

Brian Louis Ramirez – performance.sync() in Amsterdam – 2024-10-29

Noise-Cancelling RUM-Based Alerting

Key insights from our anomaly detection journey



screenspan.net

Brian Louis Ramirez

Web Performance Engineer



Speed Kit

Trusted by 10,000+ websites

O₂

carhartt
WORK IN PROGRESS

TUI

GANT

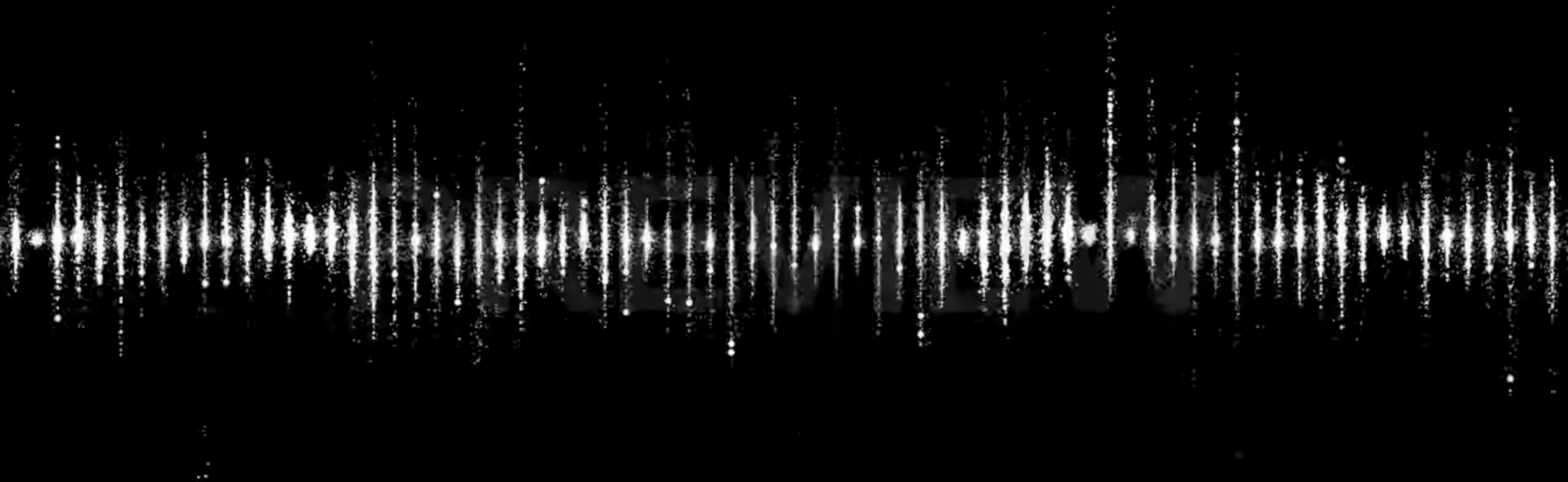
Tamaris

condor

TOM TAILOR

+ AUTODOC

LEBARA





100 %

50 %

0 %

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10

Time



100 %

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Time



**An anomaly is a
significant deviation
from the norm**

**An anomaly is a
significant deviation
from the norm**

100 %

50 %

0 %

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Time



100 %

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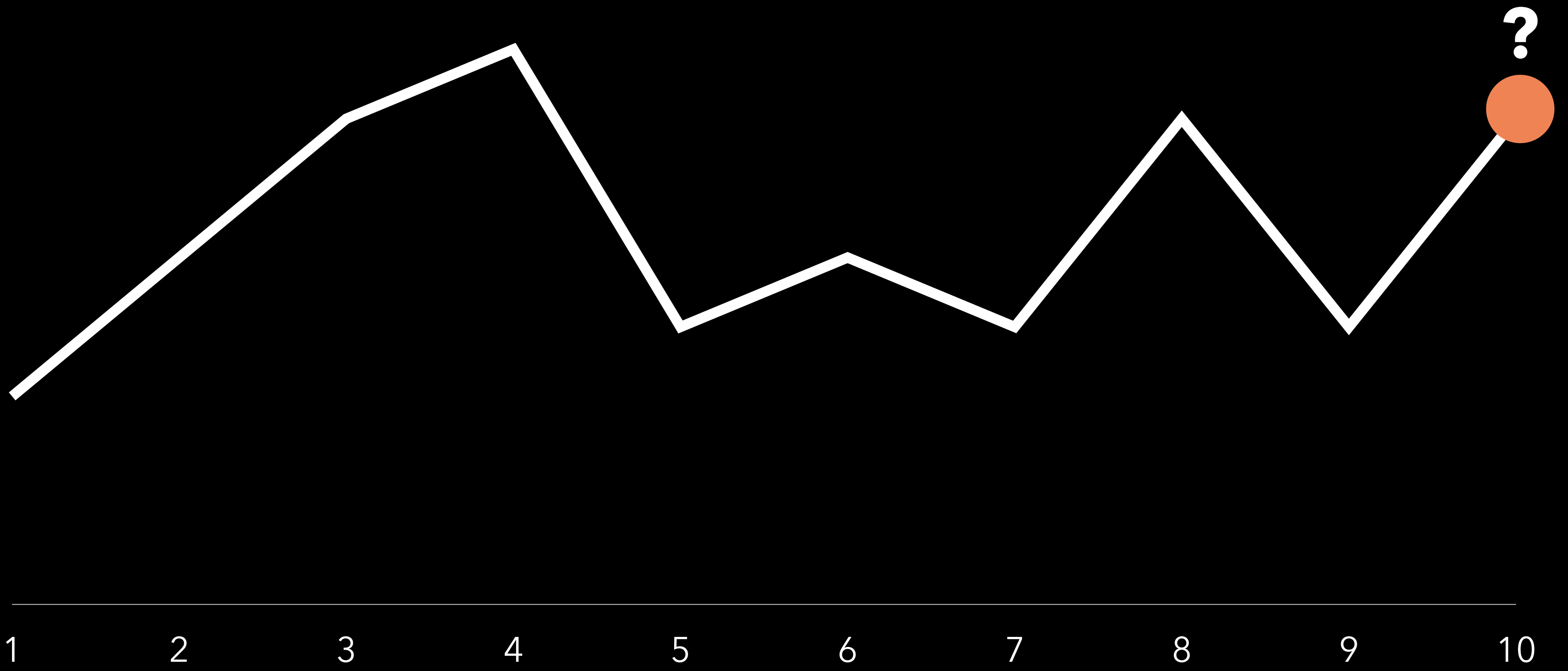
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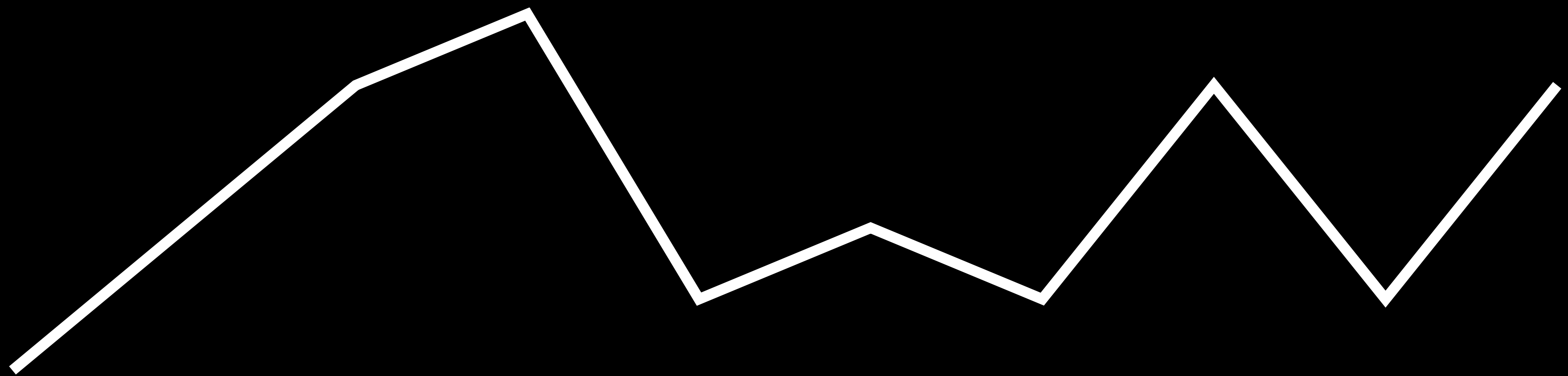
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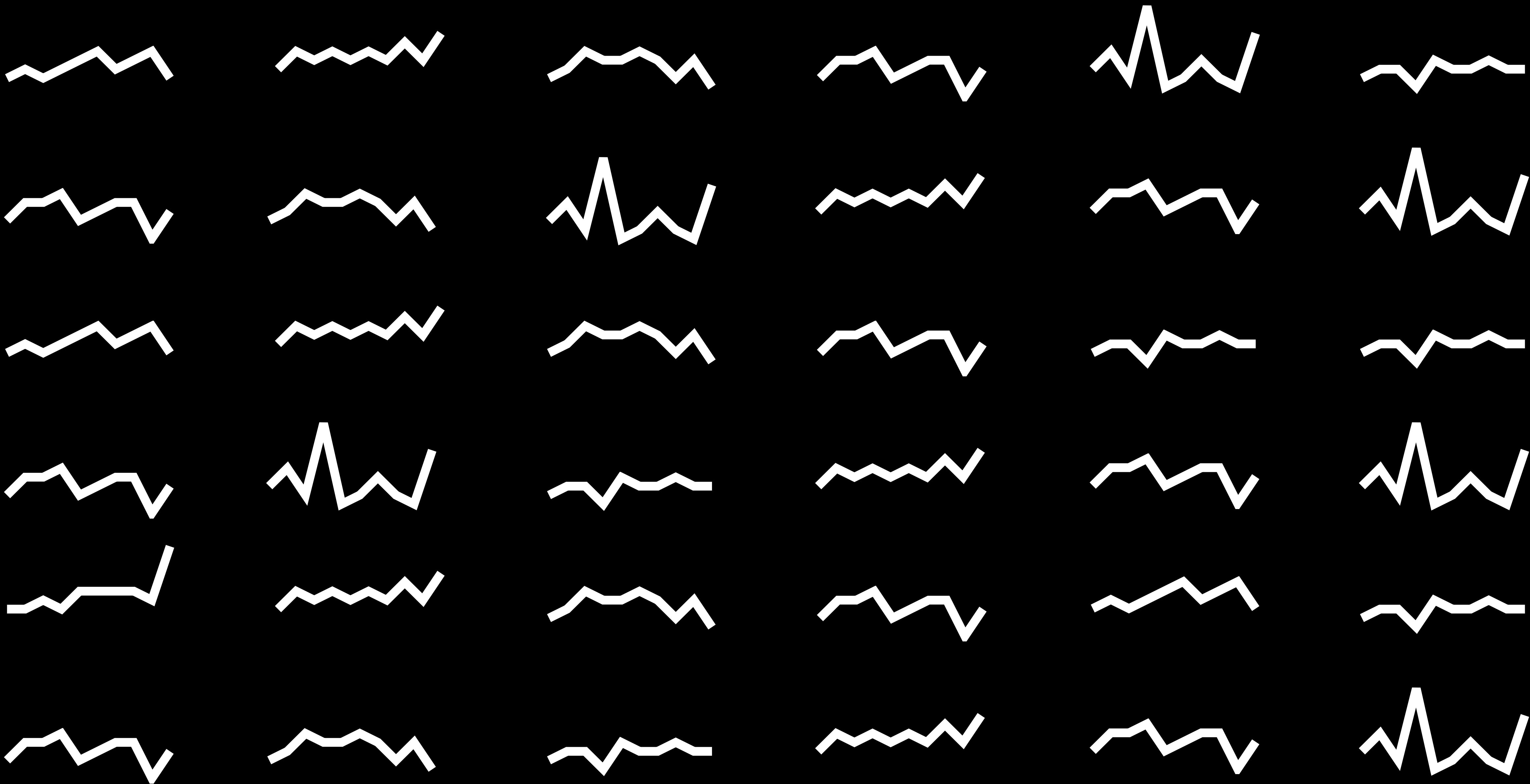
10

Time



?







Our journey

1 / 9

Watch your step

100 %

50 %

0 %

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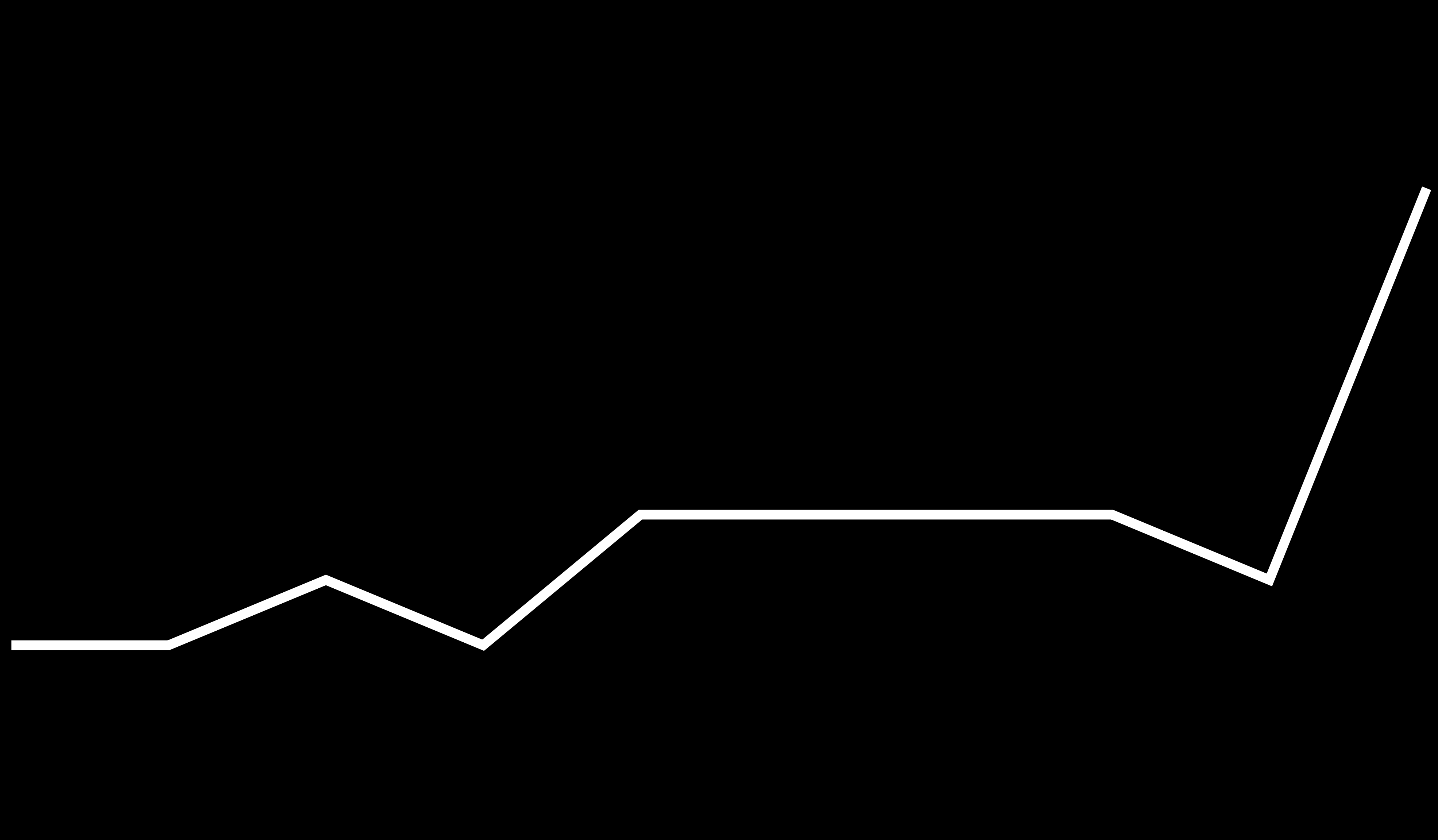
7

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Time



100 %

50 %

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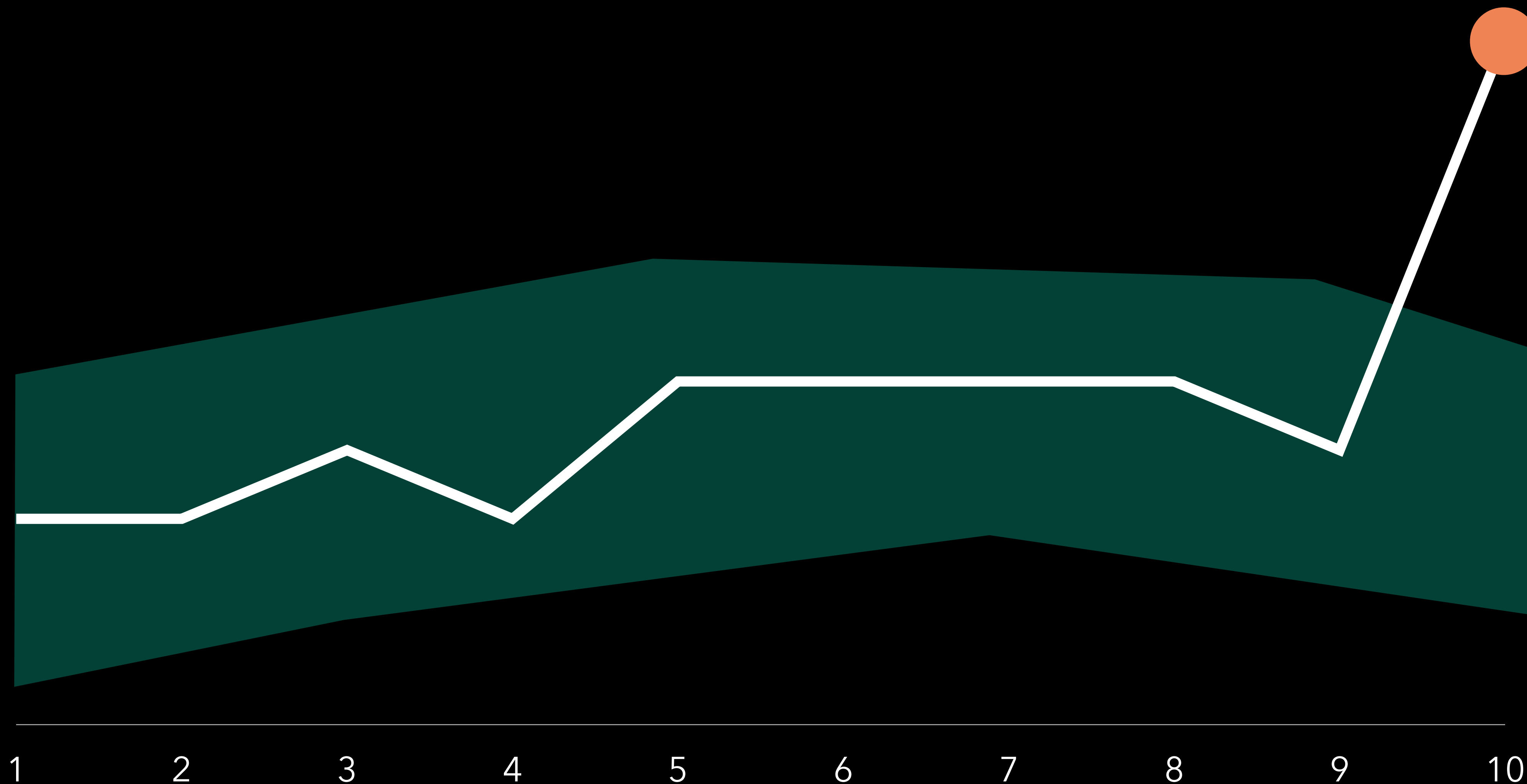
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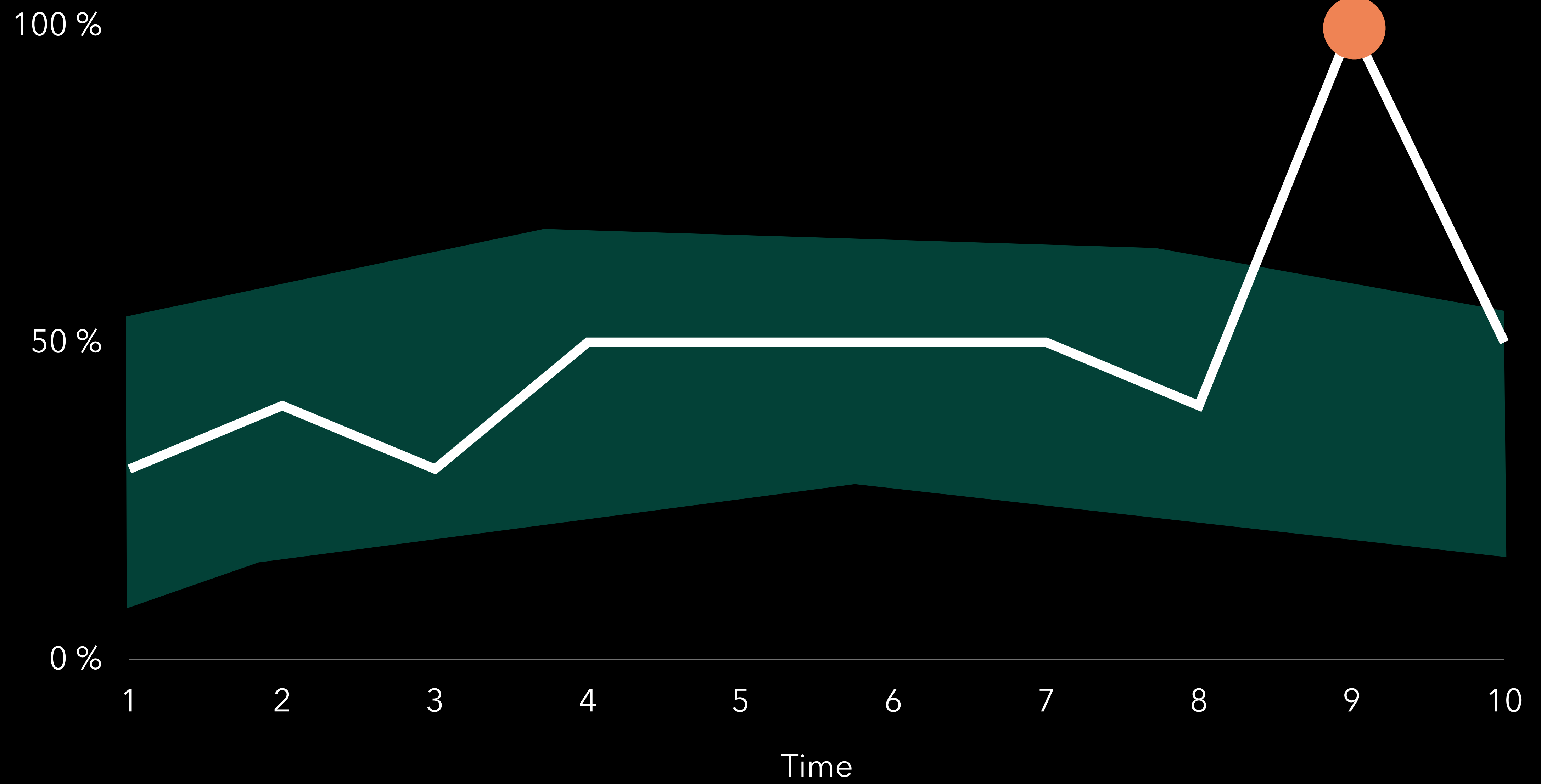
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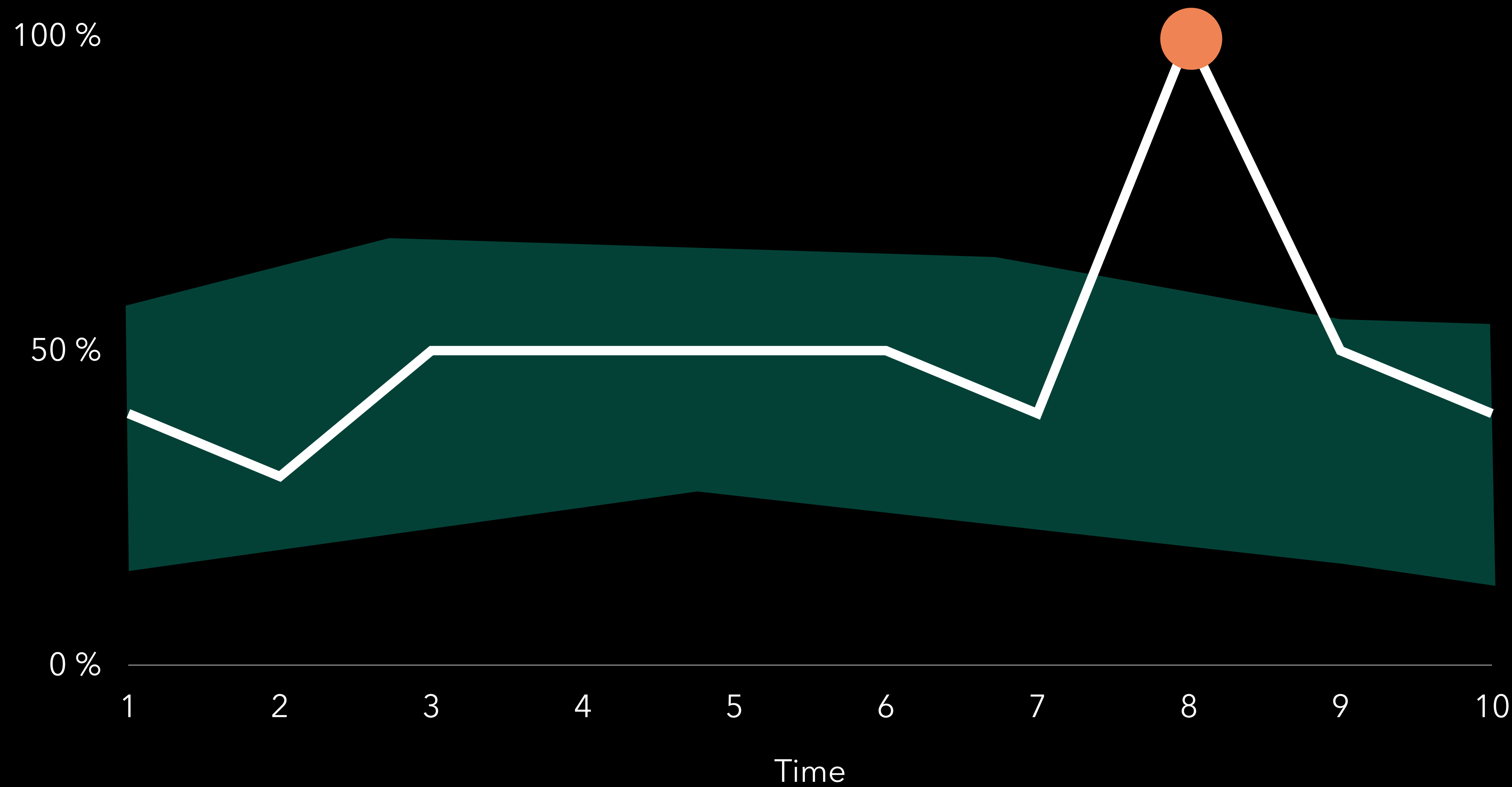
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10

