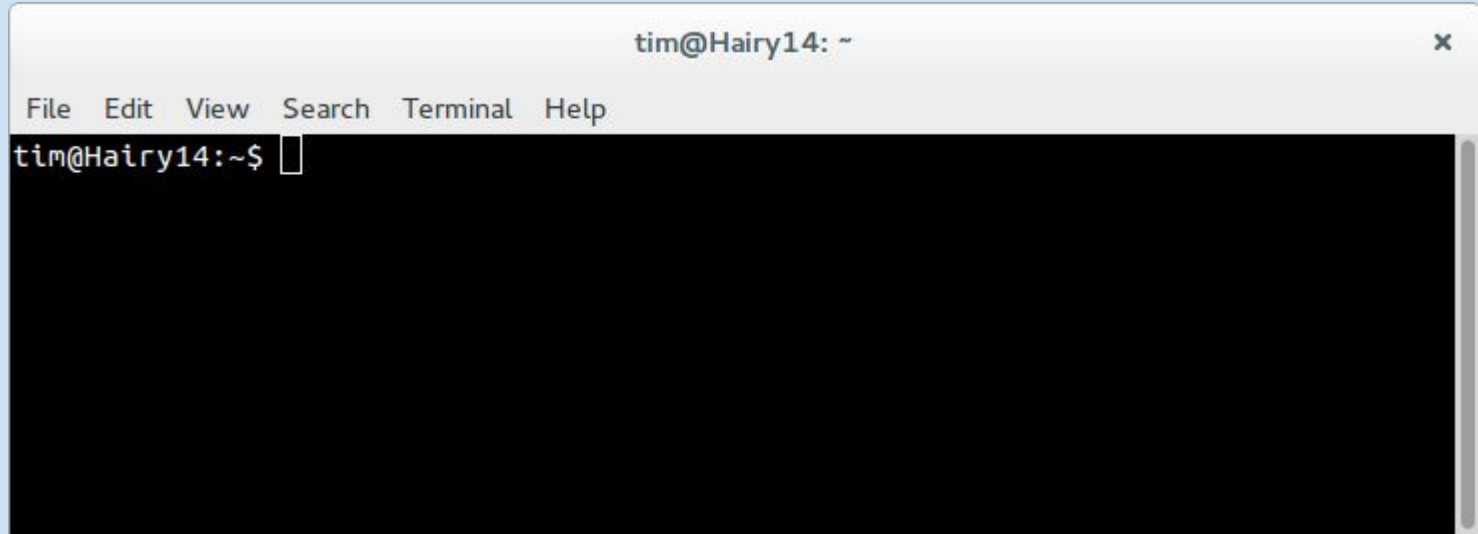


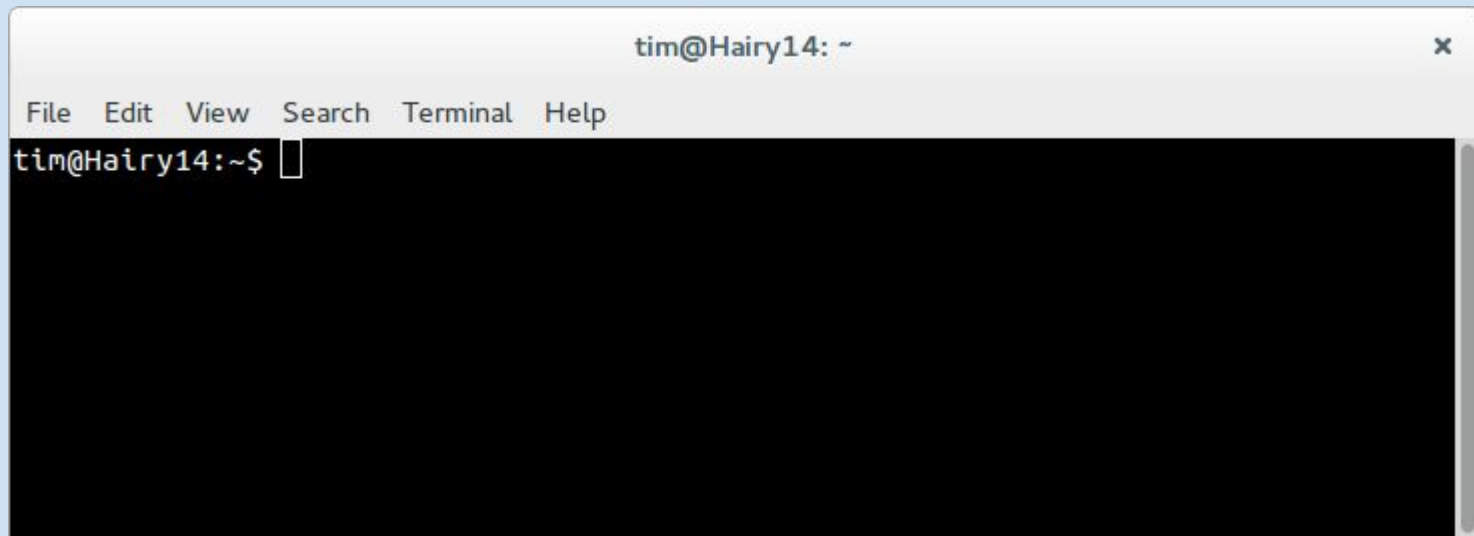
Terminal / Git Guide

