# A Mixed Methods Approach to Evaluation of Large Scale Participatory Processes

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## Abstract

Evaluation is critical to understanding how participatory processes work and how they can be structured to maximize the benefits of stakeholder and decision maker collaboration. This presentation provides a framework for evaluating stakeholder involvement in decision making in science and technology. Specifically, the following topics are covered: 1) the importance of incorporating program evaluation in processes that involve participation in decision making; 2) a review of models for evaluating participatory processes; 3) a new model for evaluating stakeholder involvement that incorporates a mixed method design; and 4) the advantages of a mixed model evaluation approach to inform the field about the types of participatory processes that work best for particular stakeholders, issues, and desired outcomes. The mixed methods model was used to evaluate the Public Engagement Pilot Project for Pandemic Influenza, an effort to involve citizens and stakeholders in policy decisions regarding vaccine distribution in the United States. Using this example, the authors describe how the mixed methods framework was used to jointly identify the evaluation questions with stakeholders and partners, select qualitative and quantitative measures, determine appropriate analyses, and effectively communicate results to decision makers and stakeholders. The implications for evaluating other public and stakeholder engagement processes are discussed.

## Summary Paper

The Public Engagement Pilot Project for Pandemic Influenza was initiated by the Centers for Disease Control and Prevention, U.S. Department of Health and Human Services to engage citizens and stakeholders in a discussion about prioritization of vaccine distribution in the event of an influenza pandemic. In this summary paper, we present the process used to design and conduct the program evaluation and selected results to illustrate this process. The evaluation of this project is important from three perspectives: First, the results can help inform persons in the public health field interested in engaging citizens in discussions about important policy issues; the evaluation can help answer the question whether obtaining citizen and stakeholder input adds value to important public health decisions. Second, the evaluation results may be useful for persons who study public engagement processes; the evaluation is a case study of one type of citizen deliberation process applied to a public health topic and can yield important lessons for other citizen participation efforts. Finally, the evaluation process is important to program evaluators interested in assessing participatory processes. It is this latter perspective that is the focus of this paper.

### PEPPPI

The Public Engagement Pilot Project on Pandemic Influenza (PEPPPI) was conducted from July through October 2005, and the final report was issued in December 2005 (see http://ppc.unl.edu/publications/documents/PEPPPI_FINALREPORT_DEC_2005.pdf). The purpose of this project was to involve citizens and stakeholders in policy decisions about the public response to pandemic influenza. The premise of the engagement process was that in the

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event of a pandemic, there would be a shortage of influenza vaccine, and decisions would have to be made about which categories of people to vaccinate first. This was the first major effort by federal policy makers to obtain citizen input on vaccine distribution.

The process used for the participatory process included both stakeholders and citizens in a unique sequence. First, organizers held a two-day framing conference for about 50 stakeholders representing health professionals, consumer advocacy groups, vaccine manufacturers, scientists, state representatives, and federal policy makers. Participants were provided information about pandemic influenza and led through a discussion of ethical dilemmas involving value decisions. At this meeting, stakeholders began discussing priorities for vaccine distribution and the impact on different groups. The next phase of the project involved approximately 100 citizens in Atlanta Georgia; during this one-day meeting, participants were provided with background information, engaged in an ethics discussions, deliberated about vaccine distribution in small groups, and developed recommendations through consensus as a large group.

The next step in the process was to bring the citizen results back to the stakeholder group. In addition, two of the citizens from the Atlanta deliberations attended the stakeholder meeting. Incorporating information from the citizen deliberation, the stakeholders developed initial recommendations. These recommendations were presented at three citizen feedback sessions in Massachusetts, Nebraska, and Oregon. These half-day feedback sessions were attended by about 150 citizens. As with the Atlanta citizens and stakeholder sessions, citizens in the three states were provided with information about pandemic influenza. They were then asked to discuss the recommendations in small group deliberations followed by a larger group process.

The final report incorporated the input from all of the citizen and stakeholder sessions. The vaccination priorities developed through this series of participatory processes were to first assure the functioning of society and second to reduce individual deaths and hospitalizations due to influenza. The recommendation was to use the minimum number of doses to achieve the first goal and then to distribute the remaining vaccine to achieve the second goal.

