SCHOOL OF INFORMATICS & IT

Storytelling Dashboard - Data Storytelling

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Tutorial Group	:	P03
Tutor	:	Nami Imanishi
Submission Date	:	7/12/2023

Declaration of Originality

I am the originator of this work and I have appropriately acknowledged all other original sources used as my references for this work.

I understand that Plagiarism is the act of taking and using the whole or any part of another person's work, including work generated by AI, and presenting it as my own.

I understand that Plagiarism is an academic offence
and if I am found to have committed or abetted the offence of plagiarism in relation to this submitted work, disciplinary action will be enforced.

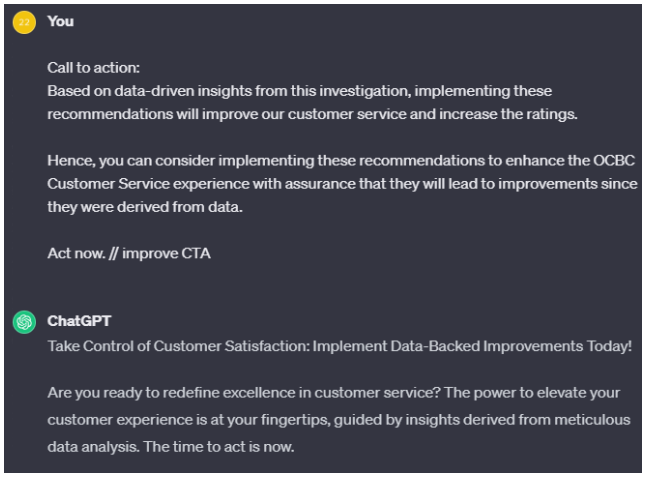
Declaration on the use of Generative AI tools for assignments

Describe how you have used Generative AI tools such as ChatGPT or Dall.E-2 in your assignment.

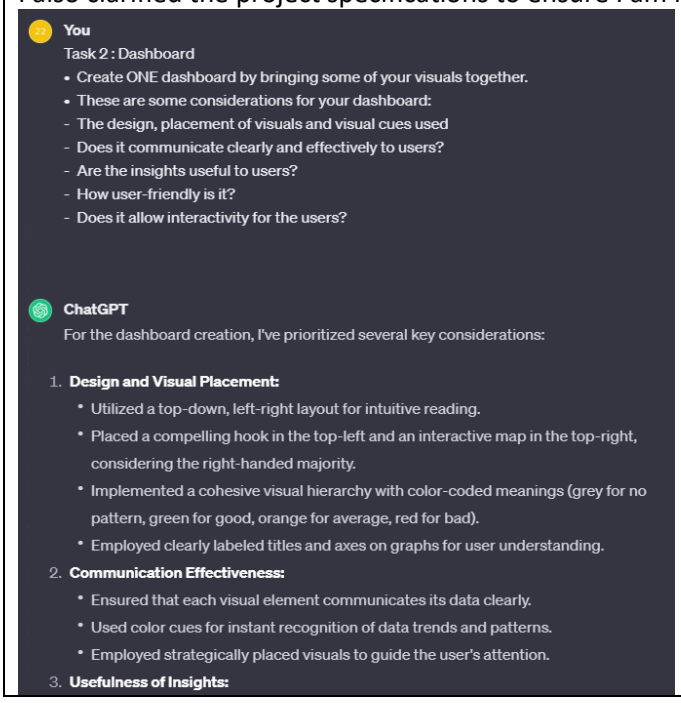
Show snapshots of the conversations with the AI tool (i.e., the prompts you used and the response you get from the AI tool).

ChatGPT Conversation:
https://chat.openai.com/share/13170724-6507-4967-84b0-e70626f56f4c
https://chat.openai.com/share/1c247586-b164-4caa-9e41-73b346a6cbb6

For this project, I used ChatGPT to phrase my statements and explanations to be clear and succinct:



I also clarified the project specifications to ensure I am not missing out anything:



How do you indicate the reference?
The content generated by AI tools are not retrievable except by the user who generated them, so they are considered non-recoverable sources. Although non-recoverable data or quotations in APA Style papers are usually cited as personal communications, with ChatGPT-generated text there is no person communicating. Quoting text from ChatGPT chat is therefore more like sharing the output of an algorithm, with a reference list entry and the corresponding in-text citation.

According to the official APA Style site, ChatGPT references should be cited as:

E.g. OpenAI. (2023). *ChatGPT* (Sep 25 version) [Large language model]. https://chat.openai.com/chat

Important Note:

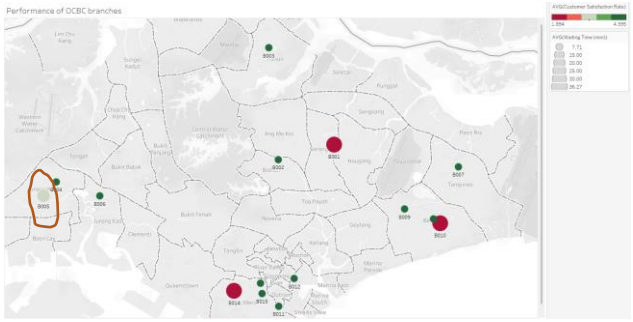
- Do not copy answers produced by the AI tool in totality as it is considered as plagiarism.
- Do not rely on any information produced by the AI tool blindly. You should always verify the answer with other sources. Do not assume that these answers provided by the AI tool are correct.
- To achieve quality outputs from the AI tool, you should provide good prompt that is clear and specific. Be precise and provide context. Avoid asking open-ended questions.

