RESEARCH NOTE

IMPORTANCE-PERFORMANCE ANALYSIS OF CITIZEN SATISFACTION SURVEYS

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This paper introduces the method of importance-performance analysis of citizen surveys, a useful approach to understanding citizen satisfaction with local government services. Using data from a US national online panel, we directly compare two approaches to importance-performance analysis: one employing an explicitly stated measure of importance, the other using a measure of importance derived from regression analysis. The different results that the two approaches give suggest that local government administrators and policy analysts arrive at distinctly different conclusions depending on which importance measure they use. These differences are illustrated by simulating the change in citizen satisfaction that would result from improvement in the top-rated services according to each measure. Research and policy implications are discussed.

Many local governments across Europe and North America have begun regularly surveying their citizens in an effort to assess their needs and gauge their satisfaction with the quality of local government services. This trend reflects a renewed emphasis on performance measurement and an interest in making local governments more customer-focused and responsive to their citizens (Bouckaert *et al.* 2002; Osborne and Gaebler 1992; Kettl 2000). Some prominent initiatives along these lines include Canada's Common Measurement Tool (Institute for Citizen Centered Service 2005), the United States' National Citizen Survey (International City/County Management Association 2005), the American Customer Satisfaction Index (2006) and the European Commission's Eurobarometer (European Commission 2005). However, most citizen surveys remain an activity that is still planned and conducted at the local level. Much of the analysis of citizen surveys continues to rely on basic

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descriptive statistics and trend lines to interpret results; yet it is often difficult to make sense of the ratings citizens give to various services and to use these ratings to meaningfully compare service quality and performance. New tools are needed to extract more useful information from the results of citizen surveys.

Several publications, aimed at advising local governments on the analysis of citizen surveys, advocate the use of importance-performance analysis, sometimes termed quadrant analysis (Miller and Kobayashi 2000; Segal and Summers 2002). This method, which originated in the field of market research (Martilla and James, 1977; Myers, 1999; Oliver, 1997; Vavra, 1997; Allen and Rao, 2000), charts the relationship between service performance ratings and service importance as viewed by the customer or citizen. The measure of performance most often used is the customer's (or citizen's) rating or satisfaction with a specific service or attribute of a service. But two alternative approaches have been recommended for measuring the importance of a service: (1) the 'stated importance' of a service in response to a survey question that explicitly asks respondents to rate importance; and (2) statistically 'derived importance' based on a regression model of overall customer or citizen satisfaction in which the services are predictor (independent) variables. Although the more complex derived approach may be unfamiliar to public administrators or policy analysts, it is widely regarded as the preferred approach in the field of private-sector market research due to its ability to better predict actual consumer behaviour (Crompton and Duray1985; Hays 1992; Myers 1999; Allen and Rao 2000).

Most of the available publications that discuss importance-performance analysis as an approach to the analysis of citizen satisfaction with local government, focus only on the stated importance approach (Miller and Kobayashi 2000; Segal and Summers 2002). A recent study by the present authors (Van Ryzin and Immerwahr 2004), however, did attempt to compare stated and derived importance using data from a New York City citizen survey. Although it was found that the derived and stated results differed, and we made an argument in favour of using derived importance, the measures of stated and derived importance used were not directly comparable. Specifically, we relied on an open-ended question about 'priorities for government to do something about' as our measure of stated importance, rather than asking respondents to explicitly rate the importance of each service. Although we acknowledged this limitation, it remains unclear from that analysis how much of the difference between the two approaches is due simply to the initial differences in question wording and structure. Nevertheless, our prior study (Van Ryzin and Immerwahr 2004) is one of the first in the field of public administration to attempt to compare and contrast the stated and derived approaches to assessing the importance of local government services to citizens.

