RESIDENT SATISFACTION WITH PUBLIC SERVICES IN NONMETROPOLITAN ILLINOIS: IMPLICATIONS FOR RESOURCE ALLOCATION

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ABSTRACT

The American Customer Satisfaction Index suggests that citizens are dissatisfied with government services. Since one's commitment to community (resident loyalty) depends on one's evaluation of the community, it is essential that communities gauge resident satisfaction with their place of living. This paper constructs a county-level public service satisfaction index for non-metro Illinois – counties with less than 50, 000 people. The satisfaction index is then employed to optimize public-service resource allocation. Results suggest that to maximize resident satisfaction, counties should spend 41% of their budgets on education, 12% on public safety, and around 32% on health-related welfare.

INTRODUCTION

This paper deals with residents' satisfaction perceptions about public services in non-metro Illinois. We define the concept non-metro both in administrative and land-use terms; administrative refers to the county government, and land-use specifies that our focus is on counties with a population of less than 50,000 people. Since taxation and public service provision operate within administrative boundaries, our definition of non-metro counties as less than 50,000 people is superior to purely economic definitions of the non-metro concept (for example, distance travelled for work; see Cromartie and Bucholtz (2008)). Similarly, public service is defined broadly to include both collective consumption and impure public products. An example of the former would be situations where an individual's consumption of the product leads to no subtraction from any other individual's consumption of that product; street lights and

public television would be instances of the category (Samuelson 1954; Scott and Marshall 2005). An example of impure public product would be public school places or library facilities that are accessible only to some segments of the population because of "zoning" restrictions (Sandler and Cornes 1986). For the purposes of this paper, we assume that public services in non-metros are either provided wholly by the government, or co-produced with the private sector.

According to the latest American Customer Satisfaction Index (ACSI), citizen satisfaction with the federal government is well below the private sector. On a 100-point scale, the ACSI for federal government services is 68.7 (Fornell 2010). If we assume similar scores for resident satisfaction with public services, then there is a possibility that dissatisfied residents could switch their place of residence to another community (see Goudy 1990) for empirical evidence in support of this assertion).

How does a given non-metro county in Illinois fare against other non-metro counties on resident satisfaction with public services? How to incorporate resident satisfaction perceptions about public services in resource allocation models? This paper addresses these and other similar questions.

SATISFACTION AND RESOURCE ALLOCATION

Satisfaction is an evaluative response about a concept. How would residents evaluate the community that they live in? The theory is that a community positions itself as one that offers benefits such as parks and recreation to the residents. For instance, Fulton County, IL, which is closer to the city of Peoria could position itself as a bedroom community that offers all the benefits of city living at a lower cost. From a resident's viewpoint, if the motive for living in the community (for example, low cost of living) is attained through benefits experienced in the

community (for example, low-cost housing, and public transportation), then satisfaction with the community and public services results. Since perception is a salient concept in the theory, we elaborate the concept and demonstrate its direct linkage to the satisfaction construct.

Perceiving or comprehending the meaning of a stimulus involves categorizing the stimulus (Smith 1995). For instance, a road is clean if it resembles our mental representation of the category "clean road". This mental representation of clean road could include features such as: (i) no litter on the road-side (ii) paved evenly (iii) pedestrian crossings marked or painted legibly, and so on. The more features the object shares with our mental representation of "clean road", the more likely we would consider the object a clean road.

This doesn't mean that to perceive or comprehend a stimulus, all features related to that stimulus stored in one's memory, would be considered. According to the accessibility principle, only frequently encountered features would be retrieved from memory to categorize the stimulus (Fiske and Taylor 1991; Smith and Osherson 1995). Continuing with our clean road example, if the resident is often exposed to reports about roadside litter (for example, see the Roadside Litter slideshow online at http://www.flickr.com/photos/71952913@N00/sets/302257/) then, the "litter" feature would be one of the most accessible feature in the resident's memory about cleanliness of city streets.

Assume that a resident has knowledge of differences among cities in terms of cleanliness of streets. Technically, these are cleanliness expectancies associated with the cities (Bayton 1958). Research in cognitive psychology suggests that these expectancies predict behavior (Rossiter 1996; Schwarz 1995). To elaborate, assume that a resident is fully mobile and is in search for a livable city to reside in. Furthermore, assume that her decision is based on a single criterion, "cleanliness of the city". Of all the cities that the resident is aware of, if city A is

perceived as having the cleanest streets, then city A is assumed to have the maximum appeal as a place of residence.

Continuing with our example, the resident who moves to city A, based on her perception that it is the cleanest city, would start experiencing public services such as streets, law enforcement, and retail shopping. These experiences get stored in the resident's memory as knowledge about the community. In line with multi-attribute models of service quality and satisfaction (see for example, Parasuraman, Zeithaml and Berry 1988; Cronin and Taylor 1992), we posit that the resident's knowledge about service experiences combine additively to result in satisfaction with pubic services. Expressed as an equation:

$$\text{Satisfaction with public services} = \sum_{i} \text{Perceptions about performance of public service } i$$