A/B Testing Gear Up

What's a terminal?

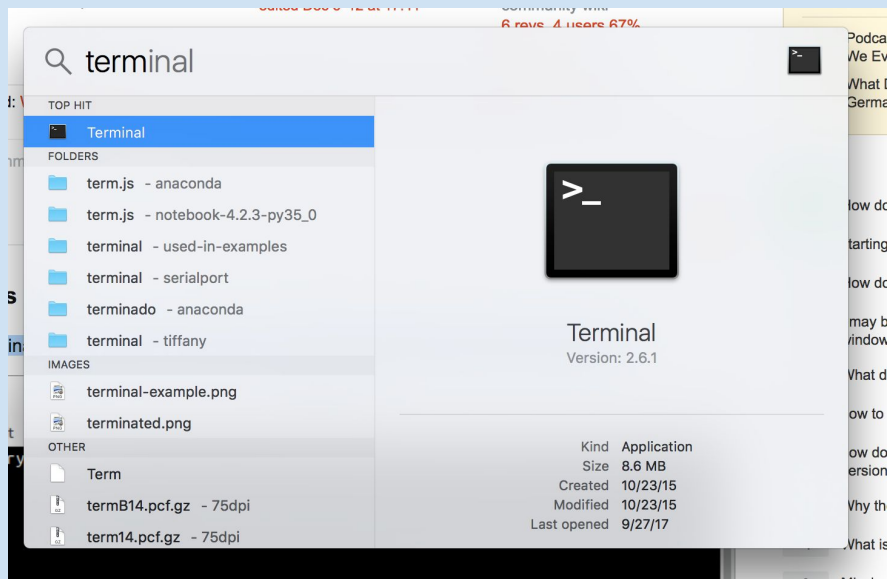


What's a terminal?