Building on this prior work, the present study provides for a better and more direct comparison of stated and derived importance. Using an online

panel of US adults, the results indicate that the services identified as important by the stated importance and the derived importance approach do differ, thus providing varying implications for public administrators and policy-makers. An attempt is made to compare the implications of each approach by simulating the change in citizen satisfaction that would result from improvement in the top-rated services. Before going into the detailed methods and findings, however, it is important to review the purpose and procedures of importance-performance analysis, something which is discussed in the section that follows.

IMPORTANCE-PERFORMANCE ANALYSIS

Figure 1 shows the four-quadrant grid that forms the basic framework for importance-performance analysis (adapted from Segal and Summers 2002; see also Martilla and James 1977; Oliver 1997). Quadrant 1 represents success areas, where the local government is perceived as doing a good job with services that citizens value. Quadrant 2 is perhaps the most critical quadrant, as it contains services that citizens value but which suffer from poor performance ratings. This is the area in which public administrators would look for indications of where to direct improvement efforts, policy changes and the allocation of marginal resources. Quadrant 3 contains services with both low importance and low performance. From a citizen satisfaction perspective, these are the services which should be given a lower priority. Although performance in these areas could be improved, there may be little gain in citizen satisfaction as a result. Quadrant 4 also contains low-importance services, yet with above-average performance. This suggests a potential overkill in terms of effort and perhaps a place to look for slack resources. It must be said at this point, however, that all of the policy and managerial actions indicated in figure 1 are based only on the results of the citizen survey and do not take into account such factors as the cost of the service, possible explanations for its high or low performance, political constraints, equity considerations, and so on. On the other hand, the importance-performance

	Low importance	High importance
High performance	**4** Potential overkill, slack resources	**1** Keep up the good work
Low performance	**3** Low priority	**2** Critical problem area, concentrate here

FIGURE 1 *The basic importance-performance grid*

grid in figure 1 does represent an advance over the usual analytical practice of simply rating and ranking services because it suggests where public administrators should focus their efforts to improve overall citizen satisfaction.

The utility of this technique depends a great deal on the validity of the measures of both importance and performance. The measurement of performance has received a great deal of attention. Useful methods such as benchmarking and comparative performance measurement have been developed to identify high and low performance (Ammons 1996; Miller and Kobayashi 2000). In addition, the validity of citizen evaluations as a performance measure has been widely studied (Brudney and England 1982; Kelly 2003), albeit with varying results. Less well understood in the public administration literature is how to measure the importance of local government services to citizens. The most common and intuitive approach, 'stated importance', involves simply asking citizens to rate the importance of local government services, either before or after they rate performance. This stated importance approach is the one discussed in the major guidebooks on citizen surveys (Miller and Kobayashi 2000; Segal and Summers 2002) and presumably occurs most often in practice.

Research on consumer behaviour, however, has long recognized that stated importance does not necessarily explain observed variation in overall customer satisfaction or purchasing behaviour (Myers and Alpert 1968; Neslin 1981; Oliver 1997; Myers 1999; Allen and Rao 2000). For example, airline customers may state that safety is by far the most important factor for them, yet their actual airline preferences are influenced more by their satisfaction with the amount of legroom and the quality of the food served (Myers 1999; Allen and Rao 2000). Customers are sometimes unaware of, or unwilling to, confess their true motivations and preferences (Myers and Alpert 1968). To the extent to which this is true, the stated importance of local government services may not provide the best indication of the true determinants of citizen satisfaction and, in turn, closely related behaviours such as complaining, trusting local government or exiting a jurisdiction (Lyons *et al.* 1992; Van de Walle and Bouckaert 2003). Given these problems, it may be preferable to use 'derived importance' – a measure of the importance of a service as derived from a regression analysis that relates services to an inherently valued criterion, such as overall customer or citizen satisfaction (Neslin 1981; Oliver 1997; Allen and Rao 2000; Chu 2002). The regression estimates of the relationship between the service and overall satisfaction constitute the measure of derived importance and the relative strength of the relationships reflect the importance of each service in explaining variation in overall satisfaction.

