

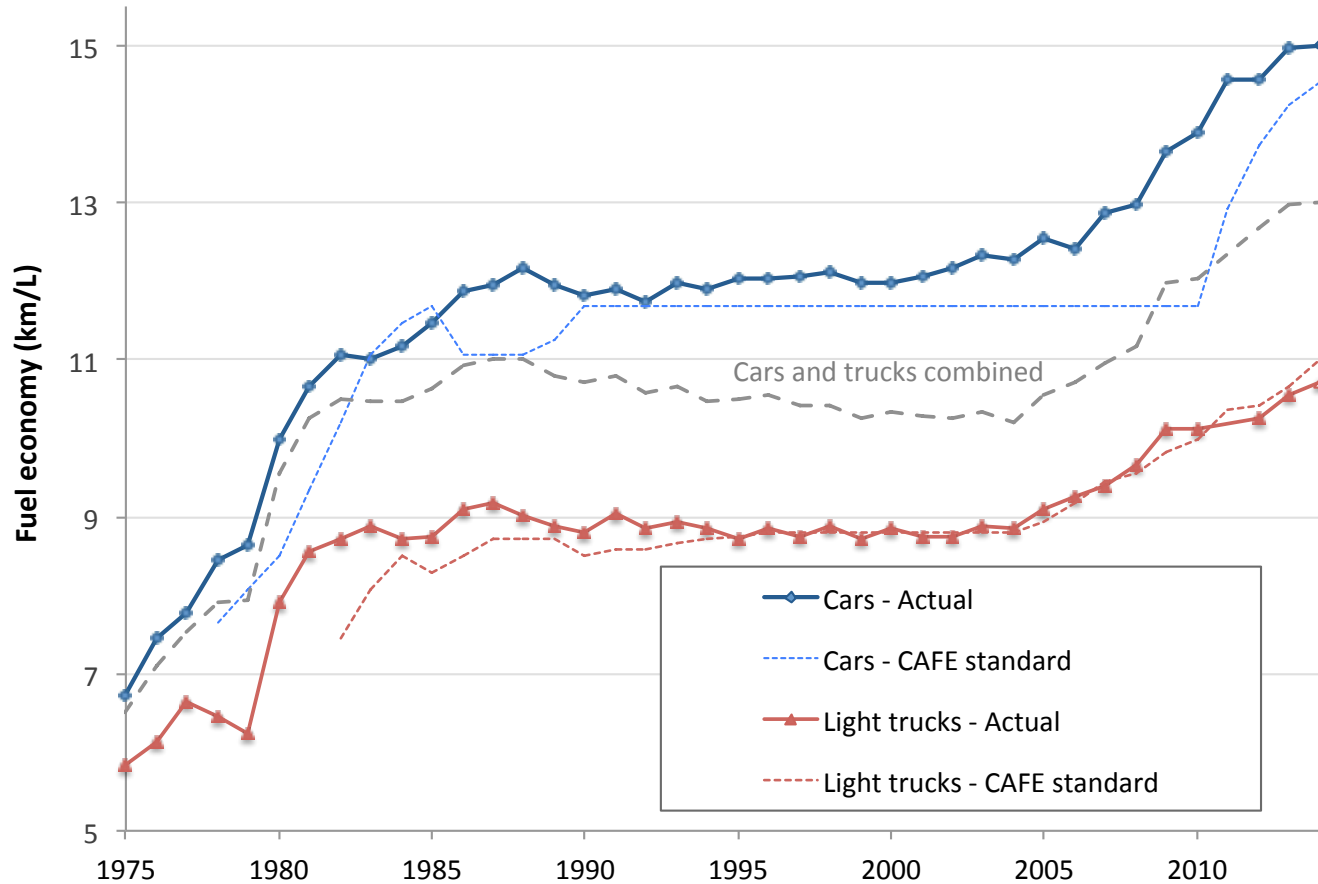
Market analysis of new light-duty vehicle sales in Mexico and comparison with U.S. market

ICCT and INECC

April 8, 2015

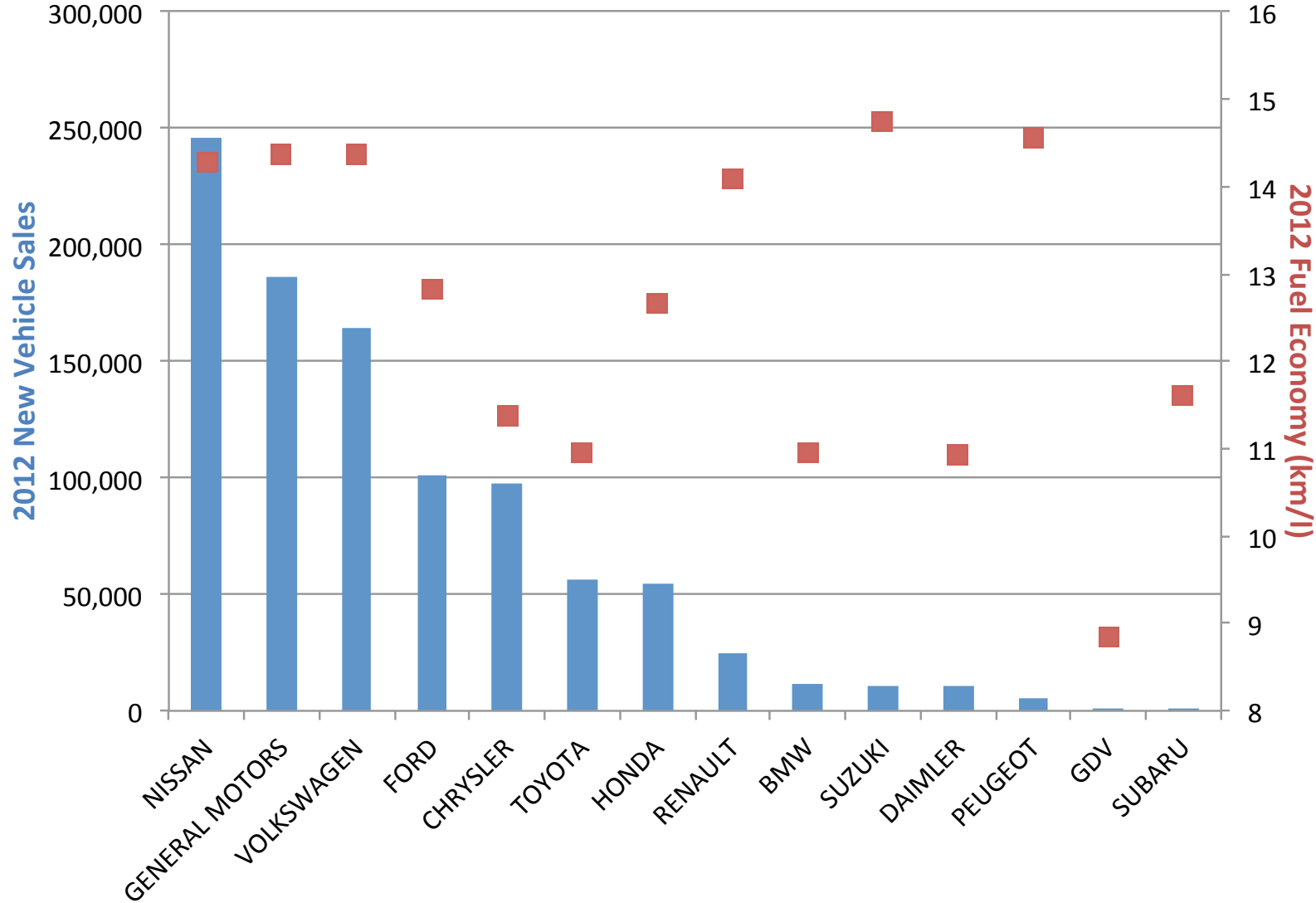


US Fuel Economy Trend

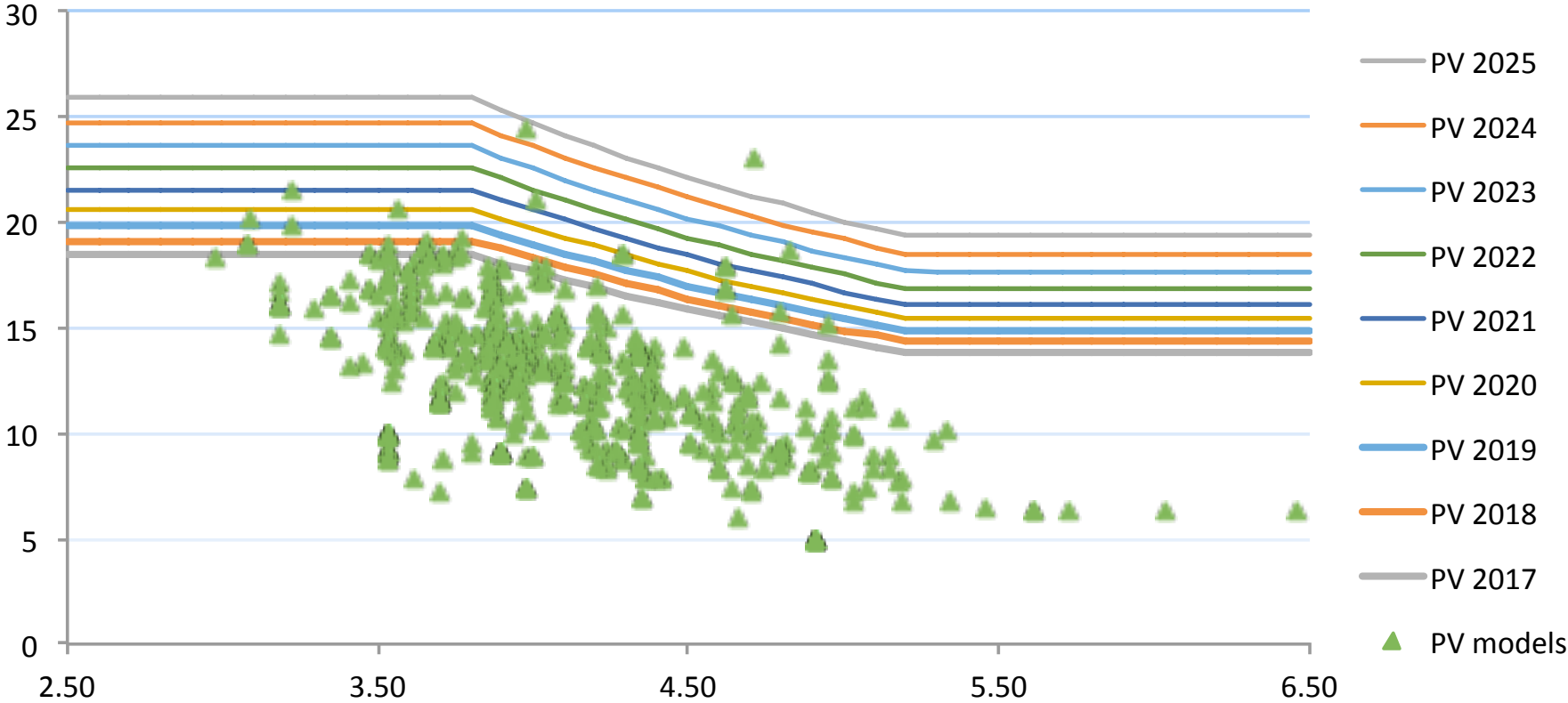


US Fuel Economy Trends Report. EPA, 2014: <http://www.epa.gov/oms/fetrends.htm>;
Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards; Final Rule. Federal Register, 2010. <http://www.gpo.gov/fdsys/pkg/FR-2010-05-07/pdf/2010-8159.pdf>