Time







100 %

50 %

0 %

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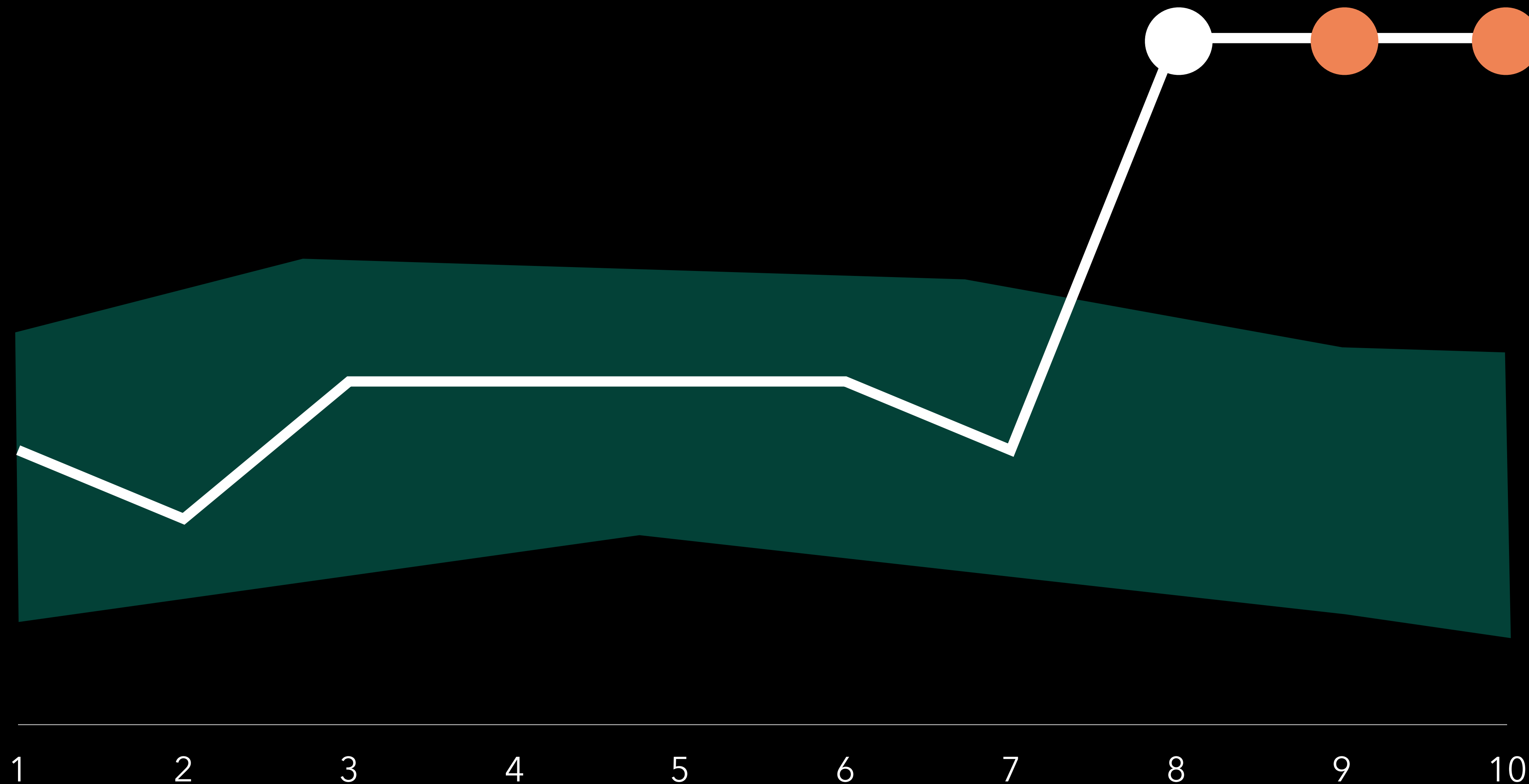
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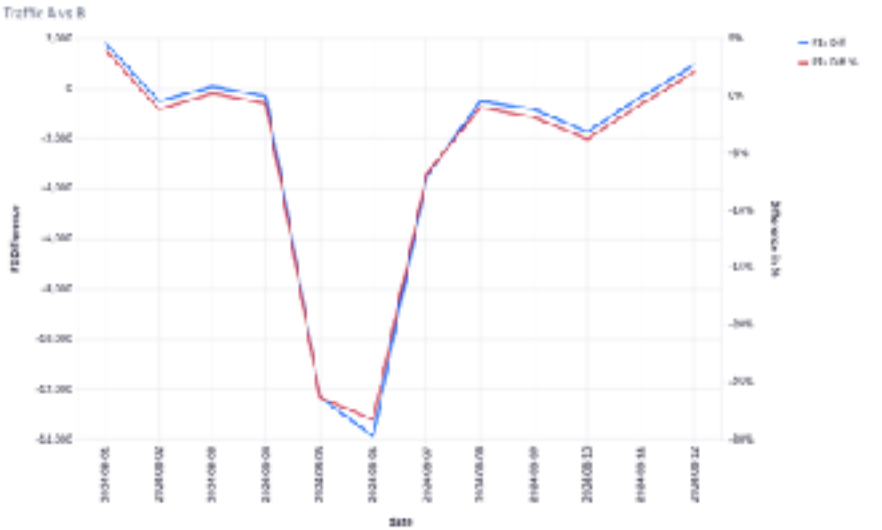
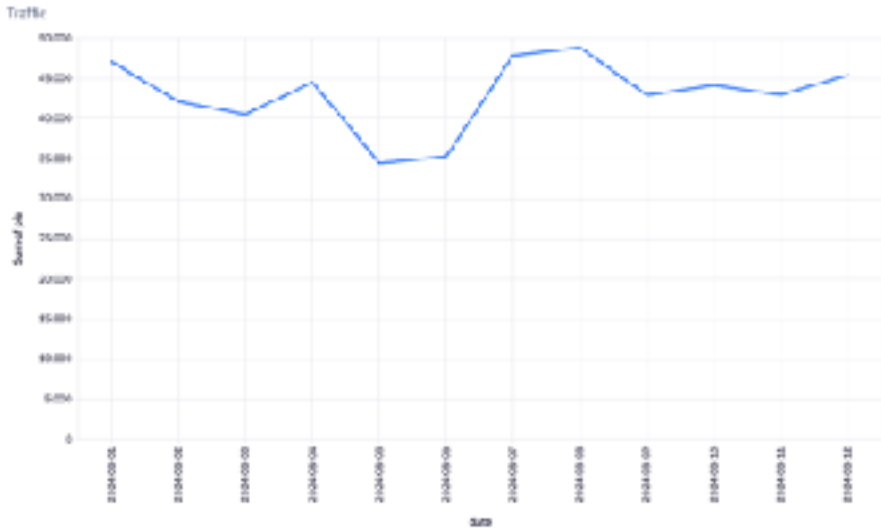
Time



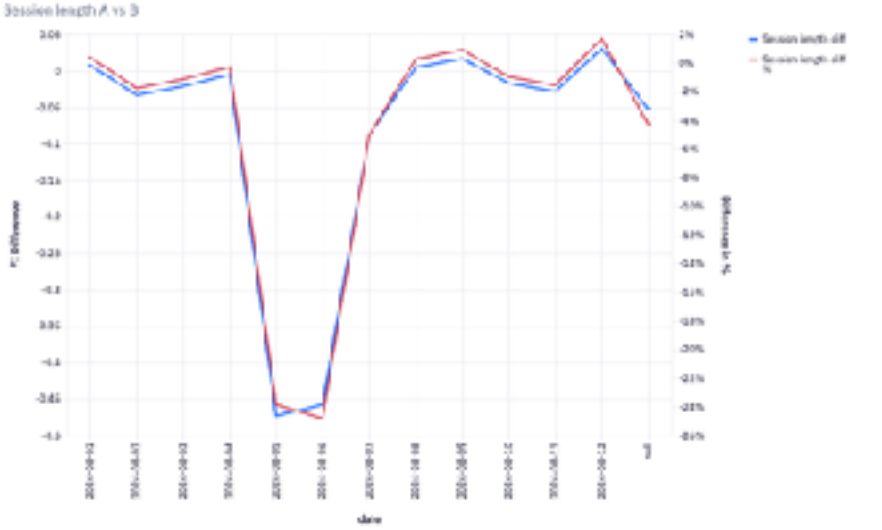
2 / 9

Investigate incidents & regressions

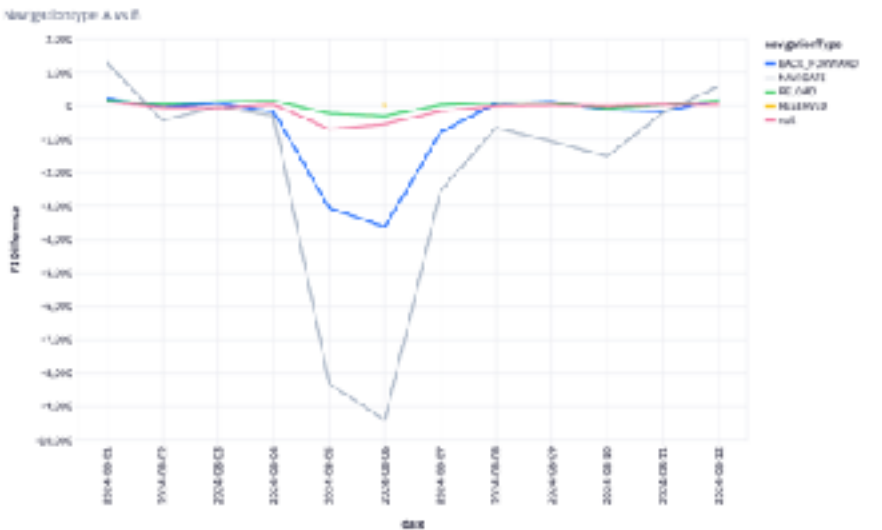
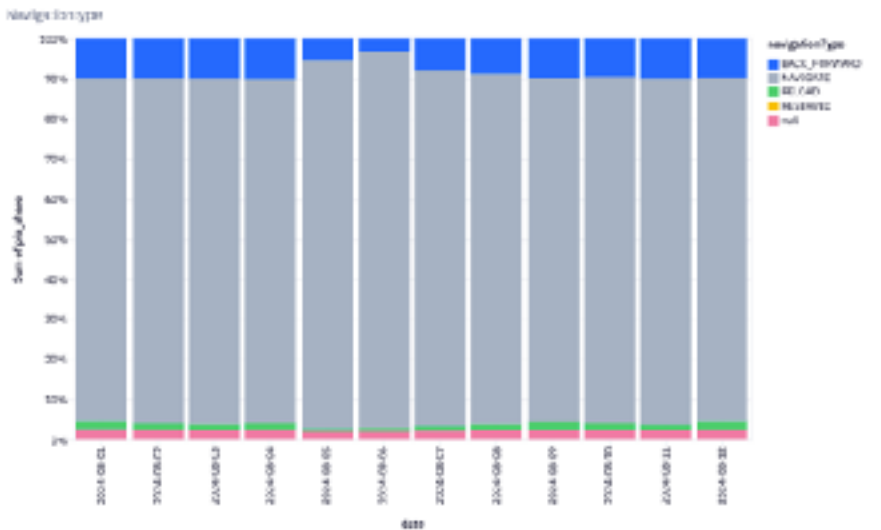
Traffic



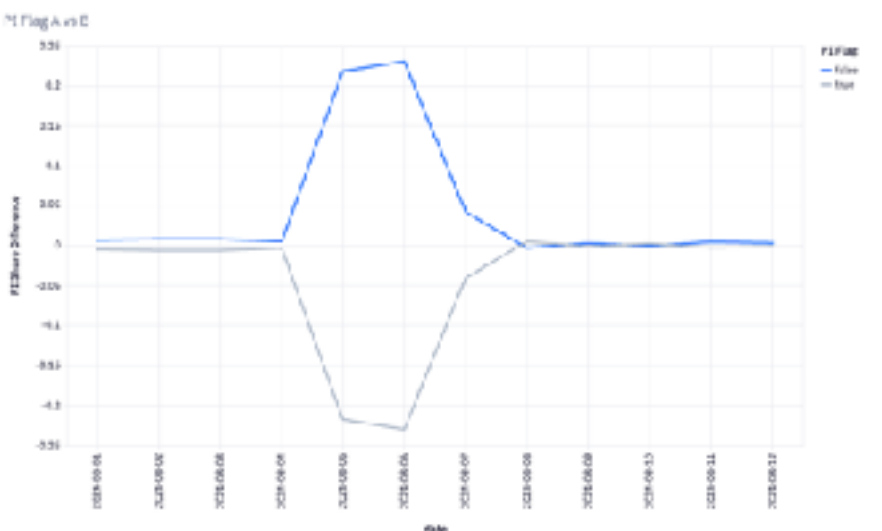
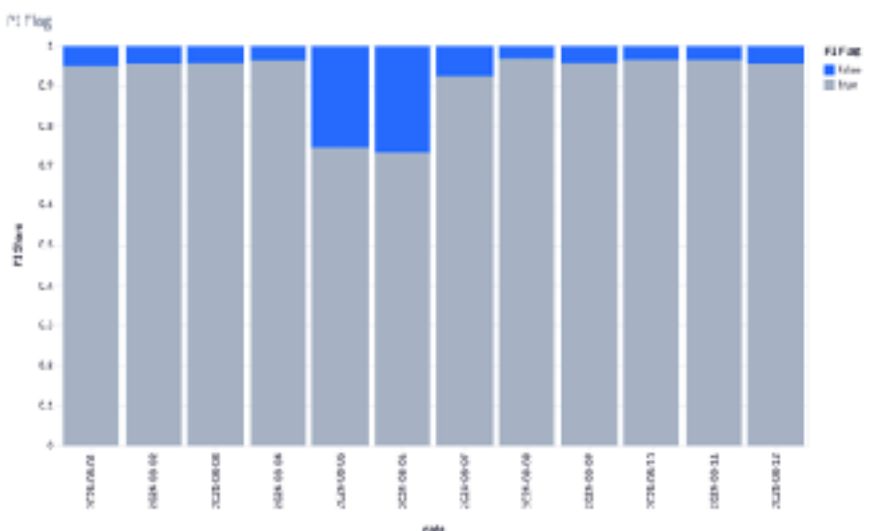
Session length



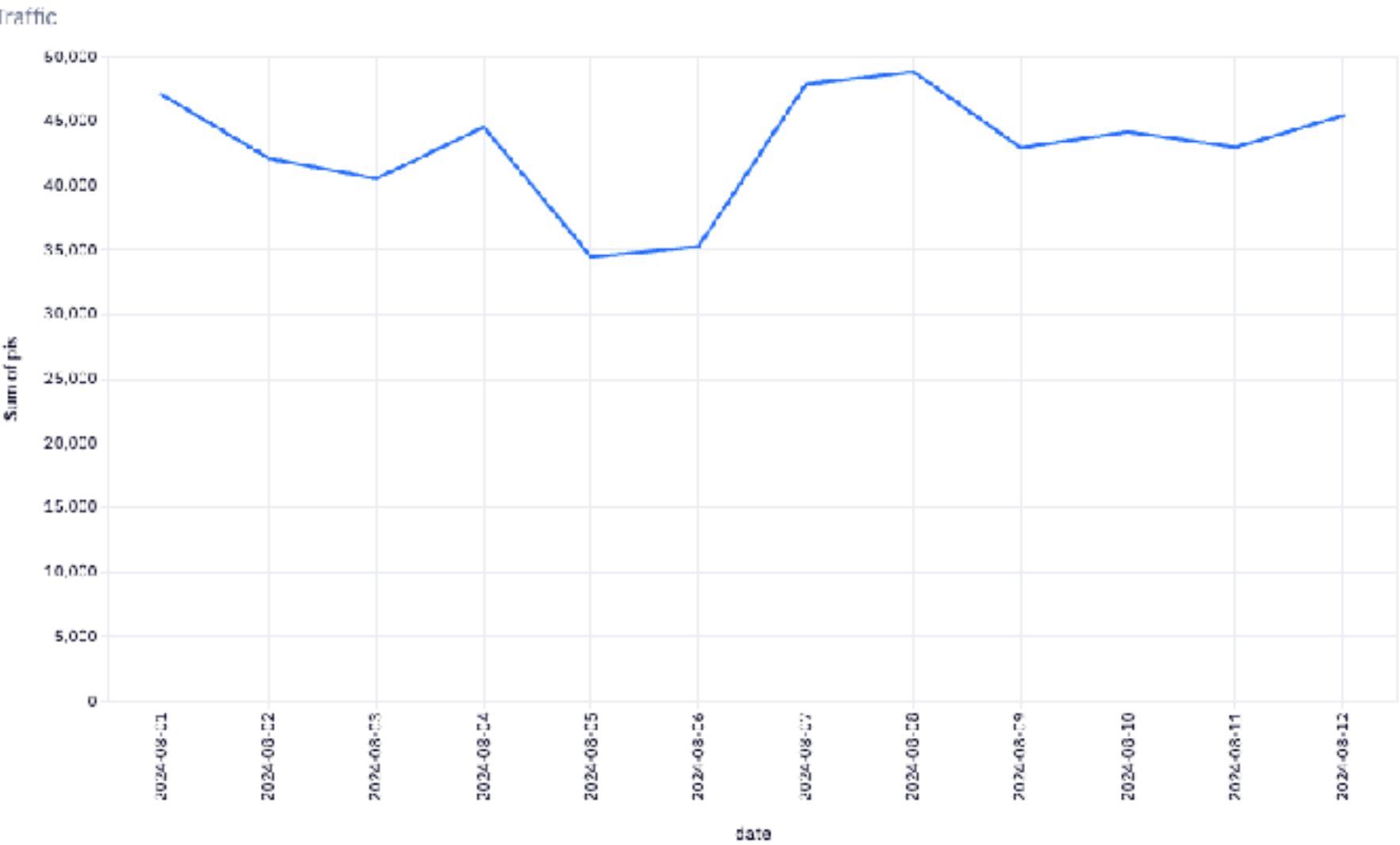
Navigationtype



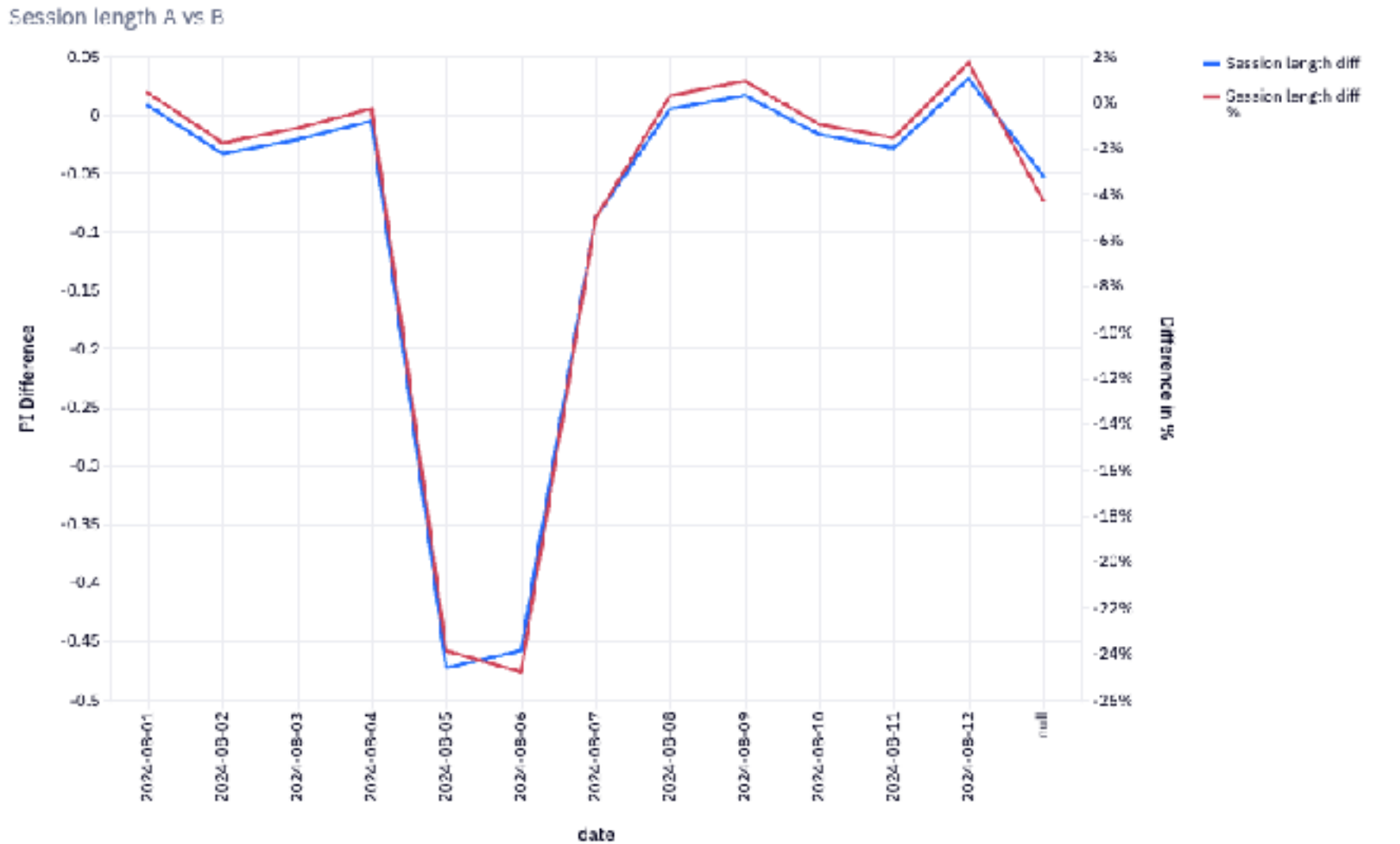
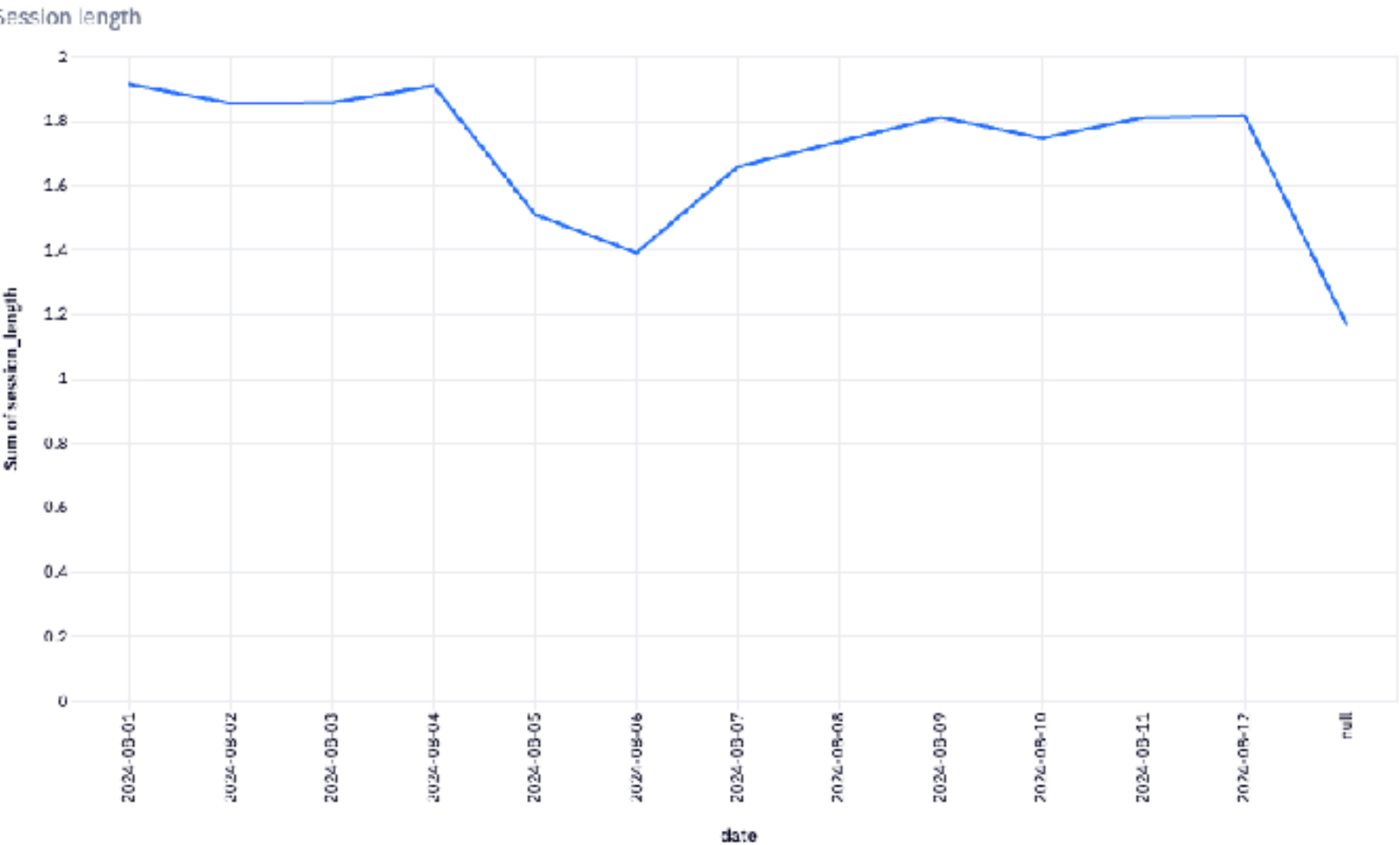
PI Flag



