Assessment of Data Quality for Web-based Surveys on Immigrant Youth

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Introduction

- Due to comparably lower cost of developing online panels, together with trends of remote working under COVID-19, online research platform and panels has experienced a proliferation (Peer et al., 2021).

- Attention to the quality of the data from online platforms is critical as various factors (i.e insufficient effort when responding to the survey) can threaten the quality of the research (Huang et al., 2012).

- Existing approaches for detecting poor quality data includes setting response time cutoff and attention check questions (ACQ).
  - The **10th percentile** of all participants' response time per item is commonly used when determining minimum seconds per item (spi) (Reimers et al., 2022).
  - **ACQs** are also preferred as they are face valid and reasonably effective (Litman and Robinson, 2020).

- Previous studies indicate a high frequency of **younger participants** being detected as low-quality data, with similar results for **Black/African American** (Reimers et al., 2022).

- No existing literature has been found on how **immigrant generation** status would influence the likelihood of being detected as low-quality data.

Research Goals

- Assess the ways of detecting insufficient effort responding (IER), unmotivated responding, in the current Immigrant socialization and identity study.
- Explore the relationship between attention check status (AC status) and the duration participants spend on each item.
- Explore some demographic factors that may influence AC status
- Assess the external validity of the current study.

Methods

Sample

- 899 youths from the CloudResearch platform fulfilled the recruitment criteria:
  - either first- or second-generation immigrants.
  - between 14 to 18 years old.
  - attending a U.S high school.
  - self-identified as either Asian; Latinx, or Hispanic; Arab, Middle Eastern/North African (AMENA); Black/African descent or West Indian/Caribbean; Multiracial.

- 2% of the participants self-reported as AMENA, 40.7% as Asian/Asian American, 9.8% as Black/African American, 39.6% as Hispanic, and 5.7% as Multicultural.

- 76% are second-generation immigrants

Measures

- Two measures are introduced to detect insufficient effort respondents:
  - Response time. The total time duration for completing the survey and progress are provided by Qualtrics. Duration per item is then calculated based on the former two parameters. The survey contains 201 questions in total and is almost all grid questions.
  - Attention check status (AC status). Two ACQs are embedded at the 8% and 24% of the survey. The first, more explicit ACQ, was presented at earlier stages, asking participants to choose the color "brown" among the other four color options. The implicit ACQ was a bogus item included in the PCCE scale.

- Demographic information. Youth were asked about the grade they were enrolled at, their age, their ethical-racial identity, and whether they and their parents were born in or outside of the U.S.

- Location. Location matching between youth's current resident state and IP address was conducted with Studio R package.

Results

Univariate

- 79% of participants passed two ACQs (N=715). Of those 184 youths who failed the ACQ, 38.5% fail the first one(N=71) and 61.4% fail the second (N=113).

