

# H-1B Authorized-to-Work Population Estimate



U.S. Citizenship and  
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## Executive Summary

The purpose of this report is to provide a total estimate of nonimmigrants who, as of September 30, 2019, are currently authorized to work in the United States under the H-1B visa classification. A detailed analysis of current data has concluded that as of the above date, the H-1B authorized-to-work population is approximately 583,420. All aliens included in this number are nonimmigrants who have received authorization from USCIS and the Department of State (if applicable), to work in an H-1B specialty occupation. The report provides the total number of aliens who are approved I-129 (H-1B) beneficiaries and in granular detail explains which of those aliens are and are not part of the final estimate. Included in this report is a technical appendix presenting the methodology used.

### 1. Introduction

The H-1B nonimmigrant visa classification is a vehicle through which U.S. employers may obtain workers on a temporary basis in specialty occupations. Information on the current population of foreign nationals authorized to work in the United States in H-1B nonimmigrant classification remains important to policy makers and researchers. However, estimating the H-1B authorized-to-work (ATW) population currently residing in the United States is complex as no electronic data system tracks or houses this information.

The objective of this study is to estimate the population of H-1B ATW beneficiaries as of September 30, 2019 (the end of federal fiscal year 2019). The ATW population is defined as the aggregate of unique foreign nationals who (1) are beneficiaries of an approved I-129 petition for a H-1B specialty occupation, and (2) have not adjusted to lawful permanent resident (LPR) status, changed to another nonimmigrant status, or been denied a visa to the United States by a U.S. consulate if the beneficiary requested consular processing abroad when the I-129 petition was approved. As such, this report does not remove from the final estimate of the ATW population aliens who held a valid H-1B visa/status but have abandoned their visa/status (leaving the United States permanently or did not attempt to enter the United States if they are the beneficiary of an approved I-129 petition for new employment). Nor does it remove from the final estimate aliens with a valid H-1B visa or H-1B nonimmigrant status who were denied entry by Customs and Border Protection (CBP) at the ports of entry.

### 2. Methodology

We first identify unique foreign nationals who are beneficiaries of approved<sup>1</sup> I-129 petitions for H-1B specialty occupations with a validity period through September 30, 2019. The size of the approved unique beneficiary (AUB) population has a cyclical pattern, as this population typically experiences marked changes when a new fiscal year starts and ends, given the annual numerical allocations for each fiscal year (commonly referred to as the H-1B cap). We then estimate the number of aliens who have adjusted status, changed status, or have been denied a visa to the United States by U.S. consulates if they requested

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<sup>1</sup> Most of USCIS data is transactional in nature and changes daily as we receive, approve, or deny applications, petitions, and requests. Additionally, USCIS sometimes revoke applications and petitions after an initial approval, or approve applications and petitions after an initial denial (typically as a result of a motion or appeal). Therefore, count of approvals as captured by USCIS' system of records (SOR) can change depending on the time of data extraction. For more information, please refer to <https://www.uscis.gov/tools/reports-studies/understanding-our-data>.

consular processing abroad. Subtracting these outgoing estimates from the AUB population will yield the H-1B ATW estimate for September 30, 2019.

## 2.1 Estimating AUB population

USCIS electronic system of record (SOR) shows there are 725,613 approved H-1B petitions with a validity period through Fiscal Year (FY) 2019 and beyond. However, one alien may be the beneficiary of multiple petitions. Because no unique person identifier exists for all H-1B petitions in the USCIS electronic SOR, we use a methodology of statistical inference. We first use the subpopulation with social security number (SSN) as a sample<sup>2</sup> to estimate the duplication rate, and then apply this duplication rate to the entire population (consisting of both SSN and non-SSN subpopulations) to derive the AUB population estimate.

Table 1 and Figure 1 show the H-1B AUB population estimate from 9/30/2016 through 9/30/2019. A cyclical pattern is evident. At the end of a fiscal year (which is also the end of the H-1B cap year), the estimated population is the lowest of all four quarters. After the new cap year begins, the estimated population increases. At the end of the first quarter of a new fiscal year, it is estimated that the AUB population increases by an average 9% to 10% over the end of the previous quarter and remains relatively flat for the next two quarters (reflected by the population estimate on 3/31 and 6/30). On September 30, 2019, the estimated H-1B AUB population is 619,327.

