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Is Bigger Better in the Eyes of Victorian Citizens?

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Abstract: Efficiency approaches to determining optimal population size in local government have proved largely inconclusive in Australian and international contexts. Empirical analysis based on effectiveness, as proxied by citizen satisfaction survey data, offers the possibility of bringing a higher level of clarity to the size debate. However, very few studies have been made of this possible relationship. This present cross-sectional multiple regression analysis provides evidence in support of statistically significant associations between the population parameters (size and density) and resident satisfaction measures. Implications for the Australian structural reform debate are discussed, as well as the need for further research including panel regression.

Keywords: Effectiveness, citizen satisfaction, size, local government.

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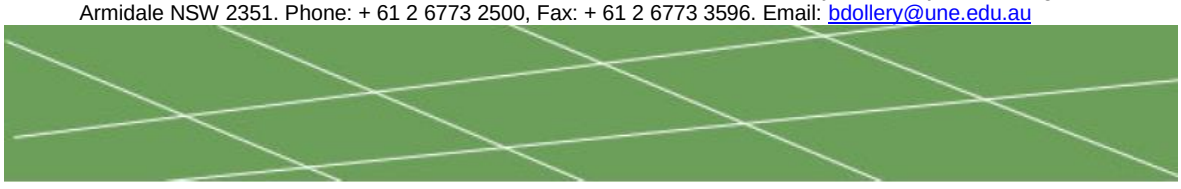

1. Introduction

Local government reform in Australia has increasingly sought to emphasise the model of 'citizen as consumer', consistent with new public management theory (NPM) (Andrews *et al.* 2011, p. 230). An example of this is the recent audit report by the Auditor General NSW (Audit Office of NSW 2012), which has called for higher levels of assurance regarding the efficiency and effectiveness of NSW local governments (NSW Auditor-General 2012, p. 18). One way of focussing regulatory attention on the 'citizen consumer' is to conduct satisfaction surveys. Indeed the NSW Auditor General has referred to the Victorian community satisfaction surveys as an example of the type of public reporting that the Department of Local Government (DLG) should consider (NSW Auditor General 2012, p. 19).

However, interpretation of citizen qualitative judgements is a complex endeavour and 'is a long debated topic in public management literature' (Andrews *et al*. 2011, p. 229). Over three decades of international research on citizen satisfaction surveys have identified a number of potential problems for the applied researcher. These problems include respondent error, lack of concordance with quantitative performance data and the effect of resident expectations on subsequent judgements (Kelly and Swindell 2002, p. 612; Walker *et al.* 2010, p. 12; Stipak 1979, p. 46; Parks 1984, p. 126; Van Ryzin 2004, p. 443; James 2007, p. 108). The literature has also revealed potentially confounding relationships between citizen judgements and exogenous factors such as socio-economic status, age and race (Stipak 1979, p. 51; Brown and Coulter 1983, p. 50; Swindell and Kelly 2005, p. 706; James 2007, p. 109). More recently Andrews *et al.* (2010, p. 110-11) have provided evidence of a relationship between the accuracy of judgements on local government performance quality and population parameters. All of these issues, enumerated above, combine to explain the complexity which will face regulatory bodies such as the DLG, wishing to promote the citizen as consumer through the implementation of community satisfaction surveys. However, the complexity inherent in citizen satisfaction data also presents the researcher with novel opportunities to advance the body of local government research. This is particularly the case in Australia, given that there

does not appear to have been any significant research conducted on the rich database of Victorian annual community satisfaction survey data (DPCD 2010b).

This paper explores whether the data contained in the Department of Planning and Community Development, Victoria (2010b) database can contribute to the contentious local government size and shape debate in Australia. Specifically it seeks to establish whether there is a statistically significant association between the population parameters (population size and density) and citizen satisfaction. The nature of any associations is then explored in the varying satisfaction contexts (overall satisfaction, satisfaction with advocacy, satisfaction with engagement in decision making). The purpose of this study is to explore the validity of applying an effectiveness approach to Australian local government size. It is intended that a subsequent study will follow with a more extensive panel of data and more sophisticated statistical techniques.

Section two considers the arguments from the literature on optimal size of local governments and expounds on the issues facing applied researchers of community satisfaction data. An outline of the data used, variables employed and the empirical strategy adopted is then detailed in section three. Section four discusses the results of the cross-sectional multiple regression analysis. Finally, the paper ends with a discussion of the implications of these results for the Australian debate on local government amalgamation.

