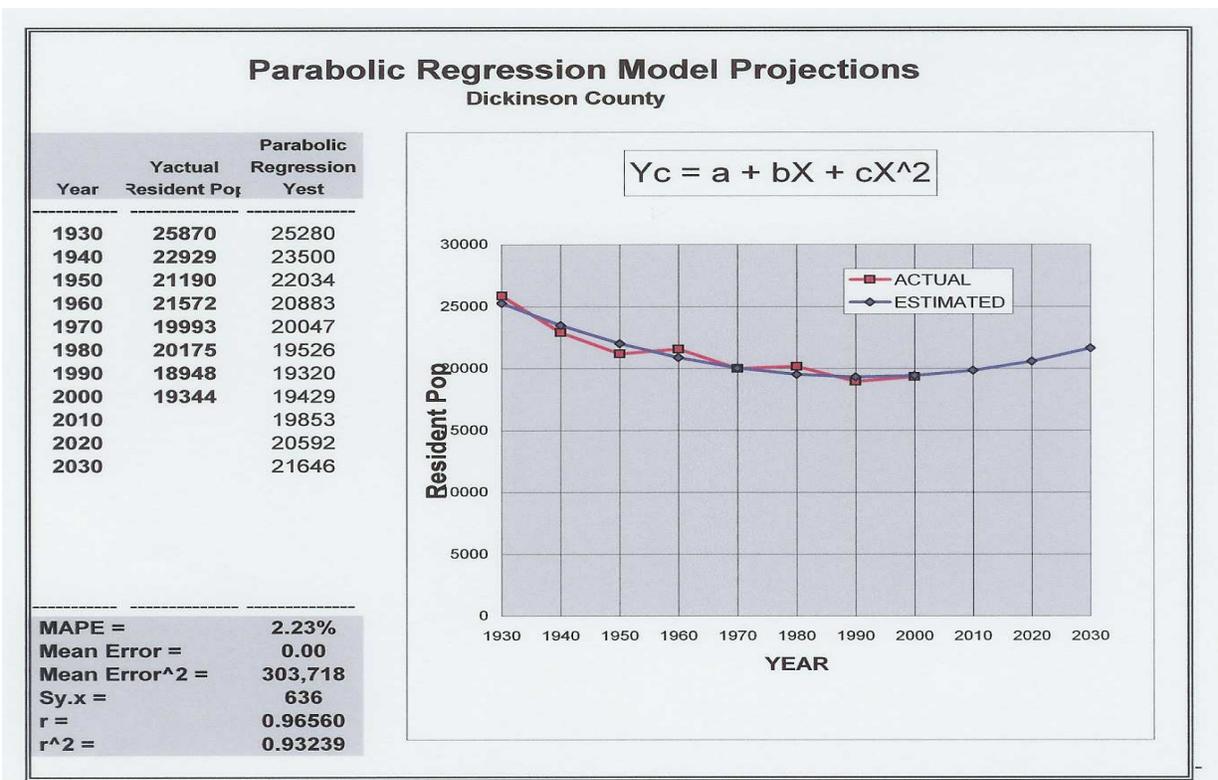


Population Projections with Trend Models

Kansas was organized as a territory on May 20, 1854, and was admitted as a state on January 29, 1861. Early growth in Dickinson County can be traced back to the 1860 Census of Population when Dickinson County contained 378 persons. Succeeding census reports for 1870 reported an increase in population during the preceding decade to 3,043, jumping to 15,251 persons in 1880, and to 22,273 in 1890. By 1930, Dickinson County reached its peak population of 25,870 persons. During these early years, various railroads crisscrossed the county, and the City of Abilene became a trail head for receipt of many cattle drives whereby the cattle could be shipped east on the railroad for processing. This was a period of growth in Dickinson County.

World War I in 1914, the Great Depression of the 1930s, World War II in the 1940s and the closing of several of the railroad lines signal a reversal of the growth trends to that of a gradual population decline in through 1990. This trend is depicted in **Graph 3.1**. The population declined from its 1930 high to 18,948 persons in 1990, or a loss of 6922 people over the 60 year period, approximately 1150 per decade.

Graph 3.1



During the last decade (1990-2000), Dickinson County again reversed its declining trend by witnessing a modest growth of just under 400 people. Assuming that this is a signal that communities located within Dickinson County, and in particular, the cities along the I-70 Corridor, have adopted pro-growth strategies, one might consider this to signal resurgence in the population of Dickinson County, and an opportunity to capitalize on the potentials within the I-70 Corridor.

In looking at the various trend analysis models, and graphic of the actual population depicting the current trend, it was determined that by using the parabolic regression trend model with the data from 1930 to 2000, an optimistic population projection for Dickinson County could be achieved. The population projected in this manner yielded a potential growth within the county of approximately 2300 persons by the target year of 2030, to a total of 21,646 persons plus or minus 1272 persons at a 95% Confidence Interval (see graph below). The “high end” or optimistic projection for land use determinations would be 22,918 persons, or approximately 23,000 persons; and the low end projection would be 20,374 or approximately 20,000 for revenue projections.

The bottom line for growth in Dickinson County will be the ability to capitalize on the market potential in the communities of Abilene, Solomon, Enterprise and Chapman along the Interstate 70 corridor through Dickinson County. As jobs become available to support the tourism industry, new families will form and provide the base in support of population growth. The expansion of Fort Riley will provide a small measure of growth on the western edge of the county, as affordable housing becomes available within a reasonable commuting distance to meet the needs of the soldiers stationed at the fort.

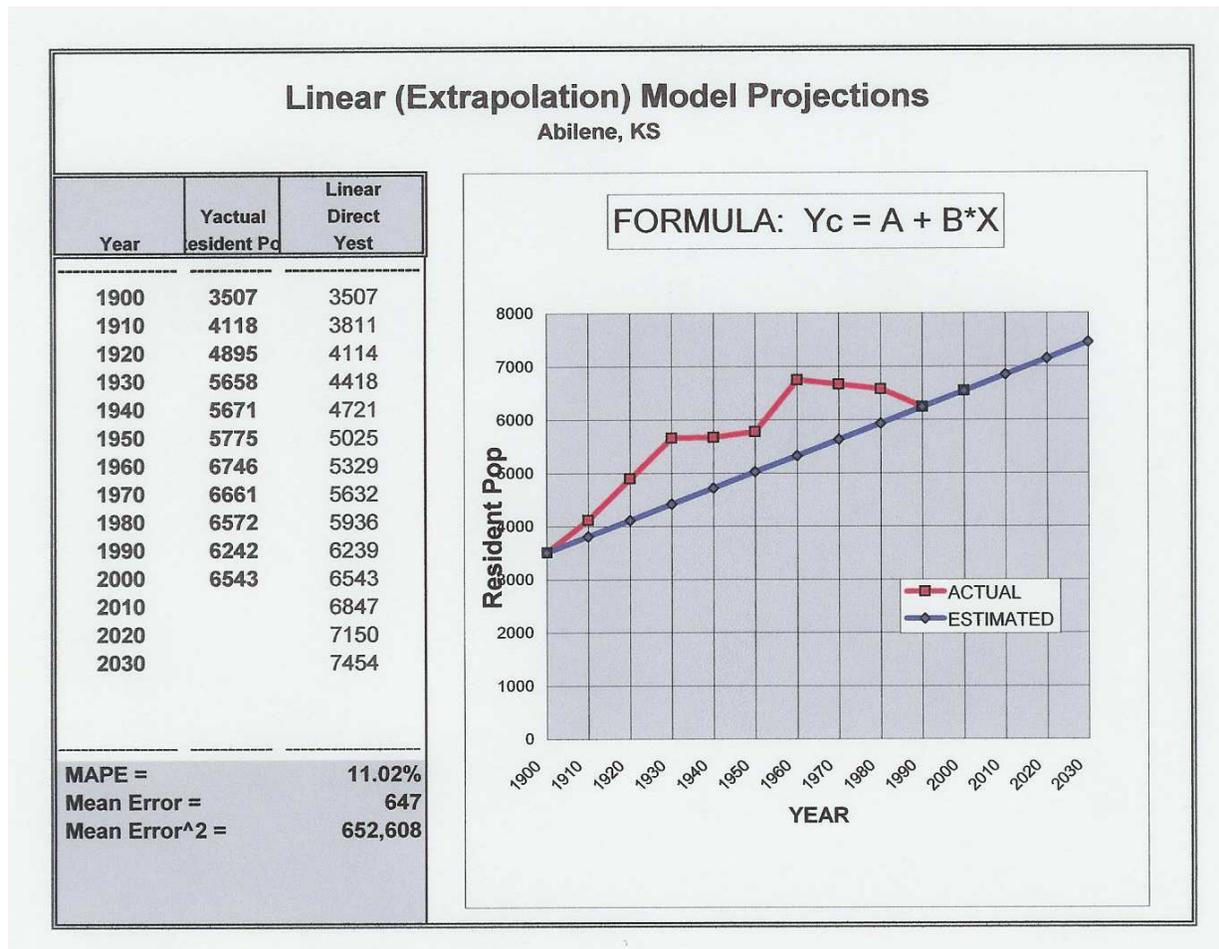
The following sections in this chapter will evaluate the population growth potential in for the nine incorporated cities within Dickinson County, using the trend analysis models and the historical growth patterns shown in **Table 1.4** in Chapter 1. Those cities include Abilene, Chapman, Enterprise and Solomon, along with Hope, Herington, Woodbine, Manchester and Carlton. An analysis of the population growth in the twenty-four townships will not be made. As noted before, half of the population of Dickinson County resides within five miles of Interstate 70, leaving the majority of land in the county in agricultural production. The only exception to this, and town of any size, would be Herington located in the south east corner of the county.

