

Online Retailer Analysis

IXIS Data Science Challenge



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Overview of Analysis

A) Dataset: July 2012 to June 2013

- 95% of data passed *simple data checks**
- 9,967k Sessions
- 1,850k Adds to Cart
- 238k Transactions

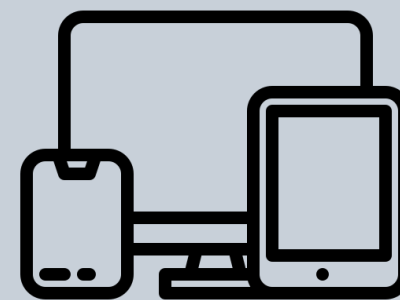
B) Analysis Scope:

- Correlations and E-commerce Metrics
- Variations and Outliers (ex. Devices)
- Impacts of Holidays and Days of the Week

C) Key Findings:



1) **Sessions** are important

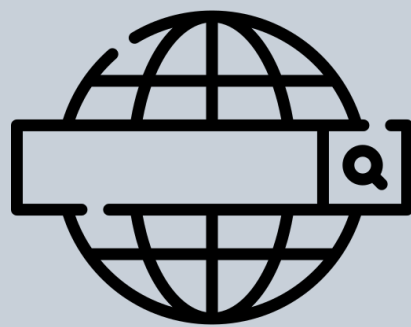


2) Conversion Rate for **mobile devices** are low

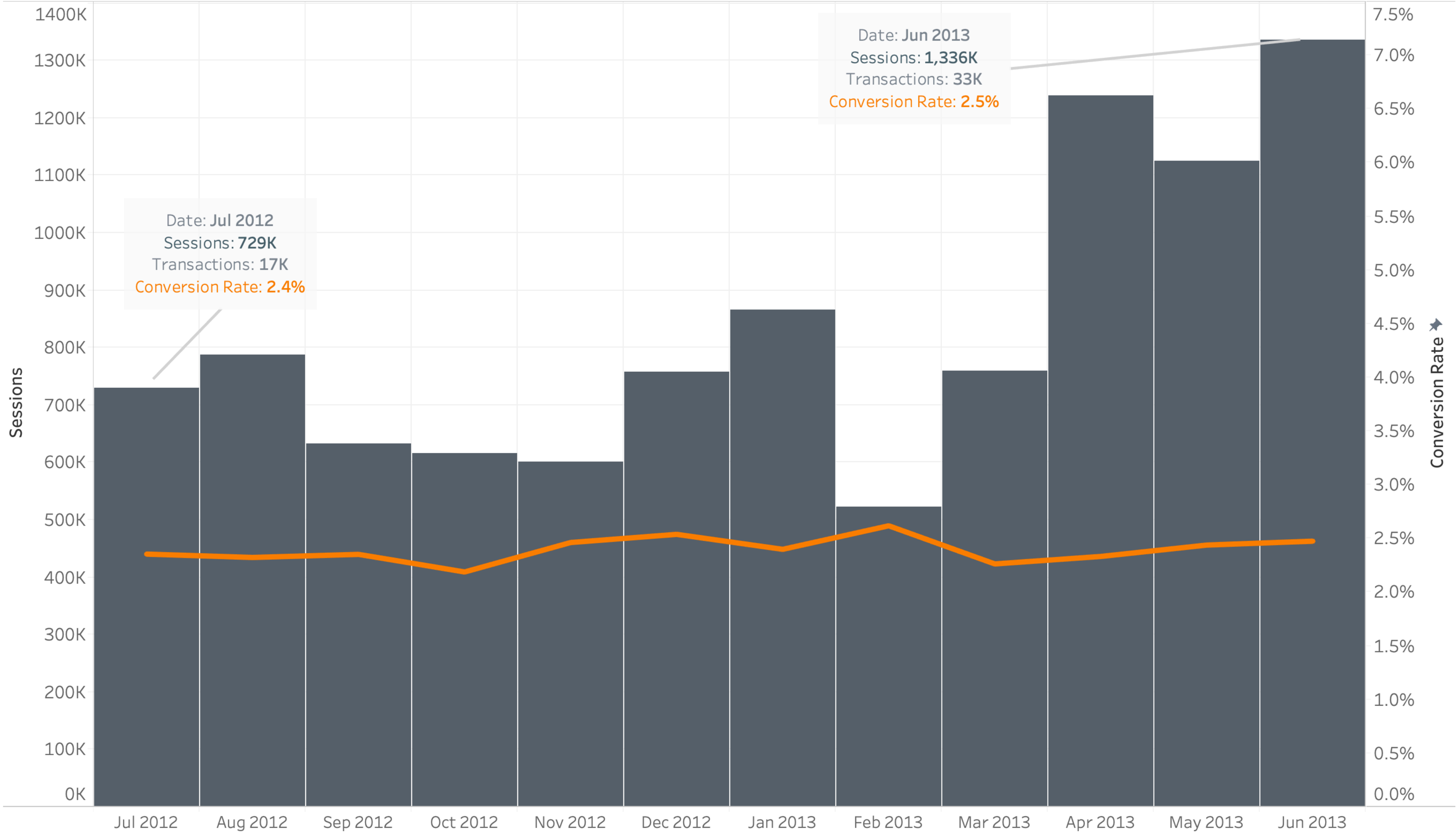


3) **Adds to Cart** trend and **Internet Explorer** browser need further investigation

