

Identifying Favorable Travel Markets and Corridors for Maglev vs. HSR

Duncan W. Allen, P.E.

Senior Technical Consultant

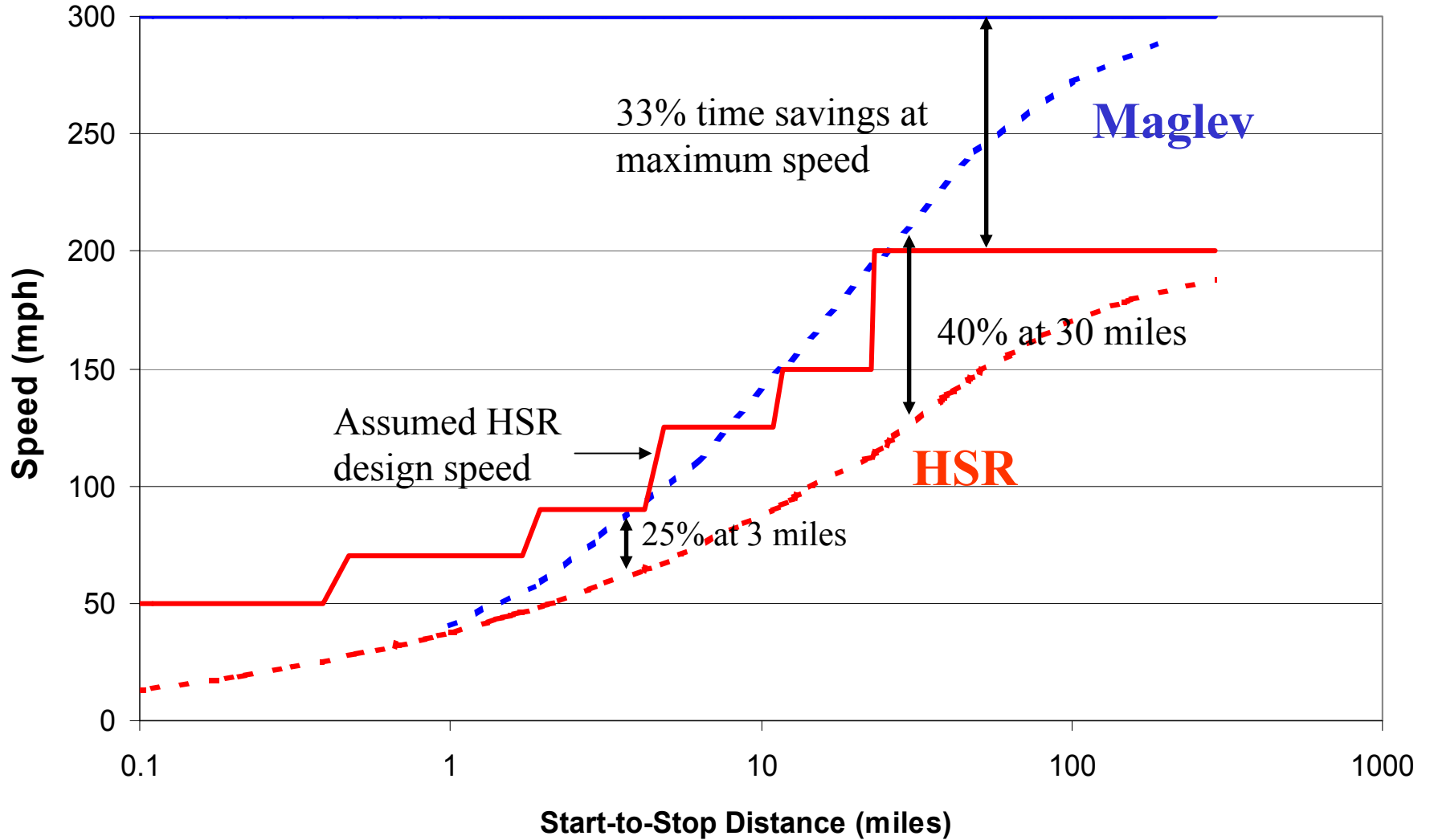
Boston, MA

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‘Apples’ and ‘Oranges’

- Maximum operational speed ignores station effects
- ‘Drag race’ speed (level, tangent, start-to-stop) ignores alignment, station dwells, and operational allowances
- Operational comparisons should be on the basis of timetable average speeds.

