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DATA ANALYST CHALLENGE

NAMASTE TECHNOLOGIES

2020-08-13

TASK 1

In [ ]:

```
# Libraries

%matplotlib inline
!pip install python-exchangeratesapi
import json as js
import pandas as pd
import numpy as np
import requests
import datetime
from exchangeratesapi import Api
import sqlite3
import matplotlib.pyplot as plt
import matplotlib.image as mpimg
from pylab import rcParams
```

```
Collecting python-exchangeratesapi
  Downloading https://files.pythonhosted.org/packages/85/20/003d4c73c72341
2a8c2d8d2b33590f6b602f903b3dff67b4096d446b7dd3/python-exchangeratesapi-0.
0.2.tar.gz
Requirement already satisfied: requests in /usr/local/lib/python3.6/dist-p
ackages (from python-exchangeratesapi) (2.23.0)
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python
3.6/dist-packages (from requests->python-exchangeratesapi) (2020.6.20)
Requirement already satisfied: chardet<4,>=3.0.2 in /usr/local/lib/python
3.6/dist-packages (from requests->python-exchangeratesapi) (3.0.4)
Requirement already satisfied: idna<3,>=2.5 in /usr/local/lib/python3.6/di
st-packages (from requests->python-exchangeratesapi) (2.10)
Requirement already satisfied: urllib3!=1.25.0,!=1.25.1,<1.26,>=1.21.1 in
/usr/local/lib/python3.6/dist-packages (from requests->python-exchangerate
sapi) (1.24.3)
Building wheels for collected packages: python-exchangeratesapi
  Building wheel for python-exchangeratesapi (setup.py) ... done
  Created wheel for python-exchangeratesapi: filename=python_exchangerates
api-0.0.2-cp36-none-any.whl size=5372 sha256=e6d0cebd53d484b36248530b1ebd7
ba418f486ba0d6198edc2851a9f9e693a95
  Stored in directory: /root/.cache/pip/wheels/c7/72/d9/22476c5944ddcef7e8
01299c3ad5d23dec0d946c43a2e04ef8
Successfully built python-exchangeratesapi
Installing collected packages: python-exchangeratesapi
Successfully installed python-exchangeratesapi-0.0.2
```

In [ ]:

```
# Set the coin

coin_i_have = 'USD'
coin_i_want = 'CAD'
```

In [ ]:

```
# Loading data

path = "https://raw.githubusercontent.com/namasteTechnologies/data-analyst-\
challenge/master/orders.json"

resp = requests.get(path)
df = js.loads(resp.text)
```

In [ ]:

```
# Create a list with dates to consult the API

dates = []

for i in df:
  d = (i['created_at'][0:10])
  dates.append(d)
```

In [ ]:

```
# Extracting day of week and changing (saturday or sunday to friday)
'''Also, 2020-01-01 was included since the API does not
shows the currency_rate of this holiday.'''

dates_ok = []

for i in dates:
  a = datetime.datetime.strptime(i, '%Y-%m-%d').weekday()
  if a == 5:
    date_time_obj = datetime.datetime.strptime(i, '%Y-%m-%d')
    day = datetime. timedelta(1)
    new_date = date_time_obj - day
    b = str(new_date)
    b = b[0:10]
    b
    dates_ok.append(b)
  elif a == 6:
    date_time_obj = datetime.datetime.strptime(i, '%Y-%m-%d')
    day = datetime. timedelta(2)
    new_date = date_time_obj - day
    b = str(new_date)
    b = b[0:10]
    b
    dates_ok.append(b)
  elif i == '2020-01-01':
    date_time_obj = datetime.datetime.strptime(i, '%Y-%m-%d')
    day = datetime. timedelta(1)
    new_date = date_time_obj - day
    b = str(new_date)
    b = b[0:10]
    b
    dates_ok.append(b)
  else:
    dates_ok.append(i)
```

In [ ]:

```
# Connecting and geting the currency_rates

api = Api()

currency_rate = []

for i in dates_ok:
 temp = api.get_rates(coin_i_have, start_date= i, end_date= i)
 a = temp['rates'][i][coin_i_want]
 currency_rate.append(a)
```

In [ ]:

```
# Union of date and rate

res = {}
for key in dates:
    for value in currency_rate:
        res[key] = value
        currency_rate.remove(value)
        break
```

