

**ATTACHMENT II****Memorandum***District of Columbia**Bowie**College Park**Frederick County**Gaithersburg**Greenbelt**Montgomery County**Prince George's County**Rockville**Takoma Park**Alexandria**Arlington County**Fairfax**Fairfax County**Falls Church**Loudoun County**Manassas**Manassas Park**Prince William County***Date:** March 16, 2006

April 28, 2006 (Revised)

To: File**From:** Michael Freeman**Subject:** Evaluation of 2005 Vehicle Registration Data for Maryland Jurisdictions of the Washington Area**Background**

The Mobile 6.2 model that is used to develop emissions rates for mobile source emissions inventory for the State Implementation Plan (SIP) and transportation conformity analysis requires a number of vehicle-specific inputs. In the Washington non-attainment region emissions rates are developed for each jurisdiction in the non-attainment area. Two of the inputs are: vehicle registration data used to develop age distribution by vehicle type, and the percentage of diesel vehicles for each vehicle type. As part of the interagency consultation procedures in place, the transportation department and the environmental department have agreed to update these data sets once every three years. The region has been using 2002 registration data sets for all emissions analysis and we are in the process of using the 2005 raw registration data information to develop 2005 input files to the Mobile 6.2 model.

Vehicle registration data have been used to develop the two input files used in the Mobile 6.2 model; namely "xxx.rdt" (age distribution by vehicle type) and "xxx.dsf" (percentage of diesel vehicles for each vehicle type and for each model year). Maryland DEQ staff has transmitted to TPB staff 2005 raw registration data files. TPB staff has used these raw data

to produce a set of “xxx.rdt” and “xxx.dsf” files using a method that includes vehicle identification number (VIN) decoding software. This memo will document TPB staff’s findings and make recommendations for developing rdt and dsf files for future air quality planning studies.

Methodology

COG used the following outline to develop rdt and dsf files (depicted graphically as a flowchart in Attachment 1):

- 1) Pre-process registration files and prepare list of vins for decoding:
 - a. Remove all duplicate VIN numbers that might be present in the registration files.
 - b. The registration files for Maryland contain an expiration field that identifies the month and year each particular vehicle registration record expires. Maryland vehicles are registered for a two-year registration period. After reviewing the values in the expiration fields it appears that the registration data was archived in November, 2005. In order to approximate the registration data of July, 2005, MWCOG staff removed registration records with expiration dates not occurring within the 11/05 to 10/07 timeframe. This adjustment will provide a year’s worth of vehicle registration records.
 - c. To adjust the year’s worth of registrations resulting from the previous step to begin in July, records with expirations occurring after June 2007, with model years of 2005 or 2006 were also removed. This resulted in a list of Vins approximating a snapshot of July 2005 registrations.
 - d. Decode Vins using VinPower software. The decoding software provided model year, Mobile 6.2 vehicle type, and other vehicle attributes. Attachment 2 summarizes the VIN control totals and decoded results. A summary of the number of decoded VIN by vehicle type and jurisdiction is provided in Attachment 5.

2) Convert the decode results:

a. Vehicle age distribution: This is the first of the two input files needed.

i. *Vehicle type*: The VIN decoder software breaks down the registration data in to the Mobile 6.2 28 vehicle categories. However, the current version of Mobile 6.2 16 can only handle registration (xxx.rdt) files in 16 vehicle types and it uses the “xxx.dsf” files internally to break it into 28 categories. Therefore, the decoded data are converted from the 28 (Mobile 6.2) types to 16 vehicle types by combining the diesel and gasoline vehicle types. While aggregating the data and developing the diesel vehicle percentages, a percentage of the heavy duty gas bus (HDGB) had to be assigned to heavy duty school bus, and heavy duty transit bus. Since Mobile 6.2 guidance did not provide specific guidance as to how to split the heavy duty gas bus between school and transit bus staff assigned 50% of the heavy duty gas bus to transit bus (HDBT) and 50% to school bus (HDBS). A similar assumption had to be made with light duty diesel trucks as well due to lack of guidance. Light duty diesel trucks 12 (LDDT 12) were assigned 50% percent to light duty truck 1 (LDT1) and 50% to light duty truck 2 (LDT2), and light duty diesel truck 34 (LDDT34) were assigned 50% to light duty truck 3 (LDT3) and 50% to light duty truck 4 (LDT4). After discussion with air and transportation agency representatives the method was modified. Since all heavy duty transit buses are diesel, and since a majority of the heavy duty gas buses were smaller shuttle buses it was decided that heavy duty gas bus (HDGB) were to be distributed among the different heavy duty vehicle types (HDV2B, HDV3, and HDV6) using the gross vehicle weight of the bus as determined by the VIN decoder. Similarly light duty diesel truck 1,2 and light duty diesel truck 3,4 were also distributed among light duty trucks 1,2,3 and 4 based on the gross

vehicle weight as determined by the VIN decoder. Attachment 3 shows the factors used for converting the 28 types to 16 types.

- ii. *Model Years*: Since the decoded list of Vins reflects conditions of July, 2005, it includes model year 2005 and 2006 as the first year vehicles. The Mobile 6.2 guidance recommends combining the two model years into model year 'one'. In addition, Vinpower does not decode VINs for vehicles that were manufactured prior to 1980 since the VINs did not meet International Standards Organization (ISO) standards prior to 1980. In order to solve this problem, we used the decoded results to directly assign vehicles to model years one through twenty-four, and used the year 24 profile to develop year 25 and older model years. The vehicle registration records were used to determine control totals by jurisdiction for: (A) Mobile 6 vehicle type years < than 25; (B) Mobile 6 vehicle types year = 25 or older. For Mobile 6 vehicle type year = 25, apply regional distribution for mobile year = 24 and normalize to match control total % from step (B). For Mobile years 1 through 24, use vin decode results to develop distributions by vehicle type and year. Then normalize years 1 through 24 of each row so that years 1 through 25 = 100%. Develop 16 (vehicle type) by 25 (Mobile 6 year) matrices by jurisdiction. This is the rdt file for input into Mobile 6. After discussion this method was modified by distributing model year 25+ vehicles among the 16 vehicle types using the vehicle type distribution for years 20 through 24 obtained through the VIN decoder. This calculation is depicted in Attachment 6.
- b. Diesel percentages by vehicle type: This is the second input file needed in Mobile 6.2 model. For percentage of diesel vehicles by vehicle type and by year (xxx.dsf) file development, use the vehicle equivalency table and the VIN decode to calculate the number of diesel and gasoline vehicles for each of the 16 vehicle types. The ratio of diesel vehicles to the total number of

vehicles is the dsf for each category. Since the VIN decoder will not decode for year 25, use the dsf calculated for year 24 for year 25, also.

Comparison with 2002 Registration Data

The next step in the processes was to compare the data developed using the methodology described above with 2002 registration data and Mobile 6.2 defaults used in previous air quality planning efforts. The attached comparison charts were used to summarize the findings.

- 1) Vehicle Age Distribution
 - a. For LDV and LDT2 vehicle types, the vin decodes tracked closely with 2002 registration data for each jurisdiction.
 - b. For vehicle type LDT1, the vin decode age distribution unexpectedly dipped in year 2 and spiked in years 18 and 19.
 - c. For vehicle types LDT3 / LDT4, vin decode age fractions were typically higher in years 2 and 3 and lower in years 10 through 17, compared with 2002 registration data for all jurisdictions.
 - d. Generally, “Heavy Duty” vehicle categories do not track as well as “Light Duty” vehicle categories among all jurisdictions.
 - e. For the motorcycle category, the mobile default included all vehicles older than 12 years into the 12th year category and no values are provided for years 13 through 25.

2) Percentage of Diesel Vehicles: For this comparison we aggregated all the Maryland data into one set of diesel fractions instead of breaking down by jurisdiction and compared them against Mobile 6 defaults. The reason behind this action was due to the fact that diesel vehicles by vehicle types were low in a number of jurisdictions and by aggregating we were able to increase the total number of vehicles for each vehicle type.

- a LDV: Both the vin decodes and 2002 data have dsf values near zero for years 1 to 18. For years 19 to 25, the mobile defaults increase to about 0.08, but the dsf values based on VIN decodes increase to about 0.25 for the same years.*
- b LDT1/LDT2: The DSF values generated by the VIN decode method are near zero for a number of years as compared to the 2002 data.*

- c. *LDT3/LDT4*: The VIN decoder identifies diesel vehicles in most of the years for these categories. For LDT3 both VIN decode and 2002 data have low values, typically less than 0.02. For LDT4, the 2002 data is also low, but the VIN decode values rise from about 0.12 in year 20 to 0.38 in year 22.
- f. *HDV2B*: VIN decoder and Mobile defaults are fairly close with VIN decodes slightly higher in years 1 through 13 and mobile defaults slightly higher in years 14 through 24.
- g. *HDV3/HDV4*: VIN decodes are lower than Mobile defaults for these categories, particularly in later years.
- h. *HDV5/HDV6/HDV7*: VIN decodes are higher than Mobile defaults for these categories.
- i. *HDV8A/HDV8B*: Both VIN decodes and Mobile defaults have dsf values at or near 1.0.

Recommendations

1) Age Distributions

- Use distributions developed by COG based on VIN decode results for each jurisdiction and 16 vehicle types. It was decided to use the VIN decoded transit and school bus registration data instead of the Mobile 6.2 defaults as was done previously, despite the ‘peaks’ occasioned by the periodic purchase of vehicles.

2) Diesel Fractions

- Aggregate jurisdiction level data to calculate diesel fractions on a Maryland regional level. It is recommended we use VIN decode results for each of the 14 vehicle types.

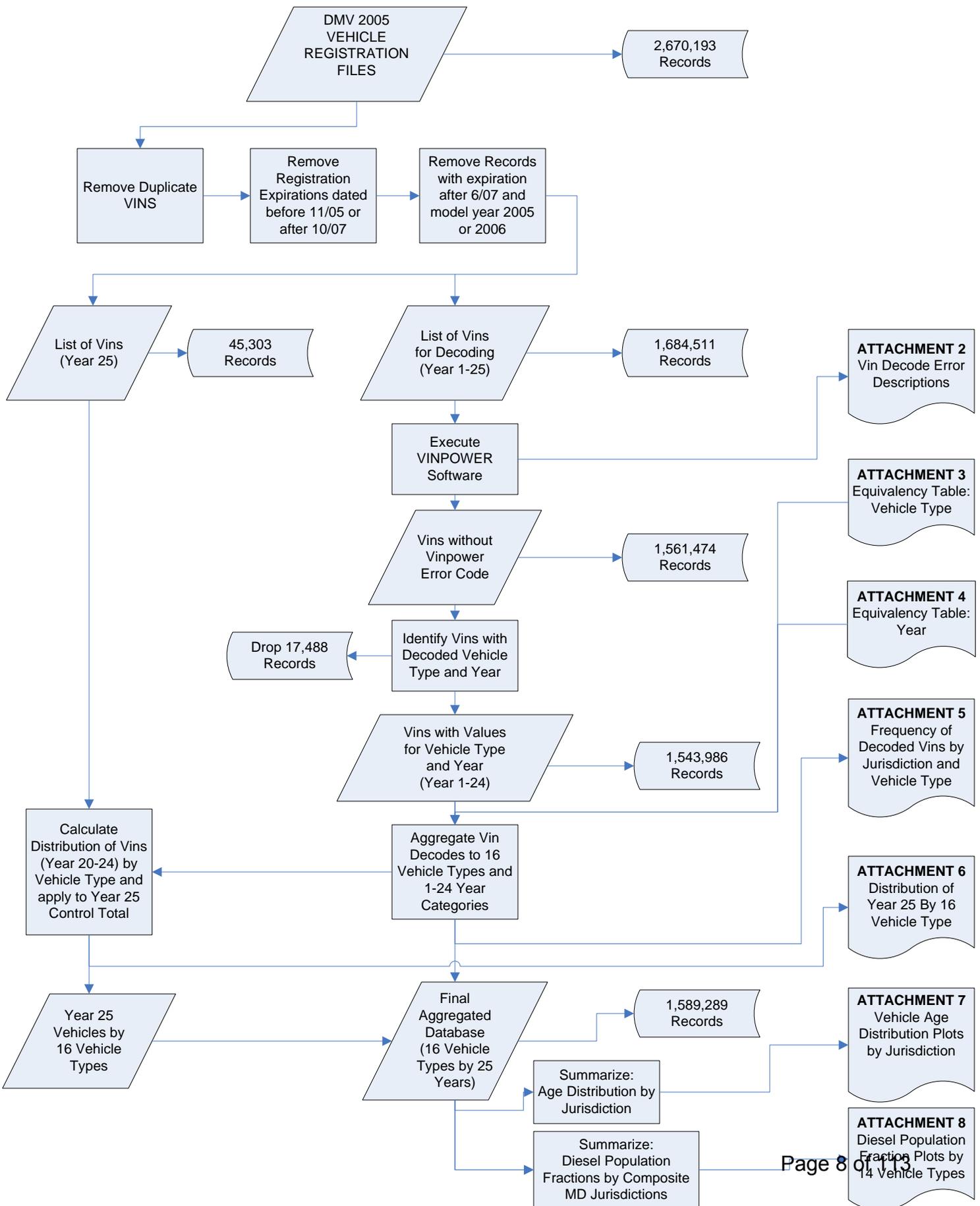
LIST OF ATTACHMENTS

- **ATTACHMENT 1:** VIN DECODE PROCESS FLOWCHART
- **ATTACHMENT 2:** 2005 VEHICLE REGISTRATION DATA VINPOWER DECODE RESULTS
- **ATTACHMENT 3:** EQUIVALENCY TABLE: VEHICLE TYPE
- **ATTACHMENT 4:** EQUIVALENCY TABLE: YEAR
- **ATTACHMENT 5:** FREQUENCY OF DECODED VINS BY JURISDICTION AND VEHICLE TYPE
- **ATTACHMENT 6:** ESTIMATION OF 25TH YEAR AGE FRACTION
- **ATTACHMENT 7A:** COMPARISON OF VEHICLE AGE DISTRIBUTIONS, JURISDICTION = CHLS
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ATTACHMENT 1

Vin Decode Process Flowchart

Maryland Jurisdictions



ATTACHMENT 2

2005 Vehicle Registration Data VinPower Decode Results

State	VINS
MD	1,684,511

Error Code	Error Code Description	MD
	No Error - Decoded Successfully	92.7%
1	VIN Number contains illegal characters	0.5%
2	VIN too short to decode (i.e.: < 10 chars)	1.1%
3	VIN Exceeds 17 characters	0.1%
4	Check Digit is bad	1.5%
5	This vehicle is unavailable in the database	2.5%
6	The model year for this vehicle is unavailable	1.1%
7	VIN Decode Error	0.0%
	Error w/o Error Code	0.5%
	TOTAL	100.0%

**ATTACHMENT 3
EQUIVALENCY TABLE - VEHICLE TYPE**

Mobile 6 Vehicle Type	COG Vehicle Type																TOTAL	
	1 LDV	2 LDT1	3 LDT2	4 LDT3	5 LDT4	6 HDV2B	7 HDV3	8 HDV4	9 HDV5	10 HDV6	11 HDV7	12 HDV8A	13 HDV8B	14 HDBS	15 HDBT	16 MC		
1 LDGV	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00
2 LDGT1	-	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00
3 LDGT2	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00
4 LDGT3	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00
5 LDGT4	-	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	-	1.00
6 HDGV2B	-	-	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	1.00
7 HDGV3	-	-	-	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	1.00
8 HDGV4	-	-	-	-	-	-	-	1.00	-	-	-	-	-	-	-	-	-	1.00
9 HDGV5	-	-	-	-	-	-	-	-	1.00	-	-	-	-	-	-	-	-	1.00
10 HDGV6	-	-	-	-	-	-	-	-	-	1.00	-	-	-	-	-	-	-	1.00
11 HDGV7	-	-	-	-	-	-	-	-	-	-	1.00	-	-	-	-	-	-	1.00
12 HDGV8A	-	-	-	-	-	-	-	-	-	-	-	1.00	-	-	-	-	-	1.00
13 HDGV8B	-	-	-	-	-	-	-	-	-	-	-	-	1.00	-	-	-	-	1.00
14 LDDV	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00
15 LDDT12	-	0.13	0.88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00
16 HDDV2B	-	-	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	1.00
17 HDDV3	-	-	-	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	1.00
18 HDDV4	-	-	-	-	-	-	-	1.00	-	-	-	-	-	-	-	-	-	1.00
19 HDDV5	-	-	-	-	-	-	-	-	1.00	-	-	-	-	-	-	-	-	1.00
20 HDDV6	-	-	-	-	-	-	-	-	-	1.00	-	-	-	-	-	-	-	1.00
21 HDDV7	-	-	-	-	-	-	-	-	-	-	1.00	-	-	-	-	-	-	1.00
22 HDDV8A	-	-	-	-	-	-	-	-	-	-	-	1.00	-	-	-	-	-	1.00
23 HDDV8B	-	-	-	-	-	-	-	-	-	-	-	-	1.00	-	-	-	-	1.00
24 MC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	1.00
25 HDGB	-	-	-	-	-	0.76	0.23	-	0.00	0.02	0.00	-	-	-	-	-	-	1.00
26 HDDBT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	-	-	1.00
27 HDDBS	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00	-	-	-	1.00
28 LDDT34	-	-	-	0.62	0.38	-	-	-	-	-	-	-	-	-	-	-	-	1.00

**ATTACHMENT 4
EQUIVALENCY TABLE - YEAR**

Vehicle Model Year	Mobile 6 Year
2006, 2005	1
2004	2
2003	3
2002	4
2001	5
2000	6
1999	7
1998	8
1997	9
1996	10
1995	11
1994	12
1993	13
1992	14
1991	15
1990	16
1989	17
1988	18
1987	19
1986	20
1985	21
1984	22
1983	23
1982	24
<= 1981	25

ATTACHMENT 5 FREQUENCY OF DECODED VINS BY JURISDICTION AND VEHICLE TYPE

Sum of count	source jur					Grand Total
	Vin Decodes					
cog_veh	CHS	CLVT	FRED	MTG	PG	
LDV	51,977	30,891	84,402	391,552	324,362	883,184
LDT1	712	595	1,272	4,668	3,820	11,067
LDT2	28,457	20,364	51,915	160,888	126,337	387,961
LDT3	12,713	9,188	16,839	38,032	44,702	121,474
LDT4	2,958	1,973	4,507	11,711	12,682	33,831
HDV2B	3,610	2,925	8,570	13,992	13,198	42,295
HDV3	898	632	1,727	2,650	2,712	8,619
HDV4	454	297	832	2,125	2,792	6,500
HDV5	135	91	301	719	777	2,023
HDV6	344	197	832	1,374	2,770	5,517
HDV7	288	131	498	692	1,200	2,809
HDV8A	494	256	904	1,188	2,460	5,302
HDV8B	80	92	263	331	555	1,321
HDBS	331	217	313	1,178	1,003	3,042
HDBT	228	92	301	1,011	929	2,561
MC	3,208	2,312	5,289	7,938	7,733	26,480
Grand Total	106,887	70,253	178,765	640,049	548,032	1,543,986

% of count	source jur					Grand Total
	Vin Decodes					
cog_veh	CHS	CLVT	FRED	MTG	PG	
LDV	48.63%	43.97%	47.21%	61.18%	59.19%	57.20%
LDT1	0.67%	0.85%	0.71%	0.73%	0.70%	0.72%
LDT2	26.62%	28.99%	29.04%	25.14%	23.05%	25.13%
LDT3	11.89%	13.08%	9.42%	5.94%	8.16%	7.87%
LDT4	2.77%	2.81%	2.52%	1.83%	2.31%	2.19%
HDV2B	3.38%	4.16%	4.79%	2.19%	2.41%	2.74%
HDV3	0.84%	0.90%	0.97%	0.41%	0.49%	0.56%
HDV4	0.42%	0.42%	0.47%	0.33%	0.51%	0.42%
HDV5	0.13%	0.13%	0.17%	0.11%	0.14%	0.13%
HDV6	0.32%	0.28%	0.47%	0.21%	0.51%	0.36%
HDV7	0.27%	0.19%	0.28%	0.11%	0.22%	0.18%
HDV8A	0.46%	0.36%	0.51%	0.19%	0.45%	0.34%
HDV8B	0.07%	0.13%	0.15%	0.05%	0.10%	0.09%
HDBS	0.31%	0.31%	0.18%	0.18%	0.18%	0.20%
HDBT	0.21%	0.13%	0.17%	0.16%	0.17%	0.17%
MC	3.00%	3.29%	2.96%	1.24%	1.41%	1.72%
Grand Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

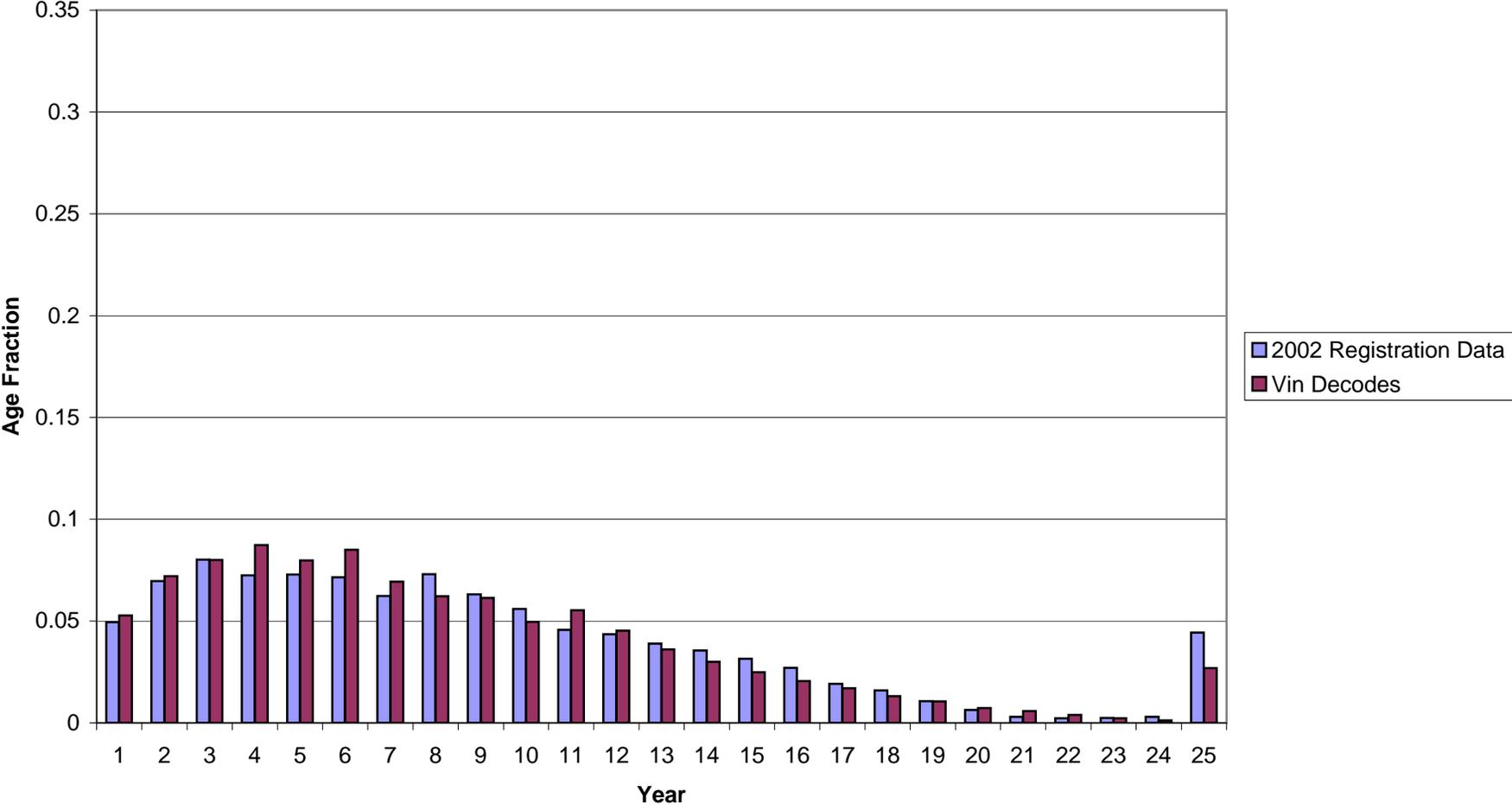
ATTACHMENT 6
Estimation of 25th Year Age Fraction
Based Upon DMV Vehicle Registration Records and Vin Decode Results

2005 Maryland Vehicle Registration Data		
	Freq	%
Years 1 - 24	1,639,208	97.31%
Year 25	45,303	2.69%
TOTAL	1,684,511	100.00%

A Vehicle Type	B Vin Decodes Yrs 20 - 24		D Est 25th YR Veh C*45303	E Vin Decodes Yrs 1 - 24	F Est Control Total D+E	G 25th Yr RDT D/F
	Freq	%				
LDV	17,374	54.02%	24,474	883,184	907,658	2.70%
LDT1	552	1.72%	778	11,029	11,807	6.59%
LDT2	6,028	18.74%	8,491	387,999	396,490	2.14%
LDT3	2,961	9.21%	4,171	121,512	125,683	3.32%
LDT4	254	0.79%	358	33,793	34,151	1.05%
HDV2B	2,012	6.26%	2,834	44,736	47,570	5.96%
HDV3	497	1.55%	700	9,313	10,013	6.99%
HDV4	185	0.58%	261	6,500	6,761	3.85%
HDV5	24	0.07%	34	2,045	2,079	1.63%
HDV6	188	0.58%	265	5,560	5,825	4.55%
HDV7	260	0.81%	366	2,809	3,175	11.53%
HDV8A	275	0.86%	387	5,302	5,689	6.81%
HDV8B	60	0.19%	85	1,321	1,406	6.01%
HDBS	144	0.45%	203	1,428	1,631	12.44%
HDBT	26	0.08%	37	975	1,012	3.62%
MC	1,321	4.11%	1,861	26,480	28,341	6.57%
TOTAL	32,161	100.00%	45,303	1,543,986	1,589,289	2.85%