- The median duration is 5.84 spi, and the 10th percentile is 2.76 spi, as shown in **Figure 1.**
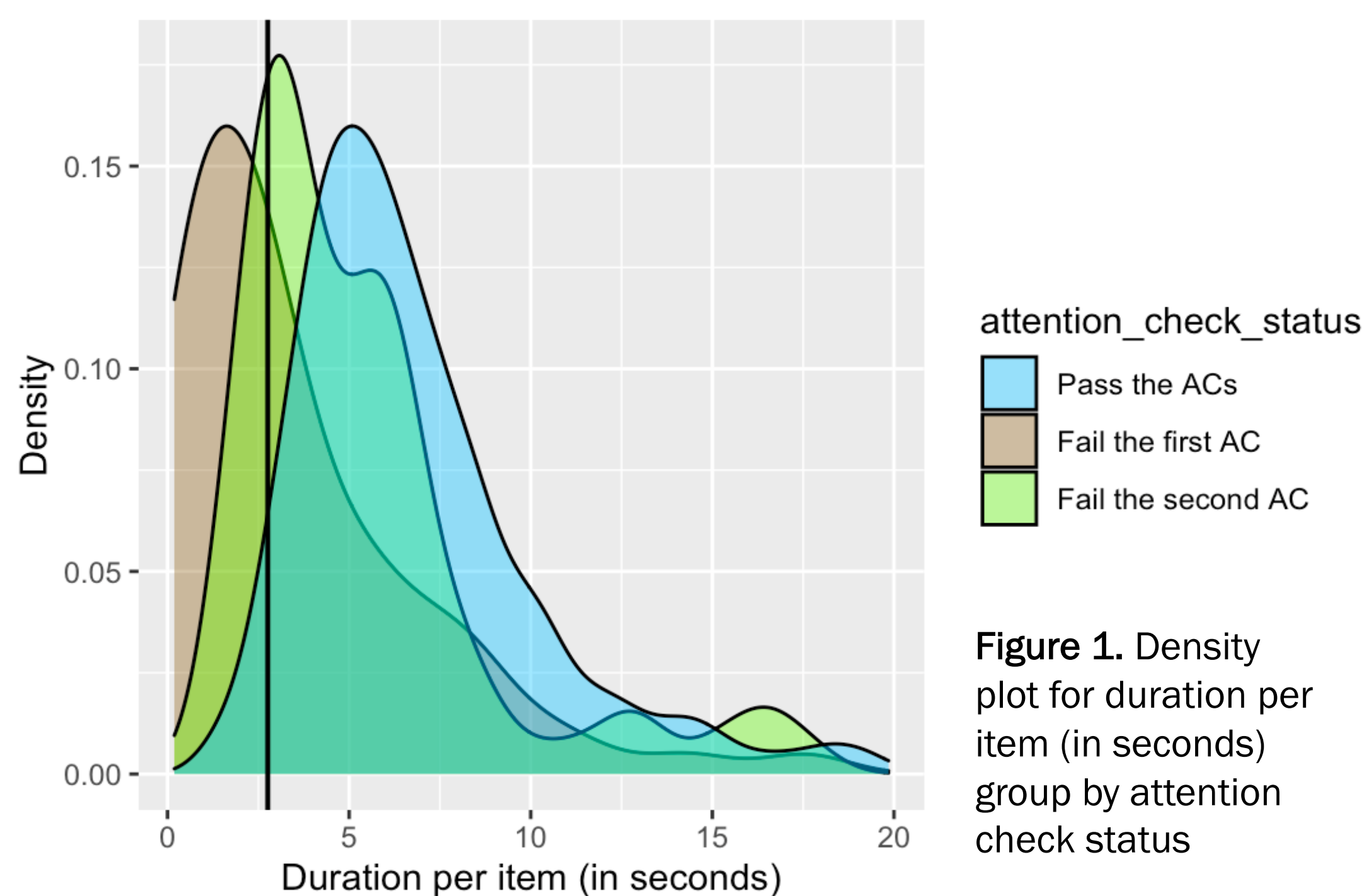
Bivariate

Figure 1. Density plot for duration per item (in seconds) group by attention check status

- A **logistic regression** was performed to ascertain the effect of duration participants spent on each item on the likelihood that they would pass (AC status=1) or fail the attention check (AC status=0).

- The model was **statistically significant.** For every unit increase in spi, we expect to see 8.1% increase in the odds of passing the ACQs (p <.001). This increase *does not depend on the value that duration is held at.*

Multivariate

- A **logistic regression** was performed to ascertain the effects of grade, ethical-racial identity, and immigrant generation on the likelihood for participants to pass or fail the ACQ.

- The odds of passing the ACQs are expected to be 80% times higher for second gen immigrant youth compared to first gen (p=0.002) while holding grade year and ethical racial identity fixed.

- The grade youths enrolled at is not a factor influencing their AC status.