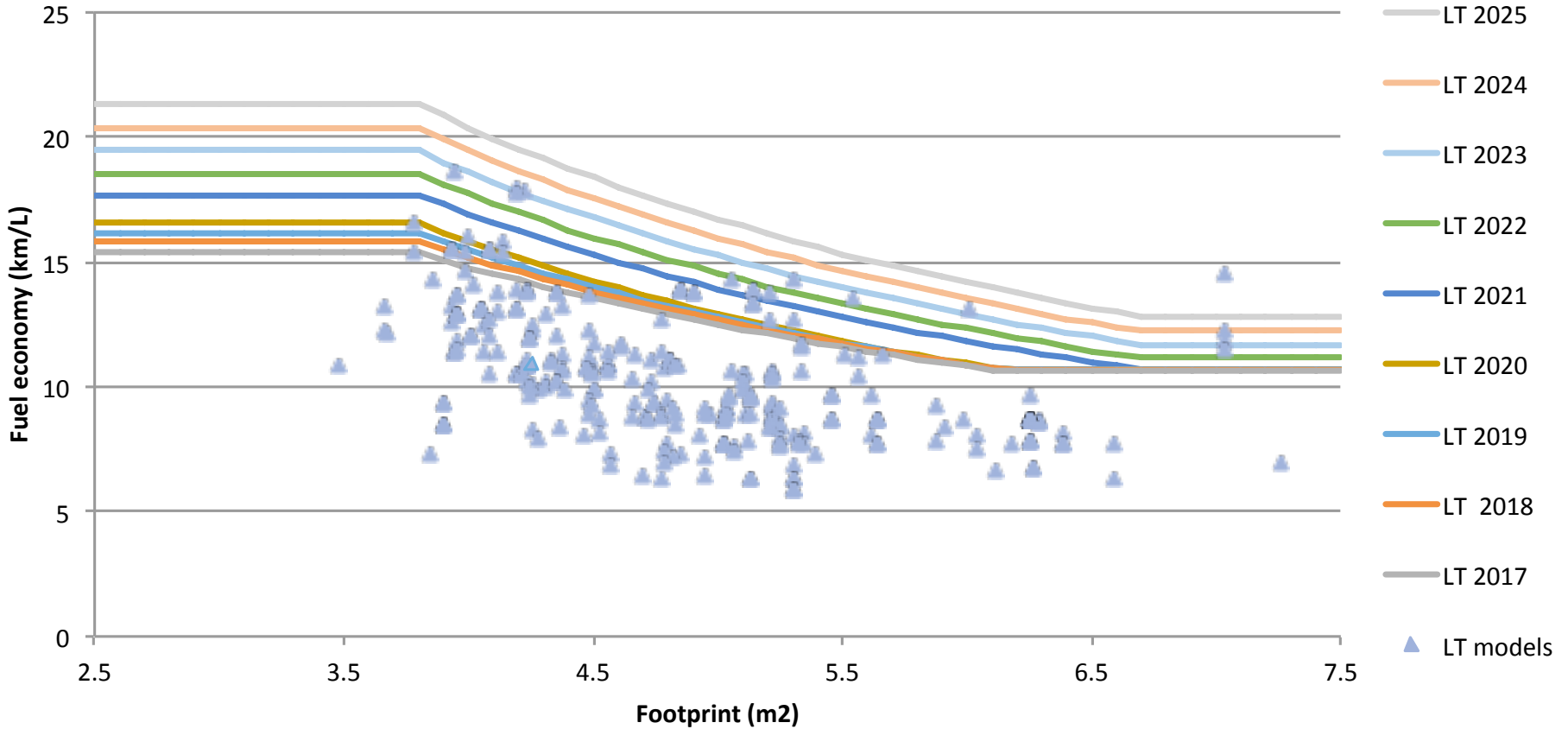
Sales in Mexico

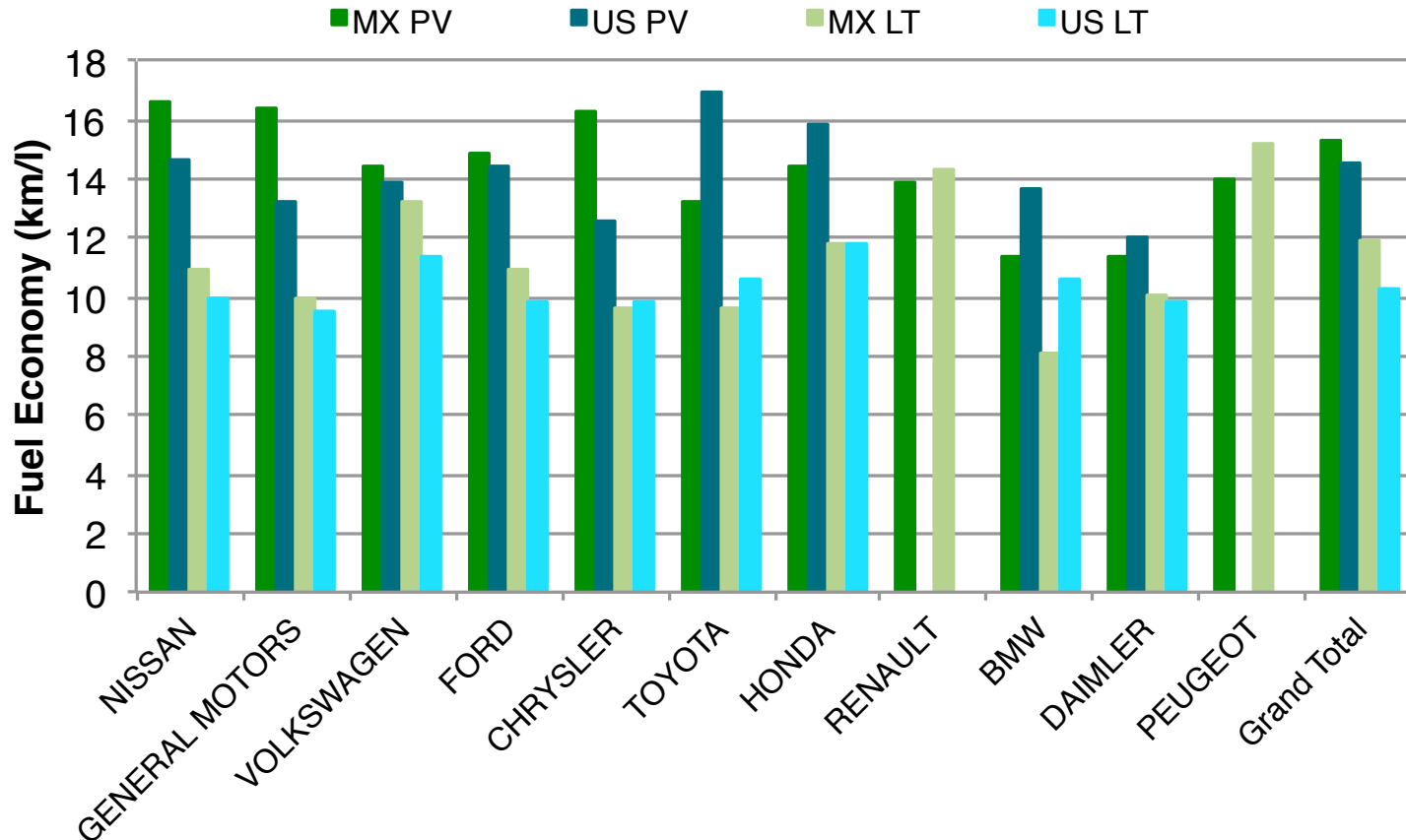


US PV 2017-2025 standards, 2012 Mexico PV models



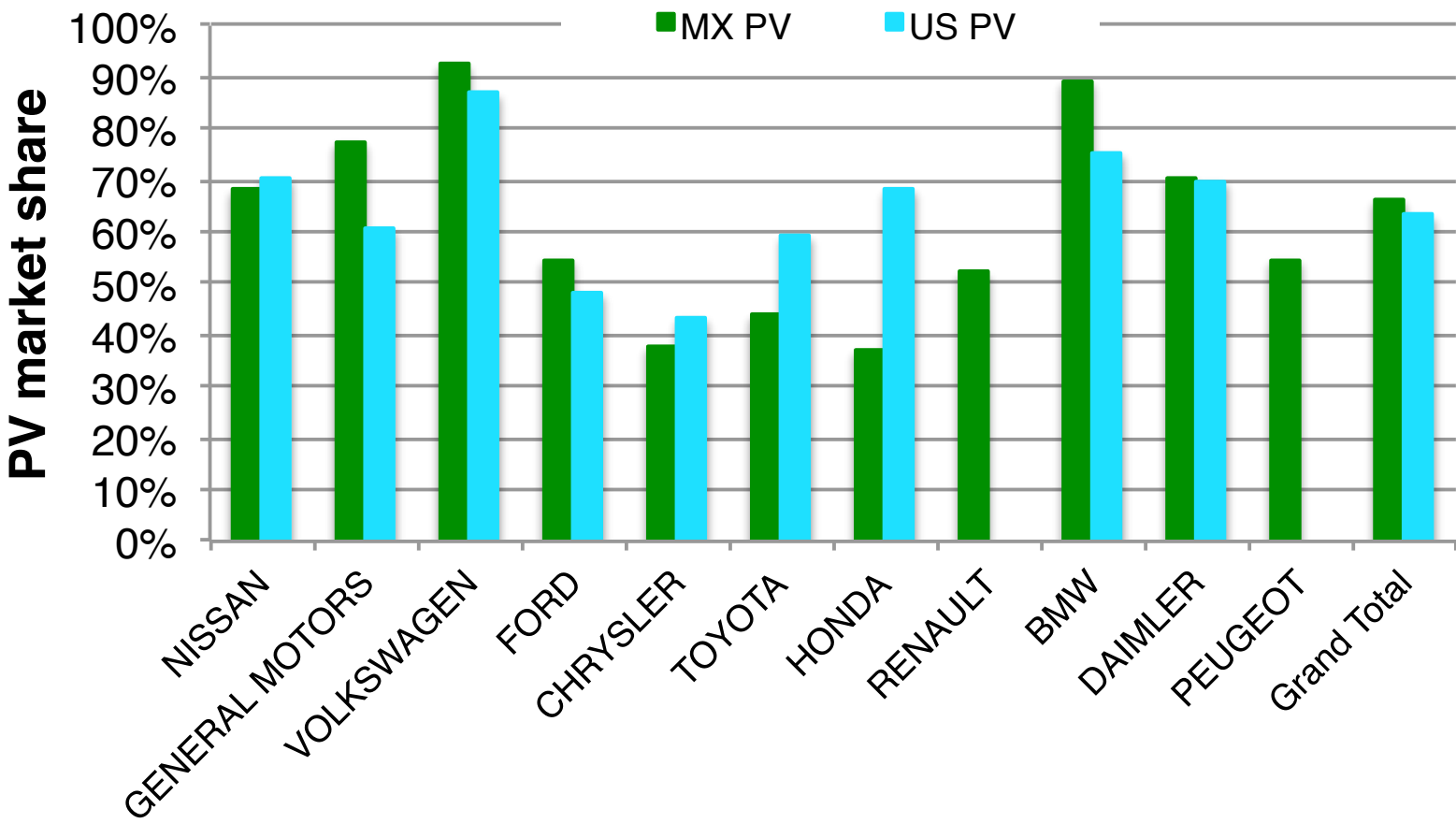
US LT 2017-2025 standards, 2012 Mexico LT models





