The Economic Impact of Non-Profit Organizations

Scott Sobolewski

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Professor Stephen Sheppard, Advisor

WILLIAMS COLLEGE

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Abstract

This thesis uses input-output modeling to measure the economic impact of non-profit sectors in four counties in Florida. The model is calibrated using data that describes the inter-industry relationships within each local economy, and then simulated using input-output analysis with social accounting matrix extensions. Output multipliers are generated for the Arts, Education, Environment, Health, Human Services, and Other non-profit sectors using IMPLAN software, which calculates the ripple effects throughout each local economy. The 10-year annual growth rates from 1996 to 2006 for each non-profit sector are used to create projections that describe what the non-profit landscape will look like in each county in year 2016. Comparisons are made between the current and future non-profit landscape, and some possible drivers of the variable growth rates are discussed. I find that there is a noticeable connection between the size of the local economy and the growth of non-profit sectors within them over time. I also find that the growth and success of the non-profit Health sector is an important indicator for the performance of the overall non-profit sector.

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I. Introduction

The economic impacts of nonprofit organizations are often given little attention by traditional economic theory and applied economics. Policymakers frequently regard the role of nonprofits as ancillary to the economic well-being of local communities, choosing instead to focus the majority of their time and attention on analyzing the growth potential of the for-profit sector. This fundamental break occurs because nonprofit organizations serve a distinctly different purpose than profit-maximizing firms, and their success is not as visible or easy to measure as the magnitude of a profit margin.

The non-profit sector is special and a particularly interesting place to perform economic impact analysis. It provides local economies with public goods that generate positive externalities for the local community; a housing assistance program helps families in transition find affordable housing, a conservation society provides open green-space in the form of a downtown park, and a non-profit hospital can provide emergency care to those without health insurance. These externalities are generally seen as important components of local quality of life, yet the non-profit organizations themselves have no way to internalize these benefits[1]. Nonprofit organizations are everywhere; private higher education, the majority of residential health care services and hospitals, arts and culture organizations, environmental and conservation societies, and a variety of human and social service organizations are all types of non-profit organizations that generate goods and services that increase the quality of life for people in the community. Although the primary purpose of nonprofit organizations is to serve some public need without turning a profit, their expenditures may generate tremendous economic impacts on the surrounding

[1] As compensation for generating these positive externalities, the federal government grants them tax exempt statues on income, donations, etc.

community in the form of direct, indirect, and induced effects. There has been a dearth of an economic literature that explains how the size and composition of non-profit sectors within local economies contribute to the overall growth of a community's GDP. In addition, there has been no attempt made to explain how and why non-profit sectors evolve over time in relation to the overall economy. In this thesis I will attempt to fill that absence.

This thesis uses input-output analysis to examine the economic impact of nonprofit organizations in four Florida counties: Polk (Bartow/Lakeland), Indian River (Vero Beach), Lee (Ft. Myers/Cape Coral), and Pinellas (Clearwater/St. Petersburg). I chose these counties in part because their economies and populations are shaped in vastly different ways. The differences between the characteristics of the four counties will be helpful tools in explaining any differences found in the role of the non-profit sector and its relation to the overall growth rate of each county's economy.

The input-output model employs the use of an economic counterfactual to measure the impact of a given sector on the local community. Similar to the theme of the old movie *It's a Wonderful Life*, this thesis examines the impact of a sector by measuring the change in the overall economy as a result of that sector disappearing completely[2]. The removal of a given sector entails imagining a world in which there does not exist any final demand for the output of that sector, and consumers do not spend the money they would have spent on that sector elsewhere. Thus, the model assumes that consumers do not find a substitute sector. Throughout this thesis, any reference to the economic impact of a particular sector refers to a counterfactual world in which that sector is entirely

[2] Although there exist plenty of other ways to define the impact of a given entity, this counterfactual is the most appropriate and mathematically tractable given the data and model restrictions.

removed from the economy. Once the sector has been removed, its impact can be quantified by calculating the ratio of the change in the overall economy as a fraction of the magnitude of the component sector being evaluated[3]. The input-output model is a vital component of this calculation, as it simulates the reaction of the local economy to the absence of a given sector. Several assumptions and a small leap of faith follow with the use of this model, but the consistency and accuracy with which the calculations are made across sectors make the results meaningful.

It is helpful to think of an input-output model as a "calibration and simulation" exercise, where the model is calibrated by information from various data sources and the model simulates how a small change in some sector of the economy affects the overall conditions of the economy. By building matrix representations of inter-industry relations within the local economy, an input-output model can simulate the ripple effects of a given sector on the entire economy. Once the model has been calibrated with the direct spending effects of a particular sector, it can simulate the indirect effects (the response by all local industries caused by the iteration of other industries purchasing from industries of final demand) and the induced effects (the response by all local industries caused by the expenditures of new household income generated by the direct and indirect effects of final demand). Summing the direct, indirect, and induced effects provides a reasonable estimate for the impact that a certain sector has on the entire economy. A multiplier can be derived for each sector, calculated to be the ratio of total output (the summation of direct, indirect, and induced effects) to the direct expenditures of the sector. This multiplier is very helpful in determining which non-profit sectors have the strongest

[3] In most cases, this ratio is greater than 1.

ripple effects throughout the local economy, and is a reasonable way to provide a numerical estimate for a sector's economic impact.

The combination of input-output analysis and relating the growth rates of the overall economy to that of the non-profit sector will allow me to make projections for the future size and role of the non-profit sector within each of the four local economies[4]. The projections will show how the non-profit sectors will evolve over time, becoming more prominent drivers of growth in some counties and less prominent drivers in others. A glimpse into the future role of non-profit organizations within the structure of the larger economy may help local policymakers identify pieces of the non-profit sector that are likely to be large sources of overall economic growth in the future. Especially during times of economic recession as policymakers are looking to implement stimulus packages, it is important for them to know which sectors of the economy are the largest drivers of overall growth. Once the projections are made, an examination and discussion of the differences between the four local economies will attempt to explain any key drivers behind the potential differences between the size and composition of non-profit sectors in the past, present, and future.

[4] The projections assume that the growth rates observed from the previous 10 years will persist for the next 10 years as unchanged.

II. Relevant Literature

Economists have used input-output models for decades as an effective way to uncover the specific effects of a sector or industry on an economy. From measuring the effects of tourism on Vermont's economy (Lin et al. 1999), to quantifying the effects of arts and culture organizations on the United States (Americans for the Arts 2007) and Berkshire County, MA (Sheppard et al. 2009), the input-output model is a nationally recognized and accepted method of impact analysis in the economics literature. There have been numerous attempts to describe the role of the non-profit sector within a local economy for a given instant in time, but there has been limited work done on describing how the relationship between local impact and overall economic growth change over time. This thesis is an exploratory analysis of that relationship, and attempts to provide some insight by focusing on four counties in Florida.

Economists have also used input-output models as a means to compare the impacts of the same sector within different economies. In the same way this thesis compares the effects of non-profit organizations between counties in Florida, Anheier and Rudney (1998) compared the effects of the non-profit sector on the economies of the United States and West Germany in 1987-88. They found that a higher proportion of non-profit spending go directly to households in the United States, whereas a higher proportion of non-profit spending goes to the federal and local governments in West Germany. They also found that the non-profit sector in the United States has a larger impact on the overall economy than in West Germany; non-profit expenditures generate an additional $0.83 for every $1 spent in the United States, compared to an additional

$0.43 for every $1 spent in West Germany[5]. In other words, the multipliers of the non-profit sector were 1.83 and 1.43 in USA and West Germany respectively.

On June 6, 2007, the Americans for the Arts, a nonprofit organizations aimed at advancing the arts in the United States, released its third version of a national study of the economic impact of arts organizations on local communities. They found that the nonprofit arts and culture industry "generates $166.2 billion in economic activity every year - $63.1 billion in spending by organizations and an additional $103.1 billion in event-related spending by visitors. The impact of this activity is significant, supporting 5.7 million US jobs and generating $29.6 billion in government revenue." (Americans for the Arts 2007). These numbers represent significant growth since the first and second versions of their national studies. In just five years from 2000-2005, spending by organizations and their audiences grew 11% in real terms. Their results show that components of the non-profit sector are very important drivers of growth in the national economy, and also serve to contextualize the growth rates seen in the four counties being analyzed in this thesis.

Americans for the Arts made use of input-output analysis to measure the economic impact of the arts and culture industry. They also make it clear that "a dollar 'ripples' very differently through each community, which is why each study region had its own customized economic model." They are also careful to note how the arts and culture sector is unique in its ability to take advantage of audience spending in the local economy relative to other less-audience-intensive industries. Since the final product of many arts and culture organizations can only be consumed on-site (i.e. in the museum)

[5] The authors converted the currency of West Germany from Deutsche Marks to Dollars for comparison.

audiences bring a significant amount of money to the local economy. In fact, "nonlocal attendees (those who live outside the county) spent twice [the amount of local attendees], or $40.19 per person" versus the $19.53 spent by local audiences. This large discrepancy is easily explained: nonlocal attendees spend significantly more than local patrons in the lodging, meals, gifts, and transportation sectors. Of the $166.2 billion generated by the arts and culture industry in 2005, audience spending accounted for $103.1 billion of it (62%).

The study also notes how arts and culture volunteerism brings an additional economic impact that is not described by the $166.2 billion in income or the 5.7 million jobs created. "The average city and county in the study had 5,174 arts volunteers who donated 191,499 hours to nonprofit arts and culture organizations, a donation valued at $3.4 million." The Americans for the Arts argue that these volunteers also have an enormous impact on the local economies because they help arts and culture organizations function as a viable industry. Thus, volunteerism is an important component of the non-profit sector that is not normally seen within the for-profit sector.

Stephen Sheppard, along with Kay Oehler at the Center for Creative Community Development in North Adams, MA, released a 2009 study commissioned by the Berkshire Chamber of Commerce that assessed the economic impact of nonprofit organizations in Berkshire County, MA. Their report provided a detailed examination of how the nonprofit sector plays a very large role in sustaining Berkshire County's economy. The authors performed input-output analysis to determine the effects that expenditures by nonprofits have on the economy of Berkshire County. Similar to the study performed by Americans for the Arts (2007), Sheppard and Oehler are also careful

to note how expenditures "generate secondary local effects for local businesses, households and other nonprofits. These expenditures generate employment not only in the nonprofit organizations themselves, but also in the retailers, restaurants, law offices, and other business that either sell goods or services directly to the nonprofits or to the people who work for them or travel to Berkshire County to visit them." Their model contains approximately 500 sectors of the economy and uses sales data collected by the US Department of Commerce Bureau of Economic Analysis.

Debra Yurenka, a Ph.D. candidate in the Department of Economics at the University of Chicago, examines the effect of increased competition on the nonprofit sector. There has been extensive research on the role of competition in the for-profit sector, with general economic consensus holding that increased competition is a good thing; more competition decreases prices for consumers, increases the productivity of firms, and leads to greater overall efficiency and social welfare within the economy. The nonprofit sector, however, is significantly different from the for-profit sector in many ways, such that the effects of increased competition could actually serve as a detriment. Since the nonprofit sector relies more heavily on charitable donations as a source of funding, "an important concern is that more organizations increase competition for potentially scarce donation resources." (Yurenka 2007)

Yurenka notes that the "nonprofit sector has experienced substantial growth over the past few decades…both in the number of organizations and in the size of existing organizations." If we keep the amount of potential donations as a fixed variable, and the number of nonprofit organizations is increasing, then each organization will have fewer resources with which to provide services to clients on average. Yurenka also brings to

light a larger problem, pointing out the potential strategy response of nonprofit organizations: spending more on fundraising activities. Assuming that the overall pool of donations is limited, "increasing fundraising expenditures across organizations will result in more dollars being spent in unproductive fundraising efforts that might otherwise be spent delivering goods and services."

She proposes a Cournot model to describe the market for donations. Once this model is established, she uses the events of September 11, 2001 as an unanticipated event that theoretically increases the nonprofit industry's ability to generate donations. She then distinguishes between "winners" (organizations that attract more donations) and "losers" (organizations that attract less donations) of the shock, and measures how the fundraising efforts of the two groups compare to actual donations received. Using panel data and "controlling for year and industry fixed-effects," she shows empirically that "fundraising expenditures are less productive for loser industries when winner industries experience a boost to fundraising productivity." The loser industries do not actually increase fundraising expenditures over this time, which should "reduce concern that waste (at least in the context of fundraising) is occurring in light of the expansion of the nonprofit sector." She concludes that the growing number of nonprofit organizations "does not appear to cause reduced efficiency in terms of fundraising."

III. Input-Output Model Framework

Input Output: Building the Model

A critical element of this thesis is the ability to describe and predict the economic repercussions of a change to a specific sector of the local economy, in this case, elements of the non-profit sector. The analysis below uses a model of the complex web of interactions that take place between individual sectors of any economy. The model assumes (correctly) that the output of any one sector may become the input for another, and vice versa. Any change in the production pattern of a specific sector will have ramifications on the production patterns of other sectors since they are linked to one another, and we will call these ramifications the "ripple effects" of a change throughout the economy. It is also important to note the heavy importance placed on the role of local inputs and outputs, as opposed to imports or exports from a sector or industry outside of the measurable local economy. A local sector whose main inputs/outputs come from/go to sectors outside of the local economy will have very little economic impact on the local community. Therefore, the size of the local economy will play a very large role on the impact of an organization; organizations within larger economies will tend to have more of their inputs coming from local sources and their outputs remaining within the local economy. Subsequently, organizations that exist within larger economies will tend to have naturally larger impacts than those within smaller economies.

In order to properly account for the role of the final consumer, the model must be able to explain the complex interaction between firms and households. These two entities interact in two main markets: the market for production goods and services, and the market for labor and capital resources. The model must be able to describe, or make

assumptions about, the consumption and production patterns of firms and households as a result of their ongoing interaction. This description will be mostly driven by supply and/or demand of final outputs. Thankfully, input-output analysis meets all of these requirements and has the ability to quantify how local economies react to changes in final demand for various sectors within a specific economy.

