Forecasting Trends of Migration to the United States of America: A Human Resource Perspective

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The paper provides an overview and analysis of select current data on international migration to United States of America from all over the globe and forecasts/estimates of future trends of immigration by using statistical technique—Regression Analysis. The Bayesian probability model has been referred and utilized to marginalized extent. The paper also discusses about the immigrants diversity, concentration in some select States and labor force characteristics by demography, region, age, sex, and education. The income generated by the immigrants and their contribution towards the economic, technological, and social development of the country is studied. The paper also considers the trends of illegal immigrants and it concludes with an analysis of the issues, dilemmas, and implications of immigration with human resource perspective in mind. It also provides material to the planners, government of USA for policy formulation.

Keywords: foreign-born, native-born, illegal, regression, forecasting, labor force

Introduction

Anderson, Charlwood, Kirkpatrick, Lawrence, and Stuart (2016), in their paper on “HR and analytics: why HR is set to fail the big data challenge” quoted analytics as discipline “which has developed at the intersection of engineering, computer science, decision-making, and quantitative methods to organize, analyze, and make sense of the increasing amounts of data being generated by contemporary societies”. Further they quoted analytics as a “must have capability for the HR function”. It is in this context that the Human Resource Planning, Development, Utilization, and Management need massive data—Human Resource Analytics—part of Business Analytics—the data science for decision making and policy formulation which is playing a great role towards collecting, analyzing, and managing immigration statistics in USA. The data available are now analyzed using numerous statistical analysis techniques, data visualization using Hadoop with Tableau and predictive analytics using R-software etc.

The paper initiates the discussion with current immigrant population and it forecasts the trends in future international migration, a challenge especially in the USA which attracts immigrants from all over the globe. The reasons for this include availability of comprehensive migration theory, uncertainty of potential

* **Acknowledgements:** The technical support provided Harleen Kaur, Graduate Computer Science student, College of Science, Anuhya Nagireddy, Graduate Electrical Engineering student, College of Engineering San Jose State University is gratefully acknowledged.

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explanatory variables, inclusion of forced migration and policy elements, and the right quality of data for forecasting. The paper attempts to present overall statistical facts and trends on immigration to USA by using Regression Model as a statistical tool and it is duly supported by statistical evidence to uphold the various estimates obtained in this empirical research. The implications of future trends on human resource policy, employment, unemployment, and other issues are referred to, towards the end to provide some lead to policy makers for action especially the illegal immigration to USA in a large number.

Data and Literature Overview/Review

Considering the dynamics of the situation, literature review has been divided into two parts viz., (a) existing data sources and relevant research outputs in the form of reports and/or research publications and (b) limited literature based on Bayesian Probabilistic Approach.

(1) Existing data sources and relevant outputs: The analysis and statistical reports in this paper inter alia include the Migration Policy Institute (MPI) (2015), Center for Immigration Studies, Pew Research Center (2015), and the Center for American Progress. Other sources include Mexico National Population Council, Mexico National Institute of Statistics and Geography, the US Census Bureau (2011), the American Community Survey-2012, and the US Department of Homeland Security—Office of Immigration Statistics. To illustrate, International Business Times 2015 written by Blake (2015) reconfirmed that immigration population in US reaches a record of 42.1 million in 2015. However, the data are limited to the second quarter of 2015 and this paper forecasts and projects the trend for the following 15 years, i.e. till 2025. The Pew Research Center (2015) estimated that the “modern immigration wave brings 59 million immigrants to US, driving population growth and change through 2065”. The Migration Policy Institute (2015) studied the trends through various dynamic and interactive charts tracing changing immigration patterns over time.

(2) Bayesian Probabilistic Approach: The usage of the Bayes’ theorem is highly limited. The application is constrained by getting estimates of priori and joint probability through expert judgment, using Delphi Method. The situation is more challenging in the case of USA, which attracts migrants from highly populated countries such as India and China.