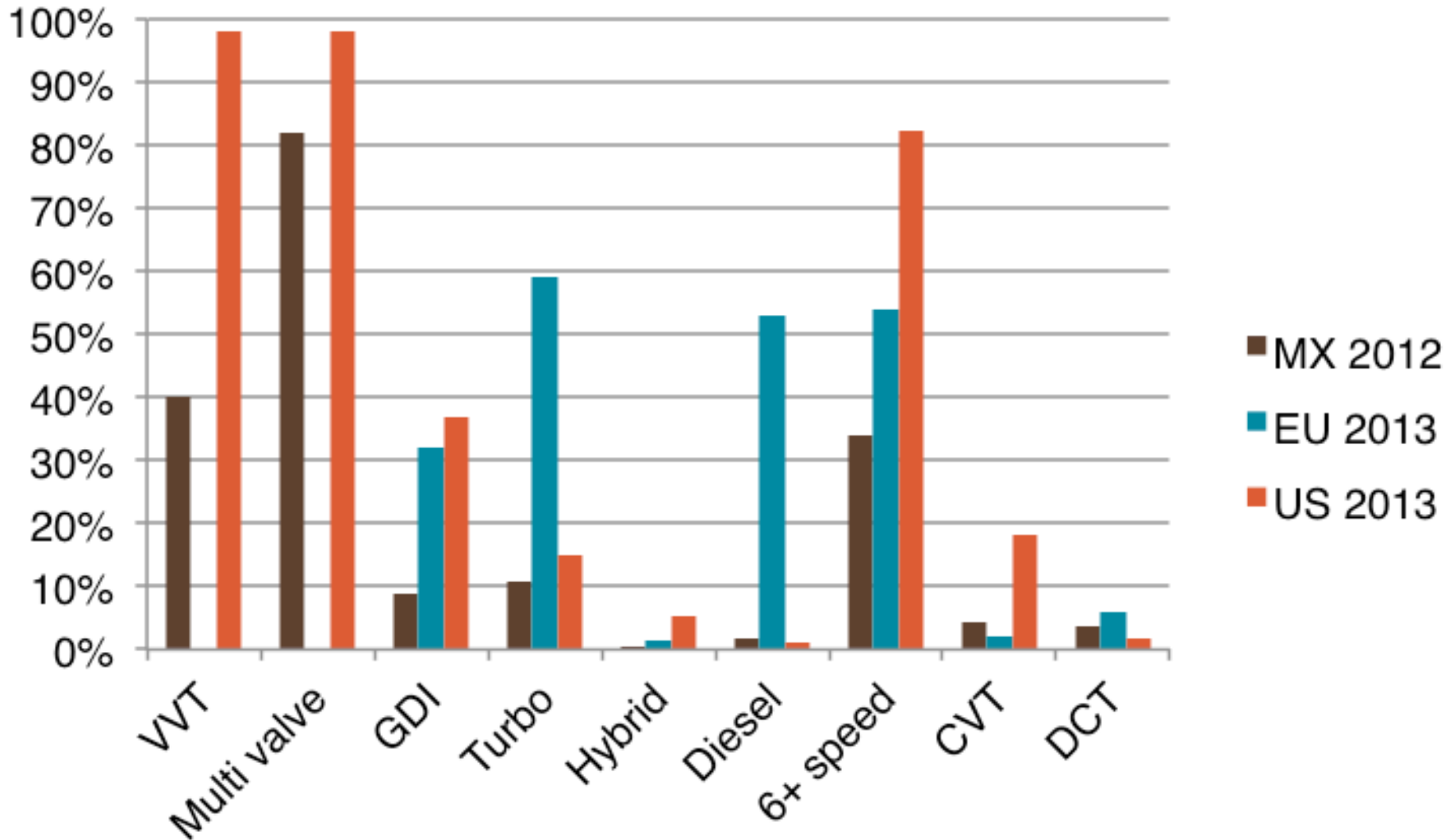
Manufacturers that are significantly more efficient in the US: Toyota, BMW, Honda

PV/LT market share



Source: EPA Fuel Economy Trends Report, Mexico Database (2012)

Technology differences



US & Mexico fleet characteristics

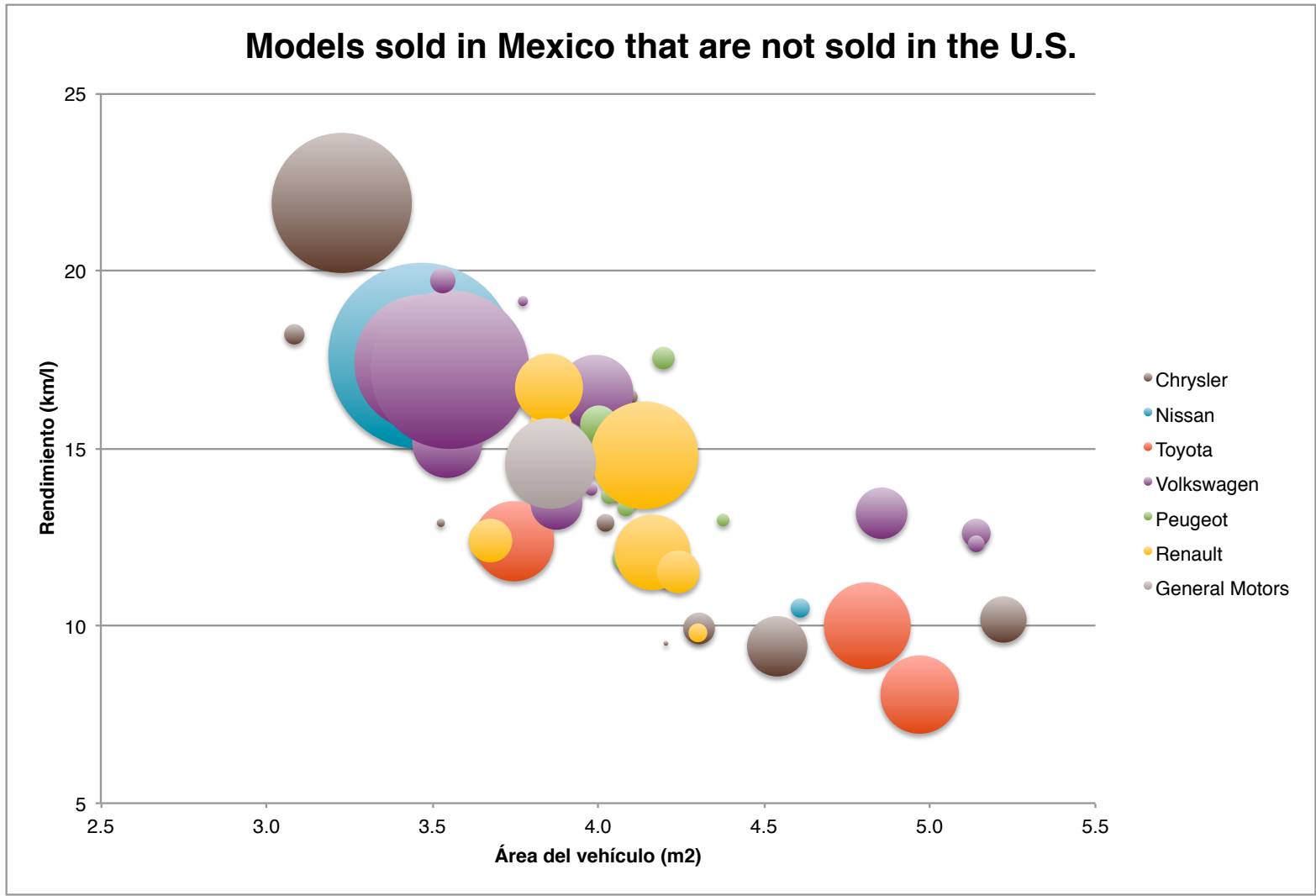
	Diesel share	Market share	Fleet average weight (kg)	Fleet average power (hp)	Fleet average size (m2)	Fleet average fuel economy (km/l)
US PV	1%*	64.6%**	1595**	192**	4.2**	14.6**
Mexico PV	0.2%	66%	1195	134	3.7	15.4
US > MX			+33%	+62%	+14%	-5%
US LT	12%*	35.6%**	2181**	284*	5.1**	10.2**
Mexico LT	5%	33%	1730	206	4.6	10.6
US > MX			+26%	+38%	+11%	-4%
US total	2.7%*		1804**	227**	4.5**	12.7**
Mexico total	1.8%		1375	159	4.0	13.4
US > MX			+31%	+43%	+13%	-5%

* Polk data for 2011

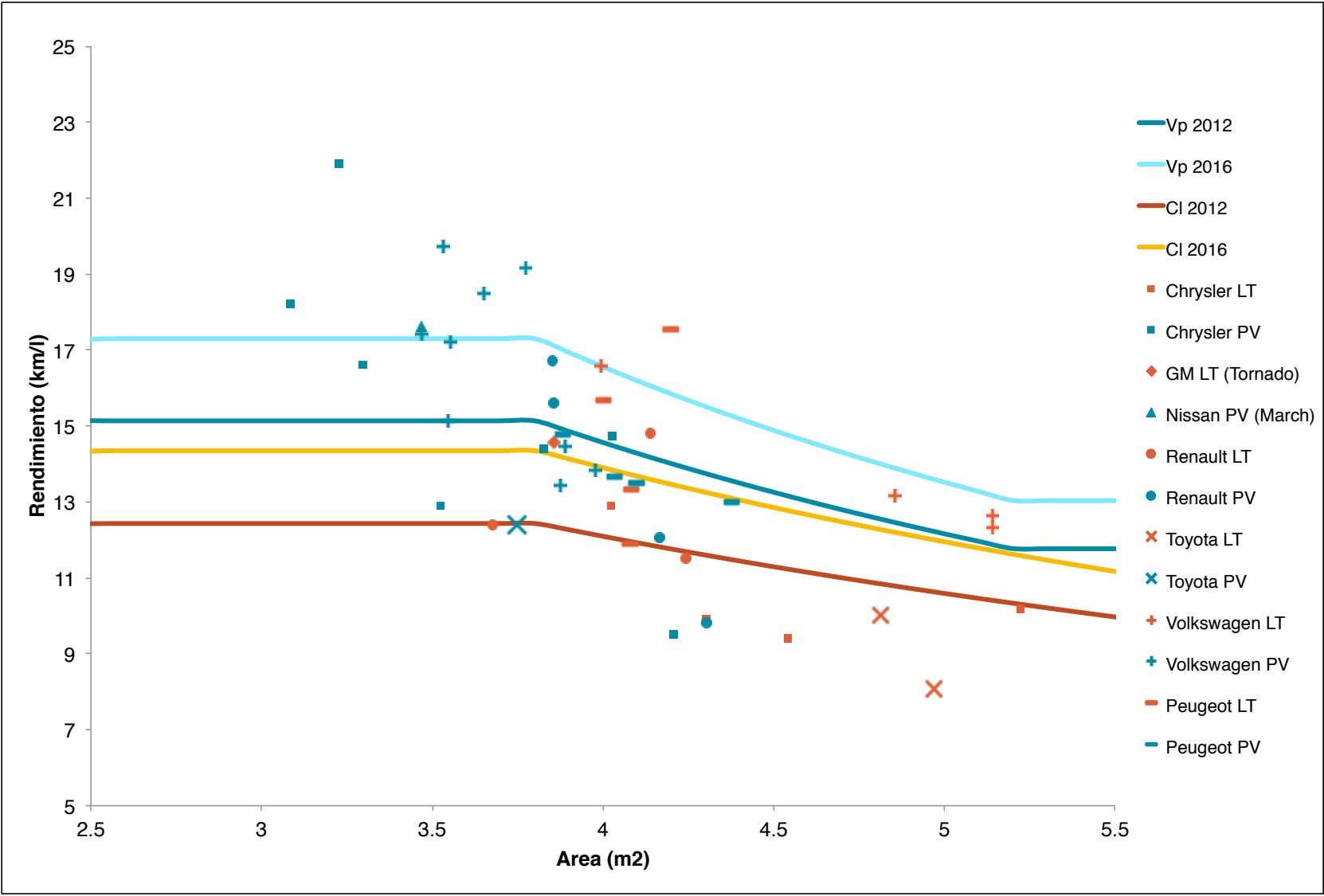
** EPA 2014 Trends report (MY 2012)

