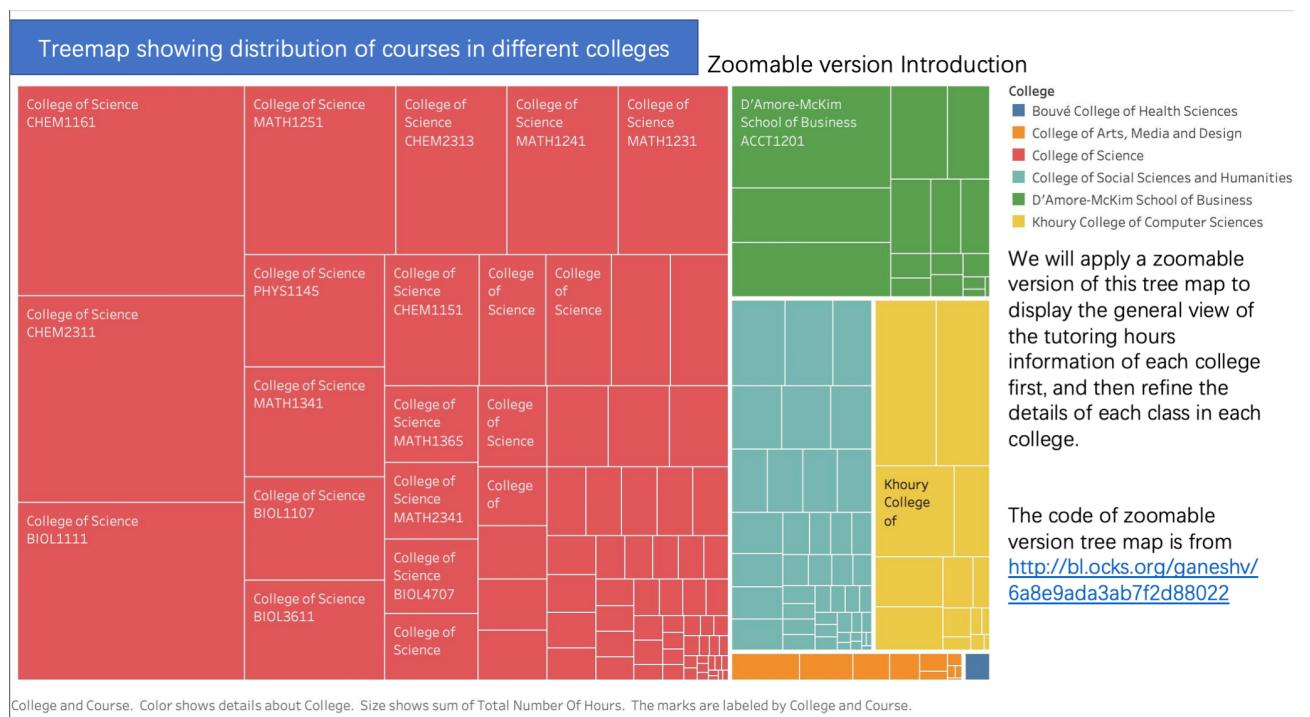
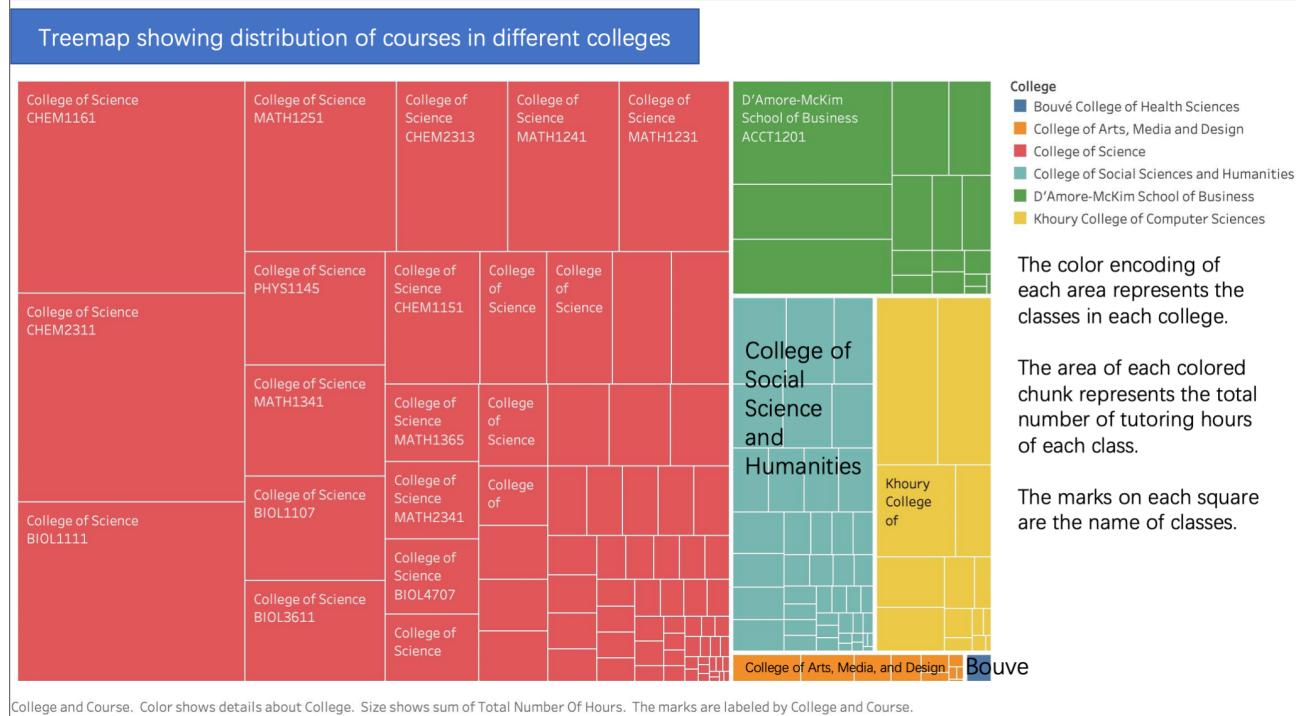


