PERFORMANCE MEASURES

1. Critique of Fielding's approach
2. Structure of performance measures

Critique of Performance Measures

- **Limited by availability of NTD data**

    - **focused on cost and efficiency**
    - **little data on quality and effectiveness**

- **Resulting measures place too much emphasis on cost efficiency and too little on cost-effectiveness**

- **Make it too easy for the manager to ignore the market and service quality**

- **Do not contribute effectively to the hypothetical roles for measures**

Performance Measure Examples

$$\frac{\text{Vehicle Miles}}{\text{Maintenance Employees}}$$

- **many possible interpretations without control for maintenance effectiveness**

$$\frac{\text{Revenue}}{\text{Operating Expense}}$$

- **if local area favors low fares, does this mean poor performance?**

$$\frac{\text{Passengers}}{\text{Rev Veh Hour}}$$

- **very high values may imply very congested vehicles; is this good performance?**
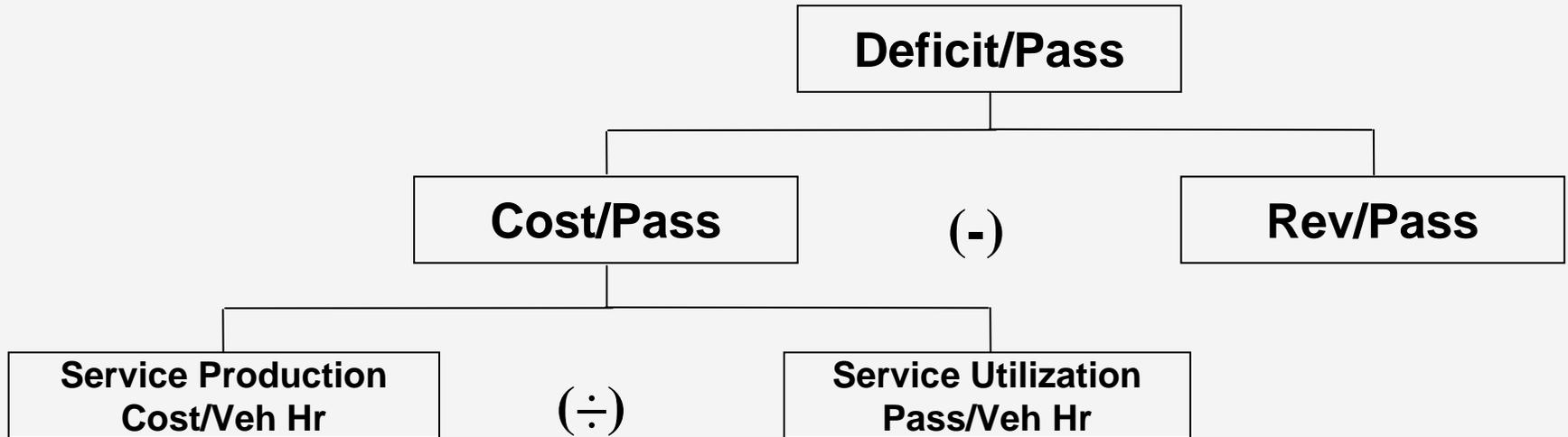
Critique of Peer Group Comparisons

- **Peers and/or measures need to recognize impacts of non-NTD differences such as:**

    -- cost of living

    -- urban structure

    -- auto ownership

- **Peers should be defined uniquely for each agency**
- **Peers might be defined differently for different types of measure**

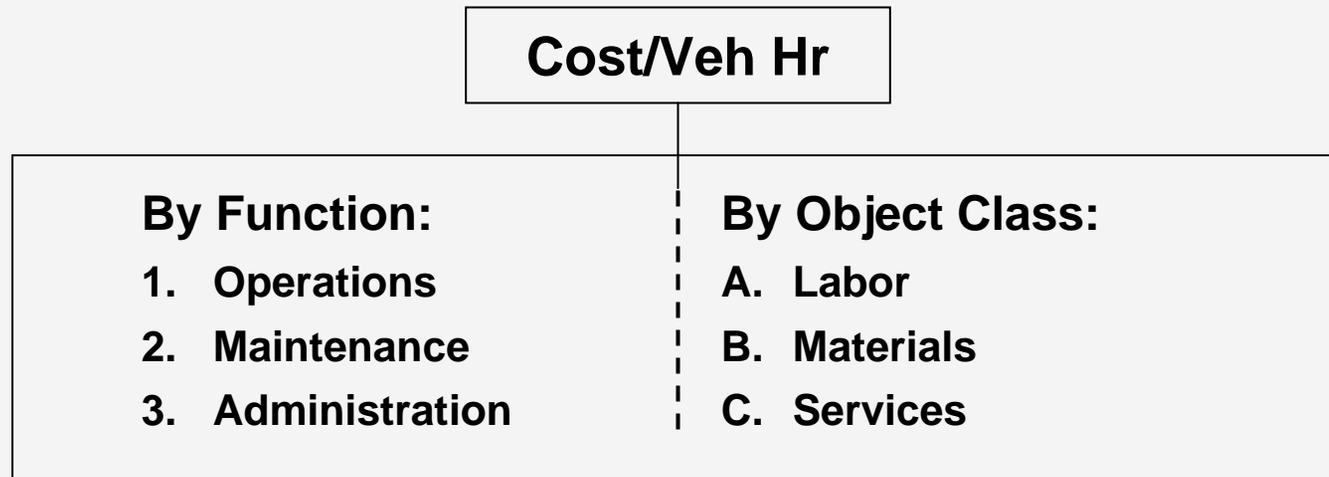# Structure of Performance Measures (D. Lee)

