Evidence-Based Transportation Asset Management (EB-TAM)

A Framework for Achieving Accumulated Evidence in TAM

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Research Objective
To develop a framework for evidence-based asset management to facilitate the use of best available evidence in transportation decision making.

Research Methodology
- Literature Review: EBD in healthcare and other industries.
- Literature Review: EBD in Transportation.
- TAM Evidence Exchange: Practitioner input/data collection.
- Implementation of prototype database.
- Development of structure and content of database.
- Development of Evidence-based Framework for TAM.

EB Approach Characteristics
- Uses best available evidence; reduces bias.
- Uses an accumulation of documented evidence.
- Incorporates practitioner input and peer review.
- Bridges gap between research and practice.
- Uses rigorous “scientific” testing where feasible.

Evidence Quality Concepts

<table>
<thead>
<tr>
<th>Evidence Type</th>
<th>Evidence Quality</th>
<th>Evidence Bias</th>
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<tbody>
<tr>
<td>Systematic study of documented case studies</td>
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<tr>
<td>Documented case study of intervention(s) and outcome(s)</td>
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<tr>
<td>Documented expert opinion (several practitioners)</td>
<td></td>
<td>Increased bias</td>
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<tr>
<td>Documented expert opinion (one practitioner)</td>
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<tr>
<td>Undocumented expert opinion/gut feeling</td>
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<td>Increased bias</td>
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Evidence Exchange Findings
- Agencies already use some type of evidence for their decisions but at this point it is “weak” evidence.
  - Based on a limited number of observations.
  - Based on gut reaction/expert opinion from individual or few practitioners.
  - Limited data.
- Experience in other fields suggests that a more robust body of evidence is of value and leads to more effective decisions.
  - Accumulated knowledge of many agencies that document observed outcomes that result from specific interventions.
- Evidence (in the form of documented experience) from peer organizations can inform decisions.
  - As many agencies document and share experiences a more robust body of evidence will form.
- A freely available database of case studies can be compiled based on a hybrid framework for EB-TAM PICMO (Problem, Intervention, Context, Mechanism and Outcome of the cases).
  - Of the PICO and CIMO.
- Informed by evidence-based management literature; hybrid of the PICO and CIMO formats.

PICMO Framework for EB-TAM

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<th>Evidence Assessment Framework</th>
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<tr>
<td>P Problem</td>
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<td>I Intervention</td>
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<td>C Context</td>
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<td>M Mechanisms</td>
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<td>O Outcomes</td>
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Development of EB-TAM Database

Case study data from TAM Evidence Exchange Webinars

Data Structure

Mine Data

Population Database

EB-TAM Database

Intervention search + Available data = Quality of evidence

Strong evidence

Moderate evidence

Minimal Evidence

Contributions to TAM Practice

A database of structured evidence and PICMO framework for assessing evidence of specific interventions.

Best available evidence that can be used by transportation practitioners in decision making.

References