

POLICE DEPARTMENTS AND CRIME STATUS IN VIRGINIA COMMUNITIES: AN ASSESSMENT FROM THE CITIZEN PERSPECTIVE

By Frank T. Manheim¹, Timothy B. Bullock², and Jahtanya S. Scott³



George Mason University Federal Work-Study Report, May 1, 2018

¹ Affiliate Professor, Schar School of Policy and Government, George Mason University

² Undergraduate Student, George Mason University

³ B.Sc. Graduate, 2017, George Mason University

EXECUTIVE SUMMARY

This report presents the first extensive assessment of crime status and police performance for communities in Virginia. Twenty-four counties and 29 cities were studied for the period 2015 and 2016. Performance was rated from a citizen, rather than a professional law enforcement perspective. Special attention was given to African American communities. The assessment utilized publicly accessible data sources including demographic data from the U.S. Census Bureau, police department web sites, FBI UCR crime statistics, media reports, and other data.

Virginia has crime rates below the national average, ranking 6th lowest in violent crime and 10th lowest in property crime for 2016. Poor correlation was found between crime rates and population size. Loudoun and Fairfax counties in northern Virginia, the two wealthiest counties in the United States, had low crime rates. Other than these two, the trend toward lower crime with increasing median income was irregular, varying by more than 300%. Peak crime levels were observed among cities with poverty levels above 16%, with the caveat that the poverty statistic may be distorted in cities with high proportions of (minimal-income) college and university students. Most localities reduced crime rates from 2010-2015.

The FBI warns against comparing municipalities based solely on crime rates. Leadership policies and department activities are reflected in police web sites. For this reason analysis of police web sites was used as an important component in the combined assessment of department performance, along with population controlled crime rates and crime trends from 2010 to 2015.

The percentage of African Americans in local populations ranged from 5 to 77%, with a state average of 19.8% (2015). African American populations as a percentage of communities were correlated with higher poverty and unemployment levels, which can affect neighborhoods and produce conditions conducive to crime. However, validation of the FBI's guidance is provided by Norfolk. With a substantial black population and a recently-appointed black police chief, Norfolk scored highest in website rank.

Based on *The Washington Post's* national database of police shootings, there were 22 and 20 deaths of white and black persons, respectively, at the hands of police in Virginia from 2015 to August 2017. One state police officer was killed in the line of duty in 2016.

Media reports from newspapers, TV, radio, and online sites were not found usable for quantitative rating of police performance. However, in-depth media reports, where available, shed important light on crime in society. Interviews with knowledgeable individuals conducted during this study provided important insights into local conditions. Our experience therefore suggests that even modest addition of interviews or other background information to media reports on crime and police activities would provide the public better information than is normally available at present.

We conclude that community history and characteristics, along with police performance, are major influences on local crime rates. This is a preliminary report, pending transfer of data to relational database format, which is expected to facilitate more extensive data comparisons.

Table of Contents

EXECUTIVE SUMMARY	2
I. INTRODUCTION.....	4
II. DATA SOURCES AND METHODS.....	6
Jurisdictions for Virginia counties, cities, and towns	6
Website analysis.....	10
Media reports	12
Crime data	13
<i>Historical profiles of crime rates for counties and cities</i>	14
<i>Fatal shootings by police in Virginia</i>	17
<i>Clearance rates</i>	17
III. RESULTS AND ANALYSIS	18
Background to demographic factors	18
Websites as indicators of police policies and performance	23
Media.....	25
<i>Insightful reporting</i>	26
National rankings and historical crime rates in Virginia	27
<i>Crime trends for Virginia communities</i>	28
Examples of the relationships of crime to local factors	29
<i>Crime vs. population</i>	29
Crime, policing and demographic relationships for African Americans in Virginia	32
<i>Police shootings</i>	32
<i>Combined ratings</i>	34
IV. CONCLUSIONS	35
V. REFERENCES	36
VI. APPENDIX.....	37

VI. APPENDIX TABLES

1. Police Departments, Chiefs, and websites as of 2015.....	37
2. Virginia cities over 15,000 population.....	39
3. Virginia counties over 50,000 population.....	40
4. Virginia towns over 1,000 population.....	41
5. Demographic data.....	43
6. Percent of police officers by race.....	44
7. Initial 13 criteria for rating websites.....	46
8. Website ratings for the 13-criteria set.....	47
9. Website ratings for the 3-criteria set.....	48
10. Media ratings.....	49
11. Violent crime index values.....	51
12. Property crime index values.....	52
13. Time profiles for violent crime.....	53
14. Time profiles for property crime.....	54
15. Combined safety/police performance ratings for cities.....	55
16. Shootings by Virginia police.....	58
17. Pearson correlations for media and crime index.....	59
18. Pearson correlations for website ratings and media.....	59

I. INTRODUCTION

Police departments serve critical functions in society, not merely for crime control but also for other services that promote the wellbeing of citizens. Relationships of police departments to African American communities have gotten newspaper headlines and public concern since the death of Michael Brown in Ferguson, MO on August 9, 2014 [1, 2]. According to FBI data for 61 “big cities” in the United States, there were 234 deaths at the hands of police officers in 2016. Of these, 103 were African Americans, or 45%, more than double the proportion of African Americans in these cities (20.7%). Statistics like these and videos of killings of unarmed black men led to the Black Lives Matter movement [3].

Media reports leave many questions unanswered. Are incidents involving African American citizens isolated, or do they reflect more generic problems? How well do police departments in general meet performance goals and citizen expectations? What are the main factors governing crime rates in Virginia? Short of in-depth research on given police departments, are there ways citizens and city officials can gauge their departments’ operational effectiveness?

The most widely accepted rating system for U.S. police departments is managed by the Center for the Accreditation of Law Enforcement Systems (CALEA)[4]. Also, see a recent summary of the status of professional police department assessment [5]. The CALEA rating system is conducted by, and details are primarily designed to be received by law enforcement or other professionals. Although there is overlap, our objectives differ from professional approaches.

To assess policing from a citizen perspective, we used data accessible on the Internet, and focused on the concerns and perspectives of the general public and local government officials to the extent we understood them. The goal was to evaluate the full range of performance, anticipating that there would be departments that offered useful experience or could serve as role models. The relationships of African American communities with police were of special interest in this study.

The Federal Bureau of Investigation (FBI), the most comprehensive and widely used source of uniform data on crime data, warns against ranking police department performance based solely on raw crime rates [6]. Respecting this warning, the current project made a special effort to use a variety of data to gain as a broad as possible perspective on police department performance and crime status in Virginia.

Mastrofski and Willis [7] state that the United States has the most decentralized police system in the world. The above authors also indicate that smaller police departments among the approximately 18,000 total departments in the last 2008 US census [8] are not well covered in published research studies. We therefore sought measurement criteria that would be applicable over as wide a range of communities as possible.

Using Virginia police departments to develop our analytical model, the following data sources were utilized as discussed in detail in the section on DATA SOURCES AND METHODS. These were:

- 1) Demographic information on municipalities
- 2) Police department websites
- 3) Media reports
- 4) FBI Uniform Crime Statistics
- 5) Changes in rates of crime per unit population in the past five years.

Other sources included telephone and email contacts with police departments, civic organizations, and discussion with staff of George Mason University's Department of Criminology, Law and Society. In addition, a limited experimental survey of African American citizens in towns around Norfolk Virginia was conducted.

On completion of the Virginia report, the intention was to test the applicability of the Virginia-based system in adjacent regions. That step is now being implemented for Maryland. This report is presented with narrow margins in order to accommodate wide tables.

This study did not undertake a detailed review of professional literature beyond selected references. One reason was to view activities and concerns relating to community policing from the perspective of citizens and local officials without professional expertise. Another reason was the lack of feasibility for our research team to undertake formal assessment of the voluminous scholarly literature on the subject. To illustrate this problem, a query on the key words, "police department performance" in *Google Scholar* returned 1.67 million titles of scholarly articles and books.

This study was made possible through the federal Department of Education Work-Study program, designed to provide research experience to undergraduate students through the George Mason University Office of Student Scholarship, Creative Activities, and Research (OSCAR). The Schar School of Policy and Government provided supplementary funding. Dr. David B. Wilson, Chairman, and Professor J. J. Willis of the Department of Criminology, Law and Society, George Mason University provided valuable information and suggestions. We thank the following individuals for their information and comments during telephone interviews: Bill Farrar, Director of Public Policy and Communications, ACLU, Virginia; Linda Thomas, State chair, Virginia Conference of the NAACP; Mechelle Smith, Coordinator of the Norfolk Criminal Justice Services; David Nye, Chief, Fredericksburg Police Department, and Lieutenant R.A. Wilburn, Radford Police Department.

II. DATA SOURCES AND METHODS

Jurisdictions for Virginia counties, cities, and towns

When Virginia declared its independence from the British Crown in 1776, it vested most power in the state. The state determines the boundaries of counties, which form the main subunits of the state. Like most other states, towns in Virginia are municipalities that have been granted a charter from the state and are part of counties. They share governmental responsibilities and tax systems with the county [9]. Unlike most other states, Virginia also has independent cities with distinct boundaries determined by the state. They elect their own officials and levy their own taxes. In fact, Virginia is said to have all but three of the 41 independent cities in the United States.

The main political entities covered in this report are counties with a police department and a population over 50,000 and cities with a police department and a population over 15,000. Table 2 provides a list of Virginia cities over 15,000 population. Table 3 lists counties over 50,000. Table 4 lists towns. Towns are parts of counties and therefore have their police functions mostly handled by county police. Where not included in the body of the paper, data tables are in the APPENDIX.

The most populous county in Virginia is Fairfax County (pop. 1,142,000 for 2016), followed by Prince William County with 451,000 (Table 1). Fairfax and other large counties have their own police departments. These include: Prince William, Arlington, and Loudoun county in northern Virginia., Chesterfield and Henrico Counties (Richmond), and Albemarle County, within which is the independent city of Charlottesville. The smallest of the 134 Virginia counties is Highland, with a population of 2,236 as of 2012 Census data.

Police jurisdictions can be complex. In Fairfax County the police department has jurisdiction over the cities of Fairfax and Falls Church and other municipalities, but not over Vienna and Herndon. The first planned community in America, the town of Reston, is neither a “town” nor a “city”. It is a “Census Bureau designated place”, which is governed by the nonprofit Reston Association. However, policing is still provided to Reston by Fairfax County.

Sheriffs’ main tasks are to operate jails. However, in counties that have no police department, the sheriff’s department may provide full police services.

City and town police departments with names, website URL and name of police chief as of 2015 or 2016 are listed in the APPENDIX, Table 1. A complete list of towns is provided in the APPENDIX, Table 2. Though a town, Blacksburg was added to selected figures and tables because it has a major university and its own police department.

Table 1. County, population, law enforcement body and status in assessment

County	Population	County Contains a Police Department (separate from Sheriff's office)	Included in Complete Assessment
Fairfax County	1,142,234	Yes	Yes
Prince William County	451,721	Yes	Yes
Loudoun County	375,629	No	Yes
Chesterfield County	335,687	Yes	Yes
Henrico County	325,155	Yes	Yes
Arlington County	229,164	Yes	Yes
Stafford County	142,003	No	No
Spotsylvania County	130,475	No	No
Albemarle County	105,703	Yes	Yes
Hanover County	103,227	No	No
Montgomery County	97,653	No	No
Roanoke County	94,409	Yes	Yes
Frederick County	83,199	No	No
Rockingham County	78,593	No	No

Bedford County	77,724	No	No
Augusta County	74,314	No	No
James City County	73,147	No	No
Fauquier County	68,782	No	No
York County	67,837	No	No
Pittsylvania County	62,194	No	No
Franklin County	56,264	No	No
Campbell County	55,086	No	No
Washington County	54,591	No	No
Henry County	51,881	No	No

Table 2. Virginia cities over 15,000 population included in assessment

County	Population
Virginia Beach	452,745
Norfolk	246,393
Chesapeake	235,429
Richmond	220,289
Newport News	182,385
Alexandria	153,511
Hampton	136,454
Roanoke	99,897
Portsmouth	96,201
Suffolk	88,161
Lynchburg	79,812
Harrisonburg	52,538
Charlottesville	46,597
Danville	42,082
Manassas	41,764
Petersburg	32,477
Fredericksburg	28,118
Winchester	27,284
Salem	25,432
Staunton	24,416
Fairfax City	24,013
Hopewell	22,378
Waynesboro	21,491
Colonial Heights	17,820
Radford	17,403
Bristol	17,141
Manassas Park	15,726
Williamsburg	15,052

Demographic data

Data were taken from the most authoritative source, the U.S. Census Bureau, which collects a vast amount of data at each ten-year interval. It estimates data between the census years, often complemented by special studies. Because of the detail in the Bureau's voluminous online files extracting desired information can be time-consuming and involve complexities. An example is that data on race is collected in multiple ways: by single race (e.g. formally designated "Black or African American alone") and by designation of two or more races. The data on race shown in sample Table 3 and in the Appendix are a combination of the two, which results in five main races generally summing to more than 100%. We chose this combination because selecting single-race data would have erred in the opposite direction, i.e. incompleteness. Unemployment figures are provided for multiple categories of age and workforce status. We chose the most comprehensive figure. Education data have different problems not mentioned by the Census Bureau but discussed below.

The most serious distortions were discovered in poverty data for cities with relatively large university populations. A significant proportion of enrolled students – usually with very low incomes – register with the local community. This creates distortions in apparent poverty levels, and to a lesser degree in median income.

Demographic data are not used in ranking performance for police departments but help interpret background and factors affecting crime and policing. In short, we hope that the present compilation of a selection of significant data will stimulate use by Virginia communities.

A sample of demographic data for the five most populous counties is provided in Table 3. This group includes the two most affluent counties in America, Loudoun, and Fairfax. Each has nearly 20% Asian population and higher Hispanic than African American populations. These and four other suburbs of Washington D.C., include six of the ten wealthiest counties in the United States. In contrast, Chesterfield and Henrico counties, in which the city of Richmond is located (capital of Virginia), have lower median household income, and nearly a quarter black population.

Table 3. Demographic data for five Virginia counties

County	Total Population (2015 Census Estimate)	% White*	% Black or African American*	% Hispanic or Latino*	% Asian*	% High School Graduate	% Bachelor's Degree	% Graduate or Professional Degree	Median Household Income	Mean Household Income	Mean to Median Ratio	% Unemployment Rate (2014 ACS 5yr. est.)	% Below Poverty Level (2014 ACS 5yr. est.)
Fairfax Co.	1,142,234	66.1	10.1	16.4	19.5	13.2	30.7	28.6	112,102	142,472	1.3	3.7	6.0

Prince William Co.	451,721	63.7	21.8	22.3	8.7	21.8	22.7	15.4	98,514	115,446	1.2	4.2	6.5
Loudoun Co.	375,629	69.8	7.9	13.6	18.0	13.8	35.0	23.0	123,966	142,011	1.1	3.3	3.8
Chesterfield Co.	335,687	69.4	23.5	8.2	3.7	24.0	23.3	13.3	72,514	89,852	1.2	5.1	7.2
Henrico Co.	325,155	59.8	30.2	5.5	8.2	23.0	24.8	14.9	61,438	82,874	1.3	5.3	10.7

Because of uncertainties associated with educational levels at the high school level and above⁴ the most informative measure of educational level was taken to be the percentage of populations with less than high school education, derived from the Census Bureau data. This number is included in figures.

Demographic data for police staff by race are listed in the APPENDIX, Table 6, For nine large cities the lowest proportion of African American officers was 9.7% in Virginia Beach, and the highest proportion was in Richmond, Virginia's capital (31.3%).

Website analysis

Police department websites offer a meaningful and underutilized source of information. They reflect leadership policies and departmental operation style. They serve as an important interface between the department and general public, potentially providing access to contact addresses and information relating to departmental functions, public safety, news reports, and community relations. The first comprehensive national survey of police websites by Dennis P. Rosenbaum and coworkers at the University of Illinois and UCLA [11] found that about 42% of agencies had web sites. Only 14% of departments in towns of from 1000 to 2500 had sites. We can expect an increase in the number of websites over the past 8 years.

Use of websites in this study was stimulated by the senior author's observation that websites of troubled departments like those for Ferguson MO and Chicago IL differed from those of well-regarded departments. For example, in 2016 and 2017, the Ferguson MO police department had no up-front report by the police chief, later determined to be important for rating police web sites. Its interface with the public was minimally informative and even intimidating for the average citizen. For example, on its first page the Ferguson site prominently displayed Police General Orders for procedures like use of lethal weapons (Table 4). In contrast, the website of a well-regarded police department of comparable size as Ferguson opened with a welcoming picture of the chief accompanied by his email address.

⁴ Educational performance measured by degrees or achievement levels is prone to uncertainties depending on school quality and standards. Systems that practice social promotion in primary and middle schools tend to end with significant fractions of high school graduates who lack basic reading skills. The third edition of the National Adult Literacy survey conducted by the National Center for Education Statistics 10. Kirsch, I.S., et al., *Adult Literacy in America*. 2002, National Center for Education Statistics (NCES). p. 176. found that between 16 and 20 percent of U.S. adults with high school diplomas performed at level 1 of 5, generally equivalent to functional illiteracy. Between 33 and 38 percent performed at level 2. Even at the four year of college level, 15 percent of the national sampling performed at the lowest two level

Table 4. “Police Department General Orders”, displayed on front page of Ferguson (MO) Police Department website, (2016 and 2017).