Thus, the use of the derived importance approach would seem to offer advantages over reliance on the stated importance approach because derived importance specifically highlights those services that empirically relate to overall citizen satisfaction. But how different are the results of the two methods when applied to real data from a citizen survey? What are the resulting

policy and management implications? And what are the advantages and disadvantages of each approach? These questions are addressed in the sections that follow.

DATA AND METHOD

In order to answer the issues raised at the end of the previous section, we analysed data from an online survey conducted in June 2004 of participants in the eTownPanel project, an opt-in email research panel of approximately 1081 active participants at the time of the study. The research panel was created to provide a general population of volunteers to participate in surveys about local community issues and government performance, in particular, surveys sponsored by local non-profit organizations, government agencies, and academic researchers (see http://www.eTownPanel.com). Invitations were sent via email to the entire panel, and a total of 657 volunteers completed the questionnaire – a panel response rate of 61 per cent. Table 1 compares 2000 US Census figures with both weighted and unweighted demographic results from the online study sample (US Census 2004). Compared to the Census, the unweighted study sample contains substantially more women, and fewer African-Americans, Hispanics and adults 65 years of age and older. The weighted results reflect simple post-stratification weighting by Census region, gender, race and age. All analytical results are weighted results.

TABLE 1 *Demographics of the survey respondents*

	US Census	Weighted responses	Unweighted responses
Age			
18 to 24 years	13.40	14.72	8.53
25 to 44 years	40.68	45.20	56.68
45 to 64 years	29.64	32.83	33.39
65 years and over	16.74	7.26	1.40
Gender			
Male	49.10	43.98	16.68
Female	50.90	56.02	83.32
Race			
White, non-Hispanic	69.10	73.39	86.97
Black or African American	12.30	8.94	4.89
Asian or Pacific Islander	3.70	5.74	2.12
Hispanic or Latino	12.50	8.00	2.58
Other	2.40	3.93	3.45
Income			
Less than $25,000	28.67	17.90	16.20
$25,000–$49,999	29.34	37.30	36.30
$50,000–$74,9999	19.46	23.40	26.90
$75,000 or more	22.52	21.40	20.60
Region			
Northeast	19.00	19.19	24.76
South	35.60	35.77	32.01
Midwest	22.90	22.97	26.22
West	21.90	22.08	17.00

The online questionnaire, in addition to including some general questions about the community and local government (as well as demographic questions), included a set of 11 specific services that respondents were asked to rate using a 5-point scale (1 = poor, 2 = only fair, 3 = good, 4 = very good, 5 = excellent). These quality ratings for each service constitute the measures of performance. The services include:

- cleanliness of streets and sidewalks (CLEAN);
- street and road maintenance (ROADS);
- parks and playgrounds (PARKS);
- public libraries (not including college or university libraries) (LIBRARY);
- garbage collection (GARBAGE);
- police protection (POLICE);
- police-community relations (POL-COM);
- fire protection (FIRE);
- public education (K-12) (SCHOOLS);
- ease of car travel in the city (TRAFFIC); and
- ease of travel by public transportation (TRANSIT).

After a few more general questions, respondents were then asked to rate the importance of these same services on a 5-point scale (1 = not that important, 2 = somewhat important, 3 = important, 4 = very important, 5 = extremely important). These ratings represent the measures of stated importance. For purposes of presentation, the ratings of performance and stated importance were both converted to a 0–100 per cent-to-maximum (PTM) scale in the manner suggested by Miller and Miller (1991).