Abilene

Abilene was organized as one of nine incorporated cities in Dickinson County in 1860. Early growth in Abilene can be traced back to the 1900 Census of Population when Abilene contained 3,507 persons. Succeeding census reports for 1910 reported an increase in population during the preceding decade to 4,118, with a steady increase to 4,895 in 1920, 5,658 in 1930, 5671 in 1940, and 5,775 in 1950. Abilene reached its peak in 1960 with a population of 6,746. During these early years, various railroads crisscrossed the county, and the City of Abilene became a trail head for receipt of many cattle drives whereby the cattle could be shipped east on the railroad for processing. This was the primary reason for growth in Abilene during this period of time.

Abilene’s current trend is visible by looking at the population decline from 1960 to 1990. However, there has been a slight resurgence between 1990 and 2000. If this signals a renewed interest in growth, the population could be expected to increase by approximately 300 residents per decade through 2030 to a total population of around 7,500 residents.

Graph 3.2



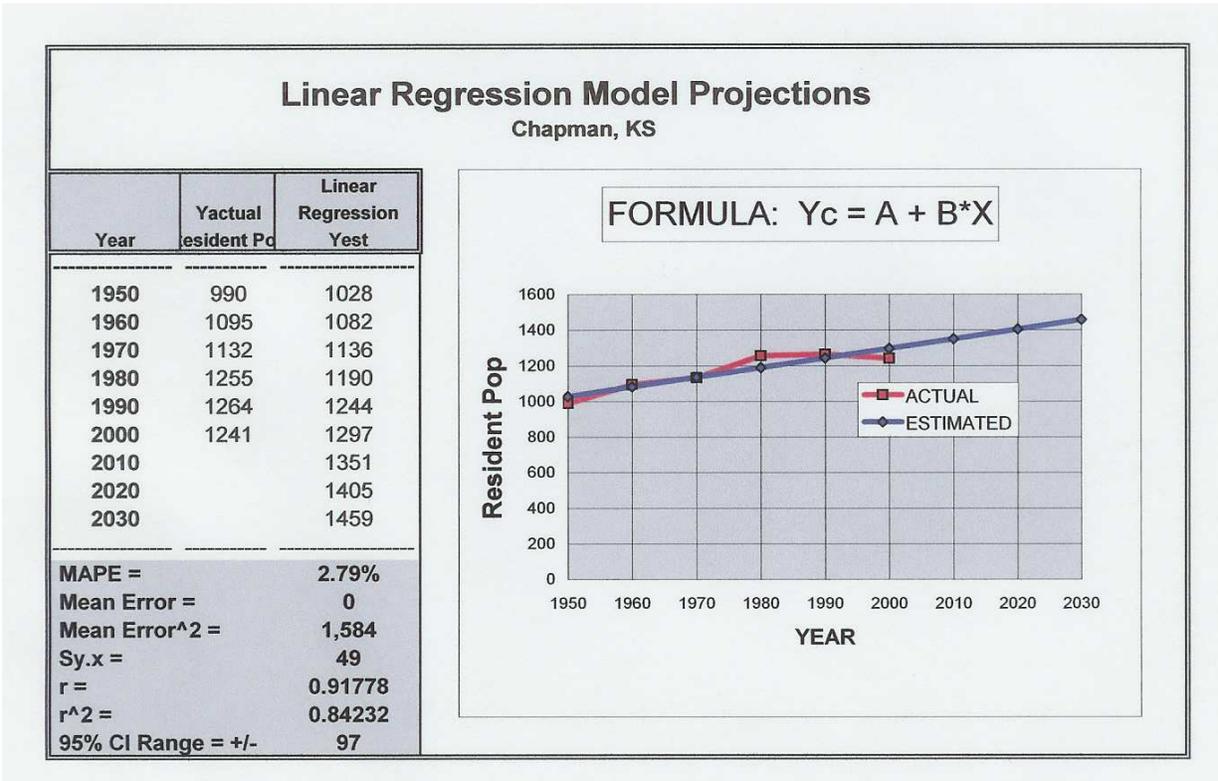
In looking at the various trend analysis models, and graphic of the actual population depicting the historical trend in population growth, none of the trend series models would represent an appropriate population projection for Abilene. Given the fact that Abilene is the county seat, its location abuts I-70, the interest of the community in expanding it's tourism industry, and the growth experienced between 1990 and 2000 of approximately 300 residents, it appears reasonable to extrapolate that growth pattern of the recent decade, holding this growth increment of 300 persons constant through the projection period to 2030, which adds an additional 900 residents to the City of Abilene. Looking at the average growth experienced in Abilene between 1900 and 2000 per decade, disregarding the surge between 1900 and 1960 and the decline between 1960 and 1990, Abilene experienced an average growth of 303 persons per decade, which is identical to the growth experienced between 1990 and 2000. For planning purposes, the population projected in this manner yields a potential population of approximately 7,500 persons by the target year of 2030. Whether or not this growth is reached, or exceeded will be a result of the proactive development posture of the Chamber of Commerce and city fathers as they court the tourism industry in Abilene. Tourism not only brings visitors, it brings jobs to Abilene, and jobs bring residential growth as well as economic growth.

Chapman

Chapman, Kansas was officially incorporated in 1872, and has since seen a steady growth in population. Early growth in Chapman was a result of the westward migration taking place in our nation during the late 1800's. The most reliable data on the early years of Chapman can be found beginning with the Census of 1900. In 1900 the population was 627 persons; for the next two decades the population grew at the rate of approximately 110 persons per decade. During this same time period no other city in Dickinson County besides Abilene saw this same rate of growth.

Beginning in 1920 and lasting until 1950 Chapman experience a period of slight population decrease, a decrease that could mostly be attributed to the "Great Depression" as well as WWII. During the period of population decrease Chapman went from 853 persons in 1920 to 782 persons in 1940. This decrease was easily overcome when the 1950 census reported 990 persons residing in Chapman. These figures are seen below.

Graph 3.3



In order to project the future populations of Chapman, Kansas the years prior to 1950 were omitted since this was a period of rapid growth, which is not consistent with the growth pattern exhibited between 1950 and 1980. The current trend between 1980 and 2000 shows a steady, but slow decline in the population of Chapman, and using trend models for this period of time would indicate an extension of that trend with Chapman losing approximately 15 persons per decade. It is the belief of this author that the City of Chapman will reverse this trend during the years 2000 to the target year of 2030, as a result of its location along I-70 and close proximity to Fort Riley, which as a result of recent decisions to return the Brigade Headquarters of Big Red One (1st Infantry Division U.S. Army) to Fort Riley, desperately needs affordable troop housing. By using the linear regression model and data from 1950 to 2000 the future population of Chapman, Kansas, can be projected to the target year of 2030 (**Graph 3.3** above). Using this logic, it can be anticipated that the population of Chapman could reach approximately 1,450 persons, which represents an increase of approximately 70 persons per decade. While these figures would seem modest they are subject to error and speculation concerning the reversal of trends. The calculated 95% confidence interval of plus or minus 100 persons would suggest that the range of population growth in Chapman could be between 1,350 and 1,550 persons by the target year of 2030.

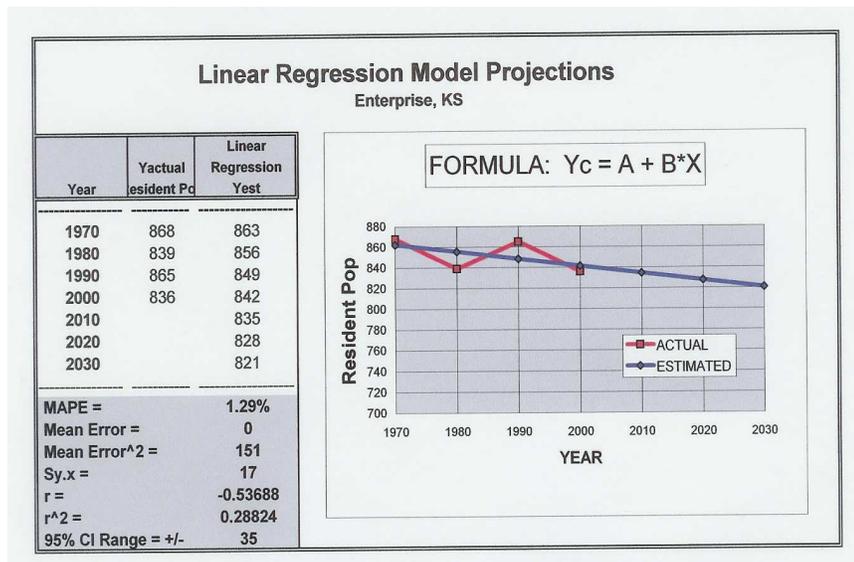
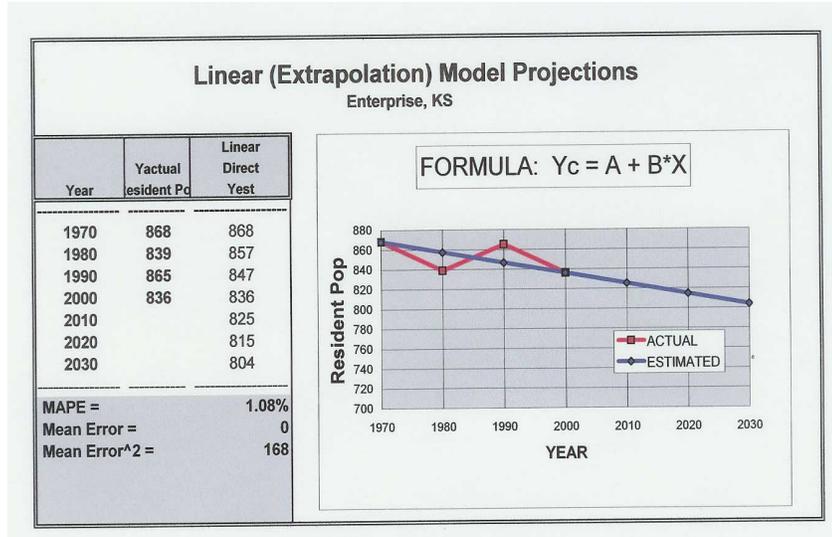
Enterprise

Enterprise, founded in 1869, is located in Dickinson County on the Smoky Hill River. Abilene is six miles away, and I-70 is only four miles north on Kansas Highway 43 through the unincorporated town of Detroit. The Santa Fe railroad passes through town. One of the great ways to come to Enterprise is on the Abilene and Smoky Valley, excursion train which brings visitors to town from Abilene, crossing the Smoky Hill just west of Enterprise. The natural waterfall of the Smoky Hill River was the reason for the settlement of Louden's Fall. Enterprise is a great location and a scenic place with lots of woods and streams.

