

Shop 'Till We Drop

A Historical and Policy Analysis of Goods Movement in the United States

Laura Schewel
ECEEE
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Outline and Questions

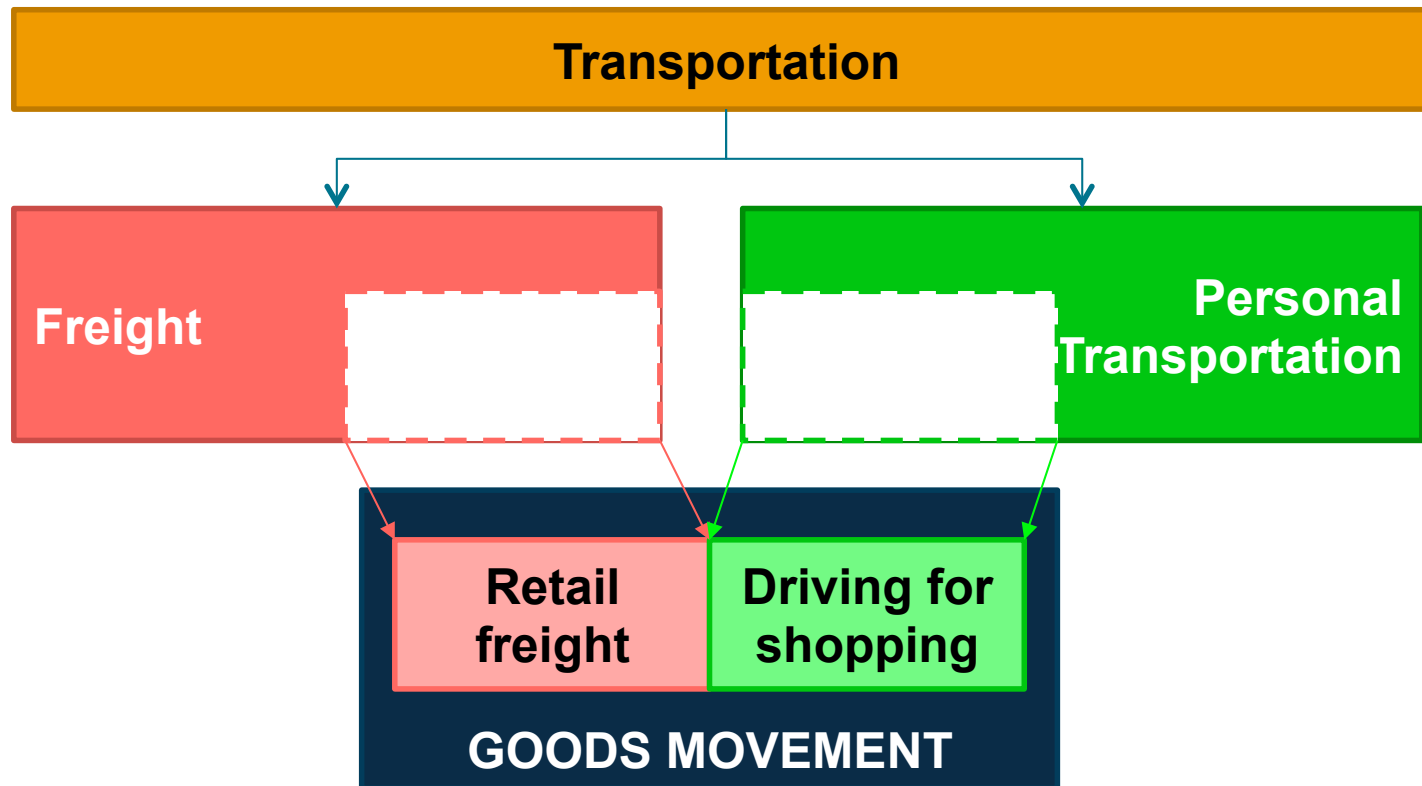


- What is goods movement?
- Why study it?
- Why has energy for goods movement increased?
- What can we do about it?

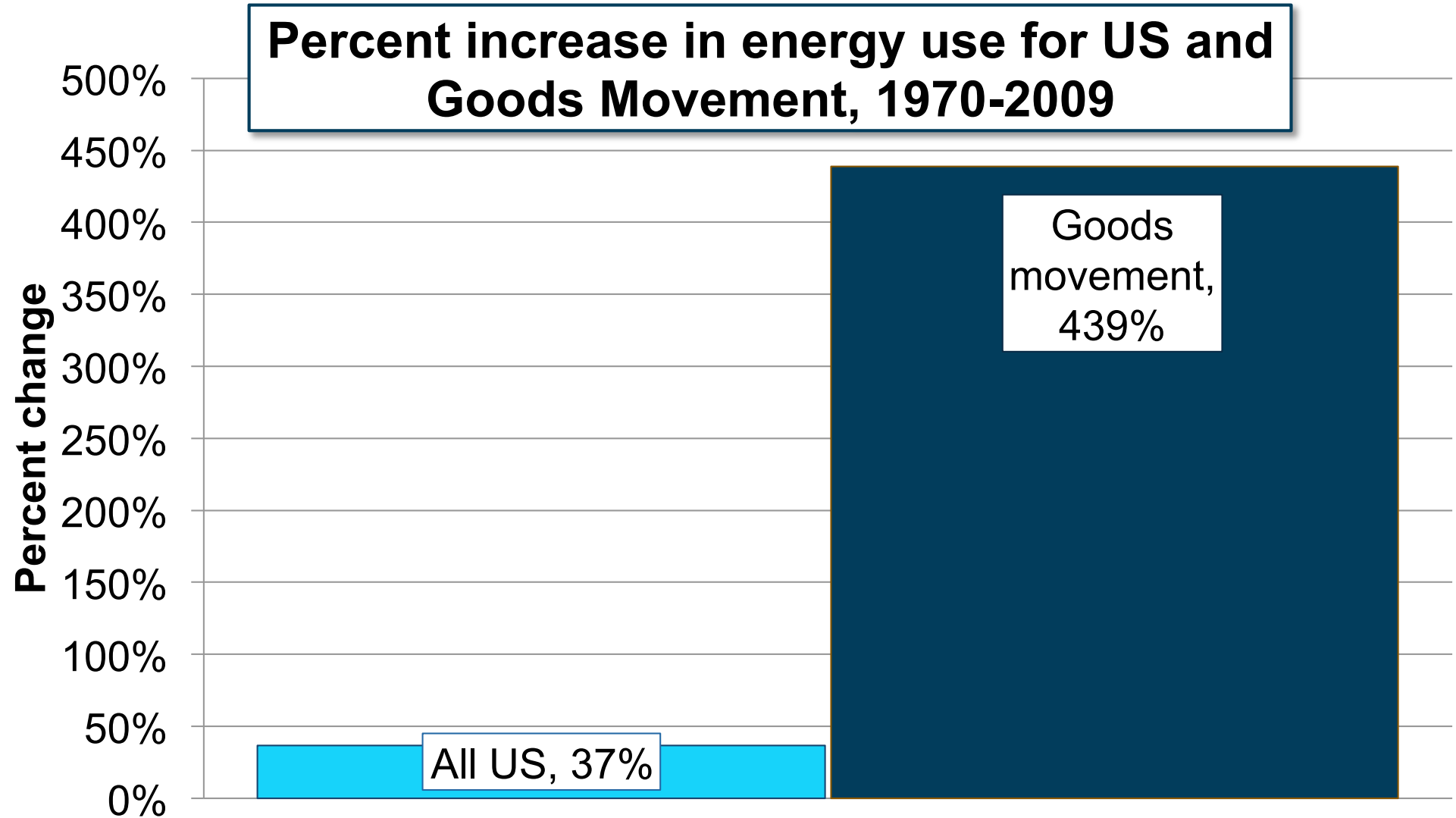
What is “Goods Movement”?



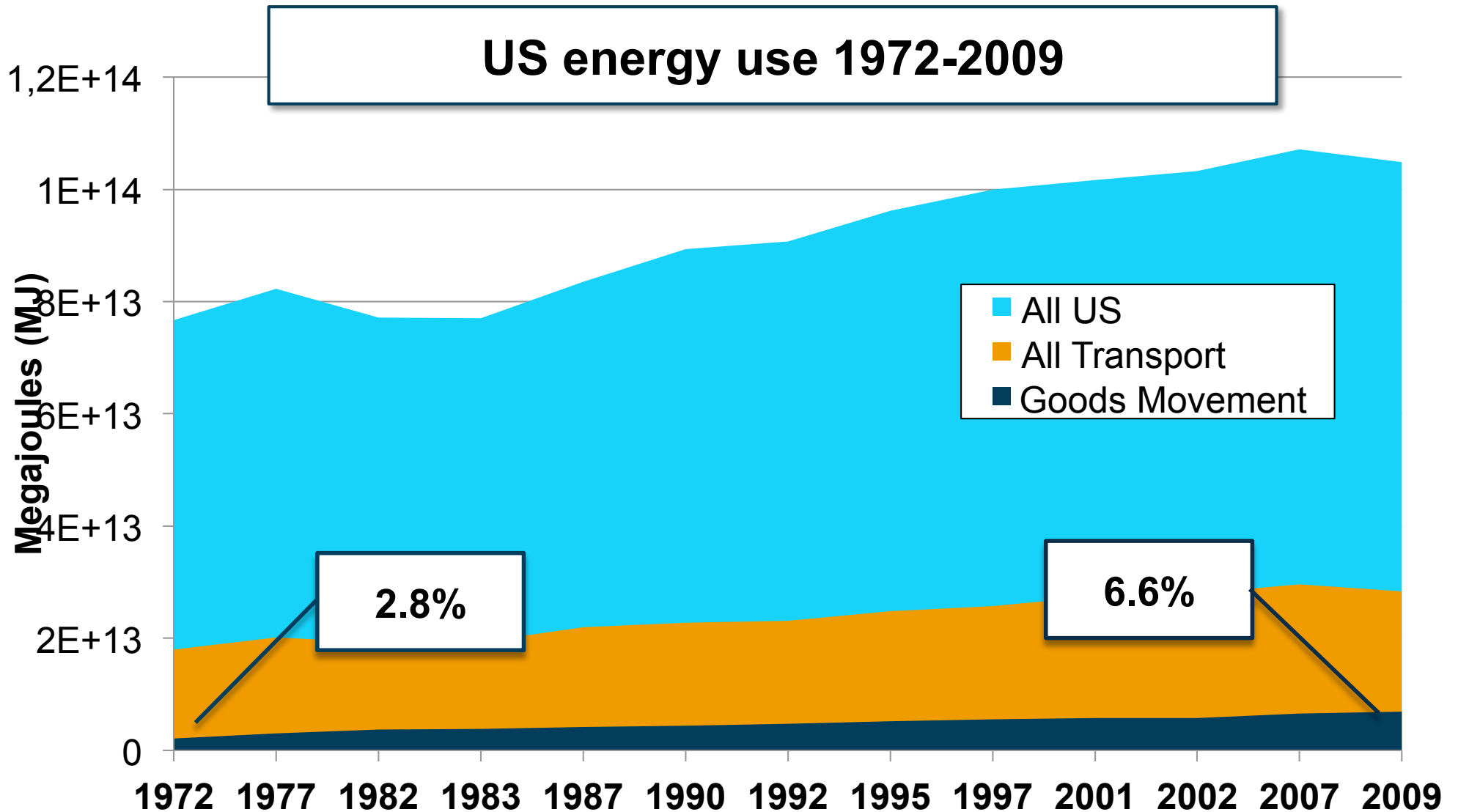
What is “Goods Movement”?



