

Digital Analytics from Google Analytics using R



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agenda

about me

intro on crunching digital data

R Studio & Google Analytic Reporting API

some examples

A pink speech bubble with a diagonal line pattern, pointing downwards.

Ines Teaca

data scientist

technology enthusiast | fast learner | positive

experience in telecom industry, direct marketing & ONGs

Setting Expectations

- This is a presentation meant to give you a flavor of R
- This is a presentation of options 😊

digital data

everywhere in any shape



2018 digital tooling

a replica of Scott Brinker's MARTECH landscape

<https://www.smartinsights.com/digital-marketing-platforms/essential-digital-marketing-tools-infographic/>

one tool or many? R ?

- a **programming language** and **free** software environment **for statistical computing and graphics** supported by the R Foundation for Statistical Computing (wikipedia)
- the most specialized integrated development environment (IDE) for R is **RStudio**

How companies are using R

- Ford uses R to improve the design of its vehicles.
- Basically, Twitter uses R to monitor user experience.
- The US National Weather Service uses R to predict severe flooding.
- The Human Rights Data Analysis Group uses R to quantify the impact of war.
- R is being used by The New York Times to create infographics.
- Google uses R to calculate the ROI of advertising campaigns.
- Facebook uses R to update Facebook status updates and its social network graph
- T-Mobile US uses R to monitor and respond to customer interactions

why R Studio and not Excel?

cope well with larger data
than Excel =scalability

writing scripts =reproduction

multitude of libraries
available=flexibility

graphical
capabilities=outstanding

free software, free
documentation=available
online

- R Studio (with prior R installation)

- GoogleAnalyticsR library



for today use case

setting tracking tools availability

personal blog account
tracked using google
analytics for demo purpose

scoping

apply CRISP-DM method
or ask yourself:

1. what is the business use case
2. what data is available
3. do we have all we need (time, tools, data, budget)?

○ Google Analytics Account : (personal demo site) <https://ineszz.blogspot.com>





do we have the insights?

prepare Google analytics reporting API

First step

The image shows two screenshots of the Google APIs console interface. The top screenshot is the 'New Project' form, and the bottom screenshot is the 'Google Analytics Reporting API' page.

New Project Form:

- Header: Google APIs
- Section: New Project
- Warning: You have 12 projects remaining in your quota. Request an increase or delete projects. [Learn more](#)
[MANAGE QUOTAS](#)
- Project name *: Analytics API
- Project ID: analytics-api-238518. It cannot be changed later. [EDIT](#)
- Location *: No organization [BROWSE](#)
- Parent organization or folder
- Buttons: CREATE, CANCEL

Google Analytics Reporting API Page:

- Header: Google APIs, Analytics API
- Section: API Library
- API Card: Google Analytics Reporting API (Google)
Access report data in Google Analytics.
Buttons: ENABLE, TRY THIS API
- Overview: The Google Analytics Reporting API v4 is the most advanced programmatic method to access report data in Google Analytics. With the Google Analytics Reporting API, you can build custom dashboards to display Google Analytics data, automate complex reporting tasks to save time, and integrate your Google Analytics data with other business applications.
[Learn more](#)
- About Google: Google's mission is to organize the world's information and make it universally accessible and useful. Through products and platforms like Search, Maps, Gmail, Android, Google Play, Chrome and YouTube, Google plays a meaningful role in the daily lives of billions of people.

Notifications:

- Create Project: Analytics API (Just now)
- [SEE ALL ACTIVITIES](#)

Second step

APIs & Services

Dashboard

Library

Credentials

Credentials

OAuth consent screen

Domain verification

APIs

Credentials

You need credentials to access APIs. [Enable the APIs you plan to use](#) and then create the credentials they require. Depending on the API, you need an API key, a service account, or an OAuth 2.0 client ID. For more information, see the [authentication documentation](#).