2. Efficiency and Effectiveness Perspectives on Local Government Size

'One of the most enduring questions in the theory and practice of public administration is: what is the optimum organisational size for the delivery of public services?' (Andrews and Boyne 2009, p. 739). There are effectively two approaches to answering this question - an efficiency argument (which examines for the presence of economies of scale) and an effectiveness argument (which considers the outcomes of local governments). Arguably, the efficiency argument has dominated the size debate in academic literature (Andrews *et al.* 2010, p. 107). This approach seeks to determine the presence or absence of economies of scale - an economic principle whereby average costs decrease with increased output - through empirical analysis of expenditure data.

The results of this approach in the Australian context have been largely inconclusive (Dollery *et al.* 2011, p. 113; Byrnes and Dollery 2002, p. 403). Although the presence of economies of scale have been demonstrated in a number of inquiries into council sustainability (Local Government Commission 1986; Victorian Grants Commission 1985; KPMG 1998; Deloitte Access Economics 2011), academic studies have also demonstrated evidence of diseconomies of scale (Soul 2000 cited Dollery *et al.* 2011) and no economies of scale (Abelson 1981 cited Dollery *et al.* 2011). This failure to establish the consistent presence of returns to scale has also proved elusive in the international context (Andrews and Boyne 2009, p. 742; Holcombe and Williams 2009, p. 419). Indeed a review of 46 such international studies found evidence equally distributed between economies of scale, diseconomies of scale and no economies of scale (Dollery *et al.* 2011, p. 108). Therefore it would appear that the efficiency approach to the determination of optimum size in local government may not be capable of producing the sort of definitive answers sought by public administrators.

As noted earlier, the alternative approach to the 'enduring question of public administration' is to consider effectiveness arguments (Boyne 1996, p. 814). Specifically this approach seeks to establish an association between municipality size and local government effectiveness, as proxied by citizen satisfaction (Andrews *et al.* 2005, p. 498; Andrews and Van De Walle 2012, p. 10). There are very few examples of this approach in the scholarly literature. Boyne (1996, p. 809) tested scale against effectiveness and found evidence of a parabolic relationship, with local *minima*. However, the controls for quality were restricted to municipality generated quantitative measures (such as percentage of waste recycle and percentage of planning decisions appealed) and thus did not directly reflect citizen's perceptions of quality (Boyne 1996, p. 815). Mouritzen (1989, p. 678) though established evidence of a statistically significant relationship between population size and resident satisfaction judgements in a series of multivariate regressions which controlled for political preferences and participation. Unfortunately this study does not appear to have been replicated or extended (until this present work). Part of the reason for this apparent neglect may be due to the robust debates on the reliability of citizen qualitative judgements, which occurred throughout the subsequent years.

As noted in the introduction, the interpretation of resident qualitative data is a complex proposition. First of all, the researcher must pay heed to the likelihood of respondent error due to the three principal sources of attribution error, assessment error and recall (Kelly and Swindell 2002, p. 612-3; Walker *et al.* 2010, p. 12). Attribution error results when citizens include in their qualitative assessment a service provided by a higher tier of government or private contractor (Swindell and Kelly 2000, p. 33; Thompson 1997, p. 300). The potential for attribution error would appear to be high in Australia given the convoluted funding arrangements present amongst the three tiers of government. Assessment error occurs due to insufficient knowledge or experience and manifests as judgements inconsistent with observed reality (Kelly and Swindell 2002, p. 610). Finally, recall error owes its existence to the vagaries of human memory combined with the perishable and intangible nature of local government services (Edgett and Parkinson 1993, p. 22). It would appear that these respondent errors have the potential to seriously compromise any research, although some have noted that independent errors are likely to wash out in aggregated data (DeHoog *et al.* 1990, p. 821).

There is also the debate regarding the lack of concordance between citizen qualitative judgements and quantitative performance data. This debate persisted for over two decades without a consistent relationship being demonstrated between service performance and citizen satisfaction (Swindell and Kelly 2005, p. 705). Some researchers used this lack of agreement between qualitative and quantitative datasets to question the validity of relying on citizen satisfaction survey data as a government decision making tool (Stipak 1979, p. 46; Brown and Coulter 1983, p. 57). However, other inquirers have pointed out that citizens make judgements on dimensions of service (such as staff demeanour) that defy capture in quantitative performance data (Parks 1984, p. 126; Kelly and Swindell 2002, p. 613). This inability of performance data to holistically capture all service dimensions, along with the imperative conferred upon the citizen in NPM would seem to neutralise any arguments against the use of resident judgements in determining the size and shape of local government.