It's All About Sessions

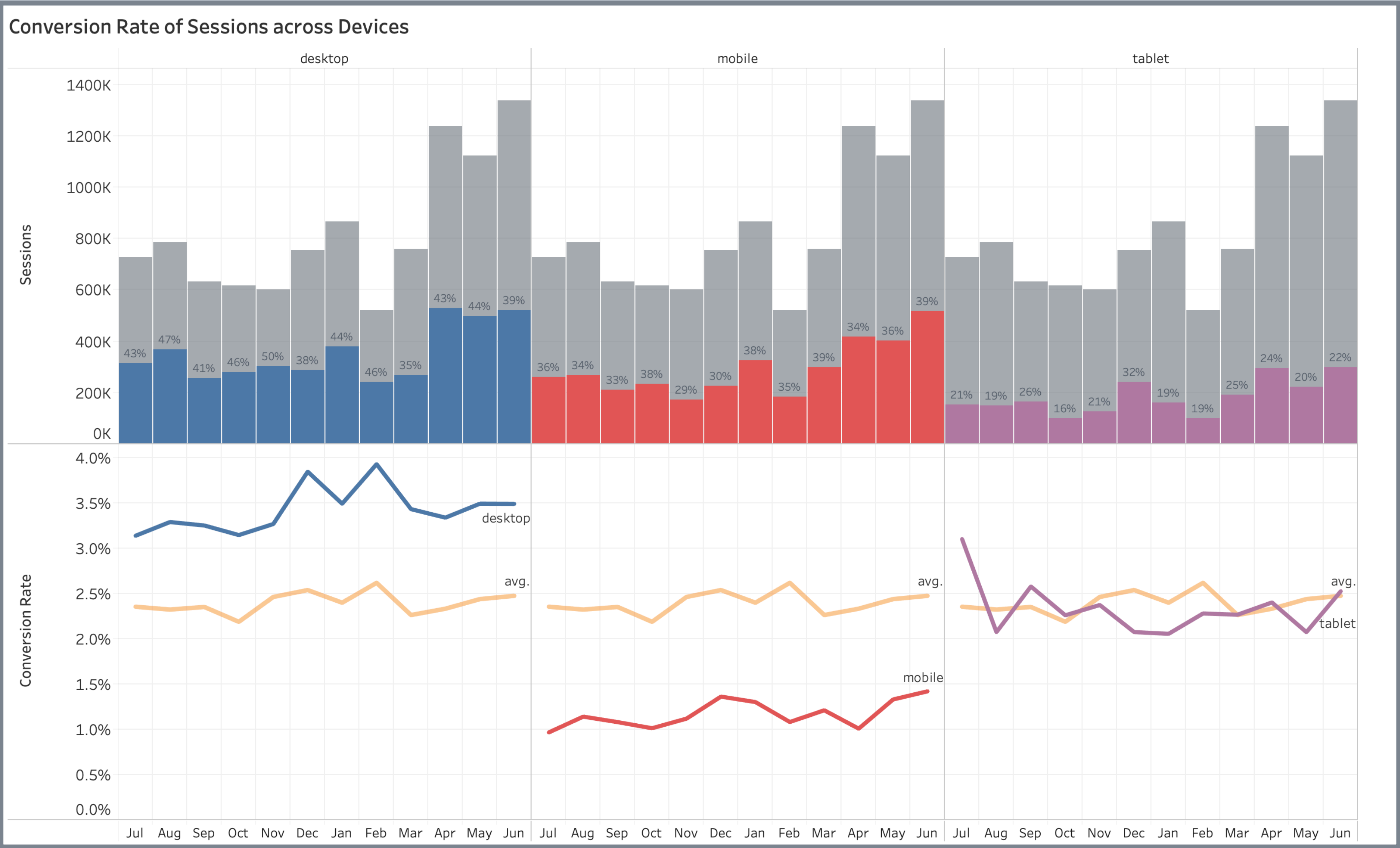
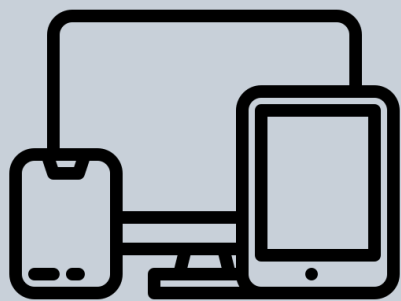


Conversion Rate of Monthly Sessions



- **Sessions** increased over the last quarter (April, May, June 2013)
 - Flat **conversion rate** indicates transactions have tracked the increase in sessions
- Action:**
Focus marketing efforts to generate more **sessions** to directly increase **transactions**

