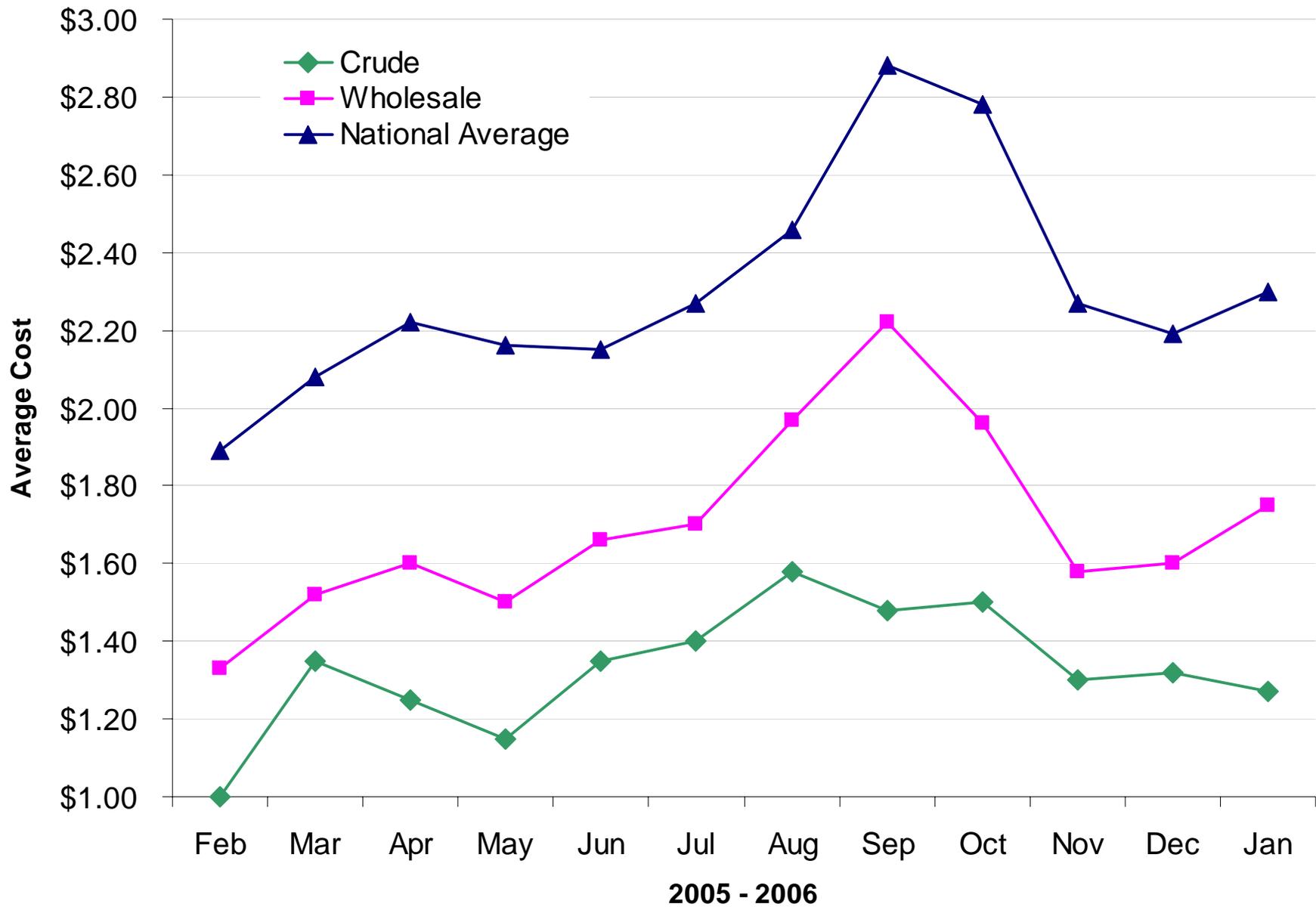


Effect of Gas Prices on Mode Choice

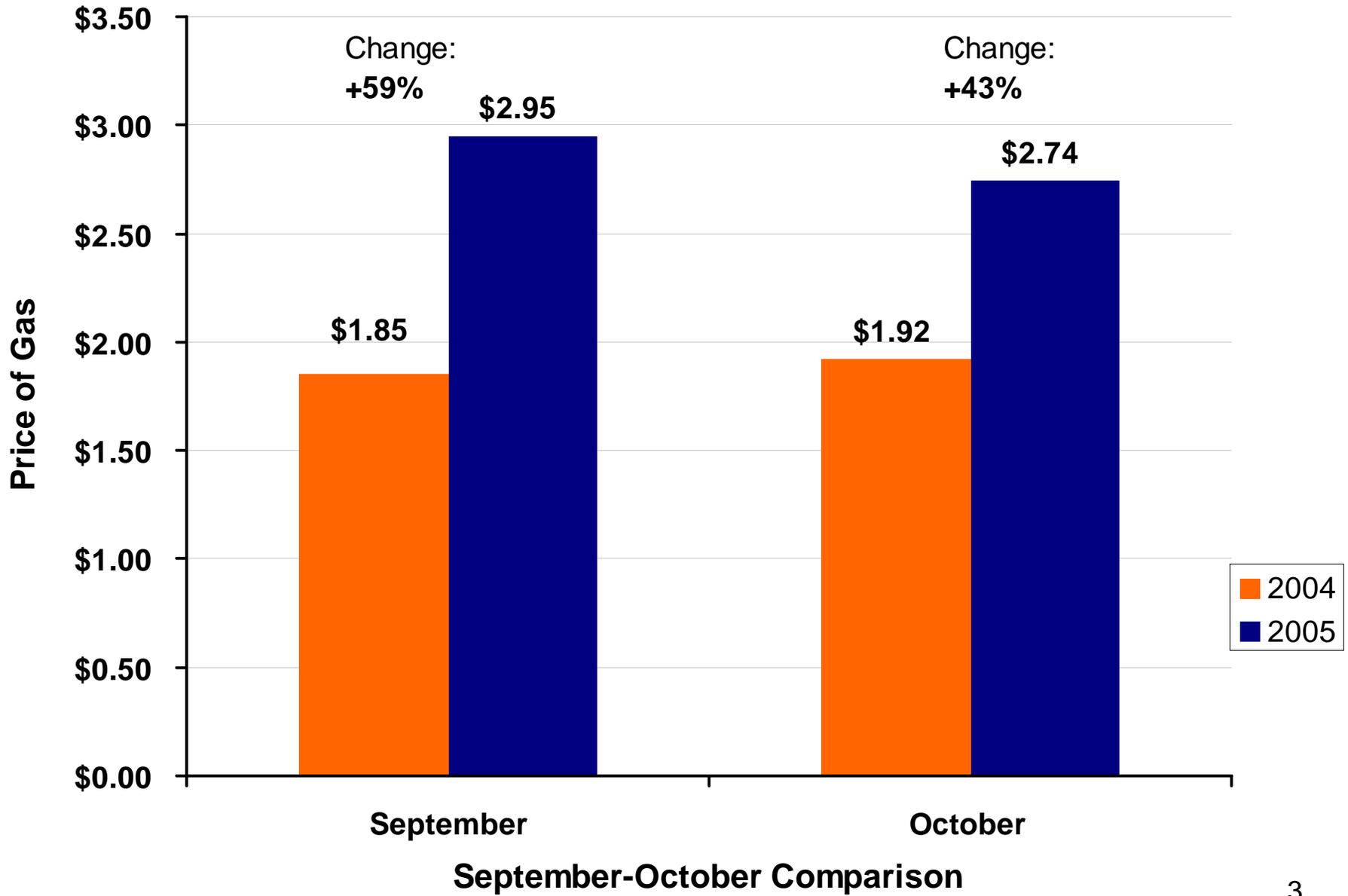
Clayton Lane, AICP
Parsons Brinckerhoff Quade & Douglas, Inc.