For example, Bijak (2005) contributed a working paper for the Central European Forum for Migration Research in Warsaw and titled it as “Bayesian Methods in International Migration Forecasting”—based on the paradigm of Bayesian statistics. However, forecasting was limited to international migration between Poland and Germany in 2004-2010. The same author then presented “Bayesian Forecasting of Immigration” to select European countries by results published in the Journal of the Royal Statistical Society (Bijak & Wisniowski, 2010). Nevertheless, the main difficulties in forecasting international migration are (a) inherent randomness of the processes and their susceptibility to barely predictable factors, and (b) lack of coherent definitions of migration across countries and time, comprehensive migration theories, and availability of data. The demand for migration projections and motivation by the needs of UN Population Division promoted Azose and Raftery (2013) to make projections for all countries. The UN has recently adopted a Bayesian approach as the basis for the official medium projection, and has issued probabilistic projections on an experimental basis (Azose & Raftery, 2013; United Nations Population Division, 2013). While the method accounts for uncertainty about fertility and life expectancy through the Bayesian hierarchical models, it doesn’t account the uncertainty about international migration. Instead, the UN population projections are conditional on deterministic migration

projections. To make the method fully probabilistic, it would require probabilistic projections of net international migration of all the countries.

This paper extends beyond the work done so far. It uses Time Series Data Approach by using Regression Analysis to work out the trends of immigration till 2025. The 10 year period has been selected deliberately, considering the fact that the longer the period the greater the chances of uncertainty of estimates obtained. This issue will be discussed in the subsequent section where projections are presented and thereafter their implications are studied to discover the issues and dilemmas of immigration in the USA.

Some Critical/Statistical Facts on Global Migration

The most fascinating fact is that about 20% of all international migrants over the globe reside in the US, which is less than 5% of the world's population. Irrespective of the rapid changing global economy, US continues to be the world's leader by far as the most popular destination for immigrants generally known as the foreign born population. The country with the next largest number is Russia with 12.3 million followed by Germany, Saudi Arabia, and Canada as seen in Figure 1.

Figure 1. Foreign-born population in some select countries. Source: UNFPA State of the World Population (2006).

A few statistics:

- Worldwide, there are estimated 191 million immigrants.
- The last 50 years has seen an almost doubling of immigration.
- 115 million immigrants live in developed countries.
- 20% (approximately 38 million) live in the US alone, making up 13% of its population.
- 33% of all immigrants live in Europe (Figure 2).
- 75% live in just 28 countries.
- Women constitute approximately half of all migrants at around 95 million.
- Between 1990 and 2005
- There were 36 million migrations (approximately 2.4 million per year).

- 33 million wound up in industrialized countries.
- 75% of the increases occurred in just 17 countries.
- Immigration decreased in 72 countries in the same period.

Figure 2 depicts the approximate spread of immigrants in the past 50 years (total of 191 million).

Figure 2. Introduction—world wide statistics. Source: Thalif (2006).

The data presented show clearly that the immigration population has grown from 30.2 to 49 million during 2001-2025—an increase of about 19 million over the period.

The projected estimates of immigrants—foreign born population shows an increase of about seven million in the coming decade, contributing to 14% of the total population. The illegal immigrants will continue to rise from about 13 million to 15 million, but constituting a 31% share to total immigrants in the country. This is by far a very large share, having serious implications on the economic and social system of the country. It will also raise tremendous legal issues to be discussed again in the conclusion of the paper.

Table 1

Immigrant Population From 2000-2025

Year	Population (millions)	Immigrant population (millions)	Immigrant population (%)	Immigrant population (millions) method 1	Immigrant population (millions) method 2	Illegal immigrants (millions)	Illegal immigrants (%)
2000	282.1	30.2	10.7	30.2	30.2	8.4	27.8
2001	285.0	31.5	11.0	31.5	31.5	9.3	29.5
2002	287.6	33.0	11.5	32.4	32.4	9.4	28.8
2003	290.1	33.5	11.5	33.9	33.9	9.7	28.9
2004	292.8	34.3	11.7	34.2	34.2	10.4	30.3
2005	295.5	35.7	12.0	34.9	34.9	11.1	31.0
2006	298.4	37.5	12.6	37.5	37.5	11.3	30.1
2007	301.2	38.1	12.6	37.6	37.6	12.0	31.5
2008	304.1	38.0	12.5	38.0	38.0	11.6	30.5
2009	306.8	38.5	12.5	37.0	37.0	11.1	28.8
2010	309.3	40.0	12.9	37.7	37.7	11.2	29.2
2011	311.6	40.4	13.0	38.0	38.0	11.1	27.4
2012	313.9	40.8	13.0	39.1	39.1	11.3	27.6
2013	316.2	41.3	13.0	39.3	39.3	11.9	28.8
2014	315.4	40.4	12.8	40.4	40.4	12.3	30.4
2015	322.0	42.1	13.2	42.1	42.1	12.9	30.6

