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## Estimating Population Growth of Las Vegas

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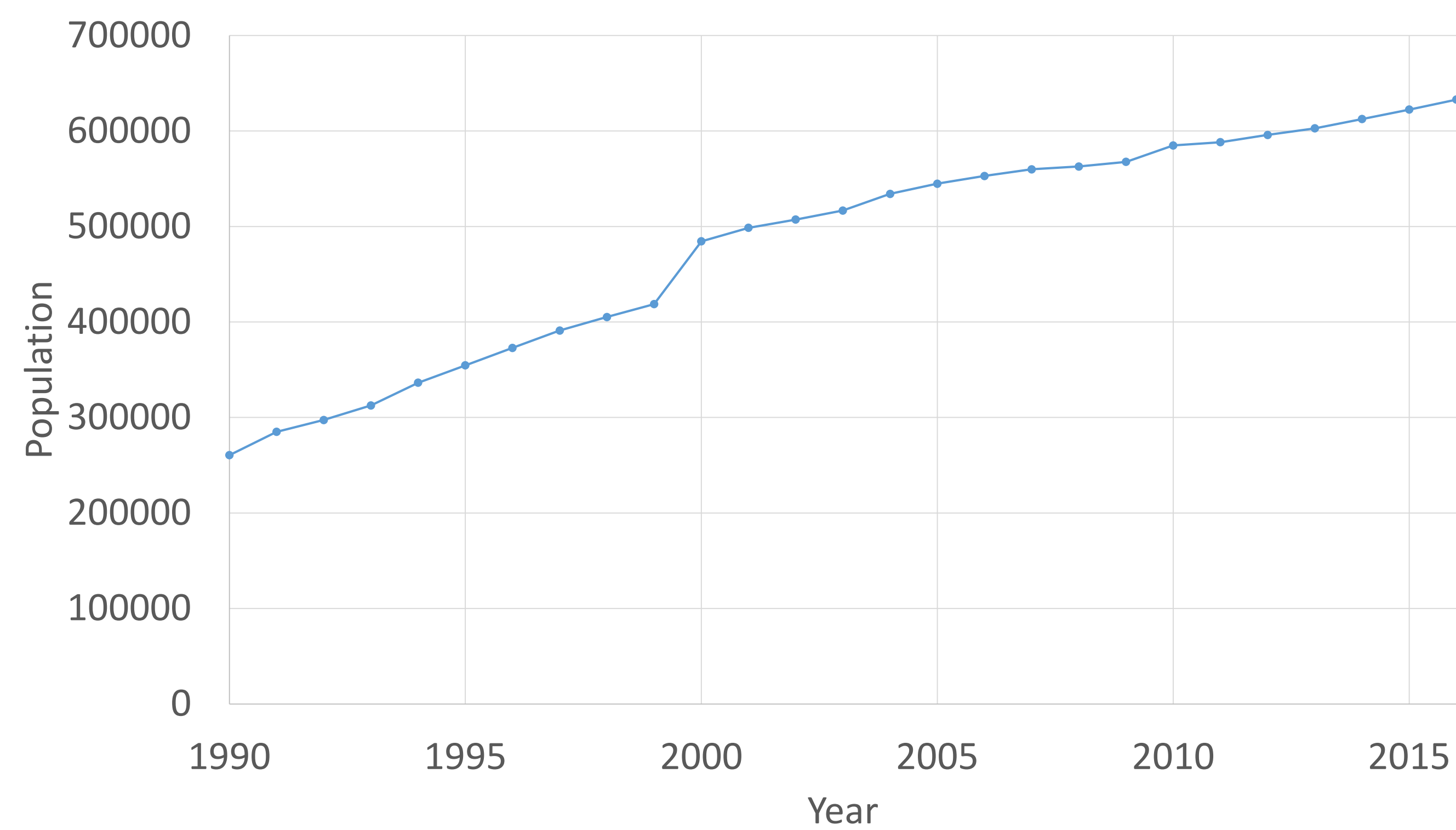
# Estimating Population Growth of Las Vegas

By: Ryan Desacola, Jacob Valadez, Ryan S. Tan (Group 5)

## Introduction

An issue we have identified is Las Vegas' population growth. To those that live in Las Vegas, many know that Las Vegas is one of the fastest-growing cities in the United States of America; due to its rampant growth, projecting future population growth is of utmost importance in order to prepare public utilities, housing developments, and other such services for the inevitable increase. Consequently, for our project, we are attempting to extrapolate upon existing population growth trends (identified by censuses of years past) and utilize the method of least squares to turn our extrapolation into a mathematical prediction.

