

# THE CRAZE FOR PLASTIC SURGERY IN THE US

[https://cherlinedelfina.github.io/FIT3179\\_ASS2/html/](https://cherlinedelfina.github.io/FIT3179_ASS2/html/)

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**Lab: 02**

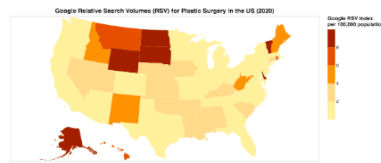
**Tutor: Jiazhou 'Joe' Liu**

# PLASTIC SURGERY

## THE CRAZE FOR PLASTIC SURGERY IN THE US

Plastic surgery is a procedure involving restoration, reconstruction, or alteration of the human body. Every year, more people undergo plastic surgery due to health benefits and society's emphasis on beauty. The US is the land of plastic surgery, ranking **1st** in the world with over **20 million procedures** done in 2020 alone.

Plastic surgery can be divided into two main categories: **reconstructive surgery** and **cosmetic surgery**.



The map visualisation shows the Google Trends Relative Search Volumes for all searches for "plastic surgery" in each state in 2020.

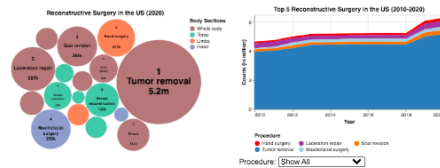
Big cities like **California**, **Texas**, and **New York** have the least interest in plastic surgery with close to 0 people looking up plastic surgeries in google search.

The 2 cities with the least population: **Vermont** and **Wyoming**, have the highest interest in plastic surgery with 10 out of 100,000 people looking up plastic surgeries in google search.

However, keep in mind that looking up plastic surgery does not actually mean undergoing the surgery and high google search does not equal high demand.

### Reconstructive Surgery

Reconstructive surgery is surgery performed to restore normal appearance and function to body parts malformed by a disease or medical condition.



The packed bubble shows the number of each reconstructive procedures performed in 2020.

Tumor removal is the most popular procedure, with around **5.2 million** procedures performed in 2020 alone due to the increasing cancer rate.

The area chart shows the top 5 Reconstructive surgeries performed in the US from 2010 to 2020.

There is an **increasing trend** in the number of reconstructive surgeries performed in the US despite the Covid-19 pandemic.

### Cosmetic Surgery

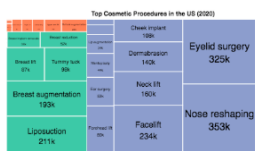
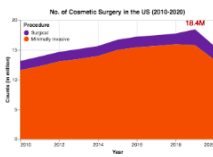
Cosmetic surgery is surgery performed to change the physical appearance for cosmetic rather than medical reasons.

Cosmetic surgery can be classified into 2 categories: **minimally invasive procedures** and **surgical procedures**. **Minimally invasive procedures** are smaller procedures that involve minimal incision.

The area chart shows the total number of cosmetic surgeries performed in the US from 2010 to 2020.

There is an **increasing trend** in the total number of cosmetic surgeries in the US, peaking in 2019 with **18.4 million** procedures before **decreasing** in 2020. Unlike reconstructive surgeries, cosmetic surgeries are not urgent and therefore, some hospitals halted cosmetic procedures during the covid-19 pandemic, causing the decline.

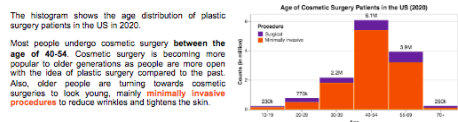
**Minimally invasive procedures** are more popular than surgical procedures due to less scarring, less expensive, and less permanent impact on the body as some people are not ready to make the big permanent decision.



The treemap shows the total number of cosmetic surgery procedures done in the US in 2020, categorised into 3 body parts: head, torso, and limbs.

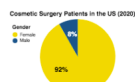
Most people undergo cosmetic surgery on the **head** area due to society's emphasis on facial over body attractiveness.

**Nose reshaping** is the most popular cosmetic procedure with a whopping **353,000** procedures done in 2020. The nose is located at the centre of the face, being the most visible feature, it is no surprise that nose reshaping is the most popular procedure.



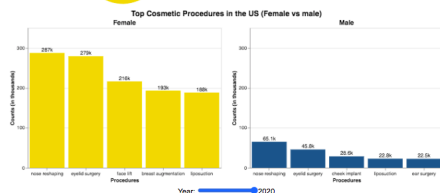
The histogram shows the age distribution of plastic surgery patients in the US in 2020.

Most people undergo cosmetic surgery **between the age of 40-54**. Cosmetic surgery is becoming more popular to older generations as people are more open with the idea of plastic surgery compared to the past. Also, older people are turning towards cosmetic surgeries to look young, mainly **minimally invasive** procedures to reduce wrinkles and lightens the skin.



The pie chart shows **female** to **male** ratio of cosmetic surgery patients.

The cosmetic surgery industry is **female** dominated, with **92%** of patients being **female** as they tend to accept cosmetic surgery more than males due to the high expectations regarding their physical appearance.



The bar chart shows the top 5 most popular cosmetic procedure among **female** and **male**.

