Help Center Escalation Rate Analysis

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Executive Summary

The analysis of Help Center Escalation Rate trends revealed a **significant increase of 3.51% (a 45.58% day-over-day rise) on the 12th**, driven by a **sharp increase in sessions and cases from Country G**. While individual country escalation rates remained stable, the **overall escalation rate increased**, highlighting **Simpson's Paradox**—where a higher-escalation-rate country (G) gained a larger share of total cases, distorting the aggregate trend.

Using the Kitagawa-Oaxaca-Blinder decomposition, we found that the **Proportion Effect** (the shift in Country G's session volume) was the primary driver of this escalation rate increase, while the **Rate Effect remained stable** across all countries. This suggests that the **Help Center's effectiveness in deflecting support tickets did not change**, but rather, a **volume shift** led to the observed trend.

Key Takeaways:

- **Steady Growth**: Most countries saw a gradual rise in the number of sessions and cases.
- **Country G Surge**: A sudden spike of both sessions and caseson the 12th significantly impacted overall trends.
- **Skewed Metrics**: The rise in overall escalation rate is due to Country G's higher volume and above-average escalation rate, not a system-wide issue.
- **Browsers**: the share and escalation rate are consistent across browsers while Chrome accounts for 60% of total sessions and cases and Firefox makes up 20%.
- **Proportion Effect had a major spike on the 12th.**
    - The spike in the overall escalation rate is driven by a compositional shift, where Country G contributed more cases, and within Country G, Chrome and Firefox had an even larger number of cases.

Next Steps & Recommendations

- Given the increase in sessions and cases across all the countries, it is critical to understand the underlying drivers and take strategic actions to manage customer support demand effectively.
- Investigate Country G's Surge on the 12th by collecting additional data.

Part A:

