



Title	The Japan Survey on Information Society 2001
Author(s)	直井, 優; 菅野, 剛; 岩渕, 亜希子
Citation	年報人間科学. 2003, 24-2, p. 125-153
Version Type	VoR
URL	<a href="https://doi.org/10.18910/8070">https://doi.org/10.18910/8070</a>
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## The Japan Survey on Information Society 2001

直井 優・菅野 剛・岩渕亜希子

### 〈要旨〉

本調査研究は、情報格差についての新たなタイプの格差をとりあげ、情報技術(「IT」)革命がもたらす文化・社会・心理的効果について学際的に明らかにするものである。文化的側面については、情報技術利用・普及に伴う価値観の変遷、脱工業化社会における脱物質主義と物質主義、グローバル化等の研究を進める。社会的側面については、メールによるコミュニケーションの進展と友人関係の変化、情報技術を媒介とするサポート関係の進展と家族関係の移り変わりや、情報格差の把握として男女格差、年齢格差、地域格差、学歴や職業、収入等の社会階層格差を研究する。心理的側面については、仕事・家事の複雑性と情報技術の自己指令性・知的柔軟性・権威主義への関連、情報技術利用による心理的变化、情報化の進展に伴う情報漏洩・プライバシーについての意識、高度情報化社会について抱かれるイメージ(光と影)とその規定因等を取りあげる。

本稿では、ドイツ全国調査ALLBUS 1998との国際比較を念頭において2001年に実施した「情報化社会に関する全国調査」(the Japan Survey on

Information Society; JIS)の第一回調査の説明と基本的な分析を示す。JIS 2001は超高齢社会を考慮した標本設計となっており、調査対象は満20歳以上八九歳以下の男女である。調査は日本全国102地点、層化二段無作為抽出法、計画標本数は1500、調査実施時期は平成十三年十月―十二月、回収数1011票、有効回収率六七・四%である。調査方法は個別面接聴取法と留置法を併用している。

キーワード

全国調査、情報化社会、脱物質主義、社会階層、社会関係資本

## 1 JIS PROJECT

### 1.1 Objectives

In this paper, we introduce the Japan Survey on Information Society (JIS) project and show some of the basic results. The revolution in Information Technology (IT) or Information and Communication Technology (ICT) in Japan has affected people's values, social orientation, psychological functioning, lifestyle, and perceived social image of the information society and aged society. The JIS survey is intended to research the information society and to analyze interdisciplinary the various aspects related to information technology, Internet, and globalization.

The JIS surveys are the products of a program of cross-temporal social science research. The effort began in early 2000 by the Graduate School of Human Sciences at Osaka University. In 2001, the Commission of the Japan Survey on Information Society launched the JIS series, designed to provide a regular monitoring of the social, cultural, and psychological aspects of the Japanese public. These JIS surveys were carried out in the autumn of 2001 and 2002. Further detailed information on the JIS surveys series will be available on the World Wide Web, via the website of the

### 1.2 Study Description

**Information Literacy** JIS 2001 surveys queried respondents on standard JIS measures such as public awareness of and attitudes toward the information society, and also focused on social orientation, values, lifestyle, education issues, social networks related to the information society, and also focused on expectations and fears regarding the progress of information technology.

We asked respondents about their level of involvement with various information equipments, such as stereos, computers or mobile phones, following their use of e-mail both in private and on business, and using the Internet. We also asked whether they had heard or knew anything about the Internet, or the online service network. Questions about the images of information society and aged society measured respondents' attitudes for or against the information society and aged society, and how well-informed respondents were about the information society and aged society. Questions about attitudes toward the information society were repeated in JIS 2002 and analyzed together. The survey contains measurements of information literacy and additional questions covering topics such as information and media-

related behavior, knowledge and images, positivism and skepticism in attitudes towards information technology and information society. We also queried respondents about their interests, with specific reference to the contents of TV programmes, newspapers, journals, and homepages. These are included for measuring and comparing the roles and effects of older and newer media.

We asked people to tell us what effects they thought information technologies are having on economic growth, jobs, lives, shopping, information retrieval, interpersonal communication, friendship, family communication, standards of morality, cross-border information flow, the costs of doing business, privacy concerns, the degree of convenience in everyday life, and the disparity between the rich and the poor. Computer network privacy issues included respondents' worries about how companies use their personal information, and awareness of the importance of maintaining the privacy of personal information.

Respondents were also queried on the role government should play in economic and social welfare situations, the role of the government in continuing restructuring, and the influence of technology and new communication techniques on politics, gender and aged society.

**Social Stratification in the Information Society** ICT, such as computers, PDAs, mobile phones, and televisions are taking an increasingly prominent place in our everyday life. These devices are the foundation of the advanced information society.

One of our important purposes is to study the relationships between social stratification and ICT, the new aspects of social stratification. Increasing inequality amid the glowing affluence of Japanese society was pointed out by the SSM survey carried out in 1995. At the same time computerization and globalization also progressed rapidly. However, there is a lack of research on the new gap, the so-called "digital divide", which is a product of variation in use of ICT. This survey analyzes a set of items about social stratification. We gathered data on educational background, household and individual income, occupation, and occupational prestige. Furthermore, a well-designed step-by-step set of questions about ICT such as image, knowledge, possession, and use are analyzed. In other words, this survey steps into an area neglected by ordinary social stratification research. We also research estimated validity and reliability of the question items which measure information literacy.

**Socio-demographic variables** Socio-demographic items

include age, gender and marital status, the respondent's and spouse's completed education, the respondent's and spouse's occupation, household income, and individual income. These items are designed to be comparable with the items of Social Stratification and Social Mobility survey (SSM) that is the most famous representative survey of Japan on social Stratification. Other background information was gathered on the type of residence, region of residence, size of locality, the number of people residing in the home, exact occupational conditions for Dictionary of Occupational Titles coding, general subjective social class, subjective social class in the information society, etc.

### **Value, Social Orientation, and Psychological Functioning**

We measured various aspects of personality, such as values, social orientation, and psychological functioning. Kohn and Schooler (1983) verified that the job condition is important in the positive relationship between social stratification and personality. These findings are supported by an international comparison of America, Japan and Poland (Kohn *et al.* 1990). Some psychological items and social consciousness items are comparable with the research of Kohn and Schooler, including self-directedness, intellectual flexibility, authoritarian conservatism, anxiety, trustfulness, standards of morality,

conformity, and self-confidence, (Naoi and Schooler 1985). We also measured the substantive complexity of jobs, such as the complexity of data, people, things, the closeness of supervision, and the other respects of job conditions. With ICT's recent rapid development, people are more engaged in touching computers and in information processing both in business and in everyday life. It is quite important to research the new aspects of relationships of work and personality and the learning generalization mechanism, the relationships among social stratification in the information society, changing occupational conditions in information and communication technology, and psychological functioning in global society. A detailed examination of the degree of complexity of the work will be important. We place ICT, information literacy, information technology availability in the research of social stratification, job condition, and personality in this JIS survey. We aim at a comprehensive contribution as for these themes.

**Post-Industrial Society and Post-Materialism** It is important to research on the value and life style in the information society. It is often pointed out that the social structure is changing from the industrial to post-industrial and post-modern, and information and knowledge have

become more and more important nowadays. Corresponding to this, people's values are also changing in post-industrial society (Bell 1974). There is important accumulation in the international comparison and the longitudinal survey in the World Value Survey. We measured some modified versions of Inglehart's items on post-materialism and materialism (Inglehart 1971).

**Comparative View** Informatization and Computerization is proceeding rapidly on a world-wide scale. An International comparative view, using the Nation Wide General Social Survey (NGSS) is important for understand these worldwide phenomena (J. A. Davis *et al* 1994). In other words, in contrast to the United States which led the information technology revolution, two advanced countries, Germany in Europe and Japan in Asia, which both succeeded in rapid economic recovery after the World War II, are important as a comparative object. We rely on the German General Social Survey (ALLBUS) for the comparison. ALLBUS has been conducted bi-annually since 1980. It surveys attitudes, behaviors, and social structures in Germany (Terwey 2000). ALLBUS is the joint project of ZUMA and ZA, and is one of the most sophisticated social researches for our purpose. Though the JIS survey fieldwork was carried out is 3 years

later, the JIS 2001 survey is designed for comparison with various aspects of the 1998 ALLBUS items.

**Continuity and Replication** It is also important to do a social monitoring repetitively to understand the dynamics and social change of Japanese social structure. JIS surveys are intended to be replicative surveys with standardized question items.