This conceptualization rests on the assumption that residents are aware of public service performances and could evaluate them. To address any concerns about the validity of this conceptualization, we invoke the principles of associative learning theory (Walther 2002) to highlight, and thus justify, the face-validity of our approach to assessing resident satisfaction with public services. To elaborate, consider a resident's long-term experience with, and evaluative response about, the local government (for example, the county administration is doing a good, fair, or poor job). This "implicit" attitude is said to be elicited automatically upon encountering relevant stimuli related to the county government. If public services, because of their spatio-temporal proximity to county government, constitute such stimuli, then, the county-government related implicit evaluation is expected to be transferred to public services (for example, "the county administration is doing a good job, so public services should be good too"). However, if the resident is asked to provide questionnaire-responses about public services, then her automatic evaluative response would be cognitively elaborated, logically reasoned, and true

evaluations or assessments will result. Gawronski and Bodenhausen (2006) provide elaborative theoretical accounts on this associative process. Galdi, Arcuri and Gawronski (2008) provide empirical verification of the theory. In summary, since this research relied on a questionnaire survey of residents to measure satisfaction, we contend that the residents did provide truthful evaluations of community/public services.

Resource-Allocation

Although scholars and practitioners advocate an expanded role for citizens in governance, citizens input into local government budget processes are scarce (ICMA 2003). Firsby and Bowman (1996) posit that public perceptions, that their opinions are unwanted, are hindering citizen participation in government budgetary processes.

While methods such as public hearings, and direct advisory boards are available to encourage citizen participation in budgetary processes, extant research suggests citizens' surveys to be the most valuable input to the budgetary process (see for example, Ebdon and Franklin (2004); Ebdon (2002), and Franklin and Ebdon (2005)). One such budgeting method is the Robbins, Simonsen, and Feldman's (2008) web-based procedure for public service resource allocation. Their method requires respondents to state their intentions to either increase or decrease budgetary allocations to public services. Specifically, the procedure requires respondents to: (i) recall service experiences, (ii) assess satisfaction with specific public service, and (iii) based on that assessment, either increase or decrease budgetary allocations to the service level. If respondents perceive these tasks as complex, then it could deter them from participating in the study. In fact, Robbins, Simonsen, and Feldman (2008) report low citizen participation rate for their interactive web survey. What is needed is a citizen survey that would help local

governments to optimize public-service resource allocation without straining the cognitive capacity of the respondents.

Consider the following conceptualization that relates satisfaction with public service *i* (S_i) as a function of expenditure on public service *i* (P_i) and a random element Z_i:

$$S_i = f_i(P_{i,}Z_i) \text{ for } i = 1,\ldots,n. \qquad (1)$$

Denote the total public service budget for the county as *P*. The county allocates a budget for each public service (for example, law enforcement, welfare, etc.) such that, $\sum_{i=1}^{n} P_i = 1$; P_i expressed as a proportion of the total.

Our objective is to maximize expected satisfaction subject to budget constraints. That is:

$$\text{Max. } E(\Sigma\, S)$$

$$\text{s.t. } \sum_{i=1}^{n} P_i = 1 \text{ and } 0 < P_i < 1$$

Note that this approach requires only resident satisfaction perceptions to decide on optimal resource allocation for public services. In general, optimizing public-service budget allocations rests on the assumption that the marginal contribution of public service expenditure with respect to satisfaction is the same across all types of public services (see for example, the community-values approach to budgeting discussed by Franklin and Carberry-George 1999). Yet, in reality, the county administrator or management does not know what satisfaction response will be elicited by allocating a certain portion of the budget to a public-service category. The best management can do is predict satisfaction response to a specific expenditure allocation in terms of a probability distribution. The distribution of error term in a regression study can serve as an estimate of such probabilities provided that the model is correctly specified and the error-terms of satisfaction in various public-service categories are uncorrelated.

Correlations among error terms can occur if satisfaction with one public service is dependent on satisfaction with other public services. For example, satisfaction with law enforcement in a community could depend on satisfaction with, housing, and streets. In such situations, satisfaction-response functions need to be estimated using the seemingly unrelated regression model (Zellner 1962).

So what is the mathematical form of Eq. 1? A simple thought on the subject would reveal that there is an upper limit for satisfaction. Put simply, as expenditure on public services becomes large, satisfaction with the services would reach a maximum. A modified exponential function captures the diminishing returns to public-service expenditure:

$$S_i = K_i (1 - e^{-C_i P_i}) \qquad \text{for i = 1, …., n} \qquad (2)$$

In Eq. 2, $K_i > 0$ is the upper limit of satisfaction since S_i approaches K_i as P_i becomes very large; $C_i > 0$ is the rate at which satisfaction reaches the upper limit in response to increases in public-service expenditure. To estimate *n* such equations, we apply logarithmic transformation to Eq. 2 to yield

$$\ln S_i = \ln K_i + \ln(1 - e^{-C_i P_i}) + \varepsilon_i \qquad \text{for i = 1, …., n} \qquad (3)$$

Estimating Eq. 3 implies an underlying stochastic satisfaction function of the form

$$S_i = K_i(1 - e^{-C_i P_i})Z_i \qquad \text{for i = 1, …., n} \qquad (4)$$

where Z_i is defined implicitly by $\varepsilon_i = \ln(Z_i)$.

