SYNTHETIC ESTIMATES OF CITIZEN POLICY PRIORITIES FOR AMERICAN CITIES

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Abstract

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In order to facilitate comparative urban research regarding the responsiveness of city officials to citizen preferences, a simulation model is presented which generates valid synthetic estimates of the policy priorities of "communities-as-a-whole" and various subpopulations within communities. By making a number of modifications in a similar simulation model used by state policy analysts, community-level preferences account are derived from two types of data: (1) national survey data which enable a determination of the policy preferences of various demographic subgroups, and (2) census data which enable a determination of the demographic composition of communities. A comparison of simulated preferences and actual citizen preferences (as revealed by survey research) within ten cities of the Urban Observatory project reveals the accuracy of the simulation model.

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Urban political analysts have become increasingly interested in analyzing the relationship between public policy preferences and public policy (see for example, Hahn, 1972; Eulau and Prewitt, 1973; and Clark, 1976). However, the enormous cost of conducting public opinion surveys in a variety of communities has been a significant barrier to an adequate understanding of these linkages. Comparative state policy analysts, such as Frank Munger (1969), Ronald Weber and William Shaffer (1972), Richard Dutton (1972) and Anne Hopkins (1974), have dealt with the problem of measuring variations in public policy preferences at the state level by developing a simulation model for estimating public opinion (Weber, 1971). Unfortunately, this model has not been usable in comparative urban research because Weber's model requires specific census data which, while available at the state level, are unreported at the city level. In addition, the Weber model has been subjected to several criticisms (Seidman, 1975), which have doubtlessly deterred urban policy analysts from utilizing the technique.

The purpose of this paper is to show that a simulation model, similar to that reported by Weber, can be developed to generate fairly accurate synthetic estimates of citizen policy preferences in local politics. In part one of this paper, the importance of developing a methodology for estimating citizen preferences is discussed. In addition, a theoretical

framework is presented which suggests how citizen preferences should be included in theoretically-informed research in urban politics. In part two, procedures for deriving simulated citizen preference scores for American cities are presented. Here, modifications in Weber's simulation model are discussed which enable the generation of synthetic measures of (1) community-wide (holistic) preferences and (2) subpopulation preferences (e.g., the preferences of blacks, whites, upper-SES citizens, and lower-SES citizens). In part three, the accuracy of these estimates of both community-wide preferences and subpopulation preferences is examined. A comparison of simulated preferences with actual preferences (as measured by survey research) for the ten cities in the Urban Observatory sample indicates the validity of the simulation procedures presented in part two.

I. A THEORETICAL FRAMEWORK FOR THE ANALYSIS OF THE IMPACT OF CITIZEN PREFERENCES ON PUBLIC POLICY

The purpose of developing a simulation model which provides accurate estimates of citizen preferences is to facilitate investigations of the policy responsiveness of political officials to citizen preferences. A psychologically-plausible model of the policymaking process recognizes that public policy is directly caused by persons--their preferences, their activities, and their influence--rather than by the variety of environmental characteristics (e.g., income level, industrialization, heterogeneity) and political characteristics (e.g., party competition, form of government, level of voter turnout) which are frequently cited in the policy literature as the determinants of public policy (Jacob and Lipsky, 1968; Fry and Winters, 1970). The human inputs (and withinputs) into the policy process which can potentially affect policy decisions are numerous. One strategy

for ascertaining the most important of these inputs is to determine the extent to which public policy is responsive to various people-based stimuli. For example, research has been conducted to determine the extent to which policy in a community reflects the preferences of elected officials (Dahl and Eyestone, 1968), various permanently-organized groups or "attentive publics" (Prewitt and Eulau; 1970, Zisk; 1973, and Kernig; 1974), various "issue-specific" ad hoc groups (Prewitt and Eulau, 1970; Schumaker, 1975), the underlying but unarticulated preferences of all citizens (Shaffer and Weber, 1974), and the underlying but unarticulated preferences of various subpopulations in a political community (Schumaker and Getter, 1977).

A simple conceptual framework suggesting how policy is affected by such inputs is presented in Figure 1. What this conceptual framework suggests is that, within each community, policy decisions reflect a combination of elite concerns, group demands, and citizen preferences. The adoption of this framework directs attention to two fundamental research questions. First, the question of the relative importance of various elite inputs, group inputs, and citizen preference inputs is suggested. For example, by discovering the extent to which policy is more (or less) affected by the preferences of white citizens than by the preferences of black citizens, inferences regarding the influence of different racial subpopulations in the community can be made (this point is developed in Schumaker and Getter, 1977). Second, the question of what causes variations among cities in the extent of input-output linkages can be investigated. For example, the extent to which public policy is responsive to group demands (linkage 2 in Figure 1) is likely to vary from community to community (Zisk, 1973). Similarly, the extent to which policy is responsive to public opinion (linkage

in Figure 1) is likely to vary across communities (Verba and Nie, 1972). Still variations in responsiveness to group demands and public policies may be affected by socio-economic and political factors such as those listed under "the political context" in Figure 1. For example, responsiveness to group demands may be reduced while responsiveness to citizen preferences may be enhanced by the presence of "unreformed" governmental structures in a city (Salter and Schumaker, 1978).

