MACQUARIE University
SYDNEY·AUSTRALIA

COMP3850 Project Deliverable Certificate

Name of Deliverable	*Project Plan and SRS/Scoping*
Date Submitted	*30 / 03 / 2023*
Project Group Number	*31*
Rubric stream being followed for this deliverable *Note: the feasibility study has the same rubric for all streams.*	*DATA SCIENCE Rubric*

We, the undersigned members of the above Project Group, collectively and individually certify that the above Project Deliverable, as submitted, **is entirely our own work**, other than where explicitly indicated in the deliverable documentation.

INITIALS	SURNAME	GIVEN NAME	STUDENT NUMBER	SIGNATURE *(IN-PERSON OR DIGITAL)*
TP	*Philip*	*Tabitha*	*46347763*	
CJ	*Johns*	*Cassandra*	*46462457*	*CassandraJ*
LY	*Yates*	*Lachlan*	*45984352*	*L.Yates*
AG	*Gardiner*	*Ava*	*46410961*	*AGardiner*
RA	*Ali*	*Rory*	*45901848*	*RoryA*

List of tasks completed for the deliverable and activities since last deliverable certificate with totals for each individual team member and whole team *(copy individual total row for each member and copy pages if more pages needed)*

Performed by *(Student Names)*	Duration *(hrs)*	Complexity *(L, M, H)*	Name of task	Checked by *(Initials)*
Tabitha Philip	2	L	Research and discussions regarding task	AG
Tabitha Philip	14	H	Creating Gantt chart, work breakdown structure and resources diagrams	AG
Tabitha Philip	2	L	Discussing and writing elements in the Scoping document	AG
Tabitha Philip	1	L	Actioning feedback from sponsors after discussion and review.	AG
Tabitha Philip	2	L	Editing Scoping document and Project plan sections.	AG
Tabitha Philip	1	L	Actioning Feedback from Sponsors	AG
Cassandra Johns	3	M	Reading through a contextual statistical study	TP
Cassandra Johns	11	H	Writing the scoping document	TP
Rory Ali	2	L	Reading contextual study	TP
Rory Ali	5	M	Risk analysis matrix and other Risk organisation plans	TP
Lachlan Yates	1	L	Writing effective change management steps.	TP
Lachlan Yates	1	M	Research and writing of quality assurance processes.	TP
Lachlan Yates	3	M	Research and writing of quality control processes.	TP
Lachlan Yates	1.5	L	Research and writing of tracking i.e. version control and tracking processes.	TP
Lachlan Yates	2.5	L	Writing and reflection of communication methods and processes.	TP
Ava Gardiner	3	M	Researched and Wrote the Introduction and the Organisation Section of the Project Plan.	TP
Ava Gardiner	2	L	Revised and updated the Team Manual, according to the feedback received from Deliverable 1	TP

Ava Gardiner	1.5	L	Read through the Project Deliverable Definition Document for the Project Plan and Scoping to ensure that Deliverable 2 followed the structure of the template exactly. I also read through the SAS Introductory Powerpoint to make sure the document is meeting SAS' project aims and outcomes.	TP
Ava Gardiner	5	H	Edited, rewrote sections and formatted Team Manual, Project Plan and Scoping Document.	TP
Tabitha Philip total	22			
Cassandra Johns total	14			
Lachlan Yates total	9			
Ava Gardiner total	11.5			
Rory Ali total	7			
Team Total	63.5			

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TEAM MANUAL

1. ROLES AND RESPONSIBILITIES (REVISED)

- **PROJECT MANAGER: TABITHA**
  Our Project Manager Tabitha, is responsible for leading the team, planning and organising project resources, and ensuring project goals and objectives are met within the defined scope and schedule. In addition, Tabitha will manage risks, communicate progress and performance, and ensure that our partner organisations are satisfied with project outcomes. Therefore, effective leadership, communication, and risk management skills are essential for the success of our project. Alongside her role Tabitha will facilitate data consultant responsibilities to support the development of data findings, analysis and recommendations.

- **PROJECT OFFICER/CHANGE OFFICER: AVA**
  Ava, our Project Officer, is a crucial member of the team, providing essential support to Tabitha in coordinating and ensuring timely completion of project activities. She will be responsible for monitoring progress, preparing reports, and collaborating with our partner organisation. Working closely with the project team, Ava will play a critical role in ensuring the smooth and efficient execution of the project. In addition to her role as a Project Officer, Ava will also assist Lachlan in Change Management by forecasting/predicting any risk that may happen in the foreseeable future of the project, especially when certain tasks and outcomes change. Mitigating risk and blockages within the project is key to the success of the team and its deliverables.

- **PROJECT OFFICER/DATA CONSULTANT: RORY**
  Rory will assist Ava in the role of Project Officer, ensuring the timely delivery of critical documentation and the coordination of project activities. Additionally, Rory will serve as our Data Consultant, bringing his expertise in data analysis and management to the project. As a Data Consultant, Rory's role will complement Cassandra's responsibilities as a Data Specialist. He will assist Cassandra in developing and implementing data collection processes, analysing data, generating reports and visualisations, and ensuring data quality.

- **DATA SPECIALIST: CASSANDRA:**

Cassandra is our Data Specialist for the group. She will be responsible for collecting, analysing, and interpreting data to provide valuable insights for informed decision-making. Her responsibilities will also include ensuring the accuracy and quality of data and effectively communicating her findings and recommendations to our partner organisation. Cassandra's contributions are critical to supporting evidence-based decision-making and improving the overall outcomes of the project.

- **CHANGE OFFICER/BUSINESS ANALYST: LACHLAN:**
  Lachlan, our Change Officer, plays a critical role in ensuring the efficient management of all changes to project scope, timelines, and deliverables. He will work closely with Tabitha to assess the impact of changes, communicate them to our partner organisation, and mitigate any associated risks to ensure project success. Alongside the role of Change Officer, Lachlan is our Business Analyst (BA) for the group. Lachlan plays an essential role in ensuring the project aligns with the team's objectives and our partner organisations' needs. His responsibilities include conducting research, gathering and analysing data, documenting requirements, developing and implementing solutions, and communicating with our partner organisations. Through his expertise and insights, Lachlan will contribute significantly to the success of the project.

Cassandra is the only team member with specialised knowledge in data science. However, all other team members have agreed to assist Cassandra with collecting and interpreting data, as well as dedicating extra time to learning how to use SAS Viya. This collaborative effort ensures that Cassandra is not isolated with large amounts of technical work, and members are able to effectively contribute to the project.

2. TEAM VALUES

As a team, we hold ourselves to a high standard of professionalism and conduct. Our success depends on how we work together, communicate with one another, and treat each other with respect and dignity. Therefore, we have established a set of values that guide our behaviour and help us achieve our goals.

- **Respect:** We treat each other with respect and dignity, regardless of our differences in opinions, backgrounds, or roles.
- **Communication:** We communicate openly and honestly with each other, listen actively, and strive to understand each other's perspectives.
- **Accountability:** We take ownership of our responsibilities and deliver on our commitments to the team.
- **Collaboration:** We work together towards a common goal, leveraging each other's strengths and supporting each other's weaknesses.
- **Continuous Improvement:** We are committed to learning and growing as individuals and as a team, and we actively seek feedback and opportunities for improvement.
- **Innovation:** We encourage creativity and exploration, and we embrace new ideas and approaches.
- **Trust:** We trust each other's intentions and capabilities, and we act with integrity and transparency.
- **Empathy:** We seek to understand and appreciate each other's feelings, perspectives, and needs, and we strive to support each other's well-being.
- **Flexibility:** We adapt to changing circumstances and challenges, and we are open to new approaches and solutions.

- **Fun:** We create a positive and enjoyable team culture, and we celebrate our successes and milestones together.

By upholding these values, we can build a strong and effective team that delivers high-quality work and supports each other along the way.

3. ACS CODE OF PROFESSIONAL CONDUCT

As professionals in our field, it is crucial that we not only possess the necessary technical skills and knowledge, but also maintain a high standard of ethics and values. Our team must demonstrate professionalism, integrity, and respect in all our interactions and activities, both within the team and with our partner organisation, SAS. By adhering to these values, we can create a positive impact on the wider community and promote the betterment of society. The ACS codes of professional conduct provide us with clear guidelines on how to achieve these goals and ensure that our work aligns with the highest standards of professional conduct.

- **Primacy of the Public Interest:** Members should consider the impact of their work on the public and prioritise the welfare of the public over personal or professional interests.
- **Enhancing Quality of Life:** Members should strive to enhance the quality of life of individuals, society, and the environment through their work.
- **Honesty:** Members should be truthful and transparent in their work and not engage in deceitful or fraudulent activities.
- **Competence:** Members should maintain high standards of technical and professional competence and continuously develop their skills and knowledge.
- **Professional Development:** Members should promote the professional development of their team members and contribute to the advancement of the profession.
- **Professionalism:** Members should behave with integrity, respect, and professionalism in all their professional dealings.
- **Compliance with the Law:** Members should comply with all relevant laws and regulations governing their work.
- **Avoiding Discrimination:** Members should not discriminate against others based on factors such as race, gender, age, religion, or sexual orientation.
- **Privacy:** Members should respect the privacy of individuals and protect the confidentiality of personal information.
- **Ethical Leadership:** Members in leadership positions should promote ethical behaviour among their team members and take responsibility for ensuring ethical conduct within their organisation.

4. PROJECT MANAGEMENT APPROACH

Our project will be a challenging endeavour, requiring a project management approach that is both effective and adaptive. One of the primary obstacles we will face is the constant change in requirements and evolving understanding of the problem. This necessitates an approach that can seamlessly be adaptive to these changes. After careful consideration, we have chosen to implement the Agile Methodology, specifically the Scrum framework approach (Schwalbe & Jonathan Lau , 2018). Scrum provides us with an iterative and flexible framework that welcomes change and can be adapted to facilitate any changing requirements. With the Scrum framework alongside the Agile Methodology, we are able to break down our project into smaller sprints, each with a specific goal to accomplish. This approach enables us to deliver increments of the

final product in each weekly sprint to our sponsor SAS, providing us with frequent opportunities for review and feedback.

The scrum approach also consists of a series of 'artefacts' these include the backlog, sprint planning, (bi-weekly) stand-ups, sprint reviews and the retrospective (DRUMOND, 2023). The backlog contains a breakdown of smaller subtasks within the project which get addressed and tasked in sprint planning. Sprint planning takes tasks from the backlog into the actionable items for the week and it is constantly addressed in bi-weekly stand-ups (one with the delivery partner) to weed out any problems or opportunities that may be encountered (DRUMOND, 2023). A sprint review is held after each deliverable to understand what was accomplished and for it to be signed off by the team leader and lastly the retrospective is a critical review of what did and didn't work well for the deliverables accomplished each week.

5. TOOLS

During the course of our project, we will use the following tools.

- **SAS Viya:** SAS Viya is an analytical data tool that will be used by our team to produce a visualisation of the Zoe Empowers data to conduct a findings, analysis and recommendations report and a presentation that provides SAS with the information they need to assess Zoe Empowers' program effectiveness.
- **Google Docs:** Google Docs will be used to create our findings, analysis and recommendations reports. Additionally, Multiple team members can also work simultaneously with changes tracked and automatically saved.
- **Google Slides:** In the final presentation, our team will use Google Slides to present our overview, methodology, findings, recommendations, and conclusion to our partner organisation, SAS. Additionally, Multiple team members can also work simultaneously as changes are tracked and automatically saved.
- **R Studio:** R studio provides a platform for the development of statistically significant information. Additionally, it provides in-depth ways to develop visual insights and manipulation of data through packages such as, GG-Plot2, Purr and Dplyr. It is an IDE for the programming language and statistical analysis language R. Visualisations will be exported from this to aid in the project deliverables.
- **Jupyter Notebook:** Jupyter Notebook is an IDE for the programming language Python, which has proficiencies in machine learning algorithms and predictive modelling. It may be used if the scope is expanded. It additionally can be used in the same way as SAS Viya and RStudio which provides a breadth of versatility.
- **Trello:** Will be used as a project management tool to visually see what tasks and subtasks are needed to be done in order to meet deliverables by the appointed deadline. Although trello is more inline with the Kanban approach the team will greatly benefit from seeing tasks visually checked off and those awaiting tasking. This is inline with the backlogging methods of Scrum.
- **GitHub:** Will be used to access deliverables and see what files have been modified by which team members. It will also serve as a homepage/ archive for already submitted deliverables throughout the project for quick reference in the future.
- **Discord:** Will be used as a communication channel for the project team. The communication server is broken down into sections that align with general communication, weekly minutes and meetings, reports, resources, team member schedule and an assessments calendar.

6. COMMUNICATION PLAN

Our plan is to hold a meeting once or twice a week. These meetings will be primarily online via Zoom, although there will be a couple of face-to-face meetings at Macquarie University Library during the project's production phase. A Discord server has also been set up to easily communicate and share information about the project. Every fortnight, our team will meet with SAS for 30 minutes online to ask questions, show progress, and receive feedback on the project.

6.1. MEETING SCHEDULE

9:30 am - 10 am on Tuesdays: Meeting with partner organisation, SAS. (Online).
10:15 am - 10:30 am on Tuesdays: Weekly team meeting sprint. (In-person, on campus).

7. CHANGE MANAGEMENT **(REVISED)**

To manage change effectively, the team will follow these steps:

- **Anticipate change:** Keep an open mind and anticipate that change may be necessary throughout the project. Stay flexible and be prepared to adapt to new situations.
- **Communicate the need for change:** If changes need to be made, communicate them clearly to the team. Explain why the changes are necessary and what impact they will have on the project.
- **Involve the team:** Involve the entire team in the change process. Encourage them to share their perspectives and ideas on how to manage the change effectively.
- **Develop a plan:** Develop a plan for managing the change. This may include setting new goals, reassigning roles and responsibilities, adjusting timelines, or other necessary changes.
- **Monitor progress:** Monitor progress closely to ensure that the change is being implemented effectively. Schedule regular check-ins to assess how well the change is being managed and to make any necessary adjustments.
- **Celebrate successes:** Finally, celebrate successes along the way. Recognise and reward team members for their hard work and accomplishments. This can help build morale and maintain a positive team environment.

In addition to these points, it is important to consider how changes to code, data, documents, team members, requirements, approach and process will be managed and what tools will be used to assist with management of each type of change.

- **Code:** Changes to code will be managed by following a version control process that includes identifying the changes, documenting them in a change log, and ensuring that all team members have access to the latest version of the code. Our team will also ensure that any changes to the code are approved by our partner organisation before implementing the updated code.
- **Data:** Changes to data will be managed through version control, backup and recovery, access controls, data validation, and change management processes. These approaches will help ensure that the data is accurate, secure, and consistent over time. All data changes will be properly documented, communicated to the team, and regularly reviewed and updated throughout the project to ensure that the data is accurate and up-to-date.
- **Documents:** Changes to documents will be managed by following a version control process that includes identifying the changes, documenting them in a change log, and ensuring that all team members have access to the latest version of the document. Our

team will also ensure that our partner organisation is informed of the changes and that any necessary approvals are obtained before implementing the updated document.

