How Public is Public Television?

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February, 2004

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* This research was funded by a grant from the Center of the Study of Popular Television, S.I. Newhouse School of Public Communications, Syracuse University. Carrie Cochran provided valuable research assistance.
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ABSTRACT
Public television in the United States is built upon a mission of “universal access” to broadcasting services. From a policy standpoint, however, even more important than access is the use of public television, which provides the most complete measure of “how public” public television actually is. Data from several sources give a mixed evaluation of public television use. While some sociodemographic characteristics of viewers and viewing areas have no significant effect over the likelihood of viewing public television (or the spending on programming by stations), others—such as higher education levels—strongly push up both measures. This has provocative implications for policy and public television management.
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Introduction

After years of service in Europe, public television officially became a Federally-subsidized institution in the United States with the 1967 Public Broadcasting Act. The Act, which defined public television as “a source of alternative telecommunications services for all the citizens of the Nation,” led to the creation of the Corporation for Public Broadcasting (CPB).¹ This new Federal agency was charged with administering government funding to a loose-knit network of nonprofit television stations around the country, with the express purpose of delivering high-quality educational programming to the public.

The CPB’s goals were, and still are, explicitly egalitarian. Indeed, its professed mission is “to facilitate the development of, and ensure universal access to, non-commercial high-quality programming and telecommunications services.”² This is manifested in public television’s attempts to serve diverse audiences (Loomis 2001) and provide programming that is not commercially viable (Witherspoon 2000).

Leaving aside (for a moment) the question of whether American public television meets its own standard of “universal access,” is this the most appropriate metric for success? Perhaps not, because it does not ensure that services are actually reaching their desired targets. That is, while equal access to television is one thing, equal viewership may be a different matter entirely.

² See http://www.cpb.org/about/corp/mission.html
Equality of use of (and access to) public television are the subject of this article. Using data on public television stations and private public television viewing habits, we examine the equality of viewership and station spending across the population. We find that, on some sociodemographic dimensions (for example, income), public broadcasting is indeed used and distributed quite equally across the public. On other dimensions, however (for example, education) it is highly unequal. These results have significant implications for policymakers and nonprofit managers.

We begin with a brief background on the public broadcasting industry in the U.S. Then, we introduce measures for equality of use and access, as well as data and methods to estimate these measures. Next, we present empirical results, followed by a discussion of the implications for public policy and management. We close with a summary of findings and suggestions for future research.

**Background**

The CPB began with an initial appropriation of $5 million for 1969 (about $24 million in today’s dollars). This quickly rose through the 1970s to over $300 million; the appropriation for 2003 is $340 million. While the CPB originally constituted the main source of public television funding, it subsequently fell as a percentage of the total, as other funding sources arose. Today, it makes up 15 percent of total public broadcasting revenues; government funding at all levels are approximately 34 percent. Individuals, mainly through memberships, cover 25 percent of income, while corporations and
foundations provide 22 percent. The remaining 19 percent comes from smaller sources, such as schools, universities, and investment income.

Television programming sponsored by the CPB is specifically intended to reflect its universal access objective, with “a particular emphasis on children’s programming with high educational value; programming for underserved audiences; and programming that creates better informed citizens on the national and local level in an objective and balanced manner.”\(^3\) Consistent with this mission, the CPB classifies its programming with respect to the following categories: arts and culture, children, Latino, African American, Native American, Asian American, Pacific American, other diverse themes, documentary, drama, educational, history, news/public affairs, other programs, other projects, and science.\(^4\)

Public broadcasting is somewhat controversial. Former U.S. House Speaker Newt Gingrich criticized the system, saying, "I don't understand why they call it public broadcasting. As far as I'm concerned, there's nothing public about it; it's an elitist enterprise” (Ledbetter 1997). In addition to such charges of elitism, for decades, public radio and television have been accused of political bias (Douglas 1999) and harming commercial broadcasters which do not enjoy government subsidies or tax-exempt status (Berry and Waldfogel 1999). At a less political level, some economists have also identified a certain incompatibility between private, donated support of public broadcasting, and the government revenues from CPB and other sources. For example,

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[^3]: See http://www.cpb.org/about/corp/goals.html
Kingma (1989) and Kingma and McClelland (1995) found that government subsidies displaced (“crowded out”) private donations to individual public radio stations.5

Public television occurs in fairly diverse settings. Figure 1 shows the breakdown of stations by institutional affiliation. It shows that, of the 356 public television stations in the U.S., 39 percent are private nonprofits, 37 percent are part of state or local governments, and 24 percent are affiliated with universities. Many of the stations of all types have radio components. For example, Among the 138 private nonprofit television stations, just 39 do not have a sister radio station.

