



WIM #35
US 2, MP 91.8
BAGLEY, MN

OCTOBER
2012

MONTHLY
REPORT



Your Destination... Our Priority



In order to understand the vehicle classes and groupings the Mn/DOT “Vehicle Classification Scheme” and the “Vehicle Class Groupings for Forecasting” are shown on the TDA Data Products page at

<http://www.dot.state.mn.us/traffic/data/data-products.html#weight>.

The WIM Monthly Reports are shown at

<http://www.dot.state.mn.us/traffic/data/reports-monthly-wim.html>.

For the month of October 2012, the system was operating normally. The data in this report uses the data that was collected for the month, no extrapolation.

VOLUME

For WIM #35 on US 2 at mile post 91.8 near Bagley, there were 169,938 vehicles that passed the site for the month of October. The Average Daily Traffic (ADT) and Heavy Commercial Average Daily Traffic (HCADT) for October 2012 was 5,482 and 469, respectively. Of the heavy commercial vehicles, the top two in volume were the Class 9’s, and 5’s. Figure 1 shows the average number of vehicles, broken down by direction, versus day of the week. The average numbers of vehicles for eastbound (EB) peaked on Fridays and was lowest on Sundays; westbound (WB) peaked on Fridays and was lowest on Saturdays. Figure 2 shows the passenger vehicles (Class 1, 2, and 3), and heavy commercial vehicles (Class 4 to 13) by direction versus hour of day. For October the EB passenger vehicles peaked between 3 pm and 6 pm. The WB passenger vehicles peaked between 3 pm and 6 pm. The passenger vehicles were reviewed for directional volume differences and it appears that there are more vehicles going WB. For October the EB heavy commercial vehicles had a peak between 1 pm and 4 pm and WB heavy commercial vehicles had a peak between 8 am and 9 am. There were over 50% of the heavy commercial vehicles going WB.

VEHICLE CLASSIFICATION

The traffic volume consisted of 155,408 passenger vehicles (91.4%) and 14,530 heavy commercial vehicles (8.6%). Table 1 summarizes vehicle class volumes and percentages; and overweight vehicles and the percentages as compared to total overweight vehicles.

OVERWEIGHT VEHICLES

The normal maximum allowable weight for a single axle is 20,000 pounds; tandem axles, spaced 8’ or less, can be up to 34,000 pounds; tridem axles, spaced 9’ or less, can be up to 43,000 pounds; quad axles, spaced 13’ or less, can be up to 51,000 pounds; and the maximum GVW is 80,000 pounds. The data was analyzed with the normal limits in effect and that data is presented in the tables and graphs.

The total volume and total heavy commercial volume for October 2012 was 169,938 and 14,530, respectively. The total number of vehicles that were overweight was 1,497 or 0.9% of the total traffic or 10.3% of the heavy commercial vehicles. Figure 1 shows the average number of overweight vehicles, broken down by direction, versus day of the week. The average numbers of overweight vehicles for EB peaked on Thursdays and for WB it peaked on Tuesdays and for both directions they were lowest on

weekends. The top two overweight violators by class were the Class 9's and the Class 10's. Overweight vehicles by class versus hour of the day are shown in Figure 3. The Class 9 overweight vehicles peaked between 3 pm and 4 pm. The Class 10 overweight vehicles peaked at lower volumes and between 4 pm and 5 pm. The overweight vehicles were also reviewed to determine if there is an EB and WB difference. Figure 4 shows the total, EB, and WB overweight vehicles versus hour of the day. Figure 4 shows that for October 2012, over 75% of the overweight vehicles were in the WB direction.

Figure 5 shows the gross vehicle weight for Class 9's and 10's in both the EB and WB direction. From Figure 5 it is apparent that the Class 9's had more empty than full vehicles going EB and more full than empty vehicles going WB. The Class 10's had more empty than full vehicles going EB and WB.

Chart 1 shows the number of vehicles during the last 12 months that crossed the WIM weighing more than 88,000 pounds. From the chart, it can be seen that there were a large number of weight violations over 100,000 pounds most of them occurring in the months of December 2011 and January 2012. This may have been caused by the WIM being out of calibration.

For weight enforcement the WIMs are a screening tool. Currently, piezo-quartz WIM systems are considered to be accurate within 5% to 10% on Gross Vehicle Weight (GVW). During normal load limits and with an accuracy of about 10% anything over a GVW of 88,000 pounds is overweight. These may still be permitted loads. For the most efficient use of personnel and equipment, these are the vehicles that should be weighed on static scales and reviewed for permits. In the EB direction during the normal load limits there were 82 vehicles over 88,000 pounds, 18 were Class 9's and 30 were Class 10's. In the WB direction during the normal load limits there were 69 vehicles over 88,000 pounds, 17 were Class 9's and 11 were Class 10's. Table 2 summarizes the Top 10 Gross Vehicle Weight for Class 9 and Class 10 vehicles for the month of October 2012.

SPEED

The speed limit on US 2 at the WIM site is 65 mph. For October 2012 for all four lanes, WIM #35 recorded an average speed of 66 mph, the median speed was 67 mph, and the 85th percentile speed was 70 mph. Table 3 summarizes the vehicle data for the Top 20 speeders that crossed WIM #35 in the month of October. The speed of the Top 20 ranged from 96 mph up to 122 mph. Figure 6 shows the average speed of passenger vehicles and heavy commercial vehicles in both the EB and WB direction by lane. As expected, generally the slowest vehicles are the heavy commercial vehicles in the driving lanes and the fastest vehicles are the passenger vehicles in the passing lanes. Depending on the hour of the day there is between a 4 and 5 mph difference between the average slowest vehicles and the average fastest vehicles. During the overnight hours the volume drops way off, which is why there are unusual dips and peaks during those times. Figure 7 shows the average speed versus the day of the month. For October 2012 the average speeds varied between 59 mph and 71 mph, except for October 28th when speeds were as

low as 44 mph. There was not a significant variation in speed by day of the month. Figure 8 shows the average speed by lane. As expected, the passing lanes were consistently faster, about 2 to 4 mph, than the driving lanes. The variations very early in the morning are due to low volumes.

BRIDGE

Bridge No. 15X02, a box culvert, is approximately 5.3 miles east of WIM #35, and Bridge No. 15001 on the EB side and Bridge No. 15004 on the WB side are 2.6 miles west of WIM #35. For the month of October 2012, WIM #35 saw 169,938 vehicles with a total weight of 1,240,000 kips (1 kip = 1,000 pounds). Figure 9 summarizes the total gross vehicle weight (GVW) by lane and class and Figure 10 summarizes the percentages each class contributes to the total GVW. Table 4 provides details on the class breakdowns versus lane for GVW.

MATERIALS

For October 2012 a total of 9,534 ESALs passed over the pavement at WIM #35. Approximately 94.5% of the ESALs were in the driving lane, 31.7% EB and 62.8% WB. Figure 11 graphically depicts the total ESALs by class and lane. Figure 12 summarizes the percentages that each vehicle class contributes to the total ESALs. It is interesting to note that the Class 9's provide 65.3% of the ESALs while they are only 27.7% of the total gross vehicle weight. Table 5 provides details on the class breakdowns versus lane for ESALs. Table 5 also provides the flexible ESAL factors for each vehicle class using a terminal serviceability of 2.5 and a structural number of 5.

Reviewing the ESALs in the 4 lanes for October 2012, the largest number of ESALs is in Lane 4, the WB driving lane. Therefore, the design lane would be the WB driving lane and the growth factor for this section of US 2 in Clearwater County is 1.5%.

For October for the WB driving lane, there were 531 Class 9 trucks and 37 Class 10 trucks over 80,000 pounds. These 568 vehicles generated 1,654 ESALs. If all of these trucks weighed just 80,000 pounds they would have generated 1,474 ESALs, 179 ESALs lower. If you take the October WB driving lane ESALs of 5,984 and multiply it by 12 to get an annual ESAL number, apply a growth factor of 1.5% for 20 years (1.30) and then multiply it by 20 to get a 20-year BESAL you get 1,867,000. If you go through the same process but start with a monthly value of 5,805, i.e. subtracting out all of the overweight Class 9 and 10 vehicles, you come up with 1,811,000 20-year BESALs. If you take the difference between the 20-year BESAL and divide that by 5,984, the BESALs with the overweight Class 9's and 10's you get 9.34, or the overweight Class 9's and 10's cause the pavement to reach its 20-year design life over 9 months early.

This is a quick, back of the napkin calculation, this only looks at Class 9's and 10's, not the other 8 heavy commercial classes. As part of a technical implementation research project we are looking at developing a report function that will perform this calculation for all heavy commercial classes. Because the heavy commercial haulers are looking to move that tonnage of freight we will add additional legal-weight trucks so that the total tonnage being shipped stays the same.

FREIGHT

For WIM #35 for October 2012, it was calculated that approximately 100,000 tons of freight crossed the sensors. More freight was shipped WB (63,000 tons) versus EB (37,000 tons). Table 6 summarizes the number of vehicles by class and the number of empty vehicles. Table 6 and Figure 13 summarize the freight shipment by class, direction, and tonnage.

CALIBRATION

WIM #35 was calibrated on January 18, 2012. As part of the on-going monitoring to assure the performance between calibrations, gross vehicle weights and front axle weights of Class 2's, 3's, and 9's are being monitored on a monthly basis. Table 7 summarizes the gross vehicle weight of the Class 2's and 3's by lane. Currently, all Class 2's and 3's are included in this data. In the future, the goal would be to only monitor the Class 2's and 3's that are not pulling trailers. Table 8 summarizes the front axle weight of the Class 2's, 3's, and 9's by lane. The current goal of the calibration is to first have the GVW for each class and each lane stay within a range of $\pm 5\%$ and then secondly to have each individual axle stay within a range of $\pm 9\%$. As you can see in Table 7, only Class 3 in Lane 4 is within range for GVW. In Table 8 the front axle weight was within the range for all Classes in Lane 4 and Class 9 in Lane 3. Sensors at this site were replaced on August 6th and 7th, 2012. With new sensors installed, the system needs to be calibrated to ensure accurate weights.

Past WIM research indicates that an unloaded Class 9 should weigh 28 to 32 kips. Data from the MnROAD site indicates that this unloaded range may have moved a little higher. The range for loaded Class 9's is generally in the 70 to 80 kip range but varies more by site and season. Figures 14 to 17 shows histograms of the monthly GVW of Class 9's over the last 11 months for Lanes 1 and 4 and over the last 14 months for Lanes 2 and 3. Figure 18 is a graph of the unloaded and loaded peaks by lane versus date. There are enough Class 9's in Lanes 1 and 4 that a weekly histogram can be developed, while for Lanes 2 and 3 about two months of data is needed to develop a clear histogram.

SUMMARY

For October 2012 the average volumes peaked on Fridays in the EB direction and on Fridays in the WB direction. The overweight vehicles peaked on Thursdays EB and on Tuesdays for WB. Over 75% of the overweight vehicles were in the WB direction. The overweight vehicles peaked from 10 am to 11 am. For October 2012, for the Class 9's, 13.2% of them were overweight and for the Class 10's, 18.1% of them were overweight. The speed of the traffic varies slightly based on vehicle class, lane, and hour of the day, but there was no significant difference in speed based on day of the week. The GVW was higher in the WB direction 652,000 kips versus 588,000 kips EB. This agrees with the ESALs and the freight data. The WB ESALs were higher 6,284 versus 3,250 EB. The tonnage of freight was higher in the WB direction 63,000 versus 37,000 EB. For October, the overweight Class 9's and 10's were shortening the 20-year BESAL design life by over 9 months. Table 9 provides a monthly summary of some of the key data for the site during the last 12 months.

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Figure 18 – Unloaded and Loaded Peaks by Lane vs. Date

To request this document in an alternative format, please contact the Affirmative Action Office at 651-366-4718 or 1-800-657-3774 (Greater Minnesota); 711 or 1-800-627-3529 (Minnesota Relay). You may also send an e-mail to ADArequest.dot@state.mn.us.
(Please request at least one week in advance).

