National Capital Region Transportation Planning Board

777 North Capitol Street, N.E., Suite 300, Washington, D.C. 20002-4290 (202) 962-3310 Fax: (202) 962-3202

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Memorandum

February 6, 2009

To: TPB Technical Committee

From: Daivamani Sivasailam
            Department of Transportation Planning

Subject: 2008 Vehicle Registration Data – Initial Results

Background

The Department of Transportation Planning has committed itself to updating vehicle characteristics data, the vehicle age distribution and diesel sales fraction used as input EPA's Mobile 6.2 emissions model, every three years. In 2005 DTP staff obtained vehicle identification number (VIN) decoder software and decoded VINs of registered vehicles in the region. A similar exercise was undertaken this fiscal year and VINs of registered vehicles as of July1, 2008 were obtained from the motor vehicle administrations in the District of Columbia, Maryland, and Virginia. This memorandum is the first in a series of memoranda that will discuss the results of the decoding exercise and analysis of the results.

Methodology

The basic methodology used in this exercise is identical to the methodology used in the 2005 exercise. A newer version of the VIN decoder software was purchased and the software is based on a different programming language. DTP staff received the data in fall 2008 from the three states. Inputs to the EPA's Mobile 6.2 model require data as of July1st of the year and the District of Columbia and Virginia data files reflect this. Maryland data was not archived on July1, 2008 and the data were adjusted to reflect a two year registration window. Expired tags, and duplicate VIN numbers were deleted and using the VIN decoder software the decoding process was executed successfully. Staff is executing several work tasks to translate the decoded data into the vehicle type, age and fuel type categories required by the Mobile 6 model. The results shown in the following exhibits do not include transit and school buses which is still being analyzed. Staff is also comparing the results with the 2005 results as a means of providing quality control.

Preliminary Results

Exhibit 1 is a table showing the control totals of the VINs received from each state and the number of VINs that were successfully decoded. The percentage of useful VINs that will used to develop vehicle age distributions and diesel sales fractions ranged from 95% to 96% which is slightly higher than the percentage achieved in 2005. Exhibit 2 is a table showing the total registered vehicles for Maryland and Virginia and the region in 2005 and 2008 broken down as light duty vehicles, light duty trucks and heavy duty vehicles. At this time the heavy duty totals does not include school and transit buses. The increase in light duty trucks (SUVs) is higher compared with the increase in light duty vehicles (cars and motorcycles). Exhibit 3 is a table showing the vehicle type distribution for Montgomery County and Fairfax County. The increase in light duty trucks between 2005 and 2008 occurred mostly among LDT2, LDT3, and LDT4. Exhibits 4 show the absolute number of LDV and LDT12 for Montgomery and Fairfax Counties. From this chart we can see the number of SUVs that are 1 and 2 year olds are going down even though the total number of SUVs has increased. Exhibit 5 and 6 are age distribution for light duty vehicles and light duty truck type 2 (SUVs) for Montgomery County and Fairfax County. Review of the age distributions indicates the light duty fleet is older as compared to 2005 light duty fleet.

Next Steps

Staff will complete the school bus and transit bus decoding and continue to review the data and provide quality control and quality assurance. Prepare the age distribution and diesel sales fraction files in Mobile 6 format and prepare VOC, NOx, and PM 2.5 emissions rates for various analysis years and compare with rates developed using 2005 vehicle registration data. The results will be shared with MWAQC's Technical Advisory Committee and after through review by staff and technical committees will be used during the upcoming conformity assessment.

