2016 NORTH CAROLINA INCIDENT ANALYSIS

Detailed County by County Data Analysis Through Use of NC 811 Ticket Data and DIRT Reported Incidents

ABSTRACT

Tracking reported incident data by county, work type, “failure to call” root cause, membership impact and education efforts. This report uses the Supermega Spreadsheet to identify counties that have improved using damages per 1000 transmissions as a benchmark

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The author encourages readers to draw their own conclusions from the data presented. This report is meant to be a starting place for conversation about effective measures that can be taken to reduce overall damages.

NORTH CAROLINA 2016 INCIDENT ANALYSIS
Overview and Results Analysis

OVERVIEW

The Supermega™ Spreadsheet (SMS) was developed in 2013 to compare damage information by county using a variety of variables, including positive response codes, first time caller survey data and percentages, "failure to call" root cause and a wide range of education activities. The purpose of the sheet is to identify counties in which "incidents per thousand" tickets and transmissions have increased or decreased from year to year.

In October, 2014 the law changed and included a requirement for excavators to notify NC 811 of damages. Prior to this change, NC 811 had been accumulating voluntary damage reports from a variety of members and creating damage tickets when notified. ***Because of the fact that the mandatory notification happened in the last quarter of 2014, it was hoped that the 2015 data would serve as the baseline for future reports and would provide the best "apples to apples" comparisons.***

Because stakeholders can also report "near miss" situations we continue to report these as incidents vs. damages when reporting DIRT outcomes. It should be noted, however, that the majority of data present in this report reflects actual damages and not near miss incidents. Only ½ of one percent of the incidents reported were not damages.

Was Facility Damaged?	Events	% of Grand Total
Y	15050	99.20%
N	122	0.80%
Grand Total	15172	100.00%

NC811, Year 2016: 15,172 Damage Events in 95 Counties

What we discovered upon comparing what NC 811 had been aware of (through damage requests and voluntary contributions from members) to the CGA DIRT data was that there was a significant gap between what was reported to us and what was reported nationally.

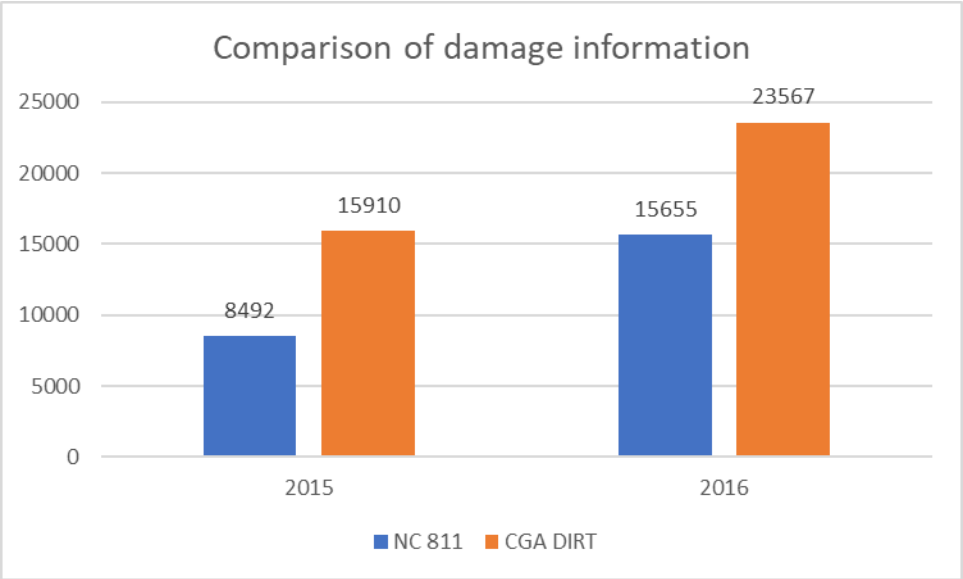
For example, in 2015 there were 8,492 damages that were reported to NC 811. CGA reports 15,655 for the same time period. In 2016 NC 811 was aware of 15,172 damages. CGA reports 23,567 for the same time period.

This means that, of the nationally reported damages in the state of North Carolina, only 53% were reported to the Notification center in 2015 and 66% were reported in 2016.

For the purposes of the most accurate analysis possible, the CGA numbers, by county, are used so that comparisons can be made for 2015 and 2016 data based on as many known incidents as possible.

Because we do not have the specific facility types broken out by county in the CGA data, the tabs for those incidents utilize the NC 811 data.

What is encouraging is that NC 811 is “closing the gap” between known damages and those reported to CGA that are not shared with NC 811.



What is discouraging is that there should be a gap at all. **This indicates that 100% of damages are not being reported to NC 811 when they occur.**

All damage data included in this report was also supplied to the national CGA DIRT system.

Note: CGA Volume 12 DIRT Report estimates the 2015 national average at 1.54 damages per transmission. Using the DIRT reported numbers, North Carolina averaged 2.04 in 2015 and 2.2 in 2016. At the time of this writing, the 2016 DIRT data has not been released.

WHAT MAKES NC UNIQUE?

Multi-stakeholder data contribution

North Carolina has been recognized as one of the “sweet sixteen” states that contributes data to DIRT. This is due to the fact that historically NC has been able to secure a good cross section of stakeholders, willingly supplying damage information to the virtual private DIRT.

County-specific data

North Carolina has been able to connect the dots between all data points at a county level. This includes ticket information but also the associated positive response information, education and marketing outreach and first time caller surveys. **This spreadsheet includes a county by county breakdown on the 2016 CGA reported damages as well.**

Recently enacted legislation (2014)

The legislation that went into effect on October 1, 2014 added many components that enhanced public safety including mandatory membership, mandatory positive response and enforcement. The data from the SMS gives us a glimpse into the impact of those changes on the damages.

The new law change in 2014 also made it a requirement to report damages by the excavator. This has resulted in a higher amount of reported damages from excavators at the time of the damage. Our spreadsheet includes all of the damages reported directly to us and those shared with NC 811 through the DIRT data grant method.

Intense growth in excavation

A final element that makes NC unique is the incredible increase in volume experienced in the past two years. We have taken to calling it a "new normal" as counties with intensive new telecommunications activity have actually doubled in locate ticket volume in some cases. **2016 saw a 27% ticket increase statewide over 2015**. This increased pressure on the process provides a great backdrop as we look into how we can bring down the numbers of damages in the face of the new volume.

WHAT IS CONTAINED IN THE SUPERMEGA SPREADSHEET?

The SMS contains raw data from a variety of sources. Data that could be gathered on a per county basis that was deemed as potentially relevant was included. There are 100 counties in North Carolina and there are 130 data cells populated for the each of the counties. **This results in 13,000 cells of data**. As was stated in previous SMS analysis, the intent is to look for patterns in the data itself without making presumptions about causation.

Color coded column headers

Column headers have been color coded to group like categories and to make it easier to focus on a particular area.

The first 8 columns are colored green and relate to raw numbers of members, population and ticket and transmission volumes.

The next 34 columns are colored blue and these are specific to positive response codes received for the tickets by county.

Two light green columns follow addressing Remote Ticket Entry (RTE) percentages and Update Lite percentages.

The next 9 columns, colored red, deal specifically with the incidents themselves. This means incidents per 1000 tickets, incidents per 1000 transmission, rate of change between the comparative years and the "failure to call" percentage and rate of change.

NOTE: As indicated in the introduction, the CGA DIRT reported incidents are also included and are the basis for what this report will calculate the ratio by. There is an additional column showing the difference between what was reported to NC 811 and what was unknown except through the DIRT submissions.

Also included are the Code 70 with no 999 and the actual 999 code percentage. These are included in this section because they reflect high opportunity for risk. The 999 code is added by the system when an operator has failed to provide positive response within the 3 full business days allowed.

Four light purple columns follow, addressing homeowner and first time caller percentages. **This year marks the first tracking of 3 hour notices.**

The next 50 columns deal with the first time caller survey data (see next page for 2016 totals). If the system has determined that a person has not called within the past 6 months, the caller is considered a first time caller. When this occurs the CSR is prompted to ask the caller how they knew to contact NC 811. As shown below, this method has resulted in 63,202 data points. The yellow section breaks down the results by county to track where a statistically higher percentage of people may be responding to a particular program or promotion technique.

Survey Report

This report shows the statistics for the new callers survey question about how they heard of the one call center.
Oldest survey answer is from 12/11/2012.
Counts for tickets only go back to 05/01/2017.

Date 01/01/2016 through 12/31/2016 County

Submit | By County | % By County | Print | CSV

Show 25 entries Search:

Surveys for 01/01/2016 through 12/31/2016

Category	Percent	Count
Base Property	0.50%	315
Billboard	3.34%	2113
Bumper stickers/Pamphlet	0.87%	553
Contractor or Locator	20.70%	13082
Fire Marquee Challenge	0.01%	8
Friend	2.46%	1553
Fuel Tanks	0.21%	132
Ingles	0.01%	5
Just knew to call	33.48%	21162
Lease Agreement HOA/Realtor	0.44%	276
Magazine	0.11%	67
Manual came w/Installation for fence/Lowes	0.37%	233
Movie Theater	0.00%	3
Municipality	1.31%	830
Neighbor	1.25%	789
Newspaper	0.14%	91
Pedestal/Utility Box	1.23%	779
Phonebook	2.00%	1261
Race Car	0.04%	27
Radio	0.72%	452
Town Planning Department/Utility Commission/City Hall	1.41%	888
TV	3.17%	2006
Utility Company	11.82%	7469
Website	5.90%	3726
Word of Mouth	8.52%	5382
Total	100%	63202

Showing 1 to 25 of 25 entries First Previous 1 Next Last

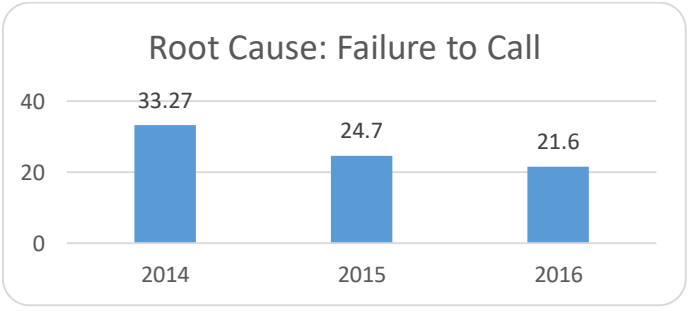
Finally, the orange columns all deal with education efforts. These columns show the numbers of people in each county that were impacted in some way by the efforts of the liaisons. These efforts include the radio, billboard, tv, internet, UCC, home shows and PIPES Plus meetings.

