



# **Alternative Fuel Use Among California Fleets: Current Use, Barriers, & Opportunities**

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# Overview

- Goal
- Methods
- Results
  - Users
    - Who is using alternative fuels?
    - What are the barriers to expansion?
    - What are the opportunities to promote expansion?
  - Non-users
    - Who is willing to use alternative fuels?
    - What are the barriers to alternative fuel use?
    - What are the opportunities to promote use?
- Recommendations

# Goal

- To identify and describe niche opportunities for alternative fuel market penetration among California fleets by characterizing the attitudes of fleet operators likely to affect their alternative fuel decisions.

# Methods

- Survey
  - Online survey
  - 1,330 respondents from DMV database and California Fleet News listserve
- Focus Groups
  - Northern California
    - 3 fleet operators using alternative fuels
  - Southern California
    - 6 fleet operators in the industries of agriculture, construction/maintenance, and short haul goods transportation

# Survey

Fleet profile

Currently using AF's?

## Users

AF use

Original Motivation

Satisfaction

Problems

Future Use

Changes to Expand Use

Overall Satisfaction

## Non-Users

Willingness to Use

Potential Motivation

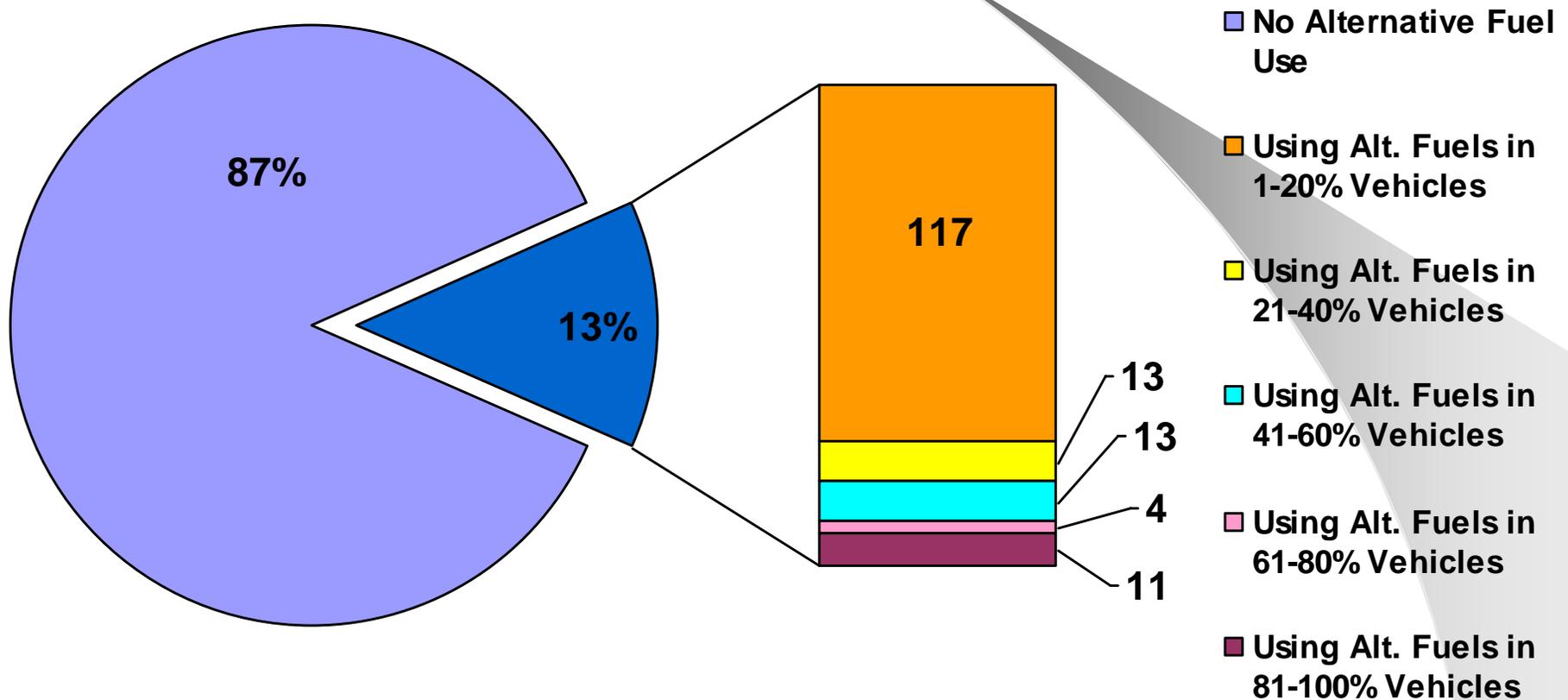
Concerns

Changes to Begin Use

# Users

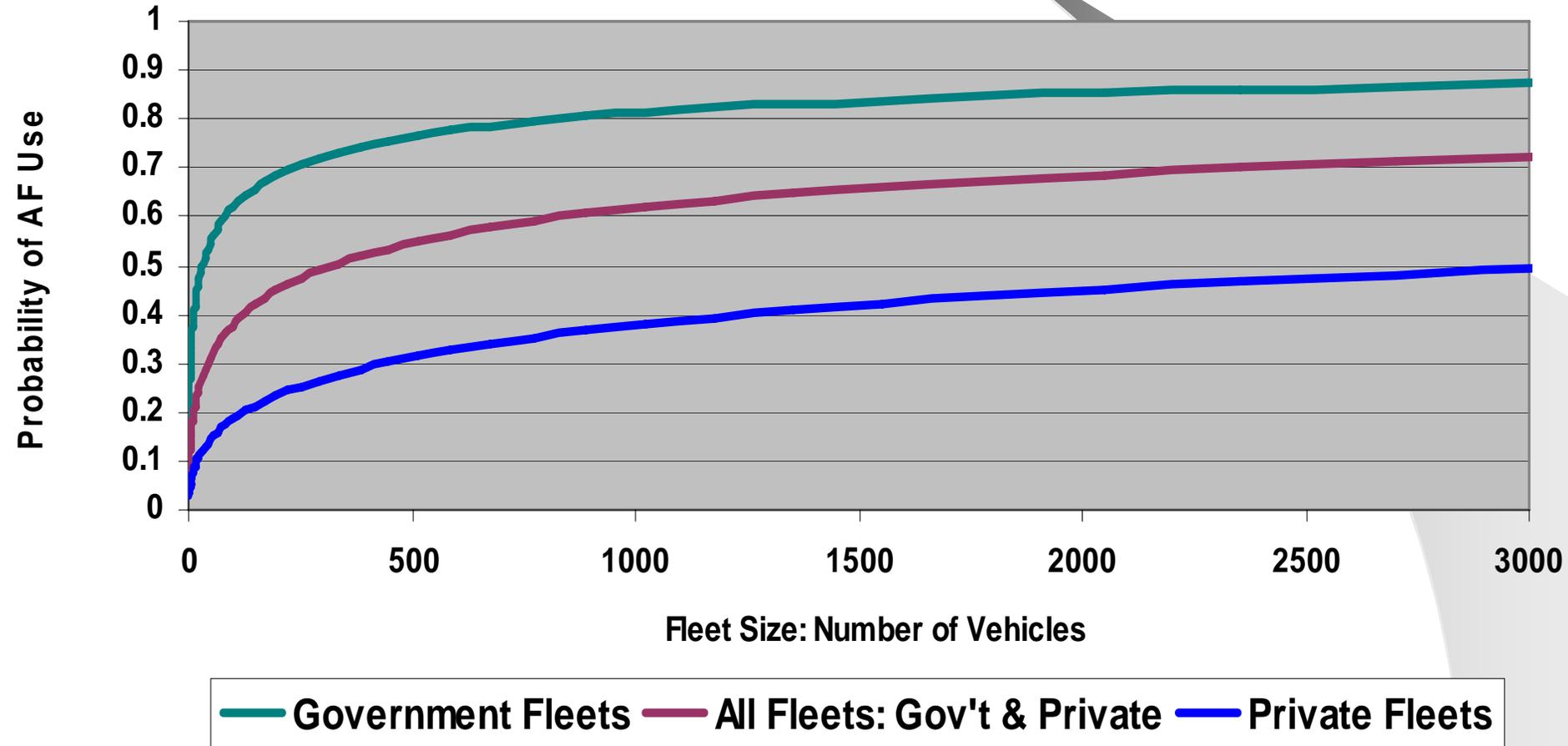
- Who is using alternative fuels?
- What are the barriers to expansion?
- What are the opportunities for expansion among users?

# How many fleets are using alternative fuels?



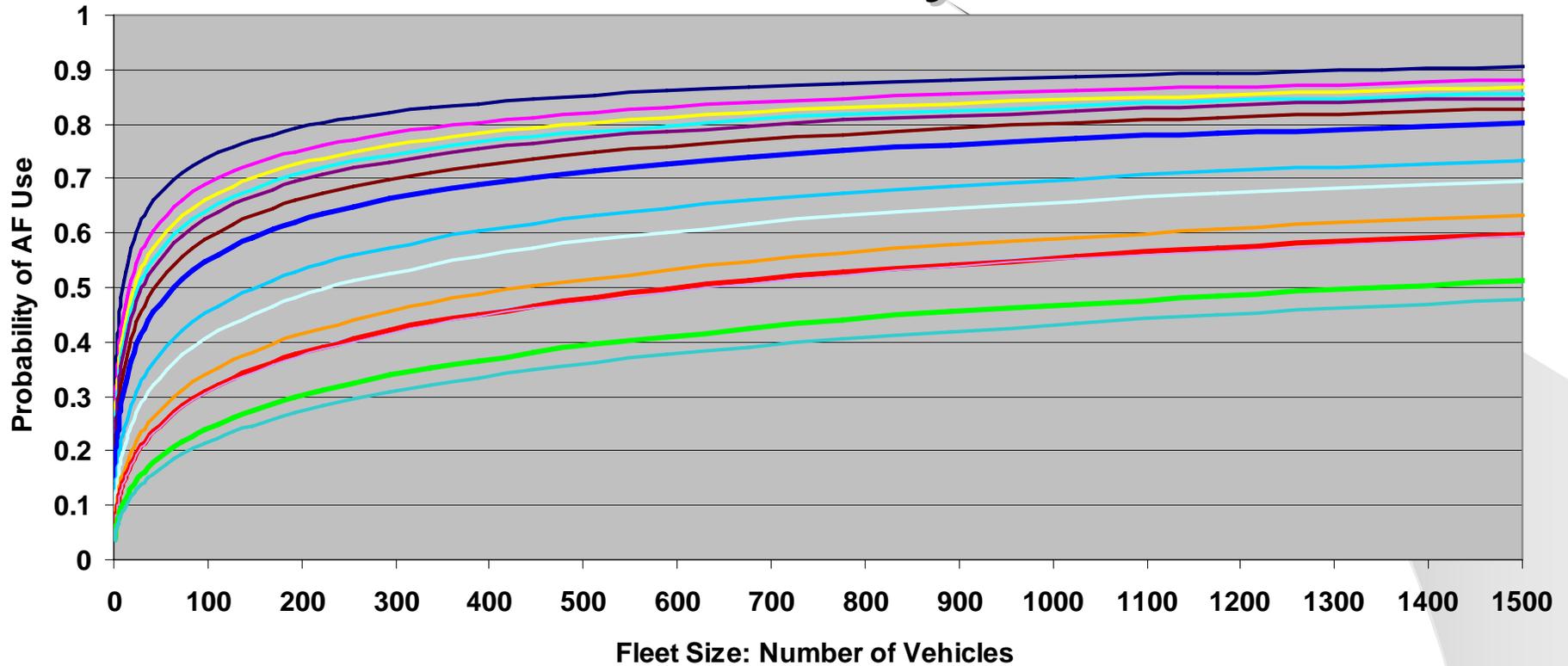
Source: 'What is the Future of Alternative Fuel in California?' survey data.

# Alternative fuel use among government and private fleets



Source: 'What is the Future of Alternative Fuel in California?' survey data.

# Alternative fuel use by industry



Source: 'What is the Future of Alternative Fuel in California?' survey data.