P5 10 PTP Trends

Wenting Yue, Xiaofei Xie, Yuxi Shen

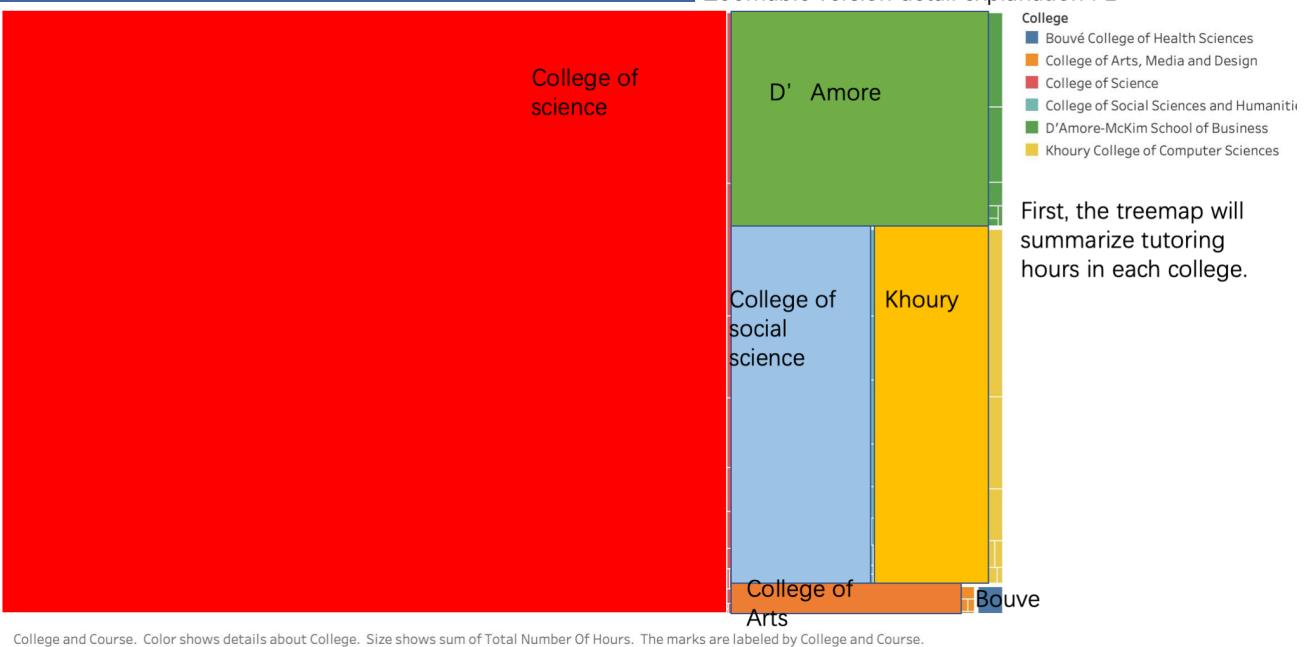
Digital Sketches

- Sketch of interactive TreeMap showing tutoring hours distribution of classes in different colleges.



Treemap showing distribution of courses in different colleges