- **Team members:** Changes to team members will be managed by establishing clear communication channels and keeping all team members informed of any changes to roles/tasking
- **Requirements:** Changes to requirements can be managed by ensuring that they are properly documented and communicated to the team. The team will regularly review and update the requirements throughout the project to ensure that they are still relevant and achievable.
- **Approach:** Changes to project approach can be managed by assessing the impact of the change on the project's objectives, timelines, and resources, and communicating the change to our partner organisation. Our team will work together to develop a revised approach that addresses the changes and ensures that all team members are aware of the new approach and any necessary adjustments to project tasks or schedules.
- **Process:** Changes to processes can be managed by following a formal change management process that includes identifying the need for the change, evaluating its impact, communicating the change to our partner organisation, and implementing the change with proper documentation.

By following these points, our team can manage change effectively and ensure the success of the project.

8. CONFLICT MANAGEMENT (REVISED)

To manage conflict effectively, our team can follow these steps:

- **Establish clear communication channels:** Create a communication plan and encourage team members to share their concerns openly and respectfully.
- **Set ground rules:** Establish a shared understanding of the project's goals, timeline, and how conflicts will be addressed when they arise.
- **Address conflicts early:** When conflicts arise, address them early on before they escalate. Schedule a separate meeting or discussion to specifically address the issue at hand.
- **Encourage active listening:** Encourage team members to actively listen to each other's perspectives and work collaboratively to find a resolution that works for everyone.
- **Stay focused on the project's goals:** Avoid personal attacks or blame and instead focus on the issues at hand. This can help maintain a positive and productive team environment.
- **Inability to resolve conflict:** If our team is unable to resolve an issue, it can lead to delays, decreased productivity and potential project failure. Our team will escalate the issue to our project organisation who can provide guidance and support in resolving the issue.

By following these steps, our team can manage conflicts effectively, ensure the success of the project, and build stronger relationships and communication skills.

PROJECT PLAN

1. INTRODUCTION

Effective project planning, execution, and management are essential for the success of any project. With this in mind, DataSynergy has developed a comprehensive project plan to guide our efforts in measuring the effectiveness of the Zoe Empowers program using advanced analytics.

Our primary objective is to gain valuable insights into the program's impact, identify obstacles hindering its success, and provide actionable recommendations to improve its efficacy. DataSynergy will analyse and visualise data from Rwanda and Kenya datasets, using the ZOE_SELF_SUFFICIENCY_INDEX to understand the program's impact and effectiveness. Using advanced analytics, we will create 3 key documents: A Finding Report, an Analysis and Recommendations Report, and a Presentation. These reports will provide us with insightful information about the program's various aspects and aid in pinpointing areas that require improvement.

To ensure the success of the project, our project plan will cover the following critical areas:

- **Project Organisation:** We will define the project structure, roles, and responsibilities of DataSynergy. We will outline the reporting hierarchy, decision-making processes, and communication channels for the project to ensure everyone involved in the project is aware of their responsibilities and can work together efficiently.
- **Risk Management:** Our project plan will include an analysis of potential risks that could impact the project's success, along with mitigation strategies to address those risks.We will outline the risk management approach, the risk register, and the contingency plan to ensure that we are prepared for any unforeseen challenges that may arise.
- **Project Resources:** We will define the resources required to complete the project successfully, including human resources, technology, equipment, and materials. We will also outline the procurement plan, including the process for selecting and acquiring necessary resources.
- **Project Schedule:** Our project plan will include a detailed project schedule, including a timeline of all activities, deliverables, and milestones. We will also identify dependencies and critical paths to ensure that the project stays on track and within the planned timeline.
- **Tracking:** We will establish a system for tracking progress and performance against the project plan. We will include regular reporting mechanisms to keep SAS informed of project status, progress, and potential issues. We will also outline the process for making changes to the project plan as needed.

By addressing these critical aspects of project planning, DataSynergy will ensure that the project is executed successfully, achieves its objectives, and delivers high-quality results that meet SAS Institute Australia and Zoe Empowers' expectations.

2. PROJECT ORGANISATION

2.1. GROUP ORGANISATION

The success of our project depends on the organisation and management of the team involved. In this project, the team consists of five members who each play an essential role in ensuring the project's success.

PROJECT MANAGER: TABITHA

- Defining project goals and objectives.
- Creating and maintaining a project plan and schedule.
- Monitoring project progress and ensuring that it stays on track.
- Developing data models and visualisations to support decision-making.
- Communicating project updates and status reports to SAS.
- Providing technical support for data-related tools and technologies.
- Managing project risks and issues.
- Facilitating team meetings and ensuring that team members are collaborating effectively.
- Ensuring that the project is delivered on time and to the required quality standards.

PROJECT OFFICER/CHANGE OFFICER: AVA

- Supporting the development of the project plan and schedule.
- Coordinating project activities and ensuring that they are completed on time.
- Facilitating communication between team members and SAS.
- Helping to manage project risks and issues.
- Supporting the implementation of project changes.
- Ensuring that project documentation is up-to-date and accessible to all team members.

PROJECT OFFICER/DATA CONSULTANT: RORY

- Gathering and analysing data related to the project.
- Developing data models and visualisations to support decision-making.
- Ensuring that data quality standards are met.
- Providing technical support for data-related tools and technologies.
- Collaborating with other team members to identify opportunities for using data to improve project outcomes.

DATA SPECIALIST: CASSANDRA

- Collecting, analysing, and interpreting data to provide valuable insights for informed decision making.
- Ensuring the accuracy and quality of data to effectively communicate her findings and recommendations to our partner organisation.
- Mitigate risks associated with data.

CHANGE OFFICER/BUSINESS ANALYST: LACHLAN

- Conducting impact assessments to understand the potential impact of project changes on our partner organisation and the project.
- Developing change management plans and strategies.
- Support the implementation of change management activities.
- Providing business analysis support to the project team.
- Collaborating with other team members to identify opportunities for improving project outcomes.

Each team member has specific responsibilities, but we will also work collaboratively to achieve the project's goals. Effective communication, collaboration, and coordination are essential for the successful completion of this project.

2.2. CLIENT ORGANISATION

DataSynergy's partner organisation, SAS Institute Australia (SAS) is a global leader in business analytics software and services, driven by a strong commitment to helping clients make informed decisions through the power of data and analytics. The SAS team consists of three members who each play a critical role in guiding, supporting and supervising DataSynergy.

- **LUCY BIASI: ACADEMIC PROGRAM MANAGER (ANZ)**
  Lucy is responsible for overseeing the project team and ensuring that all project deliverables are completed on time and meets their expectations. As the Project Lead, Lucy will be the primary point of contact for our team and will be responsible for managing project timelines, coordinating meetings, and ensuring that all team members are aligned on project objectives. She will work closely with our team to ensure that we are meeting their needs and that we are delivering high-quality results.

- **JORDAN MOWLAI - TECHNICAL CONSULTANT**
  Jordan will be responsible for ensuring that the project is aligned with the overall strategy and goals of the organisation, and that it is completed on time and meets expectations. Jordan's expertise in project management and technical skills will be invaluable in guiding the team and providing technical direction throughout the project.

- **CHRIS GIBSON - TECHNICAL CONSULTANT**
  Chris has a deep understanding of the industry and extensive experience in working with similar projects. Chris will be providing guidance and support to the team and will help ensure that the project is executed successfully. His technical expertise and experience in managing complex projects will help ensure that the project meets the high standards of quality and excellence that are expected by SAS.

SAS is a committed partner organisation in this project and is dedicated to ensuring its success. Lucy, Jordan and Chris all bring a wealth of expertise and resources to the project and are eager to collaborate and support Data Synergy to deliver valuable insights into the impact of Zoe Empowers' program.

3. RISK MANAGEMENT

In the following section, DataSynergy will address potential risks that may arise throughout our project. We will present a detailed risk matrix that outlines the nature of the risk, description, likelihood of occurrence, impact and corresponding risk level. Additionally, we will provide effective strategies that DataSynergy can employ to mitigate these risks.

3.1. RISK IDENTIFICATION

To determine risks that may affect the completion of the project, the group allocated a significant amount of time during our in-person meeting in week 3. We compiled a rough list of potential risks and hazards that may present themselves throughout the project's duration. One thing that was prevalent to everyone was that due to the nature of the task, which is not heavily based on the process of building a software like many of the other pace tasks, it was difficult to refine the rough risks into a concise list while still conducting a substantial risk analysis process. Many topics and risks associated with aspects of development, such as prototyping, beta rollouts and software testing do not necessarily apply to the nature of the task, which includes the heavy use of the sponsored 3rd party software which we have no developmental control over and also the

deliverable structure of the project submitted in a number of different analytical reports, as opposed to submissions of built from scratch software versions.

With completing a risk register ease of understanding is paramount. Upon seeing the widespread use of a risk register that is split into risk categories, it was decided to proceed with this template to ensure that the sponsors and any others who are already used to this identification process would be able to understand our categorisation process with no trouble. The categories decided that would hold the most weight with our project were: human, operational, technical and external.

Definitions are as follows:

Human Risk	Risks arising from human behaviour, including negligence, errors, or malicious intent, which can result in negative consequences for the project. (E.g. An individual leaking sensitive information to unauthorised parties due to carelessness or lack of awareness about data security policies.)
Operational Risk	Risks arising from internal processes or procedures, including those related to data collection, management, and analysis, that can impact project outcomes. (E.g. Data is not collected or processed accurately, resulting in flawed analyses and incorrect conclusion)
Technical Risk	Risks related to the use of technology, including hardware, software, and infrastructure, which can result in system failures or other negative impacts on project operations. (E.g. Software systems experience a critical error or malfunction, which causes data loss, system downtime, or other negative impacts on the organisation's operations.)
External/Residual Risk	Risks that are outside the control of the project team or sponsors, such as those arising from unforeseen events or factors in the external environment, which can have a significant and unexpected impact on the project. (E.g. Black Swan event)

3.2. RISK REGISTER

The risk register currently being used by the team. This list is subject to change as the project evolves.

Risk	**Number**	**Probability (L/M/H)**	**Impact (L/M/H)**	**Cause/Description**

Poor communication, loss of contact with team	H1	L	H	Team member is absent without explanation for meeting or submission
Team member leaves project before completion (drops unit)	H2	L	H	One member leaves the unit for unknown reasons
Team member conflict which affects working environment	H3	L	M	Members clash over specific differences in ideas or personalities
Deadlines missed	O1	L	H	Team cannot keep up with assigned deadlines for project deliverables.
Report versions repeatedly rejected by sponsor	O2	L	M	Team cannot provide the sponsor with a suitable report thesis or structure.
Scheduling clash or duplicates produced	O3	L	M	Proper workload not divided or scheduled properly leading to team confused who is doing what, may end with group members doing the same task
SAS Viya goes through period of long outage	T1	M	M	3rd party SAS software used to create most data models experiences an unforeseen outage
Data given by Zoe Empowers changes or updates	E1	L	H	Zoe empowers conducts a revision of their own datasets changing them significantly, rendering work already done obsolete
Zoe Empowers is put under legal scrutiny or shut down	E2	L	H	The charity itself was suddenly put under scrutiny for factors out of the group's control. This will stop work completely
SAS and/or Zoe Empowers finds no benefit from completed work	E3	L	L	More of a morale issue, means that our work while accepted was not at the standard that the sponsor was expecting.

The team developed actionable responses to all of these main threats. The team also has as previously mentioned a process and complete agency to add to the risk register if new risks arise

and also add to the threat mitigation table too, which will be updated and sent to all parties involved.

Risk	Response
H1	All minutes from every meeting are taken and posted within group Discord and tagged to everyone. This will notify everyone as long as they use their phone/desktop. These notes can then be referred back to if forgotten and also used to fill in anyone who missed a meeting. From a submission standpoint as a group we set a deadline for projects 2-3 days before the deliverable is due to make sure all parts are done and are available to review. This allows us to see clearly if a part is not done or needs revising well before the actual due date and hence allows the rest of the group to cover a part that might not be done in an extreme scenario.
H2	A member leaving mid project is a huge obstacle for the team to overcome. This is something that will immediately be taken to the unit convenor and sponsor to await further recommendations on how to proceed.
H3	Heated team member interactions can be dissolved by taking appropriate mediation actions to diffuse any tension while also discussing the situation with team leaders. In the case that a group member is consistently not contributing and has gained ire from all group members this will be escalated to the unit convenor.
O1	As mentioned in H1, all deadlines are well planned out in advance to help avoid official deadlines. Through the use of project management software such as Kanban visuals and gantt charts all group members know their assigned tasks and deadlines well in advance so any concerns of work not that wont be completed will be brought up well before the due date. If the workload becomes seriously too much for the group then the sponsor will be contacted to resolve work expectation issues.
O2	Sponsor is being kept informed of all ideas and processes being currently undertaken and worked on. This gives them the chance to advise if a certain aspect of a deliverable or idea is not going to work well before submission. This allows the group to be flexible and adjust to their needs, hence avoiding any disappointment in what is submitted.
O3	All work is divided properly in team meetings which is all written and posted to group discord and other workspaces. Project management software as well and gantt charts created by team leaders ensure everyone is aware of their parts in each deliverable.
T1	Upon any technical difficulties with the online SAS Viya for learners platform sponsor is immediately notified who then raises the issue with their respective team. Members are also all responsible for saving their own word and in particular downloading any important graphs and saving them within shared group workspaces.
E1	If data from Zoe Empowers changes, sponsors will contact us to inform and also advise on how to proceed properly. The team has already arranged a meeting with the SAS representative for the data collected so it is likely that this risk can be put to them directly, as well as ask for an appropriate guideline to follow if they do choose to update the data.
E2	In this scenario it is completely out of our control and we will wait for instructions from the sponsors and also university

E3	This can be avoided through strong teamwork, brainstorming and keeping the sponsors involved with all work and decisions made.

We believe that risks can be properly monitored and controlled by maintaining a proactive approach, while also thinking of new ways to take initiative with each deliverable. For example, setting advanced deadlines can help resolve deadlines and group work issues proactively. New frameworks will be developed as we start to work better as a group also. While these processes are in place, all human and operational risks will be adequately monitored. Technical and external risks monitoring and control is achieved by staying in constant contact with the sponsor. This is done by including them in all group in-progress documents, maintaining constant email communication, and holding bi-weekly meetings where we prepare questions ahead of time to make the most of the meeting time.

4. RESOURCE MANAGEMENT

For communication means the team has multiple points of contact with the main hub of communication and work sharing on a dedicated Discord server, which is organised into different channels for work and topic distribution. Messenger chats are also used for quick conversations and also a group Github for further version control of documents or any external code that is used and iterated on. In person meetings are booked bi-weekly on campus in a library meeting room to coincide with sponsor meeting times.

For the project all hardware requirements are covered by everyone's own devices. Software needed for the project is mainly the SAS Viya for learners platform, which we all have access to. Some members will use Rstudio for more advanced breakdown of certain data in a more familiar coding environment. Project management is being managed through software such as Projectlibre for work breakdown structures and Trello for general task management. Shared work is all done on Google Docs with the final presentation likely to be done using Canva.

For any questions regarding the project, we contact SAS directly using this email address academic@oz.sas.com.

5. CHANGE MANAGEMENT

5.1. MANAGING REQUIREMENT AND SCOPE CHANGE

The management of project requirements and scope change are achieved across an array of steps. Effective change management is crucial to ensuring the project is able to ongoingly adapt to change while remaining on course for development and completion.