Las Vegas Yearly Population

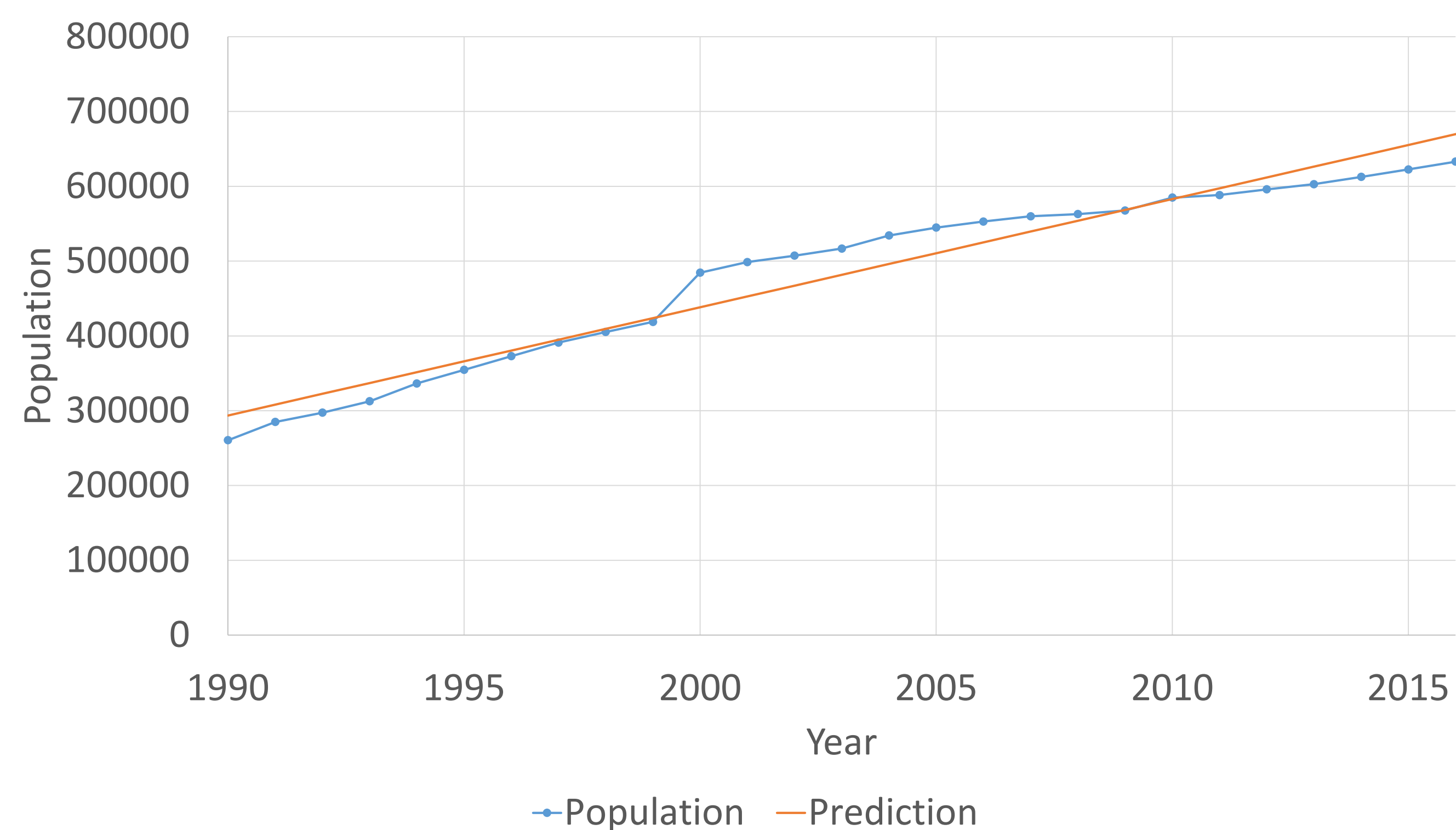


This graph illustrates the population of Las Vegas from the years 1990 – 2016.