In [ ]:

```
# Inserting the rate in the orders list

for i in df:
  d = (i['created_at'][0:10])
  if d in res:
    i['currency_rate'] = res[d]
```

In [ ]:

```
# Calculating the CAD price

for i in df:
  i['cad_price'] = (i['total_price'] * i['currency_rate'])
```

In [ ]:

```
# Checking first order

df[0]
```

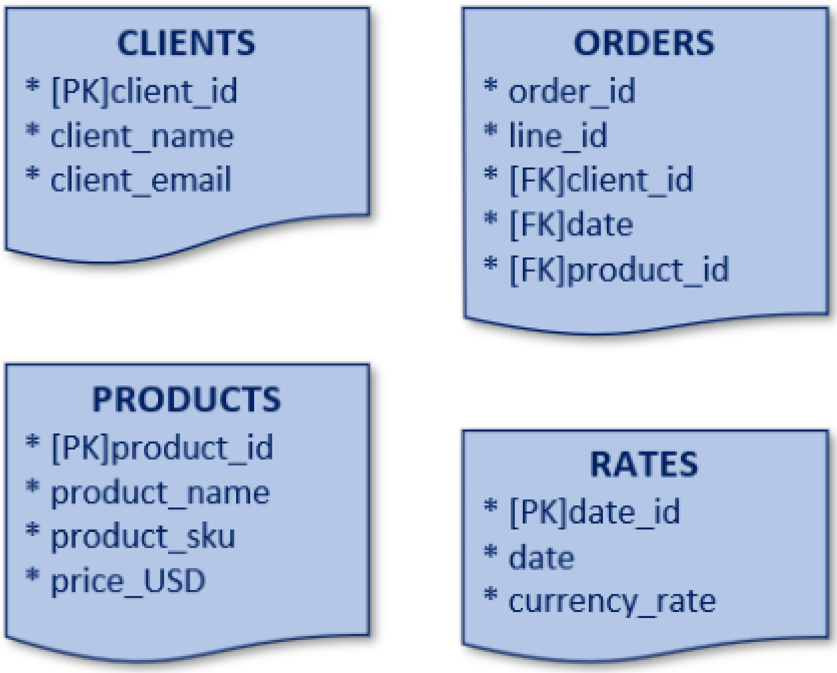
Out[ ]:

```
{'cad_price': 106.541996296631,
 'created_at': '2020-03-07T14:31:11Z',
 'currency_rate': 1.3420077629,
 'customer': {'email': 'william.doe@gmail.com',
  'id': 47178,
  'name': 'William Doe'},
 'id': 8369263756632563,
 'line_items': [{'id': 610448,
   'price': 29.4,
   'product_id': 632910392,
   'product_name': 'Purple Punch 2.0 Dried Flower',
   'product_sku': 'PPLEPUNCH20-05'},
  {'id': 997208,
   'price': 49.99,
   'product_id': 278266679,
   'product_name': "Grandpa's Stash Dried Flower",
   'product_sku': 'GPSTASH-01'}],
 'total_price': 79.39}
```

TASK 2

In [ ]:

```
# Tables strucures
rcParams['figure.figsize'] = 8, 8
img=mpimg.imread('tables.png')
imgplot = plt.imshow(img)
plt.axis('off')
plt.show()
```



In [ ]:

```
# Create databases

conn = sqlite3.connect('SQLite_Namaste.db')
c = conn.cursor()

# Create tables:

# Clients
c.execute('''CREATE TABLE IF NOT EXISTS clients
             ([client_id] INTEGER PRIMARY KEY,\
             [client_name] text,\
             [client_email] text)''')

# Products
c.execute('''CREATE TABLE IF NOT EXISTS products
             ([product_id] INTEGER PRIMARY KEY,\
             [product_name] text,\
             [product_sku] text,\
             [price_USD] float)''')

# Rates
c.execute('''CREATE TABLE IF NOT EXISTS rates
             ([date_id] INTEGER PRIMARY KEY,\
             [date] datetime,\
             [currency_rate] float)''')

# Orders
c.execute('''CREATE TABLE IF NOT EXISTS orders
             ([order_id] integer,\
             [line_id] integer,\
             [client_id] integer,\
             [date] datetime,\
             [product_id] integer)''')

conn.commit()

!ls
```

```
sales_canada.png  sample_data  SQLite_Namaste.db  tables.png
```