Not All Devices are Created Equal

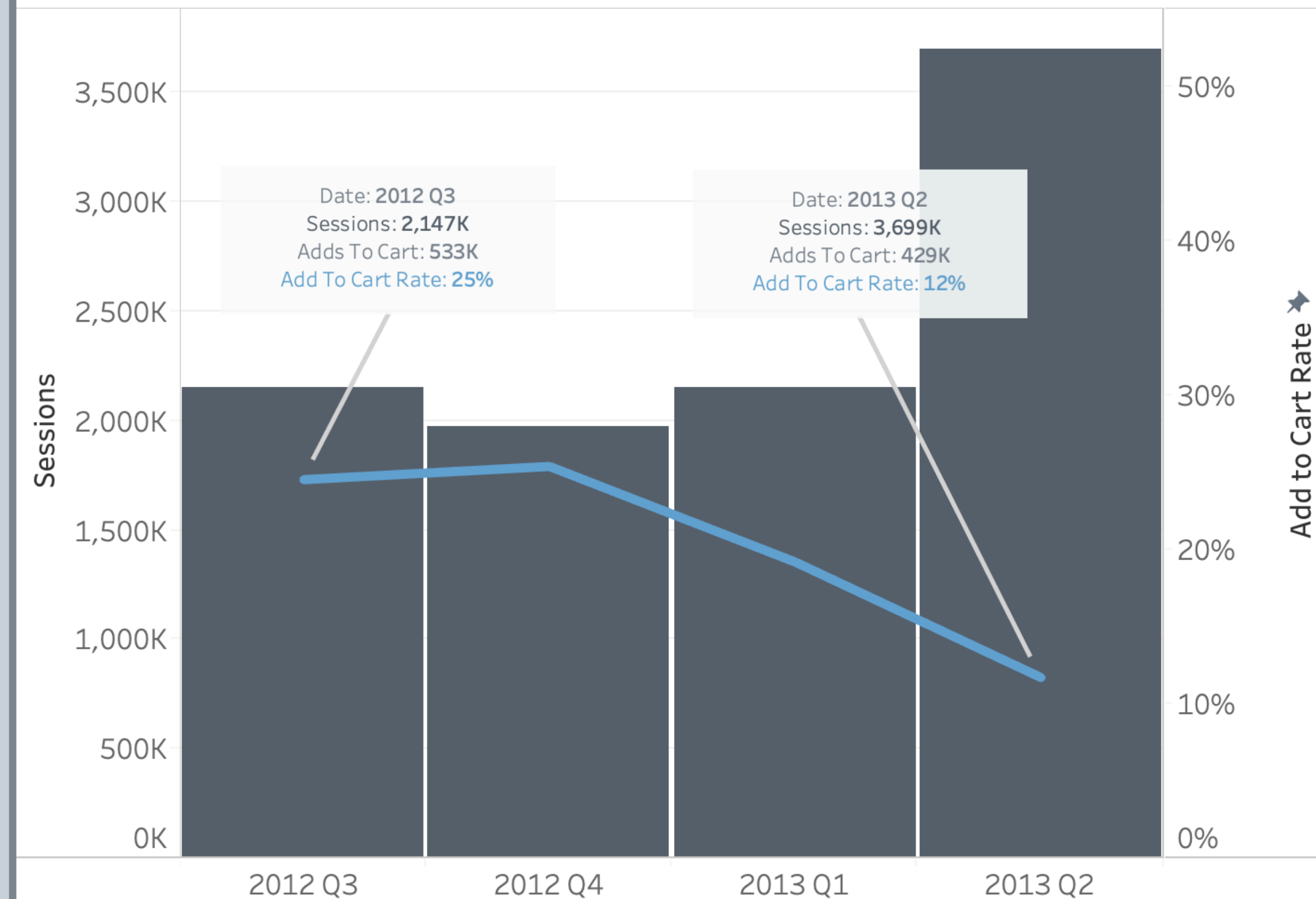


- **Desktop** and **mobile** have comparable share of total sessions
 - However, **desktop** has conversion rate 3x of **mobile**
- Action:**
Improve **mobile** & **tablet** conversion rates to increase transactions