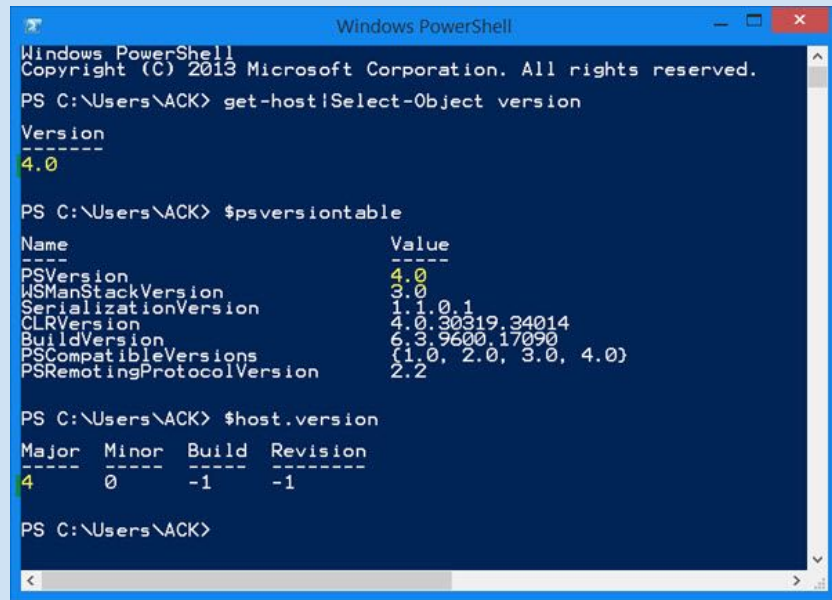


An interface in which you can type and execute text based commands.

It's already on your computer.



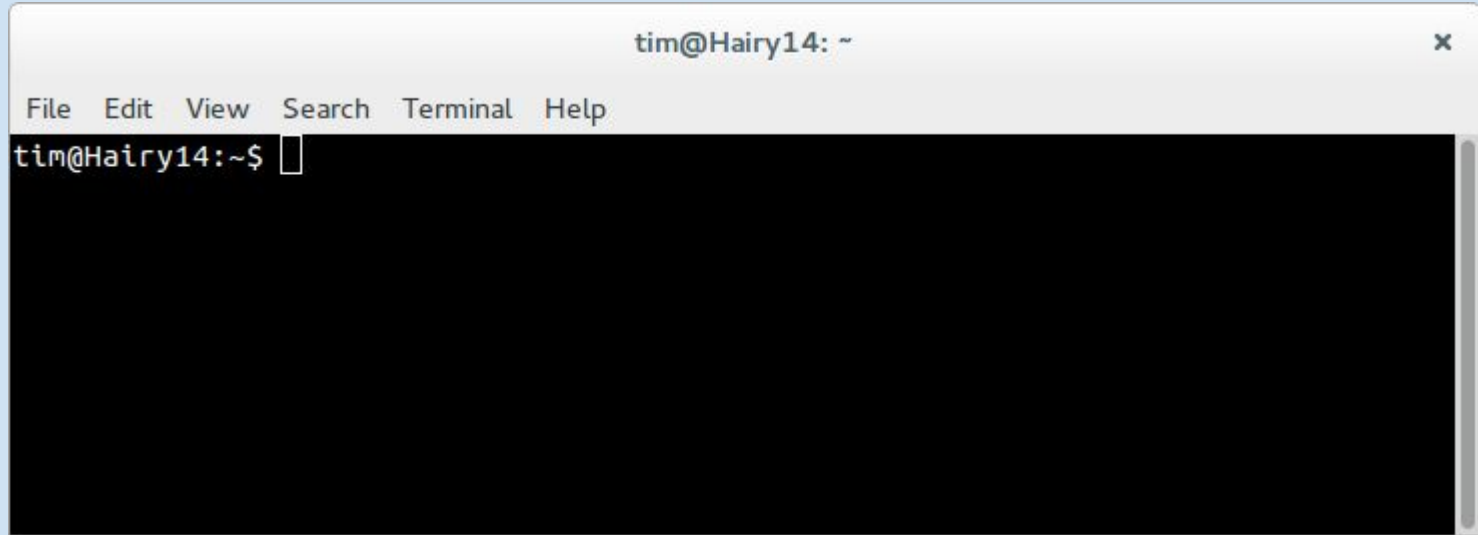
Mac: Terminal



Windows: PowerShell

(the commands in the handout will only work with PowerShell, not other command line applications!)

