

Determining a Standard for Number of Viewers of Educational Programs Delivered Through Government Access Cable TV

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Government access cable television is being used more and more to reach diverse audiences. However, the methodology to determine how many viewers are tuning in to such programs is piece-meal with the pieces not interconnecting to form a complete process. The paper explains the methodology used to estimate number of viewers for one television series which airs a new program each week with the same program appearing three times a day for a total of 15 showings each week. Three procedures were used to arrive at an overall estimate: telephone survey of cable subscribers, questioning a sample of first-time callers and visitors to the Extension office as to how they learned about the office, and synthesis and application of a number of studies described in the literature. The three procedures together provide what is believed to be a more accurate estimation of number of viewers than any one by itself; and all are applicable to other similar television series.

Many organizations are using television as a way to deliver information on a wide variety of topics to diverse audiences. Many of them, like the Cooperative Extension Service, must be accountable for their use of funds to deliver these and other programs. Even though access to the public channels has been

around for many years and many organizations use them, there are almost no data to indicate how many viewers may be or should be expected to be tuning in to such programs.

The purpose of this paper is to describe an effort to estimate the number of viewers to a government

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access cable TV educational series and to calculate an expected number to compare with the observed results. The educational series context and content were described in detail in Yates and Smith, 1989, and are summarized here only as a basis for understanding the procedure for determining a standard for performance.

Series Context

The television series, entitled *Extension Cords*, is produced by the Cooperative Extension Service (CES) in Pinellas County, Florida. The CES is a cooperative effort supported by federal, state, and county resources and has county offices in the 50 states, the District of Columbia, Puerto Rico, Virgin Islands, and Guam. It is the largest informal education organization in the world and was recognized by the Carnegie Corporation as "the chief example of a successful adult educational movement in the U.S. and represents, so far, the only success of federal government in providing continuing support in higher education" (Sprott, 1977). It began in 1914 as a result of the Smith-Lever Act. The original emphasis was on agriculture and home and family concerns for rural America, but has since broadened to other subject areas and includes virtually any family regardless of its place of residence (Sprott, 1977).

Mass media have always been used to deliver CES programs but their use has become more essential in this age of tightening budgets and expanding populations. Television, in particular, is growing in popularity for delivering programs to urban audiences—from daily three-minute CES updates (e.g., farm reports) to weekly, 30-minute, magazine type formats to 10-week concentrated

courses where viewers receive course credit.

In addition to resource concerns, the rationale for growth of TV usage for program delivery is based on statistics of viewer characteristics and viewing habits. For example, in 1984, 98.2 percent of households in the U.S. had television sets (Russell, 1985) and television households watched over seven hours per day (A. C. Nielsen Company, 1985a). Heavy viewers have characteristics of audiences that CES tends to have difficulty in reaching and effectively serving, such as the lesser educated, less affluent, older, less mobile, and members of minority groups (Warner and Christensen, 1984). Coincidentally, some of these same groups have indicated TV as their preferred method for learning (Cooligan, 1973; Wahl and Andrews, 1979; Wunderlich, 1981).

The Series

Extension Cords is a series of 30-minute educational video programs on a variety of topics in horticulture, home economics, marine science, and 4-H youth, with programs such as how to prune freeze-damaged plants, preparing for hurricanes, storing food safely, gardening in compact spaces, making wise grocery choices, and catching and cleaning blue crabs. A different program airs each week and at the time of the study was shown three times per day—10:30 a.m., 12:30 p.m., and 5:30 p.m., Monday through Friday—on the local government access channel.

The series was available to 88,500 subscribers through two cable companies which served over 50 percent of the total county population of approximately 850,000 (*Cable Television in Pinellas County*,

1985). Recent cable company expansions have increased subscriber households to 209,000.

Study Questions

The series had aired for slightly more than a year when data were needed to justify funds for continuation and/or expansion, e.g., how many people were watching and how many were motivated by the series to seek additional information from CES. These questions were operationalized as: (1) How many subscribers or their spouses had viewed *Extension Cords* one or more times? and (2) How many first-time county CES telephone callers learned about the office from the series?

