The Secrets of Graph behind Observations and Counts

CSE5544

Midterm Report

October 23, 2022

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Checkpoint 1

B.

The invariant: Date, Time

The number of components: three -- Location, FoodType, Attribute

The level of organization of the components: qualitative

The length of your components: 3

C.

The marks: lines, points

These two simple marks help me to build a macro circle representing seven days, and various channels represent other valid conditions inside this figuration.

The channels: color, circle, length, angle, position

I pick up many kinds of channels to represent my eating time in a week, with food type and eating condition (alone or with friends). The different shapes and lengths of my line segments represent where I am when I eat my meal in seven days. The two colors of the circle represent my condition when I am eating. The uppercase of five letters means the kind of food I choose for that meal. They are qualitative.

The reason I choose these marks and channels are:

1. Image the macro shape mimicking the clock circle to represent seven days.
2. Line segments help me to create seven lines to represent different days.
3. Various positions on each seven line represent my eating time in a day.

D.

Elementary question: What kind of food did the person choose for the first meal on Monday?

Intermediate question: How many times to eat with friends in one week?

High-level question: Does this person have relative health and orderly eating habit?

Checkpoint 2

B.

The invariant: Date, Time

The number of components: three -- tools, location, length of use time

The level of organization of the components: qualitative, quantitative

The length of your components: 3

C.

The marks: lines, points

These two simple marks help me to build a seven lines graph representing seven days, and various channels represent other valid conditions on each line.

The channels: color, circle, triangle, length, position

I pick up five channels to represent my study tools using time in a week, with my location and external devices. The different colors represent what kinds of tools I use in seven days. The circle and triangle represent my condition when I use tools. They are qualitative except for the length of time (quantitative).

The reason I choose these marks and channels are:

1. Image the seven lines ordered to represent seven days in a week.
2. Line segments help me to mark the whole point in one day.
3. Various colors with attributes show my study tools using conditions at a specific time.

D.

Elementary question: What kinds of tools did the person use on Friday after 11 pm?

Intermediate question: Which tool does the person use the most in a week?

High-level question: Why does the person use that tool most of the time in a week?

Checkpoint 3

B.

The invariant: Date, Time

The number of components: two -- Transportation, Mood

The level of organization of the components: qualitative

The length of your components: 2

C.

The marks: lines, area, point

These two marks help me build a 5 \* 7 matrix representing seven days and various channels representing other valid conditions on each grid.

The channels: color, circle, length, shape

I pick up four channels to represent my transportation methods in a week with my mood. The different colors represent what kinds of tools I take in seven days. The circle and various shapes of lines represent my mode when I use tools. They are qualitative.

The reason I choose these marks and channels are:

1. My transportation times do not express five times a day.
2. Colored grids easily identify what kinds of tools I take in one week.
3. The area inside a grid has enough space to represent my mood with a small shape of the image created by circles and lines.

D.

Elementary question: What tools did the person use on Friday night?

Intermediate question: Which transportation tool does the person use the most in a week?

High-level question: Why does the person use that tool most in the week?

Checkpoint 4

B.

The invariant: Date, Time

The number of components: three

The level of organization of the components: qualitative, ordered

The length of your components: four

C.

The marks: lines, area, point

These two simple marks help me to build a seven lines graph representing seven days, and various channels represent other valid conditions on each line.

The channels: color, length, shape

I picked up three channels to represent the computer's power (the computer that I was using) in a week with my location. The different colors and positions of color represent how much dump energy I leave in a specific whole point in seven days. The various shapes of lines and areas represent my location and charging condition when I use the computers. They are qualitative.

The reason I choose these marks and channels are:

1. The time I use computers is not solid in one day.
2. The battery shape is easy to distinguish how much energy the computer I use left.
3. The shapes on the top of each battery mean which computers I use without hiding the energy condition.

D.

Elementary question: How much energy does the computer have on Friday night?

Intermediate question: How many times does the user charge her computer in a week?

High-level question: Why does the person just need to charge her computer fewer times a week?

Checkpoint 5

B.

The invariant: Date, Time

The number of components: three

The level of organization of the components: qualitative, ordered

The length of your components: three

C.

The marks: lines, area, point

I create seven separate graphs to record one week's weather.