**Eyelid surgery**, **breast augmentation**, and **liposuction** remains in the top 3 most popular procedure among **females** for 11 consecutive years.

**Breast augmentation** have been the top 1 most popular cosmetic procedure among **females** until recently in 2020, but it is believed that the decrease is not due to losing popularity, but rather the covid-19 restrictions.

**Nose reshaping** and **eyelid surgery** are the top 2 most popular procedures among **males** for 11 consecutive years.

**Liposuction** (the removal of fat under the skin) is popular among both males and **female** due to the influence of social media on slim and fit bodies.

**Nose reshaping** have been the top 1 most popular cosmetic procedure among males even to this day. Males view nose reshaping as a way to look more masculine and gain confidence.

Source: [ASPS](#)

Charline Delfina Tandra | FIT3179 - Data Visualisation 2

Figure 1. Dashboard

## AIM

The domain of my visualisation is Plastic Surgery statistics in the US. My visualisation is aimed towards people who are interested in undergoing plastic surgery or those who want to know more about plastic surgery. The aim of my visualisation is to show plastic surgery statistics in the US based on 2 categories: reconstructive and cosmetic procedures.

## WHAT

The data used is taken from a report of US plastic surgery statistics by ASPS, the largest plastic surgery specialty organisation in the world (ASPS, 2022). I used R-Studio and Microsoft Excel to clean the datas.

## WHY & HOW

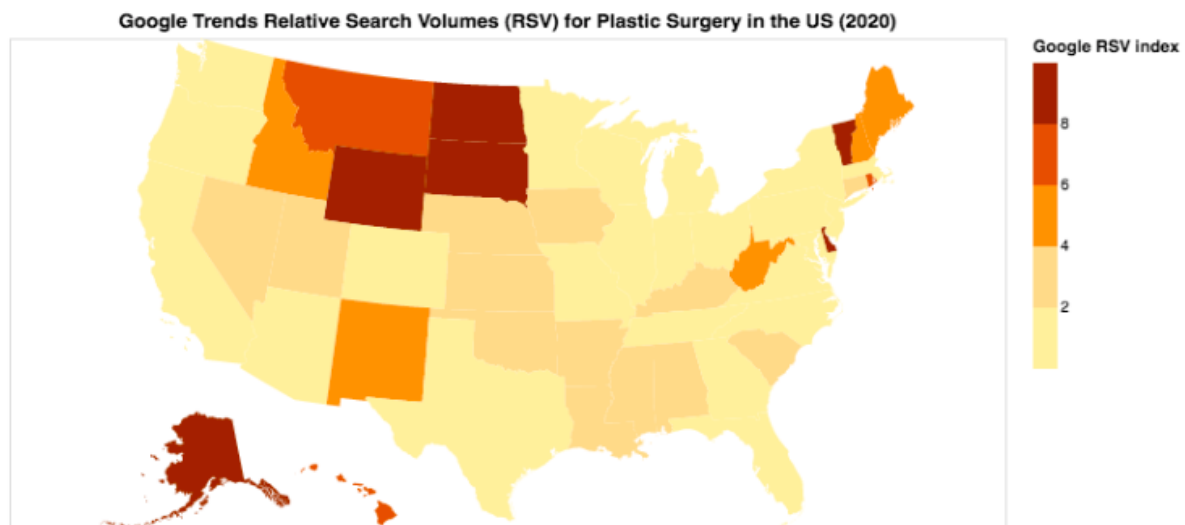


Figure 2. Google RSV for plastic surgery

I chose choropleth map (Figure 2) as choropleth map is best to visualise rate, allows readers to find the max RSV by looking at the darkest-coloured area and compare it to other regions.

The mark used is area, the channels used is colour luminance to show sequential quantitative value (RSV index).

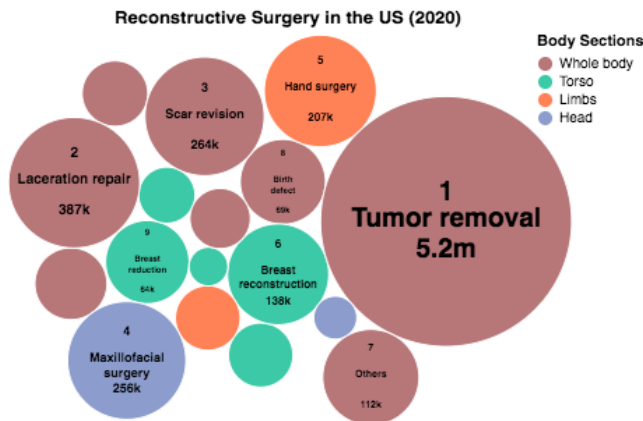


Figure 3. Reconstructive procedures

I used packed bubble (Figure 3) since packed bubble is best to show quantitative value (counts) for different categories (body sections). It allows users to compare and find the most reconstructive procedure (largest bubble).

The mark used is area, the channel used are area for quantitative value (counts) and colour hue for categorical value (body sections).

I used an area chart (Figure 4 and 5) as area chart is best to show datas with multiple categories (procedure) and how the quantitative value (counts) changes overtime. It allows readers to see the overall yearly trends and trends of each individual procedure using the drop down select filter. I chose to only show the top 5 procedures to not crowd the chart. The top 5 procedures make up 92% of the whole so it won't make much difference on the overall trend vs using all procedures.