Traffic

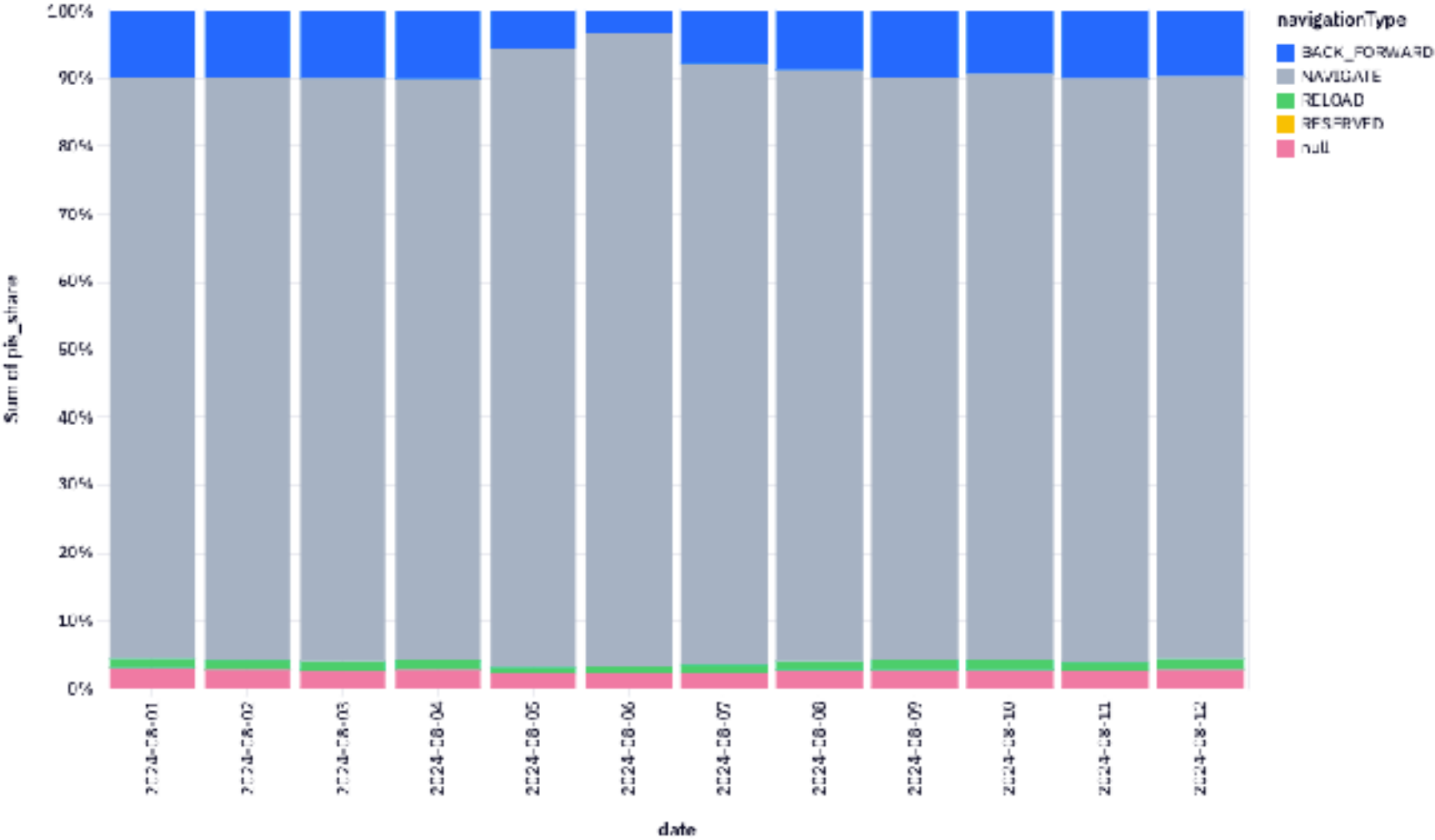


Session length

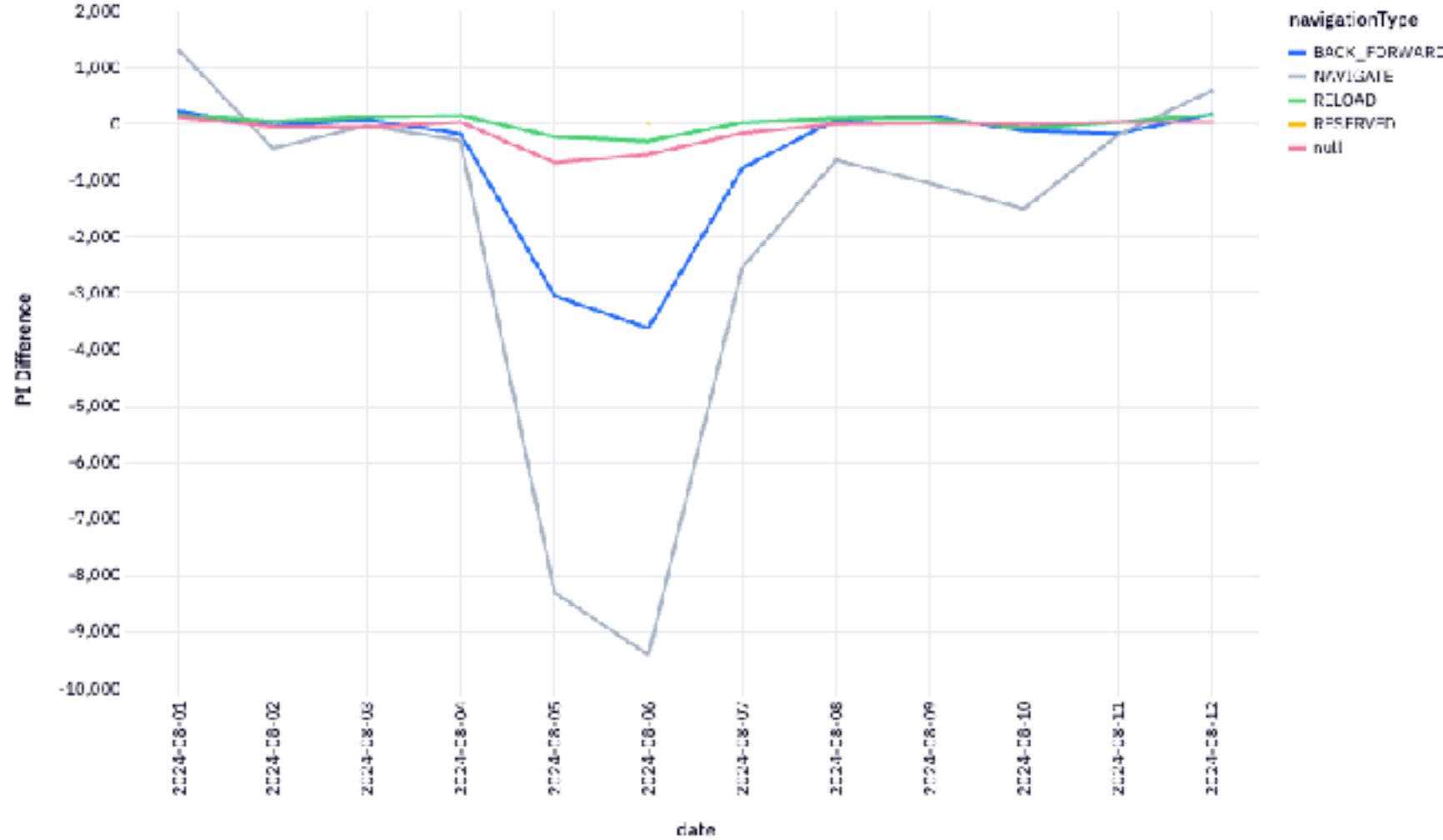


Navigationtype

Navigationtype

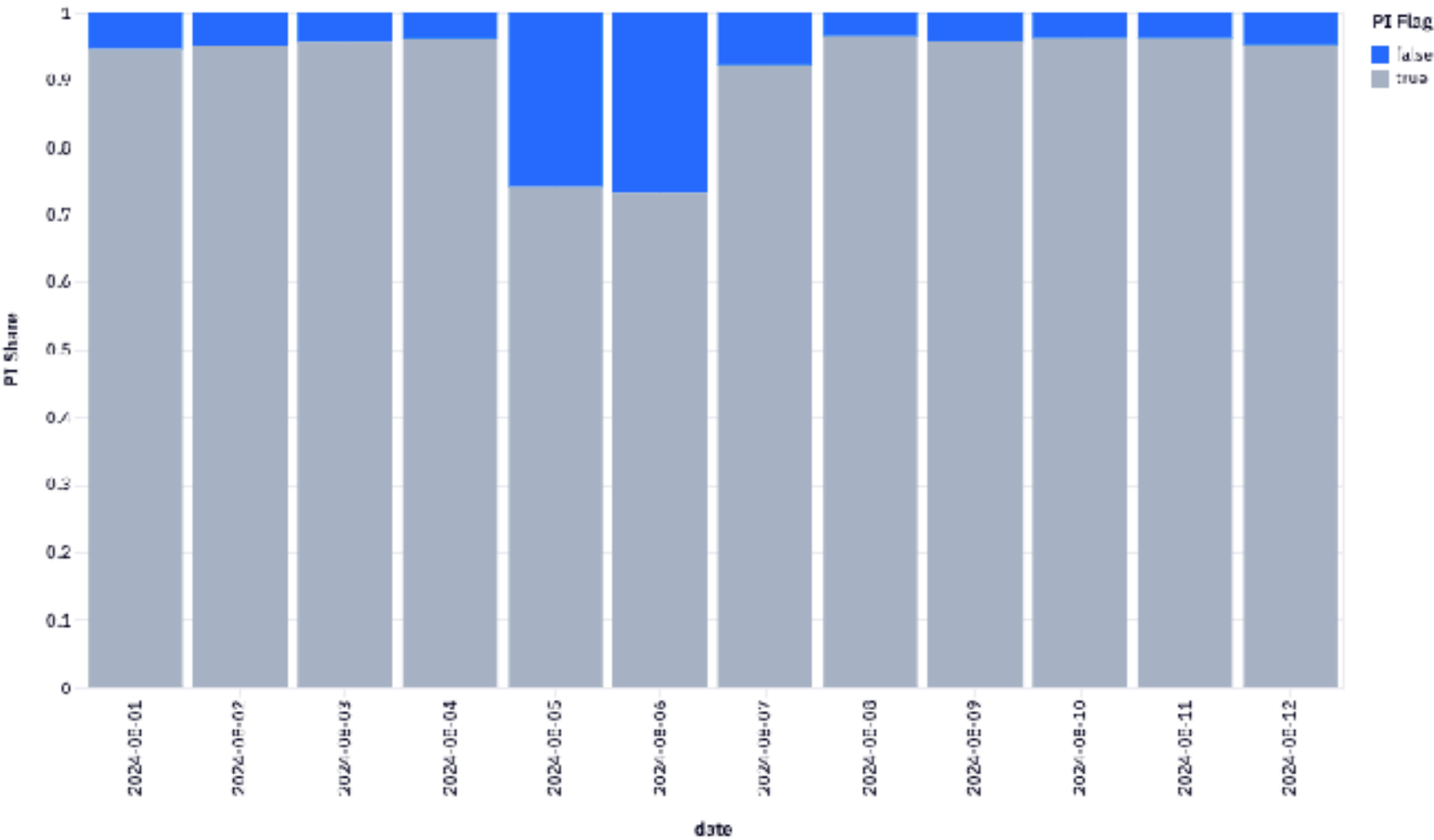


Navigationtype A vs B

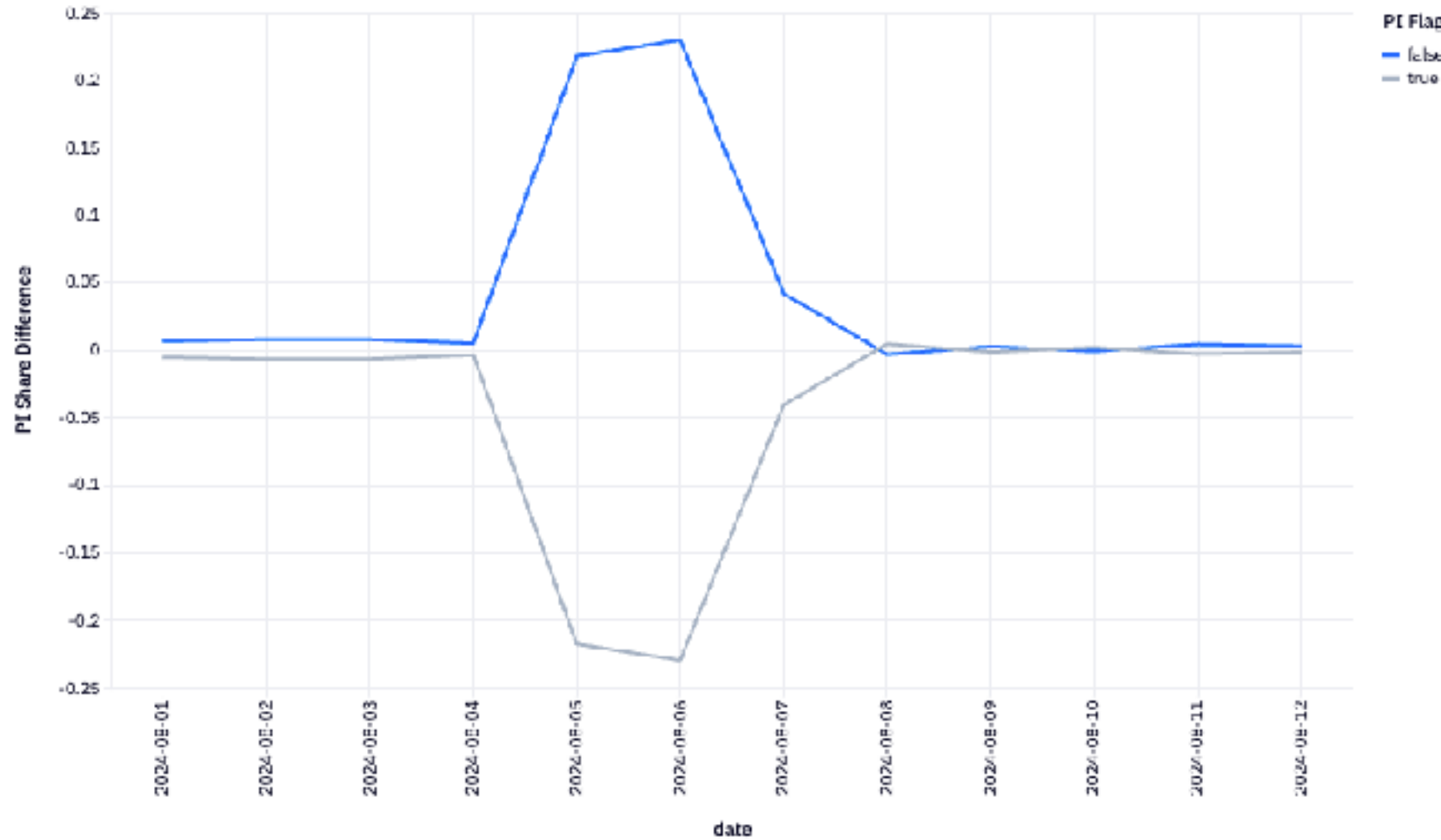


PI Flag

PI Flag

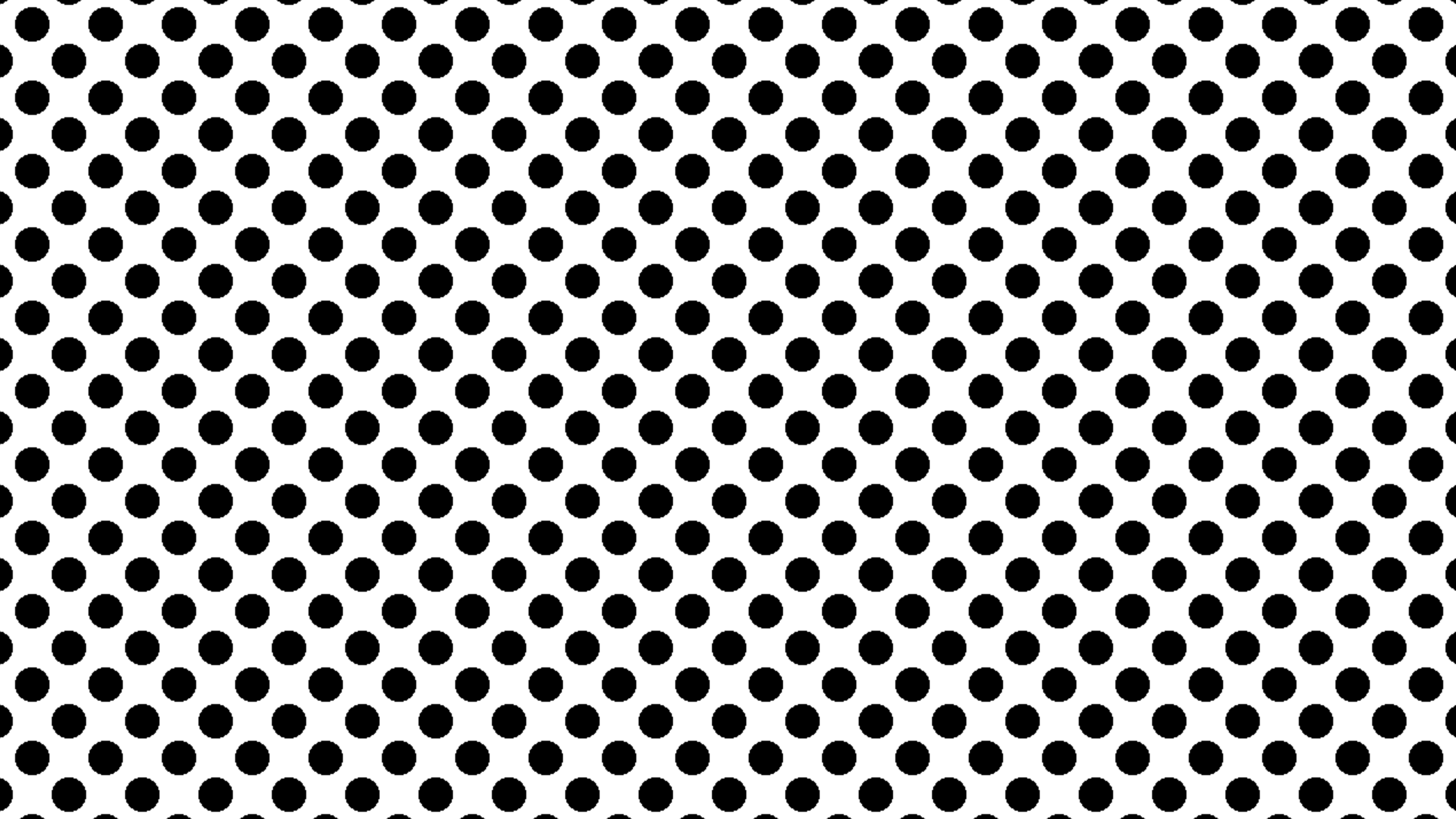


PI Flag A vs B



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Get granular



Time

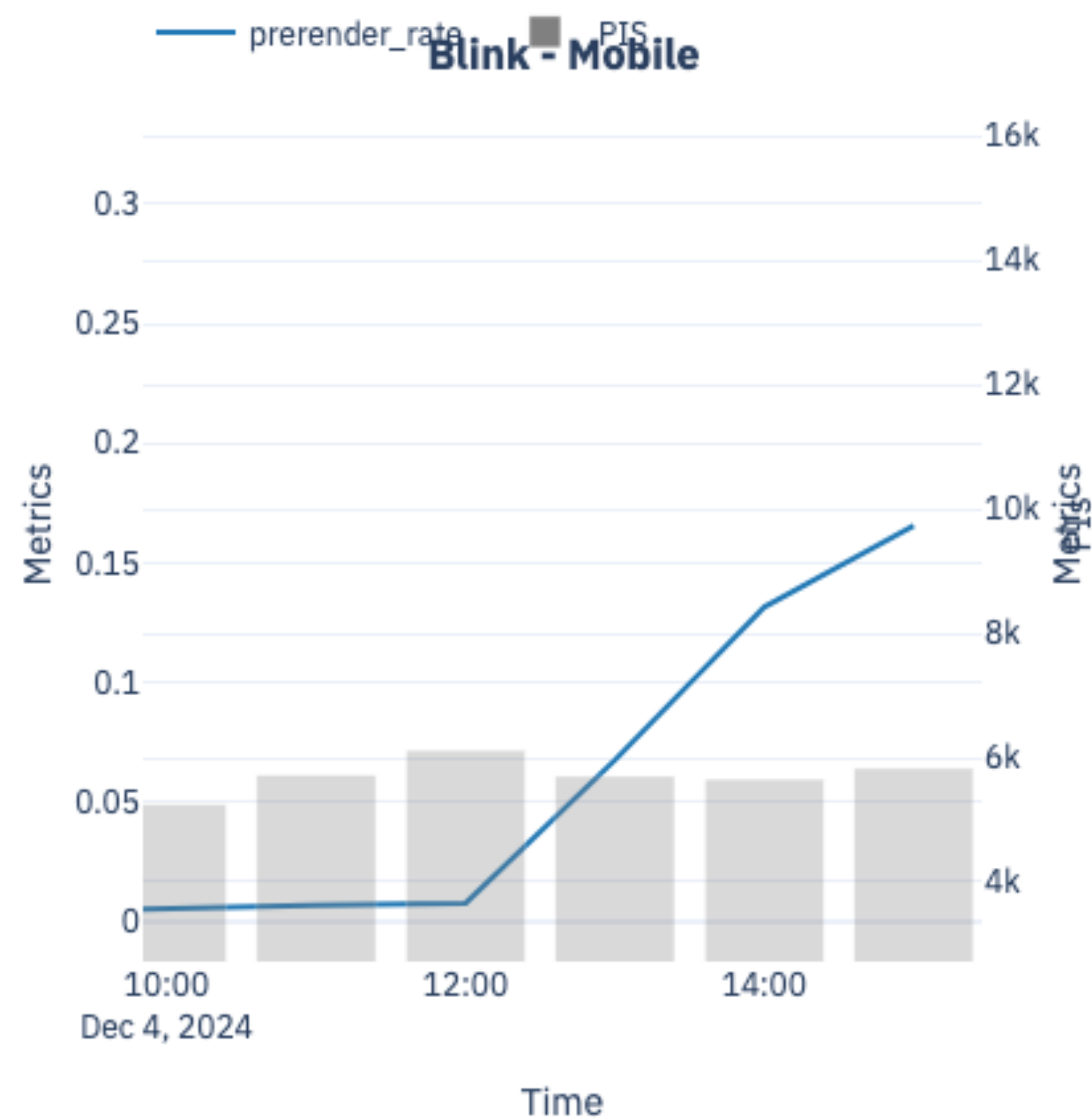
Apps

Devices

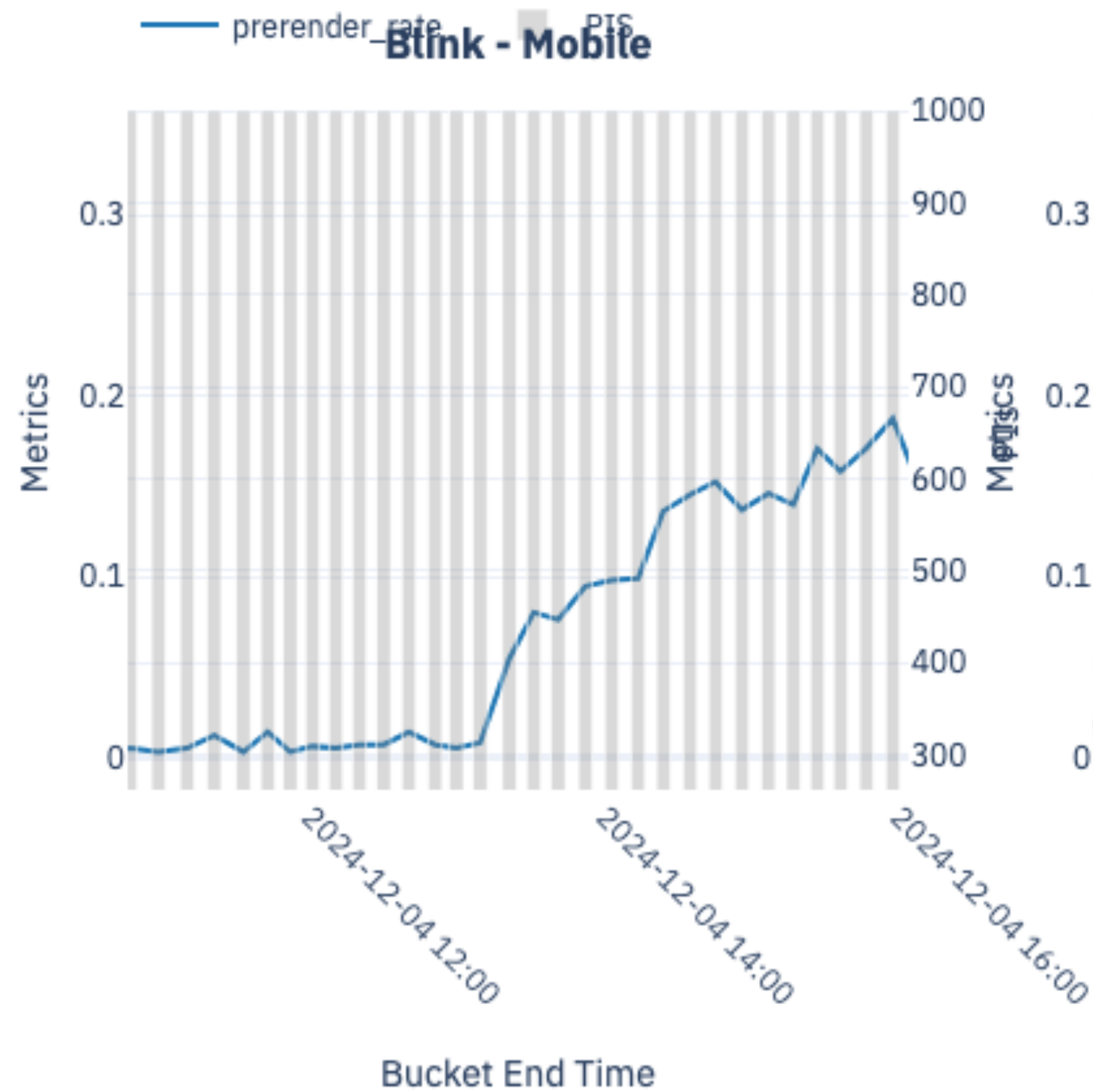
Segment

Browsers

Prerender Rate

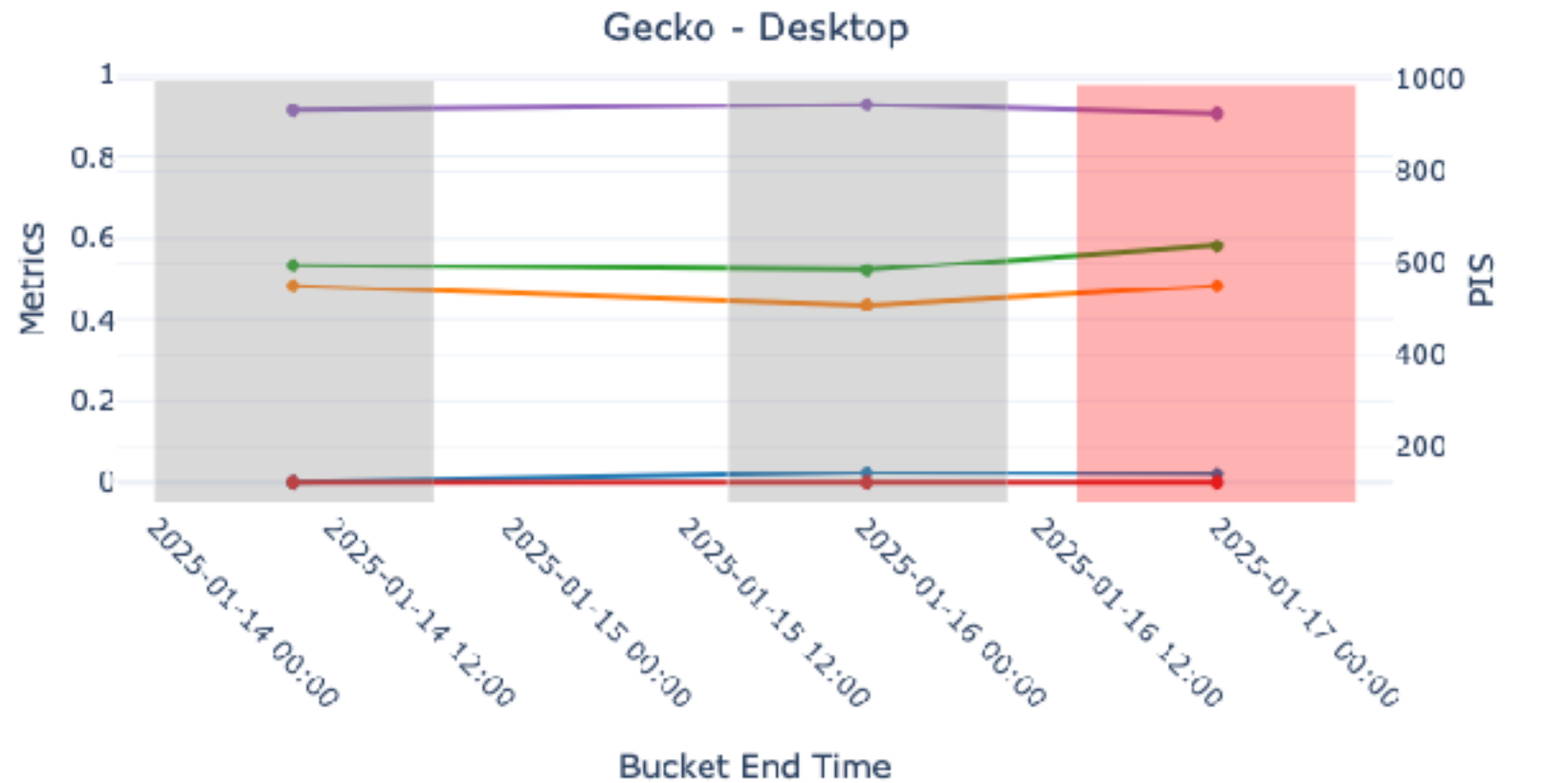
