

Data Mining on the West Point Cemetery Database

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The object of this report is to describe in detail the observations that were discovered within the West Point Cemetery database using a technique referred to as data mining. Data Mining is a technique that is used to take data within large pre-existing databases and find new correlations and patterns with this specific data. The applications used to compute the findings in this project were SPSS, Microsoft Access and Excel. The following information will describe how the technique Data Mining was used to determine if there were any similarities among the deaths within close vicinities as well as within specific years and the cause category.

The West Point Cemetery database is a large database that consists of information on African Americans in the vicinity of Norfolk buried there from the dates of 1841 – 1944. There are a total of 3649 individuals listed in this database. The West Point Cemetery is located on East Princess Anne Road in Norfolk, Virginia.³ West Point is a section of the Elmwood Cemetery where African American civilians and soldiers were buried. Each individual record consists of the following fields: Identification number, transcriber, city, cemetery, last name, first name, age at death, gender, race, house number, street, month & year of death, cause of death, cause category. The causes of death varied from Aataxia to Whooping Cough and were categorized under generalized headings called Cause Categories. The database was created by the Norfolk State University African American History Department.

During the course of searching through this database, some inexplicable anomalies were found. In the year of 1894, 106 people were buried at this cemetery. In 1895, this number more than doubled (224 people were buried in the cemetery). However in 1896, the number decreased to roughly half the number of people that died in 1895 (98 people were buried in the cemetery). There were some similar anomalies with the year 1891 and 1886, but they were not as significant.

61	General Infection
26	Heart Disorder
19	Brain Disorder
11	Lung Disease
4	Diet Deficiency

Table 1: Summary of Ailment Categories for 1895

26	Tuberculosis
23	Pneumonia
3	Congestive Chill
2	Laryngitis
2	Congenital Syphilis
1	Remittent Fever
1	Tetanus
1	Tetanus Neorotation
1	Diarrhea
1	Erysipelas

Table 2: Summary of Deaths from an Ailment Labeled as a General Infection in 1895

During the year 1895, 61 people died out of 224 that were buried in the cemetery from some type of General Infection. This number does not seem significant until one looks at the number of people who died under the other disease categories. Compared to these numbers (shown in Table 1), the number of people dying from a disease under the General Infections Category is very high. Upon further investigation, it was found that about 43% of these individuals died from Tuberculosis and 38% died from Pneumonia. These numbers are extremely significant and there has to be a reason why the number of individuals who were buried in West Point cemetery doubled in 1895 in comparison to the previous year and the year that succeeded it.

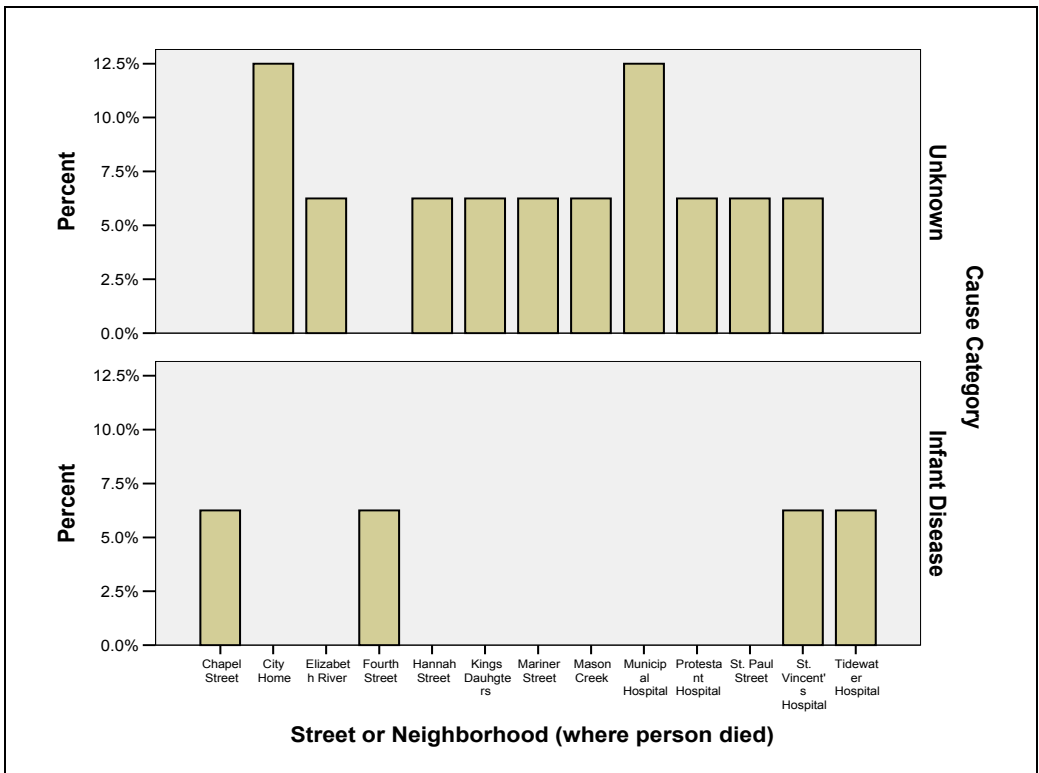
Graph one is an illustration of the data that was analyzed to check for any anomalies that may have occurred in specific years from certain illness. The x-axis represents the year of death and the y-axis represents the cause category. Notice in graph one that there is also a spike between the years of 1930 and 1931 in addition to 1894 to 1895. The large spike that is

