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Automobile use, fuel economy and CO_2 emissi
Encouraging trends through 2008?

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New car test and actual fuel economy: yet another gap?

Lee Schipper and Wienke Tax

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Automobile fuel economy
daily use. This 'gap'
because driv
Canad

reatly from that obtained from actual
s do not reflect real-world driving and
cient. Comparisons among the US,
e fuel economy tests tend to under-
the center of much environmental
sts some mitigation techniques to

rt can be attributed to driver behavior
ut in a fully-warmed up car on a pre-
ycle (for the EEC), or on a machine
es Institut für Normung (DIN)). A
by weighting the results for vari-
epresenting different speeds and
idely known that, while useful
uel economy of different new
Wirtschaftsforchung (DIW),
tests are a poor measure of
the literature suggests that
is 15–25% more than
national

Mind the gap

The vicious circle of measuring automobile fuel use

Lee Schipper, Maria Josefina Figueroa, Lynn Price and Molly Espey

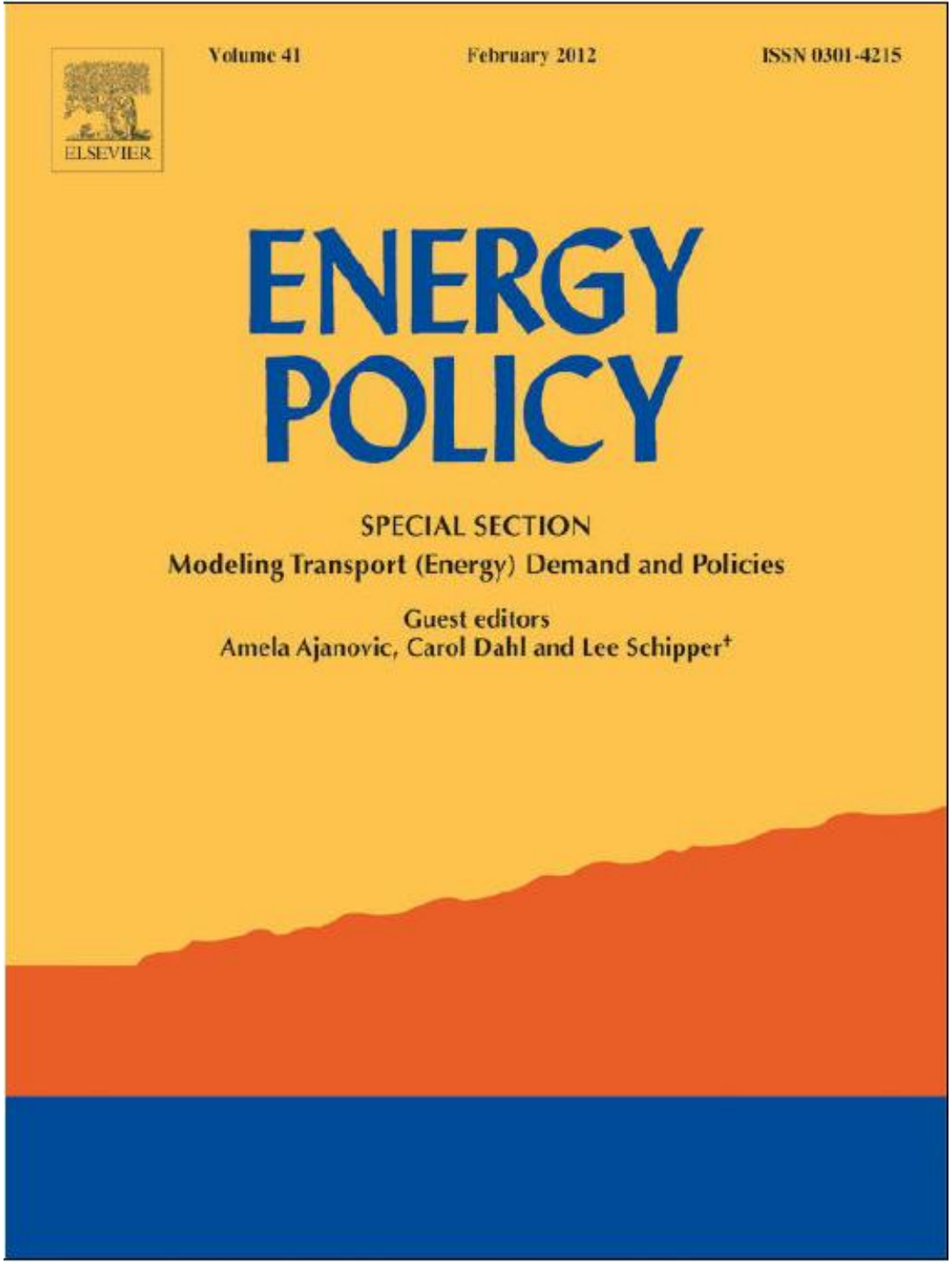
We review the circularity between estimates of automobile use, fuel consumption and fuel intensity. We find that major gaps exist between estimates of road gasoline, the quantity most often used to represent automobile fuel use in economic studies of transport fuel use, and the

naturally arises, 'How much would change in automobile fuel prices change consumption?'

