CHAPTER 1
INTRODUCTION

It is generally accepted that the overall regional economic and social impact created by institutions of higher education is positive. In the past, the Pennsylvania Economy League (PEL) has employed economic impact models to measure the regional economic effect produced by a college or university including an early economic impact study of the State System of Higher Education (SSHE). An Internet search on university including economic impact will retrieve numerous studies and methodologies and revisions to the original 1971 work of John Caffrey and Herbert Isaacs' "Estimating the Impact of a College or University on the Local Economy".

However, even though local tax consequences is a critical component of economic impact analysis there remains some question as to how a university's presence affects the small host municipality's fiscal situation. Many local government officials believe that the municipality in which the institution is located likely absorbs much of the direct and indirect costs associated with the presence of the institution while the economic benefits are spread out among it and numerous other municipalities. Indeed, conversations with municipal officials indicate they are uncertain whether the university's overall impact on the finances and operations of the host municipality is positive or negative.

In the early 1990s, the Pennsylvania League of Cities and Municipalities along with the State System of Higher Education (SSHE) began discussions on a method of researching and quantifying this effect for the purpose of determining if financial assistance to the host municipality through legislative or other means was warranted. The present study is the ultimate result of those discussions.

The Commonwealth of Pennsylvania Department of Community and Economic Development (DCED), the City of Lock Haven, the Town of Bloomsburg, and the Boroughs of Edinboro, Millersville, and West Chester contributed funds to this study. SSHE did not participate in the funding of this study.

The study's goal was to provide a base of information for determining the fiscal impact of the university on the host municipality. The study's primary focus was on:

- The cost of government services resulting from the location of the university within the municipality;
- The financing of these services including the distribution of the tax burden and other revenues necessary to support the services;
- How land use decisions made by the universities relate to the short- and long-term goals of the host municipalities and the contiguous municipalities;
- The degree to which cooperation exists between and among the host municipalities, the contiguous municipalities, and the universities in land use planning, zoning, and development activities and/or in the delivery of services used by the universities, and the extent to which any of these services have been consolidated; and
- Any processes used by other states to assist municipalities who hosting state institutions of higher education.

PEL conducted interviews and on-site visits with the host municipalities and their SSHE universities. PEL collected census and other data necessary for analysis, prepared statistical models and compared the findings with other independent PEL research. PEL utilized the services of Ms. Karen Minkel, who performed a Probit correlation analysis to compare certain fiscal statistical measures between host municipalities and a like control group of non-host municipalities. She is the author of similar research comparing California's university and non-university towns; the result of this prior work was published in the *Economic Development Journal* in 2004.

After collecting and reviewing the initial essential municipal and university submission of data, PEL discovered that much of the critical data were either not available or would be too costly to gather. This was particularly the case with data as it related to off-campus student municipal residential location, certain earned income tax statistics, municipal costs related to students, and other items requested in PEL's questionnaire.

Municipal data were available for common budgetary and fiscal items but critical data on time/man hours and costs related especially to services of off-campus students for police responses, code enforcement, and off-campus housing were very limited, if available at all. Also, similar aggregate data for the total population were difficult to obtain in a useable format. Certain tax data on the revenue side were also difficult to obtain in a useful way.

In view of the foregoing limitations the following methodologies were used:

- A Probit correlation model was created comparing host municipalities to a non-host municipalities control group for selected fiscal and demographic variables.
- A statistical comparison of each of the five host municipalities to the remaining cities and boroughs in their county for selected fiscal variables was performed. The variables reviewed were: Real Estate Tax, Earned Income Tax, Total Taxes, and Police Expenditures.
- Individual case studies analyzed the fiscal operations of each of the five host municipalities in light of the respective university's presence. These studies centered on items such as revenue streams, police operations, housing issues, code enforcement, infrastructure development, etc. An attempt was made to look at the practical side of the municipality's fiscal situation.
- Because of the importance of police costs and jurisdictional authority a review was undertaken of university and municipal police operations and collaboration in the Commonwealth.
- A review and analysis of processes used in other state to address town and gown fiscal arrangements was performed.
- PEL engaged in a review of intergovernmental/municipal planning used to address Town and Gown development in each of the five host municipalities.
- Finally, a series of findings, conclusions, and recommendations were derived based on the above approaches.

PEL wishes to acknowledge the contribution of the Commonwealth's Department of Community and Economic Development, the staff and elected officials of the host municipalities, and the various staff and officers of the Universities for their assistance in data collection and in providing time for personal interviews.

CHAPTER 2

A STATISTICAL ANALYSIS OF THE FISCAL IMPACT OF PENNSYLVANIA UNIVERSITIES ON HOST MUNICIPALITIES

When studies measure the economic impact of a university by analyzing a municipality or region before and after the establishment of a university, the benefits of a university far outweigh the costs. Universities are an economic boon to an area as well as a significant cultural contribution, a fact confirmed by numerous independent studies. [1/] [2/] [3/] However, the analysis in this report highlights the annual fiscal costs imposed by the university on a municipality, which provides a more useful framework to use in discussing the Town/Gown fiscal relationships.

A fiscal comparison of college towns and similar municipalities contributes to finding practical ways for cities and universities to explore cost-sharing agreements, which may include payments-in-lieu-of-taxes or university contributions to municipal capital or program expenditures. The methodology for conducting an analysis of college town municipalities in Pennsylvania is based on a methodology used to compare California college towns to similar municipalities, which was published in the *Economic Development Journal* in 2004. [4/]

The following steps outline the methodology:

1) A probit model[5/] was constructed using the 2000 U.S. Census data for 2,566 municipalities in Pennsylvania in order to form a control group of municipalities to compare with college town municipalities. A probit model will generate a probability for each municipality that provides the likelihood that the municipality would have a higher education institution based on the significant independent variables. The probabilities associated with a selected group of college towns can then be matched with similar probabilities for municipalities that do not have a higher education institution in order to form a control group.
2) Using Department of Community and Economic Development (DCED) Financial Data from 2001-2003, a t-test[6/] of means was used to determine if there were significant differences between the college towns and their group of counterparts for the following budget items:
    a. Earned income tax;
    b. Total taxes;

c. Real estate tax;

d. Police;

e. Public Safety;

f. Parks and Recreation; and

g. Streets and Roads.