In [ ]:

```
# Function to help separate fields and subjects.
# It ill be used to populate unique tables.
# To subjects with one argument.

def unique(df, subject, field):

  global validation

  validation = []

  for i in df:
    temp = str(i[subject][field])
    validation.append(temp)

  return(validation)
```

In [ ]:

```
# Function to help separate fields and subjects.
# It ill be used to populate unique tables.
# To subjects with more than one argument.

def unique2(df, subject, camp):

  global validation

  validation = []

  for i in df:
    camps = range(0,len(i[subject]))
    for j in camps:
      temp = str(i[subject][j][camp])
      validation.append(temp)

  return(validation)
```

In [ ]:

```
# Seting unique to customers

list_column = ['id','name','email']
final_customers = []

for i in list_column:
  unique(df,'customer',i)

  globals()[str('validation_' + str(i))] = validation

final_customers = pd.DataFrame({'id':validation_id,\
                                'name':validation_name,\
                                'email':validation_email})

final_customers = final_customers.drop_duplicates()
final_customers = final_customers.to_dict('id')
```

In [ ]:

```
# Insert customers data

try:
    sql_conn = sqlite3.connect('SQLite_Namaste.db')
    cursor = sql_conn.cursor()
    print("Successfully Connected")


    for i in final_customers:

      insert = "INSERT INTO clients\
      (client_id, client_name, client_email) VALUES ('" +\
      str(final_customers[i]['id']) + "','" +\
      str(final_customers[i]['name']) + "','" +\
      str(final_customers[i]['email']) + "')"

      count = cursor.execute(insert)
      sql_conn.commit()
      print("Record inserted successfully into table ", cursor.rowcount)
    cursor.close()

except sqlite3.Error as error:
    print("Failed to insert data", error)
finally:
    if (sql_conn):
        sql_conn.close()
        print("Connection closed")
```

```
Successfully Connected
Record inserted successfully into table  1
Record inserted successfully into table  1
Record inserted successfully into table  1
Record inserted successfully into table  1
Connection closed
```

In [ ]:

```
# Seting unique to products

list_column = ['product_id','product_name','product_sku','price']
final_products = []

for i in list_column:
  unique2(df,'line_items',i)

  globals()[str('validation_' + str(i))] = validation

final_products = pd.DataFrame({'product_id':validation_product_id, \
                               'product_name':validation_product_name,\
                               'product_sku':validation_product_sku,\
                               'price':validation_price})

final_products = final_products.drop_duplicates()
final_products = final_products.reset_index(drop = True)
final_products = final_products.to_dict('id')
```

In [ ]:

```
# Insert products data

try:
    sql_conn = sqlite3.connect('SQLite_Namaste.db')
    cursor = sql_conn.cursor()
    print("Successfully Connected")


    for i in final_products:

      insert = 'INSERT INTO products (product_id, product_name, product_sku,\
      price_USD) VALUES ("' +\
      str(final_products[i]['product_id']) + '","' +\
      str(final_products[i]['product_name']) + '","' + \
      str(final_products[i]['product_sku']) + '","' + \
      str(final_products[i]['price']) + '")'

      count = cursor.execute(insert)
      sql_conn.commit()
      print("Record inserted successfully into table ", cursor.rowcount)
    cursor.close()

except sqlite3.Error as error:
    print("Failed to insert data", error)
finally:
    if (sql_conn):
        sql_conn.close()
        print("Connection closed")
```

```
Successfully Connected
Record inserted successfully into table  1
Record inserted successfully into table  1
Record inserted successfully into table  1
Record inserted successfully into table  1
Record inserted successfully into table  1
Record inserted successfully into table  1
Connection closed
```

In [ ]:

```
# Sorting currency_rate data

ordered_date = []
ordered_rate = []

for i in range(0, len(df)):
  a = df[i]['created_at'][0:10]
  ordered_date.append(a)
  b = df[i]['currency_rate']
  ordered_rate.append(b)

ordered = pd.DataFrame({'date':ordered_date, 'currency_rate':ordered_rate})
ordered = ordered.drop_duplicates()
ordered = ordered.sort_values('date')
ordered = ordered.reset_index(drop = True)
ordered = ordered.to_dict('id')
```