Unknown cause of death category in Graph 1 also shows in the frequency table below that an abnormal number of deaths happened between the months of November 1930 and April 1931. We have not been able to link this increase in rise in deaths for 1930-1931 between the months of November and April to any historical events.

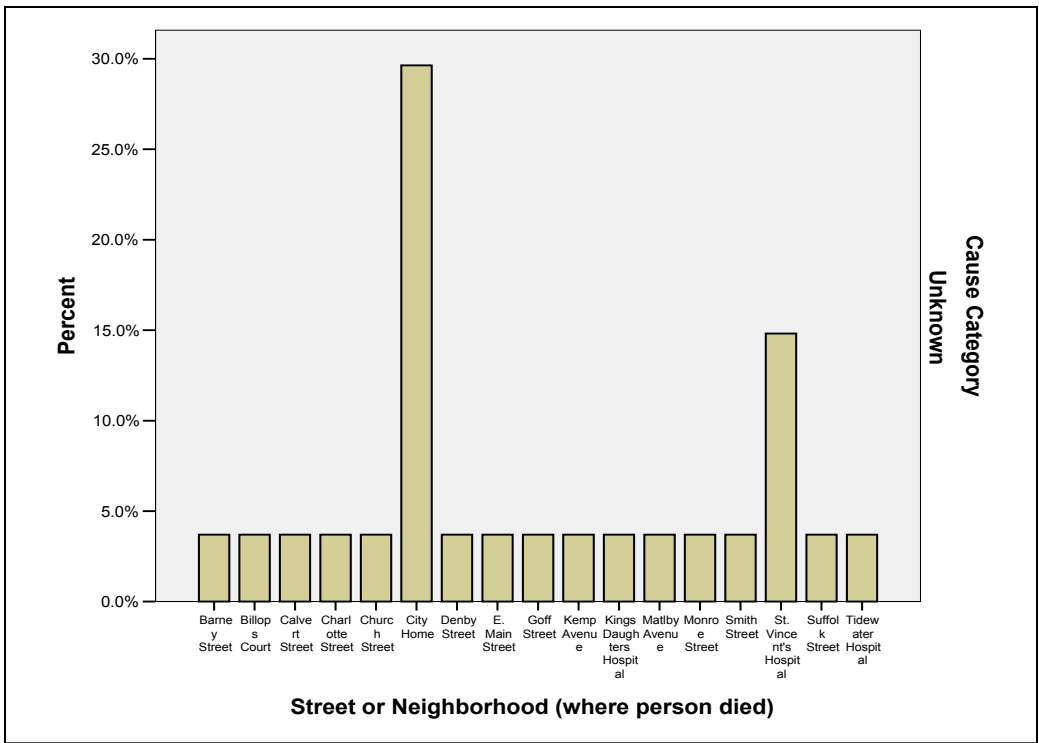
	Month of death												
	0	1	2	3	4	5	6	7	8	9	10	11	12
	Year of death	Year of death	Year of death	Year of death	Year of death	Year of death	Year of death	Year of death	Year of death	Year of death	Year of death	Year of death	Year of death
	Count	Count	Count	Count	Count	Count	Count	Count	Count	Count	Count	Count	Count
1864												1	
1877					1								
1878											1		
1879				1								1	
1881				1					1				
1882			1						1	1	2		2
1883				1	2	2			5	1		3	1
1884				4		1	1	1	5	4	6	11	
1885		3	10	18	8	7	5	8	6	6	4	2	6
1886		10	5	8	13	9	9	10	8	14	20	8	20
1887		10	12	20	13	9	16	19	17	16	11	12	13
1888		11	16	14	15	13	22	17	21	16	11	18	8
1889		9	19	11	14	9	21	19	12	15	16	11	7
1890		12	14	9	13	13	28	16	12	10	14	17	12
1891		12	12	14	28	19	16	17	16	17	11	16	27
1892		12	6	20	9	14	17	18	7	13	17	10	12
1893		12	9	19	21	16	23	18	12	18	13	12	12
1894		7	3	11	12	15	16	7	11		7	5	12
1895		17	17	13	20	23	20	21	24	17	17	18	17
1896		11	15	8	18	25	16	1		1			3
1897		9	8	8	6	8	10	15	6	12	9	5	6
1898		8	9	6	8	15	11	7	13	7	9	4	11
1899		9	11	3	14	4	7	10	6	5	4	6	6
1900		3	5	5	14	4	9	4	5	4	7	8	6
1901		9	4	2	4	7	2	8	4	7	4	4	7
1902		4	5	6	6	9	8	10	7	8	5	4	2
1903		3	3	6	7	5	8	3	2	3	3	6	2
1904		6	5	5	5	6	2	5	6	2	8	3	6
1905		3	5	8	6	4	6	12	4	7	2	5	3
1906		6	5	10	1	7	1	7	3	4	3	3	7
1907		7	5	9	3	8	5	9	5	6	6	4	6
1908		3	7	5	6	6	4	6	7	3	8	8	2
1909		4	3	3	5	6	2	1	2	6	4	4	1