The final difficulty posed in interpreting citizen satisfaction data lies in the research evidence that suggests citizen satisfaction is determined in part by individuals'

expectations (Van Ryzin 2004, p. 443; James 2007, p. 108). Whilst this could have a bearing on the ability of residents' qualitative judgements to inform the size debate, a few factors mitigate against this. Firstly, the research on expectations acknowledges that actual performance is still the major factor behind citizen satisfaction (Van Ryzin 2004, p. 442). Secondly, the size of the council itself is likely to play a significant part in the formation of resident expectations. Indeed, Andrews *et al.* (2010, p. 110) assert that large organisations have the greater capacity and resources required to manage resident expectations more effectively. Finally, the studies to date have provided conflicting data that may suggest a degree of cultural relativity (James 2007, p. 119; Roch and Poister 2006, p. 292; Van Ryzin 2004, p. 445).

Thus it can be seen that analysis of community satisfaction data does present problems for the applied researcher. Many of these problems originate due to the complexity inherent in resident qualitative judgements. It should be noted however, that actions may be taken to mitigate the effects of some issues (for instance use of aggregated data), whilst other difficulties may not be as serious as first suspected (such as the concordance debate or expectations effects). In the final analysis it should be acknowledged that the intricacies that introduce problems for the applied economist are also the source of the potential for novel approaches to the perplexing question of determining the optimum size of local government.

Earlier it was noted that only two studies appear to have specifically addressed the issue of population size and local government effectiveness (Boyne 1996; Mouritzen 1989). In both studies a statistical association was found between the two variables of interest - in the first case a parabolic relationship, in the second a negative linear relationship was established (although the discussion on theory suggested a parabolic relationship was likely, there was no test made) (Boyne 1996, p. 809; Mouritzen 1989, p. 666). An unrelated study, conducted to assess the impact of NPM on various aspects of local government, included the variables of interest as regressors within the multivariate regression analysis. Andrews and Van De Walle (2012, p. 19) found evidence of a significant relationship between population density and effectiveness measures, but not between population density and population size. The need for further studies specifically

directed at the question of associating population size and citizen qualitative judgements, to advance the existing tenuous indications, has been noted in the literature (Andrews and Boyne 2009, p. 740).

Therefore the current empirical analysis has an important implication for advancing the limited data in support of the effectiveness argument. Furthermore, this study appears to be the first empirical analysis of Australian qualitative data. Highly aggregated data has been used in order to mitigate respondent level error. Unfortunately there is currently no available data relating to citizen expectations, so some unexplained expectations effects may impact on the final model. Finally, it is envisaged that the results from this study may go some way towards establishing an alternative to the largely inconclusive efficiency approach of determining optimal local government size.

3. Data and Empirical Methodology

The community satisfaction data was obtained from the Victoria 2010 Indicators Source Data report (DPCR 2010b). Aggregate municipality data relating to exogenous factors have been obtained from the ABS National Regional Profile (ABS 2010). The empirical analysis of the combined datasets used OLS multiple regression, specified as:

$$\mathbf{E} = \alpha + \beta_1\mathbf{P} + \beta_2\mathbf{X} + \boldsymbol{\mu}$$

In this equation, **E** is the relevant Satisfaction Rating (Overall Satisfaction, Satisfaction with Advocacy, Satisfaction with Community Engagement), **P** is a vector of population variables (i.e., population, population squared, and population density), **X** is a vector of exogenous control variables (i.e., population growth, percentage identifying as ATSI, hectares of agricultural land, average income of taxable individuals, percentage unemployed, percentage of persons over 65 year, proportion of persons under 15 years, percentage of persons of a non-English speaking background (NESB), number of dwelling approvals, proportion of individuals receiving a disability pension, total length of local government roads), and **μ** is an independent identically distributed random error term (see Table 1.).

Use of the population parameters as exogenous controls is based on precedent (Andrews *et al.* 2010, p. 110-11; Mouritzen 1989, p. 678; Andrews and Van De Walle 2012, p. 8; Boyne 1996, p. 816) and theoretical considerations previously expounded. The population squared term was included due to its statistical significance along with literary evidence suggesting quadratic relationships for satisfaction data (Van Ryzin and Charbonneau 2010, p. 561; Mouritzen 1989, p. 666; Boyne 1996, p. 817). Population density was also found to have statistical significance. The theoretical grounds for inclusion of population density include the presence of 'more opportunities and better coordinated central systems for sharing knowledge about service needs' (Andrews *et al.* 2010, p. 111). An exogenous control was introduced for population growth given that authorative studies have shown that 'local governments respond to rapid growth in part by allowing current service levels to decline' (Ladd 1992, p. 293). Similar reasoning applied to the inclusion of number of new dwelling unit approvals.