January, 2006

Regular Unleaded Price



National Average Price of Gas



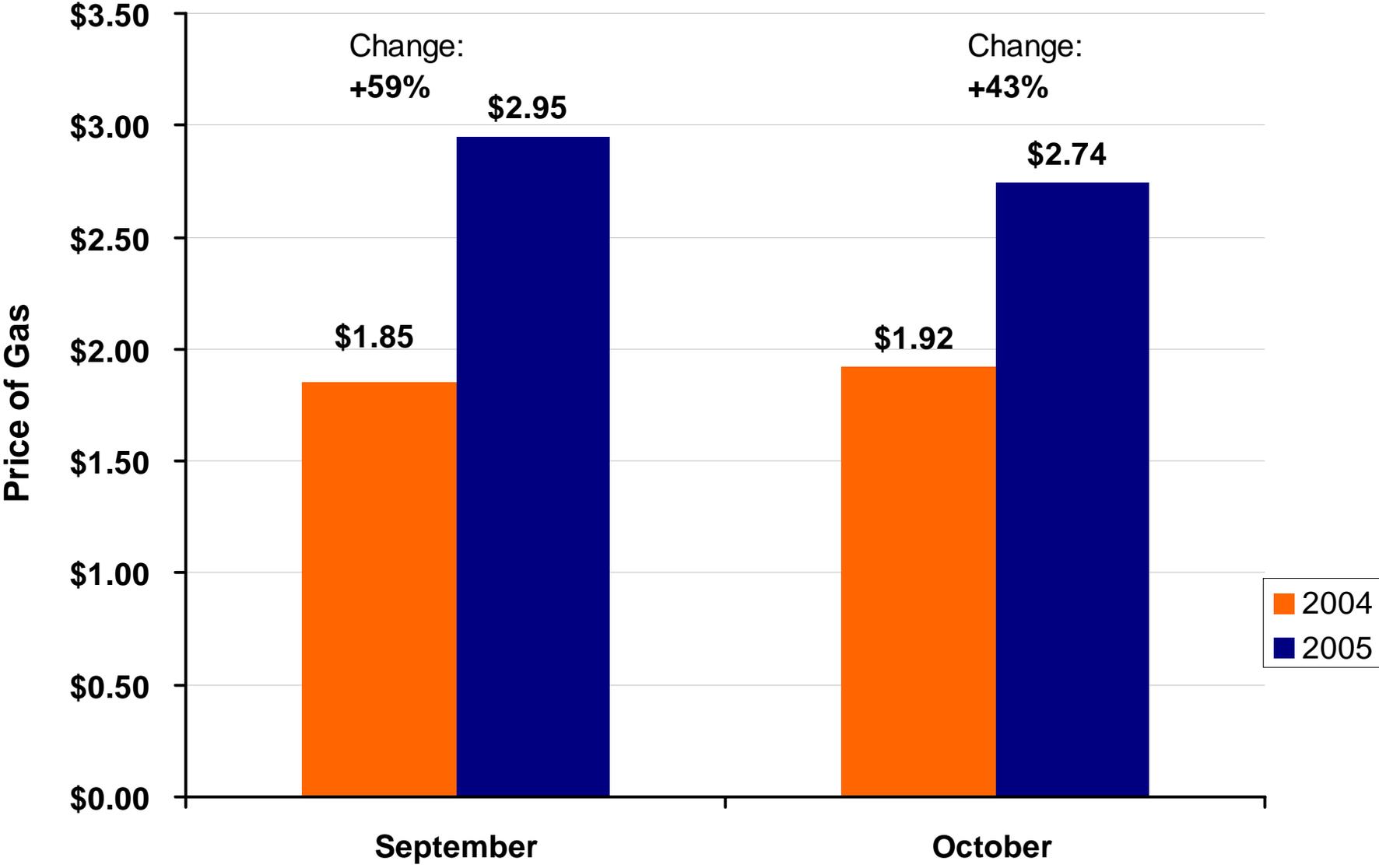
How Will Drivers Respond?

