

# An Analytical Overview of Restaurant Job in New York City in the Wake of the Pandemic

**Sonal Pandey**

*PhD, Middlesex County College, New Jersey*  
*sonal.bhu@gmail.com, [spandey@middlesexcc.edu](mailto:spandey@middlesexcc.edu)*

**ABSTRACT:** New York is the most corporate-oriented state in the U.S., as well as has instituted several tax benefits and incentives to help diminish the load on small business owners. The restaurant business in New York City is like no other business in the world. My research study is based on the hardship of the situation faced by the restaurant industry as well as their workers during this pandemic situation. Will they overcome this situation with flying colors? The objective is to suggest strategies lined up to live with the new normal. During my research study, I found that job growth of the restaurant industry from 2009-2019, is 61% and business also expanded during this period by 40 %, which shows that the rate of growth became double overall. But after 2019 picture changed and finding is surprising. Here is my research work to overview the impact of pandemic on the full-service job in restaurants in New York City in 2020 by 2 sample t-test (took 2019 and 2020 monthly restaurant employment as my sample data). I also tried to quantify the relationship between two variables that is COVID-19 cases from starting of outbreak till December 2020 and the change in full-service restaurant job in NYC during that period through linear regression analysis.

**KEYWORDS:** New York restaurants, COVID-19, impact on restaurant jobs, regression analysis, hypothesis test, future planes remedies

## Introduction and significance of the study

In 2019, industry attained its highest number of jobs and establishments ever. Although average wages in the industry is exceptionally low as compared to other business, it provides a sturdy job opportunity for many minority populations, particularly Hispanic and Asian immigrants. There are more than 25 thousands eating and drinking establishments in the five boroughs (Ryan 2020). It was unimaginable just one or two weeks ago when we all were celebrating Valentine’s day and talking about Easter that lives are going to be change in such a terrible way, due to the entry of undesirable pandemic name COVID-19.

Since March 2020 pandemic started hitting extremely hard to every corner and sectors of the world, our New York restaurants are one of the sectors among them. After the declaration of emergency on 7<sup>th</sup> march than life around New York has taken a new form. New York City became more like a ghost town with frightened people in the mask on the dark, quiet, and empty street, it looked like that our bustling metropolis celebrating Halloween in the month of March. All instructions given by government for mandatory closures, stay-at-home and social distancing, the inception of a severe economic recession, and top of that travel constraints have caused unprecedented disruption for the restaurant industry. The whole network of entire restaurant industry and small, independent farmers and producers that directly or indirectly rely on restaurants in farm to table movement shattered as quickly as comes to understand the reason.

Table 1. Monthly Data overview for change in employment in NYC Restaurant

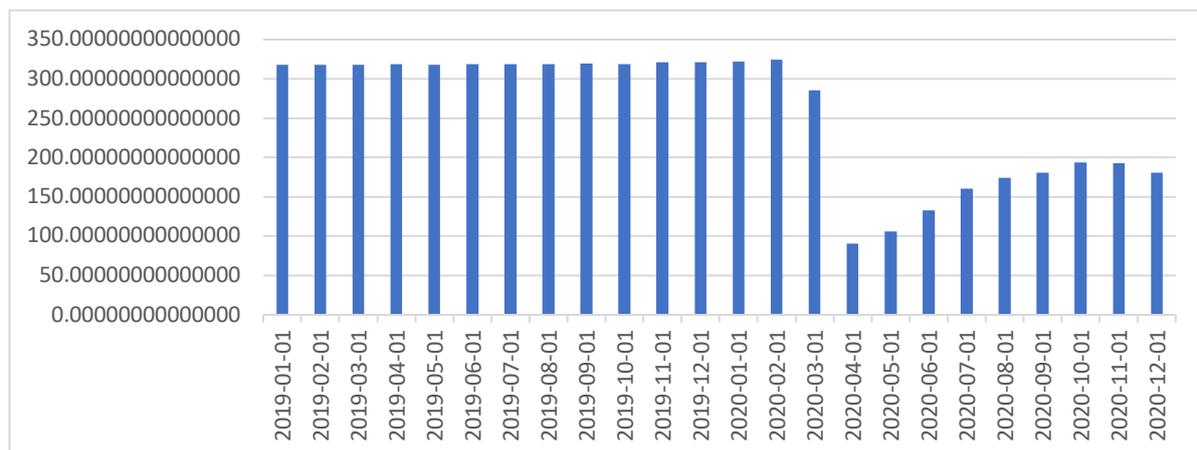
2019-01-01	318.01916552962600	2020-01-01	322.39345960722800
2019-02-01	317.68291530792100	2020-02-01	324.64481006203500

