Strategic Flight Cancellation under Ground Delay Program Uncertainty

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Motivation: Strategic Planning from an FOC Perspective

Which (if any) flights should be cancelled now?

- Strategically cancel earlier flights
- Look for opportunities to recover
- Wait and See
- Strategically cancel later flights

GDP: Time/Rates
- Probability: 40%
- GDP: Time/Rates
- Probability: 35%
- Significant AAR reduction for a sustained period
- Likely Low Rate GDP
  - Confidence: High
  - GDP: Time/Rates
  - Probability: 25%
Strategic Flight Cancellation Problem

Recommended action given current forecast

Adaptive strategy to optimize performance under predicted future scenarios

Plan Objective

Balancing Cost and Risk
- Earlier decisions are less costly than later decisions
- Later decisions are made under greater certainty
- Some decisions are not available later
- Some decisions can be changed (at a cost); others cannot

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Case Study
LGA GDP 13 November 2018
Takeaways

- APF provides a formal framework for incremental decision making under uncertainty
  - Captures risk of opportunity loss, cost of unnecessary action
- Aviation is only one applicable domain
  - Ground transportation, disease spread mitigation, disaster relief, etc.