- US vehicles are:
 - Larger
 - More powerful
 - Less efficient
 - More likely to be trucks

Models not sold in the US



Fuel economy of models not sold in the US



Non-US models may influence industry perspective

- Vehicles sold in the U.S. will have to improve to meet U.S. standards. Models not sold in the U.S. are less likely to have technology improvements and may not be able to remain in the market given increased stringency.
- Three Toyota models that are not sold in the U.S. (HiAce, HiLux and Avanza), account for 26% of Toyota sales in Mexico and are well below the 2012 voluntary standard.
- Many other popular models not sold in the U.S. are very efficient and above even the mandatory 2016 standard.
 - Nissan March
 - Volkswagen Gol, Ibiza and Saveiro
 - Chrysler i10
 - Renault Duster
 - GM Tornado

- Allows for option to comply with U.S. or European-based standards
- Standards are equivalent to:
 - Euro 4
 - Mix of Tier 1 and Tier 2
- Standards do not require certification to demonstrate compliance—manufacturers submit test results and indicate test cycle
- All diesel vehicles currently sold comply with the European-based standards (with known in-use compliance problems for NO_x)

NOM 042 US-Based Standards

80,000 km

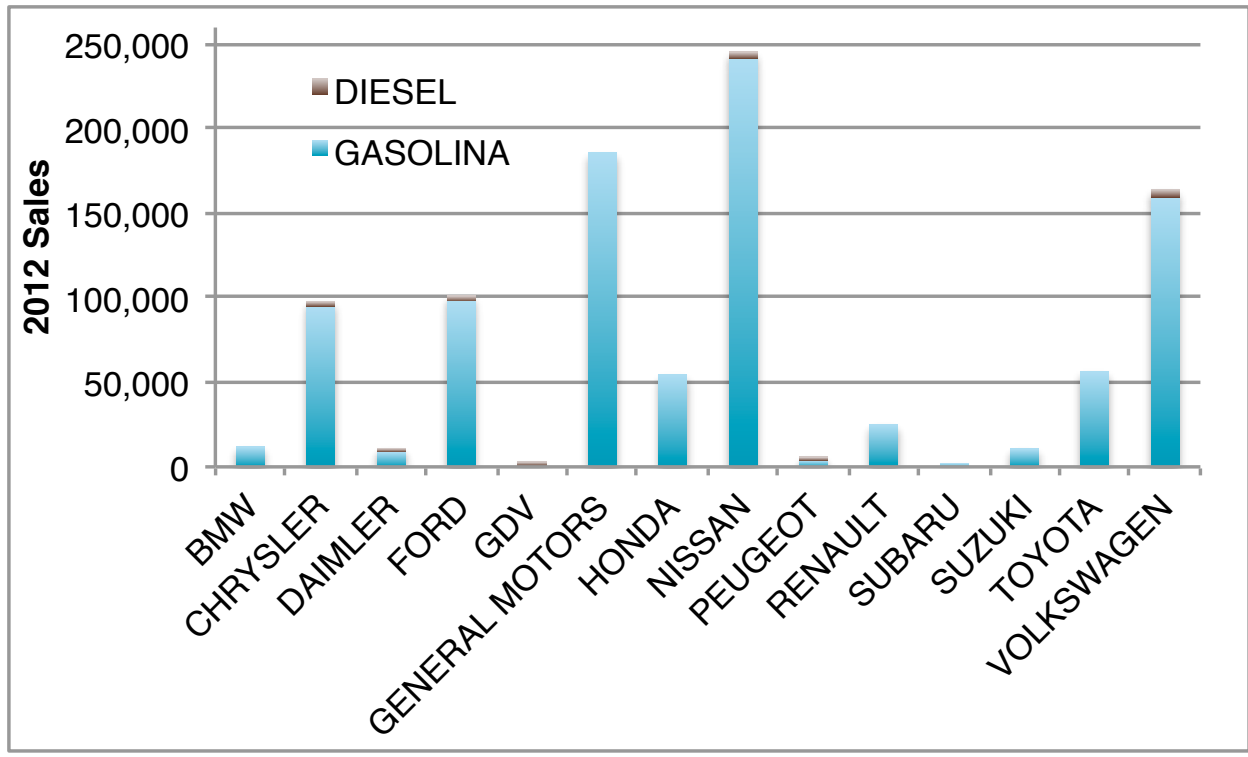
Standard	Vehicle Class	CO, g/km		HCNM, g/km		NOx, g/km		PM, g/km		Evap, g/test
		Spark	Diesel	Spark	Diesel	Spark	Diesel	Spark	Diesel	Spark
B (1)	PV	2.1		0.099		0.249		-	0.05	2
	LDT, SUV Class 1							-	0.062	
	LDT, SUV Class 2	2.7		0.121		0.249		-	0.075	
	LDT, SUV Class 3							-		
	LDT, SUV Class 4							-		
C (2)	PV	2.1		0.047		0.068		-	0.05	2
	LDT, SUV Class 1							-	0.062	
	LDT, SUV Class 2			-						
	LDT, SUV Class 3			0.087	0.124	-				
	LDT, SUV Class 4	2.1	0.087	0.124	-	0.075				

g/mile

B (1)	PV	3.4	0.16	0.40		0.08	
	LDT, SUV Class 1					0.10	
	LDT, SUV Class 2	4.4	0.19	0.40		0.12	
	LDT, SUV Class 3						
	LDT, SUV Class 4						
C (2)	PV	3.4	0.076	0.11		0.08	
	LDT, SUV Class 1					0.10	
	LDT, SUV Class 2		0.14	0.20			
	LDT, SUV Class 3						
	LDT, SUV Class 4	3.4	0.14	0.20		0.12	

