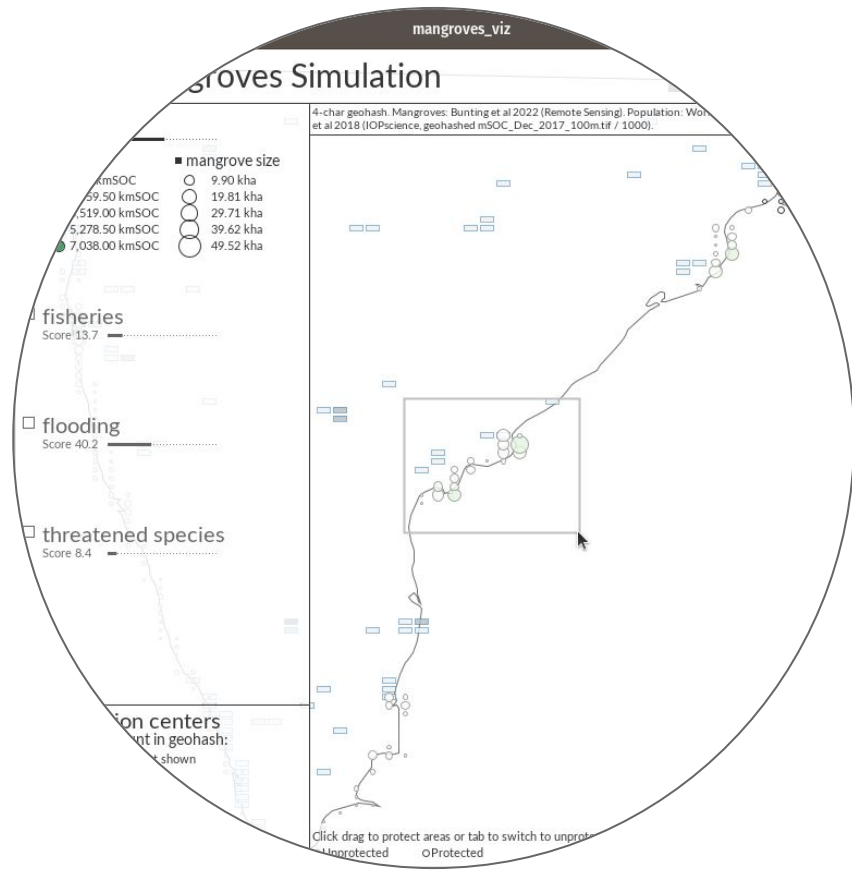
Concepts

Examples

Understanding

Action

Conclusion



Indian Mangroves Simulation

Early prototype in development

How might we make information actionable?

“Should users or computers make these decisions?”