Constructing the Comparison Group

Initially, 2000 U.S. Census data were collected on all incorporated cities in Pennsylvania, which created a dataset of 2,566 municipalities. Several parameters were used to define a "college town" or a municipality that had an institution of higher learning where the institution had enough prominence to plausibly impact the municipal budget. For the purposes of this study, only municipalities with four-year institutions were identified as a college town. First, municipalities with a population greater than 300,000 or less than 2,000 were eliminated. Pittsburgh and Philadelphia had populations over 300,000; both cities have multiple higher learning institutions and characteristics unique to large cities that make them difficult to compare to other municipalities in Pennsylvania. For example, the presence of other significant nonprofit institutions, which may produce similar effects on the municipal budget, would skew the results of a comparison. Similarly, small towns with populations less than 2,000 are less likely to have public service levels that make them suitable municipalities for a control group. Eliminating these outliers narrowed the dataset to 1,233 municipalities.

College towns with a student population that comprised less than 15 percent of the population were also eliminated. In order to complete this calculation, the number of students in undergraduate or graduate education as determined by the PA Department of Education was divided by the total population. Fifteen percent was used as a threshold level to distinguish municipalities with higher learning institutions that have a noted prominence in the community, leaving 1,172 municipalities in the dataset. Blake Gumprecht, author of *The American College Town* used 20 percent as the threshold level for defining a college town; in order to create a larger sample size, the methodology in this report used 15 percent. [7/]

One municipality, North East Borough, had a population of students that comprised over 16 percent of the total population; however, the municipality does not have a comparable four-

year higher education institution and was eliminated from the sample. This elimination left 1,171 municipalities in the final dataset.

Using SAS software, the following data were used in the first run of the model (See Appendix B.):

1) Total population: Taken from the 2000 U.S. Census data;
2) Median family income: Taken from the 2000 U.S. Census data; *
3) Area of the city in square miles: Taken from the 2000 U.S. Census data;
4) Percentage of the population with a bachelors degree: Divided Educational Attainment Bachelor's Degree or Higher by the Total Population data from the 2000 U.S. Census;
5) Percent unemployed: Taken from the 2000 U.S. Census data;* and
6) Percent of renters: Divided renter occupied by total occupied housing data from the 2000 U.S. Census.

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* Median family income rather than household income was chosen in order to exclude households where multiple students lived as roommates. The unemployment rate for the population over 25 years old was used in the model.

The final probit model included two variables that had a .05 level of significance: 1) median family income; and 2) percentage of renters. Municipalities with universities tended to have higher than average median family incomes in spite of a relatively large population of renters. The model generated the probability of a municipality being a college town based on these two significant variables. A cluster of five university towns had the five highest probabilities, ranging from .45 to .87. This cluster suggests that college town municipalities may exert a significant influence on these two municipal demographics.

The probability generated by the model for each municipality indicates the likelihood of that municipality hosting a four-year higher education institution based on the two significant variables. Comparison cities were then chosen according to how closely their probabilities matched each of the selected college towns. Comparison cities were also chosen based on their face validity. For example, some municipalities may not have the physical presence of a university building, but may offer entertainment venues or house a significant student population; these municipalities could skew the comparison by exhibiting some of the same fiscal effects as a college town and were not chosen for the control group. (Appendix A)

T-Test of Means

After determining the control group of municipalities, 2001-2003 DCED financial data were used to compare revenues and expenditures per capita for the total population for a group of 20 college town municipalities and a group of 20 control municipalities. Revenue and expenditure categories that a student population would most likely affect were chosen for this comparison. The following revenue and expenditure items were compared between the two groups:

1) Earned income tax;
2) Real estate tax;
3) Total taxes,
4) Police;
5) Public safety;
6) Parks and recreation; and
7) Streets and roads.

Revenue and expenditure data from 2001 and 2002 were multiplied by 1.04 and 1.02, respectively, to adjust for inflation. The mean of the three years of financial data was divided by the 2000 Census population in order to calculate per capita revenues or expenditures. Using a three-year mean accounted for possible fluxes in municipal revenues and expenditures. DCED data did not include Morton, Norristown, Narbeth, New Wilmington or Kennett financial data for 2003. The data also did not include Bellevue, Ebensburg or Turtle Creek financial data for 2002 or Downingtown, Grove City or West Chester data for 2001. A two-year mean was used for all fiscal items for these boroughs. Incomplete DCED data were counted as "missing data" in the calculations. (See Appendix B.)

Revenues

College town municipalities consistently collect less revenue per capita in earned income tax, real estate tax and total taxes than their municipal counterparts. The difference between the mean per capita revenues for earned income tax, per capita revenues for real estate tax and total taxes were significant at the .05 level of significance. (See Table 1-1 and Graph 2-1.)

Table 2-1

Per Capita Revenue

In College Towns and Comparable Municipalities and Levels of Significance

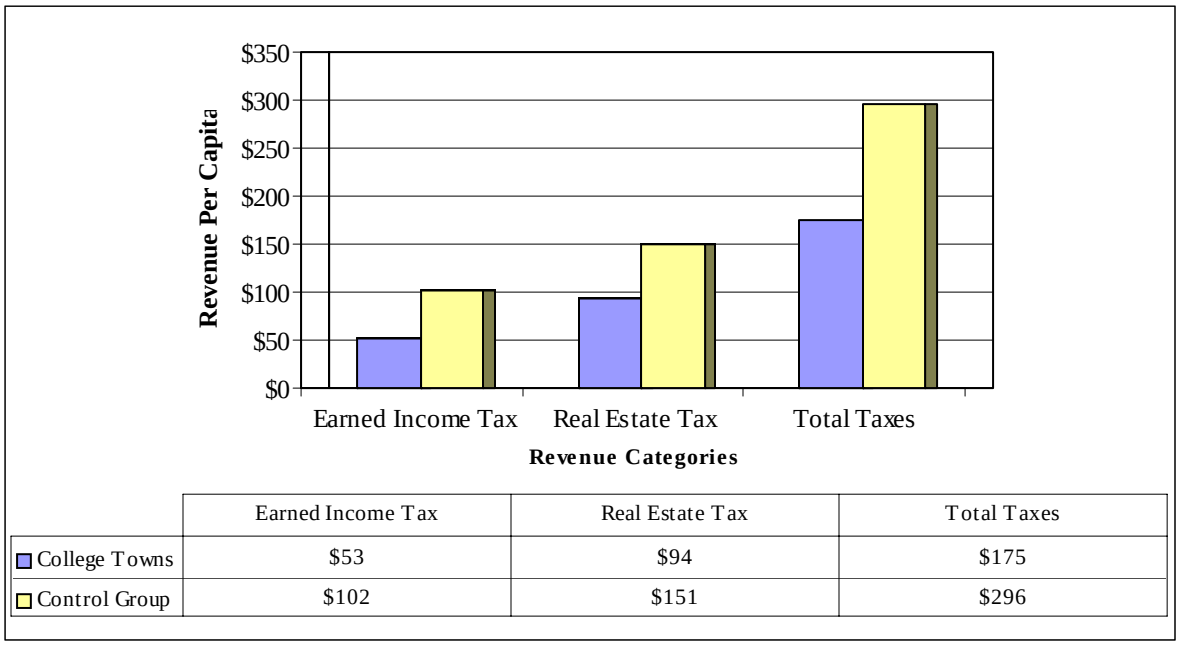
Revenue Category	College Town Mean Per Capita $	Control Group Mean Per Capita $	Level of Significance
Earned Income Tax	53	102	.03
Real Estate Tax	94	151	.01
Total Taxes	175	296	.00

All differences in means are significant at the .05 level.