In [ ]:

```
# Insert currency_rate data

date_id = 0

try:
    sql_conn = sqlite3.connect('SQLite_Namaste.db')
    cursor = sql_conn.cursor()
    print("Successfully Connected")

    for i in ordered:

      insert = "INSERT INTO rates (date_id, date, currency_rate) VALUES ('"+\
      str(date_id) + "','" +\
      str(ordered[i]['date']) + "','" + \
      str(ordered[i]['currency_rate']) + "')"

      count = cursor.execute(insert)
      sql_conn.commit()
      date_id += 1
      print("Record inserted successfully into table ", cursor.rowcount)
    cursor.close()

except sqlite3.Error as error:
    print("Failed to insert data", error)
finally:
    if (sql_conn):
        sql_conn.close()
        print("Connection closed")
```

```
Successfully Connected
Record inserted successfully into table  1
Record inserted successfully into table  1
Record inserted successfully into table  1
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Record inserted successfully into table  1
Record inserted successfully into table  1
Record inserted successfully into table  1
Record inserted successfully into table  1
Connection closed
```

In [ ]:

```
# Creating orders data_set

orders_ok = []
items_ok = []
customers_ok = []
created_at_ok = []
product_ok = []

for i in df:
  camps = range(0,len(i['line_items']))
  temp_customer = i['customer']['id']
  temp_created_at = i['created_at'][0:10]

  for j in camps:
    temp = str(i['id'])

    items_ok.append(i['line_items'][j]['id'])
    orders_ok.append(temp)
    customers_ok.append(temp_customer)
    created_at_ok.append(temp_created_at)
    product_ok.append(i['line_items'][j]['product_id'])

orders_ok = pd.DataFrame({'order_id':orders_ok,\
                          'line_id':items_ok,\
                          'client_id':customers_ok,\
                          'date':created_at_ok,\
                          'product_id':product_ok})


orders_ok = orders_ok.sort_values('date')
orders_ok = orders_ok.reset_index(drop = True)
orders_ok = orders_ok.to_dict('id')
```

In [ ]:

```
# Insert orders data

try:
    sql_conn = sqlite3.connect('SQLite_Namaste.db')
    cursor = sql_conn.cursor()
    print("Successfully Connected")

    for i in orders_ok:
      insert = "INSERT INTO orders (order_id, line_id, client_id, date,\
       product_id) VALUES ('" + \
       str(orders_ok[i]['order_id']) + "','" +\
       str(orders_ok[i]['line_id']) + "','" +\
       str(orders_ok[i]['client_id']) +  "','" +\
       str(orders_ok[i]['date']) +  "','" +\
       str(orders_ok[i]['product_id']) + "')"

      count = cursor.execute(insert)
      sql_conn.commit()

      print("Record inserted successfully into table ", cursor.rowcount)
    cursor.close()

except sqlite3.Error as error:
    print("Failed to insert data", error)
finally:
    if (sql_conn):
        sql_conn.close()
        print("Connection closed")
```

```
Successfully Connected
Record inserted successfully into table  1
Record inserted successfully into table  1
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Record inserted successfully into table  1
Record inserted successfully into table  1
Record inserted successfully into table  1
Record inserted successfully into table  1
Record inserted successfully into table  1
Connection closed
```

In [ ]:

```
# Checking tables

conn = sqlite3.connect("SQLite_Namaste.db")

cur = conn.cursor()
cur.execute("SELECT * FROM orders limit 10")

rows = cur.fetchall()

for row in rows:
  print(row)

conn.close()
```

```
(7722055557038194, 759658, 59933, '2020-01-01', 573794972)
(5825547264855968, 771854, 59933, '2020-01-01', 694165761)
(5825547264855968, 317808, 59933, '2020-01-01', 477365777)
(6255086600405590, 997208, 94720, '2020-01-05', 278266679)
(6255086600405590, 317808, 94720, '2020-01-05', 477365777)
(2366621613260728, 604665, 23955, '2020-01-18', 510650809)
(1288301820842508, 610448, 23955, '2020-01-19', 632910392)
(2212383088430312, 771854, 59933, '2020-01-22', 694165761)
(2212383088430312, 997208, 59933, '2020-01-22', 278266679)
(2212383088430312, 759658, 59933, '2020-01-22', 573794972)
```

In [ ]:

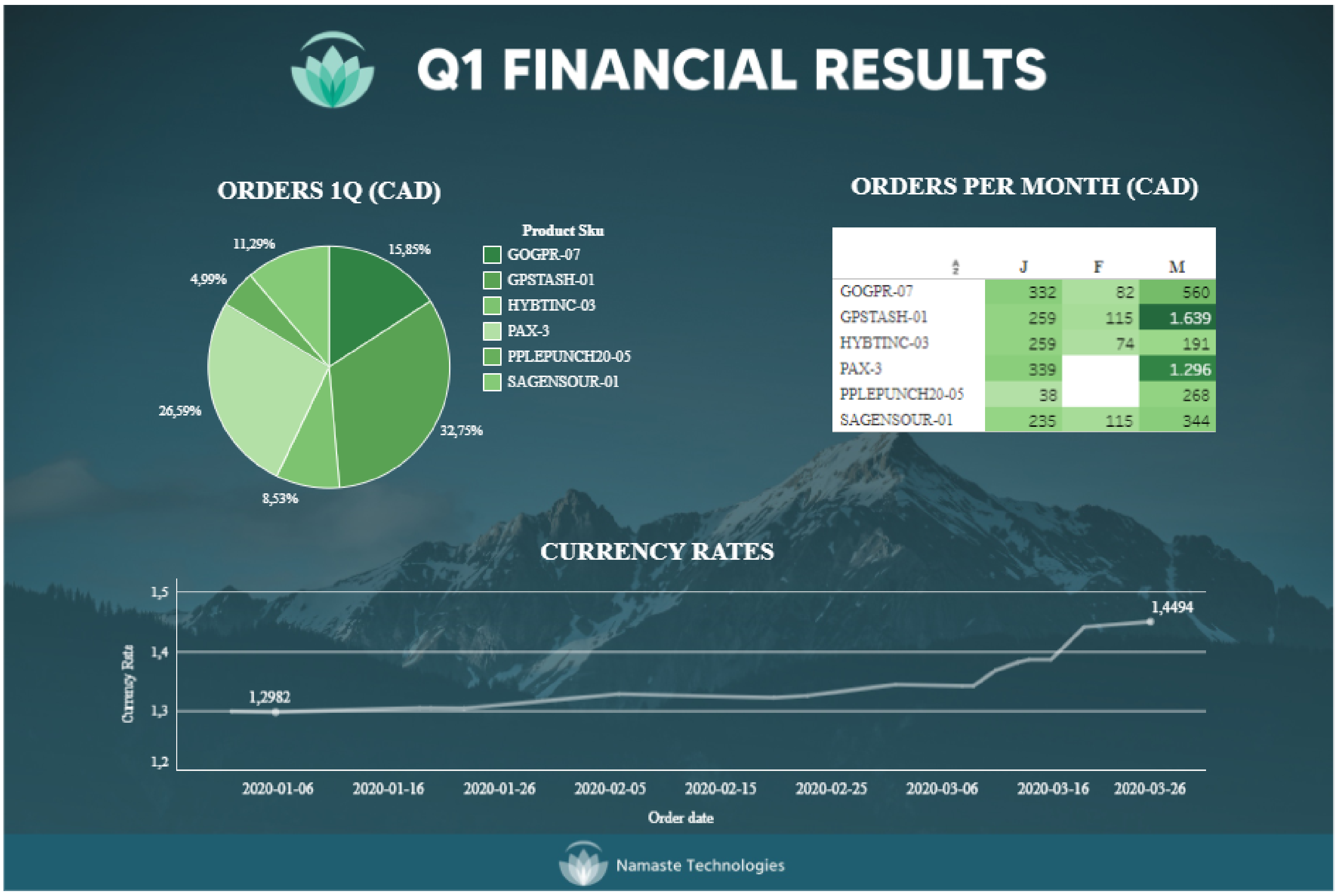
```
# Data to be written

with open("namaste_orders.json", "w") as outfile:
    js.dump(df, outfile)
```

TASK 3

Link to Tableau's dashboard:

https://public.tableau.com/views/Namaste_Project/Dashboard?:language=pt&:display_count=y&publish=yes&:
(https://public.tableau.com/views/Namaste_Project/Dashboard?:language=pt&:display_count=y&publish=yes&:

Dashboard printed:



	J	F	M
GOGPR-07	332	82	560
GPSTASH-01	259	115	1.639
HYBTINC-03	259	74	191
PAX-3	339		1.296
PPLEPUNCH20-05	38		268
SAGENSOUR-01	235	115	344

Considerations:

- I went to the Namaste website and took the color pattern to use on my dashboard. I used this site https://color.adobe.com/pt/create/color-wheel (https://color.adobe.com/pt/create/color-wheel) to identify the colors.

