

Project NOAH II

(Preliminary Results)

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Highlights of Project NOAH II
(National Outlook for Automation in the Home)

1. Project NOAH II is one of the few studies of its kind conducted in the United States in the 1990s that includes comprehensive data on household use of computers and the Internet. The data were gathered from mid-February to April 1999 and include computer/Internet use for every member of the household as well as other important aspects pertaining to new information and media technologies for the home. The data gathered for the study are truly “household” data. This study is funded by the National Science Foundation Grant No. 447681-21342-3.
2. The study is also unique in that it includes both computer households (905) and non-computer households (300).
3. The study is a sequel to Project NOAH I conducted in the 1980s, also funded by the NSF. Together these studies constitute one of the most important sets of studies that cover the last two decades of this century on home computing. They provide comparison data that we consider invaluable.
4. The study is probability based and therefore represents the population of computer households and non-computer households with usual statistical sampling errors.
5. Our data collection procedure involves both a telephone survey (CATI) and a time diary of computer usage among a small sub-sample of 120 households. The time diary covers a two-week period of computer use for every member of the household. The time-diary is a software (cf. Apptrack[?]) that resides unobtrusively in the computer. It was developed in-house in CRITO and is specifically designed to gather data on household use of computers.
6. The Field Research Institute, San Francisco, one of the most reputable market/opinion research agencies in the country, assisted us in our data collection effort.

Summary of Results – Highlights

Computer Households – Demographic Profile

Personal Computer (PC) owner households can be characterized as white/caucasian between the ages of 31 and 50. They are more likely to have children, perhaps indicating that they are buying PCs for their children. PC owning households (HHs) are better educated and have higher incomes than non-PC owning households. They are more likely to be professionals and managers with a relatively significant percentage having their own business at home. These demographics are consistent with what we observe in other studies. (Table 1)

Computer Ownership Profile

Multiple PC ownership is a popular phenomenon as 27% of PC owning HHs have more than 1 PC. (Table 2). The mean number of PCs per HH currently in use is 1.39. Most of the computers (90%) continue to be IBM/PC based. A good percentage (18%) of the HHs owns laptops. (Table 3). The laptop ownership may reflect the lower pricing and the availability of more powerful laptops that are beginning to replace desktops. Laptop ownership also reflects a need for portable computing even at the home front, as people now want a computer whether they are in the home or outside.

Internet Connection

Internet connection is high among PC owners (77%). Although 73% of PC owners have cable at home, only 6% are connected to the Internet via cable modem. There is a lot of room for growth (Table 4).

Physical Location of Computers in the Home

The computer is capable of occupying practically every living space in the home. Although home office is the most common place for the computer to be located (29%), people are also comfortable with having a computer in the *living space* of the home (or *the social space*) -- bed room (16%), den/recreation room (16%), living/family room (15%). The presence of a PC in the kitchen space has a rather low occurrence (4%). (Table 5).

Computer Use

The most important use of PCs remains job/work-related, but it seems there are two segments in this regard. People either mention job use as the number one use or they do not mention work related usage at all among the top three uses. Instead, e-mail and Internet are consistently among the top three uses of PC at home. Entertainment is also relatively important, but it is secondary to e-mail and Internet uses. The lesson here may be that there are two groups of segments, those that use the computer primarily for work at home and those that use the PC for more domestic purposes. This also shows that computers are beginning to be integrated more into the home life more than ever before. (Table 6).

Summary of Results – Highlights

Computer Use Continued

The biggest increase in the use of the PCs is in the area of e-mail and family entertainment in that order. For e-mail this is true even if we only look at the HHs that purchased the computer within the last 5 years, just when the Internet began to take off. The unexpected use of the PC as family entertainment represents an area that future development of PC can take. Even though PCs are not purchased with entertainment as the primary use in mind, people tend to use the PC more for entertainment once it enters the home. (Table 7).

Internet Use

Taken together, *social communication* and *information search* are the biggest use of the Internet. While job related use remains popular for the Internet, it seems people do not want to be tied to their jobs when at home (Table 8). On-line shopping is relatively small but not insignificant. Even in this category, on-line shopping is very low for daily/weekly purchased items compared to infrequently purchased goods and services. There are several implications for this result.