'Drag Race' Average Speed Comparison

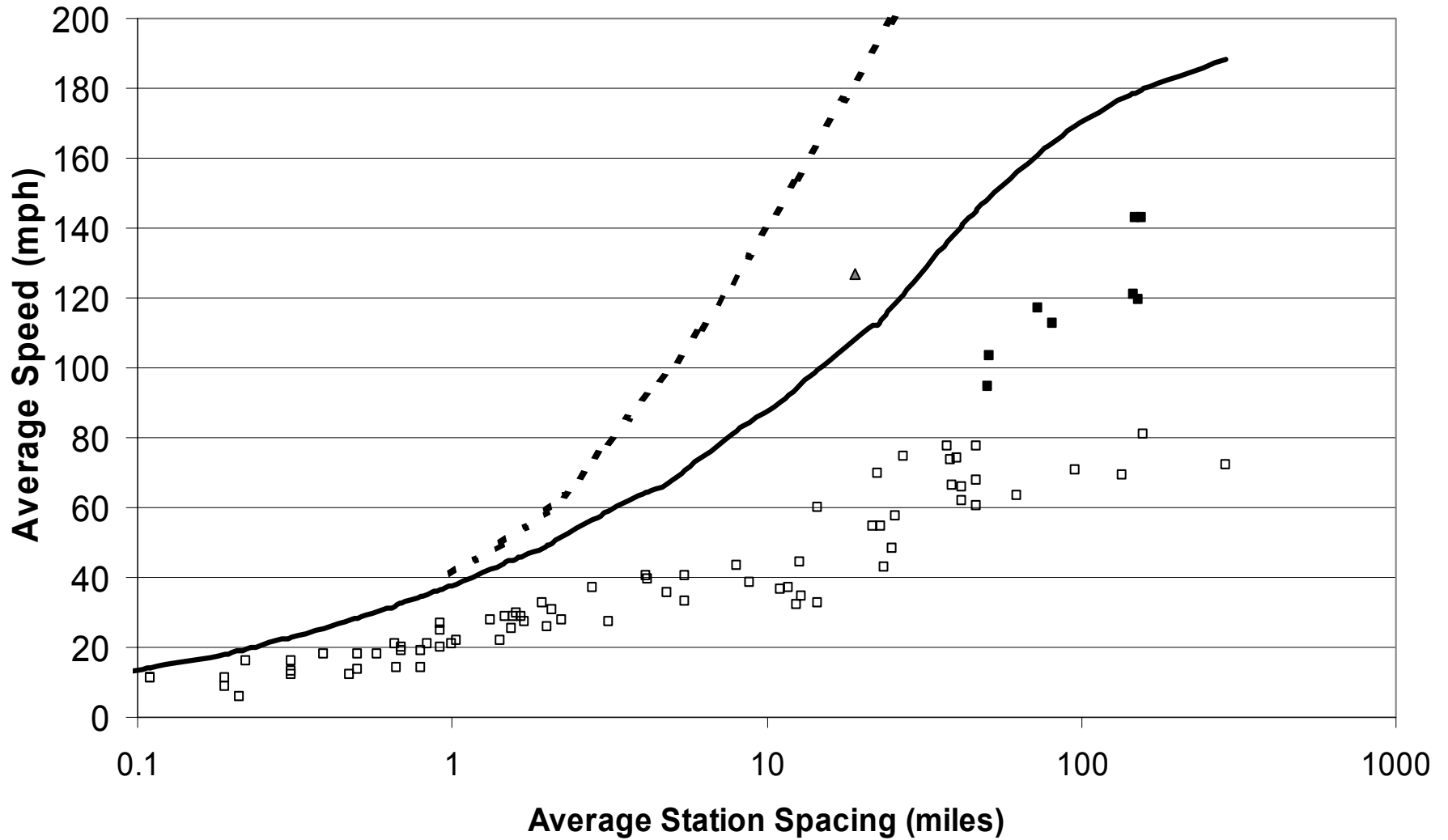


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‘Drag races’ do *not* happen in ‘real life’

- Points raised by Vuchic & Casello (*TQ*, 2002)
 - decreasing marginal time savings with higher maximum speeds
 - time savings diminish or vanish with shorter station spacings
- Further limitations
 - station dwell times
 - ‘civil’ and other speed restrictions (alignment)
 - operating margin (timetable ‘pad’)

