

Market Size Calibration

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- Market size data is a critical part of the forecast process
 - **Market Sizes:** the number of passengers flown by all carriers between two points on a (PDEW) Passenger Daily Each Way basis (the O&D)
- As key inputs to the forecast systems, market sizes need to be as accurate as possible so we can have a reasonable expectation on how a flight will perform before it operates

Use a Spill Feedback Loop for the Calibration of Market Sizes

Background

- Major progress has been made in Forecasting Load Factor (LF) accuracy in Forecasting Models
- However, forecasting still tends to under-forecast
- No further LF accuracy can be achieved without refining the market size inputs

Justification

- Monthly Market Sizes are imprecise
 - O&D data based on a 40% monthly sample
- As such, no month is precise. Market sizes, while not complete fiction are not complete fact
- Market sizes will never yield sufficient forecast accuracy to satisfactorily allocate capacity when made in isolation of the model
 - In a Forecast the completion factor is 100 percent, exceeding that of the real world
- Minor modifications to the market size are therefore acceptable

Objective

- Using an actual versus forecast comparison as a guide, tailor Market Sizes to minimize flight-level load factor error

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Concept

- Utilize an iterative process whereby spill information is used to guide market size corrections
 - Spill represents the number of passengers at the O&D level that are not accommodated and fail to fly
- In a backcast, all passengers in the market size file are assumed to have flown
 - The fact that some are left behind indicates Market Size error, since the network includes a myriad of alternative patterns
- As such, spilled passengers at the O&D level can be used as a benchmark for market size adjustments
 - For example, if 20 passengers were not accommodated in the DFW-TPA O&D, the market size would be reduced by 20 passengers

Methodology

- For a given month:
- Iteration 1: Right size overestimated Market Sizes
 - Run forecast with original market sizes
 - Remove spilled passengers
 - Rerun and evaluate accuracy using the Onboard Stats Report
- Iteration 2: First increase of underestimated Market Sizes
 - Increase Market Sizes by 10% in O&Ds with no spill in Iteration 1
 - Remove spilled passengers from markets increased by 10%
 - Rerun and evaluate accuracy
- Iteration 3: Second increase of underestimated Market Sizes
 - Increase Market Sizes by 10% in O&Ds with no spill in Iteration 1 or 2
 - Rerun and evaluate accuracy

Conclusion

- Utilize this technique for improving market sizes
- The major drawback is that this will add time to the process of creating market sizes
 - However, the forecast accuracy achieved by this process is worth the additional time spent