Graph 2-1

Per Capita Revenue

In College Towns and Comparable Municipalities



	Earned Income Tax	Real Estate Tax	Total Taxes
College Towns	$53	$94	$175
Control Group	$102	$151	$296

Expenditures

A t-test of means for police, public safety, roads, and parks and recreation per capita expenditures found no significant difference between the college towns and their comparable municipalities. Though a small sample size may account for a lack of statistical significance, no clear pattern emerges in a review of the numerical output. A level of significance of .05 (a standard statistical level of significance) was used in this report. While the per capita mean is greater for the control group than in the college town group in the areas of police and roads, the per capita mean is greater for college towns in the areas of parks and recreation and public safety than for the comparable municipalities. (See Table 2-2.)

Table 2-2

Per Capita Expenditures

In College Towns and Comparable Municipalities and Levels of Significance

Expenditure Category	College Town Mean Per Capita $	Control Group Mean Per Capita $	Level of Significance
Police	101	137	.07
Public Safety	7	3	.41
Parks and Recreation	34	26	.56
Roads	79	88	.44

Only limited input was available for a public safety expenditure per capita comparison; only 12 municipalities in the control group and 11 in the college town group provided data. A lack of statistical significance may also be a result of the small sample size in the public safety category. In addition, data or expenditures may not include volunteer provided services.

Analysis

These findings indicate that while institutions of higher education bring an undisputed economic boon to a region or state, they may also adversely affect a municipality's fiscal resources. (See Graph 2-1) Higher learning institutions do not contribute property tax due to

their tax-exempt status, but they typically own a significant amount of property in a municipality. Second, a student population generally does not own property or contribute significant earned income tax to the host municipality. These circumstances lead to less revenue for college town municipalities than municipalities that are comparable in median family income and percentage of renters.

A t-test of means that compares per capita revenues between the control group and the college town group after eliminating the on-campus student population from the calculation found no significant difference between the two groups. (See Table 2-3 and Appendix for T-test results.)

Table 2-3

Per Capita Revenues in College Towns and Comparable Municipalities Without the Student Population

Revenue Category	College Town Per Capita Mean $	Control Group Per Capita Mean $	Level of Significance
Earned Income Tax	82	120	.09
Real Estate Tax	134	151	.48
Total Taxes	239	296	.12

This finding suggests that the presence of a student population likely contributes to the difference in per capita revenues (described in the previous section) between the two groups. College town municipalities likely collect less revenue than comparable municipalities because students often do not work or only work part-time, and earned income tax may not be credited to the host municipalities. **Second, higher education institutions that have prominence in a municipality tend to own significant amounts of property, lowering the aggregate practical level of real estate taxes collected by the municipality.** (See Table 2-1, Line 2.) Both of these factors contribute to the difference in total taxes for the college town and control groups.

However, the presence of the student population did not significantly affect the expenditures of college town municipalities. There was no statistical difference between the

college town group and the control group whether the student population was included or excluded in the per capita calculation.

Table 2-4
Per Capita Expenditures in College Towns and Comparable Municipalities Without the Student Population

Expenditure Category	College Town Per Capita Mean $	Control Group Per Capita Mean $	Level of Significance
Police	140	137	.85
Public Safety	15	6	.25
Parks and Recreation	47	26	.22

Several reasons provide an explanation. First, higher education institutions often provide a number of public services to the on-campus student population. Colleges and universities frequently provide security forces on campus to handle non-violent on-campus incidents and have adequate recreational facilities for the student population, which may explain why college towns do not significantly differ from their counterparts in the police and parks and recreation per capita expenditures. (See Table 2-4.)

Students also receive a percentage of these types of services from the host municipality. Students utilize local entertainment venues that are serviced by a municipal police force, recreational facilities serviced by the host municipality, and streets and roads throughout the municipality. However, the findings in this analysis do not show significant differences in expenditures for these categories, indicating that the students' usage does not have a significant fiscal impact. This impact may vary by college town municipality, depending on the level of usage of public services by the student population.

Limitations

Several factors limit this analysis. First, constructing a control group requires a combination of statistics and commonsense knowledge about Pennsylvania municipalities. For example, Lock Haven City and New Hope Borough had similar probabilities, but the two municipalities lack face validity as a match because of their disparate figures for median family income and percentage of renters. Lock Haven City's renter population comprises 61 percent of the occupied households, and a median family income of $28,619, while New Hope Borough's

renter population comprises 39 percent of the occupied households and its median family income is over $87,000. Turtle Creek Borough, however, also had a probability of .29 and similar figures to Lock Haven City, which made Turtle Creek a more suitable control. A large sample size offsets the limitations of the individual matching process, but college towns are limited in most states, which means that only a few states would be able to provide a sample size that would lend credibility to the results. Pennsylvania has a relatively high number of higher education institutions per capita, ranking twelfth among all 50 states in higher education institutions per capita, which allowed for this type of fiscal comparison.[8/]

This analysis also lacks a comparison of fire expenditures due to limited data. DCED data do not accurately reflect the costs of fire protection in these municipalities and was not used in the comparison analysis. This follows principally from the fact that volunteer fire coverage has a minimal direct cost to most municipalities who do not have paid firefighters. Higher education institutions may have special fire equipment needs, such as a hazardous materials unit to deal with the potential of chemical fires or specific ladder trucks to accommodate high-rise dorm structures. Typically, higher education institutions do not host their own fire protection services, requiring the municipality to service the entire university community and university structures without adequate revenue to compensate for that service. Most state system schools described in the case studies were reported to be contributing funds to volunteer fire companies, but not to the host municipality.

This analysis provides a broad fiscal comparison of college towns and comparable municipalities, offering insight on the revenues and expenditures affected by the presence of a higher education institution. These comparisons do not provide exact figures for an individual municipality and university; rather, the analysis provides information that can be used at the state level or as a starting point to consider in an individual budget analysis.

Footnotes:

1/ Appleseed Inc. (2003). *Engines of Economic Growth*.

