

Paratransit Capacity Utilization: Matching Demands on Space with Vehicle Mix

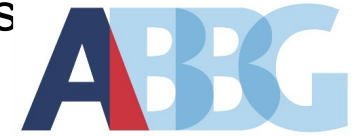
– Insights from the American Bus Benchmarking Group

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Structure

- **Context: Performance Metrics**
- **What is a boarding?**
- **What is fleet capacity?**
- **Capacity Utilization**

Using examples and the methodology adopted by the **American Bus Benchmarking Group** – a coalition of medium-sized bus agencies founded in 2011 based on existing international public transit benchmarking models



Normalization & the Paratransit Key Performance Indicator System



Growth

- PG1 Ridership: Passengers/Trips (5-year % change)
- PG2 Service Levels (5-year % change)
- PG3 Ridership Relative to Agency Total
- PG4 Operating Cost Relative to Agency Total
- PG5 Eligibility (% of applications denied, % approved conditionally and unconditionally)

Customer

- PC1 On-Time Pick-up Performance
- PC2 On-Time Drop-off Performance
- PC3 % of Late Cancellations
- PC4 % of No Shows
- PC5 Average Hold Time
- PC6 Abandoned Calls

Financial

- PF1 Total Operating Cost per Passenger, Passenger Mile, and Completed Trip
- PF2 Total Operating Cost per Vehicle Mile and Hour (F3 service operation, F4 maintenance, F5 taxi cost, F6 administration)
- PF7 Average Fare per Passenger
- PF8 Operating Cost Recovery

Internal Processes

- PP1 Peak Fleet Utilization
- PP2 Actual Productivity (passengers and completed trips per vehicle mile and hour)
- PP3 Fleet Reliability (miles between road calls due to technical faults)

Safety

- PS1 Number of Vehicle Collisions per Vehicle Mile and Hour (preventable and non-preventable)
- PS2 Number of Passenger Injuries per Boarding and Passenger Mile

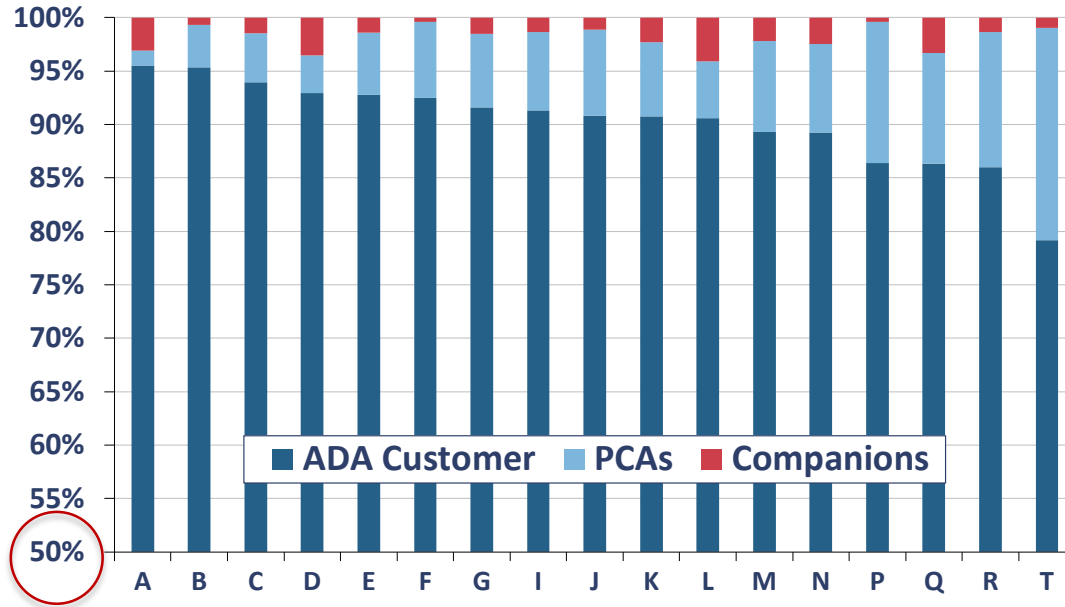
Environmental

- PE1 Fuel Consumption (per vehicle mile / passenger mile)
- PE2 CO₂ Emissions (per vehicle mile / passenger mile)

What is a boarding?