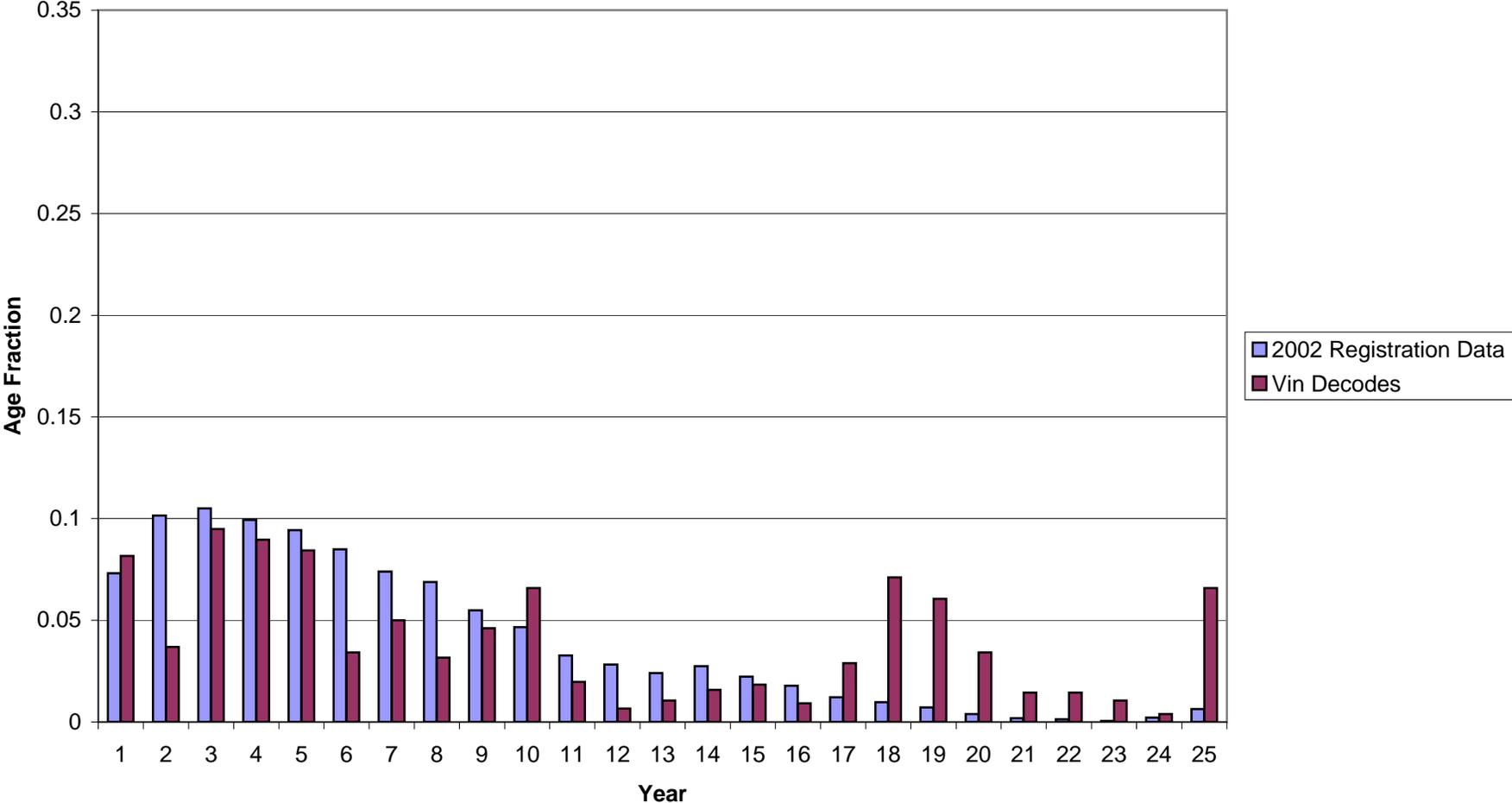
ATTACHMENT 7A

2005 Age Fractions
Jurisdiction = CHLS
Vehicle Type = LDV
Number of Decoded Vins = 51,977



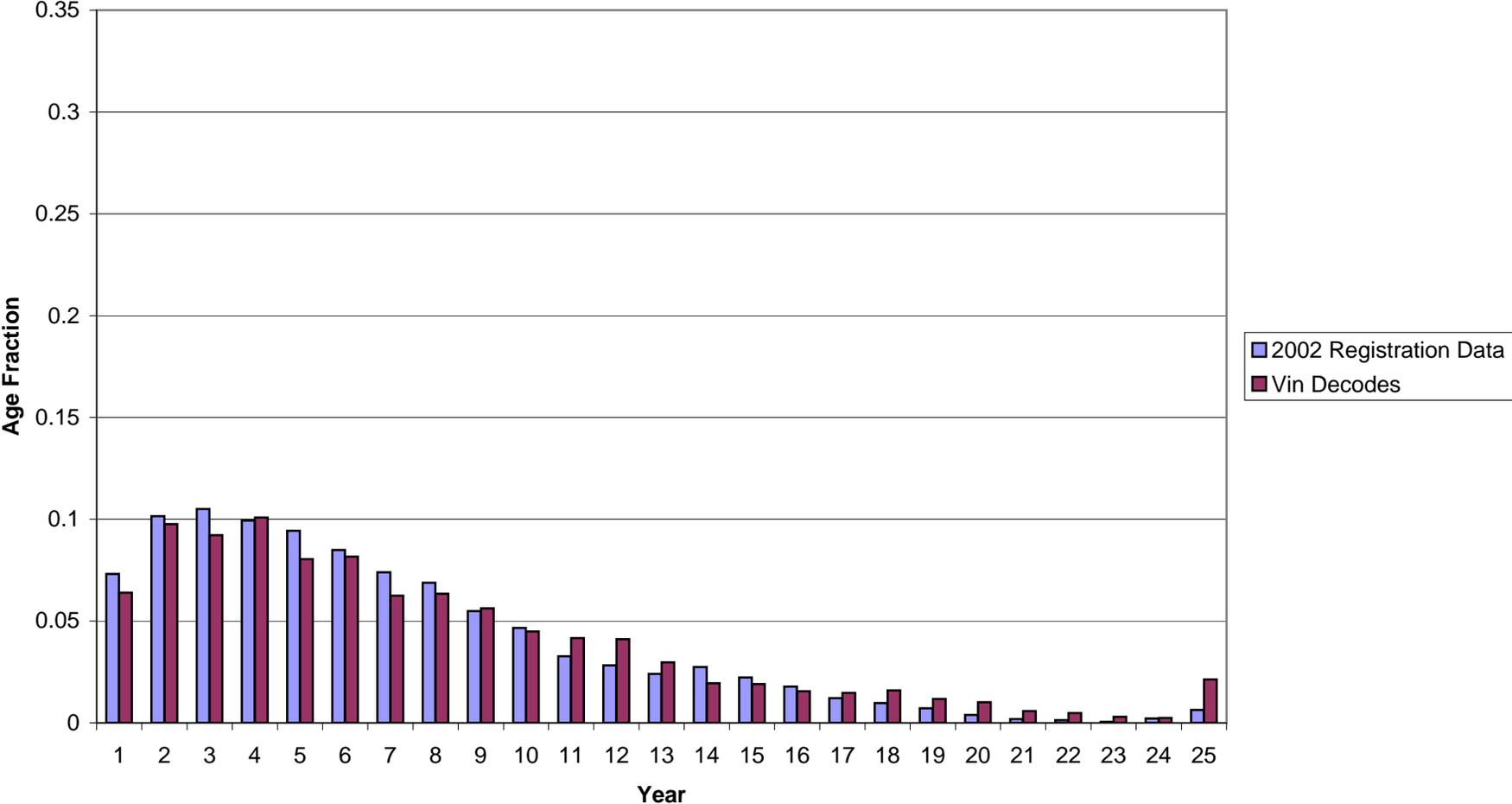
ATTACHMENT 7A

2005 Age Fractions
Jurisdiction = CHLS
Vehicle Type = LDT1
Number of Decoded Vins = 712



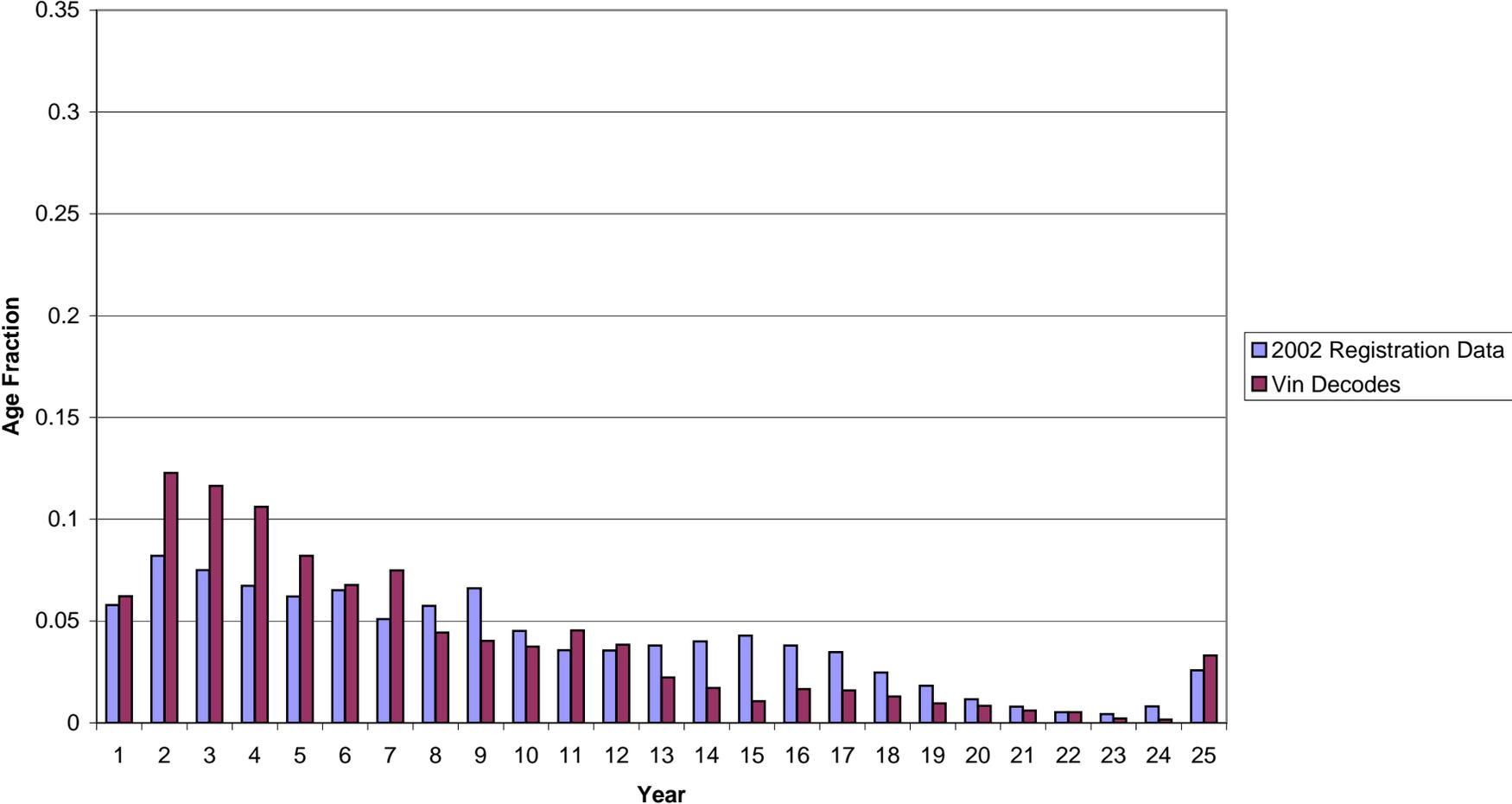
ATTACHMENT 7A

2005 Age Fractions
Jurisdiction = CHLS
Vehicle Type = LDT2
Number of Decoded Vins = 28,457



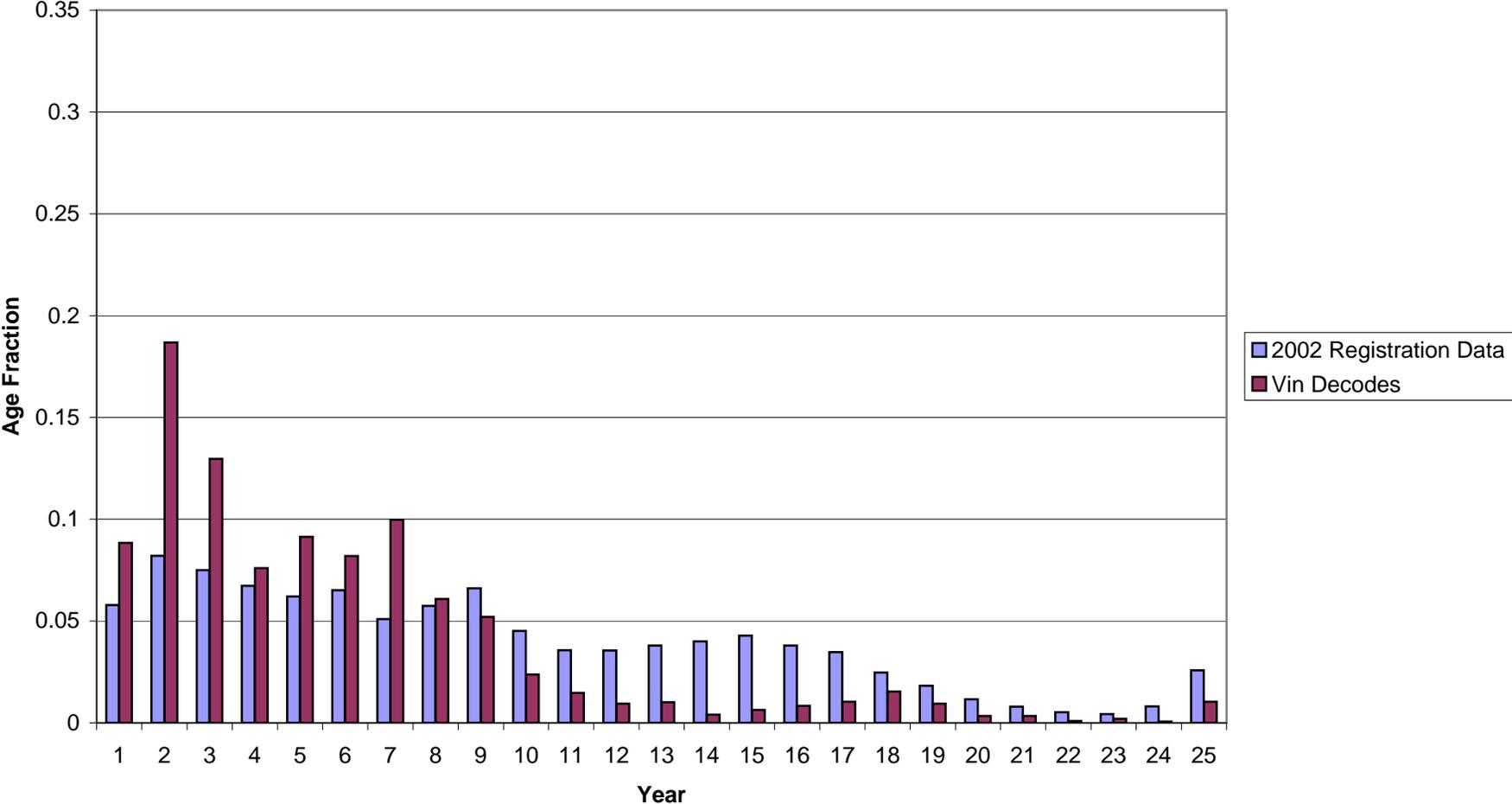
ATTACHMENT 7A

2005 Age Fractions
Jurisdiction = CHLS
Vehicle Type = LDT3
Number of Decoded Vins = 12,713



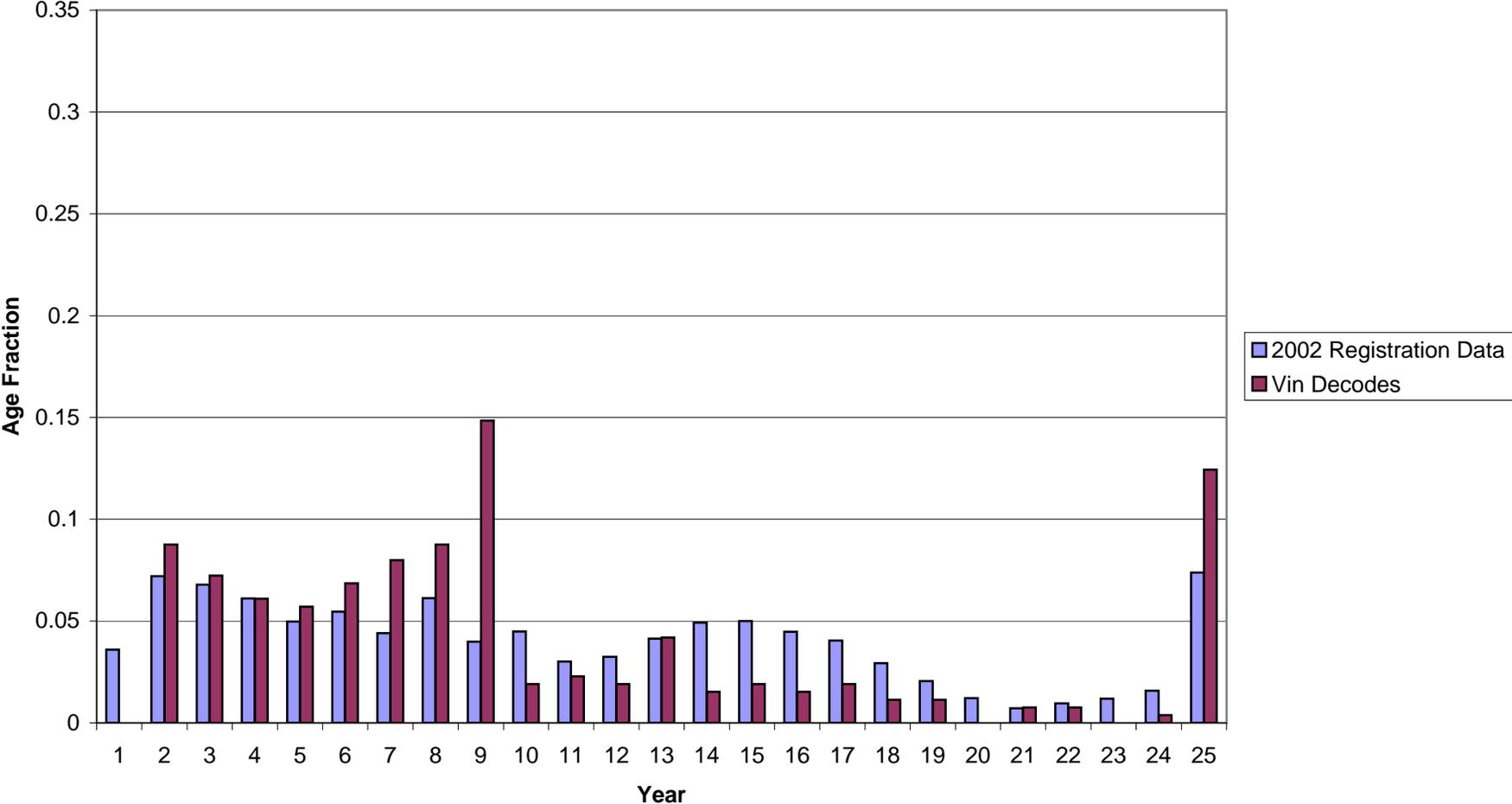
ATTACHMENT 7A

2005 Age Fractions
Jurisdiction = CHLS
Vehicle Type = LDT4
Number of Decoded Vins = 2,958



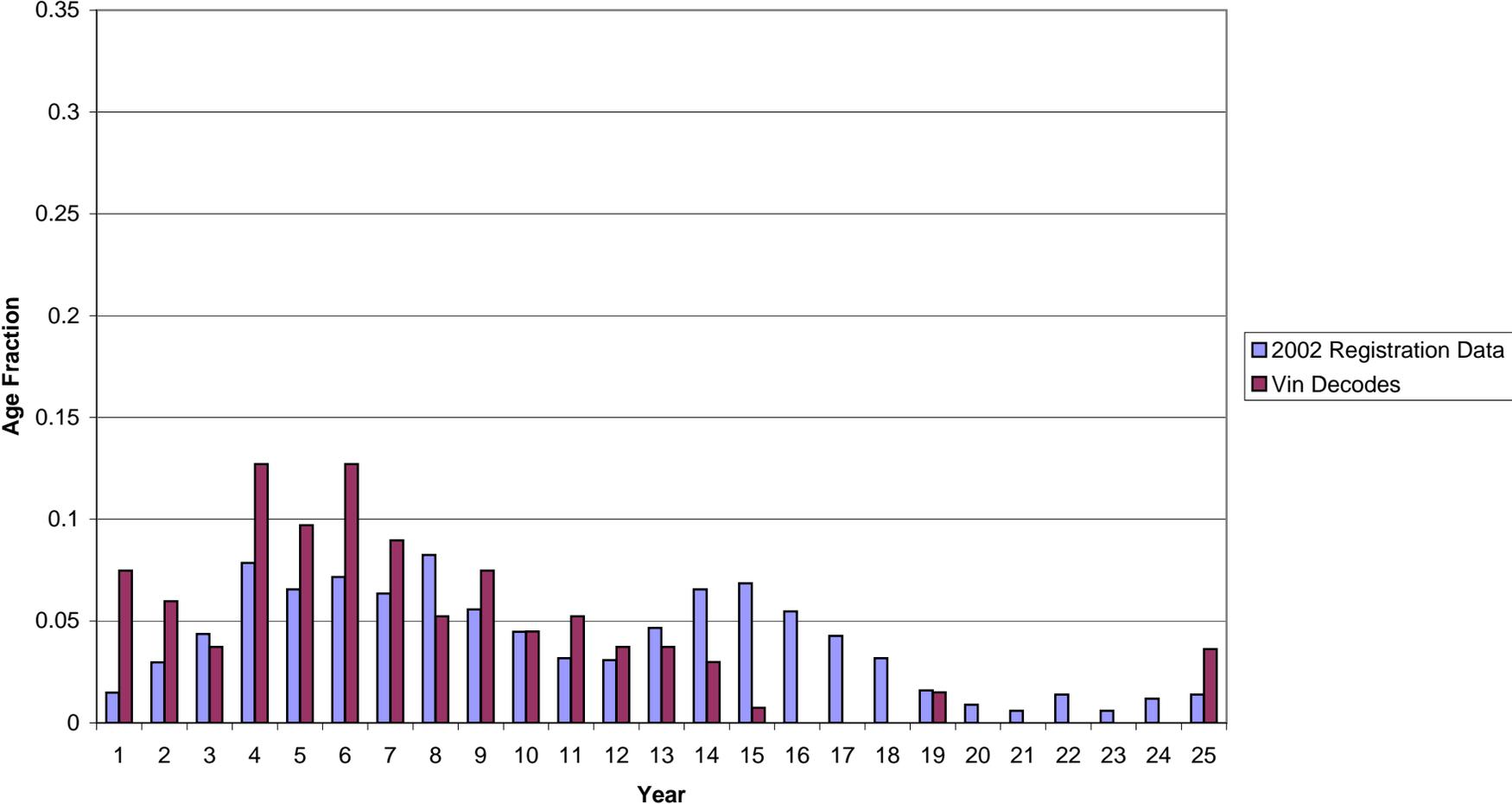
ATTACHMENT 7A

2005 Age Fractions
Jurisdiction = CHLS
Vehicle Type = HDBS
Number of Decoded Vins = 331



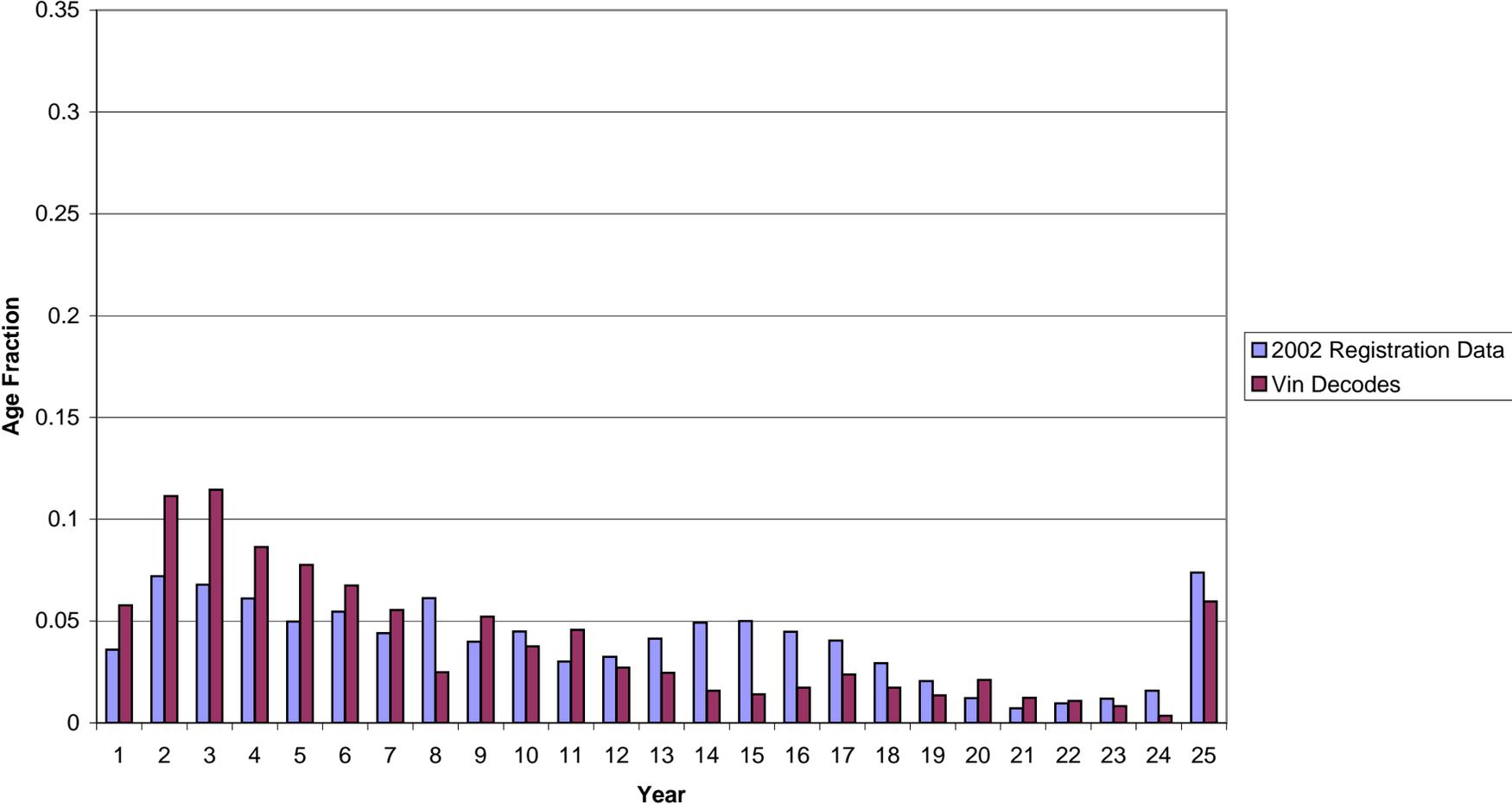
ATTACHMENT 7A

2005 Age Fractions
Jurisdiction = CHLS
Vehicle Type = HDBT
Number of Decoded Vins = 228



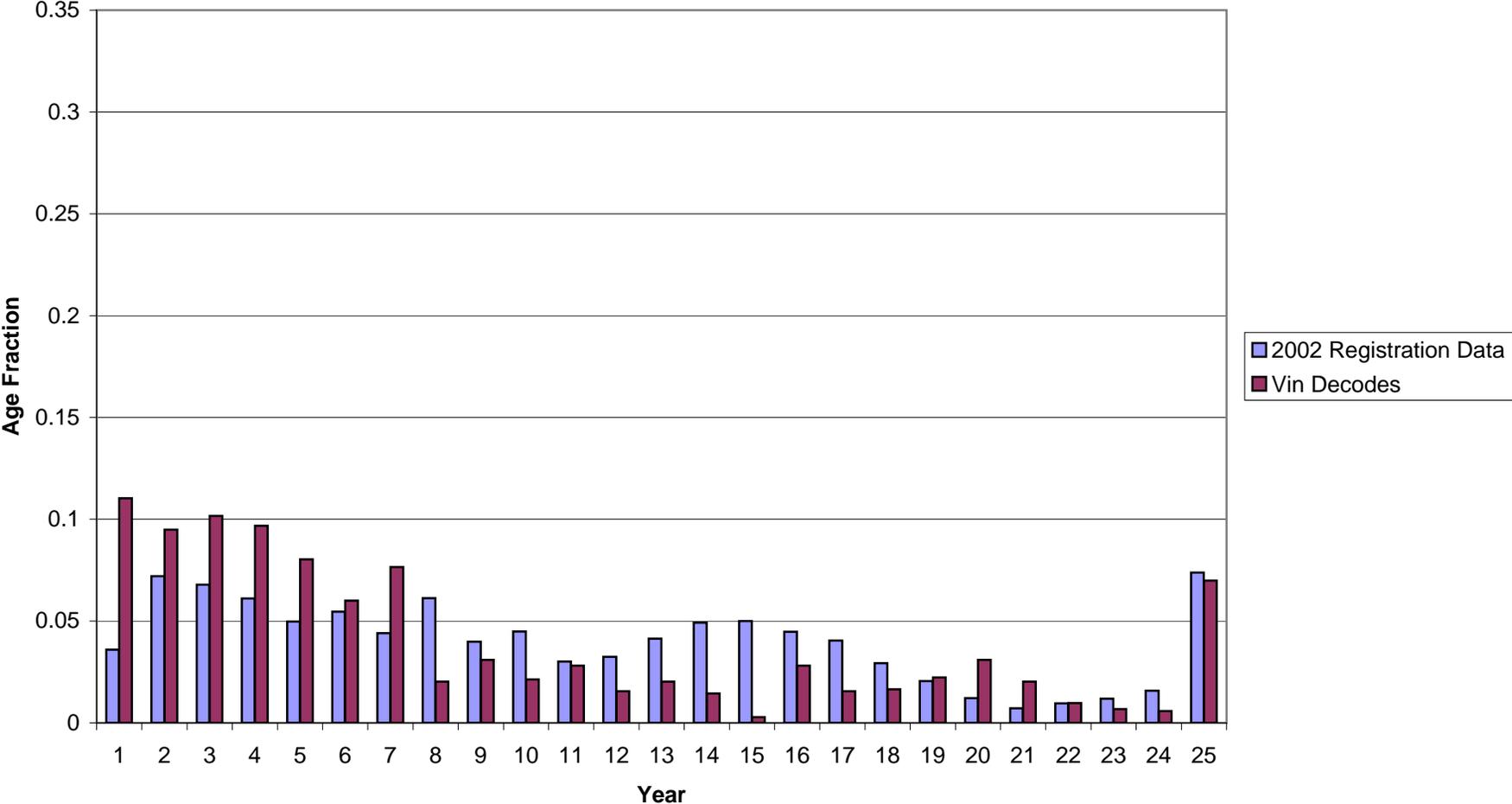
ATTACHMENT 7A

2005 Age Fractions
Jurisdiction = CHLS
Vehicle Type = HDV2B
Number of Decoded Vins = 3,610



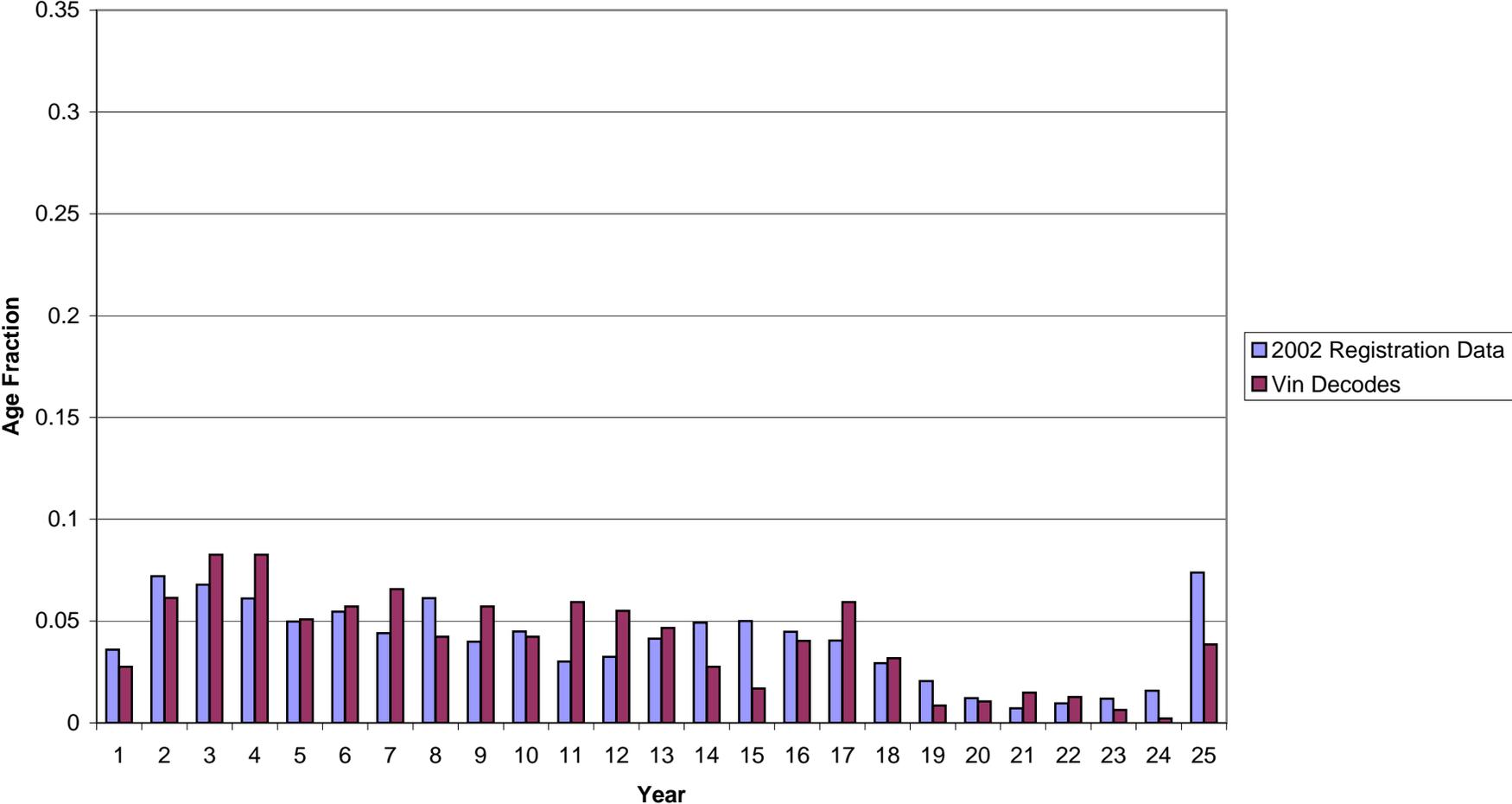
ATTACHMENT 7A

2005 Age Fractions
Jurisdiction = CHLS
Vehicle Type = HDV3
Number of Decoded Vins = 898



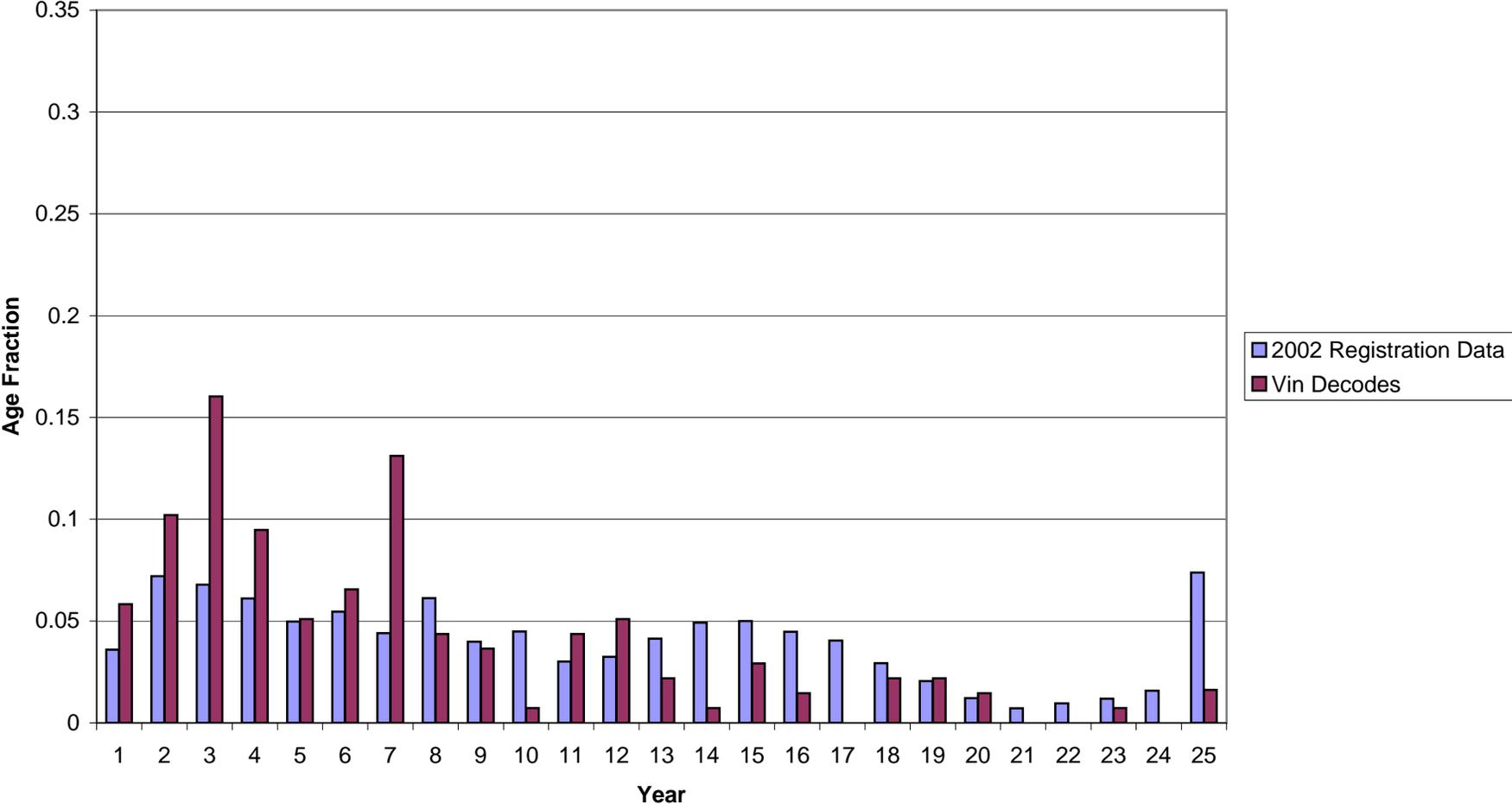
ATTACHMENT 7A

2005 Age Fractions
Jurisdiction = CHLS
Vehicle Type = HDV4
Number of Decoded Vins = 454



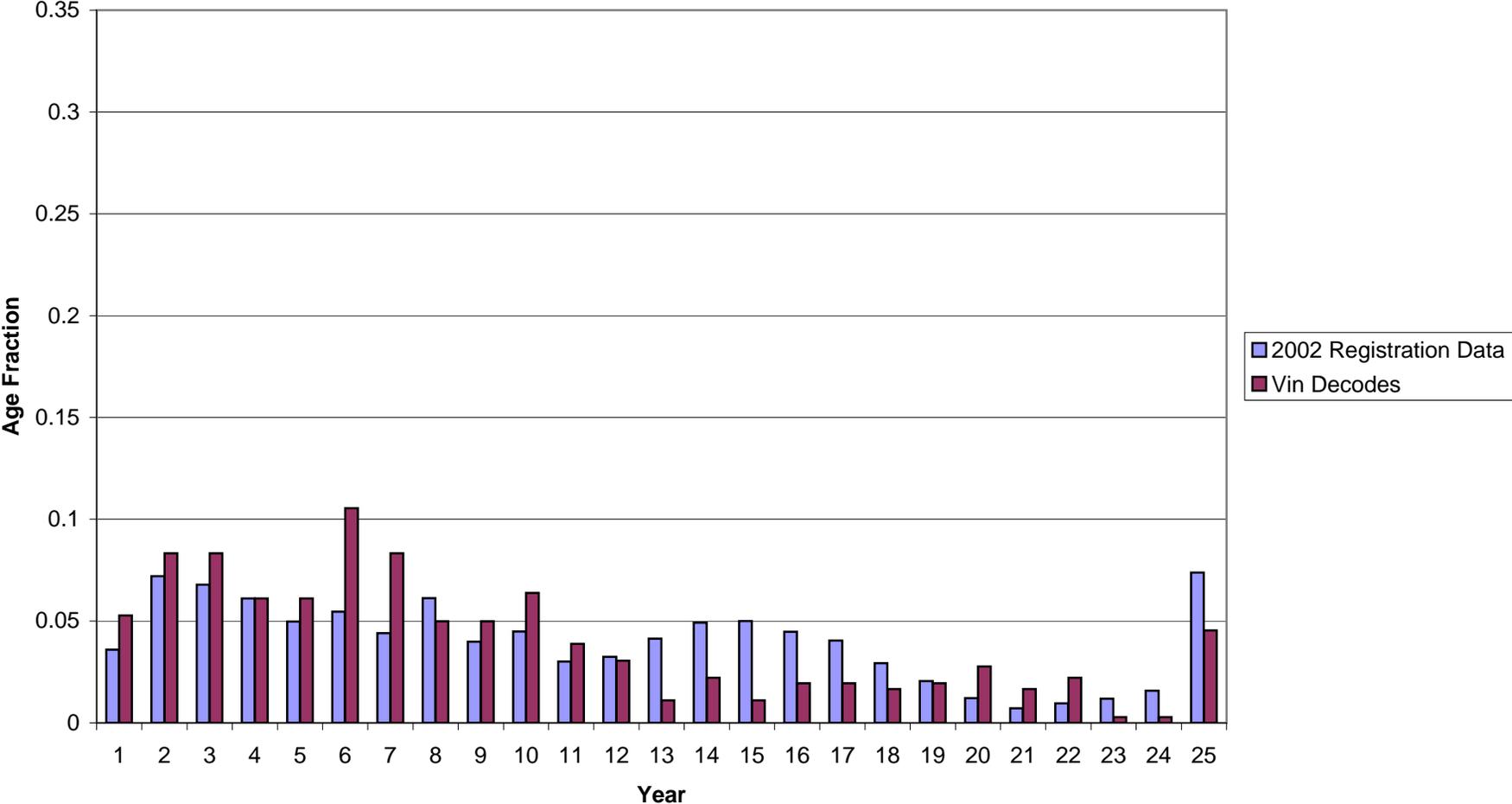
ATTACHMENT 7A

2005 Age Fractions
Jurisdiction = CHLS
Vehicle Type = HDV5
Number of Decoded Vins = 135



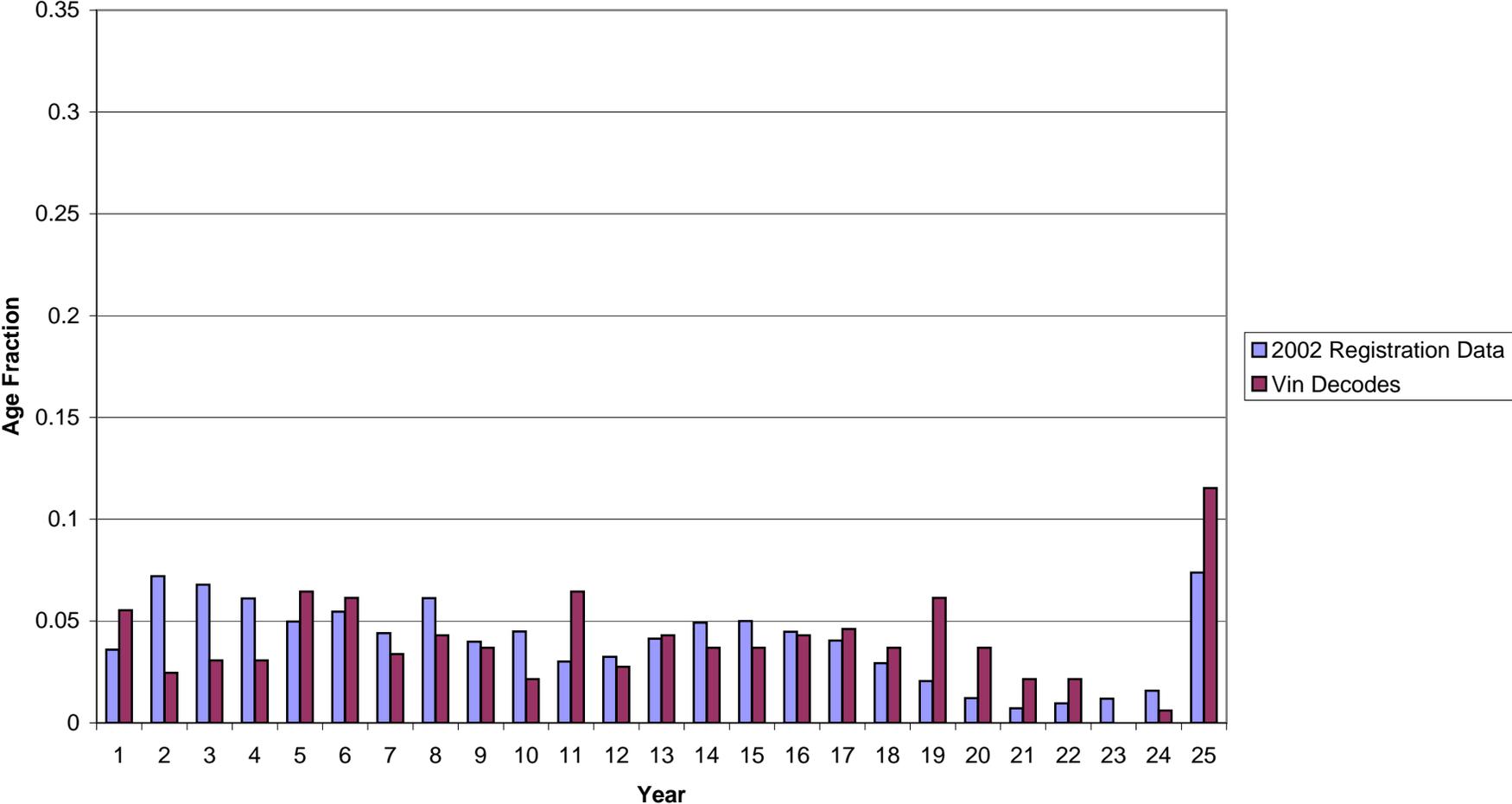
ATTACHMENT 7A

2005 Age Fractions
Jurisdiction = CHLS
Vehicle Type = HDV6
Number of Decoded Vins = 344



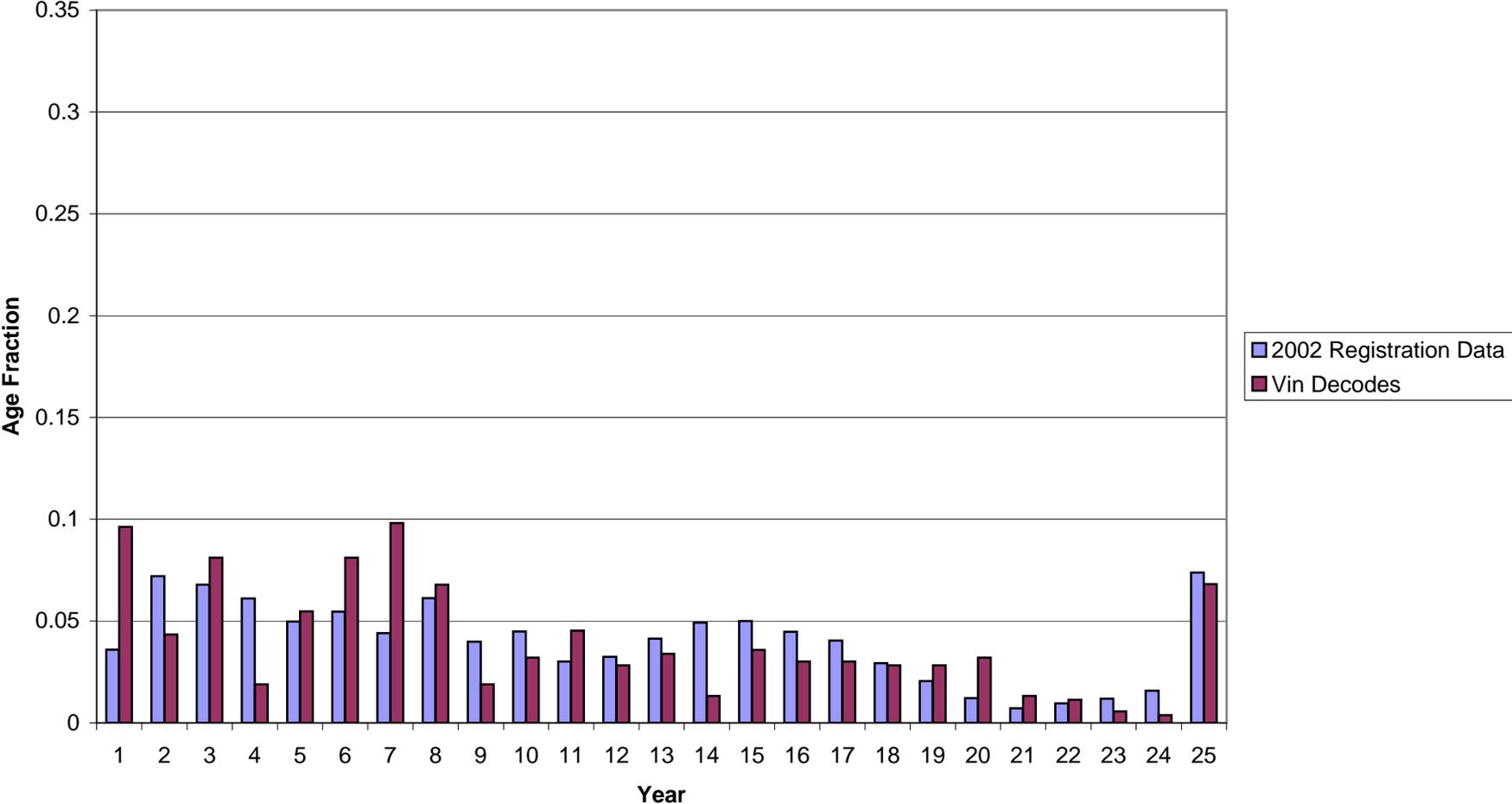
ATTACHMENT 7A

2005 Age Fractions
Jurisdiction = CHLS
Vehicle Type = HDV7
Number of Decoded Vins = 288



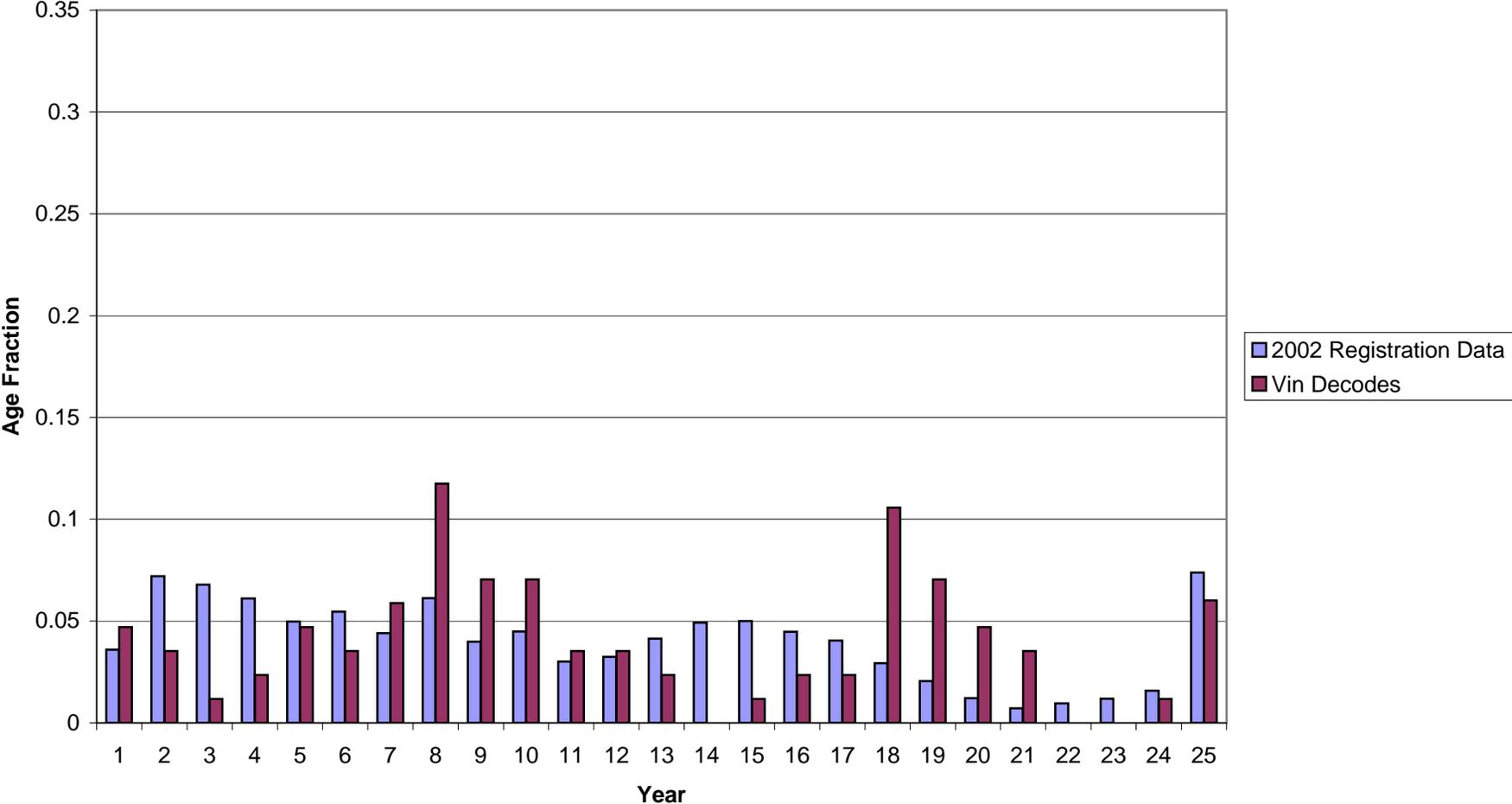
ATTACHMENT 7A

2005 Age Fractions
Jurisdiction = CHLS
Vehicle Type = HDV8A
Number of Decoded Vins = 494



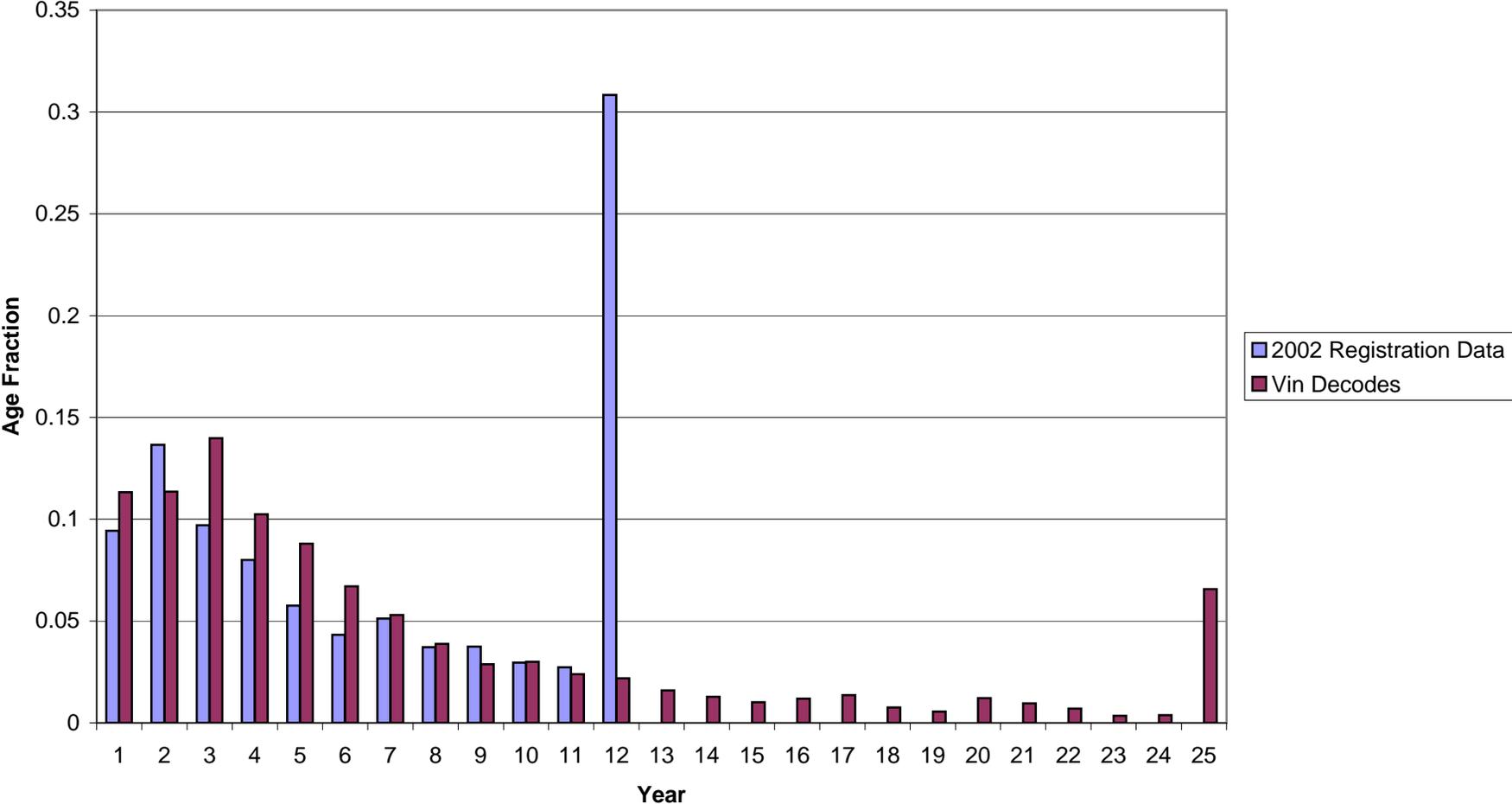
ATTACHMENT 7A

2005 Age Fractions
Jurisdiction = CHLS
Vehicle Type = HDV8B
Number of Decoded Vins = 80



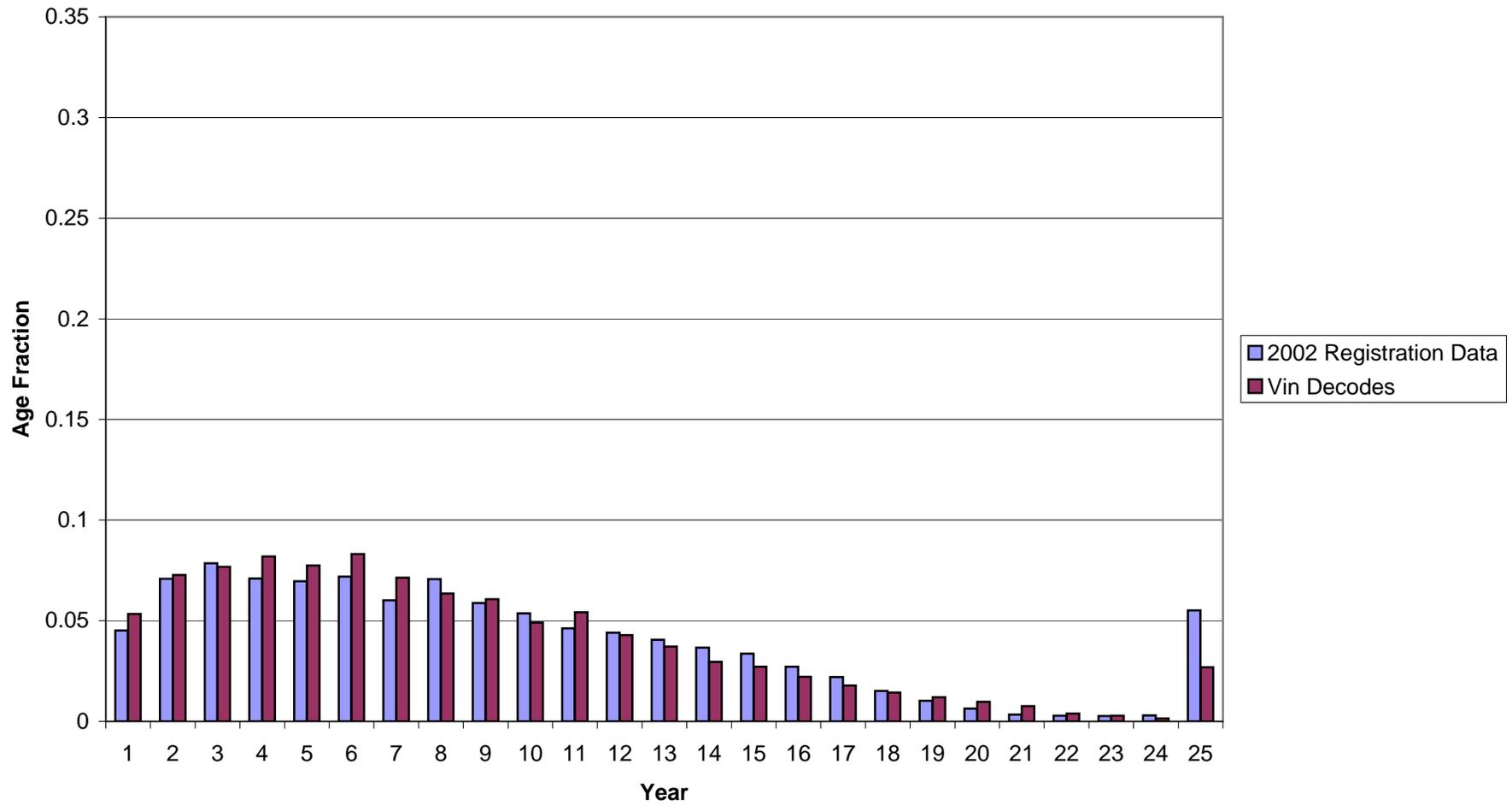
ATTACHMENT 7A

2005 Age Fractions
Jurisdiction = CHLS
Vehicle Type = MC
Number of Decoded Vins = 3,208



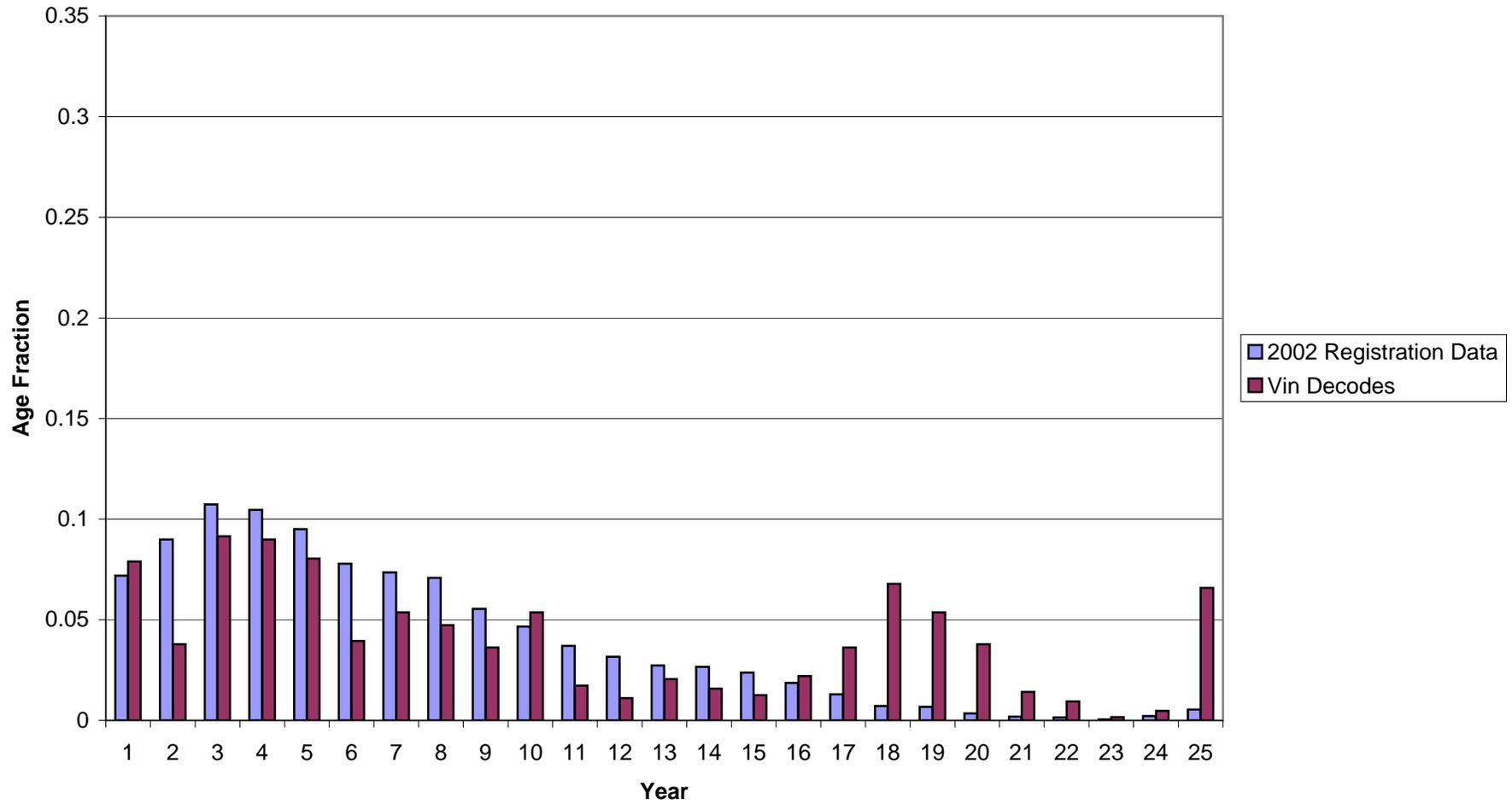
ATTACHMENT 7B

2005 Age Fractions
Jurisdiction = CLVT
Vehicle Type = LDV
Number of Decoded Vins = 30,891



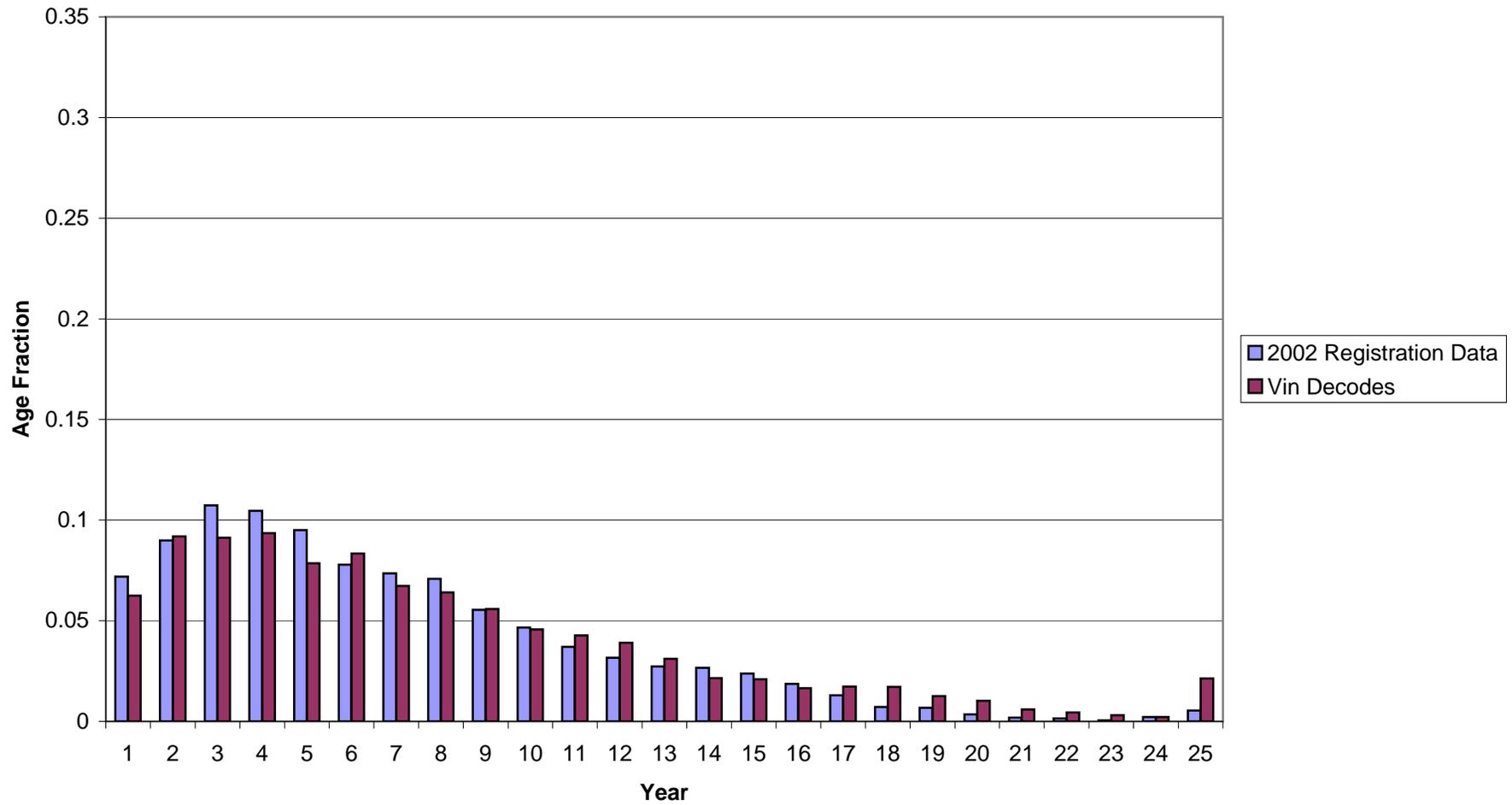
ATTACHMENT 7B

2005 Age Fractions
Jurisdiction = CLVT
Vehicle Type = LDT1
Number of Decoded Vins = 595



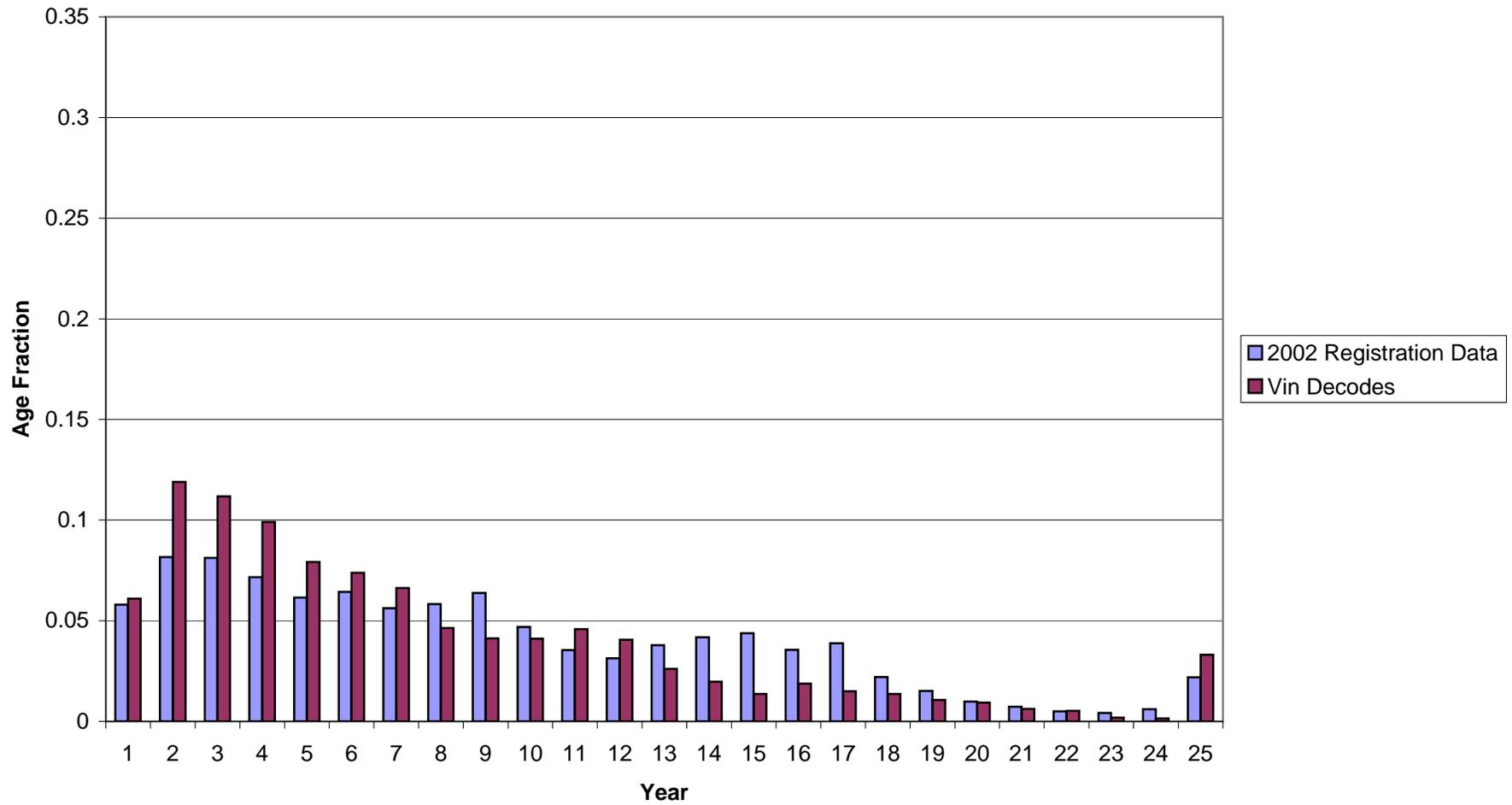
ATTACHMENT 7B

2005 Age Fractions
Jurisdiction = CLVT
Vehicle Type = LDT2
Number of Decoded Vins = 20,364



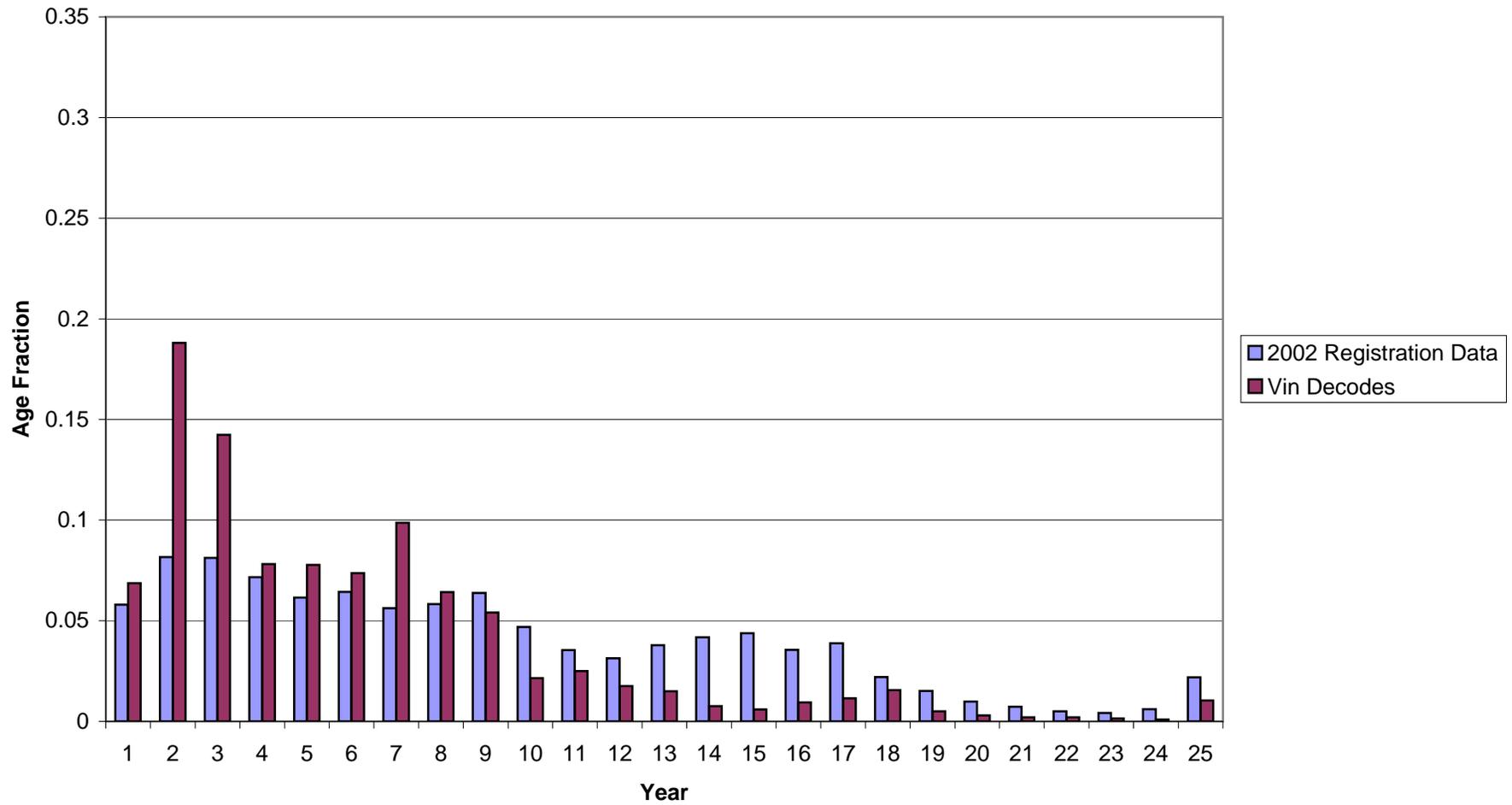
ATTACHMENT 7B

2005 Age Fractions
Jurisdiction = CLVT
Vehicle Type = LDT3
Number of Decoded Vins = 9,188



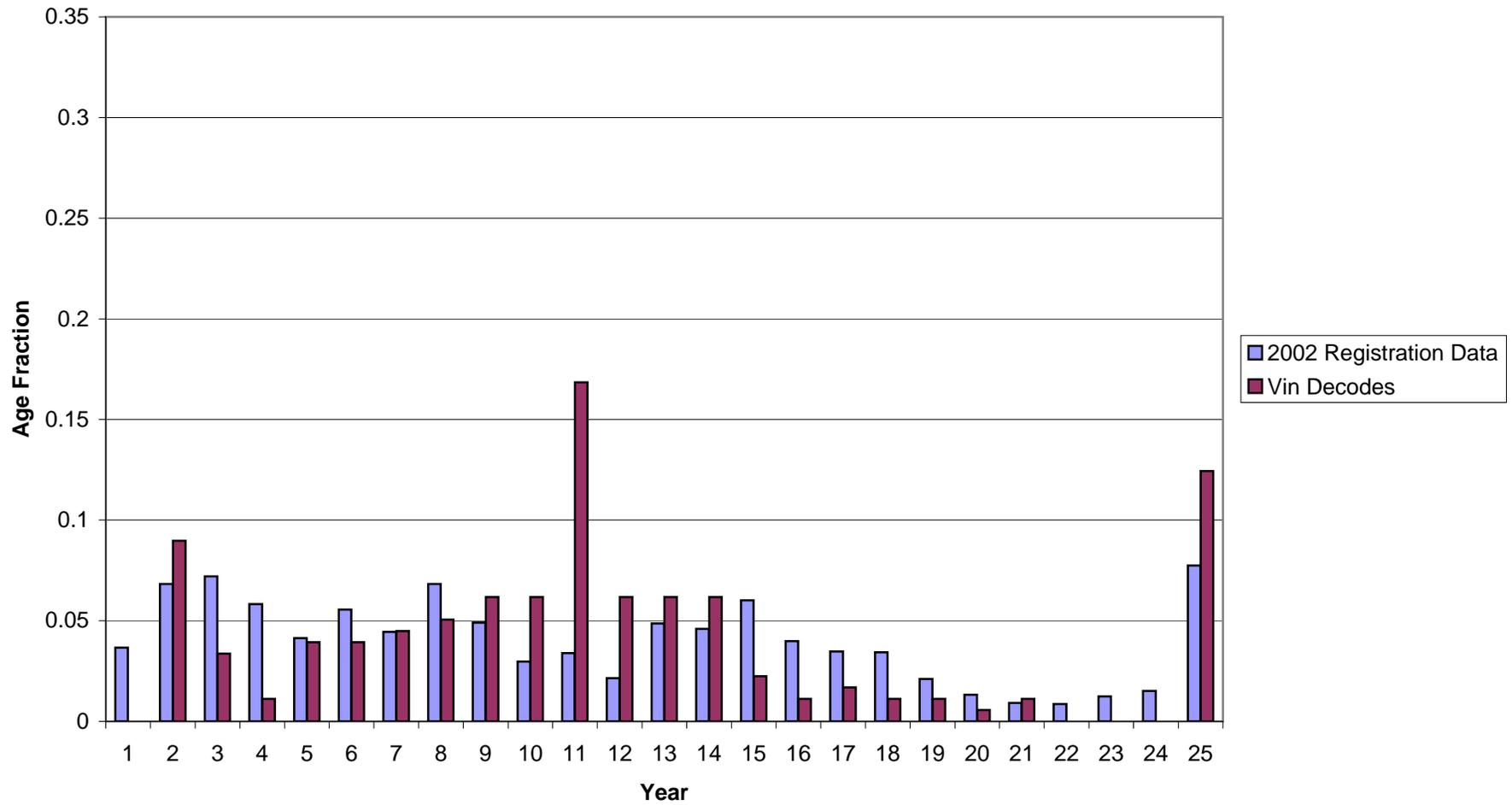
ATTACHMENT 7B

2005 Age Fractions
Jurisdiction = CLVT
Vehicle Type = LDT4
Number of Decoded Vins = 1,973



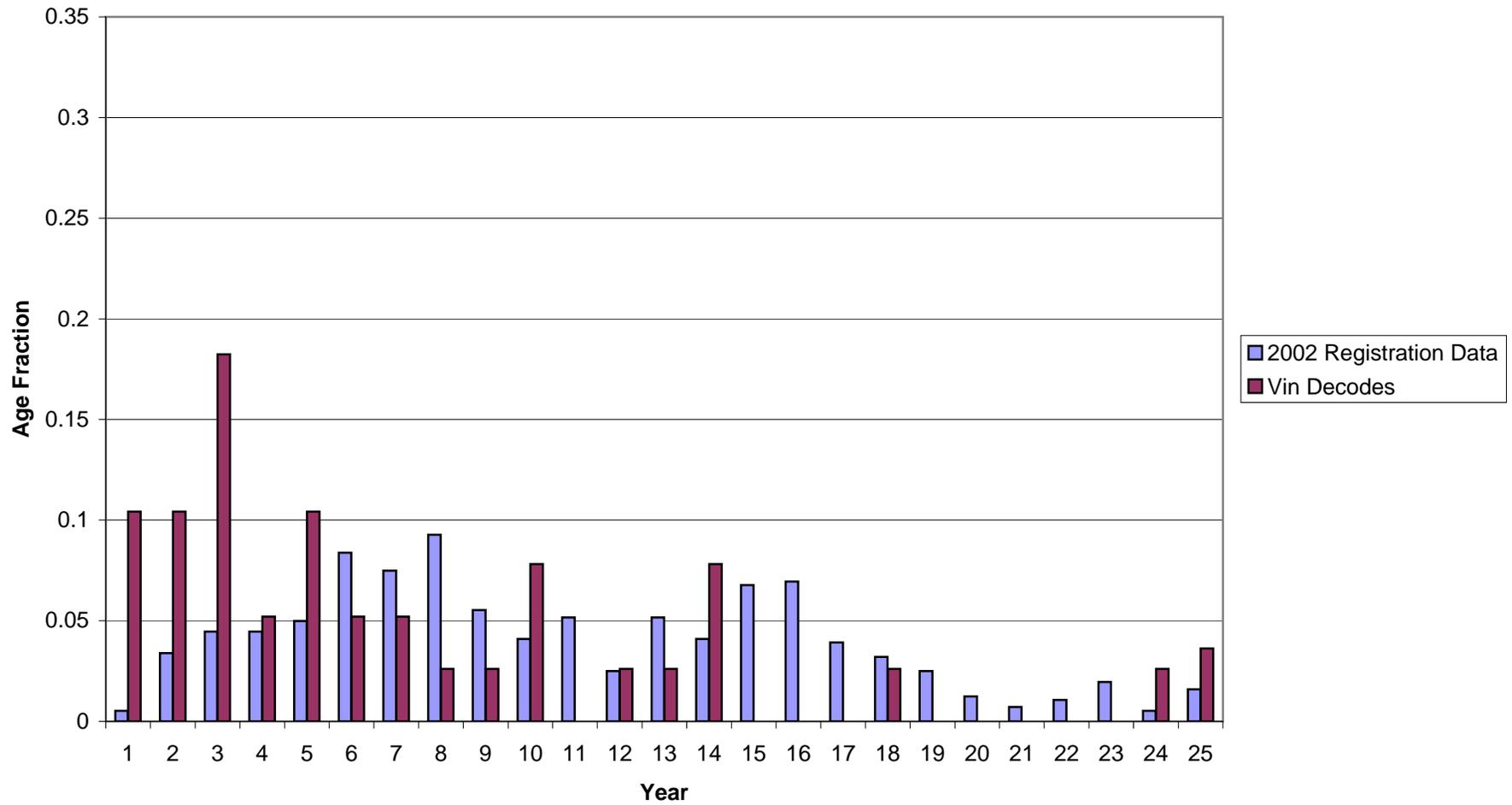
ATTACHMENT 7B

2005 Age Fractions
Jurisdiction = CLVT
Vehicle Type = HDBS
Number of Decoded Vins = 217



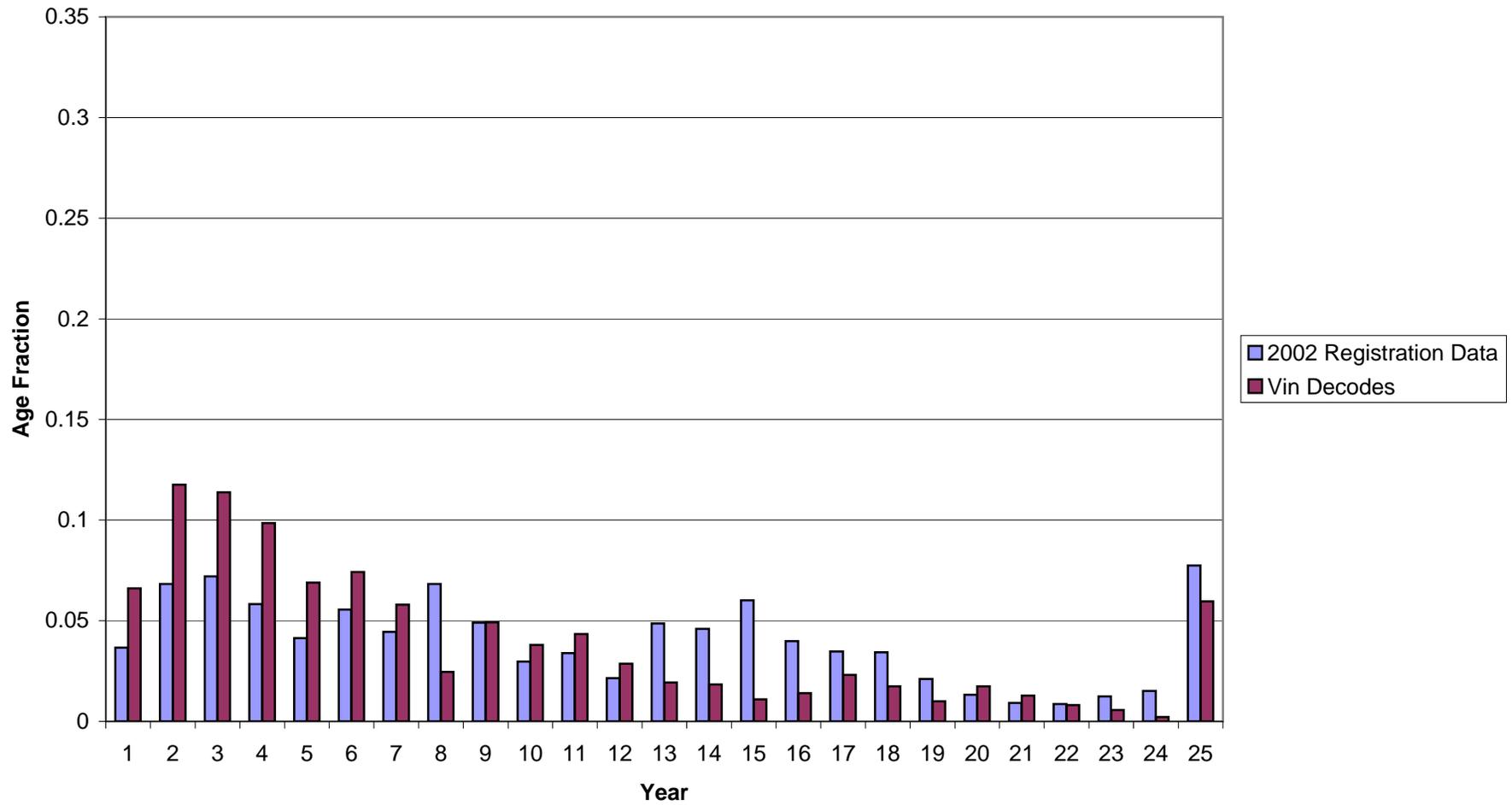
ATTACHMENT 7B

2005 Age Fractions
Jurisdiction = CLVT
Vehicle Type = HDBT
Number of Decoded Vins = 92



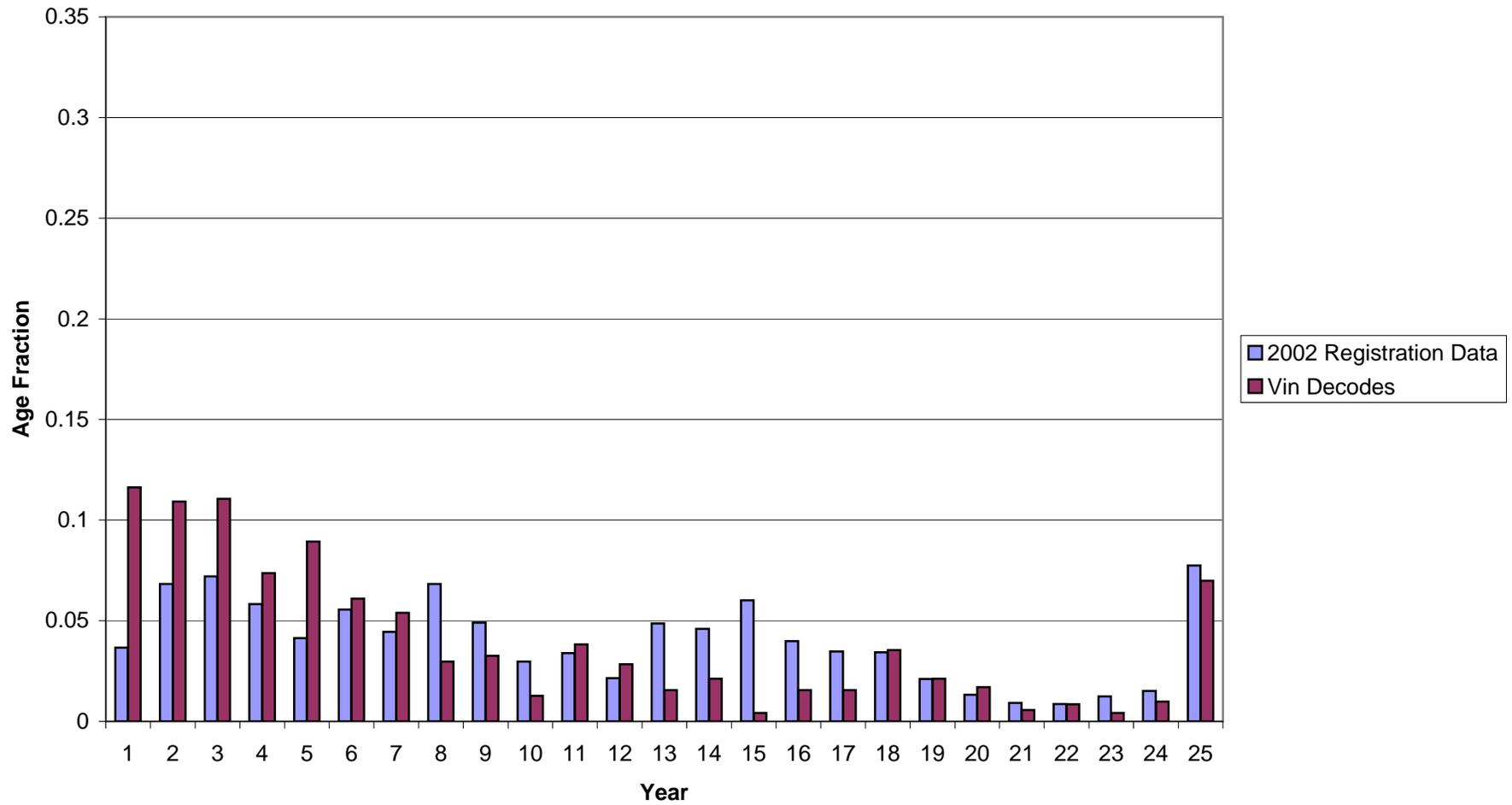
ATTACHMENT 7B

2005 Age Fractions
Jurisdiction = CLVT
Vehicle Type = HDV2B
Number of Decoded Vins = 2,925



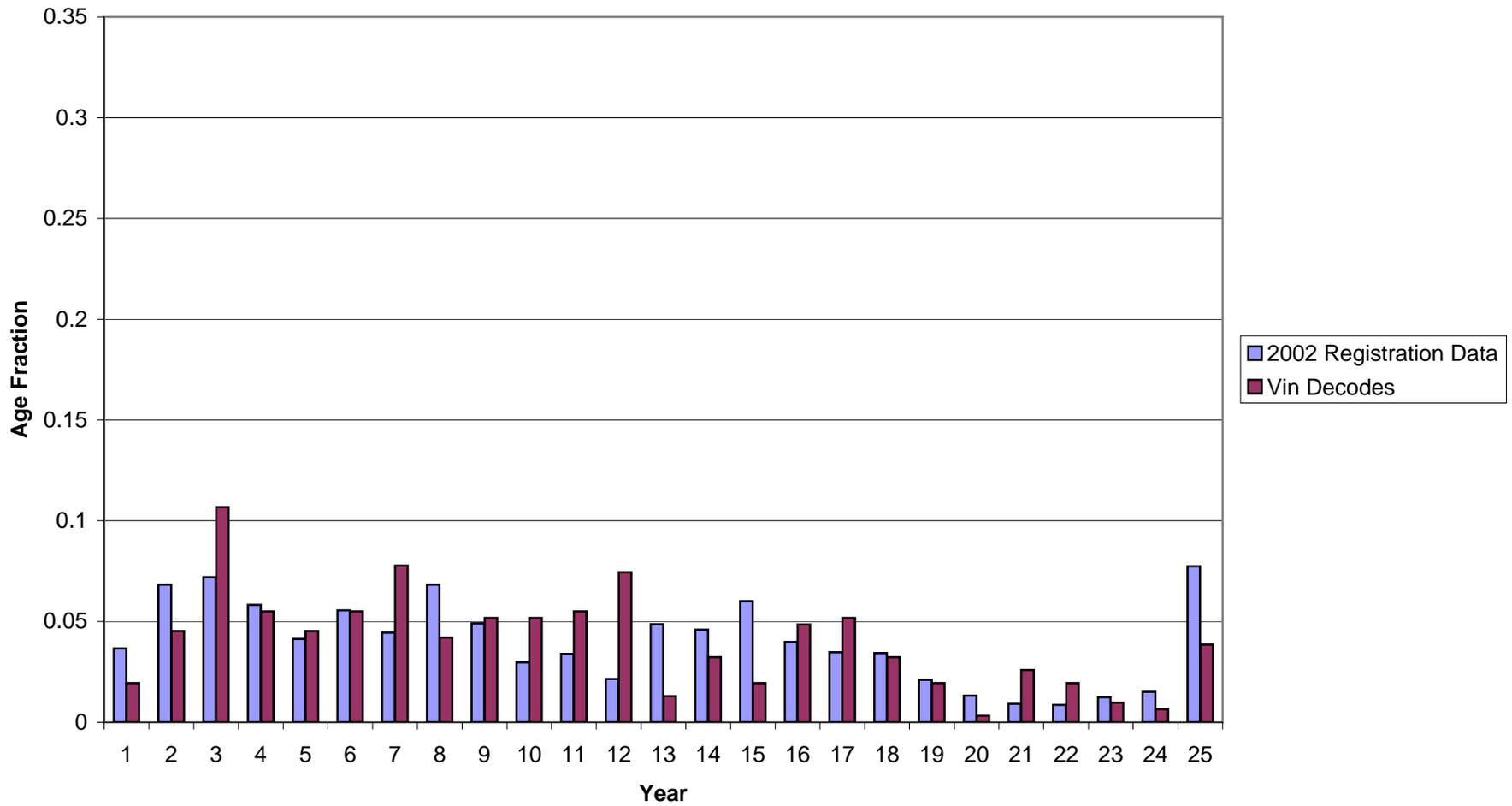
ATTACHMENT 7B

2005 Age Fractions
Jurisdiction = CLVT
Vehicle Type = HDV3
Number of Decoded Vins = 632



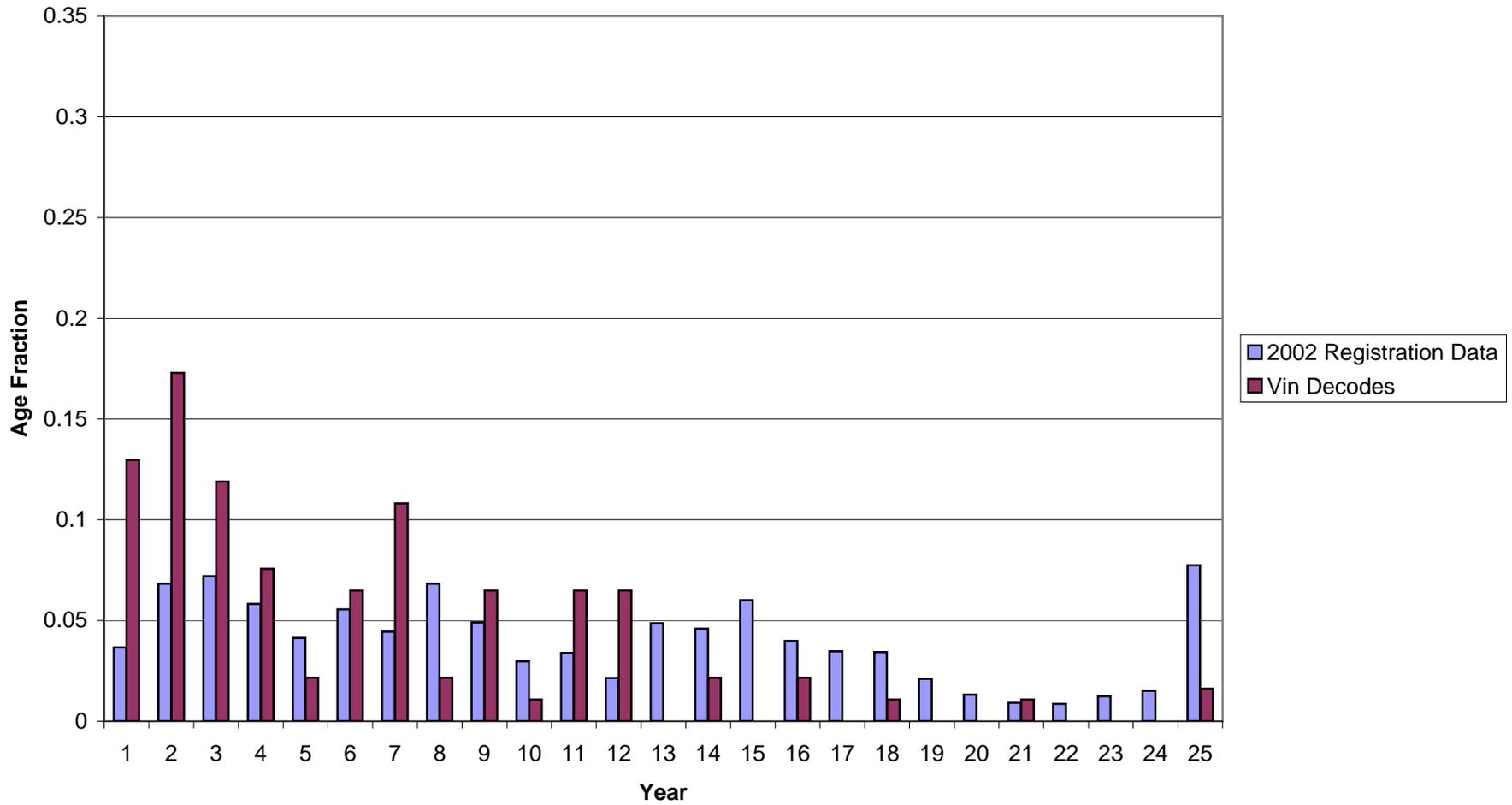
ATTACHMENT 7B

2005 Age Fractions
Jurisdiction = CLVT
Vehicle Type = HDV4
Number of Decoded Vins = 297



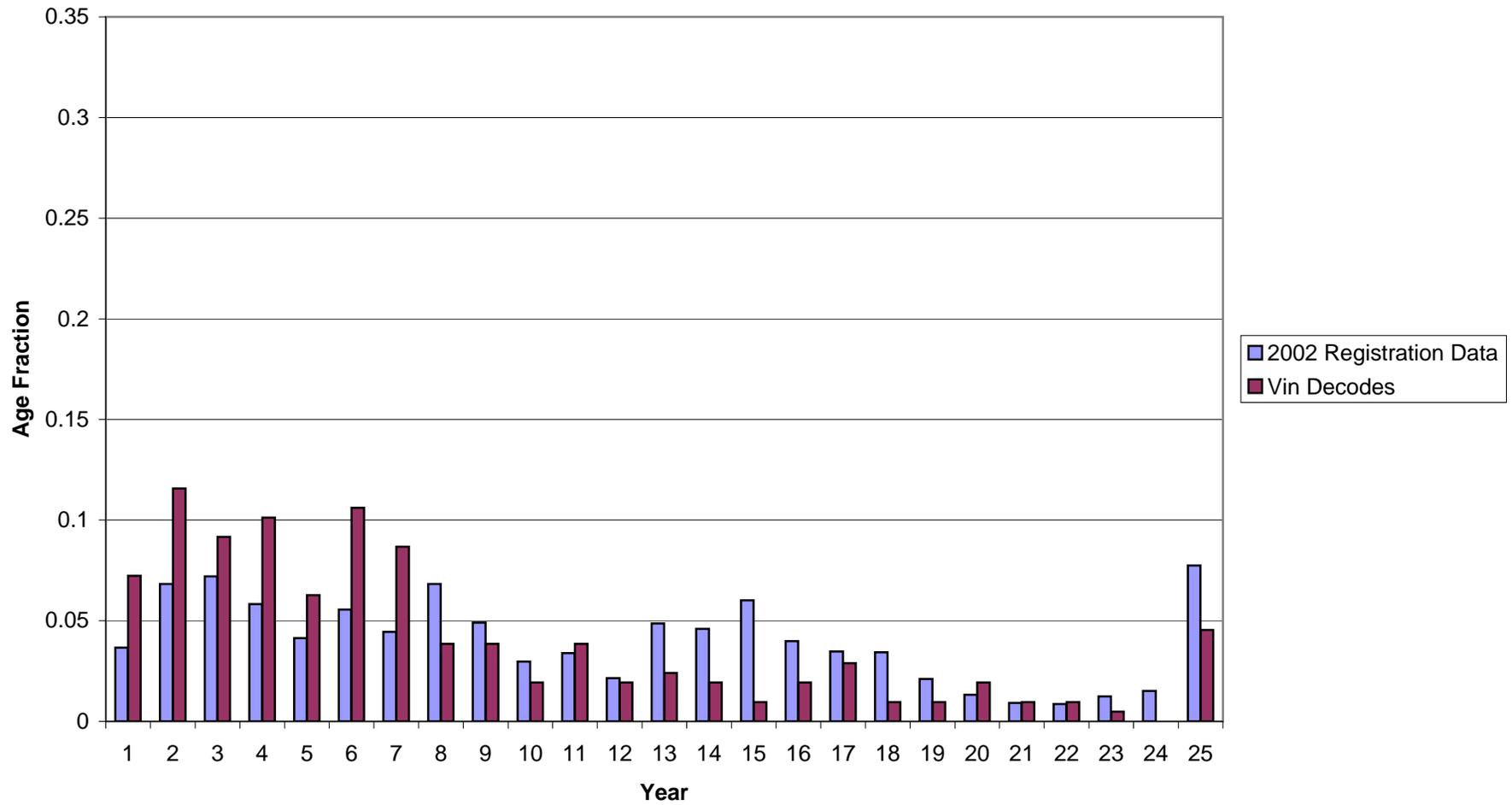
ATTACHMENT 7B

2005 Age Fractions
Jurisdiction = CLVT
Vehicle Type = HDV5
Number of Decoded Vins = 91



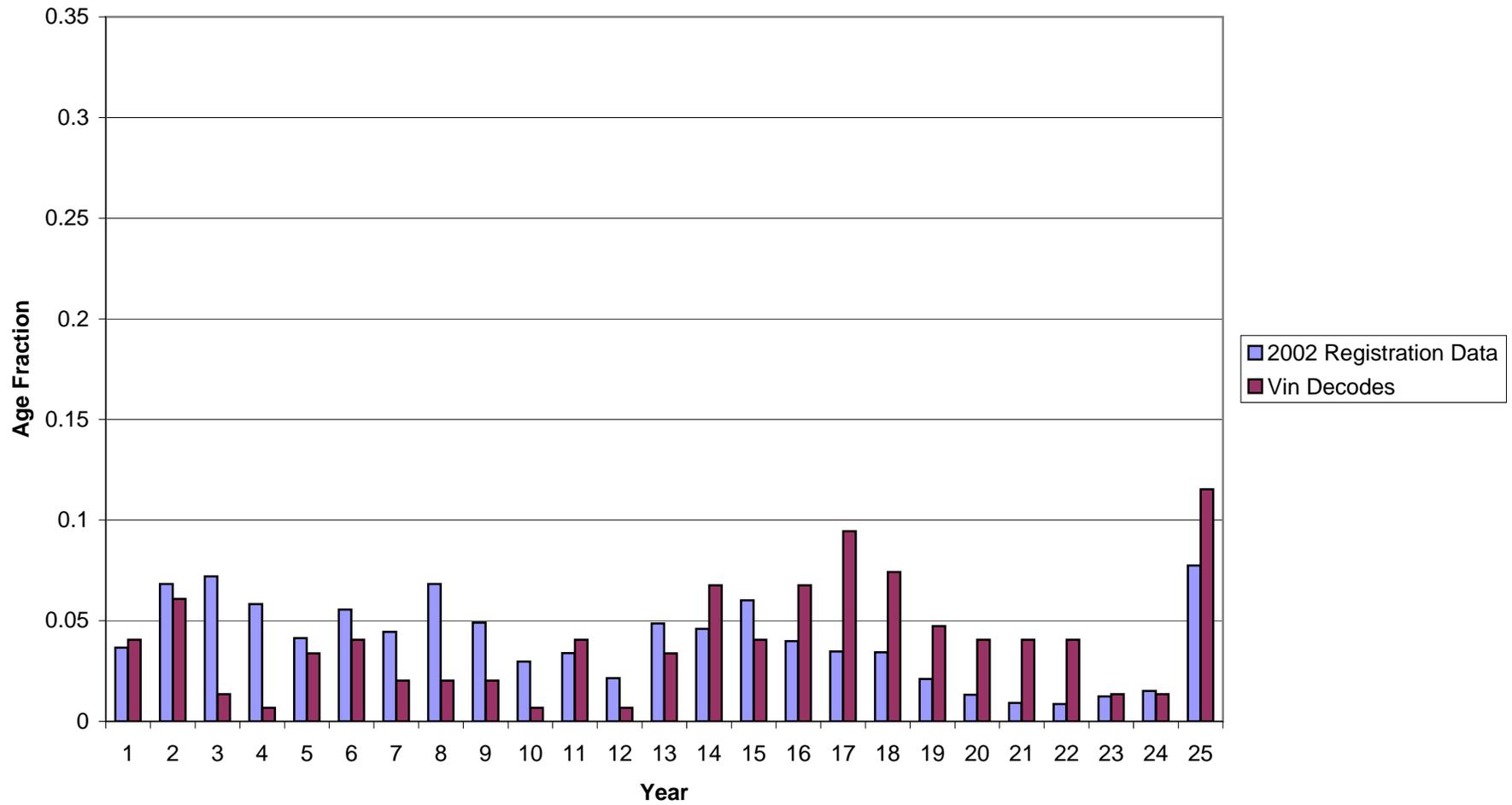
ATTACHMENT 7B

2005 Age Fractions
Jurisdiction = CLVT
Vehicle Type = HDV6
Number of Decoded Vins = 197



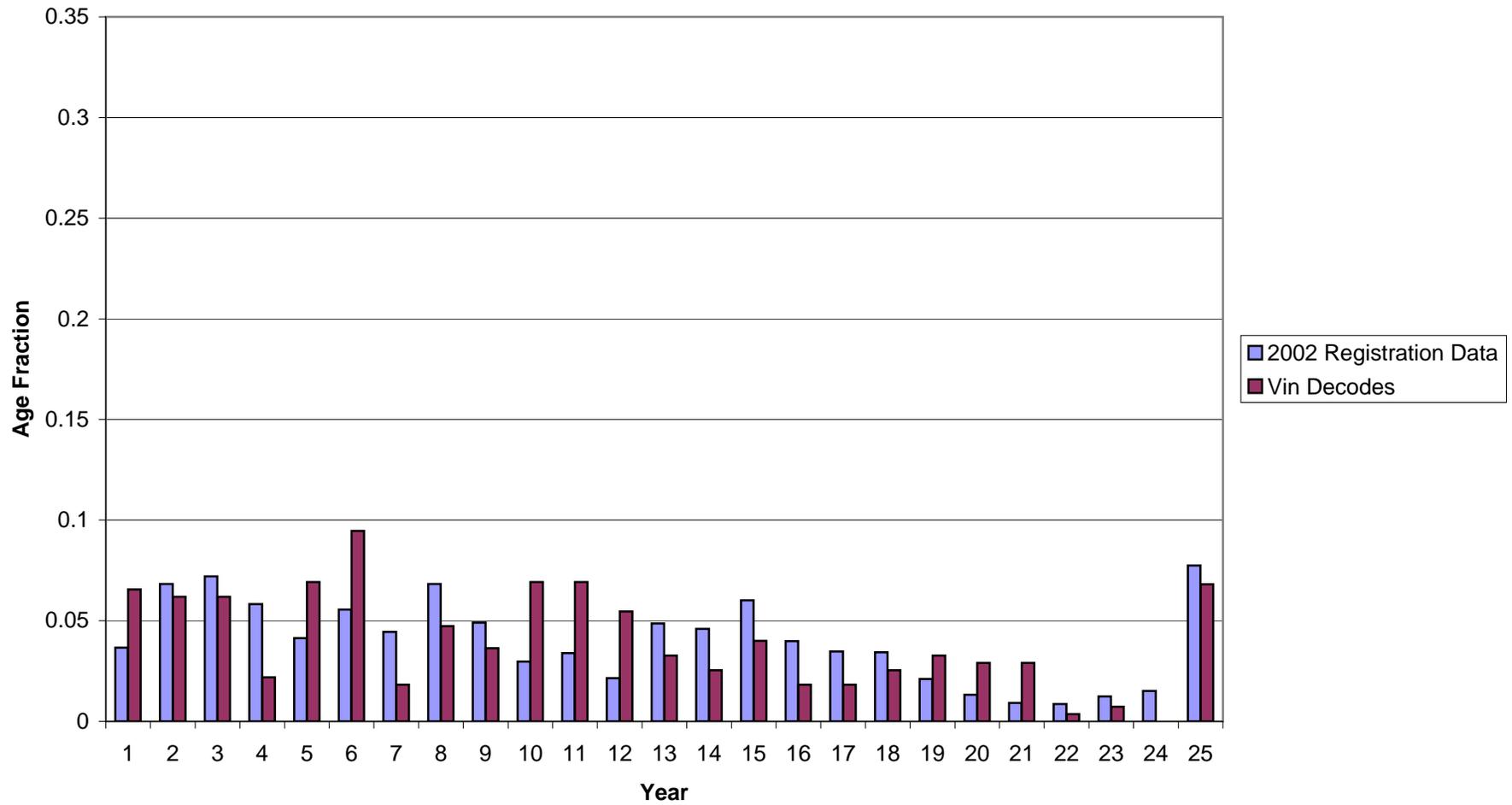
ATTACHMENT 7B

2005 Age Fractions
Jurisdiction = CLVT
Vehicle Type = HDV7
Number of Decoded Vins = 131



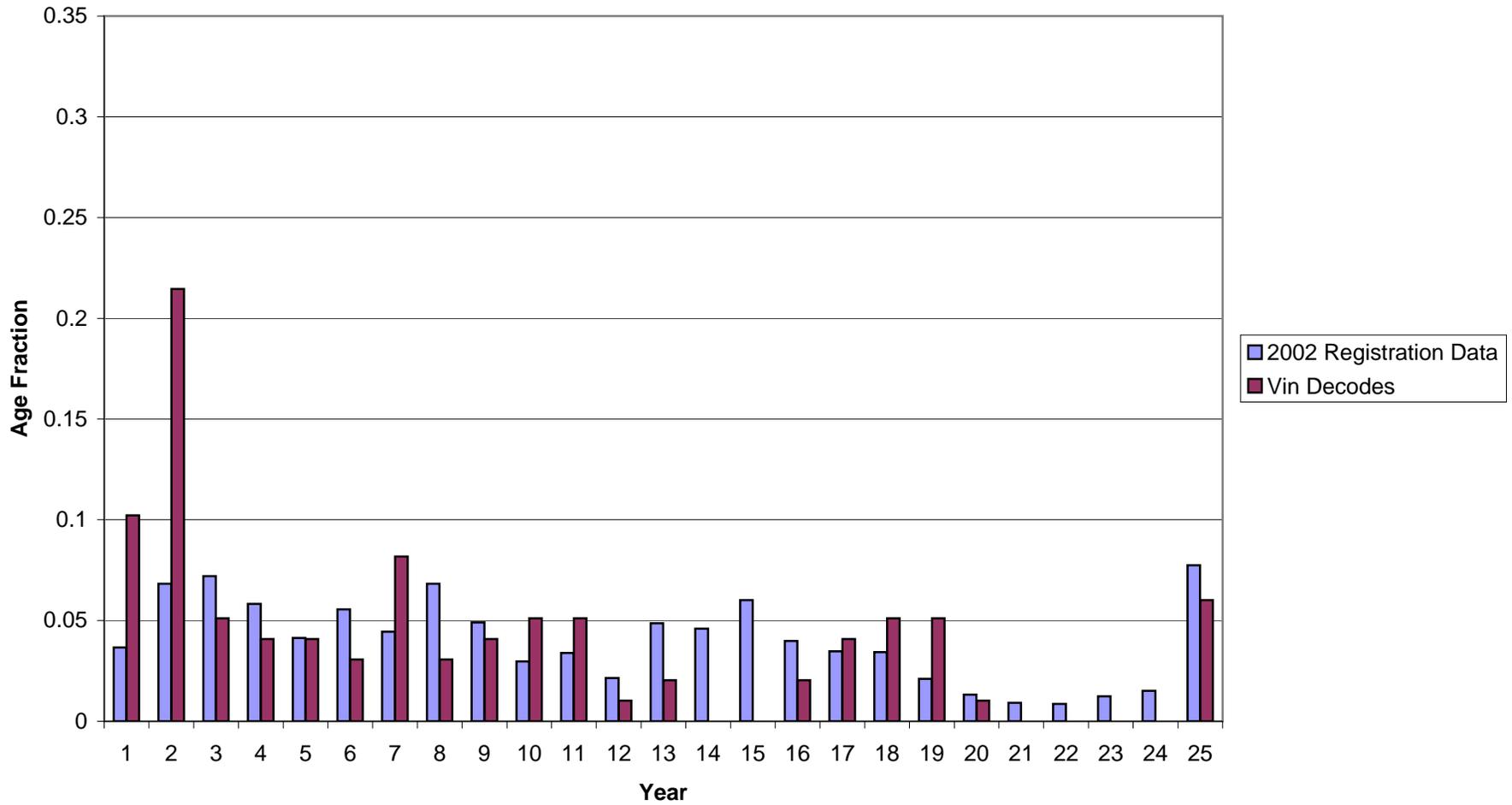
ATTACHMENT 7B

2005 Age Fractions
Jurisdiction = CLVT
Vehicle Type = HDV8A
Number of Decoded Vins = 256



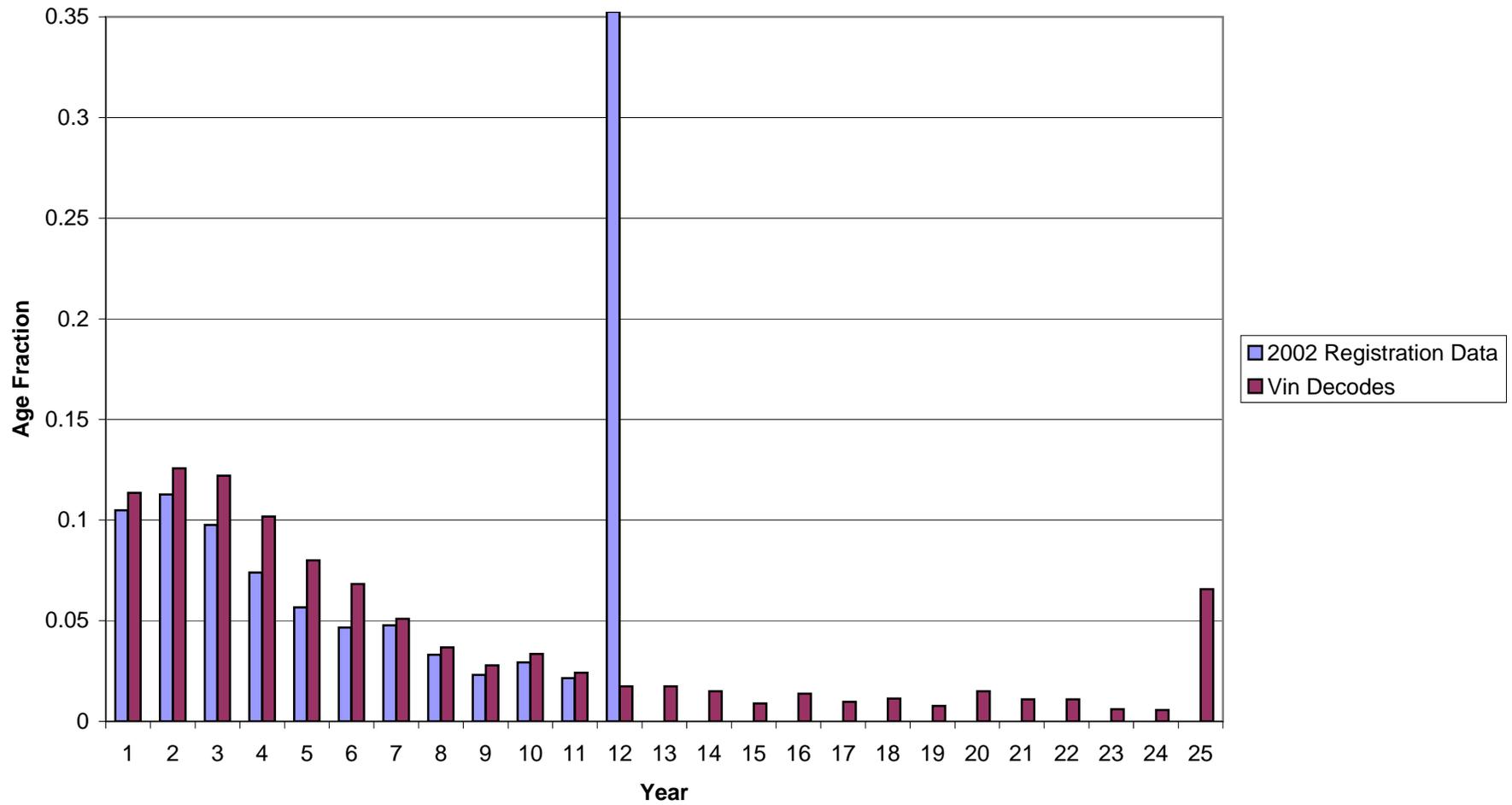
ATTACHMENT 7B

2005 Age Fractions
