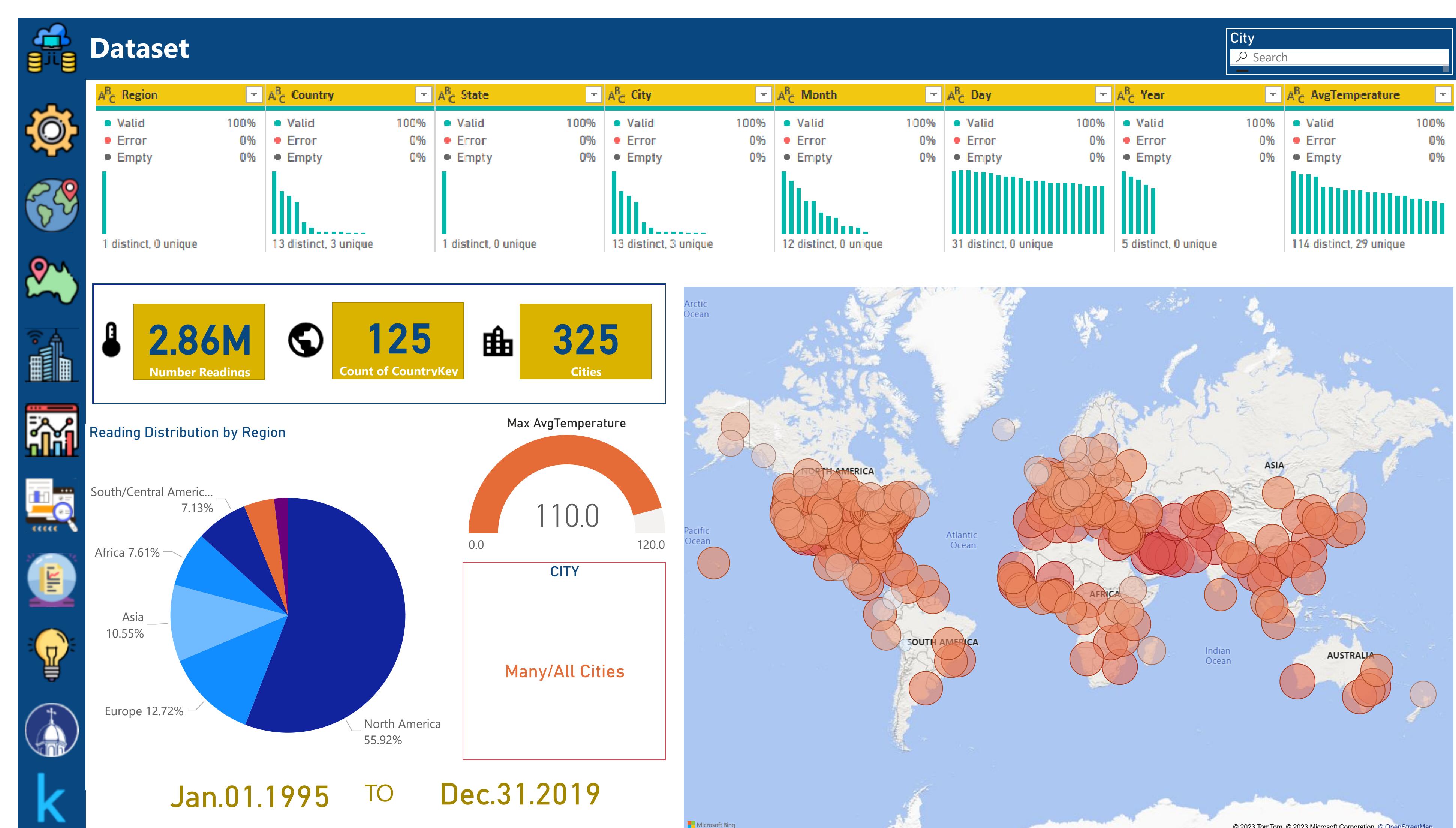


Is the Temperature of World Cities increasing? →

Hiraoka, Hugo





Data Wrangling

The original dataset contains more records than Excel's maximum capacity of 1,048,576 rows.²

Steps

- 1 Use R studio to subset the dataset

```
##(r)
library("dplyr")
library("plyr")
library("readr")

citytemperature_remergedataset <-
list.files("C:/Users/ihira/OneDrive/Documents/DataAnalytics/CityTemperature/Hugo/data_final_to_merge",pattern=".csv", full.names = TRUE) %>%
lapply(read_csv) %>%
bind_rows

citytemperature_remergedataset

#library(plyr)
#citytemperature_final <- ldply(list.files(),read.csv,header=TRUE)
#view(citytemperature_final)

# write_csv(citytemperature_final,"citytemperature_final_test.csv")
...

#Africa
write_csv(Africa_1995_1999,'Africa_1995_1999.csv')
write_csv(Africa_2000_2004,'Africa_2000_2004.csv')
write_csv(Africa_2005_2009,'Africa_2005_2009.csv')
write_csv(Africa_2010_2014,'Africa_2010_2014.csv')
write_csv(Africa_2015_2021,'Africa_2015_2021.csv')
```

- 2

Clean and wrangle with Excel.

39 subsets

- 3 Use R studio to merge the subsets into 1 dataset

```
#Region: Africa
Africa<-subset(temperature,Region=='Africa')
#Year before 2000
Africa_1995_1999<-subset(Africa,year<2000)
#Year from 2000 to 2004
Africa_2000_2004<-subset(Africa,year>=2000 & year<=2004)
#Year from 2005 to 2009
Africa_2005_2009<-subset(Africa,year>=2005 & year<=2009)
#Year from 2010 to 2014
Africa_2010_2014<-subset(Africa,year>=2010 & year<=2014)
#Year after 2014
Africa_2015_2021<-subset(Africa,year>=2015)
```

<citytemperature_final.csv>

https://drive.google.com/file/d/1XFgiV0efhrFp8Nig_kOxCQEoHWKju-5/view?usp=sharing

After wrangling our dataset was 79,672 records shorter!

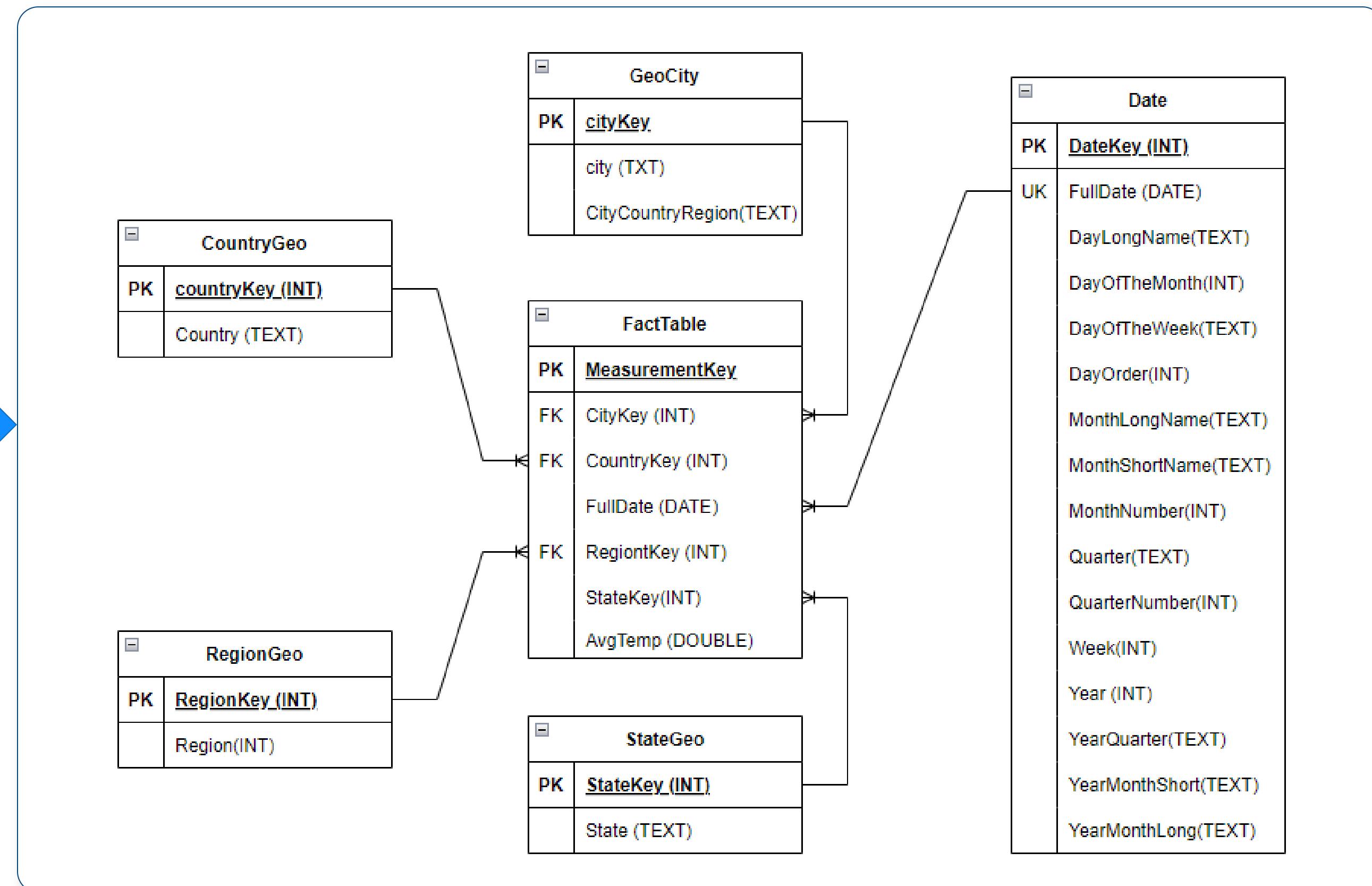
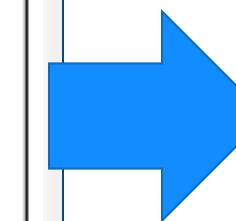
2: Excel specifications and limits: <https://support.microsoft.com/en-us/office/excel-specifications-and-limits-1672b34d-7043-467e-8e27-269d656771c3>



