

June 8, 2017

Communications Usage Trend Survey in 2016 Compiled

The Ministry of Internal Affairs and Communications (MIC) has compiled its Communications Usage Trend Survey, a survey of the communication services usage by households and businesses at the end of September 2016.

For the highlights and an outline of the survey, please see Attachment 1 and Attachment 2, respectively.

Details of the survey will be posted on the website for the MIC's Information & Communications Statistics Database and released in a machine-readable data format (CSV format).

(URL: <http://www.soumu.go.jp/johotsusintokei/statistics/statistics05.html>)

[Highlights of the Survey]

1. Internet Usage Trends

- (i) The Internet usage rate among individuals was 83.5 percent, up from 83.0 percent in 2015.
- (ii) By household annual income bracket, the Internet usage rate was around 90 percent among households in the annual income brackets over ¥4 million.
- (iii) By age group, more than two-thirds of individuals in the 20-29 age group used SNS/video posting.
- (iv) The usage rate for social media services among overall businesses was 22.1 percent, almost flat from the previous year, while the usage rate in the financial/insurance industry rose to 34.1 percent.

2. Smartphone Usage and Ownership

- (i) The percentage of individuals who used smartphones to access the Internet was 57.9 percent, up from 54.3 percent in 2015.
- (ii) The smartphone ownership rate among individuals was 56.8 percent, up from 53.1 percent in 2015.
- (iii) The smartphone ownership rate among households was 71.8 percent, and the gap between the smartphone ownership rate and the computer ownership rate (73.0 percent) narrowed to 1.2 points. (2015: a gap of 4.8 points)

3. ICT and Labor Productivity

Businesses using ICT have higher labor productivity per company (productivity premium) than businesses not using it with respect to all types of ICT.

- Telework: productivity premium of 60 percent over businesses that have not introduced telework.
- ICT education: productivity premium of 30 percent over businesses that have not implemented ICT education
- Cloud services: productivity premium of 30 percent over businesses that are not using cloud services
- Wireless communication systems and tools: productivity premium of 20 percent over businesses that have not introduced wireless communication systems and tools

Survey Outline

MIC has conducted the Communications Usage Trend Survey annually since 1990, targeting households (households and household members) and businesses, as a general statistics survey in accordance with the Statistics Act (Act No. 53 of 2007). (Business surveys have been conducted each year since 1993, except for 1994. Surveys of household members started in 2001.) MIC has conducted the household survey by prefecture since 2010.

	Households*	Businesses
Survey period	November – December 2016	
Survey area	Nationwide	
Scope of attributes / Level of survey	Households headed by someone aged 20 or older (as of April 1, 2016) and household members aged 6 or older	Businesses with 100 or more regular employees in industries other than public affairs
Sample size [Effective mails]	40,592 [38,565]	5,140 [4,133]
Effective responses [%]	17,040 households (44,430persons) [44.2%]	2,032 businesses [49.2%]
Survey items	Communication services usage, communication-device ownership, etc.	
Survey method	Survey form sent and collected by postal mail or online (email)	

*In the household survey portion of the Communications Usage Trend Survey in 2016, a simplified survey form covering a limited range of items was used in addition to the existing survey form in order to improve the survey recovery rate. The recovery status concerning each of the survey forms is as follows:

Survey form version	Sample size [Effective mails]	Effective responses [%]
Existing version	6,608 [6,211]	2,506 households (6,472 persons) [40.3%]
Simplified version	33,984 [32,354]	14,534 households (37,959 persons) [44.9%]

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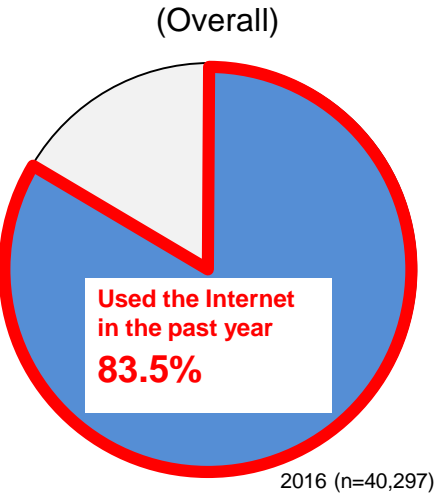
Highlights of the Communications Usage Trend Survey in 2016

Note: Household survey items are indicated with (households) in the title, business survey items with (businesses) in the title, and household members survey items with (individuals) in the title.

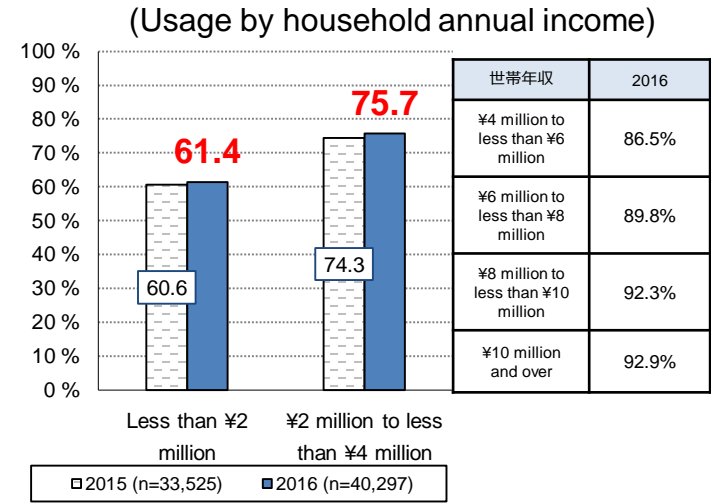
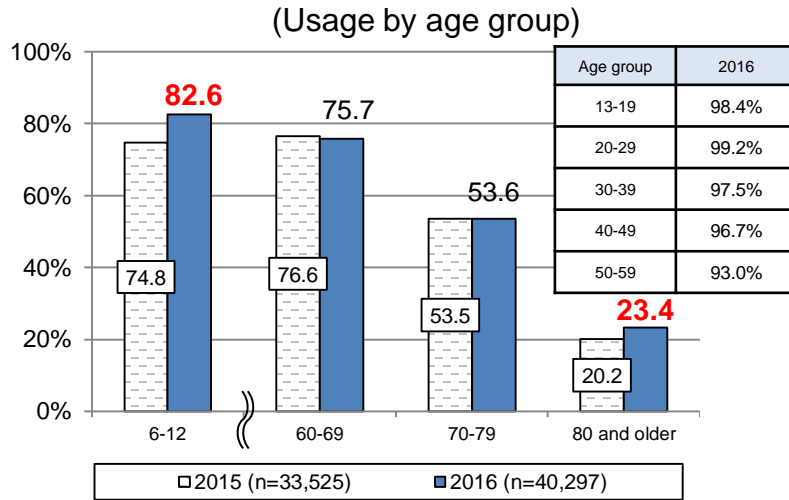
* Non-responses were excluded except in the graphs of “Transitions in ownership of communication devices (households)” in Page 2 and “Ownership of common communication devices (households) in Page 6.

Topic 1 Internet Usage Trends

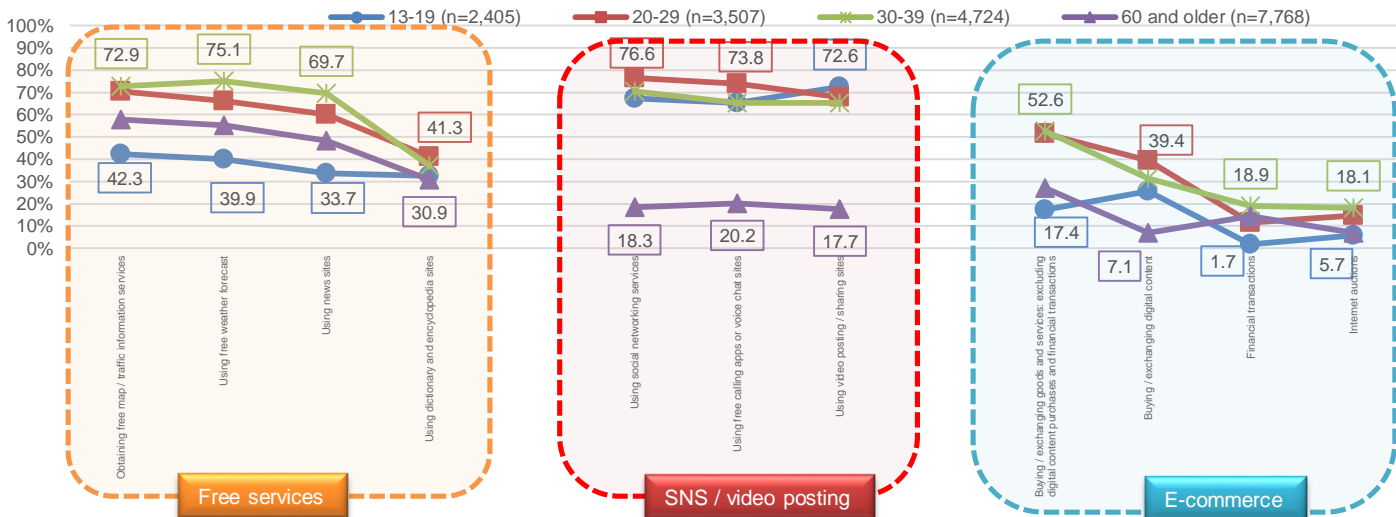
- ✓ **The Internet usage rate among was 83.5 percent**, up from 83.0 percent in 2015.
- ✓ By household annual income bracket, **the Internet usage rate was around 90 percent** among households in **the annual income brackets over ¥4 million**.
- ✓ By age group, **more than two-thirds of individuals in the 20-29 age group used SNS/video posting**.
- ✓ **The usage rate for social media services** among overall businesses was 22.1 percent, almost flat from the previous year, while **the usage rate in the financial/insurance industry rose to 34.1 percent**.



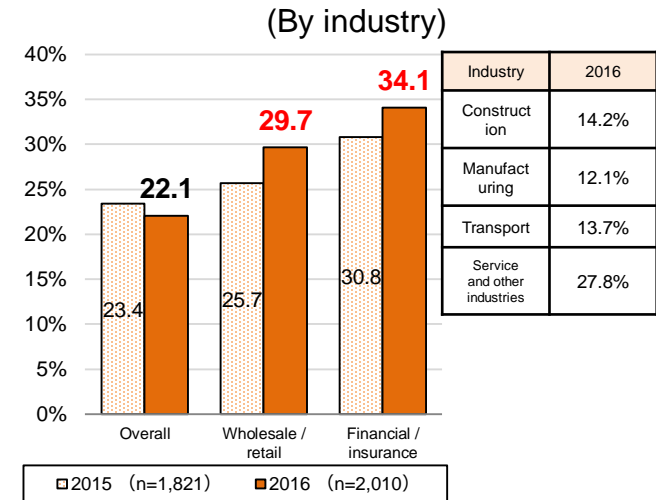
Internet usage (individuals)



Purpose of Internet use (individuals)

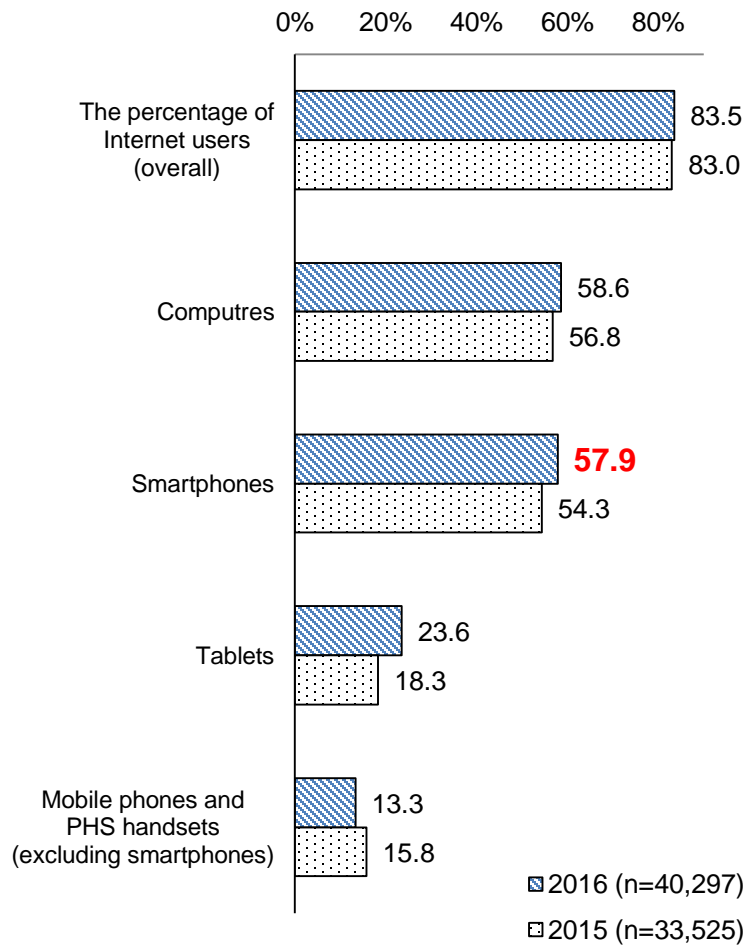


Social media usage (businesses)

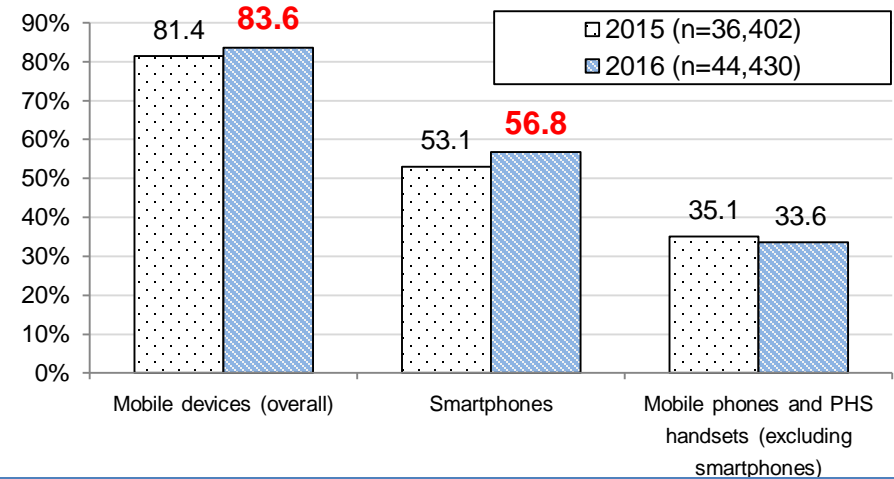


- ✓ **The percentage of individuals who used smartphones to access the Internet was 57.9 percent**, up from 54.3 percent in 2015.
- ✓ **The smartphone ownership rate among individuals was 56.8 percent**, up from 53.1 percent in 2015.
- ✓ **The smartphone ownership rate among households was 71.8 percent**, and the gap between the smartphone ownership rate and **the computer ownership rate** (73.0 percent) narrowed to **1.2 points**. (2015: a gap of 4.8 points)

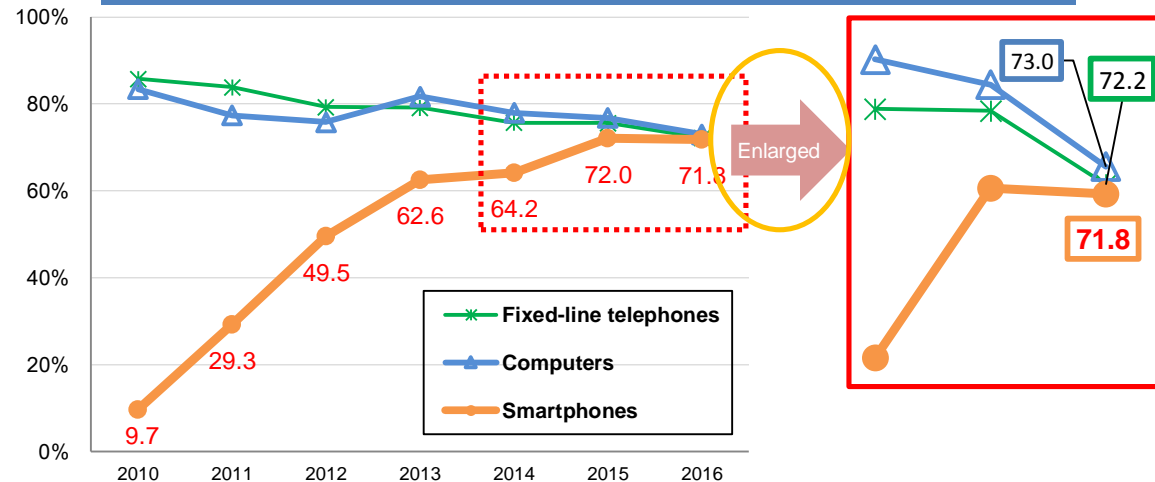
Internet usage by device



Transitions in ownership of mobile devices (individuals)



Transitions in ownership of communication devices (households)

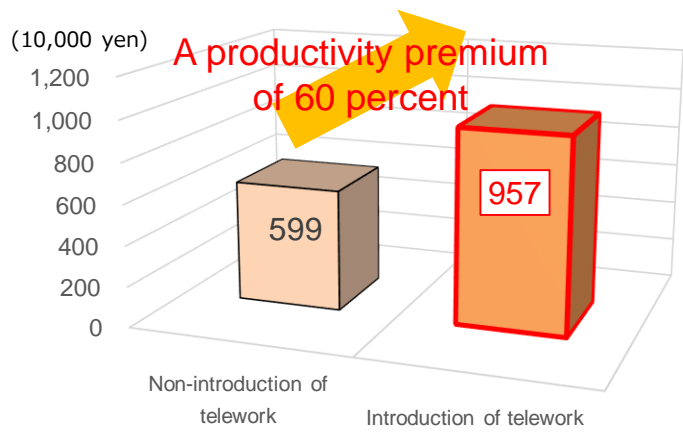


*The ownership rate for mobile devices as a whole in 2016 was 94.7 percent.