Create credentials

API key

Identifies your project using a simple API key to check quota and access

OAuth client ID

Requests user consent so your app can access the user's data

Service account key

Enables server-to-server, app-level authentication using robot accounts

Help me choose

Asks a few questions to help you decide which type of credential to use

Google APIs

Analytics API

APIs & Services

Analytics Reporting API

Overview

Metrics

Quotas

Credentials

Credentials

+ CREATE CREDENTIAL

DELETE

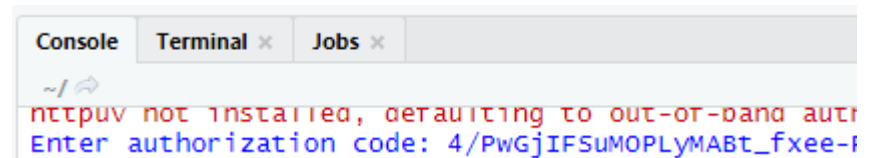
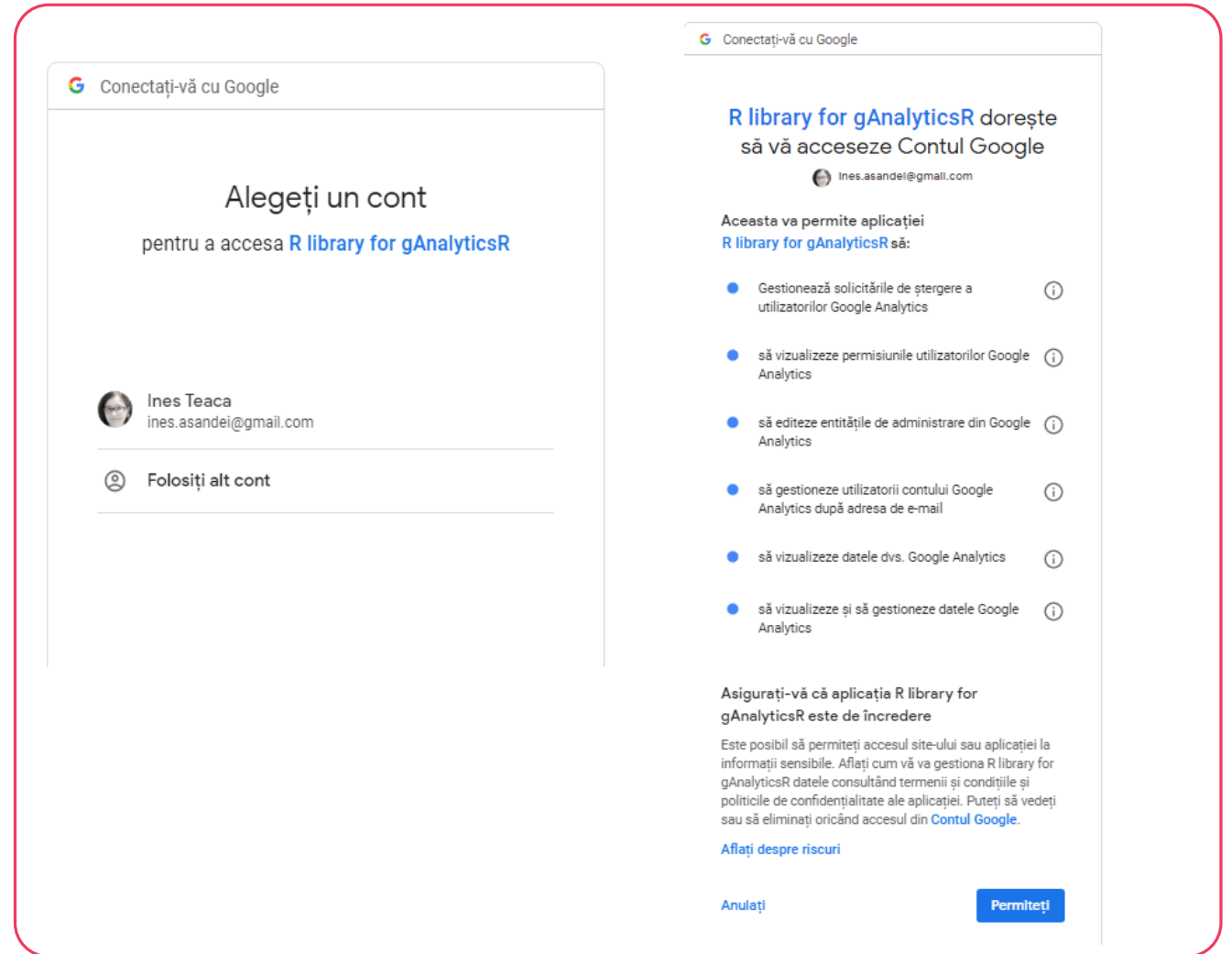
Credentials compatible with this API