Table 1 continued

2016	323.3	42.4	13.1	42.2	42.4	12.9	30.4
2017	326.1	43.1	13.2	42.8	43.2	13.1	30.4
2018	328.9	43.9	13.3	43.5	43.9	13.3	30.3
2019	331.7	44.6	13.4	44.2	44.6	13.6	30.5
2020	334.5	45.3	13.5	44.9	45.4	13.8	30.5
2021	337.3	46.1	13.7	45.5	46.1	14.0	30.4
2022	340.1	46.8	13.8	46.2	46.8	14.3	30.5
2023	342.9	47.5	13.8	46.9	47.5	14.5	30.5
2024	345.7	48.2	13.9	47.5	48.2	14.7	30.5
2025	348.5	49.0	14.0	48.2	49.0	15.0	30.6

Note. The data from 2016 to 2025 are the forecasted/estimated data.

Immigration by States

The immigrants are concentrated in four States, viz., California, New York, New Jersey, and Florida but spread over 15 States out of a total of 50 States in the USA. The 15 States where immigrants made up the biggest share of the population in 2012 account for 79% of the nation's total immigration. These 15 States with the highest share of immigrants in their respective populations are shown in Figure 3.

While immigrant population grows, top immigrants States remain the same percent of each State's population that is foreign born, by decade						
	State				State	
	Rank in 2000	%		%	Rank in 2012	
1	California	26.2		27.0	California	1
2	New York	20.4		22.7	New York	2
3	New Jersey	17.5		21.2	New Jersey	3
4	Hawaii	17.5		19.5	Florida	4
5	Florida	16.7		19.0	Nevada	5
6	Nevada	15.8		17.9	Hawaii	6
7	Texas	13.9		16.2	Texas	7
8	Arizona	12.8		15.1	Massachusetts	8
9	Illinois	12.3		14.1	Maryland	9
10	Massachusetts	12.2		13.8	Illinois	10
11	Rhode Island	11.4		13.6	Arizona	11
12	Connectiout	10.9		13.5	Rhode Island	12
13	Washington	10.4		13.5	Connectiout	13
14	Maryland	9.8		13.2	Washington	14

Figure 3. Depicts the percent of each state's population (foreign born) per decade. *Note.* State ranks calculated prior to rounding. Source: Historical Census Bureau Statistics on the US foreign-born population, adapted from Pew Research Center.

Some select features of immigrants based on the data collected by the Center for American Progress (CAP Immigration Team, 2014) show that there were 40.7 million immigrants comprising of 18.6 million naturalized US citizens and 22.1 million non-citizens. Out of non-citizens, approximately 13.3 million immigrants were legal permanent residents; 11.3 million as illegal and the remaining on temporary visas. The past decade (2000-2012) saw a significant increase in the immigrants—an increase of 31.2% from 31.1 million to 40.8 million. Interestingly, the number of immigrants has doubled since 1960 although still below its all-time high. While the immigrants were 5.4% of the total US population, their share in 2012 rose to 13% which is below their share in 1890—15% of the US population.

Diversity, an important factor of immigration changed over time. For example, while 75% of the immigrants in US were from Europe, they declined to about 12% in 2012. Out of about 11.6 million immigrants in 2012, approximately, 28% were from Mexico, 2.3 million from China, 2 million from India, 1.9 million from Philippines, 1.3 million from Vietnam and El Salvador, and 1.1 million from Cuba and Korea. With regards to education, about 11.6% had a master/professional/doctorate degree as compared to 10.8% for the Natives. Also, 69.4% of the immigrants had High School or equivalent compared to about 90% of the Natives. From demographic angle, the average age of immigrants was 42 years old as compared to natives having 35 years old. The US Census Bureau (2011) recently released some of the data from the 2013 American Community Survey (ACS). The data show that the nation's immigrant population (legal and illegal) grew by 1.4 million from July 2010 to July 2013. The data also imply that 3.3 million new immigrants settled in the country in that same period. The immigrants were 41.3 million in July 2013, as perceived by a study done by Zeigler and Camarota (2014). The immigrants in 2013 were nearly doubled in 1990, tripled in 1980, and quadrupled in 1970 at 9.6 million.