## PEPPPI Evaluation

Conference organizers believed it was important to evaluate the process and engaged the University of Nebraska Public Policy Center and Practicum Unlimited from Toronto, Canada to conduct the evaluation. The evaluation addresses the following major project issues and goals:

1. Participation and recruitment issues:
    a. Goal: Attract citizens to participate in the process in four locations: Georgia, Massachusetts, Nebraska, and Oregon.
    b. Goal: Recruit participants who reflect a diversity of perspectives, and demographic characteristics such as age, gender, race/ethnicity, and education.

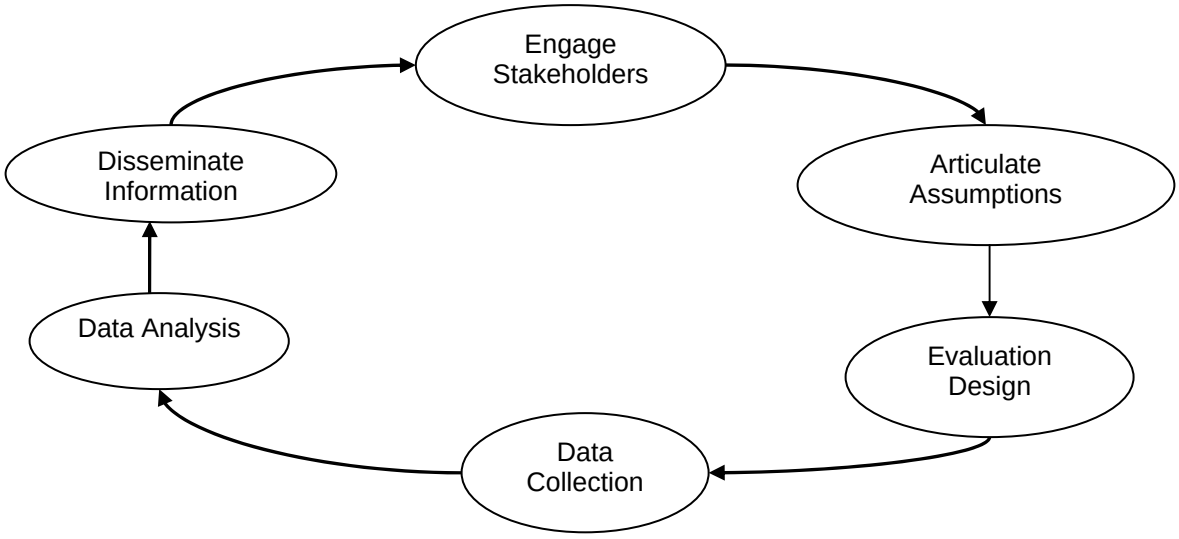
2. Process issues:
    a. Goal: Provide information to participants so they have sufficient knowledge about pandemic influenza to adequately consider and discuss the issue of the prioritization of pandemic influenza vaccination for sub-populations (e.g., children, elderly, health care workers, etc.).
    b. Goal: Design and implement a process that promotes a balanced, honest, and reasoned discussion of the issues while respecting diversity of views.
    c. Goal: Provide a forum for citizens to deliberate and consider multiple points of view. The evaluation tests the assumption that deliberation affects the opinions and judgments of participants related to prioritization of pandemic influenza vaccination.

3. Product issues:

a. Goal: Citizens contribute useful information for the stakeholder deliberations and stakeholders consider and integrate citizen input into their recommendations.
b. Goal: Citizen and stakeholder input receives serious consideration by decision makers and adds value to the input already being received from expert groups. A key aspect of the evaluation is to understand how citizen and stakeholder input is used by decision makers in establishing pandemic influenza vaccination priorities.

4. Additional outcome issues:
    a. Goal: Citizens are satisfied with the process and believe their input will be considered by decision makers.
    b. Goal: As a result of the process, the relationships among participating stakeholders improve.

The evaluation involved a participatory process. The following graphic illustrates this process. Stakeholders are engaged early in the process to articulate the goals for the project and the participatory process to achieve those goals. The assumptions underlying the goals and the process form the basis for the evaluation questions. The stakeholders are also involved in the evaluation methodology, data collection procedures, and the interpretation of the results.