TABLE 1 - VEHICLE CLASSIFICATION DATA
WIM #35 - BAGLEY
October 2012

VEHICLE CLASS	MONTHLY AVERAGE DAILY VOLUME	MONTHLY TOTAL VOLUME	MONTHLY TOTAL VOLUME PERCENTAGE	MONTHLY TOTAL OVERWEIGHT VEHICLES	MONTHLY TOTAL OVERWEIGHT PERCENTAGE
C1	1	24	0.0%	0	0.0%
C2	3,047	94,445	55.6%	0	0.0%
C3	1,966	60,939	35.9%	0	0.0%
C4	17	520	0.3%	72	4.8%
C5	129	4,008	2.4%	51	3.4%
C6	34	1,045	0.6%	97	6.5%
C7	3	89	0.1%	34	2.3%
C8	29	910	0.5%	66	4.4%
C9	226	7,010	4.1%	925	61.8%
C10	20	620	0.4%	112	7.5%
C11	4	110	0.1%	4	0.3%
C12	3	89	0.1%	53	3.5%
C13	4	129	0.1%	83	5.5%
TOTAL =	5,482	169,938	100.0%	1,497	100.0%

TABLE 2 - TOP 10 GROSS VEHICLE WEIGHT, CLASS 9 AND CLASS 10
WIM #35 - BAGLEY
October 2012

DATE	DAY OF WEEK	TIME	VEHICLE CLASS	DIRECTION	LANE	GVW (lbs)
10/15/12	Monday	10:03:51	10	Westbound	4	130,000
10/26/12	Friday	9:16:40	10	Westbound	4	130,000
10/22/12	Monday	10:30:03	10	Westbound	4	129,000
10/29/12	Monday	12:07:34	10	Westbound	4	129,000
10/1/12	Monday	17:12:03	10	Westbound	4	124,000
10/29/12	Monday	16:09:15	10	Eastbound	1	119,000
10/17/12	Wednesday	9:55:46	10	Westbound	4	118,000
10/5/12	Friday	15:25:34	10	Eastbound	1	117,000
10/30/12	Tuesday	8:11:23	10	Westbound	4	116,000
10/12/12	Friday	13:00:04	10	Eastbound	1	112,000

TABLE 3 - TOP 20 SPEEDERS
WIM #35 - BAGLEY
October 2012

DATE	DAY OF WEEK	TIME	VEHICLE CLASS	DIRECTION	LANE	SPEED (mph)
10/2/12	Tuesday	13:52:10	2	Westbound	3	122
10/5/12	Friday	23:27:18	3	Eastbound	2	114
10/19/12	Friday	15:35:44	3	Eastbound	2	114
10/9/12	Tuesday	3:31:02	3	Westbound	3	112
10/13/12	Saturday	20:14:42	2	Westbound	3	112
10/23/12	Tuesday	1:01:49	2	Eastbound	2	109
10/15/12	Monday	1:10:03	2	Westbound	4	106
10/7/12	Sunday	18:24:27	3	Eastbound	2	104
10/11/12	Thursday	20:59:20	3	Eastbound	2	104
10/17/12	Wednesday	7:03:57	2	Westbound	4	103
10/23/12	Tuesday	19:41:49	2	Westbound	4	103
10/2/12	Tuesday	3:04:21	2	Eastbound	2	101
10/2/12	Tuesday	14:26:09	2	Westbound	3	101
10/3/12	Wednesday	21:10:53	3	Eastbound	1	101
10/2/12	Tuesday	19:24:53	3	Westbound	4	100
10/2/12	Tuesday	3:35:16	3	Westbound	4	98
10/15/12	Monday	11:10:27	2	Eastbound	2	97
10/2/12	Tuesday	7:07:01	2	Westbound	4	96
10/12/12	Friday	23:58:26	2	Westbound	4	96
10/14/12	Sunday	13:07:17	2	Eastbound	2	96

TABLE 4 - GROSS VEHICLE WEIGHT BY CLASS AND LANE
WIM #35 - BAGLEY
October 2012

VEHICLE CLASS	EB DRIVING LANE (Kips)	EB PASSING LANE (Kips)	WB PASSING LANE (Kips)	WB DRIVING LANE (Kips)	TOTAL (Kips)	PERCENTAGE
C1	17	1	2	18	38	0.0%
C2	134,288	35,021	32,776	136,838	338,924	27.3%
C3	146,469	33,720	28,156	158,869	367,214	29.6%
C4	3,581	657	571	7,213	12,022	1.0%
C5	22,785	3,426	3,572	26,159	55,942	4.5%
C6	15,062	2,138	1,010	12,948	31,159	2.5%
C7	1,809	181	338	2,154	4,483	0.4%
C8	12,098	916	879	17,282	31,174	2.5%
C9	139,715	9,027	9,752	184,869	343,363	27.7%
C10	18,998	1,578	1,036	17,424	39,036	3.1%
C11	2,457	112	0	2,537	5,106	0.4%
C12	983	0	133	5,011	6,127	0.5%
C13	2,741	0	69	2,204	5,014	0.4%

TOTAL =	501,002	86,777	78,295	573,528	1,239,602	100.0%
GVW/LANE =	40.4%	7.0%	6.3%	46.3%		
GVW/DIRECTION =	47.4%		52.6%			
GVW/DIRECTION =	587,780		651,823			

TABLE 5 - ESALs BY CLASS AND LANE AND FLEXIBLE ESAL FACTOR
WIM #35 - BAGLEY
October 2012

VEHICLE CLASS	EB DRIVING LANE	EB PASSING LANE	WB PASSING LANE	WB DRIVING LANE	TOTAL	PERCENTAGE	FLEXIBLE ESAL FACTOR
C1	0	0	0	0	0	0.0%	0.0004
C2	19	5	5	20	48	0.5%	0.0005
C3	62	12	10	70	154	1.6%	0.0025
C4	73	12	13	189	287	3.0%	1.02
C5	254	32	46	371	702	7.4%	0.17
C6	194	28	18	283	523	5.5%	0.52
C7	31	1	5	45	82	0.9%	0.97
C8	128	8	9	406	551	5.8%	0.48
C9	1,839	110	178	4,097	6,223	65.3%	0.91
C10	268	20	13	262	562	5.9%	0.83
C11	45	1	0	40	85	0.9%	0.85
C12	22	0	2	131	155	1.6%	1.84
C13	89	0	1	71	161	1.7%	3.58
TOTAL =	3,022	228	300	5,984	9,534	100.0%	
ESALS/LANE =	31.7%	2.4%	3.1%	62.8%			
ESALS/DIRECTION =	34.1%		65.9%				
ESALS/DIRECTION =	3,250		6,284				

TABLE 6 - FREIGHT SUMMARY
WIM #35 - BAGLEY
October 2012

EASTBOUND

VEHICLE CLASS	WEIGHT OF EMPTY VEHICLE (Kips)	TOTAL NUMBER OF VEHICLES	NUMBER OF EMPTY VEHICLES	PERCENTAGE OF EMPTY VEHICLES	TOTAL WEIGHT OF VEHICLES WITH FREIGHT (Kips)	WEIGHT OF EMPTY VEHICLES (Kips)	TOTAL WEIGHT OF FREIGHT (Tons)
C4	15.0	223	42	18.8%	5,705	548	1,495
C5	8.0	1,899	387	20.4%	22,256	2,818	5,080
C6	19.0	595	65	10.9%	15,841	1,127	2,886
C7	11.5	45	0	0.0%	2,227	0	855
C8	31.0	407	292	71.7%	4,305	6,145	370
C9	33.0	3,393	1,581	46.6%	99,936	45,247	20,070
C10	33.5	325	65	20.0%	16,006	1,880	3,648
C11	36.5	55	20	36.4%	2,021	677	372
C12	36.5	15	2	13.3%	948	45	237
C13	31.5	61	2	3.3%	5,546	60	1,844
TOTAL =		7,018	2,456	35.0%	174,792	--	36,856

WESTBOUND

VEHICLE CLASS	WEIGHT OF EMPTY VEHICLE (Kips)	TOTAL NUMBER OF VEHICLES	NUMBER OF EMPTY VEHICLES	PERCENTAGE OF EMPTY VEHICLES	TOTAL WEIGHT OF VEHICLES WITH FREIGHT (Kips)	WEIGHT OF EMPTY VEHICLES (Kips)	TOTAL WEIGHT OF FREIGHT (Tons)
C4	15.0	290	35	12.1%	10,206	452	3,190
C5	8.0	2,010	332	16.5%	25,581	2,407	6,078
C6	19.0	417	39	9.4%	13,290	665	3,054
C7	11.5	44	2	4.5%	2,384	20	950
C8	31.0	464	223	48.1%	10,766	4,416	1,648
C9	33.0	3,325	362	10.9%	180,535	10,789	41,378
C10	33.5	266	37	13.9%	13,849	1,092	3,089
C11	36.5	55	3	5.5%	2,692	49	397
C12	36.5	71	4	5.6%	5,107	91	1,331
C13	31.5	65	2	3.1%	6,376	50	2,196
TOTAL =		7,007	1,039	14.8%	270,785	--	63,311

GRAND TOTAL = 14,025 3,495 24.9% 445,576 -- 100,166

TABLE 7 - GROSS VEHICLE WEIGHT BY CLASS AND LANE
WIM #35 - BAGLEY
October 2012

MONTH	VEHICLE CLASS	LANE 1 (Kips)	GVW ± 5%	LANE 2 (Kips)	GVW ± 5%	LANE 3 (Kips)	GVW ± 5%	LANE 4 (Kips)	GVW ± 5%
Nov 11	C2	4.79	15.70%	4.18	0.72%	4.86	27.23%	3.70	-2.37%
Dec 11		5.73	38.41%	4.36	5.06%	3.90	2.09%	3.71	-2.11%
Jan 12		5.78	39.61%	4.34	4.58%	4.16	8.90%	3.73	-1.58%
Feb 12		3.03	--	4.06	--	4.52	--	3.76	-0.79%
Mar 12		3.49	15.18%	4.06	0.00%	4.41	-2.43%	3.84	2.13%
Apr 12		3.83	26.40%	3.86	-4.93%	4.25	-5.97%	3.87	--
May 12		3.99	31.68%	3.88	-4.43%	4.23	-6.42%	3.85	-0.52%
Jun 12		4.08	34.65%	3.94	-2.96%	4.27	-5.53%	3.84	-0.78%
Jul 12		4.08	34.65%	3.72	-8.37%	4.27	-5.53%	3.85	-0.52%
Aug 12		4.14	36.63%	3.27	-19.46%	3.77	-16.59%	4.03	4.13%
Sep 12		3.68	21.45%	3.55	-12.56%	3.59	-20.58%	3.74	-3.36%
Oct 12		3.67	21.12%	3.55	-12.56%	3.57	-21.02%	3.65	-5.68%
Nov 11	C3	7.20	8.43%	6.46	-1.52%	6.49	7.10%	5.94	-0.34%
Dec 11		8.16	22.89%	6.67	1.68%	5.73	-5.45%	5.79	-2.85%
Jan 12		8.21	23.64%	6.55	-0.15%	5.60	-7.59%	5.87	-1.51%
Feb 12		4.59	--	6.22	--	6.79	--	5.89	-1.17%
Mar 12		5.28	15.03%	6.28	0.96%	6.79	0.00%	6.03	1.17%
Apr 12		6.17	34.42%	6.11	-1.77%	6.65	-2.06%	6.29	--
May 12		6.51	41.83%	6.17	-0.80%	6.64	-2.21%	6.32	0.48%
Jun 12		6.58	43.36%	6.28	0.96%	6.74	-0.74%	6.40	1.75%
Jul 12		5.93	29.19%	5.89	-5.31%	6.82	0.44%	6.49	3.18%
Aug 12		6.60	43.79%	5.18	-16.72%	6.01	-11.49%	6.84	8.74%
Sep 12		6.13	33.55%	5.65	-9.16%	5.74	-15.46%	6.44	2.38%
Oct 12		6.11	33.12%	5.66	-9.00%	5.73	-15.61%	6.19	-1.59%