Invoking the assumption that the ε_i are independently and identically distributed results in

$$E(S_i) = K_i (1 - e^{-C_i P_i}) E(Z_i) \qquad \text{for i = 1, …., n} \qquad (5)$$

$$\sigma^2_{(S_i)} = K_i^2(1 - e^{-C_i P_i})^2 \sigma^2_{(Z_i)} \qquad \text{for i = 1, …., n} \qquad (6)$$

where $E(Z_i)$ is the expected value of the random variable Z_i, and $\sigma^2_{(Z_i)}$ is its variance. Furthermore, the covariance of satisfaction among public services can be assessed

$$\mathrm{Cov}(S_i, S_j) = K_i K_j \left(1 - e^{-C_i P_i}\right)\left(1 - e^{-C_j P_j}\right) \quad \mathrm{Cov}(Z_i, Z_j) \tag{7}$$

for i, j = 1, …., n

In summary, calibrating the system of satisfaction-response functions using seemingly unrelated regressions (Zellner 1962) would provide estimates of K_i, C_i, and the covariance matrix of the residuals ε_i. However, to calibrate Eq. 4, we need the covariance matrix of the Z_i. Since $\varepsilon_i = \ln(Z_i)$, the log-normally distributed Z_i could be described as follows (see Morrison 1967):

$$E(Z_i) = e^{0.5\,\sigma^2(\epsilon_i)}$$

$$\sigma^2_{(Z_i)} = e^{2\,\sigma^2(\epsilon_i)} - e^{\sigma^2(\epsilon_i)}$$

$$\mathrm{Cov}(Z_i, Z_j) = e^{0.5(\sigma^2(\epsilon_i) + \sigma^2(\epsilon_j)) + r_{ij}\,\sigma(\epsilon_i)(\epsilon_j)} - e^{0.5(\sigma^2(\epsilon_i) + \sigma^2(\epsilon_j))} \tag{8}$$

$$R_{i,j} = \frac{Cov\,(Z_i, Z_j)}{\sigma_{(Z_i)}\sigma_{(Z_j)}}$$

where r_{ij} is the correlation between ε_i and ε_j; $\sigma^2_{(\epsilon_i)}$ is the variance of ε_i, and $\sigma_{(\epsilon_i)(\epsilon_j)}$ is $\mathrm{cov}(\varepsilon_i, \varepsilon_j)$. Having highlighted the inputs needed to calibrate the resource-allocation model, we next describe the data used in the analyses.

DATA FOR ANALYSIS

Measures of public-service satisfaction were obtained from a sample survey of residents in nonmetropolitan Illinois conducted in 2006. The Office of Management and Budget groups Illinois into 28 metropolitan counties and 74 nonmetropolitan counties (See http://www.census.gov/population/www/estimates/metrodef.html). The target population includes all households in the nonmetropolitan counties. A simple random sampling procedure was employed to select 2,000 households. The mail survey procedure used an alert postcard informing potential respondents that a survey is being conducted and that they will soon be

mailed a survey instrument, followed by a first mailing of the questionnaire with a cover note requesting cooperation. Then a reminder postcard was sent followed by mailing a second questionnaire to those who did not complete and return the first.

Table 1 lists the operational definitions of satisfaction measures and provides examples of measures used in the study (Carnap 1946). As Peterson (1981) aptly observed, local governments are unable to manipulate in any significant way such contextual variables as air pollution or scenic beauty. Hence the focus is on changeable variables such as allocational or developmental variables (Nelson 1999; Peterson 1981). Allocational indicators include essential, but often economically neutral, services such as police, fire, and sanitation. On the other hand, developmental services aim to improve the economic position of the community. Some examples of developmental variables include education, and roads.

In research on local governments in Alabama, Baker (2003) identified a set of allocational and developmental variables considered essential for quality living. The list included items such as police, cable television, and public transportation. The relevance of these variables for rural Illinois was assessed by an expert panel of academics affiliated with a publicly funded rural research center. While the expert panel retained most of the items highlighted in Baker's study, the panel recommended including additional items in the questionnaire (see Appendix 1 for a list of the items).

Table 1
Perceptual Measures

Concept	Definition	Examples of Measures
Allocational services[a]	Resident perceptions about community services related to economically neutral areas such as police and fire.	Please show the extent to which you believe that your community provides _____. • Public safety • Parks and recreation Measured on a 5-step "Not at All" to "Absolutely" Scale.
Developmental services[a]	Resident perceptions about services aimed at improving the community's economic position.	Please show the extent to which you believe that your community provides _____. • Education • Library facilities … Measured on a 5-step "Not at All" to "Absolutely" Scale.

[a]See Appendix 1 for a list of measures.

Public service expenditure data were gathered using publications from the Illinois Comptroller's Office. Specifically, using Annual Financial Reports of local governments (see for example, http://www.census.gov/prod/2005pubs/gc024x5.pdf), we gathered county-level expenditures related to education, housing, library facilities, public safety, recreation, transportation, waste management, and health-related welfare. Appendix 2 shows the expenditure data used in the study.