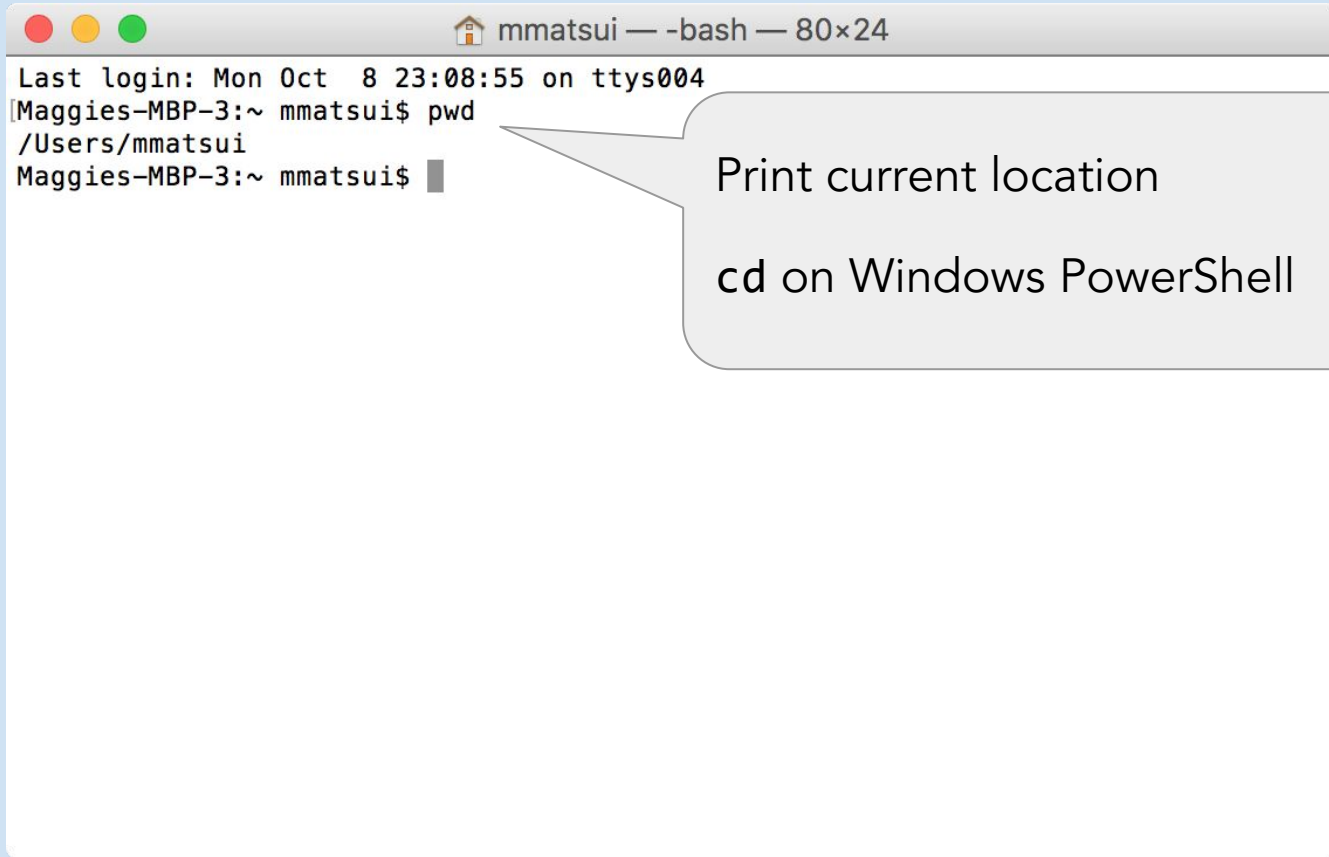
What do I need terminal for?



You will use your terminal to download the stencil files for your website from Github onto your computer.

Basic commands

Mac command	Windows command	Action
<code>pwd</code>	<code>cd</code>	Print "url" of where you are in your computer
<code>cd <FOLDER NAME></code>	<code>cd <FOLDER NAME></code>	Navigate down into a folder
<code>cd ..</code>	<code>cd ..</code>	Navigate up out of a folder
<code>ls</code>	<code>dir</code>	Show current files / folders where you are in computer



```
mmatsui — -bash — 80x24
Last login: Mon Oct  8 23:08:55 on ttys004
[Maggies-MBP-3:~ mmatsui$ pwd
/Users/mmatsui
Maggies-MBP-3:~ mmatsui$
```

Print current location

cd on Windows PowerShell

mmatsui
Last login: Mon Oct 8 23:08:55 on tt
[Maggies-MBP-3:~ mmatsui\$ pwd
/Users/mmatsui
[Maggies-MBP-3:~ mmatsui\$ ls
Applications
Creative Cloud Files
Desktop
Documents
Downloads
Library
Movies
Maggies-MBP-3:~ mmatsui\$

