

# IMD0033 - Probabilidade

## Aula 09 - Análise Exploratória de Dados II

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Agosto, 2017



# Agenda

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- Estudo de caso: analisando filmes
- Motivação: enviesamento de dados
- Gráfico de barra & personalização
- Gráficos de dispersão & personalização

# Atualizar o repositório

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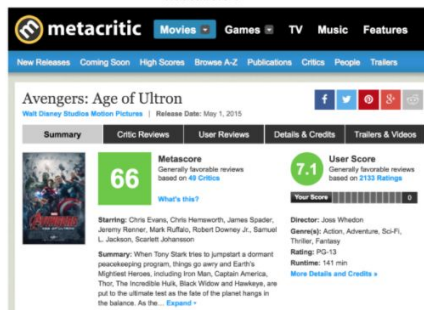
```
git clone https://github.com/ivanovitchm/IMD0033_Probabilidade.git
```

Ou ....

```
git pull
```

# Estudo de caso: avaliando filmes

Metacritic



**metacritic** Movies Games TV Music Features

New Releases Coming Soon High Scores Browse A-Z Publications Critics People Trailers

## Avengers: Age of Ultron

Walt Disney Studios Motion Pictures | Release Date: May 1, 2015

Summary Critic Reviews User Reviews Details & Credits Trailers & Videos

**66** Metascore  
Generally favorable reviews based on 49 Critics

**7.1** User Score  
Generally favorable reviews based on 2133 Ratings

**What's this?**

**Starring:** Chris Evans, Chris Hemsworth, James Spader, Jeremy Renner, Mark Ruffalo, Robert Downey Jr., Samuel L. Jackson, Scarlett Johansson

**Director:** Josh Whedon

**Genre(s):** Action, Adventure, Sci-Fi, Thriller, Fantasy

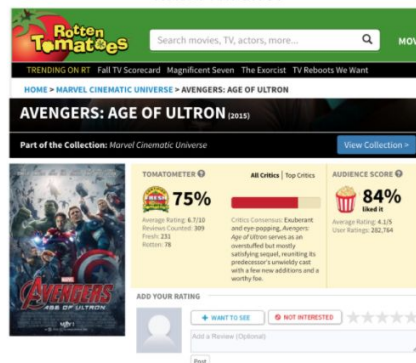
**Rating:** PG-13

**Runtime:** 141 min

[More Details and Credits](#)

**Summary:** When Tony Stark tries to jumpstart a dormant peacekeeping program, things go awry and Earth's Mightiest Heroes, including Iron Man, Captain America, Thor, The Incredible Hulk, Black Widow and Hawkeye, are put to the ultimate test as the fate of the planet hangs in the balance. [Expand](#)

Rotten Tomatoes



**Rotten Tomatoes** Search movies, TV, actors, more... MOVIE

TRENDING ON RT Fall TV Scorecard Magnificent Seven The Exorcist TV Reboots We Want

HOME > MARVEL CINEMATIC UNIVERSE > AVENGERS: AGE OF ULTRON

## AVENGERS: AGE OF ULTRON (2015)

Part of the Collection: Marvel Cinematic Universe [View Collection](#)

**TOMATOMETER** **75%**  
Average Rating: 6.7/10  
Reviews Counted: 309  
Fresh: 233  
Rotten: 76

**AUDIENCE SCORE** **84%**  
Average Rating: 4.2/5  
User Ratings: 282,794

**Critic Consensus:** Exuberant and eye-popping, *Avengers: Age of Ultron* serves as an overwrought but moodily satisfying sequel, rewarding its predecessor's savvy with a few new additions and a worthy foe.

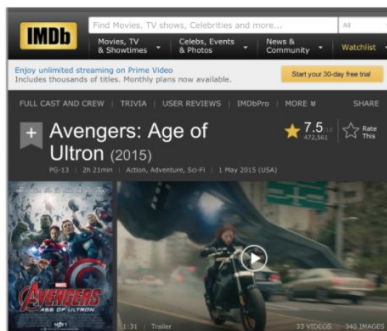
**ADD YOUR RATING**

[WANT TO SEE](#) [NOT INTERESTED](#) ★★★★★

Add a Review (Optional)

Post

IMDB



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## Avengers: Age of Ultron (2015)