Computer Expertise

People do not want to be experts, but are content to be knowledgeable about computers. They do not want to know the technical details or be preoccupied with the technical aspects; they just want to know enough to be self-reliant. (Table 9).

Frustration with Computers

Compared with other technologies in the home, people express the greatest frustration with the computers. (Table 10).

How essential is the PC compared to other home-based technologies?

The most essential technologies for the home are the following in order of importance: refrigerator/stove (98%), telephone (93%), automobile (95%), and washer/dryer (88%). The computer, the TV and the microwave are lower in their essentiality (about 50%). VCR and Stereo are the lowest (30%). (Table 11)

New Technologies

New technologies are entering into the home at different rates. In terms of not-so recent technologies, the ownership is as follows – stereo/CD player (96%), VCR (97%), answering machine/voice mail (85%), Cable TV (73%), video camera (46%). As for the rest, the figures are, video game consoles (45%), cellular phones/PCS are (64%), pagers (36%), electronic organizers/hand held computers (22%), fax (20%), DVD (13%), digital cameras (14%). For non-computer households, the rankings are generally the same but the incidence is much lower. (Table 12).

Summary of Results – Highlights

Futuristic Technologies

We asked the respondents how interested they would be in some futuristic technologies (see Table 13). Despite the media hype about futuristic technologies, the interest in futuristic technologies remains low to slightly significant. The lowest interest is shown in the web-refrigerator (6% interested), the highest interest in security related home automation (31%) closely followed by networked communication (28%). Home theatre and entertainment is at 22% and local area networks are at 14% (Table 13). This is to be expected given that it has taken almost 20 years for PCs to reach an adoption rate of 58-60% among American households, compared to 8% in the mid 1980s and 30% in early 1990s.

**Table 1
Demographics**

		CHH*		NCHH**	
		Freq.	%	Freq.	%
<u>Race</u>	White/Caucasian	802	88%	256	85%
	Black/African American	33	4%	22	7%
	Asian/American	20	2%	3	1%
	Hispanic	27	3%	9	3%
	Other	28	3%	10	3%
<u>Household</u>	Under \$30,000	134	15%	120	40%
	30,000 -- 50,000	211	23%	70	23%
	50,001 -- 75,000	201	22%	44	15%
	75,001 -- 100,000	140	15%	11	4%
	> 100,000	128	14%	11	4%
	Refused	76	8%	44	11%
<u>Households</u>	With Children	401	44%	78	25%
	Without children	505	56%	222	75%
<u>Household Size</u>	1 Person	123	14%	82	27%
	2	281	31%	116	39%
	3	179	20%	42	14%
	4	205	23%	16	5%
	5 +	117	13%	10	3%
<u>Respondents</u>	Male	414	46%	110	37%
	Female	496	55%	190	63%
<u>Marital Status</u>	Single	182	20%	53	18%
	Married	603	66%	154	51%
	With Partner	25	3%	11	3%
	Divorced	53	6%	36	12%
	Widowed	34	4%	41	14%

*Computer Households

**Non-computer Households

**Table 1 (cont.)
Demographics**

		CHH*		NCHH**	
		Freq.	%	Freq.	%
<u>Age</u>	18	23	3%	4	1%
	19-24	78	9%	13	4%
	25-30	95	11%	25	8%
	31-40	241	27%	60	20%
	41-50	240	27%	47	16%
	51-60	126	13%	41	14%
	61 above	87	10%	122	40%
<u>Education</u>	High School and below	183	19%	159	53%
	Trade School	26	3%	15	5%
	College and Some College	555	61%	109	36%
	Postgraduate	151	17%	17	6%
<u>Occupation</u>	Professional/Technical/Manageri	499	53%	72	24%
	Sales/Clerical	99	11%	27	9%
	Skilled	55	6%	25	8%
	Service/Laborer/Farm	51	6%	41	4%
	Home Maker	55	6%	31	10%
	Retired	80	9%	87	12%
<u>Home-Based Business</u>	Yes	192	21%	21	7%

