

Payday Lenders and the Military: A Study of Hampton Roads, Virginia

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Executive Summary

Payday lenders have long been identified as targeting military populations. In the last ten years, federal, state, and local legislation as well as military policy and education initiatives – have attempted to discourage payday lenders from targeting this otherwise lucrative population. This study focused on evaluating the effects of such efforts in one area: Hampton Roads, Virginia. Hampton Roads was chosen due to its large and varied military and civilian populations. Within a relatively small area, there is a large Air Force, Army, and Navy presence, as well as a small Coast Guard base. There are urban as well as rural areas, and a wide variety of incomes and ethnic populations in the area. These characteristics, as well as state initiatives to curb payday lending, made Hampton Roads the ideal “test area” for this study, which will examine the changes in payday lenders between 2005 and 2016.

Background

By studying payday lending patterns in the diverse military and civilian populations of the Hampton Roads area in Virginia, this project aimed to determine if payday lenders, who have long been identified as targeting military populations, have been discouraged in the last ten years by federal and state legislation and military policy and education initiatives. While payday lenders have always claimed that the military only represented a tiny fraction of their business – noting that in 2005, polls showed that only 3.69% of military personnel had taken out a payday loan in the last five years (“Payday Lenders Say Poll” 29) – multiple studies have shown otherwise, particularly Graves and Petersen’s “Predatory Lending and the Military: The Law and Geography of ‘Payday’ Loans in Military Towns” and Gallmeyer and Roberts’ “Payday lenders and economically distressed communities: A spatial analysis of financial predation”. This is an area of concern to military and civilian leadership since inability to pay debts can result in loss of security clearance, disciplinary action, loss of rank, confinement, security risks and separation. Payday lenders – whose Annual Percentage Rate (APR) of interest can be catastrophically high - thus pose a concern since it is relatively easy for lower income junior personnel to fall into a spiral of debt from which it is difficult to escape.

While there have been multiple analyses done on payday lenders and who their target audiences are, only a few have focused on the military in particular. Graves and Peterson exhaustively examined 20 states, 109 military installations, and nearly 15,000 payday lenders in their 2005 work “Predatory Lending and the Military: The Law and Geography of ‘Payday’ Loans in Military Towns” (653). In 2009, Gallmeyer and Roberts did a study focusing on the Colorado Springs area – home to multiple military installations and large numbers of military personnel – in their work “Payday lenders and economically distressed communities: A spatial analysis of financial predation”. Their work primarily focused on trying to determine if the claims made about payday lenders in regards “to their locations in terms of race, income, education, public assistance, and military bases” (193) were correct. Both teams found that, in fact, the military was preyed upon by payday lenders. Graves and Peterson note “Even when accounting for commercial development patterns and zoning ordinances with bank locations, payday lender location patterns unambiguously show greater concentrations per capita near military populations (832). Gallmeyer and Roberts found that “... communities characterized by a larger percentage of foreign born, elderly, and military personnel are significantly more likely to host payday lending, even controlling for their economic profile” (534).

It's worthwhile to note that several significant changes have occurred since the original study in 2005. First, Congress passed the Military Lending Act in 2006. The Act capped "the interest rate on covered loans to active duty service members at 36 percent; requires disclosures to alert service members to their rights; and, it prohibits creditors from requiring a service member to submit to arbitration in the event of a dispute" ("Department of Defense Issues" n. pag.). Efforts are ongoing in this area as well - on July 21, 2015, after a three year study, the Department of Defense issued a final rule to the Act which addressed loopholes in the original Act, such as vehicle title loans and waiving protections under the Service members Civil Relief Act (SCRA) ("Department of Defense Issues" n. pag.).

Multiple education efforts have been undertaken to educate service members about their options. In the Air Force, the First Term Airmen's Center is a weeklong series of briefings designed to give new Airmen a solid foundation for their career. One of the briefings is on financial readiness and the options available for anyone in need of assistance, such as the Airmen & Family Readiness Center, the Air Force Aid Society and others. Additionally, since 2001 military compensation has outpaced civilian earnings (Cahn n. pag.), possibly making payday lenders less attractive to junior personnel as the need for loans has decreased.

The state of Virginia has taken several steps to regulate payday lending. Beginning on January 1, 2009, The Virginia Payday Loan Act restricted payday loans to one at a time per borrower, no additional loan is permitted on the same day one is paid off, a database was established to track and determine eligibility for payday loans, a longer repayment term was established (two times the borrowers pay cycle, for example if a borrower has a pay cycle of every two weeks, they have four weeks to repay the loan), and fees, charges, and interest were changed. Interest became capped at 36%, loan fees limited to 20% of the loan, and a verification fee of up to \$5 charged per loan as a database fee (Notice to Virginia Payday Loan Customers, n. pag). As a result, "The number of active licensees (companies authorized to be payday lenders) has decreased by 29.41% during the period between January 2009 and December 2009" (Vertitec Solutions, LLC 4). According to Virginia Administrative Code, fines for licensees who violate the law are \$1,000 per violation (10VAC5-200 120B & C), and lenders may only make loans to borrowers who are not military members, spouses, or dependents (10VAC5-200 7C). This should eliminate all military borrowers from obtaining payday loans, unless they are untruthful about their status.

Hampton Roads itself consists of the cities/counties of Chesapeake, Newport News, Hampton, Norfolk, Suffolk, Portsmouth, York County, Poquoson, and Virginia Beach. These areas vary widely in ethnic makeup, income level, and urban status (Figure 1). By considering the Population Density per Square Mile of Land Area, a good idea of how urban or rural an area is can be obtained. For example, the City of Suffolk has the lowest population density and is generally considered a rural area. There are also enough areas without a significant military population to provide a good set of comparison data, though it is predominately rural: The City of Franklin and the Counties of Gloucester, Isle of Wight, James City, and Surry. Rural areas, due to their nature, tend not to attract payday lenders, but the areas are included to give a comprehensive view of the region.

The ethnic makeup of the areas varies widely, as does the mean income and population density. This variety, along with the number of military installations, makes the region ideal for this study. A map of the area, along with the major military installations, is shown in Figure 2.

<u>City/County</u>	<u>Ethnic Makeup</u> (1)	<u>Mean Household Income</u> <u>(dollars)</u> (2)	<u>Population Density Per Square Mile of Land Area</u> (1)	<u>Total Population</u> (1)	<u>Military Installations</u> (3)
<i>City of Chesapeake</i>	62.6% White, 29.8% Black or African American	\$83,155	625.0	222,209	Naval Support Activity Hampton Roads, Naval Support Activity Northwest Annex, St Julian's Creek Naval Depot Annex
<i>Franklin County</i>	88.5% White, 8.1% Black or African American	\$59,126	81.3	56,159	<i>None</i>
<i>Gloucester County</i>	87.2% White, 8.7% Black or African American	\$73,961	169.2	36,858	<i>None</i>
<i>City of Hampton</i>	42.7% White, 49.6% Black or African American	\$62,293	2,673.2	167,463	Langley Air Force Base (Joint Base Langley-Eustis)
<i>Isle of Wight County</i>	71.8% White, 24.7% Black or African American	\$79,223	111.8	35,270	<i>None</i>
<i>James City County</i>	80.3% White, 13.1% Black or African American	\$96,875	470.4	67,009	<i>None</i>
<i>City of Newport News</i>	49% White, 40.7% Black or African American	\$63,190	2,630.0	180,719	Fort Eustis (Joint Base Langley-Eustis)
<i>City of Norfolk</i>	47.1% White, 43.1% Black or African American	\$44,461	4,486.3	242,803	Camp Allen, Lafayette River Complex, Naval Station Norfolk
<i>City of Poquoson</i>	95.1% White, 0.6% Black or African American	\$101, 891	793.3	12,150	<i>None</i>
<i>City of Portsmouth</i>	47.1% White, 43.1% Black or African American	\$57,509	2,838.9	95,535	Coast Guard 5 th District, Naval Medical Center Portsmouth, Norfolk Naval Shipyard

<u>City/County</u>	<u>Ethnic Makeup</u> (1)	<u>Mean Household Income (dollars)</u> (2)	<u>Population Density Per Square Mile of Land Area</u> (1)	<u>Total Population</u> (1)	<u>Military Installations</u> (3)
<i>City of Suffolk</i>	53.3% White, 42.7% Black or African American	\$78,717	211.4	84,585	<i>None</i>
<i>Surry County</i>	51.3% White, 46.1% Black or African American	\$55,722	25.3	7,058	<i>None</i>
<i>City of Virginia Beach</i>	67.7% White, 19.6% Black or African American	\$82,870	1,758.9	437,994	Fleet Training Center Dam Neck, Joint Expeditionary Base East, Naval Air Station Oceania, Naval Amphibious Base Little Creek
<i>City of Williamsburg</i>	74% White, 14% Black or African American	\$55,170	1,559.3	14,068	<i>None</i>
<i>York County</i>	95.1% White, 0.6% Black or African American	\$98,020	624.8	64,464	Naval Weapons Station Yorktown, Camp Peary, Coast Guard Training Center

Figure 1: Hampton Roads Racial, Economic, Population, and Military Installations. Sources: (1) U.S. Census Bureau, 2010 Census. (2) U.S. Census Bureau, 2009-2013 5-Year American Community Survey. (3) Wikipedia, "Hampton Roads: U.S. Military".

