Research Report
KTC-01-15/SPR213-00-1F

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ANALYSIS OF TRAFFIC GROWTH RATES

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ANALYSIS OF TRAFFIC GROWTH RATES

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16. Abstract

The primary objectives of this study were to determine patterns of traffic flow and develop traffic growth rates by traffic composition and highway type for Kentucky's system of highways. Additional subtasks included the following: 1) a literature search to determine if there were new procedures being used to more accurately represent traffic growth rates, 2) development of a random sampling procedure for collecting traffic count data on local roads and streets, 3) prediction of vehicle miles traveled based on socioeconomic data, 4) development of a procedure for explaining the relationship and magnitude of traffic volumes on routes functionally classified as collectors and locals, and 5) development of county-level growth rates based on procedures to estimate or model trends in vehicle miles traveled and average daily traffic.

Results produced a random sampling procedure for traffic counting on local roads which were used as part of the effort to model traffic growth at the county level in Kentucky. Promising results were produced to minimize the level of effort required to estimate traffic volumes on local roads by development of a relationship between functionally classified collector roads and local roads. Both regression and logarithmic equations were also developed to explain the relationship between local and collector roads. County-level growth rates in traffic volumes were analyzed and linear regression was used to represent changes in ADT to produce county-level growth rates by functional class. Linear regression and Neural Networks models were developed in an effort to estimate interstate and non-interstate vehicle miles traveled.

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EXECUTIVE SUMMARY

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The literature review produced reference documents that were related to the objectives of the research study; however, none offered any new approaches that could be adopted and directly applied to the prediction of growth rates in Kentucky. The survey of states produced responses from 29 of 45 agencies that received the questionnaire. In general, the survey indicated that states were using historical data and regression analysis to predict growth rates.

The development of a random sampling procedure for count locations on local roads produced a GIS grid-based process. Results from the bias analysis were presented along with a description of procedures used to correct for the sampling bias. It was concluded that large samples were need in order to obtain confidence in mean ADT values for local roads.

Efforts to estimate or model traffic growth at the county level in Kentucky produced several socioeconomic variables which offered promise as reliable independent variables. The analysis procedures included linear regression models and Neural Networks models, with separate analyses for interstate and non-interstate VMT. Results indicated that predictions of VMT based on socioeconomic data was not entirely successful, even though it was determined that available data has the potential to be used predicting non-interstate VMT for most counties. It was noted that national and regional data should be used for predicting interstate VMT. Neural Networks has shown significant potential for use as a modeling technique; however, the nature and structure of specific data should be used to determine which modeling approach is best.

The need to estimate traffic volumes on local roads, without excessive data collection efforts, resulted in development of a relationship between functionally classified collector roads and local roads. Ratios of local road ADT to collector road ADT were developed for both rural and urban classifications. Regression relationships were also developed to explain the relationship between local and collector roads. Models were evaluated for goodness of fit and ability to predict local ADT beyond the limits of the 2000 local sample data. Based on evaluation of regression and logarithmic equations, the power equation was found to provide the best fit.

County level growth rates in traffic volumes were analyzed and linear regression was used to represent changes in ADT. Historical data for the period 1991 through 2000 were used to produce county-level growth rates by functional class.

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1.0 BACKGROUND AND OBJECTIVES

Traffic flow patterns and growth rates are necessary for many of the planning and design functions of the Kentucky Transportation Cabinet (KYTC), and an accurate estimation of those rates are needed for pavement design, air quality modeling, overall planning activities, and other highway infrastructure needs. Recent requirements of TEA-21 and the Environmental Protection Agency (EPA) have placed further restrictions on growth and new highway facility development, primarily based on the acceptable level of vehicle exhaust emissions. Estimates of future growth and the composition of that traffic are critical to these requirements.

Traffic growth rates have been tracked for many years and the patterns have varied significantly dependent upon the geographic area, the socioeconomic conditions, and proximity to growth areas. Highway Performance Monitoring System (HPMS) sample sites have been monitored for several years and the growth rates for Kentucky and 12 other states in the region were compared for the period 1980 through 1995. The annual growth rates for Kentucky during the most recent five years exceeded those of any other state. Kentucky's annual traffic growth rate for the period 1991- 1995 was 4.09 percent, and was the only state with rates in excess of 4.0 percent. Some states were near 4.0 percent (Tennessee and Indiana), while others had rates near 2.0 percent (Ohio and West Virginia). A recent analysis of annual vehicle miles traveled for all vehicle types as compared to heavy trucks showed a relatively even pattern of growth for all traffic between the years 1988 and 1996; however, the pattern for heavy trucks was less uniform. The growth rate for all traffic was approximately 4.0 percent annually, while the rate of growth for heavy trucks was less than the rate for all traffic. The procedure used by the Kentucky Transportation Cabinet to produce the year 2020 VMT forecasts is presented in Appendix A.

The accuracy of measuring traffic growth is linked to the ability of highway planners to adequately monitor the patterns and trends of highway usage by various types of vehicles. This task is directly related to the selection of data collection sites, the reliability of data collection equipment, and the ability to extrapolate from short-term data collection periods to represent annual average data. These and other factors can significantly affect the estimated growth patterns and universal procedures are not in place to represent the variations which can be expected based on geographic area, type of road, socio-economic factors, and various demand generators.

The primary objectives of this study were to determine patterns of traffic flow and develop traffic growth rates by highway type for Kentucky's system of highways. There were other subtasks associated with accomplishing the primary objectives including the following:

- Conducting a search of the literature to determine if there were new procedures being used to more accurately represent traffic growth rates
- Development of a random sampling procedure for collecting traffic count data on local roads and streets
- Development of a procedure for explaining the relationship between routes functionally classified as collectors and locals
- Development of county-level growth rates based on procedures to estimate or model trends in vehicle miles traveled (VMT) and average daily traffic (ADT)

2.0 REVIEW OF LITERATURE AND SURVEY OF STATES

2.1 Review of Literature

A literature search provided several reports as reference material on this project. These reports were reviewed to determine what socio-economic factors could be beneficial for this project and if there were new procedures being used to more accurately represent traffic growth rates. The following reports are listed and summarized below.

- "Estimation of Annual Average Daily Traffic for Non-State Roads in a Florida County" Xia, Qing; et al.; Department of Civil and Environmental Engineering, Florida International University, 1999

  A multiple regression model was developed for estimating ADT on non-state roads in urbanized areas in Florida. A sample size of 450 counts was used and 12 initial independent variables were analyzed. Results indicated that the most important contributing predictors were roadway characteristics, such as the number or lanes, functional classification, and area types. Various socioeconomic variables including nearby population, dwelling units, automobile ownership, employment statistics, and school enrollment have insignificant impact on ADT. Additional analyses revealed deficiencies in traditional roadway functional classifications and a need to improve or revise the classification procedures.

- "Estimation of Traffic Volume on Local Roads" Chatterjee, Dr. Arun, et al.; Department of Civil and Environmental Engineering, University of Tennessee

  In recent years, the need for reliable estimates of vehicle-miles of travel on local roads has been recognized for the analysis of air quality and also highway safety issues. In order to provide a better understanding of traffic volumes on local roads and to explore alternative methods for estimation, data from Georgia were analyzed using different statistical procedures. In order to develop a mathematical model, an attempt was made to correlate local road volumes with socioeconomic and geographic variables. Initially, eight categories with 45 variables were explored. These included population demographics, education, transportation, income, employment, agriculture, urbanization, and housing. The models developed had poor predictability for rural roads. The results suggested that there might be additional subgroups needed such as road type (paved or unpaved) and locations (outside or within metropolitan areas). Regression clustering analysis was then used. It appeared that it could play a useful role for certain subgroups of traffic volume on local roads but further research in needed.

- "Guidebook on Statewide Travel Forecasting" University of Wisconsin-Milwaukee, Center for Urban Transportation Studies and Wisconsin Department of Transportation, 1999

  This guidebook reviews the state-of-the-practice of statewide travel forecasting. It focuses on those techniques that have been considered essential to good statewide travel forecasting. Emphasis is placed on practical methods. This book also makes a distinction between urban travel forecasting and statewide travel forecasting.

- "Assessment of Land-Use and Socioeconomic Forecasts in the Baltimore Region" Talvitie, Morris, and Anderson; Transportation Research Record 775, 1980

  Accuracy of forecasts for population, labor force, employment, and car ownership from 1962 to 1975 in the Baltimore area are examined. Comparisons are made at three levels of zonal aggregation-city and suburbs, traffic districts, and traffic zones. The lack of information about household size and household income made inferences from the results incomplete. The results show that region-wide forecasts were accurate for all the variables except population. However, allocation of these forecasts between city and suburbs, to traffic districts, and to traffic zones was quite inaccurate. The results in the paper point toward large errors and uncertainties in the independent variables of traditional travel-demand models.

- "Factors that Affect Traffic Growth Rates and Projection of Traffic Volumes for Use in Highway Economic Models" J.L. Memmott; Transportation Research Record 912, 1983

  The magnitude of potential highway user benefits and costs that result from proposed highway improvements must be estimated with a reasonable degree of accuracy for highway agencies to make rational decisions in the public interest. One of the important aspects of most highway economic analysis models is the assumed traffic growth-rate pattern, which is based on one or more projected traffic volumes. The effects of different growth-rate patterns on the estimate of future benefits from a proposed project, as well as the factors that affect traffic projection errors from data collected in Dallas County, Texas, are examined. These factors include the year the projection was made, the percentage of commercial and industrial land development, and changes in highway capacity. A simple model for projecting future traffic volume is also presented, which is based on a multiple regression analysis of historical traffic volume data and adjustments for capacity changes and land development. The model is tested against the traffic projections collected for the Dallas County study sites, with the model producing somewhat more accurate projections in this sample.

- "The Linkage Between Travel Demand Forecasting Models and Traffic Analysis Models" Ho-EPK; Institute of Transportation Engineers, 1992

  There are two major types of models for transportation analysis: Travel Demand Forecasting Model (TDFM) and Traffic Operational Analysis Model (TOAM). In order to increase the efficiency and accuracy of the analysis, certain kinds of linkages between these two types of models need to be developed. The purpose of this paper is to investigate such linkages. It first provides a comparison of these two types of models, followed by the discussion of their possible linkages. Finally, this paper provides an integrated framework for the TDFM and TOAM analysis.

- "Relationships Between Highway Capacity and Induced Vehicle Travel" Noland, Robert B., U.S. Environmental Protection Agency, 1998

  An analysis of US data on lane mileage and vehicle miles of travel (VMT) by state was conducted. The data were separated by road type (interstates, arterials, and collectors) as well as by urban and rural classifications. Various econometric specifications were tested using a fixed effect cross-sectional time series model and a set of equations by road type. Lane miles are found to generally have a statistically significant relationship with VMT.

- "Policy Options For Improving Air Quality- The Relationship Between Transport Policies and Air Quality" Henderson, Gordon, et al.; Ove Arup & Partners, 1996

The context and effectiveness of various transport proposals and strategies that aim to reduce traffic related emissions were addressed in this paper. This was due to the gradual change in emphasis in Government policies and initiatives towards the environmental impacts of transportation. Policies have started to reflect increasing concerns over the contribution of road traffic emissions to poor air quality, together with the associated effects on health. Much of the work undertaken had been based on theoretical studies, which often used hypothetical situations. The effects of these situations need to be better understood before appropriate solutions can be reached. It would be necessary to undertake a greater volume of practical research in order to achieve a high level of understanding. It is clear that there are no quick-fix solutions to the problem of urban traffic congestion and its related side effects, such as vehicle emissions.

- "Traffic Growth on Road System – A Review" Sarna, Dr. A.C. and I.C. Agrawal, Traffic and Transportation Division, Central Road Research Institute, New Delhi, 1990

This study was undertaken with the objective of reviewing the traffic growth rates developed and adopted for various studies conducted for road and highway projects and to suggest suitable growth rates for traffic projections.

- "Modeling Of Traffic Growth in Congested Urban Networks" Hounsell, N.B., University of Southampton, U.K.

The economic evaluation of new road and traffic management schemes in urban areas requires forecasts to be made of traffic demand for up to 30 years. This paper describes the results of recent research completed in which a methodology for deriving limits to traffic growth was produced. Network modeling was undertaken to monitor the relationships between traffic growth and a range of network performance measures to establish criteria for identifying effective network capacity.

- "Forecasts of Traffic Growth in South East England" Stokes, Gordon, University of Oxford, Transport Studies Unit, 1992

This paper has taken an exploratory look at traffic forecasts and their feasibility on a local level. It concludes that at the county level the implications of the national forecasts are attainable. However, at the county level some major changes would be required to accommodate the forecasts.

2.2 Survey of States

A survey of the states was conducted to determine: (1) how other states were predicting VMT on functionally classified local roads and (2) how other states predicted traffic growth rates on all functionally classified roads. This survey was sent to 45 of the 50 states and 29 responses were received. This yielded a 64% response rate. This satisfactory response rate may have been due to the convenience of the survey. The survey was sent through electronic mail. This allowed respondents to quickly complete and return the results. Of the 29 responses received, 21 of them, or 72%, responded by electronic mail.

In general, the survey showed that 85% of states did use traffic growth rates. Seventy percent of those growth rates were determined using historic data and regression analysis. The historic data included such parameters as traffic growth, population, land use characteristics, employment status, location, and many others. Twelve states had different traffic growth rates for each county, seventeen states had different traffic growth rates for each functional class of road, and one state had different traffic growth rates for each vehicle type.

Eighty-one percent of states collected ADT by counting some years and estimating others. When these counts were estimated, 43% were estimated using other local road counts. However, other count estimations were based on a higher functional class, proximity to other roads, population, or other parameters. Only 11% of the states counted all their local roads.

The survey results showed that the majority of other states were predicting VMT on local roads and traffic growth rates for all functionally classified roads similar to Kentucky. However, with this project, an improved local road estimation methodology will be generated and therefore advance Kentucky in this area.

The survey questions and answers are provided in Appendix B.

3.0 DEVELOPMENT OF A RANDOM SAMPLING PROCEDURE FOR LOCAL ROAD TRAFFIC COUNT LOCATIONS

3.1 Introduction

Traditionally, transportation agencies have conducted routine traffic volume counts on higher volume highway corridors. However, local roads are important and unique because of the fact that they account for a considerable amount of the total roadway mileage. For example, local roads make up 67% of the total roadway mileage and 12% of the VMT in Kentucky (*1*). Since traffic counts have typically only been conducted on local roads for events such as road improvement projects and specific developments, the counts are not random which creates problems for estimating total travel on this class of roads.

In September 1998, the need to estimate the overall travel on local roads was further motivated by the EPA who issued a mandate requiring 22 states (including Kentucky) and the District of Columbia to submit state implementation plans (SIPs) regarding the transport of ozone across state lines (*2*). Nitrous oxides contribute to ozone, or smog, which causes serious unfavorable impacts on the environment and human health such as damaged vegetation, water quality deterioration, acid rain, and respiratory and heart disease. Sources of NO_x emissions include motor vehicles and electric utilities. The EPA requires state agencies to provide VMT by land-use classification, road-type, and vehicle-type in order to estimate the amount of vehicle emissions being produced on the county level.

VMT is most commonly estimated from average 24-hour traffic counts at points along roads or a subset of roads. The traffic count is adjusted for daily and seasonal factors and then multiplied by the length of the road section to get the VMT. For example, if 1000 vehicles travel a 2-mile section of road, the VMT is estimated to be 2000 vehicle-miles. Likewise, if there are a total of 100 miles of a particular road class in a county and the mean of a number of random traffic counts is 40,000 vehicles per day, then the county-wide VMT estimate is 4,000,000 vehicle-miles for that class of roads. VMT estimated from the existing non-random local road counts and total mileage would overestimate VMT given that the more heavily traveled local roads are the ones more often counted. These more heavily traveled local roads have traditionally been classified functionally as local, but are state maintained.

Now that air quality and not traffic management is the focus of local VMT determination and local traffic count efforts, the problem of determining random locations for local road traffic volume counts must be solved. One common source of random traffic counts is the HPMS established in 1978 by the Federal Highway Administration (FHWA). It is a data collection effort designed to provide current statistics on the condition, use, operating characteristics, and performance of the nation's major highways. This travel information is routinely available for major highway systems and given that it contains random statewide and national information it is useful for the estimation of VMT. In Kentucky, this information is used for estimating the total VMT for the entire arterial and collector road systems, even though the sample is not completely random. In order to get the HPMS sample for submittal to the FHWA, each state had to break the arterial and collector routes into logical roadway sections. Rural section lengths were to range from 3 to 10 miles. Urban access-controlled facility sections were not to exceed 5 miles. All other urban sections were to be between 1 and 3 miles. A random sample was then taken from this total set of road sections (*3*). What made the sample non-random was the various section lengths and the fact that there were no instructions for selecting the point on the section to take the traffic count. Some agencies may have counted at the busiest point or others at the center. Although some states count local roads as part of the HPMS, most do not.

It might seem that producing a spatially random sample could be easily accomplished by dividing the local roads into segments of a particular length (one tenth of a mile is common for other purposes) and selecting a random sample from this database. However, local road Geographic Information Systems (GIS) databases from which sample locations would be drawn are less developed than those for more major roadways. Given a tenth of a mile section it would be necessary to attribute every road segment in the database with starting points, ending points and mile point locations in order to produce maps of the count locations for field workers. One additional complication is the fact that many local roads, especially in urban areas, are shorter than the segment length that roads are normally divided into. This makes discretizing the routes complicated. Roads shorter than the segment length would always be a single segment and would have a higher chance per unit length of being selected.

It would be useful to have a procedure which selected random points on the roads directly or graphically, analogous to throwing a dart at a map blindfolded and counting at the road location that the dart hit. The objective of this study is to develop such a GIS-based random sampling procedure for the count locations on the functionally classified local roads. A subset of the Kentucky statewide sample that was generated through this procedure is used here to explore the bias issues that arise due to the grid-based nature of the procedure, the shorter length of some local roads, and the various directions or curves of individual roads. The following section of this paper describes other efforts to estimate VMT on local roads. The remainder of the paper describes the GIS grid-based procedure and the evaluation of the bias it creates. The results of the bias analysis are presented along with a description of a procedure to correct for the sampling bias. However, the sampling bias was considered small enough to recommend use of the straightforward sampling procedure without the more complicated bias correction procedure.

3.2 Other Efforts to Estimate Local Road VMT

Efforts have been made in several states to estimate the overall travel on local roads through random samples. Tennessee takes counts on local roads for specific highway projects, railroad crossing studies, and intersection analysis. These count locations are not typically selected randomly. Therefore, the Tennessee Department of Transportation (TDOT) sought other methods to get a random sample of count locations (*4*). In their study, a program that collects traffic count information for all bridges in the state whose span length is 24 feet or greater was analyzed for possible use. Crouch, Seaver, and Chatterjee (*4*) proposed a method to measure the randomness of these bridge counts for VMT estimation for rural local roads. The traffic counts at bridge locations were compared to a random sample of traffic counts at non-bridge locations on local roads in eight counties. The researchers developed the procedure used to collect the random sample for non-bridge locations. Each of the eight counties was divided into four square mile grids (the width and length were 2 miles), and a process of repeated systematic sampling was used. First, the grids throughout the county were sampled. Then, within each grid, the location of the actual count was chosen by randomly selecting x- and y-coordinates. Each grid cell consisted of a 10 by 10 matrix. From the randomly selected coordinates, the closest local road location was selected, and at this location, a traffic count was collected by TDOT. This is indeed a random procedure with one possible bias; shorter roads may be less likely to be closest to the 0.2 mile by 0.2 mile grid selected. When working with a large number of counties, the process could be labor intensive and time consuming. Using the random counts generated in this manner the researchers found the bridge counts to be an unrepresentative sample of all rural local roads in each county.

In a California study (*5*), vehicle miles traveled on dead-end unpaved roads were estimated on a random sample. Traffic counts were collected at random unpaved local road access points to paved roads. Because counting was conducted at the access points to prevent trespassing on the private roads, the issue of selecting the point along a road was not faced. Therefore, a random sample of whole roads was taken. The count locations were mapped using a GIS, so the sites could be easily found. The count provided an estimate of the number of trips generated on the unpaved road, and this was converted into VMT by assuming that there was a single destination on the road and that each vehicle entering or exiting the road traveled half the length of the segment. The assumption that the vehicle is traveling to or from the midpoint of the road may cause the VMT to be incorrectly estimated. For example, dead-end unpaved local roads could have one origin/destination point at the end of the road. This method is random, but it is only suitable for local roads that dead-end and have very few origin/destination points.

As part of this research study, an email survey of 45 states was conducted using contact names provided by the FHWA division office. The 29 replies indicated various methods for obtaining local road volume counts and sample locations. In Oregon, sample locations are picked from a select group of local roads that a software package indicates are under-sampled. The most recent counts from the local roads that are frequently sampled are then added to the counts of the sampled roads. The total sample may be nonrandom because the local roads that are frequently sampled are usually selected based on where road improvement projects are to be located, developments are to be built, or traffic problems exist. These are historically the higher traveled areas. The random sample of the under-sampled road segments is built by aggregating the full dataset as if it was one continuous road. Microsoft Excel then randomly picks a mile point along the road segments, and each pick becomes a location for a traffic count. The urban sample segments are 0.1-miles in length, while the rural sample segments are 1 mile. The count is taken at the center of the segment.

Other states provided less detailed input in the email survey. Vermont, for instance, selects what they think are the most "important" local roads for the counts. This, of course, is not random. West Virginia does not sample roads that have an average daily traffic value of less than 50 vehicles per day. This nonrandom method would certainly cause the VMT to be inflated if total road length was used for the estimate. In Wisconsin, local roads get counted for special reasons, such as a traffic problem or new development. Again, this is not a random sample and, therefore, the VMT estimate for EPA purposes could be incorrect. Wisconsin proposed developing a random sample of locations on local roads, but it was considered cost prohibitive.

Until recently, VMT estimations were mainly used to determine if a road needed improvements or expansion. Now that VMT is needed by the EPA to predict total vehicle emissions for each county, the importance of an accurate estimation is much greater. The formerly sufficient non-random sampling methods used by many states are no longer adequate. Clearly, a random sampling procedure for the count locations to be used for estimating the VMT on all functionally local roads that is not extremely labor intensive is needed.

3.3 The GIS Grid-Based Sampling Methodology

3.3.1 The Challenges of Finding a Methodology

The location and alignment of roads in most jurisdictions are now usually stored in GIS databases. In addition to this factor, the desire to have maps to direct field workers to count locations makes proceeding with a GIS-based method logical. When roadways are stored in GIS they are usually divided into segments (and, therefore, individual GIS features) at all intersections and many other points, some unsystematic. In the road databases for the three counties used in this study, local road segments ranged in length from a few feet to 10 miles. ArcView, a Windows-based GIS produced by the Environmental Systems Research Institute (ESRI), has a built-in function that can select a random set of such features or in this case segments. However, a random sample taken from this form of road database would not be appropriate for several reasons. First, the exact location on the road needs to be chosen and two locations on the same road segment need to have the opportunity to be chosen. The reasoning for this is based on the non-uniform variation in traffic volume along a road segment especially for longer roads where different intersecting roads and land uses affect traffic levels. Another reason that the sample could not be taken from this line network is that short and long segments would have been weighted equally. If the sample were taken from the existing GIS line theme, the precise location on the selected segment would then have to be subsequently chosen. Therefore, an individual point on a short segment would have a greater opportunity of being selected than a point on a longer segment.

As discussed in the introduction, a logical approach to developing the random sample would involve picking a random mile point or distance measure along these roads and then mapping it for the people conducting the counts. Knowing the length of every local road in a particular county, a line or row in a spreadsheet program could represent each 1/10th of a mile section. Most spreadsheet programs are capable of taking a random sample from the whole set. However, once the sample is taken it is difficult to direct the people making the traffic counts to the place to count. On local roads, there are typically no mile-markers to indicate location as there are with more major or higher volume roads. Maps of the count locations made in ArcView could have solved this problem. However, limitations in the coding of local road databases present a further problem for this mapping.

Mapping a specific point on a road is very easy with many GIS road databases that have been attributed with a feature called dynamic segmentation. Using this process, every road segment has two “special” attributes in its descriptive attribute table. One indicates the beginning linear reference marker at the start of the segment and the second indicates the end reference. The GIS can then locate any mile point on the road segment based on this information. This allows the mile point reference system to span across adjacent segments. The system could span across an intersection, for example. However, the available GIS databases for local roads rarely contain dynamic segmentation. Therefore, use of a sampling procedure that required start and end mile points to allow mapping would become a labor-intensive process.

As an alternative to creating dynamic segmentation attributes in the database, each individual road segment (as opposed to the whole road) could have been coded automatically with a start mile point of zero and an ending mile point of its length. However, using discrete mile point demarcations such as one tenth in the spreadsheet listing and random sampling still presents another problem for very short local roads especially in urban areas. Therefore, selection of a random continuous number between zero and each segment’s length would be necessary in a two-stage process like that used in Tennessee. In the first stage a weighted (by segment length) random sample, with replacement, of the road segments would be taken. In the second stage a point or points along the segment would be selected by random number generation. This procedure would require separate programming outside the GIS and the results would require subsequent transfer back into the GIS for mapping (because the mile points are not meaningful on a segment by segment basis or on local roads without field mile point markers).

The new methodology proposed here is also two-stage but involves use of standard built-in functions of the typical GIS: grid generation, database intersection and random sampling from a feature table. The product is already a line feature in the database and is immediately mapped. Essentially a GIS-grid is generated and used to cut the road segments into small point-like sections, making a new theme from which the random sample is drawn using the direct built-in random sample command. The procedure ensures that the sample locations are spread randomly throughout the study area and that each point-like section along all roads has an equal chance of being in the sample regardless of the total length of the road.

3.3.2 Creating the Point-like Sections for Three Study Areas

In this case the primary GIS used was ArcView. Because the procedure developed during this study involved cutting the roads into small sections using a grid, the shape and density of the local roads were considered potentially influencing and affected the selection of study areas. Since it was not feasible to include all 120 Kentucky counties, three study counties were used: Henderson, Pike and Fayette. Henderson County (440 square miles or 1140 km^2) was chosen because it is in the western part of the state where the flat plain topography results in grid-like roads (total of 601 miles (968 km) of local road). It includes the small city of Henderson, which has a population of approximately 27,000. Pike County (788 square miles or 2041 km^2) was chosen because it is in the eastern mountainous part of the state, had windy and curvy roads, and was considered a relatively rural county (total of 829 miles or 1335 km of local roads). Fayette County (284 square miles or 736 km^2), with a population of approximately 250,000, was selected to represent an urban county with a dense road network (total of 734 miles or 1182 km of local roads). The separate GIS themes for state-maintained, county-maintained and city-maintained local roads were combined for the three test counties to obtain three local road GIS databases.

Unfortunately, ArcView does not have the capability to create a grid (a set of adjacent polygon squares covering a certain area or extent). However, ArcInfo, a compatible ESRI GIS, does have a grid function. Grids were created in ArcInfo by specifying the extent of the area and the grid size. They can be directly used in ArcView. The use of the grid as a "cookie cutter" using the intersection function in ArcView is demonstrated in Figure 1 where the inset shows that the roads in the square are now in four separate pieces or features. Each separate tiny line feature in the output database has a record in the attribute table from which ArcView's sampling script draws the random sample. Note that the random point-like road segments are selected, not the squares.

One obstacle with the grid approach is that some bias can be introduced by virtue of the point-like segments not being of equal length as illustrated in Figure 1. The grid being used to cut the roads into small sections was at 90° North, so the roads were being cut at different angles. Some of the sections were considerably longer than others. If you have two roads of equal length and one is cut into several short pieces and the other is cut into a few long pieces, then the road that was cut into several short pieces would have a greater chance of being selected in the random sample. Given that the local road traffic volume was found to vary with original road segment length and between the rural and urban areas, in order to have no bias, the number of segments a particular road was divided into would have to be directly proportional to the length of that road. This means that a road with twice the length of another road should be divided into twice the number of sections.

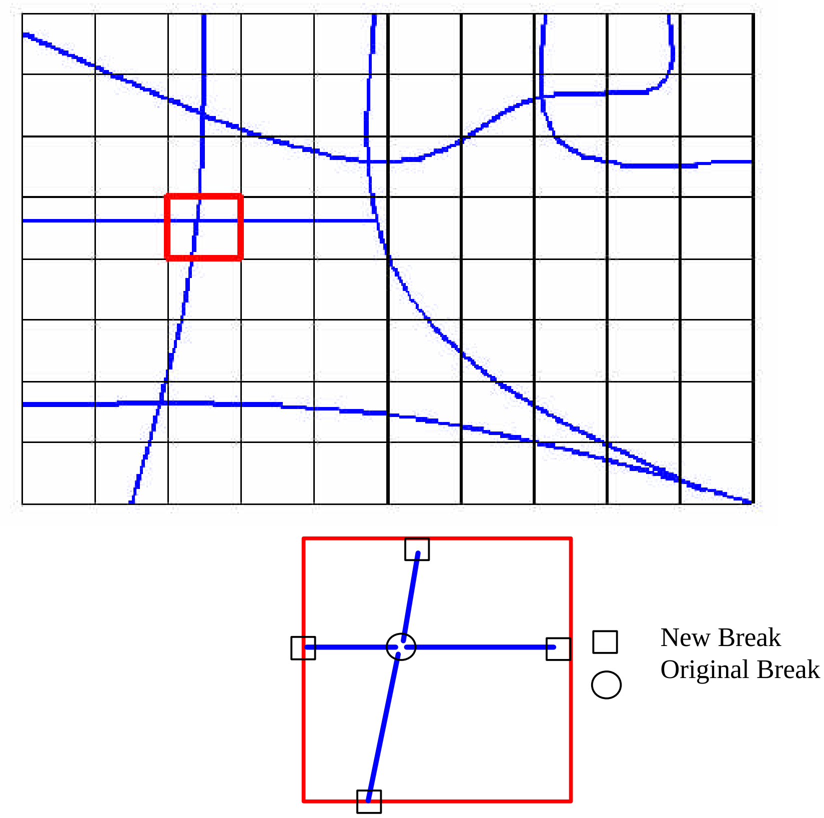


Figure 1. A "Cookie Cutter" Grid on a Network of Roads

The objective then becomes determining the size of the largest grid square that brings an acceptably low bias to the sample. As the grid size approaches zero, the point-like sections approach true points of zero length, which would present absolutely no bias. The smaller the grid square size, the more computer space and time used for the spatial analysis that cuts the road segments. The three counties were analyzed with 0.2-mile, 0.15-mile, 0.1-mile, and 0.05-mile grid square sizes. Although the space issue needed to be considered (the grid for one county at the 0.05-mile size was 148 MB) when choosing the final grid square size, the computing time and ability of a personal computer to do the intersection (cutting) without crashing were the more critical issues.

3.4 Consideration of Bias in the Point-like Sections

The development of a method to measure the bias that would be present in an average traffic count from a sample drawn using this process is necessary in order to compare grid sizes and determine if the straightforward sampling procedure could be used without a more complicated weighting procedure to correct for the bias. Once the road segments were cut by the grid, the length of the original road section and the number of point-like segments into which it was divided were available for use in measuring bias. Figure 2 illustrates this data for one of the 0.2-mile grids in Pike County. (The lines and equations on this figure are described below.)

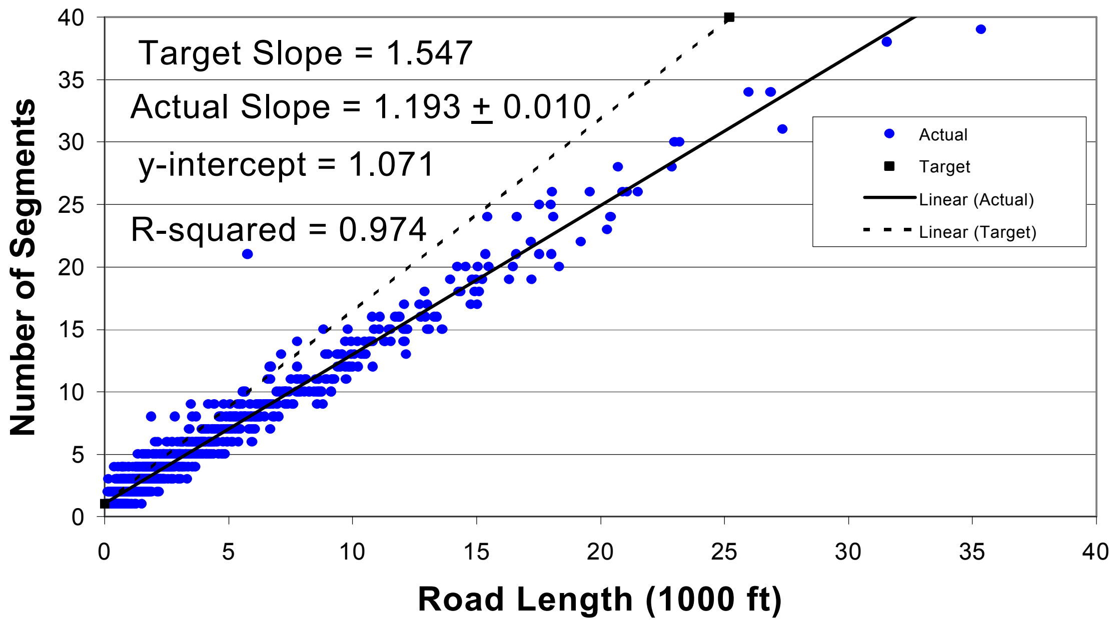


Figure 2. Bias Analysis for Pike County (0.20 mile grid)

The first of several indicators of bias considered was the coefficient on the X^2 variable in the equation for the best-fit quadratic curve (this curve is not represented on the figure). The value of the coefficient on the X^2 variable is an indication of the curvature of the line and increasing values of the coefficient would indicate bias. A negative value would indicate that the line curved downward specifying that the longer roads were being cut into relatively fewer pieces and were, therefore, under-represented in the sample. A positive value would denote the opposite; longer roads were over-represented in the sample. The magnitude of the coefficient for the X^2 term also provided an indication of whether it was appropriate to proceed using a linear regression-based representation of the relationship between road length and number of point-like segments.

Bias analysis graphs and equations such as that shown in Figure 2 were generated for each county and grid size analyzed. The coefficients on the X^2 variable in the equation for the best-fit quadratic line as generated by Excel are shown in Table 1. Bold values are statistically significant at the 0.05 level. Within an individual county, the value of the coefficient fluctuates. This alone is not insightful. It is the comparison between counties that provides some useful information. The magnitude of the coefficient is substantially greater for Fayette County than it is for Henderson and Pike Counties. This is evidence that the grid process works better for rural roads than for urban roads because they are longer and less dense. The low magnitude of these coefficients was considered justification to proceed with representing the relationship with a linear equation.

	Coefficient on the X^2 variable	y-intercept (linear)	r-squared (linear)
Pike County			
0.20 mile grid	**-0.0007**	1.071	0.97
0.15 mile grid	-0.0005	1.066	0.98
0.10 mile grid	0.00001	1.023	0.99
0.05-mile grid	**-0.0016**	1.026	0.99
Henderson County			
0.20 mile grid	-0.0005	1.049	0.98
0.15 mile grid	**-0.0011**	1.11	0.98
0.10 mile grid	-0.0001	1.038	0.99
0.05-mile grid	-0.0013	1.036	0.99
Fayette County			
0.20 mile grid	**-0.0054**	1.005	0.74
0.15 mile grid	**-0.0120**	1.012	0.81
0.10 mile grid	**-0.0073**	1.016	0.90
0.05-mile grid	**-0.0123**	1.032	0.97

Table 1. Y-Intercept, R-Squared, and X^2 Coefficient

However, it is important to note that the relationship could be linear (X^2 coefficient = zero) and bias could still exist. Therefore further consideration of the linear regression equation was undertaken. One factor considered in measuring this bias was the y-intercept of the best-fit line. On one hand, this value would ideally seem to be zero because a road of zero length should be divided into zero sections. However, a y-intercept of one would indicate that a road of very small length was divided into one section. But this indicates that very short roads will be automatically over-represented in the sample. As evident in Figure 2 some very short roads were divided into up to 3 or 4 segments. As shown in Table 1, the y-intercept value did not vary significantly as the grid size was changed. For all counties and grid sizes, it hovered just above 1, which is expected because very short segments would most often be cut into one piece or, at most, two pieces. This result illustrates that some bias will be present with all grid sizes given that short segments are over-represented.

The line corresponding to no sampling bias due to road length would be expected to have a certain slope referred to here as the target slope. The target slope is obtained by dividing the total number of segments in a county by the total length of local roadway in that county. For example, if there are 5,000,000 distance units of local road in a particular county, and a specific grid size cut these roads into 7000 segments, the segments should be on average 714.29 distance units (5,000,000 distance units / 7000 segments) long. The target slope is the inverse of this number (divided by 1000 for the graph scale shown) and the line on Figure 2 was derived by using this slope with a y-intercept of one.

Comparison of the target slope to the actual slope first required consideration of the r-squared value. The r-squared values shown in Table 1 indicate that both the sampling procedure and the weighting procedure described below which is based on the linear slope are better suited to the non-urban areas. The variation in the number of segments decreases with the smaller grid square sizes as expected. However, the relatively high overall r-square values indicate that the best-fit line does indeed represent the data well. It provides legitimacy to the comparison of the actual and target slopes described below.

Table 2 includes the target slope, the actual slope of the best-fit line, and the percent difference between its slope and the target slope. The range included with the slope is the 95% confidence interval. The confidence interval was inspected for the inclusion of the target slope. None of the target slopes were included indicating bias was present.

In each county the percent error between the target slope and the actual slope decreased as the grid square size approached zero, as expected. The target slopes are greater than the actual slopes indicating that as road length increases the road becomes under-represented in the sample. Fayette County had percent errors that were greater than the other two counties. Again, this indicates that less dense roads are better suited to the grid process. Henderson County's grid-like roads have smaller error than Pike County where roads are curvier. Therefore, it can be inferred that the grid procedure works best for grid-like roads and rural roads. The grid size is more crucial in urban areas.

In order to consider the impact of the bias due to road length and the grid procedure, weights were developed based on the slope comparison for application to the traffic counts collected for these three counties by the Kentucky Transportation Cabinet. Counts were performed during the calendar year 2000 at points selected using the 0.2-mile grid procedure (a worst case scenario). The number of 24-hour counts performed in Henderson, Pike, and Fayette counties was 164, 243, and 337 respectively. Counts were corrected for seasonal and weekly factors using constants developed in Kentucky based on counts on all functionally classed roads over many years.

	Target Slope	Slope	Percent Error
Pike County			
0.20 mile grid	1.547	1.193 ± 0.0100	22.9
0.15 mile grid	1.945	1.593 ± 0.0103	18.1
0.10 mile grid	2.752	2.414 ± 0.0116	12.3
0.05-mile grid	5.182	4.841 ± 0.0137	6.6
Henderson County			
0.20 mile grid	1.552	1.260 ± 0.0120	18.8
0.15 mile grid	1.977	1.668 ± 0.0143	15.6
0.10 mile grid	2.802	2.512 ± 0.0161	10.3
0.05-mile grid	5.296	5.009 ± 0.0245	5.4
Fayette County			
0.20 mile grid	3.029	1.228 ± 0.0170	59.5
0.15 mile grid	3.441	1.629 ± 0.0183	52.7
0.10 mile grid	4.258	2.441 ± 0.0190	42.7
0.05-mile grid	6.754	4.908 ± 0.0206	27.3

Table 2. Slope Comparison

The best-fit line and the target line were known for each county for the 0.2-mile grid size. In other words for a road of a particular length, the number of segments into which it was divided and the number of segments into which it should have been divided were known. The weight was calculated as the ratio of the number of segments into which the road of a given length should have been divided if no bias by road length existed and the actual average number of segments into which the road was divided. This weight varied by road length as illustrated in Figure 3 for Pike County for all grid sizes. Using the weights for the 0.2-mile grid size a weighted average for the 24-hour traffic count, or ADT was calculated. Table 3 presents the sampled and weighted average ADT and the subsequent sampled and weighted VMT estimate for the local roads in each county based on the 0.2-mile grid process. The table demonstrates that without the weighted ADT, the VMT estimate for each county would be slightly overestimated. The greatest difference is in Fayette County. This is further evidence that the weighting procedure is more necessary in urban areas but also a function of the greater number of shorter roads in an urban area. However, the percent difference due to the sampling bias is small and deemed acceptably low for the modeling purposes in either planning or the air quality considerations described at the beginning of this paper. Based on the slope comparison the bias would be even less with the smaller grid sizes. It would not be useful to undertake the multi-stage weighting procedure calculations.

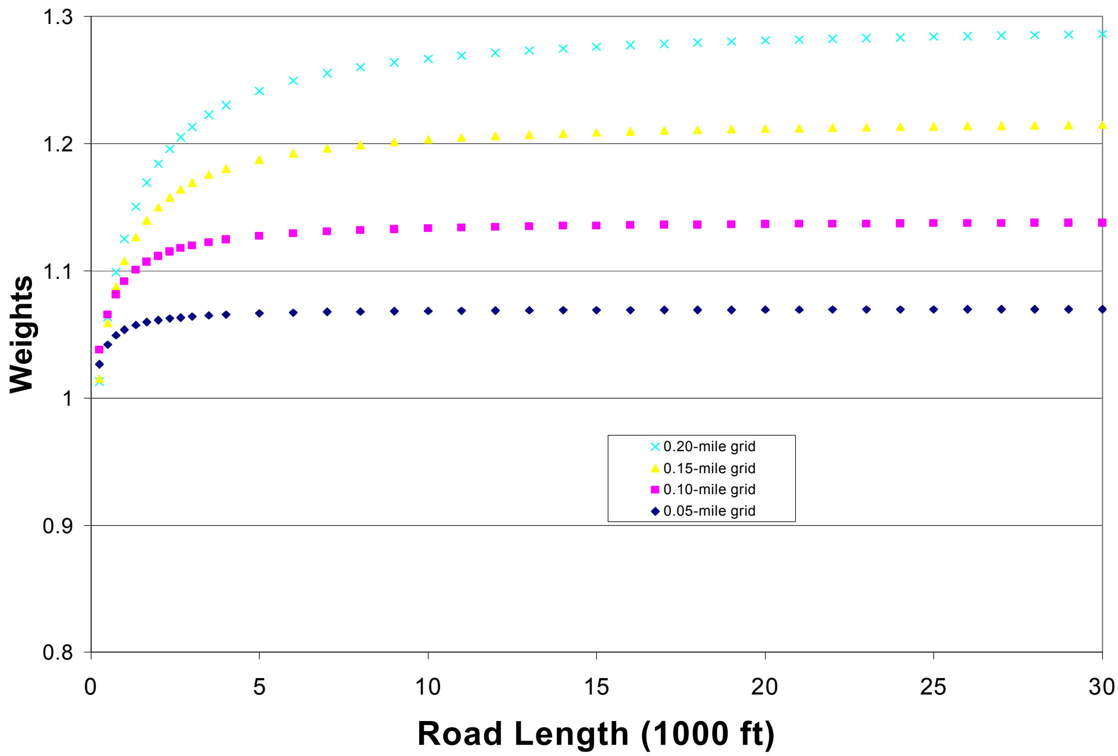


Figure 3. Pike County Weights

	Average ADT (veh/day)	Average weighted ADT (veh/day)	VMT Estimate (veh-miles)	Weighted VMT estimate (veh-miles)
Pike County	454.87	453.18	377232.79	375831.24
Henderson County	386.27	367.59	232105.78	220881.16
Fayette County	747.06	719.56	548177.69	527998.74

Table 3. Corrected and Uncorrected ADT and VMT Values (0.2 mile grid-based sample)

3.5 Conclusions

In summary, a straightforward sampling procedure has been developed and validated that will allow random sampling of traffic count locations on extensive local road systems. Due to use of built-in GIS commands, sampling does not require time-intensive processes and the results can be directly mapped for field use. The procedure offers a means to determine not only a random road but also the point along the road where counting should occur. Furthermore, it can handle the very short local roads without greatly biasing the sample.

The analysis presented here provides guidance to determine a recommended grid size for use in sampling that would balance computer time/space while ensuring acceptable randomness of sampling. Attempts to use grid sizes below 0.05-miles were not successful in ArcView for the study areas used. Although individuals should select a grid square size based on their computer capabilities and the characteristics of the roads in their study, these results indicated that a larger grid size can be used for rural roads and grid-like roads. The grid square size needs to be smaller for urban counties due to the dense, short roads. Since the 0.05-mile grid square size is very difficult to work with, the 0.1-mile size is recommended for urban counties. The recommendation for rural counties is to use the smallest grid square size that is feasible, but a 0.2-mile size would be sufficient especially if roads are in a grid-like pattern.

3.6 Local Road ADT Sample with Spatial Variables

This section describes the sample of local road ADTs that were collected during this project, a summary of the data, and the regression results of a GIS analysis to determine if spatial variables such as local road density and distance from cities or interstates would be useful in predicting ADT.

Using the sampling procedure described previously, the locations for 24-hour traffic volume counts on local roads throughout the state were selected. Samples were taken in the 27 counties shown in Figure 4. One random rural and one random urban county was selected from each of the 12 highway districts in Kentucky in order to provide a geographic representation for the whole state. Because a significant portion of the population of the state lives within the Louisville, Lexington, and Northern Kentucky triangle, three additional counties were selected in this area: Shelby, Fayette, and Grant. Shelby and Fayette have both an urban and rural area while Grant has only rural areas despite being on the outer fringe of the rapidly growing area of Northern Kentucky.

In order to define the population of local roads from which the random sample would be taken for counting, the local roads were combined from the state maintained GIS road database and the county/city maintained GIS database. In some cases, certain roads changed functional class along their length. These roads were manually edited to ensure only the local segments were included in the database.

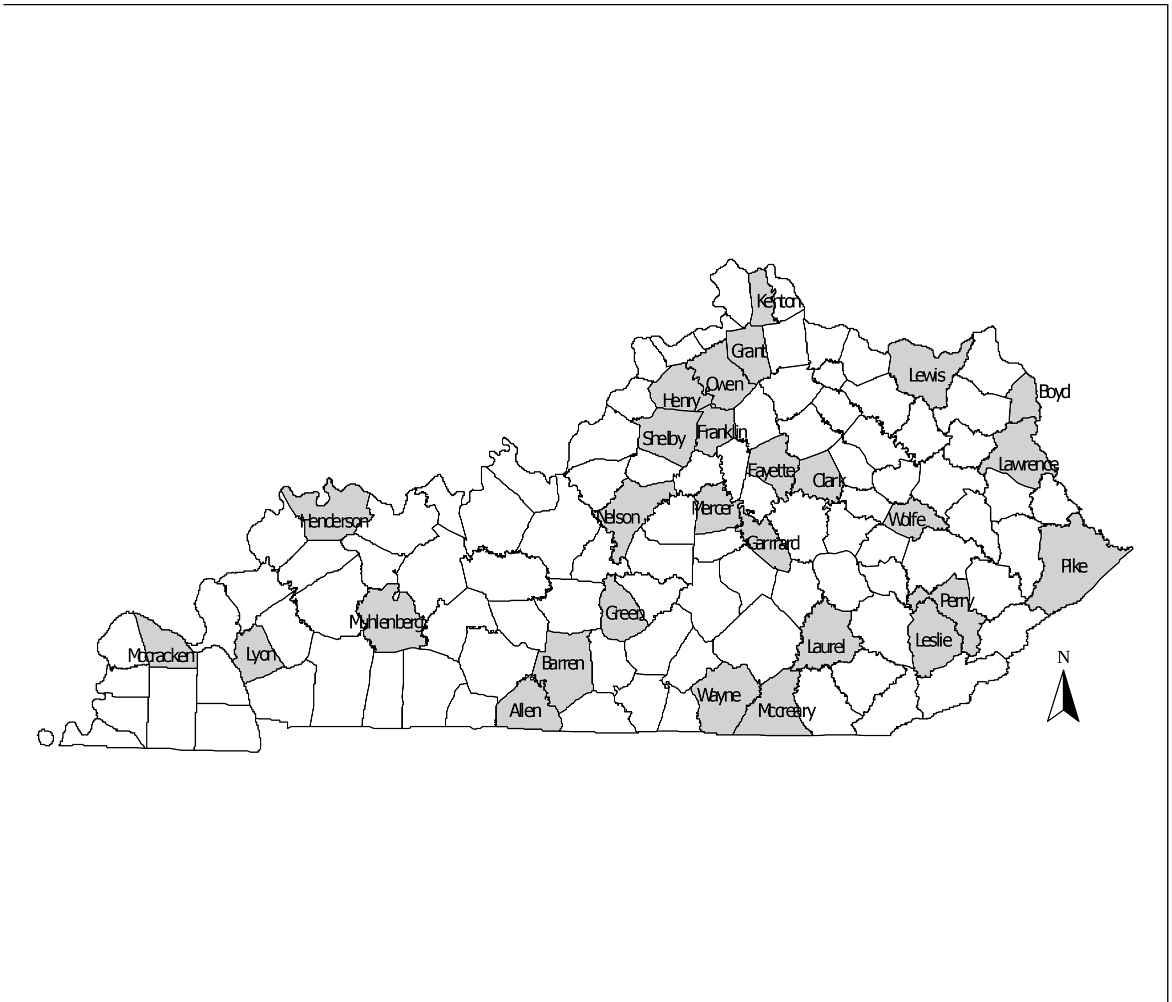


Figure 4. Counties Used in Local Road ADT Data Collection

Once the full local road database had been established for all 27 counties, it was necessary to separate the database for each county into separate rural and urban datasets. This was conducted at the direction of the KYTC and relates to their tradition of handling VMT predictions separately for urban versus rural roads. There was a desire to ensure both types of roads were represented. The separation procedure was conducted in GIS on a county-by-county basis. Because incorporated city boundaries do not necessarily match the boundaries of the urbanized areas, the GIS polygons of incorporated city areas were augmented with the areas that were considered functionally urban by the KYTC. This information was contained on paper maps and was manually entered into the GIS. One exception was Fayette County, where all roads are considered urban due to the single city and county designation. In this case, the urban service boundary was used to classify the local roads as either urban or rural. The second column of Table 4 indicates which counties contained both rural and urban local roads and which contained only rural. Once boundaries had been established for the urbanized areas, they were overlaid with the local road database for each county to divide the databases in two.

County	Rural / Urban	Target Sample Size	Final Sample Size
Allen	Rural	107	127
Barren	Rural /Urban	145/29	167/32
Boyd	Rural /Urban	45/86	47/99
Clark	Rural /Urban	N/A	63/63
Fayette	Rural /Urban	50/308	35/302
Franklin	Rural /Urban	42/52	48/56
Garrard	Rural	56	62
Grant	Rural	79	92
Green	Rural	97	102
Henderson	Rural /Urban	106/44	119/45
Henry	Rural	66	72
Laurel	Rural /Urban	163/25	176/24
Leslie	Rural	74	86
Lewis	Rural	99	105
Lyon	Rural	92	107
McCracken	Rural /Urban	45/91	50/88
McCreary	Rural	138	160
Mercer	Rural /Urban	62/25	72/27
Muhlenburg	Rural	142	150
Nelson	Rural /Urban	77/28	88/31
Owen	Rural	78	76
Perry	Rural /Urban	76/25	90/28
Pike	Rural /Urban	191/25	219/24
Shelby	Rural /Urban	62/25	67/24
Wayne	Rural /Urban	106/25	126/29
Wolfe	Rural	56	62
Total		**3375**	**3801**

Table 4. Local Road ADT Sample Locations by County

The total number of traffic volume counts to be taken was based on the budget available in the KYTC Division of Transportation Planning, which was separate from this project. The counts were to be conducted by Wilbur Smith Associates, some KYTC Divisions, and some Area Development Districts. Although the count locations were determined as part of this project, the count management was conducted by the KYTC. The total target number of counts for each rural and urban section of each county is shown in Table 4 column 3. The 3375 counts were allocated proportionally to the length of local road in the jurisdiction, but assuming that 25 was the minimum number that should be counted in any given rural or urban jurisdiction.

As shown in Table 4 column 4, the actual number of counts taken was different from that intended. This occurred for several reasons. Clark County was added after the fact at the request of the KYTC thus increasing the overall total. In the random sampling procedure, an over sample of 15% was taken. These “extra” locations were used in several ways. First, extras were used to replace roads that could not be found, did not exist, or could not be counted for various reasons. Second, when two locations were adjacent to each other such that no intersection or traffic generation was present between them, another count was taken and the count at the one site was used as the count at the adjacent site. This ensured that the contractors still took the number of counts for which they had been hired, while effectively increasing the sample size.

At the direction of the KYTC, the ADT at some count locations was estimated by the contractor instead of actually being counted. The equipment and software package that were used to process counts rounds to the nearest 10 vehicles in each hour. Therefore when a traffic count in one hour was less than 5 it was recorded as 0. In very low volume locations where it was expected that most if not all hours would be less than 5 vehicles (such as a dead-end road); the ADT was estimated using the following guideline. A residential home was assumed to produce a total of 10 trips per day. A business was assumed to produce 25 trips per day. In general if the field workers felt that less than 200 trips per day would be counted on the road he or she undertook estimation instead of an actual count. In total, exactly one third of the ADT data was estimated.

The counts received from the field workers were adjusted for seasonal and weekly variation using standard programs at the KYTC.

3.7 Local Road Traffic Volume Summary

A summary by county of the ADT values for rural and urban local roads is shown in Tables 5 and 6. Chi-square test results indicate that the mean ADT varies between rural and urban areas as well as by county. The mean ADT in urban areas was 763 while in rural areas it was 212. A standard deviation for rural areas of 386 indicates that there is wide variation in ADT on local roads. However, a standard deviation of 1323 for urban areas indicates this variation is even higher in the urban areas. This unfortunately dictates that large samples are needed in order to get good confidence in mean ADT values for local roads.

County	Maximum	Minimum	Mean	Median	Standard	Quartile 1	Quartile 2

	ADT	ADT			Deviation		
Allen	2285	0	212.7	80	368.7	30	232
Barren	1156	0	152.6	99	185.2	40	189
Boyd	2094	8	335	160	507.1	64	256
Clark	1310	30	279.8	184	284.5	118	304
Fayette	1916	8	532	299	562.3	144	869
Franklin	2356	24	299.2	161	453.8	86	313
Garrard	2759	0	294.8	105	534.2	38	242.3
Grant	2094	0	222.1	130	357.2	60	227.5
Green	2290	0	118.2	48	269	23.5	119.2
Henderson	2420	0	162.8	60	337	19	178
Henry	1169	0	162.7	94	223.6	34	175
Kenton	300	40	154.3	145	83.6	77.5	227.5
Laurel	7325	0	305.6	168	630.6	41	335.8
Lawrence	1785	0	137.1	53	260.3	30	102.3
Leslie	2393	0	219.8	143	317	47.5	268
Lewis	2560	0	177.6	85	344.2	32	197
Lyon	2173	0	131.3	55	261.3	20	147
McCracken	1186	0	180	120	216.9	37	214.2
McCreary	2378	0	154.6	50	287.6	20	180.5
Mercer	620	0	165.7	138.5	157.3	47.7	204.5
Muhlenberg	4771	0	182.5	80	440.8	30	202
Nelson	1064	0	192.3	138.5	205.1	51.2	244
Owen	2294	0	170.5	51.5	382.8	16.5	183.8
Perry	1869	0	263.3	159	329.4	59	394.8
Pike	5592	0	391.3	180	630.2	90	463
Shelby	1107	9	221.6	156	212.8	92	267
Wayne	980	0	113.9	55	166.8	28	129
Wolfe	393	0	84.2	64	84.3	16	109.5

Table 5. Local Rural Road ADT Summary

County	Maximum ADT	Minimum ADT	Mean	Median	Standard Deviation	Quartile 1	Quartile 2
Barren	10069	10	962.219	400.5	1826.6	121	1070
Boyd	6862	0	425	175	1073	100	260
Clark	6612	0	1077	478	1376	228	1626
Fayette	10587	0	772	365	1271.2	137	861.2
Franklin	5495	0	858	349	1263	155	973
Henderson	7495	0	977	589	1397	158	1318
Kenton	14114	0	805	234	1536	150	627
Laurel	4919	20	902	362	1414	45	1149
McCracken	7238	0	535	228	969	113	504
Mercer	4402	0	636	132	1038	50	703
Nelson	6956	0	1114	488	1504	140	1659
Perry	1924	19	460	256	531	134	630
Pike	9794	0	1035	189	2140	90	1189
Shelby	1843	0	612	426	579	88	1161
Wayne	3455	0	587	261	732	165	709

Table 6. Local Urban Road ADT Summary

3.8 Regression Analysis to Predict Local Road ADT

A standard set of county level variables were available and used elsewhere in this project to predict VMT. These include: 1) population, 2) average per capita income, 3) employment, 4) county-wide total earnings, and 5) licensed drivers. Table 7 indicates the R-square results of linear regression models to predict the mean county-wide local road ADT from this dataset using each of these county-wide variables. The R-squared values were used as a measure of the amount of variance in the ADT that each variable could account for. None of the variables for the urban areas produced results that would be acceptable. The results for the rural areas are promising in terms of use of these variables to forecast VMT and ADT on local roads.

URBAN

Dependent Variable	Independent variables	R-Squared
Mean ADT	Population (P)	0.002
	Income (I)	0.001
	Employment (E)	0
	County-wide Total Earnings (C)	0.001
	Licensed Drivers (L)	0.002

RURAL

Dependent Variable	Independent variables	R-Squared
Mean ADT	Population (P)	0.422
	Income (I)	0.263
	Employment (E)	0.474
	County-wide Total Earnings (C)	0.484
	Licensed Drivers (L)	0.416

Table 7. Regression Results for County-Level Variables

In this phase of the project, the main objective was to generate and test spatial variables generated by GIS to determine their usefulness in predicting ADT on local roads. Six new variables were generated for each count point using ArcView. These had the advantage of not being county based but specified to the actual location of the road section. The first three variables were local road densities. The variables were equal to the number of miles of local road in a 1, 2, and 5-mile radius of the count location. This was considered a proxy measure of the surroundings of the road in that remote locations would have low road densities and city or congested areas would have higher road densities. The final three variables were the straight-line distance between the count location and the nearest freeway or main highway, city, and state road respectively. The main highways used in this calculation are shown in Figure 5 while the cities used are shown in Figure 6.

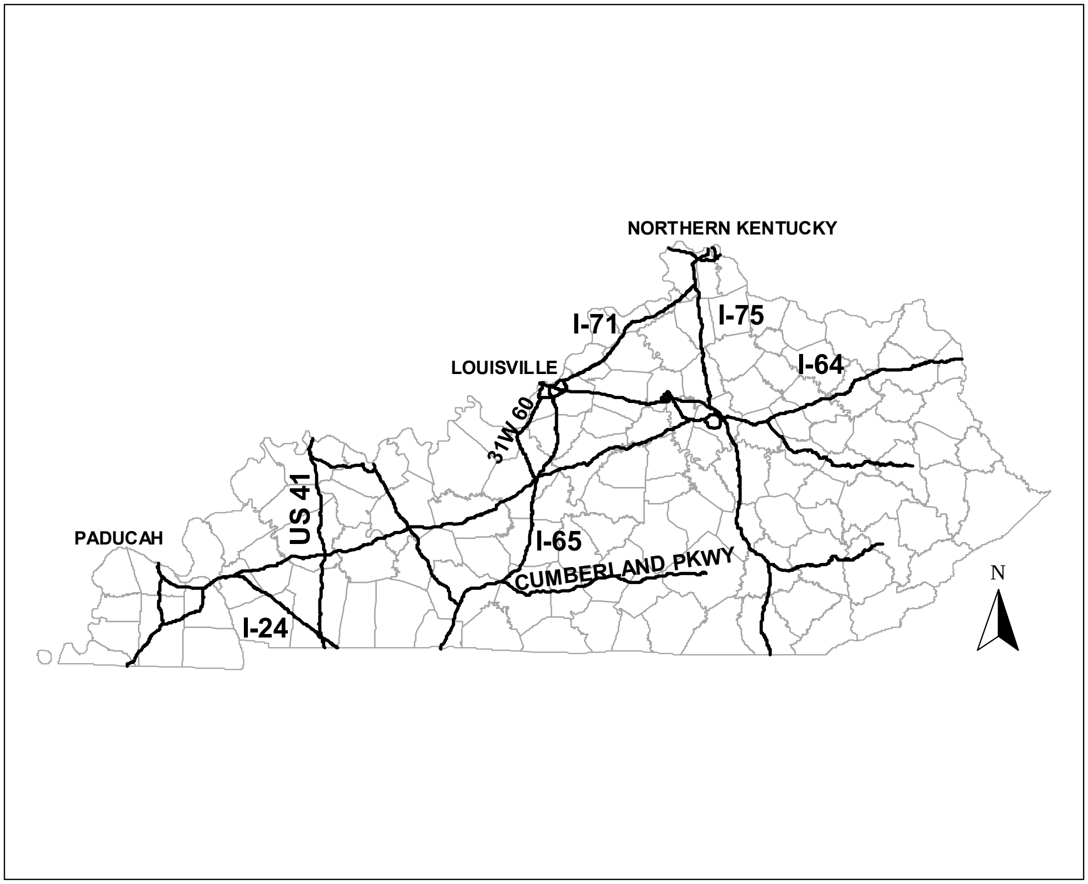
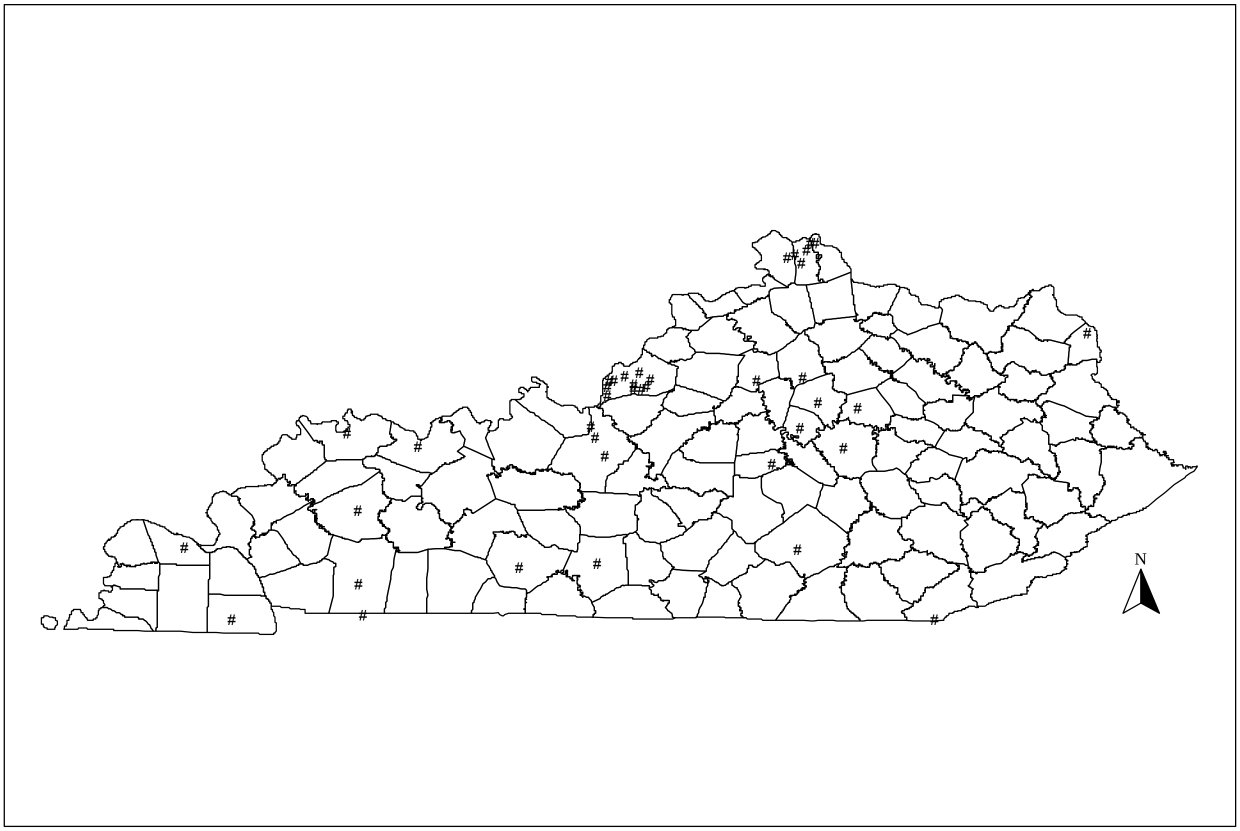


Figure 5. Major Highways Used in Distance Calculation



Ashland
Bowling Green
Covington
Danville
Elizabethtown
Erlanger
Fern Creek
Florence
Fort Campbell North
Fort Knox
Fort Thomas
Frankfort
Georgetown
Glasgow
Henderson
Highview
Hopkinsville
Independence
Jeffersontown
Lexington-Fayette
Louisville
Madisonville
Middlesborough
Murray
Newburg
Newport
Nicholasville
Okolona
Owensboro
Paducah
Pleasure Ridge Park
Radcliff
Richmond
Shively
Somerset
St. Dennis
St. Matthews
Valley Station
Winchester

Figure 6. Cities Used in Distance Calculation

The results of the regression models for each county with these spatial variables as predictors are shown in Tables 8 and 9. The regressions were also performed for all the data points together and this is indicated in the “all counties” column. Overall these variables on their own do not account for a significant portion of the variation in the ADT and could not be used to predict local road ADT. However, in the case of rural roads, the road density variable does explain up to 5% of the variation and could be used in combination with other predictors.