Data Preparation

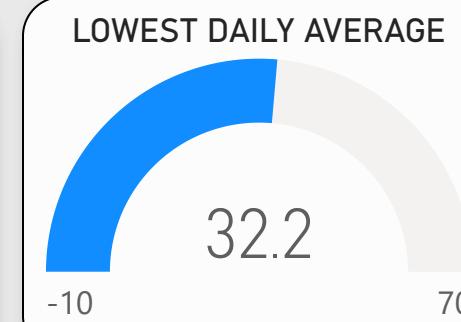
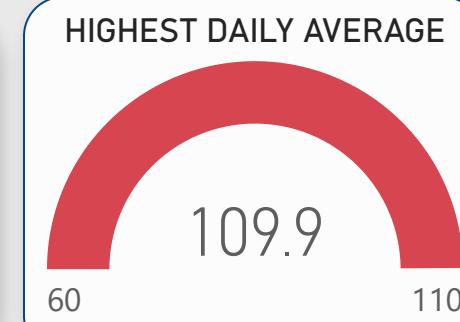


cityTemperature
Region (TEXT)
Country (TEXT)
State (TEXT)
City (TEXT)
Month (TEXT)
Day (TEXT)
Year (TEXT)
AvgTemperature (TEXT)



Regions

WORLD



HIGHEST AVG TEMPERATURE

Year	Africa	Asia	Australia/Southern Pacific	Europe	Middle East	North America	South/Central America & Caribbean	MAX
2019	96.1	98.7	65.3	91.5	108.6	105.7	91.8	108.6
2018	94.4	102.2	68.0	85.5	108.6	105.0	93.8	108.6
2017	93.9	98.5	68.0	88.7	109.8	105.2	91.1	109.8
2016	92.0	96.7	69.7	88.9	109.1	102.8	92.4	109.1
MAX	98.9	102.4	72.3	100.4	109.9	107.5	96.3	109.9

MEDIAN

76.90

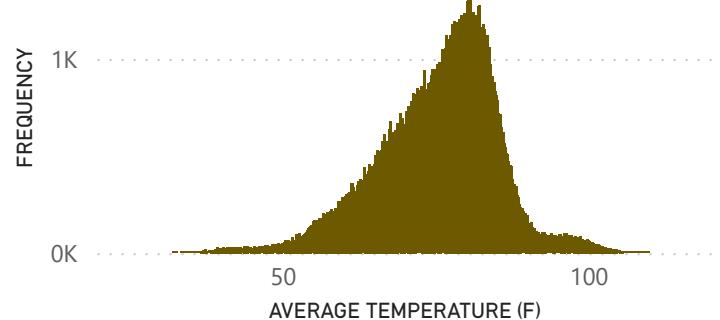
MODE

80.5

STANDARD DEV

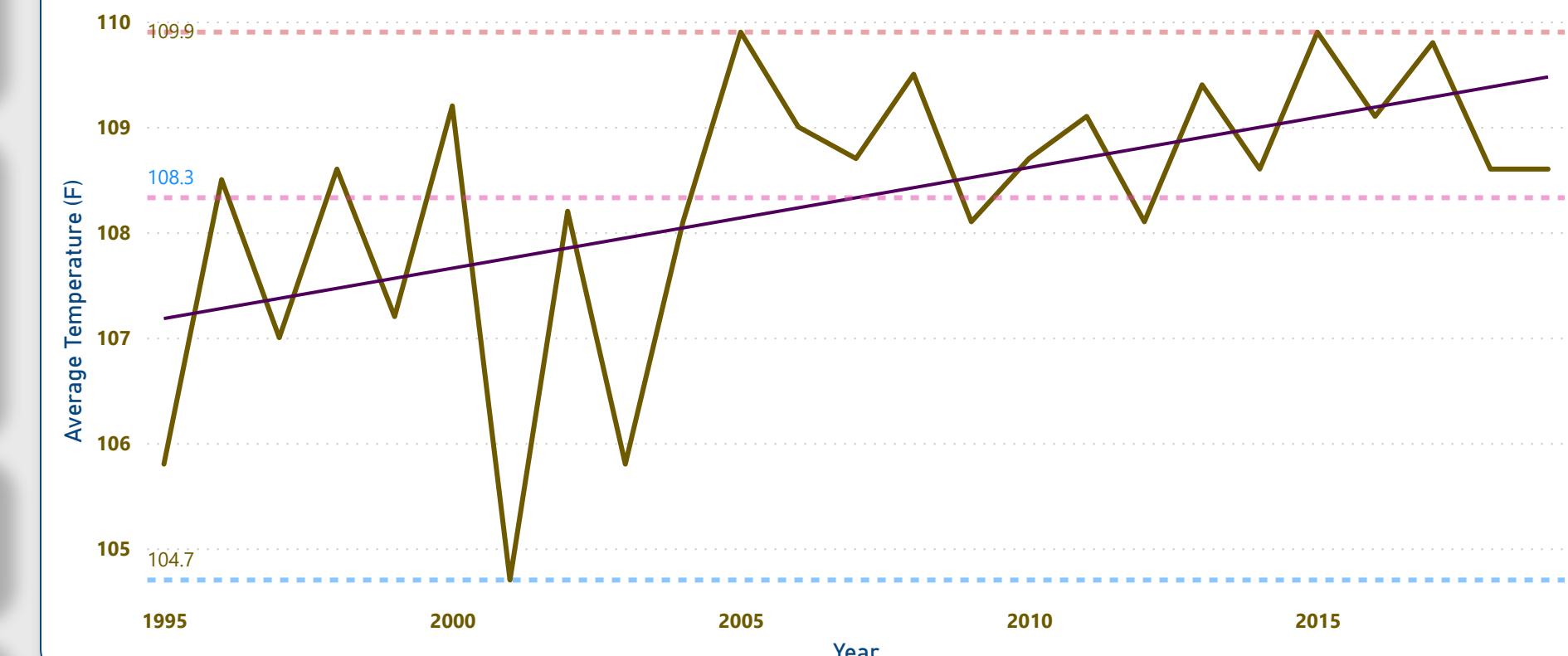
9.95

AVERAGE TEMPERATURE DISTRIBUTION

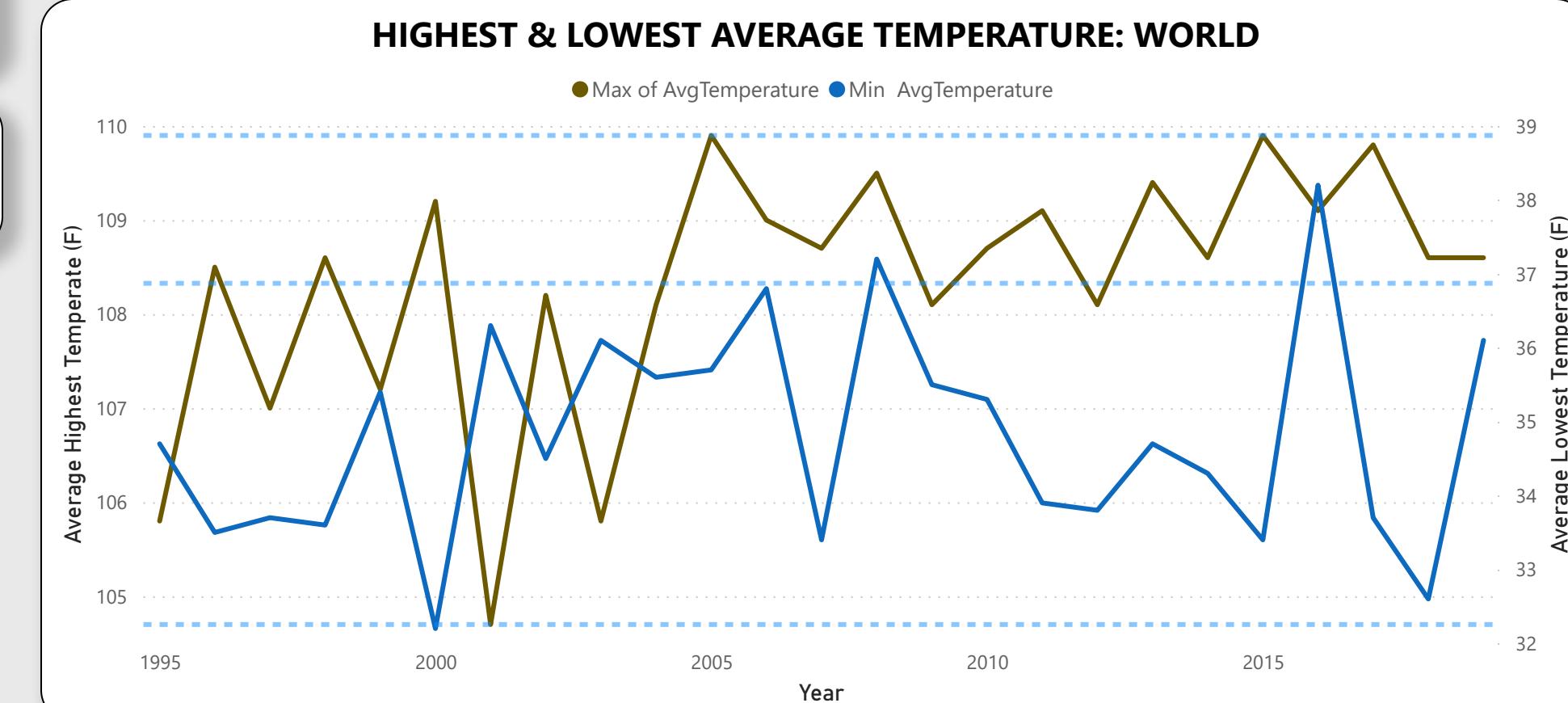


Average of AvgTemperature

HIGHEST AVERAGE TEMPERATURE: WORLD



HIGHEST & LOWEST AVERAGE TEMPERATURE: WORLD



REGION

All

YEAR

1995 2019

MONTH

July

2000 miles 2500 km

Analysis by Country

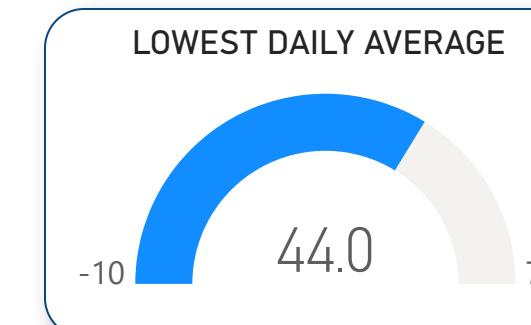
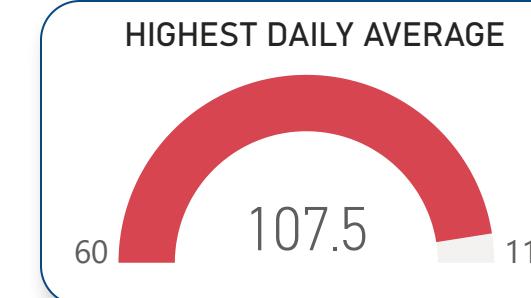


