

**Vermont Crime Analysis
Using National Incident-Based Reporting System (NIBRS) Data
Review of Day of Week and Time of Day**



Submitted to:

Vermont Department of Public Safety

Submitted by:

Christopher Louras
Crime Research Group
P.O. Box 1433
Montpelier, VT 05601
802-230-4768
www.crgvt.org

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Introduction

A series of interviews with criminal justice stakeholders conducted by Crime Research Group (CRG) in 2020 concluded that policymakers at both the state and local levels rely on access to accurate data to fully understand the scope of criminal incidents that occur within Vermont generally and within communities specifically. Without timely and accurate information, those policymakers recognize the inherent challenge in developing both short- and long-term effective strategies to address the needs of the constituencies they serve. To that end, this report analyzes five years of National Incident Based Reporting System (NIBRS) data for incident trends related to law enforcement agencies' recording day(s) of the week and time of day for criminal events. While this study by no means provides a comprehensive summary of how law enforcement agencies spend their time in response to calls for service, it provides a glimpse into one critical component, when crimes occur and/or are recorded within Vermont's data systems, that is needed to effectively and efficiently serve the public.

About NIBRS Data

Approximately 18,000 law enforcement agencies nationwide report data on known and reported crimes. Law enforcement agencies record administrative, offense, property, victim, offender, and arrestee information for about 28 offense categories that include 71 specific types of offenses (Group A offenses) as well as arrest data for 13 offenses categorized as "Group B." Some examples of Group A offenses include arson, bribery, drug/narcotic violations, fraud, homicide, assault, and prostitution. Examples of Group B offenses include disorderly conduct, failure to appear, drunkenness, perjury, and liquor law violations. The user manual offers¹ more detail on the type of information that is recorded in NIBRS and how the information is coded. It is important to remember that only crimes known to law enforcement are captured in NIBRS.

¹ The [NIBRS User Manual — FBI](#) - defines incident as "one or more offenses committed by the same offender, or group of offenders acting in concert, at the same time and place" (p. 5). This means that each incident can involve multiple offenses. Law enforcement agencies capture each offense on a separate line in the NIBRS database.

Incidents by Day of Week and Time of Day

All Recorded Incidents

Between 2015 and 2020, there were 114,407 total incidents reported in NIBRS in Vermont. Figure 1 below is a heat map reflecting these incidents by the day of the week and time of day they occurred and illustrates that most incidents were recorded Monday through Friday between the hours of 8:00am and 6:00pm. The largest numbers are represented by the darkest red and the lowest numbers are represented by dark green, with yellow and orange showing mid-range numbers.

Figure 1. All Incidents by Day of Week/Time of Day

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
12:00AM	560	385	341	379	427	451	492
01:00AM	377	194	173	191	190	220	405
02:00AM	275	148	134	139	157	160	320
03:00AM	198	109	84	107	137	126	242
04:00AM	135	114	78	87	92	89	149
05:00AM	141	112	115	124	104	114	116
06:00AM	152	286	237	222	206	217	158
07:00AM	290	553	468	518	504	483	355
08:00AM	556	1,009	955	902	957	870	673
09:00AM	676	1,070	1,015	930	935	948	711
10:00AM	713	1,228	1,092	1,081	1,004	1,032	780
11:00AM	831	1,153	1,109	1,065	998	990	834
12:00PM	867	1,198	1,139	1,076	1,036	1,138	923
1:00PM	837	1,134	1,193	1,157	1,127	1,078	866
2:00PM	797	1,183	1,196	1,152	1,135	1,117	832
3:00PM	770	1,220	1,231	1,247	1,238	1,163	793
4:00PM	754	1,104	1,114	1,199	1,123	1,108	823
5:00PM	799	1,066	1,064	982	1,017	961	789
6:00PM	711	831	938	892	912	907	682
7:00PM	656	756	748	760	779	747	654
8:00PM	631	675	686	659	620	687	609
9:00PM	495	522	539	500	509	588	587
10:00PM	411	422	407	457	464	528	497
11:00PM	318	312	334	341	347	452	472

Because NIBRS data capture information about a number of offenses, the following sections will take a more detailed look at the day of week and time of day that incidents are reported to law enforcement for specific offenses of interest to policymakers and stakeholders. Specifically, heat maps were created for aggravated assault, simple assault, and all other larceny, destructions/vandalism, shoplifting, theft from a motor vehicle, and drugs/narcotic violations.