RESULTS

The questionnaire yielded 640 usable responses from 35 counties. A majority of the respondents were female (53%), aged between 35 and 65 years (55%), with a household income

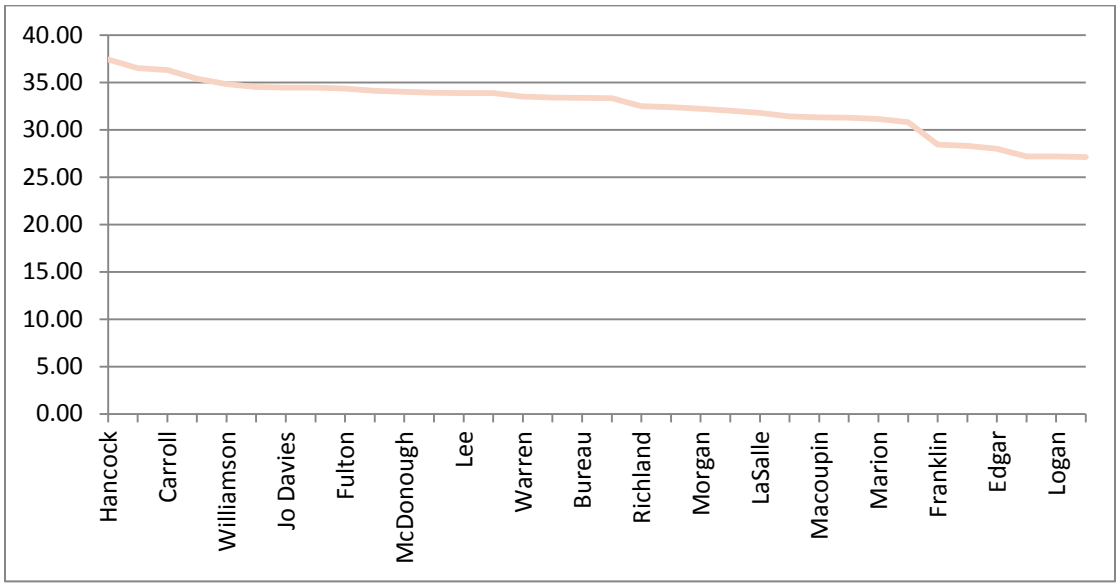
not exceeding $50,000 (67%) (See Appendix 1 for a summary description of the respondents and their responses).

Satisfaction Index

To construct an overall public-service satisfaction index for the counties, average responses to the public service items listed in Appendix 1 were summed. This methodology assumes that satisfaction is an abstract-formed concept (Rossiter 2002); the abstract concept "overall satisfaction with public services" is made up of knowledge about eight different public services listed in Appendix 1. The index scores could range from a high 40 to a low 8.

Figure 1 plots the resident-satisfaction index for the counties. Hancock County has the highest satisfaction index (37.4), and Ford County the least (26.8). The residents of the Cumberland County exhibit median level of satisfaction (33.3). Holzer, Charbonneau, and Kim (2009) contend that the demographic profiles of the counties such as the age of the respondents are associated with citizen evaluation of services. The theory is that people less than 40 years of age demand more, both in terms of quality and quantity, from services such as child care, schooling, etc. and this high expectation differentiates them from the rest of the population. In this study, we found no such associations. For example, Hancock County which has the highest satisfaction rating has 51% of its population over 40 years of age (total population of the county is around 19,000). The same figure for Ford County, which has the lowest satisfaction score, is 50% (total population is ~14, 000). Overall, the correlation between satisfaction scores and population less than 40 years of age is 0.048 ($p>.75$)

Figure 1
Resident-Satisfaction Index for the Counties



Note: See Appendix 3 for numerical scores.

Satisfaction Response Function

A nonlinear seemingly unrelated regression procedure based on the three-stage least squares method of Gallant (1977) was used to estimate the system of eight equations in the form given in Eq. 3. The coefficient estimates and the residual covariance are shown in Table 2. Gallant (1977) posits that the nonlinear three-stage least squares estimator is consistent, asymptotically normally distributed and more efficient than the nonlinear two-stage least-squares estimator. In spite of this, caution should be used in utilizing the standard errors given in Table 2 since the sample size is not large enough to assume a normal distribution for the estimates. Figure 2 shows the measured and predicted satisfaction levels for the counties. The simple correlation coefficient for actual and predicted satisfaction is 0.90 (Figure 2).

Figure 2
Measured and Predicted Satisfaction Levels

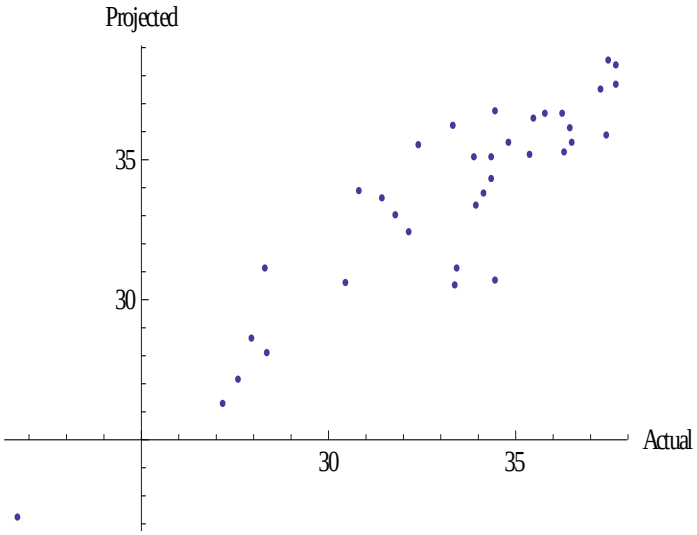


Table 2
Parameter Estimates and Covariance Matrix

Public Service	ln K_i	C_i
Education	1.29	1.132
	(.07)	
Housing	1.70	8.976
	(.06)	
Library Facilities	1.11	9.562
	(.06)	
Public safety	0.73	3.537
	(.58)	
Recreation	1.48	2.292
	(.08)	
Transportation	1.56	4.333
	(.16))	
Waste Disposal	1.35	6.597
	(.11)	
Welfare	1.36	0.348
	(.11)	