Code	Description
409.00	Miranda Decision
410.00	Use of Lethal and Less-Lethal Weapons
412.00	Summons Procedure
414.00	Interfering (sic) With Arrest
415.00	Immunity from Arrest
416.00	Prisoner Conveyance and Holdover Facility
417.00	Booking Process Fingerprinting Mug shots
418.00	Strip and Body Cavity Searches
419.00	Warrant Application
420.00	Domestic Violence
421.00	Bond Procedures

Criteria for assessing websites were initially chosen on the basis of features judged best suited to inform interested citizens and local officials about departmental policies, activities, and incidence of crime. Initially, 13 different criteria were used to rate websites on a scale of 1 to 5, with five being best performance (Table 5)

Table 5. List of initial 13 website rating criteria

1. Police chief report, including photograph
2. Non-emergency contact number
3. Availability and accessibility of annual crime statistics
4. Geographic location of crimes
5. Online reporting system (email address to report problems, tips, etc.)
6. Community relations (programs, larger groups, regional issues)
7. Citizen feedback
8. Department organization (clear descriptions of divisions and responsibilities)
9. Staff demographics
10. News releases
11. Awards and accreditations
12. Mission description (nuances, specifics; excessive claims are rated negatively)
13. Special features

Why include emphasis on a photograph in the chief’s report? Spot checks among web sites of national police departments in the news revealed the nature and placement of a photograph of the police chief to be a subtle but significant piece of information. This can be explained by the idea that a chief whose

department has good community relations and strong internal morale would be readier to show his or her image prominently (and with a pleasant expression) than a chief with a troubled department.

Intercorrelation studies and other analyses found most consistent results for 4 criteria. These were: *chief's report including a photograph; crime statistics and ease of access; community relations programs*, and *citizen feedback*. The latter two factors were merged, leaving three basic indicators.

Further reasons for using a three-criterion scheme are that use of the 13-criteria rating potentially places smaller cities at a disadvantage in terms of ability to create sophisticated websites. Partly for this reason, the final website rating system utilized a 3-criterion system. It focused on the best and simplest criteria on which to rate department operations. Full data for websites are provided in APPENDIX Table 7. It was later determined that a scale less than 5 might be desirable, but original ratings are utilized for this report. The final ratings were given weighting factors of 1 for the chief's report and 2 each for crime statistics and community relations.

Appendix Table 10 shows website ratings using the full 13-criteria set for the top and bottom three departments. Systematic factors potentially affecting the full set are discussed in Results and Analysis.

Table 6. Sample website ratings for the full 13-criteria: top and bottom three website ratings

Location	Population	Total Rating
Norfolk	246,393	54.5
Newport News	182,385	52
Hampton	136,454	48
Waynesboro	21,491	29
Williamsburg	15,052	24
Bristol	17,141	18.5

Media reports

Media analysis was undertaken by recording the number of articles and reports about individual police departments classified as positive, negative, and other. They encompassed local newspaper, TV, radio, and online sources retrieved from the Google search engine's first ten pages or more. The time frame for articles was generally within five years, less for larger communities with more articles. The study identified reports as positive using the key word, "praise", negative using the key phrase, "police brutality" or "mistreatment", and other for reports that did not fit either positive or negative criteria⁵.

We calculated the ratio of negative to total reports. Early statistical studies utilized positive to total reports, but this was not continued because the number of positive reports is much smaller than negative reports, leading to inadequate statistics. Raw data are provided in APPENDIX Table 10. Media statistics were not used to rank localities for police performance, for reasons discussed in the ANALYSIS section.

⁵ Google's search algorithm automatically searches for wider meanings than just the above terms.

Crime data

Crime statistics are taken from FBI Uniform Crime Statistics national data releases ([6], Tables 6 and 8). They are divided into two categories: violent crime, consisting of aggravated assault, robbery, rape, and murder; and property crime, encompassing larceny-theft, burglary, and motor vehicle theft. We limited our analyses to total violent and property crime, except for exploratory relationships such as those shown in Figure 1.

Correction for population was done by plotting crime incidence for individual localities against population on a log-log plot. The percent difference for numbers of crimes reported for given localities from expected value from the trend line for crime vs. population was recorded as a “crime index”. This value is different from the more common crime rate per population (which can be computed from the data in APPENDIX Table 15) and is used in several figures. Crime index takes into account population as well as regional relationships between crime and population in Virginia.

The log-log plot allows the frequency of crime incidence to be shown proportionally regardless of population (Figs. 1 and 2). Localities falling below the trendline have negative index values, while those that fall above have positive values. Full data are provided in APPENDIX Tables 11, 12, and 15. Crime index values are later combined with other data sources to provide a composite rank for localities. The slope and intercept of the trendlines with the Y-axis are obtained from Microsoft Excel tables using the SLOPE and INTERCEPT functions on tables using log values. Fig. 2 shows plots of violent and property crime against population for cities. A similar plot for counties is not shown.

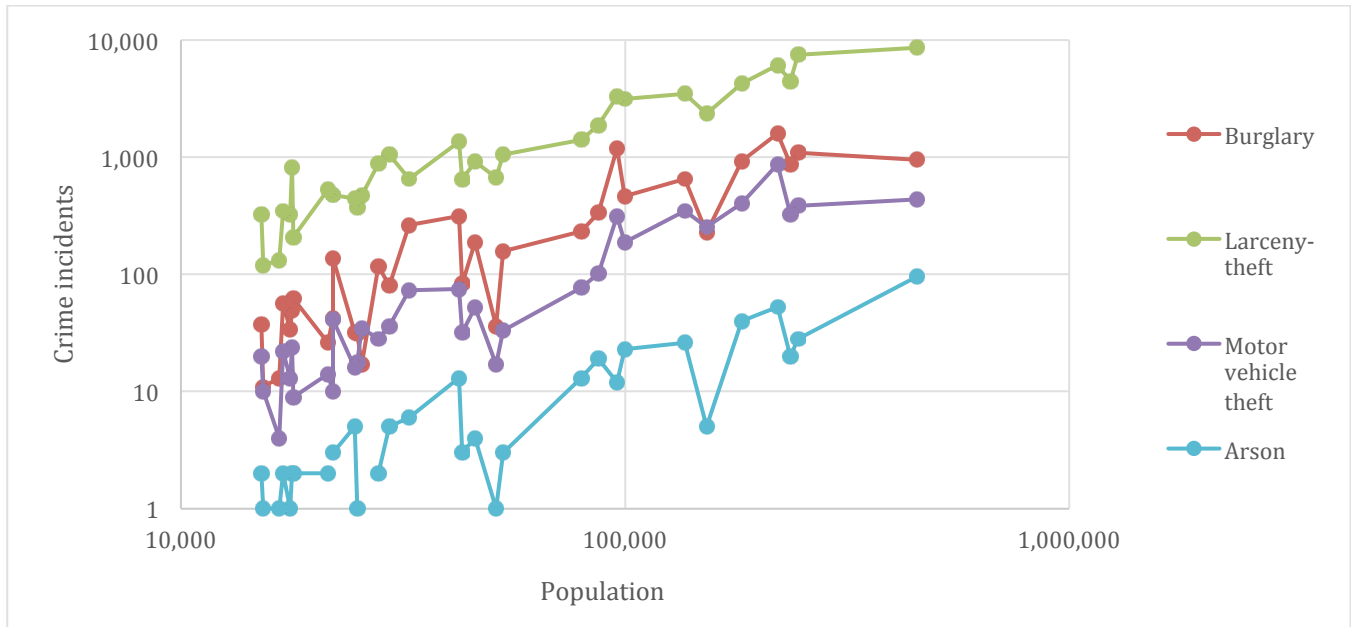


Figure 1. Plot of incidence of property crime types against population for cities

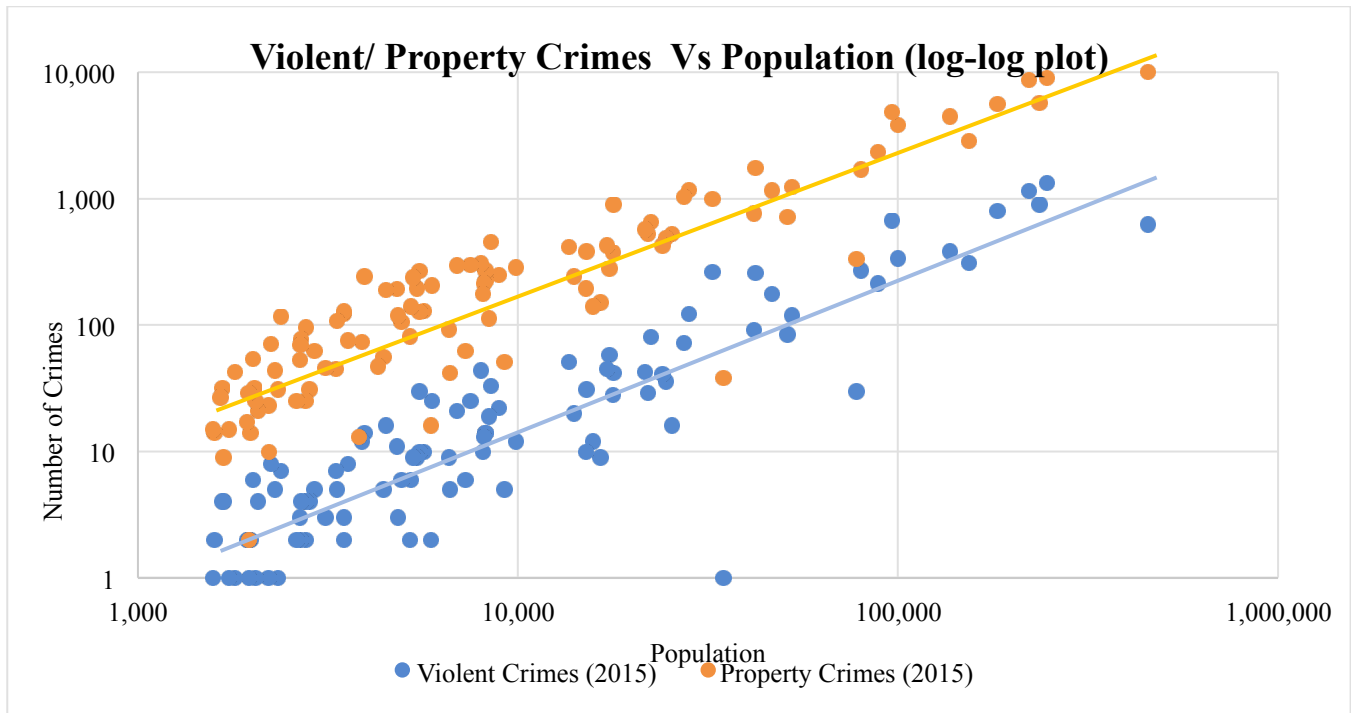


Figure 2. Log-log plot of population and crime incidence with trendlines for violent and property crime in cities.

Historical profiles of crime rates for counties and cities

Trends in the frequency of crimes since 2010 for each department are used as an indicator separate from crime rates. The frequency was calculated as percent change between 2010 and 2015. The data are shown in the Results and Analysis section (Figures 7 and 8), and Appendix Tables 13-15.

OTHER DATA

Useful information was obtained by telephone contact and email communications. A special telephone poll is referred to below

Polls of African American residents

A telephone poll of 26 African American residents with variable ages from Norfolk and surrounding communities was taken by team member, Jahtanya Scott. The poll does not meet standards for statistical validity. However, for reasons discussed in the Analysis section it is regarded as having special value.

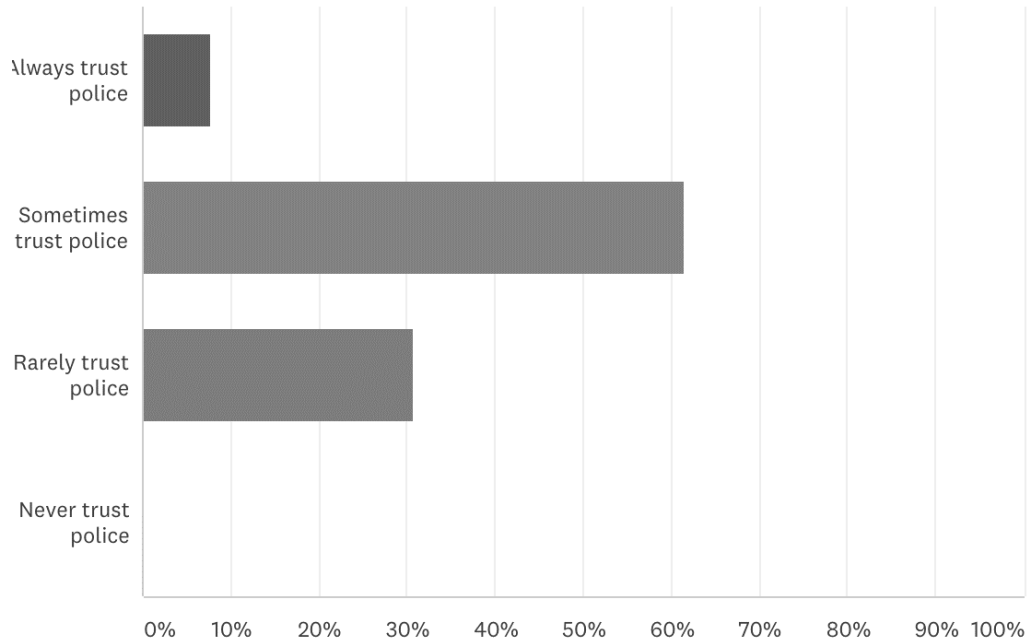


Figure 3a.

Do you think the police in your community treat people of all races and ethnic groups equally?

Answered: 26 Skipped: 0

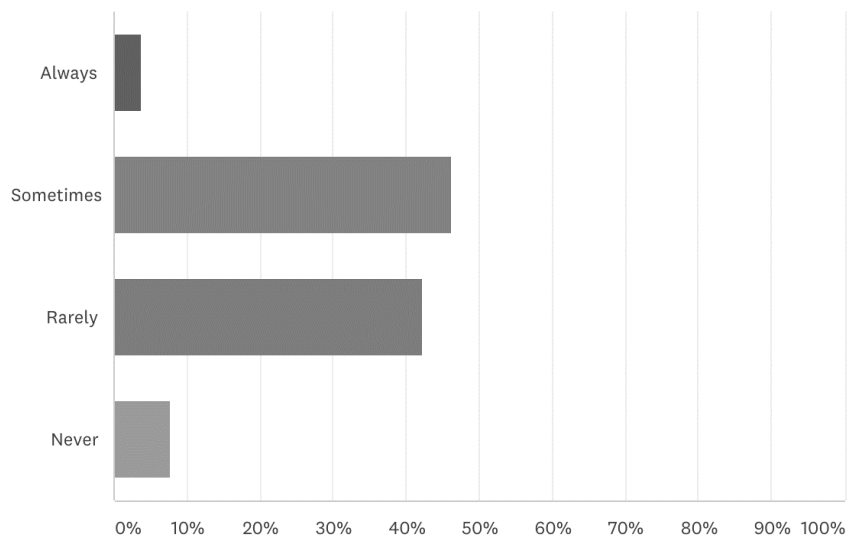


Figure 3b.

Have you or someone you know ever felt mistreated by a police officer?

Answered: 26 Skipped: 0

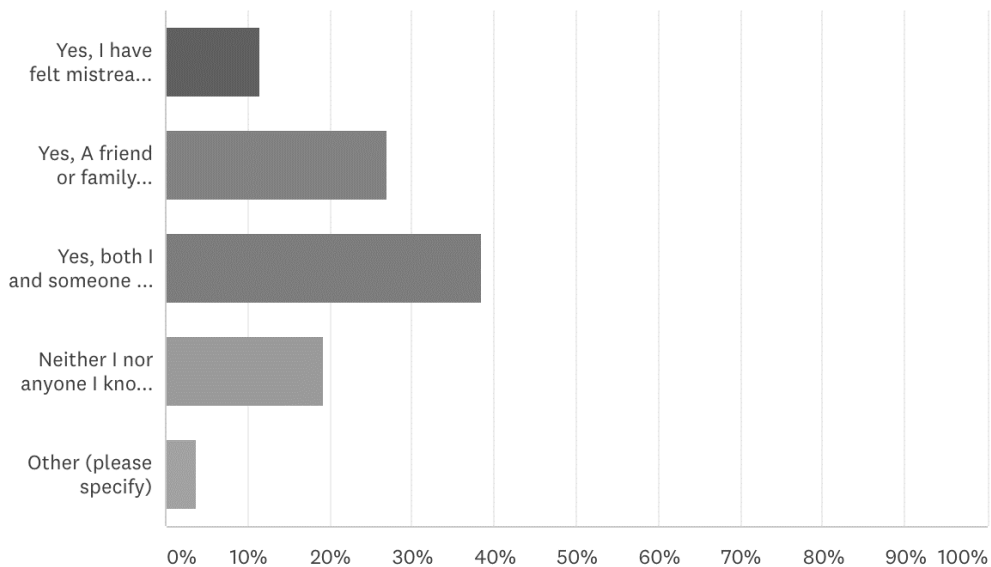


Figure 3c.

In your opinion, how common is it for the police in your neighborhood to stop people on the street, or people driving in their cars, without good reason?

Answered: 26 Skipped: 0

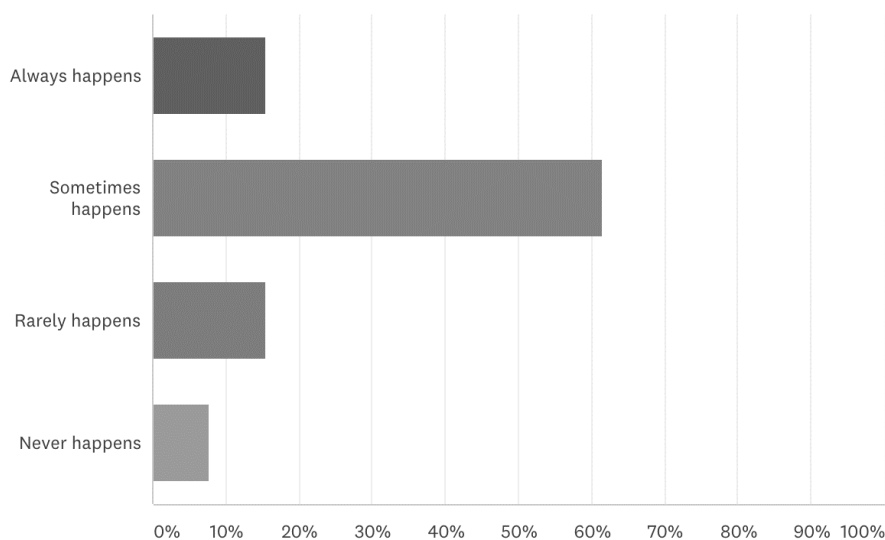


Figure 3d.