COUNTRY

YEAR

Year

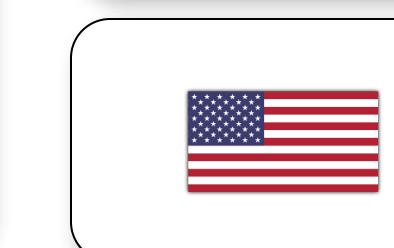
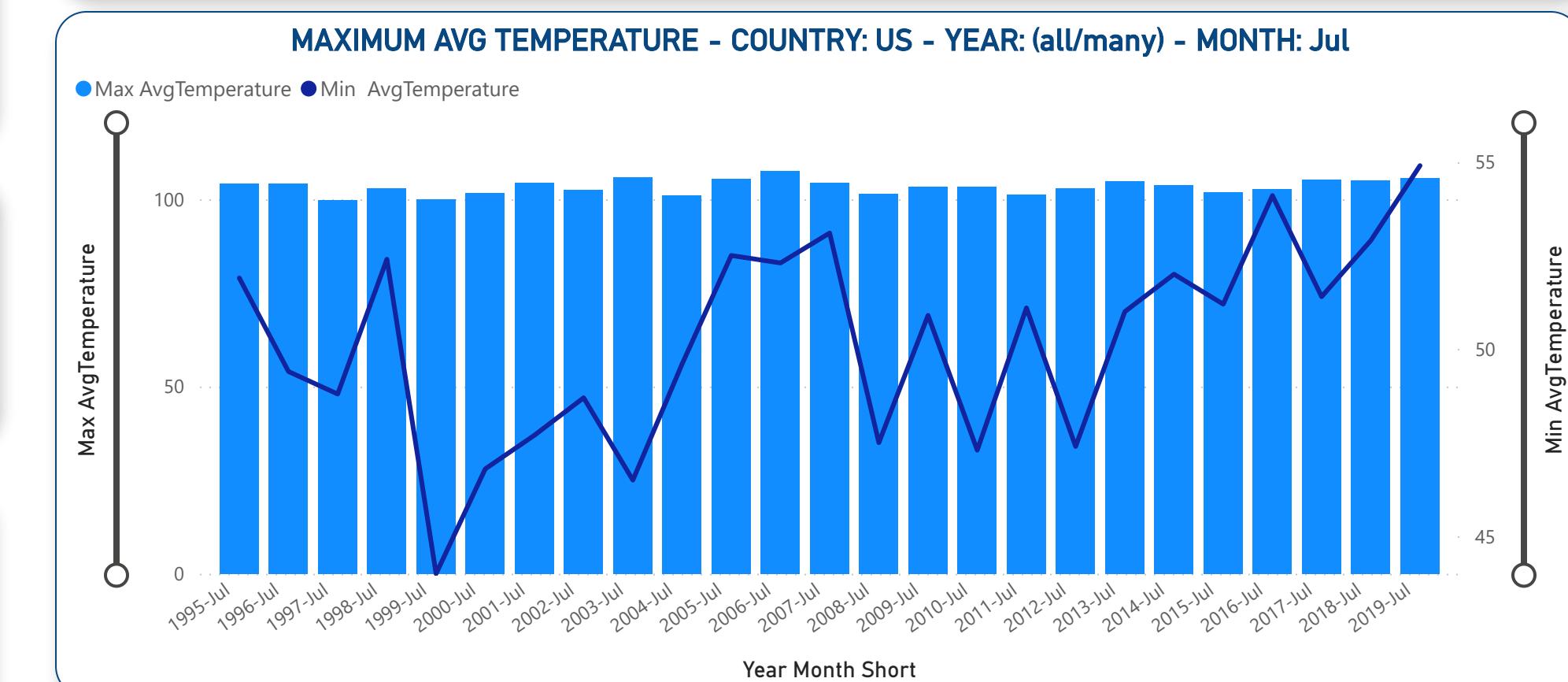
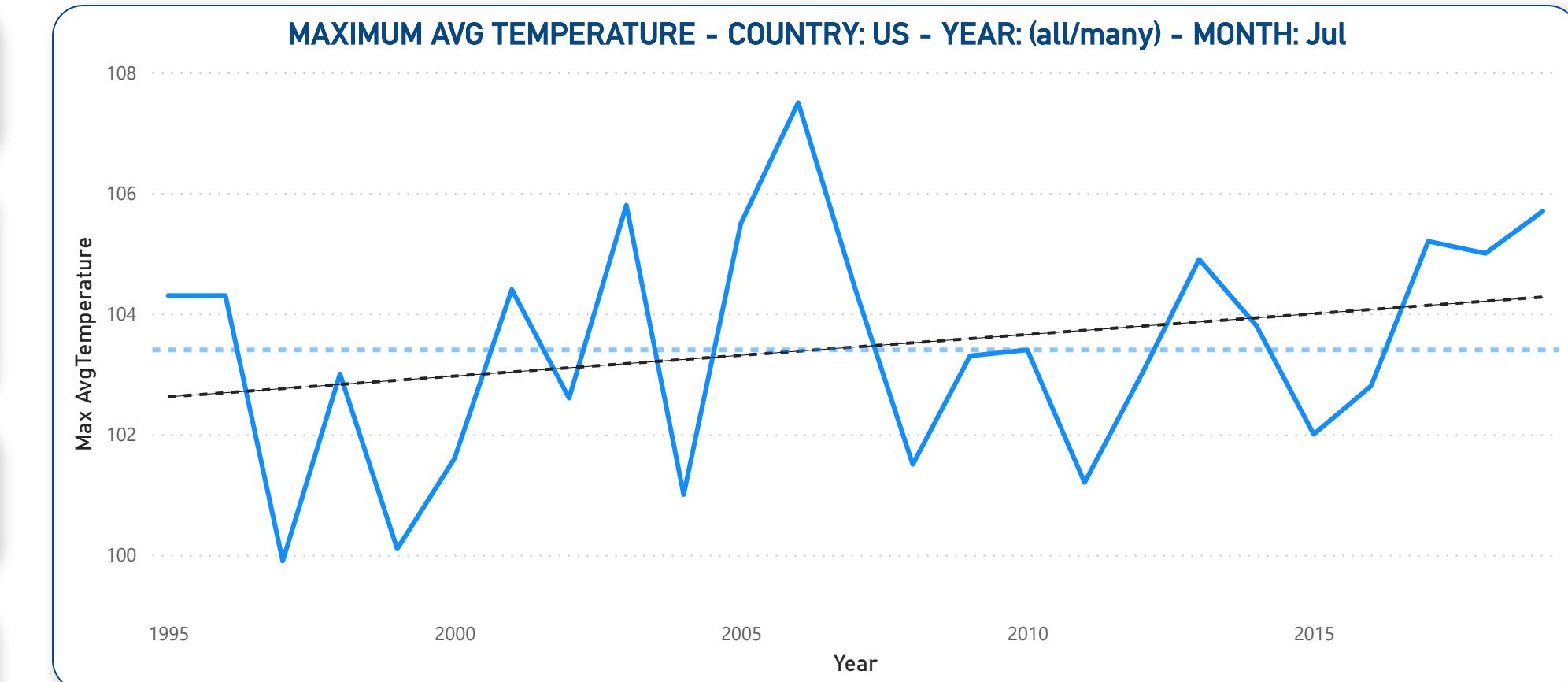
MONTH



Country	1995	1996	1997	1998	1999	2000	2001	2002	2003
US	104.3	104.3	99.9	103.0	100.1	101.6	104.4	102.6	105.8
Total	104.3	104.3	99.9	103.0	100.1	101.6	104.4	102.6	105.8

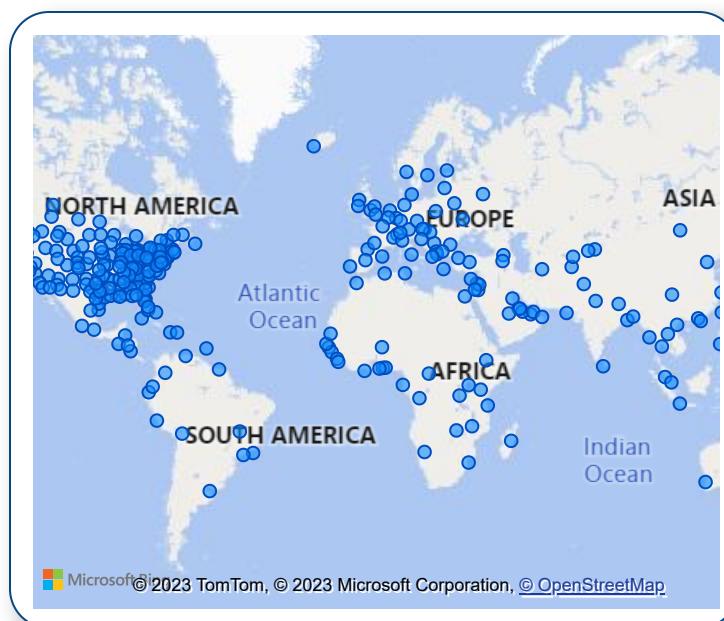
Full Date US Total

7/1/1995	95.5	95.5
7/2/1995	94.4	94.4
7/3/1995	89.8	89.8
7/4/1995	91.1	91.1
7/5/1995	92.8	92.8
7/6/1995	95.4	95.4
7/7/1995	98.0	98.0
7/8/1995	99.4	99.4
7/9/1995	99.1	99.1
7/10/1995	98.6	98.6
Total	107.5	107.5