Jurisdiction = CLVT
Vehicle Type = HDV8B
Number of Decoded Vins = 92



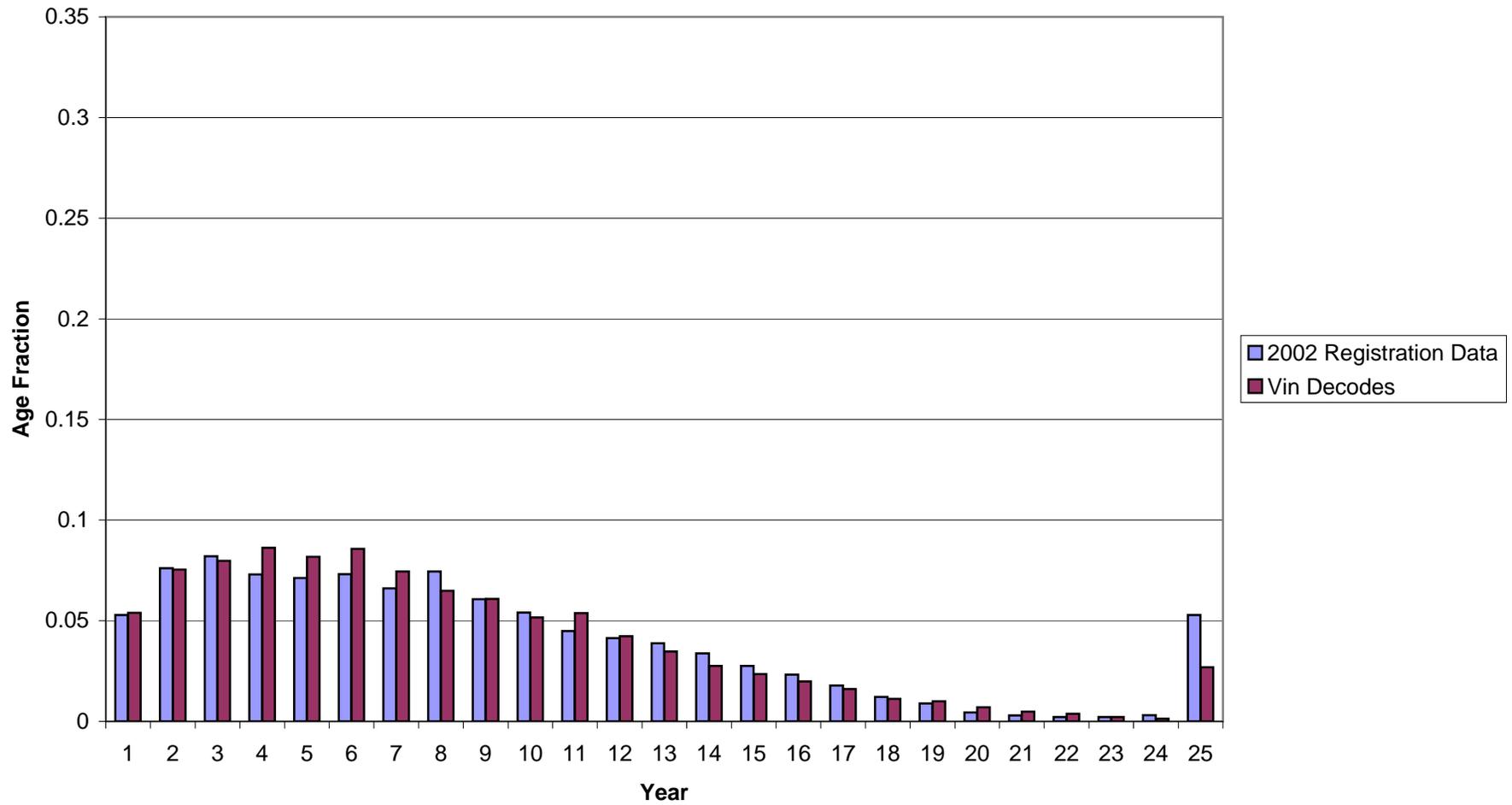
ATTACHMENT 7B

2005 Age Fractions
Jurisdiction = CLVT
Vehicle Type = MC
Number of Decoded Vins = 2,312



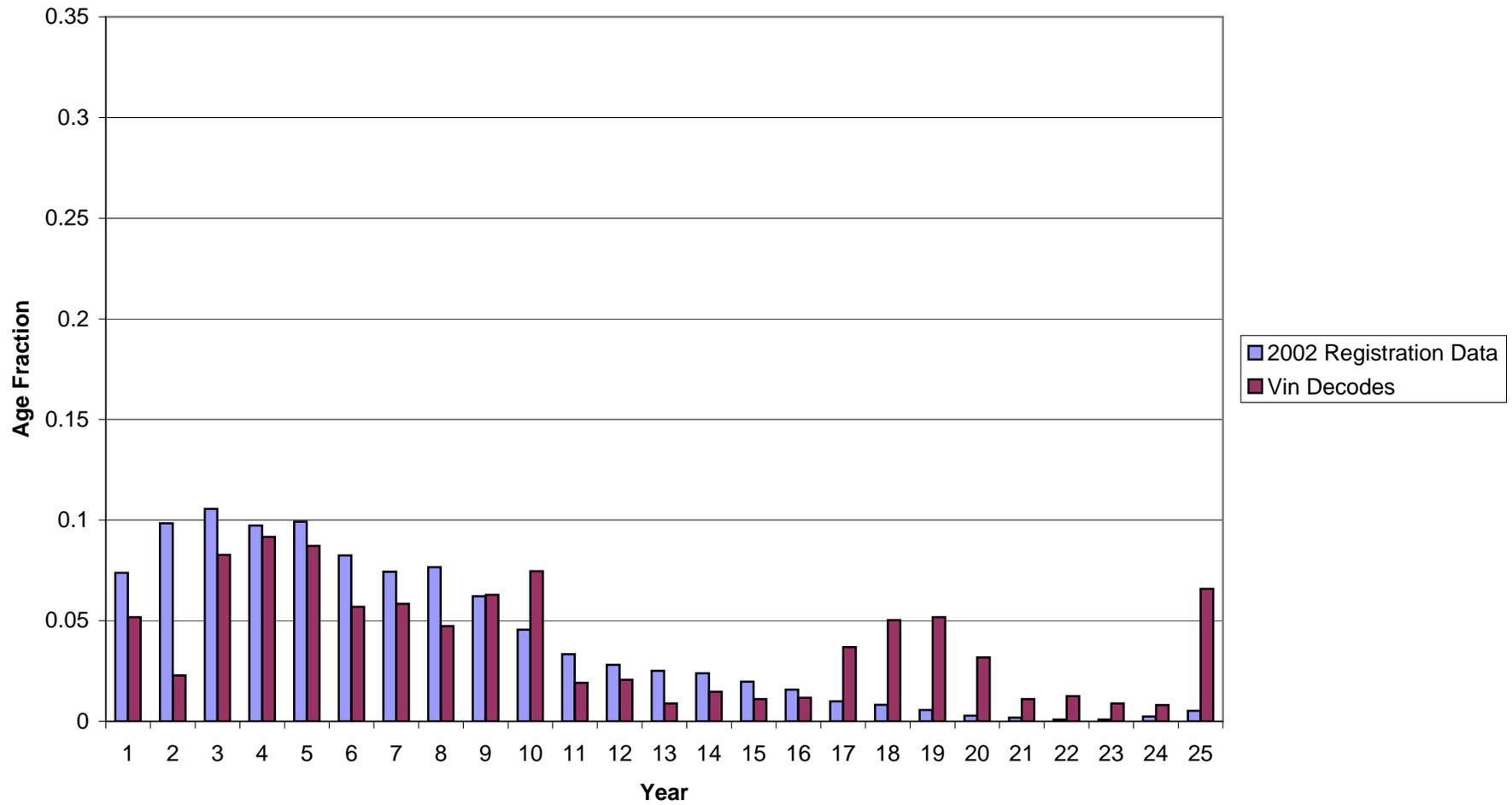
ATTACHMENT 7C

2005 Age Fractions
Jurisdiction = FRED
Vehicle Type = LDV
Number of Decoded Vins = 84,402



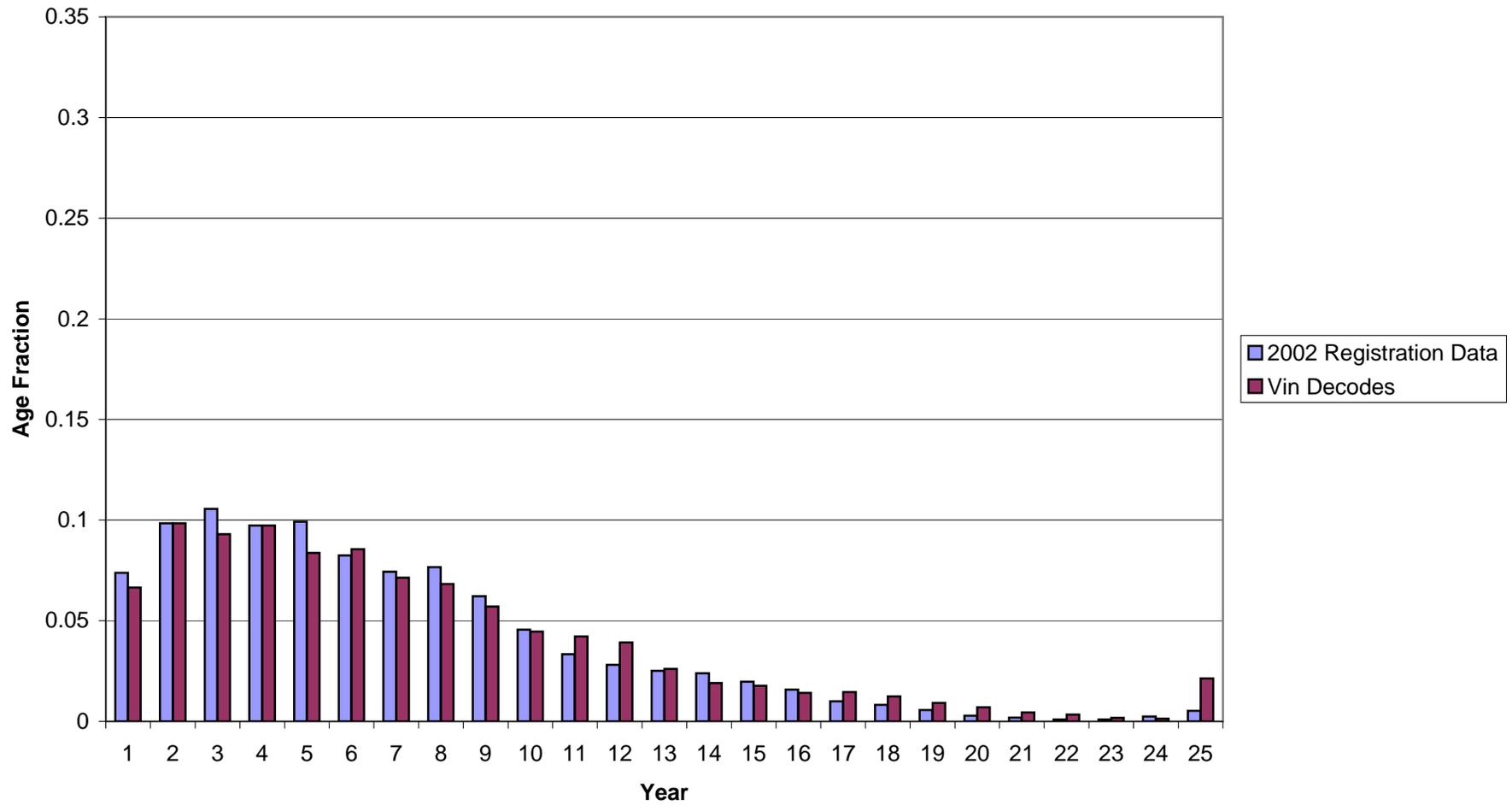
ATTACHMENT 7C

2005 Age Fractions
Jurisdiction = FRED
Vehicle Type = LDT1
Number of Decoded Vins = 1,272



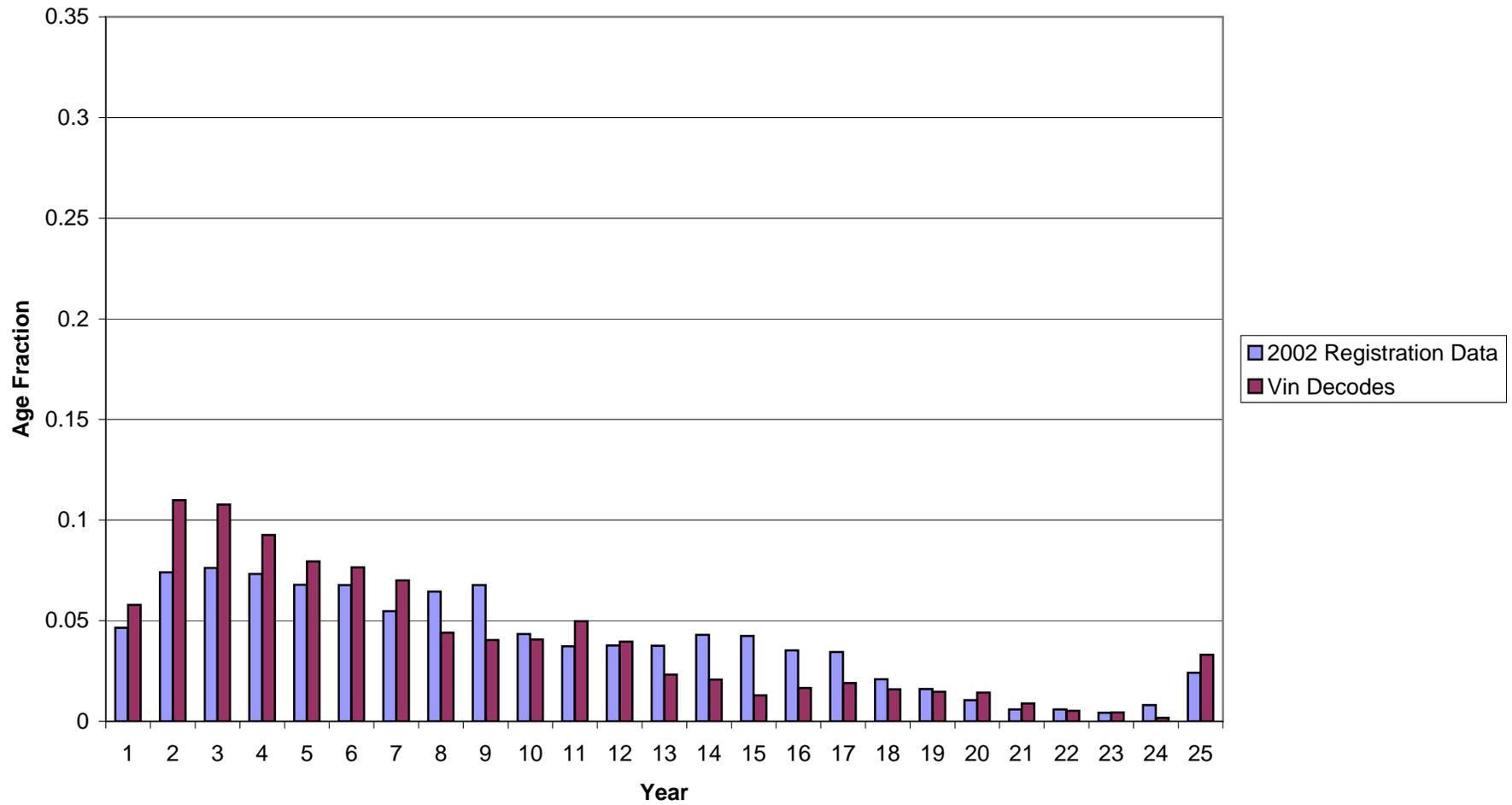
ATTACHMENT 7C

2005 Age Fractions
Jurisdiction = FRED
Vehicle Type = LDT2
Number of Decoded Vins = 51,915



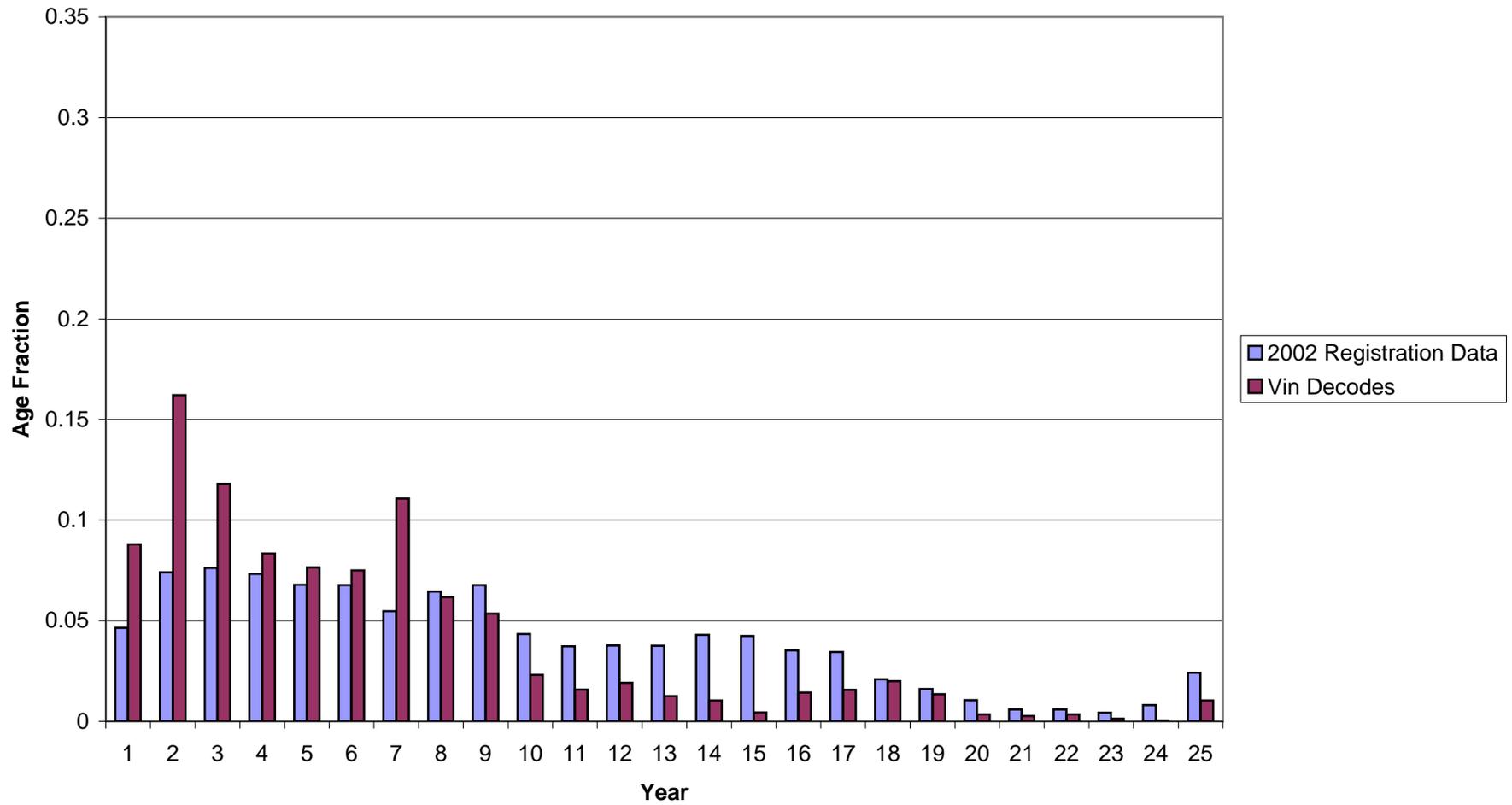
ATTACHMENT 7C

2005 Age Fractions
Jurisdiction = FRED
Vehicle Type = LDT3
Number of Decoded Vins = 16,839



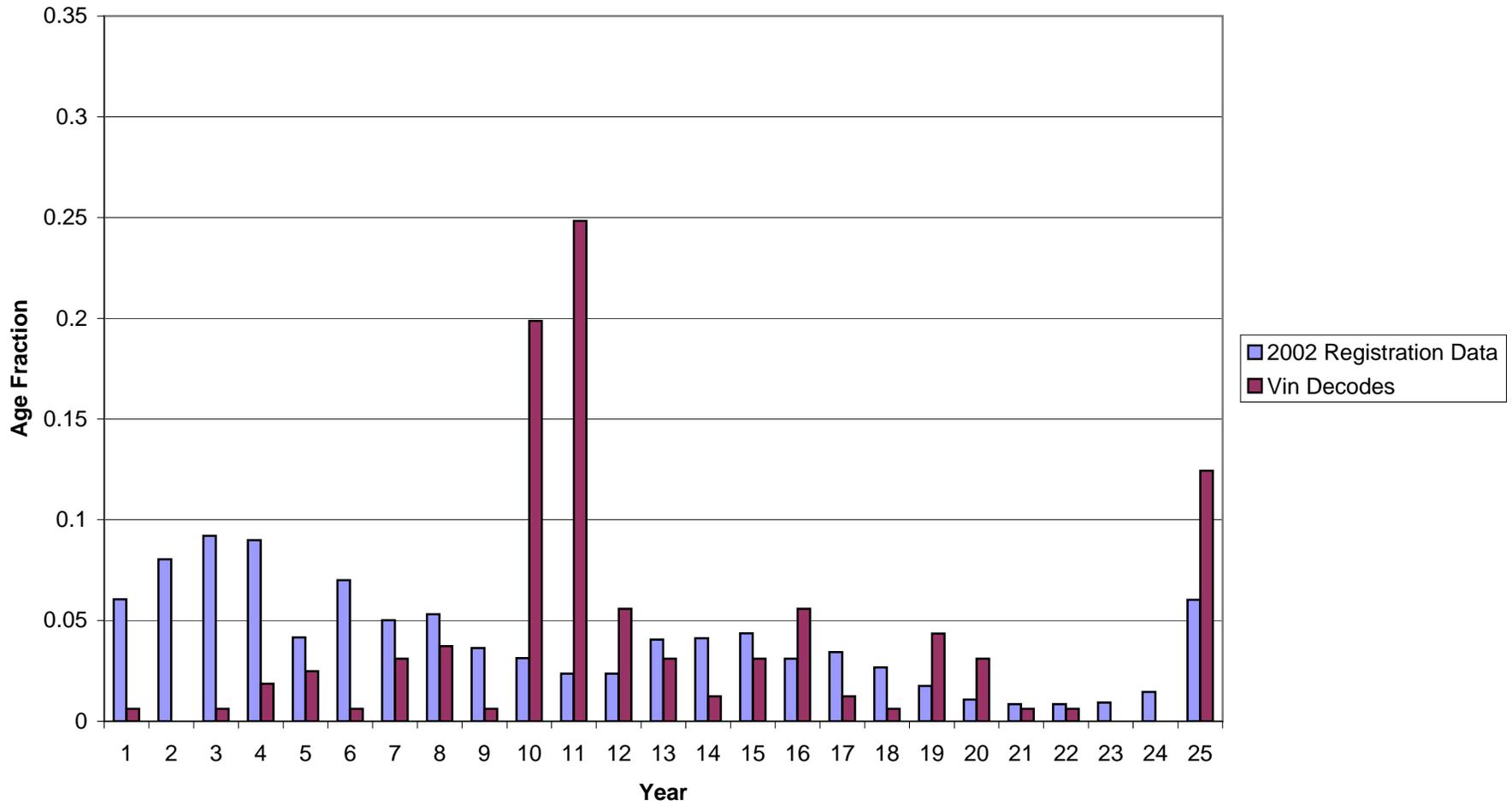
ATTACHMENT 7C

2005 Age Fractions
Jurisdiction = FRED
Vehicle Type = LDT4
Number of Decoded Vins = 4,507



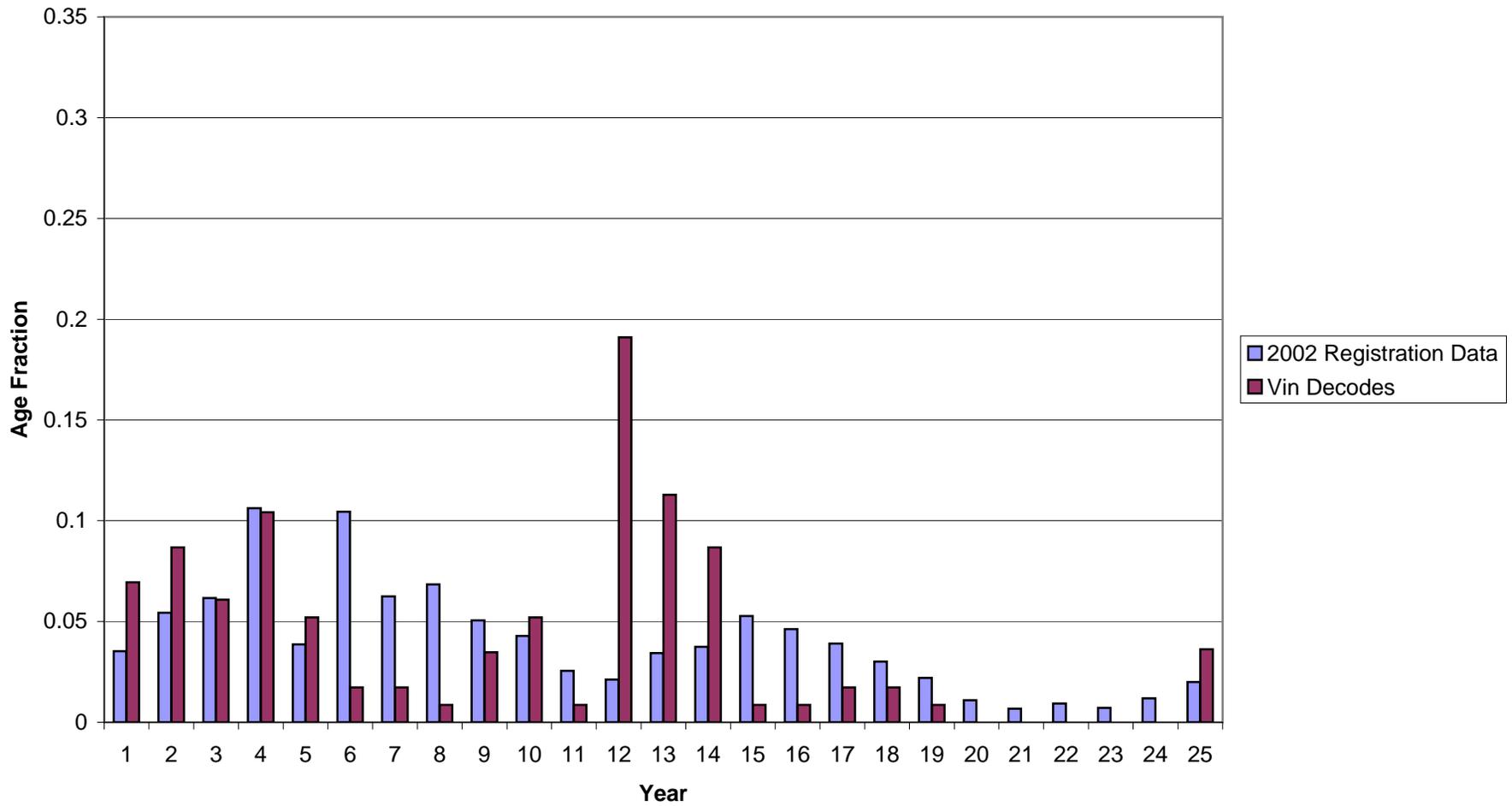
ATTACHMENT 7C

2005 Age Fractions
Jurisdiction = FRED
Vehicle Type = HDBS
Number of Decoded Vins = 313



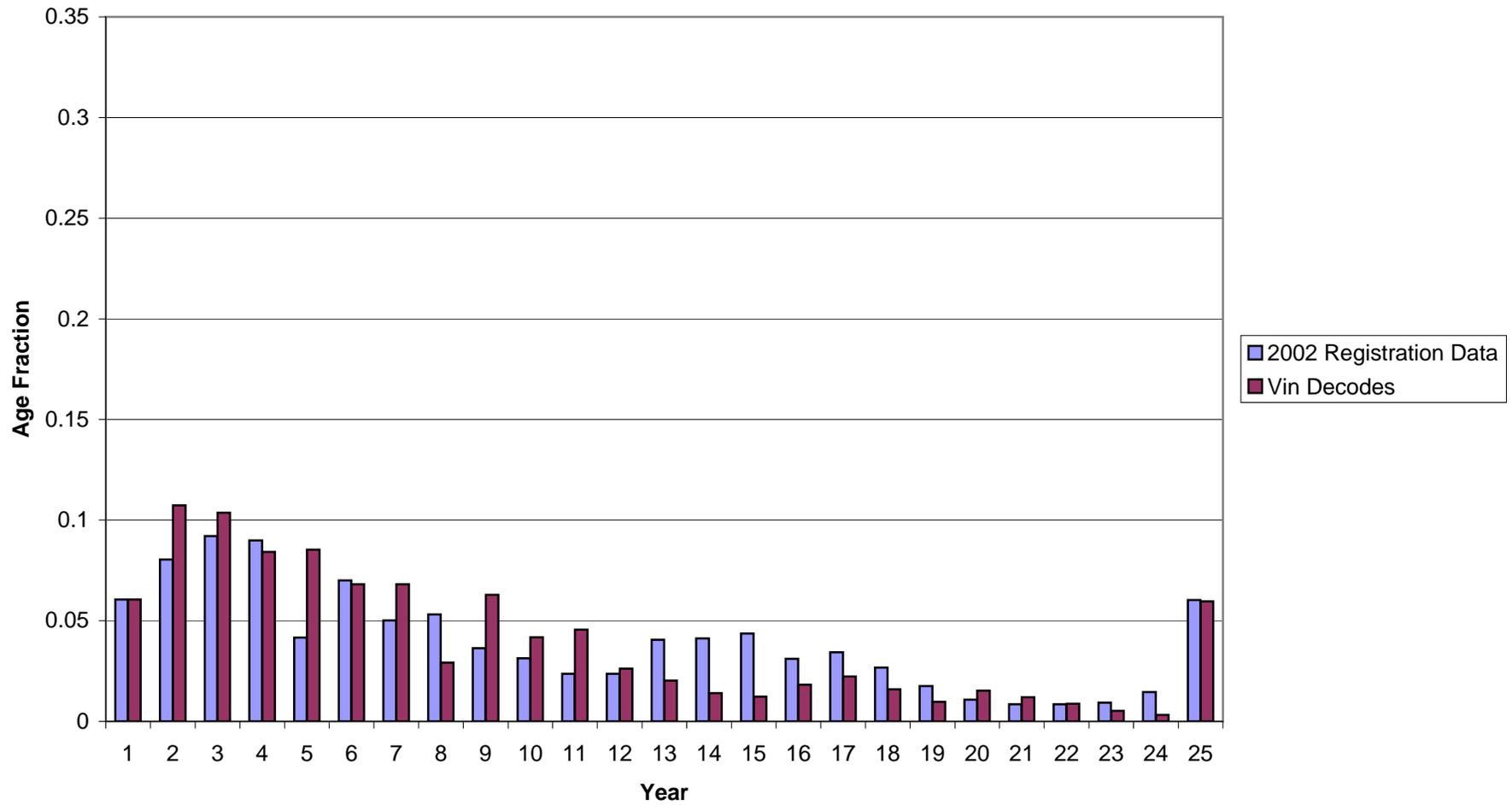
ATTACHMENT 7C

2005 Age Fractions
Jurisdiction = FRED
Vehicle Type = HDBT
Number of Decoded Vins = 301



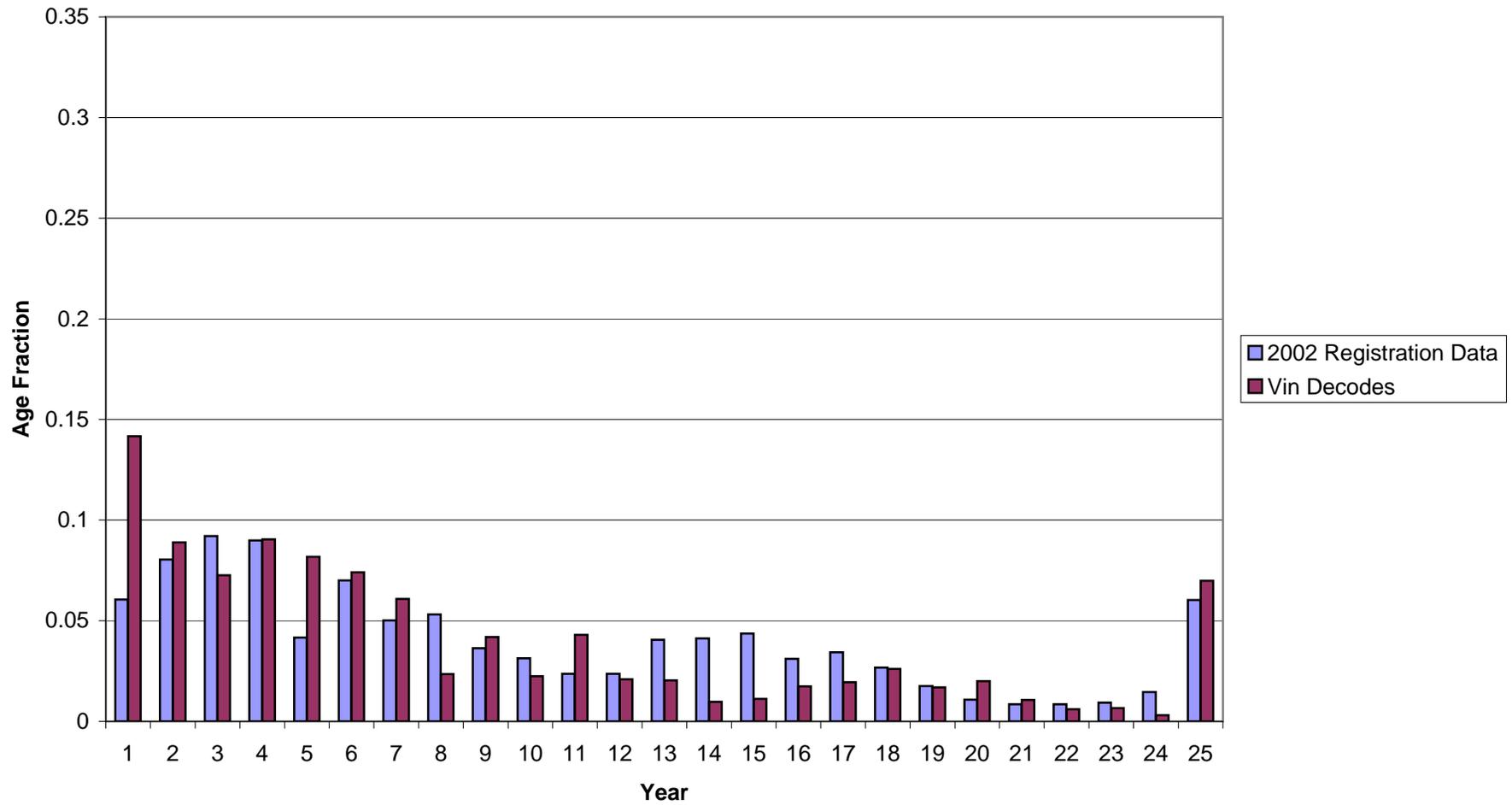
ATTACHMENT 7C

2005 Age Fractions
Jurisdiction = FRED
Vehicle Type = HDV2B
Number of Decoded Vins = 8,570



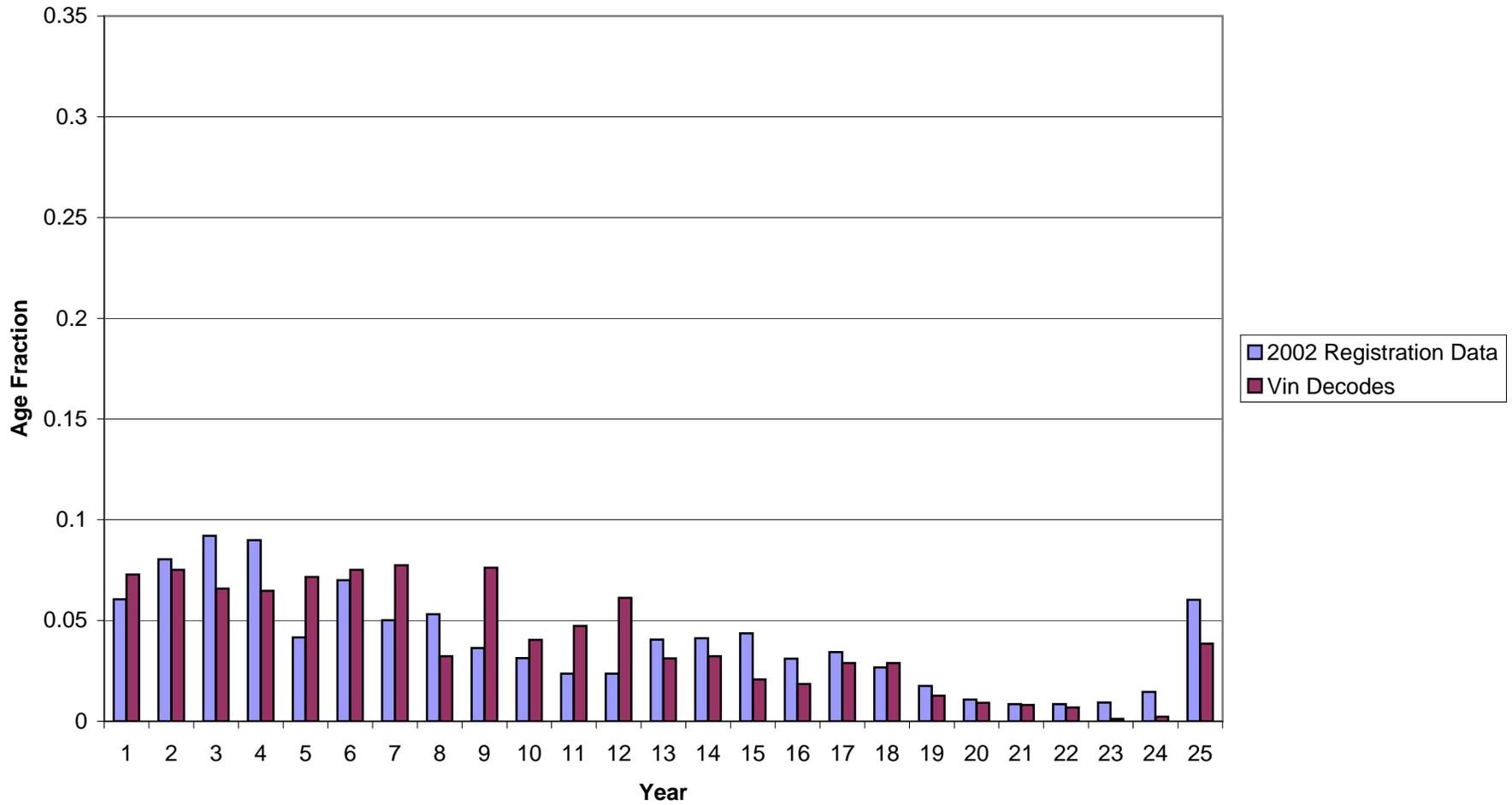
ATTACHMENT 7C

2005 Age Fractions
Jurisdiction = FRED
Vehicle Type = HDV3
Number of Decoded Vins = 1,727



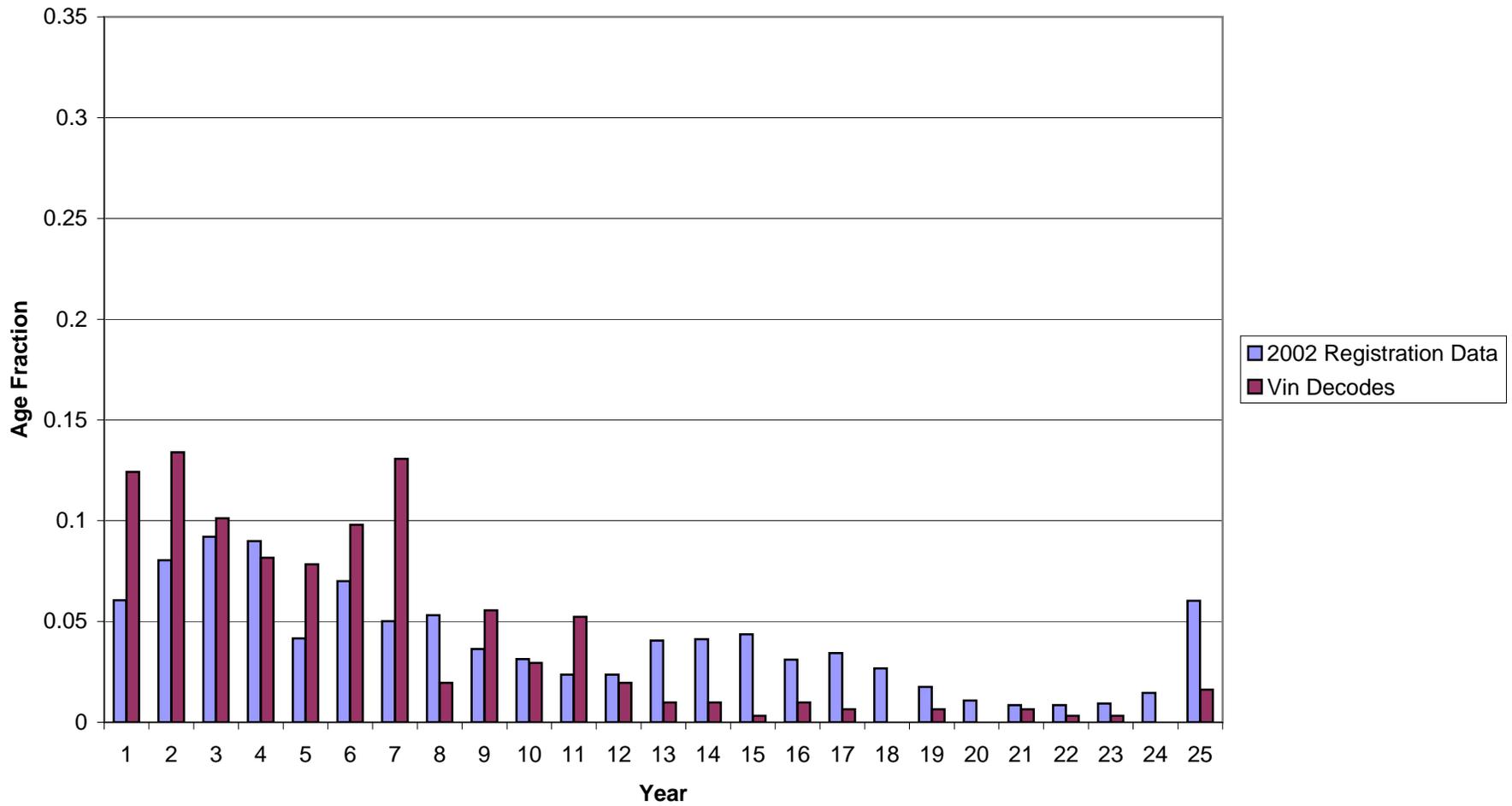
ATTACHMENT 7C

2005 Age Fractions
Jurisdiction = FRED
Vehicle Type = HDV4
Number of Decoded Vins = 832



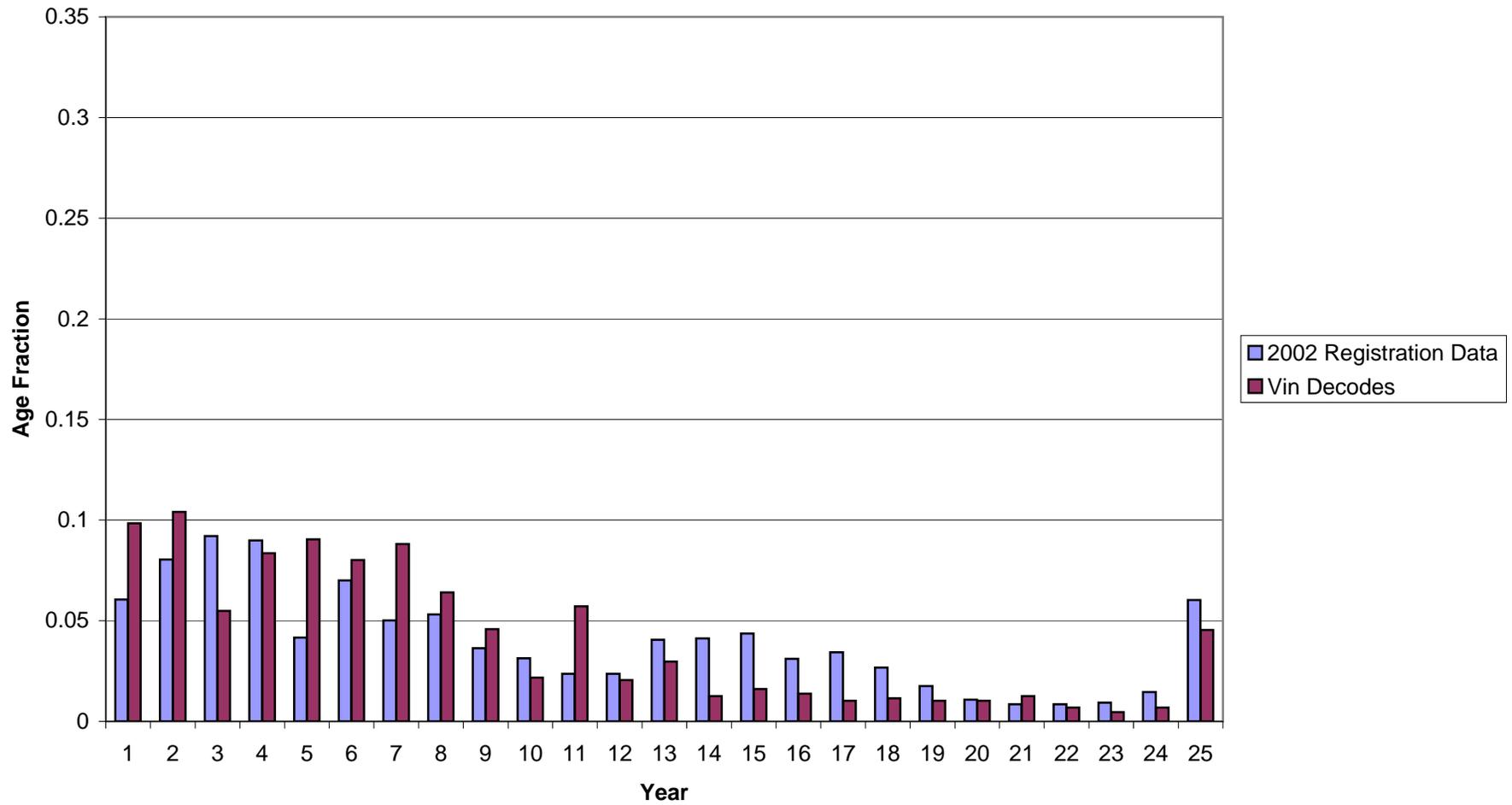
ATTACHMENT 7C

2005 Age Fractions
Jurisdiction = FRED
Vehicle Type = HDV5
Number of Decoded Vins = 301



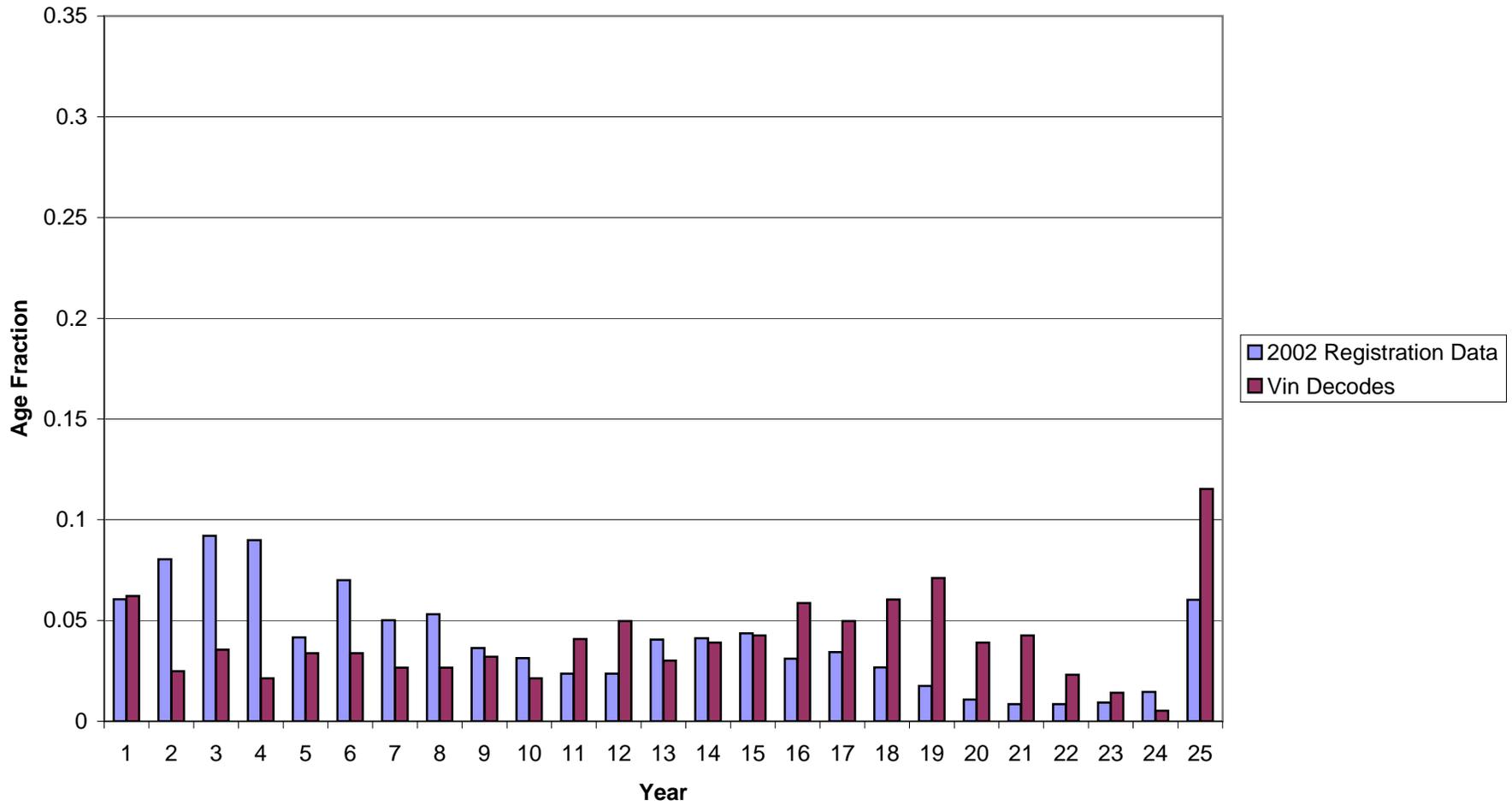
ATTACHMENT 7C

2005 Age Fractions
Jurisdiction = FRED
Vehicle Type = HDV6
Number of Decoded Vins = 832



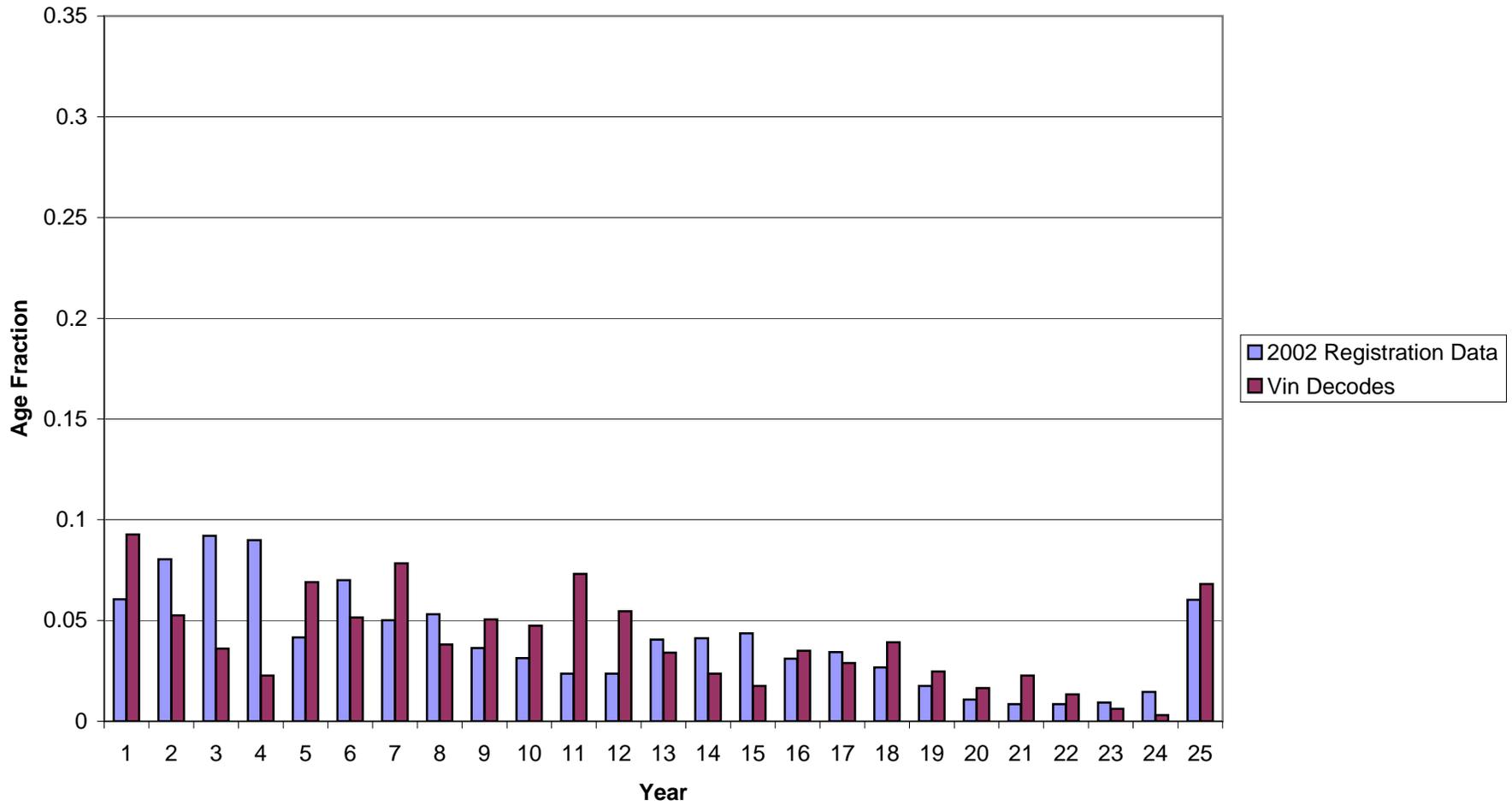
ATTACHMENT 7C

2005 Age Fractions
Jurisdiction = FRED
Vehicle Type = HDV7
Number of Decoded Vins = 498



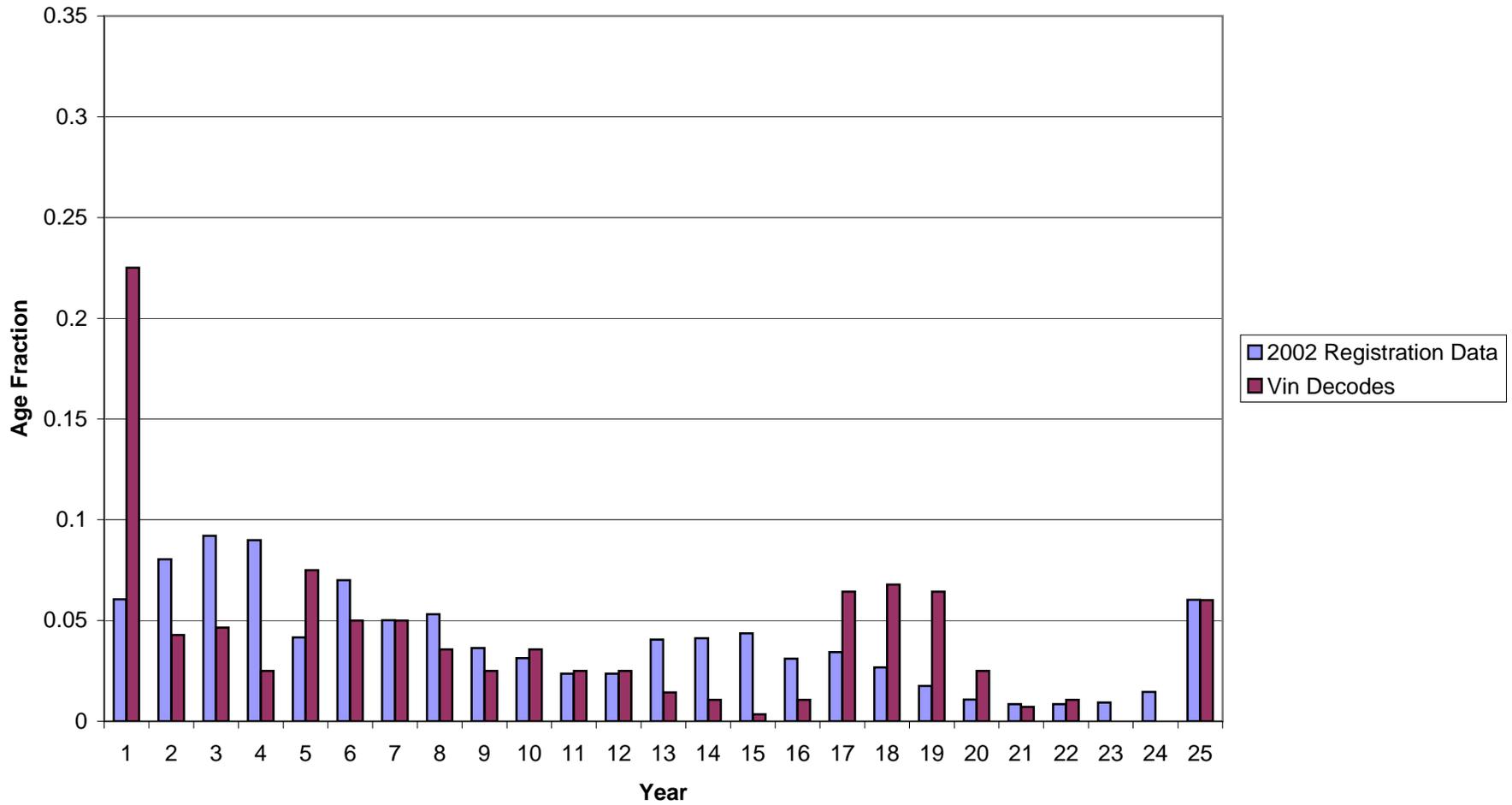
ATTACHMENT 7C

2005 Age Fractions
Jurisdiction = FRED
Vehicle Type = HDV8A
Number of Decoded Vins = 904



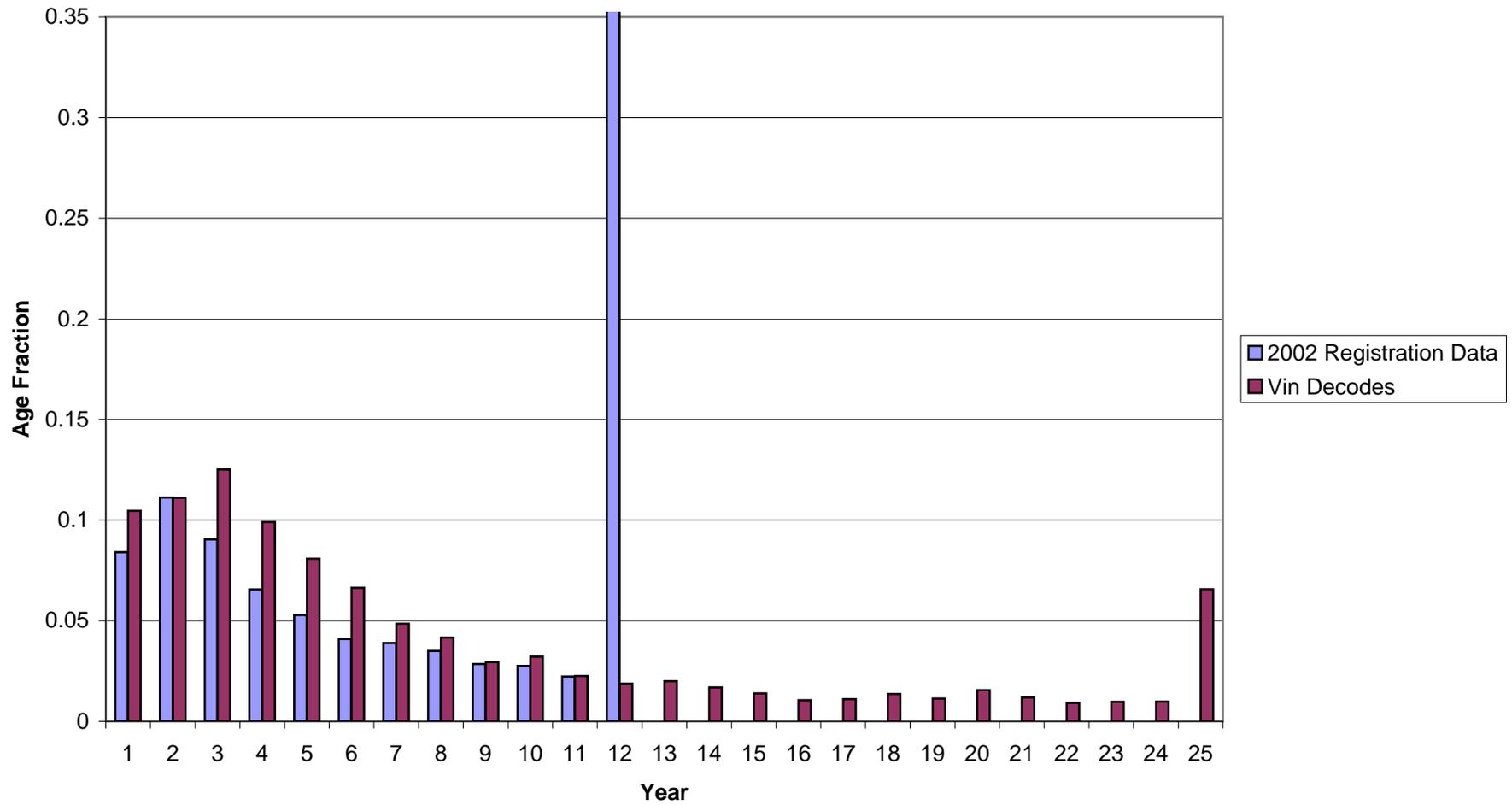
ATTACHMENT 7C

2005 Age Fractions
Jurisdiction = FRED
Vehicle Type = HDV8B
Number of Decoded Vins = 263



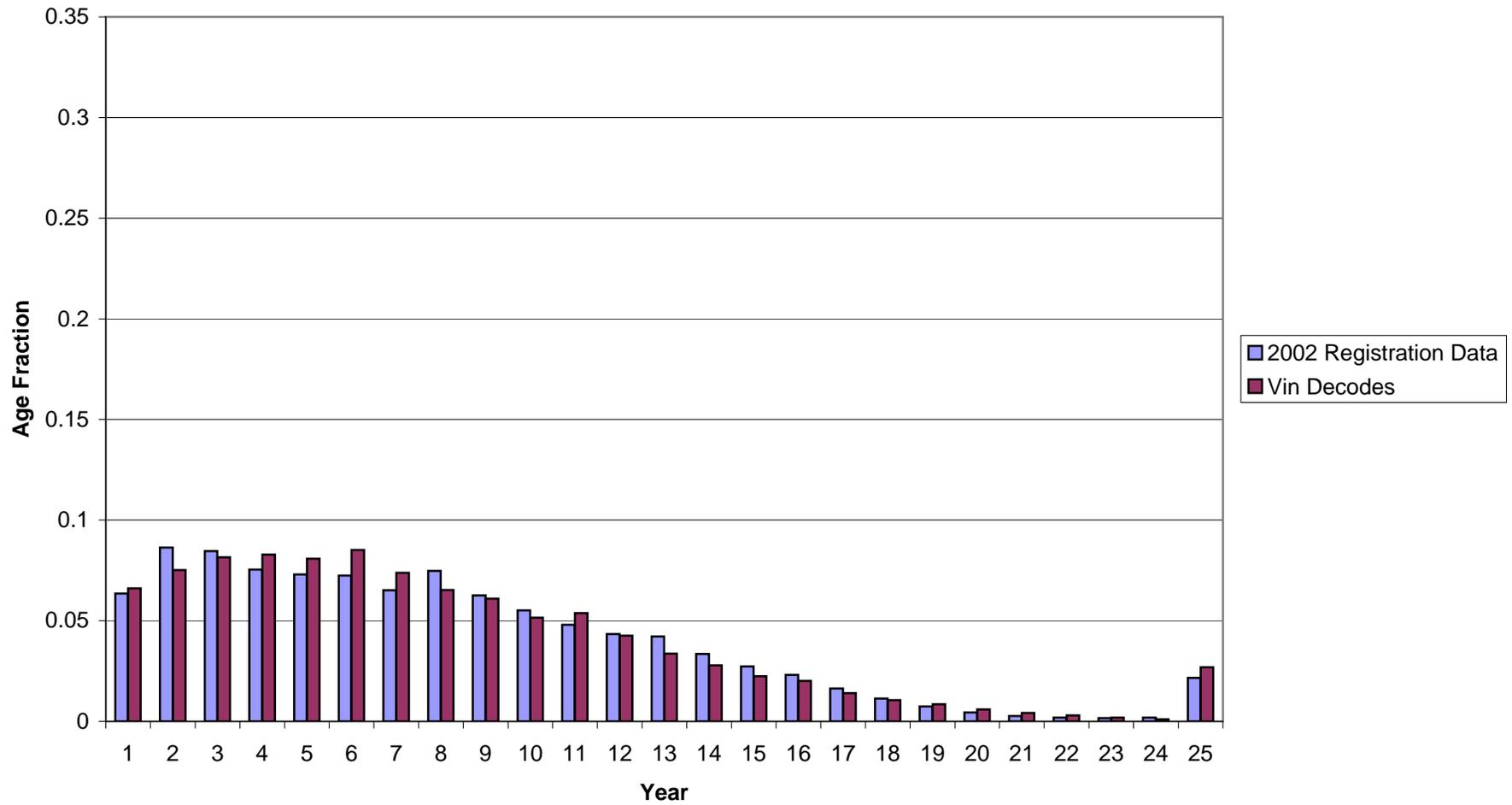
ATTACHMENT 7C

2005 Age Fractions
Jurisdiction = FRED
Vehicle Type = MC
Number of Decoded Vins = 5,289



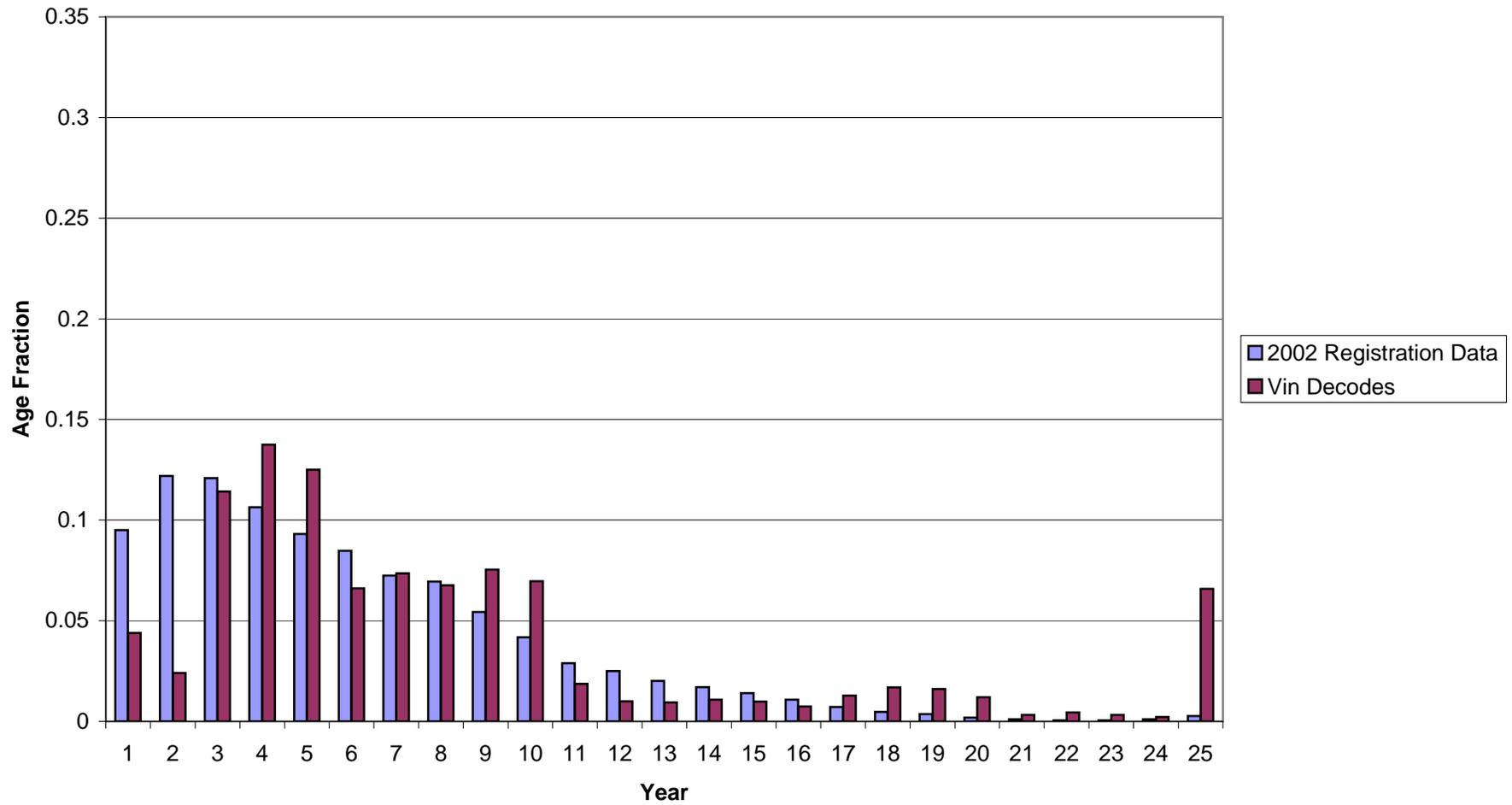
ATTACHMENT 7D

2005 Age Fractions
Jurisdiction = MTG
Vehicle Type = LDV
Number of Decoded Vins = 391,552



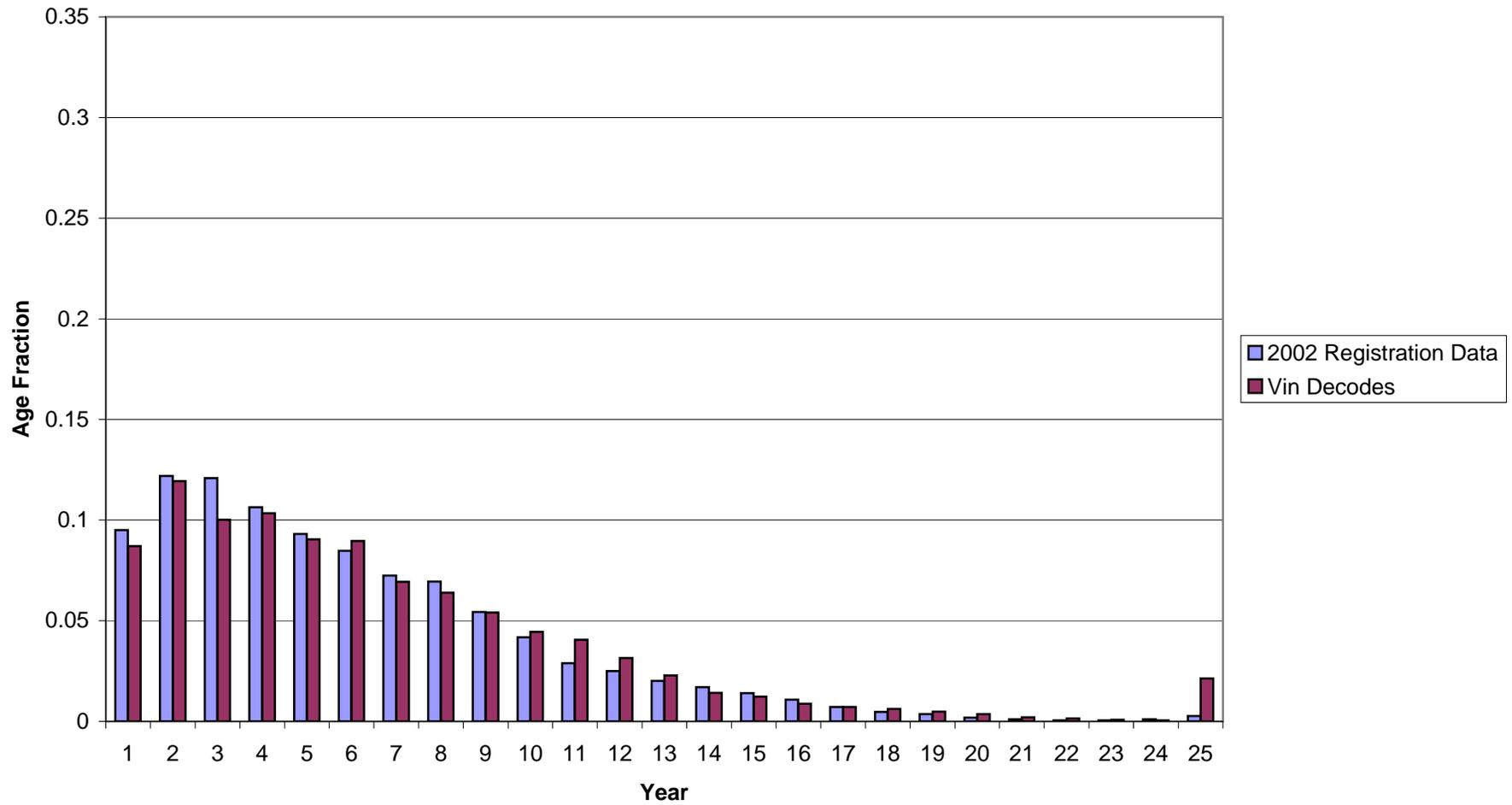
ATTACHMENT 7D

2005 Age Fractions
Jurisdiction = MTG
Vehicle Type = LDT1
Number of Decoded Vins = 4,668



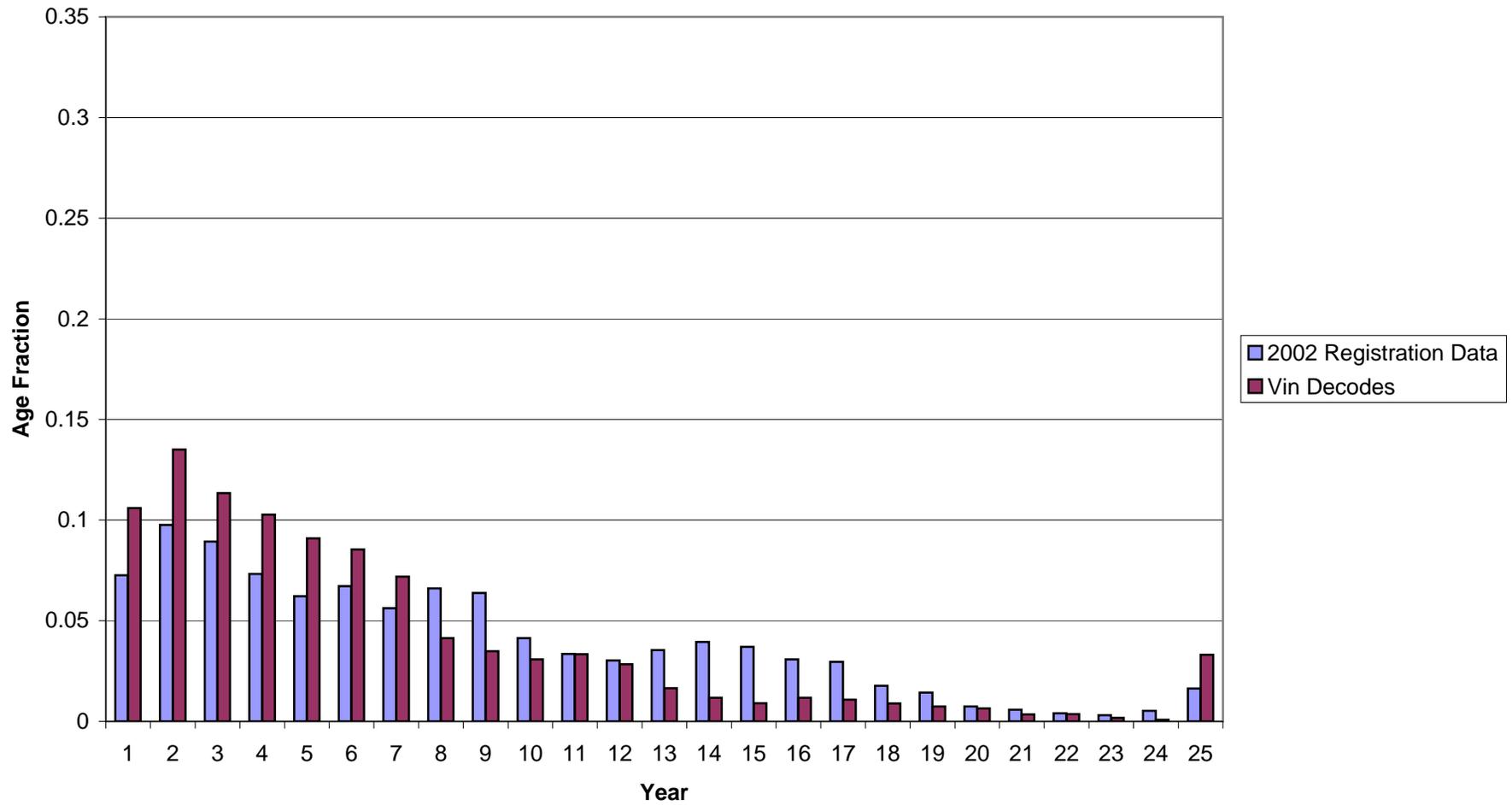
ATTACHMENT 7D

2005 Age Fractions
Jurisdiction = MTG
Vehicle Type = LDT2
Number of Decoded Vins = 160,888



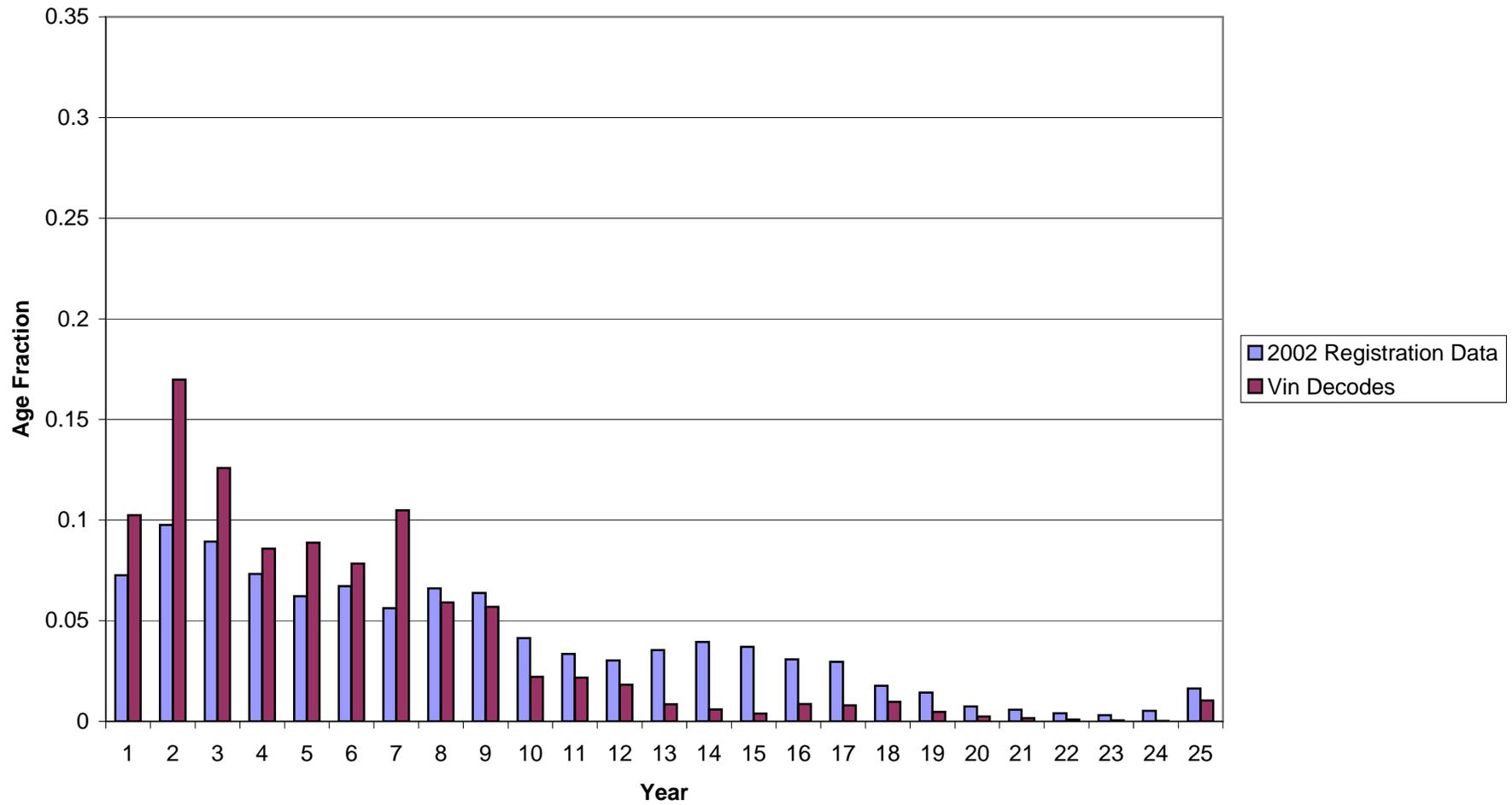
ATTACHMENT 7D

2005 Age Fractions
Jurisdiction = MTG
Vehicle Type = LDT3
Number of Decoded Vins = 38,032



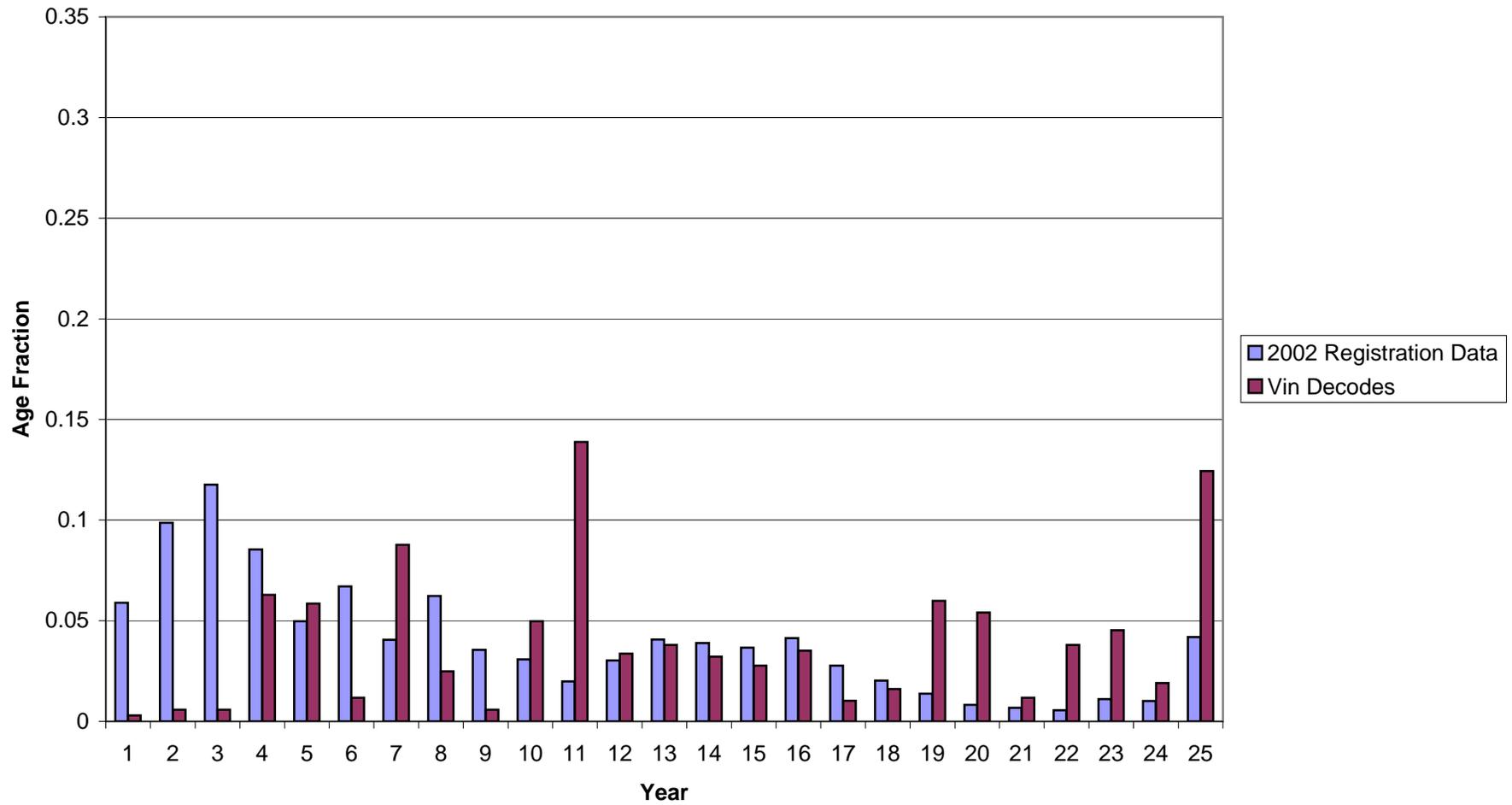
ATTACHMENT 7D

2005 Age Fractions
Jurisdiction = MTG
Vehicle Type = LDT4
Number of Decoded Vins = 11,711



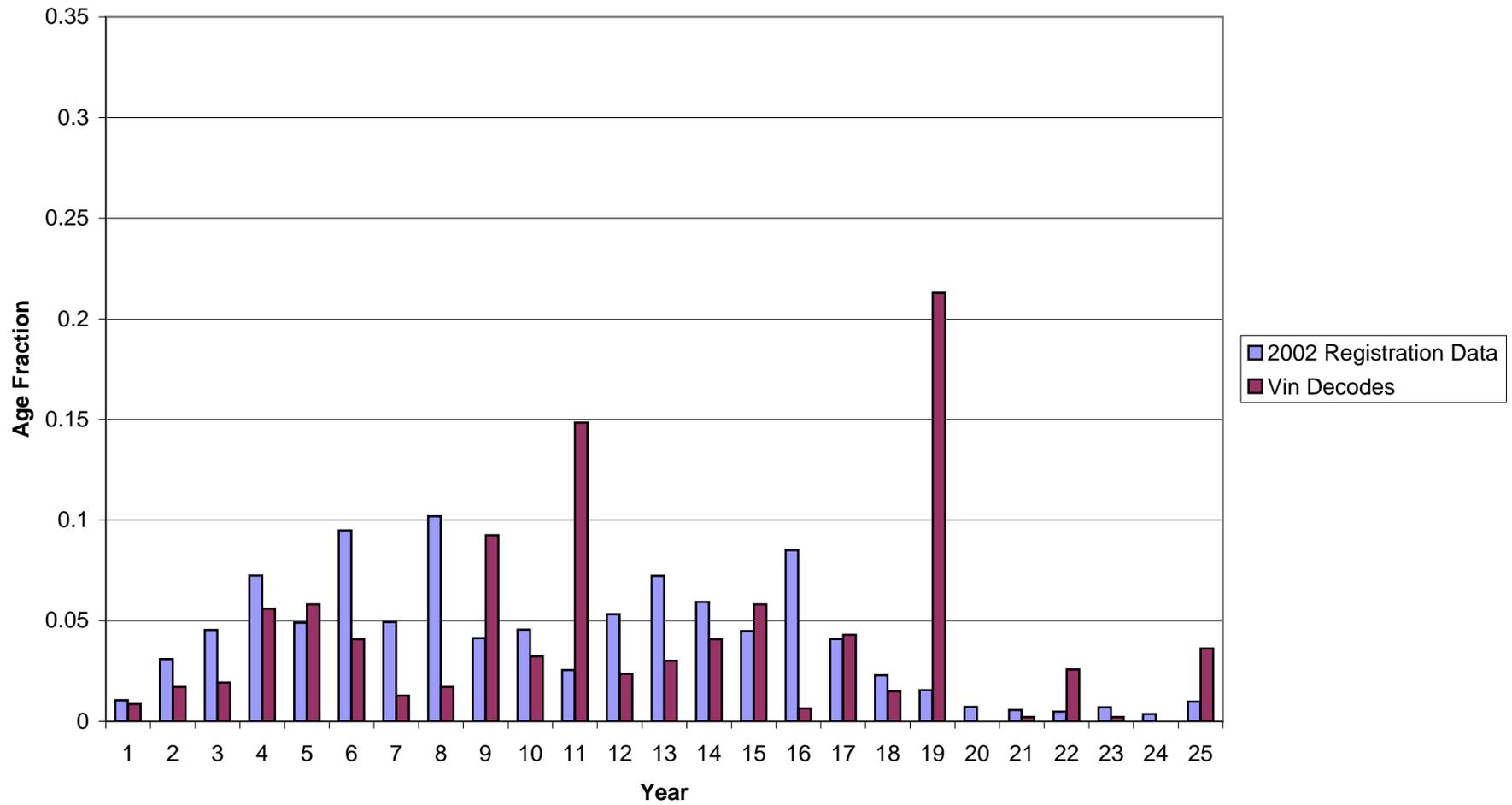
ATTACHMENT 7D

2005 Age Fractions
Jurisdiction = MTG
Vehicle Type = HDBS
Number of Decoded Vins = 1,178



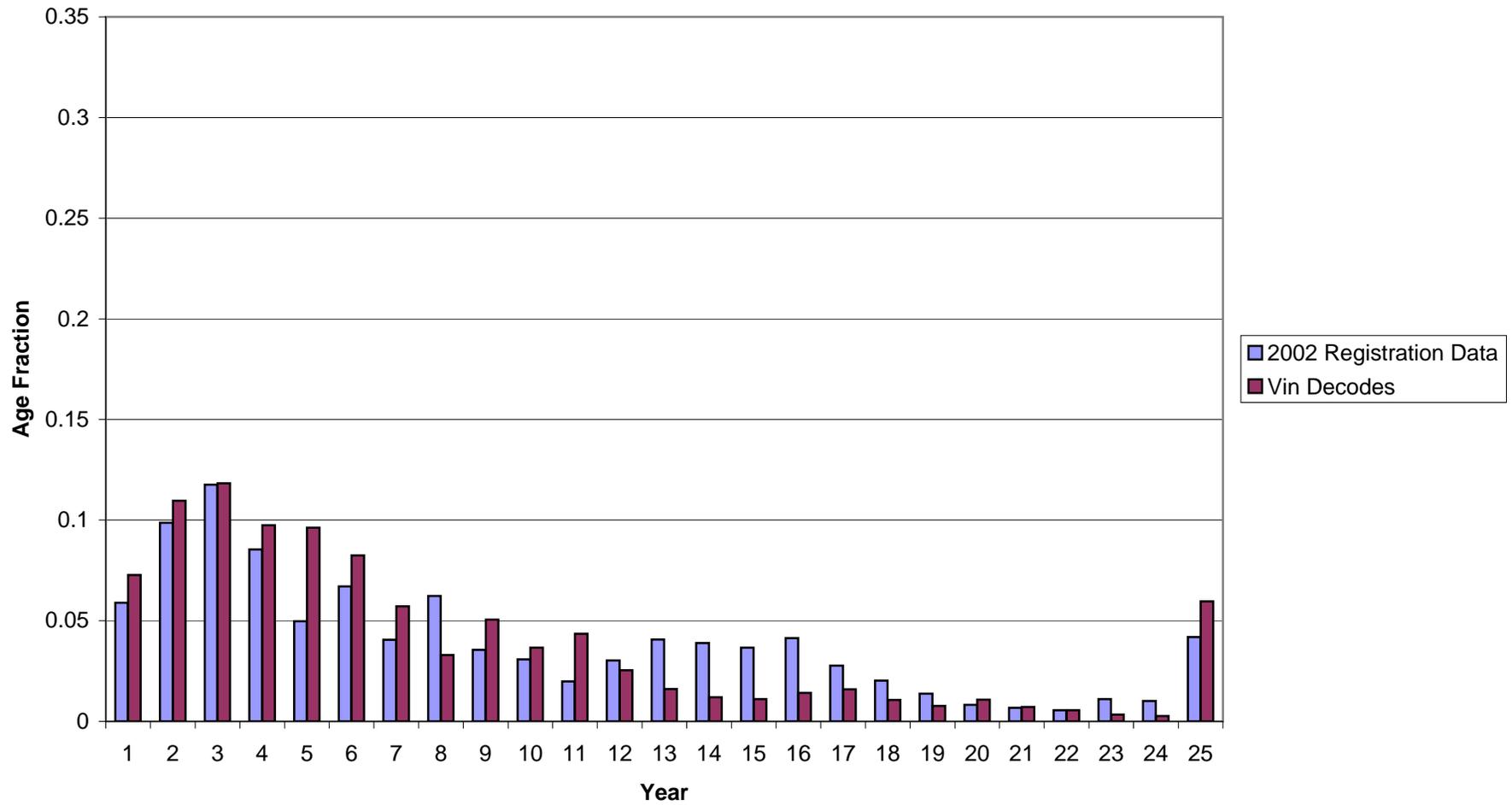
ATTACHMENT 7D

2005 Age Fractions
Jurisdiction = MTG
Vehicle Type = HDBT
Number of Decoded Vins = 1,011



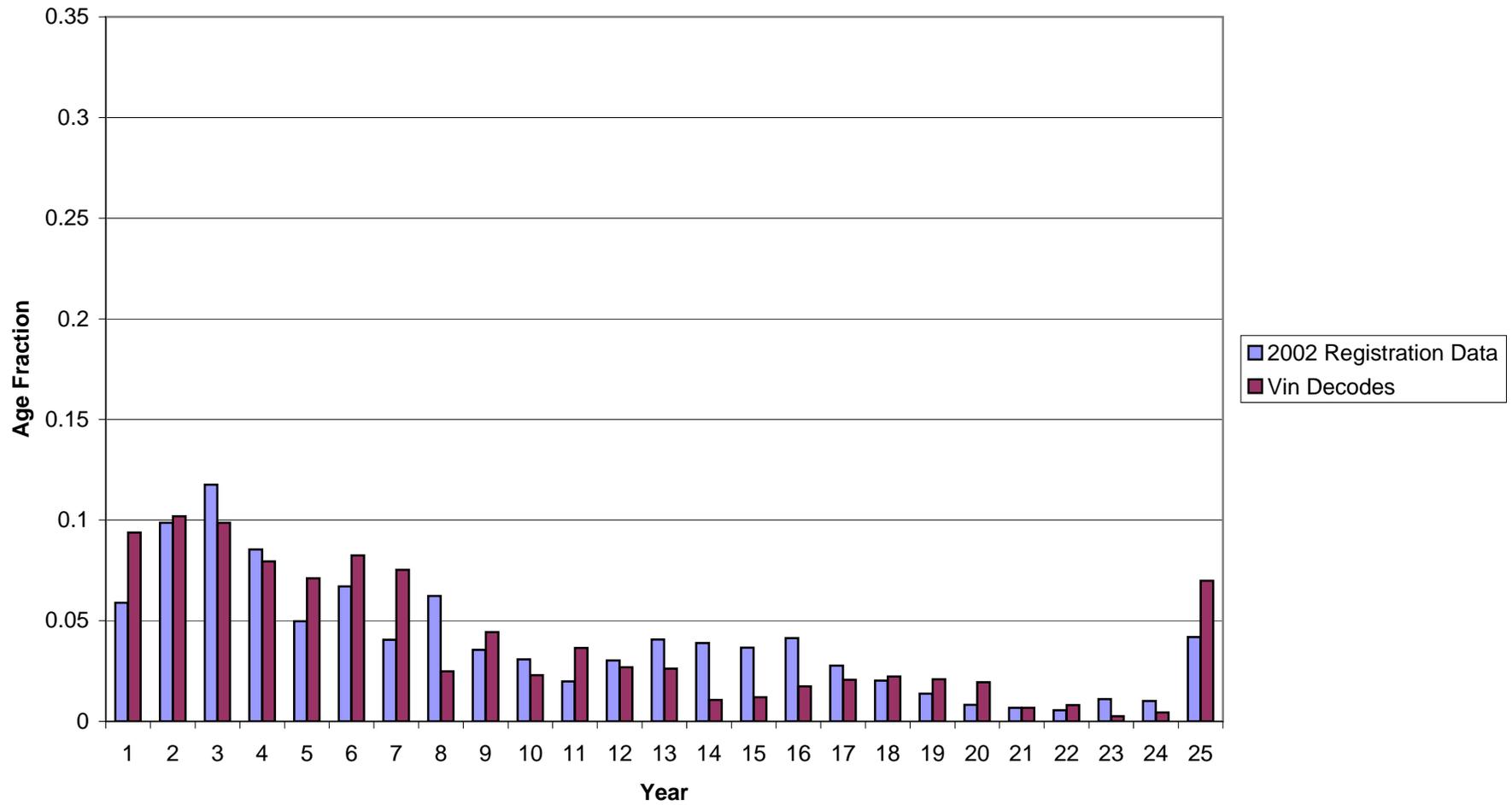
ATTACHMENT 7D

2005 Age Fractions
Jurisdiction = MTG
Vehicle Type = HDV2B
Number of Decoded Vins = 13,992



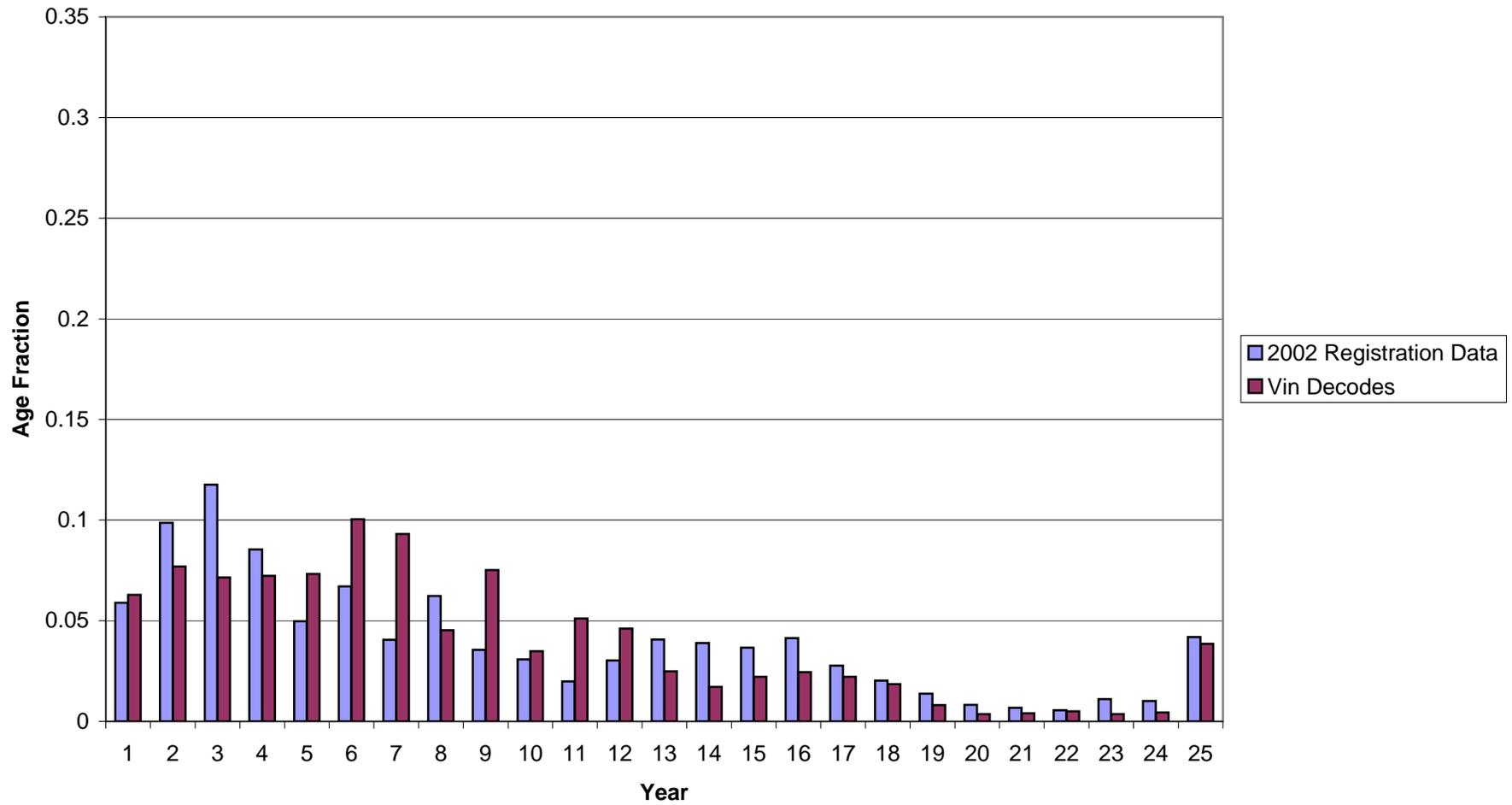
ATTACHMENT 7D

2005 Age Fractions
Jurisdiction = MTG
Vehicle Type = HDV3
Number of Decoded Vins = 2,650



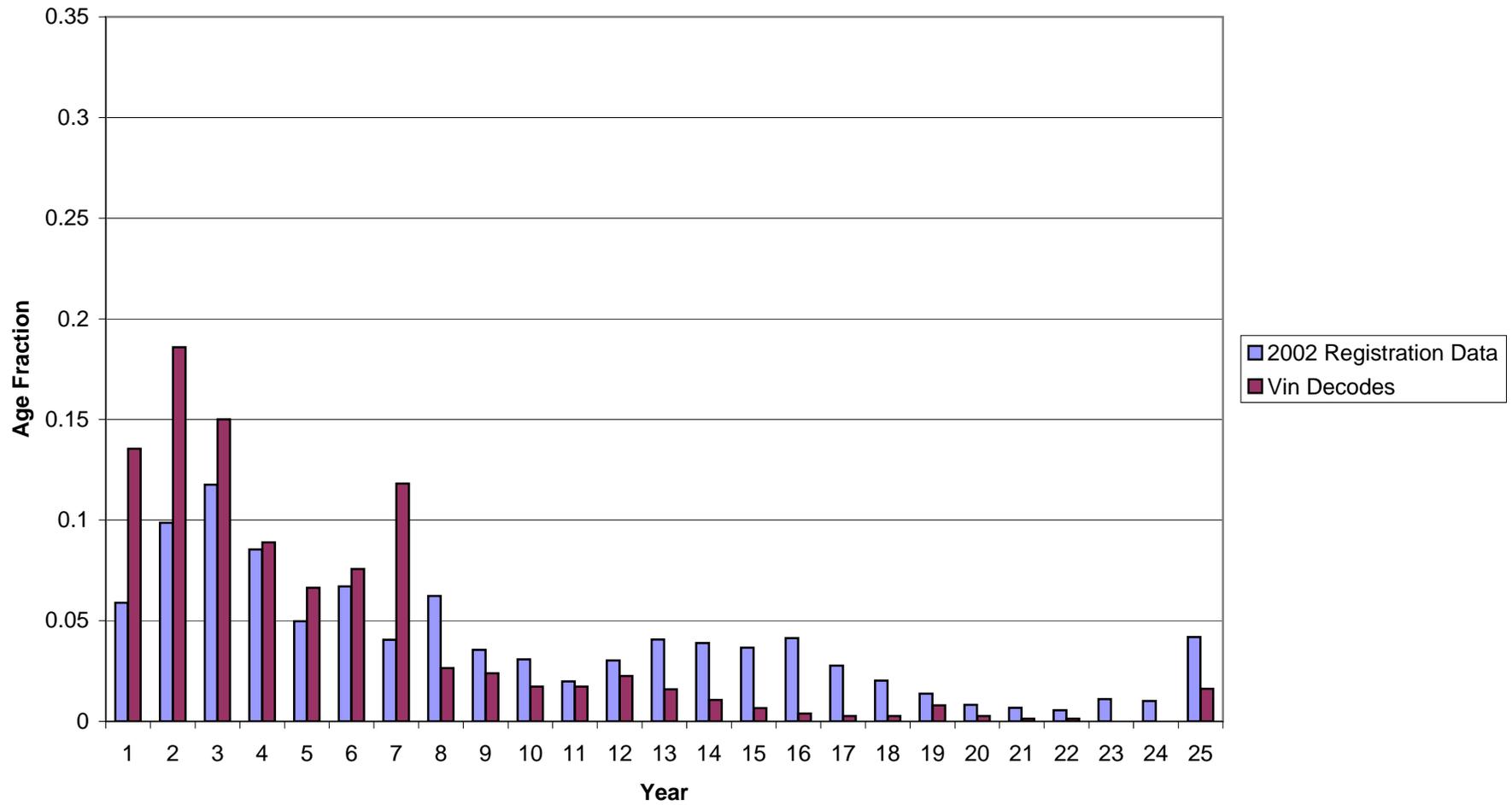
ATTACHMENT 7D

2005 Age Fractions
Jurisdiction = MTG
Vehicle Type = HDV4
Number of Decoded Vins = 2,125



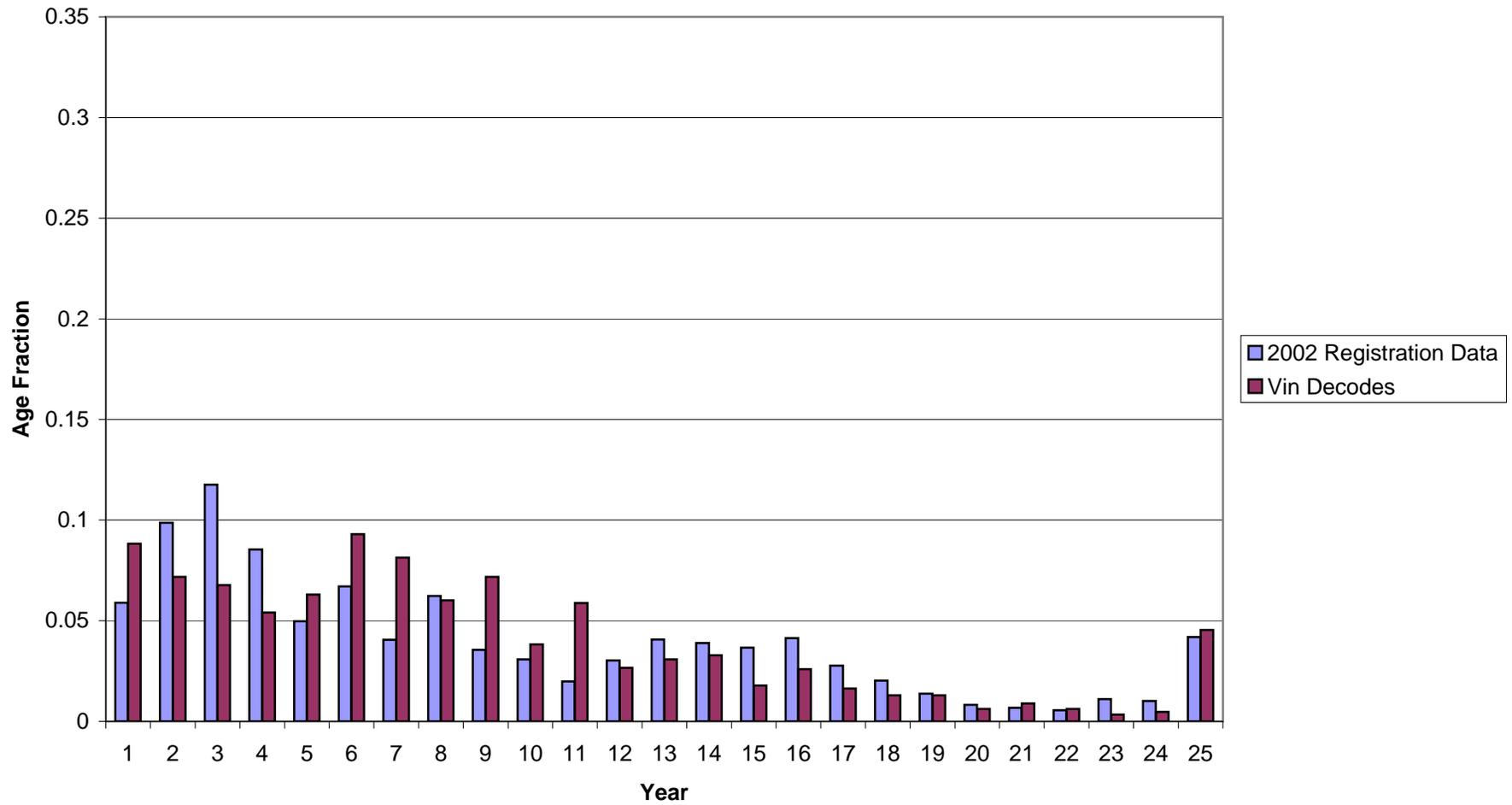
ATTACHMENT 7D

2005 Age Fractions
Jurisdiction = MTG
Vehicle Type = HDV5
Number of Decoded Vins = 719



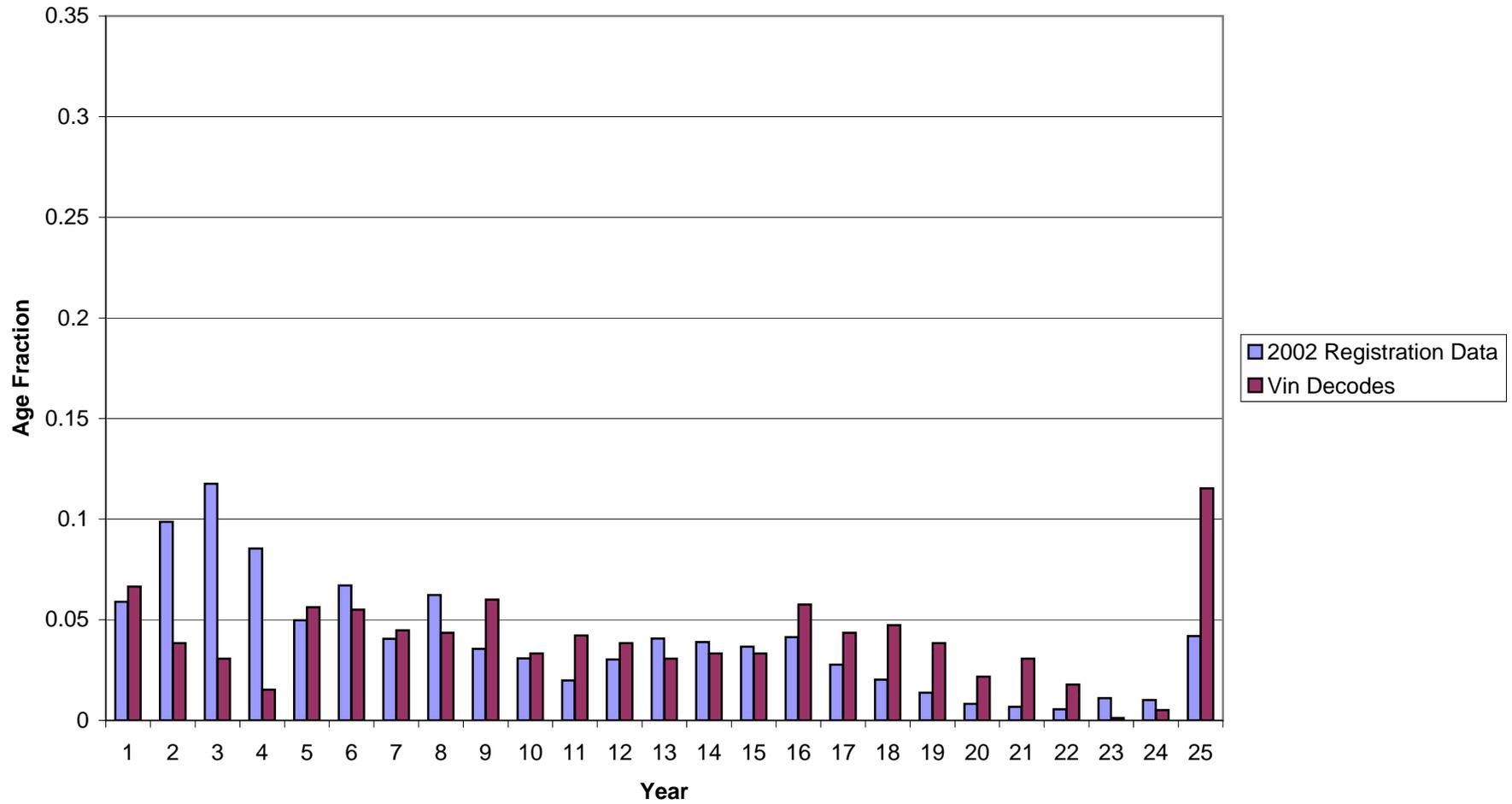
ATTACHMENT 7D

2005 Age Fractions
Jurisdiction = MTG
Vehicle Type = HDV6
Number of Decoded Vins = 1,374



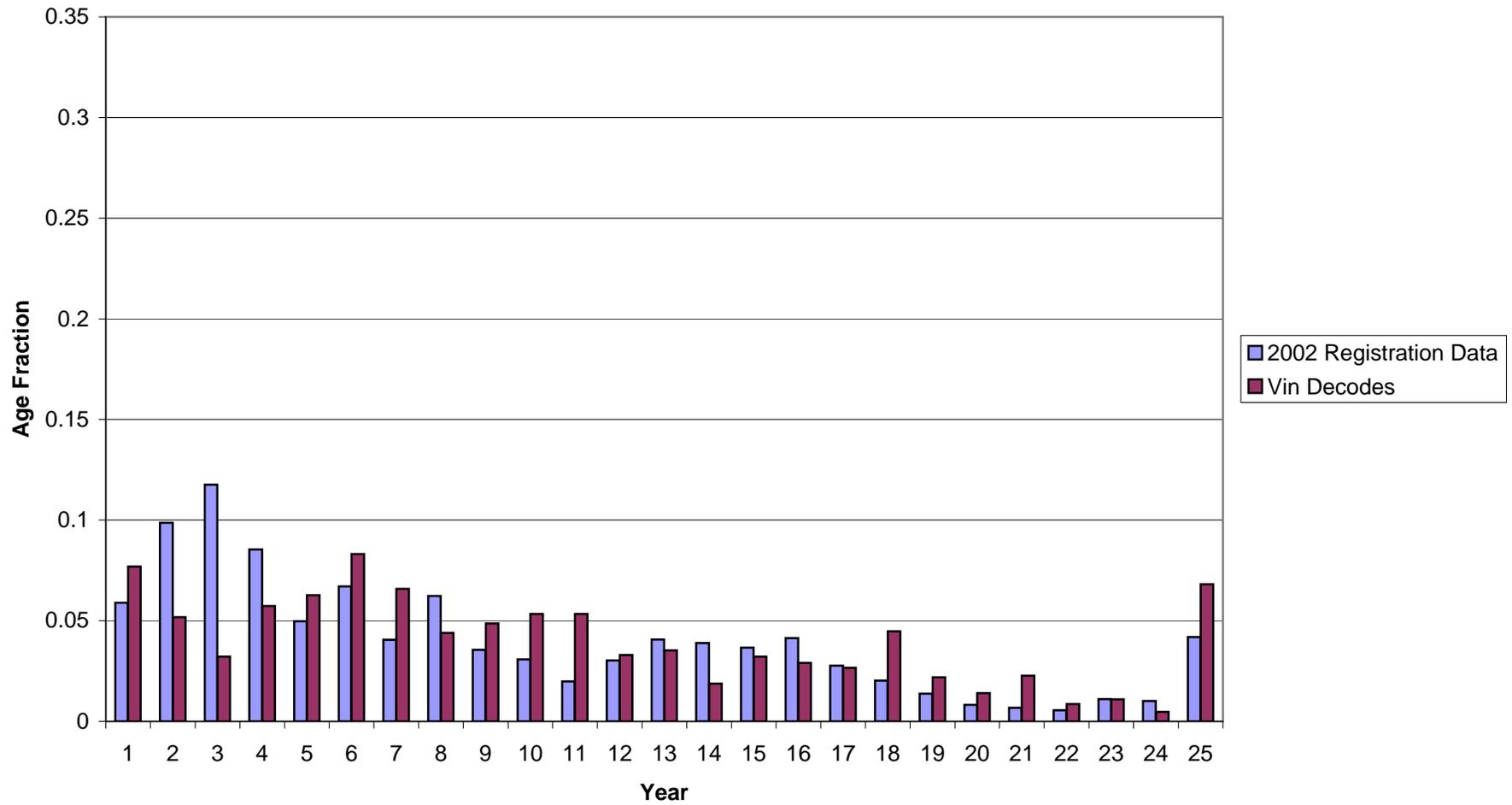
ATTACHMENT 7D

2005 Age Fractions
Jurisdiction = MTG
Vehicle Type = HDV7
Number of Decoded Vins = 692