The structure for the input-output model was created by the Russian economist Wassily Leontief in 1927 at the Insitutute for World Economics in Kiel, Germany (Dietzenbacher and Lahr 2004). According to Dietzenbacher's account, Leontief's model was a variation on the "Walrasian fully determinate general equilibrium system." Leontief's original model was closed, where he treated the economic interrelationships as self-contained and self-determining. Ten years after his first paper was published on the topic, in 1951, he reformulated the model to treat final demand exogenously, laying the foundations for descriptive input-output analysis in its current form. However, Leontief's real claim to fame, and what won him the Nobel Prize in Economic Sciences in 1973, was his work on transforming the model into a predictive tool. Using a series of equations in matrix form, he was able to predict how an economy's total output would react to a change in final demand for a specific sector of the economy.

The input-output model begins with a set of linear equations that describe the composition of total output for every sector of the economy. The equations are written as follows, where X_i is the total output for sector i and Z_{ij} is the demand from sector i for sector j. It is helpful to think of Z_{ij} as the total demand for inputs from sector i that are

produced by sector j. The set of equations for sectors 1 through k of our local economy, with d_i representing final demand[6] for sector i's output:

$$X_1 = Z_{11} + Z_{12} + \ldots + Z_{1k} + d_1$$

$$X_2 = Z_{21} + Z_{22} + \ldots + Z_{2k} + d_2$$

$$\vdots$$

$$X_k = Z_{k1} + Z_{k2} + \ldots + Z_{kk} + d_k$$

According to Shaffer's (2004) description of the model, the variable Z_{ij} can be specified as the product of a "technical coefficient" a_{ij} with output in each sector X_j. Therefore,

$$Z_{ij} = a_{ij}X_j$$

And by substitution,

$$X_1 = a_{11}X_1 + a_{12}X_2 + \ldots + a_{1k}X_k + d_1$$

$$X_2 = a_{21}X_1 + a_{22}X_2 + \ldots + a_{2k}X_k + d_2$$

$$\vdots$$

$$X_k = a_{k1}X_1 + a_{k2}X_2 + \ldots + a_{kk}X_k + d_k$$

The technical coefficient[7] a_{ij} identifies the percentage of total inputs for sector i that are required to be purchased from sector j to produce output amount X_i. The technical coefficients essentially represent a recipe for a sector i's output amount X_i.

[6] Final demand is a catchall term that can be broken down into several other components. Those components will be examined further in the "SAM Multipliers" section of this thesis.

The equations can be represented in the following matrix form:

$$X = AX + D$$

In this form, X refers to the column vector that gives total output for each sector, A refers to the matrix of technical coefficients, and D refers to the column vector of final demand for each sector. If we rearrange some terms, remembering that I is the identity matrix,

$$X - AX = D$$

$$(I - A)X = D$$

$$X = (I - A)^{-1}D$$

we are left with an equation that gives output of each sector as a function of final demand. This allows anyone the opportunity to solve for changes in output levels in each sector of a local economy as a function of changes in final demand:

$$\Delta X = (I - A)^{-1}\Delta D$$

Leontief constructed input-output analysis as a general equilibrium tool to measure the simultaneous interactions among many different sectors of the economy. In that sense, we can think of the output, technical coefficient, and final demand matrices as representing a static snapshot of the entire economy. Therefore, one critical assumption is that the economy is initially in some equilibrium state, whereby the output of any sector exactly equal to the summation of inputs purchased and final demand; essentially, supply must initially equal demand. Since we have assumed the model to be in equilibrium from the start, any changes to output as a result of some shock to final demand can be entirely attributable to that shock. When using input-output as a predictive tool, we also assume

[7] A technical coefficient is often confused with a regional purchase coefficient. Technical coefficients identify purchases from another sector regardless of geographic location, while regional purchase coefficients identify only the percentage of inputs purchased from sectors within the local economy.

that the economy returns to a new equilibrium at some point in the future; the model does not specify a time horizon but reflects the complete adjustment to a new equilibrium.

The model also assumes that there are constant returns to scale, such that increasing inputs by some factor will automatically increase output by that same factor. This implies linear production functions and L-shaped isoquants, contrary to the classical Cobb-Douglas forms, which usually represent diminishing returns to scale[8] (Shaffer 2004). Since the model is completely demand-driven, we assume that there will always be excess capacity to meet any increase in demand without a change in prices, and without any resource constraints. Not having any supply constraints implies that there exist unlimited raw materials and other factor inputs to produce any amount of output driven by changes in demand. From our formula for Z_{ij}, we can see that the "inter-industry flows from i to j are wholly dependent on the output of j" (Shaffer 2004). Since the premise of our descriptive model is as a static snapshot of an economy, the use of technical coefficients implies that prices are fixed and inputs are given in fixed proportions[9].

A Simple Example

To better understand how this model works, we can work through a simple example that will describe a simple economy with only four industries (Manufacturing (M), Agriculture (A), Construction (C), and Services (S)). The inter-industry flows represented by the set of original sectoral equations can be displayed in a transactions

[8] This, of course, depends on the magnitude of the exponent in the Cobb-Douglas production function.

[9] This is the reason for L-shaped isoquants. Only inputs in fixed proportions will cause a production expansion along a linear expansion path.

table. The rows of the table describe sellers of output, while the columns describe purchasers of inputs; the row totals represent total output produced by each sector, while the column totals represent total input expenditure by each column sector. Since we have assumed the model to be in equilibrium, the row and column totals for individual sectors will be identical (supply equals demand). In addition to the four main sectors, we will include two additional sectors as providers of inputs, local factor inputs (f) and imports (i), which are only given as row sectors because they themselves purchase no inputs. Also note that final demand (d) is a column-only sector, just as in Leontief's matrix description of the economy. All numbers in the table represent units of local currency.

Table 1: Transactions Table[10] (dollars)

	M	**A**	**C**	**S**	**d**	**TOTAL (X_i)**
M	0	25	45	0	30	100
A	20	0	55	20	105	200
C	40	35	0	65	180	320
S	10	50	70	0	40	170
f	20	50	30	80	0	180
i	10	40	120	5	35	210
TOTAL (X_i)	100	200	320	170	390	1180

We can interpret the table as follows: looking at the row for the first sector, Manufacturing, we see that total output equals $100, of which $0 is sold back to Manufacturing, $25 is sold to Agriculture, $45 is sold to Construction, $0 is sold to the Services sector, and $30 is sold to Final Demand. Now looking at the column for Manufacturing, we see that total inputs equal $100, with $0 being purchased from Manufacturing, $20 being purchased from Agriculture, $40 being purchased from

[10] It is easy to recognize the transactions table is a clear representation of the sectoral equations we established earlier. Note that total output of the Manufacturing Sector (X_1) is the sum of $Z_{11} + Z_{12} + \ldots$ where $Z_{11} = 0$, $Z_{12} = 25$, etc.

Construction, $10 being purchased from Services, $20 purchased from factor inputs, and $10 being purchased from imports. Next, we can calculate a table of technical coefficients, called a direct requirements table, by dividing each entry in the transactions table by the column total. Since final demand produces no output, technical coefficients are not calculated for final demand because no further local processing occurs after the sale. Remember that a technical coefficient identifies the expenditure made from each row sector per dollar of activity from each column sector.

Table 2: Direct Requirements Table

	M	**A**	**C**	**S**
M	0.00	0.13	0.14	0.00
A	0.20	0.00	0.17	0.12
C	0.40	0.18	0.00	0.38
S	0.10	0.25	0.22	0.00
f	0.20	0.25	0.09	0.47
i	0.10	0.20	0.38	0.03
TOTAL	1.00	1.00	1.00	1.00

The direct requirements table indicates that every $1 of Manufacturing production requires $0 dollars of inputs from Manufacturing, $0.20 of Agriculture, $0.40 of Construction, $0.10 of Services, $0.20 of Factor Inputs, and $0.10 of Imports. The transactions table and direct requirements table have described the inter-industry relationships of a simplified economy using Leontief's input-output model.

Applications as a Predictive Tool

Using input-output modeling as a predictive tool begins with three sources of data requirements: 1) the total output of each sector of the local economy, 2) the technical coefficients for each sector, and 3) the final demand for each sector. Using the numbers

specified in our simplified example from the previous section, in combination with Leontief's formula for output as a function of final demand, we can introduce a pre-specified shock to final demand in any one or more sectors to infer a change in total output for every sector. These results will tell us how the change in final demand for one sector has a ripple effect through the entire economy, and the associated magnitude with which it has an effect on other sectors. The overall impact of a given sector is obtained by setting final demand for that sector equal to zero and then measuring how the rest of the sectors in the local economy adjust their output. The summation of output adjustments across every subsequent sector in the economy will provide a reasonable estimate for the impact of a given sector.

We have Leontief's original formula, $X = AX + D$, in matrix representation:

$$\begin{pmatrix} 100 \\ 200 \\ 320 \\ 170 \\ 180 \\ 210 \end{pmatrix} = \begin{pmatrix} 0.00 & 0.13 & 0.14 & 0.00 \\ 0.20 & 0.00 & 0.17 & 0.12 \\ 0.40 & 0.18 & 0.00 & 0.38 \\ 0.10 & 0.25 & 0.22 & 0.00 \\ 0.20 & 0.25 & 0.09 & 0.47 \\ 0.10 & 0.20 & 0.38 & 0.03 \end{pmatrix} + \begin{pmatrix} 30 \\ 105 \\ 180 \\ 40 \\ 0 \\ 35 \end{pmatrix}$$

We can now rearrange into Leontief's final form, $X = (I - A)^{-1}D$. The rows representing local factor inputs and imports[11] are dropped during this rearrangement. We do not include imports because inter-industry interactions with sectors outside of our defined economy do not need to be accounted for in Leontief's predictive model. Remember that the predictive model is only concerned with the expenditures that remain within and ripple through our local economy. We drop local factor inputs because there will never be

[11] Located in the last two rows of the Transactions Table.

final demand for intermediate inputs[12]; in effect, local factor inputs will always remain inputs, and they will never cause final demand for them to change. The predictive form:

$$\begin{pmatrix} 100 \\ 200 \\ 320 \\ 170 \end{pmatrix} = \begin{pmatrix} 1.140 & 0.208 & 0.220 & 0.109 \\ 0.383 & 1.166 & 0.310 & 0.256 \\ 0.658 & 0.444 & 1.288 & 0.545 \\ 0.354 & 0.409 & 0.381 & 1.194 \end{pmatrix} \begin{pmatrix} 30 \\ 105 \\ 180 \\ 40 \end{pmatrix}$$

Now that we have successfully calculated our Leontief inverse matrix, we can introduce a shock to final demand in some sector and see how it affects total output in individual sectors and the economy as a whole. For example, we increase final demand in the Services sector from $40 to $200:

$$\begin{pmatrix} 117.372 \\ 240.929 \\ 407.154 \\ 361.034 \end{pmatrix} = \begin{pmatrix} 1.140 & 0.208 & 0.220 & 0.109 \\ 0.383 & 1.166 & 0.310 & 0.256 \\ 0.658 & 0.444 & 1.288 & 0.545 \\ 0.354 & 0.409 & 0.381 & 1.194 \end{pmatrix} \begin{pmatrix} 30 \\ 105 \\ 180 \\ 200 \end{pmatrix}$$

Here we can see that the $160 increase in final demand for the Services sector has increased the total output of Manufacturing by $17.372, Agriculture by $20.929, Construction by $87.154, and Services by $191.034. This $160 increase in final demand has increased total output in this economy by more than $336, or nearly 2.10 times the original increase in final demand! This is another astonishing result, showing that there exist ripple effects through our simplified local economy.

Different shocks to final demand will have different effects on the economy. What would happen if we reduced final demand to zero for some sector? Agriculture, for instance:

[12] Note the zero in the final demand column corresponding to local factor input row.

$$\begin{pmatrix} 78.140 \\ 77.559 \\ 273.391 \\ 127.008 \end{pmatrix} = \begin{pmatrix} 1.140 & 0.208 & 0.220 & 0.109 \\ 0.383 & 1.166 & 0.310 & 0.256 \\ 0.658 & 0.444 & 1.288 & 0.545 \\ 0.354 & 0.409 & 0.381 & 1.194 \end{pmatrix} \begin{pmatrix} 30 \\ 0 \\ 180 \\ 40 \end{pmatrix}$$

Here we see that Manufacturing has decreased output by $21.860, Agriculture by $122.441, Construction by $46.609, and Services by $42.992. This time, the $105 decrease in final demand for Agriculture has decreased the total output of the economy by $233.902, or 2.2 the original decrease in final demand. Changes in final demand for different sectors of the economy will have different consequences for the total output of individual sectors and the entire economy. Since our model is linear, however, changes of different magnitude to the same sector will change the output of individual sectors and the total output of the economy by the same factor. For instance, if we had only reduced final demand in the Agriculture sector to $55, a drop of $50, Manufacturing would drop to $89.591, Agriculture to $141.695, Construction to $297.805, and Services to $149.528. The total output of the economy would drop by $111.381, which is still 2.2 times the $50 drop in final demand.