Timetable vs. 'Drag Race' Performance

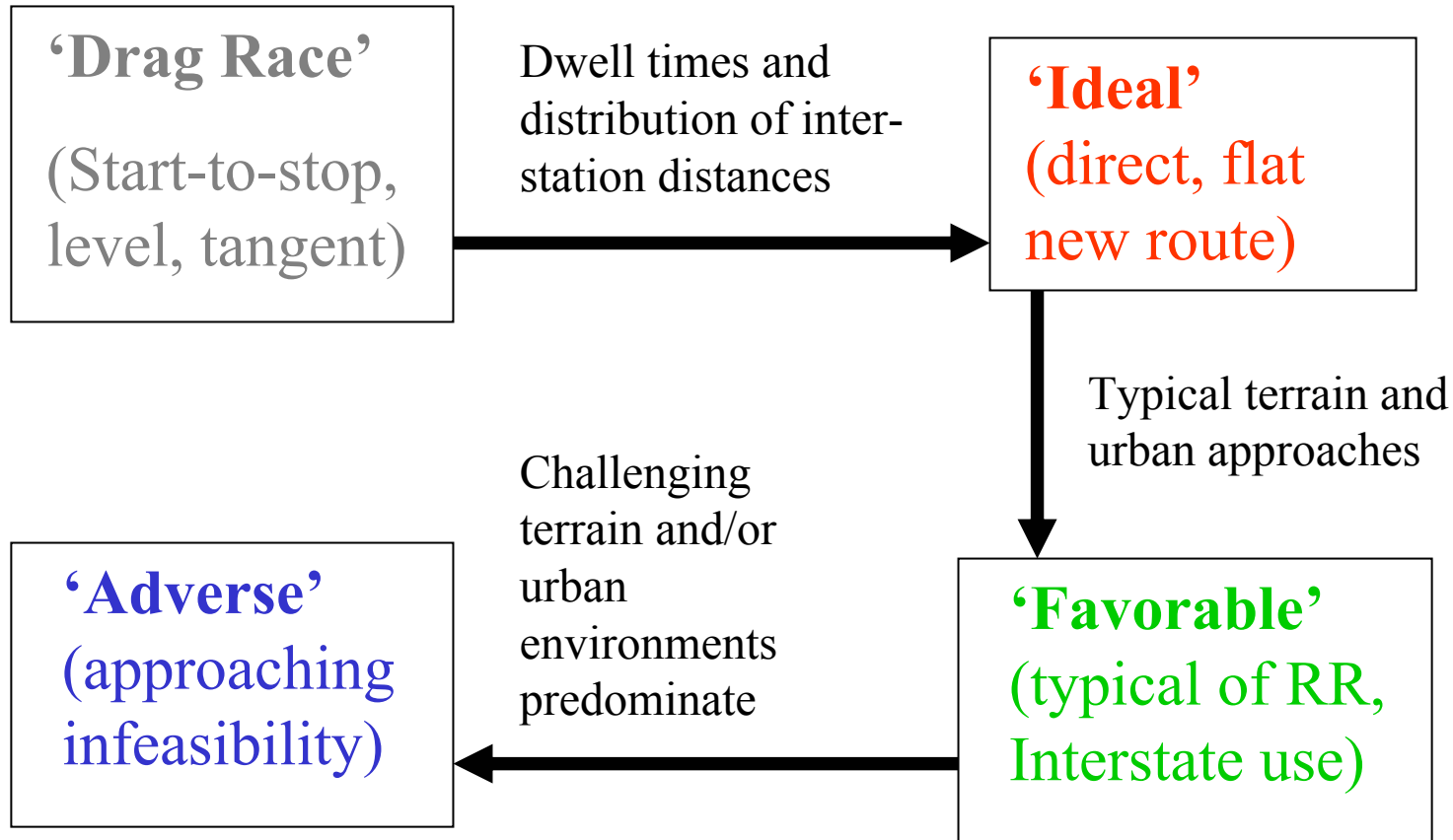


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Model for Timetable (Commercial) Average Speeds

- Acceleration & deceleration (station spacing)
- Speed restriction time losses (by alignment type: ideal/favorable/adverse)
- Station dwells (increase with station spacing)
- Operating margin (increases with distance)
- Validated against ‘side by side’ studies