Why does Goods Movement matter?



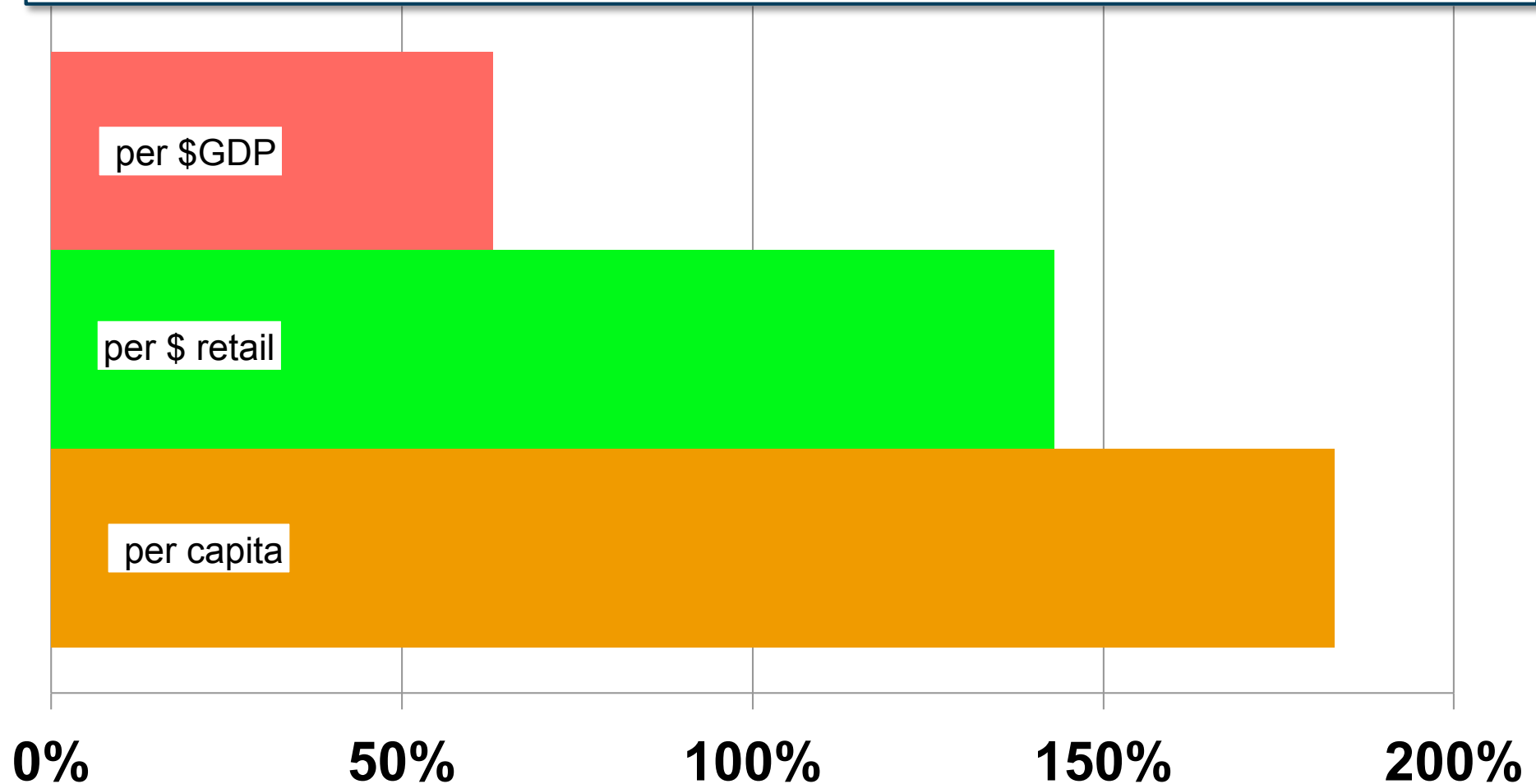
Goods Movement's role in U.S. energy bill has grown rapidly



Sources: NHTS (Oak Ridge Nat'l Lab), CFS (DOT), US Economic Census, EIA AER

Goods movement is decreasing in energy efficiency

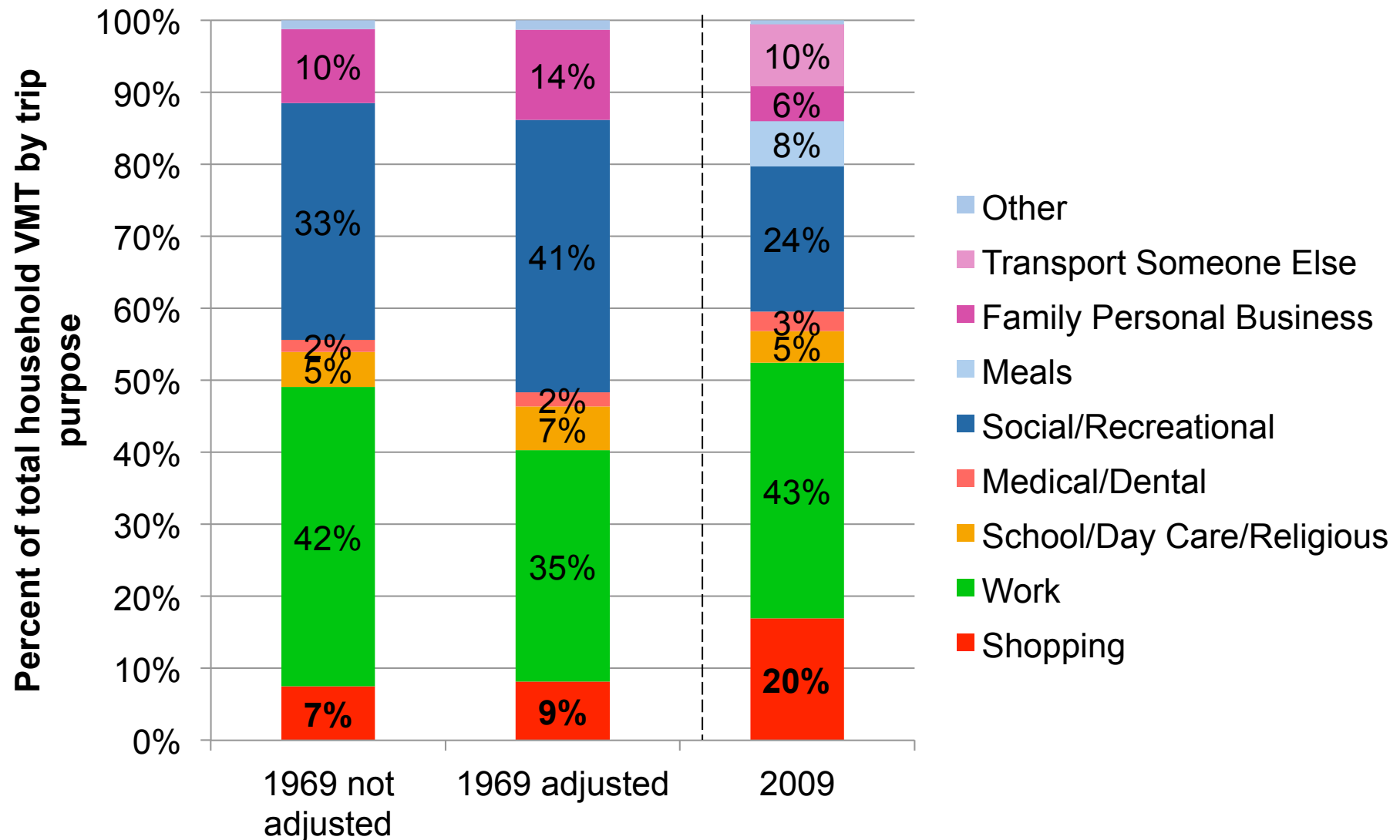
Increase in Goods Movement energy intensity 1967-2009