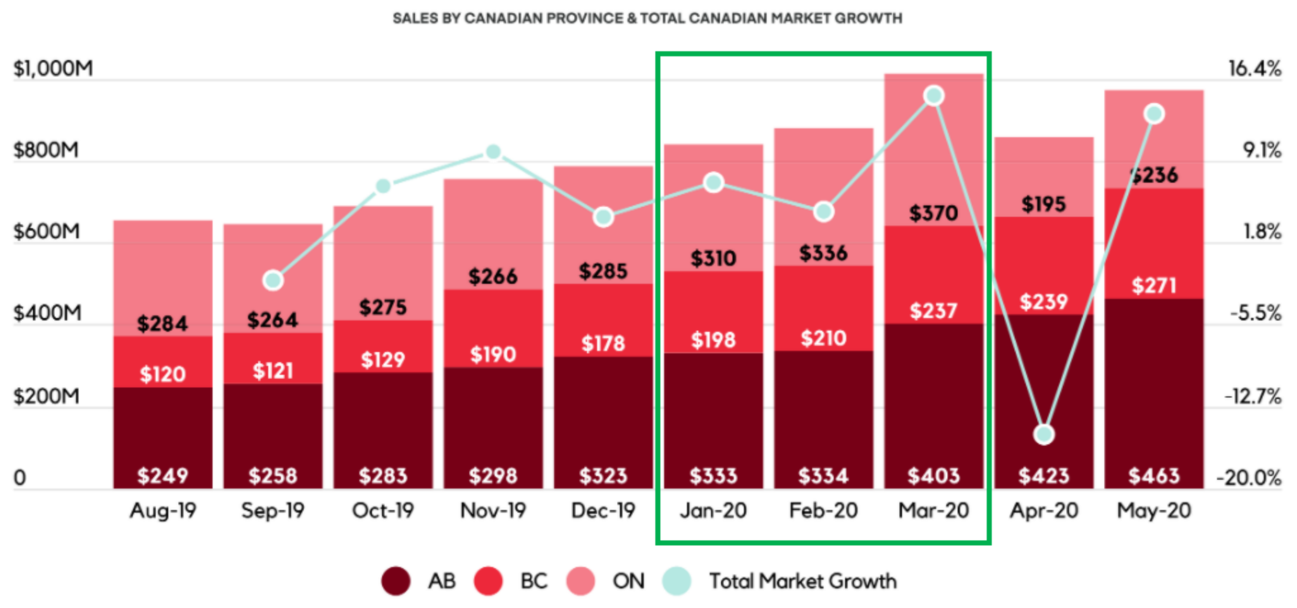
  COLOR 1: #1ca7a5
  COLOR 2: #2a6273
  COLOR 3: #1e4b58

- I went to the link below to take the background Mountain image (similar to the Namaste website). It has free images with high quality.

  https://www.pexels.com/pt-br/procurar/mountain/ (https://www.pexels.com/pt-br/procurar/mountain/)

- To check if the sales growth in March made sense, I saw the industry report of Canada's sale, that is available in this link: https://www.headset.io/industry-reports/the-current-state-of-canadas-cannabis-2-0-products (https://www.headset.io/industry-reports/the-current-state-of-canadas-cannabis-2-0-products)

- As it is possible to see in the Industry report, in the 2020 first quarter, the sales have grown, mostly in March. This information supports my dashboard's analyzes because March was the best month in Namaste's information.


SALES BY CANADIAN PROVINCE & TOTAL CANADIAN MARKET GROWTH
$1,000M
$800M
$600M
$400M
$200M
$284
$120
$249
$264
$121
$258
$275
$129
$283
$266
$190
$298
$285
$178
$323
$310
$198
$333
$336
$210
$334
$370
$237
$403
$195
$239
$423
$236
$271
$463
Aug-19
Sep-19
Oct-19
Nov-19
Dec-19
Jan-20
Feb-20
Mar-20
Apr-20
May-20
● AB
● BC
● ON
● Total Market Growth