

Response Time Analysis

Introduction

This report presents an analysis of patient submissions and responses based on data provided by Isla Health. The objective of this analysis is to evaluate the response times from different teams and understand the trends and behavior regarding patient resubmissions.

Datasets Used:

1. **Patient Entries:** Contains data on patient submissions with timestamps.
2. **Audit Actions:** Contains data on responses from various teams to patient submissions, including response times.

The analysis focuses on:

- Understanding submission and response behaviors.
- Identifying outliers and performance issues.

Key Metrics

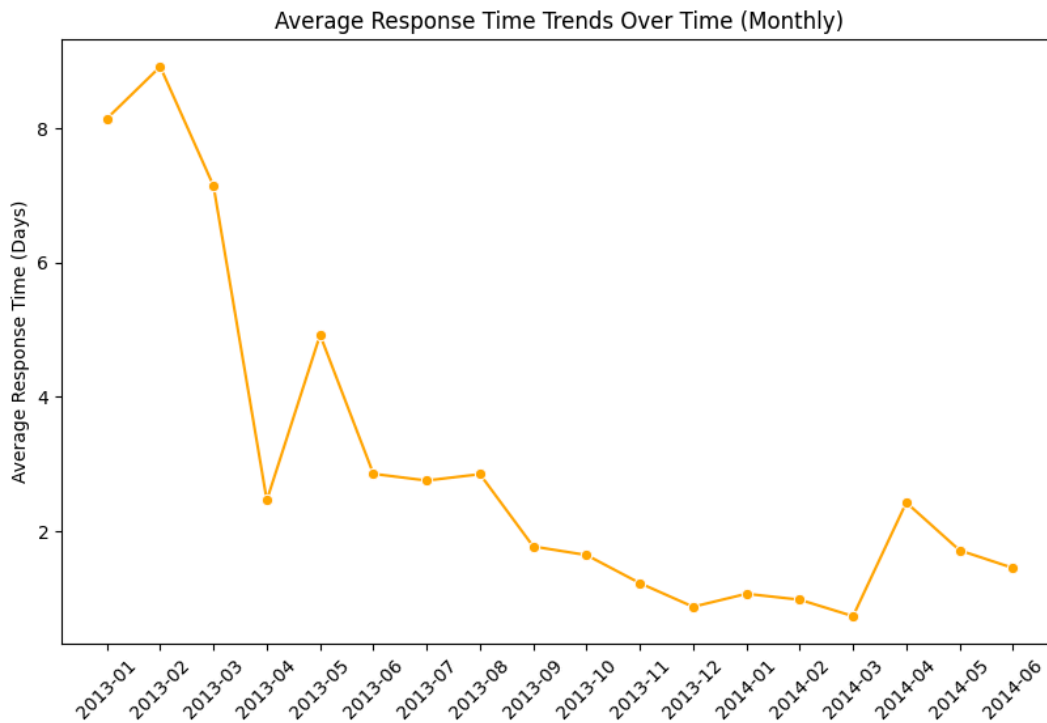
This section provides an overview of the key metrics calculated during the analysis.

Key Metrics	All Data	From June 2013
Average Response Time	2.41 Days	1.65 Days
Median Response Time	0.09 Days	0.09 Days
Maximum Response Time	515.74 Days	277.68 Days
Minimum Response Time	Within the hour	Within the Hour
Outliers (Responses > 30 days)	136 Instances	79 Instances

Analysis

Response Time Trends Over Time

Graph 1: Response Time Trends Over Time (Monthly)



This line chart shows the **monthly trend** of average response times across all teams from January 2013 to June 2014. The x-axis represents time (in months), and the y-axis shows the average response time in days.

Significant Decrease in Response Times Starting Mid-2013

The graph shows that average response times were quite high at the beginning of 2013, peaking at over **8 days** in **February 2013**. However, there is a sharp decline starting around **April 2013**, with response times dropping to under **2 days** by **June 2013**. This suggests a substantial improvement in the timeliness of responses during that period.

Stabilization After June 2013

After the dramatic decline in mid-2013, response times remain fairly consistent, with most months maintaining an average response time of **under 2 days**. The period between **July 2013** and **March 2014** shows a stable trend, indicating improved system efficiency.