The predictive form of Leontief's input-output model has provided a useful way to analyze inter-industry relationships within a local economy. Like most models the accuracy of the model's predictions will be predicated on the accuracy of the input data. The most critical juncture for the input-output model occurs at the driving force behind the input-output predictions, the technical coefficients and subsequent Leontief inverse table. Thankfully, the majority of companies and businesses know these numbers "because that is how they adjust their purchases of materials and labor as sales change." (Shaffer 2004)

Social Accounts

As it pertains to this thesis, the most important contribution of the predictive input-output model is the formation of output multipliers, which represent the total change in local output as a result of a $1 change in output for a specific sector. The Direct Requirements table implies these multipliers, but the model must be run before multipliers can be calculated. We have calculated these multipliers for a few sectors already (2.1 for Services and 2.2 for Agriculture); the formula for the total output multiplier in any given sector is the change in total output divided by the change in final demand for the individual sector. The multiplier is a very good proxy for a sector's 'economic impact' on a local community. Since the multiplier is a measure of how much a sector's expenditures increase the total output of a local economy, the multiplier will decrease linearly as imported inputs and exported outputs rise. Larger economies will tend to have bigger multipliers because more spending is contained locally; as we expand the designated boundaries of a very tiny economy, imported inputs will begin to shrink and multipliers will become naturally larger.

The input-output model we have built thus far is rather restrictive, as we have not included any details about how household income is circulated through the economy. Local factors of production, people[13], receive paychecks, and spend a portion of this income in the local economy. Different kinds of household expenditures will produce different types of reverberations throughout any economy, so we must account for this if

[13] Note that labor is not the only type of local production factor; land and capital must certainly be included as well.

our model is going to provide meaningful results. Social accounting matrices (SAM) were developed in the 1960s and 1970s precisely for this occasion.

Our initial input-output model only considered the recirculation of local currency from an industrial perspective; SAMs offer a more realistic and comprehensive extension of our industry-only input-output model. This way, the flows of goods and services from firms to households, and from households back to firms, are captured in a meaningful way. The SAM extension in our model effectively adds two missing pieces to our model: factor income distribution coefficients and household income coefficients, which describe the spending patterns of institutions and local households respectively.

Building a matrix of social accounts is more data intensive than a standard input-output model. In addition to the standard inter-industry relationships built into the Transactions Table, "typical SAMs require additional data on total factor payments, total household income (by category), total government expenditures and receipts (including intergovernmental transactions), institutional income distribution, and transfer payments." (Shaffer 2004)

The SAM extension of the input-output model shares exactly the same assumptions as in the original input-output model and will react very similarly. However, instead of placing the entire focus on industrial analysis, the SAM extension shares this focus with local households and the way in which household income is distributed. Although having the SAM extension is the most comprehensive option for purposes of this thesis, it is not without its drawbacks. The linear nature of the model inhibits capturing the effects of price changes, just as in the Leontief-inspired input-output model we described earlier.

IMPLAN Software

IMPLAN (Impact Analysis for PLANning) is a computer software package that builds and evaluates input-output models for economies at the local, regional, and national levels. All of the modeling and economic impact analysis in this thesis, from the construction of the models for the four Florida counties to the calculation of total output multipliers for non-profit sectors, was performed using IMPLAN. According to Deller et al (2009), the software is a "product of the Rural Development Act of 1972" and was originally developed by the USDA Forest Services as a means to measure economic impact projections of alternative uses of US public forest resources. In its current state, while being maintained by a private consulting group[14], the software still retains its usage as a system of county-level input-output models.

The IMPLAN software makes use of county-level input databases and builds the inter-industry relationships and SAMs for local economies by using standardized secondary data sources. These data sources come primarily from the federal government, including the Bureau of Economic Analysis, the Bureau of Labor Statistics, the Census Bureau, and the Geological Survey. The county-level tables of inter-industries generally sell for around $300, and are essentially equivalent to the Transactions Table, Direct Requirements table, and Social Accounts extensions. The software constructs the Leontief inverse table for a local economy, introduces shocks as changes in final demand, and then measures how the output of local sectors respond to the shock. It then provides a

[14] Minnesota IMPLAN Group

readout of the direct, indirect[15], and induced[16] effects on output, which all sum to the total output for a local economy. Multipliers are calculated in similar fashion as before, dividing total output by direct expenditures.

[15] The response by all local industries caused by the iteration of industries purchasing from industries of final demand.

[16] The response by all local industries caused by the expenditures of new household income generated by the direct and indirect effects of final demand, included only because of the SAM extension to our model.

IV. Data and Summary Statistics

Data Sources

The data used in this thesis comes from a wide variety of sources that can be grouped into three distinct categories. The first type of data describes the actual non-profit organizations themselves, and provides useful information about individual organizations like expenses, revenues, etc. The second type of data describes the structure of the local economy on which the impact of local non-profit organizations can be measured. The third type describes the economic conditions of the local economies since 1996, and incorporates descriptors like inflation, total metro-level GDP, and GDP of the for-profit sector. When the first two data sources are used in conjunction with one another they calibrate and customize the input/output model in order to capture the unique impacts of small changes in the local economy. The third data source provides a basis on which to compare the different effects within and between the four local economies

The data on organizations was collected from the National Center for Charitable Statistics (NCCS), and consists of a very large data set of every single non-profit organization in the United States that has filed a Form 990 from the years 1996, 2001, and 2006. Every organization that has been certified by the Internal Revenue Service as "not-for-profit" must file a Form 990 annually, and in exchange for their tax-exempt status the Form 990s are made publicly available. The NCCS dataset contains valuable information about the type of organization and its financial status, as well as variables that help describe its size and presence in the local community. Variables like expenditures and revenue are important when determining the economic impact of an

organization on a local community because they describe the amount of money being received and spent by the organization. Since the dataset contains information about every non-profit in the United States[17], it affords the opportunity to compare the effects of organizations at the local level to those at the national level, allowing a deeper understanding of the forces that drive economic growth.

A limitation of the data lies in the fact that only organizations with over $25,000 in revenue need to file a Form 990. This $25,000 filing minimum has remained constant since 1996, and is not indexed to inflation from year to year. The number of non-profit organizations in the dataset grows dramatically from 200,161 in 1996 to 264,821 in 2001 to 328,690 in 2006, but it is impossible to tell whether the growth reflects an increased non-profit presence in the United States or is merely a byproduct of inflation. As time passes and inflation rises, more non-profit organizations are going to have revenues that clear the $25,000 filing hurdle by inflation alone, and thus will be included in the NCCS dataset. Thus, only organizations with revenues greater than $25,000 (in 1996 dollars) will be included for analysis within this thesis; the revenues for the 2001 and 2006 data sets will be indexed to inflation, and any organizations with revenues less than the $25,000-indexed amount will be removed.

The second source of data comes directly from the Minnesota IMPLAN Group. The four county-level datasets describe the production relationships and flows of goods and services for the local economies of the four Florida counties. These are the Leontief-inspired Transactions and Direct Requirements Tables with the SAM extension[18].

[17] The data set only contains information about non-profit organizations with over $25,000 in annual revenue. Those organizations with less than $25,000 in revenue are not required to file a Form 990.

[18] This data, along with the IMPLAN software, are expensive tools that have been afforded to me by my thesis advisor, Professor Stephen Sheppard.

The IMPLAN software requires that every sector in the local economy have a specific IMPLAN-related code. This code, however, is not included in the NCCS database. Every non-profit organization in the NCCS dataset is classified according to the National Taxonomy of Exempt Entities (NTEE), which assigns a letter (A-Z) and number according to the purposes and goals of the specific non-profit. There exists a bridge between the two codes, called the North American Industry Classification System (NAICS). For each organization in the NCCS data set, a NAICS code was assigned according to the NTEE code, and then an IMPLAN code was assigned according to the NAICS code. The NAICS section of the US Census website provides a bridge between NTEE and NAICS classifications, while the IMPLAN website provides a useful bridge to connect NAICS classifications with IMPLAN codes.

The third data source comes from the federal government, including the websites of the Bureau of Labor Statistics, the US Census Bureau, and the Bureau of Economic Analysis. The BLS provided very useful inflation data:

- The Producer Price index was used to index national-level data for the years 2001 and 2006 back into 1996 dollars. Thus, the revenues and expenditures for the entire NCCS data set and the national-level were indexed using the PPI.
- The Consumer Price Index was used at the regional-level to index the expenditures and revenues of the non-profit organizations located within the four Florida counties. Since regional-level CPI data only comes at the Metro-level, the decision as to use which regional index was based solely on proximity. Pinellas County and Polk County were indexed using the

Tampa-St. Petersburg-Clearwater MSA regional CPI, and Lee County and Indian River County were indexed using the Miami-Fort Lauderdale-Pompano Beach MSA regional CPI.

The US Census Bureau performs economic censuses every five years. The 1997 and 2002 census were obtained from the census website and used to analyze the growth rates of several for-profit sectors. Unfortunately, the 2007 census has not been compiled in time for the writing of this thesis so it was excluded from the analysis. The revenues of the Wholesale Trade, Retail Trade, Finance, and Real Estate sectors at the national- and county-level were used as a proxy for growth within the for-profit sector.

The BEA website provided data pertaining to the overall GDP for each of the four Florida counties. Unfortunately, the GDP data only comes at the Metro-level, so exact county-level GDP was impossible to obtain. Thankfully, however, Indian River County, Polk County, and Lee County are their own MSAs, so exact GDP data was available for those three. Pinellas County, on the other hand, is a part of the much larger Tampa-St. Petersburg-Clearwater MSA, which also contains Hillsborough, Pasco, and Hernando counties. In this instance, the county-level GDP was obtained for Pinellas County by dividing up the MSA-level GDP proportional to the populations of the four counties[19].

Summary Statistics

The four Florida counties were chosen, in part, because the advisor to this thesis had already purchased the expensive inter-industry descriptions of the four counties for

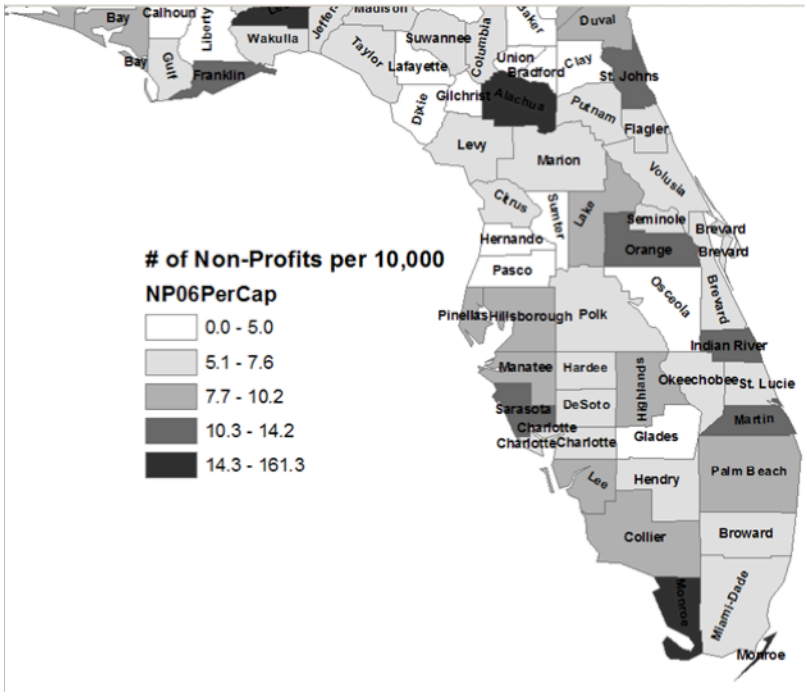
[19] This assumes that per capita GDP is equal within each of the four counties. The basis and implications of this assumption will be discussed in the Results section of this thesis.

other projects. These inter-industry descriptions of the local economy are absolutely essential for any type of economic impact analysis. Differences between the economic landscapes and non-profit sectors contained within the four counties are wide enough to provide an interesting baseline for economic analysis and comparison.

Figure 1 (below), is a map of Florida that shows the number of non-profit organizations per 10,000 people at the county level. This map is useful in determining the initial presence that the non-profit sector has within each county of Florida, although it fails to account for the number of organizations as a share of the total number of firms within the local economy of each county.

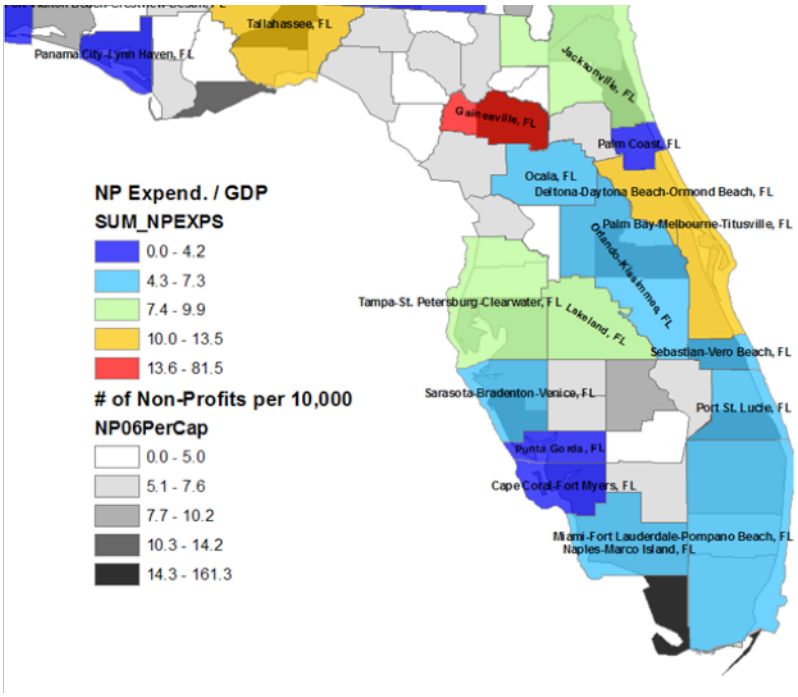
The shaded regions of Figure 1 represent national-level quintiles for the number of non-profits per capita. Polk County (Central FL) is in the second quintile (5.1-7.6), Pinellas County (Western Peninsula) and Lee County (Southwest Peninsula) are in the

Figure 1: Number of Non-Profits per 10,000 People



third quintile (7.7-10.2), and Indian River County (Eastern Peninsula) is in the fourth quintile (10.3-14.2). This represents a nice distribution in terms of the sheer number of non-profits per county. It is more useful to examine the economic presence of the non-profit sector in each county, however, which can be represented as total non-profit expenditures as a share local GDP. Since GDP data is more readily available at the MSA level, rather than at the county level, we can overlay the map with MSA data to determine the local economic presence. Figure 2 shows the same map as in Figure 1, but has a colored overlay that shows non-profit expenditures as a percentage of total GDP at the MSA level.

