

Phone Home?

An Analysis of Household Telephone Ownership

By

Tom W. Smith

National Opinion Research Center

University of Chicago

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Over the last two decades, there has been a major switch from personal to telephone interviewing in the United States and many other countries. In the United States telephone surveys now completely dominate the fields of market, campaign, and public opinion research. While initially the conversion occurred at the low end of the market, the switch-over has since proceeded upscale to the premium side. Michigan's survey of consumer sentiments and behaviors switched to telephone in 1976 and NORC's national longitudinal survey of youths adopted telephone reinterviewing in 1987. Similarly, Michigan's American National Election study has carried out experimental comparisons of telephone and personal interviewing (Shanks, et al., 1983) and the Bureau of the Census has conducted a series of similar experiments (Mulry-Liggan, 1983

and Marquis and Blass, 1985). Other countries are also moving in a similar direction (Wilson, Blackshaw, and Norris, 1988; Trewin and Lee, 1988)

Numerous concerns have been raised by the switch-over to telephone surveys. The most prominent are mode effects and undercoverage bias. Mode effects result from people responding differently to telephone interviewing than to personal interviewing. Two commonly observed differences are lower response rates to telephone surveys and shorter responses to individual questions, especially open-ended questions (Groves and Kahn, 1979; Shanks, et al., 1983; Smith, 1984). Mode effects are particularly important when a time series is being changed from personal to telephone interviewing since the medium may become the message. Undercoverage bias results from the dual facts that all households do not have telephones and that the characteristics of telephone households differ from non-telephone households. For example, while the telephone coverage rate in the United States was 92.6% in 1980, it was only 80% for Southern blacks and 67% for other race Westerners (Census, 1983).

While distinct, these two factors (mode effects and undercoverage bias) may interact and magnify one another. For example, nonresponse and undercoverage bias may augment one another to increase overall error (Thornberry and Massey, 1983; Shanks, et al., 1983; and Freeman, et al., 1982). On NORC's General Social Survey, the proportion male is underrepresented by .040. Among telephone households on the GSS the undercoverage of males increases to .045 (a rise of 12.5%).

Several studies have been carried out comparing telephone and non-telephone households. Most have analysed surveys conducted by personal interviews and compared the attributes of households with and without telephones. Collectively, the results of these studies have been both highly consistent in their portrayal of telephone/non-telephone differences and extensive in their examination of the associates of telephone ownership (Appendix 1 summarizes these studies). The two main limitations of the existing studies have been that they are atheoretical and bivariate. Most studies have attempted to demonstrate the degree of difference between telephone and non-telephone households on basic demographics and on a few variables of particular interest to the substance of the survey (e.g., health measures on the Health Interview Surveys). Since they are interested in detecting non-response bias that would occur on particular variables if the

sample was restricted to the telephone household universe, they have not tried to develop general explanations for telephone ownership. For similar reasons, most of the analysis has been bivariate, simply correlating telephone ownership with variables of general or substantive interest. (Thornberry and Massey, 1978; 1988; and Steel and Boal, 1988 being the chief exceptions). Again, since the goal was the estimation of potential undercoverage bias in particular variables, multi-variate analysis was not necessary.

This research departs from the previous literature in two significant ways. First, we have tried to develop an explicit predictive model of household telephone ownership and second, we have used multivariate analysis to determine what independent variables are associated with household telephone ownership net of other variables.

### Data

Analysis was conducted using the General Social Surveys conducted by the National Opinion Research Center, University of Chicago. These consist of 13 independent cross-sectional surveys of the adult household population of the United States conducted between 1973 and 1987. By pooling surveys together, there are 19,510 cases for analysis. Details on sampling and other matters appear in Davis and Smith, 1987.

The GSS contains a standard measure of the presence of a telephone in the household:1

May I have your name and telephone number just in case my office wants to verify this interview?

A. Is this phone located in your home?

This item might be used to measure either telephone availability (i.e. access to a telephone) or telephone ownership (i.e. the presence in the housing unit of a telephone). We have used it in the latter fashion.<sup>2</sup> A comparison of the proportion reporting telephones in the household agrees closely with the figures from the Health Interview Survey (HIS), 1973-1981 (Thornberry and Massey, 1983), the Census and Current Population Survey (CPS), 1980, 1982-1987, (Schmidley, 1986b; 1987) and the Crime Victimization Survey, 1976 (Groves and Kahn, 1979). With certain allocation for missing and uncertain cases, the GSS finds that for the pooled 1973-1987 samples, 90.7% of households had telephones.<sup>3</sup> On an annual basis, the level of telephone coverage tends to run a

bit lower on the GSS than on Census surveys, averaging 0.7% lower than CPS and HIS.