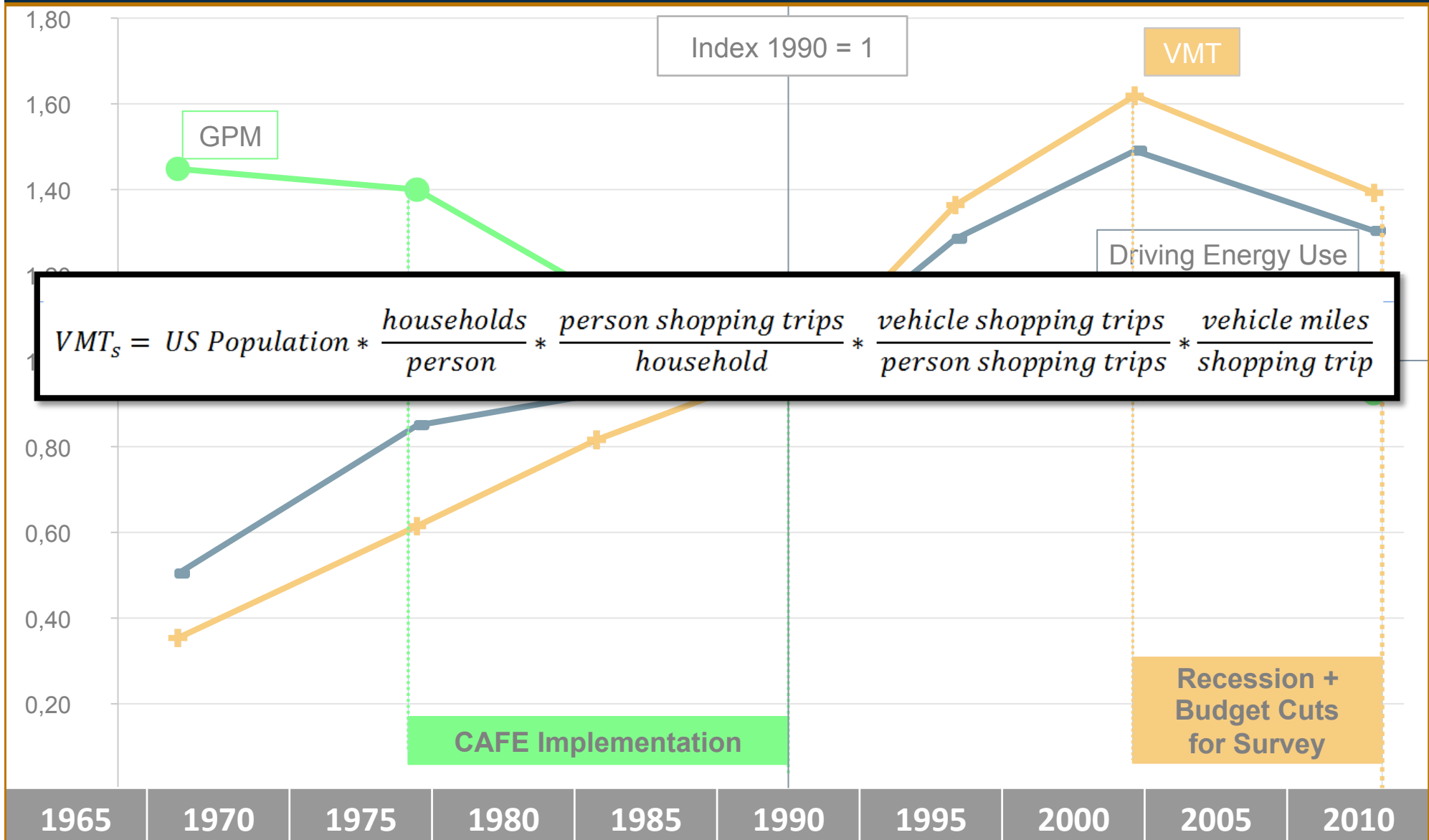
Driving for Shopping



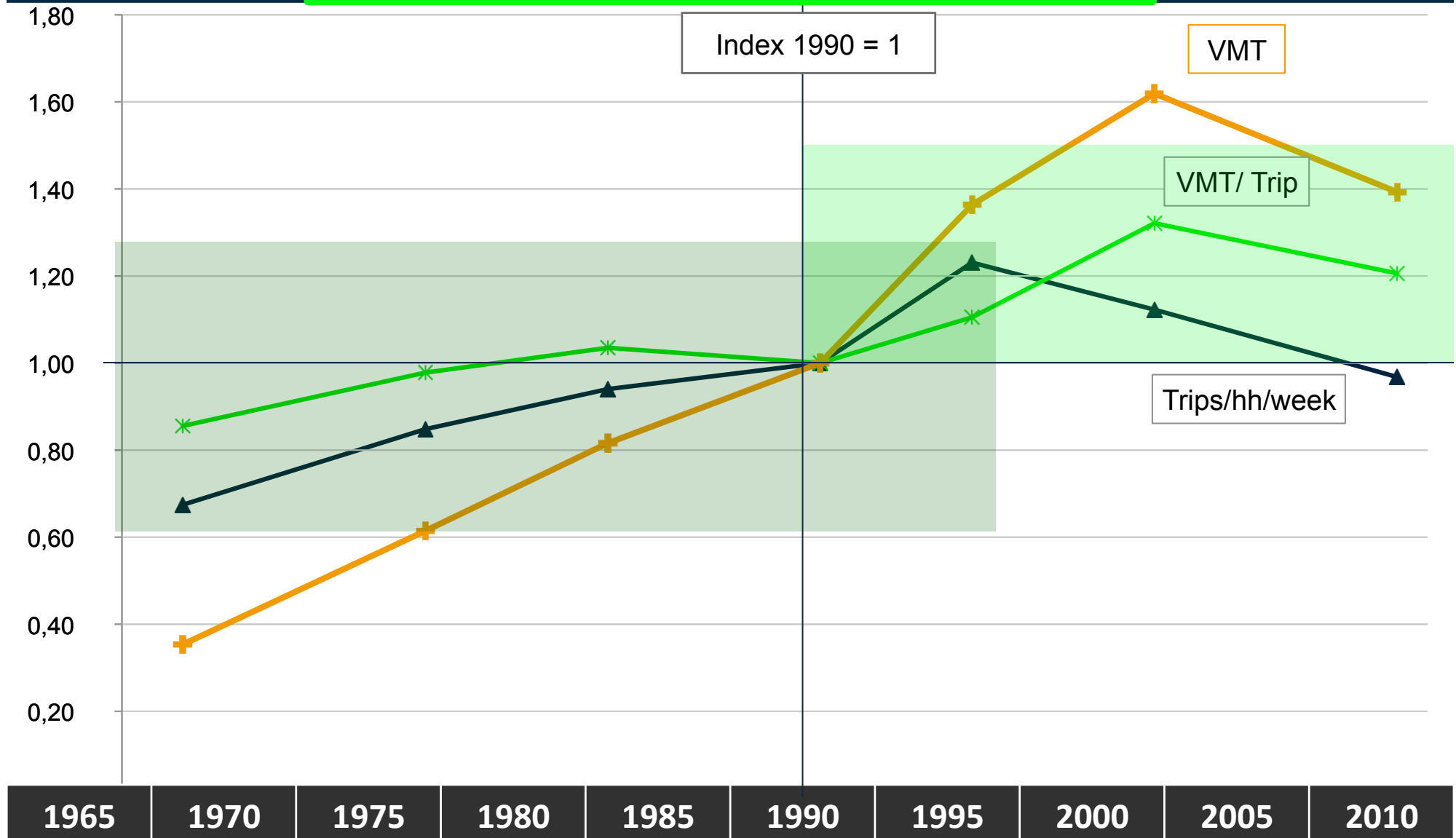
Shopping data comes from [flawed] NHTS records