Derived importance was measured using regression analysis, with an index of overall satisfaction as the dependent variable and the 11 service quality ratings as the independent variables. The overall satisfaction index is composed of the following three general items: overall satisfaction with local government services (from 1 = completely dissatisfied, to 7 = completely satisfied); comparison to expected local government services (1 = much worse than expected, to 7 = much better than expected); and comparison to one's ideal local government services (1 = very far from my ideal, to 7 = very close to my ideal). This three-item index of overall citizen satisfaction has been shown to have good internal reliability as well as construct validity (Van Ryzin 2004). The index was regressed on the 11 service quality ratings, and the standardized regression coefficients were used as measures of derived importance. Table 2 presents the regression results. To convert these derived importance measures to a 0–100 scale comparable to the stated importance measures, the standardized regression coefficients were each divided by the maximum coefficient (beta = .311 for street cleanliness), with negative betas set to 0. Thus, the PTM scores for derived importance refer to a per cent of the maximum coefficient value. (This approach differs from Van Ryzin and Immerwahr (2004), which assigned service importance based

TABLE 2 *Regression results (standardized coefficients)*

	Beta	t	Sig.	PTM-Beta
Cleanliness	0.311	7.11	0.000	100
Police-community	0.185	3.63	0.000	59
Roads	0.146	3.57	0.000	47
Schools	0.128	3.41	0.001	41
Policing	0.126	2.42	0.016	40
Traffic	0.078	2.36	0.019	25
Transit	0.078	2.36	0.019	25
Libraries	0.066	1.70	0.090	21
Parks	0.033	0.78	0.438	10
Fire protection	−0.028	−0.73	0.465	0
Garbage	−0.090	−2.35	0.019	0
R-square	0.701			
df	11/454			

Note: PTM-Beta is the per cent to maximum beta. Betas less than 0 are defined as PTM-Beta = 0.

on the statistical significance of individual services from a larger model of citizen satisfaction.)

RESULTS AND DISCUSSION

Figure 2 presents the importance-performance analysis using stated importance. The dashed axes indicate the midpoint of the importance and performance scales, while the solid-line axes indicate the grand means of importance and performance (that is, the means of all 11 importance ratings and the means of all 11 performance ratings). Using the grand means as a frame of reference is preferable, as the grand means divide the quadrant into below-average and above-average importance, as well as below-average and above-average performance. Within this frame, SCHOOLS and especially POLICE stand out as important services that receive relatively low performance ratings. Using stated importance, this suggests these are the areas of focus in any efforts to improve citizen satisfaction. CLEAN, TRANSIT and ROADS are also relatively low performing services, but are rated as relatively less important. FIRE stands out as a very important service with very high performance ratings.

Figure 3 presents the importance-performance analysis using derived importance in place of stated importance. Again, the dashed line crosses the midpoints of importance and performance and the solid line crosses at the grand means. The picture that emerges is very different from the results indicated in figure 2. In particular, ROADS and especially CLEAN move up a great deal in importance using the derived measure. Using derived importance, the analysis suggests that improvements to road maintenance and particularly street cleanliness would produce the biggest boost in citizen satisfaction. POLICE declines in importance a fair amount, while SCHOOLS essentially remains near the origin, as in figure 2. It is interesting to note that
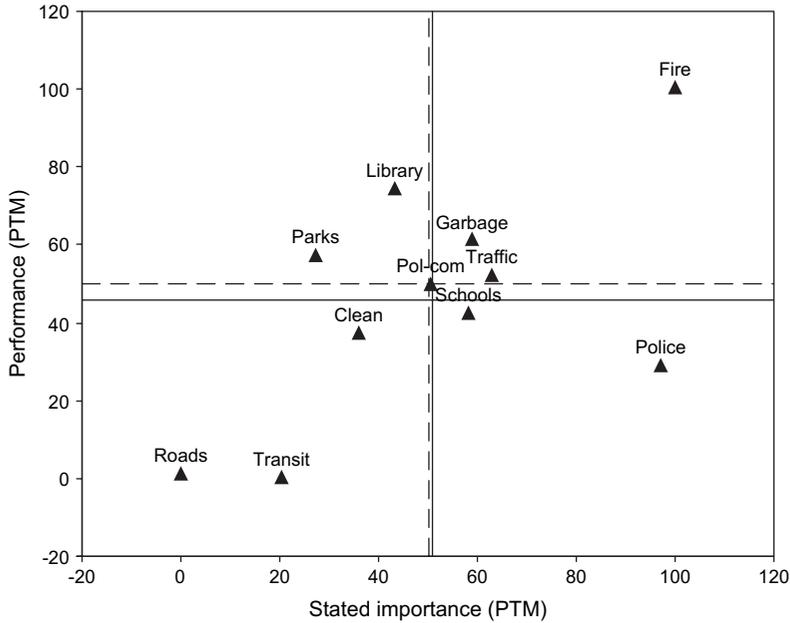
FIGURE 2 *Stated importance-performance analysis*