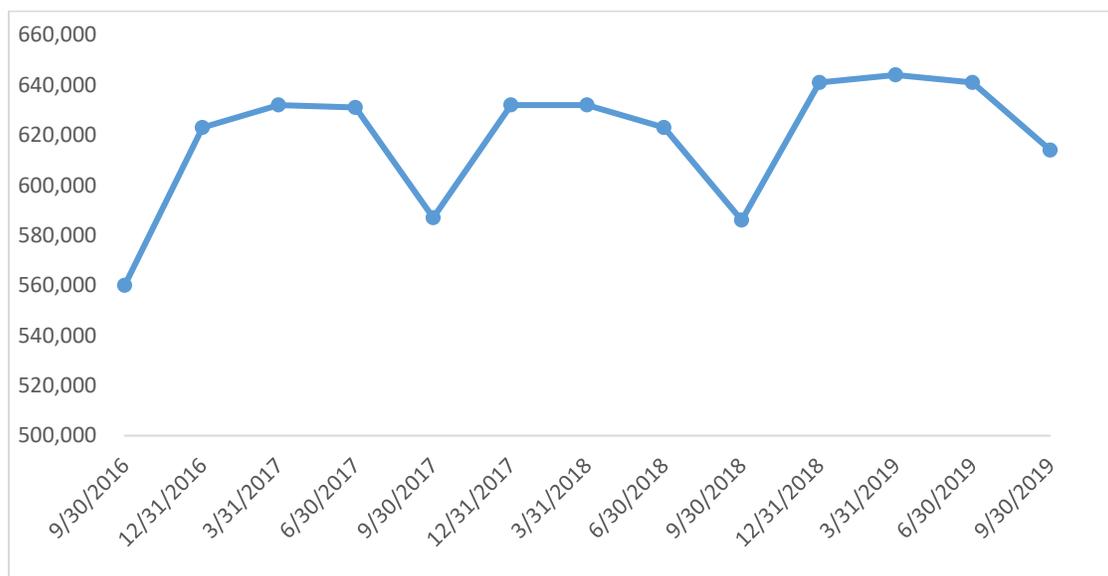
**Table 1 H-1B Approved Unique Beneficiaries (AUB) Population Estimate FY2016-FY2019<sup>3</sup>**

Date	Estimated Total Approved Unique Beneficiaries
9/30/2016	564,663
12/31/2016	628,163
3/31/2017	637,553
6/30/2017	636,288
9/30/2017	592,725
12/31/2017	637,249
3/31/2018	637,920
6/30/2018	628,449
9/30/2018	591,745
12/31/2018	647,299
3/31/2019	649,379
6/30/2019	646,564
9/30/2019	619,327

<sup>2</sup> The SSN sample was determined through an analysis to be a statistically unbiased sample, where SSN is the identifier for unique persons. About 78% of the approved petitions with a validity period through FY 2019 (and beyond) have SSN captured by USCIS SOR.

<sup>3</sup> Estimates were derived from approved H-1B petitions with a validity period through the end of each quarter.

**Figure 1 H-1B Approved Unique Beneficiary (AUB) Population Estimate FY2016-FY2019**



## 2.2 Estimating Outgoing Subpopulations

The actual number of H-1B nonimmigrants residing in the United States is smaller than the AUB population estimate due to a number of factors. First, even if an alien is the beneficiary of an approved Form I-129 petition for H-1B specialty occupation, those aliens requesting consular processing abroad may need to be approved for the visa by the Department of State (DOS) in order to travel to and request entry into the United States. In some cases, the visa will not be issued by DOS, in which case the alien will not be allowed to travel to and seek entry as an H-1B worker on the basis of the previously approved H-1B petition. Second, H-1B workers may also adjust their status to become a lawful permanent resident (LPR). Third, aliens that were previously granted H-1B status may change to a different nonimmigrant status.

### 2.2.1 Consular Denial:

USCIS data show about 15% of the approved Form I-129 petitions for H-1B specialty occupation were for beneficiaries requesting consular processing-overseas<sup>4</sup>. This population may need to apply for a visa from a U.S. consulate abroad in order to enter the United States to work as an H-1B worker. DOS data indicates the denial rate for H-1B consular processing from FY2015 through FY2019 ranges from 1.9% to 2.3%, with an average of 2.2%<sup>5</sup>. Applying this rate to the population of those approved H-1B beneficiaries that would need consular processing, we estimate the approximate number of aliens who were denied a visa by DOS is 2,100.

<sup>4</sup> Based on response to Form I-129, Petition for a Nonimmigrant Worker, Part 2, Question 4.

<sup>5</sup> Based on data provided by Department of State to USCIS.

### **2.2.2 Change of Status (COS):**

Aliens in H-1B status may request a change to another nonimmigrant status. First, aliens may request a change to a different employment-based nonimmigrant status (such as O-1, L-1, etc.) based on filing a new Form I-129. Second, an alien in H-1B status may request a change to a non-employment-based nonimmigrant status (such as F-1, H-4, etc.) by filing Form I-539, Application to Extend/Change Nonimmigrant Status. We derive an estimate of these two subpopulations by comparing the last action date of the change of status petition and that of the H-1B approval date. If the former is more recent, we deem the alien has changed status.