To view all credentials or create new credentials visit [Credentials in APIs & Services](#)

Remember to configure the OAuth consent screen with information about your application.

if first time, authorization code needs to be run

Once



now get the data with 4 commands

connecting R Studio to GA/GA360



1. load libraries

```
library("googleAnalyticsR")
```

2. authorize connection with Google Analytics servers

```
ga_auth()
```

3. pick a profile with data to query

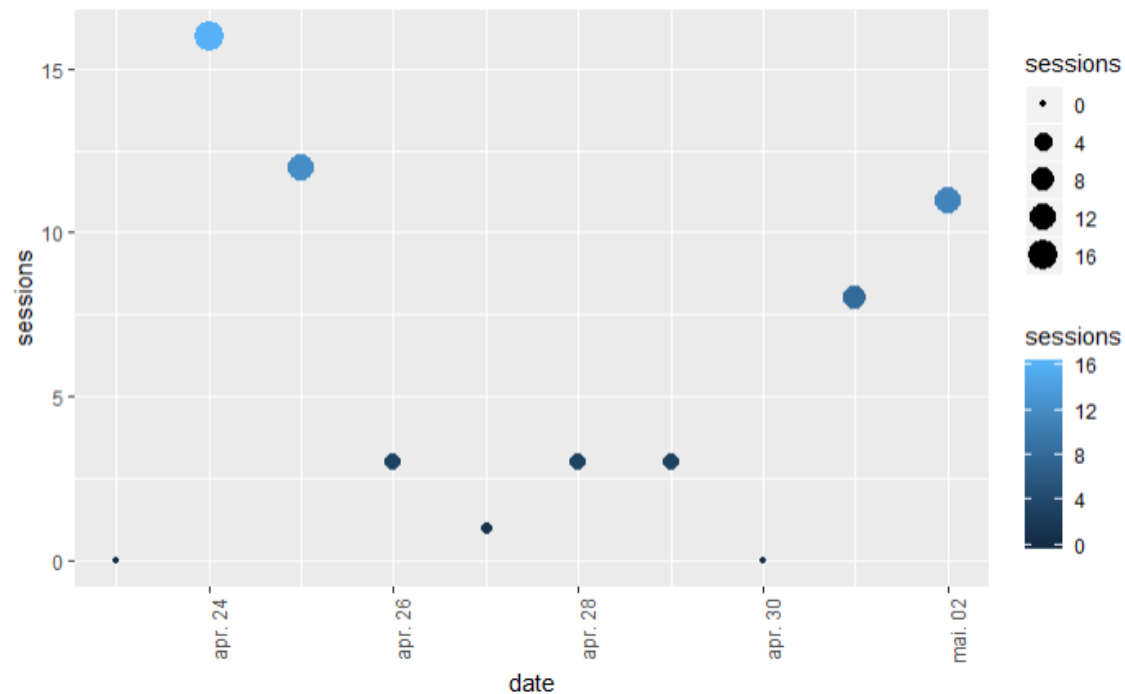
```
ga_id <- account_list[4,'viewId']
```

4. get data from Google Analytics account

```
gadata <- google_analytics(ga_id,  
  date_range = c("2019-04-23", "2019-05-02"),  
  metrics = c("users","sessions"),  
  dimensions = "date",  
  max = 100)
```

...and ...first graph
to explore daily
data is done

```
```{r}
First Graph
gadata %>%
 ggplot(aes(x=date, y=sessions, size = sessions, color =sessions)) +
 geom_point()+
 theme(axis.text.x = element_text(angle = 90, hjust = 1))
```
```