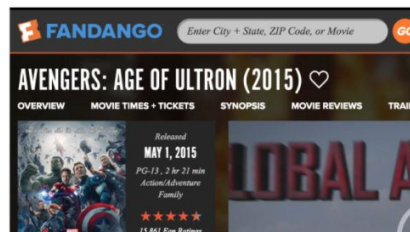
PG-13 | 2h 23min | Action, Adventure, Sci-Fi | 1 May 2015 (USA)

**7.5** [Rate This](#)  
472,361

**Trailer**

33 VIDEOS 141 PHOTOS

Fandango



**FANDANGO** Enter City + State, ZIP Code, or Movie GO

## AVENGERS: AGE OF ULTRON (2015)

OVERVIEW MOVIE TIMES + TICKETS SYNOPSIS MOVIE REVIEWS TRAILER

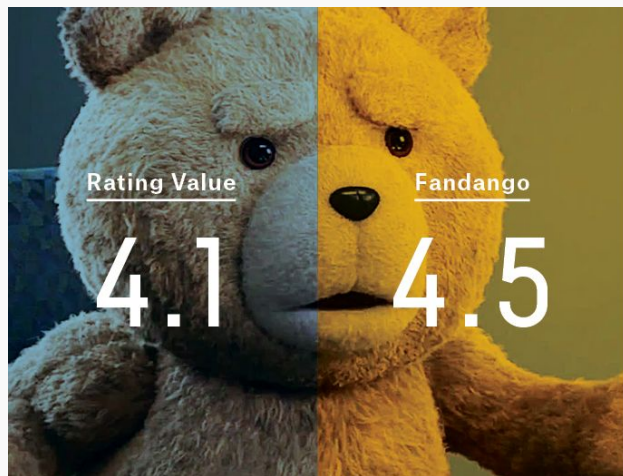
**Released MAY 1, 2015**

PG-13 - 2 hr 21 min  
Action/Adventure  
Family

★★★★★  
15,861 Fan Ratings

**GLOBAL A**

# Enviesamiento de dados



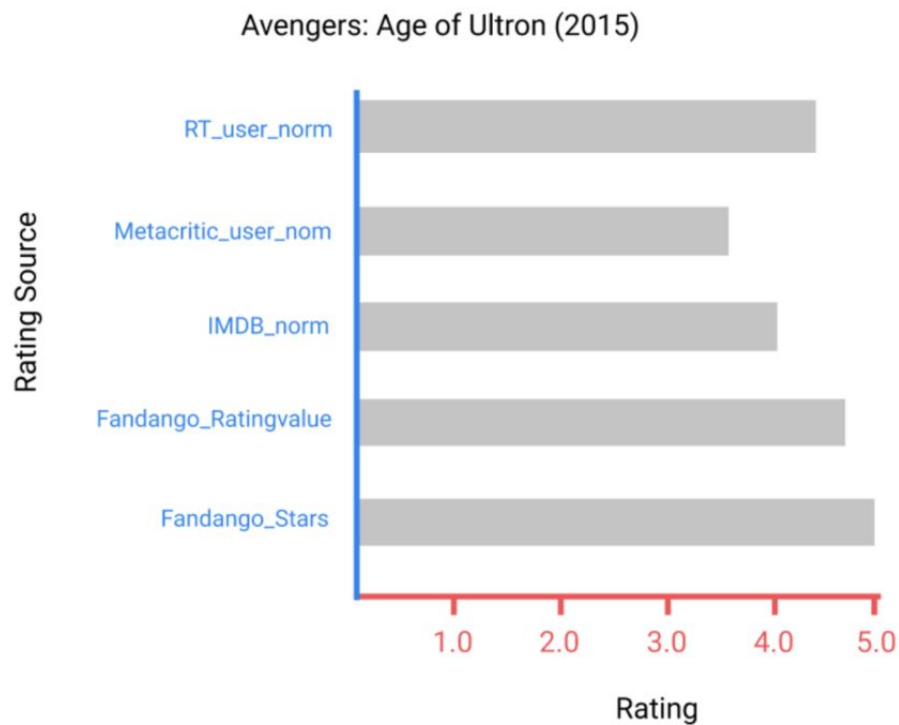
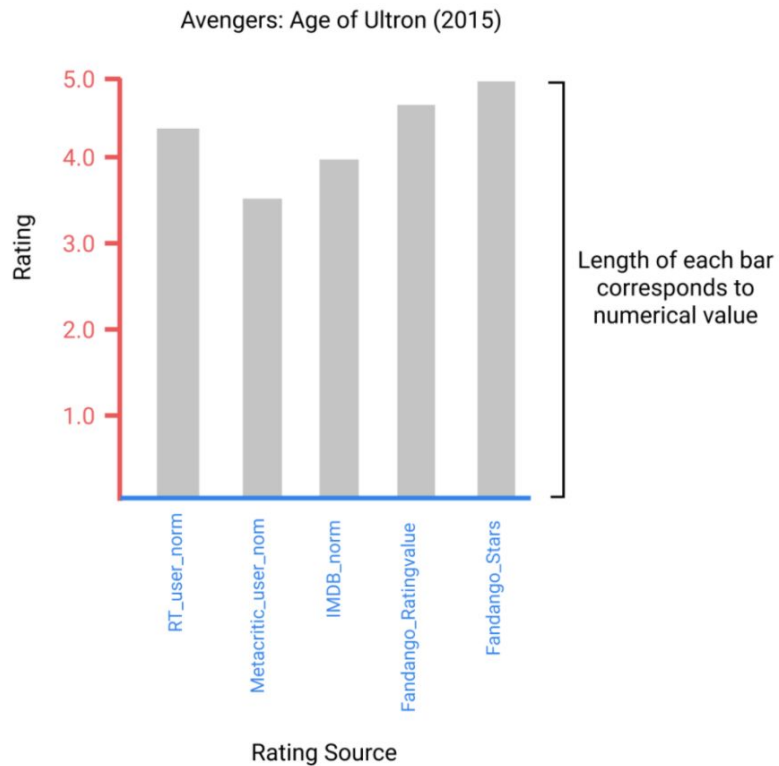
# Conjunto de dados