- The largest increases in immigration population from 2010 to 2013 were South Asia—16%, up 373,000, East Asia—5%, up 365,000, the Caribbean—6%, up 223,000, the Middle East—13%, up 208,000, and sub-Saharan Africa—13%, up 177,000, India—14%, up 254,000, China—10%, up 217,000, the Dominican Republic—13%, up 112,000, Guatemala—9%, up 71,000, Jamaica—8%, up 55,000, Bangladesh—32%, up 49,000, Saudi Arabia—97%, up 44,000, Pakistan—14%, up 43,000, and Iraq—26%, up 41,000. Between 2010 and 2013, four million new immigrants settled in the US.

- As a share of the total US population, total immigrants comprised of 13.1%, the highest percentage in 93 years as compared to 6.2% in 1980. In contrast, immigrants comprised 16% of the adult population (18-plus) in 2013, nearly one out of every six adults.

- Mexicans accounted for the largest immigrant population in the US by far, with 11.6 million legal and illegal immigrants living in 2013. However, it was a 1% decline from 2012 to 2013.

- States with the largest percentage were North Dakota (up 27%); West Virginia (up 17%); and Wyoming (up 14%). In South Dakota, Nebraska, and Idaho, the immigrant population increased 10%. It grew 8% in New Hampshire, Wisconsin, and Pennsylvania and 7% in Iowa, Delaware, and Minnesota.

Immigrants by Labor Force Characteristics, 2013 and 2014

This section describes the labor force characteristics for two years—2013 and 2014, based on the collected by the Bureau of Labor Statistics (BLS) (2014) as a part of Current Population Survey (CPS) covering about 60,000 households and also taking into consideration the 2013 Yearbook of Immigration Statistics (2013) from US Office of Immigration Statistics. As per the definition adopted by BLS, immigrants are “foreign born

people and reside in the US but were born outside the country or one of its outlying areas to parents who were not US citizens. They include legally-admitted immigrants, refugees, temporary residents such as students and temporary workers, and undocumented immigrants”. A few features:

(1) The labor force composition. There were 25.7 million i.e. 16.5% foreign-born persons in the U.S. labor force (2014); of which Hispanics accounted 48.3% and Asians 24.1%.

- According to Zong and Batalova (2015), “Immigration has a significant impact on many aspects of life in the United States, from the workforce and the classroom to communities across the country”.

(2) The unemployment rate for foreign-born persons in the US declined from 6.9% in 2013 to 5.6% in 2014. As against this unemployment rate of native born persons declined from 7.5% to 6.3%, over-the-year decrease in the unemployment rates of the foreign born and the native born. The unemployment rate for foreign-born men fell from 6.4% to 5.0%, and from 7.5% to 6.5% for foreign-born women. Among the native born, the rate for men fell from 7.9% to 6.5%, while for women from 7.0% to 6.0%. According to race and ethnicity for the foreign born, blacks had the highest unemployment rate (8.6%) in 2014, 5.9% for Hispanics, 4.7% for whites, and 4.6% for Asians. Among the native born, blacks also had the highest jobless rate (11.8%) in 2014, followed by 8.8% for Hispanics, 5.6% for Asians, and 4.9% for whites.

(3) By occupation. Interestingly, the number of foreign born workers is more than the native born workers in the Service and Sales & Office Occupations. And the pattern gets reversed i.e. they are less in management, professional, and related occupations. A few features are now discussed:

- In 2014, foreign-born workers were more likely than native-born workers to be employed in service occupations (24.1% vs. 16.4%); in production, transportation, and material moving occupations (15.6% vs. 11.2%); and in natural resources, construction, and maintenance (13.7% vs. 8.4%).

- Native-born workers were more likely than foreign-born workers to be employed in occupations like management, professional (39.8% vs. 30.7%) and in sales & office (24.2% vs. 16.0%).

- Foreign-born men were more likely than native-born to work in natural resources, construction, and maintenance and in service occupations. Compared with native-born women, foreign-born were more likely to be in service, production, transportation, and material moving occupations. About 32.4% of foreign-born women worked in service occupations in 2014, compared with 19.5% of native-born and in sales and office occupations it was 31.5% vs. 22.2%.

(4) The weekly earnings. During 2014, the Median weekly earnings of foreign born workers were \$664 as compared to \$820 for their native born counterparts, variation attributed to some factors including distributions of foreign born and native born workers by educational, industry, and geographic region. A few features:

- Among men, median weekly earnings for the foreign-born men (\$695), i.e. 76.2% of native-born (\$912). Median earnings for foreign-born women (\$613) were 83.5% of their native-borne (\$734).

- Among the major race and ethnicity groups, Hispanic foreign-born full-time wage and salary workers earned 79.0% as much as native-born counterparts in 2014. For white, black, and Asian workers, earnings for the foreign born and the native born were relatively close within each group.