2/ Beck, Roger, et al. (1995). "Economic impact studies of regional public colleges and universities". *Growth and Change*. 26:2:245-259.

3/ Sedway Group. (2004). UC Davis Economic Impact Study.

4/ Baker-Minkel. Karen, Moody, Jason and Kieser, Walter, "Town and gown," *Economic Development Journal*, p. 7-9. Fall 2004.

5/ Probit Model: allows a mixture of categorical and continuous independent variables to predict one or more categorical dependent variables

6/ T-test: a statistical test that tests the equality of means between two groups that have normal distributions and eq ual variances.

7/ Gumprecht, Blake. "The American college town". *The Geographical Review*. 93:1:51-80. January 2003.

8/ Vey, Jennifer. "Higher education in Pennsylvania: A competitive asset for communities." The Brookings Institution December 2005.

APPENDIX A

The following tables show the selected college municipalities and the control municipalities.

Host	Higher Education Institution [1/]	Probability
Edinboro Borough	**Edinboro University**	**0.55**
West Chester Borough	**West Chester University**	**0.54**
Radnor Township	Cabrini College	0.44
Clarion Borough	Clarion University	0.44
Bloomsburg Town	**Bloomsburg University**	**0.37**
Lock Haven City	**Lock Haven University**	**0.29**
Waynesburg Borough	Waynesburg College	0.25
Swarthmore Borough	Swarthmore College	0.22
Carlisle Borough	Dickinson College	0.22
Kutztown Borough	Kutztown University	0.21
Selinsgrove Borough	Susquehanna University	0.20
Mansfield Borough	Mansfield College	0.19
East Stroudsburg Borough	East Stroudsburg University	0.18
New Wilmington Borough	Westminster College	0.16
California Borough	California University	0.15
Shippensburg Township	Shippensburg University	0.11
Collegeville Borough	Ursinus College	0.11
Huntingdon Borough	Juniata College	0.08
Millersville Borough	**Millersville University**	**0.06**
Grove City Borough	Grove City College	0.05

1/ Municipality may have more than one higher education institution

The following shows the selected control municipalities.

Control Town	**Probability**
Dublin Borough	0.45
Fox Chapel Borough	0.44
Stroudsburg Borough	0.42
Bellevue Borough	0.41
New Hope Borough	0.32
Turtle Creek Borough	0.29
Narberth Borough	0.25
Morton Borough	0.24
Norristown Borough	0.21
Wormleysburg Borough	0.21
Downingtown Borough	0.20
Bridgeport Borough	0.19
Bellefonte Borough	0.19
Boyertown Borough	0.16
Sinking Spring Borough	0.15
Hanover Borough	0.11
Kennettt Township	0.11
Ebensburg Borough	0.08
Yardley Borough	0.06
West Lampeter Township	0.05

Glossary

Chi-Square Goodness of Fit Test (ChiSq): Indicates the level of significance of the relationship between the independent and dependent variables.

Confidence Level (CL): Probability that the interval estimate contains the population parameter

Degrees of Freedom (DF): the number of free choices left after a sample statistic is calculated; when using a t-distribution, the degrees of freedom are equal to one less than the sample size

Probit Model: allows a mixture of categorical and continuous independent variables to predict one or more categorical dependent variables

T-test: a statistical test that tests the equality of means between two groups that have normal distributions and equal variances.

Level of Significance: The maximum allowable probability of making a Type I error or the probability that the differences between the college towns and control group are caused by random chance.

Standard Deviation: the square root of the variance

Variance: a measure of the spread among a group of numbers

APPENDIX B

Probit Model Output

Probit Procedure

Model Information

Data Set	WORK.REVISED7	
Dependent Variable	University	University
Number of Observations	1171	
Name of Distribution	Normal	
Log Likelihood	-108.7210323	

Number of Observations Read	1171
Number of Observations Used	1171

Class Level Information

Name	Levels	Values
University	2	0 1

Response Profile

Ordered Value	University	Total Frequency
1	0	37
2	1	1134

PROC PROBIT is modeling the probabilities of levels of University having LOWER Ordered Values in the response profile table.

Algorithm converged.

Type III Analysis of Effects

Effect	DF	Wald Chi-Square	Pr > ChiSq
Total	1	0.5032	0.4781
F7	1	3.2052	0.0734
Median_Family_Income	1	9.2028	0.0024
perba	1	0.0054	0.9415
perrent	1	59.6856	<.0001
density	1	0.2822	0.5952
percent_unemployed	1	0.1270	0.7215

Probit Procedure

Analysis of Parameter Estimates

Parameter	DF	Estimate	Standard Error	95% Confidence Limits		Chi-Square	Pr > ChiSq
Intercept	1	-5.5811	0.6419	-6.8392	-4.3230	75.59	<.0001
Total	1	-0.0000	0.0000	-0.0000	0.0000	0.50	0.4781
F7	1	0.0195	0.0109	-0.0018	0.0408	3.21	0.0734
Median_Family_Income	1	0.0000	0.0000	0.0000	0.0000	9.20	0.0024
perba	1	-0.2083	2.8386	-5.7718	5.3552	0.01	0.9415
perrent	1	7.2843	0.9429	5.4363	9.1323	59.69	<.0001
density	1	-23.6209	44.4621	-110.765	63.5232	0.28	0.5952
percent_unemployed	1	-0.0177	0.0496	-0.1148	0.0795	0.13	0.7215

Probit Procedure

Model Information

Data Set	WORK.REVISED9	
Dependent Variable	University	University
Number of Observations	1171	
Name of Distribution	Normal	
Log Likelihood	-110.8518154	

Number of Observations Read	1171
Number of Observations Used	1171

Class Level Information

Name	Levels	Values
University	2	0 1

Response Profile

Ordered Value	University	Total Frequency
1	0	37
2	1	1134

PROC PROBIT is modeling the probabilities of levels of University having LOWER Ordered Values in the response profile table.

Algorithm converged.

Type III Analysis of Effects

Effect	DF	Wald Chi-Square	Pr > ChiSq
Median_Family_Income	1	7.8417	0.0051
perba	1	0.0034	0.9535
perrent	1	63.6924	<.0001

Probit Procedure

Analysis of Parameter Estimates

Parameter	DF	Estimate	Standard Error	95% Confidence Limits		Chi-Square	Pr > ChiSq
Intercept	1	-5.1537	0.5308	-6.1940	-4.1134	94.27	<.0001
Median_Family_Income	1	0.0000	0.0000	0.0000	0.0000	7.84	0.0051
perba	1	0.1568	2.6911	-5.1176	5.4312	0.00	0.9535
perrent	1	6.3561	0.7964	4.7951	7.9171	63.69	<.0001

Probit Procedure

Model Information

Data Set	WORK.REVISED7	
Dependent Variable	University	University
Number of Observations	1171	
Name of Distribution	Normal	
Log Likelihood	-110.8535132	

Number of Observations Read	1171
Number of Observations Used	1171

Class Level Information

Name	Levels	Values
University	2	0 1

Response Profile

Ordered Value	University	Total Frequency
1	0	37
2	1	1134

PROC PROBIT is modeling the probabilities of levels of University having LOWER Ordered Values in the response profile table.

