

# The Battle of the Neighborhoods

(Canary Islands Edition)

Applied Data Science Capstone Project for IBM/Coursera

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August 8, 2020

# Where to retire in the Canary Islands?



Source: Google Maps

# Which island has the best climate?

- ❖ Definition of “Best Climate”:
  - ❖ Least amount of rainfall
  - ❖ Least amount of rainy days
  - ❖ Greatest number of sunshine hours per day
  - ❖ Slightly warmer winters
  - ❖ Slightly cooler summers
  - ❖ Highest average sea temperature

# Which island has the best climate?

- ❖ Data scraping from the internet (and data cleaning):

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WORLD CLIMATE GUIDE

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**CLIMATE - CANARY ISLANDS**  
Average weather, temperature, rainfall, when to go, what to pack


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The Canary Islands enjoy a **remarkably mild climate**, in fact, they are located in the Atlantic Ocean, just north of the Tropic of Cancer, a short distance from the coasts of Morocco and Western Sahara, in a stretch of sea where a cool current flows. They are also subject to the trade winds, which blow constantly from the north east. The Canary Islands belong to Spain; there are seven major islands (Tenerife, Fuerteventura, Gran Canaria, Lanzarote, La Palma, La Gomera, and El Hierro) plus some smaller islands and islets.

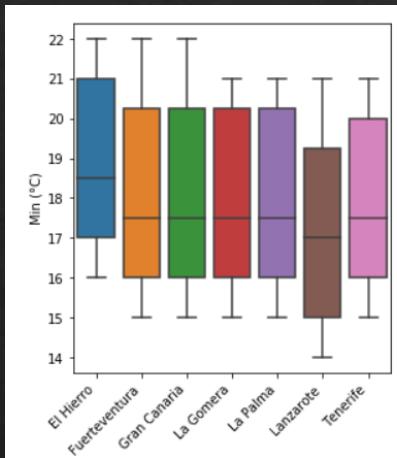
Source: <https://www.climatestotravel.com/climate/canary-islands>



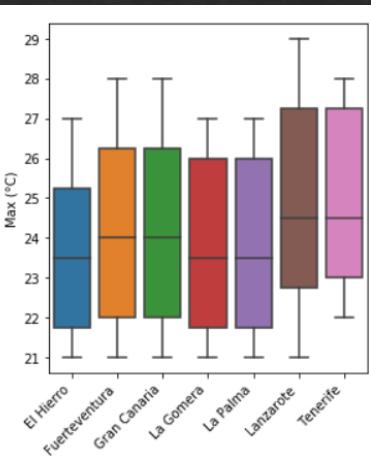
Month	Min (°C)	Max (°C)	Prec.(mm)	Rainy Days	Hours of Sun	Sea Temp (°C)	Island
Jan	17	21	28.0	3.0	5	20	El Hierro
Feb	16	21	38.0	3.0	6	19	El Hierro
Mar	17	21	25.0	3.0	6	19	El Hierro
Apr	17	22	13.0	2.0	7	19	El Hierro
May	18	23	2.0	1.0	8	20	El Hierro
...	...	...	...	...	...	...	...
Aug	21	28	1.0	0.0	9	23	Tenerife
Sep	21	28	4.0	1.0	7	23	Tenerife
Oct	20	27	12.0	2.0	7	23	Tenerife
Nov	18	25	25.0	2.0	6	22	Tenerife
Dec	16	23	30.0	4.0	6	20	Tenerife

# Which island has the best climate?

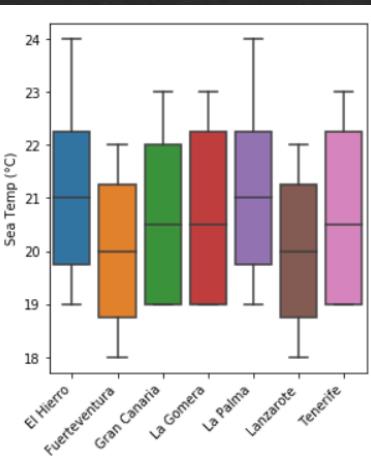
❖ Data analysis using *boxplot* from the Seaborn Library:



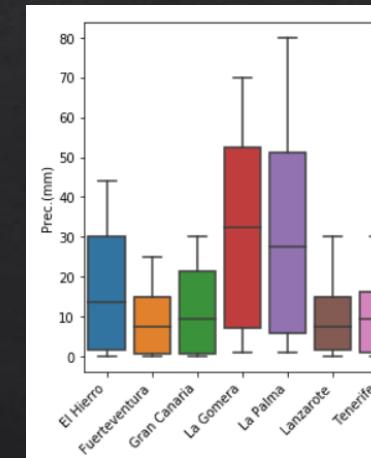
Monthly min. average T



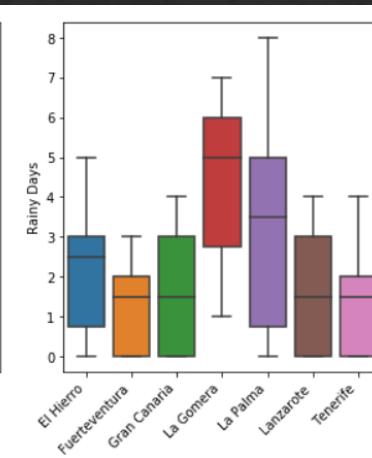
Monthly max. average T



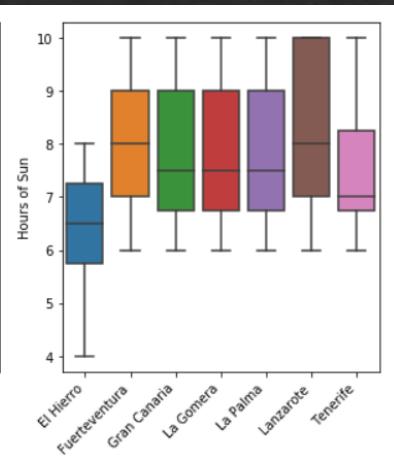
Monthly average sea T



Monthly average rainfall [mm]

