

Development of New Time-of-Day Model using the 2007/08 HTS

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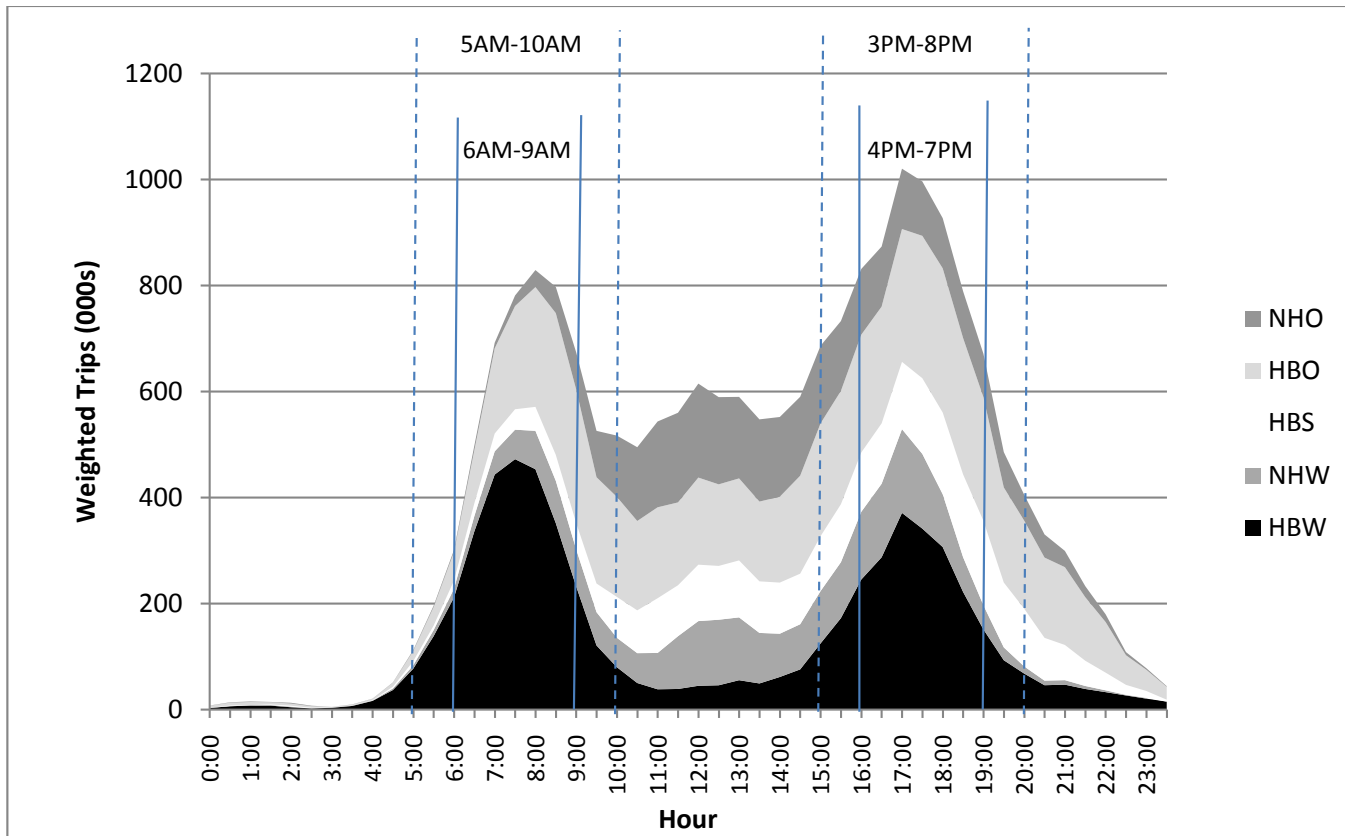
Background

- Version 2.3 model will address time of day (TOD) after mode choice
- Period factors to be applied by
 - Purpose (HBW, HBS, HBO, HBW, NHO)
 - Mode (SOV, Carpool)
 - Direction (Home -> Non-Home, Non-Home->Home)
- 2007/08 HTS will inform new factors
- Changes between 1994 and 2007/08 surveys are a concern
 - Changes should be explainable
- Staff has been reviewing truck TOD profiles as well