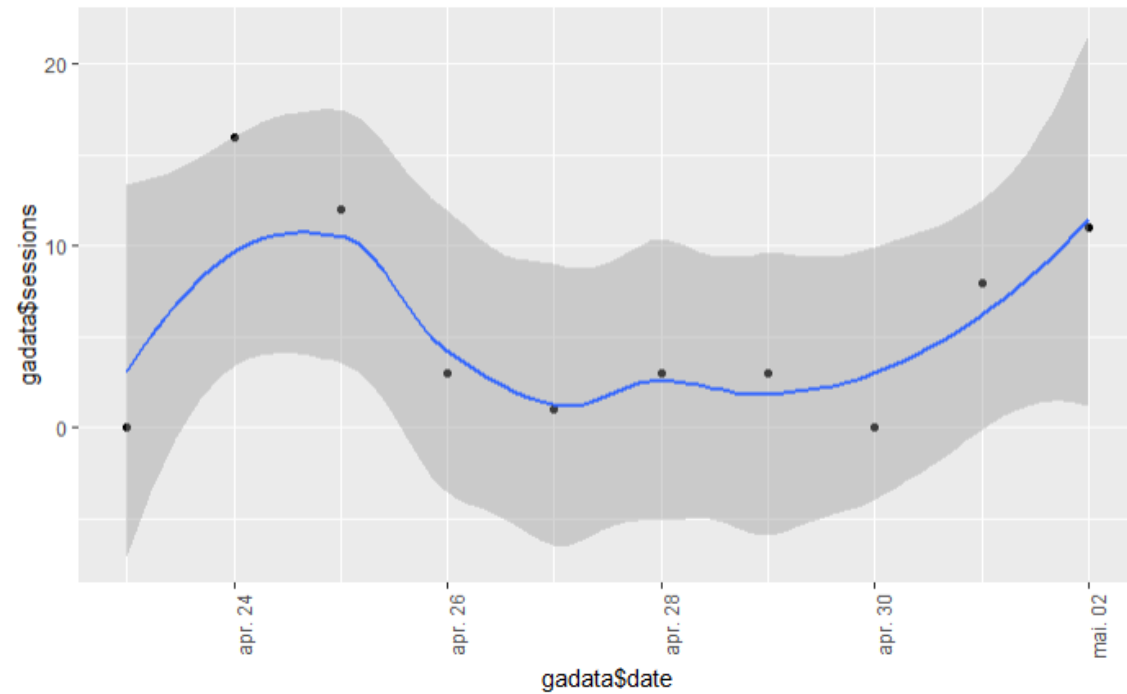


trend line

```
gadata %>%  
  ggplot(aes(x = gadata$date, y = gadata$sessions)) +  
    geom_point() +  
    geom_smooth() +  
    theme(axis.text.x = element_text(angle = 90, hjust = 1))  
````
```

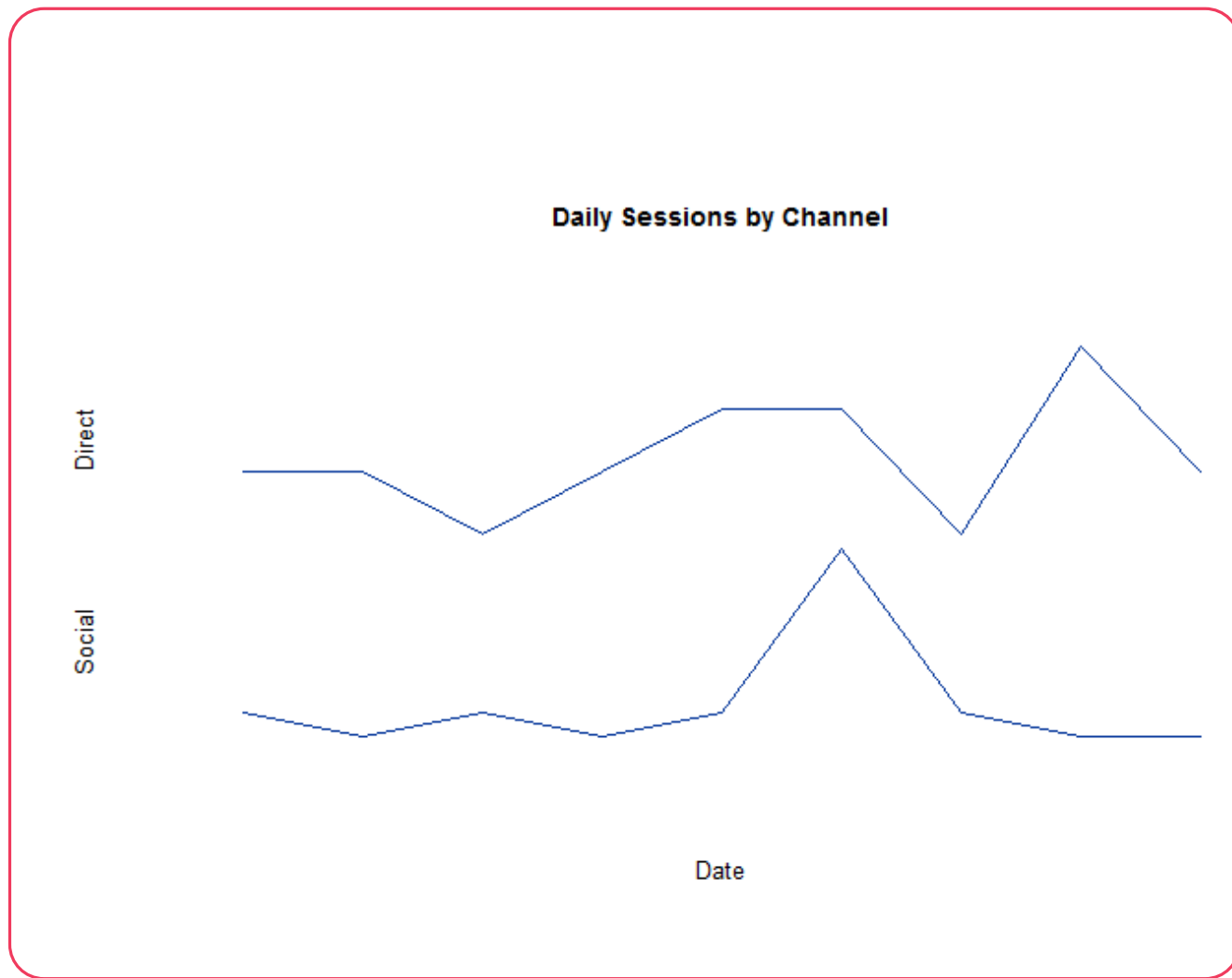


`geom\_smooth()` using method = 'loess' and formula 'y ~ x'

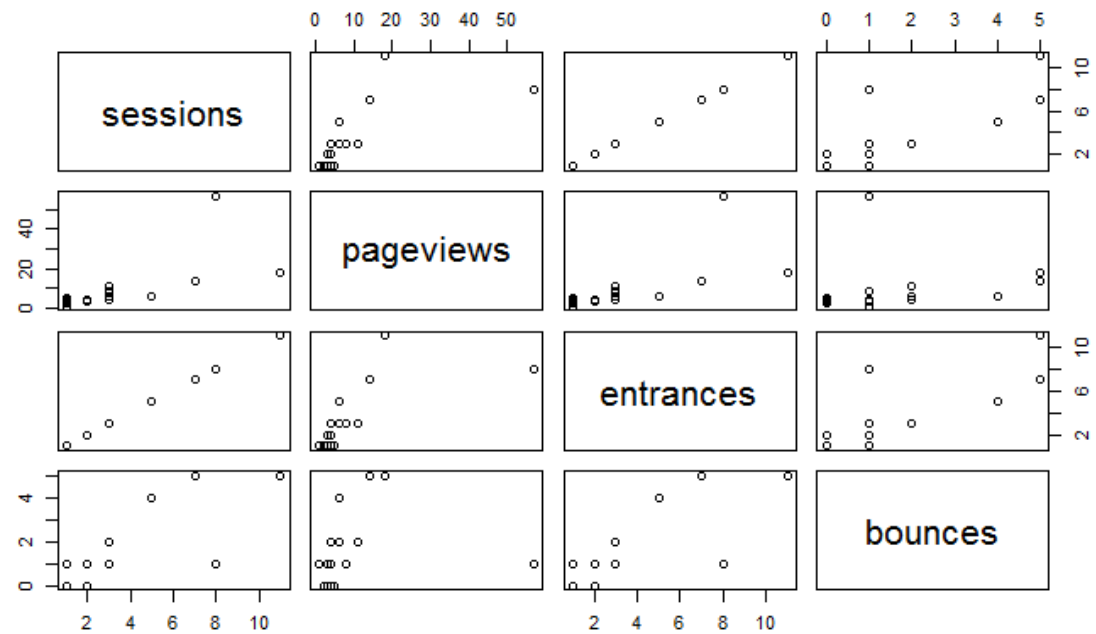


# trend line

With split per marketing channels and better visual features



# correlations



## Select Account

## Accounts

ineszz

## Select Web Property

## WebProperty

https://ines201.wordpress.com/