### Predictors of Household Telephone Ownership

With telephone coverage having been at or above 90% for a little over a decade, telephone ownership can be considered as normal, established behavior and the lack of a telephone as deviant behavior. In developing explanations for not having a home telephone, we considered both why people might be unable to have a telephone and why they might be uninterested in having a telephone.

Review of the results from previous studies, considerations of deviant behavior in general, and an evaluation of the costs and benefits of telephone ownership suggested seven initial factors influencing telephone ownership:

- 1) Socio-economic status/resources
- 2) Household composition
- 3) Cultural background
- 4) Attachments
  - a) community/mobility ties
  - b) civic/political ties
  - c) group ties
  - d) personal ties
  - e) social and institutional alienation
  - f) misanthropy
- 5) Counter-normative behavior
- 6) Psychological well-being
- 7) Physical well-being

The bivariate relationships of each of these factors are indicated in Table 1.

#### SES/Resources

The most obvious factor limiting telephone ownership is its cost. As Table 1 shows, telephone coverage rises from 75% among the lowest income decile to over 97% among the top three deciles. (For each variable, the GSS mnemonic is indicated in parentheses or a note appears describing how the measure was created. For full question text, see Davis and Smith, 1987.) Other indicators of socio-economic status such as occupational prestige, education, interviewer rating of respondent comprehension, and employment

status all show similar relationships. In addition, two dwelling-related measures, housing tenure and type of structure, both show lower telephone coverage with lower housing status.

## Household Composition

Household composition is related to telephone ownership in several ways. First, home telephones can basically be used for three purposes, 1) to call out, 2) to receive calls, and 3) to call your own household. For single person households, the third use does not apply, so for such households a telephone is less functional. Second, by considering the size and composition of households along with the income and other resource factors mentioned above, we get a crude measure of per capita family income and a better notion of disposable income. Third, certain groups such as young males may be highly mobile (e.g. away from home because of socializing or work). Finally, other groups such as young singles may have separate households, but have close ties to other households (e.g. parents or girl/boyfriends) on whose phone they rely. In brief, the reasons for associations between household composition and telephone ownership are not single dimensional as in SES, but both diverse and sometimes indirect, reflecting not just the measured attributes themselves but the type of living situation and lifestyles they are associated with.

### Table

1 shows that households with a single adult are the least likely to have a phone while conversely households with many children under six have lower telephone ownership (and presumably lower disposable income). Telephone ownership is highest for married and widowed people and especially low for the separated, lower for younger respondents, and lower for males.

## Cultural Background

As with most technological innovations, telephone ownership has been a center/periphery phenomenon, starting with urban elites and spreading out to fringe regions and classes. While telephone connection is now accessible to virtually all of the population, there are cultural sub-groups (e.g. rural blacks in the South) for whom telephone access has become possible only relatively recently.

Table 1 shows the coverage is still low among blacks, in the South, and in rural areas.

## Attachments

Attachments are used in a broad sense covering one's ties or connections with the local community, the civic and political system, groups and voluntary organizations, and interpersonal relations. It also covers psychological identification with or integration with society, its institutions, and individuals. The key idea underlying all of these diverse factors is that individuals who are unattached (i.e. without various ties and psychological connections) are cut-off from society and that telephone ownership should be lower among such social isolates.

### Community/Mobility Ties

This first aspect of attachments covers measures of length of community or dwelling residence. Longer community residence indicates more ties to the community and a more stable life in general. The measure of residential length serves as a similar measure, but also covers the practical matter that getting a telephone installed in certain areas can take some time either because of service back-ups and/or because of the necessity of establishing credit with the telephone company. On all three measures, shorter length is associated with lower telephone ownership (Table 1).

### Civic/Political Ties

This factor covers participation and interest in the civic or political system. As Table 1 shows, people who did not vote in the last presidential election, lack partisan ties, tend not to have opinions on social and political issues, and seldom read the newspaper have lower telephone coverage.

### Group Ties

Two measures of participation in the activities of voluntary groups were available. The first shows that telephone coverage increases with church attendance and the second that coverage declines as the number of group memberships drops-off.

### Personal Ties

For two of our three measures of the number or frequency of personal ties, telephone coverage is lower for the more isolated individuals. But for socializing evenings with family, friends, and neighbors, a curvilinear relationship appears. Telephone coverage is highest (93%) for the modal group which averages one socialization visit to each of the groups each month. Coverage then declines as one moves away from the mode. As anticipated, coverage dropped to 82% among those who never socialize, but counter to our expectations, telephone coverage also diminishes for those who socialize more frequently, falling to 80% for those who socialize daily. We believe that this group may represent the type of satellite household discussed above in the Household Composition section, households that continually interact with other households and use their telephones.

