Using Modeling to Support Freeway Removal

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CNU XV

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Overview

- My involvement in Seattle
  - Smart Mobility report for CNU and Center for Neighborhood Technologies (September)
  - King County workshop (February)
  - City of Seattle workshop (May)
- How raw model analysis was misused in EIS
- Limits to models
- Using models properly

Washington DOT Website

- **Can increased transit take the place of the Alaskan Way Viaduct?**
  WSDOT has planned for aggressive improvements in transit, but even with increased transit ridership, travel demand on the viaduct is expected to grow. Traffic on the viaduct replacement is expected to grow from 110,000 daily vehicles today to 135,000 vehicles per day by 2030 due to growth in population and commercial activity. This forecast takes into account heavy transportation investments, and also reflects a doubling of commute trips to downtown on transit, with an estimated 53 percent of workers in downtown commuting by transit in the year 2030.

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> "SR 99 ramps and local arterials in the downtown showed little or no growth in vehicle traffic in 2030 as compared to the present…" (*Appendix C,* Exhibit 5-16, p. 158)

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Model error with 80% downtown transit share in base model, so large increase in model share not possible

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The EIS Process

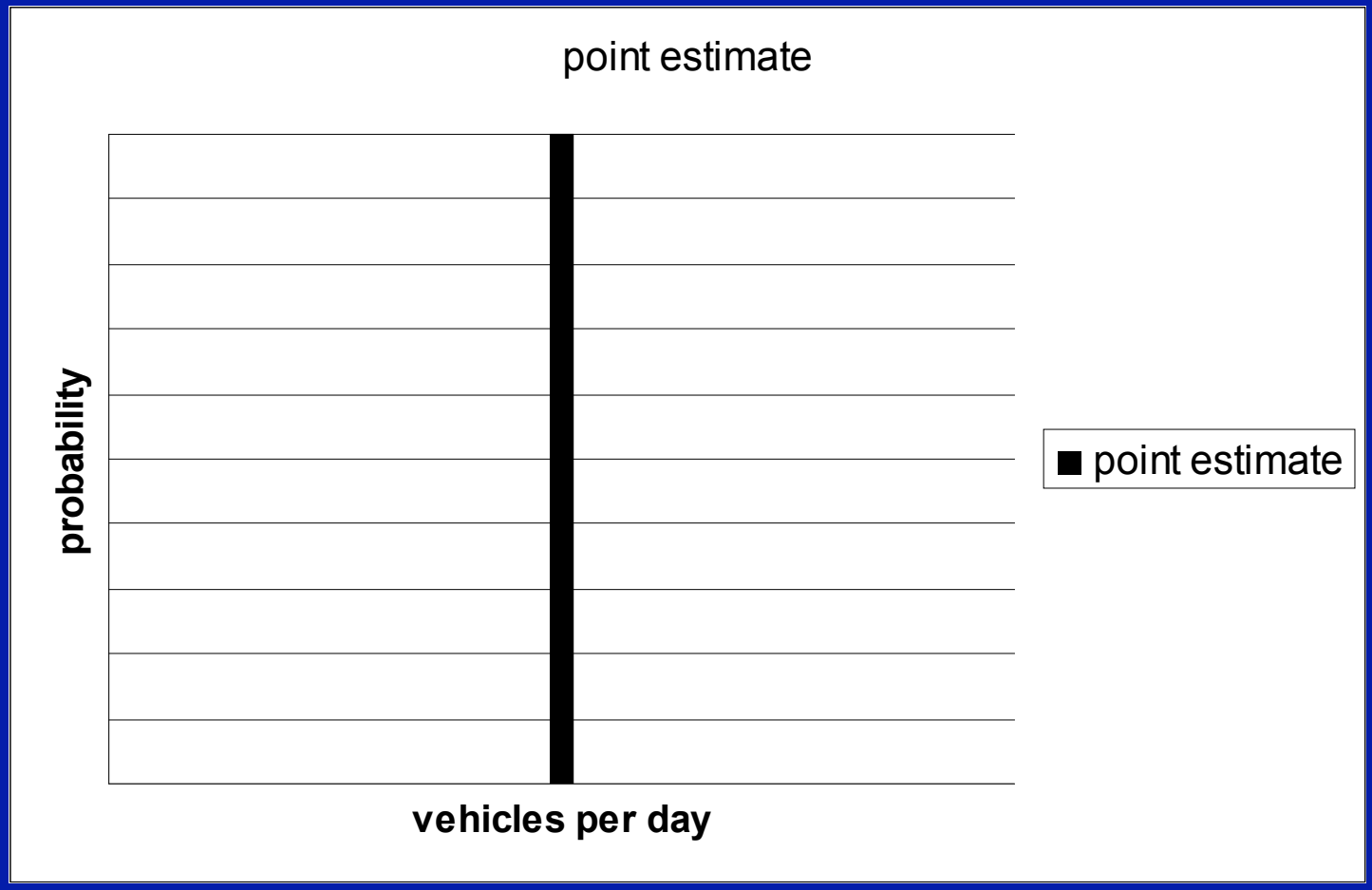
- Develop raw data and modeling results
- Select data and modeling results that support desired conclusions
- Distort selected data and modeling results
- Communicate distorted, selected data to decision makers and general public
- Pretend that the process is analytical, precise, accurate and definitive

