

PROBLEMS WITH THE SURVEY OF PREFERENCES FOR THE LOCATION OF A NEW MAIN LIBRARY

In February 1999, the Cambridge Public Library conducted a survey of citizen preferences about whether the main library should be expanded at its current site on Broadway or an expanded main library should be built at Central Square, Kendall Square or Alewife. The survey was mailed to 5000 voters selected randomly from the voting lists and 1009 surveys were returned. STS Market Research, a Cambridge consulting firm, tabulated and summarized the responses in a March 1999 report. The key finding, according to the executive summary of that report, is that 61.0 percent of the respondents preferred the current Broadway site as the location for the main library.

The results of this survey are a poor guide to citizen preferences for three basic reasons:

- (1) there are arithmetic errors and omissions in the reporting of key results;
- (2) no effort was made to correct for the substantial response bias in the survey returns;
- (3) there was no description of the alternatives, which led to confusion among the respondents; and
- (4) the survey failed to ask for preferences between pairs of alternatives, making it impossible to determine if any one alternative has majority support.

Arithmetic and Reporting Errors

In half of the tables in the report, including the key table on site preferences, the consulting firm either calculated the percentages incorrectly or failed to report a problem in the responses. In the summary column of the table on site preferences, for example, the consultants report that 61.0 percent of all respondents prefer the Broadway site, 51.2 percent prefer either Central, Kendall or Alewife and 4.8 percent have no preference, for a grand total of 117.0 percent. The same type of discrepancy appears in the columns that report site preferences by neighborhood and in the tables that report the mode of transport respondents would use to travel to alternative sites.¹

There are two possible explanations for the problem. The first is an error in the formulas used to calculate both the row and the column totals of the tables in the consultants' spreadsheets. Assuming that the data in the individual cells of the tables are correct, the summary column of the site preference table should read that 51.5 percent of respondents, or a bare majority, prefer the Broadway site while 44.7 percent prefer other sites and 3.8 percent have no preference.

The second possible explanation is that many respondents gave two or more responses to questions when they were asked for only one. In the key question about site preferences, for example, 17.0 percent of respondents may have circled two preferred sites instead of one. Indeed, that question was so poorly worded that it may have

¹ The affected tables are on pages 5-9 of the report, table numbers 500-900.

unintentionally encouraged multiple responses.² A high number of multiple responses should have been noted by the consultants, since it suggests that many respondents were either uncomfortable with or confused by the format of the question. In addition, this pattern of responses affects the interpretation of the results. If 17.0 percent circled the Broadway site and one other, for example, then the consultants should have reported that only 44.0 of the respondents preferred the Broadway site to any other, while 17.0 percent seemed indifferent between Broadway and an alternative site, and 34.2 percent preferred alternative sites.

Sampling Bias

In any survey, some types of households or individuals are more likely to respond than others. Researchers who want to accurately reflect the opinion of a community usually try to correct for this fact by weighting the responses for different types of households by their proportion in the community as a whole. This was not done in the library survey.

Sampling bias is a particular problem in this survey because the responses are heavily weighted in favor of residents of neighborhoods immediately adjacent to the Broadway site and frequent library users. One-fifth of the responses are from neighborhood 6, where the main library is now located, for example, even though it is only one of 13 neighborhoods in Cambridge. Almost three-quarters of the respondents report using the main library at least once in the past year, a proportion that seems high for the population of the city as a whole. Persons who live in neighborhoods close to the main library or who patronize the main library frequently are likely to have stronger preferences for the current site than the rest of the community does.

The problem of sampling bias was made worse because the Library apparently distributed a newsletter to its regular users and supporters alerting them to the fact that the survey was being mailed out and that they should fill it out. This newsletter also included an editorial urging support for expansion at the Broadway site.³

It is possible to use the tables in the consultant's report to make a crude correction for the bias caused by the disproportionate responses by certain neighborhoods. If the responses from the different neighborhoods are weighted equally instead of by the number of surveys returned, for example, the proportion of favoring the Broadway site falls to 44.9 percent, with 52.0 percent favoring other sites and 3.1 percent expressing no preference.⁴

² Question 9 asked respondents to "Please circle the number of the location you prefer for the Main Library". None of the alternatives on the list below was numbered, however. Instead there were un-numbered boxes to tick. A copy of the survey is attached to this report.

³ One might also argue that the consultants introduced sample bias from the start by starting with a list of registered voters. A voter list is likely to under-represent households with children and immigrants, both of whom are constituencies the Cambridge Public Library strives to serve.

⁴ Other obvious alternatives would be to weight the neighborhoods by voters or population, but the choice among weights is not obvious and should depend on the type of users that the library wishes to attract.

It is not possible to make a similar crude correction for the disproportionate response of frequent library users in part because the consultants did not report how the site preferences of frequent and infrequent library users differed.⁵ The consultants' failure to prepare a table comparing the preferences of frequent and infrequent users is curious given the potential importance of this issue to the library siting decision and the large number of other tables the consultants prepared. If the responses of frequent and infrequent users were weighted by their proportions in the city as a whole, the percentage of respondents favoring the Broadway site would probably fall even further.