Actively Anticipate Change	Team members agree that change may be necessary throughout the project. Staying open and adapting to new situations is key to managing change effectively.
Communicate Need for Change	Clear verbal or online communication between the team explaining the need for change and its impact on the project.
Team Involvement	All members are made aware of changing processes to the

	project. Members are also encouraged to share their ideas and perspectives on how we can manage change successfully.
Plan Development	The development of plans specific to change management e.g. reassignment of roles and responsibilities, setting new goals, adjustment of schedules, and other necessary changes.
Monitor Progress	Close monitoring of project progression will ensure change is handled and implemented effectively. Weekly meetings and frequent check-ins to assess the impact and management of change will ensure necessary adjustments are made.

5.2. CHANGES TO DOCUMENTS, CODE AND DATA

In this section, we will explore how DataSynergy plans to manage changes to documents, code and data, and what tools/methods are in place to facilitate effective change management.

5.2.1. VERSION CONTROL

The continuously changing environment of the project can prove challenging. As it progresses, the use of change management to ensure the team is able to effectively adapt and mitigate change is critical. The changing nature of documents, code, and data, has seen the adoption and use of the scoping document as a ‘living document’. The living document provides the team the ability to consistently edit and update the document as changes occur or mistakes are made.

5.2.2. TRACKING

The tracking of the project is accomplished using the visual project management tool Trello, real-time voice, video, text app Discord, and social media app Facebook messenger. Each enables team members to successfully distribute project information, documents and resources with one another. Further, the use of weekly and fortnightly meetings between team members and sponsors, afford the ability to effectively track the project. Implementation of tracking tools, controls, and processes are essential to successful project progression and eventual completion.

5.2.3. TRACKING PROGRESS

Effective tracking of progress over the course of the project is crucial. Our use of tracking tools, such as Trello and Discord, were purposely chosen as they fall within the agile approach of our project, or the Kanban methodology. These tools help members visualise and understand our work better while simultaneously keeping on the same page as one another (Dan Radigan, 2019).

- **Trello:** The software is used as a project management visualisation tool that allows us to visually recognize tasks and subtasks needing to be completed. The visual aspect of the softwares interface helps team members more easily understand when deliverables are due, benefiting our ability to meet appointed deadlines. The interface encompasses project resources, to-do lists, completed tasks, questions for meetings, and weekly reports, ensuring the project is on schedule and meeting goals.

- **Discord:** The discord server created serves predominantly as a communication channel, however it effectively breaks areas of our project down into text channels. This break-down of text channels within the server ensures specific tracking of reports, resources, schedules, assessments calendars, meetings and general communication, directly contributing to the project progress.
- **Weekly/Fortnightly Meetings:** In-person and/or online meetings on a weekly basis between team members help keep track of ongoing change and progress of the project. Fortnightly meetings via zoom with SAS allows for a show of progress to the sponsor, and further space to ask questions and receive feedback, affording SAS the ability to track project progress, and further reinforce progress to members.

5.2.4. COMMUNICATION METHOD

Communication is an ongoing occurrence between both team members and SAS sponsors. To ensure communication is held to standard, it is carried out across weekly team meetings, fortnightly meetings with SAS sponsors, discord communication channels, and Facebook messenger. Communication was determined a key team value to guide us to achieve project goals, therefore utilisation of both appropriate and effective forms of communication management saw us adopt a diverse set of communicative tools. Communication methods adopted by the team each serve a particular purpose. There is no one particular communication stream that allows us to effectively communicate, hence the adoption of multiple methods was deemed appropriate. While Facebook messenger serves as a familiar communication method, it is not effective in sharing information and resources with members. Hence the adoption of Discord proved appropriate to navigate this weakness.

5.2.5. COMMUNICATION METHODS

Communication Type	**Description**
Weekly Team Meetings (online & face-to-face)	The scheduled weekly meeting is carried out amongst team members either via discord voice call or face-to-face meetings in a reserved study space at Macquarie university library. The weekly meeting allows team members to ensure project goals are remaining within scope, deadlines are being reinforced, need for change is communicated, and development of plans can occur, each allowing us to collectively monitor project progress.
Fortnightly Meetings with Sponsor	Scheduled fortnightly meetings via video-call on Zoom take place between team members and SAS sponsors. The meeting ensures ongoing communication between the team and sponsor, allowing the team to ensure the project is continuing to align with sponsor expectations, wants and needs.
Discord	A discord server is used by all team members as a communication channel to gather and share project information, resources, reports, weekly minutes, and assessment schedules.
Facebook Messenger	Used as a means of both group and individual communication. The app is of familiarity to all team members, where discord is not the go to

	stream of communication for some members. This allows ease of direct communication amongst the team.
iLearn Private Group Forum	Forum to post breakdowns of weekly meetings tracking weekly activities, progress, and team member details.
Emails	Emails between team members are used predominantly to pass on responses from SAS regarding questions and work we have sent them. This helps keep track of valuable responses and information without over complicating tracking of emails.

6. QUALITY MANAGEMENT

6.1. QUALITY CONTROL

Quality control processes are used as a detective means to identify faults within the project. These work to ensure that team members possess the ability to effectively navigate faults and move forwards ensuring project quality is improved or maintained.

1. **Deliverable/Feedback Review**: Monitoring feedback and comments on our deliverables allow us to understand its faults and make adjustments. This ensures the project is rid of these faults and project quality is upheld.
2. **Weekly reports:** Allows the team to identify what they found challenging and what they did well. This reflection helps identify faults within team members' operations throughout the week, and work to navigate these faults for the week ahead.
3. **Error Checking/Editing**: Group members have the ability to leave comments on reports and documents providing recommended improvements or editing fixes. Members providing checks are to do so for work other than their own.
4. **Sponsor Feedback:** Feedback from sponsors provides an additional set of eyes to identify errors in the project, or areas that are lacking in quality or information. Sponsor feedback also ensures our project is aligning with sponsors expectations and needs.
5. **Ongoing Collaboration with SAS:** Ensuring that we reach out via email to our sponsors throughout the week and not just wait for fortnightly meetings. Continually checking project changes and requirements are being met with the sponsors will ensure we can ongoingly identify faults and make changes that align with SAS requirements.
6. **One-on-one meetings with project manager:** Group members have the option to catch up with the project manager. Members can voice challenges or issues they may be facing and the project manager and member can work collaboratively to navigate and improve said challenges.

6.2. QUALITY ASSURANCE

Quality assurance processes are employed as preventative measures. The following processes work to prevent faults and errors before they occur or heavily impact the project.

- **Project Manager Review/Audit:** Our project manager ensures proactive management of project progression, risks, and tracking. Enforcing measures of facilitation of team collaboration, ensuring documentation is up-to-date, and maintaining project plans and schedules, ensures measures are preventative and not reactive.

- **Deadlines/Checklists**: Visual checklists on Trello provide the team the ability to visualise tasks to be completed and upcoming deadlines. This ensures quality is upheld whereby we can ensure nothing is missing in reports, and we can move onto other tasks.
- **Weekly Reviews:** This encompasses both weekly meetings and reflections and works as an assurance method. Regular check-ins in with members and having individual reflection each week ensures operations are up-to-date and work isn't lagging.

7. SCHEDULE

7.1. GANTT CHART

The following Gantt Chart in Appendix A, illustrates the breakdown of deliverables across the semester and is in line with the due dates of the dictated assessments schedule. The deliverables intended to be submitted to the university will have the starting letter D, whereas deliverables intended for the Sponsor will hold the initials SD (Sponsor Deliverable). The project management tool 'ProjectLibre', was utilised to carry out the product of the Gantt Chart on a Macintosh operating system.

7.2. WORK BREAKDOWN / NETWORK DIAGRAM

The Work Breakdown Structure (WBS) in Appendix B is produced from the Gantt chart on the same software and reproduces activities in a finer detail breaking down larger tasks into subtasks. The following WBS is to be interpreted with the efforts of all individuals involved in each task and not one sole individual doing the whole task. Group discussions, brainstorming and feedback sessions are used as an accountability activity in order to encourage collaboration in all aspects of the project. For the purpose of this deliverable a network diagram of the WBS has been produced due to the limited page count.

7.3. COST AND TIME

This project has no cost breakdown or allocation as PACE is a voluntary, industry-placement program. Meaning that no additional cost is incurred to the client and not monetary value is received by the project team. The sponsor has however mentioned that they have set time allocations for engaging with this PACE project throughout their day to day activities and budget. The student team however does not engage in this.

The total time it will take to complete the project is 97 days, with an expected 25.5 hours per deliverable (rough averaging from first deliverable) totaling 229.5 hours for the project.

7.4. RESOURCE ALLOCATION AND ASSUMPTIONS

The following Resource Allocation as observed in Appendix C, has been derived from the Gantt chart and Work Breakdown. Kindly note that the software Project Libre tends to alter hours worked according to percentage assigned to resource and time to task and recalculates at each adjustment, therefore please observe the percentages and not the hours.

It is assumed that all resources will be available throughout the duration of the project with alternatives on standby. For example an alternative to the library study pods would be a local cafe or external library. Another example is that we have alternative data analytical platforms for use as well.

In previous meetings with the sponsor the team has expressed our personal experience with the SAS Viya platform and have voiced concerns about it being slow and sometimes not working. The SAS team were more than happy to report the feedback to the development team in order to adjust the platform for better use.

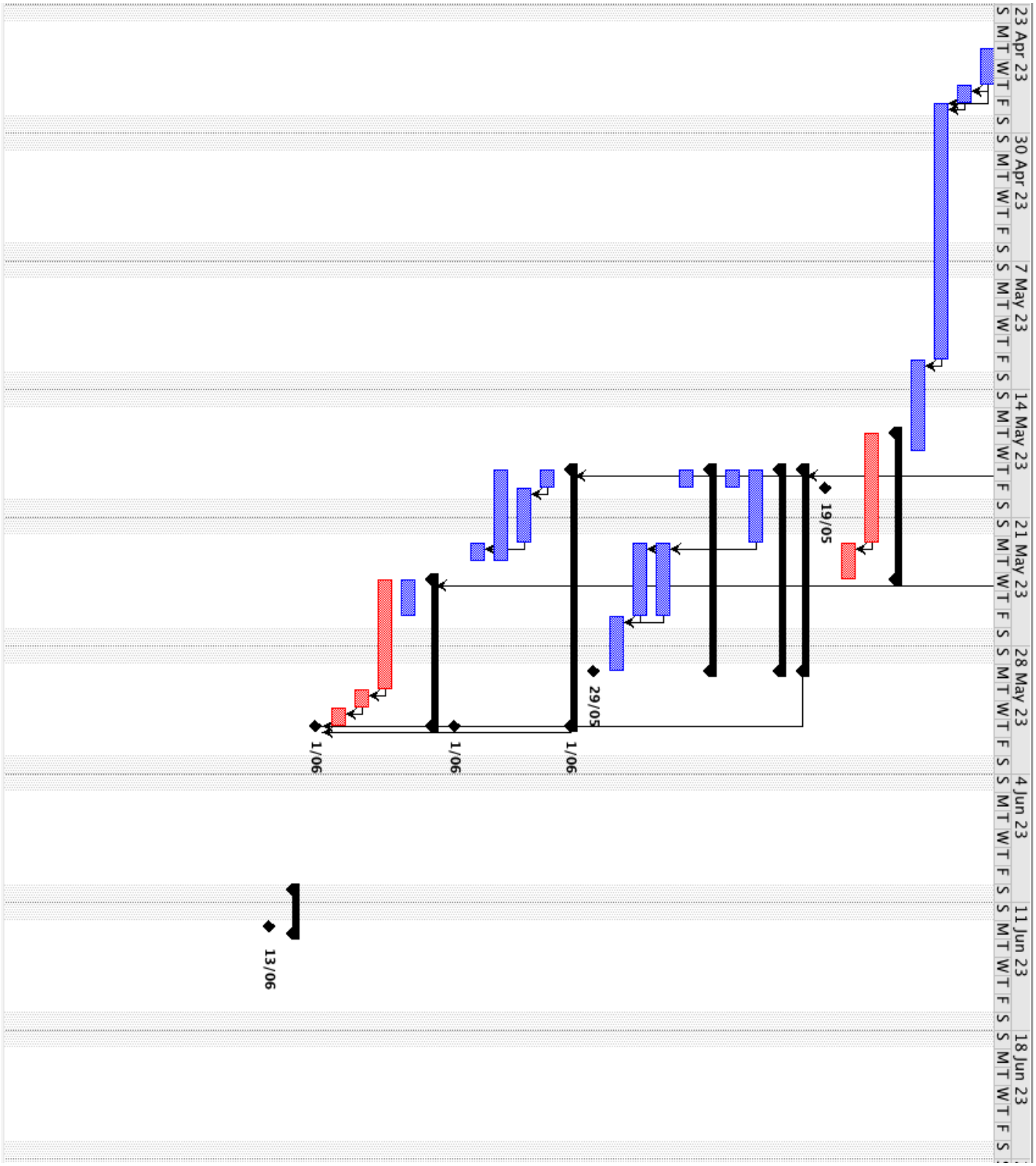
8. ASSUMPTIONS

- It is assumed that access to necessary data to measure the effectiveness of Zoe Empowers program is available, accessible, and in a usable format.
- It is assumed that the data is of sufficient quality and consistency to support accurate and meaningful analysis.
- It is assumed that the necessary data analytics tools and technologies are available and can be used to analyse and visualise the data effectively.
- It is assumed that SAS will be engaged throughout the project and will provide feedback and support as needed.
- It is assumed that the project will be completed within the defined timeline, and any potential delays or obstacles will be addressed promptly to ensure timely completion.
- It is assumed that the permittance of available external systems will be of direct beneficial assistance to conducting research for the project.
- It is assumed that predictive modelling falls within the scope of the project where forecasting predictive outcomes are essential to successful analysis and research.
- It is assumed that weekly sprint meetings between the team and fortnightly meetings with sponsors will greatly benefit the progress of the project.
- It is assumed that the agile methodology will allow the team to effectively complete the project while adapting to change both efficiently and effectively as we collectively progress.
- It is assumed that the team will remain within the scope of the project plan, working to reduce the risk of scope creeping, to ensure that we deliver a solution that meets MVP.