Figure 2: Non-Profit Expenditures as a share of MSA GDP



As you can see from the map, the Cape Coral-Ft. Myers MSA (Lee County) is in the lowest national quintile (0-4.2%), the Sebastian-Vero Beach MSA (Indian River County) is in the second national quintile (4.3-7.3%), and the Tampa-St.Petersburg-

Clearwater MSA (Pinellas County) and Lakeland-Winter Haven MSA (Polk County) are in the third national quintile (7.4-9.9%).

These facts generate useful comparisons across the four counties. Relative to the four counties, we know that Indian River County has the most non-profits per capita but the expenditures in that county are very low, meaning that the county has lots of very small organizations. Polk County, on the other hand, has few organizations, but their non-profit expenditures are very high relative to the other four counties, meaning that it must have some very large organizations accounting for the bulk of the spending.

To further emphasize the notable differences between the four counties, it is useful to refer to some basic variables in Table 3:

Table 3: Describing the four counties

	Lee County	Polk County	Indian River County	Pinellas County
Population	590,564	574,746	131,837	917,437
Income per Household	$81,879	$78,764	$116,324	$92,162
Area (sq. mi.)	804	1,875	503	280

Polk and Lee counties are relatively similar in terms of their populations and income, but Polk is a much larger county in terms of square mileage. This means that Polk is relatively more rural than Lee, having their population spread out among a larger area. Also, Polk County is located in the middle of the state, as opposed to on a coast like Lee County, making it (arguably) a less desirable living location. Indian River County, on the other hand, is the smallest of the four counties, but happens to be the richest with an average household income of $116,324. Located on the Atlantic coast, Indian River presents a desirable location to live and is the most suburban of the four counties. Pinellas County would be classified as the most urban, with a population of nearly one million

people squeezed into a small area of less than 300 square miles. Two very large cities, Clearwater and St. Petersburg, comprise the majority of this county's population. Pinellas County also contains a large amount of people who commute to work in Tampa, one of Florida's largest cities located in nearby Hillsborough County. By population, the Tampa-St. Petersburg-Clearwater MSA is the second largest metro area in the Florida[20], and the nineteenth largest in the United States.

The NCCS dataset provides some initial insight into the economic presence of the non-profit sector in each of the four counties. We have seen some variation between the four counties in terms of area and population, so we expect to see the same types of variation as we perform some initial analysis of the NCCS dataset. Table 4 shows some statistics that describe non-profit expenditures in 2006 for each of the four counties.

Table 4: Non-Profit Expenditures in 2006

	Lee County	Polk County	Indian River County	Pinellas County
N	442	361	148	929
Mean	$1,389,952	$3,253,323	$1,807,380	$3,873,951
Stand. Dev.	$5,800,672	$27,946,612	$13,025,748	$23,673,678
5th Percentile	$14,155	$15,597	$8,921	$13,258
25th Percentile	$48,817	$43,848	$48,222	$45,767
75th Percentile	$492,465	$534,264	$557,965	$648,842
95th Percentile	$6,565,059	$6,590,708	$4,203,281	$10,187,066

The data in Table 4 complements the data presented in Figures 1 and 2. The map in Figure 2 ranks Polk County and Pinellas County on the higher end of non-profit expenditures, and they have the highest means from the NCCS dataset. Indian River County is somewhat lower than those two, followed by Lee County. Even though Lee

[20]Miami-Fort Lauderdale-Pompano Beach is the largest MSA in Flordia by population.

and Polk are similar in terms of the number of non-profit organizations, the average spending per organization is much higher in Polk County. The large standard deviation for Polk, compared to that of Lee, suggests that Polk has many more organizations on the higher end of the spending distribution. Looking at the percentiles, and noticing that the 75th percentile is significantly higher in Polk County than in Lee County, corroborates this suggestion. We would expect Indian River County to have organizations with smaller spending levels due to its smaller size and suburban nature, and this is confirmed by looking at the smaller 5th and 95th percentiles, as well as Figures 1 and 2. Of course, Pinellas County has by far the highest amount of non-profit spending because the sector needs to provide for many more people. Even though Pinellas has the largest mean and a high 95th percentile, it is important note that these numbers are aggregate and not per capita or per organization; even though the numbers are large, they do not necessarily suggest that the sector has a larger relative economic presence in the county.

For the purposes of this thesis, the NTEE classifications have been grouped into six major categories: Arts, Education, Environment, Health, Human Services, and Other. The Arts sector contains things like museums and performing arts companies, Education has private schools and non-public colleges and universities, Environment has conservation and wildlife protection organizations, Health has private hospitals and medical research labs, Human Services has housing assistance and substance abuse programs, and the Other category encompasses things like foreign affairs and religious groups. The direct expenditures of each non-profit category are organized by county in Table 5 (in millions of dollars) and per capita in Table 6.

Table 5: Expenditures (in millions)

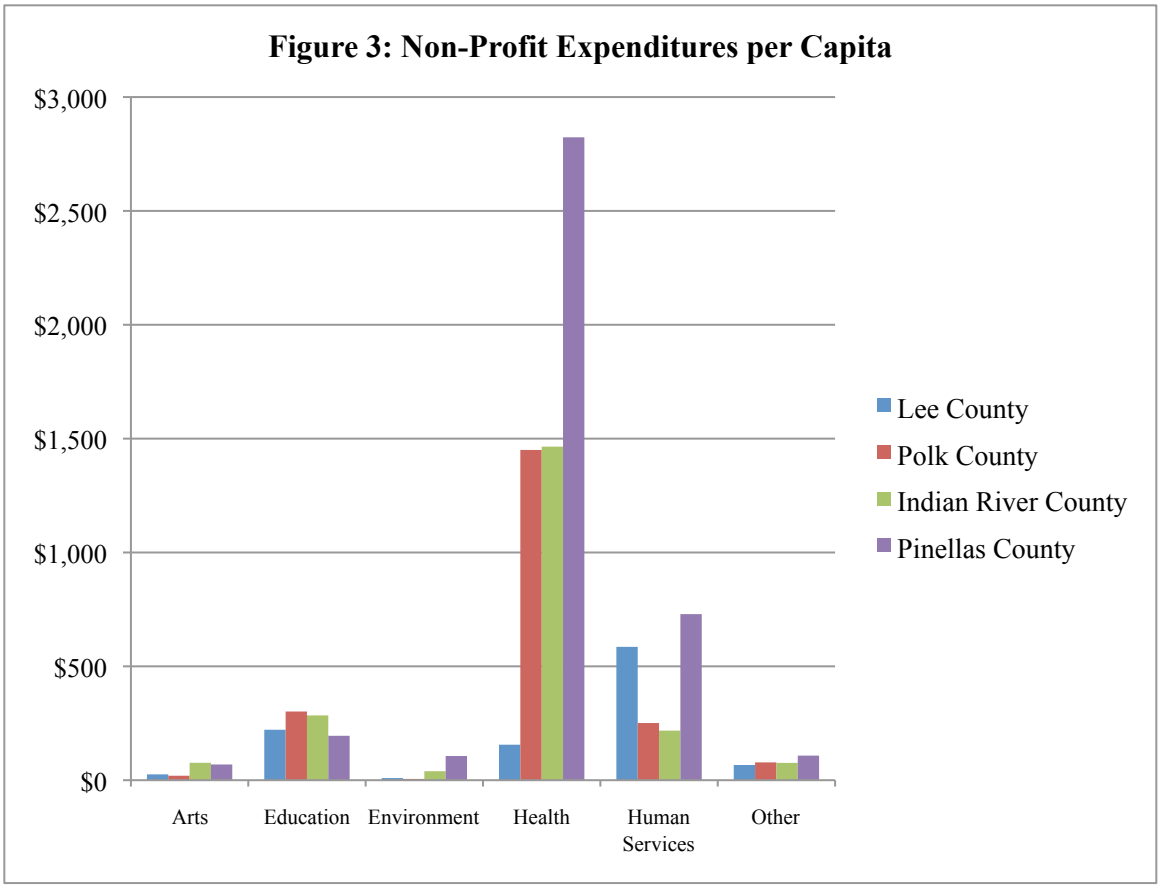
County	Arts	Education	Environment	Health	Human Services	Other	Total
Lee	$15.072	$130.808	$5.515	$92.055	$345.798	$39.424	$628.671
Polk	$11.260	$173.347	$3.199	$833.525	$144.314	$44.979	$1,210.624
Indian River	$10.065	$37.510	$5.190	$193.120	$28.716	$10.019	$284.621
Pinellas	$63.293	$178.889	$97.511	$2,590.203	$669.103	$99.011	$3,698.009
Total	$99.691	$520.553	$111.415	$3,708.903	$1,187.930	$193.433	$5,821.924

Table 6: Expenditures per capita

County	Arts	Education	Environment	Health	Human Services	Other
Lee	$26	$221	$9	$156	$586	$67
Polk	$20	$302	$6	$1,450	$251	$78
Indian River	$76	$285	$39	$1,465	$218	$76
Pinellas	$69	$195	$106	$2,823	$729	$108

The sector that immediately stands out for its enormous presence is the Health sector, particularly in Pinellas County. The fact that the Health sector happens to be very large in Florida, a state that has been a destination for older retirees for decades, is no groundbreaking discovery. Florida has a reputation for enormous healthcare spending due to the abnormally large presence of older people, and it requires no leap of faith to understand why older people need more health care. Figure 3 helps interpret these results graphically, and shows non-profit expenditures per capita.

This pattern is not seen in every county, however, as the Health sector in Lee County is third in spending behind the Education and Human Services sectors in terms of aggregate and per capita. The lower Health spending is made up for with a large Human Services sector, rivaling that of Pinellas County, which has nearly a half million more people. Indian River and Polk counties have very similar expenditure patterns, except for the Arts spending per capita in Indian River County, which happens to be the highest of any of the four counties.



This fact may reflect a correlation between wealth (Indian River has the highest income per household) and the demand for culture, a relationship considered by Sheppard et al (2006). In sum, the non-profit spending of two counties (Indian River and Polk) structured in very similar ways in terms of per capita expenditures, while Pinellas County is very focused on the Health sector and Lee County is very focused on the Human Services sector.

V. Results

The Results section will be divided into three distinct parts: Input-Output Multipliers, Growth Rates, and Projections. The first section will establish the fundamental linkages between the individual sectors of the entire non-profit industry with the rest of each county's economy, using input-out modeling to generate output multipliers for each sector. Once the multipliers have been compared within and between counties, growth rate analysis will show how each non-profit sector has been performing over time using data from 1996, 2001, and 2006. This analysis will reveal the most rapidly growing and declining sectors over that ten-year time horizon. Comparing the growth rates of the non-profit sectors within each of the four counties to the growth rates of for-profit industries will give a good baseline for the type of growth seen throughout the non-profit sector in each economy. The third section will generate projections for the size and shape of the non-profit sector in 2016 using the ten-year growth rates established from 1996-2006 and the input-output multipliers generated using expenditures from 2006. These projections will show what the non-profit sector will look like in the future, assuming that the internal structure of the local economy remains the same, and will serve to highlight some interesting patterns that were seen from 1996 to 2006. These projections should act as useful tools for local policymakers in determining the distribution of resources and funds, highlighting how the non-profit sector will look in the future for each of the four counties.

Input-Output Multipliers

Using expenditure data from the NCCS data set for non-profit organizations with greater than $25,000 in revenue in 2006, we can run input-output models for each of the four Florida counties. The Total Output for each of the six non-profit sectors can be found in graphically in Figure 4, with the specific numbers located in A1 of the Appendix. The associated multipliers are given in Table 7 (below):