All Other Larceny

The most commonly recorded criminal incident by law enforcement agencies was “all other larceny,” which NIBRS defines as “all thefts which do not fit any of the definitions” of the following specific subcategories of larceny/theft: pocket-picking, purse-snatching, shoplifting, theft from building, theft from coin-operated machine or device, theft from motor vehicle, theft of motor vehicle parts or accessories. During the study period, Vermont law enforcement agencies recorded a total of 22,928 incidents of all other larceny, with the greatest number occurring on weekdays generally, with the largest ratio of offenses recorded on Monday between 10:00am and 4:00pm, and on weekday afternoons between 1:00pm and 4:00pm. Of note, Figure 2 below reflects that 7,890 incidents, or 34.41%, were recorded by law enforcement within the 10:00am and 4:00pm time band on Monday through Friday.

Figure 2. Incidents Involving All Other Larceny by Day of Week/Time of Day

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
12:00AM	69	56	57	61	82	52	52
01:00AM	31	20	16	29	25	19	42
02:00AM	29	16	17	17	14	15	27
03:00AM	21	15	8	11	18	12	28
04:00AM	11	12	10	10	11	13	21
05:00AM	15	14	21	18	24	21	17
06:00AM	28	48	41	44	37	43	25
07:00AM	54	124	108	117	102	105	62
08:00AM	119	227	225	218	240	185	152
09:00AM	139	231	242	237	219	204	159
10:00AM	180	319	259	270	252	230	209
11:00AM	209	280	258	233	230	268	205
12:00PM	222	282	287	234	266	259	247
1:00PM	208	259	240	258	258	265	242
2:00PM	213	282	247	248	245	281	223
3:00PM	197	274	259	289	301	257	220
4:00PM	220	239	242	244	243	252	198
5:00PM	181	232	231	228	204	216	189
6:00PM	162	181	201	188	161	180	140
7:00PM	120	166	147	130	146	145	128
8:00PM	140	135	159	125	108	128	124
9:00PM	82	91	87	89	92	102	91
10:00PM	79	62	52	75	62	55	80
11:00PM	40	31	38	41	41	61	67

Destruction / Damage / Vandalism

The second most common incident in the state recorded during the study period was destruction/damage/vandalism with 18,288 total events (see Figure 3 below). As the heat map reflects, the time and day of these incidents are most often reported in the morning between 8:00am and 11:00am. This correlates with times when victims, whether public or private property owners, would become aware of incidents of vandalism or other destruction from the previous night. Likewise, the same holds true for individuals who were gone for the weekend and returned to their home or place of business to find damage that had occurred while they were away. This dynamic further helps explain the prevalence of reported incidents appearing Monday morning, as well as all weekdays between the hours of 8:00am and 9:00am.

Figure 3. Incidents Involving Destruction / Damage / Vandalism by Day of Week/Time of Day

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
12:00AM	104	66	50	74	72	86	90
01:00AM	80	38	28	36	41	49	99
02:00AM	66	28	24	27	35	34	67
03:00AM	45	22	15	21	27	20	69
04:00AM	37	23	11	21	22	23	28
05:00AM	39	25	19	34	19	30	38
06:00AM	46	80	60	55	62	64	50
07:00AM	107	177	137	147	131	120	130
08:00AM	162	242	206	209	189	197	204
09:00AM	191	223	237	173	165	173	189
10:00AM	202	227	180	177	151	198	167
11:00AM	178	184	167	149	144	153	167
12:00PM	184	202	139	160	152	158	171
1:00PM	165	168	142	152	127	158	153
2:00PM	126	157	147	153	147	112	117
3:00PM	121	158	167	152	144	151	107
4:00PM	117	141	126	153	126	150	131
5:00PM	124	129	151	110	128	141	120
6:00PM	99	120	124	119	113	126	97
7:00PM	110	105	98	95	92	92	98
8:00PM	117	121	80	94	87	86	91
9:00PM	92	87	91	83	73	87	122
10:00PM	78	74	74	74	79	103	100
11:00PM	65	61	62	63	69	91	107

Simple Assault

The most prevalent incident of violence recorded in NIBRS is simple assault, which is also the third most common offense in the state, occurring 13,836 reported times. Figure 4 below demonstrates that simple assault is a crime that occurs more often on weekends between Friday and Sunday evenings, and includes events that are recorded into the early morning hours on Saturday and Sunday, generally ending at 3:00am, before resuming early Sunday evening.