There are several significant implications for using the conceptual framework depicted in Figure 1 to study linkages between citizen preferences and public policy. First, the degree of policy responsiveness to articulated citizen preferences is viewed in the conceptual framework as problematic and variable across communities. Some scholars have included "public opinion" in their analyses of the determinants of public policy because they view public opinion as a major causal factor explaining policy (Weber and Shaffer, 1972). This view is consistent with the "responsible or populist theory of democracy" developed by Anthony Downs (1957). In this theory the political system is viewed "as analogous to a pure market economy. Citizens become the only sovereigns and it is their preferences which competing candidates for public office seek to implement" (Clark, 1976-6). However, in the conceptual framework developed above, the sovereignty of citizen preferences is not assumed. Other inputs and influences may be more important than citizen preferences as critical affecting public policy. That is, in some communities, citizen preferences may be unrelated to public policy, thus suggesting the inappropriateness of the Downsian model for explaining policies in those communities. By facilitating the investigation of the conditions under which citizen preferences and public policy are

unrelated, this framework can show the conditions under which the normal theory of democracy is invalid.

Second, citizen policy preferences are not viewed in the framework depicted in Figure 1 as an additional independent variable--to be included along with various environmental and political factors--in a multivariate model of the determinants of public policy. In his critique of Weber's simulation methodology, David Seidman (1975:339-340) notes the inappropriateness of using various measures of the socioeconomic environment--such as indicators of the racial, ethnic, and class composition of communities--and simulated public preferences as independent variables in a multiple regression analyses of the determinants of public policy. The reason for this is that, as will be seen below, the simulated public preference scores are derived, in part, from analyses of these same socio-economic variables. Since the simulated preference scores are a "linear function" of the socio-economic characteristics of a community, the inclusion of both in a regression equation would produce problems of multicollinearity. The effects on policy of citizen preferences and various socio-economic characteristics "would be hopelessly confounded" (Seidman, 1975:340).

This methodological difficulty can be surmounted by ignoring either the relevant environmental variables or citizen preference variables as determinants of policy. The theoretical considerations outlined above suggest that the environmental variables, not the citizen preference variables, should be omitted. Citizen preferences can plausibly be viewed as a crucial input into the policy process which affects policy decisions. It is much less plausible that census statistics concerning "the percent black," the "percent foreign stock" and the "percent earning $10,000 annually" have a

[illegible] in policy. The impact of these environmental variables is not that they directly cause policy. Rather, their impact is that they can enhance or retard policy responsiveness to a particular set of public [illegible] and demands. For example, policy responsiveness to black preferences may be enhanced by a large black subpopulation in communities. As this illustration suggests, the socioeconomic and political characteristics of communities can best be viewed as "specification variables" which affect the degree of linkage between citizen preferences and public policy within communities (this point is further developed in Schumaker, 1976).

Third, as depicted in Figure 1, determination of the extent of policy responsiveness to citizen preferences should utilize _intra-community_ rather than cross-community analysis. In some state policy studies, the degree of responsiveness to citizen preferences has been determined by measuring both preferences and policy in an issue-area for each of the 50 states and then finding the amount of association between preferences and policy across the states (Weber and Shaffer, 1972). While this procedure generates some useful information about the overall level of responsiveness to citizen preferences across states, it does not enable the measurement of the responsiveness of particular states. If it is theoretically useful to view different communities as exhibiting measurable variations in responsiveness, then a valid procedure for measuring these variations is required. Such measures can be obtained by intra-community analyses of the relationship between citizen preferences and public policy. Suppose, for example, that a [illegible] community is responsible for allocating public funds among five functional areas (e.g., welfare, education, health, streets, and public safety). [illegible]

determining, within each community, the level of congruence between citizen priorities and public expenditures across these service areas, a community-level measure of responsiveness can be obtained (see Schumaker and Getter, 1977).

In summary, the relationships between citizen preferences and public policy can most usefully be investigated through comparable intra-community analyses. The important research question is to determine the extent to which various citizen preferences are reflected in the policies of urban governments. In the absence of direct measures of citizen preferences, simulation models which accurately estimate citizen preferences in communities can be an important research tool.

II. PROCEDURES FOR SIMULATING CITIZEN PREFERENCES IN LOCAL POLITICS

In this section, procedures are presented for simulating both community-wide (holistic) policy preferences and subpopulation preferences. When simulating holistic or community-wide preferences, the goal is to derive a community-level score indicating the percent of all citizens in the community who support a given policy. When simulating subpopulation preferences, the goal is to derive scores indicating the level of support for a given policy among each of several subpopulations (e.g., blacks, whites, upper-SES citizens, lower-SES citizens, etc.). Because the procedures for simulating subpopulation preferences involve only a minor modification in the procedures for simulating holistic preferences, it is appropriate to consider, first, the estimation of community-wide preferences.

The simulation model presented here is similar to that reported by Weber (1971) in that it is based on the assumption that political communities vary

in the extent of support or opposition that citizens give to different policies and that these variations in community policy preferences are largely a function of the demographic characteristics of the citizens comprising the community. The assumption that citizen policy preferences are, in large part, a function of the demographic characteristics of citizens has been supported by a large body of survey research (see, for example, Wilson and Banfield, 1971; Fowler, 1974; and Lovrich, 1974). The validity of this assumption allows estimates of community policy preferences to be derived from two types of data: (1) national survey data which enable a determination of the policy preferences of various demographic subgroups (these subgroups are hereafter referred to as "citizen-types"); and (2) aggregate census-type data which enable a determination of the citizen-type composition of each community. These data can be used to attain community-level holistic preference scores by utilizing the following formula:

(1)
$$C_{kj} = \sum_{i=1}^{n=56} V_{ij} \, P_{ik}$$

where C_{kj} = the simulated holistic preference score regarding policy k in community j.