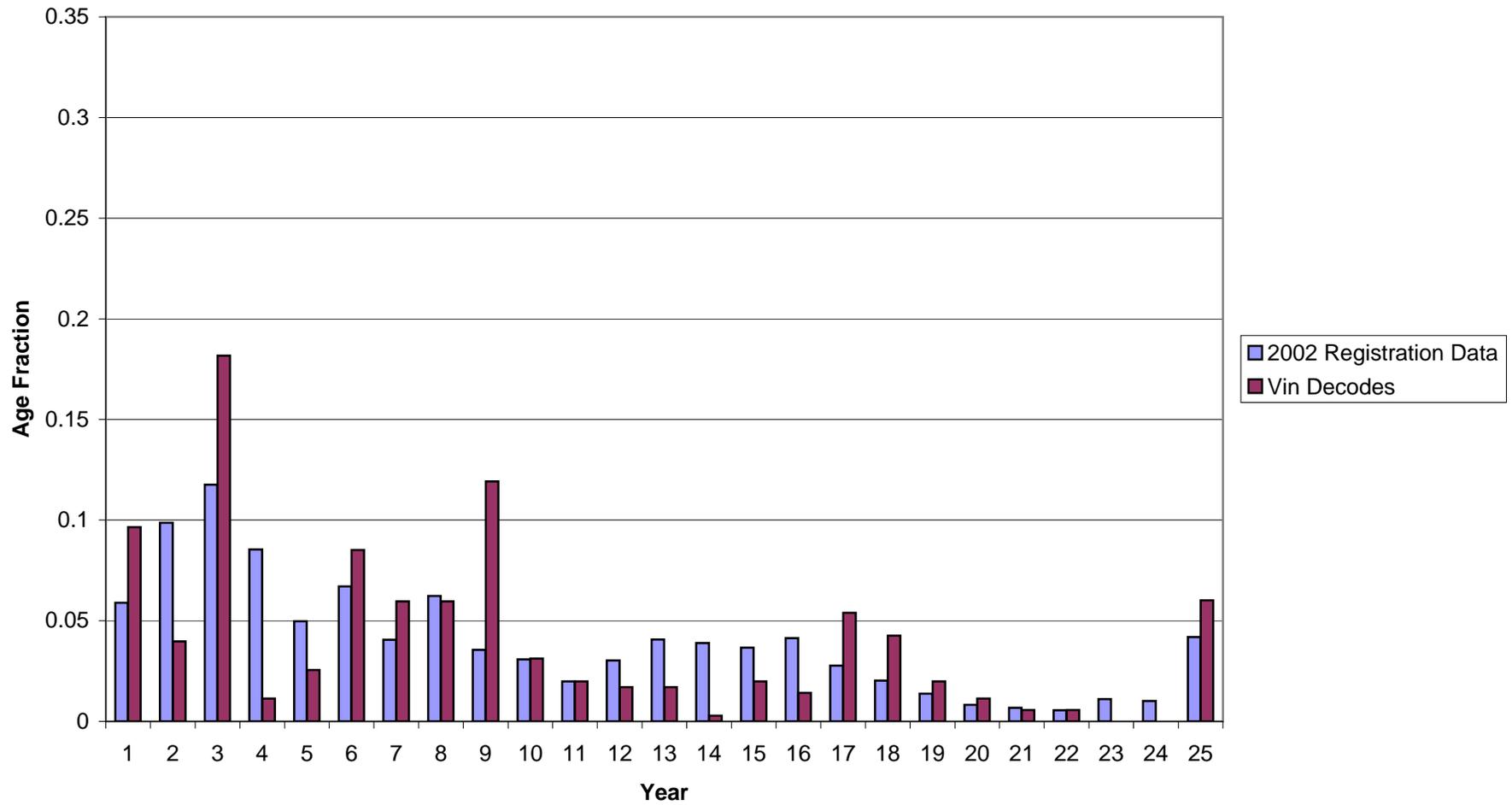
ATTACHMENT 7D

2005 Age Fractions
Jurisdiction = MTG
Vehicle Type = HDV8A
Number of Decoded Vins = 1,188



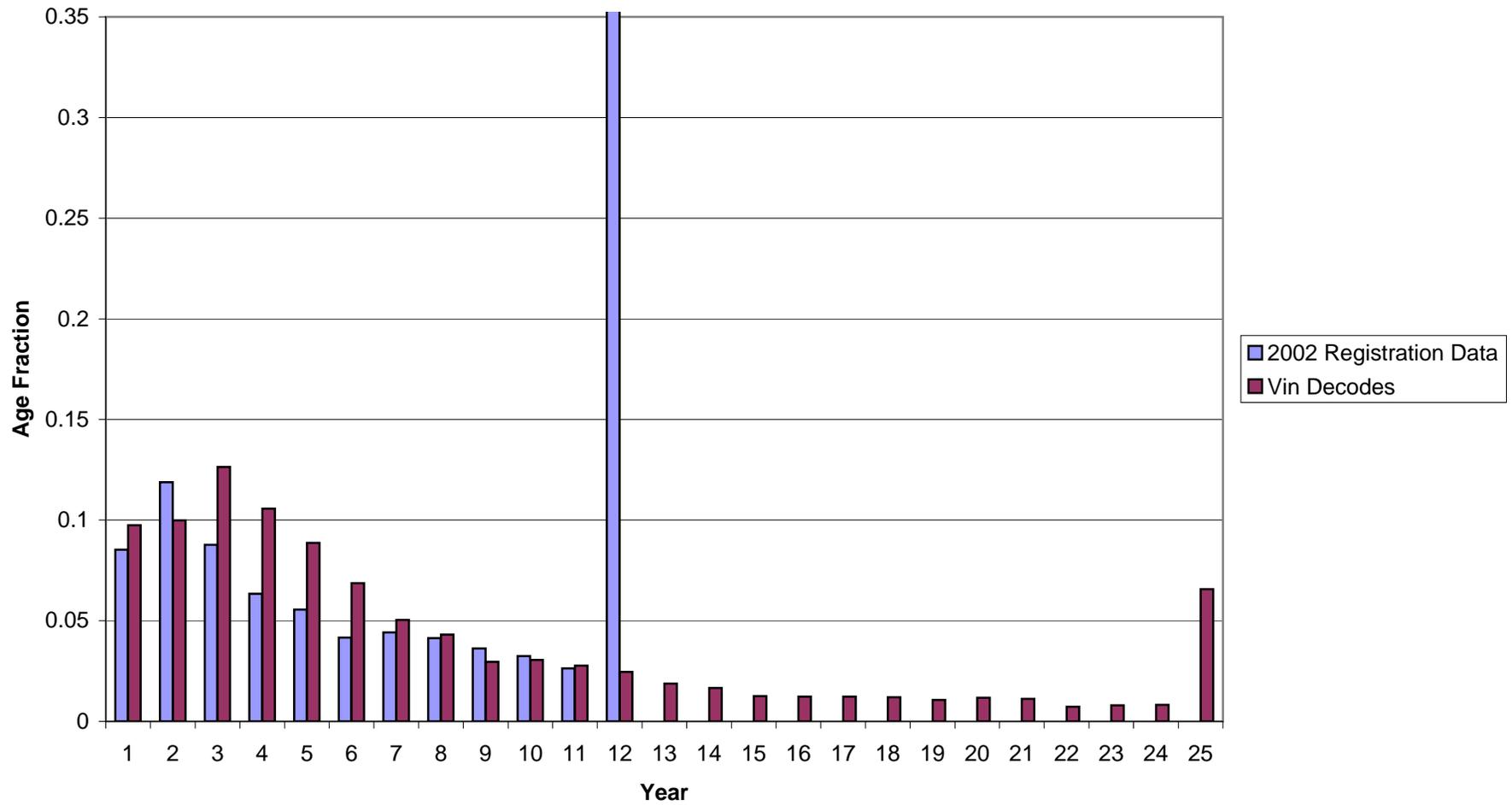
ATTACHMENT 7D

2005 Age Fractions
Jurisdiction = MTG
Vehicle Type = HDV8B
Number of Decoded Vins = 331



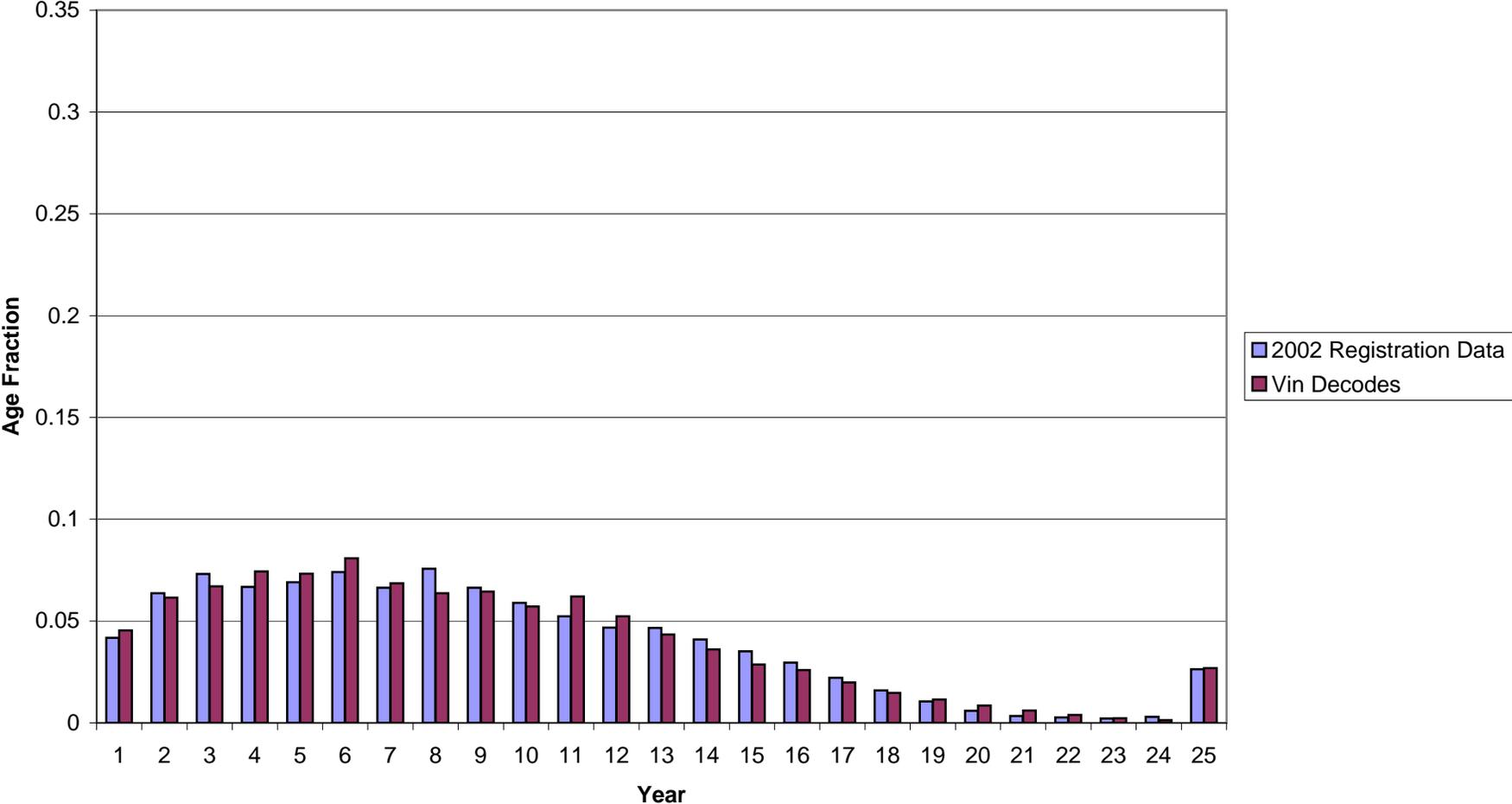
ATTACHMENT 7D

2005 Age Fractions
Jurisdiction = MTG
Vehicle Type = MC
Number of Decoded Vins = 7,938



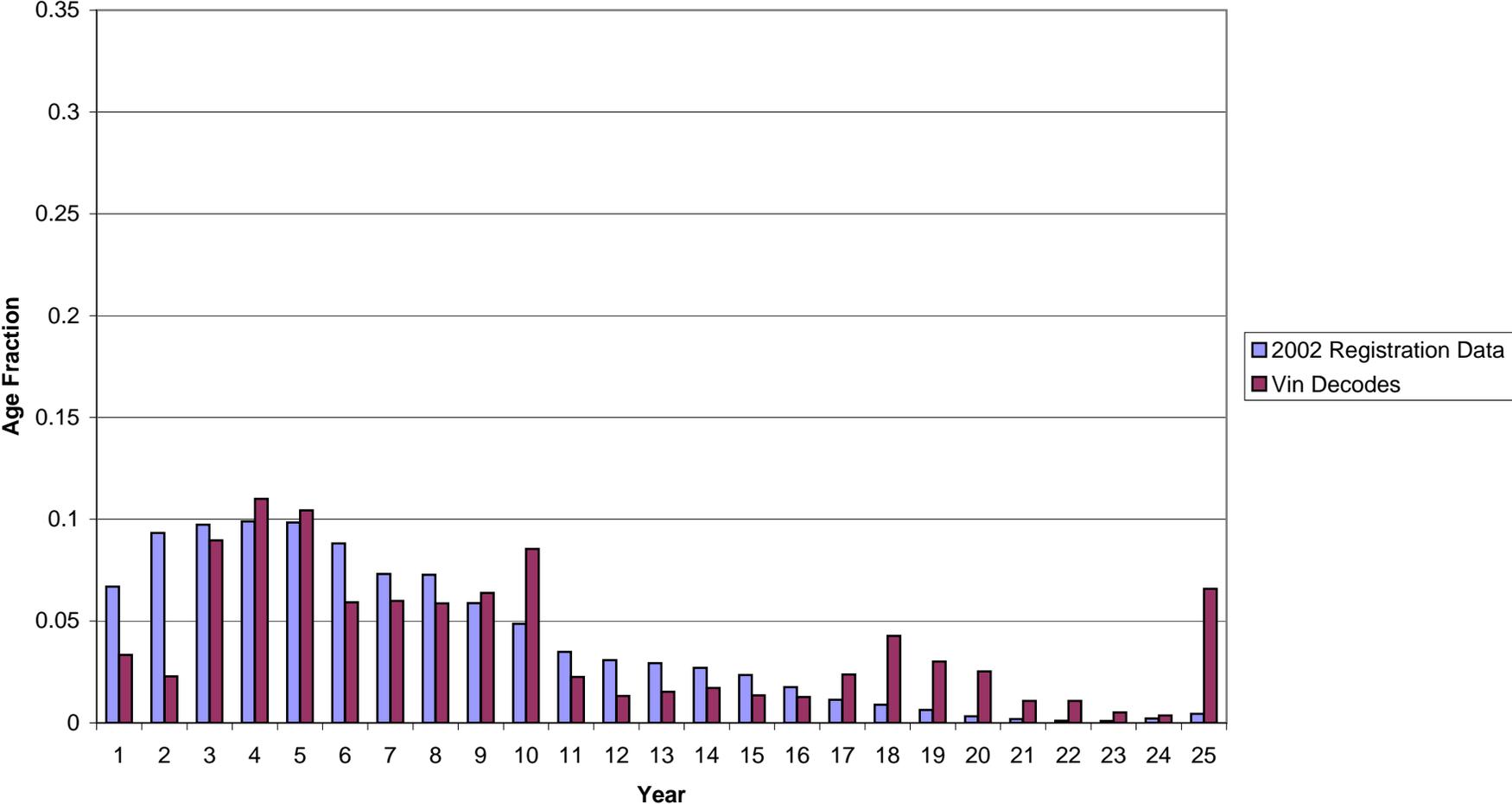
ATTACHMENT 7E

2005 Age Fractions
Jurisdiction = PG
Vehicle Type = LDV
Number of Decoded Vins = 324,362



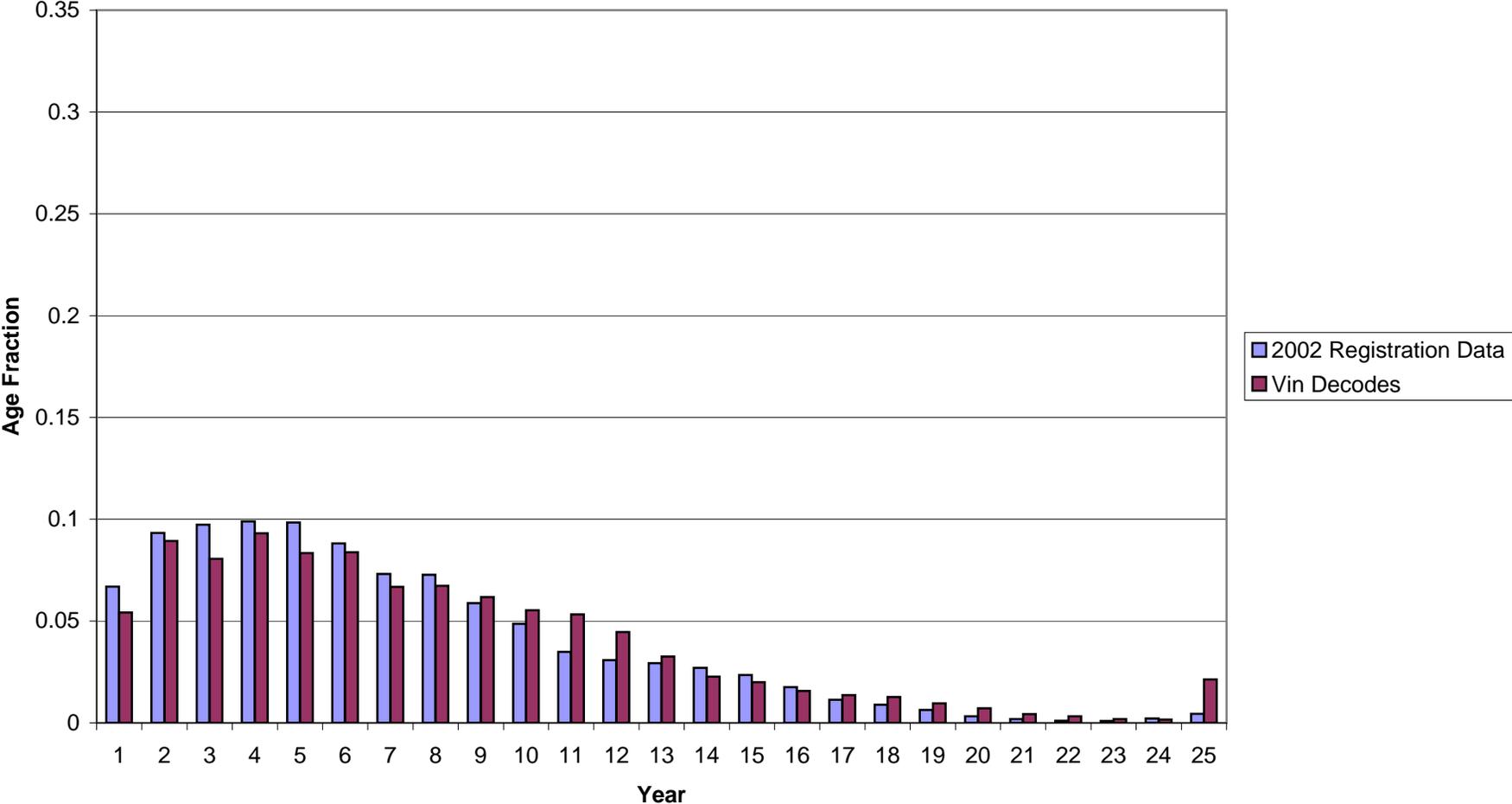
ATTACHMENT 7E

2005 Age Fractions
Jurisdiction = PG
Vehicle Type = LDT1
Number of Decoded Vins = 3,820



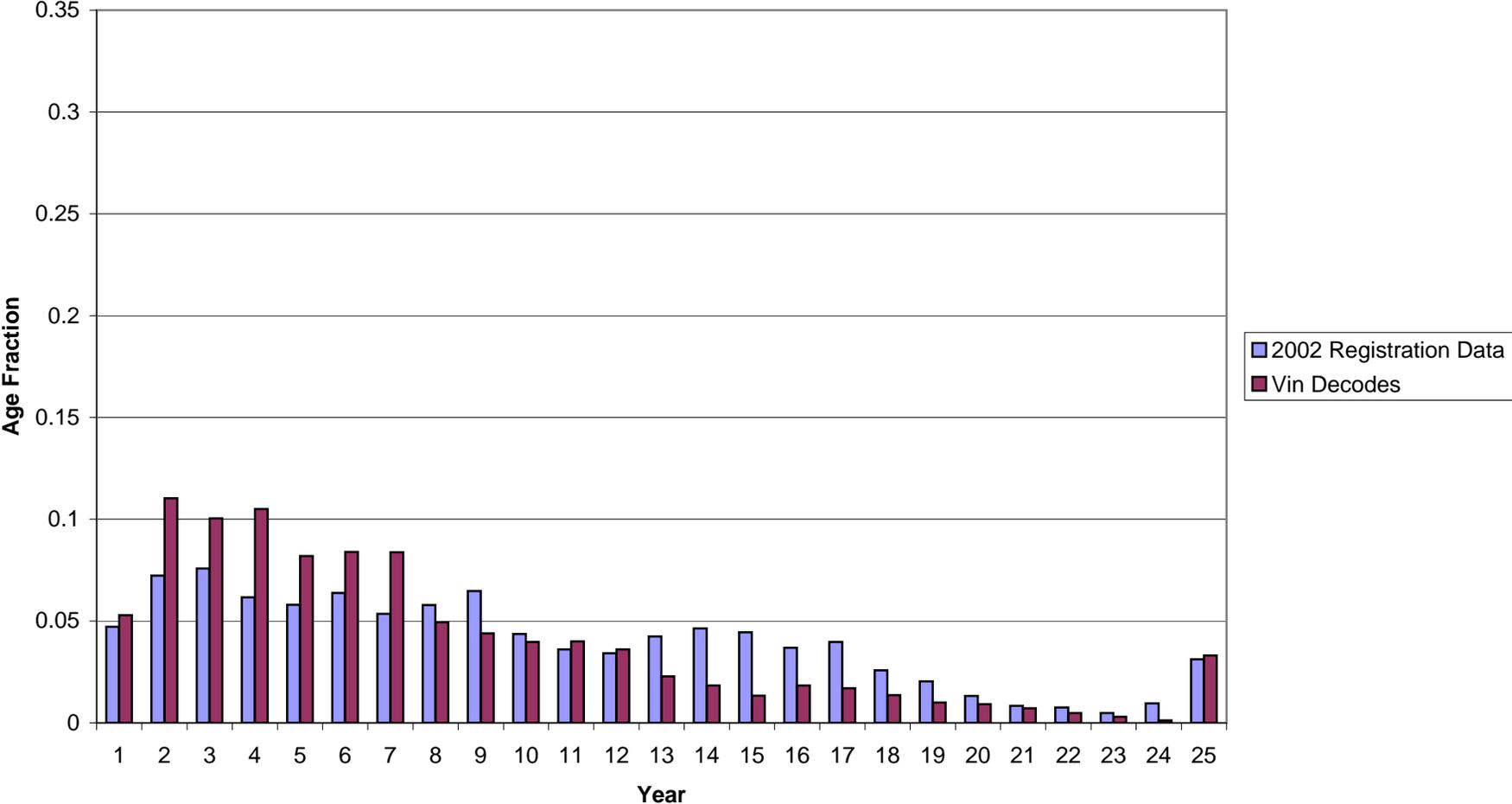
ATTACHMENT 7E

2005 Age Fractions
Jurisdiction = PG
Vehicle Type = LDT2
Number of Decoded Vins = 126,337



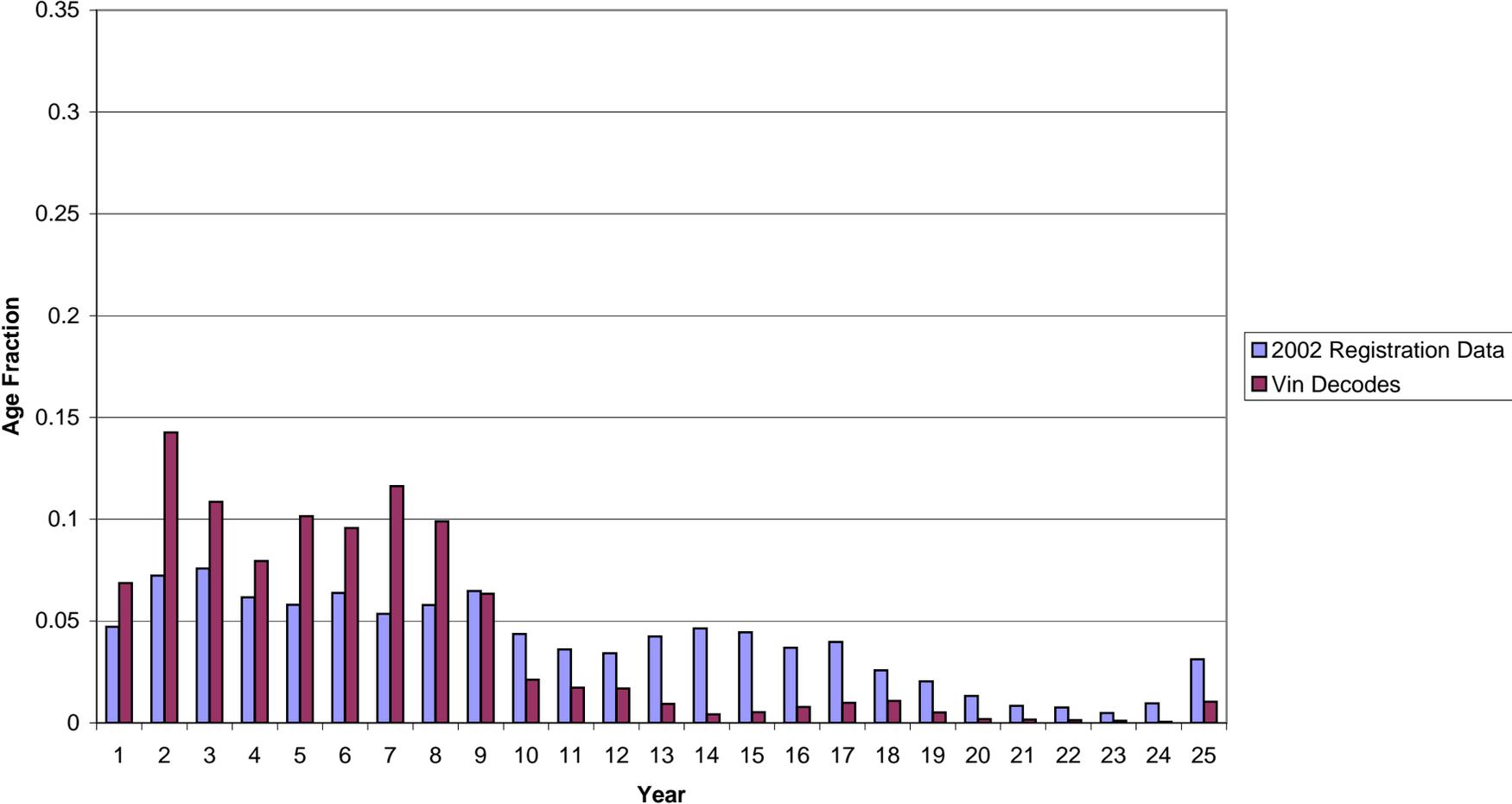
ATTACHMENT 7E

2005 Age Fractions
Jurisdiction = PG
Vehicle Type = LDT3
Number of Decoded Vins = 44,702



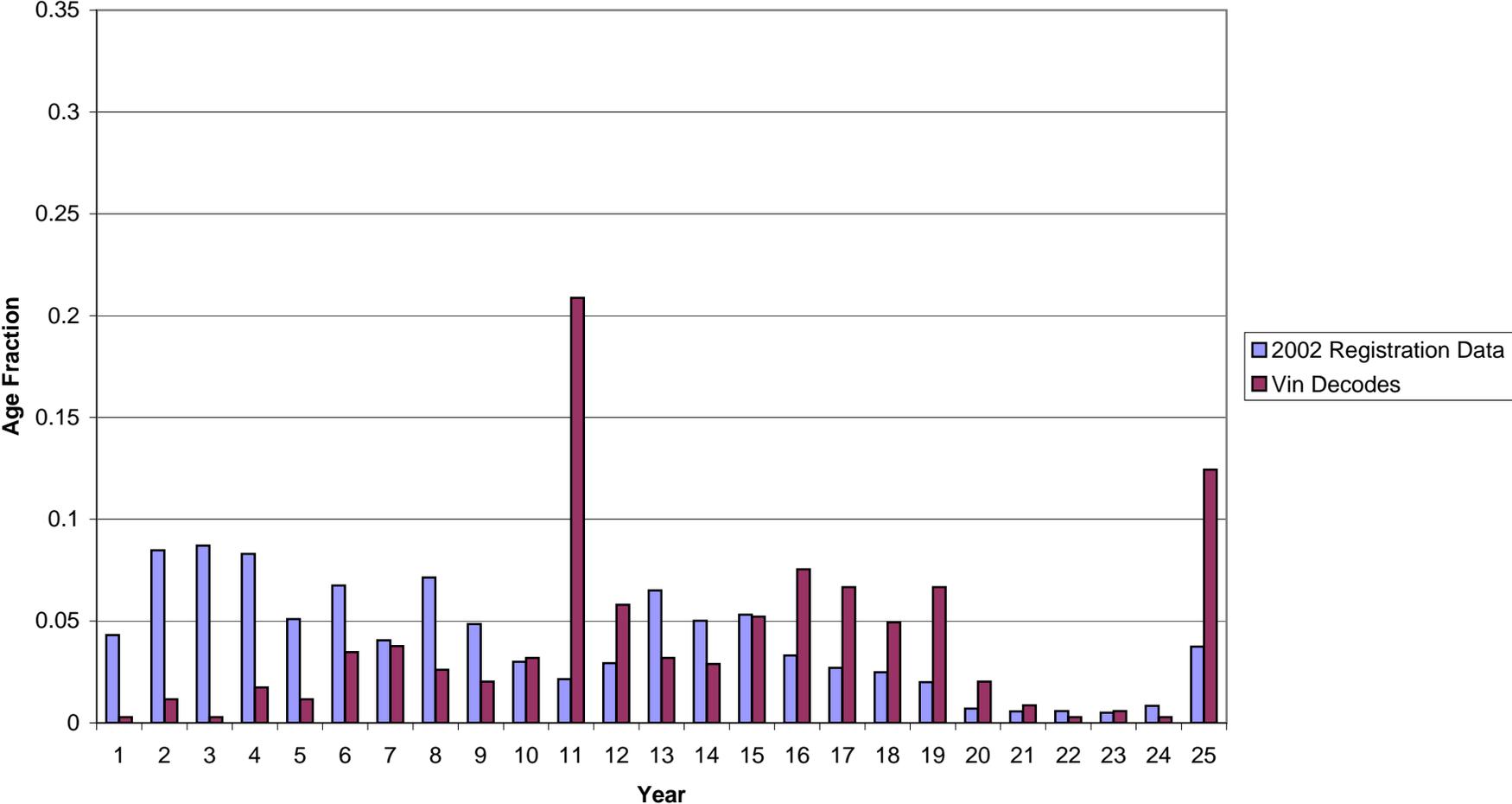
ATTACHMENT 7E

2005 Age Fractions
Jurisdiction = PG
Vehicle Type = LDT4
Number of Decoded Vins = 12,682



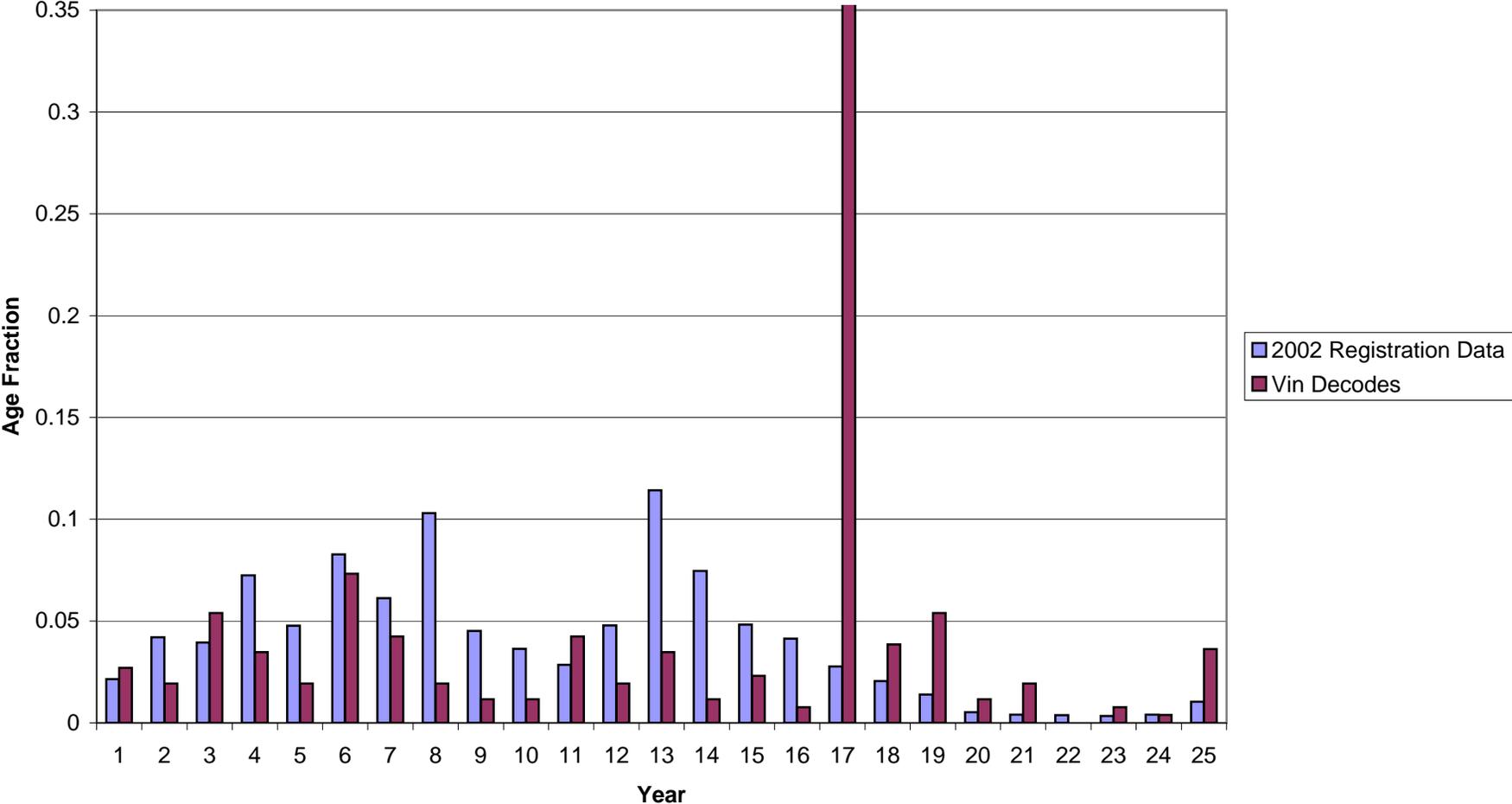
ATTACHMENT 7E

2005 Age Fractions
Jurisdiction = PG
Vehicle Type = HDBS
Number of Decoded Vins = 1,003



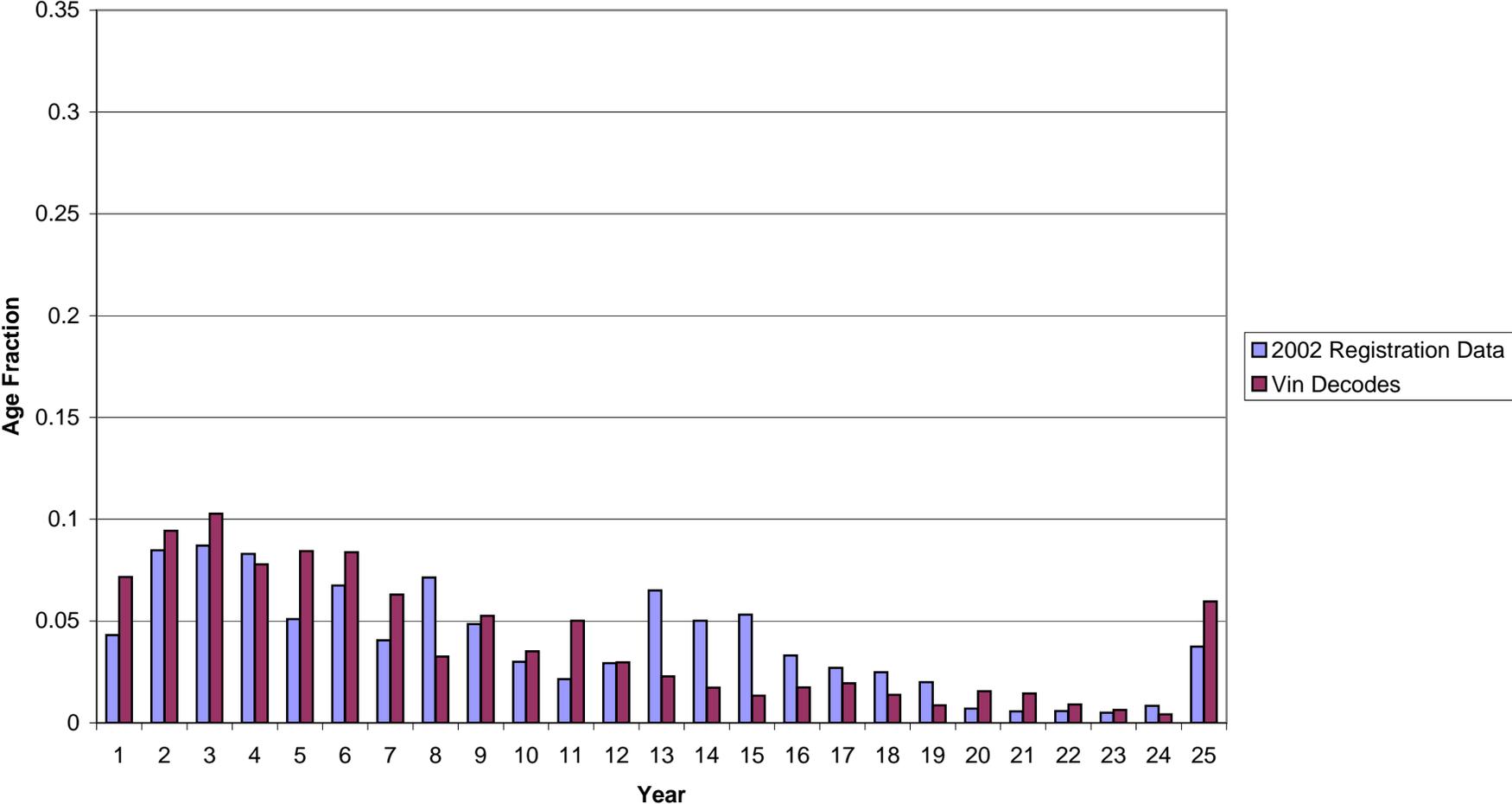
ATTACHMENT 7E

2005 Age Fractions
Jurisdiction = PG
Vehicle Type = HDBT
Number of Decoded Vins = 929



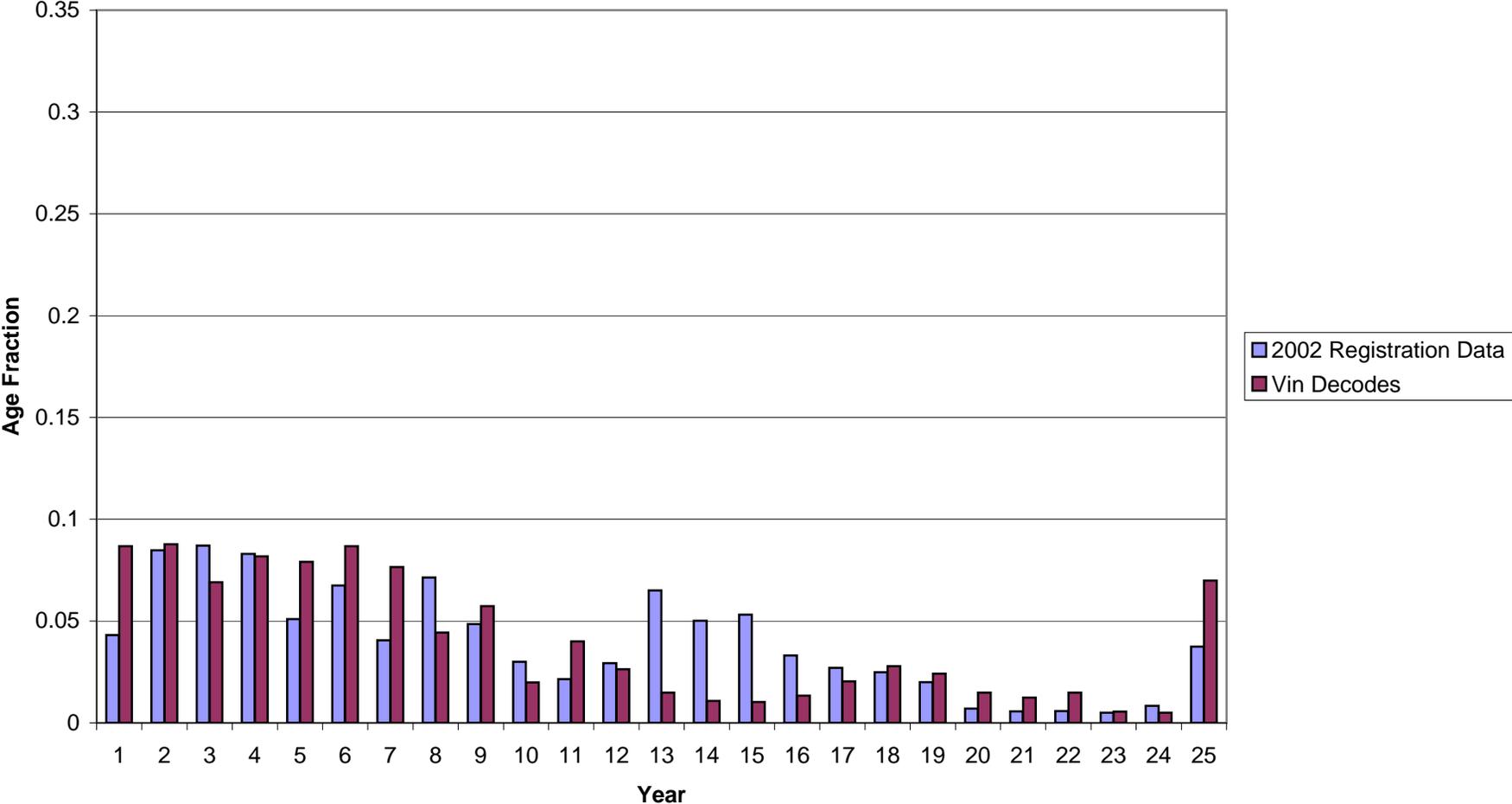
ATTACHMENT 7E

2005 Age Fractions
Jurisdiction = PG
Vehicle Type = HDV2B
Number of Decoded Vins = 13,198



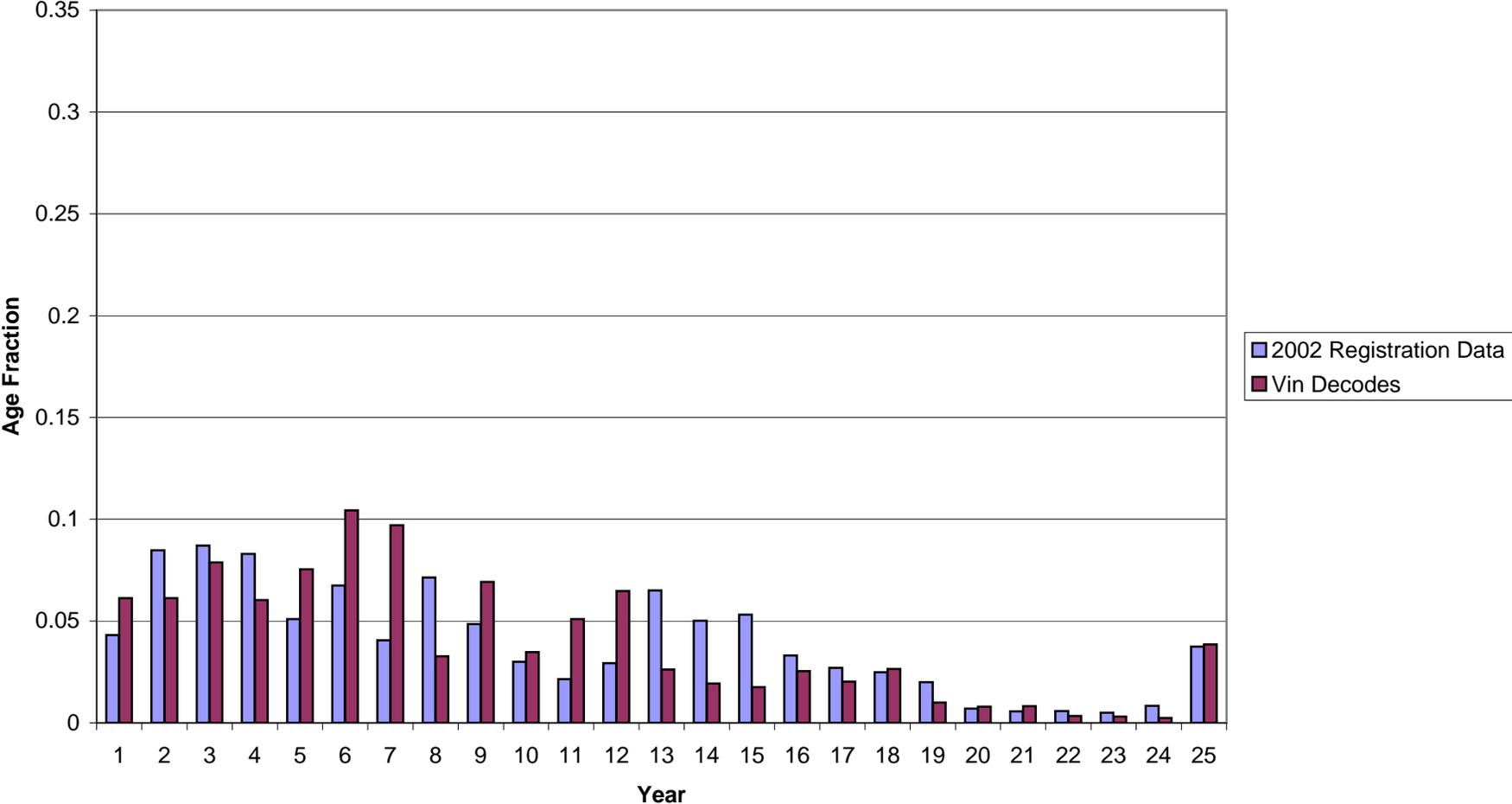
ATTACHMENT 7E

2005 Age Fractions
Jurisdiction = PG
Vehicle Type = HDV3
Number of Decoded Vins = 2,712



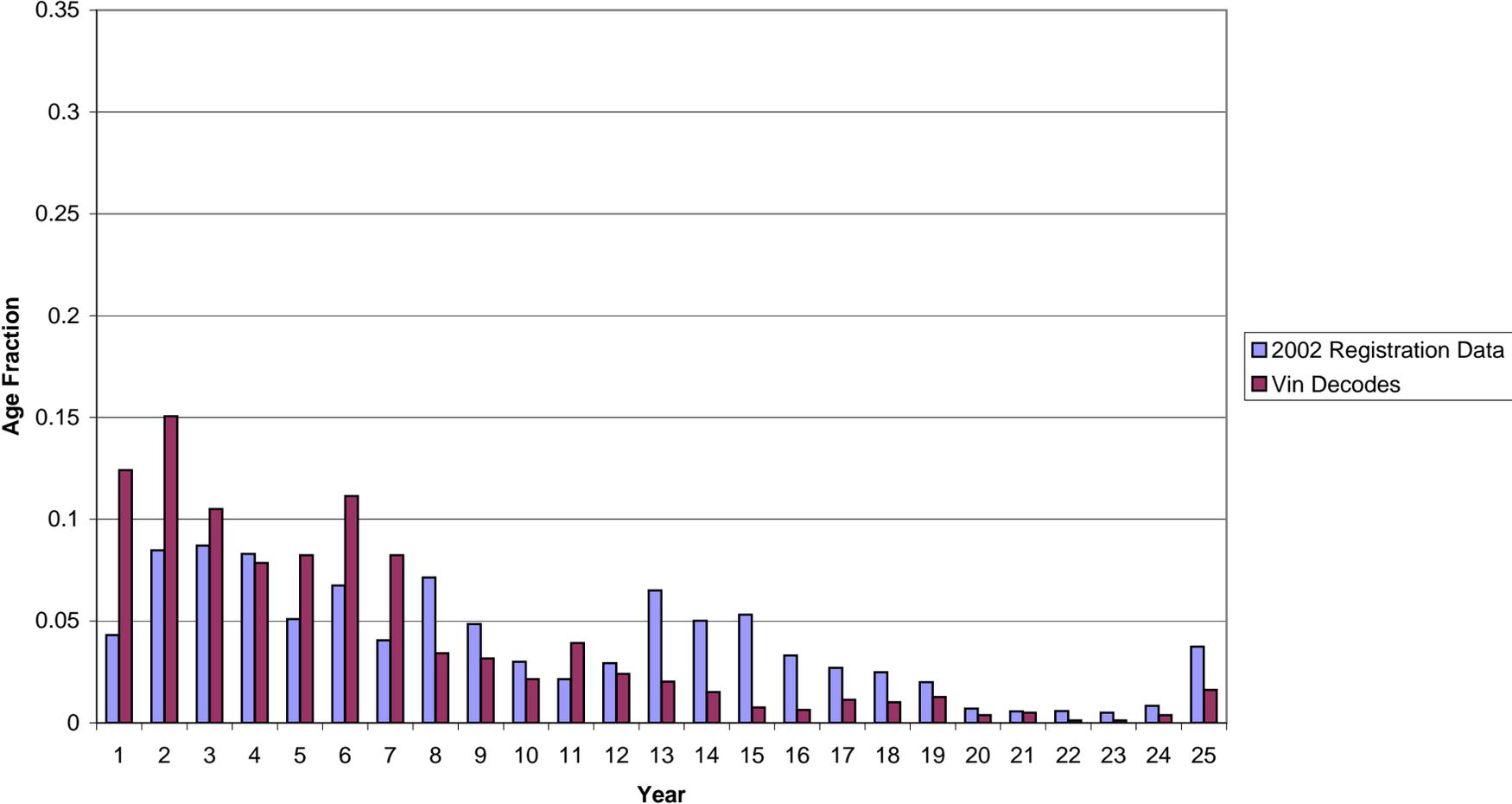
ATTACHMENT 7E

2005 Age Fractions
Jurisdiction = PG
Vehicle Type = HDV4
Number of Decoded Vins = 2,792



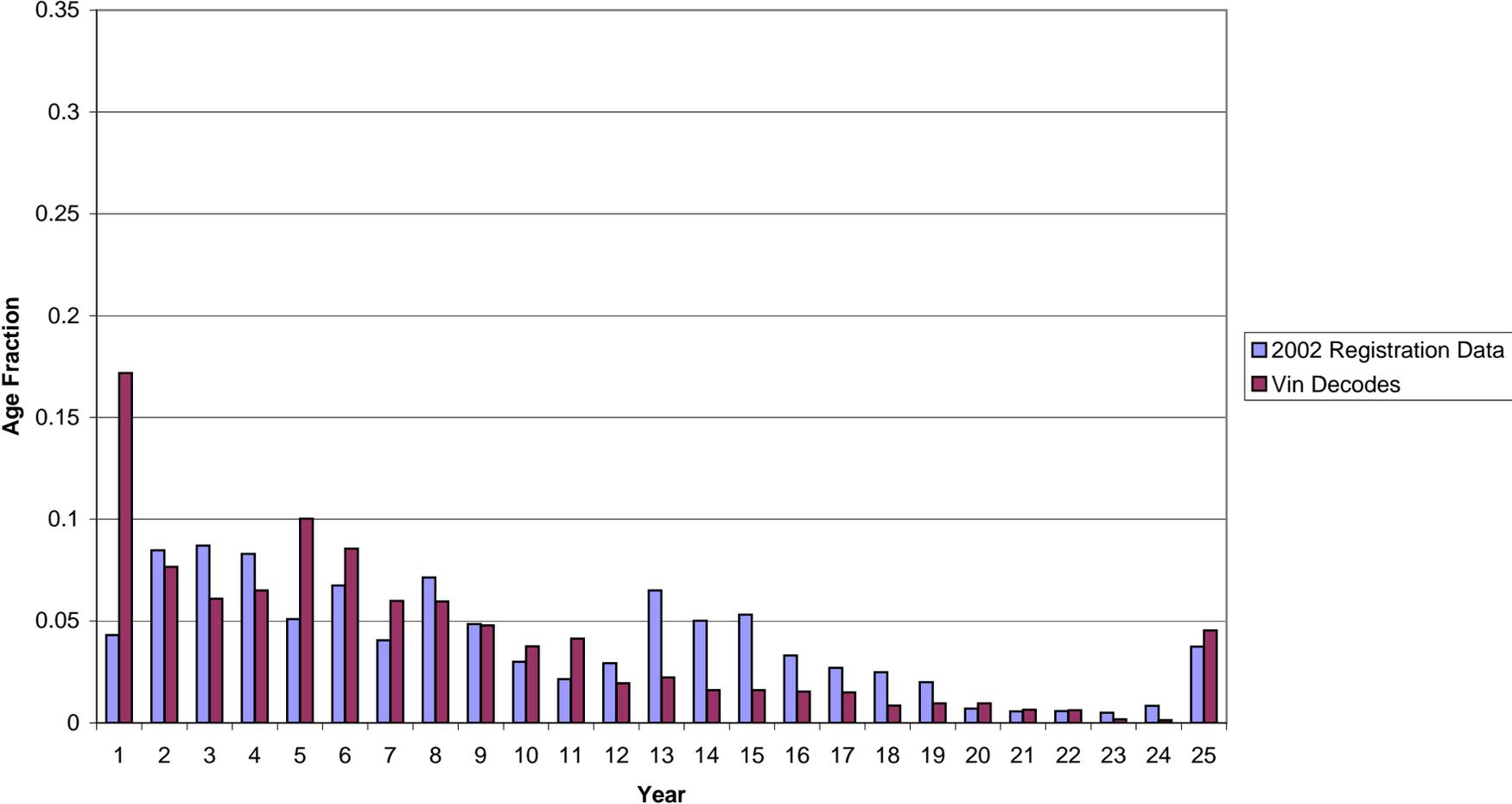
ATTACHMENT 7E

2005 Age Fractions
Jurisdiction = PG
Vehicle Type = HDV5
Number of Decoded Vins = 777



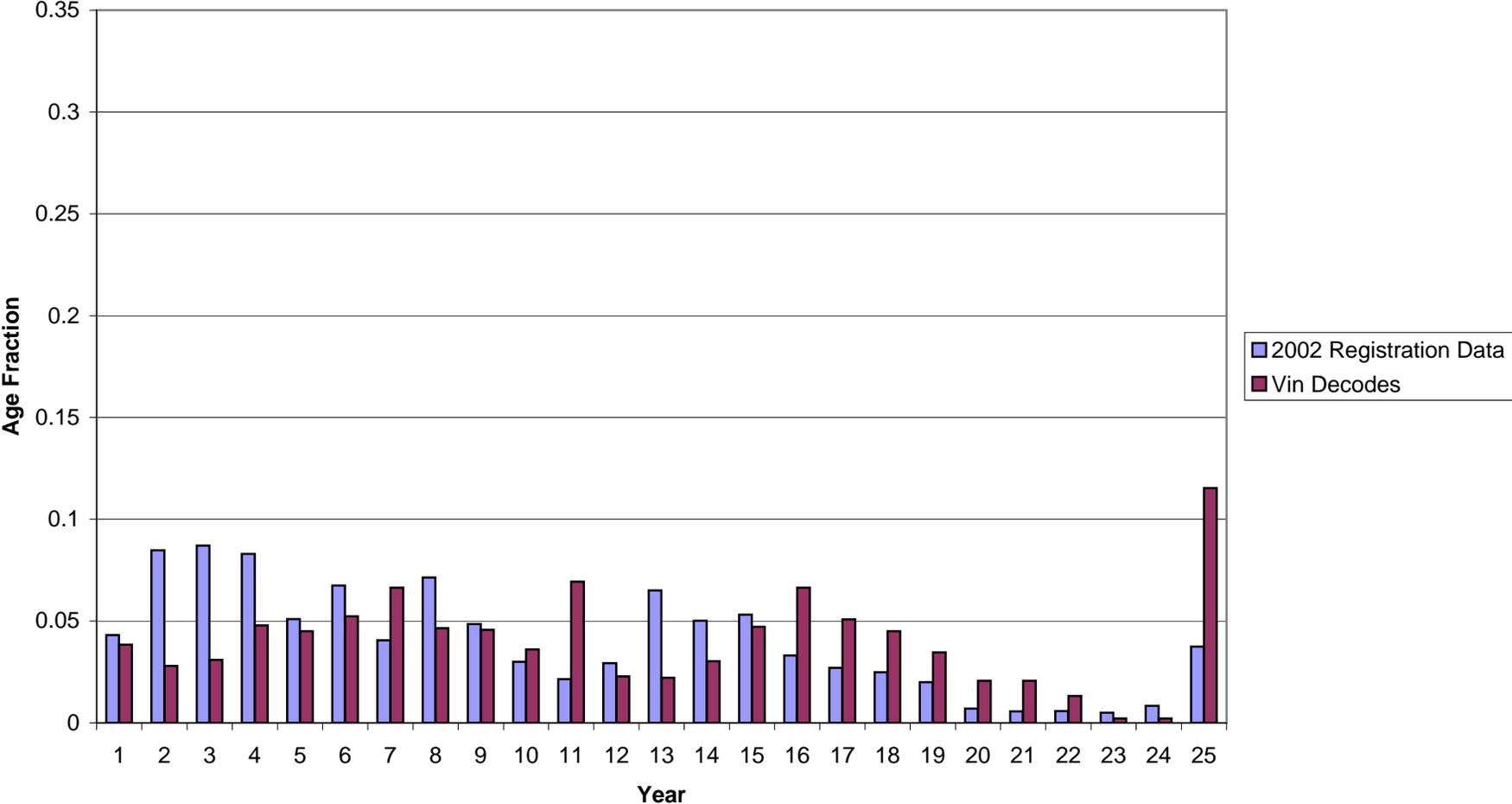
ATTACHMENT 7E

2005 Age Fractions
Jurisdiction = PG
Vehicle Type = HDV6
Number of Decoded Vins = 2,770



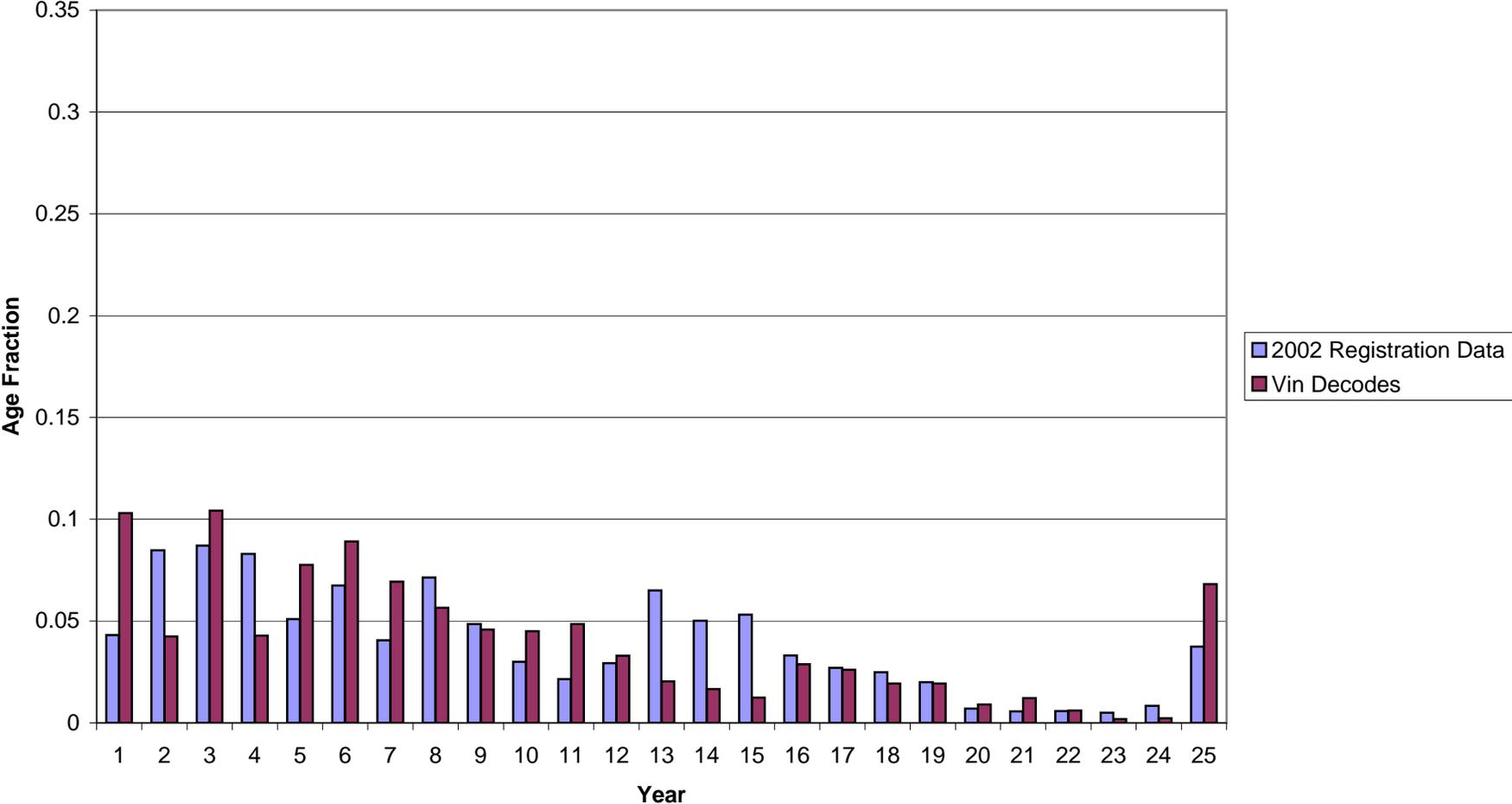
ATTACHMENT 7E

2005 Age Fractions
Jurisdiction = PG
Vehicle Type = HDV7
Number of Decoded Vins = 1,200



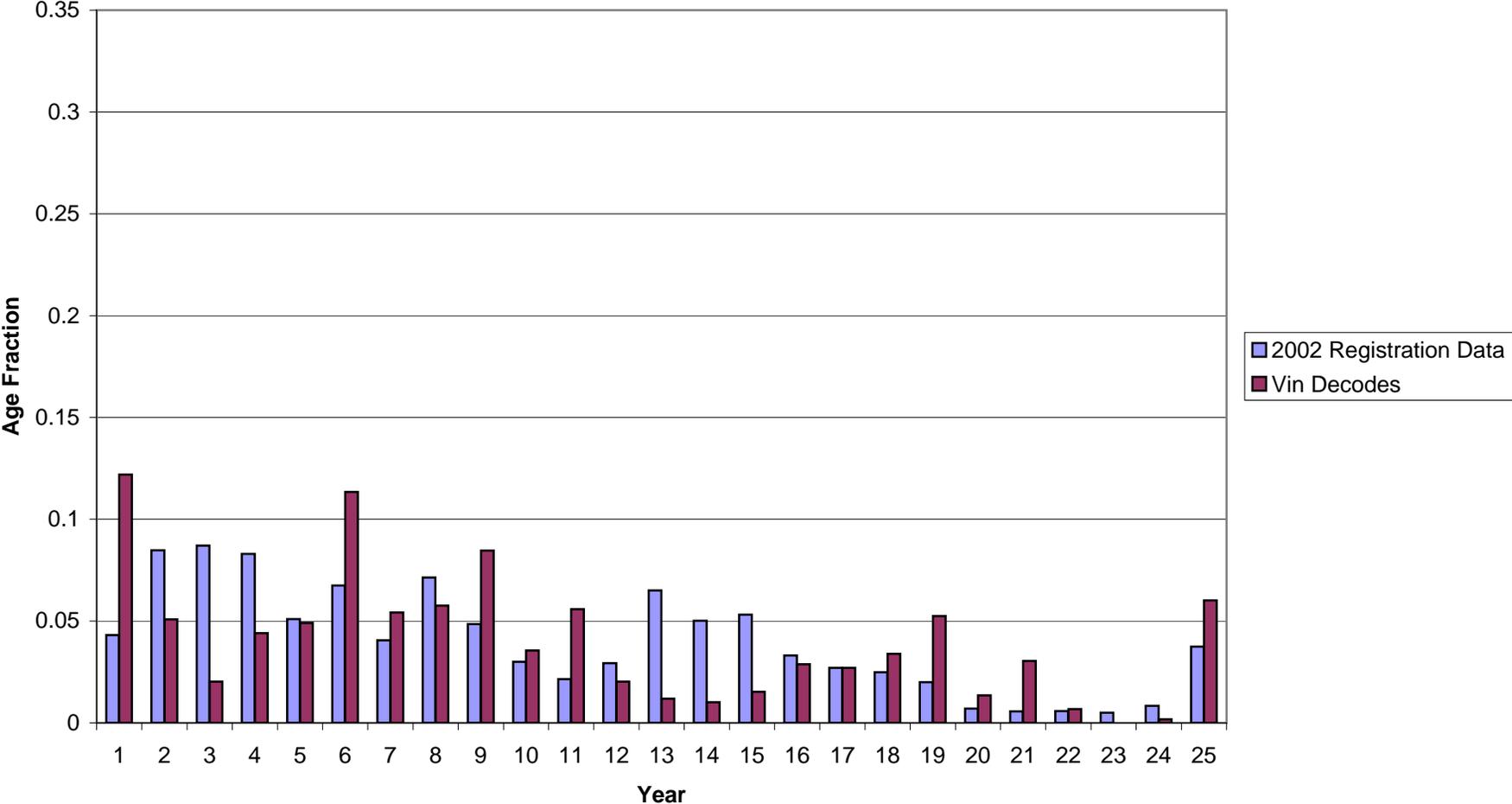
ATTACHMENT 7E

2005 Age Fractions
Jurisdiction = PG
Vehicle Type = HDV8A
Number of Decoded Vins = 2,460



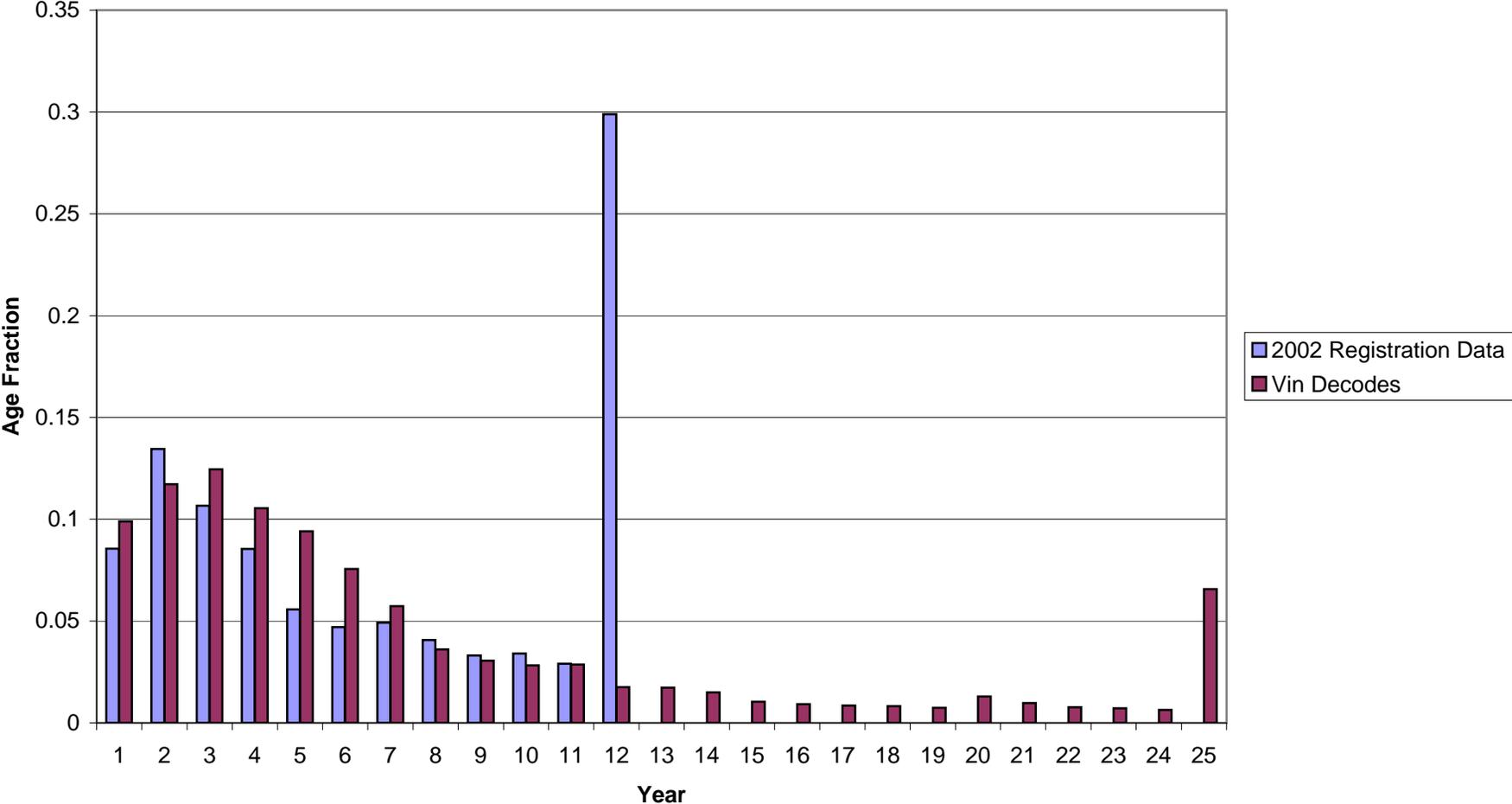
ATTACHMENT 7E

2005 Age Fractions
Jurisdiction = PG
Vehicle Type = HDV8B
Number of Decoded Vins = 555



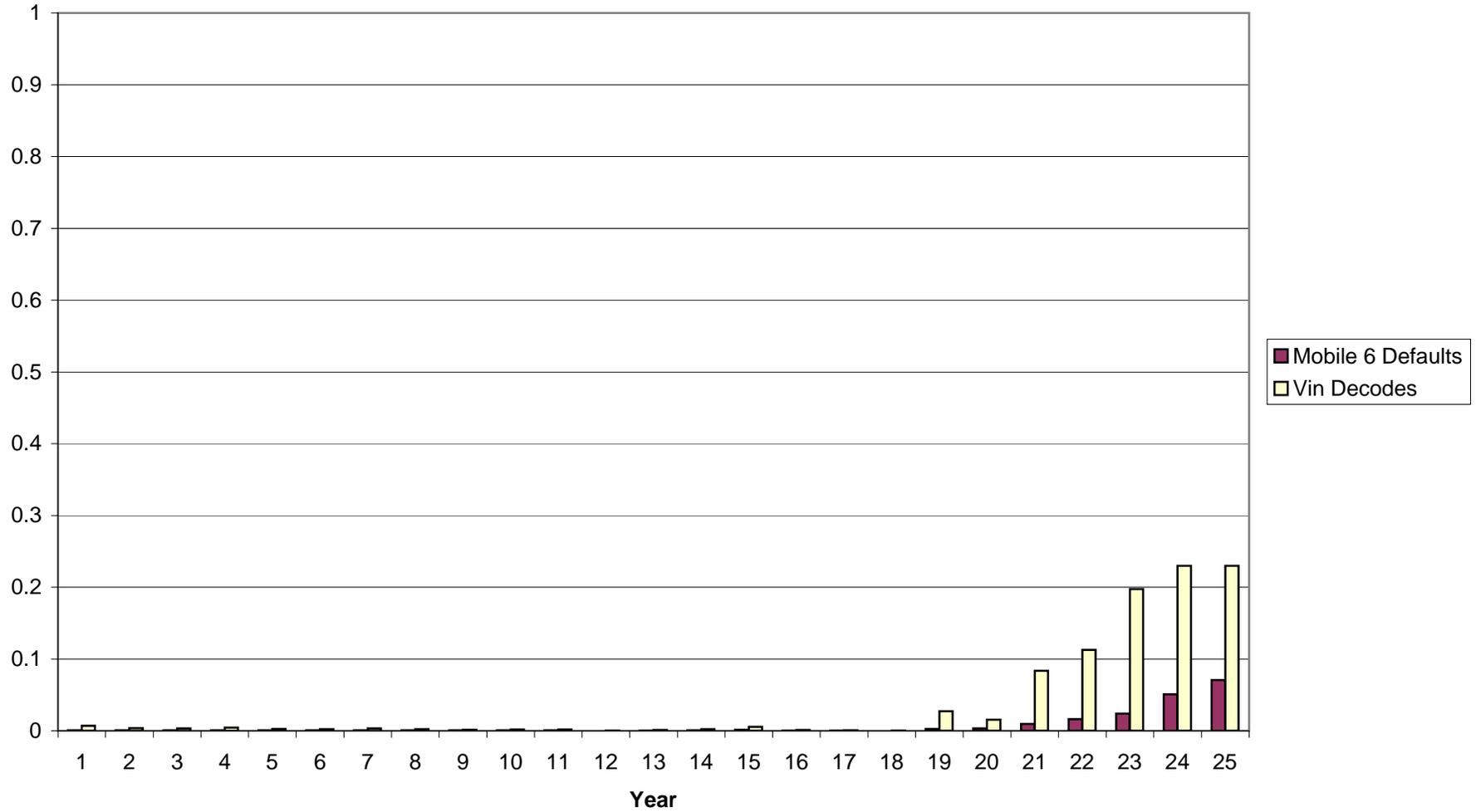
ATTACHMENT 7E

2005 Age Fractions
Jurisdiction = PG
Vehicle Type = MC
Number of Decoded Vins = 7,733



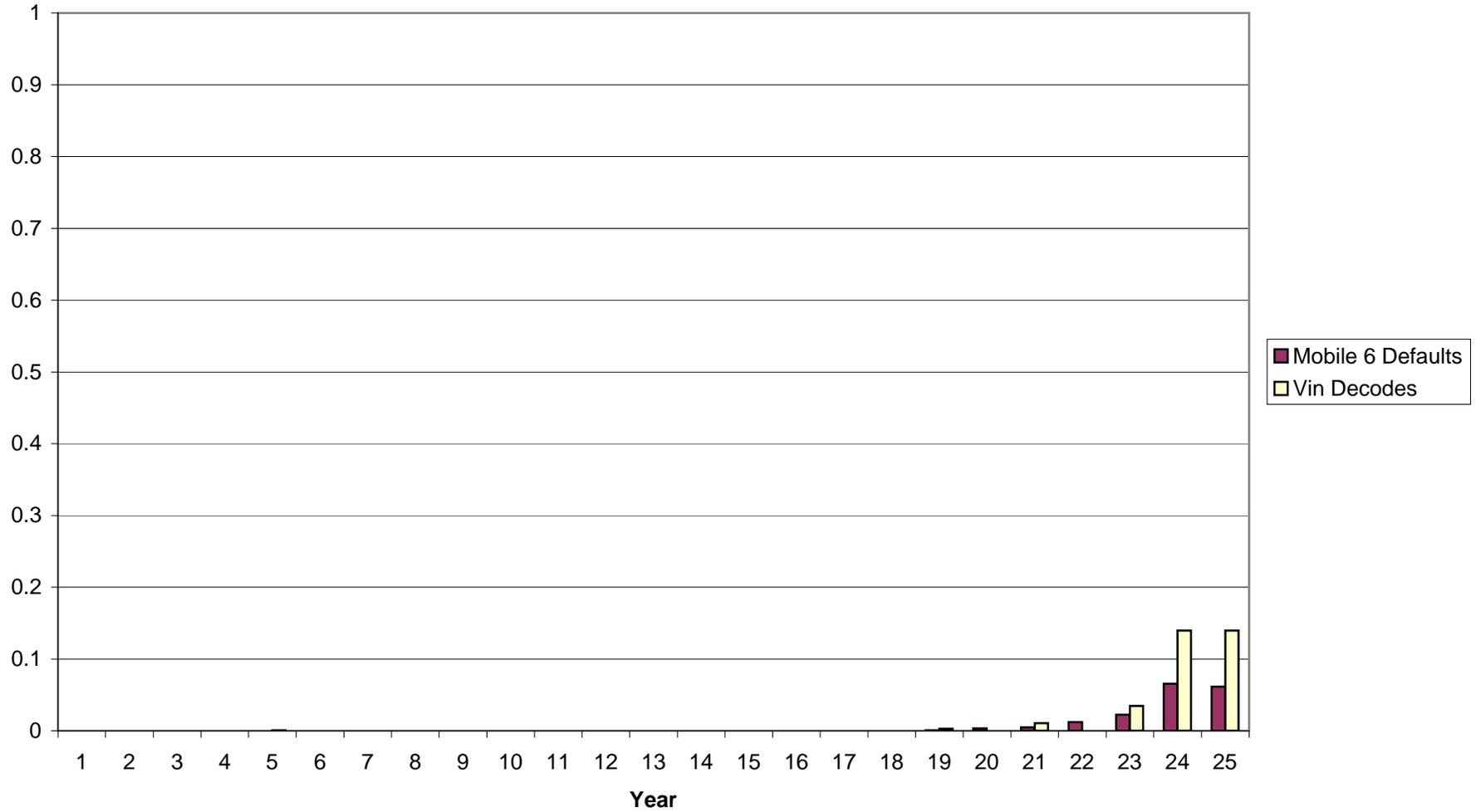
ATTACHMENT 8

Diesel Sales Fractions Maryland Jurisdictions Combined Vehicle Type = LDV



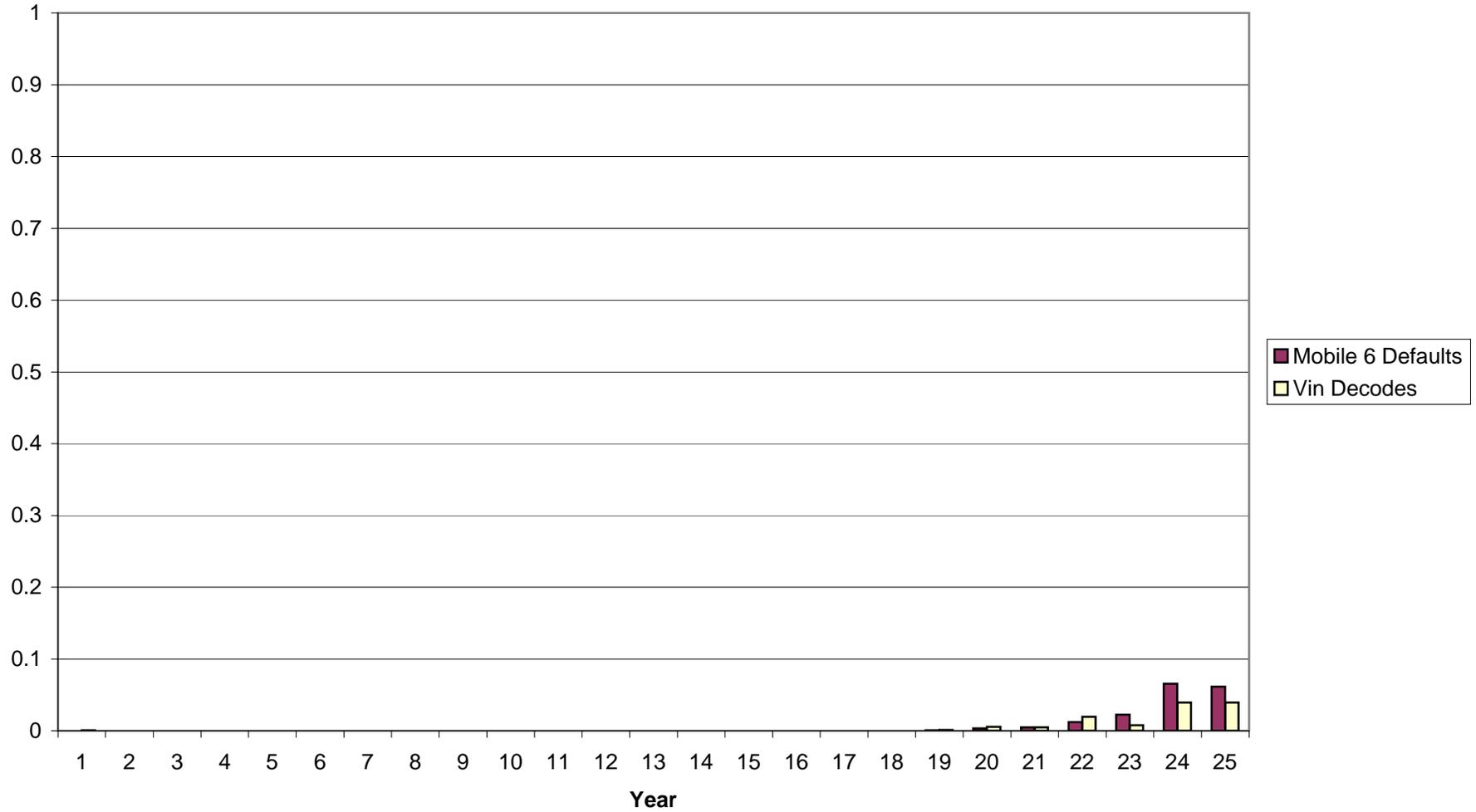
ATTACHMENT 8

Diesel Sales Fractions Maryland Jurisdictions Combined Vehicle Type = LDT1



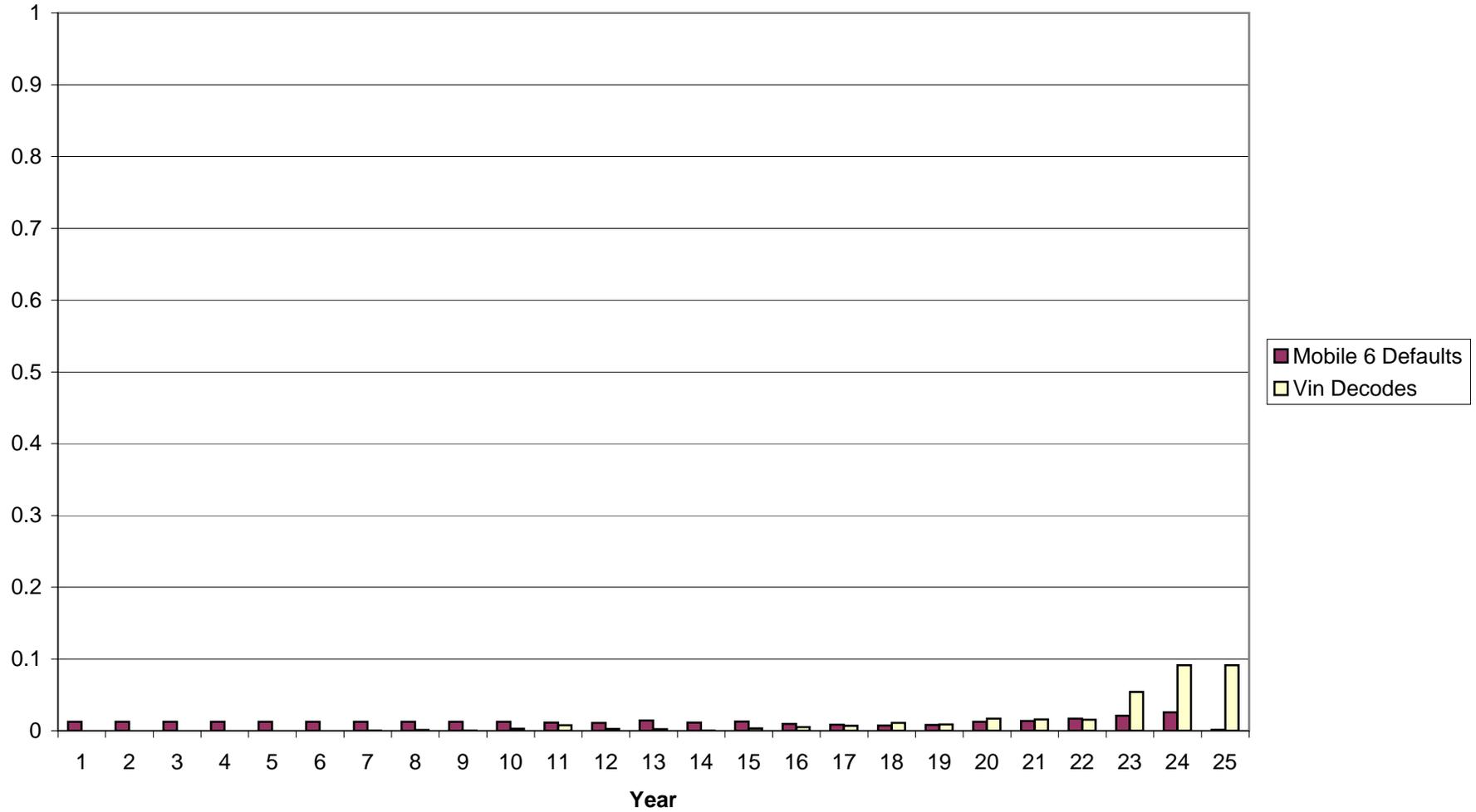
ATTACHMENT 8

Diesel Sales Fractions Maryland Jurisdictions Combined Vehicle Type = LDT2



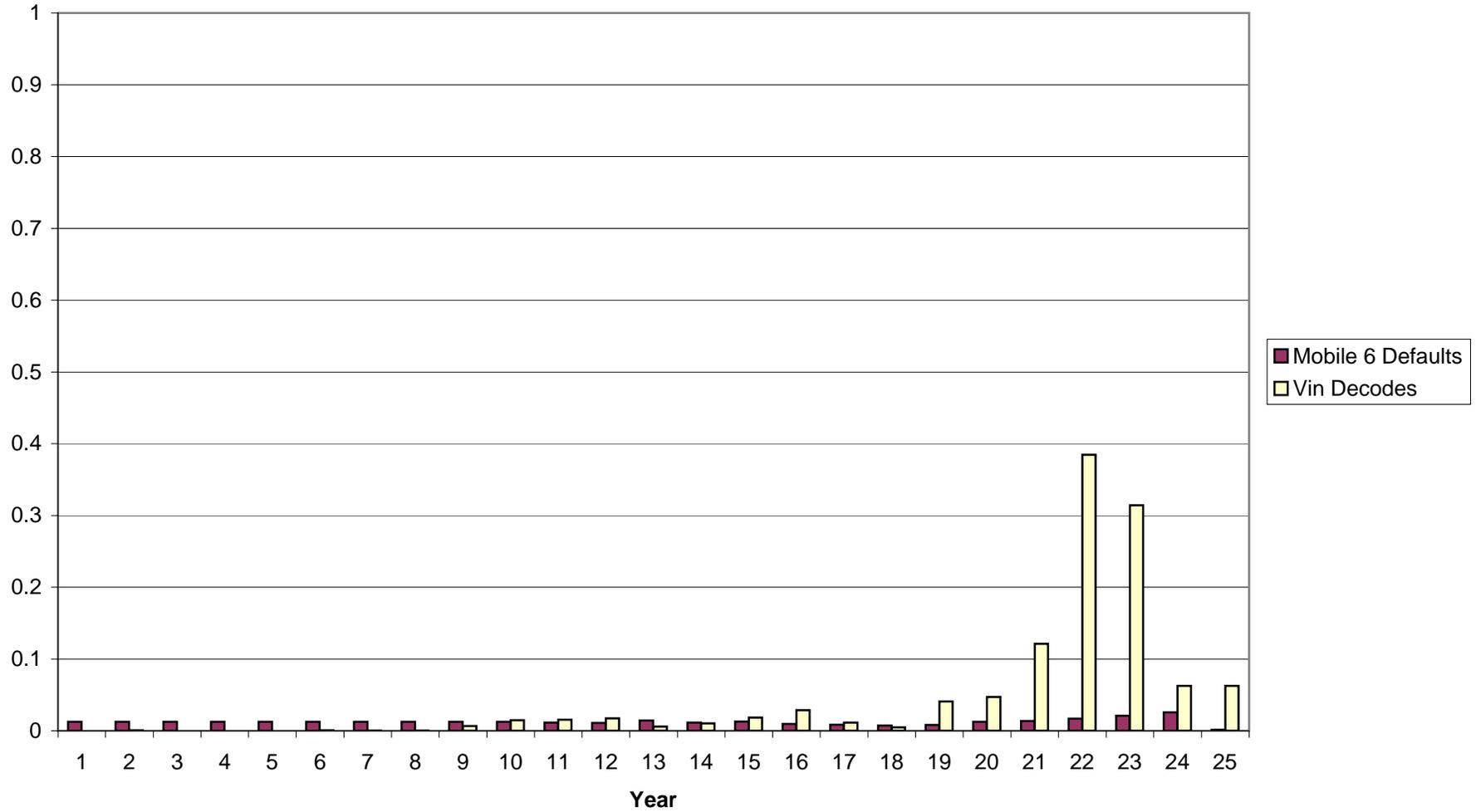
ATTACHMENT 8

Diesel Sales Fractions Maryland Jurisdictions Combined Vehicle Type = LDT3



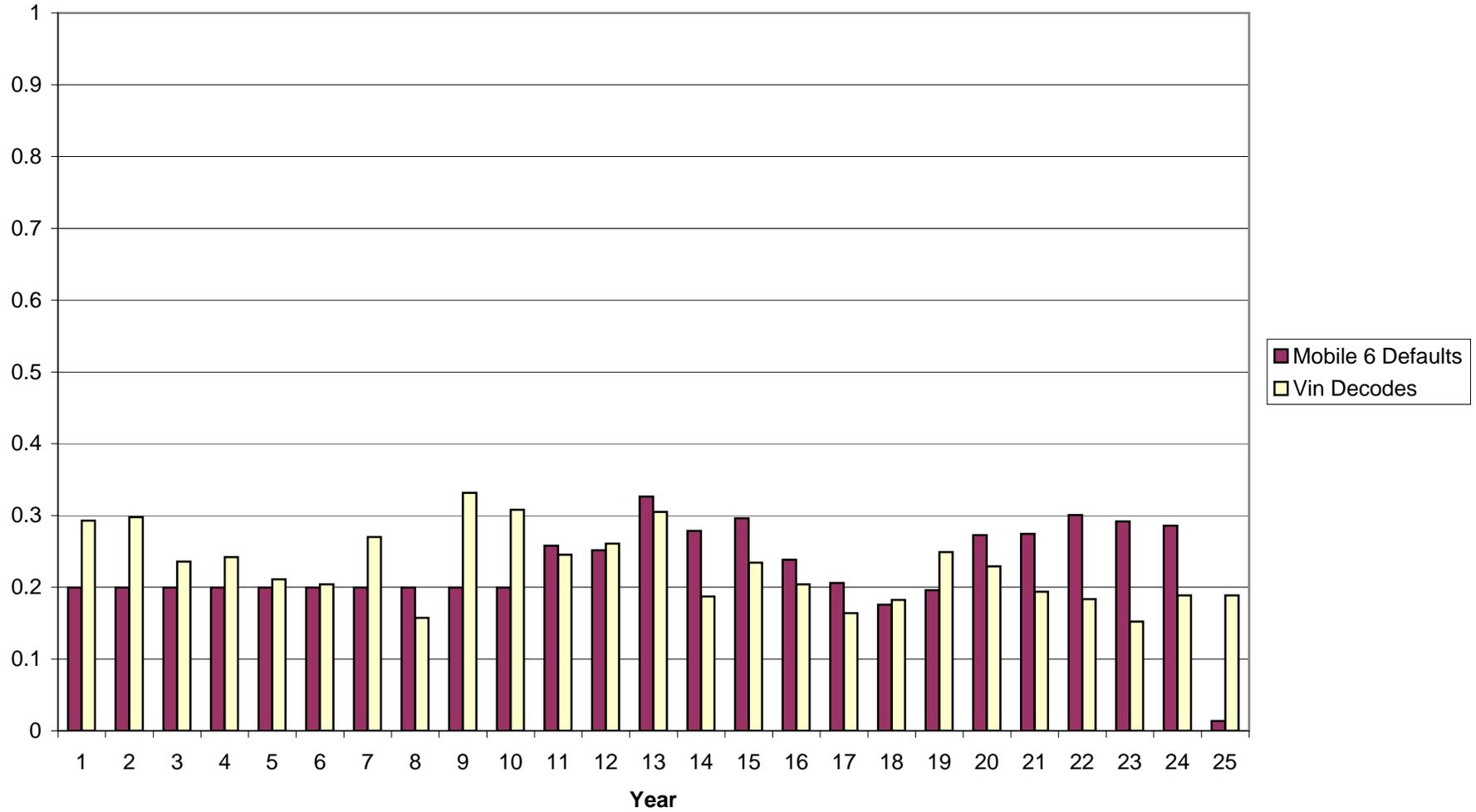
ATTACHMENT 8

Diesel Sales Fractions Maryland Jurisdictions Combined Vehicle Type = LDT4



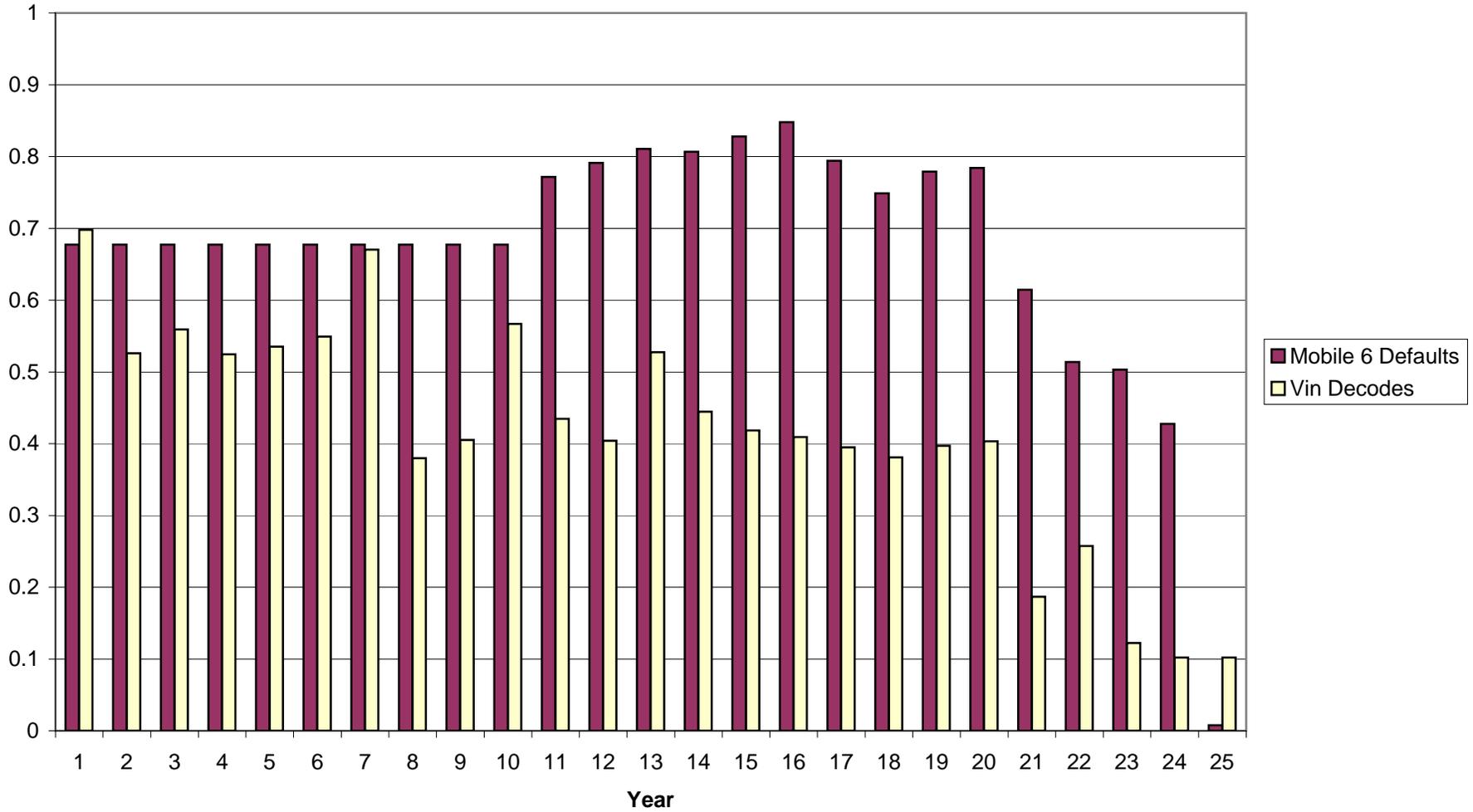
ATTACHMENT 8

Diesel Sales Fractions Maryland Jurisdictions Combined Vehicle Type = HDV2B



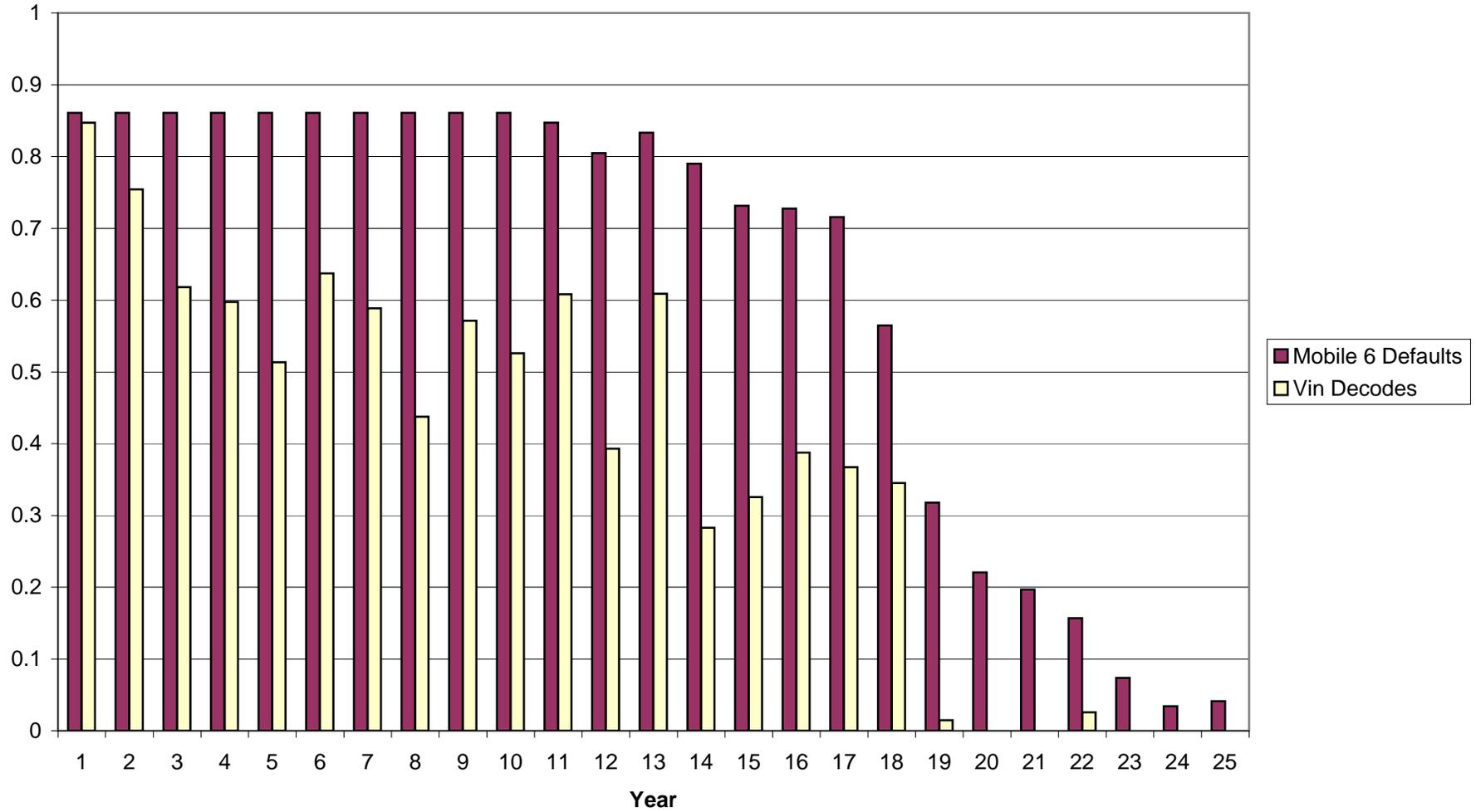
ATTACHMENT 8

Diesel Sales Fractions Maryland Jurisdictions Combined Vehicle Type = HDV3



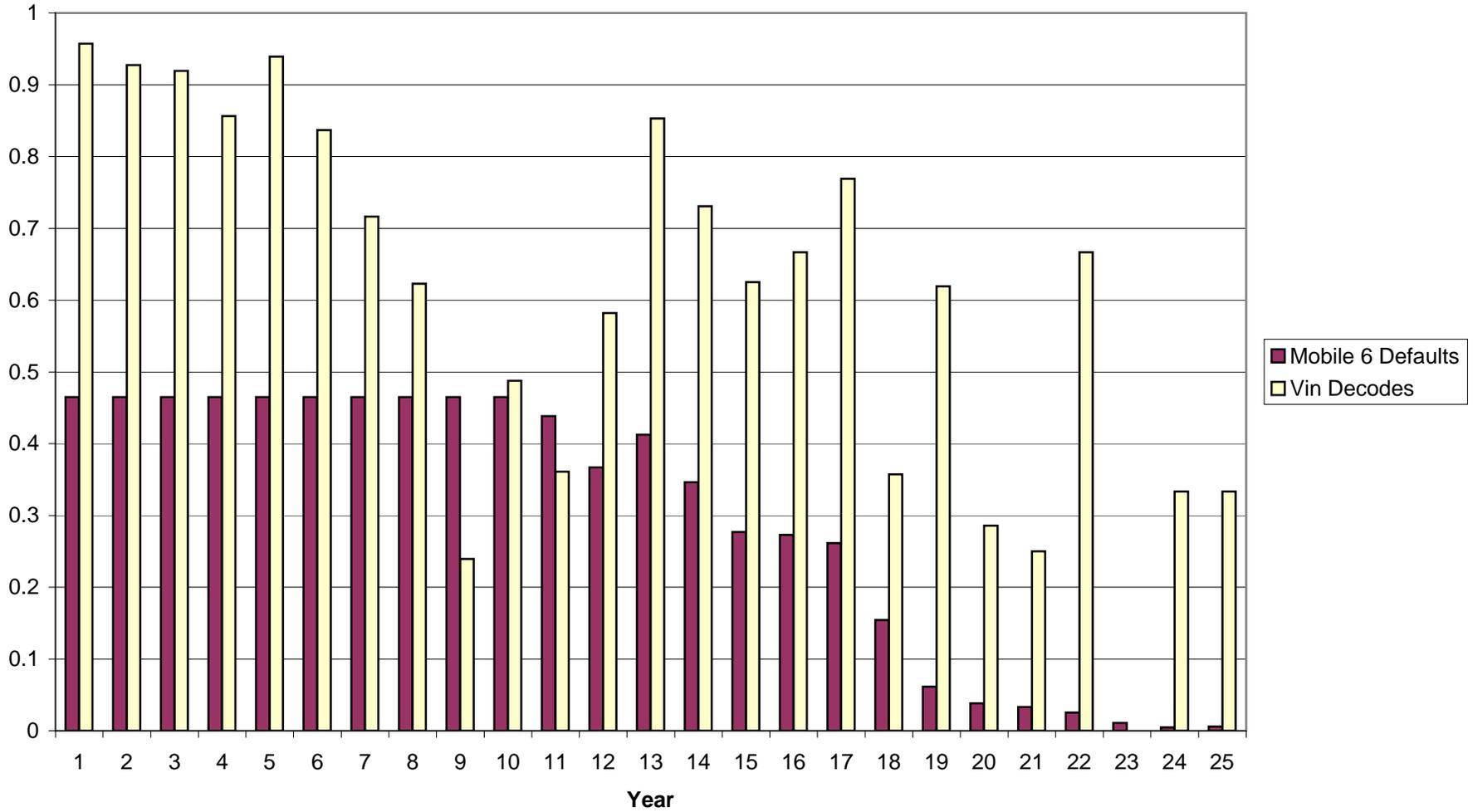
ATTACHMENT 8

Diesel Sales Fractions Maryland Jurisdictions Combined Vehicle Type = HDV4



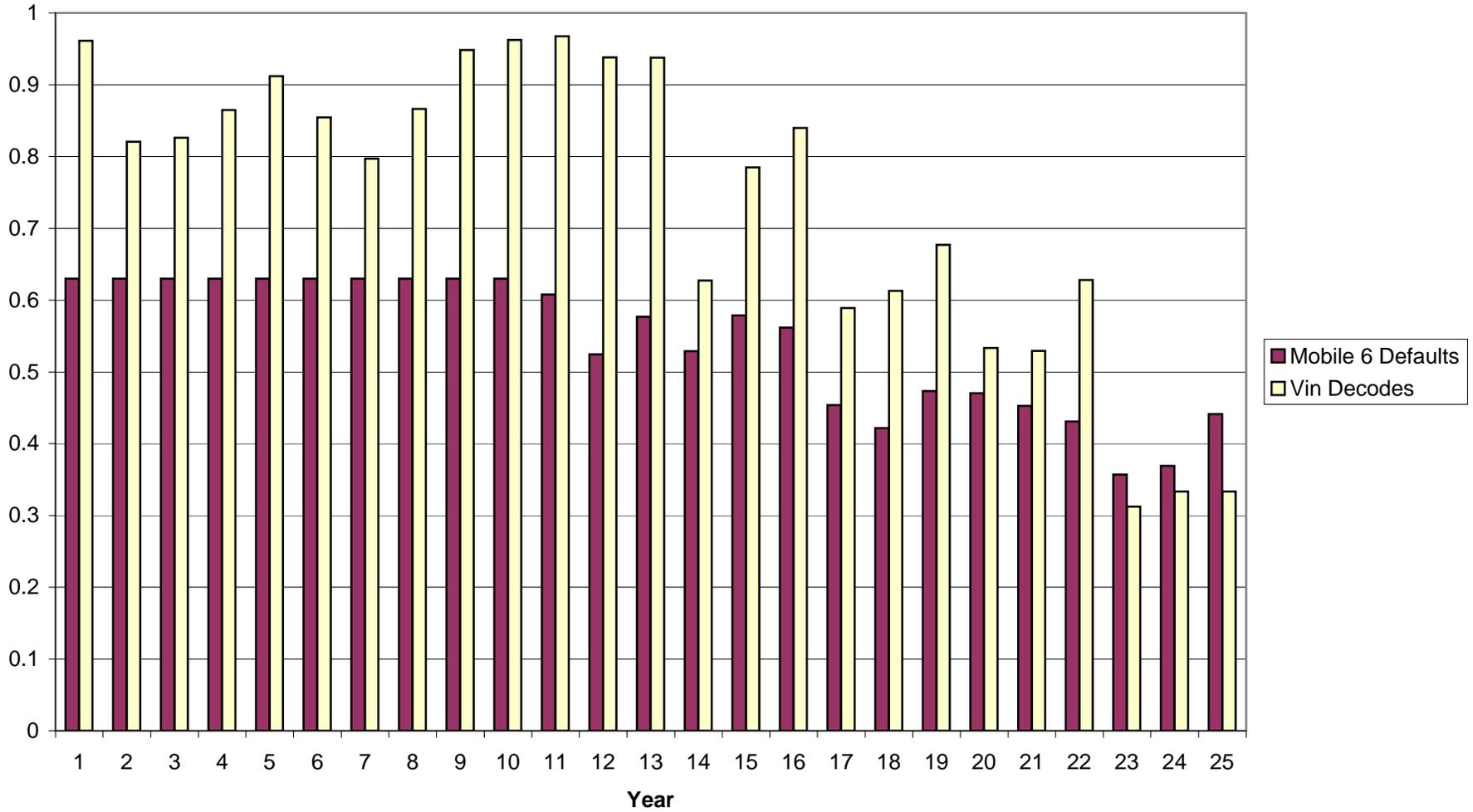
ATTACHMENT 8

Diesel Sales Fractions Maryland Jurisdictions Combined Vehicle Type = HDV5



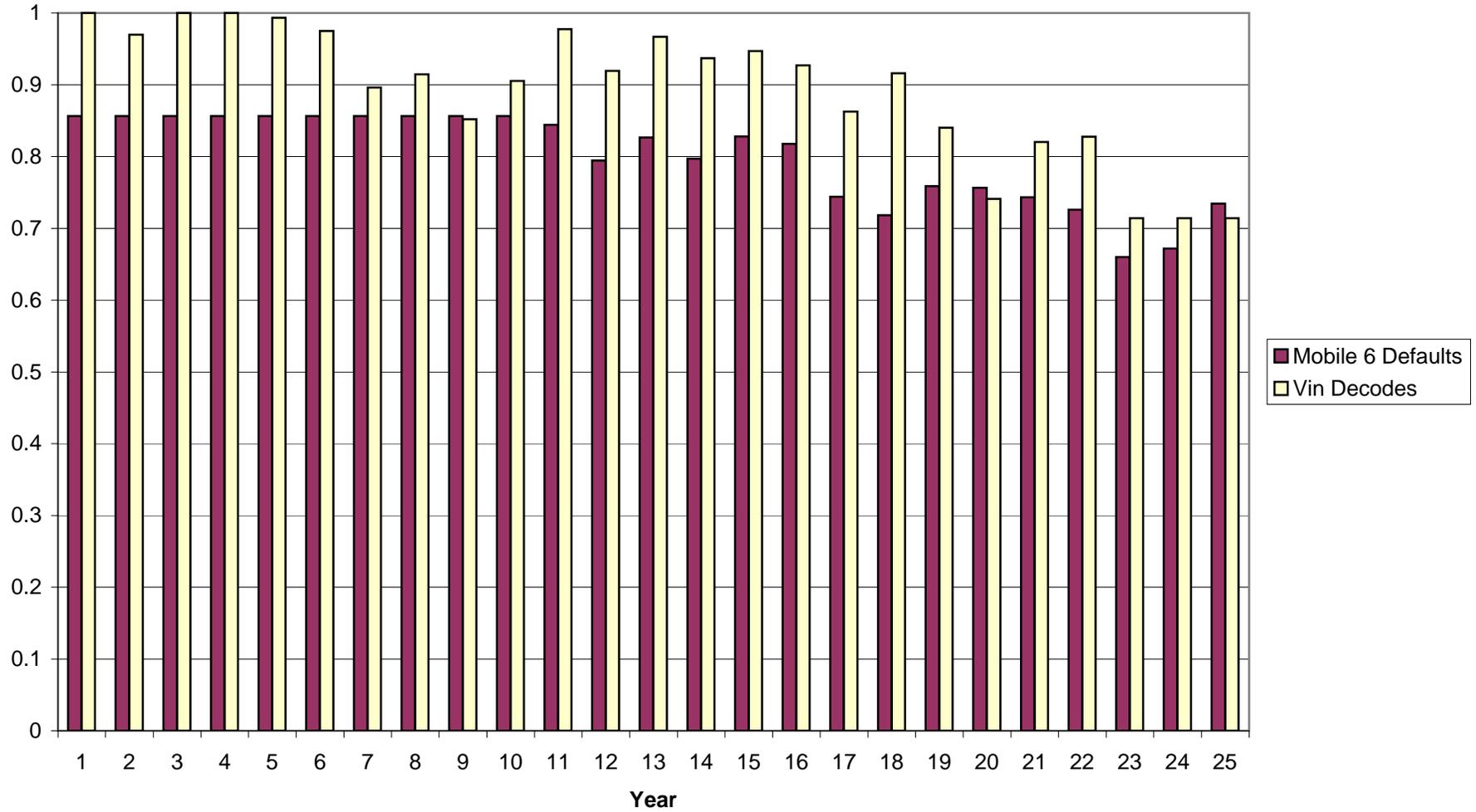
ATTACHMENT 8

Diesel Sales Fractions Maryland Jurisdictions Combined Vehicle Type = HDV6



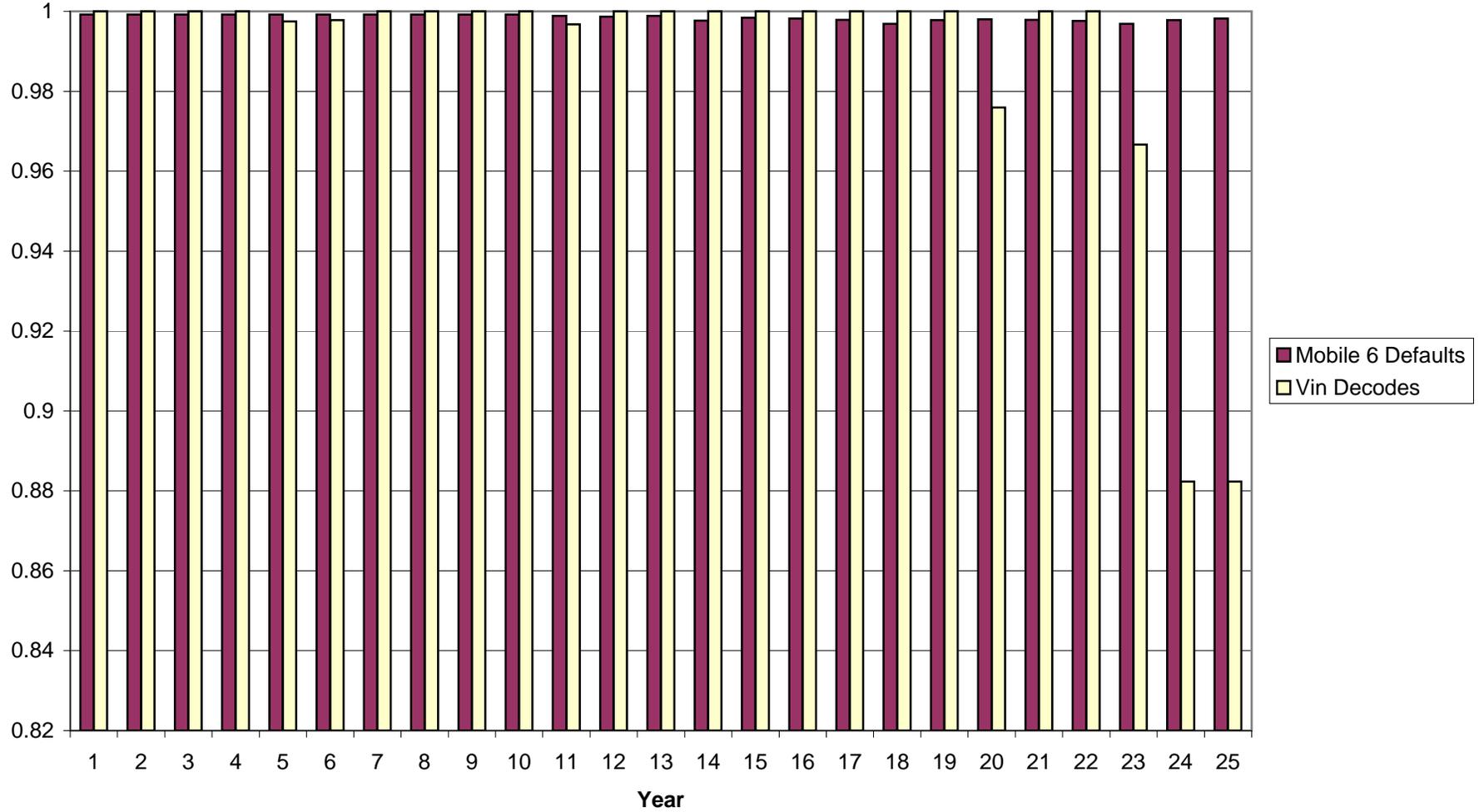
ATTACHMENT 8

**Diesel Sales Fractions
Maryland Jurisdictions Combined
Vehicle Type = HDV7**



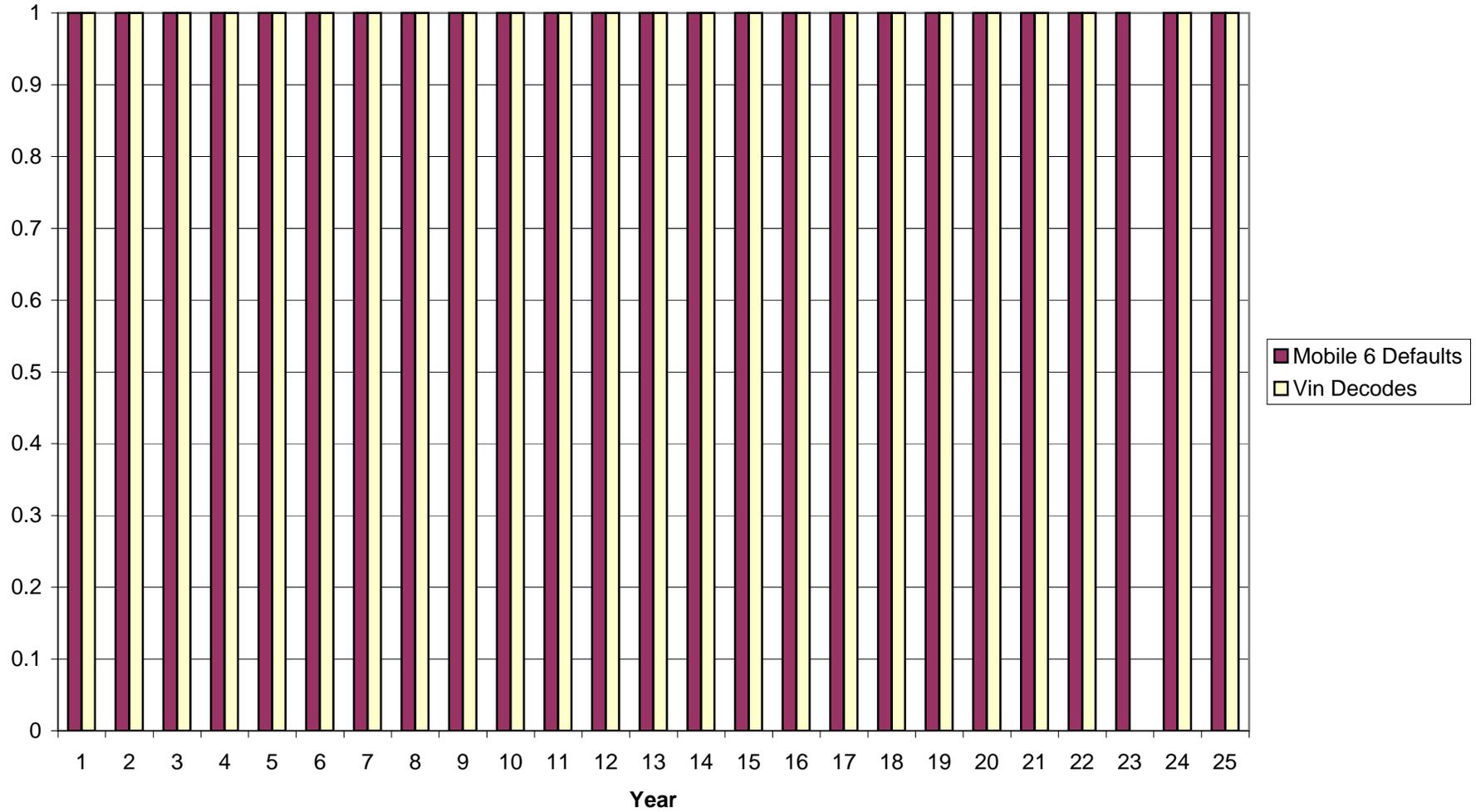
ATTACHMENT 8

**Diesel Sales Fractions
Maryland Jurisdictions Combined
Vehicle Type = HDV8A**



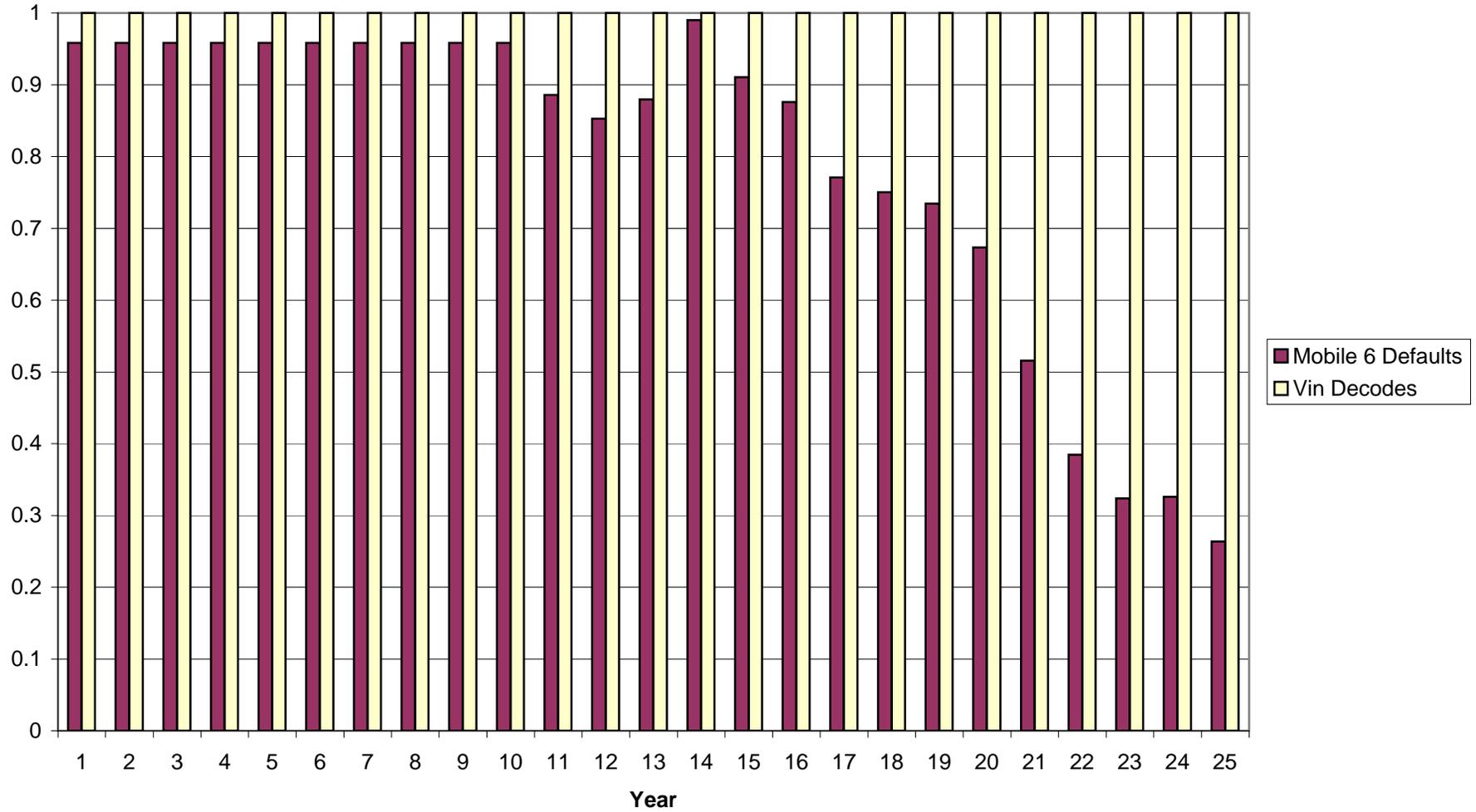
ATTACHMENT 8