Figure 4. Incidents Involving Simple Assault by Day of Week/Time of Day

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
12:00AM	122	65	62	80	69	67	131
01:00AM	125	53	51	38	47	66	139
02:00AM	114	31	28	35	37	42	110
03:00AM	42	27	16	19	39	34	61
04:00AM	37	15	18	5	14	14	29
05:00AM	28	18	17	16	17	11	23
06:00AM	28	18	21	20	18	17	26
07:00AM	24	29	36	40	38	42	25
08:00AM	34	66	75	77	67	65	45
09:00AM	78	85	91	76	81	77	43
10:00AM	79	91	104	79	94	67	70
11:00AM	87	105	96	109	88	78	76
12:00PM	79	98	83	86	68	103	74
1:00PM	92	102	105	99	84	100	78
2:00PM	98	75	110	93	78	100	94
3:00PM	106	129	112	99	129	104	84
4:00PM	108	99	89	119	94	128	108
5:00PM	132	125	126	110	123	117	126
6:00PM	115	107	121	119	143	122	102
7:00PM	153	151	116	124	107	143	139
8:00PM	125	109	129	114	120	162	140
9:00PM	146	116	121	112	115	131	137
10:00PM	103	96	93	111	130	130	117
11:00PM	65	98	89	105	80	105	132

Aggravated Assault

Of the total 114,407 incidents, there were 4,453 incidents (or 3.89%) involving aggravated assault offenses. Below, Figure 5 shows that the majority of aggravated assault offenses followed similar patterns as for simple assault incidents, occurring on Friday and Saturday between the hours of 6:00pm and 3:00am the following morning, and early on Sunday evenings. However, aggravated assault incidents, like those involving simple assault, were elevated on weekends, but were also recorded on weekday evenings beginning at 5:00pm and waning at 10:00pm.

Figure 5. Incidents Involving Aggravated Assault by Day of Week/Time of Day

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
12:00AM	45	33	17	22	14	27	48
01:00AM	40	19	12	22	16	25	45
02:00AM	27	18	14	13	20	18	50
03:00AM	25	17	7	5	10	13	34
04:00AM	17	4	4	7	6	2	14
05:00AM	11	7	6	6	7	6	10
06:00AM	9	5	8	6	10	3	7
07:00AM	7	5	18	10	17	8	10
08:00AM	20	13	17	14	11	14	13
09:00AM	23	20	17	17	27	16	18
10:00AM	23	23	21	20	20	28	23
11:00AM	19	29	30	18	26	16	15
12:00PM	38	36	27	18	19	25	33
1:00PM	36	30	21	31	24	33	22
2:00PM	21	22	28	26	27	15	27
3:00PM	21	24	34	37	37	24	30
4:00PM	36	32	45	28	21	38	33
5:00PM	43	46	47	31	36	20	36
6:00PM	46	31	40	39	42	38	43
7:00PM	37	46	37	34	34	45	61
8:00PM	59	56	44	43	49	42	36
9:00PM	46	54	36	50	30	59	51
10:00PM	45	41	28	32	45	34	55
11:00PM	36	34	26	28	21	49	56

Shoplifting

Figure 6 below indicates that the highest incidents of recorded shoplifting occur during weekday mid-afternoons, with 2,451 of the total 10,371 shoplifting incidents recorded on Monday through Friday between the hours of 2:00pm and 5:00pm. More broadly, 37.19% of all shoplifting offenses were reported on Monday through Friday between the hours of 1:00pm and 6:00pm, further demonstrating that shoplifting offenses likely happen and are recorded during weekdays. It must also be noted that shoplifting is the fourth most common recorded criminal incident in the state, accounting for 9.07% of Vermont’s total incidents during the study period.

Figure 6. Incidents Involving Shoplifting by Day of Week/Time of Day

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
12:00AM	10	3	8	8	11	13	10
01:00AM	5	8	6	5	1	6	6
02:00AM	5	4	5	5	4	3	6
03:00AM	5	5	4	8	1	4	4
04:00AM		7	2	3	2		2
05:00AM	1	4	6	8	1	3	2
06:00AM	3	6	9	3	4	4	4
07:00AM	8	12	13	19	22	16	17
08:00AM	25	39	49	22	38	41	18
09:00AM	35	58	45	61	49	59	49
10:00AM	52	90	87	86	76	84	65
11:00AM	78	101	118	126	109	84	88
12:00PM	85	127	134	152	119	110	108
1:00PM	100	149	169	148	153	142	136
2:00PM	110	176	173	157	153	165	127
3:00PM	119	174	164	169	170	174	135
4:00PM	104	147	140	163	176	150	137
5:00PM	130	152	129	116	125	123	130
6:00PM	90	109	111	107	116	126	107
7:00PM	65	84	78	90	111	109	86
8:00PM	54	74	59	60	61	73	59
9:00PM	27	25	40	32	41	43	37
10:00PM	12	20	19	19	21	23	14
11:00PM	11	6	6	11	15	9	15

Note: White rectangles symbolize zero (0) incidents occurred during that hour.