V_{ij} = the proportion of community j's population composed of citizen-type i where there are n = 56 citizen-types per community (obtained from census data).

P_{ik} = the policy preference score of citizen-type i on policy k (obtained from survey data).

This formula ensures that the preferences of those citizen-types which are large in number in a community will be heavily considered in [illegible] the community preference score and those citizen-types which are limited in number or non-existent will be relatively or entirely discounted.

An elaboration of this model for simulating citizen preferences [illegible] requires a discussion of three topics: (1) the nature [illegible]

the demographic variables and categories to be used in the simulation model; (2) the procedures used in estimating the policy preferences of various citizen-types (PP_{ik}); and (3) the procedures used in estimating the citizen-type composition of each community (V_{ij}).

Selection of Citizen-types. Normally 960 citizen-types are utilized in a simulation model (Weber, 1971:19), although accurate simulations have been performed using a smaller number of citizen-types (Pool, Abelson, Popkin, 1965:28-29). In our analysis, the most accurate estimates of citizen preferences were generated by a model having 960 citizen-types defined on the following seven variables with the indicated categories.

(1) Region: (a) Northeast, (b) Rim South, (c) Deep South, (d) Midwest (e) West

(2) City Size: (a) Greater than 150,000 (b) less than 150,000

(3) Occupation of the head of the household: (a) Professional, (b) Non-labor, (c) White Collar, (d) Blue Collar

(4) Race: (a) Nonwhite, (b) White

(5) Age: (a) 20-35, (b) 35 and over

(6) Ethnicity: (a) Foreign stock, (b) Yankee

(7) Family Income: (a) less that $5000, (b) $5000-$10,000, (c) over $10,000 per year

A full justification for the selection of these particular variables and categories is beyond the scope of this paper. For present purposes, it should simply be noted that the selection and categorization of the region, occupation, race, and age variables correspond to those of Weber (1971:18-23). As in Weber's analysis a "size-of-place" variable is used, but different categories are adopted for our model; because of our interest in urban rather than state populations, a "rural" size of place category is not useful for our

[illegible]. Thus, only two categories of size of place—[illegible] and under 150,000—were considered. Two other variables which were [illegible] by others, religion and sex, are not used in our delineation of [illegible]. Sex was omitted from the model for theoretical reasons. Although it is certainly plausible that there are significant differences between men and women regarding certain policy preferences, there is no reason for expecting significant variation in the sexual composition of communities. Thus, sex is not a useful variable in a model which differentiates communities in regard to policy preferences. Religion was excluded from the model because of considerations of measurement. Census data are not available which give the religious composition of communities. Data collected by the National Council of Churches, which are frequently used to indicate the religious composition of communities, were avoided because they were obtained by procedures considerably less accurate than those of the Census Bureau, because they are reported by S.M.S.A. rather than municipality, and because they were collected in 1957.

Instead of the sex and religion variables, ethnicity and [illegible] were used in our model. The importance of the ethnic composition of communities as a key variable for understanding urban politics has been much discussed in the ethos theory literature. Although the general validity of the ethos theory is still subject to question, a good deal of evidence has been gathered which demonstrates that first and second generation Americans frequently have different policy preferences (see [illegible] Wilson and Banfield, [illegible]). Thus, the inclusion of the ethnicity variable increases the accuracy of the estimates of citizen preferences provided by the simulation model.

income level has been incorporated in our model because of the large body of literature which argues the importance of class as a variable affecting citizen's political attitudes. For instance, Floyd Fowler (1974) has examined Urban Observatory data to show that there are important policy preference differences among different income classes. These class differences are partially captured by the occupational variable already in the model, but because of the amount of status inconsistency which exists among the American population, it is useful to include the level of income variable as well.

This selection and categorization of demographic variables results in 960 possible citizen-types (5 x 2 x 4 x 2 x 2 x 2 x 3= 960). To illustrate, one citizen-type would be Midwesterners, living in central cities, who are professionals, white, greater than 35 years old, native-born, and earning over $13,000 annually. Because the five category region variable and two category community size variable are constants in each community, the greatest possible number of citizen-types in any particular community is 96 rather than 960. For example, 96 citizen-types in Milwaukee are all midwesterners living in cities over 150,000 having various combinations of the categories of the five remaining defining variables (96 = 4 x 2 x 2 x 2 x 3).

Estimation of the Policy Preferences of Various Citizen-Types. In order to estimate the policy preferences of each of the 960 citizen-types under consideration, Weber utilized what is called "an additive method" to analyze national public opinion surveys. Using this procedure the preference score of each citizen-type is a function of how the preferences of the categorical sub-groups which define each citizen-type depart from the national

[illegible] individual's preference score for any policy [illegible] policy K is obtained by the following formula:

$$(2) \qquad pp_{ik} = \bar{k} - \sum_{j=1}^{7} \frac{}{} (k_{ij} - \bar{k})$$

where pp_{ik} = the policy preference score of citizen-type i on policy K.