### Social and Institutional Alienation

Our two measures of confidence in economic institutions show that telephone coverage is lower among the disenchanteds, but no hint of a similar relationship appears for the two political institutions. Srole's anomia scale however does show that telephone coverage is lower among the alienated.

### Misanthropy

Our misanthropy measures differ from those in the previous section by referring to personal attitudes and behaviors rather than being directed at society and its institutions. Those who believe that people are not trustworthy, fair, and helpful to others have lower telephone coverage. Similarly, respondents that were judged as less cooperative by the interviewer are less likely to have telephones. (The curvilinear relationship with interviewer rating of cooperation is not especially meaningful since 81% of respondents are in the top, "friendly" category and only 0.4% in the "hostile" category.)

### Counter-Normative Behavior

In general, the previous sections have shown that telephone coverage is highest for the normative groups (either in terms of the ideal norms, such as voting or practicing norms such as socializing patterns). This section used two normative measures

that did not fall into the broad attachment factor discussed above.

Ever having been arrested worked as predicted with those reporting an arrest in the past being much less likely to have a telephone. The other measure, personal use of alcohol, showed a curvilinear pattern similar to socializing with the modal group of moderate drinkers showing the highest coverage rate.

### Psychological Well-Being

Primarily since we thought that the socially isolated would be less psychologically well-off than the majority of socially integrated individuals, we predicted that coverage would be lower for the unhappy and dissatisfied. The results consistently supported this pattern with coverage dropping as general happiness and satisfaction with friends and family fell and as life was described as duller.

### Physical Well-Being

Poor physical well-being should be associated with low telephone coverage because 1) individuals with more health problems are likely to have higher medical expenses and therefore lower disposable income and 2) because a telephone may not be useful for those with certain physical ailments (e.g. speech and hearing difficulties). Table 1 indicates that coverage was lower among those who rated their health more negatively and who had had more medical problems over the last five years.

In sum, substantial support was found for all of the hypothesized predictors of telephone ownership. But this tells us relatively little since with up to 19,000 cases it is not too hard to find significant relationships and because bivariate associations may not indicate relations net of other predictors. For example, the lower coverage among blacks could be merely a function of the lower income and Southern locale of blacks or the lower coverage among the unhappy might reflect only their relative social isolation (as suggested above).

### Methods

Since telephone ownership was a dichotomy, we used logistical regression rather than standard OLS multiple regression.<sup>4</sup> We also re-ran a number of our models using OLS multiple regression as well as using log-linear analysis that allowed all possible



interactions

and found the results highly similar to the basic logistical regression reported below.

A special problem came from the fact that only a sub-set of variables examined in Table 1 appeared on all 13 GSSs. Some appeared on only a single survey and most appeared on two out of three GSSs, following our standard rotation patterns. Because of this, we developed a basic annual model that included only the items that appeared on all surveys. This model (discussed in Table

2 below) was then used with various combinations of additional variables. This means that instead of a single predictive model with all variables included, there are a series of multiple regressions that control for the annual regression model and sub-sets of the non-annual variables.

A third problem arose because of item non-response. Certain variables in our model were asked only of sub-populations (e.g occupational prestige was asked only of those who had worked for pay for at least a year) and the various scales all had some missing data. We tried to avoid the inclusion of variables that deleted large numbers of cases and checked to see how their inclusion or exclusion affected the distribution of telephone ownership and the relationship between other predictors and telephone ownership. This attempt to keep the case base large and representative led to various preliminary analyses and the deletion of variables that made no independent contribution.

### Multivariate Analysis

Table 2 gives the basic annual model. It contains all variables in our theoretical model that have been asked in all GSS years. In parentheses is the category or end of the scale associated with low telephone ownership. The substantive conclusions will be discussed with Table 3. From the original 19,510 cases, we have 16,110 remaining. The variable accounting for the single largest deletion of cases was occupational prestige (-1,255 cases). With occupational prestige excluded from the analysis, the proportion of cases with telephone in the annual model does not significantly differ from the total before exclusions. With the inclusion of occupational prestige, the percent owning telephones falls to 88.2% from 91.2%, a significant decline. However, an inspection of the models with and without the inclusion of occupational prestige showed no appreciable change in the other associations, so prestige was retained in the analysis.

Table 3 shows the relationship of our predictor variables

after multivariate controls.<sup>5</sup> In all cases we are controlling for the variables in the annual model. For those variables in the annual model the coefficients reported in Table 3 are the same as reported in Table 2 since no more controls are entered in the regression equations. For variables that are not in the annual model, the annual variables are always controlled for.