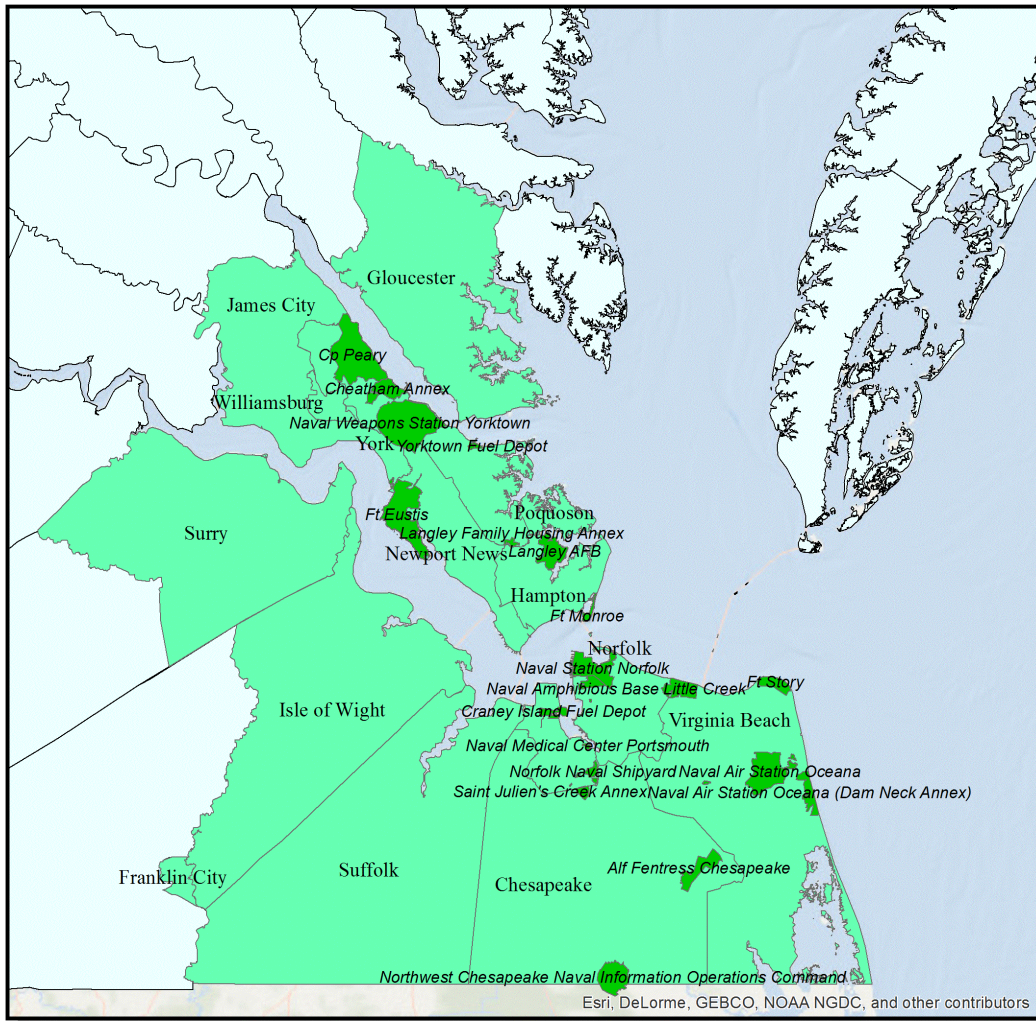


Figure 2: Hampton Roads Military Installations. Generated by the author on November 28, 2015, utilizing ArcMap 10.3.1. Source data obtained from ArcGIS Online World Ocean Base and USA Counties and U.S. Census Bureau, Geography Division Military Installations.

Goals and Objectives

My goal was to determine if payday lending has declined in the area since 2005, when Graves and Peterson first studied payday lending and the military in their study “Predatory Lending and the Military: The Law and Geography of ‘Payday’ Loans in Military Towns”. In this study, they noted that “Perhaps the most militarized region in the United States is the Norfolk-Portsmouth-Newport News region. The four counties that house most of the military population in the area (Newport News, Hampton, Norfolk and Portsmouth) have a combined population of over 661,000, 63 banks, and 101 payday lenders. This stands in stark contrast to the statewide ratio of one payday lender to every five banks. Given the population in these counties, this is 56 payday lenders above what statewide averages would predict. Each of the four counties in the region ranks among the ten worst in Virginia” (Graves and Petersen 811) for payday lenders.

They also noted “Our analysis of payday lending using ZIP code data revealed a strong bias toward military areas as well” and “and note that the area contains “54 more payday lenders than statistically expected based on the population” (813).

Methodology

I broke the project down into phases. Phase I consisted of obtaining the necessary data. For background data such as ZIP code boundaries, census blocks, state, county, place names, military installations, water bodies, roads, and other major landmarks, I used US Census Bureau TIGER/Line Shapefiles. I obtained population data from the 2010 Census. Phase I also consisted of obtaining the licensed bank and payday lender data from the Commonwealth of Virginia's State Corporation Commission's website, where names and address of both are publically available. The locations were entered and geocoded into the database. Given the numbers of lenders involved, I had planned to utilize ArcMap's Geocode Addresses tool or utilize ArcGIS Online's World Geocoding Service. However, due to licensing and other issues, I was unable to utilize the Geocoding service automatically. Instead, I entered each address manually then cross checked the result by utilizing Google Maps and Street View where available.

I then obtained the historical numbers for banks and payday lenders from the U.S. Census Bureau's American Factfinder. Unfortunately, historical addresses of banks and lenders are not available, but the number of payday lenders and banks are available per ZIP code, city and county in the U.S. Census Bureau's 2005 Business Patterns Survey. I obtained current bank address numbers and data from the FDIC.

Phase II consisted of four types of analysis. First, I compared the raw numbers of banks and payday lenders from 2005 to 2015. In order to accomplish the next phases of Phase II, I aggregated the point data by block group and ZIP code. Secondly, a Hot Spot analysis of the current data for payday lenders was performed in ArcGIS. This tool identified statistically significant clusters of high values and low values of payday lenders. I did anticipate an amount of clustering simply due to land use zoning, however any instances of clusters within a 3 mile radius of military installations were considered to be significant to this study's purpose, since the industry's agreed upon store location goals are three miles from the population they intend to serve (Graves and Peterson 703). Accordingly, 3, 6, and 9 mile buffer zones were established. The buffer zones were created using ArcMap's buffer tool and military installation polygon data. Raw counts of the numbers of payday lenders and banks in these buffer zones were determined.

Next, I completed an Anselin Local Moran's I analysis on the current payday lender locations. This analysis was used to identify any spatial clusters of features with high or low values and is the only tool that will identify statistically significant spatial outliers ("How Cluster and Outlier Analysis (Anselin Local Moran's I) works" n. pag.). As with the Hot Spot analysis, buffer zones of 3, 6, and 9 miles were established, and counts of any statistically significant high or low values in the zones were recorded.

The last part of Phase II recreated parts of the Graves and Petersen 2005 work using 2015 data. First I calculated the statewide average of payday lenders per 100,000 people. As in the original study, this enabled a prediction of payday lenders per unit, such as a ZIP code, by multiplying the statewide average of payday lenders by the population in the smaller unit (Graves and Peterson 702). This enabled the comparison of expected payday lenders against the actual numbers of payday lenders in each unit and enabled determination if the unit's payday lenders are above, equal to, or below the statewide per capita average (Graves and Peterson 702-703). ZIP codes were used since these "ZIP code regions contain those consumers whom payday lenders operating in that ZIP code wish to attract" (Graves and Peterson 698).

To calculate "payday lender density relative to banks, we (Graves and Peterson) used statistically acceptable variations on the standard location quotient formula tailored to capture subtle differences in payday lender and bank density for our county and ZIP code level analyses" (Graves and Peterson 701). Noting that "there are many ZIP codes with no payday lenders, the standard formula is not suited to measure this industry" (Graves and

Peterson 701). Instead of the standard formula: $LQ = \frac{\sum X_i}{\sum Y_i}$, where LQ equals the location quotient, X and Y are the businesses, and i is the geographic location (Graves and Peterson 701), they instead determined a ZIP code region formula after numerous experiments: $LQ = \left[\frac{X}{(X+Y) \times 100} \right] + (X - Y)$ (Graves and Peterson 702). I did the same.

Graves and Peterson also analyzed data mapped at the neighborhood level by adopting two spatial categories. These categories were near and far from a base, with near being defined as the three mile radius discussed earlier in the hot spot analysis. Like their study, I counted the number of people, payday lenders, and banks both within and outside the buffer zones. The near base tracts will be compared to statewide averages as in the original study (Graves and Peterson 703).

Graves and Peterson presented their results aggregated by county and the top 30 ZIP codes per state. For example, Figure 3 shows their results for Virginia ranked by the top 30 ZIP codes and Figure 4 shows the top counties. Since I am concentrating on a much smaller area, I ranked all ZIP codes and counties or independent cities within the identified cities and counties. My results are presented in much the same manner: Nearby bases, ZIP codes/County or City, Town or City, Number of Payday Lenders, Number of Expected Payday Lenders, Number of Banks, Payday Lenders per 100,000 people, Rank of Payday lenders, Rank of Payday Lenders Per Capita, the Rank of the Location Quotient, and their Composite Index. As Graves and Peterson did, the Composite Index will be determined from an average of the last three categories (Graves and Peterson 702). As in the original study, "Because the composite index is a function of our three measured categories, the lowest ranked counties and ZIP code regions will generally feature a relatively large number of payday lenders, a relatively high density of payday lenders per capita, and a relatively high ratio of payday lenders to banks" (Graves and Peterson 702) and enable a method for expressing proximity of payday lenders to bases with a single number (Graves and Peterson 702).

The final phase (Phase III) consisted of compiling the results, finishing the report and making the necessary visual aids to present at a conference. Figure 5 shows the overall process in a flowchart.