1. Help Center Escalation Rate Trends Overview

Escalation Rate by Day (Overall)
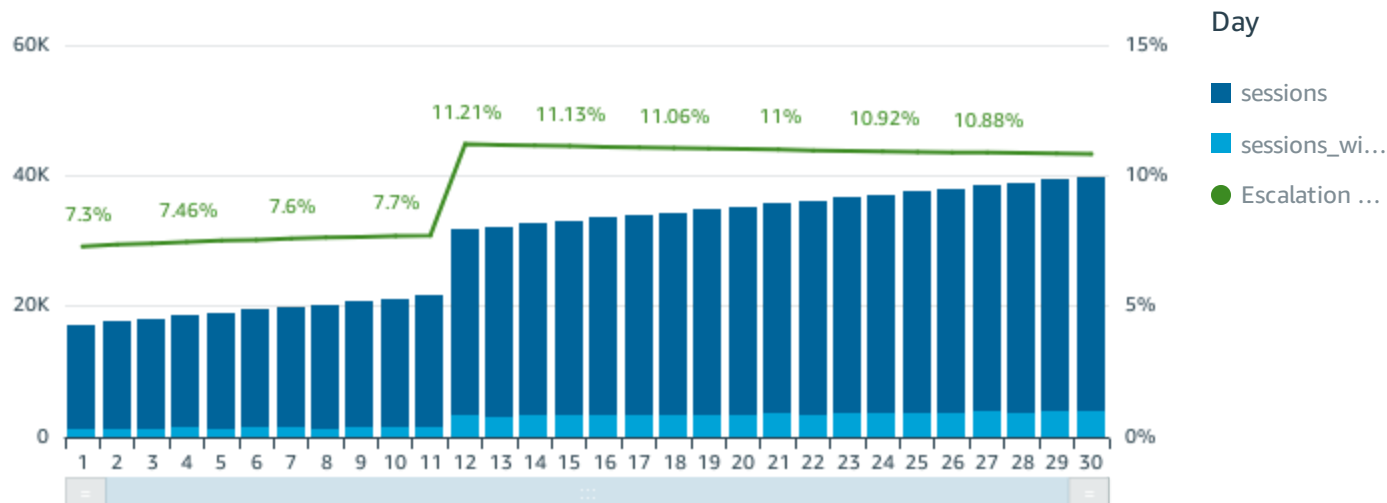
Overall, we found that the escalation rate started at 7.3%, and it jumped to 11.21% (+45.58% DoD) on the 12th. Later it gradually decreased to 10.82%. Meanwhile, both the number of sessoion and session_with_case increased on the 12th. Given this trend, our focus is to understand the factors driving the spike on that day.
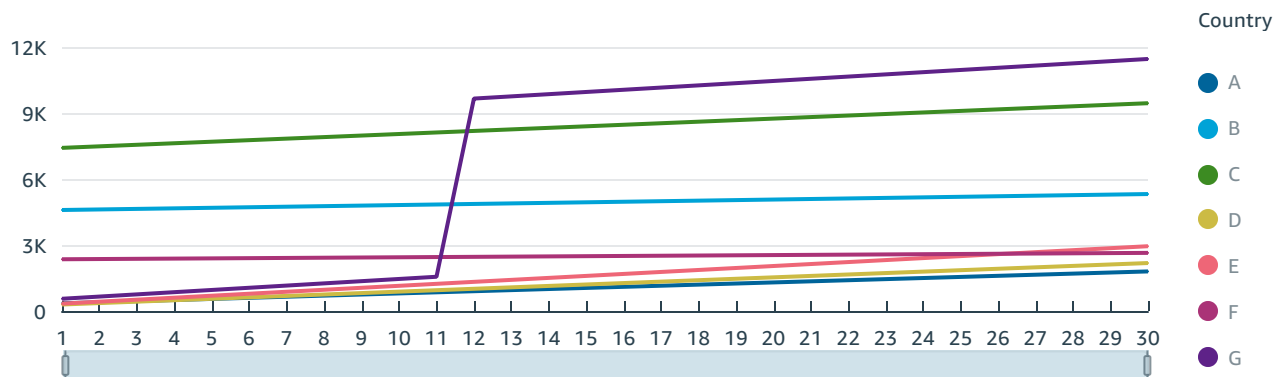
Escalation Rate by Country and Day
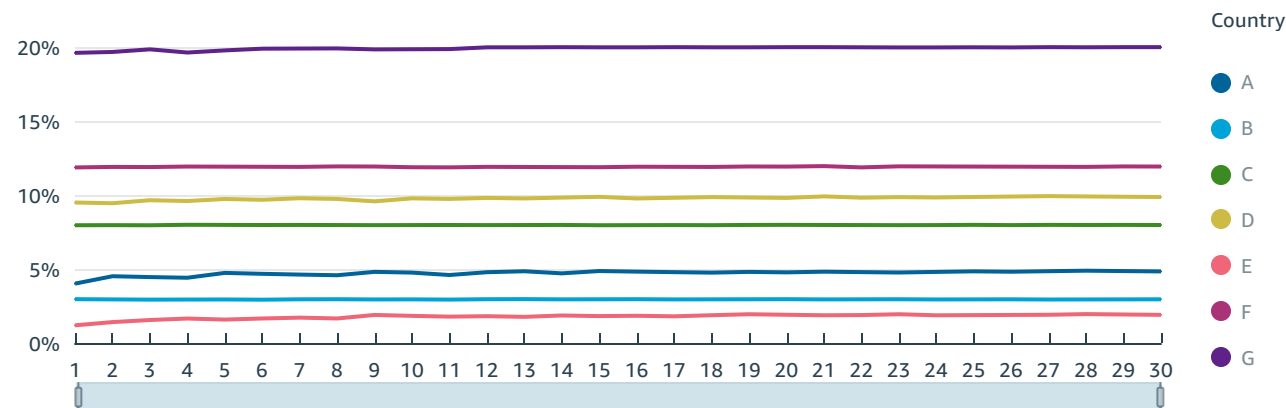
First, let's examine the Escalation Rate at the country level. The graphs above show that the Escalation Rate remained relatively stable across all countries.
Next, let's analyze the number of sessions and sessions with cases, as they directly impact the Escalation Rate (page 2).