All of the SES/resource variables remain significant with income being the strongest predictor, but not explaining the other SES associations. Among household composition, all variables are independent predictors of ownership with age being the strongest associate. Similarly, the three cultural variables, region, rural/urban, and race, all independently contribute. Attachment shows a more mixed record. Personal ties fail to show any independent relationships, but all of the other types of attachments show some independent relationship to telephone ownership. Overall, the non-telephone owners bears the clear profile of social isolates. They tend to be residentially mobile, not to read newspapers and not to have voted in the last presidential election, not to attend church nor belong to other voluntary organizations, have low confidence in banks and high social alienation, and be skeptical of human nature. While most of these associations are modest, they collectively describe the non-telephone owner as one with few ties to society in general. Table 3 also shows that respondents with arrest records tend not to be telephone owners. (Alcohol usage was dropped from the analysis). Finally, in general, psychological and physical well-being do not appear related to telephone ownership. Only low family satisfaction has a significant association.<sup>6</sup>

In many regards, people with no telephone in their households are outsiders. They are outside the economic mainstream, from regional and racial sub-cultures, with weak attachment to society and its processes and institutions. They also tend to be in transition, young adults with perhaps their bed but not their phone outside the parental household, separated people changing both their marital status and domicile,<sup>7</sup> recent movers and perhaps people about to move, and the economically marginal about ready to slip into homelessness or institutional care. They differ most from the telephone owning majority in their low income,<sup>8</sup> but income, while the single strongest predictor of telephone ownership, is far from the only important determinant.

## Conclusion

Since non-telephone owning households are so distinctive and vary in several different ways, it is highly important to seriously weigh their exclusion from telephone surveys. While the small percentage without phones minimizes the bias introduced by their exclusion, their distinctive traits can significantly effect such indicators as the unemployment rate and various health care measures (Mulry-Liggan, 1983; Thornberry and Massey, 1983; and Trewin and Lee, 1988). Although concerns about dropping telephone coverage rates in the United States due to the break-up of AT&T (Aufderheide, 1987), do not appear to have yet been realized (Schmidley, 1986a; 1986b; 1987), the absolute and relative rise in the cost of basic, local telephone service raises the possibility that either the coverage rate will fall in the future or that the already major SES differentials between household with and without telephones will increase and magnify the overall bias in telephone surveys.

#### Endnotes

1 In the 1973-75, 1977, 1980, 1982, 1983, 1984, and 1987 surveys

the question asked, "May I have your name and telephone number just in case my office wants to verify this interview?"

A. Is this phone located in your own home?" Response codes are 1) No phone number 2) Refused phone number, 3) Phone in home, 4) Phone not in home (SPECIFY WHERE PHONE IS LOCATED), and 5) Location of phone not given. In 1978 "just" was omitted. In the 1976 survey it was, "Do you have a telephone? A. How many phone numbers altogether do you have? May I please have your name and (one of) your telephone

number(s) just in case I have left something out in this interview? B. Is this phone located in your own home?" In 1985 and 1986, the question asked "to make sure I conducted" instead of "to verify".

In the 1973 and 1974 surveys and the block quota halves of the

1975 and 1976 surveys the information used came only from the

questionnaire. In the full probability halves of the 1975 and 1976 surveys and in the 1977, 1978, 1980, 1982-1987 full probability surveys, information from the screener was also used to obtain the maximum amount of usable information (see below).



variables included (COOP, # of Don't Knows, and partisanship).

No notable differences appeared and the coefficients reported in Table 3 are with these variables excluded.

6 Two variables reverse sign from the bivariate relationships discussed in Table 1. People with low confidence in business tend to own a telephone as do those with strong partisan leanings. While both associations approach a coefficient of 2.0, neither reversal is statistically significant.

7 Usually one of each separated pair is in a new and often temporary residence. We tried the basic annual model with marital status coded as separated vs. not separated and found separated people less likely to have phones with all controls in Table 2.

8 While income captures much of the picture, it fails to measure the whole issue of resources since it only crudely indicates disposable income, does not consider assets or wealth, and may not discriminate enough at the lower end of the income scale. The material state of phoneless households is dramatically lower than households with phones. While only 4.5% of telephone households complained about cracks in the walls and ceiling being a big problem and 5% mentioned cockroaches, the figures among phoneless households were 15% and 20% respectively (Groves and Kahn, 1979). Similarly, while 86% of telephone households had cars in 1970, only 62.% of those without a telephone had a car (Tull and Albaum, 1977).

