

Final Research Report

Matt Marchand
Fall 2018 | DSID 121 | J. Shook

In this research report we'll look at the following

- 10 senior project concepts
- 1 project selection and proposal
- Objective redefining, reframing
- Market research and competition
- Strengths, weaknesses and opportunities observations
- Stakeholder pains and gains research
- Customer journey
- Materials, manufacturing and technology research
- Constraints for designing
- Mind mapping exploration
- Next steps of the design

10 Concepts



01 The Camper

Problem Statement

How might we encourage a more immersive and comfortable car camping experiences?

Value Proposition

Everyone agrees, it's time to get back to our roots- specifically nature. Without investing too much space or time in gear, how might we leverage the connectivity of roads and the mobility of automobiles to establish healthy hobbies.



02 The Earth

Problem Statement

How might we explore our planet in depth from the comfort of a living room?

Value Proposition

With increased technology and answers on hand at all times, the opportunity to discover the Earth is both in our pocket, and yet never been further away. How can we encourage an interest and immersion in our precious 'little' planet?



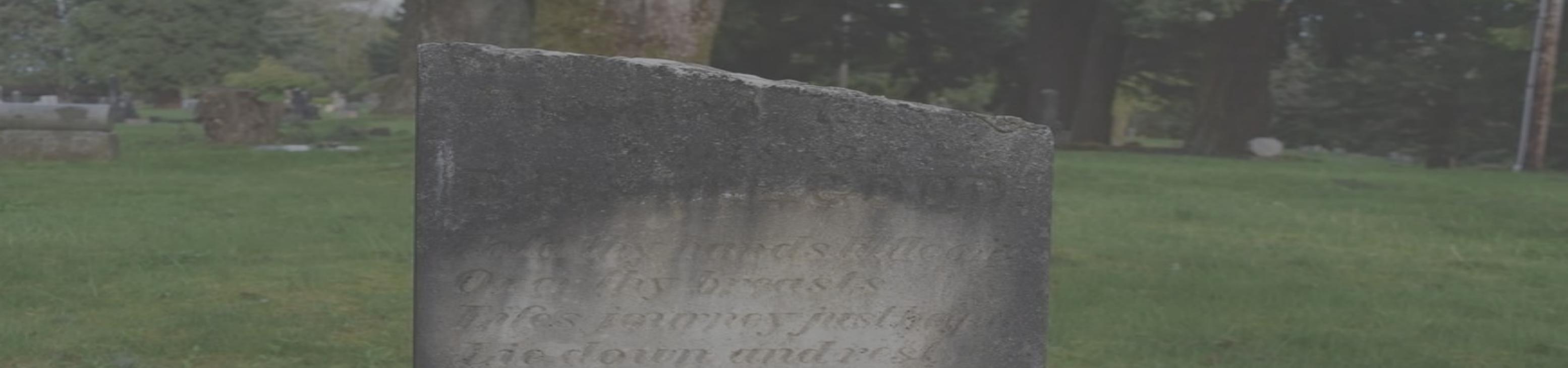
03 The Canary

Problem Statement

How might we prevent lung damage through increased air quality knowledge?

Value Proposition

From smog to mold to common colds, there's a lot in our air these days. Could there be a simple tool to determine air quality and indicate a time for meaningful change?



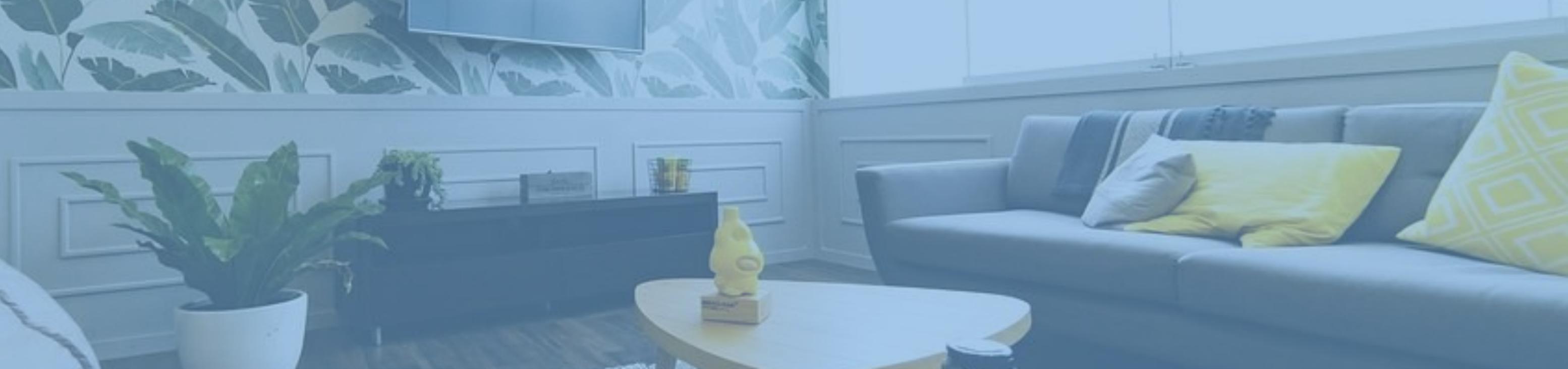
04 Memorial

Problem Statement

How might we prepare and celebrate our death?

Value Proposition

Death and taxes are unavoidable, yet we pay taxes all the time. How often do we pay attention to death? Could we change the death experience and celebration of a person's life after they've passed?



05 The Room

Problem Statement

How might we redesign a space to emphasize a trait or objective that is just out of reach?

Value Proposition

We spend a lot of time in the bedroom, kitchen and living room, outside of work. Could these spaces be redesigned to boost productivity or rest more efficiently by exploring spaces and furniture?



06 The Stack

Problem Statement

How might we design a better sketchbook?

Value Proposition

Sheets of paper are awesome, but putting them all together in an easily useable binding solution is difficult without three rings and glue. What if there was a really simple mechanical solution for organizing and interacting with paper?



07 The Cube

Problem Statement

How might we bring an immense source of power to accompany our devices on the desk?

Value Proposition

There are external hard drives and monitors, but what if there was another system to assist us? Something like an external rendering machine, a cryptocurrency bank, or a projection unit.



08 The Taboo

Problem Statement

How might we redesign a traditionally taboo thing to change the way we think about it?

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Taboos are all around us. They are challenging to talk about and potentially even more difficult to design for. How could we use this opportunity to change the way we view things?



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10 Roamstead

Problem Statement

How might we redesign the home for more modern, modular and on-the-move times?

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Home prices are rising, AirBnb's are booming, and jobs are going online. The future of housing is going towards mobility, with an emphasis on artificial intelligence to support the system.