These questions were answerable by rather standard surveying techniques. However, knowing these figures would not allow conclusions about effectiveness or efficiency of the series. Such assessments require standards, e.g., minimum expectations set by the program staff (or stakeholders) or expectations based on accepted theory and practice.

As is usual with such programs, no minimum standards were set when the program was initiated. However, at the start of this study the County Extension Director (CED) decided, on the basis of office contacts by other means, that if 1,000 subscribers or their spouses were found to have watched the series, she would feel the funds had been justified. She also said she would accept as success any number found watching that was equal to or greater than would be expected from research on viewer habits. Thus, a third question was added to the study: (3) How many subscribers should be expected to have watched the series?

Procedure and Results

For the first question (how many had watched), a telephone survey of subscriber households was conducted 16 months after the series was started. A random sample of 442 of the larger cable company (70,000 subscribers) was contacted to determine if they were aware of the series and, if so, if they had watched one or more of the programs.

The sample was computer generated by the cable company to yield conservative population estimates with a precision of $\pm 5\%$ at 95% confidence and to allow for approximately 10% no longer being in the population (Smith, 1983). Interviews were conducted during the hours potential viewers would be expected to be home—8:30 a.m. to 6:00 p.m., Monday through Friday.

Of the 442 subscribers sampled, 261 responses were achieved for a response rate of 80%, after adjustments for nonbias nonreachables. Twenty-three subscribers were found to have watched *Extension Cords* at least once and 11, three or more times. The estimated number these represented among the 70,000 subscriber households differs depending on whether one calculates a liberal estimate or one that is conservative. A liberal estimate would assume that all the unknowns in the sample were like the knowns; a more conservative estimate would assume none of those who refused to be interviewed had watched. These two estimates provide a range of 1,050 to 10,360 for one-or-more-time subscribers and 11 to 8,040 for those who watched three or more times (lower limits of conservative estimates to upper limits of liberal estimates—Figure 1).¹

For the second question (how many learned about the CES office

from the series), records were kept for two six-week periods (January 21, March 1, and April 29-June 7). These two periods covered times when the population in the county would be largest from the influx of northern transients and when it would be reduced by their leaving for the summer. Callers were asked if they had contacted the county Extension office previously. If not, they were asked how they learned about the office.

For the January-March period, 5.3% of the first-time callers indicated they learned where to call from *Extension Cords*; in the April-June period, 6.4% credited the series as the stimulus. During these two periods combined, 12,316 callers were recorded of which 31.2% were first-timers and 5.8% credited *Extension Cords* as the stimulus for their calls. If these 12 weeks were representative of all callers for one year, then the series stimulated an

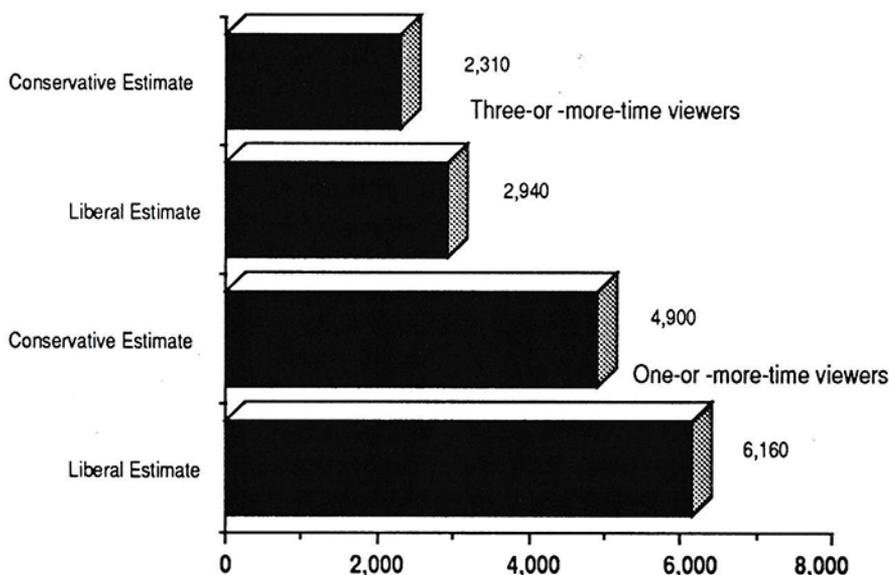


Figure 1
Number of *Extension Cords* viewers in population using liberal and conservative estimates.*