Algorithm converged.

Type III Analysis of Effects

Effect	DF	Wald Chi-Square	Pr > ChiSq
Median_Family_Income	1	21.9850	<.0001
perrent	1	69.7377	<.0001

Probit Procedure

Analysis of Parameter Estimates

Parameter	DF	Estimate	Standard Error	95% Confidence Limits		Chi-Square	Pr > ChiSq
Intercept	1	-5.1627	0.5074	-6.1572	-4.1682	103.53	<.0001
Median_Family_Income	1	0.0000	0.0000	0.0000	0.0000	21.98	<.0001
perrent	1	6.3695	0.7627	4.8745	7.8644	69.74	<.0001

Probit Procedure

Model Information

Data Set	WORK.REVISED7	
Dependent Variable	University	University
Number of Observations	1171	
Name of Distribution	Normal	
Log Likelihood	-108.7210323	

Number of Observations Read	1171
Number of Observations Used	1171

Class Level Information

Name	Levels	Values
University	2	0 1

Response Profile

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perrent	1	59.6856	<.0001
density	1	0.2822	0.5952
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Intercept	1	-5.5811	0.6419	-6.8392	-4.3230	75.59	<.0001
Total	1	-0.0000	0.0000	-0.0000	0.0000	0.50	0.4781
F7	1	0.0195	0.0109	-0.0018	0.0408	3.21	0.0734
Median_Family_Income	1	0.0000	0.0000	0.0000	0.0000	9.20	0.0024
perba	1	-0.2083	2.8386	-5.7718	5.3552	0.01	0.9415
perrent	1	7.2843	0.9429	5.4363	9.1323	59.69	<.0001
density	1	-23.6209	44.4621	-110.765	63.5232	0.28	0.5952
percent_unemployed	1	-0.0177	0.0496	-0.1148	0.0795	0.13	0.7215

Probit Procedure

Model Information

Data Set	WORK.REVISED9
Dependent Variable	University University
Number of Observations	1171
Name of Distribution	Normal
Log Likelihood	-110.8518154

Number of Observations Read	1171
Number of Observations Used	1171

Class Level Information

Name	Levels	Values
University	2	0 1

Response Profile

Ordered Value	University	Total Frequency
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perrent	1	63.6924	<.0001

Probit Procedure

Analysis of Parameter Estimates

Parameter	DF	Estimate	Standard Error	95% Confidence Limits		Chi-Square	Pr > ChiSq
Intercept	1	-5.1537	0.5308	-6.1940	-4.1134	94.27	<.0001
Median_Family_Income	1	0.0000	0.0000	0.0000	0.0000	7.84	0.0051
perba	1	0.1568	2.6911	-5.1176	5.4312	0.00	0.9535
perrent	1	6.3561	0.7964	4.7951	7.9171	63.69	<.0001

Probit Procedure

Model Information

Data Set	WORK.REVISED7	
Dependent Variable	University	University
Number of Observations	1171	
Name of Distribution	Normal	
Log Likelihood	-110.8535132	

Number of Observations Read	1171
Number of Observations Used	1171

Class Level Information

Name	Levels	Values
University	2	0 1

Response Profile

Ordered Value	University	Total Frequency
1	0	37
2	1	1134

PROC PROBIT is modeling the probabilities of levels of University having LOWER Ordered Values in the response profile table.

Algorithm converged.

Type III Analysis of Effects

Effect	DF	Wald Chi-Square	Pr > ChiSq
Median_Family_Income	1	21.9850	<.0001
perrent	1	69.7377	<.0001

Probit Procedure

Analysis of Parameter Estimates

Parameter	DF	Estimate	Standard Error	95% Confidence Limits		Chi-Square	Pr > ChiSq
Intercept	1	-5.1627	0.5074	-6.1572	-4.1682	103.53	<.0001
Median_Family_Income	1	0.0000	0.0000	0.0000	0.0000	21.98	<.0001
perrent	1	6.3695	0.7627	4.8745	7.8644	69.74	<.0001

T-Tests

Variable	Method	Variances	DF	t Value	Pr > |t|
EIT Per Capita	**Pooled**	Equal	38	2.30	0.0269
EIT Per Capita	**Satterthwaite**	Unequal	22.5	2.30	0.0309
Total Tax Per Capita	**Pooled**	Equal	38	3.75	0.0006
Total Tax Per Capita	**Satterthwaite**	Unequal	32.4	3.75	0.0007
Real Estate Tax Per Capita	**Pooled**	Equal	38	2.69	0.0107
Real Estate Tax Per Capita	**Satterthwaite**	Unequal	35.2	2.69	0.0110
Police Exp. Per Capita	**Pooled**	Equal	38	1.84	0.0732
Police Exp. Per Capita	**Satterthwaite**	Unequal	25.7	1.84	0.0769
Public Safety Exp. Per Capita	**Pooled**	Equal	38	-0.83	0.4132
Public Safety Exp. Per Capita	**Satterthwaite**	Unequal	20.6	-0.83	0.4175
Parks/Recreation Exp. Per Capita	**Pooled**	Equal	38	-0.59	0.5564
Parks/Recreation Exp. Per Capita	**Satterthwaite**	Unequal	37.4	-0.59	0.5564
Roads Exp. Per Capita	**Pooled**	Equal	38	0.78	0.4419
Roads Exp. Per Capita	**Satterthwaite**	Unequal	32	0.78	0.4428

Equality of Variances

Variable	Method	Num D F	Den DF	F Value	Pr > F
EIT Per Capita	**Folded F**	19	19	10.75	<.0001
Total Tax Per Capita	**Folded F**	19	19	2.41	0.0619
Real Estate Tax Per Capita	**Folded F**	19	19	1.78	0.2195
Police Exp. Per Capita	**Folded F**	19	19	5.48	0.0005
Public Safety Exp. Per Capita	**Folded F**	19	19	23.20	<.0001
Parks/Recreation Exp. Per Capita	**Folded F**	19	19	1.28	0.6005
Roads Exp. Per Capita	**Folded F**	19	19	2.53	0.0493

