

WK Analytic Consulting

“The Young Franc-tireurs of
Data Analytics”

By William Maréchal & Kent Johnson

**“To fight poverty
wherever it might be,
while supporting
growth”**





New York: Burning Glass X case

Our Process

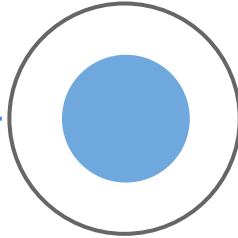
Step 1

Identify the problem



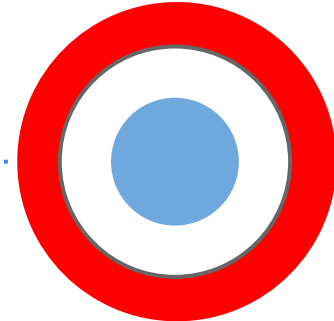
Step 2

Create a data driven solution



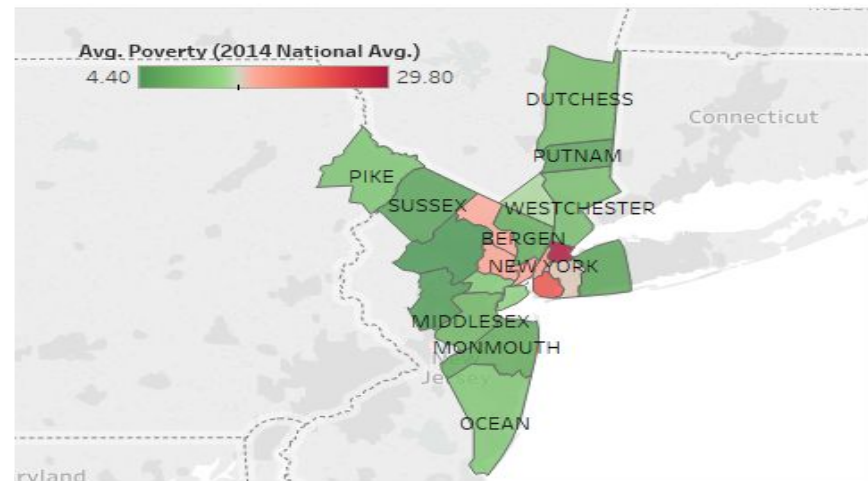
Step 3

Implement the solution

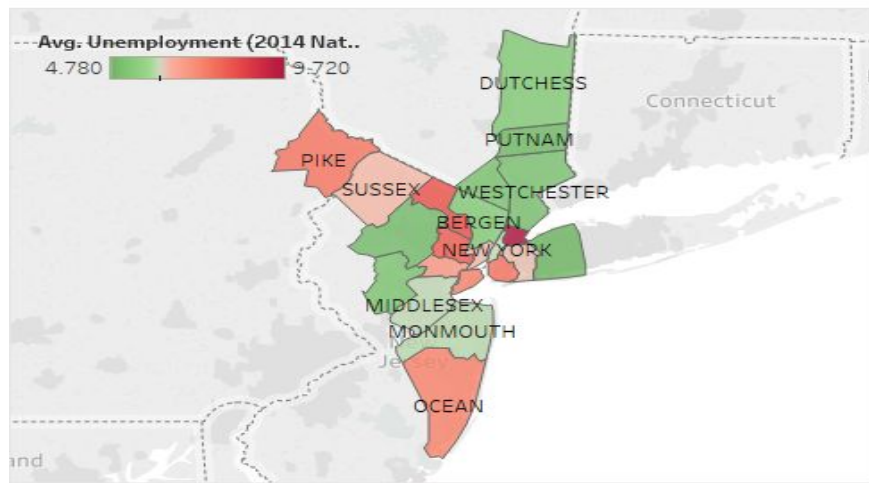


What's going on in the MSA?

