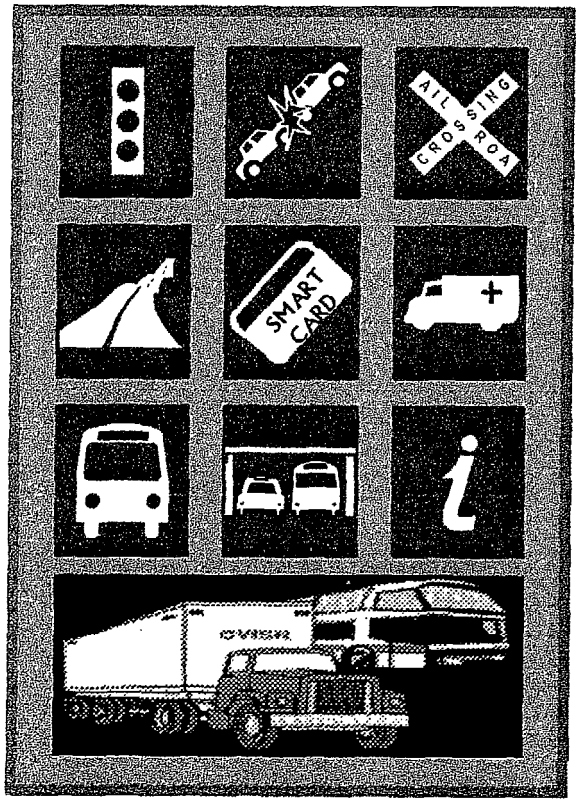
ITS National Investment & Market Analysis

...a study for ITS America and U.S. DOT



presented by
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Wilbur Smith Associates

December 19, 1996

DOT/FHWA

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Apogee

Agenda

- 10:00 a.m.- 10:15 a.m. Introduction
- 10:15 a.m.- 10:45 a.m. Key Findings
- 10:45 a.m.- 12:30 p.m. Discussion of Findings
- 12:30 p.m.- 1:30 p.m. Lunch
- 1:30 p.m.- 2:30 p.m. Funding Scenarios and Policy Implications
- 2:30 p.m.- 3:00 p.m. Communications Strategy
- 3:00 p.m.- 3:30 p.m. Wrap up

Study Goals

- Estimate public sector investment requirements to deploy basic ITS infrastructure nationwide by year 2005
- Quantify direct benefits from basic ITS infrastructure deployment
- Estimate size of private sector market
- Identify and evaluate national economic impacts

Study Deliverables

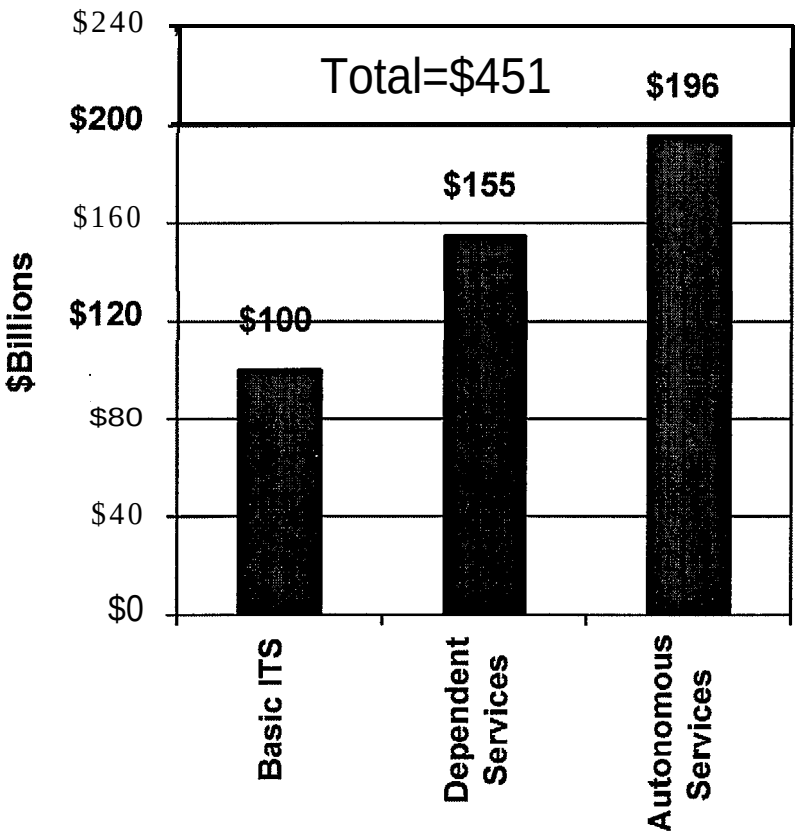
Task	Description	Products	Status
B	Review of Literature	Report	☑
C	Cost Analysis	Working Paper-C, Spreadsheet Model	☑
D	Market Analysis	Working Paper-D, Spreadsheet Model	∨
E	Analysis of Benefits	Working Paper-E, Spreadsheet Model	∨
F	National Economic Impact	Working Paper-F	In-progress
G	Final Report	Report, Slides	In-progress