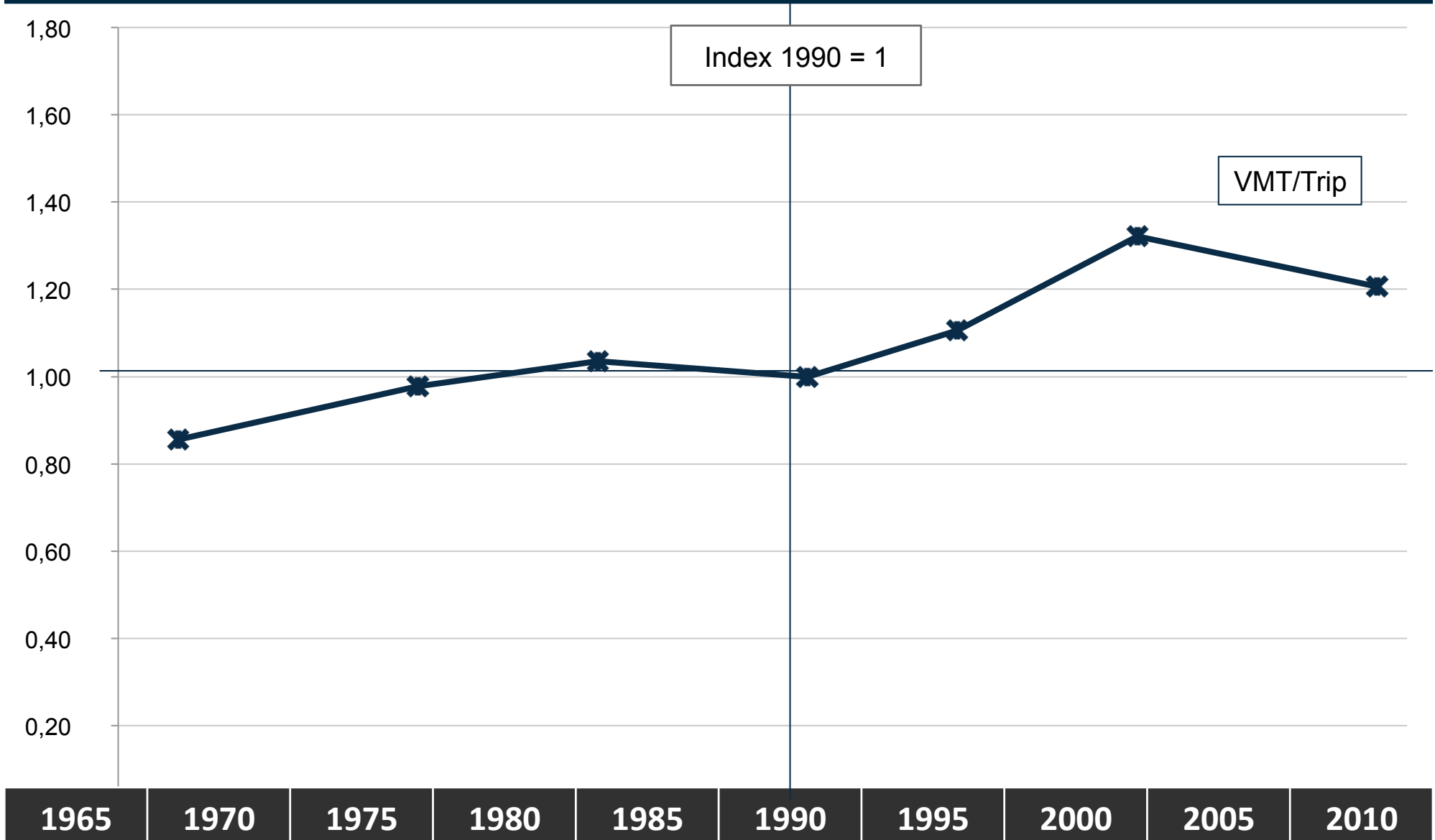
Energy use = avg gallon/mile * VMT



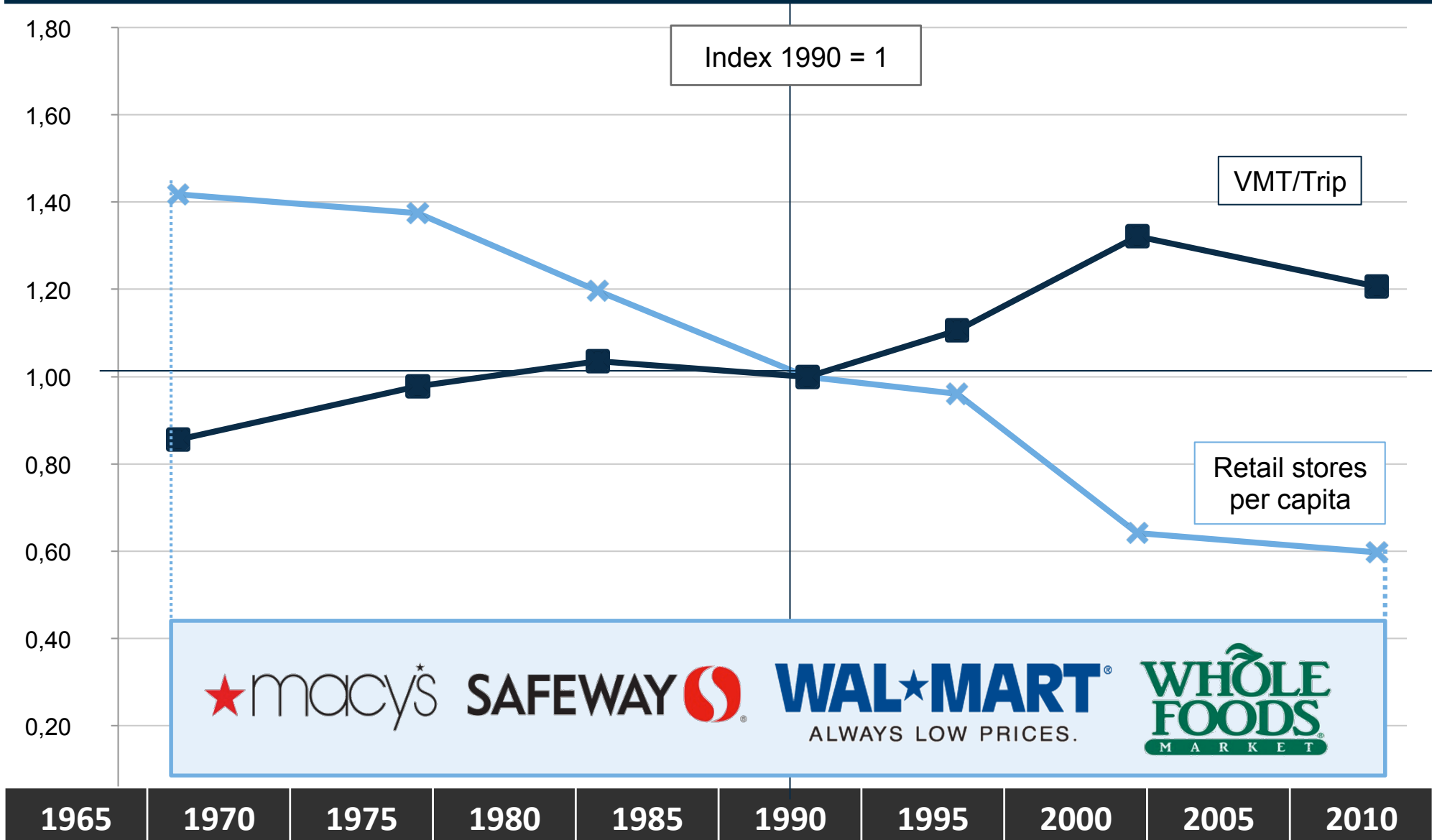
$$\text{VMT}_{\text{shop}} = \text{Pop} * \text{people/hh} * \text{carpooling} * \text{VMT/trip} * \text{trips/hh/week}$$



Why did VMT per trip increase?

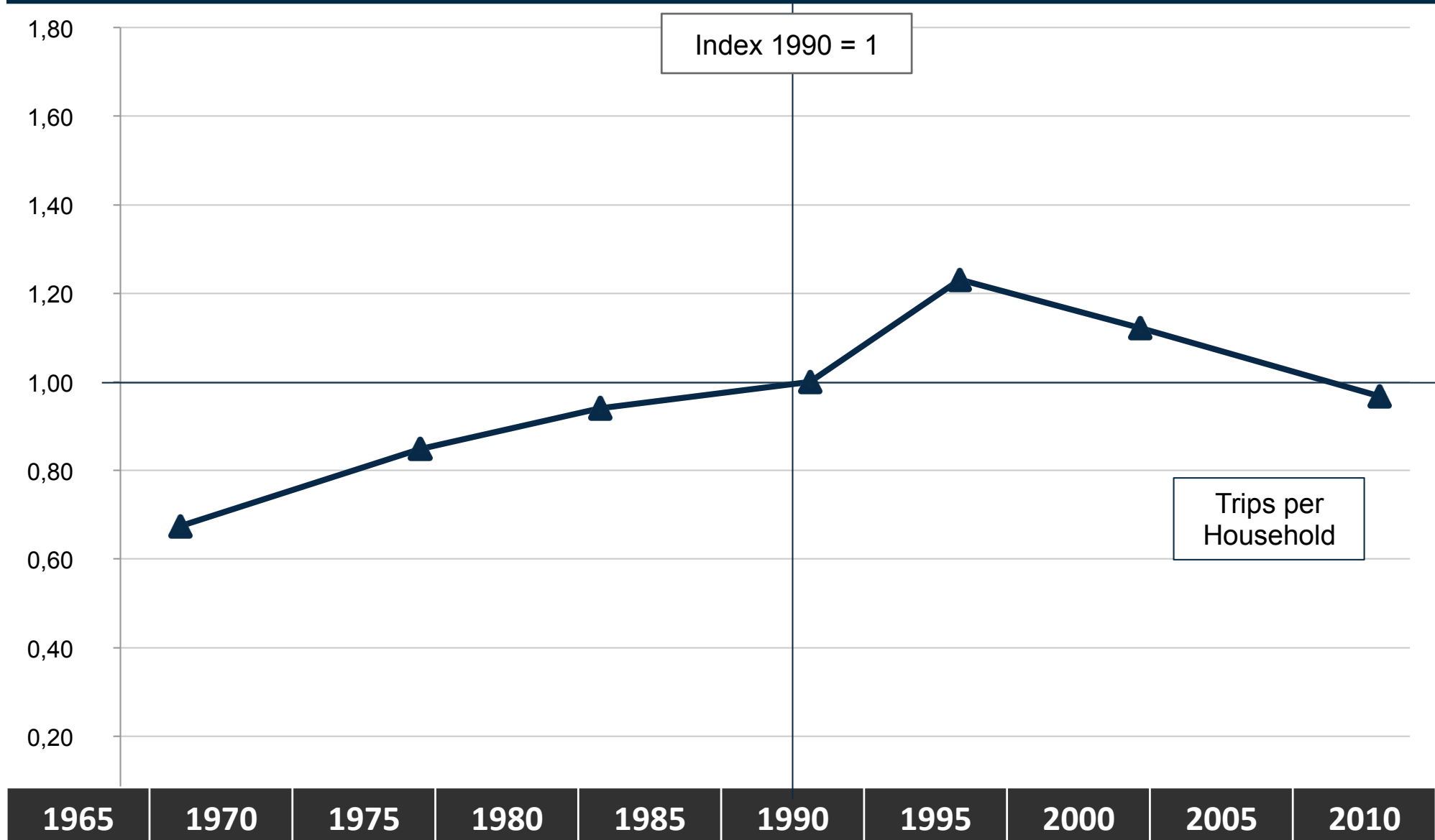


Why did VMT per trip increase?