Controls for (taxable individuals) average income and unemployment are proxies for socio-economic status, and consistent with the literature (see Stipak 1979; Brown and Coulter 1983; DeHoog *et al.* 1990; Van Ryzin 2004; James 2007). The percentage of individuals identifying as Aboriginal and Torres Strait Islanders (ATSI) and the percentage of individuals speaking a language other than English at home were both included on the basis of significant evidence for influence of race on satisfaction judgements (Van De Walle and Van Ryzin 2011; Swindell and Kelly 2005; Brown and Coulter 1983). It can be asserted that certain age groups put greater demands on local authorities and tend to have more experience of local government services (for instance, playgrounds, libraries and senior citizens clubs). Therefore controls for these demographics are prudent, as well as being attested to in the literature (Van De Walle and Van Ryzin 2011; Swindell and Kelly 2005). Similarly, there is a compelling case for the inclusion of a control for the percentage of disabled persons given that legislation enshrines their right to additional council services, or provision of services in different ways (McGrath 2009, p. 481; *Disability Discrimination Act 1992*). Length of council roads (in kilometres) are included in recognition of the fact that transport infrastructure forms the most visible and significant item (up to 24% of budget) of local government expenditure (Pricewaterhouse Coopers 2006, p. 63). Finally, a measure of the degree of

agriculture undertaken in council areas has been included given that it places specific demands on local government as well as being subject to reduced ratings (which may affect the amount of funds available for quality control).

For each satisfaction measure (overall satisfaction, satisfaction with advocacy and satisfaction with community engagement), cross-sectional regressions were run with appropriate exogenous controls. Councils were then stratified according to whether they represented metropolitan or non-metropolitan demographics. This stratification was consistent with the treatment of Van De Walle and Van Ryzin (2011). Certainly, in Australia, there is significant evidence of a cultural divide between metropolitan and rural residents (Dollery *et al.* 2006, p. 22). Furthermore, metropolitan and rural councils are accorded separate treatments by regulatory and planning authorities in recognition of their unique characteristics and needs (DPCD 2010a). Finally, significant differences in density attend the two broad classifications and stratification tends to disentangle the confounding relationship between density and population (Holcombe and Williams 2009, p. 428)

Table 1. Definitions and measures of central tendency of regression variables (n=79)

Variable	Definition	Mean	Standard Deviation	Median
Dependent				
Overall satisfaction 2010	all councils	64.06	4.30	65
Advocacy satisfaction 2010	all councils	62.95	4.24	63
Engagement satisfaction 2010	all councils	60.15	4.47	61
Independent				
Population	scaled down by a factor of 100000	0.70	0.62	0.43
Population squared	scaled down by a factor of 10^{10}	0.87	1.24	0.18
Population growth	3 year compound rate	1.57	1.54	1.35
Population density	scaled down by a factor of 1000	0.712	1.173	0.035
% population under 15 years		18.03	3.50	18.3
% population over 65 years		15.96	4.96	15.6
% population ATSI	Aboriginal and Torres Strait Islander population	0.86	0.72	0.7
% population NESB	Proportion of people speaking a language other than English at home	12.68	14.86	4.4
Unemployment rate		5.44	1.80	5.2
Average wage		51,580	10,593.7	47,870
Number of dwelling approvals		722.37	917.40	496
Hectares of agriculture		155,833	204,042	70,785.7
Total length of roads	Total of kerbed and un-kerbed roads	1,648.77	1,248.03	1,348
% population disabled	persons receiving a government disability pension	3.94	1.40	3.93

4. Results Discussion

Table 2 presents the results from multiple regression analysis of overall satisfaction with council services and population. There is no evidence of a statistically significant relationship within the pooled data. Stratifying the data into metropolitan and non-metropolitan councils considerably increases the explanatory value of the empirical models (from 36 to 55%), further validating the decision expounded above. Following the stratification, evidence of a significant (at 5% level) relationship between overall community satisfaction and population is apparent in the metropolitan data. The results indicate that general satisfaction is optimised at a population approaching 174,000 individuals and is parabolic in nature.