Minor Spikes in Early 2014

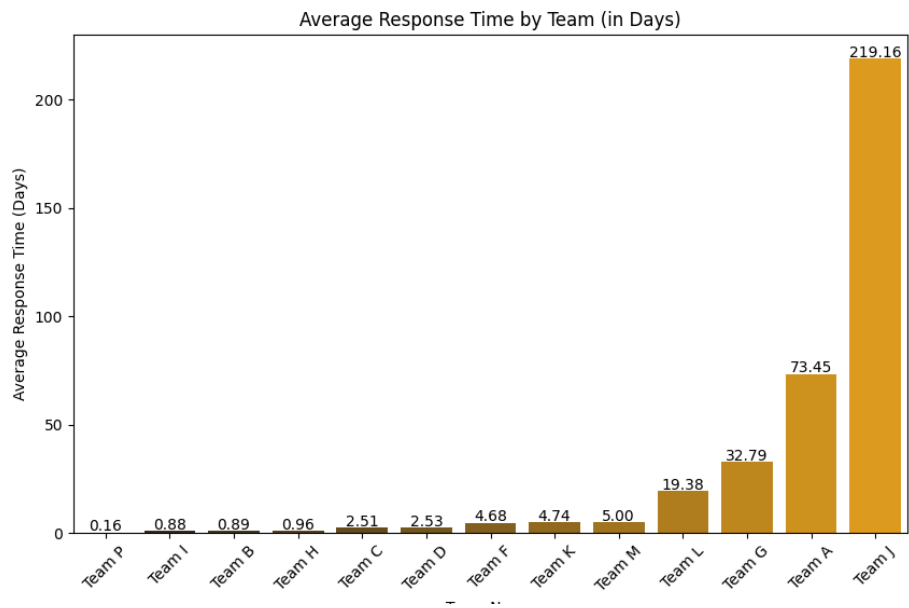
Although the overall trend remains positive, there are a few minor spikes in response times, particularly in **April 2014**, where response times temporarily increased to about **4 days**. These temporary spikes might indicate issues such as staff shortages or operational inefficiencies during that time.

Sustained Improvement

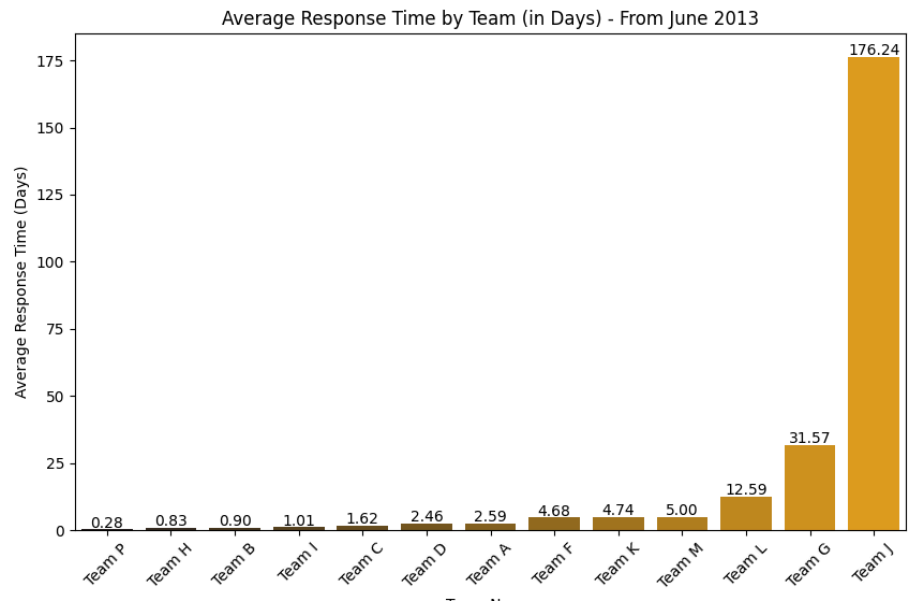
Despite the small fluctuations in early 2014, the graph demonstrates that response times have significantly improved compared to the first half of 2013, where delays were much more pronounced. The sustained improvement suggests that operational changes made after mid-2013 had a long-lasting positive impact.