$\bar{k}$ = the national average preference score derived from a national survey.

k_{ij} = the preference score of subgroup w, where there are seven subgroups defining each citizen-type.

In order to illustrate this procedure, suppose that 60 percent of the voters favored increased spending on welfare (thus $\bar{k}$ = 60.0) but further suppose that cross-tabulation analysis reveals that the following categorical groups have preferences regarding welfare spending, K, as follows: (a) for Midwesterners, K=50.0 (meaning 50 percent of all Midwesterners favor increased welfare spending); (b) for persons living in large cities, K = 70; (c) for professionals, K = 30; (d) for those over 35 years of age, K = 55; (e) for whites, K = 55.0; (f) for natives, K = 63; and (g) for those earning incomes over $10,000, K = 28.0. The preference score for hypothetical citizen-type in large cities who are professionals, over 35 years old, white, Midwestern, and have a high income would be 24.0 [pp_{ik} = 60 - (50-60) - (70-60) - (30-60) - (55-60) - (55-60) - (63-60) - (28-60)]. Although this [illegible] Huber's methodology has been subjected to recent criticism, the [illegible] method is one adaptor to our simulation model.[1]

The Dissemination Sensitivity of Each Formula. A major barrier to the creation of Webber's simulation model for estimating citizen preferences in cities is that, unfortunately, the [illegible] of the [illegible] some demographic breakdowns in such a way that the number of persons in [illegible] to communities in [illegible] accurately, for example, ...

census does not report the number of White professionals under thirty-five years of age who are "Yankees" and earn an income over $10,000. What is reported in the census data on communities is the number (and sometimes percentage) of persons in each category of each of the five defining variables. Ann Schneider (1972) encountered a similar problem when she attempted to measure the citizen-type composition of counties. She resolved the problem by assuming independence among the variables which define the various citizen-types. This enabled her to calculate the citizen-type composition by using the following type of formula:

$$(3) \qquad (V_{ij})' = M_{1j} \cdot M_{2j} \cdot M_{3j} \cdot M_{4j} \cdot M_{5j}$$

Where $(V_{ij})'$ is the estimated percentage, assuming independence, of community j of citizen-type i; and

M_{1j} to M_{5j} are the percentages (obtained from census data) of each community j in the appropriate category of each of the five defining variables (M_1 to M_5).

For example, if Milwaukee is fifteen percent professional (M_1 = .15), twenty percent nonwhite (M_2 = .20), sixty percent over thirty-five years old (M_3 = .60), seventy-five percent native (M_4 = .75), and twenty percent low income (M_5 = .20), it is assumed that (.15) (.20) (.60) (.75) (.20) = .27 percent of Milwaukee is composed of nonwhite professionals over thirty-five years who are natives and earn less than $5000 income. This assumption of independence is, as Schneider points out, obviously unrealistic. Income levels, for example, are not equally distributed between whites and nonwhites in the manner assumed by Equation 3.

In order to take into account the interrelationships among the demographic variables, and thus obtain a more accurate estimate of the actual citizen-type composition of each community, an elaborate method of estimating voter-types

...developed by Mosley (1968) and adopted by Weber. It is not necessary to describe this method here because Salomon has recently argued that in the final analysis, the Weber-Mosley technique fails to yield the desired results. According to Salomon (1973:1134):

> Simulated public opinion in a state is equal to a constant term, plus the proportion of the state's population that has a certain characteristic times the mean preference of the subgroup defined by that characteristic, plus the proportion that has a second characteristic, times the mean preference of the subgroup defined by that one, etc. For example, the proportion that is white times the white preference, plus the Catholic times the Catholic preference, etc. (Salomon's types and their associated proportions have disappeared from the equation; they have been replaced by subgroups (each defined by a single characteristic) and their associated proportions. (Emphasis added.)

In short, Salomon's criticism of the Weber-Mosley procedure for estimating the community preference scores is that it ultimately fails to take into account the interrelationships among the demographic variables under study, the ethnic-type composition of a community. In the final analysis, such technique is no better than the simpler procedure developed by Sprague. In both cases, the faulty assumption of independence among the demographic variables prevails.

It is therefore desirable to modify Weber's simulation technique in order to yield estimates of the ethnic-type composition of communities which take into account the interrelationships among the demographic variables. In our model a procedure has been developed for accomplishing this objective. The first section is used to obtain a first approximation of the ethnic composition of each community. Then these initial estimates are refined on the faulty assumption of independence among demographic variables are "corrected".

The basic notion behind this correction procedure is that it is possible to use national survey data in order to determine the empirical relationship among the five demographic variables; these inter-relationships can then be taken into account when estimating the citizen-type composition of each community. The procedure for determining inter-relationships among the variables is to examine a number of citizen surveys and sort each respondent on the five variables so that each would be placed in one of the previously discussed 96 citizen-types. By sorting tens of thousands of respondents to a large number of national surveys into these 96 citizen-types, it is possible to get a fairly reliable estimate of the national percentage of each citizen-type.

