ASL Project

The Importance of BuildOn's Work

- BuildOn's US operations serve to **create service-learning opportunities for students attending schools in underserved communities.**
- At BuildOn we strive to create "Constructive Leaders" by teaching students **"to lead, first by learning to serve, unleashing courage, resilience, empathy and a passion for the possible, to build solidarity".**
- One of our missions is to develop ways in which we can **improve our services** to help **better underprivileged communities and break the cycle of poverty and illiteracy through service and education.**

Build On's Impact

By prioritizing our efforts efficiently, we can improve on certain aspects of services to provide better learning experiences.

We will be using survey data issued by BuildOn to interpret what correlations we can find throughout their services in the United States.

Through analysis of these surveys, we can accurately gauge the impact of initiatives and determine what should be improved first.

The Variables of the Survey Explained

Engagement Overall: Engagement Overall is a metric that measures the engagement of students across a series of categories: Cognitive Engagement, Emotional Engagement, and Behavioral Engagement.

CHATOS: CHATOS, or Completed Hours at Time of Survey, relates to the amount of time students had been a part of the program. It is also split into subdivisions of: Education Hours, Service Hours, In-Class Hours, Out-of-Class Hours, and Total Hours.

Language Spoken at Home: Reflects the language spoken at home and includes English, Spanish, Arabic, Cantonese, French, Creole, Vietnamese, and more.

Region: This shows the region in which a surveyed student worked with BuildOn. The regions in which BuildOn operates within the US includes (Boston, CA, CT, IL, MI, NY).

Current Grade: This just shows the current grade of a student surveyed.

How We Assessed the Surveys

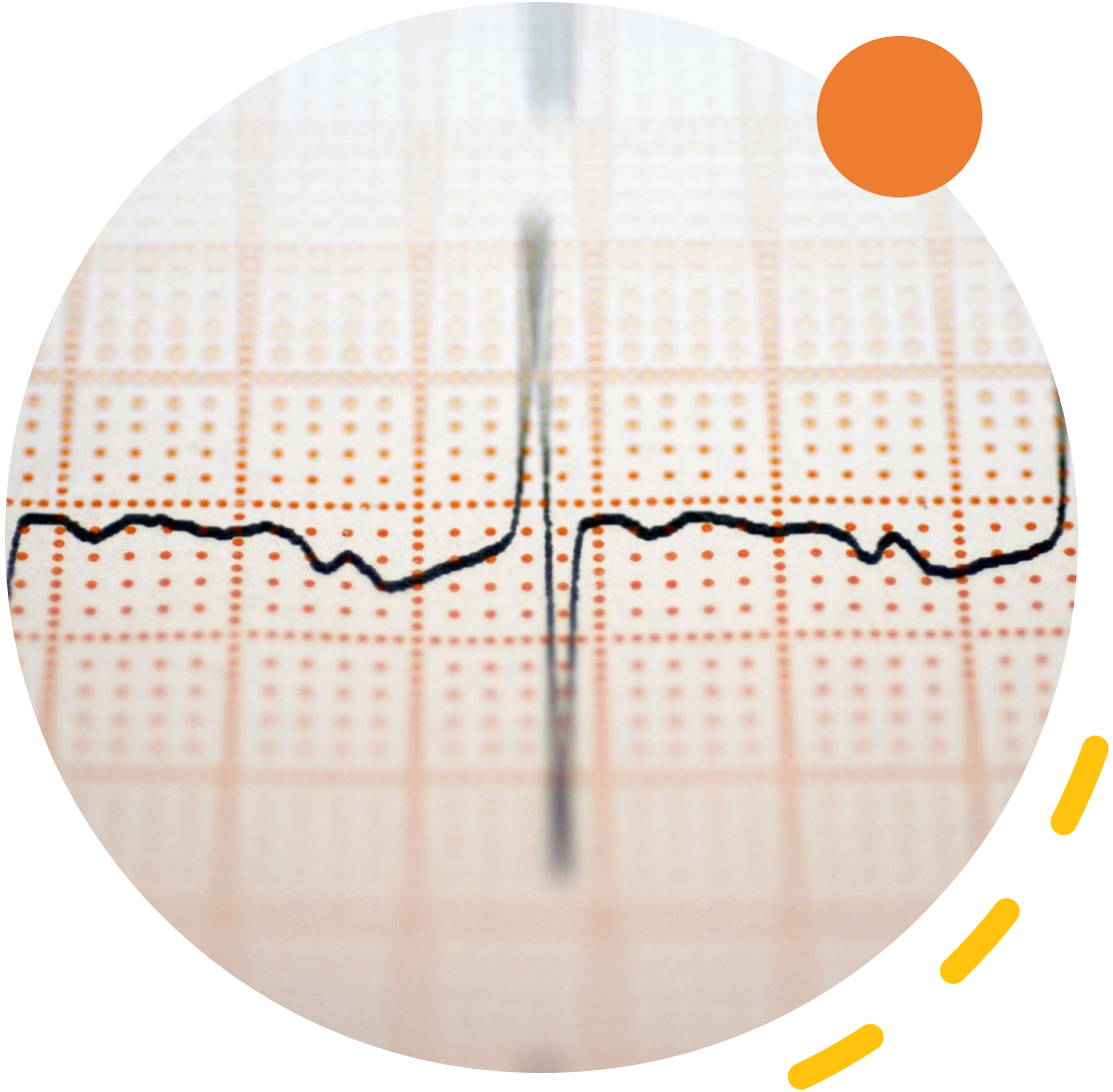
To find out if the results of the surveys are significant, we must understand if the students' engagement levels have any correlation to the amount of time spent in the program.

First, we wanted to understand the data better, so we ran a frequency test to see the means

Next, we decided we would run a Bivariate Correlation test to check for correlations. We decided we would then cluster the data by nominal categories and look for correlations within