Diesel Sales Fractions Maryland Jurisdictions Combined Vehicle Type = HDV8B



ATTACHMENT 8

**Diesel Sales Fractions
Maryland Jurisdictions Combined
Vehicle Type = HDBS**



ATTACHMENT 9

chs. rdt

REG DIST

* LDV	1	0.0527	0.0721	0.0801	0.0874	0.0798	0.0850	0.0693	0.0622	0.0613	0.0496
		0.0552	0.0452	0.0361	0.0300	0.0249	0.0206	0.0171	0.0131	0.0106	0.0073
		0.0058	0.0040	0.0024	0.0013	0.0270					
* LDT1	2	0.0817	0.0369	0.0949	0.0896	0.0843	0.0343	0.0501	0.0316	0.0461	0.0659
		0.0198	0.0066	0.0105	0.0158	0.0184	0.0092	0.0290	0.0711	0.0606	0.0343
		0.0145	0.0145	0.0105	0.0040	0.0659					
* LDT2	3	0.0639	0.0975	0.0922	0.1009	0.0804	0.0817	0.0624	0.0633	0.0562	0.0449
		0.0416	0.0411	0.0297	0.0194	0.0190	0.0156	0.0147	0.0159	0.0118	0.0102
		0.0058	0.0049	0.0030	0.0024	0.0214					
* LDT3	4	0.0621	0.1228	0.1164	0.1061	0.0820	0.0678	0.0748	0.0444	0.0403	0.0375
		0.0454	0.0384	0.0223	0.0172	0.0107	0.0166	0.0160	0.0129	0.0096	0.0084
		0.0061	0.0052	0.0022	0.0017	0.0332					
* LDT4	5	0.0884	0.1868	0.1297	0.0759	0.0914	0.0820	0.0998	0.0608	0.0521	0.0239
		0.0148	0.0094	0.0101	0.0040	0.0064	0.0084	0.0104	0.0155	0.0094	0.0034
		0.0034	0.0010	0.0020	0.0007	0.0105					
* HDV2B	6	0.0577	0.1114	0.1144	0.0863	0.0776	0.0675	0.0555	0.0248	0.0522	0.0376
		0.0457	0.0271	0.0246	0.0158	0.0141	0.0173	0.0238	0.0173	0.0136	0.0211
		0.0123	0.0108	0.0083	0.0035	0.0596					
* HDV3	7	0.1103	0.0948	0.1016	0.0968	0.0803	0.0600	0.0765	0.0203	0.0310	0.0213
		0.0281	0.0155	0.0203	0.0145	0.0029	0.0281	0.0155	0.0165	0.0223	0.0310
		0.0203	0.0097	0.0068	0.0058	0.0699					
* HDV4	8	0.0275	0.0614	0.0826	0.0826	0.0508	0.0572	0.0656	0.0424	0.0572	0.0424
		0.0593	0.0551	0.0466	0.0275	0.0169	0.0402	0.0593	0.0318	0.0085	0.0106
		0.0148	0.0127	0.0064	0.0021	0.0385					
* HDV5	9	0.0583	0.1020	0.1603	0.0947	0.0510	0.0656	0.1312	0.0437	0.0364	0.0073
		0.0437	0.0510	0.0219	0.0073	0.0291	0.0146	0.0000	0.0219	0.0219	0.0146
		0.0000	0.0000	0.0073	0.0000	0.0163					
* HDV6	10	0.0527	0.0832	0.0832	0.0610	0.0610	0.1054	0.0832	0.0499	0.0499	0.0638
		0.0388	0.0305	0.0111	0.0222	0.0111	0.0194	0.0194	0.0166	0.0194	0.0277
		0.0166	0.0222	0.0028	0.0028	0.0455					
* HDV7	11	0.0553	0.0246	0.0307	0.0307	0.0645	0.0614	0.0338	0.0430	0.0369	0.0215
		0.0645	0.0276	0.0430	0.0369	0.0369	0.0430	0.0461	0.0369	0.0614	0.0369
		0.0215	0.0215	0.0000	0.0061	0.1153					
* HDV8A	12	0.0962	0.0434	0.0811	0.0189	0.0547	0.0811	0.0981	0.0679	0.0189	0.0321
		0.0453	0.0283	0.0340	0.0132	0.0358	0.0302	0.0302	0.0283	0.0283	0.0321
		0.0132	0.0113	0.0057	0.0038	0.0681					
* HDV8B	13	0.0470	0.0352	0.0117	0.0235	0.0470	0.0352	0.0587	0.1175	0.0705	0.0705
		0.0352	0.0352	0.0235	0.0000	0.0117	0.0235	0.0235	0.1057	0.0705	0.0470
		0.0352	0.0000	0.0000	0.0117	0.0601					
* HDBS	14	0.0000	0.0876	0.0723	0.0609	0.0571	0.0685	0.0799	0.0876	0.1485	0.0190
		0.0228	0.0190	0.0419	0.0152	0.0190	0.0152	0.0190	0.0114	0.0114	0.0000
		0.0076	0.0076	0.0000	0.0038	0.1244					
* HDBT	15	0.0747	0.0598	0.0374	0.1270	0.0971	0.1270	0.0897	0.0523	0.0747	0.0448
		0.0523	0.0374	0.0374	0.0299	0.0075	0.0000	0.0000	0.0000	0.0149	0.0000
		0.0000	0.0000	0.0000	0.0000	0.0362					
* MC	16	0.1133	0.1136	0.1398	0.1025	0.0880	0.0670	0.0530	0.0387	0.0288	0.0300
		0.0239	0.0218	0.0160	0.0128	0.0102	0.0119	0.0137	0.0076	0.0055	0.0122
		0.0096	0.0070	0.0035	0.0038	0.0657					

ATTACHMENT 9

cl vt. rdt

REG DIST

* LDV	1	0.0534	0.0728	0.0767	0.0819	0.0775	0.0832	0.0714	0.0635	0.0608	0.0490
		0.0542	0.0429	0.0371	0.0296	0.0271	0.0221	0.0178	0.0143	0.0120	0.0097
		0.0075	0.0039	0.0029	0.0015	0.0270					
* LDT1	2	0.0789	0.0379	0.0915	0.0899	0.0805	0.0394	0.0537	0.0473	0.0363	0.0537
		0.0174	0.0110	0.0205	0.0158	0.0126	0.0221	0.0363	0.0679	0.0537	0.0379
		0.0142	0.0095	0.0016	0.0047	0.0659					
* LDT2	3	0.0625	0.0919	0.0912	0.0935	0.0785	0.0834	0.0673	0.0641	0.0558	0.0456
		0.0427	0.0391	0.0311	0.0214	0.0209	0.0164	0.0172	0.0172	0.0125	0.0102
		0.0059	0.0045	0.0032	0.0021	0.0214					
* LDT3	4	0.0609	0.1189	0.1119	0.0990	0.0792	0.0738	0.0663	0.0463	0.0413	0.0410
		0.0458	0.0405	0.0261	0.0197	0.0137	0.0187	0.0150	0.0137	0.0107	0.0094
		0.0062	0.0053	0.0019	0.0015	0.0332					
* LDT4	5	0.0687	0.1880	0.1424	0.0782	0.0777	0.0737	0.0988	0.0642	0.0541	0.0216
		0.0251	0.0175	0.0150	0.0075	0.0060	0.0095	0.0115	0.0155	0.0050	0.0030
		0.0020	0.0020	0.0015	0.0010	0.0105					
* HDV2B	6	0.0661	0.1176	0.1138	0.0985	0.0689	0.0742	0.0580	0.0246	0.0493	0.0380
		0.0433	0.0287	0.0193	0.0184	0.0109	0.0140	0.0231	0.0175	0.0100	0.0175
		0.0128	0.0081	0.0056	0.0022	0.0596					
* HDV3	7	0.1163	0.1092	0.1106	0.0737	0.0893	0.0610	0.0539	0.0298	0.0326	0.0128
