New Jersey PPP Loan Analysis

May 5, 2021

1 NJ PPP Loan Data Analysis

Data acquired from nj.data.gov.

1.1 Background

The Paycheck Protection Program (PPP) loans provide small businesses with the resources they need to maintain their payroll, hire back employees who may have been laid off, and cover applicable overhead. This data set includes businesses in New Jersey who received PPP funding, how much funding the employer received & how many jobs the employer claims they saved. The NAICS (National Industry Classification) was provided by the loan recipient.

This dataset was used to analyze the distribution of Payment Protection Program loans within New Jersey. In this notebook is a breakdown consisting of loan bracket, business owner race, and other important distinctions within PPP loan distribution.

[6]:
```
import pandas as pd
from pandas_profiling import ProfileReport
import seaborn as sns
import numpy as np

import matplotlib as mpl
from matplotlib import rcParams
from matplotlib import style
mpl.style.use('fivethirtyeight')
import matplotlib.pyplot as plt
%matplotlib inline

import csv
import math
import json
```

1.1.1 General Overview

[7]:
```
INIT_CSV = pd.DataFrame(pd.read_csv('PPP_Data_fixed - Final.csv'))
```

[8]:
```
data = INIT_CSV.copy()
data.head(5)
```

[8]:
```
              Loan Range            Business Name                   Address  \
0      $150,000-$350,000  MAXUM EXPO SERVICES LLC  Maxum Expo Services LLC
1  $2,000,000-$5,000,000             JRCRUZ CORP            675 Line Road
2      $150,000-$350,000   FRIENDLY DENTAL NJ LLC            112 OXFORD LN
3      $150,000-$350,000             COR MIK LLC    1077 Route 34 Store F
4      $150,000-$350,000         TCC HOLDING, LLC             400 LLoyd Rd

           City State   Zip  NAICS Code                    Business Type  \
0  109 HILL ST    NJ  8059    453998.0  Limited  Liability Company(LLC)
1     ABERDEEN    NJ  7747    237110.0  Limited  Liability Company(LLC)
2     ABERDEEN    NJ  7747    621210.0         Subchapter S Corporation
3     ABERDEEN    NJ  7747    722513.0  Limited  Liability Company(LLC)
4     ABERDEEN    NJ  7747    713910.0  Limited  Liability Company(LLC)

  Race Ethnicity      Gender     Veteran n-Profit  Jobs Retained  \
0     Unanswered  Unanswered  Unanswered       NO           10.0
1     Unanswered  Unanswered  Unanswered       NO          235.0
2     Unanswered  Unanswered  Unanswered       NO           13.0
3     Unanswered  Unanswered  Unanswered       NO           52.0
4     Unanswered  Unanswered  Unanswered       NO           12.0

  Date Approved                                  Lender  \
0     4/15/2020                   Readycap Lending, LLC
1     4/15/2020  Manufacturers and Traders Trust Company
2      5/5/2020           PNC Bank, National Association
3     4/29/2020     Santander Bank, National Association
4     4/28/2020                                Amboy Bank

  Congressional District                 Georeference
0                  NJ-01                          NaN
1                  NJ-04  POINT (-74.209684 40.414174)
2                  NJ-04   POINT (-74.227814 40.39865)
3                  NJ-04                          NaN
4                  NJ-04   POINT (-74.21847 40.400111)
```

1.1.2 Businesses owned by a White/Caucasian Individual

[5]:
```
WhtOwned = INIT_CSV.copy()
whtNum = WhtOwned[WhtOwned['Race Ethnicity'].str.contains("White")]
num = str(whtNum.shape[0])
print("There are " + num + " White owned businesses")
whtNum.head()
```

```
There are 973 White owned businesses
```