# Alternative Fuel Use by Industry

**Most likely to use**

**Moderately likely to use**

**Least likely to use**

**Fuel-related**

Retail

**People transportation**

**Busing**

Wholesale

**Other services**

**Public works-  
Refuse**

Goods transport-Long haul

**Construction/  
Maintenance**

**Public works-Utility**

Goods transport-Short haul

**“Other” fleets**

**Administration**

Lease/rental

**Goods transport**

Towing

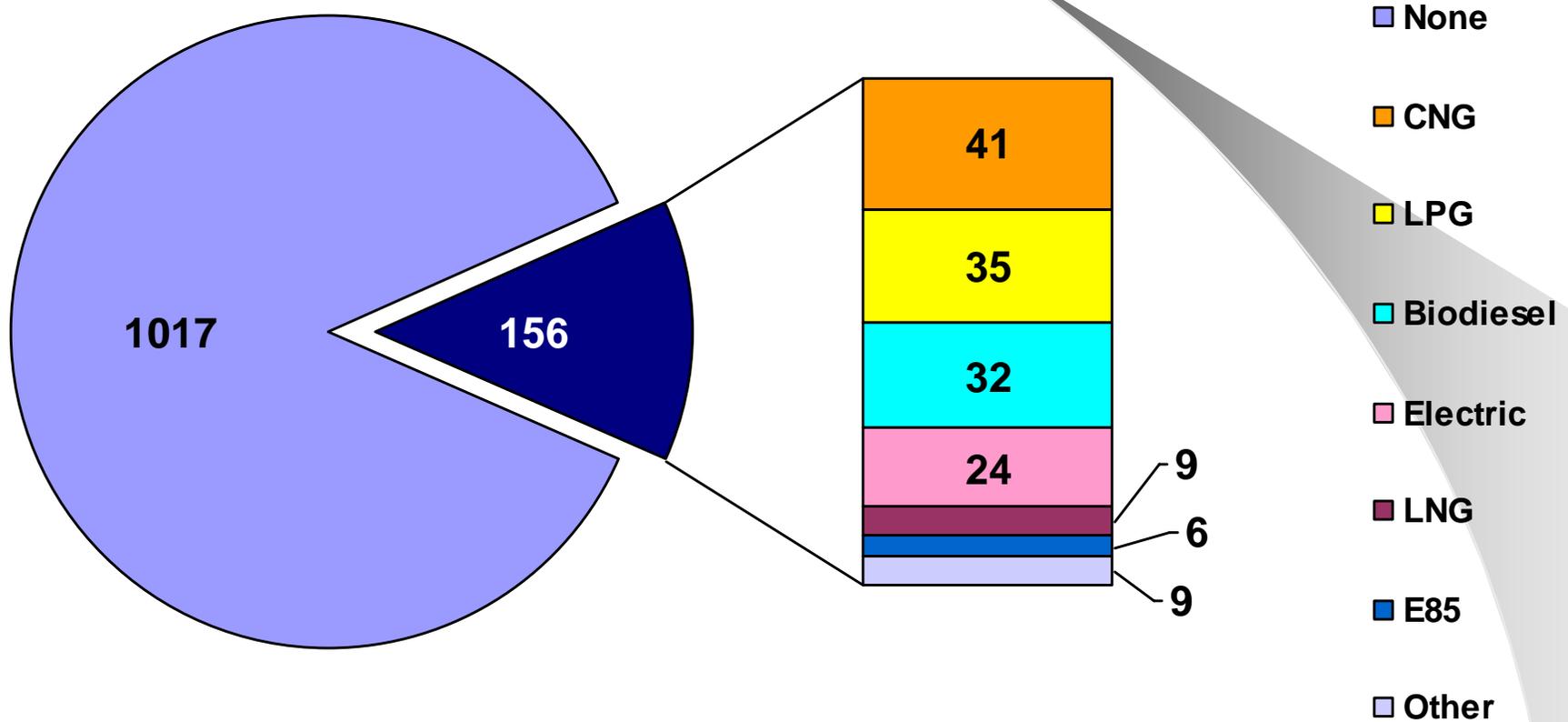
**Agriculture**

Package/Mail delivery

Public works - Other

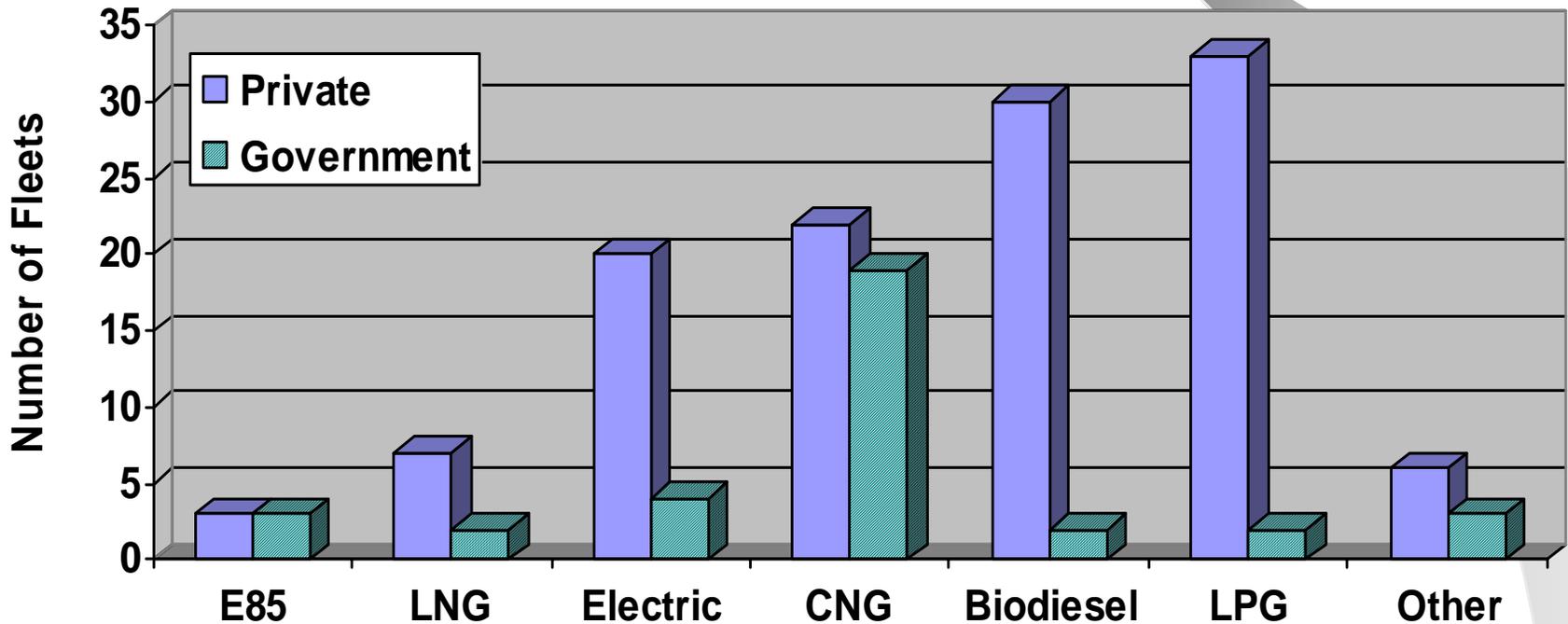
Source: 'What is the Future of Alternative Fuel in California?' survey data

# Which alternative fuels are being used?



Source: 'What is the Future of Alternative Fuel in California?' survey data.

# Alternative fuels used by government and private fleets



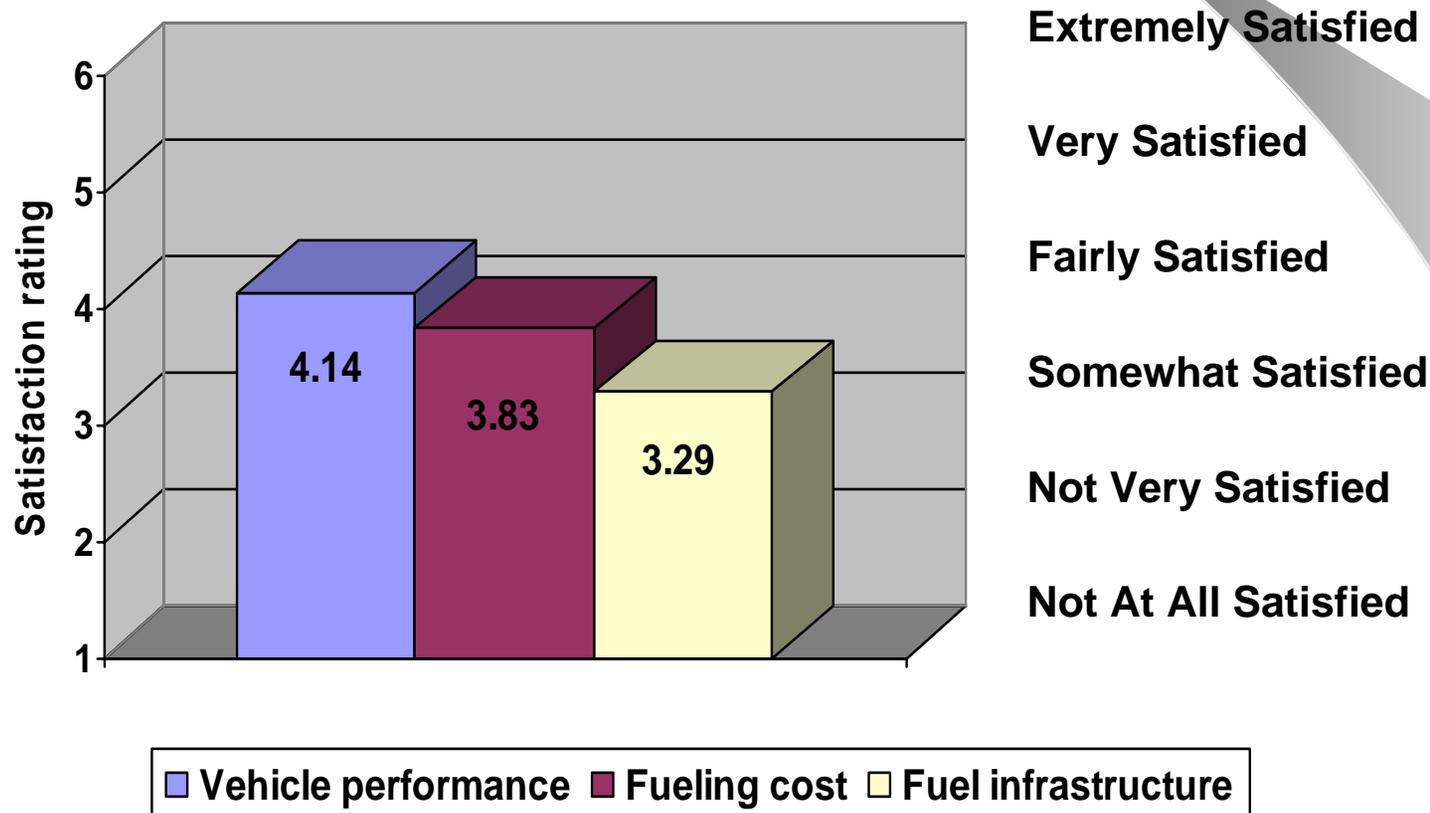
Source: 'What is the Future of Alternative Fuel in California?' survey data.

# Which industries are using each alternative fuel?

	CNG	LNG	LPG	E85	Biodiesel	Electric	Other
Administrative	2			1		1	1
Agriculture	1		8		9	1	1
Bus transportation	6	1	1		4		
Construct/Maintenance	4	2	9	1	5	10	1
Fuel		1	2		1		
Goods Transport		1			1		
Goods Transport: Long					2		
Goods Transport: Short	2		4		5	1	
Lease/Rental	1		1			1	1
People Transport		1					1
Public Works: Other	11	1	1		1	2	2
Public Works: Refuse	5	1					
Public Works: Utility	6		3		1	1	
Retail Sales			3	2	2	2	
Other Services			1			2	
Taxi/Limousine/Charter	3			2			
Wholesale	1	1	2		1	2	1

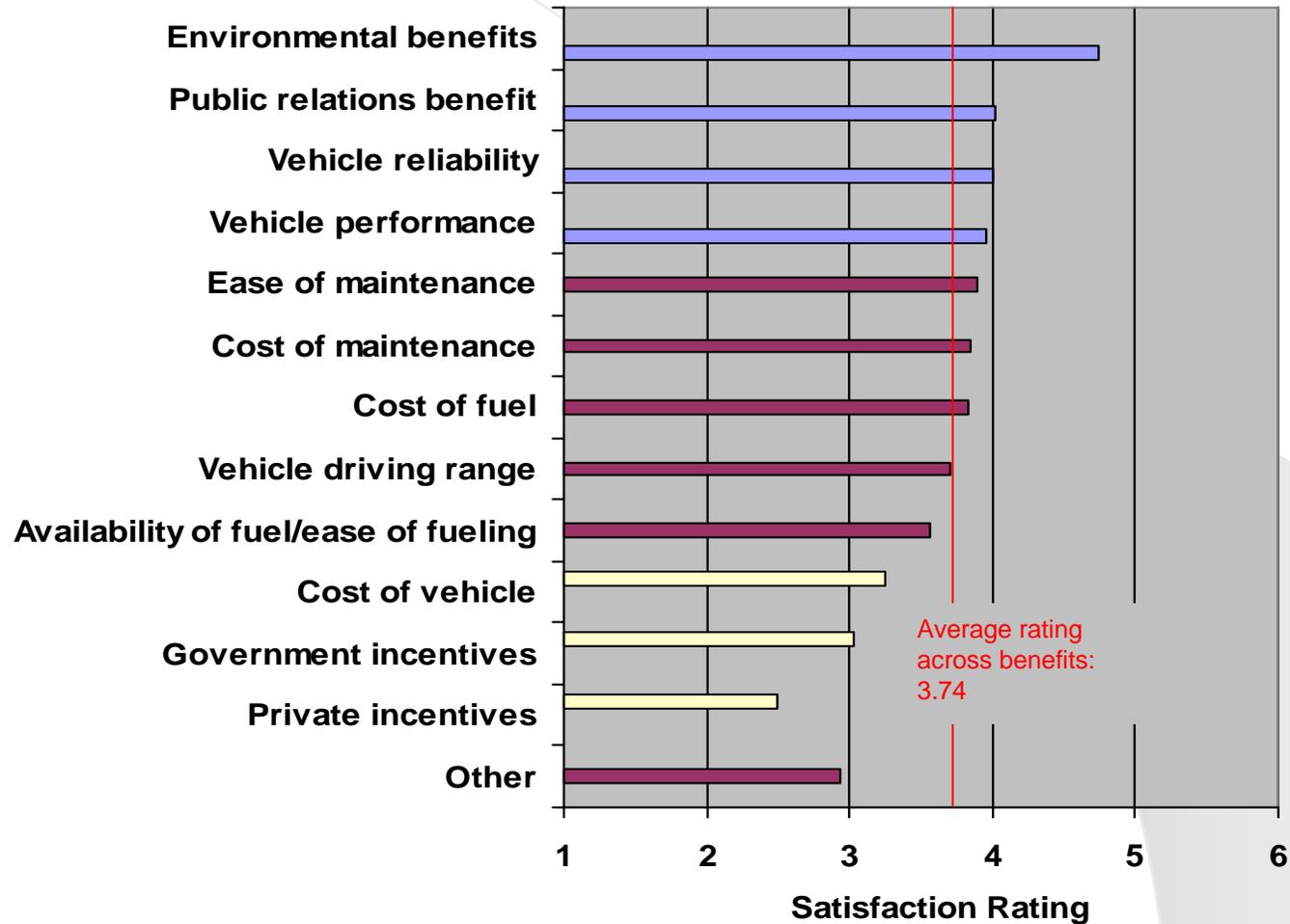
Source: 'What is the Future of Alternative Fuel in California?' survey data.