Basic premises:

- **each indicator should measure something unique**

- **a subset of indicators should fully describe some dimension of the system**

- **subsets of indicators should cover all important dimensions**

- **indicators can be grouped and nested**

- **for two systems to be compared along one dimension, they need not be similar in all other dimensions**

Level 1:
Aggregate Performance Indicators

```
                          ┌─────────────────┐
                          │  Deficit/Pass   │
                          └────────┬────────┘
            ┌──────────────────────┴──────────────────────┐
    ┌───────────────┐                              ┌───────────────┐
    │   Cost/Pass   │            (-)               │   Rev/Pass    │
    └───────┬───────┘                              └───────────────┘
      ┌─────┴──────────────────────────┐
┌──────────────────┐            ┌──────────────────┐
│ Service Production│   (÷)      │ Service Utilization│
│   Cost/Veh Hr    │            │   Pass/Veh Hr     │
└──────────────────┘            └──────────────────┘
```

Level 2: Cost

General:

```
                    ┌─────────────────┐
                    │   Cost/Veh Hr   │
                    └────────┬────────┘
        ┌────────────────────┼────────────────────┐
        │ By Function:       ┊  By Object Class:   │
        │ 1.  Operations     ┊  A.  Labor          │
        │ 2.  Maintenance    ┊  B.  Materials      │
        │ 3.  Administration ┊  C.  Services       │
        └────────────────────┴────────────────────┘
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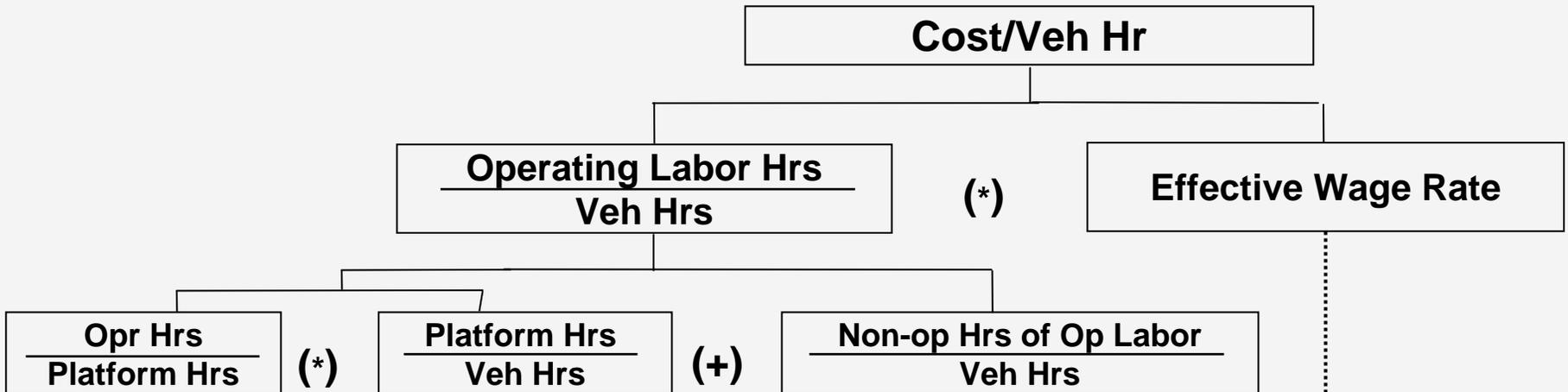
Develop separate relationships and indicators for all interesting combinations of Functions (1-3) and Object Class (A-C)

Level 2: Cost (cont'd)

Specific: 1A. Operations-Labor

Cost/Veh Hr

$$\frac{\text{Operating Labor Hrs}}{\text{Veh Hrs}}$$ (*) Effective Wage Rate

$$\frac{\text{Opr Hrs}}{\text{Platform Hrs}}$$ (*) $$\frac{\text{Platform Hrs}}{\text{Veh Hrs}}$$ (+) $$\frac{\text{Non-op Hrs of Op Labor}}{\text{Veh Hrs}}$$

- *Product of:*
  - *base wage*
  - *seniority factor*
  - *premiums factor*
  - *guarantees factor*
  - *fringe benefit factors*

Level 2: Utilization

$$\text{Pass/Veh Hr} \quad (utilization)$$

$$\frac{\text{Revenue Veh Mile}}{\text{Veh Hrs}} \quad (*) \quad \text{Pass/Rev Veh Mile}$$

$$\frac{\text{Rev Veh Hrs}}{\text{Veh Hrs}} \quad (*) \quad \frac{\text{Miles/Hr}}{\text{in service}}$$

or

$$\frac{\text{Rev Veh Miles}}{\text{Veh Miles}} \quad (*) \quad \frac{\text{Veh Miles}}{\text{Veh Hrs}}$$

(deadheading & layover time) *speed*

$$\frac{\text{Pass Miles}}{\text{Veh Miles}} \quad (load\ factor) \quad (\div) \quad \frac{\text{Pass Miles}}{\text{Pass}}$$

trip length

$$\frac{\text{Places}}{\text{Vehicles}} \quad (*) \quad \frac{\text{Pass}}{\text{Place}}$$

vehicle capacity

or

$$\frac{\text{Pass Miles}}{\text{Place Miles}}$$

occupancy