Print files / folders in current location

dir on Windows PowerShell

Music
Pictures
Public
logs
mcm710@gmail.com Creative Cloud Files
spark


```
Documents — -bash — 80x24

Last login: Mon Oct  8 23:08:55 on ttys004
[Maggies-MBP-3:~ mmatsui$ pwd
/Users/mmatsui
[Maggies-MBP-3:~ mmatsui$ ls
Applications          Music
Creative Cloud Files  Pictures
Desktop               Public
Documents              logs
Downloads              mcm7
Library               spar
Movies

[Maggies-MBP-3:~ mmatsui$ cd Documents
Maggies-MBP-3:Documents mmatsui$
```

Navigate into Documents folder

```
Documents — -bash — 80x24

Last login: Mon Oct  8 23:08:55 on ttys004
[Maggies-MBP-3:~ mmatsui$ pwd
/Users/mmatsui
[Maggies-MBP-3:~ mmatsui$ ls
Applications                Music
Creative Cloud Files        Pictures
Desktop                     Public
Documents                   logs
Downloads                   mcm710@gmail.com Creative Cloud Files
Library                     spark
Movies

[Maggies-MBP-3:~ mmatsui$ cd Documents
[Maggies-MBP-3:Documents mmatsui$ pwd
/Users/mmatsui/Documents
Maggies-MBP-3:Documents mmatsui$
```

Now we're in the Documents folder!

```
mmatsui — -bash — 80x24
Last login: Mon Oct  8 23:08:55 on ttys004
[Maggies-MBP-3:~ mmatsui$ pwd
/Users/mmatsui
[Maggies-MBP-3:~ mmatsui$ ls
Applications                Music
Creative Cloud Files        Pictures
Desktop                     Public
Documents                   logs
Downloads                   mcm710@gmail.com Creative Cloud Files
Library                     spark
Movies
[Maggies-MBP-3:~ mmatsui$ cd Documents
[Maggies-MBP-3:Documents mmatsui$ pwd
/Users/mmatsui/Documents
[Maggies-MBP-3:Documents mmatsui$ cd ..
[Maggies-MBP-3:~ mmatsui$ pwd
/Users/mmatsui
Maggies-MBP-3:~ mmatsui$
```

Navigate up one folder

For A/B Testing:

1. Create a folder where you want to store your code files.
2. Open a Terminal/PowerShell window.
3. Use **cd** to navigate to your folder you created in step 1.
4. Type `git clone https://github.com/matsuim/a-b-testing.git` to download files into your folder (you will need to download Git first).



Calculating Your Metrics

A/B Testing Gear Up

Overview

1. Getting your data
2. What's a metric?
3. Sorting your data
4. Calculating metrics!
 - a. Click rate
 - b. Time-to-click
 - c. Return rate
 - d. Dwell time

Getting your data

Your log data should look something like this:

```
2018-10-10T22:57:59.358730+00:00 app[web.1]: AB_TESTING: A 1507676280918 0 0 nfwsqqb
2018-10-10T22:58:02.636817+00:00 app[web.1]: AB_TESTING: B 1507676278189 1507676285131 mp3 jcdgkuk
2018-10-10T22:58:08.552881+00:00 app[web.1]: AB_TESTING: B 1507676285142 0 0 tuethevg
2018-10-10T22:58:08.700558+00:00 app[web.1]: AB_TESTING: A 1507676280918 1507676290270 mp2 nfwsqqb
2018-10-10T22:58:10.263199+00:00 app[web.1]: AB_TESTING: A 1507676302416 0 0 dbfggghmn
...
```

Which corresponds to this format:

```
<timestamp> AB_TESTING <ver. a/b> <page load time> <click time> <id of clicked element> <sessionID>
```

Cleaning your data

Follow your handout to get your data from this...

```
2018-10-10T22:57:59.358730+00:00 app[web.1]: AB_TESTING: A 1507676280918 0 0 nfwsqqb
2018-10-10T22:58:02.636817+00:00 app[web.1]: AB_TESTING: B 1507676278189 1507676285131 mp3 jcdgkuk
2018-10-10T22:58:08.552881+00:00 app[web.1]: AB_TESTING: B 1507676285142 0 0 tuethevg
2018-10-10T22:58:08.700558+00:00 app[web.1]: AB_TESTING: A 1507676280918 1507676290270 mp2 nfwsqqb
2018-10-10T22:58:10.263199+00:00 app[web.1]: AB_TESTING: A 1507676302416 0 0 dbfggghmn
...
```

to this!