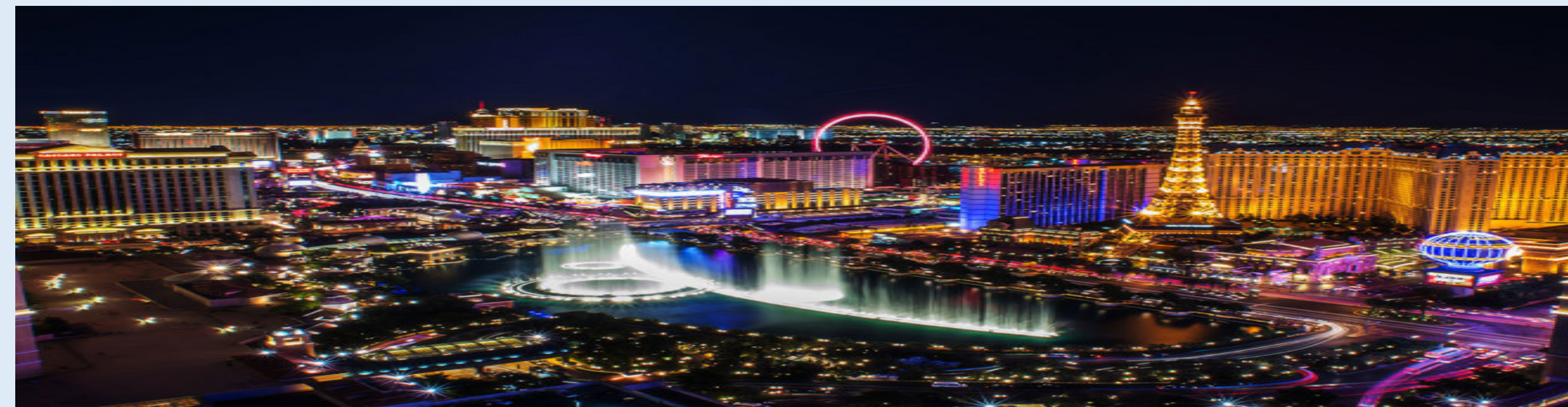
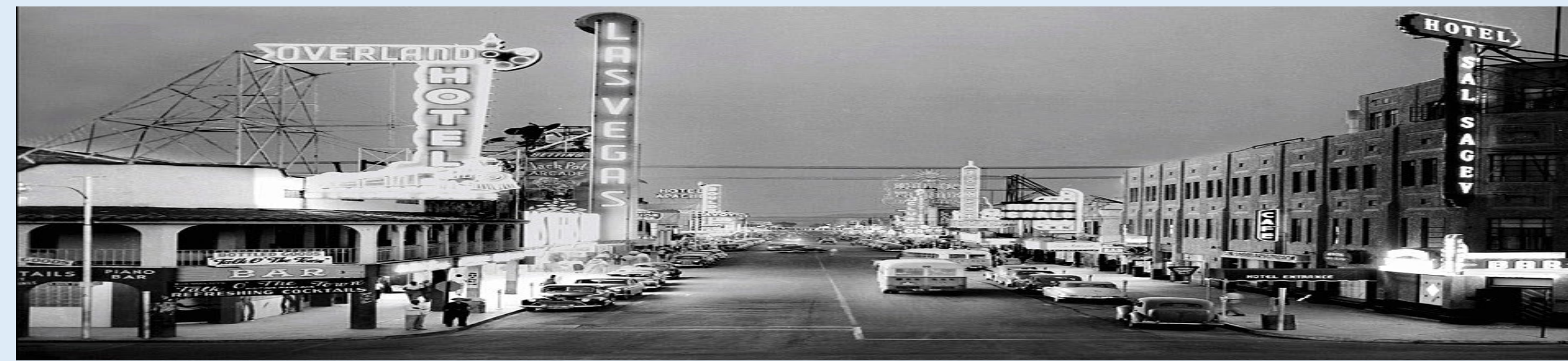
## Method

We used the method of least squares to find the equation of the line representing Las Vegas' population growth:  $p = 14,460x - 28481000$ . Using this equation, we have calculated a reasonable estimate for the future populations of Las Vegas. After finding these estimates, we plotted these points on a line (shown in orange) over the top of our original census data to extrapolate on future population count.