**Sampling Design for the Aged Society** The population of elderly people, 65 years old and over, was less than 5 % of the total population of Japan in 1950. But aging proceeds rapidly; in 1970 the proportion exceeded 7 % (i.e. "the aging society"), and 14 % (i.e. "the aged society") in 1994. Japan's population is 127,290,000 at present (October 1, 2001), which is close to the fieldwork date of the JIS 2001 survey. The population of elderly people is 22,870,000, 18% of total population. Just as aging progresses rapidly, advanced computerization has also developed rapidly. Modern Japanese society is an interesting time when these two social phenomena proceed together. Generally, elderly people are located around the working population. But when compared with Western countries, the elderly people's labor force participation rate is high in Japan. The labor force participation rate of Japanese elder people is

32.9 % for men and 13.8 % for women. In the U.S., the rate is 14.4 % for men and 9.4 % for women. In Germany is 4.4 % for men and 1.5 % for women. There also will be demand for the manpower of elderly people due to the decrease in the birthrate. The possibility that elderly people will stay in the labor market will increase.

The JIS survey grasps the rapidly developing aged society of Japan. The target population is from 20-89 years of age. Future Surveys will enable us to carry out continuous comparison.

### **1.3 The Sample, Data Collection and Response Rate**

We used a multi-stage stratified random. The sample was selected using Japanese electoral rolls, which contain the names of all registered voters over the age of 20, or by the Basic Resident Register in the case electoral rolls are unavailable, for 102 randomly selected spots. They thus represent the whole territory of Japan according to the distribution of the resident population in terms of metropolitan, urban and rural areas. <sup>1</sup> From October to December 2001, the Committee for "Social Research on the Cultural, Social, and Psychological Effects of Information Communication Technology," of the Faculty of Advanced Human Sciences, Graduate School of Human Sciences at

Osaka University, carried out the first wave of this JIS. Fieldwork was conducted by on the basis of detailed and uniform instructions. The original sample size was 1,500 and the completion rate was 67.4 %, yielding 1,011 respondents for this JIS survey.

The JIS 2001 had two components. The main one was a questionnaire administered by interviewers. These interviews were conducted face-to-face in respondents' homes. The second component was a self-administered supplemental questionnaire, which was left for the respondents to fill out. The questionnaire was reclaimed afterwards. With each person, both of face-to-face interview and self-administered questionnaire were conducted. The order in which the questionnaires were administered depended on the convenience of the respondent and the judgment of the interviewer. The firm responsible for carrying out the JIS survey is Central Research Services, INC., CRS (Japan) which is one of the most reliable Japanese corporation aggregate of the census, social surveys, marketing, and public opinion research.

## **2 THE ICT IN JAPAN**

### **2.1 The proportion of users of ICT**

**The individual use rate** This section analyzes the informatization from the point of view of city size, gender, age, and social stratification such as education, occupation and income. These socio-demographic variables are typically used in survey research studies. We examine whether there are significant differences between the socio-demographic categories in the JIS 2001 using chi-square tests. We measured various aspects the use of ICT and related equipment by asking “Which of the following items do you usually use? Please indicate all you use usually in your life.” We had listed 14 kinds of equipment, but in this section we focus on the use of video recorder, cellular phone, stereo or radio cassette, fax, computer, copy machine, printer, game console, and digital camera. The individual use rate of various information equipments is shown in the Figure 1. About two thirds of the respondents use video recorders (65.7 %) in ordinary life. A little over the half of the respondents use cellular phones (56.8 %) and stereos or radio cassettes (52.8 %). Also 39.4 % of the respondents use fax, and 38.2 % use personal computers. A little over a quarter of the respondents use copy machines (28.0 %) and printers (27.9 %). As for the game consoles, 17.5 % of the respondents are using, and 16.5 % use digital cameras. <sup>2</sup> Note that the rates of individual use tend to be lower than the rates of household possession. For

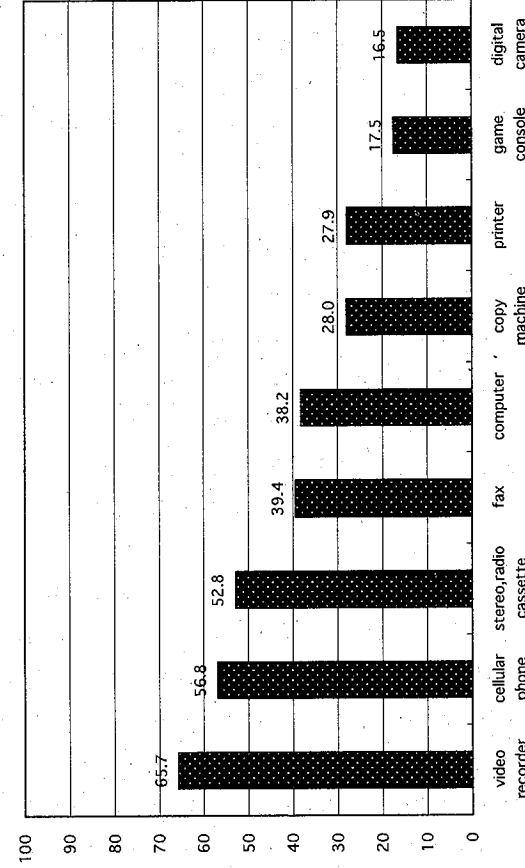


Figure 1: the use rate of ICTs (whole sample)



example, household possession rates of the above equipment in Japan at the end of March 2001, are as follows according to the Ministry of Public Management, House Affairs, Posts and Telecommunications: video recorder (79.6 %), cellular phone (78.6 %), stereo (54.9 %), fax (39.3 %), computers (57.2 %). The use rate difference is explained by both business and home use being included. The rate of actual use is more important than mere possession for investigating information literacy.

**The use rate by city size** It is sometimes believed that a gap between urban and rural areas is growing in Japan. While the large metropolitan areas are overcrowded, some rural areas face depopulation problems. The use of the ICT can narrow geographical distances, and might have some effects on the urban-rural situation. It is important to research whether ICT reduce the cost of geographical distance and help to facilitate development evenly, or whether the application of ICT facilitates social and geographical urban polarization. We looked at the use rate of the ICT by city size. The categories of city size of residential areas are metropolises,<sup>3</sup> cities having more than 100,000 inhabitants, cities having less than 100,000 inhabitants, and rural areas (towns and villages). For most items, it is clearly shown that the bigger in the size of residential areas, the higher in the use rate of the ICT. For

most items the city size of residential area approached significance.<sup>4</sup> As for copy machines and digital cameras, the difference of the use rate is trivial among cities, towns and villages, and they did not approach significance. For most items, the use rate is the highest in metropolises, and is the lowest in towns and villages. But, as for the use rate of cellular phones, stereo and radio cassettes, and fax, cities of more than 100,000 and cities of less than 100,000 are in similar situations.

**The use rate by gender** The use rate of ICT by gender is shown in Figure 2. As for the popular items, 72 % of men and 60 % of women use video recorders, and 57 % of men and 49 % of women use stereos and radio cassettes in ordinary life. 47 % of men and 29 % of women use cellular phones, and 69 % of men and 46 % of women use personal computers. It is clear that the use rate of men is higher than that of woman across the range of ICT, and gender approached significance.<sup>5</sup>

**The use rate by age** The use rate of the ICT by age is shown in Figure 3. Age categories are 20-39 years old, 40-59 years old and 60-89 years old. It is clearly shown that the use rate is higher in the younger age group than the older age group. The use rate is the highest for most items in the 20-39 year old