TABLE 8 - FRONT AXLE WEIGHT BY CLASS AND LANE
WIM #35 - BAGLEY
October 2012

MONTH	VEHICLE CLASS	LANE 1 (Kips)	FRONT AXLE ± 9%	LANE 2 (Kips)	FRONT AXLE ± 9%	LANE 3 (Kips)	FRONT AXLE ± 9%	LANE 4 (Kips)	FRONT AXLE ± 9%
Nov 11	C2	2.91	15.94%	2.46	0.41%	2.45	9.38%	2.13	-1.84%
Dec 11		3.50	39.44%	2.56	4.49%	2.26	0.89%	2.12	-2.30%
Jan 12		3.54	41.04%	2.55	4.08%	2.38	6.25%	2.14	-1.38%
Feb 12		1.88	--	2.41	--	2.63	--	2.14	-1.38%
Mar 12		2.10	11.70%	2.41	0.00%	2.57	-2.28%	2.18	0.46%
Apr 12		2.31	22.87%	2.31	-4.15%	2.48	-5.70%	2.19	--
May 12		2.40	27.66%	2.32	-3.73%	2.47	-6.08%	2.18	-0.46%
Jun 12		2.44	29.79%	2.33	-3.32%	2.48	-5.70%	2.16	-1.37%
Jul 12		2.44	29.79%	2.20	-8.71%	2.46	-6.46%	2.15	-1.83%
Aug 12		2.40	27.66%	1.88	-21.99%	2.16	-17.87%	2.27	3.65%
Sep 12		2.09	11.17%	2.02	-16.18%	2.05	-22.05%	2.12	-3.20%
Oct 12		2.10	11.70%	2.03	-15.77%	2.05	-22.05%	2.08	-5.02%
Nov 11	C3	3.95	12.22%	3.55	0.28%	3.49	9.06%	3.02	-1.31%
Dec 11		4.64	31.82%	3.70	4.52%	3.08	-3.75%	2.97	-2.94%
Jan 12		4.67	32.67%	3.65	3.11%	3.00	-6.25%	3.02	-1.31%
Feb 12		2.54	--	3.49	--	3.68	--	3.01	-1.63%
Mar 12		2.89	13.78%	3.51	0.57%	3.66	-0.54%	3.08	0.65%
Apr 12		3.34	31.50%	3.39	-2.87%	3.55	-3.53%	3.11	--
May 12		3.47	36.61%	3.39	-2.87%	3.52	-4.35%	3.10	-0.32%
Jun 12		3.46	36.22%	3.42	-2.01%	3.56	-3.26%	3.10	-0.32%
Jul 12		3.05	20.08%	3.20	-8.31%	3.58	-2.72%	3.11	0.00%
Aug 12		3.32	30.71%	2.73	-21.78%	3.12	-15.22%	3.28	5.47%
Sep 12		3.04	19.69%	2.97	-14.90%	2.99	-18.75%	3.09	-0.64%
Oct 12		3.04	19.69%	2.97	-14.90%	2.99	-18.75%	3.02	-2.89%
Nov 11	C9	13.23	14.74%	11.67	-3.07%	11.58	10.18%	10.46	0.38%
Dec 11		16.85	46.14%	11.87	-1.41%	9.33	-11.23%	10.24	-1.73%
Jan 12		16.73	45.10%	11.98	-0.50%	7.41	-29.50%	10.36	-0.58%
Feb 12		8.29	--	11.77	--	9.26	--	10.46	0.38%
Mar 12		9.12	10.01%	11.74	-0.25%	11.15	20.41%	10.99	5.47%
Apr 12		12.34	48.85%	11.36	-3.48%	11.73	26.67%	10.95	--
May 12		12.98	56.57%	11.53	-2.04%	11.43	23.43%	10.78	-1.55%
Jun 12		12.99	56.69%	11.61	-1.36%	11.59	25.16%	10.77	-1.64%
Jul 12		12.47	50.42%	10.34	-12.15%	11.55	24.73%	10.80	-1.37%
Aug 12		11.80	42.34%	9.12	-22.51%	9.87	6.59%	11.64	6.30%
Sep 12		10.39	25.33%	10.22	-13.17%	10.06	8.64%	10.99	0.37%
Oct 12		10.25	23.64%	10.15	-13.76%	9.84	6.26%	10.81	-1.28%

**TABLE 9 - SITE SUMMARY
WIM #35 - BAGLEY
October 2012**

VEHICLE
VOLUME
& AXLES

MONTH	TOTAL VOLUME	MONTHLY ADT	MONTHLY HCADT	PASSENGER VEHICLES #	PASSENGER VEHICLES %	HEAVY COMMERCIAL VEHICLES #	HEAVY COMMERCIAL VEHICLES %	HEAVY COMMERCIAL VEHICLES IN DRIVING LANE %	HEAVY COMMERCIAL VEHICLES IN PASSING LANE %
Nov 11	157,066	5,236	438	143,967	91.7%	13,099	8.3%	90.0%	10.0%
Dec 11	143,205	4,620	501	127,674	89.2%	15,531	10.8%	94.0%	6.0%
Jan 12	144,629	4,665	501	129,086	89.3%	15,543	10.7%	93.6%	6.4%
Feb 12	144,249	4,808	403	132,138	91.6%	12,111	8.4%	89.0%	11.0%
Mar 12	160,338	5,172	368	148,956	92.9%	11,382	7.1%	88.8%	11.2%
Apr 12	158,618	5,287	426	145,828	91.9%	12,790	8.1%	89.1%	10.9%
May 12	179,302	5,784	471	164,692	91.9%	14,610	8.1%	89.9%	10.1%
Jun 12	188,191	6,273	507	172,948	91.9%	15,243	8.1%	89.6%	10.4%
Jul 12	205,752	6,637	473	191,083	92.9%	14,569	7.1%	89.0%	11.0%
Aug 12	201,492	6,500	501	185,945	92.3%	15,547	7.7%	91.5%	8.5%
Sep 12	174,506	5,817	454	160,897	92.2%	13,609	7.8%	91.8%	8.2%
Oct 12	169,938	5,482	469	155,408	91.4%	14,530	8.6%	91.4%	8.6%

TOTAL =	2,027,286	--	--	1,858,622	--	168,564	--	--	--
AVERAGE =	168,941	5,523	459	154,885	91.7%	14,047	8.3%	90.6%	9.4%

ESALS

MONTH	ESALS EB DRIVING LANE	ESALS EB PASSING LANE	ESALS WB PASSING LANE	ESALS WB DRIVING LANE	TOTAL ESALS	DRIVING LANE ESALS %	PASSING LANE ESALS %	PAVEMENT LIFE DECREASE MONTHS*
Nov 11	6,228	258	322	3,349	10,156	94.3%	5.7%	80.84
Dec 11	15,397	425	108	2,069	17,999	97.0%	3.0%	148.81
Jan 12	12,539	293	45	3,673	16,550	98.0%	2.0%	133.06
Feb 12	1,278	361	19	2,927	4,586	91.7%	8.3%	58.78
Mar 12	357	251	29	3,890	4,527	93.8%	6.2%	3.41
Apr 12	4,011	338	182	4,417	8,947	94.2%	5.8%	5.74
May 12	5,561	279	262	4,769	10,871	95.0%	5.0%	68.47
Jun 12	5,726	336	65	5,119	11,246	96.4%	3.6%	72.17
Jul 12	4,442	44	90	4,664	9,240	98.6%	1.4%	4.52
Aug 12	4,881	135	282	7,120	12,418	96.6%	3.4%	52.24
Sep 12	3,048	182	263	5,520	9,013	95.1%	4.9%	16.50
Oct 12	3,022	228	300	5,984	9,534	94.5%	5.5%	9.34

TOTAL =	66,489	3,129	1,966	53,502	125,086	--	--	--
AVERAGE =	5,541	261	164	4,458	10,424	95.4%	4.6%	54.5

* Based on WLI of 88,000 lbs in effect until March 18, 2011 and then again starting December 26, 2011 and ending on March 12, 2012.

TABLE 9 - SITE SUMMARY (contd.)
WIM #35 - BAGLEY
October 2012

GROSS WEIGHT

MONTH	GVW EB DRIVING LANE	GVW EB PASSING LANE	GVW WB PASSING LANE	GVW WB DRIVING LANE	TOTAL GVW KIPS
Nov 11	571,034	84,434	76,894	470,144	1,202,506
Dec 11	717,535	82,854	56,092	354,892	1,211,372
Jan 12	617,411	59,884	43,755	474,853	1,195,903
Feb 12	362,390	72,900	52,240	411,294	898,825
Mar 12	289,721	80,670	61,913	488,875	921,179
Apr 12	478,745	87,199	70,387	511,688	1,148,019
May 12	571,278	97,791	86,518	569,350	1,324,936
Jun 12	592,881	107,524	77,501	593,483	1,371,389
Jul 12	548,735	83,672	88,137	612,890	1,333,434
Aug 12	602,017	89,692	93,075	634,209	1,418,993
Sep 12	503,754	85,759	80,403	572,142	1,242,059
Oct 12	501,002	86,777	78,295	573,528	1,239,602

TOTAL =	6,356,503	1,019,156	865,211	6,267,347	14,508,217
AVERAGE =	529,709	84,930	72,101	522,279	1,209,018

OVERWEIGHT VEHICLES

MONTH	TOTAL NUMBER OF OVERWEIGHT VEHICLES *	OVERWEIGHT/ TOTAL VOLUME %	OVERWEIGHT/ HEAVY COMMERCIAL VOLUME %	NUMBER OVER 88,000 LBS	NUMBER OVER 98,000 LBS
Nov 11	1,328	0.8%	10.1%	536	284
Dec 11	2,116	1.5%	13.6%	1,223	914
Jan 12	1,588	1.1%	10.2%	896	686
Feb 12	613	0.4%	5.1%	297	175
Mar 12	625	0.4%	5.5%	64	29
Apr 12	1,578	1.0%	12.3%	241	37
May 12	1,904	1.1%	13.0%	644	260
Jun 12	2,142	1.1%	14.1%	736	322
Jul 12	1,636	0.8%	11.2%	413	126
Aug 12	2,095	1.0%	13.5%	633	384
Sep 12	1,720	1.0%	12.6%	245	61
Oct 12	1,497	0.9%	10.3%	151	68

TOTAL =	18,842	--	--	6,079	3,346
AVERAGE =	1,570	0.9%	11.2%	507	279

* Based on WLI of 88,000 lbs in effect until March 18, 2011 and then again starting December 26, 2011 and ending on March 12, 2012.

SPEED

MONTH	AVERAGE SPEED (mph)	MEDIAN SPEED (mph)	85th PERCENTILE SPEED (mph)	SYSTEM OPERATION Days	SYSTEM OPERATION %
Nov 11	66	66	70	30	100.0%
Dec 11	66	66	70	31	100.0%
Jan 12	65	65	70	31	100.0%
Feb 12	65	66	70	29	100.0%
Mar 12	66	66	70	31	100.0%
Apr 12	66	66	70	30	100.0%
May 12	66	66	70	30.92	99.7%
Jun 12	66	67	70	30	100.0%
Jul 12	66	67	70	31	100.0%
Aug 12	67	67	70	29.96	96.6%
Sep 12	67	67	71	30	100.0%
Oct 12	66	67	70	31	100.0%

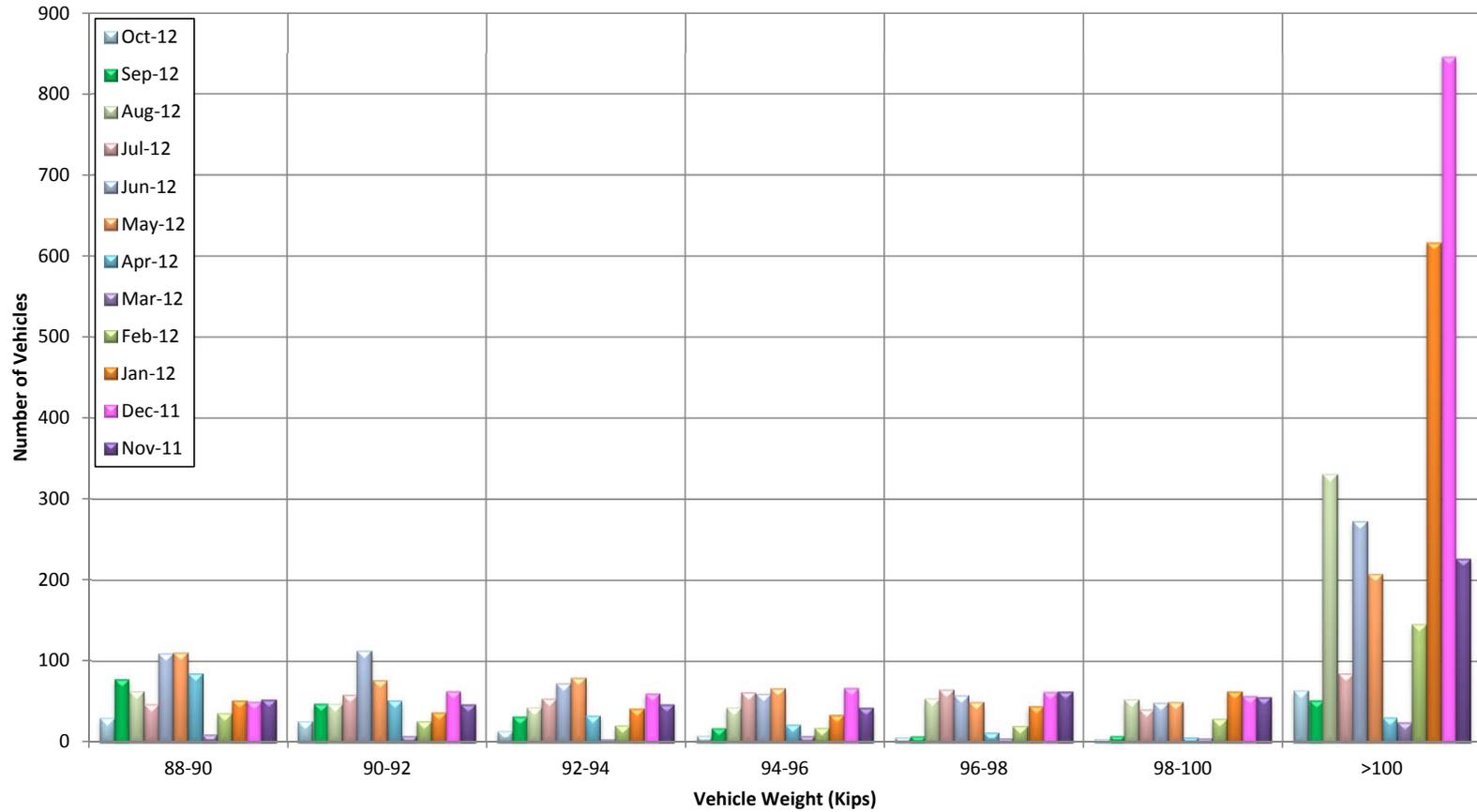
TOTAL =	--	--	--	364.88	--
AVERAGE =	66	66	70	--	99.7%