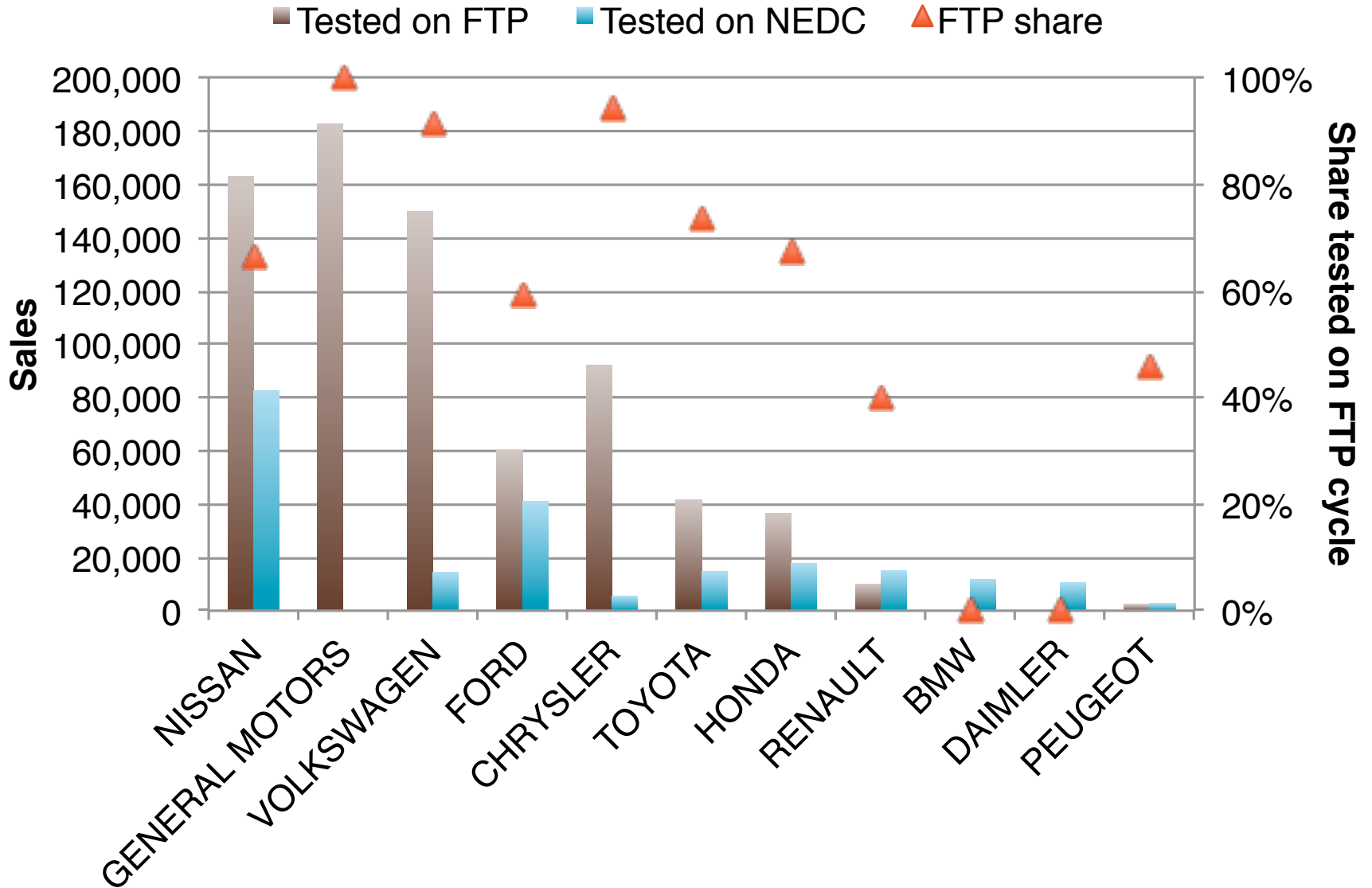


Diesel sales are low, all Euro-based certification

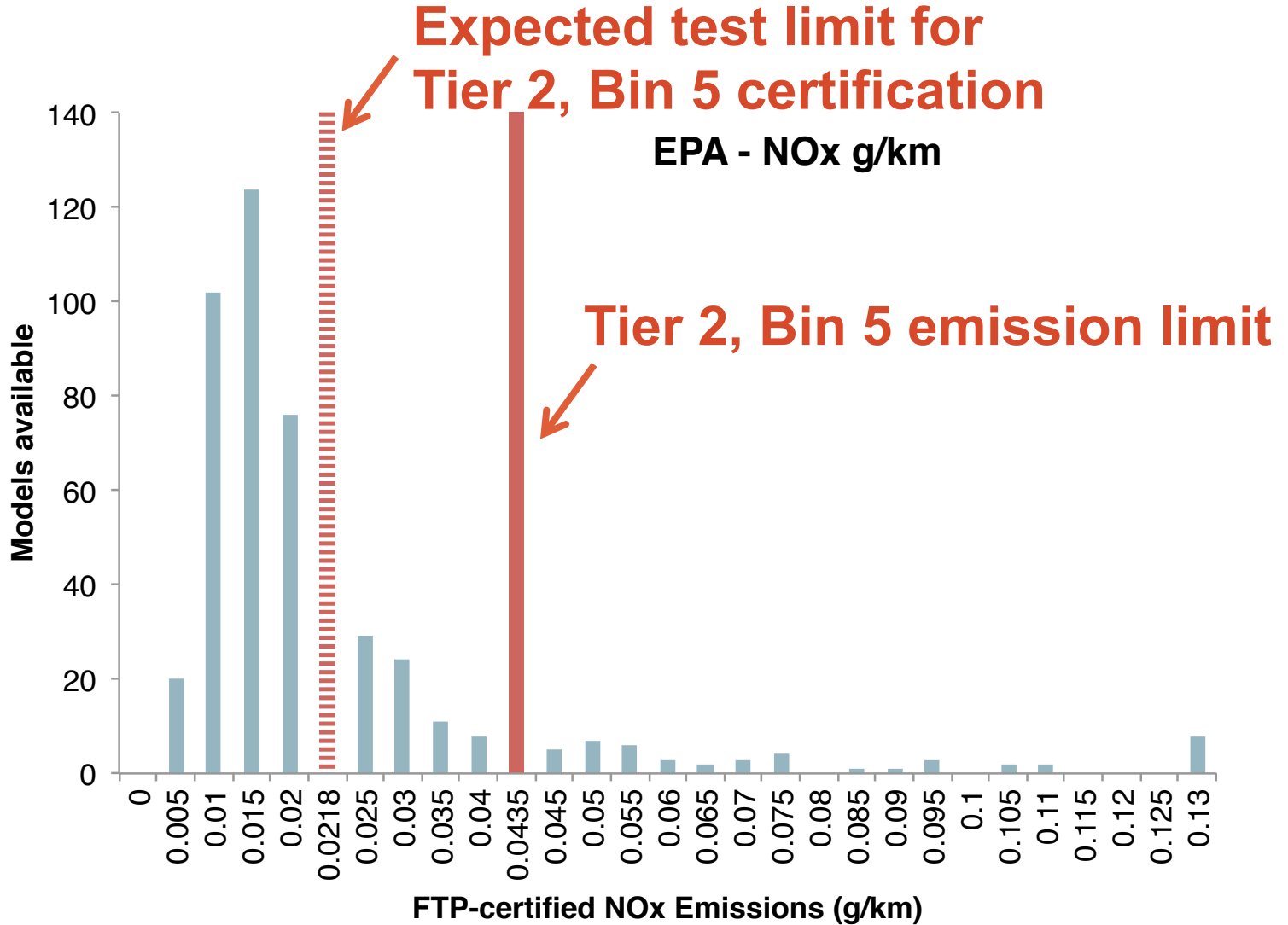


Certification	Diesel sales	Gasoline sales	Diesel share	Total share
Euro	14264	206405	6%	23%
EPA		746548	0%	77%
Total	14264	952953	1%	100%

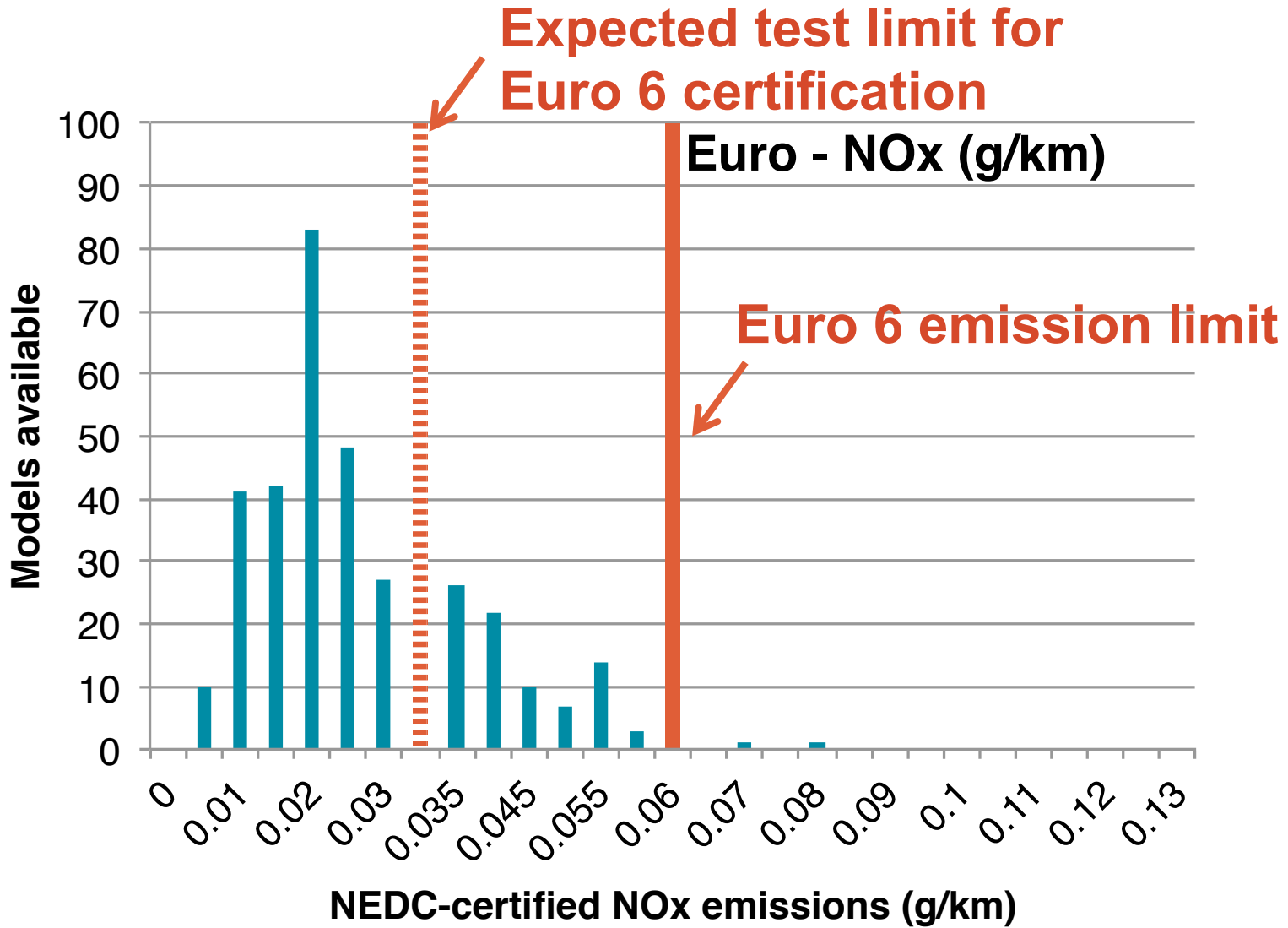
FTP and NEDC certification



NOx emissions in FTP-certified models

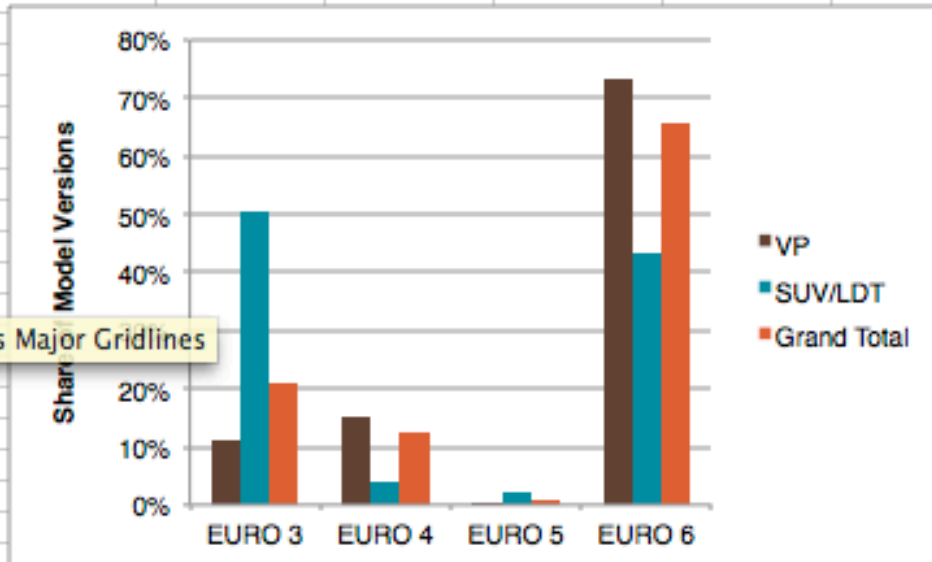
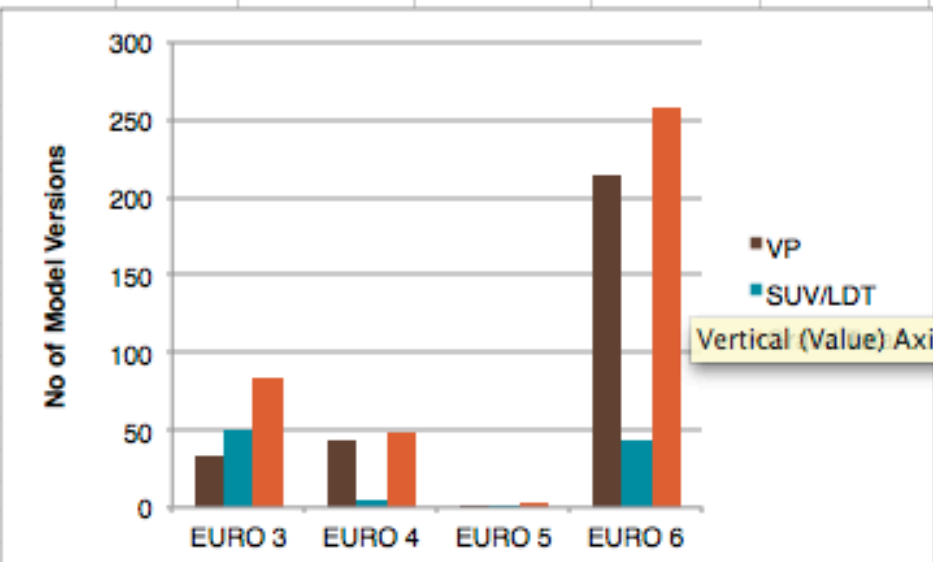
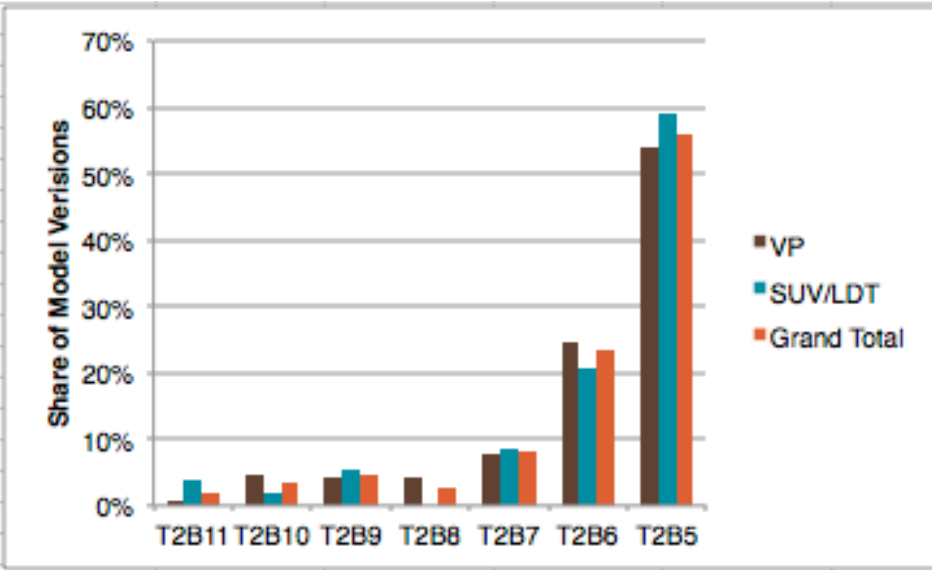
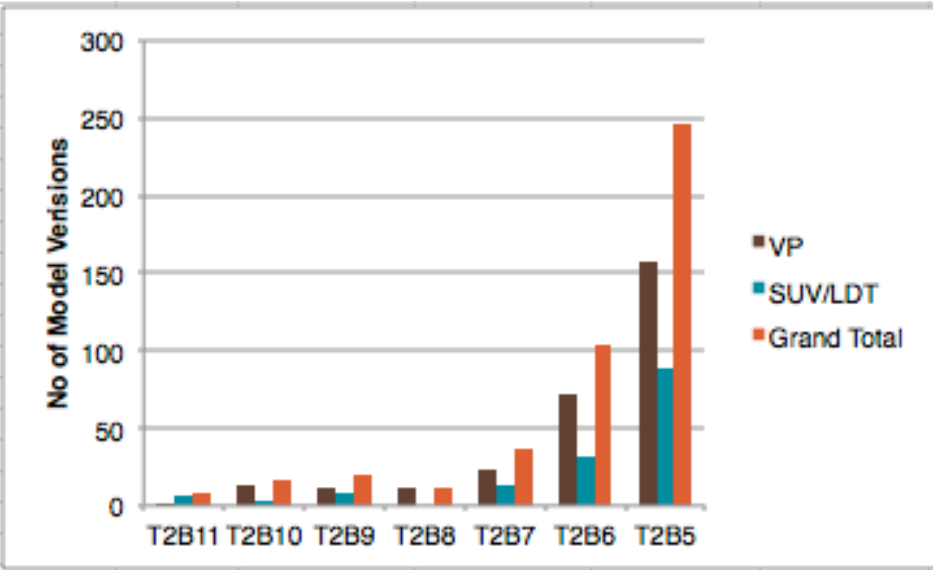