Table 2. Relationship between overall satisfaction and population (n=79)

Dependent Variable	Overall Satisfaction 2010	Overall Satisfaction 2010 - Metro only (n=32)	Overall Satisfaction 2010 - Non Metro (n=47)
Population	4.715	13.773**	13.244
	(3.382)	(5.428)	(9.096)
Population squared	-1.399	-3.950**	0.851
	(1.411)	(1.501)	(2.854)
Density	1.362	0.282	18.586
	(0.865)	(0.922)	(12.787)
Exogenous controls	Yes	Yes	Yes
R^2	0.36	0.55	0.56

** very significant at 5% level
Standard errors in parentheses

The presence of a local *maxima* in the empirical results suggests that population may have a negative influence on satisfaction in both smaller *and* larger metropolitan council areas. Standardised coefficients can give a sense of the significance of population effects on overall satisfaction. In this case, a change of 1 standard deviation in population (62,000) would result in a 0.48 standard deviation variation in satisfaction (2.06 satisfaction points). Given the relative narrow distribution of overall satisfaction ratings, the effect of increasing population appears quite strong. However, standard errors are quite large and it may be the case that quite a deal of variation is contained within the

model. There is no evidence of a statistically significant relationship between population density and resident satisfaction at either the pooled or stratified levels.

Moreover, there was no evidence of a statistically significant relationship between population and community overall satisfaction for the non-metropolitan councils. Other factors would appear to be at play. Standardised coefficients indicate that extent of agriculture (0.76) and proportion of individuals under 15 years (0.51) both have statistically significant positive influences on non-metropolitan satisfaction. Number of new dwelling approvals (-1.41) and proportion of ATSI individuals (-0.38), together exerted statistically significant negative effects. Further work would be required to confidently identify the determinants of satisfaction in non-metropolitan municipalities. However, the statistical evidence suggests that the effectiveness approach does not appear to provide support for the use of population size as the reference point for structural reform, in non-metropolitan local governments.

There were no statistically significant relationships between population and satisfaction with council advocacy, in either the pooled data or the stratified regressions (see Table 3.). However, population density did appear to be statistically significant at the pooled level. This may be an example of how density can be confounded with population in the presence of strong correlations (here the correlation between these two variables was 0.52). As shown by Holcombe and Williams (2009, p. 428), regression data must be stratified if one wishes to disentangle the strong correlations between population and density (that is, generally an increase in population is associated with an increase in density in the absence of significant urban sprawl). Alternatively, the significance of population density may be regarded as further evidence in support of its association with effectiveness, noted in the Andrews and Van De Walle study (2012, p. 19). The fact that the significance of density disappears in the stratified regressions may be used to argue in favour of the former position.

Table 3. Relationship between satisfaction with advocacy and population (n=79)

Dependent Variable	Advocacy 2010	Advocacy 2010 - Metro only (n=32)	Advocacy 2010- Non Metro (n=47)
Population	0.906	9.008	5.438
	(3.497)	(6.544)	(10.775)
Population squared	-0.729	-3.045	2.144
	(1.459)	(1.810)	(3.381)
Density	1.668**	1.115	16.912
	(0.894)	(1.112)	(15.149)
Exogenous controls	Yes	Yes	Yes
R^2	0.30	0.42	0.46

Standard errors in parentheses
** very significant at 5% level

In the final regression model (see Table 4.), there was also no evidence of significant associations between population and satisfaction (with community engagement) at the pooled level. However, following stratification clear relationships between population size and satisfaction in community engagement by councils were found for metropolitan councils (see table 5). The results mirrored the overall satisfaction analysis with one exception - the turning point for optimal satisfaction with council community engagement shifted to the left by over 52,000. The presence of this local *maximum* at 121,700 seems to suggest that surveyed members of the community have a preference for smaller municipalities when it comes to the issue of community engagement by council in decision making. This result appears to be consistent with the theoretical position of Dollery *et al.* (2006, p. 295) who assert that councils with low constituent ratios are more democratic. Certainly there is a high positive correlation (0.70) between constituent ratio and population size, consistent with their explanation. It may also explain why non-metropolitan local governments do not exhibit associations with the population parameters for advocacy satisfaction; Table 5 demonstrates that non metropolitan councils already have very low constituent ratios relative to metropolitan councils.