1910			3	4	2	5	2	3	7	3	3	2	1
1911		2	1	2	7	5	3	2	5	6	6	6	5
1912		6	5	4	2	3	3	2	3	2	2	7	1
1913		1	1	3	3	4		1	1	2	1	3	1
1914		2	5	4	7	3		1	3	2	3	3	2
1915		2	7	3	6	1			2	1	1	1	1
1916		2		4	2	3	4	2	5	3	7	2	1
1917		2	1	1	2			5	1	1		3	3
1918		2	1	2	4	2	1	1	5	3	4	17	7
1919		2	5	2	1	1	4		3	1	1	1	5
1920		5	3	6		3		2	3			2	
1921		2	6	5	1	2	1	1	1	3	3	1	
1922		3	3	1		1	1	1	2	1		1	2
1923		1	3	2	3	1	2	1	1			2	2
1924		2	2	3	2	1	2	4	1	1	2	2	
1925		1	1	2	1	3	1	3		1	3		2
1926		1	1	5	3		3	2		3	1	2	2
1927			3	2	3		1	2	2	1			
1928		1	1	2			2	3	1	2	1	1	2
1929	1	1	2	4		2			1	1	1	3	2
1930	1	1	2	1	1	1	1	1		1	1	16	27
1931		37	27	32	24	1	2	1		1	1		3
1932			1		1	1	1		2	1	1		
1933		1		1	1	3					1		
1934		1	1		1	2	2	3	1				1
1935		2	3	1	2	3	1	1			1	2	
1936		1		3	2		1					1	2
1937		1	1	1					1		2		2
1938				2				1		1	3	2	1
1939		3	1	2									
1942		1											
1943													1
1944				1									