- In 2014, foreign born workers aged 25 and over with less than a high school education earned \$463 per week, while those with a bachelor’s degree and higher earned about 2.6 times—\$1,222 per week.

- Among the native born, those with a bachelor’s degree and higher earned about 2.3 times as much as those with less than a high school education—\$1,188 vs. \$517 per week. The gap between the earnings of foreign-born and native-born workers closes at higher levels of education. For example, among high school

graduates (no college), full-time workers who were foreign born earned 84.3% as much as their counterparts in 2014. Among those with a bachelor's degree and higher, the earnings of foreign-born workers were essentially the same as the earnings of native born workers.

(5) Salient demographic characteristics. In 2014, the demographic composition of the foreign-born labor force differs from that of the native-born labor force.

- Men accounted for 58.1% of the foreign-born labor force, compared with 52.2% of the native-born.
- By age, the foreign-born (25-64 years old) labor force is 74.3%, whereas native-born 62.7%.
- Nearly half (48.3%) of the foreign-born labor force was Hispanic, (24.1%) Asian, compared with 9.9% and 1.8%, respectively, of the native-born labor force.
- About 17.5% of the foreign-born labor force was white and 9.0% black, compared with 73.9% and 11.9%, respectively, of the native-born labor force.
- About 23.8% of the foreign-born labor force aged 25 and over had not completed high school, compared with 4.6% of the native-born labor force.
- The foreign born were less likely than the native born to have some college or an associate degree—17.5% vs. 29.9%. The proportions for foreign-born and native-born persons that had a bachelor's degree or higher were more similar, at 34.2% and 38.2%, respectively.
- The share (16.5%) of the foreign born US civilian labor force that was same for 2013-2014.
- The labor force participation rate of the foreign born was 66.0%, 62.3% for the native born.
- The participation rate of foreign-born men was 78.7% in 2014, higher than the rate of 67.4% for native-born. And 53.9% of foreign-born and 57.5% for native-born women.
- Among the major race and ethnicity groups in 2014, labor force participation rates for foreign-born Asians declined to 63.8%, while the rates for foreign-born whites (59.5%), blacks (71.1%), and Hispanics (68.9%) were almost the same. And the participation rate for native-born whites (62.6%) declined in 2014, for blacks (59.7%), Asians (62.2%), and Hispanics (63.6%) showed little change.
- The foreign-born mothers with children under 18 years old were less likely to be labor force participants than that of native-born mothers—59.1% vs. 73.1%.
- The labor force participation rate of foreign-born mothers with children under the age of six was 50.1% in 2014, much lower than that of native-born mothers with children under age 6, at 68.2%.
- Among women with children under the age of three, the participation rate for the foreign born (45.4%) was 19.7% below that of native born mothers (65.1%). Among men, foreign-born and native-born fathers with children under the age of 18 were more similar, at 93.8% and 92.4%, respectively.

The comparative picture of the above analysis and discussion of data during 2013 and 2014 now follows and is given in Table 2 as mentioned earlier.

Table 2

Labor Force (LF) Characteristics of Immigrants and Natives in 2013 and 2014

Characteristics	2013		2014	
	Immigrants	Natives	Immigrants	Natives
Unemployment rate (%)	5.9	7.5	5.6	6.3
Labor force (millions)	25.3		25.7	
Hispanics (% of total LF)	47.8		48.3	9.9
Asians (% of total LF)	24.3		24.1	1.8