2019-03-01	318.34916821472400	2020-03-01	285.37514589393500
2019-04-01	318.95972336929100	2020-04-01	90.78554213358480
2019-05-01	318.24535720314700	2020-05-01	106.34861106930500
2019-06-01	318.46187687320600	2020-06-01	132.92587743133400
2019-07-01	318.76857214247200	2020-07-01	160.42666379041000
2019-08-01	318.71161899590900	2020-08-01	174.36173916597600
2019-09-01	319.89347962309400	2020-09-01	180.76253898250900
2019-10-01	318.56096190779200	2020-10-01	193.78076584905500
2019-11-01	321.27129266660000	2020-11-01	192.84706432891200
2019-12-01	321.38310287698000	2020-12-01	180.67055668534600

Source: FRED, Federal Reserve Bank of St. Louis. 2019. (SMU36935617072200001SA All Employees: Leisure and Hospitality: Food Services and Drinking Places in New York City, NY, Thousands of Persons, Monthly, Seasonally Adjusted, 2019)

In the figure below and data set above, we can see that how much change in employment in NYC restaurant in year 2020 if you compared with the previous year. I know there can be other factors too, but Pandemic played a very crucial role in this.

Figure 1. Comparable Monthly Data overview for change in employment in NYC Restaurant 2019 and 2020



### Hypothesis T-test

**State:** wish to test the following hypothesis at the  $\alpha=.01$  level

**H0:**  $\mu_1=\mu_2$

**H1:**  $\mu_1\neq\mu_2$

Where  $\mu_1$  is the true mean number of employments in NYC restaurant in 2019

$\mu_2$  is the true mean number of employments in the NYC restaurant in 2020.

**Plan:** Conducted two sample T Test because sample size is not so big and its available.

\*Normal: Assumed that the data is roughly normal distributed, unimodal, roughly symmetric, has no outliers, so it seems roughly normal. It is safe to use t-procedures.

\*Independent: due to the random assignment and the isolation of each year, we can view the employment in each year as independent.

