HANOVER POLICE DEPARTMENT

Massachusetts Uniform Citation Data Analysis Report Discussion

Select Board - March 4, 2024

HANOVER POLICE

Citation Analysis

DEPARTMENT MISSION STATEMENT

The Mission of the Hanover Police Department is to prevent crime, preserve order, and protect the rights, lives, and property of the citizens of Hanover. We will cultivate partnerships within our community to identify and effectively respond to the diverse, ever-changing social and cultural demands. Together we will accomplish this with emphasis on integrity, fairness, and professionalism.

Hanover Police Officers carry out their duties with integrity, fairness & professionalism. They are well trained, aware of social concerns & genuine good people who care about the community they serve as well as the culture of the department. I find myself fortunate to work alongside them & I'm proud of the work they do on a daily basis.

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What is the 2021 - 2022 Mass Uniform Citation Report?

As part of their responsibilities under the 2019 law, *__An Act Requiring the Hands-Free Use of Mobile Telephones While Driving__*, the Executive Office of Public Safety and Security (EOPSS) and the Office of Grants and Research (OGR) contracted with a Salem State University research team to analyze Registry of Motor Vehicles (RMV) traffic stop data collected from all Massachusetts uniform citations issued by Massachusetts state and local police departments.

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Goal of this study is to learn more about potential patterns of racial disparities in traffic stops for the purpose of understanding the causes of these disparities. Researchers are very clear about how various variables both known & unknown could influence results differently in each jurisdiction. The study provides a starting point which individual departments may take and build upon to develop and pursue their own secondary analytical approaches.

- Aggregate data for agencies that issued **100** or more citations
  - Gender, date, time, race/ethnicity, age, city/town of residence, search, outcome

- Roughly **80 %** of the 350 Mass law enforcement agencies analyzed

- Researchers excluded agencies with less than **100** citations

  (too small a small sample size)

- **1,270,129** unique traffic stops conducted during the 2-year period

  (Separate analyses were conducted for 2021 and 2022)

- **1,358,720** citations issued statewide

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Researchers Methodology

- Several variables were analyzed by researchers

- Several variables unknown (identified as a limitation by researchers)

- Most emphasis was placed on the "Intertwilight Period" of the day (ITP).
  Refers to a specific window of time during which light conditions naturally fluctuate over the course of a year to account for change of seasons & daylight savings.

- Connecticut Model ("Veil of Darkness" Test) "Intertwilight" period of day is:

  - 4:35AM - 7:16AM

  - 4:14PM - 9:02PM

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Per report: Page 29

Currently, there is no universally accepted benchmark for determining whether racial disparities exist in a particular community (McDevitt et al., 2014). This means that existing research on traffic stops has not identified an accepted threshold for differences between the demographics of drivers stopped and the demographics of the driving population. In other words, researchers and policymakers have not reached agreement on the answer to the question, how much disparity is too much disparity?

Table 1. 2021 and 2022 Statewide Descriptive Statistics, All Stops vs. ITP Stops

		2021 Stops		2022 Stops	
		All Stops (N = 594,213)	ITP Stops (N = 191,831)	All Stops (N = 675,916)	ITP Stops (N = 222, 111)
Mean Age		37.53	37.23	37.93	37.75
Zip Code Matching					
	Intown motorist	30.3%	30.1%	30.1%	30.3%
	Passing through	69.7%	69.9%	69.9%	69.7%
Gender	%				
	Female	36.0%	34.9%	36.1%	35.2%
	Male	63.9%	65.1%	63.9%	64.7%
	Non-Binary	0.1%	0.1%	0.1%	0.1%

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Race	%	2021 All Stops	2021 ITP Stops	2022 All Stops	2022 ITP Stops
	AA/Black	14.4%	13.4%	14.5%	13.2%
	Hispanic	14.5%	13.9%	15.2%	14.8%
	White	66.4%	68.3%	65.1%	66.7%
	Other	4.6%	4.5%	5.2%	5.3%

2021 MASSACHUSETTS UNIFORM CITATION DATA ANALYSIS REPORT
HANOVER POLICE DEPARTMENT

Total Citations[1]:	928	ZIP Code Match Analysis		Stop Rate by City/Town Population	
		Intown motorist:	20.2%	Citations per 1000	
				18 + residents:	86.1
		Passing through:	79.8%		