Zoomable version detail explanation P1



College and Course. Color shows details about College. Size shows sum of Total Number Of Hours. The marks are labeled by College and Course.

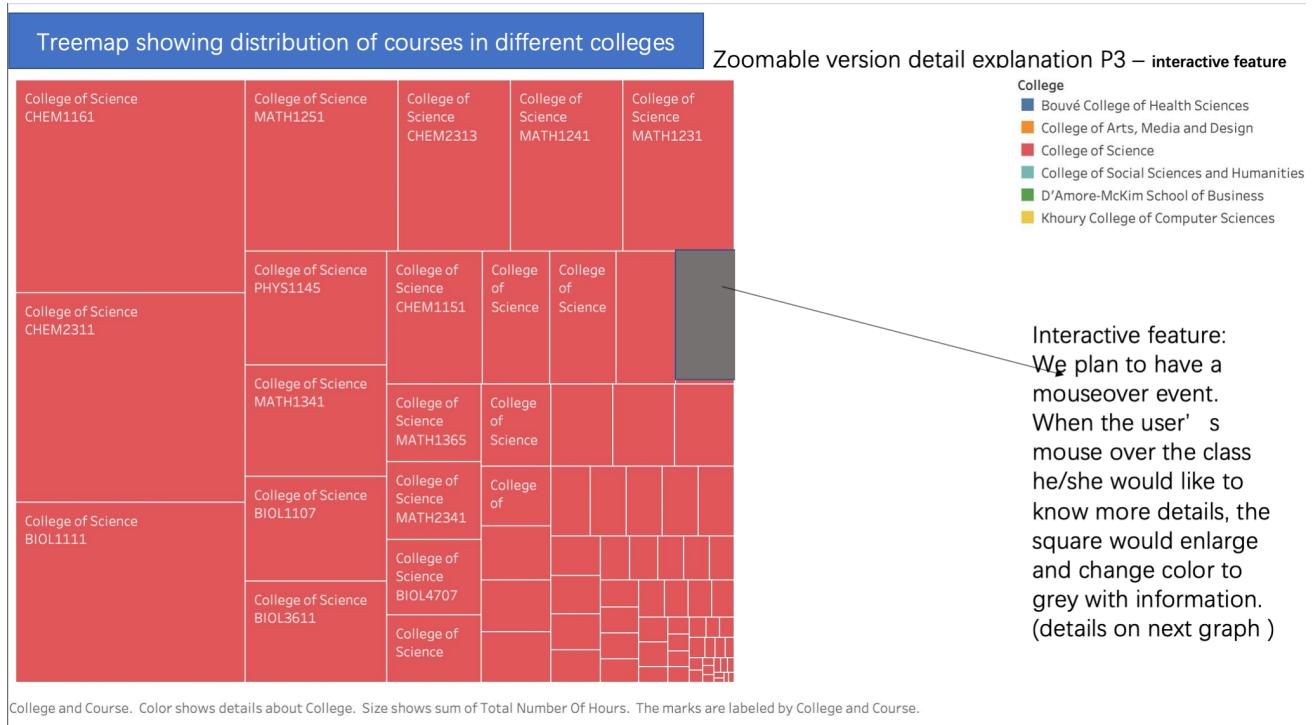
Treemap showing distribution of courses in different colleges