Exhibit 1. Vin Decoder Control Totals

	MD	%	VA	%
DMV Vehicle Registration VINs Received	2802158		1661930	
List of Vins for Decoding (After Remove Duplicate VINS)	1734903	100.00%	1661822	100.00%
VINs 25 years or older	43828	2.53%	30651	1.84%
Decoded VINs without Vinpower Error Code	1651941	95.22%	1602793	96.45%
Vins with Values for Vehicle Type and year(Year 1-24)	1598954	92.16%	1560453	93.90%
Final Aggregated Database(16 Vehicle Types by 25 Years)	1642782	94.69%	1591104	95.74%

Exhibit 2 Comparison of 2005 and 2008
Vehicle Registration Data By States

| Vehicle Types		Vehicles				Increase	
Year		2005	%	2008	%	Vehicles	%
MD	LDV(*)	935999	58.89%	936215	57.04%	216	0.02%
	LDT	568131	35.75%	616741	37.57%	48610	8.56%
	HDV(**)	85161	5.36%	88499	5.39%	3338	3.92%
	TOTAL	1589291	100.00%	1641455	100.00%	52164	3.28%
VA	LDV(*)	889426	58.96%	913326	57.41%	23900	2.69%
	LDT	549241	36.41%	608744	38.26%	59503	10.83%
	HDV(**)	69829	4.63%	68817	4.33%	-1012	-1.45%
	TOTAL	1508496	100.00%	1590887	100.00%	82391	5.46%
Regional	LDV(*)	1825425	58.93%	1849541	57.22%	24116	1.32%
	LDT	1117372	36.07%	1225485	37.91%	108113	9.68%
	HDV(**)	154990	5.00%	157316	4.87%	2326	1.50%
	TOTAL	3097787	100.00%	3232342	100.00%	134555	4.34%

* Includes motorcycles

* 2008 Data did not include school buses and transit buses

Exhibit 3 Comparison of 2005 and 2008 Vehicle Type Distributions

|	MTG				FFX			
	2005	Percentage	2008	Percentage	2005	Percentage	2008	Percentage
LDV	391,552	61.39%	403032	58.86%	437,485	59.17%	453930	56.62%
LDT1	4,668	0.73%	5028	0.73%	6,224	0.84%	6385	0.80%
LDT2	160,888	25.22%	180681	26.39%	201,269	27.22%	225205	28.09%
LDT3	38,032	5.96%	44180	6.45%	45,544	6.16%	54009	6.74%
LDT4	11,711	1.84%	14423	2.11%	13,188	1.78%	17015	2.12%
HDV2B	13,992	2.19%	16744	2.45%	14,527	1.96%	17142	2.14%
HDV3	2,650	0.42%	2996	0.44%	2,928	0.40%	3444	0.43%
HDV4	2,125	0.33%	1887	0.28%	2,466	0.33%	2303	0.29%
HDV5	719	0.11%	855	0.12%	744	0.10%	928	0.12%
HDV6	1,374	0.22%	1738	0.25%	1,680	0.23%	2312	0.29%
HDV7	692	0.11%	812	0.12%	963	0.13%	2223	0.28%
HDV8A	1,188	0.19%	1248	0.18%	1,696	0.23%	1784	0.22%
HDV8B	331	0.05%	511	0.07%	334	0.05%	310	0.04%
HDBS								
HDBT			Under Development					
MC	7,938	1.24%	10644	1.55%	10,275	1.39%	14681	1.83%
	637,860	100.00%	684779	100.00%	739323	100.00%	801671	100.00%