Action



Iteration

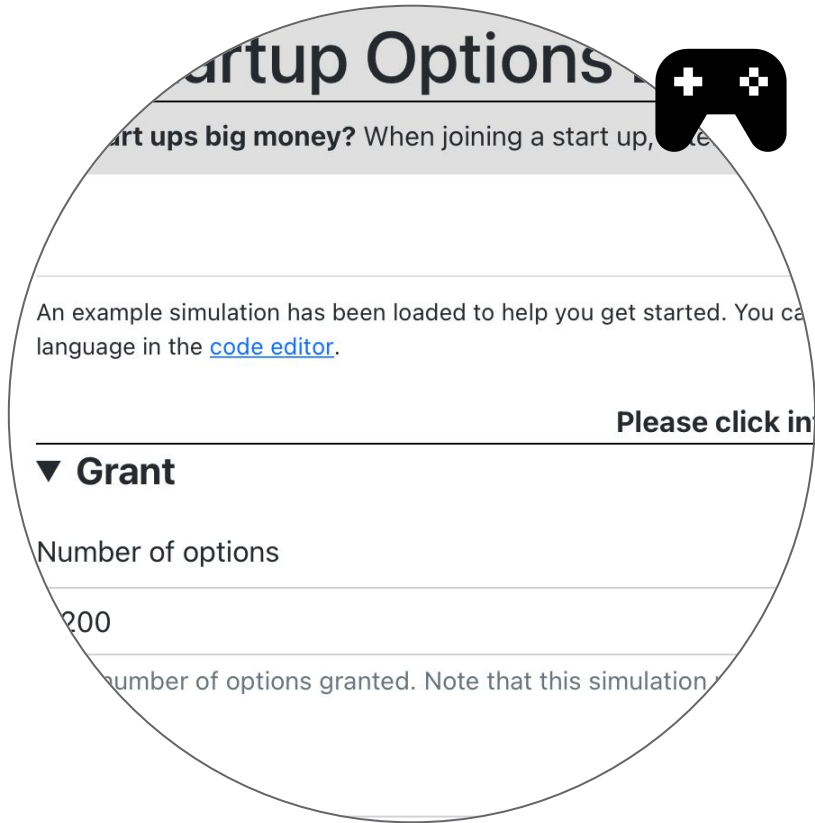


Collaboration

Understanding

Action

Conclusion



Startup Options Bot

<https://startupoptionsbot.com/>

How might we encourage iterative exploration of solutions?

“What does this kind of tool do to power structures?”



Action



Iteration

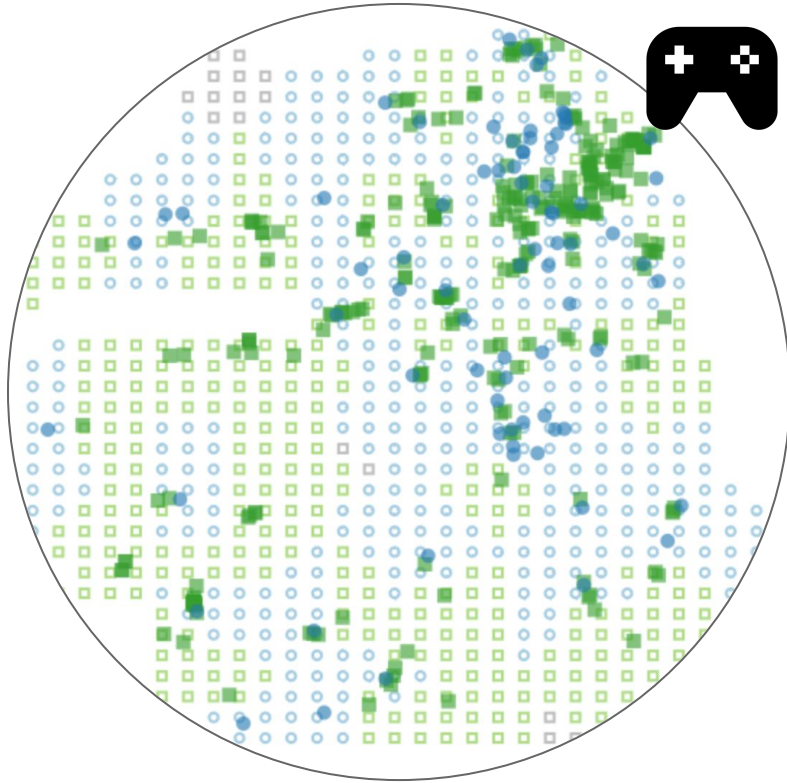


Collaboration

Understanding

Action

Conclusion



Food Sim SF

<https://foodsimsf.com>

How might we invite more people into iterative co-creation?

“What does it mean if the designer doesn’t design the solution?”



Action



Iteration



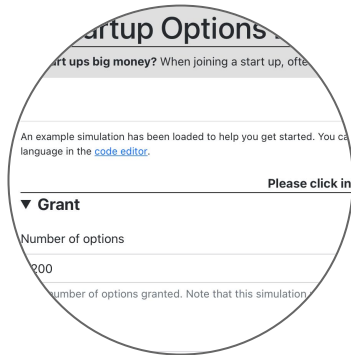
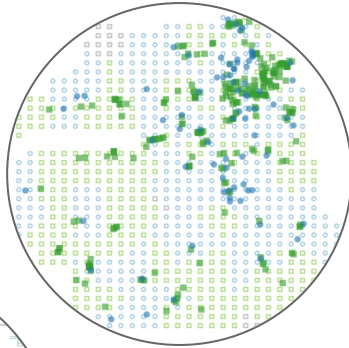
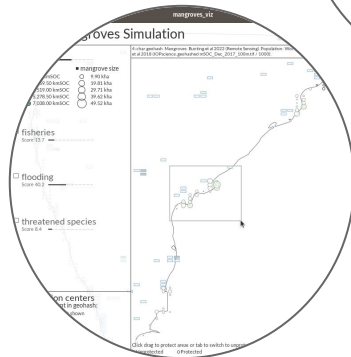
Collaboration



Understanding

Action

Conclusion



Information isn't enough. It informs solutions but sometimes doesn't afford design of a solution. **Game design** can make information actionable and more accessible.