Taken together these groupings allow sorting along multiple categories to identify trends, challenges and opportunities to reduce damages in counties that are experiencing increases.

ROOT CAUSE

The only root cause the NC 811 and the SMS shine a light on is “failure to call” as this is the only element we can objectively report. Was a valid ticket called in for the location in advance of the incident? This question is answered by researching every incident location, regardless of whether the person reporting indicated they had a ticket or not. In some cases we found reported tickets were expired or not valid. Conversely we found situations where the person reporting a damage or incident indicated there was not a ticket but research revealed that there was actually a valid ticket at that time.

Because of the research done on this root cause, NC 811 is confident in the percentage of “failure to call” for the events that are known and reflected in this report. ***The report reflects a reduction in this root cause from 33.27% in 2014 to 24.7% in 2015 and to 21.6% in 2016.***



MEMBERSHIP

The new law change in 2014 made it mandatory for all owners and operators to become members of NC 811. The required dates of membership were based on size and numbers of customers served. As of October 1, 2015 all medium sized members (defined as Operators with more than 25,000 customers or 500 miles of facilities) were active members of NC 811. The remaining small members and the NCDOT have until October 1 of 2016 to become members.

The SMS reflects that as of the end of 2015 there were 95 identified small operators who had yet to join. **The 2016 tab reflects that there are 228 identified potential members who had not joined by the end of that year.** As of the time of this writing, member services and liaison activity have resulted in 32 more signing on with more coming in every month. While it is not NC 811's responsibility to find every operator, staff makes every attempt to educate the known operators of their responsibilities under the Act for membership compliance.

WHAT'S NEW IN THE 2016 SUPERMEGA SHEET?

Tabs for facility types

In addition to the total damages by county, the 2016 report includes tabs to show the industry-specific facility damages. This allows the user to pinpoint particular counties with higher than average damages per thousand by a specific type and to compare that against the overall percentages.

Tab for Extra Education Data

This tab has been included to showcase the reach national programs, such as those conducted in participation with One Calls of America and the CGA, have in educating people in NC. These programs are broken out if we are unable to assign a specific county reach to the activity.

	County	Carolina Gardener - April/May 2016	Carolina Gardener - June /July 2016	Field & Stream - April 2016	Field & Stream - August 2016	Southwest Airlines - April 2016	Southwest Airlines-May 2016	Southwest Airlines-September 2016	Southwest Airlines-November 2016	Martha Stewart Living - April 2016	American Airlines -April 2016	Triangle Gardner - March/April 2016	Extreme How To - March 2016	Extreme How To - April 2016	Greenboro Grasshoppers (Schedule M	Farm Bureau-Field & Family - March 2	Farm Bureau-Field & Family - June 20	Southern Living (NC) -April 2016	La Noticia - August 2016	
2	ALAMANCE																		2250	2250
3	ALEXANDER																			0
4	ALLEGHANY																			0
5	ANSON																			0
6	ASHE																			0
7	AVERY																		667	667
8	BEAUFORT																			0
9	BERTIE																			0
10	BLADEN																			0
11	BRUNSWICK																			0
12	BUNCOMBE															96,290	96,290		667	193247
13	BURKE																		667	667
14	CABARRUS																		2888	2888
15	CALDWELL																			0
16	CAMDEN																			0
17	CARTERET																			0
18	CASWELL																			0
19	CATAWBA																		2888	2888
20	CHATHAM											2,714							2250	4964
21	CHEROKEE																			0
22	CHOWAN																			0

... 2015 Natural Gas | 2015 Telecommunications | 2015 Electric | 2016 | **2016 Extra Education Data** | 2016 CATV ...

Adjusted Transmissions

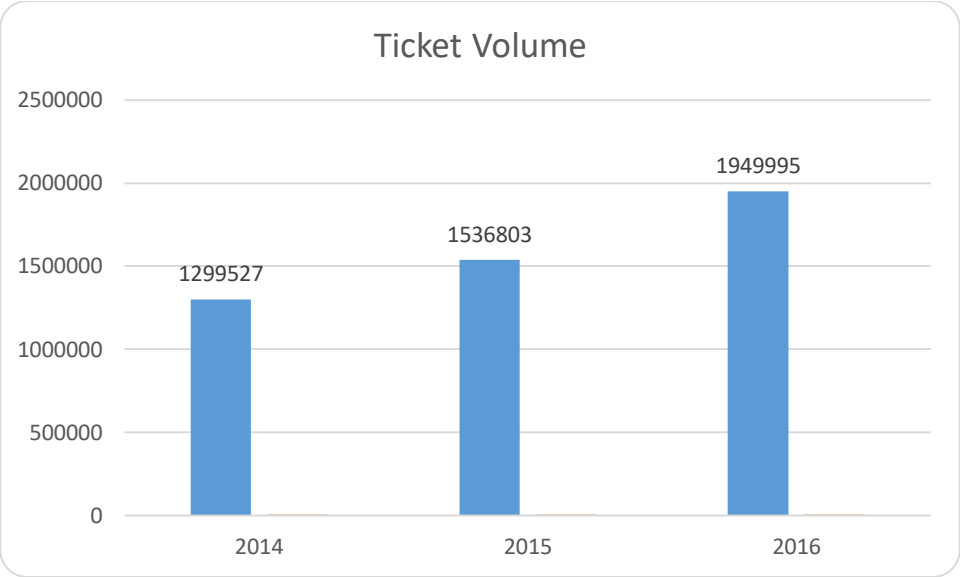
We added a tab to reflect that the original reported transmissions included ALL transmissions (including those to locators, test codes, etc.) and the adjusted number more accurately reflects the true transmissions. These adjusted transmission numbers match the numbers being reported to DIRT as well. There was roughly a 20% difference between those two sets of numbers so this was applied across the board for all counties. **The adjusted transmissions are used along with the CGA DIRT incidents to calculate the best ratio given the data available.**

New Columns Tracking 3 Hour Notices

This is an indication that the excavator did not receive a completed locate on time.

ANALYSIS

Several factors influence the reported number of damages in the state in 2016. An increase in excavation activity is an obvious reason for the increase in raw numbers. 2016 results show an increase of 27% of overall tickets being requested over 2015 and that came after an 18.3% overall tickets being requested in 2015 over 2014!



The largest impact in 2016 continued to be the installation of fiber, particularly in the Mecklenburg and Wake County markets.

2016 saw an increase in reported damages by a margin of 48% (2015: 15910 vs. 2016:23,567.)

Note that the "failure to call" root cause as a percentage continued to fall from 24.7% in 2015 to 21.6% in 2016.

Note that 2.07 to 2.2 represents a 6.3% increase in damages per 1000 in a year with a 27% increase in volume.

	2016 reported incidents	2016 CGA DIRT reported incidents	Difference between NC 811 and CGA reported incidents	2016 Incidents per 1000 transmissions (USING CGA DATA)	2016 incidents per 1000 tickets (USING CGA DATA)	2016 % failure to call	% failure to call change rate	%70- no 999	999
2016 results	**15172**	**23567**	**8395**	**2.20**	**12.09**	**21.6%**	**-3.10%**	**3.48%**	**11.12%**
2015 results	**8492**	**15910**	**7418**	**2.07**	**10.35**	**24.7%**	**-8.6%**	**6.71%**	**4.92%**

Top 10 Counties for Ticket Volume in 2016

County	Number of active members	Number of identified potential members	% of active members from total potential membership population identified	Census population data	2016 Ticket Volume	2016 vs 2015 ticket difference	2016 vs 2015 tickets % change	2016 Total Transmissions	Adjusted 2016 Transmissions	Percentage of 2016 Total Tranmissions
MECKLENBURG	54	5	91.53%	1008208	373711	163536	77.8%	3427397	2741918	150986.65%
WAKE	65	5	92.86%	987572	319317	100259	45.8%	2220880	1776704	97836.12%
GUILFORD	43	3	93.48%	516589	97475	10956	12.7%	717437	573950	31605.15%
DURHAM	45	3	93.75%	296297	90125	35879	66.1%	650505	520404	28656.61%
FORSYTH	37	3	92.50%	365546	74257	13030	21.3%	465394	372315	20501.94%
UNION	28	2	93.33%	212945	51642	8911	20.9%	354688	283750	15625.02%
CUMBERLAND	40	3	93.02%	337415	44739	1335	3.1%	298095	238476	13131.94%
NEW HANOVER	33	4	89.19%	217606	44089	5164	13.3%	307638	246110	13552.33%
CABARRUS	37	3	92.50%	189499	42930	5232	13.9%	276658	221326	12187.58%
BUNCOMBE	36	6	85.71%	251621	40733	5664	16.2%	316363	253090	13936.70%

As previously stated, Wake County and Mecklenburg Counties saw the highest increases in raw tickets being created. In terms of numbers, Wake and Mecklenburg saw a dramatic increase of 100,259 and 163,536 respectively.