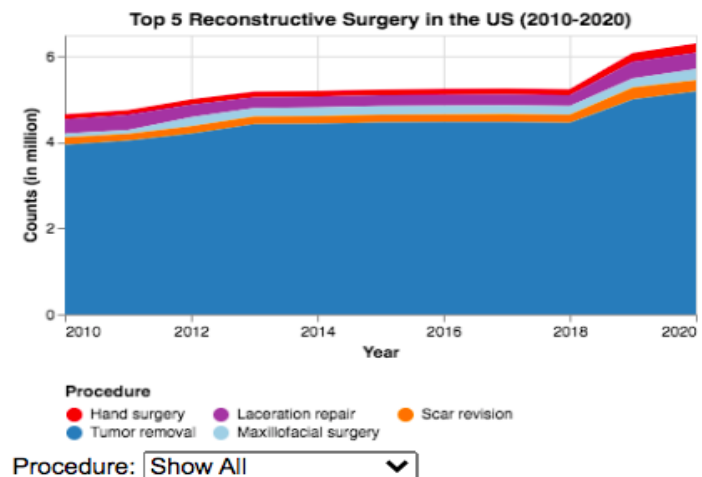


Figure 4. Reconstructive surgery trends

The mark used is area, the channels used are colour hue for categorical value (procedure) and height for quantitative value (counts).

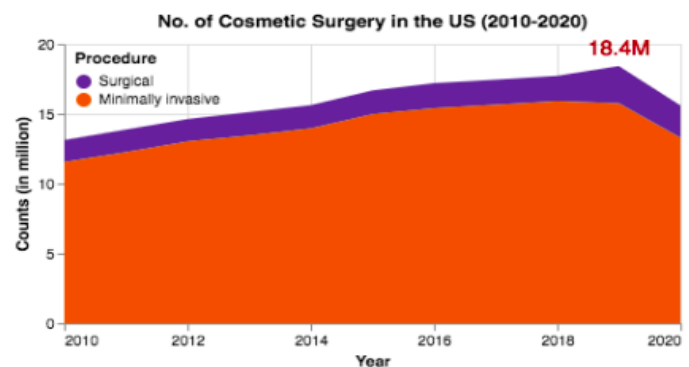


Figure 5. Cosmetic surgery trends

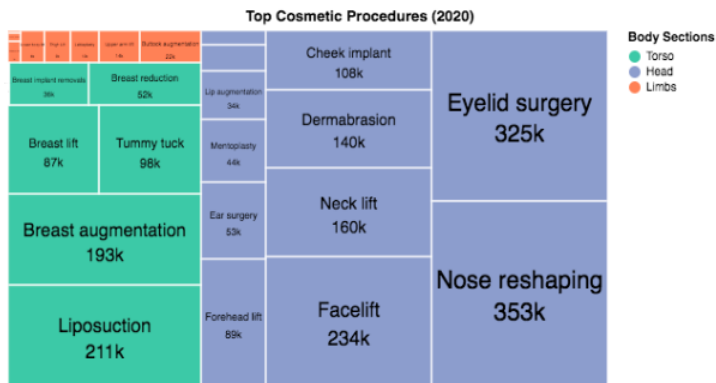


Figure 6. Cosmetic procedures

The mark used is area, the channels used are colour hue for categorical value (body sections) and area for quantitative value (counts).

I chose a tree map (Figure 6) since it's a parent-child relationship (parent: head, torso, limbs) (child: nose reshaping, etc). It allows readers to find the top cosmetic procedure (largest area) and understand the distribution of each procedure and body section.

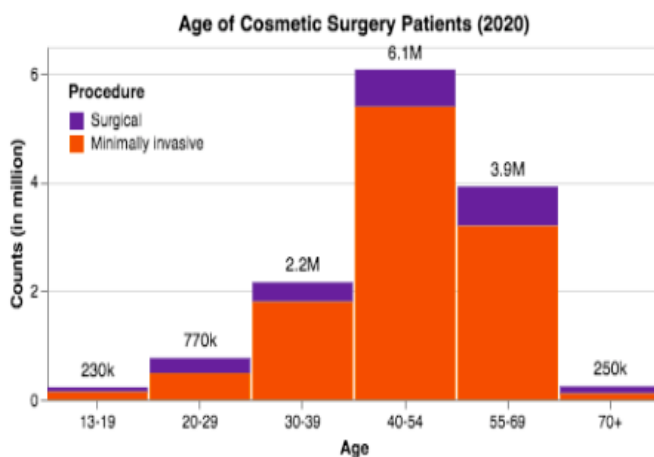


Figure 7. Age distribution of cosmetic surgery patients

I used a stacked histogram (Figure 7) since a histogram is used to show distribution. It allows readers to see the age distribution of cosmetic surgery patients, lookup values, and find the minimum and maximum age.

The mark used is line, the channels used are colour hue for categorical value (procedure), spatial region, and length for quantitative value (counts).

I used a pie chart (Figure 8) since it's a part to whole relationship. It allows readers to see the percentage of male/female patients.

The mark used is area, the channel used are angles, colour hue for categorical values (gender), and area for quantitative values (percentage).