Table 1

Characteristics of Households with Telephones

Variables	% With Phone	Probability <sup>a</sup>	Eta
1. Resources/Socio-Economic Status			
Family Income <sup>b</sup>			
Lowest decile			
75.3	.000	.247	
2nd	"	82.5	

3rd	"	85.9
4th	"	88.9
5-7	deciles	94.4
7-8.5	"	97.9
8.5+	"	97.4

Occupational Prestige (PRESTIGE)

83.9	12-25	.000	.176
	26-40		89.7
	41-52		94.4
	53+		96.9

Education (DEGREE)

85.0	Less than High School	.000	.143
	High School		92.2
	Associate Degree		95.5
	Bachelor		96.5
	Graduate		96.4

Interviewer Rating of Comprehension (COMPRED)

92.7	Good	.000	.139
	Fair		84.2
	Poor		77.3

Employment Statusc

79.9	R or Spouse Unemployed	.000	.082
	Neither Unemployed		91.2

Dwelling Tenure (DWELOWN)

96.4	Owns	.000	.212
	Rents		84.2
	Other		90.5

Dwelling Type (DWELLING)

94.7	Detached, single family	.000	.190
	Multi-unit		84.2
	Otherd		79.2

Table 1 (Continued)

Characteristics of Households with  
Telephones

Variables		% With Phone	Probability <sup>a</sup>
Eta			
2. Household Composition			
# of Adults (ADULTS)			
1	84.8	.000	.119
2			91.8
3			95.1
4			94.1
5+			93.2
# of Children Under 6 (BABIES)			
0	91.8	.000	.083
1			87.4
2			84.5
3			80.5
4+			79.3
Marital Status (MARITAL)			
Married	92.9	.000	.138
Widowed			93.1
Divorced			86.5
Separated			75.6
Never Married			86.3
Age (AGE)			
18-29	84.5	.000	.130
30-39			90.8
40-49			92.9
50-64			93.5
65+			94.4
Sex (SEX)			

89.3	Male	.000	.044
	Female		91.8

Table 1 (Continued)

Characteristics of Households with  
Telephones

Variables		% With Phone	Probability <sup>a</sup>
Eta			
3. Cultural Background			
Race (RACE)			
92.1	White	.000	.128
	Black		80.4
	Other		85.2
Region (REGION)			
97.0	New England	.000	.144
	Middle Atlantic		92.8
	East No. Central		94.1
	West No. Central		94.9
	South Atlantic		86.4
	East So. Central		83.4
	West So. Central		83.9
	Mountain		90.2
	West		92.0
Rural/Urban (SRCBELT)			
89.7	Large Central Cities	.000	.104
	Medium Central Cities		87.1
	Suburbs, L.C.C.		95.7
	Suburbs, M.C.C.		94.9
	Other Urban		91.1
	Other Rural		86.9
4. Attachments			
A. Community/Mobility Ties			
Years in Community (LOCLIVED)			
85.2	Less than One Year	.019	.090
	1-3 years		90.6



4-10 years	91.9
More than 10 years	94.0
Entire life	91.8

Years in Community (LIVECOM)

82.7	0 years	.511	.238
	1-3 years		91.1
	4-10 years		91.4
	Over 10 years		92.3

Years at Present Residence (LIVEHOME)

80.4	0 years	.034	.240
	1-3 years		87.8
	4-10 years		93.0
	Over 10 years		97.2

Table 1 (Continued)

Characteristics of Households with  
Telephones

Variables		% With Phone	Probability <sup>a</sup>	Eta
4. Attachments (Continued)				
B. Civic/Political Ties				
	Vote in Last Presidential Election			
	Voted			
94.6		.000	.186	
	Didn't vote		83.3	
	Partisanship (PARTYID)			
	Strong			
90.9		.000	.055	
	Weak		91.7	
	Leaner		91.1	
	No Party		86.7	
	Gave "Don't Know" to Policy Items <sup>f</sup>			
	0 Don't Knows			
91.6		.000	.068	
	1		90.4	
	2		89.5	
	3+		86.4	

	Reads Papers (NEWS)	
	Daily	
94.5	.000	.152
	Few times a week	
		88.5
	Weekly	
		88.0
	Less than weekly	
		83.2
	Never	
		80.9

C. Group Ties

	Church Attendance (ATTEND)	
	Weekly	
94.5	.000	.095
	Monthly	
		90.3
	Less than Monthly	
		89.1
	Never	
		87.2

	Membership in Voluntary Organizations (MEMNUM)	
	0	
83.5	.000	.165
	1	
		91.2
	2	
		93.5
	3	
		96.0
	4+	
		95.1

Table 1 (Continued)

Characteristics of Households with  
Telephones

	Variables	% With Phone	Probability <sup>a</sup>	Eta
4.	Attachments (Continued)			
	D. Personal Ties			
	Socializing Evenings with Family/Friends <sup>b</sup>			
	Almost Daily (3-5)			
79.6		.000	.095	
		(6-8)	89.1	
		(9-11)	91.1	
	Monthly	(12-14)	92.7	
		(15-20)	91.4	
	Never	(21)	82.0	