Covariance of Residuals

	ε_1	ε_2	ε_3	ε_4	ε_5	ε_6	ε_7	ε_8
ε_1	0.0118	0.0015	-0.0099	0.0233	0.0044	-0.0213	0.0188	-0.0192
ε_2	0.0015	0.5840	-0.1091	0.0012	0.00589	-0.0339	-0.1439	0.1360
ε_3	-0.0099	-0.1091	3.0128	-0.2571	-0.1107	0.1430	0.0405	1.6248
ε_4	0.0233	0.0012	-0.2571	4.2278	0.0265	-0.2573	0.9210	1.9455
ε_5	0.0044	0.00589	-0.1107	0.02657	0.0412	-0.0196	0.0554	-0.0844
ε_6	-0.0213	-0.0339	0.1430	-0.2573	-0.0196	0.3949	0.0498	0.2266
ε_7	0.0188	-0.1439	0.0405	0.9210	0.0554	0.0498	1.8440	0.9096
ε_8	-0.0192	0.1360	1.6248	1.9455	-0.0844	0.2266	0.9096	5.1879

The means, standard deviations and correlation coefficients for the Z_i were constructed using Eq. 8. Table 3 shows the results of this exercise. This information is used to generate the efficient frontier of public-service resource allocation.

Table 3
Parameter Values for the Resource Allocation Model

Parameter	**Public Services**							
	Education	**Housing**	**Library**	**Pub. Safety**	**Rec.**	**Transp.**	**Waste**	**Welfare**
Ci	8.69	5.48	8.09	5.21	6.98	5.97	8.31	5.45
Ki	3.38	4.55	3.04	2.08	4.37	4.76	3.86	3.90
E(Zi)	1.01	1.04	1.00	1.01	1.00	1.32	1.08	1.04
$\sigma_{\varepsilon i}$	0.11	0.28	0.08	0.16	0.13	1.15	0.46	0.31

Matrix of Correlations among Zi

	Edn.	Housing	Lib.	Pub. Sty	Rec.	Transp.	Waste	Welfare
Edn.	1.00							
Housing	0.23	1.00						
Lib.	0.19	0.21	1.00					
Pub. Sty	0.34	0.02	0.38	1.00				
Rec.	0.39	0.03	0.54	0.29	1.00			
Transp.	0.13	0.23	-0.01	-0.02	-0.02	1.00		
Waste	0.06	0.52	0.07	0.01	0.01	0.33	1.00	
Welfare	-0.21	-0.07	0.13	0.21	0.21	-0.07	0.44	1.00

Resource Allocation

Maximizing public service satisfaction subject to budgets given in Appendix 2 suggests that the non-metro counties should spend the following proportions of their total expenses on each of the eight services: Education (41%), housing (5%), library services (1%), public-safety (12%), recreation (4%), transportation (1%), waste disposal (5%), and health-related welfare (32%). While the prescription ignores statutory mandates on expenditures, it does provide information on "ideal" mix of service-expenditures for the nonmetropolitan region. At present, a typical non-metro county spends majority of its budget on education, and only 1% on waste disposal (Appendix 4).

DISCUSSION

Resource allocation for public services is often accomplished using one or more of the three budgeting frameworks: incremental (Widavsky 1988); performance based (Miskel 1995), and the community values approach (Franklin and Carberry-George 1999). Incremental budgeting is a political process that starts with last year's budget and makes minor changes. It is a bottom-up approach in that budget requests are typically prepared by the department heads, based on what was done previously, and sent to the senior management for approval. In contrast, top-down approach is characteristic of the performance framework, and the community values approach. Performance framework entails allocating resources according to the desired level of activity and the related costs for those services. In community values approach, the preferences and values of the community are used as inputs to public-service resource allocation.

This paper is built on the community values framework. It manages the process using objective data and responds to the fiscal-responsibility demands of the citizens (Von Drehle

2010). The normative prescription is that non-metro counties should spend 41% of their total expenses on education, 1% on library services, 12% on public safety, and 32% on citizens' health-related welfare. How could county administrators implement the approach? Elected decision makers should use the prescriptions as a starting point to discussing financial limits for service expenditures. For example, budget discussions could start with a 12% allocation to public safety. Ensuing discussions should consider other facets to budget allocations such as fixed costs of policing, and statutory mandates that may stipulate certain minimum standards for law-enforcement and public safety in a community. Table 4 aids this discussion by highlighting the mean amount of satisfaction related to different expenditure scenarios.