In terms of percentage increase in requests, Mecklenburg, Durham and Wake represented the largest of the top 10 at 77.8%, 66.1% and 45.8% respectively.

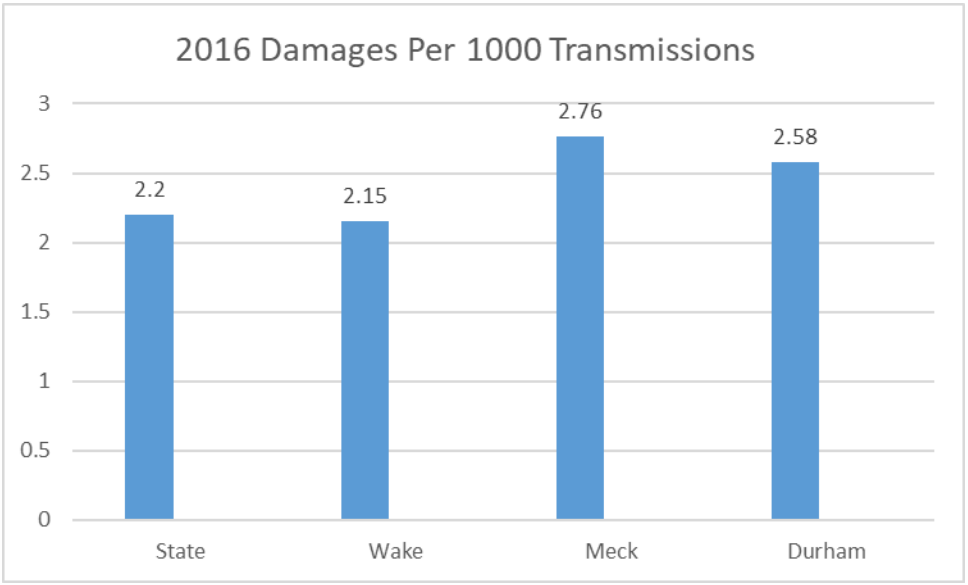
These top ten counties in volume make up 1,179,018 or 60% of the overall ticket volume. And in fact Wake and Mecklenburg alone make up over 1/3 of the overall volume (35.5%).

DAMAGE RATES FOR TOP 10 VOLUME COUNTIES

County	Number of active members	Number of identified potential members	% of active members from total potential membership population identified	Census population data	2016 Ticket Volume	2016 vs 2015 ticket difference	2016 vs 2015 tickets % change	2016 Total Transmissions	Adjusted 2016 Transmissions	2016 reported incidents	2016 CGA DIRT reported incidents	Difference between NC 811 and CGA reported incidents	2016 Incidents per 1000 transmissions (USING CGA DATA)	2016 incidents per 1000 tickets (USING CGA DATA)	2016 % failure to call	% failure to call change rate	%70- no 999	999
MECKLENBURG	54	5	91.53%	1008208	373711	163536	77.8%	3427397	2741918	5061	7562	2501	2.76	20.24	18.2%	-0.09	3.07%	15.32%
WAKE	65	5	92.86%	987572	319317	100259	45.8%	2220880	1776704	3256	3815	559	2.15	11.95	18.6%	-0.01	5.41%	13.36%
GUILFORD	43	3	93.48%	516589	97475	10956	12.7%	717437	573950	600	1218	618	2.12	12.50	24.5%	0.01	4.83%	3.76%
DURHAM	45	3	93.75%	296297	90125	35879	66.1%	650505	520404	1003	1343	340	2.58	14.90	20.0%	-0.03	2.93%	21.25%
FORSYTH	37	3	92.50%	365546	74257	13030	21.3%	465394	372315	441	829	388	2.23	11.17	28.3%	0.05	1.54%	2.19%
UNION	28	2	93.33%	212945	51642	8911	20.9%	354688	283750	511	641	130	2.26	12.42	20.0%	-0.04	1.71%	12.21%
CUMBERLAND	40	3	93.02%	337415	44739	1335	3.1%	298095	238476	207	273	66	1.15	6.11	20.3%	-0.01	1.53%	9.55%
NEW HANOVER	33	4	89.19%	217606	44089	5164	13.3%	307638	246110	211	349	138	1.42	7.92	28.0%	-0.03	1.35%	14.02%
CABARRUS	37	3	92.50%	189499	42930	5232	13.9%	276658	221326	218	310	92	1.40	7.22	17.9%	-0.10	0.57%	7.45%
BUNCOMBE	36	6	85.71%	251621	40733	5664	16.2%	316363	253090	384	794	410	3.14	19.49	32.6%	0.12	0.75%	7.02%

A few interesting notes from this data sort:

1) Wake, Mecklenburg and Durham all experienced significant ticket increases, and the damage ratio per 1000 transmissions were 2.15, 2.76, and 2.58 respectively. The state average, however, was 2.20.



2) It should be noted that Mecklenburg had the highest increase in ticket volume of the 10 counties (77.8%!) but not the highest ratio among the 10. The highest in this group was Buncombe with 3.14 damages per 1000 transmissions.
3) The “failure to call” root cause was obviously affected by the increased contractor activity in Wake, Durham and Mecklenburg.
4) Of the top ten counties, Union County reported the highest increase in damages per 1000 tickets from 2014 to 2015 (up 2.98 damages per 1000)

WORK PERFORMED WHEN DAMAGE OCCURRED

As stated earlier, ticket volume has been directly impacted by extensive fiber installation with work happening in Wake, Mecklenburg, Durham and Guilford Counties particularly. This work really began to pick up speed in the second half of 2015. Consequently, this activity is reflected in the work type being performed when the damages occurred.

Q1 - Q2 2015 Damages			*Q3 - Q4 2015 Damages*		
Work Performed	**Events**	**% of Grand Total**	**Work Performed**	**Events**	**% of Grand Total**
Water	520	14.55%	Telecommunications	1174	23.87%
Natural Gas	422	11.81%	Water	628	12.77%
Telecommunications	417	11.67%	Natural Gas	559	11.37%
Sewer	388	10.86%	Sewer	385	7.83%
Data Not Collected	312	8.73%	Data Not Collected	355	7.22%
Electric	248	6.94%	Electric	305	6.20%
Landscaping	225	6.30%	Cable TV	267	5.43%
Cable TV	211	5.90%	Landscaping	220	4.47%

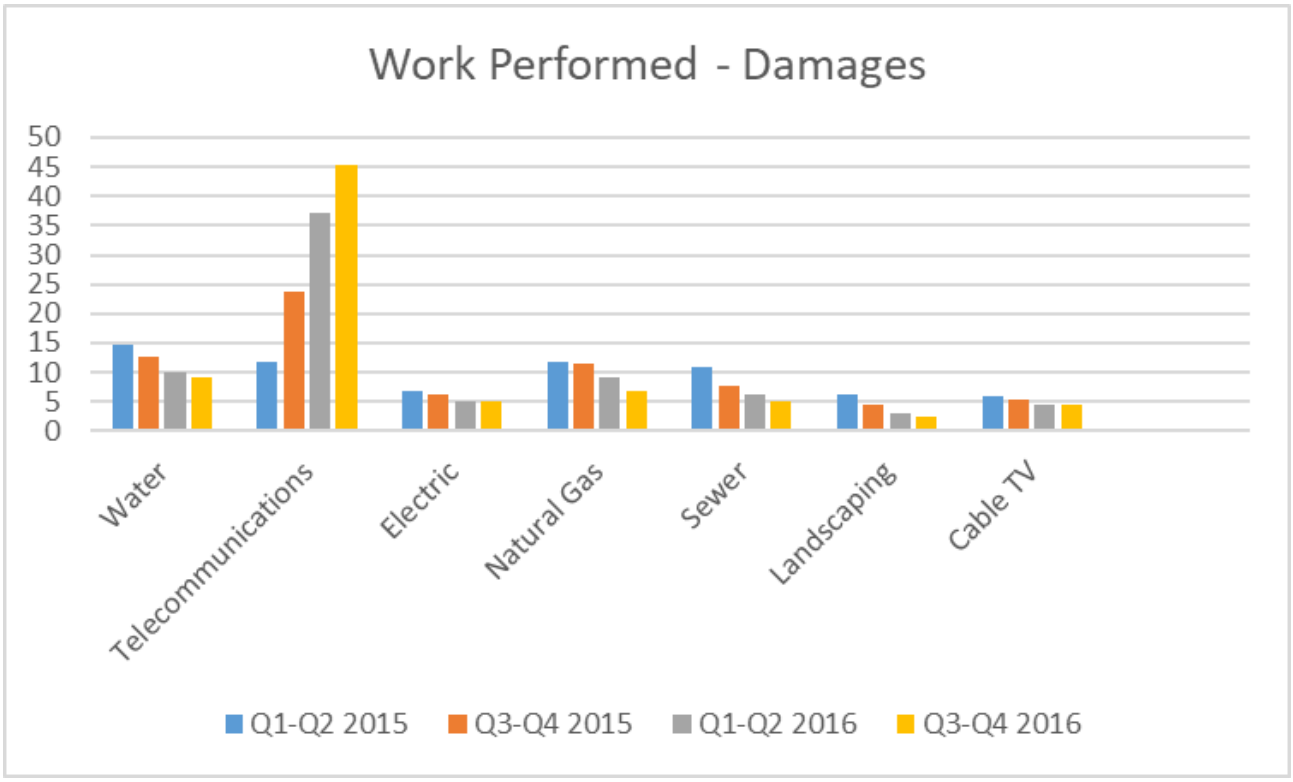
Q1 - Q2 2016 Damages		
Work Performed	**Events**	**% of Grand Total**
Telecommunications	2452	37.09%
Water	653	9.88%
Natural Gas	612	9.26%
Data Not Collected	504	7.62%
Sewer	410	6.20%
Electric	343	5.19%
Cable TV	290	4.39%
Unknown/Other	269	4.07%
Landscaping	206	3.12%
Fencing	159	2.41%
Storm Drain/Culvert	114	1.72%
Drainage	112	1.69%
Bldg. Construction	98	1.48%
Road Work	82	1.24%
Pole	55	0.83%
Irrigation	54	0.82%
Grading	45	0.68%
Site Development	44	0.67%
Driveway	31	0.47%
Curb/Sidewalk	22	0.33%
Traffic Signal	21	0.32%
Street Light	12	0.18%
Bldg. Demolition	10	0.15%
Traffic Sign	6	0.09%
Engineering/Surveying	4	0.06%
Railroad Maintenance	1	0.02%
Milling	1	0.02%
Liquid Pipeline	1	0.02%
Grand Total	**6611**	**100.00%**