Task 1 : Visual Cues

1. **Colour and Contrast and Visual Hierarchy**

   Changed colour of the middle value from grey to yellow, making it more noticeable from the grey background of the map. Employed ordinal colour gradient to show a clear visual hierarchy between well-performing and poor-performing branches.

Before:

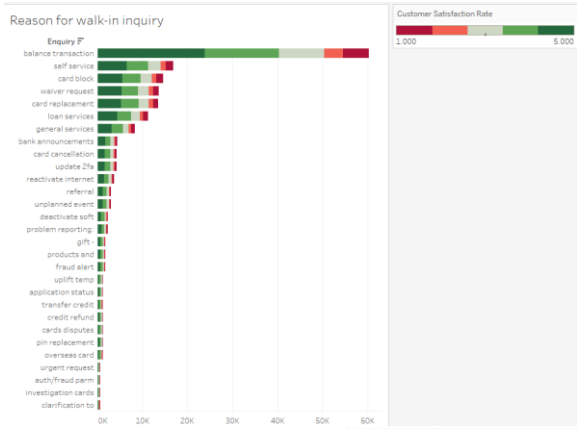


After:

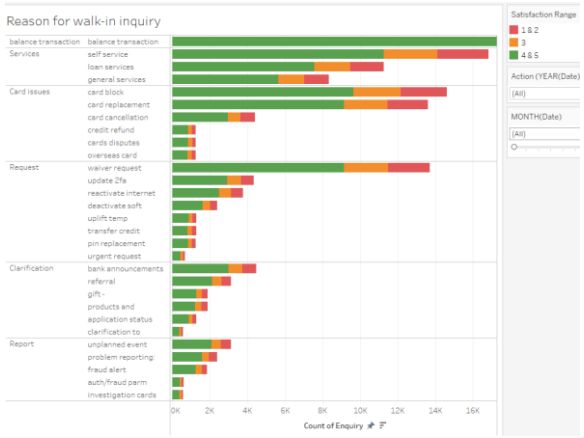
2. **De-cluttering**

- Having too many ratings clutters the bar chart, making it overwhelming. To enhance clarity, the ratings are grouped into Ideal (5), Moderate (3-4), and Poor (1-2) clusters.
- Enquiry is too specific for non-technical viewers to interpret. Hence, I will group them into a broad and generic category so that business users can instantly identify common inquiry types from a glance and only investigate deeper into a particular inquiry if they want.

Before:



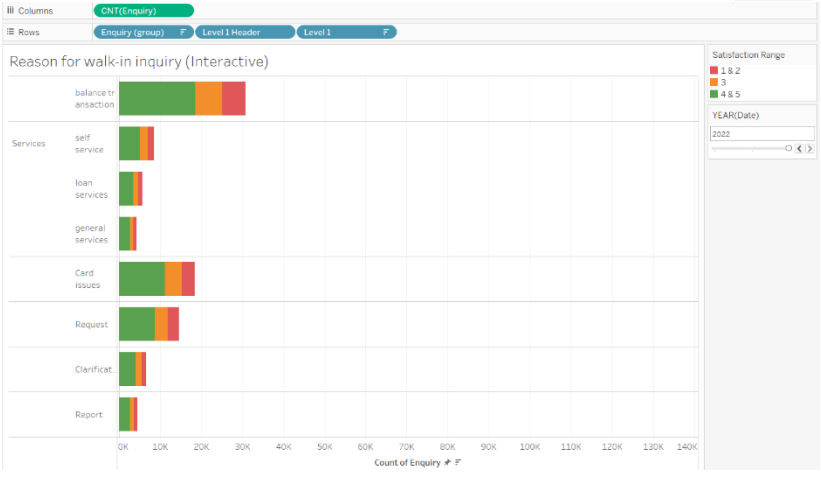
After V1 (Used in Dashboard):



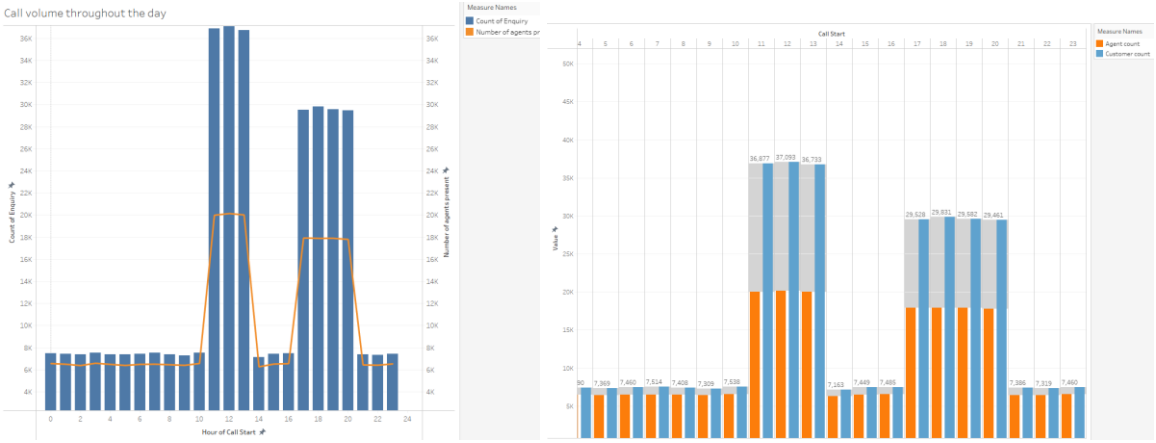
For interactive story:

I created a version that only displays the inquiry type and aggregates all the inquiries within the inquiry type to have a clear and direct overview of each inquiry type.

The user can still drill-down to inspect an inquiry in an inquiry type by clicking on the bar to expand.

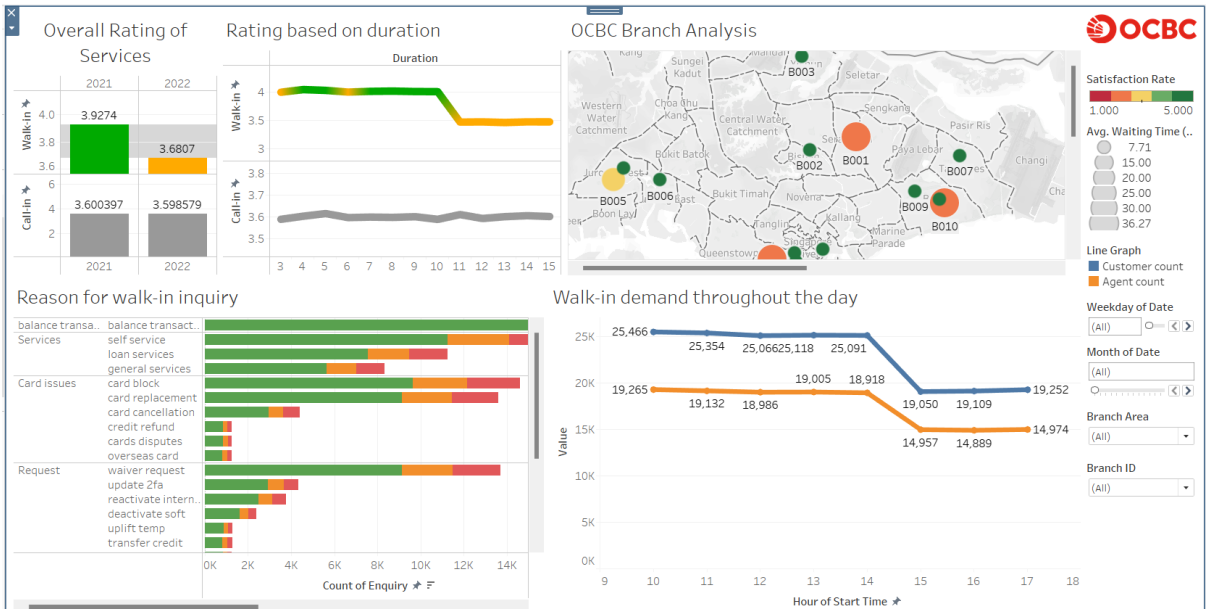


3. Changing visualization to show comparison and highlight



- Changed visualization to dual bar chart to clearly display a comparison between the availability of agents and customers.
- Repicked colours that contrast well to represent agents and customers to be colourblind inclusive by making the bars easy to differentiate.
- Highlighted difference between agents and customers to enable a direct comparison in how wide the differences between the agent and customer bar is, enabling the reader to intuitively tell that there is a shortage of agents in peak hours.
- Labelled number of customers for each hour to easier readability.

Task 2: Dashboard



Considerations

Consideration	Implementation
Professional design to match OCBC's style	Using plain white wallpaper, added OCBC Logo to signify Dashboard is about OCBC performance. Placed all legends and filters at right to be neat and consistent.
Placement of charts for readability	The dashboard is strategically designed for top-down, left-right reading, which is why the hook placed in the top-left so that it's the first thing to read. The hook induces urgency by highlighting the drastic performance drop to instill sense of purpose for reader to uncover what caused the drop using the dashboard.