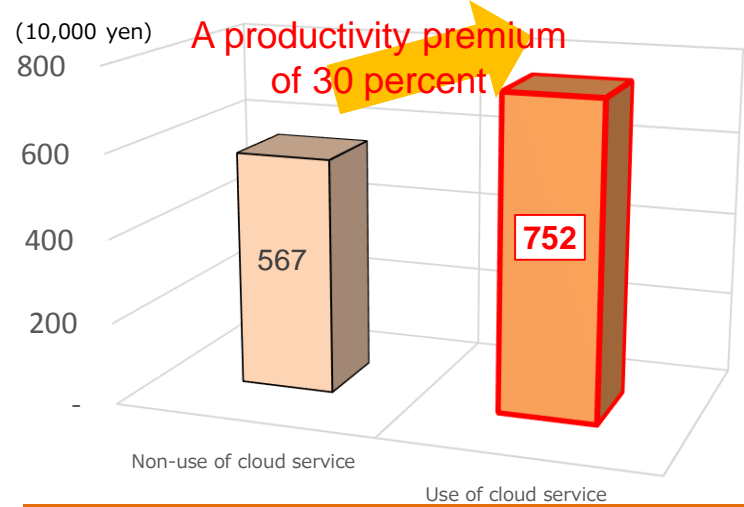
✓ **Businesses using ICT have higher labor productivity per company (productivity premium) than businesses not using it with respect to all types of ICT.**

- **Telework: productivity premium of 60 percent** over businesses that have not introduced telework.
- **ICT education: productivity premium of 30 percent** over businesses that have not implemented ICT education
- **Cloud services: productivity premium of 30 percent** over businesses that have not used cloud service
- **Wireless communication systems and tools: productivity premium of 20 percent** over businesses that have not introduced wireless communication systems and tools

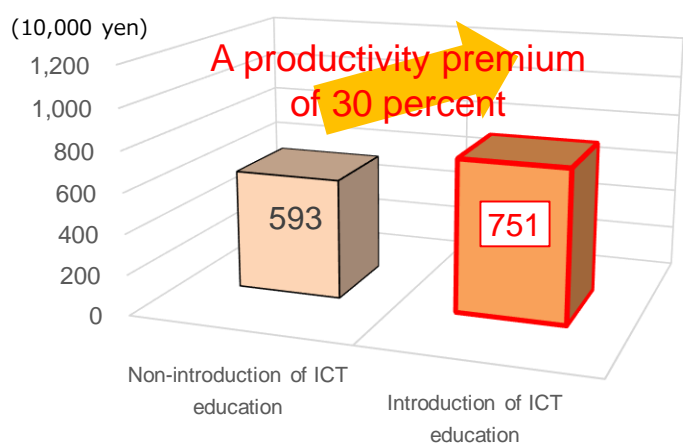
Introduction of telework and labor productivity per company



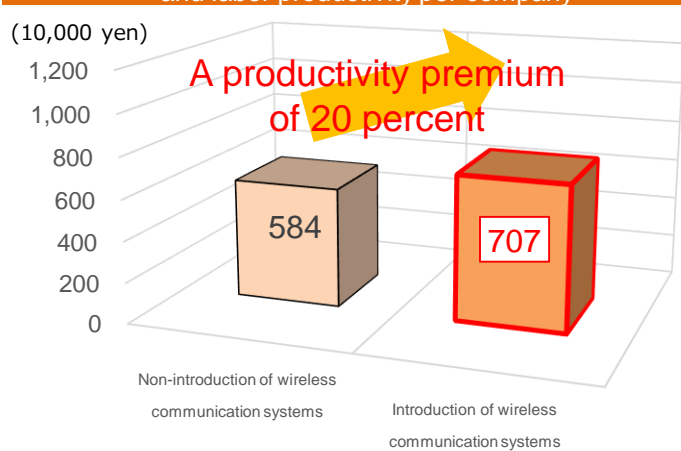
Use of cloud service and labor productivity per company



Implementation of ICT education and labor productivity per company



Introduction of wireless communication systems and tools and labor productivity per company

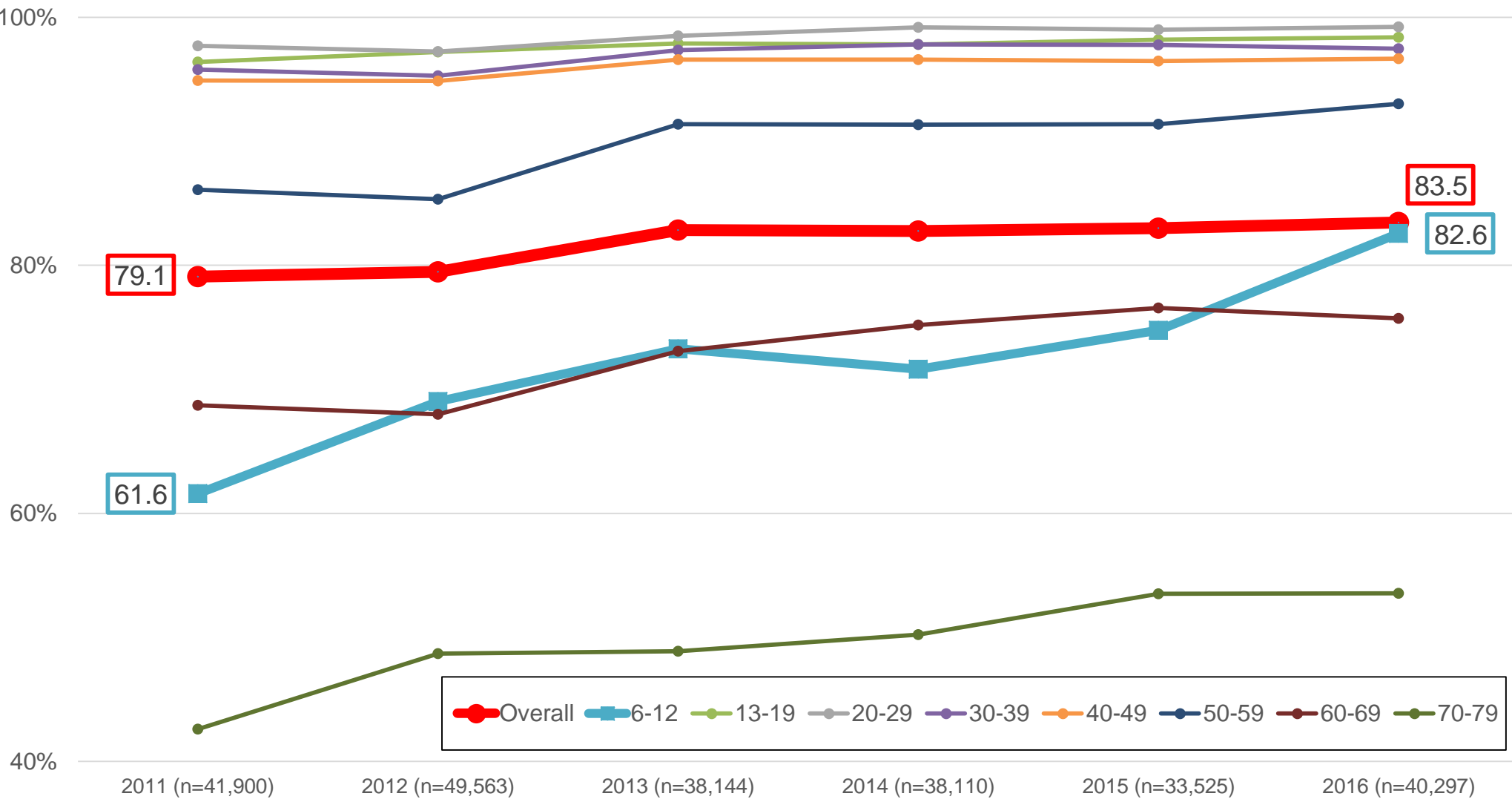


*Labor productivity = (operating profit + personnel cost + depreciation cost) ÷ number of employees
 The above figures were calculated based on the total number of businesses that gave replies with respect to all above items.
 *Wireless systems and tools: RFID tags, contactless IC cards, network cameras, sensors, and other new network-enabled devices

1. Internet Usage Trends (1)

Internet usage by age group (individuals)

Compared with five years ago (2011), the Internet usage rate rose steeply in the 6-12 age group.



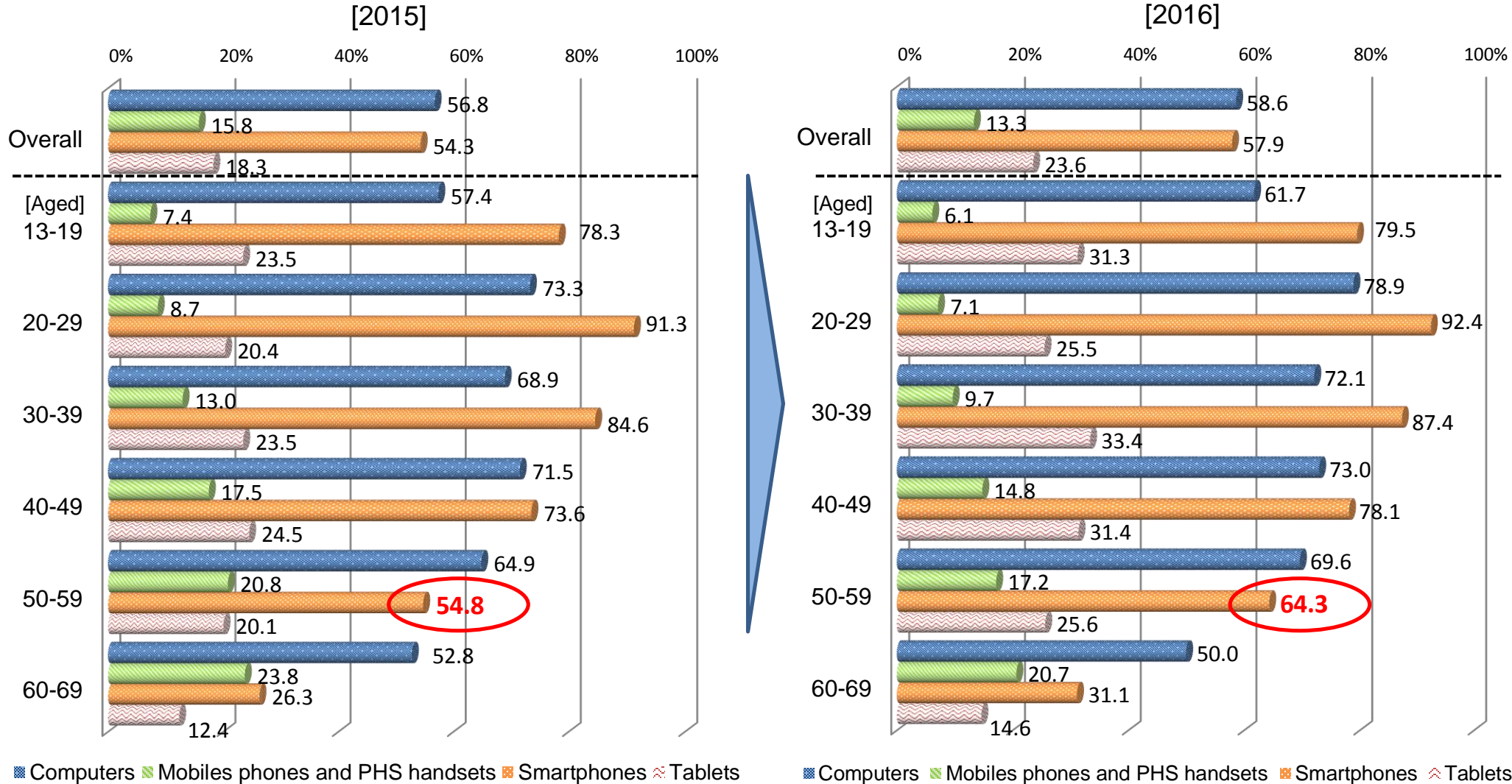
* "Overall" refers to the surveyed individuals aged 6 or older.

*The Internet usage rate among individuals aged 80 or older was 14.3 percent in 2011 and 23.4 percent in 2016.

2. Internet Usage Trends (2)

Usage of Internet access devices by age group (individuals)

In the age groups between 10 and 69 years old, the percentage of individuals using mobile phones/PHS handsets (excluding smartphones) to access the Internet declined, while the usage rate for smartphones rose. In particular, the usage rate rose as much as around 10 points in the 50-59 age group. The usage rate for tablets also rose in the age groups between 10 and 69 years old.



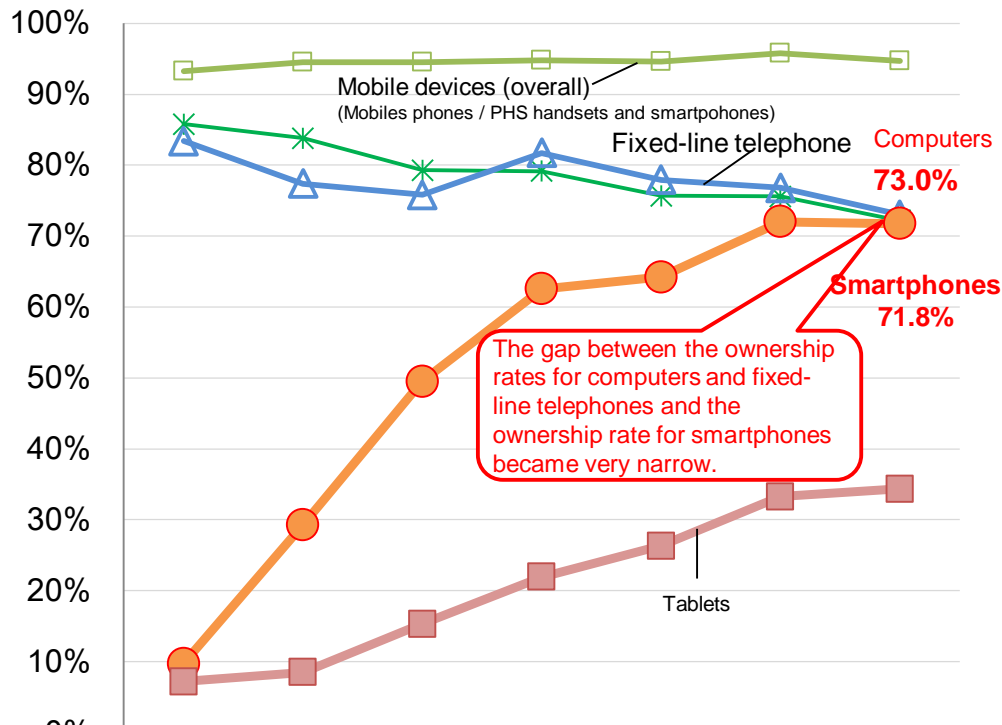
Note: Each figure is the Internet usage rate among surveyed household members (individuals) for the respective device and age group.

