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Background:
- USTC J8 sets transportation rates for DoD customers
- Rates must be set prior to each Fiscal Year (FY)
- Rates, costs, and workload (combined) yield a Net Operating Result (NOR)
- The goal is for the rates to result in a NOR of $0 each FY
- Current Practice (Up to FY16):
  - Aggregate all rates by origin-destination/destination-origin and commodity code combinations
  - Weighted averages are then computed and multiplied by three factors: the Refresh Rate, the Accumulated Operating Result, and the Composite Rate Adjustment to set the rates for the upcoming FY

Motivation:
- Inaccuracies in the rate setting process lead to improper cost recoupment by USTC

Research Objectives:
1. Evaluate the current practice’s performance using six months of historical data compared to the utilization of a full-year of data  
2. Examine the impact of errors within the factors: Refresh Rate, Accumulated Operating Result, and the Composite Rate Adjustment  
3. Utilize a prescribed methodology to identify and examine the impact of outliers

Methodology & Results - Objective 1
- Utilized a t-test as per Equation (1) to examine whether there was a statistically significant difference in the respective total NORs deviation from the target goal of NOR=0 when using six months of data compared to a full year of data in the rate setting process  
- Net Operating Result (NOR): the difference between the revenue generated by a rate and the actual cost of transportation  
- No statistically significant difference was identified ($p=0.67$ level)

Methodology & Results - Objective 2
- Using historical data from FY08-FY15, solved for the optimal combination of the Combined the Accumulated Operating Result factor (AOR) and the Composite Rate Adjustment Factor (CRA), as per Equation (2)  
- Identified historical combinations of these factors as contributing to $\sim 25\%$ of the error in achieved NOR at the $p=0.05$ level.

Methodology & Results - Objective 3
- Adapted SPC to identify outliers for rates set by the current practice as MNOR outliers as well as outliers according to historical rates  
- Marginal NOR (MNOR): the contribution per measurement ton to the NOR  
  a. The current practice possesses consistent behavior over time  
  b. Selected locations & commodities yielded outliers more frequently  
  c. The current practice corrects for MNOR outliers over time  
  d. Past rate setting practices have deviated from the prescribed practice using the “art of rate setting”, as evidenced by the percent deviation from rates set and historical rates

Literature Review Topics:
- Transportation Rate History  
- SME Interviews  
- Forecasting Techniques  
- Statistical Process Control (SPC)

Conclusions:
- Implementing an additional six months of data does not improve the current practice
- The combination of the AOR and CRA factors contributes a significant source of error with regard to the deviation from the goal of a zero-balance NORs  
- The Current rate setting practice corrects for outliers over time  
- Manual deviation from prescribed rate setting practices should be used sparingly and only with sound justification.