NOx emissions in NEDC-certified models



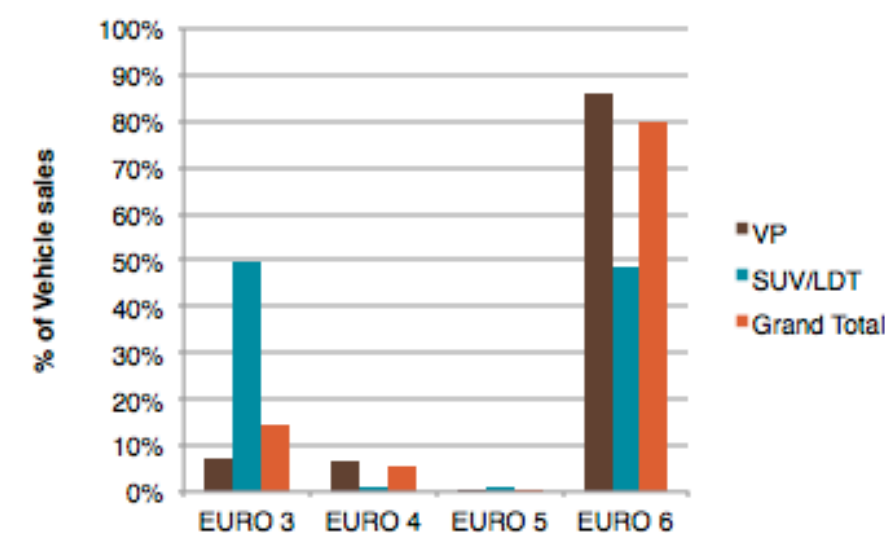
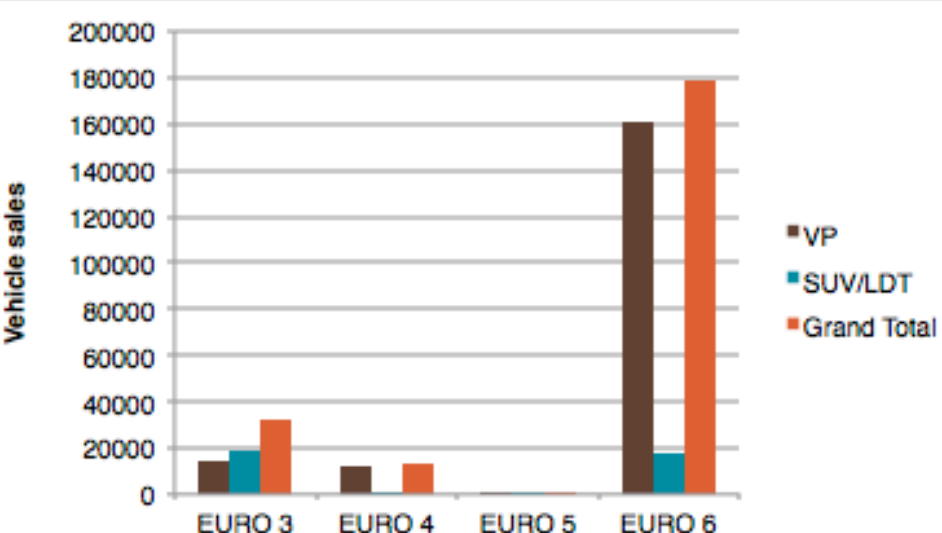
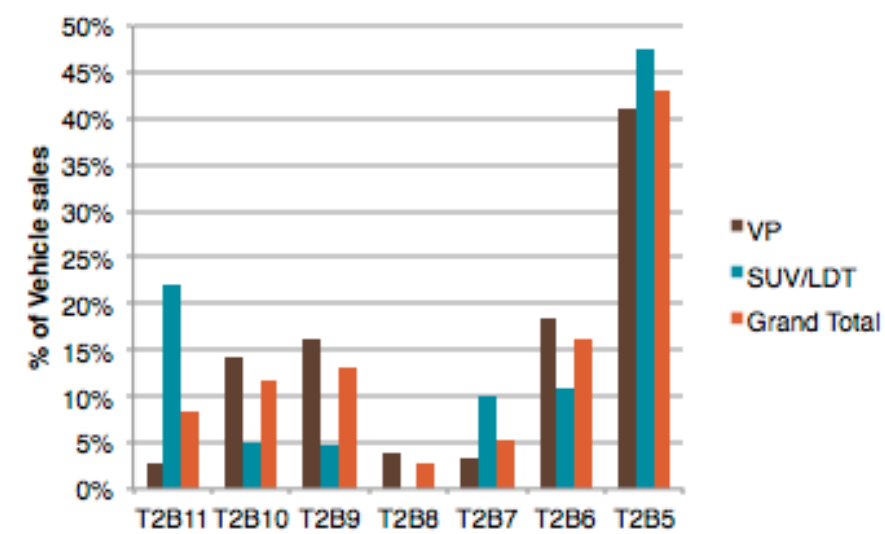
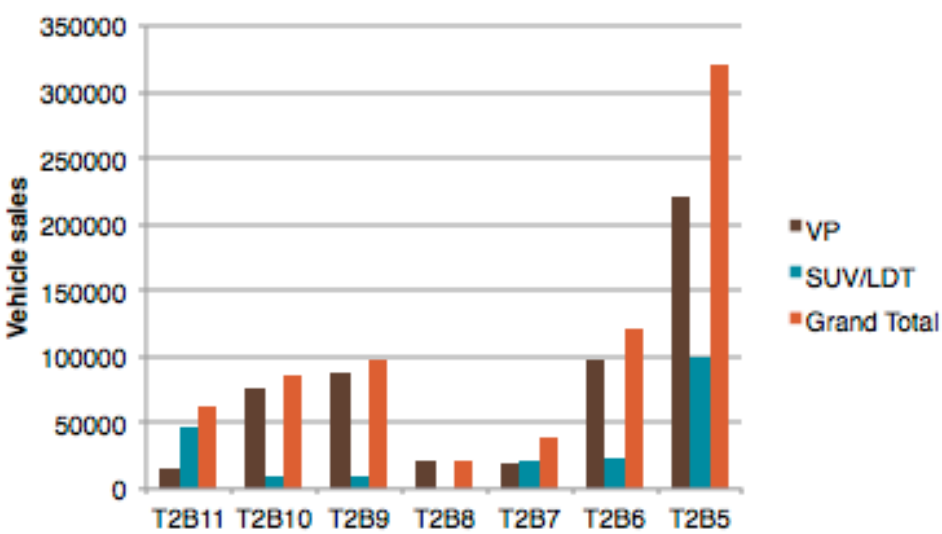
Standards by model versions

56% of all EPA model versions are T2B5. 66% of all Euro model versions are Euro 6



