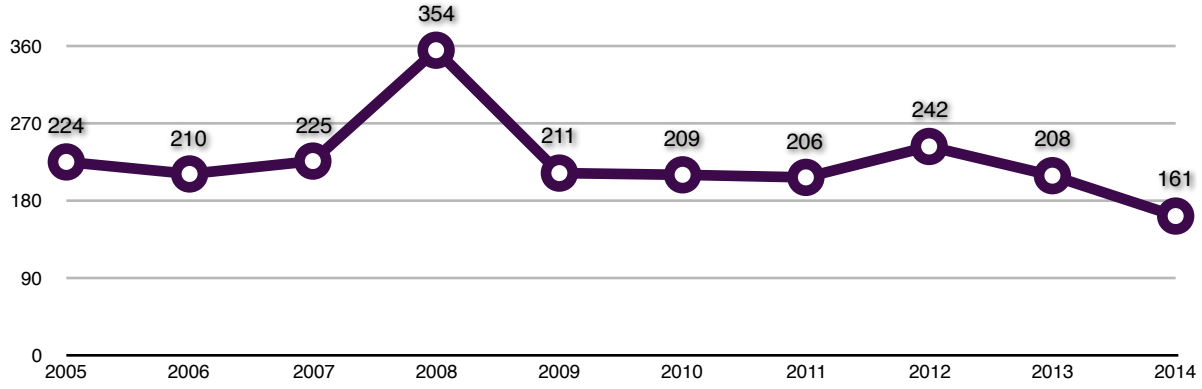
SPEEDING

Problem Identification

The table below shows some of the statistics concerning speed-related crashes that occurred in Roanoke County from 2012-2014. There were 52 fewer speed-related crashes in 2014 compared to 2013.

	2012	2013	2014	Three Year Avg
S/R Property Damage	119	102	110	110.3
S/R injuries	118	102	50	90
S/R Fatalities	5	4	1	3.3
Speed-Related	242	208	161	203.6

The graph below shows the number of speed-related crashes over the ten year period of 2005-2014. It is important to note that the number of speed-related crashes in 2014, as well as the number of fatalities and injuries, were at the lowest numbers seen in Roanoke County for more than 15 years.



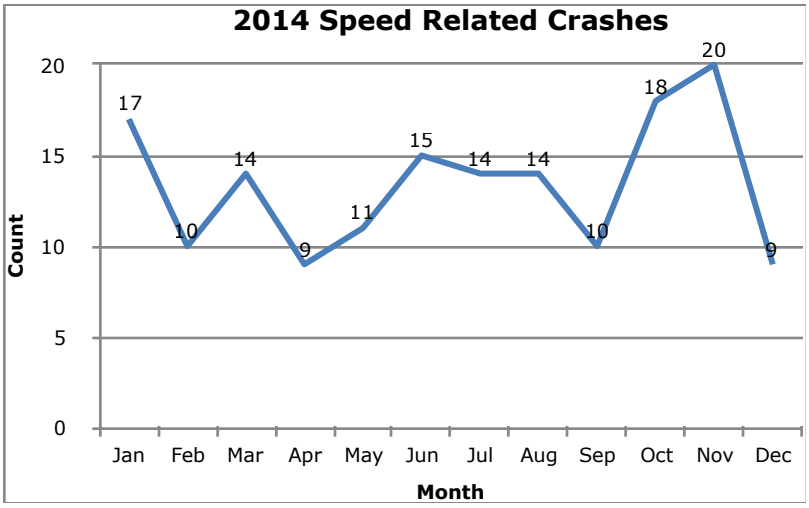
Based upon the five year crash analysis, the ten roads listed at right tend to have the highest number of speed-related crashes each year.