The 10 Proposed Projects



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Top 5 Selection



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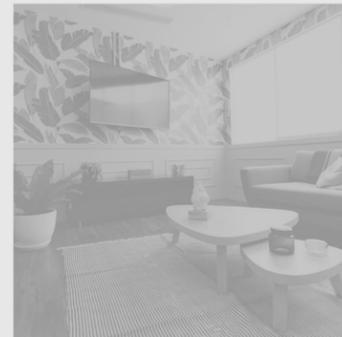
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Top Five



SWOT

Strengths, Weaknesses, Opportunities, Threats

01



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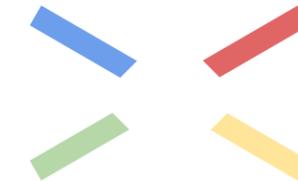
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Strengths

- Emphasizes activities outdoors
- Provides a way for living comfortably and light
- Encourages more travel
- Would look nice in my portfolio

Weakness

- Not a very deep project
- Doesn't answer a critical problem



- Change the way we live on the road / camping
- Change the way we travel
- Show even more outdoor projects in my portfolio.

- So many different types of cars, figuring out one solution could be difficult.
- Not enough interest from people to sleep/live from their vehicle.

Opportunities

Threats

02



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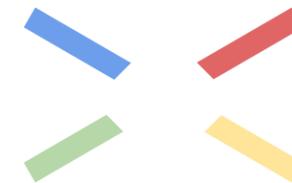
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Strengths

- Provides a solution to a topic that is not discussed often.
- Targeting a serious issue, literally life or death.
- Could give an opportunity to do an app heavy project

Weakness

- Could be too sensitive of an issue to try and tackle.
- Not so Industrial Design heavy.
- Lacking a lot of physical modeling.



- Chance to design a system and hone my UI skills.
- Opportunity to change the way we view death.

Opportunities

- There might be services somewhat similar that might be a close competition.

Threats

03



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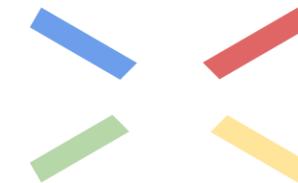
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Strengths

- So much untouched potential
- Could design a solution that shifts the conversation/perception around a large topic.

Weakness

- Taboos are very sensitive subjects and the whole thing could backfire hard.



- Chance to change some deep rooted beliefs.
- Chance to do a fun shocking project for my portfolio.

- People's perceptions.
- Not having a specific problem to solve for, more so a mindset.

Opportunities

Threats

04



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Strengths

- Nostalgia is powerful, redesigning something for the past has strong potential for something moving.
- Low tech is an interesting problem in our tech heavy present.



- Solve a problem without relying too heavily on tech to do the work for you.
- Show a transformation from past to present of a similar design.

Opportunities

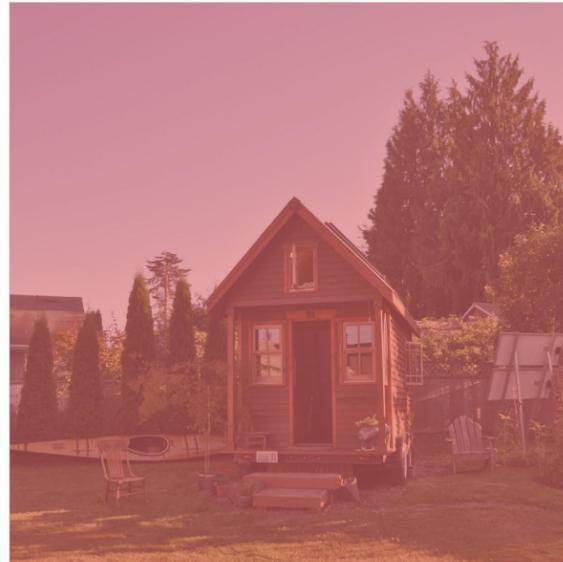
Weakness

- It might not be relevant enough to the projects going on at high level design companies.

- Tech makes everything 'smarter'
- People might not want a 'low tech' solution to their problems.

Threats

05



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Value Proposition
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Strengths

- Solves a very serious problem, housing in the world.
- People can't afford houses and property, this would change that.
- Solves a transportation issue as well as Including a system to design for.

Weakness

- Not specific enough to one category.
- Too large.



- System design.
- Transportation design.
- AI design.
- Home/Interior design

- Could be too large of a scope.
- There would be a lot of work involved.
- Market saturation/fad?

Opportunities

Threats



MATRIX

Choosing the best option

Top Five

	Car Camper	Memorial	Taboo	Rehistoric	Roamstead
	01	04	08	09	10
Gut	1	4	2	3	5
Passion	1	3	2	4	5
Feasibility	3	2	1	5	4
Depth	1	4	3	2	5
Sustainability	1	5	2	4	3
Innovation	1	5	4	3	2
Personal Strengths	4	2	1	3	5
CAD	1	3	5	4	2
Sketching	4	1	2	3	5
Modeling	1	3	4	5	2
Photography	4	2	1	5	3
Rendering	1	2	4	5	3
Portfolio	1	2	3	5	4
Outdoors	5	2	1	3	4
Natural	4	3	1	5	2
Brand: Goo.	1	5	4	2	3
Brand: Pat.	5	3	1	4	2
Futuristic	2	3	4	1	5
Nostalgia	2	4	1	5	3
Non-Plastic	2	4	1	5	3
System	3	4	2	1	5
Technological	3	4	2	1	5
Contraversial	3	4	5	1	2
	54	74	56	79	82



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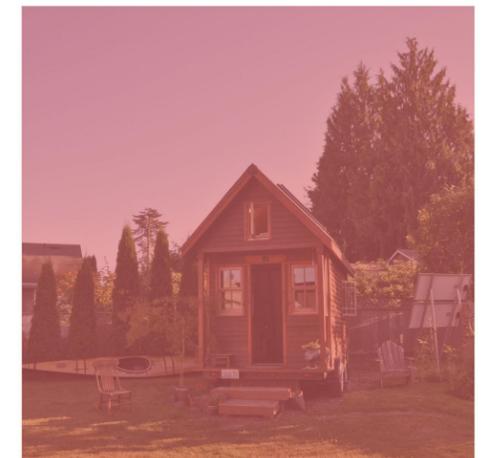
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Selection

Roamstead

Project Proposal

Choice



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Problem Statement

**How might we
improve the mobile
home experience?**

Hypothesis

Redesigning the mobile home for the future will improve life for people through increased savings and flexibility.

Opportunities

- 1. Function**
- 2. Perception**
- 3. Location**

1. Function

Transportation

Artificial Intelligence

Multifunctional

2. Perception

Taboo & Stigma

Negative Association

Market Opportunity

3. Location

Remote working

Rising housing costs

Overpopulation

Project Strengths

Nostalgia

Necessity

Boundaries

Scope | Not get too broad with the scope, while painting a clear picture of the context.