In 1900, the population was 798, however, the highest number of inhabitants in Enterprise occurred in 1960 when the population reached 1015. The next decades saw a population decline, followed by another period of growth. The sporadic nature of population growth and decline in Enterprise makes for a difficult assessment of the future population levels in the city. The general trend is of gradual decline from 1960 to year 2000, and no mathematical model yields a predictable trend in either growth or decline in the city. Using the period of 1970 to 2000 as the base for trend analysis, the only realistic trend would be an average or liner regression on the actual data. Given the loss of approximately 40 persons between 1990 and 2000, if one were to speculate that this was the current trend, the City of Enterprise could be expected to lose another 120 persons prior to reaching the target year of 2030, declining to a population level of around 700 persons and continuing to decline at the rate of 40 persons per decade. If an average trend of decline were to be investigated using a curvilinear regression model, conceivable the City of Enterprise might stabilize at some lower limit of 750.

Graph 3.4

Year	Resident Data for Enterprise, KS (Y actual)
1900	798
1910	706
1920	975
1930	764
1940	671
1950	795
1960	1015
1970	868
1980	839
1990	865
2000	836
2010	
2020	
2030	



In looking at the various trend analysis models for city of Enterprise, and graphs of the actual population depicting the current trend from 1900 to 2000, it is impossible to project an optimistic population projection. The data from 1970 to 2000 was used as the current trend because the population change between each decade was variable. It was determined that either the linear direct model or linear regression model best represented the current trend in Enterprise, and both models project a decline in the resident population by 2030 to around 800 persons.

The linear regression model indicates a decline of 7 persons per decade in Enterprise whereas the Linear Extrapolation model predicts a loss of 11 persons per decade. Projection to 2030 indicates a decline to between 804 and 821 people by year 2030 unless something is done to energize the community with new business. The potential to receive growth in residential family housing related to the expansion of Fort Riley is a possibility. Enterprise is within the acceptable commuting distance from Fort Riley thus a changing pattern of residential growth could emerge. How much growth is

indeterminable at this point in time, and is dependent on either development of new, affordable housing in the community, or the adaptation of some of the existing vacant or older housing to meet the needs of the army personnel relocating to Fort Riley. It would be important to revisit the population projections for the City of Enterprise following the release of the 2010 Census Reports to determine whether or not Enterprise can capture any of this market. As for the expansion of business opportunities in Enterprise creating jobs, it can be speculated that its proximity to Abilene will preclude any major investment in the economic structure of Enterprise, allowing the city to function more as a bedroom community for Abilene, Chapman, and potentially Fort Riley.

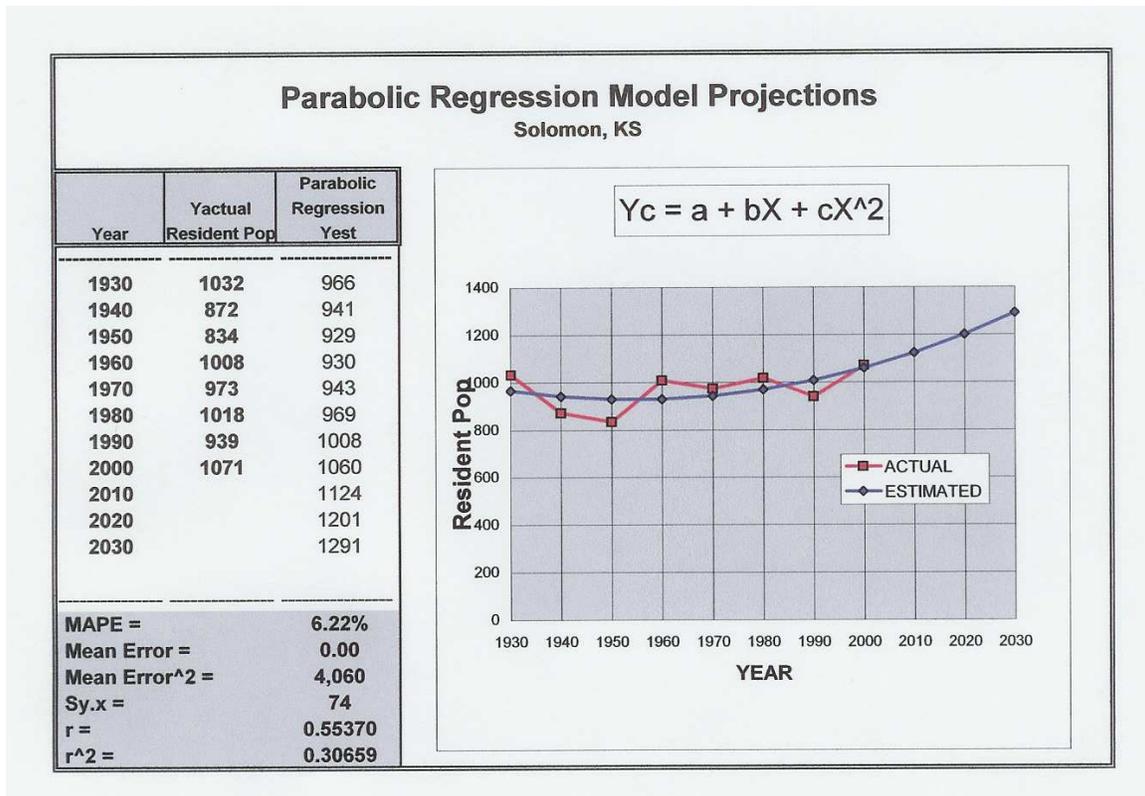
Solomon

Solomon is the westernmost town in Dickinson County. It was platted in 1858, planned in 1865, and incorporated in 1871. The growth in Solomon has fluctuated since the beginning of the 1900's. Its growth early on can be attributed to its location, at the mouth of the Solomon River midway between Salina and Abilene, or the numerous industrial opportunities it fostered, such as the salt mine, a brick plant, the grist mill and its own railway initiative point. From 1930 to the 1940's there was a drastic decline in the population from 1032 persons to 872. The 160 person decline could be attributed to the "Great Depression" and a slow grueling recovery period.

After the 1960's the population held relatively constant around the 1000 person mark, as noted on the graph shown below. During the last decade, 1990 to 2000, Solomon's population increased back to 1,071, which was the same as the population in 1920. The growth trend has been rising, hence providing a positive outlook for the future.

Using the parabolic regression model with Solomon population data from the period 1930 to 2000, a promising growth trend emerges for the future. The potential growth in the town of Solomon is not stellar, but it does predict a possibility of a modest increase of 291 persons in the next thirty years, approximately 100 per decade or 10 per year. The population projected with this model indicates growth to approximately 1,300 persons plus or minus approximately 150 people at a 95% confidence interval. This translates to a potential range of resident population to between 1,150 minimum and 1,450 persons at a maximum for planning purposes in the target year of 2030.

Graph 3.5



As the population in Solomon increases, so will the economic resources. Although this does not account for an increase in soldiers and their families at the Fort Riley Military Base, it does allow for growth in the area. Solomon may be a bit distant from Fort Riley to anticipate spill over growth in housing, but the community easily functions as a bedroom community for both the cities of Abilene and Salina.