Highlights

- **Full deployment of Basic ITS Infrastructure represents a very strong national economic investment**
  - Overall B/C Ratio = 5.0
  - Present value of net benefits = $21 1Billion
- **Returns from 75 Operation Timesaver MSAs are particularly strong**
  - B/C Ratio = 8.8
  - Increased safety and reduced congestion are major benefits
- **Outside of major metropolitan areas, investments should be more targeted**
- **Overall market for ITS is substantial and growing rapidly**

Findings: Market Estimates

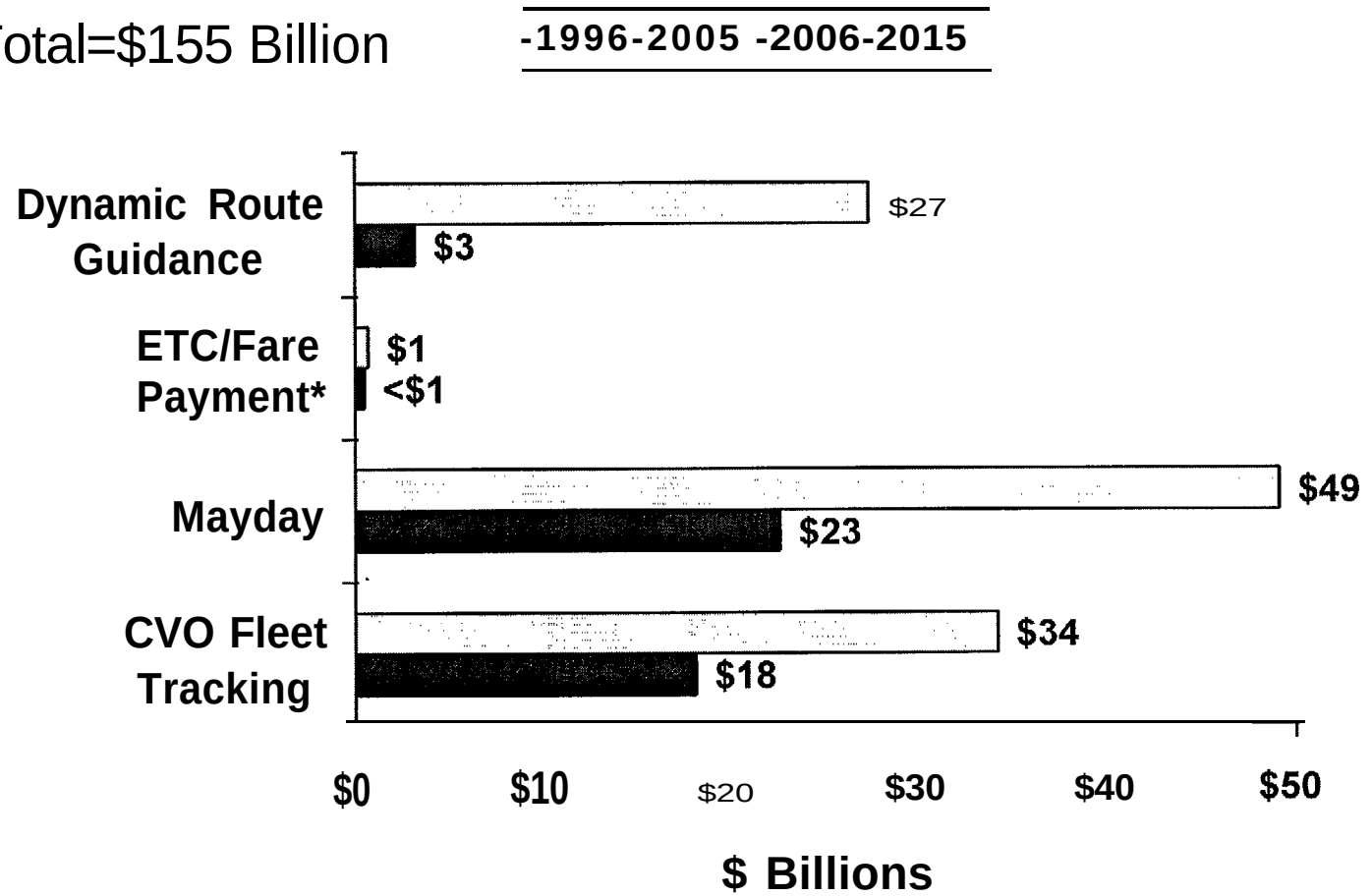
Cumulative Market, 1996-2015 ($billions)



- **Assumptions**
  - ➔ Registered vehicles growth rate of 2% per year
  - ➔ New vehicle sales growth rate of 1% per year
  - ➔ Time period
    - 1996-2005 to estimate basic ITS products/services
    - 1996-2015 to estimate all other ITS products/services (except AHS related products)
  - ➔ Constant 1996 dollars