A	B	C	D	E	F
2017-10-10T22:57:59.358730+00:00	A	1.50768E+12	0	0	nfwsqqb
2017-10-10T22:58:02.636817+00:00	B	1.50768E+12	1.5077E+12	mp3	jcdgkuk
2017-10-10T22:58:08.552881+00:00	B	1.50768E+12	0	0	tuethevg
2017-10-10T22:58:08.700558+00:00	A	1.50768E+12	1.5077E+12	mp2	nfwsqqb
2017-10-10T22:58:10.263199+00:00	A	1.50768E+12	0	0	dbfggghmn
2017-10-10T22:58:12.052691+00:00	B	1.50768E+12	0	0	jcdgkuk
2017-10-10T22:58:13.238201+00:00	A	1.50768E+12	1.5077E+12	mp3	aliqpn

What's a metric?

- Click rate
- Dwell time
- Time to click
- Return rate

** a metric is different from a statistical test!*

Sorting your data

Separate your version A data and version B data into two sheets, then sort by session. You can now see the sessions in which your page received clicks!

```
2017-10-05T17:26:19.598801+00:00 app[web.1]: AB_TESTING: B 1507224379455 0 0 fndowmclai
2017-10-05T17:26:20.579381+00:00 app[web.1]: AB_TESTING: B 1507224380415 0 0 fndowmclai
2017-10-05T17:26:24.840825+00:00 app[web.1]: AB_TESTING: B 1507224380415 1507224384783
fndwmclai
```

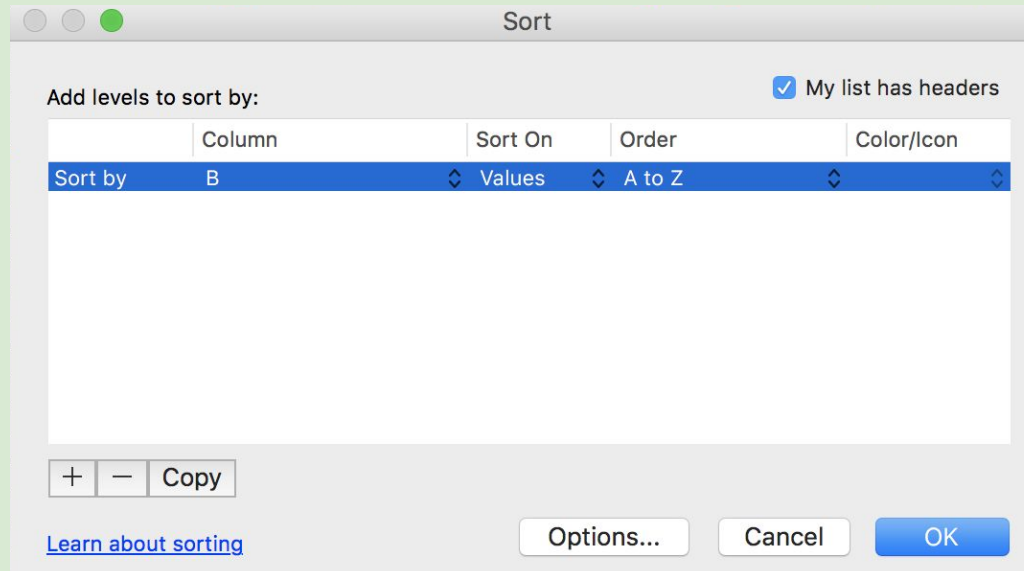
```
2017-10-05T17:26:28.808994+00:00 app[web.1]: AB_TESTING: A 1507224388741 0 0 itzjseohpj
2017-10-05T17:26:32.252820+00:00 app[web.1]: AB_TESTING: A 1507224388741 1507224392189 mp2
itzjseohpj
```

remember:

```
<timestamp> AB_TESTING <ver. a/b> <page load time> <click time> <id of clicked element> <sessionID>
```