# Overall satisfaction of users



# Users are fairly satisfied with alternative fuel experience

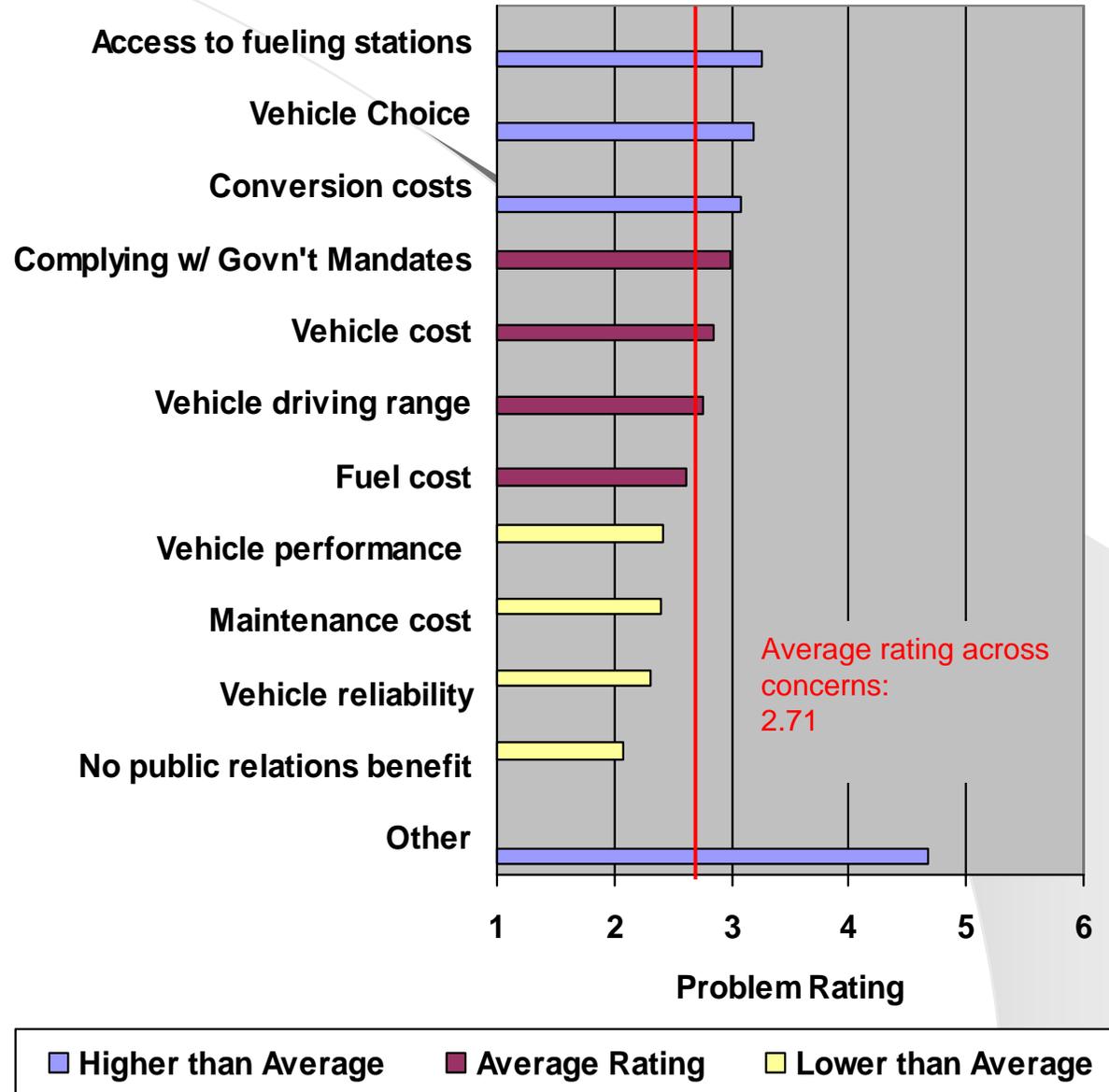
- 1 = "Not at All Satisfied"
- 2 = "Not Very Satisfied"
- 3 = "Somewhat Satisfied"
- 4 = "Fairly Satisfied"
- 5 = "Very Satisfied"
- 6 = "Extremely Satisfied"



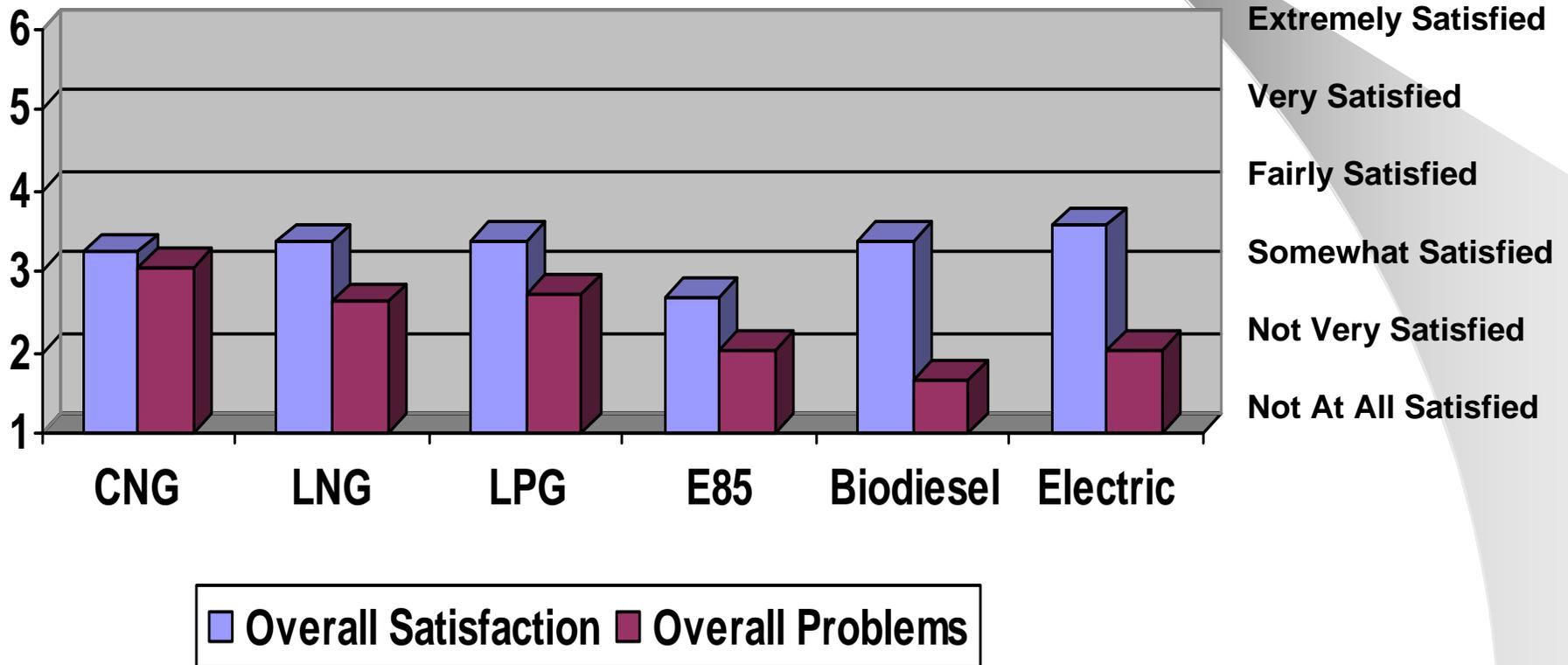
■ Higher than Average    
 ■ Average Rating    
 ■ Lower than Average

# Users' experiences are somewhat problematic

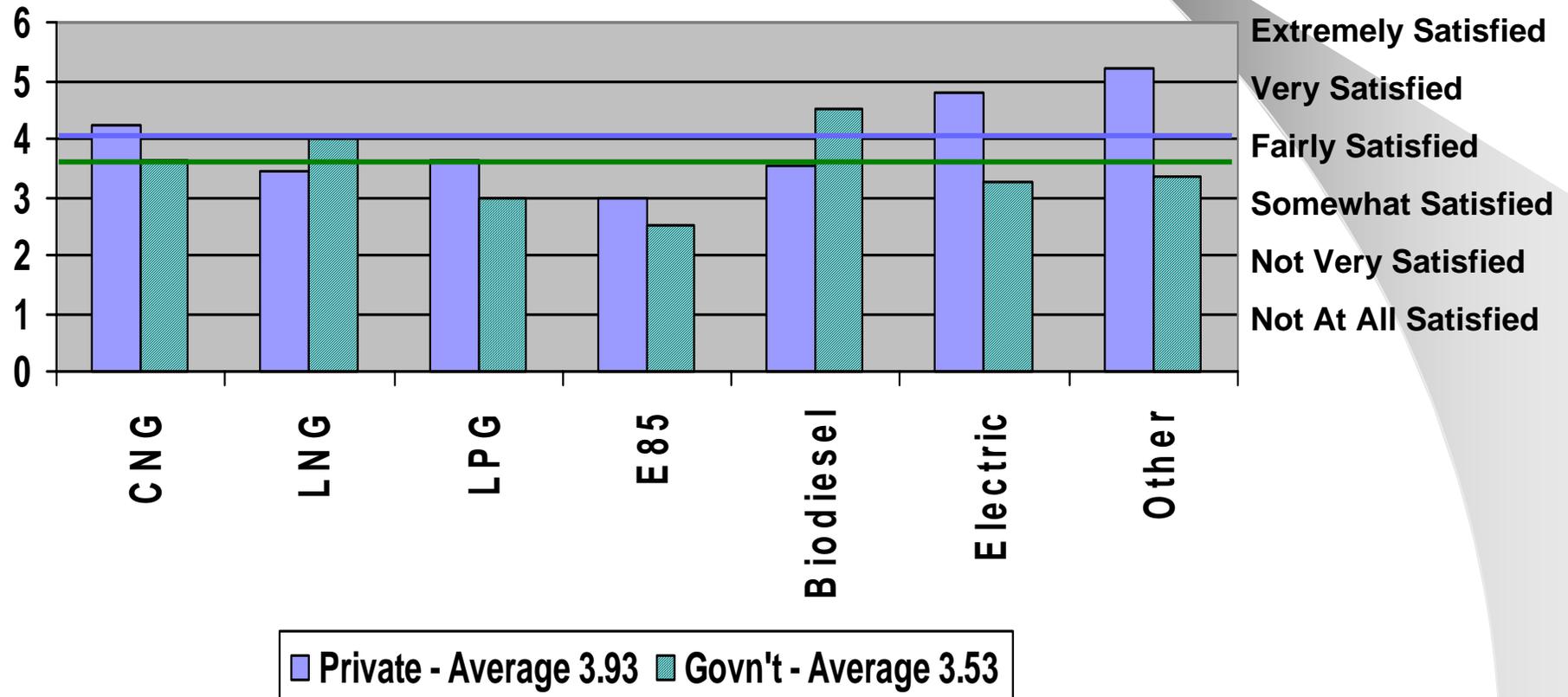
- 1 = "Not at All Problematic"
- 2 = "Not Very Problematic"
- 3 = "Somewhat Problematic"
- 4 = "Fairly Problematic"
- 5 = "Very Problematic"
- 6 = "Extremely Problematic"



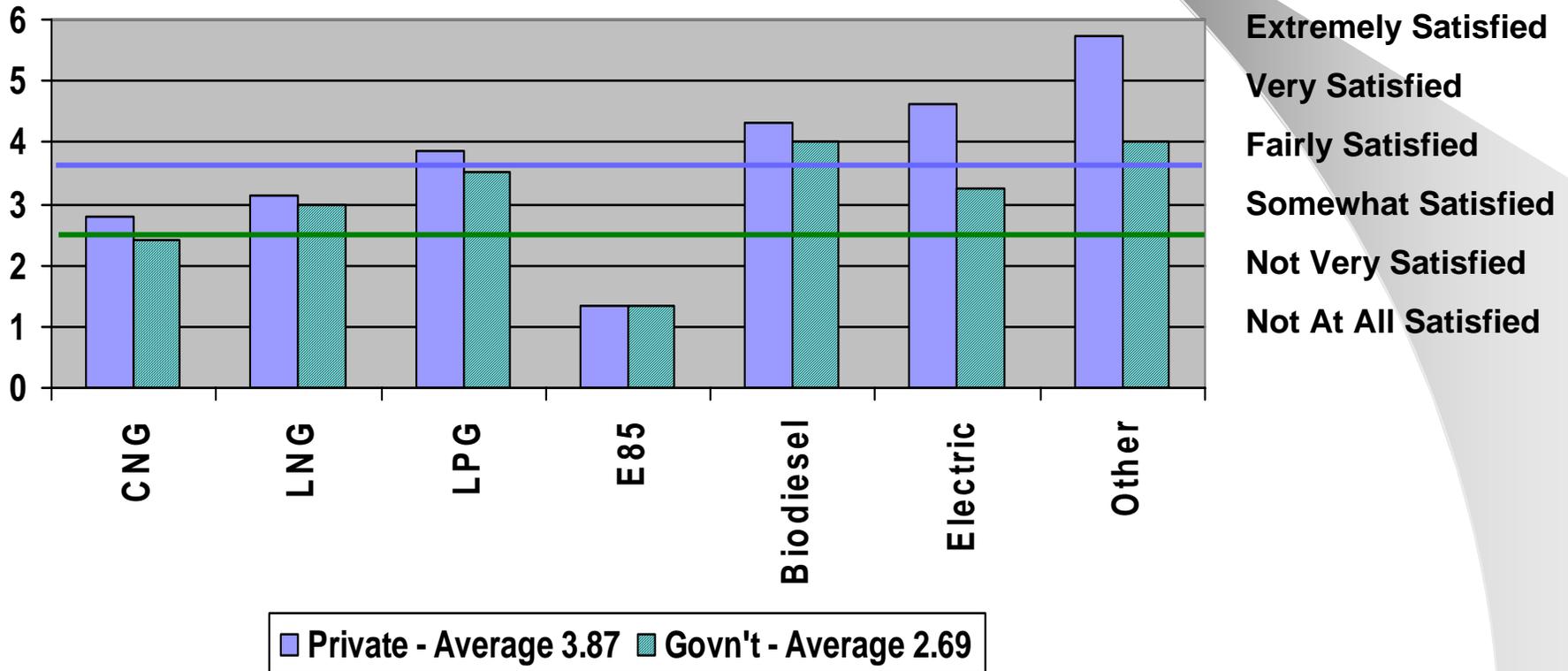
# Problems and satisfaction vary by alternative fuel type