**Cosmetic Surgery Patients in the US (2020)**

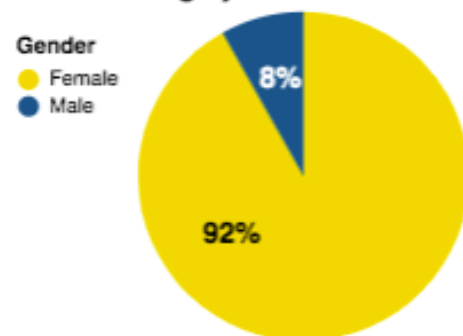


Figure 8. Cosmetic surgery patients gender

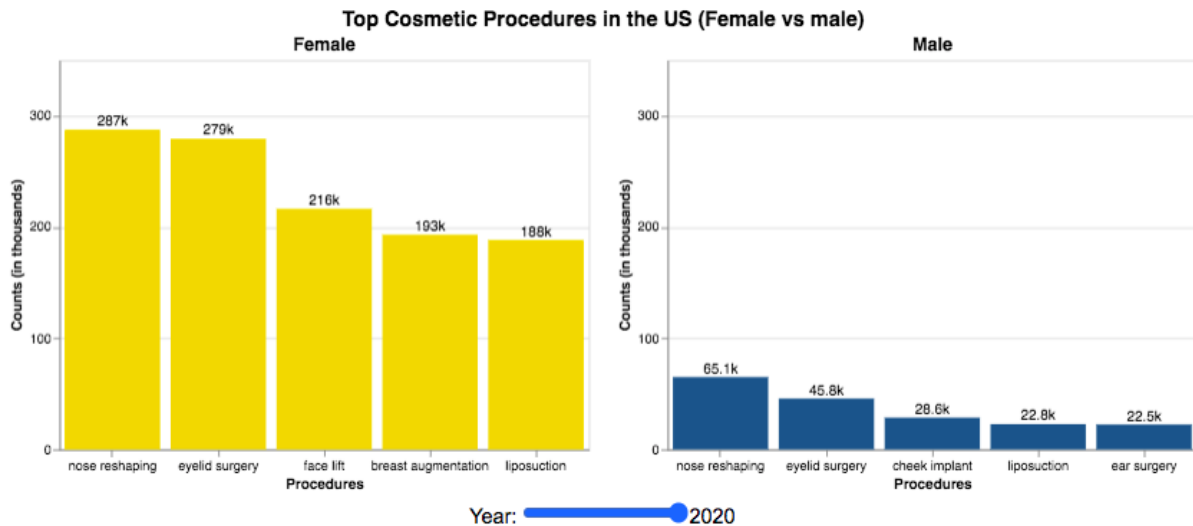


Figure 9. Female & male cosmetic procedures

I chose bar chart (Figure 9) as bar chart is useful to show comparison, allow readers to compare, look up counts of each procedure. There's a year slider to look at yearly changes.

The mark used is line, channel used are spatial region and length for quantitative values (counts).

## DESIGN

### LAYOUT

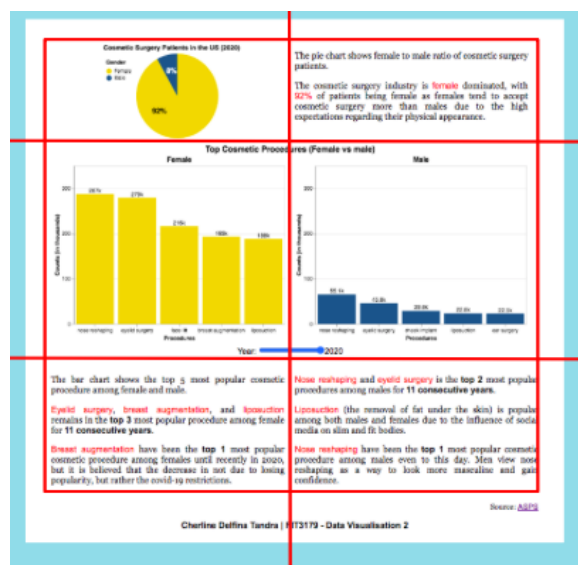


Figure 10. Dashboard layout

I centre aligned the visualisations and justified text to create imaginary closure. The texts are 1 or 2 columns with the same width to make it uniform. The sight lines are minimal (red lines, figure 10) to stabilise and enhance the layout so it looks neat, more pleasing to the eye. The heading is centre aligned to create symmetry. I separate the page into 5 containers so it won't be too long. The visualisations are arranged evenly to ensure balance. I filled the dashboards with enough visualisation and text so it has minimal white space but not too crowded.

## **COLOUR**

I chose a light blue background, not too dark so the visualisation will stand out, but not too bright that it'll merge with the white page. The heading is white and the subheading is blue to make it stand out. The text body is black, with colourful text and red annotation to show important information.

I used contrasting colours for different categories (ex: purple for surgical, orange for minimally invasive) so it's easily distinguishable. I used yellow for female, blue for male as to not use the stereotypical pink-blue. I used the same colour hue for the same item throughout all the visualisations and texts to not confuse readers and allow readers to easily identify the item (ex: yellow for female).