Detail | Focus on large design challenges rather than tiny aesthetic details.

Purpose | Keep the project meaningful, providing grounded reasons behind the decisions- aesthetic, financial, emotional.

Directions

System | Design a system that incorporates all applicable aspects of life in a mobile home.

Home | Design a strong product family and interior experience for mobile home users.

Auto | Design a transportation solution that integrates seamlessly with work and life.

Market & Competition Research

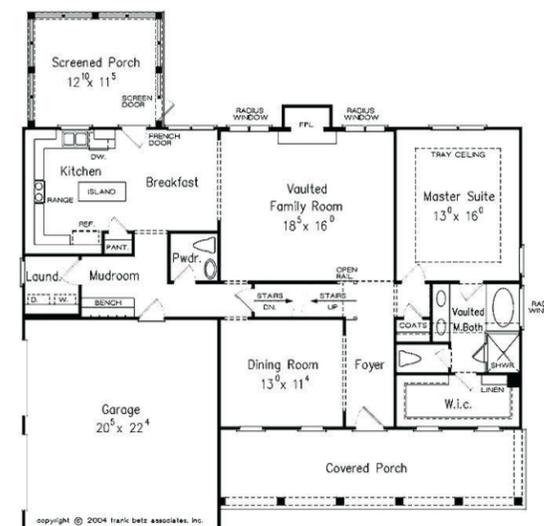
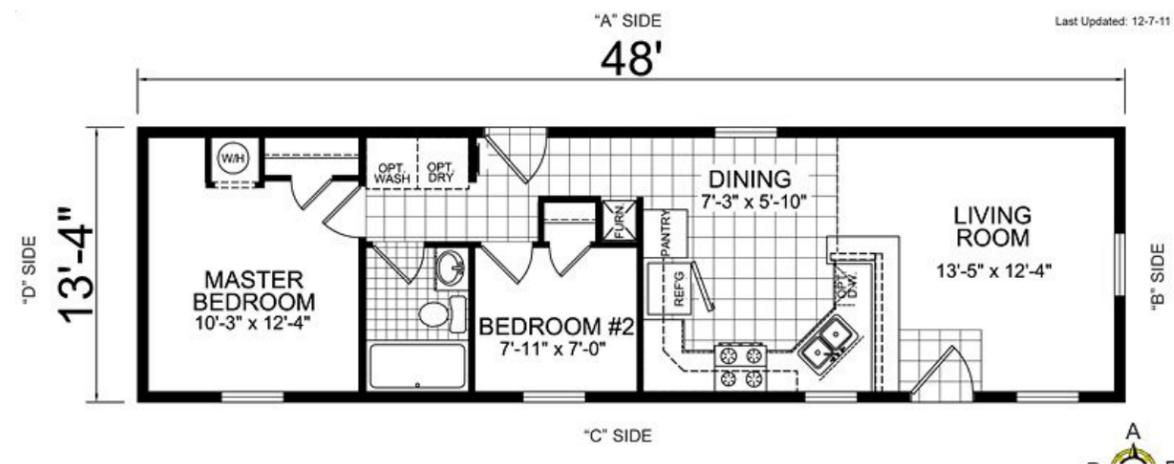
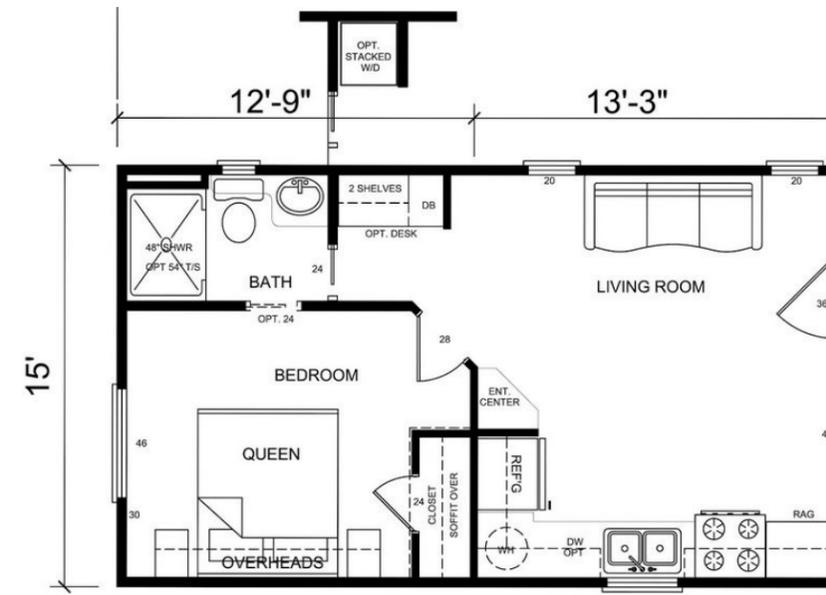
Focus

Because there is nothing on the market like the proposed home, market comparison and research will be focused on bolstering the strengths of each component while redesigning for the weaknesses.