Trends to Investigate Further



Quarterly Sessions & Add to Cart Rate

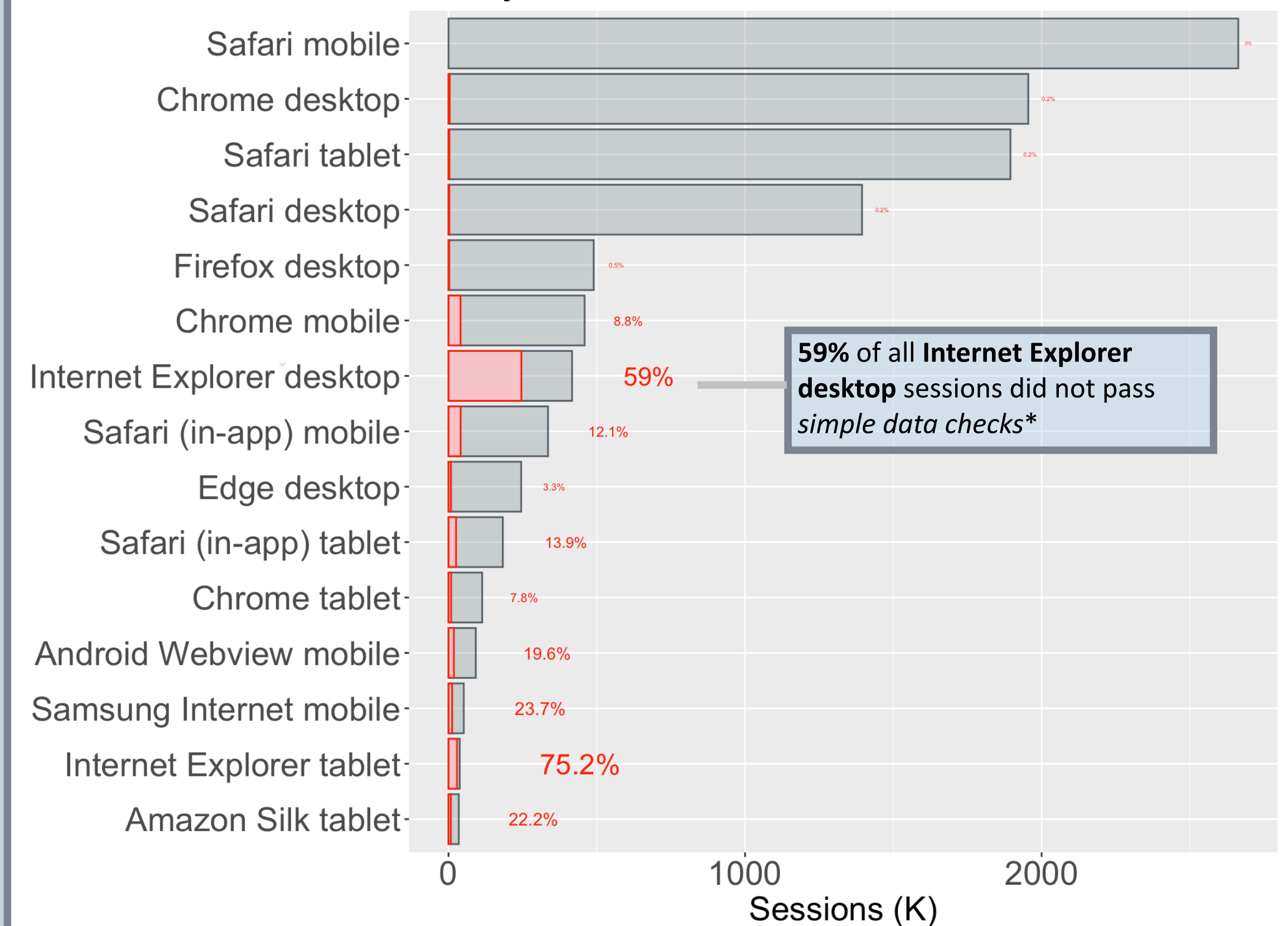


- **Adds to Cart** has not tracked the increase in **sessions**

Investigate:

Why? e.g. Has website design changed?

Yearly Sessions across Browser * Device



- **Safari**, **Chrome**, and **Firefox** dominate total **sessions**

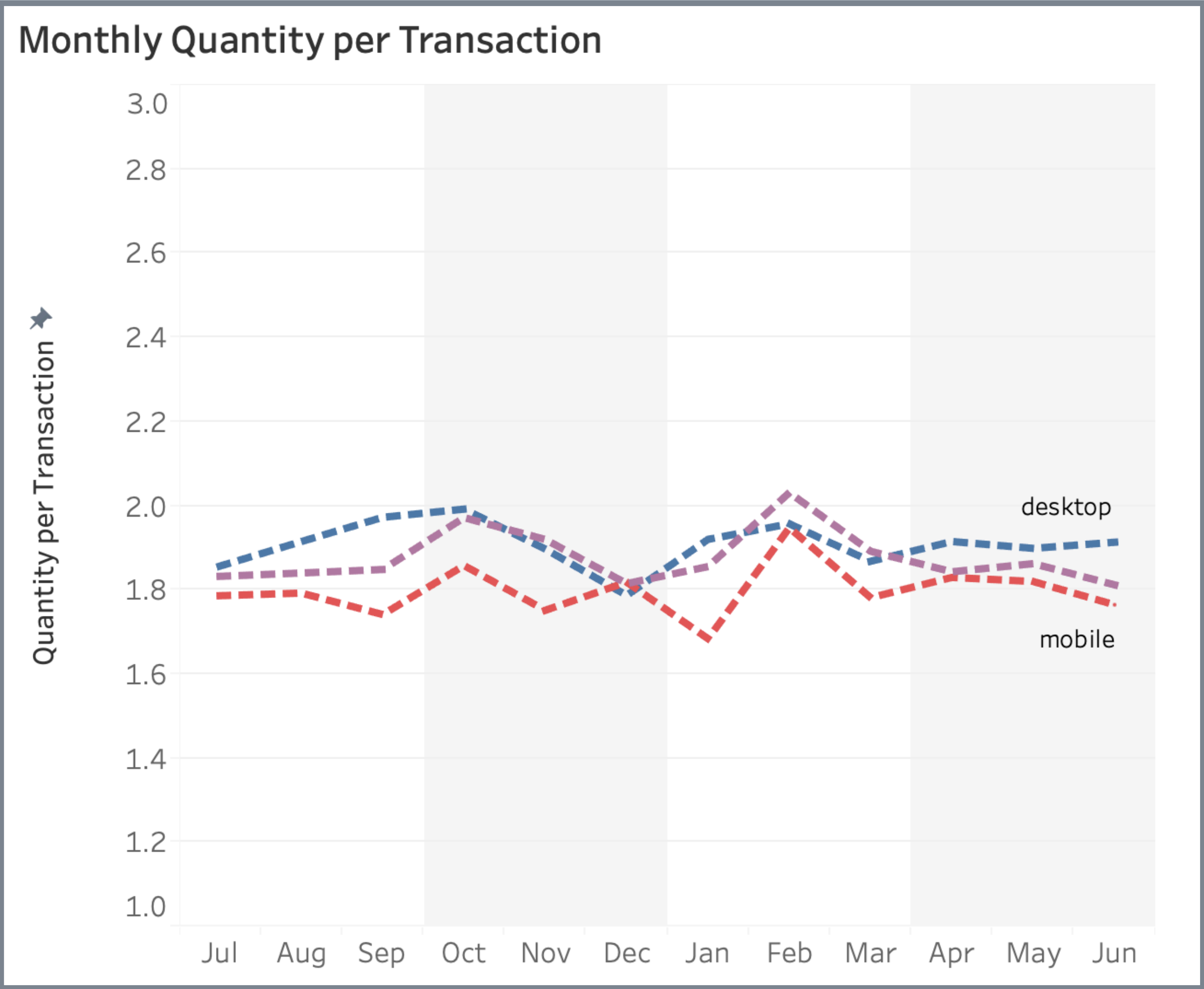
Investigate:

Why **Internet Explorer** contributes to the majority of data issues?

*See backup slides for details on how *simple data checks* were performed

Backup Slides

Trends to Investigate Further cont.



Average **Quantity per Transaction** has remained unchanged over **period** and **device** platform

Investigate:
Is there an opportunity to **increase quantity**?

Simple Data Checks

- Issue 1: Sessions < Transactions

- Severity: Low

Ex.

	dim_browser	dim_deviceCategory	dim_date	sessions	transactions	QTY	index
1	Iron	mobile	6/16/13	2	4	3	7363
2	SeaMonkey	desktop	5/7/13	1	3	2	6251
3	Maxthon	desktop	8/6/12	0	2	0	697
4	SeaMonkey	desktop	12/31/12	0	2	5	3560
5	UC Browser	mobile	4/1/13	1	2	1	5337

- Issue 2: Transactions = 0 but QTY > 0

- Severity: Low

Ex.

	dim_browser	dim_deviceCategory	dim_date	sessions	transactions	QTY	index
1	Safari (in-app)	mobile	7/13/12	1475	0	1	225
2	Safari (in-app)	mobile	3/1/13	1346	0	1	4717
3	Safari (in-app)	tablet	8/18/12	1182	0	3	914
4	Chrome	mobile	4/13/13	1057	0	4	5691
5	Android Webview	mobile	7/18/12	897	0	2	316