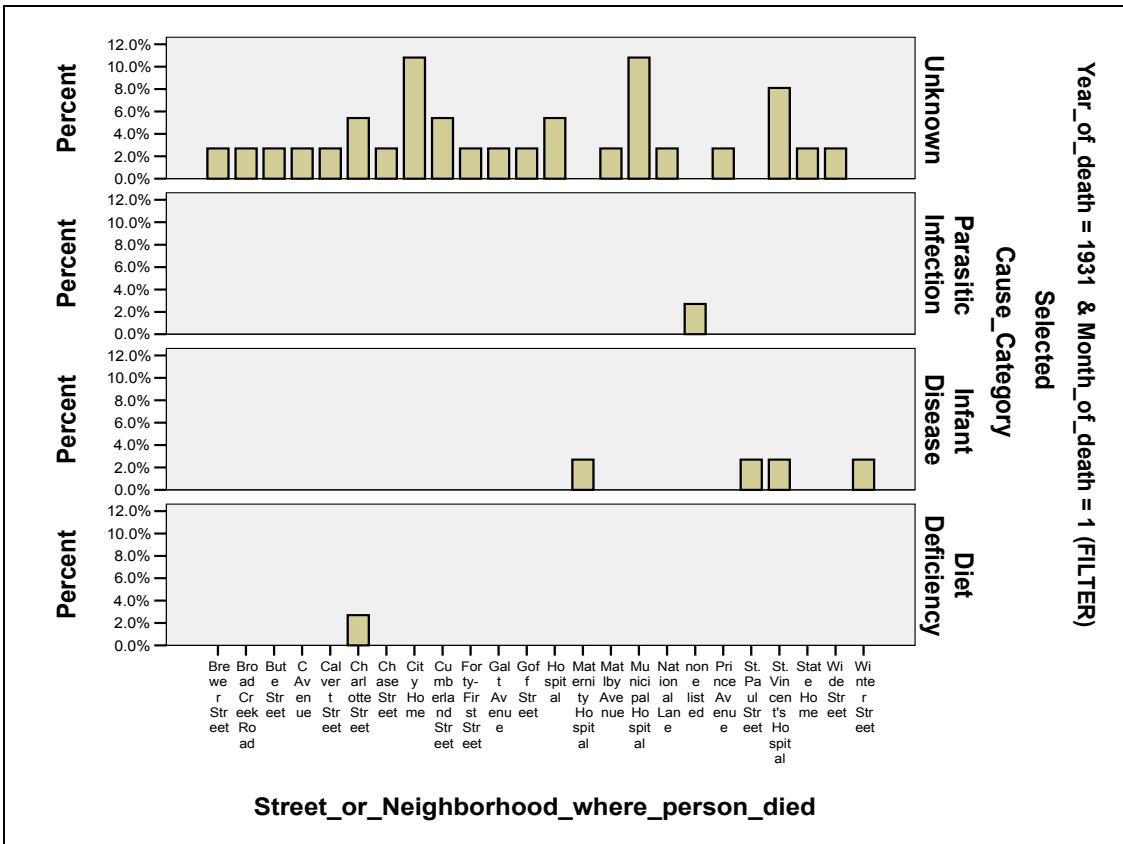
Table 3: Frequency Table



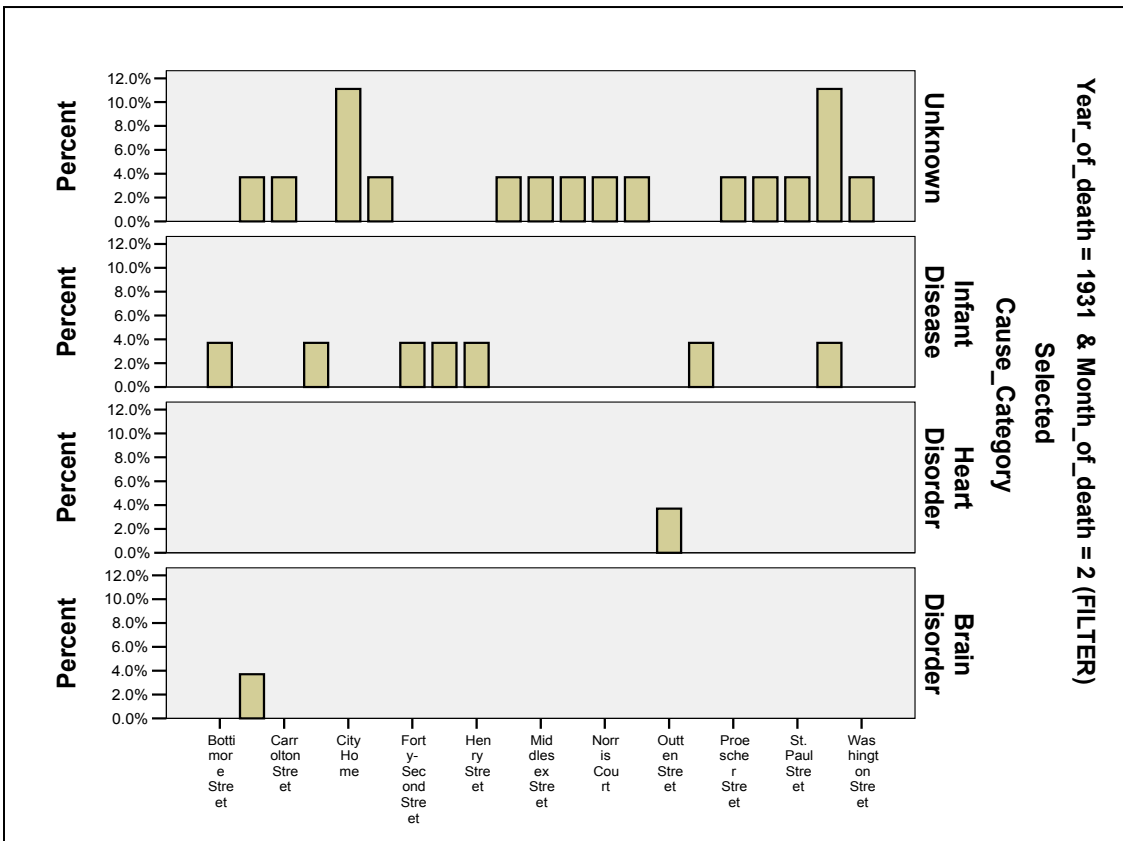
Graph 3: November 1930- Street/Neighborhood vs. Cause Category



