**Preparation**

* Several scores are missing in the "c-sat" column (20670 of 32941 rows) 62.8%
* 4 call centers to analyze (CA, MD, CO, IL) in "call center" column
* "id" column has no duplicates in this data set
* "sentiment" column contains 5 options: Very Positive, Positive, Neutral, Negative, Very Negative
* "reason" column contains 3 options: Payments, Billing Question, Service Outage
* "response time" column contains 3 options: Below SLA, Within SLA, Above SLA
* "channel" column contains 4 options: "Call-Center, Chatbot, Email, Web
* "call duration" is in minutes

**Changes**

* spellcheck all columns - found 16 cells with "Mc Keesport" in "city" column, replaced with "McKeesport"
* formatted all columns (text, number, date)
* replaced missing values in "c-sat" column with "NA"
* created "over/under 30" column (calculating if each call was over, under, or exactly 30 minutes in length)

**Observations**

* LA and Baltimore call centers receive the bulk of calls at 42% and 33% of all calls (higher volume call center) compared to Chicago and Denver at 16% and 8%
* Call center channel is used most frequently for every call center, closely followed by chatbot
* Sentiment is consistently over 60% of all calls being within SLA requirements
* Most of the sentiment across all centers is "Negative" at 33.6% of all call sentiments being labeled as such
* The average call length across all call centers is 25 minutes, with the minimum being 5 minutes, and the maximum being 45 minutes
* Calls for all call centers under 30 minutes account for just over 60% of all calls logged, with 36.46% of all calls being over 30 minutes

**Analysis**

* Based on the data and available information, I would suggest that stakeholders investigate ways to incorporate more effective training in navigating customers who are displeased. Oftentimes, in a call center situation, customers are calling because they have concern or issue and more than likely already have a low opinion of their service thus far, so continuous training on how to handle customer frustration would be ideal.
* Stakeholders could also get feedback from call center employees as to how the call centers can meet the needs of the customers more positively. Call center agents are more likely to recognize patterns for opportunities to improve customer experience overall.

**Limitations**

* Without targets given for metrics such as SLA and Sentiment, it limits the ability to fully analyze just how well each call center is performing to give further recommendations.
* Most calls logged were missing a c-sat score. Without this information, it makes it difficult to be able to accurately assess the overall performance of each call center based on these specific metrics.
* The data in this data set is from 2020 only. Being able to compare year over year is helpful in analyzing overall performance growth for all the call centers.