- The odds of passing the ACQs is expected to be 34% times lower for Black American (p=0.018) and 55.9% times lower for Hispanics (p=0.003) compared to Asian/Asian American while holding grade year and immigrant status fixed.
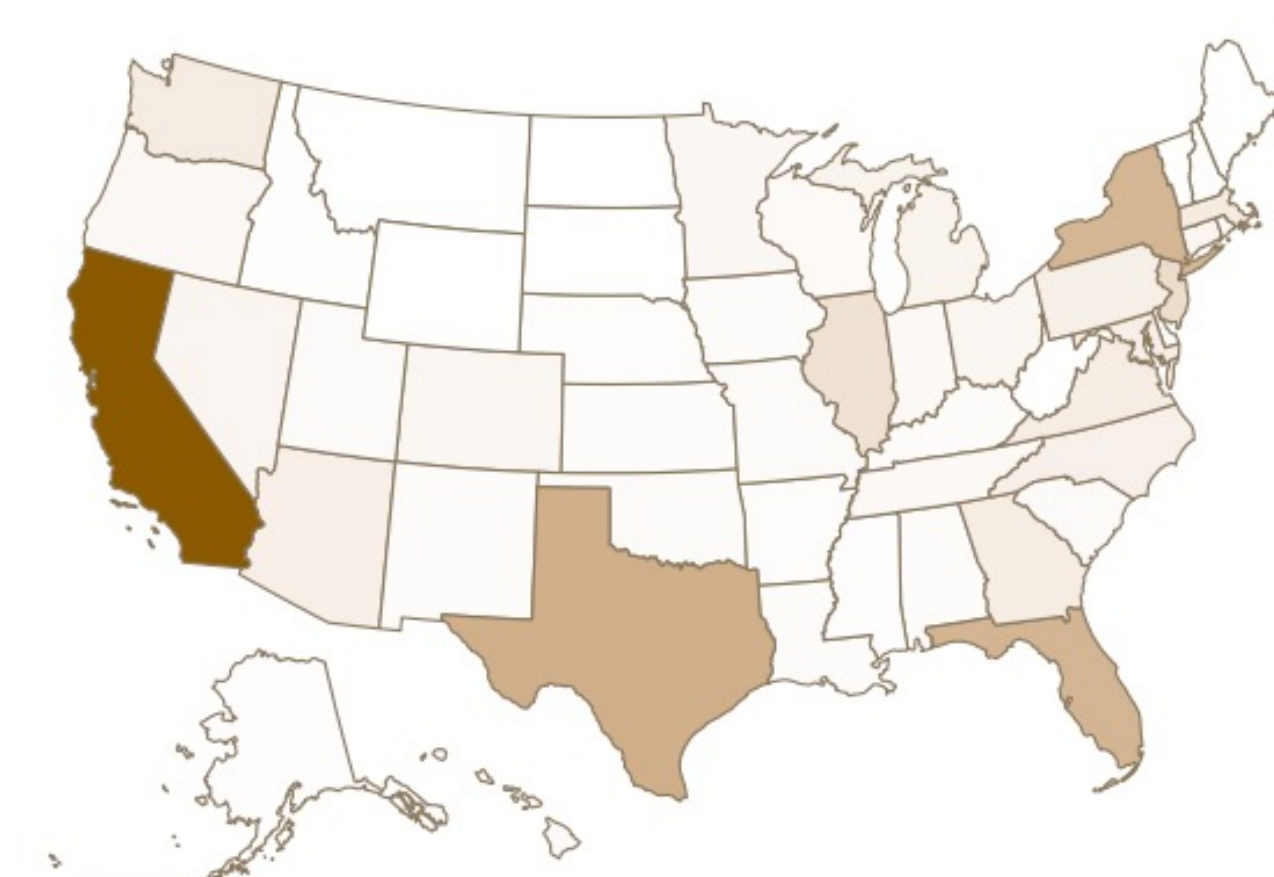

Figure 3.a 2016-2020 US immigrant number by state

External Validity

- The distribution of the Immigrant youth completed our survey (**Fig. 3.b**) is virtually identical to the distribution of the U.S. immigrant population (**Fig. 3.a**).

Discussion

- The attention check pass rate for the current study is 79%, which is substantially higher than 46.5% reported in the study conducted by Peer et al.

- 10th percentile, which is 2.76 spi, lies between 2 to 5.8 spi suggested by Reimers et al. Therefore, it was determined as the minimum response time cutoff.

- Although the logistic regression conducted between AC status and duration per item shows significant results, the large overlaps between people who pass the AC and fail the second AC indicate we could not solely rely on response time cutoff to detect poor quality data.

- The combination of attention check and response time cutoff could more effectively detect poor quality data.