Table 33. Virginia: Top 30 ZIP codes Ranked by Payday Lending

Nearby Base	ZIP	Town or City	Payday Lenders	Exp PD	Banks	PD/100K	Rank PD	Rank PC	Rank LQ	Composite Rank
Langley-4 miles	23605	NEWPORT NEWS	10	0.96	1.0	67.90	3	5	3	1
Ft. Lee	23805	PETERSBURG	9	1.16	5.0	50.44	6	8	9	2
	24540	DANVILLE	12	2.42	5.0	32.24	1	21	5	3
Norfolk/Portsmouth	23702	PORTSMOUTH	5	0.76	3.0	42.86	23	11	1	4
	24202	BRISTOL	5	0.77	3.0	42.06	23	13	12	5
NS Norfolk	23502	NORFOLK	9	1.38	13.0	42.45	5	12	31	6
	24605	BLUEFIELD	6	0.70	8.0	55.63	20	7	29	7
NS Norfolk	23505	NORFOLK	7	1.76	7.0	25.91	13	29	16	8
Norfolk/Portsmouth	23701	PORTSMOUTH	7	1.76	7.0	25.90	13	30	16	9
NS Norfolk	23518	NORFOLK	8	1.32	9.0	27.06	10	27	24	10
	23851	FRANKLIN	5	0.87	6.0	37.36	23	17	25	11
Norfolk/Portsmouth	23703	PORTSMOUTH	6	1.79	3.0	21.78	20	38	8	12
Ft. Eustis	23608	NEWPORT NEWS	7	2.76	1.0	16.87	13	53	4	13
	23223	RICHMOND	7	2.81	3.0	16.21	13	56	7	14
Ft. Lee	23834	COLONIAL HTS.	7	1.54	12.0	29.81	13	23	46	15
Langley AFB	23666	HAMPTON	9	3.17	13.0	18.48	5	45	31	15
	24112	MARTINSVILLE	8	2.37	13.0	21.99	10	37	36	17
NAS Oceana-4 mi	23464	VIRGINIA BEACH	10	4.59	9.0	14.15	3	67	15	18
	24012	ROANOKE	10	1.78	19.0	36.56	3	19	64	19
	24592	SOUTH BOSTON	5	0.89	9.0	36.73	23	18	47	20
NSY Norfolk	23324	CHESAPEAKE	4	1.41	3.0	18.40	32	46	14	21
	24073	CHRISTIANSBURG	7	1.60	14.0	28.43	13	25	54	21
Langley AFB	23661	HAMPTON	3	0.93	1.0	20.93	48	40	6	23
	24354	MARION	4	1.11	6.0	23.42	32	35	30	24
Langley AFB	23663	HAMPTON	3	0.92	2.0	21.15	48	39	13	25
NSY Norfolk-5mi	23463	VIRGINIA BEACH	1	0.00	0.0	3646.15	97	1	2	25
	24210	ABINGDON	6	0.96	14.0	40.84	20	14	75	27
	24382	WYTHEVILLE	5	0.91	12.0	35.71	23	20	71	28
Norfolk/Portsmouth	23707	PORTSMOUTH	3	0.96	4.0	20.36	48	41	27	28
	23416	OAK HALL	1	0.05	1.0	136.05	97	3	16	29
	23230	RICHMOND	4	0.43	11.0	61.06	32	6	78	29
Ft. Story	23452	VIRGINIA BEACH	11	4.05	22.0	17.90	2	51	73	34

Figure 3: Graves and Peterson Study Virginia Top 30 ZIP Codes Ranked by Payday Lending (Graves and Peterson 814)

Table 32. Virginia: Top 30 Counties Ranked by Payday Lending

Nearest Base(s)	County	Pop	Bnks	PD Lntrs	PD/100 K Pop	LQ	Rnk PD	Rnk PC	Rnk P Bnk	Cmpsit Rank	Exp PD	Obs -Exp
Fort Lee	Prince George	33037	5	14	42.36	200.00	10	1	1	1	2.15	11.85
	Pittsylvania	61745	11	17	27.53	154.55	7	3	2	1	4.01	12.99
Multiple Sites-Norfolk	Pemuncun	100565	17	21	20.86	123.53	5	5	3	3	6.54	14.46
	Henry	57930	17	11	18.99	64.71	11	6	8	4	3.76	7.24
Fort Eustis, Langley AFB	Newport News	180130	41	27	14.99	66.85	4	16	7	5	11.71	15.29
	Washington	51103	22	11	21.53	50.00	11	4	12	5	3.32	7.68
Langley AFB, NS Norfolk	Hampton	146437	27	18	12.20	66.67	6	19	5	7	9.52	8.48
	Norfolk	234403	63	35	14.33	55.56	2	18	10	7	15.23	19.77
Multiple Sites-Norfolk	Southampton	17482	7	5	28.60	71.43	25	2	4	9	1.14	3.86
	Henrico	262300	83	30	11.44	36.14	3	25	17	10	17.05	12.95
	Halifax	37355	11	6	16.06	54.55	23	12	11	11	2.43	3.57
	Roanoke City	94911	49	15	15.80	30.61	9	13	24	11	6.17	8.83
	Lynchburg	65269	39	11	16.85	28.21	11	10	26	13	4.24	6.76
NAS Oceana, Fort Story, others	Virginia Beach	425257	102	40	9.41	35.22	1	34	15	14	27.64	12.36
NSY Norfolk, others	Augusta	65615	16	8	12.19	50.00	19	20	12	15	4.26	3.74
	Bedford	60371	11	7	11.59	63.64	21	23	9	16	3.92	3.08
	Wythe	27599	16	5	18.12	31.25	25	7	23	17	1.79	3.21
	Wise	40123	17	6	14.95	35.29	23	17	19	18	2.61	3.39
NSY Norfolk, others	Chesapeake	199184	48	17	8.53	35.42	7	36	18	19	12.94	4.06
	Grayson	17917	7	3	16.74	42.86	36	11	14	19	1.16	1.84
	Tazewell	44598	30	7	15.70	23.33	21	14	33	21	2.90	4.10
	Smyth	33081	12	4	12.09	33.33	28	21	20	22	2.15	1.85
	Pulaski	35127	11	4	11.39	36.36	28	26	16	23	2.28	1.72
	Roanoke	85778	31	9	10.49	29.03	17	28	25	23	5.57	3.43
	Alleghany	12926	6	2	15.47	33.33	41	15	20	25	0.84	1.16
	Montgomery	83629	33	8	9.57	24.24	19	32	31	26	5.43	2.57
	Winchester	23585	32	4	16.96	12.50	28	9	48	27	1.53	2.47
	Giles	16657	8	2	12.01	25.00	41	22	28	28	1.08	0.92
	Rockingham	67725	21	5	7.38	23.81	25	38	32	29	4.40	0.60
	Amherst	31894	11	3	9.41	27.27	36	33	27	30	2.07	0.93

Figure 3: Graves and Peterson Study Virginia Top 30 Counties Ranked by Payday Lending (Graves and Peterson 812)

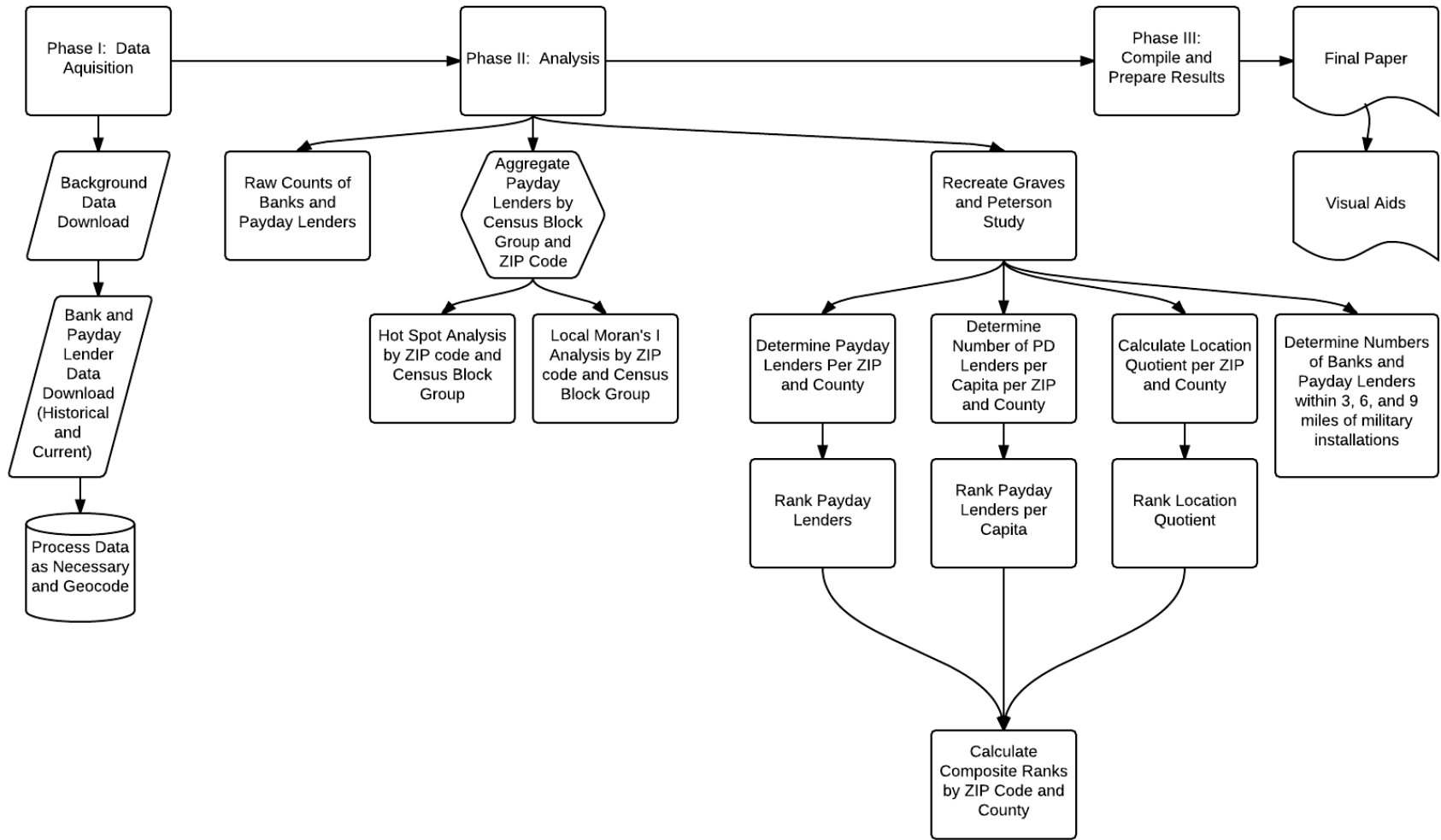


Figure 5: Flowchart showing process. Prepared by the author using Lucidchart, March 26, 2017.