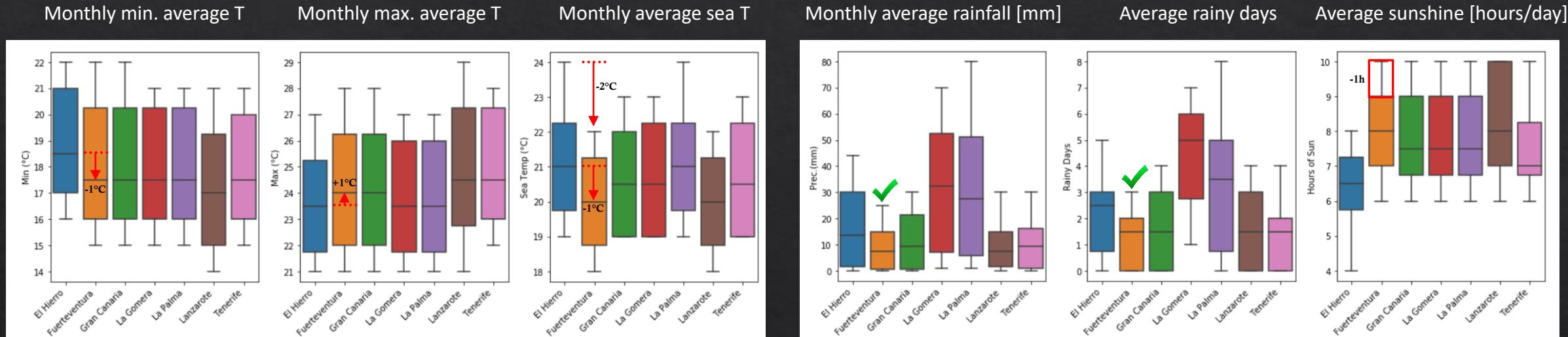


Average rainy days



Average sunshine [hours/day]

# Which island has the best climate?



- ❖ All islands have very similar temperature ranges with differences within just a couple of °C
- ❖ Fuerteventura has the least amount of rainfall and the least number of rainy days
  - All in all, **Fuerteventura** has a slight edge over the other islands, making it the winner of the "Battle of the Islands"

# The Real Estate Market in Fuerteventura

- ❖ Data scraping from the internet (and data cleaning):

The screenshot shows the tucasa.com search interface for properties in Fuerteventura. The search filters are set to 'Vivienda en venta en Fuerteventura'. The results page displays three property listings:

- 1. La Oliva, Calle EL CAÑO**: 131 m<sup>2</sup>, 3 habitaciones, 3 baños, 1389 €/m<sup>2</sup>. Description: Venta de casa independiente con 131 m<sup>2</sup> a estrenar. 3 dorm, 3 baños. Chalet en venta en la oliva (las palmas), chalet adosado de 2 plantas con 3 habitaciones, 3 baños, cocina amueblada y equipada con horno, placa.
- 2. Antigua, Urbanización El Cuchillito**: 59 m<sup>2</sup>, 1 habitación, 1 baño, 1352 €/m<sup>2</sup>. Description: Venta de piso con 59 m<sup>2</sup>, 1 dorm, 1 baño. Apartamento con terraza en venta en antigua (las palmas). Apartamento turístico situado en la urbanización el cuchillito, fuerteventura park, en la.
- 3. La Oliva, Calle MAGNINHO 59, UR. ORIGO MARE SECTOR 6**: 63 m<sup>2</sup>, 2 habitaciones, 2 baños, 1.094 €/m<sup>2</sup>. Description: Venta de casa independiente con 63 m<sup>2</sup> a estrenar. 2 dorm, 2 baños. Chalet en venta en origo mare situado en origo mare villas, en casa dos se trata de una villa de 2 dormitorios ideal para disfrutar todo el año.