Fatal shootings by police in Virginia

Fatal shootings by police are taken from *The Washington Post's* national database. This comprehensive data set was compiled beginning in 2015. As shown in a sample of data (Table 11), the database provides information on the name, age, gender and race of victims, along with other data. One death in the line of duty (a state policeman) was recorded for police officers in Virginia in 2016.

Table 7. Sample of data on shootings by police Source: *The Washington Post* National Database of Police Shootings.

City	Armed	Age	Gender	Race	Threat level
Aldie	Knife	58	M	W	Other
Alexandria	Gun	66	M	W	Attack
Arlington	Unarmed	54	M	H	Attack
Arlington	Vehicle	28	M	W	Attack
Arvonnia	Unarmed	19	M	B	Attack

Clearance rates

Clearance rates for crime are defined as the percentage of cases for which arrests, or other resolutions are reported. The FBI and informed observers emphasize that the quality of these statistics is notoriously uneven. The sample data (Table 20) are for Fairfax County, whose clearance rates are higher than national averages. Because of the uncertainties, and because clearance rates are not reported for all departments covered in this report, they are not used to rate departments. A 30% clearance rate does not mean that 70% of the crimes are never solved. Perpetrators of crimes are likely to commit others and be apprehended later, at which time earlier offences may be resolved.

Table 8. Clearance rates for Fairfax County Police Department in 2013 [12].

Crime	Clearance %
Murder and non-negligent manslaughter	92
Robbery	41
Aggravated assault	68
Total violent crime	55
Larceny	30
Burglary	44
Motor vehicle theft	33
Arson	34
Total property crime	31

Combined departmental ratings

To combine the dissimilar formats of the three categories of data we utilized Z-scores (a measure of the standard deviation from the mean) for website data, crime indices, and time trends for crime for each police department. The results are presented in four quartiles, with the best performing departments in the first quartile (see Results and Analysis section). Z-score is given by $Z=(x- \mu)/\delta$ where x is the variable, μ is the mean, and δ is the standard deviation.

III. RESULTS AND ANALYSIS

Background to demographic factors

Links between poverty and crime are widely cited. A popular summary describes relationships between economic status and factors related to lesser or greater crime [13]:

“Rich Cities/Suburbs have:

- > Good infrastructure
- > More services[14]
- > Better (funded) schools
- > More effective city management (they can afford it)”

“Poor Cities have:

- > Deteriorating physical environment
- > Very inadequate services
- > Severely limited tax base ... thus:
- > Inability to attract jobs, commerce, real estate investment
- > Congregations of needy in needy places, thus institutionalizing their character of poverty”

These factors have many ramifications. A Census Bureau study showed that the rate of out of wedlock births for women with household income between \$10,000 and \$15,000 was 61% whereas it was 9% for those with incomes over \$200,00 [15]. Lack of proper parental support for youth tends to propagate poverty and behavioral problems in succeeding generations. A study of the economic costs of childhood poverty estimated that the effects on national crime costs alone were 1.3% of GDP[16]. Compounding their other problems, poor cities may be less able to pay for and attract qualified police and police leadership.

Demographic relationships for Virginia cities

Demographic factors for Virginia cities above 15,000 population are depicted in Fig. 4, which plots median income (left vertical axis) against percent of black population, unemployment rate, poverty, and education level below high school graduation. The plot is complex but reveals important relationships. Square markers for poverty rates (purple line) show that cities with large university populations have anomalously high apparent poverty rates. As discussed below, the inclusion of registered students (normally with very low incomes) distorts apparent poverty rates. This is confirmed by comparing correlations for pairs of demographic data (Table 9). Cities included in the university category are

Blacksburg (Virginia Tech), Charlottesville (University of Virginia), Harrisonburg (James Madison University), Williamsburg (William and Mary University), Lynchburg (Liberty University), and Radford (Radford University) The largest university in Virginia is George Mason University with enrollment of 33,000, but it is located in the most populous county (Fairfax).

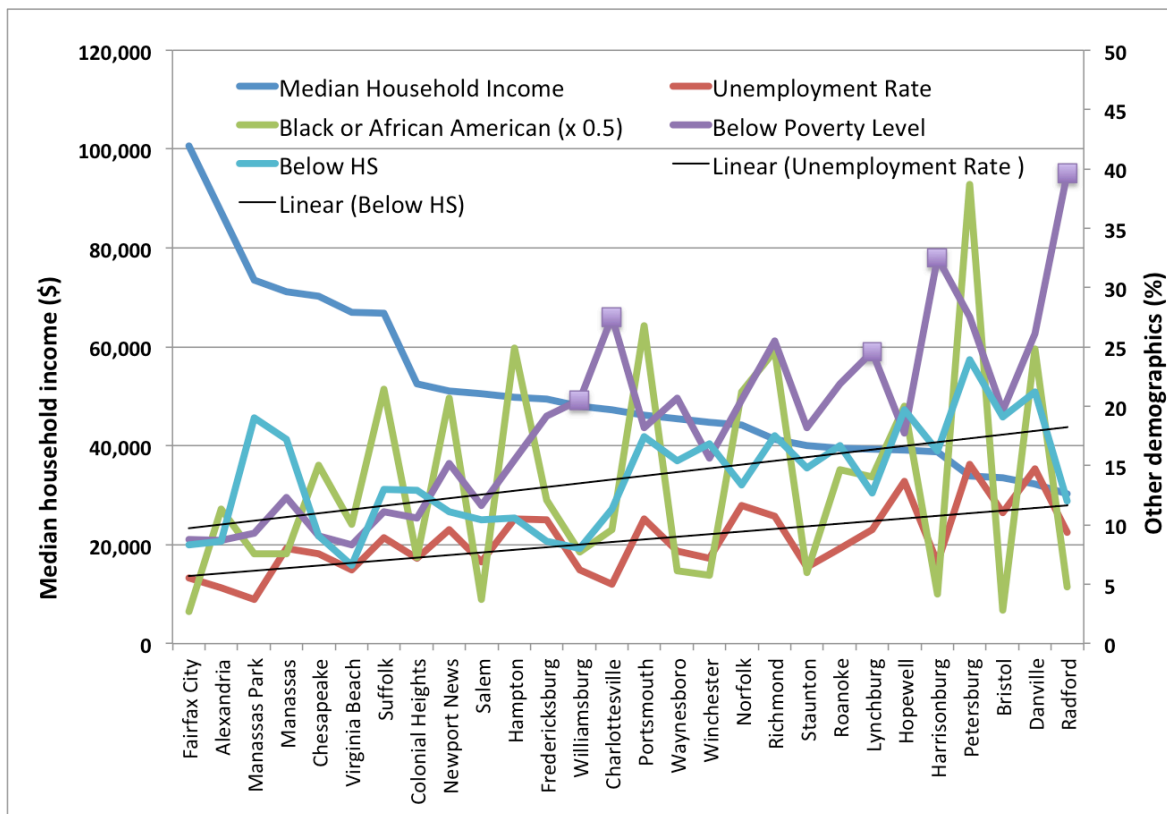


Figure 4. Plot of median household income (left axis) against other demographic parameters (right axis). Cities are shown in sequential rather than numerical order of decreasing median income to avoid crowding. Not all plotted cities are labeled. Black populations are shown at half scale.

Trendlines for unemployment rate and education below high school level vs. median income show expected increase with decreasing incomes, although there is high variability. Black populations that reach a maximum of 77 percent in Petersburg correlate with poverty and unemployment except in high income communities around the national capital (e.g. Alexandria).

crowding. Not all cities are shown. Note that percent black population is shown at half scale. Other aspects are explained in below text.

Table 9. Correlation coefficients for pairs of demographics in Virginia. “- university” refers to data sets that exclude cities with university enrollments that are relatively large.

Demographic pair	Correlation coefficient
Unemployment/poverty	0.4
Unemployment/poverty - university	0.77
Unemployment/below HS	0.55
Unemployment/below HS -university	0.5
Unemployment/black	0.72
Unemployment/black - university	0.74
Median income/poverty	0.14
Median income/poverty - university	-0.76

In Table 9 pairs of demographic data that do not involve poverty levels show minimal change in correlation coefficients whether the data excludes university cities or not. However the change is dramatic when cities with large student populations are excluded from the "median income/poverty" pair. This transforms the correlation from 0.14 to -0.76. The negative relationship is expected between median income and poverty. A university community may show a high median income (as in Blacksburg) if there is a larger population for residents as contrasted with that for low-income students registered in the city. This is because the Census Bureau computes poverty rate by a complex formula rather than a fixed level of median income.

The first indication of the special effect of high proportions of students to city population on poverty data was noted for Radford. Radford University has a student enrollment of 9,400, large compared to the city population of 17,600. Radford has a low African American population and the lowest median income among Virginia cities studied (\$32,000). Radford registered the greatest reduction in property crime among Virginia cities, and therefore its high violent crime rate stood out in a table sorted on property crime (Table 25).

To clarify Radford’s anomalous statistics a call was placed to the Radford Police Department. Lieutenant R. A. Wilburn kindly provided valuable information. He noted that a significant proportion of students registered with the town in order to get parking privileges or for other purposes. Students normally have very low incomes. Inclusion of students among residents of Radford thus explained Radford’s anomalously low median income levels.

Radford University police handled and recorded all crimes within the campus. However, Lieutenant Wilburn indicated that students were involved in off-campus drunkenness, assaults, and rapes, and could also be victims of crimes, e.g. by out-of-town gangs. These off-campus incidents were registered in city crime statistics. He cautioned that offenses could vary considerably from year to year, and that crime data could be subject to recent redefinitions.

No breakdown of the proportion of students involved in crimes was available. However, other cities in the vicinity of Radford and in Virginia tend to have roughly comparable crime index values for violent

and property crime (APPENDIX Table 15). The evidence therefore suggested that a large proportion of Radford's reported violent crime was due to students rather than townspeople. Inspecting Table 15 for other localities municipalities with similar low property crime but anomalously high violent crime identified Charlottesville (University of Virginia), and Lynchburg (Liberty University) but not Blacksburg, home to Virginia Polytechnic University (Virginia Tech). Blacksburg had the highest nominal poverty rate in Virginia, which we infer is heavily influenced by a student population of 30,000 in a town with 43,000 total population. Subsequently, Harrisonburg, home of James Madison University, and Williamsburg, home of William & Mary University, were also identified with anomalous poverty rates (Fig. 4).

Relation of crime to demographic factors

The relationships of crime to income levels and other demographic factors are explored in Figs 5, 6 and 7. Raw and population-corrected values of total violent and property crime for Virginia counties and cities included in this survey are listed in APPENDIX Tables 13 and 14.

Figure 5 shows poor correlation of crime rates with population in Virginia, in spite of the frequent popular association of crime with larger cities. A more significant trend would be expected for crime vs. median income.

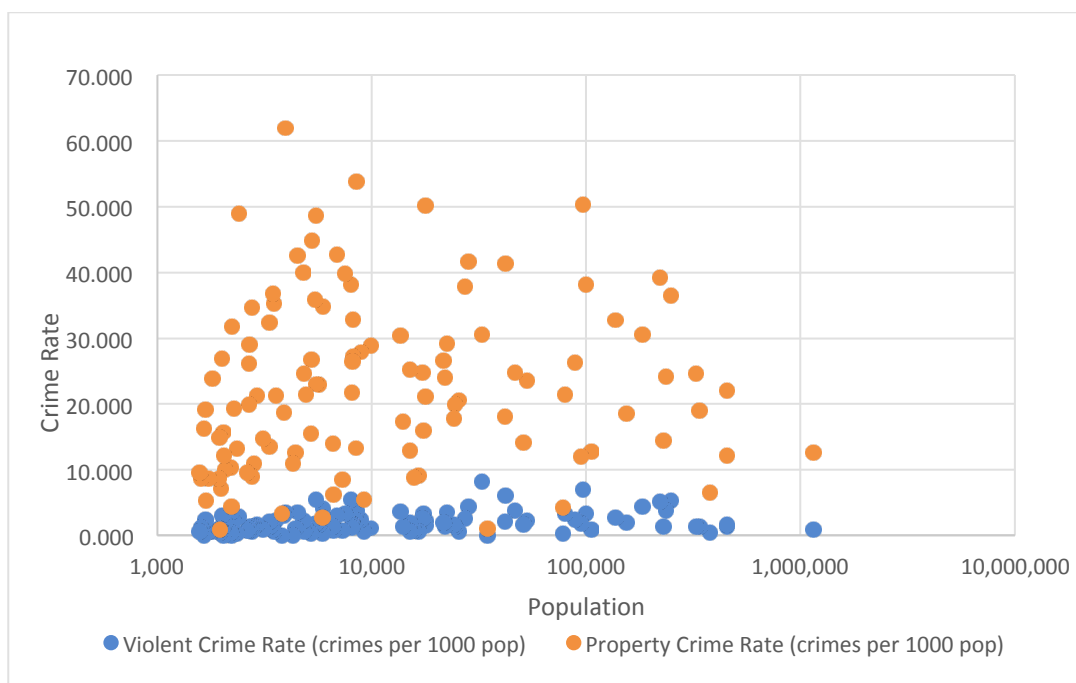


Figure 5. Violent and property crime rates vs. population

As noted earlier, the highest income communities in Virginia have low crime. A plot of median income against crime for Virginia counties and cities shows general decline in crime rates with increasing income levels (Fig. 6). All the high peaks in property crime occur in communities with less than \$60,000 median income. However, below this level there are also communities with low property crime. Policing differences between high and low crime communities are addressed under police web sites.

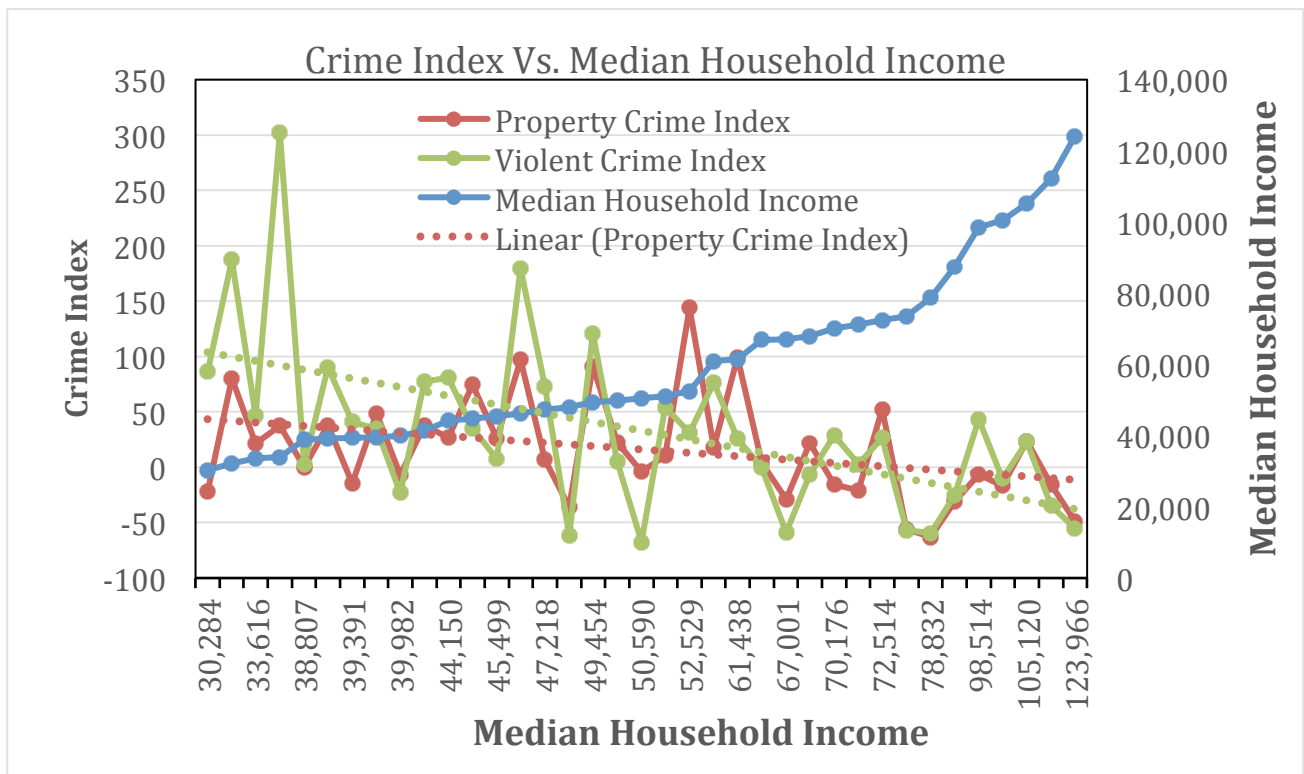


Figure 5. Median income vs. violent and property index crime values for cities and counties. “Linear” refers to the dotted trendlines for crime vs. population. Median income of populated areas is plotted in sequential order in order to avoid bunching of peaks. The axis values omit intervening values.