![Figure 1. Types of public television stations](image)

Source: Corporation for Public Broadcasting, 2003

These stand-alone stations are particularly useful to study financially, because they are free from the cross-subsidization that characterizes stations with a university,

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5 In contrast, Brooks (2003) found that the CPB’s matching-grant mechanism (in which private donation levels are partly the basis for subsequent CPB allocations) resulted in crowding in at low subsidy levels, although crowding out did tend to occur when subsidies reached a certain threshold.
government, or radio affiliate. Table 1 describes the financial and viewer demographic summary statistics for these stand-alone television stations. There is a wide range in funding, service spending, number of viewers, and viewer demographics in these data.\textsuperscript{6} For example, stations varied in their annual spending on core services from a low of $130,531 (WYOU in Madison, WI) to $8.2 million (Twin Cities Public Television in Minnesota). Similarly, average annual income per inhabitant within a 100-mile radius of each station ranged from $13,051 (WLJT in Martin, TN) to $21,897 (WVPT in Harrisonburg, VA).

\textsuperscript{6} The data in Table 1 merge two sources of data. First, we have assembled financial information on the 40 stations across 22 states from the most recent year in which they had filed their IRS form 990s. The returns were from 2001 (21 stations), 2000 (18 stations), and 1999 (one station). The 990 forms from which the data were assembled are publicly-available at www.guidestar.org. Second, we have matched the stations with 2000 U.S. Census information for the population within a 100-mile radius of the location of each station’s emitted signal.
Table 1. Data on 39 nonprofit stand-alone public television stations

<table>
<thead>
<tr>
<th>Definition</th>
<th>Mean</th>
<th>St. dev.</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Station revenues</td>
<td>$6,155,140</td>
<td>$4,918,694</td>
<td>$182,434</td>
<td>$27,097,965</td>
</tr>
<tr>
<td>Government subsidies</td>
<td>$1,478,889</td>
<td>$1,138,563</td>
<td>$0</td>
<td>$5,383,002</td>
</tr>
<tr>
<td>Spending on core services</td>
<td>$2,285,819</td>
<td>$1,686,054</td>
<td>$130,521</td>
<td>$8,235,304</td>
</tr>
<tr>
<td>Population in viewing area (potential and actual viewers)</td>
<td>4,361,472</td>
<td>5,706,352</td>
<td>80,612</td>
<td>28,124,653</td>
</tr>
<tr>
<td>Average income per potential viewer</td>
<td>$17,224</td>
<td>$2,434</td>
<td>$13,051</td>
<td>$21,897</td>
</tr>
<tr>
<td>Percent of potential viewers receiving welfare support</td>
<td>0.03</td>
<td>0.02</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>Percent of potential viewers with a college degree or higher</td>
<td>0.15</td>
<td>0.09</td>
<td>0.23</td>
<td></td>
</tr>
<tr>
<td>Percent of potential viewers in an urban area</td>
<td>0.71</td>
<td>0.28</td>
<td>0.98</td>
<td></td>
</tr>
<tr>
<td>Percent of potential viewers that are white</td>
<td>0.80</td>
<td>0.57</td>
<td>0.96</td>
<td></td>
</tr>
<tr>
<td>Percent of potential viewers that are children</td>
<td>0.25</td>
<td>0.22</td>
<td>0.28</td>
<td></td>
</tr>
</tbody>
</table>


Measuring equality in public television

To speak of public television “use” conflates the supply and demand for services: On the one hand, the decision to view public television depends on the quantity and quality of services offered by stations; on the other hand, it depends on private tastes and the opportunity cost of viewing public television programming. For understanding both supply- and demand-side factors, viewer demographics are especially useful.

On the supply side, the literature on public television identifies a number of forces affecting the quality and type of programming, such as corporate underwriting (Ledbetter 1998), philanthropy (Brooks 2003), and indirect government subsidies vis-à-vis tax
revenues foregone on deductible private donations (Schuster 1987). These forces are connected to viewer demographics, to the extent that certain groups are more likely to generate revenues for both stations and their corporate underwriters. Thus, we might expect to see disproportionately-high access to public television services in areas with high viewer concentrations with “favorable” characteristics. Evidence that stations take demographics seriously in their programming decisions is abundant. For instance, consider the following statement, from the Southern California Public Television Alliance: “Public television’s target audience is upscale, affluent, and educated. These are opinion leaders and decision makers who have greater than average influence in their communities.” The key demographics for supply, therefore, should be income and education.