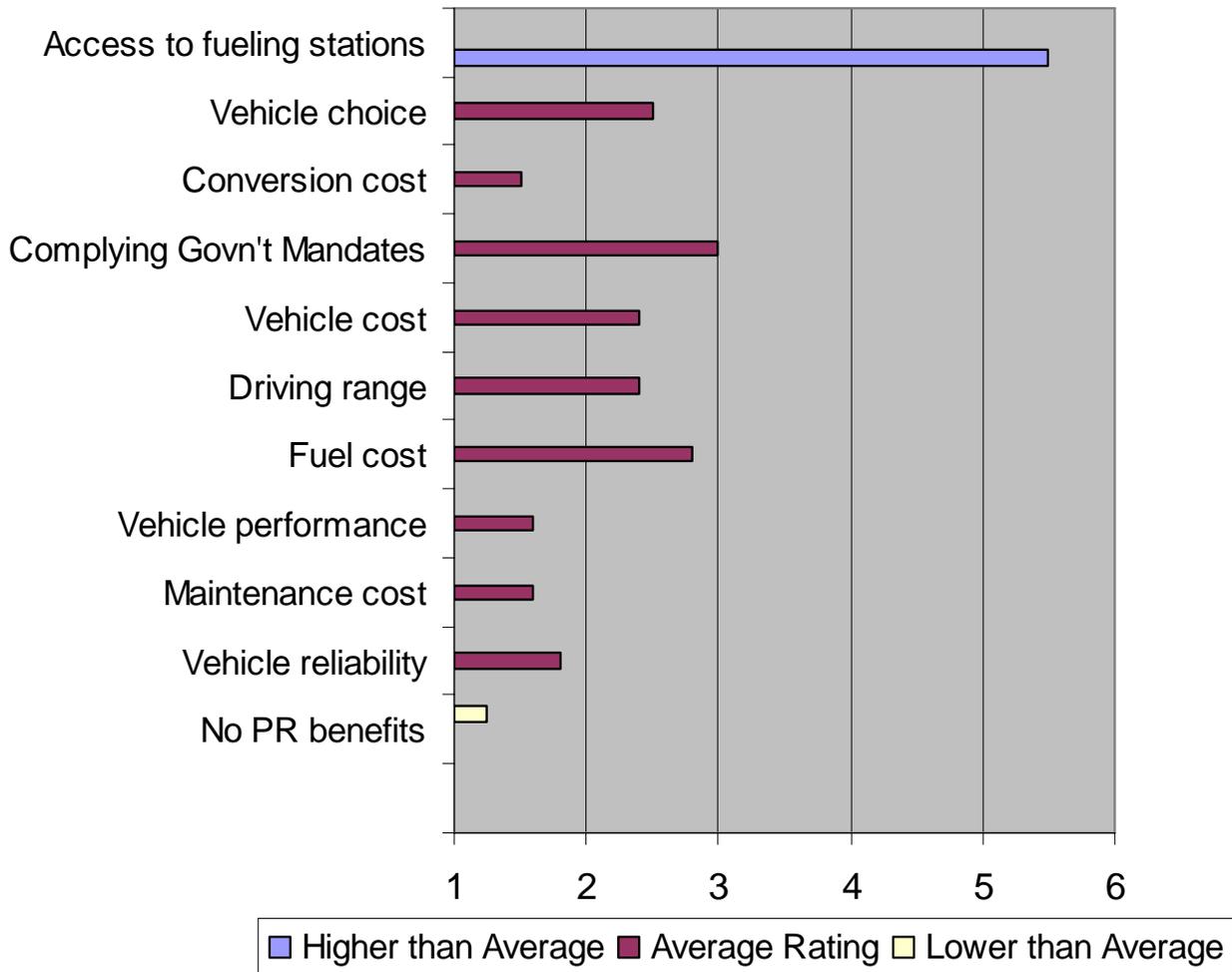
# Satisfaction with fuel cost varies by fuel type



# Satisfaction with fuel availability varies by fuel type

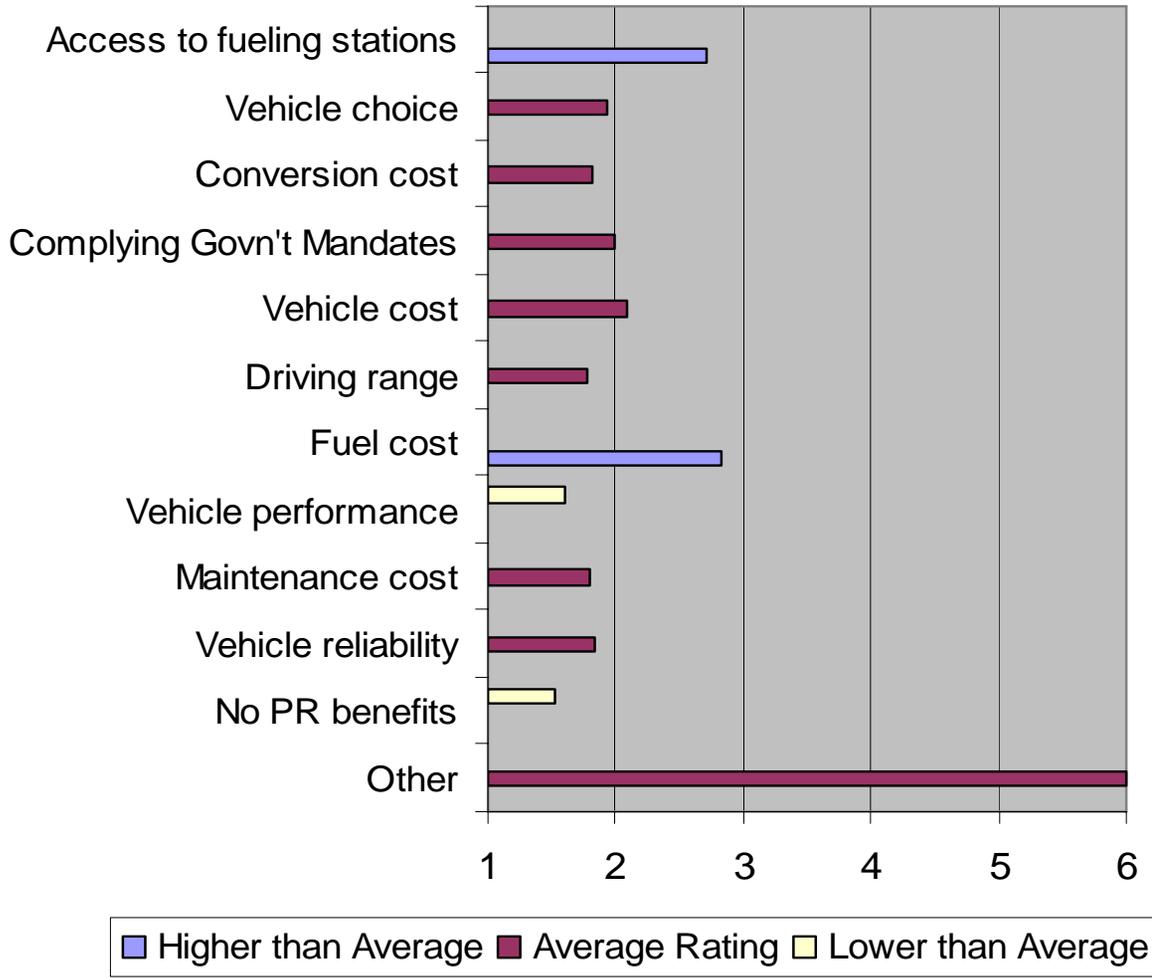


# Problems of E85 users: access to fuel



***“I have vehicles that will run on ethanol – can’t find the fuel.”***

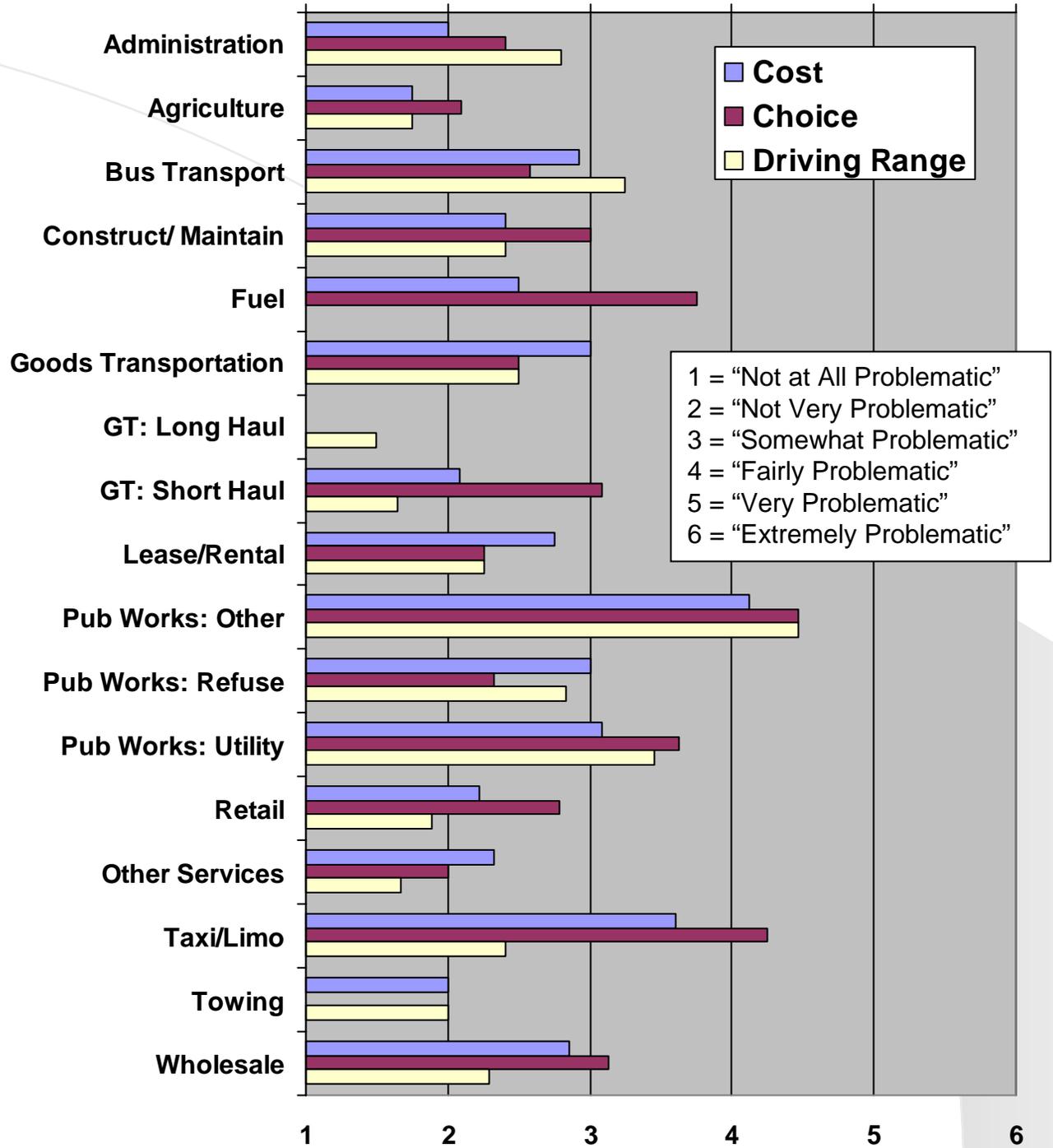
# Problems of Biodiesel users: fuel access and cost