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	FILM	RT_user_norm	Metacritic_user_nom	IMDB_norm	Fandango_Ratingvalue	Fandango_Stars
0	Avengers: Age of Ultron (2015)	4.3	3.55	3.90	4.5	5.0
1	Cinderella (2015)	4.0	3.75	3.55	4.5	5.0
2	Ant-Man (2015)	4.5	4.05	3.90	4.5	5.0
3	Do You Believe? (2015)	4.2	2.35	2.70	4.5	5.0
4	Hot Tub Time Machine 2 (2015)	1.4	1.70	2.55	3.0	3.5

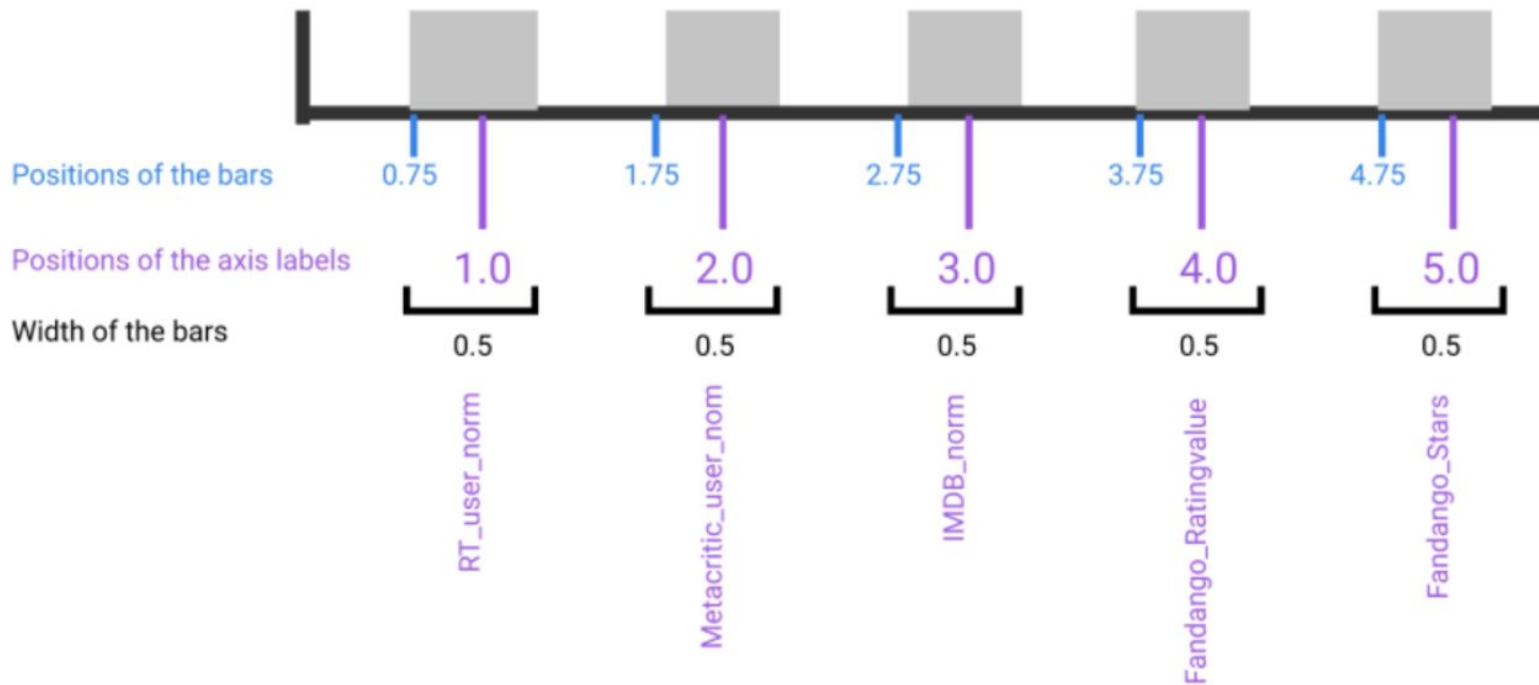
<https://github.com/fivethirtyeight/data/tree/master/fandango>