Pay No Attention to the Man Behind the Curtain

Modeler Errors

- Not doing the best modeling possible
- Providing precise-appearing forecasts without putting them in proper context of error and uncertainly
- Allowing numbers to be spun without challenge

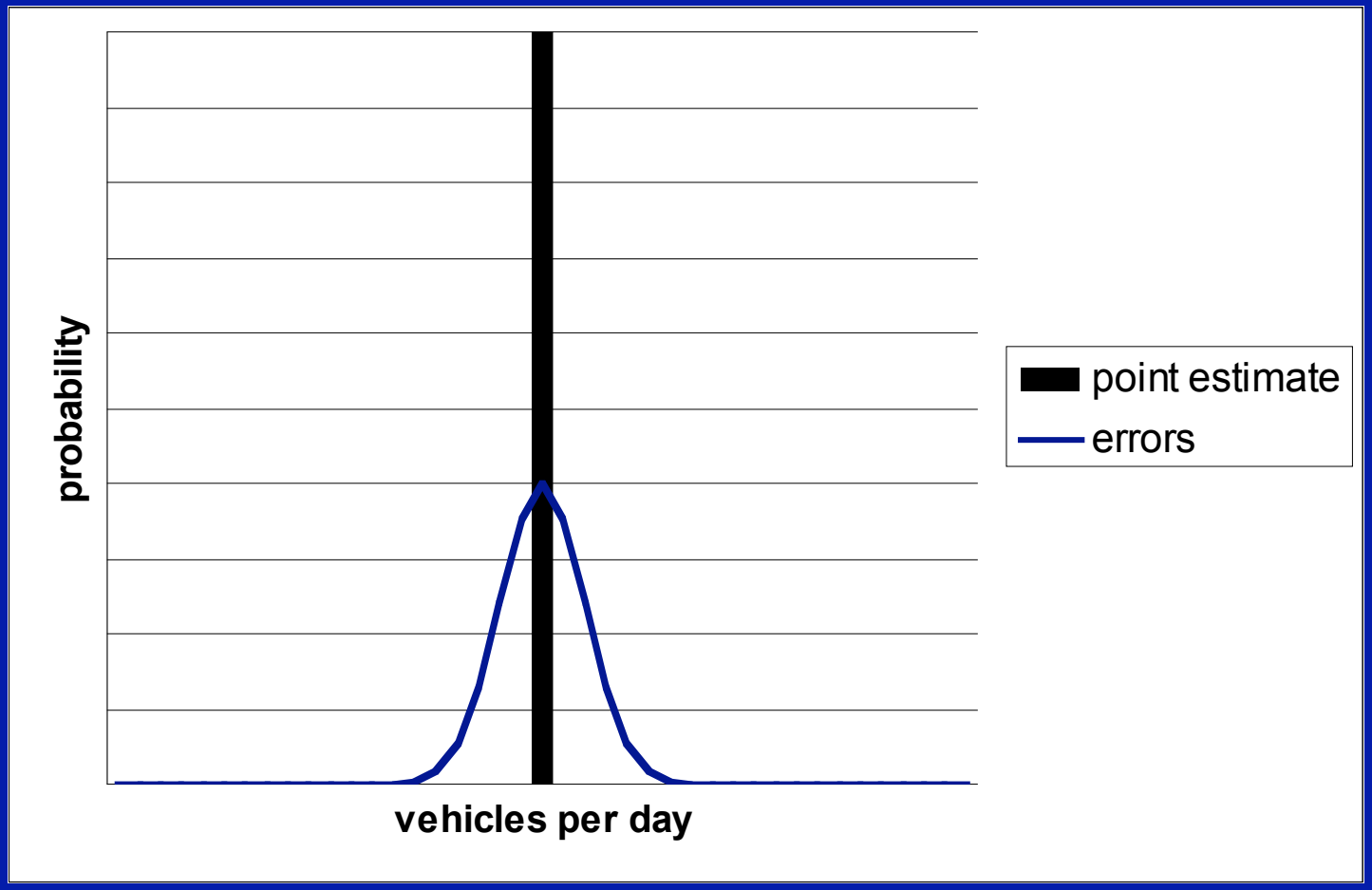
Point Estimates Ignore Model Errors, Model Omissions, and Unknowns