## **FIGURE GROUND**

I used blurriness and colour contrast to distinguish figures from ground and create visual hierarchy. The visualisation is colourful with white page background to make the visualisation stand out. The header background is dark and blurry while the header is white and sharp, creating contrast, first thing readers see.

## **TYPOGRAPHY**

I only used 2 font styles: Arial and Bebasneue to keep it simple. Bebasneue for the heading to make it stand out, Arial for the texts as it's readable. I create hierarchy by variation in typography. Large font size, bold, all capital letters for the heading to make it stand out, first thing readers read. The subheading has smaller font size than the heading, all subheadings have the same typography to make it uniform. The title and legend title for the visualisation is black and bolded to emphasise it, the axis title has the smallest size to tone it down.

The heading is centre-aligned, the subheadings are left-aligned, and the text body is justified to create balance and slight variation to make it look more eye-catching.

## **STORYTELLING**

I separate the page into 5 containers on different sections (intro, overall plastic surgery, reconstructive surgery, cosmetic surgery, and age distribution). It's neatly organised so it'll be easier for readers to look up information. There's also text for each visualisation that explains the data and red text annotations to show important information.

## REFERENCE

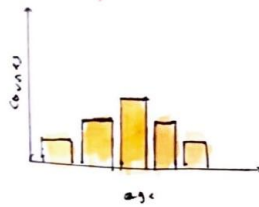
ASPS (2020). Plastic Surgery Statistics. Retrieved from  
<https://www.plasticsurgery.org/news/plastic-surgery-statistics>



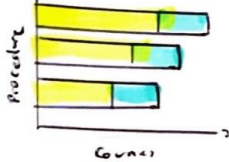
# APPENDIX

## IDEAS

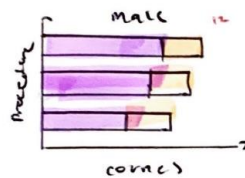
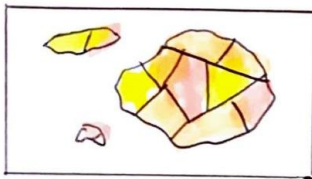
\* Age



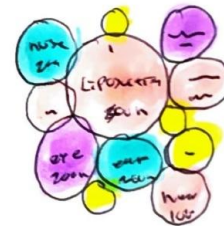
\* Gender Female recombinant vs controls