Ease of interacting with map to derive insights	The interactive map is placed top-right, considering that most readers will be right-handed. This strategic placement enables ease of interacting with map since the User must hover over a branch to get insights from the tooltip.
Visual Cues: Visual Hierarchy + Highlight	1. Every colour has a meaning to facilitate intuitive interpretation. - Graphs lacking important patterns (not main focus) are in grey to avoid attention. - Employed ordinal green-red colour gradient to enable intuitive interpretation of performance. Green represents good, yellow-orange represents average, red represents bad. - Orange and Blue in Line Graph (bottom right) indicate the measure they represent. Orange and Blue are chosen as they contrast well and are inclusive to colourblind readers. 2. Highlighted difference between performance for walk-in to attract reader's attention as that is the first graph they should see.
Communicating with readers	1. Every graph has clear titles, axes, and labels for user comprehension, to ensure the purpose and message of each graph can be communicated clearly to the user. 2. Stretched (to make the scale drastic) the y-axis of the 2 top-left charts to highlight the significant drop in performance from 2021-2022, so that reader's attention is directed to the chart. Amplifying the difference allows instant derivation of the insight that there is a performance drop.
Usefulness of insights from graphs	1. Top-middle chart reveals clear insight into how duration affects satisfaction rate. This insight is needed to answer business requirement of finding factors that lead to poor ratings. 2. Top-right is an interactive map chart to allow users to investigate performance for each branch and derive insights on what leads to changes in performance based on features of a branch. 3. The bottom-left chart can be used to study the volume of inquiries that OCBC receives. This allows insights like identify most common inquiry types and if there is any issues (such as prevalent poor ratings) for any inquiries. This insight is needed to answer business requirement of finding most common inquiry. 4. Bottom-right chart to analyze the demand for walk-in inquiry throughout the day, to understand the demand of customer service and identify peak hours for service (business requirement) and potential manpower shortage issues.
User friendliness	1. Intuitive ordinal colour gradient that matches conventional understanding where green is good and red is bad. 2. Used line graph for time-series, to show sequential progression. 3. Used bar chart to allow reader to intuitively gauge each bar (longer bar means more). 4. Used size to represent length of waiting time for map, making it intuitive to make out what the size of a dot represents.
Interactivity	1. To enhance usefulness, I added filters that apply to all the charts, to make the Dashboard interactive for users to delve deeper and explore how the trend of inquiries, demand of consultations, etc. change over the years/months. 2. The charts can be filtered using a chart. E.g. click on a bar in a graph to focus on particular inquiry. This added interactive allows for in-

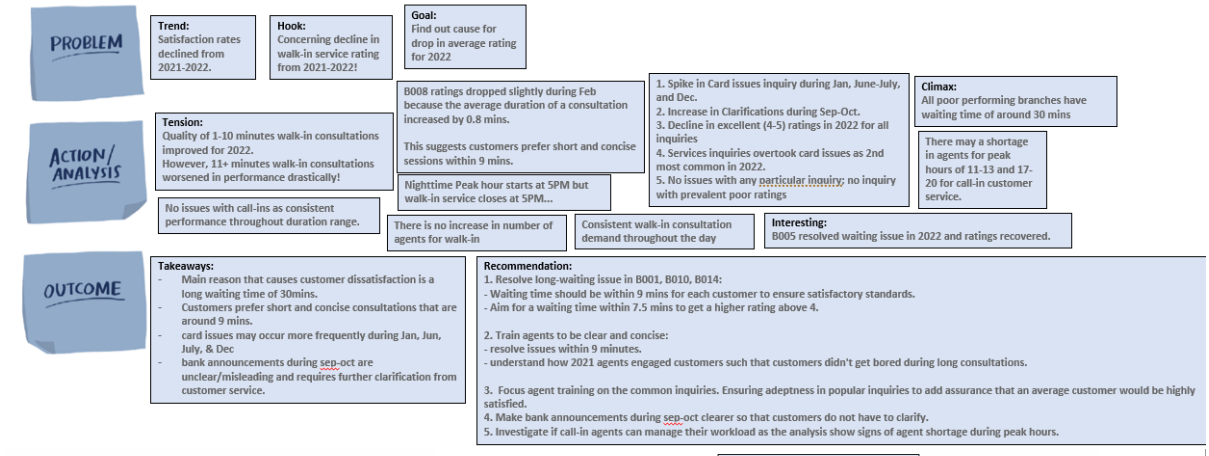
	depth insights to be discovered. E.g. how trend changes over time, is there an issue in a particular month. 3. The map chart is designed for exploratory data analysis, requiring user to interact by hovering over a Branch to discover more insights.

Task 4 : Big Idea, Linear Storyboard, Narrative Framework

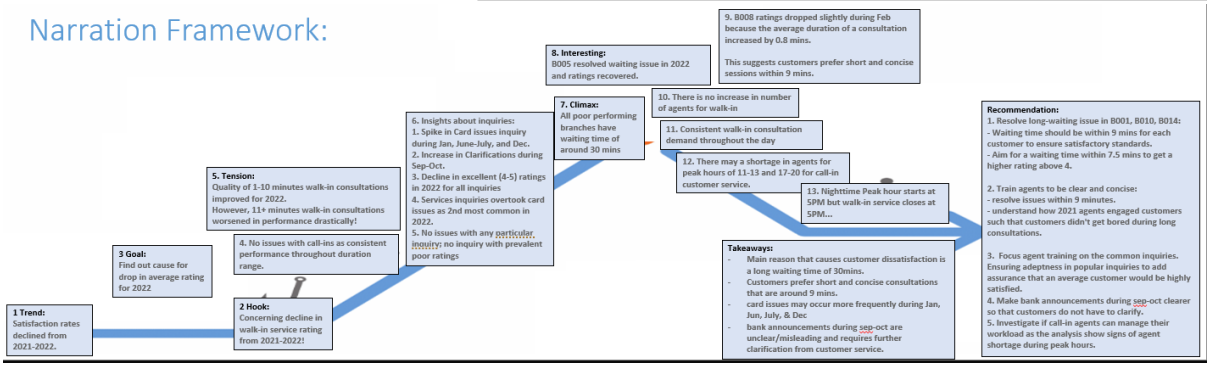
Big Idea: Improve Customer Service experience