Cumulative Market: Dependent Services

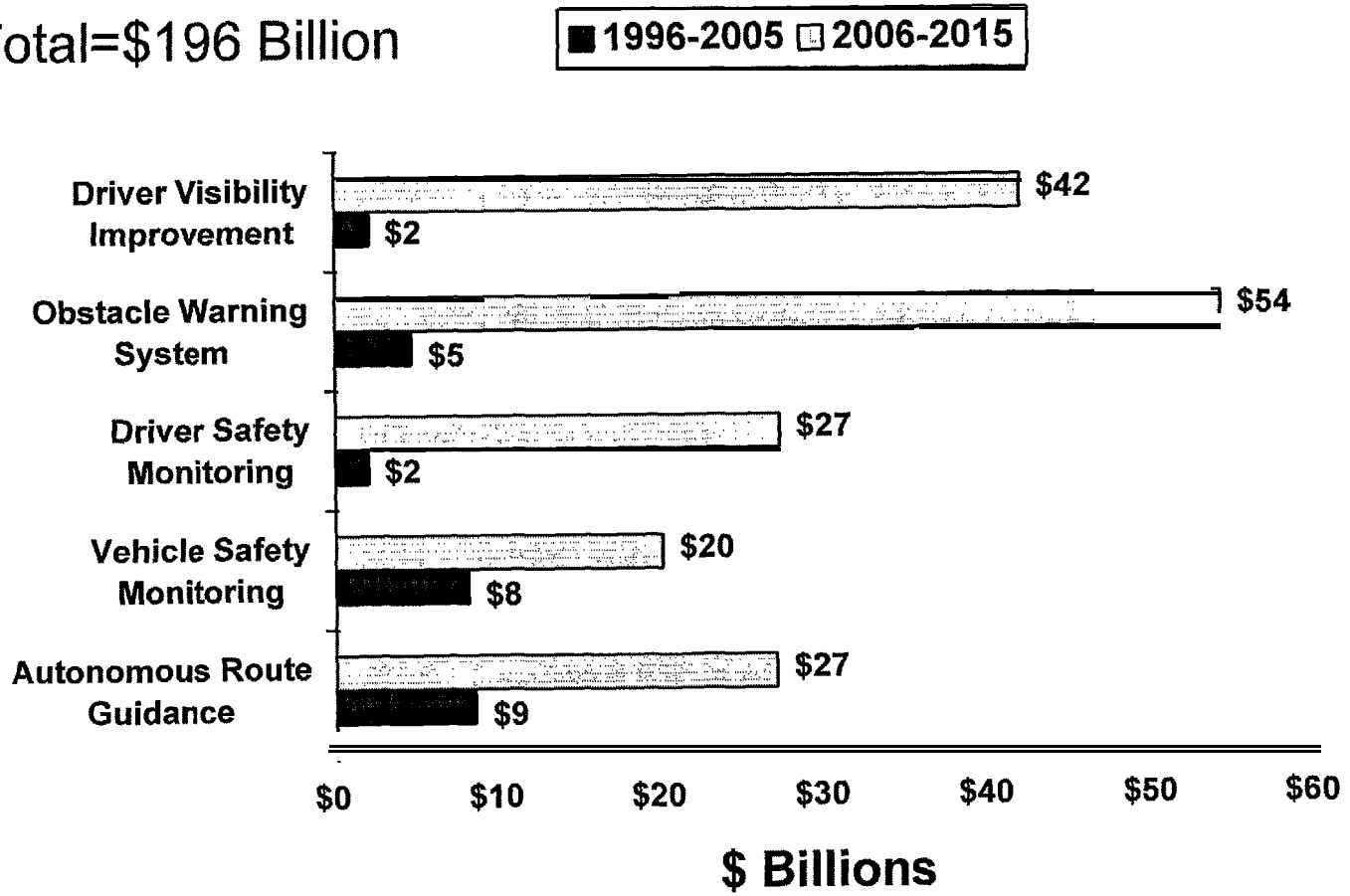
Total=$155 Billion



*ETC/Fare Payment reflects financial services market only

Cumulative Market: Autonomous Services

Total=$196 Billion



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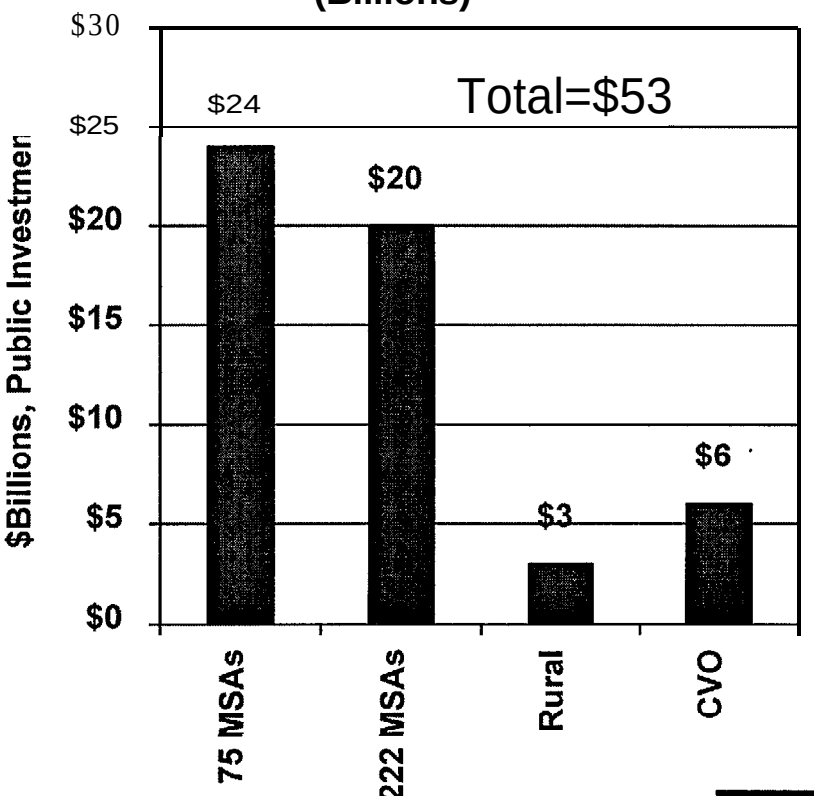
Findings: Investment Requirements

Assumptions

- Based on JAT assumptions
- Variance from JAT:
  - Volume discount for communication costs (50%)
  - Surveillance technology in urban areas
    - Full motion video (25%)
    - Compressed video (75%)
- Total costs include
  - Non-recurring, 1996-2005
  - Recurring, 1996-2015
- Corrects for double counting
- ➔ Current deployment status 5%
- Constant 1996 dollars
- Discount rate 7%