[5]:
```
              Loan Range                          Business Name  \
7      $150,000-$350,000                CAROUSEL CORPORATION
```

```
17       $150,000-$350,000                        GOURMET ITALIAN CUISINE
89       $150,000-$350,000                        OCEANSIDE SERVICE, INC.
105    $350,000-$1,000,000  COASTAL LEARNING CENTER-MONMOUTH CORPORATION
109  $1,000,000-$2,000,000                                    RANCH HOPE

             Address        City State   Zip  NAICS Code  \
7    1182 Highway 34    ABERDEEN    NJ  7747    611110.0
17   321 S PITNEY RD     ABSECON    NJ  8205    722511.0
89   531 Main Street  ALLENHURST    NJ  7711    561790.0
105  7.50 PO BOX 439   ALLENWOOD    NJ  8720    611110.0
109  45 SAWMILL ROAD     ALLOWAY    NJ  8001    624110.0

                Business Type Race Ethnicity      Gender      Veteran  \
7    Subchapter S Corporation          White  Male Owned  Non-Veteran
17                Corporation          White  Male Owned  Non-Veteran
89                Corporation          White  Male Owned  Non-Veteran
105               Corporation          White  Male Owned  Non-Veteran
109    Non-Profit Organization          White  Male Owned   Unanswered

    n-Profit  Jobs Retained Date Approved  \
7         NO           51.0     4/30/2020
17        NO           43.0      4/6/2020
89        NO           22.0     4/10/2020
105       NO           47.0     4/28/2020
109     TRUE          195.0     4/10/2020

                                          Lender Congressional District  \
7                            LCA Bank Corporation                  NJ-04
17            OceanFirst Bank, National Association                  NJ-02
89   Citizens Community Federal National Association                  NJ-04
105           OceanFirst Bank, National Association                  NJ-04
109                    The Pennsville National Bank                  NJ-02

                    Georeference
7    POINT (-74.222442 40.393991)
17   POINT (-74.493619 39.465681)
89    POINT (-74.00706 40.234503)
105                          NaN
109  POINT (-75.363284 39.549713)
```

1.1.3 Businesses owned by a Black/African American Individual

[6]:
```
AfrOwned = INIT_CSV.copy()
blkNum = AfrOwned[AfrOwned['Race Ethnicity'].str.contains("Black")]
num = str(blkNum.shape[0])
print("There are " + num + " Black/African American owned businesses")
blkNum.head()
```

```
There are 26 Black/African American owned businesses
```

[6]:

	Loan Range	Business Name	Address	City	State	Zip	NAICS Code	Business Type	Race Ethnicity	Gender	Veteran	n-Profit	Jobs Retained	Date Approved	Lender	Congressional District	Georeference
162	$1,000,000-$2,000,000	CENTRAL JERSEY URGENT CARE LLC	731 Highway 35	ASBURY PARK	NJ	7712	621111.0	Limited Liability Company(LLC)	Black or African American	Male Owned	Non-Veteran	NO	195.0	4/15/2020	OceanFirst Bank, National Association	NJ-04	POINT (-74.038384 40.227118)
955	$150,000-$350,000	NEXT MILE LLC	109 GARNER AVENUE	BLOOMFIELD	NJ	7003	484110.0	Limited Liability Company(LLC)	Black or African American	Male Owned	Veteran	NO	52.0	6/29/2020	Cross River Bank	NJ-09	POINT (-74.17655 40.837934)
994	$150,000-$350,000	ALPHA MILE LLC	109 GARNER AVENUE	BLOOMFIELD	NJ	7003	484110.0	Partnership	Black or African American	Female Owned	Non-Veteran	NO	50.0	5/26/2020	Cross River Bank	NJ-09	POINT (-74.17655 40.837934)
1442	$2,000,000-$5,000,000	OBANTA LLC	1065 US HIGHWAY 22 STE 3	BRIDGEWATER	NJ	8807	621112.0	Limited Liability Company(LLC)	Black or African American	Male Owned	Non-Veteran	NO	275.0	4/9/2020	Radius Bank	NJ-07	
1746	$350,000-$1,000,000	ATS GROUP, LLC.	423 MARKET ST STE 1	CAMDEN	NJ	8102	425110.0	Limited Liability Company(LLC)	Black or African American	Unanswered	Unanswered	NO	12.0	4/14/2020	Truist Bank d/b/a Branch Banking & Trust Co	NJ-01	

```
1442   POINT (-74.59898 40.580445)
1746  POINT (-75.121592 39.945762)
```

1.1.4 Businesses owned by an Asian Individual

[7]:
```
AsianOwned = INIT_CSV.copy()
asianNum = AsianOwned[AsianOwned['Race Ethnicity'].str.contains("Asian")]
num = str(asianNum.shape[0])
print("There are " + num + " Asian owned businesses")
asianNum.head()
```

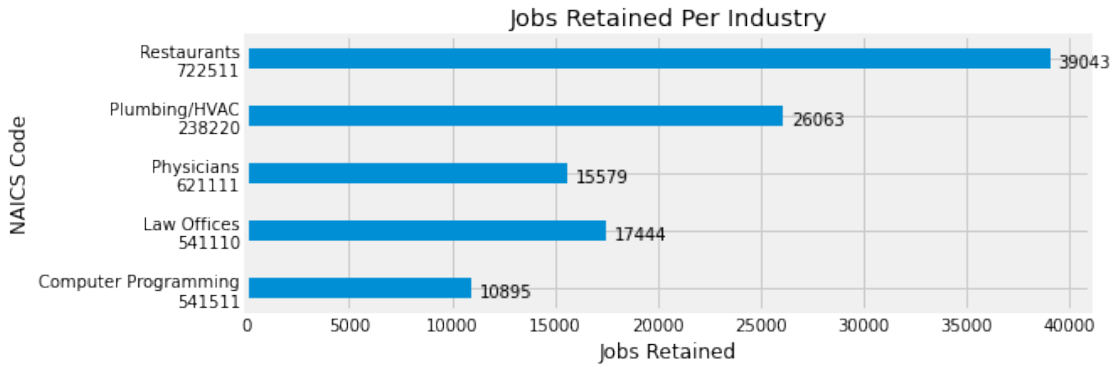
```
There are 269 Asian owned businesses
```

