

## UA Innovate Southern Company Data Analytics Category Documentation

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### Key Point 1: Not Enough Coordinators

It became clear there were not enough coordinators when we analyzed the time between when a case was completed and when the ticket was closed. Over the course of the entire dataset, 2/13/2023 - 12/31/2024, there was a total of 1133.79 hours lost from downtime between a ticket being completed and closed, an action facilitated by the coordinator. Performing the below calculation,

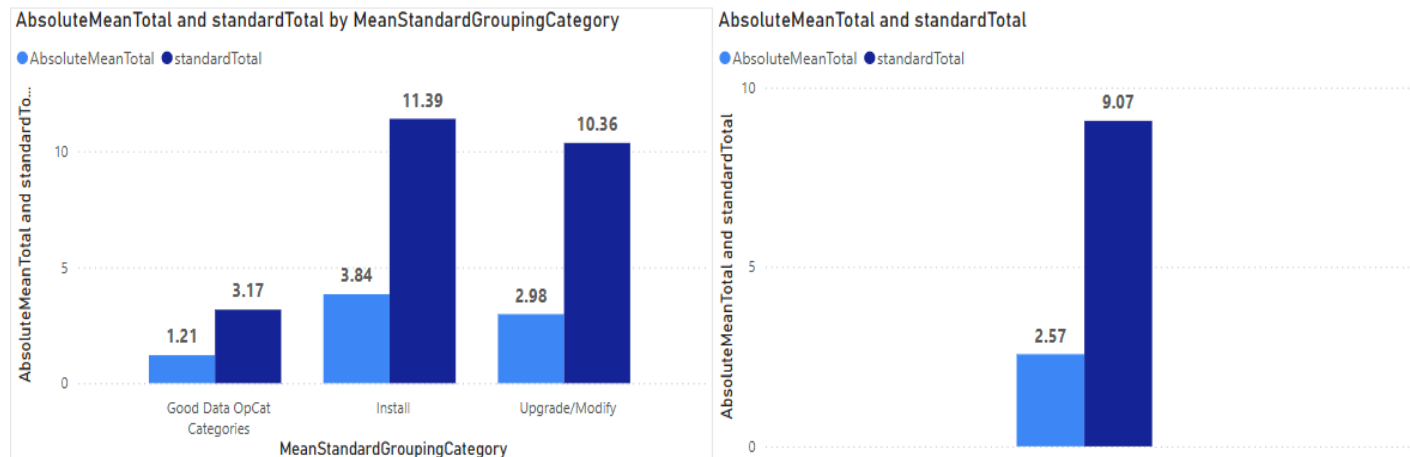
$$\text{hours\_annualized} = 1133.79 / 22.5 * 12$$

gives us the number of annual hours lost by dividing our total hours by the total number of months covered in the dataset, then multiplying by the number of months in a year to get annual hours lost. In a year, this is 604.69 hours lost. If we were to cut down on that time lost, teams could service change requests quicker, increasing productivity. Assuming that hiring another coordinator would cut downtime between ticket completion and closure by half, that brings our hours lost annually,

$$\text{hours\_lost\_with\_two\_coordinators} = 604.69 / 2$$

to 302.34. In theory, this could be something that is extrapolated further to find the exact optimal amount of additional coordinators to hire for maximum return on time, however, for this competition, we were short on time.

## Key Point 2: There's a Great Disparity in Scheduling Methodology Between Operation Categories



It is clear from the data that the way scheduling is done can be changed. There are many instances where work is being finished hours and sometimes days before it is scheduled to end. While it is understandable to schedule in a cushion in case of unforeseen circumstances, the extra time being given is excessive, thus sacrificing productivity. Our first instinct was to build a confidence interval to examine how much time we could shave off of our cushion without risking increasing the amount of Change Requests that end up late. It eventually became clear that this is impossible due to how large the standard deviation is. The data is incredibly heavily skewed right when the difference between scheduled end time and actual end time is plotted. Examining Change Requests by Operation Category 1 shows that Install and Upgrade/Modify operations suffer the most from this large downtime. Removing those data entries, we can see the mean and standard deviation of the rest of the data shrink dramatically. From the above graphs, it is clear that there needs to be a reassessment of how Change Request work is scheduled for Install and Modify/Upgrade. If possible, the process needs to be brought closer in line with the other three operational categories, and if there is no real process, one should be established because as of

right now teams are finishing their Install and Upgrade/Modify work between 3 and 4 hours earlier than scheduled. Decreasing this time will free up these teams to begin work on more Change Requests, thereby increasing productivity.

### Key Point 3: Department Staff Count Would Be Valuable

There are times when we could provide greater insights if particular data was available to us. Specifically, tracking the current number of employees staffed in each department as well as the number of employees that are on-site to service each request could better inform some of the data that we examine. For example, say we wanted to increase support to departments that have missed multiple work deadlines. Knowing how many employees are in each department would make it far easier to decide how to reapportion resources. A department that routinely finishes their work ahead of schedule would be able to stand losing an employee so that another department that struggles more to meet deadlines can better stay on top of its work. Right now, we can only assume if a particular department is overworked causing it to miss deadlines, but knowing staff counts from each department would confirm that for sure.