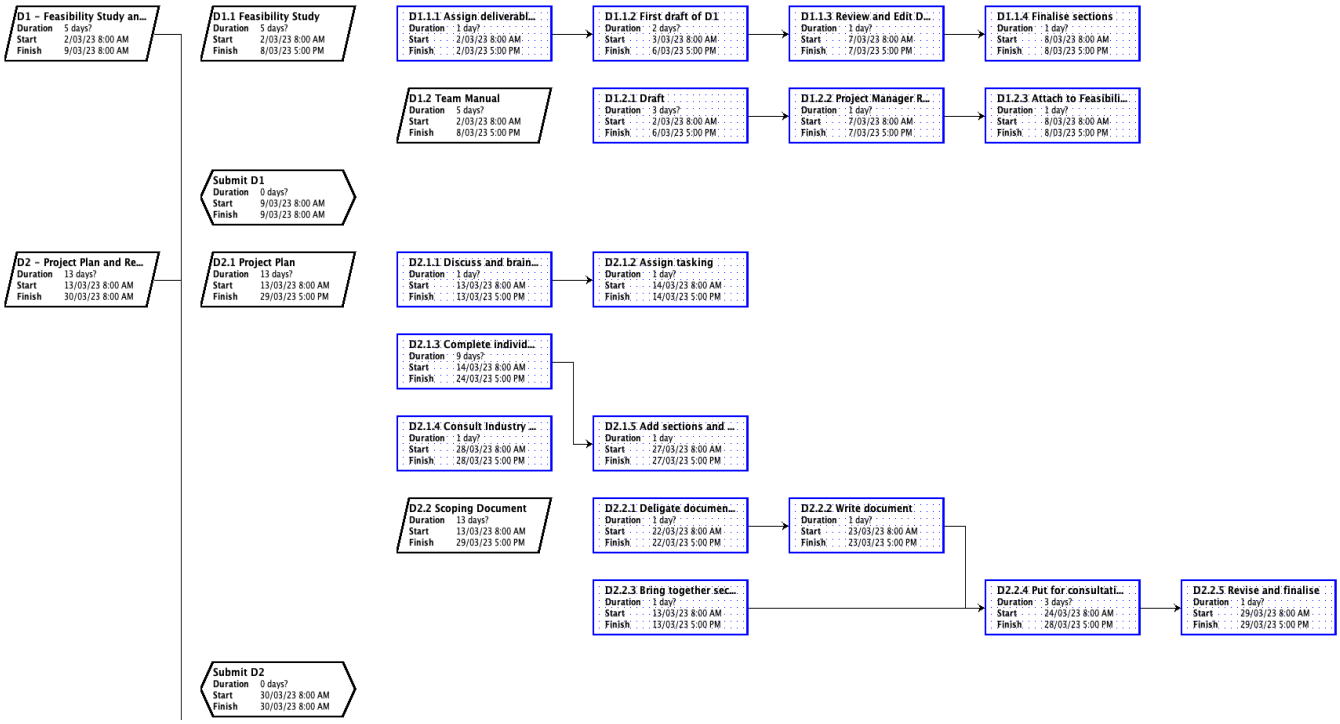
9. APPENDICES

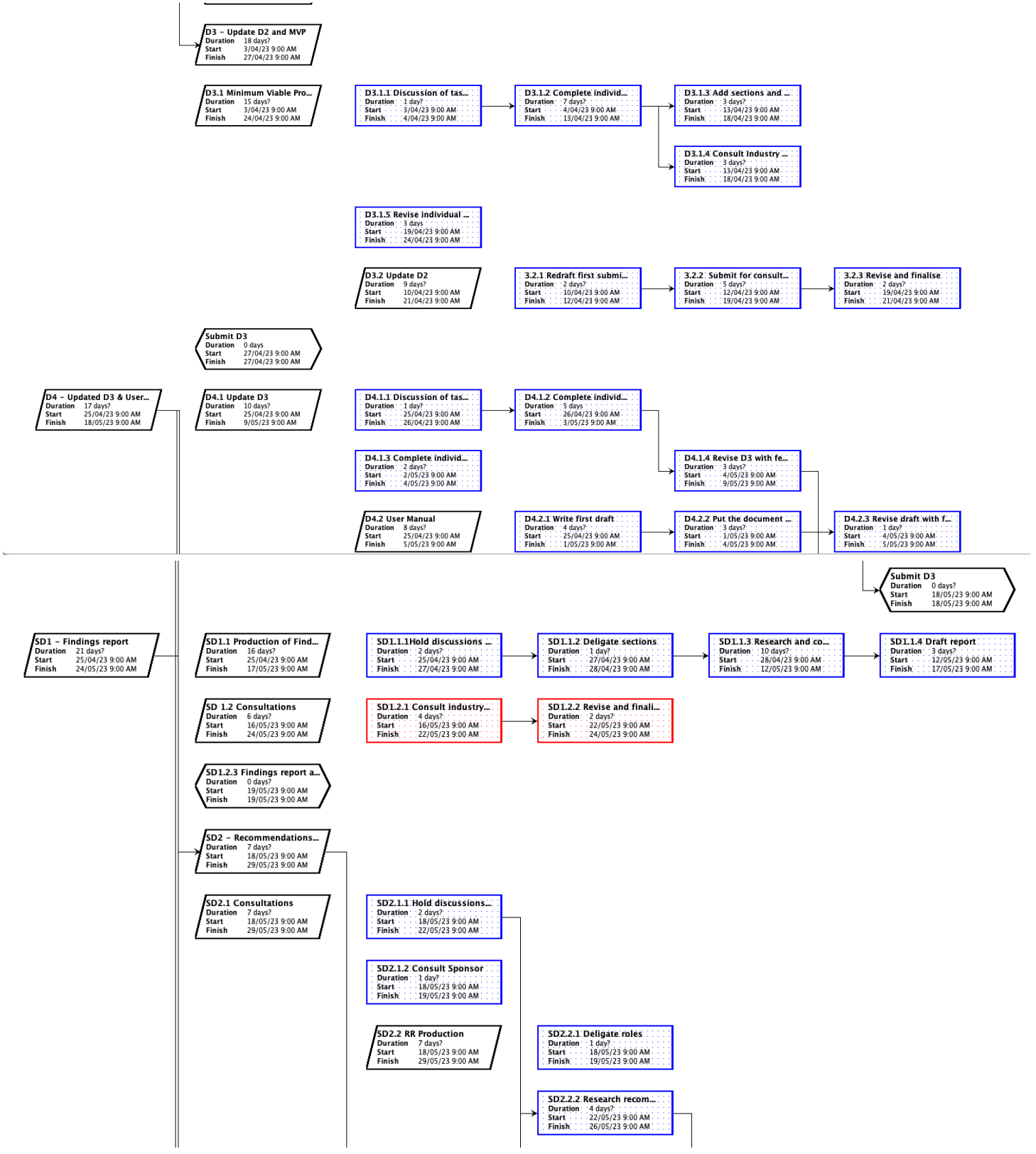
a) Appendix A - Gantt chart
b) Appendix B - Work Breakdown Structure
c) Appendix C - Resource Allocation

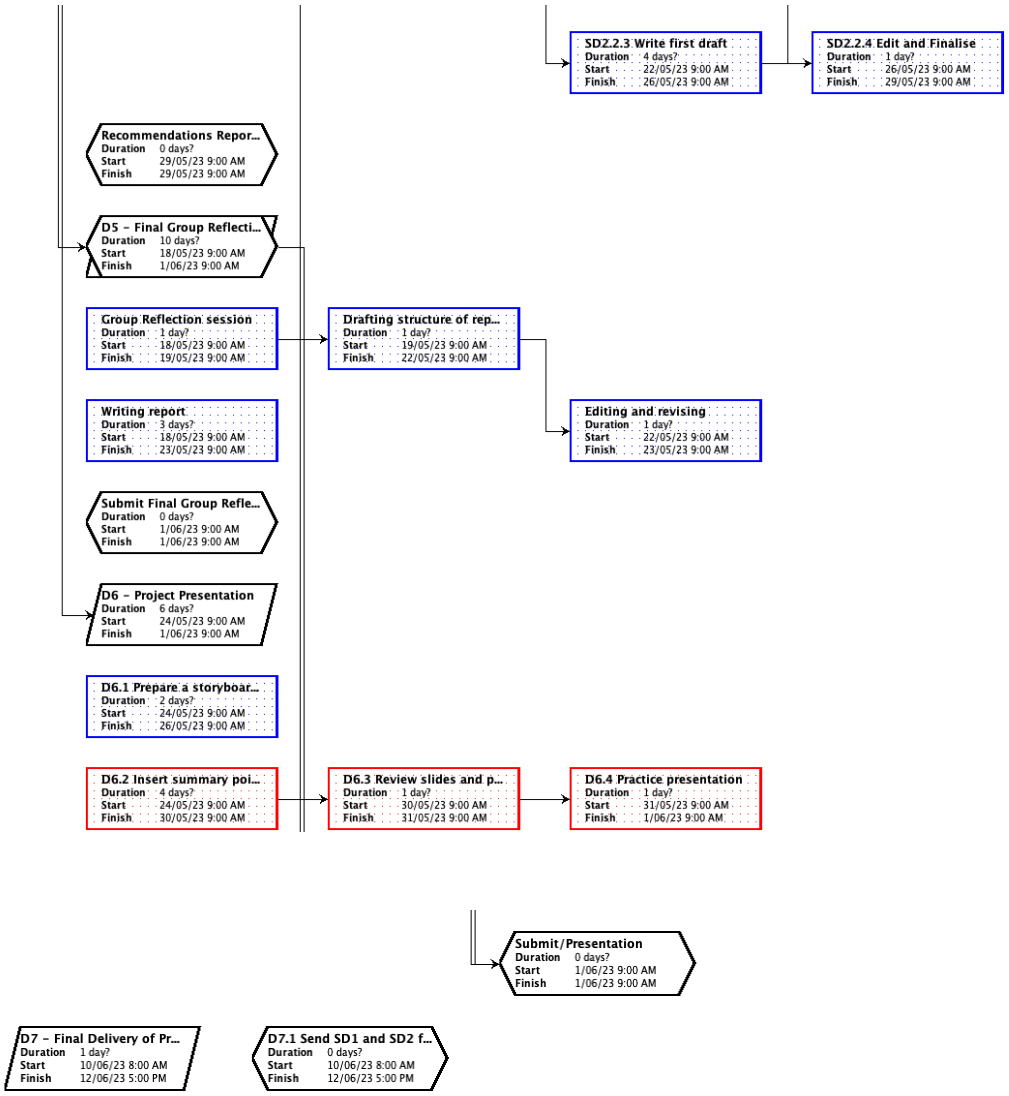
Appendix A - Gantt Chart



Appendix B


D1 - Feasibility Study an...
Duration 5 days?
Start 2/03/23 8:00 AM
Finish 9/03/23 8:00 AM
D1.1 Feasibility Study
Duration 5 days?
Start 2/03/23 8:00 AM
Finish 8/03/23 5:00 PM
D1.1.1 Assign deliverabl...
Duration 1 day?
Start 2/03/23 8:00 AM
Finish 2/03/23 5:00 PM
D1.1.2 First draft of D1
Duration 2 days?
Start 3/03/23 8:00 AM
Finish 6/03/23 5:00 PM
D1.1.3 Review and Edit D...
Duration 1 day?
Start 7/03/23 8:00 AM
Finish 7/03/23 5:00 PM
D1.1.4 Finalise sections
Duration 1 day?
Start 8/03/23 8:00 AM
Finish 8/03/23 5:00 PM
D1.2 Team Manual
Duration 5 days?
Start 2/03/23 8:00 AM
Finish 8/03/23 5:00 PM
D1.2.1 Draft
Duration 3 days?
Start 2/03/23 8:00 AM
Finish 6/03/23 5:00 PM
D1.2.2 Project Manager R...
Duration 1 day?
Start 7/03/23 8:00 AM
Finish 7/03/23 5:00 PM
D1.2.3 Attach to Feasibili...
Duration 1 day?
Start 8/03/23 8:00 AM
Finish 8/03/23 5:00 PM
Submit D1
Duration 0 days?
Start 9/03/23 8:00 AM
Finish 9/03/23 8:00 AM
D2 - Project Plan and Re...
Duration 13 days?
Start 13/03/23 8:00 AM
Finish 30/03/23 8:00 AM
D2.1 Project Plan
Duration 13 days?
Start 13/03/23 8:00 AM
Finish 29/03/23 5:00 PM
D2.1.1 Discuss and brain...
Duration 1 day?
Start 13/03/23 8:00 AM
Finish 13/03/23 5:00 PM
D2.1.2 Assign tasking
Duration 1 day?
Start 14/03/23 8:00 AM
Finish 14/03/23 5:00 PM
D2.1.3 Complete individ...
Duration 9 days?
Start 14/03/23 8:00 AM
Finish 24/03/23 5:00 PM
D2.1.4 Consult Industry ...
Duration 1 day?
Start 28/03/23 8:00 AM
Finish 28/03/23 5:00 PM
D2.1.5 Add sections and ...
Duration 1 day
Start 27/03/23 8:00 AM
Finish 27/03/23 5:00 PM
D2.2 Scoping Document
Duration 13 days?
Start 13/03/23 8:00 AM
Finish 29/03/23 5:00 PM
D2.2.1 Deligate documen...
Duration 1 day?
Start 22/03/23 8:00 AM
Finish 22/03/23 5:00 PM
D2.2.2 Write document
Duration 1 day?
Start 23/03/23 8:00 AM
Finish 23/03/23 5:00 PM
D2.2.3 Bring together sec...
Duration 1 day?
Start 13/03/23 8:00 AM
Finish 13/03/23 5:00 PM
D2.2.4 Put for consultati...
Duration 3 days?
Start 24/03/23 8:00 AM
Finish 28/03/23 5:00 PM
D2.2.5 Revise and finalise
Duration 1 day?
Start 29/03/23 8:00 AM
Finish 29/03/23 5:00 PM
Submit D2
Duration 0 days?
Start 30/03/23 8:00 AM
Finish 30/03/23 8:00 AM