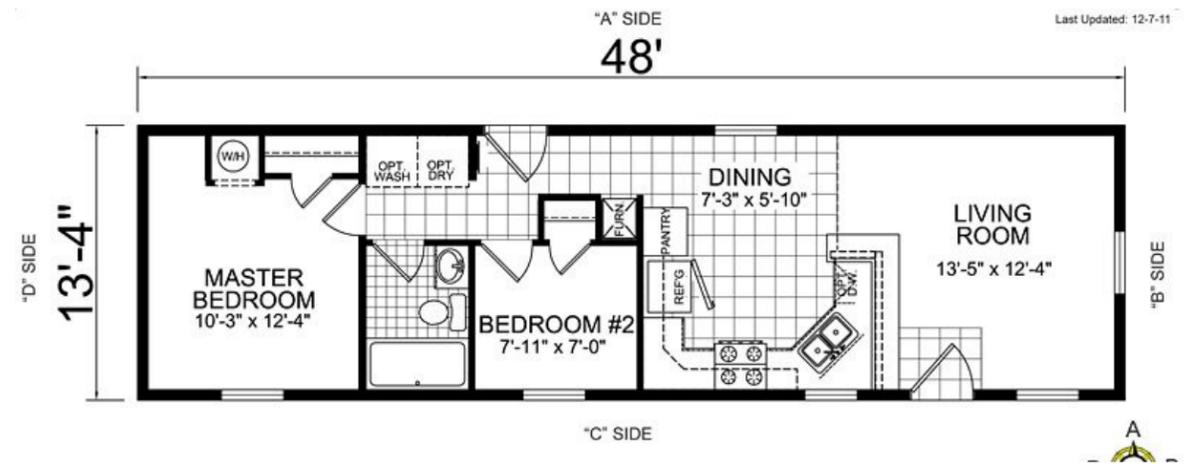
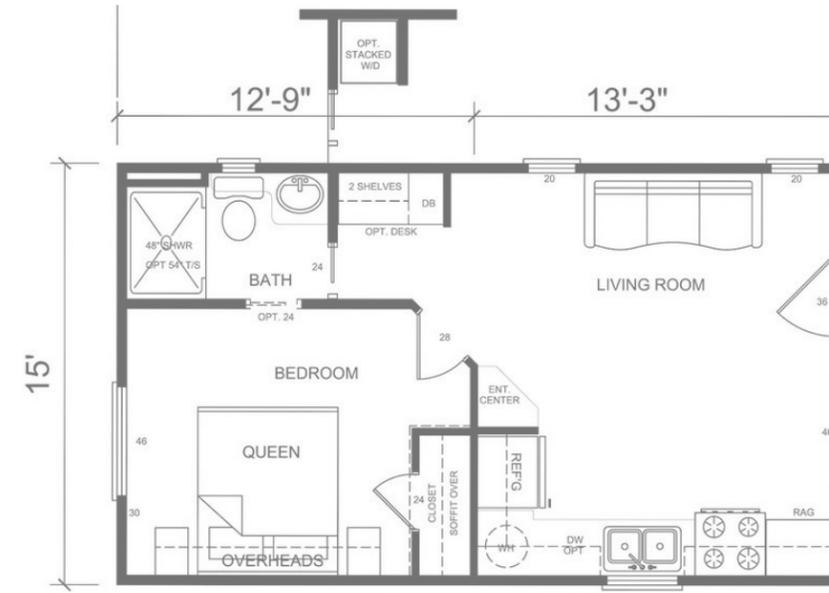
‘Tiny Home’ | Smallest of the homes, mostly under 400 sq. ft.

‘Mobile Home’ | Classic small living arrangement. Mostly under 1500 sq. ft.

‘Track Home’ | A true staple of suburbia. Ranging in all shapes and sizes, usually over 1500 sq. ft.



Sweet spot | Mobile homes fit perfectly between tiny homes (which border discomfort) and regular homes (which border excess).





Market Tiny Homes

- + \$20,000
- < 500 sq ft
- Very small
- Transport
- Small footprint
- Thoughtful design

Market Mobile Homes

- + \$50,000
- < 1500 sq ft
- Bland
- Not actually mobile
- Trying to be a house.





Market Camper Vehicles

- + \$30,000
- < 50 - 400 sq ft
- Focus on outdoors
- Built for 'on the move'
- Ranges from super fancy to simple functions.

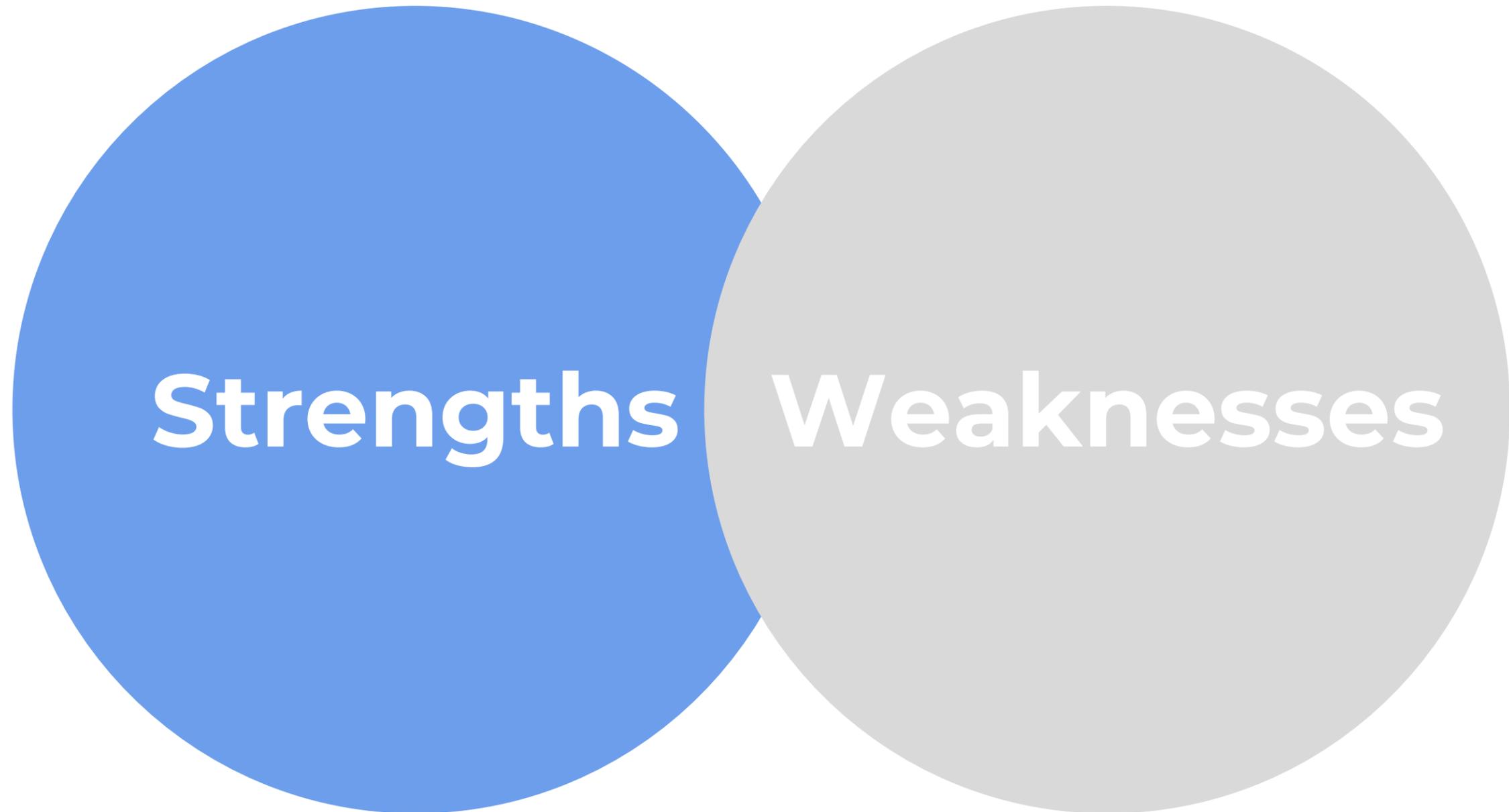
Market Autonomous Vehicles

- + \$60,000
- ~ 0 - 320 sq ft
- AI powered
- Rapidly growing technology
- Still seen as transportation tool first



Strengths & Weaknesses

- Breaking down the best and worst features



- **Tiny Home | Mobile Home | Autonomous Vehicle | Camper Vehicles**

Tiny Home

- Convenient Size
- Portable
- Inexpensive

Mobile Home

- Affordable
- Comfortable space
- Modular options



Strengths

- Frees up user time
- Subscription model
- Headache free transportation

Autonomous Vehicle

- Flexible movement
- Immersive experience
- Very mobile. Drive anywhere.