Response Time By Team

Graph 2: Average Response Time by Team



Graph 3: Average Response Time by Team from June 2013



This section analyzes the **average response time** for each team, comparing overall performance with the improvements seen after **June 2013**. The first chart represents the full dataset, while the second chart focuses on the period from **June 2013 onwards**, where response times generally improved across the board.

Significant Variability in Response Times

The overall response time data reveals significant variability among the teams. **Team J** stands out as a major outlier with an average response time of **219.16 days**, significantly higher than all other teams. While **Team A** and **Team G** also show noticeable delays in the overall dataset, with response times of **73.45 days** and **32.79 days** respectively, several teams consistently maintain quick response times. **Teams P, I, B, and H** demonstrate highly efficient performance, with average response times below **1 day**, setting a benchmark for other teams.

Post-June 2013 Improvements

After **June 2013**, a dramatic reduction in response times is evident across the board. **Team A** shows the most substantial improvement, reducing its average response time from **73.45 days** (second-highest overall) to **2.59 days**, making it one of the most efficient teams in this period. **Team A's** improvement is particularly noteworthy and could provide valuable insights into their methodologies, which may benefit other teams facing delays.

Areas For Concern

Team L also reduces its response time from **19.38 days** to **12.59 days**, showing progress, but further improvement is still needed.

Team G has essentially stayed the same showing the least if not barely any improvement (from 32.79 to 31.57) out of the 3 outlier groups.

Team J, though still an outlier, improves slightly, reducing its average response time from **219.16 days** to **176.24 days**.

Consistently High-Performing Teams

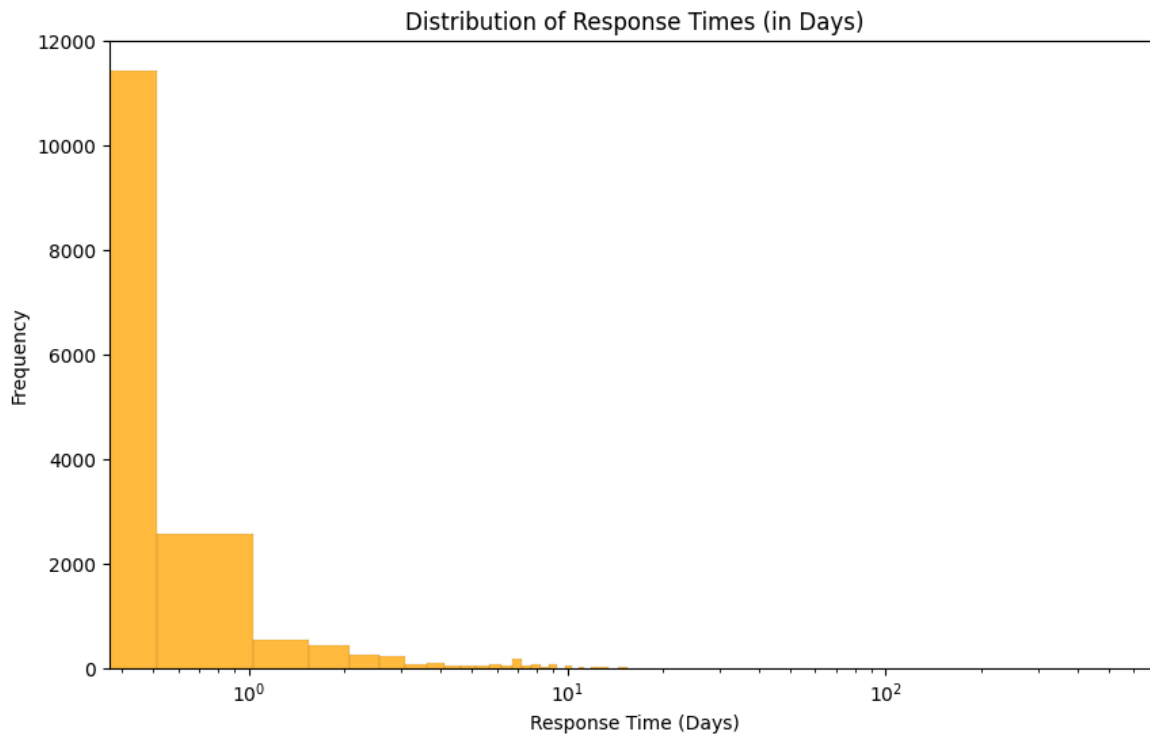
The consistently high-performing teams — **Teams P, I, B, and H** — maintain their efficient response times both before and after June 2013, with response times still under **1 day**. These teams likely follow best practices that could be shared across other teams to further enhance organizational performance.