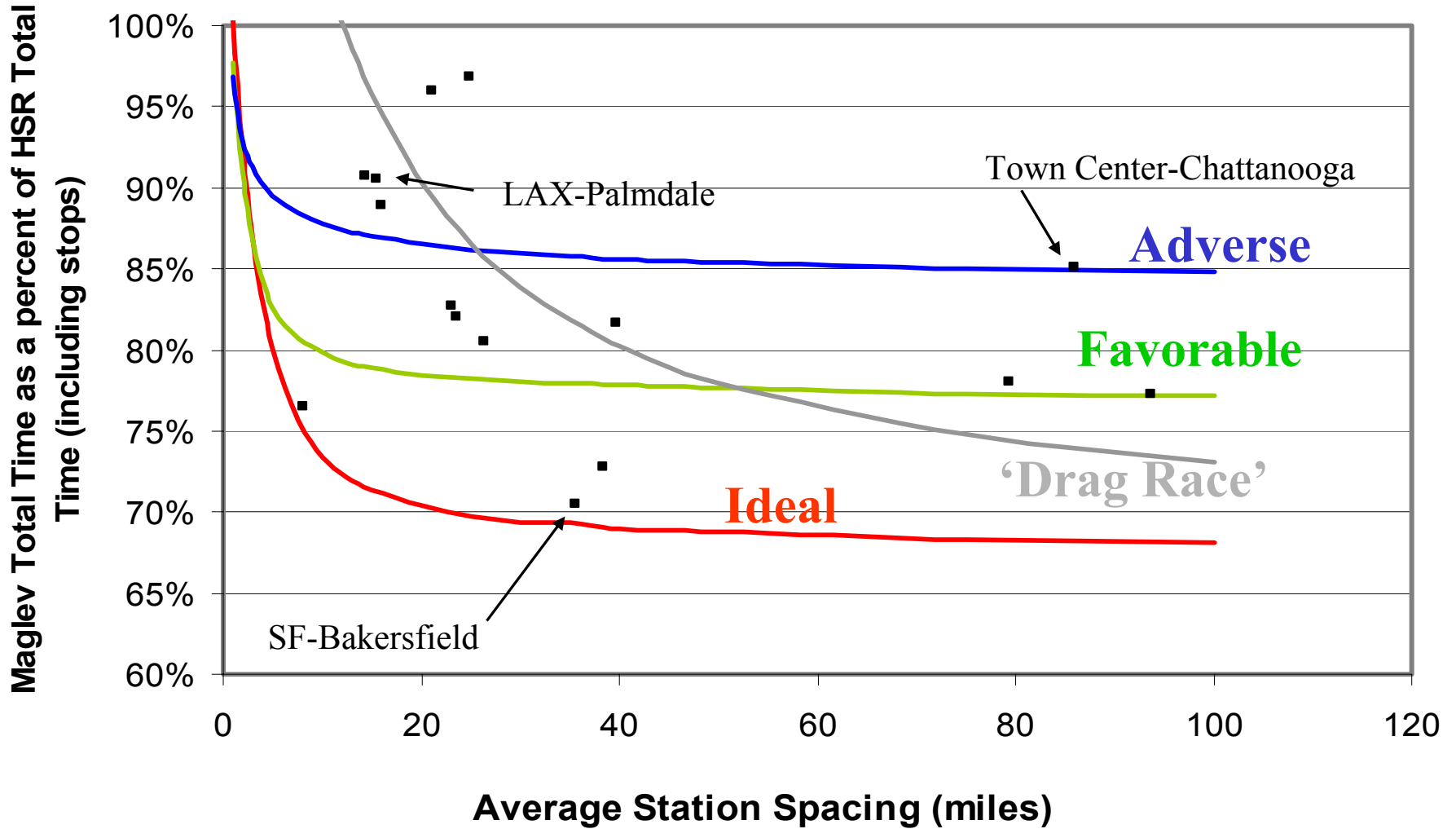
Distinguishing Factors of HSGT Operational Model Cases