One might argue that it is appropriate to give the views of current library users a disproportionate weight in any location decision. But one of the main issues in this library siting debate is whether the current site on Broadway favors certain neighborhoods over others. If the views of current library users are to be given more weight, moreover, the decision to do so should be explicit and not hidden as it is now.

Failure to Describe Alternatives

The third problem with the survey is the failure to describe the alternatives to the current site in ways that would make the survey responses meaningful. The survey, which is attached, provided almost no description of the alternatives beyond their location. The survey did not explain, for example, whether the historic library building or the Lorentz Park would be preserved if the main library were expanded on the present Broadway site. Similarly, the survey did not explain whether a branch library would be kept at Broadway or how much parking would be provided at the new main library if the main library were moved from Broadway.

There are many signs that those surveyed were uncertain about the choices they were offered. The unwillingness of many respondents to select a single preferred site is probably an indication that they were uncertain about the alternatives they were being asked to choose from. The strongest evidence of the problems caused by not describing the alternatives is that many of the written comments raised concerns about the future of the current historic building and the park or about the availability of parking and other amenities. Without a clear description of the choices, it was hard for the respondents to know what they were voting for. And in the face of uncertainty, the status quo may have a strong advantage.

Preferences Between vs. Among Alternatives

A final concern is that the survey asked only which of four alternatives respondents preferred instead for their preferences between pairs of alternatives. Political pollsters know, for example, that the former approach can make the preferences for the

⁵ Another factor that would make it difficult to correct for this bias is the uncertainty about the proportion of residents in the city as a whole that are frequent library users. One might estimate this proportion for the city as a whole by weighting the proportion of frequent users by neighborhood by the neighborhood population. But that would probably overstate frequent library users as well since, given the Library's publicity efforts, the frequent users were probably more likely to respond to the survey in every city neighborhood.

incumbent appear stronger than they really are by dividing the opposition among many alternatives. For that reason, pollsters usually ask about preferences among pairs of candidates as well, to be sure that a candidate who looks good in a very crowded field will still do well when the field has been narrowed. And if no candidate receives majority support in the crowded field, pair-wise comparisons are particularly critical. This is the case with the library location survey, at least once the reported results are corrected for arithmetic errors and response bias. Given that no one site commands majority support in the field of four presented, as a matter of simple logic the library survey can not tell us which of the four is really preferred.

In sum, the library location survey is so flawed that its results are not very helpful. At the very least, the results should be retabulated to correct the arithmetic errors and to try to limit the sampling biases. There is no solution to the problems of poorly described alternatives and poorly posed choices, however, short of a new survey.

The City of Cambridge has plans to significantly expand the Main Library building to accommodate and anticipate the need for library services in the 21st century. Since our library was last expanded 30 years ago, library use has more than doubled. Options for a new main library include the renovation and expansion of the current site on Broadway or a completely new building on a new site. To determine where to put the Main Library, we need your help. Your answers will give us a better idea of what the community wants.

1. Have you visited the Main Library in the last 12 months?

- ☒ yes
- ☐ no

2. If the Main Library moved to Central Square would you be:

- ☒ more likely
- ☐ about the same
- ☐ less likely to use it?

3. If the Main Library moved to Kendall Square would you be:

- ☐ more likely
- ☒ about the same
- ☐ less likely to use it?

4. If the Main Library moved to Alewife would you be:

- ☐ more likely
- ☒ about the same
- ☐ less likely to use it?