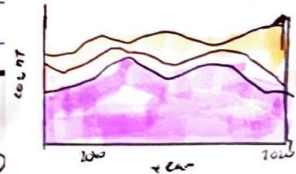
\* Demand



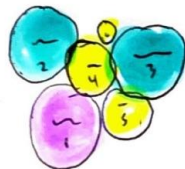
TOP customer: C



\* Procedure counts



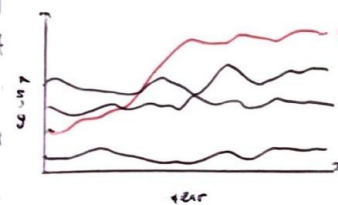
\* Top recombinant



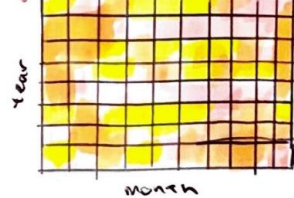
TOP procedure



\* compare vs other countries



\* Demand: test month



\* Demand vs count



\* Demand vs weather



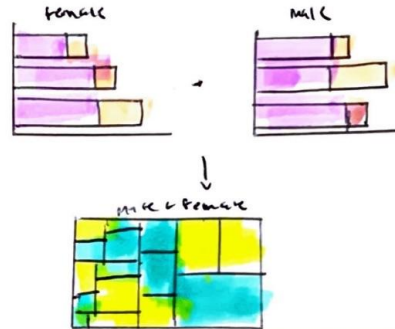
## FILTER

1, 12, 14, 15, 16, 17, 18

## CATEGORIZE

Age  
Gender  
Procedure  
Demand  
Overall trend

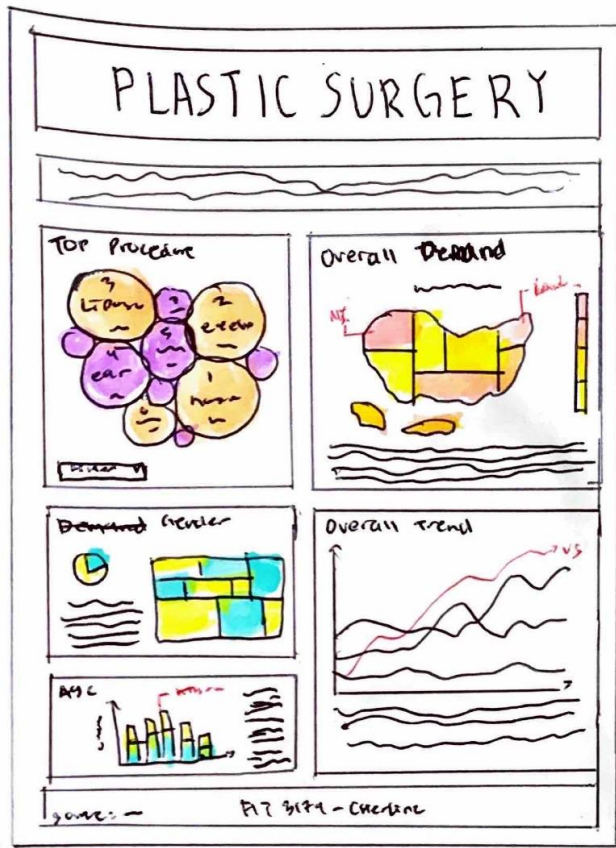
## COMPARE & REFINE



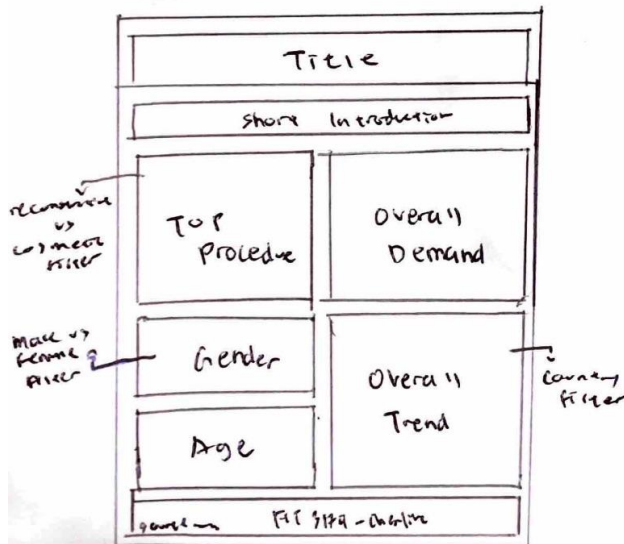
## QUESTIONS

- Does showing the data by Age, gender, Demand, Procedure, overall trend answer the users' question?
- Is it possible to do these ideas in Vega-Lite?
- Is there too much colour in the visualization (too colourful) that it will confuse readers?

# LAYOUT

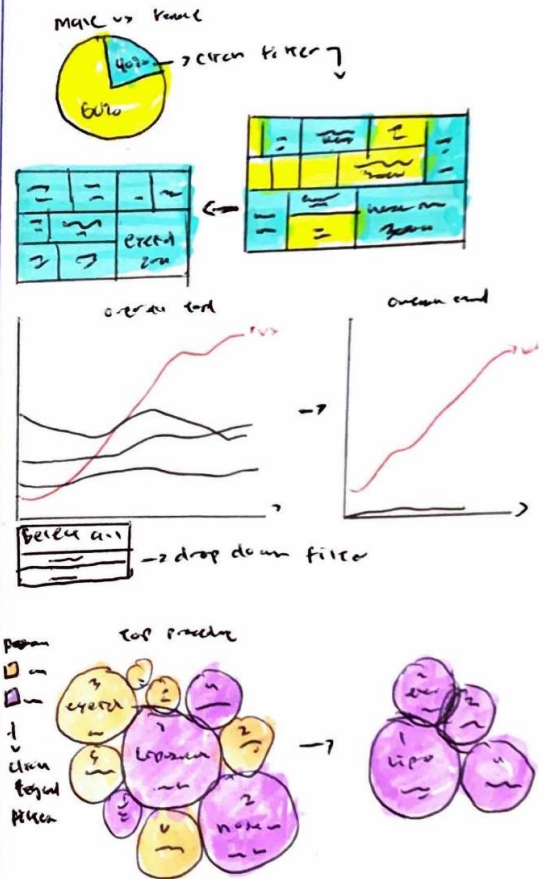


## FOCUS



Title: FIT 3179 - Data Vis 2  
 Author: Cheerline Delfina Tandra  
 Date: 17 Sept 2022  
 Sheet: 02

