



A General Approach to Equity in ATM and Mitigating Exemption Bias in GDPs



Speaker: Bob Hoffman, Metron Aviation

Joint work of Michael Ball, Thomas
Vossen, Julien Bourget

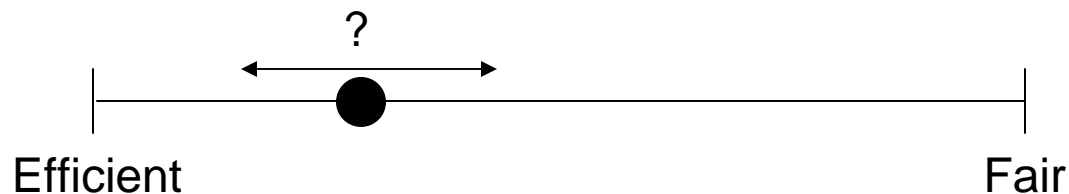


Why all the Exemptions?

- Traffic Managers exempt flights from assigned ground delays during GDPs:
 - airborne flights (mandatory)
 - international flights (mandatory)
 - de-icing (sort of mandatory)
 - VIPs (optional)
 - close-to-departure (optional)
 - long-haul flights (optional)

The Struggle Between Equity and Efficiency

- These exemptions can create inequities
- Carriers with a lot of airborne flights or long-hauls get less delay
- This creates an inherent conflict between an ideal allocation and strategic mitigation of GDP end time uncertainty e.g.