Estimated Total Costs 1996-2015, Present Value (Billions)

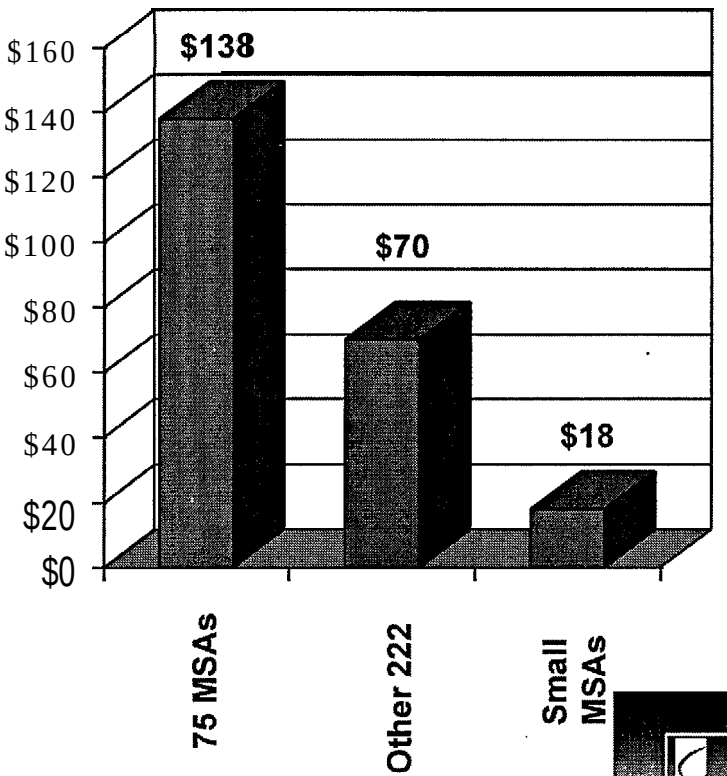


Typical Non-recurring Costs by MSA

Estimated Non-recurring costs for select MSAs (millions)

- Model deployment sites
  - New York-New Jersey $451
  - Seattle-Tacoma $169
  - Phoenix $94
  - San Antonio $81
- Other selected MSAs
  - San Francisco $248
  - Washington, DC $163
  - Atlanta $142
  - Tyler, TX $20
  - Cheyenne, WY $10

Average Non-recurring Costs 1996-2005, Present Value (Millions)



Non-recurring & Recurring Costs

Estimated Costs of Basic ITS Infrastructure Present Value

Category	1996-2005 Non-Recurring (Billions)
75 Operation Timesaver	$10.4
Other 222 MSAs	$8.6
Overall, Urban ITI	$19.0
Rural ITI	$0.8
CVO"	$1.0
Total, Basic ITS	$20.8