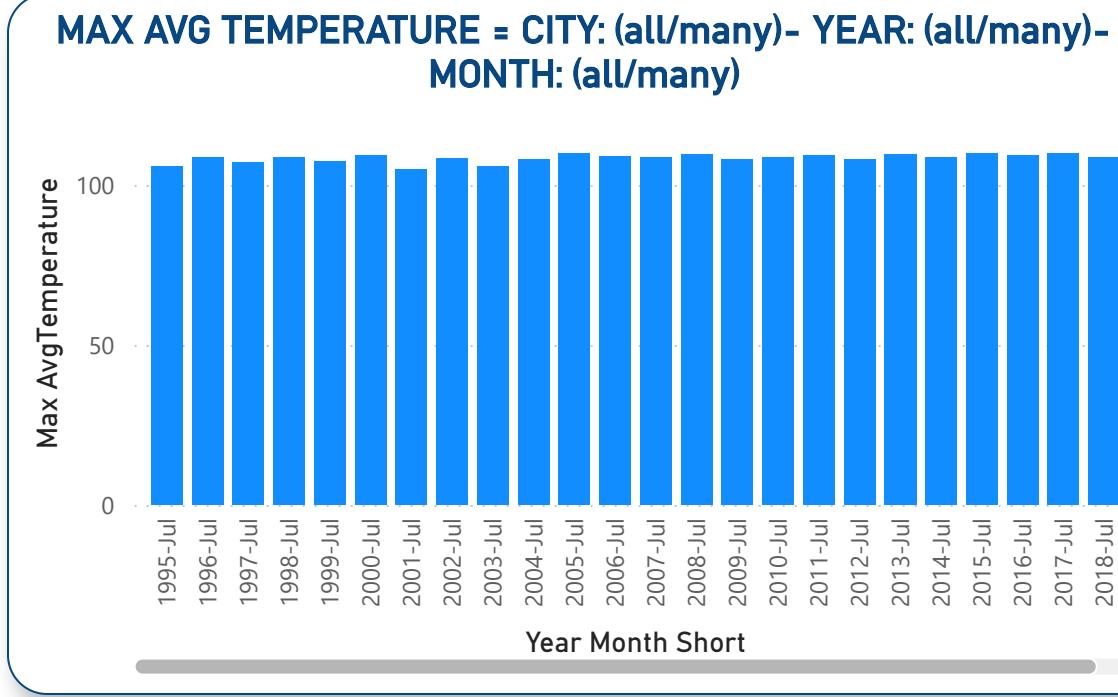


Countries
US

Analysis by City



City	State	Max AvgTemperature	Min AvgTemperature	Std Dev AvgTemp
Kuwait	NA	109.9	93.0	
Doha	NA	108.0	87.1	
Dhahran	NA	107.8	87.4	
Dubai	NA	107.5	82.6	
Yuma	Arizona	107.5	82.0	
Abu Dhabi	NA	107.3	81.4	
Phoenix	Arizona	105.8	78.7	
Total		109.9	32.2	



CITY

 Select all

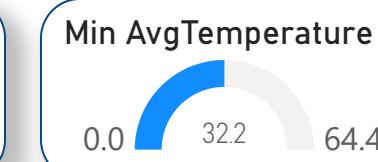
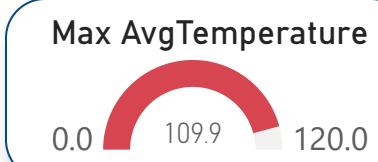
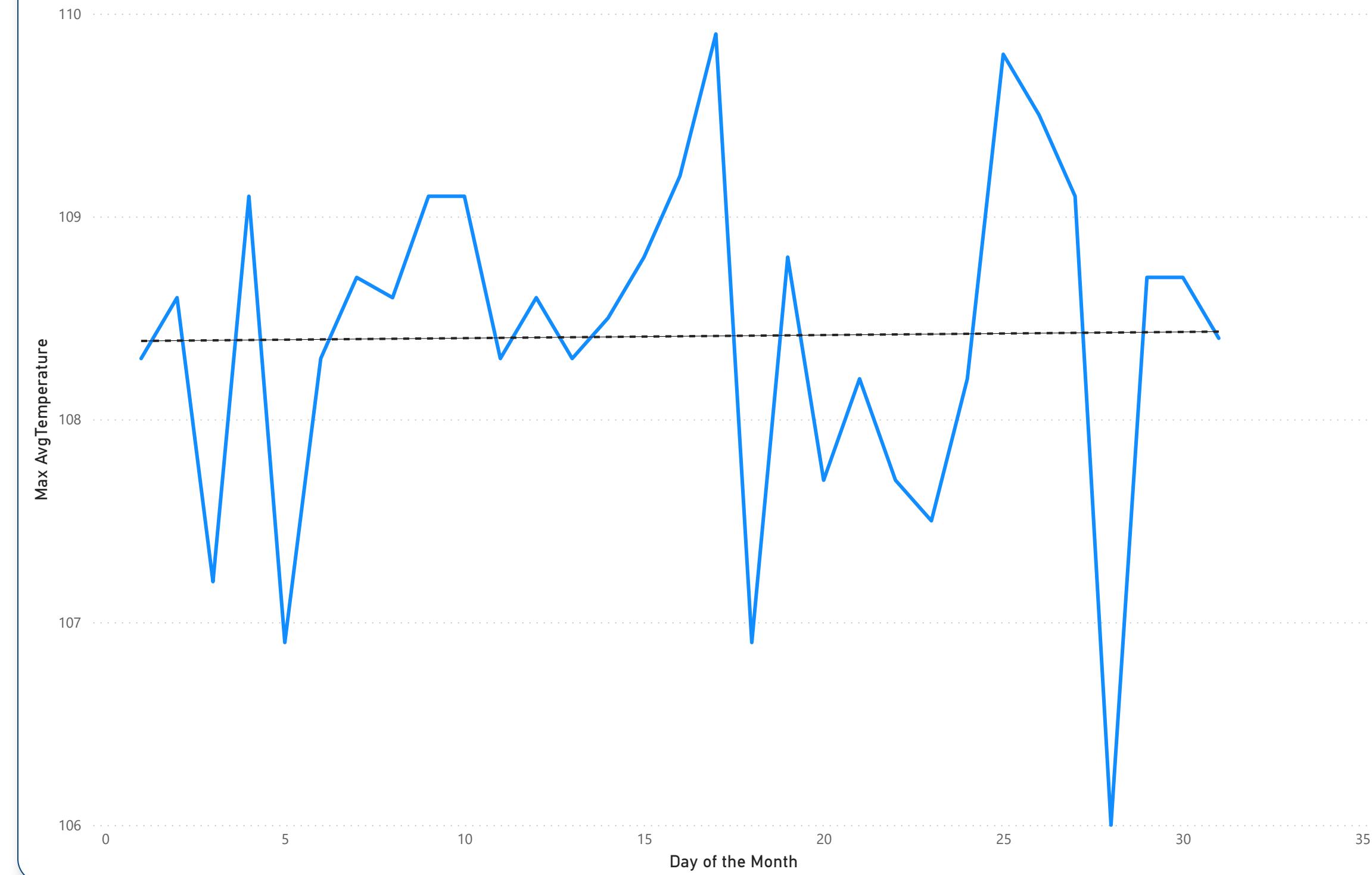
YEAR

MONTH

 Select all

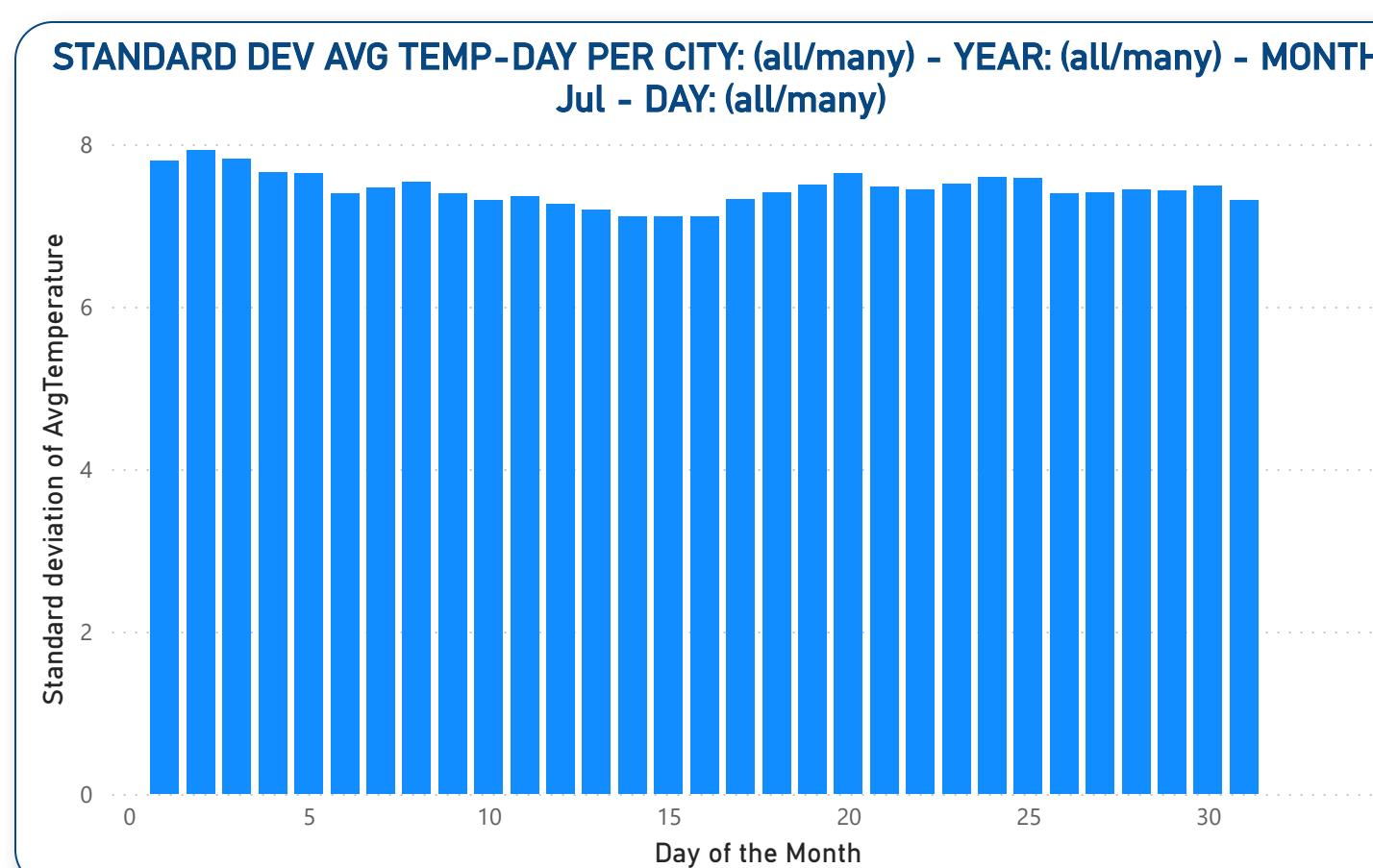
DAY

MAXIMUM AVERAGE TEMPERATURE: (all/many) -YEAR: (all/many) -MONTH: July -DAY: (all/many)