The channels: color, length, circle

With my mode and condition, I picked up three channels to represent the weather in a week. The different colors and shapes of the graphs represent how the weather in seven days. The various color lines and circles represent my mood and the average temperature daily. They are qualitative.

The reason I choose these marks and channels are:

1. The weather in a day does not change much in my location that week.
2. My mood may affect by the weather every day.
3. The different colors of line segments are distinguishable to record different moods easily.

D.

Elementary question: Which day is it raining in a week?

Intermediate question: How often does the person feel lonely in a week?

High-level question: Is the person outgoing, shy, or too pressured this week?

Checkpoint 6

B.

The invariant: Date, Time

The number of components: three

The level of organization of the components: qualitative

The length of your components: three

C.

The marks: lines, area, point

There are four kinds of music activities I always do in a week.

The channels: color, length, circle

I picked up three channels to represent the music activities I do in a week with my mode and location. The different colors and shapes of the graphs represent what kinds of activities I did and how my mood was during that process in seven days. The various lines and circles represent my location and what time I did these activities. They are qualitative except for the length of time (quantitative).

The reason I choose these marks and channels are:

1. The common music activities that I do are four types in that week.
2. My mood may decide which kinds of music activities I would like to choose.
3. Day and night are more important for music activities to cut the time interval.

D.

Elementary question: Which activity is the least common for this person?

Intermediate question: How often does the person do music activities at night?

High-level question: Why two conflicting moods could appear in the same music activities?

**Task 3:**

The best postcard that I have made is Checkpoint 2 – "A week of study tools use."

The worst postcard that I have made is Checkpoint 1 – "How much time to eat."

Text

Description automatically generatedThe worst part:

In my Checkpoint 1, I use the Uppercase letter to represent the type of food I chose that week, which is easy to read but not a good way to create an image. Furthermore, if the figuration is very large, my black and same-size letter signs will be too hard to distinguish in a different part, which may also confuse people who try to explain my figuration.

Diagram

Description automatically generated

Also, the length of each line segment is not clear enough, and some segments look like they have the same length but have to be different. These two points cause my first graph not to be clear and cannot let others understand what kind of records I want to represent.

Letter

Description automatically generatedThe best part:

In my best figuration, I summarized the wrong experience and used five big different colors to distinguish the study tools I used in a week. Since they stand on seven different lines, which do not have any cross, it is clear to express my key records – how long and what kinds of study tools I used. It is simple but includes valuable and creative ideas in the graph. My other graphs cannot be the best since some of them include more complex channels and marks, but they are not simple enough to express my data records. From my perspective, a simple but useful graph to express data's meaning is the best visualization after reading the book in task one.

A picture containing antenna

Description automatically generated

**Task 4:**

The best Dear Data postcard for me is "Week 12, A week of people," made by Stephanie. Here are my three reasons.

Shape

Description automatically generated with medium confidence

First, the whole postcard is easy to distinguish seven days a week before we read the directions, which means that Stephanie could save space from explaining where is "one week." The time – one week – is their default invariant for each week's postcard.

Second, the circle to express the number of people is simple but valuable to tell the reader how many people appeared at a specific time. The size and color of the different number of people groups look reasonable and apparent in this graph.

Last, the pattern of this graph is easy to understand and explain. The purpose of a visualization is to help people to understand some data quickly and easily. It is easy to find when there are too many in Stephanie's vicinity. If we have other information about Stepanie, we could answer some high-level questions from this graph. For example, why Tuesday afternoon Stepanie is so popular?

The worst Dear Data postcard for me is "Week 02, A week of public transportation," which is also made by Stephanie. Here are my three reasons.

Diagram

Description automatically generated

First, the whole graph is hard to understand. The postcard is small that cannot hold too much information. In the limited information mentioned by Stephanie, it's not clear to verify which day and transport she took in a week.

Second, the dark and light fringe patterns and whole black shapes are too similar to distinguish from each other. It is not easy to find which one is to run, which is to take a train, and which is overground.

Last, the length of the line in this graph has no meaning, which wastes an important element in an image. Since the small circles represent places other than home, the lines are easily recognized as distance and direction connecting between home and other places, as we always find on a regular map.

Hence, this postcard is the one that I feel is the worst one to understand.