Zoomable version detail explanation P2

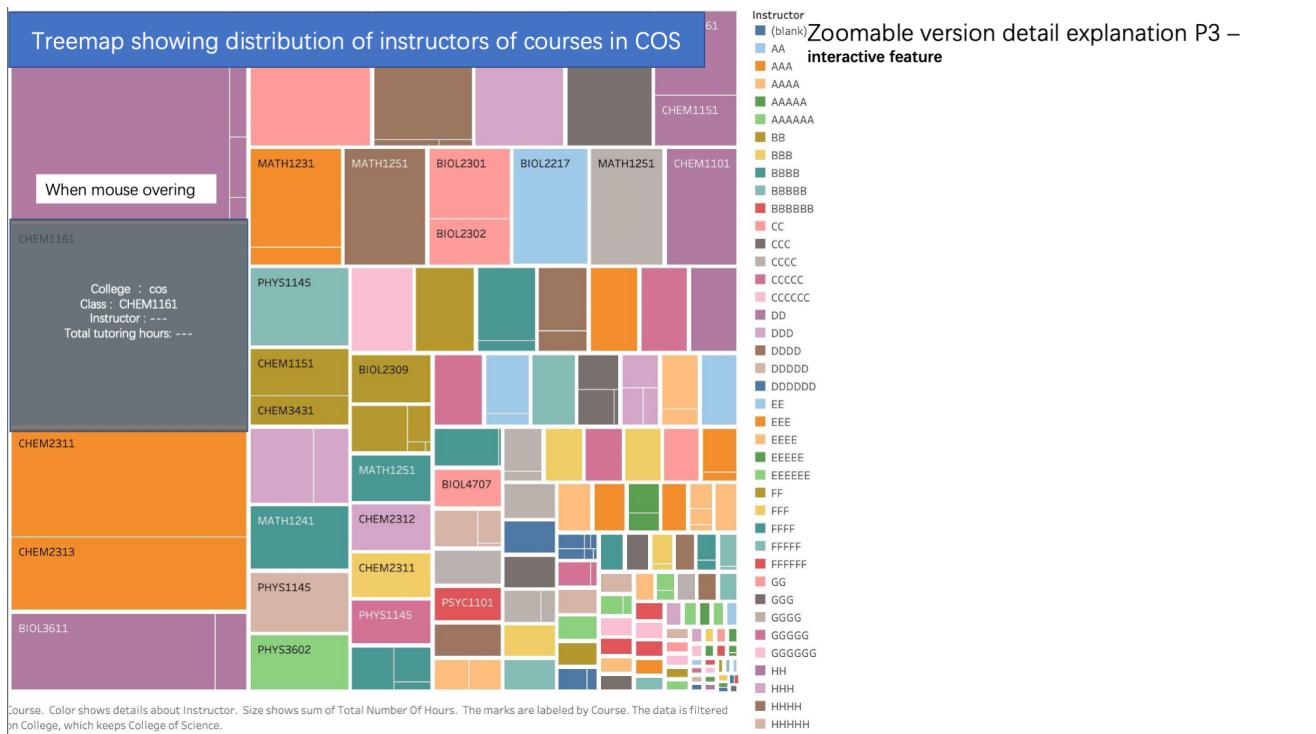


College and Course. Color shows details about College. Size shows sum of Total Number Of Hours. The marks are labeled by College and Course.

When clicking the College of Science square, the user could have a detail view of the distribution of tutoring hours of each course.



College and Course. Color shows details about College. Size shows sum of Total Number Of Hours. The marks are labeled by College and Course.