	# of Friends (FRINUM)		
	0		
85.7		.009	.189
	1-3		88.4
	4-6		93.9
	7+		92.6
	# of People You Discuss Problems with (NUMGIVEN)		
	0		
87.3		.005	.079
	1		91.1
	2		91.6
	3+		93.6
E. Social and Institutional Alienation			
	Confidence in Major Companies (CONBUS)		
	Great deal		
92.5		.000	.054
	Only some		91.0
	Hardly any		87.4
	Confidence in Banks (CONFINAN)		
	Great deal		
91.9		.000	.066
	Only some		91.3
	Hardly any		86.0
	Confidence in Executive Branch (CONFED)		
	Great deal		
90.6		.103	.016
	Only some		91.1
	Hardly any		90.0
	Confidence in Legislative (CONLEGIS)		
	Great deal		
89.6		.041	.020
	Only some		91.2
	Hardly any		90.5

Table 1 (Continued)

Characteristics of Households with  
Telephones

	Variables	% With Phone	Probability <sup>a</sup>	Eta
	Anomia <sup>h</sup>			
	Not Alienated (1)			
92.1	.000	.078		
	(2)	92.7		
	(3)	89.6		
	Alienated (4)			
		86.4		
4. Attachments (Continued)				
	F. Misanthropy			
	Hobbesian World View <sup>i</sup>			
	Negative towards			
	people (1)			
84.7	.000	.140		
	(2)	83.4		
	(3)	88.9		
	(4)	89.8		
	(5)	92.5		
	(6)	93.0		
	Positive towards (7)			
		95.4		
	people			
	Interviewer Rating of Cooperation (COOP)			
	Friendly, interested			
91.8	.000	.083		
	Cooperative			
		85.5		
	Restless, impatient			
		86.7		
	Hostile			
		95.9		
5. Counter-normative Behavior				
	Arrested for Crime (ARREST)			
	Yes			
80.6	.000	.115		
	No			
		91.4		
	Alcohol Consumption <sup>j</sup>			
	Doesn't drink			
89.3	.000	.068		
	Drinks, never drunk			
		92.9		
	Sometimes drunk			
		88.6		
6. Psychological Well-Being				
	General Happiness (HAPPY)			
	Very			

93.5	.000	.105
Pretty		90.7
Not too		83.2

Table 1 (Continued)

Characteristics of Households with  
Telephones

Variables		% With Phone	Probability <sup>a</sup>	Eta
Satisfaction with Family (SATFAM)				
Very great				
92.3	.000	.108		
		Great	91.4	
		Quite a bit	90.1	
		A fair amount	86.4	
		Some	82.2	
		A little	78.8	
		None	78.6	
6. Psychological Well-Being (Continued)				
Satisfaction with Friendships (SATFRND)				
Very great				
92.4	.000	.096		
		Great	91.8	
		Quite a bit	89.5	
		A fair amount	86.6	
		Some	82.0	
		A little	80.4	
		None	80.5	
Life is ... (LIFE)				
Exciting				
92.0	.000	.082		
		Routine	90.6	
		Dull	81.0	
7. Physical Well-Being				
Self Rating of Health (HEALTH)				
Excellent				

92.8	.000	.071	
			Good 90.9
			Fair 88.2
			Poor 85.6
Satisfaction with Health (SATHEALT)			
Very great			
91.4	.000	.058	
			Great 91.6
			Quite a bit 90.4
			A fair amount 89.8
			Some 87.7
			A little 85.4
			None 84.2

Table 1 (Continued)

Characteristics of Households with  
Telephones

Variables	% With Phone	Probability <sup>a</sup>	Eta
Hospitalization/Disability (HOSDIS5)			
Yes, last year and previous 4 years			
87.4	.000	.048	
			Yes, last year 91.3
			Yes, previous 4 years 91.8
			No 91.3

a - All probability calculations use SRS assumptions.

b - Various income variables (INCOME, INCOME77, INCOME82, INCOME86)

were cut into indicated deciles. These were the largest number

of categories that could be reasonably matched across years and

income codes.

c - If either respondent (WRKSTAT) or spouse (SPWRKSTA) were unemployed or coded other (mostly disabled) on labor force

participation, case was in first category.

d - Trailers, partly commercial structures, and other non-traditional

dwelling units.

e - Combination of variables (VOTE72, VOTE76, VOTE80, and VOTE84).

f - Count of "Don't Knows" responses to 22-24 attitude items on each

survey. Yearly mixture varies due to rotation pattern of questions. Full details available from author.

g - Additive scale of SOCOMMUN, SOCREL, and SOCFREND.

h - Additive scale of ANOMIA5, ANOMIA6, and ANOMIA7.

i - Additive scale of TRUST, HELPFUL, and FAIR. HELPFUL reverse coded.

j - Combines variables DRINK and DRUNK.