To answer this question, important insights can be gained through statistical studies of past gasoline use. Cross-country time series studies offer some of these insights. Since real fuel prices within any given country have changed so little over a period of

Lee was a physicist (among other things).

- Theory
- Measurement (DATA)
- Validate theory
- Necessary steps that precede correct, efficient action to change a system.

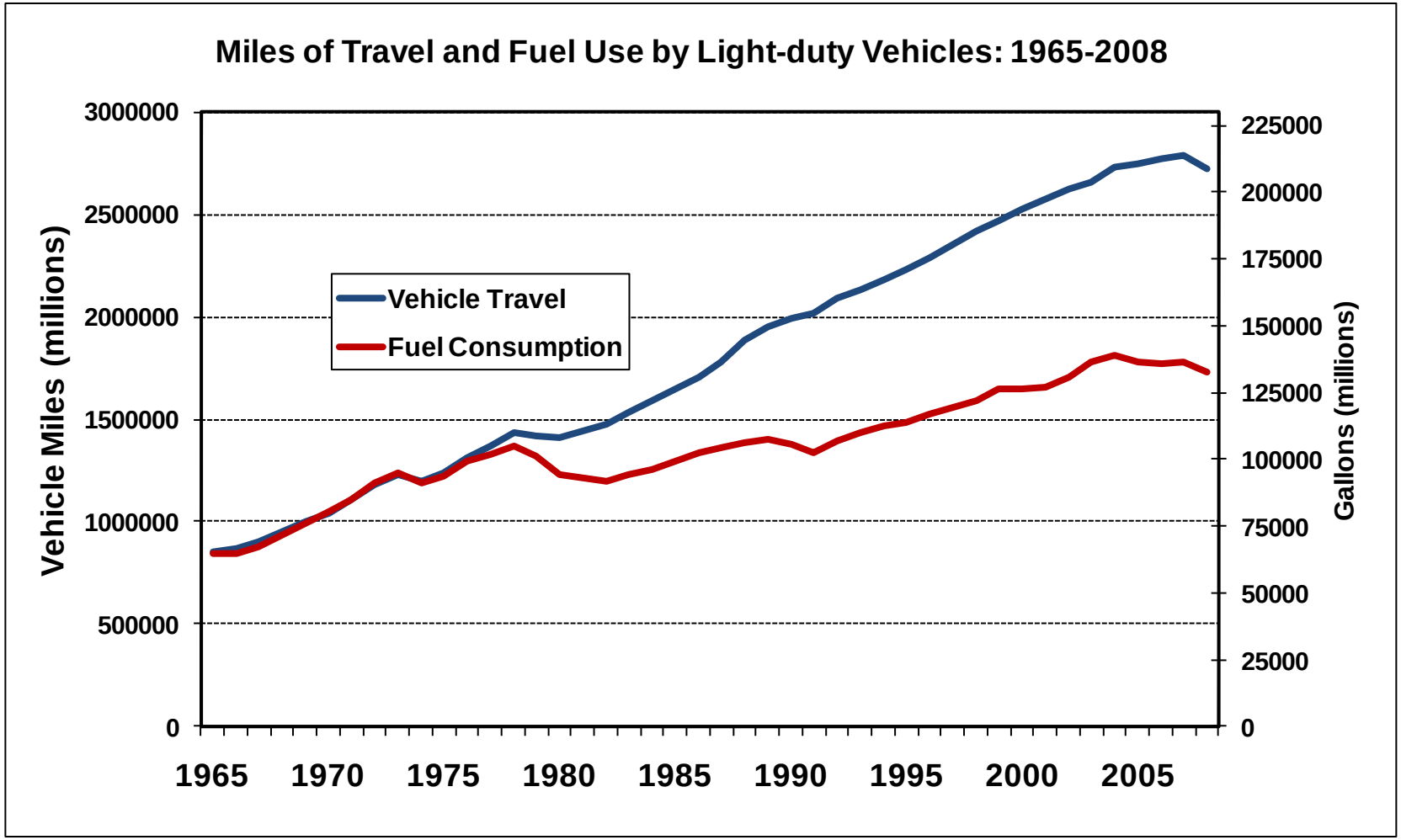


MIND THE GAP:
How little we still know about MPG.