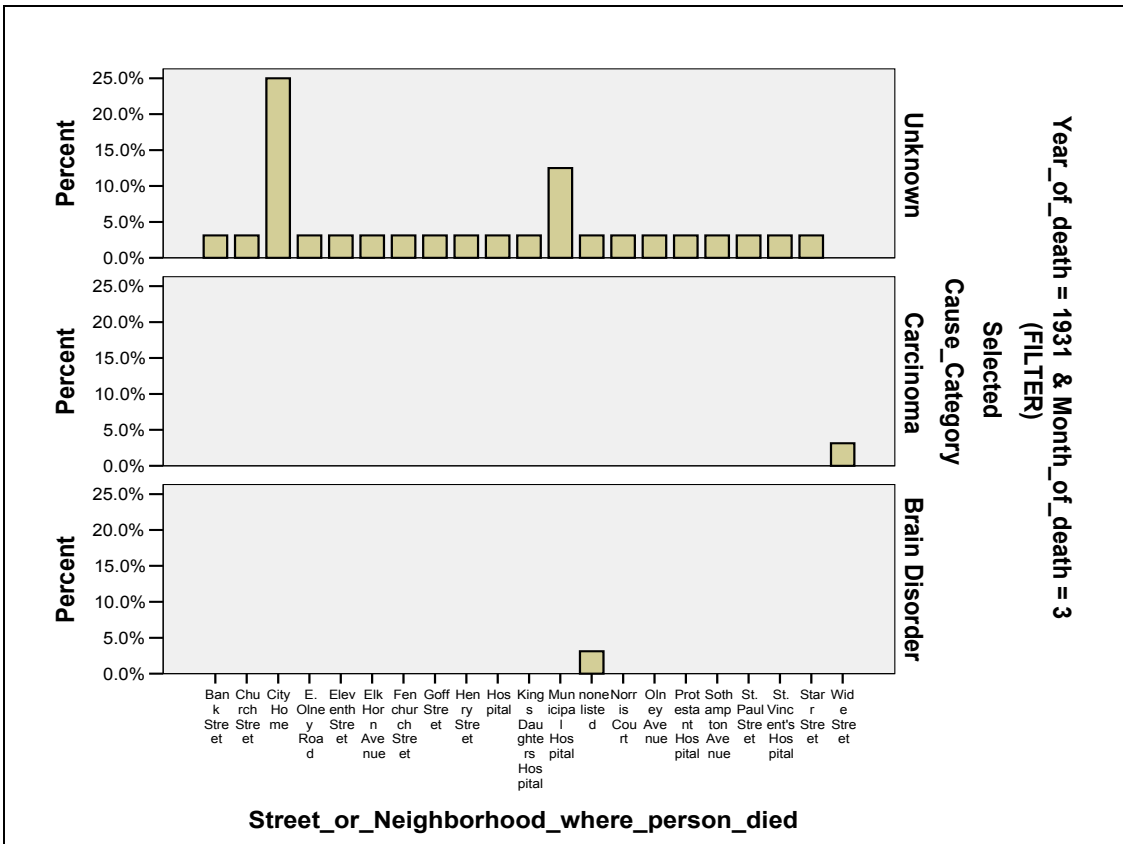
Graph 4: December 1930- Street/Neighborhood vs. Cause Category



