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Committee Size and Smart Growth: An Optimal Solution

Russell Kashian

University of Wisconsin-Whitewater

Heather Kohls

Marquette University, heather.kohls@marquette.edu

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Russell Kashian
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Marquette University

Wisconsin is one of many states that have enacted a “Smart Growth Initiative” law that requires inclusion of the public in the creation and development of a Comprehensive Plan. One implication of public participation is the strategic development of a comprehensive planning committee. Two crucial decisions occur when the committee is formed: the size of the committee and the composition of the committee. This paper models a relation between committee size and the accuracy of plan, as well as the relationship between the inclusion of experts, whether paid consultants or planners, and the quality of the outcome. Based on a survey of committee members, we test the relationship between the participants’ observations of quality and group size and composition, analyzing the tradeoff between the size of the group with the perception of quality of the decision.

INTRODUCTION

Comprehensive planning is often used to address the constant change and evolution of a community and its vision for land use. These uses include the evolution of education, the need for parkland, the anticipation of housing, commercial and industrial development, and other matters of resource allocation. A critical challenge of Wisconsin’s comprehensive planning process (often called the Smart Growth Initiative) is to include the public in the creation and development of a community’s plan. This paper focuses on the structural complications of that process. The challenge wrestles with conflicts between paid professionals and citizen volunteers. It tests relationships between passionate citizens, elected officials, and appointed committee members. It requires design choices developed within an inclusive environment of large committees but not so large as to inhibit decision making.

The Wisconsin model offers a wide variety of methods from which to develop a plan. The size of planning committees varies widely. The groups are comprised of citizen volunteers, consultants, paid staff, elected officials, or a mix of all of these. This body can be the local plan commission or an advisory committee created by the governing body. Within this framework,

the initial structure must specify the roles of the various participants in both the preparation and approval of the comprehensive plan.

The oversight committee or group charged with the development of the comprehensive plan is often selected in an attempt to satisfy and include community stakeholders. However, the complex nature of zoning and planning requires the inclusion of both staff and consultants. The addition of members to the committee often serves to bring talent to the deliberations, while at the same time disrupting the efficiency of a smaller group. The beliefs regarding the benefits of stakeholder representation align with academic insight into group size: there exists a framework that contends that committee size should incorporate diversity and input that can lead to a more representative result. In light of these issues, we analyze a mechanism design problem involving the creation of the smart growth committee. This question focuses on the optimal number of members and the impact of the makeup of the committee on the end product.

The Nature and Implementation of Wisconsin's Smart Growth Initiative

As part of its 1999-2000 biennial budget, the State of Wisconsin enacted one of the most comprehensive pieces of land use legislation considered in this state during the last fifty years. The legislation, referred to as the "Smart Growth" Initiative (s. 55.1001 subsequently revised in 2001, 2003 and 2005), is intended to provide local governmental units with the tools necessary to create comprehensive plans, make more informed decisions, and encourage agencies to create more balanced land use rules and policies.

This law was unusual because it was supported by a coalition of groups representing varying interests. Groups such as the Wisconsin Towns Association, League of Wisconsin Municipalities, the Wisconsin Alliance of Cities, Wisconsin Builders Association, Wisconsin Counties Association, and the Wisconsin Realtor's Association all supported the Smart Growth legislation. In order to accomplish the goals of comprehensive planning, approximately \$17 million in grant funds have been awarded since 2000 to assist local governments in the development of local comprehensive plans. The grants are awarded to local governments, tribes, and regional planning commissions.

Some comprehensive planning may have been done at the county level. As a result by the end of 2006, while there are 1260 townships in Wisconsin, only 43 received grants directly, as much of their comprehensive planning efforts have been contributed through county comprehensive planning committees. Thirty-four of Wisconsin's 72 counties have received comprehensive planning grants. In addition, 32 of the state's 190 cities and 25 of Wisconsin's villages have received grants. Finally, Wisconsin is divided into 9 regional planning authorities; four of these RPA's have received grants. In all, between 2000 and 2007, over 960 communities in Wisconsin have benefited from this grant program.