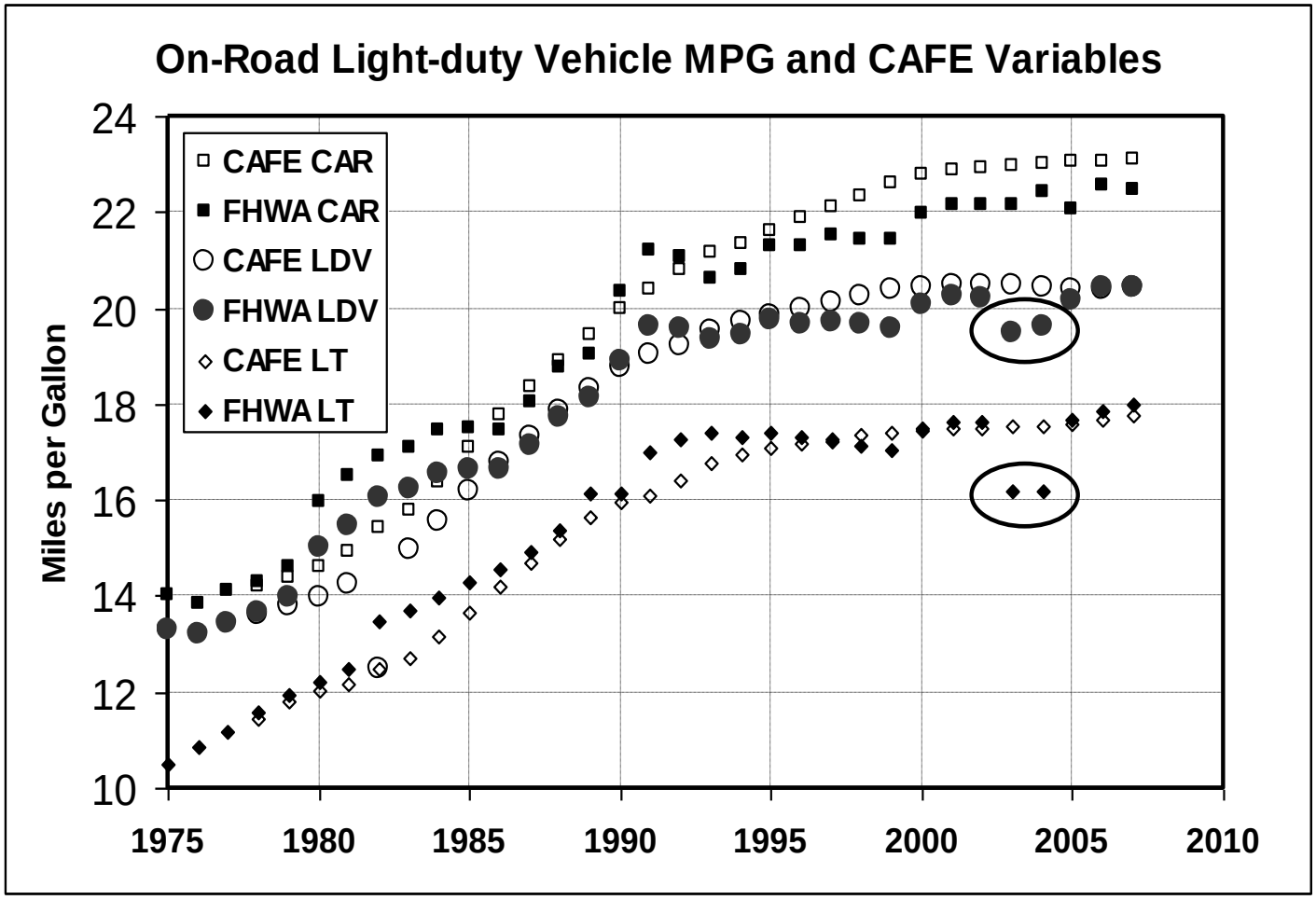
- Fuel Economy/Emissions standards
- Fuel Economy Labels
- Highway User Fees
- Oil Dependence Costs
- Sustainable Energy, Cities, Societies

- No scientific measurement of on-road MPG since 1994 RTECS
- ??????