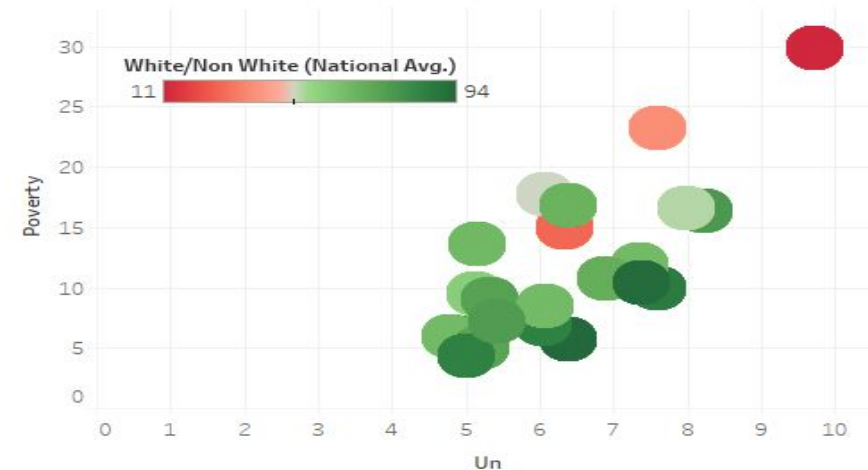
Poverty Rate



Unemployment



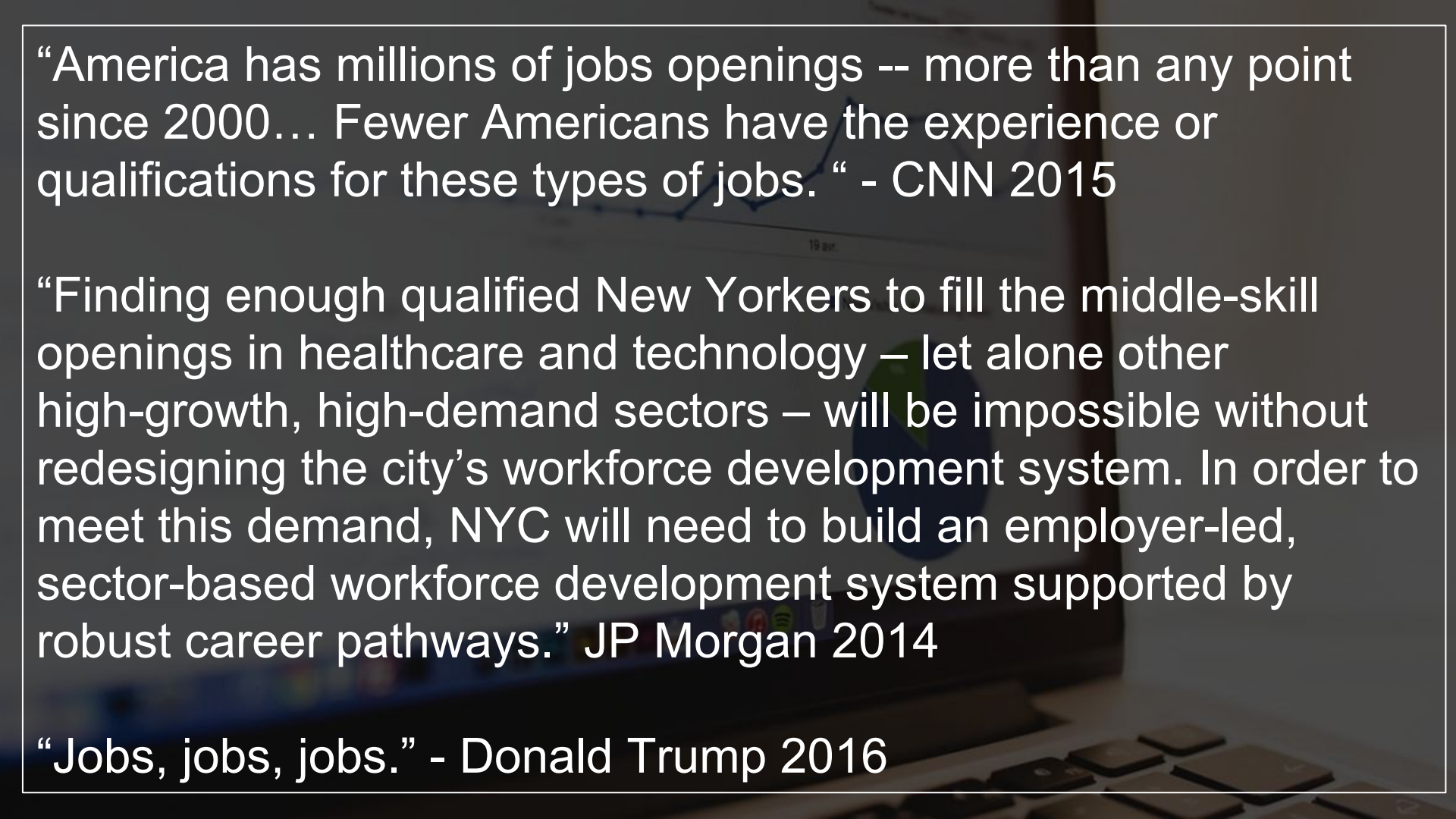
Unemployment vs Poverty



Crime



Average of Rate for each County. Color shows average of Rate. The marks are labeled by average of Rate. The view is filtered on County, which keeps 11 of 11 members.



“America has millions of jobs openings -- more than any point since 2000... Fewer Americans have the experience or qualifications for these types of jobs.” - CNN 2015

“Finding enough qualified New Yorkers to fill the middle-skill openings in healthcare and technology – let alone other high-growth, high-demand sectors – will be impossible without redesigning the city’s workforce development system. In order to meet this demand, NYC will need to build an employer-led, sector-based workforce development system supported by robust career pathways.” JP Morgan 2014

