

Economic Implications of Foreign Immigration

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Abstract. Immigrants influence the socio-economic conditions of communities, consistently impacting the economy and the social structure of regions. This study investigates the economic effects of Chinese immigrants in the United States. Using Ordinary Least Squares (OLS) regression models, this study examines the correlation between immigrant inflow and median income and predicts future migrational trends. Two models are employed: one analyzes the relationship between Chinese immigrant inflow and median income, and the other predicts migrational trends by generating a lagged variable. The results demonstrate a positive correlation between immigrant inflow and median income, as well as an upward trend in Chinese immigration, showing the growth in the influence of these individuals on the United States economy.

Keywords: immigrants, migrational trends, Ordinary Least Squares (OLS) regression.

1. Introduction

Migration has long been a defining factor in shaping the socio-economic situation of a population. While the economic elites that immigrate to a country may see the inflow of capital and financial advances, illegal immigrants may be met with controversy and discrimination. On the other hand, those wealthy individuals may be incentivized to engage in forms of tax evasion while the impoverished play crucial roles in the workforce. Various forms of immigration can benefit and detriment the economy in numerous ways. This paper focuses specifically on the category of immigrants who are born in China and have moved to the United States. This study seeks to answer the question: how do immigrants to an area economically influence and shape the population? The existing immigrant population of the same ethnicity significantly influences the arrival of newcomers, molding their economic opportunities while catering to specific sectors in alignment with their backgrounds. Common trends can be derived by investigating models of ethnic clusters such as Ethnoburbs. A visualization exemplary of the immigrational trends, Figure 1 shows the number of Chinese immigrants that migrated to the United States from 2000 to 2020, with the Year as the x-axis and the number of immigrants as the y-value.

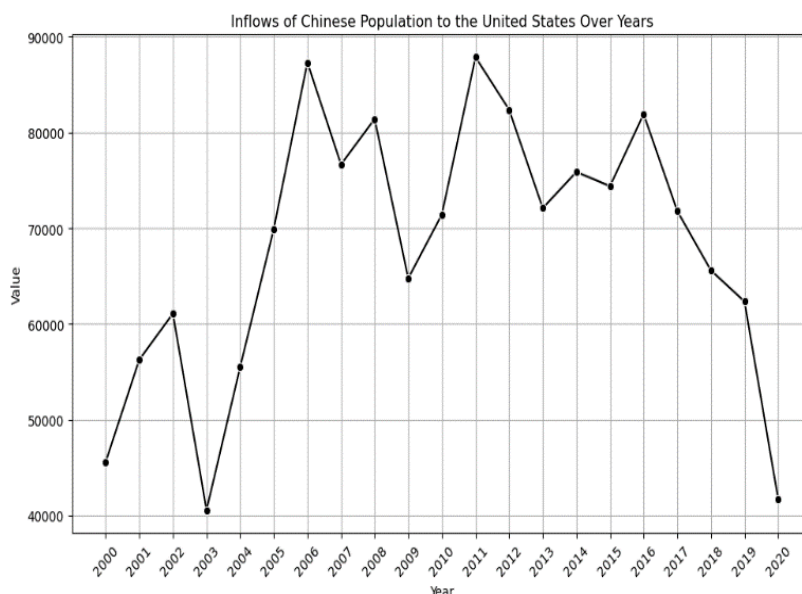


Figure 1. Inflows of Chinese Population to the United States Over the Years

Ignoring the effects that global epidemics may have brought to the data and thus focusing strictly on parts of the graph prior to 2019, a steady increase is depicted. This increase displays the significance and the sustained migration trends that this study is based on. The growing numbers of Chinese immigrants settling in the United States thus highlight the importance of understanding their economic impacts. This study employs a mother methodological approach by analyzing data through Ordinary Least Squared (OLS) models. This research seeks to extract information from the population data by implementing OLS models.

2. Literature Review

The world is currently seeing increasing trends in immigration. Easier access to forms of transportation, such as aviation, has allowed the development of migratory patterns for decades. The potential offering of citizenship and the allowance of illegal immigrants to travel over the United States-Mexico border has incentivized individuals all over the world interested in realizing their economic potential to migrate to the U.S. Ries, L. cites that as part of Joe Biden's campaign regarding immigration policies, that he would allow the gaining of citizenship by 11 million undocumented immigrants in order to prevent families from getting separated [1].