Q3 - Q4 2016 Damages		
Work Performed	**Events**	**% of Grand Total**
Telecommunications	3871	45.22%
Water	779	9.10%
Natural Gas	589	6.88%
Data Not Collected	549	6.41%
Sewer	441	5.15%
Electric	425	4.96%
Cable TV	393	4.59%
Unknown/Other	387	4.52%
Landscaping	200	2.34%
Fencing	167	1.95%
Road Work	107	1.25%
Drainage	97	1.13%
Storm Drain/Culvert	97	1.13%
Irrigation	94	1.10%
Bldg. Construction	67	0.78%
Pole	58	0.68%
Grading	56	0.65%
Site Development	48	0.56%
Curb/Sidewalk	29	0.34%
Driveway	29	0.34%
Traffic Signal	24	0.28%
Street Light	19	0.22%
Engineering/Surveying	11	0.13%
Bldg. Demolition	11	0.13%
Traffic Sign	6	0.07%
Liquid Pipeline	5	0.06%
Railroad Maintenance	1	0.01%
Milling	1	0.01%
Grand Total	**8561**	**100.00%**

Damages: Q1-Q2 vs. Q3-Q4 2016 Comparison

NOTE: This detail is provided for the damages reported to NC 811 only.

Looking at 6 month blocks of time we can see the trend in work type when we compare these side by side:



What the trend suggests is a dramatic increase in the number of damages occurring when the work type is telecommunications related. In a two-year period the installation of telecommunications went from 11.7% to 45.5% of damages reported to NC 811.

CODE 70 NO 999

A positive response code of 70 means "the excavator completed the work prior to the due date." If this code is applied during the 3 full days the excavator was to wait for the response it means that the work was started before the locate process was complete. If this code is applied after the three full days the report ignores the code because the excavator has the right to dig with care if, after waiting, there was no response from the operator and there are no visible signs of facilities. The report concerns itself with Code 70 when there are no 999 codes present. This represents a potential risk to facilities as it means all the operators responded within the 3 full business days yet the work was begun before the end of the three full days. **In 2015 the state average was 6.71% of tickets included a code of 70 when there was no 999 present. In 2016 this number fell to 3.48% or almost half.**

Intuitively we know that excavating before the locate has been performed puts the facilities at a much higher risk. In 2016 the average percentage statewide for instances of code 70 with a 999 was 3.48%. Identifying the top ten counties with a higher than average percentage shows the highest percentages in lower to middle volume counties with improved damage ratios. **Of these 10 counties 7 or 70% show higher than average rates of damages per 1000.**

County	2016 Ticket Volume	2016 vs 2015 tickets % change	2016 Incidents per 1000 transmissions (USING CGA DATA)	2015-2016 Rate of change in damages per 1000 transmissions	2016 incidents per 1000 tickets (USING CGA DATA)	2016 % failure to call	% failure to call change rate	%70- no 999	999
BURKE	8638	-1.9%	**2.49**	**1.09**	11.92	41.9%	0.03	16.14%	5.14%
LINCOLN	18877	74.6%	**2.68**	**-0.27**	12.91	26.8%	-0.18	15.20%	12.52%
CLEVELAND	12538	11.4%	**2.24**	**0.15**	11.17	17.2%	-0.02	11.19%	9.60%
BLADEN	3469	-21.6%	**0.71**	**-0.06**	2.88	33.3%	0.11	11.07%	1.12%
CALDWELL	8759	24.8%	**2.34**	**-0.76**	9.48	33.3%	-0.19	9.74%	5.40%
GASTON	39770	37.6%	**3.03**	**0.44**	15.47	33.3%	0.05	8.91%	10.35%
CATAWBA	19959	21.9%	**2.08**	**-0.32**	10.48	30.5%	-0.08	7.92%	8.53%
CHOWAN	1070	-12.1%	**1.11**	**0.15**	3.74	33.3%	-0.17	7.66%	1.84%
RUTHERFORD	7006	29.0%	**4.40**	**-1.25**	15.70	22.2%	0.10	6.88%	5.67%
WAYNE	15524	-2.3%	**1.08**	**-1.30**	4.40	28.1%	-0.11	6.65%	9.70%

Of the remaining counties above the 3.48% threshold, the largest two are Wake and Guilford. Guilford county shows a damage per 1000 transmission ratio at 2.12 or slightly better than the average of 2.2. It should also be noted that the rate of code 70 with no 999 fell in Guilford from 5.69% to 4.83%.

Wake tells an even more impressive story. Here the percentage of Code 70 with no 999 cut more than half from 10.59% to 5.14%.

	County	Adjusted 2016 Transmissions	Incidents per 1000 transmissions (USING CGA DATA)	2015-2016 Rate of change in damages per 1000 transmissions	%70- no 999
2015	WAKE	1143379	**2.68**	N/A	10.59%
2016	WAKE	1776704	**2.15**	**-0.53**	5.41%

WHAT COUNTIES ARE SHOWING THE GREATEST IMPROVEMENT?

Fifty-two counties reflected improvement from 2014-2015 in terms of damages per 1000 transmissions. **In 2016 the number of counties that improved vs. reflected higher damages per 1000 were split evenly 50/50.** Several interesting things jump out. Of course, we see the highest improvement in small volume counties.

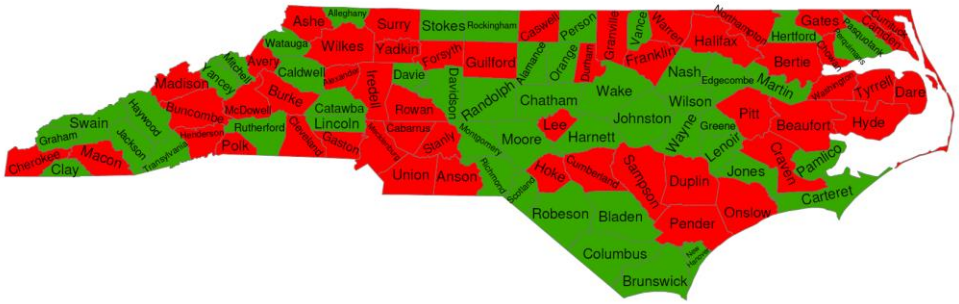
County	Adjusted 2016 Transmissions	2016 Incidents per 1000 transmissions (USING CGA DATA)	2015-2016 Rate of change in damages per 1000 transmissions	County	Adjusted 2016 Transmissions	2016 Incidents per 1000 transmissions (USING CGA DATA)	2015-2016 Rate of change in damages per 1000 transmissions
WAKE	1776704	2.15	-0.53	HALIFAX	24250	0.95	0.00
NEW HANOVER	246110	1.42	-0.48	LENOIR	24118	0.70	-0.64
BRUNSWICK	156951	1.26	-0.18	COLUMBUS	21665	0.77	-0.33
ORANGE	143528	2.79	-1.14	STOKES	21399	2.20	-0.22
JOHNSTON	140061	1.53	-0.36	PASQUOTANK	19680	0.51	-0.10
DAVIDSON	137525	1.16	-0.25	WATAUGA	17962	1.98	-1.59
ALAMANCE	107046	2.25	-0.32	EDGECOMBE	16825	1.16	-0.77
CATAWBA	100506	2.08	-0.32	PERSON	15620	0.32	-0.63
LINCOLN	90901	2.68	-0.27	TRANSYLVANIA	14044	1.64	-1.05
CHATHAM	90204	1.53	-0.31	BLADEN	14022	0.71	-0.06
HARNETT	69778	1.19	-0.08	JACKSON	13027	1.54	-1.05
ROBESON	69418	1.40	-1.17	MONTGOMERY	12131	1.15	-0.50
RANDOLPH	66696	1.32	-0.16	SCOTLAND	12026	1.00	-2.17
MOORE	65930	1.18	-0.17	HERTFORD	9159	0.33	-0.55
WAYNE	63167	1.08	-1.30	ALLEGHANY	8554	0.35	-0.06
ROCKINGHAM	60550	2.19	-0.15	YANCEY	7868	0.76	-1.93
CARTERET	47134	0.83	-0.15	MARTIN	7738	0.90	-0.43
NASH	43491	0.66	-0.53	PAMLICO	7720	0.26	-0.13
RICHMOND	35971	0.80	-0.90	JONES	6608	1.06	-0.28
CALDWELL	35528	2.34	-0.76	MITCHELL	6033	1.99	-1.01
WILSON	29958	1.27	-0.09	GREENE	5497	2.00	-0.37
DAVIE	28242	1.88	-0.04	PERQUIMANS	4579	0.44	-0.15
HAYWOOD	26682	3.15	-0.70	SWAIN	4075	1.23	-0.48
RUTHERFORD	25009	4.40	-1.25	CLAY	2930	1.37	-0.29
VANCE	24826	1.04	-0.28	GRAHAM	1331	2.25	-0.12

This list is sorted by volume. Although most of these counties are small in volume, this group includes Wake, New Hanover, Brunswick, Orange, Johnston and Davidson counties (2,600,879 transmissions or 24% of total). Of those six counties, Orange showed the most improvement (from 3.93 to 2.79) but Wake did come down from 2.68 to 2.15 reported damages per thousand in 2016 and New Hanover also came down from 1.9 to 1.42. Unfortunately, Orange County has a higher than average ratio when compared to the state average of 2.2 per 1000.