Basic ITS Infrastructure

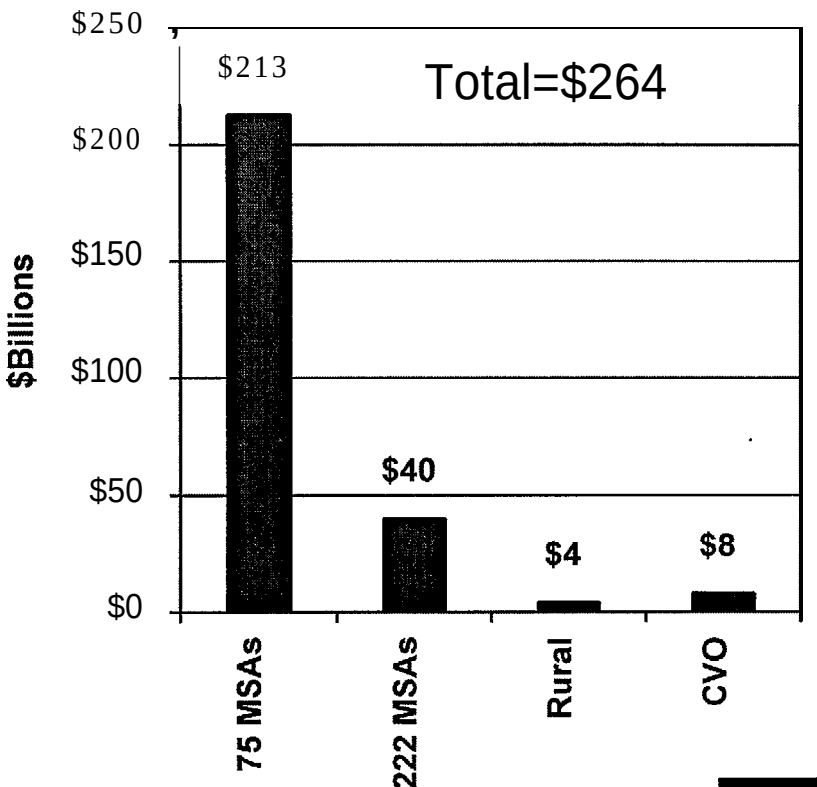
Average Annual Recurring = 13.8% of Total Capital
Average Annual O&M = 11.4% of Total Capital

Findings: Expected Benefits

Assumptions

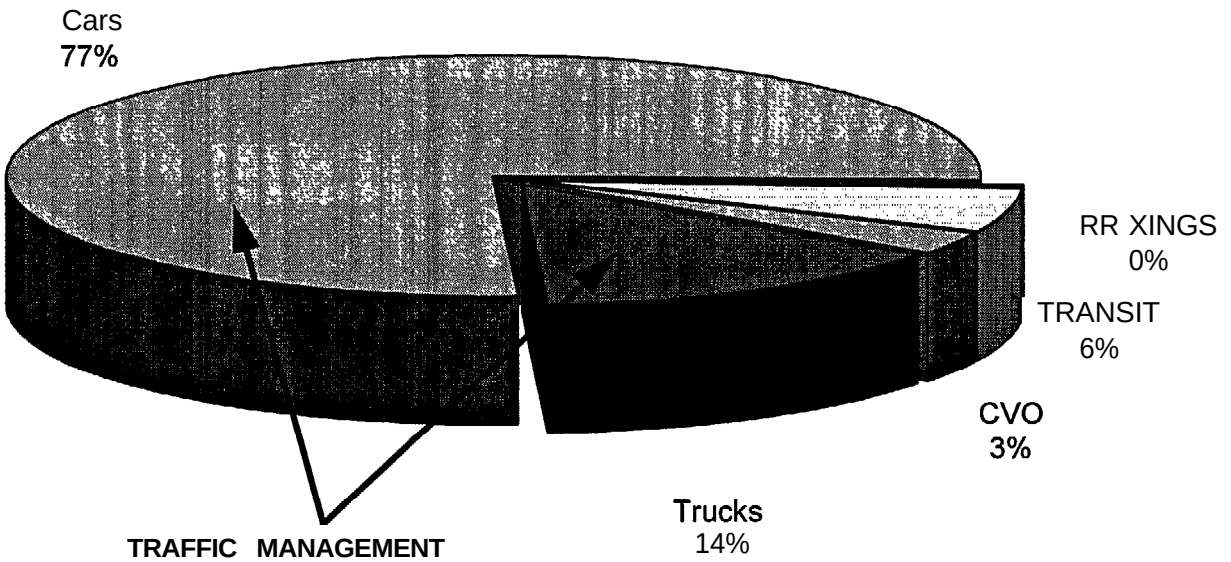
- Increase in throughput
  - Freeways (I 5%)
  - Arterials (10%)
- c v o
  - Partial public benefits from CV administrative processes
- Other
  - Current deployment status 5%
  - Constant 1996 dollars
  - Discount rate 7%

Expected Benefits from Public Investments, 1996-2015 Present Value ($billions)