Note: Mobile phones and PHS handsets exclude smartphones.

3. Proliferation of Communication Devices

Ownership of common communication devices (households) (2010-2016)

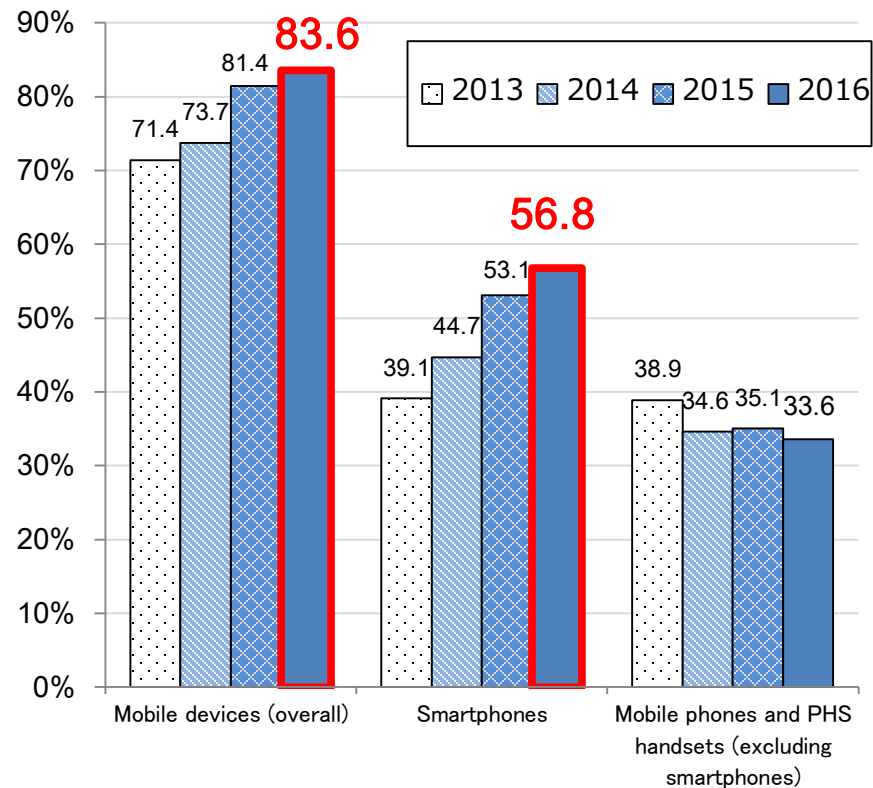
The smartphone ownership rate among households remained almost flat compared with the previous year, while the computer ownership rate declined, resulting in the narrowing of the gap between the ownership rates for these two categories.



The gap between the ownership rates for computers and fixed-line telephones and the ownership rate for smartphones became very narrow.

Ownership of mobile devices (individuals) (2013-2016)

The ownership rate for smartphones continued to rise among individuals, and the ownership rate for mobile devices (mobile phones, PHS handsets and smartphones) as a whole also rose.

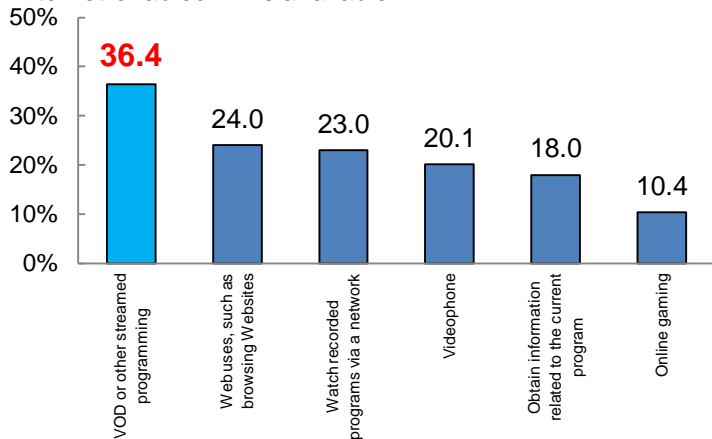


Note: Each figure is the percentage of all households in each year's survey that own the respective communication device.

4. Usage of Internet-enabled TV (households)

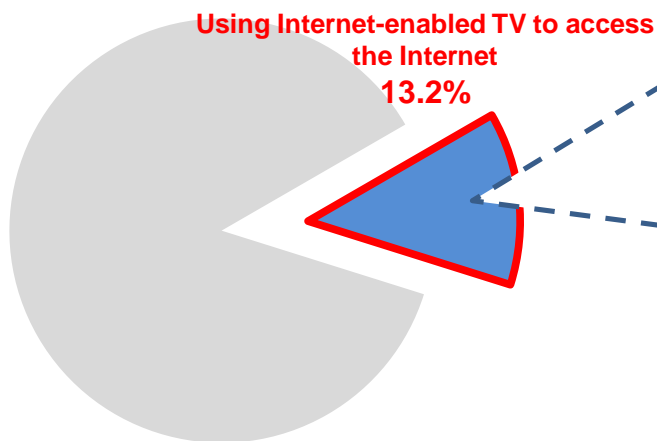
Services that households would like to use if Internet-enabled TV is available

“Video on demand (VOD) or other streamed programming” was cited by the largest percentage of households as a service that they would like to use if Internet-enabled TV is available.



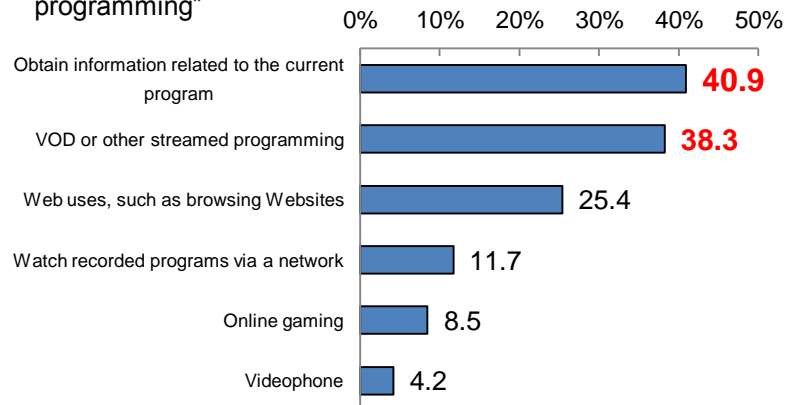
Percentage of households that used TV to access the Internet

Of the surveyed households, 13.2 percent used Internet-enabled TV to access the Internet in the past one year period.



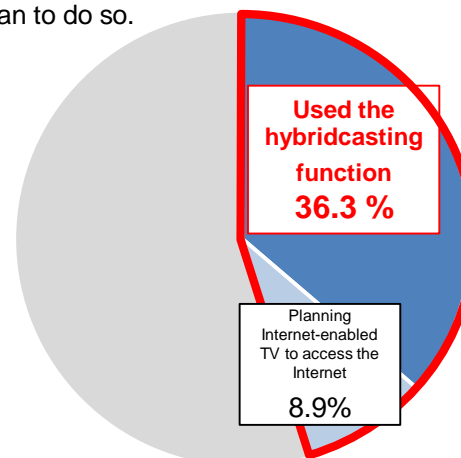
Purposes of use of Internet-enabled TV to access the Internet

“Obtain information related to the current program” was cited by the largest percentage of households as the purpose of use of TV to access the Internet, followed by “video on demand (VOD) or other streamed programming”



Usage of the hybridcasting function*

Of households that used TV to access the Internet, around 40 percent have the experience of using the hybridcasting function, while 10 percent plan to do so.

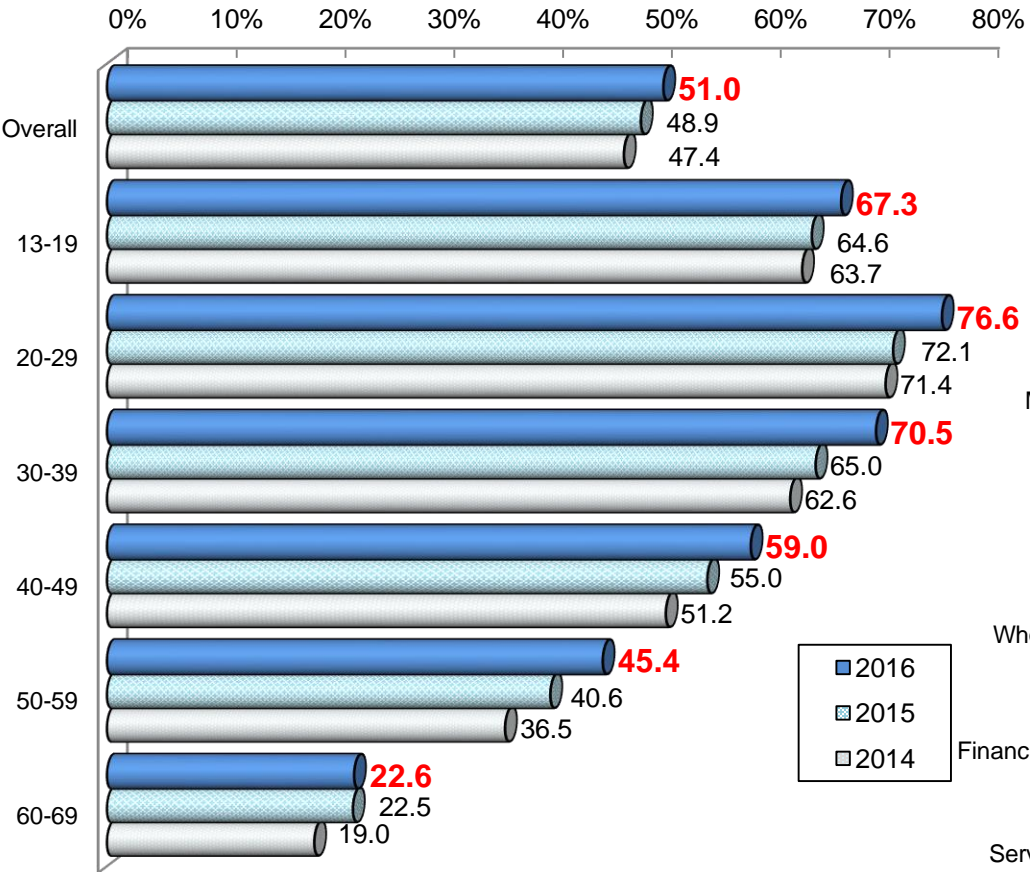


*The hybridcasting function refers to a service that indicates information and contents transmitted via the Internet on the broadcast display.

5. Social Media Usage Trends

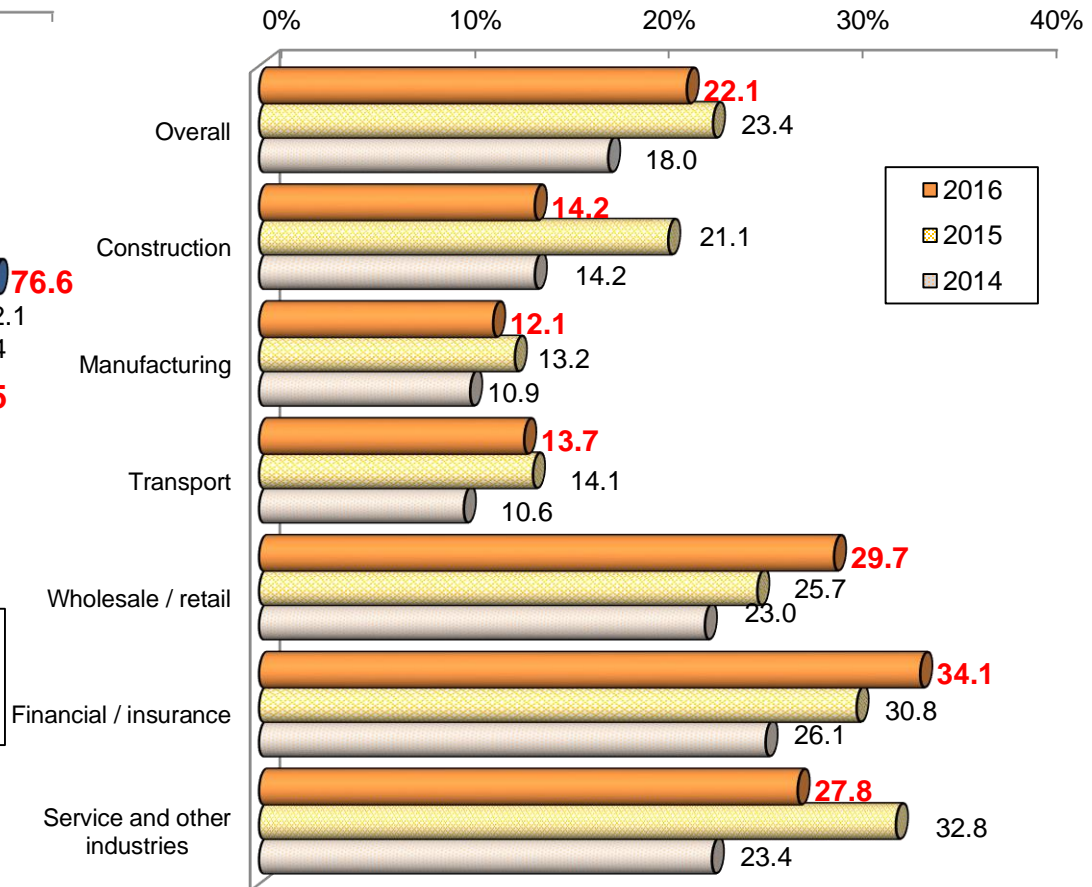
Social networking service usage (individuals)

The usage rate for social networking services continued to rise in the age groups between 10 and 69 years old.



Social media usage (businesses)

The usage rate for social media services among overall businesses remained almost flat compared with the previous year, while the rate rose in the wholesale/retail and financial/insurance industries.

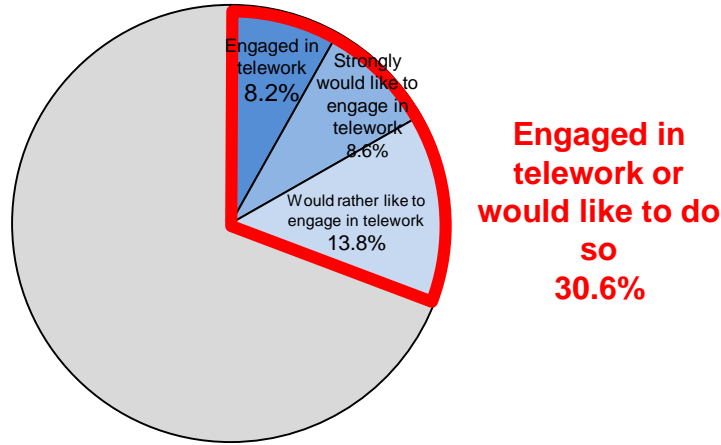


(Note) Social media refers to information services in which one can communicate with multiple people on the Internet.