The total transmissions of these improved counties is 3,980,777 represents 37% of the state total (10,703,693).

What is most interesting in this sort is that of the 50 counties that improved their ratio from 2015 to 2016, only 7 are above the average 2.2 for the state.

2015 - 2016 Rate of Change in Damages Per 1000 Transmissions



Legend

Damages

- Decrease Per 1000
- Increase Per 1000

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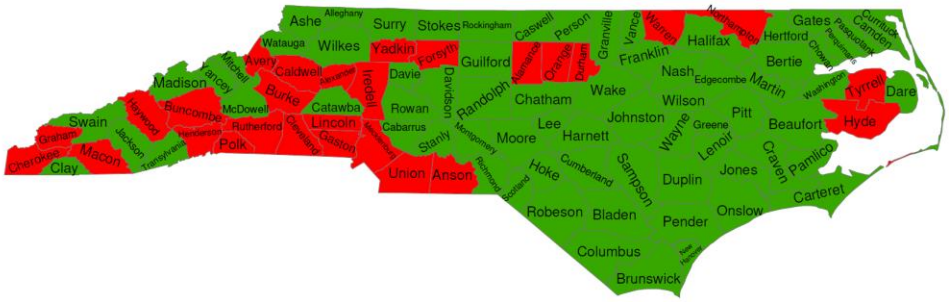
2016 Incidents Per 1000 Transmissions

(Using CGA Data)



Legend

Average is 2.2

- Below Average
- Above Average

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WHAT COUNTIES REPRESENT A CHALLENGE?

Based on the data, the following counties have increased their ratio of damages per 1000 transmissions in 2016:

County	2016 vs 2015 ticket difference	2016 vs 2015 tickets % change	Adjusted 2016 Transmissions	Percentage of 2016 Total Tranmissions	2016 Incidents per 1000 transmissions (USING CGA DATA)	2015-2016 Rate of change in damages per 1000	2016 % failure to call	% failure to call change rate	%70- no 999	999
TYRRELL	-874	-63.1%	1816	0.02%	14.87	13.80	100.0%	1.00	1.37%	3.26%
HYDE	-333	-37.4%	1542	0.01%	3.89	3.89	100.0%	DNE	0.90%	4.26%
NORTHAMPTON	-216	-8.4%	9354	0.09%	3.60	2.95	33.3%	0.33	1.39%	5.88%
WARREN	-266	-7.5%	12102	0.11%	2.60	2.18	15.8%	0.16	1.04%	7.39%
MACON	233	9.9%	8534	0.08%	3.87	2.06	75.0%	0.35	0.27%	8.31%
AVERY	-132	-8.7%	3937	0.04%	4.32	1.65	75.0%	-0.25	1.87%	6.02%
BEAUFORT	-1745	-25.9%	23676	0.22%	1.44	1.22	50.0%	0.17	1.04%	5.78%
SURRY	1458	17.4%	42507	0.40%	1.99	1.13	42.1%	0.06	1.29%	8.13%
BURKE	-169	-1.9%	41372	0.39%	2.49	1.09	41.9%	0.03	16.14%	5.14%
GATES	-792	-49.6%	2769	0.03%	1.44	1.03	33.3%	-0.17	2.36%	5.72%
CASWELL	-185	-9.4%	6111	0.06%	1.96	1.01	100.0%	0.50	1.23%	5.25%
YADKIN	506	16.3%	14102	0.13%	2.27	0.99	57.1%	0.57	0.03%	3.02%
ASHE	1274	42.6%	15190	0.14%	1.28	0.98	33.3%	DNE	0.75%	28.58%
WILKES	939	19.0%	25882	0.24%	2.12	0.83	66.7%	0.17	0.70%	5.99%
CHEROKEE	-143	-7.6%	3830	0.04%	4.31	0.78	100.0%	0.33	0.00%	2.78%
GRANVILLE	1762	25.2%	34404	0.32%	1.85	0.62	17.4%	-0.04	4.14%	5.45%
MCDOWELL	1317	50.8%	18140	0.17%	1.76	0.62	28.6%	0.14	0.38%	3.88%
POLK	1468	51.5%	15864	0.15%	4.63	0.56	20.7%	-0.10	3.87%	6.29%
ROWAN	3127	16.3%	101562	0.95%	2.05	0.53	24.5%	0.04	0.13%	7.62%
LEE	-2129	-25.1%	33657	0.31%	1.99	0.49	21.1%	0.05	0.72%	2.43%
PITT	-1575	-7.8%	95374	0.89%	1.76	0.48	27.5%	-0.06	1.24%	15.08%
FORSYTH	13030	21.3%	372315	3.48%	2.23	0.47	28.3%	0.05	1.54%	2.19%
GASTON	10874	37.6%	202922	1.90%	3.03	0.44	33.3%	0.05	8.91%	10.35%
DARE	-847	-7.5%	45576	0.43%	1.65	0.44	16.7%	-0.13	4.81%	11.00%
ANSON	-113	-3.0%	13546	0.13%	2.21	0.44	15.8%	-0.09	0.57%	8.03%
DURHAM	35879	66.1%	520404	4.86%	2.58	0.37	20.0%	-0.03	2.93%	21.25%
ALEXANDER	68	1.9%	16421	0.15%	2.89	0.37	0.0%	-0.25	6.37%	4.78%
BUNCOMBE	5664	16.2%	253090	2.36%	3.14	0.35	32.6%	0.12	0.75%	7.02%
MECKLENBURG	163536	77.8%	2741918	25.62%	2.76	0.31	18.2%	-0.09	3.07%	15.32%
BERTIE	-215	-12.0%	5604	0.05%	0.54	0.30	DNE	DNE	4.18%	5.54%
CAMDEN	-293	-23.7%	4305	0.04%	0.93	0.26	DNE	DNE	0.74%	10.13%
UNION	8911	20.9%	283750	2.65%	2.26	0.26	20.0%	-0.04	1.71%	12.21%
FRANKLIN	255	2.8%	38447	0.36%	1.63	0.26	24.5%	-0.04	2.84%	4.78%
WASHINGTON	11	1.2%	3882	0.04%	1.29	0.25	50.0%	0.00	0.78%	5.05%
CURRITUCK	524	9.1%	26289	0.25%	0.99	0.23	33.3%	0.00	2.33%	6.35%
CABARRUS	5232	13.9%	221326	2.07%	1.40	0.22	17.9%	-0.10	0.57%	7.45%
DUPLIN	-421	-9.1%	16703	0.16%	1.02	0.21	50.0%	0.50	4.14%	3.54%
PENDER	2580	26.1%	49836	0.47%	2.01	0.19	24.2%	-0.04	2.74%	7.15%
HENDERSON	3724	25.9%	82414	0.77%	5.12	0.18	23.8%	-0.03	2.83%	4.57%
GUILFORD	10956	12.7%	573950	5.36%	2.12	0.17	24.5%	0.01	4.83%	3.76%
IREDELL	3583	11.7%	178806	1.67%	2.25	0.16	28.0%	0.05	1.82%	3.98%
CHOWAN	-147	-12.1%	3618	0.03%	1.11	0.15	33.3%	-0.17	7.66%	1.84%
CLEVELAND	1287	11.4%	62505	0.58%	2.24	0.15	17.2%	-0.02	11.19%	9.60%
HOKE	738	13.0%	23829	0.22%	0.65	0.15	25.0%	-0.15	0.40%	6.09%
ONSLOW	-1094	-5.5%	89387	0.84%	0.77	0.14	51.6%	0.10	3.38%	4.46%
CUMBERLAND	1335	3.1%	238476	2.23%	1.15	0.11	20.3%	-0.01	1.53%	9.55%
SAMPSON	-1213	-11.3%	42951	0.40%	0.48	0.08	12.5%	-0.29	2.39%	9.42%
MADISON	-56	-6.8%	2058	0.02%	1.46	0.03	100.0%	0.50	1.17%	2.64%
CRAVEN	-2380	-17.5%	66481	0.62%	0.60	0.03	39.1%	0.12	2.78%	9.02%
STANLY	-1264	-13.9%	30382	0.28%	1.69	0.01	32.4%	-0.08	0.48%	10.93%
HALIFAX	-1477	-21.5%	24250	0.23%	0.95	0.00	35.3%	-0.03	2.00%	5.29%

Note: Mecklenburg, Guilford, Durham, Forsyth, Cumberland, Buncombe, Cabarrus and Union are all part of the top 10 ticket receiving counties in 2016. Of the top 10, only Wake and New Hanover improved their ratio.

