ITEM 11 - Information
April 15, 2009

Briefing on the 2008 Composition of the Vehicle Fleet in the Washington Region

Staff Recommendation: Receive briefing on the composition of the vehicle fleet in July 2008, as well as changes to the fleet since 2005.

Issues: None

Background: As mobile source emissions vary significantly according to vehicle characteristics such as vehicle type, fuel use, weight and year of manufacture, TPB staff periodically examine the composition of the Washington area vehicle fleet. Beginning in 2005, staff has utilized a vehicle identification number (VIN) decoder to determine the composition of the vehicle fleet in the Washington Region. The Board will be briefed on the first three-year update of the 2005 data, taken as of July 1, 2008.

National Capital Region Transportation Planning Board

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MEMORANDUM

April 8, 2009

To: Transportation Planning Board

From: Ronald F. Kirby
Director, Department of
Transportation Planning

Subject: 2008 Registered Vehicle Data in the Washington Area

Introduction

As mobile source emissions (those from cars, trucks and buses) vary significantly according to vehicle characteristics such as vehicle type, fuel use, weight and year of manufacture, TPB staff periodically examines the composition of the Washington area vehicle fleet. Beginning in 2005, staff has utilized a vehicle identification number (VIN) 'decoder' every three years to tabulate registered vehicles according to 28 different vehicle types used by EPA in their Mobile6 model. This model is the analytical tool which EPA requires to be used in developing any vehicular emissions rates used in air quality conformity assessments and state air quality implementation planning.

With the assistance of the motor vehicle administrations and air management agencies in the District of Columbia, Maryland and Virginia in providing the 2008 vehicle registration files, staff analyzed the data using the VIN decoder software and summarized the current characteristics of the region's fleet as of July 1, 2008. The initial application of these data will be in the ongoing 2009 CLRP air quality conformity assessment.

Technical Methods

Following receipt of the registered vehicle databases, staff applied the VIN decoder software, reading close to three and a half million vehicle records throughout the Washington area. The success rate for decoding the records varied between 95% and 98% for the three jurisdictions. (The software cannot decode VIN numbers for pre-1982 vehicles.) Staff then tabulated the data to prepare: (1) an updated profile of the region's vehicle fleet, and (2) the necessary vehicle age and fuel type distributions for all 28 vehicle types, in required input formats, for the Mobile6 model. Highlights are presented

below.

Results

The following sections present characteristics of the 2008 vehicle fleet as well as comparisons with previous 2005 data.

Total Vehicles

Exhibit 1 presents the total number of registered vehicles in the region, with subtotals by the District of Columbia, Maryland and Virginia. The exhibit shows slowing vehicle registrations in the region in 2008 versus 2005 (including a reduction in the District of Columbia) compared to past forecasts.

Vehicle Type

A. Passenger Cars, SUVs and Heavy Trucks

Primary vehicle categories are: passenger cars, light duty trucks (which include SUVs, vans and light pickup trucks), and heavy duty trucks (greater than 8,500 lbs, i.e., extending from the heaviest pickup trucks all the way to tractor trailers). EPA further stratifies these categories by vehicle weight graduations and for separate gas vs. diesel vehicles. Exhibit 2 shows the 3 primary vehicle categories in the District of Columbia, Maryland and Virginia for 2005 and 2008. The District of Columbia shows the largest percentage of passenger cars at 68% (vs. 57% for Maryland and Virginia, which include suburban and exurban counties).

B. Hybrid vehicles

Given the keen interest locally, staff tabulated hybrid vehicles in each jurisdiction. Exhibit 3 shows the dramatic increases in these vehicles since 2005, amounting to better than a tripling of such vehicles regionwide.

Vehicle Age

As newer vehicles are cleaner vehicles, in some cases quite significantly cleaner, the age distribution of vehicles in the fleet is a key characteristic to examine. The statistics for 2008 show an older fleet than in 2005 (and a more polluting one relative to the one expected in 2008 given past trends). Exhibits 4 through 6 show the age distributions, i.e., percentages of vehicles 1 year old, 2 years old, etc., for passenger cars, SUVs / light trucks, and heavy trucks, respectively. Compared to the 2005 data, the chart shows a marked reduction in the percentages of newer vehicles for SUV / light trucks and heavy trucks, while passenger cars show only a modest reduction in the percentage of newer vehicles.

Implications Regarding Mobile Source Emissions

The net impact that the data presented above will have on mobile source emissions will be to increase emissions in the nearer term, with less of an impact in the longer term. Vehicles will still be replaced through time to turn over existing older, more polluting ones, however, it will take longer than previously expected.