The law, as passed in Wisconsin, prescribes certain elements to be included in a Comprehensive Plan in accordance with the EPA recommendations. The contents of a local comprehensive plan are specified in nine elements. While a local government may choose to include additional elements, a comprehensive plan must include at least all of the following nine elements:

1. Issues and Opportunities
2. Housing
3. Transportation
4. Utilities and Community Facilities
5. Economic Development

6. Agricultural, Natural and Cultural Resources
7. Economic Development
8. Intergovernmental Cooperation
9. Implementation

Wisconsin's Comprehensive Planning law establishes certain minimum requirements that a community must follow during the preparation, review, and adoption of a Comprehensive Plan. Whether the Plan Commission or a subcommittee (a Comprehensive Planning Committee) prepared the document, the law requires that the Plan Commission must recommend adoption of the Comprehensive Plan in order that it progresses to the Common Council, Village Board, or Town Board. These entities must then adopt the plan by ordinance. Once accepted, the legislation also requires that a Comprehensive Plan be periodically reviewed and updated every ten years. Amendments and revisions can be made during this time frame. However, they need to follow the same procedures as were followed in adopting the original plan: the planning commission needs to recommend and the Common Council, Village Board, or Town Board must then adopt the amendments by ordinance.¹

The creation of a Planning Commission is dependent on the local form of government (for example, a town or a city). In a City, according to state statute, the council of any city may by ordinance create a "City Plan Commission," to consist of at least 7 members. All members of the commission shall be appointed by the mayor, who shall also choose the presiding officer. The mayor may choose to sit on the commission or may appoint any other city elected or officials, except that the commission shall always have at least 3 citizen members who are neither paid nor elected. Citizen members shall be persons of recognized experience and qualifications. A township will have a plan commission consisting of at least 5 members; villages have few guidelines or requirements to follow.

While the community may elect to have the plan commission serve as the comprehensive planning committee, this is not necessary. Due to the work load already placed on these citizen members, the delegation of labor is often preferable. Since the size of the comprehensive planning committee is not statutory (they ultimately report to the planning commission), many comprehensive planning committees have more than 7 members. As this paper shows, the committees are comprised of a variety of members, from planning professionals, citizens, elected officials and consultants ranging from 4 to 24 members.

Unlike prior definitions, the "Comprehensive Plan" as defined by the Smart Growth law (s. 55.1001) applies uniformly to all cities, villages, towns and counties in Wisconsin. The Comprehensive planning law (s. 66.1001) does not mandate how a local municipality should grow, rather it requires public participation at the local level in deciding how a municipality wants to look in the future, and that can mean simply preserving characteristics a municipality has today.

LITERATURE REVIEW

The agency effect of public participation creates an environment in which committees are accountable to the public they serve. In this environment, the agents have an incentive to

¹ For further details on Smart Growth Initiatives, including case studies see <http://www.smartgrowth.org/library/projects.asp?res=1400> or visit the portion of the EPA (Environmental Protection Agency) website devoted to smart growth at <http://www.epa.gov/dced/>.

maximize their own (or their groups) well being rather than the communities' overall well being. Thus the agency effect suggests that people do things for purely personal reasons that do not necessarily serve the public interest. Comprehensive plans developed by consultants and implemented by paid planners run the risk of serving the interests of their authors. Public participation, while creating an additional avenue of potential for agency effect, broadens the available interests that offer ideas and input.

Public participation enables citizens to shape planning decisions and outcomes while increasing their sense of social and political empowerment (Laurian, 2004). Crucial to the argument of public participation is the development of accountability and democracy within the process (Healey, 1992). One natural perk of public participation is the inclusion of lay knowledge (Forester, 1999) and community awareness. This knowledge and visibility improves public support for policies (Bickerstaff and Walker, 2001). Evolving out of this premise is the fundamental question regarding the makeup and size of these committees.