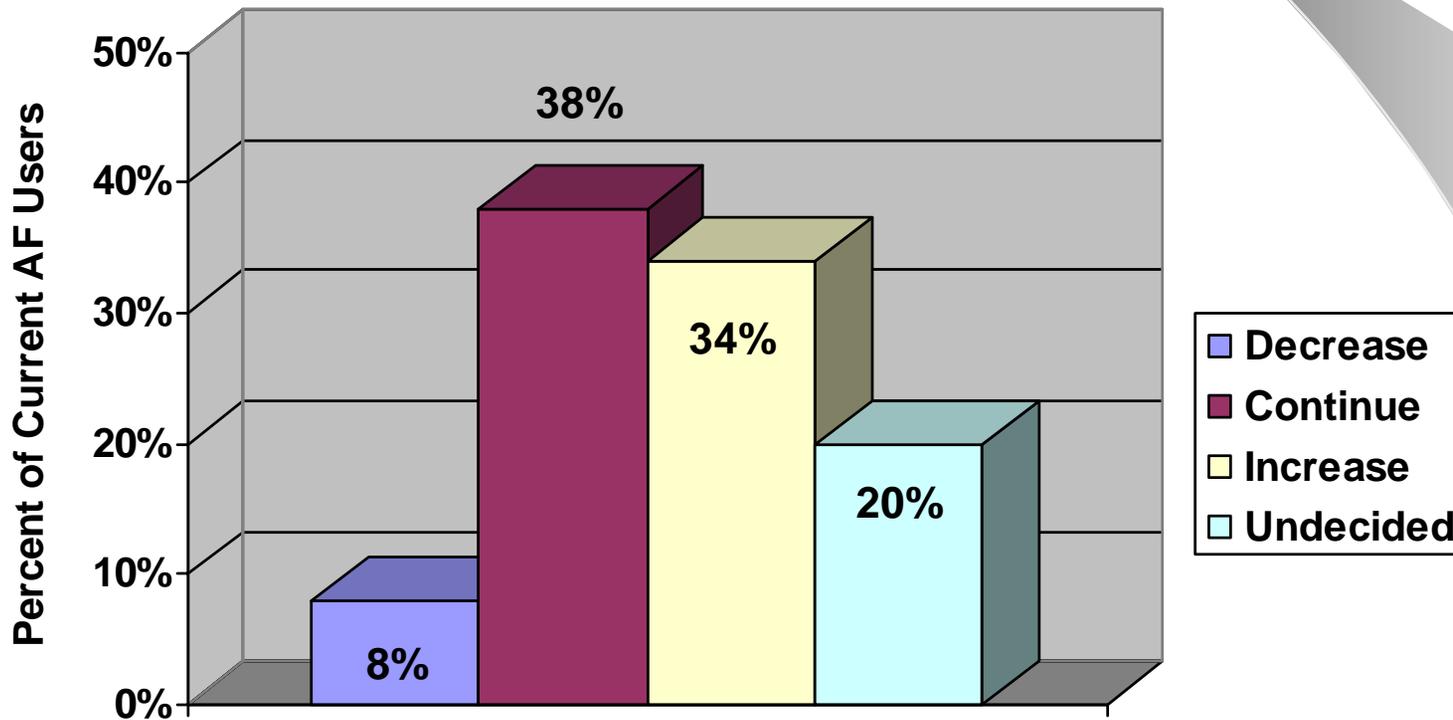
***“Our local provider can't supply my demand to even 50% of the diesel I'm currently using now.”***

***“The fuel cost is greater than regular diesel when I use virgin soybean oil. The fuel cost is the same when I use used vegetable oil. (I am not including the federal tax credit)”***

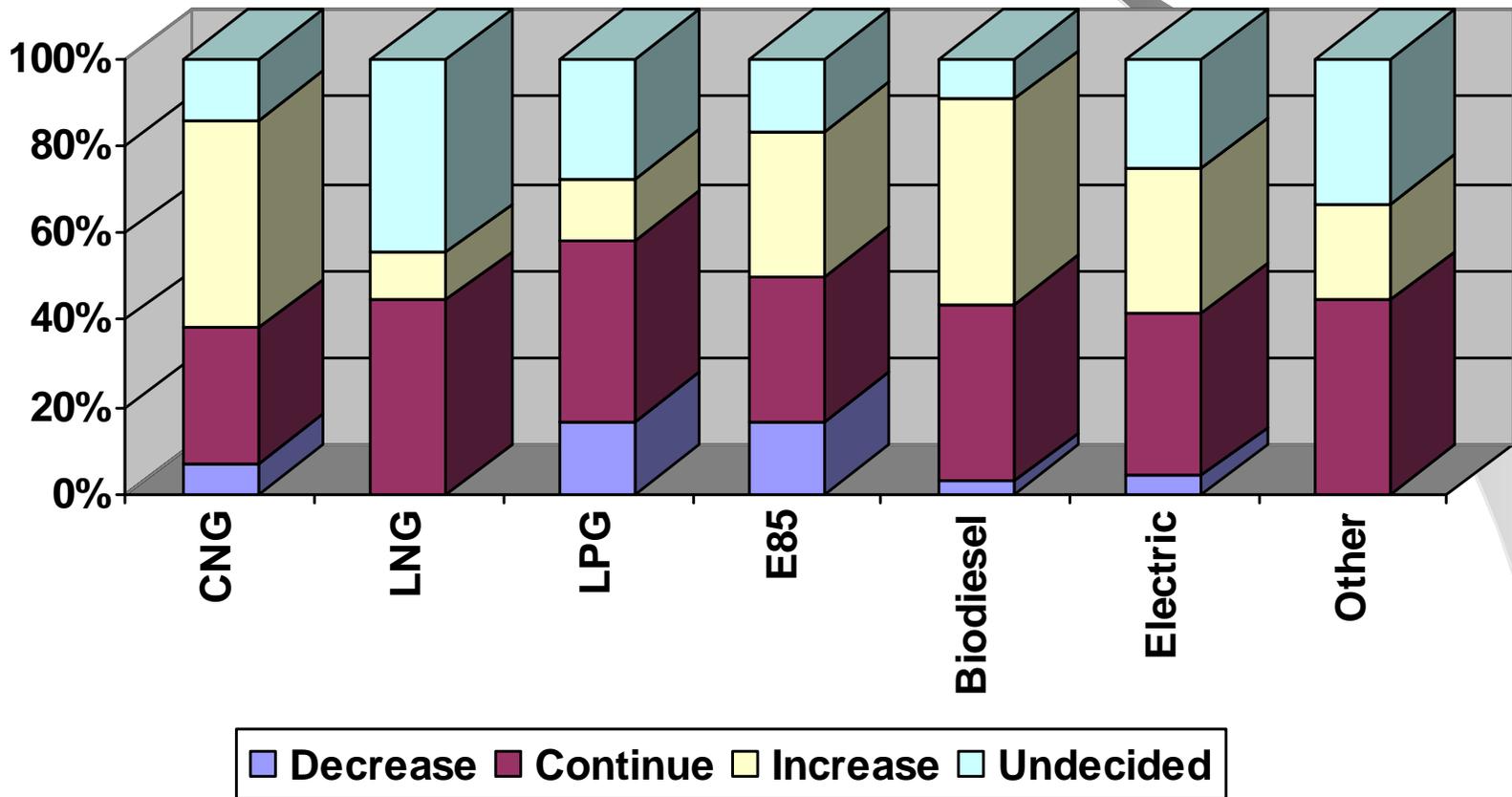
# Industries vary in experience of vehicle problems



# Future use of alternative fuels

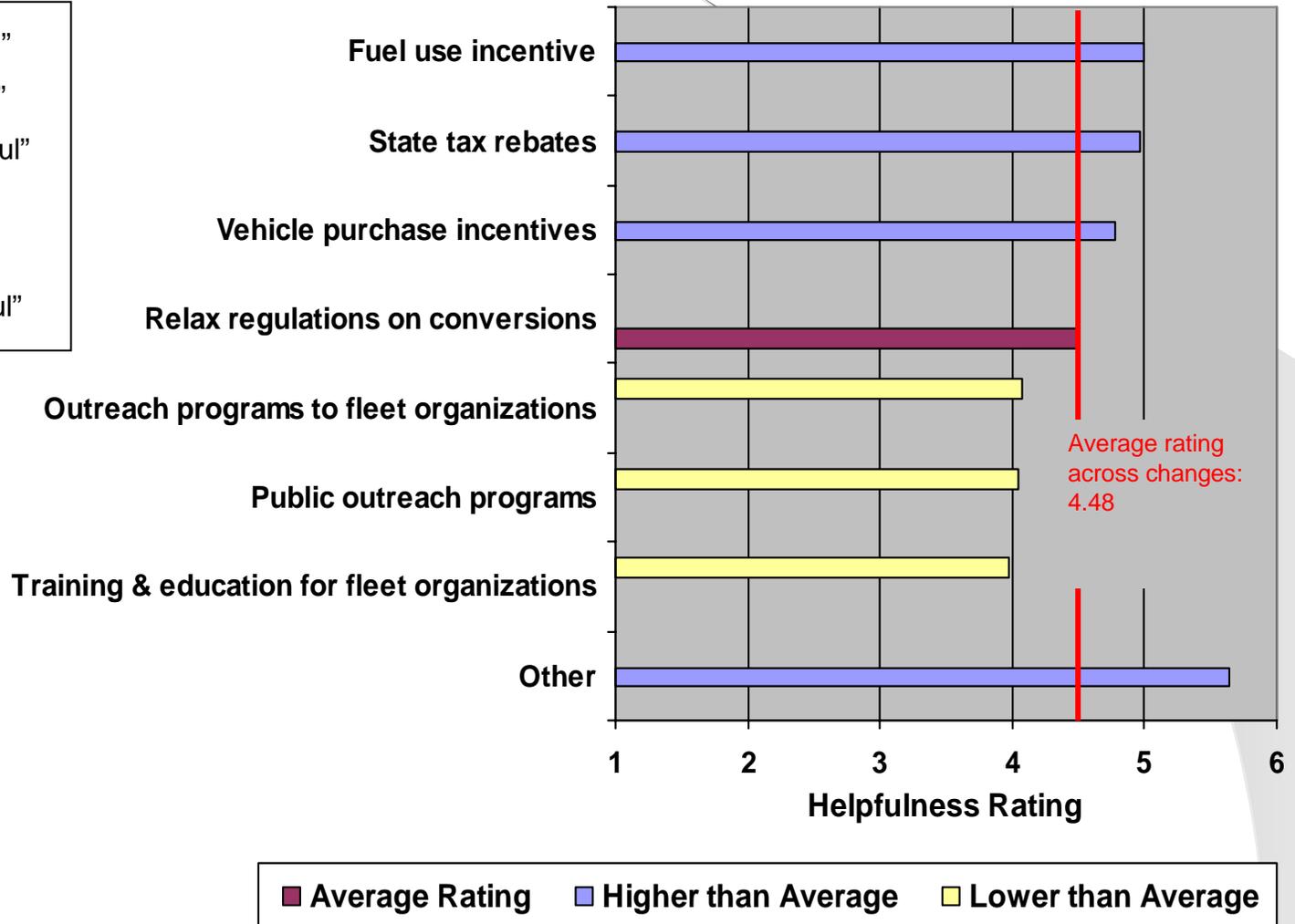


# Future use by fuel type



# Changes to expand alternative fuel use among users

- 1 = "Not at All Helpful"
- 2 = "Not Very Helpful"
- 3 = "Somewhat Helpful"
- 4 = "Fairly Helpful"
- 5 = "Very Helpful"
- 6 = "Extremely Helpful"



# Changes by fuel type

- **Biodiesel:** Fuel availability at a competitive price
- **CNG:** Vehicle choice and fuel availability
- **E85:** Fuel availability
- **Electric:** Technology development for better driving range
- **LNG:** Start-up cost
- **LPG:** Vehicle choice and technology

# Expansion among users

- Increase supply and availability of alternative fuels
- Increase supply and selection of alternative fuel vehicles
- Improve alternative fuel vehicle technology

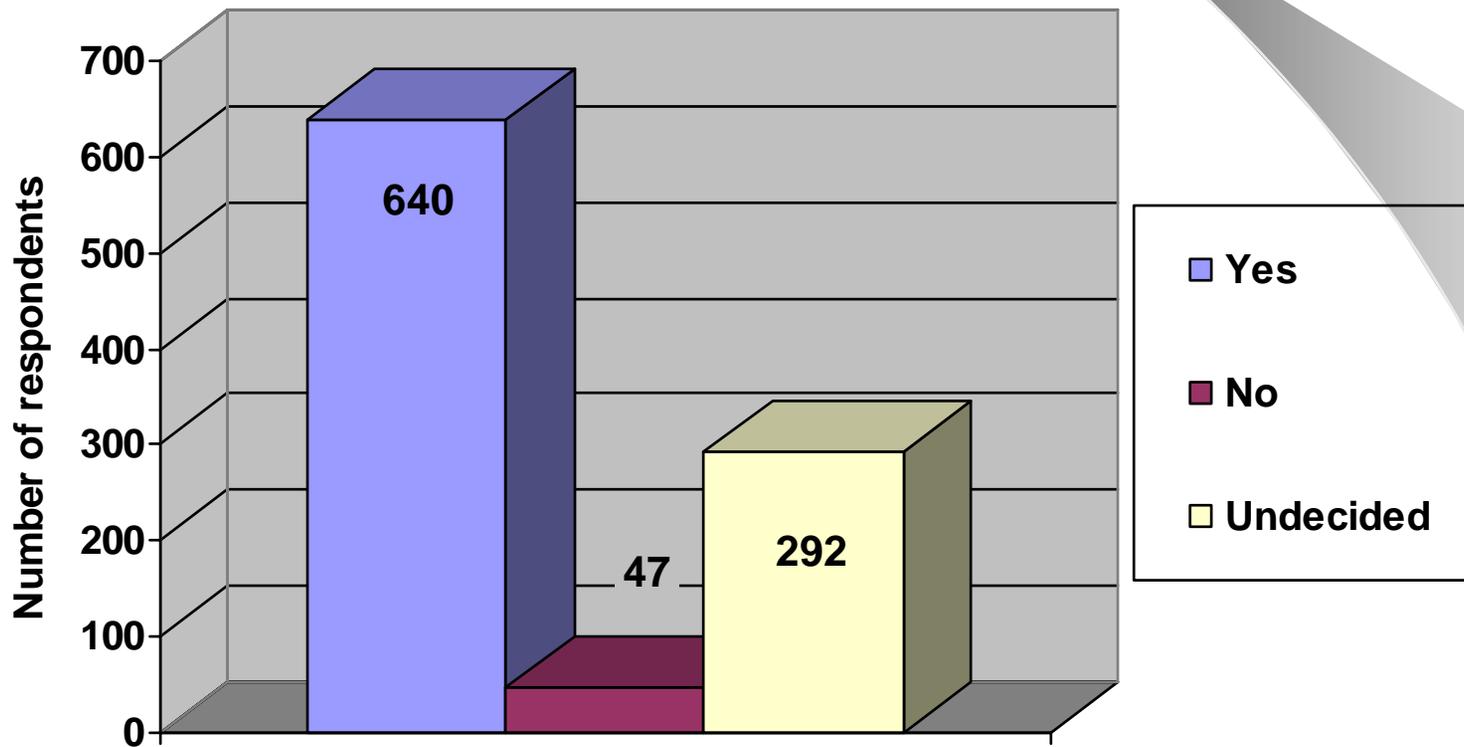
# Expansion opportunities

- Agriculture fleets
  - Large industry
  - 20% already using
  - ***Promote biodiesel availability***
- Large fleets
  - More easily manage initial costs
  - More likely to be using already
  - ***Promote vehicle choice availability***