The estimates of the national percentage of each citizen-type can then be used in conjunction with the originally obtained estimates (which are based on the assumption of independence) of the citizen-type composition of each community $(V_{ij})'$ to obtain a "correction factor" for each citizen-type. This correction factor (W_i) is defined by Equation 4.

$$W_i = \frac{U_i}{\left(\sum_{j=1}^{n} V_{ij}'\right)/n} \tag{4}$$

Where W_i = a correction factor used in estimating the citizen-type composition of communities,

U_i = the actual percentage of the nation of citizen-type i as ascertained from national surveys,

$(V_{ij})'$ = is the original estimate, assuming independence, of the percentage of community j which is of citizen-type i,

n = the number of communities under investigation.

The logic of this correction factor can perhaps best be demonstrated by an illustration. Consider the following citizen-type: White professionals

[illegible] of [illegible] who are natives and earn less than $5,000 [illegible] [illegible] by assuming independence among the five defining variables, [illegible] estimated that on the average, [illegible]% of each community was of this citizen-type (although there is considerable community-to-community variation [illegible] this model). Further, suppose that the analysis of national surveys [illegible] that 2.0% of all persons are of this citizen-type. Such results would lead one to suspect that the assumption of independence leads to an [illegible] estimation, by a factor of [illegible], of the actual percentage of this citizen-type in each community. The use of Equation [illegible] would result in [illegible] factor, W_i, equal to [illegible]. The initial estimate of the percentage [illegible] [illegible] this citizen-type, which was obtained by assuming independence [illegible] [illegible] be divided by, this correction factor. [illegible] the [illegible] citizen-type percentages in [illegible] [illegible] [illegible] following formula:

(2) $$(P_{ij})'' = W_i (P_{ij})'$$

Where $(P_{ij})''$ = [illegible] corrected estimate of the percentage of community j which is citizen-type i [illegible]

W_i = correction factor for each citizen-type [illegible]

$(P_{ij})'$ = the original estimate, assuming independence, of the percentage of community j which is of citizen-type i.

It is our assumption that $(P_{ij})''$ better estimates the citizen-type [illegible] of each community than does $(P_{ij})'$.

A second, more technical, correction is also made [illegible] [illegible] of the citizen-type composition of communities (P_{ij}). [illegible] correction factor, it is possible that for each city the [illegible] types $(P_{ij})''$ do not sum to exactly 100%. Because (P_{ij}) [illegible]

we adjust each "corrected estimate" of the frequency of each citizen-type per community to meet this requirement. This final estimate of the citizen-type composition of each community (V_{ij}) is obtained using the following formula:

$$(6) \qquad V_{ij} = \left[\frac{1.00}{\sum_{i=1}^{96} (V_{ij})''}\right] \cdot (V_{ij})''$$

Where V_{ij} = the final estimate of the proportion of community j which is of citizen-type i, and

$(V_{ij})''$ = is as in equation 5.

Thus if in community j, the corrected estimates of the 96 citizen-types summed to .90, each $(V_{ij})''$ would be multiplied by 1.11 (since 1.00/.90=1.11) to obtain final estimates of V_{ij}.

In summary, procedures have been presented for estimating the citizen-type composition of communities (V_{ij}) and the policy preferences of each citizen-type (PP_{ik}). These measures of preferences and community composition are then inserted in Equation 1 (above) to estimate public policy preferences in a variety of communities.

The Preferences of Various Subpopulations. It should be noted that Equation 1 produces a public preference score for each community which takes into account the preferences of all types of citizens. In other words, Equation 1 can be used in order to get measures of holistic citizen preferences in a community. However, it is also desirable to disaggregate holistic citizen preferences into the preferences of various subpopulations. The goal of such disaggregation procedures is to obtain a score for each community of the preferences of the high-status, low-status, black, white, etc. subpopulations. As suggested in the Theoretical Framework section, such scores

can be useful for ascertaining differential levels of responsiveness to various racial and other subpopulations in communities.

The policy preference scores for different subpopulations in a community can be calculated using a relatively simple procedure. As in the simulation of holistic citizen preferences, the data regarding the citizen-type composition of each community and the preferences of each citizen-type are used in conjunction with Equation 1. However, Equation 1 is modified so that it is not used to add up the preferences of all citizen-types in each community. Instead only those citizen-types which are defined by the subpopulation characteristics under consideration are taken into account. For example, if one wants to get a score for black preferences in a community, one would take into account only the appropriate 40 black citizen-types defined in the model. This procedure is formalized by Equation 7.

$$(7) \qquad B_{kj} = \sum_{i=1}^{n(i=40)} (V_{ij})(CP_{ik})$$

Where B_{kj} = the simulated preference score for blacks (B) regarding policy k in community j,

V_{ij} = the proportion of community j's population composed of black citizen-type i where there are n(i) black citizen-types in each community (although there are [illegible] black citizen-types in all states of different sizes and in different regions),

CP_{ik} = the policy preference score of black citizen-type i on policy k.

The appropriate substitutions in Equation 7 enable estimation of the preferences of subpopulations other than blacks for communities.

It should be noted that the estimates of subpopulation preferences obtained from Equation 7 are only appropriate for the types of *intra-community* analysis suggested in the Theoretical Framework section; they ...

not appropriate for cross-community analysis. This point can perhaps be best conveyed through an illustration. Equation 7 can be used to obtain estimates of black support for increased spending in each of a number of service areas (e.g., education, welfare, highways, etc.) within a community. The scores obtained from Equation 7 will depend on both (1) the extent to which various black citizen-types prefer each policy, and (2) the proportion of the community which is composed of black citizen-types. Because the black citizen-type composition will be constant within a community, variances in black preference scores will simply reflect variation in black preferences. Thus Equation 7 allows researchers to obtain a ranking of black policy priorities within each community.