“Jobs, jobs, jobs.” - Donald Trump 2016



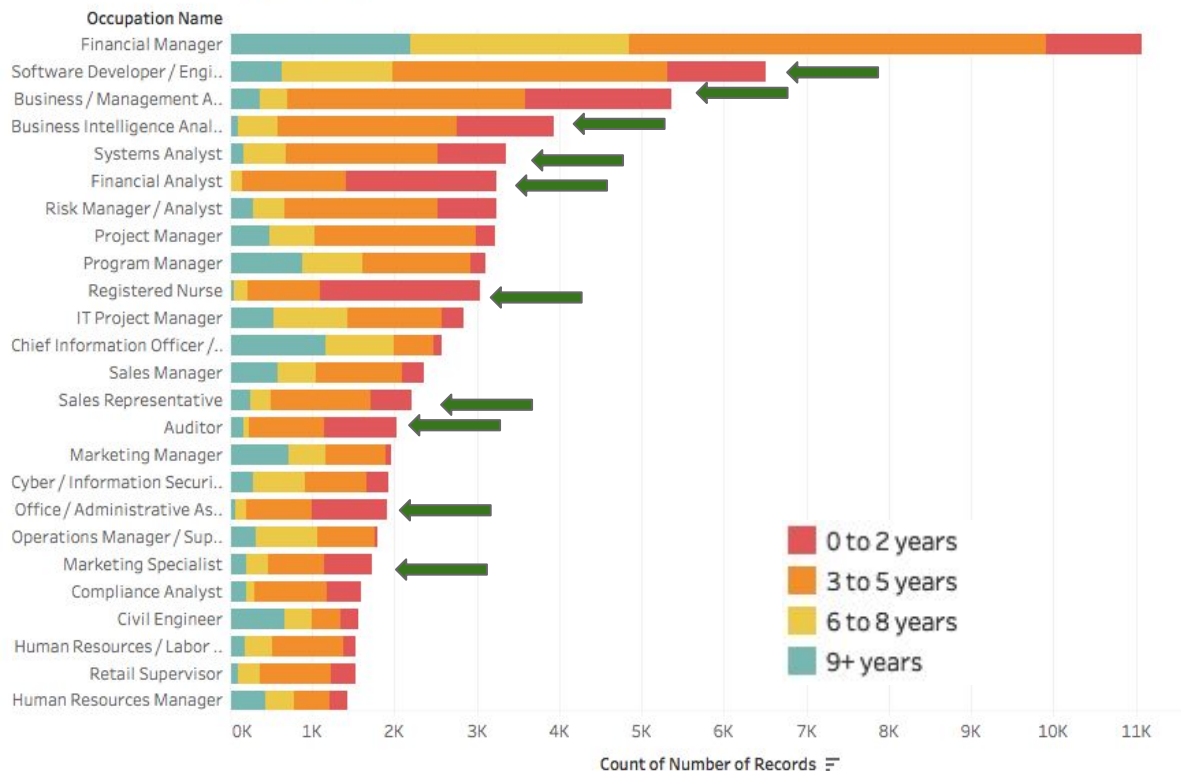
The problem: closing the skill gap

Preparing New Yorkers for high growth,
high-demand, middle-skill jobs.

- What jobs are in demand?
 - What skills are needed?
 - How much experience is needed?
 - What areas need the most support?
-

The question: What entry level jobs are most in demand?

Jobs vs experience (target)



-Nurse

-Business/Financial
intelligence/analyst

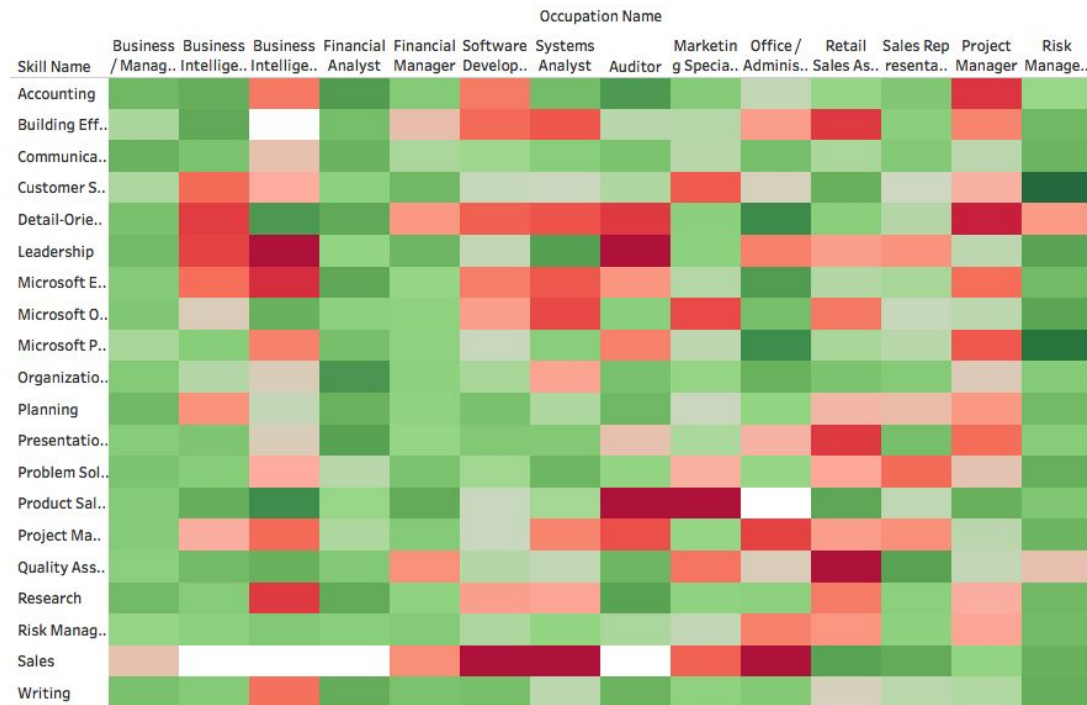
-Software Developer/Engineer
-Auditor

-Sales Representative

-Office/Administrative assistance

The question: What skills for what jobs?

Skill VS Jobs (Nurse excluded)



-Nurse

(Nursing, Quality assurance & control, research, communication)

-Business/Financial intelligence/analyst

-Software Developer/Engineer

(Accounting, organization-planning, product sales & delivery, problem solving, communication)