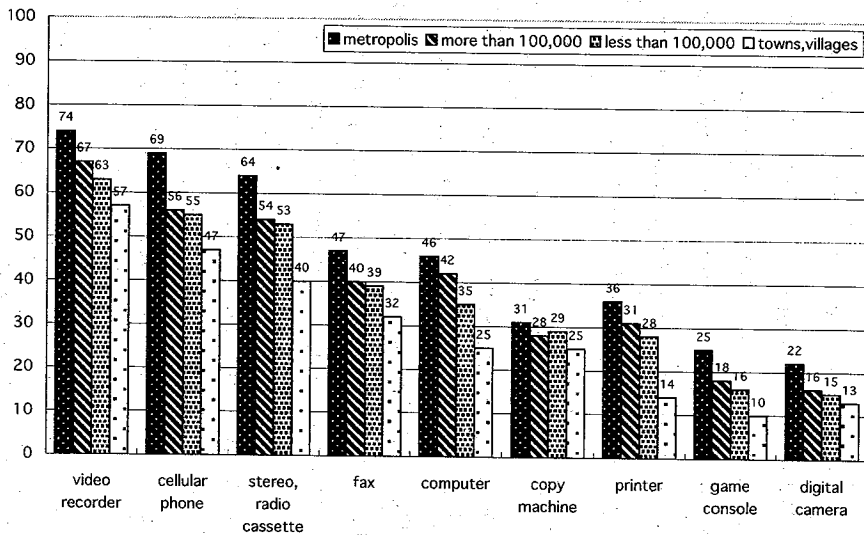


Figure 2: the use rate by city size

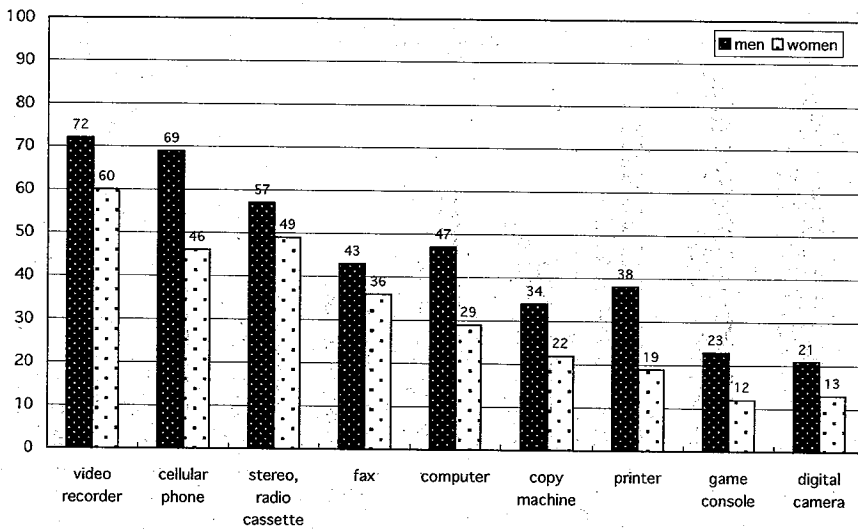


Figure 3: the use rate by gender

group, and age approached significance. <sup>6</sup> But for the fax and copy machines, the use rate is the highest in the 40-59 year old group. The use rate of printers by the 40-59 age group, resembles that of the 20-39 age group.

**The use rate by education** In Figure 4, the use rate of ICT by educational background is shown. The education categories are as follows: university, graduate school, junior college completed, high school completed, and compulsory completed. It is clear that the use rate of ICT increases with higher educational background, and education approached significance. <sup>7</sup> The use rate of every ICT is the highest among people who completed university, graduate school, and junior college. High school graduates follow. The use rate is the lowest among junior high school graduates.

**The use rate by occupation** The use rate of ICT by occupation is shown in Figure 6. The occupation categories are: professional and managerial, clerical and sales, blue-collar including agricultural, and unemployed. It is obvious that the use rate of ICT is different by occupation. The use rate of many items is the highest in professional and managerial occupations, and the use rate of many items is the lowest among the unemployed. As for the use rate of copy

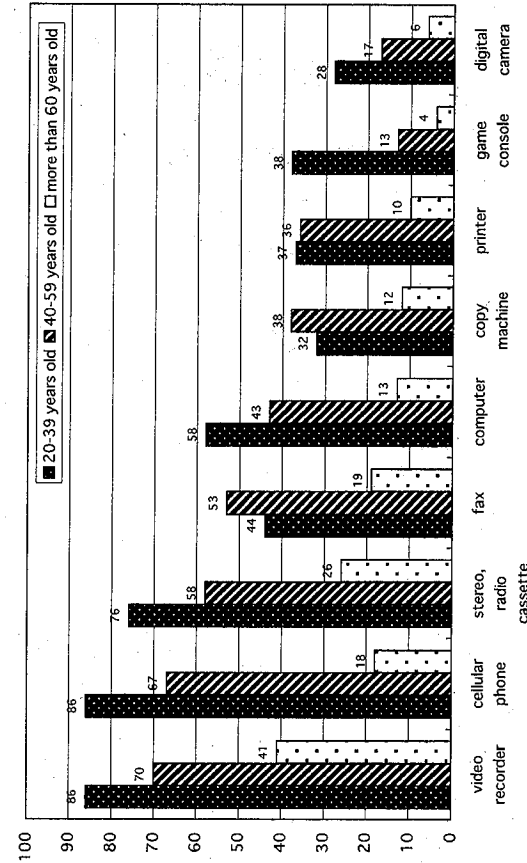


Figure 4: the use rate by age

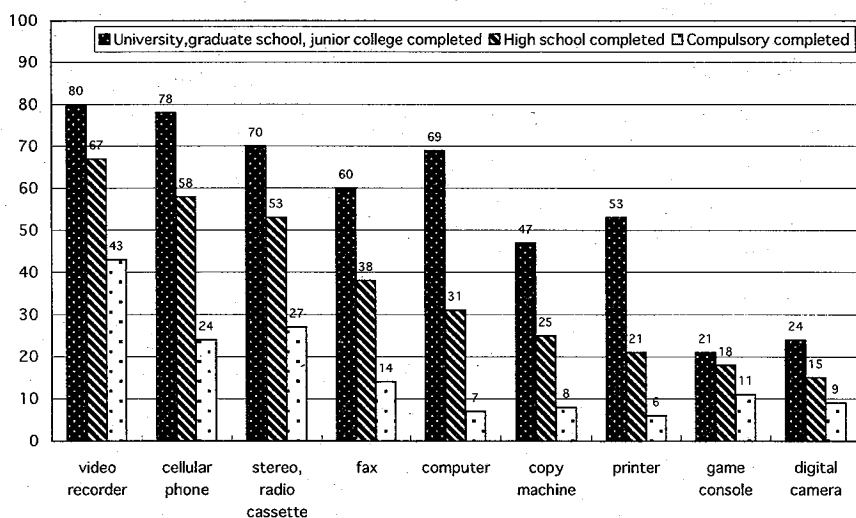


Figure 5: the use rate by education

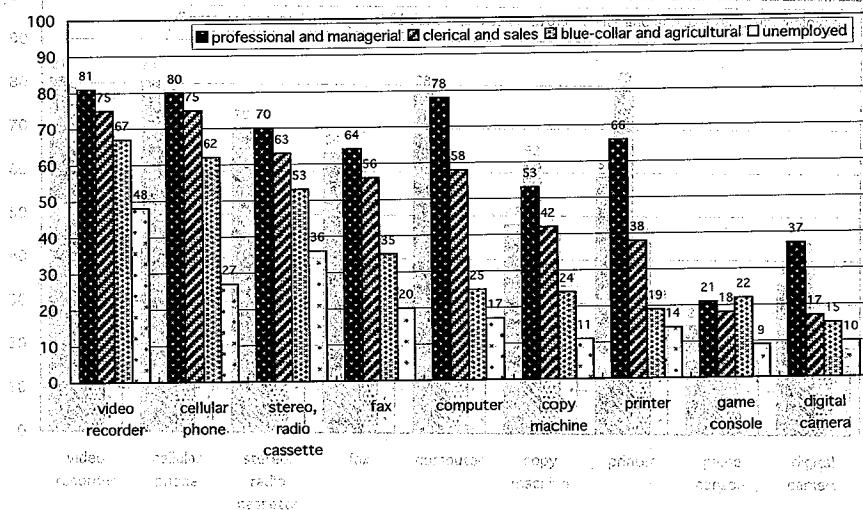


Figure 6: the use rate by occupation

machines, printers, and digital cameras, clerical and sales occupations are the highest. While 78 % those employed in professional and managerial occupations and 58 % of those employed in clerical and sales occupations use computers, only 25 % of blue-collar workers and 17 % of the unemployed usually use computers in ordinary life. There also exists a significant difference between the white-collar and the blue-collar in the use rate of fax and computers.

**The use rate by household income** The use rate of ICT by annual household income is shown in Figure 7. Household income is categorized as follows: from none to 3.5 million yen, from 3.5 million to 6.5 million yen, from 6.5 million to 10 million yen, more than 10 million yen. For all items, household income approached significance. <sup>8</sup> The use rate of video recorders is more than 70 % of the population in the groups where household income is more than 3.5 million yen. But the use rate for the 0-3.5 million group yen drops to 48 %. This tendency for use rates to fall remarkably for people whose household income is less than 3.5 million is seen in cellular phones, stereos and radio cassettes, and digital cameras as well. On the other hand, as for fax, computers, copy machines, and printers, there is a tendency for the use rate of ICT to be higher in higher income households. Any new

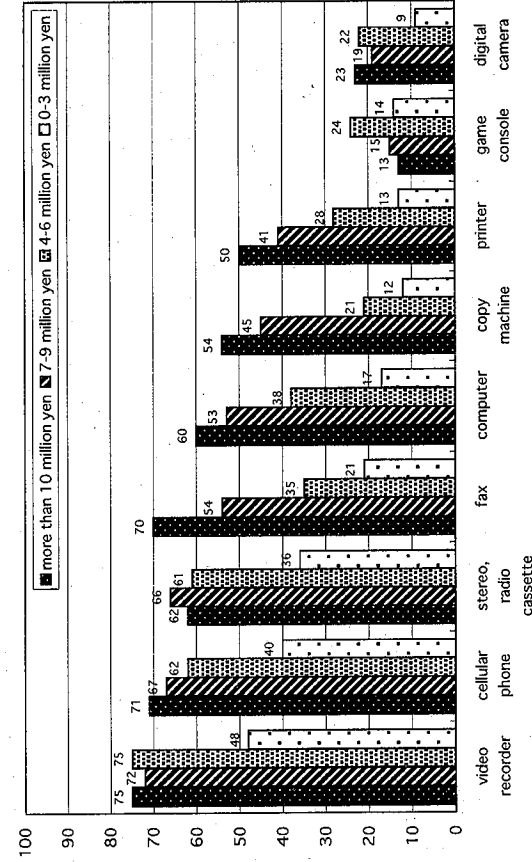


Figure 7: the use rate by annual household income

media or related device generally diffuse from the higher income households. As for game consoles, use rate is the highest for households whose income is 3.5-6.5 million yen, and other groups are in a similar situation.