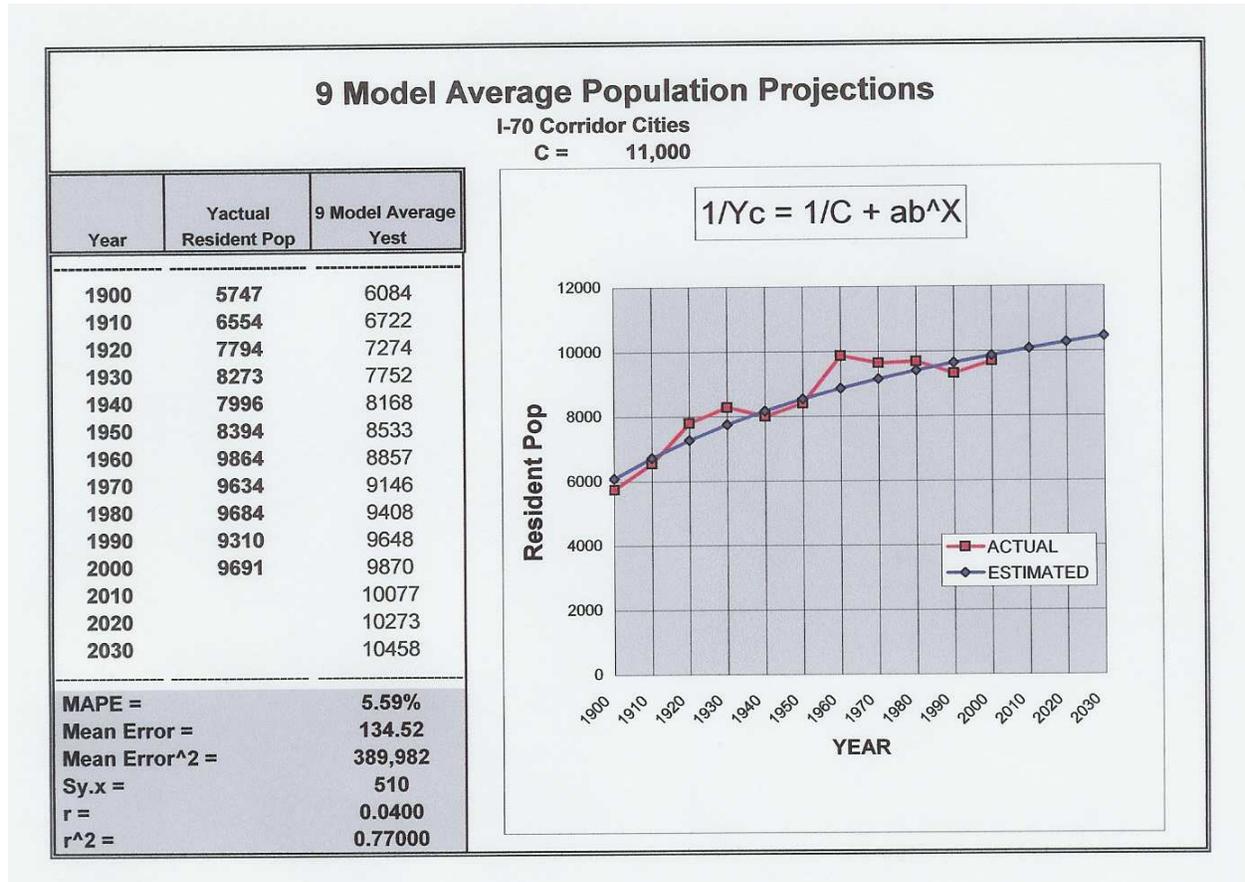
I-70 Corridor Cities

The above four cities represent communities which either border Interstate 70 through Dickinson County, or lie within five miles of the interstate. Three of the communities appear to represent potential population growth (Abilene, Chapman and Solomon), while Enterprise shows signs of population instability over time. Since the I-70 corridor may represent the best potential for continued growth, it is determined that an analysis of the corridor cities might be useful. As such, the populations were combined for an analysis, shown below.

Since 1956, The Federal Interstate System has traveled across Kansas spurring on population and economic growth to the communities located next to or in proximity to the major highway. Interstate 70 crosses the width of Dickinson County and directly impacts four communities; Enterprise, Abilene, Solomon and Chapman. These four cities have the greatest potential within the County to grow by capturing a portion of the estimated 15,000 vehicles that travel this segment of Interstate 70 each day (KDOT, 2006). Along with their locations to I-70, these cities act as important bedroom communities. Chapman is home to individuals that work in Junction City or Ft. Riley,

Solomon is the home to commuters who work in Salina and Enterprise is an affordable alternative for workers in Abilene. Due to these facts, these four cities should be analyzed collectively to project the population as well as the impacts new residents will have on the communities, the County and the infrastructure.

Graph 3.6



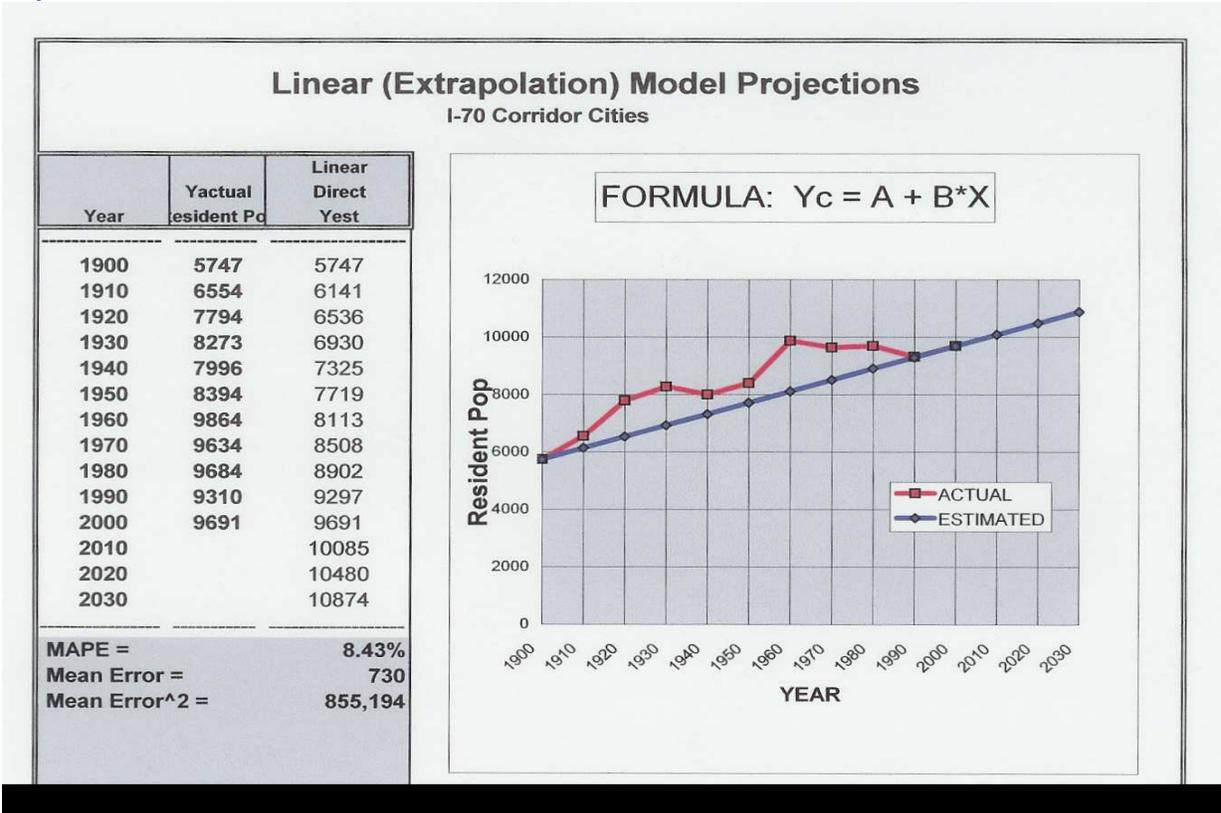
The historical population collected by the U.S. Census show that these four communities have constantly increased in population during the 20th Century. A slight decline and plateau has been established for the I-70 corridor cities since 1970, with a recent increase in population from the 1990 to 2000 Census count. Assuming that this increase of nearly 400 residents is a sign that these cities are incorporating pro-growth strategies and are realizing the tourist potential of their locations, this may be a signal that a growth resurgence is occurring.

In evaluating the historical data and projecting the population for the I-70 Corridor Communities, the U.S. Census data for each city was added together and analyzed collectively. Nine separate mathematical models were used to project the four-city total to the year 2030. All census data for the century was used in the analysis (1900-2000) to project an optimistic estimation of the population and also represents the recent trend. All nine mathematical models produced relatively close final estimates and produced similar evaluation statistics, making it nearly impossible to choose the “best fit” model that would yield the projected population for the I-70 Corridor Communities in 2030. Since no one model produced the “best fit,” all nine models were added together

and averaged to create the 2030 population projection. The result was an addition of approximately 770 new residents by 2030 or a total of 10,458 residents in the four city corridor, with a plus or minus of 1,019 at 95% confidence interval. The upper end of the prediction is 11,477 total residents which can aid in land use determinations and the lower limit is 9,437 which can serve as a projection of revenue.

An alternative growth pattern can be seen in using the linear extrapolation model with the combined populations of the I-70 corridor communities and the entire database from 1900 to 2000. This scenario essentially replicates the growth pattern shown between 1990 and year 2000, and if projected to the target year of 2030, will represent an even steeper growth for these four communities adding an additional 400 persons to the total above. This trend recognizes the resurgence in population growth over the last decade, and is shown on the graphic above.

Graph 3.7



Source: KDOT. <http://www.ksdot.org/burtransplan/maps/CountMaps/Districts/inset05.pdf>. Accessed December 5, 2006.

Growth in Dickinson County is dependent on the ability of Enterprise, Abilene, Solomon and Chapmen to capture tourist dollars from I-70 travelers as well as entice other economic endeavors that are dependent on direct access to an interstate. As new jobs are created in the tourist industry as well as other industries in the I-70 Corridor, new families will relocate to the area and create the base for future growth. The I-70 Corridor Cities and the eastern portions of Dickinson County can also realize a small increase in population due to the expansion of Ft. Riley as adequate and affordable housing becomes available to new military families and the civilian forces required to support the fort's expansion.