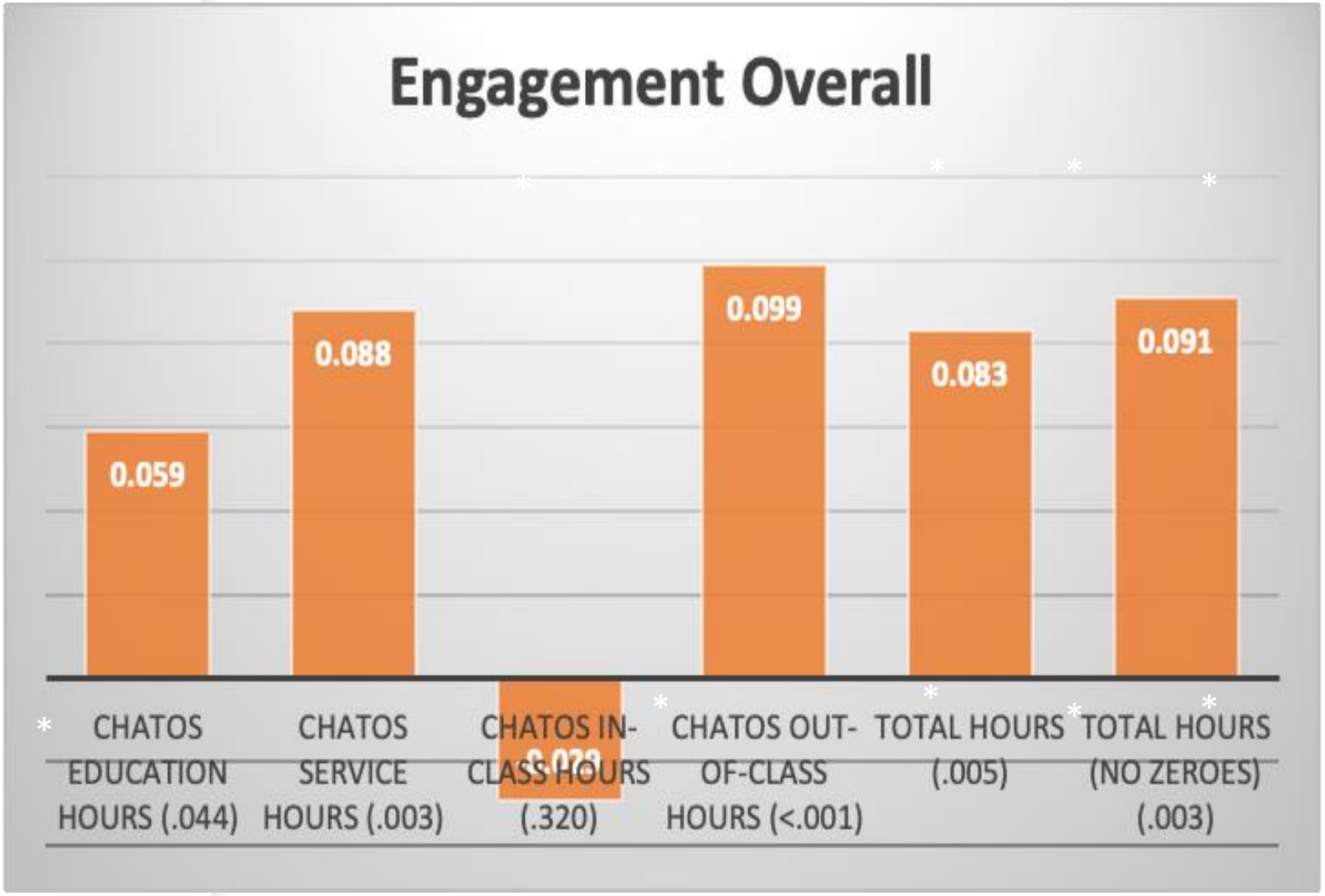
Understanding the Data

- We conducted a frequency test, revealing a **mean of 10.11** and a **standard deviation of 16.76** for the important **Total Hours category**.
- The standard deviation being larger than the mean leads us to deduce that there is a bias towards extreme data within the data set that we will see later when we break it down into nominal categories.



Correlations

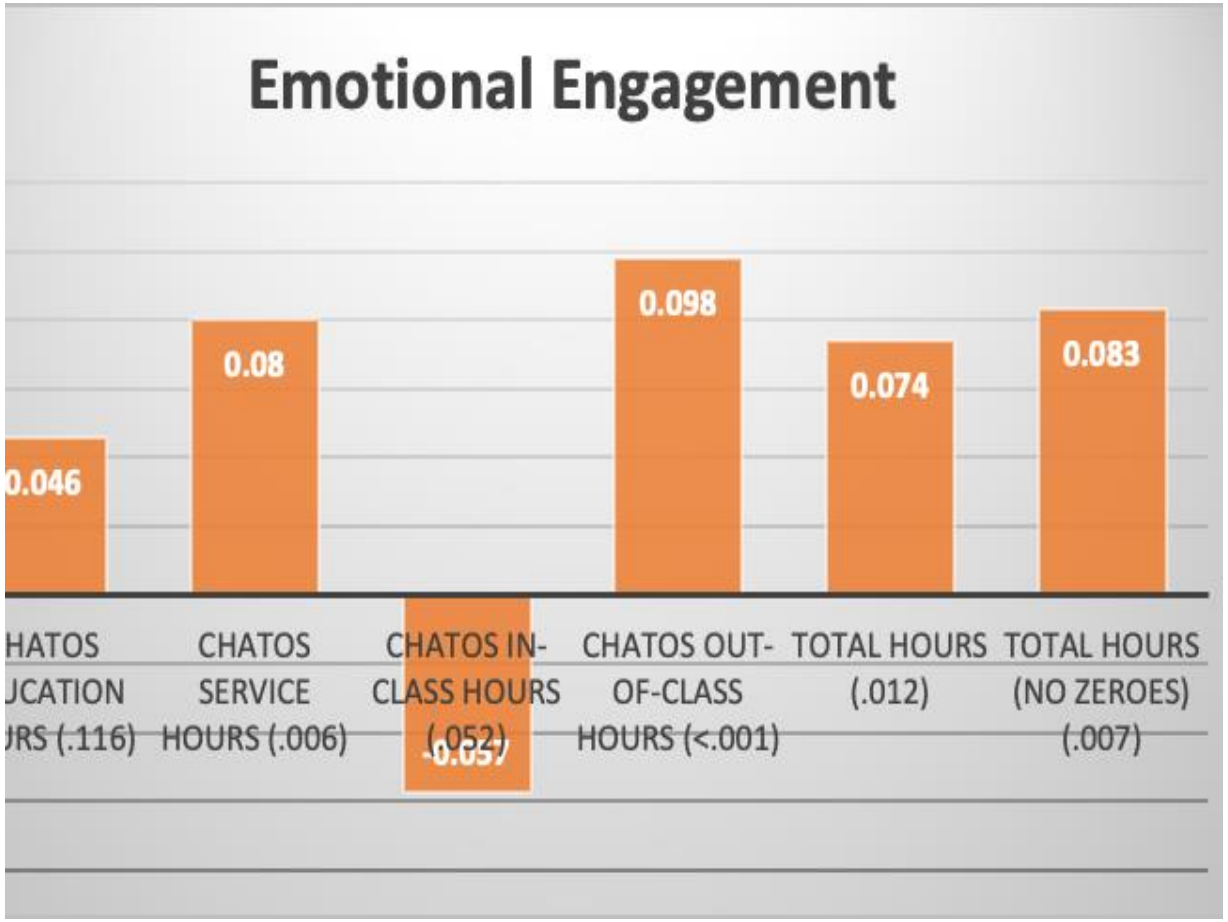
- In our analysis we found significant correlations in **Behavioral, Emotional, and Overall Engagement.**