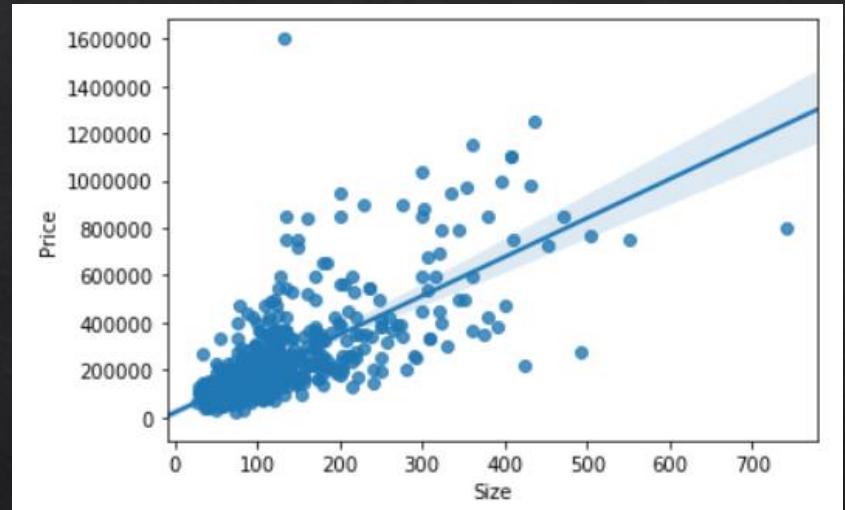
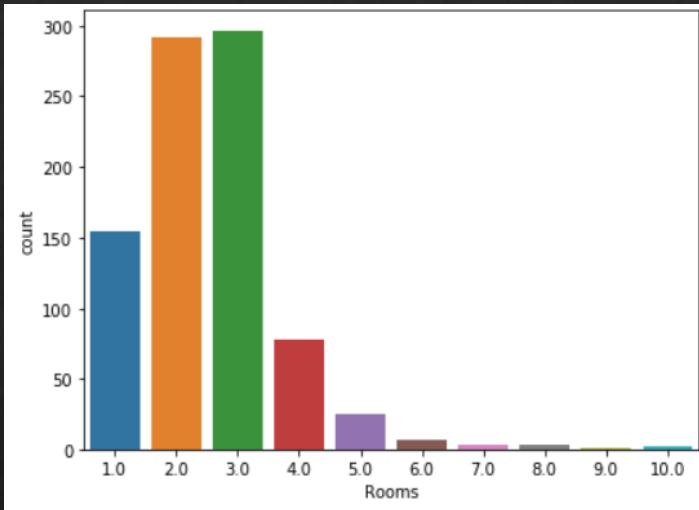
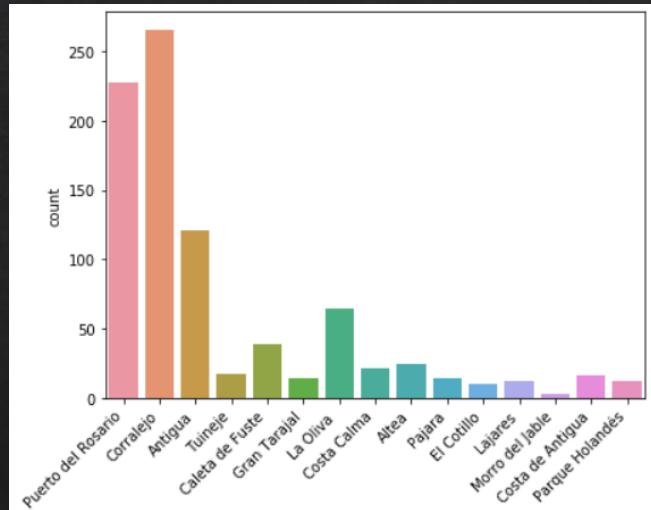
Each listing includes a thumbnail image, address, price, size, number of rooms and bathrooms, and a 'Contactar' button.

	Location	Street	Size	Rooms	Bathrooms	Price	Price/m <sup>2</sup>
0	Puerto del Rosario	CANDRAY 10	125.0	3.0	2.0	165000	1320.00
1	Corralejo		50.0	2.0	1.0	29900	598.00
2	Antigua		1000.0	3.0	3.0	275000	275.00
3	Corralejo		53.0	1.0	1.0	115900	2186.79
4	Tuineje		170.0	4.0	2.0	368000	2164.71
5	Puerto del Rosario	VIRGEN DE LA PEÑA	78.0	3.0	1.0	66000	846.15
6	Antigua		150.0	5.0	2.0	147500	983.33
7	Puerto del Rosario	Calle PITERA	96.0	3.0	2.0	82800	862.50
8	Puerto del Rosario		118.0	3.0	2.0	212000	1796.61
9	Puerto del Rosario		125.0	3.0	1.0	165000	1320.00

1000+ Property Listings

# The Real Estate Market in Fuerteventura

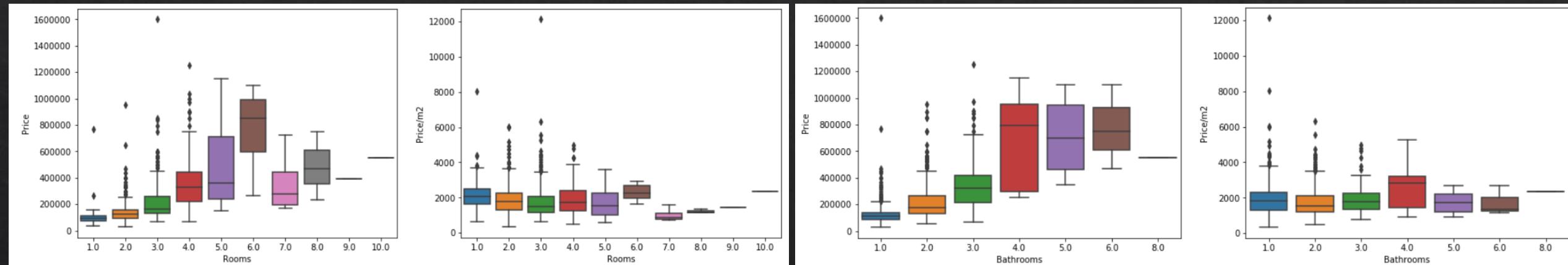
## ❖ Exploratory Data Analysis:



- *Puerto del Rosario* and *Corralejo* have the highest number of properties on offer
- Most properties have either 2 or 3 rooms
- Clear linear correlation between property size and price (as expected)

# The Real Estate Market in Fuerteventura

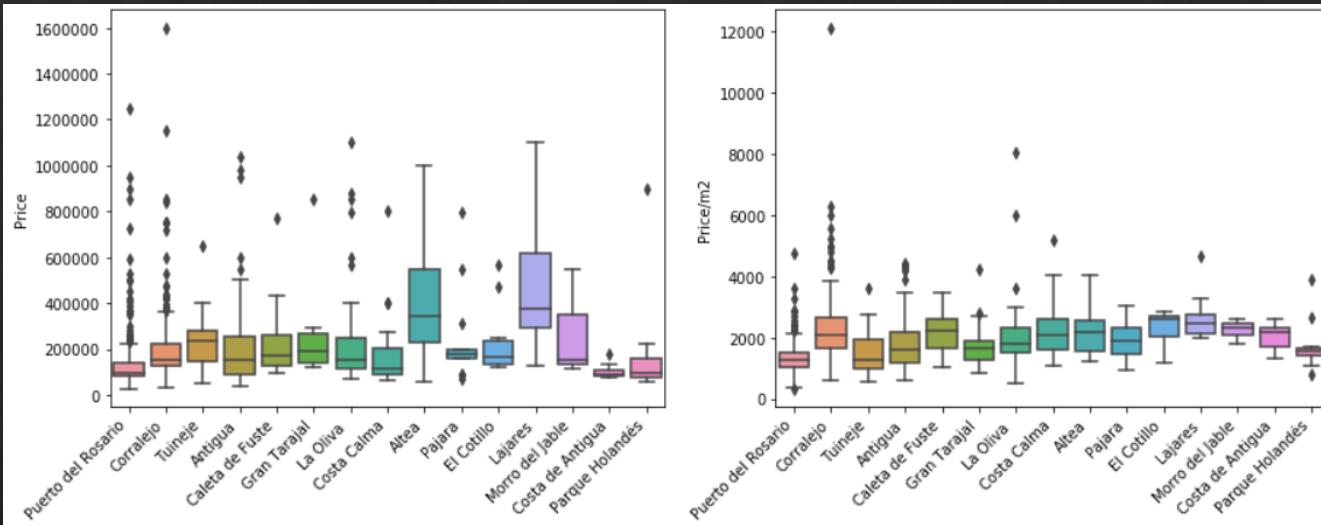
## ❖ Exploratory Data Analysis:



- Number of rooms and bathrooms influences overall price up to 6 rooms and up to 4 bathrooms respectively, but not necessarily the price per square meter

# The Real Estate Market in Fuerteventura

## ❖ Exploratory Data Analysis:



- Properties in *Altea* and *Lajares* have consequently higher prices, with *Puerto del Rosario* and *Corralejo*, in particular, having lots of outliers.
- In general, location by itself seems to have a relative limited influence on price and price per square meter.

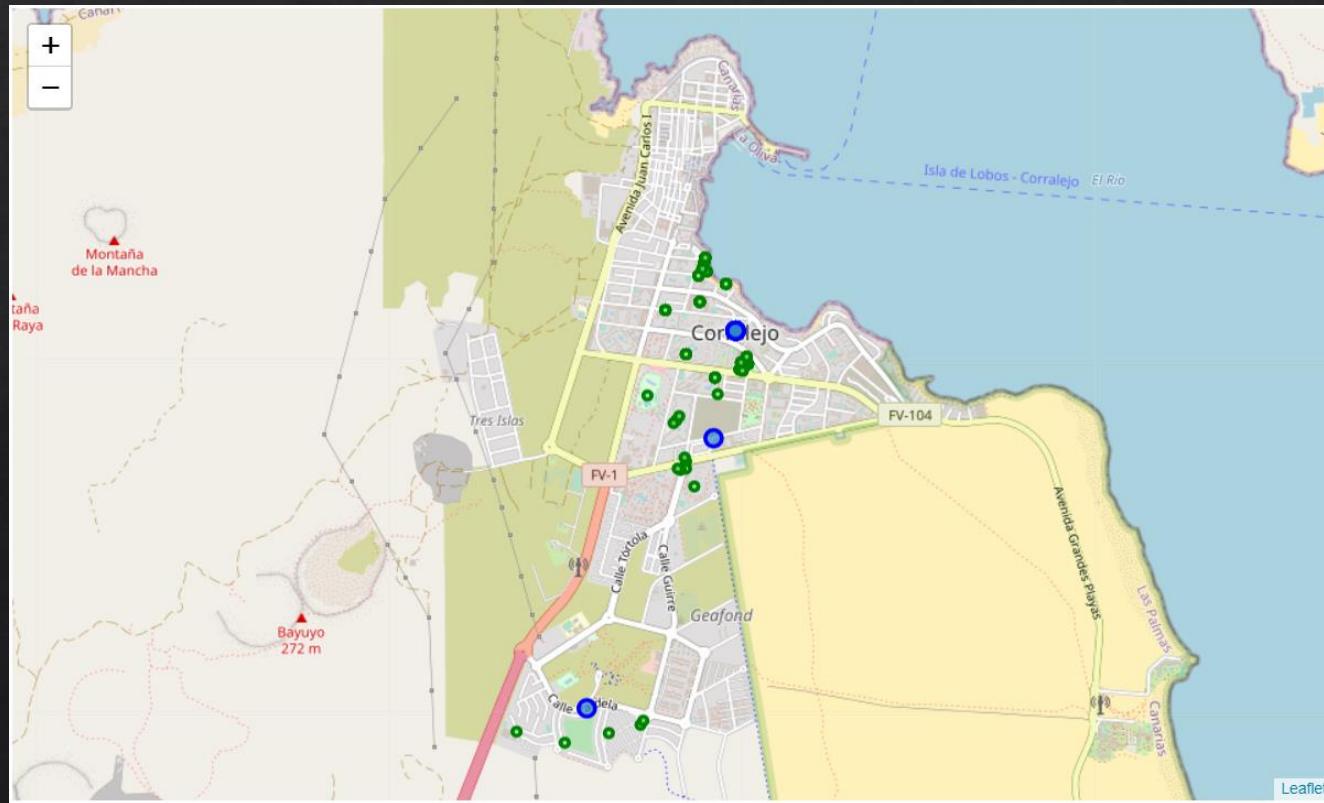
# The Real Estate Market in Fuerteventura