Coniglio, N. D. explores how migration networks and varying factors play a role in the development and expansion of urban ethnic clusters [2]. Coniglio states that migration networks are the core of shaping the geographical distribution of immigrants within an urban area. These networks not only incentivize the inflow of immigrants but also serve as sources of information for newly arrived migrants who attempt to familiarize themselves with new systems. Li, W. dives into the emergence of ethnic enclaves, specifically focusing on the Chinese communities in the suburban areas of Los Angeles [3]. Wei Li seeks to explain the socioeconomic forces and migratory patterns that have led to the evolution of these ethnic concentrations. She coins these enclaves as the term "ethnoburbs." The argument that Wei Li makes is that the formation of "ethnoburbs" represents the withdrawal from traditional urban ethnic neighborhoods. Card, D., Dustmann, C., & Preston, I. sought to analyze the importance and effect of immigration on wages [4]. A major part of their study is conducted on the response of other individuals, specifically the attitude of the population towards immigration. As such, the basis for their study is based on data from sources such as the European Social Survey (2002). While their research is largely based on the opinions of the masses, a blaring and consistent trend in responses is the concern of immigration on wages and taxes. They suggest that viewpoints on immigration are often decisive factors in choosing the point of residence and individuals to hire. It is also concluded that these viewpoints are core to resolving criticism of immigration policy. In February 2020, Donald Trump disallowed the entry of individuals attempting to enter the United States from China within a 14-day period due to the emergence of the COVID-19 epidemic Norasteh, A., & Forrester, A. C. [5]. While these efforts did not necessarily affect the rapid spread of the COVID-19 epidemic, they influenced the rate of immigration of Chinese-born individuals to the United States by disallowing their entry. This can be seen as part of a larger context as to why immigration trends may be affected starting from 2019. It is also why the datasets in this study were chosen before this period so as not to portray trends impacted by inconsistencies caused by a large epidemic disease.

3. Methods

Two models were applied in this research. While both models made use of Ordinary Least Squared (OLS) analysis in examining their respective datasets, Model 1 employed a linear regression estimator, and Model 2 created a lagged variable to draw conclusions about trends in the data set. Model 1 served to analyze the effects of the population inflow of Chinese immigrants to the United States on the median income of the population. As the dataset contains a large and varying number of variables, a line of best fit is generated using Ordinary least-squared regression, which seeks to highlight the

ongoing trend. The data is further analyzed by running two separate regressions that seek to compare trends for all states with results from a single state that contains high numbers of migrant diasporas. Table 1 shows the summaries of two variables: Median Income and Population. It was to be noted that while the Maximum value for Median Income is 250,001 in the summary statistics, I narrowed the analysis down to variables smaller or equal to 120,000 to eliminate potential outliers and ensure increased accuracy. Model 2 served to analyze the trends in the immigration inflow of Chinese individuals who have chosen to settle in the United States. It used Ordinary Least Squared analysis to analyze past trends in order to generate a predicted value.

Table 1. Summary Statistics for Median Income and Population

	Median Income	Population
count	605	259
mean	41449	1610.8
std	21687	2833.69
min	2499	0
25%	29303	307
50%	36930	969
75%	49814	1597.5
Max	250001	24959

3.1. Model1

In this study, I used Ordinary Least Squared (OLS) analysis to determine the effects of population inflow on the median income of individuals. I investigated how the number of immigrants (Asian Alone) to the United States from a foreign country impacts the median earnings of the population. To ensure accuracy, the data extracted was from the country level. The year the median income was monitored from is 2019. The dependent variable of the study was the inflow of the immigrant population, while the independent variable was median income. The following formula was thus employed:

$$Population = \beta_0 + \beta_1 \times Median\ Income \quad (1)$$

Where β_0 is the intercept and β_1 is the coefficient of median income.

I used data from the IPUMS National Historical Geographic Information System, which extracted raw data from the census dataset, conducting the following survey: 2019 American Community Survey: 1-Year Data. I chose population as my dependent variable as only immigrants from outside the country bring the most influence into forming or existing ethnoburbs, inducing the development of distinct economic trends. The analysis of a year-long record of median earnings in 2019 seeks to provide data that most represent a group of individuals free of major economic and social disturbances, which is COVID-19. I employed the stats model package in Python to generate an OLS Regression Model in my estimation of β_0 and β_1 .

3.2. Model2

Ordinary Least Squared (OLS) was used to analyze the expected current inflow of population based on past results. More specifically, I sought to predict the inflows of foreign population based on past statistics whereby immigrants are strictly from China and had settled in the United States.