Fuel economy/emissions standards benefits and costs are in the $ hundreds of billions. How well do they work? (>60 Bgals. saved in 2008)

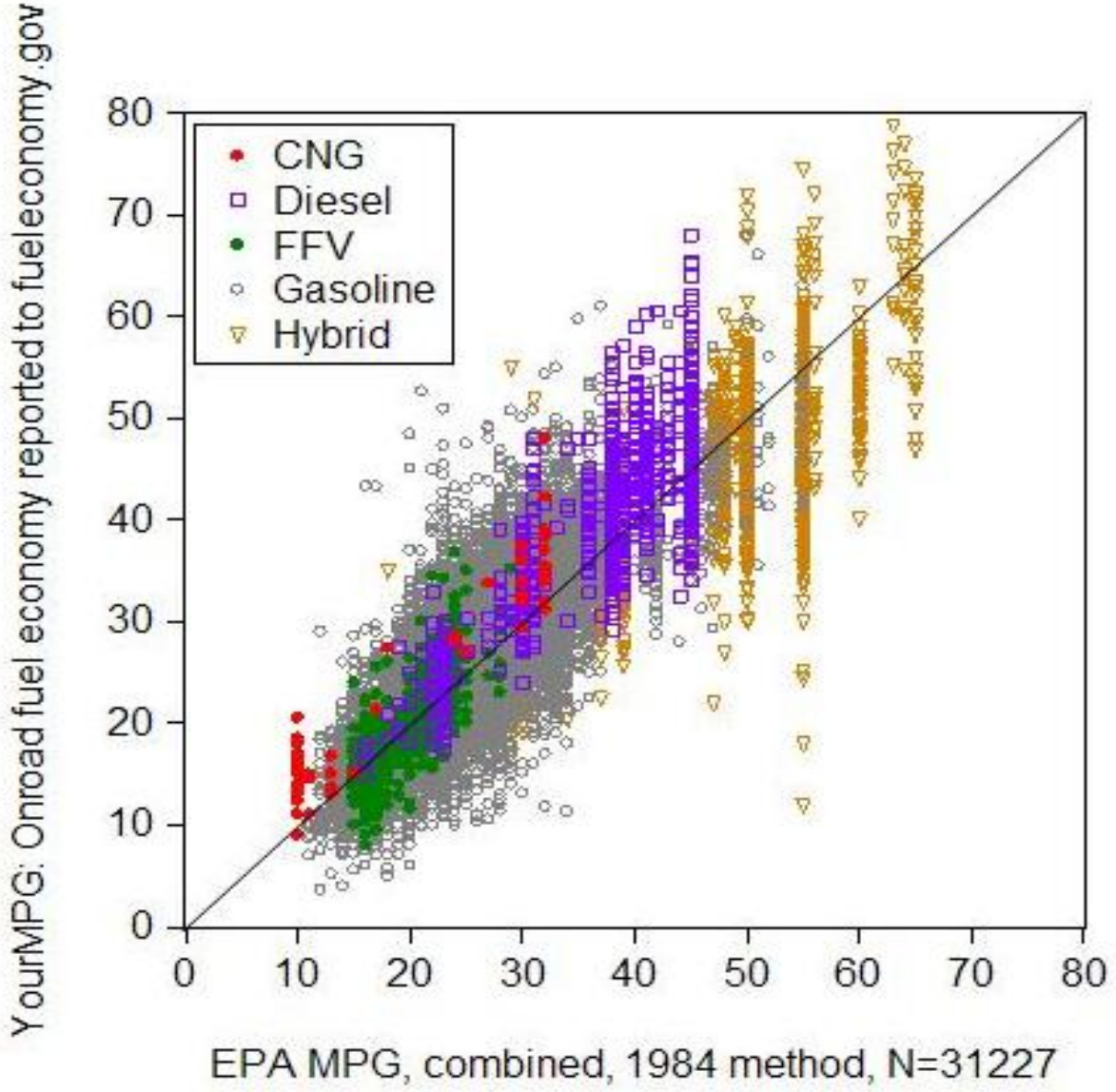


Lee realized that estimating MPG from the equation, **Fuel = VMT/MPG**, by directly measuring only one of the variables (fuel use) would lead to unreliable data.



www.fueleconomy.gov 's "Your MPG" data is a large, independent data set but is not a random sample.

Will the on-road shortfall increase at higher MPG?



Lee Schipper has bequeathed to us a duty to get the energy efficiency data right.

- Getting the standards right: how high?
- Monitoring performance.
- Giving consumers accurate as well as unbiased information.
- Evaluating the costs and benefits accurately.
- Accurately estimating the rebound effect.
- Hundreds of billions of dollars are in play.
- New IT technology offers new opportunities.
- **“Mind the gap!”**

Thank you Lee.

With credit to Dr. Philip Patterson for this Schipperesque photo.

Something about on-board storage of renewable fuels…