Camper Vehicles

Tiny Home

- Too small
- Can't move itself
- Not modular

Mobile Home

- Stigma
- Not really that mobile
- Limited growth opportunities



Weaknesses

- Early stages
- AV Infrastructure
- Limited to transportation

Autonomous Vehicle

- Too small
- Not enough amenities
- Expensive for the value, potentially

Camper Vehicles

Roamstead Strengths

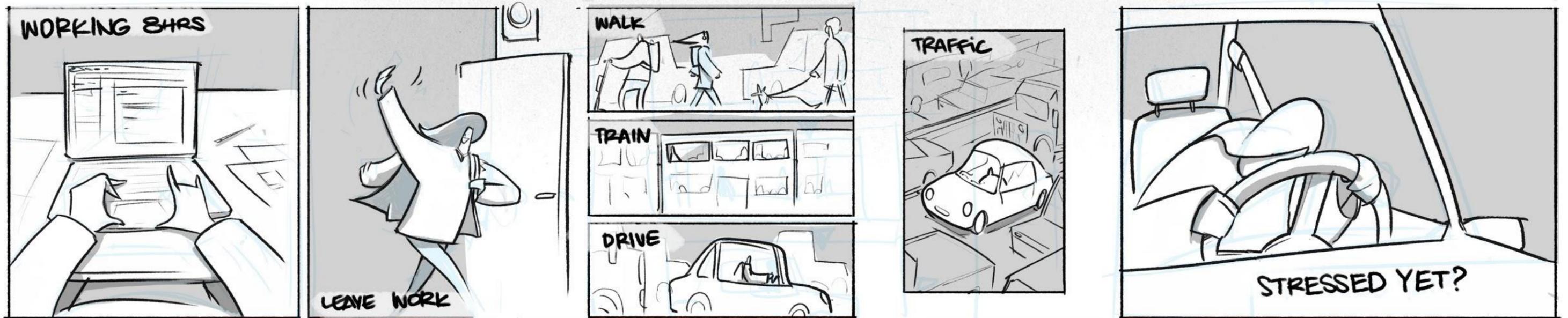
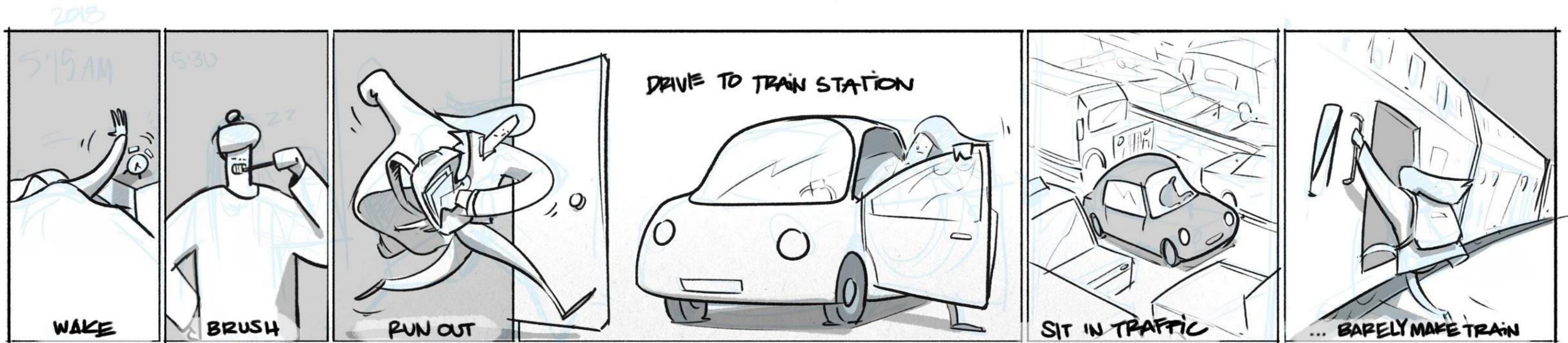
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Stakeholder Research

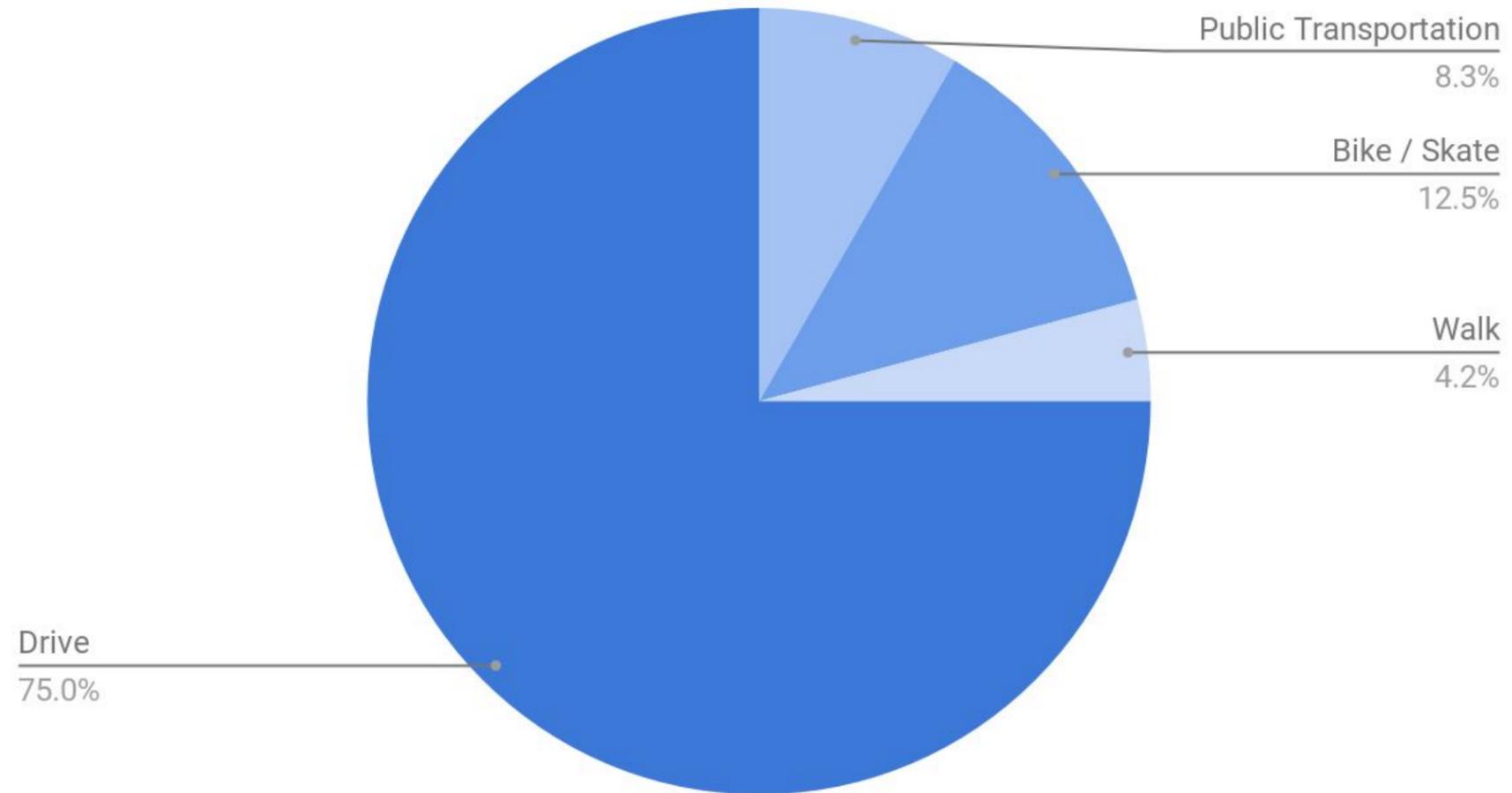
Day in the life:



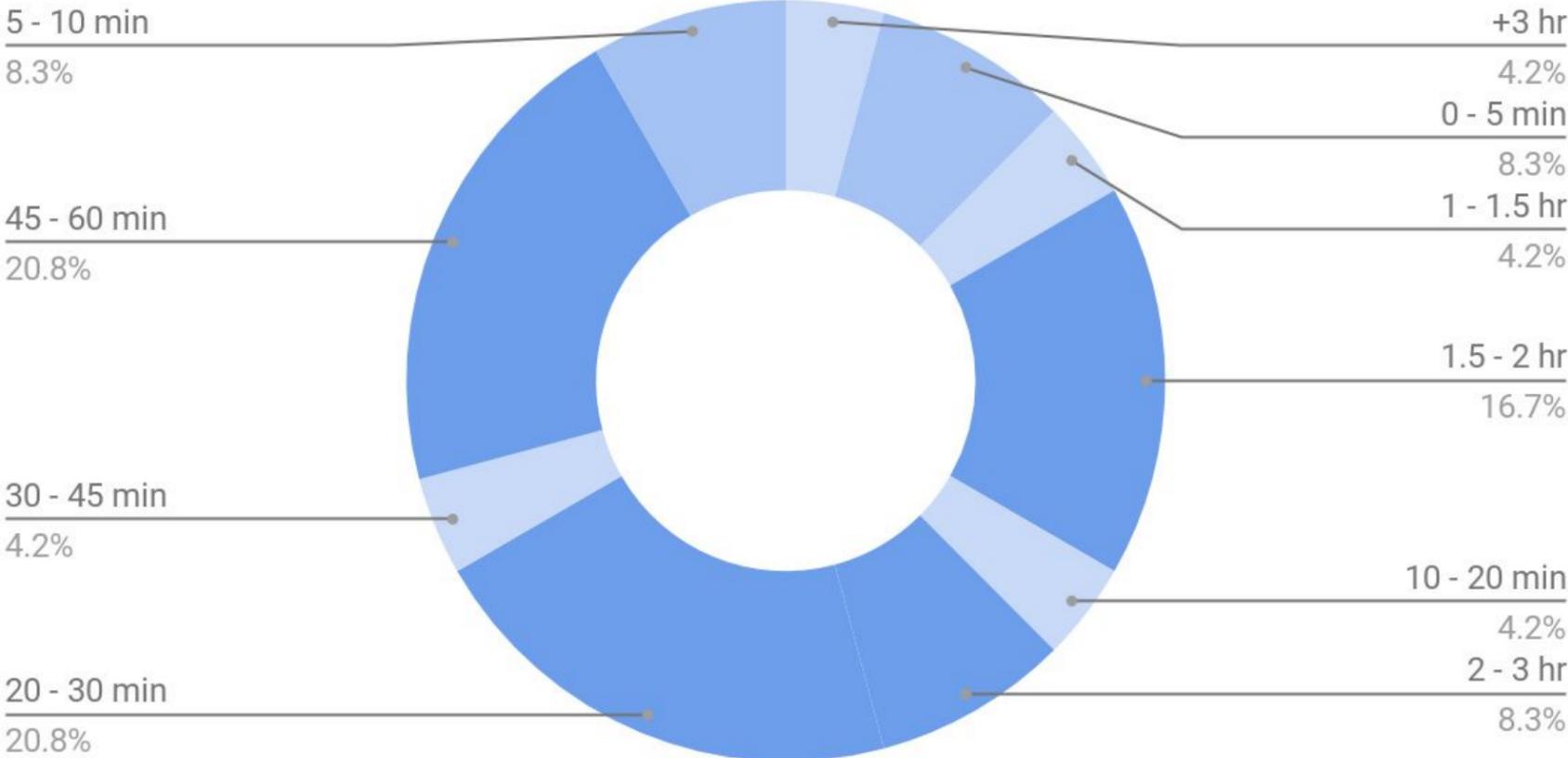
Observations

People lament the prices on the housing market and simultaneously despise their commute. This builds tension between the two. Inability to afford a house near work, which is usually in a city center, leads to longer commute times, which has a huge effect on how we structure our lives.