- **Sensitively:** Large driving reduction
- OR
- **Insensitively:** Nominal driving reduction

Implications of High Gas Prices

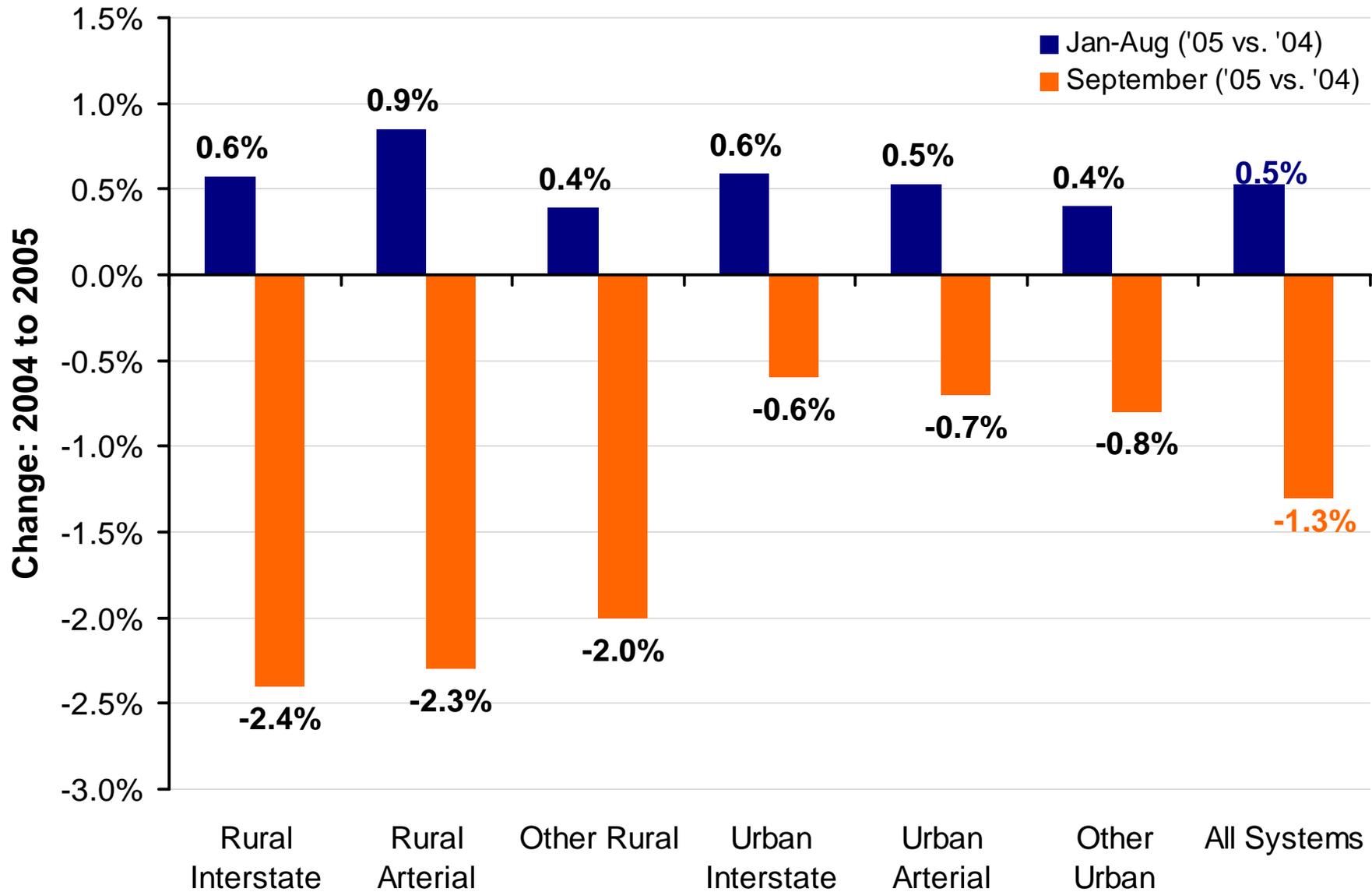
- Demand for
 - Driving
 - Alternative Modes
 - Other Goods (The Income Effect)
- Policy Implications
 - Gas Tax Relief?
 - Per-Mile Car Pricing?

