

# Summary of Respondents and Doctoral Counts with Estimation by State for 2022 ACS

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This exercise is for estimating the number of respondents who get a doctoral degree for each state in US 2022 ACS.

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## 1 Data Obtaining

To obtain the data from IPUMS USA, follow these steps: First, open the IPUMS website and navigate to the IPUMS USA section. Once there, create a data set by selecting samples from the '2022 ACS' dataset and submit the selection. Next, choose the following harmonized variables for your dataset: (i) STATEICP under GEOGRAPHIC VARIABLES–HOUSEHOLD, (ii) SEX under DEMOGRAPHIC VARIABLES–PERSON, and (iii) EDUC under EDUCATION VARIABLES–PERSON. After selecting the variables, proceed to view your cart and create the data extract. Change the data format from the default .dat to .csv, then submit the extract. Wait until the status of your data extract changes to 'completed,' at which point you can download the data. Upon downloading, a file with the .gz suffix will be received. Decompress this file to obtain the final dataset in .csv format.

Table 1: Summary of Respondents and Doctoral Counts with Estimation by State for 2022 ACS

State	Total Respondents	Total Actual Doctor	Estimated Respondents	Difference in Respondents
Alabama	51580	460	28399	23181
Alaska	6972	51	3149	3823
Arizona	74153	896	55317	18836
Arkansas	31288	251	15496	15792
California	391171	6336	391171	0
Colorado	59841	1031	63652	-3811
Delaware	9641	152	9384	257
District of Columbia	6718	311	19200	-12482
Florida	217799	2731	168606	49193
Georgia	109349	1451	89582	19767
Hawaii	14995	214	13212	1783
Idaho	19884	175	10804	9080
Illinois	128046	1457	89952	38094
Indiana	69843	620	38277	31566
Iowa	33586	258	15928	17658
Kansas	29940	321	19818	10122
Kentucky	46605	448	27659	18946
Louisiana	45040	450	27782	17258
Maryland	62442	1608	99274	-36832
Michigan	101512	991	61182	40330
Minnesota	58984	572	35314	23670
Mississippi	29796	263	16237	13559
Missouri	64551	621	38339	26212
Montana	11116	113	6976	4140
Nebraska	19989	153	9446	10543
Nevada	30749	282	17410	13339
New Jersey	93166	1438	88779	4387
New Mexico	20243	350	21608	-1365
New York	203891	2829	174656	29235
North Carolina	109230	1421	87729	21501
North Dakota	8107	60	3704	4403
Ohio	120666	1213	74888	45778
Oklahoma	39445	281	17348	22097
Oregon	43708	647	39944	3764
Pennsylvania	132605	1620	100015	32590
South Carolina	54651	647	39944	14707

State	Total Respondents	Total Actual Doctor	Estimated Respondents	Difference in Respondents
South Dakota	9296	71	4383	4913
Tennessee	72374	841	51922	20452
Texas	292919	3216	198549	94370
Utah	35537	428	26424	9113
Virginia	88761	1531	94521	-5760
Washington	80818	1195	73777	7041
West Virginia	18135	159	9816	8319
Wisconsin	61967	513	31672	30295
Wyoming	5962	72	4445	1517

## 2 Estimation

We start by matching STATEICP to the state name and getting the actual value for each state and replacing NA with 0. Select California's row from the actual values we get, using the number of doctoral degrees in the California data as a percentage of total respondents to get a ratio. Finally, the doctoral degree and the proportion of total respondents obtained in California are mapped to each state, and the estimated total respondents of each state is obtained from the doctoral degree of each state. The respondents difference column is obtained by comparing the value we obtained with the actual value.

## 3 Explanation of the Difference

There are several reasons why the ratio of people holding a doctoral degree in each state can vary, such as state education policies or cultural attitudes toward education that lead to differences in the distribution of educational resources across states. For instance, states with more universities and research institutions tend to have a higher proportion of residents with advanced degrees. Therefore, using California's doctorate-to-respondent ratio as representative of all states may not be accurate, as it does not account for these regional differences in education opportunities and demographics.

Additionally, population demographics vary between states. States with more young individuals may have fewer people with advanced degrees, while states with older populations may have more. States with industries that require highly educated workers often have more individuals with advanced degrees, and states with a higher cost of living may also attract more individuals with advanced degrees due to higher earning potential.