Model Errors

- Major error in past AWV modeling
  - Transit ridership to downtown greatly overestimated in base model
  - Impossible to significantly increase downtown transit ridership
- Other unidentified errors remain
- Impossible to remove all errors

Uncertainty from Model Errors



Responses to Freeway Removal

- Route changes
  - Including more efficient/more direct routing
- Destination changes
- Travel mode changes
- Time of day shifts
- Not make trip
- Land use changes
- Changes in attitudes and social norms

Generally Modeled (last step only of "4-step" model)

- Route changes
  - Including more efficient/more direct routing
- Destination changes
- Travel mode changes
- Time of day shifts
- Not make trip
- Land use form changes
- Changes in attitudes and social norms

AWV EIS Modeling

- Route changes
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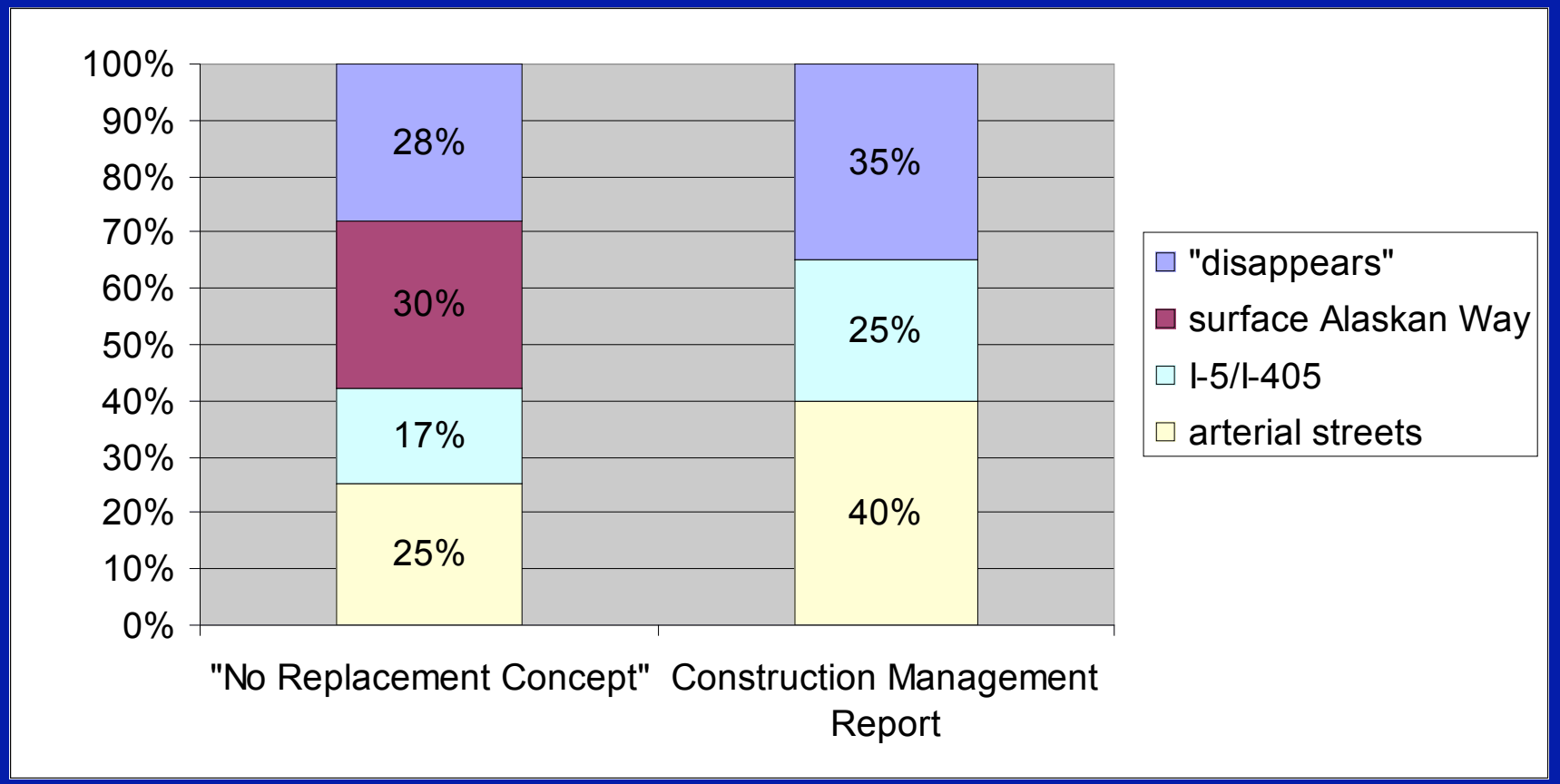
Even With Omitted Factors, EIS Modeling Showed Significant Traffic Volume Will "Disappear"