2. Root Cause Analysis

Session by Day and Country


Session w Case by Day and Country
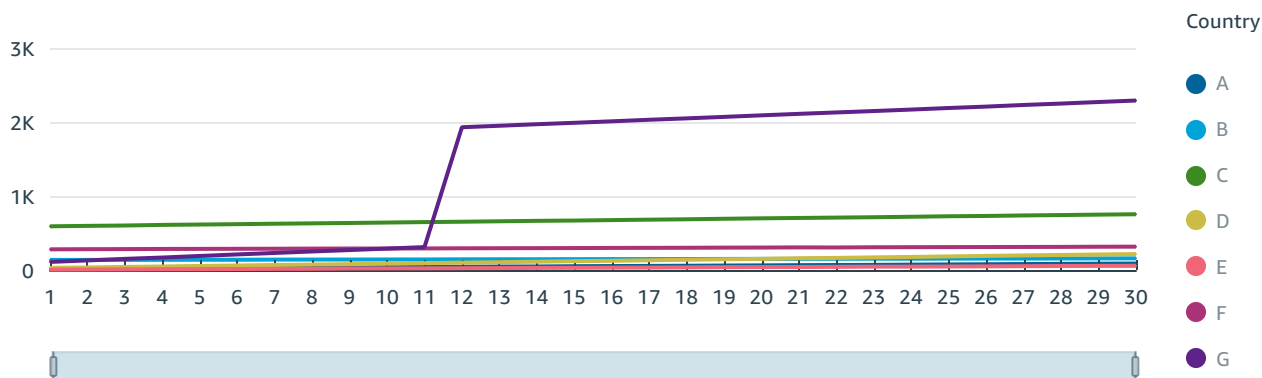
An interesting finding is that, for most of the countries, both the number of sessoion and session_with_case increased gradually; however, **the number of sessoion and session_with_case of Country G increased dramatically on the 12th.**

You may wonder why the overall escalation rate has increased, while the rates for each country remained stable. This is due to **Simpson's Paradox:** Country G, with the highest escalation rate, has been contributing a larger volume of cases since the 12th. As a result, **the surge in Country G's volume is skewing the overall escalation rate.**

When we exclude Country G, we can see the escalation rate was stable over time (See graph below).
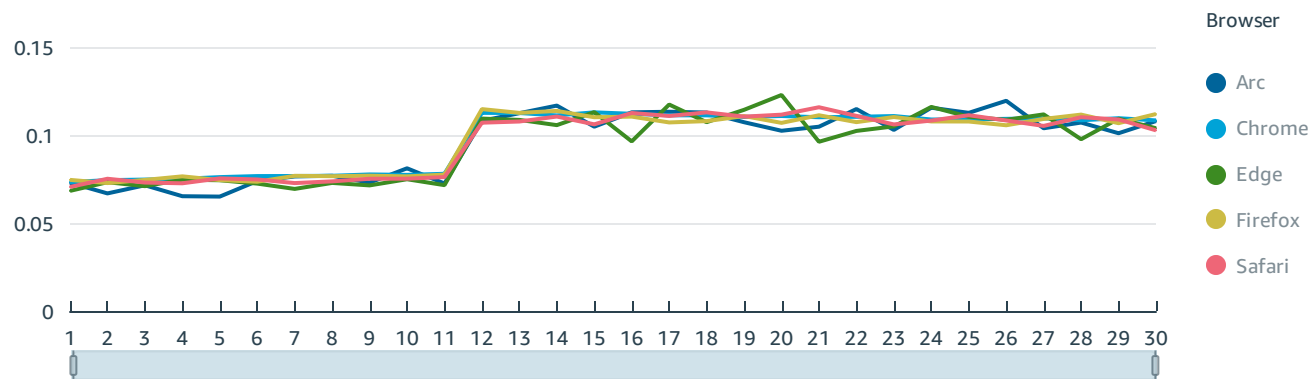
### Escalation Rate by Day (Excluding Country G)
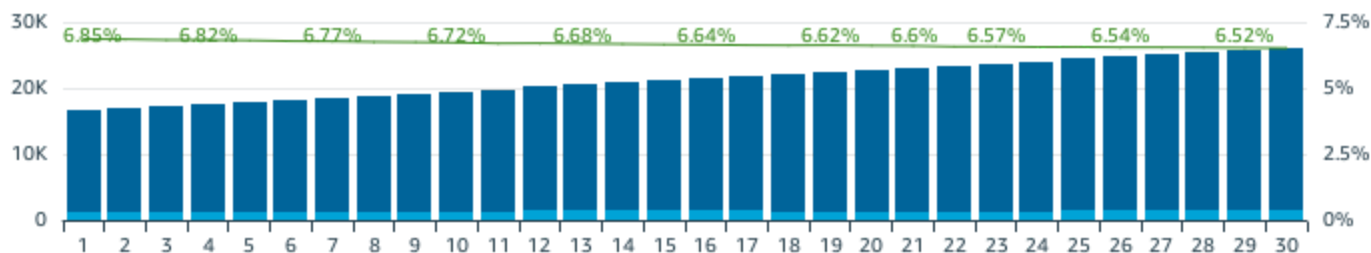
3. Next Step