- ADA paratransit vs. other service
- ADA certified customer boardings
- Other passenger boardings
 - Personal Care Attendants
 - Companions
- Capacity boardings
 - Service animals, employees, large luggage/devices

ADA Paratransit Annual Passenger Boardings
by Customer Type (2017)



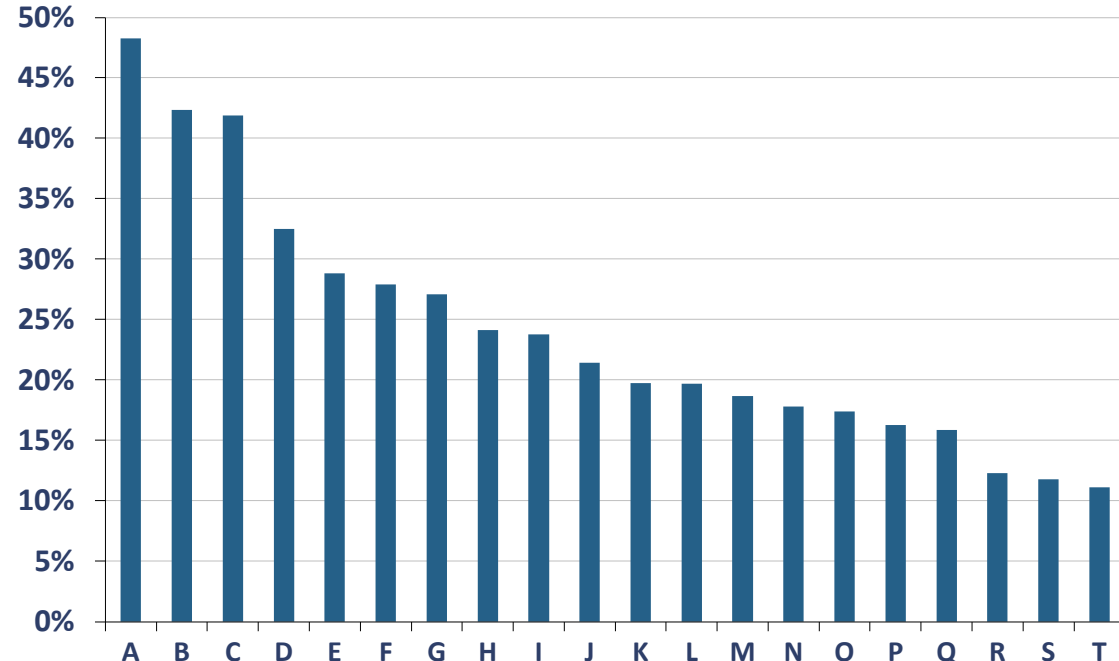
Counting methodology limitations

Management (policies) and enforcement of other boardings

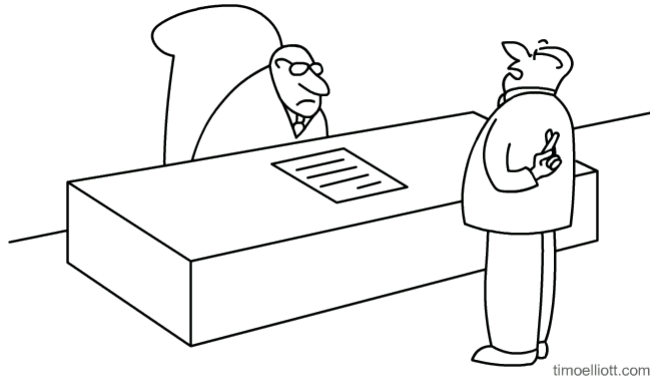
What is a boarding?

- Boardings involving a 'wheelchair'
 - Complementary data item: lift deployments (similarly 5-45% of boardings)

% "Wheelchair" Boardings on Paratransit



What is a boarding?