Unfortunately, none of this takes into account any unlicensed or online payday lenders, should any exist. The original study conducted by Graves and Peterson also ran into this problem, however there is no true way to remedy it. However, the licensed vendors gives an idea of the patterns and scope of the problem. Modifiable Areal Unit Problem (MAUP) was also a consideration, especially in the Hot Spot and Local Moran’s I analyses, however it is a necessary evil given the nature of the data and analyses available.

Results

I had anticipated the results would show not only a reduction in payday lending locations in the area since 2005 and 2009, but a general movement away from military installations, especially in rural areas where there generally is a lower demand for payday lenders. I also anticipated there would be some spatial clustering from the Hot Spot analysis simply because of land use development codes – payday lenders and banks are restricted as to where they can operate (for example, they cannot operate in residential neighborhoods). I had also anticipated there would be significant statistical clustering of payday lenders in the Local Moran’s I analysis.

I anticipated banks would have remained relatively stable in that time period, however my results showed a reduction of 10% for all ZIP codes and 14% per county (the differing numbers are a result of counties having a smaller overall “footprint” than ZIP codes). In comparison, the raw number counts for payday lenders shows a much more severe reduction during the same time period. Payday lenders decreased in both counties and by ZIP code by 74% and 75% respectively. Payday lenders in 2016 within 3, 6, and 9 miles are shown in Figure 6. The results by county are shown in Figure 7. Complete ZIP code results are shown in Appendix 1.

2016	3 Miles	6 Miles	9 Miles
Banks	216	312	326
Payday Lenders	26	37	39

Figure 6: Raw Counts of Banks and Payday Lenders within 3, 6, and 9 Miles of Military Installations. Prepared by the author, using ArcMap 10.2 and Excel 2013 on July 8, 2016.

<u>County/City</u>	<u>Number Banks 2015</u>	<u>Change</u>	<u>Number PD (PayDay)</u>	<u>Change</u>
Chesapeake	47	-3	4	-14
Franklin	4	-11	1	-1
Gloucester	12	-3	1	-1
Hampton	23	-6	4	-12
Isle of Wight	8	2	1	-3
James City	21	1	0	0
Newport News	31	-7	6	-15
Norfolk	48	-29	12	-18
Poquoson	2	1	0	-1
Portsmouth	14	-5	5	-9
Suffolk	21	6	3	-2
Surry	1	-1	0	0
Virginia Beach	91	0	6	-45
Williamsburg	10	-4	0	-1
York	15	2	0	-3
Total	348	-57	43	-125

Figure 7: Current Bank and Payday Lending Numbers by County Showing Change since 2005. Prepared by the author using Excel 2013 on March 19, 2017. Source data obtained from the Federal Insurance Deposit Commission, Virginia's Bureau of Financial Institutions State Corporation Commission, and the U.S. Census Bureau.

I was unable to complete a hot spot analysis by ZIP code due to too few data points being present. A fish net hot spot analysis was completed instead, and the results are in Figure 8 below. An underlay of the ZIP code areas is present for reference. Census Block Group hot spot results are in Figure 9 and a close up of the Norfolk, Portsmouth, and Virginia Beach area is in Figure 10.

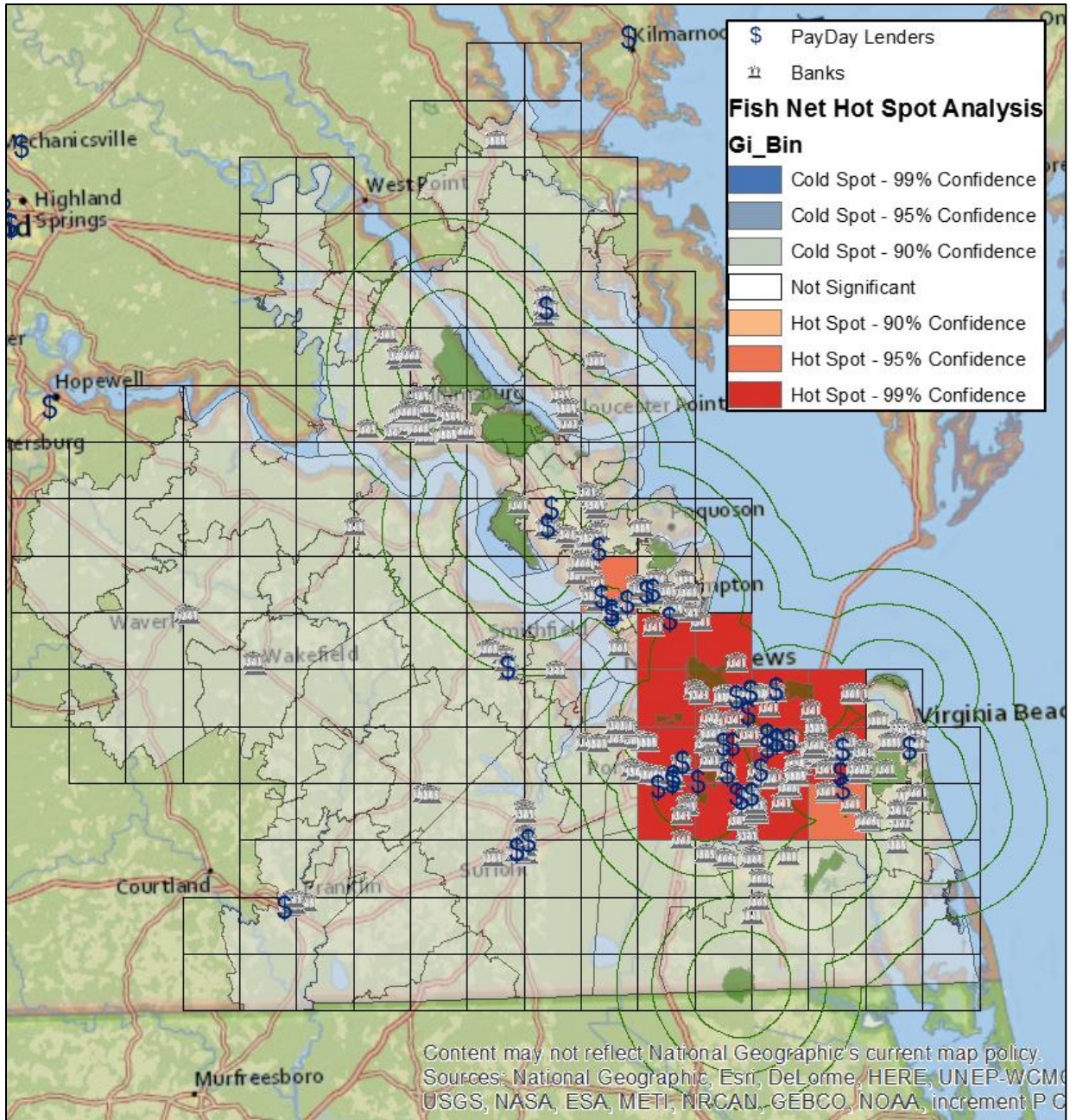


Figure 8: Fish Net Hot Spot Analysis of Payday Lenders. Prepared by the author using ArcMap 10.5 on April 16, 2017. Source data obtained from ArcGIS Online Natural Geographic World Map, U.S. Census Bureau Geography Division and American Factfinder, Federal Deposit Insurance Corporation, and the Commonwealth of Virginia State Corporation Commission.

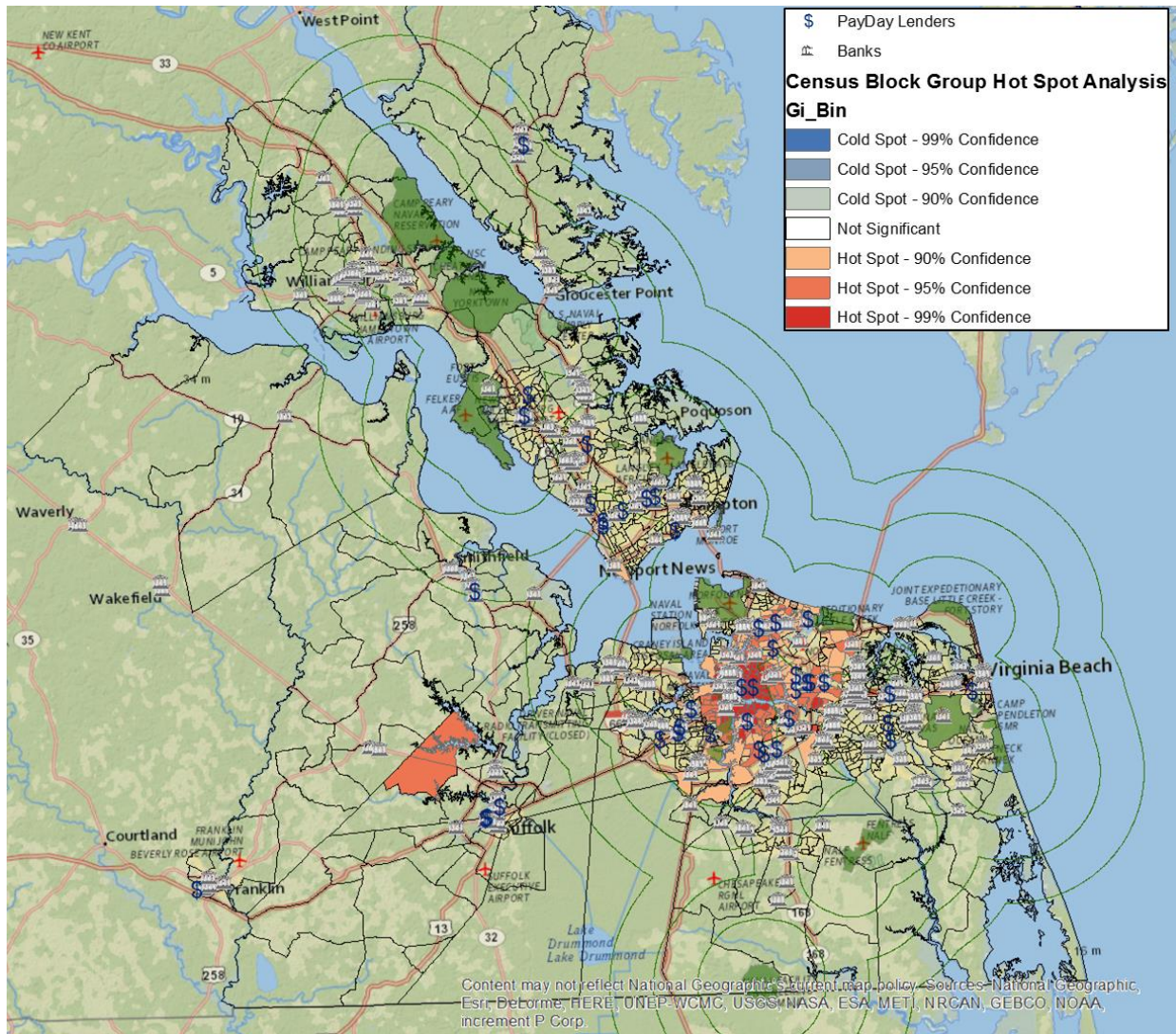


Figure 9: Hot Spot Analysis by Census Block Group of Payday Lenders. Prepared by the author using ArcMap 10.5 on April 16, 2017. Source data obtained from ArcGIS Online Natural Geographic World Map, U.S. Census Bureau Geography Division and American Factfinder, Federal Deposit Insurance Corporation, and the Commonwealth of Virginia State Corporation Commission.