FREIGHT

MONTH	EB FREIGHT TONS	WB FREIGHT TONS	TOTAL FREIGHT TONS	EB FREIGHT %	WB FREIGHT %
Nov 11	55,753	41,904	97,657	57.1%	42.9%
Dec 11	97,024	25,787	122,811	79.0%	21.0%
Jan 12	78,745	45,397	124,142	63.4%	36.6%
Feb 12	27,014	45,782	72,796	37.1%	62.9%
Mar 12	18,813	43,091	61,904	30.4%	69.6%
Apr 12	42,395	50,666	93,061	45.6%	54.4%
May 12	54,928	54,606	109,534	50.1%	49.9%
Jun 12	57,940	58,253	116,193	49.9%	50.1%
Jul 12	49,012	56,175	105,187	46.6%	53.4%
Aug 12	49,955	67,059	117,014	42.7%	57.3%
Sep 12	37,322	61,339	98,661	37.8%	62.2%
Oct 12	36,856	63,311	100,166	36.8%	63.2%

TOTAL =	605,757	613,370	1,219,126	--	--
AVERAGE =	50,480	51,114	101,594	49.7%	50.3%

Chart 1 - Histogram of Vehicles Over 88,000 Pounds for Last 12 Months



Vehicle Weights (Kips)	Oct-12	Sep-12	Aug-12	Jul-12	Jun-12	May-12	Apr-12	Mar-12	Feb-12	Jan-12	Dec-11	Nov-11
88-90	30	78	63	47	110	111	85	10	36	52	51	53
90-92	26	48	47	59	113	77	52	8	26	37	64	47
92-94	14	32	43	54	73	80	33	4	21	42	61	47
94-96	8	18	43	62	60	67	22	8	18	34	68	43
96-98	6	8	54	65	58	50	12	5	20	45	63	63
98-100	4	9	53	41	49	50	6	5	29	63	58	56
>100	64	52	331	85	273	208	31	25	146	617	846	227
TOTAL =	152	245	634	413	736	643	241	65	296	890	1,211	536