Summary of Insights

In summary, the data highlights improvements across the board after **June 2013**, particularly for teams like **Team A**, who managed to reduce their response time from the second-highest to one of the lowest. Their methodologies may provide valuable insights for other teams. **Team G** also saw improvements, but **Team J** continues to be an outlier, despite showing modest improvement. The consistently strong performance of **Teams P, I, B, and H** offers a valuable opportunity for these teams to share best practices with others to further improve response times across the organization.

Response Time Distribution

Graph 4: Distribution of Response Times



This histogram visualizes the **distribution of response times** in days across all submissions. The x-axis represents the response time on a logarithmic scale, and the y-axis shows the frequency of responses in each time range.

Most Responses Happen Quickly

The majority of responses occur **within 1 day**, with over 10,000 responses falling in this range. This indicates that most patient submissions are handled efficiently by the healthcare teams, demonstrating prompt responsiveness.

Long Tail of Delayed Responses

The graph reveals a **long tail** where some responses take much longer, extending beyond 10 days. Although these longer response times are less frequent, they indicate cases where there may be bottlenecks or delays in addressing certain submissions.

Skewed Distribution

The data is **highly skewed**, with the majority of responses occurring within 1 day, and only a small number of responses taking significantly longer. The logarithmic scale helps to visualize the long tail of delayed responses, emphasizing the need to address these outliers.

Outliers

It is clear from the graphs that we need to take a closer look at the **outliers**, especially considering that **Graph 4** has shown most of the responses occur within **1 day**. However, there are some cases where response times far exceed this, with some taking over **200 days**. Such delays can have a significant impact on patient care and should be a focus of immediate attention.

Defining Outliers

For the purposes of this analysis, an outlier is defined as any response time that exceeds **30 days**. This is because responses taking longer than **1 month** are considered excessively delayed, and ensuring timely responses is critical in healthcare settings. Ideally, we do not want any patient to wait longer than this to receive a response.

Identifying Outliers

The data shows that several teams have response times that consistently exceed this **30-day threshold**, with **Team J** being the most notable outlier across all time periods. Other teams, such as **Team G** and **Team A** (prior to their post-2013 improvements), also have outliers, although their performance has generally improved since.

Sheet on Outliers

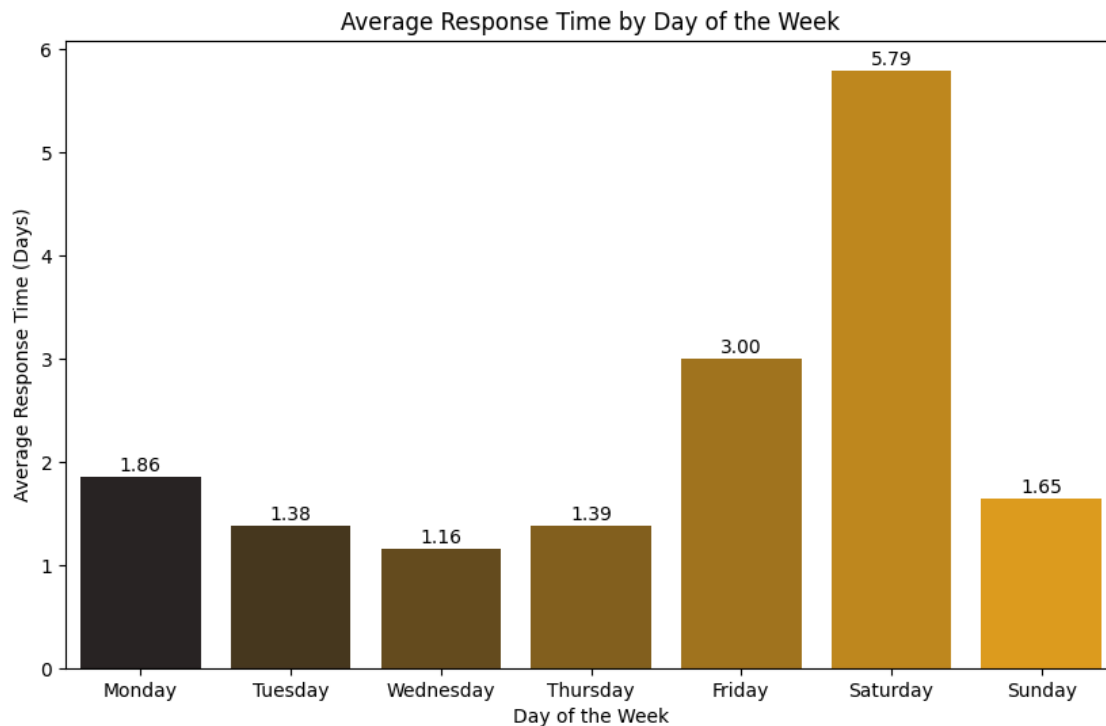
To provide a clear and actionable overview, I have compiled a [sheet](#) containing detailed information on all the outliers. This sheet includes key data such as the **team responsible**, the **response time**, and other relevant submission details, allowing for a targeted investigation into these cases. By examining these outliers closely, we can identify the root causes of the delays and implement strategies to prevent such extended response times in the future.