Theft from Motor Vehicle

While shoplifting (Figure 6 above) is considered to be an offense associated with more densely populated and commercial “urbanized” localities in the state, theft from motor vehicle offenses is likely to occur in Vermont’s sparsely populated rural areas as well as urban areas. While the total number of recorded incidents is not large, totaling only 6,650 events during the study period, or 5.81% of the state’s overall recorded incidents, its trending pattern somewhat mirrors Destruction / Damage / Vandalism in that law enforcement is more likely to record theft from motor vehicle incidents after weekends and in the morning when individuals were more likely to find that they were victims of theft.

Figure 7. Incidents Involving Theft from Motor Vehicle by Day of Week/Time of Day

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
12:00AM	22	19	15	21	32	21	29
01:00AM	6	4	4	14	7	3	9
02:00AM	6	3	6	8	8	4	12
03:00AM	17	2	5	5	14	8	4
04:00AM	7	11	2	6	5	5	9
05:00AM	8	9	12	10	7	8	7
06:00AM	14	33	27	33	19	26	13
07:00AM	27	54	56	65	53	71	37
08:00AM	55	88	75	68	98	77	69
09:00AM	61	89	87	76	61	75	75
10:00AM	61	93	91	67	55	60	54
11:00AM	78	72	76	69	57	53	69
12:00PM	61	70	84	63	53	62	67
1:00PM	72	52	65	63	51	57	66
2:00PM	54	75	63	60	59	62	52
3:00PM	45	59	46	60	67	63	35
4:00PM	45	63	52	66	66	65	43
5:00PM	64	55	45	53	53	48	52
6:00PM	49	40	38	41	37	49	30
7:00PM	27	40	48	32	43	32	26
8:00PM	28	39	39	37	35	32	25
9:00PM	24	18	32	37	27	25	25
10:00PM	28	24	23	31	15	30	23
11:00PM	23	14	15	16	12	18	16

Drug/Narcotic Violations

Vermont’s drug/narcotic violations were the sixth most common offense to have occurred during the study period, accounting for 8,727 of the state’s 114,407 total recorded incidents, or 7.63%.

Drug/narcotic violations appear to demonstrate no discernable pattern that could be assumed to be associated with the occurrence of the incident and is likely to be driven by when law enforcement records the incident. The heat map in Figure 8 below reflects that 2,677 of the incidents were recorded on Tuesday through Thursday between the hours of 1:00pm and 8:00pm, or 30.67% of incidents, with comparatively few having been recorded Friday through Sunday.

Figure 8. Incidents Involving Drug/Narcotic Violations by Day of Week/Time of Day

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
12:00AM	69	36	38	34	49	50	50
01:00AM	47	24	24	31	38	37	53
02:00AM	18	13	19	12	17	19	34
03:00AM	15	7	4	11	14	11	25
04:00AM	8	4	6	9	5	5	9
05:00AM	13	7	6	3	5	9	6
06:00AM	10	9	11	11	9	6	4
07:00AM	7	12	6	18	14	15	6
08:00AM	13	26	36	33	27	33	18
09:00AM	23	42	54	43	56	70	23
10:00AM	16	60	50	64	58	48	25
11:00AM	26	63	62	96	71	66	31
12:00PM	30	80	65	67	90	86	33
1:00PM	34	82	124	113	116	76	41
2:00PM	35	72	117	133	122	99	45
3:00PM	39	116	126	135	126	77	57
4:00PM	30	106	139	139	123	84	39
5:00PM	41	103	145	142	131	79	41
6:00PM	48	68	128	127	143	89	49
7:00PM	49	77	107	125	116	69	50
8:00PM	34	56	78	98	79	78	39
9:00PM	43	67	57	52	55	67	56
10:00PM	40	40	47	61	56	64	36
11:00PM	37	35	43	40	61	68	52

Conclusion

While we have seen that, for some incidents, NIBRS data presents some clear limitations related to the inconsistency between when crimes occur versus when they are recorded, the information and figures above demonstrate that policymakers' utilization of reports using NIBRS data can provide some key insights into criminal activity occurring in Vermont communities. This is especially true for those jurisdictions whose law enforcement agencies make timely reports that include time of the occurrence of the incident, as demonstrated by the heat maps created to visualize the distribution of shoplifting, simple assault, and aggravated assault. For those criminal incidents recorded into the system in a non-contemporaneous manner the data are still quite valuable for broad analysis, though not for day of week/time of day analysis. NIBRS data, as well as any associated reports reliant on those data, are not intended to provide operational guidance for law enforcement agencies' allocation of resources. However, they must be recognized as key components of any comprehensive response initiated by state and local policy makers as they engage with the law enforcement community. This research project affirms NIBRS as a beneficial resource in developing criminal justice strategies when analyzed in conjunction with other information available to law enforcement in Vermont.