Table 4. Relationship between citizen satisfaction with engagement and population (n=79)

Dependent Variable	Engagement 2010	Engagement 2010 - Metro only (n=32)	Engagement 2010 - Non Metro (n=47)
Population	-0.460	8.860*	6.836
	(3.730)	(4.966)	(10.652)
Population squared	-0.517	-3.640**	2.650
	(1.556)	(1.374)	(3.342)
Density	2.023**	1.567*	13.090
	(0.954)	(0.844)	(14.976)
Exogenous controls	Yes	Yes	Yes
R^2	0.28	0.61	0.52

*significant at 10% level
**significant at 5% level
Standard errors in parentheses

Table 5. Constituent ratios for metropolitan and non-metropolitan councils

Type of Council	Median Constituent Ratio	Mean Constituent Ratio
Metropolitan	6546	6177
Non-Metropolitan	1633	2114
All Councils	3031	3760

The variation between the optimal populations indicated by overall satisfaction and satisfaction with community engagement is worthy of consideration. One explanation is that whilst residents prefer smaller council size for engagement purposes, they are prepared to trade-off some of this enhanced engagement for perceived benefits associated with higher populations. Such benefits may include increased financial stability, or additional services that have a minimum efficient threshold (although further research would be required to ascertain the exact nature of any trade-offs). This would seem to suggest that in some instances democratic involvement (perhaps through the mechanism of the highly correlated lower constituent ratios) is less desirable to individual residents than the (undefined) benefits enabled by higher populations. Having said this though, it is equally true to assert that there is a marginal point at which the returns from larger populations seem to no longer justify the resultant loss in democratic participation (this appears to occur at population increases of approximately 52,000 or 43% increase in population). Further research efforts to clarify this point would appear to be warranted.

A final point of interest in the metropolitan community engagement results is that density is a statistically significant factor. In this case, the significance of population density persists into the metropolitan stratification, thus suggesting a robust relationship free of confounding error. This result would seem to support the evidence presented by Andrews and Van De Walle (2012, p. 19) as well as the theoretical position articulated by Andrews *et al* (2010, p. 111). Moreover the association of population density with engagement satisfaction appears to be a reasonable result given that engagement would be facilitated by more easily accessible populations. Once again, there is no relationship between satisfaction with community engagement and density nor population, for non-metropolitan areas.

5. Future Research directions and the Implication for Australian Council Amalgamations

There is much to commend the use of an experimental approach to applied economics. Generally, though ethical and equity concerns prohibit direct experimentation (Hicklin 2010, p. 260). However, the occurrence of amalgamations and de-amalgamations may provide an incidental opportunity to apply experimental methods. Indeed, Mouritzen (1989, p. 667) states that 'the ideal design for this kind of analysis would be a comparative design in which information on citizen's satisfaction was available.....before and after amalgamations took place.' No such database appears to have been available to Mouritzen (1989). However, the relatively recent de-amalgamation of Delatite Shire council (Victoria) presents a design scenario similar to the ideal expressed by Mouritzen (1989). The empirical evidence obtained following de-amalgamation clearly demonstrates that, *ceteris paribus,* citizens were persistently more satisfied in the resultant smaller municipalities (see Table 6).

Table 6. Citizens' satisfaction following de-amalgamation of Delatite council

Council	Overall 2001	Overall 2002	Overall 2003	Overall 2004	Overall 2005
Delatite	55	58			
Benalla			62	64	60
Mansfield			66	71	65
mean all councils	65	65	65	65	65
mean small shires	63	63	62	64	63

Source: Department of Planning and Community Development, Victoria (DPCD 2010b).

The case for empirical analysis of local government size through consideration of citizen satisfaction survey data appears to be supported by both the cross sectional regression analyses, and the above results, subsequent to the Delatite de-amalgamation. Certainly, for metropolitan councils, the evidence suggests that optimal population size is in the range of 121,000 through to 174,000, depending on the acceptable level of trade-off between democratic engagement in decision making and the (yet to be definitively determined) benefits accruing with increasing size. However, as noted previously the standard errors are elevated and there is the possibility that a good deal of variation is contained within the headline results. Certainly further analysis, perhaps using an expanded panel of data, would be required in order to increase the level of confidence in this result

A point of note is that the empirical analysis of non-metropolitan councils found no evidence of an association between population size, population density and resident satisfaction. This result would seem to suggest no resolution to 'the most enduring question of public administration' for regional municipalities (Andrews and Boyne 2009, p. 739). Rather, the result may motivate some to fall back on the previously dominant (but largely inconclusive) economic arguments relating to scale. However, the actual results realised from past amalgamations (such as Delatite council) should persuade individuals against reverting back to the old calculus - rural residents have demonstrated that they do care about municipality size (Dollery *et al.* 2011). A preferable position might be to acknowledge that the case of non-metropolitan local government size is

incredibly complex - and that more data and analysis will be required to disentangle the effect of a number of exogenous factors found to be significant in this analysis.