## 2.2 Knowledge by socio-demographic variables

We analyzed people's knowledge of the Internet. The question is "Have you heard of the Internet or online services that use personal computers?" The answer categories are: 1. I know them and the usages of them. 2. I do not know what I can do with them exactly, but I have heard of them. 3. I do not know them at all. Figure 8 shows the responses by socio-demographic variables. 62.5 % of the respondents know what the Internet is, and 28.5 % of the respondents know only the word. 9.0 % of the respondents still do not know the Internet at all.

**Knowledge by city size** It is clear that the bigger the size of the residential area, the higher the proportion of people who know the usage of the Internet. 70.3 % of the people know the Internet in metropolises, 65.9 % in cities more than 100,000 inhabitants, 59.2 % in cities less than 100,000 inhabitants, and 50.5 % in rural areas.

**Knowledge by gender** The gap is also seen among gender. 69.1 % of men know the usage of the Internet and 56.3 % of women do. But the gap is reduced when the respondents who know the word are included. 92.6 % of men know the word and 89.5 % of women do.

**Knowledge by age** The younger people tend to know the Internet. 82.8 % of 20-39 years old, 71.5 % and 40-59 years old, and 32.6 % of 60-89 years old know the usage of the Internet. 1.3 % of 20-39 year olds, 2.4 % of 40-59 year olds, and 24.1 % of 60-89 year olds do not know the Internet at all.

**Knowledge by education** Knowledge of the Internet is higher with higher educational background. 86.3 % of the university, graduate school, and college graduate, 60.8 % of high school graduates, and 30.0 % of compulsory education graduates know the usage of the Internet. 2.2 % of university graduates, 4.4 % of high school graduates, and 28.1 % of compulsory education graduates do not know the Internet at all. Education approached significance.

**Knowledge by occupation** Knowledge of the Internet is higher in professional and managerial occupations, followed by clerical and sales occupations. 89.2 % of professional and

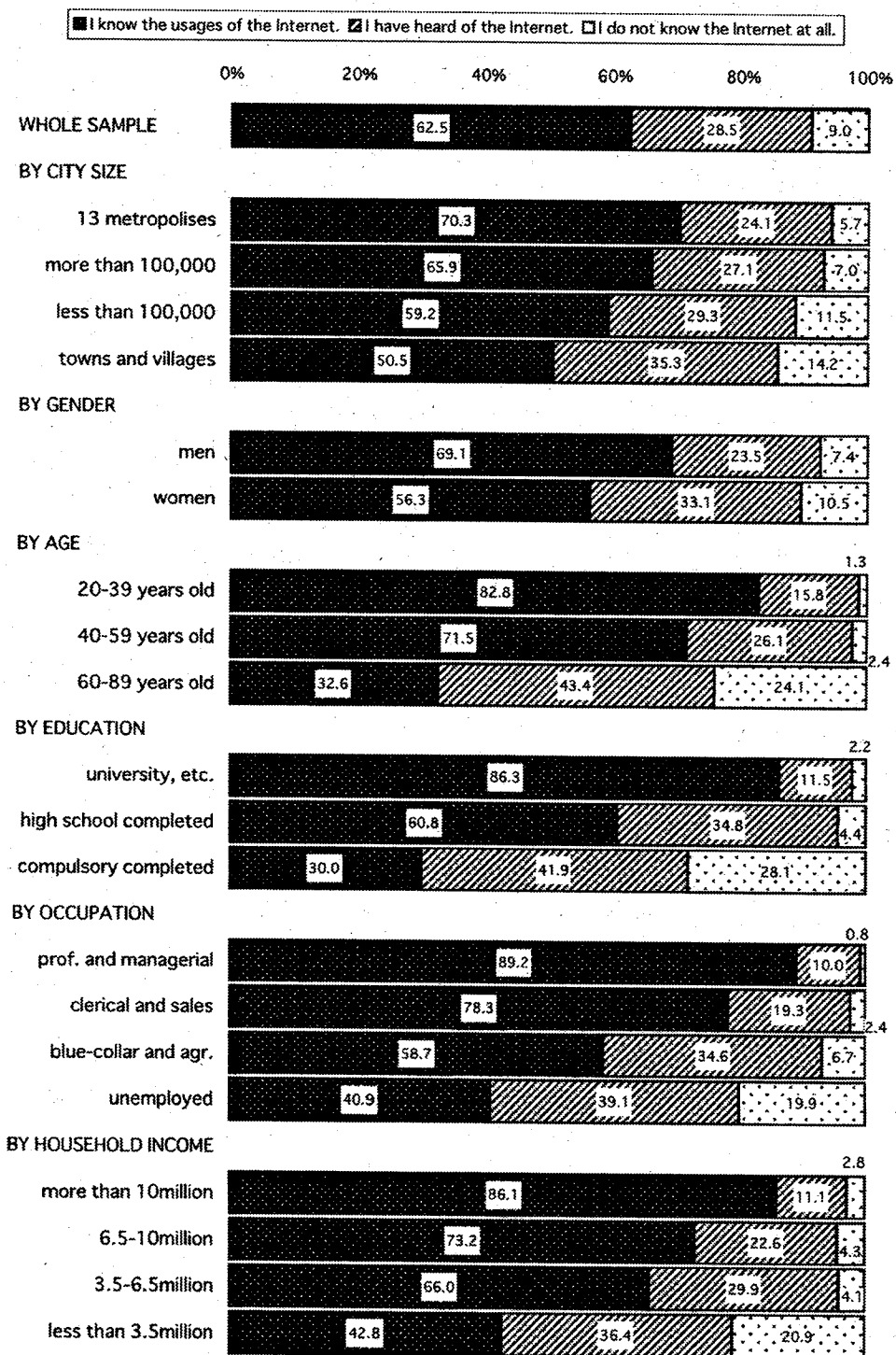


Figure 8: Knowledge by socio-demographic variables

managerial workers, 78.3 % of clerical and sales workers, 58.7 % of blue-collar and agricultural workers, and 40.9 % of the unemployed know the usage of the Internet.

**Knowledge by household income** Knowledge of the Internet is higher the higher annual household income is. 86.1 % of people in households with more than 10 million yen, 73.2 % of people in households between 6.5-10 million yen, 66.0 % of those with household incomes with between 3.5-6.5 million yen, and 42.8 % of those with household incomes between 0-6.5 million yen know the usage of the Internet.

### 3 COMPARATIVE ANALYSIS

#### 3.1 Leisure Activities and Social Capital

Now we turn to comparative research between Germany and Japan. The ALLBUS 1998 and JIS 2001 have various comparable items. We measured respondents' leisure activities and social capital in the form of informal social interaction, participation and community involvement. Some of our questions were drawn from the ALLBUS 1998 questionnaires for comparative study. In order to compare the degree to which the social activities are widely seen in both societies, we compare relative frequency distributions for

selected variables in the following sections. The relative frequency distributions of the items of the ALLBUS 1998 for East Germans are shown in Figure 9. West German frequency distributions are shown in Figure 10. The JIS 2001 distributions are shown in Figure 11. The sample size for the JIS study is 1,011. The ALLBUS study had 2,212 respondents in West Germany and 1,022 in East Germany.

Individual leisure activities were asked about as follows.<sup>9</sup> “Now some questions about your leisure time. Please say how often you do each of the activities on this list in your leisure time.”