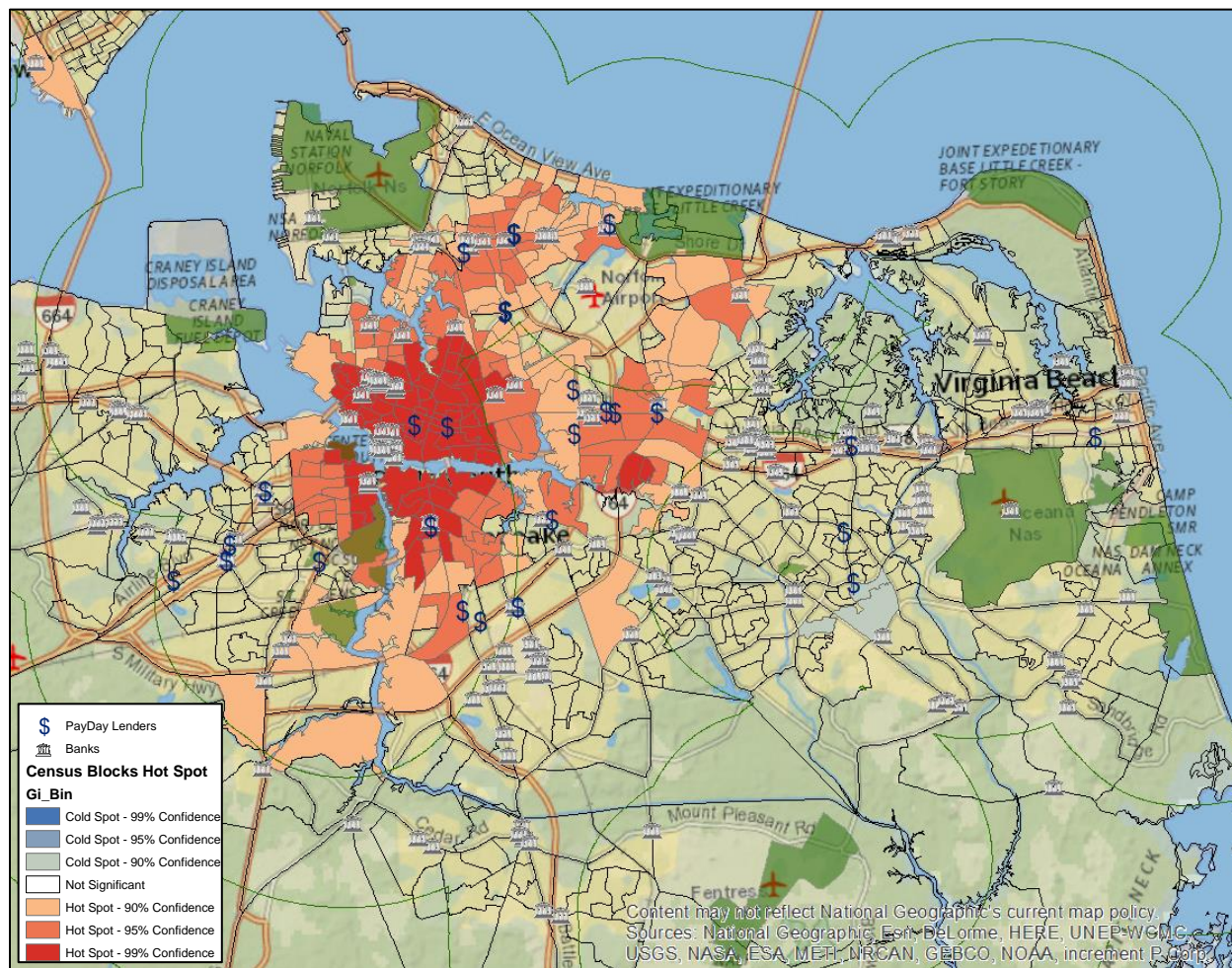


Figure 10: Norfolk, Portsmouth, Chesapeake, and Virginia Beach Area Hot Spot Analysis by Census Block Group of Payday Lenders. Prepared by the author using ArcMap 10.5 on April 16, 2017. Source data obtained from ArcGIS Online Natural Geographic World Map, U.S. Census Bureau Geography Division and American Factfinder, Federal Deposit Insurance Corporation, and the Commonwealth of Virginia State Corporation Commission.

Due to the areas involved, the fish net results are inconclusive but hint at something going on in the Norfolk, Portsmouth, and Virginia Beach area. The census block group results are extremely telling, especially in the Norfolk, Portsmouth, and Virginia Beach area. Most of the hot spots are concentrated “downtown” away from the major military installations of Naval Air Station Norfolk and across the river from the Naval Medical Center Portsmouth and the Norfolk Naval Shipyard.

The Anselin Local Moran’s I analysis results are located in Figures 11, 12, and 13 for ZIP code, Census Block Group, and a close up of the Norfolk, Portsmouth and Virginia Beach area respectively.

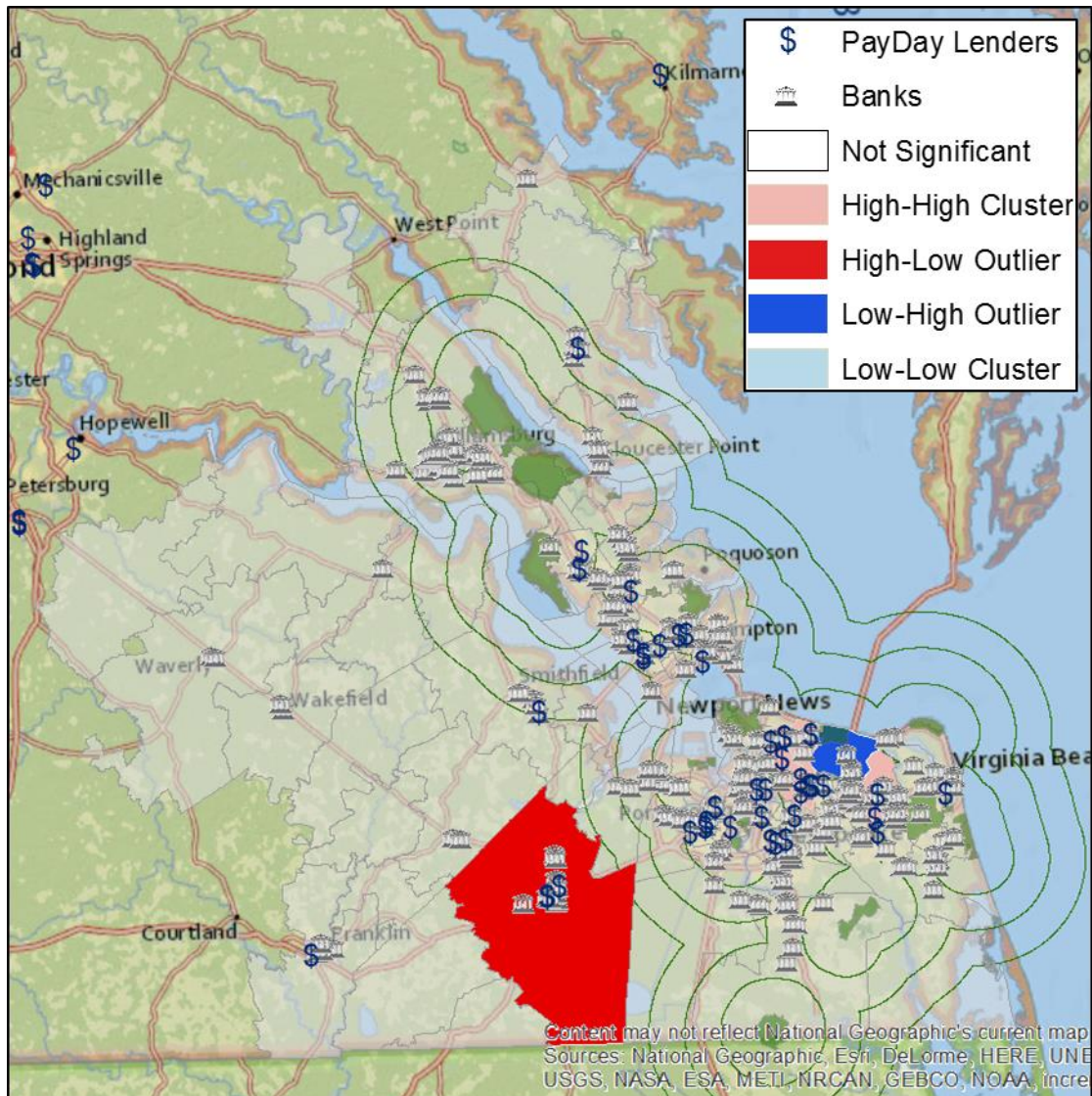


Figure 11: Anselin Local Moran's I ZIP Code Analysis of Payday Lenders. Prepared by the author using ArcMap 10.5 on April 16, 2017. Source data obtained from ArcGIS Online Natural Geographic World Map, U.S. Census Bureau Geography Division and American Factfinder, Federal Deposit Insurance Corporation, and the Commonwealth of Virginia State Corporation Commission.