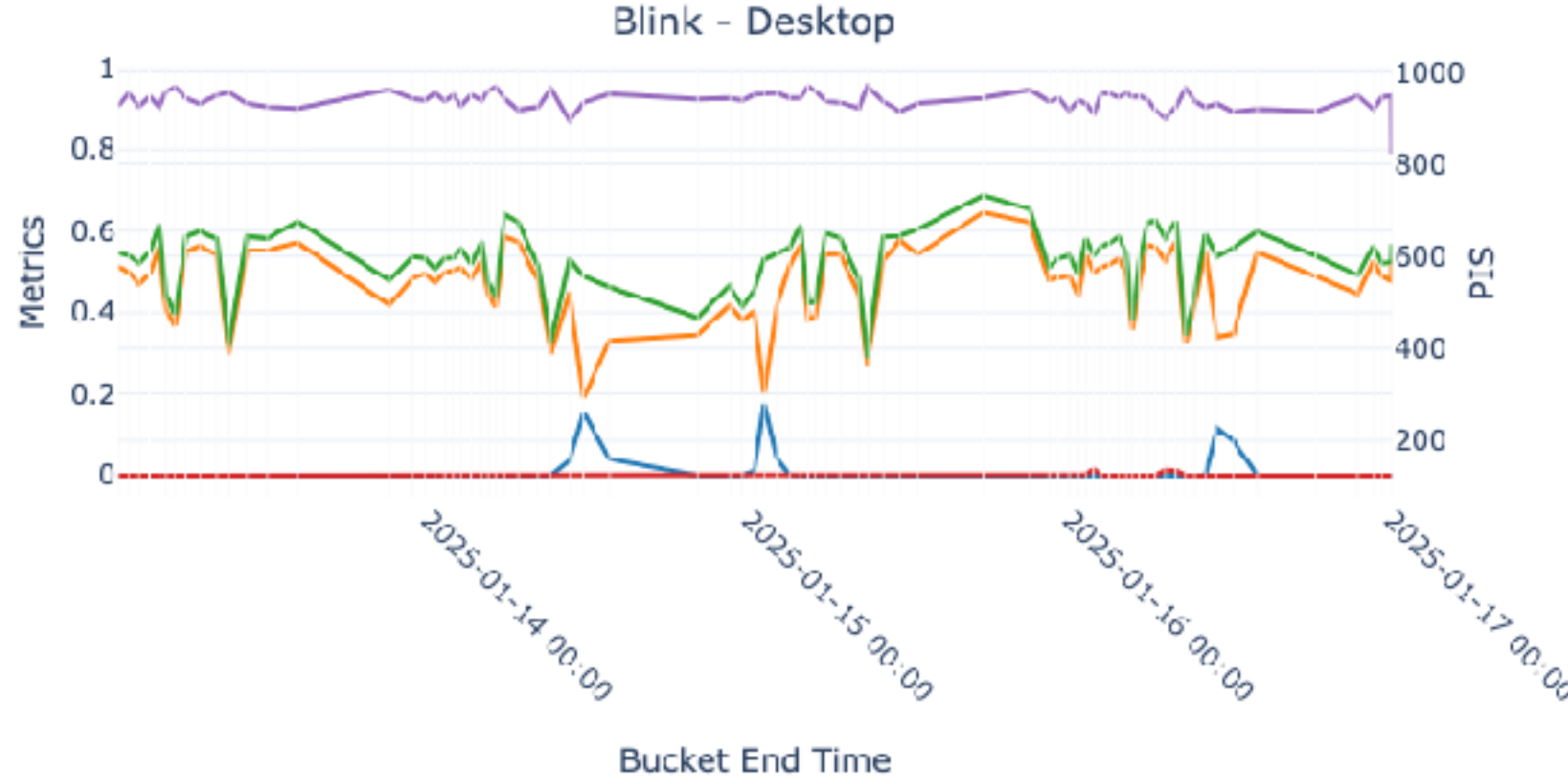
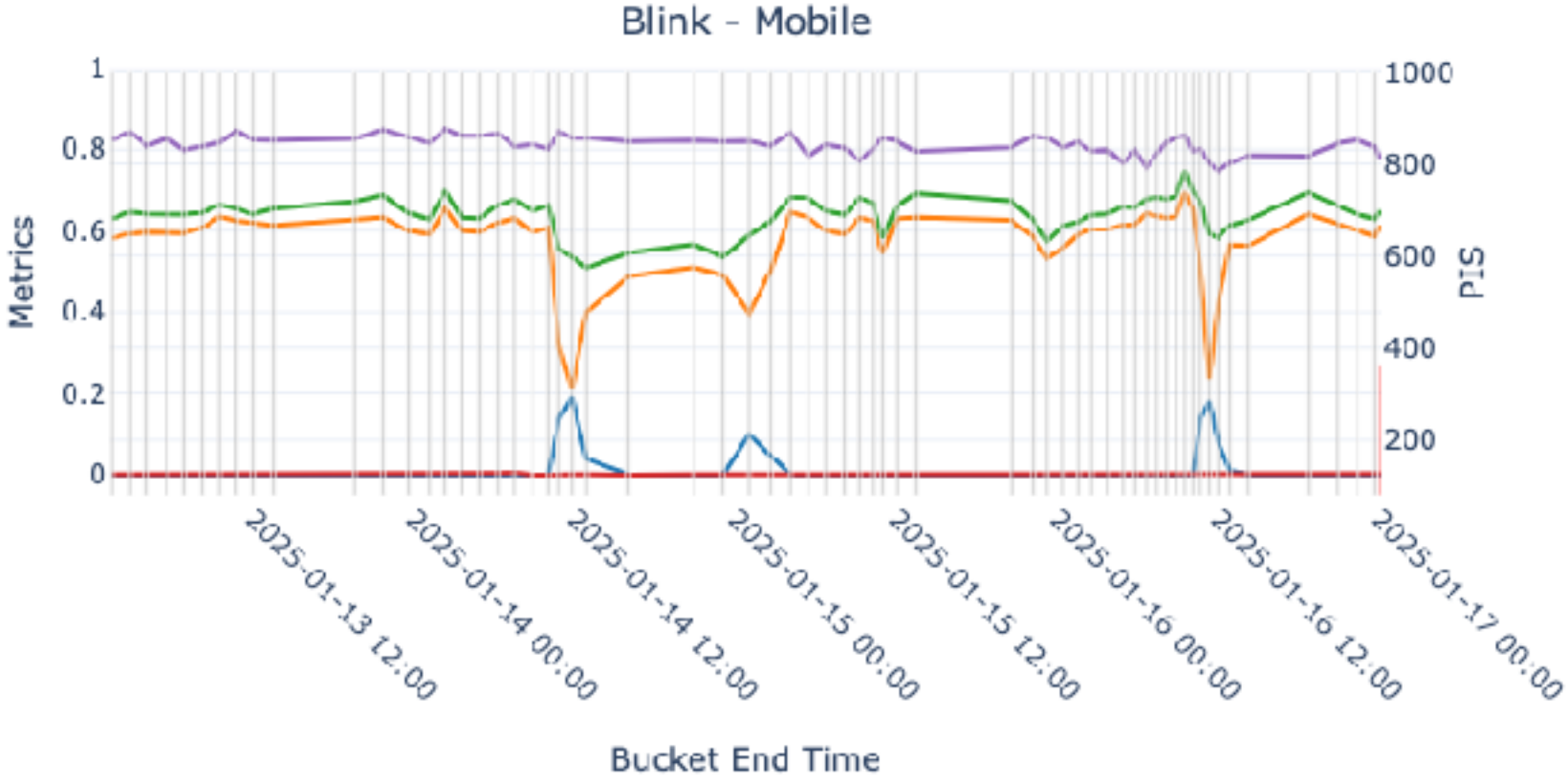
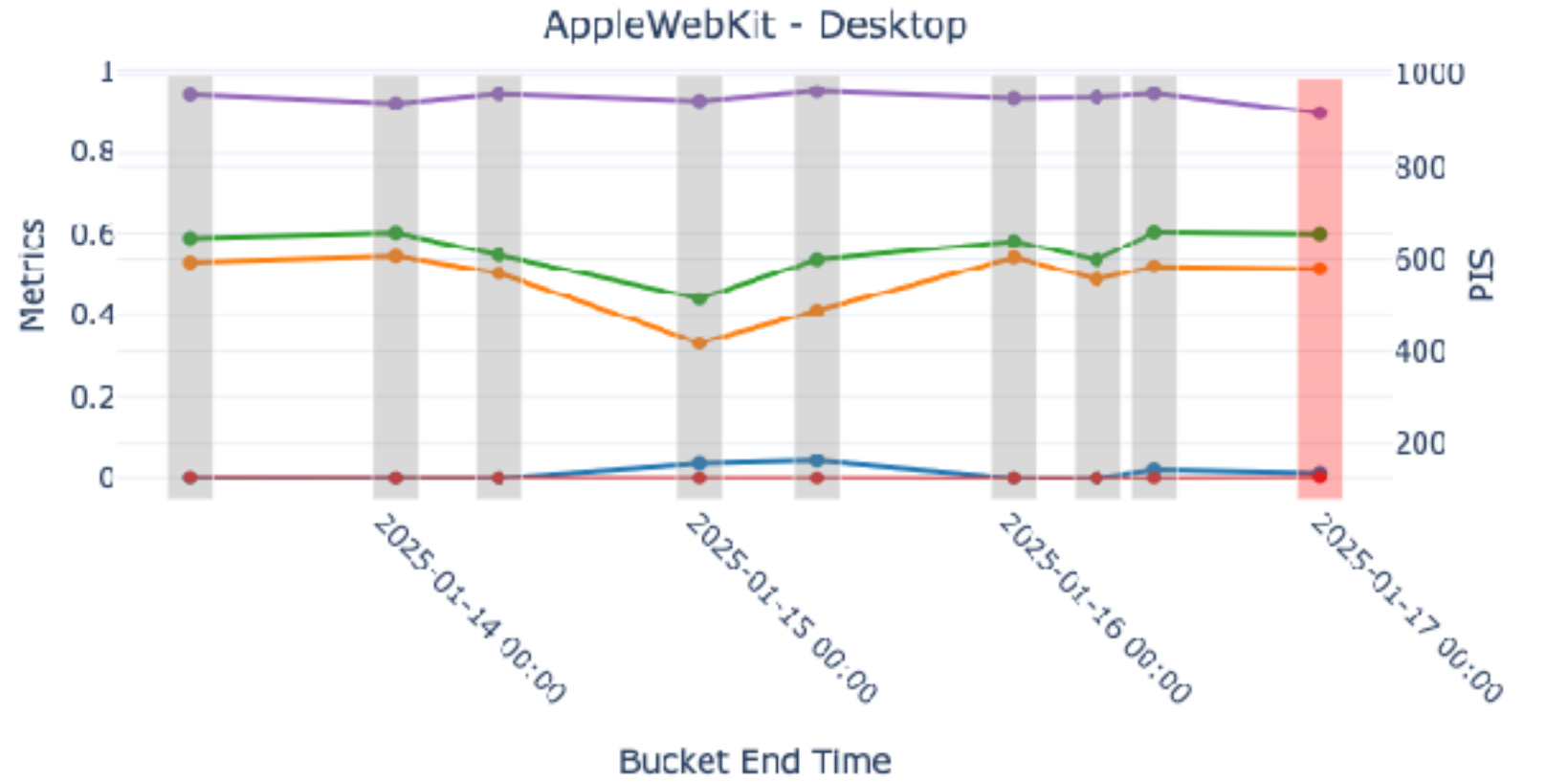
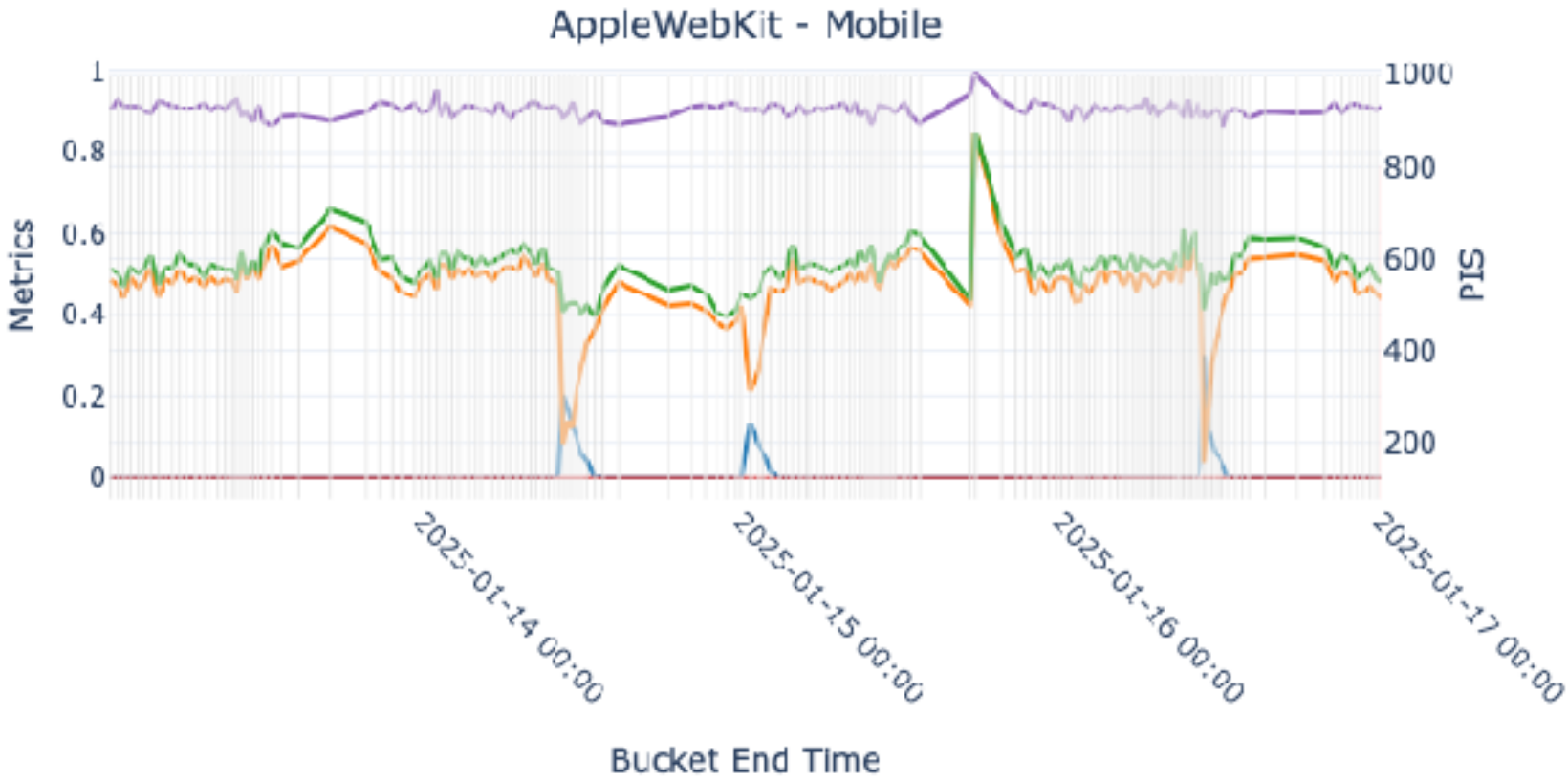


Prerender Rate



Metrics by Browser Engine and Device

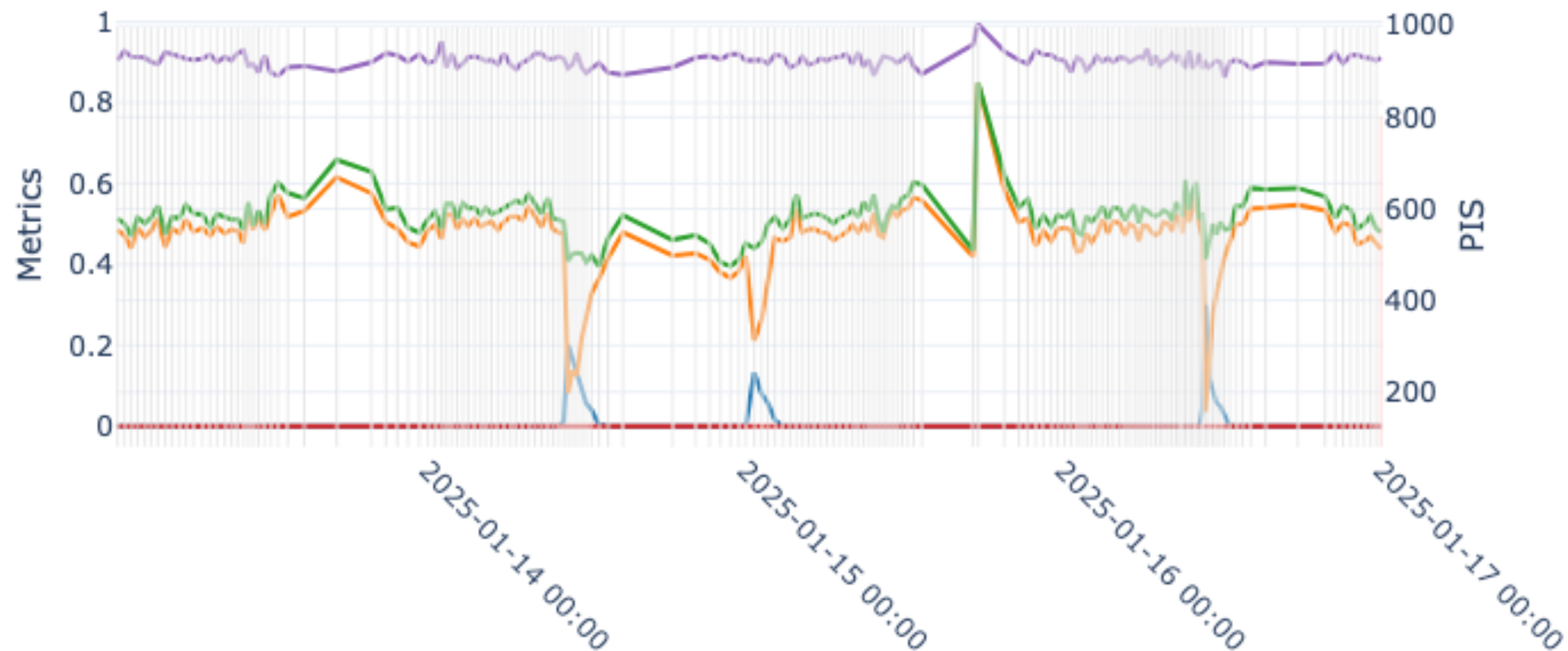
stalecache_rate acceleration_rate acceleration_rate_normalized disconnected_rate navigation_rate PIS



Metrics by Browser Engine and Device

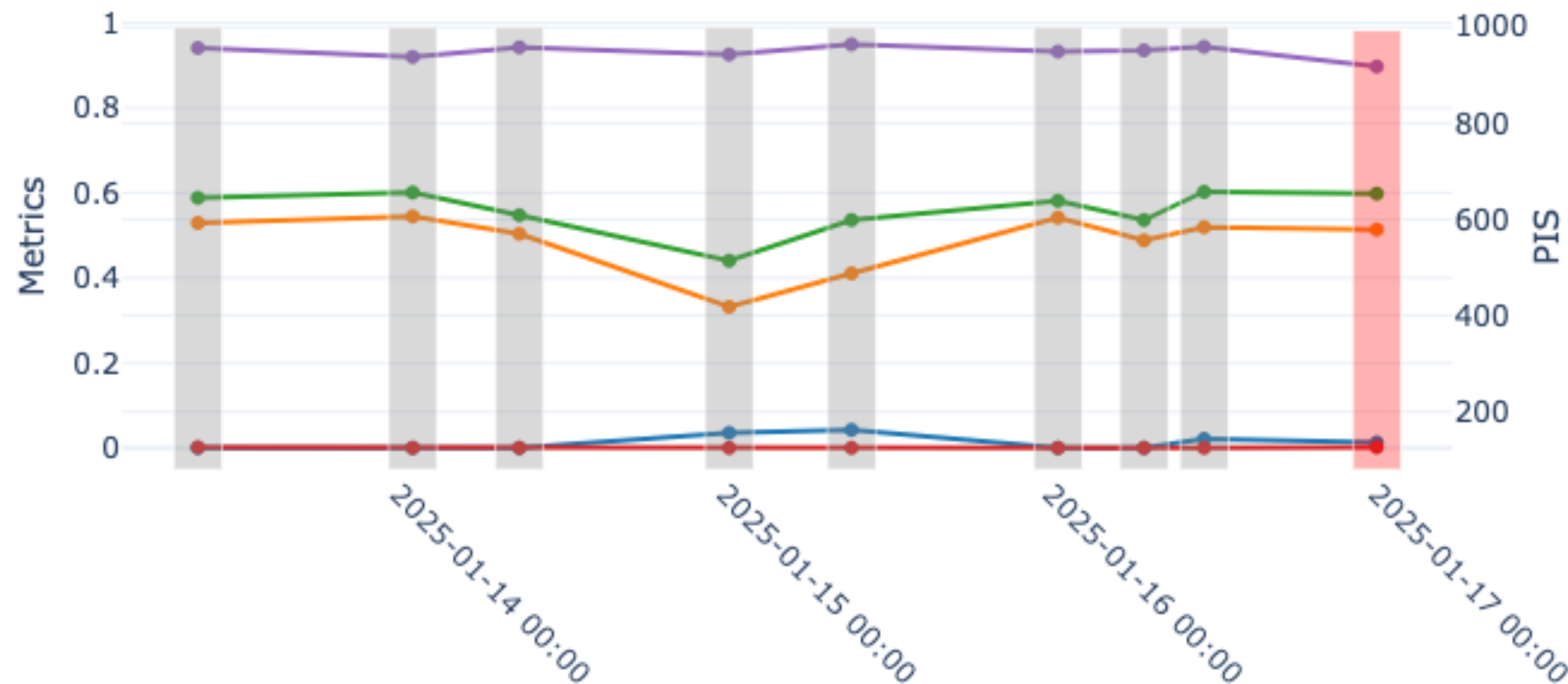
stalecache_rate acceleration_rate acceleration_rate_normalized disconnected_rate navigation_rate PIS