New City of Seattle Modeling

- Route changes
  - Including more efficient/more direct routing
- Destination changes
- Travel mode changes
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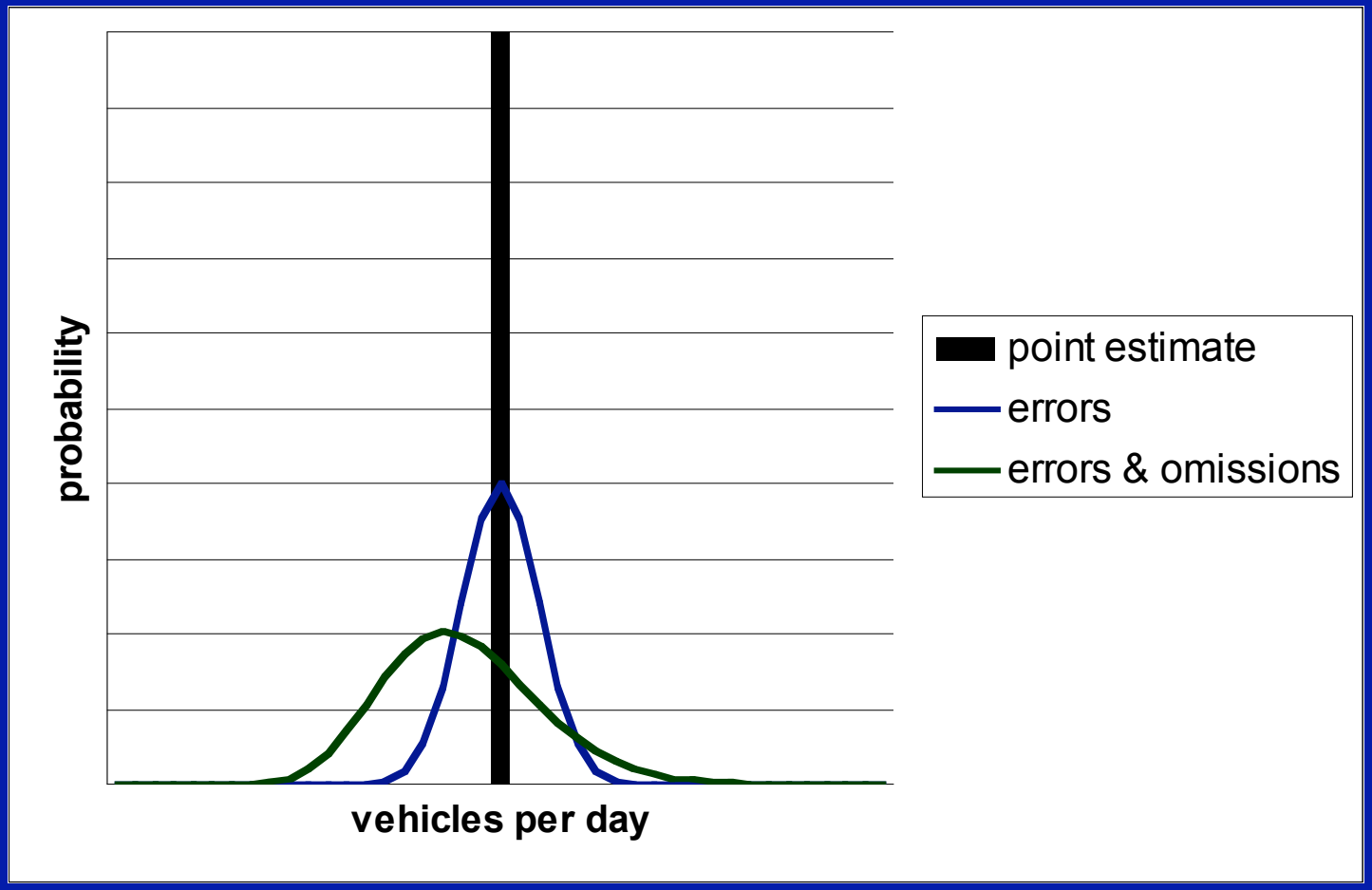
- Not make trip
- Land use form changes
- Changes in attitudes and social norms