However, Equation 7 does not generate equivalent scores of black preferences on a particular policy (e.g., increased welfare spending) across communities. Because B_{kj} is partially dependent on the number of blacks in a community, communities with a large proportion of blacks would show higher black support for increased welfare expenditures than would communities with small black populations. In short, in cross-community analysis, the size of a subpopulation rather than the preferences of the subpopulation would account for much of the cross-community variation in subpopulation preference scores.

III. A VALIDATION TEST OF THE SIMULATION MODEL

In attempting to validate his simulation model, Weber (1971) simulated the Democratic vote for president in various years and compared these estimates with the actual Democratic vote in the 50 states. He found the simulated voting outcomes were strongly correlated with the actual voting

[illegible] for those models which he rejected. Such results are surprising because they support the methodological accuracy of his model and they show that at least some political behaviors (i.e., voting) can be predicted with a high degree of accuracy using simple demographic variables. However, Weber's model has been criticized on the grounds that he has failed to know that public policy preferences can also be predicted with a high degree of accuracy using demographic variables (Sullivan, 1976). In principle, it has been suggested that citizen preferences are, or least in part, a result of specific, perhaps idiosyncratic, conditions which cannot be quantified. For example, two cities having identical demographic characteristics are likely to have different distributions of public policy preferences if the people in the two cities perceive different issues or if citizens in the two cities have different policy concerns. In short, if public policy preferences are highly influenced by "specific conditions" which cannot be quantified, estimates of public preferences derived from the simulation model are likely to be inaccurate. For this reason, it is necessary to test the validity of the simulation model by correlating simulated preferences with actual preferences in a variety of communities. Only if simulated preferences correlate highly with actual preferences would one have confidence in the validity of the synthetic estimates of public opinion derived by the simulation model.

The validity of the simulation model reported here was tested by correlating simulated public preference scores with actual citizen preferences in ten large cities sampled in the 1976 Urban Observatory citizens survey (for a discussion of this survey, see Fowler, 1977). Between approximately 400 to 600 citizens were selected by random sample in each of ten cities. The urban observatory

project provides fairly reliable measures of the actual distribution of citizen preferences within cities.

Specifically, our strategy for determining the validity of the simulation model involved three steps. First, the urban observatory data were analyzed to determine citizen preferences regarding municipal spending priorities for each of the ten cities in the project. In this part of the analysis "forced-response" questions were analyzed which asked citizens if they preferred that their cities "spend more, spend less, or spend the same" on each of sixteen service areas. By subtracting the percentage of respondents who wished to "spend less" from the percentage of respondents who wished to "spend more" in each service area, measures of "actual", or observed, citizen preferences in each city were obtained for the following service areas: education, police protection, health, low-income housing, air pollution control, public transportation, expressway construction, welfare, traffic control, street lighting, street maintainence, park maintainence, teen-age recreation facilities, sanitation, housing inspection, and drug treatment. In a similar fashion, measures were obtained of "actual" preferences in the same service areas for the following subpopulations within each community: whites, blacks, lower-income persons (those having annual family incomes of less than $10,000), high-income persons (those have family incomes of $10,000 or more), immigrants (first or second generation Americans), and Yankees (persons who were born in America and whose parents were both born in America). This part of the analysis yielded measures of "actual" holistic and subpopulation preferences that could be used as standards against which simulated preference scores could be compared.

Second, the urban observatory sample was treated as a national survey, providing data regarding citizen-type preferences which were used in the simulation model. In this phase of the analysis, the spending preferences of over 4200 respondents to the Urban Observatory survey were related to the demographic variables listed above in the "Selection of Citizen Types" section. In short, the urban observatory data were analyzed as a national sample to determine the policy preferences of various citizen types (P_{ij}) and to thus derive simulated estimates of political and administrative preferences.[2]

Third, for each of the ten urban observatory cities, the simulated citizen preference scores were correlated with the actual citizen preference scores over the sixteen spending areas under consideration. In other words, the spending priorities of citizens, as revealed by the simulation model, were correlated with the spending priorities of citizens as revealed by direct survey research, to determine the accuracy of the simulation technique. Two measures of association are reported in Table I: (1) Pearsonian zero-order correlation coefficients, and (2) Spearman's rank-order correlation coefficients.

The results suggest the validity of the simulation model. In each city, simulated priorities of all citizens are highly correlated with the actual priorities of all citizens (the mean r = .89). The Pearsonian correlation coefficients which measure this association are slightly stronger than the Spearman rank-order coefficients. This is due to the existence of a few "extreme cases" in our analysis. Expressway construction and housing inspection were revealed to be much less popular than other service areas by both the simulation model and direct measurement of public preferences. By

inclusion of these cases perhaps artificially enhances the Pearsonian correlation coefficients relating simulated and actual citizen priorities. However the Spearman coefficients are also impressively strong. This suggests that the simulation model accurately rank-orders citizens priorities even when the variation in citizen preferences among service areas is small.