Cities
Many/All Cities

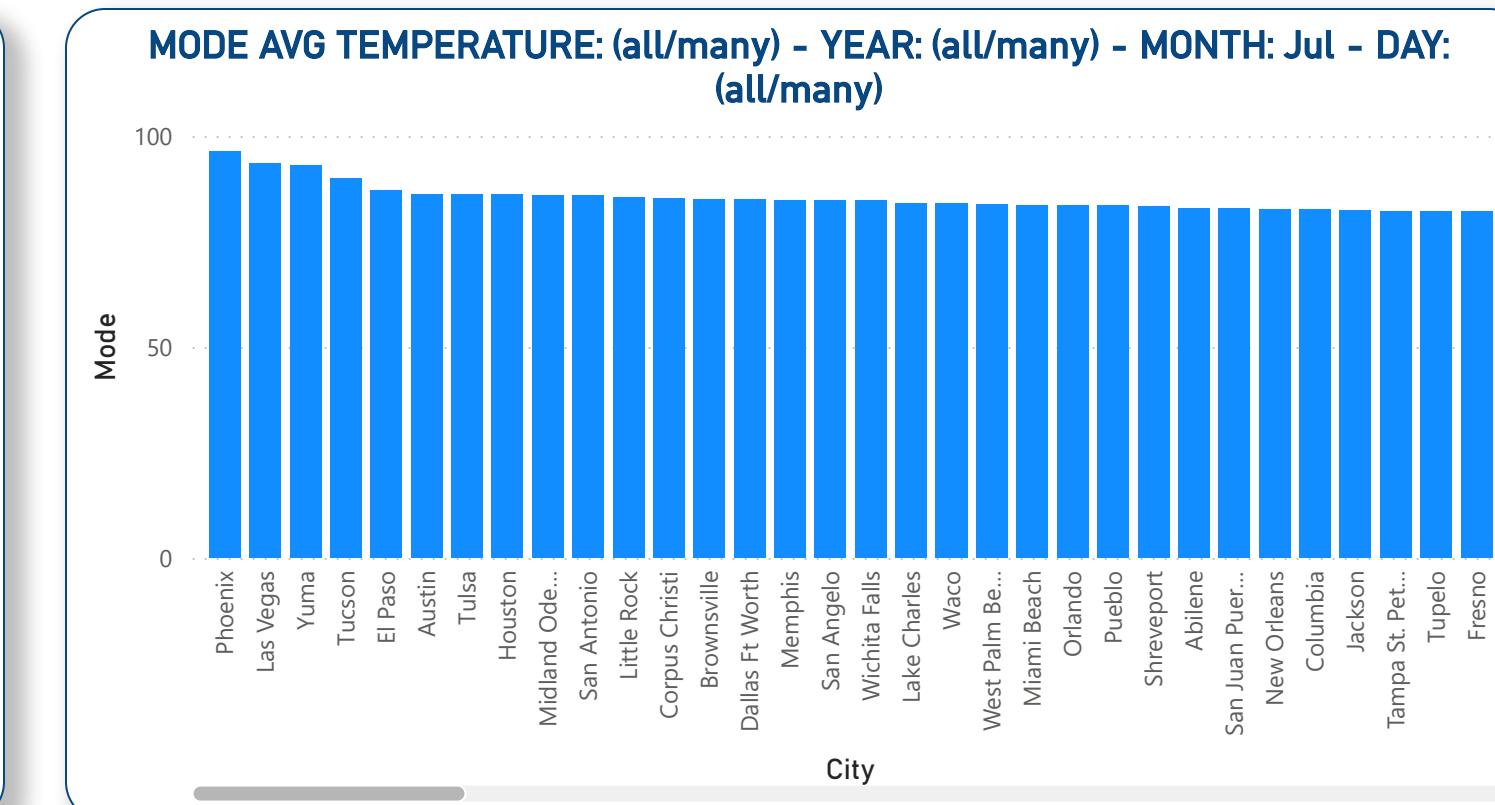
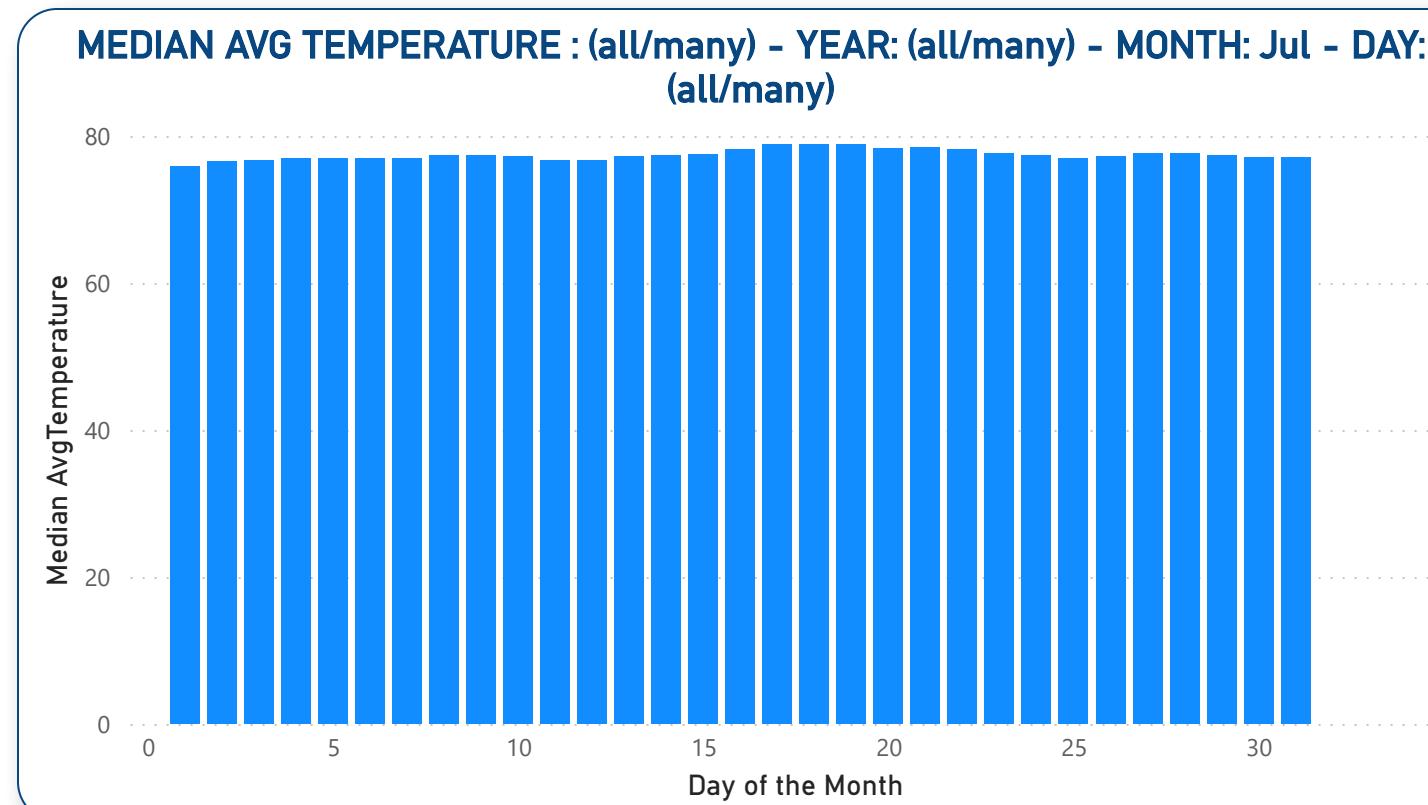
Some Statistics