Independent variables	Barren	Clark	Fayette	Franklin	Henderson	Kenton	Laurel
1 mile local road density	0.053	0.012	0.01	0.006	0.003	0.006	0.015
2 mile local road density	0.052	0.004	0.032	0.006	0.043	0.003	0.015
5 mile local road density	0.026	0.008	0.047	0.034	0	0	0.034
Distance from Major Road	0	0.028	0.018	0.069	0.007	0.006	0.406
Distance from City	0.036	0.008	0.022	0.003	0.075	0.005	0.389
Distance from State Road	0	0.028	0.036	0.056	0	0.002	0.072

Independent variables	Mercer	Nelson	Perry	Pike	Shelby	Wayne	All counties
1 mile local road density	0.111	0.274	0.065	0.011	0.069	0.008	0.016
2 mile local road density	0.005	0.198	0.064	0	0.022	0.002	0.011
5 mile local road density	0.076	0.036	0.008	0.005	0.11	0.002	0.003
Distance from Major Road	0.094	0.006	0.08	0.001	0.114	0.093	0.0005
Distance from City	0.109	0.028	0.004	0	0.001	0.029	0.0005
Distance from State Road	0.053	0.064	0.031	0.002	0.048	0.006	0.008

Table 8. Urban ADT R-Squared Regression Results for Spatial Variables

Independent variables	Allen	Barren	Boyd	Clark	Fayette	Franklin	Garrard
1 mile local road density	0.149	0.017	0.226	0.058	0.116	0.215	0.317
2 mile local road density	0.173	0.005	0.277	0.396	0.365	0.242	0.065
5 mile local road density	0.149	0.005	0.138	0.209	0.326	0.126	0
Distance from Major Road	0.011	0.055	0	0.005	0.001	0.06	0.054
Distance from City	0.017	0.029	0.243	0.267	0.366	0.09	0.009
Distance from State Road	0.065	0.049	0.064	0.103	0.026	0.024	0.092

	Green	Henderson	Henry	Laurel	Lawrence	Leslie	Lewis
1 mile local road density	0.017	0.071	0.047	0.016	0.134	0.013	0.045
2 mile local road density	0.047	0.015	0.008	0.01	0.067	0.003	0.022
5 mile local road density	0.058	0.012	0.067	0.003	0	0.068	0.029
Distance from Major Road	0.003	0.057	0.007	0.078	0	0.013	0.028
Distance from City	0.009	0.02	0.022	0.013	0.004	0	0
Distance from State Road	0.034	0.044	0.033	0.024	0.073	0.053	0.006

	Lyon	McCracken	McCreary	Mercer	Muhlenberg	Nelson	Owen
1 mile local road density	0.018	0.027	0.071	0.023	0.022	0.062	0.031
2 mile local road density	0.03	0.053	0.06	0	0.041	0.242	0.005
5 mile local road density	0.05	0.015	0.048	0.054	0.035	0.299	0.005
Distance from Major Road	0.036	0.007	0.029	0.067	0.023	0.031	0.046
Distance from City	0.031	0.02	0	0.035	0.008	0.043	0.006
Distance from State Road	0.02	0.096	0.035	0.068	0.003	0.008	0.042

	Pike	Shelby	Wayne	Wolfe	All counties
1 mile local road density	0.054	0.048	0.026	0.006	0.026
2 mile local road density	0.021	0.066	0.009	0.018	0.024
5 mile local road density	0.003	0.018	0.029	0.014	0.19
Distance from Major Road	0.001	0.028	0.023	0.022	0.002
Distance from City	0.009	0.044	0.015	0.03	0.004
Distance from State Road	0.021	0.092	0.026	0.05	0.24

Table 9. Rural ADT R-Squared Regression Results for Spatial Variables

4.0 PREDICTION OF VMT BASED ON SOCIOECONOMIC DATA

4.1 Introduction

Traffic flow patterns and their likely growth trends are critical for planning, design, and maintenance of transportation facilities. Recent transportation authorization bills (TEA-21 and ISTEA) placed restrictions on construction of transportation facilities and tied that to meeting emission standards. This made the task of reliably estimating future travel more critical to the transportation planning process.

The KYTC has undertaken a number of studies to address different aspects of the traffic/travel growth issue. This study is one of several that are aimed at developing methods to estimate future travel levels in all counties of the State of Kentucky. This study develops models to predict VMT for interstate and non-interstate routes for each of the 120 counties. As predictors for VMT, the models use socioeconomic data such as income, employment, retail sales, etc.

This section documents all modeling attempts. Numerous modeling approaches were tried with varying degrees of success; the outcomes of all (successful and unsuccessful ones) are noted in this section. The unsuccessful ones still represent a valuable source of information for any future work in the area of traffic growth modeling.

4.2 Background

Reliable estimates of VMT are critical for highway planning and design. Because of enacted regulations by EPA and the requirements of recent transportation authorization bills (TEA-21), vehicle miles of travel play a critical role in determining the use of funds to construct and upgrade transportation facilities in areas that have been previously designated as being in non-attainment of the National Ambient Air Quality Standards (NAAQS). For these areas, EPA and the Kentucky Division for Air Quality are required to develop a State Implementation Plan (SIP) demonstrating how the area will achieve and maintain attainment of the NAAQS. Utilizing the EPA mobile source emission model to determine future emission rates, and taking into account forecasted county-level VMT, along with associated speed distributions, this SIP establishes maximum level (budgets) emissions that can be produced by highway mobile sources in future years. These emission calculations are performed periodically to determine if the area is in "conformance", i.e. that the calculated emissions are not greater than the budgeted emissions as set in the SIP. Against this background, this study was initiated to develop models to predict future VMT.

Currently, VMTs for a given county are estimated based on traffic volume counts, mileage of different road classes, and a measure of socioeconomic activity in the respective counties. Where actual traffic counts are not available, estimates based on modeled historical data are used.

The initial effort of this study aimed at developing VMT growth trends at the county level for each roadway functional class. Because of the limited number and coverage of traffic counting stations, this objective was later revised, and roadways were divided into only two classes: Interstate and non-Interstate. VMT growth models were to be developed for these two roadway classes.

4.3 Objective

The objective of this section is to develop models to predict VMT at the county level using socioeconomic data as "predictors". The predictors should be such that they, themselves, can be reliably predicted for future years. The resulting models should have a reasonable level of accuracy (a ±10% error was established as a goal). Yearly VMT growth should be within the KYTC's established "normal" ranges. Other appropriate statistical and data quality tests will have to be satisfied.

The underlying rationale is that VMT are generated because of socioeconomic data within an area, and that trends in socioeconomic data may be good indicators of how VMT will change. The approach to be developed in this chapter may be used in parallel to using actual ADT and road mileage.

4.4 Data Input

The 1993-1999 VMT database (Appendix C) developed by the Division of Planning at the KYTC was used to build the VMT prediction models. The county estimates of VMT are prepared by the KYTC each year for all counties in Kentucky. Furthermore, VMT are prepared by functional class and area type (i.e., rural vs. urban).

The socioeconomic data was based on the Woods and Poole published data (6). Appendix D lists the socioeconomic data for each county for each of the study years (1993-1999). A list of available socioeconomic variables is shown in Table 10. Data on these variables is available for past and current year. Projections are also available for future years (but not for licensed drivers).

Variables
Population
Earnings (includes individual but not corporate earnings)
Employment
Per Capita Income
Retail Sales
Number of Licensed Drivers (not shown in Appendix C)

Table 10. Socioeconomic Variables Used

4.4.1 Data Measures of Quality

Two sets of quality measures were used to ensure the usefulness of the developed models. First, specific tests on the inputs and outputs that are standard with each of the modeling approaches were used. The second set is one that was imposed by the KYTC. This measure specifically requires that errors in prediction do not exceed ±10% for a given county during a given year. Errors in prediction are calculated from existing (given) and modeled VMT values:

$$\% \text{ Error} = 100*(\text{Given VMT}-\text{Predicted VMT})/\text{Given VMT}$$

Additionally, when models are tested in forecasting applications, yearly VMT variations are to be within general ranges. These rules-of-thumb were developed based on historic trends: 1-6% increase per year for non-interstate VMT and around 2-4% increase per year for interstate VMT.

4.5 Methodology

Two modeling approaches were used to achieve the above objectives: 1) Linear regression, and 2) Neural Networks. Initial modeling effort was confined to linear regression only. Neural Networks were used when linear regression did not produce acceptable models. The basic approach was to try to establish association between VMT estimates (dependent variable) and the independent variables.

4.5.1 Regression Modeling

Two independent approaches were used based on linear regression. In the first, regression models were developed using county-based VMTs. The second developed state-based VMT then apportioned it to each county based on selected county socioeconomic measures. Within each of these approaches, different variations were used (described in the Results section). Unless otherwise noted, regression models were generated using the VMT estimates that the KYTC has generated over the years. No homogeneity of variance and normality tests were conducted for this data. Preliminary scatter plots were examined to establish any trends between VMT and the independent variables.

4.5.2 Neural Networks (NNets) Modeling

Neural Networks (Nnets) are computational structures capable of learning from examples and quickly recognizing the patterns they have learned (7). Put differently, Neural Nets simulate human neuron functions and interconnections between neurons, and can be implemented on digital computers. An important feature of neural nets is their ability to interpolate and extrapolate from known cases and thus produce the best approximation to the desired result even if the patterns to be recognized were not in the set of patterns used for the training (7). NNets resemble the brain in two respects (8):

1. Knowledge is acquired by the network through a learning process
2. Inter-neuron connection strengths known as synaptic weights are used to store the knowledge

NNets operate in the two fundamental modes of *learning (or training)* and *recognition (or testing)*. In the learning phase, a large set of example patterns (the training set) is presented to the input of the network. The outputs obtained are compared with the desired results and a set of internally stored parameters or "weights" of the network are modified according to a given learning algorithm. The process is iterated until the total error reaches an acceptably low level. In the recognition phase, the test data is fed to the network to produce the desired outputs under the effect of the weights.

A NNet consists of neuron, or nodes, and neuron synapses, or connections. The neurons are grouped together to form a layer of a NNet. Any NNet typically contains two or more layers, with interconnections between each two adjacent layers. NNets can handle highly nonlinear problems, which would be much more complex or impossible to solve using traditional analytical methods. They can solve these problems much more quickly as well. Put differently, NNets have the capability to detect causal relations between the data patterns that other techniques cannot. This derives from the unique structure and functioning of a NNet.

There are different structures for a NNet. The one used in this study is the Backpropagation Neural Network (BPN). A full description of this Net is beyond the scope of this report, and may be found in specialized texts (8).

The use of NNets for prediction is relatively new. NNets have been shown to have an advantage over traditional prediction techniques particularly when the data has some noise and where complex non-linear relationships exist between the dependent (predicted) and independent (predictors) variables. In these cases, NNets were shown to have a predicting advantage over traditional approaches such as regression.

For this study, Neural Networks were tried with different combinations (and forms) of variables.

4.6 Results

This section presents a brief account of the results from the different modeling approaches (and the variations within each). This summary accounts for both *successful* and *unsuccessful* trials. The account of unsuccessful trials is presented because of the valuable lessons and findings. This information is important for future work on this subject. A summary of the most promising models, henceforth called final models, is presented at the end of this chapter.

The results are presented in two parts: The first part is the regression models; the later part is the NNet models. Within each of these two modeling approaches, numerous combinations of models, levels of aggregation (state vs. county-based), class of dependent variables (interstate VMT, non-interstate VMT, and combined VMT), and form of independent variables (logarithmic and normal form) were tried.

The final models are presented separately for *interstate* and *non-interstate* VMT. These are the best models that could be obtained; they do not necessarily represent models that are ready to use (see section 4.8 Discussion).

4.6.1 Descriptive Summary of All Trials and Results

Valuable information was gained from all modeling trials regardless of the level of success attained. This section provides a summary of all (successful and unsuccessful) modeling trials. This is being provided as a resource for future VMT modeling effort.

4.6.1.1 Regression

This section provides a summary of all regression-based modeling. Initially, models were developed based on degree of aggregation: county-based and then state-based models. The general form of the model is:

$$VMT = Constant + a_1 X_1 + a_2 X_2 + \ldots + a_n X_n$$

Where a_i is a regression coefficient and X_i is an independent variable.

For county-based models, VMT is for a given county-year combination. For state-based models, VMT is that of the state for a given year.

4.6.1.1.1 County-Based Regression Models

Initially, effort was directed at forming “logical” groups of counties using common characteristics. The idea was to develop separate models for each group of “similar” counties. However, all efforts to logically group counties were unsuccessful. Hence, the county-based models described throughout this chapter treated each county as a unique entity. Note that a county-year data constitutes an *observation*. In the language of NNets, it is a *pattern*.

In this case, county-based VMT and socioeconomic variables were used to develop the regression models. The best models were then used to predict VMT based on the corresponding socioeconomic data to verify their predictive ability at the county level. The following section presents a summary of the resulting models, along with an assessment of their potential for application.

From the county-level prediction error statistics, the county-based regression models generally lacked the predictive capability desired by the KYTC. Examination of errors for individual counties-years showed that for many points (county/year combination), the model grossly underestimates and in some cases overestimates the VMT. At least for such cases, the variables in the models seem inadequate to reliably predict VMT. Hence, the county-based regression models are inadequate to predict VMT with reasonable accuracy. This is in spite of the fact that very high values for the coefficient of multiple correlation (R^2) were obtained.

Additionally, problems caused by correlations among independent variables limited the usefulness of the models even if errors were within the acceptable limits. Inclusion and removal of some variables changed the values of the regression coefficients and signs of remaining variables. The problem of correlation is addressed in a subsequent section. As a point of clarification, correlation among independent variables does not mean that the regression models cannot be used; rather the unique contribution or importance of each variable—as measured by the regression coefficient—cannot be uniquely determined. It changes depending on what variables are included in the model. Hence, on both accounts--large prediction error and correlation among independent variables--the county-based regression models were not useful.

Tests revealed that most of the independent variables are highly correlated (Table 11). This finding is consistent with similar efforts in other states (9). This restricts the ability to interpret the contribution of individual variables in the model.

	Population	*Per Capita Income*	*Retail Sales*	*Employment*	*Earning*

Population	1				
Per capita income	0.463111	1			
Retail Sales	0.985234	0.489655838	1		
Employment	0.991666	0.467511402	0.994508921	1	
Earnings	0.987836	0.468945291	0.99284964	0.9988718	1

* Exact values of correlation coefficients would be different if different subsets of data are used.

Table 11. Correlation Matrix (using data for all counties for 1993-1999)*

4.6.1.1.2 State-Based Regression Models

In this case, models are developed to predict VMT at the state level. Time-based models were found to accurately capture the VMT growth trend. The models were then used to allocate the statewide VMT to each county based on population or a combination of socioeconomic factors. A sample of the models is shown in Figure 7. It is seen that the above model closely captures the state VMT growth trend. Other variations of the above modeling approach produced comparable results.

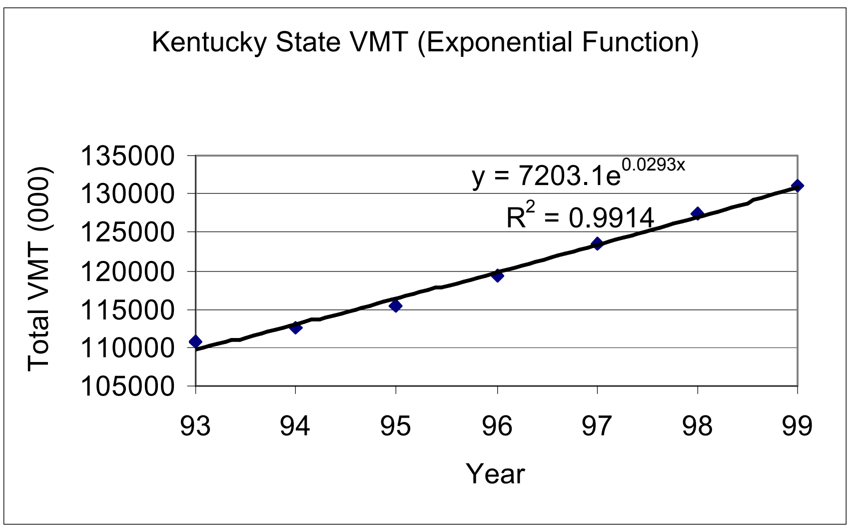


Figure 7. Prediction of State VMT (combined interstate and non-interstate VMT)

Upon allocation to counties based on population, and based on the resulting error as measured at the county-level, this approach still lacks the predictive capability desired by the KYTC (see Table 12 and Figure 8). Figure 8 shows that approximately 75% of the predictions are more extreme that the ±10% limits. When compared to the county-based regression models, the state-based regression models have smaller average error--but not small enough to meet the KYTC's prediction accuracy constraint.

Maximum Percent Error	59.0072

Minimum Percent Error	-74.3602

Table 12. Percent Error at the County Level (based on state-wide models)

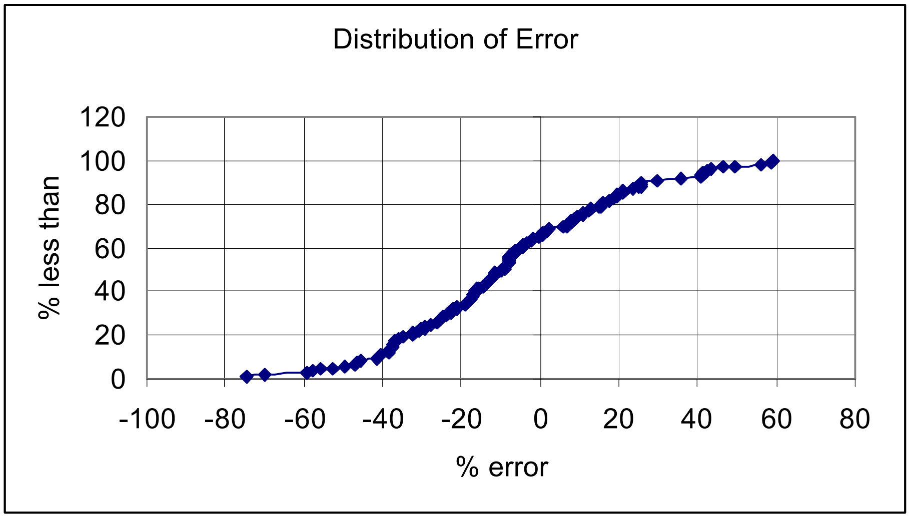


Figure 8. Distribution of Observation Error over the Error Range (interstate and non-interstate VMT combined)

4.6.1.1.3 Addressing the Problem of Correlation between Independent Variables (county-based models)

Two approaches were tried to reduce the impact of the correlation problem noted above:

1) Using reduced models (i.e., models with a limited number of not—highly-correlated variables) and,
2) Transforming the data (i.e., values of independent variables).

Although some of these attempts resulted in models that did pass standard statistical tests, they did not meet the KYTC's 10% error requirement. More specific information on these attempts is given in the following subsections.

4.6.1.1.3.1 Reduced Models

These are models with only limited number of independent variables (in some cases, only one independent variable). Variables were removed to help reduce the correlation problem. Separate models were developed to predict interstate and non-interstate VMT.

This step significantly reduced the problem of correlation. However, the predictive ability of the models at the county level significantly diminished as well. The predictive accuracy at the county level was well below what the KYTC considered acceptable (See a sample of the models below). It is shown that the models meet important statistical quality tests; however, the models grossly under/overestimated the VMT for several counties.

Sample of Reduced Models

a) Non-Interstate VMT (county-based):

VMT(000) = 160.0720062 + 0.018500727(pop)

R-Square =0.968283414

	df	*Sum of Squares*
Regression	1	1.24E+09
Residual	838	40543035
Total	839	1.28E+09

(Equation 1)

b) Interstate VMT (county-based)

VMT(000) = 140.0945954 + 0.010162643 (pop)

R-Square = 0.912011105

	df	*Sum of Squares*
Regression	1	3.34E+08
Residual	278	32102339
Total	279	3.66E+08

(Equation 2)

Note that based on the R^2 value and the sum of squares, the above models are very good models (i.e., high overall predictive capability). For illustrative purposes, the distribution of the errors associated with the predictions of the above two models is shown in Figure 9 and 10.

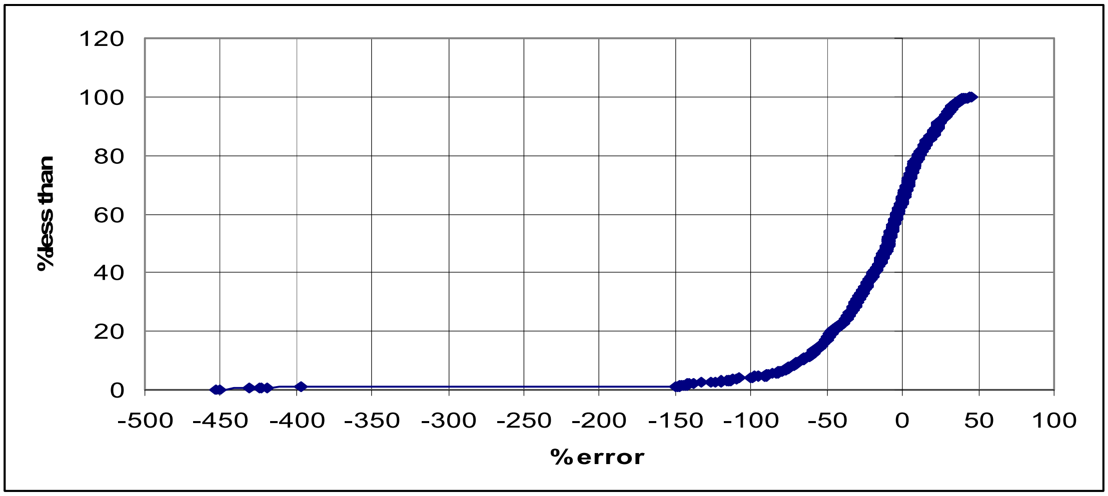


Figure 9. Distribution of Non-Interstate VMT Prediction Error over Error Range

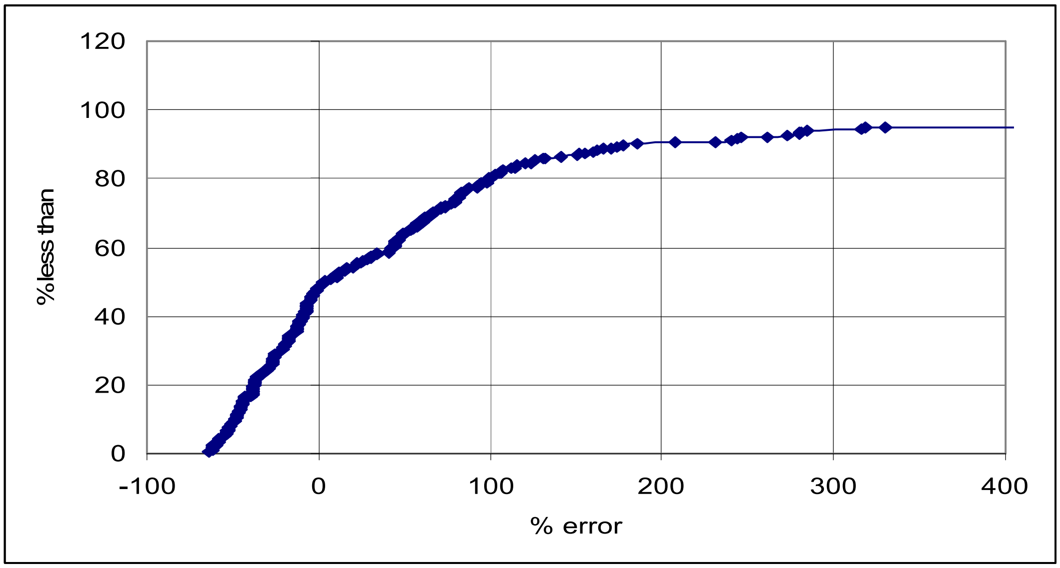


Figure 10. Distribution of Interstate VMT Prediction Error over Error Range

Figure 9 shows that only about 30% of the non-interstate VMT predictions were within the ±10% error limit. In the case of Interstate VMT (Figure 10) only 15% of predictions were within the ±10% error limit. The contrast between the quality of the models in Equations 1 and 2--as reflected by the corresponding statistics--and what Figures 9 and 10 show is striking. This demonstrates that the ±10% error constraint may be too stringent given the variation of VMT values in the KYTC database.

Models with other combinations of independent variables were also attempted. In all cases the models were statistically sound but failed to meet the ±10% prediction accuracy criterion.

4.6.1.1.3.2 Models with Transformed Data

Regression models with logarithmic forms of the data were also tried. The purpose of the transformations was to reduce the correlation problems. Because of the high correlation, the success of this attempt was only limited; the transformation of data did not eliminate the correlation problem. Specific model information is provided below.

4.6.1.1.3.2.1 County-Based Regression Models with Transformed Data

The R^2 for several of the regression models were very high (above 0.9 in some cases). Although such high value signifies successful models, this measure by itself meant very little because of the high correlation issue noted above. Additionally, the prediction error was in many cases significantly higher than the thresholds set by the KYTC. For these two reasons, the regression models were deemed inadequate to meet the objectives of this study.

As a variation and potential remedial action, a time variable was included in the models to account for possible changes in driving and travel trends that are prompted by changes in demographic and socioeconomic characteristics.

a) Non-interstate VMT

LN(VMT) = 0.152 LN(POP) + 0.527 LN(EMP) + 2.656 LN(TIME VARIABLE)

R-square = 0.8727

	df	*Sum of Squares*
Regression	3	509.4516
Residual	837	73.32543
Total	840	582.777

(Equation 3)

b) Interstate VMT

$$LN(VMT) = 0.22\ LN(POP) + 0.411\ LN(EMP) + 1.098\ LN(TIME\ VARIABLE)$$

R-square = 0.5240

	df	*Sum of Squares*
Regression	3	182.0666
Residual	277	160.7821
Total	280	342.8487

(Equation 4)

The statistics on both models indicate that data transformation did not lead to much improvement. The time variable did not help.

4.6.1.1.3.2.2. State-Based Regression Models with Transformed Data

No state-based models were developed with transformed data. There was no need for this since the non-transformed data models met all quality requirements (when used at the state level).

4.6.1.1.3.3 Models with a K-Factor

This variation of regression models was one of the last attempts. In these models, explicit attempt was made to account for the "missing" variables. Models in this group showed more promise for predicting Interstate VMT--they were relatively more accurate than the rest. These models are described in more details in the Final Models section.

The modest success of the regression approach is apparent from the above results. The following section describes the result of the Neural Networks (NNets) approach. NNets use untraditional approach to prediction. They are presented in the following section.

4.6.1.2 NNets Results

4.6.1.2.1 Variations of NNet:

Firstly, all available independent variables were included in the Nnet. The NNet itself is used to determine the significant variables. In subsequent trials, NNets with only significant variables were used. As in the regression approach, several variations of NNet were tried:

1. NNets with log-transformed data. This was done because of the large differences in values of different independent variables. Very large difference can negatively impact the quality of the NNet's prediction ability.
2. NNets with percentage VMT change (instead of actual VMT values). This was done to avoid problems caused by similar (among different counties) percentage changes but significantly different actual VMT change.

3. NNets with an "adjustment" factor (labeled K-factor)

In brief, the NNet models resulted in significant improvements in prediction accuracy. However, they still fell short of the ±10% error limit for several of the counties except for the NNet with the K-factor (described in the Final Models section). The NNet with the K-factor produced significantly better results.

4.7 Final Models

From the initial results, it was very clear that some important independent variables were missing. The models presented in this section accounted for these missing variables using surrogate measures that capture the influence of those missing variables without having to explicitly determine the variables themselves. Different functional variations of the *residual* associated with each observation (county-year combination) were evaluated, and the form that showed the most potential was selected. The residual represent the difference between the actual and the predicted VMT. It results when a "first level" model is applied to predict VMT based on the independent variables.

4.7.1 Non-Interstate VMT

For non-interstate VMT, the K-factor model was NNet-based.

4.7.1.1 NNets with K-Factor

The NNet was developed through a two-level training and testing process as follows:

1) In the first level, a NNet was developed, and then tested on the *entire* database. (the residuals from the testing process were retained and treated as unique variables associated with the respective county-year observation).
2) In the second level, another independent NNet was developed through training on the 1993-1997 data and then tested on the 1998-1999 data.
3) The residual from the first Net was treated as an additional independent variable in the second level Net.

The above is not a standard practice when developing NNet, and should normally be used only as a last resort. The premise for this use is the following: The residual is a measure of the influence of the missing variables; if we can determine a suitable form of the residual then we may use it as a variable.

The above process was followed for both interstate and non-interstate VMT. The non-interstate VMT NNet (NIVMTNNet) generated predictions such that only one county had an error more extreme than ±10%. The exception was Jefferson County with errors of 26% and 18% for 1998 and 1999, respectively. The following variables were used in Non-I VMT NNet-K model (LN means Logarithmic form):

1. LN Urban mileage
2. LN Population
3. LN Employment
4. LN Earnings (includes individual but not corporate earnings)
5. LN of number of Interstate Interchanges
6. LN of number of Parkway Interchanges
7. Residual (K-factor)

Average Error		R^2	
Training Data	*Testing Data*	*Training Data*	*Testing Data*
0.0104	0.0179	0.9997	0.9987

The error and R^2 values indicate strong prediction ability with very low error. That is consistent for both *training* and *testing* data. It should be noted that the testing data is one that was not used in developing (or training) the model. The distribution of prediction error over the error range is shown in Figure 11.

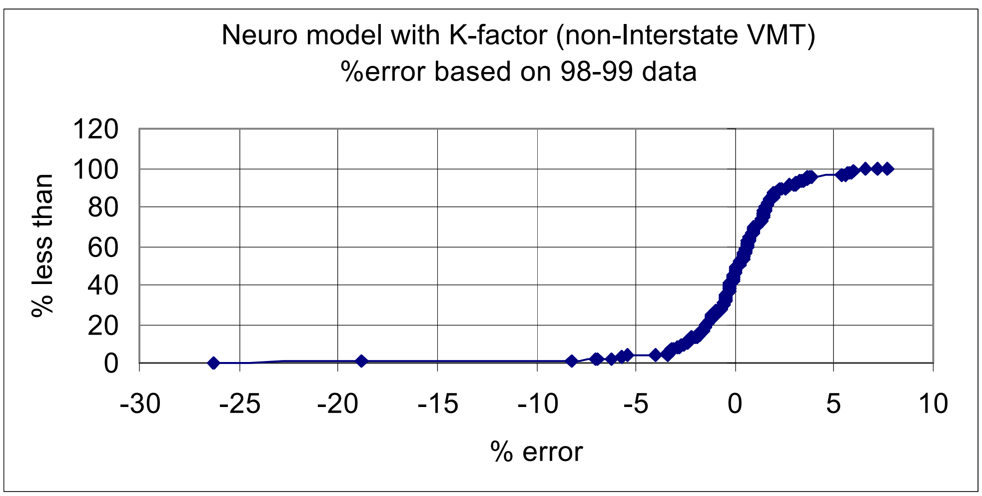


Figure 11. Distribution of Prediction Error over the Error Range (non-interstate VMT)

The interstate VMT NNet (IVMTNNet) performed poorly, and therefore the results are not presented. A regression-based model with a K-factor performed better for interstate VMT (see Section 4.7.2).

4.7.1.2 Projecting the 2000 Non-Interstate VMT

In order to test the stability of the K-factor Nnet non-interstate VMT model as a forecasting tool, the model was used to project year 2000 non-interstate VMT. The results are shown in Figure 12. The numbers on the x-axis are those of the observations—an observation is a county-year combination. It is noted that for a significant number of counties the model projects a decline in VMT, which is contrary to expectation. For many other counties much higher than "normal" increase is projected. A "normal" change for non-interstate VMT, according to the KYTC, is in the range 1-6%.

The results of Figure 12 suggest that the non-interstate VMT predictions of the NNet K-factor model are not within KYTC's "normal" range. Although this is not a calibrated/validated rule of thumb, for a large number of counties, the model projections deviate significantly from the "normal" range. More will be said on this in Section 4.8, Discussion.

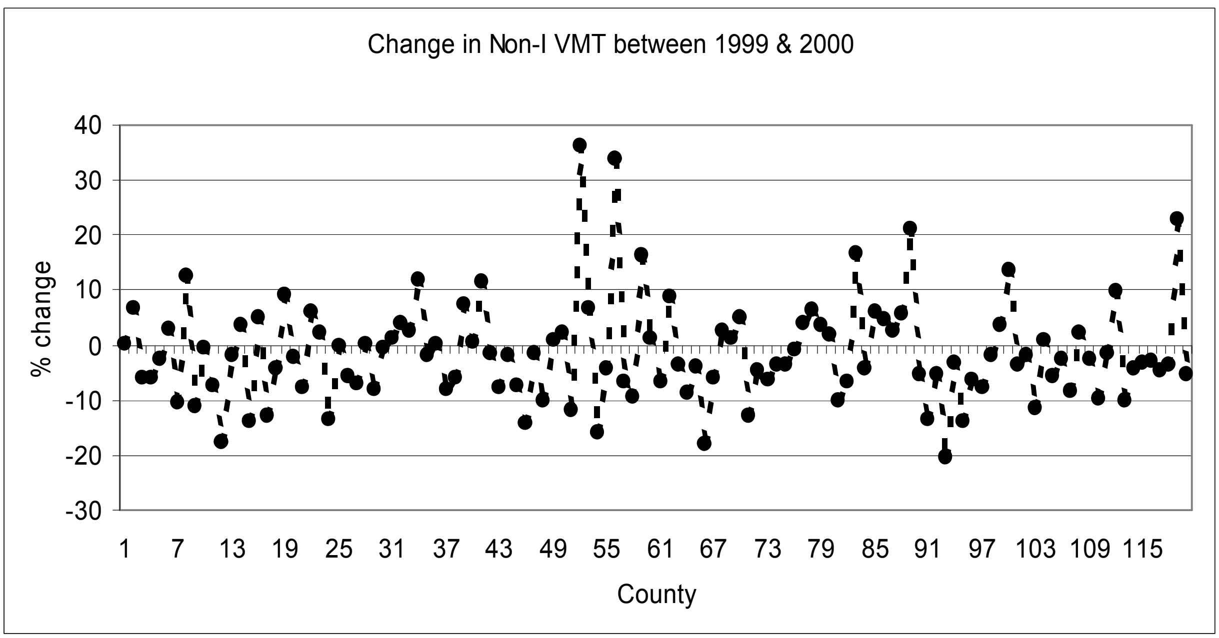


Figure 12. Projected Increase in Non-Interstate VMT between 1999 and 2000 as a percentage of 1999 VMT

4.7.2 Interstate VMT

Two different sets of "final" models for predicting interstate VMT were developed. Both are regression-based. The first uses the K-factor approach and predicts VMT at the county level directly. The second is a corridor-based model that predicts VMT based on socioeconomic factors.

4.7.2.1 Interstate VMT, K-factor Model

This is a regression-based model with K-factor. The model is:

VMT (000) = b + a (population) + K (Equation 5)

Where:

- b: Constant
- a: Regression coefficient
- K: K-factor

Different functional forms of the K-factor were evaluated. The best results were obtained with the following form:

K= [(minimum (Std Res)+Range /6(Year x -93)],

Where:

Std Res: Standard residual obtained for the subject year obtained from the First-Level regression models

Range: Range of standard residuals for the base years (1993-1999) obtained from the First-level model

When the model in Equation 5 was applied to the 1993-1999 data, approximately 85% of the observations had errors with the ± 10% limit (see Figure 13).

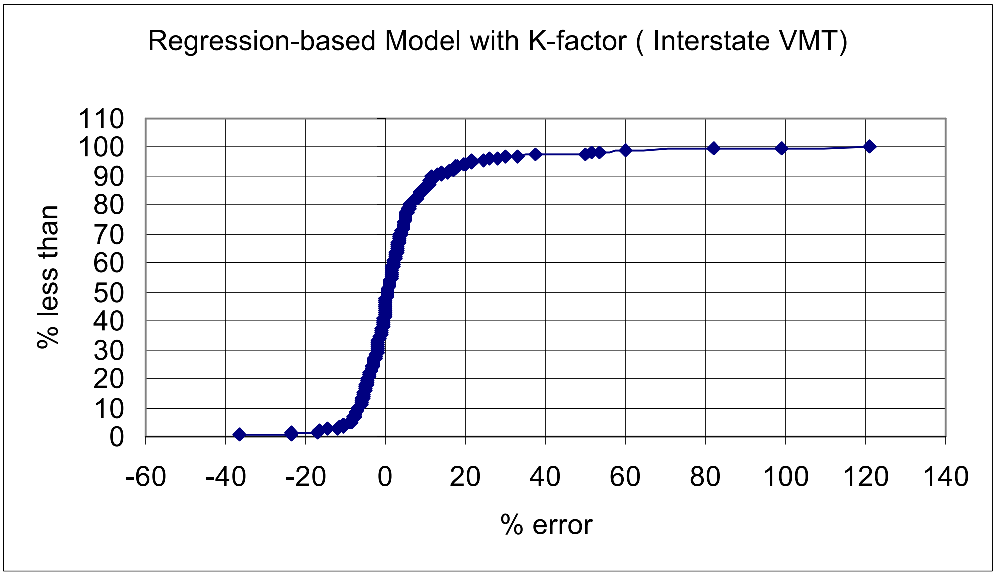


Figure 13. Distribution of Prediction Error Over the Error Range (interstate VMT) (1993-1999 data)

4.7.2.2 Projecting the 2000 Interstate VMT

The K-factor interstate VMT model was used to project the 2000 interstate VMT. Because no residual is available for the projected year, the K factor value for 1999 is used. The results are shown in Figure 14. It is noted that for a few counties negative VMT change was projected and for some the projections are unrealistically high.

Application of the model to project the 2010 and 2020 VMT resulted in noticeably low projected VMT values. Although population did not grow--even declined--for some counties, that alone cannot account for the low VMT projections. The K factor is suspect in this case. The K-factor for future years is, by definition, not known. Use of such K-factor values may have introduced unrealistic biases.

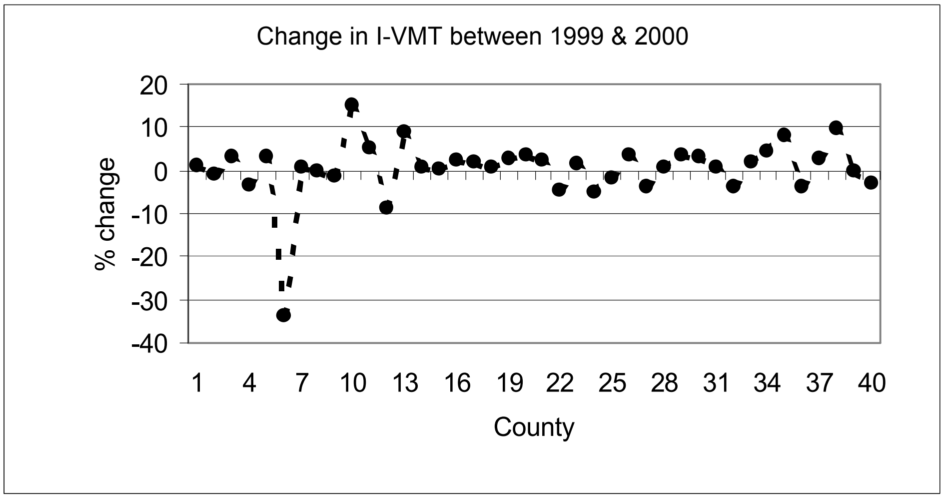


Figure 14. Projected Increase in Interstate VMT between 1999 and 2000 as a Percentage of 1999 VMT

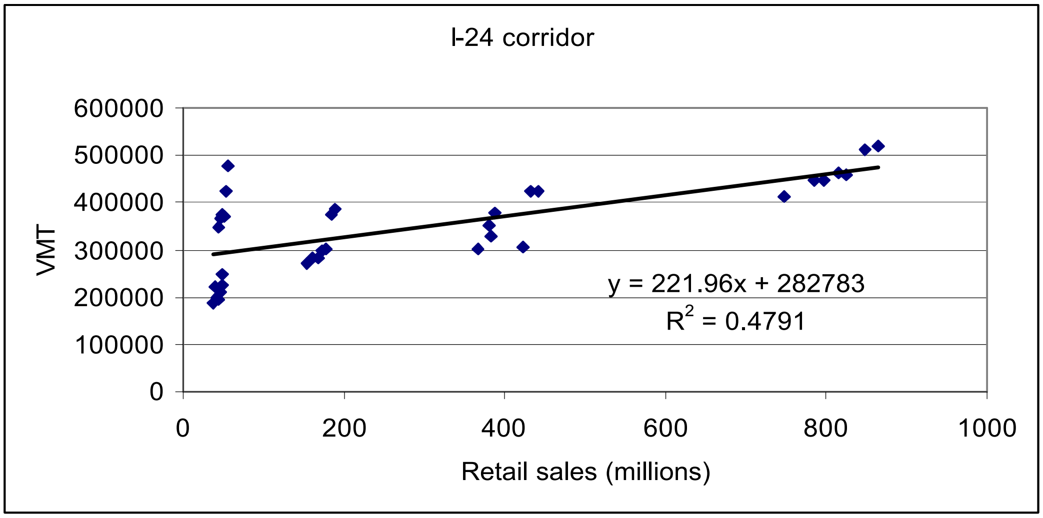
4.7.2.3 Corridor-Based Models

This model was developed according to the following steps. Regression and Neural Net models were tried:

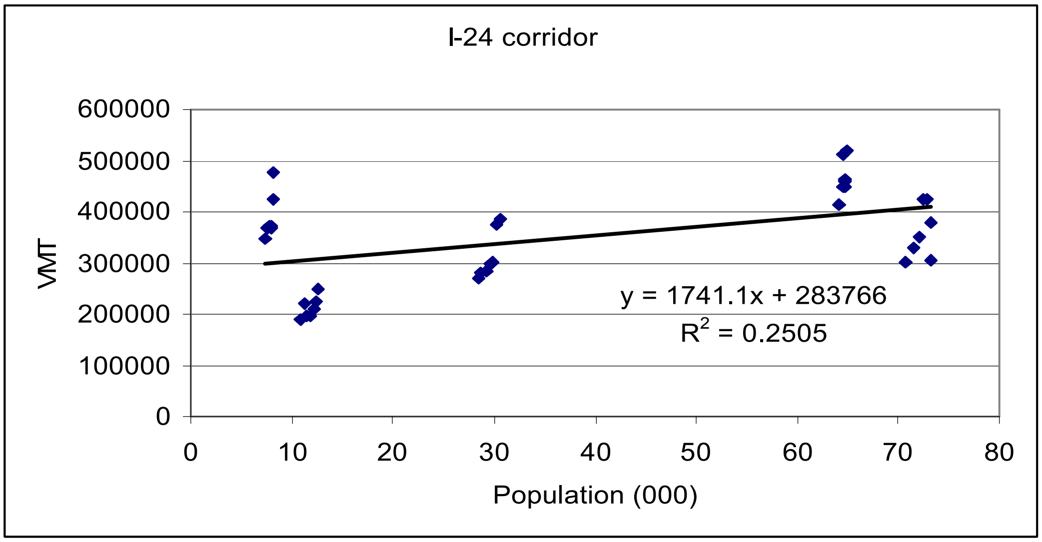
1. For a given county and interstate route, determine an ADT growth factor by examining data for different count stations. If applicable, different growth rates may need to be generated for different sections of the interstate route.
2. Determine the VMT for respective sections of the interstate route for each year from the ADT and mileage of the section.
3. Develop a model for each corridor and regress VMT against appropriate socioeconomic variables for the counties comprising the corridor,.
4. Use models generated in Step 3 to project future VMT.

A model is developed for each corridor (as contrasted with previous models where one model was developed for all corridor/counties). Figure 15 shows a sample of the regression models for two corridors. Population and retail sales-based models are shown. Figure 16 shows a sample of the NNet models.

a)



b)



c)

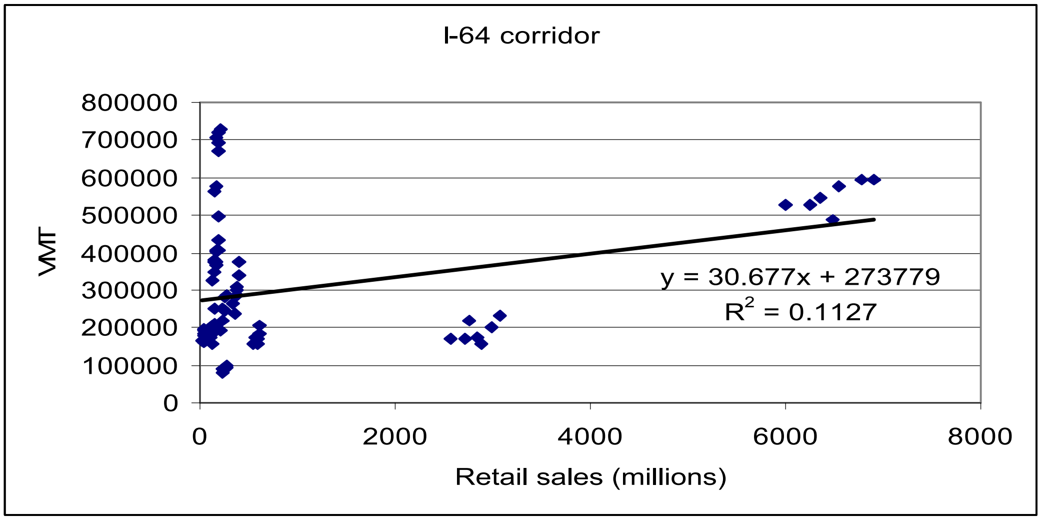


Figure 15. A Sample of Corridor-Based VMT Models

4.7.2.3.1 Assessment of Regression Corridor-based Models

Figure 15 demonstrates clearly that the regression corridor-based models do not have sufficient predictive ability. The same conclusion holds true after the models were normalized for the length of interstate route sections in the respective counties.

4.7.2.3.2 Assessment of NNet Corridor-based Models

Figure 16 demonstrates that the NNet-based models are capable of predicting the *general* trend in VMT for the various counties. However, the level of accuracy is not sufficient given the accuracy constraints set for this study. Figures 16a and 16b show the *training* (1993-1997) and *testing* (1998 & 1999) data results, respectively. In both graphs, the x-axis shows observation numbers and the y-axis shows VMT values. While the match is overall close between the actual and predicted VMT, it is not close enough to be of sufficient accuracy.

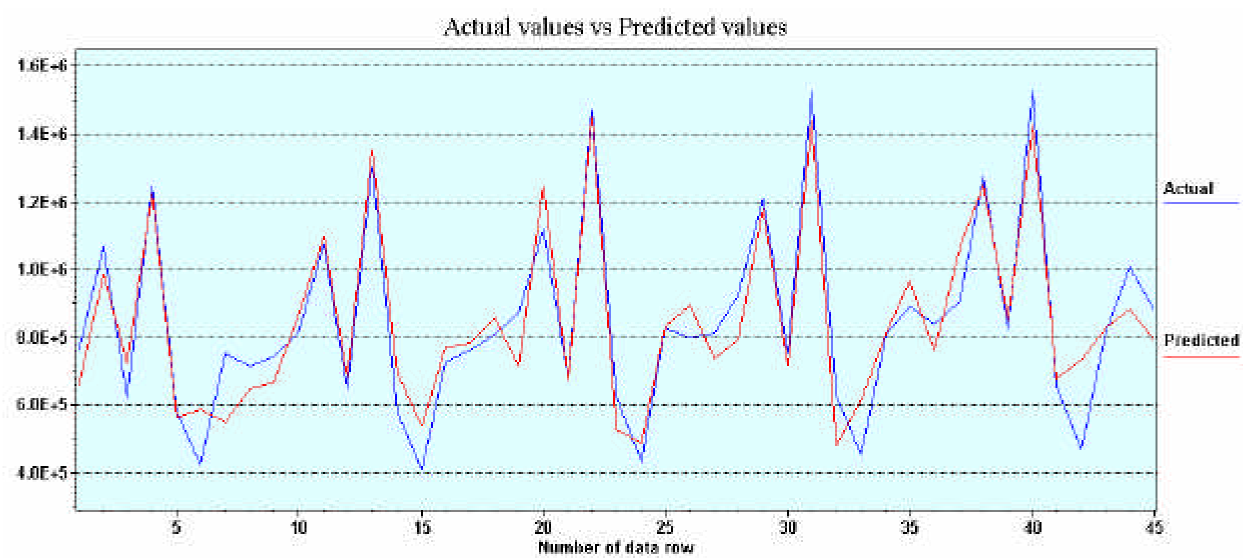


Figure 16a. Comparison of Actual and Predicted VMT - Training Data (Interstate 75 Corridor)

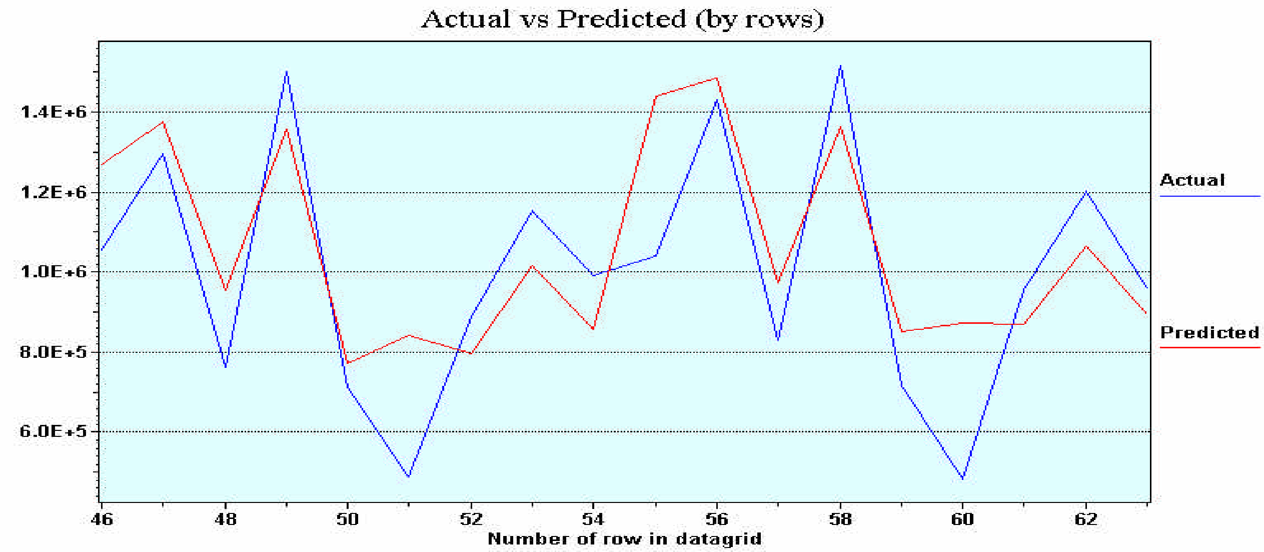
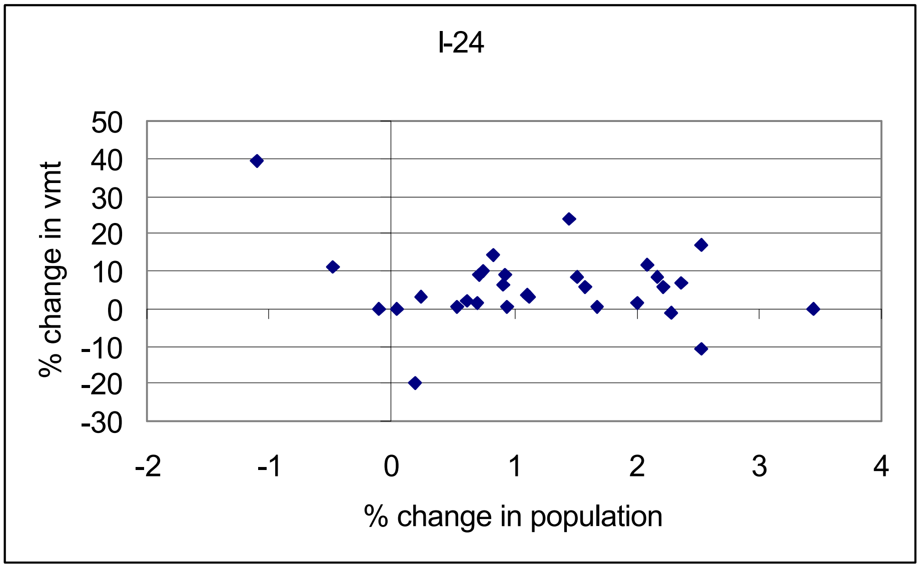


Figure 16b. Comparison of Actual and Predicted VMT - Testing Data (Interstate 75 Corridor)

4.7.2.3.3 Corridor-based Models: Are Interstate-VMT and Socioeconomic Factors Related?

The above question became necessary to address after the corridor-based models did not bring in any improvement over the previous ones. The question was addressed by examining the relation between change in interstate VMT and socioeconomic factors. A sample of the results for I-24 and I-64 corridors are shown in Figures 17 and 18, respectively. The results are for yearly changes from 1993 to 1999.

Figures 17 and 18 demonstrate one important piece of information: the association between change in interstate-VMT and socioeconomic measures is very weak. In fact, one can assert based on the above two figures that there is no relationship between change in Interstate-VMT and the socioeconomic variables that are used in this study. It seems that other variables need to be identified, or a completely different basis should be explored.



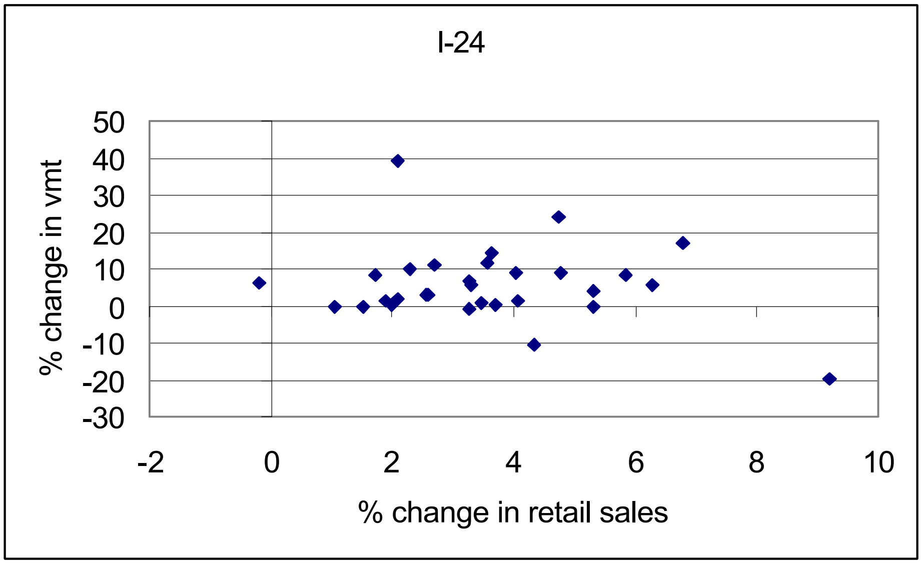
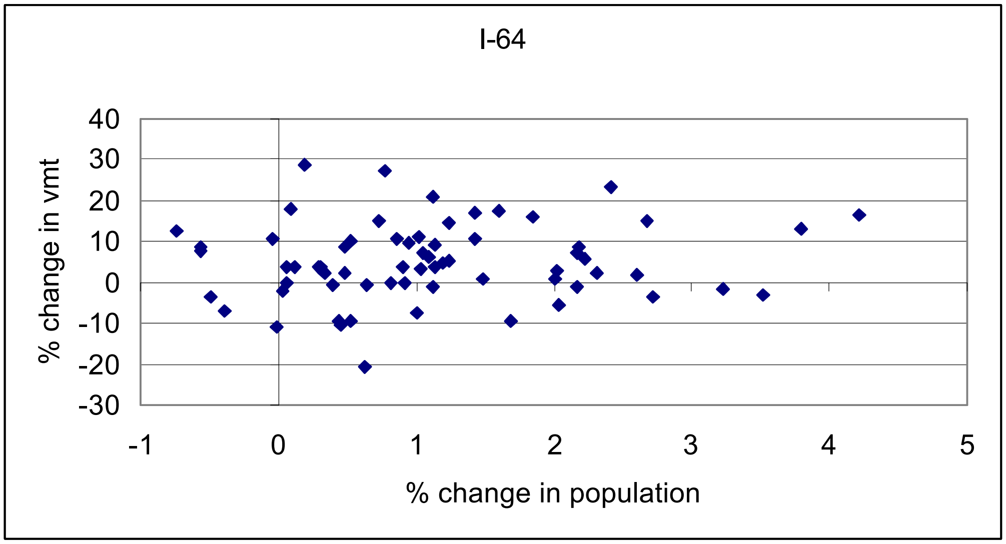


Figure 17. Relationship between Change in Interstate VMT and Retail Sales (Interstate 24 Corridor)



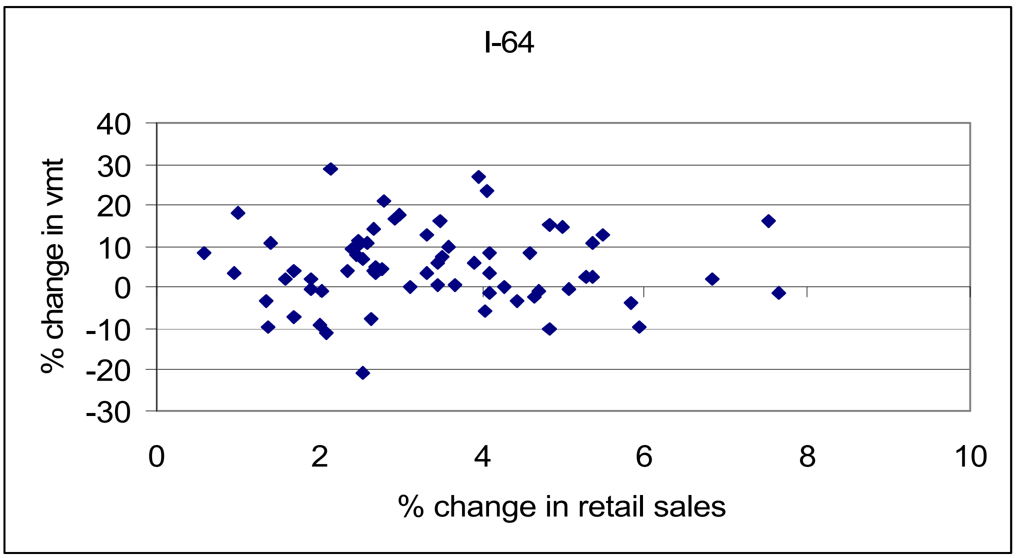
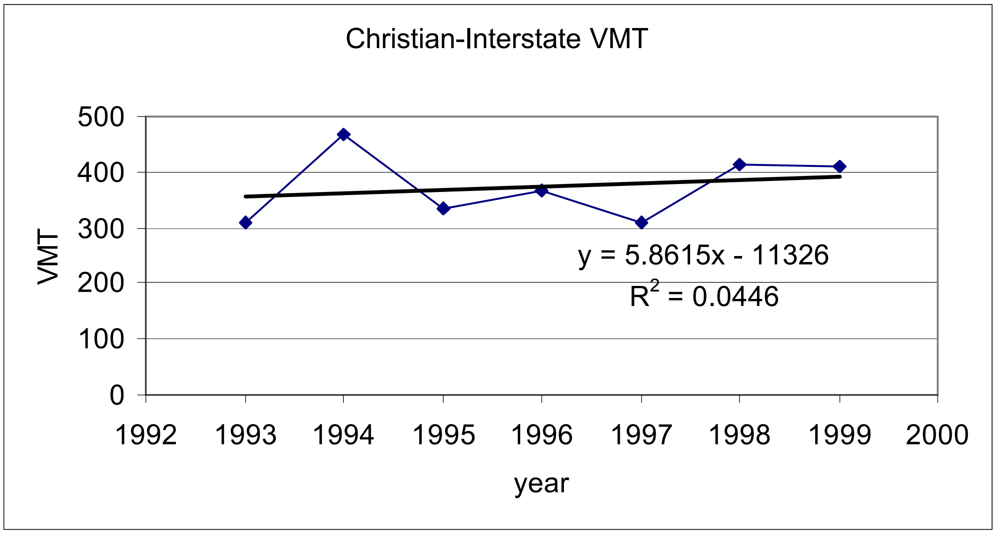


Figure 18. Relationship between Change in Interstate VMT and Retail Sales (Interstate 64 Corridor)

4.8. Discussion

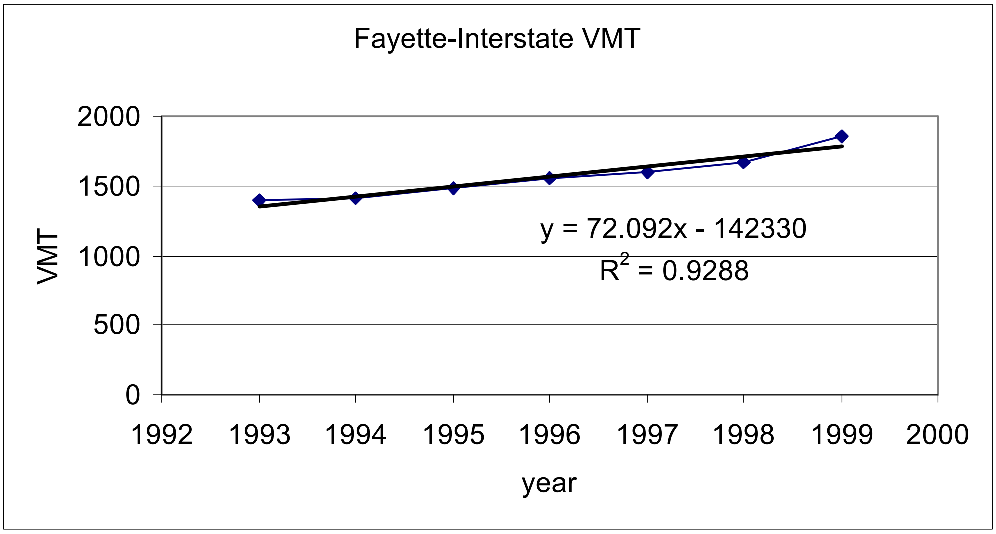
The limited success of the VMT modeling effort prompted an inquiry into the possible reasons. First, the VMT data was examined. Yearly trends and the magnitude of variation in a given county were evaluated. A sample of the results is shown in the following figures. In each case, the closest linear regression model is shown.

Figure 19 shows yearly interstate VMT variation for four representative counties. The wide variation between successive years is clearly demonstrated in the two figures.



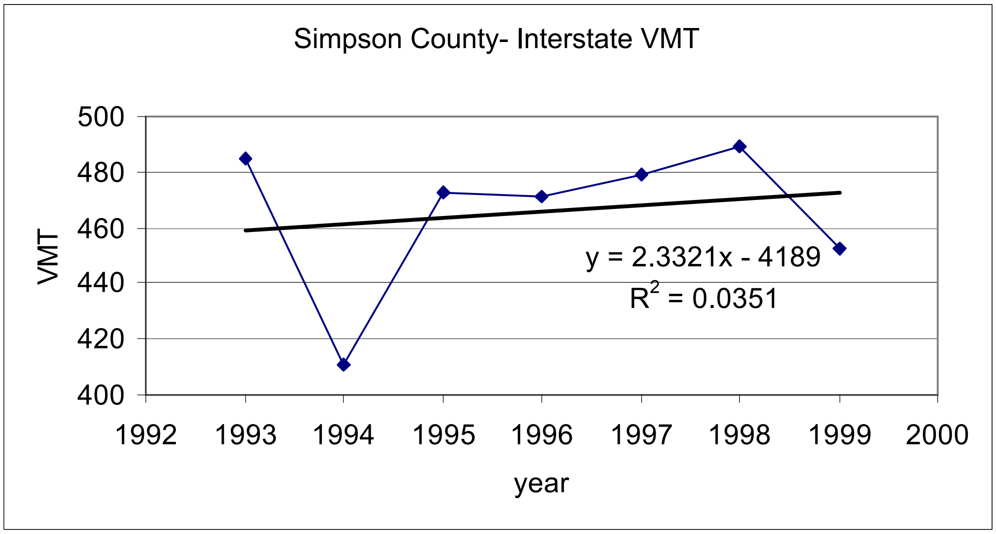
Christian-Interstate VMT
VMT
500
400
300
200
100
0
1992
1993
1994
1995
1996
1997
1998
1999
2000
year
y = 5.8615x - 11326
R2 = 0.0446

a)



Fayette-Interstate VMT
VMT
2000
1500
1000
500
0
1992
1993
1994
1995
1996
1997
1998
1999
2000
year
y = 72.092x - 142330
R2 = 0.9288

b)



Simpson County- Interstate VMT
VMT
500
480
460
440
420
400
1992
1993
1994
1995
1996
1997
1998
1999
2000
year
y = 2.3321x - 4189
R2 = 0.0351

c)

d)

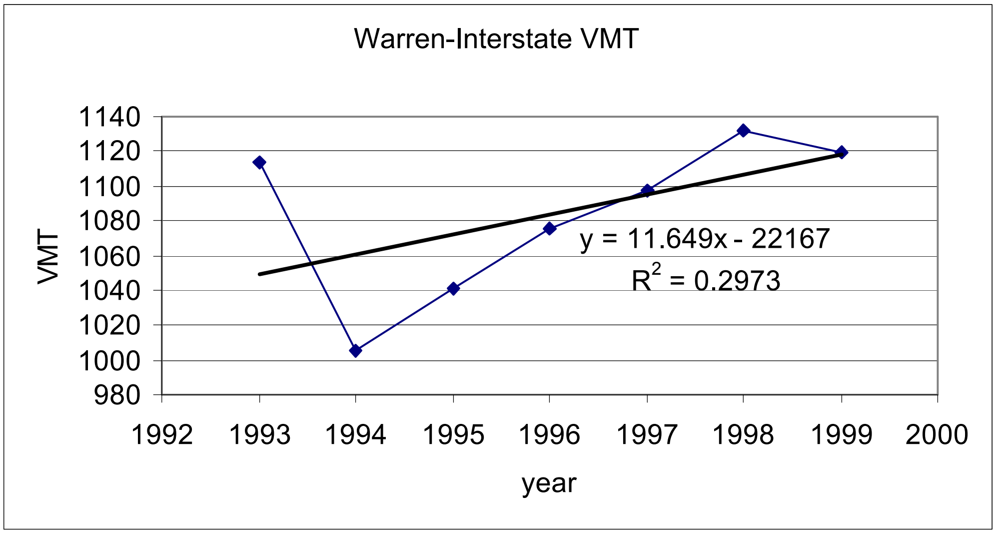


Figure 19. Variation of VMT over Time for Selected Counties (VMT Figures are in Thousands)

For interstate VMT, the normal growth should be around 3%[1]. Given this rule, approximately 25% of the observations had less than 0% growth and 50% had more than 5% growth (Figure 20). In other words, about 75% of the cases in the database have yearly growth outside the "normal" range.

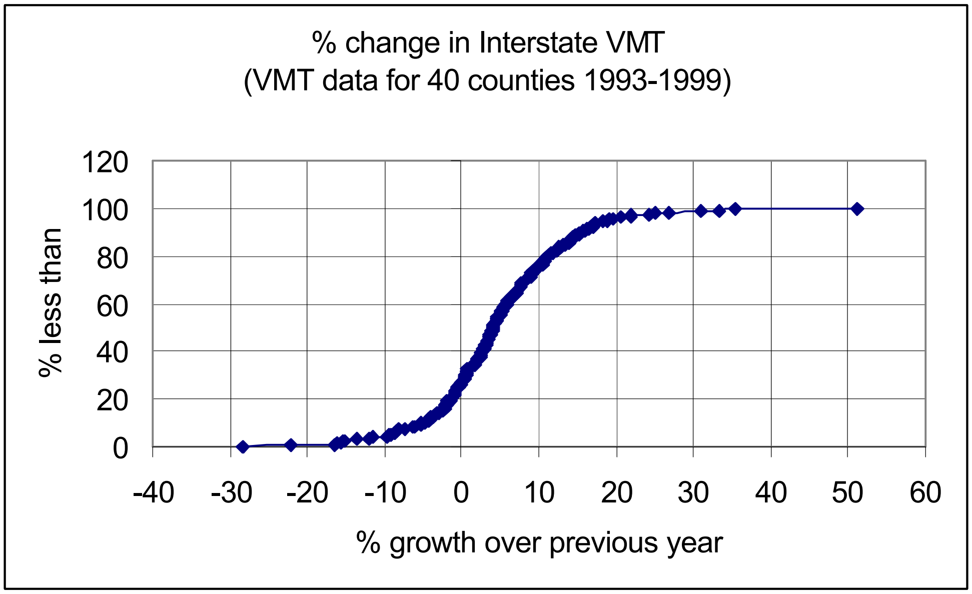


Figure 20. Distribution of Yearly Interstate VMT

[1] Rule of thumb used by KYTC to check Interstate VMT growth.