One way of achieving this end would be to conduct more rigorous analysis on the rich longitudinal data available, although the present form of the data will present technical challenges. Another option would be to study the problem in alternative contexts, such as Tasmania (the only other state to have conducted state wide community satisfaction surveys in Australia). It also appears that recent regulatory attention on increasing the level of assurance in local government may result in additional states opting to conduct regular community satisfaction surveys. As data sources expand and diversify, more options will become available to the applied researcher in local government.

In the interim this result, broadly consistent with international findings, can be taken as evidence for an association between population size, population density and community satisfaction in metropolitan municipalities. Moreover, evidence has been tendered regarding the community preference for smaller populations and higher population densities where the focus lies with community engagement. The data also indicates the possibility for some sort of trade-off between engagement in the democratic decision making process and desire for the perceived benefits associated with size. It may be fruitful for future research efforts to be directed towards examining the role that constituent ratios may play in the relationship between population size and satisfaction with community engagement.

On a practical level, the application of this effectiveness approach to optimising local government will require careful and considered policy formulation. One solution may be to reduce the constituent ratio in accordance with the apparent implications of the noted association between population and satisfaction with engagement, although this would be dependent on future research efforts, as noted above. A second option is to redraw council boundaries with a view to optimising population size, which has been the principal response of Australian state governments to date (Vince 1997). However, the significant association between citizen satisfaction and population density presents an apparently unsolvable dilemma for bureaucrats relying on crude structural reform

interventions. This is because any recasting of boundaries to increase the density (or indeed alter population size) in one municipality, will inevitably lead to a detrimental decrease in density for neighbouring municipalities. It would therefore seem that only macro-economic policies designed to encourage the migration of individuals away from densely populated areas could produce an acceptable result in this regard.

Thus, it can be seen that the application of an effectiveness approach to optimising local government is a very difficult endeavour. Perhaps future research, along the lines discussed above, may clarify some statistical associations and thereby simplify the bureaucratic response. Whatever the eventual outcome though, it seems to be the case that the effectiveness approach does offer a promising avenue to researchers and those charged with developing local government policy.

References

Andrews, R. and Boyne, G., 2009. Size, Structure and Administrative Overheads: An Empirical Analysis of English Local Authorities. *Urban Studies,* 46(4), 739-759.

Andrews, R., Boyne, G., Jae Moon, M., and Walker, R., 2010. Assessing Organizational Performance: Exploring Differences Between Internal and External Measures. *International Public Management Journal,* 13(2), 105-129.

Andrews, R., Boyne, G., and Walker, R., 2011. The Impact of Management on Administrative and Survey Measures of Organizational Performance. *Public Management Review,* 13(2), 227-255.

Andrews, R. and Van De Walle, S., 2012. New Public Management and Citizens' Perceptions of Local Service Efficiency, Responsiveness, Equity and Effectiveness. Coordinating for Cohesion in the Public Sector of the Future [COCOPS] Working Paper No. 7.

Audit Office of NSW. 2012. *New South Wales Auditor-General's Report. Performance Audit. Department of Premier and Cabinet, Division of Local Government,* Sydney: Auditor-General New South Wales.

Australian Bureau of Statistics (ABS). 2010. *National Regional Profile (2006-10).*

Boyne, G. A. 1996. Scale, Performance and the New Public Management: An Empirical Analysis of Local Authority Services. *Management Studies*, 33(6), 809-826.

Brown, K. and Coulter, P., 1983. Subjective and Objective Measures of Police Service Delivery. *Public Administration Review,* 43(1), 50-58.

Byrnes, J. and Dollery B., 2002. Do Economies of Scale Exist in Australian Local Government? A Review of the Research Evidence. *Urban Policy and Research,* 20(4), 391-414.

DeHoog, R. H., Lowery, D., and Lyons, W., 1990. Citizen Satisfaction with Local Governance: A Test of Individual, Jurisdictional, and City Specific Explanations. *Journal of Politics,* 52(3), 807-837.

Deloitte Access Economics , 2011. *Local Government Structural Reform in Tasmania*, Tasmania: Property Council of Australia.

Department of Planning and Community Development, (DPCD). 2010a. *Annual Community Satisfaction Survey,* Melbourne: Department of Planning and Community Development.

Department of Planning and Community Development, (DPCD). 2010b. *2005-2010 Source Data and Definition,* Melbourne: Department of Planning and Community Development.