"Yes sir, you can absolutely trust those numbers"

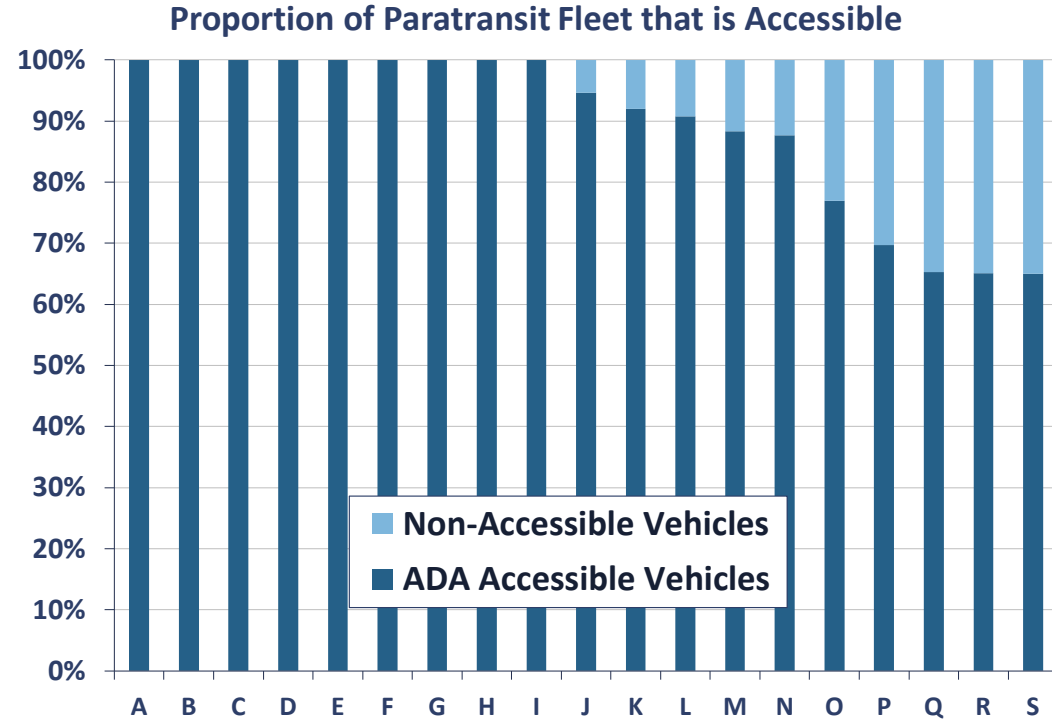
Why is this important?

Impact on:

- Performance metrics (normalization)
- Understanding of passenger miles/trip length and dwell time
- Revenue
- Communication with stakeholders (esp. for cost and productivity)
- **Match demand with supply**
 - Seat and other capacity, accessibility

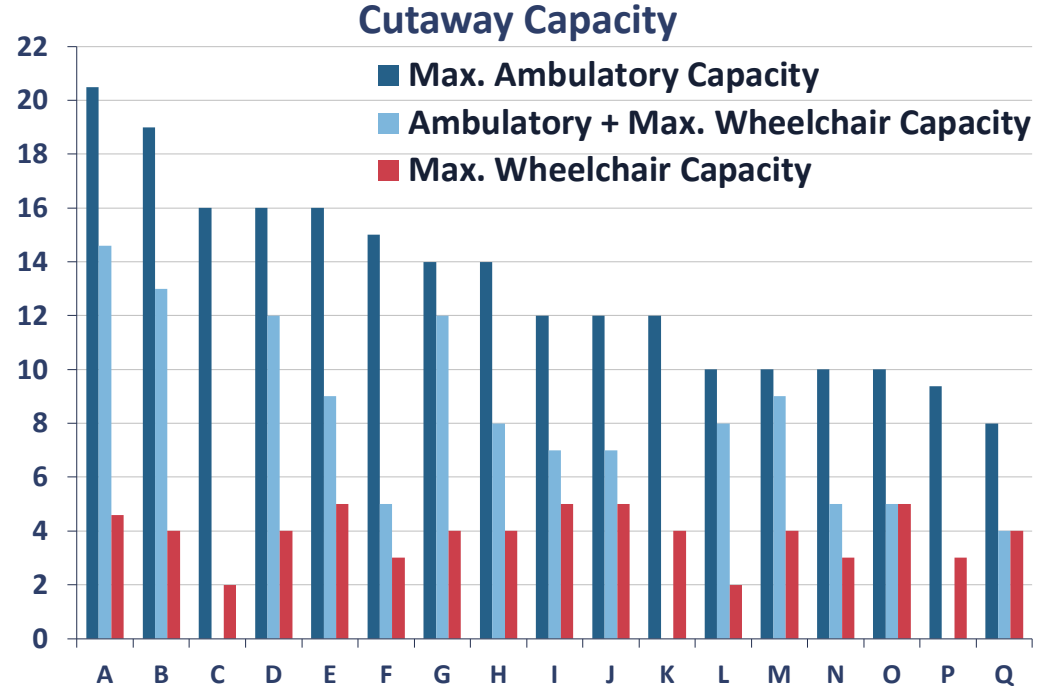
What is fleet capacity?