The results also show that the simulation model generates accurate estimates of subpopulation preferences. In general, the results in Table 1 suggest that simulated subpopulation priorities are as accurate as simulated holistic priorities. In only a few cases did simulated subpopulation priorities diverge significantly from the subpopulation priorities which were revealed by direct survey research. In Denver, black simulated priorities were only moderately related to black observed priorities (Spearman r = .51). And in Nashville and Kansas City, Kansas, immigrant simulated priorities were only moderately related to immigrant observed priorities (Spearman's r = .79 and .62 respectively). Yet, it might be premature to conclude that the simulation model was in error in these cases. Indeed, the problem may reside in the "actual" or observed preferences series. In each of these cases, relatively few citizens in the subpopulations under investigation were sampled (in Denver, 23 blocks were sampled; in Kansas, 15 Mexicans were sampled, and in Nashville, 17 immigrants were sampled). With such few respondents in these cases, it may be that our simulated preferences scores are more accurate than the observed preference scores. In any event, these few cases where simulated preferences were only moderately related to "actual" preferences do not seem to distract from the more general result revealed in Table 1: the simulation model presented in this paper results in synthetic estimates of public preferences which appear to be accurate and reliable.

SUMMARY

This paper has been concerned with procedures for simulating community-level scores of citizen policy preferences. The basic methodology utilized in this simulation model has been developed and found useful by persons working in a variety of policy-related research fields (Public Health Service, 19[illegible]; [illegible], Levy, and [illegible], 19[illegible]; Pool, Abelson, and Popkin, 19[illegible]; and [illegible], 19[illegible]). The argument has been made that this method can be equally useful to urban policy analysts concerned with describing and explaining the policy responsiveness of urban officials to citizen preferences.

An attempt has been made to contribute to the literature on the simulation of public preferences in a number of ways. First, a set of procedures have been presented which, for the first time, enable the measurement of holistic public preferences at the community level. Minor modifications in the model would also enable estimation of citizen preferences in other sub-state political jurisdictions (e.g., counties and congressional districts). Second, a procedure was presented for deriving synthetic estimates of the preferences of various subpopulations within communities; previous uses of the simulation method have not recognized the feasibility of disaggregating holistic preferences scores into subpopulation preference scores. Third, a "theoretical" perspective on the proper use of simulated citizen preference scores has been presented which avoids many of the limitations and difficulties of previous uses of synthetic estimates of public preferences. In this regard, it was suggested that simulated preferences should be related to actual policies <u>within</u> communities to get measures of variations in the [illegible]

of responsiveness to various citizen preferences for cities. Finally, the accuracy of the simulation model for generating estimates of citizens' policy priorities for intra-community analyses was established. It appears that the simulation model presented in this paper can be used to estimate citizen policy priorities within communities. These estimates can be used, in turn, in further research on the responsiveness of local policymakers to citizen preferences.

FOOTNOTES

[1] David Seidman has recently critiqued Weber's additive method because it "assumes that the defining characteristics do not interact: a given voter-type's preference [is assumed to be] an additive function of the separate effects of each particular defining characteristic" (Seidman, 1975:333). As a result, Weber's procedures cannot take into account possible interaction effects among the demographic variables in their impact on citizen preferences. Nor can this procedure control for possible spurious relationships between particular demographic variables and citizen preferences. Although Seidman has correctly pointed to certain limitations in Weber's procedures, the question arises concerning the extent to which those limitations are damaging to the accuracy of the resulting estimates of public preferences. If the adoption of the additive method results in imperfect but nevertheless quite accurate estimates, and if alternative methods are either exceedingly complex or non-existent, then the technical problems associated with the additive method can be dismissed as being of little importance.

[2] This procedure introduces a small amount of contamination into our validation test (Hyman, 1955:179-184). Approximately one-tenth of our "national sample" resides in the cities for which we are generating specific areas of public preferences. Thus the preferences of these citizens both affect our simulated scores and comprise the standard by which the accuracy of these simulated scores is tested. Somewhat weaker relationships between simulated and actual preferences may be expected if a truly national sample were used in the simulation model. Unfortunately, no existing national survey contains questions regarding citizen's policy preferences which are equivalent to those in the urban observatory survey.

Figure 1

A Conceptual Framework Facilitating Descriptions and Explanations of Variations in the Linkages Between Various Inputs and Public Policy