Sorting in Excel

1. Select all your data (CTRL + A)
2. data > sort > custom sort > sort by (column B)



Calculating Metrics

Click rate


What proportion of sessions had at least one click?

$$\frac{\text{number of unique* clicks}}{\text{number of unique sessions}}$$

$4 / 7 = 57\%$ click-through rate

*unique: only count a visitor's first interaction!

This is a click!



B	1.50768E+12	0	0	otxnngfy
B	1.50768E+12	1.50768E+12	mp2	otxnngfy
B	1.50768E+12	0	0	zqfxyjf
B	1.50768E+12	1.50768E+12	mp4	zqfxyjf
B	1.50768E+12	0	0	otxnngfy
B	1.50768E+12	1.50768E+12	mp4	hpytiqguv
B	1.50768E+12	1.50768E+12	mp3	hpytiqguv
B	1.50768E+12	0	0	atojnspcs
B	1.50768E+12	0	0	ngobznzhl
B	1.50768E+12	0	0	gjksdzs
B	1.50768E+12	1.50768E+12	mp3	gjksdzs
B	1.50768E+12	0	0	erdlamgufv
B	1.50768E+12	0	0	otxnngfy

Time-to-click

How long does it take a user to click your website?

(only count a user's first click!)

time-to-click = click time - page load time

1507676971224 - 1507676958632 = 12592 ms.

1.50768E+12	0	0	otxnnqfy
1.50768E+12	1.50768E+12	mp2	otxnnqfy

page load
time

click time

* you might have to click on the individual cell to get the full number value



PUERTO RICO GYMS

This page contains information about gym companies in Puerto Rico

Not endorsed by any of the companies listed, or Puerto Rico.

[Click Here for Gyms](#)

[Click Here for Gyms](#)

Return rate

What proportion of sessions left the landing page and returned?

number of returns
number of clicks

2 / 2 = 100% return rate

2 clicks {

1.50768E+12	0	0	snuufgs
1.50768E+12	0	0	mupwfikd
1.50768E+12	0	0	rjuwjx
1.50768E+12	1.50768E+12	mp3	rjuwjx
1.50768E+12	0	0	rjuwjx
1.50768E+12	1.50768E+12	mp1	rjuwjx
1.50768E+12	0	0	otxnnqfy
1.50768E+12	0	0	hpytiqguv
1.50768E+12	0	0	rjuwjx

} return

} return

What's a return?

page load #1



click a div



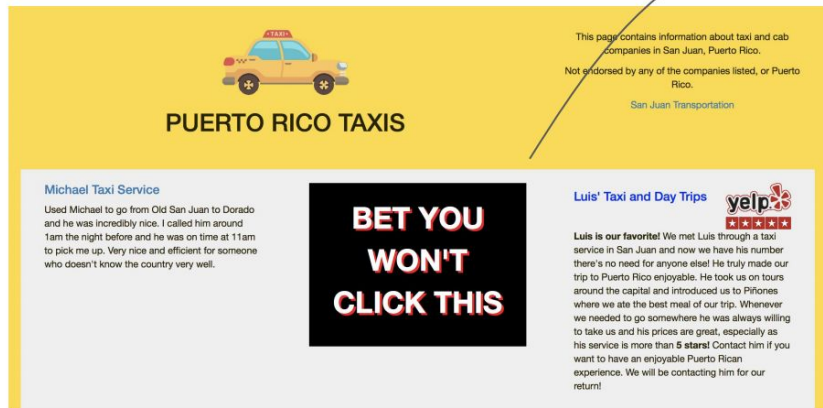
back button
(page load #2)



Why would someone return?

page load #1

ooh i'm curious
click



The screenshot shows the homepage of 'PUERTO RICO TAXIS'. At the top is a yellow header with a taxi icon and the text 'PUERTO RICO TAXIS'. Below this, there's a section for 'Michael Taxi Service' with a testimonial. To the right of the testimonial is a large black button with white text that says 'BET YOU WON'T CLICK THIS'. Further right is a section for 'Luis' Taxi and Day Trips' with a Yelp logo and a testimonial. A curved arrow points from the 'BET YOU WON'T CLICK THIS' button to the 'Luis' Taxi and Day Trips' section.