- Vehicle type/size
- Seats
- Wheelchair spaces (Regular vs. large / long)
- Space for luggage, large bags, walkers and other devices



What is fleet capacity?

- Vehicle type/size
- Seats
- Wheelchair spaces (Regular vs. large / long)
- Space for luggage, large bags, walkers and other devices
- Ambulatory vs. wheelchair configurations

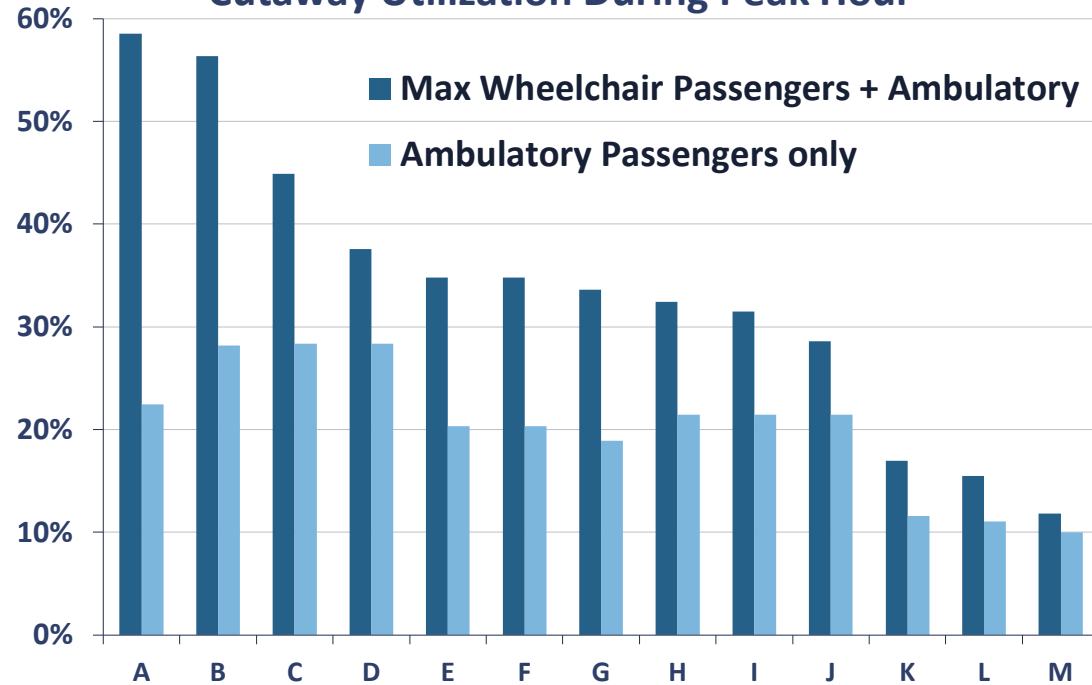


Capacity Utilization

Boardings in peak hour

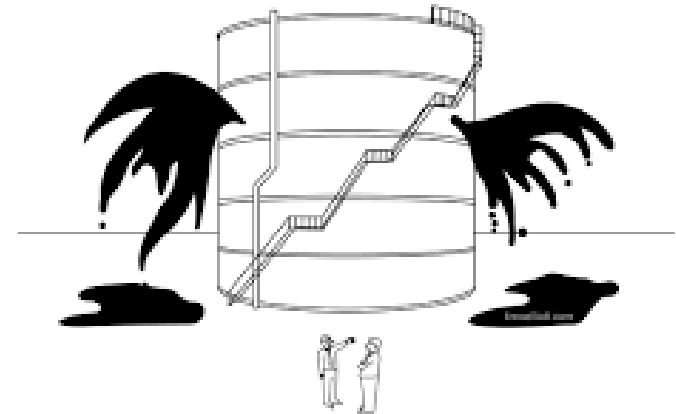
(Fleet in use during peak
hour x vehicle capacity)

Cutaway Utilization During Peak Hour



Capacity Utilization (Best Practices)

- Subscription and group trips
- Different vehicles for different customers
- Different vehicles for different trip types (group, individual, peak/off-peak, long/short trip length, etc.)
- Track cost and productivity by vehicle type to adjust vehicle assignment and capital investment in future



"Data is the new oil? Absolutely—toxic if mishandled!..."