Exhibit 4

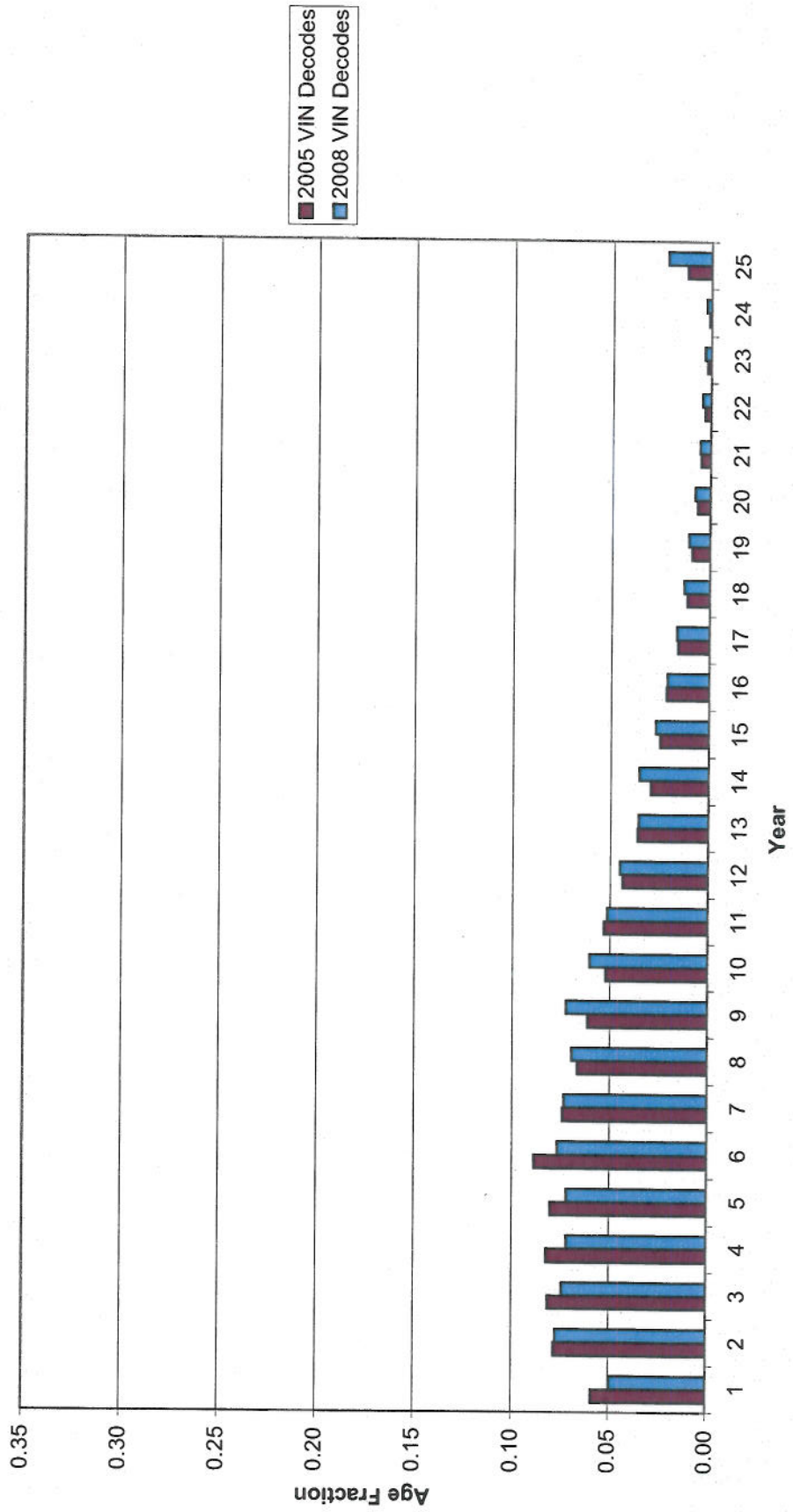# Number of Light Duty Vehicles Purchased
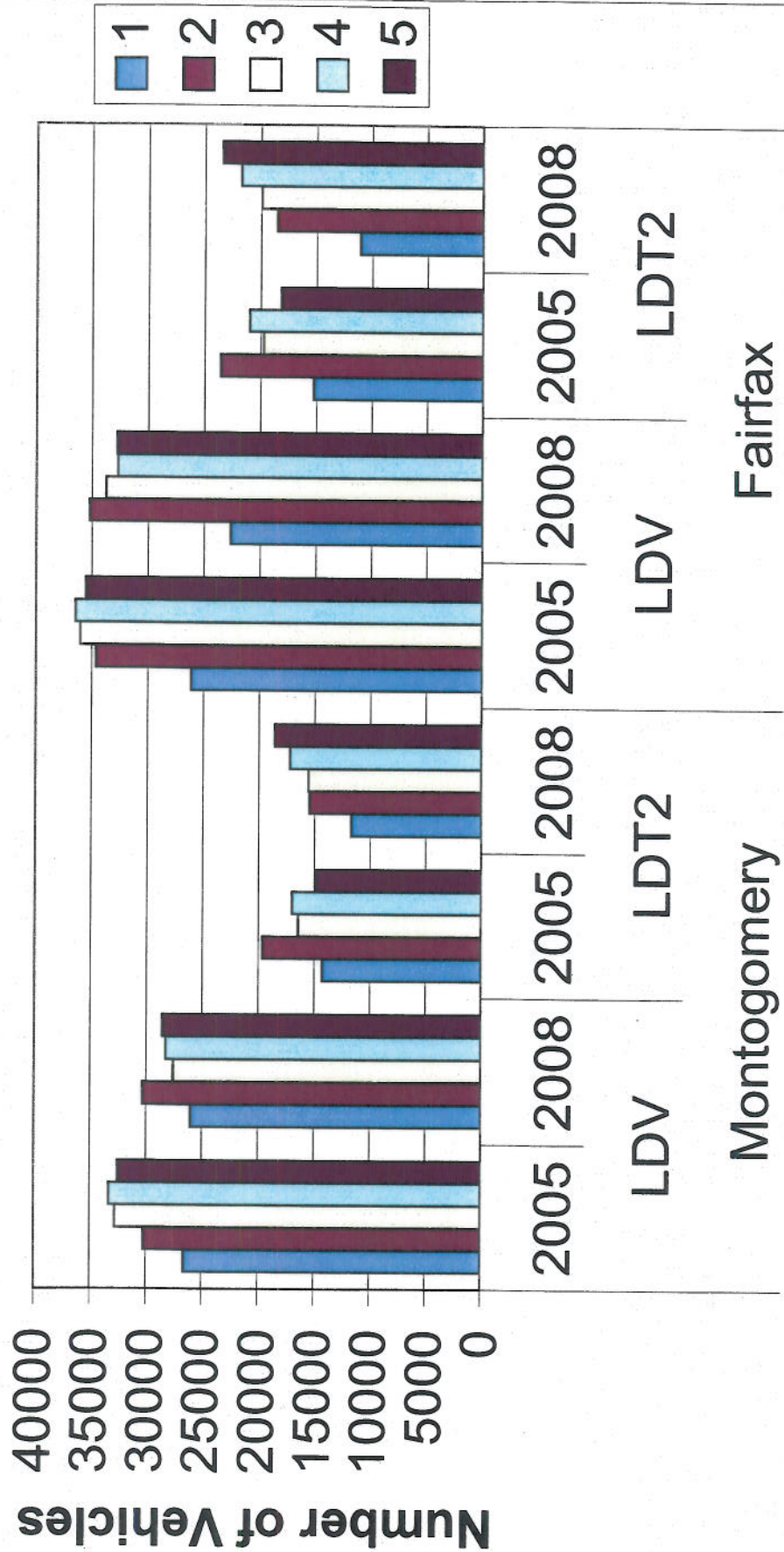