One-or-more-time viewers:

Liberal Estimate

23 watched one or more times/261 interviewees = 8.8%
 $8.8\% \times 70,000$ subscribers = 6,160 watching one or more times

Conservative Estimate

23/330 (261 interviewees + 69 interview refusers) = 7%
 $7\% \times 70,000 = 4,900$ watching one or more times

Three-or-more-time viewers:

Liberal Estimate

11 watched three or more times/261 = 4.2%
 $4.2\% \times 70,000 = 2,940$

Conservative Estimate

11/330 = 3.3%
 $3.3\% \times 70,000 = 2,310$

*Accuracy approximately $\pm 6\%$ for liberal estimate and $\pm 5.5\%$ for conservative estimate at 95% level of confidence (Smith 1983).

estimated 1,100 ($\pm 1\%$) newcomers to CES:

Total callers to CES office for 12 months prior to study = 60,000

60,000 * 31.2% = 18,720 first-time callers * 5.8% = 1,086 new contacts.

No research was found which would permit a definitive answer to the third question (how many subscribers should be expected to have watched the series) but a few studies were found which offered some guidance. For example, *Extension Cords* aired the same episode three times each weekday for a total of 15 showings of the exact same program each week. The closest research was on reruns of a stripped series which aired a different episode each weekday (Basrwise, Ehrenber and Goodhardt, 1982) and one repeat each week of selected public broadcast programs (Sparkes, 1979). *Extension Cords* was available only on the government access channel through cable subscription. No research was found on government access channel (GAC) viewing behavior. One author (Bretz, 1975) made estimates about the number of households tuned to GACs but they were only estimates, plus much has changed for television viewers since that time. A number of studies have been done on households with TV sets tuned to commercial broadcast stations (e.g., Arbitron, 1980) and on viewing behavior of persons watching public television (e.g., Frank and Greenberg, 1980, 1982). One recent study in Raleigh, N.C., (*Survey of Viewers...*, 1988) focused on community access channels. This study could have been very helpful except that respondents were asked when they would "prefer" to view rather than they "did" view community access channels.

Another problem with studies of this nature is the public's confusion with public educational television, community access channels, local origination programming, and government access channels. For example, the Raleigh study found that many respondents named other channels when asked to identify community access channels and they named programs aired on other channels when asked which community access channel programs they had watched within the past two weeks.

No study was found which reported on viewers of educational programs like those presented on *Extension Cords*. Respondents to the Raleigh study said they watched "educational programs" when presented with **classes** or **types** of programs to choose from, but **none** named an educational program when asked to list the programs they had seen within the previous two weeks.

An expected value for number of viewers to *Extension Cords* was calculated by applying data from several sources to the three times of day when *Extension Cords* aired (Exhibit 1). Using the last set of figures in the Exhibit suggests that approximately 1.4% of the cable subscribers would be expected to have viewed the program at least once.

Discussion

The standard set by the County Extension Director at the initiation of the study was for 1,000 persons to have watched the program at least once. That number is estimated to have been achieved, using the most conservative estimate from the survey results. Further evidence is the estimated 1,100 first-time callers to the CES office who credited the series as the impetus for their calls.

Exhibit 1. Literature sources and data for calculating expected value for number of viewers to Government Access Cable TV.