AppleWebKit - Mobile



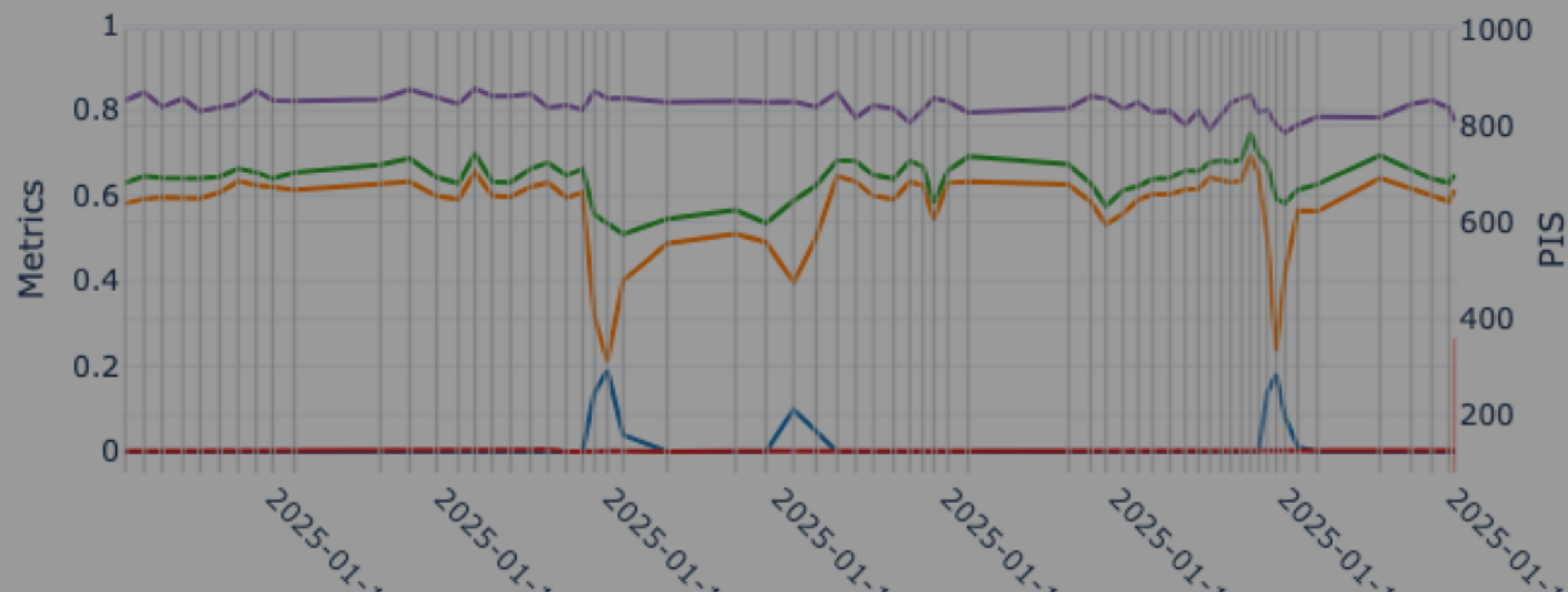
Bucket End Time

AppleWebKit - Desktop



Bucket End Time

Blink - Mobile



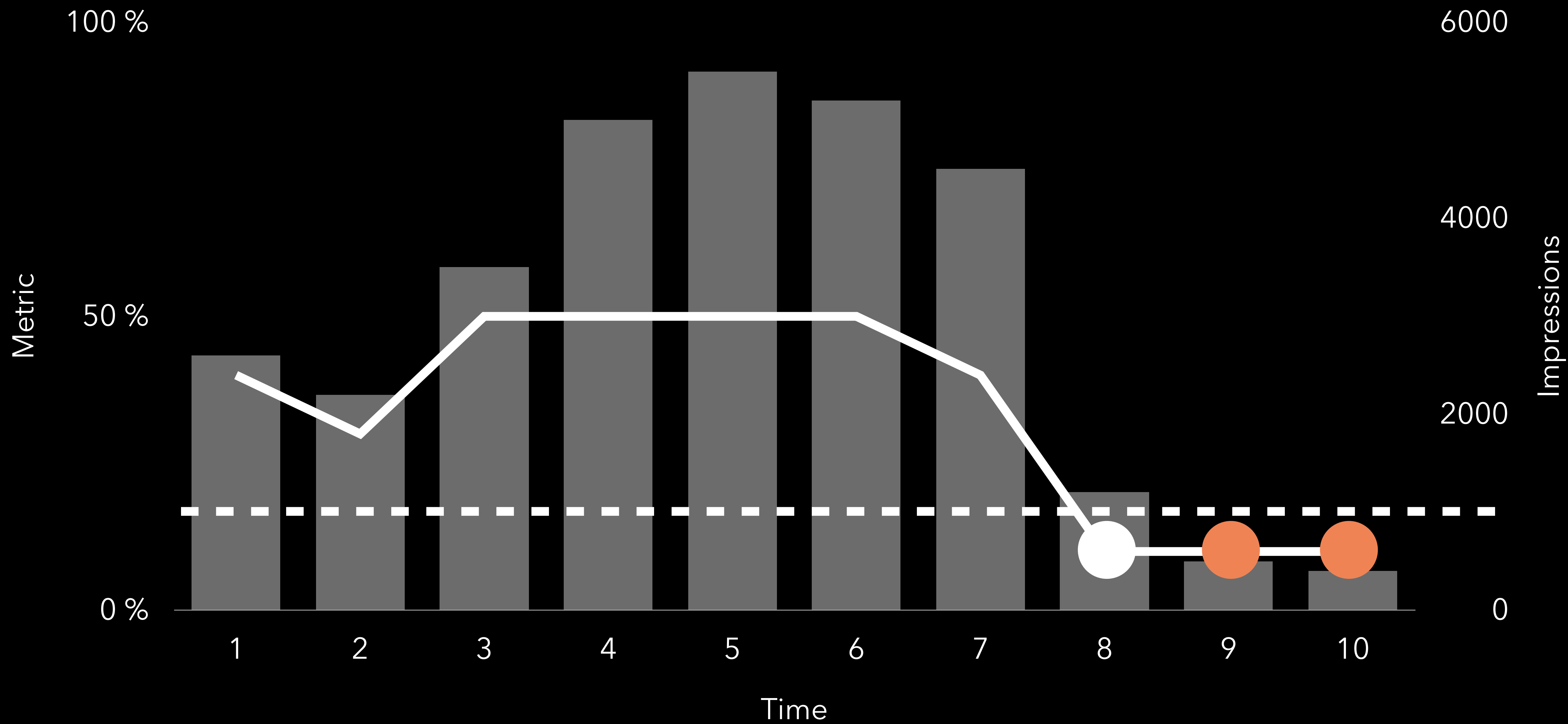
Blink - Desktop

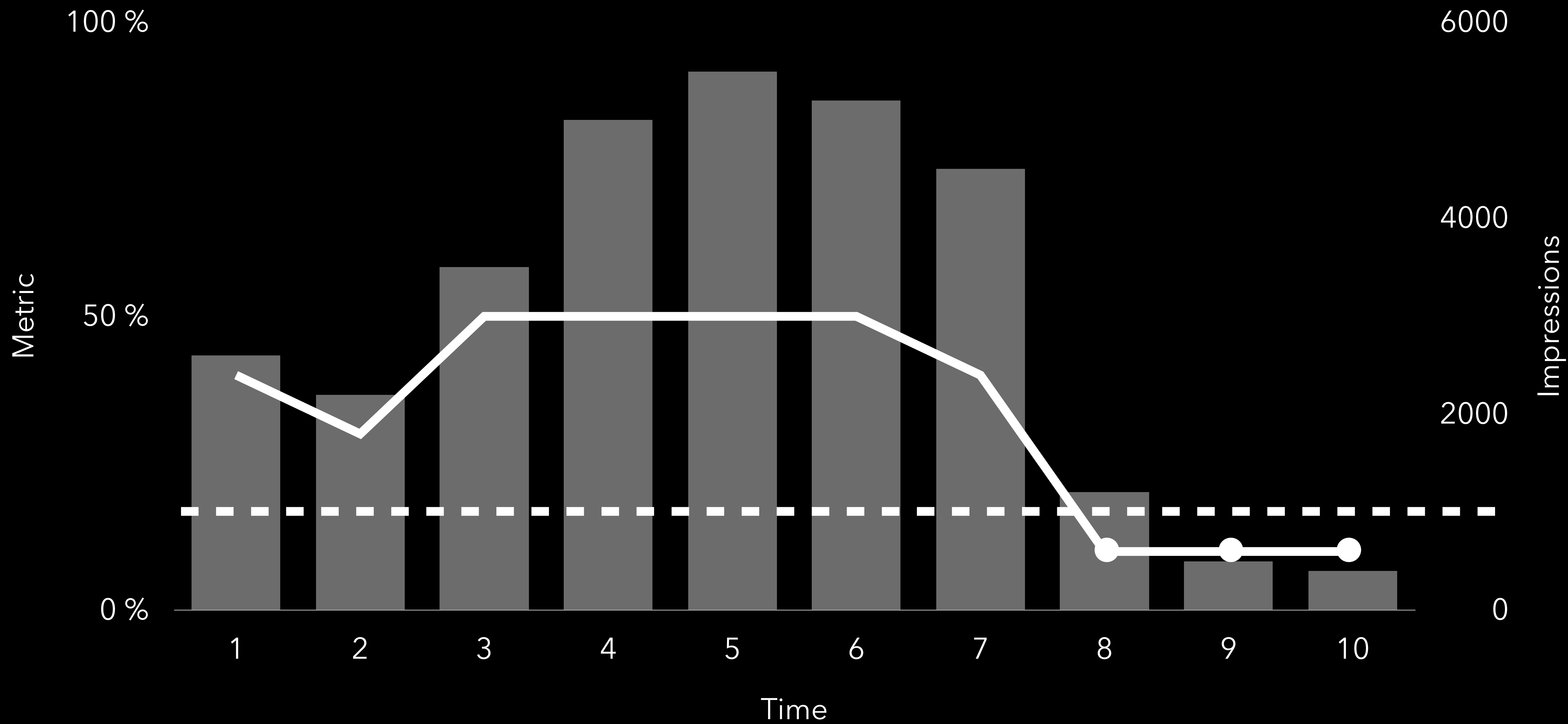


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Stay significant

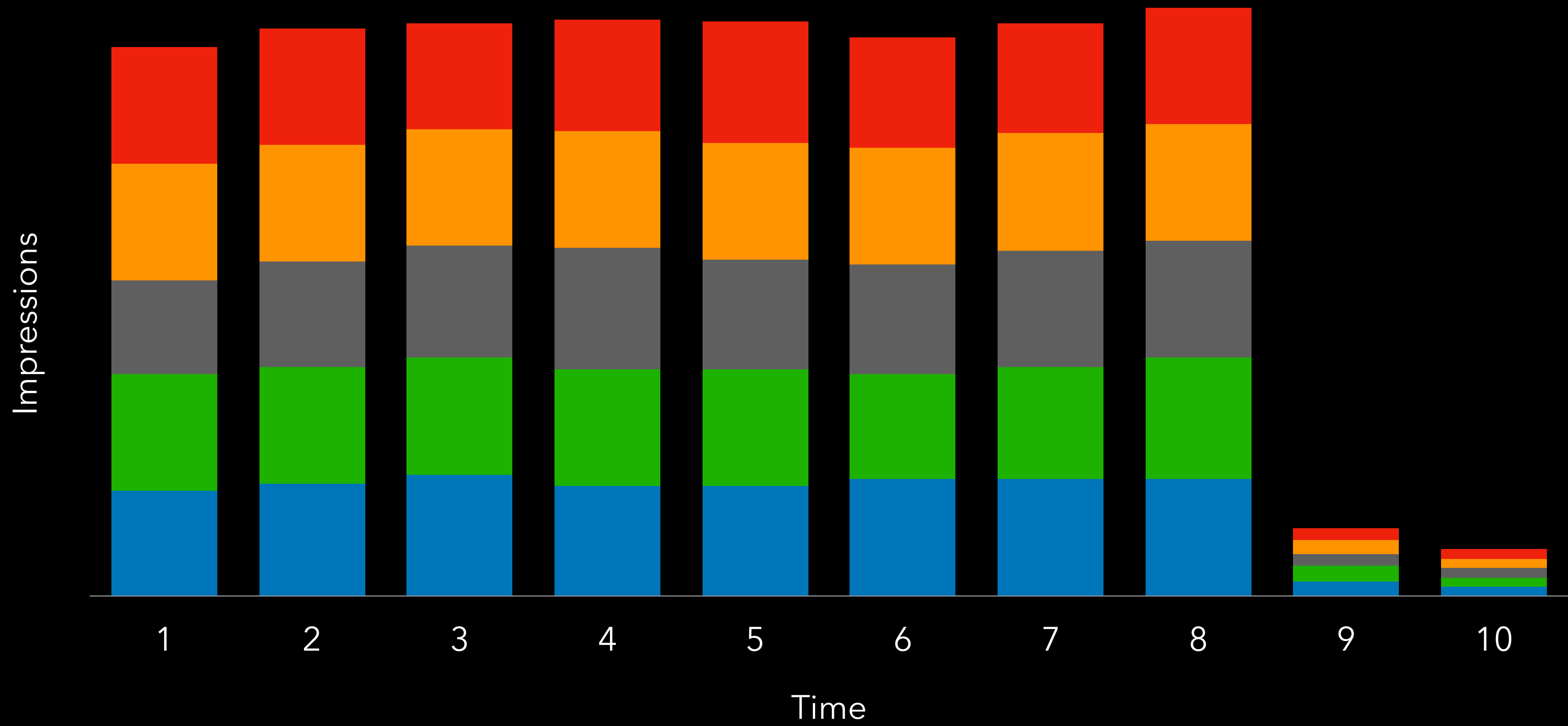






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Get course



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Link related metrics

TTFB

1 2 3 4 5 6 7 8 9 10

Time

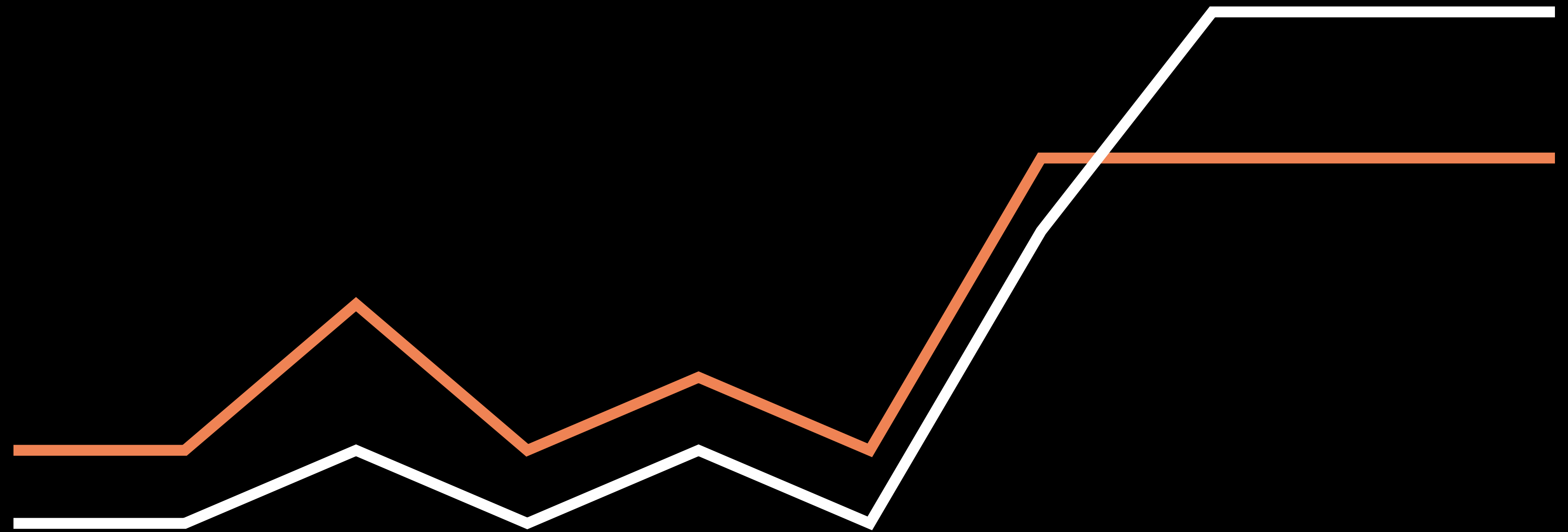


TTFB

Campaign Rate

1 2 3 4 5 6 7 8 9 10

Time



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Send SMART alerts

Specific
Meaningful
Actionable
Relevant
Timely

👉 Investigation Dashboard

Severe: PI Count anomaly on 2025-10-27 15:

Outlier value 0 is 📉 below the 6020 lower bound.
(dashboard grouping: ████████ – PI Count)

Chart

Acknowledge

Resolve

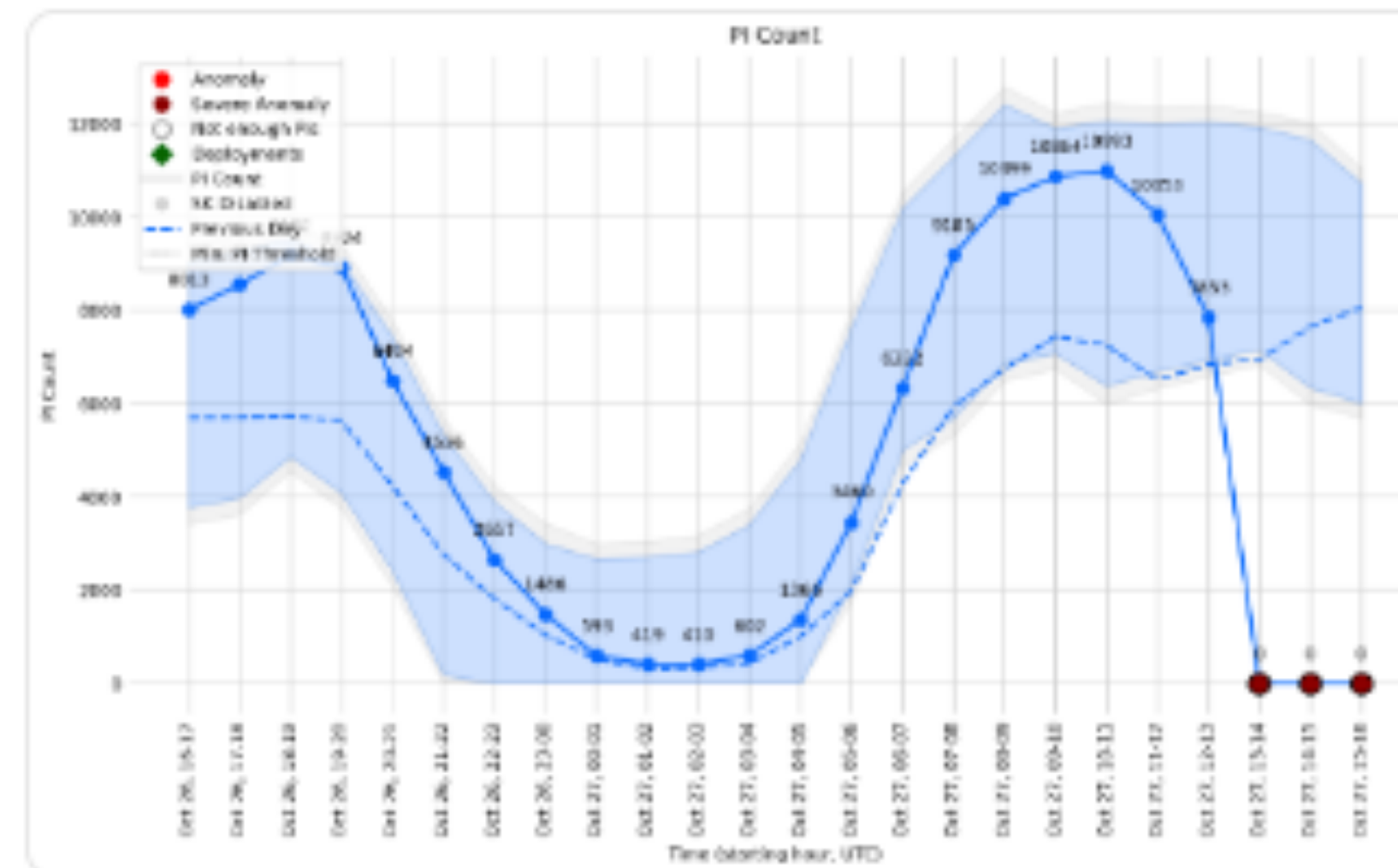
Silence

Responders

Attach to ...

+ 3 more

(279 kB) ▾



Specific
Meaningful
Actionable
Relevant
Timely

👉 Investigation Dashboard

Severe: PI Count anomaly on 2025-10-27 15:
Outlier value 0 is below the 6020 lower bound.
(dashboard grouping: - PI Count)

Chart

Acknowledge

Resolve

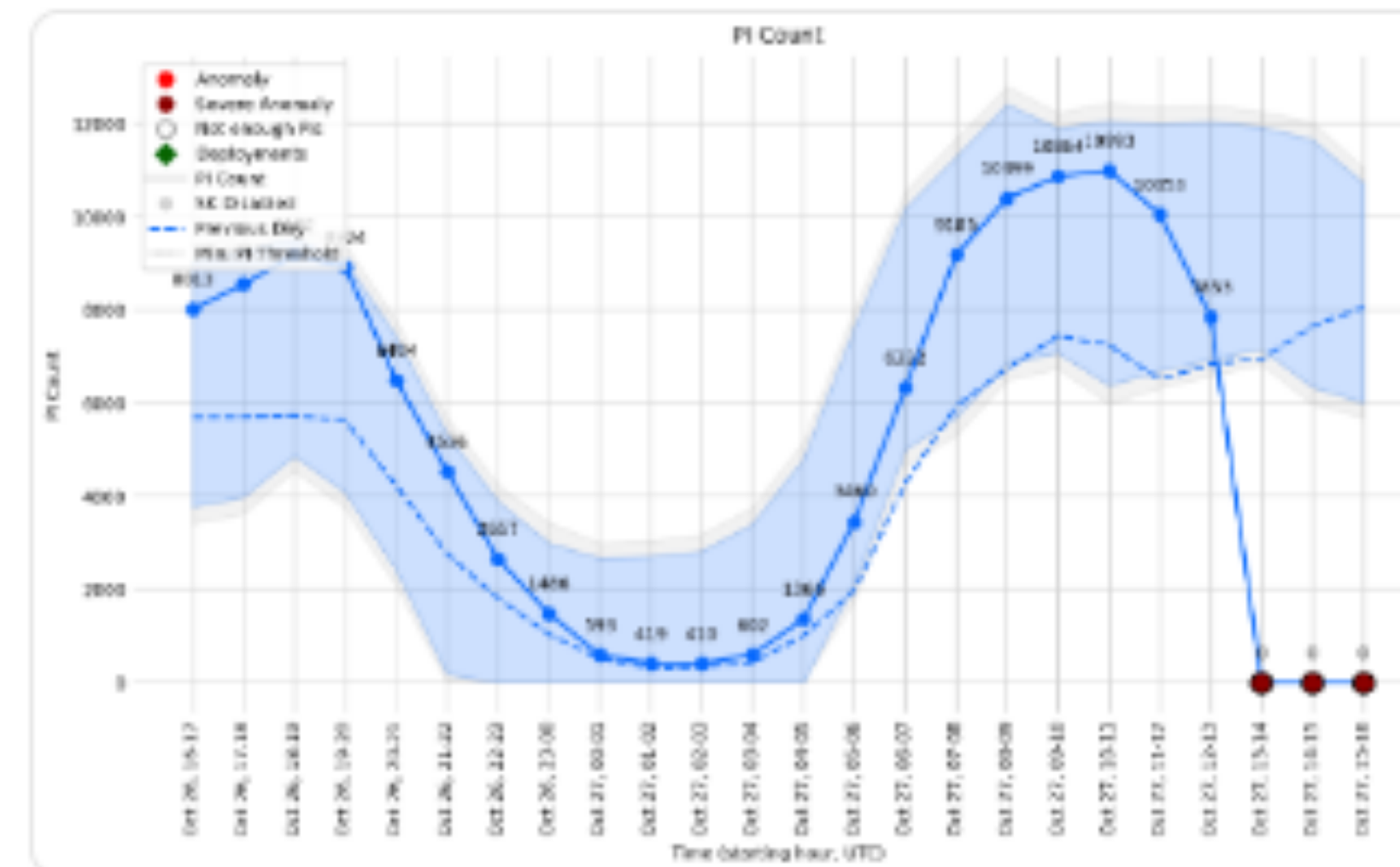
Silence

Responders

Attach to ...

+ 3 more

(279 kB)



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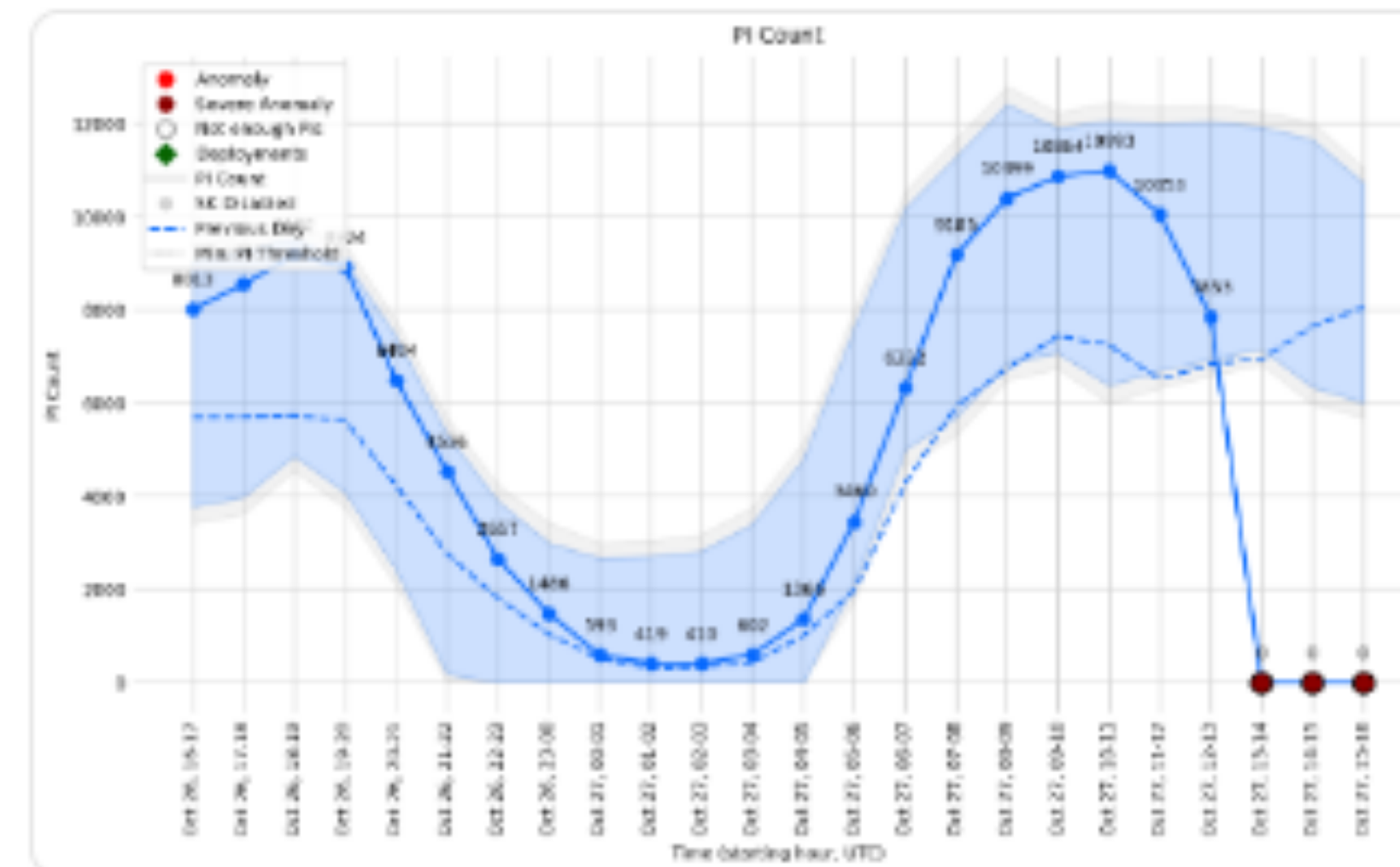
Silence

Responders

Attach to ...