2008 Age Fractions Jurisdiction=MTG
Vehicle Type=LDV
Number of Decoded Vins=403032
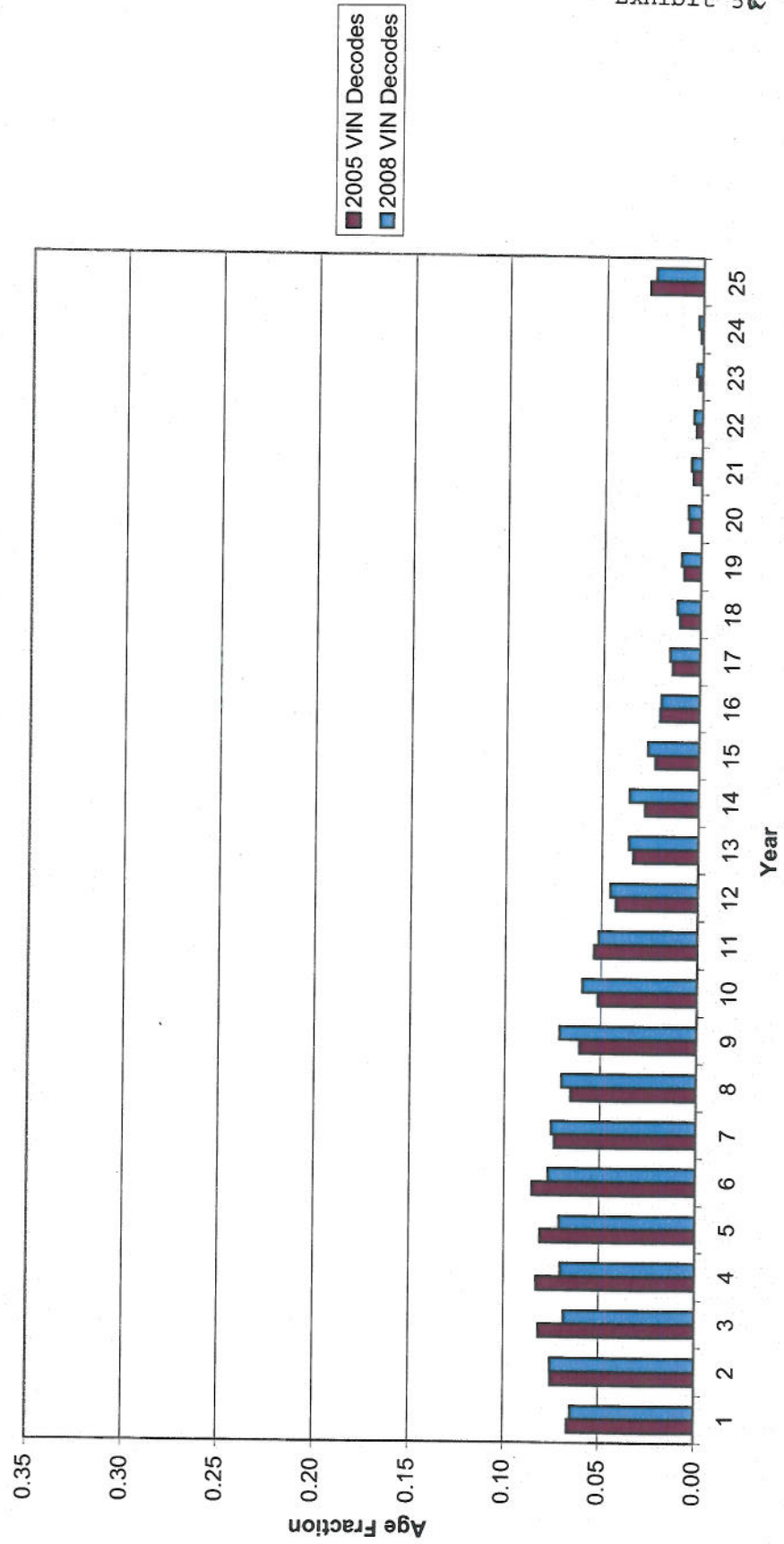
2008 Age Fractions Jurisdiction=MTG
Vehicle Type=LDT2
Number of Decoded Vins=180681