Who's the Audience?	List primary group or individuals	OCBC Customer Service Executives, Managers, Agents
	If narrow down to one, who?	Executives
	What do they care about?	Poor customer service causes customers to lose trust in OCBC
	What action do they need to take?	Rectify issues that cause dissatisfaction in customer service
What's at stake?	What are the benefits?	Superior customer service that satisfies customers
		Customer become trusting and loyal towards OCBC
	What's the risks?	If nothing done, customer service rating will worsen…
		Resulting in potential loss of customers as they are unsatisfied with OCBC and prefer seeking services from other financial institutes.
Form Big Idea	Must articulate unique point of view; Must convey what's at stake; and Must be a complete sentence.	Identify causes of poor customer service and provide data-driven solutions that OCBC can act on to resolve these issues and improve their customer service experience so that customers are satisfied with OCBC and will not consider seeking services at other financial institutes.

Storyboard



Narration Framework:



Narration Framework (Point form):

1. **Trend**: Satisfaction rates declined from 2021-2022.
2. **Hook**: This is a concerning issue as there is a drastic drop in performance from walk-in. Add sense of urgency by scaring reader with what will happen if trend continues.

3. **Goal**: State the purpose of investigation to let reader know what the story is about and what they can expect to get out of it.
4. **Inciting Event** (Tension): Show the significant disparity in walk-in performance across consultation duration, to highlight that analyzing walk-in should be the main focus of investigation as there is an issue, whereas there is no noticeable issue with call-ins.
5. **Rising Action**:

- No issue with any particular inquiry.
- Card issues common in Jan, Jun, July, & Dec.
- Clarification during Sep-Oct.

6. **Climax** (Surprising and Interesting):

- All poor performing branch have long waiting time above 30 mins
- Performance drop in all branches (except B005) in 2022 despite slight reduction in average waiting time for branches.
- B005 resolved long waiting time issue and ratings improved during 2022.

7. **Falling Action**:

- Summarise findings and setup for resolution (Takeaways).
- Analyse demand for customer service throughout the day to answer business requirements where peak hours should be identified.

8. **Recommendation + Call To Action (CTA)**:

- Construct relevant recommendations to address problem statement of improving OCBC customer service satisfaction.
- CTA urging reader to act on the recommendation to protect what's at stake.

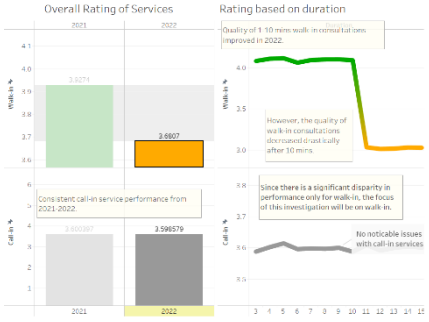
Task 5 : Tableau Story

Decrease in walk-in performance (Introduction):

Give context, to get readers interested and know what they can gain from the story. Follows Freystag's pyramid: contains the current trend, a **hook** (with a visual aid of an exaggerated graph that amplifies the drop) to express the severity of the issue, to add a **sense of urgency** by telling what could happen if nothing is done to address the issue.
Finally, I list the **purpose of this investigation** to let readers be clear on what this story is about and how it benefits.

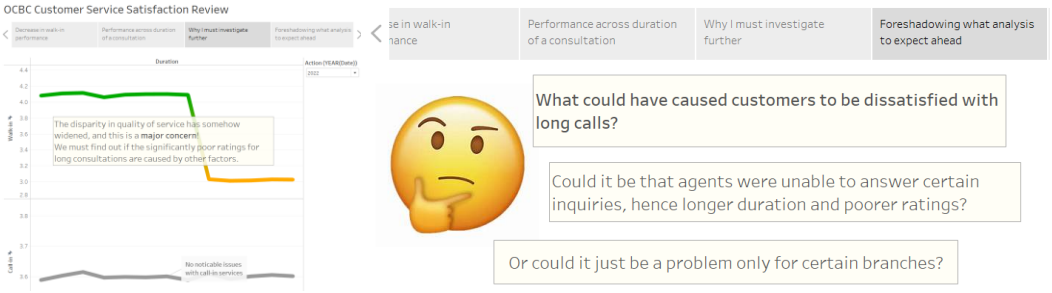
Performance across duration (Inciting event):

1. Added an **exciting insight that drives reader's curiosity further**, to hype them up on wanting to discover the drivers of poor satisfaction. First 2 **page answers 'if OCBC customers are currently satisfied with our service'**.
2. Justified why the story focuses on walk-ins because there is no reason to investigate call-ins since the performance is consistent with no issues.



Why I must investigate further + Foreshadowing what analysis I will do (Rising Action):

Build-up rising action by explaining what I plan to investigate, in a sequential manner, to ensure the story flows as I have not found the true drivers of poor satisfaction ratings yet. I also hinted what I will analyse ahead, to let readers know what to expect to create flow.