T-Tests

Variable	Method	Variances	DF	t Value	Pr > |t|
EIT Adj. Per Capita	**Pooled**	Equal	33	1.74	0.0906
EIT Adj. Per Capita	**Satterthwaite**	Unequal	20.4	1.71	0.1033
Total Tax Adj. Per Capita	**Pooled**	Equal	38	1.59	0.1193
Total Tax Adj. Per Capita	**Satterthwaite**	Unequal	37.2	1.59	0.1195
Real Estate Tax Adj. Per Capita	**Pooled**	Equal	37	0.71	0.4838
Real Estate Tax Adj. Per Capita	**Satterthwaite**	Unequal	37	0.71	0.4832
Police Exp. Adj. Per Capita	**Pooled**	Equal	38	-0.18	0.8587
Police Exp. Adj. Per Capita	**Satterthwaite**	Unequal	29.6	-0.18	0.8590
Public Safety Exp. Adj. Per Capita	**Pooled**	Equal	21	-1.18	0.2501
Public Safety Exp. Adj. Per Capita	**Satterthwaite**	Unequal	10.4	-1.13	0.2830
Parks/Recreation Exp. Adj. Per Capita	**Pooled**	Equal	38	-1.23	0.2248
Parks/Recreation Exp. Adj. Per Capita	**Satterthwaite**	Unequal	34.5	-1.23	0.2256
Roads Exp. Adj. Per Capita	**Pooled**	Equal	38	-1.25	0.2194
Roads Exp. Adj. Per Capita	**Satterthwaite**	Unequal	36.2	-1.25	0.2198

T-Tests

Variable	Method	Variances	DF	t Value	Pr > |t|
EIT Per Capita	**Pooled**	Equal	38	2.30	0.0269
EIT Per Capita	**Satterthwaite**	Unequal	22.5	2.30	0.0309
Total Tax Per Capita	**Pooled**	Equal	38	3.75	0.0006
Total Tax Per Capita	**Satterthwaite**	Unequal	32.4	3.75	0.0007
Real Estate Tax Per Capita	**Pooled**	Equal	38	2.69	0.0107
Real Estate Tax Per Capita	**Satterthwaite**	Unequal	35.2	2.69	0.0110
Police Exp. Per Capita	**Pooled**	Equal	38	1.84	0.0732
Police Exp. Per Capita	**Satterthwaite**	Unequal	25.7	1.84	0.0769
Public Safety Exp. Per Capita	**Pooled**	Equal	38	-0.83	0.4132
Public Safety Exp. Per Capita	**Satterthwaite**	Unequal	20.6	-0.83	0.4175
Parks/Recreation Exp. Per Capita	**Pooled**	Equal	38	-0.59	0.5564
Parks/Recreation Exp. Per Capita	**Satterthwaite**	Unequal	37.4	-0.59	0.5564
Roads Exp. Per Capita	**Pooled**	Equal	38	0.78	0.4419
Roads Exp. Per Capita	**Satterthwaite**	Unequal	32	0.78	0.4428

Equality of Variances

Variable	Method	Num D F	Den DF	F Value	Pr > F
EIT Per Capita	**Folded F**	19	19	10.75	<.0001
Total Tax Per Capita	**Folded F**	19	19	2.41	0.0619
Real Estate Tax Per Capita	**Folded F**	19	19	1.78	0.2195
Police Exp. Per Capita	**Folded F**	19	19	5.48	0.0005
Public Safety Exp. Per Capita	**Folded F**	19	19	23.20	<.0001
Parks/Recreation Exp. Per Capita	**Folded F**	19	19	1.28	0.6005
Roads Exp. Per Capita	**Folded F**	19	19	2.53	0.0493

College Town and Control Comparison

The TTEST Procedure

Statistics

Variable	College Town	N	Lower CL Mean	Mean	Upper CL Mean	Lower CL Std Dev	Std Dev	Upper CL Std Dev	Std Err	Minimum	Maximum
EIT Per Capita	0	20	59.115	101.93	144.75	69.577	91.49	133.63	20.458	0	408.57
EIT Per Capita	1	20	39.631	52.692	65.753	21.223	27.907	40.76	6.2401	0	109.64
EIT Per Capita	Diff (1-2)		5.943	49.241	92.54	55.275	67.636	87.168	21.388		
Total Tax Per Capita	0	20	239.02	295.73	352.43	92.142	121.16	176.96	27.092	152.11	695.72
Total Tax Per Capita	1	20	138.27	174.77	211.26	59.299	77.975	113.89	17.436	58.946	441.74
Total Tax Per Capita	Diff (1-2)		55.738	120.96	186.18	83.263	101.88	131.3	32.218		
Real Estate Tax Per Capita	0	20	115.49	150.79	186.09	57.356	75.42	110.16	16.864	30.058	329.68
Real Estate Tax Per Capita	1	20	67.679	94.162	120.64	43.032	56.585	82.646	12.653	0	236.17
Real Estate Tax Per Capita	Diff (1-2)		13.948	56.629	99.309	54.487	66.671	85.924	21.083		
Police Exp. Per Capita	0	20	98.912	136.5	174.08	61.073	80.307	117.29	17.957	0.9339	410.65
Police Exp. Per Capita	1	20	84.466	100.52	116.57	26.079	34.292	50.087	7.668	50.882	170.93
Police Exp. Per Capita	Diff (1-2)		-3.547	35.981	75.509	50.462	61.746	79.577	19.526		
Public Safety Exp. Per Capita	0	20	1.1475	3.0874	5.0274	3.1523	4.1451	6.0542	0.9269	0	14.393
Public Safety Exp. Per Capita	1	20	-2.484	6.8593	16.203	15.183	19.964	29.16	4.4642	0	84.859
Public Safety Exp. Per Capita	Diff (1-2)		-13	-3.772	5.4582	11.783	14.418	18.582	4.5594		
Parks/Recreation Exp. Per Capita	0	20	4.3215	25.748	47.174	34.816	45.781	66.867	10.237	1.9644	216.4
Parks/Recreation Exp. Per Capita	1	20	14.894	33.862	52.83	30.822	40.529	59.195	9.0625	0.8735	159.16
Parks/Recreation Exp. Per Capita	Diff (1-2)		-35.79	-8.114	19.563	35.333	43.235	55.72	13.672		
Roads Exp. Per Capita	0	20	67.024	88.316	109.61	34.598	45.494	66.448	10.173	19.798	213.49
Roads Exp. Per Capita	1	20	65.605	78.981	92.357	21.735	28.58	41.743	6.3906	42.952	151.96
Roads Exp. Per Capita	Diff (1-2)		-14.99	9.3352	33.655	31.047	37.99	48.961	12.014		