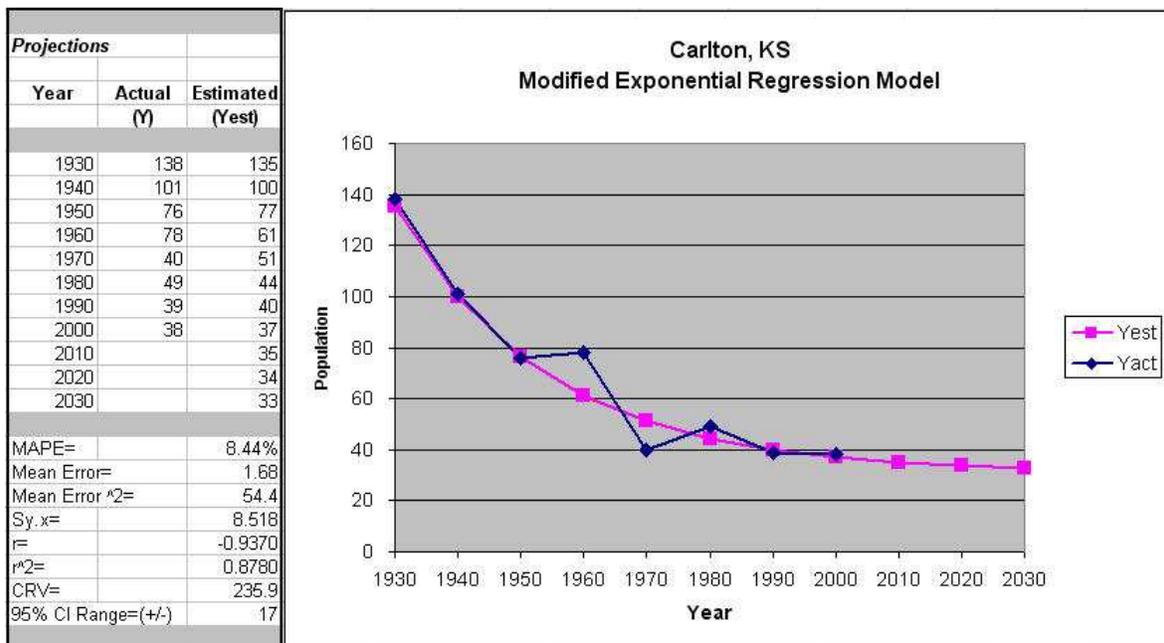
Carlton

Carlton is located in the southwest region of Dickinson County. It was platted as a town when the Missouri Pacific Railroad came through in 1886. The earliest population data found for Carlton is from 1930, the same year it became an incorporated city, and recorded a population of 138. This is the peak population for Carlton from the data that was found, but there is evidence that suggests that it was higher in the late 1800's based on the size of the school at that time. Carlton during this time became a convenient layover spot for cattle drivers traveling along the Chisholm Trail, but World War I, the Great Depression, World War II, and the closing of several of the railroad lines caused a population decline that is still seen today.

Since its peak year, Carlton's population has steadily declined to its lowest recorded population of 38 in 2000. This is a 72 percent decline over the 70-year period, representing an average of over a 10 percent decline in each of the last 7 decades.

After analyzing several population projections, with graphical representations of the data, it is determined that using then entire data set from 1930 to 2000 would give the best projection. The population count for Carlton is low enough that selecting different starting points to use in the projection process does not make a significant difference with the projection.

Graph 3.8



The modified exponential regression model is selected because it returns the most fitting evaluation criteria and population projection for 2030. The model projects a population decline of five persons by 2030. This would equal a total of 33 persons plus

or minus 17 at a 95 percent confidence interval. The high end projection would be 50 persons and the low end projection would be 16 persons.

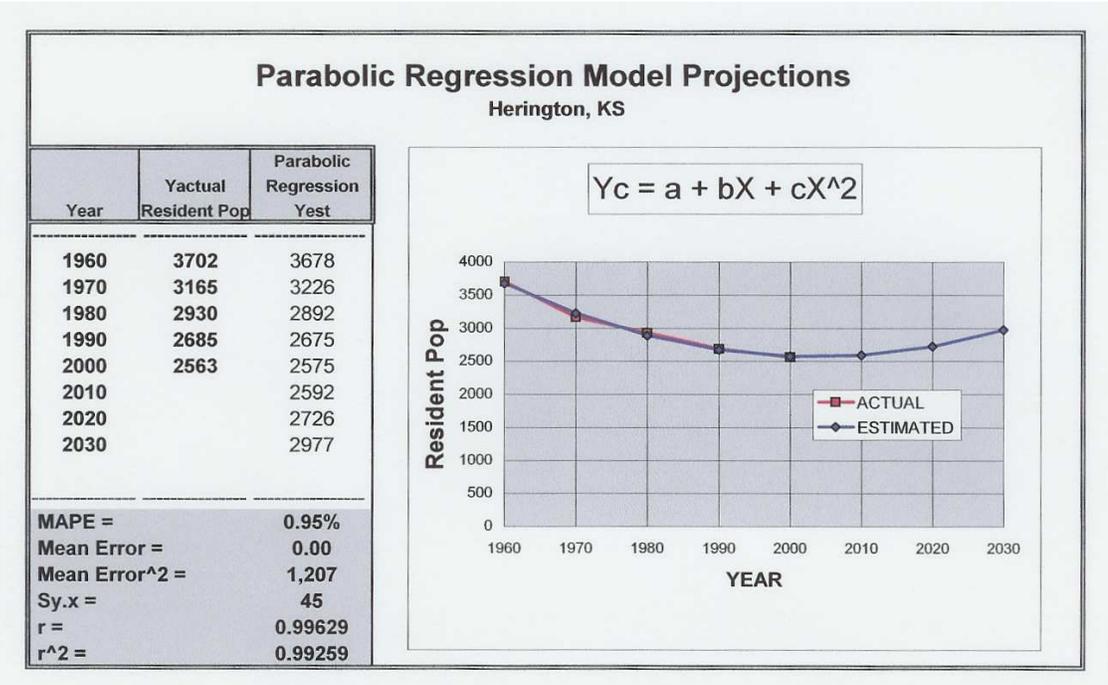
Carlton shows no signs of regeneration because of lacking amenities and opportunities for potential residents. It is not likely that Carlton will ever completely die out because of small family farming operations and other sentimental aspects. It is likely that the Fort Riley expansion will have no effect on the city of Carlton because of its location.

Herington

Herington has a rich history with railroads from its beginnings. Herington has been a hub for the Rock Island, the Cotton Belt Route, Southern Pacific, and currently, Union Pacific Railroad. Herington has also been served by the Rio Grande, Missouri Pacific and the Oklahoma, Kansas and Texas Railroads. Herington was the heart of Rock Island. The city served as a division point for Rock Island with five other lines leading out from one junction. As a result of heavy railroad traffic, people started to settle in Herington. Early growth in Herington can be traced back to 1859, where a group of German immigrants settled on Lyon Creek. By 1930, Herington reached its peak population of 4,519 persons. This was a time when various railroads crisscrossed cities in Dickinson County, boosting the population for nearby areas. It was a period of growth in Herington.

According Census Bureau estimates, the population of Herington has declined over the past three decades. **Graph 3.9** below represents the declining trend of residents with a loss of approximately 12 percent from 2,930 in 1980 to 2,563 in 2000.

Graph 3.9

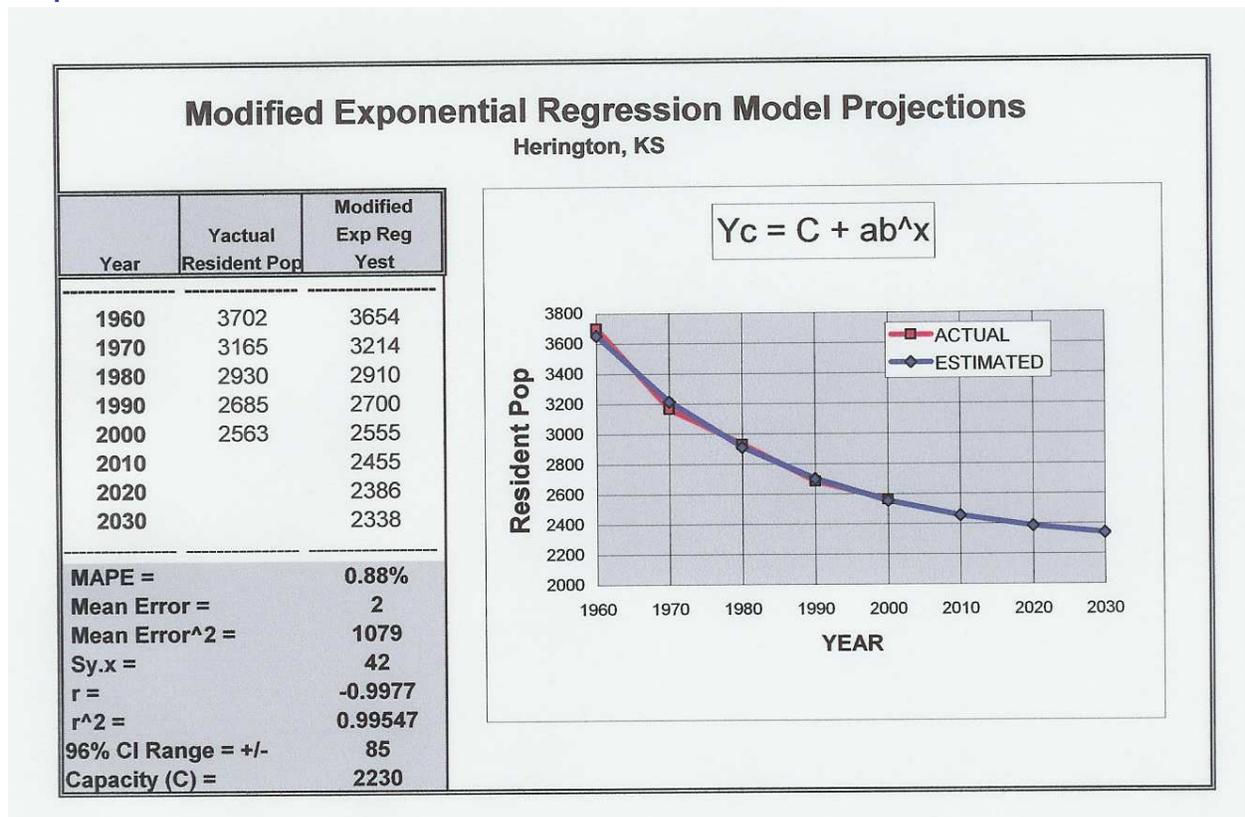


It was the Great Depression of the 1930s and World War II in the 1940s that caused Rock Island Railroad to decline. Finally, in 1980, the railroad tracks were no longer operational. Beginning from 1970, Herington population started to drop at a consistent rate. The trend is shown in graph below.