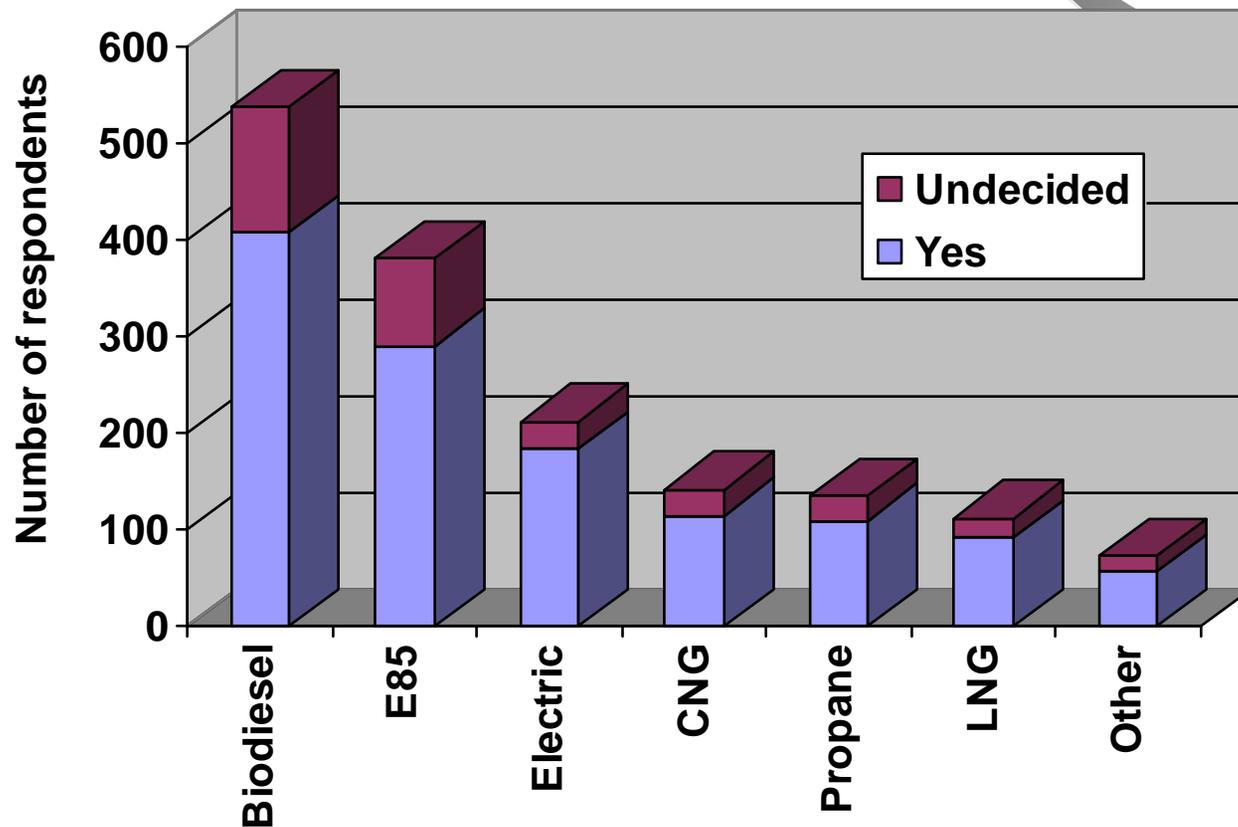
# Non-Users

- Who is willing to use alternative fuels?
- What are the barriers to alternative fuels use?
- What are the opportunities to promote use?

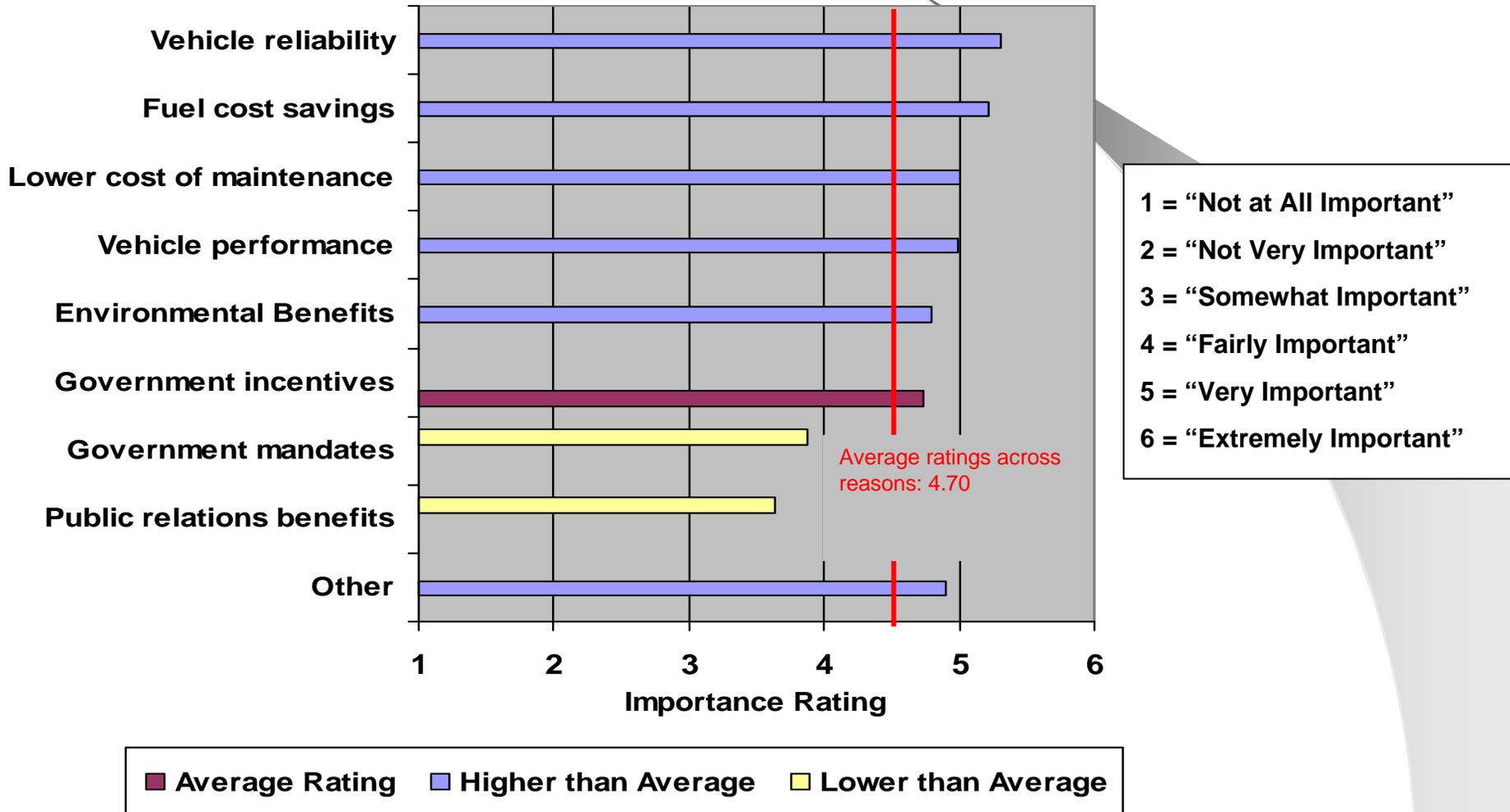
# How many fleets will consider using alternative fuels?



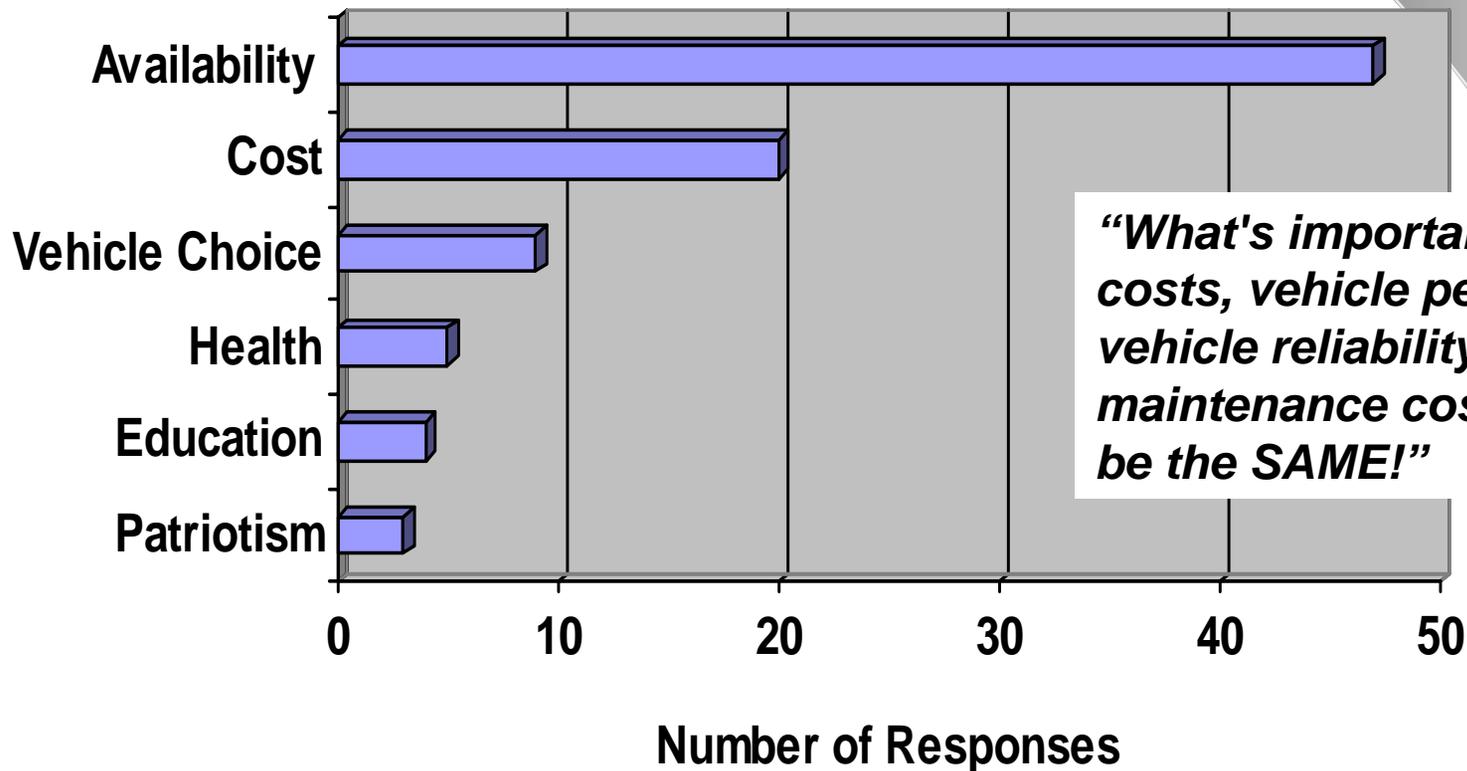
# Which alternative fuels are non-users most interested in?