## Mixed Methods Approach

A number of evaluation frameworks have been proposed for evaluation of processes that engage stakeholders in science and technology decisions (e.g., Beierle, T. C., 1998; Rowe, Marsh., 2004; Rowe & Frewer, 2004; Israel,Schulz et al., 2004). Many of these frameworks have promoted the use of quantitative and qualitative information, but existing evaluation models have not clearly articulated a coherent approach for combining both types of data in evaluation design. This paper builds on past evaluation frameworks that advocate shared, clear definitions of 'effectiveness' of the participatory process prior to choosing evaluation tools and methods. These definitions can be used to construct an evaluation design and guide choice of tools and methods in the evaluation design.

Drawing from the literature of mixed methods research (Creswell, 2002) we propose a structure for thoughtfully structuring evaluation design using qualitative and quantitative approaches. This mixed methods evaluation approach not only incorporates the advantages of quantitative methods (e.g., ability to compile and summarize large amounts of information) and the advantages of qualitative information (e.g., capturing the unexpected; richness in explanation), it

creates a systematic way to explore, explain, and verify evaluation results. Using a mixed methods framework creates opportunities for evaluators to systematically plan data collection and analysis strategies. This facilitates incorporation of a large number of evaluation questions into the study design.

The scale of PEPPPI (with regard to geography, diversity, and scope) and multiple research questions were made manageable in evaluation through thoughtful construction of research methodology that reflected the overall purpose of the project. The evaluation included both exploratory and explanatory designs with concurrent and sequential data collection and analysis. Several key methodological design decision points are posed to guide evaluators. This includes determining the level at which data is mixed, or combined, the intended use of results, and the sequencing of collection and analysis. Data collection and analysis for purposes of triangulation, or verification can be enhanced through thoughtful positioning of methods. This is particularly useful in large scale participatory approaches involving multiple research questions. The complexity of the evaluation is made simple through graphic representation of the schema used to guide the methodology choice. This aids communication and participation of partners and stakeholders throughout the process and enhances credibility of results. This mixed method evaluation framework offers a way to design rigorous, meaningful evaluations of participatory approaches that will be useful to stakeholders, practitioners, and decision makers.

The acceptance of participatory approaches to guide the involvement of society in decisions related to developments in science and technology is more likely if its use is also grounded in rigorous research. Integrating evaluation with methodologically sound research practices will establish a firm scientific basis for practitioners to use participatory processes as a regular and meaningful part of policy development. Just as participatory processes serve as a bridge between the public and decision makers, sound methodological choices can span the gap between evaluation and research.

## Evaluation Design

To assess change in knowledge, we employed a repeated measures survey administered to all citizen groups and to the stakeholders. This component of the survey was designed to assess whether the information disseminated to citizens and stakeholders actually improved their knowledge about pandemic influenza and whether participants had a sufficient level of knowledge to engage in informed deliberation. We also used a non-equivalent control group of citizens involved a participatory process unrelated to pandemic influenza; a comparison between the PEPPPI citizens and the control group was used to determine if citizens who volunteer to engage in deliberations about a particular topic, begin the process with a higher level of knowledge about the topic than average citizens. This hypothesis was developed through observations that citizens engaged in the PEPPPI process were more likely than other citizens to be interested in the topic, have read information about pandemic influenza prior to attending the meetings, and to be a health care professional. We also used a qualitative process to assess knowledge. We conducted individual interviews with citizens, stakeholders, expert observers, and process facilitators about their perception of knowledge change for the Atlanta citizens and the stakeholders.

To assess the diversity of participants, we compared the demographic characteristics of participants in the four citizen deliberations to the demographics of the general population in each community. We supplemented the quantitative analysis with open-ended interviews administered to citizens. We assessed the quality of the process through both quantitative and qualitative methods. A post process questionnaire was administered to citizens and stakeholders to assess perceptions about the fairness of the process, whether there was adequate time to deliberate, and the comfort level of participants to share ideas. The quantitative analysis was followed by qualitative interviews with citizens, stakeholders, expert observers and process facilitators.