- ❖ Limiting the Data According to Preferences:
  - ❖ Max. budget: 180,000 EUR
  - ❖ Min. # of rooms: 3
  - ❖ Min. # of bathrooms: 2
  - ❖ Min. size: 120 m<sup>2</sup>
- ❖ Acquiring geographical coordinates using *geopy* and plotting them on a map with *folium*:



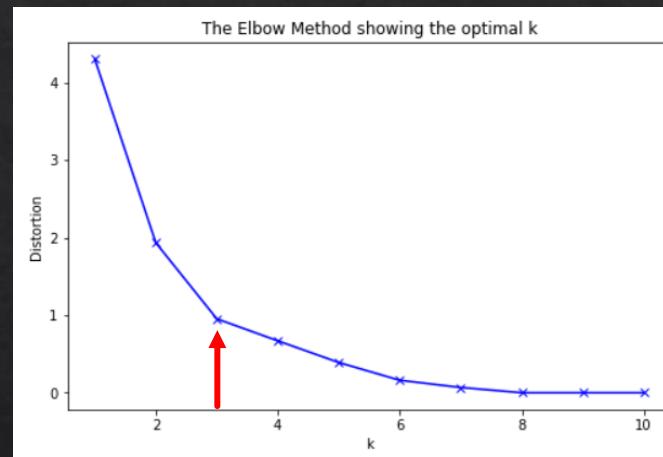
# The Real Estate Market in Fuerteventura

- ❖ Analysis of Nearby Amenities and Services with Data from FourSquare API
  - ❖ 500m radius

