"Using Highway Economic Requirements System: Project Application"

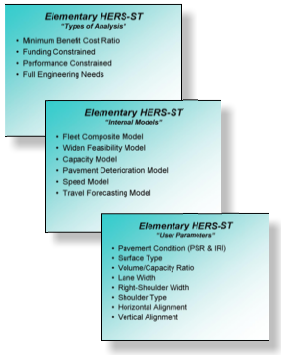
Rich Arnold, P.E.

Oregon Department of Transportation

HERS-ST runs HPMS dataset*, if you have HPMS data, you can run HERS-ST

**HERS-ST will only run the "sample" records, and dataset must be in Y2K format*

Step #1: Data Development



Keep in mind that there are different types of analysis, and the user has the freedom to adjust numerous elements within HERS-ST to control how the model evaluate deficiencies, selects improvements and the cost of said improvements.

The standard HPMS dataset contains 98 Data Items:
- 52 Items can be developed using Default values of by simple calculations
- 24 Items can be developed fairly easily
- 22 Items will vary in levels of difficulty, depending on expected Type of Analysis and $$$ budget

Data Development Process:
- Hire a Data Ninja, or
- Develop In-house data expert

This presentation reflects the sole opinion of this writer and does not reflect the views or opinions of the software developes, Federal Highway Administration (FHWA) or Oregon DOT. The discussion is based on years of experience with data development and deficiency modeling. It is meant for the sole purpose of providing a quick reference to evaluate elements that may or may not be easily developed. It is not intended to define data priority values, or to imply some data is more important than other data. All HPMS data is essential, some is just more difficult to collect. Again, the dataset must be in the current HPMS format.

Default Data

1) Year – *Default*
2) State – *Default*
3) Units – *Default*
4) County – *Default*
5) *Section ID – Calculate*
6) Standard Sample? – *Default*
7) Donut Sample?– *Default*
8) *State Control Field – Whatever*
9) Section Group? – *Default*
10) ***LRS ID – ID***
11) ***LRS BMP – ID***
12) ***LRS EMP– ID***
14) Urbanized Area Sample – *Default*
15) Urbanized Area Code – *Default*
16) NAAQS Code – *Default*
18) *Generated FC – Calculate*
19) NHS – *Default*
20) Urbuilt – *Default*
21) Route Number – *Default*
22) Route Signing – *Default*
23) Route Qualifier – *Default*
24) Signed Route Number – *Default*
25) Ownership – *Default*
26) Special Systems – *Default*
28) Truck Route – *Default*
29) Toll – *Default*
30) *Section Length – Calculate*
31) Donut AADT Vol Grp ID – *Default*
32) Standard AADT Vol Grp ID – *Default*
37) HOV – *Default*
38-46) Hwy Surveillance – *Default*
47) *Sample Identifier – Same as IS*
48) Donut Expansion Factor – *Default*
49) Standard Expansion Factor – *Default*
55) *Access Control – Calculate*
61) *Peak Parking – Calculate*
69) *HAA – Calculate*
71) *VAA – Calculate*
79) *WDS – Calculate*
90) Prevailing Signalization – *Default*
91) *Typical Peak Green – Calculate*
96) Peak Capacity – *Calculate*
98) VSF – *Calculate*
98) Year of Future AADT – *Calculate*

Easy Data

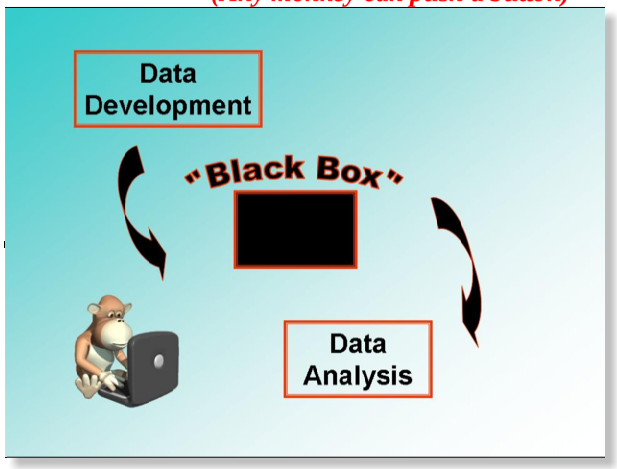
13) Rural/Urban – Easy → GIS/Video/Images/Etc...
17) Functional Class – Easy
27) Type of Facility – Easy
34) Number Through Lanes – Easy
50) Surface Type – Easy
52) Climate – Easy (*Default / Calculate*)
53) Year Improvement – Easy (*Default*)
54) Lane Width – Easy
56) Median Type – Easy
57) Median Width – Easy
58) Shoulder Type – Easy
59) Right Shoulder Width – Easy
60) Left Shoulder Width – Easy
62) Widening Feasibility – Easy (*Calculate*)
70) Terrain Type – Easy (*Calculate*)
78) PSD – Easy (*Calculate*)
80) Speed Limit – Easy
86) Directional Factor – Easy (*Calculate*)
87) Peak Number Lanes – Easy (*Calculate*)
88) Left Turn Lane – Easy
89) Right Turn Lane – Easy
92) Num At Grade Signals – Easy
93) Num At Grade Stop Signs – Easy
94) Num At Grade Other – Easy

Tough Data

33) AADT – Difficult
35) IRI – Moderate (Easy w/ PMS or *Default*)
36) PSR – Moderate (Easy w/ PMS or *Default*)
51) SN/D – Moderate (Easy w/ PMS or *Calculate*)
63-68) Horizontal Class – Easy to Difficult, depends
72-77) Vertical Class – Easy to Difficult, depends
81-82) Peak & Avg SU Trk – Difficult (*Default*)
83-84) Peak & Avg CM Trk – Difficult (*Default*)
85) K-Factor – Difficult
97) Future AADT - Difficult

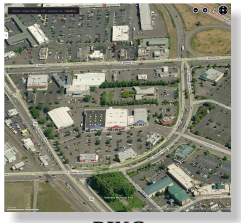
Step #2: Running HERS-ST

(Any monkey can push a button)



DIY: How To Build 100% "Sample" Datasets:
- Start with HPMS dataset
- Fill in the missing data elements, based on anticipated Type of Analysis
- Data Sources:
  - State Database
  - Aerial Photos or Images
  - GIS Data
  - Video Logs
  - Local Knowledge or Field Trips
  - Google Earth/Maps
  - Bing

Google Walk



BING

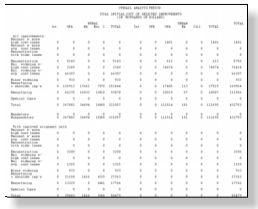
GOOGLE

Step #3: Data Analysis (i.e., Telling the Story)

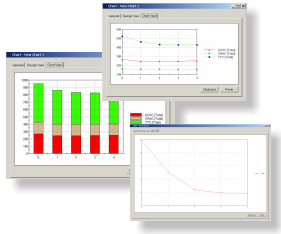
Presenting Results ("Paint the Picture"):
So you have all this nice data results. So, what does it mean??? How can it be used??? Explaining the analysis in a manner that makes reasonable sense is always the ultimate goal.

HERS-ST has some great analysis features and built-in tools.

Maps



Tables/Reports



Charts/Graphs

We are always on the look out for new and easier ways explain model results... Possibly a Dashboard approach in the near future, or something completely new.