The same general observation is true of non-interstate VMT as shown in Figure 21. In many cases growth was more than 6%, and in a significant number of cases the growth was less than – 3%. The normal expected yearly growth is 1-6%[2]. Given this rule, about 32% of the observations had less than 1% growth, and 15% had more than 6% growth. That is, over 47% of the yearly growths were outside the range.

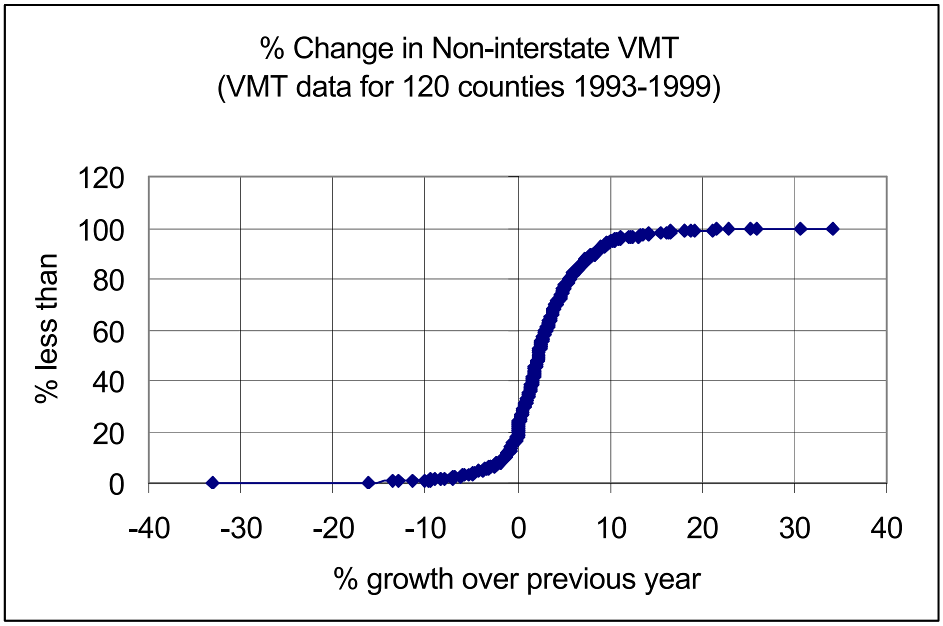


Figure 21. Distribution of Yearly Non-Interstate VMT

Such wide variations indicate unsystematic ways of generating VMT. With such variations, modeling is almost impossible because yearly trends for different counties is significantly different and, at times, completely opposite. The following comments can be made with regard to the information shown in Figures 19 through 21:

1. Some yearly VMT changes are well beyond the established "normal" ranges
2. Unsystematic changes are not too uncommon
3. Approximately 47% of non-interstate VMT yearly changes, and 75% of interstate VMT yearly changes are OUTSIDE the "normal" range

It should not come as a surprise that no model could meet the stringent, but seemingly unsupported "normal" yearly growth ranges. In fact, it is completely unrealistic, given such wide VMT yearly variations, to expect the generated models to predict completely different and much lower variation. There was a mismatch between the type of VMT data used and the VMT error and yearly variation thresholds established for this study. Those thresholds were unattainable right from the onset. This, however, was not realized until the VMT data was diagnosed in the later stages of the project.

[2] Rule of thumb used by KYTC to check Non-Interstate VMT growth

4.9 Conclusion

The objective of this research was to develop models that predict VMT based on socioeconomic data inputs. Two modeling approaches were used to develop models for both interstate and non-interstate VMT: Linear Regression and Neural Networks (NNet). Models from both approaches were evaluated for soundness and usability. Although statistically sound models were developed, success to achieve the stated objective was only modest. The following specific conclusions can be drawn based on the aforementioned results.

- Predicting VMT based on socioeconomic data (independent variables) was not successful.

- Currently available socioeconomic data has the potential to predict non-interstate VMT for most counties. However, more data refinement and modeling is needed to develop more reliable and accurate models. Additional variables may also be necessary

- Neural Networks has shown significant potential for use as a modeling technique. Their flexibility and unconventional approach make them particularly suited when the patterns of the data that is to be modeled are complex.

- Results from the *corridor-based* interstate VMT models are not much different than earlier models; prediction accuracy is still not sufficient. For corridor-based models, using NNets produced better results than regression.

- Although NNets models were generally better than regression models, that should not be construed as a statement against regression. The nature and structure of the data determine which modeling approach is better.

4.10 Recommendations

Based on the results presented thus far, the following recommendations are made:

- More than one approach should be used to predict future VMT so as to minimize the effect of biases that are present in any one single modeling approach.
- Time series models were shown to have very good predictive capability. They should be considered when sufficient independent variables are either not available or incapable of producing models with sufficient predictive capabilities.
- Neural Nets should be seriously considered in future research where the objective is to learn complex relations. They have demonstrated great capability of interpolating and extrapolating from known cases, and then generalizing this knowledge to cases that were not used in the training.
- A refinement of the models developed in this study is recommended. As part of this exercise, only basic (not processed) data should be should be modeled. Based on the data available to the KYTC, this means that only traffic volumes may be predicted based on socioeconomic input variables. VMT can then be estimated based on road mileage and traffic volume.
- It is recommended that regional and national variables be used to predict interstate VMT. However, for such variables to be useful they have to be available for future years.

- Because of the high correlation among several of the socioeconomic data variables, it is important that regression-based models be used carefully particularly when several socioeconomic variable are significant.
- It is appropriate to suggest that improved procedures are needed for screening anomalies and errors out of the KYTC traffic count data because of the influence that an aberrant count can have on the change in county level VMT from year to year.

5.0 DEVELOPMENT OF RATIOS FOR RELATIONSHIP BETWEEN COLLECTORS AND LOCAL ROADS

5.1 Local to Collector Ratio Analysis

In the determination of local VMT, it is necessary to have county level local ADT and local road mileage. Historically, the KYTC Division of Planning has collected local road (both state maintained and non-state maintained) ADT on a periodic basis. A portion of these counts was collected for local HPMS sampling required by the FHWA on a regular basis.

The logistics of collecting local road ADT on a statewide basis can be difficult. Therefore a procedure was developed to relate functionally classified local roads and functionally classified collector roads. This relationship consisted of a ratio between local ADT and collector ADT. The numerator of the ratio was defined as the average ADT for a specified grouping of local roads, while the denominator was defined by the average collector ADT for the same grouping of roadways.

Separate ratios were determined for rural functional classifications (FC 09/FC 08) and for urban functional classifications (FC 19/FC 17). These relationships were developed for groupings of both urbanized and non-urbanized counties. The urbanized counties utilized in this analysis were defined as follows: Boone, Boyd, Bullitt, Campbell, Daviess, Fayette, Greenup, Henderson, Jefferson, Jessamine, Kenton, and Oldham.

It was determined that additional analysis was necessary to further evaluate this relationship. The remainder of this section will outline the procedures that were utilized to evaluate these ratios. The ratios previously utilized that were developed by the Division of Planning are contained in Table 13.

Highway Grouping	FC 9/FC 8	FC 19/ FC 17
Non-Urbanized Counties	0.33	0.12
Urbanized Counties	0.33	0.28

Table 13. Historical Functional Class Ratios

The ratios contained in Table 13 were developed from a single years worth of data. In the development of these ratios, some concern was expressed that these ratios may change over time. One of the objectives of this effort was to determine the behavior of this relationship.

5.2 Data Analysis

To evaluate the potential change in this relationship over time, the research effort utilized the data maintained in the Traffic Volume System (TVS) maintained by the Division of Planning. Historical data from 1980 through 2000 were utilized in the analysis. The typical schedule for traffic counting in Kentucky has been as follows: 1) interstates and parkways, every year; 2) HPMS samples, every 3 years; 3) coverage counts on the remaining sites every six years. This schedule was typically utilized for all state maintained routes within the state. Functionally classified local roads that were not state maintained were also counted on a periodic basis; however, this data is sporadic and may have more than six years between actual counts.

After review of the available data, it was determined that data used to calculate the numerator of the FC ratio should be obtained from historical local HPMS samples. While the data used to calculate the denominator should be from all collector routes (FC 08 or FC 17).

The TVS contains the historical record for every traffic monitoring station utilized in Kentucky; and as was previously mentioned, actual traffic counts are not obtained on all stations each year. The TVS provides estimates for years when actual data is not available. Therefore, a complete history of each traffic volume station is available. This estimating procedure is outlined in Appendix E. Since the estimating procedure utilizes counts that are defined as actual counts (meaning some type of field count was actually performed), stations to be used in the analysis were restricted to those that had at least two actual counts since 1980. TVS also identifies stations that have had significant traffic impact events in a given year. Only data from these impact years until the year 2000 were utilized in the analysis.

To determine the ratio for each of the groupings outlined in Table 13, the numerical average of the annual ADT for all stations within a grouping, FC 19 urbanized counties for example, was determined.

Similar annual averages were determined for the other groupings. The calculation of these annual average ADTs provided the necessary information to compute the following functional class ADT ratios:

FC 09/FC 08 Urbanized Counties
FC 09/FC 08 Non-Urbanized Counties

FC 19/FC 17 Urbanized Counties
FC 19/FC 17 Non-Urbanized Counties

To evaluate the relationship of this ratio with time, an individual FC ratio was determined for each year from 1980 – 2000. Due to an increase in the local sample size in 1991, only data from

1992 through 2000 are used in the final evaluation. These ratios calculated for the years 1992 – 2000 are plotted in Figure 22.

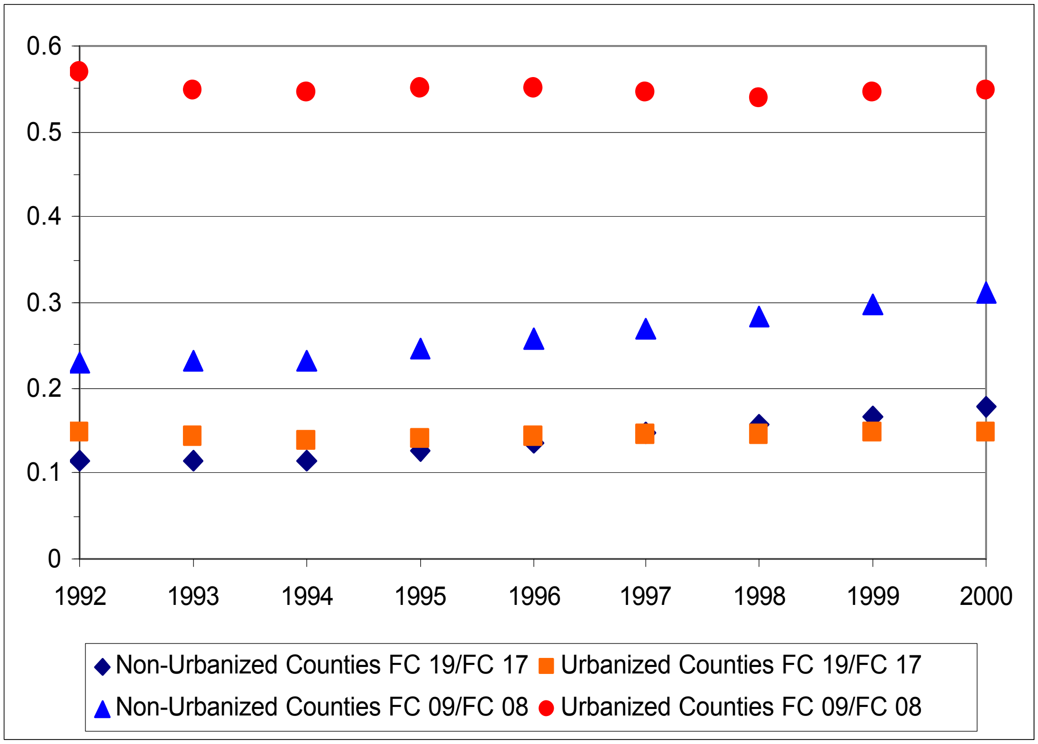


Figure 22. Comparison of Functional Class Ratios

It may be seen from Figure 22 that there is very little difference between the urbanized and non-urbanized FC 19/FC 17 ratios. Therefore it was determined that for the remaining analysis a single FC 19/FC 17 ratio would be determined for all counties.

Functional class ADT ratios were determined using both numerical average ADTs each year and ADTs calculated using a weighted average approach. The weighted average ADTs were determined using the length of the highway the traffic volume station represents as the weighting factor. Therefore, a station representing a longer length would have more of an impact on the resulting weighted average than that of a station representing a shorter length. The resulting functional class ratios for each grouping for both weighted and non-weighted ADT averages are given in Figure 23 – 25.

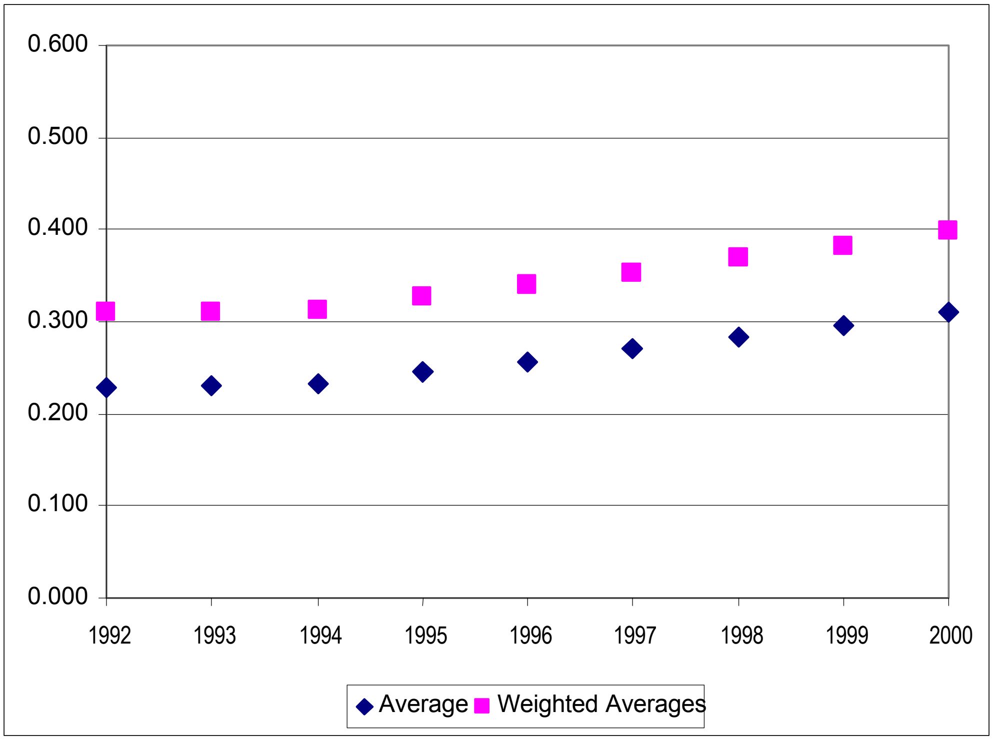


Figure 23. Non-Urbanized Counties Functional Class Ratio FC 09/08

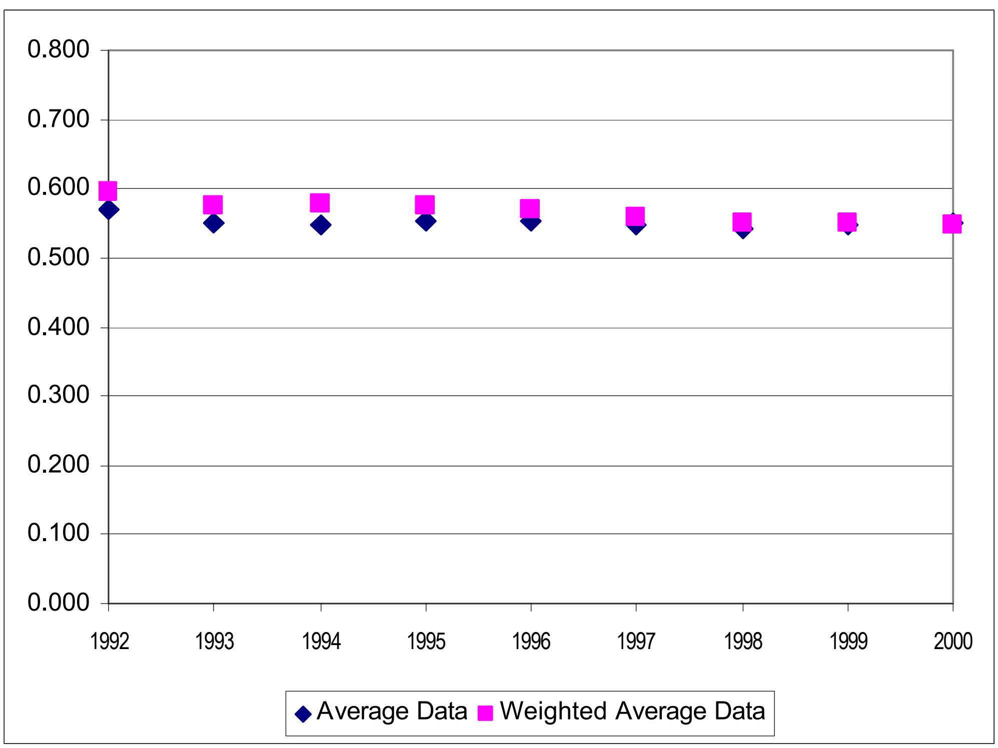


Figure 24. Urbanized Counties Functional Class Ratio FC 09/08

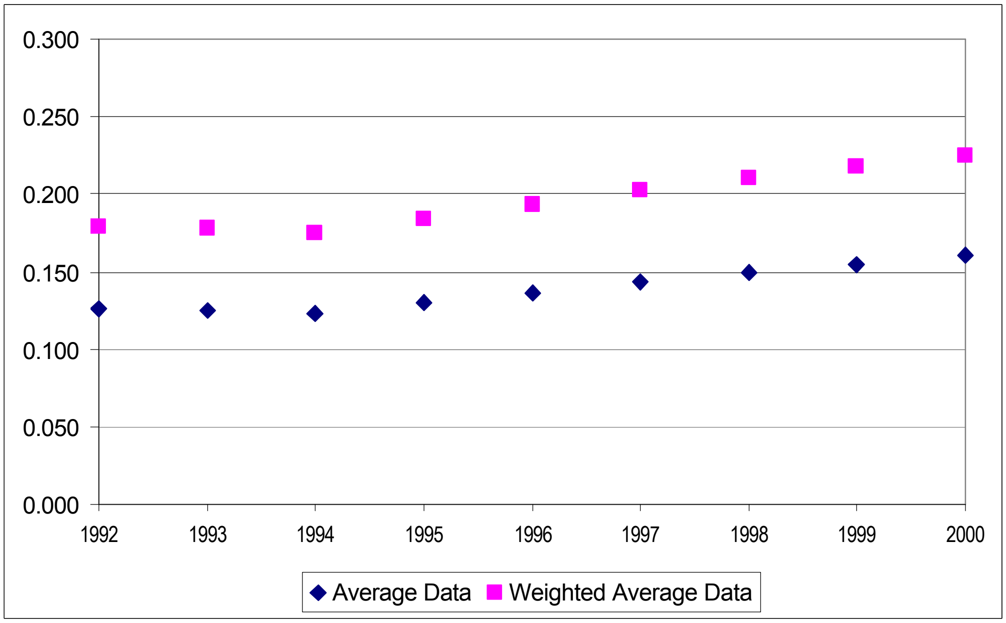


Figure 25. All Counties Functional Class Ratio FC 19/17

It may be seen from these figures that the ratio between the ADT of local routes (FC 09 and 19) to that of collector routes (FC 08 and 17) appears to change with time. In addition, the use of weighted or arithmetic averages of functional class ADT also changes the magnitude of the ratio. This is due to the effects of station length on the resulting average. Stations representing short sections of roadway would have very little impact on the resulting weighted average, but would have equal impact as other stations on the arithmetic average. While stations representing long lengths would have a greater impact on the weighted average and equal impact on the arithmetic average.

There are many issues that could affect these ratios, such as the representation of the roadways that are sampled. The sample of the collector routes would be assumed to be complete, since all routes functionally classified as collectors would have traffic counts available. The local HPMS data utilized may not provide a representative sample of all local routes. The data available in the HPMS sample has primarily been obtained on state maintained local routes. There are many routes that are functionally classified as local routes but are maintained by other jurisdictions, and therefore are not included in the Transportation Cabinet's traffic monitoring system.

5.3 2000 Local Sample

As a means to address the situation outlined in the previous section regarding having representative samples of local roads, a number of counties were selected in the year 2000 to obtain a statistically based sample of all local roads. The selection of these sample locations has been addressed in Section 3.0 of this report.

After review of the historical data in conjunction with the 2000 local samples taken, it was determined that the sampling of the previous local counts may not have included a representative sample of all local routes within a county. Therefore it was determined that the 2000 local sample would provide a more representative sample and therefore should be used for the analysis of a relationship between local and collector ADT.

The average ADT for the local roads sampled in each county and the corresponding collector ADT are contained in Table 14 for rural routes and Table 15 for urban routes.

County Name	Collector Routes		Local Routes	
	ADT	Mileage	ADT	Mileage
Allen	672	87.6	213	450.5
Barren	584	127.5	153	604.3
Boyd	527	35.2	335	83.1
Clark	825	64.0	280	225.2
Franklin	884	75.8	299	227.2
Garrard	539	52.7	295	236.4
Grant	937	56.7	222	349.4
Green	348	91.2	118	381.2
Henderson	638	107.2	188	458.6
Henry	592	106.8	163	238.8
Kenton	569	28.5	154	106.7
Laurel	798	93.0	263	826.3
Lawrence	907	64.6	137	362.7
Leslie	870	72.0	220	349.8
Lewis	502	83.3	183	395.0
Lyon	550	57.7	103	452.9
McCracken	891	68.9	180	212.2
McCreary	878	96.0	164	542.2
Mercer	467	63.1	166	256.3
Muhlenberg	1,292	122.7	191	565.7
Nelson	696	105.4	192	355.6
Owen	423	65.7	180	276.2
Perry	1,031	94.7	272	338.8
Pike	1,659	178.5	395	690.4
Shelby	738	111.9	222	278.4
Wayne	540	103.3	117	405.6
Wolfe	349	49.1	86	251.3

Table 14. Average FC 08 and FC 09 ADT for 2000 Local Sample Counties

	Collector		Local Routes	
	ADT	Mileage	ADT	Mileage
Barren	3,327	10.1	592	26.4
Boyd	3,773	31.9	313	334.2
Clark	2,815	11.1	676	54.3
Fayette	4,121	158.8	706	739.8
Franklin	3,675	19.9	584	114.1
Henderson	3,519	27.1	523	107.7
Kenton	4,976	66.1	600	564.4
Laurel	2,297	7.9	519	54.1
McCracken	3,928	29.1	390	236.3
Mercer	4,506	7.4	507	35.7
Nelson	2,255	6.6	919	41.9
Perry	4,078	4.5	472	31.7
Pike	2,551	6.0	655	15.2
Shelby	2,749	9.1	558	40.6
Wayne	1,367	6.5	438	15.2

Table 15. Average FC 17 and FC 19 ADT for 2000 Local Sample Counties

The data contained in these tables were utilized to develop a relationship between local road ADT and collector ADT. The data in Tables 14 and 15 is expressed graphically in Figure 26.

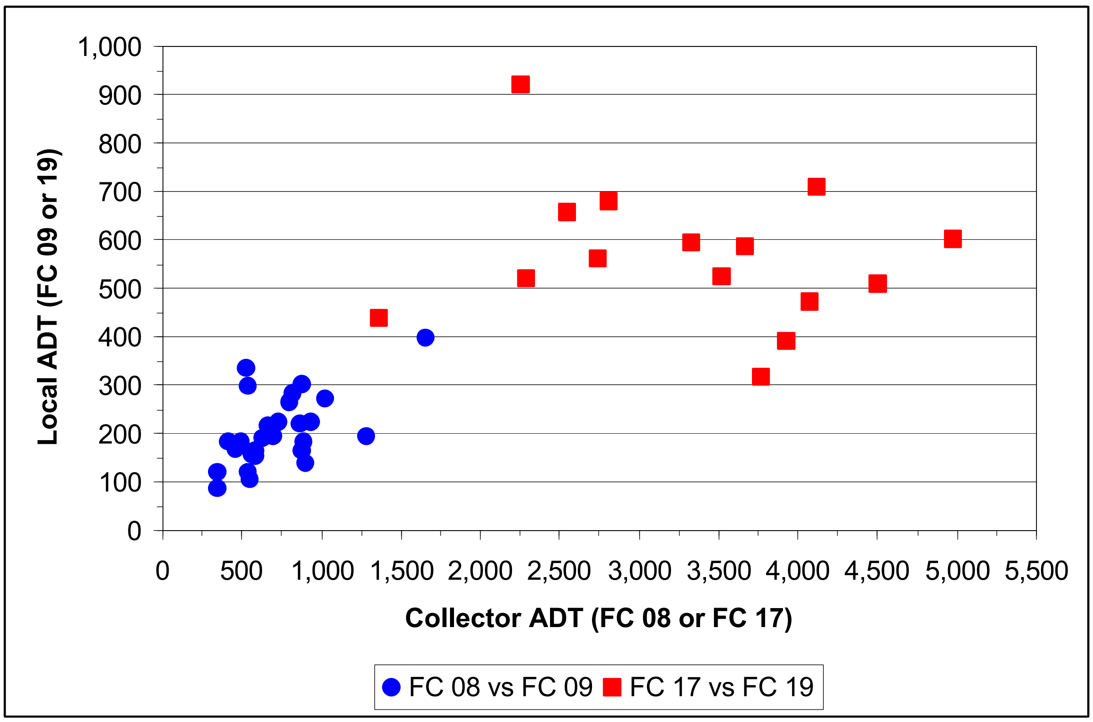


Figure 26. Comparison of Collector ADT and Local ADT

It may be see from this figure that there appears to be a relationship between collector ADT and local ADT for the sampled counties. Several different relationships were evaluated to determine the most appropriate model to characterize this relationship, including multivariate regression, simple ADT ratios, and several least squares regression models. Regression models were evaluated for the data set as a whole and by separating the local and urban functional classifications.

The multi-variant regression analysis utilized the following variables:

Rural Collector ADT	Rural Local Road Mileage
Retail Sales	Earnings
Rural Collector Mileage	Licensed Drivers
Population	Employment

After evaluation of this model, it was determined that it did provide a means to predict local road ADT. However the ability to obtain accurate data for each of the independent variables for future years may be difficult. Therefore it was determined that a relationship utilizing collector ADT as the independent variable would be more appropriate. Therefore, the following types of relationships between functionally classified local road ADT and functionally classified collector ADT were utilized.

Linear	Local ADT = A x (Collector ADT) + B
Logarithmic	Local ADT = A x (LN(Collector ADT) + B
Power	Local ADT = A x $(\text{Collector ADT})^{B}$
Average Ratio	Local ADT/Collector ADT

The linear relationship and the average ratio procedure were evaluated for both rural and urban classifications separately and for all local sample counties combined. The logarithmic and power relationships were evaluated for the entire 2000 local sample combined. The results of each of these models are presented in Figure 27.

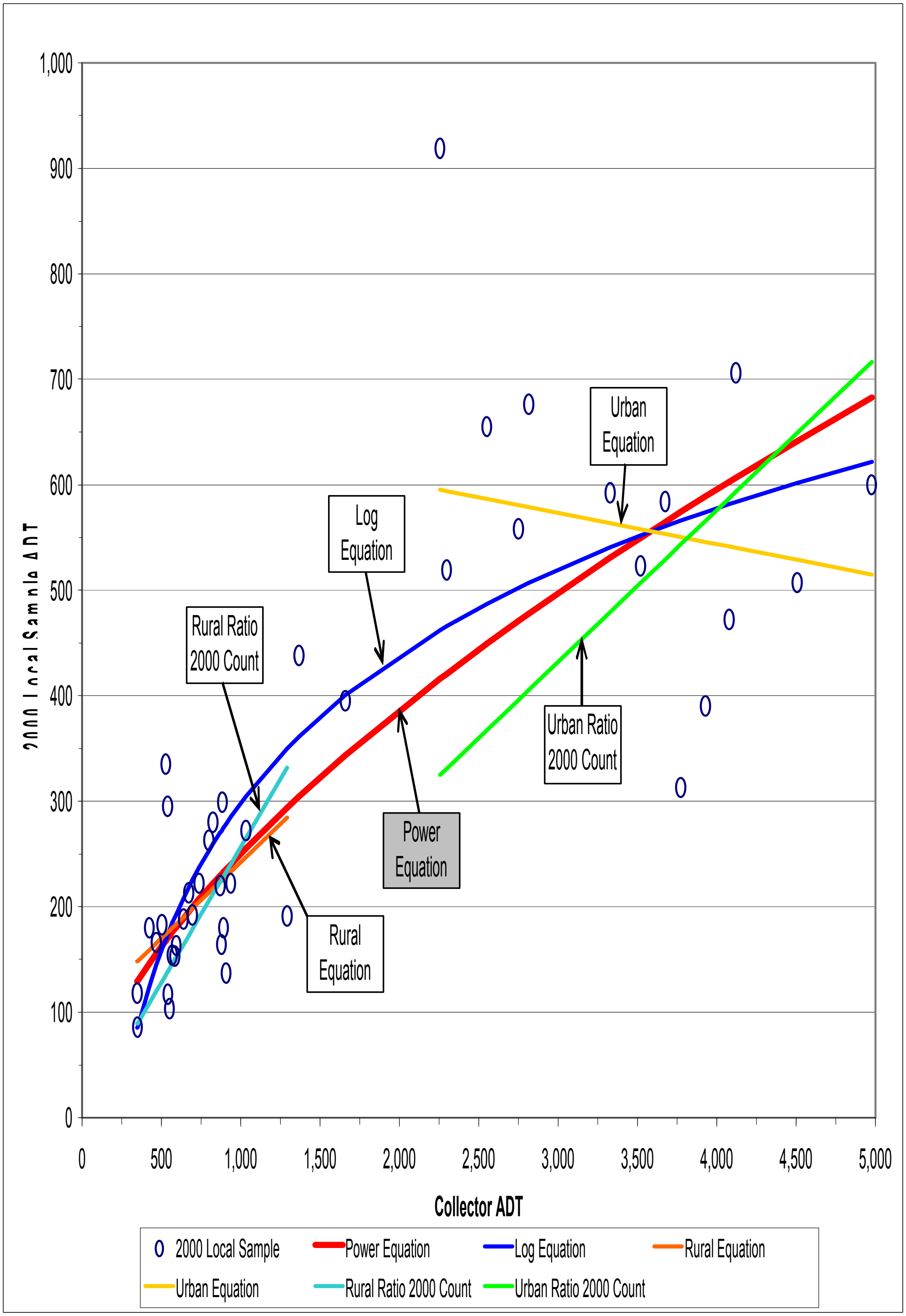


Figure 27. Comparison of Predictive Relationships

Each of these models was evaluated for both goodness of fit and the ability to predict local ADT beyond the limits of the 2000 local sample data. Based on these criteria, it was determined that the power equation best represents the relationship between local and collector ADT. The relationship provides a good fit of the collected data with a R^2 of 0.73 and has the ability to predict reasonable local ADT even at very low levels of collector ADT. The resulting equation of the best-fit line is as follows:

$$\text{Local ADT} = 3.3439 \times (\text{Collector ADT})^{0.6248}$$

6.0 DEVELOPMENT OF COUNTY-LEVEL GROWTH RATES

6.1 Growth Rate Development

In many instances in traffic planning, it is necessary to assess the historical growth of vehicle traffic. This traffic growth may be obtained from historical data for individual traffic monitoring stations or groupings of stations. Data obtained from the TVS was again utilized to analyze the traffic growth characteristics of various groupings of highways. The same procedures were followed in the selection of data for the analysis of traffic growth as were utilized in selection of stations used for the analysis of the functional class ratio procedure. The stations utilized were required to have had at least two actual counts since 1980 or since a traffic impact year was identified. Both actual traffic counts and computer estimates were utilized in developing the database for analysis. The analysis of traffic growth was limited to data from 1991 through 2000 for all functional classes with the exception of FC 09 and 19. The analysis of these functional classes was limited to 1992 through 2000 for the reasons previously stated in 5.0.

In the analysis of the growth of a specific grouping of stations, data were obtained for each station within the group for the years 1991 through 2000 (1992 – 2000 for FC 09 and 19). The average ADT, both weighted and unweighted, was determined for all stations within the grouping for each year. The weighted ADT is determined using the length which the station represents as the weighting factor while the unweighted ADT is a simple arithmetic average of all the stations. This resulted in a single average historical ADT for this group for every year. This is illustrated in Figure 28 for functional class 06 in Allen County. It may be seen from this figure that there were four functional class 06 stations in Allen County. The resulting blue line with round symbols indicates the annual unweighted average for these stations. A similar plot could be generated for weighted annual ADT. A linear regression analysis may then be performed on the average annual ADT. This is illustrated in Figure 29.

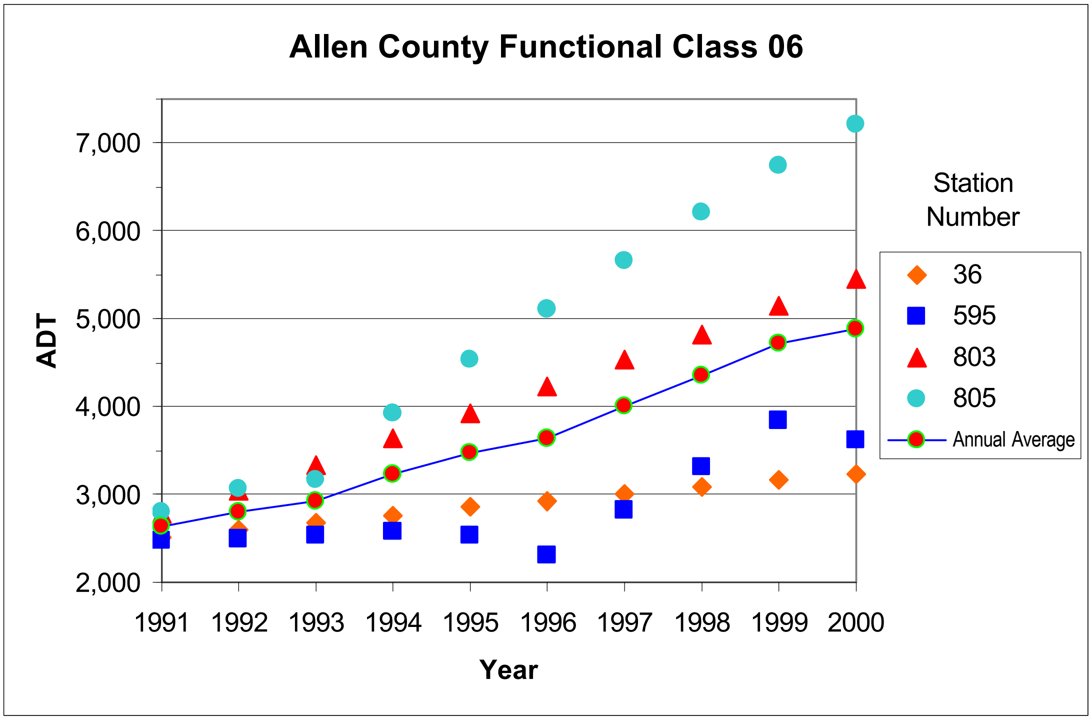


Figure 28. Allen County Functional Class 06 Traffic Monitoring Stations

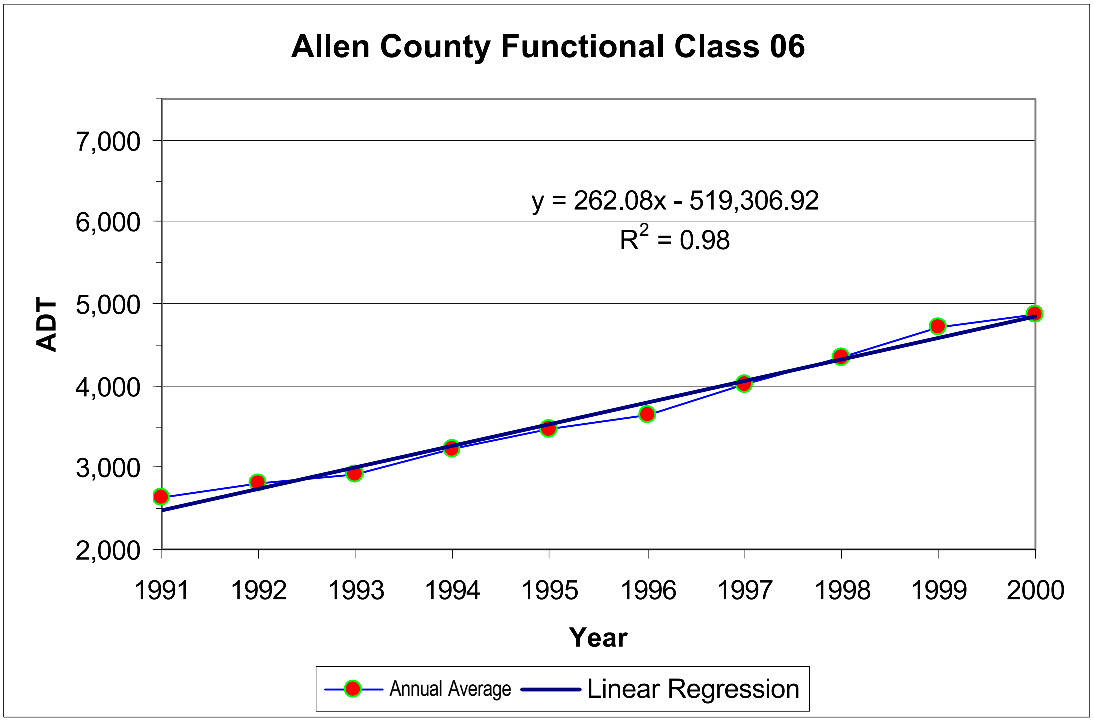


Figure 29. Average Annual Functional Class 06 ADT for Allen County

The equation has the form of a straight line, y = mx + b, where "y" is the resulting ADT and "x" is the year of prediction, and "m" and "b" are regression coefficients. The slope term of the linear regression "m" may be utilized to calculate a growth rate for the grouping of stations. The slope represents the average change in ADT between each year throughout the history of the station. This slope may be utilized in conjunction with a single years ADT to determine an individual year's growth rate. For the purpose of this project, growth was defined as the slope of the regression line divided by the predicted year 2000 ADT multiplied by 100. The resulting growth rates may then be expressed as a percent. For the example given in Figure 28 and 29, the growth rate would be determined as follows:

$$\frac{\text{Regression Slope}}{\text{Year 2000 ADT}} \times 100 = \text{Growth Rate (\%)} \quad \Rightarrow \frac{262.08}{4{,}853} \times 100 = 5.4\%$$

These types of calculations were carried out for each functional class in each county. The results of this analysis are given for both weighted and unweighted ADT in Appendix F and Appendix G, respectively.

A statewide summary of these results is given in Table 16. This table shows the numerical average of all the individual county level growth rates for both weighted and unweighted ADT.

	Functional Class											
	01	02	06	07	08	09	11	12	14	16	17	19
	Growth Rate (%)											
Unweighted ADT	3.40	3.01	2.09	1.71	1.64	1.95	3.34	2.63	2.02	1.48	1.01	1.95
Weighted ADT	3.32	3.15	2.18	1.80	1.79	2.31	3.37	2.81	2.19	1.54	1.35	2.08

Table 16. Summary of Statewide County Level Functional Classification Growth Rates

It may be seen from the tables in Appendix F and Appendix G that counties actually have negative growth rates. These negative growth rates were included in the above averages.

6.2 Statewide Functional Class Averages

The statewide unweighted average annual ADT for FC 01 and 11 are given in Figure 30. These averages were determined by averaging all FC 01 or FC 11 stations for a given year. A linear regression line is also provided in the figure. The results of this regression yield growth rates of 3.53% and 3.07% for functional class 01 and 11 respectively.

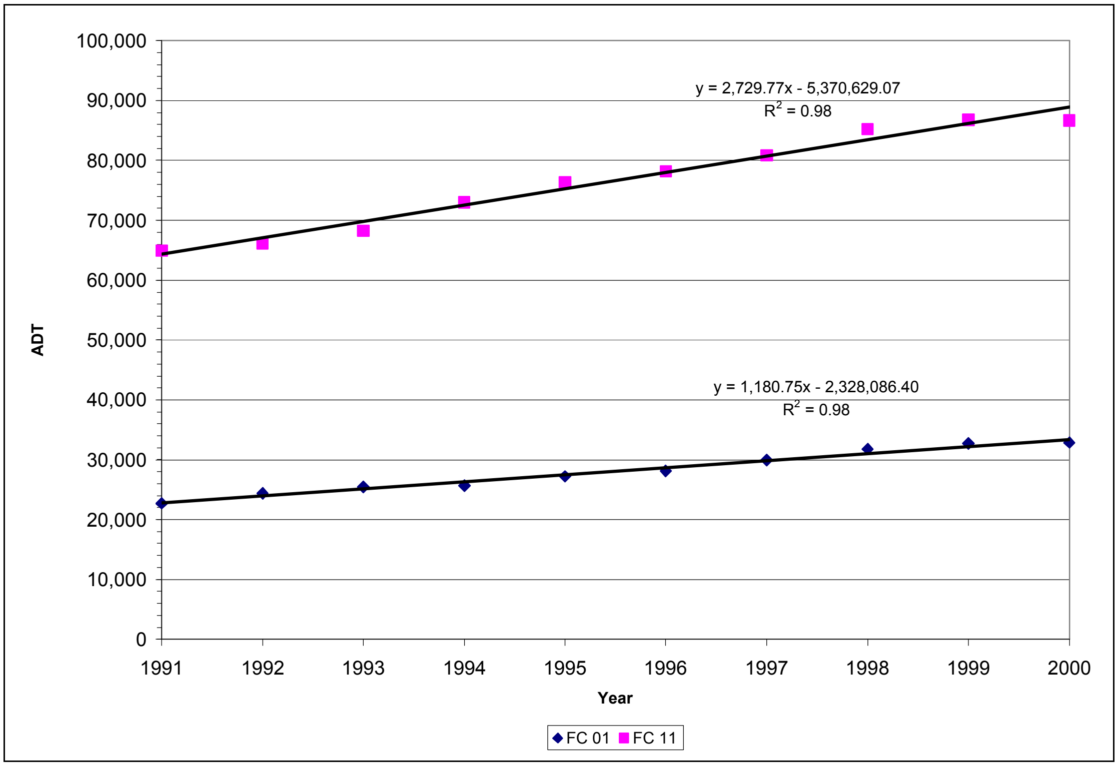


Figure 30. Statewide Unweighted Average ADT for Functional Class 01 and 11

Similar plots for the rural functional classifications and urban functional classifications are given in Figures 31 and 32 respectively. The results of the linear regression for each of these ADT histories are given in Table 17 along with the results obtained from weighted average ADT.

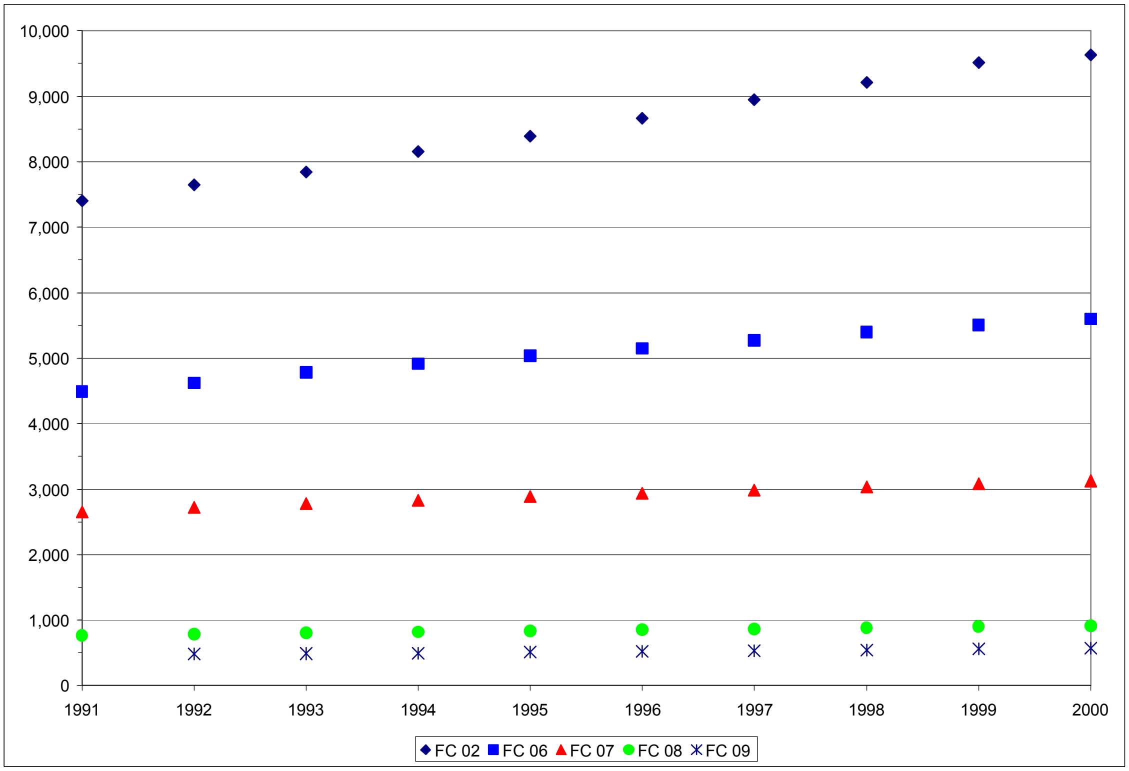


Figure 31. Statewide Unweighted Average ADT for Rural Functional Classes

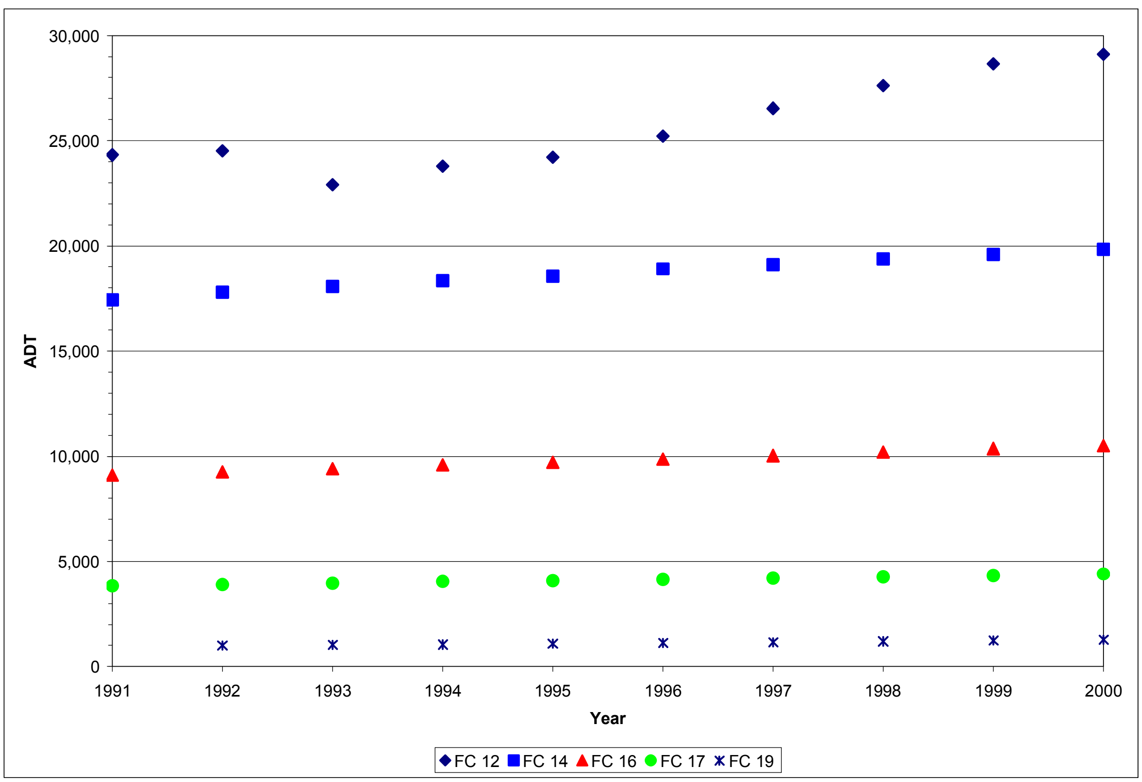


Figure 32. Statewide Unweighted Average ADT for Urban Functional Classes

	Functional Class											
	01	02	06	07	08	09	11	12	14	16	17	19
	Growth Rate (%)											
Unweighted ADT	3.53	2.67	2.20	1.67	1.73	2.05	3.07	2.22	1.32	1.48	1.44	2.76
Weighted ADT	3.51	3.21	2.39	1.82	1.89	2.67	2.94	2.65	1.58	1.77	1.95	3.44

Table 17. Summary of Statewide Functional Class Growth Rates

6.3 Interstate Corridor Analysis

Interstate functional class growth rates based on weighted ADT have been determined for each individual interstate corridor. These results are given in Table 18. Interstate corridors for I-64, I-71, and I-75 have been further broken down into urban and rural counties. These county groupings do not necessarily correspond to the standard functional class groupings of FC 01 and 11. These results are given in Appendix H.

Interstate Route	Average ADT	Weighted Average ADT	Predicted Weighted Average ADT	2000 Weighted ADT Growth Rate (%)	Regression Slope	Regression Constant
24	23,543	22,019	21,790	4.22	919	-1,817,117
64	42,767	31,560	32,032	2.95	945	-1,857,131
65	61,502	50,208	50,619	2.48	1,253	-2,455,654
71	37,062	34,904	34,599	3.46	1,196	-2,357,128
75	68,025	50,532	51,707	3.70	1,911	-3,770,625
264	113,095	100,494	108,877	4.24	4,618	-9,127,772
265	52,292	50,953	50,629	2.47	1,251	-2,452,021
275	78,350	68,291	68,199	4.74	3,233	-6,398,578
471	98,740	95,656	96,142	1.86	1,786	-3,476,124

Table 18. Interstate Corridor Weighted ADT Growth

7.0 REFERENCES

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8.0 APPENDICES

8.1 Appendix A – Kentucky Year 2020 VMT Forecast Procedures

KYTC VMT Forecasting Procedure Overview

Given the significant and non-demographic based influence of Interstate highway travel on vehicle miles traveled (VMT) in many counties, the KYTC's VMT forecasting procedure splits total VMT into two categories for forecasting purposes - Interstate and non-Interstate. Growth in VMT is forecasted first at the statewide level and then allocated to the county level. Non-Interstate VMT is then split into the functional class categories (including local) based on historical, county-specific percentages.

For non-Interstate travel, VMT growth is linked to population growth. Statewide VMT growth is forecasted using a population based linear model and a forecast of Kentucky's future population for the desired target year. This model is revised each year with the incorporation of an additional year of historical data. Because of a strong linear relationship between statewide population and statewide VMT and because statewide (and county-level) population estimates and forecasts exist and are widely accepted, the use of population change makes for a convenient and defensible method for forecasting (and subsequently allocating) statewide VMT growth. The difference between the base year (the most recent year for which estimates are available) estimate and the target year forecast establishes a statewide control total for non-Interstate VMT growth. This growth is then allocated to the counties based on a combination of county population change and the model-derived projected increase in VMT per person per year.

For Interstate travel, it is felt that the relationships between county level demographic variables and VMT are much less cause-and-effect in nature than for non-Interstate travel. Therefore, VMT growth is projected using growth rates determined from historical trends and assumed changes in the growth rate over time. Changes in the growth rate over time are based on the expectation that Interstate travel will continue to increase at a higher rate than non-Interstate travel, but that the rate of increase will likely flatten out somewhat due to various reasons (capacity restraint and the mathematics of compound interest being two of the primary reasons).

Kentucky Year 2020 VMT Forecasts

This appendix describes the methodology and assumptions used to develop year 2020 forecasts of vehicle miles of travel (VMT) for Kentucky's 120 counties.

Data Available:

1. Statewide VMT from HPMS for the years 1980 - 1998.
2. VMT by county and functional class for the years 1993 - 1998.
3. Statewide population estimates for the years 1980 - 1998.
4. County level population estimates for 1998.
5. County level population forecasts for 2020.

Data Adjustments

The need to create county level VMT estimates required improved procedures for estimating local VMT. Prior to 1998, local VMT had been estimated based on a statewide average local ADT and local mileage. This procedure was insensitive to differences in the magnitude of travel on the local system from county to county. In 1998, a procedure (Collector Ratio Method) was developed to estimate county level differences in local travel based on travel on the collector system. This procedure, which produced significantly improved estimates of county level local VMT, also produced a slight increase (2.57%) in the total estimated statewide VMT. Because of file format changes over time, it was practical to apply the revised procedure to historical VMT estimates back to 1993 only. For consistency purposes, statewide total VMT estimates for the years 1980 - 1992 were increased by 2.57%. These calculations are documented in Table 1 of the KYTC VMT forecasting spreadsheet. This spreadsheet is summarized and illustrated on pages (p. 74-86).

Basic Procedure

Given the significant and non-demographic based influence of Interstate travel on VMT in many counties, the decision was made to split VMT into two categories for forecasting purposes - Interstate and non-Interstate. Growth in VMT was forecasted first at the statewide level and then allocated to the county level.

For non-Interstate travel, VMT growth was linked to population growth. Statewide VMT growth was forecasted using a population based linear model and a forecast of Kentucky's year 2020 population. The growth in statewide VMT was then allocated to the county level VMT based on county level population growth and the model estimated increase in VMT/person/year.

For Interstate travel, the relationships between county level demographic variables and VMT are of a much less cause-and-effect nature. Therefore, VMT growth was based on historical trends and assumed changes in the growth rate over time.

Non-Interstate VMT Forecast Details

Table 2 shows statewide population and VMT estimates for the years 1980 - 1998 and a forecast of Kentucky's year 2020 population. The source of the population data was the Kentucky State

Data Center (see http://cbpa.louisville.edu/ksdc/). The source of the VMT data was the Highway Performance Monitoring System (HPMS), and the estimates for 1980 - 1992 were factored as described above under Data Adjustments. The Excel forecast function was used to determine a linear model to predict statewide VMT from statewide population based on the 18 years of data. As can be seen in Table 2, a strong linear relationship exists between statewide population and VMT ($R^2 = 0.84$). Furthermore, because statewide and county-level population estimates and forecasts exist and are widely accepted, the use of population change makes for a convenient and defensible method of forecasting VMT. A year 2020 forecast of daily VMT of 149,929,849 resulted. This represents an annual growth rate of 2.05% over the 22-year forecast period, which is felt to be somewhat conservative - but nevertheless very reasonable.

The statewide growth in non-Interstate VMT between 1998 and 2020 was allocated to the counties based on a combination of county population change and the projected increase in VMT per person. Non-Interstate VMT per person per year estimates are shown in Table 2 along with the forecasted value of this parameter for the year 2020. To account for a continued increasing trend in VMT per person, a base level growth of 1.65% per year was applied to each county over 1998 county level estimates. These calculations are shown in Table 3 (Column I). The difference between the resulting statewide total (137,538,035) and the forecasted statewide total discussed above (149,929,849) was then allocated to the county level based on each county's proportion of statewide population change between 1998 and 2020 (See Table 4). This step added VMT above the 1.65% base level growth for counties that are expected to increase in population, and it subtracted VMT from the base level growth for counties that are expected to decrease in population.

Interstate VMT Forecast Details

Table 2 shows Interstate VMT estimates for the years 1980 - 1998. Illustrative historical annual growth rates calculated for selected periods are also shown in this table. This analysis shows that Interstate VMT has increased at an annual rate of 4% or more over this 18-year period and that Interstate VMT has increased at a higher annual rate (by 1% or more) than non-Interstate VMT. In the absence of a more rigorous model, it was decided to use this historical trend, measured in terms of an annual growth rate, as the means to arrive at a year 2020 forecast of Interstate VMT.

It is expected that Interstate travel will continue to increase at a higher rate than non-Interstate travel, but that the rate of increase will likely flatten out somewhat due to various reasons (capacity restraint and the mathematics of compound interest, primary among them). An annual growth rate - starting at 4% per year and decreasing in 0.5% increments over various intervals of time to 2.5% per year - was assumed. The details of this calculation are documented in Table 2. A year 2020 forecast of daily VMT of 65,335,032 resulted. This represents an annual growth rate of 3.36% over the 22-year forecast period, which is felt to be reasonable.

County and Statewide Total VMT Summary

Year 2020 forecasts of total VMT for Kentucky’s 120 counties are shown in Table 5. This table also shows an annual VMT growth rate for each county calculated over this 22-year period. This procedure produces an annual growth rate of 2.41% for the state as a whole.

Index

Table 1 This table compares statewide totals for non-Interstate VMT, as originally submitted by HPMS, with revised estimates based on the 2001 procedure for estimating local VMT. The comparison is made for the years 1993-1997 (the only years possible), and concludes that HPMS numbers prior to 1993 do not need to be factored (previous versions of this procedure did apply a slight factoring to the 1980-1992 original HPMS estimates). Since factoring is no longer needed, this table can be omitted from future versions of this procedure. It is presented here primarily for the sake of continuity from previous versions.

Table 2(a) This table presents the results of a straight-line trend equations based on historical data for the period 1980-2000 for Interstate VMT (using year as the independent varialble) and non-Interstate VMT (using population as the independent variable). Questionable results are highlighted and noted in the table. This table also calculates projected growth rates in VMT per capita.

Chart 1 This chart graphs historical Interstate VMT and shows the results of three alternative forecasting equations (based on the period used for the trend extrapolation). It is concluded that the most proper period to use for trend extrapolation is 1989-1999. As indicated by the historical VMT curve, VMT growth prior to 1989 was flatter than the years since 1989 (which follow a very straight line). Year 2000 was not used for forecasting purposes due to its much lower growth. Additional years of future data will be needed to determine if this year represents a trend shift or if it is an abnormality (as suspected) due to aberrant data or short term travel constraints.

Table 2(b)

This table is a modifcation of Table 2(a). For non-Interstate VMT the year 2005 forecast is modified by using a straight-line interpolation between 2000 and the forecasted value for 2010. This was done because it was felt that the equation produced a growth rate for this forecast period that was slightly high. For Interstate VMT the revised statewide totals are based on the 1989-1999 trend, as discussed above. It should be noted, though, that these totals (and the growth rates that result) are used only for cross-checking purposes. The county/corridor growth rates presented in Table 3 control the Interstate VMT forecasting procedure.

Table 3 This table presents assumed annual growth rates for each county containing Interstate mileage for five-year increment periods from 2000 - 2020. These growth rates are generally applied on a corridor basis and are based on an analysis of historical traffic data (not presented here). This table also calculates growth factors for the forecast periods.

Table 4 This table presents 2000 Census population data for each county and population projections for the years 2005, 2010, 2015, and 2020. The porportion of the state's population change attributable to each county is calculated for the forecast years.

Table 5

These tables (one for each forecast year) calculate the VMT forecasts. For Interstate VMT the growth factors developed in Table 3 are applied. For non-Interstate VMT the forecast is developed in two stages. In Column I an increased VMT based on increasing VMT per capita is calculated. The calculations in Column J add or subtract a proportion of the remaining statewide increase (the difference between the statewide total forecasted in Table 2(b) and the statewide total after accounting for increased VMT per capita) based on the proportion of the statewide population change attributable to each county (from Table 4).

Table 6 This table summarizes the total VMT forecasts for each of the Table 5 forecast years and computes an annual VMT growth rate for each county. These rates, particularly the extremes, are subjectively evaluated for reasonableness.

Appendix A - Table 1

Comparison of Statewide Total VMT for Years 1993 - 1997
(Original HPMS vs. Revised Local VMT Procedure)

	Original Daily VMT	Original Interstate VMT	Original Non-Int VMT	Revised Non-Int VMT	Ratio
1980	69,131,507	15,589,000	53,542,507		
1981	69,027,397	16,263,000	52,764,397		
1982	70,210,959	15,904,000	54,306,959		
1983	73,202,740	17,287,000	55,915,740		
1984	76,578,082	17,961,000	58,617,082		
1985	78,136,986	17,526,000	60,610,986		
1986	80,142,466	17,830,000	62,312,466		
1987	83,068,493	18,707,000	64,361,493		
1988	86,613,699	20,550,000	66,063,699		
1989	88,123,288	20,945,000	67,178,288		
1990	92,161,644	22,019,000	70,142,644		
1991	96,473,973	23,216,000	73,257,973		
1992	104,279,452	24,989,000	79,290,452		
1993	108,487,671	25,703,000	82,784,671	81,744,541	0.9874
1994	109,101,370	26,395,000	82,706,370	82,539,710	0.9980
1995	112,589,041	27,628,000	84,961,041	84,160,441	0.9906
1996	116,358,904	28,747,000	87,611,904	86,669,117	0.9892
1997	122,914,000	29,928,000	92,986,000	89,100,695	0.9582
					0.9847

Appendix A - Table 2(a)

Population & VMT Trends and 2020 Projections

Note

Year	Population	Daily VMT	Interstate VMT	Non-Inter VMT	Non-Interstate VMT/person/yr
1980	3,660,334	69,131,507	15,589,000	53,542,507	5,339
1981	3,670,395	69,027,397	16,263,000	52,764,397	5,247
1982	3,683,449	70,210,959	15,904,000	54,306,959	5,381
1983	3,694,469	73,202,740	17,287,000	55,915,740	5,524
1984	3,695,459	76,578,082	17,961,000	58,617,082	5,790
1985	3,694,816	78,136,986	17,526,000	60,610,986	5,988
1986	3,687,805	80,142,466	17,830,000	62,312,466	6,167
1987	3,683,330	83,068,493	18,707,000	64,361,493	6,378
1988	3,680,002	86,613,699	20,550,000	66,063,699	6,553
1989	3,677,318	88,123,288	20,945,000	67,178,288	6,668
1990	3,686,892	92,161,644	22,019,000	70,142,644	6,944
1991	3,714,685	96,473,973	23,216,000	73,257,973	7,198
1992	3,751,866	104,279,452	24,989,000	79,290,452	7,714
1993	3,792,623	107,447,541 (2)	25,703,000	81,744,541	7,867
1994	3,823,954	108,934,710	26,395,000	82,539,710	7,878
1995	3,856,212	111,788,441	27,628,000	84,160,441	7,966
1996	3,882,071	115,416,117	28,747,000	86,669,117	8,149
1997	3,908,124	119,028,695	29,928,000	89,100,695	8,322
1998	3,936,499	122,899,633	31,566,000	91,333,633	8,469
1999	3,960,825	127,267,666	32,807,303	94,460,363	8,705
2000	4,041,769	128,277,992	32,909,866	95,368,126	8,612
2005	4,156,300 (1)		37,047,542	116,617,153	10,241
2010	4,233,231		41,706,719	125,405,210	10,813
2015	4,293,852		46,365,897	132,330,127	11,249
2020	4,348,306		51,025,075	138,550,569	11,630

Illustrative Observed & Forecasted Annual Growth Rates

Interstate VMT	
1980-2000 Annual Growth Rate =	3.81%
1990-2000 Annual Growth Rate =	4.10%
1995-2000 Annual Growth Rate =	3.56%
1999-2000 Annual Growth Rate =	0.31%
Projected Annual Growth Rate (2000-2005) =	2.40%
Projected Annual Growth Rate (2000-2010) =	2.40%
Projected Annual Growth Rate (2000-2015) =	2.31%
Projected Annual Growth Rate (2000-2020) =	2.22%
Non-Interstate VMT	
1980-2000 Annual Growth Rate =	2.93%
1990-2000 Annual Growth Rate =	3.12%
1995-2000 Annual Growth Rate =	2.53%
1999-2000 Annual Growth Rate =	0.96%
Projected Annual Growth Rate (2000-2005) =	4.11%
Projected Annual Growth Rate (1995-2005) =	3.32%
Projected Annual Growth Rate (2000-2010) =	2.78%
Projected Annual Growth Rate (2000-2015) =	2.21%
Projected Annual Growth Rate (2000-2020) =	1.89%
Non-Inter VMT/person/yr	
2000-2005 Annual Growth Rate =	3.52%
2000-2010 Annual Growth Rate =	2.30%
2000-2015 Annual Growth Rate =	1.80%
2000-2020 Annual Growth Rate =	1.51%

(1) Kentucky State Data Center 1999 projections for 2005 - 2020 revised for consistency with 2000 Census

(2) VMT estimates for 1993 - 1999 represent slight modification of numbers originally submitted with HPMS. Modification involves enchanced procedure for estimating VMT on local functional systems. Developed 2001.