**Result:** Using 2 sample T Test with the help of Texas Instrument (TI-84)

'x-bar' 1= 319.02

'x-bar' 2= 195.45

Sx1 = 1.20

Sx2=77.35

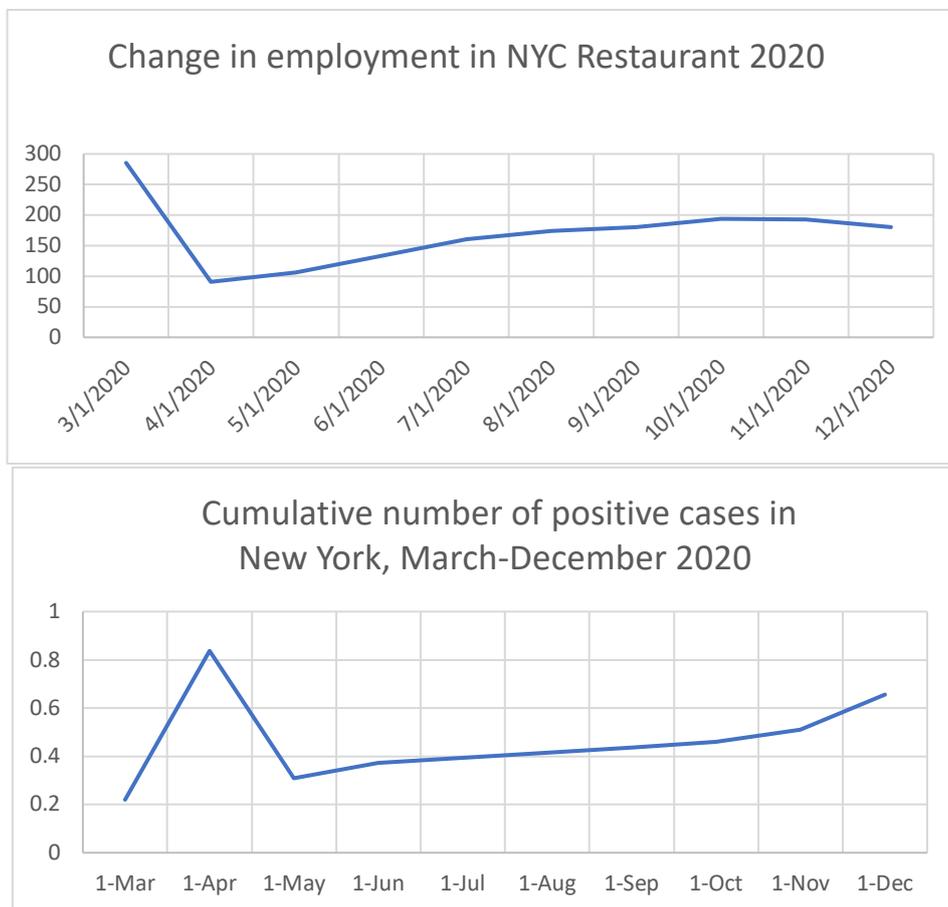
N=12

t~5.5

p~.000017

**Conclude:** With a **P** value of approximately zero, which is less than any reasonable  $\alpha$  value, **I reject H0**. There is overwhelming evidence to support the claim that there is difference in the true mean number of employments in 2019 and employment in 2020.

Figure 2. Relationship between Monthly cumulative number of COVID-19 cases and Monthly change restaurant employment



### Linear Regression analysis

$$Y = A X + B$$

a statistical relationship between one dependent variable  $Y$  and one independent variable  $X$ . Dependent variable  $Y$  is also called response variable or outcome variable. Independent variable  $X$  is called predictor variable, regressor variable, or explanatory variable. The independent variable predicts the value of dependent variable for a given value of independent variable. The general equation for a straight line may be written as  $Y = A X + B$  Where,  $Y$  is a value on the vertical axis,  $X$  is a value on the horizontal axis,  $B$  is the point where the line crosses the vertical axis and the

value of Y at X = 0, Y-intercept is the value of B when X = 0, A shows the amount, by which Y changes for each unit change in X, i.e. slope of the straight line. Figure explains these variables in a graphical format. Taking other factors out of scope and just focused on the change in Y variable in relation to change in X variable.

X coordinates represents-Change in cumulative number of positive cases in New York-March-December 2020

Y coordinate represents-Change in employment in New York City Restaurant from March-December 2020.

**A= -148.2574076 B=238.130655 R<sup>2</sup>=.2311973154**

**R=-.4808298195**

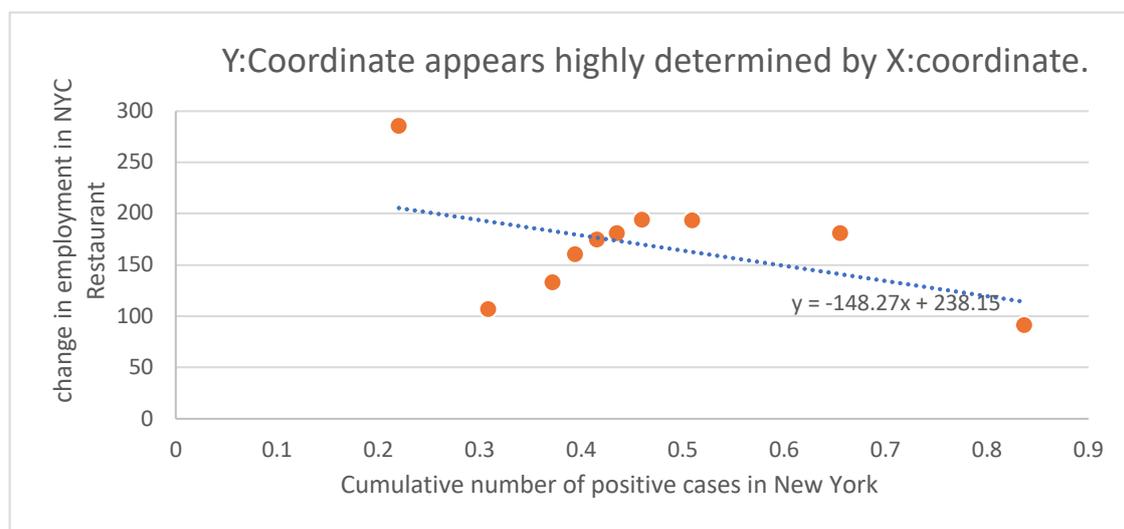
Here is some important piece of information – **R** is the correlation co-efficient; it tells us how close to perfect or positive/negative correlation in this case and it is -.48 (goes little further but taking here only two decimal places).