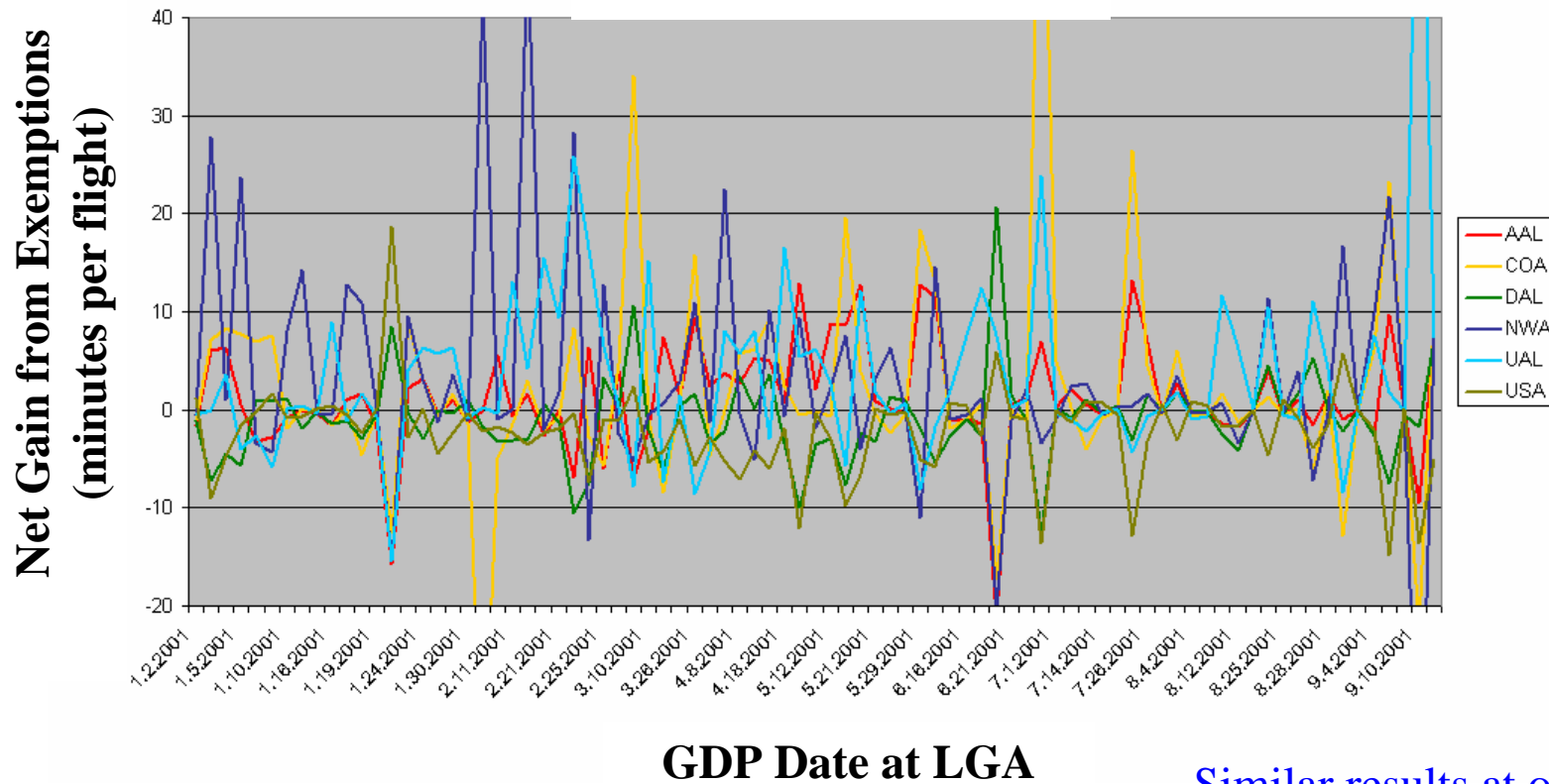


Two thrusts of Work under M.Ball

- Thomas Vossen Ph.D. thesis (2002)
 - Mini-study
 - Optimization Model for fair allocation
- Julien Bourget (2003)
 - Maxi-study
 - Simplified algorithm for fair allocation

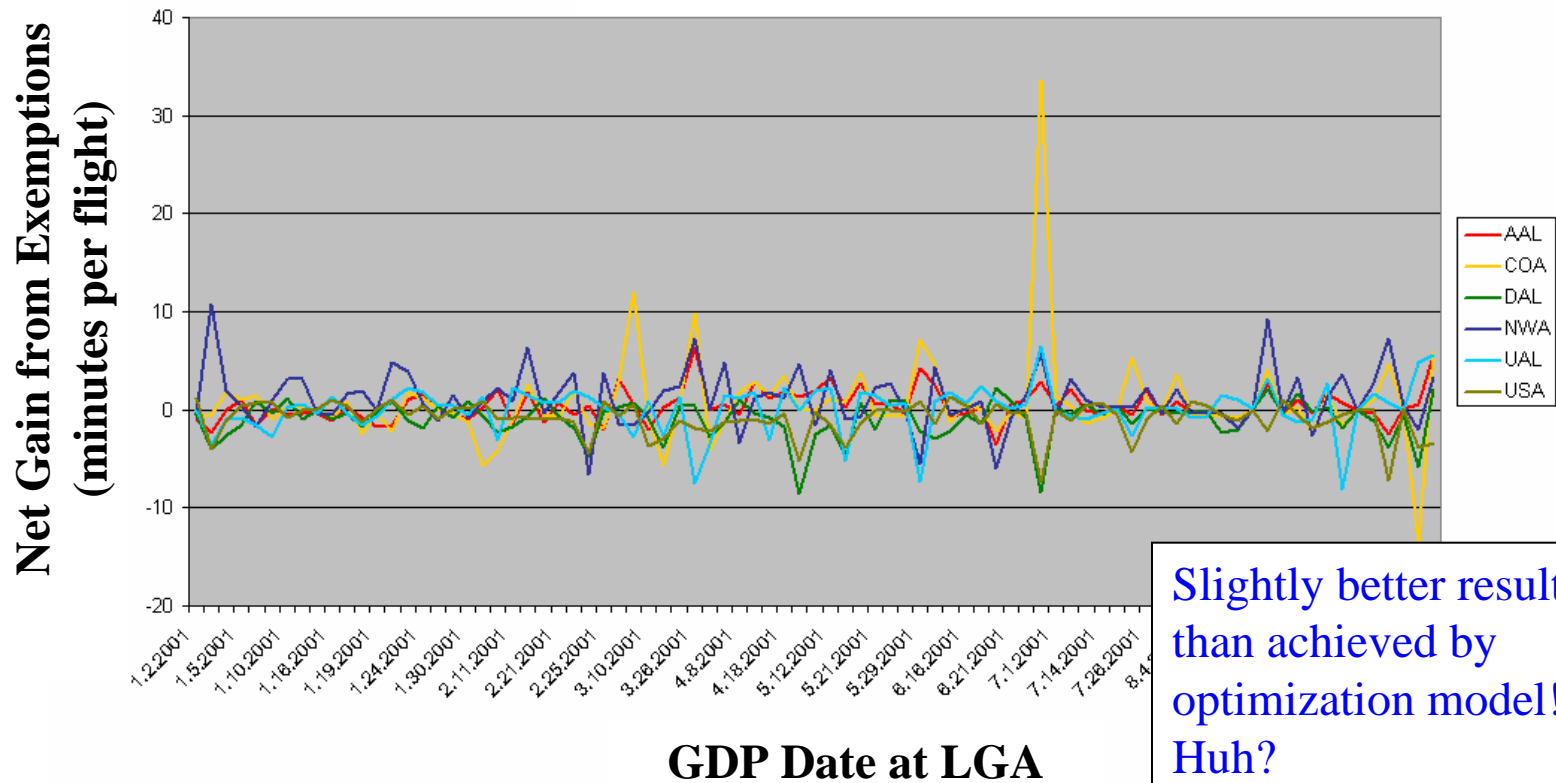
Work distinguished by acknowledging a baseline for equity and working toward it (rather than just deeming it equitable)