Linear Fit Equation Statistics

(A) Interstate VMT

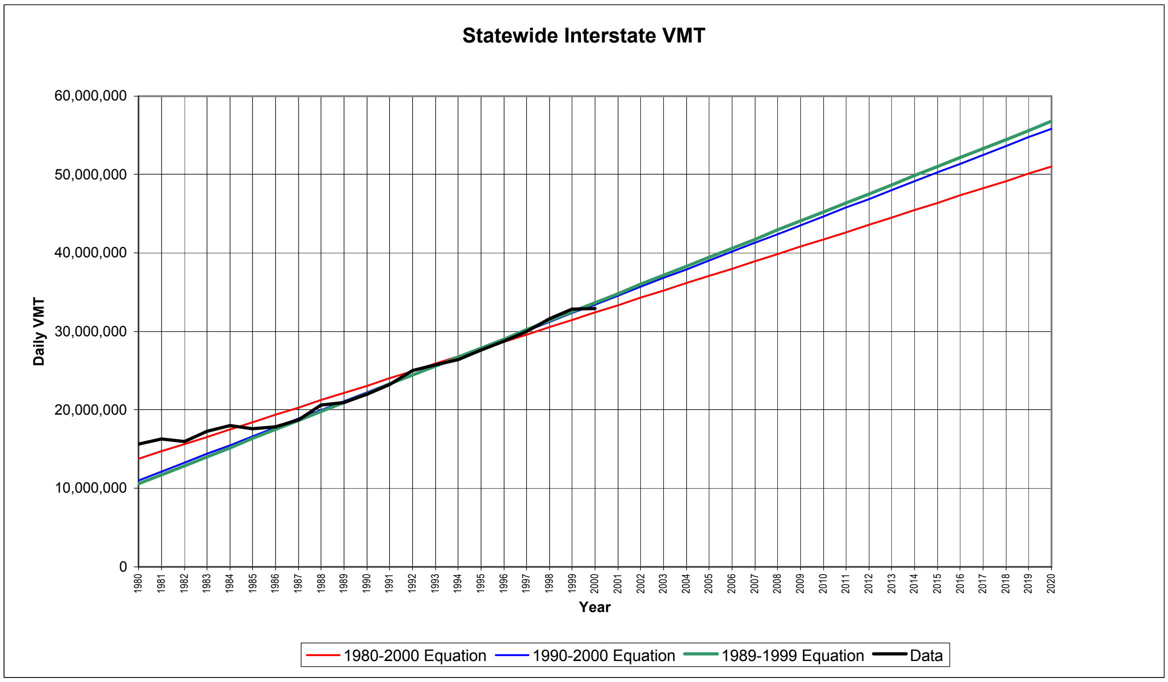
931835.5706	(1,831,282,777)	**VMT= 931,835.57xYear - 1,831,282,777**
36359.13889	72355021.35	
0.9719	1008925.158	**R^2 = 0.9719**
656.8275961	19	
6.68604E+14	1.93407E+13	

(B) Non-Interstate VMT

114.2330	(358,169,359)	**VMT = 114.2330xPOP - 358,169,359**
11.2190	42321483.34	
0.8451	5808857.275	**R^2 = 0.8451**
103.6753	19	
3.4983E+15	6.4111E+14	

Appendix A - Chart 1

Interstate VMT: 1980 - 2000 Data and Various Trend Extrpolations
See Equations Below



Year	HPMS Estimates	1980-2000 Trend	Equation Values 1990-2000 Trend	1989-1999 Trend			
					1980-2000 Trend Equation		
1980	15,589,000	13,751,652	10,989,032	10,548,744	931,835.57	(1,831,282,777)	VMT= 931,835.57xYear - 1,831,282,777
1981	16,263,000	14,683,488	12,110,419	11,703,985	36359.13889	72355021.35	
1982	15,904,000	15,615,323	13,231,806	12,859,226	0.9719	1008925.158	R^2 = 0.9719
1983	17,287,000	16,547,159	14,353,192	14,014,467	656.8275961	19	
1984	17,961,000	17,478,995	15,474,579	15,169,708	6.68604E+14	1.93407E+13	
1985	17,526,000	18,410,830	16,595,966	16,324,949			
1986	17,830,000	19,342,666	17,717,353	17,480,190			
1987	18,707,000	20,274,501	18,838,740	18,635,431	1990-2000 Trend Equation		
1988	20,550,000	21,206,337	19,960,126	19,790,672	1,121,386.76	(2,209,356,746)	VMT= 1,121,386.76xYear - 2,209,356,746
1989	20,945,000	22,138,172	21,081,513	20,945,913	34823.49691	69472963.62	
1990	22,019,000	23,070,008	22,202,900	22,101,154	0.9914	365231.9169	R^2 = 0.9914
1991	23,216,000	24,001,844	23,324,287	23,256,395	1036.969745	9	
1992	24,989,000	24,933,679	24,445,673	24,411,636	1.38326E+14	1.20055E+12	
1993	25,703,000	25,865,515	25,567,060	25,566,877			
1994	26,395,000	26,797,350	26,688,447	26,722,118			
1995	27,628,000	27,729,186	27,809,834	27,877,359	1989-1999 Trend Equation		
1996	28,747,000	28,661,021	28,931,220	29,032,601	1,155,241.04	(2,276,828,519)	VMT= 1,155,241.04xYear - 2,276,828,519
1997	29,928,000	29,592,857	30,052,607	30,187,842	28844.62656	57516257.69	
1998	31,566,000	30,524,693	31,173,994	31,343,083	0.9944	302524.9956	R^2 = 0.9944
1999	32,807,303	31,456,528	32,295,381	32,498,324	1604.040678	9	
2000	32,909,866	32,388,364	33,416,767	33,653,565	1.46804E+14	8.23692E+11	
2001		33,320,199	34,538,154	34,808,806			
2002		34,252,035	35,659,541	35,964,047			
2003		35,183,870	36,780,928	37,119,288			
2004		36,115,706	37,902,314	38,274,529			
2005		37,047,542	39,023,701	39,429,770			
2006		37,979,377	40,145,088	40,585,011			
2007		38,911,213	41,266,475	41,740,252			
2008		39,843,048	42,387,861	42,895,493			
2009		40,774,884	43,509,248	44,050,734			
2010		41,706,719	44,630,635	45,205,975			
2011		42,638,555	45,752,022	46,361,216			
2012		43,570,391	46,873,408	47,516,457			
2013		44,502,226	47,994,795	48,671,698			

Appendix A - Table 2(b)

Population & VMT Trends and 2020 Projections

Year	Population	Daily VMT	Interstate VMT	Non-Inter VMT	Non-Interstate VMT/person/yr
1980	3,660,334	69,131,507	15,589,000	53,542,507	5,339
1981	3,670,395	69,027,397	16,263,000	52,764,397	5,247
1982	3,683,449	70,210,959	15,904,000	54,306,959	5,381
1983	3,694,469	73,202,740	17,287,000	55,915,740	5,524
1984	3,695,459	76,578,082	17,961,000	58,617,082	5,790
1985	3,694,816	78,136,986	17,526,000	60,610,986	5,988
1986	3,687,805	80,142,466	17,830,000	62,312,466	6,167
1987	3,683,330	83,068,493	18,707,000	64,361,493	6,378
1988	3,680,002	86,613,699	20,550,000	66,063,699	6,553
1989	3,677,318	88,123,288	20,945,000	67,178,288	6,668
1990	3,686,892	92,161,644	22,019,000	70,142,644	6,944
1991	3,714,685	96,473,973	23,216,000	73,257,973	7,198
1992	3,751,866	104,279,452	24,989,000	79,290,452	7,714
1993	3,792,623	107,447,541 (2)	25,703,000	81,744,541	7,867
1994	3,823,954	108,934,710	26,395,000	82,539,710	7,878
1995	3,856,212	111,788,441	27,628,000	84,160,441	7,966
1996	3,882,071	115,416,117	28,747,000	86,669,117	8,149
1997	3,908,124	119,028,695	29,928,000	89,100,695	8,322
1998	3,936,499	122,899,633	31,566,000	91,333,633	8,469
1999	3,960,825	127,267,666	32,807,303	94,460,363	8,705
2000	4,041,769	128,277,992	32,909,866	95,368,126	8,612
2005	4,156,300		39,429,770	110,386,668	9,694
2010	4,233,231		45,205,975	125,405,210	10,813
2015	4,293,852		50,982,180	132,330,127	11,249
2020	4,348,306 (1)		56,758,386	138,550,569	11,630

Illustrative Observed & Forecasted Annual Growth Rates	
Interstate VMT	
1980-2000 Annual Growth Rate =	3.81%
1990-2000 Annual Growth Rate =	4.10%
1995-2000 Annual Growth Rate =	3.56%
1999-2000 Annual Growth Rate =	0.31%
Projected Annual Growth Rate (2000-2005) =	3.68%
Projected Annual Growth Rate (2000-2010) =	3.23%
Projected Annual Growth Rate (2000-2015) =	2.96%
Projected Annual Growth Rate (2000-2020) =	2.76%
Non-Interstate VMT	
1980-2000 Annual Growth Rate =	2.93%
1990-2000 Annual Growth Rate =	3.12%
1995-2000 Annual Growth Rate =	2.53%
1999-2000 Annual Growth Rate =	0.96%
Projected Annual Growth Rate (2000-2005) =	2.97%
Projected Annual Growth Rate (1995-2005) =	2.75%
Projected Annual Growth Rate (2000-2010) =	2.78%
Projected Annual Growth Rate (2000-2015) =	2.21%
Projected Annual Growth Rate (2000-2020) =	1.89%
Non-Inter VMT/person/yr	
2000-2005 Annual Growth Rate =	2.39%
2000-2010 Annual Growth Rate =	2.30%
2000-2015 Annual Growth Rate =	1.80%
2000-2020 Annual Growth Rate =	1.51%

(1) Kentucky State Data Center 1999 projections for 2005 - 2020 revised for consistency with 2000 Census

(2) VMT estimates for 1993 - 1999 represent slight modification of numbers originally submitted with HPMS. Modification involves enchanced procedure for estimating VMT on local functional systems. Developed 2001.

Linear Fit Equation Statistics

(A) Interstate VMT

1155241.0418	(2,276,828,519)	**VMT = 1,155,241.04xYear - 2,276,828,519**
28844.6266	57516257.69	
0.9944	302524.9956	**R^2 = 0.9944**
1604.0407	9	
1.46804E+14	8.2369E+11	

(B) Non-Interstate VMT

114.2330	(358,169,359)	**VMT = 114.2330xPOP - 358,169,360**
11.2190	42321483.34	
0.8451	5808857.275	**R^2 = 0.8451**
103.6753	19	
3.4983E+15	6.4111E+14	

Appendix A - Table 3

Interstate Growth Rates

		Annual Growth Rates				Growth Factors			
		2000 to 2005	2005 to 2010	2010 to 2015	2015 to 2020	2000 to 2005	2000 to 2010	2000 to 2015	2000 to 2020
001	Adair	0	0	0	0	1.0000	1.0000	1.0000	1.0000
003	Allen	0	0	0	0	1.0000	1.0000	1.0000	1.0000
005	Anderson	0	0	0	0	1.0000	1.0000	1.0000	1.0000
007	Ballard	0	0	0	0	1.0000	1.0000	1.0000	1.0000
009	Barren	2.25	2.25	2.00	1.75	1.1177	1.2492	1.3792	1.5042
011	Bath	3.50	3.00	2.50	2.00	1.1877	1.3769	1.5578	1.7199
013	Bell	0	0	0	0	1.0000	1.0000	1.0000	1.0000
015	Boone	4.50	4.25	4.00	3.50	1.2462	1.5345	1.8669	2.2173
017	Bourbon	0	0	0	0	1.0000	1.0000	1.0000	1.0000
019	Boyd	3.50	3.00	2.50	2.00	1.1877	1.3769	1.5578	1.7199
021	Boyle	0	0	0	0	1.0000	1.0000	1.0000	1.0000
023	Bracken	0	0	0	0	1.0000	1.0000	1.0000	1.0000
025	Breathitt	0	0	0	0	1.0000	1.0000	1.0000	1.0000
027	Breckinridge	0	0	0	0	1.0000	1.0000	1.0000	1.0000
029	Bullitt	3.75	3.25	2.75	2.50	1.2021	1.4106	1.6155	1.8278
031	Butler	0	0	0	0	1.0000	1.0000	1.0000	1.0000
033	Caldwell	4.50	4.00	3.50	3.00	1.2462	1.5162	1.8007	2.0875
035	Calloway	0	0	0	0	1.0000	1.0000	1.0000	1.0000
037	Campbell	3.00	3.00	2.75	2.50	1.1593	1.3439	1.5392	1.7414
039	Carlisle	0	0	0	0	1.0000	1.0000	1.0000	1.0000
041	Carroll	4.00	3.50	3.00	2.50	1.2167	1.4450	1.6752	1.8953
043	Carter	3.50	3.00	2.50	2.00	1.1877	1.3769	1.5578	1.7199
045	Casey	0	0	0	0	1.0000	1.0000	1.0000	1.0000
047	Christian	4.50	4.00	3.50	3.00	1.2462	1.5162	1.8007	2.0875
049	Clark	3.50	3.00	2.50	2.00	1.1877	1.3769	1.5578	1.7199
051	Clay	0	0	0	0	1.0000	1.0000	1.0000	1.0000
053	Clinton	0	0	0	0	1.0000	1.0000	1.0000	1.0000
055	Crittenden	0	0	0	0	1.0000	1.0000	1.0000	1.0000
057	Cumberland	0	0	0	0	1.0000	1.0000	1.0000	1.0000
059	Daviess	0	0	0	0	1.0000	1.0000	1.0000	1.0000
061	Edmonson	2.25	2.25	2.00	1.75	1.1177	1.2492	1.3792	1.5042
063	Elliott	0	0	0	0	1.0000	1.0000	1.0000	1.0000
065	Estill	0	0	0	0	1.0000	1.0000	1.0000	1.0000
067	Fayette	3.25	3.00	2.75	2.50	1.1734	1.3603	1.5579	1.7626
069	Fleming	0	0	0	0	1.0000	1.0000	1.0000	1.0000
071	Floyd	0	0	0	0	1.0000	1.0000	1.0000	1.0000
073	Franklin	3.50	3.25	3.00	2.50	1.1877	1.3936	1.6156	1.8279
075	Fulton	0	0	0	0	1.0000	1.0000	1.0000	1.0000
077	Gallatin	4.00	3.50	3.00	2.50	1.2167	1.4450	1.6752	1.8953
079	Garrard	0	0	0	0	1.0000	1.0000	1.0000	1.0000
081	Grant	4.50	4.25	4.00	3.50	1.2462	1.5345	1.8669	2.2173
083	Graves	0	0	0	0	1.0000	1.0000	1.0000	1.0000
085	Grayson	0	0	0	0	1.0000	1.0000	1.0000	1.0000
087	Green	0	0	0	0	1.0000	1.0000	1.0000	1.0000
089	Greenup	0	0	0	0	1.0000	1.0000	1.0000	1.0000
091	Hancock	0	0	0	0	1.0000	1.0000	1.0000	1.0000
093	Hardin	4.25	4.00	3.50	3.00	1.2313	1.4981	1.7793	2.0627
095	Harlan	0	0	0	0	1.0000	1.0000	1.0000	1.0000
097	Harrison	0	0	0	0	1.0000	1.0000	1.0000	1.0000
099	Hart	2.25	2.25	2.00	1.75	1.1177	1.2492	1.3792	1.5042
101	Henderson	0	0	0	0	1.0000	1.0000	1.0000	1.0000
103	Henry	4.00	3.50	3.00	2.50	1.2167	1.4450	1.6752	1.8953
105	Hickman	0	0	0	0	1.0000	1.0000	1.0000	1.0000
107	Hopkins	0	0	0	0	1.0000	1.0000	1.0000	1.0000
109	Jackson	0	0	0	0	1.0000	1.0000	1.0000	1.0000
111	Jefferson	3.25	3.00	2.75	2.50	1.1734	1.3603	1.5579	1.7626
113	Jessamine	0	0	0	0	1.0000	1.0000	1.0000	1.0000
115	Johnson	0	0	0	0	1.0000	1.0000	1.0000	1.0000
117	Kenton	3.25	3.00	2.75	2.50	1.1734	1.3603	1.5579	1.7626
119	Knott	0	0	0	0	1.0000	1.0000	1.0000	1.0000
121	Knox	0	0	0	0	1.0000	1.0000	1.0000	1.0000
123	Larue	2.25	2.25	2.00	1.75	1.1177	1.2492	1.3792	1.5042
125	Laurel	3.50	3.00	2.50	2.00	1.1877	1.3769	1.5578	1.7199
127	Lawrence	0	0	0	0	1.0000	1.0000	1.0000	1.0000
129	Lee	0	0	0	0	1.0000	1.0000	1.0000	1.0000
131	Leslie	0	0	0	0	1.0000	1.0000	1.0000	1.0000
133	Letcher	0	0	0	0	1.0000	1.0000	1.0000	1.0000
135	Lewis	0	0	0	0	1.0000	1.0000	1.0000	1.0000

		Annual Growth Rates				Growth Factors			
		2000 to 2005	2005 to 2010	2010 to 2015	2015 to 2020	2000 to 2005	2000 to 2010	2000 to 2015	2000 to 2020
137	Lincoln	0	0	0	0	1.0000	1.0000	1.0000	1.0000
139	Livingston	4.50	4.00	3.50	3.00	1.2462	1.5162	1.8007	2.0875
141	Logan	0	0	0	0	1.0000	1.0000	1.0000	1.0000
143	Lyon	4.50	4.00	3.50	3.00	1.2462	1.5162	1.8007	2.0875
145	McCracken	4.50	4.00	3.50	3.00	1.2462	1.5162	1.8007	2.0875
147	McCreary	0	0	0	0	1.0000	1.0000	1.0000	1.0000
149	McLean	0	0	0	0	1.0000	1.0000	1.0000	1.0000
151	Madison	3.50	3.00	2.50	2.00	1.1877	1.3769	1.5578	1.7199
153	Magoffin	0	0	0	0	1.0000	1.0000	1.0000	1.0000
155	Marion	0	0	0	0	1.0000	1.0000	1.0000	1.0000
157	Marshall	4.50	4.00	3.50	3.00	1.2462	1.5162	1.8007	2.0875
159	Martin	0	0	0	0	1.0000	1.0000	1.0000	1.0000
161	Mason	0	0	0	0	1.0000	1.0000	1.0000	1.0000
163	Meade	0	0	0	0	1.0000	1.0000	1.0000	1.0000
165	Menifee	0	0	0	0	1.0000	1.0000	1.0000	1.0000
167	Mercer	0	0	0	0	1.0000	1.0000	1.0000	1.0000
169	Metcalfe	0	0	0	0	1.0000	1.0000	1.0000	1.0000
171	Monroe	0	0	0	0	1.0000	1.0000	1.0000	1.0000
173	Montgomery	3.50	3.00	2.50	2.00	1.1877	1.3769	1.5578	1.7199
175	Morgan	0	0	0	0	1.0000	1.0000	1.0000	1.0000
177	Muhlenberg	0	0	0	0	1.0000	1.0000	1.0000	1.0000
179	Nelson	0	0	0	0	1.0000	1.0000	1.0000	1.0000
181	Nicholas	0	0	0	0	1.0000	1.0000	1.0000	1.0000
183	Ohio	0	0	0	0	1.0000	1.0000	1.0000	1.0000
185	Oldham	4.00	3.50	3.00	2.50	1.2167	1.4450	1.6752	1.8953
187	Owen	0	0	0	0	1.0000	1.0000	1.0000	1.0000
189	Owsley	0	0	0	0	1.0000	1.0000	1.0000	1.0000
191	Pendleton	0	0	0	0	1.0000	1.0000	1.0000	1.0000
193	Perry	0	0	0	0	1.0000	1.0000	1.0000	1.0000
195	Pike	0	0	0	0	1.0000	1.0000	1.0000	1.0000
197	Powell	0	0	0	0	1.0000	1.0000	1.0000	1.0000
199	Pulaski	0	0	0	0	1.0000	1.0000	1.0000	1.0000
201	Robertson	0	0	0	0	1.0000	1.0000	1.0000	1.0000
203	Rockcastle	3.50	3.00	2.50	2.00	1.1877	1.3769	1.5578	1.7199
205	Rowan	3.50	3.00	2.50	2.00	1.1877	1.3769	1.5578	1.7199
207	Russell	0	0	0	0	1.0000	1.0000	1.0000	1.0000
209	Scott	5.00	4.75	4.50	4.00	1.2763	1.6096	2.0058	2.4404
211	Shelby	3.50	3.25	3.00	2.50	1.1877	1.3936	1.6156	1.8279
213	Simpson	2.25	2.25	2.00	1.75	1.1177	1.2492	1.3792	1.5042
215	Spencer	0	0	0	0	1.0000	1.0000	1.0000	1.0000
217	Taylor	0	0	0	0	1.0000	1.0000	1.0000	1.0000
219	Todd	0	0	0	0	1.0000	1.0000	1.0000	1.0000
221	Trigg	4.50	4.00	3.50	3.00	1.2462	1.5162	1.8007	2.0875
223	Trimble	4.00	3.50	3.00	2.50	1.2167	1.4450	1.6752	1.8953
225	Union	0	0	0	0	1.0000	1.0000	1.0000	1.0000
227	Warren	2.25	2.25	2.00	1.75	1.1177	1.2492	1.3792	1.5042
229	Washington	0	0	0	0	1.0000	1.0000	1.0000	1.0000
231	Wayne	0	0	0	0	1.0000	1.0000	1.0000	1.0000
233	Webster	0	0	0	0	1.0000	1.0000	1.0000	1.0000
235	Whitley	3.50	3.00	2.50	2.00	1.1877	1.3769	1.5578	1.7199
237	Wolfe	0	0	0	0	1.0000	1.0000	1.0000	1.0000
239	Woodford	3.50	3.25	3.00	2.50	1.1877	1.3936	1.6156	1.8279

Appendix A - Table 4

Population Change: 2000 - 2020

	2000	2005	2005-2000	% of State Increase	2010	2010-2000	% of State Increase	2015	2015-2000	% of State Increase	2020	2020-2000	% of State Increase
Kentucky	4,041,769	4,156,300	114,531		4,233,231	191,462		4,293,852	252,083		4,348,306	306,537	
1 Adair	17,244	17,840	596	0.52%	18,153	909	0.47%	18,383	1,139	0.45%	18,630	1,386	0.45%
2 Allen	17,800	18,977	1,177	1.03%	19,636	1,836	0.96%	20,215	2,415	0.96%	20,894	3,094	1.01%
3 Anderson	19,111	21,078	1,967	1.72%	22,384	3,273	1.71%	23,605	4,494	1.78%	25,010	5,899	1.92%
4 Ballard	8,286	8,612	326	0.28%	8,713	427	0.22%	8,779	493	0.20%	8,896	610	0.20%
5 Barren	38,033	39,915	1,882	1.64%	40,940	2,907	1.52%	41,758	3,725	1.48%	42,682	4,649	1.52%
6 Bath	11,085	11,306	221	0.19%	11,415	330	0.17%	11,487	402	0.16%	11,541	456	0.15%
7 Bell	30,060	29,299	-761	-0.66%	28,929	-1,131	-0.59%	28,513	-1,547	-0.61%	27,850	-2,210	-0.72%
8 Boone	85,991	99,686	13,695	11.96%	109,392	23,401	12.22%	118,647	32,656	12.95%	129,784	43,793	14.29%
9 Bourbon	19,360	19,310	-50	-0.04%	19,266	-94	-0.05%	19,173	-187	-0.07%	18,973	-387	-0.13%
10 Boyd	49,752	48,648	-1,104	-0.96%	47,765	-1,987	-1.04%	46,749	-3,003	-1.19%	45,421	-4,331	-1.41%
11 Boyle	27,697	28,237	540	0.47%	28,516	819	0.43%	28,698	1,001	0.40%	28,830	1,133	0.37%
12 Bracken	8,279	8,410	131	0.11%	8,475	196	0.10%	8,508	229	0.09%	8,520	241	0.08%
13 Breathitt	16,100	16,524	424	0.37%	16,835	735	0.38%	17,095	995	0.39%	17,306	1,206	0.39%
14 Breckinridge	18,648	19,405	757	0.66%	19,815	1,167	0.61%	20,156	1,508	0.60%	20,542	1,894	0.62%
15 Bullitt	61,236	66,838	5,602	4.89%	70,779	9,543	4.98%	74,197	12,961	5.14%	77,658	16,422	5.36%
16 Butler	13,010	13,358	348	0.30%	13,565	555	0.29%	13,730	720	0.29%	13,898	888	0.29%
17 Caldwell	13,060	13,303	243	0.21%	13,344	284	0.15%	13,361	301	0.12%	13,411	351	0.11%
18 Calloway	34,177	34,113	-64	-0.06%	33,769	-408	-0.21%	33,312	-865	-0.34%	32,798	-1,379	-0.45%
19 Campbell	88,616	90,207	1,591	1.39%	91,316	2,700	1.41%	92,078	3,462	1.37%	92,549	3,933	1.28%
20 Carlisle	5,351	5,380	29	0.03%	5,331	-20	-0.01%	5,271	-80	-0.03%	5,197	-154	-0.05%
21 Carroll	10,155	10,242	87	0.08%	10,299	144	0.08%	10,343	188	0.07%	10,353	198	0.06%
22 Carter	26,889	28,077	1,188	1.04%	28,821	1,932	1.01%	29,399	2,510	1.00%	29,938	3,049	0.99%
23 Casey	15,447	15,409	-38	-0.03%	15,394	-53	-0.03%	15,368	-79	-0.03%	15,273	-174	-0.06%
24 Christian	72,265	75,539	3,274	2.86%	78,025	5,760	3.01%	80,315	8,050	3.19%	82,467	10,202	3.33%
25 Clark	33,144	34,417	1,273	1.11%	35,243	2,099	1.10%	35,892	2,748	1.09%	36,468	3,324	1.08%
26 Clay	24,556	24,599	43	0.04%	24,896	340	0.18%	25,163	607	0.24%	25,256	700	0.23%
27 Clinton	9,634	9,677	43	0.04%	9,667	33	0.02%	9,635	1	0.00%	9,566	-68	-0.02%
28 Crittenden	9,384	9,344	-40	-0.03%	9,230	-154	-0.08%	9,107	-277	-0.11%	8,983	-401	-0.13%
29 Cumberland	7,147	7,143	-4	0.00%	7,085	-62	-0.03%	7,009	-138	-0.05%	6,929	-218	-0.07%
30 Daviess	91,545	93,074	1,529	1.34%	94,166	2,621	1.37%	94,894	3,349	1.33%	95,229	3,684	1.20%
31 Edmonson	11,644	12,433	789	0.69%	12,866	1,222	0.64%	13,197	1,553	0.62%	13,544	1,900	0.62%
32 Elliott	6,748	6,683	-65	-0.06%	6,658	-90	-0.05%	6,646	-102	-0.04%	6,604	-144	-0.05%
33 Estill	15,307	15,365	58	0.05%	15,362	55	0.03%	15,324	17	0.01%	15,210	-97	-0.03%
34 Fayette	260,512	264,013	3,501	3.06%	266,560	6,048	3.16%	267,987	7,475	2.97%	268,230	7,718	2.52%
35 Fleming	13,792	14,250	458	0.40%	14,455	663	0.35%	14,628	836	0.33%	14,815	1,023	0.33%
36 Floyd	42,441	42,090	-351	-0.31%	42,097	-344	-0.18%	42,067	-374	-0.15%	41,728	-713	-0.23%
37 Franklin	47,687	48,382	695	0.61%	48,676	989	0.52%	48,657	970	0.38%	48,410	723	0.24%
38 Fulton	7,752	7,655	-97	-0.08%	7,581	-171	-0.09%	7,494	-258	-0.10%	7,405	-347	-0.11%
39 Gallatin	7,870	9,019	1,149	1.00%	9,822	1,952	1.02%	10,644	2,774	1.10%	11,669	3,799	1.24%
40 Garrard	14,792	16,242	1,450	1.27%	17,033	2,241	1.17%	17,695	2,903	1.15%	18,506	3,714	1.21%
41 Grant	22,384	25,419	3,035	2.65%	27,587	5,203	2.72%	29,686	7,302	2.90%	32,166	9,782	3.19%
42 Graves	37,028	37,994	966	0.84%	38,487	1,459	0.76%	38,908	1,880	0.75%	39,448	2,420	0.79%
43 Grayson	24,053	25,169	1,116	0.97%	25,865	1,812	0.95%	26,464	2,411	0.96%	27,043	2,990	0.98%
44 Green	11,518	11,592	74	0.06%	11,554	36	0.02%	11,475	-43	-0.02%	11,392	-126	-0.04%
45 Greenup	36,891	36,815	-76	-0.07%	36,627	-264	-0.14%	36,269	-622	-0.25%	35,661	-1,230	-0.40%
46 Hancock	8,392	9,303	911	0.80%	9,914	1,522	0.79%	10,487	2,095	0.83%	11,142	2,750	0.90%
47 Hardin	94,174	94,484	310	0.27%	95,680	1,506	0.79%	96,719	2,545	1.01%	97,066	2,892	0.94%
48 Harlan	33,202	32,609	-593	-0.52%	32,423	-779	-0.41%	32,207	-995	-0.39%	31,702	-1,500	-0.49%
49 Harrison	17,983	18,534	551	0.48%	18,813	830	0.43%	19,047	1,064	0.42%	19,333	1,350	0.44%
50 Hart	17,445	18,346	901	0.79%	18,871	1,426	0.74%	19,292	1,847	0.73%	19,736	2,291	0.75%
51 Henderson	44,829	45,032	203	0.18%	45,059	230	0.12%	44,949	120	0.05%	44,649	-180	-0.06%
52 Henry	15,060	16,146	1,086	0.95%	16,807	1,747	0.91%	17,377	2,317	0.92%	17,999	2,939	0.96%
53 Hickman	5,262	4,904	-358	-0.31%	4,646	-616	-0.32%	4,418	-844	-0.33%	4,190	-1,072	-0.35%
54 Hopkins	46,519	46,365	-154	-0.13%	46,223	-296	-0.15%	46,018	-501	-0.20%	45,656	-863	-0.28%
55 Jackson	13,495	14,014	519	0.45%	14,352	857	0.45%	14,642	1,147	0.46%	14,925	1,430	0.47%
56 Jefferson	693,604	692,873	-731	-0.64%	693,303	-301	-0.16%	690,635	-2,969	-1.18%	683,742	-9,862	-3.22%
57 Jessamine	39,041	42,210	3,169	2.77%	44,436	5,395	2.82%	46,411	7,370	2.92%	48,511	9,470	3.09%
58 Johnson	23,445	23,596	151	0.13%	23,712	267	0.14%	23,749	304	0.12%	23,667	222	0.07%
59 Kenton	151,464	153,242	1,778	1.55%	155,260	3,796	1.98%	156,716	5,252	2.08%	157,455	5,991	1.95%
60 Knott	17,649	17,569	-80	-0.07%	17,611	-38	-0.02%	17,636	-13	-0.01%	17,537	-112	-0.04%
61 Knox	31,795	32,860	1,065	0.93%	33,633	1,838	0.96%	34,306	2,511	1.00%	34,933	3,138	1.02%
62 Larue	13,373	13,992	619	0.54%	14,329	956	0.50%	14,589	1,216	0.48%	14,878	1,505	0.49%
63 Laurel	52,715	56,741	4,026	3.52%	59,633	6,918	3.61%	62,266	9,551	3.79%	65,045	12,330	4.02%
64 Lawrence	15,569	16,308	739	0.65%	16,761	1,192	0.62%	17,131	1,562	0.62%	17,504	1,935	0.63%
65 Lee	7,916	8,049	133	0.12%	8,099	183	0.10%	8,136	220	0.09%	8,140	224	0.07%
66 Leslie	12,401	12,244	-157	-0.14%	12,191	-210	-0.11%	12,110	-291	-0.12%	11,903	-498	-0.16%
67 Letcher	25,277	25,139	-138	-0.12%	25,082	-195	-0.10%	24,955	-322	-0.13%	24,629	-648	-0.21%
68 Lewis	14,092	14,532	440	0.38%	14,860	768	0.40%	15,157	1,065	0.42%	15,422	1,330	0.43%
69 Lincoln	23,361	24,615	1,254	1.09%	25,389	2,028	1.06%	26,016	2,655	1.05%	26,645	3,284	1.07%

	2000	2005	2005-2000	% of State Increase	2010	2010-2000	% of State Increase	2015	2015-2000	% of State Increase	2020	2020-2000	% of State Increase
70 Livingston	9,804	9,937	133	0.12%	9,898	94	0.05%	9,808	4	0.00%	9,698	-106	-0.03%
71 Logan	26,573	27,509	936	0.82%	28,050	1,477	0.77%	28,516	1,943	0.77%	28,989	2,416	0.79%
72 Lyon	8,080	8,456	376	0.33%	8,542	462	0.24%	8,551	471	0.19%	8,576	496	0.16%
73 McCracken	65,514	65,687	173	0.15%	65,653	139	0.07%	65,452	-62	-0.02%	65,105	-409	-0.13%
74 McCreary	17,080	17,650	570	0.50%	18,084	1,004	0.52%	18,456	1,376	0.55%	18,750	1,670	0.54%
75 McLean	9,938	10,000	62	0.05%	9,946	8	0.00%	9,862	-76	-0.03%	9,765	-173	-0.06%
76 Madison	70,872	75,161	4,289	3.74%	77,871	6,999	3.66%	80,045	9,173	3.64%	82,268	11,396	3.72%
77 Magoffin	13,332	13,746	414	0.36%	14,086	754	0.39%	14,391	1,059	0.42%	14,633	1,301	0.42%
78 Marion	18,212	18,529	317	0.28%	18,778	566	0.30%	19,008	796	0.32%	19,209	997	0.33%
79 Marshall	30,125	31,227	1,102	0.96%	31,567	1,442	0.75%	31,696	1,571	0.62%	31,863	1,738	0.57%
80 Martin	12,578	12,077	-501	-0.44%	11,917	-661	-0.35%	11,754	-824	-0.33%	11,432	-1,146	-0.37%
81 Mason	16,800	16,550	-250	-0.22%	16,359	-441	-0.23%	16,124	-676	-0.27%	15,823	-977	-0.32%
82 Meade	26,349	30,364	4,015	3.51%	33,076	6,727	3.51%	35,593	9,244	3.67%	38,633	12,284	4.01%
83 Menifee	6,556	6,931	375	0.33%	7,130	574	0.30%	7,291	735	0.29%	7,464	908	0.30%
84 Mercer	20,817	21,627	810	0.71%	22,084	1,267	0.66%	22,443	1,626	0.65%	22,794	1,977	0.64%
85 Metcalfe	10,037	10,336	299	0.26%	10,488	451	0.24%	10,599	562	0.22%	10,689	652	0.21%
86 Monroe	11,756	11,396	-360	-0.31%	11,152	-604	-0.32%	10,898	-858	-0.34%	10,575	-1,181	-0.39%
87 Montgomery	22,554	23,436	882	0.77%	24,000	1,446	0.76%	24,479	1,925	0.76%	24,938	2,384	0.78%
88 Morgan	13,948	14,204	256	0.22%	14,350	402	0.21%	14,467	519	0.21%	14,567	619	0.20%
89 Muhlenberg	31,839	32,622	783	0.68%	33,050	1,211	0.63%	33,413	1,574	0.62%	33,764	1,925	0.63%
90 Nelson	37,477	41,228	3,751	3.28%	43,876	6,399	3.34%	46,381	8,904	3.53%	49,235	11,758	3.84%
91 Nicholas	6,813	6,949	136	0.12%	7,016	203	0.11%	7,060	247	0.10%	7,092	279	0.09%
92 Ohio	22,916	23,479	563	0.49%	23,759	843	0.44%	24,001	1,085	0.43%	24,241	1,325	0.43%
93 Oldham	46,178	49,769	3,591	3.14%	51,981	5,803	3.03%	54,089	7,911	3.14%	56,921	10,743	3.50%
94 Owen	10,547	11,142	595	0.52%	11,454	907	0.47%	11,714	1,167	0.46%	12,010	1,463	0.48%
95 Owsley	4,858	4,957	99	0.09%	5,014	156	0.08%	5,047	189	0.07%	5,074	216	0.07%
96 Pendleton	14,390	15,458	1,068	0.93%	16,158	1,768	0.92%	16,789	2,399	0.95%	17,468	3,078	1.00%
97 Perry	29,390	29,660	270	0.24%	30,039	649	0.34%	30,319	929	0.37%	30,357	967	0.32%
98 Pike	68,736	68,453	-283	-0.25%	68,529	-207	-0.11%	68,282	-454	-0.18%	67,365	-1,371	-0.45%
99 Powell	13,237	13,938	701	0.61%	14,434	1,197	0.63%	14,896	1,659	0.66%	15,335	2,098	0.68%
100 Pulaski	56,217	59,779	3,562	3.11%	61,703	5,486	2.87%	63,152	6,935	2.75%	64,620	8,403	2.74%
101 Robertson	2,266	2,243	-23	-0.02%	2,213	-53	-0.03%	2,176	-90	-0.04%	2,136	-130	-0.04%
102 Rockcastle	16,582	17,084	502	0.44%	17,346	764	0.40%	17,531	949	0.38%	17,686	1,104	0.36%
103 Rowan	22,094	23,015	921	0.80%	23,535	1,441	0.75%	23,927	1,833	0.73%	24,231	2,137	0.70%
104 Russell	16,315	16,991	676	0.59%	17,323	1,008	0.53%	17,525	1,210	0.48%	17,709	1,394	0.45%
105 Scott	33,061	37,413	4,352	3.80%	40,346	7,285	3.80%	43,131	10,070	3.99%	46,541	13,480	4.40%
106 Shelby	33,337	36,032	2,695	2.35%	37,682	4,345	2.27%	39,109	5,772	2.29%	40,731	7,394	2.41%
107 Simpson	16,405	16,939	534	0.47%	17,259	854	0.45%	17,508	1,103	0.44%	17,746	1,341	0.44%
108 Spencer	11,766	14,178	2,412	2.11%	15,910	4,144	2.16%	17,681	5,915	2.35%	19,972	8,206	2.68%
109 Taylor	22,927	23,515	588	0.51%	23,773	846	0.44%	23,943	1,016	0.40%	24,092	1,165	0.38%
110 Todd	11,971	12,007	36	0.03%	12,001	30	0.02%	11,989	18	0.01%	11,953	-18	-0.01%
111 Trigg	12,597	13,896	1,299	1.13%	14,566	1,969	1.03%	15,115	2,518	1.00%	15,783	3,186	1.04%
112 Trimble	8,125	8,646	521	0.45%	8,979	854	0.45%	9,271	1,146	0.45%	9,605	1,480	0.48%
113 Union	15,637	16,103	466	0.41%	16,713	1,076	0.56%	17,373	1,736	0.69%	18,041	2,404	0.78%
114 Warren	92,522	96,623	4,101	3.58%	99,247	6,725	3.51%	101,333	8,811	3.50%	103,254	10,732	3.50%
115 Washington	10,916	11,191	275	0.24%	11,321	405	0.21%	11,439	523	0.21%	11,587	671	0.22%
116 Wayne	19,923	20,632	709	0.62%	21,058	1,135	0.59%	21,397	1,474	0.58%	21,689	1,766	0.58%
117 Webster	14,120	13,941	-179	-0.16%	13,801	-319	-0.17%	13,668	-452	-0.18%	13,494	-626	-0.20%
118 Whitley	35,865	36,733	868	0.76%	37,351	1,486	0.78%	37,879	2,014	0.80%	38,297	2,432	0.79%
119 Wolfe	7,065	7,432	367	0.32%	7,711	646	0.34%	7,971	906	0.36%	8,225	1,160	0.38%
120 Woodford	23,208	24,634	1,426	1.25%	25,571	2,363	1.23%	26,360	3,152	1.25%	27,189	3,981	1.30%
	4,041,769	4,156,300	114,531	100.00%	4,233,231	191,462	100.00%	4,293,852	252,083	100.00%	4,348,306	306,537	100.00%

Appendix A - Table 5

2005 VMT Forecasts

		2000 Total DVMT	2000 Interstate DVMT	2000 Non-Inter. DVMT	2005 Interstate DVMT	2000 Non-Inter. +2.39%/yr.	2005 Non-Inter. DVMT	2005 Total DVMT
001	Adair	499,690	0	499,690	0	562,326	578,271	578,271
003	Allen	429,261	0	429,261	0	483,069	514,558	514,558
005	Anderson	574,215	0	574,215	0	646,193	698,817	698,817
007	Ballard	272,170	0	272,170	0	306,286	315,008	315,008
009	Barren	1,332,171	260,874	1,071,297	291,573	1,205,584	1,255,935	1,547,508
011	Bath	485,692	248,370	237,322	294,985	267,071	272,983	567,968
013	Bell	889,500	0	889,500	0	1,000,999	980,639	980,639
015	Boone	3,714,615	2,082,005	1,632,610	2,594,557	1,837,258	2,203,650	4,798,207
017	Bourbon	576,998	0	576,998	0	649,325	647,987	647,987
019	Boyd	1,348,719	189,505	1,159,215	225,072	1,304,522	1,274,986	1,500,059
021	Boyle	716,728	0	716,728	0	806,570	821,017	821,017
023	Bracken	294,198	0	294,198	0	331,075	334,580	334,580
025	Breathitt	431,986	0	431,986	0	486,135	497,479	497,479
027	Breckinridge	443,317	0	443,317	0	498,887	519,140	519,140
029	Bullitt	2,077,887	1,214,990	862,897	1,460,540	971,061	1,120,935	2,581,474
031	Butler	480,073	0	480,073	0	540,250	549,561	549,561
033	Caldwell	521,369	37,910	483,460	47,242	544,062	550,563	597,805
035	Calloway	817,228	0	817,228	0	919,668	917,956	917,956
037	Campbell	2,143,995	824,757	1,319,237	956,120	1,484,604	1,527,169	2,483,289
039	Carlisle	159,375	0	159,375	0	179,352	180,128	180,128
041	Carroll	624,249	370,203	254,046	450,408	285,891	288,218	738,626
043	Carter	1,093,167	474,248	618,920	563,258	696,501	728,285	1,291,542
045	Casey	394,825	0	394,825	0	444,317	443,300	443,300
047	Christian	2,302,526	466,406	1,836,121	581,226	2,066,279	2,153,870	2,735,097
049	Clark	1,229,322	460,383	768,938	546,791	865,325	899,382	1,446,173
051	Clay	701,215	0	701,215	0	789,112	790,263	790,263
053	Clinton	272,191	0	272,191	0	306,310	307,461	307,461
055	Crittenden	236,572	0	236,572	0	266,227	265,157	265,157
057	Cumberland	219,322	0	219,322	0	246,815	246,708	246,708
059	Daviess	2,110,068	0	2,110,068	0	2,374,565	2,415,471	2,415,471
061	Edmonson	332,216	78,314	253,901	87,530	285,728	306,837	394,367
063	Elliott	140,399	0	140,399	0	157,998	156,259	156,259
065	Estill	337,380	0	337,380	0	379,671	381,223	381,223
067	Fayette	7,342,753	1,792,108	5,550,644	2,102,880	6,246,419	6,340,084	8,442,964
069	Fleming	357,213	0	357,213	0	401,990	414,243	414,243
071	Floyd	1,493,891	0	1,493,891	0	1,681,150	1,671,760	1,671,760
073	Franklin	1,504,839	444,473	1,060,366	527,895	1,193,283	1,211,877	1,739,772
075	Fulton	206,673	0	206,673	0	232,580	229,985	229,985
077	Gallatin	620,913	445,524	175,389	542,048	197,374	228,114	770,162
079	Garrard	360,746	0	360,746	0	405,966	444,759	444,759
081	Grant	1,262,752	902,674	360,078	1,124,896	405,213	486,411	1,611,307
083	Graves	1,207,177	0	1,207,177	0	1,358,497	1,384,342	1,384,342
085	Grayson	880,393	0	880,393	0	990,751	1,020,608	1,020,608
087	Green	270,461	0	270,461	0	304,364	306,343	306,343
089	Greenup	908,623	0	908,623	0	1,022,519	1,020,486	1,020,486
091	Hancock	282,667	0	282,667	0	318,099	342,471	342,471
093	Hardin	3,673,512	1,052,169	2,621,343	1,295,584	2,949,930	2,958,223	4,253,807
095	Harlan	843,751	0	843,751	0	949,516	933,651	933,651
097	Harrison	381,630	0	381,630	0	429,468	444,209	444,209
099	Hart	1,060,312	675,089	385,224	754,532	433,511	457,617	1,212,148
101	Henderson	1,603,327	0	1,603,327	0	1,804,305	1,809,736	1,809,736
103	Henry	690,546	372,301	318,245	452,961	358,137	387,192	840,153
105	Hickman	197,484	0	197,484	0	222,239	212,661	212,661
107	Hopkins	1,747,339	0	1,747,339	0	1,966,368	1,962,248	1,962,248
109	Jackson	313,765	0	313,765	0	353,096	366,981	366,981
111	Jefferson	19,084,449	7,955,972	11,128,476	9,335,628	12,523,434	12,503,877	21,839,505
113	Jessamine	939,376	0	939,376	0	1,057,127	1,141,909	1,141,909
115	Johnson	668,852	0	668,852	0	752,693	756,733	756,733
117	Kenton	3,919,090	2,129,239	1,789,850	2,498,474	2,014,209	2,061,777	4,560,251
119	Knott	504,967	0	504,967	0	568,265	566,125	566,125
121	Knox	891,148	0	891,148	0	1,002,854	1,031,346	1,031,346
123	Larue	503,382	135,630	367,752	151,590	413,850	430,410	582,000
125	Laurel	1,996,640	808,146	1,188,494	959,824	1,337,472	1,445,182	2,405,006
127	Lawrence	604,878	0	604,878	0	680,699	700,470	700,470
129	Lee	197,355	0	197,355	0	222,094	225,652	225,652
131	Leslie	404,219	0	404,219	0	454,887	450,687	450,687
133	Letcher	711,210	0	711,210	0	800,361	796,669	796,669
135	Lewis	435,920	0	435,920	0	490,562	502,334	502,334

		2000 Total DVMT	2000 Interstate DVMT	2000 Non-Inter. DVMT	2005 Interstate DVMT	2000 Non-Inter. +2.39%/yr.	2005 Non-Inter. DVMT	2005 Total DVMT
137	Lincoln	710,692	0	710,692	0	799,777	833,326	833,326
139	Livingston	389,452	111,588	277,864	139,059	312,694	316,252	455,312
141	Logan	860,098	0	860,098	0	967,912	992,953	992,953
143	Lyon	676,173	378,142	298,030	471,234	335,388	345,448	816,682
145	McCracken	2,133,941	562,163	1,571,777	700,558	1,768,800	1,773,428	2,473,986
147	McCreary	472,284	0	472,284	0	531,485	546,734	546,734
149	McLean	307,586	0	307,586	0	346,142	347,801	347,801
151	Madison	2,422,949	1,095,608	1,327,341	1,301,238	1,493,724	1,608,470	2,909,709
153	Magoffin	421,918	0	421,918	0	474,806	485,882	485,882
155	Marion	430,566	0	430,566	0	484,537	493,018	493,018
157	Marshall	1,259,674	317,265	942,409	395,370	1,060,540	1,090,023	1,485,393
159	Martin	340,828	0	340,828	0	383,551	370,147	370,147
161	Mason	678,811	0	678,811	0	763,900	757,211	757,211
163	Meade	663,413	0	663,413	0	746,572	853,988	853,988
165	Menifee	143,467	0	143,467	0	161,450	171,483	171,483
167	Mercer	618,651	0	618,651	0	696,200	717,870	717,870
169	Metcalfe	340,816	0	340,816	0	383,538	391,537	391,537
171	Monroe	276,823	0	276,823	0	311,523	301,892	301,892
173	Montgomery	713,101	228,347	484,754	271,205	545,518	569,115	840,320
175	Morgan	358,763	0	358,763	0	403,735	410,583	410,583
177	Muhlenberg	1,038,484	0	1,038,484	0	1,168,658	1,189,606	1,189,606
179	Nelson	1,192,457	0	1,192,457	0	1,341,932	1,442,285	1,442,285
181	Nicholas	171,513	0	171,513	0	193,012	196,651	196,651
183	Ohio	930,782	0	930,782	0	1,047,456	1,062,518	1,062,518
185	Oldham	1,278,095	616,475	661,620	750,036	744,554	840,626	1,590,662
187	Owen	231,732	0	231,732	0	260,780	276,699	276,699
189	Owsley	124,675	0	124,675	0	140,303	142,952	142,952
191	Pendleton	338,493	0	338,493	0	380,924	409,497	409,497
193	Perry	958,955	0	958,955	0	1,079,160	1,086,384	1,086,384
195	Pike	2,177,247	0	2,177,247	0	2,450,165	2,442,594	2,442,594
197	Powell	497,464	0	497,464	0	559,821	578,575	578,575
199	Pulaski	1,723,396	0	1,723,396	0	1,939,424	2,034,720	2,034,720
201	Robertson	44,126	0	44,126	0	49,658	49,042	49,042
203	Rockcastle	1,204,077	804,632	399,445	955,651	449,515	462,946	1,418,596
205	Rowan	830,467	278,974	551,493	331,333	620,623	645,263	976,597
207	Russell	514,862	0	514,862	0	579,400	597,486	597,486
209	Scott	1,991,532	1,268,943	722,589	1,619,529	813,165	929,597	2,549,126
211	Shelby	1,533,323	856,296	677,028	1,017,011	761,893	833,994	1,851,005
213	Simpson	896,853	495,968	400,886	554,332	451,137	465,423	1,019,755
215	Spencer	300,410	0	300,410	0	338,066	402,596	402,596
217	Taylor	587,402	0	587,402	0	661,033	676,765	676,765
219	Todd	330,629	0	330,629	0	372,073	373,036	373,036
221	Trigg	536,766	182,482	354,284	227,406	398,694	433,447	660,853
223	Trimble	209,771	19,350	190,421	23,542	214,291	228,229	251,771
225	Union	428,872	0	428,872	0	482,631	495,099	495,099
227	Warren	3,352,540	1,187,538	2,165,002	1,327,284	2,436,386	2,546,102	3,873,387
229	Washington	348,934	0	348,934	0	392,673	400,031	400,031
231	Wayne	474,610	0	474,610	0	534,103	553,071	553,071
233	Webster	559,244	0	559,244	0	629,345	624,556	624,556
235	Whitley	1,638,010	864,748	773,262	1,027,049	870,190	893,412	1,920,462
237	Wolfe	319,037	0	319,037	0	359,028	368,846	368,846
239	Woodford	1,018,333	220,058	798,275	261,359	898,339	936,490	1,197,850
	Totals	128,277,992	32,909,866	95,368,126	39,218,812	107,322,545	110,386,668	149,605,480
				Annual Growth Rates	3.57%		2.97%	

Appendix A - Table 6

VMT Annual Growth Rates: 2000 - 2020

		2000 Total DVMT	2005 Total DVMT	2000-2005 Annual Growth %	2010 Total DVMT	2000-2010 Annual Growth %	2015 Total DVMT	2000-2015 Annual Growth %	2020 Total DVMT	2000-2020 Annual Growth %
001	Adair	499,690	578,271	2.46%	654,274	2.48%	687,801	2.02%	718,874	1.75%
003	Allen	429,261	514,558	3.07%	593,399	2.99%	634,744	2.47%	678,715	2.21%
005	Anderson	574,215	698,817	3.33%	818,047	3.27%	887,684	2.76%	964,467	2.50%
007	Ballard	272,170	315,008	2.47%	354,345	2.43%	370,738	1.95%	386,898	1.69%
009	Barren	1,332,171	1,547,508	2.53%	1,757,060	2.55%	1,873,593	2.15%	1,987,525	1.92%
011	Bath	485,692	567,968	2.64%	649,688	2.68%	709,325	2.40%	762,098	2.17%
013	Bell	889,500	980,639	1.64%	1,083,017	1.81%	1,115,159	1.42%	1,129,375	1.14%
015	Boone	3,714,615	4,798,207	4.36%	5,939,358	4.36%	7,018,104	4.06%	8,226,953	3.86%
017	Bourbon	576,998	647,987	1.95%	721,528	2.05%	748,321	1.64%	766,230	1.36%
019	Boyd	1,348,719	1,500,059	1.79%	1,657,090	1.89%	1,718,357	1.53%	1,751,135	1.25%
021	Boyle	716,728	821,017	2.29%	924,055	2.34%	967,216	1.89%	1,003,641	1.62%
023	Bracken	294,198	334,580	2.17%	375,136	2.23%	391,460	1.80%	404,767	1.53%
025	Breathitt	431,986	497,479	2.38%	564,115	2.46%	594,925	2.02%	621,723	1.75%
027	Breckinridge	443,317	519,140	2.67%	591,172	2.65%	625,405	2.17%	659,123	1.91%
029	Bullitt	2,077,887	2,581,474	3.68%	3,080,494	3.64%	3,486,384	3.29%	3,912,901	3.06%
031	Butler	480,073	549,561	2.28%	619,134	2.34%	649,366	1.91%	676,399	1.65%
033	Caldwell	521,369	597,805	2.31%	672,813	2.35%	709,257	1.94%	742,851	1.70%
035	Calloway	817,228	917,956	1.96%	1,013,768	1.98%	1,041,548	1.53%	1,058,547	1.24%
037	Campbell	2,143,995	2,483,289	2.48%	2,844,678	2.60%	3,099,197	2.33%	3,342,948	2.14%
039	Carlisle	159,375	180,128	2.06%	199,473	2.06%	205,830	1.61%	210,129	1.33%
041	Carroll	624,249	738,626	2.84%	858,131	2.94%	957,882	2.71%	1,050,839	2.51%
043	Carter	1,093,167	1,291,542	2.82%	1,487,303	2.84%	1,624,272	2.51%	1,748,883	2.26%
045	Casey	394,825	443,300	1.95%	494,060	2.06%	513,553	1.66%	527,230	1.39%
047	Christian	2,302,526	2,735,097	2.91%	3,183,174	2.99%	3,485,277	2.62%	3,779,338	2.39%
049	Clark	1,229,322	1,446,173	2.74%	1,661,497	2.78%	1,805,993	2.43%	1,936,326	2.19%
051	Clay	701,215	790,263	2.01%	890,352	2.19%	934,907	1.81%	968,791	1.55%
053	Clinton	272,191	307,461	2.05%	342,669	2.12%	355,736	1.69%	365,140	1.41%
055	Crittenden	236,572	265,157	1.92%	292,401	1.94%	300,696	1.51%	306,371	1.24%
057	Cumberland	219,322	246,708	1.98%	273,479	2.03%	282,400	1.59%	288,973	1.32%
059	Daviess	2,110,068	2,415,471	2.28%	2,726,676	2.36%	2,859,793	1.92%	2,965,941	1.63%
061	Edmonson	332,216	394,367	2.90%	452,858	2.86%	487,260	2.42%	521,498	2.17%
063	Elliott	140,399	156,259	1.80%	173,573	1.95%	180,360	1.58%	184,842	1.32%
065	Estill	337,380	381,223	2.06%	425,156	2.12%	441,415	1.69%	452,181	1.40%
067	Fayette	7,342,753	8,442,964	2.35%	9,585,329	2.45%	10,274,026	2.12%	10,897,517	1.90%
069	Fleming	357,213	414,243	2.50%	468,112	2.49%	492,353	2.03%	514,936	1.76%
071	Floyd	1,493,891	1,671,760	1.89%	1,865,101	2.04%	1,940,825	1.65%	1,993,111	1.38%
073	Franklin	1,504,839	1,739,772	2.45%	1,979,919	2.53%	2,133,441	2.21%	2,266,671	1.97%
075	Fulton	206,673	229,985	1.80%	254,363	1.91%	262,204	1.50%	267,758	1.24%
077	Gallatin	620,913	770,162	3.66%	921,935	3.66%	1,060,266	3.40%	1,203,159	3.20%
079	Garrard	360,746	444,759	3.55%	519,421	3.37%	560,115	2.79%	606,176	2.50%
081	Grant	1,262,752	1,611,307	4.15%	1,991,701	4.23%	2,378,858	4.04%	2,801,787	3.87%
083	Graves	1,207,177	1,384,342	2.31%	1,558,739	2.35%	1,634,999	1.91%	1,706,864	1.66%
085	Grayson	880,393	1,020,608	2.49%	1,159,004	2.53%	1,224,172	2.08%	1,284,181	1.81%
087	Green	270,461	306,343	2.10%	340,586	2.12%	352,131	1.66%	360,942	1.38%
089	Greenup	908,623	1,020,486	1.95%	1,132,776	2.02%	1,168,408	1.58%	1,186,673	1.28%
091	Hancock	282,667	342,471	3.25%	400,048	3.21%	433,395	2.71%	469,830	2.45%
093	Hardin	3,673,512	4,253,807	2.47%	4,911,650	2.68%	5,375,500	2.41%	5,800,766	2.20%
095	Harlan	843,751	933,651	1.70%	1,036,043	1.88%	1,072,237	1.51%	1,090,451	1.23%
097	Harrison	381,630	444,209	2.56%	503,724	2.56%	531,227	2.09%	558,395	1.83%
099	Hart	1,060,312	1,212,148	2.26%	1,369,262	2.35%	1,490,940	2.15%	1,608,952	2.01%
101	Henderson	1,603,327	1,809,736	2.04%	2,019,529	2.12%	2,098,930	1.70%	2,157,924	1.42%
103	Henry	690,546	840,153	3.32%	989,369	3.32%	1,110,333	3.01%	1,229,532	2.79%
105	Hickman	197,484	212,661	1.24%	229,610	1.38%	232,294	1.02%	232,060	0.77%
107	Hopkins	1,747,339	1,962,248	1.95%	2,184,687	2.05%	2,268,157	1.64%	2,330,322	1.38%
109	Jackson	313,765	366,981	2.65%	419,333	2.67%	445,075	2.21%	469,381	1.94%
111	Jefferson	19,084,449	21,839,505	2.27%	24,783,471	2.40%	26,847,026	2.16%	28,724,658	1.97%
113	Jessamine	939,376	1,141,909	3.31%	1,339,475	3.28%	1,452,744	2.76%	1,572,006	2.48%
115	Johnson	668,852	756,733	2.08%	847,558	2.18%	883,358	1.75%	909,757	1.48%
117	Kenton	3,919,090	4,560,251	2.56%	5,256,017	2.70%	5,816,649	2.50%	6,361,031	2.33%
119	Knott	504,967	566,125	1.92%	632,770	2.07%	659,506	1.68%	677,860	1.41%
121	Knox	891,148	1,031,346	2.47%	1,173,277	2.53%	1,241,281	2.09%	1,303,450	1.83%
123	Larue	503,382	582,000	2.45%	659,474	2.49%	704,798	2.13%	748,661	1.91%
125	Laurel	1,996,640	2,405,006	3.15%	2,810,137	3.16%	3,103,841	2.80%	3,390,041	2.55%
127	Lawrence	604,878	700,470	2.48%	794,726	2.51%	838,186	2.06%	878,469	1.79%
129	Lee	197,355	225,652	2.26%	253,181	2.29%	264,629	1.85%	273,531	1.57%
131	Leslie	404,219	450,687	1.83%	501,188	1.97%	519,352	1.58%	529,495	1.29%
133	Letcher	711,210	796,669	1.91%	887,008	2.03%	919,589	1.62%	938,964	1.33%

		2000 Total DVMT	2005 Total DVMT	2000-2005 Annual Growth %	2010 Total DVMT	2000-2010 Annual Growth %	2015 Total DVMT	2000-2015 Annual Growth %	2020 Total DVMT	2000-2020 Annual Growth %
135	Lewis	435,920	502,334	2.39%	570,034	2.47%	602,204	2.04%	631,016	1.78%
137	Lincoln	710,692	833,326	2.69%	952,389	2.70%	1,009,856	2.22%	1,064,614	1.94%
139	Livingston	389,452	455,312	2.64%	520,789	2.68%	564,182	2.34%	604,520	2.12%
141	Logan	860,098	992,953	2.42%	1,123,576	2.46%	1,183,353	2.01%	1,238,348	1.75%
143	Lyon	676,173	816,682	3.20%	961,177	3.25%	1,084,796	3.00%	1,207,523	2.80%
145	McCracken	2,133,941	2,473,986	2.49%	2,829,557	2.60%	3,064,448	2.29%	3,281,531	2.07%
147	McCreary	472,284	546,734	2.47%	622,693	2.55%	659,227	2.11%	691,016	1.83%
149	McLean	307,586	347,801	2.07%	386,359	2.09%	399,639	1.65%	409,532	1.37%
151	Madison	2,422,949	2,909,709	3.10%	3,382,635	3.08%	3,721,546	2.72%	4,041,816	2.47%
153	Magoffin	421,918	485,882	2.38%	552,041	2.47%	583,724	2.05%	611,189	1.78%
155	Marion	430,566	493,018	2.28%	557,313	2.37%	586,990	1.96%	613,091	1.70%
157	Marshall	1,259,674	1,485,393	2.79%	1,706,891	2.80%	1,850,865	2.43%	1,989,946	2.20%
159	Martin	340,828	370,147	1.38%	408,216	1.65%	420,230	1.32%	423,126	1.04%
161	Mason	678,811	757,211	1.84%	839,029	1.95%	866,434	1.54%	884,668	1.27%
163	Meade	663,413	853,988	4.30%	1,032,618	4.10%	1,149,359	3.49%	1,290,015	3.22%
165	Menifee	143,467	171,483	3.02%	197,147	2.93%	209,939	2.41%	222,787	2.12%
167	Mercer	618,651	717,870	2.51%	814,244	2.53%	858,140	2.07%	898,406	1.79%
169	Metcalfe	340,816	391,537	2.34%	441,232	2.38%	462,555	1.93%	480,887	1.65%
171	Monroe	276,823	301,892	1.46%	329,562	1.60%	335,548	1.21%	335,626	0.92%
173	Montgomery	713,101	840,320	2.77%	965,877	2.80%	1,048,010	2.44%	1,123,527	2.19%
175	Morgan	358,763	410,583	2.27%	462,306	2.33%	484,695	1.90%	504,046	1.63%
177	Muhlenberg	1,038,484	1,189,606	2.29%	1,339,606	2.34%	1,405,198	1.91%	1,463,303	1.65%
179	Nelson	1,192,457	1,442,285	3.22%	1,686,997	3.20%	1,830,339	2.71%	1,987,063	2.46%
181	Nicholas	171,513	196,651	2.31%	221,335	2.35%	231,683	1.90%	240,424	1.62%
183	Ohio	930,782	1,062,518	2.23%	1,193,475	2.29%	1,249,513	1.86%	1,298,678	1.60%
185	Oldham	1,278,095	1,590,662	3.71%	1,893,728	3.64%	2,138,983	3.27%	2,406,471	3.06%
187	Owen	231,732	276,699	3.00%	317,841	2.91%	338,484	2.40%	359,737	2.12%
189	Owsley	124,675	142,952	2.31%	161,142	2.36%	168,702	1.91%	175,192	1.63%
191	Pendleton	338,493	409,497	3.22%	477,436	3.18%	515,638	2.67%	555,709	2.39%
193	Perry	958,955	1,086,384	2.10%	1,223,079	2.24%	1,281,564	1.83%	1,325,194	1.55%
195	Pike	2,177,247	2,442,594	1.94%	2,727,004	2.07%	2,831,406	1.66%	2,894,164	1.36%
197	Powell	497,464	578,575	2.55%	660,035	2.60%	700,778	2.16%	738,750	1.90%
199	Pulaski	1,723,396	2,034,720	2.81%	2,326,378	2.76%	2,464,030	2.26%	2,595,762	1.97%
201	Robertson	44,126	49,042	1.78%	53,819	1.82%	54,916	1.38%	55,372	1.09%
203	Rockcastle	1,204,077	1,418,596	2.77%	1,631,988	2.80%	1,804,438	2.56%	1,958,434	2.34%
205	Rowan	830,467	976,597	2.74%	1,119,213	2.75%	1,211,281	2.39%	1,292,729	2.13%
207	Russell	514,862	597,486	2.51%	676,261	2.51%	709,798	2.03%	739,607	1.74%
209	Scott	1,991,532	2,549,126	4.20%	3,165,962	4.30%	3,797,232	4.12%	4,505,061	3.96%
211	Shelby	1,533,323	1,851,005	3.19%	2,172,325	3.22%	2,444,529	2.96%	2,716,495	2.76%
213	Simpson	896,853	1,019,755	2.16%	1,148,174	2.27%	1,241,631	2.05%	1,330,127	1.89%
215	Spencer	300,410	402,596	5.00%	500,205	4.74%	573,280	4.12%	669,096	3.89%
217	Taylor	587,402	676,765	2.39%	762,511	2.40%	798,669	1.94%	830,142	1.66%
219	Todd	330,629	373,036	2.03%	415,938	2.11%	432,623	1.69%	445,609	1.43%
221	Trigg	536,766	660,853	3.53%	779,903	3.45%	868,511	3.05%	961,428	2.81%
223	Trimble	209,771	251,771	3.09%	292,368	3.06%	316,270	2.60%	341,207	2.34%
225	Union	428,872	495,099	2.42%	570,336	2.63%	613,493	2.26%	656,017	2.04%
227	Warren	3,352,540	3,873,387	2.44%	4,401,017	2.50%	4,736,319	2.18%	5,052,851	1.97%
229	Washington	348,934	400,031	2.30%	450,056	2.34%	471,973	1.91%	492,453	1.65%
231	Wayne	474,610	553,071	2.58%	629,504	2.60%	665,261	2.13%	697,240	1.85%
233	Webster	559,244	624,556	1.86%	692,557	1.96%	717,024	1.57%	734,590	1.31%
235	Whitley	1,638,010	1,920,462	2.69%	2,205,467	2.74%	2,419,132	2.47%	2,608,972	2.24%
237	Wolfe	319,037	368,846	2.45%	419,683	2.52%	444,602	2.10%	467,819	1.84%
239	Woodford	1,018,333	1,197,850	2.74%	1,378,968	2.79%	1,495,024	2.43%	1,607,454	2.20%
		128,277,992	149,605,480	2.60%	171,502,490	2.68%	185,672,867	2.34%	199,197,341	2.12%

8.2 Appendix B – State Survey Results

General Survey Responses

Question # 1

a. Does your agency develop and use traffic growth rates?

22 Yes (AL, AZ, DE, IL, IN, IA, KY, MA, NH, NJ, NM, OR, PA, SC, SD, TN, UT, VT, VA, WV, WI, WY)

4 No (AK, CT, MN, NE)

b. If yes, what are the values?

6 (IA, MA, NM, PA, SC, VT)

Question # 2

a. What type of methodology is used in forecasting your traffic growth rates?

14 Regression (AZ, DE, KY, MN, NJ, NM, SD, TN, UT, VT, VA, WV, WI, WY)

2 Time Series (MN, NH)

4 Other (CT, IL, MA, PA)

b. 22 Historic traffic growth extrapolation (AL, AK, AZ, DE, IL, IN, IA, KY, MA, MN, NE, NM, OR, PA, SC, TN, UT, VT, VA, WV, WI, WY)

Question # 3

Can documentation of the methodology or modeling be obtained?

18 Yes (AL, CT, DE, IL, IN, IA, KY, MN, NH, NJ, NM, OR, PA, UT, VA, WV, WI, WY)

8 No (AK, AZ, IN, MA, NE, SC, SD, TN)

Question # 4

What parameters/variables are used in the methodology?

10 Employment status (CT, DE, MA, NJ, NM, PA, TN, UT, VA, WV)

9 Income (CT, DE, IN, MA, OR, PA, UT, VA, WI)

6 Number of registered vehicles (DE, IN, MA, OR, TN, WV)

14 Population (CT, DE, IN, IA, KY, NE, NJ, OR, PA, UT, VA, WV, WI, WY)

13 Land use characteristics (CT, DE, IL, IN, MA, MN, NJ, NM, OR, PA, TN, VA, WY)

10 Location (CT, DE, IN, IA, MA, MN, TN, WV, WI, WY)

19 Historic traffic growth (AL, AZ, DE, IL, IA, KY, MA, MN, NE, NH, OR, PA, SC, TN, VT, VA, WV, WI, WY)

8 Other (CT, MA, NE, NM, OR, UT, VA, WI)

Question # 5

What are the sources of your agency's future forecasting input parameters/variables?

12 Census Bureau (AL, CT, DE, IN, IA, MA, NE, NM, OR, UT, VA, WV)

3 Bureau of Economic Analysis (DE, NJ, OR)

3 Bureau of Labor Statistics (DE OR, WV)

0 IRS - Statistics of Income Division

14 Other (CT, DE, IL, IA, KY, MA, NJ, OR, PA, SC, UT, VA, WV, WI)

Question # 6

a. Are there different traffic growth rates for each county or groups of counties?

12 Yes, each county (DE, IL, IN, IA, KY, MA, MN, NJ, TN, VA, WV, WI)
6 Yes, groups of counties (IL, IA, NH, PA, VA, WY)
7 No (AL, AZ, NE, NM, SC, UT, VT)

b. How did you group the counties?