Expected Benefits

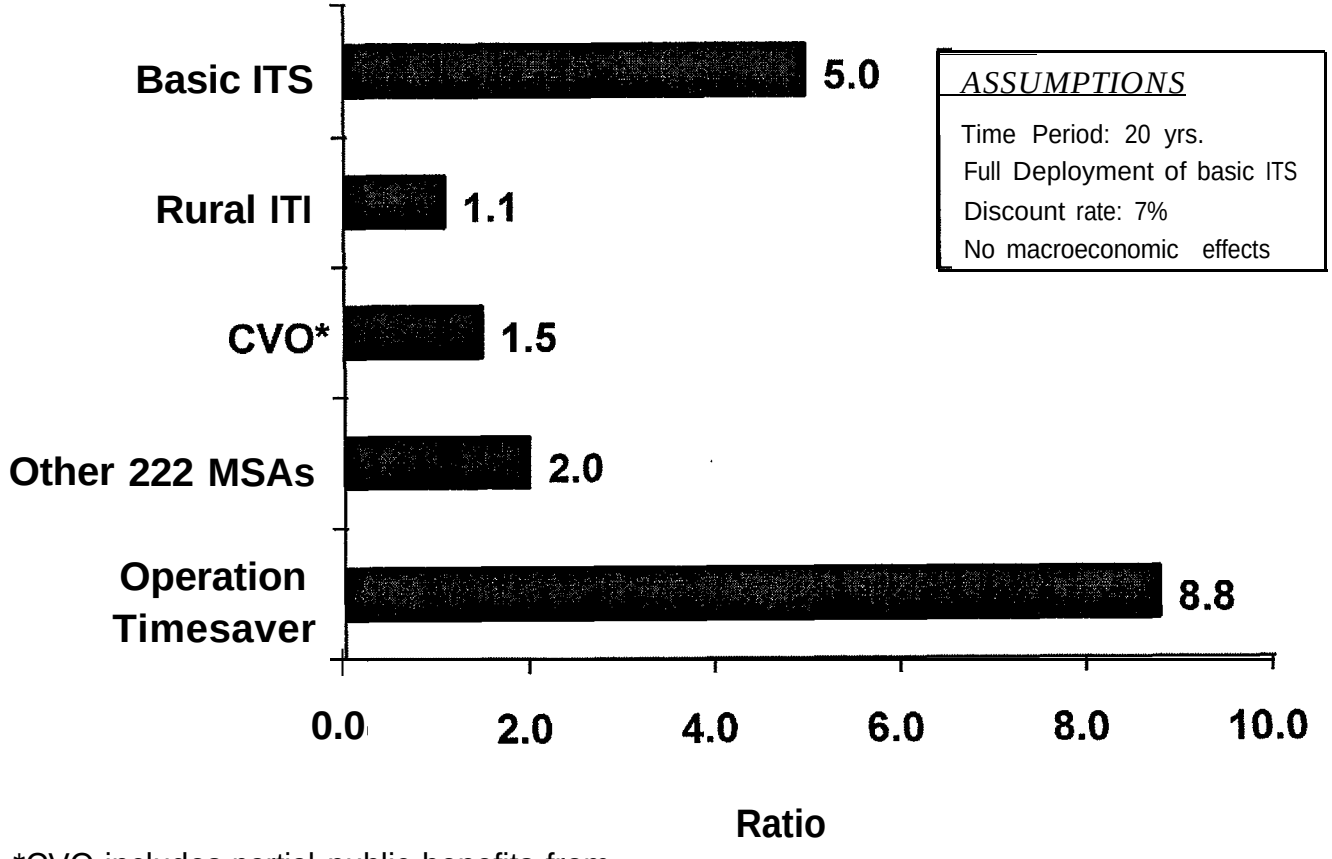
TOTAL=$264Billion



Majority of the benefits:
*accrue to Operation TimerSaver MSAs
*result from traffic management