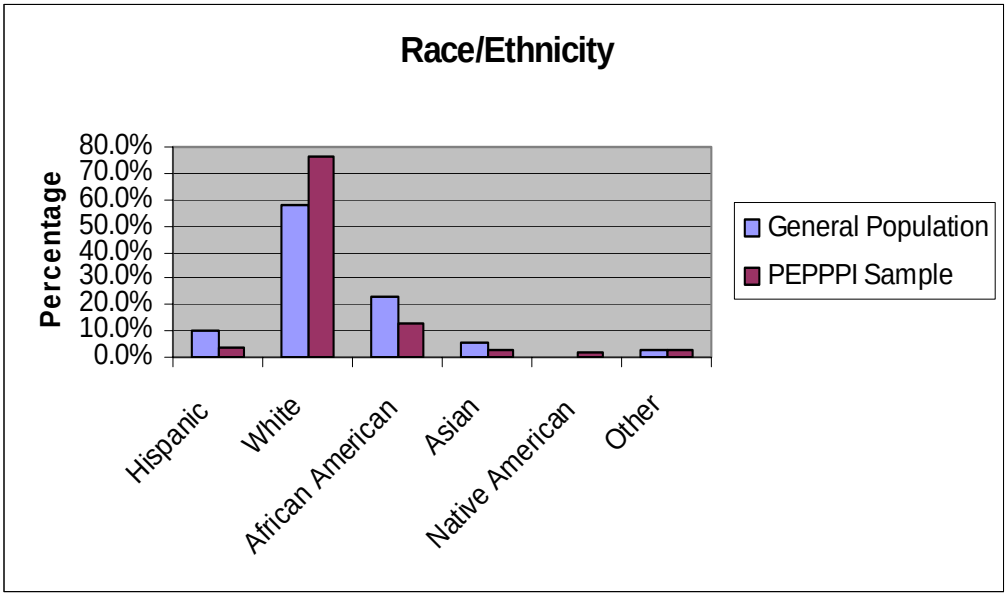
We assessed change in attitudes about values, goals, and priority populations related to vaccine distribution through a pre-post survey administered prior to the deliberations and again after

deliberations. We also assess perceptions of change through post-deliberations interviews with citizens, stakeholders, observers and facilitators. Citizens and stakeholders were asked their perceptions about how they thought their input would be used by policy makers through a quantitative survey and qualitative interview. Stakeholders were asked their perceptions about how useful the citizen input was to their deliberations through individual interviews. The methods for assessing policy impact included two approaches: a document review to determine how policy documents referred to the deliberative process and interview with policy makers to assess how decisions were made and how PEPPPI might have influenced those decisions.

## Results

Although a full discussion of the results is beyond the scope of this paper, we will highlight some of the findings to illustrate the evaluation methodology. With regard to diversity of the citizen groups, the demographic analysis indicated that there was diversity in all four groups, although certain groups were underrepresented in comparison to the demographics of the community (see Table 1). For example, PEPPPI participants were more likely to be white, older, female and have higher education levels compared to the general population. The perception of observers and citizens indicated that participants represented a diversity of views and perspectives, although these respondents noted the lack of participation by historically disenfranchised persons such as racial minorities and the poor. As stated by one citizen from the Atlanta session, “I think it represented a diverse mix of middle, upper class people. I don’t think you got lower class vulnerable populations.” The ranking of values and goals on the pre-test surveys also indicated a diversity of views by participants.

Table 1




The process was successful in increasing the level of participant knowledge. As shown in Table 2, knowledge increased for citizens after receiving information about pandemic influenza and deliberating with other citizens. Participants were impressed with the quality of the information presented; as expressed by one citizen, “It truly informed the discussion, and I thought it was really well done.” Citizens believed that the information provided helped them become more informed participants; as stated by one individual, “This information put everyone on a fairly identical platform in terms of ideas and wisdom going into the deliberations.” In addition to the initial presentation about pandemic influenza, experts were available during the citizen small group discussions, and participants found this resource helpful; the following comment from the Atlanta citizen deliberations is typical “If I didn’t understand the information, a doctor from the CDC was sitting at our table that was able to answer all our questions.” Observers of the Atlanta

citizen deliberations who were experts in participatory processes were impressed by the ability of participants to grasp the concepts and use the knowledge in their discussions.