		0.0383	0.0284	0.0156	0.0213	0.0043	0.0156	0.0156	0.0354	0.0213	0.0170
		0.0057	0.0085	0.0043	0.0099	0.0699					
* HDV4	8	0.0194	0.0453	0.1068	0.0550	0.0453	0.0550	0.0777	0.0421	0.0518	0.0518
		0.0550	0.0745	0.0129	0.0324	0.0194	0.0486	0.0518	0.0324	0.0194	0.0032
		0.0259	0.0194	0.0097	0.0065	0.0385					
* HDV5	9	0.1297	0.1730	0.1189	0.0757	0.0216	0.0649	0.1081	0.0216	0.0649	0.0108
		0.0649	0.0649	0.0000	0.0216	0.0000	0.0216	0.0000	0.0108	0.0000	0.0000
		0.0108	0.0000	0.0000	0.0000	0.0163					
* HDV6	10	0.0723	0.1157	0.0916	0.1012	0.0627	0.1061	0.0868	0.0386	0.0386	0.0193
		0.0386	0.0193	0.0241	0.0193	0.0096	0.0193	0.0289	0.0096	0.0096	0.0193
		0.0096	0.0096	0.0048	0.0000	0.0455					
* HDV7	11	0.0405	0.0608	0.0135	0.0068	0.0338	0.0405	0.0203	0.0203	0.0203	0.0068
		0.0405	0.0068	0.0338	0.0675	0.0405	0.0675	0.0945	0.0743	0.0473	0.0405
		0.0405	0.0405	0.0135	0.0135	0.1153					
* HDV8A	12	0.0655	0.0619	0.0619	0.0218	0.0692	0.0946	0.0182	0.0473	0.0364	0.0692
		0.0692	0.0546	0.0328	0.0255	0.0400	0.0182	0.0182	0.0255	0.0328	0.0291
		0.0291	0.0036	0.0073	0.0000	0.0681					
* HDV8B	13	0.1022	0.2145	0.0511	0.0409	0.0409	0.0306	0.0817	0.0306	0.0409	0.0511
		0.0511	0.0102	0.0204	0.0000	0.0000	0.0204	0.0409	0.0511	0.0511	0.0102
		0.0000	0.0000	0.0000	0.0000	0.0601					
* HBBS	14	0.0000	0.0898	0.0337	0.0112	0.0393	0.0393	0.0449	0.0505	0.0617	0.0617
		0.1684	0.0617	0.0617	0.0617	0.0225	0.0112	0.0168	0.0112	0.0112	0.0056
		0.0112	0.0000	0.0000	0.0000	0.1244					
* HDBT	15	0.1042	0.1042	0.1823	0.0521	0.1042	0.0521	0.0521	0.0260	0.0260	0.0781
		0.0000	0.0260	0.0260	0.0781	0.0000	0.0000	0.0000	0.0260	0.0000	0.0000
		0.0000	0.0000	0.0000	0.0260	0.0362					
* MC	16	0.1136	0.1257	0.1220	0.1018	0.0800	0.0683	0.0509	0.0368	0.0279	0.0335
		0.0242	0.0174	0.0174	0.0150	0.0089	0.0137	0.0097	0.0113	0.0077	0.0150
		0.0109	0.0109	0.0061	0.0057	0.0657					

ATTACHMENT 9

fred. rdt

REG DIST

* LDV	1	0.0540	0.0754	0.0798	0.0863	0.0817	0.0858	0.0745	0.0649	0.0608	0.0517
		0.0538	0.0423	0.0347	0.0276	0.0236	0.0199	0.0160	0.0112	0.0101	0.0070
		0.0048	0.0038	0.0022	0.0013	0.0270					
* LDT1	2	0.0517	0.0229	0.0828	0.0916	0.0872	0.0569	0.0584	0.0473	0.0628	0.0746
		0.0192	0.0207	0.0089	0.0148	0.0111	0.0118	0.0370	0.0503	0.0517	0.0318
		0.0111	0.0126	0.0089	0.0081	0.0659					
* LDT2	3	0.0665	0.0985	0.0930	0.0974	0.0837	0.0855	0.0713	0.0682	0.0570	0.0447
		0.0422	0.0392	0.0260	0.0191	0.0178	0.0142	0.0146	0.0124	0.0092	0.0071
		0.0045	0.0033	0.0018	0.0014	0.0214					
* LDT3	4	0.0578	0.1099	0.1077	0.0926	0.0795	0.0766	0.0701	0.0440	0.0404	0.0407
		0.0497	0.0396	0.0233	0.0208	0.0130	0.0166	0.0191	0.0159	0.0147	0.0143
		0.0089	0.0053	0.0045	0.0017	0.0332					
* LDT4	5	0.0880	0.1621	0.1180	0.0834	0.0765	0.0750	0.1107	0.0617	0.0536	0.0232
		0.0159	0.0192	0.0126	0.0104	0.0044	0.0143	0.0157	0.0201	0.0135	0.0035
		0.0026	0.0035	0.0013	0.0004	0.0105					
* HDV2B	6	0.0605	0.1074	0.1037	0.0843	0.0853	0.0681	0.0681	0.0292	0.0629	0.0418
		0.0455	0.0262	0.0202	0.0140	0.0122	0.0182	0.0223	0.0160	0.0098	0.0153
		0.0120	0.0087	0.0052	0.0033	0.0596					
* HDV3	7	0.1416	0.0890	0.0726	0.0905	0.0818	0.0741	0.0608	0.0235	0.0419	0.0225
		0.0430	0.0210	0.0205	0.0097	0.0112	0.0174	0.0194	0.0261	0.0169	0.0199
		0.0107	0.0061	0.0066	0.0031	0.0699					
* HDV4	8	0.0728	0.0751	0.0659	0.0647	0.0716	0.0751	0.0774	0.0324	0.0763	0.0404
		0.0474	0.0612	0.0312	0.0324	0.0208	0.0185	0.0289	0.0289	0.0127	0.0092
		0.0081	0.0069	0.0012	0.0023	0.0385					
* HDV5	9	0.1242	0.1340	0.1013	0.0817	0.0784	0.0980	0.1307	0.0196	0.0556	0.0294
		0.0523	0.0196	0.0098	0.0098	0.0033	0.0098	0.0065	0.0000	0.0065	0.0000
		0.0065	0.0033	0.0033	0.0000	0.0163					
* HDV6	10	0.0984	0.1042	0.0549	0.0836	0.0904	0.0801	0.0881	0.0641	0.0458	0.0217
		0.0572	0.0206	0.0298	0.0126	0.0160	0.0137	0.0103	0.0114	0.0103	0.0103
		0.0126	0.0069	0.0046	0.0069	0.0455					
* HDV7	11	0.0622	0.0249	0.0355	0.0213	0.0338	0.0338	0.0266	0.0266	0.0320	0.0213
		0.0409	0.0497	0.0302	0.0391	0.0426	0.0586	0.0497	0.0604	0.0711	0.0391
		0.0426	0.0231	0.0142	0.0053	0.1153					
* HDV8A	12	0.0928	0.0526	0.0361	0.0227	0.0691	0.0515	0.0783	0.0381	0.0505	0.0474
		0.0732	0.0546	0.0340	0.0237	0.0175	0.0350	0.0289	0.0392	0.0247	0.0165
		0.0227	0.0134	0.0062	0.0031	0.0681					
* HDV8B	13	0.2251	0.0429	0.0465	0.0250	0.0750	0.0500	0.0500	0.0357	0.0250	0.0357
		0.0250	0.0250	0.0143	0.0107	0.0036	0.0107	0.0643	0.0679	0.0643	0.0250
		0.0071	0.0107	0.0000	0.0000	0.0601					
* HBBS	14	0.0062	0.0000	0.0062	0.0186	0.0248	0.0062	0.0311	0.0373	0.0062	0.1987