2005 VIN Decodes
2008 VIN Decodes
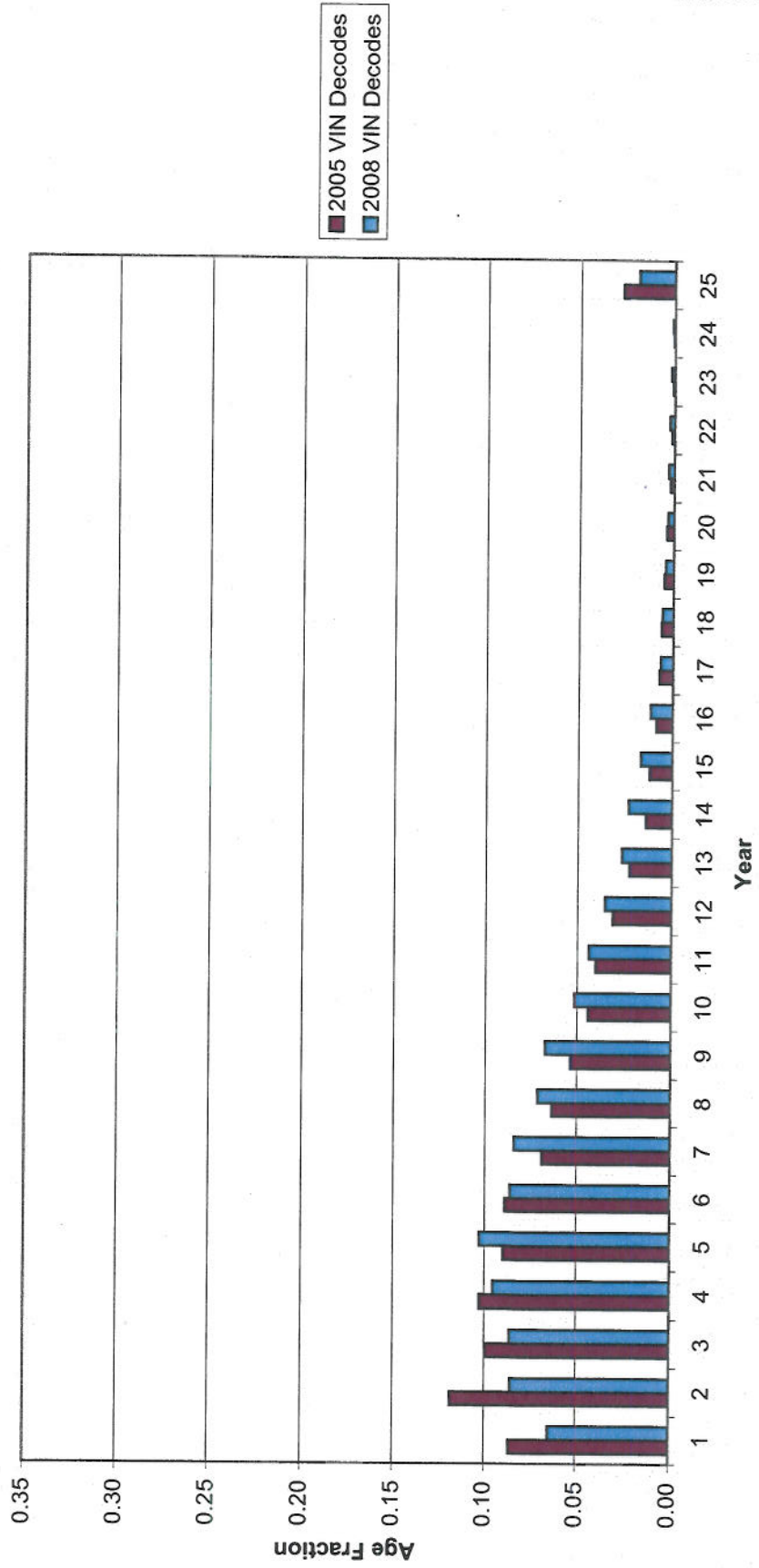
2008 Age Fractions Jurisdiction=FFX
Vehicle Type=LDV
Number of Decoded Vins=455374

2008 Age Fractions Jurisdiction=FFX
Vehicle Type=LDT2
Number of Decoded Vins=225661

- 2005 VIN Decodes
- 2008 VIN Decodes