Explanation:

- The main challenge this sketch seeks to solve is to **show how many hours of tutoring each college takes up per session/hour**, which is a new task we identified. In the meanwhile, this treemap solved the tasks that we planned in P3, including **task3 – Create interaction between user and visualization by showing the relevant information of specific data**, **task4 – Visualizing the instructor information among different classes**, and **task5 – Discover the most popular classes as well**. The low-level task of this task is to summarize

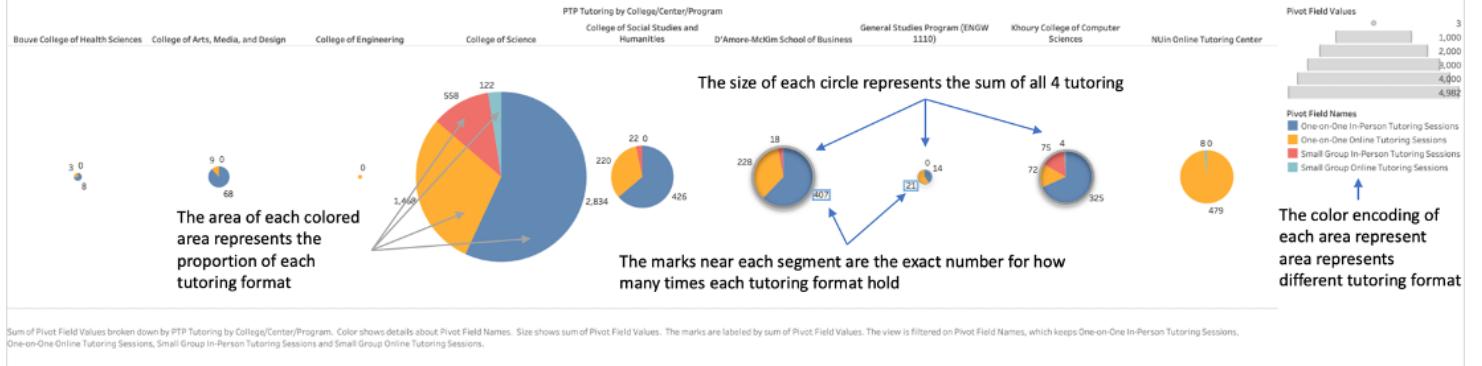
hours of all classes in each college, and the mid-level task is to find the most popular classes in the whole university or a certain college (the classes with the most tutoring hours). Its high-level task is the Discover and Analyze dataset.

- The task we prioritize in this visualization is discovering the most popular class based on its tutoring hours and identifying the instructor information at the same time. Since our application is a Treemap table, it has a complete hierarchy. Our team hopes to break down the dataset containing a large amount of data through this table and show the most outstanding values (courses requiring a large number of tutoring resources) by the size of the area. The dataset also contains information on sections taught by professors, so we also want to be able to show which professor's students in a particular course need more tutoring. Because it also shows how well the students understand the professor's teaching style. If we can get answers to the above questions, we can help PTP organizations better deploy tutors and tutoring sessions to different courses. And in a sense, we can also identify the most popular teachers with the most engaging teaching style.
- Our previous plan delivered the general goal for this dataset which contains instructor information and individual class information. In this current documentation, we decide to explore further the dataset and try to discover the potential needs of our stakeholders and help them forecast the improvements. For example, we determine the interactive methodology for this specific dataset. The reason we decide to apply the zoomable characteristic on this treemap is that we believe the interactivity of this treemap could show various aspects of the dataset. Thus, the treemap is built to explain the dataset from a very high-level overview down through multiple levels of summarization to a fully detailed view of a small part of it.

2. Sketch of types of tutoring sessions in different colleges.

Pie Chart Distribution of Different Tutoring Format for Each College/Center/Program

Preferred Group Format by Each College/Center/Program

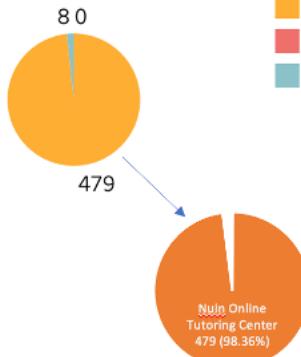
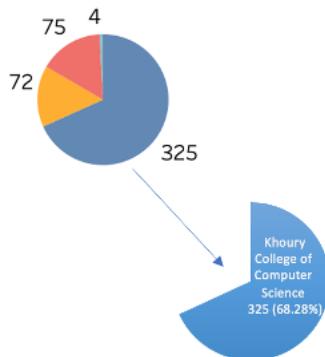


Pie Chart Distribution of Different Tutoring Format for Each College/Center/Program