Systematic Biases



Similar results at other airports

Bias Reduction From Algorithm





How the Algorithm Works

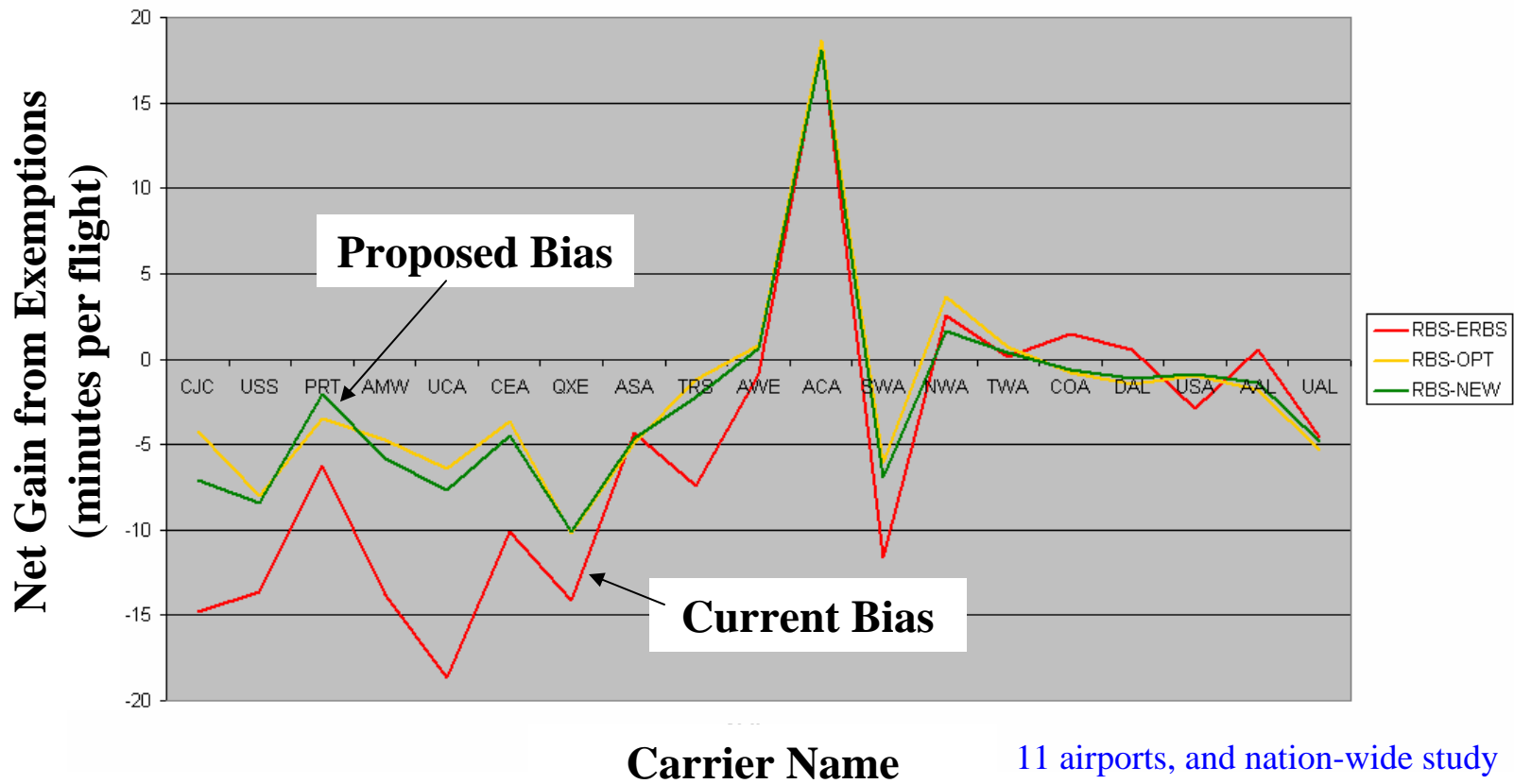




How the Algorithm Works



The Lord Giveth and Taketh...



11 airports, and nation-wide study over 21 months (April 2000 to December 2001)



Implementation Issues

- No cost solution!
 - can be implemented tomorrow
 - restores equity with no loss of efficiency
- Acceptance is an issue.
 - Not exactly met with open arms by GDP-E subgroup
 - Obligation on the part of the service provider?