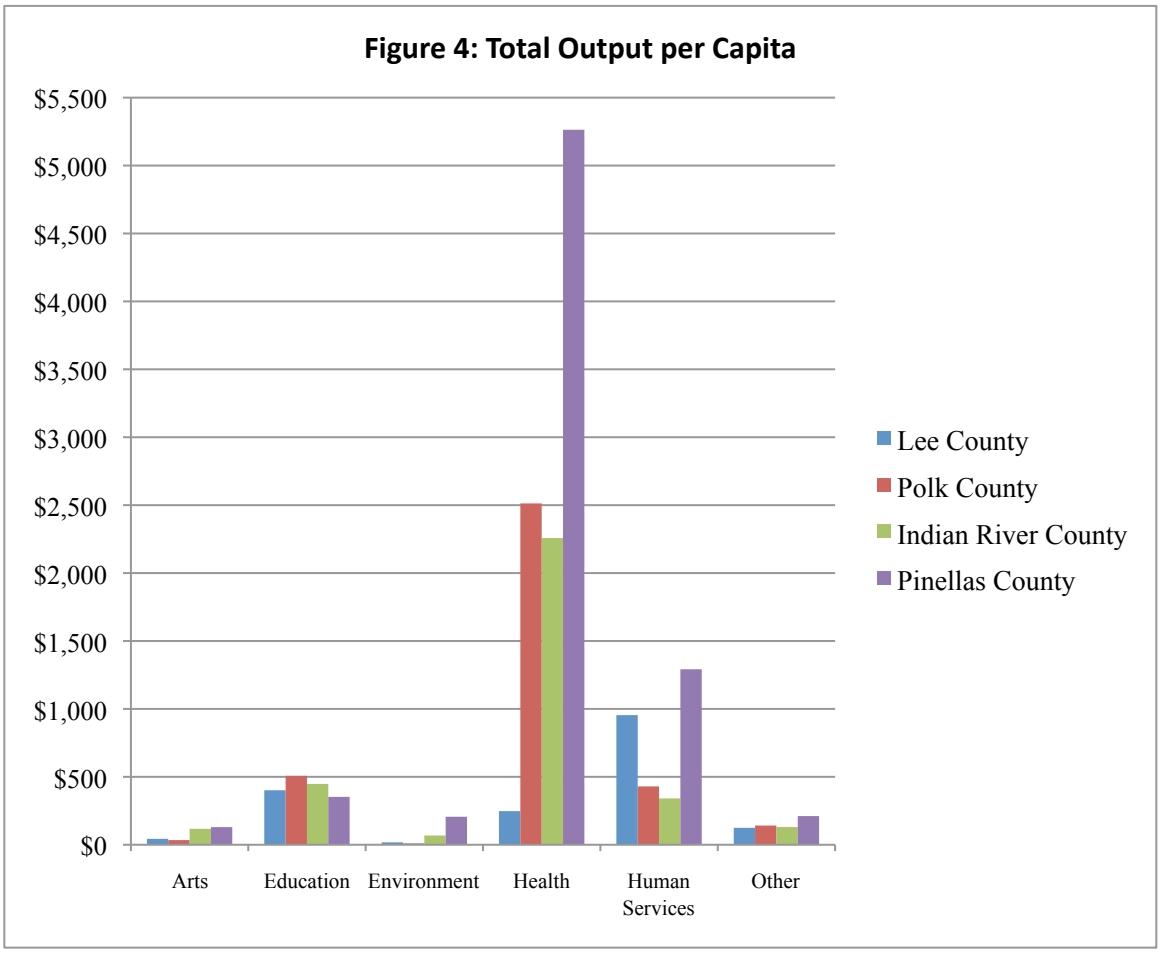


Table 7: Output Multipliers

County	Arts	Education	Environment	Health	Human Services	Other
Lee	1.71	1.81	1.90	1.59	1.63	1.87
Polk	1.75	1.68	1.82	1.73	1.71	1.81
Indian River	1.54	1.57	1.73	1.54	1.57	1.71
Pinellas	1.88	1.81	1.94	1.86	1.77	1.96

The subtle differences between the graphs in Figures 3 and 4 represent the subtle differences in the way each non-profit sector is treated in each of the four economies. It may just seem like the labels on the y-axis have doubled, but there are indeed differences that reflect how the inter-industry flows are different within and between the four economies. Take Polk County's Health sector, for instance; even though the direct expenditures per capita were less than that of Indian River County, more of that money has remained within the county and has contributed to Polk County's higher Total Output per capita. The "ripple effects" of the Health sector are stronger within Polk County than for Indian River County, a fact that is reflected in the Polk County's higher multiplier.

There is a caveat to this interpretation: for any input-output model, larger economies tend to have naturally higher multipliers since more of the money has a higher chance to remain within and circulate through the local economy. Indian River County is the smallest economy, with the lowest multipliers across every sector. Pinellas County, the largest economy, has the highest multipliers across the board. In these instances, it is difficult to compare the multipliers of economies of very different sizes. It is more useful to compare the multipliers within a given economy.

In every single county, the Environment sector has the highest multiplier. This is a very interesting result, since this sector represents the lowest spending per capita in all four counties. This sector has remained relatively untapped, and the large multipliers represent a good place for a local government to spend money[21]. A dollar spent by an organization in the Environment sector adds around $1.90 dollars to the local economy, compared to lower figures for other sectors. It is unclear how this multiplier would

[21] Under the assumptions of our input-output model.

respond over time, though, as more or less money is pumped into a specific sector. These results are merely a static snapshot of the economy, so any interpretations assume that the economy remains the same over time and does not change as a sector grows.

Growth Rates

In order to provide meaningful projections of the non-profit sector in the future, we need to examine its behavior in the past. For each of the four counties, this involves analyzing the growth rates of three variables over a 10-year time horizon: number of organizations, revenues, and expenditures. For number of organizations, we can examine aggregate and per capita growth rates, and for the revenues and expenditures we can examine aggregate, per capita, and per organization growth rates. Each type of growth rate tells us something different about a sector's behavior, since each holds a different variable as fixed. Annual growth rates are used in this analysis, and are calculated by taking the natural log of [the value at the later year divided by the value at the earlier year], and dividing that total by the number of years between the earlier and later year.

Table 8: Number of Organizations, Per Annum Growth Rates (NP Sector)

	1996-2001		2001-2006		1996-2006	
	Aggregate	Per Capita	Aggregate	Per Capita	Aggregate	Per Capita
National	5.26%	4.13%	3.61%	2.70%	4.43%	3.41%
4 FL Counties	8.36%	6.97%	3.73%	1.94%	6.04%	4.45%
Indian River	6.57%	4.43%	4.14%	1.85%	5.36%	3.14%
Lee	6.84%	4.14%	4.93%	0.64%	5.88%	2.39%
Pinellas	11.89%	10.34%	3.19%	0.69%	7.54%	5.51%
Polk	3.17%	2.57%	3.53%	3.59%	3.35%	3.08%

Table 8 shows the annual growth rates for the number of non-profit organizations within each county, and also gives the annual growth rates for the number of organizations at the national level and combining the four Florida counties. Immediately,

we see that the four Florida counties have experienced very strong growth from 1996 to 2001 compared to the nation as a whole, and less so from 2001 to 2006. The growth rate for the combined Florida counties is heavily influenced by the growth rates in Pinellas County, which has half of the number of total organizations. Hence, most of the strong growth is seen in Pinellas County from 1996 to 2001, with the number of organizations growing by more than 10% annually. Polk County represents the slowest growth over the ten-year period, except for Lee County's 10-year per capita growth rate (which is the lowest overall ten-year annual growth rate). Since all of the per capita growth rates are positive, we know one of two things must be true: 1) the number of organizations is growing at a faster rate than the population, signaling that the non-profit sector is gaining presence over time, or 2) large numbers of organizations are crossing the $25,000 NCCS filing threshold.

Analyzing the growth rates of individual non-profit sectors within each county provides a deeper understanding of which non-profit sectors are driving growth. The tables for this analysis can be found in section A2 of the Appendix. The majority of new organization growth within Indian River County is driven by the Education sector, with ten-year annual growth rates around 10%, and strong five-year annual growth rates around 16% in the Environment sector. Lee County has seen generally consistent growth in all six sectors, except for abnormally slow growth in the Health and Arts sectors, both of which have slightly negative per capita growth rates. Pinellas County has seen the highest average growth rates, led by the Education and Environment sectors, each having 10-year growth rates well over 9%. Polk County has experienced the least amount of

growth over this 10-year time period, with the most growth occurring in the Environment sector.

An organization's revenue represents the amount of money coming in to the non-profit organization, and is an important variable by which to measure its success. Although the input-output model deals explicitly with expenditures, revenues are a better measure of how efficient an organization is operating. Revenues for each county, as well as the national average, are summarized in Table 9.

Table 9: Revenue, Per Annum Growth Rates (NP Sector)

Revenues	1996-2001			2001-2006			1996-2006		
	Aggregate	Per Capita	Per Organization	Aggregate	Per Capita	Per Organization	Aggregate	Per Capita	Per Organization
National	4.04%	2.91%	-1.21%	5.55%	4.64%	1.94%	4.80%	3.78%	0.36%
4 FL Counties	5.01%	3.62%	-3.34%	5.91%	4.12%	2.18%	5.46%	3.87%	-0.58%
Indian River	-5.88%	-8.02%	-12.45%	3.26%	0.97%	-0.88%	-1.31%	-3.53%	-6.66%
Lee	2.24%	-0.456%	-4.60%	9.45%	5.16%	4.53%	5.85%	2.35%	-0.04%
Pinellas	10.71%	10.11%	-1.18%	5.68%	5.73%	2.48%	8.19%	7.92%	0.65%
Polk	-3.35%	-4.90%	-6.52%	5.59%	3.09%	2.06%	1.12%	-0.91%	-2.23%

The negative revenue growth is apparent for Indian River and Polk counties, especially from 1996 to 2001, and is in sharp contrast to the strong growth for Pinellas County during that same time period. The 10-year growth rates for Indian River and Polk are well below the national average, while Pinellas County is nearly double the national average in every 10-year growth rate. Lee County, on the other hand, was able to recover from a dismal five-year growth period between 1996 and 2001 with strong growth between 2001 and 2006. The majority of the growth and declines in revenue for each county can be attributed to a handful of very large organizations entering or exiting the non-profit sector during the five-year periods, or very large organization adding or losing massive amounts of revenue. This driving force becomes more obvious as we examine

the growth rates of individual sectors within each county. (see section A3 of the Appendix)

Indian River's Health sector experienced a 14% decline in revenues per organization annually between 1996 and 2001, which is larger in magnitude than the 12% decline in revenues per capita and 9% decline in aggregate revenues in that sector. Revenues are declining faster than the number of organizations are disappearing, signaling that many non-profits in the Health sector have experienced significant declines yet still remain open. For instance, Indian River Memorial Hospital nearly lost half of its 1996-level revenue, dropping from $205 million to only $117 million after adjusting for inflation. This organization is by far the largest non-profit in the county, with the Saint Edwards School the second largest at a mere $10 million. The very large drop in revenue by Indian River Memorial Hospital has overshadowed many of the gains made by other non-profits within other sectors. The Arts, Environment, Education, and Human Services sectors have all experienced 10-year annual growth in revenue nearly double the national average, yet their struggling Health sector has overshadowed the growth in other sectors.

The same general story can be told in Lee and Polk counties as well. Both have experienced negative 10-year growth rates within the Health sector, and generally positive growth within all other sectors. It happens that many of the largest non-profit organizations in each county are hospitals and medical centers, and their declines have cancelled out the growth in other sectors. In Polk County, the largest non-profit organization in 1996 was the Lakeland Regional Medical Center with revenues at $432 million, with the second largest organization (Winter Haven Hospital) at $146 million. By 2001, the revenues for Lakeland Regional Medical Center had dropped down to $266

million after adjusting for inflation. This decline by a single large organization represents more than 30% of all non-profit revenue in that county in 1996, and certainly overshadows the growth of other organizations within that sector. Winter Haven Hospital, for instance, grew to $171 million in revenues in 2001.

Pinellas County certainly stands out for the tremendous growth in revenues seen from 1996 to 2006, highlighted by the near 30% annual growth rates in the Environment sector, and near 10% growth rates in the Arts, Human Services, and Other sectors. The Health sector is the second slowest growing sector in that county, yet still experienced significant growth close to 8% aggregate and per capita. The primary driver of growth within this county has been the emergence of many new non-profit organizations. The largest organization in the county has been the Morton Plant Hospital Association, growing from $255 million in 1996 to $282 million in 2001, but other very large organizations have also emerged. St. Anthony's Hospital ($267 million), Salvador Dali Museum ($59 million), Eckerd Youth Alternatives ($57 million), and Regional Healthcare System ($54 million) have been some of the largest new entrants.

The growth rates of the for-profit sector provide an interesting contrast to the type of growth experienced by the non-profit sector. The non-profit sector represents a different fraction of the total economy in each of the four counties, so we must examine this relationship before we can compare different growth rates. Table 10 shows the expenditures of the non-profit sector as a fraction of total county GDP[22].

[22] Note that since GDP data was not available at the county-level, and Pinellas County was the only one not its own MSA, I assumed that GDP per capita would be equal across all four counties within the Tampa-St.Petersburg MSA and scaled the GDP by population within each county.

Table 10: Non-Profit Expenditures as a Fraction of Total GDP in 2006							
County	Arts	Education	Environment	Health	Human Services	Other	Total
Lee	0.07%	0.58%	0.02%	0.41%	1.54%	0.18%	2.80%
Polk	0.07%	1.09%	0.02%	5.26%	0.91%	0.28%	7.64%
Indian River	0.23%	0.87%	0.12%	4.45%	0.66%	0.23%	6.57%
Pinellas	0.16%	0.47%	0.25%	6.75%	1.74%	0.26%	9.64%

This table shows us the relative importance of the non-profit sector within each county. The non-profit sector has the largest presence within Pinellas County and the smallest presence within Lee County. Similarly, Pinellas County has the largest Health sector while Lee County has the smallest, relative to county GDP. This pattern serves to illustrate the very large importance of the Health sector in Florida.

The growth rate of the for-profit sector can serve as another useful baseline. The growth rates for number of organizations and revenues for Wholesale Trade, Retail Trade, and Real Estate are located in section A6 of the Appendix. The number of for-profit organizations was growing fastest in Lee County, with Real Estate growing by 7%, Retail Trade by 2.5% and Wholesale Trade by 2% annually from 1997-2002. Polk County experienced the second most growth, with Pinellas County experiencing the least amount of for-profit growth over that time.

The for-profit growth in revenues, however, paints a slightly different picture. Lee County is still has the fastest growing for-profit sector from 1997-2002, peaking with Real Estate revenue growing by 11.5%, Retail Trade by 7.5% and Wholesale Trade by 6.5% annually, but Pinellas County has experienced the second most growth across all three sectors. This means that the number of organizations in Pinellas is decreasing, but the organizations that continue to exist are growing at rates much faster than in the other

counties. Lee County's marginal dependence on the non-profit sector is compensated with the very fast growth rates associated with the for-profit sector.