The idea of public participation is a question of how and why they participate (Laurian, 2004) as well as the impact of the content of the comprehensive plans (Berke and Conroy, 2000) on participation have been addressed in prior literature. This paper focuses rather on the outcome of participation by bureaucrats, citizens, and elected officials, paid or unpaid, and how it may lead to plan success. One of the original premises of this paper evolves from an article on the design of small decision making groups and the probability of accurate outcomes (www.intuitor.com, 1996). The authors argue that larger does not result in more accurate results. For example, a firm may find that offering a wider variety of products does not ensure success. It rather offers more opportunities for failure at the individual level. The paper also argues that larger groups create a problem in managing communications.

This paper seeks to estimate policy success by modeling the relationship between committee size and plan accuracy. The idea of large committees is supported by intuitive ideas. Large committees provide an opportunity for each member to learn from each other and pool the judgment of different individuals (Lombadelli, Proudman, and Talbot, 2002). This idea, combined with the Condorcet Jury Theorem² suggests that committees should be very large. Persico (1999) contends that the standard model is based on the idea that if each committee member contributes private information, increasing the number of committee members helps the decision making process.

However, Persico continues that with larger committees evolves a less engaged committee member, prone to free riding on the others efforts. Also, each additional member feels less responsible for the ultimate decision. As a result, it can be argued that small committees may be more accurate.

Employing the rule of large numbers, it can be observed that, if high-quality members are scarce, adding members to a high quality small committee will simply lower the average quality of the membership. This could be more problematic in smaller communities, especially if the more qualified members are the first selected. In voting schemes requiring majority rule, the addition of lower quality members, combined with the possibility of free riding, creates a scenario worth examining.

The contribution of this paper is to look at these issues in an applied fashion. According to the argument and the models, the development of committees creates two hurdles. The first is

² If each committee member has an independent probability greater than ½ of making the correct decision, then the probability that the majority of the committee makes the correct decision increases with the number of members (Grofman and Owen, 1986). This is based on the expectation that individuals are more likely (perhaps 60%) to be correct than to be incorrect (perhaps 40%).

the increased likelihood that a large committee will confront a sensible and positive solution. However, due to the noise created through the multiple answers developed in a large format, this solution may be drowned out by the noise. As a result, this paper looks at recent policy and the corresponding committee size. Finally, using the results of the regression equation, the question of an optimal committee size is addressed.

DATA AND METHODOLOGY

The data for this model initiated with a list provided by the Wisconsin Department of Administration of all communities who had filed comprehensive plans with the state of Wisconsin between the years 2002 and 2004. This ensured that the communities surveyed had seasoned their plans with actual service to the community. In addition, the Department of Administration provided input regarding the question design and the quality metric. The one-page survey and explanatory letter was sent to 489 individuals who were identified in the completed plans as participants.

The survey itself was divided into five sections. The first was respondent's basic demographic information, most importantly how many years they had served as a community planner or as an elected official. The theory being that elected officials and bureaucrats have different levels of accountability to the citizens they represent. The second question identified demographic characteristics for their community. The third question focused on issues of committee design and decision making style, including a split between volunteers, elected members, and bureaucrats. The fourth question probed the plan authorship and funding. The final question was to find out how they perceived the plan to be working.

The fifth question has three parts. The initial part asked if the plan is referred to when decisions are currently being made. The assumption here is that, as a living document, the plan is integral to current decision making. Secondly, we asked how often exceptions are made to the plan. Finally, committee members were asked how long before the plan is expected to need revision. If exceptions are regularly being made or the community is already considering revision, the plan itself was not perceived to be of high quality. This analysis assigned points to these measures of quality³. This provided a quality measure based on all three questions ranging in value from a low of 3 to a high of 30.

Surveys were mailed on Marquette University letterhead by the Department of Administration and returned to UW Whitewater. Of the 489 surveys mailed 152 were returned. This provided a 31% return rate where no incentive was given which is well within standard expectations of respondents. Eight of the surveys had plans that were submitted to the state in 2004; those surveys were removed from the data because of the immaturity of the plans. Unfortunately of those remaining respondents, only 82 answered the survey completely. Three of those had unrealistic responses for committee size (i.e. greater than 90 members) and were omitted.