-Retail / sales Representative

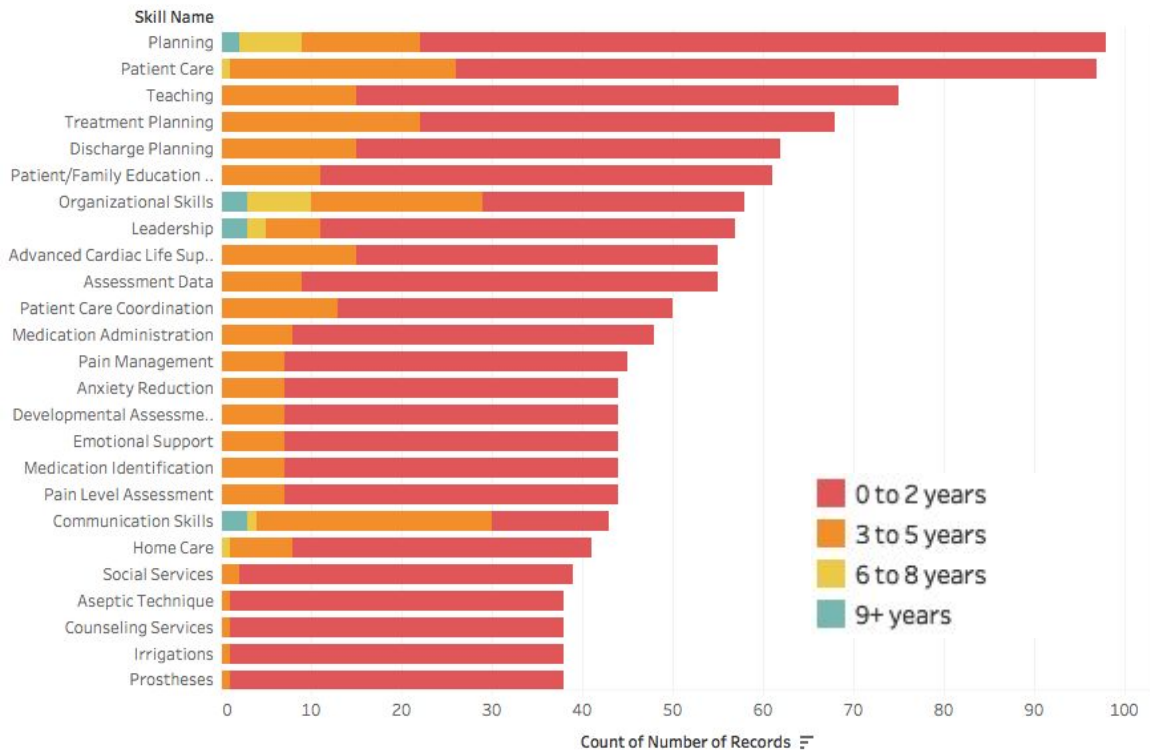
-Auditor

-Office/Administrative assistance

(Accounting, organisation skills, detail oriented, sales, communication)

The question: What skills are needed for nursing?

Nursing



-Medical background + nurse training
But little work experience

-Leadership

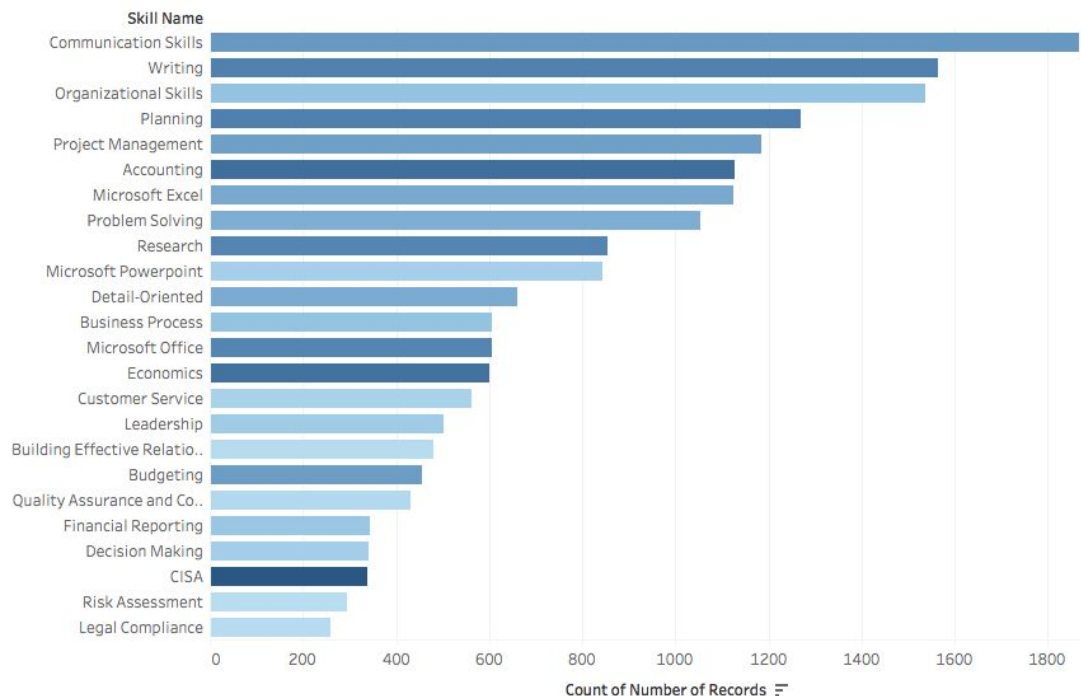
-Organization / Planning

-Communication

-Emotional intelligence

The question: Which skills can get me a job and is it worth it ?