- Second-generation immigrant youths are more likely to pass the attention check. Self-reported ethnic identity is also an influencing factor. The prediction of AC status for Black youths is consistent with the study conducted by Reimers et al.

- Future researchers on similar topics may need to include more participants from particular ethical radical groups and immigrant generation to obtain identical number of participants.

- We do not see any problem in the external validity or generalizability of our study based on the two distributions maps.
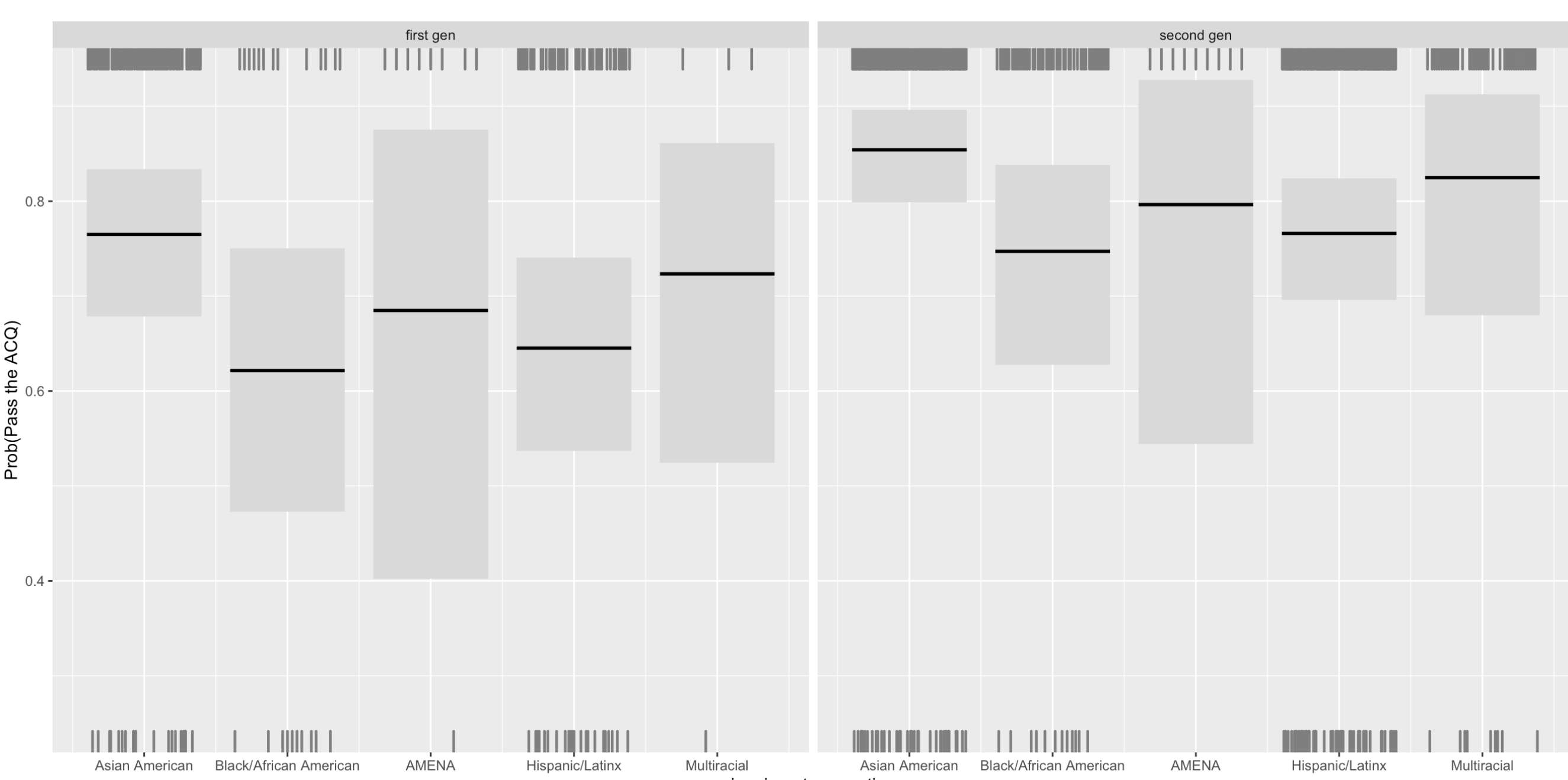