D3 – Update D2 and MVP
Duration 18 days?
Start 3/04/23 9:00 AM
Finish 27/04/23 9:00 AM
D3.1 Minimum Viable Pro...
Duration 15 days?
Start 3/04/23 9:00 AM
Finish 24/04/23 9:00 AM
D3.1.1 Discussion of tas...
Duration 1 day?
Start 3/04/23 9:00 AM
Finish 4/04/23 9:00 AM
D3.1.2 Complete individ...
Duration 7 days?
Start 4/04/23 9:00 AM
Finish 13/04/23 9:00 AM
D3.1.3 Add sections and ...
Duration 3 days?
Start 13/04/23 9:00 AM
Finish 18/04/23 9:00 AM
D3.1.4 Consult Industry ...
Duration 3 days?
Start 13/04/23 9:00 AM
Finish 18/04/23 9:00 AM
D3.1.5 Revise individual ...
Duration 3 days
Start 19/04/23 9:00 AM
Finish 24/04/23 9:00 AM
D3.2 Update D2
Duration 9 days?
Start 10/04/23 9:00 AM
Finish 21/04/23 9:00 AM
3.2.1 Redraft first submi...
Duration 2 days?
Start 10/04/23 9:00 AM
Finish 12/04/23 9:00 AM
3.2.2 Submit for consult...
Duration 5 days?
Start 12/04/23 9:00 AM
Finish 19/04/23 9:00 AM
3.2.3 Revise and finalise
Duration 2 days?
Start 19/04/23 9:00 AM
Finish 21/04/23 9:00 AM
Submit D3
Duration 0 days
Start 27/04/23 9:00 AM
Finish 27/04/23 9:00 AM
D4 – Updated D3 & User...
Duration 17 days?
Start 25/04/23 9:00 AM
Finish 18/05/23 9:00 AM
D4.1 Update D3
Duration 10 days?
Start 25/04/23 9:00 AM
Finish 9/05/23 9:00 AM
D4.1.1 Discussion of tas...
Duration 1 day?
Start 25/04/23 9:00 AM
Finish 26/04/23 9:00 AM
D4.1.2 Complete individ...
Duration 5 days
Start 26/04/23 9:00 AM
Finish 3/05/23 9:00 AM
D4.1.3 Complete individ...
Duration 2 days?
Start 2/05/23 9:00 AM
Finish 4/05/23 9:00 AM
D4.1.4 Revise D3 with fe...
Duration 3 days?
Start 4/05/23 9:00 AM
Finish 9/05/23 9:00 AM
D4.2 User Manual
Duration 8 days?
Start 25/04/23 9:00 AM
Finish 5/05/23 9:00 AM
D4.2.1 Write first draft
Duration 4 days?
Start 25/04/23 9:00 AM
Finish 1/05/23 9:00 AM
D4.2.2 Put the document ...
Duration 3 days?
Start 1/05/23 9:00 AM
Finish 4/05/23 9:00 AM
D4.2.3 Revise draft with f...
Duration 1 day?
Start 4/05/23 9:00 AM
Finish 5/05/23 9:00 AM
Submit D3
Duration 0 days?
Start 18/05/23 9:00 AM
Finish 18/05/23 9:00 AM
SD1 – Findings report
Duration 21 days?
Start 25/04/23 9:00 AM
Finish 24/05/23 9:00 AM
SD1.1 Production of Find...
Duration 16 days?
Start 25/04/23 9:00 AM
Finish 17/05/23 9:00 AM
SD1.1.1Hold discussions ...
Duration 2 days?
Start 25/04/23 9:00 AM
Finish 27/04/23 9:00 AM
SD1.1.2 Deligate sections
Duration 1 day?
Start 27/04/23 9:00 AM
Finish 28/04/23 9:00 AM
SD1.1.3 Research and co...
Duration 10 days?
Start 28/04/23 9:00 AM
Finish 12/05/23 9:00 AM
SD1.1.4 Draft report
Duration 3 days?
Start 12/05/23 9:00 AM
Finish 17/05/23 9:00 AM
SD 1.2 Consultations
Duration 6 days?
Start 16/05/23 9:00 AM
Finish 24/05/23 9:00 AM
SD1.2.1 Consult industry...
Duration 4 days?
Start 16/05/23 9:00 AM
Finish 22/05/23 9:00 AM
SD1.2.2 Revise and finali...
Duration 2 days?
Start 22/05/23 9:00 AM
Finish 24/05/23 9:00 AM
SD1.2.3 Findings report a...
Duration 0 days?
Start 19/05/23 9:00 AM
Finish 19/05/23 9:00 AM
SD2 – Recommendations...
Duration 7 days?
Start 18/05/23 9:00 AM
Finish 29/05/23 9:00 AM
SD2.1 Consultations
Duration 7 days?
Start 18/05/23 9:00 AM
Finish 29/05/23 9:00 AM
SD2.1.1 Hold discussions...
Duration 2 days?
Start 18/05/23 9:00 AM
Finish 22/05/23 9:00 AM
SD2.1.2 Consult Sponsor
Duration 1 day?
Start 18/05/23 9:00 AM
Finish 19/05/23 9:00 AM
SD2.2 RR Production
Duration 7 days?
Start 18/05/23 9:00 AM
Finish 29/05/23 9:00 AM
SD2.2.1 Deligate roles
Duration 1 day?
Start 18/05/23 9:00 AM
Finish 19/05/23 9:00 AM
SD2.2.2 Research recom...
Duration 4 days?
Start 22/05/23 9:00 AM
Finish 26/05/23 9:00 AM


SD2.2.3 Write first draft
Duration 4 days?
Start 22/05/23 9:00 AM
Finish 26/05/23 9:00 AM
SD2.2.4 Edit and Finalise
Duration 1 day?
Start 26/05/23 9:00 AM
Finish 29/05/23 9:00 AM
Recommendations Repor...
Duration 0 days?
Start 29/05/23 9:00 AM
Finish 29/05/23 9:00 AM
D5 - Final Group Reflecti...
Duration 10 days?
Start 18/05/23 9:00 AM
Finish 1/06/23 9:00 AM
Group Reflection session
Duration 1 day?
Start 18/05/23 9:00 AM
Finish 19/05/23 9:00 AM
Drafting structure of rep...
Duration 1 day?
Start 19/05/23 9:00 AM
Finish 22/05/23 9:00 AM
Writing report
Duration 3 days?
Start 18/05/23 9:00 AM
Finish 23/05/23 9:00 AM
Editing and revising
Duration 1 day?
Start 22/05/23 9:00 AM
Finish 23/05/23 9:00 AM
Submit Final Group Refle...
Duration 0 days?
Start 1/06/23 9:00 AM
Finish 1/06/23 9:00 AM
D6 - Project Presentation
Duration 6 days?
Start 24/05/23 9:00 AM
Finish 1/06/23 9:00 AM
D6.1 Prepare a storyboar...
Duration 2 days?
Start 24/05/23 9:00 AM
Finish 26/05/23 9:00 AM
D6.2 Insert summary poi...
Duration 4 days?
Start 24/05/23 9:00 AM
Finish 30/05/23 9:00 AM
D6.3 Review slides and p...
Duration 1 day?
Start 30/05/23 9:00 AM
Finish 31/05/23 9:00 AM
D6.4 Practice presentation
Duration 1 day?
Start 31/05/23 9:00 AM
Finish 1/06/23 9:00 AM
Submit/Presentation
Duration 0 days?
Start 1/06/23 9:00 AM
Finish 1/06/23 9:00 AM
D7 - Final Delivery of Pr...
Duration 1 day?
Start 10/06/23 8:00 AM
Finish 12/06/23 5:00 PM
D7.1 Send SD1 and SD2 f...
Duration 0 days?
Start 10/06/23 8:00 AM
Finish 12/06/23 5:00 PM

Appendix C - Resource Graph (Please observe the %)

1	**⊟D1 – Feasibility Study and Team Manual**	**100%**	**52.919 hours**	**8 days?**	**2/03/23 8:00 AM**	**13/03/23 5:00 PM**
2	**⊟D1.1 Feasibility Study**	**100%**	**52.919 hours**	**8 days?**	**2/03/23 8:00 AM**	**13/03/23 5:00 PM**
3	D1.1.1 Assign deliverable responsibilities	100%	8 hours	1 day?	2/03/23 8:00 AM	3/03/23 5:00 PM
	PROJECT MANAGER	*100%*	*8 hours*	*1 day*	*3/03/23 8:00 AM*	*3/03/23 5:00 PM*
4	D1.1.2 First draft of D1	24%	7.779 hours	4 days?	6/03/23 8:00 AM	9/03/23 5:00 PM
	PROJECT OFFICER/CHANGE OFFICER	*20%*	*1.986 hours*	*1.241 days*	*7/03/23 8:00 AM*	*8/03/23 9:55 AM*
	PROJECT MANAGER	*20%*	*4.8 hours*	*3 days*	*7/03/23 8:00 AM*	*9/03/23 5:00 PM*
	DATA SPECIALIST	*20%*	*0.827 hours*	*0.517 days*	*7/03/23 8:00 AM*	*7/03/23 1:08 PM*
	PROJECT OFFICER/DATA CONSULTANT	*20%*	*0 hours*	*0 days*	*7/03/23 8:00 AM*	*7/03/23 8:00 AM*
	CHANGE OFFICER/BUSINESS ANALYST	*20%*	*0.165 hours*	*0.103 days*	*7/03/23 8:00 AM*	*7/03/23 8:49 AM*
5	D1.1.3 Review and Edit D1	100%	8 hours	1 day?	10/03/23 8:00 AM	10/03/23 5:00 PM
6	D1.1.4 Finalise sections	100%	8 hours	1 day?	13/03/23 8:00 AM	13/03/23 5:00 PM
7	**⊟D1.2 Team Manual**	**100%**	**21.14 hours**	**2.75 days?**	**2/03/23 8:00 AM**	**6/03/23 3:00 PM**
8	D1.2.1 Draft	96%	7.7 hours	1 day?	2/03/23 8:00 AM	2/03/23 5:00 PM
	PROJECT OFFICER/CHANGE OFFICER	*70%*	*5.6 hours*	*1 day*	*2/03/23 8:00 AM*	*2/03/23 5:00 PM*
	PROJECT MANAGER	*10%*	*0.7 hours*	*0.875 days*	*2/03/23 8:00 AM*	*2/03/23 4:00 PM*
	PROJECT OFFICER/DATA CONSULTANT	*20%*	*1.4 hours*	*0.875 days*	*2/03/23 8:00 AM*	*2/03/23 4:00 PM*
	DATA SPECIALIST	*0%*	*0 hours*	*0 days*	*2/03/23 8:00 AM*	*2/03/23 8:00 AM*
9	D1.2.2 Project Manager Review and team edit	100%	8 hours	1 day?	3/03/23 8:00 AM	3/03/23 5:00 PM
	PROJECT MANAGER	*100%*	*8 hours*	*1 day*	*3/03/23 8:00 AM*	*3/03/23 5:00 PM*
10	D1.2.3 Attach to Feasibility study and clean up	91%	5.44 hours	0.75 days?	6/03/23 8:00 AM	6/03/23 3:00 PM
	PROJECT OFFICER/CHANGE OFFICER	*40%*	*2.4 hours*	*0.75 days*	*6/03/23 8:00 AM*	*6/03/23 3:00 PM*
	PROJECT MANAGER	*40%*	*2.4 hours*	*0.75 days*	*6/03/23 8:00 AM*	*6/03/23 3:00 PM*
	PROJECT OFFICER/DATA CONSULTANT	*10%*	*0.32 hours*	*0.4 days*	*6/03/23 8:00 AM*	*6/03/23 11:12 AM*
	DATA SPECIALIST	*10%*	*0.32 hours*	*0.4 days*	*6/03/23 8:00 AM*	*6/03/23 11:12 AM*
11	Submit D1	100%	0 hours	0 days?	9/03/23 8:00 AM	9/03/23 8:00 AM

12	**⊟D2 – Project Plan and Requirements/Scoping Document**	**100%**	**126.598 hours**	**13 days?**	**13/03/23 8:00 AM**	**30/03/23 8:00 AM**
13	**⊟D2.1 Project Plan**	**100%**	**126.598 hours**	**11.625 da...**	**13/03/23 8:00 AM**	**28/03/23 2:00 PM**
14	D2.1.1 Discuss and brainstrom task	84%	4.2 hours	0.625 days?	13/03/23 8:00 AM	13/03/23 2:00 PM
	PROJECT MANAGER	*20%*	*1 hour*	*0.625 days*	*13/03/23 8:00 AM*	*13/03/23 2:00 PM*
	PROJECT OFFICER/CHANGE OFFICER	*20%*	*0.8 hours*	*0.5 days*	*13/03/23 8:00 AM*	*13/03/23 1:00 PM*
	PROJECT OFFICER/DATA CONSULTANT	*20%*	*0.8 hours*	*0.5 days*	*13/03/23 8:00 AM*	*13/03/23 1:00 PM*
	DATA SPECIALIST	*20%*	*0.8 hours*	*0.5 days*	*13/03/23 8:00 AM*	*13/03/23 1:00 PM*
	CHANGE OFFICER/BUSINESS ANALYST	*20%*	*0.8 hours*	*0.5 days*	*13/03/23 8:00 AM*	*13/03/23 1:00 PM*
15	D2.1.2 Assign tasking	100%	4 hours	0.5 days?	13/03/23 2:00 PM	14/03/23 9:00 AM
	PROJECT MANAGER	*100%*	*4 hours*	*0.5 days*	*13/03/23 2:00 PM*	*14/03/23 9:00 AM*
16	D2.1.3 Complete individual sections	100%	72 hours	9 days?	14/03/23 8:00 AM	24/03/23 5:00 PM
	PROJECT MANAGER	*20%*	*14.4 hours*	*9 days*	*14/03/23 8:00 AM*	*24/03/23 5:00 PM*
	PROJECT OFFICER/CHANGE OFFICER	*20%*	*14.4 hours*	*9 days*	*14/03/23 8:00 AM*	*24/03/23 5:00 PM*
	PROJECT OFFICER/DATA CONSULTANT	*20%*	*14.4 hours*	*9 days*	*14/03/23 8:00 AM*	*24/03/23 5:00 PM*
	DATA SPECIALIST	*20%*	*14.4 hours*	*9 days*	*14/03/23 8:00 AM*	*24/03/23 5:00 PM*
	CHANGE OFFICER/BUSINESS ANALYST	*20%*	*14.4 hours*	*9 days*	*14/03/23 8:00 AM*	*24/03/23 5:00 PM*
17	D2.1.4 Consult Industry partners	100%	5 hours	0.625 days?	28/03/23 8:00 AM	28/03/23 2:00 PM
	PROJECT MANAGER	*20%*	*1 hour*	*0.625 days*	*28/03/23 8:00 AM*	*28/03/23 2:00 PM*
	PROJECT OFFICER/CHANGE OFFICER	*20%*	*1 hour*	*0.625 days*	*28/03/23 8:00 AM*	*28/03/23 2:00 PM*
	PROJECT OFFICER/DATA CONSULTANT	*20%*	*1 hour*	*0.625 days*	*28/03/23 8:00 AM*	*28/03/23 2:00 PM*
	DATA SPECIALIST	*20%*	*1 hour*	*0.625 days*	*28/03/23 8:00 AM*	*28/03/23 2:00 PM*
	CHANGE OFFICER/BUSINESS ANALYST	*20%*	*1 hour*	*0.625 days*	*28/03/23 8:00 AM*	*28/03/23 2:00 PM*
18	D2.1.5 Add sections and edit	67%	1.598 hours	0.297 days	27/03/23 8:00 AM	27/03/23 10:22 AM
	PROJECT MANAGER	*18%*	*0.076 hours*	*0.053 days*	*27/03/23 8:00 AM*	*27/03/23 8:25 AM*
	PROJECT OFFICER/CHANGE OFFICER	*30%*	*0.381 hours*	*0.159 days*	*27/03/23 8:00 AM*	*27/03/23 9:16 AM*
	PROJECT OFFICER/DATA CONSULTANT	*18%*	*0.381 hours*	*0.264 days*	*27/03/23 8:00 AM*	*27/03/23 10:06 AM*
	DATA SPECIALIST	*18%*	*0.381 hours*	*0.264 days*	*27/03/23 8:00 AM*	*27/03/23 10:06 AM*
	CHANGE OFFICER/BUSINESS ANALYST	*16%*	*0.381 hours*	*0.297 days*	*27/03/23 8:00 AM*	*27/03/23 10:22 AM*