In looking at the different trend analysis models, and graphic of the actual population depicting the declining population trend, it was concluded that by using the Parabolic Regression model with the data from 1960 to 2000, an optimistic population projection of Herington could be achieved. This can only be attained when the Chamber of Commerce in the City of Herington becomes proactive in the generation of new jobs that help support growth. The parabolic projection suggested a growth of approximately 400 new residents to 2,977 persons by the target year of 2030 bringing the total population of Herington to nearly 3,000 persons, plus or minus 90 persons at a 95% Confidence Interval. The high end or optimistic projection for the City of Herington would be 3,067; and the low end projection would be 2,887.

On the other hand, if the current trend is to be continued, Herington will face a continuing decline in population at a steady rate. In *figure 2 and table 2*, the modified exponential regression projection model provided an extension of the current trend arriving at a projection of approximately 2,375 persons by 2030, or a decline of an additional 186 persons in the next 30 years.

Graph 3.10



The growth of Herington will largely depend on the creation of new firms and the expansion of existing enterprises. Although the City of Herington is currently undergoing several upgrades for their comprehensive transportation plan, and expect to see improvement in a number of local buildings and bridges linking city streets and highways, these developments may not be enough to enhance the area’s economy. Unless more jobs are provided, the future of Herington does not look very promising.

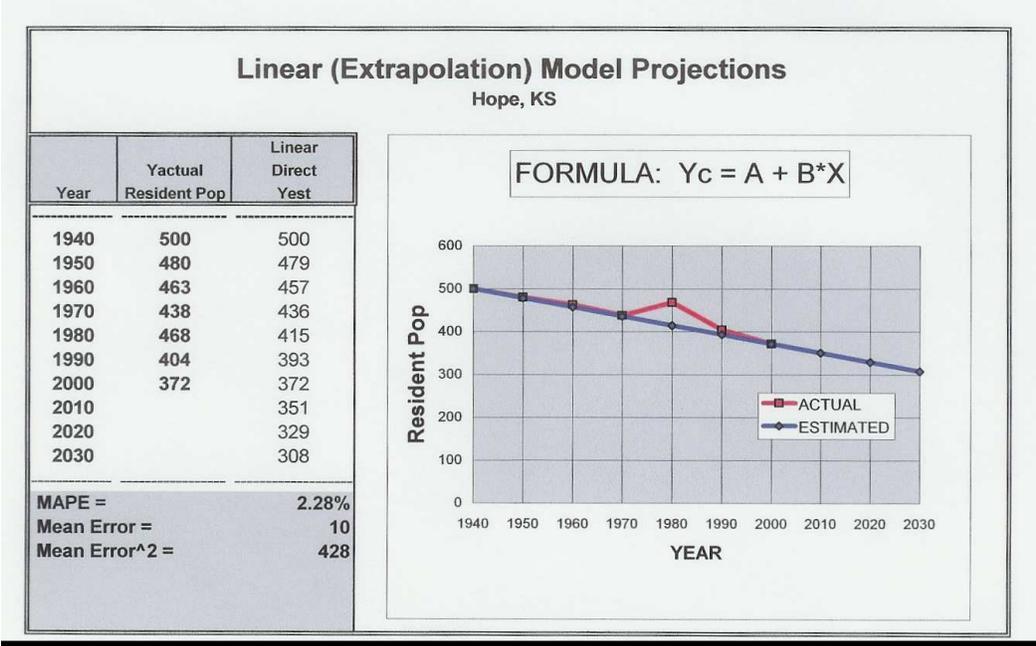
Hope

The arrival of the Topeka, Salina & Western Railroad in 1886, followed by the Santa Fe in 1887 helped the population of Hope to prosper. Access to grain and livestock markets in Chicago brought goods and people in and transferred commodities going out. The discovery of gypsum in 1892 near Dillon also attracted big business. The City of Hope prospered with its population rising to over 300 by 1892.

Hope continued to increase in population until 1920 when it reached its maximum population of 589. The 1920 census shows marked increases in population throughout the county. It is likely this is a result of WWI veterans returning home. By 1930 Hope’s population declined to 556 and has continued that trend ever since. It is interesting to note here that most Dickinson County cities declined in population during this decade except the two largest cities of Abilene and Herington. This may reflect a period of agricultural hardship as a result of increased soil erosion. It is plausible that these hardships evoked a migration from Hope to larger cities where people had a better chance to make a living.

Hope is geographically located in the southeastern portion of the county. This area is rather remote and has no direct connection to any growth center or corridor. By the year 2000 Hope’s population had declined to 372. Given these factors, it seems likely that Hope’s population will either continue to decline or stabilize at some lower value.

Graph 3.11



Through analysis of Hope's population trends between the periods 1900-2000, there are some reasonable projections regarding its potential future. Hope saw its most significant decline between 1920 and 1940, when it lost 89 residents, reporting a population of 500 residents in 1940. From 1940 to 2000 Hope's population continued to decline by approximately 20 persons per decade reaching its year 2000 population of 372 residents. With the exception of one growth spurt between 1970 and 1980, the population trend can be described as a near-perfect linear decline. Therefore, only the population values between 1940 and 2000 are used to make future projections, and the linear extrapolation model is the realistic descriptive model to use in projecting Hope's population to the target year 2030. The graph above shows a fairly steady linear decline. If the population of Hope continues its historical trend at the same incremental rate of decline, it is likely that the community will lose population to around 300 by the year 2030. This is a loss of 70 people over the next three decades. Given Hope's geographical location and the continual population increase in the cities located along the I-70 corridor it appears that this projection is realistically viable.

(Source: City of Hope Website, History, by Larry Potter).

Manchester

Manchester is located in the northwest corner of Dickinson County. It was founded and platted during the 1880's by English and Scottish families and Civil War Veterans.

Manchester was self-sufficient and progressive town prior to World War 1. Between 1910 and 1920, the population of Manchester increased from 250 to 263. Between 1920 and 1940, Manchester was in a pattern of slow decline, and lost 48 people, or about 18% of its population, likely resultant from Great Depression, and other factors that caused the decline of the railroads. Like most of the small towns in Dickinson County, Manchester was dependent on the railroads, and when they closed down during World War II, so did Manchester. Between 1940 and 1950, Manchester experienced a period of sharp population decline, losing 64 people, or 30% of its residents. Between 1940 and 1970, people who work in those towns could choose to live in Manchester. New residents would allow Manchester to expand its own economic base. While such a scenario is a possibility, it is not considered a reality. Manchester's population in the future can be expected to remain constant at approximately 100 residents through the projection year.

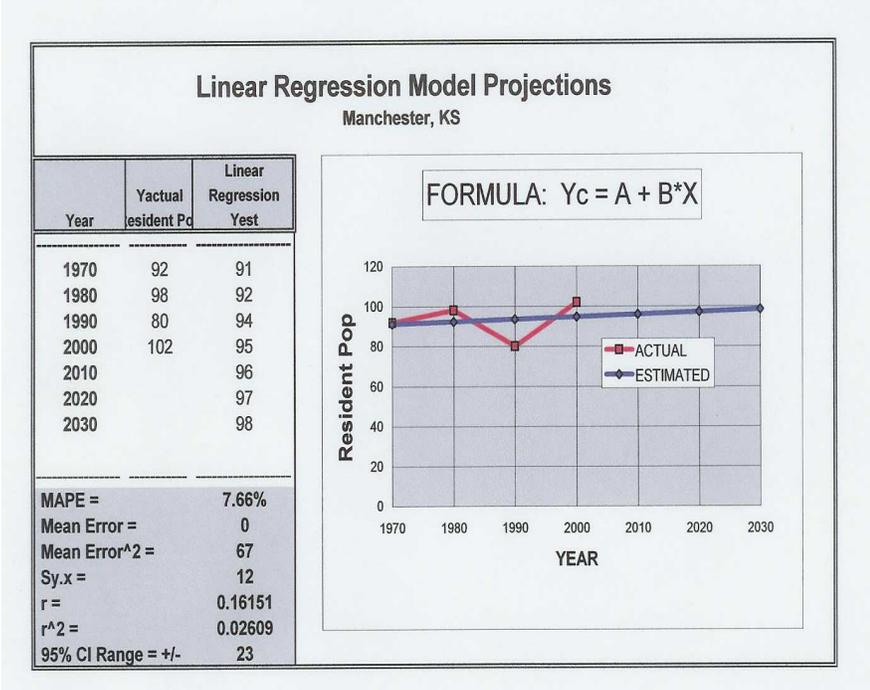
Currently, most of the residents in Manchester commute to jobs in Junction City, Salina, or Abilene. As Manchester is not on the Interstate 70 corridor, it is likely difficult for the town to attract new businesses or new residents who work in the aforementioned cities.

