

# Goodbye Gondola

Audrey Miller - Michael Eyer - Marni Epstein

u1197148@utah.edu - u1245499@utah.edu - u1369717@utah.edu

[Github Repo](#)

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# Background and Motivation

## Background

Little Cottonwood Canyon (LCC) is one of the most beloved canyons in the Salt Lake greater area, recognized for its world class resort skiing, backcountry skiing, climbing, hiking, birdwatching, and more. Little Cottonwood Canyon is a crucial destination for both locals and tourists, with over [2 million](#) people visiting the canyon each year.

In 2017, the Utah legislature passed [Senate Bill 277](#), *Highway General Obligation Bonds Authorization*, which included funding for transportation improvement projects that “have a significant economic development impact associated with recreation and tourism within the state” and “address significant needs for congestion mitigation.” The Utah Transportation Commission identified Little Cottonwood Canyon as a top priority due to its high volume of use and economic benefit from tourism.

In the spring of 2018, the Utah Department of Transportation (UDOT) began the S.R. 210 project with the goal of identifying and evaluating transportation improvement alternatives for S.R. 210, the road that runs through Little Cottonwood Canyon, and Wasatch Boulevard. UDOT began the project by conducting an Environmental Impact Statement (EIS) for Little Cottonwood Canyon (LCC) and Wasatch Boulevard in partnership with Utah Transit Authority (UTA) and the U.S. Department of Agriculture Forest Service. The Federal Highway Administration has assigned full responsibility under the National Environmental Policy Act (NEPA) to UDOT for carrying out the environmental review process and using federal-aid highway funding for identified projects. In their [Final Environmental Impact Statement](#), UDOT identified the main purpose of this project: “to substantially improve roadway safety, reliability, and mobility on S.R. 210 from Fort Union Boulevard through the town of Alta for all users on S.R. 210.”

UDOT released a draft EIS statement in the summer of 2021 and held an open comment period from June - September 2021, followed by a second public comment period from December 2021 - January 2022. After receiving a record-breaking 14,000 public comments, they released their [final EIS](#) and recommendation on August 31, 2022, with a public comment period from September - August 2022 and almost 10,000 comments received. UDOT plans to release their final record of decision in the winter of 2022/2023.

## Transportation Options

In their Initial EIS, UDOT identified [five primary alternatives](#). All travel times are estimated by UDOT and reflect time from the identified mobility hub to Alta.

1. **Enhanced Bus Service (No Additional Roadway Capacity).** This option would provide winter point-to-point bus service from mobility hubs directly to ski resorts. There would be 24 buses per hour in peak hours, serving an estimated 1,008 people per hour during

peak hours, and no summer bus service. Tolling and other management strategies such as no-single occupant vehicles during peak periods would also be utilized.

- a. Travel time: 54 minutes
  - b. Cost: 338M – 355M
2. **Enhanced Bus Service in Peak-period Shoulder Lane Alternative.** This option would provide the same bus service as in option 1, plus road widening in Little Cottonwood Canyon. Bus-only peak-period shoulder lanes would be added to S.R. 210 from the North Little Cottonwood Road/Wasatch Boulevard intersection to the Alta Bypass Road.
  - a. Travel time: 36 minutes
  - b. Cost: 493M – 510M
3. **Gondola Alternative A (Starting at Canyon Entrance).** This option would build a gondola from the entrance of Little Cottonwood Canyon to the Alta Ski Resort, with stops at Snowbird and Alta ski resorts only. The gondola would provide 30 gondola cabins per hour, serving an estimated 1,050 people during peak hours. Enhanced bus service would be provided from mobility parking hubs to the gondola base station, as there would be no parking at the base station.
  - a. Travel time: 63 minutes
  - b. Cost: 554M – 561M
4. **Gondola Alternative B (Starting at La Caille).** This option would provide the same gondola service as in option 3, but the base station would exist at La Caille, about 0.75 miles northwest from the entrance to Little Cottonwood Canyon. It would provide 2,500 parking spaces at the La Caille base station.
  - a. Travel time: 55 minutes
  - b. Cost: 533M – 550M
5. **Cog Rail Alternative (Starting at La Caille).** This option would build a cog rail beginning at La Caille, about 0.75 miles northwest from the entrance to Little Cottonwood Canyon. It would stop at Snowbird and Alta ski resorts only. It would have service every 15-minutes during peak hours, serving around 1,000 people hourly during peak hours. It would provide 2,500 parking spaces at the La Caille base station.
  - a. Travel time: 55 minutes
  - b. Cost: 1,051M – 1,064M