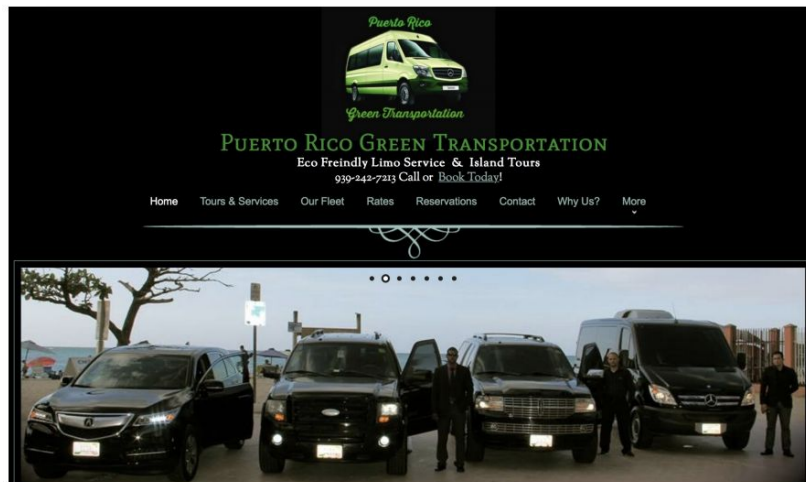
This page contains information about taxi and cab companies in San Juan, Puerto Rico.
Not endorsed by any of the companies listed, or Puerto Rico.
San Juan Transportation

Michael Taxi Service
Used Michael to go from Old San Juan to Dorado and he was incredibly nice. I called him around 1am the night before and he was on time at 11am to pick me up. Very nice and efficient for someone who doesn't know the country very well.

BET YOU WON'T CLICK THIS

Luis' Taxi and Day Trips
Luis is our favorite! We met Luis through a taxi service in San Juan and now we have his number there's no need for anyone else! He truly made our trip to Puerto Rico enjoyable. He took us on tours around the capital and introduced us to Pifones where we ate the best meal of our trip. Whenever we needed to go somewhere he was always willing to take us and his prices are great, especially as his service is more than 5 stars! Contact him if you want to have an enjoyable Puerto Rican experience. We will be contacting him for our return!

page load #2



The screenshot shows the homepage of 'PUERTO RICO GREEN TRANSPORTATION'. At the top is a green header with a van icon and the text 'PUERTO RICO GREEN TRANSPORTATION'. Below this, there's a navigation menu with links: Home, Tours & Services, Our Fleet, Rates, Reservations, Contact, Why Us?, and More. Below the navigation menu is a large image of several vehicles (a car, a truck, and a van) parked in a lot with people standing next to them.

Puerto Rico Green Transportation
Eco Friendly Limo Service & Island Tours
939-242-7215 Call or Book Today!

Home Tours & Services Our Fleet Rates Reservations Contact Why Us? More

no thanks, gonna find a
different taxi

Dwell time

What's the average time users spend on linked pages before returning to the landing page?

dwell time = 2nd page load time - click time

1507676888123 - 1507676885288 = 2835 ms.

1.50768E+12	0	0	rjuwjx
1.50768E+12	1.50768E+12	mp3	rjuwjx
1.50768E+12	0	0	rjuwjx

click time

2nd page load time

Handy Excel formulas

`=COUNTIF(A2:A5, "zkjfiol")`

Counts the number of cells that have "zkjfiol" (for instance, this could be a session ID) in cells A2 through A5.

`=SUMPRODUCT(1/COUNTIF(H1:H6, H1:H6))`

Uses two formulas to count the total unique entries in column H!

This is useful to find **number of unique sessions**.

Here's [more information](#) about how to use the COUNTIF formula.

You can also watch [this helpful video](#) for more information on how to apply these functions.