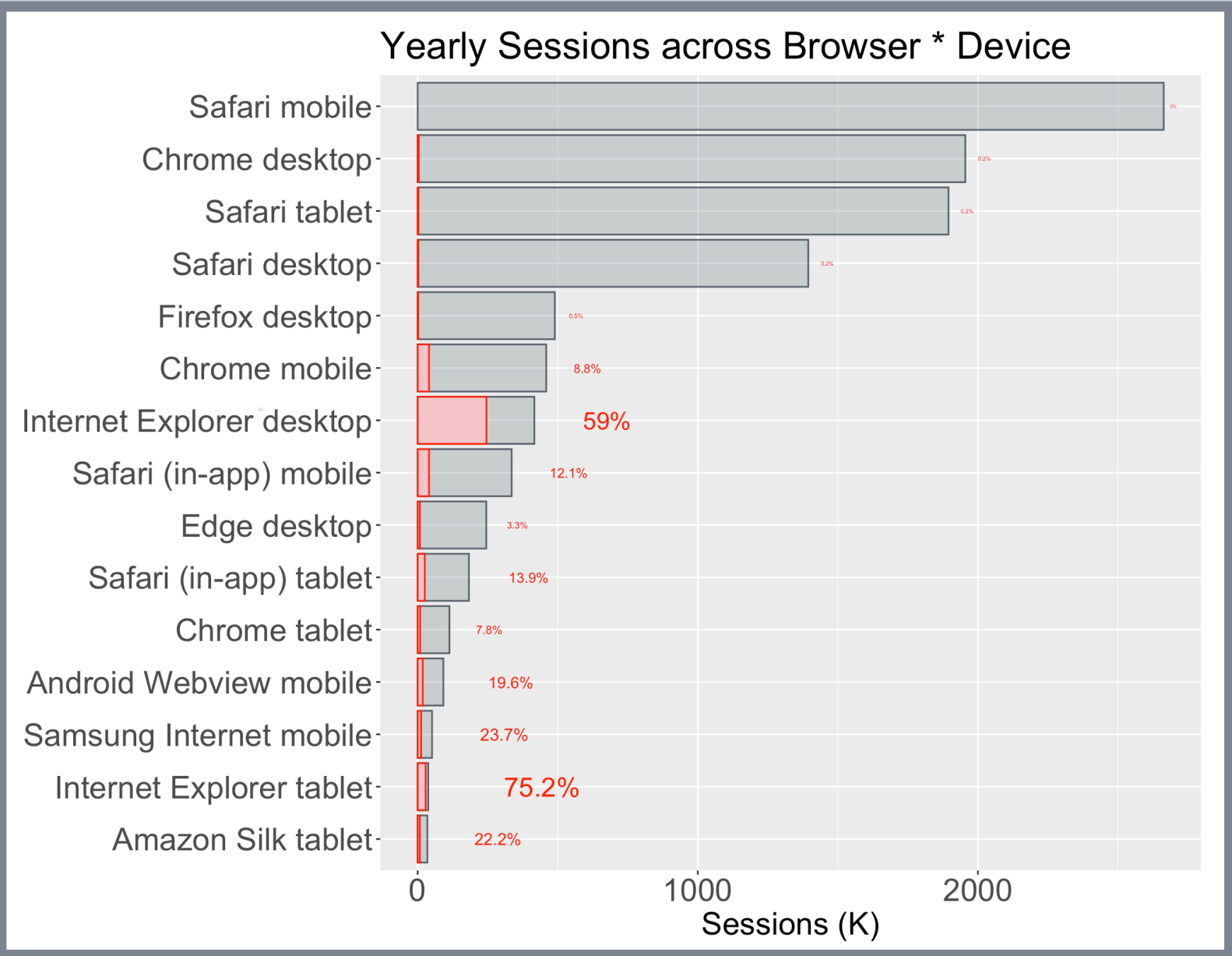
- Issue 3: Transactions > QTY

- Severity: Medium

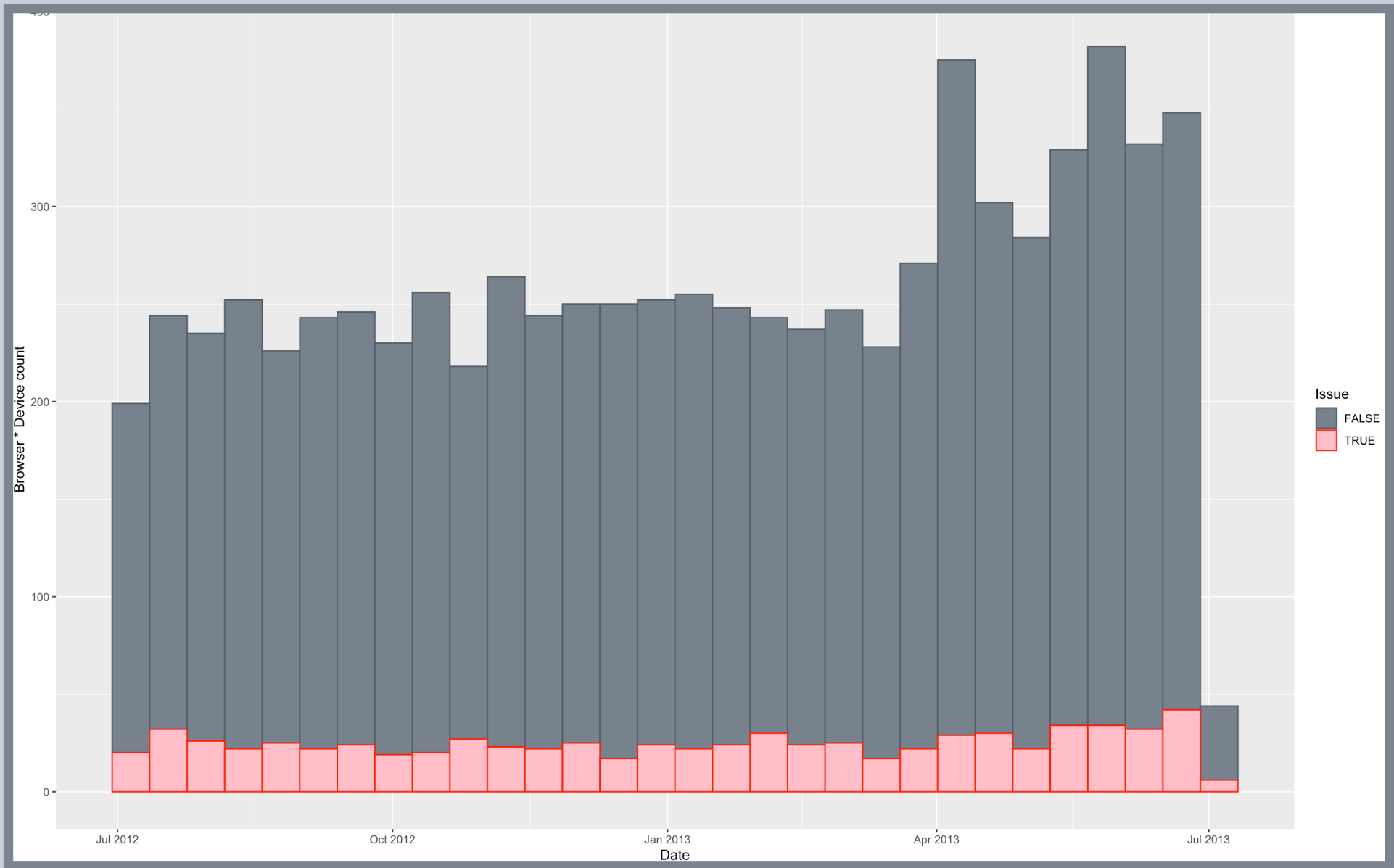
Ex.