+ 3 more

(279 kB)



Specific
Meaningful
Actionable
Relevant
Timely

👉 Investigation Dashboard



Severe: PI Count anomaly on 2025-10-27 15:
Outlier value 0 is 📉 below the 6020 lower bound.
(dashboard grouping: [REDACTED] - PI Count)

Chart

Acknowledge

Resolve

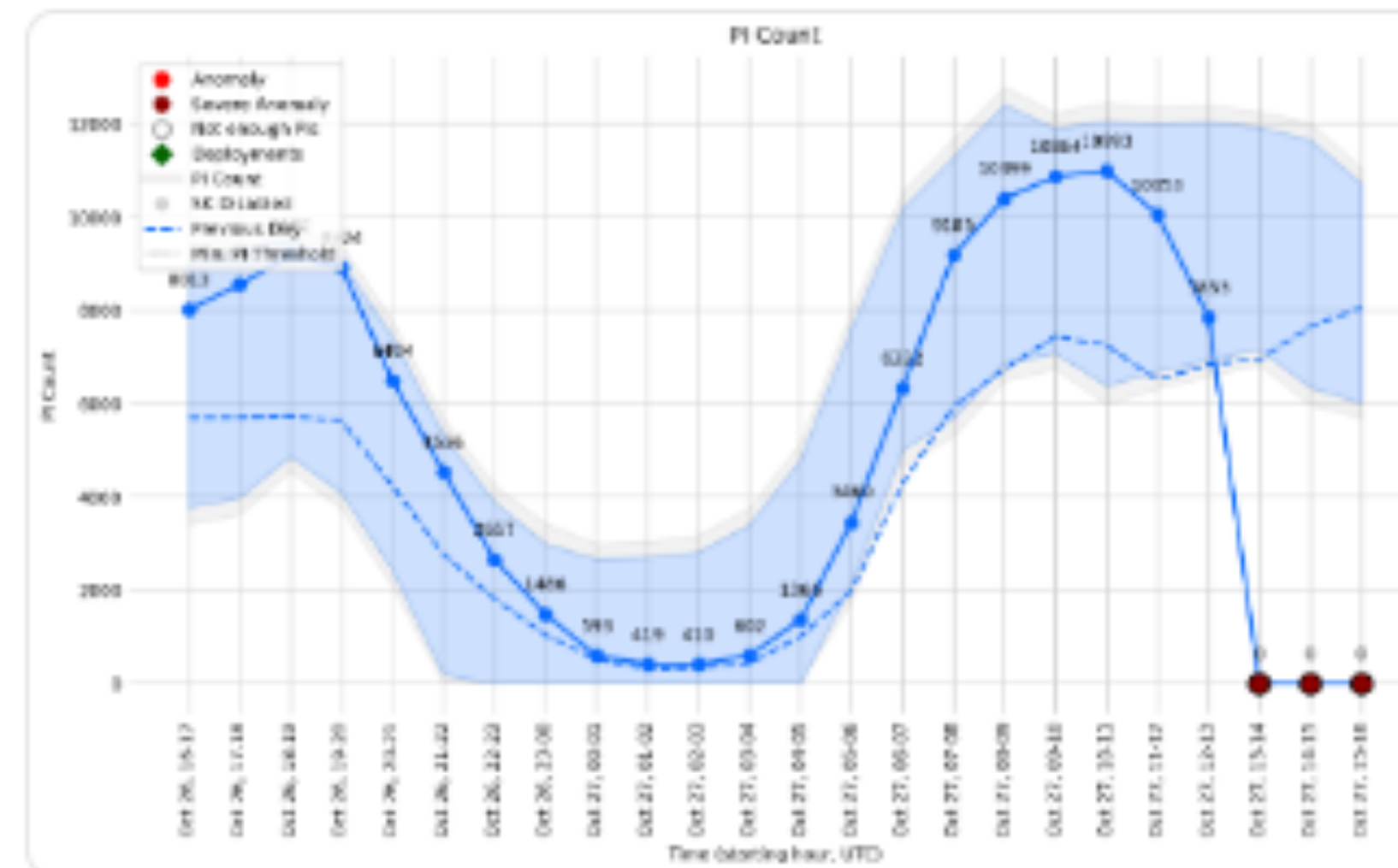
Silence

Responders

Attach to ...

+ 3 more

(279 kB) ▼



Timely

👉 Investigation Dashboard

Severe: **PI Count** anomaly on 2025-10-27 15:
Outlier value 0 is below the 6020 lower bound.
(dashboard grouping: - PI Count)

Chart

Acknowledge

Resolve

Silence

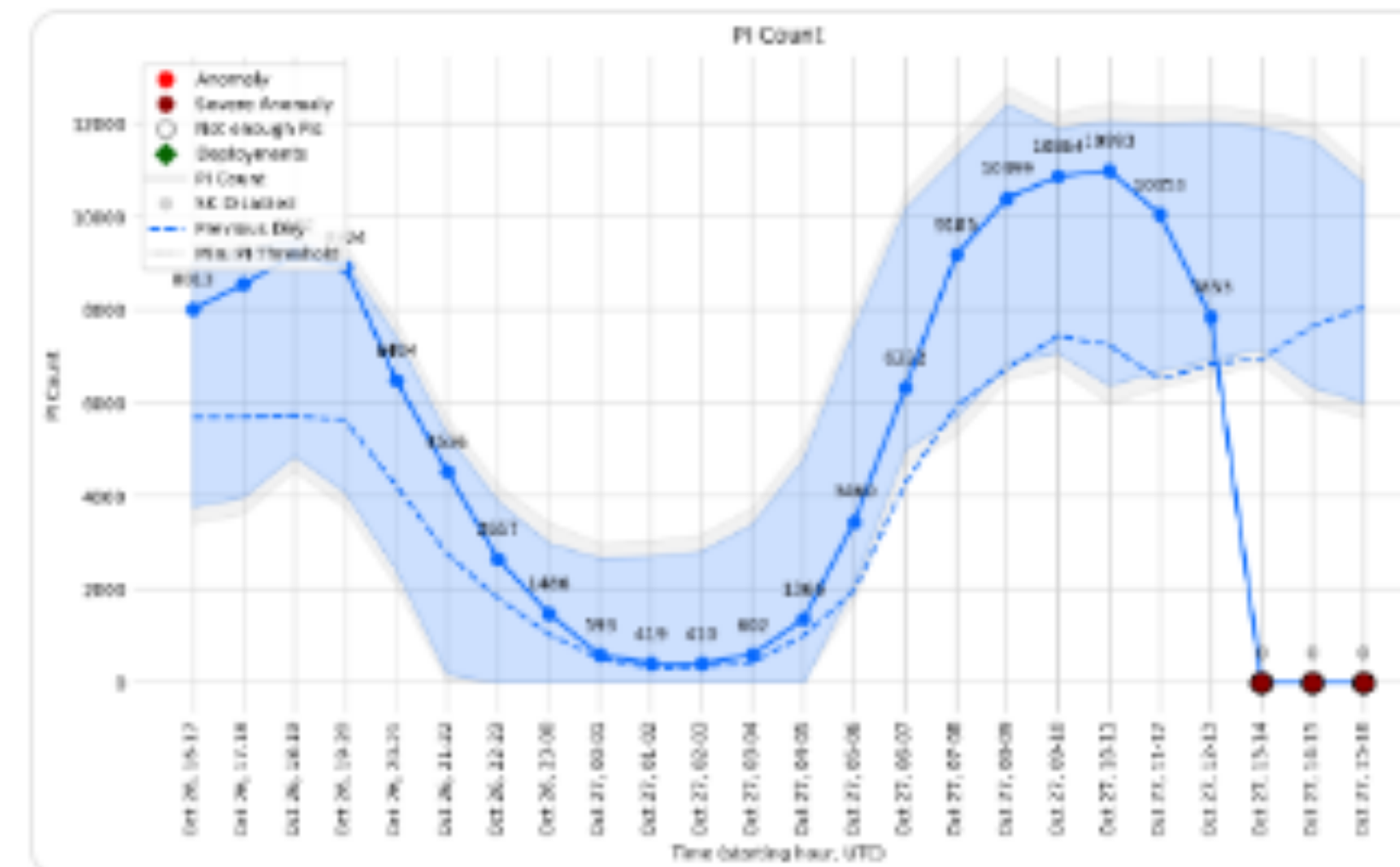


Responders

Attach to ...

+ 3 more

(279 kB) ▾



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Track alerting effectiveness

1. Alert

Investigation Dashboard

Severe: **PI Count** anomaly on 2025-10-27 15:
Outlier value 0 is below the 6020 lower bound.
(dashboard grouping: Austria – PI Count)

[Chart](#)

Acknowledge

Resolve

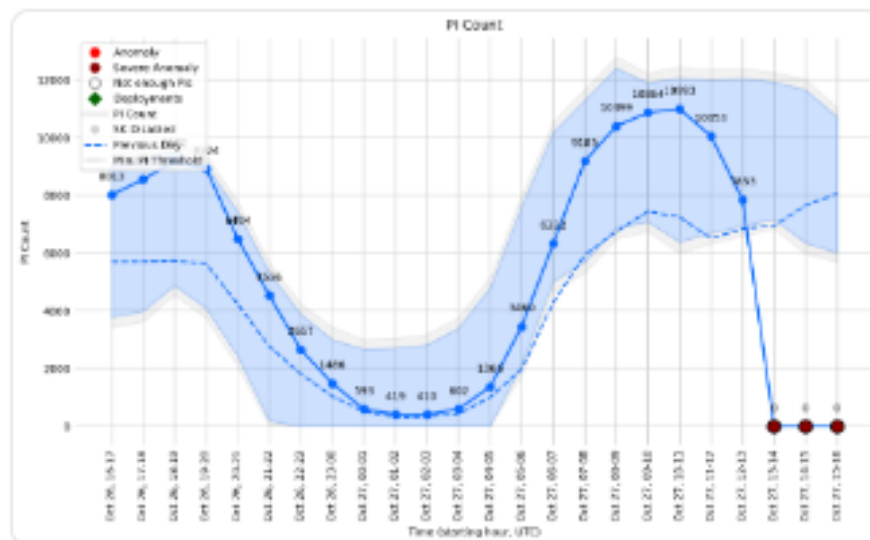
Silence

Responders

Attach to ...

+ 3 more

(279 kB)



1. Alert

2. Investigate



Severe: PI Count anomaly on 2025-10-27 15:
Outlier value 0 is below the 6020 lower bound.
(dashboard grouping: Austria – PI Count)

Chart

Acknowledge

Resolve

Silence

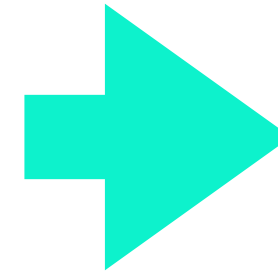
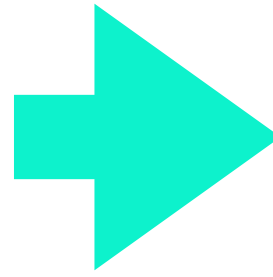
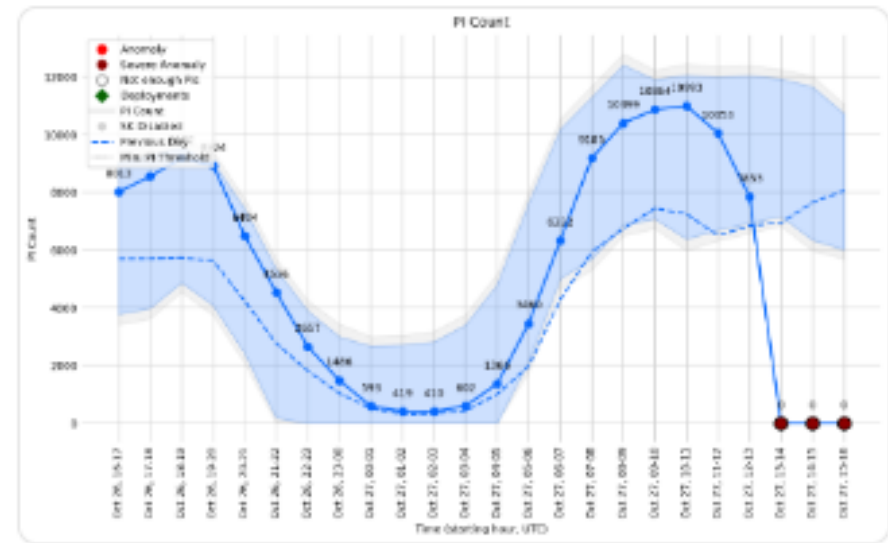


Responders

Attach to ...

+ 3 more

(279 kB) ▾



1. Alert

2. Investigate

3. Resolve

Investigation Dashboard

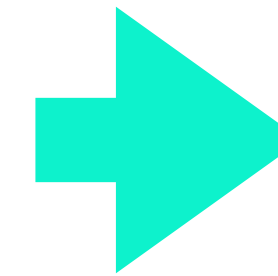
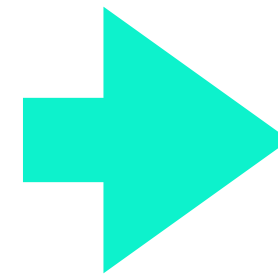
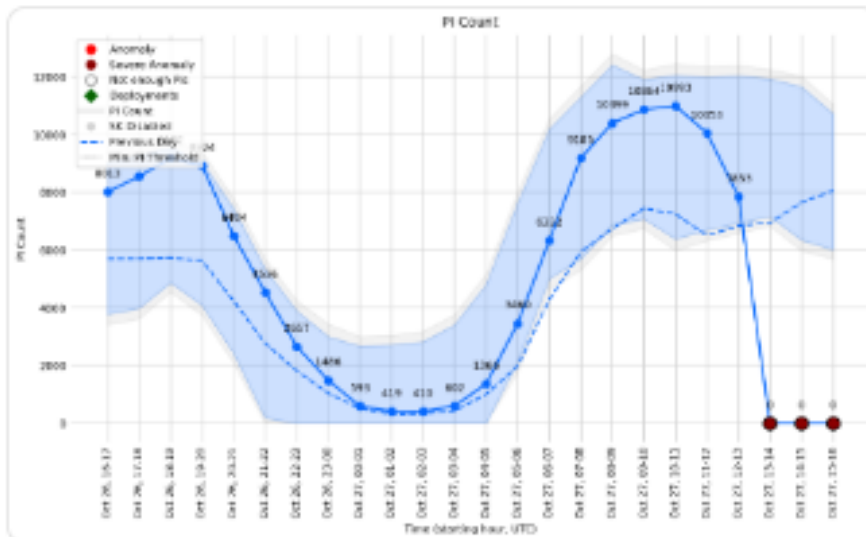
Severe: **PI Count** anomaly on 2025-10-27 15:
Outlier value 0 is below the 6020 lower bound.
(dashboard grouping: Austria - PI Count)

Chart

Acknowledge Resolve Silence Responders Attach to ...

+ 3 more

(279 kB)



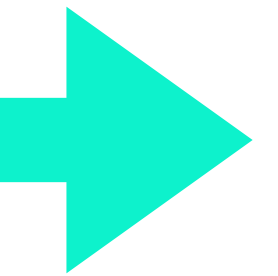
Brian Ramirez Today at 6:51 PM

Alert evaluation: TP. RUM beacons getting 500 responses.

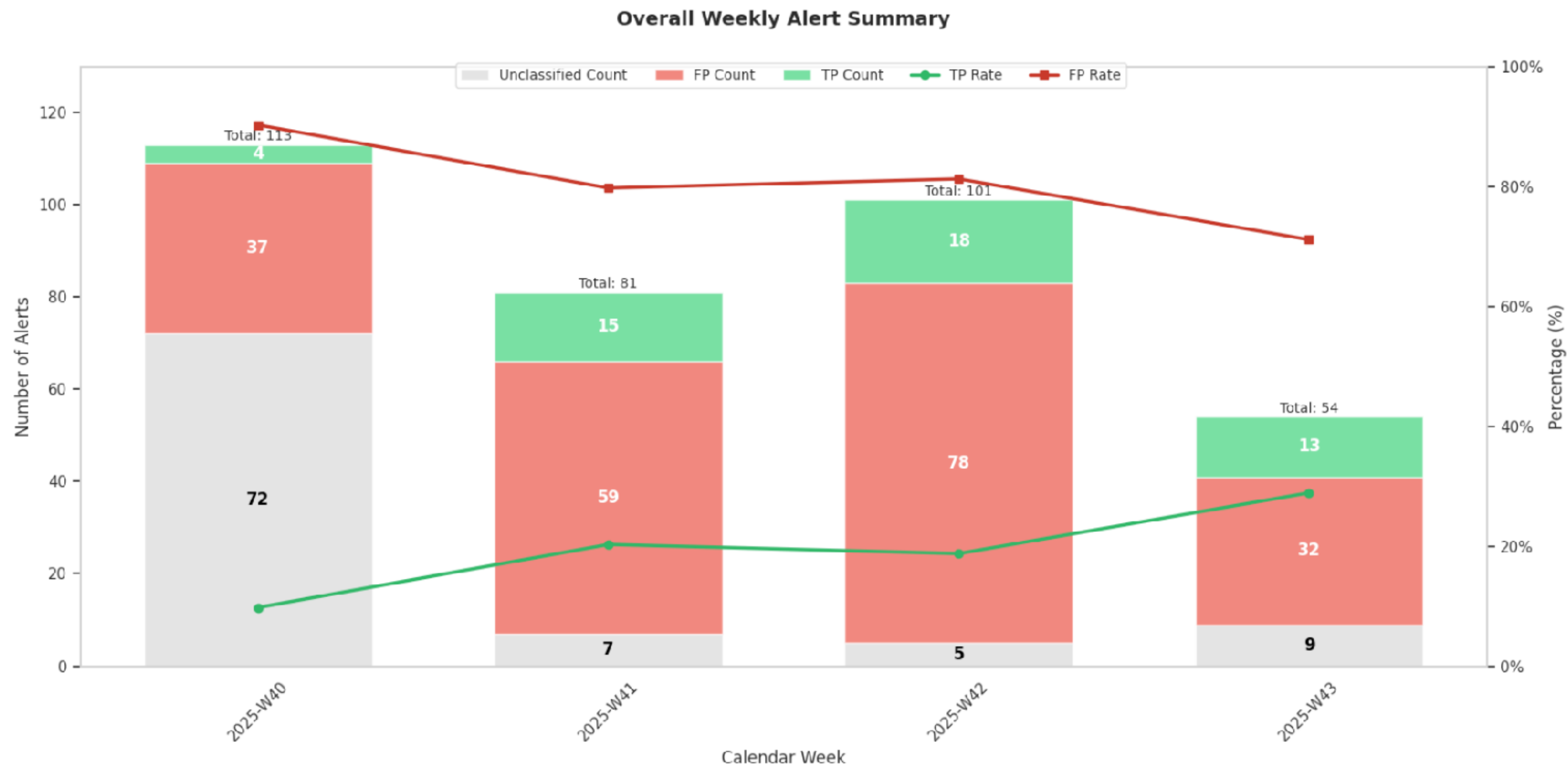
Ticket for PI created: Yes

Info shared: Yes, with [#support-engineering](#) and FloB

Case study: Yes



4. Report & Analyze



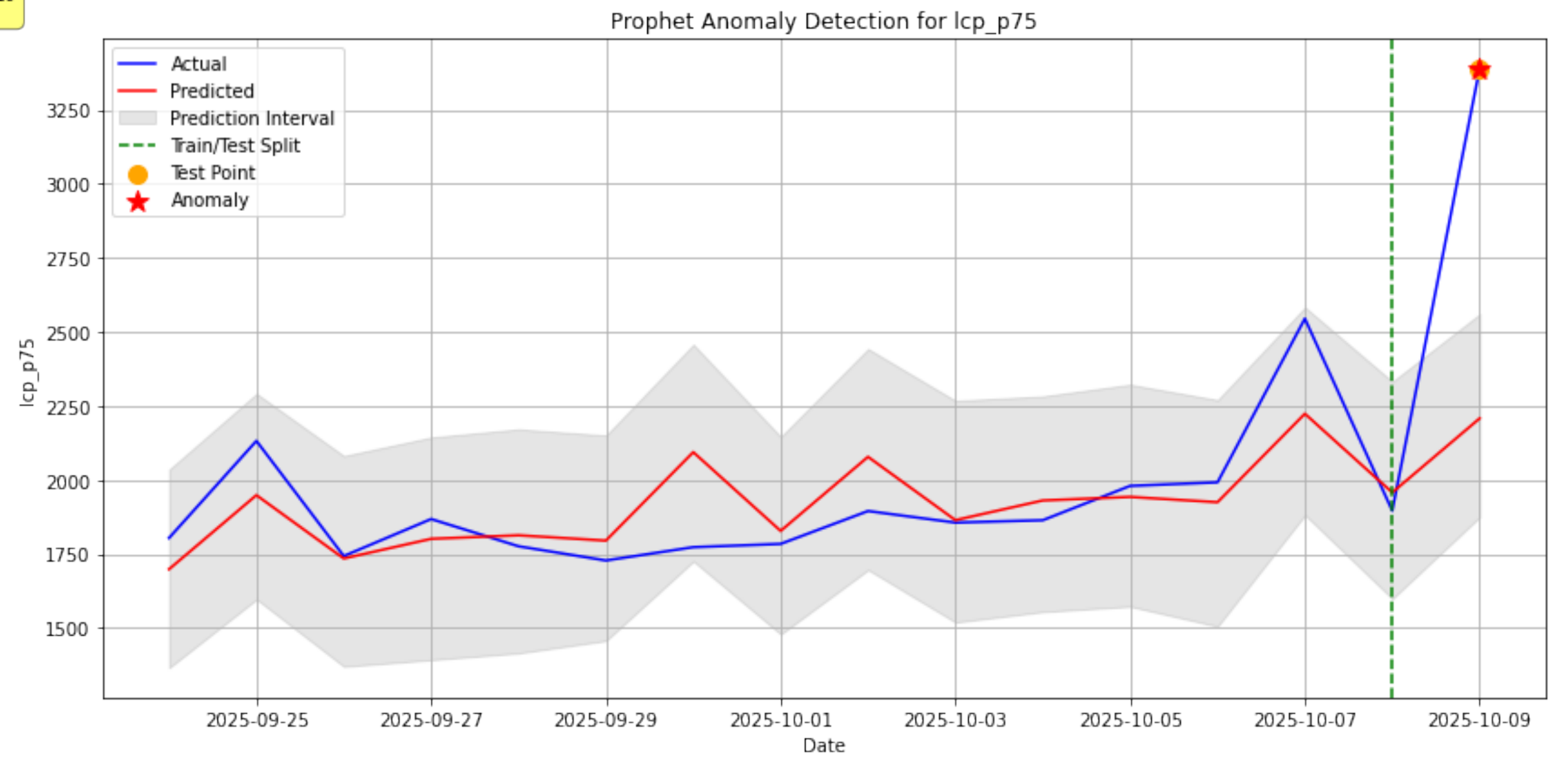
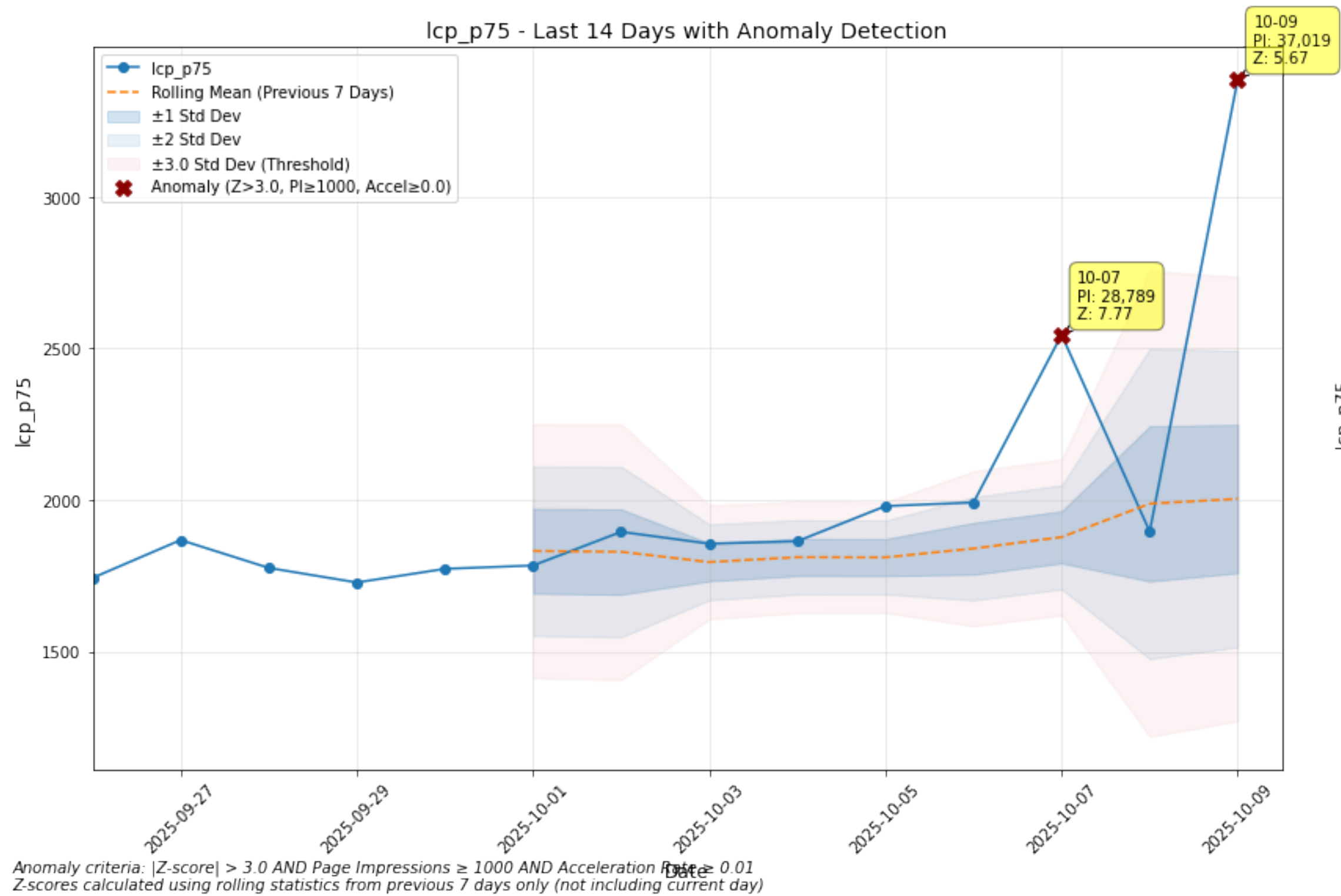
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Research & experiment