1 Population (IA)
5 Geographic location (IL, IA, PA, VA, WY)
3 Other (MA, NH, VA)

Question # 7

a. Are the traffic growth rates different for each functional class of road?

17 Yes (AL, DE, IL, IN, IA, KY, NE, NH, NJ, NM, PA, SC, UT, VA, WV, WI, WY)
5 No (AK, AZ, MA, MN, VT)

b. Are the traffic growth rates different for each vehicle type?

1 Yes (MN)
20 No (AL, AK, AZ, DE, IN, IA, KY, MA, NE, NH, NJ, NM, PA, SC, UT, VT, VA, WV, WI, WY)

Question # 8

What scheme/categorization is used for the vehicle classification?

22 FHWA scheme F (AL, AK, AZ, CT, DE, IN, KY, MA, MN, NE, NH, NJ, NM, OR, SC, SD, TN, UT, VT, VA, WV, WY)
1 EPA scheme (WI)
2 Other (IL, PA)

Question # 9

a. Does your agency have a methodology for converting between FHWA and EPA vehicle classification systems?

4 Yes (AL, NH, WV, WI)
21 No (AK, AZ, CT, DE, IL, IN, KY, MA, MN, NE, NJ, NM, OR, PA, SC, SD, TN, UT, VT, VA, WY)

b. If yes, please describe or provide documentation.

4 (AL, NH, WV, WI)

Question # 10

a. How is ADT collected for local roads?

1 Always counted (NJ)
4 Always estimated (AZ, MA, NE, NH)
21 Counted some years, estimated other years (AL, AK, CT, DE, IL, IN, IA, KY, MN, NM, OR, PA, SC, SD, TN, UT, VT, VA, WV, WI, WY)

b. If estimated, what is the estimation based on?

6 Higher functional class (AK, CT, KY, NE, TN, VT)
3 Population (AZ, TN, WI)
6 Proximity to other roads (AL, NM, TN, WV, WI, WY)
10 Other local road counts (AK, DE, MA, NM, OR, PA, SD, TN, VA,WY)
8 Other (IL, IN, MA, MN, NH, PA, WV, WI)

Question # 11

a. How often are local roads counted?

0 Annually

10 Three-year cycle (CT,DE, IN, NJ, NM, OR, UT, VA, WV, WY)

3 Six-year cycle (KY, SD, VA)

14 Other (AL, AK, IL, IA, MA, MN, NE, NH, PA, SC, TN, VT, VA, WI)

b. Are all local roads counted?

3 Yes (DE, SD, VA)

23 No (AL, AK, CT, IL, IN, IA, KY, MA, MN, NE, NH, NJ, NM, OR, PA, SC, TN, UT, VT, VA, WV, WI, WY)

c. If no, what is the sampling scheme?

14 Described on page 15 (AL, CT, IL, KY, NH, NJ, NM, OR, PA, TN, UT, VT, VA, WV)

5 No sampling scheme (AK, MA, NE, SC, WI)

1 HPMS (IN)

Question # 12

a. What is your local road VMT estimation methodology based on?

15 HPMS (AK, DE, IN, KY, MA, MN, NE, NJ, OR, PA, SD, UT, VT, VA, WY)

12 Other (AL, AZ, CT, IL, IA, NH, NM, NC, SC, TN, WV, WI)

b. Is the VMT county-based?

10 Yes (AZ, DE, IL, KY, NE, PA, SD, WV, WI, WY)

16 No (AL, AK, CT, IN, MN, MA, NH, NJ, NM, NC, OR, SC, TN, UT, VT, VA)

Question # 13

Additional comments.

11 (CO, CT, FL, KY, MA, NE, NJ, NC, SD, TN, WI)

Detailed Survey Responses

1		Does your agency develop and use traffic growth rates?	Values provided?
	Alabama	Yes	By route.
	Alaska	No	N/A
	Arizona	Yes	Annual traffic growth rates are developed from our network of automatic traffic recorders (ATRs). These ATR-based growth factors are used to adjust older AADT volumes on highways which do not receive a 24 or 48 hour raw coverage count for a given year. These growth factors are mean values from all ATR stations within a specific statewide factor grouping. This grouping is geographically based rather than by highway functional class. Any traffic forecasting that Arizona DOT performs does not use any of these factors as inputs.
	Connecticut	No	N/A
	Delaware	Yes	-
	Florida	-	-
	Illinois	Yes	-
	Indiana	Yes	-
	Iowa	Yes	Enclosed is a copy of the old growth rates. New values are being generated and will be available March 1, 2000.
	Kentucky	Yes	Provided by functional class and county statewide.
	Massachusetts	Yes	Varies, usually between 1/2 to 1 1/2 % per year based on the area and regional planning models.
	Minnesota	No	N/A
	Nebraska	No	N/A
	New Hampshire	Yes	Short term growth rates (1 to 3 years) are based on functional class. Long term (20 years) growth rates are determined for various regions of the state based on historical traffic data from permanent counters.
	New Jersey	Yes	Values are provided to the county level by functional class. More details can be provided in documentation (q#3).
	New Mexico	Yes	See attached sheet for values.
	North Carolina	-	-
	Oregon	Yes	Our traffic growth rates are based on location (i.e. by highway and milepost). For every location where traffic counts have been taken (locations described in ODOT's Traffic Volume Tables), we have a unique future traffic volume (future AADT for specific year), which changes all along the given roadway (particularly as the highway moves in and out of urban areas). These future volumes are calculated using an extrapolated method, based on historical traffic counts. In general, it's one thing to say that 25% of Oregon's traffic growth is on the interstate system. But, it's totally different to say where that growth is on any one of the five interstate roadways. For Planning, we are interested in how the system changes, whether we use HPMSAP, HERS, or some other model. Rather than using the Functional Classification (FC), most of ODOT uses the State Classification System (SCS), to designate the roadway (interstate, statewide, regional, or district). The SCS is much more generic than FC.
	Pennsylvania	Yes	See Table #371 and FC Group Designation Table in 1998 Traffic Data report at www.dot.state.pa.us (Select: Programs and Services, select: Traffic Information, select: 1998 Traffic Data Report).
	South Carolina	Yes	See attached sheet.
	South Dakota	Yes	-
	Tennessee	Yes	We figure growth rates, count by count, project by project.
	Utah	Yes	Permanent traffic counters are used for cluster analysis to factor 48 hour counts, and these vary each year. Typical clusters are urban/rural interstate, urban/rural arterials, recreational, special construction...
	Vermont	Yes	These are based on individual continuous count stations, or by group: interstate highways (five year growth factor = 1.13), urban highways (five year growth factor = 1.03), primary and secondary highways (five year growth factor = 1.09).
	Virginia	Yes	Values are not available.
	West Virginia	Yes	Growth factors correspond to individual county and FC within each county.
	Wisconsin	Yes	By two aggregate functional class groupings, principal arterials and others. We don't have the data needed to develop separate growth rates for all functional classes, given a lack of data on local roads and numerous changes in urban areas.
	Wyoming	Yes	-

2	What type of methodology is used in forecasting your traffic growth rates?
Alabama	Historic traffic growth extrapolation
Alaska	Historic traffic growth extrapolation
Arizona	Historic traffic growth extrapolation (It is a straight-line linear regression simply using a feature available in Excel spreadsheet software and all of our historic AADT volumes as far back as 1974.)
Connecticut	Entire state is modeled using a traditional 4 step network model.
Delaware	Regression, historic traffic growth extrapolation
Florida	-
Illinois	Historic traffic growth extrapolation, (Illinois DOT, Division of Highways is divided into nine highway districts, each district being responsible for specific counties. With certain exceptions, traffic forecasting is performed by district personnel familiar with the highway systems within their jurisdictions, and their methodologies vary. Historical trends are the basis for most forecasts, but other factors such as residential or commercial development are considered and frequent use is made of the ITE Trip Generation manual. Exceptions are the forecasts made with traffic models for Chicago and eight other urbanized areas by the metropolitan planning organization (MPO) for each area.)
Indiana	Historic traffic growth extrapolation
Iowa	Historic traffic growth extrapolation
Kentucky	Regression, historic traffic growth extrapolation
Massachusetts	Regional traffic modeling, future year networks, historic traffic growth extrapolation
Minnesota	Regression, time series, historic traffic growth extrapolation
Nebraska	Historic traffic growth extrapolation (extrapolated as a volume, not as a rate)
New Hampshire	Time series
New Jersey	Regression
New Mexico	T-Model regression, historic traffic growth extrapolation
North Carolina	-
Oregon	Historic traffic growth extrapolation (the VMT methodology from Financial Services involves both regression and time series techniques (part of Mazen's revenue forecast model). The VMT methodology from Policy Section involves traffic growth extrapolation and analysis of fuel tax, WM tax, vehicle statistics, and other demographic variables.)
Pennsylvania	Historic traffic growth extrapolation, some counties have travel demand models which forecast growth based on input population and employment information
South Carolina	Historic traffic growth extrapolation
South Dakota	Regression
Tennessee	Regression, historic traffic growth extrapolation
Utah	Regression (our MPO's model in the urbanized areas with MINUTP), historic traffic growth extrapolation (our statewide planning section mostly uses this for the rural areas).
Vermont	Historic traffic growth extrapolation (We do linear regression based on the historic traffic data. We are looking into changing from a straight line regression for all years available to a more trend sensitive evaluation.)
Virginia	Regression, historic traffic growth extrapolation
West Virginia	Regression, historic traffic growth extrapolation
Wisconsin	We use a causally based model to develop long-range forecasts both personal and commercial VMT on a statewide basis. In a nutshell, we forecast personal VMT as a function of annual average miles driven per licensed driver by sex and six age groups. These miles driven per licensed driver increase as a function of income and an underlying time-trend factor. The changing age structure of the population over time also drives the forecasts. We forecast commercial VMT as a function of the Index of Industrial Production (excluding computers and office equipment) using a difference-stationary regression model over a 25-year historical time period. To get county specific growth rates, we use the results of the above described procedure to serve as a statewide control total and develop specific growth rates for each county based on each counties projected rate of population growth. We then get the two broad functional class groupings based on observed historical differences (from HPMS and other traffic count data).
Wyoming	Regression, historic traffic growth extrapolation

3	Can documentation of the modeling/methodology be obtained?
Alabama	Yes
Alaska	No
Arizona	No
Connecticut	Yes
Delaware	Yes
Florida	-
Illinois	Yes (No statewide "cookbook" for forecasting based on historical trends and future land use has been developed by IDOT because no single approach is appropriate for every area or every project. Experienced personnel apply the appropriate methodology in each situation. Documentation of traffic modeling may be obtained through the MPO.)
Indiana	Yes (historic data) / No (modeling)
Iowa	Yes (will be available later this year).
Kentucky	Yes
Massachusetts	No
Minnesota	Yes
Nebraska	No
New Hampshire	Yes (We use a commercial program called Smart Forecast. Documentation can be obtained from the vendor.)
New Jersey	Yes
New Mexico	Yes
North Carolina	-
Oregon	ODOT's VMT methods are being evaluated by a consultant and a final report will be available after July 2000. As a by product of the RFP, we have a very brief description of the 4 VMT methods. I am attaching a copy in case it is useful.
Pennsylvania	Yes (Historic growths are summarized in the 1998 Traffic Data Report.)
South Carolina	No
South Dakota	No (We are currently conducting a research project to review, and if necessary change, our methodology; therefore, I can't accurately answer the next 4 questions at this time.)
Tennessee	No (We don't have a manual.)
Utah	Yes (through the MPOs)
Vermont	-
Virginia	Yes
West Virginia	Yes
Wisconsin	Yes (but not much more specific documentation exists than what I have already stated).
Wyoming	Yes

4	What parameters/variables are used in the methodology?
Alabama	Historic traffic growth
Alaska	N/A
Arizona	Historic traffic growth (It is Arizona DOT's current policy not to prepare traffic forecasts for State System Highways that are within large urbanized areas and that are influenced by Transportation Management Areas (TMA's) and/or Metropolitan Planning Organizations (MPO's). We use their forecasts for those roads and streets under our jurisdiction within these large urbanized areas. MPO and TMA forecasts are produced via modeling. Inputs to these models are not known.)
Connecticut	Employment status, income, population, land use characteristics, location, vehicle availability
Delaware	Employment status, income, no. of reg. vehicles, population, land use char., location, historic traffic growth
Florida	-
Illinois	Land use characteristics, historic traffic growth
Indiana	Income, no. of reg. vehicles, population, land use characteristics, location
Iowa	Population, location, historic traffic growth
Kentucky	Population, historic traffic growth
Massachusetts	Employment status, income, no. of reg. vehicles, land use characteristics, location, historic traffic growth, households
Minnesota	Land use characteristics, location, historic traffic growth
Nebraska	Population, historical VMT
New Hampshire	Historic traffic growth
New Jersey	Employment status, population, land use characteristics
New Mexico	Employment status, land use characteristics, network characteristics (links and nodes, speed, capacities, link lengths, lanes, directional)
North Carolina	-
Oregon	Historic traffic growth, metropolitan models, (A combination of income, no. of registered vehicles, population, and historic traffic growth are included in the Finance and Policy methods. Within specific metropolitan areas, where transportation models have been developed, we use growth rates from the models. ODOT is currently working on a statewide model which will be projecting future growth rates based on anticipated land use (which includes most of the above).)
Pennsylvania	Employment status, income, population, land use characteristics, historic traffic growth
South Carolina	Historic traffic growth
South Dakota	see Q#3
Tennessee	Employment status, no. of reg. vehicles, land use characteristics, location, historic traffic growth
Utah	Employment status, income, population, vehicles per household, validated by length & number of trips by trip purpose
Vermont	Historic traffic growth
Virginia	Employment status, income, population, land use characteristics, historic traffic growth, school enrollment, trucks
West Virginia	Employment status, no. of reg. vehicles, population, location, historic traffic growth
Wisconsin	Income, population, location, historic traffic growth, miles driven per licensed driver, licensed drivers, sex, six age group cohorts (16-19, 20-34, 35-59, 60-69, 70-79, 80+), Index of Industrial Production (excluding computers and office equipment)
Wyoming	Population, land use characteristics, location, historic traffic growth

5	What are the sources of your agency's future forecasting input parameters/variables?
Alabama	Census Bureau
Alaska	N/A
Arizona	None of these apply.
Connecticut	Census Bureau, Conn. Dept. of Labor, current traffic counts and transit ridership
Delaware	Census Bureau, Bureau of Economic Analysis, Bureau of Labor Statistics., building permit/land development tracking process inputs to statewide local area demographic forecasting
Florida	-
Illinois	The Department maintains an extensive history of annual vehicle miles traveled (AVMT) tabulated by functional class, by county, urbanized area, etc. An annual traffic monitoring program provides current AADT at approximately 20,000 locations statewide, which are used to calculate AVMT and to publish a variety of traffic maps. These maps provide a reliable basis for historical trend analysis for specific roadway sections.
Indiana	Census Bureau
Iowa	Census Bureau, historic data from automatic traffic
Kentucky	Kentucky State Data Center (population), KY Transportation Cabinet's Division of Planning (traffic data)
Massachusetts	Census Bureau, Mass. Institute of Social and Economic Research-MISER, Regional Economic Models Inc.-REMI
Minnesota	-
Nebraska	Census Bureau
New Hampshire	-
New Jersey	Bureau of Economic Analysis, Consultant Economic Analysis
New Mexico	Census Bureau
North Carolina	-
Oregon	Census Bureau, Bureau of Economic Analysis, Bureau of Labor Statistics, Standard & Poor's DRI, Office of Economic Analysis of DAS
Pennsylvania	Metropolitan Planning Organization forecasts
South Carolina	Department Traffic Count Data
South Dakota	see Q#3
Tennessee	-
Utah	Census Bureau, State Office of Planning & Budget
Vermont	-
Virginia	Census Bureau, state agencies-local govt., school boards
West Virginia	Census Bureau, Bureau of Labor Statistics, DMV vehicle registrations
Wisconsin	The Demographic Services section of our state Department of Administration, Data Resources Inc. for the income forecasts
Wyoming	-

6		Are there different traffic growth rates for each county or groups of counties?	How did you group the counties?
	Alabama	No	N/A
	Alaska	N/A	N/A
	Arizona	No	By geographic location but largely defined by principle highway routes and urban areas. But these growth rates are for adjusting dated AADT volumes - NOT FOR CALCULATING FORECASTS!!!
	Connecticut	N/A	N/A
	Delaware	Yes, each county.	N/A
	Florida	-	-
	Illinois	Yes, each county and groups of counties (historical AVMT growth rates for specific geographical areas (individual counties, groups of counties, urbanized areas, etc.) or specific routes are developed on an ad hoc basis for use by forecasters in the districts.)	Geographic location
	Indiana	Yes, each county.	N/A
	Iowa	Yes, each county and groups of counties.	Population, geographic location
	Kentucky	Yes, each county.	N/A
	Massachusetts	Yes, each county (or regional planning district).	Regional planning district, urbanized areas
	Minnesota	Yes, each county.	N/A
	Nebraska	No	N/A
	New Hampshire	Yes, groups of counties.	Based on historical traffic growth
	New Jersey	Yes, each county.	N/A
	New Mexico	No	N/A
	North Carolina	-	-
	Oregon	For Planning, we have defined different growth rates all along any given highway. It could be rolled up to a district, county, or regional level, but we don't need it that way.	N/A
	Pennsylvania	Yes, groups of counties.	Geographic location
	South Carolina	No (We are currently working on a project to develop rates for each county by FC.)	N/A
	South Dakota	see Q#3	see Q#3
	Tennessee	Yes, each county (We have a program that calculates growth rates for each county.)	N/A
	Utah	No	N/A
	Vermont	No	N/A
	Virginia	Yes, each county (and city) and groups of counties (by district).	Geographic location, individual cities
	West Virginia	Yes, each county.	N/A
	Wisconsin	Yes, each county.	N/A
	Wyoming	Yes, groups of counties.	Geographic location

7	Are the traffic growth rates different for each functional class of road?	Are the traffic growth rates different for each vehicle type?
Alabama	Yes	No
Alaska	No	No
Arizona	No	No
Connecticut	N/A	N/A
Delaware	Yes	No
Florida	-	-
Illinois	Yes	-
Indiana	Yes	No
Iowa	Yes	No
Kentucky	Yes	No
Massachusetts	No	No
Minnesota	No	Yes
Nebraska	Yes	No (insufficient data)
New Hampshire	Yes (for short term growth (1-3 years))	No
New Jersey	Yes	No
New Mexico	Yes	No
North Carolina	-	-
Oregon	N/A	N/A
Pennsylvania	Yes	No
South Carolina	Yes	No
South Dakota	see Q#3	see Q#3
Tennessee	-	-
Utah	Yes (but not all classes)	No
Vermont	No (although the groups can be related to FC: interstates are 1,11; urban are 12-19; and primary and secondary are 2-9)	No
Virginia	Yes	No
West Virginia	Yes	No
Wisconsin	Yes (but only for 2 groups: prin. arterials and all lower FC)	No
Wyoming	Yes	No (unless we have information on a vehicle type that is going to grow different)

8	What scheme is used for the vehicle classification?
Alabama	FHWA scheme F
Alaska	FHWA scheme F
Arizona	FHWA scheme F
Connecticut	FHWA scheme F
Delaware	FHWA scheme F
Florida	-
Illinois	Trend analysis is done for three vehicle categories; passenger vehicles, single-unit and multiple-unit trucks.
Indiana	FHWA scheme F
Iowa	N/A
Kentucky	FHWA scheme F
Massachusetts	FHWA scheme F
Minnesota	FHWA scheme F
Nebraska	FHWA scheme F
New Hampshire	FHWA scheme F
New Jersey	FHWA scheme F
New Mexico	FHWA scheme F
North Carolina	-
Oregon	FHWA scheme F
Pennsylvania	9 vehicle types.
South Carolina	FHWA scheme F
South Dakota	FHWA scheme F
Tennessee	FHWA scheme F
Utah	FHWA scheme F
Vermont	FHWA scheme F
Virginia	FHWA scheme F
West Virginia	FHWA scheme F
Wisconsin	EPA scheme
Wyoming	FHWA scheme F

9		Does your agency have a methodology for converting between FHWA and EPA vehicle classification systems?	Provided documentation or description?
	Alabama	Yes	Use of EPA's default values.
	Alaska	No	N/A
	Arizona	No	N/A
	Connecticut	No	N/A
	Delaware	No	N/A
	Florida	-	-
	Illinois	No	N/A
	Indiana	No	N/A
	Iowa	N/A	N/A
	Kentucky	No	N/A
	Massachusetts	No	N/A
	Minnesota	No	N/A
	Nebraska	No	N/A
	New Hampshire	Yes	We use the conversion required for input into Mobile 5. Mobile 5 documentation explains the process.
	New Jersey	No	N/A
	New Mexico	No	N/A
	North Carolina	-	-
	Oregon	No	N/A
	Pennsylvania	No	N/A
	South Carolina	No	N/A
	South Dakota	No	N/A
	Tennessee	No	N/A
	Utah	No	N/A
	Vermont	No	N/A
	Virginia	No	N/A
	West Virginia	Yes	2-axle dual tire vehicles, including buses, are "Medium Trucks", all others are "Heavy Trucks".
	Wisconsin	Yes	We essentially use the EPA conversion methodology, except that we use state specific data where we have it (from our I/M stations) to estimate the split between the combined FHWA classes 2 and 3 to the EPA classes LDGV, LDGT1, LDGT2 (which we estimate at the following proportions, .554, .327, .118, respectively.
	Wyoming	No	N/A

10	How is ADT collected for local roads?	If estimated, what is estimation based on?
Alabama	Counted some years, estimated other years.	Proximity to other roads.
Alaska	Counted some years, estimated other years (some always estimated).	Higher functional class, other local road counts.
Arizona	Always estimated.	Population (Local functional system travel estimates are prepared and submitted by the local government agencies who own them - not the State DOT.)
Connecticut	Counted some years, estimated other years.	Higher functional class.
Delaware	Counted some years, estimated other years.	Other local road counts.
Florida	-	-
Illinois	Counted some years, estimated other years.	Historical trend extrapolation.
Indiana	Counted some years, estimated other years.	County growth.
Iowa	Counted some years, estimated other years.	-
Kentucky	Counted some years, estimated other years.	Higher functional class (collector to local ratios).
Massachusetts	Always estimated.	Other local road counts (regional planning agencies count some local roads), mileage, default values for ADT.
Minnesota	Counted some years, estimated other years.	ATR growth factors for similar roads.
Nebraska	Always estimated.	Higher functional class.
New Hampshire	Always estimated.	-
New Jersey	Always counted.	N/A
New Mexico	Counted some years, estimated other years.	Proximity to other roads, other local road counts.
North Carolina	-	-
Oregon	ADT is counted on a sample of local roads.	Other local road counts (partial count of local roads).
Pennsylvania	Counted some years, estimated other years.	Other local road counts, total annual system growth.
South Carolina	Counted some years, estimated other years.	-
South Dakota	Counted some years, estimated other years.	Other local road counts.
Tennessee	Counted some years, estimated other years.	Higher functional class, population, proximity to other roads, other local road counts.
Utah	Counted some years, estimated other years.	-
Vermont	Counted some years, estimated other years (some roads are counted in our coverage count schedule, and others are never counted).	Higher functional class.
Virginia	Counted some years, estimated other years.	Other local road counts.
West Virginia	Counted some years, estimated other years.	Proximity to other roads, previous counts, number of residences on route.
Wisconsin	Counted some years, estimated other years.	Depends on the transportation district office. Some use crude traffic generation rates derived from land-use (such as 10 vehicle trips per household) and others just make "guesstimates" based on local knowledge, population, or proximity to other roads.
Wyoming	Counted some years, estimated other years.	Proximity to other roads, other local road counts.

11	How often are local roads counted?	Are all local roads counted?	If no, is sampling scheme provided?
Alabama	As requested.	No	As requested.
Alaska	Some counted 3-5 years, others not counted.	No	None
Arizona	Unknown.	Unknown	-
Connecticut	Three-year cycle.	No	Random sample for each urbanized area and rural area 1/3 counted each year-factors developed to estimate total local VMT.
Delaware	Three-year cycle.	Yes	N/A
Florida	-	-	-
Illinois	5-yr cycle downstate, 4-yr cycle in Chicago area counties.	No	Seventy to 100 percent coverage on local systems down to and including collectors. Count structures and RR crossings on township roads and municipal streets.
Indiana	Three-year cycle.	No	HPMS
Iowa	Four-year cycle.	No	-
Kentucky	Six-year cycle.	No	Random samples developed for HPMS in 1979.
Massachusetts	By regional agencies upon municipal requests.	No	None
Minnesota	4 years.	No	-
Nebraska	Never as an entire system, only a handful of locations each year.	No	None
New Hampshire	Always estimated.	No	We estimate VMT for local roads.
New Jersey	Three-year cycle.	No	The original sample was selected for HPMS. Five local streets were randomly selected within randomized grid clusters. Additional samples were added for tims/h.
New Mexico	Three-year cycle.	No	Random selection or as needed.
North Carolina	-	-	-
Oregon	Three-year cycle (and then only part of them).	No	Samples are picked at random. The idea is to have a certain number per volume group. Volume groups are based on ADT ranges within each functional class as outlined in the FHWA HPMS Manual-Appendix F.
Pennsylvania	10-yr cycle - state owned only.	No	Locally owned roads are estimated yearly from known system growth.
South Carolina	As time permits.	No	None
South Dakota	Six-year cycle.	Yes	N/A
Tennessee	-	No	As requested for project projections from Design Division and others, for bridge counts, for railroad crossing studies, intersection analysis, high hazard locations, etc.
Utah	Three-year cycle.	No	Local roads are grouped into zones and then sampled in each zone.
Vermont	Four-year cycle.	No	We have selected what we think are the most important local roads for our coverage counts. It is not a random sample.
Virginia	3-,6- and 12-year cycles.	Yes/No (all local roads are counted that are VDOT maintained).	In urban areas, the sample is one count made for each ten miles of road.
West Virginia	Three-year cycle.	No	Do not sample roads with < 50 ADT.
Wisconsin	No fixed cycle. Some local roads get counted for special purposes, but most never get counted.	No	We don't sample count local roads. We proposed developing a random sample of locations on local roads and counting them as part of the regular 3-yr count cycle, but mgmt considered it cost prohibitive.
Wyoming	Three-year cycle.	No	-

12	What is your local road VMT estimation methodology based on?	Is the VMT county-based?
Alabama	Counted +2% growth factor.	No
Alaska	HPMS	No
Arizona	Provided by local govt. agencies and typically based on population growth.	Yes (Total VMT over all functional systems by each county is originally based on fuel sales and then adjusted by statewide functional system VMT after the HPMS data submittal.)
Connecticut	Network model factored to HPMS control totals by functional classification.	No
Delaware	HPMS	Yes
Florida	-	-
Illinois	Representative samples on county level.	Yes
Indiana	HPMS	No
Iowa	-	-
Kentucky	HPMS	Yes
Massachusetts	HPMS	No, based on regional planning districts, only a few are contiguous with county boundaries (common in New England). Results are routinely summed to non-attainment areas for conformity purposes, and occasionally extrapolated to county-by-county reporting for DEP tracking purposes (reasonable further progress, etc.).
Minnesota	HPMS	No
Nebraska	HPMS	Yes
New Hampshire	-	No
New Jersey	HPMS	No
New Mexico	-	No
North Carolina	Based on growth trends of other FC of roads.	No
Oregon	HPMS	No
Pennsylvania	HPMS	Yes
South Carolina	Statewide average.	No
South Dakota	HPMS	Yes
Tennessee	TN conducts short machine counts (24 hours) on 14,000 locations each year as well as hundreds of other machine, WIM, and turning movement counts. Most of these counts are on functional classified routes. TN has a database that develops VMT for each route, log mile by log mile, for all of the classified routes. (This is furnished to HPMS.) The local routes are estimated based on the classified routes.	No
Utah	HPMS	No (by FC and jurisdiction).
Vermont	HPMS	No (the data is collected by Town, then we can do a county total if we wish).
Virginia	HPMS	No
West Virginia	Road inventory log of state system with ADT count or estimate on each link.	Yes
Wisconsin	We back into the estimates of local road VMT. We develop statewide estimates of VMT, arrived at based on three independent approaches: 1) an estimate based on gasoline and diesel fuel consumption in the state multiplied by auto and truck fleet fuel efficiency (MPG) estimates; 2) the percent change in functional class system weighted changes in AADT levels based on over 100 automatic traffic recorders (ATRs) statewide (but none on local roads and few on the lower level functional systems); 3) the change in the HPMS VMT estimates for arterial and collector highways in the state. From this final statewide estimate of VMT, we subtract out the HPMS VMT as given from the arterial and collector highways and the remainder gets allocated to the local roads (given that we don't have the actual traffic counts or samples to estimate local road VMT directly.	No (not originally, but in the end it gets allocated on a county basis).
Wyoming	HPMS	Yes

13	Additional comments provided?
Alabama	-
Alaska	-
Arizona	-
Connecticut	CONNDOT uses a network based travel model factored to our HPMS submittal to calculate the VMTs by speed range that are input to the mobile emission model. CONNDOT doesn't use growth rates-HPMS VMT for local roads is based on a sample of local road ADTs.
Delaware	-
Florida	In Florida, all areas are in maintenance status; however, may go into attainment status in the next year or so. Historically, FDOT has used a transportation model (FSUTMS, Transplan derivation) to forecast future volumes. These volumes are used to estimate air quality emissions. FDOT does tie the base year model (as required by EPA) back to HPMS based mileage. FDOT doesn't go to any extra effort to deal with local roads. FDOT uses centroid connectors within the model as local road elements.
Illinois	-
Indiana	-
Iowa	-
Kentucky	Ongoing study will develop new HPMS local sample and will generate an improved local road estimation methodology. Alternatives include improved collector/local ratios derived from historical count data and a regression procedure derived from other variables (e.g. population, employment, proximity, etc.).
Massachusetts	Local road VMT estimation for HPMS reporting is based on mileage and default values for ADT. As for NOx and other pollutants, we use the VMT results of the regional travel demand models, which include some local roads, for reporting emission results to DEP and EPA. These results are factored to HPMS before emissions are calculated. A possible aim of MassHighway is to eventually convince EPA that the VMT results of the regional models (and within a few years the statewide model), are more accurate than HPMS factoring because of better coverage of all roads, including local (HPMS is based on samples).
Minnesota	-
Nebraska	Nebraska has no air quality non-attainment areas.
New Hampshire	-
New Jersey	We have asked our universities for a statistical analysis to develop a countywide VMT estimation process within or parallel to HPMS.
New Mexico	-
North Carolina	
Oregon	-
Pennsylvania	-
South Carolina	-
South Dakota	Our research project is scheduled to be completed in late spring.
Tennessee	Comparisons are made on rural, small urban, urbanized areas.
Utah	-
Vermont	-
Virginia	-
West Virginia	-
Wisconsin	We know we need a better method to estimate local road VMT, such as some type of sampling or estimated local road VMT at the county level based population. But thus far we have not gotten the resources committed to develop a better approach and the ideas remain on the drawing board only.
Wyoming	-

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8.3 Appendix C – VMT from Historical KYTC Data Files (1993-1999)

	Non-Interstate VMT (x 1000)						
County	1993	1994	1995	1996	1997	1998	1999
Adair	425	410	417	424	480	497	489
Allen	360	360	366	366	383	402	423
Anderson	462	462	465	500	522	524	570
Ballard	248	236	237	244	245	242	251
Barren	877	881	910	953	966	992	1037
Bath	181	183	202	204	207	213	223
Bell	722	712	729	733	767	785	856
Boone	1958	1968	2139	2234	2484	2579	2376
Bourbon	489	495	499	502	518	546	569
Boyd	1169	1166	1204	1241	1344	1385	1246
Boyle	566	565	569	612	622	642	712
Bracken	204	205	203	202	204	247	274
Breathitt	387	388	399	408	419	415	422
Breckinridge	364	358	378	387	401	408	415
Bullitt	720	739	755	805	864	863	1025
Butler	377	379	388	391	489	426	446
Caldwell	412	375	397	402	460	449	486
Calloway	696	690	694	709	768	779	819
Campbell	1619	1578	1607	1589	1622	1631	1568
Carlisle	136	136	145	147	143	144	150
Carroll	203	201	211	212	220	225	245
Carter	513	514	538	566	593	593	604
Casey	344	346	355	363	359	368	380
Christian	1484	1668	1586	1679	1582	1682	1832
Clark	629	615	637	677	672	694	743
Clay	607	605	601	612	625	646	710
Clinton	221	226	229	233	249	259	270
Crittenden	203	218	223	224	225	229	221
Cumberland	161	162	193	191	193	192	205
Daviess	1988	1959	1974	2045	2153	2185	2185
Edmonson	217	223	216	217	216	217	244
Elliott	113	114	116	114	115	119	124
Estill	325	306	312	319	330	337	335
Fayette	4680	5045	5100	5216	5371	5499	5476
Fleming	276	296	311	319	325	334	342
Floyd	1412	1405	1457	1452	1485	1510	1549
Franklin	877	917	912	936	971	1024	1088
Fulton	163	172	188	191	194	207	205
Gallatin	125	124	125	125	135	141	166
Garrard	283	283	291	298	317	341	351
Grant	291	291	336	342	355	360	375
Graves	1036	1039	1039	1077	1126	1147	1173
Grayson	751	722	813	868	864	887	964
Green	223	225	230	231	241	248	255
Greenup	906	854	857	875	919	936	1003
Hancock	209	209	194	229	240	245	251
Hardin	2142	2497	2325	2413	2463	2536	2667
Harlan	764	771	772	781	825	866	883
Harrison	341	320	321	325	315	328	351
Hart	278	279	343	345	345	354	356
Henderson	1397	1421	1454	1507	1626	1610	1775
Henry	380	380	405	443	447	470	350
Hickman	149	157	160	166	171	181	175
Hopkins	1555	1558	1705	1668	1752	1790	1828
Jackson	224	224	246	253	257	280	297
Jefferson	11980	11618	11664	12329	12551	12864	12103
Jessamine	725	734	753	800	879	933	1014
Johnson	588	596	611	610	559	651	667
Kenton	2000	2165	2161	2129	2097	2114	1967
Knott	504	504	520	521	546	556	503

	Non-Interstate VMT (x 1000)						
County	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**
Knox	688	678	690	701	758	794	850
Larue	352	348	348	358	333	355	360
Laurel	1016	1019	1011	1029	1114	1169	1213
Lawrence	485	476	527	545	545	583	606
Lee	169	169	173	177	176	182	184
Leslie	357	359	352	375	409	419	429
Letcher	562	641	646	651	694	705	742
Lewis	382	418	379	394	408	394	413
Lincoln	515	537	550	593	601	612	668
Livingston	244	244	259	263	263	264	269
Logan	627	641	664	674	699	753	825
Lyon	246	310	268	265	301	316	323
Madison	1045	1084	1100	1154	1217	1277	1344
Magoffin	376	377	388	369	370	378	385
Marion	379	379	392	392	364	376	388
Marshall	1032	1024	1006	923	915	942	946
Martin	359	385	394	417	431	445	402
Mason	476	488	514	568	606	621	636
McCracken	1316	1351	1405	1433	1456	1465	1579
McCreary	396	402	413	425	425	449	475
McLean	258	258	266	269	289	290	293
Meade	533	556	595	638	625	662	662
Menifee	121	120	120	125	127	134	128
Mercer	459	469	490	520	533	534	573
Metcalfe	329	329	332	339	342	362	321
Monroe	272	269	267	271	274	277	270
Montgomery	415	403	410	435	435	443	469
Morgan	288	288	292	310	317	319	331
Muhlenberg	954	953	1039	1049	1074	1057	1145
Nelson	896	898	960	996	1025	1119	1190
Nicholas	135	147	144	146	152	158	171
Ohio	818	818	865	896	930	890	1037
Oldham	557	561	583	590	631	649	871
Owen	175	178	184	191	210	218	221
Owsley	105	105	107	109	107	109	112
Pendleton	265	270	275	280	280	287	328
Perry	864	865	896	897	922	954	965
Pike	2111	2089	2127	2159	2215	2217	2267
Powell	412	410	432	439	456	478	479
Pulaski	1477	1454	1518	1540	1578	1605	1605
Robertson	36	36	38	38	38	39	40
Rockcastle	311	322	338	352	345	355	393
Rowan	411	427	442	462	506	527	545
Russell	455	433	442	490	502	514	523
Scott	509	520	594	637	689	735	752
Shelby	505	503	497	505	527	549	667
Simpson	333	328	346	353	371	362	400
Spencer	192	188	198	201	199	218	285
Taylor	505	480	497	506	536	542	563
Todd	276	276	275	277	270	305	347
Trigg	298	346	290	328	353	371	368
Trimble	164	164	166	166	169	165	181
Union	445	448	424	450	447	441	446
Warren	1712	1739	1812	1903	2075	2079	2265
Washington	295	295	312	321	323	341	354
Wayne	397	398	381	395	433	447	454
Webster	523	498	506	512	517	533	590
Whitley	674	714	715	770	783	753	782
Wolfe	272	269	293	283	310	318	309
Woodford	672	704	697	710	734	771	808

	Interstate VMT (x 1000)						
County	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**
Barren	249	215	234	226	227	249	270
Bath	180	200	198	194	222	228	240
Boone	1469	1554	1588	1682	1768	2016	2067
Boyd	153	172	156	156	168	187	195
Bullitt	906	910	945	1106	1190	1211	1201
Caldwell	28	35	32	27	29	34	39
Campbell	658	758	725	718	711	695	848
Carroll	285	286	296	303	326	337	385
Carter	399	438	435	415	441	441	477
Christian	310	469	336	366	310	413	411
Clark	358	376	407	476	462	506	488
Edmonson	71	65	69	66	68	75	83
Fayette	1395	1406	1485	1552	1594	1672	1854
Franklin	333	313	374	384	394	430	475
Gallatin	356	325	327	339	366	385	429
Grant	667	694	718	811	899	842	917
Hardin	728	820	833	908	955	1036	1051
Hart	548	540	624	573	634	604	706
Henry	288	294	327	321	344	376	363
Jefferson	6465	6750	7021	7404	7498	7848	7883
Kenton	1680	1698	1863	1940	1958	2020	2079
LaRue	105	104	132	116	132	132	138
Laurel	671	675	720	704	732	754	794
Livingston	85	88	87	89	94	107	115
Lyon	287	289	302	298	300	348	389
Madison	879	860	935	1003	1126	1116	1155
Marshall	231	238	244	255	247	307	319
McCracken	408	425	402	479	467	533	546
Montgomery	176	172	190	221	217	225	226
Oldham	452	472	197	387	524	600	596
Rockcastle	642	614	720	705	706	782	840
Rowan	221	236	216	213	252	247	281
Scott	720	869	823	886	1033	1184	1192
Shelby	654	676	803	772	818	796	840
Simpson	484	411	473	471	479	489	453
Trigg	137	167	148	140	149	164	185
Trimble	14	15	16	17	18	18	19
Warren	1114	1005	1041	1076	1097	1132	1119
Whitley	721	602	706	744	802	803	887
Woodford	175	159	180	204	171	224	252

8.4 Appendix D – Socioeconomic Census-Based Data

TOTAL EMPLOYMENT
(IN THOUSANDS OF JOBS)

COUNTY	NAME	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
21000	KENTUCKY	1914.562	1915.339	1964.802	2008.736	2048.572	2102.913	2135.842	2192.577	2238.216	2282.561
21001	ADAIR, KY	7.082	7.287	7.349	7.674	7.654	7.757	7.079	7.534	7.882	7.95
21003	ALLEN, KY	8.333	8.452	8.876	7.613	8.126	9.031	7.928	9.029	9.202	9.375
21005	ANDERSON, KY	5.881	5.204	5.412	5.613	5.876	6.455	6.441	5.468	6.524	6.588
21007	BALLARD, KY	3.888	3.498	3.556	3.521	3.641	3.833	4.038	4.119	4.204	4.274
21009	BARREN, KY	20.116	20.601	21.166	21.887	22.881	23.809	23.826	24.73	25.433	26.035
21011	BATH, KY	3.467	3.384	3.601	3.715	3.79	3.988	3.866	4.1	4.19	4.256
21013	BELL, KY	11.782	11.989	11.338	11.641	11.646	12.004	11.841	12.036	12.168	12.341
21015	BOONE, KY	45.571	47.721	50.941	54.424	56.921	60.908	64.88	68.924	72.058	75.79
21017	BOURBON, KY	9.363	9.338	9.386	9.338	9.166	9.503	9.445	9.789	9.805	10.103
21019	BOYD, KY	33.63	31.994	33.45	33.063	34.093	32.946	33.568	34.344	34.681	35.077
21021	BOYLE, KY	16.662	16.479	17.324	17.67	18.088	18.34	18.588	19.32	18.744	20.118
21023	BRACKEN, KY	2.848	3.05	2.888	2.911	2.924	2.942	3.124	3.147	3.187	3.234
21025	BREATHITT, KY	5.337	4.941	5.585	5.373	5.305	4.914	4.777	4.804	4.733	4.845
21027	BRECKINRIDGE, KY	5.874	5.84	5.873	6.094	6.012	6.361	6.436	6.615	6.653	6.706
21029	BULLITT, KY	11.485	11.726	12.166	13.169	13.867	14.368	14.767	15.414	15.768	16.139
21031	BUTLER, KY	5.434	5.269	5.163	5.191	5.336	5.389	5.26	5.434	5.472	5.496
21033	CALDWELL, KY	5.32	5.169	5.244	5.745	6.214	6.111	5.628	5.798	5.655	5.909
21035	CALLOWAY, KY	16.337	17.362	17.824	18.114	18.504	19.523	20.201	20.705	21.28	21.786
21037	CAMPBELL, KY	38.338	39.15	38.331	30.706	38.668	31.766	33.965	32.734	34.762	35.685
21039	CARLISLE, KY	1.888	1.72	1.724	1.749	1.764	1.788	1.81	1.824	1.840	1.807
21041	CARROLL, KY	5.782	5.464	5.808	5.172	5.583	6.314	6.303	5.744	6.862	6.988
21043	CARTER, KY	7.815	7.831	8.282	8.354	8.211	8.670	8.792	9.273	8.456	9.822
21045	CASEY, KY	6.218	6.383	6.604	6.358	6.474	6.749	6.668	6.84	6.813	6.909
21047	CHRISTIAN, KY	48.452	47.983	55.860	56.034	56.036	57.336	57.846	58.62	58.61	60.16
21049	CLARK, KY	14.328	14.321	14.41	14.492	14.726	15.401	15.889	17.112	17.64	17.923
21051	CLAY, KY	5.734	5.85	6.108	6.726	6.613	6.85	6.303	5.902	6.709	6.815
21053	CLINTON, KY	3.771	3.946	3.824	4.058	3.972	4.13	4.176	4.277	4.313	4.351
21055	CRITTENDEN, KY	3.388	3.337	3.311	3.616	3.658	3.773	3.808	3.762	3.765	3.808
21057	CUMBERLAND, KY	2.873	3.042	3.01	3.015	3.088	2.903	2.082	2.995	3.081	3.116
21059	DAVIESS, KY	48.352	48.774	47.985	49.391	51.222	52.177	52.285	53.114	54.467	55.501
21061	EDMONSON, KY	2.841	2.853	2.776	2.737	2.651	2.817	2.765	2.83	2.865	2.898
21063	ELLIOTT, KY	1.492	1.443	1.471	1.462	1.466	1.545	1.608	1.673	1.712	1.734
21065	ESTILL, KY	3.866	3.966	4.673	4.043	3.975	4.213	4.26	4.435	4.631	4.822
21067	FAYETTE, KY	173.527	174.125	177.377	180.61	183.424	187.388	193.603	196.974	203.519	208.473
21069	FLEMING, KY	6.646	6.001	6.162	6.268	6.254	6.360	6.255	6.236	6.311	6.379
21071	FLOYD, KY	14.763	14.628	14.977	14.706	14.861	14.796	14.543	14.995	14.996	15.347
21073	FRANKLIN, KY	33.737	34.15	34.774	34.649	35.411	35.799	35.664	36.975	37.775	38.488
21075	FULTON, KY	4.113	4.141	4.172	4.336	4.252	4.791	4.665	4.738	4.926	5.098
21077	GALLATIN, KY	1.661	1.729	1.786	1.776	1.950	2.367	2.479	2.622	2.728	2.819
21079	GARRARD, KY	4.728	4.616	4.856	4.787	4.765	4.882	4.862	5.007	5.065	5.157
21081	GRANT, KY	6.333	6.259	6.334	6.469	6.75	6.958	7.224	7.578	7.779	7.952
21083	GRAVES, KY	14.846	15.083	15.623	16.196	16.115	16.607	16.675	17.012	17.268	17.522
21085	GRAYSON, KY	9.433	9.624	9.776	9.941	10.007	10.406	10.776	11.203	11.388	11.588
21087	GREEN, KY	4.618	4.46	4.531	4.655	4.664	4.69	4.23	4.242	4.279	4.317
21089	GREENUP, KY	12.688	12.583	12.284	11.093	10.989	11.467	11.666	11.617	11.762	11.895
21091	HANCOCK, KY	5.388	5.191	5.669	5.109	5.231	5.338	5.563	6.08	6.173	6.253
21093	HARDIN, KY	56.841	54.615	55.826	55.368	55.952	56.088	56.792	57.811	57.606	58.73
21095	HARLAN, KY	13.13	11.326	11.384	11.011	11.142	10.641	10.406	10.483	10.381	10.305
21097	HARRISON, KY	7.85	7.938	8.11	7.922	7.84	7.993	7.926	8.094	8.216	8.32
21099	HART, KY	6.365	6.47	6.744	6.947	7.207	7.401	7.208	7.338	7.488	7.525
21101	HENDERSON, KY	22.154	22.097	22.392	23.329	24.597	25.046	25.511	26.83	27.314	27.658
21103	HENRY, KY	5.215	5.503	5.546	5.699	5.725	5.687	5.58	5.624	5.708	5.795
21105	HICKMAN, KY	2.133	2.076	2.087	2.042	2.037	1.921	2.016	2.124	2.109	2.232
21107	HOPKINS, KY	22.61	22.403	21.84	22.294	22.424	22.67	23.037	23.212	23.453	23.882
21109	JACKSON, KY	3.44	3.596	3.572	3.546	3.616	3.741	4.609	4.834	4.841	5.033
21111	JEFFERSON, KY	465.679	448.307	450.347	461.442	473.466	492.946	488.454	500.777	511.342	527.022
21113	JESSAMINE, KY	12.426	12.719	13.888	13.404	13.977	15.380	16.41	17.28	18.222	19.015
21115	JOHNSON, KY	8.671	8.107	8.462	8.737	8.881	9.139	8.025	8.920	9.076	9.32
21117	KENTON, KY	59.467	59.902	60.517	60.165	62.22	64.259	66.065	67.642	69.514	71.148
21119	KNOTT, KY	4.032	3.848	4.628	4.051	4.022	4.348	4.451	4.641	4.653	4.746
21121	KNOX, KY	9.116	9.094	9.601	9.746	9.885	9.981	10.108	10.032	10.242	10.44
21123	LARUE, KY	4.181	4.348	4.312	4.495	4.556	4.768	4.773	4.959	4.926	5.002
21125	LAUREL, KY	21.184	21.502	22.108	23.087	23.887	25.333	26.263	27.173	27.889	28.679
21127	LAWRENCE, KY	3.818	3.832	3.822	3.988	4.137	4.23	4.364	4.304	4.403	4.454
21129	LEE, KY	2.44	2.433	2.375	2.399	2.452	2.499	2.476	2.618	2.662	2.715
21131	LESLIE, KY	3.766	2.636	3.881	4.138	4.21	4.367	4.412	4.401	4.456	4.588
21133	LETCHER, KY	8.138	7.964	7.593	7.468	7.467	7.626	7.503	7.658	7.611	7.733
21135	LEWIS, KY	4.765	4.724	4.538	4.613	4.56	4.627	4.56	4.528	4.502	4.658
21137	LINCOLN, KY	5.546	6.04	6.337	6.432	6.472	6.778	7.054	7.463	7.626	7.771
21139	LIVINGSTON, KY	2.811	3.023	2.941	3.043	3.116	3.608	3.739	3.821	3.88	3.945
21141	LOGAN, KY	11.848	12.026	12.469	12.901	13.464	13.603	13.717	13.998	13.885	14.165
21143	LYON, KY	2.563	2.665	2.886	2.909	2.924	2.973	3.11	3.114	3.247	3.358
21145	McCRACKEN, KY	39.454	39.036	39.815	41.819	43.318	43.665	44.072	45.879	47.085	48.036
21147	McCREARY, KY	3.166	3.509	3.691	3.967	4.327	4.349	4.257	4.491	4.61	4.726
21149	McLEAN, KY	2.167	2.227	2.156	2.099	2.113	2.209	2.287	2.376	2.426	2.481
21151	MADISON, KY	28.884	29.062	28.804	30.303	31.587	31.68	32.264	33.413	34.007	34.594
21153	MAGOFFIN, KY	3.4	3.426	3.441	3.444	3.658	3.808	3.868	3.871	4.028	4.074
21155	MARION, KY	6.848	7.013	7.22	7.101	6.878	7.318	7.576	8.077	8.238	8.409
21157	MARSHALL, KY	12.714	12.803	13.428	13.808	13.958	14.01	14.561	14.352	14.56	14.77
21159	MARTIN, KY	3.893	3.801	3.984	3.894	3.745	3.801	3.58	3.935	3.541	3.59
21161	MASON, KY	10.871	10.992	11.472	11.636	12.017	12.384	12.081	12.226	12.562	12.933
21163	MEADE, KY	5.161	5.140	5.194	5.496	5.467	5.671	5.766	5.977	6.158	6.31
21165	MENIFEE, KY	1.592	1.683	1.681	1.727	1.751	1.850	2.016	2.035	2.059	2.075
21167	MERCER, KY	9.83	9.316	9.474	9.708	10.076	10.087	10.16	10.507	10.888	11.124
21169	METCALFE, KY	4.745	4.72	4.826	4.643	4.858	4.913	4.801	4.950	4.841	5.038
21171	MONROE, KY	6.275	6.008	6.110	6.301	6.307	6.595	6.515	6.508	6.541	6.570
21173	MONTGOMERY, KY	9.622	9.593	9.17	9.612	9.535	10.198	10.881	11.979	12.341	12.833
21175	MORGAN, KY	4.184	4.243	4.364	4.449	4.451	4.618	4.818	4.97	5.073	5.172
21177	MUHLENBERG, KY	12.184	11.682	11.460	11.484	11.702	12.169	12.19	12.402	12.664	12.909
21179	NELSON, KY	14.887	14.224	14.447	14.662	15.217	16.321	16.706	17.402	17.722	18.091
21181	NICHOLAS, KY	3.163	3.219	3.226	3.09	3.019	3.095	2.999	3.131	3.186	3.249
21183	OHIO, KY	7.818	7.810	7.806	7.978	8.088	8.106	8.771	9.079	9.315	9.524
21185	OLDHAM, KY	13.534	12.55	13.164	13.887	14.384	15.337	15.912	16.583	17.221	17.929
21187	OWEN, KY	3.862	3.572	3.682	3.707	3.609	3.698	3.675	3.7	3.787	3.947
21189	OWSLEY, KY	1.281	1.227	1.271	1.262	1.285	1.206	1.216	1.375	1.4	1.417
21191	PENDLETON, KY	4.345	4.278	4.371	4.463	4.459	4.64	4.575	4.533	4.588	4.671
21193	PERRY, KY	12.887	12.711	13.37	13.644	13.87	13.695	13.786	14.142	14.346	14.637
21195	PIKE, KY	27.641	28.105	27.604	28.04	28.06	30.136	28.974	30.605	30.610	31.595
21197	POWELL, KY	3.821	3.736	4.141	4.26	4.61	4.84	5.079	4.999	5.084	5.219
21199	PULASKI, KY	26.751	26.891	27.544	27.837	28.397	29.407	28.886	30.872	31.647	32.62
21201	ROBERTSON, KY	0.797	0.786	0.804	0.836	0.809	0.827	0.852	0.882	0.86	0.890
21203	ROCKCASTLE, KY	5.338	5.363	5.47	5.089	5.206	5.459	5.564	5.631	5.75	5.99
21205	ROWAN, KY	9.883	9.972	9.667	10.319	10.392	10.663	10.604	11.188	11.382	11.577
21207	RUSSELL, KY	8.227	8.591	8.96	9.300	9.221	9.422	0	8.704	8.869	8.963
21209	SCOTT, KY	14.772	16.016	17.802	19.172	20.21	21.565	22.496	24.343	25.417	26.374
21211	SHELBY, KY	14.384	14.259	15.844	15.821	16.424	16.833	17.094	17.414	17.651	17.908
21213	SIMPSON, KY	8.798	8.773	9.17	9.254	9.383	9.591	9.1	9.399	9.56	9.795
21215	SPENCER, KY	2.341	2.368	2.414	2.636	2.62	2.706	2.775	2.851	2.966	3.033
21217	TAYLOR, KY	13.632	13.642	14.201	14.699	14.71	14.637	14.641	14.219	14.416	14.599
21219	TODD, KY	4.864	4.479	4.637	4.992	5.036	5.088	5.076	5.172	5.211	5.231
21221	TRIGG, KY	4.134	4.358	4.365	4.409	4.477	4.642	4.765	4.777	4.778	4.798
21223	TRIMBLE, KY	3.488	2.33	2.152	2.05	2.124	2.073	2.084	2.131	2.162	2.191
21225	UNION, KY	6.748	6.863	6.827	6.260	6.565	6.402	6.202	7.003	7.027	7.000
21227	WARREN, KY	48.878	48.716	50.606	51.746	53.617	56.076	57.610	59.333	60.277	61.331
21229	WASHINGTON, KY	4.888	4.544	4.853	5.159	5.077	5.246	5.23	5.427	5.478	5.541
21231	WAYNE, KY	6.834	6.993	7.207	7.475	7.566	7.742	7.676	7.853	7.944	8.033
21233	WEBSTER, KY	5.856	6.037	6.13	6.226	6.341	6.036	5.986	6.127	6.282	6.422
21235	WHITLEY, KY	14.242	14.106	13.827	14.426	14.366	15.166	14.615	14.999	15.063	15.14
21237	WOLFE, KY	1.958	2.216	2.193	2.222	2.166	2.463	2.401	2.493	2.519	2.541
21239	WOODFORD, KY	12.678	13.065	13.446	13.642	13.666	14.223	14.283	14.443	14.842	15.214

TOTAL POPULATION
(IN THOUSANDS)

COUNTY	NAME	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
21000	KENTUCKY	3692.559	3716.45	3750.498	3782.851	3824.167	3856.125	3882.566	3910.366	3935.442	3971.18
21001	ADAIR, KY	15.373	15.486	15.643	15.828	15.989	16.257	16.417	16.45	16.447	16.644
21003	ALLEN, KY	14.704	14.709	14.925	15.129	15.43	15.692	15.865	16.184	16.546	16.736
21005	ANDERSON, KY	14.669	15.112	15.596	16.184	16.747	17.163	17.733	18.07	18.589	18.763
21007	BALLARD, KY	7.889	7.938	7.921	7.959	8.045	8.201	8.259	8.358	8.487	8.516
21009	BARREN, KY	34.095	34.291	34.439	34.873	35.071	35.745	36.246	36.731	36.971	37.319
21011	BATH, KY	9.713	9.734	9.868	9.997	10	10.102	10.136	10.361	10.57	10.638
21013	BELL, KY	31.465	31.115	30.793	30.773	30.697	30.326	30.062	29.798	29.14	29.343
21015	BOONE, KY	58.12	60.574	62.906	65.314	67.533	70.016	72.868	75.121	79.667	81.511
21017	BOURBON, KY	19.25	19.308	19.323	19.286	19.226	19.237	19.217	19.341	19.366	19.441
21019	BOYD, KY	51.105	51.297	51.068	50.83	50.564	50.355	50.11	49.639	49.544	49.524
21021	BOYLE, KY	25.652	25.764	25.986	26.207	26.496	26.653	26.913	27.033	27.18	27.392
21023	BRACKEN, KY	7.804	7.917	8.035	8.129	8.125	8.153	8.264	8.351	8.453	8.535
21025	BREATHITT, KY	15.669	15.013	15.15	15.263	15.37	15.482	15.517	15.657	15.687	15.762
21027	BRECKINRIDGE, KY	16.29	16.35	16.51	16.682	16.876	16.861	16.919	17.318	17.461	17.596
21029	BULLITT, KY	47.697	49.211	50.923	53.003	54.762	55.934	57.102	57.995	59.306	60.319
21031	BUTLER, KY	11.234	11.306	11.361	11.395	11.542	11.626	11.657	11.768	11.929	11.958
21033	CALDWELL, KY	13.221	13.082	13.1	12.964	13.16	13.224	13.264	13.331	13.313	13.363
21035	CALLOWAY, KY	30.787	30.996	31.395	31.722	32.089	32.273	32.577	33.199	33.475	34.04
21037	CAMPBELL, KY	84.041	84.257	84.871	85.663	86.183	86.956	87.082	87.486	87.383	87.807
21039	CARLISLE, KY	5.219	5.245	5.245	5.268	5.226	5.341	5.342	5.373	5.313	5.347
21041	CARROLL, KY	9.305	9.424	9.488	9.516	9.559	9.632	9.466	9.586	9.606	9.68
21043	CARTER, KY	24.396	24.76	24.982	25.407	25.613	25.994	26.266	26.553	26.851	27.134
21045	CASEY, KY	14.183	14.198	14.427	14.56	14.401	14.43	14.468	14.651	14.772	14.869
21047	CHRISTIAN, KY	68.913	67.517	71.087	70.769	71.427	72.073	73.162	73.296	72.488	72.873
21049	CLARK, KY	29.564	29.74	30.048	30.336	30.483	30.629	31.486	31.649	31.979	32.389
21051	CLAY, KY	21.68	21.884	22.168	22.636	22.56	22.601	22.589	22.577	22.804	22.96
21053	CLINTON, KY	9.158	9.193	9.169	9.243	9.238	9.288	9.256	9.276	9.344	9.381
21055	CRITTENDEN, KY	9.195	9.227	9.266	9.413	9.364	9.402	9.418	9.429	9.571	9.612
21057	CUMBERLAND, KY	6.77	6.747	6.718	6.793	6.807	6.806	6.933	6.961	6.829	6.837
21059	DAVIESS, KY	87.262	87.639	88.664	89.328	90.099	90.506	90.686	90.86	91.149	91.717
21061	EDMONSON, KY	10.346	10.361	10.237	10.365	10.616	10.785	11.001	11.182	11.358	11.416
21063	ELLIOTT, KY	6.445	6.536	6.556	6.592	6.597	6.548	6.561	6.66	6.600	6.606
21065	ESTILL, KY	14.881	14.894	15.174	15.315	15.381	15.472	15.502	15.451	15.588	15.684
21067	FAYETTE, KY	226.259	226.512	231.659	235.027	236.346	237.395	238.879	239.914	241.755	245.151
21069	FLEMING, KY	12.286	12.423	12.573	12.639	12.82	12.984	13.123	13.2	13.408	13.523
21071	FLOYD, KY	43.545	43.768	43.856	43.998	43.974	43.867	43.532	43.357	43.346	43.812
21073	FRANKLIN, KY	44.216	44.346	44.84	45.212	45.414	45.922	46.066	46.202	46.445	46.687
21075	FULTON, KY	8.246	8.156	8.118	7.689	7.416	7.396	7.761	7.606	7.532	7.536
21077	GALLATIN, KY	5.429	5.506	5.660	5.807	6.052	6.166	6.404	6.779	7.163	7.315
21079	GARRARD, KY	11.607	11.862	12.16	12.282	12.601	12.968	13.251	13.599	13.813	14.037
21081	GRANT, KY	15.915	16.304	16.869	17.395	17.909	18.714	19.345	19.817	20.346	20.737
21083	GRAVES, KY	33.664	33.758	34.032	34.363	34.791	35.034	35.54	35.636	35.884	36.137
21085	GRAYSON, KY	21.111	21.488	21.884	22.236	22.517	22.713	22.871	23.282	23.772	24.085
21087	GREEN, KY	10.368	10.359	10.4	10.361	10.361	10.488	10.549	10.586	10.642	10.874
21089	GREENUP, KY	36.745	36.689	37.025	37.057	37.165	37.045	37.104	37.086	36.883	36.933
21091	HANCOCK, KY	7.867	7.927	7.936	7.977	8.14	8.496	8.706	8.87	8.936	8.974
21093	HARDIN, KY	88.446	87.753	90.647	90.06	91.18	91.248	90.148	90.78	91.463	92.262
21095	HARLAN, KY	36.53	36.484	36.266	36.143	35.975	36.018	35.488	35.298	34.941	34.958
21097	HARRISON, KY	16.267	16.437	16.689	16.699	16.736	16.911	17.115	17.276	17.573	17.688
21099	HART, KY	14.914	15.204	15.501	15.671	15.961	16.191	16.336	16.546	16.731	16.86
21101	HENDERSON, KY	43.105	43.724	43.816	44.137	44.141	44.279	44.364	44.447	44.454	44.807
21103	HENRY, KY	12.85	13.162	13.467	13.724	13.84	14.214	14.454	14.716	14.762	14.907
21105	HICKMAN, KY	5.571	5.598	5.556	5.518	5.356	5.388	5.279	5.237	5.248	5.257
21107	HOPKINS, KY	46.094	46.246	46.337	46.188	46.125	46.487	46.474	46.25	46.36	46.54
21109	JACKSON, KY	11.986	12.142	12.275	12.316	12.616	12.667	12.736	12.826	12.906	13.032
21111	JEFFERSON, KY	666.505	668.733	668.136	670.36	670.406	671.267	671.153	671.724	672.089	674.788
21113	JESSAMINE, KY	30.7	31.399	32.23	33.004	33.642	34.332	35.271	36.077	36.530	37.514
21115	JOHNSON, KY	23.292	23.341	23.597	23.876	23.86	24.063	24.039	24.036	24.021	24.257
21117	KENTON, KY	142.169	142.898	143.122	144.304	144.59	145.206	145.175	145.219	145.734	148.056
21119	KNOTT, KY	17.929	18.068	18.198	18.15	18.339	18.347	18.191	18.033	17.984	18.16
21121	KNOX, KY	29.673	30.09	30.372	30.399	31.031	31.256	31.36	31.494	31.697	32.206
21123	LARUE, KY	11.742	11.768	11.866	12.221	12.371	12.561	12.747	12.875	13.06	13.155
21125	LAUREL, KY	43.569	44.326	45.236	46.467	47.159	48.06	49.115	50.114	50.725	51.533
21127	LAWRENCE, KY	14.01	14.238	14.674	14.751	15.111	15.26	15.387	15.488	15.641	15.745
21129	LEE, KY	7.428	7.822	7.891	7.919	7.769	7.878	7.877	7.978	8.02	8.086
21131	LESLIE, KY	13.621	13.638	13.723	13.736	13.745	13.596	13.476	13.487	13.592	13.679
21133	LETCHER, KY	27	27.068	26.974	26.88	26.879	26.811	26.654	26.506	26.15	26.366
21135	LEWIS, KY	12.998	13.032	13.089	13.087	13.226	13.388	13.491	13.551	13.573	13.666
21137	LINCOLN, KY	20.154	20.278	20.463	20.889	21.127	21.443	21.763	22.027	22.37	22.576
21139	LIVINGSTON, KY	9.059	9.103	9.148	9.136	9.217	9.321	9.189	9.362	9.431	9.506
21141	LOGAN, KY	24.454	24.604	24.945	25.231	25.36	25.575	25.086	25.136	25.148	25.318
21143	LYON, KY	6.641	6.842	7.164	7.417	7.591	7.733	7.91	7.985	8.051	8.218
21145	MCCRACKEN, KY	63.036	63.262	63.726	64.191	64.647	64.578	64.736	64.768	64.857	64.856
21147	MCCREARY, KY	15.63	15.777	15.846	16.147	16.216	16.538	16.565	16.626	16.659	16.866
21149	MCLEAN, KY	9.604	9.611	9.686	9.597	9.646	9.662	9.718	9.754	9.838	9.878
21151	MADISON, KY	57.877	58.460	59.491	60.921	61.91	62.974	64.236	65.46	66.5	67.115
21153	MAGOFFIN, KY	13.113	13.187	13.352	13.506	13.606	13.638	13.707	13.907	13.836	13.906
21155	MARION, KY	16.486	16.625	16.618	16.741	16.689	16.801	16.943	17.002	17.029	17.1
21157	MARSHALL, KY	27.271	27.636	27.942	28.41	28.726	29.206	29.67	29.879	30.309	30.547
21159	MARTIN, KY	12.539	12.696	12.766	12.846	12.886	12.772	12.674	12.227	12.12	12.196
21161	MASON, KY	16.667	16.769	17.167	17.211	17.132	17.065	16.923	16.97	17.019	17.101
21163	MEADE, KY	24.296	23.777	24.135	25.365	25.960	26.96	27.535	28.221	28.616	29.164
21165	MENIFEE, KY	5.116	5.103	5.15	5.271	5.273	5.398	5.488	5.621	5.736	5.768
21167	MERCER, KY	19.185	19.286	19.504	19.6	19.719	20.078	20.306	20.426	20.698	20.945
21169	METCALFE, KY	8.962	8.984	8.992	9.10	9.169	9.3	9.354	9.486	9.56	9.812
21171	MONROE, KY	11.41	11.407	11.469	11.511	11.595	11.494	11.392	11.292	11.262	11.206
21173	MONTGOMERY, KY	19.587	19.516	19.643	19.968	20.222	20.346	20.517	20.734	20.930	21.152
21175	MORGAN, KY	11.69	12.421	13.14	13.166	13.306	13.376	13.382	13.462	13.561	13.766
21177	MUHLENBERG, KY	31.279	31.284	31.114	31.087	31.074	31.672	31.631	32.006	32.16	32.496
21179	NELSON, KY	29.778	30.373	31.112	31.862	32.478	33.444	34.213	35.173	35.884	36.432
21181	NICHOLAS, KY	6.726	6.756	6.828	6.878	6.902	6.968	6.963	7.032	6.998	7.036
21183	OHIO, KY	21.089	21.205	21.215	21.308	21.446	21.485	21.74	21.968	22.085	22.225
21185	OLDHAM, KY	33.572	35.115	36.374	38.138	39.624	41.012	42.112	43.247	44.401	45.499
21187	OWEN, KY	9.076	9.319	9.362	9.458	9.603	9.801	9.832	10.063	10.283	10.32
21189	OWSLEY, KY	5.032	5.132	5.18	5.273	5.412	5.361	5.446	5.362	5.402	5.423
21191	PENDLETON, KY	12.079	12.397	12.647	12.862	13.19	13.369	13.696	13.646	13.711	13.875
21193	PERRY, KY	30.33	30.736	30.924	30.89	31.114	31.202	31.047	31.15	31.036	31.245
21195	PIKE, KY	72.472	72.93	73.022	73.136	73.191	73.442	73.074	72.575	72.13	72.626
21197	POWELL, KY	11.649	11.661	11.863	12.018	12.129	12.184	12.401	12.693	12.93	13.122
21199	PULASKI, KY	49.667	50.344	51.366	52.132	53.284	54.272	55.083	55.795	56.290	56.927
21201	ROBERTSON, KY	2.114	2.134	2.162	2.175	2.19	2.209	2.185	2.181	2.209	2.222
21203	ROCKCASTLE, KY	14.822	14.981	15.096	15.225	15.365	15.515	15.550	15.718	15.947	16.123
21205	ROWAN, KY	20.424	20.67	20.942	21.15	21.331	21.643	21.64	21.948	22.188	22.461
21207	RUSSELL, KY	14.753	14.988	15.267	15.544	15.792	15.936	16.109	16.332	16.228	16.358
21209	SCOTT, KY	23.944	24.418	25.154	25.864	26.880	27.7	28.443	29.445	30.666	31.384
21211	SHELBY, KY	24.979	25.347	25.781	26.298	26.904	27.635	28.196	28.897	29.592	29.957
21213	SIMPSON, KY	15.149	15.406	15.546	15.605	15.835	16.014	16.088	16.094	16.395	16.511
21215	SPENCER, KY	6.847	6.945	7.034	7.236	7.629	8.168	8.66	9.179	9.564	9.766
21217	TAYLOR, KY	21.177	21.402	21.733	22.034	22.339	22.580	22.706	22.875	22.936	23.076
21219	TODD, KY	10.926	10.951	11.067	11.164	11.229	11.113	11.192	11.18	11.219	11.264
21221	TRIGG, KY	10.356	10.469	10.644	10.904	11.16	11.463	11.868	12.138	12.403	12.486
21223	TRIMBLE, KY	6.101	6.181	6.266	6.603	6.786	6.957	7.236	7.282	7.621	7.686
21225	UNION, KY	16.644	16.36	16.335	16.348	16.43	16.447	16.40	16.527	16.676	16.851
21227	WARREN, KY	77.648	78.624	79.736	81.627	82.749	84.156	85.5	86.597	87.321	88.806
21229	WASHINGTON, KY	10.464	10.493	10.491	10.406	10.567	10.641	10.731	10.824	10.915	10.952
21231	WAYNE, KY	17.486	17.642	17.905	17.98	18.136	18.374	18.6	18.932	19.104	19.216
21233	WEBSTER, KY	13.921	13.629	13.697	13.636	13.55	13.469	13.476	13.512	13.407	13.517
21235	WHITLEY, KY	33.336	33.968	34.023	34.724	34.864	35.079	35.45	35.646	35.948	36.176
21237	WOLFE, KY	6.464	6.739	6.875	6.959	7.076	7.2	7.306	7.276	7.362	7.412
21239	WOODFORD, KY	20.032	20.397	20.761	20.846	21.199	21.892	22.063	22.327	22.843	23.207