YEAR

MONTH

DAY MONTH



REGION

COUNTRY

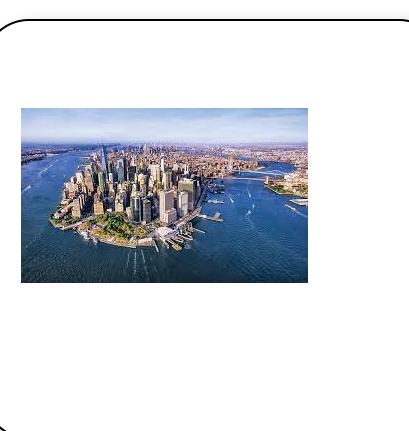
STATE

CITY

55.9

Variance of AvgTemperature

Case Example



YEAR

YEAR

1995 2019

QUARTER

QUARTER

2 3

MONTH NUMBER

MONTH NUMBER

6 8

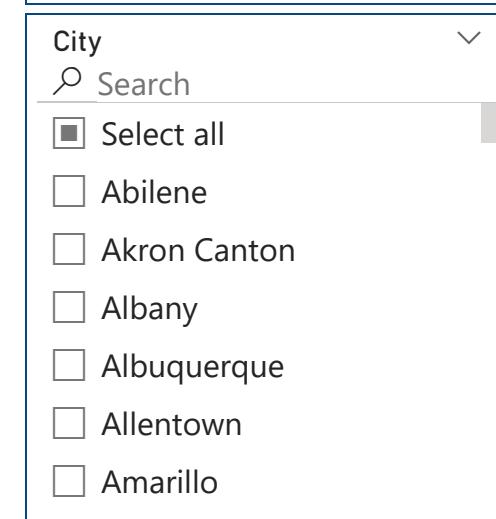
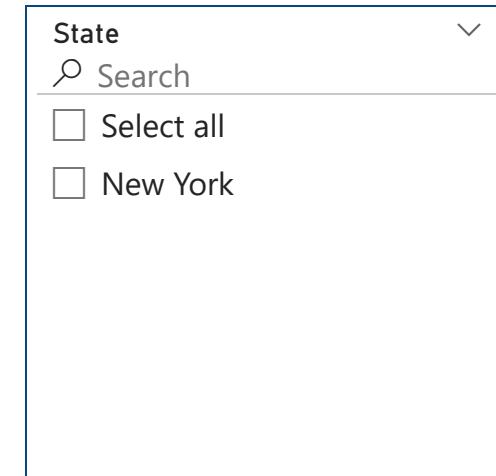
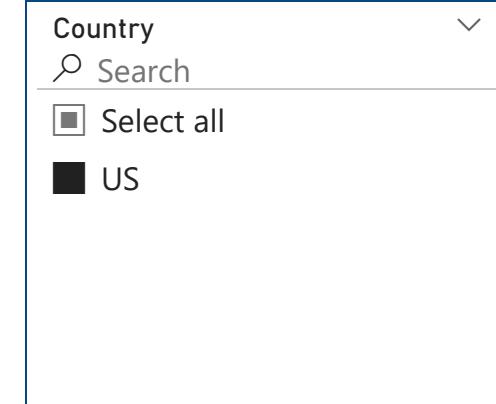
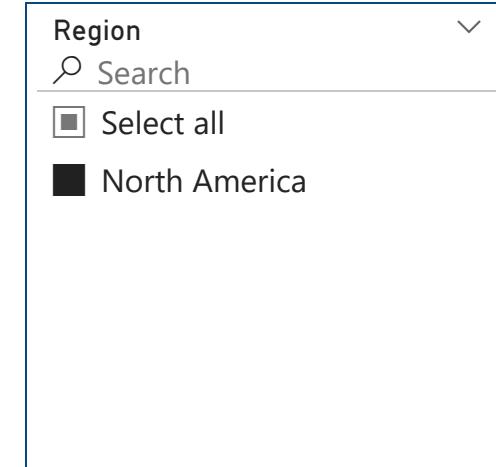
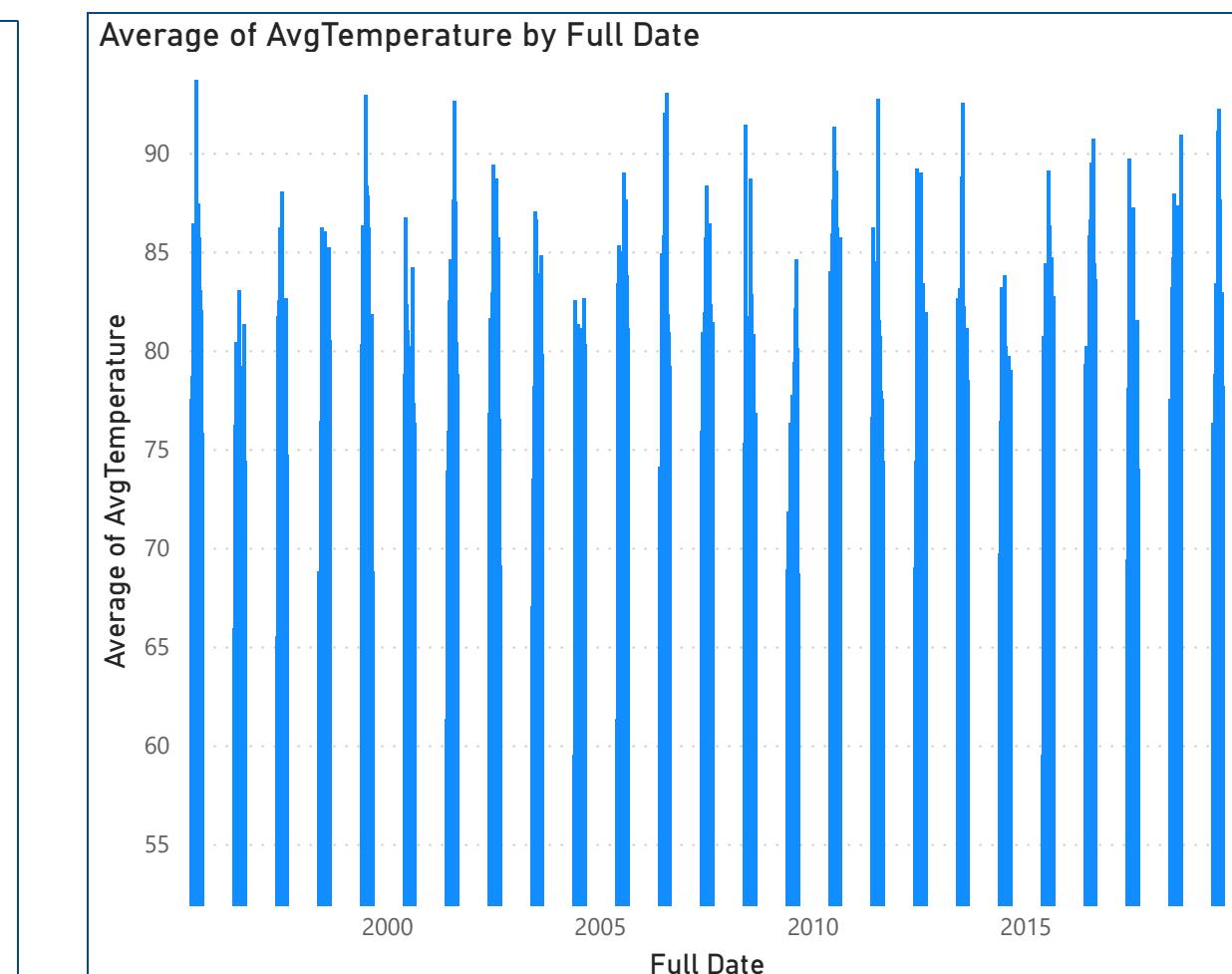
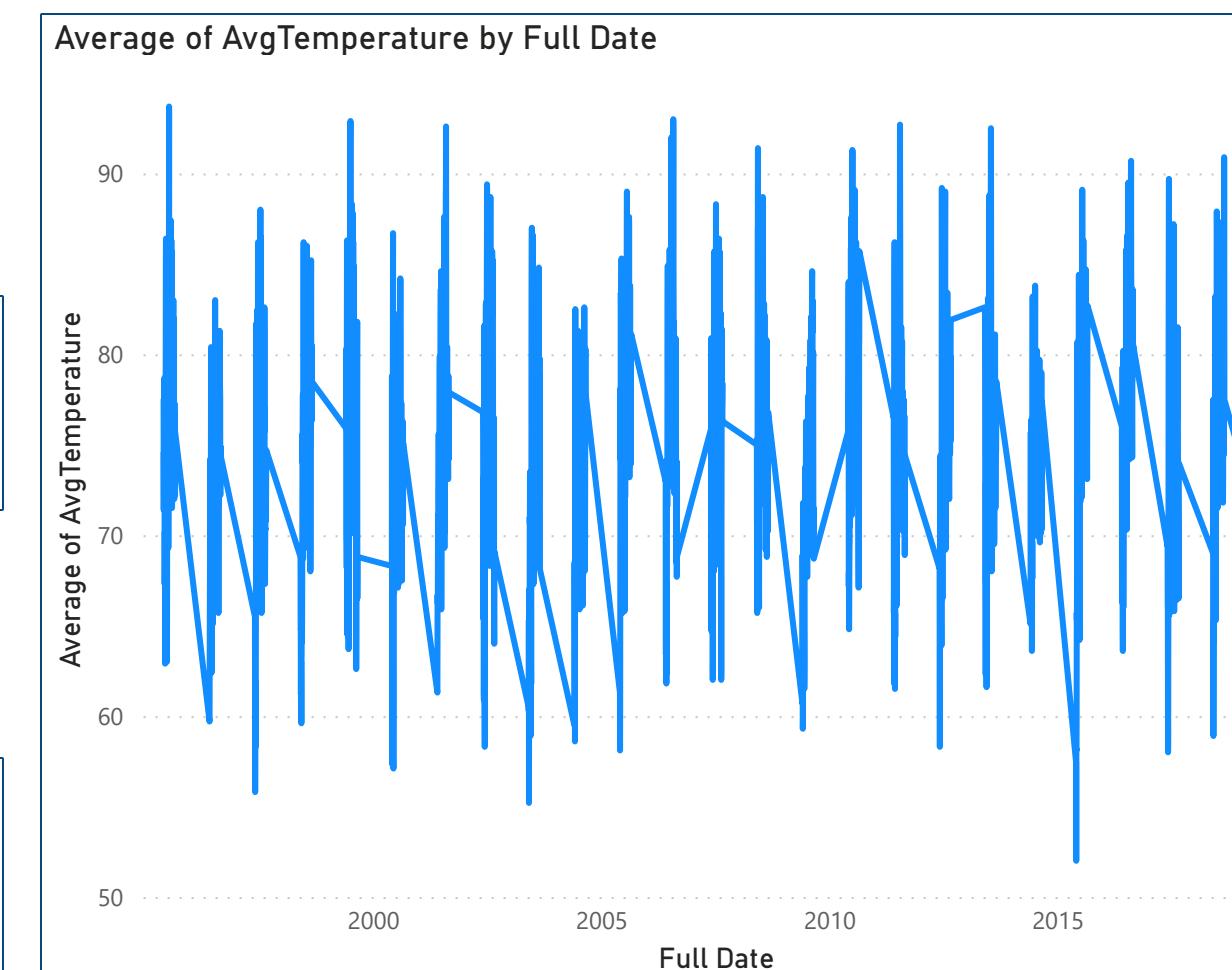
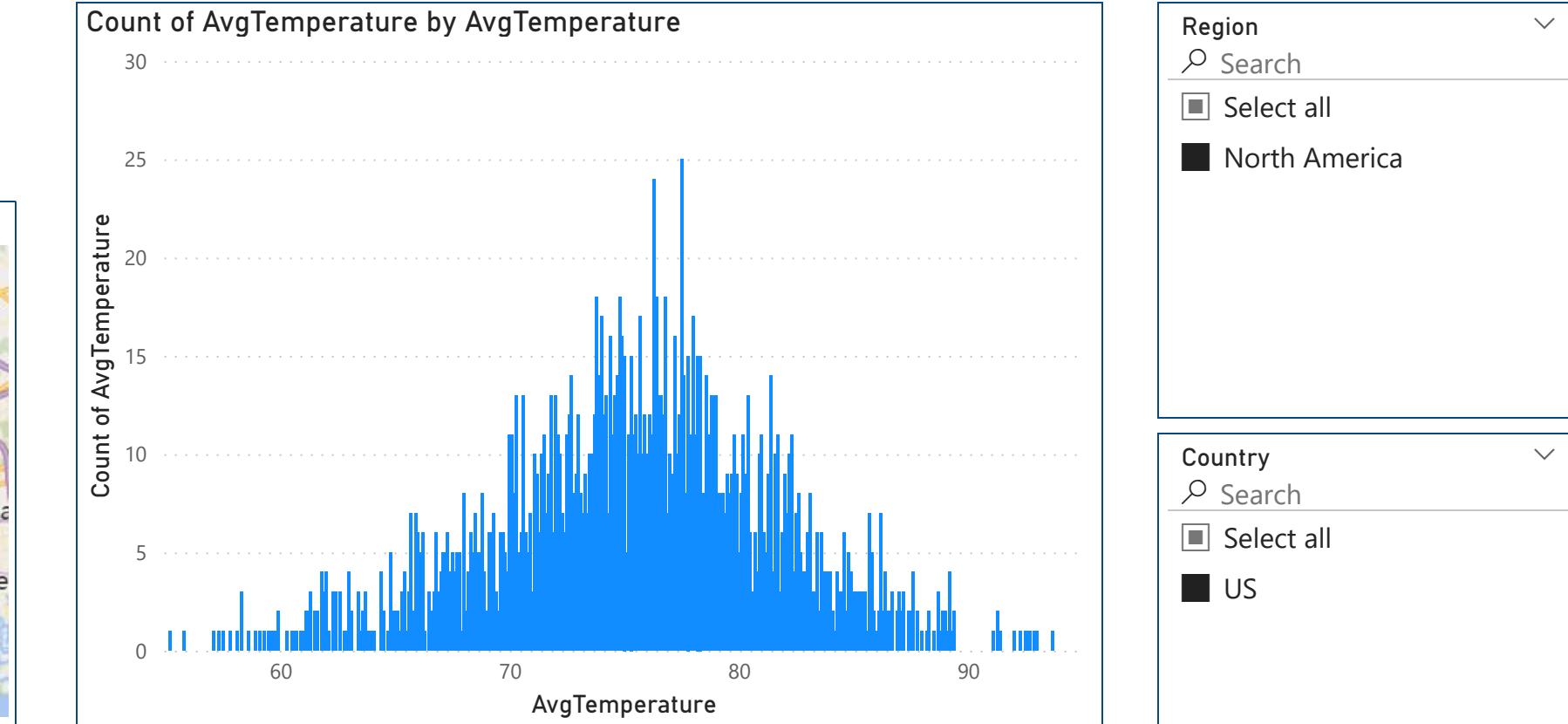
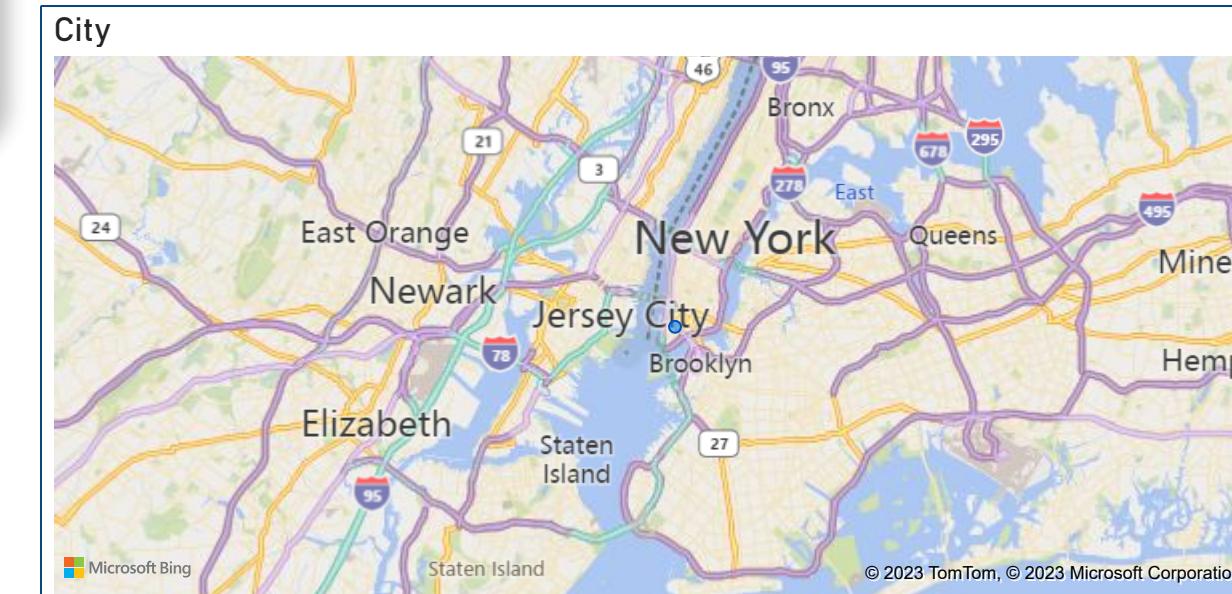
DAY