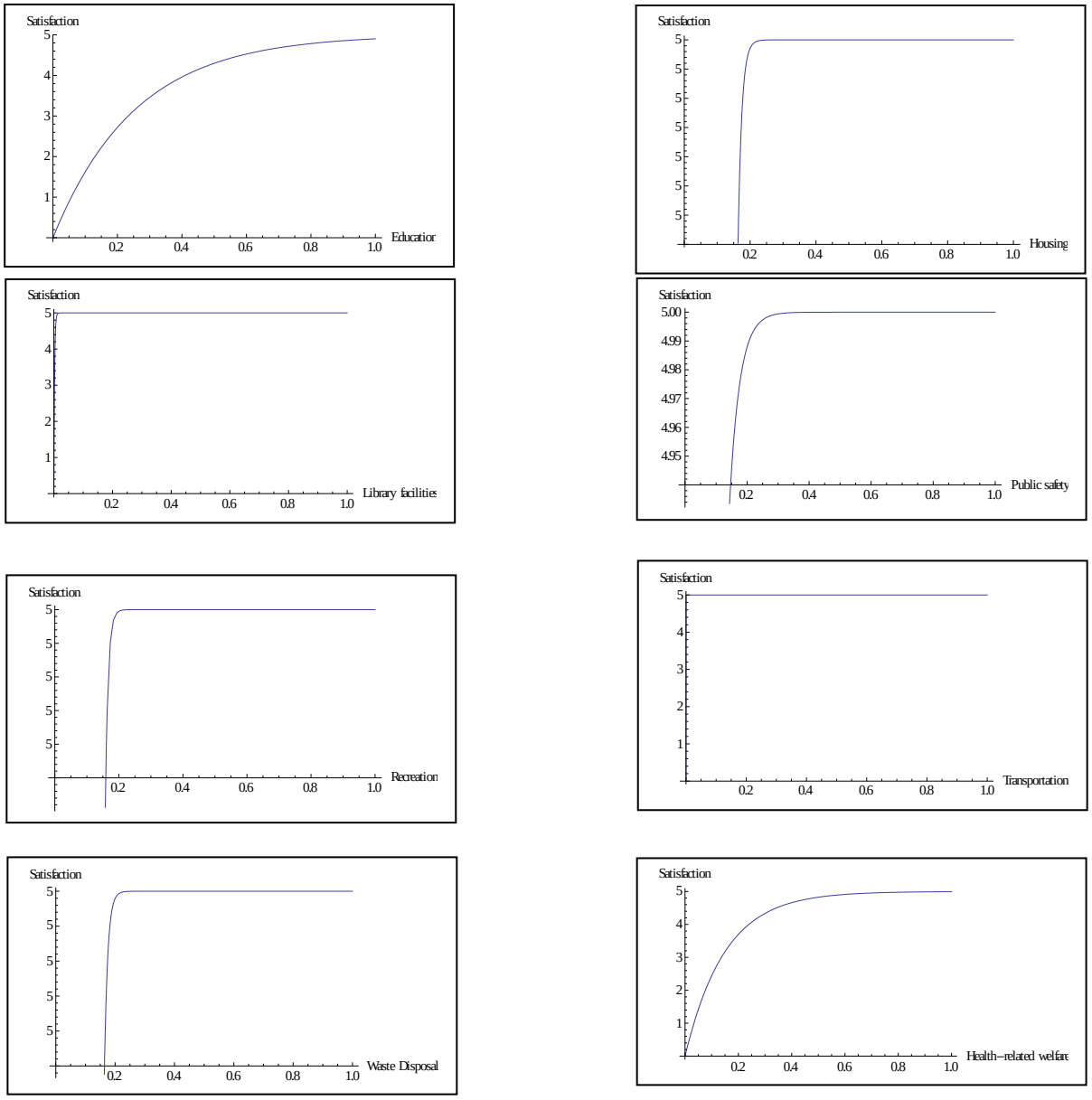
Table 4
Selected Public Service Expenditures and their Impact on Satisfaction

Mean Satisfaction	**Std. Dev**	**Expenditure Item …**							
		Education	**Housing**	**Library**	**Pub. Safety**	**Rec.**	**Transp.**	**Waste**	**Welfare**
Ideal (Maximum Satisfaction = 38 on a 8 to 40 scale)	4.03	41%	5%	1%	12%	4%	1%	5%	32%
Satisfaction = 33	2.95	74%	10%	1%	10%	3%	1%	1%	1%
Satisfaction = 32	1.22	82%	3%	1%	7%	3%	1%	1%	3%
Satisfaction = 31	3.01	80%	3%	1%	6%	2%	1%	1%	2%
Satisfaction = 30	2.61	50%	2%	1%	5%	1%	1%	1%	41%

The variability in satisfaction (standard deviations) suggests that policy makers wanting a low-risk route to budget allocation, and enhancing resident satisfaction, would choose a satisfaction objective of 32 index-points. Ideal satisfaction is relatively high risk; its standard deviation is

three times more than the safe-bet of 32 satisfaction points (Table 4). Figure 3 summarizes our conclusion that maximum satisfaction is attained when expenditures are apportioned to the eight services as follows: education (41%), housing (5%), library services (1%), public-safety (12%), recreation (4%), transportation (1%), waste disposal (5%), and health-related welfare (32%).

Figure 3
Satisfaction Maximizing Expenditure Levels



As regards satisfaction, this paper addresses, albeit theoretically, the long-held concern in public policy that citizens possess little or knowledge about public services (Stipak 1977; 1979; DeHoog, Lowery and Lyons 1990; Miller and Miller 1991; Kelly 2005). More specifically, we argue that residents are not only aware of the contingencies between county government and public service provisions, but also motivated to think about reasons for their evaluations. Empirically, it is shown that Hancock County has the highest satisfaction index and Ford County the least. Could it mean that Ford County would lose its dissatisfied residents? The answer is probably, "yes". However, because relocation often takes a long time, it is difficult to determine a functional relationship between satisfaction and resident response. A longitudinal-research design that models resident loyalty as a function of public-service satisfaction, and personal variables (for example, monetary significance of the relocating decision) is needed to address the question. This would be an area for future research on the topic.