Next Steps

Staff is presently concluding the work to quality-assure the data and to prepare emissions factors for each jurisdiction for each milestone year required in the air quality conformity assessment of the 2009 CLRP. Following this review and preparation work, and the conclusion of ongoing travel forecasting work, the emissions factors will be applied to develop the required emissions inventories for the conformity milestone years.

Staff will brief the Board on these results at its April 15th meeting.

Exhibit 1. Washington Area Vehicle Registrations (000)

Jurisdiction	Years		2005 to 2008	
	2005	2008	Increase	Percentage
District of Columbia	258.1	243.2	-14.9	-5.8
Maryland	1,684.5	1,734.9	50.4	3.0
Virginia	1,574.1	1,661.8	87.7	5.6
Total	3,516.7	3,639.9	123.2	3.5

Exhibit 2. Washington Area Registrations By Vehicle Type (000)

		2005		2008	
State	Vehicle Type	Registrations	Percentage	Registrations	Percentage
DC	Pass. Cars/Motorcycles	183.9	71.2	164.3	67.6
	Lt. Trucks/SUVs	65.0	25.2	68.1	28.0
	Heavy Trucks	9.2	3.6	10.7	4.4
	TOTAL	258.1	100.0	243.2	100.0
MD	Pass. Cars/Motorcycles	992.0	58.9	985.4	56.8
	Lt. Trucks/SUVs	602.1	35.7	649.1	37.4
	Heavy Trucks	90.3	5.4	100.5	5.8
	TOTAL	1,684.5	100.0	1,734.9	100.0
VA	Pass. Cars/Motorcycles	928.2	59.0	951.2	57.2
	Lt. Trucks/SUVs	573.1	36.4	634.0	38.1
	Heavy Trucks	72.8	4.6	76.7	4.6
	TOTAL	1,574.1	100.0	1,661.8	100.0
Region	Pass. Cars/Motorcycles	2,104.7	59.8	2,101.6	57.7
	Lt. Trucks/SUVs	1,239.8	35.3	1,350.6	37.1
	Heavy Trucks	172.2	4.9	187.7	5.2
	TOTAL	3,516.7	100.0	3,639.9	100.0