*Computer Households

**Non-computer Households

Table 2
How Many Computers in Use at Home

Number of Computer	Frequency	%
1	660	73%
2	183	20%
3	44	5%
4	13	1%
5	8	1%
6+	2	.2%

(Mean 2.51 computers in use)

Table 3
Type of Computer Owned

		Freq.	%
What Type of Computer?	Apple	104	11%
	IBM/PC	829	90%
Desk Top	Yes	854	94%
	No	56	6%
Lap Top	Yes	161	18%
	No	749	82%

Table 4
Internet Connection

		Freq.	%
Internet Connection	Yes	698	77%
	No	206	23%
Type of Internet Connection	Telephone Modem	658	94%
	Cable Modem	35	6%

Table 5
Physical Space
(Where Computers are Located)

	Freq.	%
Family Room	119	13%
Living Room	132	15%
Kitchen	33	4%
Den/Recreation Room	149	16%
Bedroom (Adult)	149	16%
Bedroom (Child)	79	9.2%
Home Office	268	29%
Dining Room	43	9%

Table 6
Three Most Important Uses

		Freq.	%
#1	Job Related	207	23%
	Accessing Internet (info, shopping)	173	19%
	Email	135	15%
#2	Accessing Internet	174	19%
	Hobbies/Games/Entertainment	147	16%
	Email	132	15%
	Correspondence	111	12%
#3	Hobbies/Games/Entertainment	145	16%
	Correspondence	119	13%
	Assessing Internet	114	13%
	Email	107	12%

Table 7
Use of Computers – Some General Trends

	Anticipate Use %	Actual Use %	
Children's Education/Entertainment	55%	59%	Entertainment Center
Financial Management	53%	56%	Home Management Center
Job Related Work	63%	71%	Work Center
Family Entertainment/Games	68%	86%	Entertainment Center
Word Processing	86%	86%	
Email Correspondence	35%	78%	Communication Center
Internet/Web Surfing	39%	77%	Activity Center

Among households that purchased the first computer within the last 5 years.

	Anticipate Use %	Actual Use %	
Email Correspondence	56%	70%	Communication Center
Internet/Web Surfing	65%	70%	Activity Center

Table 8
Internet Uses at Home

	Freq.	%	
Work or job-related email	389	56%	Work Center Communication Center
Email family and friends	659	94%	Communication Center
Shopping for or purchasing daily/weekly purchase item (food)	69	10%	Shopping Center
Shopping for or purchasing large ticket items (cars, appliances)	216	31%	Shopping Center
Online banking/Stock quotes	273	39%	Shopping Center
Sending faxes	215	24%	Communications Center
Reading news information	528	76%	Information Center
Getting sports information	349	50%	Information Center
Community information	251	36%	Information Center
Chat groups	251	36%	Communications Center
Web surfing	590	85%	
Bulletin Boards	143	21%	Communications Center

Table 9
Expertise

How do the respondents feel how expert they are in terms of using the computer?

	Freq.	%
Expert	219	24.1%
Not expert but knowledgeable	484	53.2%
Can do a few things well	142	15.6%
Beginner	64	7.0%

Table 10
Frustration

How frustrated are you with the following? (Computer Owning Household)

	Never/Rarely	Sometimes	Freq/All the Time
Computer	247 (27%)	410 (55%)	151 (16%)
Stereo	729 (83%)	125 (15%)	24 (3%)
Telephone	710 (78%)	167 (16%)	33 (4%)
Microwave	820 (90%)	59 (6%)	12 (1%)
Automobile	628 (70%)	234 (24%)	36 (4%)
VCR	598 (65%)	246 (28%)	65 (7%)
TV	788 (87%)	91 (10%)	25 (3%)
Washer/Dryer	758 (83%)	93 (11%)	17 (2%)
Refrigerator/Stove	841 (93%)	51 (6%)	17 (2%)