[1]Total *citations* issued by department, _including_ multiple-citation encounters and crashes

All Stops[2]		(N = 828)		ITP Stops[3]		(N = 289)	
Mean age				Mean age			
			37.28				36.51
Gender	%			Gender	%		
	Female		34.9%		Female		29.8%
	Male		65.1%		Male		70.2%
	Non-binary		0.0%		Non-binary		0.0%
Race	%	Mis/Unk[4]	2.8%	Race	%	Mis/Unk[4]	3.5%
	AA/Black		7.1%		AA/Black		7.2%
	Hispanic		4.7%		Hispanic		4.3%
	White		86.8%		White		87.1%
	Other		1.4%		Other		1.4%

[2]Total unique *stop* incidents by department, _excluding_ multiple-citation encounters and crashes
[3]_Only_ those unique stops occurring between 4:35am and 7:16am (dawn) or 4:14pm and 9:02pm (dusk)
[4]Percentage of cases where race was not reported (missing) or police could not make a determination (unknown)

Comparative Analyses

Stops vs. U.S. Census Demographics				Stops vs. State Average[5]			
Motorist Race	City Dem	% Dif		Motorist Race	State Avg	%Dif	
AA/Black	7.1%	1.0%	6.1%	AA/Black	7.1%	14.4%	-7.3%
Hispanic	4.7%	0.6%	4.1%	Hispanic	4.7%	14.5%	-9.8%
White	86.8%	96.5%	-9.7%	White	86.8%	66.4%	20.4%
Other	1.4%	1.2%	0.2%	Other	1.4%	4.6%	-3.2%

[5]State average represents racial/ethnic breakdown of *all* 2021 stops by *all* MA departments

VoD Analyses

All Stops[2]					ITP Stops[3]			
Race	N	Daylight	Darkness		Race	N	Daylight	Darkness
NW	99	11.8%	16.4%		NW	32	11.2%	16.7%
White	657	88.2%	83.6%		White	216	88.8%	83.3%
Chi-square, X-tab[6]:		.088	*not sig.*		Chi-square, X-tab[6]:		.231	*not sig.*
Odds ratio Exp(B)[7]:		.770	*not sig.*		Odds ratio Exp(B)[7]:		.676	*not sig.*

[6]Sig. *Chi-square* indicates observed pattern in X-tab table is real, and _not_ due to chance alone
[7]*Odds ratio* < 1 indicates NW drivers _less_ likely to be stopped during the day than at night; > 1 indicates NW drivers _more_ likely to be stopped during the day than at night. Only "sig." results can be interpreted.

Citation Outcomes by Race[8]

	Warning	Civil	Criminal	Arrest		Search?	
AA/Black	40.0%	24.6%	29.2%	6.2%	NW	7	N/A
Hispanic	28.6%	23.8%	42.9%	4.8%	White	20	N/A
White	59.3%	29.5%	8.3%	2.9%			
Other	54.5%	27.3%	9.1%	9.1%		Counts	Percent
Chi-square, X-tab[6]:	.000*	*sig.*					

[8]Analyzes total *citations* issued by department, _including_ multiple-citation encounters and crashes

2022 MASSACHUSETTS UNIFORM CITATION DATA ANALYSIS REPORT
HANOVER POLICE DEPARTMENT

Total Citations[1]: **1,321**	ZIP Code Match Analysis		Stop Rate by City/Town Population	
	Intown motorist:	**18.6%**	Citations per 1000	
			18 + residents:	**122.5**
	Passing through:	**81.4%**		

[1]Total *citations* issued by department, <u>including</u> multiple-citation encounters and crashes

All Stops[2]		(N = 1,165)		ITP Stops[3]		(N = 439)	
Mean age				Mean age			
		39.09				38.81	
Gender	%			Gender	%		
	Female	39.3%			Female	37.2%	
	Male	60.6%			Male	62.3%	
	Non-binary	0.2%			Non-binary	0.5%	
Race	%	Mis/Unk[4]	3.0%	Race	%	Mis/Unk[4]	2.7%
	AA/Black	7.1%			AA/Black	5.9%	
	Hispanic	3.1%			Hispanic	3.5%	
	White	88.8%			White	89.9%	
	Other	1.0%			Other	0.7%	