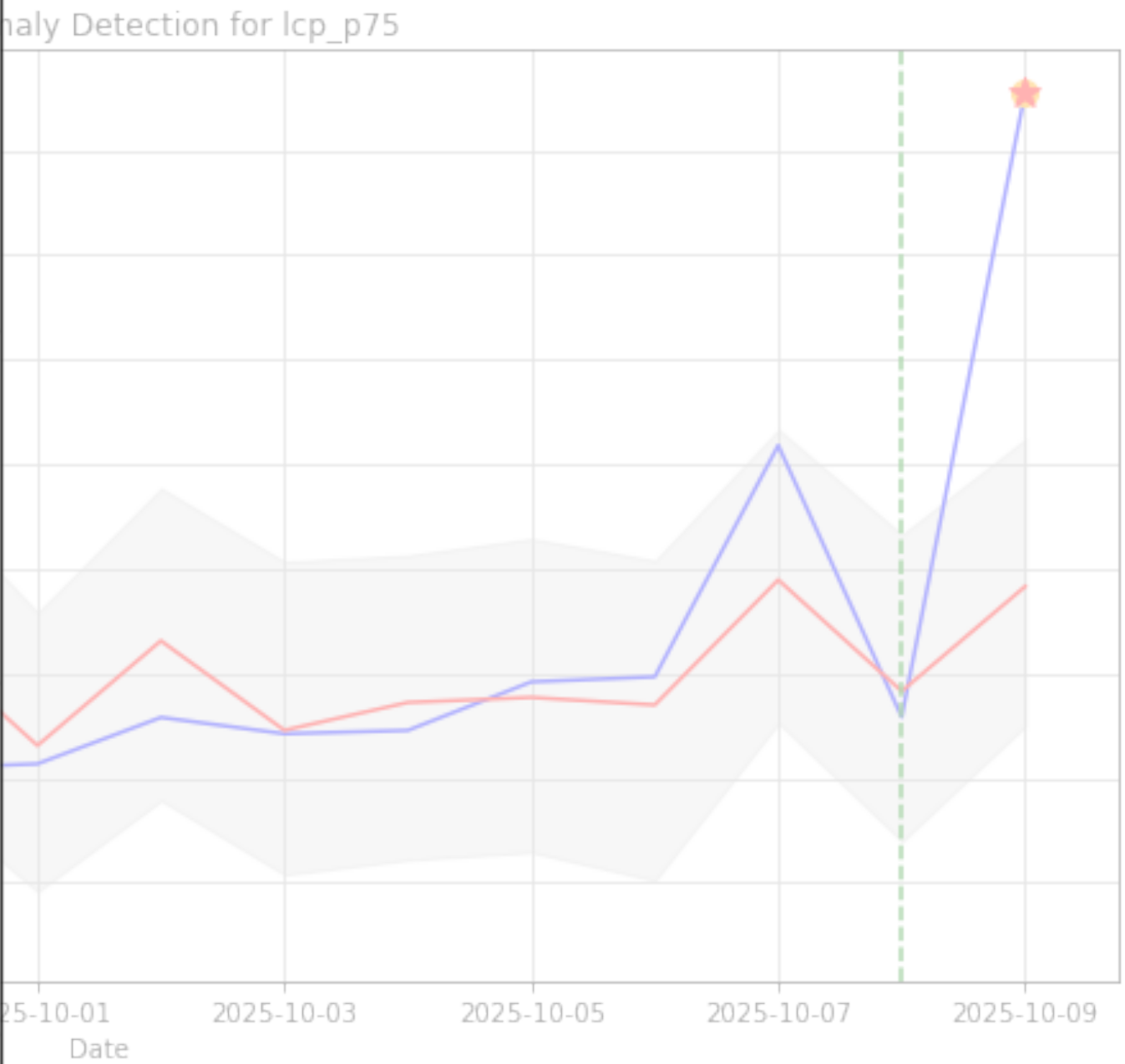
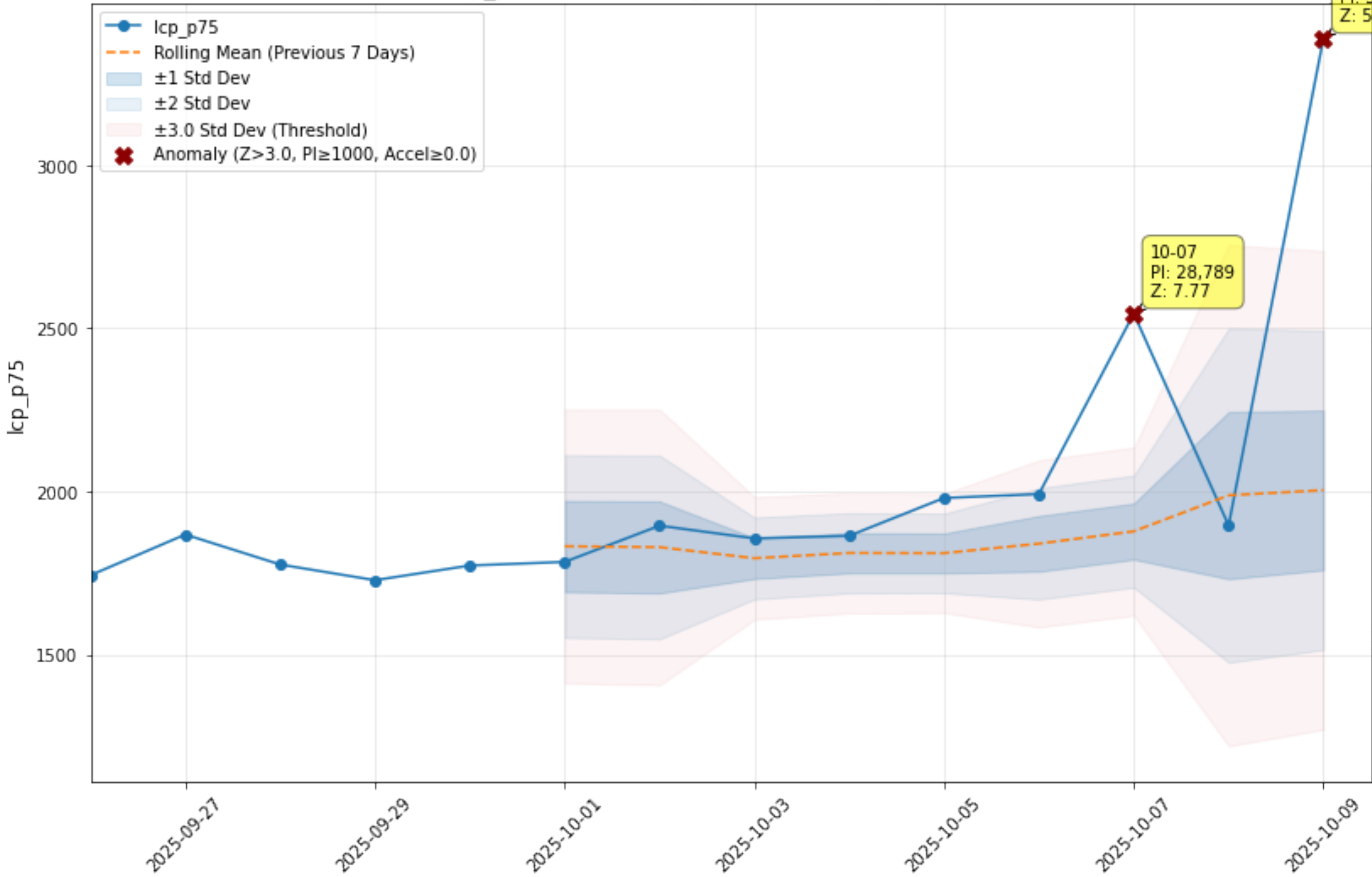
MAIN

STAGING

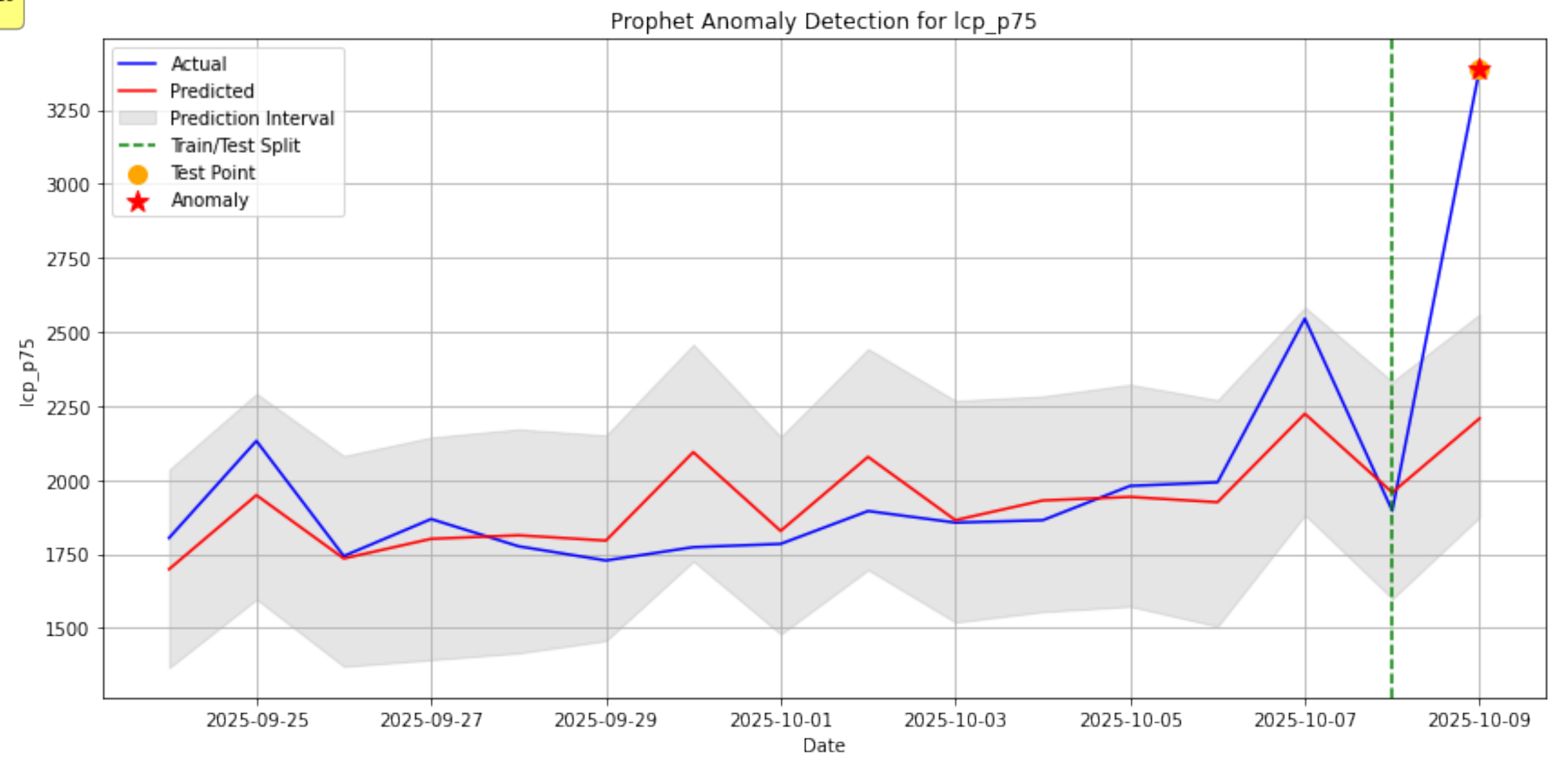
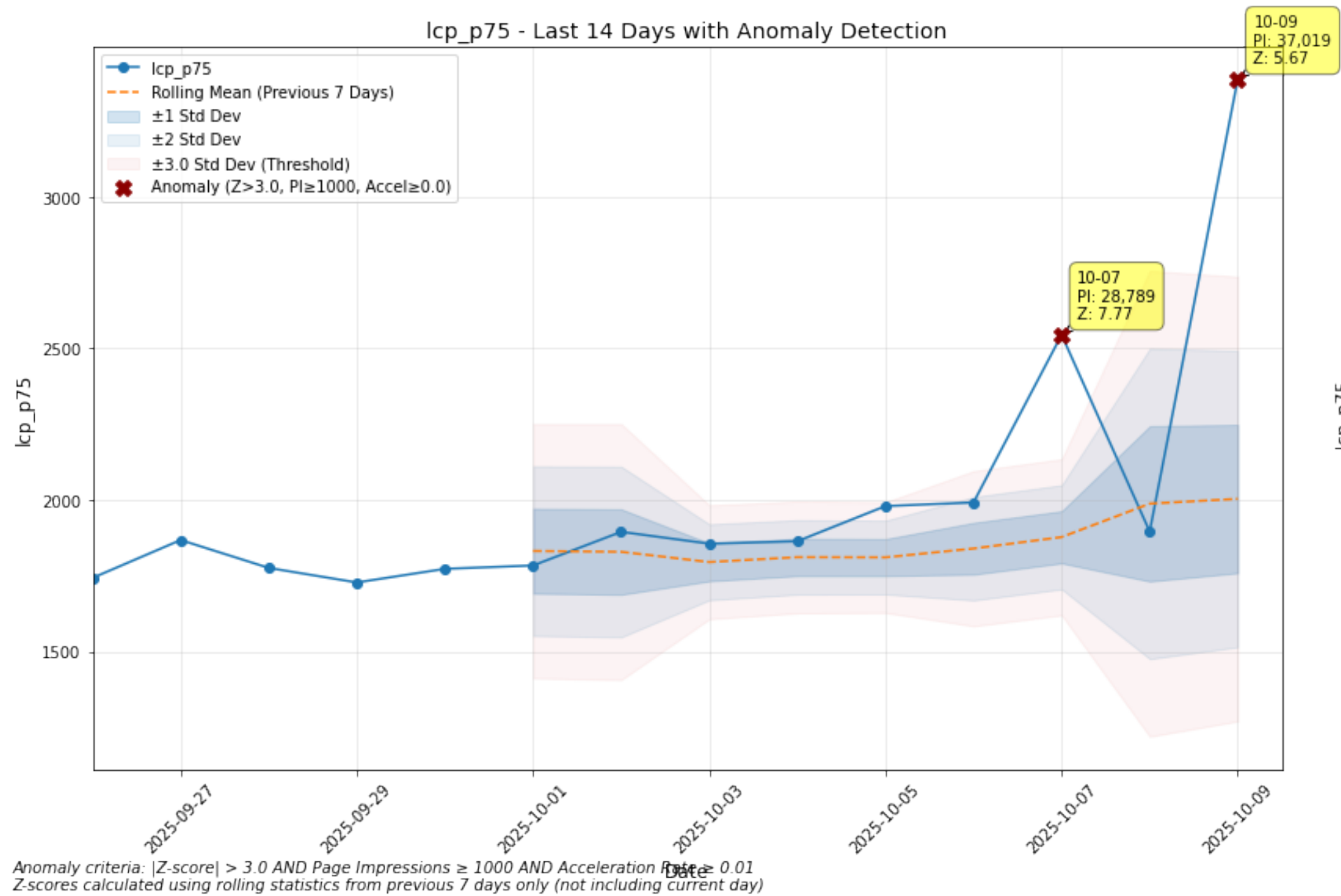
DEV

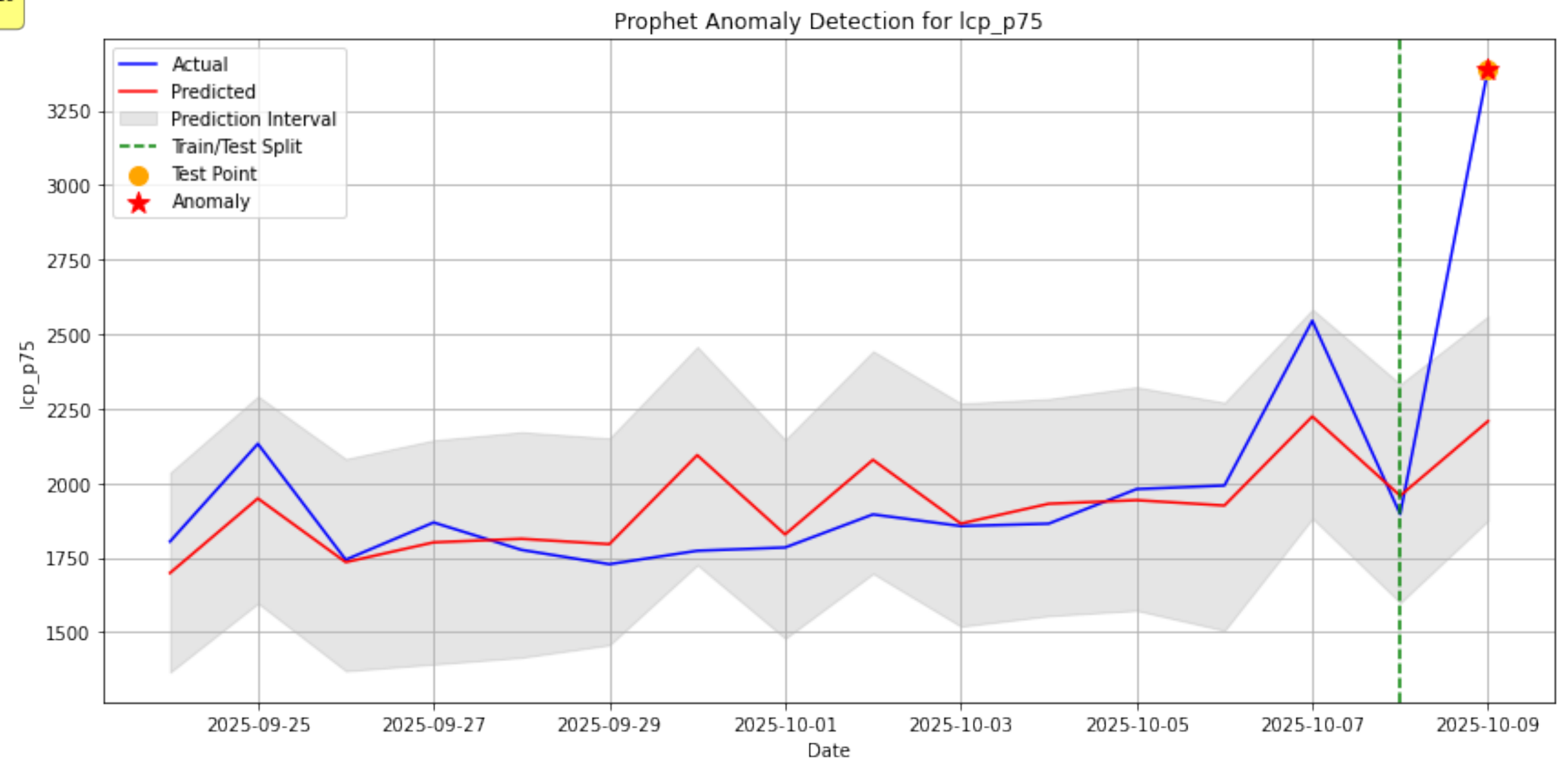
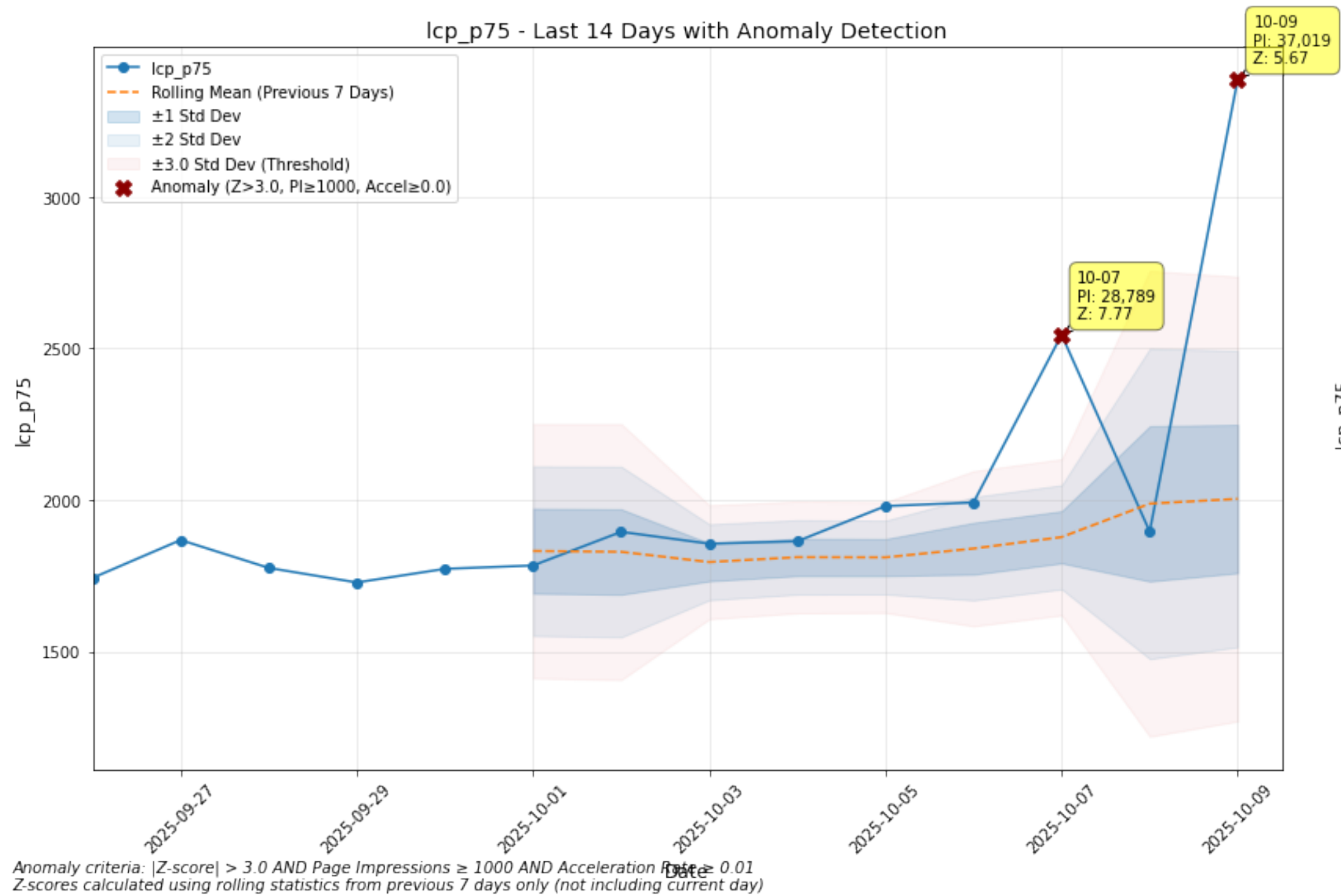


lcp_p75 - Last 14 Days with Anomaly Detection

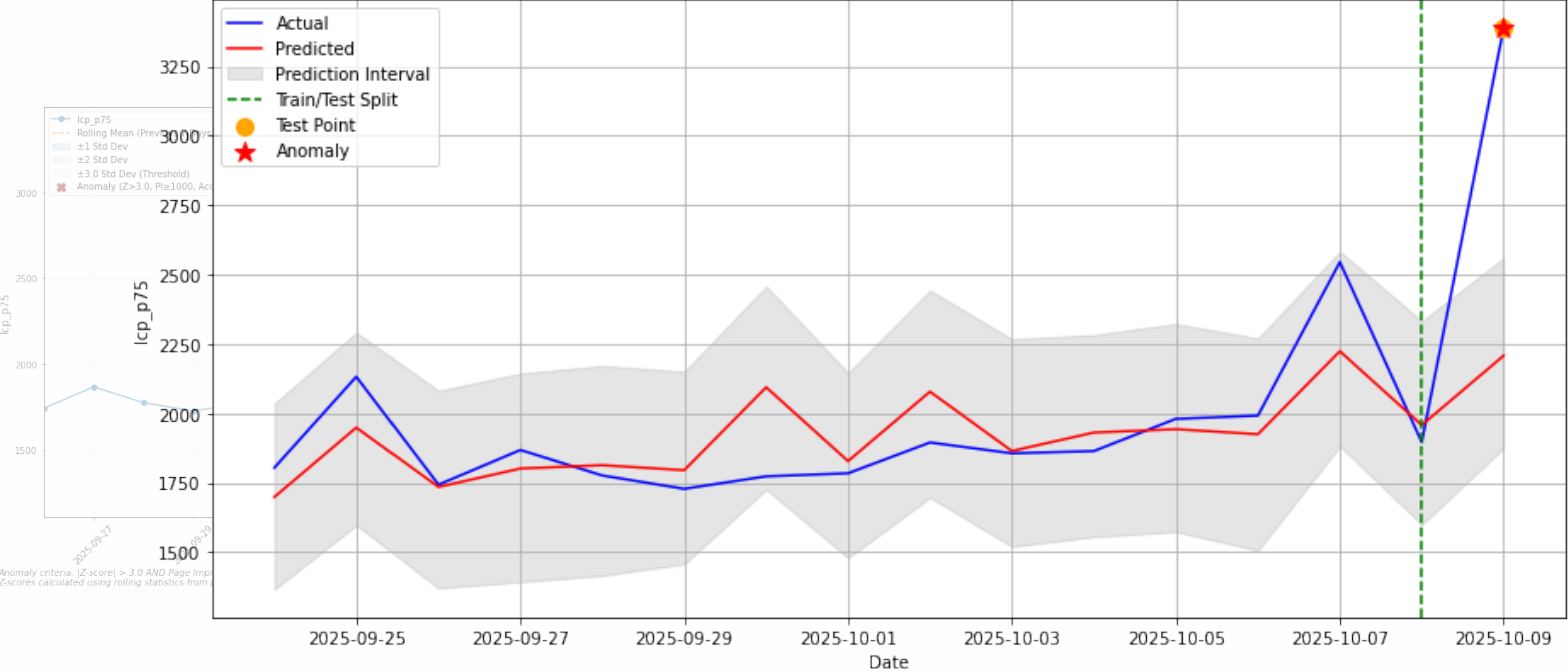


Anomaly criteria: |Z-score| > 3.0 AND Page Impressions ≥ 1000 AND Acceleration Rate ≥ 0.01
Z-scores calculated using rolling statistics from previous 7 days only (not including current day)