6. Introduction of Telework

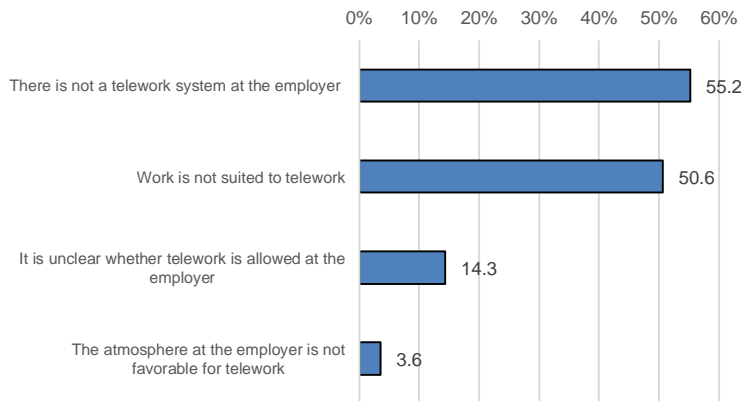
Engagement in telework (individuals)

Of individuals aged 15 or older and working for companies or other organizations, 30.6% either engaged in telework in the past year or said they would like to do so.



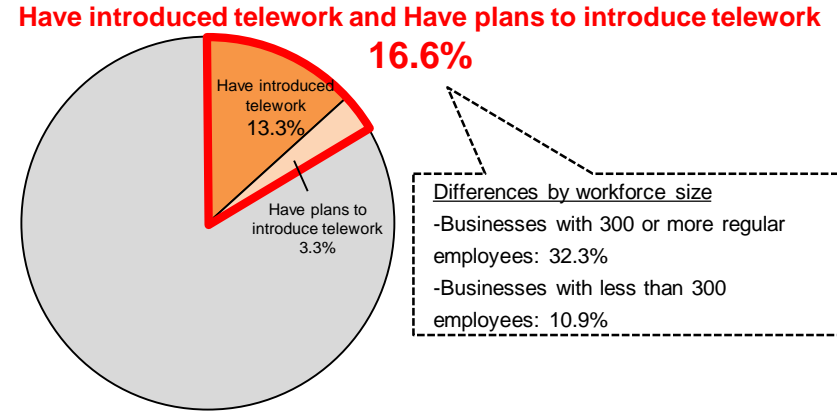
Reasons for not engaging in telework (individuals)

Among individuals who would like to engage in telework, the largest percentage cited "There is not a telework system" as the reason for not engaging in telework.



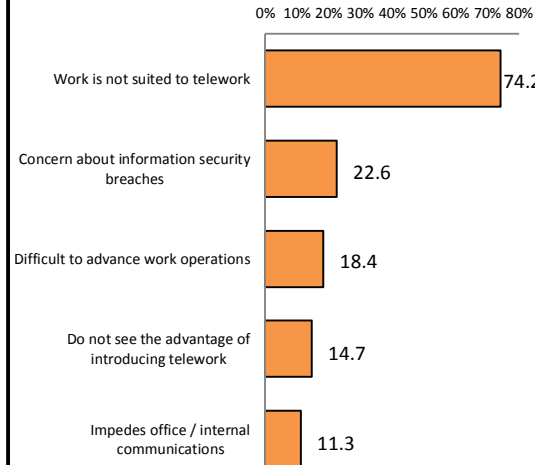
Introduction of telework (businesses)

Of the surveyed businesses, 16.6 percent have introduced or have plans to introduce telework.



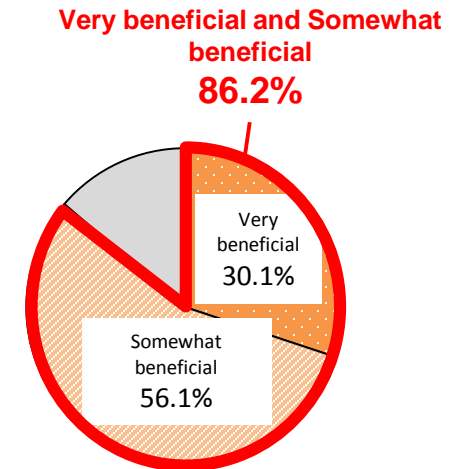
Reasons for not introducing telework (businesses)

Around 70 percent cited "Work is not suited to telework" as the reason for not introducing telework.



Telework benefits (businesses)

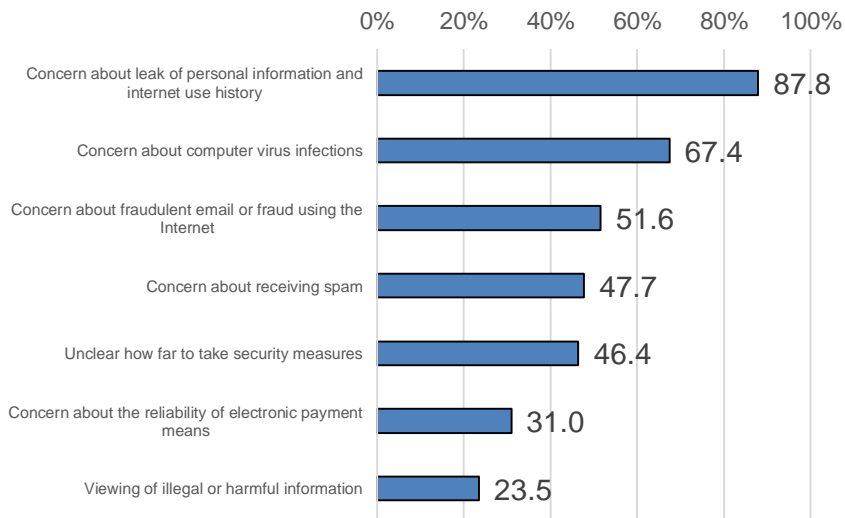
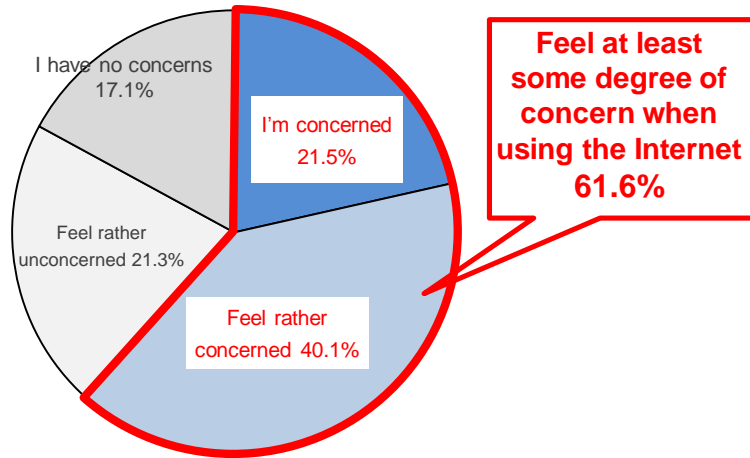
Concerning the intended effects of introduction of telework, 86.2 percent recognized "beneficial" effects.



7. Personal Information Protection Measures and Concerns about Using the Internet

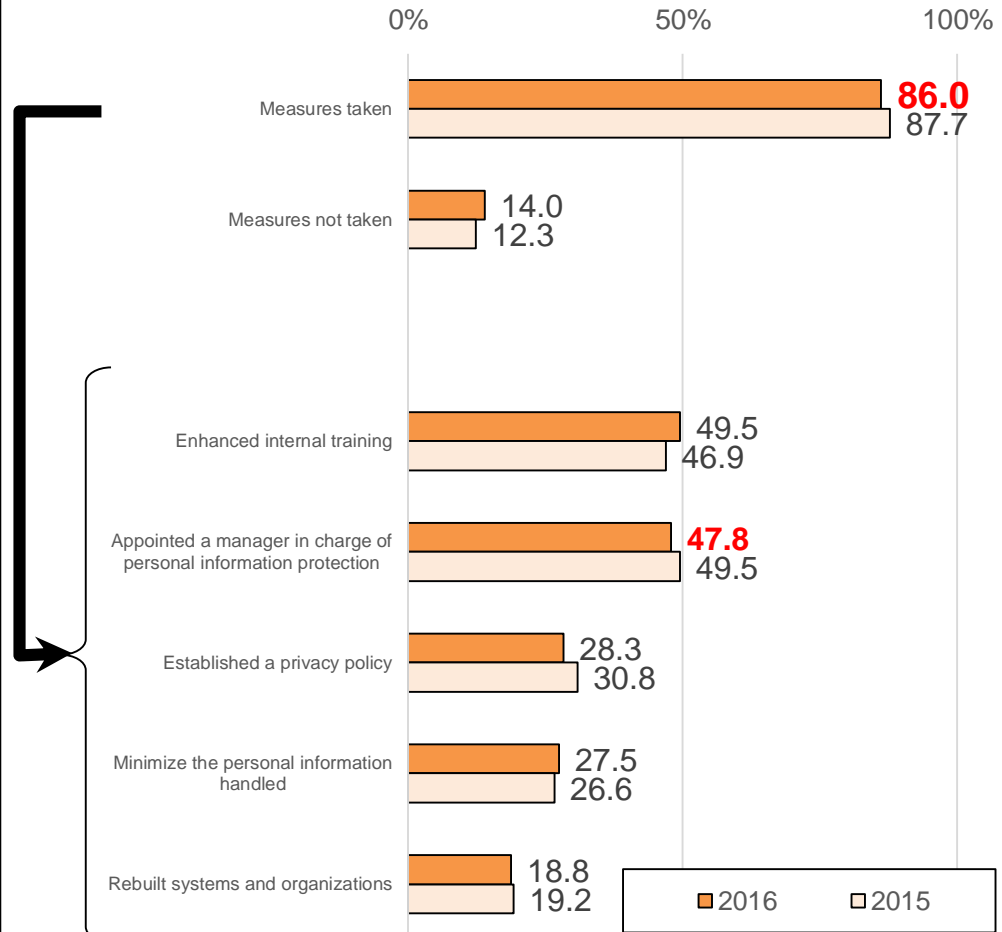
Concerns about using the Internet (individuals)

Of Internet users aged 12 or older, around 60 percent felt at least some degree of concern when using the Internet. Specifically, 87.8 percent cited “concern about leak of personal information,” indicating a very high level of concern over protection of personal information.



State of personal information protection measures (businesses)

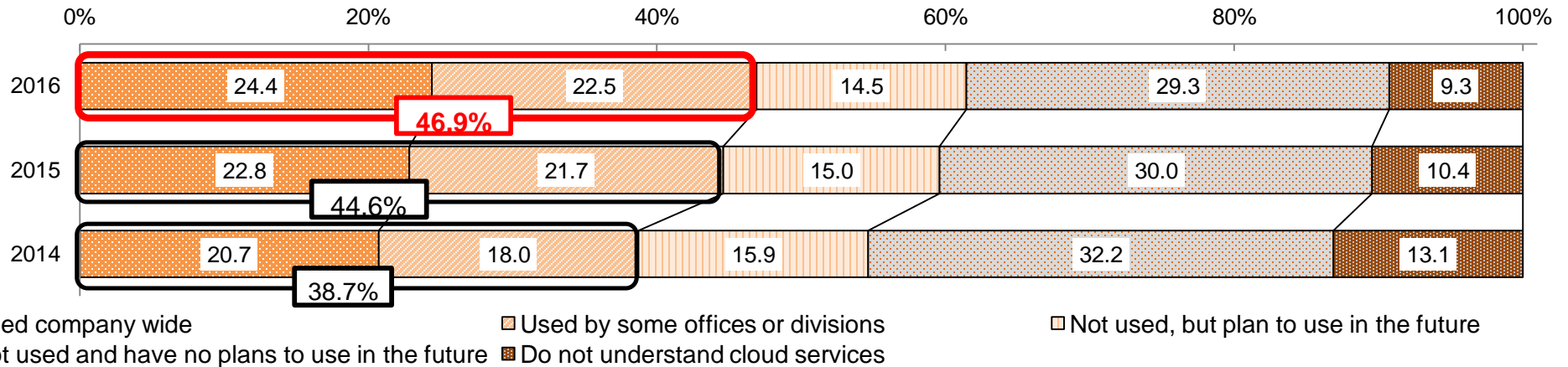
Of the surveyed businesses, around 90 percent have implemented some personal information protection measures. Around half have appointed a manager in charge of personal information protection.



8. Cloud Service Usage (businesses)

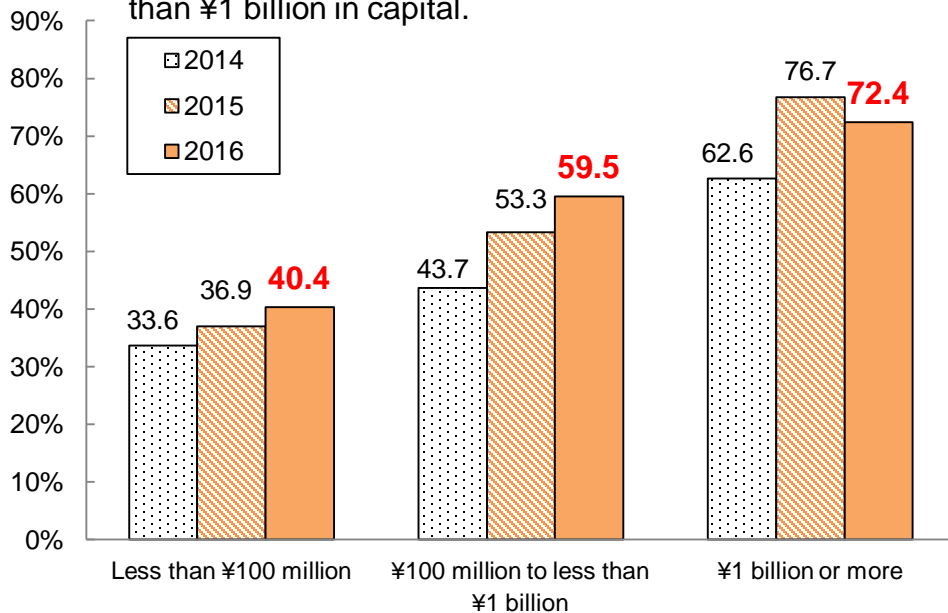
Cloud service usage

The usage rate for cloud services among businesses has been rising year after year. The level of awareness of cloud services is also rising, as shown by a decline in the percentage of businesses that selected the reply “Do not understand cloud services.”



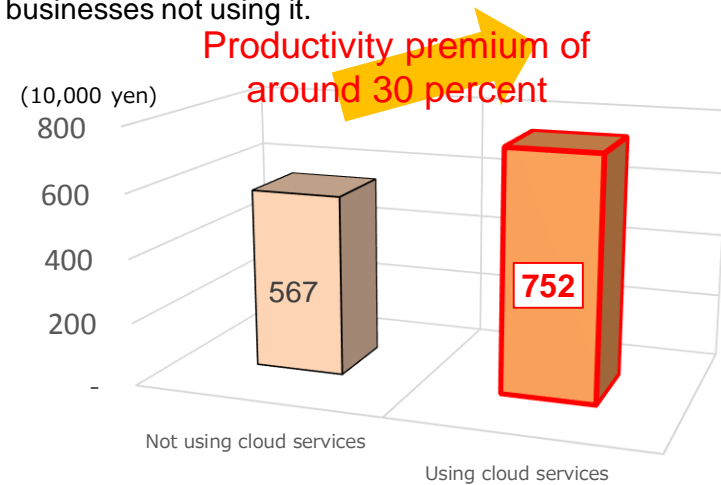
Cloud service usage by capitalization

The usage rate is rising among businesses with less than ¥1 billion in capital.



Usage of cloud services and labor productivity

Businesses using cloud services have a 30 percent higher labor productivity per company (productivity premium) than businesses not using it.



*Labor productivity = (operating profit + personnel cost + depreciation cost) ÷ number of employees
 The above figures were calculated based on the total number of businesses that gave replies with respect to all above items.