[2]Total unique *stop* incidents by department, <u>excluding</u> multiple-citation encounters and crashes
[3]<u>Only</u> those unique stops occurring between 4:35am and 7:16am (dawn) or 4:14pm and 9:02pm (dusk)
[4]Percentage of cases where race was not reported (missing) or police could not make a determination (unknown)

Comparative Analyses

Stops vs. U.S. Census Demographics				Stops vs. State Average[5]			
Motorist Race	City Dem	% Dif		Motorist Race	State Avg	%Dif	
AA/Black	7.1%	1.0%	6.1%	AA/Black	7.1%	14.5%	-7.4%
Hispanic	3.1%	0.6%	2.5%	Hispanic	3.1%	15.2%	-12.1%
White	88.8%	96.5%	-7.7%	White	88.8%	65.1%	23.7%
Other	1.0%	1.2%	-0.2%	Other	1.0%	5.2%	-4.2%

[5]State average represents racial/ethnic breakdown of *all* 2022 stops by *all* MA departments

VoD Analyses

All Stops[2]				ITP Stops[3]			
Race	N	Daylight	Darkness	Race	N	Daylight	Darkness
NW	117	10.6%	14.6%	NW	38	12.6%	8.8%
White	896	89.4%	85.4%	White	299	87.4%	91.2%
Chi-square, X-tab[6]:		.082	*not sig.*	Chi-square, X-tab[6]:		.299	*not sig.*
Odds ratio Exp(B)[7]:		.836	*not sig.*	Odds ratio Exp(B)[7]:		5.374*	*sig.*

[6]Sig. *Chi-square* indicates observed pattern in X-tab table is real, and <u>not</u> due to chance alone
[7]*Odds ratio* < 1 indicates NW drivers <u>less</u> likely to be stopped during the day than at night; > 1 indicates NW drivers <u>more</u> likely to be stopped during the day than at night. Only "sig." results can be interpreted.

Citation Outcomes by Race[8]

	Warning	Civil	Criminal	Arrest		Search?	
AA/Black	56.2%	27.0%	14.6%	2.2%	NW	0	N/A
Hispanic	30.2%	18.9%	49.1%	1.9%	White	12	N/A
White	67.1%	22.3%	7.6%	3.0%			
Other	58.3%	25.0%	16.7%	0.0%		Counts	Percent
Chi-square, X-tab[6]:	.000*	*sig.*					

[8]Analyzes total *citations* issued by department, <u>including</u> multiple-citation encounters and crashes

All Stops – 117 Total

NW = Non-White

ITP Stops – 38 Total

ITP Odds Ratio (sig.)
5.374 (2022)
vs
.676   (2021)

3.8 % difference between daylight/darkness represents a drastic ratio increase from 21 to 22 which required more in-depth analysis.

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Upon reviewing data analysis report the following footnote was included in which researchers acknowledge significant Hanover PD data not analyzed due to "Missingness"

[18]Hanover PD had a significant portion (23.2%) of its cases not analyzed due to missingness. See "Some Notes on Missing Data" section below for more information on how patterns of missingness might affect results.

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23.2 % of data not analyzed translates into **308** citations not included in this study

308 is more citations than many agencies issued for all of 2022

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Citation Analysis

• How could this missing data impact analysis results?

Per Researchers Analysis Report page 27 -

For department-level analyses specifically, the percentage missing/unknown race and

ethnicity is provided for additional context. This statistic is provided for race and ethnicity only

(and not other demographic variables) because 1) this is one key variable which is left up to

officer perception and not listed explicitly on a Massachusetts driver's license, 2) it is a variable

of primary interest when examining patterns of disparity, or profiling, and 3) significant

percentages of missingness were identified in a small fraction of agencies, which could

potentially affect the validity of their demographic and Veil of Darkness (VoD) results.

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Citation Analysis

Why is such a high percentage of data classified as missing?

What is different when comparing HPD to most agencies in terms of citation reporting?

Answer: HPD does not utilize Electronic Citation Reporting
- **85%** of Agencies in MASS participate in E-Citation program
- Streamlines the submission of all data directly to RMV
- Citation fields cannot be bypassed (hence data will not be missing)

HPD physically mailed 1 carbon paper copy of citation to RMV in 2022

This very likely accounts for most of the missing data (unreadable)

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Why does HPD not participate in E-Citation program?

Answer: We are in the process of securing grant funding to outfit all marked cruisers with E-Citation equipment.