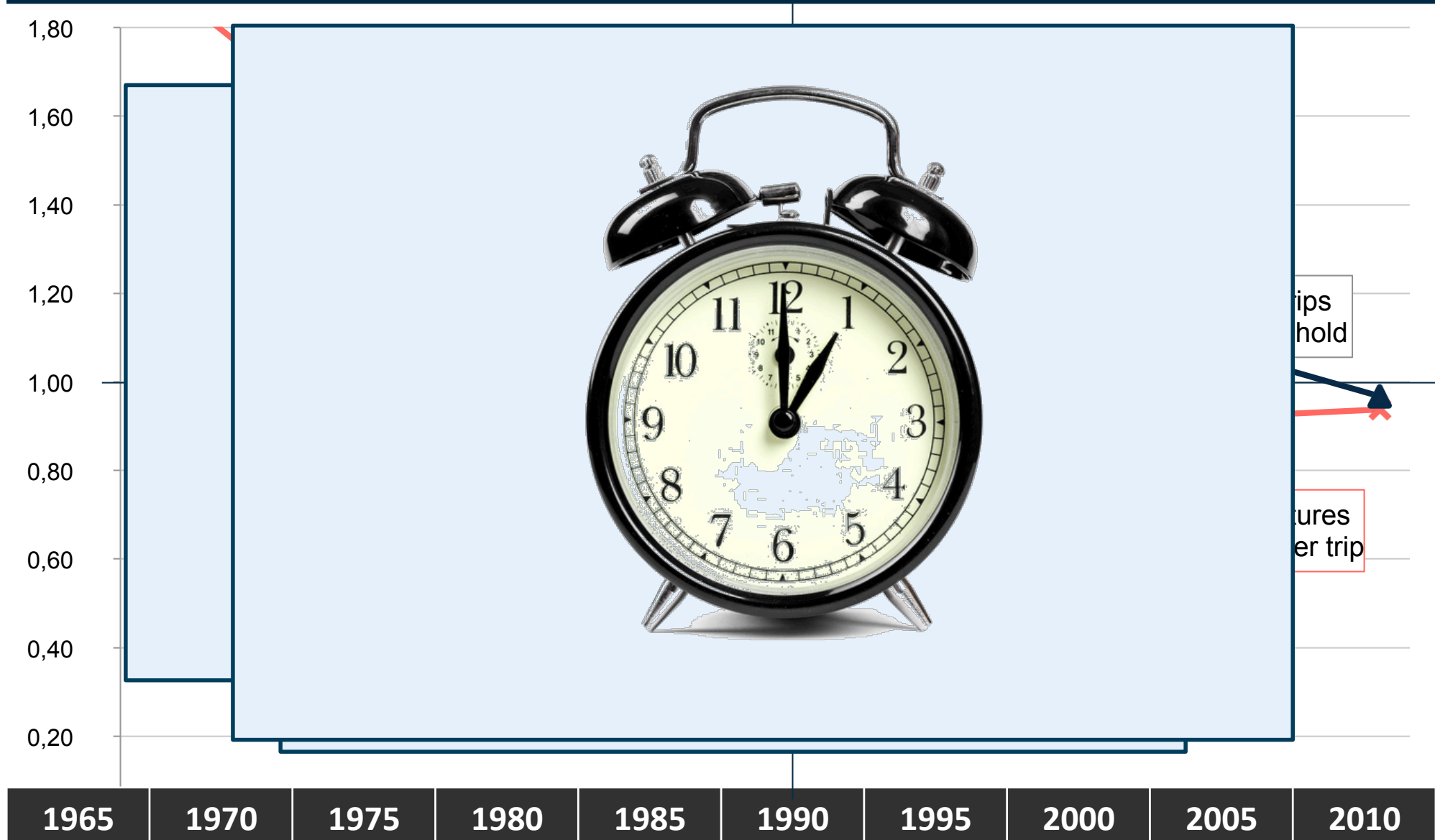


Sources: NHTS, NTS, NPTS (Oak Ridge Nat'l Lab), EIAAER, American Statistical Abstract

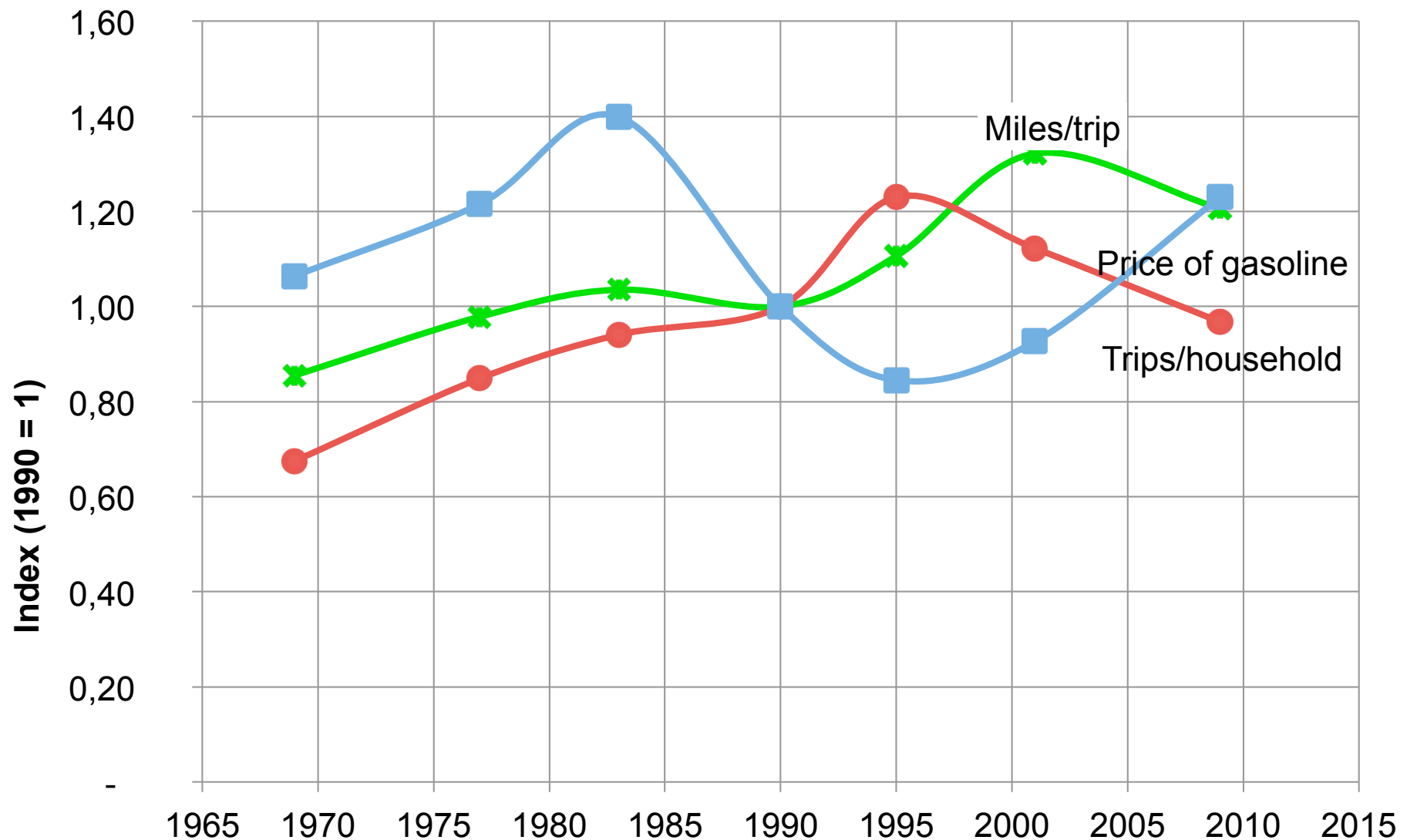
Why did trips per household increase?