INCOME PER CAPITA
(IN MILLIONS OF 1992 DOLLARS)

COUNTY	NAME	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
21000	KENTUCKY	16236	16236	16676	16761	16996	17293	17744	18397	18896	19232
21001	ADAIR, KY	12389	12658	13151	13012	12937	13087	13192	13565	13896	14247
21003	ALLEN, KY	11824	12081	12481	12891	13369	13186	13436	13636	13915	14181
21005	ANDERSON, KY	15407	15988	16323	16216	16495	16858	16945	17583	17938	18068
21007	BALLARD, KY	16826	16517	16987	16880	17485	17278	18788	19386	19270	19462
21009	BARREN, KY	14641	14674	15299	15970	16668	16664	16649	17475	18164	18593
21011	BATH, KY	11899	11306	12020	11532	11800	11782	12221	13305	13491	13741
21013	BELL, KY	11183	11569	12064	12132	12212	12951	12781	13269	13828	14010
21015	BOONE, KY	18757	18364	18823	19019	19468	19831	20506	21194	21807	22400
21017	BOURBON, KY	16620	16674	17430	17277	17606	17861	19300	20272	19538	19963
21019	BOYD, KY	18617	18397	18833	18646	18829	18829	19117	19661	20299	20629
21021	BOYLE, KY	15863	15548	16147	16330	16561	16854	17722	18348	18845	19368
21023	BRACKEN, KY	12961	12635	12577	12490	12836	12873	13368	14385	13851	14073
21025	BREATHITT, KY	10937	11361	12101	12537	12486	11873	11882	12202	12432	12880
21027	BRECKINRIDGE, KY	12365	12451	12875	12837	13012	12900	13142	13884	13368	14156
21029	BULLITT, KY	14051	13869	14346	14577	14946	15336	15578	16210	16457	16704
21031	BUTLER, KY	11193	11154	11637	11832	12059	12213	12897	13281	13309	13184
21033	CALDWELL, KY	13898	13989	14541	14936	14951	14807	15117	16324	15447	16658
21035	CALLOWAY, KY	16299	15784	16379	16618	16906	17234	17972	18073	18647	18827
21037	CAMPBELL, KY	17225	17075	17284	17467	17764	18042	18652	19315	19766	20266
21039	CARLISLE, KY	15836	16081	16114	15785	16473	16194	17026	16664	16806	17151
21041	CARROLL, KY	14735	15045	15524	15455	16160	16086	16390	17042	16863	17255
21043	CARTER, KY	11806	11050	12158	12070	12338	12106	12326	13285	13870	13884
21045	CASEY, KY	10869	11075	11460	11128	11450	11296	11518	12447	12608	12811
21047	CHRISTIAN, KY	11907	12331	12880	12882	12818	12760	13032	13108	13288	13418
21049	CLARK, KY	16385	16512	16810	16871	17246	17766	18271	19113	19325	19584
21051	CLAY, KY	9842	10237	10656	10714	10899	11201	11347	11521	12097	12292
21053	CLINTON, KY	9868	10345	10822	11024	10794	11006	11340	12097	12615	12795
21055	CRITTENDEN, KY	12915	12708	13202	13392	13821	13486	13863	13917	13822	13983
21057	CUMBERLAND, KY	10515	10938	11459	11286	11332	10986	11109	11976	12222	12484
21059	DAVIESS, KY	16694	16654	16943	17086	17559	17717	18102	18798	19636	20008
21061	EDMONSON, KY	10303	10415	10895	10963	11125	11090	11446	11515	12291	12473
21063	ELLIOTT, KY	8826	8964	9822	9113	9113	8459	8784	9858	10162	10345
21065	ESTILL, KY	10975	10852	11299	11167	11436	11778	12152	13025	13800	13842
21067	FAYETTE, KY	21910	21719	21062	22171	22189	23308	23652	25062	25044	26426
21069	FLEMING, KY	12259	12529	13508	13143	12835	12362	12880	13420	13351	13540
21071	FLOYD, KY	12441	12437	12910	12913	12836	13145	13222	13666	14155	14380
21073	FRANKLIN, KY	18355	18550	18833	18884	19258	19794	20306	21256	21833	22152
21075	FULTON, KY	14896	14804	16119	16732	17318	17709	17821	18186	18886	19058
21077	GALLATIN, KY	12782	13008	13262	13274	13608	13875	14018	14519	14637	16072
21079	GARRARD, KY	14305	13608	14099	14028	13814	13412	13670	14495	14844	14651
21081	GRANT, KY	13535	14052	14109	14162	14445	14482	14722	15510	16044	16305
21083	GRAVES, KY	14669	14845	15084	15670	15868	16299	16989	17764	17227	17969
21085	GRAYSON, KY	13139	13315	12727	12378	12578	13694	13393	13597	14062	14902
21087	GREEN, KY	12253	12636	12910	12767	12804	12477	12211	12800	13249	13459
21089	GREENUP, KY	15309	14570	15323	14946	15151	15339	15787	16371	16808	17190
21091	HANCOCK, KY	17467	17023	17631	17370	17947	17592	18325	19424	19317	19596
21093	HARDIN, KY	14421	14690	14856	15058	14932	15191	15837	16334	16638	16871
21095	HARLAN, KY	11960	11801	12208	11943	11827	11638	11814	12245	12690	12798
21097	HARRISON, KY	14747	14990	15066	15145	15282	15290	15283	16545	16730	16978
21099	HART, KY	11699	12233	12363	12322	12592	12278	12604	13261	13464	13710
21101	HENDERSON, KY	16679	16958	17382	17537	18415	18395	18835	19736	20396	20814
21103	HENRY, KY	15300	14992	15385	15366	15714	16045	16326	16060	16008	16289
21105	HICKMAN, KY	13995	13850	15255	15304	16651	16615	16886	16592	16627	16866
21107	HOPKINS, KY	16765	16258	16318	16292	16438	16278	16761	17207	17961	18230
21109	JACKSON, KY	9184	9696	10036	10222	10464	10573	11102	11745	11897	12017
21111	JEFFERSON, KY	21135	21114	21796	22064	22448	23034	23552	24194	25072	25534
21113	JESSAMINE, KY	15802	15497	15564	15619	15897	16440	17066	17623	18254	18686
21115	JOHNSON, KY	12339	12392	12699	12794	12993	13378	13627	13839	14069	14666
21117	KENTON, KY	18674	18616	19097	19192	19721	20286	21141	22226	22717	23203
21119	KNOTT, KY	10661	10606	10653	10674	10794	11118	11446	12086	12749	12948
21121	KNOX, KY	10455	10574	10960	11167	10906	11114	11354	11731	12065	12251
21123	LARUE, KY	15900	15951	16300	15726	15731	15741	16055	16265	17084	17636
21125	LAUREL, KY	13310	13361	13837	13544	13690	13684	14186	14735	15250	15884
21127	LAWRENCE, KY	11154	11144	11134	11211	11269	11358	11611	11966	12026	12183
21129	LEE, KY	10072	9820	10030	10286	10807	10726	11062	11449	11691	11872
21131	LESLIE, KY	10398	10603	11472	11844	12036	12342	12746	13026	13472	13719
21133	LETCHER, KY	11817	11787	11668	11725	11596	11808	11997	12504	12986	13146
21135	LEWIS, KY	9816	10061	10566	10442	10420	10615	10953	11231	10898	11119
21137	LINCOLN, KY	11618	11973	12761	12666	12884	12947	13137	14113	14082	14353
21139	LIVINGSTON, KY	16040	16630	16095	16759	16776	17302	18119	18521	19095	19397
21141	LOGAN, KY	13622	13666	14811	14740	15748	16420	16992	16113	16411	16638
21143	LYON, KY	13130	12086	12256	11831	12030	12245	12729	13057	13320	13658
21145	MCCRACKEN, KY	18643	18886	19236	19032	19858	20511	21013	21673	22861	23020
21147	MCCREARY, KY	8393	9127	9572	9747	10086	10068	10179	10626	10941	11125
21149	MCLEAN, KY	13897	13526	14052	13852	14467	14153	15236	15506	15743	16071
21151	MADISON, KY	14084	14182	14635	14900	14886	15246	15737	16322	16887	17303
21153	MAGOFFIN, KY	9214	9825	10132	9913	10124	10345	10295	10597	11249	11486
21155	MARION, KY	13233	13300	13872	13557	13871	13980	14351	15325	15490	15840
21157	MARSHALL, KY	16215	16282	16949	16656	17286	17946	18056	18170	18632	18754
21159	MARTIN, KY	12603	12527	12942	12833	12706	13011	13882	13406	14239	14366
21161	MASON, KY	16121	14771	16187	16062	16614	16540	16909	16664	17566	17971
21163	MEADE, KY	13146	15030	13924	13356	13388	13164	13297	13537	13955	14159
21165	MENIFEE, KY	9812	9872	10236	9946	10425	10885	11090	11552	11380	11543
21167	MERCER, KY	16447	16517	16025	16306	16788	16384	16772	17783	18282	18690
21169	METCALFE, KY	11680	11709	12139	12022	12378	12298	12689	13316	12806	13180
21171	MONROE, KY	12772	13056	13564	13992	14362	14704	15041	15913	16276	16506
21173	MONTGOMERY, KY	14049	13936	14399	14071	14402	14635	15016	16986	17377	17689
21175	MORGAN, KY	9641	9525	9386	9141	9171	9246	9689	10433	10759	10936
21177	MUHLENBERG, KY	13898	13402	13296	13137	13561	13594	13843	14216	14666	14906
21179	NELSON, KY	16743	16670	16030	16322	16835	16648	17277	18066	18492	18673
21181	NICHOLAS, KY	13981	13234	13386	13542	12962	12789	12999	13915	14430	14674
21183	OHIO, KY	12390	12177	12434	12300	12569	12711	13365	14206	14084	14656
21185	OLDHAM, KY	24821	23704	23131	23225	23894	24831	26281	26297	26332	26750
21187	OWEN, KY	12801	12721	13324	13326	13540	13444	13742	14634	14279	14850
21189	OWSLEY, KY	8674	8827	9315	9359	9480	9737	9820	10762	11298	11467
21191	PENDLETON, KY	13165	13125	13330	13396	13444	13563	13660	14601	14465	14680
21193	PERRY, KY	12962	12750	13065	13324	13301	13371	13815	14320	14715	14952
21195	PIKE, KY	14300	14136	14152	14199	14338	14619	14861	15372	16183	16445
21197	POWELL, KY	10646	10774	10971	10896	11088	11503	11782	12088	12619	12847
21199	PULASKI, KY	13772	13874	14152	14082	14241	14410	14784	15626	16103	16415
21201	ROBERTSON, KY	11508	11912	12588	13114	12991	12296	13066	14602	13886	14073
21203	ROCKCASTLE, KY	10649	10954	11179	11347	11523	11798	11987	12641	13009	13274
21205	ROWAN, KY	10623	11136	11197	11295	11347	11701	11862	12312	12686	12868
21207	RUSSELL, KY	12834	12889	13311	13189	13206	12918	13038	13627	13832	14013
21209	SCOTT, KY	17938	18532	19088	19396	19097	19151	19675	20084	20491	20961
21211	SHELBY, KY	19381	19469	19509	19212	19229	19236	19752	20385	20572	20871
21213	SIMPSON, KY	14477	14352	14980	15286	15409	15196	15563	16000	16053	16504
21215	SPENCER, KY	14778	15159	15447	15373	14669	13645	13360	13530	13466	13763
21217	TAYLOR, KY	14206	14238	14915	14967	14833	14702	15068	15502	15796	16028
21219	TODD, KY	13089	12691	14216	14163	14836	14931	16483	16730	16313	15602
21221	TRIGG, KY	14284	14476	14688	14824	14832	14690	15139	15263	15044	15160
21223	TRIMBLE, KY	13540	13213	13597	13075	13642	13142	12782	13826	13390	13560
21225	UNION, KY	17890	17350	18163	17137	17230	16244	16885	16026	17412	17786
21227	WARREN, KY	16515	16658	17369	17606	18177	18630	19230	19901	20346	20682
21229	WASHINGTON, KY	13842	13880	14444	14857	14408	14638	14804	15276	15958	16267
21231	WAYNE, KY	10039	10465	10975	11154	11164	11131	11422	12096	12088	12277
21233	WEBSTER, KY	15725	15631	16123	15584	16201	15509	16097	16016	17574	18404
21235	WHITLEY, KY	12166	12386	12528	12518	12486	12866	12893	13260	13504	13660
21237	WOLFE, KY	9987	10129	10981	10746	10582	10686	10806	11447	11734	11991
21239	WOODFORD, KY	23071	22087	22693	22746	23681	23821	23649	24972	24103	24486

TOTAL RETAIL SALES
(IN MILLIONS OF 1992 DOLLARS)

COUNTY	NAME	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
21000	KENTUCKY	25016.03	24446.65	25257.79	26401.22	27756.97	28454.45	29208.02	29757.12	30654.35	31568.95
21001	ADAIR, KY	56.822	55.762	57.835	60.572	63.826	65.988	67.945	69.055	70.953	72.762
21003	ALLEN, KY	60.085	57.6	58.25	60.984	64.688	67.038	69.035	71.096	75.338	77.309
21005	ANDERSON, KY	88.729	87.619	80.172	74.294	72.604	85.214	87.766	90.517	96.207	96.582
21007	BALLARD, KY	45.498	40.632	39.64	41.287	43.532	45.073	46.088	47.288	49.562	50.46
21009	BARREN, KY	248.17	248.182	260.698	273.467	285.597	296.34	306.455	315.034	326.572	334.409
21011	BATH, KY	26.856	27.181	29.282	30.684	32.111	32.911	33.536	34.697	36.526	37.27
21013	BELL, KY	216.713	204.624	208.762	211.012	219.236	220.739	223.011	223.069	225.006	229.786
21015	BOONE, KY	889.795	899.889	961.776	1033.486	1111.161	1172.539	1244.864	1316.495	1421.316	1475.44
21017	BOURBON, KY	107.085	106.616	111.424	115.149	119.144	121.448	123.586	126.143	130.302	132.647
21019	BOYD, KY	517.306	513.078	532.994	549.766	569.089	577.756	586.577	589.962	603.385	611.05
21021	BOYLE, KY	227.924	218.422	223.213	233.490	245.936	251.821	259.222	264.154	273.373	279.322
21023	BRACKEN, KY	14.045	13.981	14.661	15.365	16.015	16.38	16.777	17.119	17.999	18.416
21025	BREATHITT, KY	85.963	78.8	81.858	85.736	89.723	91.986	94.497	95.761	99.076	101.001
21027	BRECKINRIDGE, KY	64.73	62.346	63.842	65.917	68.601	70.533	72.736	75.468	78.641	80.278
21029	BULLITT, KY	136.571	138.191	151.432	163.132	175.334	182.545	189.725	195.24	205.793	212.406
21031	BUTLER, KY	27.35	27.2	28.546	29.646	31.256	31.972	32.821	33.406	34.975	35.572
21033	CALDWELL, KY	99.884	96.058	96.428	98.925	104.185	106.402	109.266	111.061	114.362	116.376
21035	CALLOWAY, KY	239.736	238	247.878	259.415	273.636	280.731	287.246	296.582	308.411	318.043
21037	CAMPBELL, KY	464.384	441.628	444.533	464.608	485.492	499.156	510.106	518.334	534.073	545.154
21039	CARLISLE, KY	16.133	15.958	15.739	16.419	17.076	17.868	17.771	18.252	18.609	18.943
21041	CARROLL, KY	71.145	73.636	79.084	82.073	85.665	88.16	88.573	90.413	93.42	95.663
21043	CARTER, KY	117.69	119.727	127.464	134.156	140.849	145.027	148.898	153.504	159.801	163.84
21045	CASEY, KY	40.188	39.478	41.469	43.32	44.858	45.858	46.803	47.328	49.871	50.818
21047	CHRISTIAN, KY	375.994	347.674	363.366	367.386	382.17	381.461	397.994	425.697	432.853	441.211
21049	CLARK, KY	215.509	208.04	212.587	222.057	232.247	238.506	249.793	253.655	264	270.171
21051	CLAY, KY	93.427	89.642	91.383	95.797	101.074	103.946	104.61	105.225	109.694	112.089
21053	CLINTON, KY	35.412	35.389	36.999	38.629	40.21	41.096	41.761	42.523	43.997	44.813
21055	CRITTENDEN, KY	26.606	25.308	26.372	26.67	27.74	28.38	28.745	29.362	30.586	31.136
21057	CUMBERLAND, KY	28.377	29.766	30.619	31.984	33.514	34.71	35.481	35.459	36.32	36.861
21059	DAVIESS, KY	686.932	661.163	673.356	702.264	737.084	753.384	770.148	782.442	807.754	824.688
21061	EDMONSON, KY	16.337	16.182	16.661	17.436	18.766	19.156	20.13	20.581	21.573	21.981
21063	ELLIOTT, KY	11.029	10.58	10.575	11.023	11.397	11.547	11.854	11.939	12.436	12.62
21065	ESTILL, KY	47.444	43.4	41.821	43.707	45.884	47.18	47.874	48.311	50.131	51.211
21067	FAYETTE, KY	2468.848	2384.174	2457.327	2578.900	2709.86	2767.873	2807.725	2878.338	2989.88	3077.238
21069	FLEMING, KY	54.122	58.931	58.979	61.69	64.362	67.001	68.919	70.085	73.56	75.044
21071	FLOYD, KY	223.337	216.128	219.545	229.068	237.645	241.52	244.45	245.550	253.206	258.609
21073	FRANKLIN, KY	326.606	318.075	328.151	342.994	359.427	369.452	379.3	382.973	396.623	406.318
21075	FULTON, KY	58.064	55.063	55.432	54.37	54.322	54.682	55.426	58.919	60.013	60.798
21077	GALLATIN, KY	12.485	12.789	12.943	13.751	14.895	15.464	16.269	17.538	18.174	19.001
21079	GARRARD, KY	29.564	29.017	29.691	31.16	33.332	34.704	36.122	37.766	39.641	40.515
21081	GRANT, KY	106.751	111.272	121.092	129.168	139.066	147.196	154.26	160.836	170.226	175.199
21083	GRAVES, KY	218.464	214.526	225.114	235.156	247.696	254.308	262.913	268.522	276.746	282.897
21085	GRAYSON, KY	96.161	97.899	103.66	110.156	116.14	119.071	122.434	128.062	132.73	136.3
21087	GREEN, KY	27.614	26.91	27.653	28.73	29.807	30.522	31.641	32.024	33.258	33.827
21089	GREENUP, KY	103.365	101.1	104.687	108.538	112.963	114.429	117.379	118.762	121.886	123.591
21091	HANCOCK, KY	17.386	16.584	16.769	17.67	18.712	19.86	20.904	21.448	22.315	22.719
21093	HARDIN, KY	729.037	689.775	698.822	757.314	807.845	820.422	826.948	845.197	822.789	842.305
21095	HARLAN, KY	164.632	157.301	157.718	163.084	169.87	172.354	171.87	174.016	177.32	179.937
21097	HARRISON, KY	81.469	80.542	84.016	87.536	91.758	94.066	97.109	99.445	103.853	105.906
21099	HART, KY	56.349	55.107	57.791	60.582	64.407	65.123	67.984	69.846	72.786	74.381
21101	HENDERSON, KY	333.663	321.741	330.245	344.287	355.667	366.465	374.077	380.045	390.871	399.776
21103	HENRY, KY	59.967	56.693	60.729	64.071	67.361	70.122	73.444	75.116	77.676	79.549
21105	HICKMAN, KY	11.134	10.642	11.001	11.309	11.496	11.58	11.726	11.556	12.121	12.304
21107	HOPKINS, KY	316.224	307.587	312.768	325.043	336.872	344.862	350.612	353.307	365.164	371.611
21109	JACKSON, KY	17.598	17.642	18.092	19.711	20.958	21.502	22.17	22.468	23.304	23.671
21111	JEFFERSON, KY	5903.076	5644.777	5775.193	5951.168	6246.614	6362.56	6464.5	6560.681	6768.76	6886.596
21113	JESSAMINE, KY	181.557	185.287	199.622	211.533	223.866	231.934	244.967	252.68	264.037	275.009
21115	JOHNSON, KY	172.469	176.318	190.608	200.171	207.9	213.012	218.168	220.646	226.873	232.497
21117	KENTON, KY	834.109	800.112	811.944	847.866	884.6	902.866	922.179	938.958	971.361	994.579
21119	KNOTT, KY	43.47	42.586	43.766	45.164	47.486	48.444	48.918	49.049	50.884	51.721
21121	KNOX, KY	147.245	142.855	145.026	150.358	160.111	163.911	165.051	170.136	177.727	182.425
21123	LARUE, KY	35.663	34.272	35.107	37.107	39.244	40.597	41.799	42.762	44.676	45.679
21125	LAUREL, KY	263.395	265.896	282.895	300.55	315.115	326.926	342.845	353.91	369.856	380.946
21127	LAWRENCE, KY	60.697	61.819	67.053	69.763	74.168	76.684	78.012	79.616	83.401	85.132
21129	LEE, KY	27.444	27.527	27.884	28.619	29.468	30.366	31.171	31.864	33.07	33.68
21131	LESLIE, KY	30.78	31.322	33.645	34.678	35.406	36.511	37.011	37.563	38.855	39.707
21133	LETCHER, KY	104.161	100.334	101.253	104.516	109.088	110.686	112.051	113.098	114.719	117.158
21135	LEWIS, KY	27.248	26.626	27.876	28.999	30.39	31.135	32.137	32.682	33.732	34.451
21137	LINCOLN, KY	54.372	52.904	54.392	57.572	60.6	62.47	64.66	66.296	69.383	70.996
21139	LIVINGSTON, KY	21.638	21.166	21.826	22.981	23.769	24.438	24.744	25.188	26.256	26.841
21141	LOGAN, KY	108.762	105.158	109.969	115.154	120.633	124.217	127.502	130.539	134.499	137.398
21143	LYON, KY	28.506	30.549	41.297	44.214	46.091	45.998	50.811	52.262	54.155	55.095
21145	MCCRACKEN, KY	708.822	685.278	717.65	745.142	769.916	796.615	816.341	824.607	846.999	864.561
21147	MCCREARY, KY	40.411	41.191	44.009	46.426	48.623	50.536	51.468	52.172	53.56	55.431
21149	MCLEAN, KY	18.891	17.78	17.901	18.366	19.258	19.626	20.137	20.298	21.221	21.6
21151	MADISON, KY	394.319	392.902	413.36	436.262	463.594	479.714	498.683	514.03	539.174	552.169
21153	MAGOFFIN, KY	37.379	37.837	40.144	42.01	44.186	45.204	46.336	47.047	48.538	49.460
21155	MARION, KY	64.8	63.772	65.367	68.117	70.545	72.321	74.822	75.829	78.136	79.611
21157	MARSHALL, KY	145.699	142.408	145.466	154.03	162.201	168.209	173.742	177.02	186.387	190.161
21159	MARTIN, KY	56.864	52.706	54.726	56.373	58.041	59.925	59.929	58.7	59.968	61.21
21161	MASON, KY	146.753	146.429	156.151	162.229	168.529	171.266	171.5	173.899	180.64	184.175
21163	MEADE, KY	73.606	67.701	68.143	74.525	80.606	84.665	86.732	89.668	94.952	97.590
21165	MENIFEE, KY	11.086	10.811	10.814	11.038	11.468	11.912	12.373	12.856	13.536	13.886
21167	MERCER, KY	86.498	83.719	86.107	90.582	95.088	96.718	100.408	102.086	106.528	109.247
21169	METCALFE, KY	25.165	23.111	22.286	22.563	24.601	25.275	25.909	26.542	27.618	28.223
21171	MONROE, KY	48.689	48.747	51.562	54.101	56.578	57.552	56.897	57.15	58.871	59.734
21173	MONTGOMERY, KY	151.073	147.405	152.912	160.862	170.198	175.394	178.096	183.029	190.14	194.815
21175	MORGAN, KY	41.463	38.149	36.415	37.819	39.721	40.456	41.512	42.287	43.864	45.182
21177	MUHLENBERG, KY	170.306	167.759	173.026	178.851	186.028	192.946	197.861	201.217	208.821	213.849
21179	NELSON, KY	163.977	166.076	175.644	186.84	198.643	206.671	216.896	224.847	236.663	243.802
21181	NICHOLAS, KY	12.92	12.981	13.815	14.406	15.033	15.489	15.083	16.106	16.523	16.848
21183	OHIO, KY	97.364	92.674	92.901	95.696	101.35	103.271	105.298	106.893	112.442	115.096
21185	OLDHAM, KY	148.065	145.373	148.026	160.667	174.265	182.598	192.245	199.263	210.051	219.163
21187	OWEN, KY	33.951	33.777	34.84	35.218	38.127	38.604	40.917	42.275	44.313	45.183
21189	OWSLEY, KY	7.236	7.236	7.546	7.962	8.492	8.583	8.911	8.87	9.168	9.352
21191	PENDLETON, KY	34.872	34.146	36.034	36.923	39.332	40.786	42.55	43.476	44.319	45.518
21193	PERRY, KY	217.054	221.19	236.304	243.262	255.178	260.486	265.115	267.926	275.569	281.361
21195	PIKE, KY	492.726	492.133	514.866	534.184	557.773	568.523	577.66	578.964	593.443	606.312
21197	POWELL, KY	37.497	37.7	40.691	42.604	44.757	45.694	47.38	48.633	51.627	53.167
21199	PULASKI, KY	380.663	372.548	386.476	405.997	432.516	449.25	462.76	473.645	494.261	507.342
21201	ROBERTSON, KY	1.93	2.061	2.286	2.376	2.506	2.577	2.609	2.6	2.724	2.77
21203	ROCKCASTLE, KY	41.965	41.603	43.476	45.707	47.798	49.868	50.58	51.613	53.907	55.269
21205	ROWAN, KY	142.661	143.602	152.358	159.478	165.025	171.366	176.741	181.291	188.362	193.376
21207	RUSSELL, KY	75.301	77.797	83.679	88.304	93.140	95.067	100.354	101.157	105.775	108.092
21209	SCOTT, KY	158.705	161.771	183.512	195.462	210.418	221.263	232.669	242.078	261.251	270.288
21211	SHELBY, KY	142.081	140.688	147.068	155.43	165.063	172.603	179.773	188.11	196.9	202.261
21213	SIMPSON, KY	118.181	120.147	131.677	136.731	144.517	149.024	152.173	155.092	162.043	165.506
21215	SPENCER, KY	15.066	14.69	15.059	16.062	17.806	19.153	20.687	22.195	24.144	24.746
21217	TAYLOR, KY	151.106	152.536	162.718	171.014	180.66	185.726	189.823	194.127	200.406	204.899
21219	TODD, KY	24.023	24.045	25.552	26.671	27.978	28.244	28.944	29.266	30.326	30.744
21221	TRIGG, KY	36.13	36.029	36.671	39.164	40.763	42.521	44.773	46.236	48.942	50.068
21223	TRIMBLE, KY	9.251	10.145	11.626	12.596	13.376	13.991	14.967	15.37	16.45	16.819
21225	UNION, KY	80.512	78.008	79.115	81.863	85.913	87.464	89.258	90.626	93.691	95.456
21227	WARREN, KY	769.797	739.236	761.484	807.151	853.566	881.890	912.042	936.306	973.108	1002.092
21229	WASHINGTON, KY	34.083	34.826	37.321	38.306	40.439	41.614	42.934	43.303	45.301	46.15
21231	WAYNE, KY	68.185	67.992	72.948	74.96	79.916	83.05	85.065	86.216	90.622	92.684
21233	WEBSTER, KY	60.652	56.784	55.857	57.629	59.475	60.097	61.573	62.423	64.130	65.19
21235	WHITLEY, KY	270.235	271.153	288.961	308.609	320.48	326.331	336.302	343.292	357.497	364.9
21237	WOLFE, KY	16.996	18.275	20.17	21.146	22.426	23.2	24.112	24.315	25.204	25.727
21239	WOODFORD, KY	106.759	104.174	108.304	112.437	119.114	123.268	128.290	131.846	138.926	143.074

TOTAL EARNINGS
(IN MILLIONS OF 1992 DOLLARS)

COUNTY	NAME	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
21000	KENTUCKY	42973.4	41829.81	44160.73	45121.95	46346.68	46958.57	48175.62	50638.76	52707.66	54355.74
21001	ADAIR, KY	94.026	97.95	105.53	107.443	107.267	105.383	106.547	106.742	111.336	115.278
21003	ALLEN, KY	96.157	99.803	107.325	116.773	132.766	126.955	131.2	136.743	140.105	144.915
21005	ANDERSON, KY	86.058	88.351	92.274	97.703	102.878	105.468	110.042	118.985	122.324	124.517
21007	BALLARD, KY	84.224	85.428	92.499	89.738	96.429	96.055	109.801	111.346	109.406	112.462
21009	BARREN, KY	383.556	388.015	416.845	439.817	460.513	474.169	497.546	502.677	531.772	552.155
21011	BATH, KY	41.94	43.066	45.661	46.072	46.328	43.978	44.555	51.862	54.934	55.578
21013	BELL, KY	240.822	231.283	234.473	238.632	236.58	240.482	236.447	243.936	268.406	264.052
21015	BOONE, KY	1078.087	1131.741	1261.978	1380.192	1462.938	1538.661	1686.938	1866.088	2007.759	2120.288
21017	BOURBON, KY	169.607	174.97	188.441	190.08	189.904	192.171	202.166	219.878	205.062	211.248
21019	BOYD, KY	907.425	881.882	953.278	927.095	965.875	897.411	892.964	917.715	969.687	979.01
21021	BOYLE, KY	336.001	350.454	365.676	361.901	368.75	386.376	374.955	404.308	425.621	437.863
21023	BRACKEN, KY	35.653	37.603	34.117	33.301	34.317	31.902	35.716	41.894	36.888	39.944
21025	BREATHITT, KY	108.072	91.062	100.122	115.276	115.446	91.496	86.058	82.228	87.846	90.86
21027	BRECKINRIDGE, KY	71.759	72.889	81.073	76.011	76.306	72.186	75.288	86.348	85.615	87.308
21029	BULLITT, KY	186.053	189.603	206.134	226.922	244.518	251.407	261.234	280.247	294.599	304.736
21031	BUTLER, KY	74.863	72.988	79.584	76.791	83.073	83.344	85.068	87.383	84.775	86.137
21033	CALDWELL, KY	93.103	79.442	93.177	93.807	99.681	97.54	94.584	97.386	97.787	99.684
21035	CALLOWAY, KY	304.028	322.44	342.108	347.571	367.635	388.548	407.037	415.006	435.196	449.583
21037	CAMPBELL, KY	592.95	588.87	606.95	670.938	673.139	686.575	701.178	750.744	768.171	798.323
21039	CARLISLE, KY	27.472	26.361	27.871	27.41	29.343	35.782	30.571	27.997	29.884	30.536
21041	CARROLL, KY	130.313	150.355	151.53	165.695	174.626	181.104	182.071	181.044	181.096	186.626
21043	CARTER, KY	105.336	109.657	107.811	109.472	106.895	109.648	106.652	120.542	126.542	130.136
21045	CASEY, KY	76.77	80.409	84.211	80.078	82.44	79.258	77.798	87.107	89.388	91.688
21047	CHRISTIAN, KY	1010.662	1042.104	1200.384	1283.433	1272.696	1321.05	1362.35	1374.008	1401.405	1427.885
21049	CLARK, KY	284.95	286.455	293.82	293.363	300.249	310.815	321.402	358.096	364.584	375.493
21051	CLAY, KY	93.145	97.354	107.021	116.508	113.684	121.563	114.14	121.154	124.536	127.945
21053	CLINTON, KY	41.949	43.69	45.902	48.091	46.791	46.51	45.628	49.66	54.275	55.308
21055	CRITTENDEN, KY	46.698	46.906	51.012	55.824	57.757	58.49	60.115	68.282	68.664	80.634
21057	CUMBERLAND, KY	35.159	36.336	38.075	35.029	36.078	32.888	31.273	35.517	36.48	37.754
21059	DAVIESS, KY	970.99	964.074	1001.692	1035.056	1077.391	1084.515	1097.175	1140.743	1213.85	1249.827
21061	EDMONSON, KY	38.182	37.558	36.463	37.717	35.69	33.49	32.381	34.052	37.332	36.788
21063	ELLIOTT, KY	14.129	15.099	15.289	15.023	15.34	13.97	14.065	15.096	19.026	20.386
21065	ESTILL, KY	57.949	58.419	61.44	57.287	58.088	55.604	59.401	64.164	63.743	71.12
21067	FAYETTE, KY	4560.796	4450.606	4600.082	4665.772	4685.191	4842.455	5070.686	5284.157	5515.088	5804.476
21069	FLEMING, KY	77.344	79.261	89.181	85.236	84.853	80.824	84.512	87.78	87.498	89.452
21071	FLOYD, KY	338.779	324.924	341.569	343.046	343.417	330.165	334.77	333.555	352.694	363.165
21073	FRANKLIN, KY	753.566	776.62	794.912	797.74	822.383	840.871	860.366	895.906	932.559	957.5
21075	FULTON, KY	71.249	71.186	81.895	83.961	87.732	90.845	95.096	96.165	99.006	103.679
21077	GALLATIN, KY	21.664	22.506	24.11	23.884	30.477	42.361	45.621	54.079	59.5	61.619
21079	GARRARD, KY	61.762	61.794	66.488	65.869	64.316	60.544	69.796	70.406	70.612	72.366
21081	GRANT, KY	85.005	86.051	86.074	78.02	85.325	95.408	100.097	111.316	115.719	122.664
21083	GRAVES, KY	301.221	299.028	308.316	309.124	345.83	345.858	366.421	363.26	362.107	370.571
21085	GRAYSON, KY	133.516	135.018	141.269	142.879	145.917	150.597	159.848	171.045	180.06	185.624
21087	GREEN, KY	53.439	53.702	56.305	54.588	55.791	47.361	41.761	45.242	47.863	45.968
21089	GREENUP, KY	368.466	338.017	345.274	295.133	284.47	277.658	288.645	294.143	305.461	311.56
21091	HANCOCK, KY	166.175	172.121	174.089	179.908	182.596	181.936	190.295	218.580	219.999	224.96
21093	HARDIN, KY	1174.952	1173.227	1258.821	1236.881	1229.57	1224.673	1252.646	1291.847	1338.590	1369.324
21095	HARLAN, KY	300.989	279.808	275.058	280.032	268.302	245.768	234.08	238.527	252.618	253.658
21097	HARRISON, KY	139.158	140.251	143.201	141.288	142.493	137.912	134.297	149.066	152.701	166.375
21099	HART, KY	76.442	80.519	86.973	89.863	94.06	86.151	89.464	95.507	97.759	110.992
21101	HENDERSON, KY	500.632	481.589	523.154	540.131	553.54	571.235	574.579	621.864	647.545	665.041
21103	HENRY, KY	76.92	81.814	86.105	89.734	90.291	82.161	81.617	87.817	89.992	92.635
21105	HICKMAN, KY	33.506	30.862	37.106	35.663	36.56	32.685	40.799	36.872	36.282	39.595
21107	HOPKINS, KY	544.086	524.375	510.273	505.122	500.832	505.278	521.277	555.763	566.707	560.462
21109	JACKSON, KY	38.544	42.777	43.818	43.606	45.889	44.486	63.867	65.386	66.686	68.765
21111	JEFFERSON, KY	11561.02	11519.54	12067.93	12451.66	12752.55	13046.02	13028.96	13718.3	14421.79	14803.42
21113	JESSAMINE, KY	231.774	234.378	238.087	240.72	251.666	275.862	306.21	337.366	368.096	378.064
21115	JOHNSON, KY	163.726	161.49	162.96	167.501	173.746	175.361	170.241	171.567	181.413	186.827
21117	KENTON, KY	1237.261	1249.526	1296.438	1312.45	1418.202	1484.563	1545.575	1610.394	1664.099	1711.506
21119	KNOTT, KY	91.639	86.379	87.024	90.173	87.22	106.599	112.666	118.273	129.186	132.618
21121	KNOX, KY	150.764	162.345	170.021	177.747	176.23	175.486	179.101	180.053	184.03	189.093
21123	LARUE, KY	58.366	57.141	58.987	59.045	61.087	59.808	61.05	64.054	71.739	73.886
21125	LAUREL, KY	384.332	405.632	421.326	436.778	445.309	460.586	475.935	508.856	530.227	557.076
21127	LAWRENCE, KY	66.385	64.668	65.551	66.646	69.94	70.128	74.075	76.149	77.492	79.11
21129	LEE, KY	36.845	34.883	36.331	35.918	37.087	37.246	37.306	39.863	41.387	42.501
21131	LESLIE, KY	90.04	90.033	96.947	107.228	110.927	111.402	116.611	117.497	121.786	125.404
21133	LETCHER, KY	188.323	183.086	163.114	163.214	157.67	154.575	150.616	157.884	166.39	169.474
21135	LEWIS, KY	53.956	56.427	57.656	66.286	64.672	55.036	54.367	69.949	56.622	59.06
21137	LINCOLN, KY	70.962	74.475	84.963	85.136	87.513	86.591	92.407	109.061	110.728	114.46
21139	LIVINGSTON, KY	48.689	48.888	48.569	51.972	51.01	63.608	66.141	60.197	73.913	75.83
21141	LOGAN, KY	224.307	229.089	256.086	259.838	274.996	273.961	284.422	285.159	291.079	296.966
21143	LYON, KY	36.72	40.069	44.229	45.363	44.246	44.44	47.065	47.885	49.525	51.641
21145	MCCRACKEN, KY	865.415	880.397	951.907	972.574	980.748	1022.158	1052.984	1097.96	1156.252	1181.563
21147	MCCREARY, KY	48.089	53.168	56.616	64.896	69.807	70.458	69.904	73.249	77.572	80.179
21149	MCLEAN, KY	46.308	40.608	49.37	47.084	51.689	46.506	54.066	52.751	54.468	55.807
21151	MADISON, KY	512.047	517.232	564.074	589.501	593.054	600.293	613.815	651.746	670.287	695.961
21153	MAGOFFIN, KY	48.849	51.45	50.11	50.697	55.651	59.079	59.413	61.647	66.486	69.872
21155	MARION, KY	109.44	106.404	114.893	108.312	107.661	109.217	112.906	126.836	128.512	132.075
21157	MARSHALL, KY	322.632	324.667	353.037	349.022	375.381	366.448	388.803	381.738	396.242	405.422
21159	MARTIN, KY	137.169	126.072	125.512	122.789	113.745	116.06	101.189	97.68	108.76	110.083
21161	MASON, KY	196.65	200.53	214.281	213.001	225.248	220.936	217.706	230.297	249.605	257.466
21163	MEADE, KY	87.897	89.096	95.001	95.643	97.132	96.904	100.189	104.715	111.373	115.080
21165	MENIFEE, KY	16.006	16.996	20.072	20.428	21.736	22.064	24.68	26.327	24.764	25.271
21167	MERCER, KY	153.804	162.361	177.727	182.227	206.936	182.111	186.296	211.308	222.538	231.481
21169	METCALFE, KY	58.006	59.684	61.963	60.712	61.799	59.286	60.361	66.615	62.757	64.812
21171	MONROE, KY	76.957	81.169	84.678	91.016	90.725	91.393	98.91	94.607	97.271	98.775
21173	MONTGOMERY, KY	164.45	144.981	151.651	144.38	151.045	157.878	177.21	210.926	219.2	226.315
21175	MORGAN, KY	56.45	58.231	63.384	62.67	63.96	63.534	66.869	74.878	79.775	81.374
21177	MUHLENBERG, KY	273.739	249.127	241.469	234.61	245.396	260.772	246.756	254.222	266.267	274.186
21179	NELSON, KY	268.719	260.145	272.545	286.623	302.917	314.145	324.524	344.165	369.312	370.445
21181	NICHOLAS, KY	42.066	44.61	45.131	40.786	41.163	36.014	36.309	41.094	42.69	44.037
21183	OHIO, KY	125.927	129.798	127.137	126.899	135.232	127.397	144.117	160.102	167.944	165.672
21185	OLDHAM, KY	305.465	320.727	278.186	285.256	310.960	301.3	329.184	366.76	392.426	408.381
21187	OWEN, KY	43.26	44.887	47.781	47.178	46.497	42.246	44.577	50.903	49.486	50.952
21189	OWSLEY, KY	12.972	12.861	14.056	13.944	14.497	15.606	15.607	15.556	17.606	18.014
21191	PENDLETON, KY	56.737	56.527	60.764	61.769	59.46	61.614	59.964	66.592	64.977	66.971
21193	PERRY, KY	322.005	306.941	322.507	321.764	323.515	312.002	307.806	322.746	336.664	346.66
21195	PIKE, KY	727.264	714.097	700.281	701.688	711.117	716.933	711.023	731.384	786.991	805.972
21197	POWELL, KY	60.93	63.119	59.232	61.829	67.717	69.136	71.139	74.132	79.607	82.64
21199	PULASKI, KY	464.479	451.446	473.474	484.731	504.221	510.968	524.182	565.784	586.512	616.213
21201	ROBERTSON, KY	7.38	8.449	9.364	10.117	9.422	7.762	8.507	10.968	10.184	10.818
21203	ROCKCASTLE, KY	68.016	68.071	68.017	65.168	71.667	71.655	72.617	76.666	82.868	86.976
21205	ROWAN, KY	161.369	170.735	172.057	174.712	177.804	182.43	185.369	194.473	204.976	210.769
21207	RUSSELL, KY	142.43	131.542	145.462	145.869	140.862	138.237	138.279	140.630	144.236	147.38
21209	SCOTT, KY	399.228	456.712	540.427	635.827	667.628	718.702	763.287	862.601	913.061	960.641
21211	SHELBY, KY	258.821	262.151	268.041	305.203	317.66	318.696	325.725	351.125	365.285	375.627
21213	SIMPSON, KY	186.597	184.554	196.984	203.554	201.315	197.024	197.077	205.557	215.017	225.773
21215	SPENCER, KY	26.869	29.863	33.738	33.862	32.946	30.914	30.674	33.261	37.737	39.188
21217	TAYLOR, KY	238.514	235.985	256.975	263.108	260.012	249.685	253.689	266.341	263.614	268.665
21219	TODD, KY	74.966	70.14	86.531	87.41	94.26	91.86	107.282	107.225	92.971	94.53
21221	TRIGG, KY	72.659	75.118	80.373	81.725	85.029	82.291	89.609	91.066	89.511	90.454
21223	TRIMBLE, KY	48.966	41.035	31.272	26.79	27.825	24.832	27.84	29.401	28.75	29.397
21225	UNION, KY	265.085	271.028	268.226	222.658	240.715	218.332	214.97	196.61	222.06	230.604
21227	WARREN, KY	998.692	986.24	1060.136	1087.009	1155.549	1208.02	1263.896	1338.321	1373.142	1414.546
21229	WASHINGTON, KY	61.22	62.446	68.162	71.832	73.581	72.401	73.826	82.468	83.244	86.475
21231	WAYNE, KY	95.007	96.765	101.482	105.511	107.148	104.681	107.646	117.596	117.963	120.772
21233	WEBSTER, KY	151.683	140.509	152.109	165.67	177.125	149.3	149.271	142.103	160.367	175.409
21235	WHITLEY, KY	277.544	276.896	290.909	292.016	288.445	292.167	287.058	293.862	305.22	310.014
21237	WOLFE, KY	22.866	26.415	26.637	28.366	27.737	29.112	29.836	31.468	33.215	33.919
21239	WOODFORD, KY	300.877	322.958	343.306	352.12	346.462	364.462	365.412	381.986	379.445	392.084

8.5 Appendix E – Traffic Volume (TVS) Estimating Procedure

TVS Estimating Procedure, Historical Estimates

No Actual Data	Functional Classification (FC) or Statewide Average (SW)
One Actual Count	Ratio of Data to Functional Classification or Statewide Average
Two or More Actual Counts	Piecewise estimate from current year to last actual data point. If slope from first actual data point to current year is negative, a ratio of FC or SW is used from most recent actual county to current. If Five or more actual data points are available an exponential fit will be used from the last actual data point to the end of the record. If fewer than five data points are available a ratio to FC or SW to the last actual data point will be used.
Bypass or New Road	If a bypass year or new road year is indicated, estimates will be made from the year indicated to the current year, using only data from that same period. Estimates made before the Bypass year will remain unchanged.

TVS Estimating Procedure, 20-year Estimates

No Actual Data	Same as Historical Estimates
One Through Four Data Points in the Last Twenty Years	Ratio of latest actual data to FC or SW twenty Year Estimate
Five or More Data points in the Last Twenty Years	A linear regression will be used , If the slope is negative, a ratio of latest actual to FC or SW

8.6 Appendix F – Weighted County Level Functional Class Growth Rates

Functional Class 01, Weighted County Level Growth Rates

County Number	County Name	Functional Class	Year	Average ADT	Weighted Average ADT	Predicted Weighted Average ADT	2000 Weighted ADT Growth Rate (%)	Weighted Analysis Regression Constant	Weighted Analysis Regression Slope
5	BARREN	1	2000	32,350	31,013	29,940	1.02	-581,703	305.82
6	BATH	1	2000	18,667	18,663	18,310	2.91	-1,049,093	533.70
8	BOONE	1	2000	44,629	41,781	41,845	4.23	-3,497,897	1,769.87
10	BOYD	1	2000	18,300	17,719	17,932	2.89	-1,017,341	517.64
15	BULLITT	1	2000	56,375	58,114	59,884	2.96	-3,490,880	1,775.38
17	CALDWELL	1	2000	14,750	14,884	14,795	3.97	-1,158,736	586.77
21	CARROLL	1	2000	26,367	25,313	25,581	3.71	-1,872,601	949.09
22	CARTER	1	2000	14,325	14,753	14,956	2.61	-766,714	390.83
24	CHRISTIAN	1	2000	19,533	18,963	17,586	4.58	-1,592,153	804.87
25	CLARK	1	2000	30,050	29,597	30,137	3.25	-1,929,521	979.83
31	EDMONSON	1	2000	29,800	29,800	28,589	1.20	-659,896	344.24
37	FRANKLIN	1	2000	33,100	33,857	34,614	3.41	-2,328,591	1,181.60
39	GALLATIN	1	2000	26,067	27,072	25,950	3.52	-1,800,636	913.29
41	GRANT	1	2000	41,580	39,205	40,774	3.86	-3,104,910	1,572.84
47	HARDIN	1	2000	40,580	41,980	43,176	4.67	-3,988,367	2,015.77
50	HART	1	2000	32,525	32,667	33,385	3.20	-2,102,095	1,067.74
52	HENRY	1	2000	28,467	27,869	28,341	3.17	-1,769,629	898.98
56	JEFFERSON	1	2000	43,600	43,600	44,556	2.36	-2,056,050	1,050.30
59	KENTON	1	2000	44,700	44,700	49,075	4.22	-4,095,168	2,072.12
62	LARUE	1	2000	33,100	33,580	35,141	3.59	-2,488,705	1,261.92
63	LAUREL	1	2000	34,567	35,304	34,909	2.39	-1,636,355	835.63
70	LIVINGSTON	1	2000	25,000	24,644	25,104	4.24	-2,104,237	1,064.67
72	LYON	1	2000	19,225	18,039	18,013	4.00	-1,424,767	721.39
76	MADISON	1	2000	47,320	47,398	49,460	3.44	-3,355,894	1,702.68
79	MARSHALL	1	2000	26,567	26,368	26,532	4.40	-2,309,680	1,168.11
73	MCCRACKEN	1	2000	27,450	28,175	28,560	4.12	-2,327,278	1,177.92
87	MONTGOMERY	1	2000	19,767	20,054	20,781	3.64	-1,490,456	755.62
93	OLDHAM	1	2000	44,920	45,965	45,901	3.90	-3,538,122	1,792.01
102	ROCKCASTLE	1	2000	34,467	35,539	36,341	3.21	-2,295,497	1,165.92
103	ROWAN	1	2000	15,633	14,154	13,840	3.38	-921,796	467.82
105	SCOTT	1	2000	43,717	48,330	47,404	5.62	-5,280,799	2,664.10
106	SHELBY	1	2000	38,520	38,349	39,177	3.13	-2,411,351	1,225.26
107	SIMPSON	1	2000	35,833	36,173	35,196	0.44	-271,831	153.51
111	TRIGG	1	2000	14,500	14,668	14,682	3.94	-1,140,908	577.79
112	TRIMBLE	1	2000	26,800	26,800	27,235	3.79	-2,037,008	1,032.12
114	WARREN	1	2000	41,040	39,830	39,027	1.24	-929,382	484.20
118	WHITLEY	1	2000	30,767	30,461	30,514	2.58	-1,545,423	787.97
120	WOODFORD	1	2000	29,950	28,672	30,386	3.47	-2,080,718	1,055.55

Functional Class 02, Weighted County Level Growth Rates

County Number	County Name	Functional Class	Year	Average ADT	Weighted Average ADT	Predicted Weighted Average ADT	2000 Weighted ADT Growth Rate (%)	Weighted Analysis Regression Constant	Weighted Analysis Regression Slope
1	ADAIR	2	2000	14,041	5,526	5,972	4.31	-509,055	257.51
2	ALLEN	2	2000	5,298	4,952	5,061	3.31	-330,265	167.66
3	ANDERSON	2	2000	12,752	12,644	12,329	3.13	-758,425	385.38
4	BALLARD	2	2000	5,723	5,623	5,508	2.13	-229,315	117.41
5	BARREN	2	2000	6,615	5,519	6,014	4.22	-501,094	253.55
7	BELL	2	2000	15,312	13,037	12,655	2.90	-721,667	367.16
9	BOURBON	2	2000	10,181	10,081	10,130	2.17	-429,411	219.77
10	BOYD	2	2000	11,651	11,131	11,068	0.75	-156,015	83.54
11	BOYLE	2	2000	11,131	10,545	10,545	2.87	-595,341	302.94
12	BRACKEN	2	2000	7,293	7,355	7,311	7.40	-1,074,893	541.10
13	BREATHITT	2	2000	10,353	7,692	7,701	1.95	-292,146	149.92
14	BRECKINRIDGE	2	2000	5,434	4,854	4,888	2.62	-250,951	127.92
16	BUTLER	2	2000	8,492	8,732	8,611	5.21	-888,388	448.50
17	CALDWELL	2	2000	8,850	8,484	9,515	4.58	-862,894	436.20
18	CALLOWAY	2	2000	8,265	8,539	8,748	2.60	-445,577	227.16
19	CAMPBELL	2	2000	9,623	10,121	10,248	6.47	-1,316,182	663.21
20	CARLISLE	2	2000	3,325	2,927	2,950	0.39	-20,245	11.60
22	CARTER	2	2000	4,690	4,361	4,286	4.29	-363,716	184.00
23	CASEY	2	2000	6,154	4,402	4,436	2.55	-221,485	112.96
24	CHRISTIAN	2	2000	9,372	10,541	10,360	3.08	-626,823	318.59
25	CLARK	2	2000	9,928	12,253	11,951	3.12	-734,138	373.04
26	CLAY	2	2000	5,640	6,524	7,627	5.70	-862,059	434.84
27	CLINTON	2	2000	9,579	4,224	4,308	3.07	-259,995	132.15
30	DAVIESS	2	2000	9,283	7,751	8,647	3.46	-590,519	299.58
35	FLEMING	2	2000	3,115	2,991	2,990	2.31	-135,348	69.17
36	FLOYD	2	2000	14,605	15,527	15,579	2.72	-831,499	423.54
37	FRANKLIN	2	2000	18,450	18,053	18,586	3.49	-1,277,216	647.90
38	FULTON	2	2000	5,736	4,791	4,974	4.83	-475,277	240.13
40	GARRARD	2	2000	11,039	10,498	10,543	2.67	-553,425	281.98
42	GRAVES	2	2000	9,578	9,369	8,999	2.69	-474,473	241.74
43	GRAYSON	2	2000	8,893	8,772	9,862	4.26	-830,934	420.40
45	GREENUP	2	2000	8,513	7,680	7,612	1.80	-266,349	136.98
46	HANCOCK	2	2000	9,445	9,810	9,753	3.64	-700,537	355.15
47	HARDIN	2	2000	8,857	12,100	11,826	2.66	-618,016	314.92
48	HARLAN	2	2000	7,140	6,073	6,157	1.55	-184,854	95.51
51	HENDERSON	2	2000	8,836	9,534	10,775	5.16	-1,101,878	556.33
53	HICKMAN	2	2000	4,251	4,539	4,484	4.39	-389,369	196.93
54	HOPKINS	2	2000	14,612	13,613	15,120	6.02	-1,804,955	910.04
56	JEFFERSON	2	2000	23,420	23,916	24,600	1.85	-885,248	454.92
57	JESSAMINE	2	2000	35,267	32,796	33,504	4.21	-2,789,571	1,411.54
58	JOHNSON	2	2000	8,608	8,178	7,753	0.17	-18,645	13.20
60	KNOTT	2	2000	6,402	6,228	6,330	1.23	-148,908	77.62
61	KNOX	2	2000	17,563	16,238	16,316	3.42	-1,098,922	557.62
63	LAUREL	2	2000	8,508	7,860	8,133	2.38	-378,452	193.29
64	LAWRENCE	2	2000	8,857	8,983	8,873	1.11	-188,651	98.76
66	LESLIE	2	2000	5,090	5,065	6,160	3.53	-429,366	217.76
67	LETCHER	2	2000	6,432	5,956	6,305	2.12	-260,713	133.51
68	LEWIS	2	2000	4,594	4,115	4,035	4.51	-359,578	181.81
69	LINCOLN	2	2000	11,713	10,177	9,651	4.00	-762,556	386.10
72	LYON	2	2000	8,130	8,200	9,178	5.02	-912,088	460.63
76	MADISON	2	2000	10,158	10,629	10,774	2.67	-564,847	287.81
77	MAGOFFIN	2	2000	8,109	6,523	6,120	1.40	-165,734	85.93
78	MARION	2	2000	6,770	6,252	6,198	3.03	-369,696	187.95
79	MARSHALL	2	2000	7,629	7,095	7,572	3.49	-520,798	264.19
80	MARTIN	2	2000	7,345	7,172	7,519	0.78	-110,025	58.77
81	MASON	2	2000	7,164	7,632	7,651	5.20	-787,387	397.52
73	MCCRACKEN	2	2000	12,481	11,005	11,102	1.81	-389,883	200.49
74	MCCREARY	2	2000	9,539	7,873	7,944	2.90	-452,447	230.20
82	MEADE	2	2000	11,510	8,761	9,009	2.78	-492,079	250.54
84	MERCER	2	2000	13,425	13,113	12,934	2.40	-608,576	310.76
85	METCALFE	2	2000	4,535	4,528	4,839	3.82	-364,412	184.63
88	MORGAN	2	2000	5,750	5,750	4,963	1.49	-143,158	74.06
89	MUHLENBERG	2	2000	8,990	9,091	10,973	5.02	-1,090,271	550.62
90	NELSON	2	2000	9,483	9,383	9,876	4.75	-928,281	469.08
91	NICHOLAS	2	2000	4,600	4,325	4,367	2.09	-178,185	91.28
92	OHIO	2	2000	7,723	7,356	8,025	4.50	-714,435	361.23
96	PENDLETON	2	2000	7,630	7,630	7,581	5.53	-831,329	419.45
97	PERRY	2	2000	10,268	9,477	9,517	2.37	-442,264	225.89
98	PIKE	2	2000	12,245	10,474	10,426	2.43	-497,078	253.75
99	POWELL	2	2000	11,322	10,529	10,707	2.30	-482,442	246.57
100	PULASKI	2	2000	9,631	7,542	7,652	2.35	-351,647	179.65
101	ROBERTSON	2	2000	3,070	3,070	2,937	1.86	-106,517	54.73
102	ROCKCASTLE	2	2000	8,193	7,307	7,474	3.95	-583,308	295.39
104	RUSSELL	2	2000	6,107	4,231	4,480	2.95	-259,685	132.08
109	TAYLOR	2	2000	7,987	7,478	7,515	3.14	-465,034	236.27
110	TODD	2	2000	6,860	6,860	7,323	-4.28	634,233	-313.45
111	TRIGG	2	2000	4,439	3,752	3,869	2.22	-167,764	85.82
113	UNION	2	2000	6,801	4,918	4,959	1.18	-111,882	58.42
114	WARREN	2	2000	11,001	8,901	9,401	4.30	-798,704	404.05
115	WASHINGTON	2	2000	5,548	5,086	5,727	3.78	-427,115	216.42
117	WEBSTER	2	2000	13,800	14,137	14,505	10.70	-3,089,976	1,552.24
119	WOLFE	2	2000	6,063	5,593	5,656	2.23	-246,346	126.00
120	WOODFORD	2	2000	25,557	20,181	19,163	2.10	-787,072	403.12

Functional Class 06, Weighted County Level Growth Rates

County Number	County Name	Functional Class	Year	Average ADT	Weighted Average ADT	Predicted Weighted Average ADT	2000 Weighted ADT Growth Rate (%)	Weighted Analysis Regression Constant	Weighted Analysis Regression Slope
1	ADAIR	6	2000	7,872	2,324	2,388	0.78	-34,906	18.65
2	ALLEN	6	2000	4,875	4,594	4,569	5.04	-455,619	230.09
3	ANDERSON	6	2000	5,783	5,252	5,167	0.59	-55,739	30.45
4	BALLARD	6	2000	2,644	1,873	1,881	1.21	-43,564	22.72
5	BARREN	6	2000	7,298	6,362	6,344	2.27	-281,628	143.99
6	BATH	6	2000	2,948	2,615	2,580	2.78	-141,083	71.83
9	BOURBON	6	2000	3,163	3,206	3,234	2.65	-167,989	85.61
11	BOYLE	6	2000	4,684	5,231	5,224	2.51	-256,673	130.95
14	BRECKINRIDGE	6	2000	2,491	2,484	2,501	1.91	-92,875	47.69
15	BULLITT	6	2000	12,038	9,501	9,637	2.50	-472,503	241.07
17	CALDWELL	6	2000	3,477	3,421	3,499	3.00	-206,160	104.83
18	CALLOWAY	6	2000	6,238	4,926	5,025	2.59	-254,954	129.99
19	CAMPBELL	6	2000	5,697	6,596	6,617	2.14	-276,020	141.32
20	CARLISLE	6	2000	1,214	1,296	1,296	2.00	-50,440	25.87
22	CARTER	6	2000	8,786	5,367	5,358	2.07	-216,480	110.92
24	CHRISTIAN	6	2000	4,310	4,583	4,682	5.10	-473,093	238.89
25	CLARK	6	2000	5,905	3,799	3,753	3.07	-226,620	115.19
26	CLAY	6	2000	11,241	7,620	7,685	2.49	-375,301	191.49
27	CLINTON	6	2000	3,626	3,740	3,659	3.70	-267,383	135.52
28	CRITTENDEN	6	2000	6,465	3,893	3,907	1.49	-112,492	58.20
29	CUMBERLAND	6	2000	5,028	3,372	3,449	2.70	-182,854	93.15
30	DAVIESS	6	2000	6,945	6,937	6,956	2.62	-357,685	182.32
31	EDMONSON	6	2000	5,526	4,201	4,102	1.54	-122,025	63.06
32	ELLIOTT	6	2000	3,150	2,354	2,376	1.74	-80,481	41.43
35	FLEMING	6	2000	4,349	3,850	3,932	2.83	-218,343	111.14
36	FLOYD	6	2000	2,090	2,090	2,224	-9.76	436,163	-216.97
37	FRANKLIN	6	2000	3,902	3,558	3,639	2.60	-185,560	94.60
38	FULTON	6	2000	1,916	1,170	1,214	1.80	-42,588	21.90
39	GALLATIN	6	2000	2,367	2,304	2,323	3.77	-172,890	87.61
40	GARRARD	6	2000	3,726	2,238	2,269	2.18	-96,629	49.45
42	GRAVES	6	2000	3,915	3,452	3,452	1.38	-91,684	47.57
43	GRAYSON	6	2000	10,248	4,228	4,278	2.71	-227,190	115.73
44	GREEN	6	2000	5,621	3,594	3,599	1.10	-75,670	39.63
47	HARDIN	6	2000	8,955	9,639	9,573	1.31	-241,077	125.32
48	HARLAN	6	2000	10,681	6,296	6,254	1.80	-218,636	112.45
49	HARRISON	6	2000	5,073	4,031	3,955	2.18	-168,181	86.07
51	HENDERSON	6	2000	5,402	5,275	5,382	2.63	-277,410	141.40
52	HENRY	6	2000	5,031	3,350	3,384	2.61	-173,468	88.43
53	HICKMAN	6	2000	555	582	575	1.70	-18,922	9.75
54	HOPKINS	6	2000	6,798	6,495	6,554	1.76	-223,634	115.09
55	JACKSON	6	2000	3,935	3,183	3,267	2.57	-164,954	84.11
56	JEFFERSON	6	2000	9,780	10,221	10,317	3.90	-794,421	402.37
57	JESSAMINE	6	2000	8,140	8,792	8,883	3.94	-690,858	349.87
58	JOHNSON	6	2000	4,290	4,290	4,364	2.23	-190,666	97.52
62	LARUE	6	2000	5,350	5,317	5,327	2.55	-266,253	135.79
63	LAUREL	6	2000	7,407	5,659	5,519	0.77	-79,224	42.37
65	LEE	6	2000	5,377	3,932	3,953	2.72	-211,449	107.70
66	LESLIE	6	2000	5,993	3,493	3,557	1.47	-100,907	52.23
69	LINCOLN	6	2000	3,940	3,910	3,947	2.08	-160,248	82.10
70	LIVINGSTON	6	2000	4,788	4,464	4,499	1.06	-90,446	47.47
71	LOGAN	6	2000	4,975	4,809	4,819	2.56	-241,853	123.34
72	LYON	6	2000	5,972	5,457	5,616	1.19	-127,811	66.71
76	MADISON	6	2000	4,423	4,319	4,339	2.80	-238,244	121.29
77	MAGOFFIN	6	2000	7,403	4,074	4,231	2.63	-218,208	111.22
79	MARSHALL	6	2000	4,678	4,029	4,023	1.26	-97,331	50.68
80	MARTIN	6	2000	5,603	5,580	5,998	0.60	-66,386	36.19
81	MASON	6	2000	5,440	5,381	5,374	1.18	-121,170	63.27
74	MCCREARY	6	2000	1,218	1,186	1,077	-1.76	39,055	-18.99
75	MCLEAN	6	2000	6,249	5,907	5,942	1.84	-212,478	109.21
82	MEADE	6	2000	8,550	6,804	7,134	3.25	-456,637	231.89
83	MENIFEE	6	2000	3,939	3,207	3,252	3.07	-196,119	99.69
84	MERCER	6	2000	2,888	2,884	2,856	1.89	-104,940	53.90
85	METCALFE	6	2000	3,438	3,311	3,313	1.73	-111,087	57.20
87	MONTGOMERY	6	2000	6,136	5,767	5,702	2.94	-329,080	167.39
88	MORGAN	6	2000	4,853	2,775	2,771	1.56	-83,540	43.16
89	MUHLENBERG	6	2000	6,657	4,891	4,907	1.57	-149,399	77.15
90	NELSON	6	2000	6,211	6,751	7,019	4.04	-559,848	283.43
93	OLDHAM	6	2000	10,634	8,137	8,145	2.42	-385,389	196.77
94	OWEN	6	2000	4,517	2,737	2,676	3.14	-165,307	83.99
95	OWSLEY	6	2000	1,143	1,286	1,270	1.23	-29,968	15.62
96	PENDLETON	6	2000	6,771	6,090	6,116	2.57	-308,702	157.41
99	POWELL	6	2000	3,005	2,879	2,753	4.06	-220,864	111.81
100	PULASKI	6	2000	10,868	9,771	9,877	2.90	-563,386	286.63
102	ROCKCASTLE	6	2000	7,600	6,495	6,524	1.77	-224,116	115.32
103	ROWAN	6	2000	8,693	8,267	8,489	3.40	-569,381	288.94
104	RUSSELL	6	2000	10,600	10,600	10,529	1.93	-396,017	203.27
105	SCOTT	6	2000	6,628	6,546	6,612	3.89	-507,965	257.29
106	SHELBY	6	2000	6,749	6,409	6,532	3.55	-457,056	231.79
107	SIMPSON	6	2000	8,993	8,466	8,500	3.28	-549,140	278.82
108	SPENCER	6	2000	8,010	8,514	8,463	4.95	-829,463	418.96
110	TODD	6	2000	2,975	2,358	2,559	3.56	-179,692	91.13
112	TRIMBLE	6	2000	5,286	4,309	4,277	3.31	-278,461	141.37
113	UNION	6	2000	5,580	4,630	4,688	0.48	-40,138	22.41
114	WARREN	6	2000	3,081	2,424	2,769	-0.07	6,921	-2.08
115	WASHINGTON	6	2000	7,134	4,501	4,604	2.16	-194,708	99.66
116	WAYNE	6	2000	6,883	6,872	7,072	3.94	-550,155	278.61
117	WEBSTER	6	2000	4,323	4,159	4,215	-0.07	10,365	-3.08
118	WHITLEY	6	2000	6,100	4,704	4,800	3.54	-335,013	169.91
119	WOLFE	6	2000	3,928	2,020	2,033	1.58	-62,386	32.21