On the demand side, the demographics that associate in most studies with a taste for the arts and culture—and consequently, we assume, also for public television—are well-known. They include income, age, political views, gender, number of children in the home, education, urban residence, and race (McCarthy, et al. 2001).

Together, access to, and taste for, public television lead to the ultimate variable of interest, which is actual viewership (use of services). And this should be predictable on the basis of the demographics identified above. We measure the degree to which different characteristics predict the propensity to watch public television with the model

\[
y_i = \alpha + X_i \beta + \varepsilon_i,
\]

where \( y_i \) is the frequency with which someone tunes into public television, \( X_i \) is the set of demographics, and \( \varepsilon_i \) is a random disturbance.

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7 See <www.ptvalliance.org>.
The General Social Survey (GSS) provides a convenient means to estimate equation (1) empirically (Davis, et al., 1999). The GSS is produced by the National Opinion Research Center, and is designed to provide a sample of responses by adult interviewees to different subsets of about 4,000 questions on different social issues. In 1993, the GSS asked respondents about their television viewing habits, including this question on public television: “Would you tell me how often you watch programs shown on public television?” 19 percent of respondents answered “every day;” 30 percent answered “several times per week;” 22 percent said “several times per month;” 19 percent said “rarely;” and the remaining 10 percent said “never.” The GSS also contained a full battery of demographics.

The data used in estimating equation (1) are summarized in Table 2. The portrait of the average respondent that emerges is fairly unremarkable: She has an annual household income of about $34,000 ($41,500 in 2004 dollars), is 46 years old, has education slightly beyond the high school level, and is politically moderately conservative. A respondent is most likely to be a white women not living in a large city.

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8 Unfortunately, the GSS does not contain a measure of welfare receipt for 1993, so this variable does not appear in Table 2.
Table 2. Data on viewership of public television

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>Mean</th>
<th>St. dev.</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public TV</td>
<td>Frequency with which respondent views public television:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0=never; 1=rarely; 2=several times per month; 3=several times per week;</td>
<td>2.28</td>
<td>1.25</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>4=every day</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Income*</td>
<td>Household income</td>
<td>$34,354</td>
<td>$22,830</td>
<td>$500</td>
<td>$75,000</td>
</tr>
<tr>
<td>Age</td>
<td>Respondent’s age</td>
<td>46.05</td>
<td>17.36</td>
<td>18</td>
<td>89</td>
</tr>
<tr>
<td>Male**</td>
<td>Respondent is male</td>
<td>0.43</td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Education</td>
<td>Respondent’s years of formal education</td>
<td>13.05</td>
<td>3.05</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>White**</td>
<td>Respondent is white</td>
<td>0.84</td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Conservative</td>
<td>Political beliefs scale:</td>
<td>4.16</td>
<td>1.35</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>1=extremely liberal; 7=extremely conservative</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family size</td>
<td>Number of members of respondent’s household</td>
<td>2.59</td>
<td>1.35</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>Big city**</td>
<td>Respondent lives in big city</td>
<td>0.17</td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

* Income is measured categorically in the GSS. It is recoded continuously here as the midpoint in each category. **Dummy variable.

Results and analysis

To estimate equation (1), we use an ordered logit model, which exploits the ordinal nature of the $y$-variable, indicating the change in the number of “decision categories” (never, rarely, etc.) that a one-unit change each $X$-variable would elicit. Table 3 summarizes the results of this estimation.
Table 3. Ordered logit results on equality of use

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Estimate</th>
<th>Standard error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income</td>
<td>-0.022</td>
<td>0.251</td>
</tr>
<tr>
<td>Age</td>
<td>0.011***</td>
<td>0.003</td>
</tr>
<tr>
<td>Male</td>
<td>0.047</td>
<td>0.098</td>
</tr>
<tr>
<td>Education</td>
<td>0.069***</td>
<td>0.019</td>
</tr>
<tr>
<td>White</td>
<td>-0.007</td>
<td>0.144</td>
</tr>
<tr>
<td>Conservative</td>
<td>-0.007</td>
<td>0.037</td>
</tr>
<tr>
<td>Family size</td>
<td>0.098**</td>
<td>0.042</td>
</tr>
<tr>
<td>Big city</td>
<td>0.021</td>
<td>0.134</td>
</tr>
<tr>
<td>Log of likelihood function</td>
<td>-2,076.45</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>1,358</td>
<td></td>
</tr>
</tbody>
</table>

Notes: For the coefficients, * denotes significance at the .10-level, ** denotes significance at the .05-level, *** denotes significance at the .01-level. Income is measured in thousands of 1993 dollars. The ordered logit cut points are as follows: $\theta_1 = -0.731$, $\theta_2 = 0.688$, $\theta_3 = 1.683$, and $\theta_4 = 3.173$.