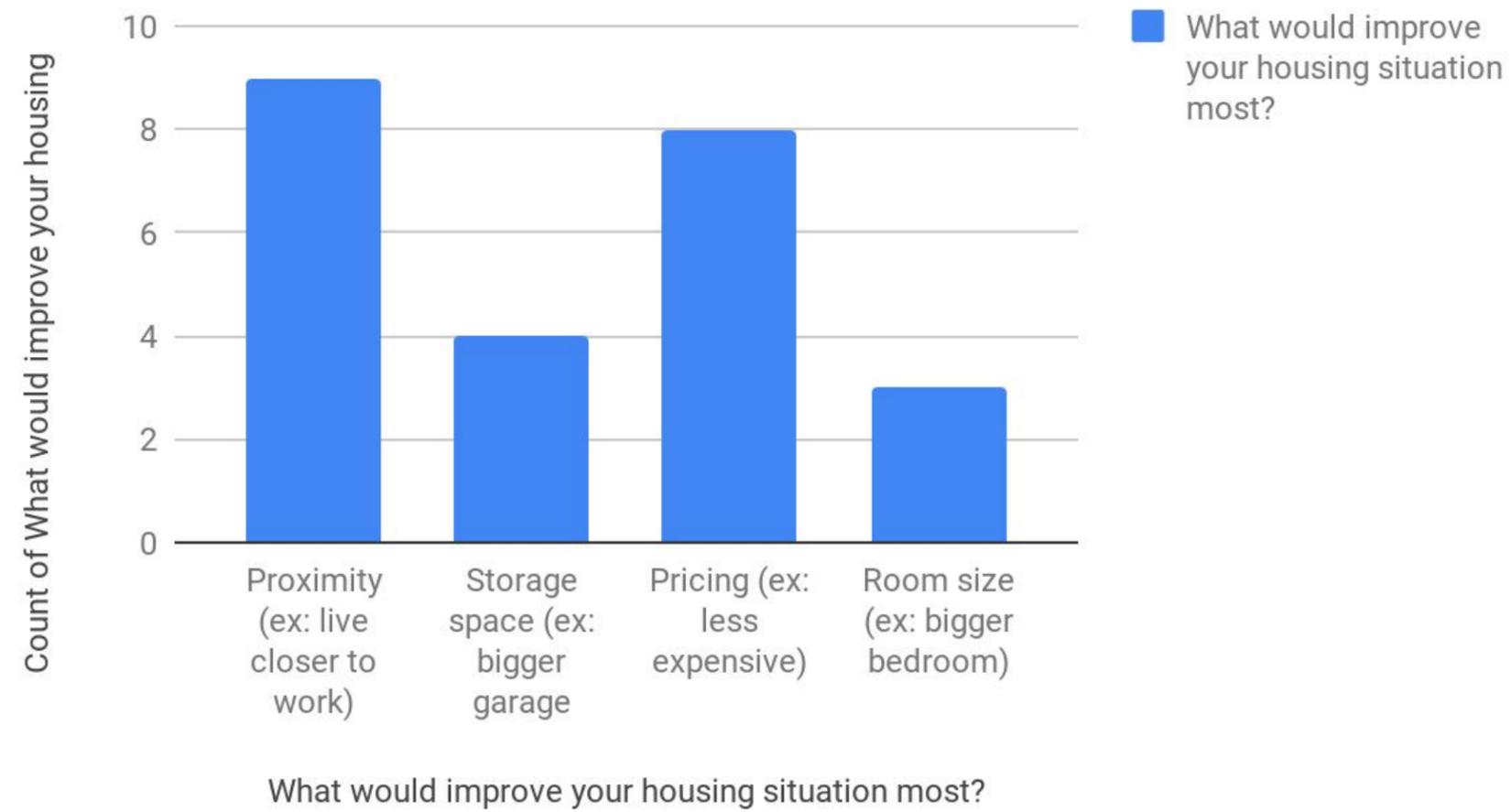
How do you commute each day?



How much time total do you spend commuting, each day?



What would improve your housing situation most?



First
Home

Second
Apartment

Third
Mobile Home

'Mobile Home' was rated the **least** preferred housing solution, **even though it has the potential to solve many of the problems from housing and commuting.** It can be inexpensive, mobile, and closer to where you spend your time. Currently it faces stigma that is keeping it from even being considered.

Some Stakeholder Thoughts

“I wish I had multiple homes. One near work and one near play.”

“I love the area we live in and apparently we got a “good deal,” but the Bay Area is painfully expensive.”

“Taking the train takes forever. But it's nice to be able to work on it.”

“I live in the bay area so a good podcast goes a long way.”

“I love being able to work from home.”

“I would love to walk to work, I can't always read on the bus and sometimes miss it because it's so full. I wish I could afford an apartment without two roommates.”

“I am often too tired to commute in the morning.”

Design Objective

Leverage the wide-open market and stigma of mobile homes to redesign and reframe a transportation and living solution for the future.

**Materials,
Processes,
Technologies &
Sustainability
Research**

Objective

Get inspired by natural materials, processes, technologies and solutions. Discover unique, ethical, healthy ways to fabricate great products.

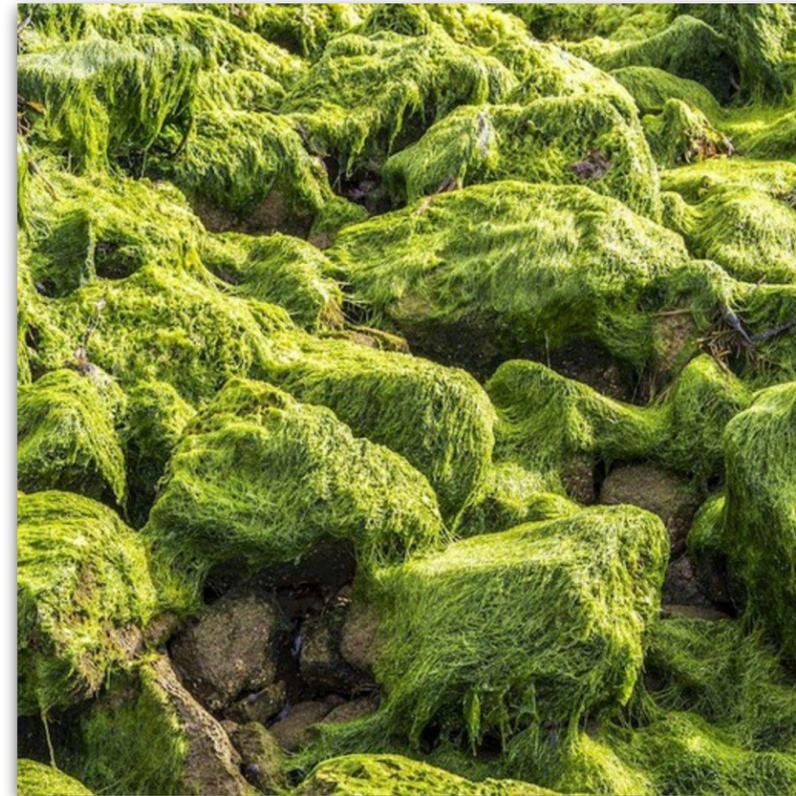


Material:
Reclaimed Wood
Replex, Netherlands

How interesting would it be if the wood we took from our newly demolished homes was used to construct our new ones. Reclaimed wood carries with it an entire back story of a previous purpose beyond that of just a tree. It one time provided shelter and now on the second time as a reclaimed piece of wood provide shelter again. This particular brand, Replex makes use of all shapes and sizes.

Technology: **Bioplastics, Algae** *Algix, Mississippi*

Bioplastics, specifically ones using algae, are a fascinating material and process. They're double great because along the way of collecting the algae, it actually helps clean the environment. Then when made into plastic it is able to break down in nature more easily without large environmental impact.