If analyzing the economic impact of a particular organization or economic sector, expenditures are the primary variable. Whereas revenues only describe the amount of money taken in by an organization, expenditures describe the affects that a particular organization has on its neighbors and the surrounding community. The growth rates for expenditures are given in Table 11:

Table 11: Expenditures, Per Annum Growth Rates (NP Sector)

Exp.	1996-2001			2001-2006			1996-2006		
	Aggregate	Per Capita	Per Organization	Aggregate	Per Capita	Per Organization	Aggregate	Per Capita	Per Organization
National	4.57%	3.44%	-0.68%	4.99%	4.08%	1.38%	4.78%	3.76%	0.35%
4 FL Counties	5.11%	3.72%	-3.25%	5.12%	3.33%	1.39%	5.11%	3.52%	-0.93%
Indian River	-6.09%	-8.23%	-12.66%	2.55%	0.25%	-1.59%	-1.77%	-3.99%	-7.13%
Lee	0.89%	-1.80%	-5.94%	9.26%	4.97%	4.33%	5.07%	1.58%	-0.81%
Pinellas	10.68%	10.08%	-1.22%	4.92%	4.98%	1.73%	7.80%	7.53%	0.26%
Polk	-2.19%	-3.75%	-5.36%	4.41%	1.91%	0.88%	1.11%	-0.92%	-2.24%

Table 11 shows us that Indian River is struggling in the same way they were with revenues, experiencing negative growth rates driven primarily by a lackluster period between 1996 and 2001.Pinellas County is still experiencing high 10-year growth rates well above the national average, although they are relatively weaker than the growth in revenues over that same time span. Lee County remains very similar to the national averages on the 10-year time horizon, but is not nearly as consistent. Nationally, non-profit organizations experienced steady growth over both 5-year time horizons, whereas the majority of Lee's growth took place between 2001 and 2006. Polk County remains relatively stagnant, with their population growing at a slightly faster rate than the expenditure of their non-profit sector.

Section A4 of the Appendix provides a breakdown of expenditures by non-profit sector, and reveals some interesting differences between the growth rates of revenues and expenditures. The growth in expenditures of Polk and Lee counties are very similar to the growth in revenues, but this is not the case for Indian River and Pinellas counties. The smallest county being analyzed, Indian River, experienced much less growth in the Environmental and Arts sectors compared to the growth in revenue. The declines in growth in spending per capita and per organization signals that these organizations are not having the same economic impact they were having in the previous decade. Pinellas County, on the other hand, is experiencing exactly the opposite of what is happening in Indian River. The expenditure growth rates of the Environment and Art sectors are much higher than the growth in revenue, creating a much larger impact on the surrounding community. Most of the other sectors remain very similar in terms of expenditures and revenues.

Projections

The NCCS data set provides useful information about the non-profit sector from 1996 to 2006. Extrapolating the growth rates from those ten years out an additional ten years, to 2016, is a useful and revealing exercise for local policymakers and those interested in how the role of non-profit organizations changes over time. In order to make projections, we must make several assumptions regarding the landscape of the four economies. In order to make use of the multipliers we have established using input-output models, we must assume that the structure of the local economies remain the same over time. This is a rather unrealistic assumption, as it is quite unlikely that the role and inter-

industry relationships of a very small non-profit sector will remain the same as that organization grows very large over time. As an organization or sector grows larger, it certainly extends its breadth throughout a local economy, so assuming that the local multipliers will remain the same is a large assumption being made with these projections. The strongest assumption being made with these projections is that future growth rates will equal past growth rates. One additional thing to keep in mind is that the projected expenditure, output, and GDP data are all in 2006 dollars.

Two sets of projections were made: one for the expenditure and total output of the non-profit sector in 2016, and one for the GDP of each county in 2016.

The first set of projections was made using MSA-level GDP data from the BEA. Unfortunately, this data was only made available as far back as 2001, so per annum growth rates were obtained using 2001 and 2006 data points. The projections are given in Table 12[23]:

Table 12: Actual and Projected GDP by MSA (in millions of 2006 dollars)

MSA	2006	2016 (Projected)
Cape Coral-Fort Myers, FL (Lee)	$22,481	$40,768
Lakeland-Winter Haven, FL (Polk)	$15,848	$23,523
Sebastian-Vero Beach, FL (Indian River)	$4,335	$8,244
Tampa-St. Petersburg, FL (Pinellas)	$112,027	$169,593
Pinellas GDP (Tampa-St. Pete * 0.3426)	$38,378	$58,098

The second set of projections was made using the 10-year annual growth rates associated with each non-profit sector within each county. The 2016 aggregate expenditure data were projected using the 10-year aggregate growth rates, and the 2016 per capita expenditure data were projected using the 10-year per capita growth rates. The

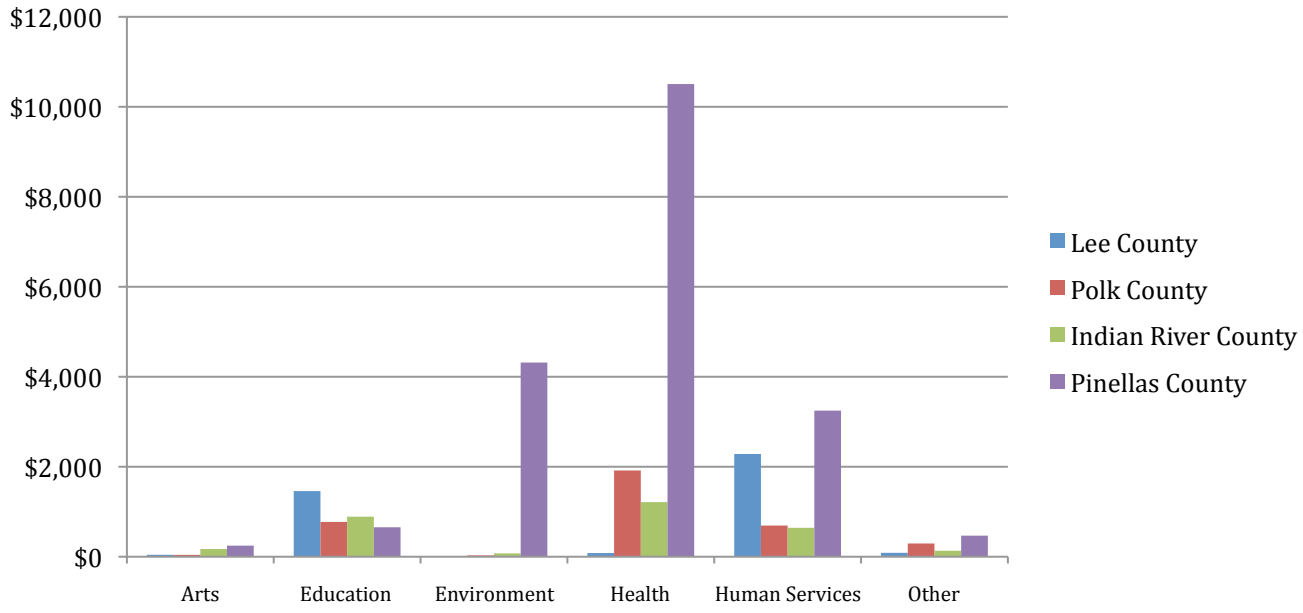
[23] Since Pinellas was the only county that was not its own MSA, GDP projections were obtained by multiplying the MSA-level data by Pinellas' share of the total population within the MSA.

total output of each sector was calculated by multiplying the expenditure data by the 2006 multiplier associated with each county's sector. The projections for aggregate direct expenditure, aggregate total output, and direct expenditures per capita in 2016 are given in section A7 of the Appendix. The projections for total output per capita are given in Table 13, and graphically in Figure 5[24].

Table 13: Projected Total Output per Capita in 2016

	Arts	Education	Environment	Health	Human Services	Other	Total
Lee County	$42.86	$1,459.12	$14.42	$82.18	$2,283.39	$86.95	$3,968.92
Polk County	$41.40	$773.90	$30.11	$1,917.07	$692.93	$294.52	$3,749.92
Indian River County	$171.18	$890.16	$74.51	$1,213.99	$643.15	$132.78	$3,125.77
Pinellas County	$246.38	$654.61	$4,315.83	$10,505.59	$3,247.56	$468.60	$19,438.57

Figure 5: Projected Non-Profit Output per Capita in 2016



[24] There is a clear distinction between "Direct Expenditures" and "Total Output". Direct expenditures are the direct spending efforts of a given organization, whereas Total Output is the overall impact that those spending efforts have on the local economy. Total Output equals Direct Expenditures times the multiplier for the given sector.

Figure 5 is drastically different than Figure 4, which is reflection of the changes in the non-profit sector between 1996 and 2006. The 2016 projections extrapolate this growth out an additional 10 years, and simulate what the non-profit sector would look like should similar types of growth persist. The Environment sector of Pinellas County, Education sector of Lee County, Education and Other sectors of Polk County, and the Arts and Education sector of Indian River County are the sectors with most pronounced growth between 2006 and 2016.

The differences between 2006 and 2016 become clearest when comparing the total output[25] of each non-profit sector in 2006 to the total output of each sector in 2016. Keep in mind that the total output of a sector is its total effect on the local economy, incorporating all of the 'ripple effects' associated with the inter-industry relationships. Tables 14 and 15 compare the two years as a percentage of county GDP:

Table 14: Total Output in 2006 as percentage of 2006 GDP

County	Arts	Education	Environment	Health	Human Services	Other	Total
Lee	0.11%	1.05%	0.05%	0.65%	2.51%	0.33%	4.70%
Polk	0.12%	1.84%	0.04%	9.11%	1.56%	0.51%	13.18%
Indian River	0.36%	1.36%	0.21%	6.87%	1.04%	0.40%	10.23%
Pinellas	0.32%	0.87%	0.51%	12.93%	3.17%	0.52%	18.32%

Table 15: Projected Total Output in 2016 as percentage of 2016 GDP

County	Arts	Education	Environment	Health	Human Services	Other	Total
Lee	0.09%	3.00%	0.03%	0.17%	4.69%	0.18%	8.15%
Polk	0.12%	2.32%	0.09%	5.74%	2.07%	0.88%	11.22%
Indian River	0.34%	1.78%	0.15%	2.42%	1.28%	0.27%	6.24%
Pinellas	0.41%	1.09%	7.20%	17.52%	5.41%	0.78%	32.41%

These two tables not only reveal information regarding how the role of each sector has changed within the local economy, but also show how the role of the entire

[25] Total Output is the summation of direct expenditures, indirect effects, and induced effects. It is representative of the overall impact of the sector on the local economy, and accounts for the ripple effects as the output of the sector circulates throughout the local economy.

non-profit sector is changing within each local economy. As a percentage of local GDP, the non-profit sector is becoming almost twice as important in Lee and Pinellas counties over that short 10-year time horizon, whereas the non-profit sectors of Polk and Indian River counties are playing a substantially lesser role. The most interesting thing is that there are vastly different drivers of growth and decline within each county.

The tremendous growth of Pinellas County is driven primarily by the Environment and Health sectors, while the Human Services and Education sectors drive the relatively large growth of Lee County. The declines in Indian River and Polk counties are predominantly caused by a struggling Health sector, but growing Education and Human Services sectors in both counties has helped to slightly soften the blow.

Summary of Results

The Environment sector has the highest average input-output multipliers within each of the four counties. The Other sector, which encompasses organizations related to international/foreign affairs, religion, and public/societal benefit, has the second largest average multiplier within each county. Since Pinellas County contains the largest local economy, it comes as no surprise that it had the highest multipliers between counties by sector.

The non-profit sectors in general, both nationally and within each of the four local economies, experienced much larger growth in the number of organizations from 1996-2001 compared to the time period between 2001-2006. The dramatic changes in annual growth rates of non-profit revenues from 1996-2001 to 2001-2006 can be attributed to two primary drivers, which tend to overshadow the growth of small organizations:

- The emergence/disappearance of very large organizations, primarily within the Health and Education sectors.
- Large gains/drops in revenue for the top 5 largest organizations within each county, also mainly within the Health and Education sectors.

The Health sector is the primary driver of overall non-profit growth (relative to local GDP) within each of the four counties:

- Where the expenditures of the Health sector are large[26] and growing positively (Pinellas County), the total output of the non-profit sector as a share of local GDP is projected to increase over time.
- Where the expenditures of the Health sector are large[27] and experiencing negative growth (Polk and Indian River counties), the total output of the non-profit sector as a share of local GDP is projected to decrease over time.
- Where the expenditures of the Health sector are small[28] (Lee County), regardless of the direction of growth[29], the total output of the non-profit sector as a share of local GDP is projected to increase over time.

[26] Relative to local GDP and expenditures of other non-profit sectors within the same county.

[27] Relative to local GDP and expenditures of other non-profit sectors within the same county.

[28] Relative to local GDP and expenditures of other non-profit sectors within the same county.

[29] The expenditures of the Health sector in Lee County are experiencing negative growth over time.

VI. Discussion

There are several questions to ask after analyzing the input-output results, annual growth rates, and ten-year projections for the non-profit sectors of the four Florida counties. The most important two would have to be: what is driving the growth, and why are some non-profit sectors growing at faster rates than others?

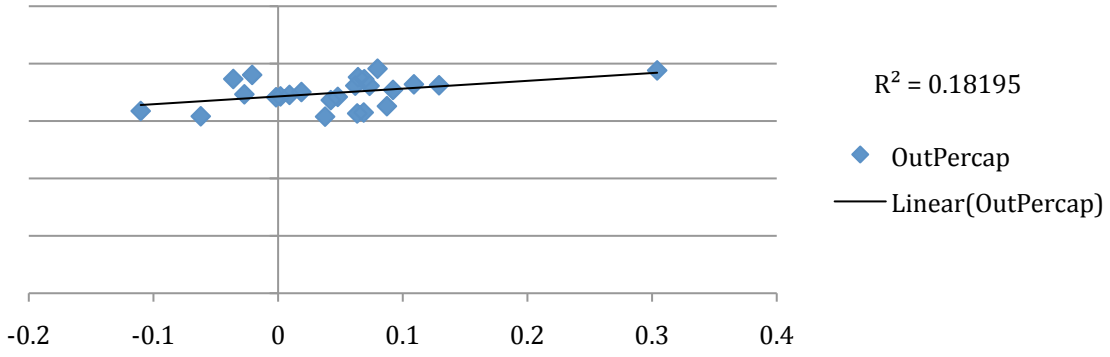
It seems plausible that higher output multipliers may have some connection to growth, since higher multipliers signal that more money will remain locally. Yurenka (2007) demonstrated the large reliance that non-profit organizations have on public donations, so much so that competition for the donations becomes a very important feature of non-profit spending. Regardless of how cutthroat the competition is, Yurenka's results should only serve to illustrate how necessary public donations are to an organization's success.