National Average Price of Gas

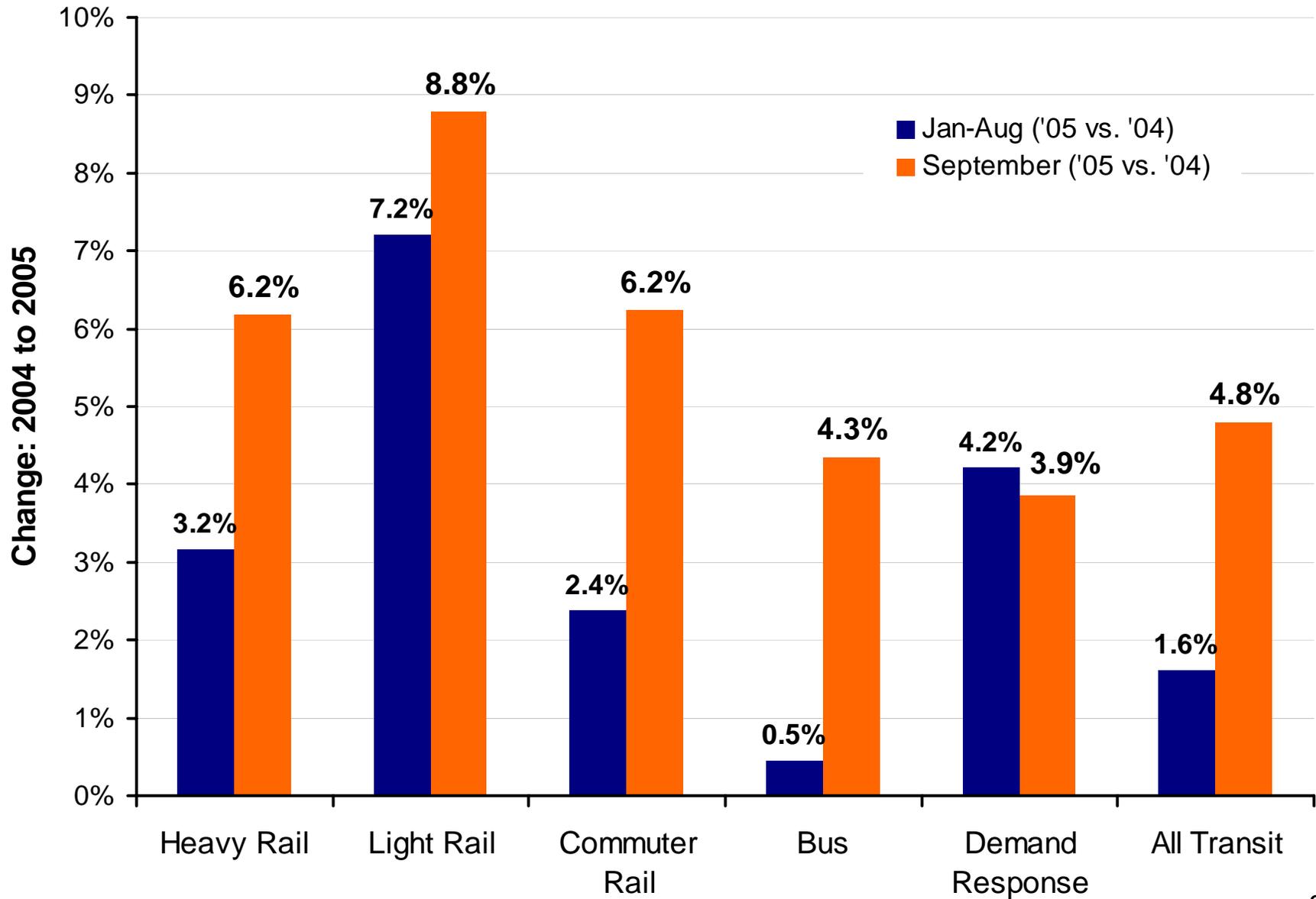


September-October Comparison

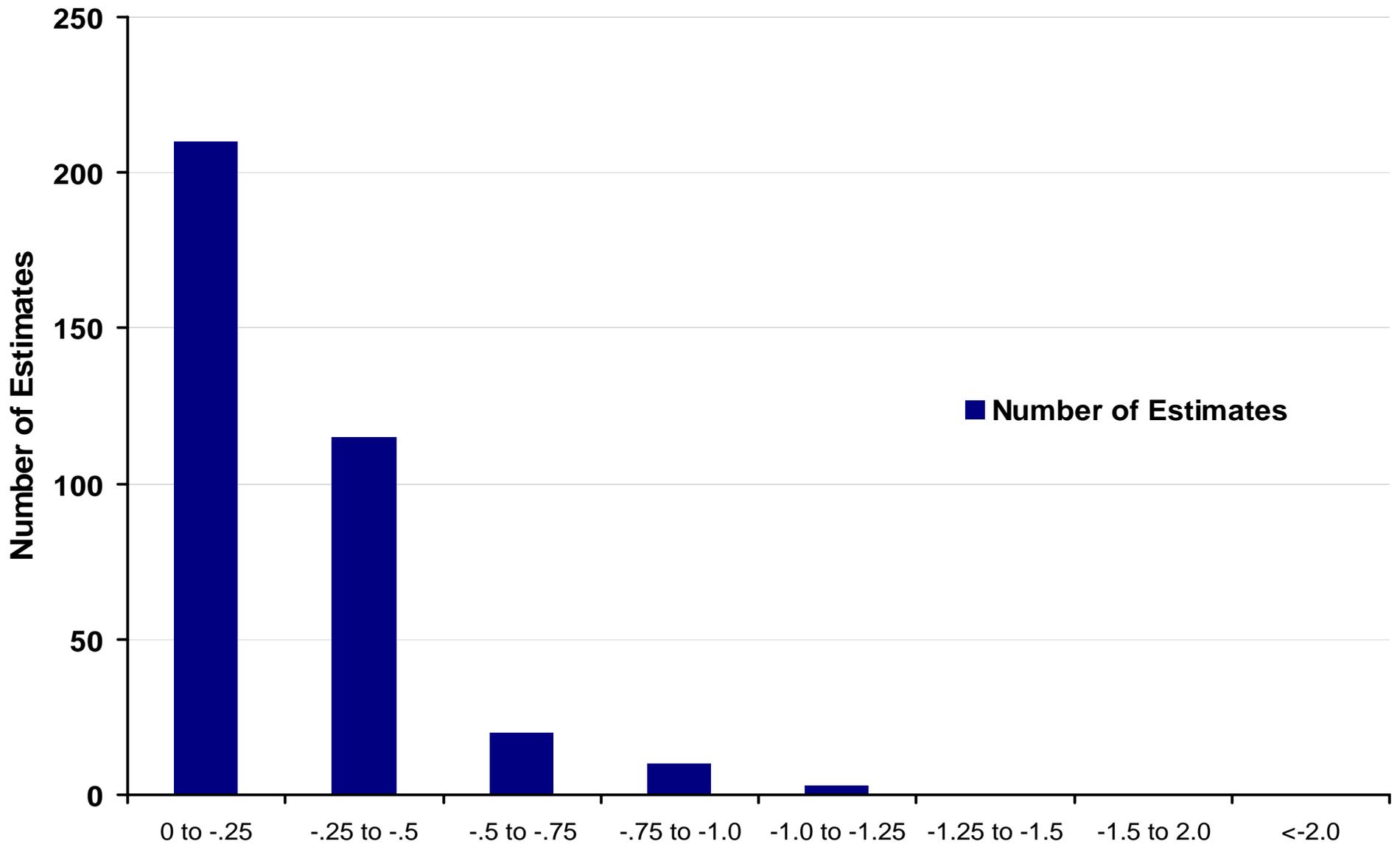
Vehicle Miles Traveled: 2005 vs. 2004



Public Transit Ridership: 2005 vs. 2004