NOTES ABOUT THE 50 COUNTIES THAT DID NOT SEE IMPROVEMENT IN DAMAGE RATIO

- **22 of the 50 counties saw an increase in the percentage of "failure to call" as a root cause.**
- **Combined this group represented 63% of the transmissions.**
- **Mecklenburg alone makes up a quarter of all transmissions in the state (25.6%)**
- **Mecklenburg and Durham saw 77% and 66% increases in ticket volume respectively.**

USE OF REMOTE TICKET ENTRY (RTE)

In North Carolina, excavators choosing to enter their tickets online may do so using our RTE program. Excavators are trained in the use of the system and allowed to create their tickets 24/7 with a full pass through to the operators. In 2016 NC 811 received over 65% of all tickets online. When sorting the counties by highest to lowest percentage of RTE usage there is about an even split of improved counties in the 31 counties when RTE was used more than 65% of the time. **23 of the 31 counties or 74% were below the state average of 2.2 damages per 1000 transmission.**

County	Adjusted 2016 Transmissions	2016 RTE %	2016 Update Lite %	2016 reported incidents	2016 CGA DIRT reported incidents	Difference between NC 811 and CGA reported incidents	2016 Incidents per 1000 transmissions (USING CGA DATA)	2015-2016 Rate of change in damages per 1000 transmissions
MECKLENBURG	2741918	73.30%	6.79%	5061	7562	2501	2.76	0.31
WAKE	1776704	70.93%	6.21%	3256	3815	559	2.15	-0.53
GUILFORD	573950	66.32%	14.86%	600	1218	618	2.12	0.17
DURHAM	520404	70.18%	8.25%	1003	1343	340	2.58	0.37
CABARRUS	221326	67.14%	7.86%	218	310	92	1.40	0.22
JOHNSTON	140061	69.00%	4.44%	162	214	52	1.53	-0.36
ROWAN	101562	69.31%	19.60%	98	208	110	2.05	0.53
LINCOLN	90901	68.94%	5.54%	82	244	162	2.68	-0.27
CHATHAM	90204	66.03%	4.67%	131	138	7	1.53	-0.31
WAYNE	63167	67.71%	13.53%	32	68	36	1.08	-1.30
CARTERET	47134	66.19%	9.10%	18	39	21	0.83	-0.15
SAMPSON	42951	69.13%	32.28%	8	21	13	0.48	0.08
SURRY	42507	70.31%	20.52%	19	85	66	1.99	1.13
FRANKLIN	38447	70.77%	5.32%	53	62	9	1.63	0.26
RICHMOND	35971	68.85%	19.45%	13	29	16	0.80	-0.90
GRANVILLE	34404	68.50%	6.50%	46	64	18	1.85	0.62
WILSON	29958	70.03%	3.26%	38	38	0	1.27	-0.09
HAYWOOD	26682	69.88%	0.85%	20	84	64	3.15	-0.70
VANCE	24826	67.57%	13.81%	12	26	14	1.04	-0.28
HOKE	23829	65.36%	19.44%	12	15	3	0.65	0.15
MCDOWELL	18140	65.87%	10.28%	7	32	25	1.76	0.62
DUPLIN	16703	68.21%	8.78%	4	17	13	1.02	0.21
YADKIN	14102	67.00%	2.75%	7	32	25	2.27	0.99
ANSON	13546	66.71%	16.48%	19	30	11	2.21	0.44
MONTGOMERY	12131	68.34%	28.92%	2	14	12	1.15	-0.50
WARREN	12102	65.14%	5.06%	19	32	13	2.60	2.18
ALLEGHANY	8554	73.17%	44.93%	1	3	2	0.35	-0.06
YANCEY	7868	86.80%	65.83%	2	6	4	0.76	-1.93
MITCHELL	6033	80.06%	44.22%	2	12	10	1.99	-1.01
AVERY	3937	70.16%	13.49%	4	17	13	4.32	1.65
GRAHAM	1331	72.97%	8.46%	0	3	3	2.25	-0.12

Again we see Wake in this group operating at almost 71% RTE usage with statistical improvements in 2016 over 2015 damages per 1000, however Mecklenburg at 73% still saw the increase in damages per 1000.

COUNTIES WITH THE HIGHEST GROWTH IN VOLUME

Do counties with the highest growth in ticket volume reflect more damages per 1000? Not necessarily. When the data is sorted along the lines of percentage of growth in ticket volume among the counties with greater than 24% growth, there are significant differences in rate of change for reported damages. As already identified, there are increases in damages occurring in two large counties (Mecklenburg and Durham) while reductions occurred in Wake. It should be noted that the growth in Wake and Durham is faster than the other three.

County	2016 Ticket Volume	2016 vs 2015 tickets % change	Adjusted 2016 Transmissions	2016 CGA DIRT reported incidents	2016 Incidents per 1000 transmissions (USING CGA DATA)	2015-2016 Rate of change in damages per 1000 transmissions
MECKLENBURG	373711	77.8%	2741918	7562	2.76	0.31
TRANSYLVANIA	4660	77.4%	14044	23	1.64	-1.05
LINCOLN	18877	74.6%	90901	244	2.68	-0.27
JONES	1953	72.4%	6608	7	1.06	-0.28
DURHAM	90125	66.1%	520404	1343	2.58	0.37
GRAHAM	603	57.0%	1331	3	2.25	-0.12
RICHMOND	6752	53.6%	35971	29	0.80	-0.90
POLK	4320	51.5%	15864	74	4.63	0.56
MCDOWELL	3911	50.8%	18140	32	1.76	0.62
WAKE	319317	45.8%	1776704	3815	2.15	-0.53
ASHE	4267	42.6%	15190	20	1.28	0.98
GASTON	39770	37.6%	202922	615	3.03	0.44
BRUNSWICK	34707	35.9%	156951	198	1.26	-0.18
JACKSON	3753	30.4%	13027	20	1.54	-1.05
RUTHERFORD	7006	29.0%	25009	110	4.40	-1.25
PENDER	12470	26.1%	49836	100	2.01	0.19
HENDERSON	18109	25.9%	82414	422	5.12	0.18
ORANGE	28160	25.5%	143528	400	2.79	-1.14
GRANVILLE	8760	25.2%	34404	64	1.85	0.62
CALDWELL	8759	24.8%	35528	83	2.34	-0.76
DAVIE	7010	24.5%	28242	53	1.88	-0.04

When sorting all of the 100 counties based on rate of growth we find nine among the top 21 counties that have an increase in the damages per 1000 transmission ratio.

THREE HOUR NOTICES

The three hour notices came about as a result of the new law change in 2014. These notices can be requested when an excavator has waited the three full days or has received 100% of their responses and they note evidence of an unmarked underground facility at the excavation site. The presence of a three hour notice typically means something did not happen correctly in the overall process.

County	2016 vs 2015 tickets % change	Adjusted 2016 Transmissions	2016 Incidents per 1000 transmissions (USING CGA DATA)	2015-2016 Rate of change in damages per 1000 transmissions	%70- no 999	999	2016 3-Hour Tickets	2016 3-Hour Tickets %
MECKLENBURG	77.8%	2741918	**2.76**	**0.31**	3.07%	15.32%	15526	4.15%
WAKE	45.8%	1776704	**2.15**	**-0.53**	5.41%	13.36%	13039	4.08%
LINCOLN	74.6%	90901	**2.68**	**-0.27**	15.20%	12.52%	718	3.80%
DURHAM	66.1%	520404	**2.58**	**0.37**	2.93%	21.25%	3165	3.51%
CHATHAM	16.3%	90204	**1.53**	**-0.31**	3.85%	16.52%	550	2.70%
ORANGE	25.5%	143528	**2.79**	**-1.14**	2.90%	11.61%	713	2.53%
UNION	20.9%	283750	**2.26**	**0.26**	1.71%	12.21%	1209	2.34%
CALDWELL	24.8%	35528	**2.34**	**-0.76**	9.74%	5.40%	204	2.33%

It shouldn't be considered unusual that Mecklenburg and Wake lead the pack in this sort with the highest percentage of three hour notices. Given the sheer volume it makes sense that these counties may have struggled with compliance.

Perhaps more telling with this sort is the fact that the four counties with high percentage rates of three hour tickets also experienced significant rates of change in ticket volume in a short time (46%, 66%, 75% and 78%). Also of note, these four counties represent half of the total transmissions in the state. Six of the eight counties in this sort have higher than the average damage per thousand ratio.

EDUCATION IMPACTS ON DAMAGES

Education throughout the state comes in a variety of forms. The “call before you dig” message is shared through billboards, television, radio and Internet banners as well as utility messaging in billing, signs and displayed banners. More in depth education takes place with PIPES Plus, onsite training of NCDOT, Surveyors and excavators throughout the state. This training covers all of the components of safe excavation from One Call through the proper ways to excavate with care.

Sorting the data by PIPES Plus attendees of 40 or more reveals an even spread of counties that increased and decreased damages per 1000. **Of note is the concentration of a variety of methods in Wake County and the reduction of damages per 1000 from 2.68 to 2.15 even in the face of increased excavation activity.** Because this messaging can only influence a person contacting 811, it does not speak to what happens when the ticket is created and distributed. Other factors, such as timely accurate locates and excavating with care, impact the damage ratio as previously shown.