	dim_browser	dim_deviceCategory	dim_date	sessions	transactions	QTY	index
1	Internet Explorer	desktop	6/23/13	3459	213	38	7543
2	Internet Explorer	desktop	6/6/13	3666	185	0	7063
3	Internet Explorer	desktop	8/4/12	3502	171	93	637
4	Internet Explorer	desktop	7/8/12	2898	159	0	124
5	Internet Explorer	desktop	1/20/13	2277	155	0	3931

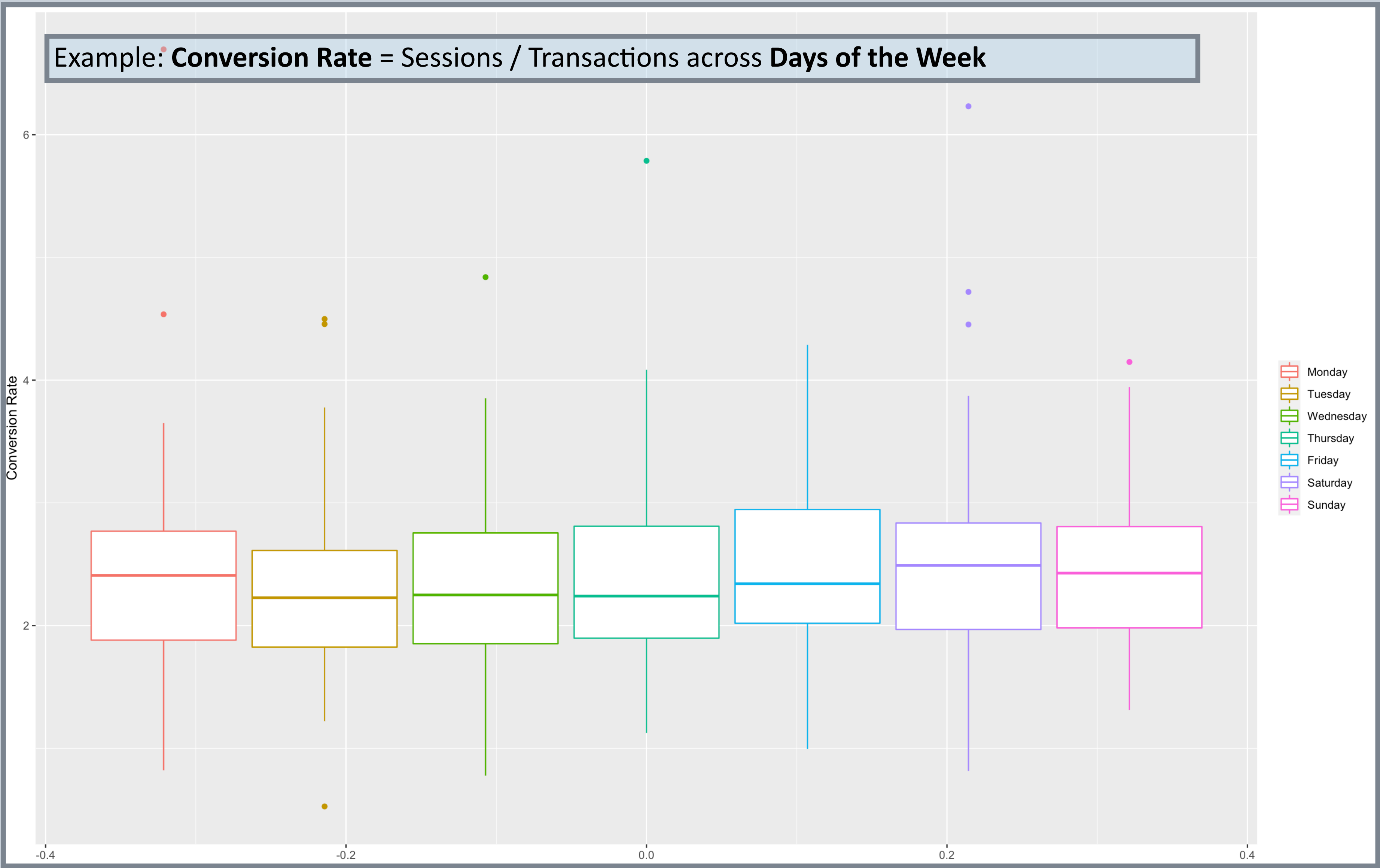
Data issues across each Browser * Device



Data issues are constant over time.