Disability Discrimination Act, 1992. Commonwealth of Australia.

Dollery, B., Crase, L., and Johnson, A., 2006. *Australian Local Government Economics.* Sydney: University of New South Wales Press.

Dollery, B., Kortt, M., and Grant, B., 2011. A Normative Model for Local Government De-Amalgamation in Australia. *Australian Journal of Political Science,* 46(4), 601-615.

Edgett, S. and Parkinson, S., 1993. Marketing for Service Industries - A Review. *Service Industries Journal,* 13(3), 19-39.

Hicklin A. 2010. 'Methods.' In Walker, R. M., Boyne, G., and Brewer, G., (eds). *Public Management and Performance.* Cambridge: Cambridge University Press, 1-33.

Holcombe, R., and Williams, D., 2009. Are There Economies of Scale in Municipal Government Expenditures? *Public Finance and Management,* 9(3), 416-438.

James, O, 2007. Evaluating the Expectations Disconfirmation and Expectations Anchoring Approaches to Citizen Satisfaction with Local Public Services. *Journal of Public Administration Research and Theory,* 19, 107-123.

Kelly, J., and Swindell, D., 2002. A Multiple Indicator Approach to Municipal Service Evaluation: Correlating Performance Measurement and Citizen Satisfaction Across Jurisdictions. *Public Administration Review,* 62(5), 610-621.

KPMG. 1998. *Reinventing Local Government in New South Wales,* Sydney: Property Council of Australia, NSW Division.

Ladd, H., 1992. Population Growth, Density and the Costs of Providing Public Services. *Urban Studies,* 29(2), 273-295.

Local Government Commission. 1986. *The Restructure of Local Government in Victoria: Principles and Programme,* Melbourne: Local Government Commission.

McGrath, R., 2009. A Discourse Analysis of Australian Local Government Recreation and Sport Plans Provision for People with Disabilities. *Public Management Review,* 11(4), 477-497.

Mouritzen, P., 1989. City Size and Citizen's Satisfaction: Two Competing Theories Revisited. *European Journal of Political Research*, 17, 661-688.

Parks, R., 1984. Linking Objective and Subjective Measures of Performance. *Public Administration Review,* 44(2), 118-127.

Pricewaterhouse Coopers (PWC). 2006. *National Financial Sustainability Study of Local Government*. *Commissioned by the Australian Local Government Association*, Sydney: Pricewaterhouse Coopers.

Roch, C., and Poister, T., 2006. Citizens, Accountability, and Service Satisfaction: The Influence of Expectations. *Urban Affairs Review,* 41(3), 292-308.

Stipak, B, 1979. Citizen Satisfaction with Urban Services: Potential Misuse as a Performance Indicator. *Public Administration Review,* 39(1), 46-52.

Swindell, D., and Kelly, J., 2000. Linking Citizen Satisfaction Data to Performance Measures A Preliminary Evaluation. *Public Performance & Management Review,* 24(1), 30-52.

Swindell, D., and Kelly, J., 2005. Performance Measurement Versus City Service Satisfaction: Intra-City Variations in Quality? *Social Science Quarterly*, 86(3), 704-723.

Thompson, L., 1997. Citizen Attitudes About Service Delivery Modes. *Journal of Urban Affairs*, 19(3), 291-302.

Van De Walle, S., and Van Ryzin G., 2011. The Order of Questions in a Survey on Citizen Satisfaction with Public Services: Lessons From a Split-Ballot Experiment. *Public Administration*, 89(4), 1436-1450.

Van Ryzin, G., 2004. Expectations, Performance, and Citizen Satisfaction with Urban Services. *Journal of Policy Analysis and Management,* 23(3), 433-448.

Van Ryzin, G., and Charbonneau, E., 2010. Public Service Use and Perceived Performance: An Emprical Note on the Nature of the Relationship. *Public Administration,* 88(2), 551-563.

Victorian Grants Commission. 1985. *Report by the Victorian Grants Commission on the Prospective Financial Advantages of Restructuring Local Government in Victoria*, Melbourne: Victoria Grants Commission.

Vince, A., 1997. Amalgamations. In Dollery, B., and Marshall, N. (eds.), *Australian Local Government: Reform and Renewal*. Melbourne: Macmillan.

Walker, R., Boyne, G., and Brewer, G., 2010. Introduction. In Walker, R. M., Boyne, G. and G. A. Brewer (eds). *Public Management and Performance.* Cambridge: Cambridge University Press, 1-33.