New Time-of-Day Developments

- TOD-related changes between Version 2.2 and Version 2.3:
 - Version 2.3 AM and PM peak periods are planned to be expanded from 3-hour to 5-hour duration (5:00-10:00AM and 3:00-8:00PM)
 - Time periods increased from 3 to 4
 - A midday time period is added (10:00AM-3:00PM)
 - NHB trip purpose is subdivided as NHW and NHO
 - In part, because temporal profiles are different

Auto Driver Trip in motion by purpose



Comparison of 1994 to 2007/08 Trip Factors

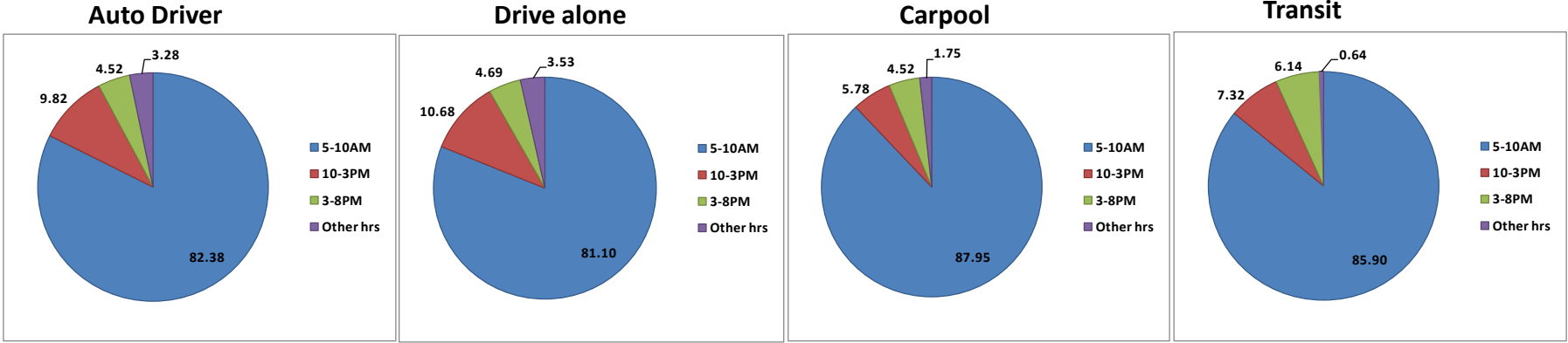
- TOD factors formulated from reported trip start/stop times based on 30-minute “in-motion” summaries
- TOD factor comparisons were formulated by:
 - Four time periods (i.e., the redefined Version 2.3 time periods)
 - Four purposes (i.e., NHB was not split)
- Notable differences between surveys to be aware of:
 - Sample sizes are different (4,800 vs. 11,400 HHs)
 - Geographic extent is different (13 vs. 22 jurisdictions surveyed)
 - Methodological and quality control differences