- Read books
- Read magazines/journals
- Listen to records, CDs, cassettes
- Watch videos
- Use the computer
- Use the internet or special online services
- Further your education
- Just do nothing, take it easy
- Go for walks, go hiking

The item “read magazines or journals” in the ALLBUS



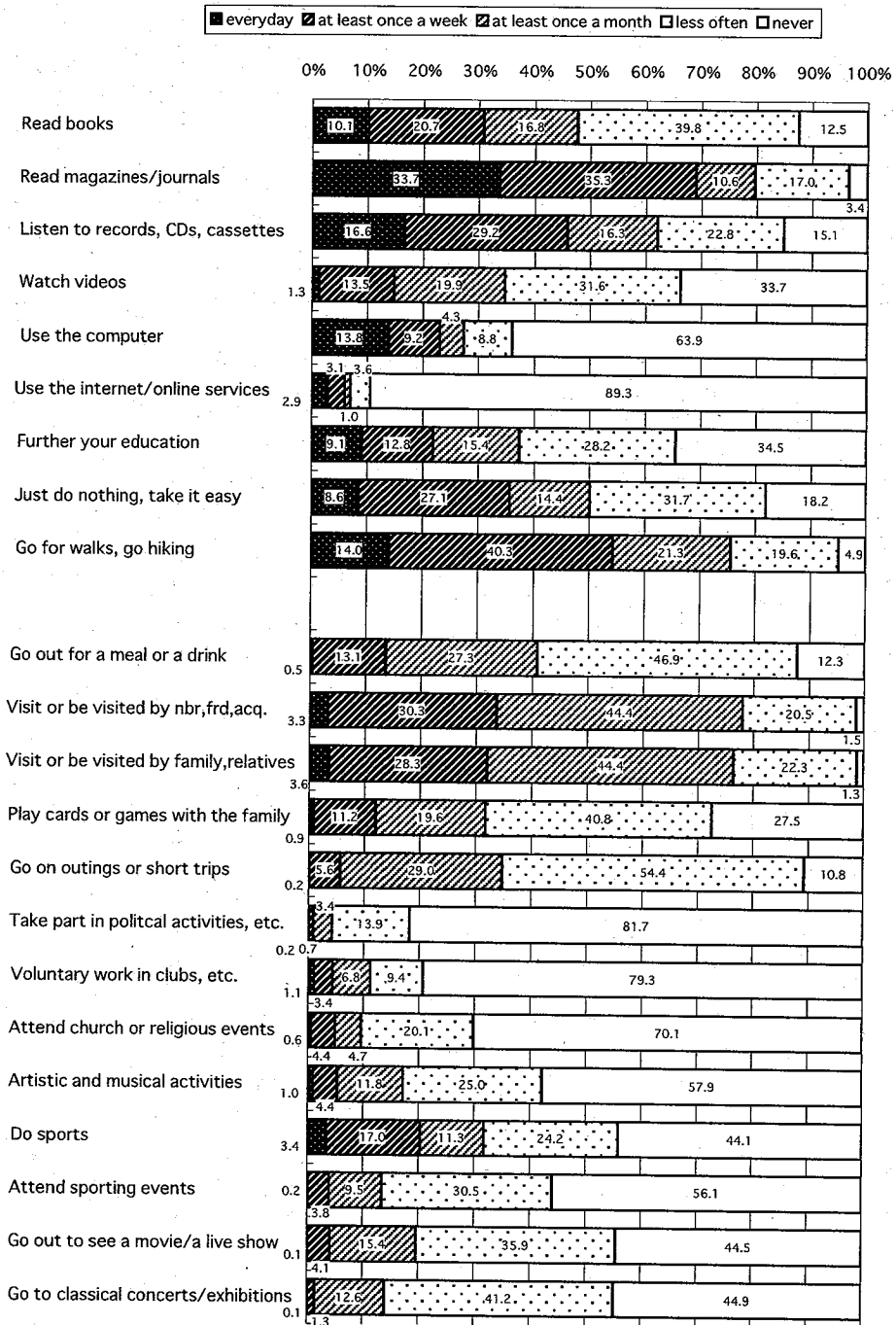


Figure 9: Leisure Activities and Social Capital (ALLBUS 1998, East Germany)

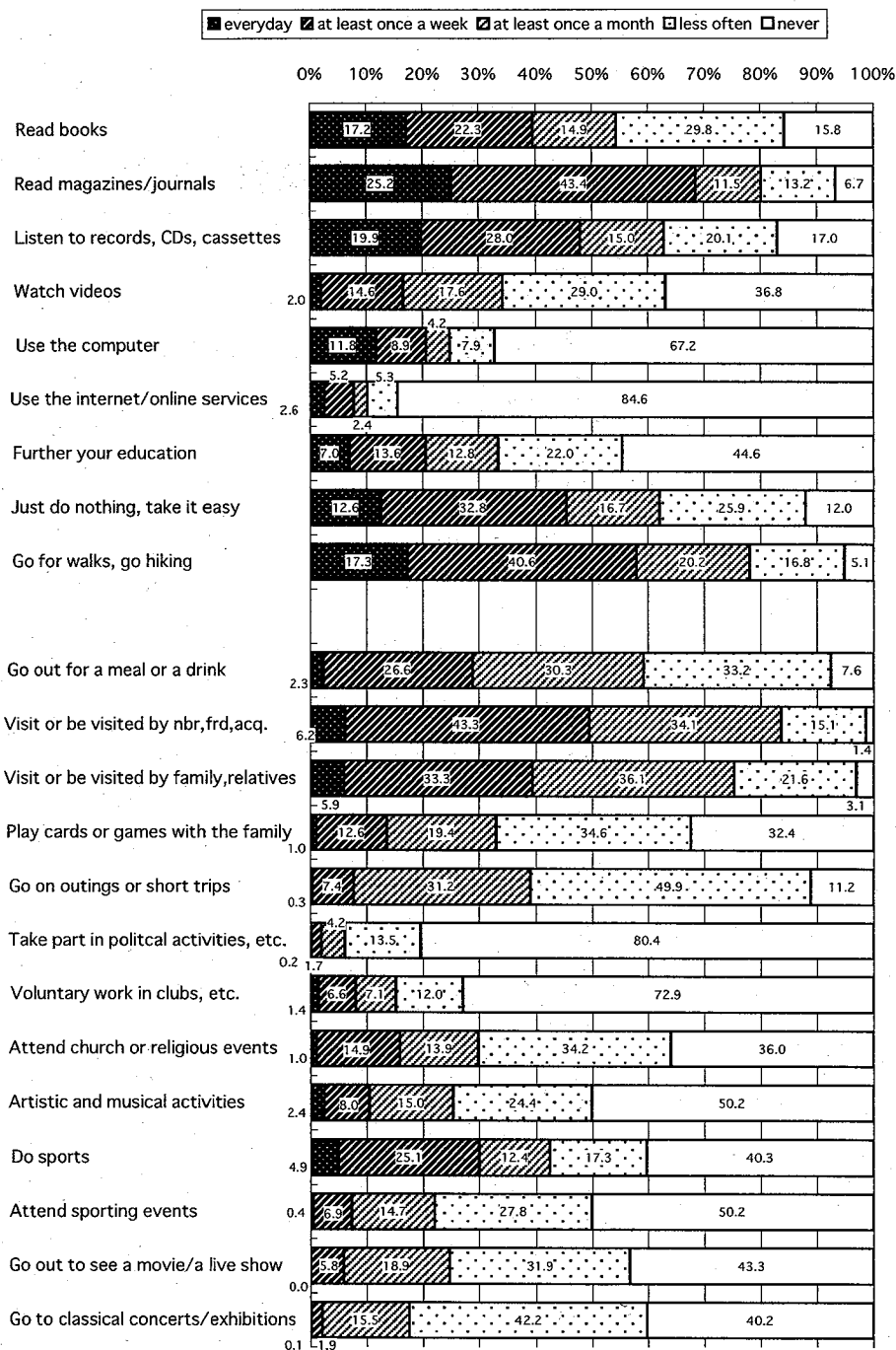


Figure 10: Leisure Activities and Social Capital (ALLBUS 1998, West Germany)