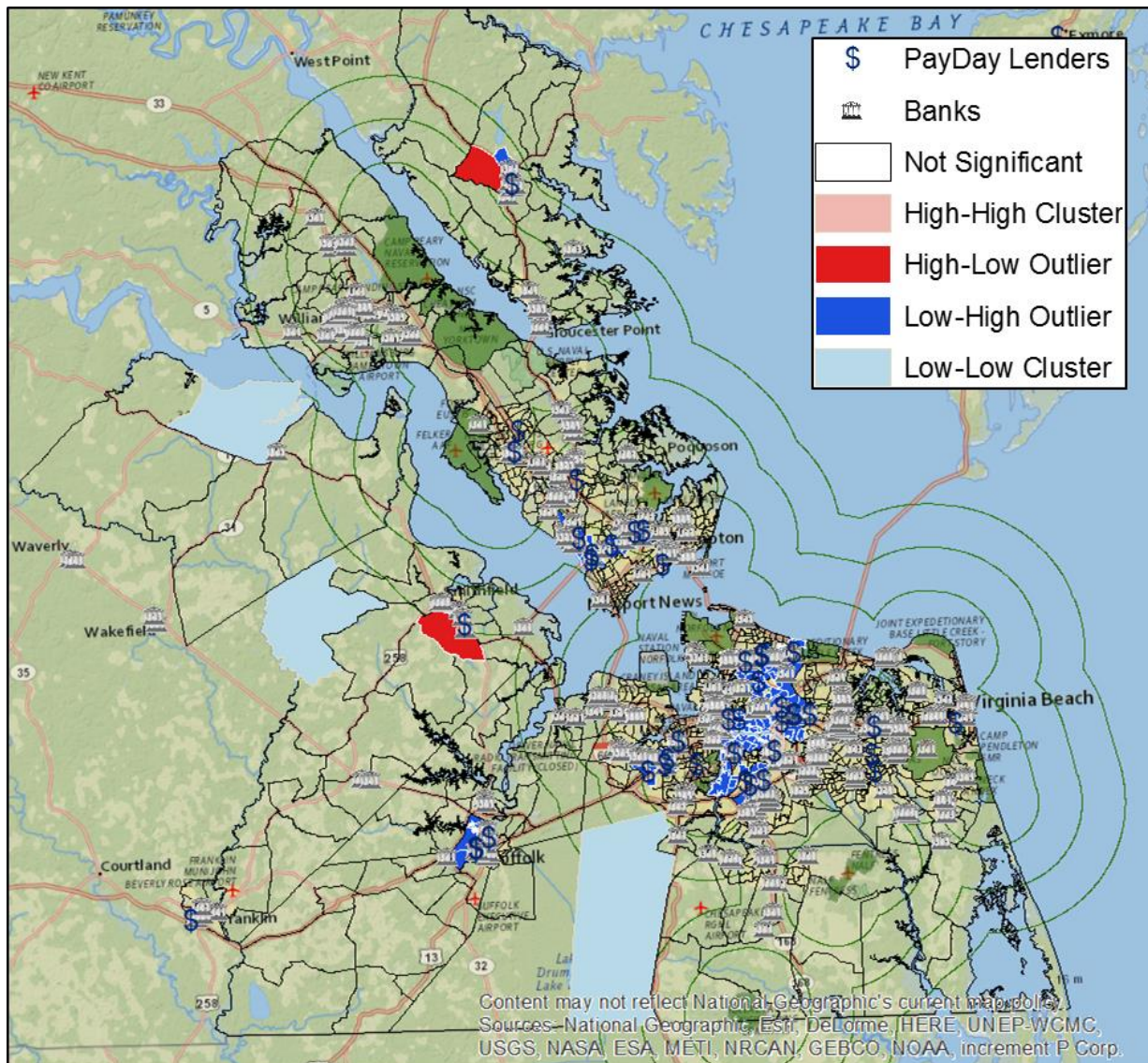


Figure 12: Anselin Local Moran's I by Census Block Group of Payday Lenders. Prepared by the author using ArcMap 10.5 on April 16, 2017. Source data obtained from ArcGIS Online Natural Geographic World Map, U.S. Census Bureau Geography Division and American Factfinder, Federal Deposit Insurance Corporation, and the Commonwealth of Virginia State Corporation Commission.

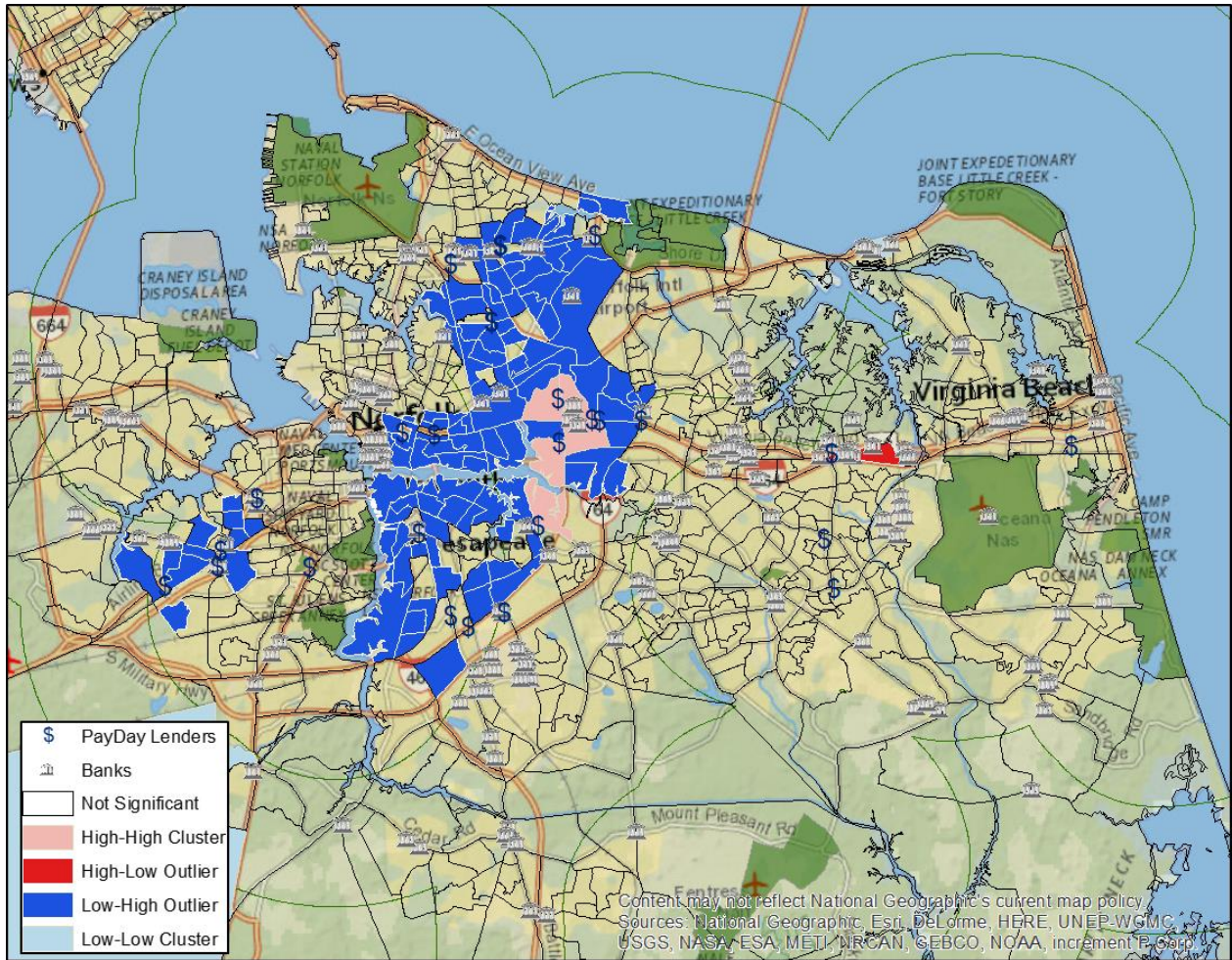


Figure 13: Norfolk, Portsmouth, Chesapeake, and Virginia Beach Area Anselin Local Moran's I by Census Block Group of Payday Lenders. Prepared by the author using ArcMap 10.5 on April 16, 2017. Source data obtained from ArcGIS Online Natural Geographic World Map, U.S. Census Bureau Geography Division and American Factfinder, Federal Deposit Insurance Corporation, and the Commonwealth of Virginia State Corporation Commission.

In all analyses, Norfolk, Portsmouth and the Virginia Beach area stands out as a high concentration of payday lenders, though the analyses show slightly different areas of concentration. This is perhaps not surprising considering their large populations. Due to the large number of military installations in the area, it is difficult not to be within 3 miles of one. However, with the exceptions of the Portsmouth Naval Shipyard and the Naval Amphibious Base Little Creek, there are no payday lenders in the immediate area outside the installation gates. Suffolk emerges as an area of interest in the census block group Hot Spot analysis and in the Anselin Local Moran's I analyses, showing higher than expected numbers of payday lenders. In the Anselin Local Moran's I census block group analysis, several census block groups in Gloucester county to the north also shows up as an area with a higher number of lenders than can be expected.