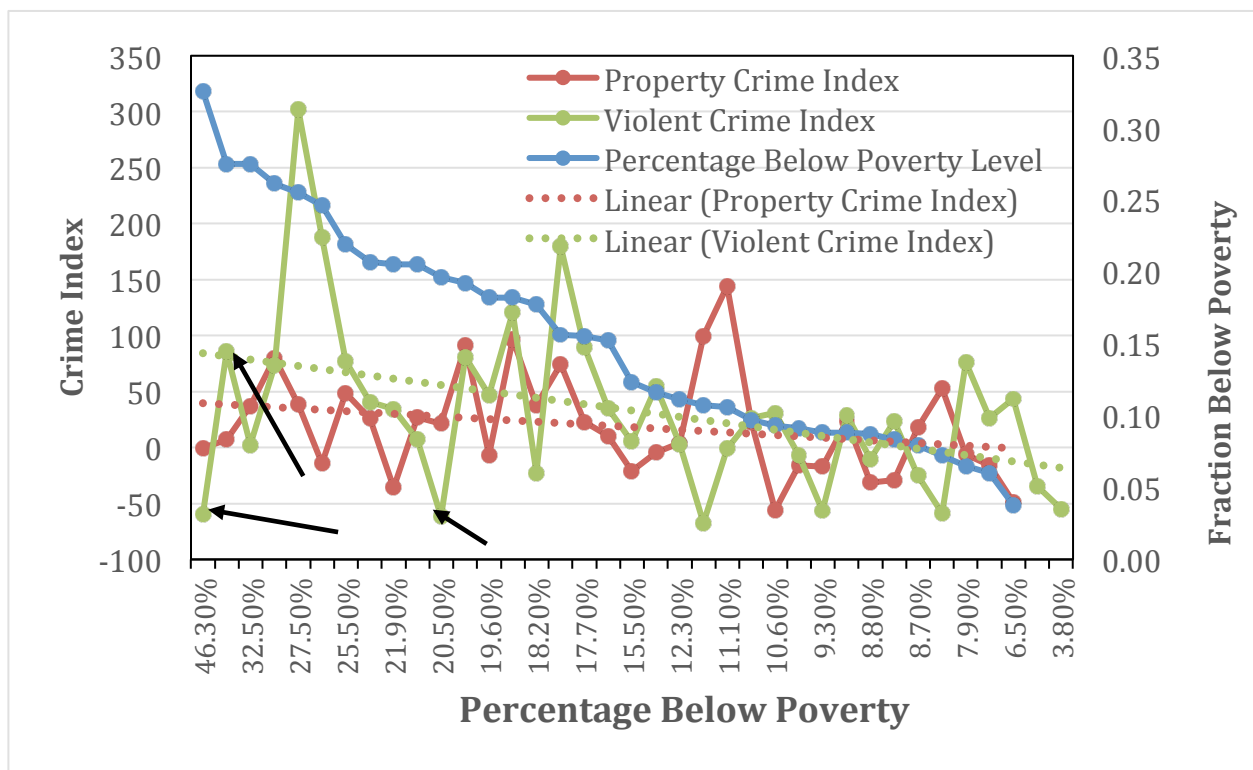


Figure 6. Plot of crime index values against poverty level. “Linear” refers to linear trendlines calculated from data that omit Blacksburg and Radford. The numbers on the horizontal axis show sequential (incomplete) sample intervals for the cities and counties in the plot. Arrows identify cities (Blacksburg, Radford, and Williamsburg from left to right) whose apparent poverty rates are artificially increased because of large student populations.

Even more extreme excursions are found for the relationship between crime and poverty. However, these relations are affected by data distortion associated with university towns. The highest nominal poverty level in Virginia, 46%, along with a low crime index value, is observed for Blacksburg, home to Virginia Polytechnic University. As discussed previously, Blacksburg’s unrealistically high poverty level can be attributed to inclusions of a significant fraction of the student population registered in town statistics.

Recognition that crime tends to be concentrated in “hot spots” in municipalities goes back many decades. A large literature on crime mapping and techniques has burgeoned since 2000. Police websites for many Virginia cities provide interactive maps of the geographic distribution of crime, and one can also get crime data directly from federal sources [14, 17]. No formal references for comparisons of crime data with demographic factors were found in *Google* or *Google Scholar*. However, communities that report geographic distribution of crime could link this data with detailed demographic data obtainable through the Census Bureau’s SAIPE program.

Websites as indicators of police policies and performance

The importance of police leadership gained nationwide attention in the 1990s. New York City had become the murder capital of America with over 2000 homicides per year. After his appointment as Police Commissioner in 1994, William Bratton achieved spectacular reductions in homicides and violent crime. He did this through policies acknowledging police faults, promoting community policing, and by adopting the “broken window theory” of not ignoring minor crime. The latter policy has gotten a bad reputation with the African American community because of instances where intensified stop-and-frisk policies disproportionately targeted African Americans [18]. However, one may need to examine whether the departments in question failed to balance policies as was done in New York City.

Demands on police chiefs have grown. Without taking into account the problem of terrorism since 2001, U.S. society has become more fragmented, guns have proliferated, and instant electronic communications increase the opportunity and need for police departments to communicate more effectively with the public. Concern about bias against African Americans has grown. Police leadership, policies, and activities are reflected in departmental websites. They are therefore given special attention in this report.

The initial list of 13 website criteria (Table 5) was rated by two team members. Minor differences were observed between two raters, a black female psychology major and a white electrical engineering student. The statistics shown in Table 10 indicate that good general agreement was reached for a 12 criteria set (the 13th criterion was omitted in this table).

Table 10. Mean and correlation coefficient for interrater scores, 12 website criteria. Confidence interval is 95%.

<i>Factor #</i>	<i>Rater 1</i>	<i>Rater 2</i>	<i>Interclass Correlation Coefficient</i>
<i>F1</i>	3.61	3.61	.963
<i>F2</i>	4.39	4.39	.960
<i>F3</i>	4.07	4.25	.914
<i>F4</i>	3.36	3.43	.995
<i>F5</i>	3.04	2.79	.899
<i>F6</i>	3.82	3.43	.930
<i>F7</i>	3.29	3.07	.966
<i>F8</i>	3.07	3.32	.935
<i>F9</i>	1.32	1.32	.982
<i>F10</i>	4.14	4.21	.816
<i>F11</i>	3.14	2.96	.985
<i>F12</i>	2.54	2.43	.988

Table 11. Intercorrelation values for highest-rated website criteria. Asterisks show criteria that are merged into Community relations for the final 3 criteria.

Website features	Factor no.	Corrected item-total correlation	Cronbach's Alpha if other factors are deleted
Police chief report & photo	F1	.549	.659
Crime data and accessibility	F3	.557	.657
Community relations*	F6	.594	.654
Citizen feedback*	F7	.411	.677

The ratings for each item observed have a high interclass correlation coefficient, which measures the reliability of grouped data. Scale reliability determined with SPSSTM statistical software found that our data had good reliability (Cronbach's Alpha) and that the deletion of less relevant criteria would further increase Cronbach's Alpha (Table 11). The police chief's report, crime data and access, community relations, and feedback loaded highest for correlation with our measure.

The extended list of 13 website criteria is informative but time consuming to prepare. Even more serious is its potential bias against police departments of smaller cities that have more limited resources. Statistical tests described in Table 10 found that three criteria captured major aspects of department operations: police chief's report (with picture), accessibility of crime statistics, and community relations and public feedback (the latter two combined). Effective treatments of these items are assumed to be within the capacities of any department that maintains a web site. Parameters roughly comparable to these three criteria are among those discussed in the Rosenbaum study [11].

A citizen with whom we discussed the report asked, "Can departments create fancy websites that cover up poor performance?" The question is realistic, but we see self-correcting factors. Crime statistics tell their own story. Given the importance of public confidence in the police, departments that demonstrate understanding of good policies through their web sites have every incentive to operate in pursuance of these insights. However, raters were watchful for overly elaborate websites that tended to obscure key issues, as well as mission statements that promised too much.

Media

The research team early reached the conclusion that newspaper, TV, radio, and Internet reports did not provide a reliable index for inclusion in police department ratings. For smaller communities, the number of citations was too small; media reports for larger communities served by major newspapers with more citations failed to show results consistent with other measures. For example, Virginia Beach, one of the best-rated departments in terms of website, crime levels, as well as accreditations by CALEA and state awards, had poorer media scores than more troubled departments.

Part of the problem is that selection of stories by journalists and editors tends to focus on current incidents. In-depth investigations of crime conditions and policing are rare. A list of reports for the D.C. area in the October 5, 2017 illustrates typical reports.

- *Sex offender accused of sending racist threats to Howard students*
- *D. C. police arrest long-sought suspect in fatal stabbing of woman in Southeast Washington*
- *Parks employee found not guilty of murder in stabbing at wedding reception*
- *This notorious house party made it all the way to the Supreme Court. It was hosted by a mystery woman named 'Peaches.'*
- *Reported sexual assault of school girl in Prince George's did not occur, police say*
- *Stonewall Jackson statue defaced at Civil War battlefield in Virginia*

However, *The Washington Post* has stood out in the recent past for in-depth investigative journalism of larger national issues. Its national database of fatal police shootings [19] is an outstanding achievement

that elicited an unusual acknowledgment from former FBI chief, James Comey. According to the British *Guardian* newspaper, Comey was quoted as saying in April 2015

"It is unacceptable that The Washington Post and the Guardian newspaper from the UK are becoming the lead source of information about violent encounters between [US] police and civilians" [20]

Given the nature of public interest, negative or sensational events are more likely to get media attention than positive performance. Underreporting – especially in relationships involving minorities- appears to be widespread. This includes failure to add background information to reports of crime or other police-related activity. Part of the problem may be the sensitivity of the policing issue and perhaps the presumed requirement of special expertise to undertake more in-depth investigations.

Insightful reporting

No effort was made to undertake a systematic search for good reporting in Virginia in this study. However, an example of the value of reporting that digs beneath the events and statistics was found for Roanoke. Roanoke is shown in Figure 4 to have the highest rate of increase in violent crime among departments studied in this report. Noting the increases, a reporter for local radio station WSLC [21] cited the leader of a citizen activist group:

"The majority of the crime you see comes from the poorer neighborhoods. So that's a direct reflection of what's going on and what permeates violence. . . statistically, the majority of [violent] crimes happen at night and are related to Roanoke City nightclubs. When someone gets intoxicated and someone may illegally have a weapon on them, that could escalate into something that ends up in somebody getting killed and that's what we try to prevent."

Longstanding problems with violent crime in Roanoke were referred to in an unusually in-depth article in the Roanoke Times [21]. It cited a 2004 study by Isaac van Patten, Chairman of the Criminology Department at Radford University:

"The people in the Roanoke Valley . . . are willing to resort to physical altercations to resolve their differences . . . police should not be blamed entirely for Roanoke's upward crime trend because law enforcement agencies are mostly reactive -- they respond to reported crimes."

"Police officials blame the problem on judges and the Virginia Department of Corrections' probation and parole system for, as police put it, keeping dangerous people on the street . . . Police Capt. Tim Jones said. 'You have this whole pocket of recidivists that tend to go in and out of the system through a revolving door'."

"A former school principal attributes the crime rate to a lack of parental supervision, too few organized activities for teenagers and a dearth of high-paying jobs."

Patten said the Roanoke community condones violence as a way to solve personal differences.

"School violence that is tolerated, covered up or excused sends a message to young people. Child abuse that is tolerated, covered up, or excused models violence as an acceptable behavior . . . Domestic violence that is tolerated by neighbors, the police, or the courts says settle your family problems with assault . . . In the Roanoke Valley, we have a culture that condones violence . . . We are responsible for that."

In short, addition of background information to crime reporting, such as interviews of police and knowledgeable individuals, can provide useful information on conditions and relationships beneath the events and statistics.

National rankings and historical crime rates in Virginia

Virginia's crime rates are substantially below the national average (Table 12). Virginia ranked 6th lowest in violent crime and 10th lowest in property crime in 2016. A historical view of violent crime in Virginia and Massachusetts (FBI UCR statistics) shows that Virginia had three times higher violent crime than Massachusetts in 1960, but kept increases to much lower levels in the turbulent 1960s and 1970s (Fig. 7). Along with most states [22], both Massachusetts and Virginia systematically reduced crime since the early 1990s.

A factor in Virginia's above average police performance in the past 50 years may be the series of state administrative reforms initiated in the 1960s and 70s, subsequent to which Virginia placed importance on good state management. This is considered to have propagated to county and civic agencies. Virginia is one of 7 states that have maintained triple-A bond ratings since 2004 (*Ballotopedia State Credit Ratings*), 2017). Another factor contributing to Virginia's relatively low crime rates is that its largest cities, near the national capital, are characterized by high median income levels.

Good criminal justice management requires cooperation by police departments with prosecutors, courts, and the Virginia Department of Corrections, all of which deal with persons arrested by the police. With the exception of comments cited in a media report for Roanoke, these relationships were not explored in our research.

Table 12 Virginia and national crime rates per 100,000 population. Source: <http://UCR.FBI.gov>

Area	U.S. average	Virginia
Year	2016	2016
Population	323,127,513	8,411,808
Violent crime	397	217
Murder and nonnegligent manslaughter	5.3	5.8
Rape (revised definition)	40.4	32.5
Rape (legacy definition)	29.6	23.4
Robbery	102.8	57.1
Aggravated assault	248	122
Property crime	2,450	1,859
Burglary	468	238
Larceny-theft	1,745	1,505
Motor vehicle theft	237	116

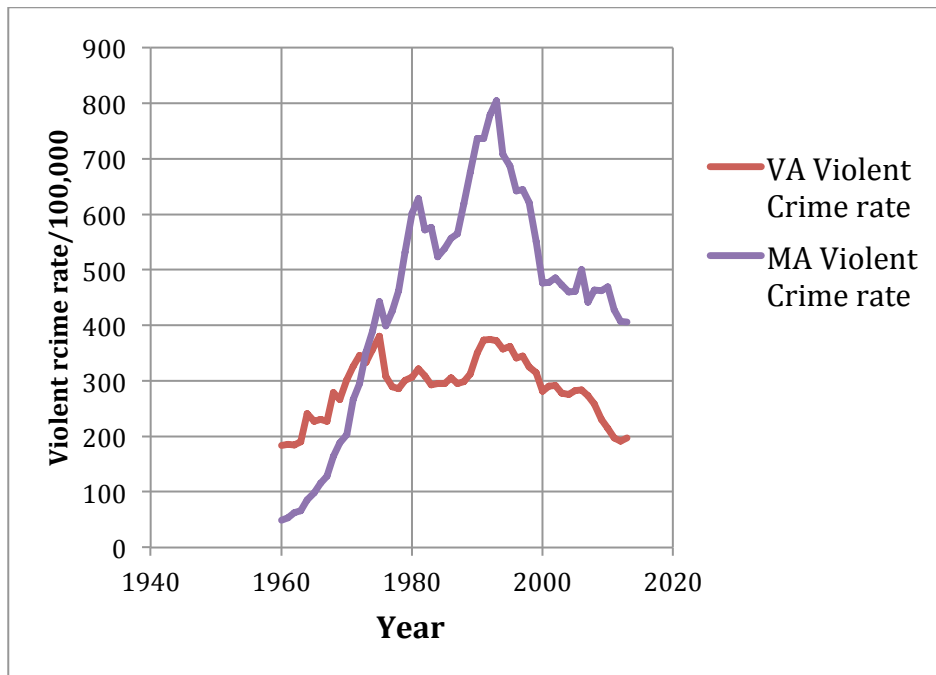


Fig. 6 Historical time profiles for violent crime rates (per 100,000 population) in Massachusetts and Virginia, 1960-2014. FBI UCR data.

Crime trends for Virginia communities

Time profiles (change of crime rate from 2010 to 2015) for Virginia communities are shown in Figs. 7 and 8. They reveal that the majority of Virginia cities over 15,000 in population enjoyed substantial reductions in crime during the recent five-year period from 2010 to 2015. As indicated earlier, this partly reflects a national trend. Hope, Salem, and Roanoke achieved greatest reductions in violent crime, while the greatest reductions in property crime were obtained in Radford, Lynchburg, and Manassas Park. In contrast, as discussed in more detail later, Roanoke County had the highest rates of increase in violent crime.

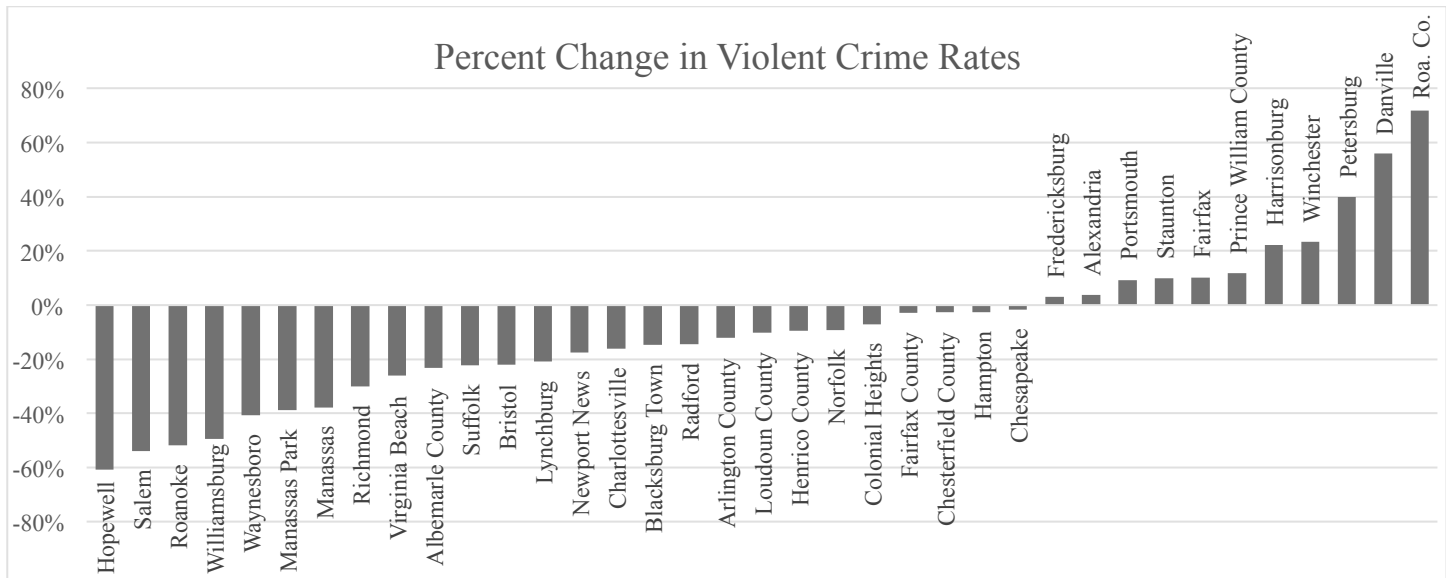


Figure 7 Change in violent crime rate for localities over 15,000 population, 2010-2015.