See letter sent to Mass CJIS dated January 18, 2024

Town of Hanover

Timothy A. Kane
Chief of Police

Police Department

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Hanover, MA 02339-0214
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Email: timothy.kane@hanover-ma.gov

January 18, 2024

Joseph Demers – MACCS Coordinator
Massachusetts Department of Criminal Justice Information Services
200 Arlington Street, Suite 2200
Chelsea, MA 02150

Re: MACCS e-citation grant funding

Mr. Demers,

I am wiring this letter with the intent of expressing my interest in the MACCS e-citation grant opportunity for printers. I understand a letter of interest is required and respectfully request your consideration of grant funding being awarded to the Hanover Police Department for the installation of in-car vehicle hardware and installation for 9 marked police vehicles. To expedite the installation process, Lt. David Zemotel will be assigned as the point of contact for this project.

Thank you for your consideration!

Best regards,

Timothy A. Kane
Chief of Police
Hanover Police Department

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MOTOR VEHICLE AUTOMATED CITATION AND CRASH SYSTEM (MACCS)

State and Local Law Enforcement Agency grant program

Jamison R. Gagnon
Commissioner

Michaela Dunne
Deputy Commissioner

Joseph Demers
MACCS Coordinator

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Progress Update

Completed Agencies:	288
Pending Training:	7
Pending Installation	8
New applicants awaiting grant award:	8
Have not applied:	33

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The good news...

First time grant applicants after renewed outreach effort:

- Freetown
- Hanover
- North Attleboro
- Stoneham
- Sutton
- Quincy
- Wakefield
- Worcester

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Enhancements

Programmed:
- Crash Report Manual link available in MACCS Crash Report
- Onboarding of Mark43 and QED to the return of service function (data backfill into RMS/CAD systems)

Future proposals:
- Updating Offense Codes (accuracy and specificity)
- Small changes to increase efficiencies for users
- Motor Vehicle Exchange Form as a MACCS menu option
- Updates to further align with police training

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Records Management System – IMC

2022 – First full year using new RMS

- *Upon notification of report, a flaw in software identified*
- *Race reporting of citation data is not in-line with uniform citation race options*

  - **Hispanic Race missing on "Citation tab"**
  - **Hispanic listed as option under "Ethnicity" not race**

While this has no impact on data submitted to RMV, it could potentially impact agencies ability to monitor racial profiling stats

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HPD routinely monitors stats pertaining to racial disparity although we have never monitored this data using the VOD

Hanover Police Department   Page: 1

Race Data Entry
From: 01/01/2022 Thru: 12/31/2022

Race Data Entry

Black	57	4.5%
Asian or Pacific Islander	10	0.8%
Hispanic	37	2.9%
American Indian or Alaskan Native	1	0.1%
Middle Eastern or East Indian (South Asian)	1	0.1%
White	1126	88%
Missing	48	3.8%
TOTAL	**1280**	

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Hanover Citations (per report)

1,320 Total Citations

1,013 Analyzed
- **896** White Motorists
- **117** Non White Motorists
  - **38** ITP
    - **17** Hispanic
    - **17** Black (1 operator issued 2 cits)
      - 1 Result of outside agency arrest
    - **2** Asian
    - **1** American Indian
    - **4** Result of Crashes
      Not officer initiated stops

Post Stop Outcomes (ITP)

- **20** Warnings
- **10** Criminal Summons (Unlicensed Operation = Limited Discretion)
- **8** Civil Citations

Race % Comp vs State Avg. (per report)

	Hanover	**State**
White	**88.8%**	65.1%
AA/Black	**7.1%**	14.5%
Hispanic	**3.1%**	15.2%
Other	**1%**	5.2%

* Stops resulting in verbal warnings are not mandated to be tracked and most agencies issue an equal if not larger frequency of VW's than citations.

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Citation Count by Comparison (2022) – Hanover & Surrounding Communities

Hanover	1,320
Hansen	1,052
Abington	675
Duxbury	669
Rockland	590
Whitman	365
Pembroke	353
Norwell	281
Marshfield	286

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VOD theory does not line up with HPD approach to traffic

- **82%** of HPD cits issued in daylight opposed to only **18%** during darkness

- HPD conducts TE during these hours due to massive disparity in volume compared to overnight (primarily state highways Rt.53, 123 & 139)

- Directed patrols deployed to high crash frequency locations as defined by MUTCD.