This blurs the line between quantitative and qualitative approaches by making everyone active designers and centering a collective human experience of the data in solution design.

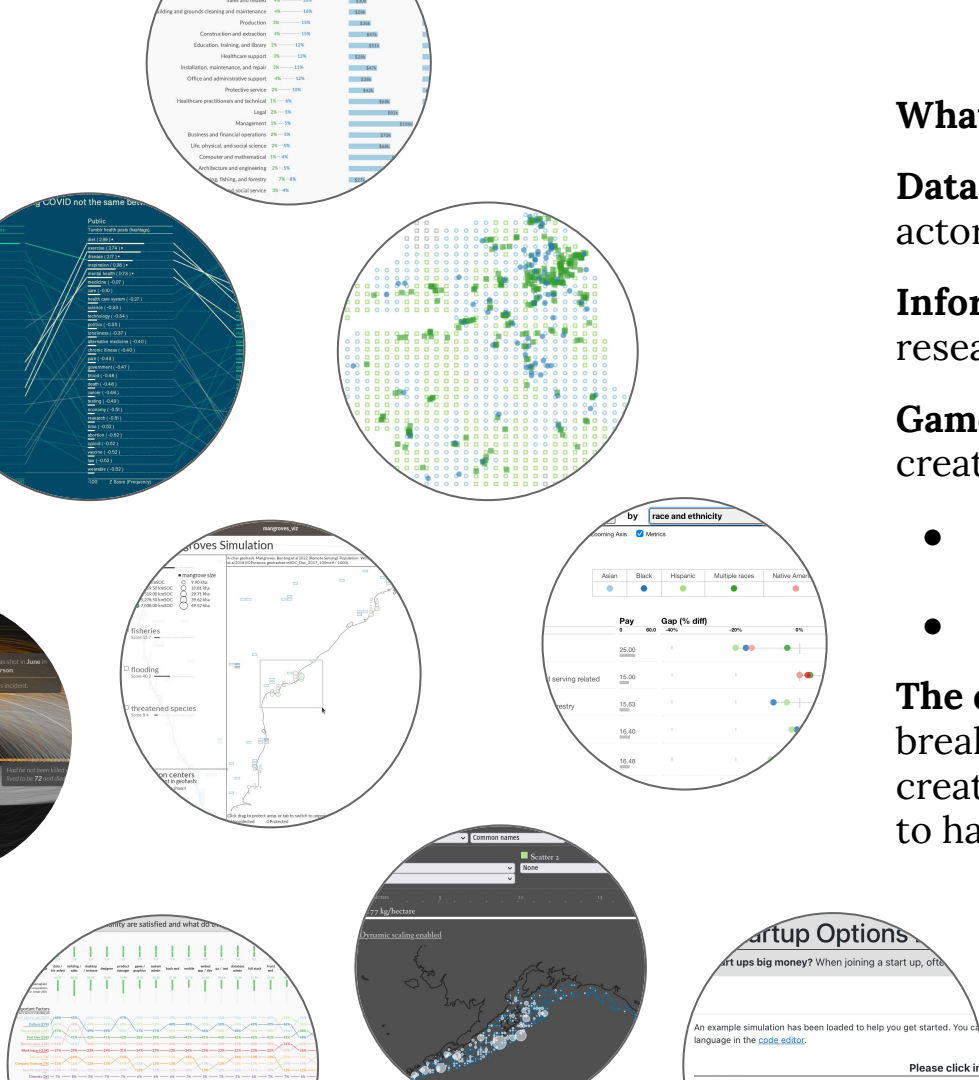
3. Conclusion / Takeaways



You don't need fancy tools to make this happen.

[Ocean board game example](#)

Credit: MSP Challenge



What to think about on the way out...

Data science helps understand systems for diverse actors across multiple variables.

Information design can co-inform qualitative research to create deeper understanding.

Game design can help increase accessibility and create conversations.

- Often the goal isn't to provide an answer but help structure a conversation.
- This approach re-centers the human in AI / ML.

The destination of this combination of disciplines breaks the barrier between designer and user. It creates space for qualitative and quantitative methods to happen simultaneously.

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