Skill employment potential colored by salary



-Communication skills / Writing

-Planning

-Project management

-Accounting / Budgeting / Economics

-Microsoft Office

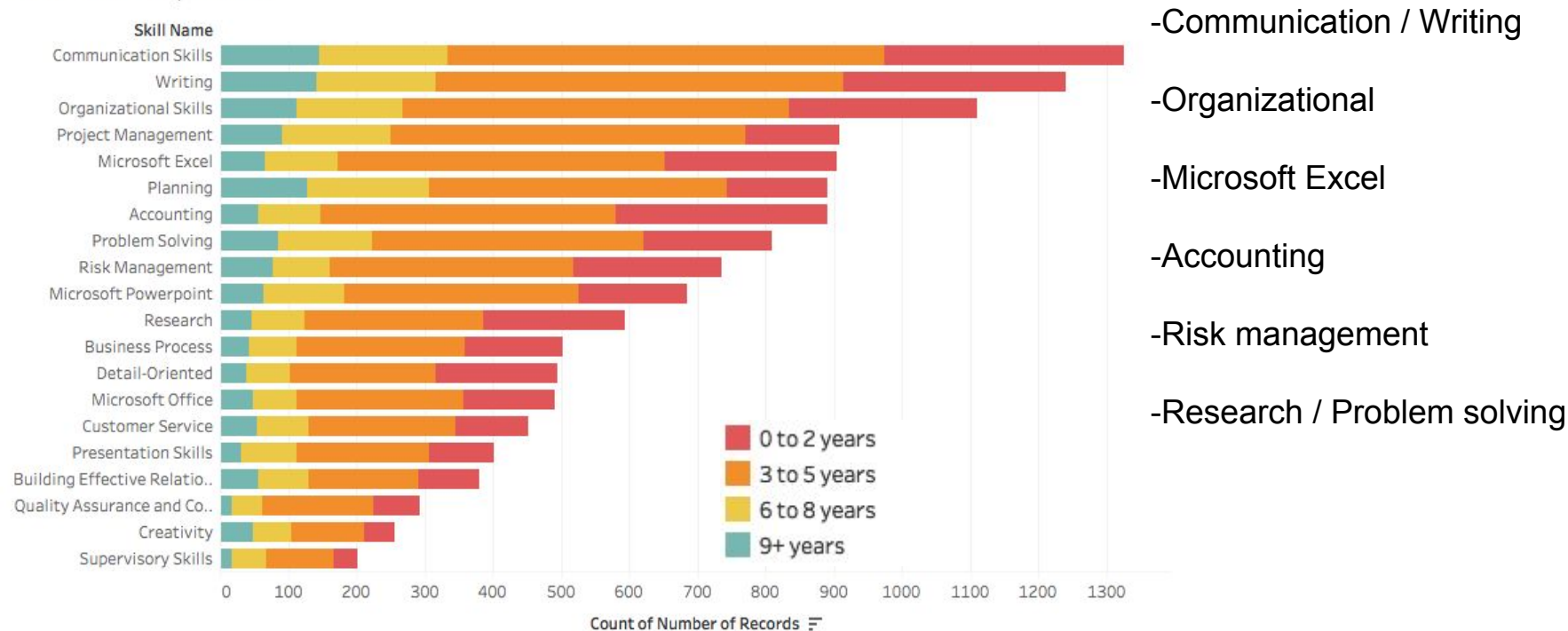
-Research

-Problem solving

-Certified Information System Auditor

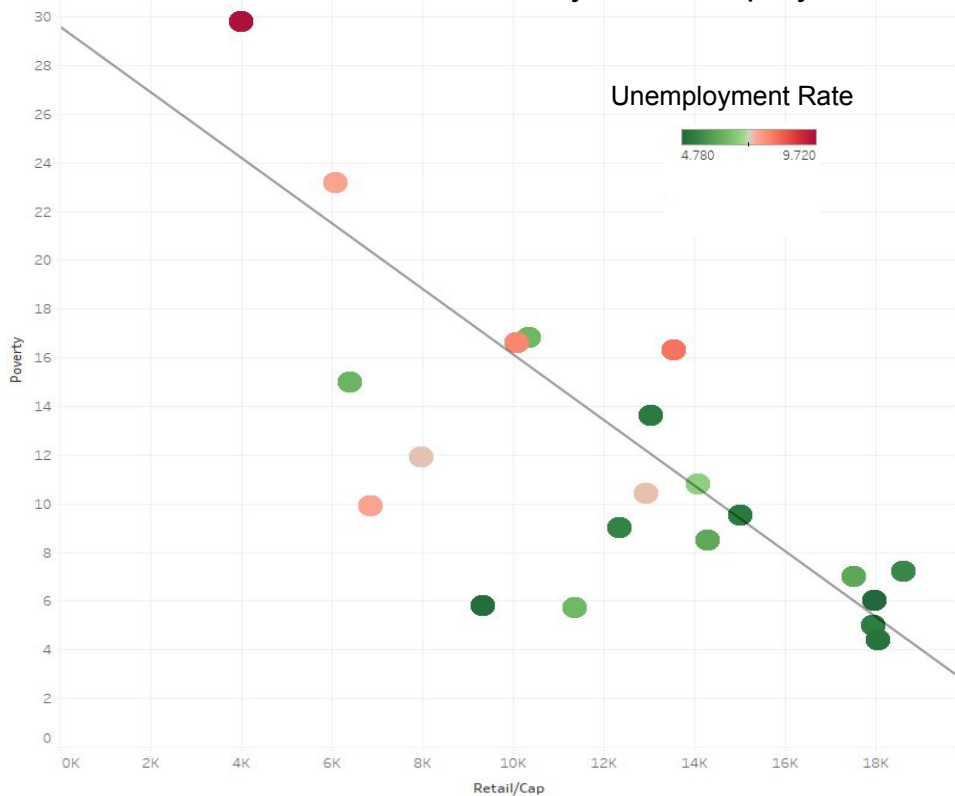
The question: How much experience?