1994 and 2007/08 Time-of-Day Percentages: Home to Non-Home Direction

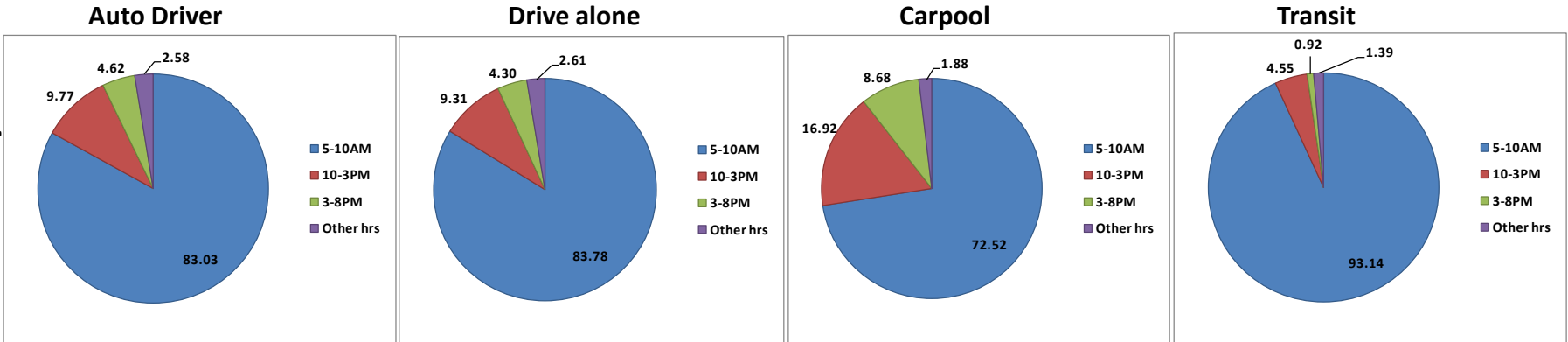
Purpose	Mode	1994 HTS					2007/08 HTS				
		5-10AM	10-3PM	3-8PM	Other hrs	Total %	5-10AM	10-3PM	3-8PM	Other hrs	Total %
HBW	Auto Drv	82.38	9.82	4.52	3.28	100.00	83.03	9.77	4.62	2.58	100.00
	Drv Alone	81.10	10.68	4.69	3.53	100.00	83.78	9.31	4.30	2.61	100.00
	CarPool Psn	87.95	5.78	4.52	1.75	100.00	72.52	16.92	8.68	1.88	100.00
	Transit	85.90	7.32	6.14	0.64	100.00	93.14	4.55	0.92	1.39	100.00
HBS	Auto Drv	21.06	34.71	34.82	9.41	100.00	23.02	35.39	36.10	5.49	100.00
	Drv Alone	23.32	35.08	31.91	9.69	100.00	30.06	36.09	28.17	5.68	100.00
	CarPool Psn	13.17	31.27	45.04	10.52	100.00	11.72	32.40	50.92	4.96	100.00
	Transit	45.38	33.08	21.54	0.00	100.00	48.09	31.94	18.49	1.48	100.00
HBO	Auto Drv	34.14	24.63	33.99	7.24	100.00	36.19	28.29	31.15	4.37	100.00
	Drv Alone	33.99	28.16	30.42	7.43	100.00	35.18	31.36	28.67	4.79	100.00
	CarPool Psn	36.43	16.91	40.04	6.62	100.00	44.29	20.61	32.06	3.04	100.00
	Transit	49.21	29.21	19.32	2.26	100.00	54.80	28.46	15.13	1.61	100.00
NHB	Auto Drv	13.79	40.39	39.39	6.43	100.00	13.43	44.64	37.80	4.13	100.00
	Drv Alone	15.36	42.39	37.64	4.61	100.00	15.33	44.25	36.88	3.54	100.00
	CarPool Psn	11.26	34.45	43.12	11.17	100.00	9.31	42.63	41.87	6.19	100.00
	Transit	19.11	33.56	42.90	4.43	100.00	19.60	24.18	53.16	3.06	100.00