In their Initial EIS, UDOT identified option 2, Enhanced Bus Service in Peak-Period Shoulder Lane Alternative, and option 4, Gondola Alternative B, as preferred alternatives. In their [Final EIS](#), UDOT identified the Gondola Alternative B as the preferred alternative.

## Public Opinion and Impact

The preferred alternative, Gondola Alternative B, would have extreme and irrevocable impacts on Little Cottonwood Canyon. It would disproportionately affect user groups outside of resort

skiers, such as backcountry skiers, climbers, and hikers. Local organizations that represent outdoor user groups, and environmental protection groups have taken a strong stance in opposition of the gondola, including [Save Our Canyons](#), the [Salt Lake Climbers Alliance](#) (SLCA), [Friends of Little Cottonwood Canyon](#), and [Wasatch Backcountry Alliance](#).

Local governmental leaders have also taken a stance against the gondola. The Salt County Council and Salt Lake County Mayor Jenny Wilson passed a [joint resolution](#) condemning the gondola. The Salt Lake City Council and Salt Lake City Mayor Erin Mendenhall passed a similar joint [resolution](#) against the gondola plan. Sandy Mayor Monica Zoltanski has been outspoken about her opposition to the gondola.

As data visualization students and climbers, we want to use visualization to display the effects that the proposed gondola would have on climbing in Little Cottonwood Canyon, with a focus on boulders that will be directly affected by gondola stations. A [joint study](#) from the SLCA and University of Utah found that Little Cottonwood Canyon ranked as the most popular and frequently used climbing destination in the Wasatch. Despite this, the United States Forest Service stated in a [letter to UDOT](#) that “individual cliffs, boulders, groups of boulders, bouldering problems” are not significant enough for protections when assessed individually. We hope that our visualizations help the public understand the immense and irrevocable impact that the gondola would have on the world class bouldering site of Little Cottonwood Canyon.

## Project Objectives

### Project Purpose

Goodbye Gondola intends to utilize visualization to increase awareness of the impact that gondola construction in Little Cottonwood Canyon could have on climbing boulders. One of the main questions that then becomes apparent is, “What boulders will be impacted directly by the gondola construction?” To answer this, users will be able to interact with the visualization to target specific boulder problems, as well as specific areas to easily see the impact at both large and small scales throughout the canyon. Another apparent question is, “How will our visualization promote user activism?” This question is answered through our usage of an intuitive and effective visualization, so that more users will be aware of the negative impacts, which in turn will encourage them to act against the construction of the gondola. This brings up one more question, “How will users know what resources to use to act against the construction of the gondola?” To answer this, users will be provided with resources to help prevent the construction of the gondola within the visualization so that once they have gained awareness, they know the next steps. So, through this visualization, we aim to increase awareness of the threat of a gondola, as well as promote user engagement with the push against the gondola construction.

Through this visualization, not only will we be able to answer those questions, but we will also provide the climbing community and the broader Salt Lake community with these benefits:

- Increased understanding of impact of the gondola construction.
- An interactive easy to use visualization to share amongst the community.
- Increased awareness of the issue.
- Increased activism in the community.

## Learning Outcomes

As a group, we have discussed a few learning outcomes that we hope to achieve through this project. The first outcome is to gain a better understanding of D3 and frontend web languages so that we can effectively produce a visualization. We will achieve this by using various resources, including our classwork, internet resources, and teaching assistant aid to propel us in this goal. Another outcome that we discussed was to learn the best methods to effectively engage users in our visualization. This can be done via material we have learned in class, as well as other resources. Finally, we would like to educate ourselves better on the gondola impact so that the information we present in our visualization is correct and effective. This can be achieved through various resources in the climbing community like the SLCA, and other organizations.