Findings: B/C Ratios

Public Sector Investments Only



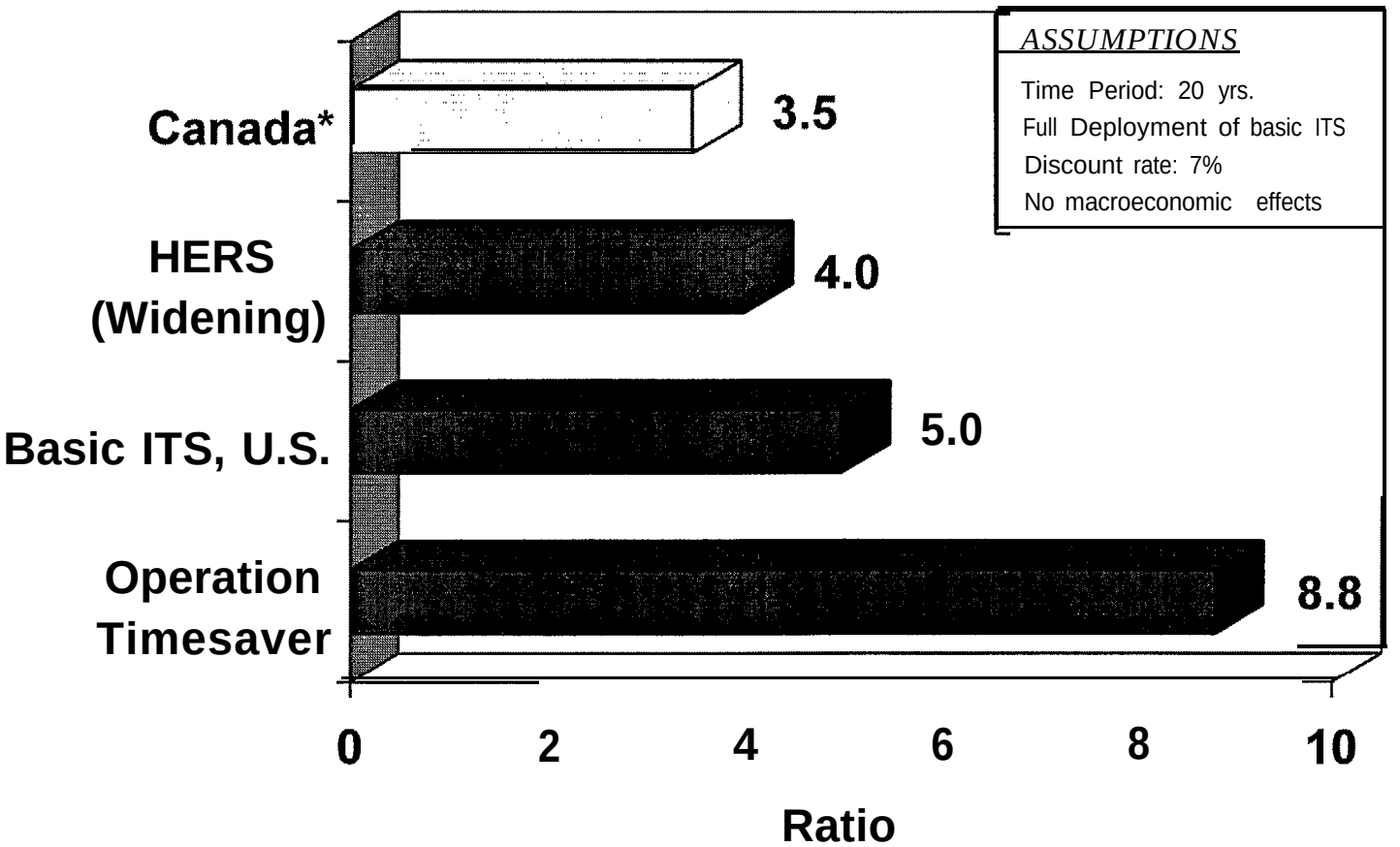
ASSUMPTIONS

Time Period: 20 yrs.
Full Deployment of basic ITS
Discount rate: 7%
No macroeconomic effects

*CVO includes partial public benefits from CV Administrative Processes only

Comparison of B/C Ratios

Public Sector Investments Only



Based on average estimates for urban, rural, and CVO

Alternative Funding Scenarios*

Aggressive

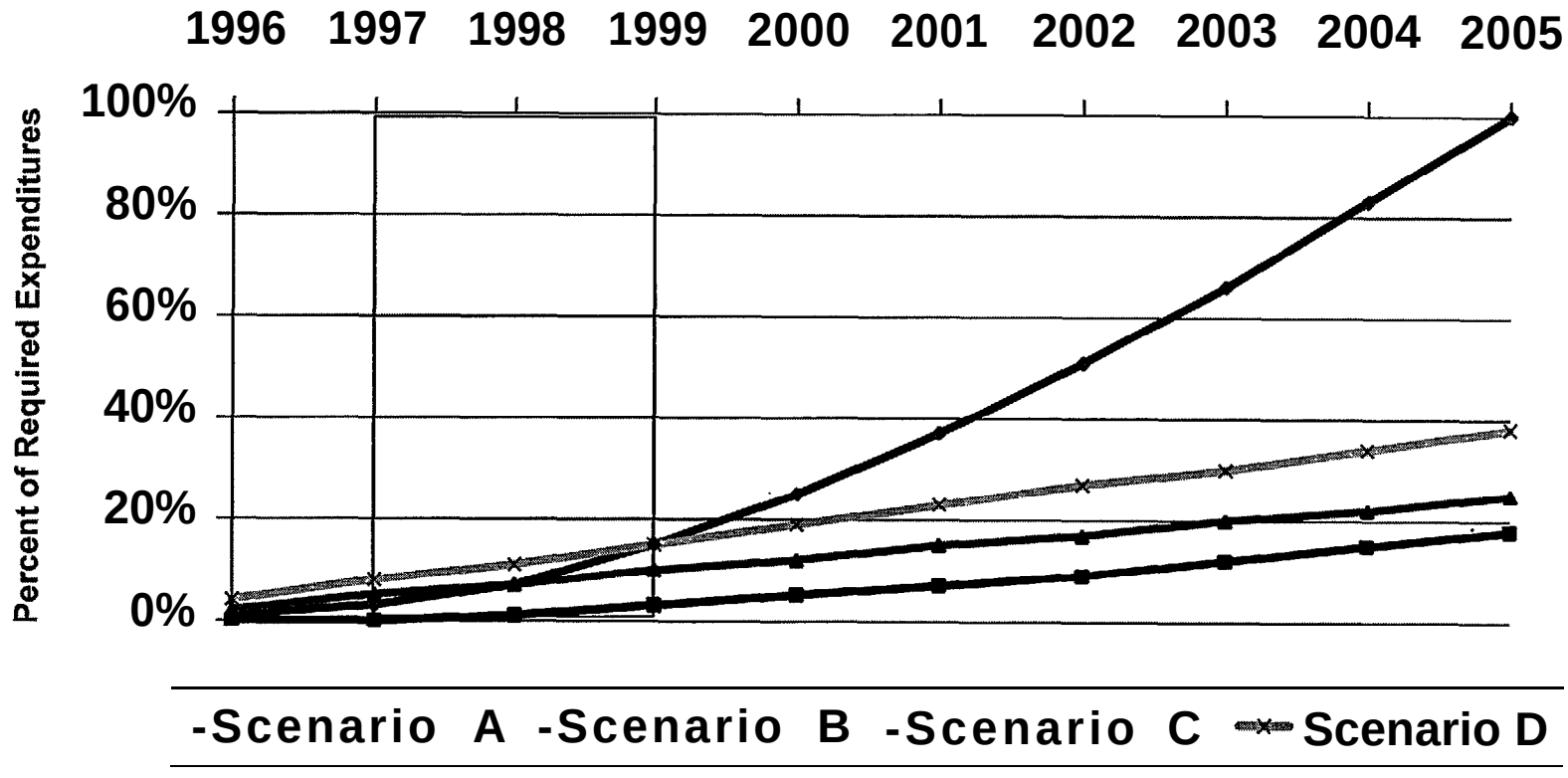
- Scenario A = Full deployment (CVO, Rural & Urban Basic ITS Infrastructure)