**R squared** is co-efficient of determination and that is 0.23 (again taking two decimal places) and if we need to interpret the meaning of that we say that 23 % of the variability in the y variable which is our full-service restaurant employment can be accounted by the variability in the x variable (cumulative number of COVID-19 cases) so concisely we can say 23 % of variability in the full-service restaurant employment can be accounted by the variability in cumulative number of cases. The remaining 77% is coming from unexplained factors that are outside of the scope of problem, things like weather and natural factors, are outside of the scope of concern here.

Here equation of the regression line is – **Y = -148.26 X + 238.13**

Y = B+ AX Here, B is **238.130655** which is the value of Y when X is 0. But in this case the Cumulative number of positive cases can never be practically zero during that period. A is **-148.26** which is the number of changes in Y for each one unit change in X. So, by this regression equation we can conclude that increase in Cumulative number of positive cases decrease the full-service restaurant job in New York by 148.26 degree.

Figure 3. Change in employment in NYC Restaurant



Downward line indicates Negative correlation – So the two variables change in the opposite direction and in the same proportion. Each point on regression line shows the combination of change of two variables.

**Conclusion:** As per hypothetical two sample t-test, there is strong evidence that employment in 2020 is way less than in 2019 as we can see in test result change in employment number for both years are way far, so mean value is not equal. Now from the regression testing I concluded that monthly change employment in 2020 is impacted by number of cumulative cases increase in each month of 2020 from march to December, that viewed as negative regression line /slope.

### **Discussion /Suggestions / Future Hopes**

New York City has roughly 26 thousands restaurants. Due to the quarantine nearly all of them have shut down. It is unknown when these workers can work again. Without aid, an estimated 75 percent of independent restaurants are likely to never reopen. This would make it difficult to restaurant workers to find job after the pandemic ([www.nytimes.com/2020/03/24/opinion/coronavirous-restaurants-danny-meyer.html?searchRestaurantPosition=3](http://www.nytimes.com/2020/03/24/opinion/coronavirous-restaurants-danny-meyer.html?searchRestaurantPosition=3)).

Though many of the changes in the restaurant industry are likely here to stay, it does not mean that restaurants will not continue to evolve, improve, and serve an important role in people's lives. There just might be new expectations for what restaurants are and will be. "In six months, it will be a great time to open a restaurant," Bob Phibbs, CEO of The Retail Doctor, a New York-based retail consultancy, told the E-Commerce Times (Wagner 2020).

As we all know that situation is still not under control and City is in processes of recovery but from beginning of the pandemic to the end of the year 2020 restaurants business and their workers fought very well with all new techniques and precautions. "People will want to get out, and 50 percent of the existing businesses that were around a year ago will be gone. It will be a perfect time to open a new concept built around more space, digitized menus, contactless payment, and the like. If restaurants can just hold on until then, they'll be heroes and rewarded for making it through this dark time" (Wagner 2020).

Recently, The Renaissance Pavilion, had a collaboration between local non-profit Harlem Park to Park, WXY Architecture + Urban design, the Black-owned restaurants guide Eat Okra, UberEATS, and PR firm Valance, working together for making of multiple outdoor dining arrangements introducing artwork from local artists and heaters for diners to eat outside during the winter months. The outdoor structures is created entirely free of cost for the restaurants, and it will serve as a permanent outdoor dining feature along the street, now that NYC has allowed outdoor dining whole year.

It could be extremely exciting to see whole new regional food system that can survive these shocks and others that will come along. The restaurant industry will see a new reality, post COVID-19. Recovery will obviously be a challenge for all restaurants: both large and small and fact is that it will not happen overnight.

Who knows what other revelations may develop after COVID-19? The only thing we have control on is- acceptance of change and that is constant in our life.

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