The three variables that significantly impact frequency of viewership are age, education, and family size. Specifically, an extra 10 years of age push up public television viewing by 11 percent of a decision category; an extra year of education pushes it up by .07 categories; and an extra family member pushes it up by about ten percent of a category. The first two results are particularly notable, given public television’s emphasis on education and providing services for people of all ages.

One of the salient results from Table 3 is not what is significant, but rather what is not: Controlling for education, income does not affect preferences for public television.\(^9\) Similarly, no difference is evident between women and men, whites and nonwhites, people with different political viewpoints, nor people living large cities versus those in more rural areas.

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\(^9\) This result is in contrast to work on public television from the 1970s, which concluded that income drives viewership (Boyle 1973).
As noted earlier, the fact that certain groups disproportionately watch public television may be a function of either a) access that is geared toward these groups, or b) taste differences. The dataset from which Table 1 is derived provides insight into the extent to which it is the former (and consequently is a matter for policy and management scrutiny). To look specifically at access, we measure the extent to which education, age, and family size impact core service spending per potential viewer (S/N). Table 4 presents the result of the regression

\[(S/N)_i = \pi + X_i \lambda + \nu_i,\]

where \(X_i\) indicates the vector of population proportions within viewing areas, and \(\nu_i\) is a random disturbance.

The station-level data exist in an unbalanced panel, in which each station has between one and five annual observations over the years 1997-2001. Because the regressors are time-invariant, only between-group variation is used to estimate the coefficients. Hence, the dependent variable used in the regressions is the station-specific mean of spending per potential viewer, and there is one regression observation for each station. We estimate equation (2) using generalized least squares (GLS) to neutralize heteroscedasticity, weighting the observation for each station by the square root of the number of sample years in the data.\(^{10}\) The specification in Table 4 omits several of the variables from Table 1. Our criterion in doing so was to find the set of regressors that maximizes Theil’s adjusted \(R^2\) measure.

\(^{10}\) Breusch-Pagan tests uncovered only weak evidence for other forms of heteroskedasticity.
Table 4. GLS estimates of the equality of access

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Coefficient (Standard Error)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-4.205**(1.913)</td>
</tr>
<tr>
<td>White</td>
<td>5.633 *** (1.236)</td>
</tr>
<tr>
<td>Average income</td>
<td>-11.382 (7.116)</td>
</tr>
<tr>
<td>Welfare</td>
<td>29.647 ** (14.842)</td>
</tr>
<tr>
<td>College</td>
<td>9.939* (5.875)</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>0.431</td>
</tr>
<tr>
<td>N</td>
<td>38</td>
</tr>
</tbody>
</table>

Notes: * denotes significance at the .10-level, ** denotes significance at the .05-level, *** denotes significance at the .01-level.

Table 4 yields three significant coefficients besides the constant term. The percentage white, the population percentage receiving welfare payments, and the college-educated proportion of viewership all push spending up. This last result is particularly evocative, because it reinforces the results in Table 3. It suggests that, at least part of the disproportionately-high use of public television among well-educated people is due to the fact that stations spend more per capita on programming in areas with high education levels. Presumably, this is because they have received more in revenues from these areas in the past (from donors and underwriters) and can thus afford to spend more, and also because they desire more of these revenues in the future. This is consistent with the statement presented earlier from the Southern California Public Television Alliance about its “target audience.”
Implications for policy and management

To the central question of the “publicness” of public television, the answer appears to be “somewhat.” While many groups (sorted by income, race, political beliefs, and other characteristics) do not exhibit disproportionately-high use of public television services, others (particularly highly-educated people) have high access to these services, and are especially likely to use them.