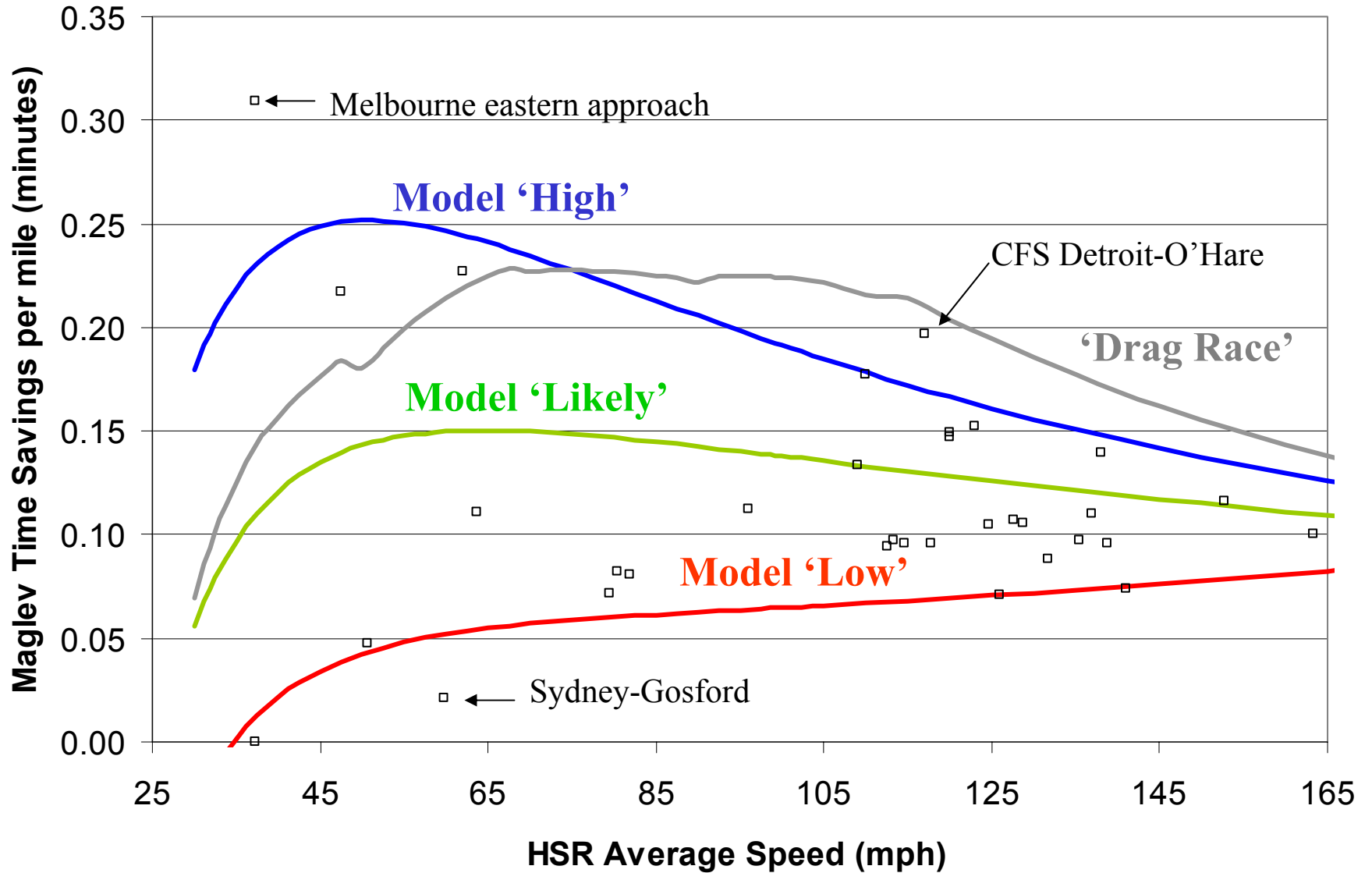
‘Side-by-Side’ Studies

- Commercial Feasibility Study (FRA)
- California HSR Authority
- LAX-Palmdale (SCAG)
- Atlanta-Chattanooga (ARC)
- East Coast VHS Train Study (DOTARS, Australia)

Models of Maglev Average Speed vs. HSR



Model and Study Time Savings (Maglev vs. HSR)