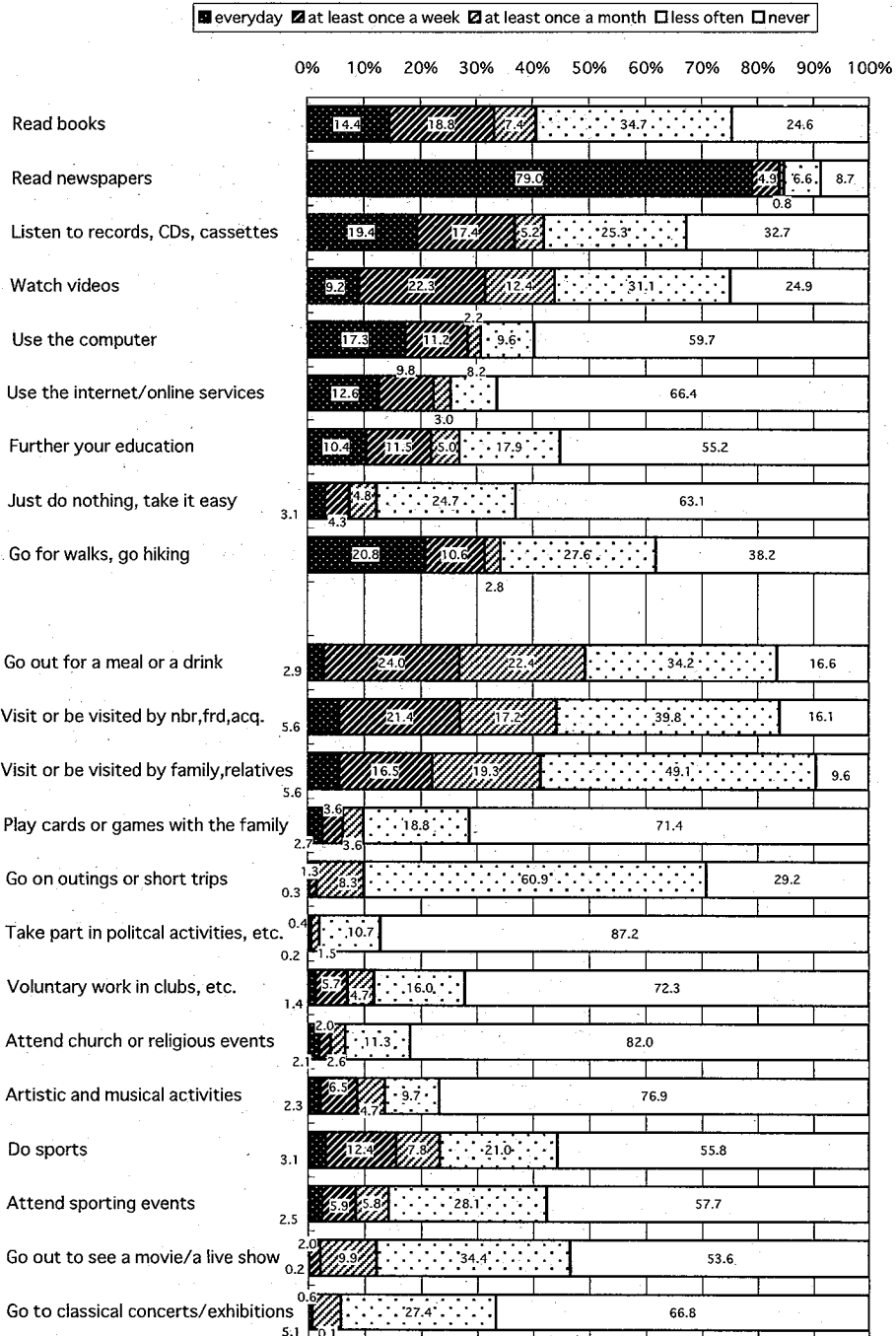


Figure 11: Leisure Activities and Social Capital (JIS 2001, Japan)

1998 is slightly modified as “read journals” in the JIS 2001. The response categories are every day, at least once a week, at least once a month, less often, never.

Likewise, we asked about the social activities in leisure time as follows.<sup>10</sup> “And what about these activities? Please tell me here too, how often you do the following in your leisure time.”

- Go out for a meal or a drink (cafe, pub, restaurant)
- Visit or be visited by neighbours, friends or acquaintances
- Visit or be visited by family members or relatives
- Play cards or games with the family
- Go on outings or short trips
- Take part in political parties activities, local politics or citizens' action groups
- Voluntary work in clubs, associations or community services
- Attend church or religious events
- Artistic and musical activities (painting, playing an instrument, photography, theatre, dance)
- Do sports
- Attend sporting events
- Go out to see a movie in a theater or a live show

- Go to events such as the classical concerts or exhibitions

The response categories are every day, at least once a week, at least once a month, less often, never.

### 3.2 Similarities and Differences among Germany and Japan

Although it is important to keep in mind the limitations and nuances of translation in cross-cultural survey data when making comparisons, we believe the following international comparison with nation-wide samples is invaluable. We compare Germany and Japan concerning leisure activity and social participation. While the overall relative patterns of leisure activities and social participation are similar among Germans and Japanese, some similarities and differences are noticed (Figure 9, 10 and 11). We describe the relative frequency distributions briefly. Germans read books more frequently in leisure time than Japanese do,<sup>11</sup> but Japanese read journals more frequently than Germans read magazines or journals.<sup>12</sup> Germans listen to records, CDs, and cassettes more frequently than Japanese do,<sup>13</sup> whereas Japanese watch videos more frequently than Germans do.<sup>14</sup> Japanese tend to use computers more frequently than Germans do,<sup>15</sup> and

Japanese use the Internet or special online services more frequently than Germans do.<sup>16</sup> But as for the use of computers and the Internet, we should take into consideration the dates of fieldwork and the recent rapid diffusion of ICT. Germans tend to further their own education more frequently than Japanese do<sup>17</sup> and Germans just do nothing more frequently than Japanese do.<sup>18</sup> Germans go for walks or go hiking more frequently than Japanese do.<sup>19</sup>

We also describe the frequency distributions of items that measure social participation and social capital. West Germans go out for a meal or a drink most frequently.<sup>20</sup> Germans visit or are visited by neighbors, friends, or acquaintances more frequently than Japanese are.<sup>21</sup> Germans visit or are visited by family and relatives more frequently than Japanese are.<sup>22</sup> Germans also play cards or games with the family more frequently than Japanese do.<sup>23</sup> Germans go on outings or short trips more frequently than Japanese do.<sup>24</sup> In both countries, people are seldom involved in taking part in political parties activities, local politics or citizens' action groups,<sup>25</sup> nor are people often involved in taking part in voluntary work in clubs, associations or community services.<sup>26</sup> West Germans attend church or religious events more frequently than East Germans. Japanese do so the least.<sup>27</sup> Germans go to artistic and musical activities more frequently

than Japanese do.<sup>28</sup> Germans do sports more frequently than Japanese do,<sup>29</sup> with West Germans attend sporting events most frequently.<sup>30</sup> Germans go out to see a movie or a live show more frequently than Japanese do,<sup>31</sup> and Germans go to classical concerts or exhibitions more frequently than Japanese do.<sup>32</sup> From the results shown above, Germans are more involved in various kinds of social participation than Japanese are.

#### 4 SOCIAL CAPITAL IN THE INFORMATION SOCIETY

One interesting question is the relationship between social integration and the information society. How will the information society change social networks, social bonds, and social capital? For example, in the United States, the Stanford Institute for the Quantitative Study of Society (SIQSS) asserts that ICT weaken people's ties that the more time spent using the Internet, the greater the loss of social environment (Nie and Erbring 2000). Kraut *et al.* (1998) also shows the negative effects of Internet use on social involvement. On the other hand, the Pew Internet Project (2000) in the United States asserts that the Internet does not isolate people. E-mail is conceived as helpful for many people to improve their

connections with relatives and friends. Katz and Rice (2002) also conclude that the use of the Internet does not reduce social capital such as involvement in community, religious, or recreational events.

In the ALLBUS 1998 and the JIS 2001, there are some items about leisure activity and social participation that are indicative of various aspects of respondents' social networks and social capital (Sandefur and Laumann 1998, Winter 2000, Stone 2001, Stone and Hughes 2002). Putnam (2000) suggests that the higher are the levels of social participation and activity, the more dense is the integration of mutual networks of trust and commitment. In short, some kind of social participation is inevitably required for social integration.

We analyzed the relationships among the ICT and social participation in the JIS 2001. The sum of the use of various kinds of ICT mentioned earlier is used to measure the degree of ICT use. We calculated the correlation coefficients of the sum of ICT used and each of the social participation items. We also computed partial correlations controlling for the size of residential areas, gender, age, education, household income, and occupational prestige. We used the occupational prestige scores typically used in Japanese sociology (Naoi 1979). The results are shown in Table 1.