## Pick View (ID)

## Views

All Web Site Data 194111376

## Select Dates

## Date Range

22-Apr-2019

to

9-May-2019

Choose date range of data. Include lead time before and after event date for sensible results.

## Select Test Segment

## Your Segments

iOS Traffic

## Test Metric

Users

This is the data that you want to see if the event effected. You can create more segments in the normal GA interface. Refresh this page afterwards to load them here.

## Control Segment

## Your Segments

Mobile and Tablet Traffic

## Control Metric

New Users

Select a segment of data that will be used as control, unaffected by the event. Refresh this page afterwards to load them here.

Click-Drag to Zoom. Double-Click to Reset. Shift-Drag to Pan.



When did the event to be tested happen?

Tue 24-April-2019

Does the Data Have Seasonality?

Seasonality

⊗ None

# Shiny Dashboards

<https://gallery.shinyapps.io/ga-effect/> by Mark Edmondson



## Not Significant

Its likely that any effect observed is just by chance



20 users

Total Estimated Impact From Effect to End Date

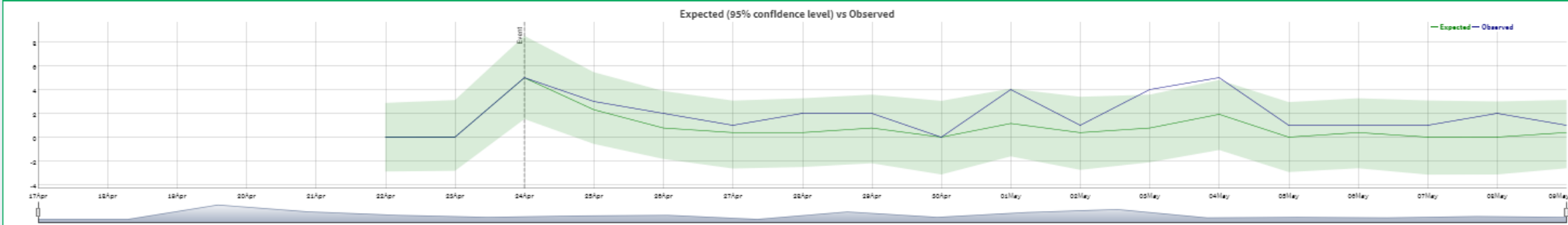


211 %

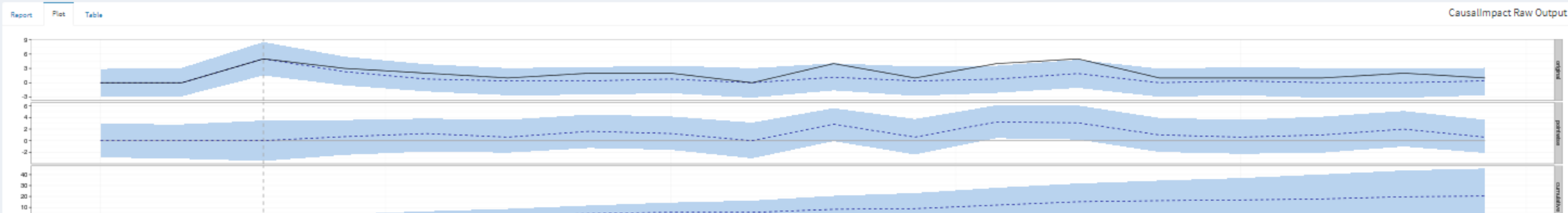