MUTCD = Manual on Traffic Control Devices (Federal Highway Administration)

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Correlation does not = Causation

11. As noted throughout the report, while the descriptive and associative statistical

    techniques presented can establish relationships, or correlations between variables

    (such as daylight conditions, race/ethnicity, citation and search outcomes), these

    patterns cannot be taken to represent causation. A standard caveat in all quantitative

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    research is that correlation does not equal causation. This is true in studying

    Massachusetts traffic stops/citations.

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Crash Data – Totals for Town of Hanover

2018 - **611**

2019 - 532

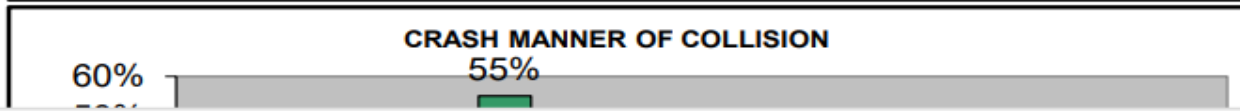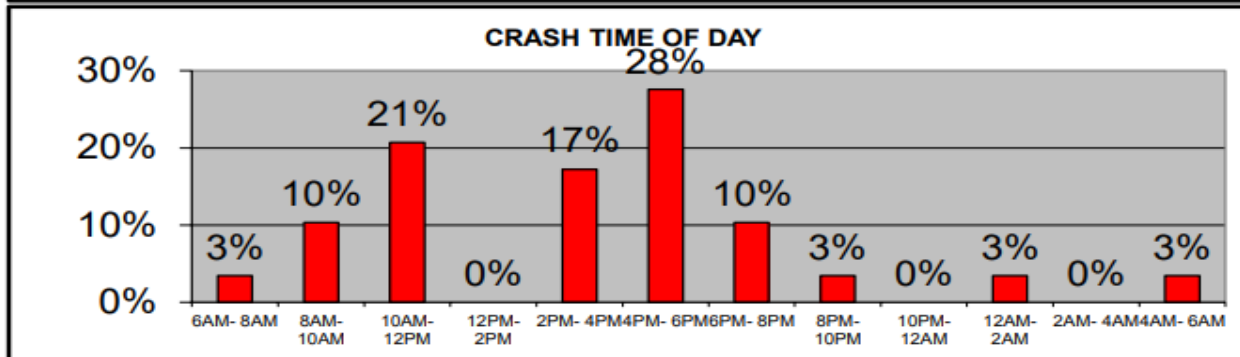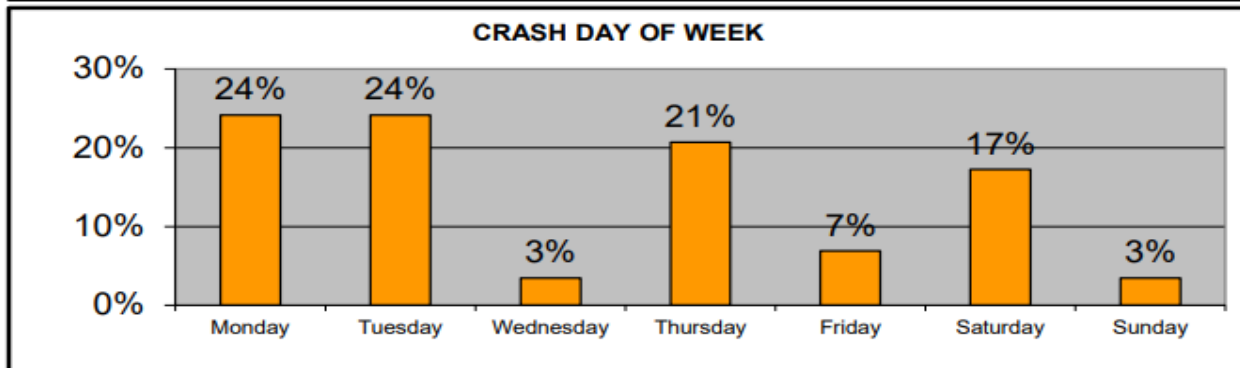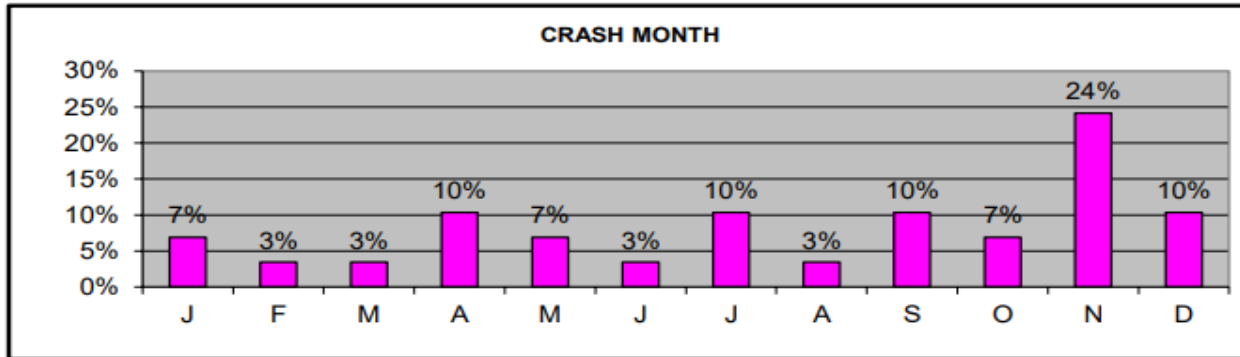2020 - 419