Next Steps

Addressing these outliers should be a priority moving forward. While teams like **Team A** have shown substantial improvement, other teams like **Team J & G** still have significant challenges to overcome. By investigating these outliers, we can uncover potential operational inefficiencies, staffing shortages, or communication issues that may be contributing to the extended delays. Correcting these will help further reduce response times across the organization.

Day of the Week Analysis

Graph 3: Average Response Time by Day of the Week



This bar chart visualizes the average response time for patient submissions based on the day of the week. The x-axis represents each day of the week, while the y-axis indicates the average response time in days.

Faster Response Times on Weekdays

Tuesday, Wednesday, and Thursday exhibit the fastest response times, with **Wednesday** leading at **1.16 days** on average. **Monday**, however, has a slightly higher average response time of **1.86 days** (Still greatly less than that of Friday and Saturday). This could be due to a backlog of submissions accumulated over the weekend. As teams clear submissions from **Saturday** and **Sunday**, responses to submissions made on **Monday** may experience slight delays due to this increased workload.

Weekend Delays

The longest delays occur on **Saturday**, with an average response time of **5.79 days**, likely caused by reduced staffing or lower operational capacity during the weekend. **Friday** also has longer delays, with an average response time of **3.00 days**, likely due to submissions made late in the week being addressed the following Monday.

Sunday Response Times

Surprisingly, **Sunday** has a slightly faster average response time of **1.65 days** compared to **Monday**. One potential explanation is that **Sunday** may have fewer submissions overall, allowing the available staff to handle those submissions more quickly. Additionally, some urgent cases submitted on **Sunday**

may be prioritized and addressed sooner when operations fully resume on Monday, contributing to a quicker overall response time for **Sunday** submissions.

Opportunities for Improvement

The extended delays on **Saturday** highlight a clear area for improvement. It may be worth reviewing weekend staffing levels or workflow processes to enhance responsiveness. Furthermore, managing patient expectations around weekend submissions could help mitigate dissatisfaction, as responses tend to be slower during this period.

Patient Resubmissions Analysis

This section explores the behavior of patients who submit multiple entries, analyzing their submission patterns and categorizing them into distinct groups based on their frequency of resubmissions.

Understanding Patient Resubmissions

Patient resubmissions occur when patients submit multiple entries, possibly due to unresolved issues or needing additional follow-up care. Analyzing these resubmission patterns provides insights into patient needs and can reveal areas where the system may require improvement in handling patient queries.

I analyzed the number of unique **entry IDs** per **patient ID** to understand how often each patient resubmits. The results are summarized below, with patients divided into distinct groups based on their frequency of submissions.