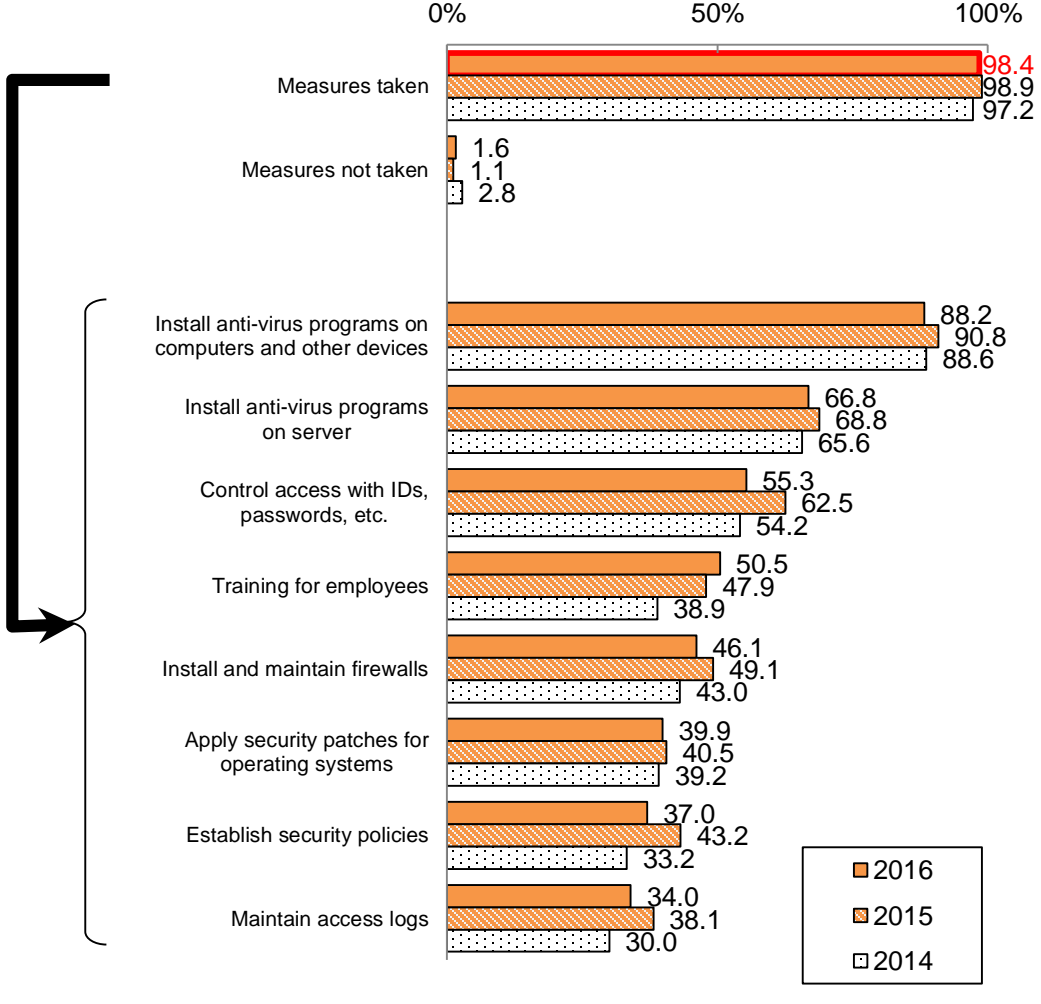
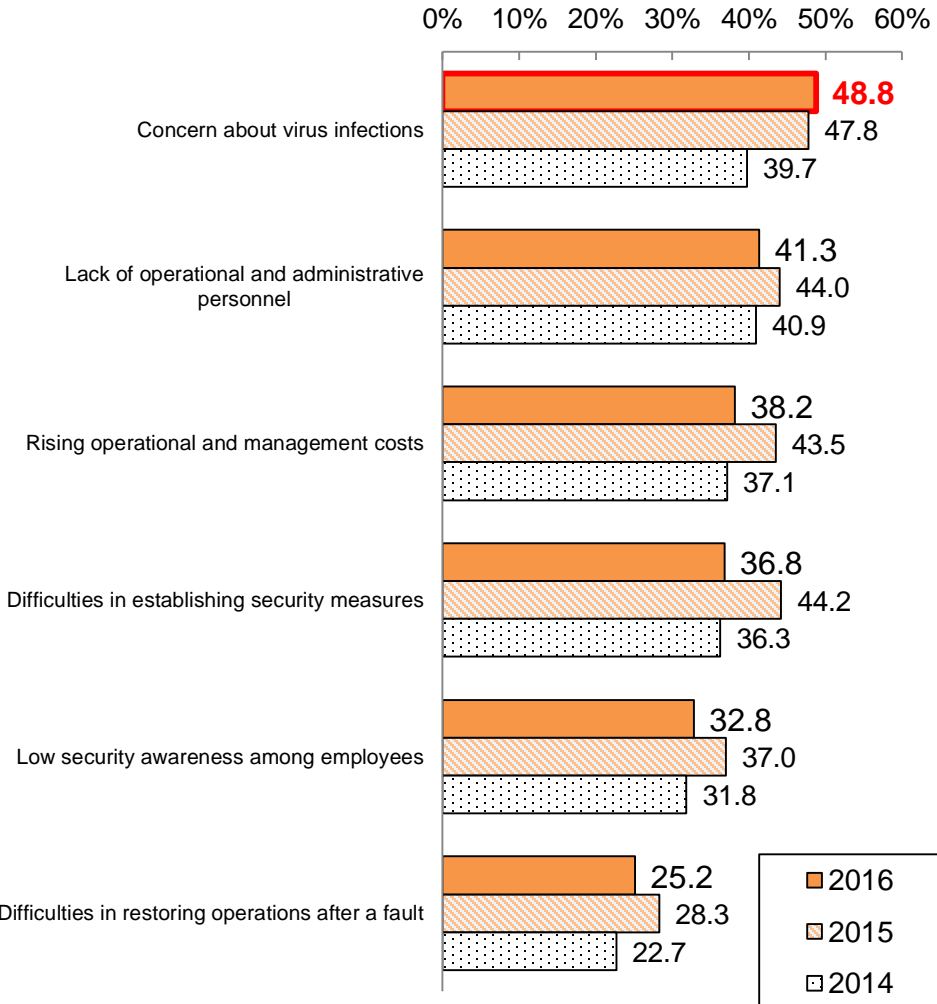
9. Issues associated with information-communication networks and security measures implemented (businesses)

Issues associated with use of information-communication networks

The percentage of businesses citing “concern about virus infections” as an issue associated with use of information-communication networks remained high.

Information security measures taken by businesses

Around 98 percent implemented some information security measures.



Summary Findings of the 2016 Communications Usage Trend Survey

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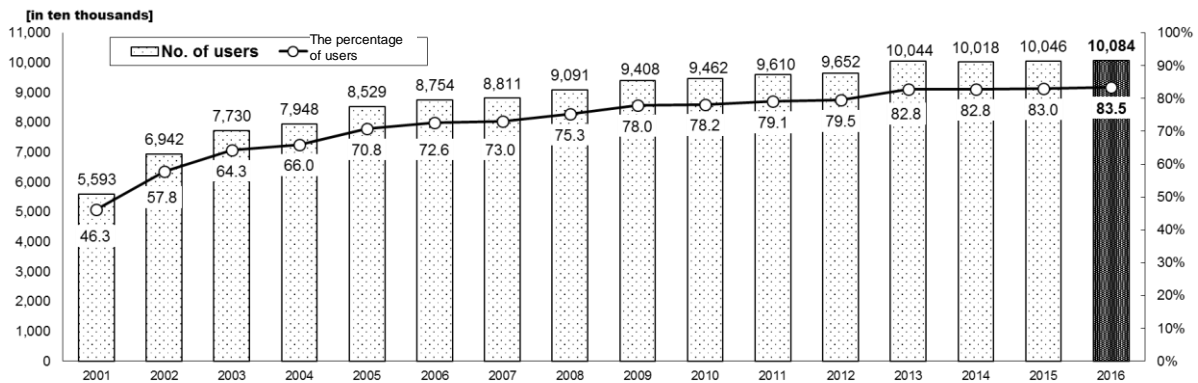
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1. Proliferation of the Internet and Other Networks

(1) Transitions in the number of Internet users (individuals)

As of the end of September 2016, the number of people who used the Internet in the past year (Internet users; estimate) was 100.84 million, while the Internet usage rate among individuals was 83.5 percent.

Figure 1-1: Transitions in the number of Internet users and Internet usage rates



Notes: 1. The survey questioned persons aged six and older.

2. The number of Internet users was calculated by multiplying the estimated population aged six and older (estimated from census returns and mortality tables) by the percentage of individuals who used the Internet in the past year in this survey. The estimate included computers, mobile phones, PHS handsets, smartphones, tablets, game consoles, and all other devices used to access the Internet and included personal use, work use, school use, and all other purposes.

3. Calculations excluded non-responses. (This holds for all findings in this document.)

(2) Internet usage (individuals)

By gender, the Internet usage rate was 87.0 percent among men and 80.1 percent among women, with a gap of 6.9 points between the rates for men and women.

By age group, the Internet usage rate was higher than 90 percent in the age groups between 13 and 59 years old. In the 6-12 and over-80 age groups, the usage rate rose from the previous year.

Figure 1-2: Transitions in Internet usage by gender

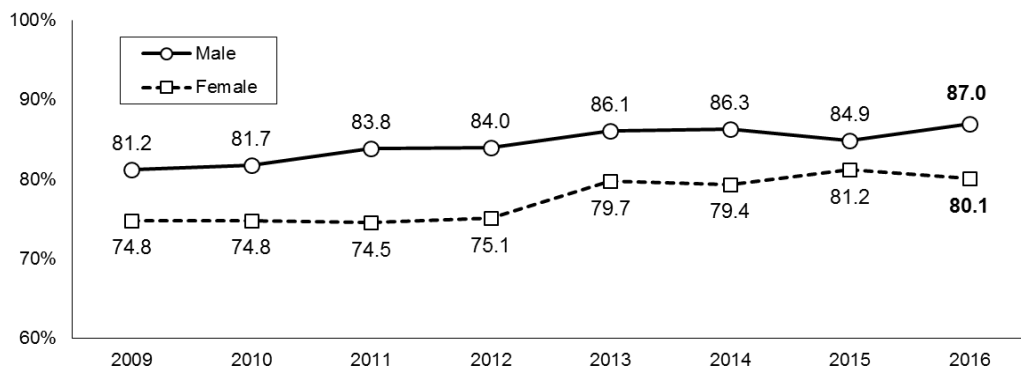


Figure 1-3: Transitions in Internet usage by age group

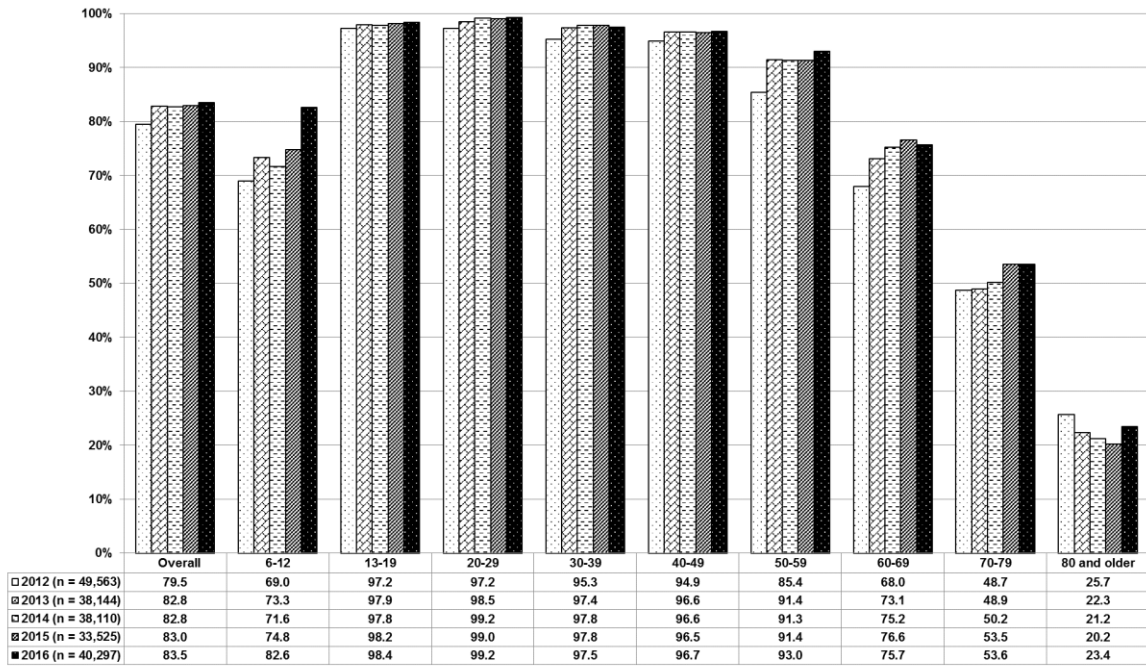


Figure 1-4: Internet usage by age and gender — 2016

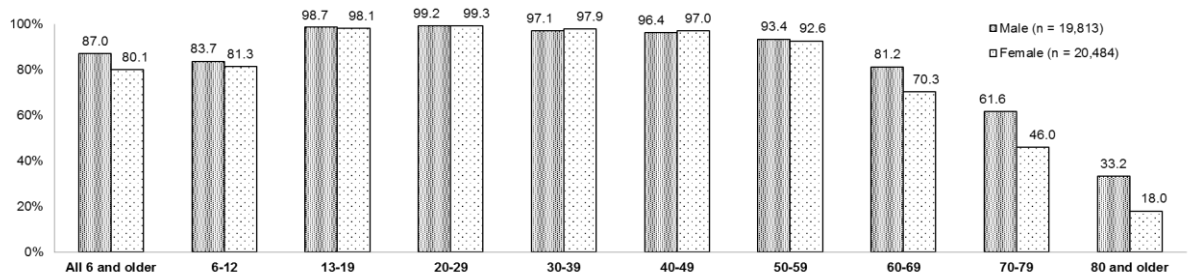
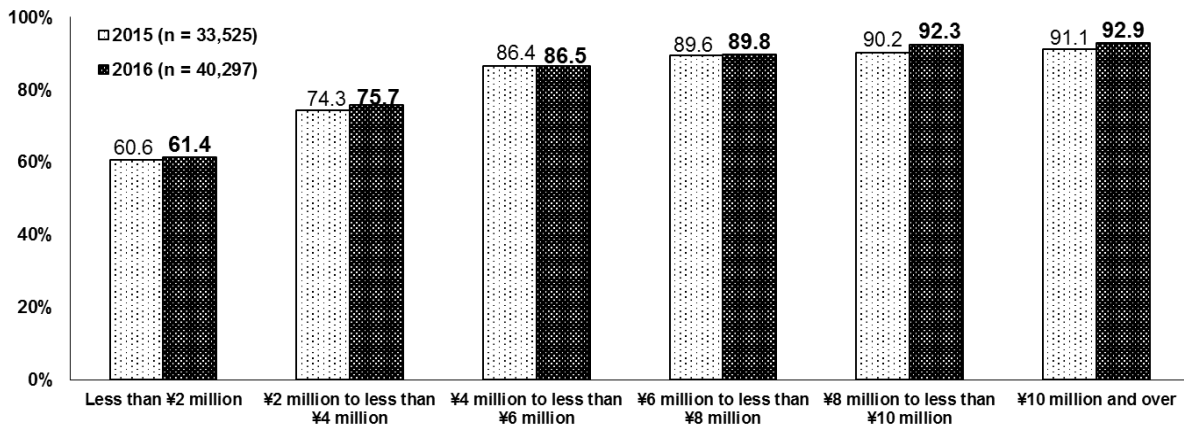


Figure 1-5: Internet usage by annual household income — 2016



(3) Internet usage by device (individuals)

By type of device used to access the Internet, “computers” were used by the largest percentage, 58.6 percent, followed by “smartphones” (57.9 percent). The gap between the computer and smartphone usage rates narrowed to 0.7 points from 2.4 points in the previous year.

By age group, the smartphone usage rate was higher than 70 percent in the age groups between 13 and 49 years old and was higher than 90 percent in the 20-29 age group.