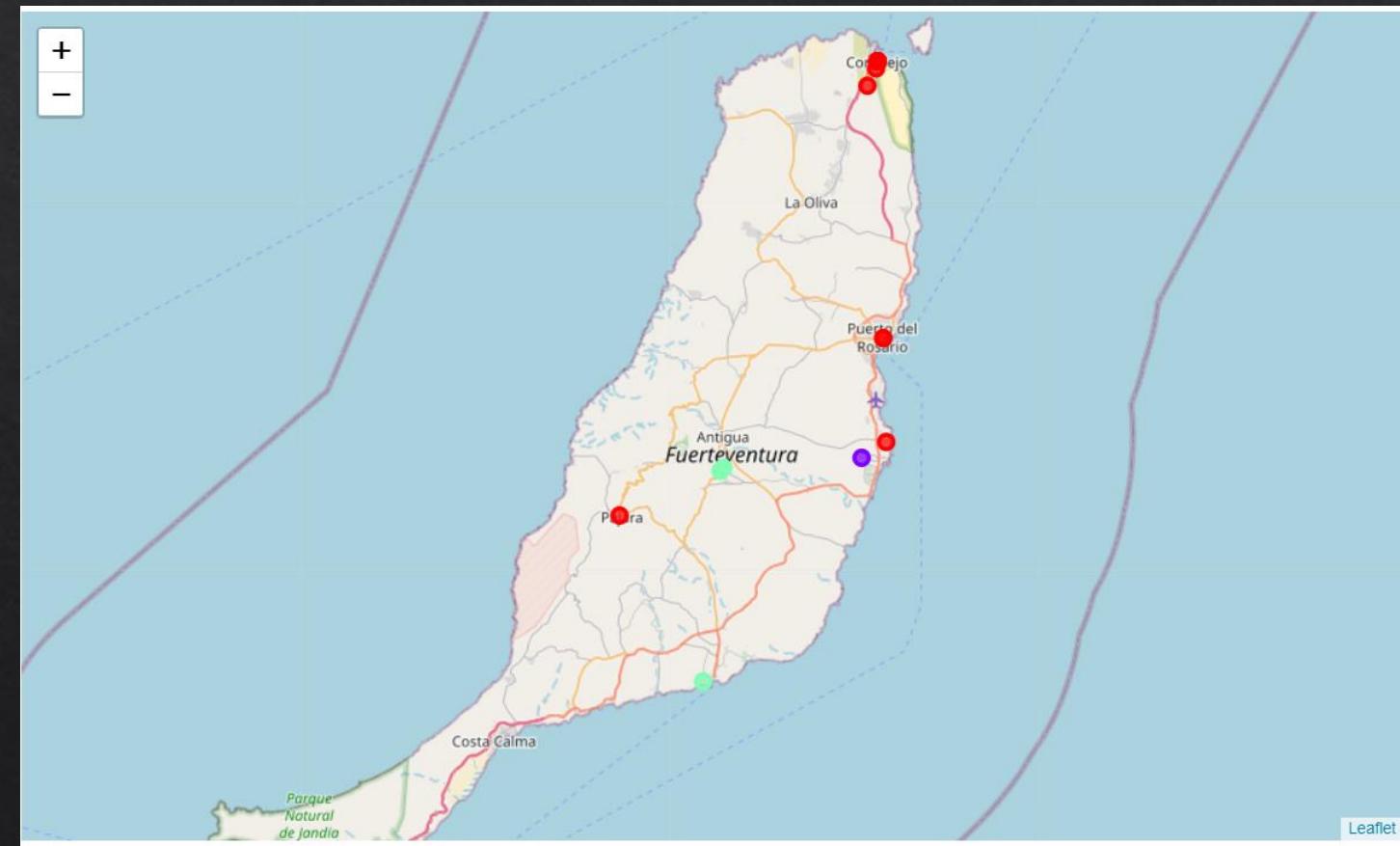


# The Real Estate Market in Fuerteventura

## ❖ K-Means Clustering (Venues)



- Cluster 1: 1 Property (Purple)
- Cluster 2: 3 Properties (Cyan)
- Cluster 3: 17 Properties (Red)



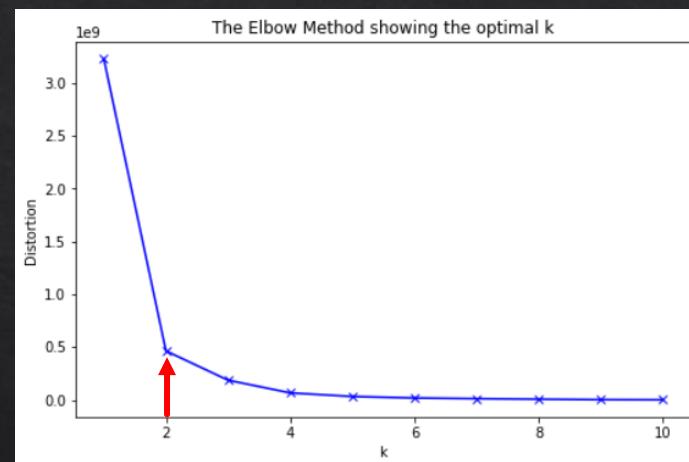
# The Real Estate Market in Fuerteventura

- ❖ Cluster 3 appeared to have more diverse and more interesting venues nearby. That makes the properties in this cluster the most appealing ones and, therefore:
  - ❖ Cluster 3 makes up the **shortlist of potentially suitable properties**