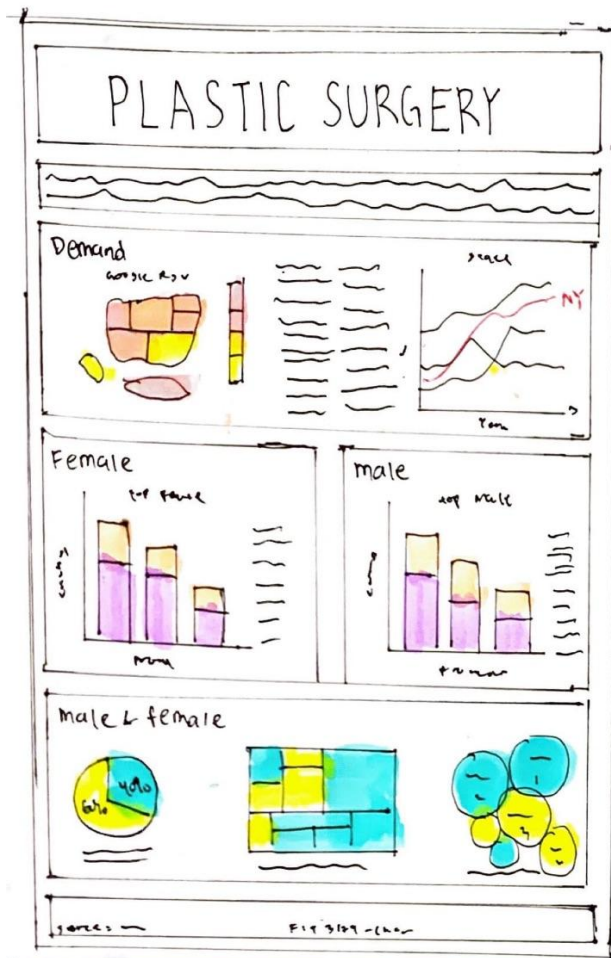
## OPERATION



## DISCUSSION

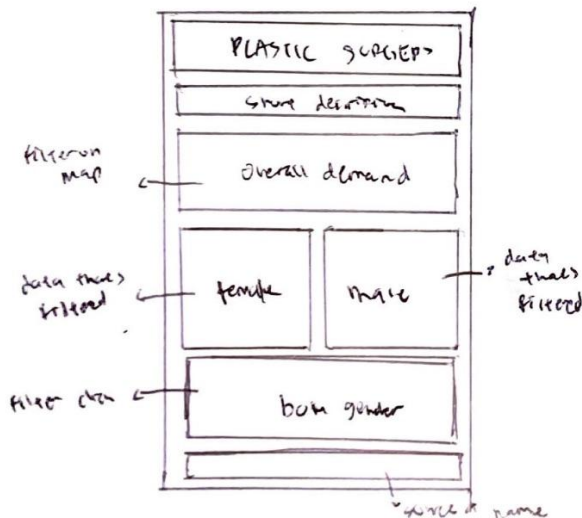
- \* Uniform color throughout visualization
- + Legend & drop down select filter to make it interactive
- \* Simple clean container layout based on categories for easier navigation
- \* Try to use less color to make it not confusing

# LAYOUT



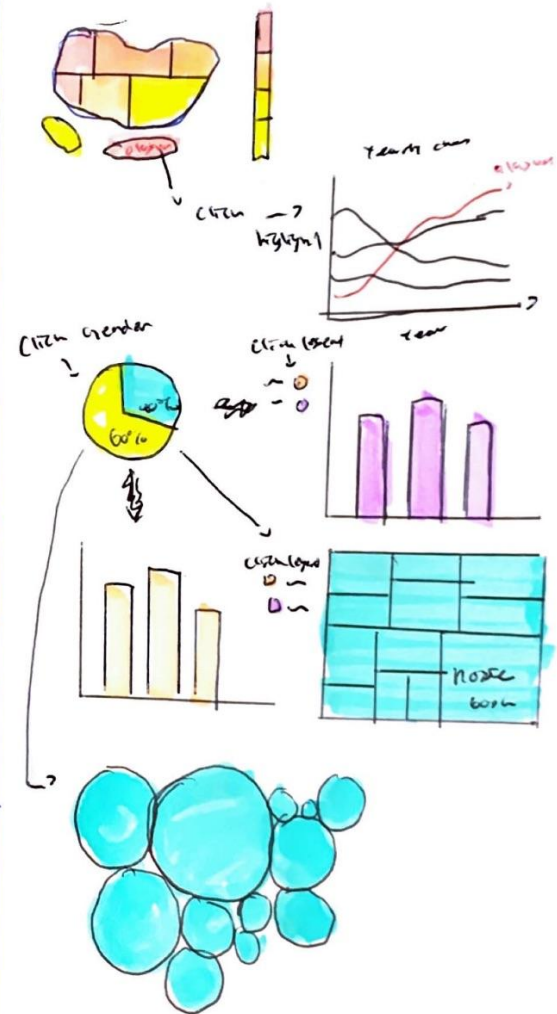
## FOCUS

\* focus is on Gender



Title: FIT 3179 - Data Vis 2  
 name: chertine Delfina Tandem  
 Date: 17 SEPT 2021  
 sheet: 03

## OPERATION



## DISCUSSION

- \* uniform colour throughout dashboard
- \* filter on map & pie chart
- \* simple & clean & container layout, center & justified aligned
- \* use minimal colour to make it less confusing
- \* use light page background & dark title background to emphasise



# PLASTIC SURGERY

The first section, titled 'PLASTIC SURGERY', contains three hand-drawn diagrams. The first diagram shows a vertical strip of yellow and pink blocks, a yellow and pink irregular shape, and a pink oval. The second diagram shows a yellow and pink irregular shape. The third diagram shows a yellow and pink irregular shape.

## RECONSTRUCTIVE

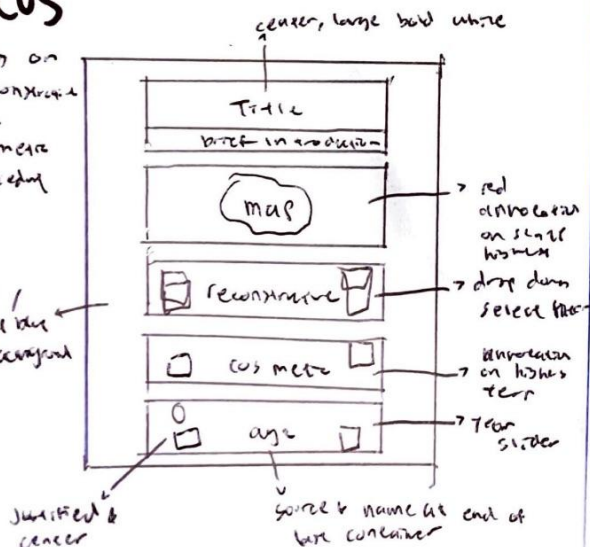
The second section, titled 'RECONSTRUCTIVE', contains two hand-drawn diagrams. The first diagram shows a cluster of yellow and pink circles. The second diagram shows a yellow and pink irregular shape.