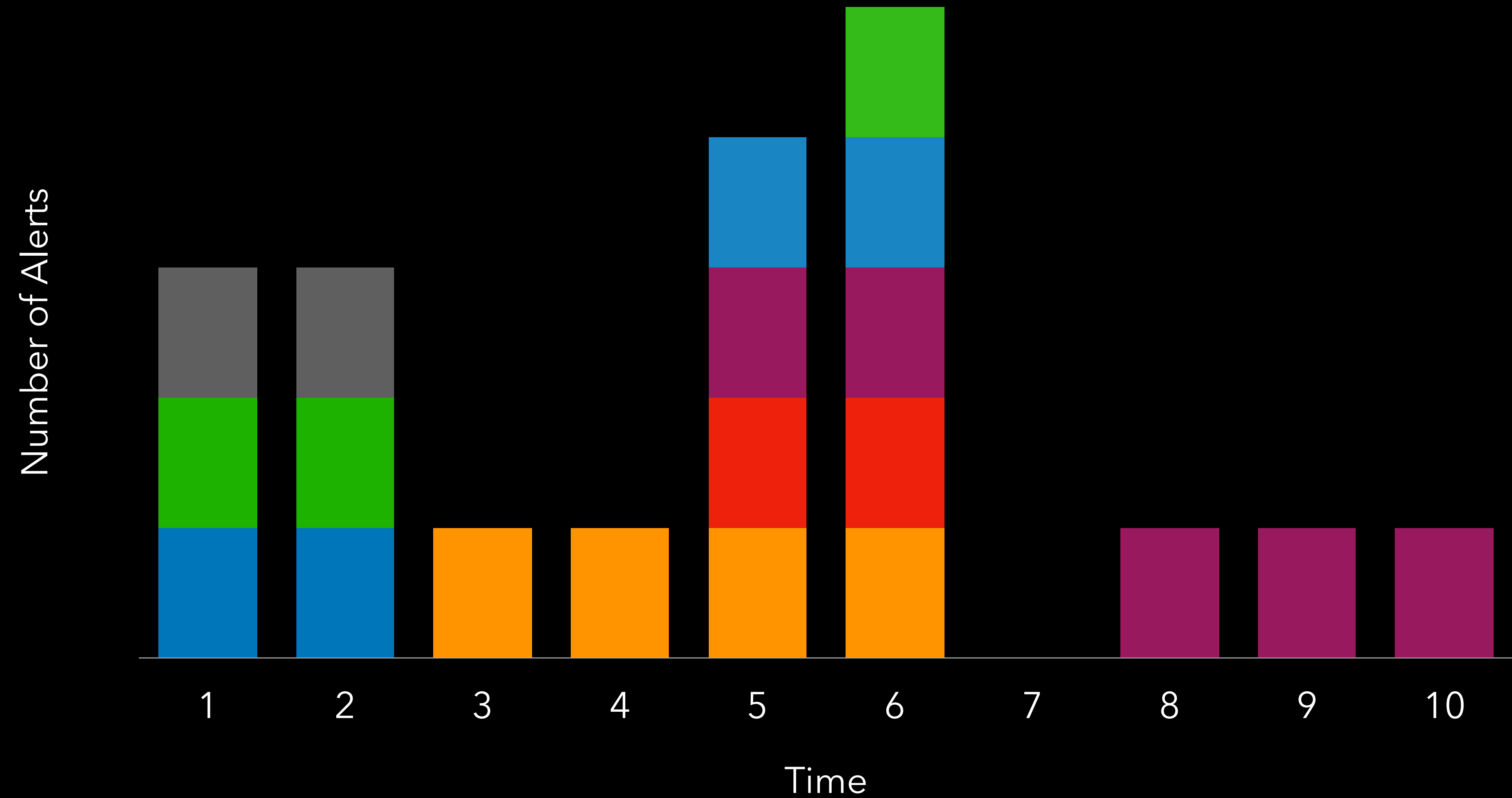




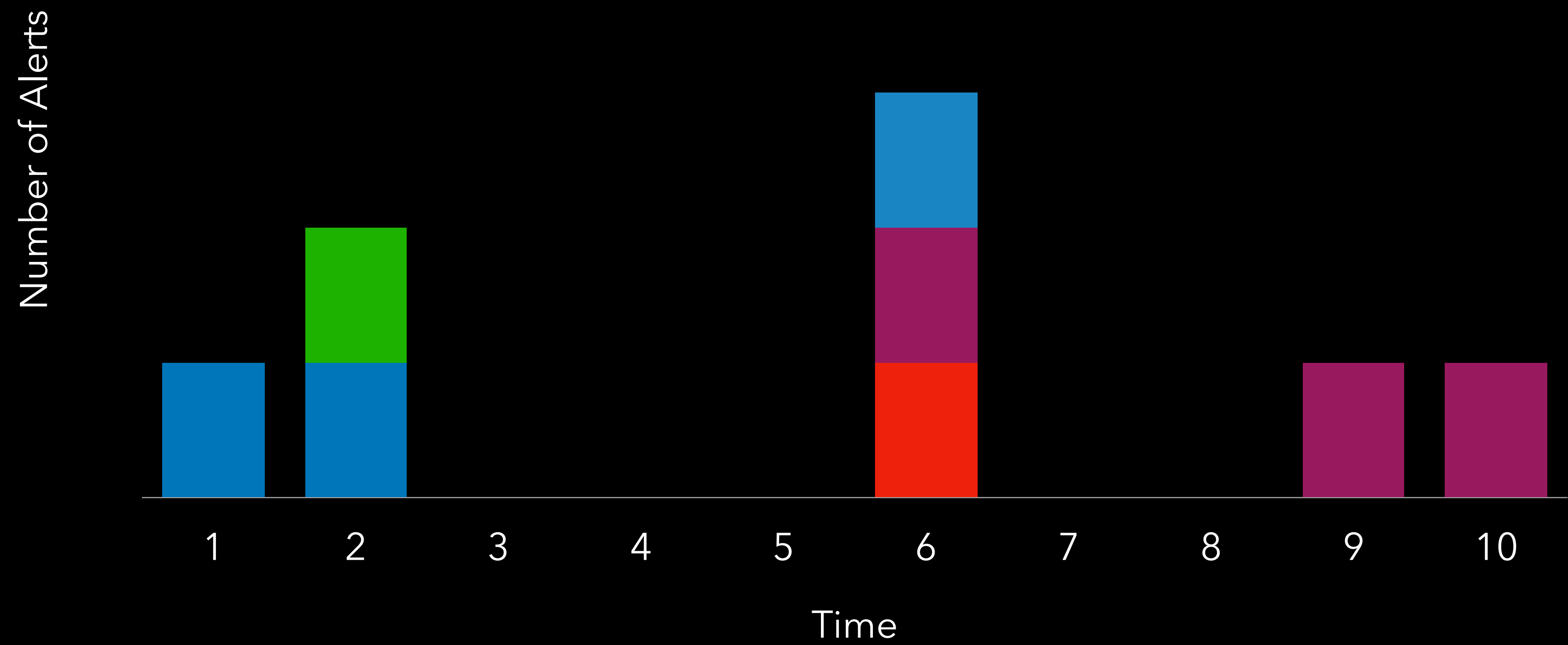
Prophet Anomaly Detection for lcp_p75



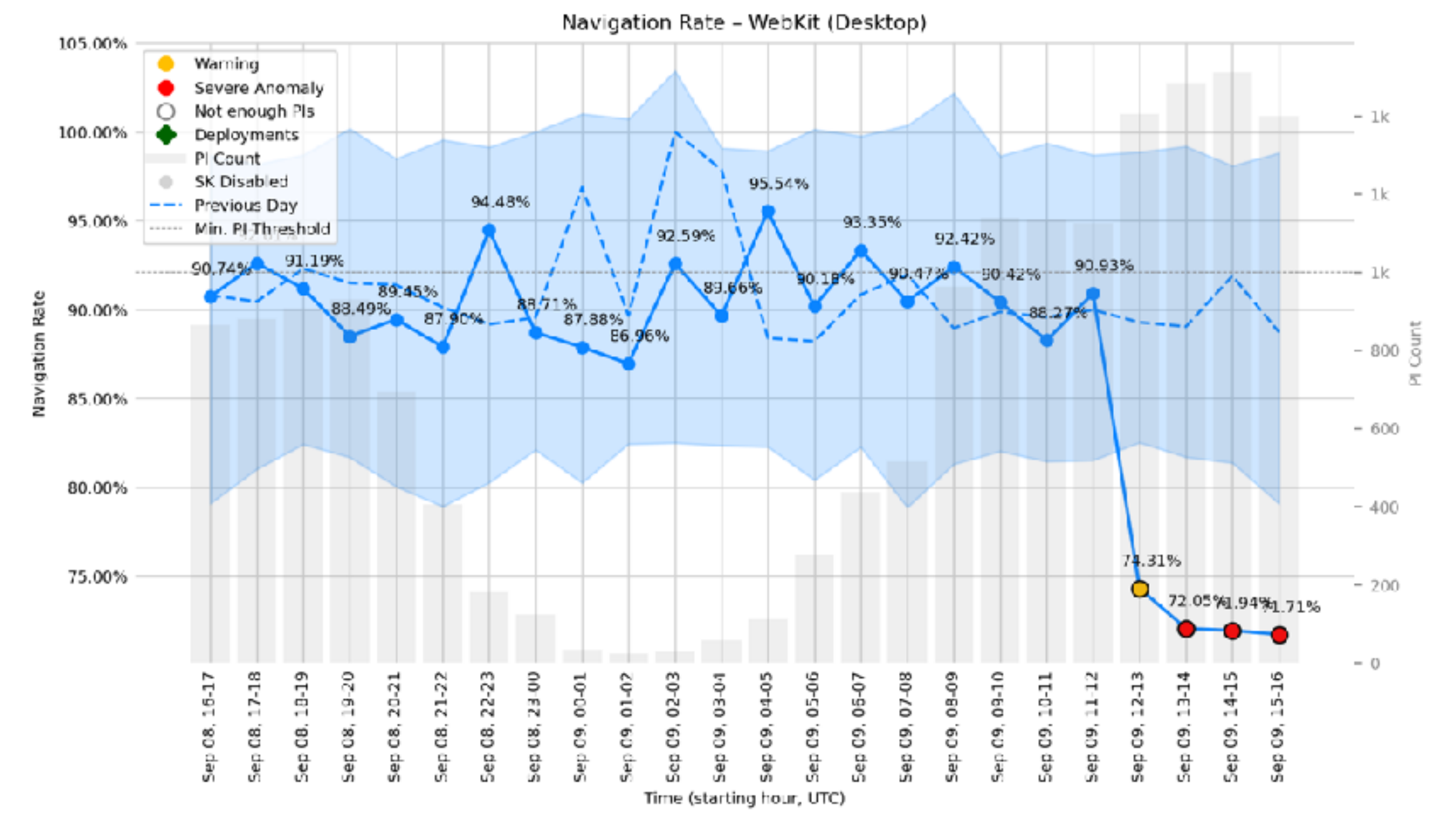
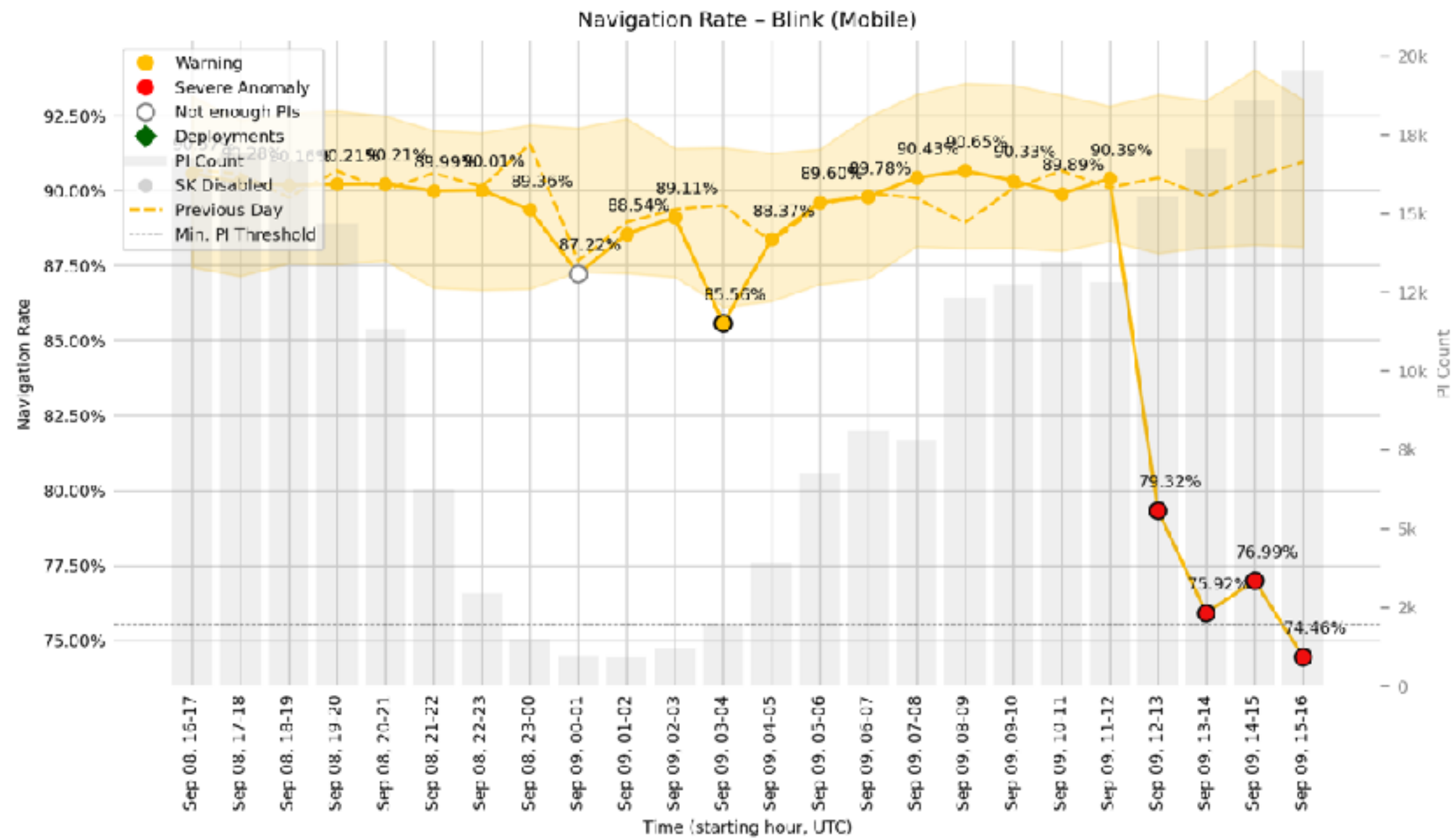
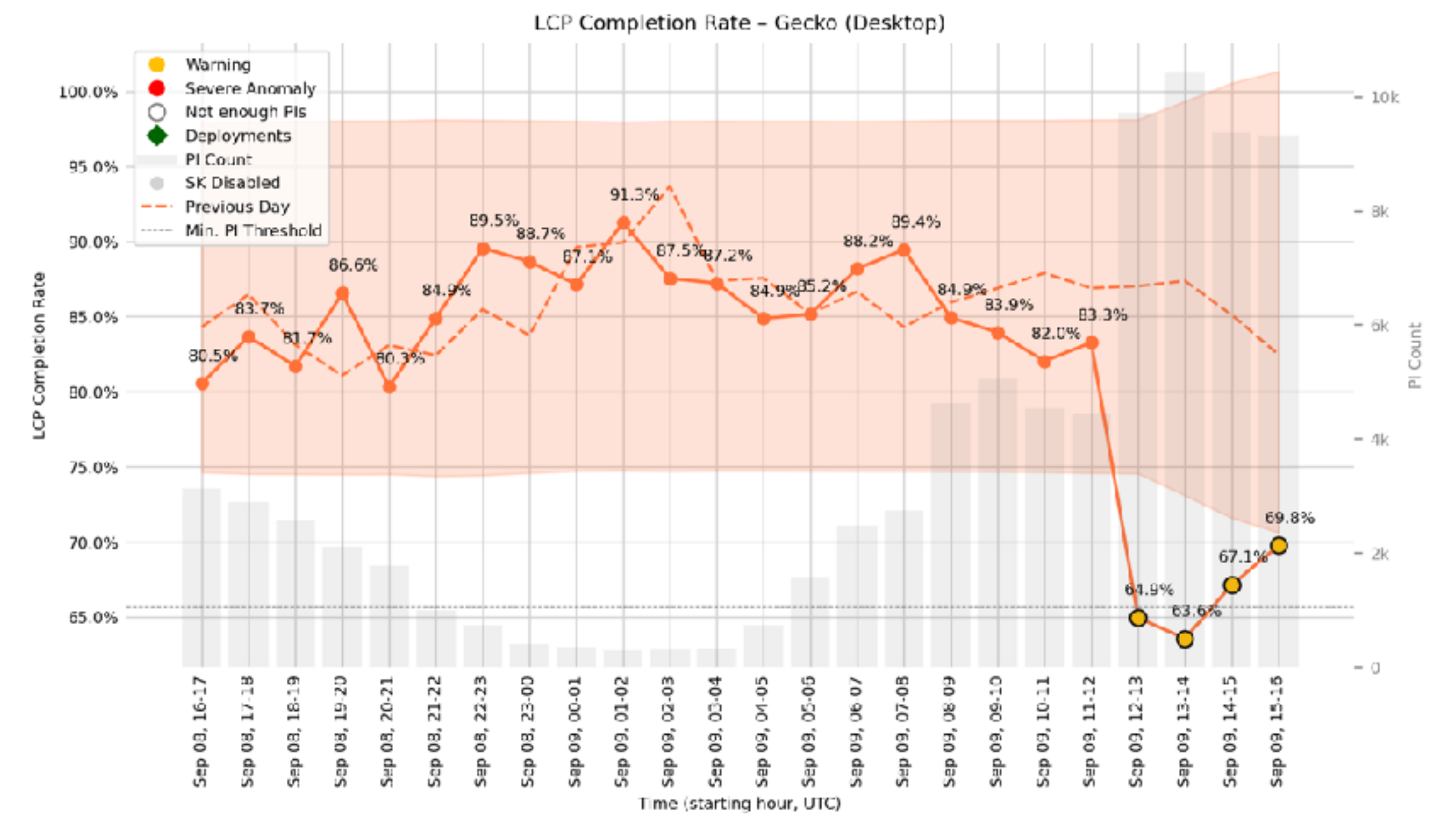
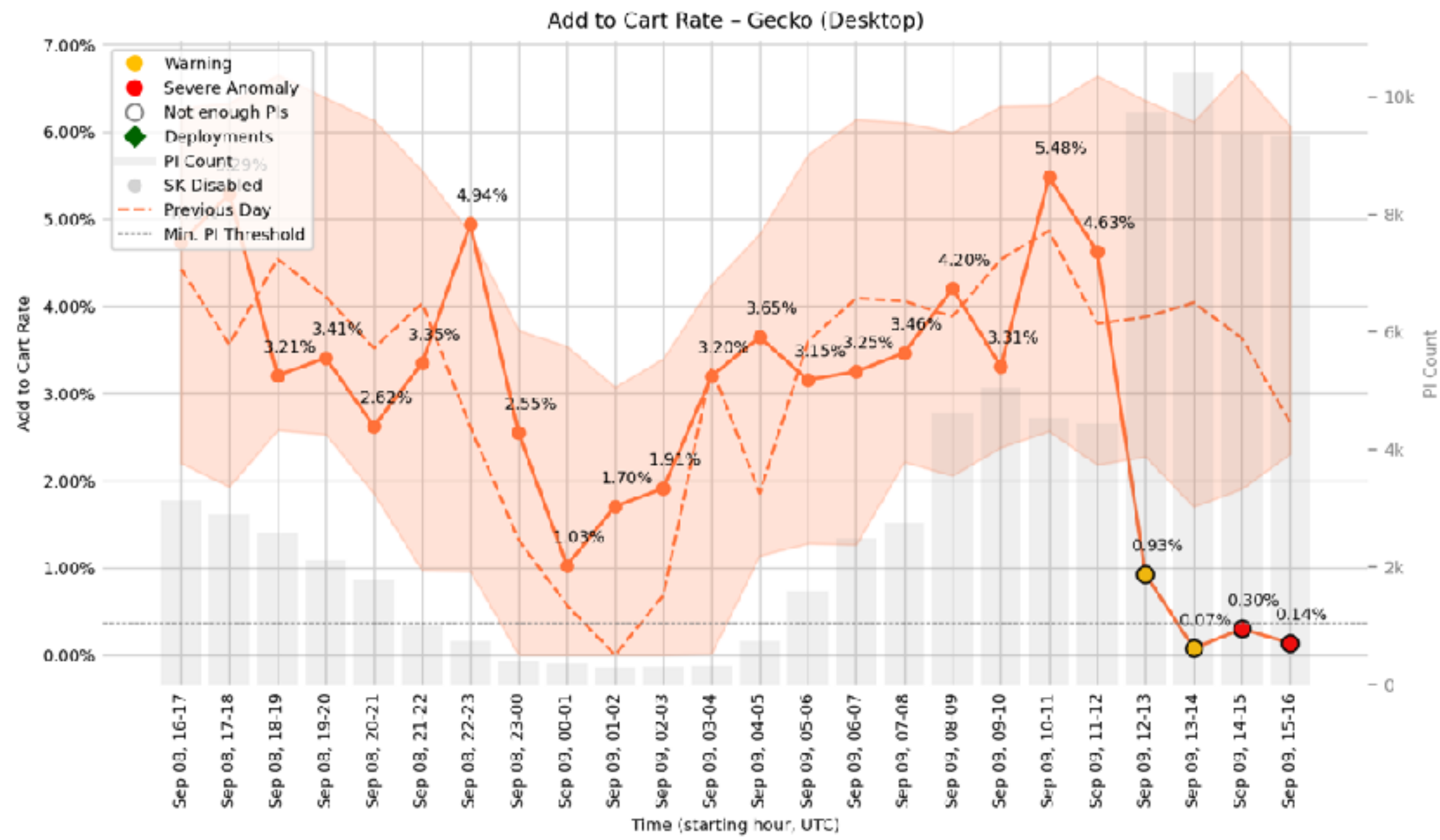
Error Rate > 1% for 2 sequential hours



Error Rate > 1% for 3 sequential hours



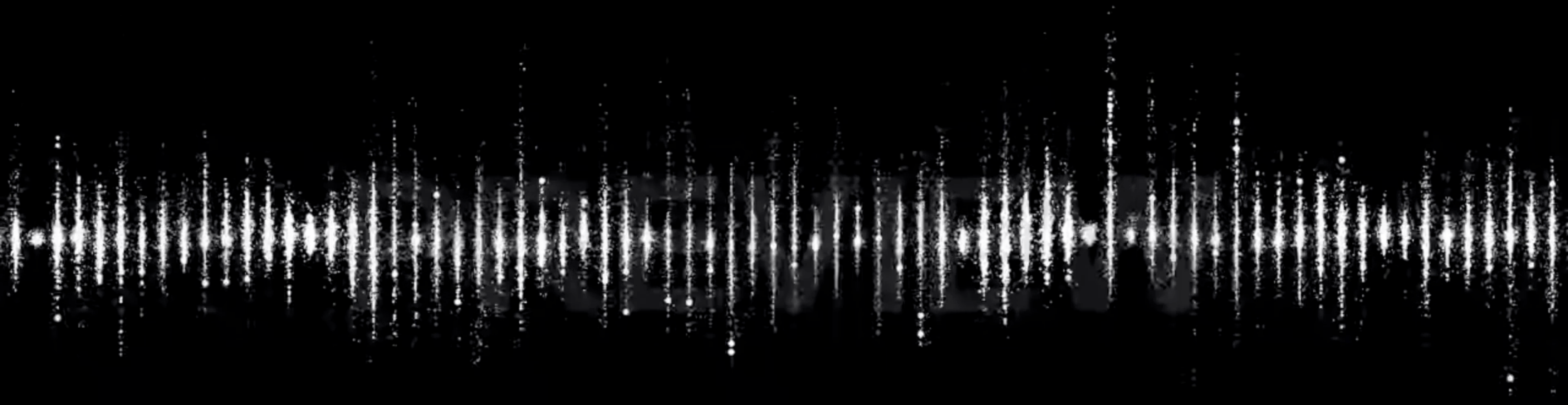
Case



Reduce noise in RUM-based alerting

- **Look for steps in the data**
- **Investigate known incidents and regressions to find the right indicators**
- **Get granular, but stay significant**
- **Observe course data on a meta level**
- **Link related metrics**
- **Send SMART alerts, taking workload into consideration**
- **Track alerting effectiveness**
- **Continually research & experiment**

**Don't build a
system that you
serve – the system
should serve you.**



Thanks!

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