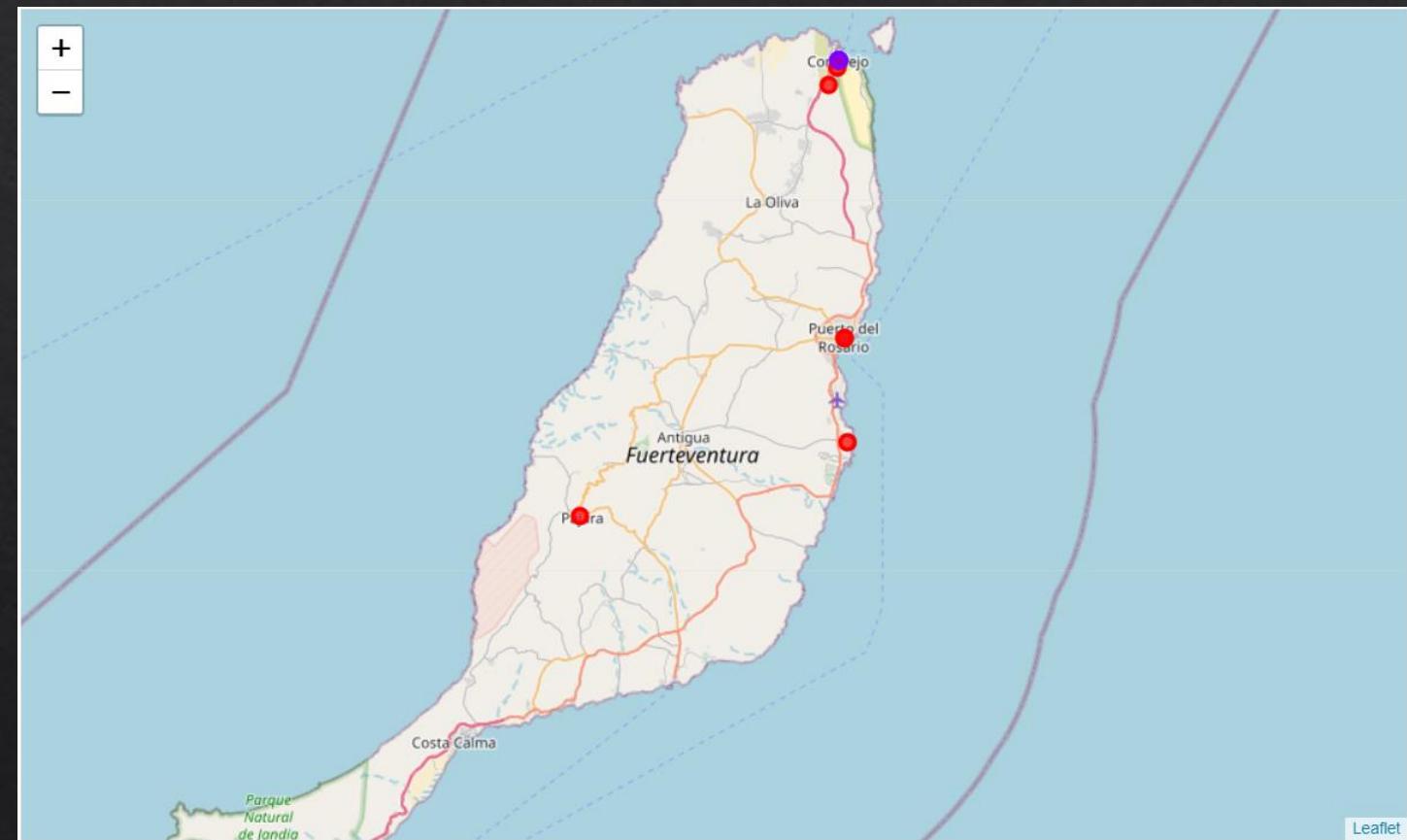
ID	Location	Street	Size	Rooms	Bathrooms	Price	Price/m2	Latitude	Longitude
0	1 Puerto del Rosario	CANDRAY 10	125.0	3.0	2.0	165000	1320.00	28.499342	-13.859905
2	3 Corralejo	Calle PARDELA URB.MIRADOR DE LAS DUNAS S/N	126.0	3.0	2.0	155000	1230.16	28.730723	-13.865191
3	4 Corralejo	Calle PARDELA URB.MIRADOR DE LAS DUNAS S/N	129.0	3.0	2.0	150000	1162.79	28.730723	-13.865191
4	5 Corralejo	Calle PARDELA URB.MIRADOR DE LAS DUNAS S/N	124.0	3.0	2.0	150000	1209.68	28.730723	-13.865191
6	7 Corralejo	Calle PARDELA URB.MIRADOR DE LAS DUNAS S/N	120.0	3.0	2.0	126500	1054.17	28.730723	-13.865191
7	8 Corralejo	Calle PARDELA URB.MIRADOR DE LAS DUNAS S/N	129.0	3.0	2.0	125500	972.87	28.730723	-13.865191
8	9 Corralejo	Calle PARDELA URB.MIRADOR DE LAS DUNAS S/N	120.0	3.0	2.0	137500	1145.83	28.730723	-13.865191
9	10 Corralejo	Calle PARDELA URB.MIRADOR DE LAS DUNAS S/N	122.0	3.0	2.0	134500	1102.46	28.730723	-13.865191
10	11 Corralejo	Calle PARDELA URB.MIRADOR DE LAS DUNAS S/N	120.0	3.0	2.0	134500	1120.83	28.730723	-13.865191
11	12 Corralejo	Calle PARDELA	120.0	3.0	2.0	158700	1322.50	28.710112	-13.874482
13	14 Pajara	Calle Real	172.0	3.0	2.0	160103	930.83	28.350184	-14.110690
14	15 Puerto del Rosario	Betoveen 110	145.0	4.0	3.0	162000	1117.24	28.499342	-13.859905
16	17 Corralejo	Calle PARDELA URB.MIRADOR DE LAS DUNAS S/N	120.0	3.0	2.0	127500	1062.50	28.730723	-13.865191
17	18 Corralejo	el roque	140.0	3.0	2.0	165000	1178.57	28.724865	-13.866551
18	19 Corralejo	Calle PARDELA URB.MIRADOR DE LAS DUNAS S/N	122.0	3.0	2.0	129000	1057.38	28.730723	-13.865191
19	20 Antigua	Maestro Leonardo	120.0	3.0	2.0	149000	1241.67	28.411383	-13.856528

# The Real Estate Market in Fuerteventura

- ❖ More K-Means Clustering  
(Cluster 3 Property Characteristics)