Finally, it is suggested that the model presented in the paper be extended to include a comprehensive list of services such as those discussed by the Citizen-Centered Service Network (1998), and Baer (1985).

SUMMARY AND CONCLUSION

This paper presents an analytical approach to maximizing satisfaction with public services which could generate resident loyalty or commitment to a community. The mathematical model recognizes the nonlinear effects of public service expenditure on resident satisfaction perceptions, and suggests the following spending proportions for eight public services:

- Education (41%), Housing (5%), Library services (1%), Public-safety (12%), Recreation (4%), Transportation (1%), Waste disposal (5%), and Health-related welfare (32%).

Note that these are the spending required to attain maximum satisfaction levels. Exceeding these levels will not increase satisfaction. Also, it is important to note that the analytical model does not consider statutory mandates set for services.

Politics is often cited as the main consideration in decisions concerning county budgets. The "manage-by-fact" approach presented in this paper could help local governments to assure their citizens that their opinions and evaluations drive public-service resource-allocation process in the community.

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Appendix 1
Descriptive Statistics

Respondents Characteristics

Gender	%
Male	47
Female	53

Marital Status	%
Married	56
Single (never married)	9
Widowed	17
Divorced or separated	19

Ethnic Group	%
White	97
Black	1
Other	2

Formal Education	%
Less than 9^{th} grade	3
9^{th} to 12^{th} grade	7
High school diploma	29
Some college	25
Associate degree	10
Bachelors degree	16
Graduate degree	10

Household Income	%
Less than $20,000	24
$20,000 to $39,999	31
$40,000 to $59,999	21
$60,000 to $79,999	13
$80,000 to $100,000	6
More than $100,000	5

Responses (Community Service Variables)

	Mean	Std. Dev
x_1: Education (K-12)	4.1	1.5
x_2: Housing	3.9	1.3
x_3: Library services	4.3	1.2
x_4: Public safety	3.7	1.3
x_5: Parks and recreation	4.0	1.3
x_6: Public transit and transportation	4.5	2.3
x_7: Waste disposal	4.0	1.4
X_8: Health-related welfare	3.9	1.6

Appendix 1 Cont'd ….

County-wise Responses

County	No. of Respondents
Bureau	4%
Carroll	2%
Christian	2%
Clay	2%
Coles	2%
Cumberland	2%
Douglas	2%
Edgar	1%
Effingham	2%
Ford	1%
Franklin	2%
Fulton	2%
Hancock	1%
Iroquois	2%
Jackson	4%
Jefferson	3%
Jo Davies	2%
Knox	6%
LaSalle	8%
Lee	4%
Logan	2%
McDonough	3%
Macoupin	7%
Marion	4%
Mason	1%
Morgan	3%
Randolph	2%
Richland	2%
Saline	2%
Stephenson	4%
Vermillion	6%
Warren	2%
Wayne	1%
Whiteside	5%
Williamson	3%
Total	100% (n=640)

Appendix 2
Per Capita Expenditure Data ($ in 2005)

County	Edu.	Lib	Health	Trans.	Police	Parks	Housing	Waste
Bureau	1277.74	14.32	669.22	0.05	127.89	41	49.98	52
Carroll	1353.17	23.08	14.96	3.24	130.46	55.98	46.89	23.44
Christian	1151.38	7.78	23.43	2.41	118.22	78.86	34.3	12.78
Clay	1480.2	10.35	795.56	22.18	93.33	20.57	68.35	34.7
Coles	2374.6	33.48	65.39	18.76	150.57	84.38	21.79	4.47
Cumberland	1325.56	6.31	42.97	0.05	103.59	52.16	45.22	0.81
Douglas	1262.98	21.75	23.11	0.05	119.94	25.96	0.05	0.05
Edgar	1382.98	6.39	72.41	0.05	105.84	11.02	103.78	0.05
Effingham	1189.86	0.73	55.88	4.16	129.08	51	45.68	6.22
Ford	1192.77	22.6	18.15	0.05	162.34	40.25	165.02	3.74
Franklin	1186.22	37.98	17.87	7.73	151.24	19.28	112.29	21.64
Fulton	1670.73	11.62	107.36	0.05	115.9	111.01	52.21	17.39
Hancock	1322.36	26.86	65.1	0.05	77.14	23.46	16.35	0.05
Iroquois	1408.18	64.55	61.79	0.05	87.26	28.33	0.81	36.05
Jackson	1507.31	18.8	89.15	53.07	148	54.7	46.26	20.24
Jefferson	1903.77	12.58	24.75	58.03	130.83	17.99	123.8	14.59
Jo Davies	1449.11	14.48	306.02	0.05	117.78	247.94	183.53	19.6
Knox	1216.66	74.21	23.76	4.95	154.92	54.66	102.94	46.32
LaSalle	1637.61	20.01	32.82	2.15	147.4	21.39	67.71	21.26
Lee	1659.26	17.4	38.59	2.81	120.19	34.16	24.08	14.6
Logan	942.07	24.39	73.19	0.97	142.39	48.77	39.49	1.66
McDonough	891.75	13.75	1263.06	18.63	94.01	49.51	83.81	22.22
Macoupin	1420.1	72.12	42.24	0.05	106.15	41.39	30.51	0.41
Marion	1841.54	16.8	635.54	2.75	123.46	18.89	50.6	41.45
Mason	1553.41	33.4	751.47	0.44	97.19	65.29	21.45	8.94
Morgan	1029.71	17.31	39.71	9.03	123.59	38.91	25.7	0.14
Randolph	1069.19	29.7	869.34	7.75	110.66	20.09	35.41	3.09
Richland	3599.23	11.95	13.26	15.25	80.53	40.45	72.38	16.3
Saline	2205.7	18.55	0.04	6.67	166.16	23.81	77.44	0.05
Stephenson	1467.93	59.54	44.96	3.07	134.85	107.09	26.66	51.66
Vermillion	1651.3	35.6	42.56	8.74	156.16	26.38	78.16	21.22
Warren	1019.19	25.33	15.11	0.05	109.38	33.6	67.74	0.05
Wayne	1223.25	43.08	35.21	10.62	81.34	16.55	32.98	32.92
Whiteside	1287.15	16.39	1186.7	3.31	103.78	100.43	55.38	22.25
Williamson	1495.6	47.71	20.51	19.18	107.35	22.48	85.16	19.52