		0.2484	0.0559	0.0311	0.0124	0.0311	0.0559	0.0124	0.0062	0.0435	0.0311
		0.0062	0.0062	0.0000	0.0000	0.1244					
* HDBT	15	0.0695	0.0868	0.0608	0.1042	0.0521	0.0174	0.0174	0.0087	0.0347	0.0521
		0.0087	0.1910	0.1129	0.0868	0.0087	0.0087	0.0174	0.0174	0.0087	0.0000
		0.0000	0.0000	0.0000	0.0000	0.0362					
* MC	16	0.1046	0.1111	0.1253	0.0991	0.0809	0.0664	0.0486	0.0417	0.0295	0.0322
		0.0226	0.0187	0.0200	0.0170	0.0140	0.0106	0.0111	0.0136	0.0113	0.0155
		0.0118	0.0092	0.0097	0.0099	0.0657					

ATTACHMENT 9

mtg. rdt

REG DIST

* LDV	1	0.0662	0.0752	0.0815	0.0829	0.0809	0.0852	0.0738	0.0653	0.0610	0.0515
		0.0538	0.0426	0.0337	0.0279	0.0225	0.0201	0.0140	0.0105	0.0085	0.0059
		0.0042	0.0029	0.0019	0.0011	0.0270					
* LDT1	2	0.0439	0.0241	0.1143	0.1375	0.1251	0.0662	0.0736	0.0676	0.0754	0.0696
		0.0186	0.0100	0.0094	0.0108	0.0098	0.0074	0.0128	0.0168	0.0160	0.0120
		0.0032	0.0044	0.0032	0.0022	0.0659					
* LDT2	3	0.0871	0.1194	0.1001	0.1034	0.0904	0.0896	0.0694	0.0639	0.0540	0.0445
		0.0405	0.0315	0.0228	0.0141	0.0123	0.0088	0.0071	0.0063	0.0048	0.0037
		0.0020	0.0014	0.0009	0.0006	0.0214					
* LDT3	4	0.1060	0.1350	0.1134	0.1028	0.0910	0.0854	0.0719	0.0414	0.0349	0.0308
		0.0333	0.0283	0.0165	0.0118	0.0091	0.0118	0.0108	0.0089	0.0074	0.0065
		0.0035	0.0037	0.0018	0.0008	0.0332					
* LDT4	5	0.1025	0.1698	0.1258	0.0859	0.0888	0.0785	0.1049	0.0590	0.0569	0.0221
		0.0218	0.0182	0.0085	0.0059	0.0039	0.0086	0.0079	0.0097	0.0047	0.0024
		0.0016	0.0009	0.0006	0.0003	0.0105					
* HDV2B	6	0.0727	0.1096	0.1182	0.0974	0.0963	0.0825	0.0571	0.0330	0.0505	0.0367
		0.0435	0.0254	0.0161	0.0120	0.0111	0.0142	0.0159	0.0107	0.0077	0.0108
		0.0072	0.0056	0.0034	0.0027	0.0596					
* HDV3	7	0.0938	0.1019	0.0986	0.0796	0.0711	0.0825	0.0754	0.0249	0.0443	0.0230
		0.0365	0.0268	0.0262	0.0107	0.0120	0.0175	0.0207	0.0223	0.0210	0.0194
		0.0068	0.0081	0.0026	0.0045	0.0699					
* HDV4	8	0.0629	0.0769	0.0715	0.0724	0.0733	0.1004	0.0932	0.0452	0.0751	0.0348
		0.0511	0.0461	0.0249	0.0172	0.0222	0.0244	0.0222	0.0186	0.0081	0.0036
		0.0041	0.0050	0.0036	0.0045	0.0385					
* HDV5	9	0.1354	0.1859	0.1500	0.0889	0.0664	0.0757	0.1182	0.0266	0.0239	0.0173
		0.0173	0.0226	0.0159	0.0106	0.0066	0.0040	0.0027	0.0027	0.0080	0.0027
		0.0013	0.0013	0.0000	0.0000	0.0163					
* HDV6	10	0.0883	0.0718	0.0677	0.0541	0.0630	0.0931	0.0814	0.0602	0.0718	0.0383
		0.0588	0.0267	0.0308	0.0328	0.0178	0.0260	0.0164	0.0130	0.0130	0.0062
		0.0089	0.0062	0.0034	0.0048	0.0455					
* HDV7	11	0.0665	0.0384	0.0307	0.0153	0.0562	0.0550	0.0447	0.0435	0.0601	0.0332
		0.0422	0.0384	0.0307	0.0332	0.0332	0.0575	0.0435	0.0473	0.0384	0.0217
		0.0307	0.0179	0.0013	0.0051	0.1153					
* HDV8A	12	0.0769	0.0518	0.0322	0.0573	0.0628	0.0832	0.0659	0.0439	0.0486	0.0533
		0.0533	0.0329	0.0353	0.0188	0.0322	0.0290	0.0267	0.0447	0.0220	0.0141
		0.0227	0.0086	0.0110	0.0047	0.0681					
* HDV8B	13	0.0965	0.0398	0.1817	0.0114	0.0256	0.0852	0.0596	0.0596	0.1193	0.0312
		0.0199	0.0170	0.0170	0.0028	0.0199	0.0142	0.0540	0.0426	0.0199	0.0114
		0.0057	0.0057	0.0000	0.0000	0.0601					
* HDBS	14	0.0029	0.0058	0.0058	0.0629	0.0585	0.0117	0.0877	0.0249	0.0058	0.0497
		0.1389	0.0336	0.0380	0.0322	0.0278	0.0351	0.0102	0.0161	0.0599	0.0541
		0.0117	0.0380	0.0453	0.0190	0.1244					
* HDBT	15	0.0086	0.0172	0.0194	0.0559	0.0581	0.0409	0.0129	0.0172	0.0925	0.0323
		0.1484	0.0237	0.0301	0.0409	0.0581	0.0065	0.0430	0.0151	0.2130	0.0000
		0.0022	0.0258	0.0022	0.0000	0.0362					
* MC	16	0.0975	0.0999	0.1264	0.1057	0.0886	0.0686	0.0504	0.0431	0.0295	0.0306
		0.0277	0.0246	0.0188	0.0166	0.0126	0.0122	0.0122	0.0120	0.0107	0.0118
		0.0112	0.0073	0.0080	0.0082	0.0657					

ATTACHMENT 9

pg. rdt

REG DIST

* LDV	1	0.0454	0.0615	0.0670	0.0744	0.0733	0.0808	0.0686	0.0637	0.0645	0.0572
		0.0620	0.0523	0.0434	0.0361	0.0287	0.0260	0.0198	0.0148	0.0115	0.0085
		0.0060	0.0039	0.0023	0.0013	0.0270					
* LDT1	2	0.0334	0.0228	0.0896	0.1100	0.1043	0.0592	0.0599	0.0587	0.0638	0.0854
		0.0226	0.0133	0.0152	0.0172	0.0135	0.0128	0.0238	0.0427	0.0302	0.0253
		0.0108	0.0108	0.0052	0.0037	0.0659					
* LDT2	3	0.0543	0.0894	0.0806	0.0931	0.0834	0.0838	0.0668	0.0673	0.0618	0.0552
		0.0532	0.0446	0.0326	0.0227	0.0199	0.0156	0.0137	0.0127	0.0095	0.0071
		0.0044	0.0033	0.0019	0.0016	0.0214					
* LDT3	4	0.0529	0.1103	0.1004	0.1051	0.0819	0.0840	0.0839	0.0493	0.0440	0.0397
		0.0401	0.0362	0.0228	0.0183	0.0134	0.0184	0.0171	0.0137	0.0100	0.0091
		0.0072	0.0049	0.0030	0.0012	0.0332					
* LDT4	5	0.0687	0.1426	0.1086	0.0795	0.1015	0.0957	0.1162	0.0989	0.0634	0.0212