Skills need experience

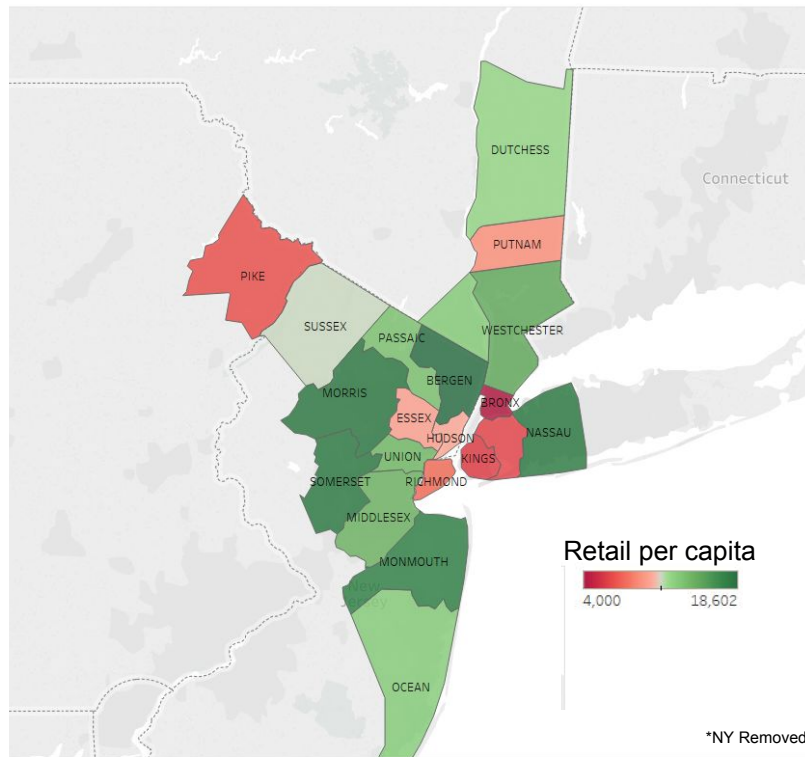


The question: Is there a correlation between poverty/unemployment and retail sales?

Retail v Poverty w/ Unemployment



Retail Sales per Capita by County



*NY Removed

Retail/Cap vs. Poverty. Color shows Un. Details are shown for County. The view is filtered on County, which excludes NEW YORK. *NY Removed

ude (generated). Color shows average of Retail/Cap. The marks are labeled by County. Details are shown for State. The view is filtered on Exclusion

Conclusion

Our analysis of the Metro Statistical Area of New York City:

- The Bronx, Kings & Queens + New York are the areas that are impacted most greatly by the skills gap, therefore we will concentrate our program efforts there.
- High demand jobs: Nursing, Business Intelligence & Sales.
- The most sought after skills are: Communication, organization, accounting and nursing.
- Efforts must be made to support and grow retail sales in our target areas.

The NYCSC has a \$100 million budget to alleviate the skills gap.

Through our analysis we have identified 3 key focus areas to foster jobs growth

We plan to partner with local organizations that have a track record of success in adult education.

Nursing

- 16 to 18 month training programs: Roseman University, UTICA College, Manhattan Institute
- Online course: South University,
https://www.southuniversity.edu/online/areas-of-study/nursing#lid-90_cid-50_aosid-66
 - Tuition: \$6000-\$8000



Business Intelligence

- BootCamps: 8-12 weeks
 - Developer Bootcamp, NYC Data Science Bootcamp
- Online training / Remote programs:
 - B.I. Academy, Coursera, Georgia Tech, NYC Data Science Bootcamp, Level
- Subsidised internships in local firms