Table 2
Change in knowledge for Atlanta citizens

| Question Topic | % correct pre-survey | % correct post-survey |
|---|---|---|
| Reason for getting the flu | 86.2% | 90.7% |
| Average influenza hospitalizations | 34.0% | 46.4%* |
| Benefits of antiviral drugs | 69.1% | 57.7%** |
| Average deaths from influenza | 57.4% | 86.6%* |
| Priority group for vaccine last year | 87.2% | 86.6% |
| Effectiveness of vaccine | 69.1% | 73.2% |
| Length of vaccine production | 46.8% | 90.7%* |
| Frequency of pandemic | 40.4% | 80.4%* |
| Cause of pandemic | 67.0% | 76.3% |
| Last pandemic | 41.5% | 79.4%* |
| Type of avian influenza virus | 28.7% | 84.5%* |
| Pandemic vs. epidemic | 72.3% | 89.7%* |
| Percentage vaccinated each week | 54.3% | 74.2%* |

* Increase significant at $p<.05$
** Decrease significant at $p<.05$

Participants also changed their views related to goals, values and priority populations. Table 3 provides an example of this change for the four citizen deliberations. Results from the pre-post surveys indicated citizens ranked “minimizing the spread of the disease,” treating all persons the same,” and “maintaining national security” lower after the participatory process; and they ranked “maintaining social order” higher. Interviews with citizens support the quantitative results. As stated by one citizen, “[My opinions changed] to an extent because I was more informed about other things to consider, not only children and elderly, but also caregivers and different categories like medical personnel, first responders and military.”

Table 3
Change in Goal Rankings
For Four Citizen Groups

| Goal | N | Pretest Mean | Posttest Mean | ANOVA F-value | ANOVA p-value |
|---|---|---|---|---|---|
| Minimize deaths | 215 | 3.35 | 3.53 | 1.194 | .276 |
| Minimize spread | 215 | 2.35 | 2.71 | 9.620* | .002 |
| Maintain social order | 210 | 4.66 | 3.88 | 26.142* | <.001 |
| Maintain health care | 214 | 2.97 | 2.77 | 2.741 | .099 |
| Maintain economic productivity | 210 | 6.09 | 6.00 | 0.545 | .461 |
| Treat all persons the same | 212 | 5.42 | 6.12 | 23.827* | <.001 |
| Ensure adequate distribution | 213 | 3.62 | 3.84 | 1.853 | .175 |
| Maintain national security | 210 | 5.02 | 5.35 | 4.686* | .032 |

*p<.05

Results from the quantitative and qualitative methods indicate participants in the citizen and stakeholder deliberations thought the process promoted a balanced, honest, and reasoned discussion of the issues that respected diversity of views. Table 4 indicates that survey respondents gave high numerical ratings to questions about the quality of the deliberations. The interviews with citizens and observers support the survey results. The following comment from an expert observer is typical, “The facilitation was so well done that no one ever dominated the discussion. I’ve been in many meetings like that where people became frustrated that people are allowed to dominate the discussion, and they just withdrew.”

Table 4
Average ratings on process by site

| Statement | DC1 | DC2 | Atl | Bos | Oma | Por |
|---|---|---|---|---|---|---|
| I felt comfortable talking | 4.78 | 4.57 | 4.85 | 4.71 | 4.28 | 4.68 |
| I think other people felt comfortable talking | 4.71 | 4.71 | 4.73 | 4.69 | 4.19 | 4.53 |
| This discussion was fair to all participants | 4.71 | 4.93 | 4.74 | 4.50 | 4.18 | 4.26 |
| I think this process helped me better understand the types of trade-offs | 4.54 | 4.69 | 4.72 | 4.74 | 4.22 | 3.79 |
| I think this process has produced credible, relevant, and independent information | 4.17 | 4.79 | 4.61 | 4.45 | 4.05 | 4.47 |
| I think this process produced a valuable outcome | 3.91 | 4.64 | 4.43 | 4.03 | 3.78 | 4.11 |
| Important points were left out of our discussion | 3.17 | 2.64 | 2.53 | 3.07 | 3.32 | 3.79 |
| One person or small group of persons dominated the discussion | 1.88 | 1.71 | 1.73 | 2.07 | 3.12 | 2.42 |

## Conclusion

Evaluation of stakeholder involvement in decision-making related to science and technology is critical to inform the field about the types of participatory approaches that work best for particular stakeholders, issues, and desired outcomes. A well-designed evaluation can answer questions related to the process such as the knowledge level of participants and the quality of the process. We propose a participatory evaluation in which process organizers work with evaluators to develop the evaluation questions and the evaluation methods and help interpret the results. The evaluation design should include mixed methods of quantitative and qualitative methods that are appropriate to answer the evaluation questions. This type of mixed methods evaluation produces rich information and results that can be generalized.

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