Policymakers might be concerned that public television appeals primarily to the already-educated. Public television advocates (e.g. Holtz-Bacha and Norris 2001) frequently see the strong correlation between educational attainment and public television viewership as evidence of the system’s excellence. However, this could actually be suboptimal, if the largest educational gains that public television could make are at lower levels of schooling.\footnote{This depends on whether the marginal gains from education tend to be diminishing.} Perhaps even more disconcerting is the evidence that some part of the discrepancy by education in viewership is due to access, not simply tastes. This suggests behavior on the part of stations that, while rational, is not compatible with the mission of the CPB to provide universal access to public television services.

The significance of age in predicting viewership implies that the goal of reaching all age groups may not be successful. However, this should not be interpreted as evidence that adults are more likely than children to watch public television, because the GSS excludes respondents under the age of 18. Indeed, the positive significance of family size indicates that the presence of children in the home should push viewing up, not down.

The insignificance of race in predicting use may be interpreted in two ways, with different policy implications. On the one hand, we might conclude that the CPB’s
programming efforts to satisfy different racial groups have been successful, such that nonwhites are not more or less likely than whites to watch public television. On the other hand, race may simply be irrelevant in predicting tastes, suggesting that the CPB’s efforts to program specifically for African-Americans, Latinos, etc., are unnecessary.

The results in this study suggest two main challenges for public television managers. The first involves audience breakdowns by age; the second has to do with cultivating audiences among low-education groups.

The fact that older adults watch more than young adults may be a natural function of time and tastes as one matures, or it may say something about the tastes of specific audience cohorts. If young adults naturally mature into public television viewers, then this measured effect is not particularly menacing. Conversely, if today’s young adults have fundamentally different tastes than older adults, such that they will never become public television viewers, there may be a demand-side problem on the horizon for stations. Managers are best-equipped to speculate on which explanation is the more accurate one.

Sparking interest among lower-education people, whom we have seen tend to be least interested in public television, may be difficult. Ouellette (2002) argues that public television’s effective rejection of popular culture is to blame for this situation. This assertion is supported in the GSS data, which show that the correlation between the public television scale in Table 2, and an equivalent scale for commercial television dramas and sitcoms, is only 0.17. Ouellette further argues that this inattention to popular programming short-circuits public television’s ability to meet its true mission of serving a broad public. Indeed, she believes that a more popular approach—which may or may not
require less-challenging programming than at present—is needed to diversify the audience to include people from all educational backgrounds.

Summary and future research

Government backing of public television in America is built upon a mission of “universal access” to its services. Beyond ensuring that all Americans can receive a public television signal, universal access surely also refers to the quantity and quality of service. From a policy standpoint, even more important than access is actual use of public television services, which is the ultimate test of “how public” public television actually is. Data from several sources have given us a mixed evaluation of public television’s universality of access and use. Many sociodemographic characteristics of viewers and viewing areas, such as income, do not affect access or use. Others, however, have a strong predictive relationship with one or the other. Particularly notable is the finding that high education levels strongly push up both the likelihood of viewing public television, and the spending on programming by stations.

While this research has thrown into question the true “publicness” of public television, it has certainly not provided the last word on the issue. On the contrary, there are many other potentially fruitful areas of research that might shed more light on these questions.

A first line of inquiry might revolve around gathering more, better, and newer data on public television viewers and stations. For example, one might find the GSS data from this study to be insufficiently-detailed in getting at viewing habits. Beyond simply
asking whether and how often someone sees public television, we might like to know how many hours people watch. Even better, we would be interested in the impact people feel they experience from the programming. These desires go significantly beyond the data available on the topic and would probably require a new data collection effort.

A more exhaustive look at stations would also be useful. Our sample examined just 39 stations, which were free from cross-subsidization from universities and radio affiliates. Naturally, it is possible that these stations are not representative of all public television, and hence that measures of access might be skewed in one way or another. Future data collection efforts might try to look more completely at the population of stations, considering new ways to prevent the invisible bias that tends to come from cross-subsidies. Data on access might also focus geographically, building measures of coverage by station signal, and studying the populations that do not have much (or any) access.

Note that, in this article, we have compared what public television accomplishes with its stated goals. A final line of inquiry might try to ascertain what the behavior of stations truly reveals about the motives of managers. This is a topic that has received empirical treatment for nonprofits in general (Stenberg 1986), and theoretical treatment of arts nonprofits in particular (Hansmann 1981). These authors have identified several possible objectives—service, quality, and budget size—as possible maximands for managers. It would be useful to apply the techniques in these studies to public television to see whether what the system professes differs from what it pursues.
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Ledbetter, James (Nov. 10, 1997). “Pox Populi.” *Salon*.