# Motivations to begin using alternative fuels



# Other motivations to begin using

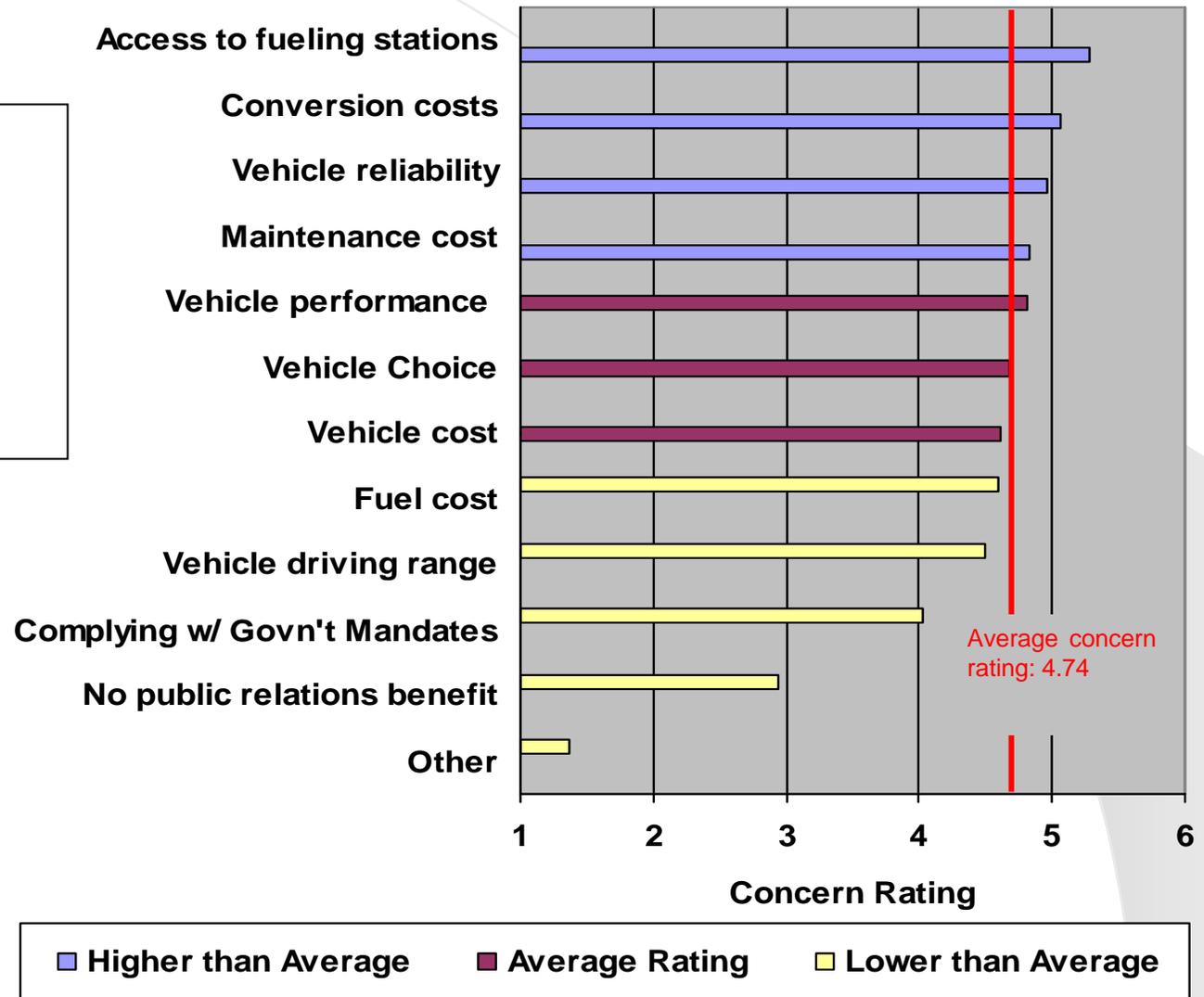


***“What's important is that fuel costs, vehicle performance, vehicle reliability, and maintenance costs just need to be the SAME!”***

Source: 'What is the Future of Alternative Fuel in California?' survey data.

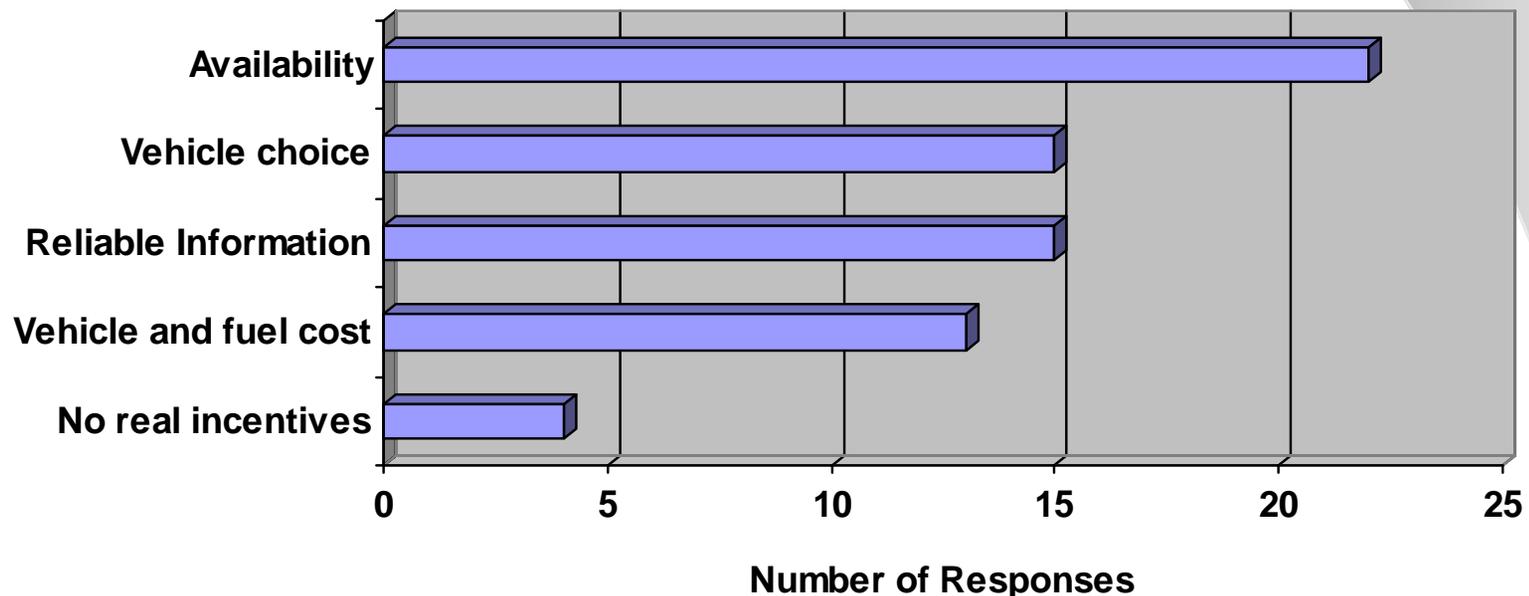
# Concerns about using alternative fuels

- 1 = "Not at All Concerning"  
2 = "Not Very Concerning"  
3 = "Somewhat Concerning"  
4 = "Fairly Concerning"  
5 = "Very Concerning"  
6 = "Extremely Concerning"



# Other concerns about using: supply of fuel, vehicles, and information

***“We just never really checked into it. There are no real incentives and not a lot of information that is handed out as to the pros and cons of alternatives. If we don't have any information about why we should change, why would we think about it? Don't fix it if it isn't broken.”***



# Problems for small fleets: start-up costs

- Small businesses have a harder time overcoming start-up costs:
  - *“I would have to win the lottery to re-invest in new equipment. Due to the states strangling of small business through taxes, DMV, EPA, Workers Comp., Health care, etc. It is impossible to make enough to upgrade equipment.”*

# High concern of non-users vs Low problems of users

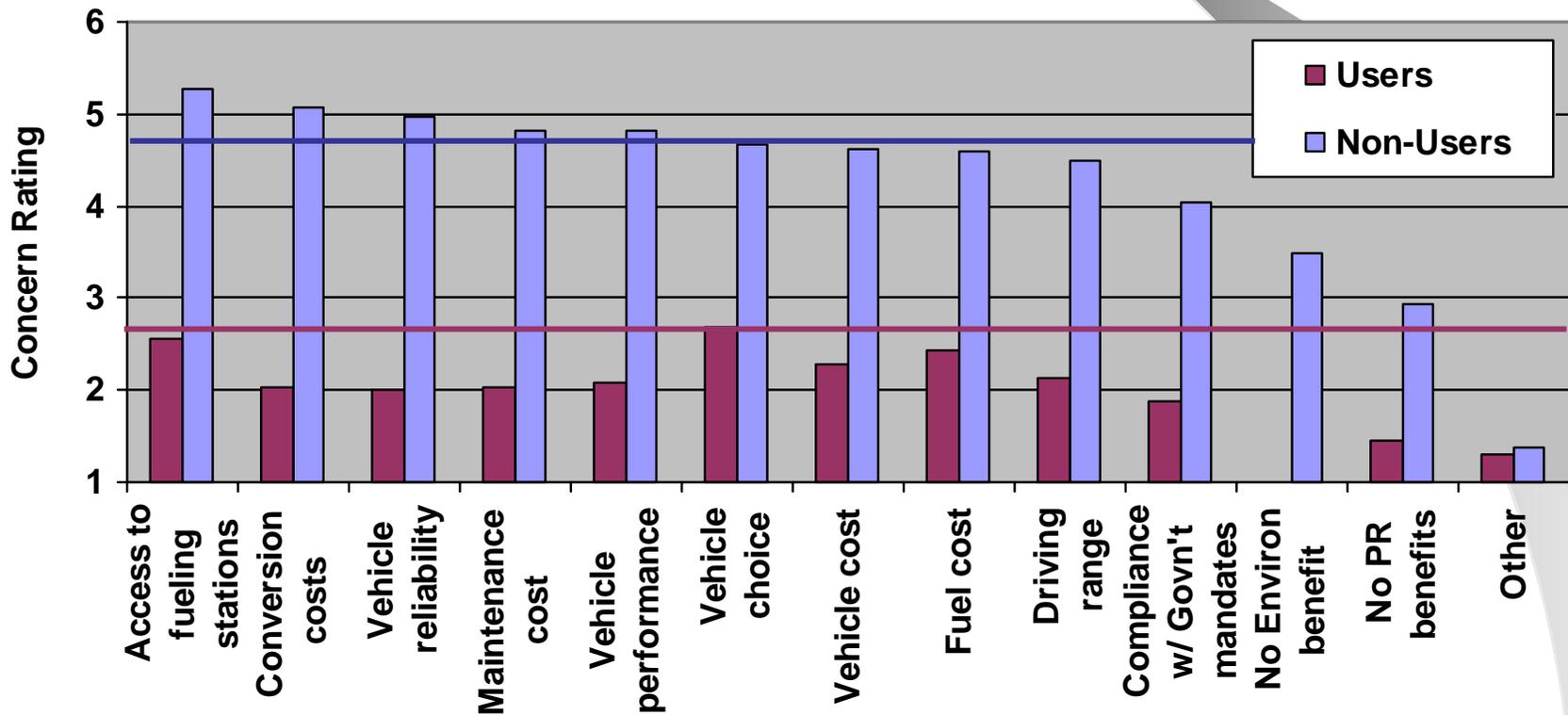
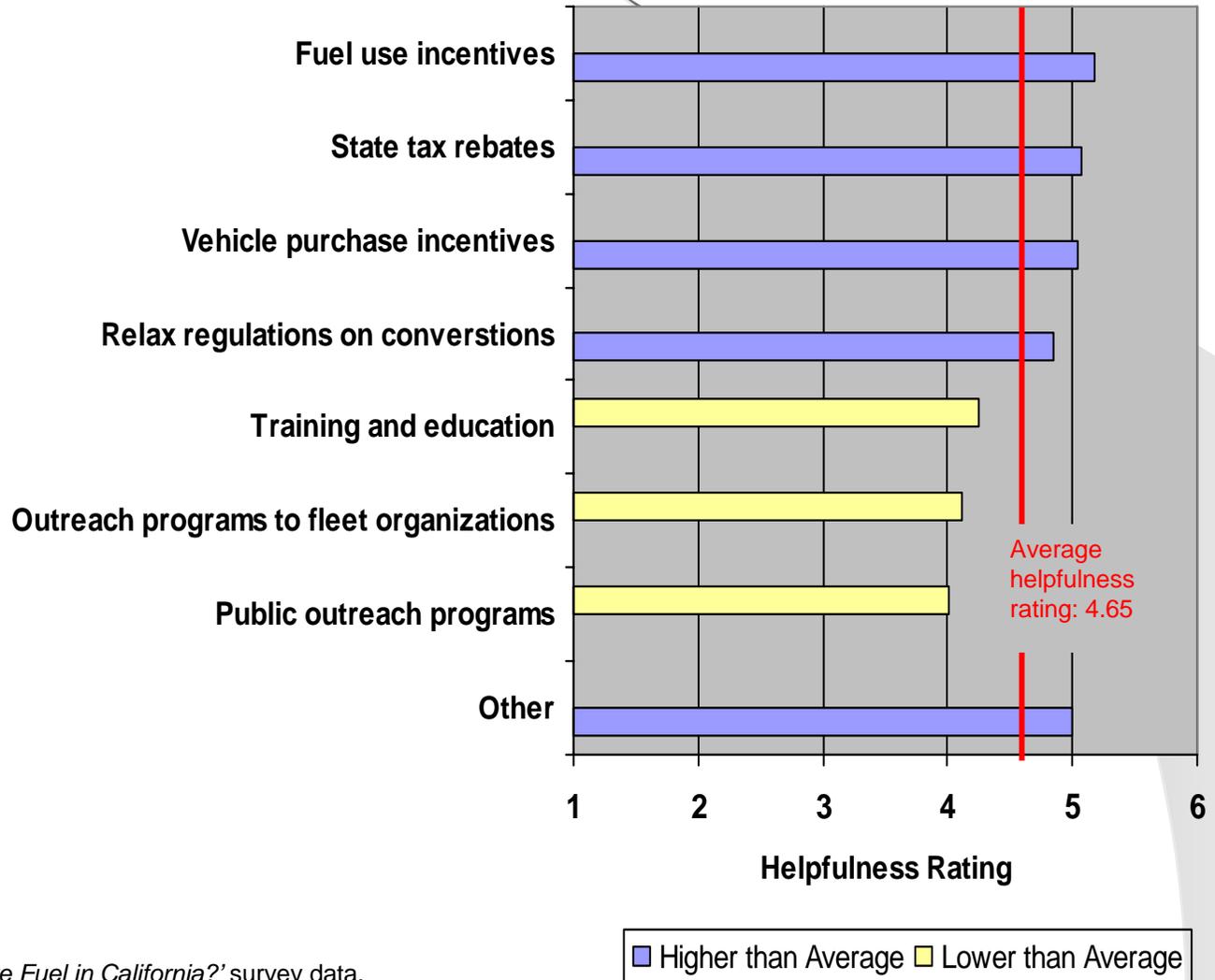