Table 11
Essential Technologies

	CHH* (%)	NCHH** (%)
Computer	453 (50%)	18 (6%)
Stereo System	257 (28%)	63 (21%)
Television	474 (52%)	181 (60%)
Telephone	841 (93%)	267 (89%)
Refrigerator/Stove	892 (98%)	297 (99%)
Microwave	472 (52%)	149 (50%)
Washer/Dryer	797 (88%)	260 (87%)
Automobile	864 (95%)	277 (92%)
VCR	276 (30%)	81 (27%)

*Computer Household

**Non-Computer Household

Technological space
(Essentiality)

Table 12
New Technologies in the Home

	CHH*		NCHH**	
	Freq.	%	Freq.	%
Electronic organizer or Handheld Computer	203	22%	26	9%
Fax or telex machine (separate from PC)	186	20%	11	4%
Pager	329	36%	51	17%
Voice Mail/Voice Message Service/Answering Machine	776	85%	183	61%
Video game console (Nintendo, Sony Playstation, etc.)	407	45%	80	30%
DVD, DIVX, Laser disk player	118	13%	12	4%
Stereo System/CD Player	871	96%	224	74%
Satellite TV	133	15%	41	14%
Cable TV	666	73%	197	66%
Cellular Phone or PCS	580	64%	99	32%
Video Camera	422	46%	79	26%
VCR	885	97%	256	85%
Digital Camera	123	14%	14	5%

*Computer Households

**Non-computer Households

Table 13
How Interested Are You?

	CHH*				NCHH**			
	Low	%	High	%	Low	%	High	%
<u>Shopping</u> A Refrigerator with a computer screen	718	78%	55	6%	252	84%	15	5%
<u>Entertainment</u> Audio-Video System linking various units (Home Theatre)	445	49%	204	22%	199	66%	37	12%
<u>Communication</u> A communication system that links telephone, computer, internet access, TV, etc. (network)	338	37%	258	28%	198	66%	51	17%
<u>Security</u> A home computer control system that manages lighting, temperature, security	326	36%	285	31%	180	60%	59	20%
<u>Home Network</u> A local area network for the home which connects multiple computers, printers, data sources	538	59%	122	14%	250	83%	19	6%

*Computer Households

**Non-computer Households

Exhibit of Complete Database

<p>Identification Field Research Corporation project code Respondent identification number Date of interview FIPS number Zip code of respondent Sample key Sample replicate</p> <p>Computer in the Home: First Acquired When first computer acquired Uses of first computer Frequency of use compared with now</p> <p>Current Home Computer Configuration Total computers in the home Age of computers Macintosh or IBM/IBM-compatible Operating system Desktop or laptop Household users of computers Computer location Internet connection Type of Internet connection</p> <p>Household Use of Computers Hours used by household members Types of uses Most frequent uses by household members Household have WebTV Length of time for Internet access Types of uses of Internet by household members Internet access outside of the home Household read computer-related magazines Who in household reads computer-related magazines</p> <p>Other Technologies in the Home How essential are appliances and household electronics Level of frustration using appliances and household electronics Other technology-related household products Future technologies in the home</p> <p>Attitudes about Computers Attitudes about household use Attitudes about Internet use Attitudes about children's use Attitudes about computers and children's education Satisfaction with computers in household Advice-seeking about computers Advice-giving about computers Personal (psychological) characteristics</p>	<p>Respondent Characteristics Gender of respondent Age of respondent Computer use of respondent Computer expertise of respondent Marital status of respondent Level of education of respondent Occupation of respondent</p> <p>Household Member Characteristics Household size Relationship of household member to respondent Sex of household member Age of household member Computer use of household member Computer expertise of household member Level of education of household members Occupation of household members Work at home Home-based business Household income Race or ethnicity of respondent</p> <p>Constructed Variables Children age 17 and under in household Household configuration Number of computer users in household Number of adult computer users in household Number of children computer users in household Highest level of computer expertise in home Age of youngest computer in household Age of oldest computer in household Apple Macintosh in household IBM/IBM-compatible in household Laptop in household Desktop in household Location of computers in house Household level types of Internet uses Highest level of education in household Total other technology-based products in household</p>
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Title Page of AppTrack?



National Outlook for Automation in the Home

AppTrack?
Instruction Manual

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