DAY

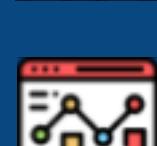
1 31

New York City-New Yor...

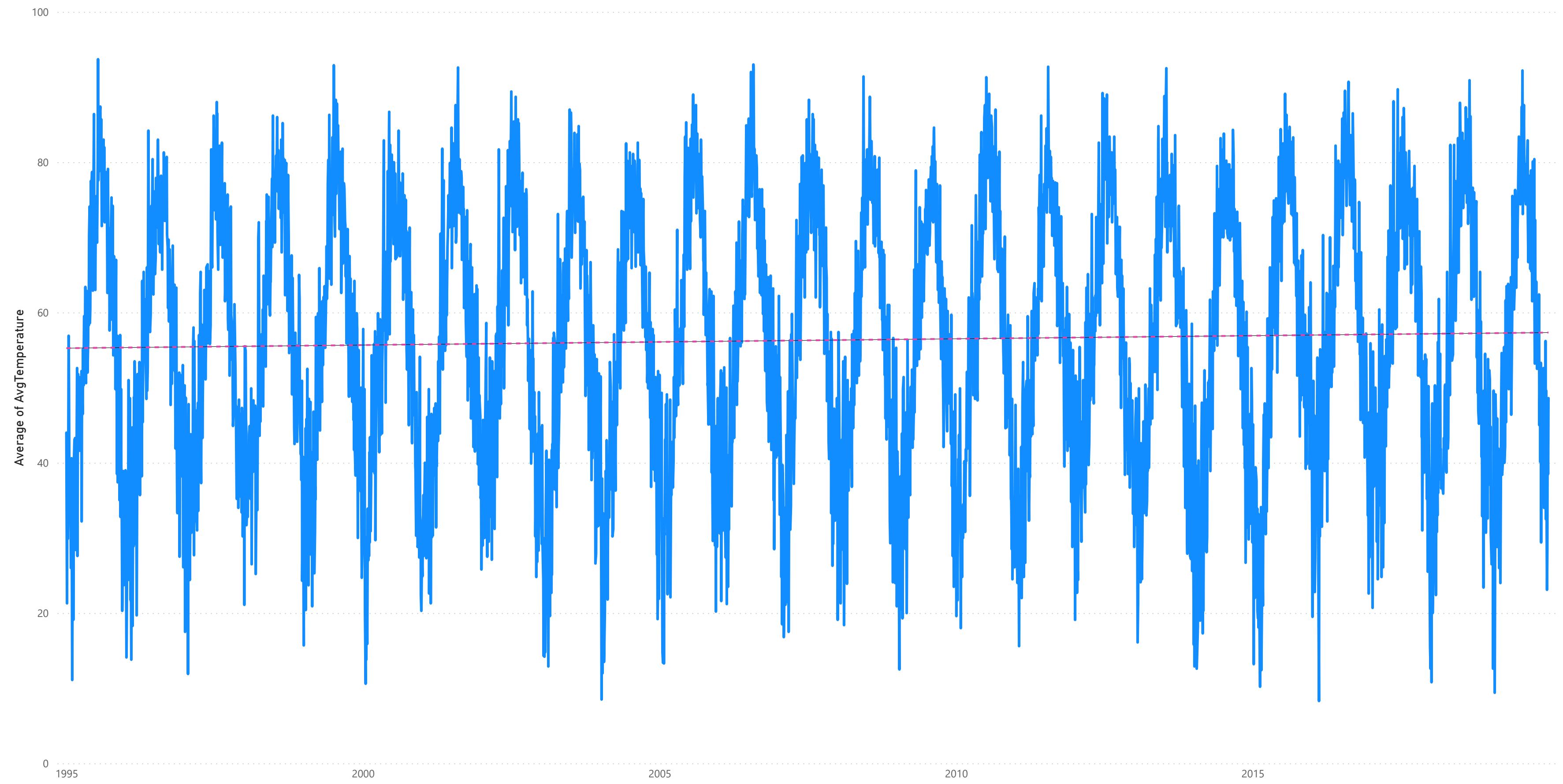
First City State Country



Forecast



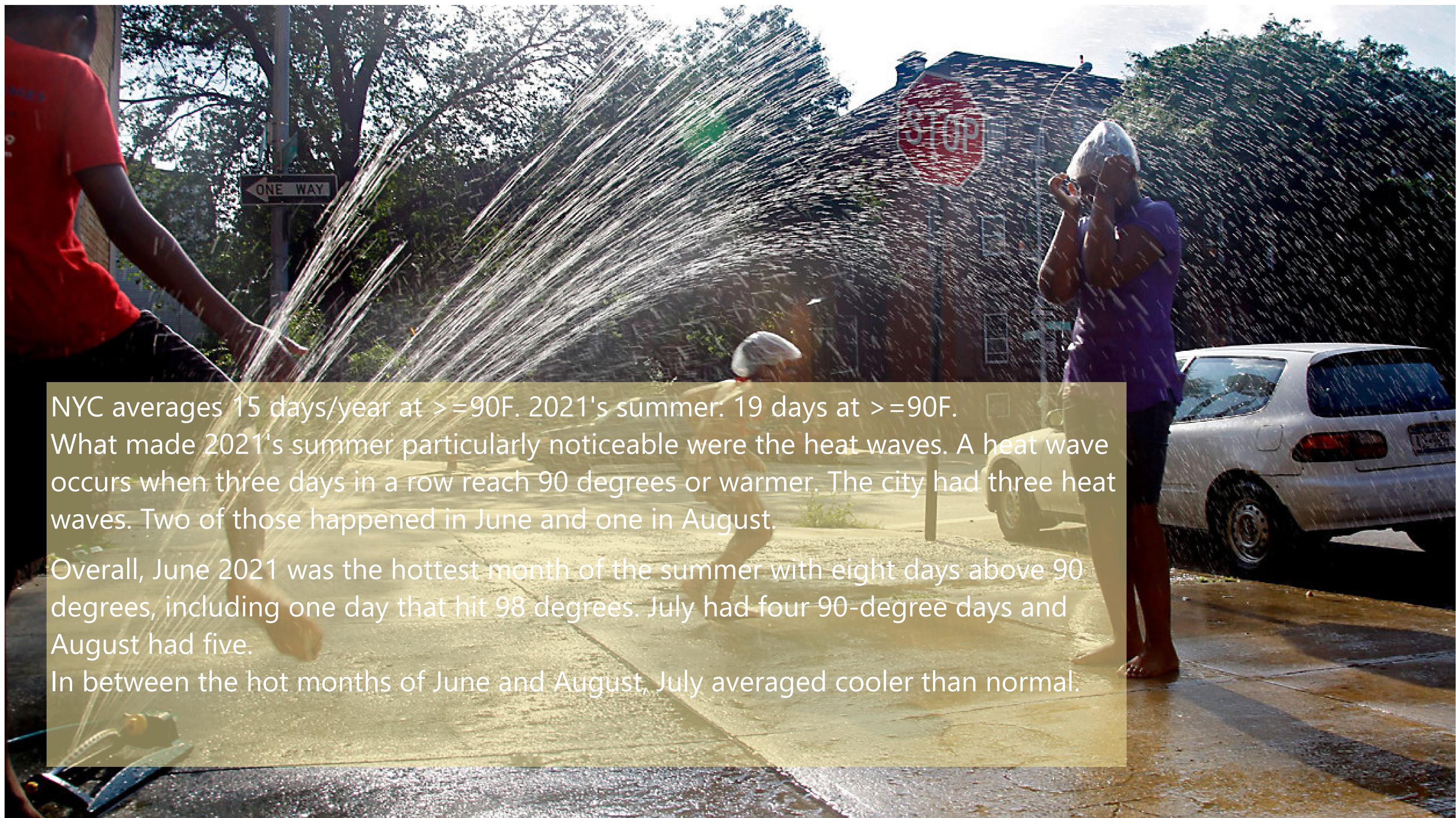
NYC Average of AvgTemperature by Year



WU WEATHER
UNDERGROUND

NYC Max and Avg Temperature





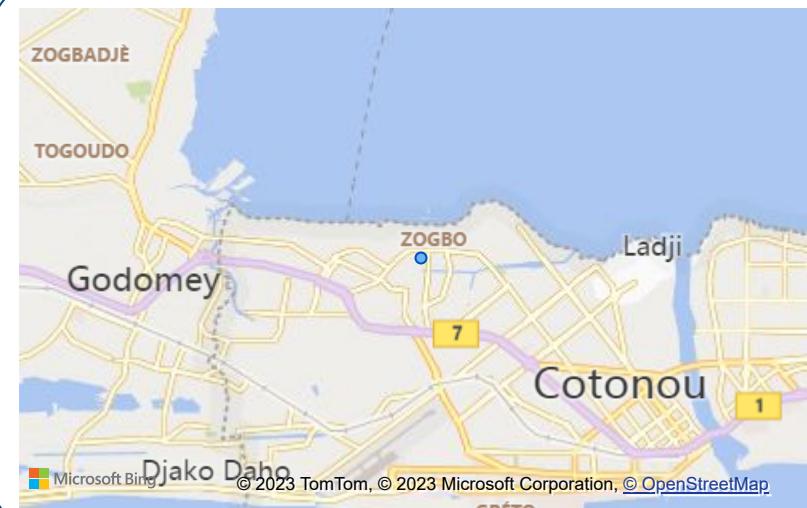
NYC averages 15 days/year at $>=90F$. 2021's summer: 19 days at $>=90F$. What made 2021's summer particularly noticeable were the heat waves. A heat wave occurs when three days in a row reach 90 degrees or warmer. The city had three heat waves. Two of those happened in June and one in August.

Overall, June 2021 was the hottest month of the summer with eight days above 90 degrees, including one day that hit 98 degrees. July had four 90-degree days and August had five.