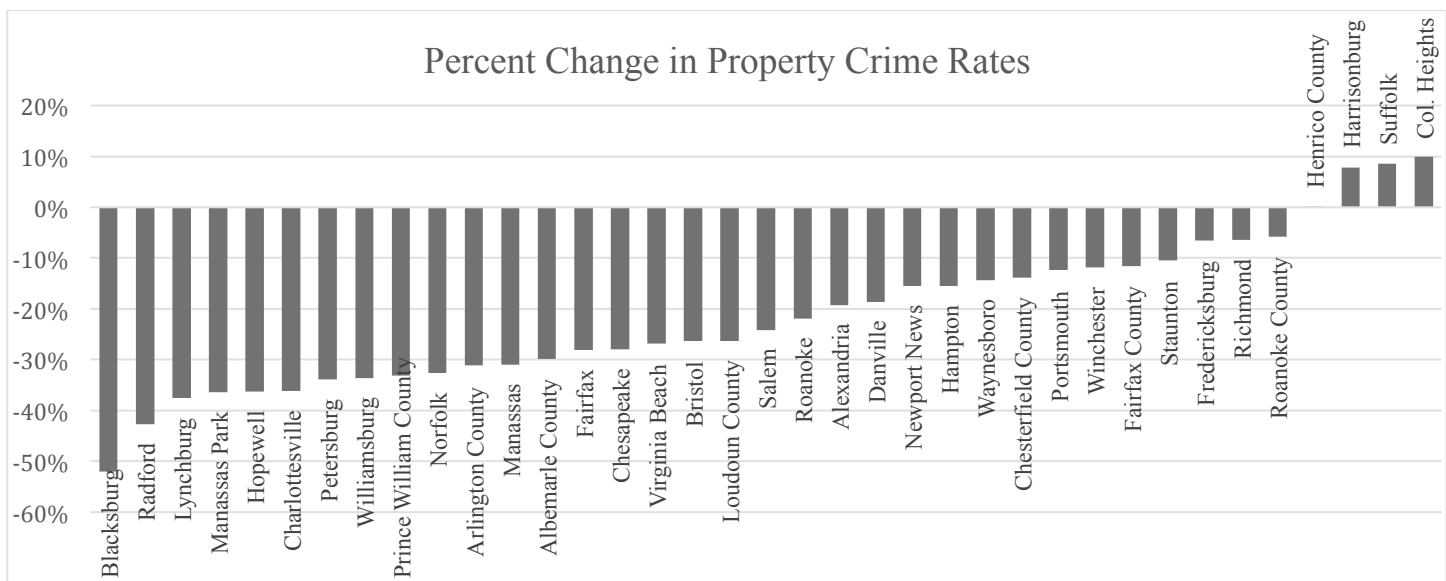


Figure 8 Change in property crime rates for localities over 15,000 population, 2010-2015.

Examples of the relationships of crime to local factors

Crime vs. population

Except for the two wealthiest counties, poor correlations were found for population and rates of crime in Virginia communities (Figure 9). This was somewhat surprising, given the frequent association of larger

cities with conditions for crime.

Table 13. Selected demographic and crime data (2015) for the three most affluent localities in Virginia. Income data are from Census Bureau survey in 2012. Website ranking is for the 3-criterion scale with maximum possible value of 25. Negative values for crime index signify departure from the mean in the direction of low crime.

County	Population	Median income	Unemployment (%)	Violent crime index	Property crime index	Website Rating
Loudoun	375,629	117,876	3.3	-75.8	-70.9	22
Fairfax	1,142,234	112,436	3.7	-65.5	-47.2	22
Arlington	229, 164	105,120	2.8	23.3	23.8	14

Good police policies in difficult conditions: Norfolk and Alexandria

This pairing underscores the FBI's caution against relating cities on the basis of crime statistics alone. Tables 14 and 15 compare demographics, crime indices and website ratings for Norfolk and Alexandria.

Table 14 Demographic data for Norfolk and Alexandria. ACS refers to Bureau of Labor Statistics, American Community Survey data.

Demographic group	Norfolk	Alexandria
% Black or African American	42.4	22.6
% Bachelor's Degree	15.3	30.6
% Graduate or Professional Degree	10.3	31
Median Household Income \$	44,150	87,319
Mean Household Income \$	59,861	116,416
% Unemployment (2014 ACS 5 yr. est.)	11.6	4.7
% Below Poverty Level (2014 ACS 5 yr. est.)	20.5	8.7

Table 15. Population, website score, and crime indices for Norfolk and Alexandria

City	Population	Website score (13)	Violent crime index	Property crime index
Norfolk	246,393	54.5	80.9	26.7
Alexandria	153,511	42	-25.3	-31.5

Alexandria has twice the median household income, higher educational levels than Norfolk, and less than half of Norfolk's unemployment and poverty rates. Norfolk has higher crime index values than Alexandria. Norfolk has double the African American population and led Virginia communities in killings by police – though at lower relative black/white levels than the Virginia average.

The above data make it clear that the Norfolk police deal with more challenging social conditions than Alexandria's police department. However, based on the full 13-criteria scale, Norfolk's website rating is the best of all cities. Its website suggests that its leadership currently pursues progressive policies. The department places special emphasis on improving community relations, and has made significant reductions in crime. Recently appointed police chief, Larry Boone, offered unusually candid views in a 2017 interview [23]. Boone spoke from the background of an African American who "hung out with drug dealers" in early youth, but brought a 27-year career in law enforcement to his position. He observed that Norfolk has a longstanding culture of violence and urged parents to get involved in their childrens' life:

"Children are brainwashed into thinking street credibility and respect are life sources . . . My officers are working hand-in-hand building lasting relationships in our neighborhoods We can't effect sustainable, lasting change without our communities standing up against violence as well."

"Look for signs of criminal behavior or cries for help and take action before it's too late. Call on the community for support when you need help. Reach out to police to report suspicious activity in your neighborhood . . . The age of tolerance and silence has to end. As a community, we have to invest in our youth to create positive opportunities of hope for their future and the generation to come."

In summary, Norfolk has economic disadvantages and a legacy of troubled social culture. However, its reduction in crime, high website rating, and the willingness of the police chief to challenge the community and citizens to do their part in reducing crime is an example of effective police leadership.

Table 16. Website rankings and crime index values for the ten communities with lowest property crime. The table is sorted on property crime index in descending order.

	Police Chief Photo (1)	Data Access- Crime Stats (2)	Community Relations + Feedback (2)	Sum of Ratings	% Violent Crime index	% Property Crime index
Blacksburg Town	4	10	10	24	-59.4	-62.8
Manassas Park	4	2	8	14	-56.6	-56.0
Loudoun County	5	8	9	22	-54.7	-48.6
Williamsburg	1	4	5.5	10.5	-61.9	-35.7
Alexandria	2	10	9	21	-25.3	-31.5
Virginia Beach	4	10	8	22	-58.7	-29.2
Radford	1	4	4	9	85.9	-22.1
Manassas	5	10	9.5	24.5	2.7	-21.0
Fairfax City	4	10	9	23	-10.5	-16.8
Chesapeake	3	10	5	18	28.9	-15.8
Fairfax County	4	10	8	22	-34.6	-15.7

Crime, policing and demographic relationships for African Americans in Virginia

The earlier plot of household income against demographic factors (Fig 4) shows correlations between black population and unemployment, poverty level and lower educational levels. This confirms for Virginia relationships established in the U.S. more generally. Such relationships may be associated with crime in disadvantaged neighborhood environments, rather than race as an independent factor.

Team member Jahtanya Scott conducted an experimental survey of 26 African American residents of mixed ages in Norfolk and nearby cities in 2016 (Figs. 3a-d). Three quarters of the respondents were female. The survey was small and as indicated earlier, does not meet normal requirements for scientific polls. However, we suggest that the results are significant for the following reasons. Police officers are professionals who have an unusually sensitive role in society. The survey reports personal experience or knowledge of mistreatment of black citizens by police. A smaller part of the sample population did not have bad experience, but a majority did. It is hard to avoid the conclusion that actions by at least some officers did not meet professional standards. These clearly had a negative effect on public confidence among a substantial fraction of African Americans polled. One might compare the situation with automobile breakdowns or accidents on a commuter highway. They may involve a small proportion of all cars, but have disproportionate impact. The results suggest a more extensive poll would be valuable.

Police shootings

Fatal police shootings in the United States and Virginia are tabulated by race (black B, white W) along with population in Table 17. The ratio of white to black deaths in the U.S. is 2:1, whereas the ratio of white to black population is almost 6:1. The total number of shootings in Virginia is about a third less than the U.S. average per population.

The total number of deaths at the hands of police in the United States is out of proportion with that for any other advanced nation. A British newspaper, the Manchester Guardian, offered a sardonic comparison between England and Wales, with 55 deaths at the hands of police in 24 years, and the U.S., with 55 deaths in the first 24 days of 2015 [24].

African Americans and others have expressed outrage at video tapings showing unarmed black civilians killed by police, or killed under circumstances indicating excessive use of force. Without going into the vast number of articles relating to this problem, a recent national investigation by *The Washington Post* [23] reported that of 1881 officers fired nationally since 2006, 450 or 24% were rehired. Often, officers fired from one agency were rehired by another. In rare cases departments were forced by courts or arbitrators to rehire officers fired multiple times – against the will of police chiefs. A constraint embedded in many contracts concluded with police unions is a provision for mandatory arbitration of proposed dismissals. Unions argue that these are essential for police exposed to serious risks. More extended discussion regarding policing, punishment, and public is provided in a review by Matthews and Pitts [25].

Table 17 Racial distribution for victims of police shootings for the United States and Virginia. Data Sources: *The Washington Post's* database of police shootings (Jan. 2015-August 2017); data for race based on Census Bureau estimate, July 1, 2016.

Locality	Population (Millions)	% W or B of total	Deaths by police shooting	Black % total
U.S.	323.13		2696	
White	248.49	76.9	1294	48.0
Black	42.98	13.3	657	24.4
VA	8.41		46	
White	1.67	70.1	22	47.8
Black	5.89	19.81	20	43.5

Comparison of police shooting data by race (Table 18) shows that Fairfax County with a population of 1.1 million has a larger black population than Norfolk but no police shootings. Norfolk leads Virginia communities with 6 shootings since 2015. This points out that civic conditions and that status of African Americans, rather than race alone, affects shootings.

Table 18 Comparisons of police shootings by race for Fairfax County and the City of Norfolk; source as in Table 17.

Locality	Population	% of total	Deaths by police shooting
Fairfax	1,140,000		0
White	750,000	66.1	0
Black	120,000	10.1	0
Norfolk	250,000		6

White	120,000	49.3	3
Black	100,000	42.4	2

Combined performance ratings

Table 19 provides public safety/police performance ratings for Virginia communities that combine the three criteria: website rankings, crime rates, and trends of crime rates with time. The can differ substantially from raw crime rates. For example, Norfolk moved up in quartile ranking in spite of its relatively high crime rates. Virginia Beach and Loudoun County remain high in rankings, but other localities have moved down in comparison with ratings based on crime rates alone.

As stated earlier, we do not attach importance to specific numerical placement but suggest that the quartile rankings derive from verifiable indicators and as such deserve consideration. This report is preliminary because basic data in spreadsheet format limited interpretations. Transfer of data to relational database format, in progress, is expected to facilitate more flexible querying and interpretation.

Table 19 Z-scores, grand totals for selected counties (>50,000) and cities (>15,000 population). Z scores refer to aggregate differences in standard deviation from the mean for the three criteria referred to in the text. Positive Z score denotes higher rankings.

Locations	Grand Total, Z Score	Quartiles	Locations	Grand Total, Z Score	Quartiles
Blacksburg Town	3.708	First	Chesapeake	0.266	Third
Manassas	2.653		Roanoke	-0.014	
Virginia Beach	2.244		Richmond	-0.428	
Loudoun County	2.130		Arlington County	-0.713	
Lynchburg	1.706		Harrisonburg	-0.809	
Fairfax City	1.430		Chesterfield County	-0.911	
Albemarle County	1.409		Winchester	-1.068	
Manassas Park	1.309		Henrico County	-1.105	
Alexandria	1.054		Colonial Heights	-1.119	
Fairfax County	1.017		Radford	-1.296	Fourth
Charlottesville	0.927	Second	Waynesboro	-1.361	
Norfolk	0.859		Fredericksburg	-1.411	

Newport News	0.769		Bristol	-1.487	
Hampton	0.699		Staunton	-1.717	
Salem	0.674		Portsmouth	-1.989	
Prince William County	0.665		Petersburg	-2.393	
Hopewell	0.602		Danville	-3.449	
Suffolk	0.459		Roanoke County	-3.756	
Williamsburg	0.447				

IV. CONCLUSIONS

- Virginia has an above average public safety record. It ranks 6th lowest in violent crime and 10th lowest in property crime among the states in 2016 according to FBI data.
- Counties with more than 50,000 population and cities with over 15,000 population in Virginia show trends toward higher crime with lower median income and poverty rates, but up to 3.5-fold variability in population-controlled rates of violent and property crime.
- Examples of national success in combining community-sensitive and innovative policing policies to reduce violent crime illustrate the importance of police leadership. The current project found analysis of police department websites an effective tool to assess leadership policies and department activity. Rating of websites confirmed the validity of the FBI's warning against comparing cities on the basis of raw crime rates. The combination of website ratings, population-controlled crime rates and crime trends from 2010-2015 yielded a more balanced assessment of police performance.
- Media reports (newspapers, radio, TV, and internet) were not usable to quantitatively rate police performance. However, investigative reports by news media can shed important light on crime in society. We conclude that even a modest addition of background interviews or other investigative effort to routine crime reporting would add to public information and efforts to reduce crime.
- Municipalities with relatively high proportions of college and university students typically show anomalously high poverty rates. Examples are Radford, Charlottesville (U.Virginia), Blacksburg (Virginia Tech), Harrisonville (James Madison U.) and Lynchburg (Liberty U.). Some show enhanced ratios of violent (assaults, rape) crime to property crime.
- African American populations in Virginia municipalities tend to be associated with higher levels of poverty and unemployment. When these pervade neighborhoods they foster crime. However, We conclude that community history and characteristics, along with police policies have

significant roles in crime status. Norfolk, a city with a significant African American population and police chief, ranked highest in website ratings.

- *The Washington Post* national database of police shootings listed 46 individuals killed by police in Virginia since 2015 (22 white and 20 black). The proportion of African Americans killed is double their proportion in the population. Nongovernmental organizations concerned about African American relationships with police include the ACLU and the NAACP. According to the Virginia state NAACP office, local branches have not yet made systematic efforts to collect information about policing from the African American population.

V. REFERENCES

1. Anonymous. "What Happened in Ferguson." New York Times, August 9, 2014; Available from: <https://www.nytimes.com/interactive/2014/08/13/us/ferguson-missouri-town-under-siege-after-police-shooting.html>.
2. Lowery, W. *They Can't Kill Us All: Ferguson, Baltimore, and a New Era in America's Racial Justice Movement*. 2016; Little Brown.
3. Laird, E., M. Morial, D. Mckesson, J. Wallis and M. Thompson. "A Civil Rights Movement for the 21st Century: Black Lives Matter." Aspen Ideas Festival, 2016; Available from: <https://www.aspenideas.org/session/civil-rights-movement-21st-century-black-lives-matter>.
4. CALEA. "Law Enforcement Accreditation," Commission for Accreditation for Law Enforcement Agencies, 2016; Available from: <http://www.calea.org/content/commission>.
5. Scovill, D. "What's Really Going on with Crime Rates: Crime Stats Are Used to Judge the Effectiveness of Law Enforcement Agencies, but Hardly Anyone Is Questioning Their Validity or Accuracy." *Police Magazine*, Oct. 9, 2013.
6. Anonymous. "FBI Uniform Crime Reporting Statistics: Their Proper Use." Federal Bureau of Investigation, May 2017; Available from: <https://ucr.fbi.gov/ucr-statistics-their-proper-use>.
7. Mastrofski, S.D. and J.J. Willis. "Police Organization Continuity and Change: Into the Twenty-first Century." *Crime and Justice*, 2010. 39(1): p. 55-144.
8. Reaves, B.A. "Census of State and Local Law Enforcement Agencies, 2008." Department of Justice, Bureau of Justice, 2011: p. 19.
9. Anonymous. "County vs. Town vs. City in Virginia." Undated; Available from: <http://www.virginiaplaces.org/nova/countytowncity.html>.
10. Kirsch, I.S., et al. "Adult Literacy in America." National Center for Education Statistics (NCES), 2002: p. 176.
11. Rosenbaum, D.P., Lisa M. Graziano, Cody D. Stephens, and Amie M. Schuck. "Understanding Community Policing and Legitimacy-Seeking Behavior in Virtual Reality: A National Study of Municipal Police Websites." *Police Quarterly*, Feb. 11, 2011.
12. Kaste, M. "How Many Crimes Do Your Police 'Clear'? Now You Can Find Out." 2015; National Public Radio, Available from: <http://www.npr.org/2015/03/30/395799413/how-many-crimes-do-your-police-clear-now-you-can-find-out>.
13. McLaughlin, L. "The Poverty-Crime Connection." *Jackson Free Press*. Oct. 19, 2011.