County	Adjusted 2016 Transmissions	2016 Incidents per 1000 transmissions (USING CGA DATA)	2015-2016 Rate of change in damages per 1000	2016 % failure to call	% failure to call change rate	%70- no 999	999	First time callers %	2016 Homeowners %	2016 3-Hour Tickets %	AG Days	PIPES Plus on-Site & On-Line	Billboards (Eyes On)	Wral & Wralsportsfan.com-Digital Impressions	UCC	Trade shows (Reached at Booth)	Magazine
GUILFORD	573950	2.12	0.17	24.5%	0.01	4.83%	3.76%	13.71%	3.94%	1.33%		201			156	1145	12,250
BLADEN	14022	0.71	-0.06	33.3%	0.11	11.07%	1.12%	16.19%	8.53%	0.49%		137					
WAKE	1776704	2.15	-0.53	18.6%	-0.01	5.41%	13.36%	11.21%	2.78%	4.08%	325	106	496,420	33,000	610	1950	10,286
MARTIN	7738	0.90	-0.43	0.0%	-0.67	2.38%	3.92%	14.02%	6.21%	0.39%		101					
MECKLENBURG	2741918	2.76	0.31	18.2%	-0.09	3.07%	15.32%	13.55%	2.78%	4.15%		101	2,139,447		355	6002	641,936
BUNCOMBE	253090	3.14	0.35	32.6%	0.12	0.75%	7.02%	16.38%	6.20%	1.29%		82	862,550		182	1542	193,247
FORSYTH	372315	2.23	0.47	28.3%	0.05	1.54%	2.19%	11.25%	4.29%	0.92%		76	521,548		79		2,250
NEW HANOVER	246110	1.42	-0.48	28.0%	-0.03	1.35%	14.02%	12.78%	3.47%	0.77%		70	108,170		211	352	
RICHMOND	35971	0.80	-0.90	30.8%	-0.36	2.87%	4.47%	15.09%	3.18%	0.73%		65	45,673		115	500	
BURKE	41372	2.49	1.09	41.9%	0.03	16.14%	5.14%	25.42%	8.71%	1.04%		52			177	270	667
CLEVELAND	62505	2.24	0.15	17.2%	-0.02	11.19%	9.60%	16.64%	7.43%	1.22%		43	121,942.00		22	100	667
CRAVEN	66481	0.60	0.03	39.1%	0.12	2.78%	9.02%	15.60%	6.26%	0.29%		43			88		
NASH	43491	0.66	-0.53	0.0%	-0.35	4.29%	2.58%	13.47%	4.26%	0.31%		43	117,545			30	
JACKSON	13027	1.54	-1.05	20.0%	-0.30	1.41%	8.29%	20.23%	5.65%	0.77%		40			17		

Data sorted by PIPES Plus attendees

IMPACT OF BILLBOARDS

County	Adjusted 2016 Transmissions	2016 Incidents per 1000 transmissions (USING CGA DATA)	2015-2016 Rate of change in damages per 1000 transmissions	2016 incidents per 1000 tickets (USING CGA DATA)	2016 % failure to call	% failure to call change rate	First time callers %	2016 Homeowners %	Survey - Billboard %
EDGECOMBE	16825	1.16	-0.77	4.22	30.8%	0.17	8.86%	3.47%	8.86%
JONES	6608	1.06	-0.28	3.58	0.0%	-0.33	9.93%	2.66%	6.98%
MCDOWELL	18140	1.76	0.62	8.18	28.6%	0.14	23.55%	7.24%	6.98%
PITT	95374	1.76	0.48	9.01	27.5%	-0.06	13.61%	3.92%	6.90%
CLEVELAND	62505	2.24	0.15	11.17	17.2%	-0.02	16.64%	7.43%	6.68%
LENOIR	24118	0.70	-0.64	3.18	25.0%	-0.33	11.24%	3.16%	6.47%
HAYWOOD	26682	3.15	-0.70	14.05	55.0%	0.19	20.41%	4.79%	5.98%
CALDWELL	35528	2.34	-0.76	9.48	33.3%	-0.19	23.50%	8.59%	5.86%
YANCEY	7868	0.76	-1.93	2.28	0.0%	-0.50	20.55%	1.86%	5.77%
ALAMANCE	107046	2.25	-0.32	10.66	30.0%	0.06	13.99%	5.48%	5.64%
BUNCOMBE	253090	3.14	0.35	19.49	32.6%	0.12	16.38%	6.20%	5.60%
CRAVEN	66481	0.60	0.03	3.58	39.1%	0.12	15.60%	6.26%	5.51%
BURKE	41372	2.49	1.09	11.92	41.9%	0.03	25.42%	8.71%	5.03%
GUILFORD	573950	2.12	0.17	12.50	24.5%	0.01	13.71%	3.94%	4.96%
ROCKINGHAM	60550	2.19	-0.15	9.44	41.0%	0.12	16.70%	6.25%	4.96%
PAMLICO	7720	0.26	-0.13	1.03	100.0%	0.00	13.64%	5.48%	4.90%
WATAUGA	17962	1.98	-1.59	7.13	20.0%	-0.20	26.19%	9.79%	4.62%
GASTON	202922	3.03	0.44	15.47	33.3%	0.05	14.59%	5.20%	4.62%

Using the first time caller survey to determine the impact of the billboards is challenging as the majority of the callers, when asked, do not specifically recall **how** they knew: they just knew (33%). When coupled with “word of mouth” at 8% the total percentage of first time caller that were asked who could not directly identify their source was over 40%.

So we are left with working with the people who **did** specifically report billboards as their reason for knowing.

In the group of counties that are statistically higher than the average (3.34%) we note that 11 of the 18 counties also reported a higher than average of first time callers. 12 of the 18 had higher than average homeowner percentages as well.

The next two sections will focus on 999 codes and impact on “failure to call” ratio to see if these statistically reflect the increased damages in some counties.

IMPACT OF 999 CODES ON DAMAGES

County	Adjusted 2016 Transmissions	2016 Incidents per 1000 transmissions (USING CGA DATA)	2015-2016 Rate of change in damages per 1000 transmissions	999
ASHE	15190	1.28	0.98	28.58%
DURHAM	520404	2.58	0.37	21.25%
ALLEGHANY	8554	0.35	-0.06	18.45%
CHATHAM	90204	1.53	-0.31	16.52%
TRANSYLVANIA	14044	1.64	-1.05	16.17%
MECKLENBURG	2741918	2.76	0.31	15.32%
PITT	95374	1.76	0.48	15.08%
NEW HANOVER	246110	1.42	-0.48	14.02%
WAKE	1776704	2.15	-0.53	13.36%
LINCOLN	90901	2.68	-0.27	12.52%
UNION	283750	2.26	0.26	12.21%
ORANGE	143528	2.79	-1.14	11.61%
PASQUOTANK	19680	0.51	-0.10	11.19%

DEFINITION: The 999 code is applied to the ticket by the system when a member that was notified failed to provide electronic positive response within the 3 full business days.

When the tickets are sorted by highest to lowest occurrence of 999 codes by county, the top 13 counties (statistically higher than the average 11.1%) show 8 that improved while 5 of the counties increased in damages per 1000 transmissions. Durham and Mecklenburg counties are the highest in volume to make this list with an increase in damages per 1000. Wake, however, again bucks the trend by showing improvement in damages as the second highest county in volume and a higher than average 13.4% 999 rate.

IMPORTANT NOTE: ***Instances of 999 code increased as a percentage of transmissions from 4.92% in 2015 to 11.1% in 2016. This doubling of 999 reflects the struggle the stakeholders had keeping pace with the 27% overall increase in volume statewide.***

"FAILURE TO CALL" IMPACT ON DAMAGES

For this important discussion the data has been sorted by "failure to call" from highest to lowest. Five counties were excluded as they had 0 damages attributed to failing to call. **As the data indicated, the state average was 21.6%.** That was based on all tickets and all damages accounted for in this SMS. Of the 95 remaining counties, 65 fell above the 21.6 threshold. ***Interestingly, in 2015 64 counties fell above the 24.7 threshold.***

Totaling up all of the damages in 2016 for the 30 counties that increased in damages from 2015 **AND** fell higher than the 24.7% yields **2,129** damages.

Of the 23,567 damages reported this means only 9% of the total damages reported occurred in counties with higher than the 24.7 average for root cause "failure to call" that reported an increase in damages over 2015.

8071 of the total damages occurred in the 65 counties that were higher than the 21.6%

This means that 65% of the 100 counties fell above the 21.6 "failure to call" threshold but only 34% of the damages occurred in those counties.

Perhaps not surprisingly, when the top 10 counties for transmission volume are identified 6 of the 10 fell below the 21.6% average. This is a direct relationship between the high volume of contracted excavation work and use of RTE, resulting in a ticket being created for the work.

County	Adjusted 2016 Transmissions	2016 Incidents per 1000 transmissions (USING CGA DATA)	2015-2016 Rate of change in damages per 1000 transmissions	2016 % failure to call	% failure to call change rate	%70- no 999	999
MECKLENBURG	2741918	2.76	0.31	18.2%	-0.09	3.07%	15.32%
WAKE	1776704	2.15	-0.53	18.6%	-0.01	5.41%	13.36%
GUILFORD	573950	2.12	0.17	24.5%	0.01	4.83%	3.76%
DURHAM	520404	2.58	0.37	20.0%	-0.03	2.93%	21.25%
FORSYTH	372315	2.23	0.47	28.3%	0.05	1.54%	2.19%
UNION	283750	2.26	0.26	20.0%	-0.04	1.71%	12.21%
BUNCOMBE	253090	3.14	0.35	32.6%	0.12	0.75%	7.02%
NEW HANOVER	246110	1.42	-0.48	28.0%	-0.03	1.35%	14.02%
CUMBERLAND	238476	1.15	0.11	20.3%	-0.01	1.53%	9.55%
CABARRUS	221326	1.40	0.22	17.9%	-0.10	0.57%	7.45%

USE OF CODE 32

Code 32 “Locate not complete, additional communication with the excavator required. Unable to contact the excavator.” **The average statewide occurrence of this code for 2016 is 2.09%, an increase from 2015 when the percentage was .31%.** Only 9 counties exceeded this average with over 70% less than 1%. The 9 counties with percentages higher than average are represented in the sheet below. It should be noted that of these 9 counties in which this code was used 6 of the counties improved in terms of their damages per 1000 ratio in 2016.