FIRE slides back a great deal in importance using the derived measure, compared to figure 2, while POL-COM (police-community relations) increases in importance.

   One argument in favour of the derived importance measure is that it reflects those services that correlate most directly with variation in overall citizen satisfaction. According to figure 3, how satisfied a citizen is with the cleanliness of streets and sidewalks (CLEAN) explains – better than anything else – how satisfied they will be overall. This cannot be said of FIRE in figure 2, for example. Although citizens explicitly rate FIRE as highly important, the empirical results suggest that the perceived performance of this service is not highly correlated with overall citizen satisfaction.

   If we assume for a moment that we can improve the performance (or at least citizen perceptions of performance) of individual services one at a time, we can simulate the resulting change in overall citizen satisfaction. This simulation is shown in figure 4 and provides another basis for comparing stated and derived importance. The graph in figure 4 shows the gains in overall citizen satisfaction that are predicted from successive one standard deviation increases in the performance of services, beginning with the most important service. In other words, we are simulating successive improvement in services – beginning with the most important, the next most important, and so on – and predicting the corresponding change in overall citizen satisfaction. The gap between the lines suggests the shortfall in citizen
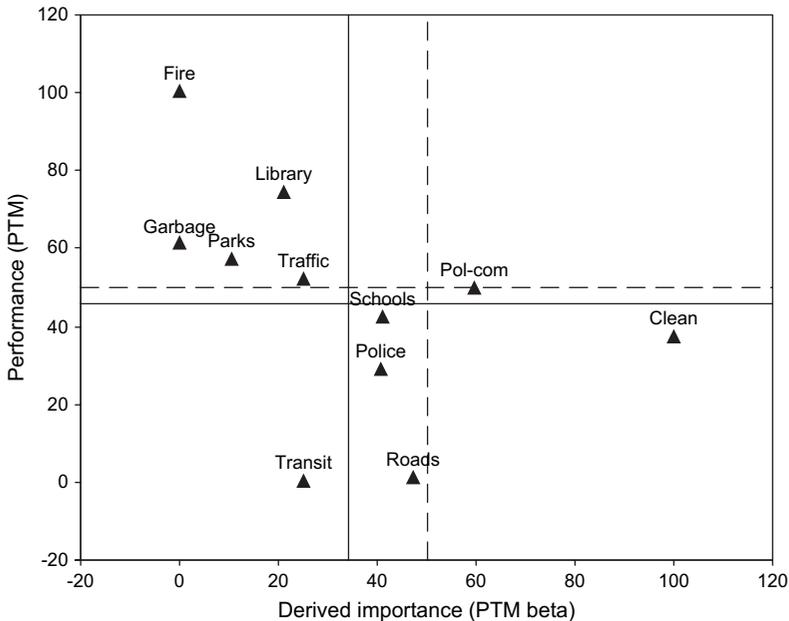
FIGURE 3 *Derived importance-performance analysis*

satisfaction that could result if we relied on stated rather than derived importance. For example, it suggests that we could improve all of the top four stated-importance services (FIRE, POLICE, SCHOOLS, and GARBAGE) and still not see the gains in citizen satisfaction from an improvement in just street cleanliness (CLEAN) alone.