Las Vegas Census vs Predicted Population



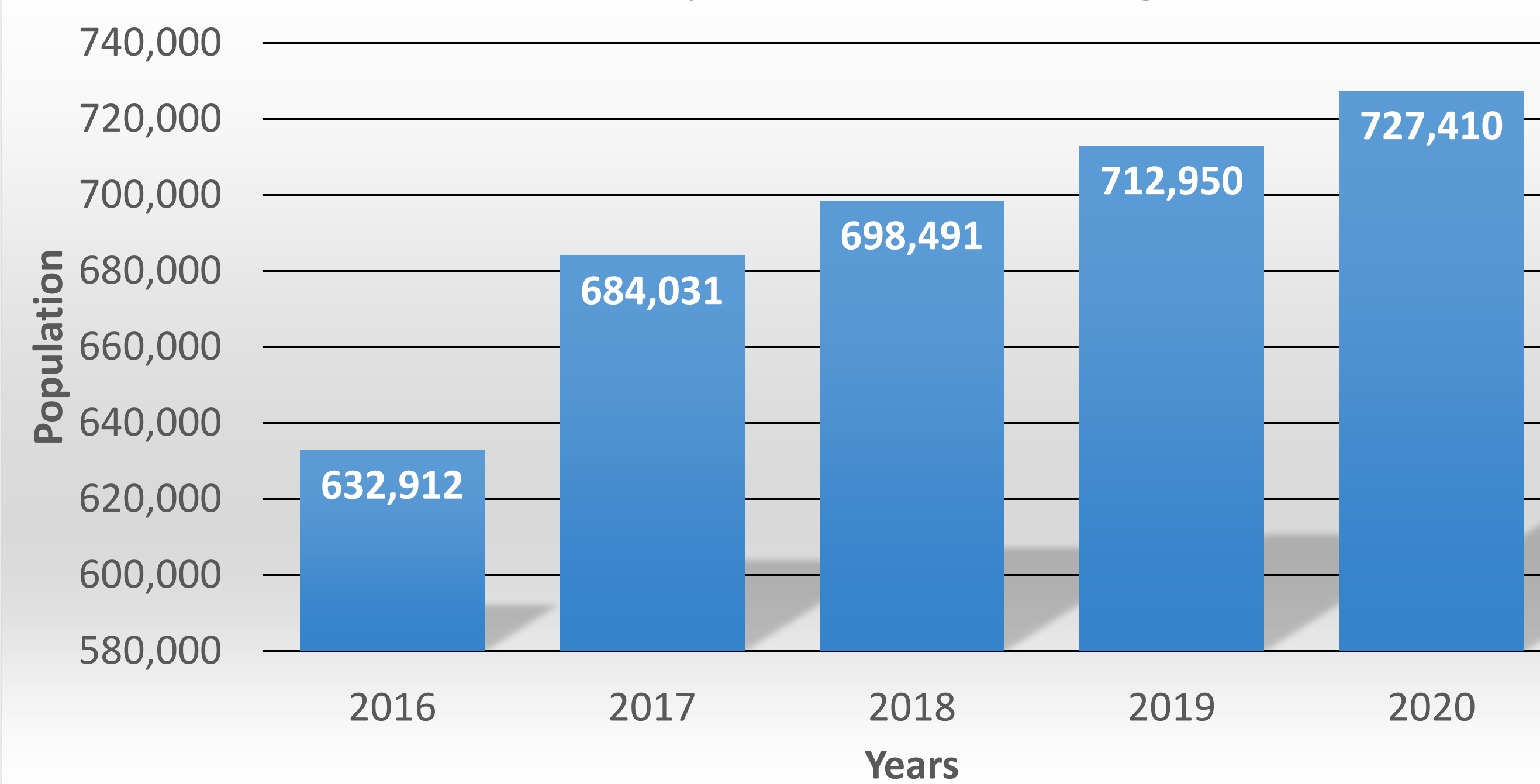
This graph illustrates the censuses of Las Vegas contrasted with our predictions for the years 1990 – 2016.



## Results

Using the equation we found for the estimate, we calculated the values representing the mathematical prediction for a Las Vegas population in the future of 2017 - 2020. Note that this is an extension of our method of least squares equation, expanded for years past 2016.

Predicted Population of Las Vegas



This graph illustrates the last census of Las Vegas followed by our extrapolations for the years 2017 – 2020.

## Conclusion

Looking at our hard census data juxtaposed with our predictive data from our method of least squares equation, it appears that our estimations are quite reasonable and relatively likely to occur. If these current population trends continue as we have expected, Las Vegas will have sustainable population growth, and planning for this growth will help us ease into preparing public utilities, housing developments, and other such services for the inevitable increase.

## Discovery

If current trends continue over the next four years (2017 – 2020), Las Vegas should expect to have **94,498** new citizens.

## Census vs Predictions Chart

- The **Years** column (shown in red) represents the years for which we obtained data.
- The **Census** column (shown in blue) represents the data collected officially from the United States Census Bureau.
- The available data only goes to the year 2016.
- The **Predictions** column (shown in green) represents our calculated populations for the years 2017 – 2020.

Years	Census	Prediction
1990	260561	293622
1991	284931	308081
1992	297326	322541
1993	312634	337000
1994	336380	351460
1995	354559	365920
1996	372849	380379
1997	391074	394839
1998	405245	409299
1999	418658	423758
2000	484487	438218
2001	498638	452677
2002	507219	467137
2003	516723	481597
2004	534168	496056
2005	544806	510516
2006	552855	524975
2007	559892	539435
2008	562849	553895
2009	567641	568354
2010	584862	582814
2011	588263	597274
2012	595848	611733
2013	602749	626193
2014	612531	640652
2015	622448	655112
2016	632912	669572
2017	---	684031
2018	---	698491
2019	---	712951
2020	---	727410