14. Holzer, H.J., et al. "The Economic Costs of Childhood Poverty in the United States." *Journal of Children and Poverty*, 2008. 1(March 1, 2008): p. 41-61.
15. Shattuck, R. and R.M. Kreider. "Social and Economic Characteristics of Currently Unmarried Women With a Recent Birth: 2011." Census Bureau, May 2013.
16. Weisburd, D., "The Law and Crime Concentration and the Criminology of Place." *Criminology*, 53, Issue 2, p. 133-157.
17. NIJ. "CrimeStat: Spatial Statistics Program for the Analysis of Crime Incident Locations." Department of Justice, National Institute of Justice, 2017.
18. Childress, S. "The Problem with 'Broken Windows' Policing." *Frontline*, June 28, 2016; Available from: <https://www.pbs.org/wgbh/frontline/article/the-problem-with-broken-windows-policing/>.
19. Muyskens, J. and others. *Washingtonpost/data-police-shootings*. 2015; Available from: <https://github.com/washingtonpost/data-police-shootings>.
20. Tran, M. "FBI Chief: 'Unacceptable' that Guardian Has Better Data on Police Violence." *Guardian*, Oct. 8, 2015.
21. Lucas, R. "Violent Crime on the Rise in Roanoke City." *Top Stories 2016*, WSLs10, Roanoke VA, Nov. 2 2016.
22. Sharkey, P., G. Torratts-Espinosa, and D. Takyar, "Community and the Crime Decline: The Causal Effect of Local Nonprofits on Violent Crime." *American Sociological Review*, 2017. 82(6): p. 1214–1240.
23. Satchell, E. "Norfolk Police Chief Issues Renewed Call for Change in Response to Violence." *On Your Side*, Radio Station 10, WAVY, Aug. 8, 2017.
24. Larty, J., "By the Numbers: US Police Kill More in Days Than Other Countries Do in Years." *Guardian*, June 9, 2015.
25. Matthews, R. and J. Pitts, *Crime, Disorder and Community Safety*. Routledge, 2013.

VI. APPENDIX

Table 1. Police departments, chiefs and websites as of 2015; some chiefs may have changed subsequent to preparation of this table

Police Jurisdiction	Chief	Web URL
Albemarle County	Ron L. Lantz	http://www.albemarle.org/departments.asp?department=police
Alexandria	Earl L. Cook	https://www.alexandriava.gov/Police
Arlington County	M. Jay Farr	https://police.arlingtonva.us/
Blacksburg Town	Anthony S. Wilson	http://www.blacksburg.gov/departments/departments-l-z/police
Bristol	John S. Austin	http://www.bristolva.org/index.aspx?nid=155
Charlottesville	Al S. Thomas Jr.	http://www.charlottesville.org/departments-and-services/departments-h-z/police-department

Chesterfield County	Thierry G. Dupuis	https://www.chesterfield.gov/police/
City of Chesapeake	Colonel K. L. Wright	http://www.cityofchesapeake.net/government/City-Departments/Departments/Police-Department.htm
City of Fairfax	Carl Pardiny	http://www.fairfaxva.gov/government/police
Colonial Heights	Jeffrey W. Faries	http://www.colonialheightsva.gov/156/Police
Danville	Philip A. Broadfoot	http://www.danville-va.gov/588/Police
David W. Nye	David W. Nye	http://www.fredericksburgva.gov/index.aspx?nid=428
Fairfax County	Edwin C. Roessler Jr.	http://www.fairfaxcounty.gov/police/
Hampton Police Division	Terry L. Sult	http://www.hampton.gov/256/Police
Harrisonburg	Stephen Monticelli	https://www.harrisonburgva.gov/police
Henrico County Police Division	Humberto I. Cardounel, Jr.	http://henrico.us/police/
Hopewell	John F. Keohane	http://www.hopewellva.gov/public-safety/police-welcome/
Loudoun County Sheriff's Office	Michael L. Chapman	https://sheriff.loudoun.gov/
Lynchburg	Raul M. Diaz	http://www.lynchburgva.gov/police-department
Manassas City	Douglas W. Keen	http://www.blacksburg.gov/departments/departments-l-z/police
Manassas Park	John C. Evans	http://manassasparkpolice.com/
Newport News	Richard W. Myers	https://www.nngov.com/police
Norfolk	Larry Boone.	http://www.norfolk.gov/police
Petersburg Bureau of Police	William C. Rohde	http://www.petersburg-va.org/index.aspx?NID=176
Portsmouth	Tonya D. Chapman	http://www.portsmouthpd.us/
Prince William County	Barry Barnard	http://www.pwcgov.org/government/dept/police/pages/default.aspx
Radford City	Don Goodman	http://www.radfordva.gov/220/Police-Department

Richmond	Michael Goldsmith	http://www.richmondgov.com/Police/
Roanoke	Tim Jones	http://www.roanokeva.gov/150/Police
Roanoke County	Howard B. Hall	http://www.roanokecountyva.gov/police
Salem	Tim Guthrie	http://www.salemva.gov/departments/pd/SalemPolice.aspx
Staunton	Jim Williams	http://www.staunton.va.us/directory/departments-h-z/police/police
Suffolk	Thomas E. Bennett	http://www.suffolkva.us/spd/
Virginia Beach	James A. (Jim) Cervera	https://www.vbgov.com/government/departments/police/Pages/default.aspx
Waynesboro	Michael D. Wilhelm	http://www.waynesboro.va.us/155/Police-Department
Williamsburg	Dave Sloggie	http://www.williamsburgva.gov/index.aspx?page=40
Winchester	Kevin L. Sanzenbacher	http://winchesterpolice.org/

Table 2. Virginia cities over 15,000 population covered in this report
Source: Population: 2015 Census Bureau

City	Population
Virginia Beach	452,745
Norfolk	246,393
Chesapeake	235,429
Richmond	220,289
Newport News	182,385
Alexandria	153,511
Hampton	136,454
Roanoke	99,897
Portsmouth	96,201
Suffolk	88,161
Lynchburg	79,812
Harrisonburg	52,538
Charlottesville	46,597
Danville	42,082
Manassas	41,764
Petersburg	32,477
Fredericksburg	28,118

Winchester	27,284
Salem	25,432
Staunton	24,416
Fairfax City	24,013
Hopewell	22,378
Waynesboro	21,491
Colonial Heights	17,820
Radford	17,403
Bristol	17,141
Manassas Park	15,726
Williamsburg	15,052

Table 3. Virginia counties over 50,000 population used in this report.
Source: Population: 2015 Census Bureau

County	Population	County Contains a Police Department (not including Sheriff's office)	Included in Complete Assessment
Fairfax County	1,142,234	Yes	Yes
Prince William County	451,721	Yes	Yes
Loudoun County	375,629	No*	Yes
Chesterfield County	335,687	Yes	Yes
Henrico County	325,155	Yes	Yes
Arlington County	229,164	Yes	Yes
Stafford County	142,003	No	No
Spotsylvania County	130,475	No	No
Albemarle County	105,703	Yes	Yes
Hanover County	103,227	No	No
Montgomery County	97,653	No	No
Roanoke County	94,409	Yes	Yes
Frederick County	83,199	No	No
Rockingham County	78,593	No	No

Bedford County	77,724	No	No
Augusta County	74,314	No	No
James City County	73,147	No	No
Fauquier County	68,782	No	No
York County	67,837	No	No
Pittsylvania County	62,194	No	No
Franklin County	56,264	No	No
Campbell County	55,086	No	No
Washington County	54,591	No	No
Henry County	51,881	No	No

Table 4. Virginia towns with more than 1000 population; Most are not included in crime data because they are included within county police jurisdiction.

Town	Population	County	Town	Population	County
Leesburg	51,209	Loudoun	Chase City	2,296	Mecklenburg
Blacksburg	44,215	Montgomery	Crewe	2,241	Nottoway
Herndon	24,568	Fairfax	Amherst	2,210	Amherst
Christiansburg	21,943	Montgomery	New Market	2,208	Shenandoah
Culpeper	17,557	Culpeper	Waverly	2,073	Sussex
Vienna	16,522	Fairfax	Mount Jackson	2,042	Shenandoah
Front Royal	15,070	Warren	Saltville	2,031	Smyth
Warrenton	9,897	Fauquier	Coeburn	1,999	Wise
Purcellville	9,232	Loudoun	Haymarket	1,980	Prince William
Pulaski	8,890	Pulaski	Gate City	1,955	Scott
Smithfield	8,364	Isle of Wight	Narrows	1,953	Giles
Vinton	8,231	Roanoke	Stephens City	1,940	Frederick
Farmville	8,169	Cumberland	Lovettsville	1,934	Loudoun
Abingdon	8,119	Washington	Pennington Gap	1,805	Lee
Wytheville	8,115	Wythe	Appomattox	1,759	Appomattox
South Boston	7,976	Halifax	Chilhowie	1,741	Smyth
Ashland	7,503	Hanover	Victoria	1,677	Lunenburg
Strasburg	6,586	Shenandoah	Appalachia	1,671	Wise
Bedford	6,561	Bedford	Stanley	1,654	Page
Marion	5,957	Smyth	Louisa	1,621	Louisa
Bridgewater	5,889	Rockingham	Dayton	1,588	Rockingham

Richlands	5,504	Tazewell	Gordonsville	1,577	Orange
Big Stone Gap	5,416	Wise	Warsaw	1,495	Richmond
Bluefield	5,279	Tazewell	Rural Retreat	1,485	Wythe
Woodstock	5,248	Shenandoah	Chatham	1,481	Pittsylvania
Dumfries	5,217	Prince William	Happy spring	1,453	Washington
Orange	4,947	Orange	Exmore	1,447	Northampton
Luray	4,828	Page	Stuart	1,442	Patrick
Rocky Mount	4,799	Franklin	Kilmarnock	1,437	Lancaster
South Hill	4,527	Mecklenburg	Honaker	1,392	Russell
Tazewell	4,421	Tazewell	Clintwood	1,325	Dickenson
Berryville	4,300	Clarke	Middletown	1,315	Frederick
Broadway	3,807	Rockingham	Hurt	1,274	Pittsylvania
Clifton Forge	3,739	Alleghany	Weber City	1,262	Scott
Colonial Beach	3,580	Westmoreland	Onancock	1,261	Accomack
Blackstone	3,491	Nottoway	Halifax	1,249	Halifax
Altavista	3,474	Campbell	Gretna	1,248	Pittsylvania
Lebanon	3,342	Russell	Courtland	1,246	Southampton
West Point	3,333	King William	Kenbridge	1,227	Lunenburg
Wise	3,119	Wise	Clarksville	1,204	Mecklenburg
Chincoteague	2,914	Accomack	Buchanan	1,178	Botetourt
Elkton	2,809	Rockingham	Bowling Green	1,160	Caroline
Grottoes	2,758	Augusta	Brookneal	1,119	Campbell
Dublin	2,686	Pulaski	Glasgow	1,115	Rockbridge
Pearisburg	2,678	Giles	Pembroke	1,081	Giles
Hillsville	2,677	Carroll	Lawrenceville	1,078	Brunswick
Windsor	2,671	Isle of Wight	Cedar Bluff	1,076	Tazewell
Timberville	2,603	Rockingham	Edinburg	1,069	Shenandoah
Tappahannock	2,387	Essex	Occoquan	1,025	Prince William
Shenandoah	2,340	Page	Cape Charles	1,017	Northampton

Table 5. Demographic data for Virginia entities. Data source: U.S. Bureau of Census. * Race data collected from 2015 Census Estimate uses “Race Alone” Data. This corresponds to the percentage of people who reported a single race alone in addition to people who reported that race specific in combination with one or more races. This, mixed with survey margin of error, often produces total percentages greater than 100%.

County, City (or other jurisdiction)	Total Population (2015 Census Estimate)	% White*	% Black or African American *	% Hispanic or Latino*	% Asian	% High School Graduate	% Bachelor's Degree	% Graduate or Professional Degree	Median Household Income	Mean Household Income	% Mean to Median Ratio	% Unemployment Rate (2014 ACS 5yr. est.)	% Below Poverty Level (2014 ACS 5yr. est.)
Fairfax Co.	1,142,234	66.1	10.1	16.4	19.5	13.2	30.7	28.6	112,102	142,472	1.27	3.7	6.0
Virginia Beach	452,745	68.2	20.1	8.0	6.9	22.7	21.8	11.7	67,001	84,615	1.26	6.2	8.3
Prince William Co.	451,721	63.7	21.8	22.3	8.7	21.8	22.7	15.4	98,514	115,446	1.17	4.2	6.5
Loudoun Co.	375,629	69.8	7.9	13.6	18.0	13.8	35.0	23.0	123,966	142,011	1.15	3.3	3.8
Chesterfield Co.	335,687	69.4	23.5	8.2	3.7	24.0	23.3	13.3	72,514	89,852	1.24	5.1	7.2
Henrico Co.	325,155	59.8	30.2	5.5	8.2	23.0	24.8	14.9	61,438	82,874	1.35	5.3	10.7
Norfolk	246,393	49.3	42.4	7.6	3.8	26.9	15.3	10.3	44,150	59,861	1.36	11.6	20.5
Chesapeake	235,429	62.5	30.1	5.5	3.4	27.0	18.5	10.8	70,176	82,802	1.18	7.6	9.1
Arlington Co.	229,164	76.2	9.2	15.7	10.5	8.7	34.2	37.7	105,120	136,973	1.3	2.8	8.8
Richmond	220,289	45.1	49.4	6.5	2.5	23.2	21.3	14.1	41,331	64,040	1.55	10.7	25.5
Newport News	182,385	50.6	41.3	8.7	3.3	28.1	15.0	9.1	51,000	63,502	1.25	9.6	15.2
Alexandria	153,511	66.3	22.6	16.7	7.0	11.9	30.6	31.0	87,319	116,416	1.33	4.7	8.7
Hampton	136,454	43.2	49.8	5.5	2.4	26.9	14.8	8.5	49,879	61,727	1.24	10.5	15.5
Albemarle Co.	105,703	82.2	9.8	5.8	4.9	18.5	25.9	26.2	67,958	96,760	1.42	2.6	9.7
Roanoke Co.	99,897	64.7	29.3	6.1	2.7	30.3	15.1	9.0	39,530	52,819	1.34	8.0	21.9
Portsmouth	96,201	41.6	53.5	4.0	1.4	29.1	12.8	6.7	46,239	57,080	1.23	10.5	18.2
Roanoke	94,409	88.4	6.0	3.0	3.5	26.6	22.6	11.4	60,950	76,294	1.25	3.5	7.9
Suffolk	88,161	53.4	42.8	4.0	1.9	27.9	16.1	10.0	66,822	80,883	1.21	8.9	11.1
Lynchburg	79,812	65.8	28.1	3.0	3.3	25.6	19.9	12.4	39,391	54,856	1.39	9.6	24.6
Harrisonburg	52,538	83.7	8.4	18.6	4.4	27.1	20.3	15.4	38,807	53,546	1.38	6.8	32.5
Charlottesville	46,597	70.2	19.2	5.0	7.1	22.2	23.7	25.6	47,218	67,583	1.43	5.0	27.5
Blacksburg Town	43,530	78.6	5.3	4.0	11.7	10.3	27.1	42.2	78,832	101,312	1.29	4.5	46.3
Danville	42,082	47.2	49.6	3.8	1.2	28.6	10.8	6.5	32,173	46,759	1.45	14.7	26.1
Manassas	41,764	73.3	15.1	34.7	6.2	27.0	18.4	10.8	71,215	88,657	1.24	8.0	12.3
Petersburg	32,477	18.5	77.3	4.6	1.3	33.5	9.5	5.3	33,927	43,421	1.28	15.1	27.5
Fredericksburg	28,118	68.3	24.2	11.5	2.9	27.3	21.3	16.4	49,454	71,366	1.44	10.4	19.2
Winchester	27,284	81.6	11.5	16.6	2.9	30.4	15.8	12.2	44,731	65,500	1.46	7.2	15.6
Salem	25,432	87.8	7.5	3.5	2.2	28.1	19.4	11.3	50,590	66,625	1.32	6.9	11.6
Staunton	24,416	83.6	12.0	2.8	1.4	29.4	19.1	12.4	39,982	56,256	1.41	6.4	18.2
Fairfax City	24,013	73.1	5.4	16.8	17.2	15.5	30.5	23.0	100,584	122,464	1.22	5.5	8.8
Hopewell	22,378	54.6	40.0	7.1	1.2	39.8	7.1	3.8	39,156	49,932	1.28	13.7	17.7

Waynesboro	21,491	83.1	12.2	7.1	1.0	38.3	11.8	7.3	45,499	51,610	1.13	7.8	20.7
Colonial Heights	17,820	78.8	14.5	5.5	3.6	36.7	12.5	7.0	52,529	68,164	1.30	7.2	10.6
Radford	17,403	85.5	9.5	3.2	1.6	21.4	20.0	14.9	30,284	44,166	1.46	9.4	39.6
Bristol	17,141	90.4	5.7	1.8	1.3	34.0	13.9	6.5	33,616	46,158	1.37	11	19.6
Manassas Park	15,726	69.0	15.1	37.1	10.5	25.3	17.5	8.8	73,460	86,033	1.17	3.7	9.3
Williamsburg	15,052	74.1	15.5	7.3	6.7	19.1	25.3	23.4	48,057	70,384	1.46	6.2	20.5

Table 6. Percent of officers by race for sworn officers in Virginia police departments. The table includes all 2013 data available from the U.S. Department of Justice, Bureau of Justice Data Collection: Law Enforcement and Management Statistics (LEMAS).