Gas: Demand Price Elasticity in SHORT-Run



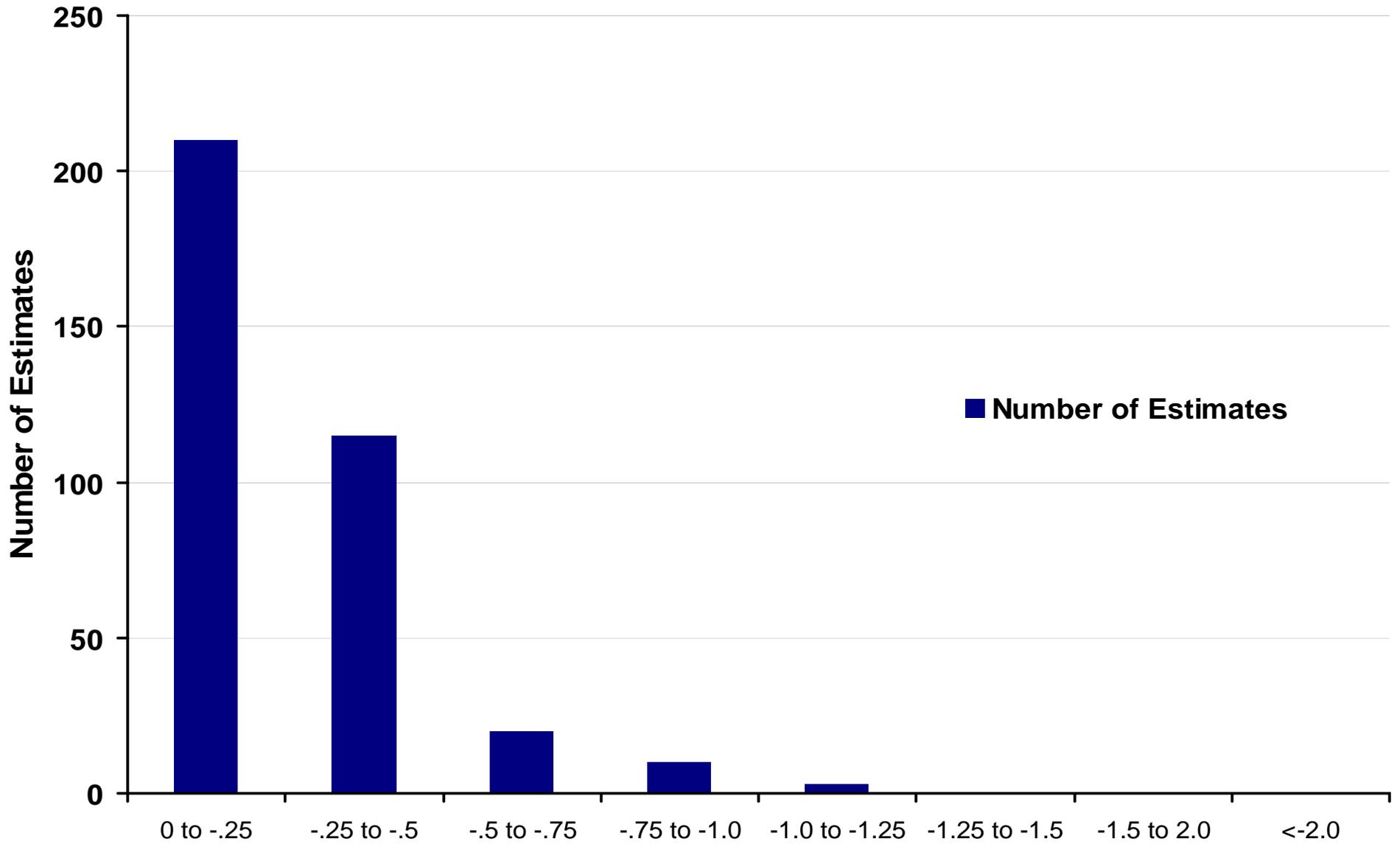
Source: Peter Berck, 2003

Short-Run Price Elasticity

Short-Run Options Are Limited

- Short Run
 - Take transit
 - Forego trips
- Long Run
 - Change job location