Table 2

Logistic Regression Predictors of  
Households with Telephone: Annual Items Only

(Standardized Logit Coefficients)

Family Income (Low)	-16.1
Age (Young)	-13.8
Region (South)	-10.6
Sex (Male)	-9.3
# of Adults (Few)	-8.5
Voted (Didn't)	8.4
Church Attendance (Infrequent)	-6.3
Rural/Urban (Rural)	6.2
Education (Low)	-6.1
Race (Black)	4.8
Comprehension (Low)	3.7
# of young children (Many)	3.6
Unemployed (Yes)	3.1
Occupational Prestige (Low)	2.7
Marital Status (Not Married)	2.3
Partisanship (Strong)	-1.8
DKs (Many)	1.6
Cooperation (Low)	1.0

(16110)

The category in parentheses is the group or value that has less telephone coverage. Thus a negative coefficient means not having a telephone is associated with the category in parentheses.

The standardized logit coefficients are the logit regression coefficients divided by their standard error. We are considering all standardized coefficients of 2 or greater to be statistically significant (SRS assumptions).

Table 3

Logistical Regression Predictors of  
Households with Telephones

1. Resources/SES	Standardized Logit coefficients <sup>a</sup>	N
Income (Low)	-16.1	(16,110)
Occupational prestige (Low)	-2.7	(16,110)
Education (Low)	-6.1	(16,110)
Comprehension (Poor)	3.7	(16,110)
Employment Status (Unemployed)	3.1	(16,110)
Dwelling Tenure (Renter)	4.0	(3,755)
Dwelling Type (Not single, family unit)	3.9	(3,755)
2. Household Composition		
# of Adults (Few)	-8.5	(16,110)
# of Children Under 6 (Many)	3.6	(16,110)
Marital Status <sup>b</sup> (Not married, except widowed)	2.3	(16,110)
Age (Young)	-13.8	(16,110)
Sex (Male)	-9.3	(16,110)
3. Cultural Background		
Race (Black)	4.8	(16,110)
Region <sup>c</sup> (South)	-10.6	(16,110)
Rural/Urban (Rural) <sup>d</sup>	6.2	(16,110)
4. Attachments		
A. Community Ties/Mobility		
Years in Community - LOCLIVED (Short time)	-0.8	(1,262)
Years in Community - LIVECOM (Long Time)	1.6	(1,179)
Years at Present Residence (Short Time)	-3.7	(1,179)



B. Civic/Political Ties		
Voted (Didn't)	8.4	(16,110)
Partisanship (Strong)	-1.8	(16,110)
DKs (Many)	1.6	(16,110)
Newspaper Reading (Infrequent)	2.5	(8,762)

Table 3 (Continued)

4. Attachments (Continued)	Standardized Logit coefficients	N
C. Group Ties		
Church Attendance (Infrequent)	-6.3	(16,110)
Group Membership (Few)	-3.7	(8,003)
D. Personal Ties		
Socializing		
Lots vs. moderate and little (Lots)	-0.9	(8,794)
Little vs. moderate and lots (Little)	-1.8	(8,794)
# of Friends (few)	-0.4	(1,179)
# of Discussants (many)	0.7	(1,262)
E. Social/Institutional Alienation		
Confidence in companies (Low)	-1.8	(11,312)
"    in Banks (Great)	2.1	(11,312)
Anomia (Alienated)	2.8	(8,322)
F. Misanthropy		
Hobesian Scale (Misathropic)	-2.3	(8,003)
Cooperation (Non-cooperative)	1.0	(16,110)
5. Counter-Normative Behavior		
Arrested (Been arrested)	-3.3	(8,322)
6. Psychological Well-Being		
Happiness (Unhappy)	0.9	(11,312)
Family Satisfaction (Low)	2.6	(11,312)
Friend Satisfaction (Low)	0.5	(11,312)
Life Activity (Dull)	0.6	(8,322)

## 7. Physical Well-Being

Self-rating of Health (Poor)	1.9	(8,322)
Health Satisfaction (Low)	0.8	(11,312)
Hospitalization/Disability (Yes)	1.6	(7,399)

The category in parentheses is the group or value that has less telephone coverage. Thus a negative coefficient means not having a telephone is associated with the category in parentheses.

a Used LOGIT model on SPSSX PROBIT routine:  $(\text{LOG}(p/(1-p))/2) + 5) = \text{intercept} + Bx$ .

b Marital status coded married and widowed vs. divorced, separated or never married.

c Region coded South/Non South.

d Rural/Urban coded suburb of large central city, suburb of smaller

central city, other urban, large central city, smaller central city, rural.

e Dummy variables from additive sociability scale.

First is cut 3-6 vs. 7-21 and second is cut 20,21 vs. 3-19.