Day of the Week: *no difference for all metrics*

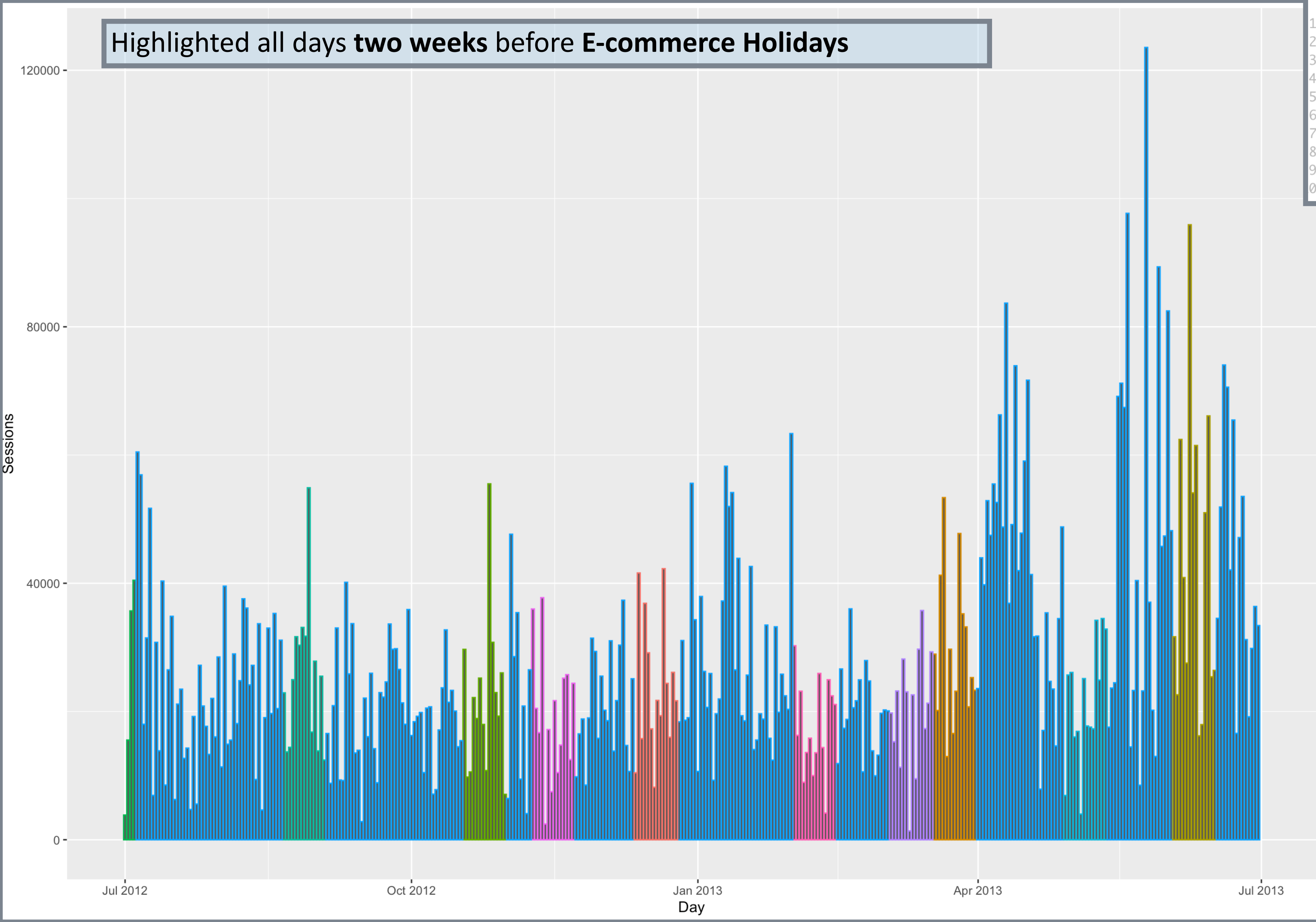


Each Box Plot (N = 52 days)
except Sunday (N=53 days)

Daily Sessions Highlighted by Holiday

Dates with most Sessions:

Highlighted all days **two weeks** before E-commerce Holidays



	date	sessions	transactions	QTY	ECR	QpT	DayofWeek	Month
	<date>	<int>	<int>	<int>	<dbl>	<dbl>	<chr>	<chr>
1	2013-05-25	123562	3222	5910	0.0261	1.83	Saturday	May
2	2013-05-19	97691	2451	4533	0.0251	1.85	Sunday	May
3	2013-06-08	95910	3713	6369	0.0387	1.72	Saturday	June
4	2013-05-29	89343	2276	4515	0.0255	1.98	Wednesday	May
5	2013-04-10	83688	1695	3003	0.0203	1.77	Wednesday	April
6	2013-06-01	82476	1946	3547	0.0236	1.82	Saturday	June
7	2013-06-19	74046	1765	3341	0.0238	1.89	Wednesday	June
8	2013-04-13	73914	1104	1972	0.0149	1.79	Saturday	April
9	2013-04-17	71668	1734	3281	0.0242	1.89	Wednesday	April
0	2013-05-17	71201	1554	2954	0.0218	1.90	Friday	May