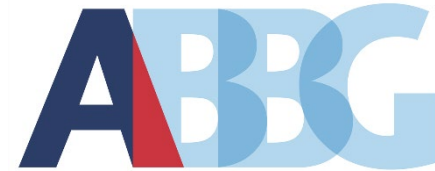
Thank you! Any Questions?

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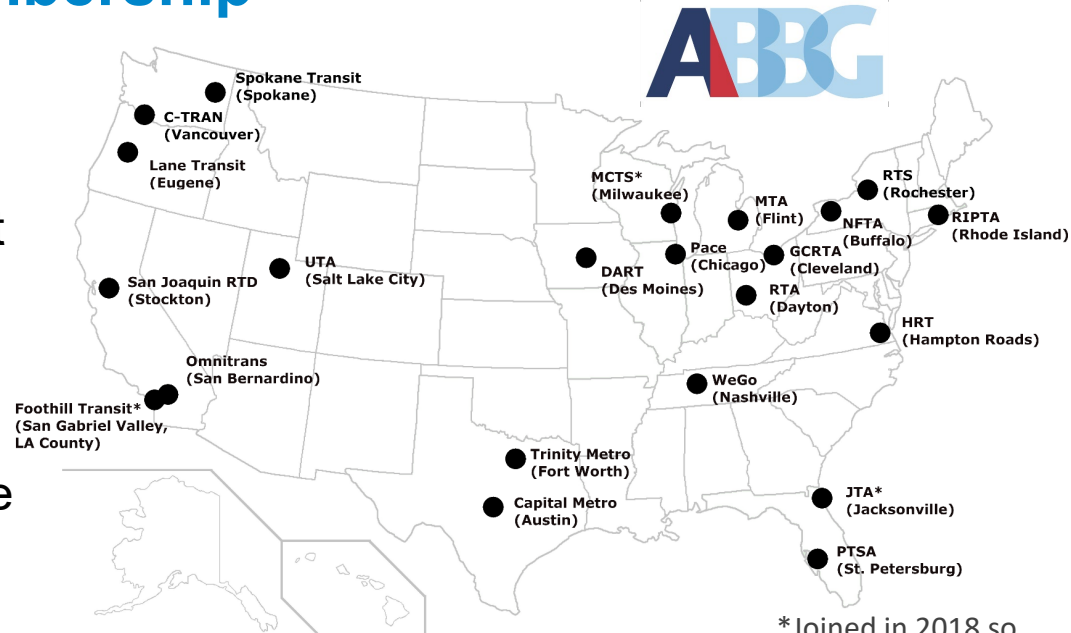
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For reference: Morse L, Trompet M, Barron A, Graham DJ,
2017, Development of a Key Performance Indicator
System to Benchmark Relative Paratransit Performance,
Transportation Research Record, Pages: 1-8, ISSN: 0361-1981

Background: ABBG Membership

- Between ~5-50 million annual boardings
- Between ~100-600 vehicles in fleet
- Similar service and operating characteristics
- Public management/administration
- Willingness to participate/contribute
- Geographic diversity



*Joined in 2018 so data not yet available

Background: ABBG Paratransit Models

- Most members do most eligibility certification steps in-house
- Most members have at least some in-house dedicated fleet even if they contract services (some maintain these vehicles, others don't)
- Members that contract vary in which functions they perform in-house vs. contract (e.g., dispatching, scheduling, etc.)

Most/All Service In-House (7)

Logos for in-house service providers: rta connect, Project Mobility, RTS ACCESS, C-TRAN C, NFTA Access Line, RIPA Ride, MTA Your Ride, and dart Paratransit.

Partially Contracted Service (5)

Logos for partially contracted service providers: TRINITY, METRO, MITS, Nashville MTA, UTA, Flextrans, AccessRide, Spokane Transit Paratransit, and Greater Cleveland Regional Transit Authority Paratransit ADA Services.

All Service Contracted (10)

Logos for all service contracted providers: SAN JOAQUIN RTD Dial-a-Ride, PSTA DART, HAMPTON ROADS TRANSIT Paratransit, CALWALUKE COUNTY TRANSIT plus, pace, cta Provides regional service, LTD RideSource, METRO MetroAccess, Connexion, OmniTrans Access, and Foothill Transit access Provided by regional entity.