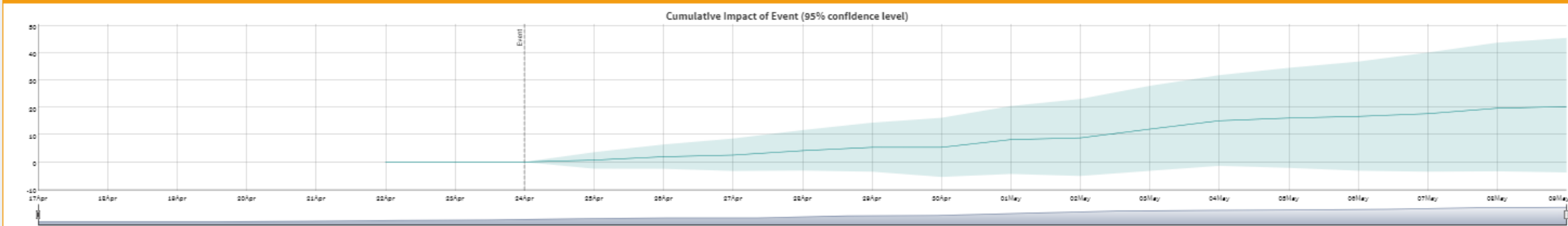
Estimated Average % Change On users

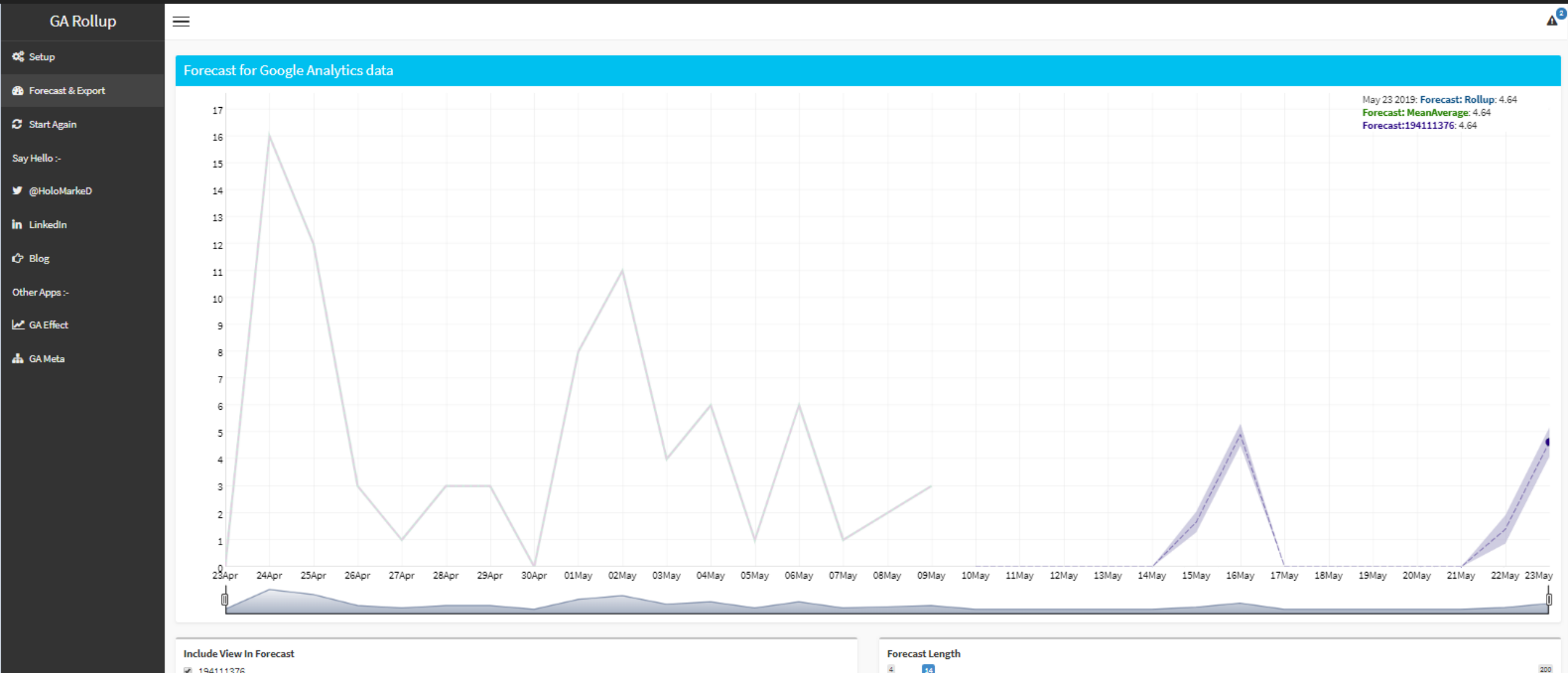


How did the expected trend with no effect present compare to the observed?



How did the observed trend with the event perform verses the expected trend without it?





# THE END





Contact details: [Linkedin](#)

GitHub Notebook: [https://github.com/ineszz/R\\_MARTECH](https://github.com/ineszz/R_MARTECH)

Blog [ineszz.blogspot.com](http://ineszz.blogspot.com)

→ Stay Close ( or get in touch), we prepare de **R-Ladies Bucharest** meetup for more R goodies!