Speed Related Crashes: Top Streets

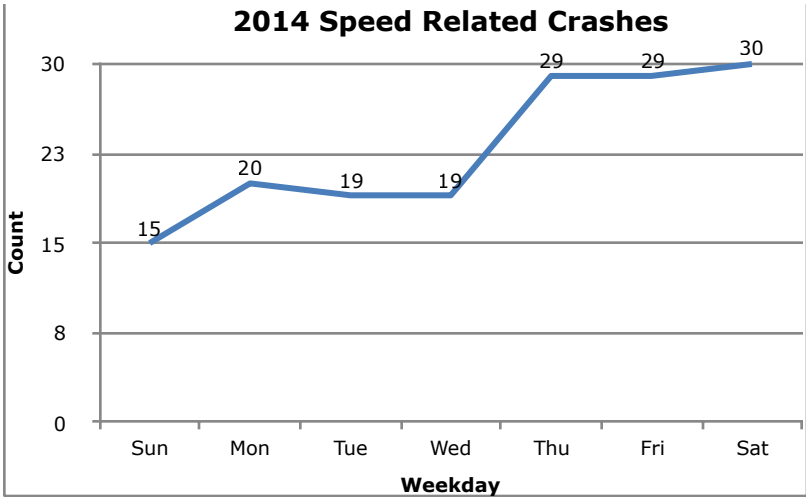
Street Name	2010	2011	2012	2013	2014	Total
Electric Rd	12	12	5	6	16	51
Franklin Rd	7	12	9	5	13	46
Bent Mountain Rd	11	3	7	7	2	30
Challenger Ave	4	2	5	5	13	29
Catawba Valley Rd	4	2	4	4	6	20
Williamson Rd	3	7	2	3	3	18
Hunting Hills Rd	4	3	6	3	1	17
Brambleton Ave	3	2	3	6	3	17
Plantation Rd	4	2	2	3	3	14
Bradshaw Rd	3	2	3	1	3	12

SPEEDING

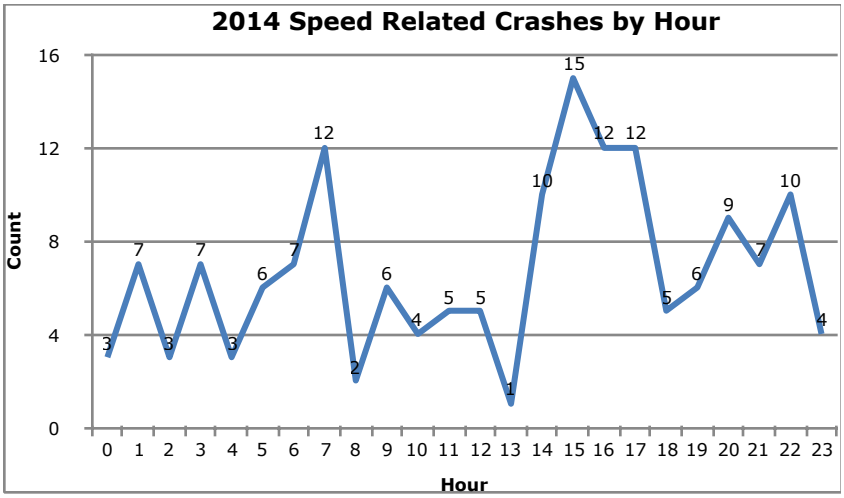
At the end of each year, a detailed traffic crash and enforcement analysis is completed in order to detect trends related to crashes and to determine the effectiveness of enforcement campaigns. The yearly analysis, along with the five year crash information, is utilized to decide when and where to deploy enforcement. The figures below contain speed-related traffic crash data from the analysis performed for 2014 data.



24% took place in October and November

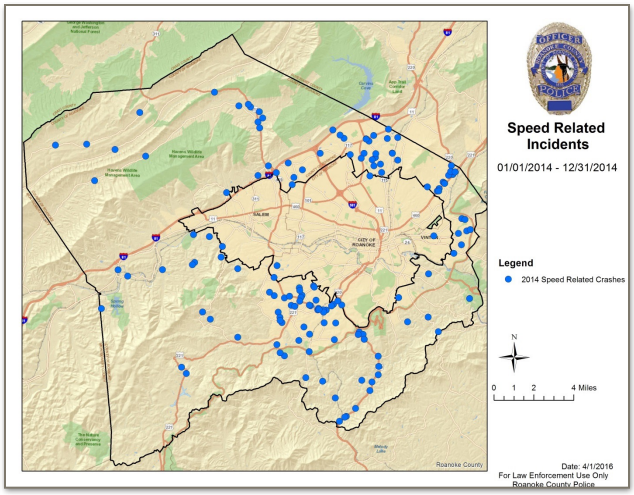


55% took place on Thursdays, Fridays, and Saturdays



30% took place between the hours of 1400 and 1800

SPEEDING



A map of speed-related crashes, such as the reproduction at left, was generated during the year end crash analysis in order to evaluate the effectiveness of enforcement the previous year and plan the next year's efforts.