The Value is the dependent variable while Lag_1 is the independent variable. The following formula was employed to determine the prediction:

$$Value = \beta_0 + \beta_1 \times lag_1 \quad (2)$$

Where value is Current year's inflow of foreign-born immigrants from China to the U.S. Lag1 is the previous year's inflow of foreign-born immigrants from China to the U.S.

Lag1 was set as a lagged variable where the next value is determined by the real-time Value. Thus, Lag1 was a dependent variable, and Value is the independent variable. The coefficient of Lag_1 determines that for each unit increase for Value, the prediction for Lag_1 increases by 0.5909. β_0 Signifies the estimated inflow when Lag_1 is equal to zero, and β_1 represents the change in the current year's inflows according to the change in last year's population inflow.

4. Discussion

The regression results are displayed in both a graph format and also in an OLS Regression Results table. This provides numerical and visual understanding of the relationship between the variables used in the study. Model 1 utilized Ordinary Least Squared (OLS) analysis to investigate the factors behind immigration, specifically from China to the United States. The result is shown in table 2. The R-squared value, being 0.071, indicates that 7.1 percent of the variation of the median income variable can be explained by this model. This displays that there are a series of other factors influencing median income aside from the Pop. The adjusted R-squared at 0.068 indicates that, more realistically, 6.8 percent of the variation in the median income variable can be explained by this model. The coefficient for median income, being 0.047, suggests that there is a positive correlation between median income and Pop, meaning that a unit of increase in median income leads to 0.047 units of positive change in population. This coefficient value, having been labeled with three asterisks, displays that the P-value associated with it is less than 0.01, showing that it is extremely statistically significant and that the null hypothesis can be rejected. The intercept of the graph, being -360.074, suggests that when median income is 0, the population would be -360.074. The Residual Std. Error, being 2766.979, shows that standard deviation from the line of best fit. The F Statistic of 19.248, which also has a low P-value, suggests that it is statistically significant. As it is higher than 2.5, it also suggests that the model is highly statistically significant.

Table 2. Regression Results of Inflow of Chinese Population on Median Income Regression

Dependent variable: population		
	All States	California
Intercept	-360.074 (488.115)	-4897.73 (3396.472)
Median Income	0.047*** (0.011)	0.187** (0.073)
Observations	252	30
R squared	0.071	0.192
Adjusted R squared	0.068	0.163
F Statistic	19.248***	6.648**

Figures 2 represents the regression results of both models, whereby Median income is the x-axis, and Pop is the y-axis. The two figures are different in that while the first is an analysis of all states in the United States, the latter depicts strictly variables from the state of California. Both figures depict a line-of-best-fit traveling upwards, suggesting that with an increase in Median income, population also goes up. The regression results table further displays that the coefficient for Median income in the second model is 0.187, suggesting that with each unit of increase in Median Income, there is a

0.187 increase in Population in California. The P-value of the coefficient, being lower than 0.05, further suggests that it is highly statistically significant. The R-value and adjusted R-value of the second model re 0.192 and 0.163, respectively, suggest that 19.2 and 16.3 percent of the variation in data can be explained by the model. While the standard deviation for model 2 is relatively high when compared to model 1, and its F statistic proves to be lower, which suggests that the data is more scattered and may be of less significance, the coefficient of Median income and R squared for model 2 is higher than that of model 1. This suggests that the population in California, a state with historically high amounts of ethnic enclaves, is more affected by increases in Median Income than the average of all states.