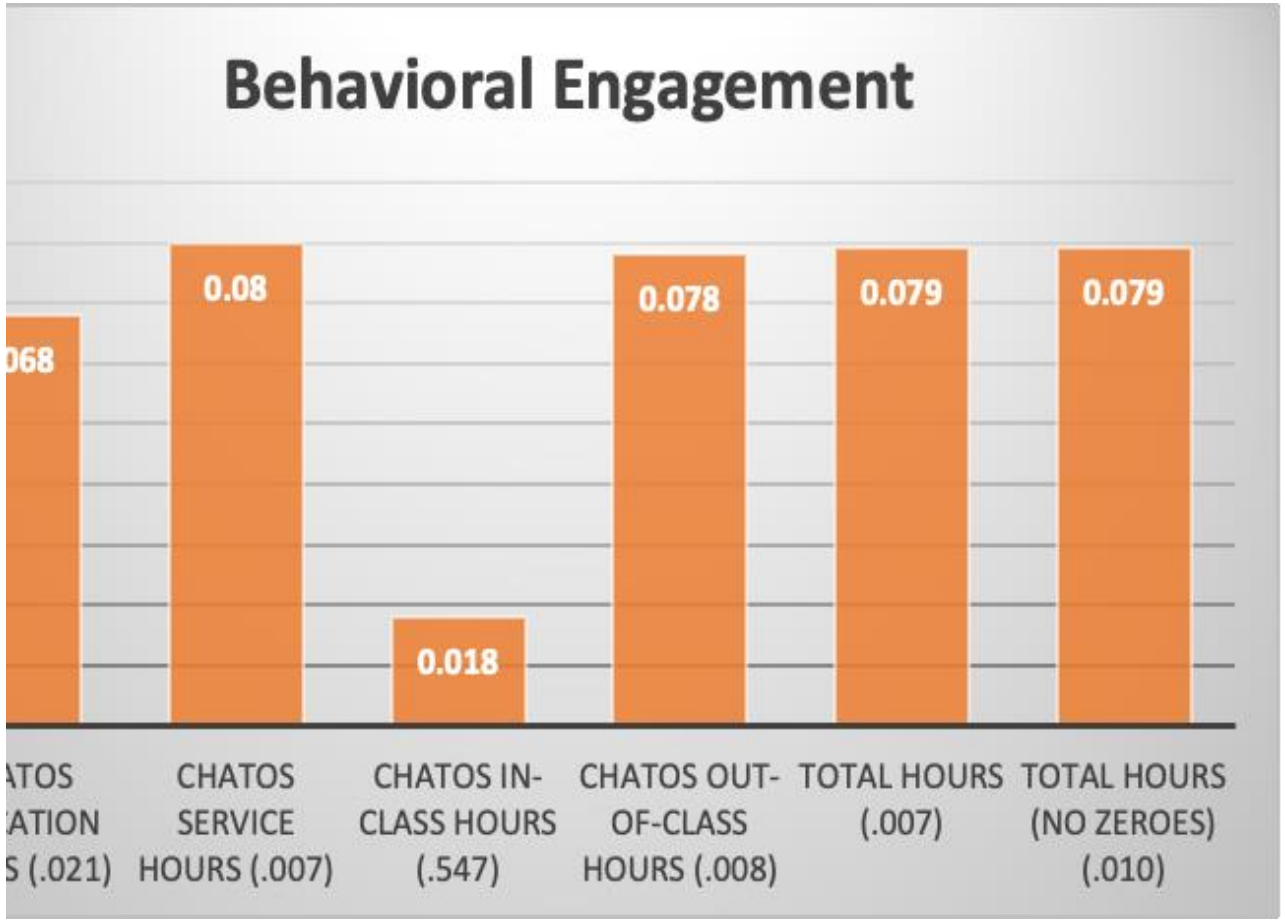


The number in the bar is Pearson's R score while the captioned number is the Sig level

We were unable to find a correlation between CHATOS and Cognitive Engagement

Correlations





The number in the bar is Pearson's R score while the captioned number is the Sig level

Breaking it Down

While surface-level correlations reveal valuable insights, breaking the data into nominal categories helps us understand key differences more clearly. To do this, we created three categories that best capture the patterns in our data.