Figure 1-6: Internet usage by device

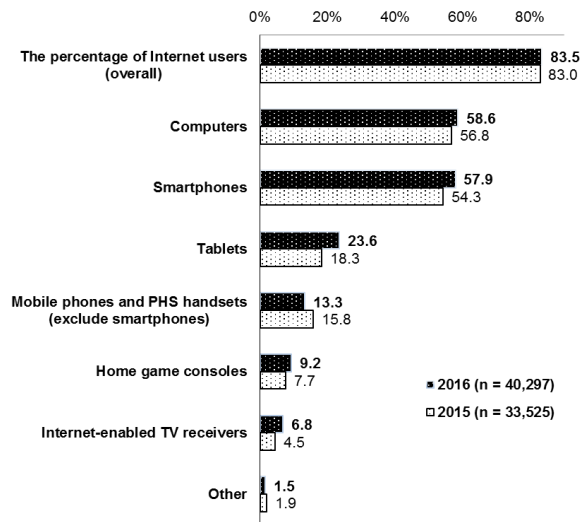
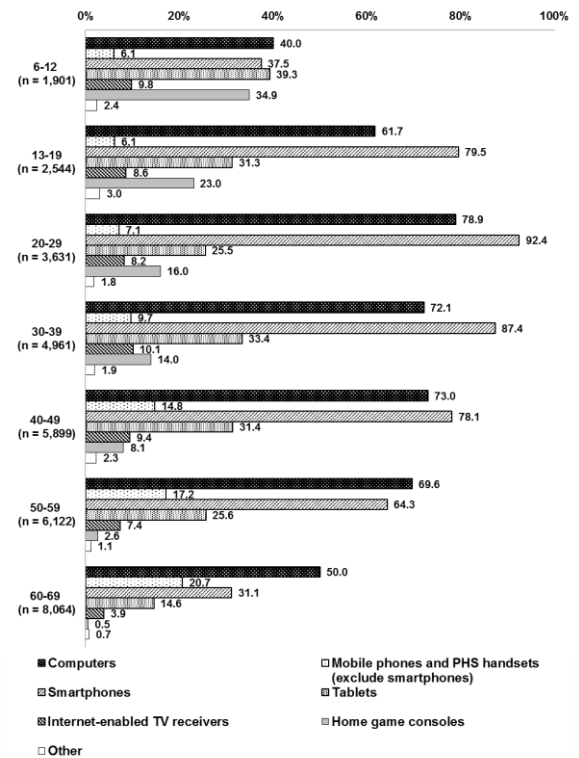


Figure 1-7: Use of Internet devices by age group — 2016

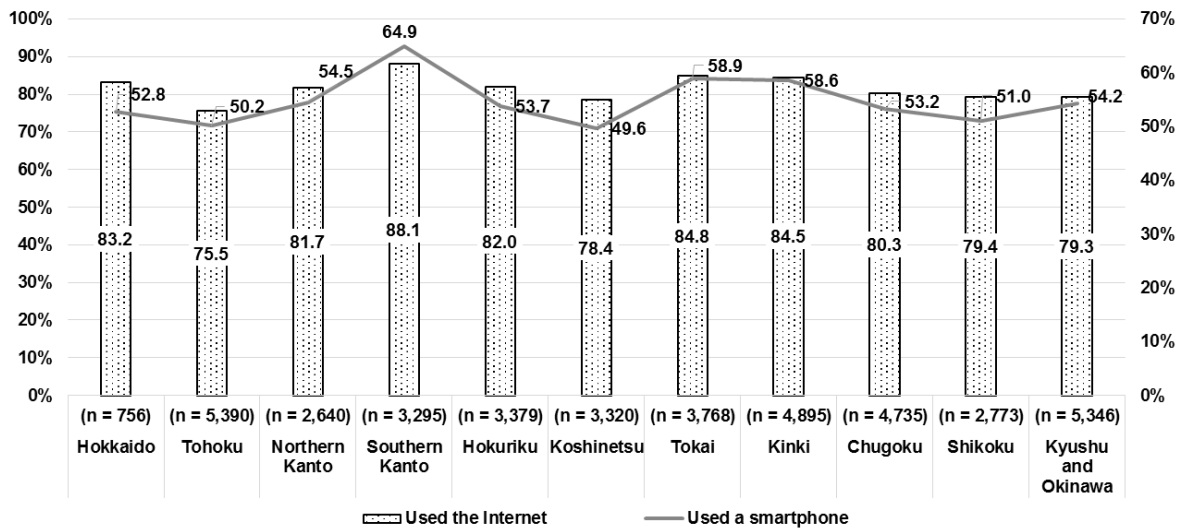


(4) Internet and smartphone usage by region (individuals)

By region, the Internet usage rate in southern Kanto, Tokai and Kinki was higher than the national average rate (83.5 percent).

As in the case of the Internet usage rate by region, the smartphone usage rate in southern Kanto, Tokai and Kinki was higher than the national average rate (57.9 percent).

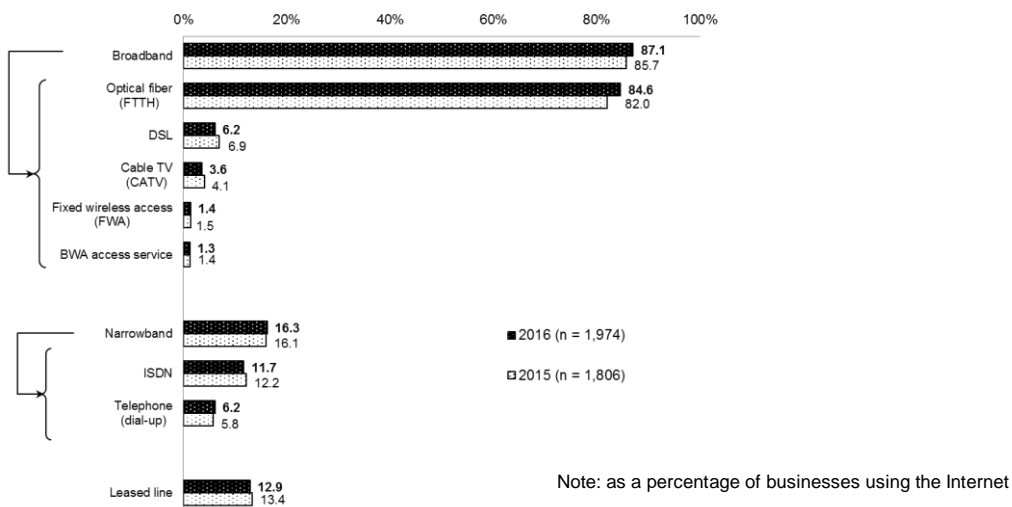
Figure 1-8: Internet and smartphone usage by region —2016



(5) Types of Internet connections (businesses)

Of the surveyed businesses, 87.1 percent used a broadband connection to access the Internet from their premises. Of businesses using a broadband connection, 84.6 percent used an optical fiber connection.

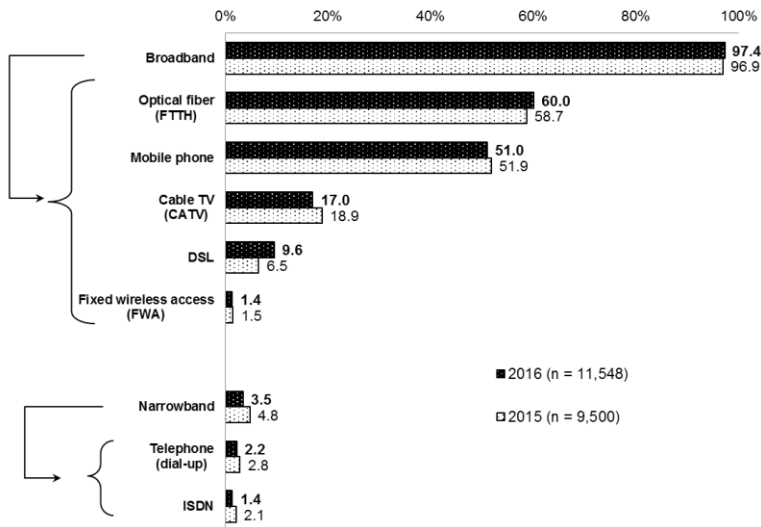
Figure 1-9: Internet connection types (multiple responses accepted)



(6) Types of Internet connections (households)

Of households using a broadband connection to access the Internet from computers at home, tablets, and other devices, 97.4 percent used a broadband connection. Of households using a broadband connection, 60.0 percent used an optical fiber connection and 51.0 percent used a mobile phone connection.

Figure 1-10: Types of Internet connections for computers at home and other devices (multiple responses)

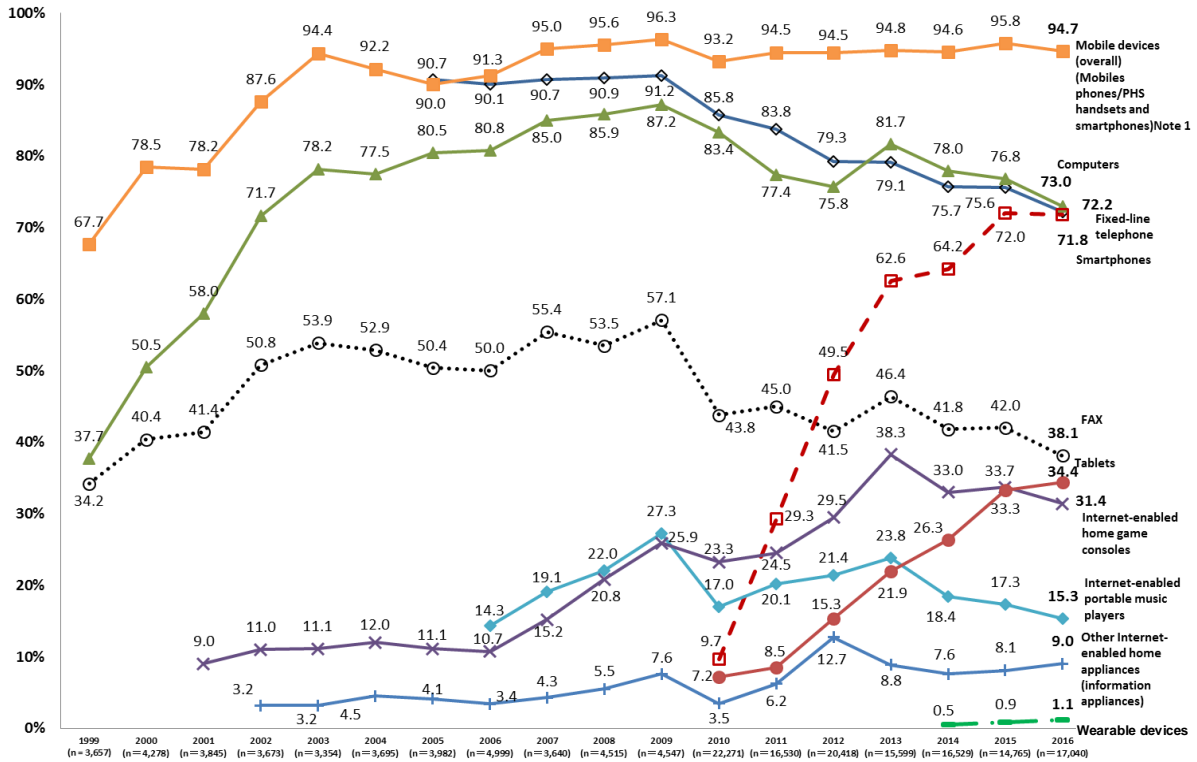


Note: as a percentage of households accessing the Internet from computers at home and other devices.

(7) Ownership of communication devices (households)

As for ownership of communication devices by households by type of device, 71.8 percent owned “smartphones,” which were included in the “mobile devices (overall)” category (94.7 percent). As a result, the gap between the smartphone ownership rate and the computer ownership rate (73.0 percent) narrowed to 1.2 points from 4.8 points in the previous year.

Figure 1-11: Transitions in ownership of communication devices



Notes: 1. “Mobile devices (overall)” include mobile phones and PHS handsets. This category also included personal digital assistants (PDAs) from 2009 to 2012 and smartphones from 2010.
 2. For comparison purposes between years, these calculations do include non-responses.

(8) Ownership of mobile devices (individuals)

Regarding the ownership of mobile devices by individuals, the ownership rate for “smartphones” rose 3.7 points from the previous year to 56.8 percent, 23.2 points higher than the ownership rate for “mobile phones/PHS handsets” (33.6 percent).

By age group, the ownership rate for “smartphones” was higher than the ownership rate for “mobile phones/PHS handsets” in the age groups between 6 and 59 years old.

Figure 1-12: Transitions in ownership of mobile devices

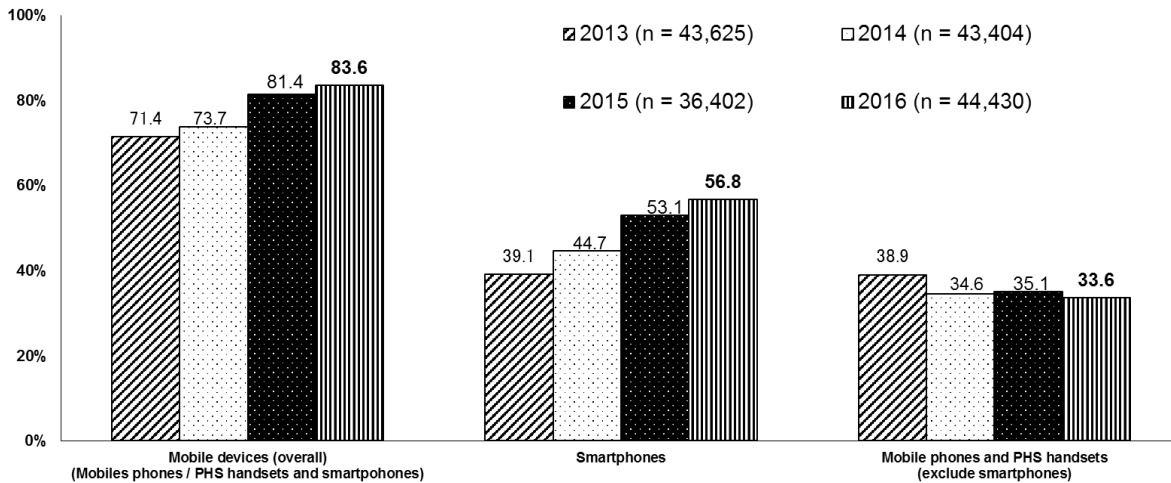
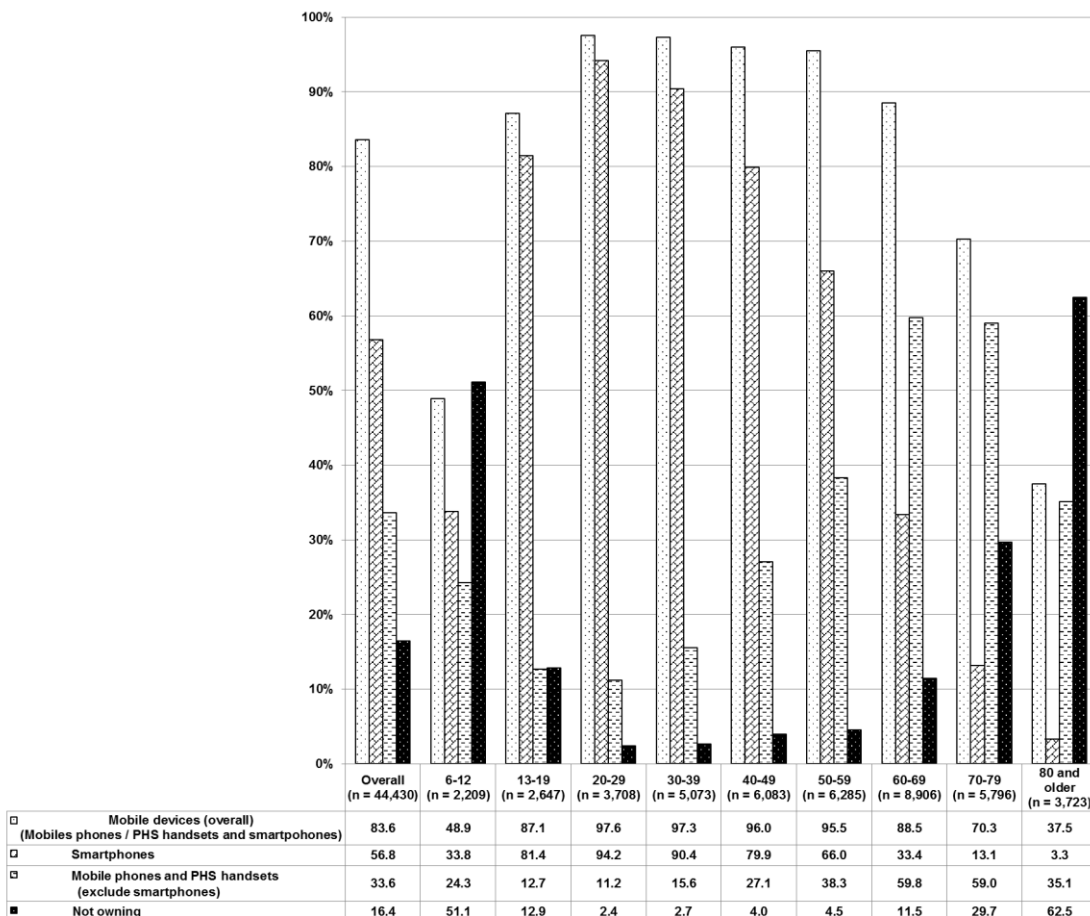