Additionally, we need to investigate what happened on the 12th in Country G that led to the increase. Possible causes could include data quality issues, bot traffic, browser issues, product bugs, service outages, policy changes, or promotions that attracted new users. Further data is needed to determine the exact reason.
It's also worth noting that I have verified the behavior is consistent across all browsers, so the increase in the escalation rate is unlikely to be browser-related.
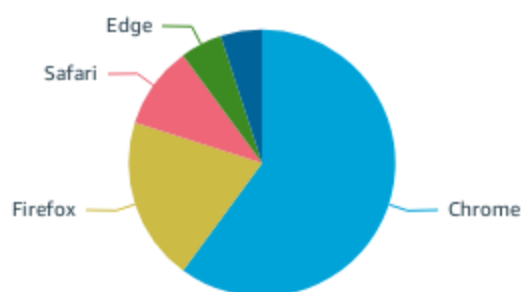
Escalation Rate by Day and Browser (Overall)

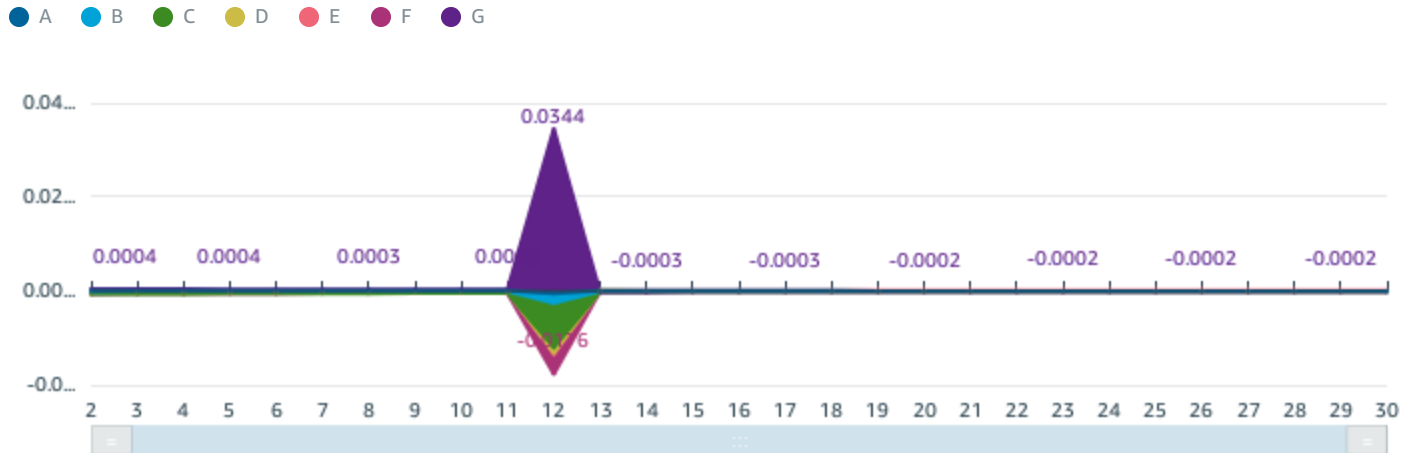### Escalation Rate by Day and Browser (Excluding Country G)
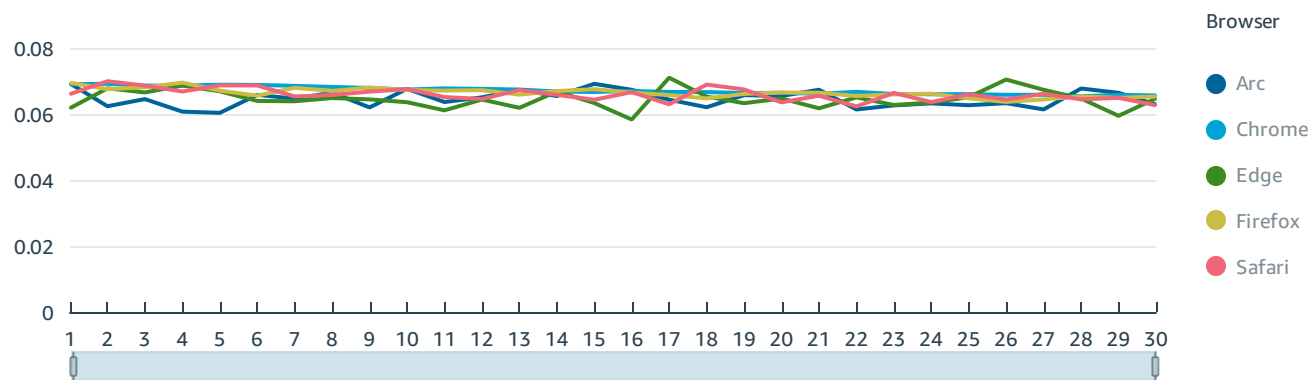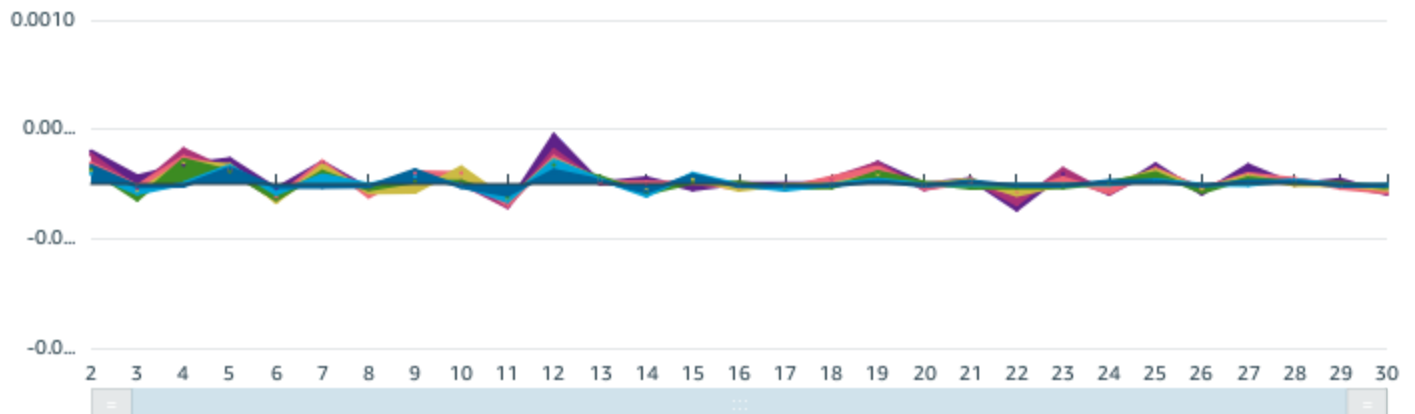

Browser Usage (Overall)

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Part B: Kitagawa-Oaxaca-Blinder (KOB) Decomposition
1. Country Level Decomposition