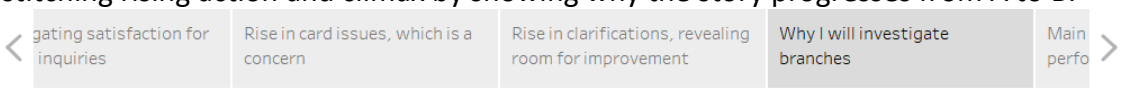
Investigating satisfaction for various inquiries:
Explained insights into common inquiries and how the performance of all inquiries dropped in 2022 using an interactive year filter.

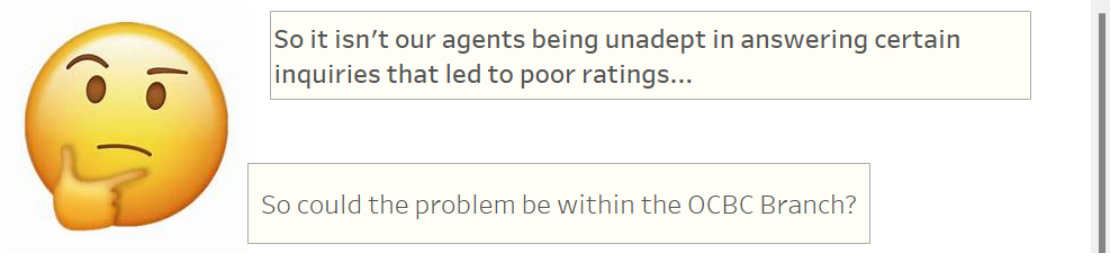
This bar chart is interactive as it allows me to expand and drill down into an inquiry type when I click on the header. For these insights, the charts are collapsed as the insights are an overview of the overall performance in general. This **page answers the 'most common reason(s) for branch visits'**.

Rise in card issues:
Filtering to June, card issues is most common inquiry. Drilled down to card issues graphs to show that the issue is mostly card block and card replacement. This insight is separated in order to utilize the visual to better illustrate the insight, instead of asking readers to click themselves to see. This delves into how the most common inquiry changes across the months.

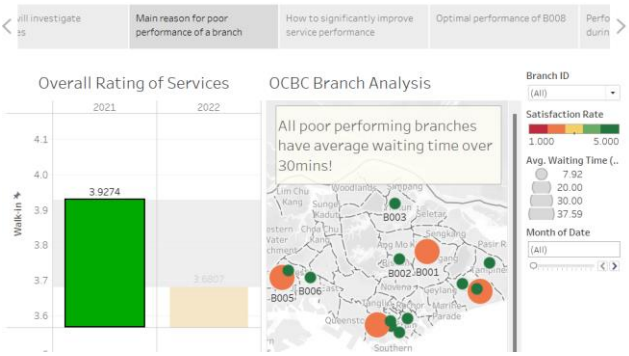
Rise in clarifications:
Filtering to Sep and Oct, I noticed a rise in clarifications for both years. Drilling down into clarifications, the inquiry that led to the increase is bank announcements.

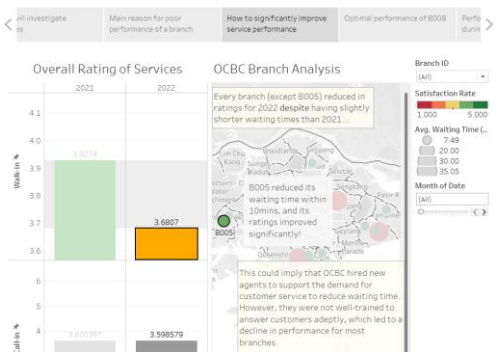
Why I will investigate branches (Build up Climax):
About to reveal the key factor that leads to poor ratings, so this page **adds flow to the story** by stitching rising action and climax by showing why the story progresses from A to B.



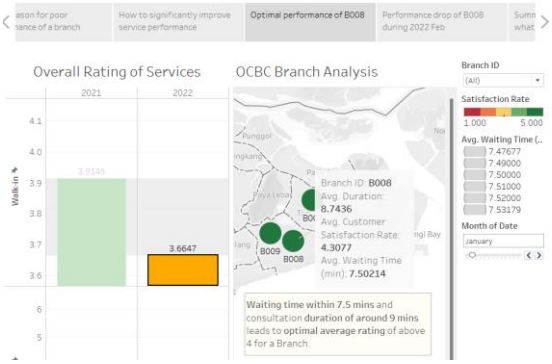


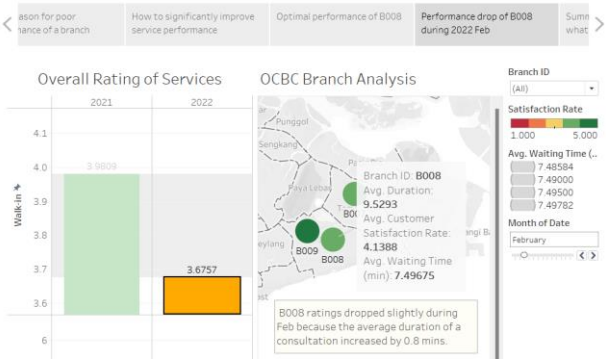
Main reason for poor performance of Branches (Climax):
Show the story of how ratings changed from 2021-2022 for each branch. This graph is **meant to be interactive** where customers must hover over a dot to uncover facts and derive **deeper insights into each branch from the tooltip**. These 2 page answers: 'Identify factors that affect rating score and explain how they influence the score'. For page 2 (right), I highlighted B005 and created an annotation to ensure readers will notice this insight.