Two Sample t Test for College Towns and Controls Minus the Student Population

The TTEST Procedure

Statistics

Variable	College Town	N	Lower CL Mean	Mean	Upper CL Mean	Lower CL Std Dev	Std Dev	Upper CL Std Dev	Std Err	Minimum	Maximum
EIT Adj. Per Capita	0	17	75.775	120.41	165.04	64.655	86.812	132.12	21.055	16.571	408.57
EIT Adj. Per Capita	1	18	65.375	82.053	98.731	25.166	33.537	50.277	7.9048	37.716	160.91
EIT Adj. Per Capita	Diff (1-2)		-6.413	38.356	83.125	52.479	65.064	85.643	22.005		
Total Tax Adj. Per Capita	0	20	239.02	295.73	352.43	92.142	121.16	176.96	27.092	152.11	695.72
Total Tax Adj. Per Capita	1	20	189.78	238.71	287.63	79.496	104.53	152.68	23.374	113.45	592.23
Total Tax Adj. Per Capita	Diff (1-2)		-15.42	57.021	129.46	92.474	113.15	145.83	35.782		
Real Estate Tax Adj. Per Capita	0	20	115.49	150.79	186.09	57.356	75.42	110.16	16.864	30.058	329.68
Real Estate Tax Adj. Per Capita	1	19	99.603	134.11	168.62	54.102	71.601	105.88	16.426	32.222	316.62
Real Estate Tax Adj. Per Capita	Diff (1-2)		-31.09	16.676	64.443	59.993	73.587	95.203	23.574		
Police Exp. Adj. Per Capita	0	20	98.997	136.54	174.09	61.01	80.224	117.17	17.939	1.8678	410.65
Police Exp. Adj. Per Capita	1	20	119.47	140.22	160.97	33.715	44.333	64.751	9.9131	68.482	242.42
Police Exp. Adj. Per Capita	Diff (1-2)		-45.16	-3.674	37.817	52.968	64.812	83.529	20.496		
Public Safety Exp. Adj. Per Capita	0	12	2.9019	5.5169	8.1318	2.9155	4.1156	6.9878	1.1881	0.097	14.393
Public Safety Exp. Adj. Per Capita	1	11	-3.581	15.107	33.796	19.437	27.819	48.82	8.3877	0.1097	89.654
Public Safety Exp. Adj. Per Capita	Diff (1-2)		-26.45	-9.591	7.2731	14.946	19.426	27.762	8.1091		

Statistics

Variable	College Town	N	Lower CL Mean	Mean	Upper CL Mean	Lower CL Std Dev	Std Dev	Upper CL Std Dev	Std Err	Minimum	Maximum
Parks/Recreation Exp. Adj. Per Capita	0	20	4.3215	25.748	47.174	34.816	45.781	66.867	10.237	1.9644	216.4
Parks/Recreation Exp. Adj. Per Capita	1	20	17.627	47.348	77.069	48.294	63.504	92.753	14.2	1.4451	259.41
Parks/Recreation Exp. Adj. Per Capita	Diff (1-2)		-57.04	-21.6	13.837	45.24	55.357	71.342	17.505		
Roads Exp. Adj. Per Capita	0	20	67.024	88.316	109.61	34.598	45.494	66.448	10.173	19.798	213.49
Roads Exp. Adj. Per Capita	1	20	87.6	104.56	121.51	27.551	36.228	52.913	8.1007	46.608	203.73
Roads Exp. Adj. Per Capita	Diff (1-2)		-42.56	-16.24	10.087	33.607	41.123	52.998	13.004		

CHAPTER 3
AREA WIDE COMPARISONS

Description

Within the Commonwealth of Pennsylvania, budgetary and fiscal comparisons are frequently made between municipalities that are located in the same geographical area. This comparison can be a substantive indicator because of the similar historical, political, and economic development of local municipalities in the Commonwealth. Pennsylvania has no unincorporated territory (land that is not part of a corporate municipality) and there are more than 2,500 municipalities in the Commonwealth.

Consequently it seems meaningful to analyze how each of the five host university municipalities compares to one or more of their own neighboring county municipalities.

Study Parameters

PEL decided to use the County in which the university municipalities were located as the geographic base to determine neighboring municipalities. The host municipalities are: Town of Bloomsburg (Columbia County), Edinboro Borough (Erie County), Lock Haven City (Clinton County), Millersville Borough (Lancaster County), and West Chester Borough (Chester County). PEL compared the host municipalities to the rest of the boroughs and cities within their respective counties. (Bloomsburg is the only town in Pennsylvania)

In Pennsylvania, smaller cities and boroughs are usually older mature settlements with population and development density that is much greater than in the neighboring townships. This difference is reflected in the scope of municipal services provided, as well as in the underlying available revenue resources utilized to pay for these services.

PEL compared defined municipal fiscal data for each host municipality to the average of the remaining cities and boroughs within their respective counties. The fiscal measures used were: Real Estate Tax per capita; Earned Income Tax per capita; Total Taxes per capita; and Police Expenditures per capita.

The data utilized for the comparative analysis was obtained from the Pennsylvania Department of Community and Economic Development (DCED) municipal financial statistics for 2003. The 2003 data were the latest available at the time the underlying research was

conducted. Certain municipalities were not included if they had not submitted their data to DCED or if there seemed to be extreme aberrations in the data presented. These exclusions were minor.

Comparison Limitations

One of the primary limitations facing this comparative analysis is the relatively small sample size once townships were excluded within each county. Specifically, the sample sizes are as follows.

West Chester Borough – 13 municipalities (Chester County)
Lock Haven City – 7 municipalities (Clinton County)
Bloomsburg Town – 7 municipalities (Columbia County)
Edinboro Borough – 14 municipalities (Erie County)
Millersville Borough – 18 municipalities (Lancaster County)

Related to the small data sets is the fact that no controls other than municipal type (city, borough, and town) were used. There was no attempt to duplicate the control measures as used in the Probit methodology.

Comparative Results

Exhibit Area Wide Comparison 1 provides the results of the comparative "area" county calculations.

The relevant findings are:

Real Estate Tax Per Capita

- Lock Haven City, Bloomsburg Town, and West Chester Borough receive more in real estate taxes per capita than do the average of the boroughs and cities in their counties. Both Edinboro and Millersville receive less in these taxes than the average of their counterpart municipalities. Only the Lock Haven City difference is statistically significant at the .05 level.

Earned Income Tax Per Capita

- All the municipalities received less in earned income tax per capita than the average of the respective county boroughs and cities, except for Edinboro. It should be noted that Edinboro Borough is a "Home Rule" municipality and has a municipal Earned Income Tax rate of 1.5 percent, or three times the usual rate of 0.5 percent for this tax. From a budget standpoint, the Borough has made a decision to emphasize the EIT revenue source. From a statistical standpoint, however, only Edinboro's difference in means is statistically significant, at the .05 level. Millersville Borough is significant at the .10 level. All the other differences in means are not statistically significant.