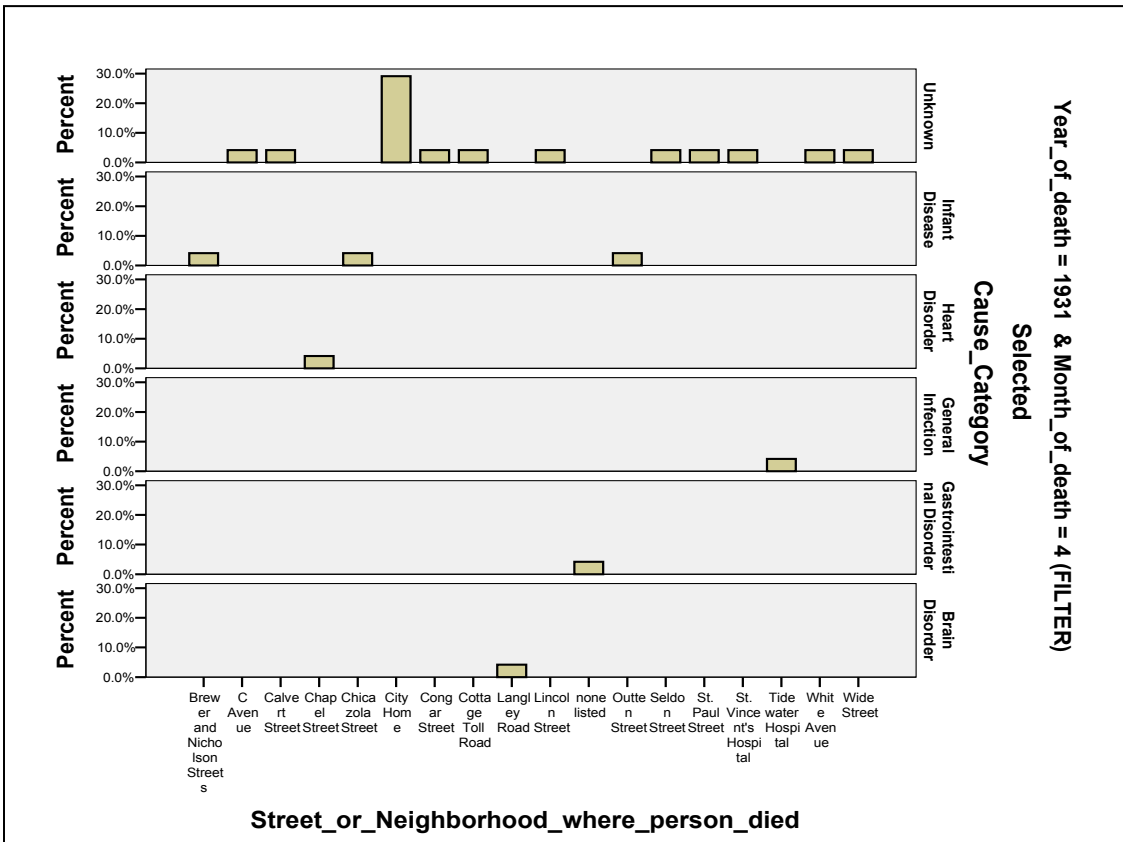
Graph 5: January 1931- Street / Neighborhood of death vs. Cause Category



Graph 6: February 1931- Street / Neighborhood of death vs. Cause Category



Graph 7: March 1931- Street / Neighborhood of death vs. Cause Category



Graph 8: April 1931- Street / Neighborhood of death vs. Cause Category

In conclusion, based on the data collected the largest anomalies present within this database are the rise in deaths in 1895 and 1930-1931. However, there are no known reasons for these anomalies. The Yellow Fever Epidemic did not seem to have an effect on the number of burials for West Point Cemetery, for if it had logically the number of burials would have been large throughout the database. This however was not the case. In 1895, burials occurred at a relatively steady rate and most died of some type of infection (usually Tuberculosis or Pneumonia), but in 1930-1931 most of the burials occurred between December of 1930 and April of 1931 and the causes of death for most of these people was listed as unknown. Many of these individuals died in a city home. The people of Norfolk knew about Yellow Fever and the horrors that it could devastate a population with, so it can be inferred that a death from Yellow Fever would not be listed as "Unknown." There was no historical data found that could explain so many unknown deaths in such a short period of time.

References

[1] Antiquus Morbus. <<http://www.antiquusmorbus.com/>>. 20 January 2005.

[2] Parramore, Thomas C., Peter C. Stewart and Tommy L. Bogger. "Norfolk: The First Four Centuries." University Press of Virginia. University of Virginia. 1994.

[3] West Point Cemetery. 2 February 2005. <<http://home.hamptonroads.com/>>.

[4] "The Norfolk Journal And Guide." Vol. 31 No.