Figure 1 - Average Volume and Average Overweight Volume vs. Day of the Week

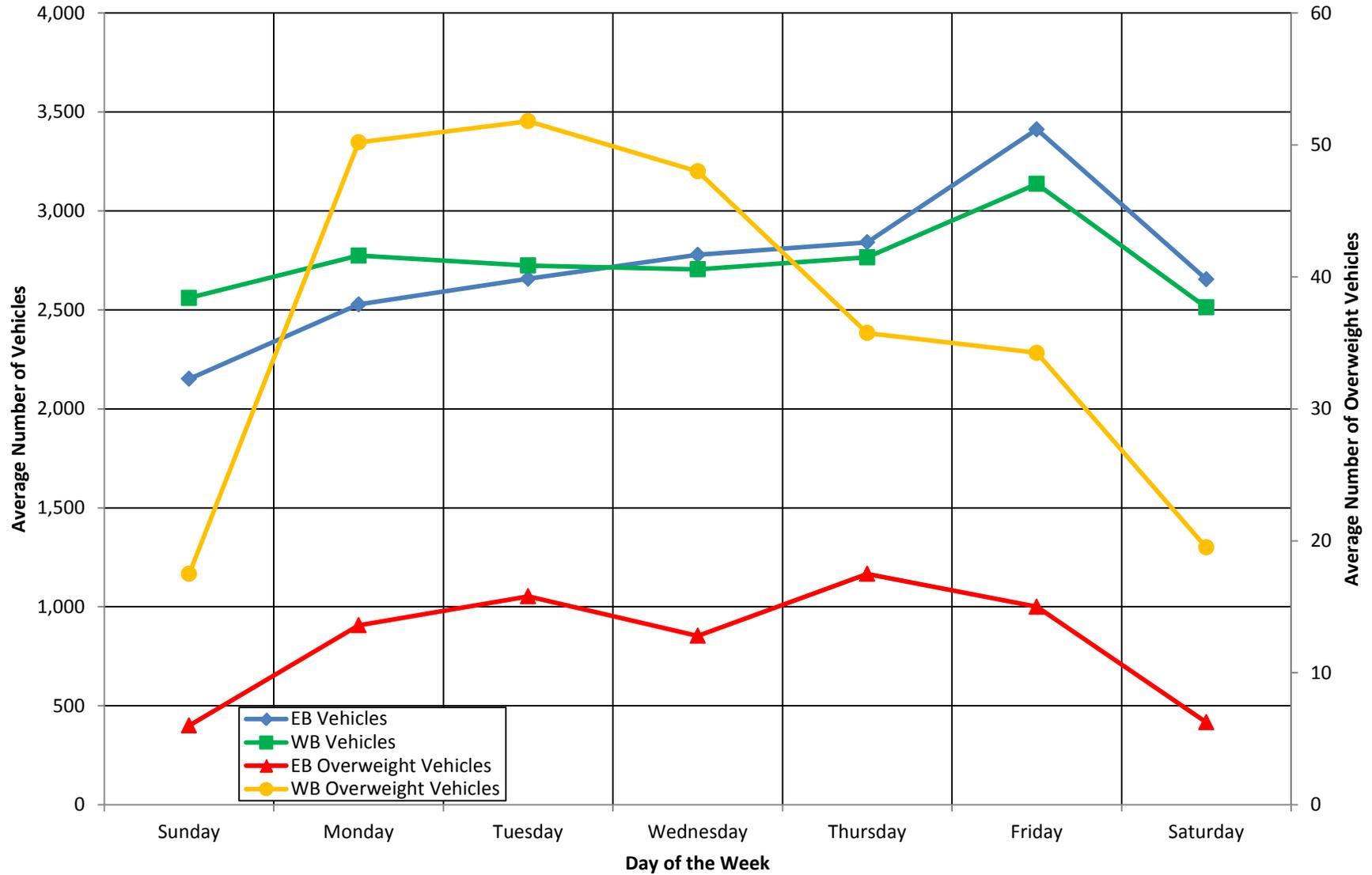


Figure 2 - Passenger and Heavy Commercial Vehicles vs. Hour of the Day

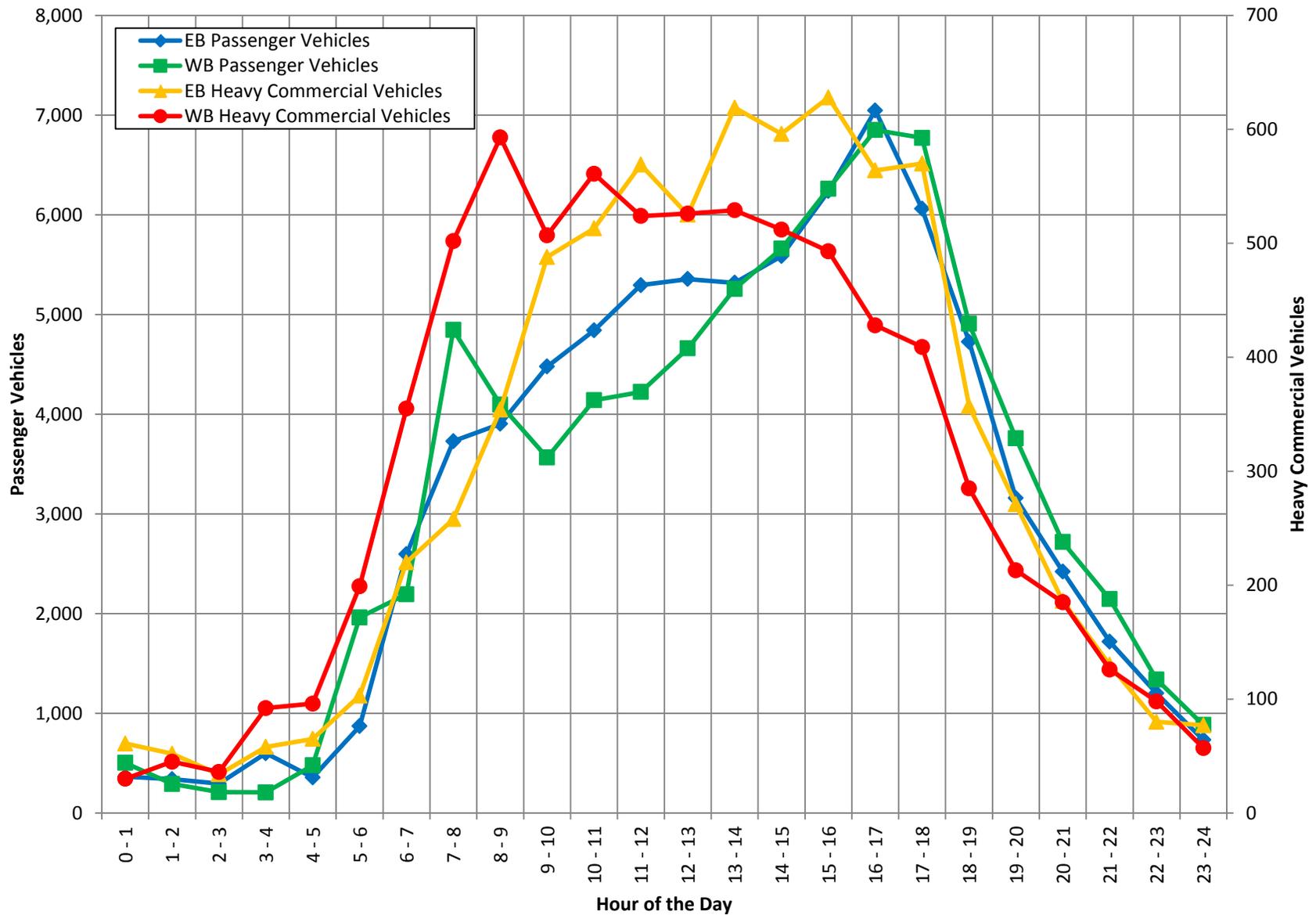


Figure 3 - Overweight Vehicles by Class vs. Hour of the Day

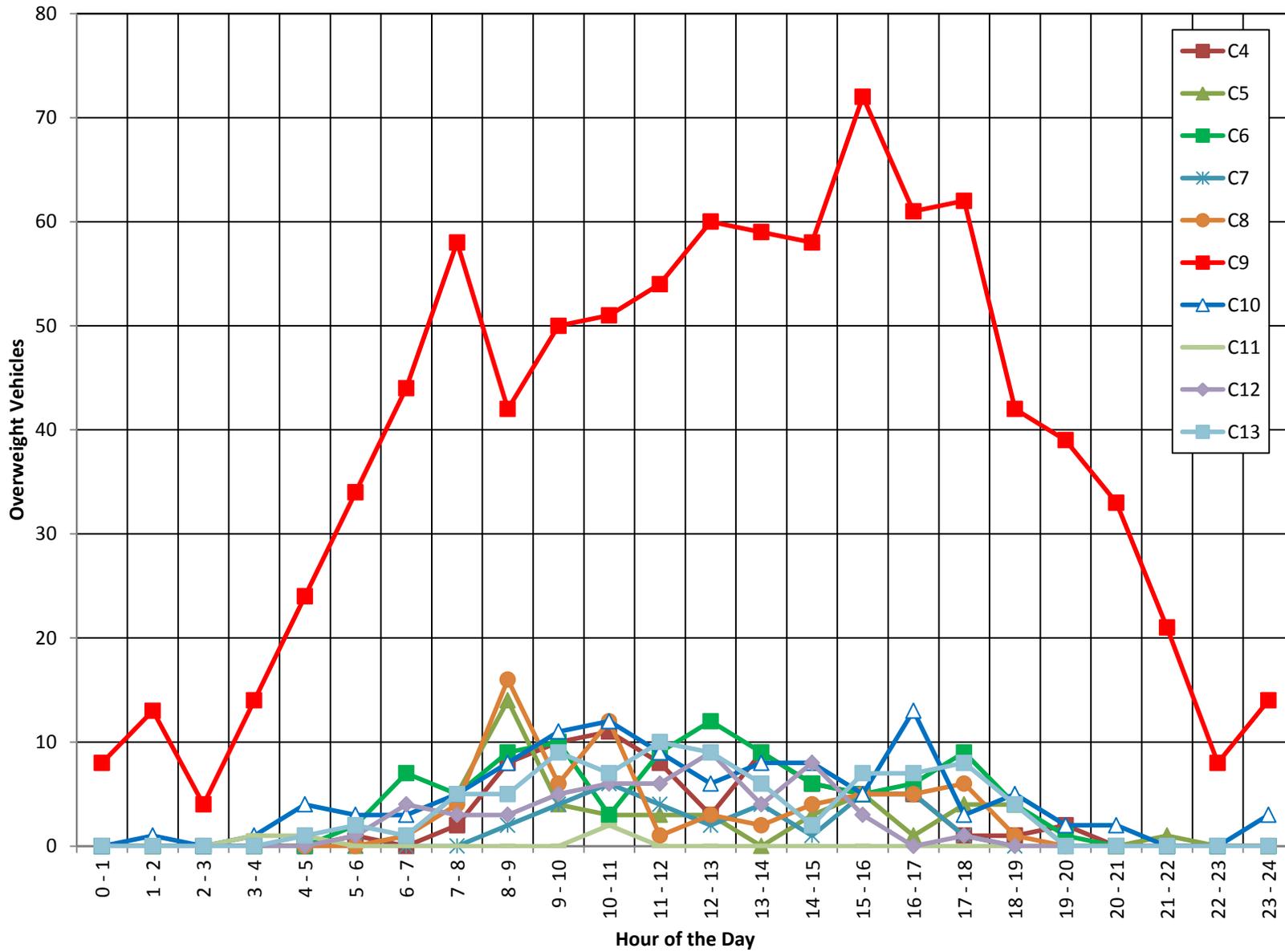


Figure 4 - Overweight Vehicles by Direction vs. Hour of the Day