Proportion Effect by Country

● A ● B ● C ● D ● E ● F ● G
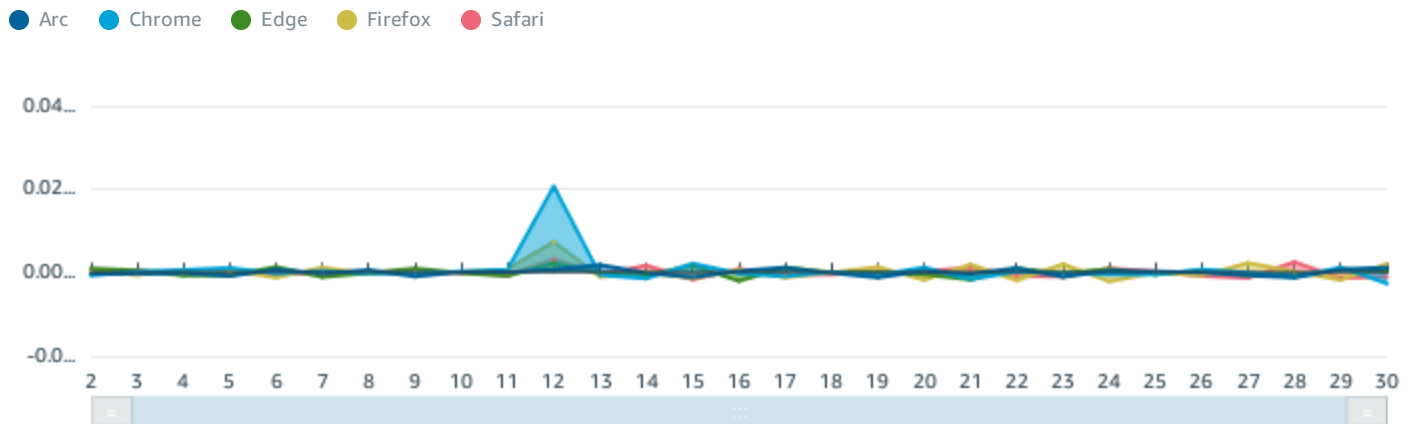

**Rate Effect by Country**

Key Insights:
- Proportion Effect had a major spike on the 12th
  - Proportion Effect (the shift in Country G's session volume) had a major spike on the 12th, especially for Country G
- Rate Effect remained stable across all countries
- This indicates that the escalation rate increase at the aggregate level was not due to individual country rates increasing, but rather due to Country G contributing a larger share of cases—which aligns with the definition of Simpson's Paradox.

2. Broswer Level Decomposition

Proportion Effect by Broswer

● Arc   ● Chrome   ● Edge   ● Firefox   ● Safari

Rate Effect by Broswer
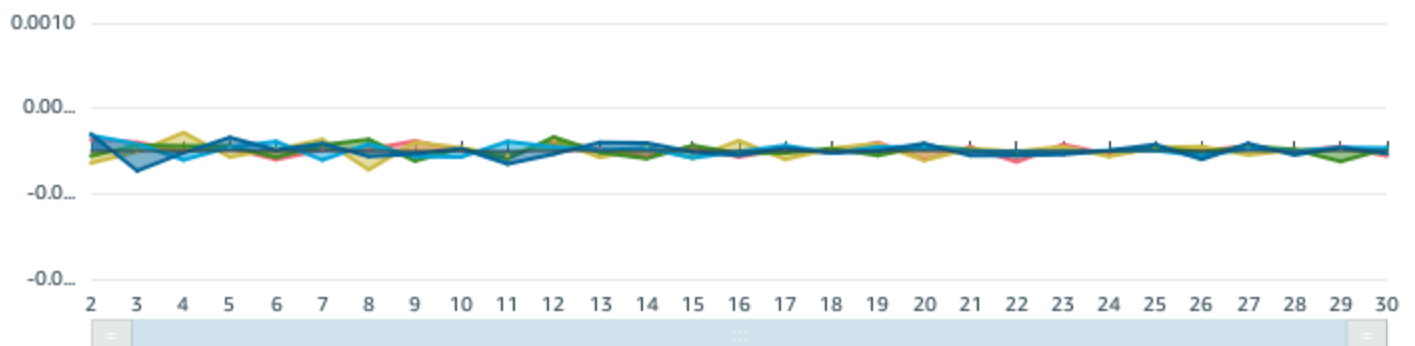
Key Insights:

- **Chrome and Firefox Dominate the Volume**
  - Chrome accounts for 60% of total sessions and cases, while Firefox makes up 20%.
  - Therefore any shifts in these browsers' proportions can have a large impact on the overall escalation rate.
- **Proportion Effect of Chrome & Firefox Spiked on the 12th (Overall and for Country G)**
  - The spike in the overall escalation rate is driven by a compositional shift, where Country G contributed more cases, and within Country G, Chrome and Firefox had an even larger share of cases.
  - Even though Chrome and Firefox's share decreased in individual countries, the overall shift in volume (especially in Country G) dominated the global trend—leading to a higher escalation rate.
- **Rate Effect of these broswers were limited and relative stable**