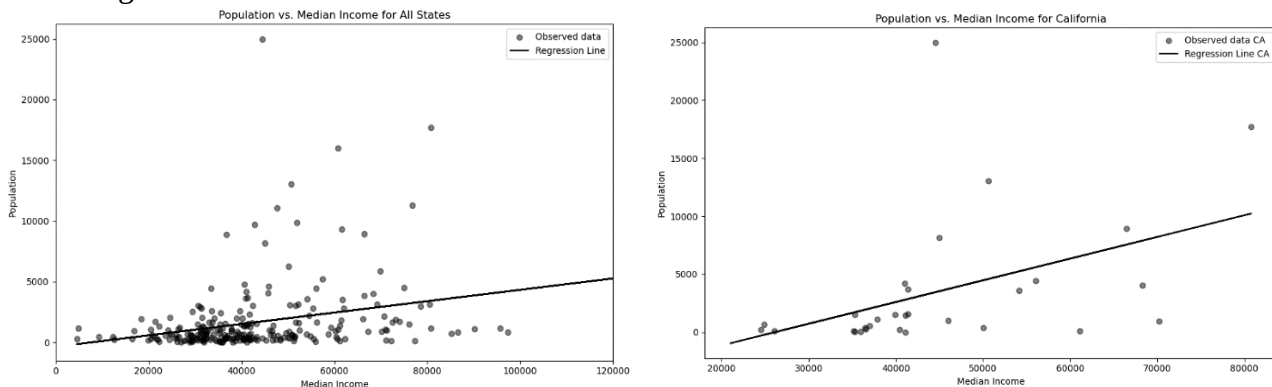


Figure 2. Population versus median income for all states and California

Model 2 employs Ordinary Least Squared (OLS) analysis to explore the relationship between the current and previous years' immigration flow, specifically from China to the United States. The regression results for Model 2 are presented in Table 3. The figure displays the coefficient for the Lag_1 variable to be 0.591, indicating that an increase in the number of immigrants one year tends to lead to a rise in the following year as well. The P-value for this coefficient is lower than 0.01, suggesting that it is very statistically significant. The F Statistic, being 8.826 and also possessing a p-value under 0.01, also indicates the likelihood of the model being highly statistically significant. The R-squared value of 0.329 suggests that 32.9 percent of the annual variation in Chinese immigration to the United States can be explained by the model. The adjusted R-squared, being 0.292, suggests that 29.2 percent of the variation can be explained by the model. The constant is 28130.553, suggesting the baseline value of Value whereby no factors are influencing the predicted variable.

Table 3. Results with inflows of Chinese population

Dependent variable: value	
	(1)
const	2810.553* (13998.435)
Last year inflows of Chinese Population	0.591*** (0.199)
Observations	20
R squared	0.329
Adjusted R squared	0.292
F Statistic	8.826***

Figure 3 shows a comparison between the actual number of Chinese immigrants and the predicted number based on the regression model. The X-axis depicts the year, while the Y-axis shows the number of immigrants inflowing into the United States. The actual data points are plotted against the predicted values to visualize the accuracy of the model in estimating immigration trends. Comparing the predicted graph to the actual graph, it is observable that the predicted values follow a similar trend to the real values. As such, it can be interpreted that the regression model is largely accurate in generating statistically significant Value. The data trends from the year 2001 to pre-COVID-19 also

display the existence of an upward trend. This suggests the increase in the inflow of the Chinese population to the United States, which elevates the significance of examining the effect of Mandarin ethnic groups' impact on US society and economy.

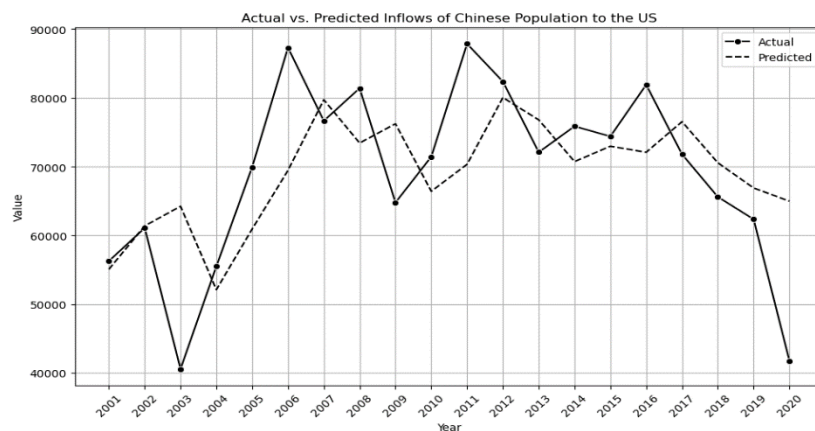


Figure 3. Graph of Actual vs Predicted Inflows of Chinese Population to the United States

5. Conclusion

Through the usage of Ordinary Least Squared analysis, two different models are examined. One reveals linear trends in the correlation between the median income of the population and the inflow of Chinese immigrants, while the other the predicted trends in the absorption of migrants. The results from these quantitative regressions display the upward trend of immigrant inflow, along with the positive correlation between Chinese migrants and median income. These conclusions suggest the growing prevalence of Chinese-born immigrants and their increasing influence on the United States economy and population.

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