Exhibit 3. Washington Area Hybrid Vehicle Registrations

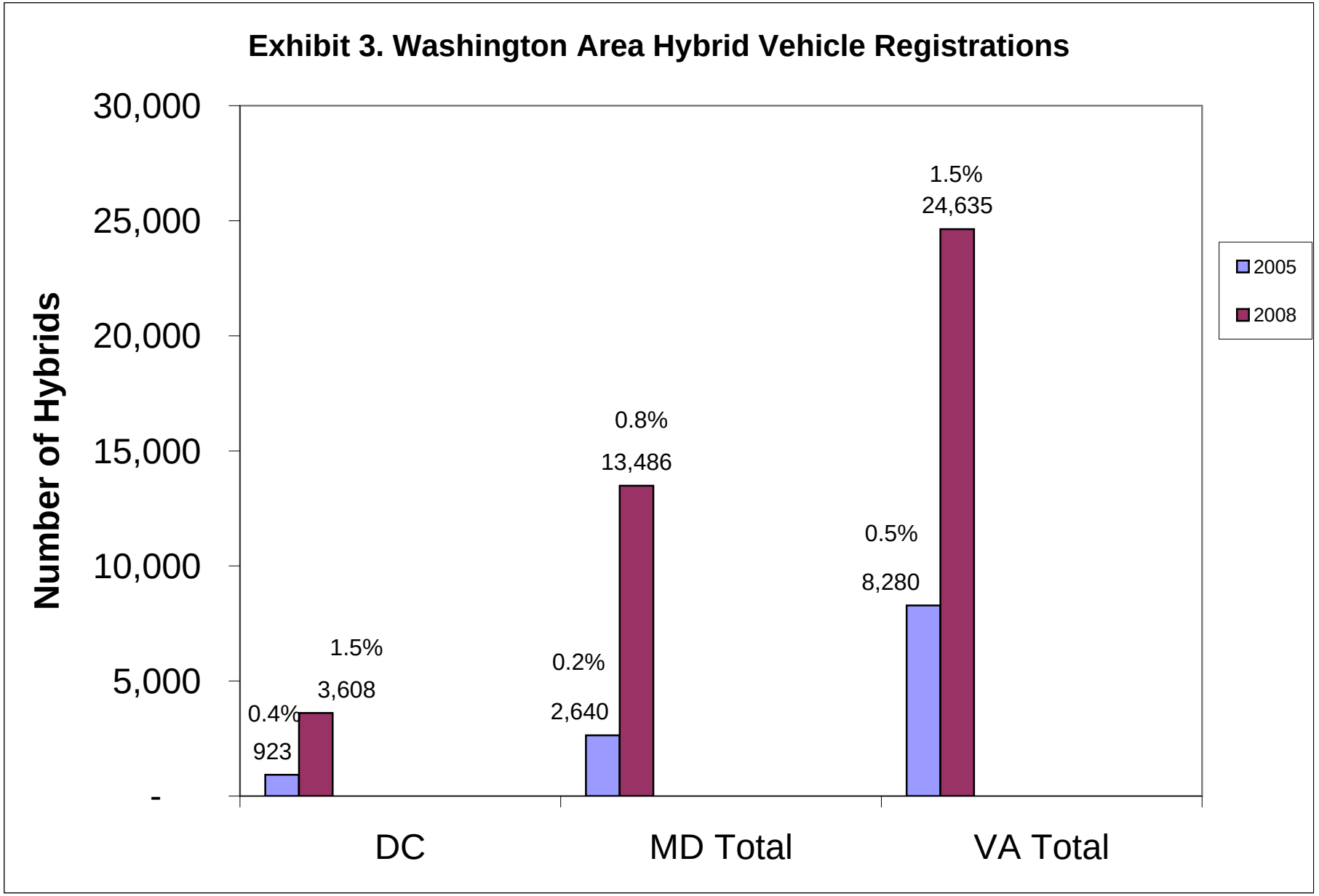

Exhibit 4. Washington Area Vehicle Age Distributions
Vehicle Type=Passenger Cars/Motorcycles