In addition to analyzing crash reports, the Department conducted 57 speed surveys (20 more than the three year average) in 2015 on targeted roadways to determine if there was a speeding problem and if so, when to deploy enforcement. The locations for the surveys were based upon crash reports, traffic engineering requests, and citizen complaints. During 2015, the Department had three types of speed measurement devices to conduct studies. A radar-based speed sign mounted on a portable trailer was used in areas where the goal was to obtain speed surveys, but also reduce overall speeding offenses. Upon entering the scope of the radar, the speed of each vehicle would be recorded into memory and displayed on a digital display board. The trailer was also equipped with a digital message board to display programmable messages such as "High Crash Area". With solar charged batteries, the speed trailer could be deployed for longer periods of time. At times, the speed trailer was deployed on roadways a few weeks after an aggressive speed enforcement program in an effort to extend the speed reduction efforts. Additionally, the Department has an older speed trailer that doesn't have the ability to record information and used solely to alert drivers to their speeds but has been useful to continue the reduction of speeding offenses after an enforcement operation.

The Department utilized two 'Speed Spy' devices by Decatur to conduct covert speed studies which provided a more accurate sampling of the speeds of passing vehicles on the targeted roadways. Discreetly mounted on a utility pole, the device would not alert drivers to the speed survey. After downloading the results from both the speed trailer and the 'Speed Spy', the data was analyzed to determine the best times and days of week to deploy officers for speed enforcement.

Additionally, the Department has two 'ADR Sabre' units which are pneumatic road tube units that conduct both speed and vehicle classification studies. As vehicles drove over the road tubes, the 'ADR Sabre' would record not only the speed, date, and time, but also the type of vehicle, which was useful when responding to specific complaints of speeding motorcycles or commercial vehicles.

The Department maintains an electronic log of all speed surveys dating back to 2005 separated by the instrument utilized that is readily accessible to all officers and used to keep track of all

completed surveys. Because this historical data is maintained, comparisons can be made to see any changes in drivers' speeds long term. It is important to note that conducting speed surveys not only helped to effectively deploy officers to a road at the right time and day of week but also prevented the waste of patrol time spent on a roadway without a speed problem. If a speed survey indicated there was no speed problem on a road, the Department was justified in not deploying enforcement but would routinely set up one of the radar trailers instead as a means of addressing a citizen's complaint. The table at right is a sample of the log maintained for all speed surveys by year and type of device.

Location	Stoneybrook Dr	Maplewood Dr	Challenger Ave
Block Number	Brookfield Ave	400 block	4100 block
Direction	Eastbound	northbound	westbound
Date	6/8-10/15	6/12-15/2015	6/17-19/15
Times	1000-1600	1900-0300	1500-2100
Total Vehicles	1475	537	6586
Speed Limit	25	25	45
Avg. Speed	30	**28**	**49**
Max. Speed	48	48	87
50th Percentile	31	29	49
85th Percentile	**35**	**33**	**55**
#Veh 6-10mph	202	136	1754
# Veh 11-15	62	28	683
# Veh 16-20	12	7	171
# Veh 21+	3	3	96
Target Times	0800-1000	1600-1800	1100-1400
for speeding offenses	1230-1500	2000-2100	1500-2000

Planning

While the 2014 traffic crash analysis created the foundation for deployment of traffic and district officers during the year, a five year study of speed-related crashes was utilized to determine when and where to deploy saturation patrols with the Department's $30,000 Department of Motor Vehicles enforcement grant. Based upon the five year trend, the Department committed to spend a minimum of 75% of the funding between the hours of 0900 and 2100 on Sundays, Mondays, and Thursday through Saturday.

Specific plans were made to address the top ten locations for speed-related crashes through enforcement and public awareness. The Department utilized its 'Facebook' page and 'Twitter' account to notify the public of these top locations and a warning of strict speed enforcement. Throughout the year, sixteen speed studies were conducted on the top locations to determine the average speed, 85th percentile speed, and times/days of week of speeding violations to more effectively utilize speed enforcement patrols.