Regions surveyed

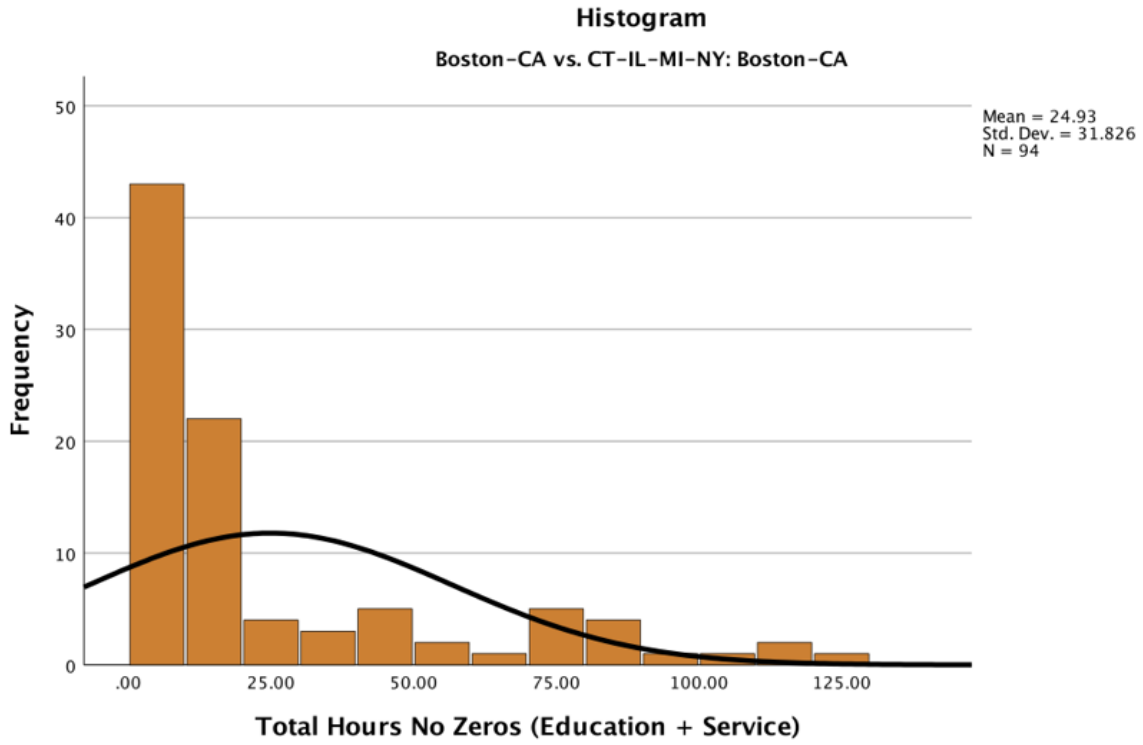
Languages spoken at home

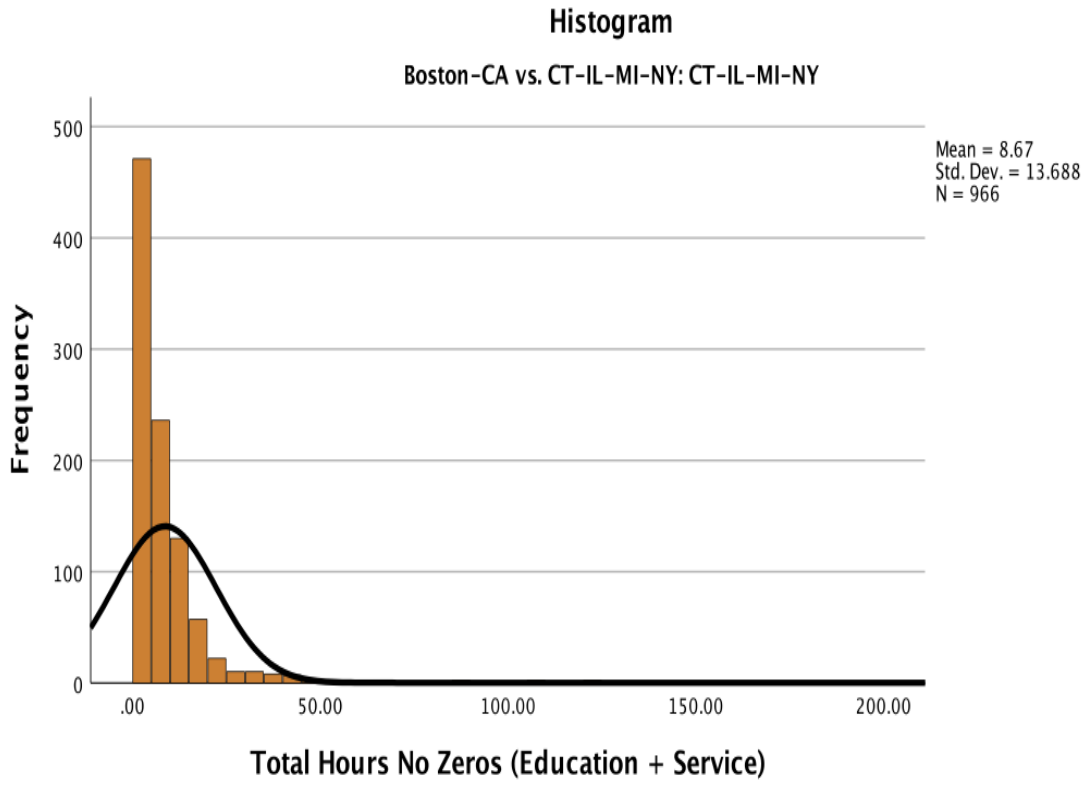
Current grade of students surveyed

Regional Analysis

Regions Frequencies

- **Boston and CA have respective Total Hours of 25.3 and 23.06**
- **CT, IL, MI, and NY respectively have 7.7, 6.8, 7.5, and 9.5 Total Hours** which isn't enough to be significantly comparable on their own
- If we cluster these groups together, we are then able to see on the histograms below how they become more comparable

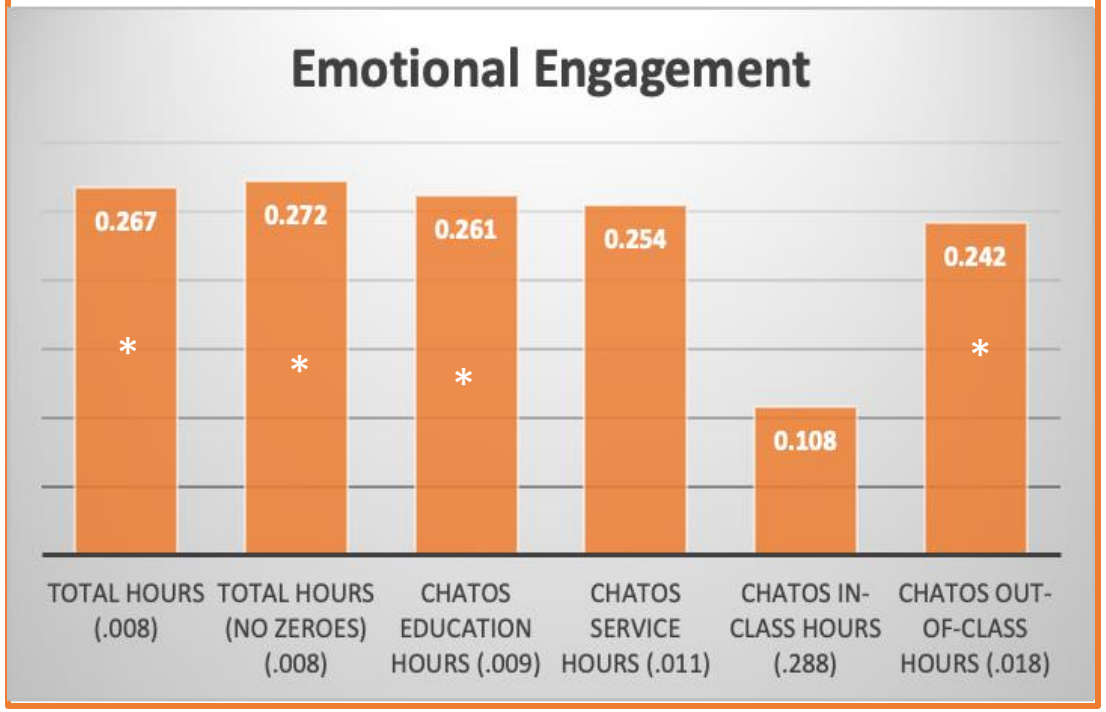




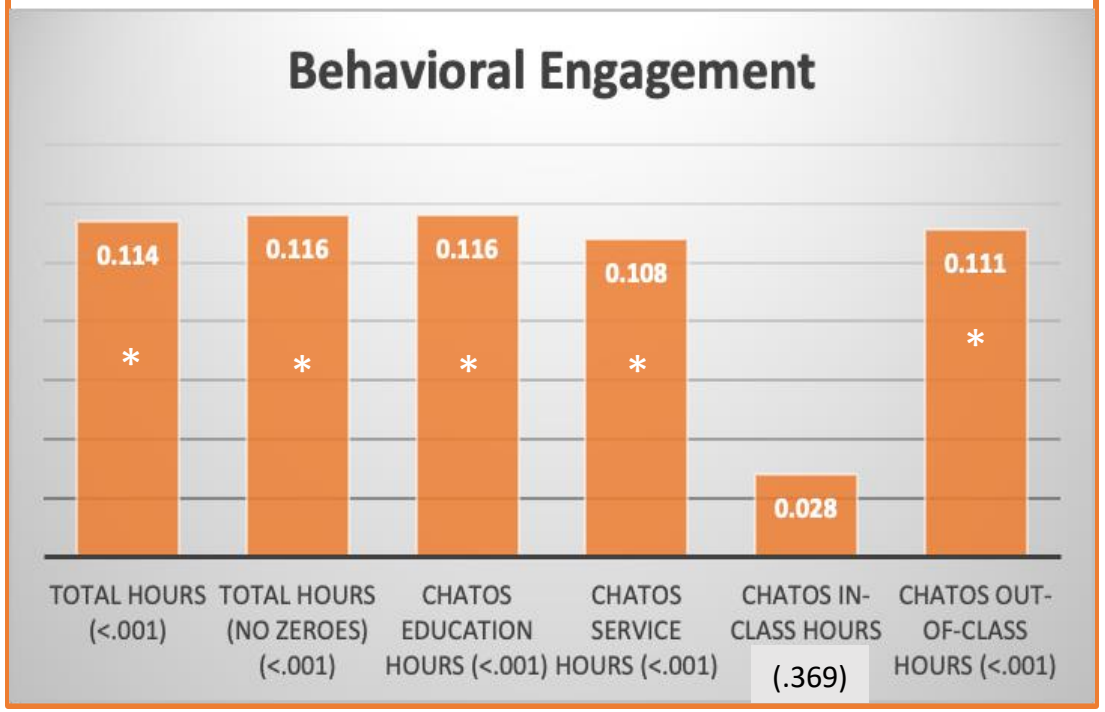
Regions Correlations

- We split the regions into two groups because of the difference in mean between Boston + CA and CT, IL, MI, NY. The results for the groups are below:

- For California and Boston, we were able to find the following significant correlations listed below:



- For CT, IL, MI, NY we were able to find the following significant correlations listed below:



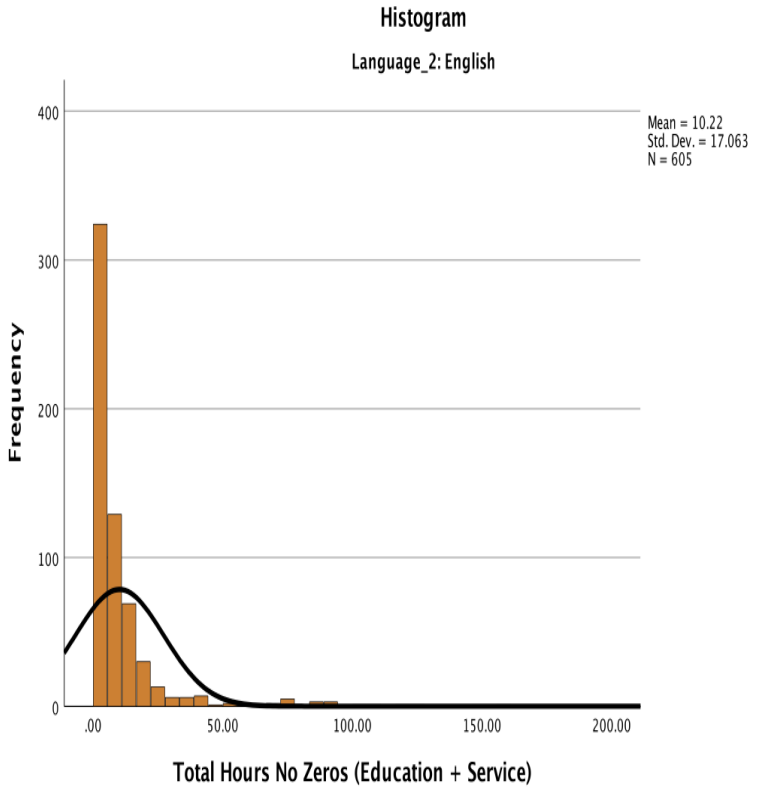
Regional Results Interpreted

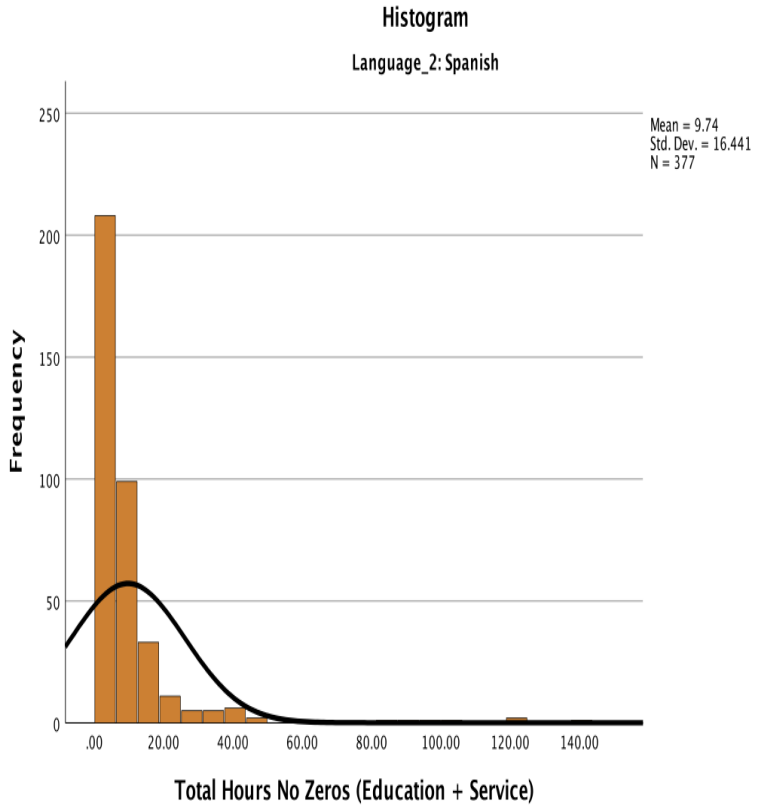
- There is a significant correlation between Emotional Engagement and CHATOS scores for California and Boston
- There is a significant correlation between Behavioral Engagement and CHATOS scores for CT, IL, NY and MI
- It's been known that people exhibit varying behaviors in response to their environmental context so we can assume that BuildOn operates differently in CA and Boston to better incentivize students as indicated by the frequencies histogram, this should be instituted in the other states
- For all the regions together, their emotional and behavior engagement in the class is significant while their cognitive is not. The students are not as involved in the In-class sessions as they are during the service and education segments of the program which helps them grown behaviorally and emotionally

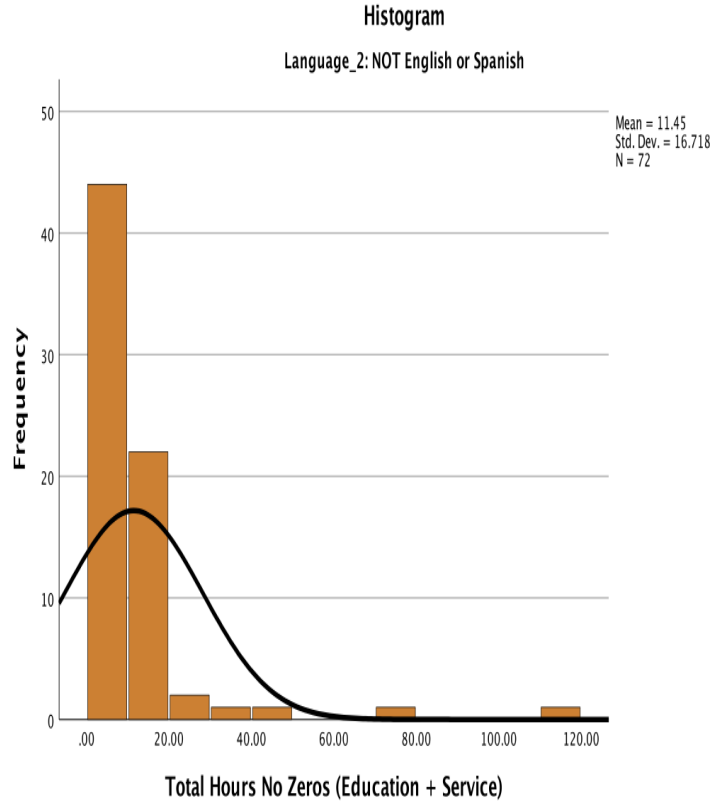
Language Analysis

Languages Spoken Frequencies

- Unfortunately, there aren't enough students who speak other languages for their individual results to be significant on their own
- To solve this, we effectively clustered them into groups as you can see below:





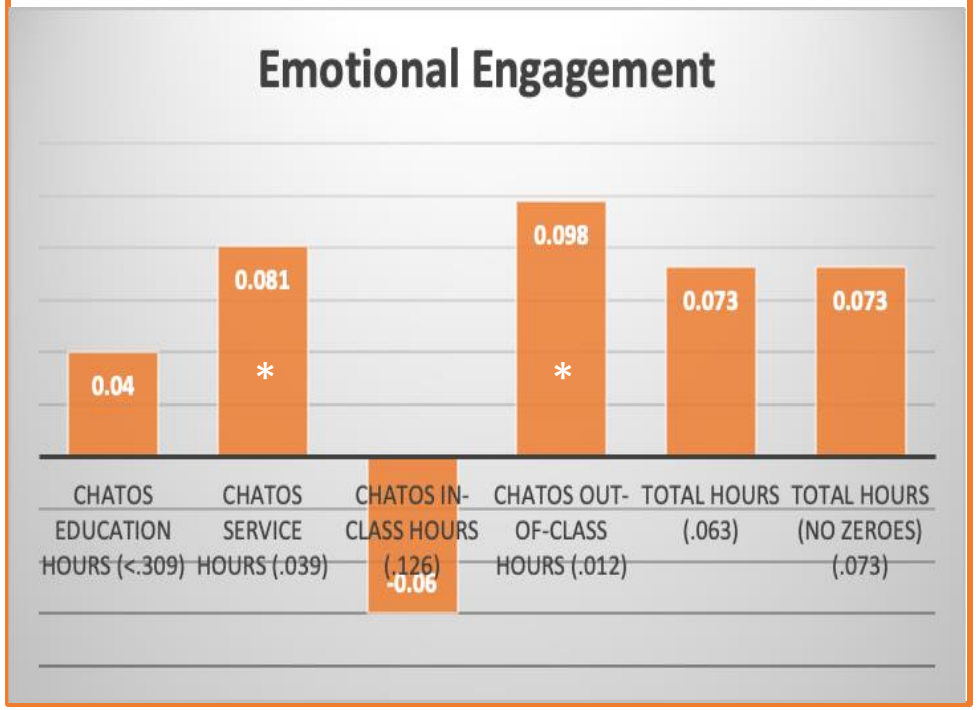


Languages Spoken Correlations

- Below are the correlations we were able to find for the first two groups

English:

- Two significant correlation between Service Hours and Out-Of-Class hours

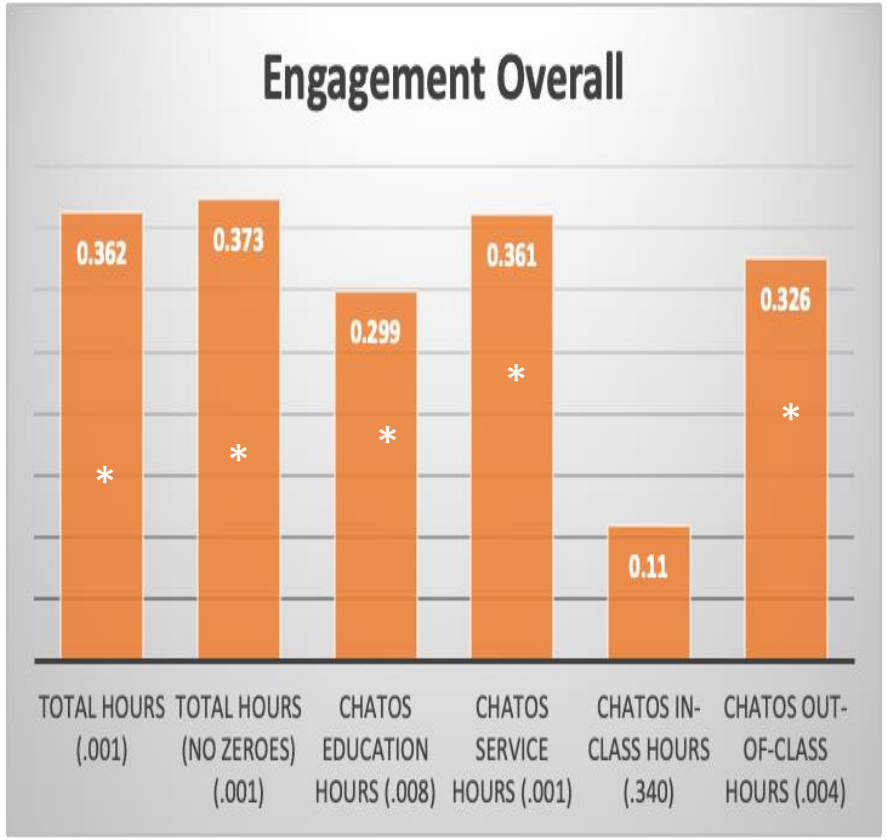


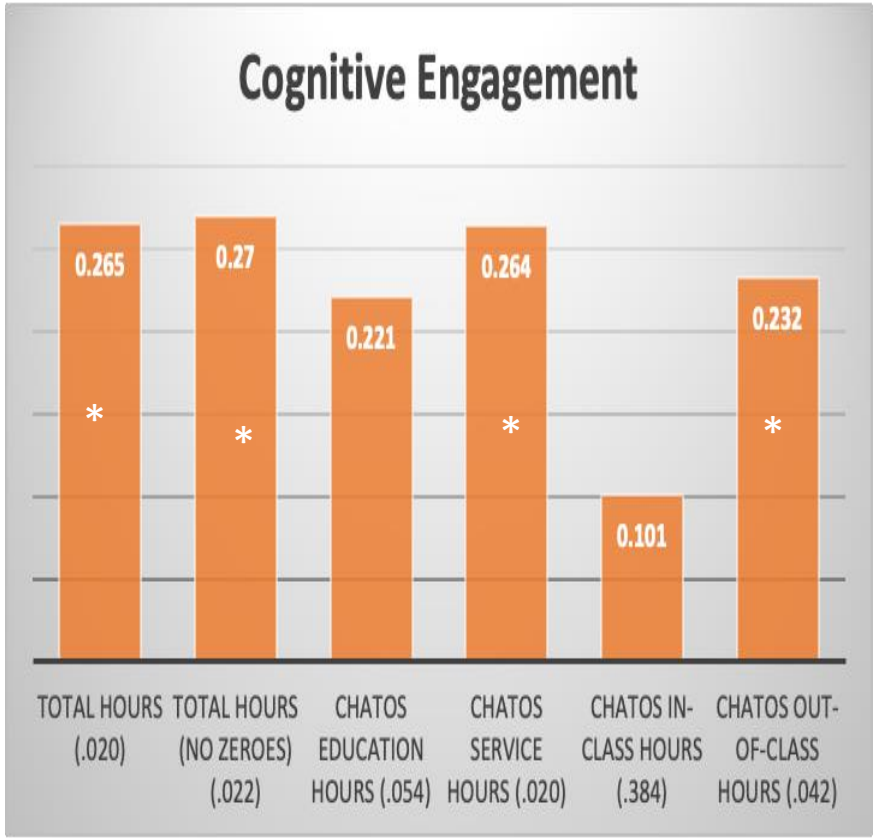
Spanish:

- We were unable to find any correlation between the CHATOS variables and the engagement variables for the Spanish group.

Languages Spoken Correlations (Continued)

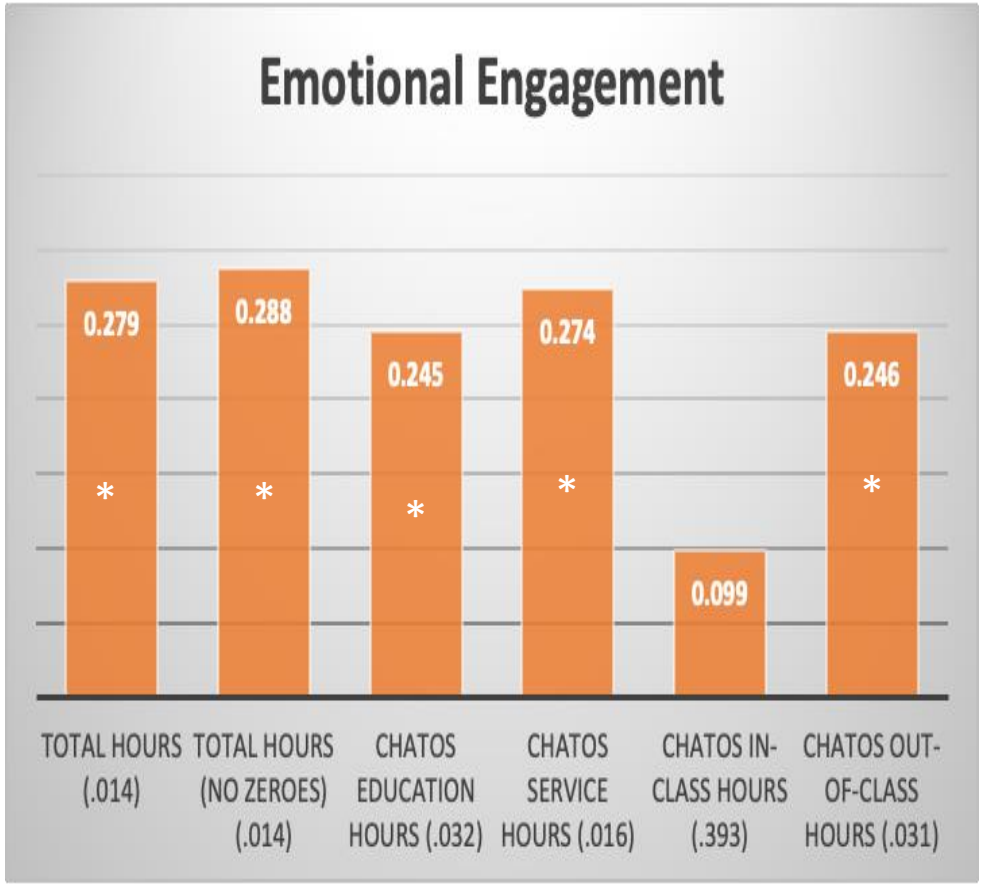
- Like we previously mentioned there is a third group represented: "NOT Spanish or English". Below are the significant correlations we found within this group data visualized:

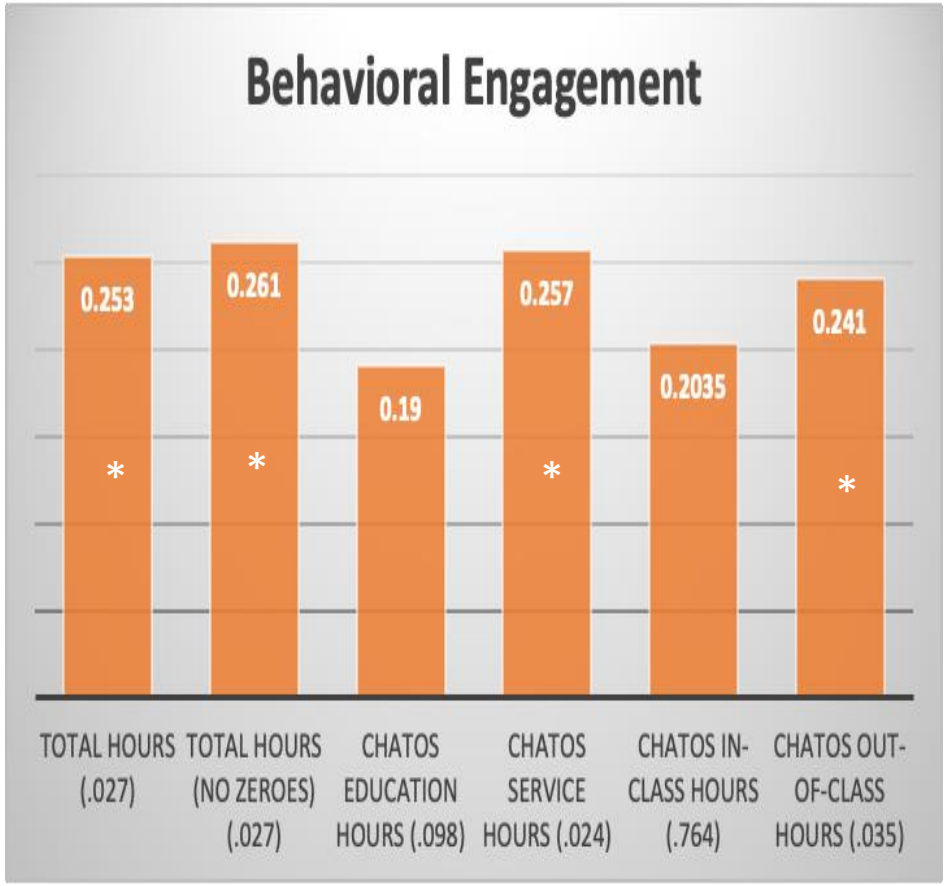




Languages Spoken Correlations (Continued)

- Below are the rest of the correlation histograms pertaining to students in the "NOT English or Spanish" groups





Language Results Interpreted

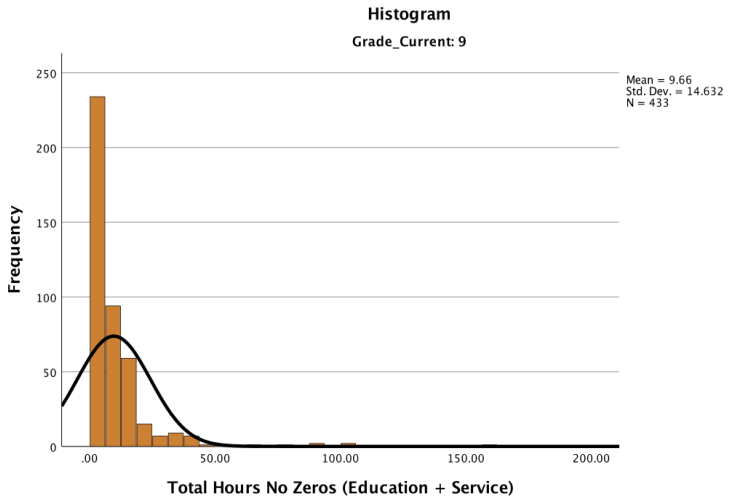
- For the English speaking group, you can see that their CHATOS education hours and in-class hours are not significant as opposed to the rest of the CHATOS values which are heavily correlated to Emotional Engagement
- We found no correlations between Engagement and CHATOS scores for the Spanish speaking group
- There is a significant correlation between the overall engagement and CHATOS scores for the third group
  - This group was students that spoke languages other than English and Spanish (Arabic, Cantonese, French, Creole, Vietnamese, and more).
  - In each category of engagement, they all yielded significant results and showed positive relationships, the exception being in-class hours which had no correlations whatsoever
  - However, since there is such a wide variety of data clustered together the significance level for each correlation tested has increased
- The lack of Spanish data and the extreme significance of the clustered "NOT Spanish or English" group leads us to believe that language does not have a significant impact on the data

Grade Analysis

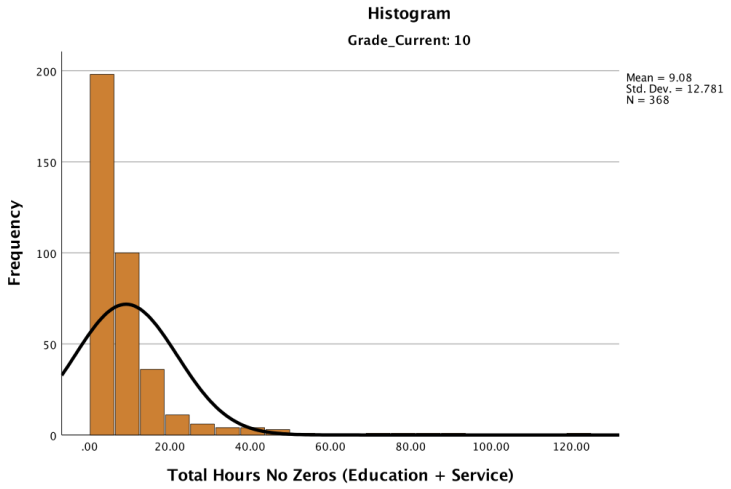
Current Grade Frequencies

- This last category splits the data by the current grade to see how each grade is affected differently. We then began to look for the frequencies to understand the data better
- The following histograms reflect the frequencies of the data:
- From this we can conclude there is no disparities between the groups and that we can proceed to look for correlations