 - Change residential location
 - Reduce car ownership
 - Buy more fuel-efficient vehicle
 - Take transit, walk, bike, car-share, car pool

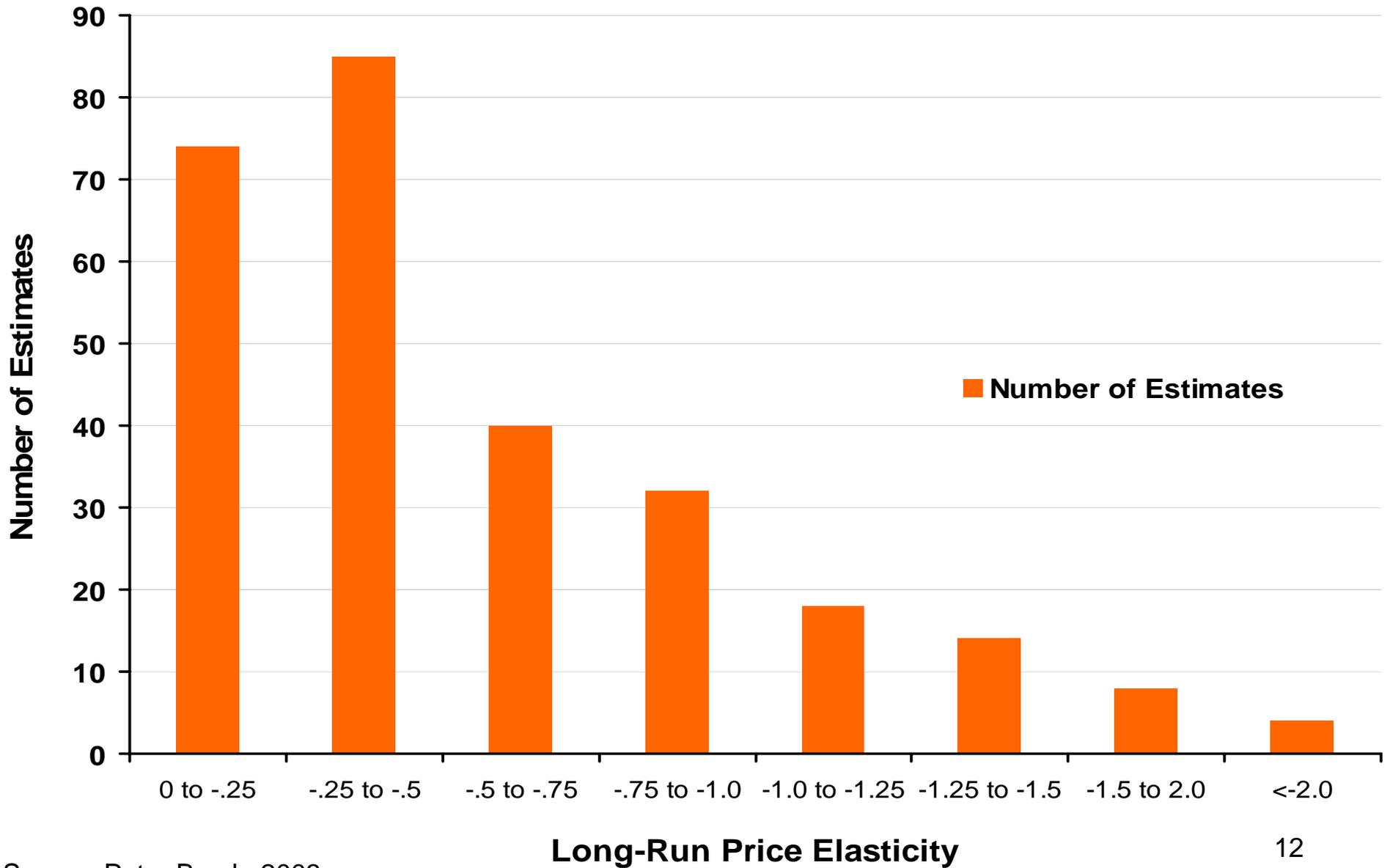
Gas: Demand Price Elasticity in SHORT-Run