It should also be noted that of the 91 counties that fell below the 2.09% ratio, a total of 13,403 damages were reported or 57% of the 23,567 total.

The 9 counties above the average represent 29% of the ticket volume but 43% of the damages.

County	2016 Ticket Volume	2016 vs 2015 ticket difference	2016 vs 2015 tickets % change	2016 Total Transmissions	Code 32 %	2016 CGA DIRT reported incidents	2016 Incidents per 1000 transmissions (USING CGA DATA)	2015-2016 Rate of change in damages per 1000	2016 % failure to call	% failure to call change rate	%70- no 999	999
CALDWELL	8759	1740	24.8%	44410	4.76%	83	2.34	-0.76	33.3%	-0.19	9.74%	5.40%
MECKLENBURG	373711	163536	77.8%	3427397	4.01%	7562	2.76	0.31	18.2%	-0.09	3.07%	15.32%
HERTFORD	2252	-46	-2.0%	11449	3.58%	3	0.33	-0.55	DNE	DNE	3.55%	5.77%
LINCOLN	18877	8067	74.6%	113626	2.63%	244	2.68	-0.27	26.8%	-0.18	15.20%	12.52%
DURHAM	90125	35879	66.1%	650505	2.62%	1343	2.58	0.37	20.0%	-0.03	2.93%	21.25%
PENDER	12470	2580	26.1%	62295	2.54%	100	2.01	0.19	24.2%	-0.04	2.74%	7.15%
GASTON	39770	10874	37.6%	253653	2.53%	615	3.03	0.44	33.3%	0.05	8.91%	10.35%
PERSON	4589	215	4.9%	19525	2.40%	5	0.32	-0.63	66.7%	0.33	0.02%	0.96%
CATAWBA	19959	3591	21.9%	125632	2.18%	209	2.08	-0.32	30.5%	-0.08	7.92%	8.53%

Top 9 counties with percentages of Code 32 usage

MORE DAMAGE ANALYSIS

The average number of total reported damages per 1000 transmissions in 2016 was 2.2.

County	2016 Ticket Volume	2016 vs 2015 tickets % change	Adjusted 2016 Transmissions	Code 32 %	Code 70 %	2016 CGA DIRT reported incidents	2016 Incidents per 1000 transmissions	2015-2016 Rate of change in damages per	2016 incidents per 1000 tickets (USING CGA	2016 % failure to call	% failure to call change rate	%70- no 999	999	2016 3-Hour Tickets %
TYRRELL	511	-63.1%	1816	0.04%	0.40%	27	14.87	13.80	52.84	100.0%	1.00	1.37%	3.26%	0.59%
HENDERSON	18109	25.9%	82414	0.79%	0.55%	422	5.12	0.18	23.30	23.8%	-0.03	2.83%	4.57%	0.76%
POLK	4320	51.5%	15864	0.16%	1.27%	74	4.63	0.56	17.01	20.7%	-0.10	3.87%	6.29%	1.23%
RUTHERFORD	7006	29.0%	25009	1.63%	2.03%	110	4.40	-1.25	15.70	22.2%	0.10	6.88%	5.67%	1.30%
AVERY	1394	-8.7%	3937	0.08%	0.67%	17	4.32	1.65	12.20	75.0%	-0.25	1.87%	6.02%	0.29%
CHEROKEE	1747	-7.6%	3830	0.25%	0.00%	17	4.31	0.78	9.44	100.0%	0.33	0.00%	2.78%	0.57%
HYDE	558	-37.4%	1542	0.83%	0.26%	6	3.89	3.89	10.75	100.0%	DNE	0.90%	4.26%	0.90%
MACON	2590	9.9%	8534	0.06%	0.07%	33	3.87	2.06	12.74	75.0%	0.35	0.27%	8.31%	0.19%
NORTHAMPTON	2367	-8.4%	9354	0.03%	0.36%	34	3.60	2.95	14.22	33.3%	0.33	1.39%	5.88%	0.76%
HAYWOOD	5977	3.5%	26682	1.46%	0.15%	84	3.15	-0.70	14.05	55.0%	0.19	0.77%	6.40%	0.99%
BUNCOMBE	40733	16.2%	253090	1.55%	0.14%	794	3.14	0.35	19.49	32.6%	0.12	0.75%	7.02%	1.29%
GASTON	39770	37.6%	202922	2.53%	1.84%	615	3.03	0.44	15.47	33.3%	0.05	8.91%	10.35%	2.10%
ALEXANDER	3563	1.9%	16421	0.08%	1.19%	48	2.89	0.37	13.33	0.0%	-0.25	6.37%	4.78%	0.42%
ORANGE	28160	25.5%	143528	1.76%	0.59%	400	2.79	-1.14	14.22	21.3%	0.02	2.90%	11.61%	2.53%
MECKLENBURG	373711	77.8%	2741918	4.01%	0.53%	7562	2.76	0.31	20.24	18.2%	-0.09	3.07%	15.32%	4.15%
LINCOLN	18877	74.6%	90901	2.63%	3.45%	244	2.68	-0.27	12.91	26.8%	-0.18	15.20%	12.52%	3.80%
WARREN	3259	-7.5%	12102	0.97%	0.24%	32	2.60	2.18	9.67	15.8%	0.16	1.04%	7.39%	2.06%
DURHAM	90125	66.1%	520404	2.62%	0.64%	1343	2.58	0.37	14.90	20.0%	-0.03	2.93%	21.25%	3.51%
BURKE	8638	-1.9%	41372	1.03%	3.64%	103	2.49	1.09	11.92	41.9%	0.03	16.14%	5.14%	1.04%
CALDWELL	8759	24.8%	35528	4.76%	2.02%	83	2.34	-0.76	9.48	33.3%	-0.19	9.74%	5.40%	2.33%
YADKIN	3606	16.3%	14102	0.10%	0.01%	32	2.27	0.99	8.87	57.1%	0.57	0.03%	3.02%	0.22%
UNION	51642	20.9%	283750	1.05%	0.36%	641	2.26	0.26	12.42	20.0%	-0.04	1.71%	12.21%	2.34%
GRAHAM	603	57.0%	1331	0.30%	0.18%	3	2.25	-0.12	4.98	DNE	DNE	0.33%	1.08%	0.17%
ALAMANCE	22597	16.5%	107046	0.94%	0.64%	241	2.25	-0.32	10.66	30.0%	0.06	3.20%	7.32%	0.78%
IREDELL	34174	11.7%	178806	0.82%	0.33%	402	2.25	0.16	11.76	28.0%	0.05	1.82%	3.98%	1.51%
CLEVELAND	12538	11.4%	62505	0.94%	2.28%	140	2.24	0.15	11.17	17.2%	-0.02	11.19%	9.60%	1.22%
FORSYTH	74257	21.3%	372315	2.06%	0.29%	829	2.23	0.47	11.17	28.3%	0.05	1.54%	2.19%	0.92%
ANSON	3665	-3.0%	13546	0.14%	0.25%	30	2.21	0.44	8.19	15.8%	-0.09	0.57%	8.03%	0.68%

- Counties with statistically higher percentages than 2.2 totaled 28 and made up 65% of the total transmissions.
- Only 7 of those 28 counties improved in their ratio in 2016 (25%) with 75% showing an increase in damages per 1000.
- Of those 7, none were in the top 10 volume.
- The 28 counties make up 49% of the volume.

CONCLUSIONS

It is important to state right up front that it is difficult to draw a straight line to causation from any of this data. As stated earlier, the only root cause that is identified is the “failure to call” percentage. This has significantly improved as has the quality of the data being collected. By utilizing the CGA DIRT reported incident data by county for the 2015 and 2016 timeframes, damage ratios will match those reflected in the DIRT report.

Despite the improvements in damage reporting, there remain statistically higher instances of damages per 1000 in some key counties relative to the state average.

This data will not reflect two key areas that affect damages: locate accuracy and timeliness and safe excavation practices.

Counties that have a higher instance of 999 codes applied by the system, on average, do not trend higher in terms of damages. However, Durham and Mecklenburg counties present both high instances of 999 and higher than average damage ratios. As pointed out earlier, the doubling of the occurrence of this code in 2016 reflects the challenge that the massive increase in ticket volume produced.

Counties with less than an average instance of 32 codes, on average trend lower in terms of damages. The fact that the percentage went up significantly in 2016 may also be indicative of the stress on the process due to volume.

Mecklenburg, Guilford, Durham, Forsyth, Cumberland, Buncombe, Cabarrus and Union are all part of the top 10 ticket receiving counties in 2016 and all 8 saw a higher ratio of damages per 1000 in 2016 vs. 2015. Of the top 10, only Wake and New Hanover improved their ratio. Five of the top 10 counties are below the state average of 2.2 (Wake, Guilford, New Hanover, Cumberland and Cabarrus).

Damages due to the installation of telecommunications has significantly increased in Q3 and 4 of 2015 as a percentage of overall work type.

The author encourages readers to draw their own conclusions from the data presented. This report is meant to be a starting place for conversation about effective measures that can be taken to reduce overall damages.