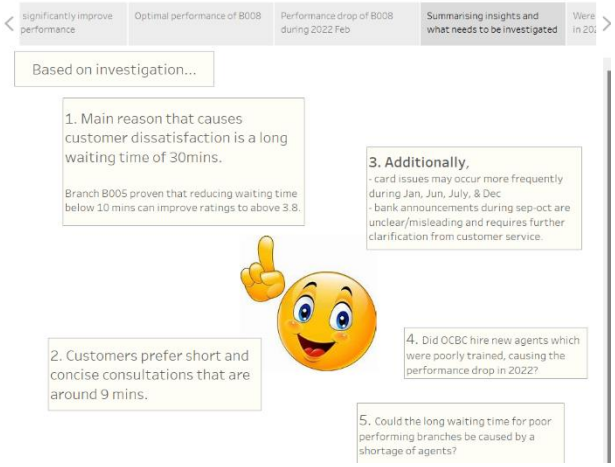


Optimal Performance for B008:
To make it intuitive for the reader to notice the insight I'm showing, I **highlighted the 3 branches to focus on, excluding the rest** of the branches, and used the month filter to show how B008 changed over time. B007 is used as support since its pattern change is similar to B008. B009 is a control to show that the trend only applied to B007 and B008 because of the pattern change.
I added annotation to B008 to save readers the hassle of hovering over the branch to see the details, so that readers can easily focus on the details and see the insight that an increased duration caused a reduced rating.



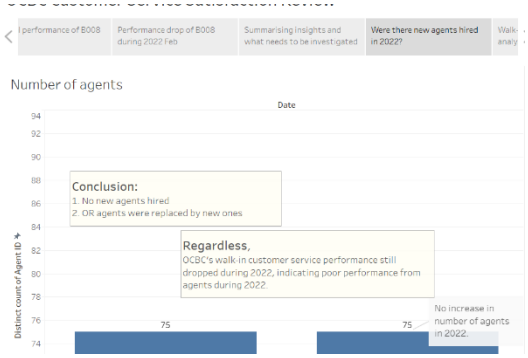


Transitioning to Falling Action:
Since I already revealed all the exciting insight of the most impactful factors on customer satisfaction, **this part is a summary** to recap the reader on what they should have picked up from the story so far. I have **not addressed peak hours of customer service and any insights on call-in which are required** of this analysis. Hence, I had to **weave in a reason for me to explore the demand of customer service across the day** to ensure all needs of business requirements are fully answered.



Were there new agents hired in 2022 (Falling Action):

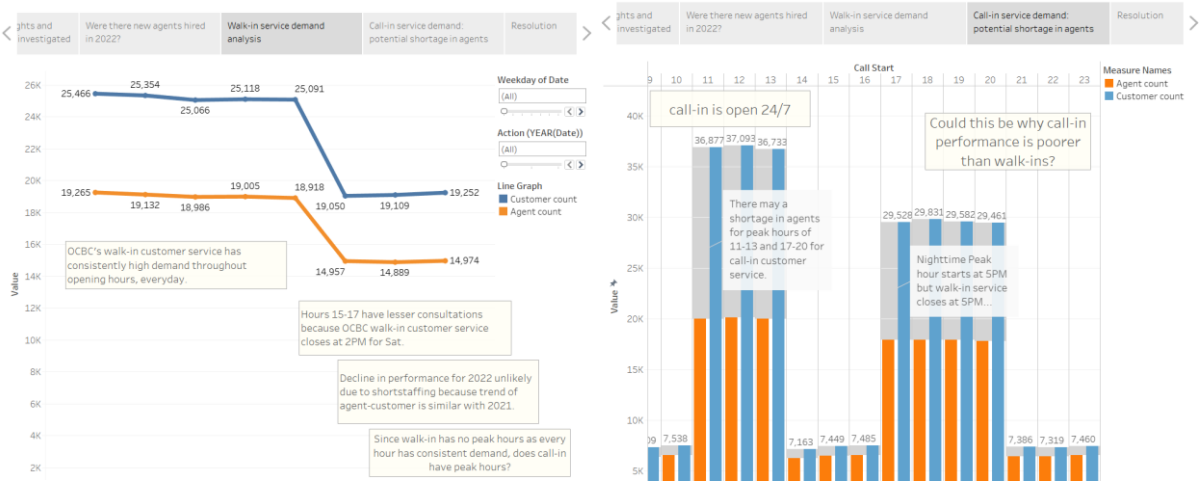
To concretely prove that there is no increase in agents during 2022, to facilitate derivation of conclusions on whether the reduced waiting time in all branches and customer satisfaction drop could be caused by new agents.