Table 2 continued

Labor force participation rate					
Total	66.4	62.7	66	62	
Men			78.7	67.4	
Women			53.9	57.5	
By race ethnicity					
Asians	65.1	62.4	63.8	62.2	
Whites	60	63.1	59.5	62.6	
Blacks	71.8	59.5	71.1	59.7	
Hispanics	68.6	63.7	68.9	63.6	
Mothers with children less than 18 years old	59.7	72.7	59.1	73.1	
Mothers with children less than 6 years old	51.2	67.4	50.1	68.2	
Mothers with children less than 3 years old	46.7	64.9	45.4	65.1	
Fathers with children less than 18 years old	93.6	92.6	98.8	92.4	
Weekly earnings (median \$)					
Total	643	805	664	820	
Men	671	899	695	912	
Women	610	719	613	734	
By age and education					
25 years old with less than high school degree	428	511	463	517	
25 years old with bachelors and high school degree	1235	1187	517	1188	
Demographics					
Men	57.7	52.3	58.1	52.2	
Age	74.6	63	74.3	62.7	
Race/Ethnicity					
Whites	17.7	74.4	17.5	73.9	
African Americans	9	11.7	9	11.9	
Hispanics	47.8	74.4	9.7	73.9	
Asians	24.3	11.7	1.7	11.9	
Education (% of LF)					
Not completed High School	24.3	4.8	23.8	4.6	
College associate degree	17.7	30.1	17.5	29.9	
Bachelor or higher degree	33.8	37.5	34.2	38.2	
Region					
West			23.8		
North East			19.2		
South		153		153	
Midwest				8.5	
Occupation					
Service	24.8	16.7	24.1	16.4	
Production, transportation, and material moving	15.4	11.1	15.6	11.2	
Construction and maintenance	12.9	8.3	13.7	8.4	
Management and professional related	30.3	39.5	30.7	39.8	
Sales and office	24.4	16.5	24.2	16	

Source: Compiled from various tables—Bureau of Labor Statistics, USA (2014).

Estimated Total Immigration and Future Trends Towards 2025

Given the significant cutbacks in enforcement in recent years, the permissive nature of the legal immigration

system, and improvements in the economy, it is not surprising that the immigrant (legal and illegal) population has surged in the last four years. After growing little from 2007 to 2011, the nation's immigrant population has grown by 4.1 million from 2011 to 2015. This is roughly equal to the pace of growth from 2000 to 2007. The 1.7 million growth in the immigrant population (legal and illegal) from 2014 to 2015 is one of the largest single-year increases from the same quarter of the prior year since 2000. Both the growth from 2011 to 2015 and the increase in the last year are statistically significant. For the immigrant population, increase by one million means that significantly more than one million new immigrants must enter the country because some immigrants already here return to their homeland each year and natural mortality totals 250,000. The number of deaths changes little from annually year to year and births in the United States cannot add to the immigrant population because all those born to immigrants are by definition not foreign-born and are automatically given American citizenship. Thus, a change in migration patterns with more immigrants coming or fewer leaving is the only way that can make the foreign-born population grow.

Research Methods for Forecasting

Two methods have been used for forecasting. First, Regression Analysis has been used by considering total immigration as a function of time and then future trends have been estimated (Table 3 and Figure 4). Second, total immigration has been considered as a function of total population and then forecasting trends estimated (Table 4). Somehow, the estimates obtained from both the methods are convergent and statistical supported by analysis presented in this paper.

Method I: Total Immigration as a Function of Time

Table 3

Total Immigrants: 2000-2025 (With Reference to Data From Table 1)

Correlation:

	Column 1	Column 2
Column 1	1	
Column 2	0.961489	1

Regression:

SUMMARY OUTPUT

Regression statistics	
Multiple <i>R</i>	0.961489
<i>R</i> square	0.924462
Adjusted <i>R</i> square	0.919066
Standard error	0.945479
Observations	16

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	Significance <i>F</i>
Regression	1	153.1625	153.1625	171.336	3.04E-09
Residual	14	12.51503	0.893931		
Total	15	165.6775			

	Coefficients	Standard error	<i>t</i> stat	<i>P</i> -value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	30.7825	0.495813	62.08485	1.71E-18	29.71909	31.845914	29.719086	31.845914
<i>X</i> variable	0.671176	0.051276	13.08954	3.04E-09	0.561201	0.781152128	0.561200813	0.781152128

Figure 4. Plot showing the total immigration for 2000-2025.

Method II: Total Immigration as a Function of Total Population

The method takes into consideration total immigration as a function of total population. The purpose is to get an alternative estimate of immigrants and then compare the two for future use for policy decision etc.

Table 4

Total Immigrants Versus Total Population: 2000-2025 (With Reference to Data From Table 1)

Correlation:

	Column 1	Column 2
Column 1	1	
Column 2	0.944048	1

Regression:

SUMMARY OUTPUT

Regression statistics	
Multiple <i>R</i>	0.944048
<i>R</i> square	0.891226
Adjusted <i>R</i> square	0.881337
Standard error	0.99068
Observations	13

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	Significance <i>F</i>
Regression	1	88.45486	88.45486	90.12702	1.24E-06
Residual	11	10.79591	0.981447		
Total	12	99.25077			

	Coefficients	Standard error	<i>t</i> stat	<i>P</i> -value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-41.6146	8.131555	-5.11767	0.000335	-59.512	-23.7171	-59.512	-23.7171
<i>X</i> variable	0.258579	0.027237	9.493525	1.24E-06	0.19863	0.318528	0.19863	0.318528

Illegal Immigrants to United States of America

The Center for American Progress shows that the number of illegal immigrants has relatively stayed stable after declining slightly during the great recession. While their estimated number was 8.4 million in 2000, it will rise to 12 million in 2017. Again their estimated number was 11.7 million towards 2012 end, their number was

estimated as 11.2 in 2012 and it has marginally increased to 11.3 million in 2013.