Figure 1-13: Ownership of mobile devices by age group — 2016



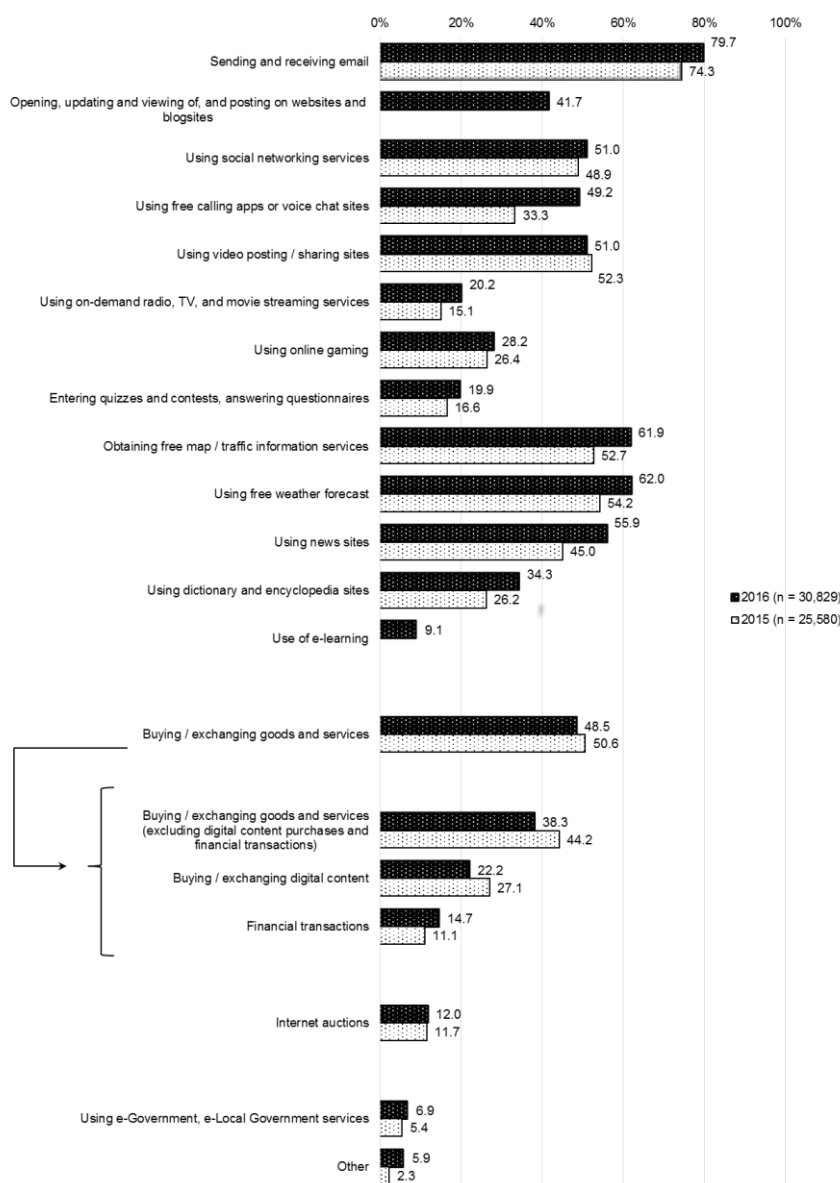
2. Current ICT Usage by Individuals

(1) Purposes of using the Internet

The most common use of the Internet was “sending and receiving email,” at 79.7 percent. This was followed by “using free weather forecast” (62.0 percent) and “obtaining free map / traffic information services” (61.9 percent).

By age group, “sending and receiving email” was a common usage across all age groups, while there were wide differences across age groups with respect to such purposes as “using social networking services” and “using video posting/sharing sites.”

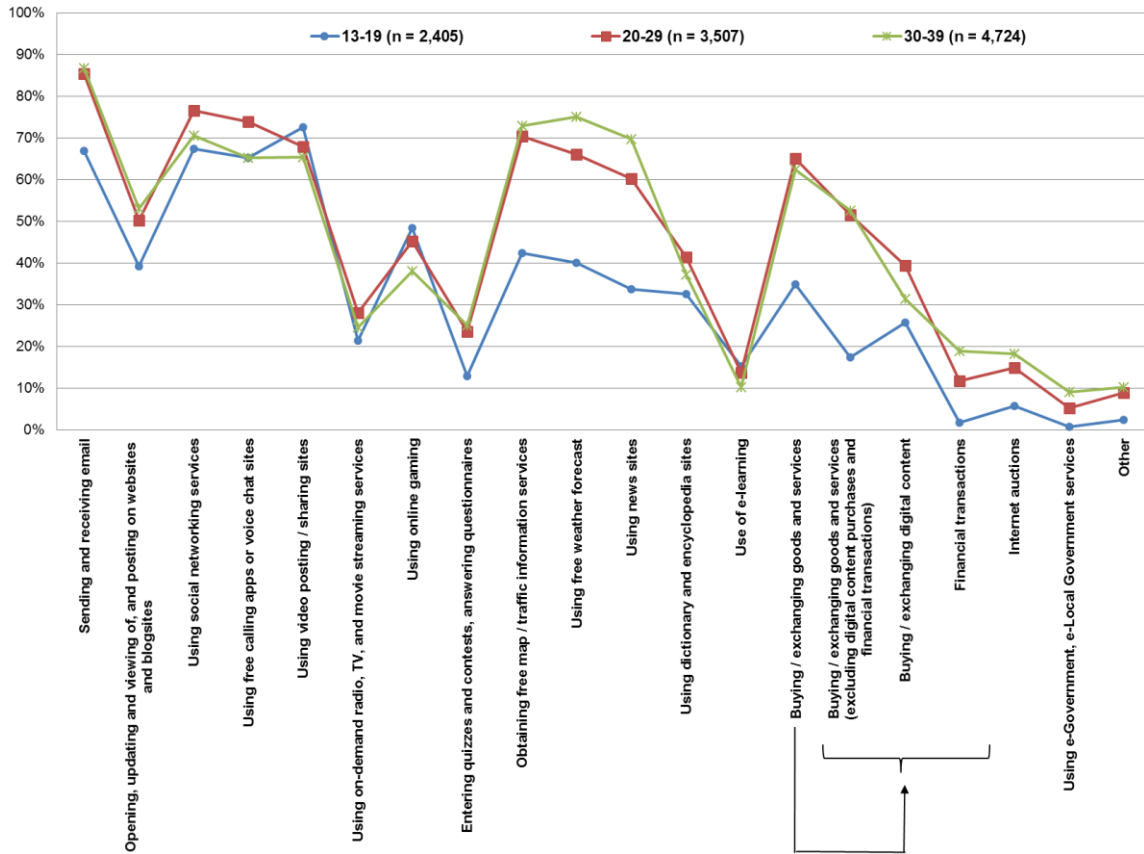
Figure 2-1: Purposes of using the Internet — 2016 (multiple responses accepted)



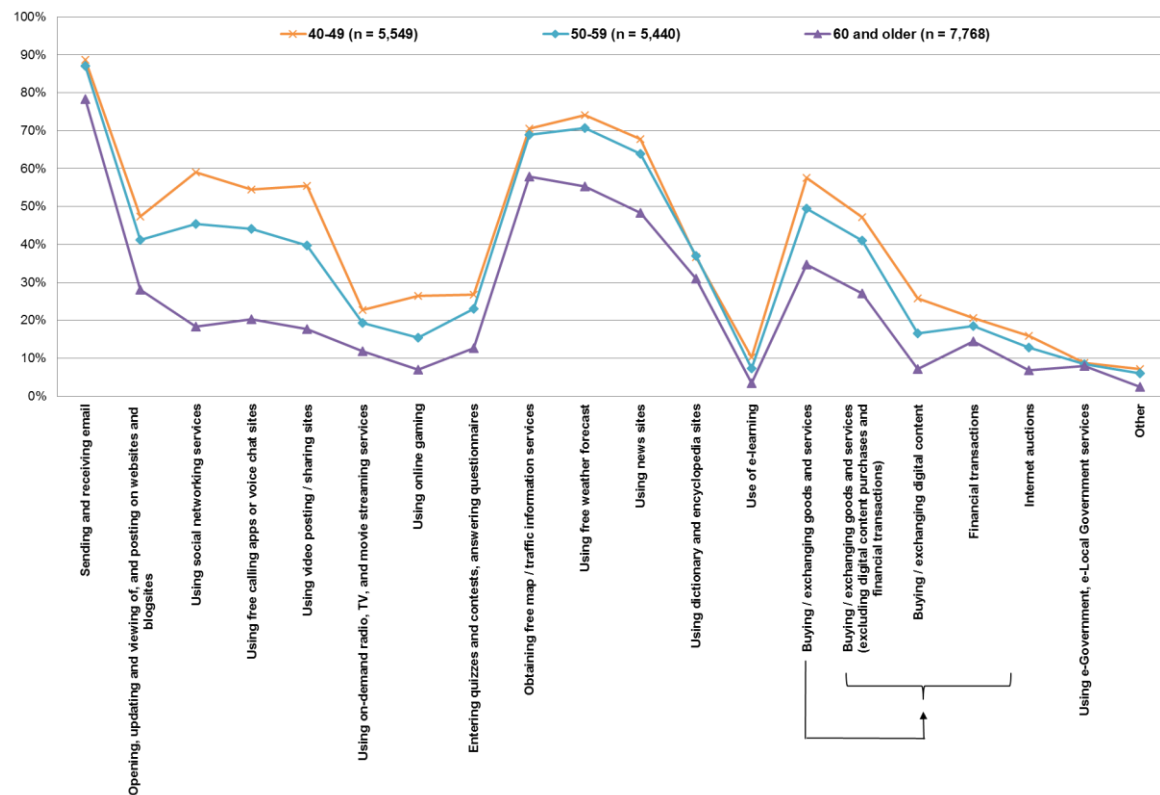
Note: as a percentage of Internet users

Of the reply options, “opening, updating and viewing of, and posting on websites and blogsites” was added in the current survey for the first time.

Figure 2-2: Purposes of using the Internet by age group — 2016 (multiple responses accepted)



Note: as a percentage of Internet users



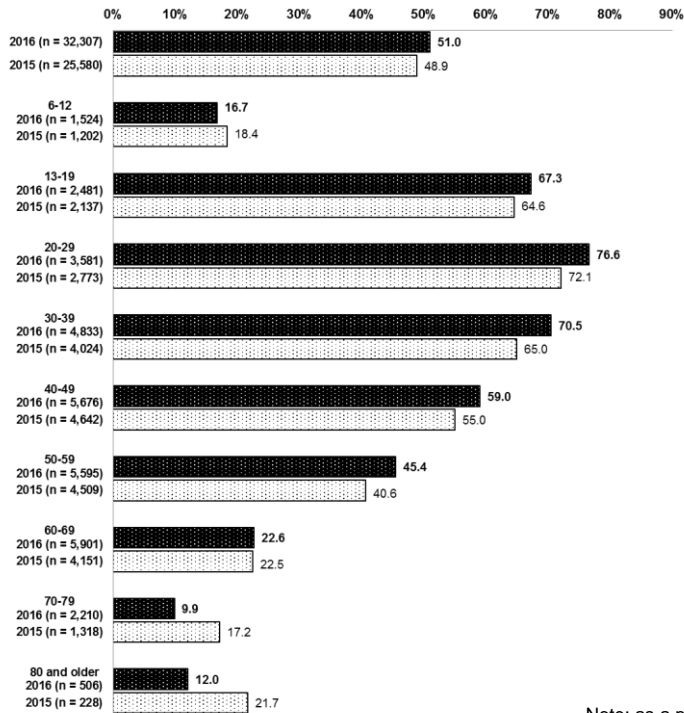
Note: as a percentage of Internet users

(2) Social networking service usage

Of Internet users, 51.0 percent used social networking services.

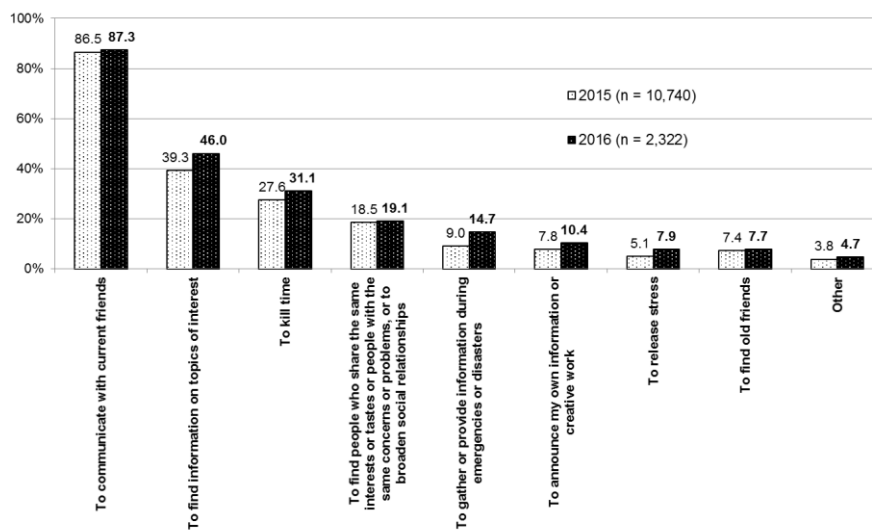
The most common purpose of the use of social media was “to communicate with current friends,” which was cited by 87.3 percent, followed by “to find information on topics of interest” (46.0 percent) and “to kill time” (31.1 percent).

Figure 2-3: Social networking service usage



Note: as a percentage of Internet users

Figure 2-4: Purposes of social networking service usage (multiple responses accepted)



Note: as a percentage of social networking service users

[Sample subjects in the current survey]

In the current survey, a simplified survey form covering a limited range of matters was used in addition to the existing survey form, with these two versions of the survey form sent to different samples. As a result, there is a difference between the current and previous surveys in the number of samples, so care should be taken when comparison is conducted.

3. Current ICT Usage by Businesses

(1) Social media usage

Of businesses using the internet, 22.1 percent used social media services.

By industry, “financial / insurance” had the highest using rate, at 34.1 percent. This was followed by “wholesale / retail” (29.7 percent) and “service and other industries” (27.8 percent).

By capitalization, the Internet usage rate among businesses with ¥5 billion or more in capital was the highest at 40.4 percent.

By usage/application purpose, “publicize/promote products or events” was cited by the largest percentage, 67.1 percent, followed by “provide periodic information” (58.1 percent) and “company profile/recruiting” (35.5 percent).