2021 - 354

2022 - 448

2023 - **585**

Gradual dip in crash data followed by gradual increase follows timeline of the closing of Hanover Mall & opening of Hanover Crossing in 2022. This is significant as a high percentage of crashes occurred on state highways resulting in increased traffic enforcement at these locations where traffic is more diverse than Hanover demographics.

Crash Data
January 2018 – December 2022

Crash Data Summary Tables and Charts
Hanover Town Center - Hanover, MA

CRASH MONTH

Month	%
J	7%
F	3%
M	3%
A	10%
M	7%
J	3%
J	10%
A	3%
S	10%
O	7%
N	24%
D	10%

CRASH DAY OF WEEK

Day	%
Monday	24%
Tuesday	24%
Wednesday	3%
Thursday	21%
Friday	7%
Saturday	17%
Sunday	3%

CRASH TIME OF DAY

Time	%
6AM-8AM	3%
8AM-10AM	10%
10AM-12PM	21%
12PM-2PM	0%
2PM-4PM	17%
4PM-6PM	28%
6PM-8PM	10%
8PM-10PM	3%
10PM-12AM	0%
12AM-2AM	3%
2AM-4AM	0%
4AM-6AM	3%

CRASH MANNER OF COLLISION

60%
55%

Hanover PD relies heavily on crash data to strategically choose when/where to conduct TE

Rt. 139 Crash Data

Highest % of crashes occur during evening ITP
- **28%** from 4-6PM
- **10%** from 6-8PM
  - **38%** total during