Although Mexicans constitute the largest number of immigrants in the US, their number has somehow declined from 6.9 million (57% of total immigrants) to six million (52% of total immigrants).

As of 2012, the concentration of immigrants in six US's States, viz., California (22%), Texas (15%), Florida (8%), New York (7%), Illinois (4%), and New Jersey (4%). These numbers may differ from estimates from other sources, but the fact remains that the majority of the immigrants are located in the States mentioned here.

Majority of the illegal immigrants have stayed for a long time thus having committed themselves to living in the US. Their median length of stay was 13 years in 2013. Currently, 62% have been living in the US for 10 years or longer. A full 88% have been living in the US for five years or longer. These illegal immigrants continue to be undocumented as they cannot adjust their status towards green card sponsorship. The illegal immigrants constitute disproportionately large percentage of the labor force relative to the overall size of the population. Interestingly, 84% of the illegal immigrants were employed in the US in 2010 constituting about 5.2% of the total labor force against 3.7% share in the US population, almost half of the settled illegal immigrant's homeowners. As per the Pew Research Center (2015), 52% of the illegal immigrants have completed high school or even higher and 15% have a bachelor or higher degree.

Apart from the number of illegal immigrants in the US, quite often, the everyday, real-life effects of illegal status are overlooked in debates about abstract numbers or policies. The fact remains that with more than 11 million illegal immigrants living in the US, with majority of them living for more than a decade, takes a real toll and puts pressure on American families according to Seth and Patten (2013).

Estimated Illegal Immigrants vs. Total Immigrants (2000-2025)

It is important to understand illegal immigration, in addition to deaths and return migration, new arrivals are also an offset by those who remain in the country, but change their status from illegal to legal each year. Since 2009, about 2.5 million new illegal have settled in the country, with Mexico as the top sending country. It is well established that illegal immigrants respond to US Census Bureau (2011) surveys. In fact, researchers have used Census Bureau data as the basis to estimate the size and composition of the illegal population. The ratio of immigrants to the illegal population in the second quarter over the years as estimated by these three organizations varies from a high of 3.57:1 to a low of 3.22:1. Averaging all three organization's estimates results in a ratio of 3.38:1. This average ratio implies that the illegal population could be 12.4 million in 2015. If true, this would mean that the illegal population grew significantly since 2013, when Pew and CMS last estimated its size. To actually estimate the illegal population in the second quarter of 2015 would require administrative data that are not yet available, as well as other information. But the evidence, while preliminary and incomplete, does indicate that the number of illegal immigrants has increased in the last two years.

Based on the below estimation (Figure 5) and results depicted in Table 5, it seems that about two million illegal immigrants are likely to be added in the coming 10 years. This is a quite high number obviously having lot of implications on the economic and social system of the country. This also includes illegal immigrants for which special provision is required. The government is still debating on how to accommodate such a large number of existing illegal immigrants.

Table 5

Illegal Migrants Versus Total Migrants: 2000-2025 (With Reference to Data From Table 1)

Correlation:

	Column 1	Column 2
Column 1	1	
Column 2	0.959467	1

Regression:

SUMMARY OUTPUT

Regression statistics	
Multiple <i>R</i>	0.959467
<i>R</i> square	0.920576
Adjusted <i>R</i> square	0.914903
Standard error	0.355559
Observations	16

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	Significance <i>F</i>
Regression	1	20.51448	20.51448	162.2695	4.32951E-09
Residual	14	1.769912	0.126422		
Total	15	22.28439			

	Coefficients	Standard error	<i>t</i> stat	<i>P</i> -value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-1.89371	1.011828	-1.87158	0.082308	-4.063867186	0.276442	-4.06387	0.276442
X variable	0.351883	0.027624	12.7385	4.33E-09	0.29263647	0.41113	0.292636	0.41113

Figure 5. Plot showing the total immigration, illegal immigrant population for 2000-2025.