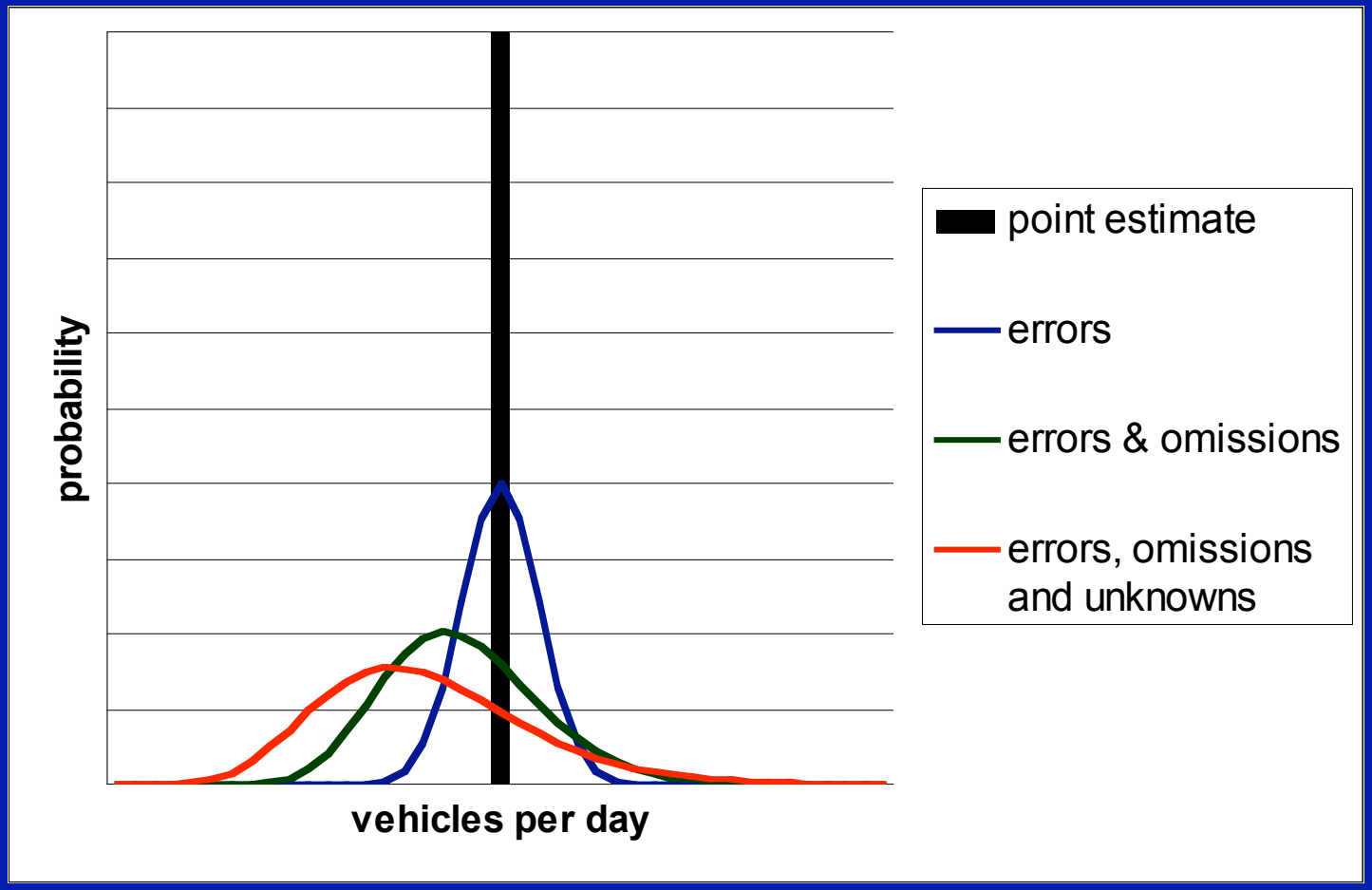
Uncertainty from Model Errors and Model Omissions



Unknowns

- General level of economic activity
- Energy pricing
- Greenhouse gas regulation
- Technological change
- Social change, e.g. much more widespread telecommuting

Uncertainty from Model Errors, Model Omissions, and Unknowns



Scenario Tests for Omissions and Unknowns

- Possible scenario tests
  - Downtown development, particularly residential development
  - Pedestrian mode shares
  - Bias for/against transit
  - Gasoline prices and/or greenhouse gas regulation
- Scenario tests illuminate magnitude of uncertainty

Communicate Big Picture

- Where does the traffic go?
  - Route changes including more efficient/more direct routing
  - Destination changes
  - Travel mode changes
  - Time of day shifts
  - Land use form changes
  - Changes in attitudes and social norms

Fully Disclose Positives and Negatives

- Begin with region to assure full accounting
  - vehicle miles traveled (VMT)
  - vehicle hours traveled (VHT)
- Then calculate VMT and VHT for smaller areas
- Comprehensive statistics avoid “cherry picking” data

Communicate Future Roadway Volumes in Proper Context

- Ranges (not point estimates)
  - Peak period volumes
  - Peak period volume/capacity ratios (not highly precise intersection delay and microsimulation delay calculations which are precise but not accurate)

Communicate Need to Manage Uncertainty and Risk

- Small incremental projects allow faster adaptation than mega-projects
  - Intersection improvements
  - Adding/subtracting on-street parking
  - Adjusting transit service level
- Managing demand
  - Road pricing
  - Parking management

Summary: Using Models Correctly

- Do best modeling possible and disclose limitations
- Use scenarios to test possible effects of omissions and unknowns
- Use models to make us smarter by helping to explain complex behavior like “disappearing” traffic
- Provide traffic forecast ranges to assist design process
- Use models to help explain why small incremental projects are less risky than mega-projects, and also the value of demand management