The results of the recreated Graves and Peterson study are shown in Figures 14 and 15 for county and the top ZIP results respectively. Appendix 2 shows complete ZIP code results for the region. While it is difficult to compare the two since Graves and Peterson studied the entire state and this project concentrated on one region, it is readily apparent that changes have occurred. For example, the location quotient for Portsmouth County, the highest ranked county in the original study area, dropped from 123.53 to 35.71. The highest ranked site, Norfolk, had a location quotient of 25.00 – well below the previous top ranked quotient at 280.00. The top 10 ZIP Codes are equally telling. 23324 in Chesapeake, surpassed other ZIP codes such as 23502 (Norfolk), 23702 (Portsmouth), and 23518 (Norfolk) to leap from being the 11 among area ZIP codes (and 21 in the state overall) to 1 in the local ranking. However, it is worth note that the previous statewide top ZIP code – 23605 (Newport News/Hampton) ranks 7 on the current composite rank list.

Additionally, the data shows the expected number of payday lenders in the area, based on the statewide average, would be 40. While this is less than the 43 actually present, this is significantly less than Graves and Peterson found in their study (“54 more payday lenders than statistically expected”) (813), the number of payday lenders dropped by 74%. In comparison, bank branches closed by 14% over the same time period. This indicates the policy changes were successful.

Nearest Base	County/City	Pop	Banks	PD Lenders	PD/100K Pop	Exp PD	LQ	Rank LQ	Rank PD	Rank PC	Sum of Ranks	Composite Rank	Previous Statewide Rank
Multiple Sites	Norfolk	242,803	48	12	4.94	6.31	25.00	2	1	2	5	1	7
Multiple Sites	Portsmouth	95,535	14	5	5.21	2.16	35.71	1	3	1	5	1	3
Ft. Eustis, Langley AFB	Newport News	180,719	31	6	3.31	4.08	19.35	3	2	4	9	3	5
	Suffolk	84,585	21	3	3.52	1.91	14.29	5	5	3	13	4	
Langley AFB	Hampton	167,463	23	4	2.4	3.78	17.39	4	4	7	15	5	7
	Franklin	56,159	4	1	1.78	1.27	25.00	2	6	9	17	6	
	Isle of Wight	35,270	8	1	2.86	0.80	12.50	6	6	5	17	6	
Multiple Sites	Chesapeake	222,209	47	4	1.8	5.02	8.51	7	4	8	19	8	19
	Gloucester	36,858	12	1	2.7	0.83	8.33	8	6	6	20	9	
NAS Oceania, Ft Story, Others	Virginia Beach	437,994	91	6	1.37	9.90	6.59	9	2	10	21	10	14
Cp Peary	James City	67,009	21	0	0	1.51	0.00	10	7	11	28	11	
Langley AFB	Poquoson	12,150	2	0	0	0.27	0.00	10	7	11	28	11	
	Surry	7,058	1	0	0	0.16	0.00	10	7	11	28	11	
Cp Peary	Williamsburg	14,068	10	0	0	0.32	0.00	10	7	11	28	11	
Multiple Sites	York	64,464	15	0	0	1.46	0.00	10	7	11	28	11	

Figure 14: Recreated Graves and Peterson Study Using 2016 Data by County/City. Prepared by the author using Microsoft Excel on March 19, 2016. Source data obtained from the Federal Insurance Deposit Commission, Virginia's Bureau of Financial Institutions State Corporation Commission, and the U.S. Census Bureau

<u>Nearby Base</u>	<u>ZIP</u>	<u>Town or City</u>	<u>Payday Lenders</u>	<u>Pop</u>	<u>Exp PD</u>	<u>Banks</u>	<u>PD/100K</u>	<u>LQ</u>	<u>Rank PD</u>	<u>Rank PC</u>	<u>Rank LQ</u>	<u>Sum of Ranks</u>	<u>Composite Rank</u>	<u>Previous Statewide Rank</u>
NSY Norfolk	23324	Chesapeake	3	22,851	0.52	1	13.13	2.01	2	2	1	5	1	21
Naval Base Amphibious Base Little Creek	23502	Norfolk	4	20,678	0.47	9	19.35	-5.00	1	1	8	10	2	6
	23701	Portsmouth	3	25,161	0.57	6	11.92	-3.00	2	3	6	11	3	9
Multiple	23702	Portsmouth	1	11,424	0.26	0	8.75	1.01	4	5	2	11	3	4
	23504	Norfolk	2	23,483	0.53	1	8.52	1.01	3	6	2	11	3	
Naval Base Amphibious Base Little Creek	23518	Norfolk	3	28,095	0.63	6	10.68	-3.00	2	4	6	12	6	10
	23605	Newport News/Hampton	2	13,854	0.31	1	7.22	1.01	3	8	2	13	7	1
	23513	Norfolk	2	29,595	0.67	0	6.76	2.01	3	10	1	14	7	
	23851	Franklin City	1	13,715	0.31	4	7.29	-3.00	4	7	6	17	9	11
	23707	Portsmouth	1	14,236	0.32	3	7.02	-2.00	4	9	5	18	10	29
Langley AFB	23666	Hampton	3	49,825	1.13	10	6.02	-7.00	2	12	10	24	11	15
	23430	Isle of Wight	1	17,281	0.39	5	5.79	-4.00	4	13	7	24	11	
Ft Eustis	23602	Newport News	2	39,676	0.90	6	5.04	-4.00	3	14	7	24	11	
NAS Oceana	23453	Virginia Beach	1	35,960	0.81	0	2.78	1.01	4	18	2	24	11	
	23434	Suffolk	3	47,670	1.08	13	6.29	10.00	2	11	12	25	15	

Figure 15: Recreated Graves and Peterson Study Using 2016 Data by Top 16 ZIP Codes. Prepared by the author using Microsoft Excel on March 19, 2016. Source data obtained from the Federal Insurance Deposit Commission, Virginia’s Bureau of Financial Institutions State Corporation Commission, and the U.S. Census Bureau.

Conclusion

This project provided an analysis of what 10 years of an applied law accomplished in the Hampton Roads area. While it is difficult to compare a smaller study area to a larger one, payday lending has declined by 74% in the region, with only 3 more lenders present than statistically expected, a far cry from the previous number of 56 above what statistical averages would predict (Graves and Peterson 811). While several smaller installations have closed since the original study, this still remains “Perhaps the most militarized region in the United States” (Graves and Peterson 811). Given the drastic reduction in payday lenders vs banks in this area, the data shows a much healthier picture of payday lending in the region. In this case, due to the significant decline in payday lenders vs banks over the same time period, measures to combat payday lending in the area have been successful.

Appendix 1: Current Bank and Payday Lending Numbers by County Showing Change Since 2005.

ZIP Code	Number Banks	Change	Number PD	Change
23050	0	0	0	0
23061	7	-2	1	1
23062	2	1	0	0
23072	3	-2	0	-2
23089	0	0	0	0
23128	0	0	0	0
23149	2	-1	0	0
23168	0	0	0	0
23185	19	-3	0	-2
23187	0	0	0	0
23188	16	3	0	-1
23304	0	0	0	0
23314	1	1	0	0
23315	0	0	0	0
23320	20	-3	1	-8
23321	8	-3	0	-3
23322	13	6	0	-2
23323	4	-1	0	-1
23324	1	-2	3	2
23325	1	0	0	-2
23430	5	0	1	-2
23432	0	0	0	0
23433	0	0	0	0
23434	13	3	3	-1
23435	8	4	0	-1
23436	0	0	0	0
23437	0	-1	0	0
23438	0	0	0	0
23451	18	2	1	-1
23452	18	-1	2	-13
23453	0	0	1	1
23454	11	-2	0	-6
23455	7	1	0	-5
23456	10	6	0	-2
23457	0	0	0	0
23459	0	0	0	0
23460	0	-1	0	0
23461	0	0	0	0
23462	15	-4	1	-9
23464	12	0	1	-10

ZIP Code	Number Banks	Change	Number PD	Change
23487	2	1	0	-1
23502	9	-3	4	-7
23503	1	-3	0	-2
23504	1	0	2	1
23505	7	0	1	-6
23507	1	0	0	0
23508	1	-1	0	0
23509	1	-1	0	0
23510	13	-14	0	0
23511	1	1	0	0
23513	0	0	2	0
23517	7	1	0	-2
23518	6	-3	3	-1
23523	0	0	0	0
23551	0	0	0	0
23601	7	-4	1	-1
23602	6	-1	2	-2
23603	0	0	0	0
23604	1	0	0	0
23605	1	0	2	-4
23606	12	-1	0	-2
23607	1	-2	0	-1
23608	2	0	1	-5
23651	1	0	0	0
23661	1	0	0	-2
23662	2	1	0	-1
23663	2	-2	0	-2
23664	0	0	0	-1
23665	0	-1	0	0
23666	10	-3	3	-3
23669	9	0	1	-4
23690	0	0	0	0
23691	0	0	0	0
23692	6	1	0	-1
23693	4	-1	0	0
23696	0	0	0	0
23701	6	-1	3	0
23702	0	0	1	-3
23703	2	-2	0	-5
23704	3	-2	0	0
23707	3	0	1	-2
23708	0	0	0	0

ZIP Code	Number Banks	Change	Number PD	Change
23709	0	0	0	0
23839	0	0	0	0
23842	0	0	0	0
23846	0	0	0	0
23851	4	-1	1	-3
23866	0	-1	0	0
23881	0	0	0	0
23883	1	1	0	0
23888	2	0	0	0
23890	2	1	0	0
23898	0	0	0	0
23899	0	0	0	0
Total	352	-39	43	-127

Prepared by the author using Excel 2013 on March 19, 2017. Source data obtained from the Federal Insurance Deposit Commission, Virginia's Bureau of Financial Institutions State Corporation Commission, and the U.S. Census Bureau.