		0.0173	0.0169	0.0094	0.0041	0.0052	0.0079	0.0099	0.0109	0.0051	0.0019
		0.0016	0.0014	0.0010	0.0005	0.0105					
* HDV2B	6	0.0717	0.0943	0.1027	0.0778	0.0844	0.0838	0.0629	0.0326	0.0525	0.0352
		0.0502	0.0298	0.0229	0.0173	0.0134	0.0174	0.0195	0.0138	0.0086	0.0155
		0.0145	0.0090	0.0064	0.0042	0.0596					
* HDV3	7	0.0868	0.0877	0.0691	0.0818	0.0790	0.0868	0.0766	0.0443	0.0573	0.0198
		0.0400	0.0263	0.0149	0.0108	0.0102	0.0133	0.0205	0.0279	0.0242	0.0149
		0.0124	0.0149	0.0056	0.0050	0.0699					
* HDV4	8	0.0613	0.0613	0.0789	0.0603	0.0754	0.1043	0.0971	0.0327	0.0692	0.0348
		0.0510	0.0647	0.0262	0.0193	0.0176	0.0255	0.0203	0.0265	0.0100	0.0079
		0.0083	0.0034	0.0031	0.0024	0.0385					
* HDV5	9	0.1241	0.1507	0.1051	0.0785	0.0823	0.1114	0.0823	0.0342	0.0317	0.0215
		0.0392	0.0241	0.0203	0.0152	0.0076	0.0063	0.0114	0.0101	0.0127	0.0038
		0.0051	0.0013	0.0013	0.0038	0.0163					
* HDV6	10	0.1718	0.0767	0.0609	0.0650	0.1003	0.0856	0.0599	0.0596	0.0479	0.0376
		0.0414	0.0195	0.0222	0.0161	0.0161	0.0154	0.0151	0.0086	0.0096	0.0096
		0.0065	0.0062	0.0017	0.0014	0.0455					
* HDV7	11	0.0383	0.0280	0.0310	0.0479	0.0450	0.0523	0.0663	0.0464	0.0457	0.0361
		0.0693	0.0229	0.0221	0.0302	0.0472	0.0663	0.0509	0.0450	0.0346	0.0206
		0.0206	0.0133	0.0022	0.0022	0.1153					
* HDV8A	12	0.1030	0.0424	0.1042	0.0428	0.0777	0.0890	0.0693	0.0564	0.0458	0.0451
		0.0485	0.0330	0.0205	0.0167	0.0125	0.0288	0.0261	0.0193	0.0193	0.0091
		0.0121	0.0061	0.0019	0.0023	0.0681					
* HDV8B	13	0.1219	0.0508	0.0203	0.0440	0.0491	0.1135	0.0542	0.0576	0.0847	0.0356
		0.0559	0.0203	0.0119	0.0102	0.0152	0.0288	0.0271	0.0339	0.0525	0.0135
		0.0305	0.0068	0.0000	0.0017	0.0601					
* HBBS	14	0.0029	0.0116	0.0029	0.0174	0.0116	0.0348	0.0377	0.0261	0.0203	0.0319
		0.2088	0.0580	0.0319	0.0290	0.0522	0.0754	0.0667	0.0493	0.0667	0.0203
		0.0087	0.0029	0.0058	0.0029	0.1244					
* HDBT	15	0.0270	0.0193	0.0540	0.0347	0.0193	0.0732	0.0424	0.0193	0.0116	0.0116
		0.0424	0.0193	0.0347	0.0116	0.0231	0.0077	0.3778	0.0386	0.0540	0.0116
		0.0193	0.0000	0.0077	0.0039	0.0362					
* MC	16	0.0990	0.1172	0.1245	0.1055	0.0941	0.0756	0.0573	0.0361	0.0306	0.0283
		0.0286	0.0176	0.0173	0.0150	0.0104	0.0092	0.0086	0.0082	0.0074	0.0129
		0.0098	0.0077	0.0071	0.0064	0.0657					

ATTACHMENT 9

md. dsf

DI SEL FRACTIONS :

0.0068	0.0036	0.0034	0.0043	0.0025	0.0022	0.0033	0.0022	0.0013	0.0020
0.0019	0.0004	0.0013	0.0023	0.0055	0.0010	0.0007	0.0004	0.0273	0.0153
0.0837	0.1125	0.1973	0.2298	0.2298					
0.0000	0.0000	0.0000	0.0000	0.0008	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0028	0.0000
0.0105	0.0000	0.0345	0.1395	0.1395					
0.0009	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0010	0.0054
0.0049	0.0197	0.0079	0.0393	0.0393					
0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0004	0.0012	0.0004	0.0028
0.0079	0.0025	0.0023	0.0005	0.0034	0.0050	0.0068	0.0109	0.0089	0.0169
0.0157	0.0154	0.0541	0.0915	0.0915					
0.0000	0.0009	0.0000	0.0000	0.0000	0.0007	0.0005	0.0004	0.0065	0.0146
0.0155	0.0172	0.0059	0.0102	0.0183	0.0288	0.0116	0.0047	0.0409	0.0471
0.1212	0.3846	0.3143	0.0625	0.0625					
0.2928	0.2976	0.2356	0.2420	0.2112	0.2042	0.2699	0.1572	0.3314	0.3080
0.2452	0.2608	0.3049	0.1870	0.2342	0.2041	0.1640	0.1822	0.2488	0.2290
0.1937	0.1835	0.1520	0.1887	0.1887					
0.6980	0.5259	0.5592	0.5244	0.5352	0.5490	0.6704	0.3799	0.4052	0.5667
0.4346	0.4041	0.5274	0.4444	0.4184	0.4094	0.3949	0.3810	0.3972	0.4031
0.1869	0.2574	0.1224	0.1020	0.1020					
0.8471	0.7544	0.6182	0.5973	0.5135	0.6372	0.5885	0.4375	0.5714	0.5261
0.6081	0.3929	0.6087	0.2828	0.3258	0.3876	0.3672	0.3452	0.0147	0.0000
0.0000	0.0256	0.0000	0.0000	0.0000					
0.9574	0.9273	0.9192	0.8563	0.9392	0.8368	0.7162	0.6230	0.2394	0.4878
0.3611	0.5818	0.8529	0.7308	0.6250	0.6667	0.7692	0.3571	0.6190	0.2857
0.2500	0.6667	0.0000	0.3333	0.3333					
0.9614	0.8207	0.8262	0.8649	0.9118	0.8547	0.7971	0.8663	0.9486	0.9623
0.9677	0.9380	0.9379	0.6271	0.7849	0.8396	0.5889	0.6129	0.6769	0.5333
0.5294	0.6279	0.3125	0.3333	0.3333					
1.0000	0.9697	1.0000	1.0000	0.9933	0.9748	0.8961	0.9147	0.8521	0.9053
0.9774	0.9192	0.9667	0.9369	0.9470	0.9271	0.8625	0.9161	0.8403	0.7412
0.8202	0.8276	0.7143	0.7143	0.7143					
1.0000	1.0000	1.0000	1.0000	0.9975	0.9978	1.0000	1.0000	1.0000	1.0000
0.9968	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9759
1.0000	1.0000	0.9667	0.8824	0.8824					
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	0.0000	1.0000	1.0000					
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000