2.2.2.a) Form I-129 COS: The Form I-129 COS number is very small. The COS number for the SSN subpopulation is 379. Extrapolating this to the entire population yields 485.

2.2.2.b) Form I-539 COS: The I-539 COS number is also very small. The COS number for the SSN subpopulation is 774. Extrapolating this to the entire population yields 990.

Combining these two subpopulations, we conclude the COS population on 9/30/2019 is approximately 1,475.

### **2.2.3 Adjustment of Status (AOS):**

Nonimmigrants in H-1B status in the United States can adjust status to lawful permanent resident (LPR) in the discretion of USCIS if they qualify and, in cases when a statutory numerical limit exists, if a visa number is available. Historical data shows an overwhelming majority (greater than 80%) of the H-1B status holders who have adjusted status did so via employment-based preference categories, while a small minority adjusted status via family based, humanitarian, diversity, or other categories.

Since an H-1B visa is valid for up to 3 years, former H-1B status holders who adjusted status in FY2017-FY2019 could potentially have H-1B visa validity dates through 9/30/2019. The most recent LPR data compiled by the Office of Immigration Statistics (OIS) shows in FY2017 and FY2018, 37,001 and 31,561 H-1B status holders adjusted to LPR status respectively. These figures include aliens who held H-1B status valid through 9/30/2019 or beyond. As of the date of this writing, OIS has not released the FY2019 LPR data. Thus, the number of H-1B nonimmigrants adjusting to LPR status in FY2019 needs to be estimated. After analyzing the trend of the historical data in FY2016-FY2018, we arrive at an estimate of 28,236. Thus, the estimated total number of H-1B nonimmigrants who have adjusted status in FY2017-FY2019 is 96,798.

The Technical Appendix summarizes a methodology we use to estimate the number of aliens in the H-1B AUB population who have adjusted status. Using this methodology, we estimate the number of aliens in the H-1B AUB population who have adjusted status is 32,332.

### 3. Conclusion

The following table summarizes our findings:

**Table 2 H-1B Authorized to Work Population Estimate September 30, 2019**

Total Authorized Unique Beneficiaries (AUBs)	619,327
Consular Denials	-2,100
Change of Status (COS)	-1,475
Adjustment of Status (AOS)	-32,332
<b>Authorized to Work as of 9/30/2019</b>	<b>583,420</b>

USCIS concludes the H-1B authorized-to-work (ATW) population on September 30, 2019 is approximately **583,420**. We expect the ATW population also to follow the same cyclical pattern as the AUB population. The ATW population in the first two quarters of Fiscal Year 2020 is expected to be approximately 10% higher than this estimate. Lastly, it must be pointed out that, as described in the Introduction, the scope of this study is estimating the authorized to work population, defined as the population that has received authorization from USCIS and DOS (if applicable) to work as H-1B specialty occupation nonimmigrant worker in the United States, and has not adjusted status or changed status. It does not remove from the final estimate aliens who held a valid H-1B visa/status but have abandoned their visa/status (leaving the United States permanently or did not attempt to enter the United States at all if they are the beneficiary of an approved I-129 petition for new employment). Nor does it remove from the final estimate H-1B visa holders or returning H-1B workers who were denied entry by Customs and Border Protection (CBP) at the ports of entry. Merging USCIS data with CBP's entry/exit data is needed in order to assess the impact of such scenarios.

## Technical Appendix

In this appendix we present the details of estimating the adjustment of status population for H-1B status holders. We first assess the size of this population under a scenario featuring a universal validity period assumption and two even distribution assumptions (defined below). Then we adjust this preliminary estimate using a ratio derived from the historical data in FY2017-FY2018 to arrive at a final estimate.

For the sake of simplicity, we assume all H-1B petitions have a universal validity period of 3 years. Suppose there are  $N_1$  H-1B status holders who are admitted as LPR in FY2017. Suppose there are  $L$  working days in a fiscal year. Thus, the validity period of an H-1B visa is  $3L$  work days. Assuming (1) every day there are equal number of aliens who obtained LPR status, (2) the  $3L$  work day validity period is also equally distributed, then it follows that the probability of an alien who obtained LPR status on the first work day (usually October 1<sup>st</sup>) has an valid period through 9/30/2019 is  $\frac{1}{3L}$ ; the probability of an alien who obtained LPR status on the second work day has an validity period through 9/30/2019 is  $\frac{2}{3L}$ ; ....; the probability of an alien who obtained LPR status on 9/30/2017 (or the last work day of the fiscal year) has an valid period through 9/30/2019 is  $\frac{L}{3L}$ . Hence, in FY2017 the total number of H-1B status holders who adjust and who also have a valid period through 9/30/2019 is

$$\frac{N_1}{L} \left( \frac{1}{3L} + \frac{2}{3L} + \dots + \frac{L}{3L} \right) = \frac{L+1}{6L} N_1$$

If  $L$  is sufficiently large (261, or the number of work days in a year <sup>6</sup>), then  $\frac{L+1}{6L} \approx \frac{1}{6} = 0.167$ . We know  $N_1=37001$  from the OIS LPR dataset. Thus, in FY2017 the total number of aliens who have a validity period through 9/30/2019 is  $0.167N_1 = 0.167 \times 37001 = 6179$ .