It must be pointed out that there are a number of cautions and limitations to these simulation results. The relationships may not be truly causal, so that improvement in services (or service perceptions) may not actually result in the corresponding gains in citizen satisfaction suggested by the regression coefficients. Even if the relationships were causal, it may not be possible to manipulate perceptions of service performance. Studies suggest that perceived performance may be only loosely correlated with actual service efforts, at least as measured by traditional administrative output measures (Stipak 1979; Kelly 2003). So producing change in perceived performance may be difficult to achieve in practice. Still, the simulation illustrates a point: how different the result could be if public administrators relied on stated importance to guide their improvement efforts rather than derived importance.

CONCLUSION

Importance-performance analysis offers a useful tool for public administrators and policy-makers to make better sense out of citizens' subjective ratings
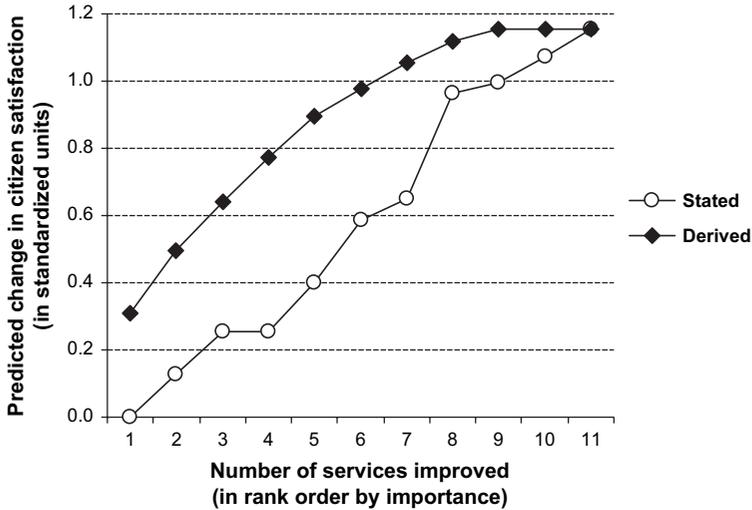
FIGURE 4 *Simulation of change in overall citizen satisfaction from improvement in services*

of government performance. This tool can work using either explicitly stated importance measures or derived importance measures from regression analysis. In this paper, we have compared these two approaches directly to show that they do not necessarily lead to the same conclusions. Although a number of local government services retain their coordinates, several services do clearly shift location in the importance-performance grid, resulting in different policy and management implications. The question naturally arises: which method is preferable from the point or view of public administrators or policy analysts planning a citizen survey?

We would argue for the use of statistically derived importance for several reasons. To begin with, as our simulations demonstrate, the statistically derived key services explain much more variation in overall citizen satisfaction than do the services explicitly stated as important. Although these simulations are somewhat artificial, and only suggestive, they do illustrate the potential problems that may result from a reliance on citizens' stated importance as a guide for service improvement efforts and expenditures. In addition, it is worth noting that the statistically derived importance approach does not require a new series of questions in a citizen survey since they are based on regression coefficients on the same variables used to measure performance. The derived importance approach, in contrast, requires a new series of questions, adding to the length and cost of a citizen survey.

One advantage of the stated importance approach over the derived importance approach, however, is the fact that this approach is more easily understood by decision makers and the public. The use of the stated

importance approach also requires fewer analytical skills and less expertise to implement than the derived importance approach. Finally, it can be difficult to scale and graph the regression coefficients that serve as measures of derived importance, although the method used here would seem to be a reasonable approach. But none of these technical challenges are too large, and the more the method of statistically derived importance-performance analysis is used in practice, the more public administrators, policy-makers and the public will begin to understand it. Hopefully, this might lead to more careful consideration and use of citizen survey data in the planning, delivery and evaluation of local government services.

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