Source and Data	<u>Times <i>Extension Cords</i> Aired</u>		
	10:30 am	12:30 pm	5:30 pm
A. Arbitron (1980) reported the daily pattern of viewers of 4 commercial broadcast stations in areas contiguous to Pinellas County and at times <i>Extension Cords</i> aired. Figures equal percent of households whose sets were in use:	14%	18%	35%
B. Bretz (1975) estimated that 3-9% more cable subscribers watched TV than did regular commercial broadcast viewers. Add 6% to Arbitron data for average estimate of percent of cable households with TV sets on:	20%	24%	41%
C. Multiply Arbitron and Bretz percentages by population of cable subscriber households of cable company sampled (70,000) for estimate of number of cable households with TV sets on:	14,000	16,800	28,700
D. Bretz estimated 2/10 of 1% of cable viewers are tuned in to a government access channel at any one time. Multiply number of cable households *.002 (2/10 of 1%) for estimate of cable households tuned to a government access channel:	28	34	57
E. Assume all cable households tuned to a government access channel are watching <i>Extension Cords</i> ; also assume total new audience each day: $5 * (28 + 34 + 57) = 595$ viewers in one week.			
F. Barwise, Ehrenberg, and Goodhardt (1982) found that about 30% of the people who viewed a program one day would view a different episode of the same program on the following day. Use this figure as estimate of repeat viewers from one week to another: $595 = \text{Week 1} - 30\% = 417$ new viewers for Week 2 and subsequent weeks $595 + 417 = 1,012$ estimated one-or-more-time viewers			
G. $1,012 + 70,000 = 1.4\%$ of all subscribers			

An expected value (Question 3) was calculated to enable a judgment to be made about how effective the series was in reaching its potential audience. The difference between the expected estimate (1.4%) and the observed estimates (7% or 8.8%), depending upon whether the conservative or liberal percentage is used [Figure 1]) is significant at $p =$

$<.001$ (Chi Square Goodness of Fit Test, Conover, 1980). Based on this comparison, *Extension Cords* appears to have reached more viewers than would be expected from chance viewing.

The calculations used to arrive at an expected value for number of viewers were based on assumptions which may or may not be valid. It is

an attempt to develop a logic model for predicting something that cannot be precisely measured. It was an "educated guess." Use here is helpful in two ways: (1) as a comparison value for the observed *Extension Cords* results which is hopefully better than choosing an arbitrary number, and (2) it points to the need for sound research for future comparisons.

Conclusion

This paper has described methodology used to draw conclusions about how many cable subscriber households have watched one or more programs in a series of educational offerings by a county Cooperative Extension Service. The sample estimates appear to be a higher than might have been expected for an educational series on a government access cable channel.

These findings do not answer the question of whether or not the number found watching was worth the resources expended. The answer to this question is a value judgement. If data were available on effectiveness (e.g., changes in learning and /or practices) of *Extension Cords* and other programming methods, this type of comparison could be rather easy. Without that, the person making the judgement has to decide by what criteria "worth" will be determined, such as resources alone, enjoyment of staff in delivering program, attitude of the viewing public toward *Extension*, etc.

The *Extension Cords* survey was simple to do, took little time, and answered only the basic question of how many were watching. The characteristics of *Extension Cords* viewers, though of some interest, was not a high priority at the time, since the

programs were aimed at the general public. However, whether or not the viewers benefit is of primary interest and should be the subject of future research.

This paper has demonstrated that people do watch educational programs on government access channels and has described a process whereby other organizations can arrive at an **estimate** of how well they are doing in reaching their potential audience.

Endnotes

¹ 1,050 = Conservative estimate for one-or-more-time viewers of 4,900 less 5.5% of 70,000 (3,850); 10,360 = Liberal estimate for one-or-more-time viewers of 6,160 plus 6% of 70,000 (4,200); 11 - actual number of three-or-more-time viewers observed - no estimate here since 2,310 less 5.5% of 70,000 (3850) would be less than 0; 8,040 = Liberal estimate of three-or-more-time viewers of 2,310 plus 6% of 70,000 (4,200).

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