Likewise, if there are  $N_2$  H-1B status holders who are admitted as LPRs in FY 2018, and if the two even distribution assumptions hold, then the total number of aliens who have a validity period through 9/30/2019 is

$$\frac{N_2}{L} \left( \frac{L+1}{3L} + \frac{L+2}{3L} + \dots + \frac{2L}{3L} \right) = \left( \frac{L+1}{6L} + \frac{1}{3} \right) N_2$$

If  $L$  is sufficiently large (261, or the number of working days in a year), then  $\frac{L+1}{6L} + \frac{1}{3} \approx \frac{1}{6} + \frac{1}{3} = 0.5$ . We know  $N_2=31561$  from the OIS LPR dataset. Thus in FY2018 the total number of aliens who have a validity period through 9/30/2019 is  $0.5N_2 = 0.5 \times 31561 = 15780$ .

Lastly, if there are  $N_3$  H-1B status holders who are admitted as LPR in FY 2019, and if the two even distribution assumptions hold, then the total number of aliens who have a validity period through 9/30/2019 is

$$\frac{N_3}{L} \left( \frac{2L+1}{3L} + \frac{2L+2}{3L} + \dots + \frac{3L}{3L} \right) = \left( \frac{L+1}{6L} + \frac{2}{3} \right) N_3$$

Again, if  $L$  is sufficiently large (261, or the number of working days in a year), then  $\frac{L+1}{6L} + \frac{2}{3} \approx \frac{1}{6} + \frac{2}{3} = 0.833$ . Thus, in FY2019 the total number of aliens who have a validity period through 9/30/2019 is  $0.833N_3$ .

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<sup>6</sup> The total number of work days in a calendar year is usually 261.

Using a simple smoothing technique and utilizing H-1B adjustment of status data in FY2016-FY2018, we forecast  $N_3=28236$ . Thus, in FY2019 the total number of aliens who have a validity period through 9/30/2019 is  $0.833 \times 28236 = 23520$  under the scenario featuring universal validity period and even distributions. Finally, under this scenario, the total number of H-1B workers who have validity period through 9/30/2019 and who have also adjusted their status would be

$$0.167N_1 + 0.5N_2 + 0.833N_3 = 6179 + 15780 + 23520 = 45479$$

In reality, the 3-year universal validity assumption and the two even distribution assumptions do not hold. Some of the H-1B beneficiaries have a validity period less than 3 years<sup>7</sup>. In addition, due to the priority date in the employment-based preference categories (which account for nearly 83%<sup>8</sup> of the H-1B adjustment of status population), it stands to reason that the number of H-1B status holders who adjust their status is inversely correlated with time. Both factors lead to a smaller number than what was calculated under the universal validity and even distribution scenarios. In fact, 6,812 aliens in the AUB population have an A-number matched in the OIS LPR dataset. Since only 45% of the AUB population have an A-number captured by USCIS systems, we estimate the approximate number of the H-1B status holders in the AUB population who have adjusted status in FY2017 and FY2018 is 15,129, indeed less than the 21,959 (sum of 6,179 and 15,780) estimate based on the universal validity and even distribution assumptions. Assuming this pattern continues to hold in FY2019, we estimate the number of aliens in the H-1B AUB population who have adjusted status in FY2019 is  $23520 \times (15129/21959) = 16203$ . Therefore, the total estimate of aliens in the H-1B AUB population who have adjusted status is  $15129 + 16203 = 32332$ .

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<sup>7</sup> In FY2017-18, the average validity period for approved H-1B beneficiaries is 2.3 years (2.5 years for initial employment and 2.2 years for continuing employment, respectively).

<sup>8</sup> Calculated from the 2016-18 LPR data compiled by the Office of Immigration Statistics (OIS).

## **List of Acronyms**

AOS	Adjustment of Status
ATW	Authorized-to-Work
AUB	Approved Unique Beneficiaries
CBP	Customs and Border Protection
COS	Change of Status
DOS	Department of State
LPR	Lawful Permanent Resident
OIS	Office of Immigration Statistics
SOR	System of Records
SSN	Social Security Number
USCIS	U.S. Citizenship and Immigration Services