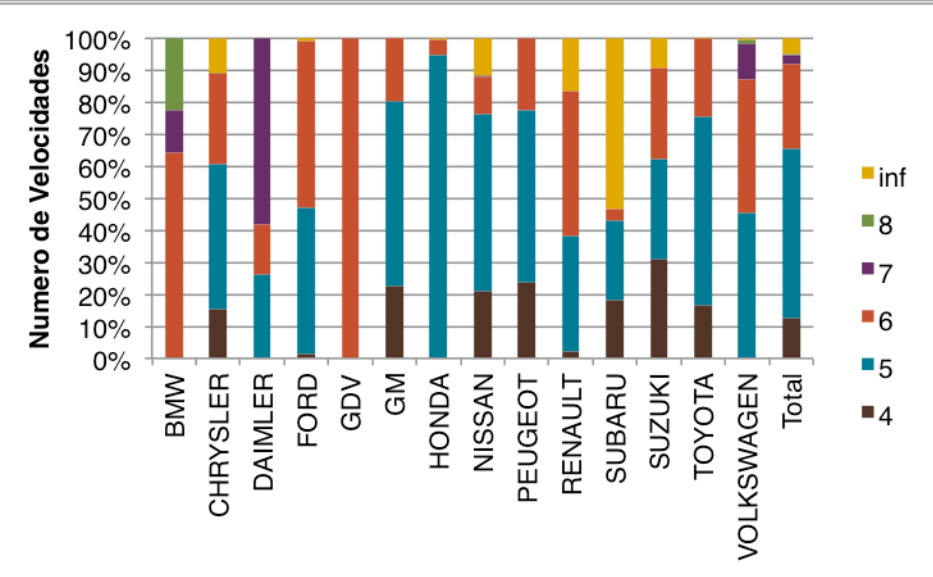
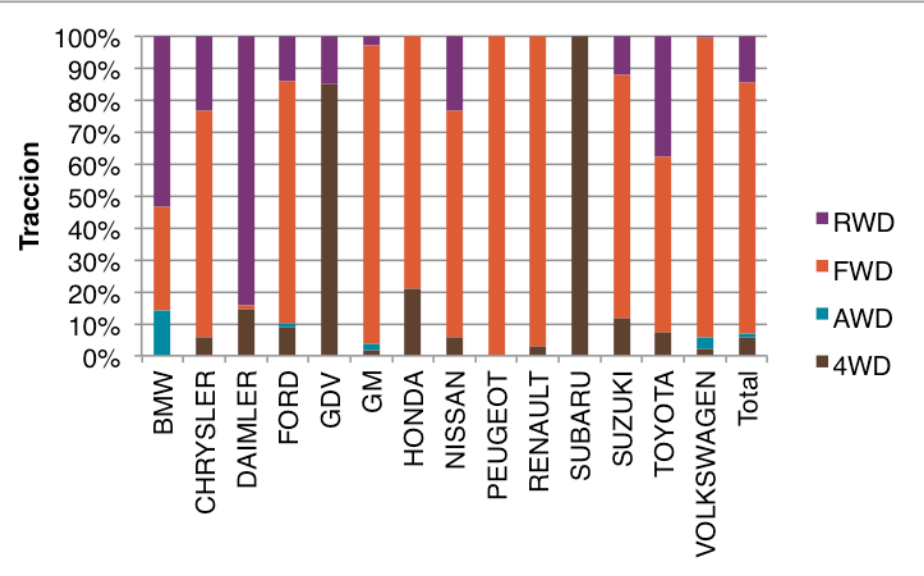
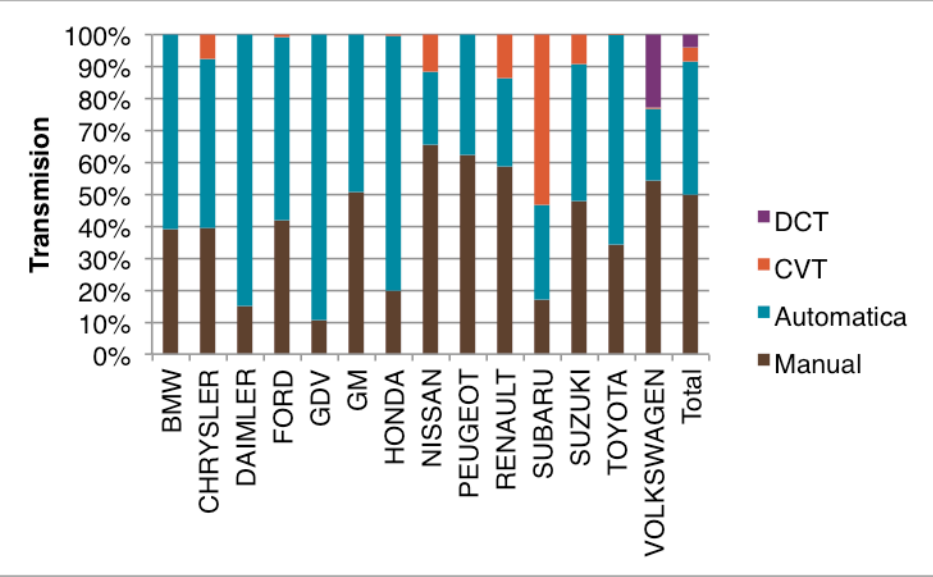
Standards by sales

43% of all EPA vehicles are T2B5. 80% of all Euro vehicles are Euro 6

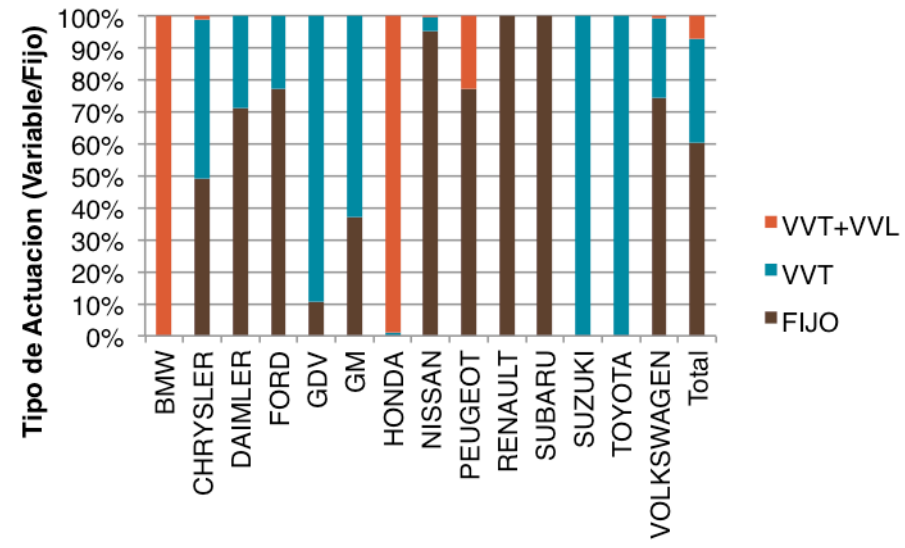
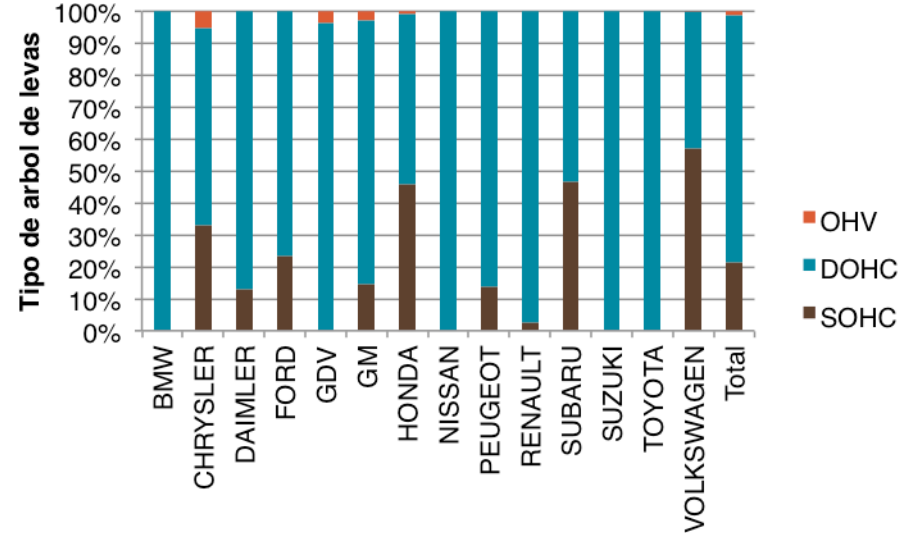
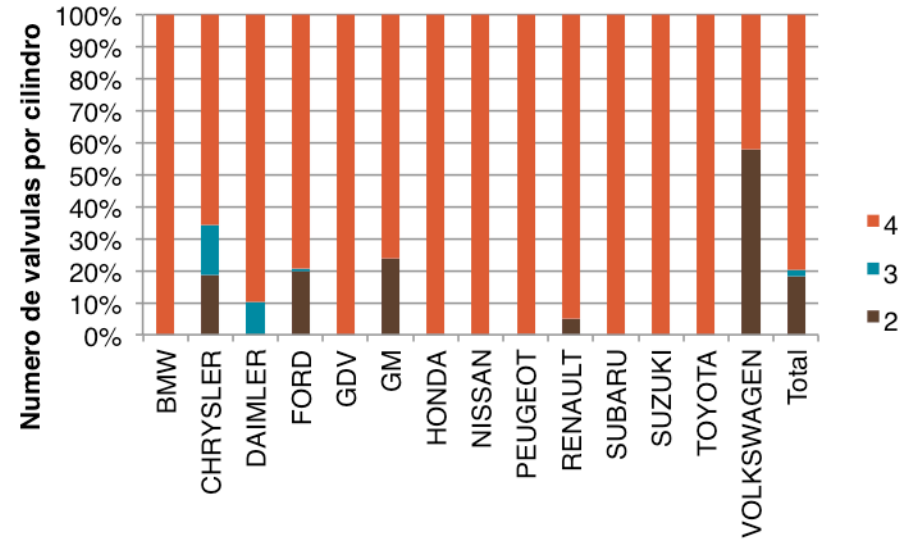


Extra Slides

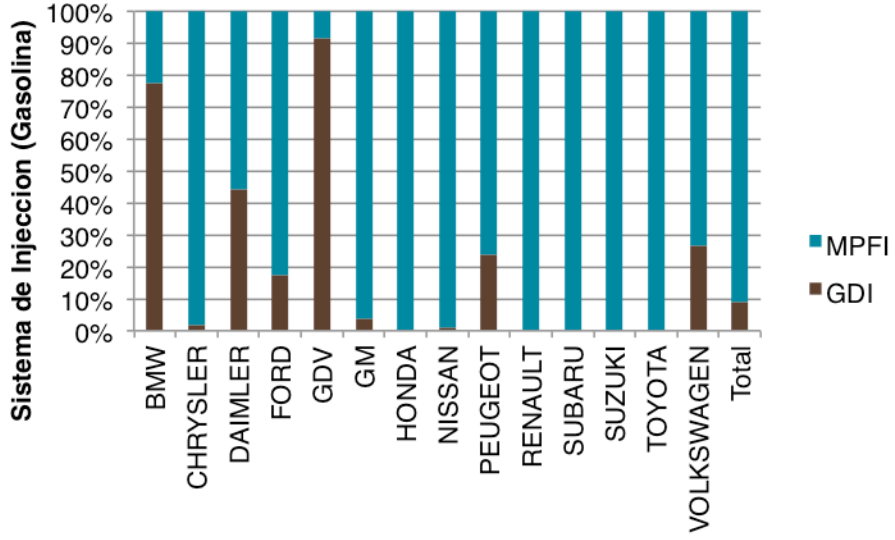
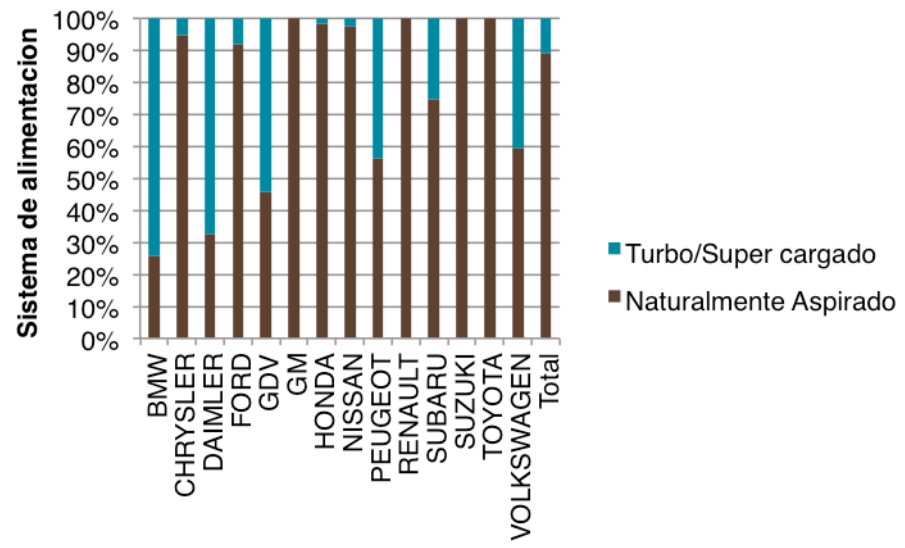
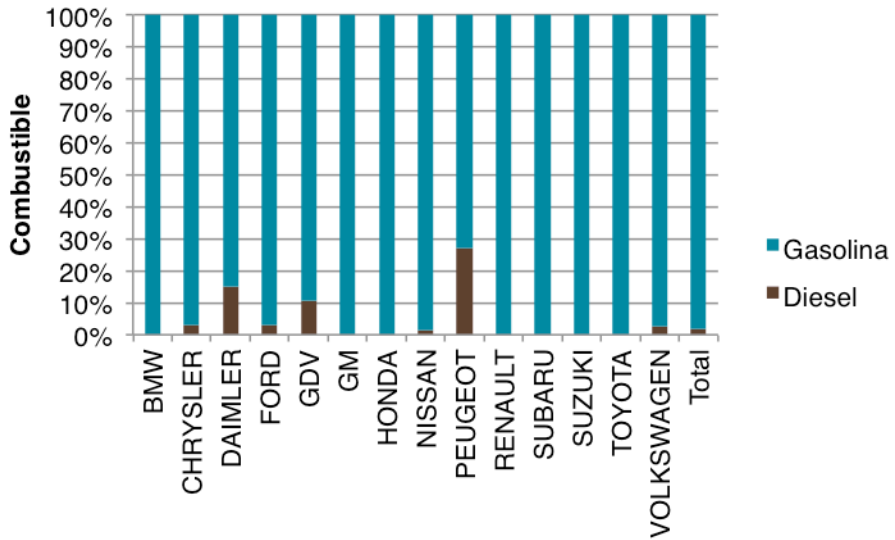
Tecnologías: Transmisiones