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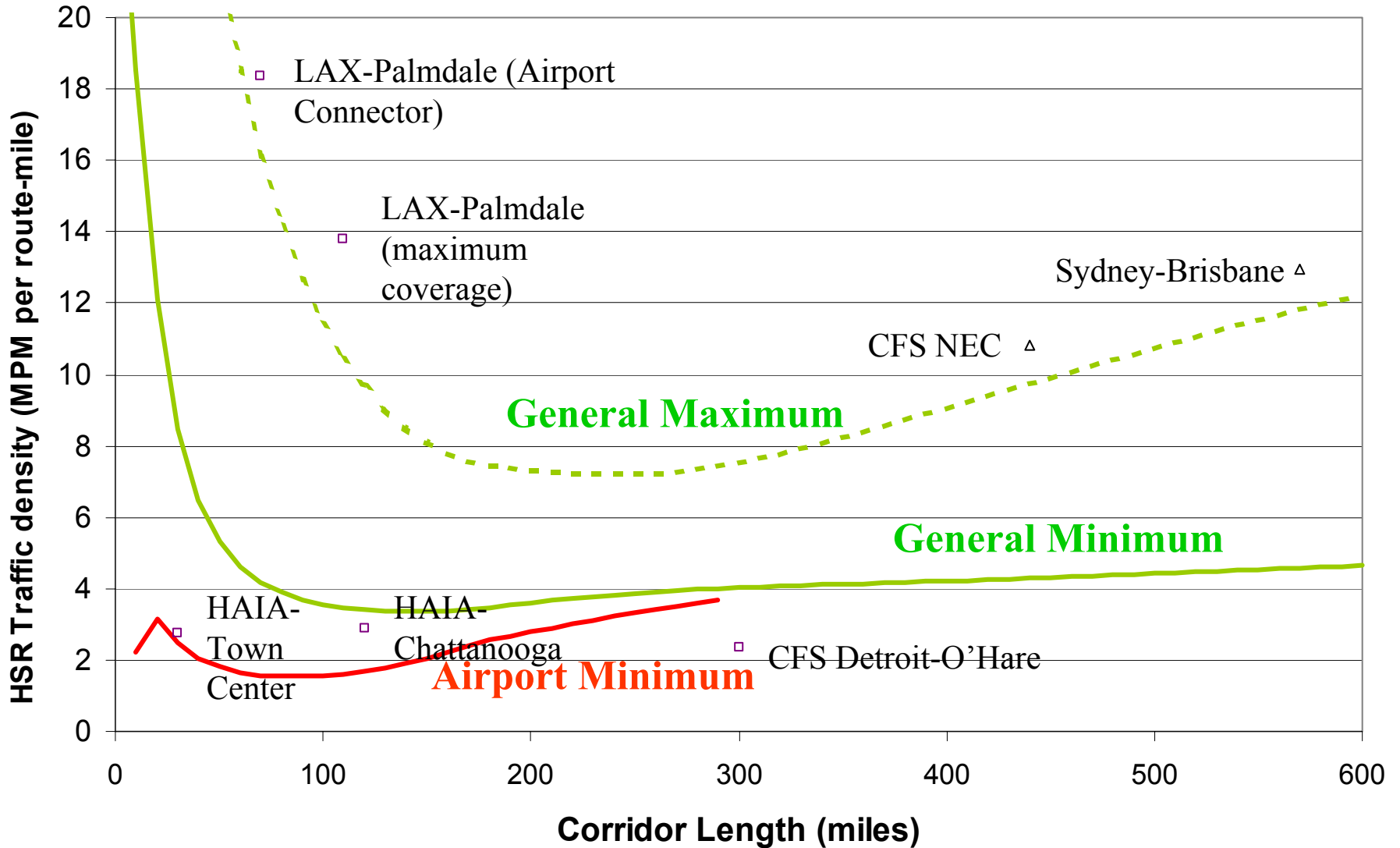
Under What Model Conditions would Maglev 'Break Even' with HSR?

- Additional revenue would capitalize the additional cost of Maglev
- HSR average speed (including stops) as a baseline
- Passenger Traffic Density (millions of passenger-miles per route-mile)
- Airport access versus regional/intercity service

Conditions Assumed for Maglev/HSR 'Break Even'

- HSR is 'feasible' and optimal alignment has been defined
- Maglev alignment would be substantially the same as HSR alignment
- Incremental fixed infrastructure costs of \$5.5-7.5 million per route-mile for Maglev
- No value assigned to environmental benefits of Maglev (e.g. noise reduction vs. HSR)

Break-even Ranges and Example Study Results Found to Indicate Maglev as (or more) beneficial than HSR



General Indications Favorable to Maglev vs. HSR

- General intercity markets over 80 miles end-to-end, with projected HSR passenger traffic densities (PTD) of at least 4 million passenger-miles per route mile per year
- Airport access links with HSR PTD of at least 2 million (and average station spacing 8 miles or more)