In addition to speed surveys conducted in the top ten locations, the Department conducted surveys based upon citizen complaints and to keep a check on roads with speed-related crashes and complaints in the past. The Uniform Division and Traffic Unit were informed of the results of all speed surveys to better plan enforcement. At right, this table was e-mailed to officers, as well as Roanoke County Community Development and the Virginia Department of Transportation, in September following a review of streets with a high number of citizen complaints for speeding during the year. The Department followed up with meetings involving these two organizations to assist in developing measures to reduce speeding. The meetings evolved into a community forum when the public and media were invited to an event to share the results- which included additional speed enforcement, signage, and planned traffic calming techniques.

Street	Speed Citation	Other Citation	Warning Citation	Date Spd Survey	Avg Spd/ 85th %
Pinevale Rd	12	31	40	7/2015	28/34
Canter Dr	12	15	22	5/2015	32/36
Hunting Hills Dr	150	38	31	4/2015	32/36
Crossbow Cir	12	21	13	2/2015	26/35
Meadowlark Rd	5	5	4	4/2015	26/32
Monet Dr	3	7	1	7/2015	29/34
Keagy Rd	151	35	4	5/2015	34/39
View Ave	161	76	88	5/2015	31/35
Daugherty Rd	4	5	8	7/2015	29/35

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As mentioned previously, part of the Department's plan for addressing speed-related crashes and complaints was to share the results of all speed studies with officers. The e-mail below is an example of that and was sent out concerning a road that has tractor trailer restrictions.

We ran a speed/vehicle classification survey on Jae Valley Road near the Blue Ridge Parkway bridge:
Speed Limit- 45 mph
Avg. Speed- 49 mph
85th Percentile- 54 mph
275 vehicles were in excess of 20 mph over the limit during the three day study
Target Times for speed were- 0700-0900 and 1500-1900 hours.

The number of tractor trailers detected was lower than our last survey but there were still several that passed through; mainly during: 1100-1200; 1600-1700; 1800-1900

In addition to surveys conducted by the Department, the Virginia Department of Transportation (VDOT) also conducted more than 10 speed surveys that were shared with the Roanoke County Police Department. Most of these surveys were conducted in response to a citizen request concerning a speed limit change. Upon receiving such reports, the Department analyzes crash reports and traffic summonses for the roadway in question and provides the data to VDOT to assist in their speed determination. At times, the average and 85th percentile speeds discovered during such surveys are higher than the safe speed determined by VDOT and appropriate speed enforcement is scheduled for the area.

Additionally, the Department continued to utilize the Data-Driven Approaches to Crime and Traffic Safety (DDACTS) model during 2015. DDACTS involves combining location-based crime and traffic crash data to determine where and when to deploy law enforcement and other resources. After combining crime and traffic crash data, the Department chose two locations based upon a high number of reported incidents, one in the northern part of the County and one in the south. Each location was approximately one square mile and was an elliptical shape on a map.

Subsequently, additional high visibility efforts were conducted in the two areas including saturation patrols, traffic checkpoints, business checks, bike patrols, and more in an effort to decrease the number of reported criminal offenses and traffic crashes. Because one of the top ten roads for speed-related crashes was in one of the chosen zones, speed surveys and subsequent speed enforcement conducted on that road benefited the DDACTS program. Efforts in both DDACTS zones remained a vital component to the Department's traffic safety programs throughout the year.

The Department's efforts concerning speed-related crashes directly supported the Virginia Highway Safety Plan (VHSP) for 2015 in several ways. Listed below are the key points to the VHSP and the support generated by the Roanoke County Police Department.

- ✦ 18% reduction in speed-related fatalities as compared to 2013 data
  - Roanoke County had a 25% reduction in speed-related fatalities as shown in the table below
  - Please note that of the three speed-related fatalities shown in the below table that occurred in 2015, the crash reconstruction revealed that the highest speed difference as compared to the speed limit was ten mph over the posted limit.