NYC DATA SCIENCE
ACADEMY



h i l l
HOCHSCHULE DER MEDIEN

coursera

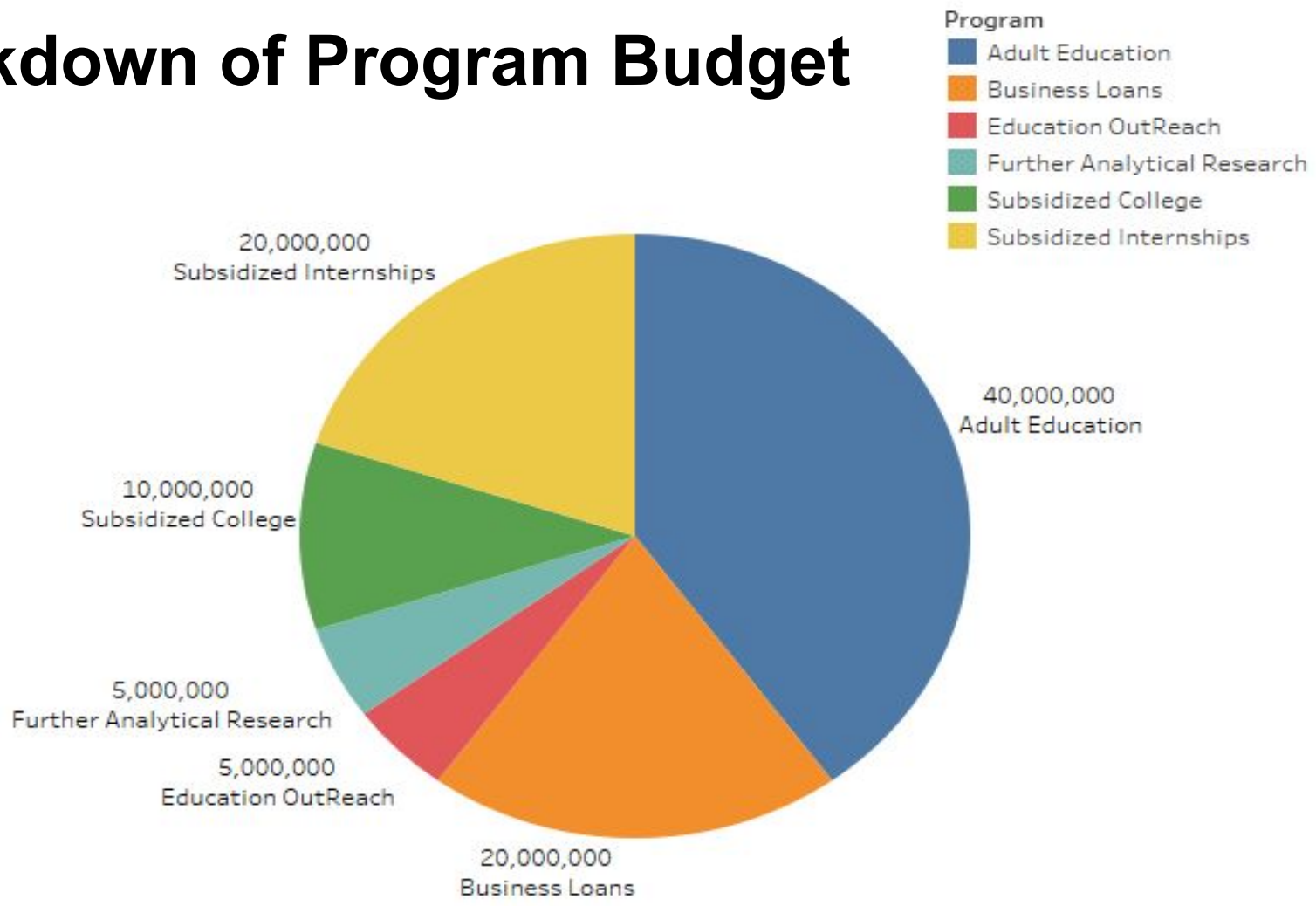


Retail Space/Sales

- New York Tax Credits
- Subsidized loans to local business
- Employee training incentive program
- Start-Up NY
 - <https://esd.ny.gov/doing-business-ny>
- Sponsoring local cultural events and festivals