HBW Time-of-Day Percentages: Home to Non-Home Direction

Year: 1994



Year: 2007/08

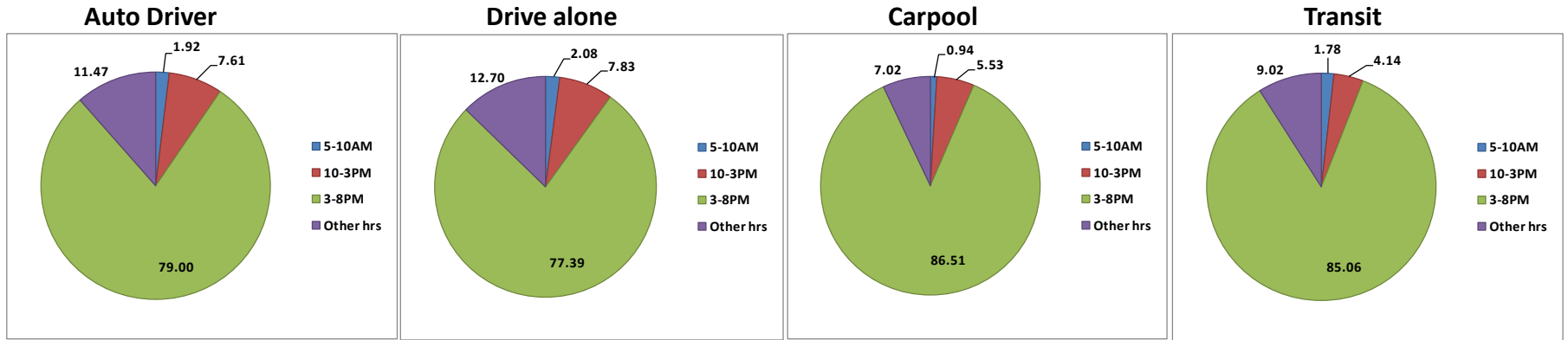


1994 and 2007/08 Time-of-Day Percentages: Non-Home to Home Direction

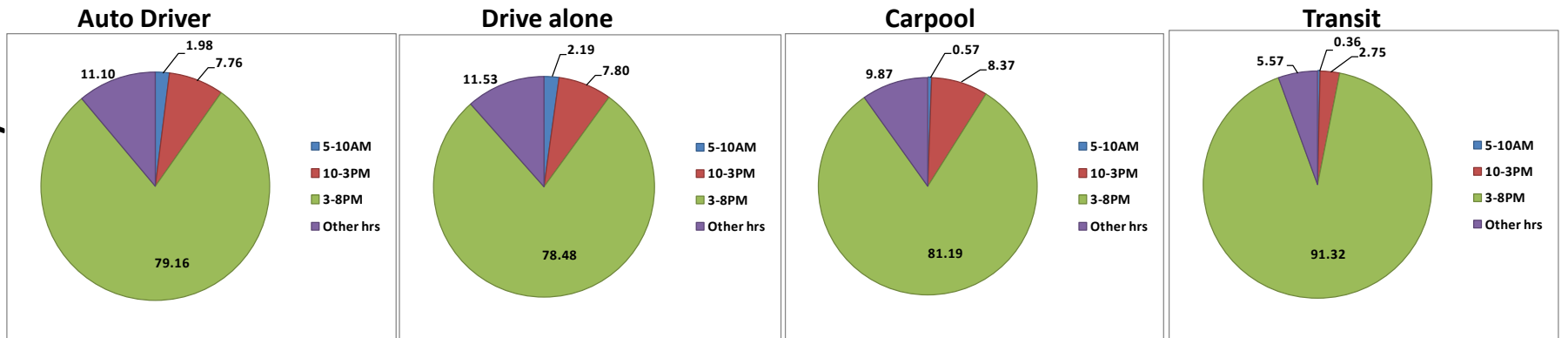
Purpose	Mode	1994 HTS					2007/08 HTS				
		5-10AM	10-3PM	3-8PM	Other hrs	Total %	5-10AM	10-3PM	3-8PM	Other hrs	Total %
HBW	Auto Drv	1.92	7.61	79.00	11.47	100.00	1.98	7.76	79.16	11.10	100.00
	Drv Alone	2.08	7.83	77.39	12.70	100.00	2.19	7.80	78.48	11.53	100.00
	CarPool Psn	0.94	5.53	86.51	7.02	100.00	0.57	8.37	81.19	9.87	100.00
	Transit	1.78	4.14	85.06	9.02	100.00	0.36	2.75	91.32	5.57	100.00
HBS	Auto Drv	3.92	29.21	49.45	17.42	100.00	3.26	30.44	48.73	17.57	100.00
	Drv Alone	4.97	30.48	48.88	15.67	100.00	4.21	31.19	49.23	15.37	100.00
	CarPool Psn	1.51	23.34	51.47	23.68	100.00	1.23	28.34	47.55	22.88	100.00
	Transit	1.46	31.42	52.56	14.56	100.00	1.56	24.56	51.90	21.98	100.00
HBO	Auto Drv	7.94	20.35	44.08	27.63	100.00	10.80	23.85	42.72	22.63	100.00
	Drv Alone	10.24	22.75	40.26	26.75	100.00	13.90	25.07	38.63	22.40	100.00
	CarPool Psn	3.23	15.68	51.12	29.97	100.00	4.64	20.72	53.11	21.53	100.00
	Transit	3.64	21.31	55.09	19.96	100.00	1.31	22.54	48.57	27.58	100.00
NHB	Auto Drv	13.79	40.39	39.39	6.43	100.00	13.43	44.64	37.80	4.13	100.00
	Drv Alone	15.36	42.39	37.64	4.61	100.00	15.33	44.25	36.88	3.54	100.00
	CarPool Psn	11.26	34.45	43.12	11.17	100.00	9.31	42.63	41.87	6.19	100.00
	Transit	19.11	33.56	42.90	4.43	100.00	19.60	24.18	53.16	3.06	100.00