## COSMETIC

The third section, titled 'COSMETIC', contains two hand-drawn diagrams. The first diagram shows a yellow and pink irregular shape. The second diagram shows a yellow and pink irregular shape.

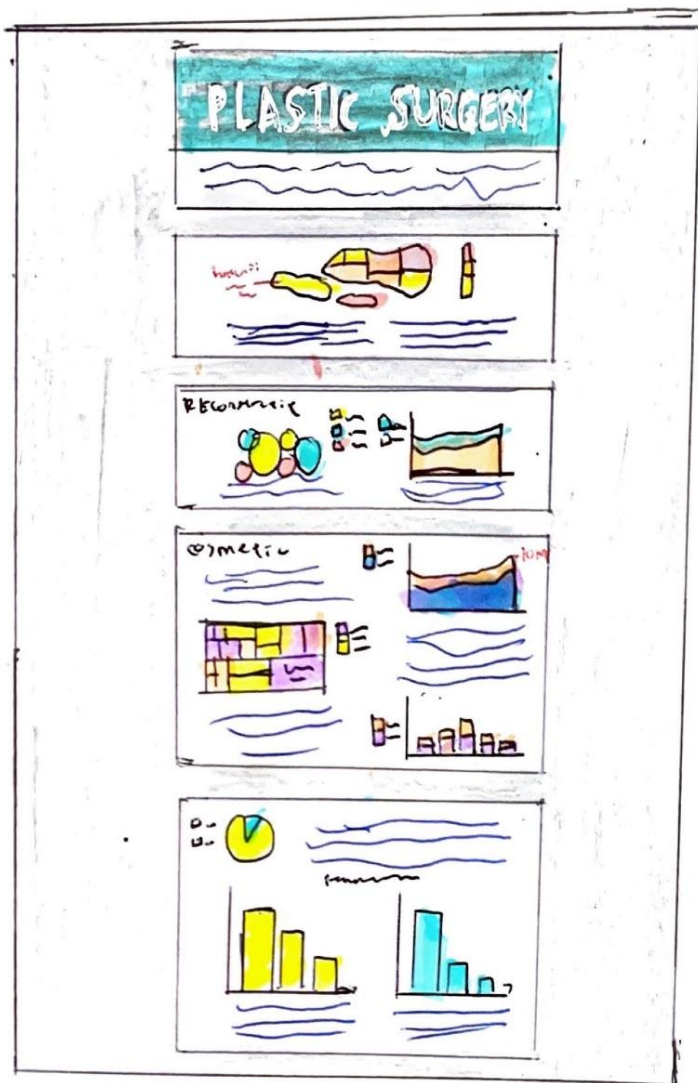
The fourth section contains two hand-drawn diagrams. The first diagram shows a yellow and pink irregular shape. The second diagram shows a yellow and pink irregular shape.

3001 /  
light blue ←  
background



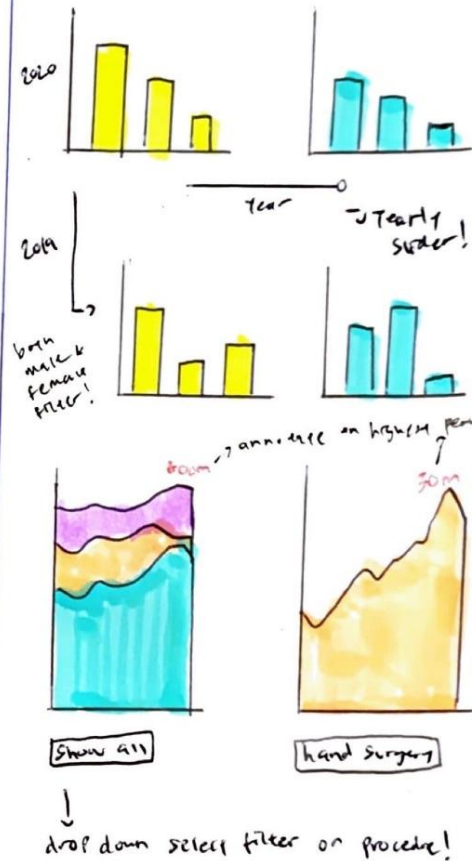
\* red annotation, bold!

# LAYOUT



Title: FIT 3179-Data VIS 2  
 Author: Chertine Dettin Tandin  
 Date: 17 Sept 2022  
 Sheet: 05

## OPERATION



## DETAILS

### >> software

- Vega
  - Vega-lite
  - HTML
  - CSS
  - Git HUB
- save all files inc. HTML

### >> dependent

- DB

### >> Estimated time

<del>Task</del>	time taken
• Tidy dataset	: 2 days
• Create visualisation	: 1-2 weeks
• Write text	: 3 days
• Create interactive	: 1 week
• create HTML page	: 3 days

### >> Dataset

- US plastic surgery (ASPS) American Society of Plastic Surgeon