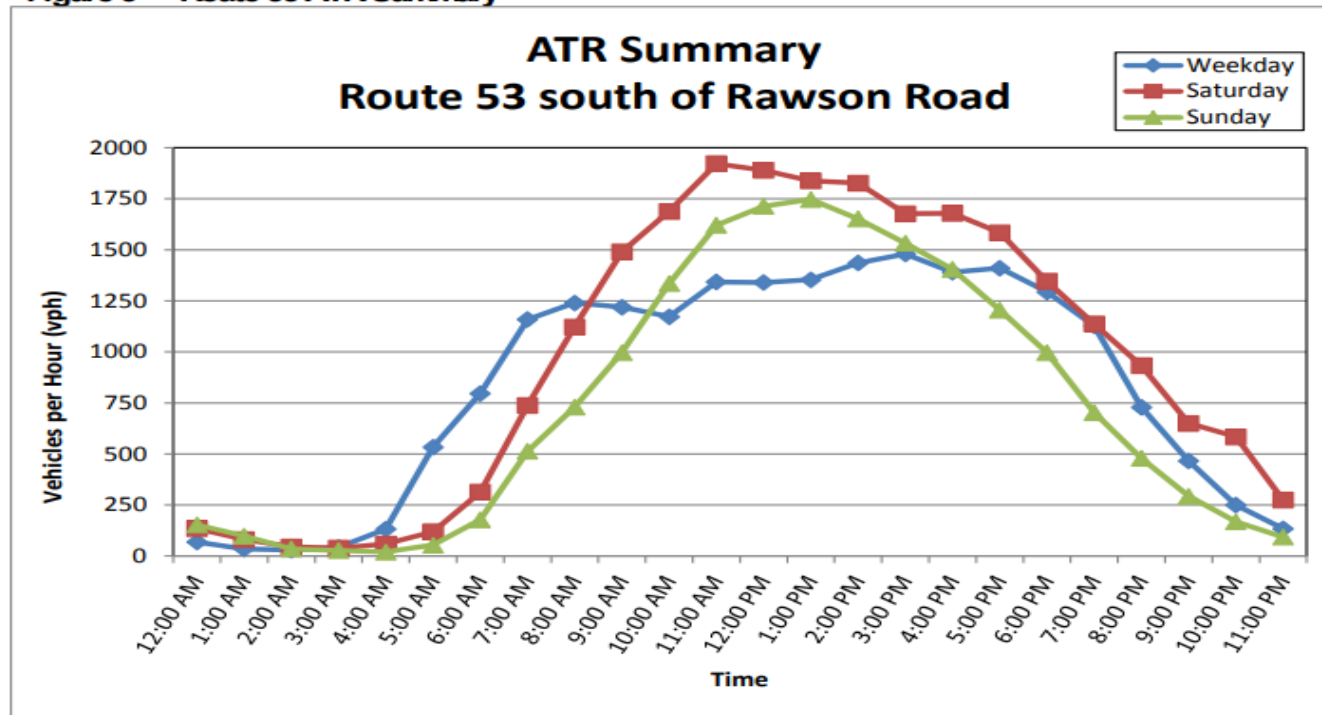Less than **9%** of crashes occur after darkness
In total **91%** of crashes occur during daylight (as defined by VOD methodology)

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Figure 3   Route 53 ATR Summary

ATR Summary
Route 53 south of Rawson Road

Legend: Weekday, Saturday, Sunday

Source: Vanasse Hangen Brustlin, Inc. Based on automatic traffic recorder (ATR) counts conducted in April and May 2014

Manual turning movement counts (TMCs) were collected during the weekday morning (7:00 to 9:00 AM), weekday evening (4:00 to 6:00 PM, and Saturday midday (11:00 AM to 1:00 PM) peak periods in April 2014 to quantify current traffic volumes traveling through the key intersections in the study area. Traffic volume data is

2014 Traffic study which drives current HPD approach to crash mitigation. Deploy resources directly towards the problem areas at the problematic times

HPD Safety Officer prioritized this approach as did the town with the formation of a Traffic Safety Committee formed in 2016

This flow chart/traffic count is very consistent with hours noted as VOD

vhb

Table 3   2011 HSIP Crash Clusters

EPDO Range	Town	Location
50-150	Hanover	Columbia Road (Route 53) at Broadway
>50	Hanover	Columbia Road (Route 53) at Rockland Street (Route 139)

Source: MassDOT. <http://services.massdot.state.ma.us/maptemplate/topcrashlocations/ >

- 2011 Crash Study Identified two significant "Crash Cluster" locations on Rt.53/139
- Rt.53/Broadway intersection now identified as top 200 crash location on state roads
  - Includes a fatal accident

These studies & data points drive HPD to show a significant presence on state roads at the most travelled times
DAY LIGHT

As a result 81.4% of citations are issued to non-resident motorists (mostly state roads)
The demographics/race of motorists travelling through town do not align with local demographics

Hanover PD in Response to Citation Study

- Work with EOPSS to facilitate discussions/communications with research team
  - Chief working with EOPPS Senior Policy Advisor. EOPSS is very receptive to our concerns

- Chief to participate in statewide meetings to discuss state findings with stakeholders

- Solidify RMS data entry & submissions to affirm accuracy/usability of data for future research
  - E – Citation Program prioritized
  - New RMS scheduled for September 2024 – Hexagon

- Begin tracking all stops to include those resulting in verbal warnings

- Meet with individual officers to listen to their concerns & discuss the nuances of the research.
  - Important to gain valuable feedback from those who's "perception" is being analyzed

- **Develop a RMS tracking that accounts for VOD variables for future monitoring (Immediately)**

- Continue training officers in state mandated subject matter to include Fair & Impartial Policing, Implicit Bias
  - Department is in process of implementing innovative Virtual Reality Training program in town which will incorporate these trainings. **Street Smart VR**