

Overview of the MBTA review Panel's approach to building the fact base

This memo provides a summary of how the MBTA Review Panel approached and constructed the analytical fact base that informed its findings and recommendations. The objective is to clarify what the sources of information were; how the Panel decided what data, comparisons and analyses to conduct; how the data were actually analyzed; and to provide some insight into the breadth of research and analyses that were completed.

SOURCES OF DATA

The Panel decided to pursue multiple sources of analytical evidence as part of the fact-gathering for its report, in order to ensure a broad understanding of the current and past performance of the MBTA and insight into its strengths and challenges. These sources include:

- Data and facts received directly from the MBTA (e.g. historical operating costs, capital program spend, revenue sources and levels, performance data, HR headcount and absenteeism data etc.)
- Interviews and meetings with current and former MBTA and Department of Transportation staff to ensure the data were interpreted in appropriate context, to triangulate and stress-test the data, and to identify issue areas for focus
- Peer benchmarking to highlight similarities and differences to a peer set, using the National Transit Database as an independent data source
- Site visits to maintenance shops and other key MBTA facilities
- Ad-hoc analyses conducted by individual Panel members

PRINCIPLES AND APPROACH FOR DATA ANALYSES

The analytical approach taken by the Panel was grounded in several key principals:

1. **Anchor the work of the Panel in a data-driven and evidence-based approach.** The Panel ensured that its discussions were underpinned by fact and analytics, not just anecdotes and stories. And sought clear evidence to support the narrative on both past and current conditions at the MBTA.
2. **Access and debate a broad set of data inputs from multiple sources to reduce the risk of bias or misinterpretation of the evidence.** The Panel was realistic that there is never a ‘single version of the truth’ and that all analyses will have inherent limitations, and therefore sought to bring a range of perspectives into the discussion (as laid out above) to inform the recommendations
3. **Review and draw insights from many previous reports and assessments of the MBTA and keep an open mind about the true challenges and opportunities.** The Panel had access to many previous written reports and reviews, and interviewed a number of authors or key stakeholders involved in their preparation to bring additional points of view into the room
4. **Conduct a peer-benchmarking exercise as one of many sources of evidence, and to provide a perspective on other systems.** The Panel agreed on a peer set of ~5-8 urban transit organizations and used publically accessible, independent data sources for comparisons of the MBTA to other public transit systems
 - The peer set was selected in advance of the analyses to avoid bias. The peer set was selected based on system size, age, climate, and urban setting. The Panel selected peers with typically older, larger-city systems, and several in comparable tough winter climates
 - The Panel was acutely aware that no two systems are the same, and every comparison will have potential limitations. The decision was made not to try and adjust for every difference (which might make it appear that analyses were manipulated) but instead to take the other systems as they are, understand the differences, and interpret the results appropriately
 - Comparisons were typically made at a modal level (e.g. bus, heavy rail) versus for the systems in aggregate for better comparability given differences in mix of modes that exist across systems
 - Data was normalized to account for differences in system size. There are many different ways to normalize urban transit data – for the most part the Panel selected to use vehicle revenue miles as a measure of the quantity of service actually provided. Analyses were tested using other factors (vehicle service hours, passenger miles, unlinked trips etc.) and

while these changed individual results, the takeaways and insights remained consistent. For select metrics a different normalization was used (e.g. for fare and non-fare revenue, dollars per unlinked passenger trip was more appropriate)

- Comparison data was sourced for all US systems from the National Transit Database (NTD) to conduct like-for-like comparisons on key performance metrics. In select areas, one or two international comparisons were also used to show differences to the US-based systems, and these were taken from public information published by those systems
5. **Insights and recommendations were developed from the ‘body of evidence in aggregate,’ not from any specific individual data point/analysis.** The format of the final report required the Panel to select a few analyses for inclusion to support the recommendations. Often these were the clearest illustrations of the evidence available to support the case. However they were fully consistent with the Panel’s interpretation of the overall body of evidence being discussed, and were not cherry-picked to make points not supported by the overall analyses in aggregate.
 6. **Analyses were supplemented with targeted internal MBTA data to highlight specific MBTA issues identified.** For example, data and analyses on absenteeism levels, labor relations situation, and the state of good repair database (none of which are externally available via NTD) were collected from MBTA/MassDOT staff and analyzed. In select areas (e.g. absenteeism) the Panel attempted to find external benchmarks for other systems from other public sources to put these numbers in context. In addition, the Panel worked with MBTA staff to conduct new analyses in areas such as understanding the actual delivered spend in the capital program.
 7. **A look-back period of ~5 years was typically selected to give sufficient context for the current situation and to ensure the insights were relevant to today.** For operating expense, maintenance, and other typical system spend and revenue this was appropriate; however a longer time-period was used for fleet assessments given their long service-cycle.

CLOSING THOUGHTS

The Panel is aware that no individual analysis can tell the full story of the MBTA situation, or of any situation of this complexity. And that, in particular, peer-system benchmarking is fraught with challenges around comparability of the systems,

different modes, local context, legacy, etc. However, a strongly evidence-based approach was required for this work in order to ensure that the recommendations are robust and informed by fact.

The Panel therefore took all of these analyses, insights, and sources of evidence into account and debated their accuracy, potential sources of bias, their relevance to the work and how best to interpret them. The Panel firmly believes that – although individual analyses can be challenged – in aggregate the evidence base was very clear and compelling. It consistently showed that the MBTA underperformed other peer systems on a wide range of benchmarks; that the fleet in any mode was typically older and in poor condition; that fares were typically lower than peers; that operating and maintenance costs were typically higher for most modes than peers; that the capital program faces substantial challenges in delivery; and that absenteeism is at high absolute levels.

This aggregate view across all the analyses gives the Panel confidence in the quality of the evidence used to support its work, and therefore in the recommendations themselves as the right actions to take to secure a successful future for the MBTA.