**Execution Algorithm Route Analysis Project**

Attached is a dataset containing US algo routes for two trading desks since the beginning of 2014. The initial field is an identifier for each route. Fields 2 (BTP\_TradeDateEST) through 27 (BTP\_TradeMomentum) are all features of the algo route (or the stock that was traded by the algo route). The last two fields, BTP\_LmtAdjArrivalPrice\_bps and BTP\_LmtAdjPWP20Pct\_bps, are the trading cost measurements. While we look at both measurements, we primarily look at BTP\_LmtAdjPWP20Pct\_bps.

The goal of this project is to understand the variance structure of the trading cost values and to map this variance to the feature fields. More specifically, we want to understand which of these features if any contributes to negative transaction costs. Are there any patterns and relationships in the data that can help us further understand which of these features is associated with the sign and magnitude of trading costs? And finally, if we were to attempt to minimize these trading costs, what features would be the most important to minimize/maximize in order to do so?

If you have any questions regarding the dataset or the analysis goal, please feel free to reach out directly to [alex.hagmeyer@franklintempleton.com](mailto:alex.hagmeyer@franklintempleton.com).

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| **Field** | **Description** |
| BTP\_PlacementID | Identifier for each broker algo route |
| BTP\_TradeDateEST | Trade date of broker algo route |
| BTP\_TDI | Trade Difficulty Index |
| BTP\_MomentumPercentile | Percentile of Trade Momentum |
| BTP\_SpreadPercentile | Percentile of Spread Size |
| BTP\_VolPercentile | Percentile of Volatility |
| BTP\_ADVPercentile | Percentile of ADV (i.e., order size) |
| BTP\_PlacementDuration | Duration of order (minutes) |
| BTP\_PreExecDuration | Duration between beginning of route and first execution |
| BTP\_LPA | Limit Price Aggressiveness (how far away the trader's limit is from the market at the time of order submission) |
| BTP\_PctADV | ADV (i.e., order size) |
| BTP\_Side | Side of the order |
| BTP\_ExecutedShares | Number of shares executed |
| BTP\_ExecutedValue | Value of shares executed |
| BTP\_StartTime | Start time of route |
| BTP\_Broker | Broker code for route |
| BTP\_Strategy | Broker algo strategy for route |
| BTP\_PartRate | Route participation rate |
| BTP\_LmtAdjPartRate | Rotue participation rate, adjusted for trader limit |
| BTP\_Trader | Trader name |
| BTP\_OrderType | Type of order (i.e., market order or limit order) |
| BTP\_Desk | Trading Desk |
| BTP\_PreExecLeakage\_bps | Price movement between beginning of order route and first execution |
| BTP\_5DayAvgSpread\_bps | Five day average spread for the stock traded |
| BTP\_10DayAbsVol\_Nominal | Ten day absolute volatility for the stock traded |
| BTP\_10DayRelVol\_Nominal | Ten day relative volatility for the stock traded |
| BTP\_TradeMomentum | Momentum experienced during the duration of the algo route |
| BTP\_LmtAdjArrivalPrice\_bps | Arrival price benchmark trading cost |
| BTP\_LmtAdjPWP20Pct\_bps | PWP 20 price benchmark trading cost |