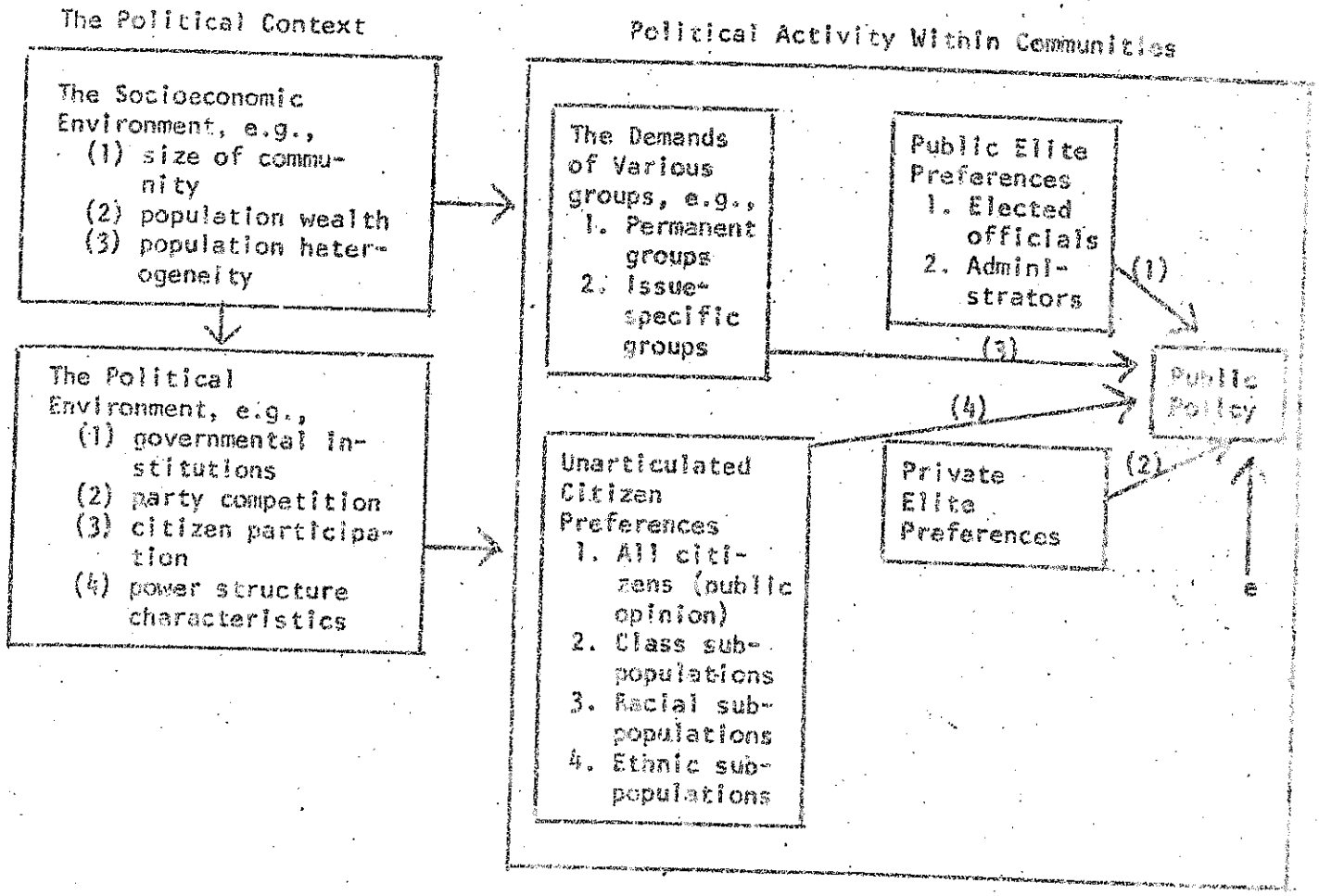

Table 1

Correlations Between Observed Priorities and Simulated Priorities over 16 Spending Areas in 10 Urban Observatory Cities

	All Citizens	Whites	Blacks	Yankees	Immigrants	Lower Income Persons	Higher Income Persons
Boston	.88[a] (.85)	.88 (.83)	.95 (.91)	.92 (.89)	.92 (.89)	.92 (.77)	.93 (.80)
Baltimore	.88 (.86)	.90 (.71)	.98 (.87)	.85 (.81)	.82 (.86)	.93 (.82)	.92 (.82)
Milwaukee	.85 (.81)	.87 (.77)	.91 (.84)	.87 (.77)	.86 (.88)	.89 (.80)	.92 (.82)
St. Louis	.88 (.86)	.88 (.79)	.86 (.98)	.88 (.86)	.72 (.63)*	.86 (.75)	.90 (.88)
San Francisco	.93 (.92)	.93 (.93)	.91 (.95)	.92 (.95)	.81 (.86)	.95 (.82)	.93 (.92)
Atlanta	.93 (.88)	.85 (.85)	.96 (.90)	.93 (.90)	.85 (.79)	.95 (.86)	.93 (.94)
Houston	.87 (.88)	.86 (.86)	.95 (.94)	.87 (.85)	.67* (.70)	.94 (.78)	.95 (.93)
Denver	.92 (.87)	.93 (.85)	.84 (.82)*	.93 (.89)	.86 (.93)	.92 (.77)	.90 (.89)
Albuquerque	.87 (.87)	.88 (.87)	.86 (.75)	.88 (.87)	.87 (.80)	.88 (.70)	.91 (.76)
San Diego	.86 (.76)	.91 (.83)	.82 (.74)	.91 (.86)	.85 (.75)	.92 (.72)	.86 (.88)
Pearson r	.89	.89	.90	.90	.83	.97	.90
Spearman r	.85	.82	.85	.86	.81	.77	.86

[a] These Pearson correlation coefficients indicate the degree of association between (A) the priorities of (sub)populations in each urban observatory city over 16 policy areas as revealed by the 1970 Urban Observatory citizen survey and (B) the priorities of (sub)populations in each city over the same 16 policy areas as measured by the simulation model. The figures in parentheses are the Spearman's rank-order correlation coefficients indicating the degree of association between these measures.

* All correlations in the table are significant at the .01 level, except those indicated by an asterisk, which are significant at the .05 level.

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