In between the hot months of June and August, July averaged cooler than normal.

Cotonou Benin Africa

Place Name



YEAR

1995 2019

MONTH

All

DAY

1 31

REGION

All

COUNTRY

Search

Select all

Albania

Algeria

Argentina

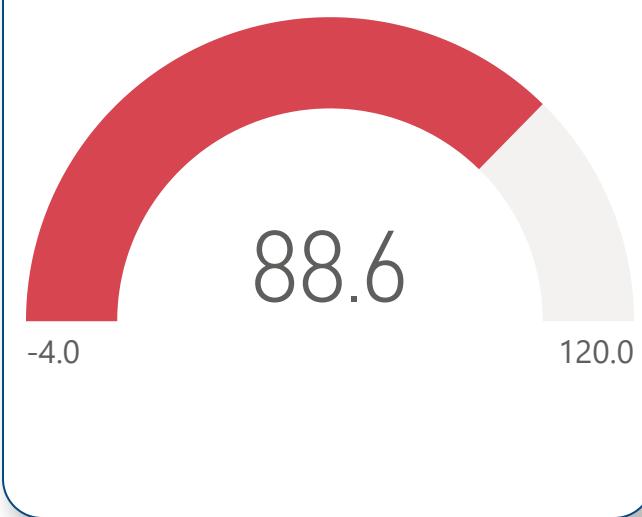
Australia

Austria

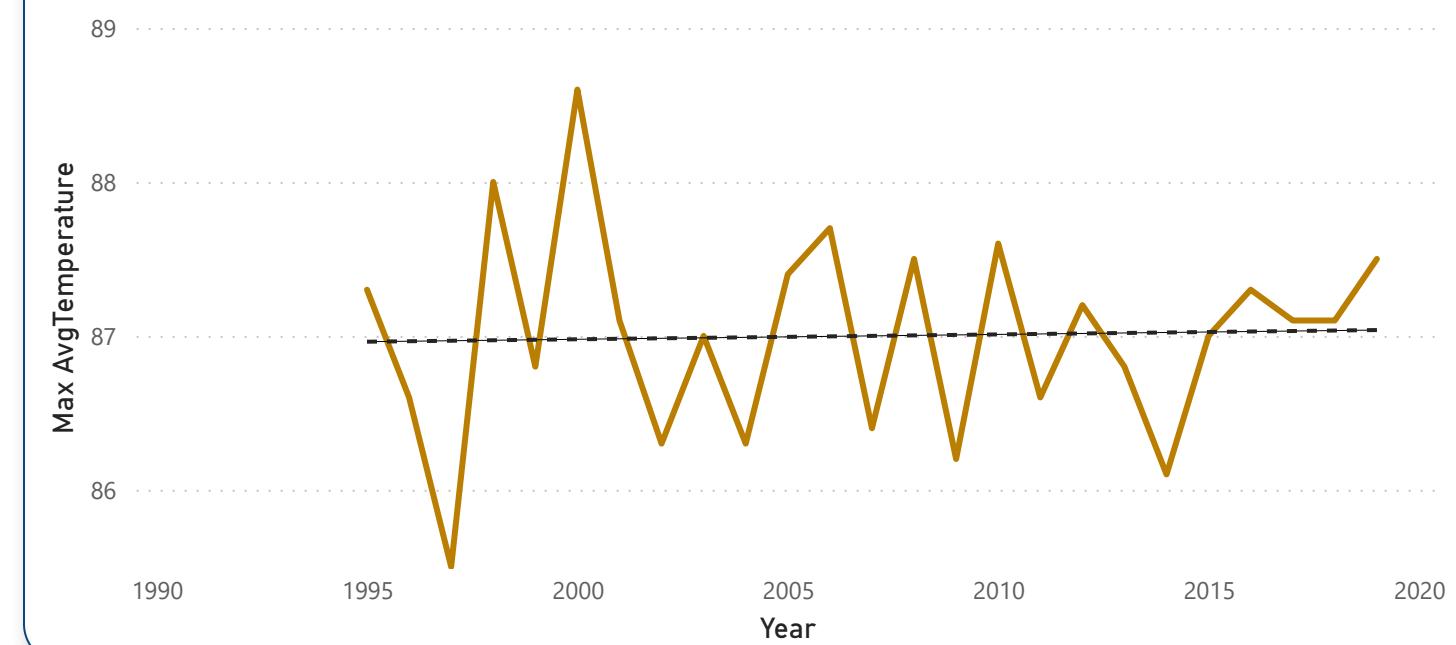
HIGHEST AVG TEMPERATURE/DAY PER REGION/YEAR

Year	Africa	MAX
2000	88.6	88.6
1998	88.0	88.0
2006	87.7	87.7
2010	87.6	87.6
MAX	88.6	88.6

Max Avg Temperature Fahrenheit



MAXIMUM AVERAGE TEMPERATURE



State

NA

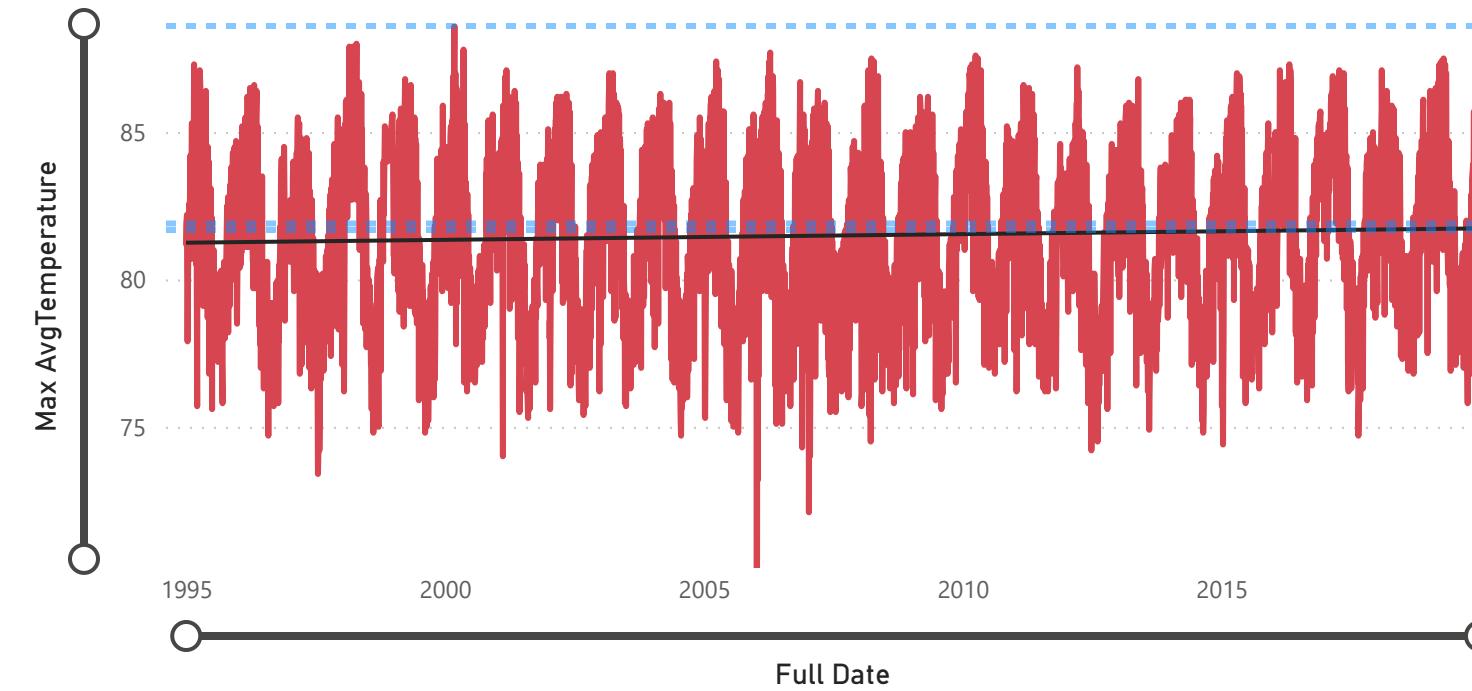
CITY

Search

Select all

Cotonou

Max AvgTemperature by Full Date



MAXIMUM AVERAGE TEMPERATURE