19	**⊟D2.2 Scoping Document**	**100%**	**39.8 hours**	**10.975 da...**	**13/03/23 8:00 AM**	**27/03/23 4:48 PM**
20	D2.2.1 Deligate document sections	100%	1 hour	0.125 days?	22/03/23 8:00 AM	22/03/23 9:00 AM
	PROJECT MANAGER	*100%*	*1 hour*	*0.125 days*	*22/03/23 8:00 AM*	*22/03/23 9:00 AM*
21	D2.2.2 Write document	100%	10 hours	1.25 days?	22/03/23 9:00 AM	23/03/23 11:00 AM
	PROJECT MANAGER	*30%*	*3 hours*	*1.25 days*	*22/03/23 9:00 AM*	*23/03/23 11:00 AM*
	DATA SPECIALIST	*70%*	*7 hours*	*1.25 days*	*22/03/23 9:00 AM*	*23/03/23 11:00 AM*
22	D2.2.3 Bring together sections and edit	100%	8 hours	1 day?	13/03/23 8:00 AM	13/03/23 5:00 PM
	DATA SPECIALIST	*50%*	*4 hours*	*1 day*	*13/03/23 8:00 AM*	*13/03/23 5:00 PM*
	PROJECT MANAGER	*50%*	*4 hours*	*1 day*	*13/03/23 8:00 AM*	*13/03/23 5:00 PM*
23	D2.2.4 Put for consultation	100%	16 hours	2 days?	23/03/23 11:00 AM	27/03/23 11:00 AM
	PROJECT MANAGER	*50%*	*8 hours*	*2 days*	*23/03/23 11:00 AM*	*27/03/23 11:00 AM*
	PROJECT OFFICER/DATA CONSULTANT	*0%*	*0 hours*	*0 days*	*23/03/23 11:00 AM*	*23/03/23 11:00 AM*
	DATA SPECIALIST	*50%*	*8 hours*	*2 days*	*23/03/23 11:00 AM*	*27/03/23 11:00 AM*
24	D2.2.5 Revise and finalise	100%	4.8 hours	0.6 days?	27/03/23 11:00 AM	27/03/23 4:48 PM
	PROJECT MANAGER	*60%*	*2.88 hours*	*0.6 days*	*27/03/23 11:00 AM*	*27/03/23 4:48 PM*
	DATA SPECIALIST	*40%*	*1.92 hours*	*0.6 days*	*27/03/23 11:00 AM*	*27/03/23 4:48 PM*
25	Submit D2	100%	0 hours	0 days?	30/03/23 8:00 AM	30/03/23 8:00 AM
26	**⊟D3 – Update D2 and MVP**	**100%**	**163.367 hours**	**18 days?**	**3/04/23 9:00 AM**	**27/04/23 9:00 AM**
27	**⊟D3.1 Minimum Viable Product**	**100%**	**163.367 hours**	**15.625 da...**	**3/04/23 9:00 AM**	**24/04/23 3:00 PM**
28	D3.1.1 Discussion of task and deligating parts	100%	1 hour	0.125 days?	3/04/23 9:00 AM	3/04/23 10:00 AM
	PROJECT MANAGER	*100%*	*1 hour*	*0.125 days*	*3/04/23 9:00 AM*	*3/04/23 10:00 AM*
29	D3.1.2 Complete individual sections	24%	24.3 hours	12.5 days?	3/04/23 10:00 AM	19/04/23 3:00 PM
	CHANGE OFFICER/BUSINESS ANALYST	*60%*	*10.8 hours*	*2.25 days*	*3/04/23 10:00 AM*	*5/04/23 1:00 PM*
	DATA SPECIALIST	*15%*	*3 hours*	*2.5 days*	*3/04/23 10:00 AM*	*5/04/23 3:00 PM*
	PROJECT OFFICER/DATA CONSULTANT	*5%*	*5 hours*	*12.5 days*	*3/04/23 10:00 AM*	*19/04/23 3:00 PM*
	PROJECT OFFICER/CHANGE OFFICER	*15%*	*3 hours*	*2.5 days*	*3/04/23 10:00 AM*	*5/04/23 3:00 PM*
	PROJECT MANAGER	*5%*	*2.5 hours*	*6.25 days*	*3/04/23 10:00 AM*	*11/04/23 1:00 PM*
30	D3.1.3 Add sections and edit	100%	14.4 hours	1.8 days?	19/04/23 3:00 PM	21/04/23 1:24 PM
	PROJECT OFFICER/CHANGE OFFICER	*60%*	*8.64 hours*	*1.8 days*	*19/04/23 3:00 PM*	*21/04/23 1:24 PM*
	PROJECT MANAGER	*40%*	*5.76 hours*	*1.8 days*	*19/04/23 3:00 PM*	*21/04/23 1:24 PM*
31	D3.1.4 Consult Industry Partners	100%	24 hours	3 days?	19/04/23 3:00 PM	24/04/23 3:00 PM
	CHANGE OFFICER/BUSINESS ANALYST	*100%*	*24 hours*	*3 days*	*19/04/23 3:00 PM*	*24/04/23 3:00 PM*
32	D3.1.5 Revise individual part with feedback	100%	24 hours	3 days	19/04/23 9:00 AM	24/04/23 9:00 AM
	PROJECT OFFICER/DATA CONSULTANT	*50%*	*12 hours*	*3 days*	*19/04/23 9:00 AM*	*24/04/23 9:00 AM*
	CHANGE OFFICER/BUSINESS ANALYST	*50%*	*12 hours*	*3 days*	*19/04/23 9:00 AM*	*24/04/23 9:00 AM*

33	**⊟D3.2 Update D2**	**100%**	**75.667 hours**	**9.667 day...**	**10/04/23 9:00 AM**	**21/04/23 3:20 PM**
34	3.2.1 Redraft first submission	92%	19.667 hours	2.667 days?	10/04/23 9:00 AM	12/04/23 3:20 PM
	PROJECT OFFICER/CHANGE OFFICER	*50%*	*10.667 hours*	*2.667 days*	*10/04/23 9:00 AM*	*12/04/23 3:20 PM*
	PROJECT MANAGER	*50%*	*9 hours*	*2.25 days*	*10/04/23 9:00 AM*	*12/04/23 11:00 AM*
35	3.2.2 Submit for consultation to Sponsors	100%	40 hours	5 days?	12/04/23 3:20 PM	19/04/23 3:20 PM
	PROJECT MANAGER	*100%*	*40 hours*	*5 days*	*12/04/23 3:20 PM*	*19/04/23 3:20 PM*
36	3.2.3 Revise and finalise	100%	16 hours	2 days?	19/04/23 3:20 PM	21/04/23 3:20 PM
	PROJECT MANAGER	*100%*	*16 hours*	*2 days*	*19/04/23 3:20 PM*	*21/04/23 3:20 PM*
37	Submit D3	100%	0 hours	0 days	27/04/23 9:00 AM	27/04/23 9:00 AM
38	**⊟D4 – Updated D3 & User/Training Manual**	**100%**	**132.418 hours**	**21.518 da...**	**25/04/23 9:00 AM**	**24/05/23 2:08 PM**
39	**⊟D4.1 Update D3**	**100%**	**132.418 hours**	**21.518 da...**	**25/04/23 9:00 AM**	**24/05/23 2:08 PM**
40	D4.1.1 Discussion of task and deligating parts	100%	8 hours	1 day?	25/04/23 9:00 AM	26/04/23 9:00 AM
	PROJECT MANAGER	*100%*	*8 hours*	*1 day*	*25/04/23 9:00 AM*	*26/04/23 9:00 AM*
41	D4.1.2 Complete individual sections	24%	35.085 hours	18.518 d...	26/04/23 9:00 AM	22/05/23 2:08 PM
	CHANGE OFFICER/BUSINESS ANALYST	*40%*	*7.407 hours*	*2.315 days*	*26/04/23 9:00 AM*	*28/04/23 11:31 AM*
	PROJECT OFFICER/DATA CONSULTANT	*40%*	*2.963 hours*	*0.926 days*	*26/04/23 9:00 AM*	*27/04/23 8:24 AM*
	DATA SPECIALIST	*5%*	*7.407 hours*	*18.518 d...*	*26/04/23 9:00 AM*	*22/05/23 2:08 PM*
	PROJECT OFFICER/CHANGE OFFICER	*5%*	*7.407 hours*	*18.518 d...*	*26/04/23 9:00 AM*	*22/05/23 2:08 PM*
	PROJECT MANAGER	*10%*	*9.9 hours*	*12.375 d...*	*26/04/23 9:00 AM*	*12/05/23 1:00 PM*
42	D4.1.3 Submit for consultation	100%	16 hours	2 days?	2/05/23 9:00 AM	4/05/23 9:00 AM
	CHANGE OFFICER/BUSINESS ANALYST	*100%*	*16 hours*	*2 days*	*2/05/23 9:00 AM*	*4/05/23 9:00 AM*
43	D4.1.4 Revise D3 with feedback	100%	16 hours	2 days?	22/05/23 2:08 PM	24/05/23 2:08 PM
	CHANGE OFFICER/BUSINESS ANALYST	*100%*	*8 hours*	*1 day*	*22/05/23 2:08 PM*	*23/05/23 2:08 PM*
	PROJECT OFFICER/DATA CONSULTANT	*50%*	*8 hours*	*2 days*	*22/05/23 2:08 PM*	*24/05/23 2:08 PM*
44	**⊟D4.2 User Manual**	**100%**	**57.333 hours**	**7.333 day...**	**25/04/23 9:00 AM**	**4/05/23 11:40 AM**
45	D4.2.1 Write first draft	95%	25.333 hours	3.333 days?	25/04/23 9:00 AM	28/04/23 11:40 AM
	PROJECT OFFICER/DATA CONSULTANT	*20%*	*4 hours*	*2.5 days*	*25/04/23 9:00 AM*	*27/04/23 2:00 PM*
	PROJECT OFFICER/CHANGE OFFICER	*40%*	*10.667 hours*	*3.333 days*	*25/04/23 9:00 AM*	*28/04/23 11:40 AM*
	PROJECT MANAGER	*40%*	*10.667 hours*	*3.333 days*	*25/04/23 9:00 AM*	*28/04/23 11:40 AM*
46	D4.2.2 Put the document out for consultation	100%	24 hours	3 days?	28/04/23 11:40 AM	3/05/23 11:40 AM
	PROJECT MANAGER	*100%*	*24 hours*	*3 days*	*28/04/23 11:40 AM*	*3/05/23 11:40 AM*
47	D4.2.3 Revise draft with feeback and finalise	100%	8 hours	1 day?	3/05/23 11:40 AM	4/05/23 11:40 AM
	PROJECT OFFICER/CHANGE OFFICER	*100%*	*8 hours*	*1 day*	*3/05/23 11:40 AM*	*4/05/23 11:40 AM*
48	Submit D3	100%	0 hours	0 days?	24/05/23 2:08 PM	24/05/23 2:08 PM

49	**⊟SD1 – Findings report**	**100%**	**118.4 hours**	**39 days?**	**25/04/23 9:00 AM**	**19/06/23 9:00 AM**
50	**⊟SD1.1 Production of Findings report**	**100%**	**70.4 hours**	**9.625 day...**	**25/04/23 9:00 AM**	**8/05/23 3:00 PM**
51	SD1.1.1Hold discussions and brainstorming session	100%	16 hours	2 days?	25/04/23 9:00 AM	27/04/23 9:00 AM
	PROJECT MANAGER	*20%*	*3.2 hours*	*2 days*	*25/04/23 9:00 AM*	*27/04/23 9:00 AM*
	PROJECT OFFICER/CHANGE OFFICER	*20%*	*3.2 hours*	*2 days*	*25/04/23 9:00 AM*	*27/04/23 9:00 AM*
	PROJECT OFFICER/DATA CONSULTANT	*20%*	*3.2 hours*	*2 days*	*25/04/23 9:00 AM*	*27/04/23 9:00 AM*
	DATA SPECIALIST	*20%*	*3.2 hours*	*2 days*	*25/04/23 9:00 AM*	*27/04/23 9:00 AM*
	CHANGE OFFICER/BUSINESS ANALYST	*20%*	*3.2 hours*	*2 days*	*25/04/23 9:00 AM*	*27/04/23 9:00 AM*
52	SD1.1.2 Deligate sections	100%	1 hour	0.125 days?	27/04/23 9:00 AM	27/04/23 10:00 AM
	PROJECT MANAGER	*100%*	*1 hour*	*0.125 days*	*27/04/23 9:00 AM*	*27/04/23 10:00 AM*
53	SD1.1.3 Research and compute data	100%	30 hours	3.75 days?	27/04/23 10:00 AM	2/05/23 5:00 PM
	DATA SPECIALIST	*50%*	*15 hours*	*3.75 days*	*27/04/23 10:00 AM*	*2/05/23 5:00 PM*
	CHANGE OFFICER/BUSINESS ANALYST	*10%*	*3 hours*	*3.75 days*	*27/04/23 10:00 AM*	*2/05/23 5:00 PM*
	PROJECT OFFICER/DATA CONSULTANT	*20%*	*6 hours*	*3.75 days*	*27/04/23 10:00 AM*	*2/05/23 5:00 PM*
	PROJECT OFFICER/CHANGE OFFICER	*10%*	*3 hours*	*3.75 days*	*27/04/23 10:00 AM*	*2/05/23 5:00 PM*
	PROJECT MANAGER	*10%*	*3 hours*	*3.75 days*	*27/04/23 10:00 AM*	*2/05/23 5:00 PM*
54	SD1.1.4 Draft report	78%	23.4 hours	3.75 days?	3/05/23 8:00 AM	8/05/23 3:00 PM
	CHANGE OFFICER/BUSINESS ANALYST	*12%*	*3.6 hours*	*3.75 days*	*3/05/23 8:00 AM*	*8/05/23 3:00 PM*
	DATA SPECIALIST	*30%*	*6 hours*	*2.5 days*	*3/05/23 8:00 AM*	*5/05/23 1:00 PM*
	PROJECT OFFICER/DATA CONSULTANT	*12%*	*1.2 hours*	*1.25 days*	*3/05/23 8:00 AM*	*4/05/23 10:00 AM*
	PROJECT OFFICER/CHANGE OFFICER	*30%*	*9 hours*	*3.75 days*	*3/05/23 8:00 AM*	*8/05/23 3:00 PM*
	PROJECT MANAGER	*12%*	*3.6 hours*	*3.75 days*	*3/05/23 8:00 AM*	*8/05/23 3:00 PM*
55	**⊟SD 1.2 Consultations**	**100%**	**48 hours**	**24 days?**	**16/05/23 9:00 AM**	**19/06/23 9:00 AM**
56	SD1.2.1 Consult industry partners	100%	32 hours	4 days?	16/05/23 9:00 AM	22/05/23 9:00 AM
	DATA SPECIALIST	*100%*	*32 hours*	*4 days*	*16/05/23 9:00 AM*	*22/05/23 9:00 AM*
57	SD1.2.2 Revise and finalise Findings Report	10%	16 hours	20 days?	22/05/23 9:00 AM	19/06/23 9:00 AM
	PROJECT OFFICER/CHANGE OFFICER	*2%*	*3.2 hours*	*20 days*	*22/05/23 9:00 AM*	*19/06/23 9:00 AM*
	PROJECT OFFICER/DATA CONSULTANT	*60%*	*3.2 hours*	*0.667 days*	*22/05/23 9:00 AM*	*22/05/23 3:20 PM*
	PROJECT MANAGER	*2%*	*3.2 hours*	*16 days*	*22/05/23 9:00 AM*	*13/06/23 9:00 AM*
	DATA SPECIALIST	*30%*	*3.2 hours*	*1.333 days*	*22/05/23 9:00 AM*	*23/05/23 11:40 AM*
	CHANGE OFFICER/BUSINESS ANALYST	*5%*	*3.2 hours*	*8 days*	*22/05/23 9:00 AM*	*1/06/23 9:00 AM*
58	SD1.2.3 Findings report added to GitHub	100%	0 hours	0 days?	19/05/23 9:00 AM	19/05/23 9:00 AM
	PROJECT OFFICER/CHANGE OFFICER	*100%*	*0 hours*	*0 days*	*19/05/23 9:00 AM*	*19/05/23 9:00 AM*