## Data Methods:

The data will be combined from multiple different sources. The data regarding the gondola, including tower locations, is provided by [UDOT](#). We will identify the latitude and longitude data of tower locations manually based on the map published by UDOT. We do not anticipate this to be cumbersome because there are not many tower locations.

A list of boulders directly affected will be provided by the SLCA. The data regarding all of the boulders in Little Cottonwood Canyon will be gathered from [Mountain Project](#). This will also provide Latitude and Longitude information, as well as a list of problems featured on each Boulder. Information regarding the popularity of the boulders will be gathered through the website [8a](#).

## Data Processing:

The data for the gondola and tower locations will have to be generated manually. This process will not be too cumbersome as the number of towers is relatively small.

The information provided by Mountain Project will be obtained using a [Mountain Project web scraper](#). The information provided by 8a will likewise be gathered using an [8a web scraper](#). This data will most likely need some cleanup, however the web scrapers can be modified to produce results that will reduce the effort required for this.



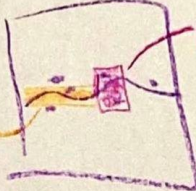
# Visualization Designs

## Sheet 1 (Brainstorm)

Sheet 1: Brainstorm

**Ideas**

Map View w/ layers

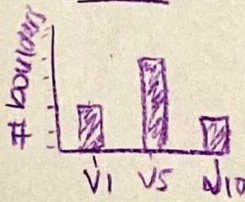


+ more feature →

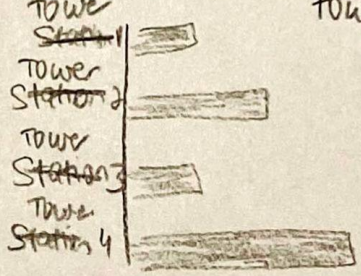
non-map visuals

- filter areas / boulders to see  
# affected

show boulders affected by grade



# boulders affected per gondola ~~station~~ tower



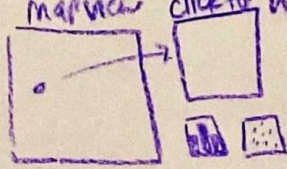
↳ We could also show the road widening option

Filter + categorize

1. Map view - hover tooltip → connected to zoomed in view of select area?  
zoom ability
2. Area Scorecard → shows info on area + # boulders +
3. Display how popular boulders are to show context for the effect of the gondola - 8a scrape