Using the entire twentieth century to make future projections for the city of Manchester yields a grim prediction: by 2030, the best-fitting projection model, in this case Exponential Regression shows Manchester's population slipping to 52 people. This would mean a loss of 50 people, or nearly half its current population at a rate of between 18 and 19 residents per decade with a 95% confidence interval of plus or minus 20 people.

However, if we remove the periods of sharpest decline and begin our projections at 1970, the most reasonable projection model becomes the linear regression model or Linear Extrapolation model, which in this scenario projects a possible modest increase in population. The population of Manchester seems to have generally stabilized at the level identified between 1970 and 2000 at approximately 100 residents.

Graph 3.12

Year	Resident Data for Manchester, KS (Y actual)
1910	250
1920	263
1930	241
1940	215
1950	151
1960	153
1970	92
1980	98
1990	80
2000	102
2010	
2020	
2030	



Woodbine

Woodbine, located in southeastern Dickinson County, dates to 1887, but the hamlet of Lyons was mapped in 1871, sixteen years earlier. Both villages were in the northwest quarter of section 35-14-1, Liberty Township, and overlapped slightly.

Early growth in city of Woodbine can be traced back to the 1910 Census when the city contained 250 persons. Succeeding census reports for 1920 reported an increase in population during the preceding decade to 318, which remained constant at 317 in the 1930 Census. Woodbine then began a steady decline in population until 1960 (172 persons) and then stabilizing by 1970 at 170 persons. Following 1970 Woodbine has shown an incremental growth in population through the year 2000, at which time 207 persons resided in Woodbine. The population trend can best be described as declining from its 1930 high of 318 persons to its low of 170 persons in 1970, followed by a period of slow growth to its current level of 207 persons in year 2000. This was a 37 person increase over 30 years.

Using the Population growth from 1940 to 2000 to project the current population trend and the parabolic regression model suggests that the community could experience continued growth to around 325 persons by 2030. This would be a very optimistic projection fueled by a growth of 20 persons during the last decade and an assumption that this growth spurt continues in a curvilinear manner, rather than a linear manner. If the City of Woodbine were to grow by 20 persons per decade for the next 30 years in a linear fashion, the population could be expected to reach 267 by year 2030.

Since Woodbine is located roughly 35 miles south of the Interstate 70 on Kansas Highway 77, it is within the 60 mile commuting range allowed by Fort Riley for troop housing. Affordable housing could be created in the City of Woodbine for the soldiers for two reasons; one being that it is approximately 40 miles away from the Fort, and second that it has existing services and infrastructure to accommodate housing needs in the future. It is unlikely that additional jobs would be created in Woodbine of any magnitude, but serving as a bedroom community for military and civilian personnel working or stationed at Fort Riley could become the impetus for continued growth in population in the community. The creation of affordable housing here would be necessary to sustain a growing population.

For planning purposes, the city fathers in Woodbine should plan for an expansion of housing opportunities in the community, to house approximately 270 to 300 persons by year 2030. It would be necessary to monitor the actual growth to gage the attractiveness of the community for continued growth, as well as to market the community as a small town living experience. Projections given by the use of the Parabolic Regression Model of 330 persons by the year 2030 appear to be somewhat unrealistic at this point in time, however, could become realistic should Woodbine become an attractive small town bedroom community for Fort Riley and Junction City.

Summary and Conclusions

The population growth in Dickinson County and the communities within it have been dependent upon transportation routes linking the communities. The early settlers of the County in the 1850's followed the expanding railroad lines heading west. The early communities in Dickinson County were established to ship farm products, such as grain and cattle back to the East Coast as well as receive goods from the industrial coast. The dependence on viable transportation routes continues for the communities in Dickinson County.

The population trend in Dickinson County during the past century has fluctuated from a high of 25,870 persons in 1930 to a low of 18,948 in 1990 according to census reports. During the last decade, the county experienced an increase in population of approximately 400 people, the majority of which can be traced directly to the growth in the city of Abilene from 6,242 residents in 1990 to 6,543 residents in 2000. The city of Solomon, located a few miles west of Abilene and adjacent to I-70 was the only other incorporated community in Dickinson County to experience growth in population in excess of 100 persons during this decade. A few other communities (Woodbine and Manchester) experienced a bit of growth at around 20 persons, while the other five communities (Carlton, Chapman, Hope, Herington and Enterprise) experienced a

combined decline in population during this period totaling approximately 150 persons. It is evident that the future growth in Dickinson County is tied to the growth potential of the communities abutting I-70. These cities are directly impacted by I-70 which crosses the width of the county. The estimated 15,000 vehicles traveling this section of interstate each day represent a tremendous economic and population growth potential.

The following chart indicates the trend analysis projections of the population to the year 2030 for the county and incorporated cities of Dickinson County, as discussed in the preceding sections of this chapter.

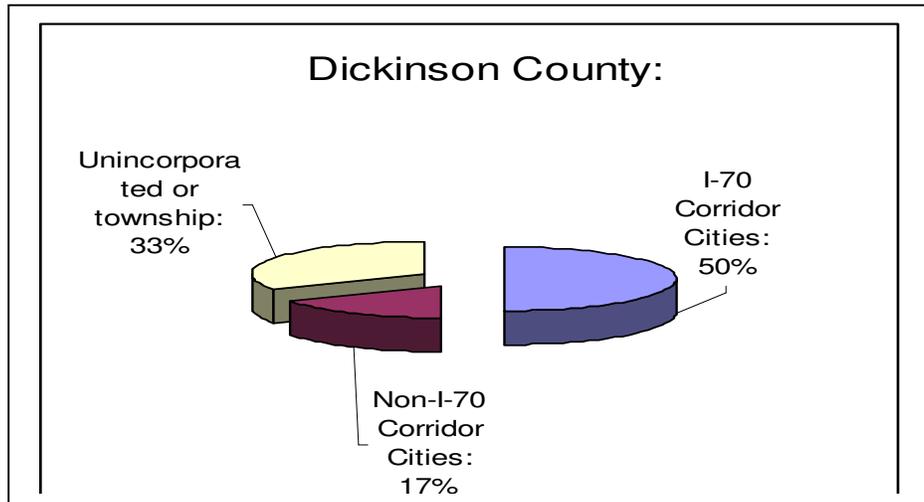
Table 3.1 Summary Population Projections for Incorporated Communities – Dickinson County

Year	County	Abilene	Chapman	Solomon	Enterprise	Carlton	Herington	Hope	Manchester	Woodbine
1990	18,948	6,242	1,264	939	865	39	2,685	404	80	186
2000	19,344	6,543	1,241	1,071	836	38	2,563	372	102	207
2010	19,853	6,847	1,351	1,124	825	35	2,472	354	105	239
2020	20,592	7,150	1,405	1,201	815	34	2,414	335	108	280
2030	21,646	7,454	1,459	1,291	804	33	2,375	316	111	330

Collectively analyzing the historical population trends for the four I-70 corridor communities yields a promising growth potential. Currently, these four communities contain approximately 9700 residents, or about 50 percent of the total population in Dickinson County. As seen in the table above, target projections to the year 2030 yield a growth period to around 11,000 residents. This is a growth of 1,300 people over the coming three decades, which represents approximately 51 percent of the projected county population in 2030 (21,646 residents). The corridor communities have the potential to capture tourist dollars from the motorist traveling I-70 as well as to attract businesses that require direct access to an interstate. Separately, each city has its own attributes that can attract a variety of new residents.

Two-thirds of the county population resided in the nine incorporated communities in year 2000, and by 2030, it is projected that 65 percent of the county population (14,173 persons) will reside in these cities (assuming no annexations), with the other 35 percent (7,473 persons) residing in the 24 rural townships and unincorporated communities of the county.