As shown in Model 1 of Table 1, almost all correlation

Table 1: Correlation between ICTs use and Social Capital

	sum of the ICTs use			
	Model 1 correlation	Model 2 partial correlation	Model 3 partial correlation	Model 4 partial correlation
Go out for a meal or a drink	.317 p=.000	.153 p=.000	.137 p=.001	.116 p=.017
Visit or be visited by nbr, frd, acq.	.035 p=.281	.095 p=.003	.100 p=.012	.124 p=.011
Visit or be visited by family or relatives	.063 p=.051	.058 p=.072	.033 p=.408	.122 p=.012
Play cards or games with the family	.206 p=.000	.107 p=.001	.082 p=.038	.101 p=.038
Go on outings or short trips	.163 p=.000	.147 p=.000	.090 p=.023	.081 p=.099
Take part in political activities, etc.	.089 p=.006	.114 p=.000	.070 p=.076	.102 p=.036
Voluntary work in clubs, etc.	.154 p=.000	.169 p=.000	.126 p=.001	.131 p=.007
Attend church or religious events	-.078 p=.016	.059 p=.070	.088 p=.027	.052 p=.287
Artistic and musical activities	.210 p=.000	.187 p=.000	.194 p=.000	.180 p=.000
Do sports	.257 p=.000	.101 p=.002	.059 p=.136	.037 p=.451
Attend sporting events	.141 p=.000	.043 p=.191	.018 p=.647	-.014 p=.776
Go out to see a movie or a live show	.316 p=.000	.147 p=.000	.136 p=.001	.125 p=.010
Go to classical concerts or exhibitions	.257 p=.000	.214 p=.000	.211 p=.000	.158 p=.001
n	963	946	633	419

Model 1: correlation

Model 2: partial correlation controlling for city size, gender, age and education

Model 3: partial correlation, Model 2 + Controlling for household income

Model 4: partial correlation, Model 2 + Controlling for household income, occupational prestige

coefficients for social participation items and the sum of ICT used show a positive relationship. The more ICT used, the more socially participatory people were.

We also calculated partial correlations for ICT use and social participation controlling for city size, gender, age, education, household income, and occupational prestige (Model 2, Model 3 and Model 4).<sup>33</sup> After controlling for significant socio-demographic variables, some of the significant positive relationships between using ICT and social capital persisted. In this analysis, the use of ICTs is shown not to weaken social capital measured as social participation, voluntary association, informal communication and interaction.

## 5 DISCUSSION

One of the most important questions is whether the so-called "digital divide", or gap in information literacy, exists in Japan. There are several aspects of information literacy. One is the preliminary image on the information society, and as the knowledge increases, the image becomes shaped concretely. The others are the knowledge and vision, use and application. The possession of and the use of the ICT are sometimes closely related, but sometimes they are not. In this

paper, we treat the use of ICT as the most fundamental element. The use rate is shown to differ by various socio-demographic characteristics in Japan. From our results, there also exists a gap in the knowledge of the Internet. Those who use ICT and know the usage of the Internet were most likely to be men, living at metropolises, aged 20-39 years old, earning more than 10 million a year, university graduates, and in professional and managerial occupations. Those who do not use ICT and do not know the Internet at all were most likely to be women, aged 60-89 years old, living at rural areas, earning less than 3 million yen a year, with only a education compulsory completed, and the unemployed.

We must see the findings deliberately: whether the observed gap is really a deep digital divide, or only an artifact of the diversity of lifestyles, or a product of the lag in the dispersion process of ICT, just as there was with telephones, televisions and video recorders in an earlier period.

As for the relationships between ICT and social participation, the partial correlation controlling for socio-demographic variables remained significantly positive. There is robust evidence of a positive relationship between ICT use and some indicators of social capital. To analyze whether self-directedness and intellectual flexibility take some crucial part in these relationship is our next task. Also, some other aspects

of information literacy such as the time and frequency of using e-mail and the WWW, should be included in the more complicated analysis.

Our future task is to keep monitoring the trends of information society in Japan. The JIS project is working to establish international comparative and longitudinal research interest about the information society.

Acknowledgement: We would like to thank Mr. Ekkehard Mochmann and his colleagues at the Z.A., Professor Dr. Wolfgang Jagodzinski at the Cologne University, Professor Dr. Peter Ph. Mohler and his colleagues at the ZUMA, and Associate Professor Robert S. North at Osaka University, for their valuable help. However, all defects in this paper are our own.

This study was supported by the Japanese Ministry of Education, Culture, Sports, Science and Technology.

## Note

- 1 In this survey, the geographical areas are composed as follows. The Hokkaido area contains Hokkaido Prefecture. The Tohoku area contains Aomori Prefecture, Iwate Prefecture, Miyagi Prefecture, Akita Prefecture, Yamagata Prefecture and Fukushima Prefecture. The Kanto area contains Ibaraki

Prefecture, Tochigi Prefecture, Gunma Prefecture, Saitama Prefecture, Chiba Prefecture, Tokyo Metropolis and Kanagawa Prefecture. The Hokuriku area contains Niigata Prefecture, Toyama Prefecture, Ishikawa Prefecture and Fukui Prefecture. The Tozan area contains Yamanashi Prefecture, Nagano Prefecture and Gifu Prefecture. The Tokai area contains Shizuoka Prefecture, Aichi Prefecture and Mie Prefecture. The Kinki area contains Shiga Prefecture, Kyoto Prefecture, Osaka Prefecture, Hyogo Prefecture, Nara Prefecture and Wakayama Prefecture. The Chugoku area contains Tottori Prefecture, Shimane Prefecture, Okayama Prefecture, Hiroshima Prefecture and Yamaguchi Prefecture. The Shikoku area contains Ehime Prefecture, Tokushima Prefecture, Kagawa Prefecture and Kochi Prefecture. The Kita-Kyushu area contains Fukuoka Prefecture, Saga Prefecture, Nagasaki Prefecture and Oita Prefecture. The Minami-Kyushu area contains Kumamoto Prefecture, Miyazaki Prefecture, Kagoshima Prefecture and Okinawa Prefecture.

- 2 As for the use rate except for these, though not shown in the figure, word processor (14 %), car navigation (10 %), scanner (10 %), DVD player (9 %) and others (1 %).
- 3 13 metropolises are Sapporo City, Sendai City, Tokyo Metropolis department, Yokohama City, Kawasaki City, Chiba City, Nagoya City, Kyoto City, Osaka City, Kobe City, Hiroshima City, Kita Kyushu City and Fukuoka City.
- 4 The chi-square tests are as follows: video recorder, chi-square=14.1,  $p<.00$ , cellular phone, chi-square=22.2,  $p<.00$ , stereo, radio cassette, chi-square=24.6,  $p<.00$ , fax, chi-square=10.4,  $p<.02$ , computer, chi-square=24.0,  $p<.00$ , copy machine, chi-square=2.2,



$p < .54$ , printer, chi-square= 29.0,  $p < .00$ , game console, chi-square=18.1,  $p < .00$ , digital camera, chi-square=6.2,  $p < .10$ .

5 The chi-square tests are as follows: video recorder, chi-square=15.5,  $p < .00$ , cellular phone, chi-square=53.1,  $p < .00$ , stereo and radio cassette, chi-square=6.8,  $p < .00$ , fax, chi-square=5.5,  $p < .05$ , computer, chi-square=34.7,  $p < .00$ , copy machine, chi-square=17.5,  $p < .00$ , printer, chi-square=44.1,  $p < .00$ , game console, chi-square=21.8,  $p < .00$ , digital camera, chi-square=12.2,  $p < .00$ .

6 The chi-square tests are as follows: video recorder, chi-square=148.1,  $p < .00$ , cellular phone, chi-square=322.4,  $p < .00$ , stereo, radio cassette, chi-square=165.0,  $p < .00$ , fax, chi-square=90.6,  $p < .00$ , computer, chi-square=144.4,  $p < .00$ , copy machine, chi-square= 61.1,  $p < .00$ , printer, chi-square= 72.2,  $p < .00$ , game console, chi-square=135.9,  $p < .00$ , digital camera, chi-square= 55.1,  $p < .00$ .

7 The chi-square tests are as follows: video recorder, chi-square=77.7,  $p < .00$ , cellular phone, chi-square=151.2,  $p < .00$ , stereo, radio cassette, chi-square=91.3,  $p < .00$ , fax, chi-square=108.7,  $p < .00$ , computer, chi-square=223.8,  $p < .00$ , copy machine, chi-square=101.2,  $p < .00$ , printer, chi-square=160.9,  $p < .00$ , game console, chi-square= 9.8,  $p < .00$ , digital camera, chi-square=24.0,  $p < .00$ .

8 The chi-square tests are as follows: video recorder, chi-square=41.6,  $p < .00$ , cellular phone, chi-square=40.5,  $p < .00$ , stereo, radio cassette, chi-square=39.4,  $p < .00$ , fax, chi-square=83.9,  $p < .00$ , computer, chi-square=74.8,  $p < .00$ , copy machine, chi-square=85.9,  $p < .00$ , printer, chi-square= 58.6,  $p < .00$ , game console, chi-square=9.7,  $p < .05$ , digital camera, chi-square=15.5,  $p < .00$ .

9 Precise cultural comparison is important (Harkness and Schoua-Glusberg 1998). The English translation referred for this paper is from Harkness and Wasmer (2001). The original German question items in the ALLBUS 1998 are as follows (Zentralarchiv für Empirische Sozialforschung und Zentrum für Umfragen, Methoden und Analysen 1999). "Nun einige Fragen zu Ihrer Freizeit. Geben Sie bitte zu jeder der Tätigkeiten auf dieser Liste an, wie oft Sie das in Ihrer Freizeit machen: täglich, mindestens einmal jede Woche, mindestens einmal jeden Monat, seltener oder nie."