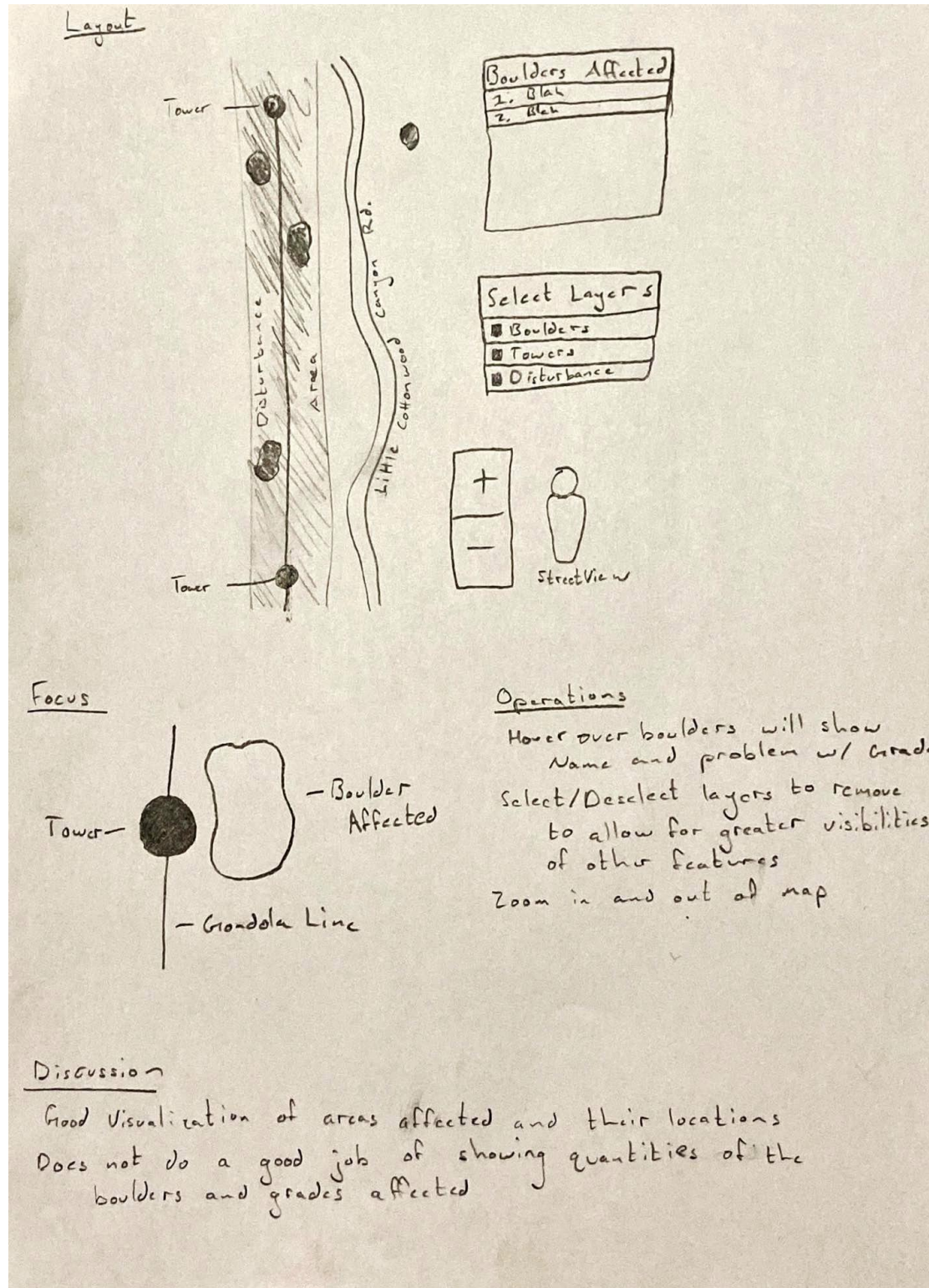
**Combine + Refine**

map view click for highlight

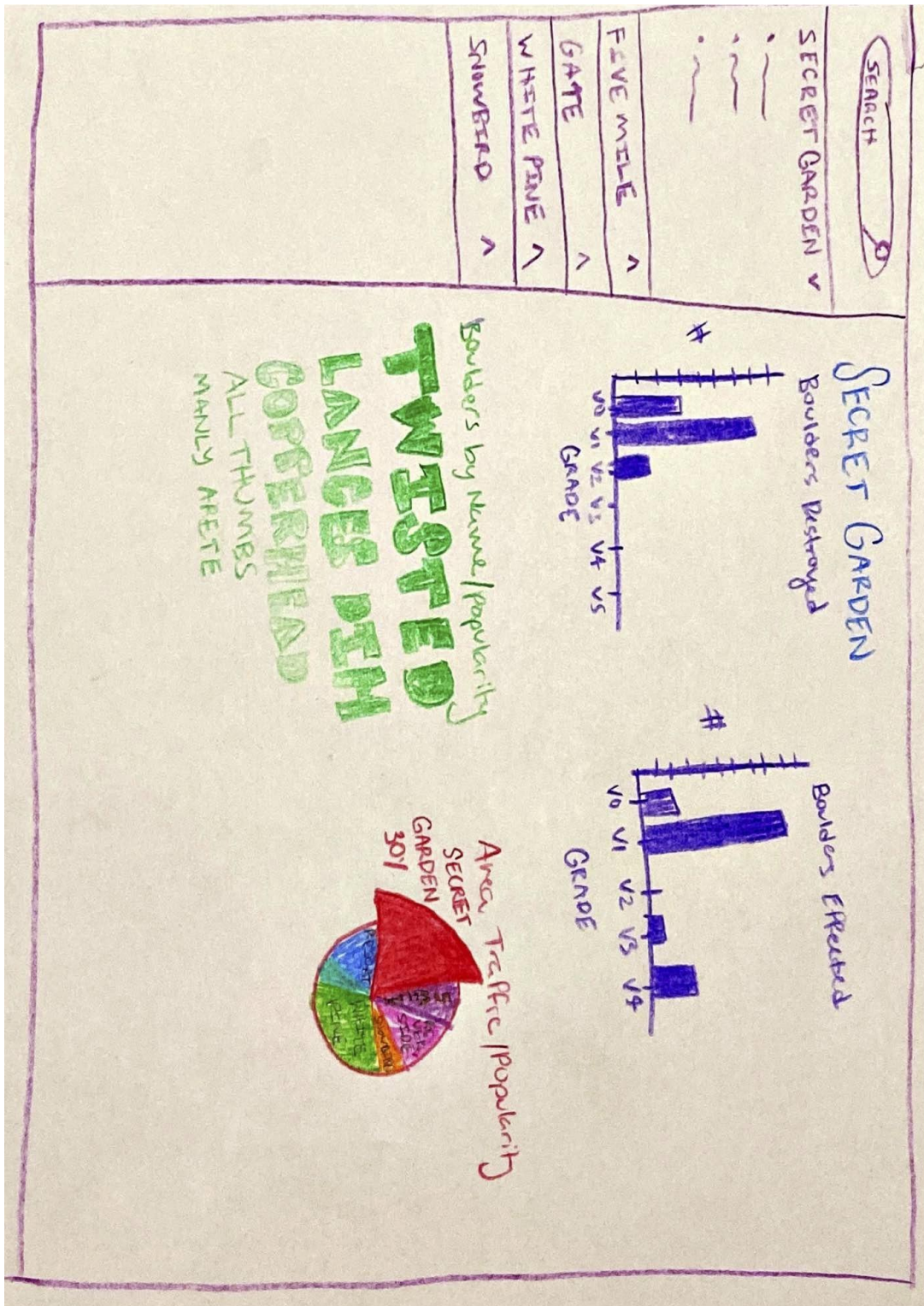




## Sheet 2 (Initial Design 1)

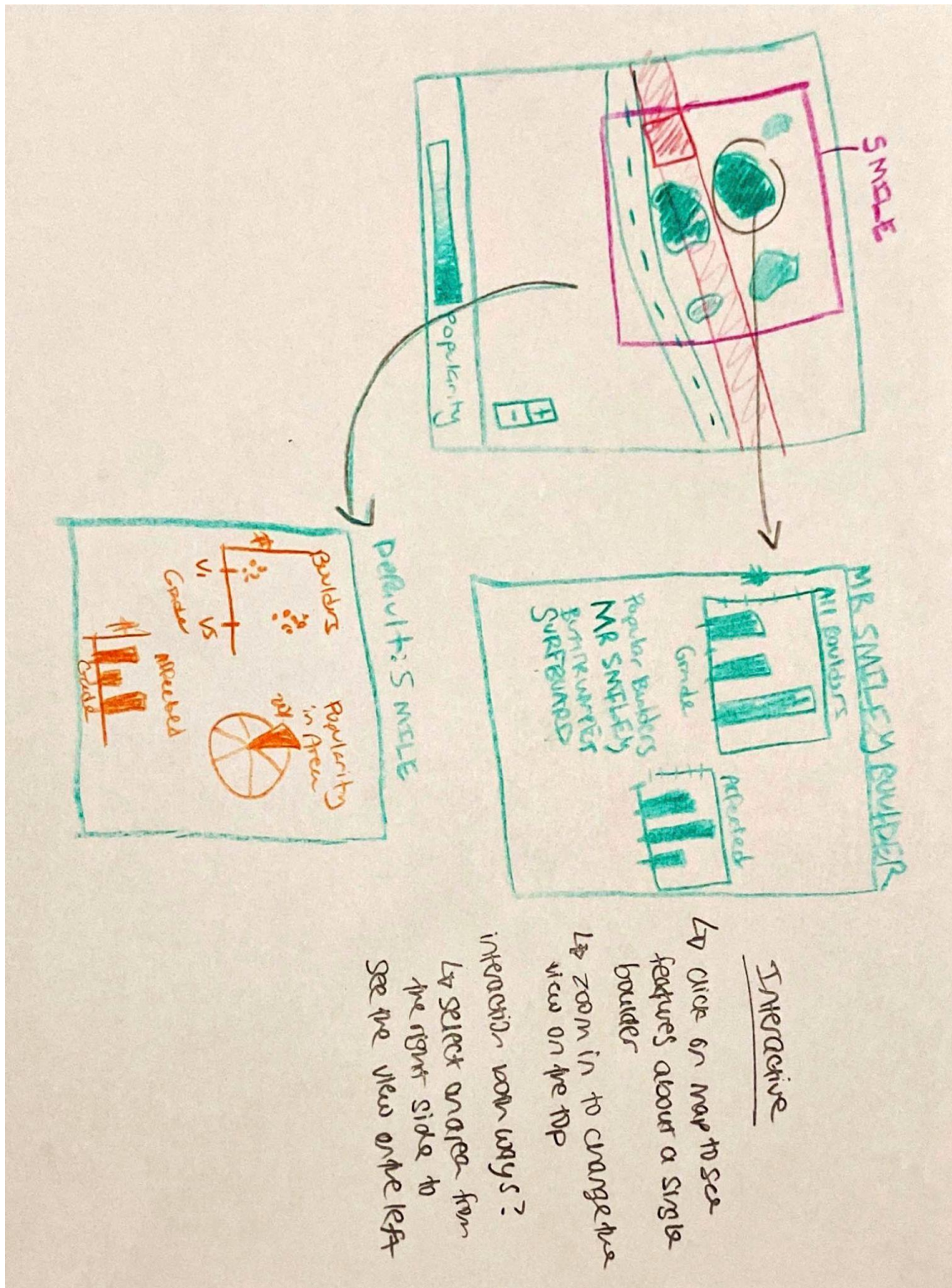


## Sheet 3 (Initial Design 2)





## Sheet 4 (Initial Design 3)







## Necessary Features

Below is a list of the necessary features we intend to include in our visualization so that it accomplishes our prospective goals.

Features:

- Show the boulders with established climbing on the map with indication
  - Indicate whether they are impacted by the gondola or not via saturation/color etc.
- Show the gondola towers construction points
  - Indicated by a stark color so that they are obvious
- Show the impact area of the gondola aside from the towers (i.e. areas that fall under the gondola)
- Display various data representations that include:
  - Number of boulder problems affected by the gondola in a zoom or clickable area
  - Number of various grades (representing difficulty) of boulders affected in that zoom or clickable area
- Have an easy to understand key so that users can decipher various elements
- Have layers that can be removed and added to simplify or complicate the visualization

## Optional Features

While we will achieve an effective visualization with just the necessary features, additional features will improve user engagement, as well as increase user understanding of the problem. Below is a list of the optional features we intend to incorporate given we have extra time/resources to do so.

Optional Features:

- Additional metrics on the boulders based on resources like mountain project and 8a
  - See individual area popularity
  - See boulder problem popularity
- Link Mountain Project (an online database of climbing routes/boulders) page to each boulder with a click feature
- Have an option to view the other transportation options such as option 2, enhanced bus service with road widening

## Project Schedule

1. Project proposal: 10/21/22

2. Data wrangling/cleaning: 11/4/22. Clean data from the Salt Lake Climbers Alliance on which boulders are affected by the gondola. Scrape data from 8a and/or mountain project on boulder popularity.
3. Create skeleton of the web interface: 11/4/22
4. Load in the data + set up: 11/11/22
5. Chart visualization: 11/25/22
6. Write up and de-bug, submit final project: 12/2/22