³ Question number 5a: "Is plan regularly referred to when making decisions?" Never=1, Sometimes=5, Always=10.
Question number 5b: "Frequency of exceptions to plan" never=10, one-four times=7, five-ten times=4, and more than 10=1.
Question number 5c: "How many years do you expect will pass before the plan needs major revision?" 5 years=1, 10 years=5, and 20+years=10. The intent of these questions was to establish how usable the existing plans are with minimal room for a personal opinion by the respondent.

Table 1
RELEVANT STATISTICS

Variable Name	Obs.	Mean	Std. Dev.	Min	Max	Description
Age	144	57.92	10.98	30	85	Age of respondent
years as cp	139	11.16	9.59	0	43	Years served as a community planner
years as eo	133	4.80	6.94	0	30	Years served as an elected official
Commsize	118	8.59	3.65	4	24	Committee Size
Pct Bureaucrats	100	28.37	37.65	0	100	Percent of Committee that are paid but not elected
Quality metric ⁴	126	18.26	4.87	3	30	The sum of point values earned by the quality questions (see appendix footnote)

The remaining 79 respondents represented a wide variety of communities: 45 planners from cities, 64 from townships, and 35 from villages. 57% of respondents stated that their decision making rule was majority rule rather than consensus. In spite of smaller numbers of completed data, the actual responses were quite representative of the communities in the state of Wisconsin that have participated in the comprehensive planning process as measured by the Wisconsin Planners database.

Table 2
COMPARISON OF RESPONDENTS AND ORIGINAL DATABASE

Variable	Wisconsin Planners database		Respondents		State of Wisconsin	
City	153	31.3%	23	29.1%	190	11%
Village	113	23.1%	21	26.6%	402	22%
Town	223	45.6%	35	44.3%	1260	67%
Counties Represented	30		15		72	

RESULTS

The ordinary least squares (OLS) econometric equation of interest was constructed to explain the value of the perceived quality metric in terms of Committee size, committee size squared, years as community planner, years as elected official, population and governance dummies, and the percent of paid, unelected individuals on the planning commission.

This commonly employed technique allows us to understand whether or not the variables in the function have an impact on the variable quality metric and if that impact is significantly different from zero. The model was run twice. First we found the result without any weighting for potential distortions from committees with large sizes. Second, we used analytical weights to adjust for the possible impact of too many responses from the same community which would be the result of too many planners from that community responding to our survey.

Table 3
REGRESSION ESTIMATES OF QUALITY METRIC

Independent Variable	Unweighted	Weighted
Committee Size	1.78*** (0.66)	1.16* (0.65)
Committee Size Squared	-0.081*** (0.03)	-0.047* (0.024)
Years as a Community Planner	-0.06 (0.06)	-0.084 (0.057)
Years as an Elected Official	0.15* (0.08)	0.11 (0.092)
Population Indicator	-3.17* (1.70)	-1.40 (2.77)
City or Town Indicator	.94 (1.32)	1.98* (1.18)
Percentage of Commission Paid but not elected	.05*** (0.01)	0.049*** (0.016)
Constant	9.99*** (3.45)	10.094* (3.79)
Adjusted-R squared	0.2406	0.2429
F-stat	3.75***	4.58***
Notes: * indicates significance at 10% level *** indicates significance at the 1% level		

The most crucial variable to find significant is the committee size and its square. Both of these were found to have an impact on the quality metric. Committee size was found to have a positive impact on perceived quality, whereas its square was not. That suggests that increasing committee size is a good thing up to a point; the identification of that point is the subject of the next section of this paper.

There are four other significant variables are of interest. The years as an elected official variable confirms the positive relationship expected between the quality of the plan and an elected official's institutional and community knowledge; however, it is only a small improvement in quality. Small communities, less than 10,000 residents, produce a lower perceived quality metric; this is anticipated due to limited resources available to direct to the writing of the plan. This is reflected by both the population indicator dummy and the city or town indicator variable, as negative would indicate smaller population for the former and positive would indicate a smaller town for the latter.