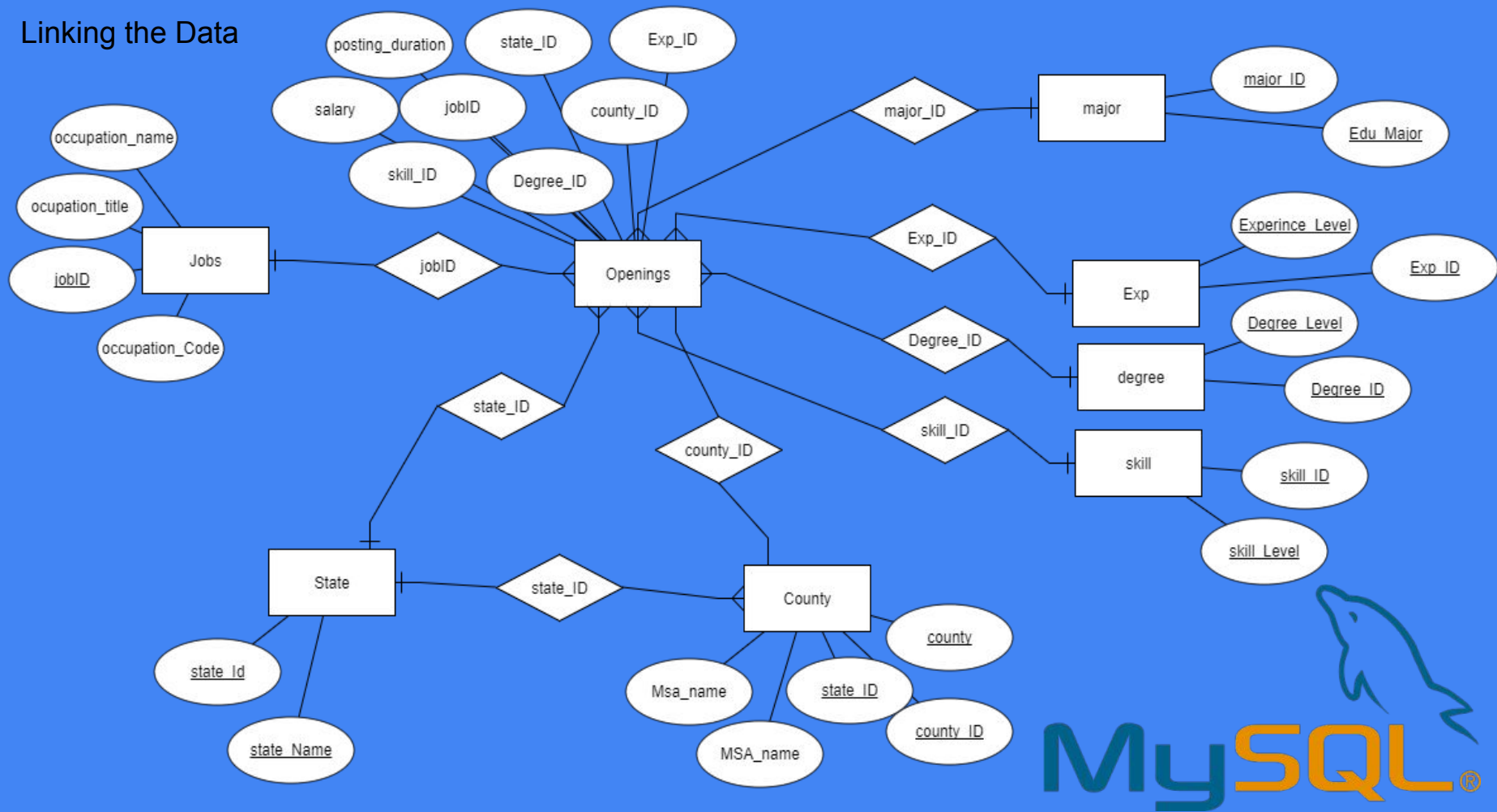
Breakdown of Program Budget



An aerial photograph of a city skyline at dusk or dawn. The sky is a mix of dark blue, purple, and orange. The city is densely packed with skyscrapers, many of which have their lights on. The Empire State Building is prominent in the center. The text 'The technology: Excel + R + MySQL + Tableau' is overlaid in large, bold, white letters.

The technology: Excel + R + MySQL + Tableau

Linking the Data



```
create database burningglass;
use burningglass;
create table state
select distinct state_Name, state_ID from data
create table county
select distinct county, county_ID, state_ID, MSA_ID, MSA_name from data
create table jobs
select jobID,occupation_name, occupation_title, occupation_Code from data
create table openings
select jobID,major_ID,state_ID,state_name,county_ID,Exp_ID,
Degree_ID,skill_ID,posting_duration from data
# a test
select state_name,county,occupation_name,posting_duration
from jobs,openings,county
where jobs.jobID = openings.jobID and openings.county_ID = county.county_ID
create table exp
select distinct Exp_ID, Experience_Level from data
create table degree
select distinct degree_ID, Degree_Level from data
create table skill
select distinct skill_ID, skill_Name from data
create table major
select distinct major_ID, Edu_Major from data
```



```
con1 <- dbConnect(MySQL(), user = 'root', password = "*****", host = 'localhost', dbname = 'burningglass')
library(RMySQL)
class <- read_csv("C:/Users/kjohn/Desktop/BG/BGT_class.csv")
class <- as.data.frame(class)
library(readr)
dbWriteTable(conn = con1, name = 'data', value = class)
MSA <- class[which(class$State_Name == 'PA'|class$State_Name=='NJ'|class$State_Name=='NY'),]
x <- (unique(class$County))
x <- sort(x)

MSA_Counties <- x[c(18,24,61,64,85,86,93,111,113,117,119,
123,129,133,138,142,147,149,151,153,166,169,172,178,184)]

MSA_V <- as.vector(MSA_Counties)
MSA1 <- MSA[is.element(MSA$County,MSA_V),]
MSA2 <- MSA1[which(MSA1$Occupation_Code != 0),]
MSA3 <- MSA2[c(3,6,8:14,16,19,22)]

dbWriteTable(conn = con1, name = 'data2', value = MSA3)

MS_sal <- MS[which(MS$Salary != 0),]

dbWriteTable(conn = con1, name = 'data3', value = MS_sal)
```



```
library(readr)
unemployment <- as.data.frame(read_excel("~/Desktop/Burning_glass/POP.xlsx",sheet = "Rate"))

POP_NY <- as.data.frame(read_excel("~/Desktop/Burning_glass/POP.xlsx",sheet = "NY"))
POP_PEN <- as.data.frame(read_excel("~/Desktop/Burning_glass/POP.xlsx",sheet = "PEN"))
POP_CON <- as.data.frame(read_excel("~/Desktop/Burning_glass/POP.xlsx",sheet = "CON"))
POP_NJ <- as.data.frame(read_excel("~/Desktop/Burning_glass/POP.xlsx",sheet = "NJ"))

a<-rbind(POP_NY,POP_PEN,POP_CON,POP_NJ)
POP_unemployment<-merge(unemployment,a,by="County",all.x=TRUE)
names(POP_unemployment)[7]<-"POP_2014"
POP_unemployment$unemployed<-ceiling(.5/100*POP_unemployment$Rate * POP_unemployment$POP_2014)
POP_unemployment<-POP_unemployment[POP_unemployment$Year==2014,]

unemployment2014<-aggregate(POP_unemployment[, 8], list(POP_unemployment$`county_state`), mean)
names(unemployment2014)<-c("county_state", "unemployment")
a<-aggregate(POP_unemployment[, 5], list(POP_unemployment$`county_state`), mean)
names(a)<-c("a","z")
unemployment2014$Rate<-a$z
unemployment2014$unemployment<-ceiling(unemployment2014$unemployment)
unemployment2014$county_state<-toupper(unemployment2014$county_state)

save(unemployment2014, file = "unemployment2014.RData")
```



Our Sources

- ❑ <http://www.indexmundi.com/facts/united-states/quick-facts/new-york/percent-of-people-of-all-ages-in-poverty#map>
 - ❑ Website containing USA Statistics by county
- ❑ <https://ucr.fbi.gov/>
 - ❑ Crime stats
- ❑ <http://money.cnn.com/2015/08/07/news/economy/us-economy-job-skills-gap/index.html>
 - ❑ CNN article on the USA skills gap
- ❑ <https://www.census.gov/people/laborforce/>
 - ❑ Labor force statistics
- ❑ <https://www.bls.gov/web/empsit/cpseea10.htm>
 - ❑ Unemployment data
- ❑ Burningglass Data
- ❑ <https://www.jpmorganchase.com/corporate/Corporate-Responsibility/document/54841-JPMC-GAP-REPORT-AW6.pdf>
 - ❑ JP Morgan Article

Questions?