5. How would you get to the Main Library on Broadway?

- ☐ walk/bike
- ☐ car
- ☒ bus/subway

6. How would you get to the Main Library in Central Square?

- ☐ walk/bike
- ☐ car
- ☒ bus/subway

7. How would you get to the Main Library in Kendall Square?

- ☐ walk/bike
- ☐ car
- ☒ bus/subway

8. How would you get to the Main Library in Alewife?

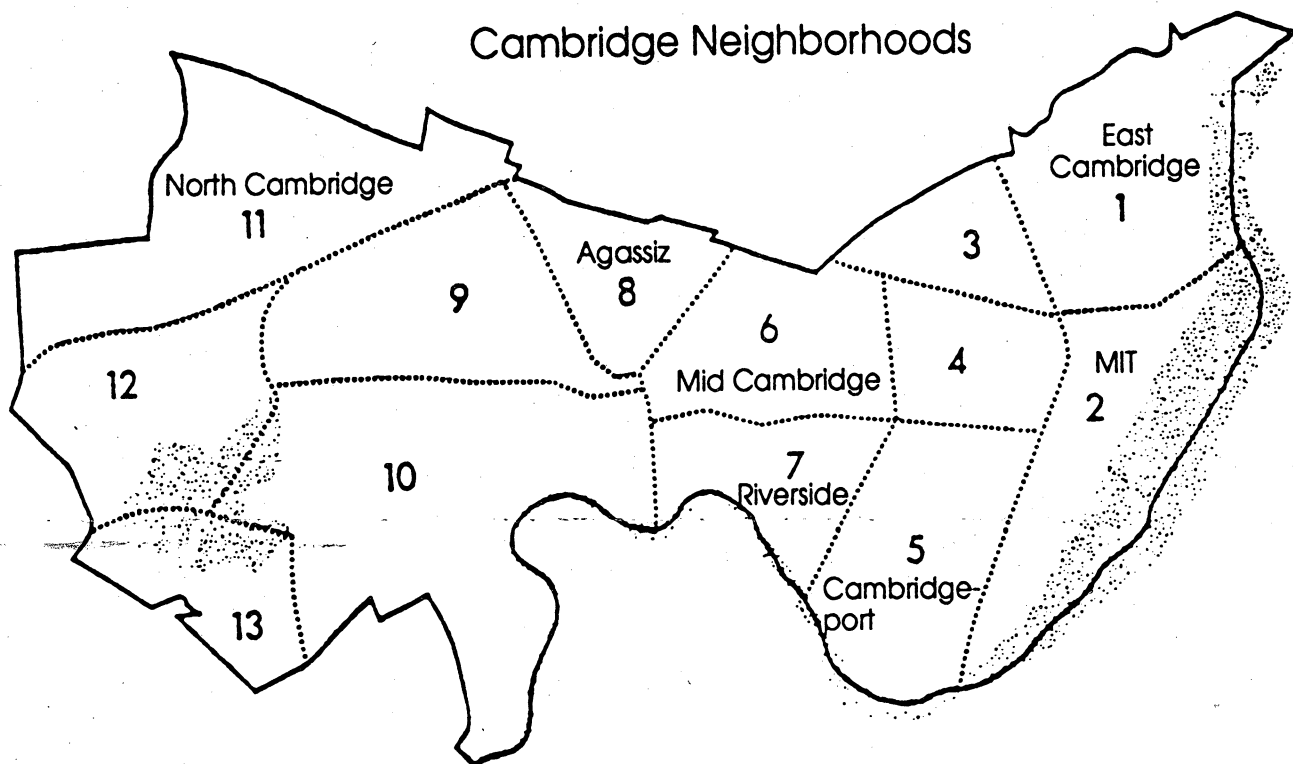
- ☐ walk/bike
- ☐ car
- ☒ bus/subway

9. Please circle the number of the location you prefer for the Main Library:

- ☐ Current Main Library site on Broadway
- ☒ Central Square
- ☐ Kendall Square
- ☐ Alewife
- ☐ No Preference

Comments:

Please select the neighborhood where you live on this map.



78A Ellery Street
Cambridge, MA 02138
April 6, 1999

Cambridge City Council

Care of the City Clerk

City Hall, Cambridge, MA 02139

APR -7 A 10:54
OFFICE OF THE CITY CLERK
CAMBRIDGE, MASSACHUSETTS

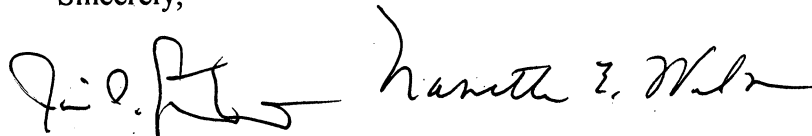
To the Honorable the City Council:

We write to alert you to a misleading survey that the Library Trustees are circulating. This survey was sent to a sample of 5,000 Cambridge voters and 1,009 responded. According to the executive summary, 61.0 percent prefer the current site for an expanded Main Library over the alternatives of Central Square, Kendall Square, and Alewife. The survey suffers from four problems:

- First, there are arithmetic and other errors in the tabulation of the results. If these errors are corrected, at most 51.5 percent of the respondents prefer the Broadway site to the others, not 61.0 percent.
- Second, the reported results are unrepresentative of the city as a whole because there was no effort to control for sampling bias. If the over sampling of adjacent neighborhoods is corrected, the proportion favoring Broadway falls to 44.9 percent while 52.0 percent, a majority, favor other sites. If the over sampling of frequent library users were corrected, the percentage favoring Broadway probably would fall further.
- Third, the survey provided no description of the alternatives, which led to confusion among the respondents.
- Finally, the survey failed to ask for preferences between pairs of alternatives, which makes it impossible to determine whether any one site has majority support.

We have attached a short report describing these problems in more detail.

Sincerely,



Jose A. Gomez-Ibanez and Nanette E. Wilson

Attachment

Cc: Robert Healy, City Manager
Richard Rossi, Assistant City Manager
Susan Flannery, Director, City Library

Consent Communication #10

27/5

A communication was received from Jose A. Gomez-Ibanez and Nanette E. Wilson, transmitting an alert to a misleading survey that the Library Trustees are circulating relative to the site for the new main library.

In City Council April 12, 1999

Referred to
City Manager on report on
Survey on motion of
C. Davis