Appendix 2: Complete Recreated Graves and Peterson Study Using 2016 Data by ZIP Code

Nearby Base	ZIP	Town or City	Payday Lenders	Pop	Exp PD	Banks	PD/100K	LQ	Rank PD	Rank PC	Rank LQ	Sum of Ranks	Composite Rank	Previous Statewide Rank
NSY Norfolk	23324	Chesapeake	3	22,851	0.52	1	13.13	2.01	2	2	1	5	1	21
Naval Base Amphibious Base Little Creek	23502	Norfolk	4	20,678	0.47	9	19.35	-5.00	1	1	8	10	2	6
	23701	Portsmouth	3	25,161	0.57	6	11.92	-3.00	2	3	6	11	3	9
Multiple	23702	Portsmouth	1	11,424	0.26	0	8.75	1.01	4	5	2	11	3	4
	23504	Norfolk	2	23,483	0.53	1	8.52	1.01	3	6	2	11	3	
Naval Base Amphibious Base Little Creek	23518	Norfolk	3	28,095	0.63	6	10.68	-3.00	2	4	6	12	6	10
	23605	Newport News/Hampton	2	13,854	0.31	1	7.22	1.01	3	8	2	13	7	1
	23513	Norfolk	2	29,595	0.67	0	6.76	2.01	3	10	1	14	7	
	23851	Franklin City	1	13,715	0.31	4	7.29	-3.00	4	7	6	17	9	11
Norfolk Portsmouth	23707	Portsmouth	1	14,236	0.32	3	7.02	-2.00	4	9	5	18	10	29
Langley AFB	23666	Hampton	3	49,825	1.13	10	6.02	-7.00	2	12	10	24	11	15
	23430	Isle of Wight	1	17,281	0.39	5	5.79	-4.00	4	13	7	24	11	
Ft Eustis	23602	Newport News	2	39,676	0.90	6	5.04	-4.00	3	14	7	24	11	
NAS Oceana	23453	Virginia Beach	1	35,960	0.81	0	2.78	1.01	4	18	2	24	11	
	23434	Suffolk	3	47,670	1.08	13	6.29	-10.00	2	11	12	25	15	
	23601	Newport News	1	25,127	0.57	7	3.98	-6.00	4	15	9	28	16	
Ft Eustis	23608	Newport News	1	42,917	0.97	2	2.33	-1.00	4	20	4	28	16	13
Naval Station Norfolk, Naval	23505	Norfolk	1	28,503	0.64	7	3.51	-6.00	4	16	9	29	18	8

Support Activity Norfolk														
	23464	Virginia Beach	1	72,359	1.64	12	1.38	-11.00	4	24	3	31	19	18
	23050	Gloucester	0	598	0.01	0	0	0	5	26	3	34	20	
	23062	Gloucester	0	2,340	0.05	2	0	0	5	26	3	34	20	
	23072	Gloucester	0	11,541	0.26	3	0	0	5	26	3	34	20	
	23089	James City	0	4,914	0.11	0	0	0	5	26	3	34	20	
	23128	Gloucester	0	1,045	0.02	0	0	0	5	26	3	34	20	
	23149	Gloucester	0	3,190	0.07	2	0	0	5	26	3	34	20	
	23168	James City	0	6,115	0.14	0	0	0	5	26	3	34	20	
	23185	Williamsburg/York/James City	0	46,370	1.05	19	0	0	5	26	3	34	20	
	23187	Williamsburg	0	267	0.01	0	0	0	5	26	3	34	20	
Cp Peary	23188	James City/York	0	38,733	0.88	16	0	0	5	26	3	34	20	
	23304	Isle of Wight	0	71	0.00	0	0	0	5	26	3	34	20	
	23314	Isle of Wight	0	6,991	0.16	1	0	0	5	26	3	34	20	
	23315	Isle of Wight	0	1,525	0.03	0	0	0	5	26	3	34	20	
	23321	Chesapeake	0	33,653	0.76	8	0	0	5	26	3	34	20	
Alf Fentress Chesapeake, NW Chesapeake NIO Command	23322	Chesapeake	0	60,473	1.37	13	0	0	5	26	3	34	20	
Saint Julien's Creek Annex	23323	Chesapeake	0	35,906	0.81	4	0	0	5	26	3	34	20	
	23325	Chesapeake	0	17,592	0.40	1	0	0	5	26	3	34	20	
	23432	Suffolk	0	1,538	0.03	0	0	0	5	26	3	34	20	
	23433	Suffolk	0	1,218	0.03	0	0	0	5	26	3	34	20	
	23435	Suffolk	0	27,053	0.61	8	0	0	5	26	3	34	20	
	23436	Suffolk	0	942	0.02	0	0	0	5	26	3	34	20	

	23437	Suffolk	0	4,283	0.10	0	0	0	5	26	3	34	20	
	23438	Suffolk	0	1,818	0.04	0	0	0	5	26	3	34	20	
Ft Story, NAS Oceana	23454	Virginia Beach	0	60,283	1.36	11	0	0	5	26	3	34	20	
Naval Base Amphibious Base Little Creek	23455	Virginia Beach	0	47,938	1.08	7	0	0	5	26	3	34	20	
	23456	Virginia Beach	0	51,748	1.17	10	0	0	5	26	3	34	20	
	23457	Virginia Beach	0	4,289	0.10	0	0	0	5	26	3	34	20	
Ft Story	23459	Fort Story	0	1,091	0.02	0	0	0	5	26	3	34	20	
Ft Story, NAS Oceana	23460	Virginia Beach	0	1,201	0.03	0	0	0	5	26	3	34	20	
Ft Story, NAS Oceana	23461	Virginia Beach	0	287	0.01	0	0	0	5	26	3	34	20	
	23487	Isle of Wight	0	6,238	0.14	2	0	0	5	26	3	34	20	
Naval Station Norfolk, Naval Support Activity Norfolk	23503	Norfolk	0	30,856	0.70	1	0	0	5	26	3	34	20	
	23507	Norfolk	0	25,818	0.58	1	0	0	5	26	3	34	20	
Lafayette River Complex	23508	Norfolk	0	20,263	0.46	1	0	0	5	26	3	34	20	
	23509	Norfolk	0	12,817	0.29	1	0	0	5	26	3	34	20	
Naval Medical Center Portsmouth	23510	Norfolk	0	7,031	0.16	13	0	0	5	26	3	34	20	
Naval Station Norfolk, Naval Support Activity Norfolk	23511	Norfolk	0	2,457	0.06	1	0	0	5	26	3	34	20	
	23517	Norfolk	0	4,484	0.10	7	0	0	5	26	3	34	20	
	23523	Norfolk	0	7,793	0.18	0	0	0	5	26	3	34	20	
Naval Station Norfolk, Naval Support Activity	23551	Norfolk	0	930	0.02	0	0	0	5	26	3	34	20	

Norfolk														
Ft Eustis, NWS Yorktown	23603	Newport News/York	0	38,899	0.88	0	0	0	5	26	3	34	20	
Ft Eustis	23604	Fort Eustis	0	5,720	0.13	1	0	0	5	26	3	34	20	
Ft Eustis	23606	Newport News	0	29,283	0.66	12	0	0	5	26	3	34	20	
	23607	Newport News	0	24,519	0.55	1	0	0	5	26	3	34	20	
	23651	Hampton	0	696	0.02	1	0	0	5	26	3	34	20	
Langley AFB	23661	Hampton	0	14,113	0.32	1	0	0	5	26	3	34	20	23
Langley AFB	23662	Poquoson	0	12,150	0.27	2	0	0	5	26	3	34	20	
Langley AFB	23663	Hampton	0	14,495	0.33	2	0	0	5	26	3	34	20	25
	23664	Hampton	0	10,194	0.23	0	0	0	5	26	3	34	20	
Langley AFB	23665	Langley AFB	0	5,120	0.12	0	0	0	5	26	3	34	20	
	23690	York	0	3,032	0.07	0	0	0	5	26	3	34	20	
NWS Yorktown, Cheatham Annex, Cp Peary	23691	Naval Weapons Station Yorktown	0	127	0.00	0	0	0	5	26	3	34	20	
Yorktown Fuel Depot, NWS Yorktown, Ft Eustis	23692	York	0	18,846	0.43	6	0	0	5	26	3	34	20	
Langley AFB	23693	York	0	23,292	0.53	4	0	0	5	26	3	34	20	
	23696	York	0	3,669	0.08	0	0	0	5	26	3	34	20	
Craney Island Fuel Depot, CG Station Norfolk	23703	Portsmouth	0	25,739	0.58	2	0	0	5	26	3	34	20	12
Norfolk Naval Shipyard	23704	Portsmouth	0	18,716	0.42	3	0	0	5	26	3	34	20	
Naval Medical Center Portsmouth	23708	Naval Medical Center Portsmouth	0	181	0.00	0	0	0	5	26	3	34	20	
	23709	Norfolk Naval Shipyard	0	78	0.00	0	0	0	5	26	3	34	20	

	23839	Surrey	0	741	0.02	0	0	0	5	26	3	34	20	
	23842	Surrey	0	6,906	0.16	0	0	0	5	26	3	34	20	
	23846	Surrey	0	933	0.02	0	0	0	5	26	3	34	20	
	23866	Isle of Wight	0	2,237	0.05	0	0	0	5	26	3	34	20	
	23881	Surrey	0	2,176	0.05	0	0	0	5	26	3	34	20	
	23883	Surrey	0	2,551	0.06	1	0	0	5	26	3	34	20	
	23888	Surrey	0	2,275	0.05	2	0	0	5	26	3	34	20	
	23890	Surrey	0	4,249	0.10	2	0	0	5	26	3	34	20	
	23898	Isle of Wight	0	2,223	0.05	0	0	0	5	26	3	34	20	
	23899	Surrey	0	351	0.01	0	0	0	5	26	3	34	20	
Ft Story	23452	Virginia Beach	2	59,321	1.34	18	3.37	-16.00	3	17	15	35	20	34
Langley AFB	23669	Hampton	1	43,148	0.98	9	2.32	-8.00	4	21	11Ft	36	20	
	23061	Gloucester	1	21,208	0.48	7	0.21	-6.00	4	25	9	38	20	
Ft Story, NAS Oceana	23451	Virginia Beach	1	41,544	0.94	18	2.41	-17.00	4	19	16	39	20	
	23462	Virginia Beach	1	61,973	1.40	15	1.61	-14.00	4	23	14	41	20	
	23320	Chesapeake	1	51,797	1.17	20	1.93	-19.00	4	22	17	43	20	

Prepared by the author using Microsoft Excel on March 19, 2016. Source data obtained from the Federal Insurance Deposit Commission, Virginia's Bureau of Financial Institutions State Corporation Commission, and the U.S. Census Bureau.

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