## Appendix 1:

A Summary of Studies of Demographic Factors  
Related to Telephone Ownership

As Tables A.1 and A.2 summarize, there is great consistency both within the United States and cross-nationally on the bivariate demographic associates of telephone ownership. Most relationships hold up across all studies and countries.

First, telephone coverage is greater in urban areas than in rural areas, although in countries with very high overall telephone penetration (e.g. Canada, France, Denmark, and Norway) the difference is rather small. Second, in the United States coverage is lower in the South. Similar regional differences prevail in at least some other countries (e.g. Ireland and Israel), but regional categorizations are country specific and are hard to compare cross-nationally. Third, in the United States coverage is lower among non-whites. No racial information was available from other countries.

Fourth, telephone coverage is always lower among those with lower incomes, the unemployed, those in manual or low prestige occupations, and the less educated.

Fifth, telephone coverage is consistently lower for renters and people living in apartments or trailers rather than single, family homes. Only the relationship with renting has data from both the United States and other countries.

Sixth, households without telephones tend to be headed by younger persons, unmarried people, and perhaps males (data exists only for the United States and even in the United States the relationship is uncertain). Non-telephone households also tend to be either smaller than average or larger than average.

Table A.1

Variables		Characteristics of Households with Telephones						
		in the United States						
		Studies						
H	I	A	B	C	D	E	F	G
Rural-Urban (Rural)		+	*	*	*	+	*	+
+	+							
Region (South)		+	*	*	*	+	+	*
+	+							
Race (not white)		+	+	+	+	+	*	+
+	+							
Income (Low)		*	*	*	*	+	+	+
+	+							
Unemployed (Yes)		*	+	*	+	+	*	*
*	+							
Occupation (Manual)		*	*	*	+	*	*	*
*	*							
Education (Low)		*	+	+	+	+	*	+
+	+							
Housing (Renter)		*	*	+	*	+	*	+
*	*							
Housing (Trailer)		*	*	*	*	+	*	+
*	*							
Housing (Apartment)		*	*	*	*	+	*	+
*	*							
Age of head (Young)		*	*	+	*	+b	+	+
*	*							
Marital Status (Single)		*	+	*	+	+	*	+
+c	+							

Household size (Small)	*	*	+	*	+d	*	*
+e +f							
Sex (Male)	*	+	o	+	+	*	-g
+ *							

- A=Census, 1980
- B=Mulry-Liggan, 1983
- C=Freeman, et al., 1982
- D=Wolfe, 1979
- E=Groves and Kahn, 1979
- F=Schmidley, 1986a; 1986b
- G=Tull and Albaum, 1977
- H=Thornberry and Massey, 1978; 1983
- I=Thornberry and Massey, 1988

a A "+" means that phone ownership is lower among the group in parentheses.

A "-" means that phone ownership is higher among the group in parentheses.

A "o" means phone ownership doesn't differ by groups.

A "\*" means that this variable was not used in study.

b Respondent's age, not head's.

c Small difference, bigger difference among separated.

d Number of adults.

e Non-phone households are both smaller and larger than average.

f Non-phone household are both smaller and larger than average see also

Maklan and Waksberg, 1988

g Sex of head of household.

Table A.2

Characteristics of Households with  
Telephones  
Outside the United States

Variables	AU	AS	CA	DE	FI	FR	GE	GR	HU	IS
NE NO SP KU										
Rural-Urban (Rural)	+	+	+	+	+	+	+	+	+	+
+ o + *										
Income (Low)	+	*	+	*	+	+	+	+	+	+
+ + * +										
Unemployed (Yes)	+	*	+	*	*	*	*	*	*	*
* * * +										
Occupation (Manual)	*	+	*	*	+	*	*	*	+	+
+ * * +										

Education (Low)	*	*	*	*	*	*	*	*	*	*
+ * * *										
Housing (Renter)	+	*	+	*	*	*	*	*	*	*
* * * +										
Age of head (Young)	+	*	*	+	*	+	*	*	+	*
+ * * +a										
Marital Status (Single)	*	*	*	+	*	*	*	*	*	*
+ * * +										
Household size (Small)	+b	*	+	*	*	+b	*	*	*	+b
+b + + *										

AU=Australia AS=AUSTRIA CA=Canada DE=Demark FI=Finland  
 FR=France Ge=Germany (West)  
 GR=Greece HU=Hungary IS=Israel NE=Netherlands NO=Norway  
 SP=Spain UK=United Kingdoms

a Non-phone households headed by very young and very old.  
 b Non-phone households are both smaller and larger than average.

Source: Steel and Boal, 1988; Trewin and Lee, 1988; Wilson, Blackshaw, and Norris, 1988.  
 Countries rated on two or more variables were included.

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