Agency Name	City	White	Black	Hispanic	American Indian	Asian	Hawaiian	Two or More	Unknown
Alexandria Police Department	Alexandria	68.5	16.1	10.3	0.3	4.8	0.0	0.0	0.0
Appalachia Police Department	Appalachia	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Arlington County Police Department	Arlington	74.3	10.2	12.2	0.0	3.3	0.0	0.0	0.0
Blacksburg Police Department	Blacksburg	95.2	4.8	0.0	0.0	0.0	0.0	0.0	0.0
Bland County Sheriff's Office	Bland	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bluefield Police Department	Bluefield	94.1	5.9	0.0	0.0	0.0	0.0	0.0	0.0
Bristol Police Department	Bristol	96.2	3.8	0.0	0.0	0.0	0.0	0.0	0.0
Albemarle County Department	Charlottesville	86.9	3.1	2.3	0.0	0.0	0.0	0.0	7.7
Charlottesville Police Department	Charlottesville	91.6	7.6	0.0	0.0	0.8	0.0	0.0	0.0
Pittsylvania County Sheriff's Department	Chatham	84.9	15.1	0.0	0.0	0.0	0.0	0.0	0.0
Chesapeake Police Department	Chesapeake	79.7	12.1	4.9	0.3	2.5	0.0	0.0	0.5
Chesterfield County Police Department	Chesterfield	88.4	7.6	2.1	0.4	1.5	0.0	0.0	0.0
Chincoteague Police Department	Chincoteague	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Montgomery County Sheriff's Office	Christiansburg	98.3	1.7	0.0	0.0	0.0	0.0	0.0	0.0
Christiansburg Police Department	Christiansburg	91.2	5.3	3.5	0.0	0.0	0.0	0.0	0.0
Cumberland County Sheriff's Department	Cumberland	68.8	31.3	0.0	0.0	0.0	0.0	0.0	0.0
Danville Police Department	Danville	85.3	14.7	0.0	0.0	0.0	0.0	0.0	0.0
Dumfries Police Department	Dumfries	62.5	25.0	12.5	0.0	0.0	0.0	0.0	0.0
Fairfax County Police Department	Fairfax	83.8	7.9	4.3	0.1	3.8	0.0	0.0	0.0
Prince Edward County Sheriff's Department	Farmville	48.3	51.7	0.0	0.0	0.0	0.0	0.0	0.0
Botetourt County Sheriff's Department	Fincastle	95.7	3.2	0.0	0.0	0.0	0.0	1.1	0.0
Franklin Police Department	Franklin	83.3	16.7	0.0	0.0	0.0	0.0	0.0	0.0
Gloucester County Sheriff's Department	Gloucester	85.7	5.2	3.9	0.0	1.3	0.0	1.3	2.6

Hampton Police Division	Hampton	65.8	27.0	4.3	0.0	0.0	0.0	2.8	0.0
Hanover County Sheriff's Office	Hanover	93.8	4.3	1.0	0.0	0.5	0.5	0.0	0.0
Henrico County Police Department	Henrico	90.5	6.0	2.2	0.3	1.0	0.0	0.0	0.0
Hopewell Police Department	Hopewell	81.0	12.7	4.8	0.0	1.6	0.0	0.0	0.0
Hurt Police Department	Hurt	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Loudoun County Sheriff's Office	Leesburg	85.1	6.3	3.1	0.2	3.1	0.0	0.0	2.3
Nelson County Sheriff's Department	Lovingston	87.5	6.3	6.3	0.0	0.0	0.0	0.0	0.0
Page County Sheriff's Office	Luray	98.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0
Lynchburg Police Department	Lynchburg	89.8	6.6	3.0	0.0	0.6	0.0	0.0	0.0
Manassas (City) Police Department	Manassas	79.2	8.3	8.3	0.0	0.0	3.1	1.0	0.0
Henry County Sheriff's Office	Martinsville	91.2	8.8	0.0	0.0	0.0	0.0	0.0	0.0
Newport News Police Department	Newport News	76.2	14.4	4.5	0.0	3.7	0.0	1.2	0.0
Norfolk Police Department	Norfolk	74.3	16.2	5.2	0.3	0.0	3.7	0.3	0.0
Onancock Police Department	Onancock	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fluvanna County Sheriff's Department	Palmyra	73.3	23.3	3.3	0.0	0.0	0.0	0.0	0.0
Petersburg Police Department	Petersburg	55.5	40.0	2.7	0.0	1.8	0.0	0.0	0.0
Portsmouth Police Department	Portsmouth	74.3	14.8	2.4	0.0	8.6	0.0	0.0	0.0
Prince William County Police Department	Prince William	79.5	7.2	8.4	0.2	2.1	0.0	2.6	0.0
Radford Department of Police	Radford	91.7	8.3	0.0	0.0	0.0	0.0	0.0	0.0
Virginia State Police	Richmond	87.2	10.1	1.5	0.5	0.7	0.0	0.0	0.0
Richmond Police Department	Richmond	64.1	30.4	3.2	0.0	0.0	0.0	0.0	2.2
Roanoke (City) Police Department	Roanoke	86.9	8.1	2.7	0.0	0.0	0.0	0.0	2.3
Roanoke County Police Department	Roanoke	94.6	4.7	0.0	0.0	0.7	0.0	0.0	0.0
Salem Police Department	Salem	93.7	4.8	0.0	0.0	0.0	1.6	0.0	0.0
Scottsville Police Department	Scottsville	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spotsylvania County Sheriff's Department	Spotsylvania	91.0	4.2	3.0	1.2	0.6	0.0	0.0	0.0
Stafford County Sheriff's Office	Stafford	87.7	8.6	3.1	0.6	0.0	0.0	0.0	0.0
Patrick County Sheriff's Department	Stuart	95.8	4.2	0.0	0.0	0.0	0.0	0.0	0.0
Suffolk Police Department	Suffolk	73.9	21.7	3.9	0.6	0.0	0.0	0.0	0.0
Surry County Sheriff's Department	Surry	33.3	66.7	0.0	0.0	0.0	0.0	0.0	0.0
Tazewell County Sheriff's Department	Tazewell	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Virginia Beach Police Department	Virginia Beach	84.3	9.4	3.2	0.3	2.2	0.4	0.0	0.3
Fauquier County Sheriff's Office	Warrenton	97.5	1.7	0.0	0.0	0.0	0.0	0.0	0.8
Warrenton Police Department	Warrenton	68.2	9.1	13.6	4.5	0.0	0.0	4.5	0.0
James City County Police Department	Williamsburg	85.7	7.7	3.3	1.1	1.1	1.1	0.0	0.0
Frederick County Sheriff's Office	Winchester	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
Shenandoah County Sheriff's Department	Woodstock	98.6	1.4	0.0	0.0	0.0	0.0	0.0	0.0
Wythe County Sheriff's Office	Wytheville	97.4	2.6	0.0	0.0	0.0	0.0	0.0	0.0
Max		100.0	66.7	13.6	4.5	8.6	3.7	4.5	100.0

Min	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Median	87.2	7.6	1.5	0.0	0.0	0.0	0.0	0.0	0.0
Average	83.4	10.7	2.5	0.2	0.8	0.2	0.2	0.2	2.0

Table 7. Initial 13 criteria for rating police websites. Note: final website criteria used in aggregate ratings are reduced to three: numbers 1, 3, 6 and 7, with 6 and 7 consolidated to a single criterion (“community relations”).

<i>Criterion</i>	<i>Poor (1)</i>	<i>Unsatisfactory (2)</i>	<i>Satisfactory (3)</i>	<i>Very Satisfactory (4)</i>	<i>Outstanding (5)</i>
1. Police Chief Section, including photograph	No chief section or picture	Message or picture missing	Marginal chief report; picture not easily accessible	Informative chief section with stern picture or picture on alternate page	Clear and informative chief section with picture
2. Non-Emergency Contact Number	No emergency contact number	On alternate page but not labeled	On alternate page but labeled	On first page but not labeled	Present and labeled on first page
3. Data Access: Crime Statistics	No crime data	Poorly organized crime statistics and/or missing data	Daily, weekly, or monthly crime data but no annual report	Annual crime data available but hard to find	Annual data accessible from first page; data well organized
4. Geographic Location	No crime map	Crime map not user interactive	Crime Map hard to navigate	Crime map hard to find but easy to navigate once found	Maps and/or crime identifier easy to find and navigate (crime mapping, LexisNexis, Crime Reports, crime view)
5. Online reporting system (email address to report problems, tips, etc.)	Unavailable or non-existent	No online submission	Limited to certain subjects, or hard to access	Report a tip or similar	Email address and telephone numbers easy to access
6. Community Relations (Programs, larger groups, regional issues)	No programs or pictures	Minimal programs	Fewer crime prevention related programs	Some programs and pictures	Active community programs, pictures, and/or liaisons
7. Citizen Feedback	None	Minimal feedback opportunity	Contact line only for complaints/commendations	Online system but hard to find or no online reporting system	Prominent online system for citizen feedback

				but citizen satisfaction survey	
8. Department Organization (clear descriptions of divisions and responsibilities)	None available	Poorly organized and/or difficult to find	Minimal description of department organization with no picture or hierarchy chart	Pictures but no organizational chart	Organizational structure clear and easy to access
9. Staff Demographics	None found	Retrieval only from external sources	Limited demographic information on annual report	Some demographic information about staff	Demographic information on staff including racial breakdown
10. News Releases	No news	Outdated news or minor detail	List of announcements but no news releases	News releases on alternate page or link to a police newsletter	News releases on front page
11. Awards and Accreditations	None listed	Working towards accreditation	Few (maybe one) award/accreditation mention	Accreditation listed in annual report or on a different page	Significant accreditation/awards. listed on the first page of the website
12. Mission Descriptive (nuances, specifics, no horn blowing)	No mission statement listed	High-flown rhetoric that does not convey a sense of reality	Marginal mission statement	Brief, adequate mission statement	Thoughtful and convincing mission statement
13. Special Features	No special features - website is basic	Barely any special features	Few special features	Some special features	Historical information, captivating graphics, multiple features

Table 8. Website ratings, 13-criteria set.

City/County	Population	Total Rating
Norfolk	246,393	54.5
Newport News	182,385	52
Hampton	136,454	48
Virginia Beach	452,745	47.5
Colonial Heights	17,820	47

City/County	Population	Total Rating
Manassas Park	15,726	39.5
Roanoke	99,897	39
Richmond	220,289	38.5
Danville	42,082	37.5
Hopewell	22,378	37.5

Fairfax County	1,142,234	47
Suffolk	88,161	47
Loudoun County	375,629	46
Blacksburg Town	43,530	45
Fairfax City	24,013	45
Portsmouth	96,201	44.5
Fredericksburg	28,118	44
Manassas	41,764	43.5
Winchester	27,284	43
Alexandria	153,511	42
Albemarle County	105,703	41
Harrisonburg	52,538	41
Lynchburg	79,812	40
Prince William County	451,721	40

Charlottesville	46,597	37
Petersburg	32,477	37
Chesapeake	235,429	36.5
Henrico County	325,155	36
Staunton	24,416	33.5
Arlington County	229,164	32
Chesterfield County	335,687	32
Roanoke County	94,409	32
Salem	25,432	30.5
Radford	17,403	29
Waynesboro	21,491	29
Williamsburg	15,052	24
Bristol	17,141	18.5

Table 9. Website ratings, 3-criteria set. Data access and Community relations are given double weight

Locations	Chief's report	Data access	Community relations	Total rating
Colonial Heights	5	10	10	25
Manassas	5	10	9.5	24.5
Blacksburg Town	4	10	10	24
Fairfax City	4.5	10	9	23.5
Norfolk	5	8	10	23
Suffolk	4	10	9	23
Hampton	4	10	9	23
Newport News	5	10	8	23
Albemarle County	5	10	7	22
Fairfax County	4	10	8	22
Fredericksburg	3	10	9	22

Loudoun County	5	8	9	22
Lynchburg	2	10	10	22
Virginia Beach	4	10	8	22
Portsmouth	4	10	7	21
Alexandria	2	10	9	21
Charlottesville	5	9	7	21
Henrico County	4	8	9	21
Prince William County	4	8	9	21
Winchester	5	8	8	21
Harrisonburg	4	10	6.5	20.5
Richmond	4	8	8	20
Petersburg	4	9	6	19
Chesapeake	3	10	5	18
Chesterfield County	4	8	6	18
Hopewell	5	10	3	18
Roanoke	4	10	3	17
Danville	3	10	3.5	16.5
Arlington County	4	6	4	14
Manassas Park	4	2	8	14
Salem	5	6	3	14
Roanoke County	1	8	3	12
Staunton	4	4	3.5	11.5
Bristol	1	7	3	11
Waynesboro	1	4	6	11
Williamsburg	1	4	5.5	10.5
Radford	1	4	4	9

Table 10. Media rating by ratio of negative to total citations, normalized by dividing ratios by the maximum negative ratio.

City	Total Negative	Total Positive	Total Other	Total	Ratio of negatives to total
Fredericksburg	4	0	0	4	1.000
Petersburg	3	0	1	4	0.750
Hampton	7	3	0	10	0.700
Alexandria	4	2	0	6	0.667
Fairfax	14	7	0	21	0.667

Roanoke County	2	0	1	3	0.667
Richmond	8	4	1	13	0.615
Manassas Park*	4	3	0	7	0.571
Norfolk	9	5	2	16	0.563
Albemarle County	1	1	0	2	0.500
Lynchburg	6	4	2	12	0.500
Virginia Beach	10	6	4	20	0.500
Newport News	5	4	2	11	0.455
Chesapeake	4	3	2	9	0.444
Waynesboro	4	2	3	9	0.444
Portsmouth	5	5	2	12	0.417
Roanoke	5	4	3	12	0.417
Danville	2	3	0	5	0.400
Suffolk	3	4	1	8	0.375
Staunton	3	4	1	8	0.375
Hopewell	3	3	2	8	0.375
Charlottesville	4	6	3	13	0.308
Loudoun County	2	4	1	7	0.286
Fairfax County	3	6	2	11	0.273
Chesterfield County	2	5	1	8	0.250
Williamsburg*	2	6	3	11	0.182
Henrico County	1	4	2	7	0.143
Colonial Heights	0	2	0	2	0.000
Bristol	0	5	0	5	0.000
Harrisonburg	0	4	1	5	0.000
Winchester	0	2	1	3	0.000
Arlington County	0	2	1	3	0.000
Manassas	0	2	2	4	0.000
Salem	0	1	1	2	0.000
Prince William County	0	1	2	3	0.000
Radford	0	0	1	1	0.000

Table 11. Violent crime index value in percent below (negative) or above (positive) expected values for crime / population trend line.

Locations	Population (2015)	Violent Crimes (2015)	Expected Number of Violent Crimes	Violent Crime Index
Salem	25,432	16	49	-67.4
Williamsburg	15,052	10	26	-61.9
Blacksburg Town	43,530	37	91	-59.4
Virginia Beach	452,745	626	1517	-58.7
Manassas Park	15,726	12	28	-56.6
Loudoun County	375,629	200	442	-54.7
Fairfax County	1,142,234	974	1490	-34.6
Alexandria	153,511	312	418	-25.3
Staunton	24,416	36	47	-22.9
Fairfax City	24,013	41	46	-10.5
Albemarle County	105,703	103	110	-6.6
Suffolk	88,161	214	216	-0.8
Harrisonburg	52,538	119	116	2.2
Manassas	41,764	91	89	2.7
Hampton	136,454	382	363	5.2
Waynesboro	21,491	43	40	7.2
Arlington County	229,164	317	257	23.3
Henrico County	325,155	476	377	26.2
Chesterfield County	335,687	493	390	26.3
Chesapeake	235,429	897	696	28.9
Colonial Heights	17,820	42	32	30.9
Roanoke	99,897	337	250	34.6
Winchester	27,284	72	53	35.0
Lynchburg	79,812	270	192	40.9
Prince William County	451,721	775	540	43.5
Bristol	17,141	45	31	46.9
Newport News	182,385	793	513	54.5
Charlottesville	46,597	175	101	73.4
Roanoke County	94,409	172	98	76.4
Richmond	220,289	1,139	643	77.2
Norfolk	246,393	1,329	735	80.9

Radford	17,403	58	31	85.9
Hopewell	22,378	80	42	90.0
Fredericksburg	28,118	122	55	120.7
Portsmouth	96,201	670	239	179.8
Danville	42,082	257	89	187.5
Petersburg	32,477	264	66	302.2

Table 12. Property crime index value in percent below (negative) or above (positive) expected value from crime/population trend line.

Locations	Population (2015)	Property Crimes (2015)	Expected Number of Property Crimes	Property Crime Index
Blacksburg Town	43,530	366	383	-62.8
Manassas Park	15,726	140	318	-56.0
Loudoun County	375,629	2,445	4754	-48.6
Williamsburg	15,052	195	303	-35.7
Alexandria	153,511	2,854	4165	-31.5
Virginia Beach	452,745	9,987	14113	-29.2
Radford	17,403	278	357	-22.1
Manassas	41,764	757	959	-21.0
Fairfax City	24,013	427	513	-16.8
Chesapeake	235,429	5,684	6748	-15.8
Fairfax County	1,142,234	14,434	17118	-15.7
Lynchburg	79,812	1,709	1991	-14.2
Staunton	24,416	488	523	-6.7
Prince William County	451,721	5,517	5879	-6.2
Salem	25,432	524	548	-4.3
Harrisonburg	52,538	1,238	1242	-0.3
Suffolk	88,161	2,321	2227	4.2
Charlottesville	46,597	1,157	1085	6.7
Newport News	182,385	5,585	5059	10.4
Roanoke County	94,409	1,141	969	17.8
Bristol	17,141	425	351	21.1
Albemarle County	105,703	1,348	1103	22.2
Hampton	136,454	4,474	3646	22.7
Arlington County	229,164	3,330	2690	23.8
Waynesboro	21,491	570	453	25.8
Norfolk	246,393	9,002	7103	26.7

Petersburg	32,477	992	722	37.4
Hopewell	22,378	654	474	37.9
Richmond	220,289	8,648	6260	38.1
Roanoke	99,897	3,816	2565	48.8
Chesterfield County	335,687	6,365	4176	52.4
Winchester	27,284	1,035	593	74.6
Danville	42,082	1,741	967	80.1
Fredericksburg	28,118	1,173	613	91.2
Portsmouth	96,201	4,838	2458	96.8
Henrico County	325,155	8,026	4026	99.4
Colonial Heights	17,820	895	367	144.1

Table 13. Time profiles for violent crime rate per 1000 citizens. Table sorted alphabetically by name.