Functional Class 07, Weighted County Level Growth Rates

County Number	County Name	Functional Class	Year	Average ADT	Weighted Average ADT	Predicted Weighted Average ADT	2000 Weighted ADT Growth Rate (%)	Weighted Analysis Regression Constant	Weighted Analysis Regression Slope
1	ADAIR	7	2000	2,639	2,028	2,074	2.65	-107,784	54.93
2	ALLEN	7	2000	3,552	2,068	2,092	1.85	-75,295	38.69
3	ANDERSON	7	2000	1,745	1,526	1,514	1.44	-42,047	21.78
4	BALLARD	7	2000	1,534	1,446	1,461	0.75	-20,366	10.91
5	BARREN	7	2000	3,094	2,256	2,285	1.51	-66,790	34.54
6	BATH	7	2000	3,340	1,957	1,991	2.19	-85,251	43.62
7	BELL	7	2000	2,264	1,588	1,594	2.29	-71,563	36.58
8	BOONE	7	2000	4,547	3,105	3,111	2.71	-165,716	84.41
9	BOURBON	7	2000	1,794	1,571	1,573	2.28	-70,227	35.90
10	BOYD	7	2000	3,130	2,990	3,037	2.27	-134,748	68.89
11	BOYLE	7	2000	2,722	2,128	2,101	1.83	-74,846	38.47
12	BRACKEN	7	2000	1,633	1,225	1,226	1.19	-27,853	14.54
13	BREATHITT	7	2000	2,904	1,325	1,305	0.32	-7,006	4.16
14	BRECKINRIDGE	7	2000	1,724	1,219	1,229	1.86	-44,391	22.81
15	BULLITT	7	2000	7,494	5,441	5,425	1.71	-180,541	92.98
16	BUTLER	7	2000	3,255	2,149	2,159	1.78	-74,792	38.48
17	CALDWELL	7	2000	1,675	1,584	1,615	1.51	-47,089	24.35
18	CALLOWAY	7	2000	2,238	2,177	2,188	2.25	-96,182	49.19
19	CAMPBELL	7	2000	1,295	1,235	1,222	0.51	-11,215	6.22
20	CARLISLE	7	2000	1,531	1,560	1,558	1.36	-40,796	21.18
21	CARROLL	7	2000	4,356	3,343	3,369	2.16	-142,269	72.82
22	CARTER	7	2000	4,785	3,026	3,064	1.97	-117,940	60.50
23	CASEY	7	2000	2,334	1,449	1,423	0.94	-25,309	13.37
24	CHRISTIAN	7	2000	1,880	1,905	1,933	0.88	-32,090	17.01
25	CLARK	7	2000	3,307	2,967	2,980	1.71	-98,736	50.86
26	CLAY	7	2000	2,467	2,018	2,035	2.60	-103,827	52.93
27	CLINTON	7	2000	2,932	2,017	2,021	2.25	-88,973	45.50
28	CRITTENDEN	7	2000	1,221	798	809	0.33	-4,532	2.67
29	CUMBERLAND	7	2000	2,702	1,193	1,222	2.64	-63,319	32.27
30	DAVIESS	7	2000	4,018	3,993	3,963	1.68	-129,239	66.60
31	EDMONSON	7	2000	1,177	1,259	1,281	1.71	-42,439	21.86
32	ELLIOTT	7	2000	697	592	595	0.63	-6,940	3.77
33	ESTILL	7	2000	6,448	3,420	3,401	1.28	-83,844	43.62
35	FLEMING	7	2000	2,746	1,960	1,965	1.54	-58,434	30.20
36	FLOYD	7	2000	4,745	3,361	3,206	0.44	-25,249	14.23
37	FRANKLIN	7	2000	3,003	4,014	3,926	0.83	-60,865	32.40
38	FULTON	7	2000	3,326	1,912	1,901	0.59	-20,704	11.30
39	GALLATIN	7	2000	3,197	3,072	3,116	3.87	-237,868	120.49
40	GARRARD	7	2000	1,397	1,186	1,191	1.86	-43,052	22.12
41	GRANT	7	2000	3,632	3,062	3,111	2.34	-142,618	72.86
42	GRAVES	7	2000	1,900	1,842	1,838	1.73	-61,583	31.71
43	GRAYSON	7	2000	3,737	2,271	2,306	2.29	-103,098	52.70
44	GREEN	7	2000	1,939	2,287	2,315	2.59	-117,822	60.07
45	GREENUP	7	2000	1,956	1,785	1,791	1.25	-42,875	22.33
46	HANCOCK	7	2000	1,605	1,384	1,373	1.77	-47,318	24.35
47	HARDIN	7	2000	2,678	2,703	2,679	1.79	-93,482	48.08
48	HARLAN	7	2000	4,436	2,473	2,565	2.19	-109,731	56.15
49	HARRISON	7	2000	2,217	2,249	2,251	2.66	-117,498	59.87
50	HART	7	2000	3,444	2,183	2,245	2.12	-92,870	47.56
51	HENDERSON	7	2000	2,524	2,518	2,543	0.61	-28,299	15.42
52	HENRY	7	2000	2,963	2,032	2,101	2.20	-90,266	46.18
53	HICKMAN	7	2000	1,398	1,192	1,185	1.14	-25,754	13.47
54	HOPKINS	7	2000	4,095	3,038	3,040	0.93	-53,426	28.23
55	JACKSON	7	2000	1,208	825	845	2.57	-42,609	21.73
57	JESSAMINE	7	2000	3,396	2,731	2,722	2.62	-139,998	71.36
58	JOHNSON	7	2000	6,358	4,043	3,958	0.48	-34,246	19.10
59	KENTON	7	2000	2,991	2,932	2,962	2.39	-138,752	70.86
60	KNOTT	7	2000	3,638	2,534	2,519	0.77	-36,381	19.45
61	KNOX	7	2000	2,962	2,112	2,068	2.82	-114,518	58.29
62	LARUE	7	2000	2,620	2,410	2,301	0.22	-7,649	4.97
63	LAUREL	7	2000	5,260	3,770	3,816	2.69	-201,440	102.63
64	LAWRENCE	7	2000	3,374	1,226	1,244	2.25	-54,786	28.01
65	LEE	7	2000	2,778	1,422	1,416	0.75	-19,853	10.63
66	LESLIE	7	2000	2,510	1,964	1,966	0.96	-35,679	18.82
67	LETCHER	7	2000	3,254	2,171	2,170	1.60	-67,329	34.75
68	LEWIS	7	2000	2,468	1,366	1,365	1.35	-35,441	18.40
69	LINCOLN	7	2000	2,128	1,541	1,527	2.56	-76,523	39.03
70	LIVINGSTON	7	2000	1,478	1,398	1,398	1.51	-40,689	21.04
71	LOGAN	7	2000	1,153	1,161	1,161	1.86	-42,090	21.63
72	LYON	7	2000	1,801	1,528	1,521	-0.53	17,529	-8.00
76	MADISON	7	2000	4,257	4,586	4,598	2.16	-194,458	99.53
77	MAGOFFIN	7	2000	2,101	1,509	1,496	1.33	-38,216	19.86
78	MARION	7	2000	1,815	1,560	1,588	2.16	-67,110	34.35
79	MARSHALL	7	2000	3,639	3,305	3,299	0.20	-9,963	6.63
80	MARTIN	7	2000	2,084	1,573	1,707	-1.50	52,873	-25.58
81	MASON	7	2000	1,404	1,202	1,195	1.32	-30,397	15.80
73	MCCRACKEN	7	2000	3,029	2,724	2,760	1.88	-101,053	51.91
74	MCCREARY	7	2000	2,369	1,529	1,555	2.38	-72,599	37.08
75	MCLEAN	7	2000	2,737	2,237	2,251	1.96	-86,104	44.18
82	MEADE	7	2000	3,396	3,220	3,306	2.61	-169,291	86.30
83	MENIFEE	7	2000	1,288	754	752	2.16	-31,709	16.23
84	MERCER	7	2000	2,120	1,786	1,795	1.82	-63,696	32.75
85	METCALFE	7	2000	3,456	2,276	2,278	1.53	-67,280	34.78
86	MONROE	7	2000	3,441	1,921	1,899	0.78	-27,686	14.79
87	MONTGOMERY	7	2000	3,356	2,812	2,866	3.15	-177,496	90.18
88	MORGAN	7	2000	1,811	1,921	1,966	2.77	-107,059	54.51
89	MUHLENBERG	7	2000	6,128	4,064	4,083	1.63	-128,888	66.49
90	NELSON	7	2000	3,541	2,803	2,850	3.04	-170,299	86.57
91	NICHOLAS	7	2000	4,539	2,360	2,363	3.08	-143,420	72.89
92	OHIO	7	2000	5,682	3,261	3,228	1.20	-73,929	38.58
93	OLDHAM	7	2000	3,560	2,881	2,868	2.77	-155,927	79.40
94	OWEN	7	2000	1,394	961	976	2.31	-44,112	22.54
95	OWSLEY	7	2000	2,904	1,450	1,446	2.33	-65,862	33.65
96	PENDLETON	7	2000	1,727	1,071	1,076	1.71	-35,776	18.43
97	PERRY	7	2000	3,171	2,462	2,456	1.63	-77,849	40.15
98	PIKE	7	2000	3,590	2,837	2,824	-0.05	5,683	-1.43
99	POWELL	7	2000	5,482	3,013	3,024	2.05	-121,009	62.02
100	PULASKI	7	2000	2,460	2,333	2,302	1.82	-81,462	41.88
101	ROBERTSON	7	2000	1,122	743	750	1.61	-23,408	12.08
102	ROCKCASTLE	7	2000	1,754	1,788	1,821	1.93	-68,597	35.21
103	ROWAN	7	2000	3,163	2,828	2,868	2.40	-134,599	68.73
104	RUSSELL	7	2000	3,417	2,457	2,469	1.85	-88,655	45.56
105	SCOTT	7	2000	3,801	3,299	3,378	3.23	-215,106	109.24
106	SHELBY	7	2000	2,422	2,432	2,469	3.52	-171,202	86.84
107	SIMPSON	7	2000	2,129	2,488	2,443	3.52	-169,446	85.94
108	SPENCER	7	2000	3,077	2,567	2,539	4.12	-206,506	104.52
109	TAYLOR	7	2000	2,750	2,717	2,742	2.15	-115,023	58.88
110	TODD	7	2000	2,402	1,732	1,706	1.05	-34,075	17.89
111	TRIGG	7	2000	2,007	1,176	1,181	1.35	-30,759	15.97
112	TRIMBLE	7	2000	3,541	3,079	3,066	3.95	-238,879	120.97
113	UNION	7	2000	2,138	1,593	1,604	0.86	-26,069	13.84
114	WARREN	7	2000	4,562	4,140	4,182	2.25	-183,632	93.91
115	WASHINGTON	7	2000	1,360	949	959	1.60	-29,650	15.30
116	WAYNE	7	2000	1,414	1,064	1,065	2.42	-50,559	25.81
117	WEBSTER	7	2000	2,822	2,186	2,164	0.94	-38,658	20.41
118	WHITLEY	7	2000	3,619	2,990	3,043	2.23	-132,647	67.84
119	WOLFE	7	2000	1,292	1,040	1,042	2.03	-41,288	21.17
120	WOODFORD	7	2000	3,533	3,196	3,229	3.00	-190,394	96.81

Functional Class 08, Weighted County Level Growth Rates

County Number	County Name	Functional Class	Year	Average ADT	Weighted Average ADT	Predicted Weighted Average ADT	2000 Weighted ADT Growth Rate (%)	Weighted Analysis Regression Constant	Weighted Analysis Regression Slope
1	ADAIR	8	2000	770	426	431	1.06	-8,714	4.57
2	ALLEN	8	2000	969	673	671	1.32	-17,073	8.87
3	ANDERSON	8	2000	784	676	673	1.27	-16,477	8.57
4	BALLARD	8	2000	364	322	318	0.65	-3,826	2.07
5	BARREN	8	2000	584	594	598	1.93	-22,463	11.53
6	BATH	8	2000	543	505	508	2.10	-20,862	10.68
7	BELL	8	2000	1,050	842	860	3.11	-52,630	26.74
8	BOONE	8	2000	1,248	1,115	1,120	2.19	-47,867	24.49
9	BOURBON	8	2000	952	887	881	1.97	-33,834	17.36
10	BOYD	8	2000	568	537	540	-2.02	22,381	-10.92
11	BOYLE	8	2000	751	611	602	1.45	-16,847	8.72
12	BRACKEN	8	2000	478	451	457	3.43	-30,873	15.67
13	BREATHITT	8	2000	526	487	491	1.71	-16,318	8.40
14	BRECKINRIDGE	8	2000	549	417	417	1.31	-10,541	5.48
15	BULLITT	8	2000	1,382	1,262	1,272	3.02	-75,568	38.42
16	BUTLER	8	2000	468	425	423	1.34	-10,922	5.67
17	CALDWELL	8	2000	358	363	363	0.85	-5,798	3.08
18	CALLOWAY	8	2000	696	643	646	1.89	-23,767	12.21
19	CAMPBELL	8	2000	764	543	561	3.01	-33,263	16.91
20	CARLISLE	8	2000	271	266	262	-0.26	1,646	-0.69
21	CARROLL	8	2000	479	471	480	3.57	-33,784	17.13
22	CARTER	8	2000	875	777	761	0.58	-7,995	4.38
23	CASEY	8	2000	593	564	561	1.38	-14,914	7.74
24	CHRISTIAN	8	2000	588	572	569	1.43	-15,684	8.13
25	CLARK	8	2000	872	832	843	1.93	-31,667	16.25
26	CLAY	8	2000	1,121	886	877	2.33	-40,063	20.47
27	CLINTON	8	2000	797	614	618	1.39	-16,530	8.57
28	CRITTENDEN	8	2000	383	271	270	0.11	-333	0.30
29	CUMBERLAND	8	2000	397	357	358	1.95	-13,611	6.98
30	DAVIESS	8	2000	744	684	689	2.09	-28,122	14.41
31	EDMONSON	8	2000	614	602	568	2.34	-25,973	13.27
32	ELLIOTT	8	2000	390	372	378	2.52	-18,672	9.53
33	ESTILL	8	2000	934	821	823	2.26	-36,307	18.57
35	FLEMING	8	2000	667	547	555	2.50	-27,250	13.90
36	FLOYD	8	2000	2,857	1,714	1,723	1.38	-45,852	23.79
37	FRANKLIN	8	2000	889	799	816	1.40	-21,990	11.40
38	FULTON	8	2000	1,050	396	401	0.34	-2,361	1.38
39	GALLATIN	8	2000	708	721	713	4.25	-59,880	30.30
40	GARRARD	8	2000	521	521	534	3.34	-35,142	17.84
41	GRANT	8	2000	1,237	959	980	2.94	-56,639	28.81
42	GRAVES	8	2000	885	844	845	1.12	-18,126	9.49
43	GRAYSON	8	2000	1,138	947	956	2.52	-47,149	24.05
44	GREEN	8	2000	376	346	352	1.22	-8,199	4.28
45	GREENUP	8	2000	665	495	495	0.70	-6,441	3.47
46	HANCOCK	8	2000	684	588	584	2.46	-28,196	14.39
47	HARDIN	8	2000	1,598	1,366	1,357	2.97	-79,401	40.38
48	HARLAN	8	2000	2,489	1,424	1,440	1.16	-31,941	16.69
49	HARRISON	8	2000	687	662	662	2.70	-35,141	17.90
50	HART	8	2000	492	486	493	2.35	-22,679	11.59
51	HENDERSON	8	2000	576	630	640	1.64	-20,326	10.48
52	HENRY	8	2000	693	599	607	2.07	-24,451	12.53
53	HICKMAN	8	2000	317	243	243	-0.04	435	-0.10
54	HOPKINS	8	2000	1,195	964	961	1.06	-19,440	10.20
55	JACKSON	8	2000	537	455	455	2.97	-26,546	13.50
56	JEFFERSON	8	2000	1,385	1,503	1,477	4.39	-128,071	64.77
57	JESSAMINE	8	2000	1,470	1,242	1,228	1.33	-31,507	16.37
58	JOHNSON	8	2000	1,428	933	939	2.01	-36,740	18.84
59	KENTON	8	2000	605	591	579	2.38	-26,994	13.79
60	KNOTT	8	2000	1,152	915	911	0.58	-9,678	5.29
61	KNOX	8	2000	1,481	1,157	1,141	3.57	-80,333	40.74
62	LARUE	8	2000	1,092	647	658	1.15	-14,530	7.59
63	LAUREL	8	2000	927	812	824	2.92	-47,248	24.04
64	LAWRENCE	8	2000	978	712	722	3.42	-48,633	24.68
65	LEE	8	2000	759	487	486	2.27	-21,577	11.03
66	LESLIE	8	2000	959	888	901	2.64	-46,700	23.80
67	LETCHER	8	2000	1,468	1,218	1,239	2.52	-61,152	31.20
68	LEWIS	8	2000	711	415	420	0.44	-3,292	1.86
69	LINCOLN	8	2000	1,496	858	866	2.68	-45,632	23.25
70	LIVINGSTON	8	2000	520	412	413	1.51	-12,090	6.25
71	LOGAN	8	2000	583	576	578	1.53	-17,143	8.86
72	LYON	8	2000	547	543	529	1.00	-10,021	5.27
76	MADISON	8	2000	1,145	1,116	1,143	3.18	-71,639	36.39
77	MAGOFFIN	8	2000	541	517	504	1.50	-14,567	7.54
78	MARION	8	2000	991	807	790	0.97	-14,594	7.69
79	MARSHALL	8	2000	896	871	868	0.83	-13,500	7.18
80	MARTIN	8	2000	1,453	1,203	1,241	0.52	-11,623	6.43
81	MASON	8	2000	530	474	493	1.30	-12,321	6.41
73	MCCRACKEN	8	2000	970	912	922	1.74	-31,259	16.09
74	MCCREARY	8	2000	1,508	905	894	1.65	-28,530	14.71
75	MCLEAN	8	2000	554	521	525	1.82	-18,550	9.54
82	MEADE	8	2000	1,045	915	914	2.15	-38,495	19.70
83	MENIFEE	8	2000	449	411	398	0.07	-130	0.26
84	MERCER	8	2000	463	476	479	1.73	-16,084	8.28
85	METCALFE	8	2000	622	554	560	-0.84	10,003	-4.72
86	MONROE	8	2000	799	576	576	1.01	-11,028	5.80
87	MONTGOMERY	8	2000	925	810	797	1.98	-30,778	15.79
88	MORGAN	8	2000	376	387	385	1.95	-14,636	7.51
89	MUHLENBERG	8	2000	1,872	1,329	1,326	1.31	-33,404	17.36
90	NELSON	8	2000	764	695	702	2.97	-40,997	20.85
91	NICHOLAS	8	2000	465	406	409	1.28	-10,062	5.24
92	OHIO	8	2000	781	637	645	1.29	-16,019	8.33
93	OLDHAM	8	2000	1,695	1,515	1,493	3.97	-117,178	59.34
94	OWEN	8	2000	448	430	438	2.20	-18,835	9.64
95	OWSLEY	8	2000	344	315	305	0.37	-1,953	1.13
96	PENDLETON	8	2000	946	830	832	2.99	-48,924	24.88
97	PERRY	8	2000	1,134	1,049	1,048	1.78	-36,191	18.62
98	PIKE	8	2000	1,944	1,671	1,661	0.97	-30,495	16.08
99	POWELL	8	2000	875	635	631	2.32	-28,715	14.67
100	PULASKI	8	2000	805	689	674	1.64	-21,496	11.09
101	ROBERTSON	8	2000	218	227	228	1.22	-5,347	2.79
102	ROCKCASTLE	8	2000	987	655	660	3.10	-40,217	20.44
103	ROWAN	8	2000	853	853	878	3.07	-52,970	26.92
104	RUSSELL	8	2000	1,477	1,043	1,058	2.40	-49,725	25.39
105	SCOTT	8	2000	1,223	1,268	1,298	4.01	-102,657	51.98
106	SHELBY	8	2000	742	743	757	2.73	-40,621	20.69
107	SIMPSON	8	2000	630	565	576	2.13	-23,941	12.26
108	SPENCER	8	2000	678	704	684	3.75	-50,628	25.66
109	TAYLOR	8	2000	736	665	676	2.13	-28,106	14.39
110	TODD	8	2000	592	566	567	1.89	-20,821	10.69
111	TRIGG	8	2000	604	556	553	1.09	-11,511	6.03
112	TRIMBLE	8	2000	554	435	415	-3.07	25,963	-12.77
113	UNION	8	2000	663	705	698	0.70	-9,019	4.86
114	WARREN	8	2000	1,298	1,116	1,111	2.73	-59,561	30.34
115	WASHINGTON	8	2000	940	496	505	1.98	-19,503	10.00
116	WAYNE	8	2000	560	549	555	1.53	-16,423	8.49
117	WEBSTER	8	2000	683	624	628	0.79	-9,257	4.94
118	WHITLEY	8	2000	1,209	1,078	1,073	2.16	-45,343	23.21
119	WOLFE	8	2000	468	345	343	0.05	11	0.17
120	WOODFORD	8	2000	836	909	910	1.21	-21,049	10.98

Functional Class 09, Weighted County Level Growth Rates

County Number	County Name	Functional Class	Year	Average ADT	Weighted Average ADT	Predicted Weighted Average ADT	2000 Weighted ADT Growth Rate (%)	Weighted Analysis Regression Constant	Weighted Analysis Regression Slope
1	ADAIR	9	2000	406	289	287	5.55	-31,611	15.95
2	ALLEN	9	2000	356	255	249	0.15	-511	0.38
3	ANDERSON	9	2000	290	282	277	5.09	-27,955	14.12
4	BALLARD	9	2000	306	288	290	0.54	-2,851	1.57
5	BARREN	9	2000	631	554	555	0.89	-9,293	4.92
6	BATH	9	2000	399	474	480	3.53	-33,433	16.96
7	BELL	9	2000	1,090	911	910	3.30	-59,151	30.03
8	BOONE	9	2000	854	541	543	1.19	-12,432	6.49
9	BOURBON	9	2000	367	337	334	2.66	-17,421	8.88
10	BOYD	9	2000	937	754	751	1.20	-17,288	9.02
11	BOYLE	9	2000	393	274	273	2.15	-11,459	5.87
12	BRACKEN	9	2000	199	210	206	3.97	-16,193	8.20
13	BREATHITT	9	2000	538	280	271	1.19	-6,171	3.22
14	BRECKINRIDGE	9	2000	1,719	489	494	1.22	-11,568	6.03
15	BULLITT	9	2000	1,511	1,032	1,014	0.67	-12,590	6.80
16	BUTLER	9	2000	395	174	166	1.39	-4,449	2.31
17	CALDWELL	9	2000	127	133	134	0.03	64	0.04
18	CALLOWAY	9	2000	520	446	453	3.09	-27,541	14.00
19	CAMPBELL	9	2000	1,600	987	990	2.34	-45,329	23.16
20	CARLISLE	9	2000	192	170	169	0.88	-2,808	1.49
21	CARROLL	9	2000	478	309	305	2.65	-15,871	8.09
22	CARTER	9	2000	465	306	303	3.43	-20,464	10.38
23	CASEY	9	2000	553	378	381	2.56	-19,105	9.74
24	CHRISTIAN	9	2000	363	232	236	0.84	-3,717	1.98
25	CLARK	9	2000	1,390	1,011	1,010	1.01	-19,398	10.20
26	CLAY	9	2000	884	471	460	2.76	-24,906	12.68
27	CLINTON	9	2000	185	177	177	1.47	-5,040	2.61
28	CRITTENDEN	9	2000	139	134	134	2.14	-5,592	2.86
29	CUMBERLAND	9	2000	214	133	128	-0.91	2,463	-1.17
30	DAVIESS	9	2000	605	533	530	2.44	-25,329	12.93
31	EDMONSON	9	2000	287	324	326	1.58	-9,940	5.13
32	ELLIOTT	9	2000	175	173	171	-1.58	5,554	-2.69
33	ESTILL	9	2000	680	345	346	1.25	-8,279	4.31
34	FAYETTE	9	2000	1,498	1,416	1,417	2.21	-61,085	31.25
35	FLEMING	9	2000	404	279	281	3.32	-18,388	9.33
36	FLOYD	9	2000	1,143	841	832	1.46	-23,452	12.14
37	FRANKLIN	9	2000	587	351	355	0.84	-5,636	3.00
38	FULTON	9	2000	457	211	208	1.07	-4,254	2.23
39	GALLATIN	9	2000	430	374	375	4.15	-30,744	15.56
40	GARRARD	9	2000	449	494	484	4.76	-45,585	23.03
41	GRANT	9	2000	671	534	523	5.63	-58,290	29.41
42	GRAVES	9	2000	426	406	410	2.48	-19,927	10.17
43	GRAYSON	9	2000	315	365	360	3.73	-26,489	13.42
44	GREEN	9	2000	648	373	374	0.35	-2,234	1.30
45	GREENUP	9	2000	952	681	689	-0.98	14,226	-6.77
46	HANCOCK	9	2000	1,074	690	685	1.00	-13,027	6.86
47	HARDIN	9	2000	534	522	515	1.31	-12,936	6.73
48	HARLAN	9	2000	1,265	976	984	3.38	-65,494	33.24
49	HARRISON	9	2000	432	436	440	6.16	-53,785	27.11
50	HART	9	2000	389	300	302	1.86	-10,908	5.60
51	HENDERSON	9	2000	393	329	336	0.44	-2,601	1.47
52	HENRY	9	2000	334	316	317	1.96	-12,113	6.21
53	HICKMAN	9	2000	331	249	251	2.16	-10,584	5.42
54	HOPKINS	9	2000	761	689	676	3.95	-52,716	26.70
55	JACKSON	9	2000	408	349	344	3.94	-26,788	13.57
56	JEFFERSON	9	2000	1,820	1,820	1,820	0.55	-18,180	10.00
57	JESSAMINE	9	2000	1,809	2,044	2,091	4.90	-202,776	102.43
58	JOHNSON	9	2000	460	474	465	2.30	-20,941	10.70
59	KENTON	9	2000	476	476	473	2.92	-27,117	13.79
60	KNOTT	9	2000	616	613	606	6.47	-77,777	39.19
61	KNOX	9	2000	2,542	1,535	1,540	2.44	-73,682	37.61
62	LARUE	9	2000	218	200	198	0.59	-2,127	1.16
63	LAUREL	9	2000	666	625	622	3.92	-48,060	24.34
64	LAWRENCE	9	2000	764	352	349	4.13	-28,481	14.42
65	LEE	9	2000	208	203	201	2.48	-9,762	4.98
66	LESLIE	9	2000	481	451	455	4.62	-41,572	21.01
67	LETCHER	9	2000	822	481	484	0.19	-1,329	0.91
68	LEWIS	9	2000	255	246	261	1.18	-5,916	3.09
69	LINCOLN	9	2000	841	494	495	-0.06	1,123	-0.31
70	LIVINGSTON	9	2000	229	195	197	2.26	-8,670	4.43
71	LOGAN	9	2000	310	220	221	2.14	-9,234	4.73
72	LYON	9	2000	227	218	213	2.79	-11,668	5.94
76	MADISON	9	2000	957	935	938	5.63	-104,711	52.82
77	MAGOFFIN	9	2000	496	292	291	1.42	-7,969	4.13
78	MARION	9	2000	214	229	222	2.53	-10,985	5.60
79	MARSHALL	9	2000	970	871	868	1.05	-17,381	9.12
80	MARTIN	9	2000	644	910	910	4.25	-76,412	38.66
81	MASON	9	2000	249	208	211	-1.11	4,902	-2.35
73	MCCRACKEN	9	2000	599	627	621	3.18	-38,852	19.74
74	MCCREARY	9	2000	518	403	401	1.93	-15,074	7.74
75	MCLEAN	9	2000	298	227	227	1.61	-7,056	3.64
82	MEADE	9	2000	393	271	274	1.61	-8,564	4.42
83	MENIFEE	9	2000	237	244	241	5.59	-26,716	13.48
84	MERCER	9	2000	516	459	445	0.10	-416	0.43
85	METCALFE	9	2000	297	315	306	-0.65	4,306	-2.00
86	MONROE	9	2000	485	333	323	4.85	-31,022	15.67
87	MONTGOMERY	9	2000	686	313	315	2.69	-16,683	8.50
88	MORGAN	9	2000	649	374	375	2.62	-19,273	9.82
89	MUHLENBERG	9	2000	984	756	766	1.54	-22,754	11.76
90	NELSON	9	2000	434	674	675	2.45	-32,421	16.55
91	NICHOLAS	9	2000	232	204	205	2.18	-8,723	4.46
92	OHIO	9	2000	927	407	408	1.20	-9,390	4.90
93	OLDHAM	9	2000	1,950	1,306	1,306	2.37	-60,675	30.99
94	OWEN	9	2000	423	250	261	2.45	-12,501	6.38
95	OWSLEY	9	2000	231	139	139	2.45	-6,641	3.39
96	PENDLETON	9	2000	418	396	396	3.55	-27,712	14.05
97	PERRY	9	2000	598	546	548	2.93	-31,613	16.08
98	PIKE	9	2000	1,098	808	809	0.70	-10,502	5.66
99	POWELL	9	2000	730	362	365	1.94	-13,809	7.09
100	PULASKI	9	2000	506	363	359	3.70	-26,215	13.29
101	ROBERTSON	9	2000	118	113	113	1.57	-3,438	1.78
102	ROCKCASTLE	9	2000	434	288	287	2.72	-15,341	7.81
103	ROWAN	9	2000	262	255	256	2.95	-14,859	7.56
104	RUSSELL	9	2000	366	322	323	4.36	-27,819	14.07
105	SCOTT	9	2000	356	287	293	2.71	-15,569	7.93
106	SHELBY	9	2000	568	517	522	4.33	-44,668	22.60
107	SIMPSON	9	2000	260	253	247	6.42	-31,429	15.84
108	SPENCER	9	2000	422	303	302	3.06	-18,200	9.25
109	TAYLOR	9	2000	350	329	328	2.87	-18,498	9.41
110	TODD	9	2000	411	387	385	1.54	-11,519	5.95
111	TRIGG	9	2000	312	307	306	2.76	-16,582	8.44
112	TRIMBLE	9	2000	287	221	220	-0.15	865	-0.32
113	UNION	9	2000	305	283	283	-1.98	11,485	-5.60
114	WARREN	9	2000	1,069	895	908	3.01	-53,746	27.33
115	WASHINGTON	9	2000	225	220	220	2.92	-12,645	6.43
116	WAYNE	9	2000	735	679	684	1.86	-24,800	12.74
117	WEBSTER	9	2000	486	454	458	1.78	-15,834	8.15
118	WHITLEY	9	2000	543	450	428	-0.87	7,842	-3.71
119	WOLFE	9	2000	488	315	304	6.17	-37,183	18.74
120	WOODFORD	9	2000	1,202	1,076	1,097	4.94	-107,416	54.26

<u>Functional Class 11, Weighted County Level Growth Rates</u>

County Number	County Name	Functional Class	Year	Average ADT	Weighted Average ADT	Predicted Weighted Average ADT	2000 Weighted ADT Growth Rate (%)	Weighted Analysis Regression Constant	Weighted Analysis Regression Slope
8	BOONE	11	2000	101,025	91,184	92,811	4.77	-8,761,835	4,427.32
15	BULLITT	11	2000	79,700	80,608	79,601	3.08	-4,829,833	2,454.72
19	CAMPBELL	11	2000	90,767	86,507	85,496	1.81	-3,003,789	1,544.64
24	CHRISTIAN	11	2000	25,300	25,300	24,657	4.52	-2,203,914	1,114.29
25	CLARK	11	2000	41,000	41,000	42,278	3.35	-2,788,025	1,415.15
34	FAYETTE	11	2000	54,338	50,595	51,108	2.96	-2,972,068	1,511.59
47	HARDIN	11	2000	47,050	47,947	49,964	4.19	-4,136,218	2,093.09
56	JEFFERSON	11	2000	94,464	84,301	85,913	2.70	-4,545,856	2,315.88
59	KENTON	11	2000	125,864	122,309	124,337	3.16	-7,725,200	3,924.77
63	LAUREL	11	2000	35,550	35,996	37,562	3.25	-2,404,105	1,220.83
76	MADISON	11	2000	44,000	44,143	44,763	2.77	-2,431,458	1,238.11
73	MCCRACKEN	11	2000	34,400	34,896	35,050	3.96	-2,741,632	1,388.34
105	SCOTT	11	2000	42,100	42,100	43,765	4.25	-3,678,659	1,861.21
114	WARREN	11	2000	44,500	44,500	42,620	2.24	-1,864,047	953.33
118	WHITLEY	11	2000	34,600	34,600	38,131	3.52	-2,646,718	1,342.42

Functional Class 12, Weighted County Level Growth Rates

County Number	County Name	Functional Class	Year	Average ADT	Weighted Average ADT	Predicted Weighted Average ADT	2000 Weighted ADT Growth Rate (%)	Weighted Analysis Regression Constant	Weighted Analysis Regression Slope
5	BARREN	12	2000	6,920	6,920	7,173	3.46	-488,706	247.94
19	CAMPBELL	12	2000	48,800	48,800	40,049	1.23	-941,769	490.91
24	CHRISTIAN	12	2000	14,967	14,475	15,262	3.03	-910,037	462.65
30	DAVIESS	12	2000	18,814	18,985	19,281	3.23	-1,225,230	622.26
34	FAYETTE	12	2000	63,689	63,439	62,987	3.00	-3,714,172	1,888.58
42	GRAVES	12	2000	15,033	14,854	14,762	3.75	-1,092,305	553.53
47	HARDIN	12	2000	20,850	18,953	19,212	2.29	-861,889	440.55
51	HENDERSON	12	2000	25,300	29,168	28,934	1.98	-1,119,609	574.27
54	HOPKINS	12	2000	19,633	17,702	19,629	1.72	-656,786	338.21
56	JEFFERSON	12	2000	33,700	34,371	34,332	3.79	-2,570,527	1,302.43
90	NELSON	12	2000	9,590	9,590	10,237	4.89	-991,096	500.67
100	PULASKI	12	2000	10,400	10,400	9,824	-0.28	64,854	-27.52
114	WARREN	12	2000	11,740	11,727	11,639	4.45	-1,023,873	517.76

Functional Class 14, Weighted County Level Growth Rates

County Number	County Name	Functional Class	Year	Average ADT	Weighted Average ADT	Predicted Weighted Average ADT	2000 Weighted ADT Growth Rate (%)	Weighted Analysis Regression Constant	Weighted Analysis Regression Slope
3	ANDERSON	14	2000	16,200	16,288	16,643	3.28	-1,075,374	546.01
5	BARREN	14	2000	15,311	14,842	14,982	2.64	-775,480	395.23
7	BELL	14	2000	26,225	25,829	25,347	2.30	-1,141,584	583.47
9	BOURBON	14	2000	8,743	11,190	11,017	2.60	-561,676	286.35
10	BOYD	14	2000	21,286	22,140	22,133	1.04	-436,878	229.51
11	BOYLE	14	2000	14,009	15,409	15,383	3.35	-1,014,994	515.19
15	BULLITT	14	2000	19,200	19,263	18,643	3.42	-1,257,863	638.25
18	CALLOWAY	14	2000	17,117	16,700	16,929	2.18	-722,641	369.78
19	CAMPBELL	14	2000	15,586	18,268	18,257	1.92	-684,121	351.19
24	CHRISTIAN	14	2000	17,047	15,593	15,179	2.50	-743,882	379.53
25	CLARK	14	2000	19,600	19,161	18,978	2.94	-1,095,349	557.16
30	DAVIESS	14	2000	14,713	17,404	17,478	1.06	-351,399	184.44
34	FAYETTE	14	2000	29,879	30,586	30,699	1.36	-806,341	418.52
37	FRANKLIN	14	2000	23,122	21,885	22,264	2.78	-1,215,079	618.67
42	GRAVES	14	2000	9,434	9,502	9,534	0.33	-53,072	31.30
45	GREENUP	14	2000	20,988	19,536	19,705	1.63	-621,287	320.50
47	HARDIN	14	2000	27,838	26,739	27,183	1.33	-695,839	361.51
49	HARRISON	14	2000	10,355	11,166	11,433	1.05	-229,184	120.31
51	HENDERSON	14	2000	26,767	21,672	21,717	1.28	-535,710	278.71
54	HOPKINS	14	2000	13,924	12,678	13,179	1.57	-399,445	206.31
56	JEFFERSON	14	2000	23,989	26,009	26,103	1.11	-553,342	289.72
57	JESSAMINE	14	2000	22,200	23,297	22,927	3.18	-1,435,306	729.12
59	KENTON	14	2000	12,060	16,083	15,586	-0.19	73,969	-29.19
61	KNOX	14	2000	26,700	25,692	26,189	4.55	-2,358,619	1,192.40
63	LAUREL	14	2000	20,000	17,812	17,761	2.89	-1,010,210	513.99
71	LOGAN	14	2000	8,785	8,522	8,502	2.07	-342,806	175.65
76	MADISON	14	2000	17,310	16,195	16,578	1.78	-574,858	295.72
78	MARION	14	2000	12,600	13,260	13,169	2.40	-618,715	315.94
81	MASON	14	2000	14,229	12,299	12,458	0.88	-207,246	109.85
73	MCCRACKEN	14	2000	16,207	16,705	17,021	0.29	-81,620	49.32
82	MEADE	14	2000	14,390	13,483	13,693	2.42	-649,709	331.70
84	MERCER	14	2000	17,818	18,196	18,403	2.26	-814,605	416.50
87	MONTGOMERY	14	2000	18,050	16,382	16,387	3.74	-1,209,550	612.97
90	NELSON	14	2000	14,942	13,877	13,903	2.13	-578,248	296.08
97	PERRY	14	2000	18,986	17,998	17,981	2.49	-878,856	448.42
98	PIKE	14	2000	27,722	27,045	27,180	2.72	-1,454,061	740.62
100	PULASKI	14	2000	24,020	22,375	22,436	0.73	-304,639	163.54
103	ROWAN	14	2000	19,691	19,800	19,782	2.16	-835,686	427.73
105	SCOTT	14	2000	12,313	10,790	11,123	3.93	-864,073	437.60
106	SHELBY	14	2000	18,985	17,520	17,623	3.30	-1,146,838	582.23
109	TAYLOR	14	2000	17,991	16,023	16,063	2.42	-761,565	388.81
114	WARREN	14	2000	19,581	23,631	23,764	2.27	-1,055,135	539.45
116	WAYNE	14	2000	10,455	10,484	10,667	5.41	-1,143,788	577.23
120	WOODFORD	14	2000	23,075	23,337	22,965	0.70	-297,666	160.32

Functional Class 16, Weighted County Level Growth Rates

County Number	County Name	Functional Class	Year	Average ADT	Weighted Average ADT	Predicted Weighted Average ADT	2000 Weighted ADT Growth Rate (%)	Weighted Analysis Regression Constant	Weighted Analysis Regression Slope
3	ANDERSON	16	2000	9,165	9,286	9,240	1.42	-252,669	130.95
5	BARREN	16	2000	7,412	7,471	7,570	2.04	-301,604	154.59
7	BELL	16	2000	8,489	8,900	8,840	0.94	-157,100	82.97
8	BOONE	16	2000	18,570	15,637	15,432	2.46	-744,188	379.81
9	BOURBON	16	2000	7,635	7,103	7,154	1.81	-251,954	129.55
10	BOYD	16	2000	8,835	7,982	8,040	0.78	-116,874	62.46
11	BOYLE	16	2000	6,769	5,858	5,743	1.75	-195,554	100.65
15	BULLITT	16	2000	13,071	9,584	9,668	2.72	-516,114	262.89
17	CALDWELL	16	2000	6,181	6,338	6,503	3.15	-403,818	205.16
18	CALLOWAY	16	2000	9,334	8,914	9,042	1.90	-334,340	171.69
19	CAMPBELL	16	2000	5,982	4,724	4,718	0.78	-68,552	36.63
24	CHRISTIAN	16	2000	8,688	8,054	7,993	1.06	-162,006	85.00
25	CLARK	16	2000	10,669	10,928	11,114	2.24	-487,860	249.49
30	DAVIESS	16	2000	8,279	8,341	8,233	0.88	-136,429	72.33
34	FAYETTE	16	2000	13,683	12,263	12,304	2.78	-670,573	341.44
37	FRANKLIN	16	2000	9,922	10,934	10,991	0.74	-150,711	80.85
42	GRAVES	16	2000	3,933	4,347	4,460	1.10	-93,867	49.16
45	GREENUP	16	2000	8,720	9,217	9,075	2.06	-364,828	186.95
47	HARDIN	16	2000	11,560	10,588	10,658	2.94	-616,727	313.69
49	HARRISON	16	2000	5,310	5,179	5,218	1.62	-163,732	84.48
51	HENDERSON	16	2000	8,952	7,589	7,577	1.60	-234,276	120.93
54	HOPKINS	16	2000	12,781	11,727	11,656	1.39	-313,179	162.42
56	JEFFERSON	16	2000	15,342	14,929	14,900	1.26	-359,924	187.41
57	JESSAMINE	16	2000	12,065	11,712	11,912	3.48	-816,220	414.07
59	KENTON	16	2000	13,466	11,799	11,562	1.02	-224,627	118.09
61	KNOX	16	2000	8,920	8,469	8,375	0.26	-34,547	21.46
63	LAUREL	16	2000	10,274	9,859	9,837	0.75	-137,652	73.74
71	LOGAN	16	2000	7,170	5,858	5,918	2.44	-282,594	144.26
76	MADISON	16	2000	8,822	8,365	8,529	2.02	-335,541	172.03
78	MARION	16	2000	5,458	5,526	5,298	-0.12	17,716	-6.21
81	MASON	16	2000	5,160	3,715	3,785	-0.25	22,487	-9.35
73	MCCRACKEN	16	2000	7,155	7,201	7,277	0.83	-113,706	60.49
82	MEADE	16	2000	3,780	2,342	2,485	2.07	-100,288	51.39
84	MERCER	16	2000	4,641	4,362	4,394	1.73	-147,802	76.10
87	MONTGOMERY	16	2000	7,078	6,769	6,870	2.47	-332,060	169.47
90	NELSON	16	2000	9,309	11,124	11,256	3.82	-849,323	430.29
93	OLDHAM	16	2000	11,492	10,073	9,988	3.11	-610,549	310.27
97	PERRY	16	2000	8,043	7,165	7,304	1.22	-171,603	89.45
98	PIKE	16	2000	9,558	7,067	7,033	-0.61	92,904	-42.94
100	PULASKI	16	2000	6,885	6,730	6,813	1.02	-132,727	69.77
103	ROWAN	16	2000	7,290	7,770	7,975	2.49	-388,882	198.43
105	SCOTT	16	2000	11,228	9,099	9,077	1.07	-184,560	96.82
106	SHELBY	16	2000	8,590	4,542	4,974	-1.78	182,482	-88.75
107	SIMPSON	16	2000	6,367	6,292	6,230	0.47	-51,855	29.04
109	TAYLOR	16	2000	8,371	7,672	7,636	1.24	-181,101	94.37
114	WARREN	16	2000	11,580	11,934	11,955	2.24	-522,966	267.46
116	WAYNE	16	2000	12,137	12,464	12,335	1.74	-416,440	214.39
118	WHITLEY	16	2000	10,569	10,710	10,792	2.05	-432,090	221.44
120	WOODFORD	16	2000	9,474	9,621	9,535	1.27	-231,922	120.73

Functional Class 17, Weighted County Level Growth Rates

County Number	County Name	Functional Class	Year	Average ADT	Weighted Average ADT	Predicted Weighted Average ADT	2000 Weighted ADT Growth Rate (%)	Weighted Analysis Regression Constant	Weighted Analysis Regression Slope
3	ANDERSON	17	2000	5,554	5,390	5,585	2.47	-269,787	137.69
5	BARREN	17	2000	2,812	2,452	2,451	-0.53	28,668	-13.11
7	BELL	17	2000	3,674	3,590	3,599	2.57	-181,194	92.40
8	BOONE	17	2000	11,763	10,801	10,920	4.38	-946,178	478.55
9	BOURBON	17	2000	2,331	2,450	2,457	1.59	-75,696	39.08
10	BOYD	17	2000	4,199	3,905	3,879	1.64	-123,603	63.74
11	BOYLE	17	2000	3,783	3,351	3,477	1.06	-69,897	36.69
15	BULLITT	17	2000	5,066	5,583	5,611	3.11	-343,097	174.35
17	CALDWELL	17	2000	1,986	1,696	1,660	-0.48	17,493	-7.92
18	CALLOWAY	17	2000	3,508	3,783	3,875	1.94	-146,541	75.21
19	CAMPBELL	17	2000	6,989	5,340	5,325	1.23	-125,710	65.52
24	CHRISTIAN	17	2000	3,842	4,534	4,597	1.81	-161,761	83.18
25	CLARK	17	2000	2,680	2,897	2,947	1.40	-79,304	41.13
30	DAVIESS	17	2000	4,046	3,958	3,922	1.67	-127,055	65.49
34	FAYETTE	17	2000	4,992	3,980	3,969	2.06	-159,187	81.58
37	FRANKLIN	17	2000	3,507	3,960	3,960	2.23	-172,622	88.29
38	FULTON	17	2000	469	493	491	-0.33	3,699	-1.60
42	GRAVES	17	2000	3,047	3,235	3,208	0.81	-48,671	25.94
45	GREENUP	17	2000	4,653	4,402	4,394	1.66	-141,402	72.90
47	HARDIN	17	2000	4,586	4,493	4,599	2.16	-193,857	99.23
49	HARRISON	17	2000	3,295	3,201	3,197	1.34	-82,419	42.81
51	HENDERSON	17	2000	2,907	3,082	3,140	2.02	-123,869	63.50
54	HOPKINS	17	2000	3,921	4,011	3,993	0.37	-25,864	14.93
56	JEFFERSON	17	2000	7,014	6,417	6,380	1.77	-219,351	112.87
57	JESSAMINE	17	2000	3,047	3,115	3,123	2.44	-149,427	76.27
59	KENTON	17	2000	5,738	4,920	4,905	2.03	-194,236	99.57
61	KNOX	17	2000	1,978	1,521	1,517	2.45	-72,915	37.22
63	LAUREL	17	2000	2,365	2,755	2,737	1.31	-68,743	35.74
71	LOGAN	17	2000	1,579	1,995	2,014	-3.96	161,473	-79.73
76	MADISON	17	2000	6,440	6,142	6,072	1.49	-175,292	90.68
78	MARION	17	2000	2,333	2,272	2,199	0.60	-24,318	13.26
81	MASON	17	2000	2,391	2,356	2,329	2.07	-94,227	48.28
73	MCCRACKEN	17	2000	4,558	4,014	4,035	2.25	-177,413	90.72
82	MEADE	17	2000	5,367	7,041	7,825	-1.76	283,352	-137.76
84	MERCER	17	2000	4,223	4,029	4,131	2.84	-230,102	117.12
87	MONTGOMERY	17	2000	2,045	1,686	1,720	0.04	473	0.62
90	NELSON	17	2000	2,215	2,290	2,297	2.93	-132,227	67.26
93	OLDHAM	17	2000	3,050	2,742	2,729	2.74	-146,589	74.66
97	PERRY	17	2000	4,800	5,438	5,781	4.86	-556,475	281.13
98	PIKE	17	2000	3,612	2,954	2,913	2.38	-135,944	69.43
100	PULASKI	17	2000	6,387	6,877	7,041	2.94	-407,656	207.35
103	ROWAN	17	2000	3,717	2,857	2,803	0.66	-33,915	18.36
105	SCOTT	17	2000	2,405	2,678	2,636	0.45	-21,095	11.87
106	SHELBY	17	2000	3,728	3,067	3,056	2.16	-128,724	65.89
107	SIMPSON	17	2000	2,896	3,566	3,585	1.44	-99,852	51.72
109	TAYLOR	17	2000	3,761	3,480	3,483	-0.02	4,539	-0.53
114	WARREN	17	2000	4,859	5,170	5,382	1.44	-149,529	77.46
116	WAYNE	17	2000	1,174	1,180	1,146	-7.94	183,121	-90.99
118	WHITLEY	17	2000	3,273	2,253	2,256	0.87	-37,008	19.63
120	WOODFORD	17	2000	4,494	4,771	4,838	3.01	-286,865	145.85

Functional Class 19, Weighted County Level Growth Rates

County Number	County Name	Functional Class	Year	Average ADT	Weighted Average ADT	Predicted Weighted Average ADT	2000 Weighted ADT Growth Rate (%)	Weighted Analysis Regression Constant	Weighted Analysis Regression Slope
5	BARREN	19	2000	906	906	902	-5.03	91,646	-45.37
7	BELL	19	2000	1,713	1,572	1,654	5.11	-167,379	84.52
8	BOONE	19	2000	2,411	4,277	4,272	6.55	-555,250	279.76
9	BOURBON	19	2000	1,096	1,096	1,112	3.71	-81,388	41.25
10	BOYD	19	2000	1,990	2,631	2,617	0.59	-28,197	15.41
11	BOYLE	19	2000	745	622	601	4.27	-50,723	25.66
15	BULLITT	19	2000	4,790	4,790	4,633	2.28	-206,367	105.50
16	BUTLER	19	2000	1,320	1,320	1,320	0.76	-18,680	10.00
17	CALDWELL	19	2000	1,097	829	841	1.18	-19,032	9.94
19	CAMPBELL	19	2000	1,062	1,146	1,226	4.40	-106,591	53.91
21	CARROLL	19	2000	2,850	2,850	2,844	2.92	-163,156	83.00
24	CHRISTIAN	19	2000	1,687	2,746	2,780	5.02	-276,263	139.52
25	CLARK	19	2000	1,142	1,679	1,641	2.07	-66,459	34.05
26	CLAY	19	2000	1,255	1,255	1,259	1.59	-38,808	20.03
27	CLINTON	19	2000	426	426	426	-2.61	22,682	-11.13
30	DAVIESS	19	2000	1,744	2,092	2,064	2.82	-114,334	58.20
33	ESTILL	19	2000	848	848	849	2.58	-43,018	21.93
34	FAYETTE	19	2000	2,110	1,546	1,549	2.68	-81,532	41.54
37	FRANKLIN	19	2000	680	815	785	6.86	-106,887	53.84
38	FULTON	19	2000	1,255	1,186	1,186	1.20	-27,336	14.26
40	GARRARD	19	2000	1,885	2,002	1,976	-5.28	210,658	-104.34
41	GRANT	19	2000	2,615	3,095	3,365	12.09	-810,182	406.77
42	GRAVES	19	2000	390	469	461	-0.81	7,922	-3.73
43	GRAYSON	19	2000	526	375	390	3.63	-27,933	14.16
44	GREEN	19	2000	1,360	1,286	1,249	0.27	-5,471	3.36
45	GREENUP	19	2000	602	1,491	1,487	1.44	-41,475	21.48
47	HARDIN	19	2000	2,560	1,356	1,541	0.19	-4,289	2.92
48	HARLAN	19	2000	143	143	142	-6.84	19,508	-9.68
49	HARRISON	19	2000	1,447	1,073	1,066	2.70	-56,422	28.74
51	HENDERSON	19	2000	1,146	1,146	1,135	3.91	-87,635	44.38
52	HENRY	19	2000	1,260	1,260	1,258	-1.19	31,258	-15.00
54	HOPKINS	19	2000	4,370	5,167	5,189	2.32	-235,155	120.17
56	JEFFERSON	19	2000	1,126	1,723	1,722	1.54	-51,362	26.54
57	JESSAMINE	19	2000	1,783	1,470	1,482	2.78	-80,985	41.23
59	KENTON	19	2000	1,510	1,743	1,743	4.40	-151,673	76.71
61	KNOX	19	2000	808	1,183	1,180	5.55	-129,764	65.47
63	LAUREL	19	2000	1,078	1,209	1,227	2.60	-62,516	31.87
69	LINCOLN	19	2000	782	782	781	0.69	-9,977	5.38
71	LOGAN	19	2000	551	551	559	0.85	-8,974	4.77
76	MADISON	19	2000	969	884	881	4.57	-79,659	40.27
81	MASON	19	2000	878	1,273	1,275	4.64	-117,067	59.17
73	MCCRACKEN	19	2000	900	1,291	1,300	4.34	-111,613	56.46
74	MCCREARY	19	2000	194	194	204	0.17	-496	0.35
84	MERCER	19	2000	765	803	798	3.02	-47,396	24.10
87	MONTGOMERY	19	2000	1,578	2,841	2,848	2.30	-128,291	65.57
89	MUHLENBERG	19	2000	703	644	641	3.06	-38,588	19.61
90	NELSON	19	2000	425	522	505	-0.40	4,525	-2.01
97	PERRY	19	2000	486	712	688	-0.79	11,568	-5.44
98	PIKE	19	2000	2,866	1,647	1,657	-0.92	32,024	-15.18
100	PULASKI	19	2000	3,234	3,399	3,367	4.43	-295,204	149.29
103	ROWAN	19	2000	693	709	696	2.52	-34,426	17.56
105	SCOTT	19	2000	1,819	2,893	2,822	3.80	-211,387	107.10
107	SIMPSON	19	2000	621	564	554	4.78	-52,411	26.48
109	TAYLOR	19	2000	433	667	658	3.11	-40,300	20.48
114	WARREN	19	2000	1,275	1,878	1,843	6.18	-225,737	113.79
118	WHITLEY	19	2000	861	837	830	2.22	-36,087	18.46
120	WOODFORD	19	2000	180	180	197	-8.04	31,864	-15.83

8.7 Appendix G – Unweighted County Level Functional Class Growth Rates

Functional Class 01, Unweighted County Level Growth Rates

County Number	County Name	Functional Class	Year	Average ADT	Predicted 2000 ADT	2000 Growth (%)	Regression Slope	Regression Constant
5	BARREN	1	2000	32,350	31,714	1.65	522.58	-1,013,437.42
6	BATH	1	2000	18,667	18,502	3.04	562.02	-1,105,537.98
8	BOONE	1	2000	44,629	45,495	4.27	1,944.24	-3,842,990.04
10	BOYD	1	2000	18,300	18,931	2.92	552.42	-1,085,917.58
15	BULLITT	1	2000	56,375	58,916	3.54	2,083.13	-4,107,346.87
17	CALDWELL	1	2000	14,750	14,659	3.97	581.39	-1,148,128.61
21	CARROLL	1	2000	26,367	26,459	3.93	1,038.99	-2,051,521.01
22	CARTER	1	2000	14,325	14,475	2.42	350.45	-686,434.55
24	CHRISTIAN	1	2000	19,533	19,119	4.61	880.95	-1,742,780.38
25	CLARK	1	2000	30,050	30,617	3.39	1,039.39	-2,048,170.61
31	EDMONSON	1	2000	29,800	28,589	1.20	344.24	-659,895.76
37	FRANKLIN	1	2000	33,100	34,072	3.34	1,139.39	-2,244,715.61
39	GALLATIN	1	2000	26,067	25,423	3.48	885.86	-1,746,294.14
41	GRANT	1	2000	41,580	44,192	4.53	2,001.70	-3,959,202.30
47	HARDIN	1	2000	40,580	42,410	4.35	1,845.24	-3,648,074.76
50	HART	1	2000	32,525	33,379	3.21	1,072.58	-2,111,772.42
52	HENRY	1	2000	28,467	28,705	2.92	839.60	-1,650,487.07
56	JEFFERSON	1	2000	43,600	44,556	2.36	1,050.30	-2,056,049.70
59	KENTON	1	2000	44,700	49,075	4.22	2,072.12	-4,095,167.88
62	LARUE	1	2000	33,100	34,635	3.49	1,208.79	-2,382,941.21
63	LAUREL	1	2000	34,567	34,161	2.11	721.62	-1,409,071.72
70	LIVINGSTON	1	2000	25,000	25,452	4.45	1,131.52	-2,237,578.48
72	LYON	1	2000	19,225	19,155	4.03	771.02	-1,522,874.98
76	MADISON	1	2000	47,320	49,120	3.32	1,631.03	-3,212,940.97
79	MARSHALL	1	2000	26,567	26,808	4.78	1,281.01	-2,535,212.32
73	MCCRACKEN	1	2000	27,450	27,705	4.07	1,128.79	-2,229,871.21
87	MONTGOMERY	1	2000	19,767	20,478	3.72	762.42	-1,504,370.91
93	OLDHAM	1	2000	44,920	45,122	3.62	1,631.48	-3,217,847.52
102	ROCKCASTLE	1	2000	34,467	35,145	3.05	1,070.71	-2,106,269.29
103	ROWAN	1	2000	15,633	15,255	4.05	617.23	-1,219,209.43
105	SCOTT	1	2000	43,717	43,178	4.98	2,148.73	-4,254,276.61
106	SHELBY	1	2000	38,520	39,532	3.10	1,227.03	-2,414,528.97
107	SIMPSON	1	2000	35,833	35,587	1.39	493.84	-952,089.49
111	TRIGG	1	2000	14,500	14,553	3.92	570.94	-1,127,326.06
112	TRIMBLE	1	2000	26,800	27,235	3.79	1,032.12	-2,037,007.88
114	WARREN	1	2000	41,040	40,368	1.45	586.67	-1,132,965.33
118	WHITLEY	1	2000	30,767	31,125	2.80	870.71	-1,710,289.29
120	WOODFORD	1	2000	29,950	30,655	3.88	1,188.79	-2,346,921.21

Functional Class 02, Unweighted County Level Growth Rates

County Number	County Name	Functional Class	Year	Average ADT	Predicted 2000 ADT	2000 Growth (%)	Regression Slope	Regression Constant
1	ADAIR	2	2000	14,041	14,295	2.15	307.22	-600,146.64
2	ALLEN	2	2000	5,298	5,378	3.25	174.77	-344,152.73
3	ANDERSON	2	2000	12,752	12,617	3.14	395.80	-778,983.00
4	BALLARD	2	2000	5,723	5,674	1.56	88.61	-171,544.92
5	BARREN	2	2000	6,615	7,108	4.79	340.18	-673,255.82
7	BELL	2	2000	15,312	15,098	3.24	488.99	-962,876.44
9	BOURBON	2	2000	10,181	10,298	2.21	227.76	-445,217.39
10	BOYD	2	2000	11,651	11,570	0.62	71.68	-131,793.32
11	BOYLE	2	2000	11,131	11,183	2.85	318.43	-625,677.97
12	BRACKEN	2	2000	7,293	7,251	7.55	547.35	-1,087,455.98
13	BREATHITT	2	2000	10,353	10,407	2.12	221.06	-431,706.32
14	BRECKINRIDGE	2	2000	5,434	5,475	3.17	173.55	-341,615.74
16	BUTLER	2	2000	8,492	8,325	5.09	423.49	-838,664.77
17	CALDWELL	2	2000	8,850	10,120	5.15	521.01	-1,031,899.99
18	CALLOWAY	2	2000	8,265	8,535	2.49	212.81	-417,083.01
19	CAMPBELL	2	2000	9,623	9,648	6.78	653.72	-1,297,796.22
20	CARLISLE	2	2000	3,325	3,327	-0.54	-18.04	39,411.34
22	CARTER	2	2000	4,690	4,561	5.19	236.70	-468,833.30
23	CASEY	2	2000	6,154	6,171	2.38	146.66	-287,147.69
24	CHRISTIAN	2	2000	9,372	9,415	3.59	338.08	-666,746.59
25	CLARK	2	2000	9,928	9,543	3.71	354.15	-698,760.52
26	CLAY	2	2000	5,640	6,594	4.35	286.71	-566,820.63
27	CLINTON	2	2000	9,579	9,650	3.09	298.63	-587,610.44
30	DAVIESS	2	2000	9,283	9,701	2.64	256.40	-503,107.26
35	FLEMING	2	2000	3,115	3,080	2.74	84.24	-165,404.76
36	FLOYD	2	2000	14,605	14,645	2.68	391.81	-768,972.14
37	FRANKLIN	2	2000	18,450	18,983	3.42	648.45	-1,277,926.55
38	FULTON	2	2000	5,736	5,865	4.76	279.19	-552,513.81
40	GARRARD	2	2000	11,039	11,114	2.57	286.11	-561,105.89
42	GRAVES	2	2000	9,578	9,341	2.51	234.72	-460,098.53
43	GRAYSON	2	2000	8,893	9,943	4.33	430.16	-850,380.34
45	GREENUP	2	2000	8,513	8,505	1.50	127.63	-246,747.37
46	HANCOCK	2	2000	9,445	9,400	3.04	285.34	-561,285.27
47	HARDIN	2	2000	8,857	8,882	2.90	257.19	-505,496.45
48	HARLAN	2	2000	7,140	7,319	2.51	183.75	-360,177.55
51	HENDERSON	2	2000	8,836	9,678	4.33	419.17	-828,656.26
53	HICKMAN	2	2000	4,251	4,256	1.99	84.78	-165,311.81
54	HOPKINS	2	2000	14,612	15,658	6.46	1,012.29	-2,008,927.57
56	JEFFERSON	2	2000	23,420	23,813	2.16	514.55	-1,005,277.45
57	JESSAMINE	2	2000	35,267	35,533	4.29	1,523.94	-3,012,346.06
58	JOHNSON	2	2000	8,608	8,319	1.00	82.80	-157,271.70
60	KNOTT	2	2000	6,402	6,605	1.14	75.28	-143,961.05
61	KNOX	2	2000	17,563	17,552	3.31	580.18	-1,142,809.21
63	LAUREL	2	2000	8,508	8,677	2.52	218.82	-428,959.52
64	LAWRENCE	2	2000	8,857	8,709	0.78	68.21	-127,714.95
66	LESLIE	2	2000	5,090	6,170	3.59	221.33	-436,496.67
67	LETCHER	2	2000	6,432	6,645	1.50	99.38	-192,108.88
68	LEWIS	2	2000	4,594	4,420	5.15	227.67	-450,916.20
69	LINCOLN	2	2000	11,713	11,249	4.09	459.69	-908,124.89
72	LYON	2	2000	8,130	9,117	4.93	449.82	-890,519.18
76	MADISON	2	2000	10,158	10,226	2.41	246.72	-483,208.62
77	MAGOFFIN	2	2000	8,109	7,943	1.56	123.73	-239,524.07
78	MARION	2	2000	6,770	6,723	2.75	184.65	-362,586.15
79	MARSHALL	2	2000	7,629	7,784	1.39	108.23	-208,682.31
80	MARTIN	2	2000	7,345	7,686	0.63	48.51	-89,331.89
81	MASON	2	2000	7,164	7,158	5.24	374.92	-742,684.88
73	MCCRACKEN	2	2000	12,481	12,610	0.84	106.32	-200,028.35
74	MCCREARY	2	2000	9,539	9,713	3.13	304.32	-598,930.60
82	MEADE	2	2000	11,510	11,792	2.47	290.95	-570,107.38
84	MERCER	2	2000	13,425	13,206	2.40	316.70	-620,187.64
85	METCALFE	2	2000	4,535	4,886	3.75	183.18	-361,477.82
88	MORGAN	2	2000	5,750	4,963	1.49	74.06	-143,157.94
89	MUHLENBERG	2	2000	8,990	10,955	4.97	544.36	-1,077,772.30
90	NELSON	2	2000	9,483	9,825	4.27	419.67	-829,508.83
91	NICHOLAS	2	2000	4,600	4,642	2.03	94.28	-183,912.29
92	OHIO	2	2000	7,723	8,292	4.64	384.73	-761,162.94
96	PENDLETON	2	2000	7,630	7,581	5.53	419.45	-831,328.55
97	PERRY	2	2000	10,268	10,496	2.40	251.58	-492,664.42
98	PIKE	2	2000	12,245	12,229	2.37	289.68	-567,134.34
99	POWELL	2	2000	11,322	11,108	2.45	271.73	-532,358.67
100	PULASKI	2	2000	9,631	9,740	2.14	208.70	-407,664.78
101	ROBERTSON	2	2000	3,070	2,937	1.86	54.73	-106,517.27
102	ROCKCASTLE	2	2000	8,193	8,405	3.47	291.45	-574,487.13
104	RUSSELL	2	2000	6,107	6,134	2.16	132.50	-258,875.22
109	TAYLOR	2	2000	7,987	8,026	3.01	241.98	-475,925.22
110	TODD	2	2000	6,860	7,323	-4.28	-313.45	634,232.55
111	TRIGG	2	2000	4,439	4,605	3.03	139.34	-274,072.93
113	UNION	2	2000	6,801	6,869	1.37	93.87	-180,869.50
114	WARREN	2	2000	11,001	11,278	2.81	317.22	-623,159.67
115	WASHINGTON	2	2000	5,548	6,032	3.87	233.18	-460,334.63
117	WEBSTER	2	2000	13,800	14,225	9.15	1,301.61	-2,588,989.29
119	WOLFE	2	2000	6,063	6,176	2.41	148.96	-291,743.37
120	WOODFORD	2	2000	25,557	24,951	1.67	416.63	-808,313.37