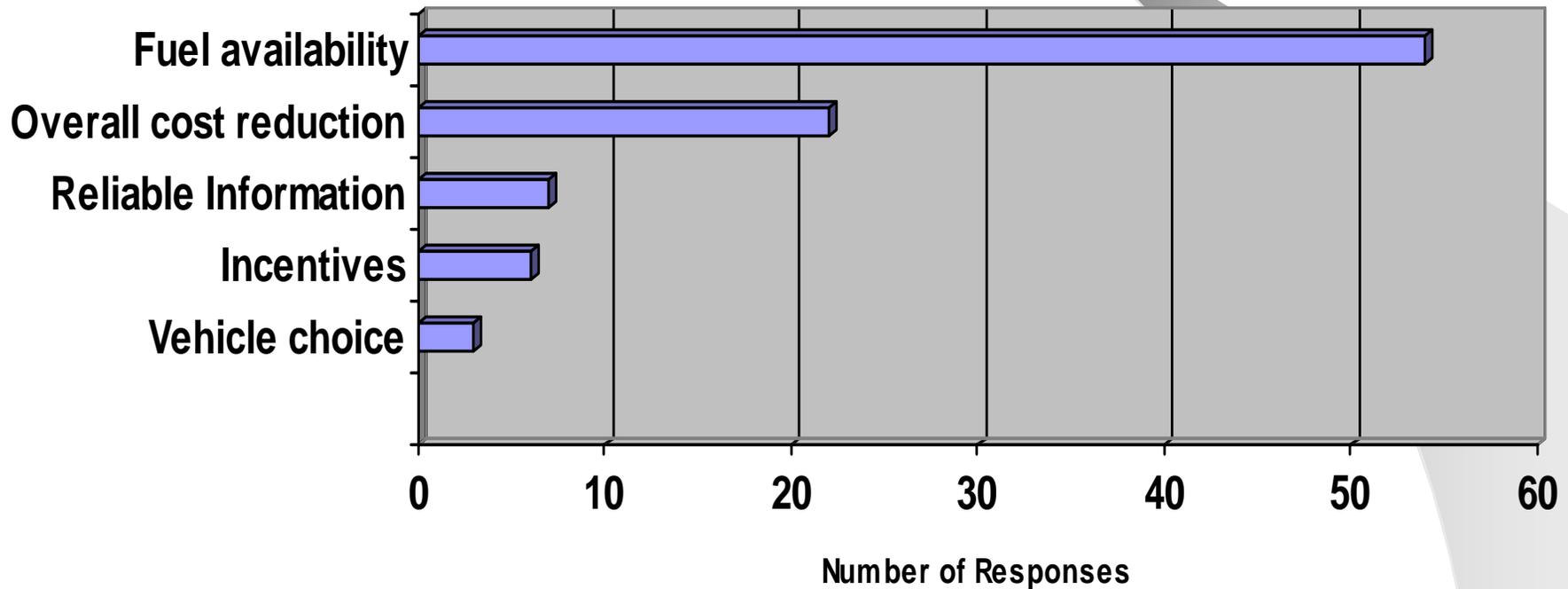
Figure 5.2 Source: 'What is the Future of Alternative Fuel in California?' survey data.

# Changes to encourage use among non-users

- 1 = "Not at All Helpful"
- 2 = "Not Very Helpful"
- 3 = "Somewhat Helpful"
- 4 = "Fairly Helpful"
- 5 = "Very Helpful"
- 6 = "Extremely Helpful"



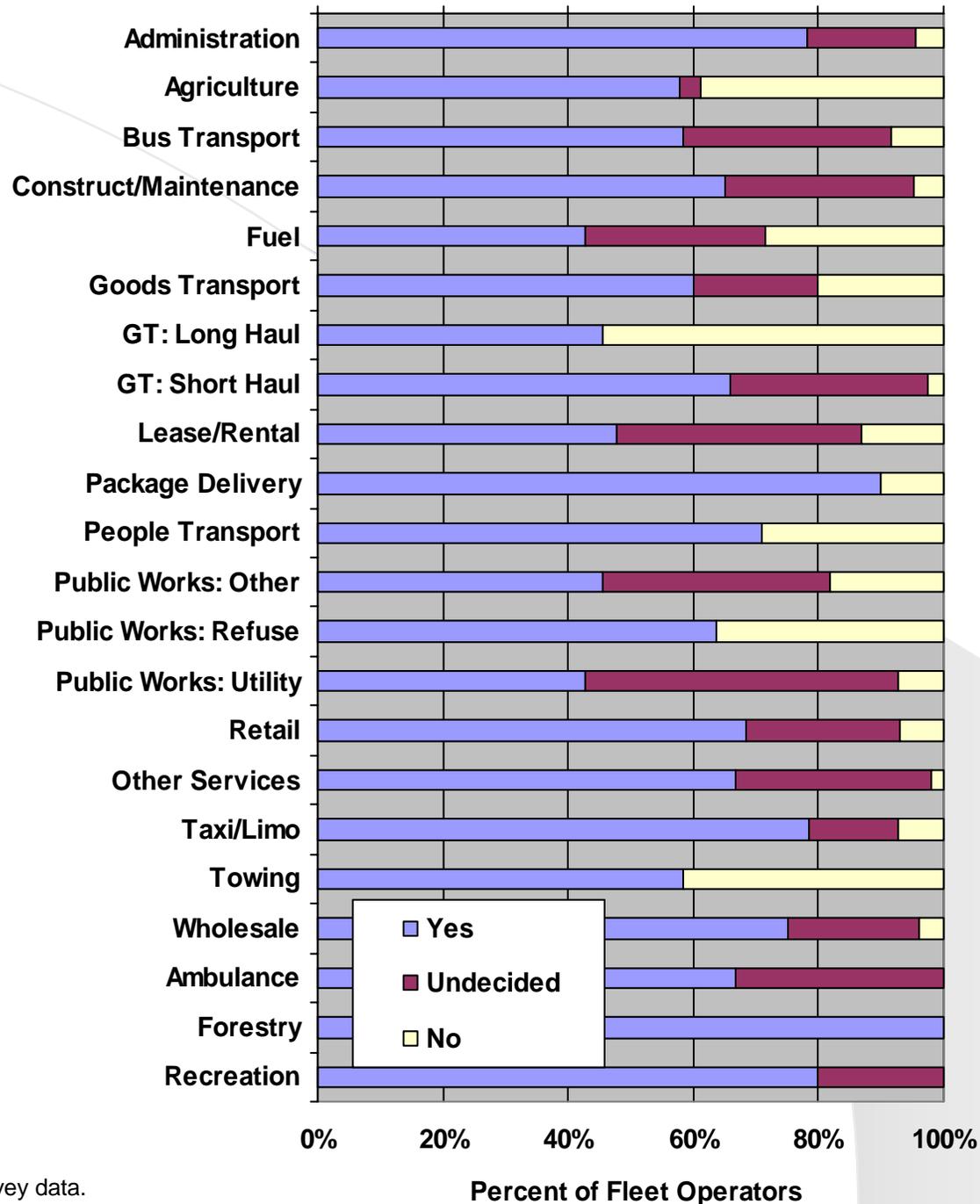
# Non-users need assurance of availability and effects on bottom dollar



# Opportunities to promote alternative fuel use

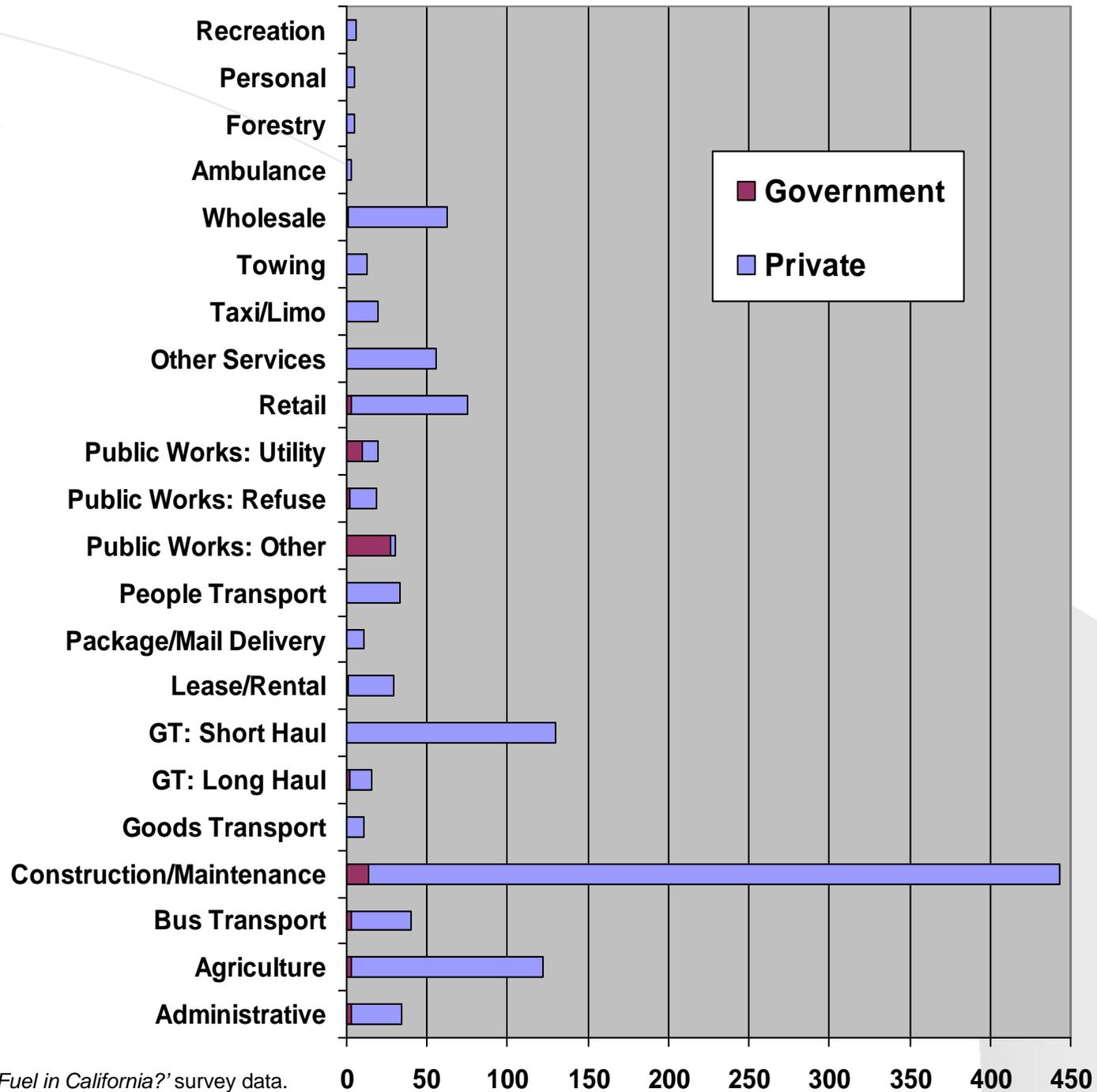
- Industry
  - Willing industries
  - Biggest industries
  - Industry-fuel match
- Fleet size
  - Small businesses

# Willing industries



Source: 'What is the Future of Alternative Fuel in California?' survey data.

# Industry size



Source: 'What is the Future of Alternative Fuel in California?' survey data.

# Industry-fuel match

	CNG	LNG	LPG	E85	Bio-diesel	Electric	Other
<b>Administrative</b>	2	3	2	11	5	11	5
<b>Agriculture</b>	8	6	12	38	59	18	8
<b>Bus transportation</b>	4	3	2	6	14	9	1
<b>Construction/ Maintenance</b>	66	60	62	169	235	70	16
<b>Goods Transport: Short Haul</b>	12	10	16	36	70	20	11
<b>Lease/Rental Cars &amp; Trucks</b>	2	2	2	5	11	8	1
<b>People Transport</b>	6	3	4	17	9	8	7
<b>Public Works: Refuse Collection</b>	4	5	1	2	10	1	0
<b>Retail Sales</b>	8	4	7	21	26	16	6
<b>Other Services</b>	7	6	7	23	18	19	9
<b>Taxi/Limo/Charter</b>	5	1	5	9	2	3	1
<b>Wholesale</b>	7	5	9	17	28	17	3

# Fleet size

- Most fleets are small fleets (< 20 vehicles)
- Small businesses:
  - have flexible decision-making
  - are at higher risk when trying new technology
  - need help with start-up costs

# Opportunities to promote alternative fuel use

- **Large industries are interested in biodiesel:**
  - Promote biodiesel availability and information for:
    - Agriculture
    - Construction/Maintenance
    - Short Haul Goods Transportation
- **Small fleets are flexible but need help with start-up costs**
  - Provide incentives for start-up costs, with clear phase-out plan.

# Top 4 Recommendations

- **Disseminate all current information on alternative fuel use in an easily accessible format from a trusted source.**
- **Generate accurate information on the costs and benefits of alternative fuel use.**
- **Address the supply of alternative fuels and vehicles by facilitating conversations between fleet operators and suppliers/manufacturers.**
- **Help small businesses afford the start-up costs; include a clear plan for phase-out of incentives.**

# Thank you!

For invaluable assistance with this project, Zetetic Associates would like to thank:

- California Energy Commission
- Katin Engineering
- Kevin Nesbitt and Dan Sperling
- California Department of Motor Vehicles
- 20 pilot survey participants
- 1330 survey participants
- 9 focus group participants



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