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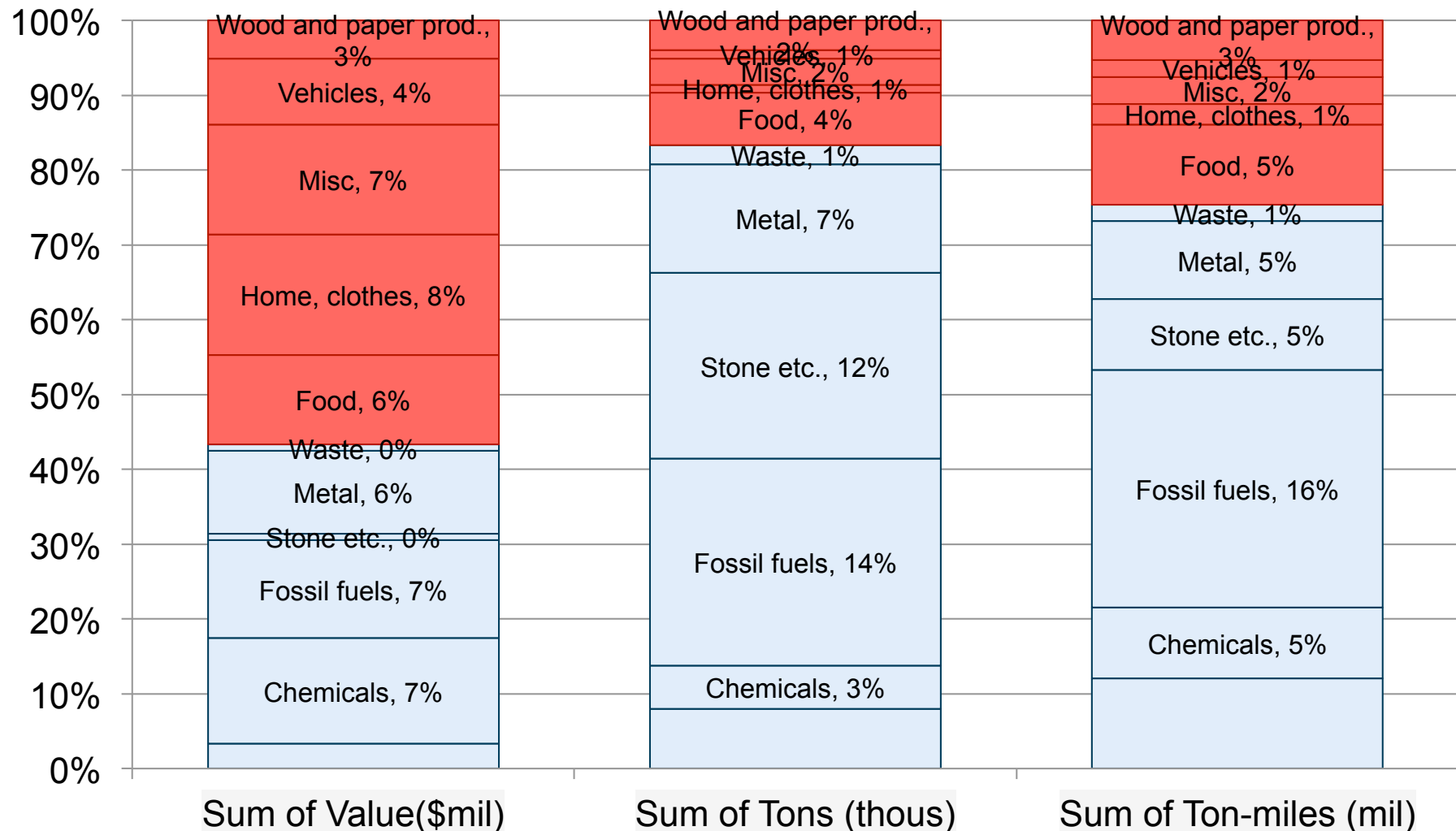
Price of Gasoline: Not Strong Indicator?



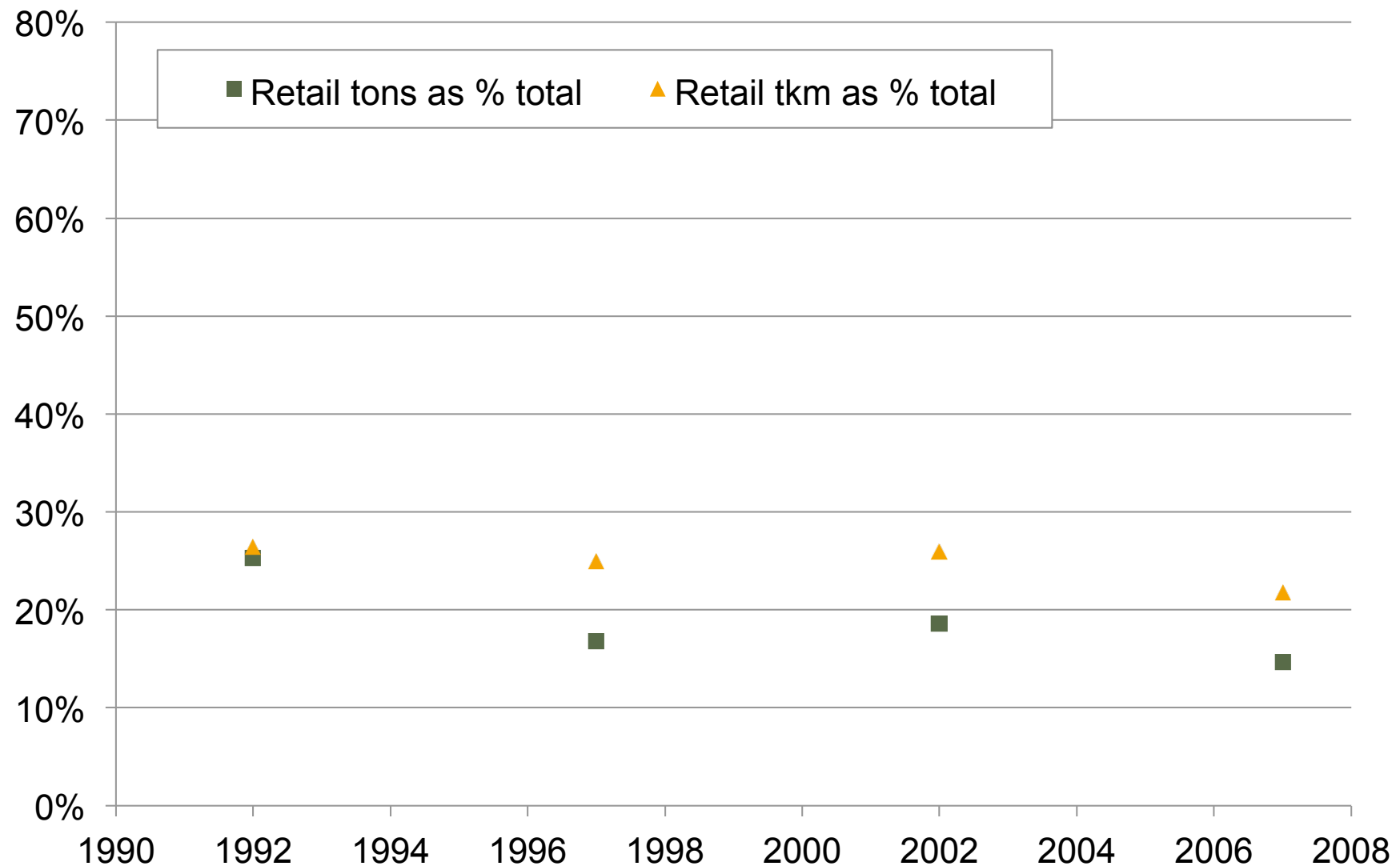
Freight



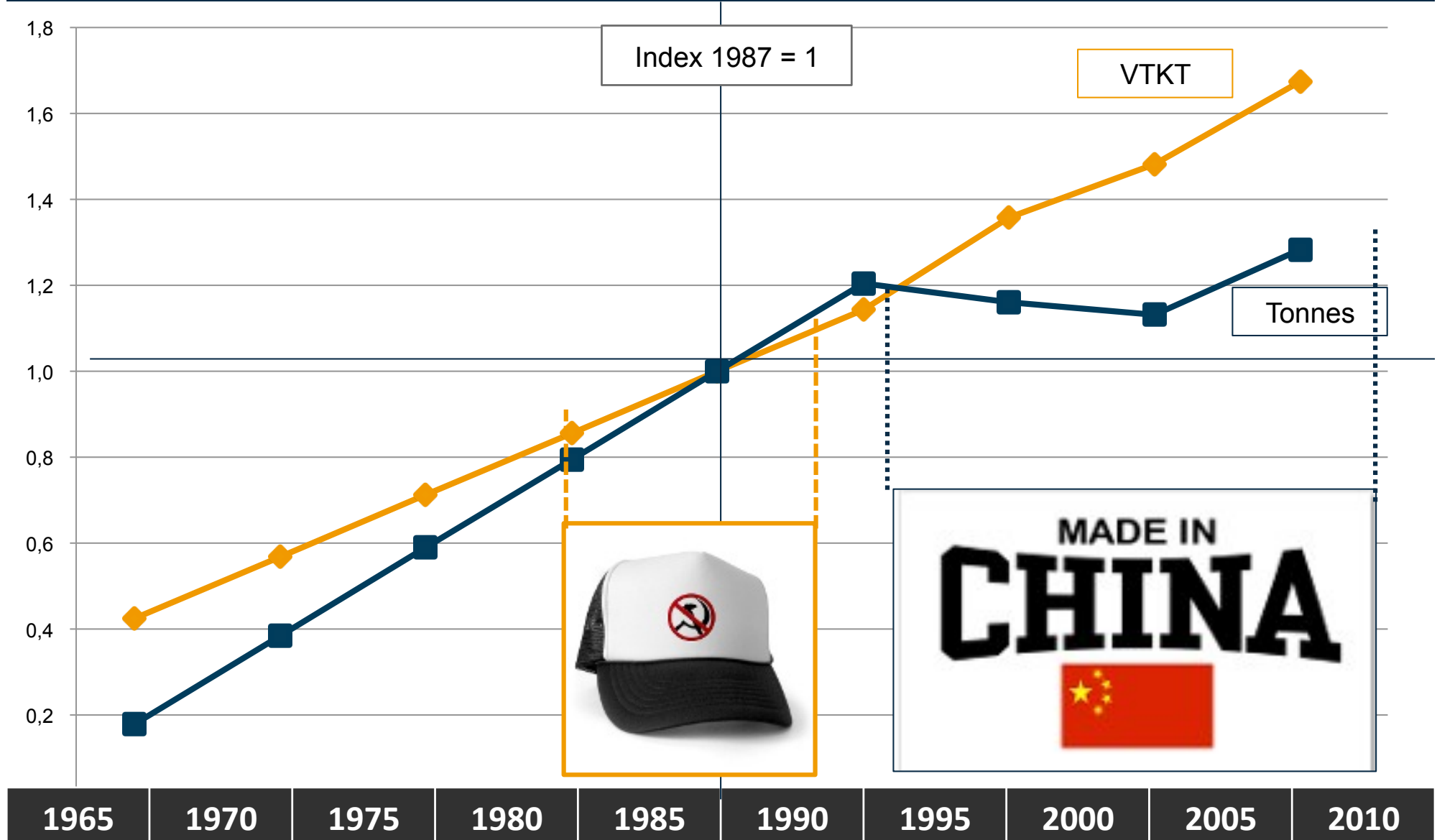
2007 freight tonnes, tonne-km, and value. Retail (pink) as % total.