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	2013	2014	2015	% Change 2013 vs 2015
Fatalities Speed-Related	4	1	3	-25%

- ✦ To conduct at least four high visibility speed enforcement campaigns.
  - The Department conducted more than the four requested to include:
  - Two speed enforcement campaigns conducted around County high schools targeting teen drivers
  - Multiple targeted speed enforcement operations in the two hot spot locations determined through the DDACTS model
  - Two speed enforcement campaigns centered around the Martinsville NASCAR race days
  - '460 Blitz'- a multi-jurisdictional campaign which targeted speed, occupant protection, and impaired driving along US Routes 460 and 11 on the Friday of the Memorial Day weekend
  - Speed enforcement campaign conducted during the Roanoke County Schools' 2015 Spring Break targeting speeding teen drivers
  - Residential speed enforcement campaign conducted in September
  - The Department also conducted 18 speed enforcement operations where a bike officer or officer in a covert vehicle would operate radar or lidar then radio to other staged officers to make the traffic stop

- ✦ Local law enforcement to conduct 100 local high visibility speed enforcement activities
  - During 2015 the Department conducted 237 targeted speed enforcement patrols with money received from speed enforcement grants awarded by the Virginia Highway Safety Office. Additionally, the Department's four traffic officers were routinely sent out to targeted areas for 'wolf pack' operations, where all four focused on a particular area for speed enforcement.

Since 2005, the Department has also utilized a 'Road of the Day' program that is currently maintained in calendar format on a secured intranet site accessible by all officers via their mobile data terminals. Each day of the month has a road assigned to it and each district officer (all three shifts) as well as the four traffic officers are strongly encouraged to spend at least 30 minutes operating radar on that road during their shift. The program has proven success in reducing the number of citizen complaints concerning speeding because the officers are routinely running radar on the roads with a history of complaints. Additionally, if a citizen calls in concerning a speeding complaint and the subsequent speed survey indicates a problem, the road can be added to the calendar several times over the course of the month, which satisfies the citizen's request and reduces speed.

Another active component of the Department's planning for speed reduction is a means of accountability to make certain officers are conducting radar in the appropriate locations at the right times. Every 24 hours a report is generated and e-mailed to all supervisors showing the date, time, and location of each patrol that marks out conducting radar. Below is an example of the report.

2015-00067232	11/04/2015	10:33:17.00	12:12:42.00	Radar/Checkpoint	0953	KEAGY RD / TOWNE DR
2015-00067316	11/04/2015	16:41:49.00	17:14:22.00	Radar/Checkpoint	1112	MONET DR / CHAGALL CIR
2015-00067279	11/04/2015	13:42:08.00	14:14:42.00	Radar/Checkp	0953	OLD CAVE SPRING RD / MCVITTY RD

SPEEDING

Training

The table at right shows the training received by officers during 2015 as well as the three years prior. Please note that during 2013 the Department instituted a new recertification training for RADAR and LIDAR operators that will be required every three years.

	2015	2012-2014
RADAR/LIDAR Instructor	4	4
Basic RADAR Class	9	32
RADAR Recertification	5	126
Basic LIDAR Class	5	12
LIDAR Recertification	5	26
Crash Data Retrieval Technician	6	7
Officers receiving Advanced Crash Reconstruction Training Classes	6	17

In addition to the above training, 90 officers (Uniform Division) were e-mailed a power point presentation in the Spring of 2015 as a reminder of the proper use of same direction moving radar as the Department moves towards the goal of equipping all uniform division vehicles with such radar.

Public Information and Education

The Roanoke County Police Department maintains a strong relationship with the Roanoke County Schools which provided many opportunities for educational opportunities during 2015 concerning speeding. In total, the Department conducted a total of 26 traffic safety presentations in the County high schools and 36 in the middle schools during 2015. Many of the presentations were part of the Department's award winning 'Why Math Matters' program. The program, which began in 2005, is done by a Department crash reconstructionist and the students are shown how major crashes are investigated based upon physics and mathematics. The program is tailored to physics and math classes with each receiving a discipline specific presentation that includes the inherent risks of speeding but in a manner that builds upon the standards of learning taught in the schools. Additionally, every Driver's Education class in the County's five high schools was given a 90 minute presentation concerning teen driver safety with a strong emphasis on speeding issues. The SRO at each high school worked closely with the Youth of Virginia Speak Out About Traffic Safety (YOVASO) in support of each traffic safety program promoted throughout the State and a mock car crash was performed at two high schools involving an impaired driver that was speeding.