Source: Peter Berck, 2003

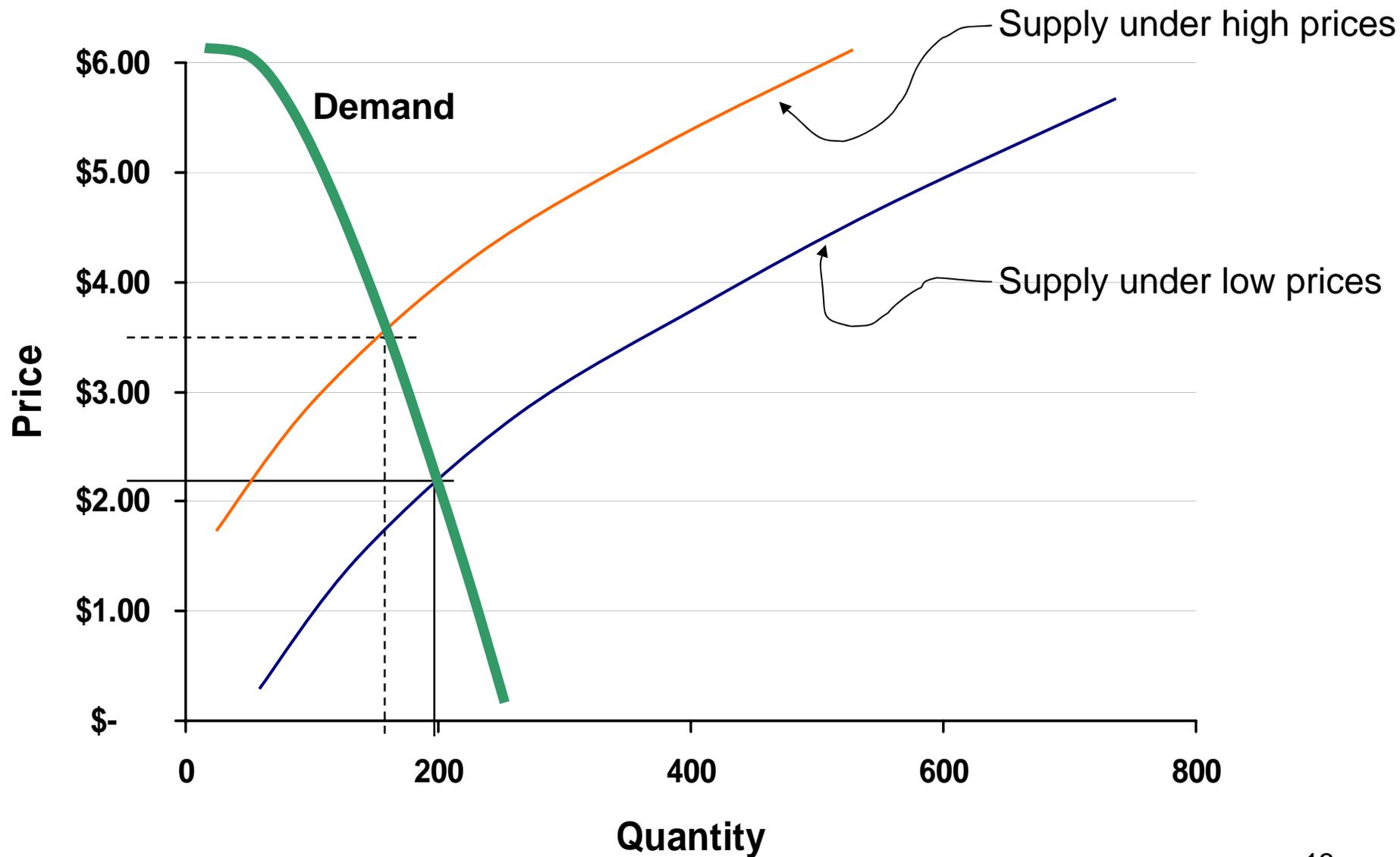
Short-Run Price Elasticity

Gas: Demand Price Elasticity in LONG-Run



Source: Peter Berck, 2003

Prices Under Inelastic Demand



Short-Run Demand is Inelastic

- When demand for gas outstrips supply (even by just a little), prices have to go up a lot to keep the gas pumps from literally running dry.
- Prices, remember, are used to allocate scarce goods. In the short run, small disparities in supply and demand will always by necessity have a large impact on prices.

- Jerry Taylor, 2000
Director, Natural Resource Studies, Cato Institute

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The Income Effect

Because it is difficult to reduce spending on gasoline, the effects of price increases are often shifted to other economic sectors.

The Income Effect

A wary Wal-Mart

No. 1 retailer blames higher gas prices for soft second-quarter sales, worries about outlook.

August 16, 2005: 1:07 PM EDT

By [Parija Bhatnagar](#), *CNN/Money staff writer*

NEW YORK (CNN/Money) - While Wal-Mart Stores blamed higher gas prices for cutting into its sales in the second quarter, CEO Lee Scott said Tuesday he's concerned that the worst may be yet to come. . . .

Long-Run Impact Seems to be Income Effect too!

Long-run VMT reductions seem to occur primarily via reduced auto ownership, which is highly income-sensitive.

Policy Implication: Gas Tax Relief?

- Tax reductions eroded by higher prices
- Illinois & Indiana, 1999
 - Oil industry got 5 cents
 - Consumers got 4 cents
 - State government lost 9 cents (hundreds of millions of dollars)

Policy Implication: Per-Mile Car Pricing?

Policy Implication: Per-Mile Car Pricing?