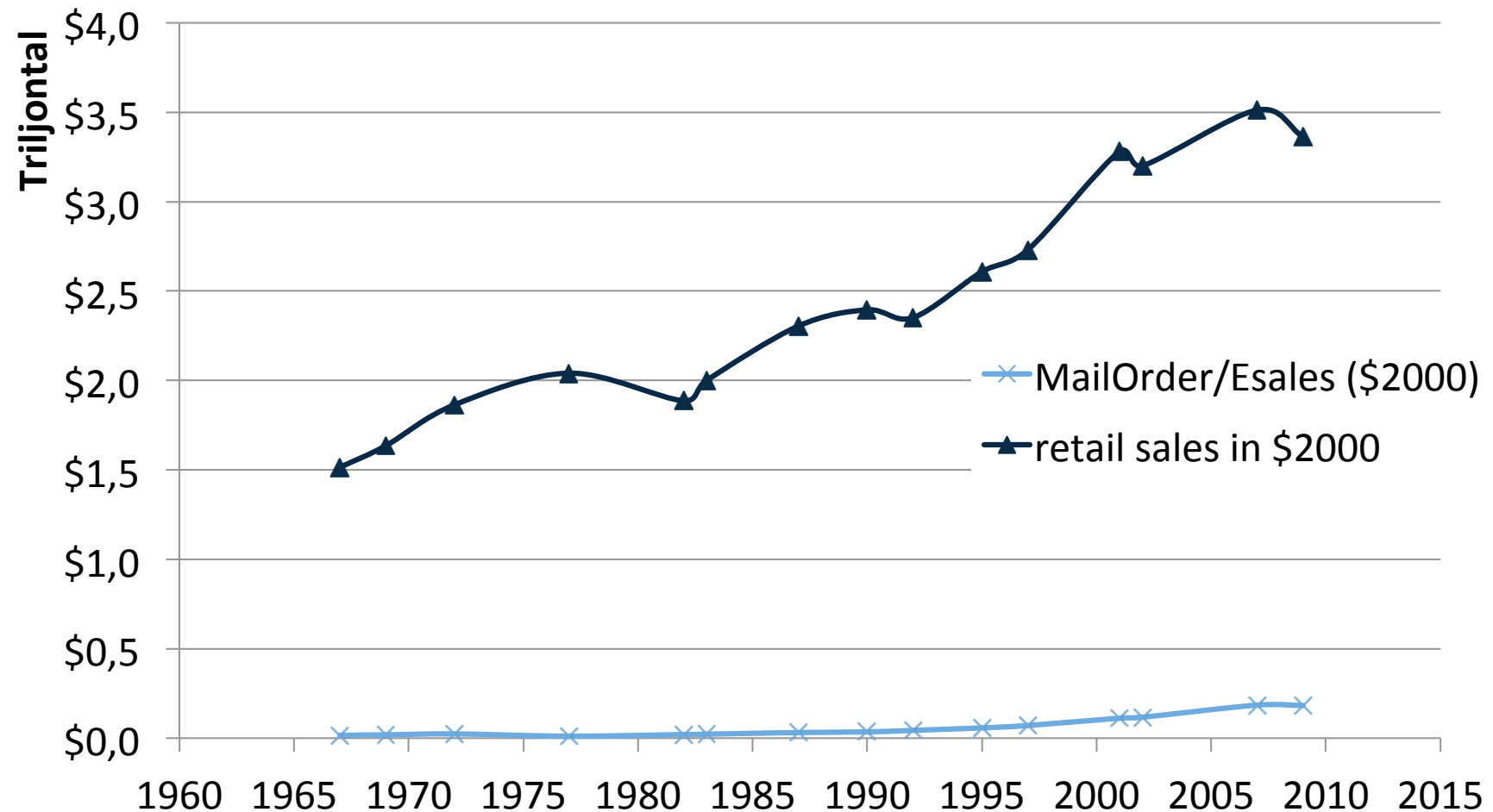
Retail figures required extrapolation



Why has retail freight energy use increased?



Value of e-sales (6% all in 2009)



What can we do about it?

1. Pay attention
2. Transcend freight/driving barrier
3. Data data data
4. Go beyond urban planning
(e.g. electronic shopping)
5. Explore non-energy policy

Thank you!

(laura.schewel@berkeley.edu)



Back up slides

Decomposition: DFS

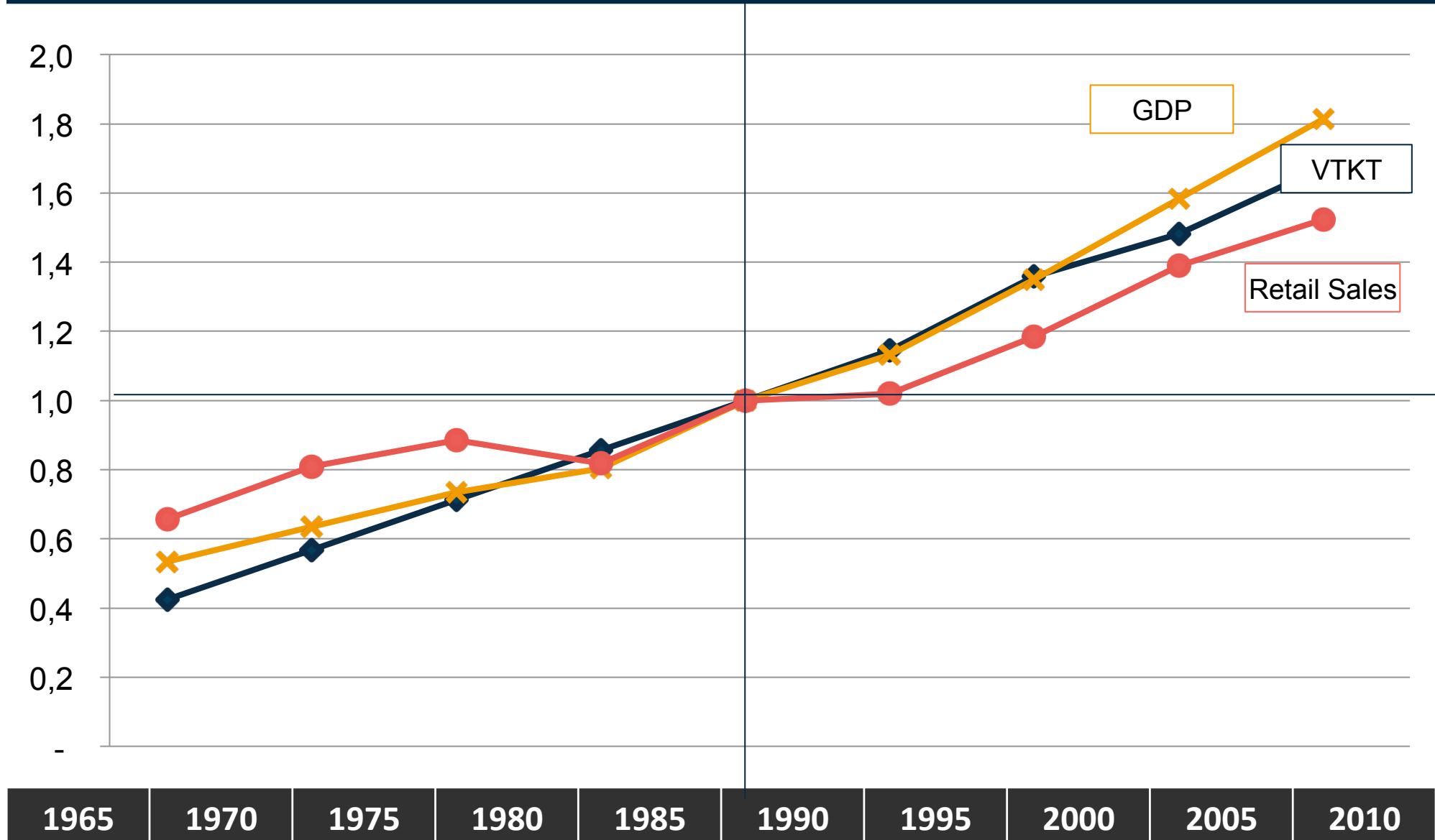
Year	1969	1977	1983	1990	1995	2001	2009	1967-2009
VMT for shopping	0.35	0.61	0.79	1.00	1.33	1.60	1.41	4.06
US Population	0.81	0.88	0.94	1.00	1.07	1.14	1.24	1.53
Households/Person	0.81	0.90	0.95	1.00	0.97	0.99	0.99	1.22
Person Trips/Household	0.67	0.85	0.94	1.00	1.23	1.12	0.97	1.43
Vehicle Trips/Person Trip	0.92	0.92	0.92	1.00	0.94	0.95	0.99	1.08
Vehicle Miles per Trip	0.85	0.98	1.04	1.00	1.11	1.32	1.21	1.41
GPM	1.45	1.40	1.16	1.00	0.96	0.93	0.92	0.64
Joules from shopping	0.50	0.85	0.92	1.00	1.29	1.49	1.30	2.59