# Gráfico de barra





# Criando as barras I





## Criando as barras II

---

```
fig, ax = plt.subplots()
```

```
# Positions of the left sides of the 5 bars. [0.75, 1.75, 2.75, 3.75, 4.75]
```

```
from numpy import arange
```

```
bar_positions = arange(5) + 0.75
```

```
# Heights of the bars. In our case, the average rating for the first movie  
in the dataset.
```

```
num_cols = ['RT_user_norm', 'Metacritic_user_nom', 'IMDB_norm', 'Fandango_Ra  
tingvalue', 'Fandango_Stars']
```

```
bar_heights = norm_reviews[num_cols].iloc[0].values
```

```
ax.bar(bar_positions, bar_heights)
```

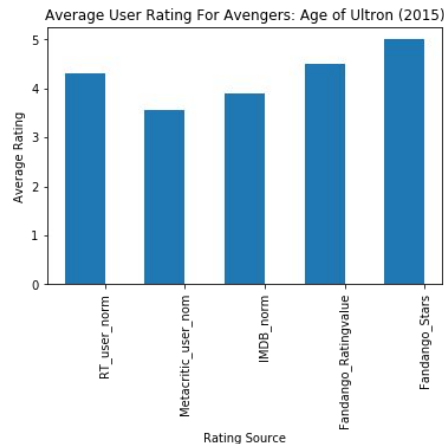
# Configurando os eixos

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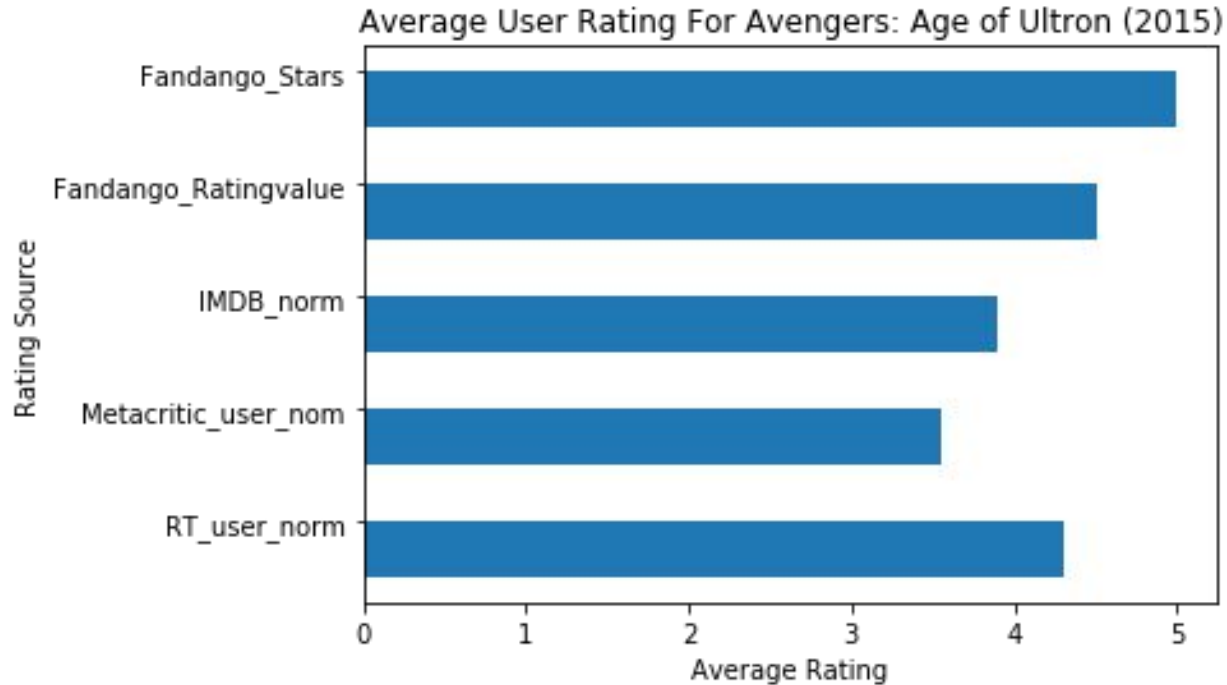
```
tick_positions = range(1,6)  
ax.set_xticks(tick_positions)
```

```
num_cols = ['RT_user_norm', 'Metacritic_user_nom', 'IMDB_norm', 'Fandango_Ra  
tingvalue', 'Fandango_Stars']  
ax.set_xticklabels(num_cols)
```

```
ax.set_xticklabels(num_cols, rotation=90)
```