Imagine yourself in the following scenario: You are resident of a particularly county in Florida and you are a prominent business owner or rich philanthropist. You are looking for a few non-profit organizations to donate money to, but you have no preferences about which sector it goes to. Even though you have never done any economic analysis of inter-industry relationships within the county, you have lived there for years and have a pretty good sense of the non-profit landscape. If you have any intuition regarding which non-profit organizations spend the majority of their expenditures locally, compared to outside of the county, wouldn't you want to donate to that particular organization? By donating your money to an organization that spends a large fraction of its money locally, you are effectively receiving a discount on your donation because that money has a higher chance of circulating around the economy and

ending up back in you or your business' pocket. Holding everything else constant and looking from a purely economic perspective, sectors with higher multipliers should be drawing in the majority of donations, and then growing at a faster rate than those sectors with lower multipliers. Do the data reflect this hypothesis?

A basic scatter plot of 10-year per capita growth rates (x-axis) versus output multipliers (y-axis) for every non-profit sector within each of the four counties provides some insight, seen with trend line in Figure 5.

Figure 5: Growth vs. Output Multipliers



A coefficient of determination of only 0.18195 shows that there is some minor correlation between the two variables, but we are uncertain as to the direction of causality. Output multipliers could be driving growth through the donation channel described by Yurenka, or positive growth rates could be driving multipliers higher.

This thesis is unable to make a claim regarding change in multipliers over time. Since the input-output model can only describe a snapshot of an economy at any given instant, this thesis only considers a single instant in 2006 to determine the output multiplier for each non-profit sector. To determine the output multipliers at different instances in time, I would have needed to purchase the IMPLAN data that describe the inter-industry relationships for that economy at the given instant in time. At the current

time, I am unable to speculate on the other direction of causality. Regardless of the direction, the low coefficient of determination suggests that there is some other mechanism driving the growth of specific industries.

Perhaps there exists a connection between the growth of a particular non-profit sector and the relative importance of non-profit organizations as drivers of economic growth. As it pertains to Florida, we have seen from Table 9 that the Health sector has had a relatively large presence in the overall economy, accounting for over 5% of GDP in most cases. Appendix tables in A3 and A5 have also demonstrated that the Health sector's revenues are declining the most rapidly, experiencing negative aggregate, per capita, and per organization growth rates from 1996 to 2006 in every county but Pinellas. This could be representative of a shift in the way non-profit health care is provided in smaller communities. The declining revenues, combined with the fact that the Health sector's share of the total non-profit sector is declining, could tell us that people from smaller communities are going outside of their communities, to larger communities, to receive their health care.

More often than not, larger hospitals are able to take advantage of economies of scale and provide the most technologically advanced, and expensive, medical equipment, along with the most highly trained doctors. This is an advantage that smaller hospitals do not have, and people may be willing to travel a certain distance to larger communities in order to receive care from the larger hospitals.

VII. Conclusion

This thesis has demonstrated how a simple input-output model can describe the complex industrial relationships of a sector within a given local economy. By changing the final demand for goods and services produced within any sector, the model can simulate the magnitude of 'ripple effects' throughout the economy associated with that change. In applying the model to non-profit sectors in four Florida counties, we see how the distribution of the non-profit sector can have a profound effect on its development over time. Using data that describes how the non-profit sector and the overall economy has behaved in the past, we can extrapolate that behavior out over future time horizons and arrive at projections that describe the role of the non-profit sector in 2016.

It comes as no surprise that the Health sector, a renowned topic when discussing important industries associated with the economy of Florida, plays a key role as the primary driver of growth and decline of three out of the four counties. The largest economy, Pinellas County, happens to be on the upside of these growth effects. Aided by unusually large growth within the Environment sector, the non-profit sector in Pinellas County is gaining share and is expected to account for nearly thirty percent of local GDP by 2016. Indian River and Polk counties, on the other hand, are on the opposite end of the growth spectrum. As a result of large losses in Health expenditures in each county, the two non-profit sectors are projected to lose share of each local economy, dropping to six percent and eleven percent of local GDP respectively. Lee County seems to be an outlier; with little reliance on the Health sector, the primary driver of growth is equally distributed between the Education and Human Services sectors. As a result, the non-profit

sector of Lee County has nearly doubled its share of local GDP, projected to account for over eight percent of local GDP by 2016.

While reading Yurenka's (2007) paper describing the importance of donations to the success of non-profit organization, evidenced by the extreme lengths to which organizations go to solicit such donations, there is certainly room to incorporate the role of donations into this type of impact analysis. Ceteris paribus, organizations with very high donation rates should enjoy a longer lifespan and more pronounced growth over a shorter time period. This growth would certainly attribute to its direct expenditures, and subsequently its effect on the local economy. There is also some room for an interesting analysis regarding how donations are made to non-profits; studying the correlation between multipliers and donation rates could shed some light on whether philanthropists or businesses inherently sense organizations with higher multipliers. By donating to organizations that spend more money locally, philanthropists and businesses are essentially receiving a discount on their donation because they are more likely to receive some of that money back as it circulates throughout the local economy. Thus, a revealing analysis on the thought process behind donation decisions would have profound effects on the way organizations solicit donations and their long-term impact on the local economy.

This thesis does not incorporate any data regarding the impact of economic cycles on non-profit organizations, and vice versa. An interesting topic for future research would incorporate the role that non-profit organizations have on economic cycles, and examine whether large non-profit sectors would help mitigate or exacerbate an economic downturn within the local economy. We have seen that non-profit organizations are very

dependent on public donations, and these valuable donations could dry up during economic downturns. The connection between business cycles and endowments is also an interesting avenue of research. Organizations that are very reliant on large endowments, like private colleges and high schools, would be very sensitive to business cycles as their endowments fluctuate with the ebbs and flows of the market. Organizations that have small endowments and are mostly reliant on revenues to fund their spending, like private hospitals, would seem to be more insulated from the effects of business cycles.

This thesis is very focused in terms of the geographic areas of examination; additional research could examine the economic impact of non-profit organizations beyond four counties in Florida. Comparing the different results would help identify the region-specific drivers of growth and decline within the non-profit sector.

In conclusion, the size of local economies has a tremendous effect on the role of the non-profit sector within it. In a state like Florida, with a reputation for the importance it places on providing quality health care, the non-profit sector experiencing the most growth happens to be located in the largest economy with the largest Health sector. The Health sector is unique when we compare it to the other sectors; it is able to take advantage of large economies of scale[30] to provide the most expensive equipment and highly specialized doctors. It provides a service that many Americans are willing to sacrifice for, whether it be time or travel, in order to receive the highest quality care possible. Smaller economies like Indian River and Polk counties, whose non-profit sectors at one time depended on a large Health sector, are beginning to see portions of

[30] This statement is in contrast to the assumptions of the input-output model. The model assumes that no economies of scale exist within any sector. Of course economies of scales exist in the real world, and this hypothesis is attempting to explain the pattern seen between the four counties and should be interpreted separately from the multiplier results of the input-output model.

their non-profit sectors disappear. Economies that have never had a strong dependence on the Health sector, like Lee County, are seeing large growth in their non-profit sectors driven by areas like Education and Human Services.

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Appendix

A1: Total Output by County (millions $)

	Arts	Education	Environment	Health	Human Services	Other	Total
Lee County	$25.729	$236.950	$10.487	$146.128	$563.456	$73.572	$1,056.323
Polk County	$19.735	$291.583	$5.821	$1,444.230	$246.799	$81.258	$2,089.426
Indian River County	$15.482	$59.049	$8.967	$297.660	$44.969	$17.178	$443.305
Pinellas County	$119.118	$323.424	$189.257	$4,828.747	$1,185.163	$193.652	$6,839.361
Total	$180.064	$911.006	$214.532	$6,716.766	$2,040.386	$365.660	$10,428.414

A2: Per Annum Growth Rates by County: Number of Organizations

Per Annum Growth Rates (Non-Profit Sector)						
# of Organizations	1996-2001		2001-2006		1996-2006	
Indian River	Aggregate	Per Capita	Aggregate	Per Capita	Aggregate	Per Capita
Arts	4.4629%	2.3218%	-1.3799%	-3.6741%	1.5415%	-0.6761%
Education	16.5336%	14.3925%	7.2581%	4.9639%	11.8958%	9.6782%
Environment	0.0000%	-2.1410%	17.5094%	15.2152%	8.7547%	6.5371%
Health	4.7278%	2.5867%	3.8211%	1.5269%	4.2744%	2.0568%
Human Services	6.5701%	4.4291%	7.2929%	4.9986%	6.9315%	4.7139%
Other	5.7536%	3.6126%	-5.7536%	-8.0479%	0.0000%	-2.2176%

Per Annum Growth Rates (Non-Profit Sector)						
# of Organizations	1996-2001		2001-2006		1996-2006	
Lee	Aggregate	Per Capita	Aggregate	Per Capita	Aggregate	Per Capita
Arts	6.5084%	3.8129%	-0.5634%	-4.8550%	2.9725%	-0.5210%
Education	8.9605%	6.2649%	8.4763%	4.1847%	8.7184%	5.2248%
Environment	5.7536%	3.0581%	3.0830%	-1.2085%	4.4183%	0.9248%
Health	1.3338%	-1.3618%	2.9906%	-1.3009%	2.1622%	-1.3313%
Human Services	6.7643%	4.0687%	6.3533%	2.0617%	6.5588%	3.0652%
Other	9.3405%	6.6449%	4.0405%	-0.2510%	6.6905%	3.1969%

Per Annum Growth Rates (Non-Profit Sector)						
# of Organizations	1996-2001		2001-2006		1996-2006	
Pinellas	Aggregate	Per Capita	Aggregate	Per Capita	Aggregate	Per Capita
Arts	9.3218%	8.7232%	5.7536%	5.8127%	7.5377%	7.2679%
Education	17.0998%	16.5012%	5.0518%	5.1108%	11.0758%	10.8060%

Environment	16.9460%	16.3474%	2.6706%	2.7296%	9.8083%	9.5385%
Health	10.0251%	9.4265%	3.0280%	3.0870%	6.5266%	6.2568%
Human Services	11.4669%	10.8683%	2.2666%	2.3256%	6.8667%	6.5970%
Other	11.6690%	11.0704%	2.9584%	3.0174%	7.3137%	7.0439%

Per Annum Growth Rates (Non-Profit Sector)						
# of Organizations	1996-2001		2001-2006		1996-2006	
Polk	Aggregate	Per Capita	Aggregate	Per Capita	Aggregate	Per Capita
Arts	2.2245%	0.6699%	2.0017%	-0.5029%	2.1131%	0.0835%
Education	7.4939%	5.9393%	4.1267%	1.6222%	5.8103%	3.7807%
Environment	10.2165%	8.6619%	5.2473%	2.7427%	7.7319%	5.7023%
Health	0.0000%	-1.5546%	2.0357%	-0.4689%	1.0178%	-1.0117%
Human Services	2.3812%	0.8266%	3.7143%	1.2098%	3.0478%	1.0182%
Other	2.2666%	0.7120%	3.5868%	1.0823%	2.9267%	0.8971%

A3: Per Annum Growth Rates by County: Revenues

Per Annum Growth Rates (Non-Profit Sector)									
Revenues	1996-2001			2001-2006			1996-2006		
Indian River	Aggregate	Per Capita	Per Organization	Aggregate	Per Capita	Per Organization	Aggregate	Per Capita	Per Organization
Arts	3.1535%	1.0124%	-1.3094%	13.3333%	11.0391%	14.7132%	8.2434%	6.0258%	6.7019%
Education	10.4615%	8.3205%	-6.0721%	7.3489%	5.0547%	0.0908%	8.9052%	6.6876%	-2.9906%
Environment	26.4113%	24.2703%	26.4114%	-9.0313%	-11.3255%	-26.5406%	8.6900%	6.4724%	-0.0646%
Health	-9.4509%	-11.5919%	-14.1787%	1.8200%	-0.4742%	-2.0011%	-3.8155%	-6.0331%	-8.0899%
Human Services	8.9355%	6.7944%	2.3654%	8.7912%	6.4970%	1.4983%	8.8633%	6.6457%	1.9319%
Other	5.3306%	3.1896%	-0.4230%	1.1617%	-1.1325%	6.9154%	3.2462%	1.0285%	3.2462%

Per Annum Growth Rates (Non-Profit Sector)									
Revenues	1996-2001			2001-2006			1996-2006		
Lee	Aggregate	Per Capita	Per Organization	Aggregate	Per Capita	Per Organization	Aggregate	Per Capita	Per Organization
Arts	4.5477%	1.8521%	-1.9607%	-0.0150%	-4.3065%	0.5484%	2.2664%	-1.2272%	-0.7062%
Education	16.2845%	13.5889%	-38.7276%	17.1117%	12.8202%	54.6871%	16.6981%	13.2046%	7.9797%
Environment	9.4251%	6.7295%	3.6715%	-5.7088%	-10.0003%	-8.7918%	1.8582%	-1.6354%	-2.5601%
Health	-14.3551%	-17.0507%	-15.6889%	2.3316%	-1.9599%	-0.6590%	-6.0117%	-9.5053%	-8.1740%
Human Services	14.2980%	11.6024%	7.5337%	9.4289%	5.1374%	3.0755%	11.8634%	8.3699%	5.3046%
Other	-13.6783%	-16.3739%	-23.0187%	14.1369%	9.8453%	10.0964%	0.2293%	-3.2643%	-6.4612%