<u>Functional Class 06, Unweighted County Level Growth Rates</u>

County Number	County Name	Functional Class	Year	Average ADT	Predicted 2000 ADT	2000 Growth (%)	Regression Slope	Regression Constant
1	ADAIR	6	2000	7,872	7,905	1.66	130.88	-253,859.56
2	ALLEN	6	2000	4,875	4,845	5.41	262.08	-519,306.92
3	ANDERSON	6	2000	5,783	5,612	0.07	4.08	-2,549.25
4	BALLARD	6	2000	2,644	2,666	0.93	24.70	-46,740.10
5	BARREN	6	2000	7,298	7,143	2.31	164.84	-322,535.62
6	BATH	6	2000	2,948	2,883	2.23	64.41	-125,935.09
9	BOURBON	6	2000	3,163	3,180	2.56	81.34	-159,490.33
11	BOYLE	6	2000	4,684	4,684	2.23	104.59	-204,497.41
14	BRECKINRIDGE	6	2000	2,491	2,511	1.94	48.78	-95,055.72
15	BULLITT	6	2000	12,038	12,089	2.65	320.94	-629,789.56
17	CALDWELL	6	2000	3,477	3,567	3.13	111.68	-219,786.32
18	CALLOWAY	6	2000	6,238	6,342	2.66	168.58	-330,809.09
19	CAMPBELL	6	2000	5,697	5,724	2.37	135.93	-266,137.50
20	CARLISLE	6	2000	1,214	1,215	1.95	23.69	-46,161.03
22	CARTER	6	2000	8,786	8,712	1.46	127.10	-245,497.36
24	CHRISTIAN	6	2000	4,310	4,444	4.93	218.91	-433,373.76
25	CLARK	6	2000	5,905	5,815	3.71	215.79	-425,761.21
26	CLAY	6	2000	11,241	11,278	1.75	197.25	-383,215.18
27	CLINTON	6	2000	3,626	3,550	3.84	136.27	-268,983.33
28	CRITTENDEN	6	2000	6,465	6,404	1.73	110.47	-214,542.96
29	CUMBERLAND	6	2000	5,028	5,073	0.49	24.69	-44,314.53
30	DAVIESS	6	2000	6,945	6,945	2.32	160.94	-314,942.06
31	EDMONSON	6	2000	5,526	5,281	2.27	119.84	-234,400.41
32	ELLIOTT	6	2000	3,150	3,202	1.96	62.74	-122,267.58
35	FLEMING	6	2000	4,349	4,433	2.97	131.45	-258,476.16
36	FLOYD	6	2000	2,090	2,224	-9.76	-216.97	436,163.03
37	FRANKLIN	6	2000	3,902	4,009	2.45	98.14	-192,278.55
38	FULTON	6	2000	1,916	1,976	1.64	32.36	-62,747.88
39	GALLATIN	6	2000	2,367	2,365	3.22	76.26	-150,160.40
40	GARRARD	6	2000	3,726	3,688	0.93	34.42	-65,158.70
42	GRAVES	6	2000	3,915	3,923	1.36	53.54	-103,158.13
43	GRAYSON	6	2000	10,248	10,478	3.10	324.88	-639,291.82
44	GREEN	6	2000	5,621	5,654	1.27	71.89	-138,127.51
47	HARDIN	6	2000	8,955	8,905	0.54	48.48	-88,064.52
48	HARLAN	6	2000	10,681	10,721	2.50	268.48	-526,234.70
49	HARRISON	6	2000	5,073	5,012	1.84	92.24	-179,473.16
51	HENDERSON	6	2000	5,402	5,518	2.49	137.59	-269,667.84
52	HENRY	6	2000	5,031	5,079	2.88	146.24	-287,393.26
53	HICKMAN	6	2000	555	547	1.62	8.86	-17,176.50
54	HOPKINS	6	2000	6,798	6,858	1.24	85.25	-163,639.15
55	JACKSON	6	2000	3,935	4,038	2.83	114.46	-224,889.59
56	JEFFERSON	6	2000	9,780	9,741	4.38	426.76	-843,774.24
57	JESSAMINE	6	2000	8,140	8,201	4.38	358.82	-709,447.84
58	JOHNSON	6	2000	4,290	4,364	2.23	97.52	-190,666.48
62	LARUE	6	2000	5,350	5,382	1.75	94.39	-183,406.01
63	LAUREL	6	2000	7,407	7,257	0.66	47.72	-88,177.28
65	LEE	6	2000	5,377	5,356	2.16	115.75	-226,149.08
66	LESLIE	6	2000	5,993	6,170	1.32	81.72	-157,274.11
69	LINCOLN	6	2000	3,940	3,965	2.08	82.51	-161,045.49
70	LIVINGSTON	6	2000	4,788	4,823	0.87	41.76	-78,706.71
71	LOGAN	6	2000	4,975	4,995	2.00	99.84	-194,684.16
72	LYON	6	2000	5,972	6,132	1.02	62.71	-119,278.39
76	MADISON	6	2000	4,423	4,449	3.11	138.56	-272,678.44
77	MAGOFFIN	6	2000	7,403	7,572	2.22	167.88	-328,185.76
79	MARSHALL	6	2000	4,678	4,675	0.51	23.70	-42,718.97
80	MARTIN	6	2000	5,603	6,000	0.89	53.13	-100,262.20
81	MASON	6	2000	5,440	5,422	1.56	84.70	-163,972.30
74	MCCREARY	6	2000	1,218	1,114	-1.32	-14.68	30,465.57
75	MCLEAN	6	2000	6,249	6,201	1.28	79.14	-152,072.03
82	MEADE	6	2000	8,550	9,008	3.61	325.12	-641,222.08
83	MENIFEE	6	2000	3,939	3,982	2.91	115.94	-227,897.06
84	MERCER	6	2000	2,888	2,848	1.73	49.37	-95,895.83
85	METCALFE	6	2000	3,438	3,444	1.41	48.71	-93,969.96
87	MONTGOMERY	6	2000	6,136	6,078	3.01	182.67	-359,271.97
88	MORGAN	6	2000	4,853	4,885	1.96	95.65	-186,408.92
89	MUHLENBERG	6	2000	6,657	6,717	1.41	94.90	-183,082.80
90	NELSON	6	2000	6,211	6,402	3.41	218.29	-430,174.09
93	OLDHAM	6	2000	10,634	10,587	2.59	273.84	-537,085.24
94	OWEN	6	2000	4,517	4,486	2.12	95.28	-186,078.26
95	OWSLEY	6	2000	1,143	1,125	1.07	12.07	-23,011.90
96	PENDLETON	6	2000	6,771	6,817	2.69	183.16	-359,511.98
99	POWELL	6	2000	3,005	2,929	4.31	126.18	-249,434.82
100	PULASKI	6	2000	10,868	10,958	3.02	330.71	-650,465.79
102	ROCKCASTLE	6	2000	7,600	7,722	2.14	165.00	-322,287.42
103	ROWAN	6	2000	8,693	8,843	2.96	261.36	-513,884.14
104	RUSSELL	6	2000	10,600	10,529	1.93	203.27	-396,016.73
105	SCOTT	6	2000	6,628	6,664	3.90	259.87	-513,068.93
106	SHELBY	6	2000	6,749	6,868	3.62	248.48	-490,100.63
107	SIMPSON	6	2000	8,993	9,052	3.30	299.13	-589,210.20
108	SPENCER	6	2000	8,010	7,989	4.48	357.55	-707,110.16
110	TODD	6	2000	2,975	3,189	3.49	111.36	-219,533.58
112	TRIMBLE	6	2000	5,286	5,250	3.24	169.92	-334,581.93
113	UNION	6	2000	5,580	5,646	0.35	19.94	-34,239.47
114	WARREN	6	2000	3,081	3,278	0.72	23.55	-43,816.85
115	WASHINGTON	6	2000	7,134	7,179	2.01	144.35	-281,526.47
116	WAYNE	6	2000	6,883	7,030	3.72	261.54	-516,040.46
117	WEBSTER	6	2000	4,323	4,363	-0.49	-21.55	47,470.90
118	WHITLEY	6	2000	6,100	6,206	3.92	243.41	-480,616.30
119	WOLFE	6	2000	3,928	3,858	0.84	32.52	-61,179.70

Functional Class 07, Unweighted County Level Growth Rates

County Number	County Name	Functional Class	Year	Average ADT	Predicted 2000 ADT	2000 Growth (%)	Regression Slope	Regression Constant
1	ADAIR	7	2000	2,639	2,695	1.97	52.98	-103,263.11
2	ALLEN	7	2000	3,552	3,567	1.16	41.33	-79,090.79
3	ANDERSON	7	2000	1,745	1,734	1.47	25.57	-49,415.33
4	BALLARD	7	2000	1,534	1,548	0.91	14.16	-26,774.22
5	BARREN	7	2000	3,094	3,127	1.62	50.66	-98,191.49
6	BATH	7	2000	3,340	3,404	2.49	84.86	-166,309.61
7	BELL	7	2000	2,264	2,279	2.59	59.13	-115,985.68
8	BOONE	7	2000	4,547	4,615	2.92	134.98	-265,339.16
9	BOURBON	7	2000	1,794	1,828	2.66	48.68	-95,542.08
10	BOYD	7	2000	3,130	3,185	2.16	68.96	-134,741.79
11	BOYLE	7	2000	2,722	2,749	2.23	61.44	-120,134.90
12	BRACKEN	7	2000	1,633	1,638	1.36	22.24	-42,849.01
13	BREATHITT	7	2000	2,904	2,850	-0.33	-9.29	21,421.59
14	BRECKINRIDGE	7	2000	1,724	1,718	1.90	32.58	-63,443.23
15	BULLITT	7	2000	7,494	7,414	1.56	115.65	-223,885.08
16	BUTLER	7	2000	3,255	3,289	2.00	65.89	-128,489.17
17	CALDWELL	7	2000	1,675	1,696	1.35	22.89	-44,076.61
18	CALLOWAY	7	2000	2,238	2,247	1.98	44.39	-86,525.44
19	CAMPBELL	7	2000	1,295	1,265	0.22	2.78	-4,304.27
20	CARLISLE	7	2000	1,531	1,528	0.96	14.66	-27,793.02
21	CARROLL	7	2000	4,356	4,351	1.50	65.06	-125,774.50
22	CARTER	7	2000	4,785	4,840	1.67	80.76	-156,681.74
23	CASEY	7	2000	2,334	2,273	0.39	8.77	-15,263.48
24	CHRISTIAN	7	2000	1,880	1,923	0.97	18.70	-35,475.09
25	CLARK	7	2000	3,307	3,325	1.72	57.30	-111,277.60
26	CLAY	7	2000	2,467	2,483	2.33	57.92	-113,350.96
27	CLINTON	7	2000	2,932	2,950	1.91	56.33	-109,703.84
28	CRITTENDEN	7	2000	1,221	1,240	0.23	2.83	-4,420.22
29	CUMBERLAND	7	2000	2,702	2,750	2.08	57.28	-111,802.50
30	DAVIESS	7	2000	4,018	3,997	1.86	74.18	-144,357.86
31	EDMONSON	7	2000	1,177	1,208	1.60	19.34	-37,462.10
32	ELLIOTT	7	2000	697	701	0.75	5.23	-9,751.77
33	ESTILL	7	2000	6,448	6,410	1.26	81.05	-155,693.32
35	FLEMING	7	2000	2,746	2,760	1.13	31.16	-59,564.58
36	FLOYD	7	2000	4,745	4,573	1.05	48.24	-91,908.90
37	FRANKLIN	7	2000	3,003	2,942	1.13	33.28	-63,623.65
38	FULTON	7	2000	3,326	3,308	0.33	10.93	-18,548.35
39	GALLATIN	7	2000	3,197	3,193	3.42	109.28	-215,359.52
40	GARRARD	7	2000	1,397	1,386	1.22	16.96	-32,526.94
41	GRANT	7	2000	3,632	3,669	2.82	103.63	-203,584.28
42	GRAVES	7	2000	1,900	1,896	1.53	28.92	-55,936.41
43	GRAYSON	7	2000	3,737	3,797	2.53	96.00	-188,198.88
44	GREEN	7	2000	1,939	1,951	2.57	50.20	-98,454.68
45	GREENUP	7	2000	1,956	1,969	1.12	22.03	-42,091.00
46	HANCOCK	7	2000	1,605	1,600	0.95	15.18	-28,769.23
47	HARDIN	7	2000	2,678	2,644	2.21	58.54	-114,426.49
48	HARLAN	7	2000	4,436	4,530	2.06	93.26	-181,987.46
49	HARRISON	7	2000	2,217	2,232	2.42	53.99	-105,743.54
50	HART	7	2000	3,444	3,545	2.30	81.64	-159,738.92
51	HENDERSON	7	2000	2,524	2,549	0.61	15.45	-28,360.09
52	HENRY	7	2000	2,963	3,061	2.71	83.02	-162,970.58
53	HICKMAN	7	2000	1,398	1,389	1.51	20.96	-40,521.48
54	HOPKINS	7	2000	4,095	4,105	0.88	36.15	-68,187.48
55	JACKSON	7	2000	1,208	1,229	2.15	26.45	-51,680.36
57	JESSAMINE	7	2000	3,396	3,439	2.69	92.68	-181,916.04
58	JOHNSON	7	2000	6,358	6,289	0.51	31.90	-57,511.25
59	KENTON	7	2000	2,991	2,993	2.46	73.57	-144,155.98
60	KNOTT	7	2000	3,638	3,649	1.14	41.47	-79,288.53
61	KNOX	7	2000	2,962	2,955	1.75	51.64	-100,320.23
62	LARUE	7	2000	2,620	2,593	0.80	20.63	-38,667.64
63	LAUREL	7	2000	5,260	5,396	3.62	195.53	-385,661.44
64	LAWRENCE	7	2000	3,374	3,384	2.17	73.55	-143,711.28
65	LEE	7	2000	2,778	2,747	-0.21	-5.80	14,348.69
66	LESLIE	7	2000	2,510	2,519	1.26	31.64	-60,752.25
67	LETCHER	7	2000	3,254	3,275	0.99	32.49	-61,711.99
68	LEWIS	7	2000	2,468	2,444	0.82	20.12	-37,803.28
69	LINCOLN	7	2000	2,128	2,105	1.07	22.52	-42,934.96
70	LIVINGSTON	7	2000	1,478	1,474	1.31	19.28	-37,086.73
71	LOGAN	7	2000	1,153	1,156	1.96	22.71	-44,272.22
72	LYON	7	2000	1,801	1,817	0.96	17.42	-33,013.98
76	MADISON	7	2000	4,257	4,274	2.10	89.86	-175,450.74
77	MAGOFFIN	7	2000	2,101	2,093	1.34	28.13	-54,176.87
78	MARION	7	2000	1,815	1,820	1.56	28.41	-54,997.40
79	MARSHALL	7	2000	3,639	3,640	0.25	9.22	-14,801.63
80	MARTIN	7	2000	2,084	2,183	0.01	0.20	1,785.27
81	MASON	7	2000	1,404	1,384	1.83	25.32	-49,247.33
73	MCCRACKEN	7	2000	3,029	3,070	1.81	55.70	-108,330.16
74	MCCREARY	7	2000	2,369	2,402	2.37	57.02	-111,643.73
75	MCLEAN	7	2000	2,737	2,732	1.38	37.84	-72,943.93
82	MEADE	7	2000	3,396	3,452	1.99	68.56	-133,676.33
83	MENIFEE	7	2000	1,288	1,291	2.17	27.97	-54,651.33
84	MERCER	7	2000	2,120	2,127	1.82	38.81	-75,487.13
85	METCALFE	7	2000	3,456	3,440	1.41	48.61	-93,779.68
86	MONROE	7	2000	3,441	3,403	0.32	10.80	-18,206.36
87	MONTGOMERY	7	2000	3,356	3,417	3.15	107.65	-211,877.17
88	MORGAN	7	2000	1,811	1,846	2.31	42.63	-83,405.17
89	MUHLENBERG	7	2000	6,128	6,151	1.00	61.71	-117,262.71
90	NELSON	7	2000	3,541	3,597	3.03	109.05	-214,509.43
91	NICHOLAS	7	2000	4,539	4,553	2.21	100.53	-196,498.89
92	OHIO	7	2000	5,682	5,627	1.06	59.69	-113,748.49
93	OLDHAM	7	2000	3,560	3,562	2.33	83.07	-162,587.75
94	OWEN	7	2000	1,394	1,414	2.04	28.81	-56,206.71
95	OWSLEY	7	2000	2,904	2,902	1.68	48.81	-94,708.47
96	PENDLETON	7	2000	1,727	1,731	1.75	30.23	-58,721.49
97	PERRY	7	2000	3,171	3,163	1.72	54.44	-105,722.99
98	PIKE	7	2000	3,590	3,580	-0.16	-5.78	15,130.56
99	POWELL	7	2000	5,482	5,461	2.04	111.32	-217,187.09
100	PULASKI	7	2000	2,460	2,449	1.81	44.26	-86,081.12
101	ROBERTSON	7	2000	1,122	1,123	1.92	21.51	-41,896.72
102	ROCKCASTLE	7	2000	1,754	1,791	1.99	35.59	-69,389.45
103	ROWAN	7	2000	3,163	3,203	2.26	72.38	-141,550.86
104	RUSSELL	7	2000	3,417	3,395	1.38	46.89	-90,381.12
105	SCOTT	7	2000	3,801	3,889	2.77	107.73	-211,571.71
106	SHELBY	7	2000	2,422	2,459	3.53	86.84	-171,219.10
107	SIMPSON	7	2000	2,129	2,105	2.95	62.12	-122,130.31
108	SPENCER	7	2000	3,077	3,056	3.94	120.45	-237,850.44
109	TAYLOR	7	2000	2,750	2,770	2.02	55.89	-109,006.37
110	TODD	7	2000	2,402	2,361	0.88	20.69	-39,016.38
111	TRIGG	7	2000	2,007	2,024	1.59	32.13	-62,232.71
112	TRIMBLE	7	2000	3,541	3,535	3.98	140.72	-277,913.26
113	UNION	7	2000	2,138	2,151	0.72	15.47	-28,797.79
114	WARREN	7	2000	4,562	4,605	2.10	96.78	-188,960.15
115	WASHINGTON	7	2000	1,360	1,386	1.34	18.50	-35,620.80
116	WAYNE	7	2000	1,414	1,412	2.29	32.29	-63,160.57
117	WEBSTER	7	2000	2,822	2,822	0.34	9.46	-16,100.77
118	WHITLEY	7	2000	3,619	3,668	2.33	85.34	-167,013.21
119	WOLFE	7	2000	1,292	1,305	1.98	25.80	-50,298.42
120	WOODFORD	7	2000	3,533	3,574	3.19	114.10	-224,620.79

Functional Class 08, Unweighted County Level Growth Rates

County Number	County Name	Functional Class	Year	Average ADT	Predicted 2000 ADT	2000 Growth (%)	Regression Slope	Regression Constant
1	ADAIR	8	2000	770	780	1.25	9.74	-18,699.39
2	ALLEN	8	2000	969	1,016	0.31	3.17	-5,320.59
3	ANDERSON	8	2000	784	786	1.57	12.30	-23,813.88
4	BALLARD	8	2000	364	362	0.32	1.17	-1,974.62
5	BARREN	8	2000	584	588	1.87	11.02	-21,460.50
6	BATH	8	2000	543	543	1.95	10.61	-20,679.88
7	BELL	8	2000	1,050	1,071	2.74	29.33	-57,584.82
8	BOONE	8	2000	1,248	1,264	2.63	33.20	-65,143.74
9	BOURBON	8	2000	952	953	2.38	22.70	-44,447.94
10	BOYD	8	2000	568	588	-3.72	-21.92	44,428.28
11	BOYLE	8	2000	751	742	1.79	13.29	-25,847.92
12	BRACKEN	8	2000	478	484	3.17	15.33	-30,179.10
13	BREATHITT	8	2000	526	525	1.18	6.19	-11,863.24
14	BRECKINRIDGE	8	2000	549	549	0.92	5.06	-9,578.36
15	BULLITT	8	2000	1,382	1,392	3.57	49.67	-97,949.37
16	BUTLER	8	2000	468	467	1.48	6.91	-13,343.36
17	CALDWELL	8	2000	358	358	0.95	3.41	-6,463.10
18	CALLOWAY	8	2000	696	702	1.84	12.95	-25,200.32
19	CAMPBELL	8	2000	764	795	3.98	31.65	-62,511.45
20	CARLISLE	8	2000	271	267	-0.08	-0.23	717.49
21	CARROLL	8	2000	479	489	3.70	18.08	-35,676.15
22	CARTER	8	2000	875	864	0.81	7.01	-13,147.30
23	CASEY	8	2000	593	590	1.40	8.25	-15,901.90
24	CHRISTIAN	8	2000	588	583	1.46	8.51	-16,430.78
25	CLARK	8	2000	872	881	1.97	17.40	-33,913.70
26	CLAY	8	2000	1,121	1,089	1.66	18.09	-35,088.88
27	CLINTON	8	2000	797	802	1.71	13.70	-26,598.52
28	CRITTENDEN	8	2000	383	382	0.22	0.85	-1,308.33
29	CUMBERLAND	8	2000	397	398	1.94	7.73	-15,059.75
30	DAVIESS	8	2000	744	746	2.01	14.97	-29,201.75
31	EDMONSON	8	2000	614	580	2.45	14.18	-27,786.69
32	ELLIOTT	8	2000	390	395	2.46	9.72	-19,041.13
33	ESTILL	8	2000	934	937	2.49	23.33	-45,728.54
35	FLEMING	8	2000	667	680	2.51	17.04	-33,397.89
36	FLOYD	8	2000	2,857	2,865	1.49	42.76	-82,655.59
37	FRANKLIN	8	2000	889	902	1.83	16.54	-32,172.38
38	FULTON	8	2000	1,050	1,063	0.31	3.32	-5,574.05
39	GALLATIN	8	2000	708	702	4.35	30.51	-60,328.01
40	GARRARD	8	2000	521	536	3.39	18.20	-35,855.34
41	GRANT	8	2000	1,237	1,264	3.01	38.03	-74,798.90
42	GRAVES	8	2000	885	888	1.49	13.22	-25,550.35
43	GRAYSON	8	2000	1,138	1,150	2.66	30.59	-60,026.94
44	GREEN	8	2000	376	381	1.32	5.02	-9,661.17
45	GREENUP	8	2000	665	666	1.00	6.63	-12,601.52
46	HANCOCK	8	2000	684	679	1.89	12.81	-24,942.74
47	HARDIN	8	2000	1,598	1,585	2.92	46.32	-91,047.75
48	HARLAN	8	2000	2,489	2,559	0.99	25.36	-48,164.23
49	HARRISON	8	2000	687	683	2.84	19.39	-38,104.07
50	HART	8	2000	492	498	2.22	11.04	-21,581.16
51	HENDERSON	8	2000	576	586	1.51	8.83	-17,066.86
52	HENRY	8	2000	693	696	1.97	13.72	-26,749.28
53	HICKMAN	8	2000	317	317	0.48	1.51	-2,701.33
54	HOPKINS	8	2000	1,195	1,190	0.57	6.73	-12,278.69
55	JACKSON	8	2000	537	541	3.27	17.68	-34,814.05
56	JEFFERSON	8	2000	1,385	1,375	3.96	54.45	-107,524.95
57	JESSAMINE	8	2000	1,470	1,448	0.77	11.20	-20,945.75
58	JOHNSON	8	2000	1,428	1,424	1.19	16.96	-32,495.07
59	KENTON	8	2000	605	591	2.50	14.80	-29,007.89
60	KNOTT	8	2000	1,152	1,139	0.41	4.63	-8,123.07
61	KNOX	8	2000	1,481	1,464	3.21	47.04	-92,606.83
62	LARUE	8	2000	1,092	1,109	1.00	11.10	-21,091.30
63	LAUREL	8	2000	927	944	2.66	25.13	-49,311.90
64	LAWRENCE	8	2000	978	986	3.73	36.81	-72,626.00
65	LEE	8	2000	759	724	0.46	3.30	-5,882.75
66	LESLIE	8	2000	959	980	0.19	1.88	-2,784.04
67	LETCHER	8	2000	1,468	1,480	2.21	32.65	-63,829.22
68	LEWIS	8	2000	711	690	-1.10	-7.56	15,811.78
69	LINCOLN	8	2000	1,496	1,500	3.15	47.30	-93,107.12
70	LIVINGSTON	8	2000	520	524	1.59	8.32	-16,117.93
71	LOGAN	8	2000	583	585	1.48	8.65	-16,722.64
72	LYON	8	2000	547	527	0.89	4.68	-8,830.88
76	MADISON	8	2000	1,145	1,158	2.84	32.85	-64,534.95
77	MAGOFFIN	8	2000	541	526	1.88	9.91	-19,303.10
78	MARION	8	2000	991	976	1.93	18.86	-36,745.09
79	MARSHALL	8	2000	896	893	0.89	7.96	-15,023.38
80	MARTIN	8	2000	1,453	1,474	0.83	12.21	-22,953.09
81	MASON	8	2000	530	548	1.78	9.77	-18,995.26
73	MCCRACKEN	8	2000	970	983	1.77	17.34	-33,705.22
74	MCCREARY	8	2000	1,508	1,488	1.14	17.03	-32,566.06
75	MCLEAN	8	2000	554	555	1.69	9.35	-18,154.00
82	MEADE	8	2000	1,045	1,048	1.95	20.39	-39,734.05
83	MENIFEE	8	2000	449	431	0.46	2.00	-3,567.34
84	MERCER	8	2000	463	467	1.81	8.42	-16,383.01
85	METCALFE	8	2000	622	617	-0.14	-0.87	2,355.92
86	MONROE	8	2000	799	795	-0.04	-0.30	1,396.14
87	MONTGOMERY	8	2000	925	902	1.65	14.87	-28,835.31
88	MORGAN	8	2000	376	375	1.60	5.99	-11,603.94
89	MUHLENBERG	8	2000	1,872	1,869	1.14	21.29	-40,708.93
90	NELSON	8	2000	764	772	2.88	22.26	-43,742.53
91	NICHOLAS	8	2000	465	464	1.19	5.53	-10,591.92
92	OHIO	8	2000	781	786	1.15	9.08	-17,372.88
93	OLDHAM	8	2000	1,695	1,675	3.23	54.05	-106,424.30
94	OWEN	8	2000	448	454	2.03	9.22	-17,982.90
95	OWSLEY	8	2000	344	332	0.28	0.95	-1,559.99
96	PENDLETON	8	2000	946	948	2.72	25.82	-50,693.86
97	PERRY	8	2000	1,134	1,132	1.56	17.71	-34,283.38
98	PIKE	8	2000	1,944	1,936	0.86	16.70	-31,459.01
99	POWELL	8	2000	875	873	2.03	17.70	-34,531.13
100	PULASKI	8	2000	805	787	1.67	13.12	-25,451.60
101	ROBERTSON	8	2000	218	219	1.39	3.04	-5,869.66
102	ROCKCASTLE	8	2000	987	985	2.22	21.84	-42,689.47
103	ROWAN	8	2000	853	872	2.81	24.52	-48,160.57
104	RUSSELL	8	2000	1,477	1,477	1.82	26.91	-52,333.61
105	SCOTT	8	2000	1,223	1,253	3.89	48.80	-96,339.47
106	SHELBY	8	2000	742	763	2.67	20.34	-39,923.21
107	SIMPSON	8	2000	630	661	1.38	9.14	-17,613.33
108	SPENCER	8	2000	678	661	3.75	24.82	-48,985.08
109	TAYLOR	8	2000	736	746	1.97	14.72	-28,698.70
110	TODD	8	2000	592	596	2.01	11.99	-23,390.54
111	TRIGG	8	2000	604	600	1.19	7.15	-13,708.47
112	TRIMBLE	8	2000	554	527	-2.02	-10.64	21,798.65
113	UNION	8	2000	663	656	0.52	3.40	-6,149.67
114	WARREN	8	2000	1,298	1,278	2.80	35.74	-70,207.27
115	WASHINGTON	8	2000	940	954	1.23	11.72	-22,486.98
116	WAYNE	8	2000	560	565	1.35	7.64	-14,724.01
117	WEBSTER	8	2000	683	688	0.45	3.12	-5,543.08
118	WHITLEY	8	2000	1,209	1,208	1.90	22.98	-44,745.75
119	WOLFE	8	2000	468	471	0.64	3.03	-5,581.47
120	WOODFORD	8	2000	836	837	1.32	11.05	-21,263.68

Functional Class 09, Unweighted County Level Growth Rates

County Number	County Name	Functional Class	Year	Average ADT	Predicted 2000 ADT	2000 Growth (%)	Regression Slope	Regression Constant
1	ADAIR	9	2000	406	410	4.47	18.34	-36,263.48
2	ALLEN	9	2000	356	352	0.50	1.77	-3,185.38
3	ANDERSON	9	2000	290	286	4.96	14.22	-28,144.97
4	BALLARD	9	2000	306	304	-2.59	-7.87	16,044.97
5	BARREN	9	2000	631	633	0.37	2.33	-4,021.78
6	BATH	9	2000	399	405	3.59	14.53	-28,649.51
7	BELL	9	2000	1,090	1,090	0.90	9.85	-18,601.41
8	BOONE	9	2000	854	858	2.88	24.69	-48,516.25
9	BOURBON	9	2000	367	365	2.50	9.11	-17,858.71
10	BOYD	9	2000	937	935	0.87	8.12	-15,303.40
11	BOYLE	9	2000	393	401	1.90	7.61	-14,826.98
12	BRACKEN	9	2000	199	195	3.66	7.12	-14,043.01
13	BREATHITT	9	2000	538	535	1.52	8.13	-15,729.49
14	BRECKINRIDGE	9	2000	1,719	1,735	0.62	10.69	-19,648.96
15	BULLITT	9	2000	1,511	1,490	-0.71	-10.62	22,733.53
16	BUTLER	9	2000	395	385	0.67	2.60	-4,809.30
17	CALDWELL	9	2000	127	128	-1.29	-1.64	3,416.89
18	CALLOWAY	9	2000	520	536	2.45	13.16	-25,778.44
19	CAMPBELL	9	2000	1,600	1,600	2.20	35.23	-68,850.11
20	CARLISLE	9	2000	192	192	0.34	0.65	-1,099.58
21	CARROLL	9	2000	478	471	0.99	4.65	-8,822.47
22	CARTER	9	2000	465	462	1.95	9.03	-17,598.79
23	CASEY	9	2000	553	534	-1.17	-6.23	13,002.26
24	CHRISTIAN	9	2000	363	367	1.04	3.83	-7,295.60
25	CLARK	9	2000	1,390	1,377	-0.85	-11.65	24,670.35
26	CLAY	9	2000	884	879	2.29	20.14	-39,400.78
27	CLINTON	9	2000	185	186	2.56	4.76	-9,342.26
28	CRITTENDEN	9	2000	139	138	0.22	0.30	-465.94
29	CUMBERLAND	9	2000	214	213	0.63	1.33	-2,453.89
30	DAVIESS	9	2000	605	596	1.07	6.39	-12,193.21
31	EDMONSON	9	2000	287	286	1.21	3.47	-6,659.86
32	ELLIOTT	9	2000	175	173	0.13	0.22	-270.27
33	ESTILL	9	2000	680	684	0.91	6.22	-11,752.15
34	FAYETTE	9	2000	1,498	1,498	1.18	17.73	-33,953.72
35	FLEMING	9	2000	404	408	2.41	9.81	-19,219.72
36	FLOYD	9	2000	1,143	1,147	2.06	23.64	-46,129.48
37	FRANKLIN	9	2000	587	588	2.13	12.51	-24,436.22
38	FULTON	9	2000	457	454	0.94	4.26	-8,064.90
39	GALLATIN	9	2000	430	430	4.14	17.81	-35,188.28
40	GARRARD	9	2000	449	442	4.49	19.84	-39,239.62
41	GRANT	9	2000	671	659	5.99	39.51	-78,364.18
42	GRAVES	9	2000	426	430	2.43	10.43	-20,435.78
43	GRAYSON	9	2000	315	308	3.46	10.67	-21,023.90
44	GREEN	9	2000	648	639	-1.21	-7.76	16,155.17
45	GREENUP	9	2000	952	967	-0.68	-6.62	14,200.37
46	HANCOCK	9	2000	1,074	1,064	1.51	16.07	-31,080.57
47	HARDIN	9	2000	534	526	1.22	6.44	-12,344.17
48	HARLAN	9	2000	1,265	1,244	2.80	34.79	-68,332.16
49	HARRISON	9	2000	432	434	3.42	14.85	-29,267.58
50	HART	9	2000	389	391	1.92	7.52	-14,646.45
51	HENDERSON	9	2000	393	397	2.29	9.09	-17,778.68
52	HENRY	9	2000	334	337	1.90	6.41	-12,491.06
53	HICKMAN	9	2000	331	328	-0.18	-0.59	1,514.74
54	HOPKINS	9	2000	761	746	4.32	32.20	-63,647.17
55	JACKSON	9	2000	408	403	4.69	18.88	-37,356.24
56	JEFFERSON	9	2000	1,820	1,820	0.55	10.00	-18,180.00
57	JESSAMINE	9	2000	1,809	1,854	4.77	88.40	-174,953.89
58	JOHNSON	9	2000	460	451	3.02	13.61	-26,777.71
59	KENTON	9	2000	476	469	2.65	12.46	-24,441.82
60	KNOTT	9	2000	616	605	6.38	38.58	-76,563.80
61	KNOX	9	2000	2,542	2,560	0.85	21.82	-41,078.46
62	LARUE	9	2000	218	215	1.00	2.15	-4,085.23
63	LAUREL	9	2000	666	664	3.74	24.81	-48,964.10
64	LAWRENCE	9	2000	764	769	2.65	20.40	-40,023.17
65	LEE	9	2000	208	206	2.53	5.22	-10,226.93
66	LESLIE	9	2000	481	480	4.70	22.56	-44,631.12
67	LETCHER	9	2000	822	827	-0.75	-6.19	13,205.86
68	LEWIS	9	2000	255	271	0.98	2.66	-5,041.33
69	LINCOLN	9	2000	841	844	-0.58	-4.90	10,650.66
70	LIVINGSTON	9	2000	229	230	0.71	1.62	-3,018.87
71	LOGAN	9	2000	310	312	1.73	5.40	-10,491.14
72	LYON	9	2000	227	220	2.08	4.59	-8,961.41
76	MADISON	9	2000	957	956	5.44	52.02	-103,081.52
77	MAGOFFIN	9	2000	496	494	0.03	0.17	158.23
78	MARION	9	2000	214	208	2.86	5.95	-11,696.52
79	MARSHALL	9	2000	970	966	0.49	4.76	-8,557.32
80	MARTIN	9	2000	644	647	4.00	25.91	-51,165.67
81	MASON	9	2000	249	252	0.35	0.89	-1,525.14
73	MCCRACKEN	9	2000	599	597	2.68	16.02	-31,447.21
74	MCCREARY	9	2000	518	518	0.09	0.45	-383.08
75	MCLEAN	9	2000	298	296	1.20	3.56	-6,825.77
82	MEADE	9	2000	393	400	1.06	4.22	-8,049.08
83	MENIFEE	9	2000	237	236	4.31	10.20	-20,163.54
84	MERCER	9	2000	516	502	0.18	0.90	-1,305.05
85	METCALFE	9	2000	297	288	-0.42	-1.21	2,711.60
86	MONROE	9	2000	485	473	1.41	6.68	-12,884.67
87	MONTGOMERY	9	2000	686	693	2.81	19.47	-38,250.75
88	MORGAN	9	2000	649	640	0.64	4.09	-7,533.77
89	MUHLENBERG	9	2000	984	988	1.13	11.14	-21,284.26
90	NELSON	9	2000	434	427	2.99	12.75	-25,080.68
91	NICHOLAS	9	2000	232	232	1.53	3.55	-6,878.12
92	OHIO	9	2000	927	932	2.39	22.22	-43,504.34
93	OLDHAM	9	2000	1,950	1,950	3.06	59.73	-117,509.04
94	OWEN	9	2000	423	438	1.74	7.61	-14,782.64
95	OWSLEY	9	2000	231	247	3.69	9.10	-17,951.85
96	PENDLETON	9	2000	418	419	3.85	16.12	-31,827.34
97	PERRY	9	2000	598	604	2.57	15.51	-30,408.43
98	PIKE	9	2000	1,098	1,090	1.01	10.98	-20,878.14
99	POWELL	9	2000	730	724	1.42	10.29	-19,847.72
100	PULASKI	9	2000	506	503	4.10	20.62	-40,729.73
101	ROBERTSON	9	2000	118	118	1.66	1.95	-3,782.18
102	ROCKCASTLE	9	2000	434	436	3.12	13.57	-26,714.25
103	ROWAN	9	2000	262	262	2.13	5.57	-10,875.75
104	RUSSELL	9	2000	366	367	3.61	13.25	-26,130.44
105	SCOTT	9	2000	356	363	2.05	7.43	-14,493.76
106	SHELBY	9	2000	568	572	3.85	22.04	-43,499.14
107	SIMPSON	9	2000	260	253	7.15	18.07	-35,890.22
108	SPENCER	9	2000	422	418	4.66	19.51	-38,591.74
109	TAYLOR	9	2000	350	349	2.87	10.01	-19,662.53
110	TODD	9	2000	411	413	2.04	8.41	-16,398.49
111	TRIGG	9	2000	312	311	2.17	6.76	-13,202.36
112	TRIMBLE	9	2000	287	286	0.61	1.75	-3,218.44
113	UNION	9	2000	305	306	-2.43	-7.44	15,180.51
114	WARREN	9	2000	1,069	1,078	2.39	25.76	-50,438.57
115	WASHINGTON	9	2000	225	225	2.78	6.24	-12,251.86
116	WAYNE	9	2000	735	739	2.38	17.56	-34,377.89
117	WEBSTER	9	2000	486	489	1.53	7.47	-14,456.52
118	WHITLEY	9	2000	543	534	0.32	1.71	-2,893.10
119	WOLFE	9	2000	488	479	1.84	8.79	-17,110.74
120	WOODFORD	9	2000	1,202	1,220	3.57	43.53	-85,835.17

Functional Class 11, Unweighted County Level Growth Rates

County Number	County Name	Functional Class	Year	Average ADT	Predicted 2000 ADT	2000 Growth (%)	Regression Slope	Regression Constant
8	BOONE	11	2000	101,025	103,537	4.29	4,444.66	-8,785,792.48
15	BULLITT	11	2000	79,700	77,913	3.00	2,340.61	-4,603,299.39
19	CAMPBELL	11	2000	90,767	89,767	1.93	1,736.04	-3,382,311.26
24	CHRISTIAN	11	2000	25,300	24,657	4.52	1,114.29	-2,203,914.29
25	CLARK	11	2000	41,000	42,278	3.35	1,415.15	-2,788,024.85
34	FAYETTE	11	2000	54,338	55,047	3.14	1,730.15	-3,405,255.02
47	HARDIN	11	2000	47,050	48,715	4.10	1,997.88	-3,947,042.12
56	JEFFERSON	11	2000	94,464	97,740	3.07	3,002.49	-5,907,234.27
59	KENTON	11	2000	125,864	128,871	2.78	3,583.45	-7,038,022.27
63	LAUREL	11	2000	35,550	37,744	3.34	1,259.70	-2,481,650.30
76	MADISON	11	2000	44,000	44,594	2.77	1,233.03	-2,421,466.97
73	MCCRACKEN	11	2000	34,400	34,835	3.76	1,308.33	-2,581,831.67
105	SCOTT	11	2000	42,100	43,765	4.25	1,861.21	-3,678,658.79
114	WARREN	11	2000	44,500	42,620	2.24	953.33	-1,864,046.67
118	WHITLEY	11	2000	34,600	38,131	3.52	1,342.42	-2,646,717.58

<u>Functional Class 12, Unweighted County Level Growth Rates</u>

County Number	County Name	Functional Class	Year	Average ADT	Predicted 2000 ADT	2000 Growth (%)	Regression Slope	Regression Constant
5	BARREN	12	2000	6,920	7,173	3.46	247.94	-488,706.06
19	CAMPBELL	12	2000	48,800	40,049	1.23	490.91	-941,769.09
24	CHRISTIAN	12	2000	14,967	15,097	2.41	364.40	-713,712.86
30	DAVIESS	12	2000	18,814	18,930	3.15	597.03	-1,175,133.11
34	FAYETTE	12	2000	63,689	63,617	3.15	2,003.34	-3,943,066.94
42	GRAVES	12	2000	15,033	14,931	3.84	573.49	-1,132,053.57
47	HARDIN	12	2000	20,850	21,462	2.82	605.66	-1,189,851.01
51	HENDERSON	12	2000	25,300	24,356	0.67	162.02	-299,684.65
54	HOPKINS	12	2000	19,633	21,278	0.95	203.17	-385,071.43
56	JEFFERSON	12	2000	33,700	33,621	3.63	1,219.09	-2,404,560.91
90	NELSON	12	2000	9,590	10,237	4.89	500.67	-991,096.22
100	PULASKI	12	2000	10,400	9,824	-0.28	-27.52	64,854.48
114	WARREN	12	2000	11,740	11,697	4.29	501.43	-991,171.90

Functional Class 14, Unweighted County Level Growth Rates

County Number	County Name	Functional Class	Year	Average ADT	Predicted 2000 ADT	2000 Growth (%)	Regression Slope	Regression Constant
3	ANDERSON	14	2000	16,200	16,532	3.22	531.52	-1,046,498.48
5	BARREN	14	2000	15,311	15,397	2.04	313.37	-611,334.16
7	BELL	14	2000	26,225	25,593	2.38	608.48	-1,191,376.52
9	BOURBON	14	2000	8,743	8,600	1.62	138.94	-269,272.96
10	BOYD	14	2000	21,286	21,305	0.88	187.45	-353,595.48
11	BOYLE	14	2000	14,009	14,097	2.52	354.59	-695,079.74
15	BULLITT	14	2000	19,200	18,848	3.33	627.68	-1,236,505.66
18	CALLOWAY	14	2000	17,117	17,670	2.13	375.55	-733,429.74
19	CAMPBELL	14	2000	15,586	15,464	0.46	71.69	-127,922.58
24	CHRISTIAN	14	2000	17,047	16,820	2.36	397.48	-778,137.99
25	CLARK	14	2000	19,600	19,332	2.89	557.79	-1,096,244.21
30	DAVIESS	14	2000	14,713	14,765	0.91	134.61	-254,446.92
34	FAYETTE	14	2000	29,879	29,936	1.33	398.40	-766,868.92
37	FRANKLIN	14	2000	23,122	23,514	3.00	706.07	-1,388,625.70
42	GRAVES	14	2000	9,434	9,572	0.40	38.16	-66,754.84
45	GREENUP	14	2000	20,988	21,183	1.52	321.21	-621,241.29
47	HARDIN	14	2000	27,838	28,242	1.53	430.72	-833,198.90
49	HARRISON	14	2000	10,355	10,582	0.94	99.38	-188,175.87
51	HENDERSON	14	2000	26,767	26,910	0.91	246.06	-465,217.94
54	HOPKINS	14	2000	13,924	14,578	1.58	230.43	-446,288.14
56	JEFFERSON	14	2000	23,989	24,103	0.55	132.30	-240,494.31
57	JESSAMINE	14	2000	22,200	21,880	2.88	630.36	-1,238,847.64
59	KENTON	14	2000	12,060	11,812	-0.03	-3.85	19,514.09
61	KNOX	14	2000	26,700	27,178	4.63	1,257.19	-2,487,206.14
63	LAUREL	14	2000	20,000	19,946	2.82	561.74	-1,103,536.26
71	LOGAN	14	2000	8,785	8,815	1.96	172.53	-336,245.80
76	MADISON	14	2000	17,310	17,643	1.69	297.92	-578,207.22
78	MARION	14	2000	12,600	12,489	2.14	267.70	-522,918.07
81	MASON	14	2000	14,229	14,462	0.90	129.55	-244,632.34
73	MCCRACKEN	14	2000	16,207	16,443	0.28	45.80	-75,159.65
82	MEADE	14	2000	14,390	14,624	2.41	351.73	-688,830.27
84	MERCER	14	2000	17,818	18,014	2.05	369.83	-721,652.50
87	MONTGOMERY	14	2000	18,050	18,038	4.22	760.61	-1,503,173.64
90	NELSON	14	2000	14,942	14,873	1.58	235.61	-456,338.69
97	PERRY	14	2000	18,986	19,012	2.54	482.08	-945,143.64
98	PIKE	14	2000	27,722	27,857	2.66	741.89	-1,455,913.67
100	PULASKI	14	2000	24,020	23,614	0.29	67.39	-111,162.23
103	ROWAN	14	2000	19,691	18,891	2.15	405.77	-792,657.50
105	SCOTT	14	2000	12,313	12,640	4.17	527.68	-1,042,713.88
106	SHELBY	14	2000	18,985	19,200	3.01	577.14	-1,135,075.17
109	TAYLOR	14	2000	17,991	18,116	2.01	363.53	-708,941.14
114	WARREN	14	2000	19,581	19,618	2.03	399.01	-778,392.79
116	WAYNE	14	2000	10,455	10,628	5.23	555.76	-1,100,886.74
120	WOODFORD	14	2000	23,075	22,864	0.95	218.03	-413,196.97

<u>Functional Class 16, Unweighted County Level Growth Rates</u>

County Number	County Name	Functional Class	Year	Average ADT	Predicted 2000 ADT	2000 Growth (%)	Regression Slope	Regression Constant
3	ANDERSON	16	2000	9,165	9,110	1.28	116.87	-224,623.73
5	BARREN	16	2000	7,412	7,478	1.35	101.28	-195,091.10
7	BELL	16	2000	8,489	8,558	1.82	156.04	-303,520.04
8	BOONE	16	2000	18,570	18,316	2.16	395.48	-772,653.64
9	BOURBON	16	2000	7,635	7,653	1.33	102.03	-196,409.77
10	BOYD	16	2000	8,835	8,864	0.74	65.48	-122,104.25
11	BOYLE	16	2000	6,769	6,680	0.74	49.22	-91,769.84
15	BULLITT	16	2000	13,071	13,227	3.05	404.04	-794,853.96
17	CALDWELL	16	2000	6,181	6,268	1.19	74.30	-142,324.12
18	CALLOWAY	16	2000	9,334	9,510	1.99	189.14	-368,775.08
19	CAMPBELL	16	2000	5,982	5,903	0.05	2.69	524.16
24	CHRISTIAN	16	2000	8,688	8,633	0.91	78.96	-149,294.36
25	CLARK	16	2000	10,669	10,835	2.00	216.46	-422,093.29
30	DAVIESS	16	2000	8,279	8,197	1.21	98.81	-189,425.00
34	FAYETTE	16	2000	13,683	13,737	2.41	330.71	-647,689.55
37	FRANKLIN	16	2000	9,922	9,976	0.76	75.50	-141,018.34
42	GRAVES	16	2000	3,933	4,076	0.78	31.84	-59,600.73
45	GREENUP	16	2000	8,720	8,635	1.89	163.04	-317,448.14
47	HARDIN	16	2000	11,560	11,694	2.25	263.68	-515,675.77
49	HARRISON	16	2000	5,310	5,325	1.37	72.79	-140,260.44
51	HENDERSON	16	2000	8,952	8,919	1.76	157.17	-305,412.96
54	HOPKINS	16	2000	12,781	12,790	0.99	126.71	-240,626.42
56	JEFFERSON	16	2000	15,342	15,333	1.21	185.59	-355,846.34
57	JESSAMINE	16	2000	12,065	12,168	2.74	333.02	-653,874.35
59	KENTON	16	2000	13,466	13,152	0.92	121.65	-230,155.11
61	KNOX	16	2000	8,920	8,796	0.27	23.58	-38,355.22
63	LAUREL	16	2000	10,274	10,258	0.77	78.64	-147,023.03
71	LOGAN	16	2000	7,170	7,430	1.65	122.55	-237,671.32
76	MADISON	16	2000	8,822	9,016	1.91	171.91	-334,801.49
78	MARION	16	2000	5,458	5,278	-0.48	-25.23	55,746.66
81	MASON	16	2000	5,160	5,166	-0.67	-34.58	74,325.99
73	MCCRACKEN	16	2000	7,155	7,190	0.67	48.13	-89,073.58
82	MEADE	16	2000	3,780	4,325	6.10	263.70	-523,069.30
84	MERCER	16	2000	4,641	4,731	1.91	90.50	-176,258.98
87	MONTGOMERY	16	2000	7,078	7,172	1.23	88.16	-169,149.31
90	NELSON	16	2000	9,309	9,375	3.25	304.68	-599,983.85
93	OLDHAM	16	2000	11,492	11,273	2.56	288.87	-566,472.73
97	PERRY	16	2000	8,043	8,171	1.10	89.99	-171,814.17
98	PIKE	16	2000	9,558	9,541	0.55	52.80	-96,049.70
100	PULASKI	16	2000	6,885	6,930	0.41	28.57	-50,209.11
103	ROWAN	16	2000	7,290	7,500	2.67	200.02	-392,548.38
105	SCOTT	16	2000	11,228	11,250	0.94	105.40	-199,542.36
106	SHELBY	16	2000	8,590	8,688	3.36	291.76	-574,827.58
107	SIMPSON	16	2000	6,367	6,262	-0.10	-5.98	18,225.53
109	TAYLOR	16	2000	8,371	8,354	1.29	107.75	-207,151.16
114	WARREN	16	2000	11,580	11,565	1.87	216.29	-421,019.57
116	WAYNE	16	2000	12,137	12,065	1.81	218.52	-424,974.85
118	WHITLEY	16	2000	10,569	10,594	1.87	198.46	-386,333.87
120	WOODFORD	16	2000	9,474	9,377	0.89	83.51	-157,636.21

Functional Class 17, Unweighted County Level Growth Rates

County Number	County Name	Functional Class	Year	Average ADT	Predicted 2000 ADT	2000 Growth (%)	Regression Slope	Regression Constant
3	ANDERSON	17	2000	5,554	5,740	2.42	138.82	-271,904.61
5	BARREN	17	2000	2,812	2,819	0.32	8.98	-15,150.06
7	BELL	17	2000	3,674	3,674	2.52	92.66	-181,644.91
8	BOONE	17	2000	11,763	11,834	4.22	499.47	-987,110.74
9	BOURBON	17	2000	2,331	2,349	1.49	34.91	-67,466.30
10	BOYD	17	2000	4,199	4,166	1.91	79.58	-154,997.17
11	BOYLE	17	2000	3,783	3,840	1.19	45.82	-87,802.32
15	BULLITT	17	2000	5,066	5,096	2.95	150.47	-295,843.53
17	CALDWELL	17	2000	1,986	1,956	-0.34	-6.64	15,228.20
18	CALLOWAY	17	2000	3,508	3,601	2.01	72.49	-141,380.43
19	CAMPBELL	17	2000	6,989	6,970	1.17	81.45	-155,923.31
24	CHRISTIAN	17	2000	3,842	3,865	1.11	42.83	-81,788.37
25	CLARK	17	2000	2,680	2,737	1.06	28.97	-55,205.09
30	DAVIESS	17	2000	4,046	4,003	0.81	32.41	-60,826.02
34	FAYETTE	17	2000	4,992	4,982	2.12	105.53	-206,076.22
37	FRANKLIN	17	2000	3,507	3,507	1.32	46.32	-89,135.04
38	FULTON	17	2000	469	467	-0.18	-0.82	2,103.54
42	GRAVES	17	2000	3,047	3,050	0.59	18.13	-33,218.03
45	GREENUP	17	2000	4,653	4,673	1.92	89.63	-174,596.81
47	HARDIN	17	2000	4,586	4,652	1.90	88.28	-171,907.75
49	HARRISON	17	2000	3,295	3,311	0.40	13.30	-23,296.54
51	HENDERSON	17	2000	2,907	2,942	1.63	48.00	-93,056.76
54	HOPKINS	17	2000	3,921	3,921	0.57	22.28	-40,645.05
56	JEFFERSON	17	2000	7,014	6,972	1.49	103.71	-200,453.55
57	JESSAMINE	17	2000	3,047	3,050	1.71	52.13	-101,212.45
59	KENTON	17	2000	5,738	5,630	0.99	55.52	-105,416.34
61	KNOX	17	2000	1,978	1,976	1.62	32.05	-62,132.58
63	LAUREL	17	2000	2,365	2,391	1.21	29.03	-55,675.28
71	LOGAN	17	2000	1,579	1,663	-2.22	-36.96	75,590.84
76	MADISON	17	2000	6,440	6,372	1.41	89.54	-172,705.66
78	MARION	17	2000	2,333	2,260	0.30	6.77	-11,279.04
81	MASON	17	2000	2,391	2,352	1.90	44.73	-87,107.79
73	MCCRACKEN	17	2000	4,558	4,569	1.19	54.56	-104,556.00
82	MEADE	17	2000	5,367	5,878	-1.29	-76.12	158,120.55
84	MERCER	17	2000	4,223	4,394	3.64	160.06	-315,729.21
87	MONTGOMERY	17	2000	2,045	2,066	-0.25	-5.10	12,265.43
90	NELSON	17	2000	2,215	2,206	1.80	39.72	-77,236.84
93	OLDHAM	17	2000	3,050	3,004	2.32	69.78	-136,564.70
97	PERRY	17	2000	4,800	4,976	2.47	122.98	-240,988.93
98	PIKE	17	2000	3,612	3,521	-1.11	-39.13	81,788.08
100	PULASKI	17	2000	6,387	6,472	2.56	165.54	-324,600.10
103	ROWAN	17	2000	3,717	3,668	0.66	24.23	-44,793.59
105	SCOTT	17	2000	2,405	2,374	0.17	3.95	-5,530.89
106	SHELBY	17	2000	3,728	3,718	1.41	52.40	-101,085.10
107	SIMPSON	17	2000	2,896	2,874	0.28	8.05	-13,216.94
109	TAYLOR	17	2000	3,761	3,730	-0.11	-4.23	12,196.86
114	WARREN	17	2000	4,859	5,016	0.99	49.45	-93,885.80
116	WAYNE	17	2000	1,174	1,047	-10.84	-113.50	228,047.90
118	WHITLEY	17	2000	3,273	3,297	1.85	61.03	-118,760.87
120	WOODFORD	17	2000	4,494	4,561	3.24	147.62	-290,671.07

Functional Class 19, Unweighted County Level Growth Rates

County Number	County Name	Functional Class	Year	Average ADT	Predicted 2000 ADT	2000 Growth (%)	Regression Slope	Regression Constant
5	BARREN	19	2000	906	902	-5.03	-45.37	91,645.96
7	BELL	19	2000	1,713	1,789	3.81	68.21	-134,629.64
8	BOONE	19	2000	2,411	2,393	4.90	117.34	-232,287.19
9	BOURBON	19	2000	1,096	1,112	3.71	41.25	-81,387.58
10	BOYD	19	2000	1,990	1,960	0.50	9.74	-17,525.43
11	BOYLE	19	2000	745	728	3.71	27.00	-53,262.36
15	BULLITT	19	2000	4,790	4,633	2.28	105.50	-206,366.89
16	BUTLER	19	2000	1,320	1,320	0.76	10.00	-18,680.00
17	CALDWELL	19	2000	1,097	1,116	0.76	8.52	-15,917.36
19	CAMPBELL	19	2000	1,062	1,090	3.25	35.42	-69,744.58
21	CARROLL	19	2000	2,850	2,844	2.92	83.00	-163,155.78
24	CHRISTIAN	19	2000	1,687	1,692	5.70	96.40	-191,108.03
25	CLARK	19	2000	1,142	1,114	3.07	34.21	-67,305.70
26	CLAY	19	2000	1,255	1,259	1.59	20.03	-38,807.98
27	CLINTON	19	2000	426	426	-2.61	-11.13	22,681.97
30	DAVIESS	19	2000	1,744	1,729	1.78	30.83	-59,933.33
33	ESTILL	19	2000	848	849	2.58	21.93	-43,018.16
34	FAYETTE	19	2000	2,110	2,122	2.27	48.15	-94,177.32
37	FRANKLIN	19	2000	680	658	5.71	37.59	-74,522.53
38	FULTON	19	2000	1,255	1,256	1.21	15.23	-29,197.56
40	GARRARD	19	2000	1,885	1,859	-3.18	-59.18	120,225.96
41	GRANT	19	2000	2,615	2,789	10.52	293.47	-584,144.19
42	GRAVES	19	2000	390	384	-1.59	-6.13	12,644.36
43	GRAYSON	19	2000	526	546	3.88	21.17	-41,787.39
44	GREEN	19	2000	1,360	1,327	0.45	5.96	-10,589.56
45	GREENUP	19	2000	602	597	1.31	7.85	-15,104.54
47	HARDIN	19	2000	2,560	2,757	-1.44	-39.69	82,142.31
48	HARLAN	19	2000	143	142	-6.84	-9.68	19,508.27
49	HARRISON	19	2000	1,447	1,441	2.14	30.81	-60,169.50
51	HENDERSON	19	2000	1,146	1,136	4.17	47.34	-93,551.32
52	HENRY	19	2000	1,260	1,258	-1.19	-15.00	31,257.78
54	HOPKINS	19	2000	4,370	4,391	2.69	117.89	-231,392.79
56	JEFFERSON	19	2000	1,126	1,117	1.50	16.72	-32,314.45
57	JESSAMINE	19	2000	1,783	1,795	1.89	34.00	-66,205.36
59	KENTON	19	2000	1,510	1,496	2.79	41.78	-82,064.51
61	KNOX	19	2000	808	807	7.16	57.78	-114,759.48
63	LAUREL	19	2000	1,078	1,074	3.74	40.18	-79,290.85
69	LINCOLN	19	2000	782	781	0.69	5.38	-9,976.93
71	LOGAN	19	2000	551	559	0.85	4.77	-8,974.16
76	MADISON	19	2000	969	961	4.58	43.98	-86,999.18
81	MASON	19	2000	878	879	3.14	27.58	-54,271.14
73	MCCRACKEN	19	2000	900	894	4.41	39.45	-78,003.49
74	MCCREARY	19	2000	194	204	0.17	0.35	-496.27
84	MERCER	19	2000	765	763	3.76	28.69	-56,617.73
87	MONTGOMERY	19	2000	1,578	1,583	1.94	30.74	-59,902.02
89	MUHLENBERG	19	2000	703	700	1.79	12.51	-24,325.46
90	NELSON	19	2000	425	406	-2.50	-10.14	20,695.24
97	PERRY	19	2000	486	469	1.21	5.65	-10,838.45
98	PIKE	19	2000	2,866	2,868	1.41	40.56	-78,260.84
100	PULASKI	19	2000	3,234	3,235	2.14	69.08	-134,931.24
103	ROWAN	19	2000	693	687	4.40	30.18	-59,674.07
105	SCOTT	19	2000	1,819	1,798	3.47	62.41	-123,018.61
107	SIMPSON	19	2000	621	606	6.58	39.88	-79,159.52
109	TAYLOR	19	2000	433	423	3.57	15.08	-29,737.83
114	WARREN	19	2000	1,275	1,233	3.89	47.94	-94,639.17
118	WHITLEY	19	2000	861	852	2.95	25.17	-49,486.72
120	WOODFORD	19	2000	180	197	-8.04	-15.83	31,863.56

8.8 Appendix H – Corridor Interstate Growth Rates

I-64 Detailed Corridor Weighted ADT Growth Analysis

Year	Average ADT	Weighted Average ADT	Predicted Weighted Average ADT	2000 Weighted ADT Growth Rate (%)	Regression Slope	Regression Constant
Jefferson County -- MP 0.0 - 23.974				2.83	2,320	-4,558,472
1991	62,817	58,358	61,056			
1992	68,325	64,749	63,376			
1993	75,023	66,486	65,697			
1994	76,462	68,979	68,017			
1995	77,229	70,610	70,337			
1996	76,393	70,772	72,657			
1997	82,757	76,621	74,977			
1998	87,229	79,312	77,298			
1999	86,321	78,837	79,618			
2000	87,386	80,247	81,938			
Shelby to Scott -- MP 23.974 - 71.0				3.24	1,158	-2,280,680
1991	25,642	25,874	25,329			
1992	26,300	26,980	26,487			
1993	26,483	27,503	27,646			
1994	25,792	26,385	28,804			
1995	30,242	30,976	29,962			
1996	30,569	31,124	31,120			
1997	31,785	32,489	32,279			
1998	32,923	33,291	33,437			
1999	34,969	35,842	34,595			
2000	34,462	34,949	35,753			
Fayette County -- MP 71.0 - 89.48				2.58	847	-1,661,174
1991	26,050	25,443	25,143			
1992	25,550	25,524	25,990			
1993	26,850	26,665	26,837			
1994	26,900	26,636	27,684			
1995	32,500	33,292	28,531			
1996	28,767	27,853	29,378			
1997	27,867	26,559	30,225			
1998	31,667	30,999	31,072			
1999	33,400	33,898	31,919			
2000	32,867	32,680	32,766			
Clark to Boyd -- MP 89.48 - 191.507				2.97	551	-1,083,719
1991	15,236	13,474	13,579			
1992	15,440	14,000	14,131			
1993	16,360	14,767	14,682			
1994	17,660	15,836	15,233			
1995	17,686	15,669	15,784			
1996	18,050	15,998	16,335			
1997	18,714	16,689	16,886			
1998	19,723	17,419	17,437			
1999	20,614	18,319	17,988			
2000	20,632	18,425	18,540			
All Counties -- MP 0.0 - 194.507				2.95	945	-1,857,131
1991	30,833	23,241	23,531			
1992	32,509	24,662	24,475			
1993	35,617	25,630	25,420			
1994	36,394	26,247	26,364			
1995	37,964	27,676	27,309			
1996	37,506	27,708	28,254			
1997	39,752	29,108	29,198			
1998	41,887	30,354	30,143			
1999	42,631	31,627	31,087			
2000	42,767	31,560	32,032			

I-65 Detailed Corridor Weighted ADT Growth Analysis

Year	Average ADT	Weighted Average ADT	Predicted Weighted Average ADT	2000 Weighted ADT Growth Rate (%)	Regression Slope	Regression Constant
Simpson to Larue -- MP 0.0 - 78.661				1.85	660	-1,284,094
1991	26,968	27,374	29,747			
1992	30,558	31,878	30,407			
1993	33,332	34,646	31,067			
1994	29,468	29,686	31,727			
1995	32,260	32,724	32,386			
1996	31,730	32,121	33,046			
1997	32,995	33,500	33,706			
1998	33,715	33,977	34,366			
1999	35,105	35,201	35,026			
2000	35,635	36,055	35,686			
Hardin to Bullitt -- MP 78.661 - 123.18				3.75	1,982	-3,911,735
1991	34,420	34,658	34,979			
1992	37,070	36,614	36,962			
1993	38,373	39,881	38,944			
1994	40,782	39,650	40,926			
1995	43,958	41,841	42,908			
1996	47,083	46,185	44,891			
1997	48,992	48,183	46,873			
1998	51,569	50,493	48,855			
1999	52,177	50,567	50,838			
2000	52,454	50,926	52,820			
Jefferson -- MP 123.18 - 137.18				2.64	3,491	-6,850,012
1991	95,644	96,525	101,037			
1992	100,233	101,424	104,529			
1993	110,556	110,779	108,020			
1994	114,900	113,971	111,511			
1995	119,844	118,701	115,002			
1997	123,467	122,440	121,985			
1996	123,767	122,590	118,494			
1998	125,656	124,323	125,476			
1999	128,222	126,405	128,967			
2000	132,056	130,322	132,459			
All Counties -- MP 0.0 - 137.18				2.49	1,268	-2,485,264
1991	45,195	37,496	39,610			
1992	48,774	41,439	40,878			
1993	52,574	45,077	42,146			
1994	52,374	42,258	43,414			
1995	54,910	44,708	44,683			
1996	56,427	45,982	45,951			
1997	57,333	47,417	47,219			
1998	58,943	48,634	48,487			
1999	60,343	49,573	49,755			
2000	61,502	50,582	51,023			

I-71 Detailed Corridor Weighted ADT Growth Analysis

Year	Average ADT	Weighted Average ADT	Predicted Weighted Average ADT	2000 Weighted ADT Growth Rate (%)	Regression Slope	Regression Constant
Jefferson -- MP 0.0 - 11.315				2.50	1,421	-2,786,206
1991	43,300	41,961	43,957			
1992	51,900	49,387	45,378			
1993	50,100	48,972	46,800			
1994	46,750	44,519	48,221			
1995	49,900	47,967	49,643			
1996	51,850	51,568	51,064			
1997	50,475	49,749	52,486			
1998	58,000	57,625	53,907			
1999	55,550	55,362	55,329			
2000	55,300	56,424	56,750			
Oldham to Gallatin -- MP 11.315 - 69.89				3.90	1,208	-2,385,350
1991	22,036	20,272	20,123			
1992	23,657	21,723	21,331			
1994	25,071	22,994	23,747			
1993	24,386	23,802	22,539			
1996	26,029	24,327	26,164			
1995	26,221	24,382	24,955			
1997	29,140	27,107	27,372			
1998	31,673	29,304	28,580			
1999	32,307	30,548	29,788			
2000	32,940	31,137	30,996			
Boone -- MP 69.89 - 77.724				3.41	1,010	-1,989,547
1991	20,550	21,318	20,537			
1992	19,350	19,811	21,546			
1993	26,900	27,471	22,556			
1994	22,050	22,643	23,566			
1995	22,000	22,571	24,575			
1996	23,150	23,743	25,585			
1997	24,950	25,587	26,594			
1998	25,950	26,543	27,604			
1999	28,450	29,131	28,614			
2000	31,500	31,983	29,623			
All Counties -- MP 0.0 - 77.724				3.46	1,196	-2,357,128
1991	26,140	23,683	23,836			
1992	28,875	25,731	25,032			
1994	29,105	26,233	27,424			
1995	30,535	27,780	28,620			
1993	29,780	28,019	26,228			
1996	30,905	28,411	29,816			
1997	32,805	30,250	31,011			
1998	36,143	33,149	32,207			
1999	36,367	34,017	33,403			
2000	37,062	34,904	34,599			

I-75 Detailed Corridor Weighted ADT Growth Analysis

Year	Average ADT	Weighted Average ADT	Predicted Weighted Average ADT	2000 Weighted ADT Growth Rate (%)	Regression Slope	Regression Constant
Whitley to Madison -- MP 0.0 - 97.543				2.94	1,090	-2,143,117
1991	28,811	27,498	27,249			
1992	30,705	29,162	28,339			
1993	31,105	29,423	29,429			
1994	31,168	29,238	30,519			
1995	33,526	31,527	31,609			
1996	34,295	31,925	32,699			
1997	35,979	33,544	33,790			
1998	38,721	36,060	34,880			
1999	38,637	36,767	35,970			
2000	38,405	36,401	37,060			
Fayette -- MP 97.443 - 120.792				3.38	2,054	-4,047,406
1991	43,322	43,639	42,309			
1992	45,756	45,659	44,363			
1993	46,350	46,304	46,417			
1994	46,830	46,664	48,471			
1995	48,440	48,208	50,525			
1996	52,410	52,253	52,580			
1997	55,560	54,636	54,634			
1998	57,100	56,114	56,688			
1999	63,120	62,074	58,742			
2000	60,780	59,974	60,796			
Scott to Grant -- MP 120.792 - 166.263				4.97	2,257	-4,468,205
1991	27,570	27,263	25,131			
1992	28,390	27,967	27,388			
1993	28,640	28,683	29,644			
1994	30,730	29,773	31,901			
1995	33,400	32,531	34,158			
1996	36,610	35,412	36,415			
1997	41,000	40,349	38,672			
1998	42,950	42,001	40,929			
1999	45,160	43,824	43,185			
2000	44,920	45,061	45,442			
Boone to Kenton -- MP 166.263 - 191.777				3.24	3,473	-6,838,748
1991	91,788	76,463	75,851			
1992	95,794	79,274	79,324			
1993	90,794	77,579	82,797			
1994	96,112	82,535	86,269			
1995	107,811	91,581	89,742			
1996	115,624	104,236	93,215			
1997	111,250	96,451	96,688			
1998	115,444	101,507	100,161			
1999	116,811	102,189	103,634			
2000	116,150	102,972	107,107			
I-75 All Data -- MP 0.0 - 191.777				3.70	1,911	-3,770,625
1991	49,659	35,246	34,507			
1992	52,070	36,846	36,418			
1993	51,507	37,715	38,329			
1994	53,602	38,589	40,240			
1995	59,579	42,047	42,151			
1996	62,330	44,177	44,063			
1997	64,065	46,414	45,974			
1998	66,916	48,938	47,885			
1999	68,763	50,567	49,796			
2000	68,025	50,532	51,707			