Service demand analysis for walk-in and call-in (Falling Action):

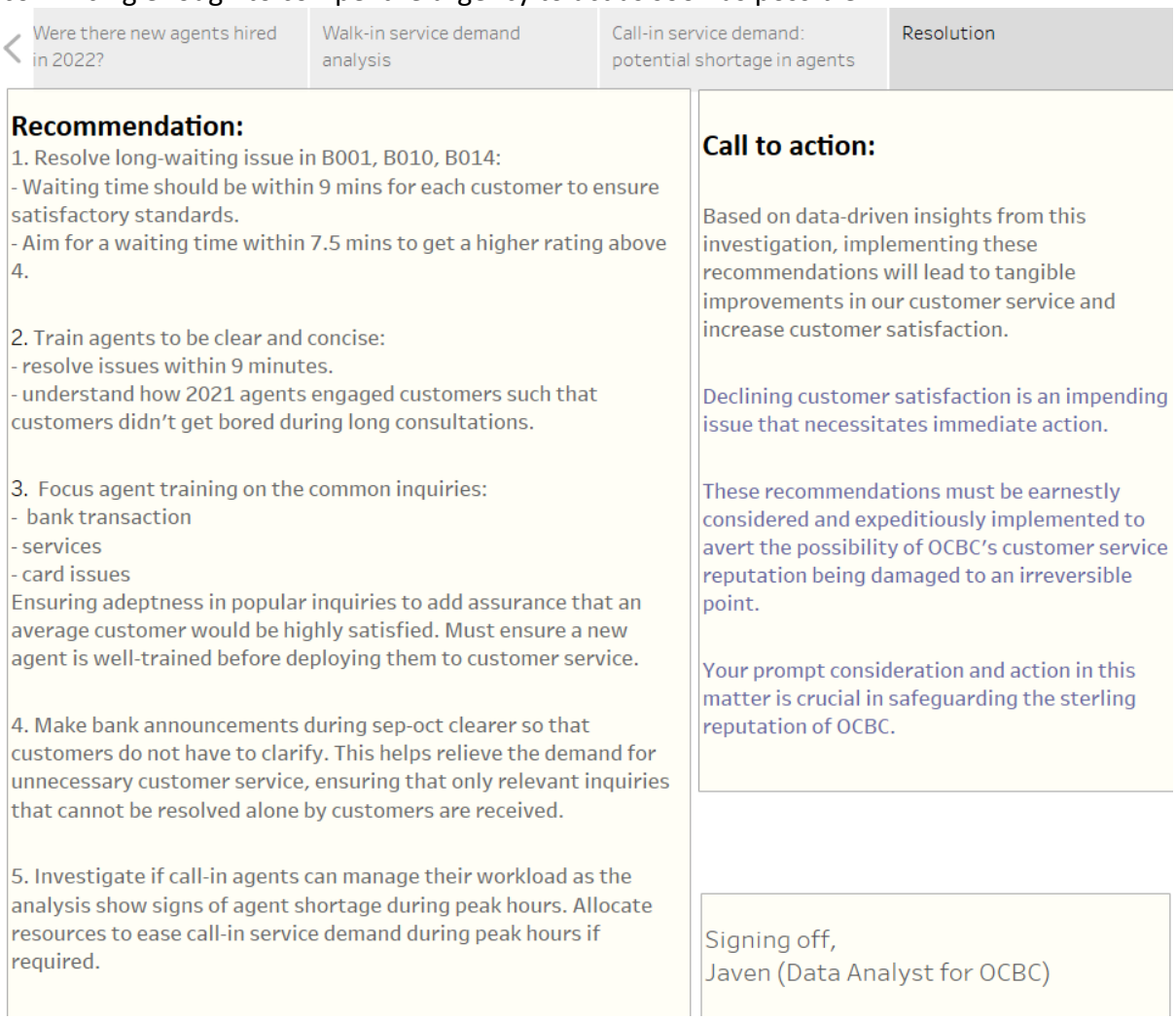
These 2 **pages answer the 2 business requirements**: 'Identify peak periods when both call-in and walk-in channels experience the highest activity' and 'Identify if there is a specific time when a channel is preferred over the other and why'.

Analysis and insights from these 2 **pages do not play a detrimental role in the story or formulating of recommendations** but are required, which is why it's placed at falling action. I connected the analysis of call-in demand after walk-in demand analysis by justifying why I should analyse call-in too. This ensures that the page will still flow logically in my story.



All business requirements from the problem statement are addressed, which means I can end the story now as all aspects of business needs are covered. I will end the story with a resolution that contains recommendations that are relevant to help improve customer service at OCBC.

Resolution:
Relevant takeaways and recommendations from the story that answer the purpose of the investigation and can be implemented to improve customer service performance. Includes Call to action to remind the reader (OCBC Executives) to consider taking the recommended actions in case they forget the problem and the need to action. Also had to make CTA convincing enough to compel the urgency to act as soon as possible.



End of Report

References:

Interactive bar chart that can expand and collapse - https://www.youtube.com/watch?v=b4KfAx2jSis&t=167s

Research on Freystag's Pyramid - https://www.masterclass.com/articles/freytags-pyramid