# Barras horizontais



# Barras horizontais

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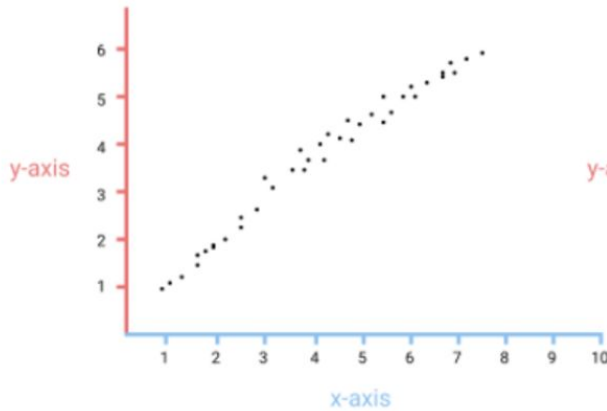
```
bar_widths = norm_reviews[num_cols].iloc[0].values
bar_positions = arange(5) + 0.75
ax.barh(bar_positions, bar_widths, 0.5)
```

```
tick_positions = range(5) + 1
num_cols = ['RT_user_norm', 'Metacritic_user_nom', 'IMDB_norm', 'Fandango_Ra
tingvalue', 'Fandango_Stars']
ax.set_yticks(tick_positions)
ax.set_yticklabels(num_cols)
```

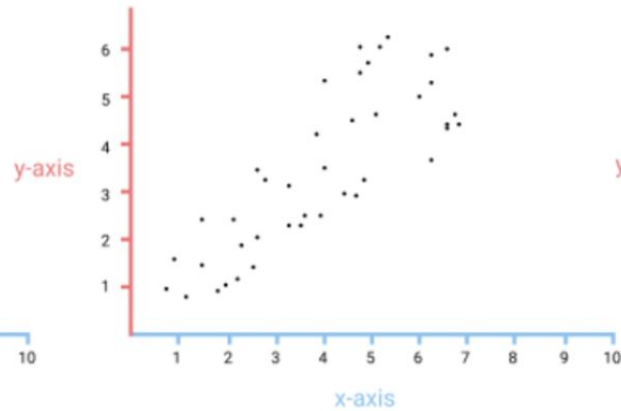
# Gráficos de dispersão

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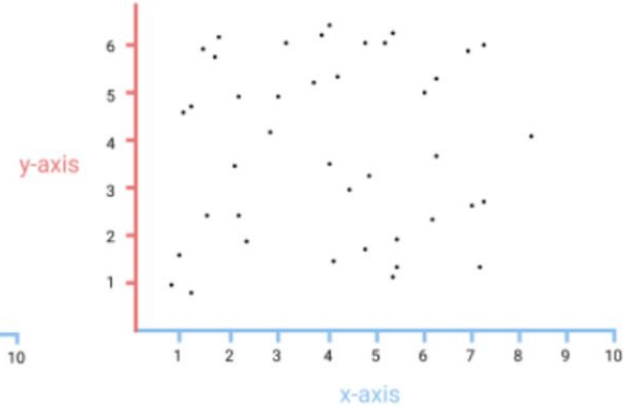
Strong correlation