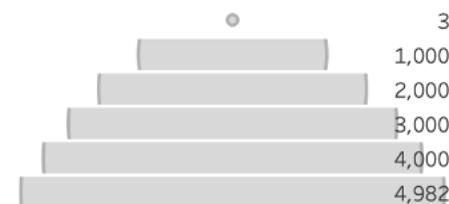
Khoury College of Computer Sciences NUin Online Tutoring Center

When clicking the circle, users can zoom in the circle

Zoomable Version of Each College/Center/Program



Pivot Field Values



Pivot Field Names

- One-on-One In-Person Tutoring Sessions
- One-on-One Online Tutoring Sessions
- Small Group In-Person Tutoring Sessions
- Small Group Online Tutoring Sessions

Interactive Features: We plan to have a mouse over event, when users mouse over the segment, the circle would enlarge and change to a darker color with detail information showed, which include the name of each college/center/program, the number of times each tutoring format have held and the proportion of this segment.

Explanation:

- Our pie chart visualization shows the distributions of different types of tutoring format services among all colleges in Northeastern University, which help to solve task No.2 (display tutor distribution among colleges in each class) that we mentioned in P3. There is no other task we should add since this visualization can only address one task based on the dataset we have.

2. We prioritize the color and size for our design. Different colors represent different tutoring formats, and different sizes represent the sum of all tutors hold that is different from each college/center/program. The bigger the pie size, the more sessions take place. Since the size difference is quite large for different college/center/programs, we implement a zoom-in and zoom-out interaction inside our visualization. The low-level task is to display the percentage of tutors in each college for each college/center/program, and the mid-level task is to scale each circle properly, which make the proportion of each segment clearer, and the high-level task is the discover and analyze dataset based on the visualization and then think about how can we adjust the specific tutoring session to accommodate students better.

3. We transferred the visualization from a stacked bar chart to a pie chart since the pie chart can show the proportion of each tutoring format better than the stacked bar chart. In this way, users can have a clear view of which tutoring format uses most in one particular college/center/program. And it's better for them to compare one tutoring format to another, and compare the sum of all tutoring sessions among different colleges/centers/programs.

Execution plan

Revise your Execution Plan from P2 according to your new sketches.

1. Make a list of all the visual encodings (visualizations/plots/charts) you will need to create for your final project.
 - Treemap: The Treemap is encoded by the area mark and color channel. The area of each rectangle represents how many tutoring sessions of each course in each college. Each college is declared by a distinct color. The area of each course is comparable within the college and across the college, roughly showing the percentage of sessions for that course.
 - Pie chart: The Pie chart has the area mark and color channel. For each college, the pie chart shows the percentage of the session taken in each type of tutoring. The size of the pie represents the total number of tutoring sessions in that college. The bigger the pie size, the more sessions take place. The pie charts exhibit horizontally to highlight the difference in the size of the pie chart for different colleges. Each type of tutoring has a different color so that users can compare the how many percentages of each type of tutoring for in different colleges.
2. Make a list of all the interactions and interactive components (e.g., brush/link, zoom, highlighting, filtering, etc.) you will need to implement in your final project.
 - treemap: zoomable when clicking a specific block of college, and then shows the distribution of each course. If we click further, then shows the distribution of the instructor of each course.
 - treemap: highlighting the square when the mouse over a specific grid and showing the related data information of that square.
 - pie chart: zoomable when users mouse over the segment, the circle would enlarge and change to a darken color with detailed information shown, which include the name of each college/center/program, the number of times each tutoring format have held and the proportion of this segment.
3. Annotate and organize which items are required/necessary for your final project, and which items are “nice to have” items. (This will help you prioritize your execution plan.)

Necessary to have:

 - interactions of showing the detailed data information when clicking.
 - Highlighting when click by changing colors and enlarged

Nice to have:

 - filtering features, for example, if the user doesn't want to compare the tutoring sessions between each college but only analyze all colleges, the user can filter the college or type of tutoring.
 - Zoom in or out on the chart: enlarge the chart from 100% to 200% or reduce it from 100% to 50% if the user wants to see the chart in more detail.
4. Please also include a short paragraph summarizing how you plan to implement your visualization and whether you will be using any particular libraries or APIs.