- Bücher lesen
- Zeitschriften lesen
- Schallplatten, CDs, Kassetten hören
- Videokassetten anschauen
- Mit dem Computer beschäftigen
- Das Internet oder spezielle Online-Dienste nutzen
- Sich privat weiterbilden
- Einfach nichts tun, faulenzen
- Spazierengehen, Wandern

10 The original German question items in the ALLBUS 1998 are as follows. "Und wie ist es mit diesen Tätigkeiten? Geben Sie mir auch hier bitte wieder an, wie oft Sie das in Ihrer Freizeit machen."

- Essen oder trinken gehen (Café, Kneipe, Restaurant)
- Gegenseitige Besuche von Nachbarn, Freunden oder Bekannten
- Gegenseitige Besuche von Familienangehörigen oder Verwandten

- Karten- und Gesellschaftsspiele im Familienkreis
  - Ausflüge oder kurze Reisen machen
  - Beteiligung in Parteien, in der Kommunalpolitik, Bürger-initiativen
  - Ehrenamtliche Tätigkeiten in Vereinen, Verbänden oder sozialen Diensten
  - Kirchengang, Besuch von religiösen Veranstaltungen
  - Künstlerische und musische Tätigkeiten (Malerei, Musizieren, Fotografie, Theater, Tanz)
  - Aktive sportliche Betätigung
  - Besuch von Sportveranstaltungen
  - Kinobesuch, Besuch von Pop-oder Jazzkonzerten, Tanzveranstaltungen/Disco
  - Besuch von Veranstaltungen wie Oper, klassische Konzerte, Theater, Ausstellungen
- 11 47.6 % of East Germans, 54.4 % of West Germans, and 40.6 % of Japanese read books more than at least once a month. 12.5 % of East Germans, 15.8 % of West Germans, and 24.6 % of Japanese never do.
- 12 33.7 % of East Germans, 25.2 % of West Germans read magazines or journals, 79.0 % of Japanese read journals everyday.
- 13 62.1 % of East Germans, 62.9 % of West Germans, and 42.0 % of Japanese listen to records, CDs, cassettes more than at least once a month. 15.1 % of East Germans, 17.0 % of West Germans, and 32.7 % of Japanese never do.
- 14 1.3 % of East Germans, 2.0 % of West Germans, 9.2 % of Japanese watch videos everyday. 34.7 % of East Germans, 34.2 % of West Germans, and 43.9 % of Japanese watch videos more than

at least once a month. 33.7 % of East Germans, 36.8 % of West Germans, and 24.9 % of Japanese never do.

- 15 13.8 % of East Germans, 11.8 % of West Germans, and 17.3 % of Japanese use the computer everyday. 27.3 % of East Germans, 24.9 % of West Germans, and 30.7 % of Japanese use the computer more than at least once a month.
- 16 2.9 % of East Germans, 2.6 % of West Germans, and 12.6 % of Japanese use the internet or special online services. 7.0 % of East Germans, 10.2 % of West Germans, and 25.4 % of Japanese use the internet or special online services more than at least once a month. 89.3 % of East Germans, 84.6 % of West Germans, and 66.4 % of Japanese never do.
- 17 37.3 % of East Germans, 33.4 % of West Germans, and 26.9 % of Japanese further their own education more than at least once a month. 34.5 % of East Germans, 44.6 % of West Germans, and 55.2 % of Japanese never do.
- 18 50.1 % of East Germans, 62.1 % of West Germans, and 12.2 % of Japanese just do nothing more than at least once a month. 18.2 % of East Germans, 12.0 % of West Germans, and 63.1 % of Japanese response that they never just do nothing. There might be some difference in translation.
- 19 75.6 % of East Germans, 78.1 % of West Germans, and 34.2 % of Japanese go for walks or go hiking more than at least once a month. 4.9 % of East Germans, 5.1 % of West Germans, and 38.2 % of Japanese never do.
- 20 40.9 % of East Germans, 59.2 % of West Germans, and 49.3 % of Japanese go out for a meal or a drink more than at least once a month. 12.3 % of East Germans, 7.6 % of West Germans, and 16.6

- % of Japanese never do.
- 21 78.0 % of East Germans, 83.6 % of West Germans, and 44.2 % of Japanese visit or be visited by neighbors, friends, acquaintances more than at least once a month. 1.5 % of East Germans, 1.4 % of West Germans, and 16.1 % of Japanese never do.
  - 22 76.3 % of East Germans, 75.3 % of West Germans, and 41.4 % of Japanese visit or be visited by family, relatives more than at least once a month. 1.3 % of East Germans, 3.1 % of West Germans, and 9.6 % of Japanese never do.
  - 23 31.7 % of East Germans, 33.0 % of West Germans, 9.9 % of Japanese play cards or games with the family more than at least once a month. 27.5 % of East Germans, 32.4 % of West Germans, 71.4 % of Japanese never do.
  - 24 34.8 % of East Germans, 38.9 % of West Germans, 9.9 % of Japanese go on outings or short trips more than at least once a month. 10.8 % of East Germans, 11.2 % of West Germans, 29.2 % of Japanese never do.
  - 25 4.3 % of East Germans, 6.1 % of West Germans, and 2.1 % of Japanese take part in political activities more than at least once a month. 81.7 % of East Germans, 80.4 % of West Germans, and 87.2 % of Japanese never do.
  - 26 11.3 % of East Germans, 15.1 % of West Germans, and 11.8 % of Japanese take part in voluntary work more than at least once a month. 79.3 % of East Germans, 72.9 % of West Germans, and 72.3 % of Japanese never do.
  - 27 9.7 % of East Germans, 29.8 % of West Germans, and 6.7 % of Japanese attend church or religious events more than at least once a month. 70.1 % of East Germans, 36.0 % of West Germans, and 82.0 % of Japanese never do.
  - 28 17.2 % of East Germans, 25.4 % of West Germans, and 13.5 % of Japanese go to artistic and musical activities more than at least once a month. 57.9 % of East Germans, 50.2 % of West Germans, and 76.9 % of Japanese never do.
  - 29 31.7 % of East Germans, 42.4 % of West Germans, and 23.3 % of Japanese do sports more than at least once a month. 44.1 % of East Germans, 40.3 % of West Germans, and 55.8 % of Japanese never do.
  - 30 13.5 % of East Germans, 22.0 % of West Germans, and 14.2 % of Japanese attend sporting events more than at least once a month. 56.1 % of East Germans, 50.2 % of West Germans, and 57.7 % of Japanese never do.
  - 31 19.6 % of East Germans, 24.7 % of West Germans, and 12.1 % of Japanese go out to see a movie or a live show more than at least once a month. 44.5 % of East Germans, 43.3 % of West Germans, and 53.6 % of Japanese never do.
  - 32 14.0 % of East Germans, 17.5 % of West Germans, and 5.8 % of Japanese go out to see a movie or a live show more than at least once a month. 44.9 % of East Germans, 40.2 % of West Germans, and 66.8 % of Japanese never do.
  - 33 Due to the list-wise deletion and missing values in household income, the sample size becomes smaller in tModel 3. In Model 4, due to the control for occupational prestige scores, the unemployed respondents are omitted from the analysis.

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# **The Japan Survey on Information Society 2001**

NAOI Atsushi, SUGANO Tsuyoshi, and IWABUCHI Akiko

The revolution in information technology (IT) or information and communication technology (ICT) in Japan has affected people's value, social orientation, psychological functioning, lifestyle, and perceived social image of the information society and aged society. In this paper, we introduce and explain the Japan Survey on Information Society (JIS) project for researching various effects of ICT on the value, social orientation, psychological functioning, and lifestyle in contemporary Japan, and show some of the basic results.

This project studies social stratification and inequality, relationships between social stratification and ICT, the aspects of relationships between work and personality and the learning generalization mechanism, and the relationships between the ICT and post-materialism. The project also measures information literacy. Many items in the JIS 2001 can be comparable with those in German General Social Survey ALLBUS 1998. A multi-stage random sampling survey of men and women 20-89 years old was carried out in autumn 2001. The original sample size was 1,500 with a response rate of 67.4 %, giving a valid sample of 1,011.

We describe the basic use rates of various kinds of ICT, and knowledge about the Internet in Japan. The use rates and the knowledge differ among various socio-demographic groups in Japan. We describe and compare the degrees of social participation in Germany and Japan that are indicative of social networks and social capital. We also examine the relationship between the use of ICT, social participation, and social capital, analyzing correlations and partial correlations. The use of ICT turns out to be positively correlated with social capital measured as social participation, voluntary association, informal communication, and interaction.

## **Key Words**

Nationwide General Social Survey, Information Society, Post-Materialism, Social Stratification, Social Capital.