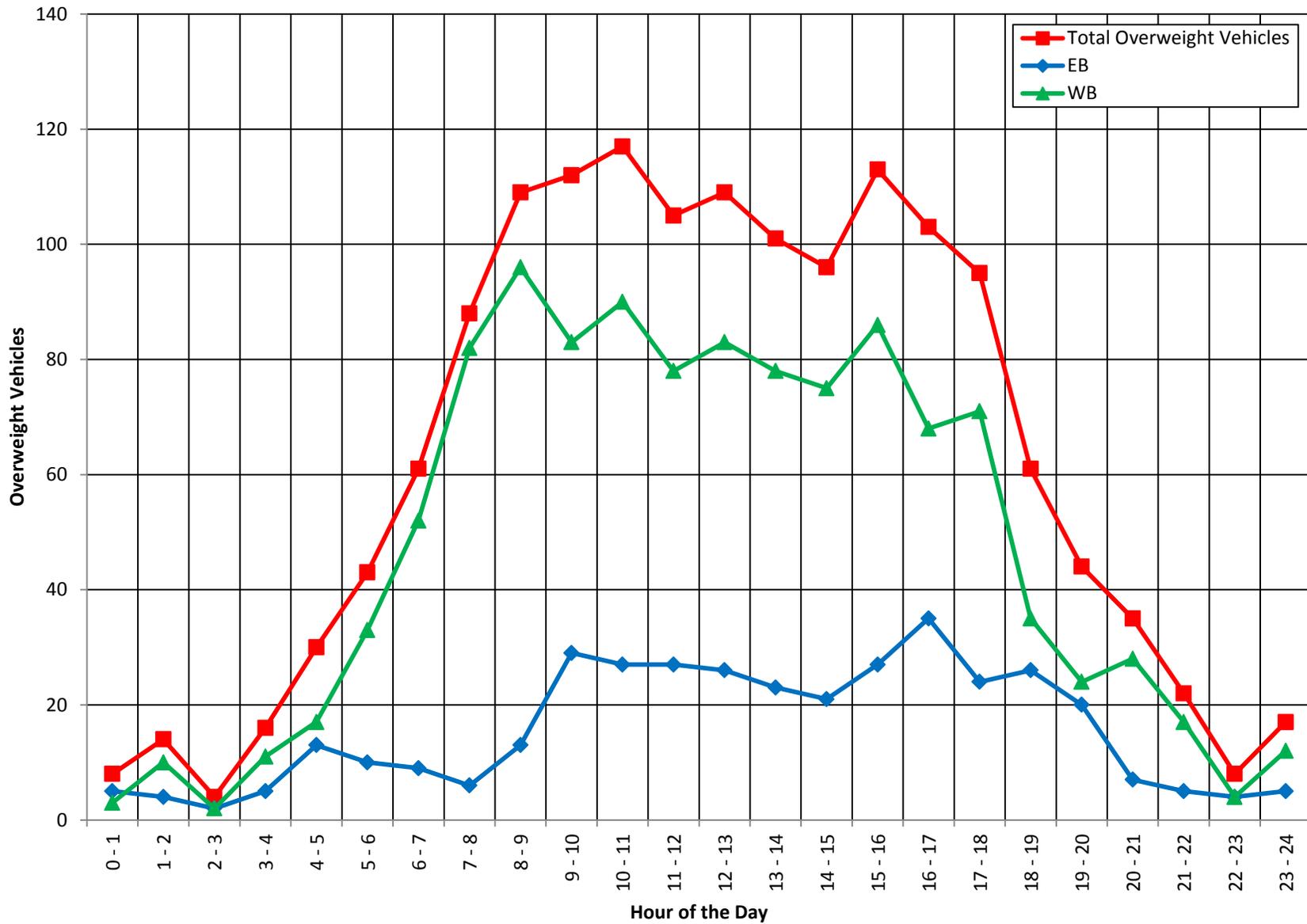


Figure 5 - Class 9's and 10's by Direction vs. Gross Vehicle Weight

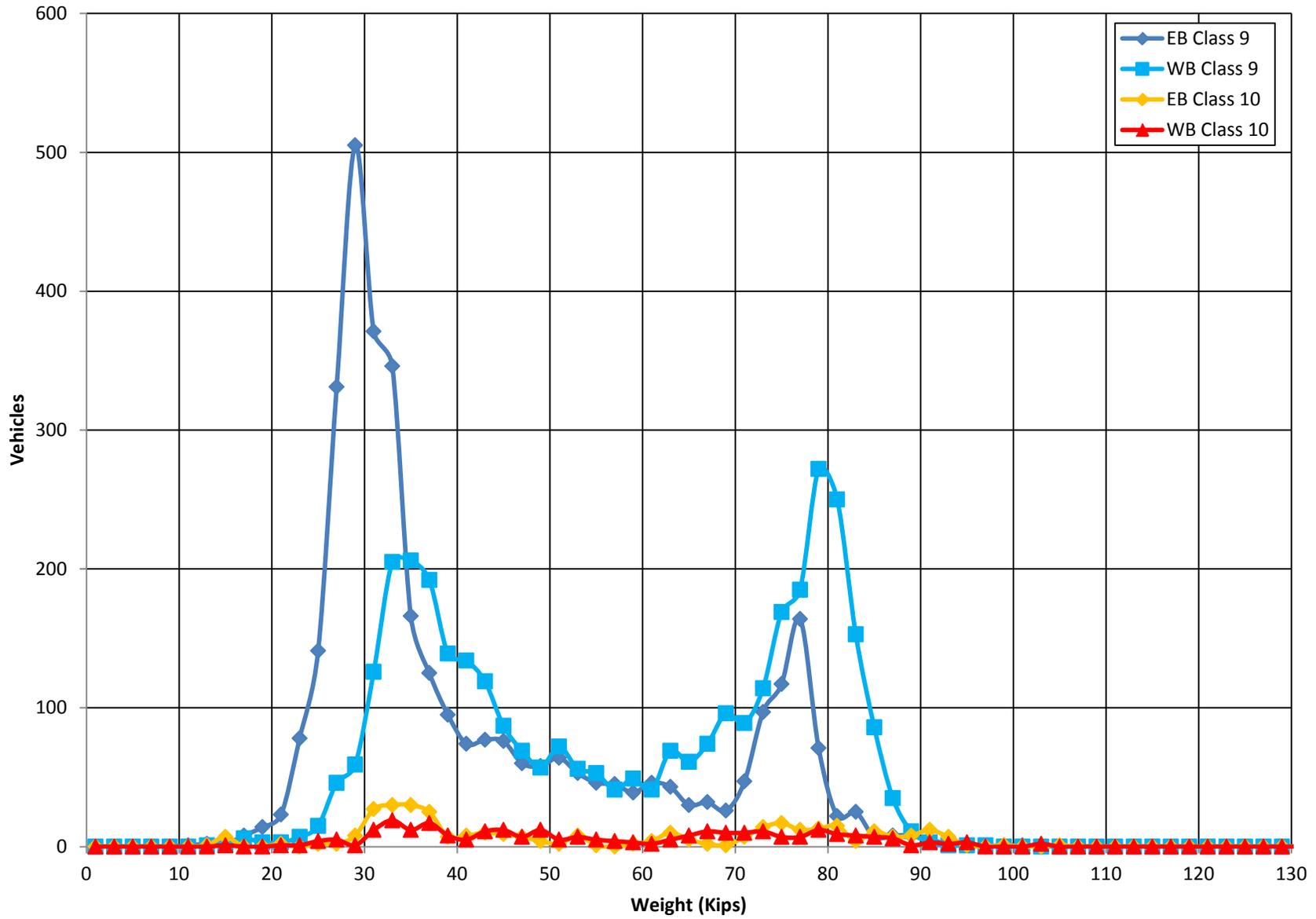


Figure 6 - Average Speed by Lane and Vehicle Type vs. Hour of the Day

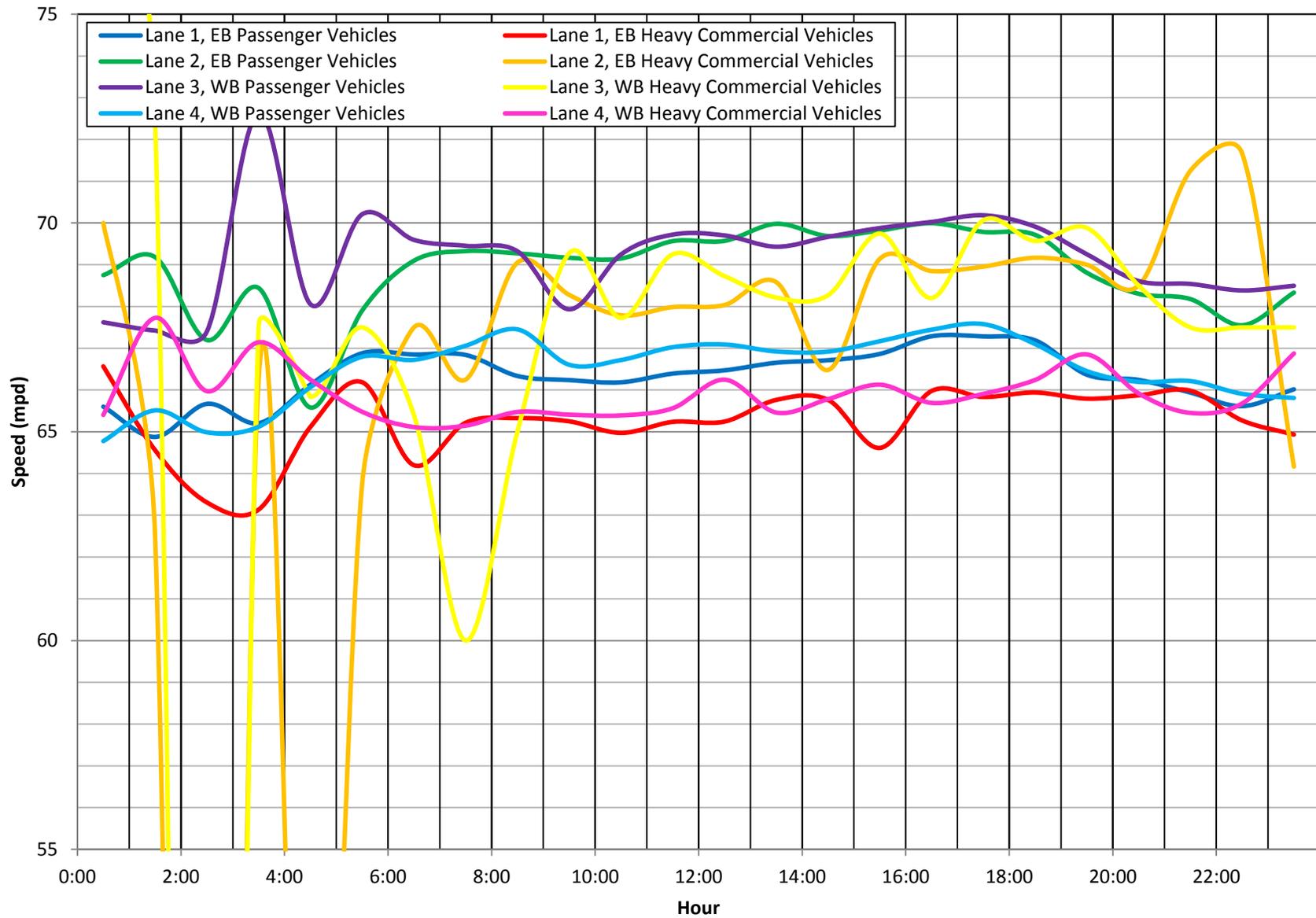


Figure 7 - Average Speed vs. Day of Month

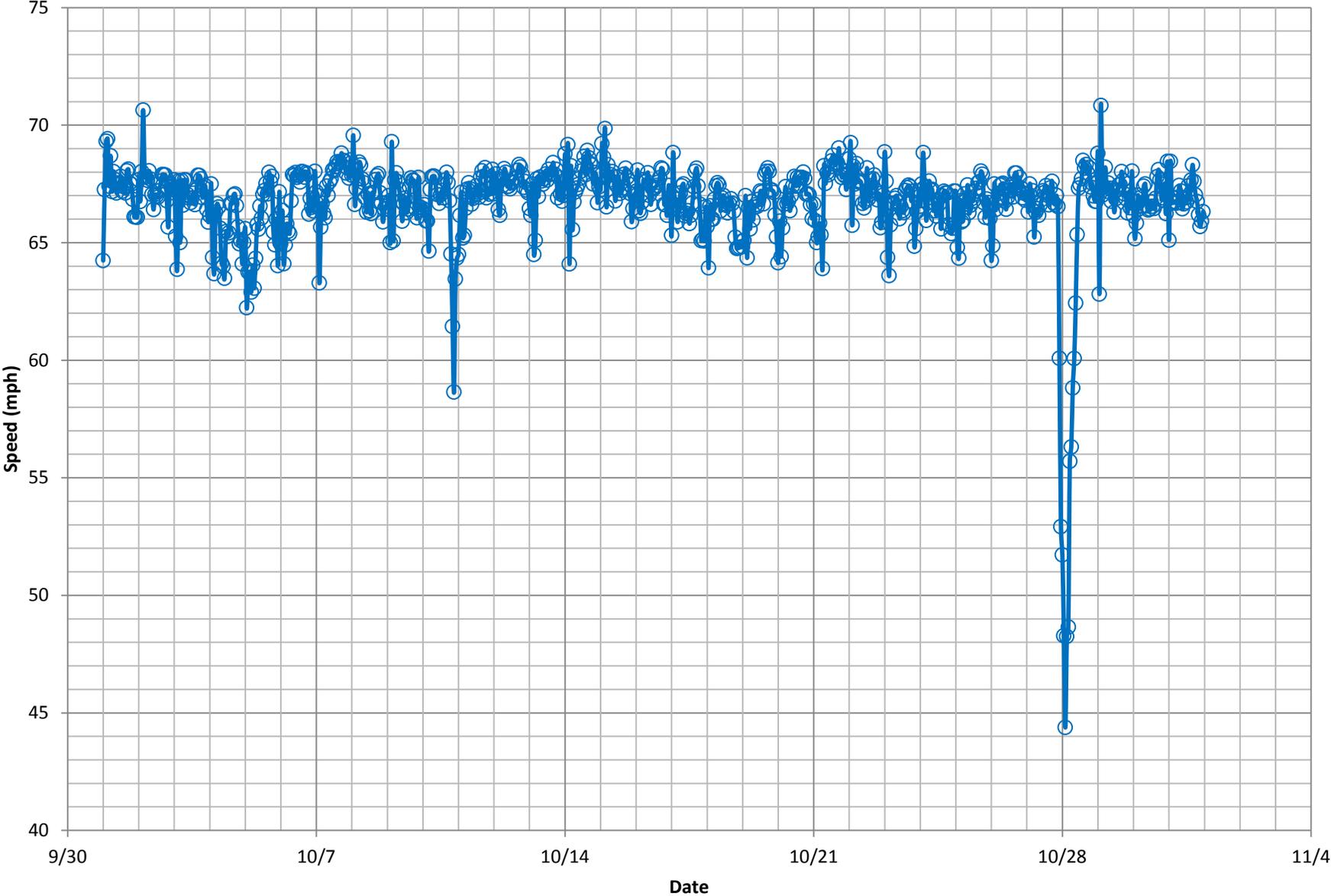


Figure 8 - Average Speed by Lane and Direction vs. Hour of the Day