Per Annum Growth Rates (Non-Profit Sector)									
Revenues	1996-2001			2001-2006			1996-2006		
Pinellas	Aggregate	Per Capita	Per Organization	Aggregate	Per Capita	Per Organization	Aggregate	Per Capita	Per Organization
Arts	32.8635%	32.2649%	23.5417%	-10.0302%	-9.9712%	-15.7839%	11.4166%	11.1469%	3.8789%

Education	6.5713%	5.9727%	-10.5285%	6.0700%	6.1290%	1.0182%	6.3206%	6.0508%	-4.7552%
Environment	20.8027%	20.2041%	3.8567%	36.0993%	36.1583%	33.4287%	28.4510%	28.1812%	18.6427%
Health	8.5317%	7.9331%	-1.4934%	6.5858%	6.6448%	3.5578%	7.5587%	7.2890%	1.0322%
Human Services	16.5644%	15.9658%	5.0975%	2.6755%	2.7345%	0.4089%	9.6199%	9.3501%	2.7532%
Other	13.1354%	12.5368%	1.4664%	6.7382%	6.7972%	3.7799%	9.9368%	9.6670%	2.6231%

Per Annum Growth Rates (Non-Profit Sector)									
Revenues	1996-2001			2001-2006			1996-2006		
Polk	Aggregate	Per Capita	Per Organization	Aggregate	Per Capita	Per Organization	Aggregate	Per Capita	Per Organization
Arts	9.1972%	7.6427%	6.9728%	-3.9744%	-6.4790%	-5.9761%	2.6114%	0.5818%	0.4983%
Education	1.9865%	0.4319%	-5.5074%	10.0454%	7.5408%	5.9186%	6.0159%	3.9864%	0.2056%
Environment	15.6131%	14.0585%	5.3966%	13.4813%	10.9768%	8.2341%	14.5472%	12.5176%	6.8153%
Health	-6.6051%	-8.1597%	-6.6051%	5.3338%	2.8292%	3.2981%	-0.6357%	-2.6652%	-1.6535%
Human Services	9.5547%	8.0002%	7.1735%	2.4603%	-0.0443%	-1.2541%	6.0075%	3.9779%	2.9597%
Other	11.7633%	10.2087%	9.4967%	5.9139%	3.4094%	2.3271%	8.8386%	6.8090%	5.9119%

A4: Per Annum Growth Rates by County: Expenditures

Per Annum Growth Rates (Non-Profit Sector)									
Expenditures	1996-2001			2001-2006			1996-2006		
Indian River	Aggregate	Per Capita	Per Organization	Aggregate	Per Capita	Per Organization	Aggregate	Per Capita	Per Organization
Arts	6.4358%	4.2948%	1.9729%	5.5366%	3.2424%	6.9165%	5.9862%	3.7686%	4.4447%
Education	11.2144%	9.0733%	-5.3192%	6.9577%	4.6635%	-0.3004%	9.0860%	6.8684%	-2.8098%
Environment	-5.0380%	-7.1790%	-5.0380%	11.2978%	9.0036%	-6.0463%	3.1299%	0.9123%	-5.5422%
Health	-8.8063%	-10.9473%	-13.5341%	0.8321%	-1.4621%	-2.9890%	-3.9871%	-6.2047%	-8.2615%
Human Services	7.2591%	5.1181%	0.6890%	9.8605%	7.5663%	2.5677%	8.5598%	6.3422%	1.6283%
Other	2.8158%	0.6747%	-2.9379%	1.9967%	-0.2975%	7.7503%	2.4062%	0.1886%	2.4062%

Per Annum Growth Rates (Non-Profit Sector)									
Expenditures	1996-2001			2001-2006			1996-2006		
Lee	Aggregate	Per Capita	Per Organization	Aggregate	Per Capita	Per Organization	Aggregate	Per Capita	Per Organization
Arts	1.3080%	-1.3876%	-5.2005%	5.3524%	1.0608%	5.9158%	3.3302%	-0.1634%	0.3577%
Education	15.3421%	12.6465%	6.3816%	17.4663%	13.1748%	8.9900%	16.4042%	12.9106%	7.6858%
Environment	4.6587%	1.9631%	-1.0950%	-1.8373%	-6.1289%	-4.9203%	1.4107%	-2.0829%	-3.0077%
Health	-17.0126%	-19.7082%	-18.3464%	1.9544%	-2.3372%	-1.0363%	-7.5291%	-11.0227%	-9.6913%
Human Services	15.4644%	12.7689%	8.7002%	8.9757%	4.6842%	2.6224%	12.2201%	8.7265%	5.6613%
Other	-14.4078%	-17.1034%	-23.7483%	14.2021%	9.9105%	10.1615%	-0.1029%	-3.5964%	-6.7934%

Per Annum Growth Rates (Non-Profit Sector)

Expenditures	1996-2001			2001-2006			1996-2006		
Pinellas	Aggregate	Per Capita	Per Organization	Aggregate	Per Capita	Per Organization	Aggregate	Per Capita	Per Organization
Arts	11.0867%	10.4881%	1.7649%	2.2648%	2.3239%	-3.4888%	6.6758%	6.4060%	-0.8619%
Education	8.0775%	7.4789%	-9.0223%	4.8402%	4.8992%	-0.2117%	6.4588%	6.1890%	-4.6170%
Environment	24.1813%	23.5827%	7.2353%	37.1736%	37.2326%	34.5030%	30.6775%	30.4077%	20.8691%
Health	-36.8637%	-37.4623%	-0.8371%	51.2263%	51.2853%	2.1466%	7.1813%	6.9115%	0.6547%
Human Services	17.1491%	16.5505%	5.6822%	1.8275%	1.8865%	-0.4391%	9.4883%	9.2185%	2.6216%
Other	9.3663%	8.7677%	-2.3026%	7.1235%	7.1825%	4.1651%	8.2449%	7.9751%	0.9312%

Per Annum Growth Rates (Non-Profit Sector)									
Expenditures	1996-2001			2001-2006			1996-2006		
Polk	Aggregate	Per Capita	Per Organization	Aggregate	Per Capita	Per Organization	Aggregate	Per Capita	Per Organization
Arts	11.2282%	9.6736%	9.0036%	-3.4278%	-5.9323%	-5.4295%	3.9002%	1.8706%	1.7871%
Education	6.7238%	5.1692%	-0.7701%	5.7811%	3.2765%	1.6544%	6.2524%	4.2229%	0.4421%
Environment	20.9278%	19.3732%	10.7114%	4.9207%	2.4161%	-0.3266%	12.9242%	10.8947%	5.1924%
Health	-6.3394%	-7.8940%	-6.3394%	4.9864%	2.4818%	2.9507%	-0.6765%	-2.7061%	-1.6943%
Human Services	10.7396%	9.1850%	8.3584%	2.8902%	0.3857%	-0.8241%	6.8149%	4.7854%	3.7671%
Other	21.1022%	19.5477%	18.8357%	-2.3655%	-4.8701%	-5.9523%	9.3684%	7.3388%	6.4417%

A5: Sector Revenue as a percentage of Total Non-Profit Revenue

Revenues	1996		2001		2006	
Indian River	Aggregate	Per Organization	Aggregate	Per Organization	Aggregate	Per Organization
Arts	2.52%	3.00%	3.96%	4.60%	6.56%	10.37%
Education	3.44%	7.01%	7.79%	8.49%	9.56%	9.20%
Environment	0.62%	1.76%	3.10%	10.80%	1.68%	3.09%
Health	87.21%	82.93%	72.95%	66.89%	67.87%	65.30%
Human Services	3.83%	3.03%	8.02%	5.59%	10.58%	6.50%
Other	2.38%	2.26%	4.17%	3.63%	3.75%	5.54%

Revenues	1996		2001		2006	
Lee	Aggregate	Per Organization	Aggregate	Per Organization	Aggregate	Per Organization
Arts	3.15%	4.21%	3.54%	6.40%	2.20%	4.61%
Education	7.59%	11.47%	15.33%	2.77%	22.47%	29.92%
Environment	1.72%	6.63%	2.46%	13.34%	1.15%	6.02%
Health	45.70%	54.76%	19.93%	41.87%	13.96%	28.39%
Human Services	28.97%	12.28%	52.94%	29.98%	52.87%	24.50%
Other	12.87%	10.65%	5.81%	5.64%	7.34%	6.55%

Revenues	1996	2001	2006

Pinellas	Aggregate	Per Organization	Aggregate	Per Organization	Aggregate	Per Organization
Arts	1.48%	2.98%	4.49%	9.72%	2.05%	3.63%
Education	5.97%	10.38%	4.86%	6.16%	4.95%	5.33%
Environment	0.32%	2.31%	0.54%	2.82%	2.45%	12.32%
Health	74.11%	75.61%	66.45%	70.51%	69.55%	69.26%
Human Services	15.24%	6.32%	20.42%	8.19%	17.57%	6.88%
Other	2.87%	2.40%	3.25%	2.60%	3.42%	2.58%

Revenues	1996		2001		2006	
Polk	Aggregate	Per Organization	Aggregate	Per Organization	Aggregate	Per Organization
Arts	0.74%	1.31%	1.40%	2.43%	0.86%	1.54%
Education	9.64%	8.72%	12.59%	8.70%	15.74%	9.97%
Environment	0.10%	0.48%	0.25%	0.83%	0.37%	1.07%
Health	80.72%	86.01%	68.60%	81.24%	67.73%	81.63%
Human Services	6.97%	2.39%	13.29%	4.50%	11.36%	3.60%
Other	1.82%	1.09%	3.88%	2.29%	3.94%	2.20%

A6: Growth Rates of the For-Profit Sector, 1996-2001

Number of Organizations

Indian River County		
	1997-2002	
	Aggregate	Per Capita
Wholesale Trade	-1.4090%	-3.4560%
Retail Trade	0.0000%	-2.0470%
Real Estate	5.0655%	3.0185%

Pinellas County		
	1997-2002	
	Aggregate	Per Capita
Wholesale Trade	-1.8900%	-2.3053%
Retail Trade	-0.4255%	-0.8408%
Real Estate	3.3944%	2.9792%

Lee County		
	1997-2002	
	Aggregate	Per Capita
Wholesale Trade	1.9805%	-0.8812%
Retail Trade	2.5075%	-0.3542%
Real Estate	7.6045%	4.7428%

Polk County		
	1997-2002	
	Aggregate	Per Capita
Wholesale Trade	0.7072%	-0.7339%
Retail Trade	-1.1678%	-2.6089%
Real Estate	4.6568%	3.2157%

Revenues

Indian River County			
	1997-2002		
	Aggregate	Per Capita	Per Org.
Wholesale Trade			
Retail Trade	5.7455%	3.6985%	5.7455%
Real Estate	4.1236%	2.0766%	-0.9419%

Pinellas County			
	1997-2002		
	Aggregate	Per Capita	Per Org.
Wholesale Trade	8.5735%	8.1583%	10.4636%
Retail Trade	3.3466%	2.9313%	3.7721%
Real Estate	8.3600%	7.9447%	4.9656%

Lee County			
	1997-2002		
	Aggregate	Per Capita	Per Org.
Wholesale Trade	6.5228%	3.6611%	4.5422%
Retail Trade	7.5371%	4.6754%	5.0296%
Real Estate	11.4506%	8.5889%	3.8460%

Polk County			
	1997-2002		
	Aggregate	Per Capita	Per Org.
Wholesale Trade	8.9771%	7.5360%	8.2698%
Retail Trade	3.2487%	1.8077%	4.4165%
Real Estate	7.8619%	6.4208%	3.2051%

A7: Projections

Projected Direct Expenditure in 2016 (in 2006 $)							
	Arts	Education	Environment	Health	Human Services	Other	Total
Lee County	$21,028,497	$674,617,300	$6,350,139	$43,357,381	$1,173,634,554	$39,020,020	$1,958,007,890
Polk County	$16,631,747	$323,933,242	$11,649,907	$779,001,472	$285,282,833	$114,782,392	$1,531,281,593
Indian River County	$18,315,034	$93,057,411	$7,097,666	$129,619,341	$67,588,013	$12,744,962	$328,422,428
Pinellas County	$123,389,456	$341,261,296	$2,095,842,449	$5,311,444,125	$1,728,084,812	$225,816,343	$9,825,838,480
Total	$179,364,734	$1,432,869,249	$2,120,940,161	$6,263,422,319	$3,254,590,212	$392,363,717	$13,643,550,390

Projected Total Output in 2016							
	Arts	Education	Environment	Health	Human Services	Other	Total
Lee County	$35,897,053	$1,222,029,127	$12,075,619	$68,825,370	$1,912,366,887	$72,819,374	$3,324,013,432
Polk County	$29,148,399	$544,881,839	$21,198,881	$1,349,757,810	$487,877,447	$207,362,182	$2,640,226,557
Indian River County	$28,170,713	$146,493,127	$12,261,873	$199,785,504	$105,841,588	$21,851,254	$514,404,059
Pinellas County	$232,221,269	$616,986,091	$4,067,780,038	$9,901,782,420	$3,060,908,732	$441,665,361	$18,321,343,911
Total	$325,437,433	$2,530,390,184	$4,113,316,412	$11,520,151,105	$5,566,994,653	$743,698,171	$24,799,987,959

Projected Direct Expenditure per Capita in 2016 (in 2006 $)							
	Arts	Education	Environment	Health	Human Services	Other	Total
Lee County	$25.11	$805.50	$7.58	$51.77	$1,401.34	$46.59	$2,337.89
Polk County	$23.62	$460.08	$16.55	$1,106.42	$405.19	$163.03	$2,174.88
Indian River County	$111.29	$565.46	$43.13	$787.63	$410.70	$77.44	$1,995.65
Pinellas County	$130.91	$362.07	$2,223.65	$5,635.33	$1,833.46	$239.59	$10,425.01
Total	$290.94	$2,193.12	$2,290.90	$7,581.15	$4,050.68	$526.65	$16,933.44