Material:
Biomimetic Insulation
STO, Germany

Biomimetic insulation is a great alternative to the chemical heavyweights that we currently use. Things like fiberglass and extruded polystyrene are not great materials to interact with nor are they made from sustainable sources. One interesting part of biomimetic insulation is how it references nature, in this case polar bears and their ability to stay insulated from the freezing Arctic Winters.

Sustainability: Ethical Wool

Friendsheep, Nepal

Sometimes the most interesting material is the old one we'd forgotten about. Wool is naturally formed from proteins in the sheepskin, it's renewable and as long as sheep have grass, the wool grows. Wool is biodegradable, it's a natural insulator it's also breathable. It's easy to care for doesn't need chemicals to take rich colors, it's odor resistant and it doesn't cause any allergies or promote the growth of bacteria





Process: **Prefabrication & Modularity** *Method Homes, USA*

Prefabrication and modularity are expected to make a comeback in the next few years due to its affordability with making large scale construction more feasible. With a decreasing labor force and increasing material prices, any clever ways to make things more efficient will succeed.

Design Constraints

Objective

“Research on various factors that will constrain the imaginative and ingenious design process. Anticipate potentially risky situations, check government and industry codes, legal requirements, and all other factors addressing realistic constraints that will help make the best design decision.”

Mobile homes face many regulations since they combine two already highly regulated things:

- 1. Transportation**
- 2. Housing**

Transportation

National Highway Traffic Safety Administration

“The National Highway Traffic Safety Administration is an agency of the Executive Branch of the U.S. government, part of the Department of Transportation. It describes its mission as "Save lives, prevent injuries, reduce vehicle-related crashes.”

Manufacturing | Requirements on how the unit is built and assembled.

Autonomous Vehicle | Established standards on how AV units operate.

Operational Safety | Standards that ensure safety while unit is in use.

Energy Consumption | Fuel and electricity regulations on the unit.

1

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Housing

The U.S. Green Building Council / LEED (USGBC)

“LEED provides a framework to create healthy, highly efficient and cost-saving green buildings. LEED certification is a globally recognized symbol of sustainability.”

Housing and Urban Development (HUD)

Manufactured Housing and Standards - “The Department of Housing and Urban Development (HUD) is the Federal agency responsible for national policy and programs that address America's housing needs, improve and develop the Nation's communities and enforce fair housing laws.”

Construction | Regulations on how the housing side of the unit would be built.

Manufacturing | Assembling the units to code with insulation & systems.

Sustainable | Green standards according to LEED requirements.

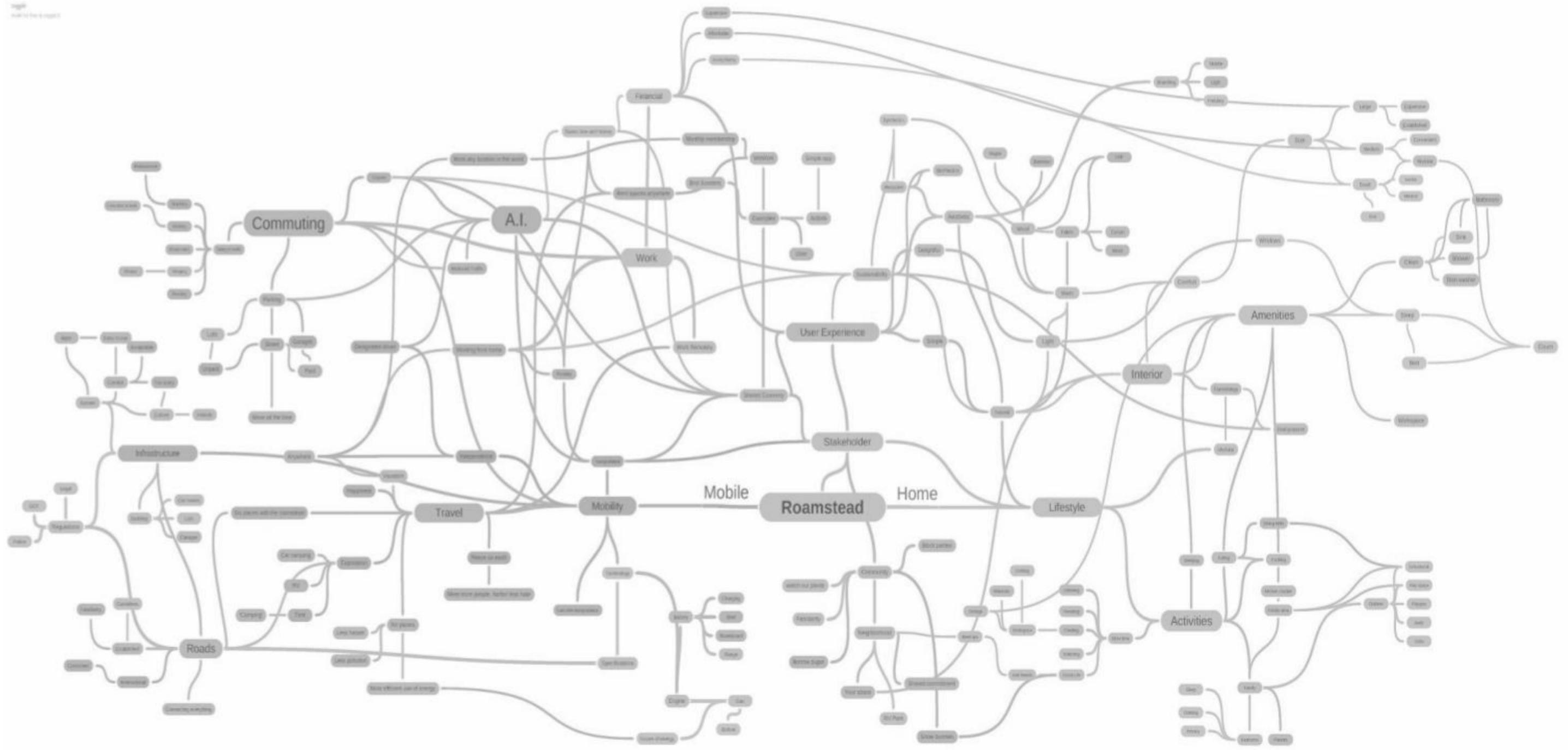
Housing | Standards making sure there are enough facilities and space.

Health and Safety | Standards making sure there is proper ventilation etc.

Constraint Summary

Construction is a primary consideration around the design constraints. From both a housing and a vehicle perspective, they are both highly regulated. I suspect that once requirements for the body are met from a transportation perspective, there will be little else on the housing side that needs addressing. From the housing side, things like appropriate facilities will be important. While in motion as transportation, or existing as a house, making the unit sustainable will be key. Using LEED standards set up by HUD will ensure these goals are soundly met.

Roamstead Mindmap



Roamstead

**How might we
redesign the mobile
home experience?**