Additionally, each high school hosted the 'Partnering for the Privilege' presentation for both parents and new drivers. This program is a joint adventure between the Allstate Foundation, YOVASO, Roanoke County Schools, and the Roanoke County Police Department and is conducted each school year to educate parents and new drivers the risks associated with teen drivers. Part of the Department's presentation focused on the typical teen fatal crash in southwestern Virginia- driving too fast and running off the road. Each agency that assists with the program addresses teen driver safety from their unique perspective then the parent of a teen killed in a crash speaks to the audience providing a powerful closing.

In 2012, the Department developed the 'ScanEd' program to compliment efforts concerning teen traffic safety. 'ScanEd' is an interactive, hands-on approach to teaching teens the dangers associated with unsafe driving. The Department has an enclosed trailer packed with items to

perform a presentation in the school parking lot including a crashed car, motorcycle, and dummy. After speaking with the students, they are then paired up and given an iPad with ear buds. More than 30 QR (quick response) codes, similar to bar codes, are placed on the vehicles, dummy, signs, traffic light, beer can, etc. and are associated with a private network created using a laptop and wireless router. Using a bar code scanner on the iPads, the students can then self-learn as they scan the QR codes and an appropriate video or slideshow will play. For example, scan a QR code on the driver door and a video will play concerning the dangers associated with speeding. Scan a QR code on a cell phone and a video will play that graphically depicts the risks of distracted driving. Throughout the presentation a very strong emphasis is placed on speeding as it plays a very common role in serious teen crashes in our area.

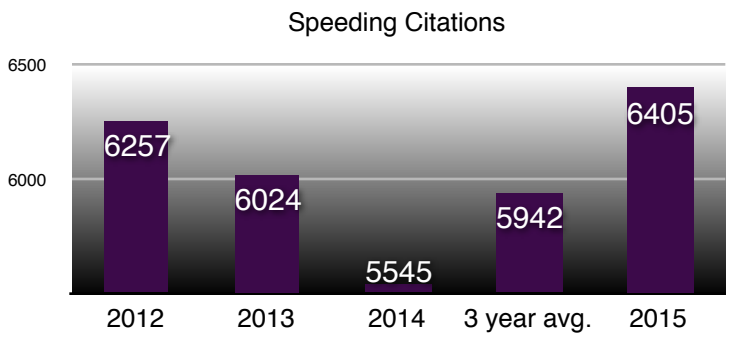
Because the Department is called upon to present the program throughout Southwestern Virginia, the trailer and canopy display the logo for the Blue Ridge Regional Crash Teams, a multi-jurisdictional, multi-discipline team led by the Department to investigate major crashes and provide safety presentations. The Department has found the 'ScanEd' system to be the best approach thus far to interact with teens, in particular middle school students, because of the interest generated by both the students and faculty. The pictures below depict some of the Department's 'ScanEd' presentations during 2015.

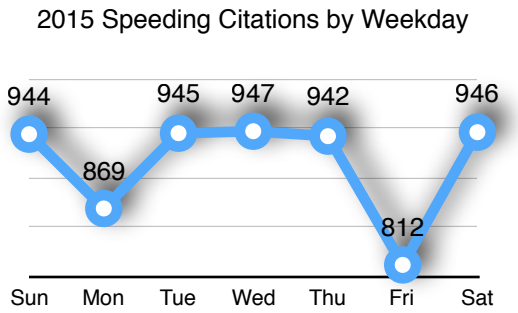
Through its leadership role with the Blue Ridge Transportation Safety Board (BRTSB), the Department led or assisted in several traffic safety enforcement and public informational/ educational initiatives during 2015 concerning speed-related issues. The BRTSB is a multi-jurisdictional, multi-discipline board made up of law enforcement, businesses, insurance, traffic engineers, and safety advocates all joined together to improve traffic safety throughout southwestern Virginia since 1988. Through the BRTSB, the Department coordinated several speed enforcement campaigns, such as the '460 Blitz' and enforcement along other major connector roadways through the Roanoke Valley. The Board's non-law enforcement members supported the efforts by promoting the campaigns through electronic media.

Enforcement

The tables on the following page show the number of speeding citations issued by the Department's officers over the last four years, as well as, the three year average from 2012-2014 and by day of week. There were 860 more speeding citations issued in 2015 than in the previous year and 463 more than the three year average. Of the 6,405 speeding citations issued during 2015, only 1,285 (20%) were issued during grant funded saturation patrols leaving the vast majority of speed enforcement being accomplished through Department funding.