Decomposition for Retail Freight

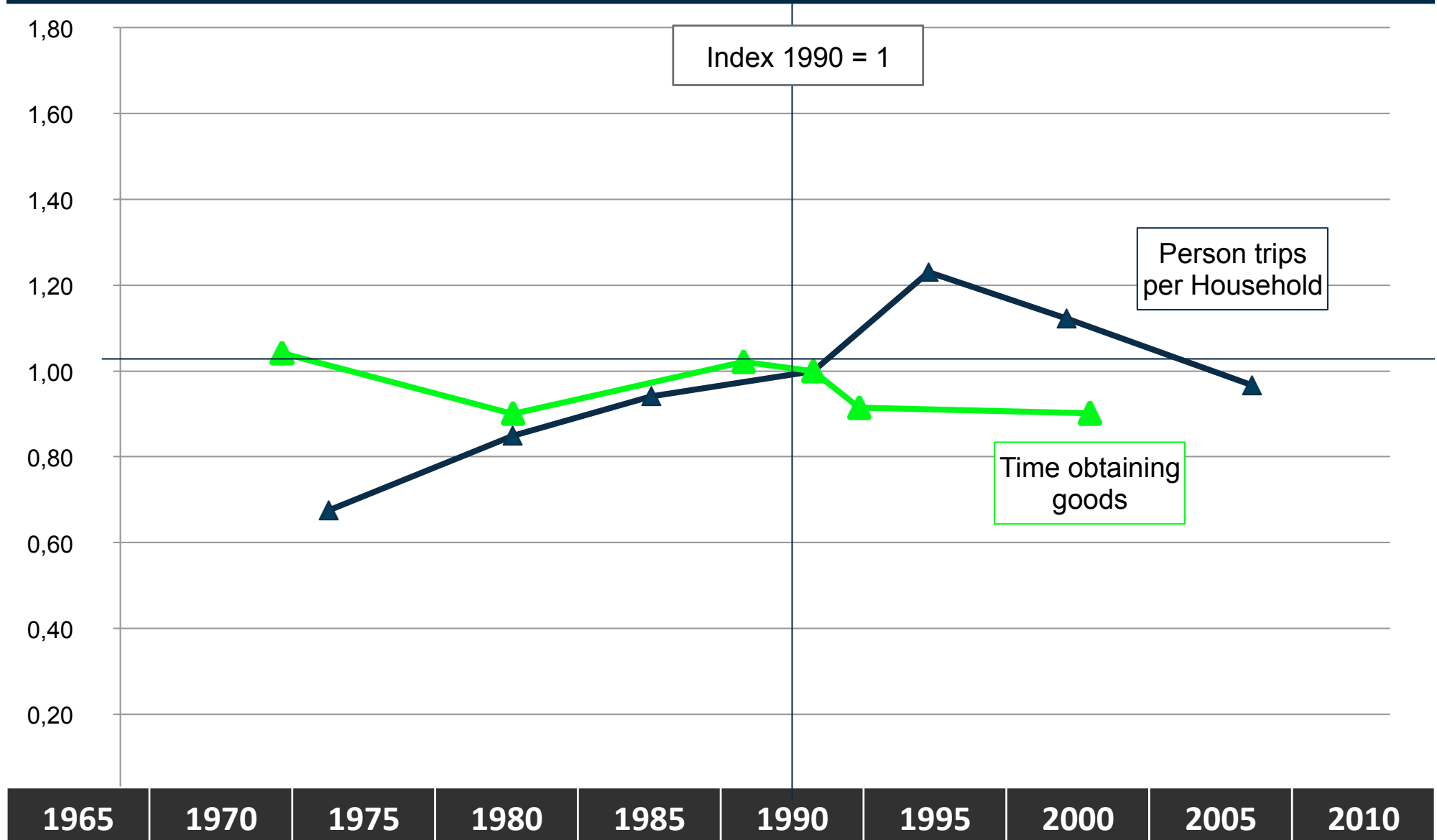
1967 1972 1977 1982 1987 1992 1997 2002 2007 ~~1967~~
2007

	1967	1972	1977	1982	1987	1992	1997	2002	2007	1967 2007
VKTK(RF)	0.42	0.57	0.71	0.86	1.00	1.14	1.36	1.48	1.67	3.9
Tonnes	0.18	0.38	0.59	0.79	1.00	1.21	1.16	1.13	1.28	7.2
Intensity	0.86	0.97	1.05	1.00	1.00	1.04	1.05	1.06	1.10	1.3
Joules(RF)	0.36	0.55	0.75	0.85	1.00	1.19	1.43	1.57	1.85	5.1

Why did retail freight energy use increase?

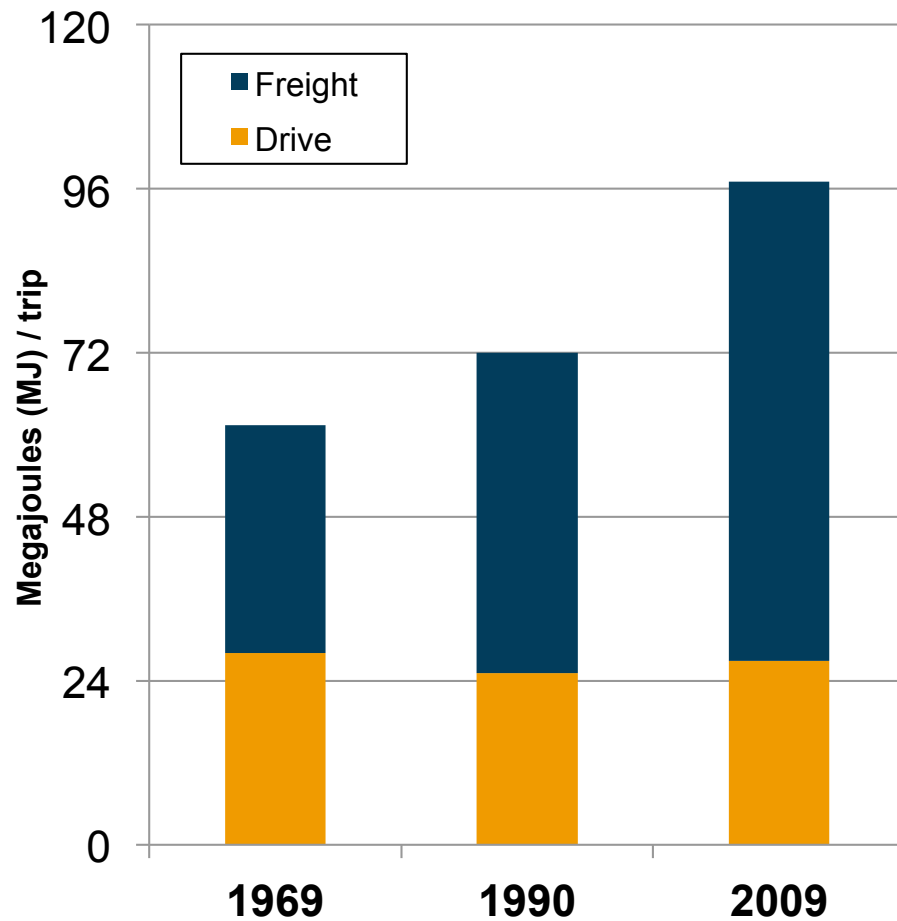


Why did trips per household increase?

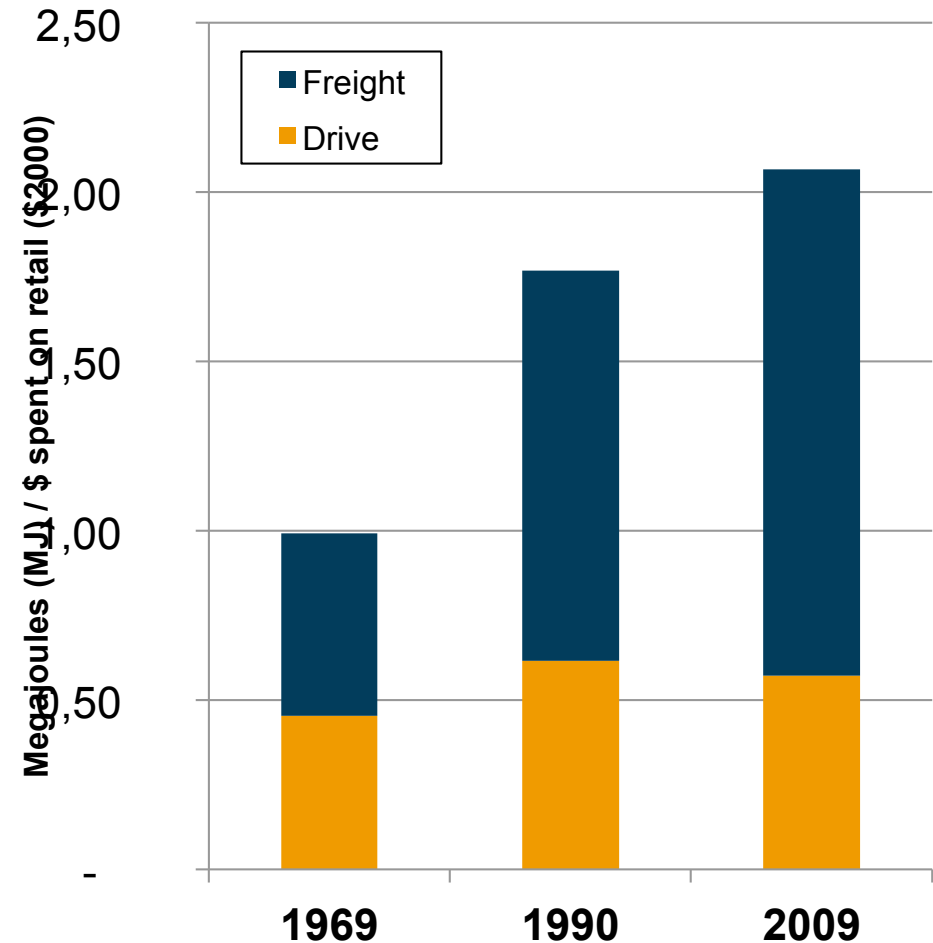


Goods Movement has become less energy efficient

Goods Movement energy use per shopping trip



Goods Movement energy use per \$2000 spent on goods



Why does Goods Movement matter?