Finally, the percent of paid but not elected members on the commission produce a small positive impact on the perceived quality; this is consistent with the historic and educational capital that they bring to the process. This result supports the idea that paid consultants provide a positive component to the planning process.

Optimal Committee Size Calculation

Econometric theory suggests that the optimal number of a variable is produced by incorporating the variable and its square into the model. Once regressed into an equation, the first derivative should be calculated and set equal to zero. In such a maximization regression, the key is the signs of the coefficients for the variable in question (committee size) and its square. It is important that committee size is both significant and positive, while its square is significant and negative. In both versions of the model we have achieved this requirement. Using the

coefficients for committee size and its square, we can absorb all of the other variables into the constant resulting in the following equation:

$$[1] \quad \text{Quality metric} = \text{Constant} + 1.78 * \text{Committee Size} - 0.081 * \text{Committee Size}^2$$

The first derivative of this function results in:

$$[2] \quad \delta(\text{Quality metric}) / \delta(\text{committee size}) = 1.78 - 0.162 * \text{Committee Size}$$

Finally, setting this equation equal to zero results in an optimal committee size of 10.98 members. Thus the size predicted by our model is 11 commission members. In other words, to maximize the perception of success of the plan by the commission, there should be 11 members on the committee.

CONCLUSION

Comprehensive planning commissions can be composed in a variety of forms and types of members. Research theories suggest that there should exist an optimal size for a decision making body. The findings presented here are consistent with the theory. The linear regression model results in significant, opposite, and correct signs for the committee size variables, allowing us to conclude that the optimal committee size for a comprehensive planning commission should be 11 members. The research further suggests that both experienced elected officials and paid consultants have a positive impact on the perceived quality of the plan. This could help to facilitate costly decisions for small town planners.

The goal of the Wisconsin Comprehensive Planning law is to manage development and to guarantee public participation in the process with the intent of creating plans that are useful and applicable as communities grow. Thus investigating the planners perceptions of successfulness (i.e. How frequently the plan must be amended, how well growth is tied to the plan, etc.) relative to the composition of the decision making body should attest to the quality of the plans and therefore the importance of the law itself. The focus of this work is just the beginning. Several more years will need to pass before it is possible to evaluate whether the investment of state funds to support local comprehensive planning has been effective. Effectiveness depends not only on the quality of plans, but also on public awareness of their content and intent, and on the commitment of successive local government administrations to their implementation.

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Appendix A:

2005 Comprehensive Planning Survey

You have been asked to complete the following research survey. It should take approximately 10 minutes for you to complete the survey. The following survey, sent to communities that filed their Comprehensive Plans with the Wisconsin DOA during 2002 and 2003, is designed to investigate how valuable the process of completing these plans were to the communities they were designed to serve. Your responses are strictly anonymous and your participation is completely voluntary. By completing the survey, you are giving your permission to the researcher to use your anonymous responses for use at professional meetings and in research publications. Thank you for your participation.

1. Please tell us some basic information about yourself:

Are you: Male Female

Current age: _____

Years involved in community planning: _____

Years spent as an elected official: _____

2. Please tell us a bit about your community:

Estimated population: 0 – 10,000 11,000 – 50,000 > 50,000

Is your community: City Town Village

3. Tell us about your Planning Commission:

- a. Did you reach your decision by:

majority rule consensus

- b. _____ # of voting members

- c. _____ % elected

- d. _____ % volunteers

- e. _____ % paid and not elected (these 3 should equal 100%)

4. Tell us about your Plan

- a. _____ % developed by consultants

- b. _____ % taken from previous plans

- c. Length of time taken to pass (in terms of hours of meeting time): _____

- d. _____ % of plan paid by local funds only.

5. How well is the plan working?

- a. Is plan regularly referred to when making decisions?

never sometimes always

- b. Frequency of exceptions to plan

never one-four times five – ten times more than 10 times

- c. How many years do you expect will pass before the plan needs major revision?

5 years 10 years 20+ years