59	**⊟SD2 – Recommendations Report**	**100%**	**96.999 hours**	**12.302 da...**	**24/05/23 2:08 PM**	**9/06/23 4:33 PM**
60	**⊟SD2.1 Consultations**	**100%**	**96.999 hours**	**12.302 da...**	**24/05/23 2:08 PM**	**9/06/23 4:33 PM**
61	SD2.1.1 Hold discussions and brainstorm	100%	16 hours	2 days?	24/05/23 2:08 PM	26/05/23 2:08 PM
	PROJECT MANAGER	*20%*	*3.2 hours*	*2 days*	*24/05/23 2:08 PM*	*26/05/23 2:08 PM*
	PROJECT OFFICER/CHANGE OFFICER	*20%*	*3.2 hours*	*2 days*	*24/05/23 2:08 PM*	*26/05/23 2:08 PM*
	PROJECT OFFICER/DATA CONSULTANT	*20%*	*3.2 hours*	*2 days*	*24/05/23 2:08 PM*	*26/05/23 2:08 PM*
	DATA SPECIALIST	*20%*	*3.2 hours*	*2 days*	*24/05/23 2:08 PM*	*26/05/23 2:08 PM*
	CHANGE OFFICER/BUSINESS ANALYST	*20%*	*3.2 hours*	*2 days*	*24/05/23 2:08 PM*	*26/05/23 2:08 PM*
62	SD2.1.2 Consult Sponsor	100%	8 hours	1 day?	24/05/23 2:08 PM	25/05/23 2:08 PM
	PROJECT OFFICER/DATA CONSULTANT	*100%*	*8 hours*	*1 day*	*24/05/23 2:08 PM*	*25/05/23 2:08 PM*
63	**⊟SD2.2 RR Production**	**100%**	**72.999 hours**	**12.302 da...**	**24/05/23 2:08 PM**	**9/06/23 4:33 PM**
64	SD2.2.1 Deligate roles	100%	1 hour	0.125 days?	24/05/23 2:08 PM	24/05/23 3:08 PM
	PROJECT MANAGER	*100%*	*1 hour*	*0.125 days*	*24/05/23 2:08 PM*	*24/05/23 3:08 PM*
65	SD2.2.2 Research recommendations	50%	32 hours	8 days?	26/05/23 2:08 PM	7/06/23 2:08 PM
	PROJECT OFFICER/DATA CONSULTANT	*50%*	*6.4 hours*	*1.6 days*	*26/05/23 2:08 PM*	*30/05/23 9:56 AM*
	CHANGE OFFICER/BUSINESS ANALYST	*10%*	*6.4 hours*	*8 days*	*26/05/23 2:08 PM*	*7/06/23 2:08 PM*
	DATA SPECIALIST	*20%*	*6.4 hours*	*4 days*	*26/05/23 2:08 PM*	*1/06/23 2:08 PM*
	PROJECT OFFICER/CHANGE OFFICER	*10%*	*6.4 hours*	*8 days*	*26/05/23 2:08 PM*	*7/06/23 2:08 PM*
	PROJECT MANAGER	*10%*	*6.4 hours*	*8 days*	*26/05/23 2:08 PM*	*7/06/23 2:08 PM*
66	SD2.2.3 Write first draft	43%	31.999 hours	9.302 days?	26/05/23 2:08 PM	8/06/23 4:33 PM
	PROJECT OFFICER/CHANGE OFFICER	*30%*	*7.442 hours*	*3.101 days*	*26/05/23 2:08 PM*	*31/05/23 2:57 PM*
	PROJECT MANAGER	*15%*	*7.442 hours*	*6.201 days*	*26/05/23 2:08 PM*	*5/06/23 3:45 PM*
	PROJECT OFFICER/DATA CONSULTANT	*10%*	*7.442 hours*	*9.302 days*	*26/05/23 2:08 PM*	*8/06/23 4:33 PM*
	DATA SPECIALIST	*15%*	*7.442 hours*	*6.201 days*	*26/05/23 2:08 PM*	*5/06/23 3:45 PM*
	CHANGE OFFICER/BUSINESS ANALYST	*30%*	*2.232 hours*	*0.93 days*	*26/05/23 2:08 PM*	*29/05/23 1:35 PM*
67	SD2.2.4 Edit and Finalise	100%	8 hours	1 day?	8/06/23 4:33 PM	9/06/23 4:33 PM
	PROJECT OFFICER/CHANGE OFFICER	*100%*	*8 hours*	*1 day*	*8/06/23 4:33 PM*	*9/06/23 4:33 PM*
68	Recommendations Report added to GitHub	100%	0 hours	0 days?	29/05/23 9:00 AM	29/05/23 9:00 AM

69	**⊟D5 – Final Group Reflection**	**100%**	**18.198 hours**	**5.482 day...**	**24/05/23 2:08 PM**	**1/06/23 9:00 AM**
70	Group Reflection session	100%	8 hours	1 day?	24/05/23 2:08 PM	25/05/23 2:08 PM
	PROJECT MANAGER	*20%*	*1.6 hours*	*1 day*	*24/05/23 2:08 PM*	*25/05/23 2:08 PM*
	PROJECT OFFICER/CHANGE OFFICER	*20%*	*1.6 hours*	*1 day*	*24/05/23 2:08 PM*	*25/05/23 2:08 PM*
	PROJECT OFFICER/DATA CONSULTANT	*20%*	*1.6 hours*	*1 day*	*24/05/23 2:08 PM*	*25/05/23 2:08 PM*
	DATA SPECIALIST	*20%*	*1.6 hours*	*1 day*	*24/05/23 2:08 PM*	*25/05/23 2:08 PM*
	CHANGE OFFICER/BUSINESS ANALYST	*20%*	*1.6 hours*	*1 day*	*24/05/23 2:08 PM*	*25/05/23 2:08 PM*
71	Drafting structure of report	84%	1.598 hours	0.238 days?	25/05/23 2:08 PM	25/05/23 4:02 PM
	PROJECT MANAGER	*20%*	*0.076 hours*	*0.048 days*	*25/05/23 2:08 PM*	*25/05/23 2:31 PM*
	PROJECT OFFICER/CHANGE OFFICER	*20%*	*0.38 hours*	*0.238 days*	*25/05/23 2:08 PM*	*25/05/23 4:02 PM*
	PROJECT OFFICER/DATA CONSULTANT	*20%*	*0.381 hours*	*0.238 days*	*25/05/23 2:08 PM*	*25/05/23 4:02 PM*
	DATA SPECIALIST	*20%*	*0.381 hours*	*0.238 days*	*25/05/23 2:08 PM*	*25/05/23 4:02 PM*
	CHANGE OFFICER/BUSINESS ANALYST	*20%*	*0.381 hours*	*0.238 days*	*25/05/23 2:08 PM*	*25/05/23 4:02 PM*
72	Writing report	90%	0.6 hours	0.083 days?	24/05/23 2:08 PM	24/05/23 2:48 PM
	CHANGE OFFICER/BUSINESS ANALYST	*5%*	*0 hours*	*0 days*	*24/05/23 2:08 PM*	*24/05/23 2:08 PM*
	PROJECT OFFICER/CHANGE OFFICER	*5%*	*0 hours*	*0 days*	*24/05/23 2:08 PM*	*24/05/23 2:08 PM*
	PROJECT MANAGER	*90%*	*0.6 hours*	*0.083 days*	*24/05/23 2:08 PM*	*24/05/23 2:48 PM*
73	Editing and revising	100%	8 hours	1 day?	25/05/23 4:02 PM	26/05/23 4:02 PM
	PROJECT OFFICER/DATA CONSULTANT	*100%*	*8 hours*	*1 day*	*25/05/23 4:02 PM*	*26/05/23 4:02 PM*
74	Submit Final Group Reflection	100%	0 hours	0 days?	1/06/23 9:00 AM	1/06/23 9:00 AM
75	**⊟D6 – Project Presentation**	**100%**	**87.999 hours**	**10.839 da...**	**19/06/23 9:00 AM**	**3/07/23 4:42 PM**
76	D6.1 Prepare a storyboard/ slide deck template	100%	24 hours	3 days?	19/06/23 9:00 AM	22/06/23 9:00 AM
	CHANGE OFFICER/BUSINESS ANALYST	*100%*	*24 hours*	*3 days*	*19/06/23 9:00 AM*	*22/06/23 9:00 AM*
77	D6.2 Insert summary points per report and process outlined	100%	32 hours	4 days?	19/06/23 9:00 AM	23/06/23 9:00 AM
	PROJECT OFFICER/CHANGE OFFICER	*100%*	*32 hours*	*4 days*	*19/06/23 9:00 AM*	*23/06/23 9:00 AM*
78	D6.3 Review slides and prepare speaking notes	50%	8 hours	2 days?	23/06/23 9:00 AM	27/06/23 9:00 AM
	PROJECT MANAGER	*50%*	*1.6 hours*	*0.4 days*	*23/06/23 9:00 AM*	*23/06/23 1:12 PM*
	PROJECT OFFICER/CHANGE OFFICER	*15%*	*1.6 hours*	*1.333 days*	*23/06/23 9:00 AM*	*26/06/23 11:40 AM*
	PROJECT OFFICER/DATA CONSULTANT	*10%*	*1.6 hours*	*2 days*	*23/06/23 9:00 AM*	*27/06/23 9:00 AM*
	DATA SPECIALIST	*10%*	*1.6 hours*	*2 days*	*23/06/23 9:00 AM*	*27/06/23 9:00 AM*
	CHANGE OFFICER/BUSINESS ANALYST	*15%*	*1.6 hours*	*1.333 days*	*23/06/23 9:00 AM*	*26/06/23 11:40 AM*
79	D6.4 Practice presentation	62%	23.999 hours	4.839 days?	27/06/23 9:00 AM	3/07/23 4:42 PM
	PROJECT MANAGER	*30%*	*11.613 hours*	*4.839 days*	*27/06/23 9:00 AM*	*3/07/23 4:42 PM*
	DATA SPECIALIST	*10%*	*3.871 hours*	*4.839 days*	*27/06/23 9:00 AM*	*3/07/23 4:42 PM*
	PROJECT OFFICER/CHANGE OFFICER	*10%*	*3.871 hours*	*4.839 days*	*27/06/23 9:00 AM*	*3/07/23 4:42 PM*
	PROJECT OFFICER/DATA CONSULTANT	*10%*	*3.871 hours*	*4.839 days*	*27/06/23 9:00 AM*	*3/07/23 4:42 PM*
	CHANGE OFFICER/BUSINESS ANALYST	*20%*	*0.774 hours*	*0.484 days*	*27/06/23 9:00 AM*	*27/06/23 1:52 PM*
80	Submit/Presentation	100%	0 hours	0 days?	19/06/23 9:00 AM	19/06/23 9:00 AM
	PROJECT MANAGER	*100%*	*0 hours*	*0 days*	*19/06/23 9:00 AM*	*19/06/23 9:00 AM*

81	**⊟D7 – Final Delivery of Products**	**100%**	**1 hour**	**0.125 day...**	**10/06/23 8:00 AM**	**12/06/23 9:00 AM**
82	D7.1 Send SD1 and SD2 from GitHub to Delivery Partner	100%	1 hour	0.125 days?	10/06/23 8:00 AM	12/06/23 9:00 AM
	PROJECT OFFICER/CHANGE OFFICER	*100%*	*1 hour*	*0.125 days*	*10/06/23 8:00 AM*	*12/06/23 9:00 AM*

SRS/SCOPING

1. OVERVIEW

1.1. INTENDED AUDIENCE

The intended audience for our project will include the key project stakeholders (SAS Institute and Zoe Empowers) and where appropriate, interested parties hoping to gain insight into the impacts the Zoe Empowers (ZE) project has on both wider and local communities in developing nations.

1.2. PROJECT SCOPE

The aim of this project is to analyse the data provided by SAS for their partnered charity organisation, Zoe Empowers. The project will use data analytics methods and tools, such as Viya (SAS-approved platform) and R Studio, to extract key insights regarding the program and its participants' engagement/success before, during, and after the program. DataSynergy will produce two reports: Findings and Analysis/Recommendations. The Finding Report will provide a detailed analysis of the raw data provided by SAS, highlighting the benefits, limitations, and potential areas for improvement in the program. Following the Finding report, the project will produce an Analysis and Recommendations Report, which will be split into two distinct sections Analysis and Recommended Action. The Analysis section will identify any vulnerabilities/gaps that may exist within the program structure/activities, based on the key findings derived from the Findings Report. The Recommendations section will provide suggestions for improving the effectiveness of the program based on the vulnerabilities/gaps identified in the Analysis section. Lastly, DataSynergy will deliver a presentation to SAS that provides insightful information about various aspects of the Zoe Empowers program and will pinpoint areas in the program that require improvement. It is important to note that this project will not deliver any solutions to SAS, regarding any aspects of the Zoe Empowers program. Additionally, it will not project future data outcomes, but instead, will focus on the current efforts of the program and how they can be improved for future intakes.

2. DATA UNDERSTANDING

2.1. INITIAL DATA SOURCES

The data that has been provided to us by SAS has been deemed sufficient to execute the whole project. The sponsor has provided three data files in a csv format that describes different sections of the Zoe Empowers' work.

Firstly, the two data sets split participants into two respective countries, Kenya and Rwanda, with around 400 rows and 500 rows respectively. Both these datasets are in the exact same format with perfectly corresponding headings, which is beneficial for the project team as the alternative of joining two tables would be trivial. The data sets identify participants per row with a unique identifier that does not overlap between datasets. There is no personally identifying information (PII) about individual participants outside what is useful to the study, maintaining confidence in PII. The data that is included for the participant ranges from basic classifiers like, gender, religion, age and level of education, none of which are personally identifiable. Information that specifically pertains to the study includes points of interest and growth that Zoe Empowers has identified for us. The years in which the participants have answered the questionnaire ranges from 2015 to 2018.

There is a detailed list of 56 columns including categories that carry simple information whereas some columns prove unhelpful due to the amount of filler data that exists. The following identified information has been sighted as 'helpful' to the project, including:

- Nutrition
    - How much food participants have and what types
    - How to prepare food
- Finance Status
    - Type of financial position participants are in
    - Their savings;
    - or investment in farming
- Program Structure/ Provisions
    - What provisions were received by ZE
    - What stage in training they're up to in the program;
    - Recently on boarded or recently graduated from the program.
- Knowledge around rights

It is important to note that there is a variety of categorical and continuous types of data items within the data set. It is also quite full of N/A values that have to be managed. The data set is quite extensive and will provide a large amount of interesting points to go over and investigate.

The last data set is possibly the most important out of the three, it contains the Self Sufficiency Index (SSI) for all the participants. The Self Sufficiency Index is created by Zoe Empowers and SAS to quantify how self-sufficient a participant is at the point of doing the questionnaire. The data set contains all the same unique identifiers for both Kenya and Rwanda, which is incredible for joining the data with only less than 10 participants not matching up. It also contains 9 other columns, the index itself which is a summation of the other eight. The other eight categories are Food Security and Nutrition, Housing, Community Connections, Health and Hygiene, Child Rights, Education, Economy / IGA and Spiritual Strength. These all are a 4 point value range from 0 to 3, which also means that the self sufficiency index ranges from 0 to 24. There are some places in this data set that do have null values (which are sometimes represented with a '.') but all the Self Sufficiency Indexes are filled, so these can be simply reverse engineered if required.