Name	Total Population (2015)	2010	2011	2012	2013	2014	2015	Percent Change
Albemarle County	105,703	1.3	1.1	1.0	1.2	0.9	1.0	-23.3
Alexandria	153,511	2.0	1.7	1.7	1.7	1.8	2.0	3.7
Arlington County	229,164	1.6	1.5	1.4	1.6	1.4	1.4	-11.9
Blacksburg Town	43530	1.6	1.5	1.4	1.6	1.4	1.4	-11.9
Bristol	17,141	3.4	3.2	3.4	3.4	3.1	2.6	-21.9
Charlottesville	46,597	4.5	4.2	4.5	4.7	4.2	3.8	-16.2
Chesapeake	235,429	3.9	4.0	3.7	3.2	4.2	3.8	-1.7
Chesterfield County	335,687	1.5	1.2	1.2	1.2	1.2	1.5	-2.7
Colonial Heights	17,820	2.5	1.9	2.3	2.5	2.0	2.4	-7.0
Danville	42,082	3.9	3.9	3.2	3.5	4.6	6.1	56.0
Fairfax	24,013	1.5	1.6	0.8	1.1	0.8	1.7	102
Fairfax County	1,142,234	0.9	0.8	0.8	0.8	0.8	0.9	-2.8
Fredericksburg	28,118	4.2	3.9	4.0	4.1	4.6	4.3	3.0
Hampton	136,454	2.9	2.6	2.3	2.1	2.5	2.8	-2.6
Harrisonburg	52,538	1.9	2.0	2.2	2.1	2.0	2.3	22.1
Henrico County	325,155	1.6	1.4	1.7	1.8	1.5	1.5	-9.6
Hopewell	22,378	9.1	6.2	4.1	4.5	3.7	3.6	-60.7
Loudoun County	375,629	0.6	0.7	0.6	0.6	0.6	0.5	-10.1
Lynchburg	79,812	4.3	3.6	3.4	4.2	4.7	3.4	-20.7
Manassas	41,764	3.5	3.3	3.3	3.0	3.4	2.2	-37.8
Manassas Park	15,726	1.2	0.7	0.0	0.9	1.4	0.8	-38.8
Newport News	182,385	5.3	4.7	4.2	4.4	4.3	4.3	-17.5

Norfolk	246,393	5.9	5.8	5.4	5.8	5.2	5.4	-9.3
Petersburg	32,477	5.8	4.9	5.4	5.1	5.9	8.1	39.8
Portsmouth	96,201	6.4	5.7	4.8	6.1	6.1	7.0	9.2
Prince William County	451,721	1.5	1.3	1.5	1.6	1.7	1.7	11.9
Radford	17,403	3.9	3.3	4.7	5.3	5.9	3.3	-14.3
Richmond	220,289	7.4	6.9	6.4	6.2	5.8	5.2	-29.9
Roanoke	99,897	7.0	6.1	5.5	4.6	3.4	3.4	-51.8
Roanoke County	94,409	1.1	1.1	1.2	1.2	1.2	1.8	71.8
Salem	25,432	1.4	1.1	0.3	1.0	1.1	0.6	-53.9
Staunton	24,416	1.3	2.0	1.8	2.1	1.3	1.5	9.8
Suffolk	88,161	3.1	3.1	3.0	3.1	2.7	2.4	-22.3
Virginia Beach	452,745	1.9	1.8	1.7	1.6	1.5	1.4	-26.0
Waynesboro	21,491	3.4	3.5	3.3	2.2	1.6	2.0	-40.7
Williamsburg	15,052	1.3	1.9	1.4	1.5	1.7	0.7	-49.5
Winchester	27,284	2.1	2.4	2.2	3.3	3.1	2.6	23.3

Table 14. Time profiles for property crime rate (per 1000 citizens). Table sorted alphabetically by name

Location	Total Population (2015)	2010	2011	2012	2013	2014	2015	Percent Change
Albemarle County	105,703	18.17	16.42	14.41	16.30	15.24	12.75	-29.8
Alexandria	153,511	23.01	22.00	20.31	19.80	19.55	18.59	-19.2
Arlington County	229,164	21.10	17.27	17.39	16.83	15.56	14.53	-31.1
Bristol	17,141	33.66	36.88	36.66	31.00	27.80	24.79	-26.3
Charlottesville	46,597	38.91	33.55	33.77	32.69	29.72	24.83	-36.2
Chesapeake	235,429	33.53	31.79	27.57	26.84	27.37	24.14	-28.0
Chesterfield County	335,687	22.00	20.89	21.19	19.26	19.02	18.96	-13.8
Colonial Heights	17,820	45.67	53.44	56.14	42.73	49.33	50.22	10.0
Danville	42,082	50.85	48.91	45.53	47.72	41.65	41.37	-18.6
Fairfax	24,013	24.74	24.06	19.04	16.85	17.56	17.78	-28.1
Fairfax County	1,142,234	1.40	13.42	12.96	12.82	12.76	12.64	801.7
Fredericksburg	28,118	44.62	41.46	37.72	40.77	42.36	41.72	-6.5
Hampton	136,454	38.81	38.60	33.95	32.56	31.92	32.79	-15.5
Harrisonburg	52,538	21.86	21.30	20.88	26.65	22.01	23.56	7.8
Henrico County	325,155	24.68	24.56	24.47	24.12	24.04	24.68	0.0
Hopewell	22,378	45.82	42.46	39.42	35.47	30.22	29.23	-36.2
Loudoun County	375,629	8.83	8.56	8.59	7.63	7.15	6.51	-26.3

Lynchburg	79,812	34.27	32.23	27.01	25.22	25.34	21.41	-37.5
Manassas	41,764	26.26	21.22	22.31	20.42	17.58	18.13	-31.0
Manassas Park	15,726	13.99	11.33	15.06	12.73	9.62	8.90	-36.4
Newport News	182,385	36.25	33.54	31.77	30.76	30.32	30.62	-15.5
Norfolk	246,393	54.18	50.33	46.32	44.10	39.31	36.54	-32.6
Petersburg	32,477	46.14	46.04	41.17	34.34	26.08	30.55	-33.8
Portsmouth	96,201	57.33	54.66	49.93	55.69	50.42	50.29	-12.3
Prince William County	451,721	18.26	16.59	15.81	14.73	13.14	12.21	-33.1
Radford	17,403	27.84	28.44	27.45	23.84	21.45	15.97	-42.6
Richmond	220,289	41.96	41.85	43.16	40.69	38.67	39.26	-6.5
Roanoke	99,897	48.93	47.85	48.64	44.87	41.36	38.20	-21.9
Roanoke County	94,409	12.84	13.47	13.62	13.57	13.15	12.09	-5.8
Salem	25,432	27.17	25.84	23.11	23.98	19.72	20.60	-24.2
Staunton	24,416	22.32	21.63	22.08	24.70	23.99	19.99	-10.5
Suffolk	88,161	24.25	28.08	27.93	30.10	25.68	26.33	8.6
Virginia Beach	452,745	30.14	27.39	26.29	25.00	21.76	22.06	-26.8
Waynesboro	21,491	30.94	36.63	35.45	32.66	30.92	26.52	-14.3
Williamsburg	15,052	19.50	16.27	17.61	12.86	12.13	12.96	-33.6
Winchester	27,284	43.00	41.83	44.08	36.74	39.55	37.93	-11.8

Table 15. Crime rates for all cities used in calculation of trend lines and crime indices (above 1500 population) as well as 8 counties that are given special attention in this report. Data are sorted by population.

2015 Data		Violent Crime Numbers			Property Crime Numbers		
Locations (Cities and towns above 1500 plus 8 selected counties)	Population (2015)	Violent Crimes (2015)	Expected Number of Violent Crimes	Difference Number of Violent Crimes	Property Crimes (2015)	Expected Number of Property Crimes	Difference Number of Property Crimes
Fairfax County	1,142,234	974	1490	-34.6	14,434	17118	-15.7
Virginia Beach	452,745	626	1517	-58.7	9,987	14113	-29.2
Prince William County	451,721	775	540	43.5	5,517	5879	-6.2
Loudoun County	375,629	200	442	-54.7	2,445	4754	-48.6
Chesterfield County	335,687	493	390	26.3	6,365	4176	52.4
Henrico County	325,155	476	377	26.2	8,026	4026	99.4
Norfolk	246,393	1,329	735	80.9	9,002	7103	26.7
Chesapeake	235,429	897	696	28.9	5,684	6748	-15.8
Arlington County	229,164	317	257	23.3	3,330	2690	23.8
Richmond	220,289	1,139	643	77.2	8,648	6260	38.1
Newport News	182,385	793	513	54.5	5,585	5059	10.4
Alexandria	153,511	312	418	-25.3	2,854	4165	-31.5
Hampton	136,454	382	363	5.2	4,474	3646	22.7

Albemarle County	105,703	103	110	-6.6	1,348	1103	22.2
Roanoke	99,897	337	250	34.6	3,816	2565	48.8
Portsmouth	96,201	670	239	179.8	4,838	2458	96.8
Roanoke County	94,409	172	98	76.4	1,141	969	17.8
Suffolk	88,161	214	216	-0.8	2,321	2227	4.2
Lynchburg	79,812	270	192	40.9	1,709	1991	-14.2
Bedford	77,724	30	186	-83.8	332	1932	-82.8
Harrisonburg	52,538	119	116	2.2	1,238	1242	-0.3
Leesburg	51,059	84	113	-25.4	722	1203	-40.0
Charlottesville	46,597	175	101	73.4	1,157	1085	6.7
Danville	42,082	257	89	187.5	1,741	967	80.1
Manassas	41,764	91	89	2.7	757	959	-21.0
Louisa	34,602	1	71	-98.6	38	775	-95.1
Petersburg	32,477	264	66	302.2	992	722	37.4
Fredericksburg	28,118	122	55	120.7	1,173	613	91.2
Winchester	27,284	72	53	35.0	1,035	593	74.6
Salem	25,432	16	49	-67.4	524	548	-4.3
Staunton	24,416	36	47	-22.9	488	523	-6.7
Fairfax City	24,013	41	46	-10.5	427	513	-16.8
Hopewell	22,378	80	42	90.0	654	474	37.9
Christiansburg	21,928	29	41	-29.4	527	463	13.7
Waynesboro	21,491	43	40	7.2	570	453	25.8
Colonial Heights	17,820	42	32	30.9	895	367	144.1
Culpeper	17,755	28	32	-12.4	376	365	3.0
Radford	17,403	58	31	85.9	278	357	-22.1
Bristol	17,141	45	31	46.9	425	351	21.1
Vienna	16,455	9	29	-69.2	150	335	-55.2
Manassas Park	15,726	12	28	-56.6	140	318	-56.0
Front Royal	15,137	31	26	17.3	382	305	25.3
Williamsburg	15,052	10	26	-61.9	195	303	-35.7
Falls Church	13,982	20	24	-16.8	243	279	-12.9
Martinsville	13,645	51	23	118.4	415	271	53.0
Warrenton	9,889	12	16	-24.6	286	189	51.6
Purcellville	9,206	5	15	-65.8	51	174	-70.7
Pulaski	8,891	22	14	57.0	248	167	48.2
Franklin	8,490	33	13	148.8	457	159	187.8
Smithfield	8,384	19	13	45.4	112	157	-28.5
Vinton	8,193	14	13	10.1	223	153	46.2
Farmville	8,186	14	13	10.2	269	152	76.5
Wytheville	8,136	13	13	3.1	215	151	42.0
Abingdon	8,078	10	12	-20.0	176	150	17.2
South Boston	7,977	44	12	257.3	305	148	106.0
Ashland	7,501	25	11	118.5	298	138	115.8
Lexington	7,262	6	11	-45.5	62	133	-53.4
Galax	6,914	21	10	102.2	296	126	135.0
Buena Vista	6,618	5	10	-49.3	42	120	-65.0
Strasburg	6,565	9	10	-7.8	92	119	-22.6
Marion	5,943	25	9	188.3	207	106	94.9

Bridgewater	5,896	2	9	-76.7	16	105	-84.8
Covington	5,658	10	8	22.3	130	100	29.4
Richlands	5,507	10	8	26.3	127	97	30.3
Emporia	5,496	30	8	279.8	268	97	175.7
Big Stone Gap	5,409	9	8	16.1	194	95	103.2
Bluefield	5,282	9	8	19.5	237	93	154.9
Woodstock	5,232	6	7	-19.4	140	92	52.2
Dumfries	5,197	2	7	-72.9	81	91	-11.3
Orange	4,938	6	7	-13.7	106	86	23.0
Luray	4,825	3	7	-55.6	119	84	41.8
Rocky Mount	4,803	11	7	63.5	192	84	129.9
South Hill	4,489	16	6	157.8	191	77	146.9
Tazewell	4,423	5	6	-18.0	56	76	-26.4
Berryville	4,279	0	6	-100.0	47	73	-35.9
Norton	3,939	14	5	163.6	244	67	265.5
Clifton Forge	3,884	12	5	129.8	73	66	11.1
Broadway	3,819	0	5	-100.0	13	64	-79.8
Colonial Beach	3,565	8	5	69.7	76	60	27.4
Blackstone	3,485	2	5	-56.4	123	58	111.5
Altavista	3,478	3	5	-34.5	128	58	120.6
Lebanon	3,332	5	4	14.9	108	55	95.4
West Point	3,326	7	4	61.3	45	55	-18.4
Wise	3,112	3	4	-25.2	46	51	-10.1
Chincoteague	2,916	5	4	34.7	62	48	30.4
Elkton	2,819	4	4	12.2	31	46	-32.3
Grottoes	2,768	2	3	-42.7	96	45	114.1
Windsor	2,761	4	3	15.0	25	45	-44.1
Pearisburg	2,687	4	3	18.8	78	43	79.9
Hillsville	2,679	2	3	-40.4	70	43	62.0
Dublin	2,662	3	3	-9.9	53	43	23.5
Timberville	2,612	2	3	-38.5	25	42	-40.5
Tappahannock	2,385	7	3	139.7	117	38	208.7
Shenandoah	2,336	1	3	-64.9	31	37	-16.3
Chase City	2,287	5	3	80.0	44	36	21.7
Crewe	2,236	8	3	195.8	71	35	101.5
Amherst	2,212	0	3	-100.0	10	35	-71.3
New Market	2,200	1	3	-62.3	23	35	-33.5
Waverly	2,072	4	2	62.0	21	32	-35.1
Mount Jackson	2,036	1	2	-58.7	25	32	-21.1
Saltville	2,025	0	2	-100.0	32	32	1.6
Coeburn	2,006	6	2	152.5	54	31	73.2
Haymarket	1,974	2	2	-14.2	14	31	-54.3
Narrows	1,960	1	2	-56.7	2	30	-93.4
Gate City	1,952	2	2	-13.0	29	30	-4.1
Stephens City	1,938	2	2	-12.3	17	30	-43.3
Pennington Gap	1,803	1	2	-52.2	43	28	55.6
Chilhowie	1,734	1	2	-49.9	15	26	-43.3

Victoria	1,683	4	2	107.5	9	26	-64.8
Appalachia	1,668	4	2	109.8	32	25	26.4
Stanley	1,650	0	2	-100.0	27	25	8.0
Dayton	1,593	2	2	10.8	14	24	-41.8
Gordonsville	1,570	1	2	-43.6	15	24	-36.6

Table 16. Shootings by Virginia police. Data from *The Washington Post* national database (2015 to August 2016).

City	Armed	Age	Gender	Race	Threat level
Aldie	knife	58	M	W	Other
Alexandria	gun	66	M	W	Attack
Arlington	unarmed	54	M	H	Attack
Arlington	vehicle	28	M	W	Attack
Arvonnia	unarmed	19	M	B	Attack
Chesapeake	gun	34	M	B	Attack
Chesapeake	gun	26	M	B	Attack
Concord	gun	24	M	B	Attack
Culpeper	gun	43	M	W	Attack
Emporia	gun	53	M	B	Attack
Falls Church	metal pole	29	M	H	Other
Fredericksburg	vehicle	33	M	W	Attack
Grayson County	gun	45	M	W	Attack
Grundy	gun	36	M	W	Other
Harrisonburg	gun	23	M	W	Attack
Herndon	gun and knife	32	M	A	Attack
Hopewell	knife	61	M	W	Other
King George	knife	64	M	W	Other
Newport News	gun	23	M	B	Attack
Newport News	gun	35	M	B	Attack
Norfolk	gun	58	M	W	Attack
Norfolk	gun	25	M	B	Attack
Norfolk	toy weapon	25	F	B	Attack
Norfolk	gun	30	M	W	Attack
Norfolk	knife	43	M	B	Other
Norfolk	gun	39	M	W	Attack
Norfolk	gun	25	F	B	Attack
Norman	gun	49	M	B	Other

Pearisburg	knife	26	M	W	Attack
Portsmouth	gun	29	M	B	Attack
Portsmouth	unarmed	18	M	B	Undetermined
Powhatan County	gun	71	M	W	Attack
Pulaski	gun	46	M	W	Attack
Pulaski	gun	48	M	W	Attack
Richmond	gun	20	M	B	Attack
Richmond	gun	34	M	B	Attack
Richmond	gun	29	M	B	Other
Richmond	ax	23	M	W	Other
Roanoke	toy weapon	18	M	B	Other
Scott County	gun	69	M	W	Other
Stafford	gun	67	M	W	Attack
Suffolk	toy weapon	28	M	W	Attack
Virginia Beach	gun	35	M	B	Attack
Virginia Beach	unarmed	28	F	B	Undetermined
Winchester	knife	38	M	W	Other
Woodford	gun	49	M	W	Other
York County	gun	26	M	B	Attack

Table 17. Pearson Correlation of media and crime index rates

	Violent Crime Rate	Property Crime Rate	Total Negative Media
Violent Crime Rate	1	.621	-.064
Property Crime Rates	.621	1	-.191
Total Negative Media	-.064	-.191	1
Total Positive Media	-.279	-.291	.544
Total Neutral Media	-.113	-.202	.168
Media Total	-.169	-.280	.901
Ratio Positive to Total Media	-.263	.139	-.429

Table 18. Pearson correlation of website rating and media

	Total Website Rating	Total Negative Media	Total Positive Media	Total Neutral Media	Total Media	Ratio of Positive Media to Total Media
Total Website Rating	1	.463	.099	-.029	.337	-.149
Total Negative Media	.463	1	.544	.168	.901	-.429

Total Positive Media	.099	.544	1	.365	.808	.317
Total Neutral Media	-.029	.168	.365	1	.471	-.200
Total Media	.337*	.901	.808	.471	1	-.216
Ratio Positive to Total Media	-.149	-.429	.317	-.200	-.216	1