Grouping Patients by Resubmission Frequency

To make the analysis clearer, patients were grouped into five categories based on the number of submissions:

Submission Group	Number of Patients
1-5	6311
6-10	273
11-20	36
21-50	4
51-100	1

Key Insights

- **Most Patients Submit 1-5 Entries:** The vast majority of patients (**6,311**) fall into the **1-5 submissions** category. This indicates that the system is resolving issues effectively for most

patients, as they do not require multiple follow-ups. This suggests the system is generally efficient in handling patient queries and concerns.

- **Small Group of Frequent Submitters:** A smaller group of **273** patients submitted **6-10 entries**, while an even smaller group of **36 patients** submitted **11-20 entries**. These frequent submitters may represent patients with more complex or ongoing issues that require closer attention. One extreme outlier in the **51-100** submissions group could indicate a particular case where the patient's concerns were repeatedly unresolved, calling for further investigation.

Opportunities for System Improvement

- **Frequent Resubmissions:** The patients in the **21-50** and **51-100** submission groups warrant particular attention. These patients are re-submitting significantly more than others, which may indicate unresolved concerns or gaps in service. Investigating these cases could provide insights into potential bottlenecks or inefficiencies within the system.
- **Low-Frequency Submitters:** The majority of patients (with **1-5 submissions**) represent an encouraging sign of system efficiency. Their cases are likely being resolved with minimal follow-up, indicating that for most patients, the response process is functioning well.

Excel Sheet Access

A [sheet](#) summarizing patient submission data by frequency has been compiled. This table allows the healthcare team to quickly identify the patients in each group and investigate cases as needed. This tool is crucial for identifying potential issues and focusing on high-frequency resubmissions.

Conclusion

This report provided an in-depth analysis of patient submissions and team response times at Isla Health. By examining response times, patient behavior, and team performance, I have uncovered valuable insights into the operational efficiency and areas that require attention.

Key findings include:

- **Significant Improvements** in response times after June 2013, with many teams showing quicker and more consistent responses.
- **Team A** demonstrated a remarkable reduction in response times, dropping from the second-highest to one of the lowest averages post-June 2013.
- **Team J** remains a notable outlier with an average response time exceeding 200 days, though there have been modest improvements.
- **Saturday** submissions have the longest response times, likely due to reduced weekend staffing, while **Wednesday** shows the fastest response times during the week.
- A majority of patients require **1-5 submissions**, indicating the system is generally effective at addressing concerns, though a small group of patients frequently resubmits, signaling more complex cases that need further investigation.

Recommendations

Address Long Response Times for Outliers

While most teams perform efficiently, the presence of outliers like **Team J** highlights a need for targeted interventions. These could include:

- **Process Review:** Investigate the internal workflows of teams with long response times (especially **Team J**) to identify bottlenecks or inefficiencies.
- **Additional Resources:** Consider allocating more resources or adjusting staffing to ensure cases requiring longer response times are handled more efficiently.

Improve Weekend Response Times

The delays observed for **Saturday** submissions highlight an area for potential improvement. Recommendations:

- **Weekend Coverage Adjustments:** Reassess staffing levels or introduce new processes for handling weekend submissions more efficiently.
- **Managing Patient Expectations:** If it's operationally difficult to increase weekend response capabilities, communicate clear expectations to patients about potential delays for weekend submissions.

Learn from High-Performing Teams

Teams such as **P, I, B, and H** consistently demonstrate fast response times. **Team A's** drastic improvement also provides valuable insights:

- **Best Practices Sharing:** Facilitate cross-team collaboration where high-performing teams share their processes and strategies with teams that are struggling.
- **Training and Mentoring:** Consider setting up mentoring programs between teams to exchange successful workflows, especially focusing on how **Team A** improved so significantly.

Investigate Frequent Resubmissions

A small group of patients is responsible for a high number of resubmissions, which could signal unresolved issues:

- **Identify Frequent Submitters:** Focus on patients in the **11-50 submission** groups and examine the reasons for their repeated submissions.
- **Patient Follow-Up:** Implement a more proactive follow-up process for these patients, potentially including personalized case management or deeper reviews of their issues.

Monitor Post-June 2013 Improvements

The overall decrease in response times after June 2013 shows the effectiveness of operational changes. However:

- **Sustain and Build on Gains:** Continue monitoring teams to ensure these improvements are sustained over time, and look for further optimization opportunities.