Source: Finances of Individual County Governments: Illinois (www.comptrollerconnect.ioc.state.il.us/Office/LocalGovt)

Appendix 3
Satisfaction Index for Counties

County	Satisfaction Score
Hancock	37.4
Iroquois	36.5
Carroll	36.28571429
Knox	35.375
Williamson	34.8
Whiteside	34.5
Jo Davies	34.44444444
Effingham	34.42857143
Fulton	34.33333333
Stephenson	34.11764706
McDonough	34
Jefferson	33.91666667
Lee	33.875
Christian	33.85714286
Warren	33.5
Mason	33.4
Bureau	33.35714286
Cumberland	33.33333333
Richland	32.5
Wayne	32.4
Morgan	32.2
Coles	32
LaSalle	31.78125
Vermillion	31.41666667
Macoupin	31.30769231
Douglas	31.28571429
Marion	31.11764706
Jackson	30.78571429
Franklin	28.42857143
Saline	28.28571429
Edgar	28
Clay	27.16666667
Logan	27.16666667
Randolph	27.125
Ford	26.8

Note: The index has a score of 40 as its maximum and 8 as the minimum.

Appendix 4
Actual Spending Proportions: 2005

County	Edu.	Lib	Health	Trans.	Police	Parks	Housing	Waste
Bureau	57%	1%	30%	0%	6%	2%	2%	2%
Carroll	82%	1%	1%	0%	8%	3%	3%	1%
Christian	81%	1%	2%	0%	8%	6%	2%	1%
Clay	59%	0%	32%	1%	4%	1%	3%	1%
Coles	86%	1%	2%	1%	5%	3%	1%	0%
Cumberland	84%	0%	3%	0%	7%	3%	3%	0%
Douglas	87%	1%	2%	0%	8%	2%	0%	0%
Edgar	82%	0%	4%	0%	6%	1%	6%	0%
Effingham	80%	0%	4%	0%	9%	3%	3%	0%
Ford	74%	1%	1%	0%	10%	3%	10%	0%
Franklin	76%	2%	1%	0%	10%	1%	7%	1%
Fulton	80%	1%	5%	0%	6%	5%	3%	1%
Hancock	86%	2%	4%	0%	5%	2%	1%	0%
Iroquois	83%	4%	4%	0%	5%	2%	0%	2%
Jackson	78%	1%	5%	3%	8%	3%	2%	1%
Jefferson	83%	1%	1%	3%	6%	1%	5%	1%
Jo Davies	62%	1%	13%	0%	5%	11%	8%	1%
Knox	72%	4%	1%	0%	9%	3%	6%	3%
LaSalle	84%	1%	2%	0%	8%	1%	3%	1%
Lee	87%	1%	2%	0%	6%	2%	1%	1%
Logan	74%	2%	6%	0%	11%	4%	3%	0%
McDonough	37%	1%	52%	1%	4%	2%	3%	1%
Macoupin	83%	4%	2%	0%	6%	2%	2%	0%
Marion	67%	1%	23%	0%	5%	1%	2%	2%
Mason	61%	1%	30%	0%	4%	3%	1%	0%
Morgan	80%	1%	3%	1%	10%	3%	2%	0%
Randolph	50%	1%	41%	0%	5%	1%	2%	0%
Richland	94%	0%	0%	0%	2%	1%	2%	0%
Saline	88%	1%	0%	0%	7%	1%	3%	0%
Stephenson	77%	3%	2%	0%	7%	6%	1%	3%
Vermillion	82%	2%	2%	0%	8%	1%	4%	1%
Warren	80%	2%	1%	0%	9%	3%	5%	0%
Wayne	83%	3%	2%	1%	6%	1%	2%	2%
Whiteside	46%	1%	43%	0%	4%	4%	2%	1%
Williamson	82%	3%	1%	1%	6%	1%	5%	1%
Median	80%	1%	2%	0%	6%	2%	3%	1%