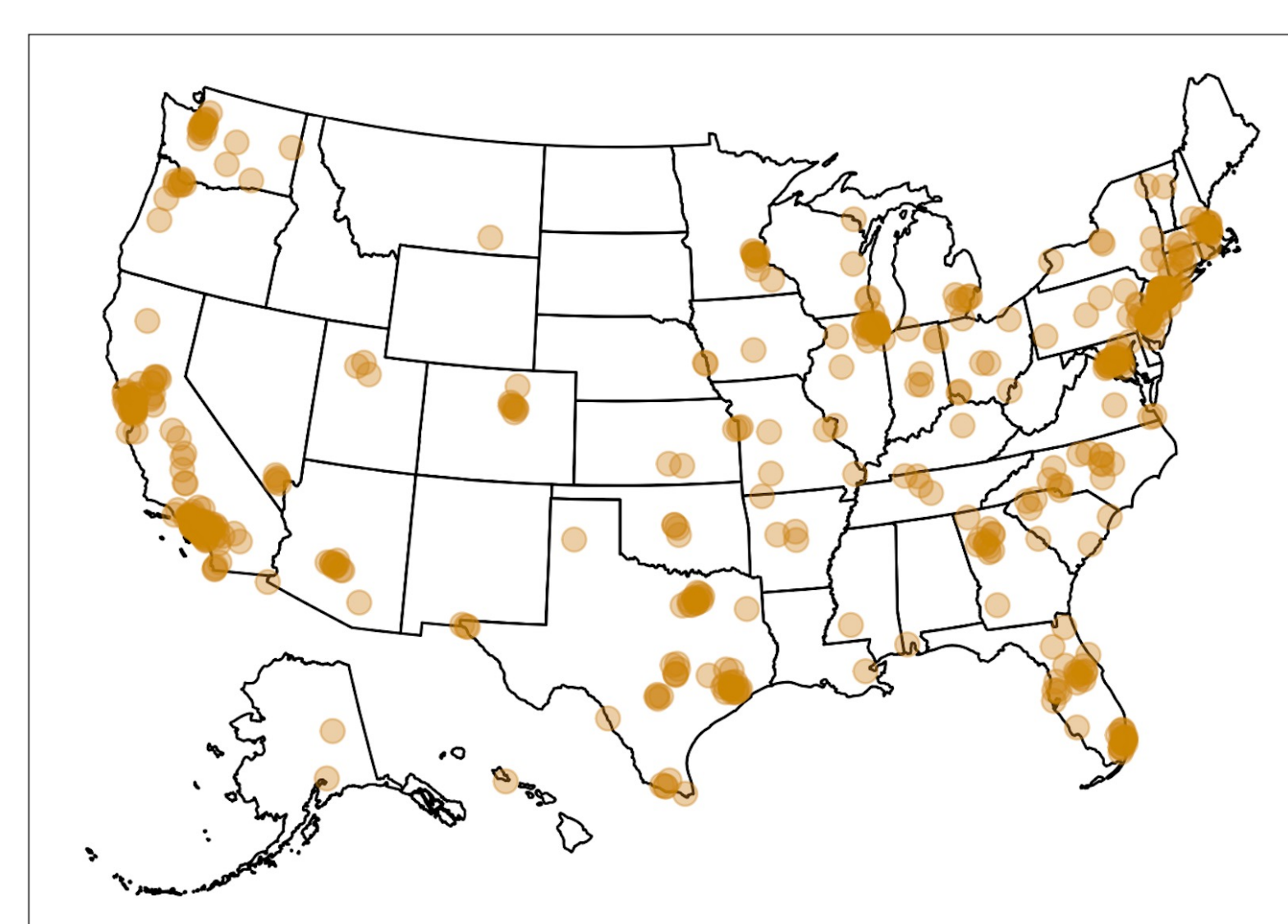Figure 2 (left) The relationship between AC status and race group by immigrant generation

Figure 3.b The location of the immigrant youths who participated in the study

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