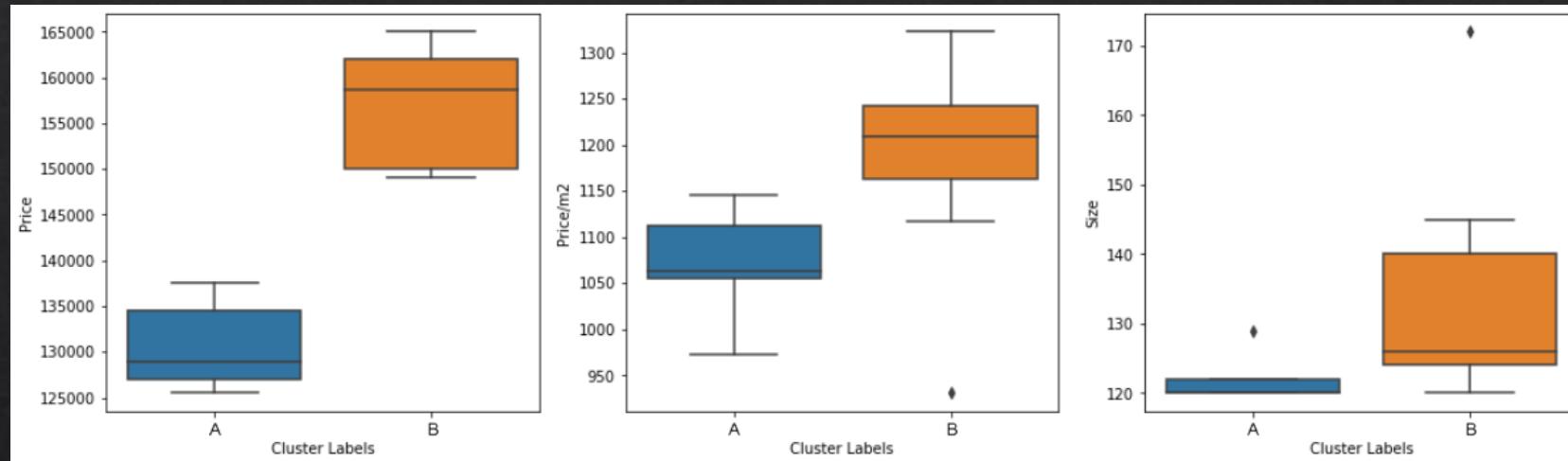


- Cluster A: 7 Properties (Purple)
- Cluster B: 9 Properties (Red)



# The Real Estate Market in Fuerteventura

- ❖ More K-Means Clustering (Cluster 3 Property Characteristics)
  - ❖ Analyzing the differences between Cluster A and Cluster B:



- Cluster A is made up solely of apartments that are in the same complex and are relatively smaller in size.
- Cluster B is made up of single-family homes with a small garden.

# The Real Estate Market in Fuerteventura

- ❖ Shortlists of potentially suitable properties for retirement in Fuerteventura:

- Apartments (Cluster A):

ID	Location	Street	Size	Rooms	Bathrooms	Price	Price/m2
6	7 Corralejo	Calle PARDELA URB.MIRADOR DE LAS DUNAS S/N	120.0	3.0	2.0	126500	1054.17
7	8 Corralejo	Calle PARDELA URB.MIRADOR DE LAS DUNAS S/N	129.0	3.0	2.0	125500	972.87
8	9 Corralejo	Calle PARDELA URB.MIRADOR DE LAS DUNAS S/N	120.0	3.0	2.0	137500	1145.83
9	10 Corralejo	Calle PARDELA URB.MIRADOR DE LAS DUNAS S/N	122.0	3.0	2.0	134500	1102.46
10	11 Corralejo	Calle PARDELA URB.MIRADOR DE LAS DUNAS S/N	120.0	3.0	2.0	134500	1120.83
16	17 Corralejo	Calle PARDELA URB.MIRADOR DE LAS DUNAS S/N	120.0	3.0	2.0	127500	1062.50
18	19 Corralejo	Calle PARDELA URB.MIRADOR DE LAS DUNAS S/N	122.0	3.0	2.0	129000	1057.38

- Single-Family Homes (Cluster B):

ID	Location	Street	Size	Rooms	Bathrooms	Price	Price/m2
0	1 Puerto del Rosario	CANDRAY 10	125.0	3.0	2.0	165000	1320.00
2	3 Corralejo	Calle PARDELA URB.MIRADOR DE LAS DUNAS S/N	126.0	3.0	2.0	155000	1230.16
3	4 Corralejo	Calle PARDELA URB.MIRADOR DE LAS DUNAS S/N	129.0	3.0	2.0	150000	1162.79
4	5 Corralejo	Calle PARDELA URB.MIRADOR DE LAS DUNAS S/N	124.0	3.0	2.0	150000	1209.68
11	12 Corralejo	Calle PARDELA	120.0	3.0	2.0	158700	1322.50
13	14 Pajara	Calle Real	172.0	3.0	2.0	160103	930.83
14	15 Puerto del Rosario	Betoveen 110	145.0	4.0	3.0	162000	1117.24
17	18 Corralejo	el roque	140.0	3.0	2.0	165000	1178.57
19	20 Antigua	Maestro Leonardo	120.0	3.0	2.0	149000	1241.67

# Summary and Conclusion

- ❖ Determined that Fuerteventura is the island of the Canary Islands with "best" weather based on given subjective criteria (i.e. low rainfall, lots of sunshine, etc.)
- ❖ Explored the real estate market on Fuerteventura and narrowed down the options based on preferences regarding property characteristics (i.e. max. price, min. number of rooms, min. number of bathrooms, and min. property size)
- ❖ Explored and analyzed the availability of nearby amenities and services using the FourSquare API
- ❖ Obtained a shortlist of top properties for a potential retiree to plan his or her visits to the listed properties and make a final decision for buying a suitable home for retirement in the Canary Islands.