[7]:

	Loan Range	Business Name	Address	City	State	Zip	NAICS Code	Business Type	Race Ethnicity	Gender	Veteran	n-Profit	Jobs Retained	Date Approved	Lender	Congressional District	Georeference
195	$350,000-$1,000,000	TBD, INC.	660 Cookman Avenue	ASBURY PARK	NJ	7712	722511.0	Corporation	Asian	Male Owned	Non-Veteran	NO	75.0	4/16/2020	First Bank	NJ-04	POINT (-74.012061 40.215755)
477	$150,000-$350,000	GOLDEN FORTUNE IMPORT & EXPORT CORP.	55 Hook Road, Front Bldg	BAYONNE	NJ	7002	424410.0	Corporation	Asian	Male Owned	Non-Veteran	NO	30.0	4/10/2020	East West Bank	NJ-08	POINT (-74.096306 40.652135)
763	$350,000-$1,000,000	AM/PM WALK-IN URGENT CARE CLINIC LLC	19 S WASHINGTON AVE	BERGENFIELD	NJ	7621	621111.0	Limited Liability Company(LLC)	Asian	Male Owned	Non-Veteran	NO	65.0	4/11/2020	Provident Bank	NJ-05	POINT (-73.996234 40.927171)
802	$150,000-$350,000	BRIGHT BEGINNINGS QUALITY CARE CENTER, LLC	246 Springfield Ave	BERKELEY HEIGHTS	NJ	7922	624410.0	Limited Liability Company(LLC)	Asian	Male Owned	Non-Veteran	NO	40.0	4/6/2020	Lakeland Bank	NJ-07	POINT (-74.433778 40.689396)
993	$150,000-$350,000	DAS EDUCATION INC	156 Washington Street	BLOOMFIELD	NJ	7003	624410.0	Corporation	Asian	Male Owned	Non-Veteran	NO	24.0	4/6/2020	Berkshire Bank	NJ-09	POINT (-74.202724 40.792875)

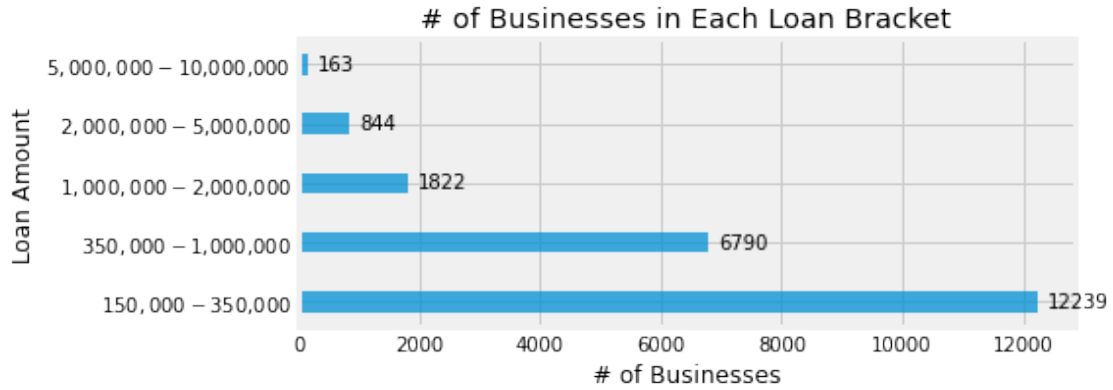
1.1.5 How many jobs were retained per industry?

