Modeling Task Force Meeting

SCAG's Auto Operating Costs Development for Base Year 2012

Yongping Zhang
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Background

- Auto operating cost (AOC) is a key parameter in the calculation of the marginal utility cost functions used in mode choice

- AOC is defined as an out-of-pocket expense consisting of:
  - fuel (primarily gasoline) cost
  - Other costs (repairs, maintenance, tires, accessories)

- AOC does not include other costs such as – insurance and depreciation

Background

The big 4 MPOs in CA (SCAG, MTC, SANDAG, SACOG) work collectively and use consistent methods and data. Data sources include:

1. Fuel Cost:
    – OPIS gas prices, region specific
2. Non-Fuel Cost:
    – AAA "YourDrivingCosts" report, national average
3. Fuel Efficiency:
    – EMFAC 2011 default fuel efficiency for LMDV after adopting Pavley I, region specific

OPIS Gas Prices

- Oil Price Information Service (OPIS) provides the actual daily price data without any rolling averages
- Captures over 100,000 gas and diesel prices daily, far more than any other company in the marketplace
- Used by AAA Fuel Gauge (www.fuelgaugereport.com)
- OPIS collects it's retail prices through a number of different sources:
  - captures actual gasoline prices using fleet cards used by companies such as Federal Express, local fleets, etc.
  - receives direct feeds from several major chains and gas station owners
  - Gas Buddy: retail prices submitted by trusted users which was acquired by Gas Buddy
- However, OPIS data is not weighted towards sales volume
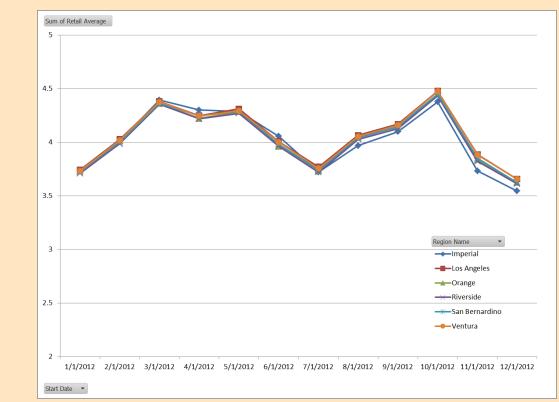
OPIS Gas Prices

Data comes from 8,895 gas stations in CA:

Summary Region Name	Station Count
CA - Imperial	66
CA - Los Angeles	1,823
CA - Orange	589
CA - Riverside	448
CA - San Bernardino	527
CA - Ventura	172
Total Stations in SCAG Region	**3,625**
Total Stations in CA	**8,895**

OPIS Gas Prices

SCAG Purchased OPIS Retail History:

- – Jan 1 – Dec 31 for 2005, 2008, and 2012

- – Annual Averages and Monthly Averages

- – Gasolines by grade (Regular, Mid, Premium) and Diesel

- – 6 counties

Sales Volumes

Prime Supplier Sales Volumes by Grade (regular, mid, premium) in CA
- Source: U.S. Energy Information Administration
- http://www.eia.gov/dnav/pet/pet_cons_prim_dcu_SCA_m.htm

Year	%Regular	%Mid	%Premium	%total
Total 2012	81.3%	3.0%	15.7%	100.0%
Total 2008	81.6%	4.5%	13.9%	100.0%
Total 2005	78.9%	6.4%	14.7%	100.0%

HPMS – VMT ESTIMATION

Table 1. 2012 Total Daily VMT (in thousands) by County		
County	**Official 2012 HPMS**	**%**
IMPERIAL	5,002	1.18%
LOS ANGELES	214,482	50.40%
ORANGE	72,771	17.10%
RIVERSIDE	55,337	13.00%
SAN BERNARDINO	59,240	13.92%
VENTURA	18,703	4.40%
Total	**425,535**	100.00%

CPI Factor

CPI Factor:
- – Source: Bureau of Labor Statistics, U.S. Dept. of Labor
- – http://data.bls.gov/pdq/SurveyOutputServlet?series_id=CUURA4 21SA0,CUUSA421SA0

Year	Annual	HALF1	HALF2
2003	187.00	186.70	187.20
2004	193.20	191.50	194.90
2005	201.80	199.20	204.50
2006	210.40	209.30	211.60
2007	217.34	216.26	218.42
2008	225.01	224.38	225.64
2009	223.22	221.94	224.50
2010	225.89	225.49	226.30
2011	231.93	231.61	232.25
2012	236.65	235.81	237.49

Fuel Efficiency

1. Region-specific, derived from ARB's Emission Factor (EMFAC) software
2. For SCAG region, value (19.79 mile/gallon for year 2012) is based on EMFAC 2011 default fuel efficiency for LMDV in SCAG region after adopting Pavley I.

	EMFAC2011	After adopting Pavley I	After adopting Pavley I & LCFS
2005	18.63		
2008	18.85		
2012	19.06	19.79	19.89

Fuel Cost Estimation

1. Purchased the OPIS prices on gas (regular, mid, premium) for six counties in SCAG region in year 2005, 2008, 2012.
2. Used VMT by county from HPMS 2012 to weigh the gas and diesel prices for each county.
3. Used Sales Volumes to weigh the gas prices by grade (regular, mid, premium)
4. Used CPI adjustment factor to convert the nominal dollars into $2010.
5. Applied fuel efficiency to convert the gas price from mpg to $/mile

Year	Gasoline Price (Nominal) $/gallon	Gasoline Price ($2010) /gallon	Fuel Efficiency (mile/gallon)	Fuel Cost ($2010)/mile
2005	2.54	2.85	18.63	0.153
2008	3.52	3.53	18.85	0.187
2012	4.08	3.90	19.79	0.197

Non-Fuel-Related Operating Costs

- Source: "YourDrivingCosts" annual report published by AAA. Values are national estimates that we assume will apply to each of the MPO areas

Table 1: Non-Fuel-Related Operating Costs (Prices in Year 2010 dollars per mile)

Year	Maintenance	Tires	Maint. + Tires
2005	$0.0437	$0.0062	$0.05
2006	$0.0453	$0.0065	$0.05
2007	$0.0437	$0.0069	$0.05
2008	$0.0452	$0.0076	$0.05
2009	$0.0447	$0.0082	$0.05
2010	$0.0444	$0.0096	$0.05
2011	$0.0461	$0.0103	$0.06
2012	$0.0524	$0.0105	$0.06

Results

AOC for base year 2012, in $2011

AUTO OPERATING COST CALCULATION		
Description	**Value**	**Based on**
2012 On-road miles/gallon	19.79	MPG for SCAG Region (SCAG Model)
Avg. Year 2012 cents/gallon	408.2	Price & volume sold by fuel grade
Converted to 2011_cents*/gallon	400.0	
Fuel Cost (2011_cents/mile)	20.21	Gallon/mile * cents/gallon
Other Costs (2011_cents/mile)	6.47	Repairs, maint., tires, accessories
Total Cost/Mile (2011 cents)	26.68	
Total Cost/Mile (2011 cents)	**26.68**	