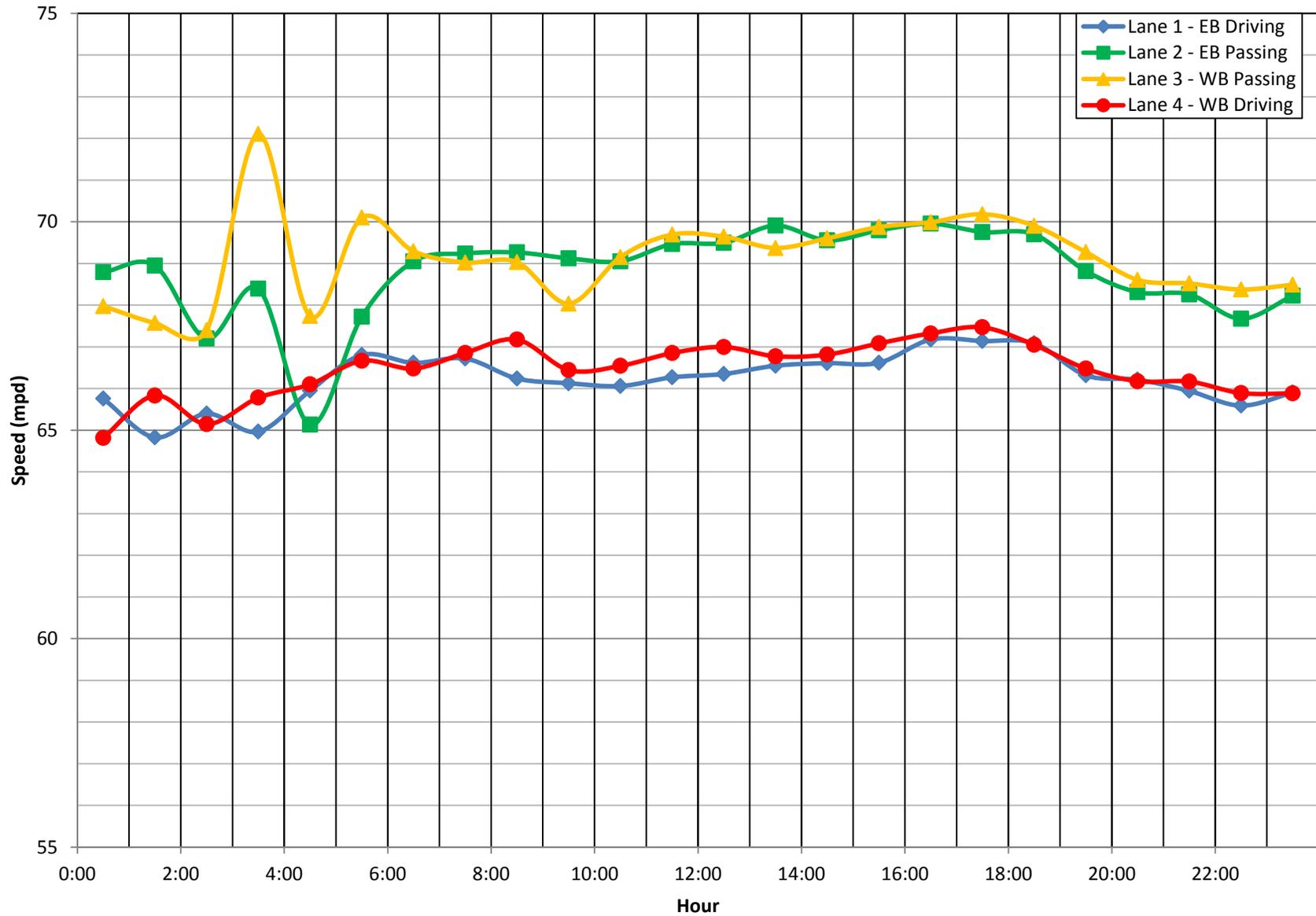


Figure 9 - Total Gross Vehicle Weight by Class and Lane

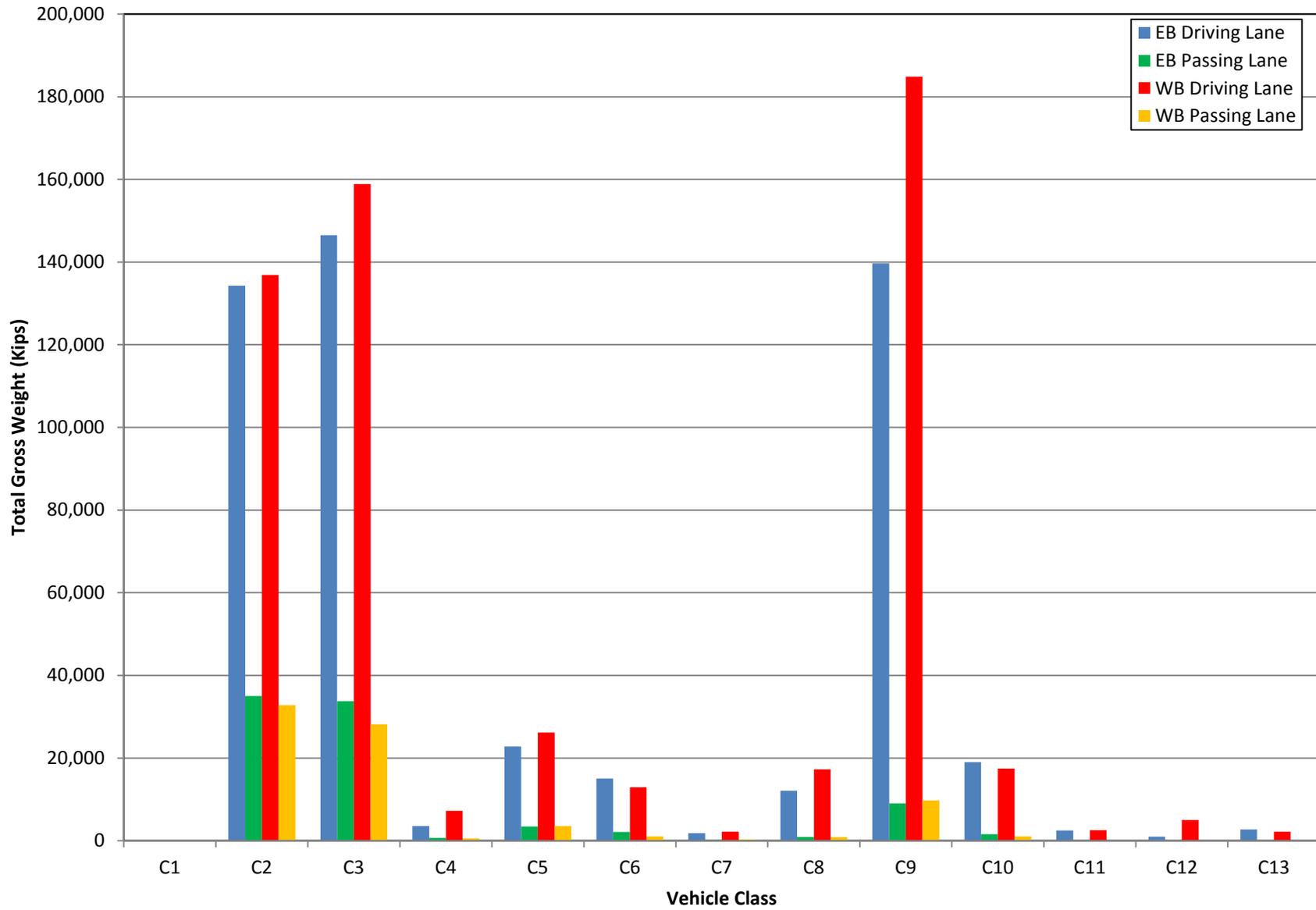


Figure 10 - Total Gross Vehicle Weight by Class

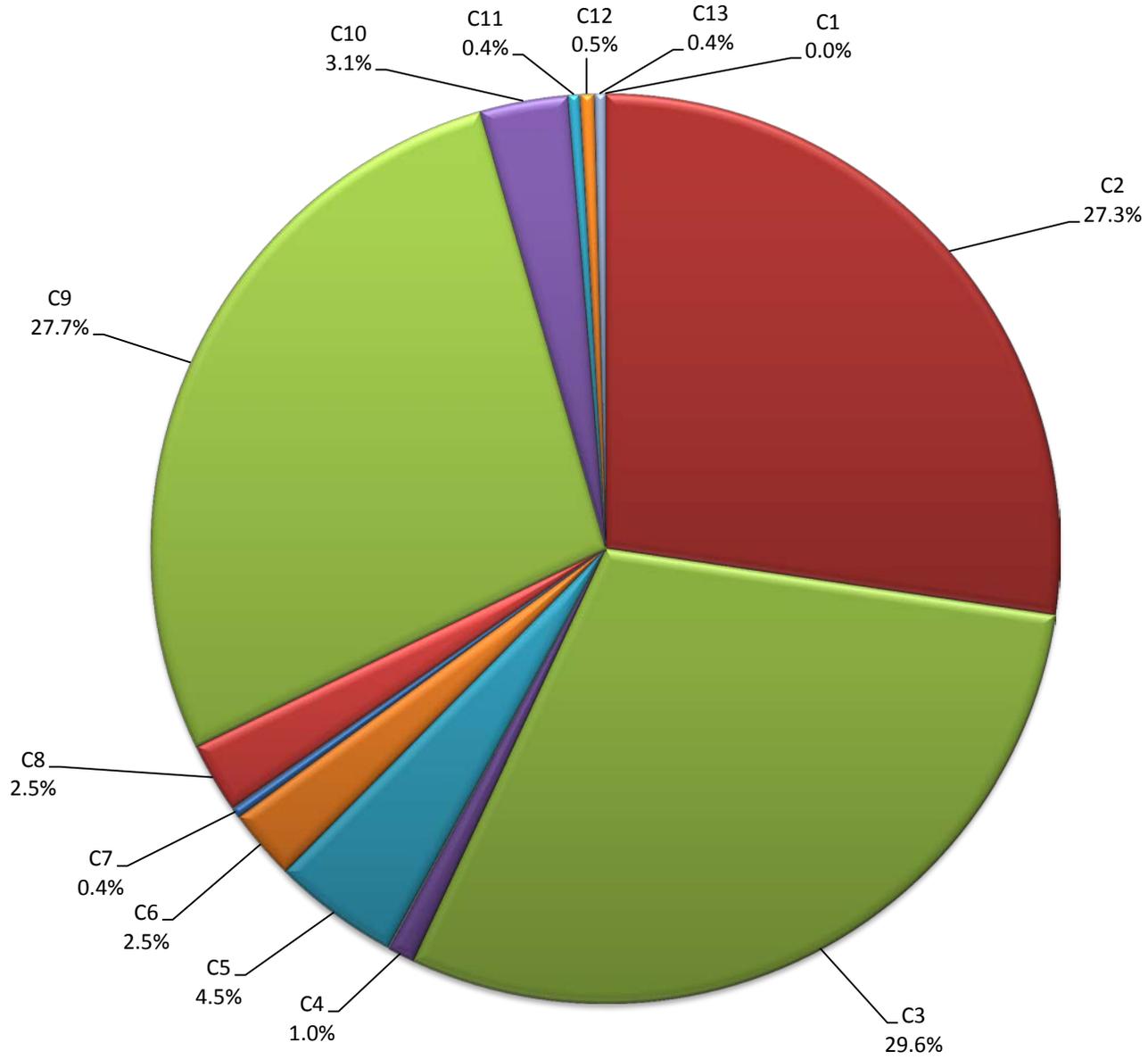


Figure 11 - Total ESALs by Class and Lane

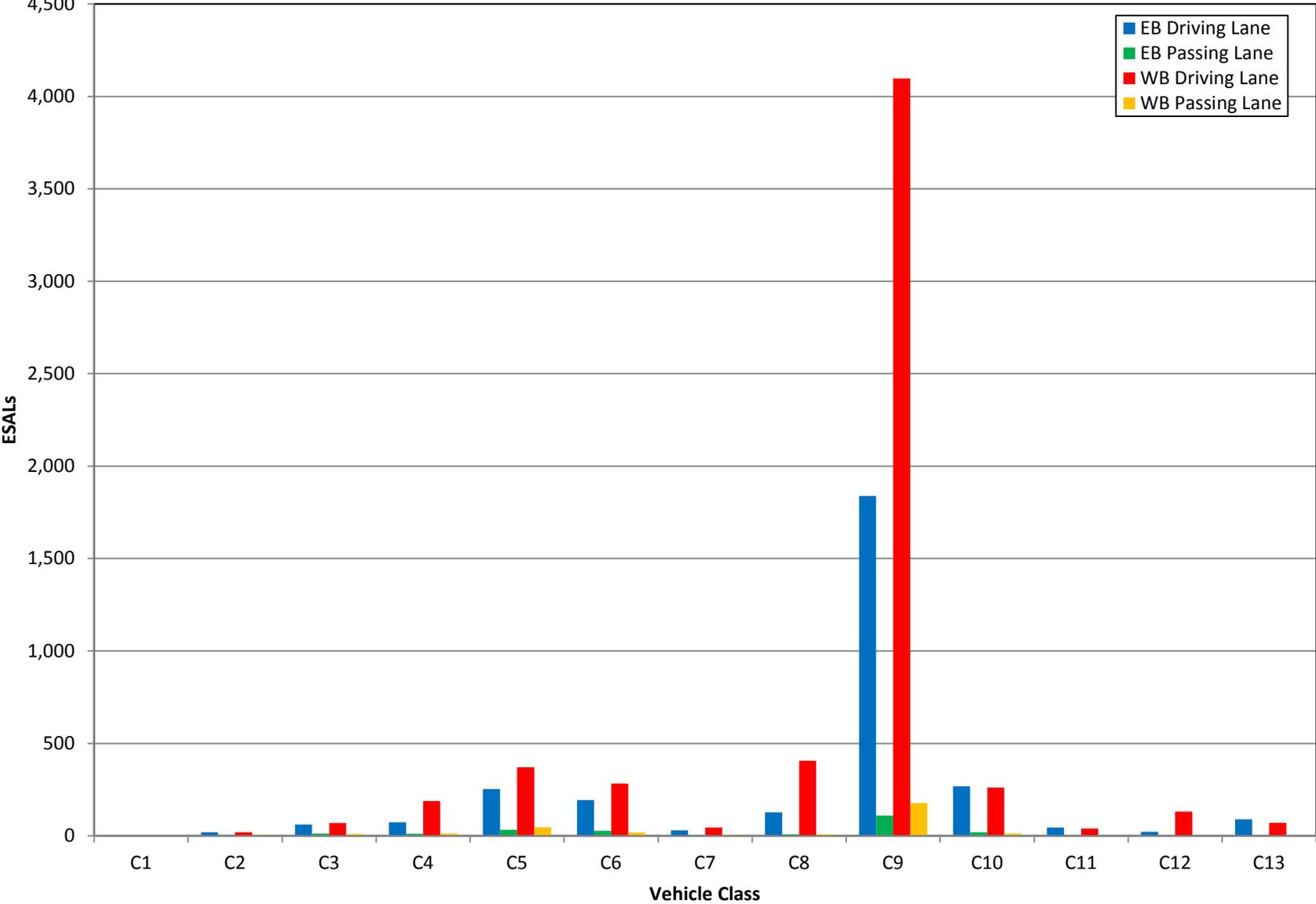


Figure 12 - ESALs by Class

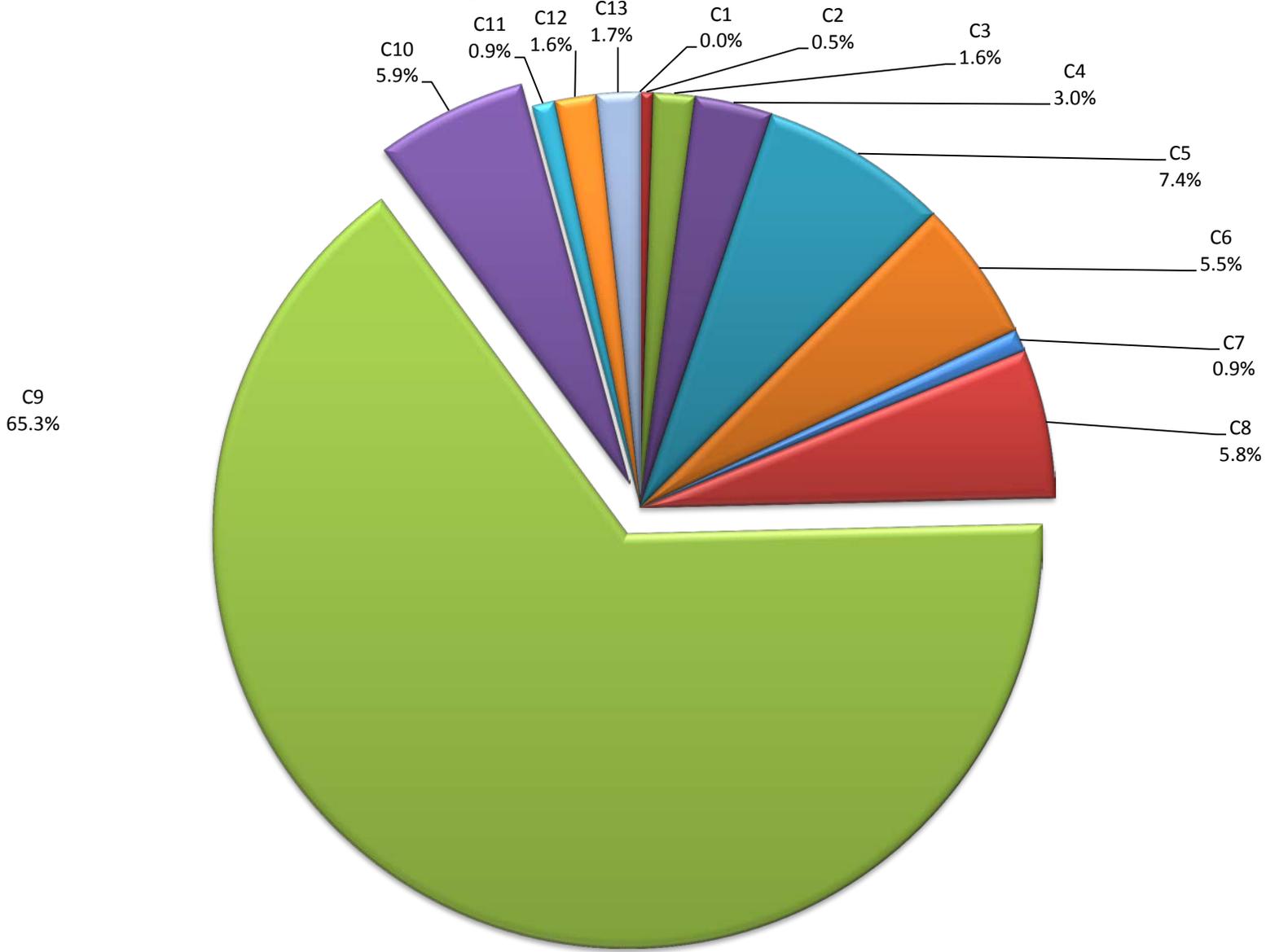
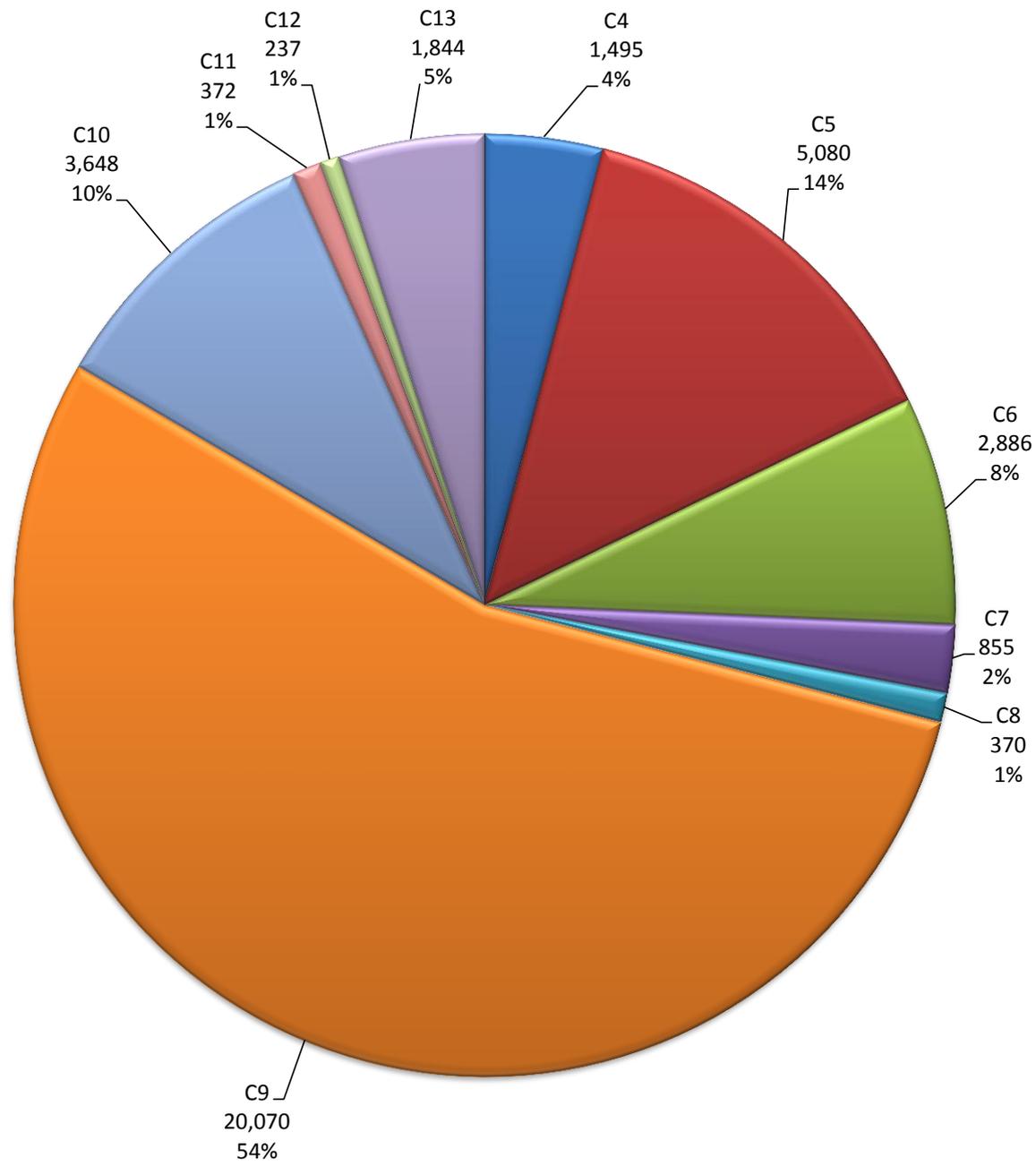