SPEEDING





As previously stated, the five year analysis of speed-related crashes showed the majority of speed-related crashes occurred between the hours of 0900 and 2100 on the following days: Sundays, Mondays, Thursdays, Fridays, and Saturdays. Subsequently, a goal set by the Department was to conduct 75% of speed enforcement saturation patrols funded through our DMV grant during these timeframes. By year's end, almost 90% of grant funded patrols were conducted during these timeframes resulting in 3,608 speeding citations (56% of the yearly total).

Outcomes

The table below shows the speed-related crashes in 2015 as compared to the three year average of 2012-2014. There were 23 fewer speed-related crashes in 2015 compared to the three year average.

	2012	2013	2014	Three Year Average	2015
S/R Property Damage	119	102	110	110.3	118
S/R injuries	118	102	50	90	59
S/R Fatalities	5	4	1	3.3	3
S/R Total	242	208	161	203.6	180

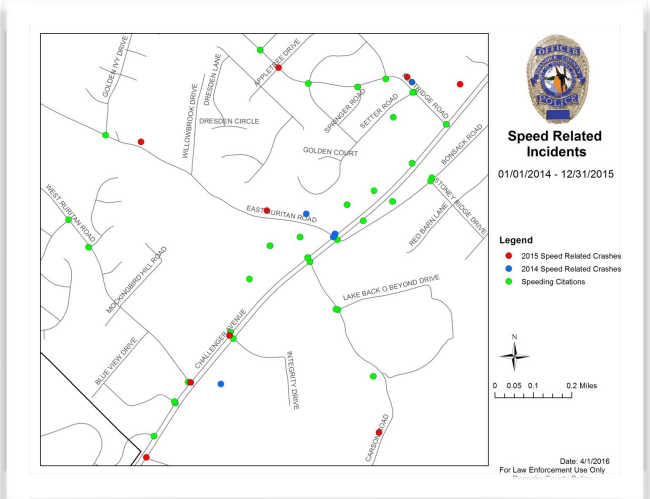
The table on the next page shows the number of crashes in 2015 compared to the five year average for the ten roads chosen for targeted speed enforcement. Though each category in the table above is lower for speed-related crashes with the exception of property damage crashes, each of the ten roads chosen for enforcement saw an increase over the five year average except for one. It is believed that part of the reason is based upon the fact that the Department's Traffic Unit was called upon to investigate more crashes in 2015 than years past due to manpower concerns. These officers are thoroughly trained in crash reconstruction and therefore more skilled at determining the speeds of vehicles in crashes.

SPEEDING

Speed Related Crashes: Top Streets

Street Name	2010	2011	2012	2013	2014	Total	5 yr avg.	2015
Electric Rd	12	12	5	6	16	51	10.2	23
Franklin Rd	7	12	9	5	13	46	9.2	11
Bent Mountain Rd	11	3	7	7	2	30	6	13
Challenger Ave	4	2	5	5	13	29	5.8	8
Catawba Valley Rd	4	2	4	4	6	20	4	7
Williamson Rd	3	7	2	3	3	18	3.6	5
Hunting Hills Rd	4	3	6	3	1	17	3.4	4
Brambleton Ave	3	2	3	6	3	17	3.4	5
Plantation Rd	4	2	2	3	3	14	2.8	4
Bradshaw Rd	3	2	3	1	3	12	2.4	2

The map at right shows a section of Roanoke County that was chosen for targeted speed enforcement during 2015 based upon an ongoing analysis of speed-related, serious injury crashes. Please note that speeding citations were issued during the year addressing each location and the fact most of the citation locations actually involved multiple citations for that location. The analysis of the offense location for traffic citations is limited only due to the fact that GPS coordinates are not able to be tracked and instead only the general location on the summonses can be used.



In terms of recognition, each year the officer that issues the most speeding citations is recognized with a letter of commendation from the Chief of Police. For 2015, Officer T. Farmer was recognized for his diligence in speed enforcement by issuing 1,077 speed related citations, which was 385 more than the next officer. He also began assisting with the deployment of covert speed surveys for the Traffic Unit during the year and subsequently deployed the 'ADR Sabre' units 13 times for speed and vehicle classification studies.