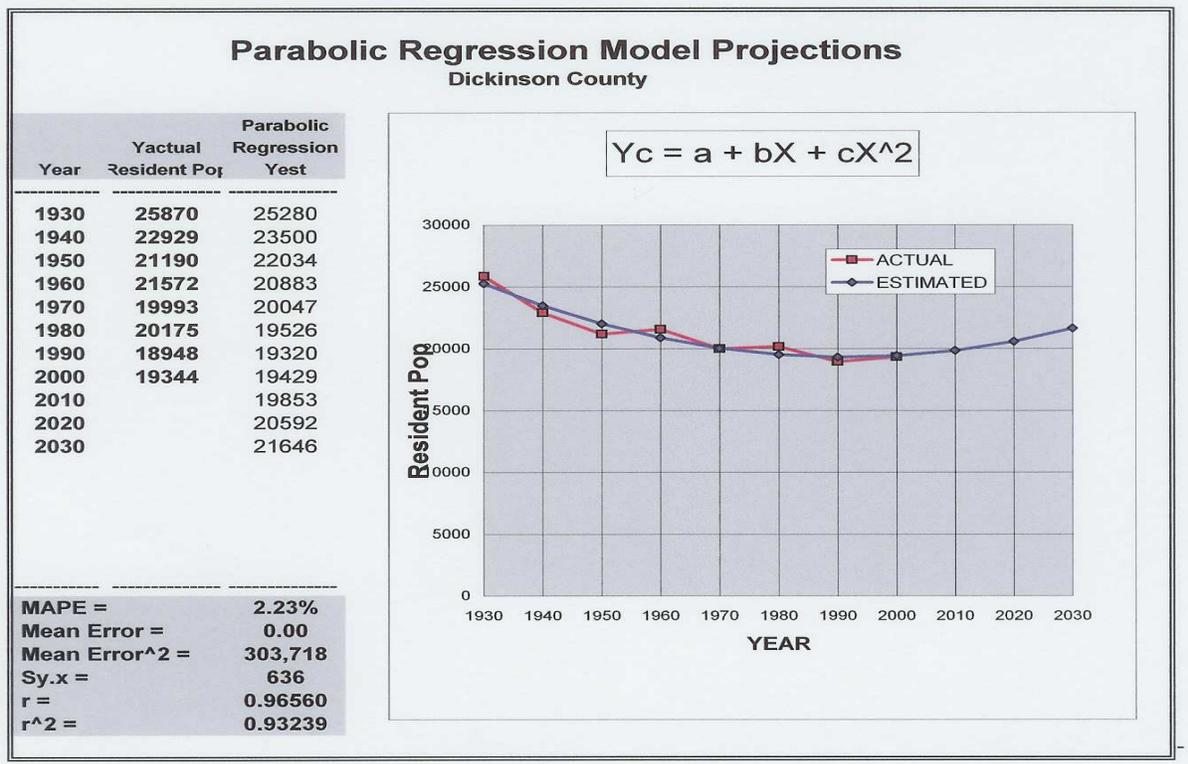
Graph 3.13



Herington is another city within the county that has the potential to witness growth in the coming decades. Herington's location along Highway 77 and within 30 miles of Ft. Riley provides its citizens and business owners with opportunities to capture travelers along the busy state highway and to become a destination for the county. While the trend projections for Herington suggest a slow, continual decline in population, its quaintness, location, and proximity to other amenities in the corner of the county suggest that opportunity awaits the community should it be marketed as a potential residential site for commuters to Ft. Riley, Junction City or Manhattan.

It should be noted that these population projections represent an analysis of historical trends, and should those trends continue into the future, these projections could represent reality. There are a number of assumptions built into these projections, and they do not factor into the changes that have taken place between 2000 and 2007. The expansion of Ft. Riley in Geary County could possibly have an impact on the communities in Dickinson County, and will probably increase the desirability of several communities within the county as places to reside. A proactive growth stance by the Chamber of Commerce in Abilene could also provide the impetus for greater growth in the City of Abilene, thus fueling additional county growth. Herington could also play a larger role in county growth should that community begin to capitalize on its location and amenities available within the community.

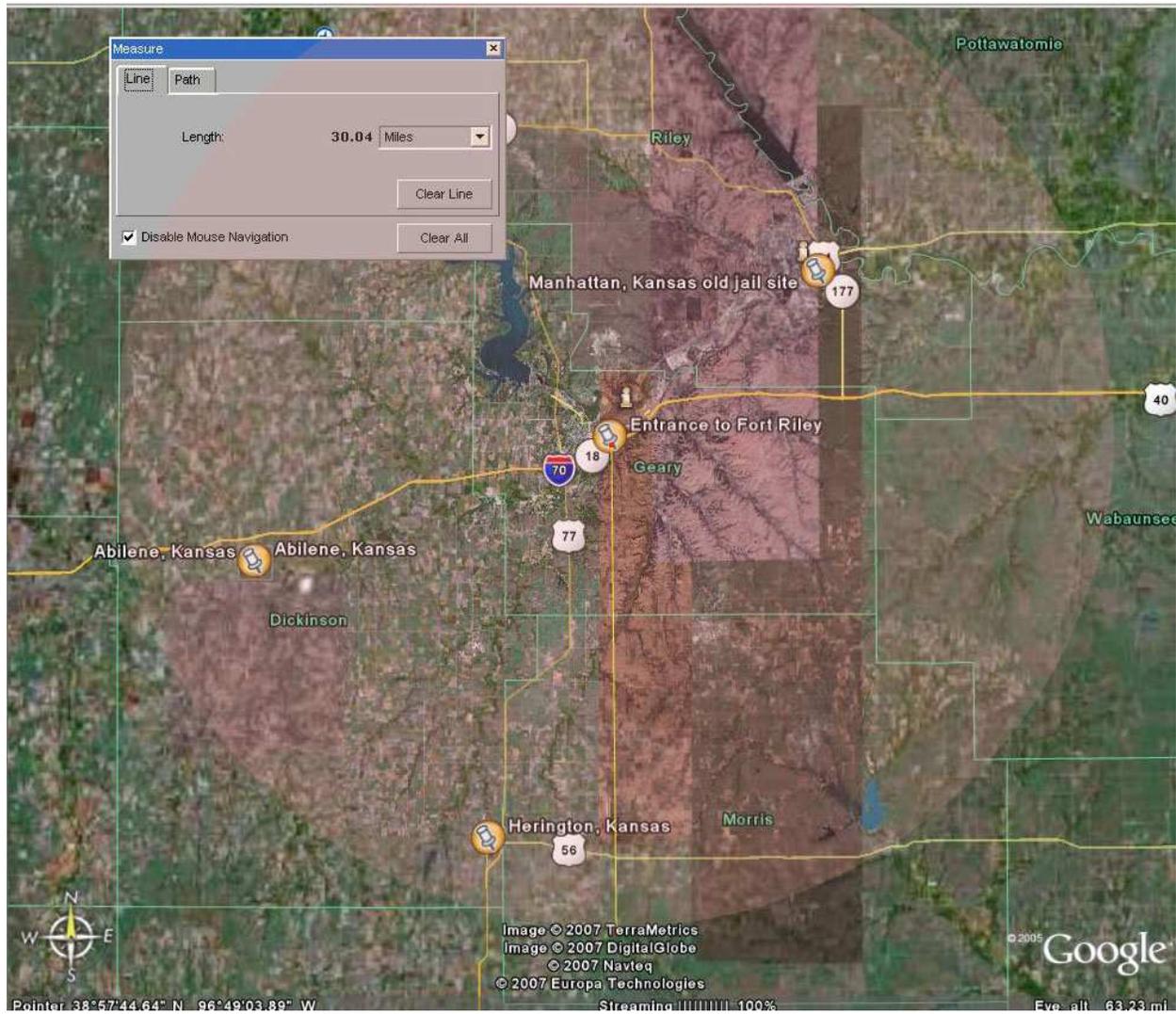
Graph 3.14



The communities of Chapman, Enterprise, Woodbine and Herington all offer the potential for greater growth and rural living, which generally means more affordable housing opportunities. These things are but speculation at this point in time, however, and should become much clearer when the next census is taken in 2010.

Using trend analysis on county data from 1930 to 2000 yields an optimistic projection of the population of Dickinson County, building to a high of 21,646 persons plus or minus 1,272 at a 95% confidence interval. For planning purposes, 23,000 residents of Dickinson County would represent a reasonable goal for land development at this time. As noted, however, the expansion of Fort Riley can provide the impetus for growth beyond what is anticipated through the use of trend analysis models. Communities that exist within 30 to 60 miles of Ft. Riley which can offer adequate and affordable housing as well as favorable amenities will be able to capture a portion of the estimated 30,000 troops, family members and civilian support personnel anticipated in the region by 2012. Dickinson County is in a very favorable position to help satisfy those needs since the entire group of I-70 corridor communities in Dickinson County lie within the 30-mile radius of the main entrance to Fort Riley. The cities of Herington and Woodbine do as well.

Map 3.1 30-Mile Commute Radius of Ft. Riley's I-70 Entrance



Trend Projection Model Caveat/Caution

Trend projection models evaluate the historical growth or decline of a community, and attempt to fit a mathematical equation to that historical trend. The analyst is responsible for determining the start of the current trend by looking at the existing data. As was the case in studying the trends in the nine incorporated cities in Dickinson County, the current trend varied in each case, and different projection models are utilized in defining the best mathematical fit to the actual data.

Trend models do not analyze cause or effect of any of the historical events which may impact population growth or decline. Instead, the projections merely represent an extension of the population trends should those conditions which have historically precipitated growth or decline continue into the future. Positive changes in the political structure, pro-active growth strategies that are implemented by the Chamber of Commerce, planning department, residents and business community can certainly create the impetus for modifying the historical trend. Maintaining the status quo or a continuation of existing policies tends to favor the trend projections and bring those projections closer to a reality. Speculations have been provided in the analysis of the historical trends, leading towards potential changes that allow selection of an optimistic growth trend. Since the majority of communities discussed in this section have a historical trend of decline in population during the 20th Century, some speculation would indicate that the historical declining trend will likely continue, and the county will continue to lose population. These projections comprise only one considered opinion as to the future growth (or decline) in population within these incorporated communities in Dickinson County through the next 30 years.

In the final analysis, it is important to note that the data used in this analysis is seven years old. The decision to move the headquarters of the "Big Red One" back from Germany to Ft. Riley, as well as other units thus enlarging the military operations, was made after the completion of the 2000 Census, and while the relocations have started, they are projected to be completed by 2012. To determine the impact of these changes to the population in the communities in Dickinson County it would be necessary to review the issuance of building permits, water hook-ups, and telephone connections in order to measure growth resulting from the expansion of the military base since 2000. The actual growth at Ft. Riley cannot be accurately measured at this time, and since it is ongoing, can only lead to speculation of the ultimate impacts on all communities within a reasonable commuting distance.

Special thanks to the 2006-2007 KSU Computer Applications class for assistance with this chapter as well as chapter one.