Figure 13 - Freight Tonnage and Percentage by Direction and Class

Eastbound Freight



Westbound Freight

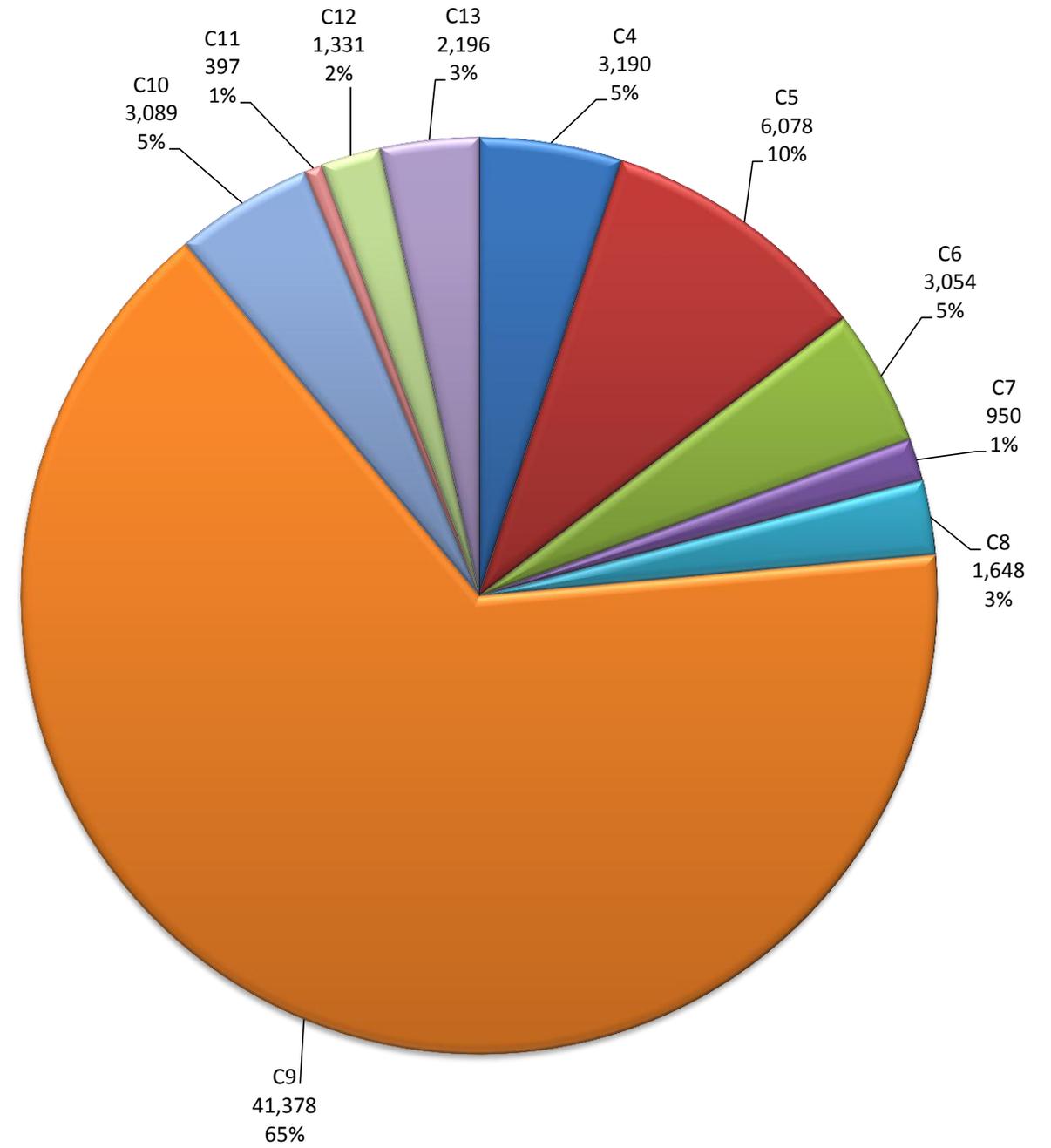


Figure 14 - Monthly Class 9 GVW Histogram - Lane 1 (EB Driving)

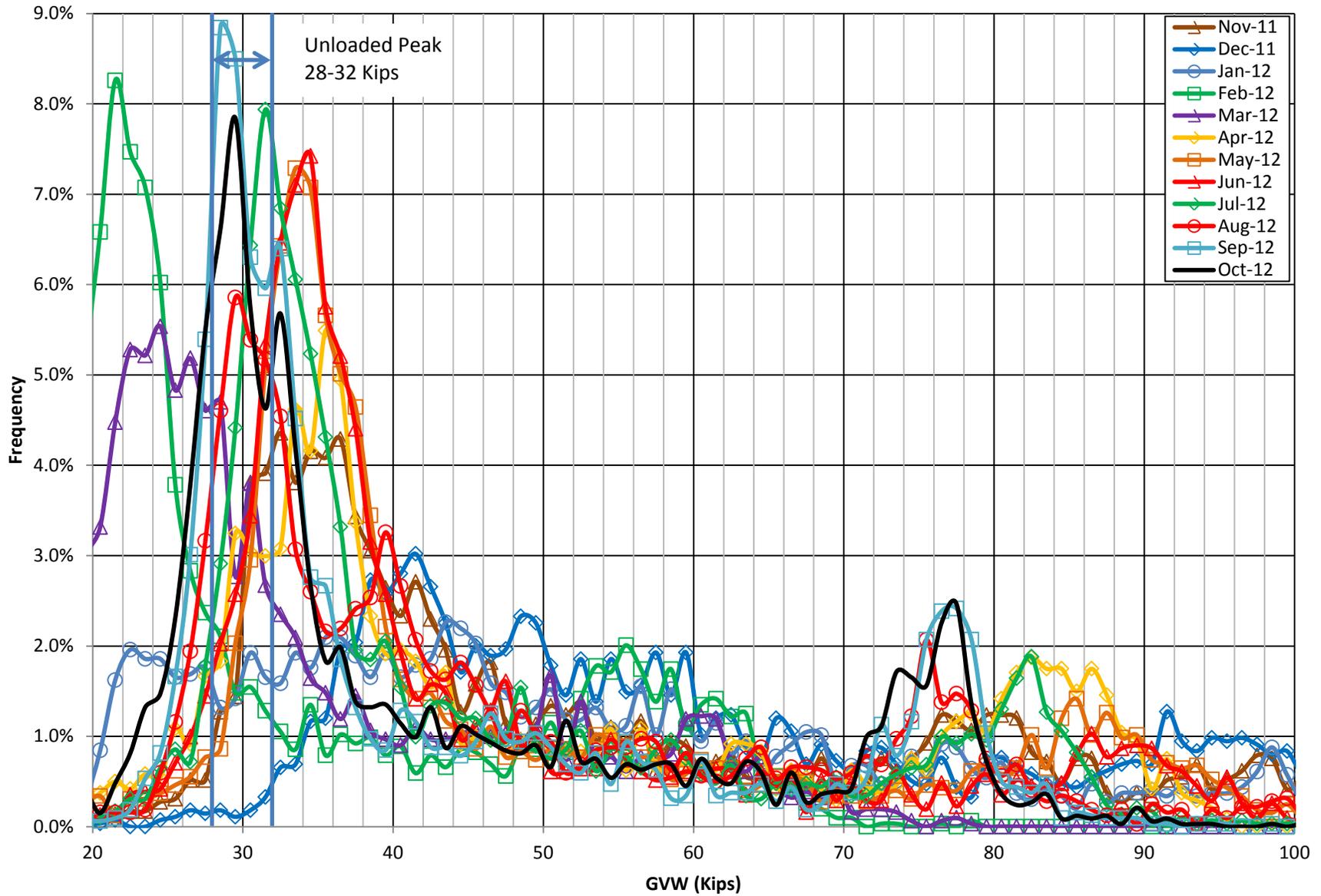


Figure 17 - Monthly Class 9 GVW Histogram - Lane 4 (WB Driving)

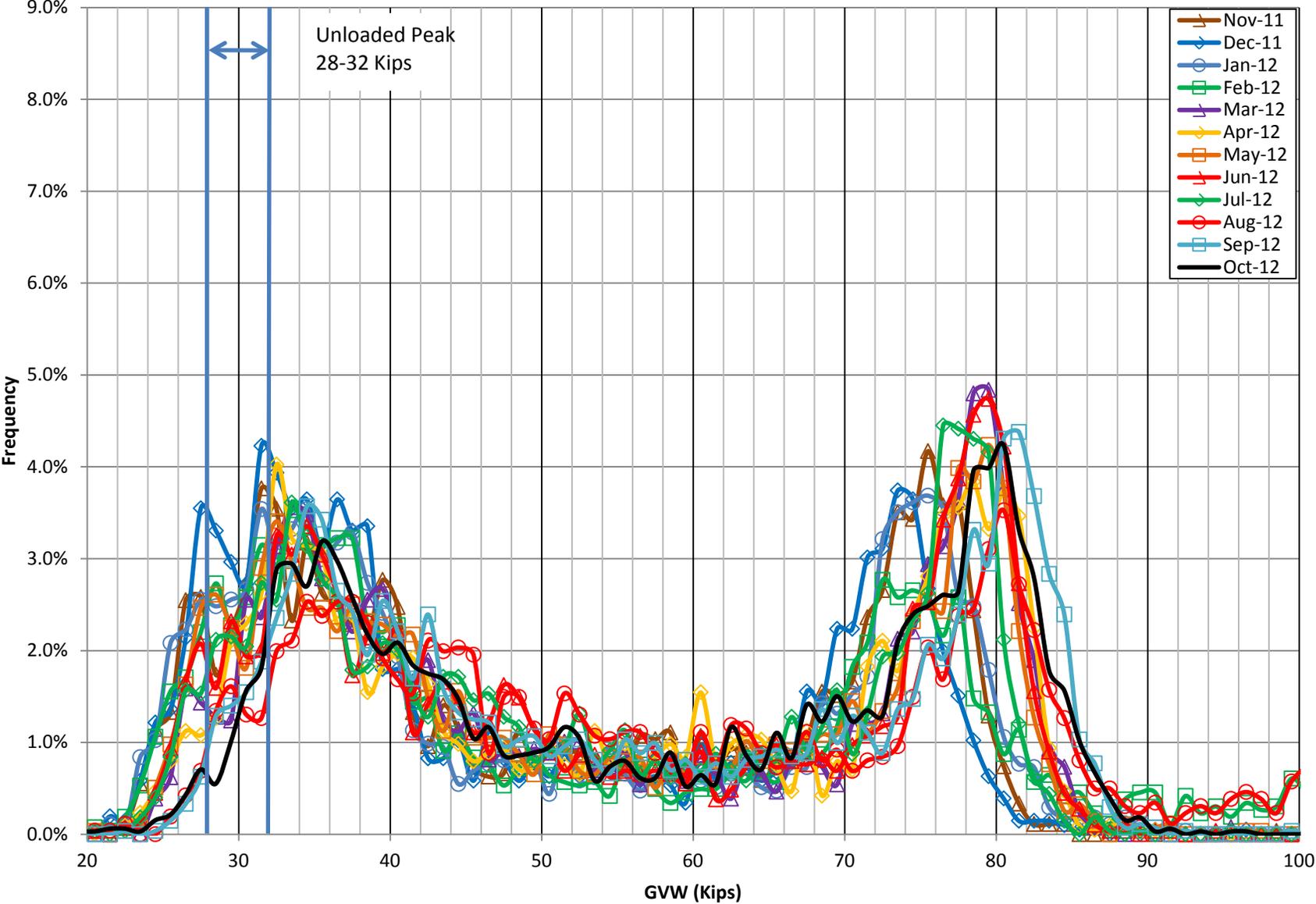


Figure 18 - Unloaded and Loaded Peaks by Lane vs. Date