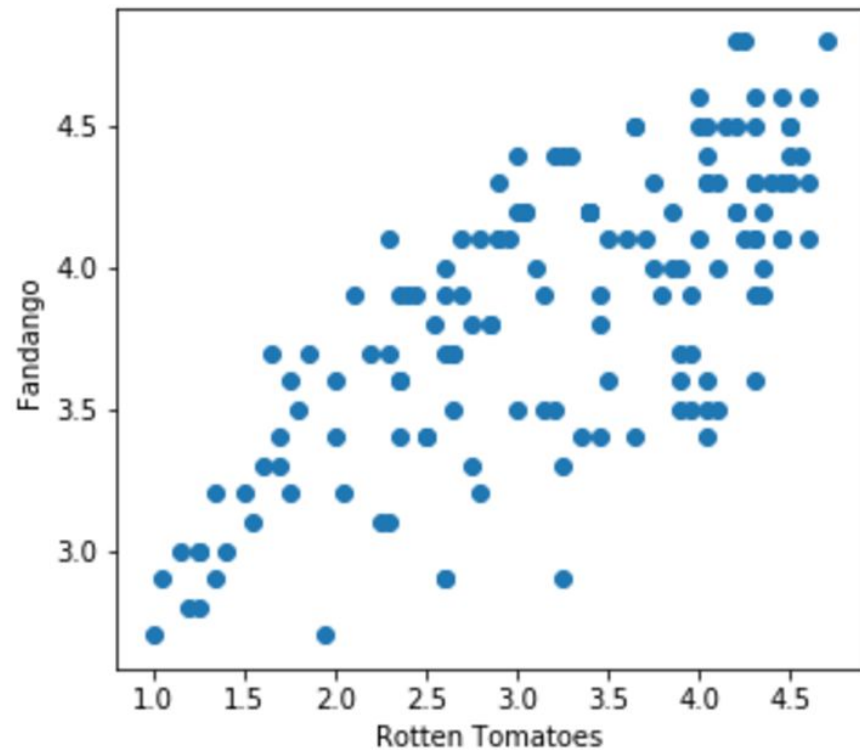
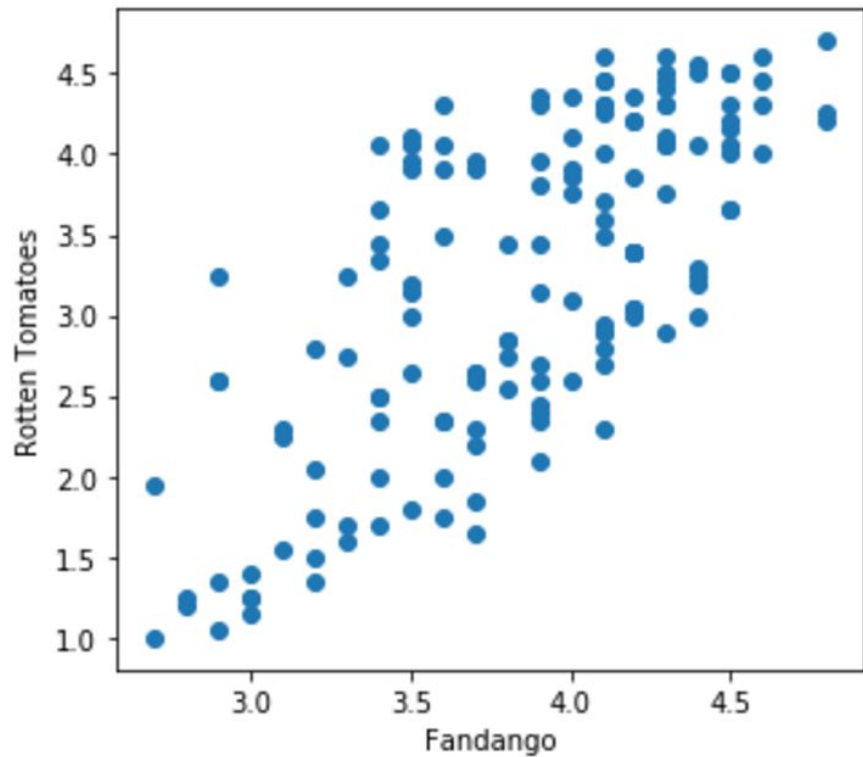
Weak correlation



No correlation



# Trocando os eixos



Vocês concordam com a conclusão final descrita no notebook?