"Business as Usual"

- Scenario B = $40 million (Federal/JPO) + $1 billion (Other)
- Scenario C = $200 million (Federal/JPO) + $200 million (Matching) + $1 billion (Other)
- Scenario D = Scenario B + One cent/gallon gas tax dedicated to ITS

*For Illustration Purposes Only

Total Spending by Year*



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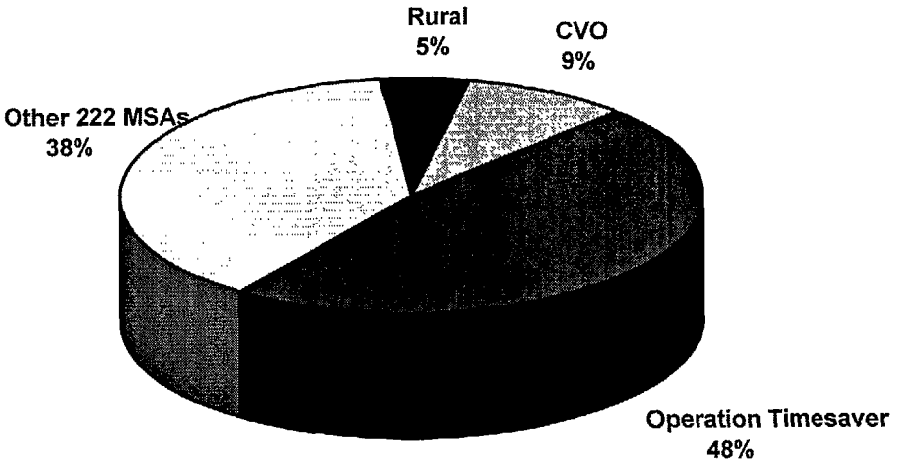
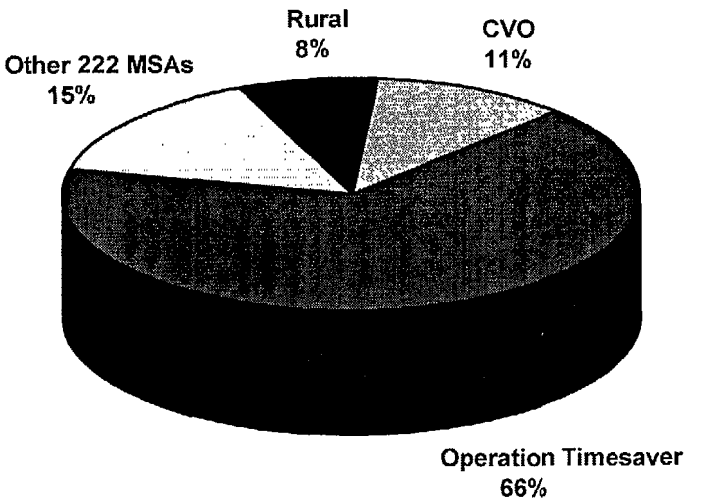
Allocation of Total Expenditures*

Scenario 9



Alternative (BCR)



*For Illustration Purposes Only

Next Steps

- **Analysis of Economic impacts**
- **Strategy for disseminating study findings**
  - Executive Summary (1 O-1 5 Pages) -- High level audience
  - Final Report (100-120 Pages) -- General audience
  - Technical Working Papers -- Technical audience
  - Presentation Slides -- Facilitate outreach efforts