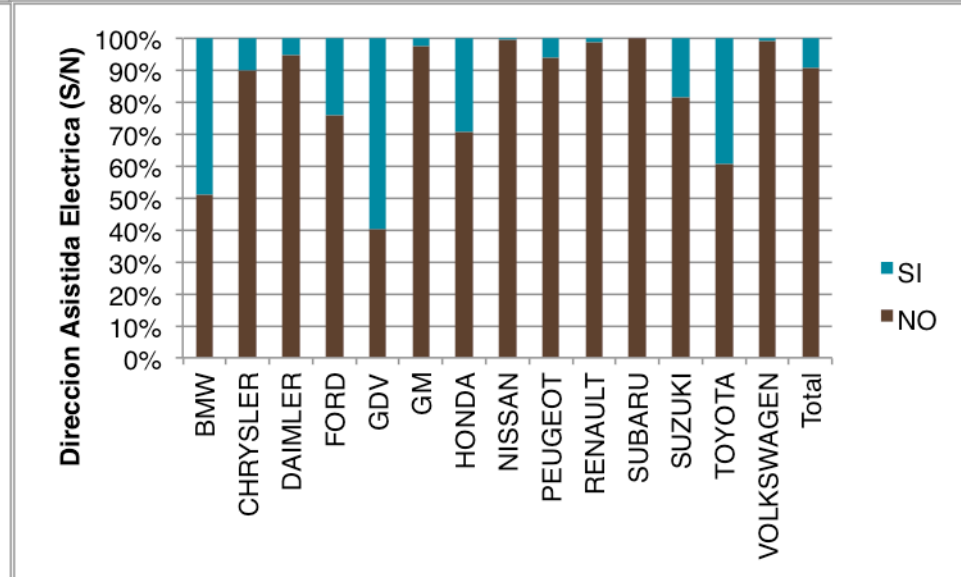
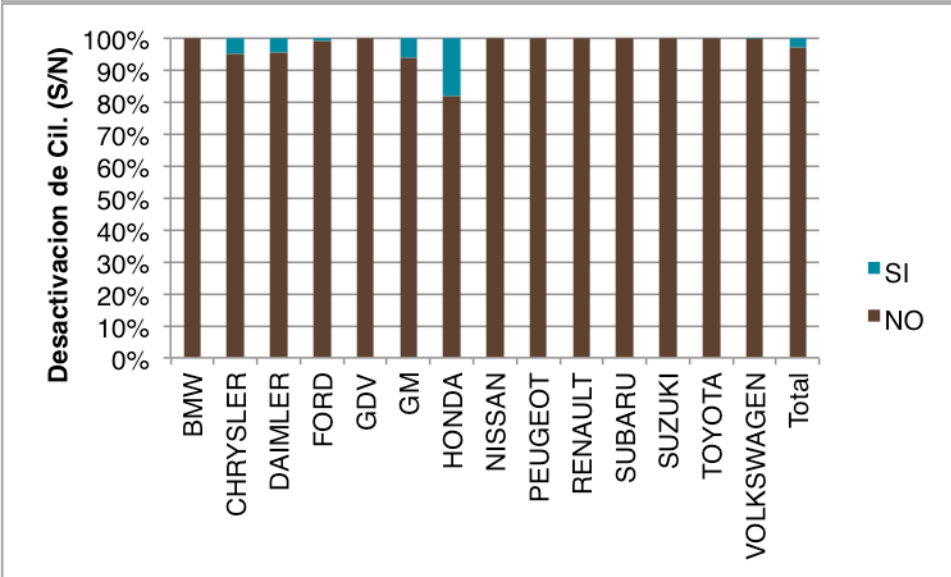
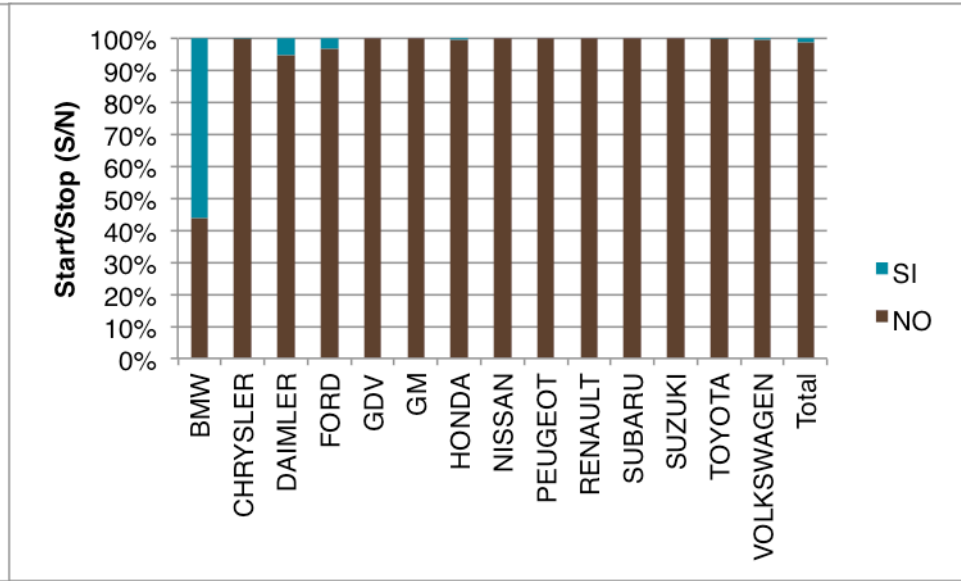
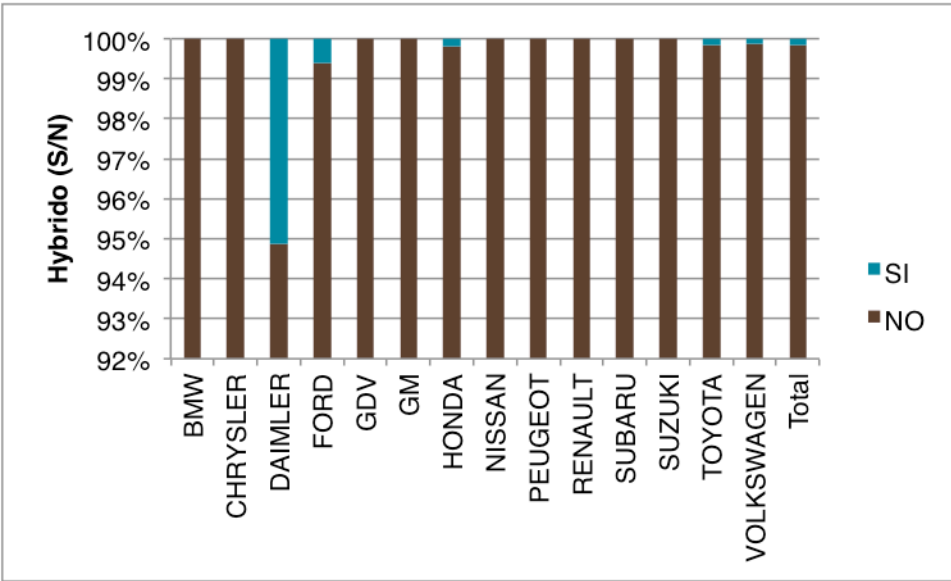
Sistema de Valvulas



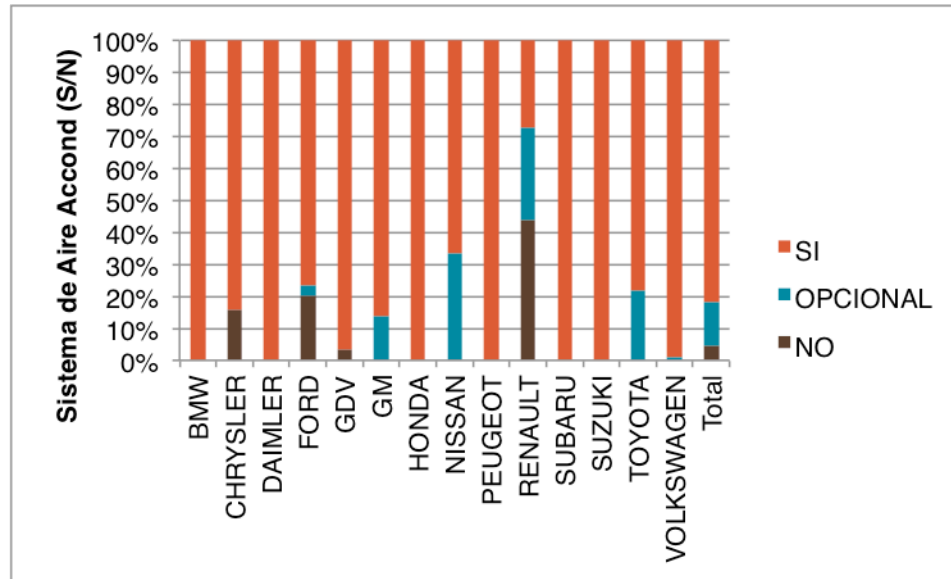
Sistema Alimentacion Aire/Combustible



Tecnologías para reducción del consumo



Tecnologías para reducción del consumo



Sales by brand and fuel type

Brand	Models	Sales volume	Gasoline	Diesel	
BMW		85	11827	11827	0
CHRYSLER		85	97909	95014	2896
DAIMLER		53	10600	9015	1585
FORD		110	101247	98184	3063
GDV		19	1044	934	110
GENERAL MOTORS		73	185919	185919	0
HONDA		40	54515	54515	0
NISSAN		66	245577	241749	3828
PEUGEOT		31	5204	3803	1401
RENAULT		15	25030	25030	0
SUBARU		18	283	283	0
SUZUKI		11	10733	10733	0
TOYOTA		32	56278	56278	0
VOLKSWAGEN		195	164195	159610	4586
Grand Total		833	970361	952893	17468

Marca	Ventas	% Ventas	% Cumulative share
NISSAN	245,577	25.3%	0.25
GENERAL MOTORS	185,919	19.2%	0.44
VOLKSWAGEN	164,195	16.9%	0.61
FORD	101,247	10.4%	0.72
CHRYSLER	97,909	10.1%	0.82
TOYOTA	56,278	5.8%	0.88
HONDA	54,515	5.6%	0.93
RENAULT	25,030	2.6%	0.96
BMW	11,827	1.2%	0.97
SUZUKI	10,733	1.1%	0.98
DAIMLER	10,600	1.1%	0.99
PEUGEOT	5,204	0.5%	1.00
GDV	1,044	0.1%	1.00
SUBARU	283	0.0%	1.00
TOTAL	970,361		