[8]:
```
df = INIT_CSV.copy()
df = df[["NAICS Code", "Jobs Retained"]]

# Remove rows with empty data
df.dropna(inplace = True)

# Make sorted list of unique NAICS codes
codes = sorted(list(set(np.array([238220, 541110, 541511, 621111, 722511]))))
decodes = sorted(list(set(np.array(["Plumbing/HVAC\n238220", "Law␣
 ↪Offices\n541110", "Computer Programming\n541511", "Physicians\n621111",␣
 ↪"Restaurants\n722511"]))))
jobs = []

# Sum jobs retained for each job code
for code in codes:
    total = df.loc[df["NAICS Code"] == code, "Jobs Retained"].sum()
    jobs.append(total)

# Make ticks evenly spaced despite their values
x_pos = np.arange(len(codes))

fig, ax = plt.subplots(figsize=(8,3))

# Add chart labels
plt.barh(x_pos, jobs, .35)
plt.title("Jobs Retained Per Industry")
plt.ylabel("NAICS Code")
plt.xlabel("Jobs Retained")

plt.yticks(x_pos, decodes)
plt.setp(ax.yaxis.get_majorticklabels(), rotation=0, ha="right",␣
 ↪rotation_mode="anchor")

for p in ax.patches:
#     ax.annotate(str(p.get_x()), (p.get_width() * 1.005, p.get_x() * 1.005))
    ax.annotate(str(p.get_width().astype(int)), (p.get_x() + p.get_width(), p.
 ↪get_y()), xytext=(5, 1), textcoords='offset points')

plt.show()
```



1.1.6 How many businesses took loans in each bracket?

[9]:
```
pd.set_option('precision', 0)
fields = ['Loan Range', 'NAICS Code']
order = ['$5,000,000-$10,000,000', '$2,000,000-$5,000,000',␣
 ↪'$1,000,000-$2,000,000', '$350,000-$1,000,000', '$150,000-$350,000']
dfJob = pd.DataFrame(pd.read_csv('PPP_Data_fixed - Final.csv',␣
 ↪skipinitialspace=True, usecols=fields))
ax = dfJob.groupby('Loan Range').size().reindex(order)\
.plot(kind='barh', alpha=0.75, figsize=(8,3),\
      title="# of Businesses in Each Loan Bracket",\
      xlabel="Loan Amount", width=.35)
plt.gca().invert_yaxis()
for p in ax.patches:
    ax.annotate(str(p.get_width()), (p.get_x() + p.get_width(), p.get_y()),␣
 ↪xytext=(5, -8), textcoords='offset points')
plt.xlabel("# of Businesses")
plt.tight_layout()
```



1.1.7 Exploring specific cities in New Jersey

[10]:
```
cities = {}

with open('PPP_Data_fixed - Final.csv', 'r') as f_in:
    reader = csv.reader(f_in)
    count = 0
    for row in reader:
        if len(row) == 17:
            string = row[3]
        elif len(row) == 19:
            string = row[5]
        elif len(row) == 18:
            string = row[4]

        if string not in cities:
            cities[string] = 1
        else:
            cities[string] += 1
        count += 1
f_in.close()

city = input("Which city would you like to explore? ")
city = city.upper()
print('\n' + city.title() + " had " + str(cities.get(city.upper())) + "␣
↪businesses recieve a PPP loan.")

#    df[(df['A'] > 1) | (df['B'] < -1)]

AfrOwned = INIT_CSV.copy()
blkNum = AfrOwned[(AfrOwned['Race Ethnicity'] == 'Black or African American') &␣
↪(AfrOwned['City'] == city)]
num = str(blkNum.shape[0])
print(num + " of which are Black/African American owned businesses")

WhtOwned = INIT_CSV.copy()
whtNum = WhtOwned[(WhtOwned['Race Ethnicity'] == 'White') & (WhtOwned['City']␣
↪== city)]
num = str(whtNum.shape[0])
print(num + " of which are White owned businesses")

AsianOwned = INIT_CSV.copy()
asianNum = AsianOwned[(AsianOwned['Race Ethnicity'] == 'Asian') &␣
↪(AsianOwned['City'] == city)]
num = str(asianNum.shape[0])
print(num + " of which are Asian owned businesses")
```

```
HispOwned = INIT_CSV.copy()
hispNum = HispOwned[(HispOwned['Race Ethnicity'] == 'Hispanic') &␣
 ↪(HispOwned['City'] == city)]
num = str(hispNum.shape[0])
print(num + " of which are Hispanic owned businesses")

NativeOwned = INIT_CSV.copy()
natNum = NativeOwned[(NativeOwned['Race Ethnicity'] == 'American Indian or␣
 ↪Alaska Native') & (NativeOwned['City'] == city)]
num = str(natNum.shape[0])
print(num + " of which are American Indian/Alaskan Native owned businesses")

NaNOwned = INIT_CSV.copy()
NaNNum = NaNOwned[(NaNOwned['Race Ethnicity'] == 'Unanswered') &␣
 ↪(NaNOwned['City'] == city)]
num = str(NaNNum.shape[0])
print(num + " businesses did not answer")
```

```
Which city would you like to explore? Union

Union had 157 businesses recieve a PPP loan.
1 of which are Black/African American owned businesses
6 of which are White owned businesses
1 of which are Asian owned businesses
2 of which are Hispanic owned businesses
0 of which are American Indian/Alaskan Native owned businesses
147 businesses did not answer.
```