Total Taxes Per Capita

- The total tax per capita category results show all host municipalities (except for Millersville) with a higher total taxes per capita than the mean total taxes per capita of the comparative municipalities in each county. However, only Lock Haven's result is statistically significant at the .05 level.

Police Expenditures Per Capita

- Expenditure patterns within Pennsylvania vary greatly among municipalities. The principal service function provided in most municipalities is police protection. Therefore, this expenditure item was selected for comparison between the host municipality and the other cities/boroughs in each county.
- In all cases police expenditures per capita were greater in the university host municipality than for the average of the remaining cities/boroughs in the county. However, only in Lock Haven are the results statistically significant at the .05 level of confidence.

Analysis

- Of the 20 statistical mean comparisons only four are statistically significant. They are Real Estate Taxes, Total Taxes, and Police Expenditures in the City of Lock Haven and the Earned Income Tax in Edinboro Borough. PEL believes that this lack of statistical significance is because of the small sample size used in each case.

- Also important is the fact that except for the geographic area there has been no attempt at controlling for commonality or standardization such as median family income levels or percentage of renter occupied units in an attempt to determine "like" municipalities.
- As to the reasons why certain Lock Haven City and Edinboro Borough results may be statistically significant, PEL has no definitive answers but does offer the following explanation:
  - The Borough of Edinboro as a Home Rule municipality has set its Earned Income Tax rate at 1.5 percent for the municipality. The rate set for non Home Rule municipalities is 0.5 percent. Therefore Edinboro has a rate that is three times that of non Home Rule municipalities. The decision to employ the 1.5 percent EIT rate by the Borough was based on budgetary and fiscal considerations in an effort to reduce its real estate tax rate.
  - In addition, Edinboro University owns over 40.0 percent of the land area in Edinboro Borough. This large amount of land exempt from real estate taxation creates a revenue inefficiency that the Borough must replace by higher Earned Income Tax.
  - The City of Lock Haven is a small city located within the most rural of the counties of any of the host entities; the revenue and expenditure conditions for this small urban city, especially in population density and levels of service delivery, are not really comparable to the boroughs within the county.

A Second Measure: Tax Burden on Hypothetical Household

In a number of its municipal studies, PEL has constructed a measure of tax burden on a hypothetical household in order to compare taxes from one municipality to another. The hypothetical burden measures the real estate tax, earned income tax, and occupational privilege tax for a household with two persons who are employed earning an income and owning a home valued at the median within the municipality. Comparing the sum of these taxes paid across municipalities provides an example of how the tax structure affects the "hypothetical household."

PEL calculated this tax burden and compared it for the host municipality to the average hypothetical tax burdens of the remaining cities and boroughs in the respective counties.

Specifically, PEL calculated a 2003 Hypothetical Tax burden by summing the following:

Real Estate Tax – Obtained the median value of an owner-occupied home from the 2000 Census and adjusted it by the change in market value from 2000-2003 as determined by the Pennsylvania State Tax Equalization Board (STEB). This value was then adjusted for the county assessment ratio and multiplied by the applicable millage as shown in the 2003 DCED data.

Earned Income Tax – Multiplied the 2000 Census median household income by the Bureau of Labor Statistics change in the value of a dollar from 2000-2003 and multiplied by the EIT rate provided in DCED data.

Occupational Privilege Tax – Applied the rate for a municipality as reported by DCED and multiplied it by two individuals working within the municipality.

PEL then averaged these calculations for cities and boroughs within each county and compared this average to that of the similar measure for the host municipality.

Hypothetical Tax Burden Results

Exhibit Area Wide Comparison 2 provides the results between the average of tax burden of the cities/boroughs in each respective county to that for the host municipality. For all five cases, the host municipality had a higher tax burden than the county (city/borough) average. (Note that the data set of boroughs and cities included is the same as used in the prior per capita analysis.)

Hypothetical Tax Burden Analysis

Although the hypothetical results and rankings are interesting they generally are inconclusive. Once again only Lock Haven City is statistically significant at the 0.5 level. While the measure removes the per capita denomination and uses median value as a type of standard the sample size used is quite small. Therefore, serious analytical limitations are present. Further, as with the county per capita data, the sets compared do not control for median family income or renter occupancy as in the Probit model.

Exhibit Areawide Comparison 1
Comparison of Host Municipalities to the Averages of the Remaining Cities and Boroughs in the County
For Selected 2003 Taxes Per Capita and Police Expenditures Per Capita

	Lock Haven Means Difference	Bloomsburg Means Difference	Edinboro Means Difference	West Chester Means Difference	Millersville Means Difference
Real Estate Tax Per Capita	(90.31)	(12.38)	28.35	(45.56)	22.85
Earned Income Tax Per Capita	15.46	28.44	(46.37)	11.94	30.26
Total Tax Per Capita	(84.28)	(28.04)	(18.96)	(46.27)	58.11
Police Expenditures Per Capita	(63.76)	(72.59)	(54.21)	(72.56)	(5.40)

Mean Difference is equal to the average of the variable for the cities and boroughs in each county less the same variable for the host municipality.

	Lock Haven Probability	Bloomsburg Probability	Edinboro Probability	West Chester Probability	Millersville Probability
Real Estate Tax Per Capita	**0.0046**	0.7984	0.6842	0.4623	0.6621
Earned Income Tax Per Capita	0.2973	0.3598	**0.0032**	0.8963	0.0995
Total Tax Per Capita	**0.0074**	0.2949	0.8618	0.6605	0.3046
Police Expenditures Per Capita	**0.0230**	0.1656	0.3613	0.4064	0.9412

Variables are significant if the probability is equal to or less than 0.05.

Exhibit Areawide Comparison 2
Comparison of Host Municipalities to the Averages of the Remaining Cities and Boroughs in the County
For 2003 Hypothetical Tax Burden

Host Municipality	Mean Difference[1/] Hypothetical Tax Burden In Dollars
Lock Haven	(337.80)
Bloomsburg	(71.14)
Edinboro	(301.70)
West Chester	(99.87)
Millersville	(50.66)

Host Municipality	Probability 2/
Lock Haven	0.0031
Bloomsburg	0.5959
Edinboro	0.1003
West Chester	0.5975
Millersville	0.5921

1/ Mean Difference is equal to the average of the variable for the cities and boroughs in each county less the same variable for the host municipality.

2/ Variables are significant if the probability is equal to or less than 0.05.