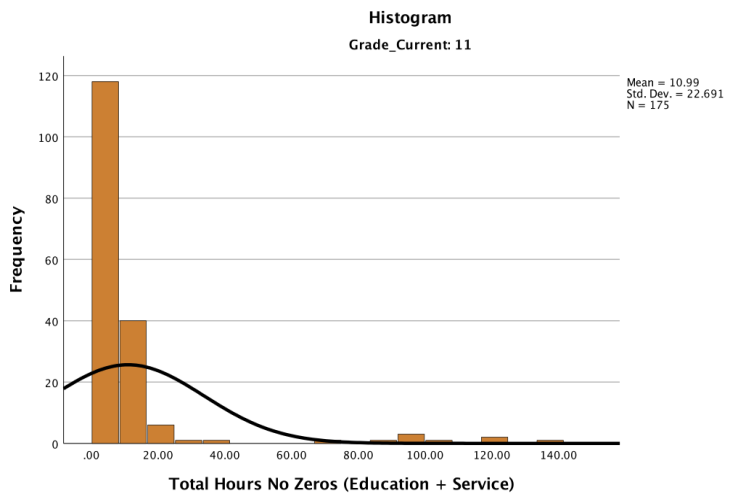
- 9th Grade



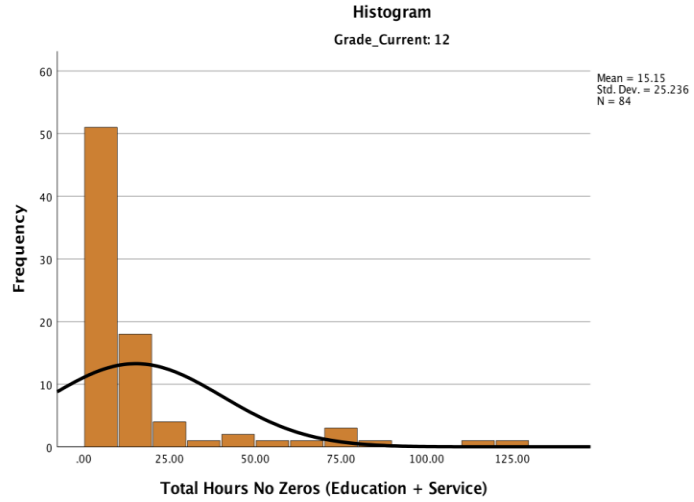
- 10th Grade



- 11th Grade



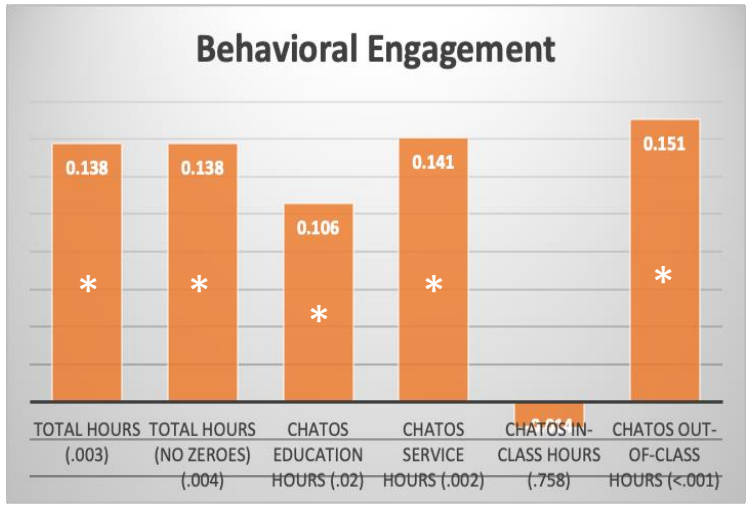
- 12th Grade



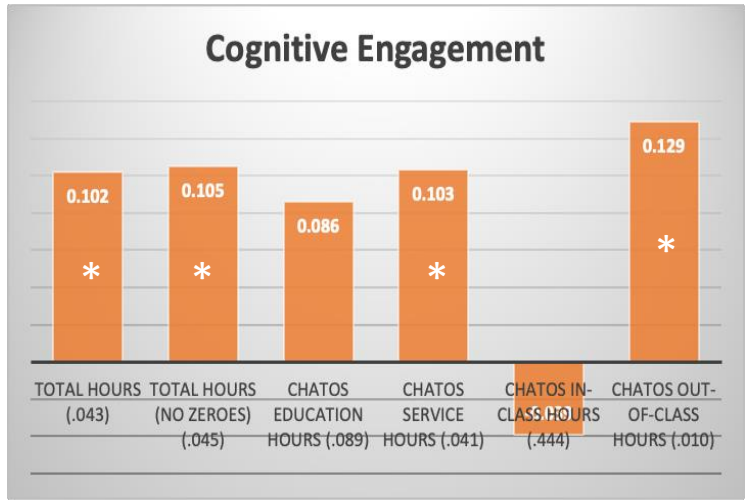
Current Grade Correlations

- Building on the frequency findings, we then explored correlations between CHATOS scores and engagement levels within these data groups.
- The following graphs reflect the correlations we were able to find:

- 9th Grade



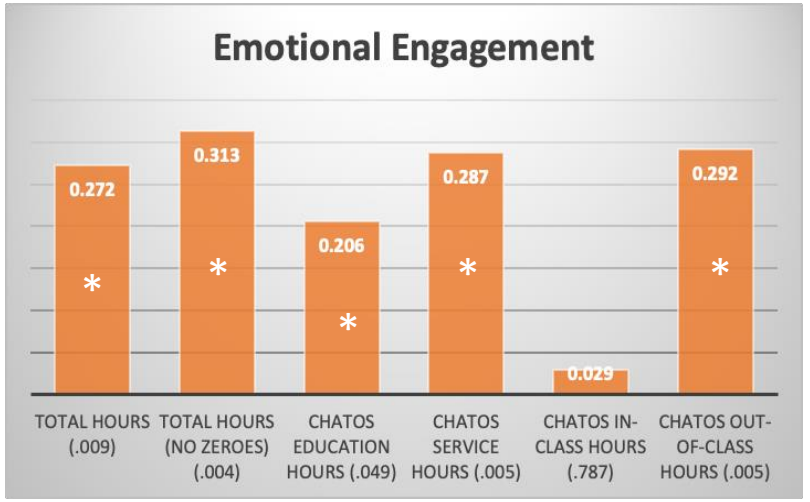
- 10th Grade



- 11th Grade

Aside from a significant correlation of -.146 between Cognitive Engagement and Service Hours we were unfortunately unable to find any significant correlations

- 12th Grade



Current Grade Results Interpreted

- We are able to surmise that the current grade a student is in at the time of the survey doesn't have much significant impact on the data
- One observation that does stick out however is that juniors (11th Graders) have no data. One could assume this is because of the stress of college applications during this year. Perhaps make an initiative to get this demographic more engaged.

Conclusion

Across all categories, CHATOS scores showed far more correlations with emotional and behavioral engagement than with cognitive engagement. This suggests that while BuildOn's initiatives successfully supported emotional and behavioral growth, they were less effective in promoting cognitive engagement in the classroom.

Another unique trend we noticed was that the means for the total hours variable with regard to the regional data had a disparity whereby CA and Boston had more hours than the rest of the states. This leads us to believe that the other states should follow Boston and CA's model of incentivizing students

Additionally, we were unable to find a significant enough amount of reliable data for the categories languages spoken by students and current grade level of students to deem that they affected the data in any significant way