2.2. DATA COLLECTION AND CAPTURES

The data that is provided is the basis for our entire project. It is presumably direct from the source and appears to have already been managed for us. There is a large complexity to this data that could lead to many different investigations and angles to tackle this project. However, there is always room for more data to be included. Extra outside information that could improve the contextual understanding of what is happening in Kenya and Rwanda could prove valuable, especially since the data is from 2015 - 2018 and the pandemic that has since ensued would have impacted the participants of the Zoe Empowers. The data we would look for is likely to be provided from reputable sources such as government/international agencies like WHO and the UN. However it is unlikely that we would need to collect/organise more data than what we have been provided with.

2.3. DATA QUALITY

At first glance, the data is of high quality.

- It is structured very effectively with lots of features pertaining to an individual participant.
- There does not seem to be any evidence of duplication within the data.
- It is simple to understand.
- There are only three files.
- All three files “line up” almost perfectly with each other:
    - Appending Kenya and Rwanda with the same column names.
    - Joining the Self Sufficiency Index on the unique id.

There are a few issues that arise. There is a tendency to have NAs that are concentrated in a few direct columns such as Vocational Training in the Kenya and Rwanda datasets and Education in the Self Sufficiency Index dataset. Another immediate issue is there is no data for after the participants have graduated from Zoe Empowers and practically (a single row out of around 900) no data on truly before the participants begin work with Zoe Empowers. This will make the discoveries around the impact of participating in Zoe Empowers difficult to properly understand. To find these properties is rudimentary, firstly excel can be used to find where the NA values are through short functions and filtering. It can additionally be used to identify the distinct values within indexes and attempt de-duplication of values. Since no de-duplication was generated by excel, it is safe to assume that there are no obvious duplicates. Joining the three files is more technical, software such as Viya or RStuido has the tools available to append/join files and also produce a report on successfulness.

3. DATA PREPARATION

Due to the high quality of the data, there does not seem to be a large amount of data preparation required compared to most data analysis projects. That does not mean there is nothing to do. Firstly there will need to be some cleaning performed on the datasets. Next for particular models the data needs to be transformed into a suitable format. Lastly there would be a great benefit to gain from appropriately appending and joining data sets as already described.

3.1. CLEANING

The first step in cleaning the data would be managing the null/NA values. Across the board there are several points where the null values appear and need to be managed. Firstly the SSI data set has a pattern of missing values specifically in one index. Luckily for us, the SSI column is simply a summation of the others, when only one column is missing it is possible to calculate exactly what the value was supposed to be. The Rwanda data set in particular has a large amount of null values that will be more difficult to find the answer to. The amount of features that the data has is quite large, this is a beneficial property as some columns can be extrapolated, this technique is called Hot-Deck Imputation. For example, “Taught vocational training” would be dependent on if they've completed or even started “Vocational/Skill Training”. This can be applied across several different sections of the data but doesn’t solve all the issues. Unfortunately due to the nature of some indexes deletion is the only choice, this is aimed at the indexes that have categorical data that provide all possible information. It would be possible to encode a numerical representation and then take an average to fill the missing value, but considering the nature that this is participants lives and that some of these columns are primarily missing data, deletion is the better option. Specifically, keeping to pairwise deletion as mentioned before, there are many features and to perform listwise deletions and remove all data points that contain null values would result in a far greater loss of information than simply removing them when needed. This does make the

approach in modelling more complex as cleaning is required almost per model, but the information retained from this approach is required for a majority of analysis to be performed.

3.2. TRANSFORMATION

Several techniques would be helpful for transforming the data into a better format to aid different models. The model that would benefit the most from transformations would be the multiple regression models. Firstly, the model can handle both categorical and continuous data, but is more sensitive to continuous/numerical data. To help build a more accurate model first we should encode categorical data into a numerical format, change indexes that have Y and N values to 1 and 0s, and encode the multiple choice questions into their respective values. For example, the index “Membership status” has four options, Not Yet a Member, Member less than 3 months, Member 1yr - 2yr and Recent Graduate (less than three months) can be encoded to values 0 to 3. It would be a time consuming process to translate all indexes from the start, so again it is likely to be done similar to pairwise deletion, on demand. The next transformation that the multiple regression model would benefit from is normalisation. This involves reducing the data from a full range to a range between 0 and 1 for all values. This provides more accurate results for both simple linear regression and multiple regression models as it is easier to calculate the relevant significance scales between the predictor variables and their effect on the response variable. Additionally, normalisation increases readability to explorative models and visualisation techniques as the scales would be equal across every axis. If all the techniques were applied to the data from the beginning, the format that would be left would be all values encoded numerically and then normalised. However, both encoding and normalisation applies a level of abstraction to the data, keeping a record of the original data to cross check assumptions and understanding would be key to progressing effectively.

3.3. STORAGE

The storage systems for managing this project are pretty simple. The files are not too excessive that they can be stored both locally and on a cloud system like google drive. The benefit of having cloud storage is the ability to see exactly the same item as a team member, version control is not a particular worry if we keep prime documents separated. Another noteworthy point is that these raw files are stored on SAS’ Viya platform and that no matter how much manipulation that we have we'll always have a copy of the originally provided document. Throughout the project, it is likely that the direct coding produced on software platforms will be pushed onto GitHub. It is important to keep all the places that we store the data files private as we are managing the data that was provided to us by SAS that we ourselves do not own. On top of that an Intellectual Property agreement has been signed with SAS about how we are required to manage the data sets and the reports that we are going to produce for them.
We need to be mindful that as we start analysing the data sets we will generate new sets, some larger as we combine information and some smaller as we subject the data to categorisations. It’s an extremely helpful thing to stay ahead of the growth of complexity and communicate the different storage systems and the current location of where everything is kept.

4. MODELLING

There is a defiant split between two types of models during the lifetime of a data science project, exploration and evaluation. Firstly exploration models are about learning what is in the data. They delve into the raw data points and summarise information, identify trends/relationships and build questions about what we can analyse. On the other hand evaluation models are those that build more statistically significant information and demonstrate quantitatively how data relates to

produce information. They work in tandem, exploration models help produce evaluation modes to define our understanding better. Evaluation models can produce more questions themselves, especially if they fail to produce results, which push us to scope outwards and generate more exploration models to “rephrase” our questions.

4.1. EXPLORATION MODELS

These models are the beginning of extrapolating information from the data. They are used to present overviews of individual variables and interaction between them. They’re doing the work to provide context from random data points, turn it from a clean excel spreadsheet into something that can be understood at a quick glance. An even more important role that they serve is helping to prepare data for the evaluation models by showing facts such as outliers.

The most basic and beginning part to any data exploration is the classic histogram visualisation. The histogram shows the frequency distribution of a single variable. This makes for a simple way to begin understanding how the data is behaving in this project. It will guide us in knowing if the data is normally distributed or not. With correct bin selection it will also help us identify outliers early. The first place this would be deployed is directly on the variable of most interest, the SSI, this index distributed according to the Central Limit Theorem, is a considerable number of participants for the Theorem to take hold. If the data does not hold up to the Central Limit Theorem and doesn’t approach a normal distribution, then straight away the histogram is producing interesting questions for deeper explorations. Once a variable of interest has been identified, more quantitative techniques are required. To identify normal distribution of the data, a Normal Q-Q plot can be employed, if the distribution lines up with the diagonal, then the assumption of normality can be confirmed for more evaluative models and/or hypothesis testing techniques. Furthermore, if needing to identify outliers a box plot will visually show the quantitative measurement of inter quartile range of a variable, any points that are outside the expected range should be removed before employing models such as multiple regression as they can impact accuracy.

An interesting model for judging the significance of predictor variables and the variable of interest is a decision tree. This model classifies the impact of both categorical and continuous variables onto the chosen variable of interest. It shows the path of significance from the root node through the predictor variable to the variable of interest quantitatively, showing what are the significant predictors earlier in the path. It will identify more interesting variables in the data and several decision trees can show us different trends. It is also designed as a classifier model, helping to provide another way to classify other rows in the data that might have not been entered correctly into the data set, however it is a supervised model and must be trained with a steady hand to attempt to avoid overfitting and biases. If in the earlier stages it was difficult to clear missing data points a well trained decision tree can help us fill the classification of particular variables. These also point us in the right direction for more robust statistical models about variable impacts such as multi linear regression. Although before deployment we need to acknowledge that the decision trees are not a great model for complex data, which our data set for it. It should not be blindly applied to the entire or large sections of the dataset. When we have questions that focus on a particular few variables this is when decision trees are best employed. They should prove helpful in identifying the way that the more economically focused data points impact on the Self Sufficiency Index and lead us towards more research, if required.

4.2. EVALUATION MODELS

Explorative models are helpful visualisation tools that teach us about the shapes of and between variables in data. They generate questions and intrigue about the nature of the data that we desire to analyse, a blurb to the more vigorous component of statistical analysis that quantifies and evaluates the data. Different models have to be used to acquire statistical significance.

4.2.1. SIMPLE LINEAR REGRESSION

A model that is likely to show a great deal of interest in evaluating the effectiveness of Zoe Empower's methodology is linear regression. Simple linear regression is useful for quantifying the relationship between two variables. Simple analysis between the predictor, time spent in Zoe Empower's and the effect, participants' SSI, should have a relationship. Linear regression models will help quantify how much of an effect the predictor will have on the predicted variable, if at all. Additionally an advantage of the model is that it can describe the level of uncertainty within the model and even demonstrate a visual representation of it with a confidence interval. More statistically rigorous methods such as finding the p value of the predictor and quantifying the relationship through an R squared measurement will also be deployed. Linear regression also has some constraints, it assumes linearity, which is to say that it assumes the relationship between variables will be linear, it does not have the ability to measure different relationships such as polynomials. However we predict that the participants' Self Sufficiency Index will increase with time, as Zoe Empowers appears to be an effective charity organisation and our statistically rigorous measurements will help identify if this prediction is reality. Unfortunately, linear regression is susceptible to outliers in the data, they can have a dramatic effect on the models effectiveness and accuracy. To manage this, the explorative models like histograms and boxplots will help us identify the outliers in specific categories and remove them before applying the linear regression model.

4.2.2. MULTIPLE REGRESSION

Building upon simple linear regression, multiple regression models will help demonstrate the impact of different independent variables on the dependent variable, Self Sufficiency Index. A highlightable issue with simple linear regression is that it measures the relationship between only two variables, this will be very important for our efforts in finding the effectiveness of the Zoe Empowers' methodology, but it will not highlight the specific impacts of what measurable differences correlate to an improved quality of life. We will be figuring out precisely how the Self Sufficiency Index is calculated, but the use of multiple regression can tell us the impact of specific independent variables. This will allow us to focus ourselves toward understanding a secondary part of the project. The macro economics factors that influence the individuals. We can choose what variables we would like to monitor the impact that they have on the Self Sufficiency Index. For example, how does buying assets vs building savings impact the Self Sufficiency Index directly? Does one or the other tend to have a greater impact? The use of multiple regression models will be able to identify these types of questions. More of these specific questions will reveal themselves through the exploration models, like box plots separated by categorical variables. Past that, the benefits of using multiple regression models are similar to the use of simple linear regression. We have the ability to quantify both the metric of how these variables impact the dependent variable and an additional metric to quantify the uncertainty of the model. There are similar disadvantages too. Multiple regression models are dramatically impacted by outliers, even more so than simple linear regression, and therefore, they must be identified and managed before attempting to fit the models. Multiple regression also brings in a couple of new issues that need to be addressed, firstly it requires a larger sample size to produce accurate results. Each variable may have an impact on the dependent, but without a large enough sample size these

trends cannot be identified. Luckily the data that was provided to us is quite extensive, over 900 participants should be a large enough sample size. But we need to note that due to different types of testing and the evaluation of outliers has not been identified yet, that number could be significantly reduced to be able to produce corrected results. Which unfortunately could lead to the rejection of this model. Lastly and one to be extremely mindful of is the multicollinearity issue. Multicollinearity is an issue when the predictor variables are highly correlated with each other, when this is the case it significantly increases the difficulty of understanding what is driving the relationship between the predictors and the variable of interest. I believe that there is evidence in simply the columns of the data that this is a likely effect if we do not choose the predictors carefully, for example “I have a business” and “My group members give me business” are likely to be directly impactful of each other. With the acknowledgements of the drawbacks of multiple regression models, it will still be beneficial to deploy and evaluate the significance of different variables' impact.

5. EVALUATION

The main focus on the project is to determine the effectiveness of the Zoe Empowers’ program as a whole. With a general nudge towards investigating the demographics and macroeconomic factors that influence the participants self-sufficiency. This leads us to a more open exploration of the data once we have found our main points about effectiveness. There has been other research conducted on this dataset and the effectiveness of Zoe Empowers’ program and the participants’ self sufficiency. An example is an executive summary by Kenneth Hinze, a sociologist-demographer that retired in 2001 from being a research-active Professor at Louisiana State University in Shrevepo. This summary is a rigorous statistical analysis of the SSI and the validity of the claim that Zoe Empowers’ program does indeed create improvement. The reports we will be creating will take the context that there has been research already conducted, but will not be comparing our findings with those that have already been reported on.
After analysis has been completed we will then need to create recommendations based on our findings. Our goal is to make insightful recommendations on improving specific attributes of the program, singling out what data points make a significant impact on the participants. It is likely that we will also find some recommendations about their data acquisition processes, but that is almost always a given for even data recommendation reports. There will never be enough data in the world for analysis. If these recommendations are of high enough quality and spark enough interest, there may be a slim chance that these findings will be shown directly to Zoe Empowers. Other than that, it is not likely there will be any steps to take after this project has demonstrated the information found.

6. DEPLOYMENT

The project will have four main deliverables to the sponsor: The Findings Report, Analysis and Recommendations Report and a Presentation. The Presentation will be the first deliverable to the Sponsor SAS Institute, followed by the three reports handed in together. These deliverables are in accordance with the dictated assessments schedule from the university.

The project deliverables will be monitored throughout its development, via a series of university deliverables which will act as “checkpoints” for the “monitoring and maintenance” across documentation. The deliverables have been scheduled into a Gantt chart to track timing of tasks and are visually displayed in a project Trello board.

In terms of training, a brief summary of instructions will be provided in each delivered document and a quick rundown of these instructions will be presented during the final presentation.

7. SAS Feedback and Team Response/Action

Meeting date and time: Tuesday 28th March at 9:30 am - 10 am.

Feedback received

- Scope section although good for academic submission doesn't necessarily meet industry standards, it can be shortened to what will be delivered rather than how. Keeping it short and concise is the best industry approach.
- SAS highlighted that they were looking for a distinct analysis section from the findings to be included.

Follow-up feedback from Jordan MowlaiSAS Representative:

As discussed in the catch-up here are my points regarding the scoping document –

Business project scope documents are clear and concise on the project scope and deliverables. It is meant for non-technical individuals to get a better understanding of what is required and the constraints involved.

Usually the project scope is within the range of just a couple of pages, I understand that you have a marking rubric to go off and thus I will talk against this. Overall I think it is a very comprehensive document and I can see a lot of thought has gone into it. All of the main points along the rubric have been addressed, except two 1. Integration and 2. Formats. As our project these two are not required it might be best to simply mention that these are not relevant to the project just in case they mark you down for this.

Another time to address is just general documentation work, grammatical errors, formatting, language, etc.

Again, unfortunately you are constrained by the rubric as it's not exactly what a scoping document is usually set up but overall looks very well done.

Team response/action points

- Revise scope to semi meet industry standards and academic standards (*meeting halfway*)
- Will divide the findings/analysis report into 2 distinct sections with findings and analysis.