Firstly, we would like to preprocess the data to a format that is more usable and convenient for visualizing. We have to filter the features which would be used for encoding, for example, using sessions as the measure instead of hours. Especially for encoding the pie chart, we have to pivot the dataset. We plan to do it on python using the pandas library then export it to the final organized dataset. Then, we would use the d3 library in javascript for creating the treemap and pie charts and any interactions.

5. If your project requires server-side components — e.g., to run a model and provide a REST API for the results — make sure to list the requirements here.

Our project does not need server-side components to be run.

Revised Group Charter

Now that your group has had a couple of weeks to work together, please meet as a group and re-visit your group charter.

Group Purpose

We all have passion on contribute to our campus and we all heard about PTP before, so we form our group of three people. The purpose of our groups is to help visualize the data about peer tutor population distribution among all colleges and different classes. Our stakeholders are the leader of PTP and the whole student organization. This organization would need our visualization to set effective strategies to organize the peer tutor resources and to assign them into different classes groups. Our intended users might be the student organization leaders and the coordinators, who expect to gain meaningful insights from our visualization.

Group Goals

Our group's project is to create a data visualization for Northeastern's Peer Tutor Programming to help Nicole Wang and her teams gain useful insights. When conducting this project, we will have frequent communications with our partner Nicole, and we will hold group meetings every week to make some progress on our project. Our quality goal is to create a useful, accurate, and easily understandable data visualization model to help our stakeholders. We are collectively aiming for a top grade in this course, so all of us will try our best to perform well. We are all willing to commit enough time to this project, and willing to maintain our curiosity toward the dataset and the passion for this project.

Group Member Roles/Responsibilities

Wenting Yue is the Communications Director. She will meet Nicole Wang throughout the semester to make sure we are on the right path of the project and what she desired for the outcome. Wenting would inform any advice or updates from our partner to other group members, and reach out to the professor when we have any confusion. Xiaofei Xie is the meeting facilitator. She will schedule the meeting and prepare for any discussion. Also, Xiaofei would make sure group members know the project progress and what we expect to do for the next phase. Yuxi Shen would be the group leader. Her responsibility is to track the quality of the works, identify any possible problems, and separate the works to each group member in a reasonable way.

Ground Rules

- Meeting frequency: At least one virtual meeting per week.
- Norms and ground rules of our group:
 - Every team member contributes to the project fairly.
 - Every team member stays mentally and physically present.
 - Let everyone participate.

- Listen with an open mind.
 - Think before speaking.
- Conduct discussions and make decisions:
 - Our team enables everyone to speak out their ideas, and every decision would be consented to by the whole team. If team members have dissenting views, we would listen to the team leader.
- Participation:
 - We create a WeChat group to share each member's progress and to do brainstorming and discussion.
 - As the project develops, it is expected that each one would contribute to the GitHub pages of this project.

Potential Barriers and Coping Strategies

- Given that we are all second-year students and are looking for first coops, we all have tight schedules. Sometimes, maybe there are conflicts between our schedules which makes it hard to set a meeting time weekly. To solve this problem, we will set a potential default weekly meeting time. If someone has to be absent from this meeting, this team member should let the other two members know at least 1 hour before, so we could settle down another time to meet.
- It is a common scenario that someone in the team has to handle more than the others, so we would like to
 - Break down projects into smaller tasks and workstreams
 - Split the workload as same as possible
 - Ask for help from others(TAs, professors, team members) when it is out of capacity

Group Charter Follow-up

We have all been abiding by our agreed-upon guidelines. We agreed on our group goals and understand the purpose of the project and our responsibility for the partnership with the peer tutoring program. We all feel comfortable with the group roles and each member follows the responsibility of her role to make sure the efficiency of the group works. We always have closed discussions and brainstorming for each part of the project. If there is any conflict on the ideas of the project, we keep our respect for different opinions and have discussions to find the proper solution. We haven't found any problems we need to troubleshoot yet. We have nice conversations, regular meetings, and each group member finishes her part on time in high quality. If there are any possible problems in the future, we would address the problems by finding alternative ways to make sure we can meet the requirement if there is an emergency for any group member. For example, if a group member cannot finish her part on time due to any enforcement, other group members can re-schedule works to see how to cover the left parts.