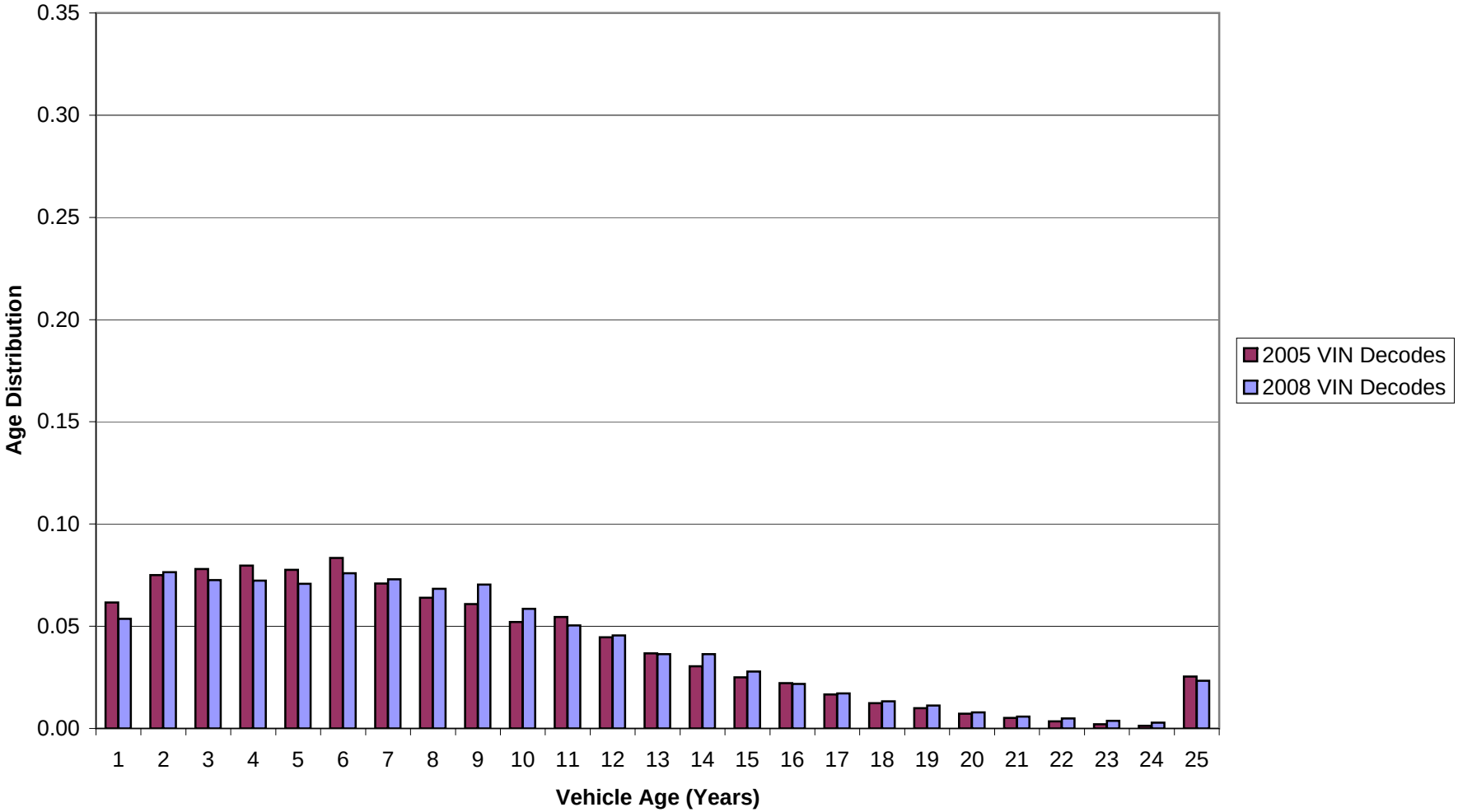

Exhibit 5. Washington Area Vehicle Age Distributions
Vehicle Type=Light Trucks and SUVs

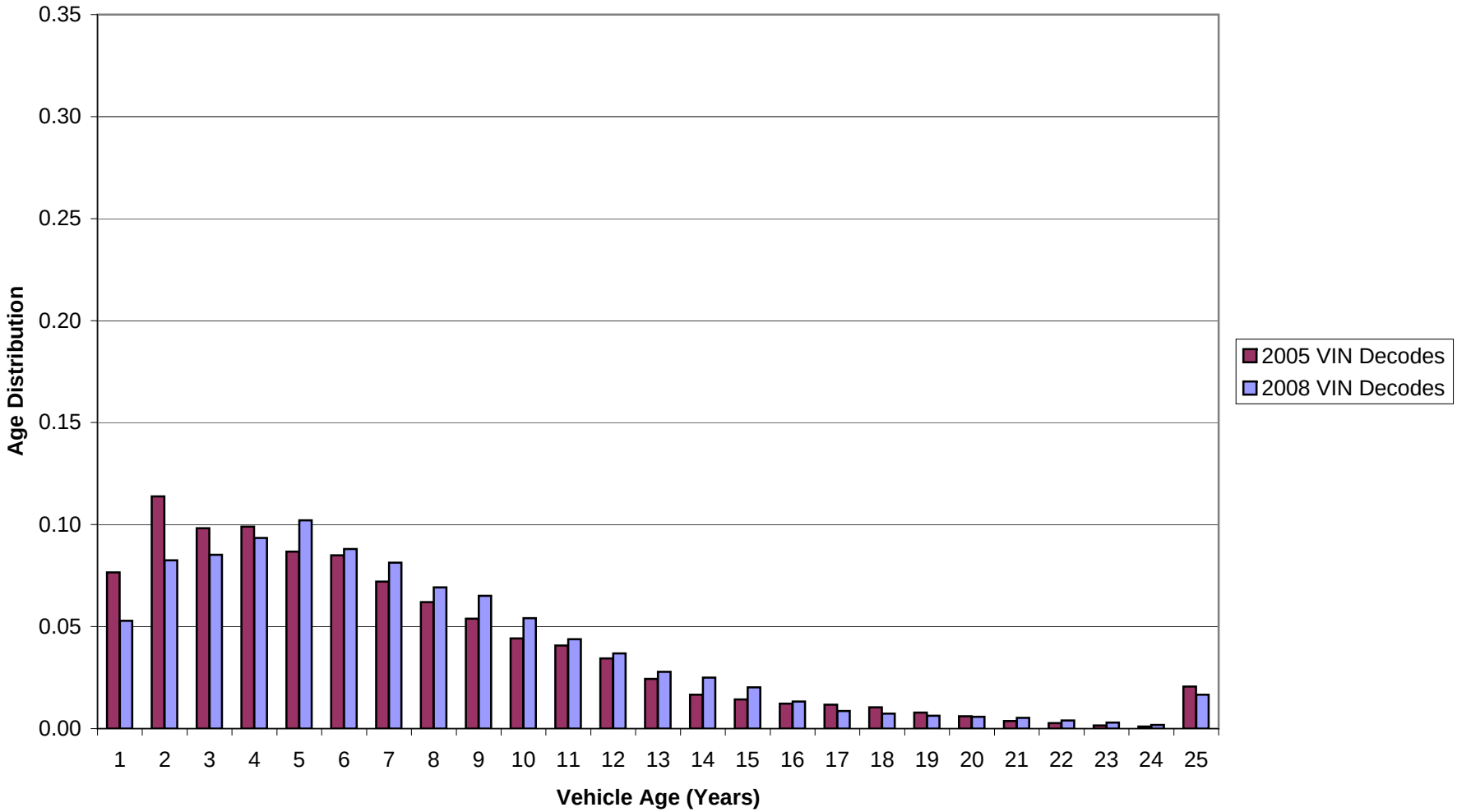

Exhibit 6. Washington Area Vehicle Age Distributions
Vehicle Type=Heavy Trucks