HBW Time-of-Day Percentages: Non-Home to Home Direction

Year: 1994

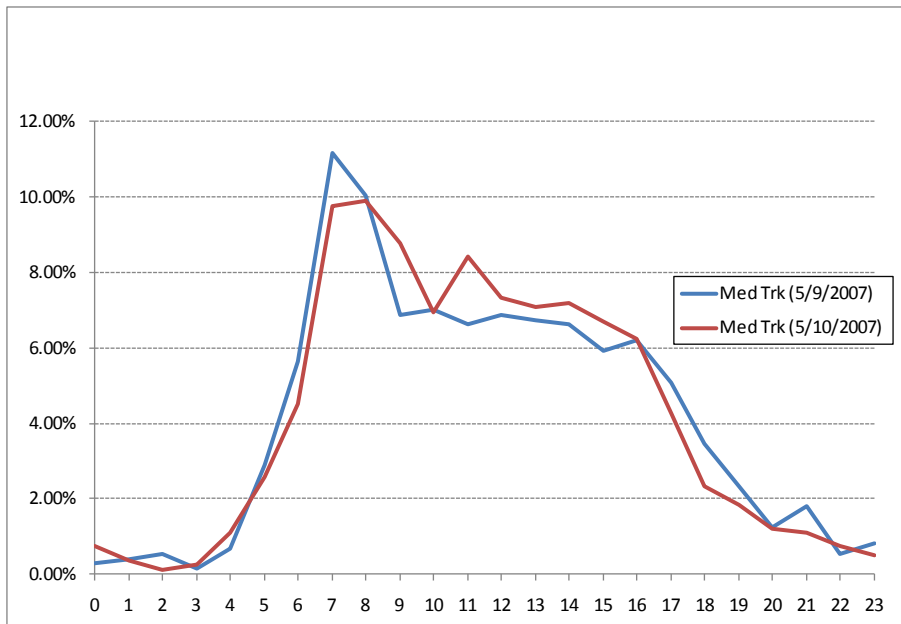


Year: 2007/08



“Typical” Medium Truck Time-of-Day Profile

Count Location: I-66 (between Nutley and Chain Bridge)



	AM Pct.	MD Pct.	PM Pct.	Other hrs
Date	5-10 AM	10-3 PM	3-8 PM	Pct.
5/9/2007	36.64%	33.88%	23.00%	6.47%
5/10/2007	35.53%	37.00%	21.37%	6.11%

- Medium trucks are 2-axle/ 6-tire vehicles (Class 5)
- “Morning Delivery” pattern is most typical of medium truck counts
- Generalized TOD percents for the AM, Midday, PM, Other periods:
~ 35%, 35%, 20%, and 10%

“Typical” Heavy Truck Time-of-Day Profile

Count Location: I-66 (between Nutley and Chain Bridge)



	AM Pct.	MD Pct.	PM Pct.	Other hrs
Date	5-10 AM	10-3 PM	3-8 PM	Pct.
5/9/2007	24.65%	30.85%	13.23%	31.27%
5/10/2007	24.96%	30.10%	13.40%	31.55%

- Heavy trucks are 3-7 axle vehicles (Classes 6-13)
- “Double-peak” pattern appears to be typical of heavy truck counts
 - a “wee” hour peak
 - midday peak
- Generalized TOD percents for the AM, Midday, PM, Other periods:
 ~ 25%, 30%, 15%, and 30%

Summary

- The Version 2.3 model will have expanded peak periods and an added (midday) period
- TOD summaries from the 2007/08 HTS have been formulated
 - Auto driver and drive alone patterns consistent
 - Carpool patterns reflect less travel in peak periods
 - Possible explanation – shift to transit
- Another pressing challenge: hourly counts to validate with