Other Available Future Trends of Immigrants

Further, the US immigrant population is projected to rise, even as share falls between Hispanics and Asians, the nation's immigrants are projected to reach 78 million by 2060, making up 18.8% of the total US population according to new Census Bureau as depicted in Figure 6. That would be a new record beating the previous high of 14.8% in 1890 will be passed as soon as 2025.

Fifty years after passage of the landmark law that rewrote US immigration policy, nearly 59 million immigrants have arrived in the United States, pushing the country's foreign-born share to a near record 14% in 2015 as depicted in Figure 7. The Pew Research Center's (2015) US population projections show that if current demographic trends continue, future immigrants and their descendants will be an even bigger source of population growth. Between 2015 and 2065, they are projected to account for 88% of the US population increase, or 103 million people, as the nation grows to 441 million.

Figure 6. Plot showing the estimation of total immigration for 2000-2065.

Figure 7. Plot showing the % foreign born share for various ethnicity for 2015 & 2065. Source: US Census Bureau (2011).

These are some key findings of a new Pew Research analysis of US Census Bureau data and new Pew Research US population projections through 2065, which provide a 100-year look at immigration's impact on population growth and on racial and ethnic change. In addition, this report uses newly released survey data to examine US public attitudes toward immigration. The Wall Street Journal of September 28, 2015 reports that "Asians to Represent Largest Foreign—Born Group in US by 2055".

There is a mixed reaction among the immigrants and natives, according to an opinion released by the Pew Research Center (2015). Overall, 45% Americans say immigrants in the US are making American society better in the long run, while 37%—make it worse, and 16%—don't have much effect. The same survey finds that half of Americans want to see immigration to the US reduced (49%) and eight-in-ten (82%) say the US immigration system needs major changes or it needs to be completely rebuilt.

Analysis and Discussion—Critical Issues, Some Dilemmas and HR Perspective

The foregoing discussion and analysis leads to numerous issues on the US's economy.

Few issues are emerging out from current data and others being forecasted through “Regression Analysis”:

- According to Time and Kirk (2006), the real problem is massive illegal immigration into the US more than 10 million illegal persons are in the US currently and thereby raising the population by 700,000 every year. This could be a threat towards security in the presence of global terrorism.
- While the immigrants to US would typically come for better jobs and career, the process and their influx would add value to the US's economy. However, rise in illegal immigrants may result in taking away the value by weakening the legal and national security environment. Further, not undermining the benefits of immigration as a good and educated human resource, the impact on the generous social benefits and institutions of US is a critical issue that requires consideration by the politicians and the government.
- The other issue relates of ethics of immigration. While the illegal immigrants and particularly the Mexicans are willing to take up any jobs at relatively lower wages as compared to Americans, it does have impact on the employment situation and perhaps leading to higher level of unemployment amongst the natives.
- Another immigration issue or dilemma is that the system needs to address a growing problem of brain drain. The hard fact remains that smart foreigners who study in US's universities often face the problem of staying in the country because of the tough immigration laws even though they were educated at taxpayer expense through scholarships etc. They leave US mostly out of compulsion and return to their home countries for jobs or as entrepreneurs.
- Bill Gates once remarked “US is throwing talent away”. Danielle Guichard-Ashbrook, who directed the Massachusetts Institute of Technology's international students office, said legislative proposals are “trying to play catch-up” with the rest of the pro-business world. Further, “We educate them, but then we don't make it easy for them to stay”, she said of the nation's laws. “Other countries are snapping them up”. The issue was also once brought up by President Obama in terms of facilitating the stay of trained human resource in USA.
- The issues highlighted by the Federation for American Immigration Reform include legal/illegal immigration, national security, labor and economics, guest workers, population and environment, and social issues, not to speak of the other hidden or unknown issues.

Conclusion

There is a sharp rise in the number of immigrants in USA in recent decades and as projected for future serves as a basis for any policy formulation. While immigration is considered to be a great and constant source of economic vitality and demographic dynamism, it is equally well a great source of taxpayers, job creators, and consumers. There seems to be a strong need to restore public faith in the system rather than focus on the economic benefits from the immigrant population. The work in this paper is a beginning in the direction of immigration studies. It is restricted to the use of Regression Analysis for forecasting the trends in immigration.

The subsequent work is expected to enlarge the scope towards Bayesian Probabilistic Approach perhaps combined with Delphi Method based on the opinion of some experts in the area and perhaps focused more towards illegal immigration.

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