Your Cost of Driving (10,000 mi/yr in 2004)

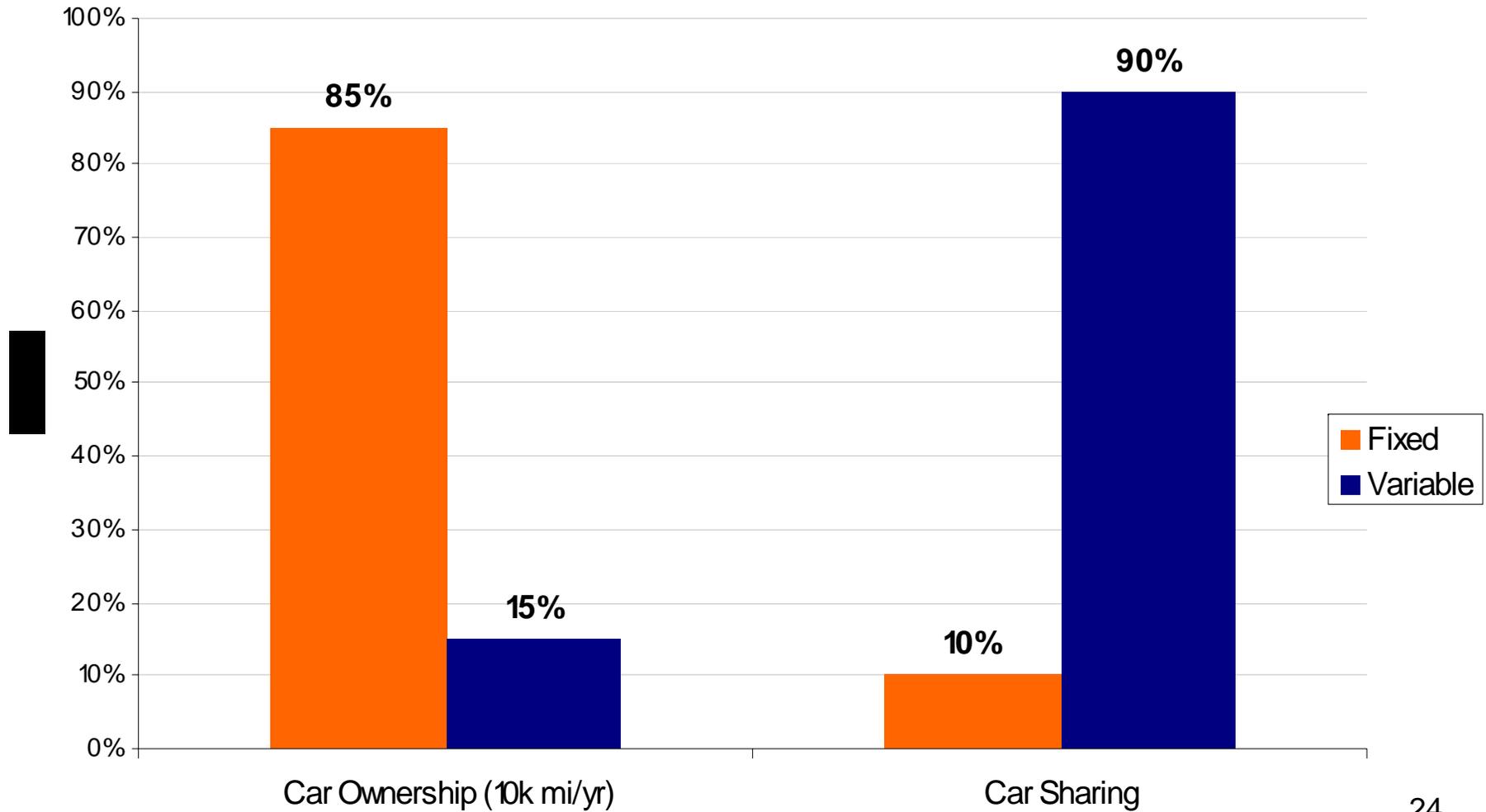
Fixed	Depreciation	\$3,011	
Fixed	Insurance	\$1,014	
Fixed	Finance Charges	\$ 828	
Variable (Invis?)	Maintenance and Tires	\$ 590	
Variable	Gas and Oil	\$ 590	→ 9 %
Fixed	License, Registration, Taxes	\$ 201	
Variable (Free?)	Parking & Tolls	?	
	Annual Total	\$6,234	

Source: AAA, 2004

Policy Implication: Per-Mile Car Pricing?

- Car Sharing
 - “Cars by the hour”, in the neighborhood
 - Mileage & hourly rates cover vehicle, gas, insurance, maintenance, parking, etc.
 - 100,000 U.S. participants (SF, Chicago, Seattle, NY, D.C., Philadelphia, etc.)

Car Sharing shifts costs from Fixed to Variable



Dramatic Impacts

- Car Sharing
 - Each shared vehicle replaces 6 to 23 privately owned cars
 - 50% driving reduction (Philadelphia, San Francisco)

Summary

- Short-run Impact of High Gas Prices
 - Driving: **Trivial**
 - Alternative modes: **Modest**
 - Income Effect: **Significant**
- Long-run?
 - More compact cities??
- Policy Implications
 - Gas Tax relief: does more for oil industry than for consumers, at great public expense
 - Car Sharing: extraordinary promise

Effect of Gas Prices on Mode Choice

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January, 2006