**5. Evaluation**

**1.1 What Went Well**

Our team has achieved significant milestones in collaborative research projects, particularly in leveraging R programming to address data visualization challenges. Despite the potential challenges posed by differing laboratory schedules, effective communication and coordination were seamlessly achieved through meticulous planning and the strategic use of collaborative tools.

One of the critical tools that underpinned our workflow was Trello, which served as the backbone of our planning and task management processes. From clearly defining project milestones to assigning responsibilities and establishing deadlines, Trello enabled us to maintain organization and focus. By delineating individual tasks, we ensured that each team member had clear ownership of their responsibilities while collectively contributing to the overarching goals of the project.

GitHub was equally instrumental in the success of our project, providing a robust platform for the development, testing, and refinement of our codebase. Through diligent repository management, we avoided code conflicts during merges, ensuring that our repository remained clean, functional, and well-documented. Every contribution was carefully reviewed and integrated with feedback from team members, exemplifying our collaborative synergy even when working remotely.

The project was a testament to the collective efforts and diverse skill sets of the team. Each member brought unique expertise that not only enhanced the quality of the code but also contributed to a technically superior and visually compelling output. Challenges encountered throughout the project were met with a proactive and solution-oriented mindset, fostering an environment of growth and learning.

In summary, this project highlights our ability to balance technical complexity with effective teamwork. It underscores the importance of meticulous planning, clear communication, and a shared commitment to excellence, all of which were pivotal to our success.

**1.2 Points for Improvement**

While the project overall ended up as a good success story, certain points surely provided an avenue for improvement:

**Time Conflicts**

Aligning meetings among team members to non-existent lab hours would remain one of the greatest challenges. However, most of this was bridged by the virtual discussions held within Google Meet. That flexibility with using virtual meetings made possible scenarios where team members could connect from different locations and discuss critical aspects of the project. It might still be quite little with time overlaps, making some final decisions slow. In future projects, we may augment this system even further to help bring everyone up to speed by recording the Google Meet sessions for those not present, or by centralizing shared documentation on meeting notes.

Slack, which had been primarily used for tutor communications, could create a whole new layer for communication and support - something that would allow us to get inputs or feedback quickly, clear up doubts, or share updates with tutors. A future vision would expand Slack even more to include asynchronous teams discussion or even some shared channels to add another layer of communication with Google Meet, as it would also suffice for some settings.

**Initial Learning Curve**

R programming had one of the most steep learning curve, and the visualization libraries posed the most challenge to some of the team members who have been introduced to those tools. It caused a slowdown, even though, like magic, the group eventually adapted through personal efforts and support from the colleagues. The tutors on Slack helped to address many technical queries, but it could have been more proactive in addressing the learning curve with dedicated workshops or collaborative coding sessions scheduled earlier into the timeline of the project. Curated resources such as an already gathered collection of tutorials and documentation shared in team meetings or on Slack would form another effective basis for building confidence among the members.

**Commit Documentation**

GitHub was a very helpful tool to work with in getting the project repository well organized yet commit documentation had some inconsistencies leading to some confuse in it at times. As a team, we were able to take full advantage of GitHub for version control. However, some commit messages actually did not contain sufficient detail about the reasons for making those changes or the context of those edits that makes code review painful. Clear and comprehensive guidelines focused on writing commit messages would better clarify and trace changes.

**1.3 Group’s Time Management**

Our team exercised an excellent manage of time by following the project schedule and milestone achievement dates. The Trello boards which were effective for distributing tasks, clarifying roles, and setting deliverable deadlines were systematic so that all remained on the same page, notwithstanding the differences in the lab schedule. Updates and task watching on the Trello platform gave everyone accountability and shared transparency as we organized ourselves toward our targeted goals.

Some delays were caused by unknown bugs and integration troubles most especially during code contributions merging of bits. Such delays were fairly resolved without them majoring on the overall timeline using collaborative problem solving. Timely communication and decision-making were further strengthened by the use of Google Meet. We could certainly use a buffer period in future projects to enhance flexibility and fortify the team even better in managing its time.

**1.4 Project’s Overall Judgement**

This project successfully achieved all its objectives, delivering valuable research outputs characterized by striking visualizations. The R program we developed is not only highly functional but also user-friendly, effectively and precisely addressing the identified visualization challenges. The visual outputs provide meaningful interpretations of the data while exemplifying the team’s technical expertise and commitment to excellence.

The success of this project was largely driven by teamwork and the strategic use of collaboration tools. Trello provided a structured framework for planning and task management, while GitHub facilitated seamless version control and efficient integration of contributions. These tools, complemented by proactive communication through Google Meet, ensured consistent coordination and productivity throughout the project’s lifecycle. As a result, the final output is cohesive, technically robust, and a testament to both the team’s collaborative efforts and the efficiency of the workflow.