Figure 3-1: Social media usage by industry and capitalization

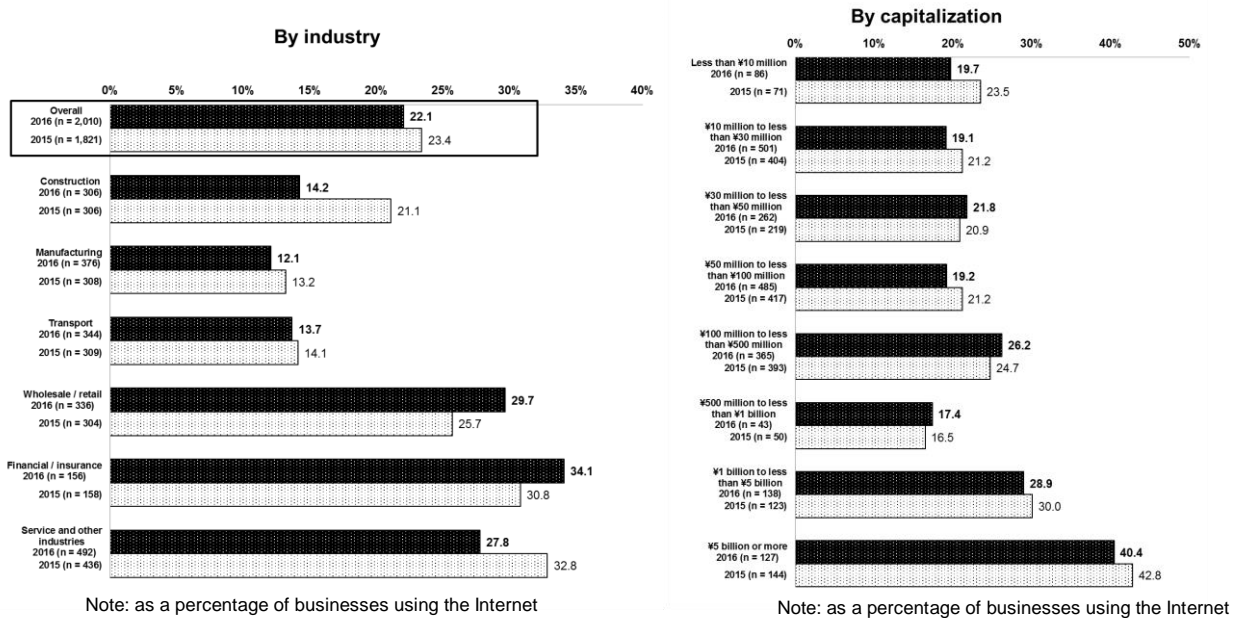
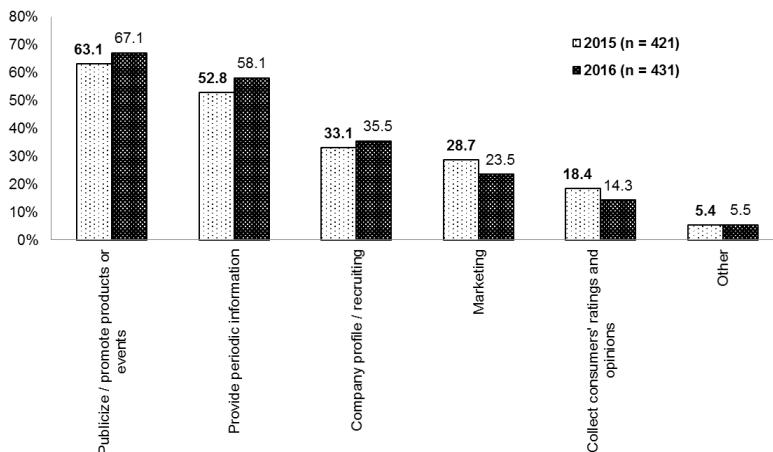


Figure 3-2: Purpose / application of social media usage (multiple responses accepted)



Note: as a percentage of businesses using social media services

(2) E-commerce usage

48.6 percent of businesses engaged in e-commerce (purchasing or selling over the Internet).

By industry, “wholesale / retail” had the highest usage rate, at 60.7 percent. This was followed by “financial / insurance” (52.7 percent) and “manufacturing” (51.9 percent).

Among businesses that used the Internet for sales, the most common Internet sales model was “e-store (own site),” at 72.0 percent. This was followed by “e-store (store in an e-mall)” (40.2 percent).

Figure 3-3: E-commerce usage by industry and capitalization — 2016 (multiple responses accepted)

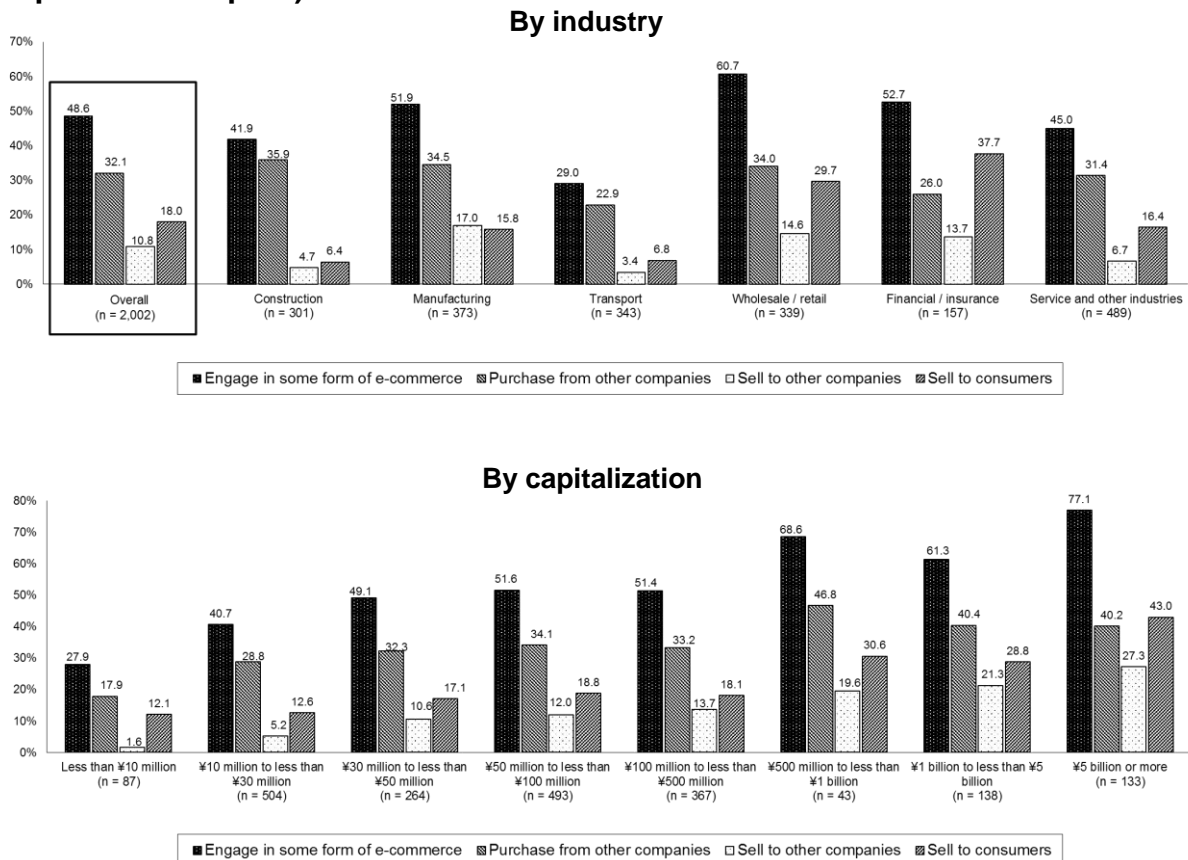
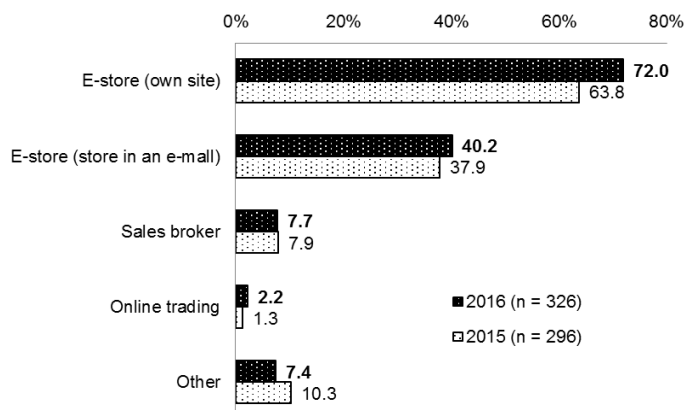


Figure 3-4: Internet sales models (multiple responses accepted)



Note: as a percentage of businesses that used the Internet for sales

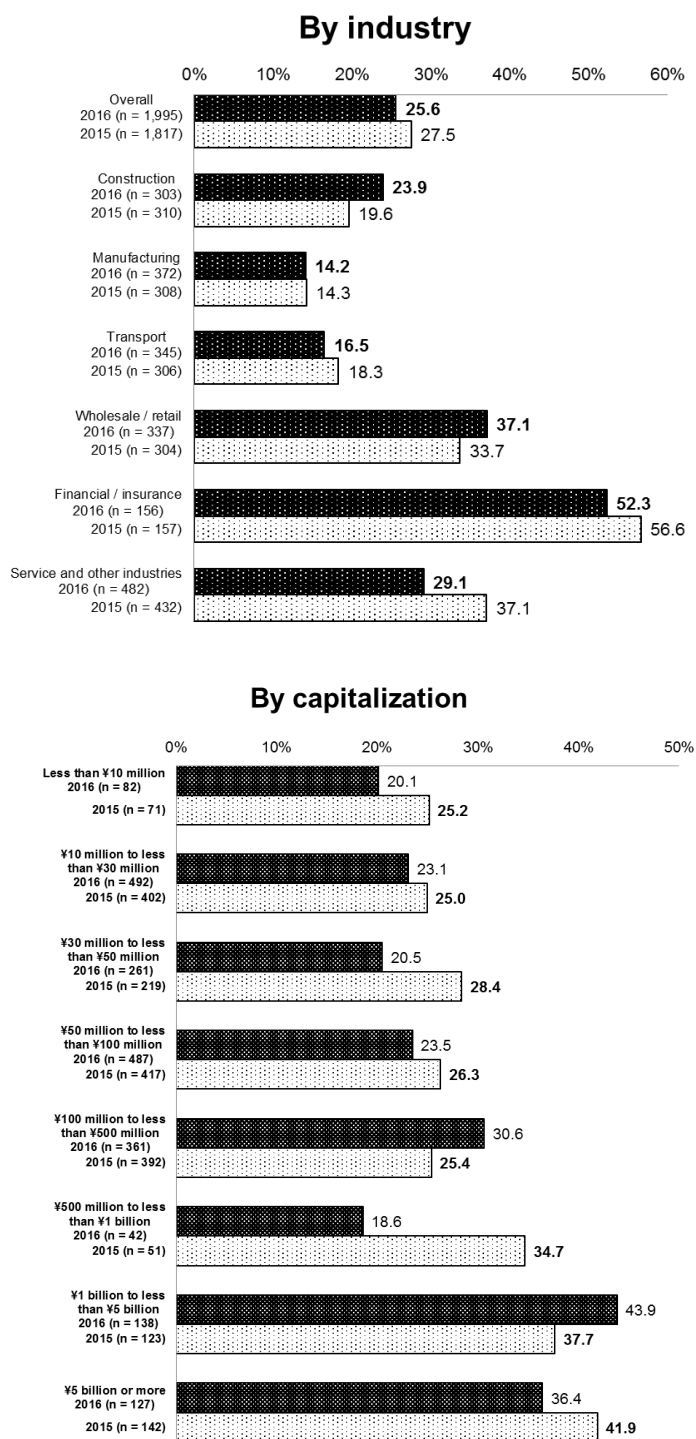
(3) Use of Internet advertising

Of the surveyed businesses, 25.6 percent used Internet advertising.

By industry, “financial / insurance” had the highest advertising rate, at 52.3 percent. This was followed by “wholesale / retail” (37.1 percent) and “service and other industries” (29.1 percent).

By capitalization, the usage rate for Internet advertising rose steeply among businesses with ¥1 billion to less than 5 billion in capital.

Figure 3-5: Internet advertising usage by industry and capitalization



(4) Cloud computing service usage

Of the surveyed businesses, 46.9 percent used cloud computing services (cloud services), up 2.3 points from 44.6 percent in the previous year.

As for the effects of the use of cloud services, 85.6 recognized either “very beneficial” or “somewhat beneficial” effects.

By type of cloud service used, “email” was used by the largest percentage, 51.7 percent, followed by “file management/data storage” (50.7 percent) and “server applications” (46.7 percent).

Figure 3-6: Transitions in cloud service usage

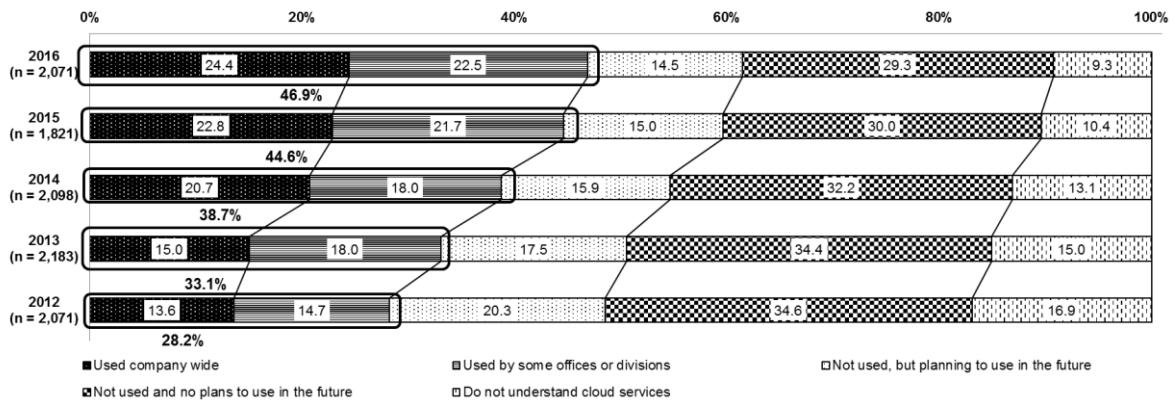


Figure 3-7: Cloud service usage by industry and capitalization

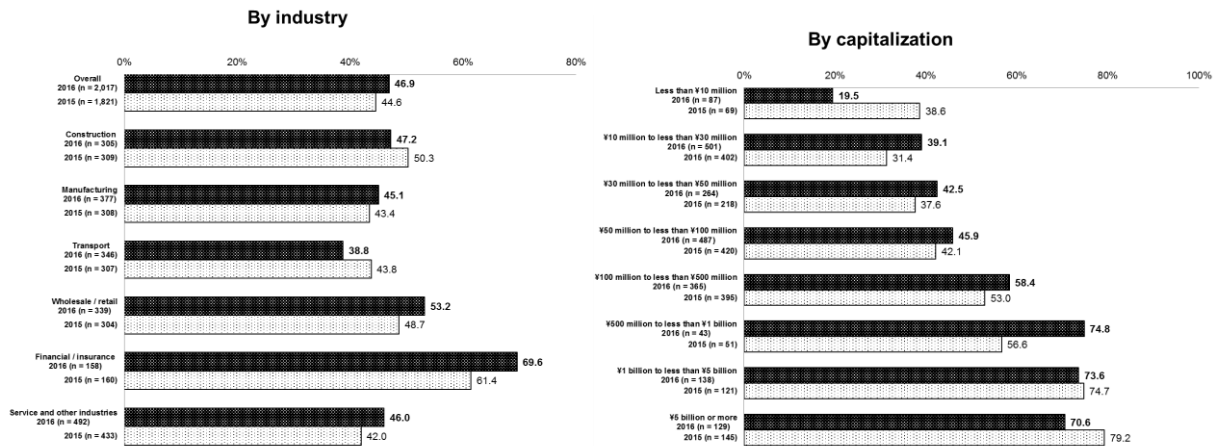
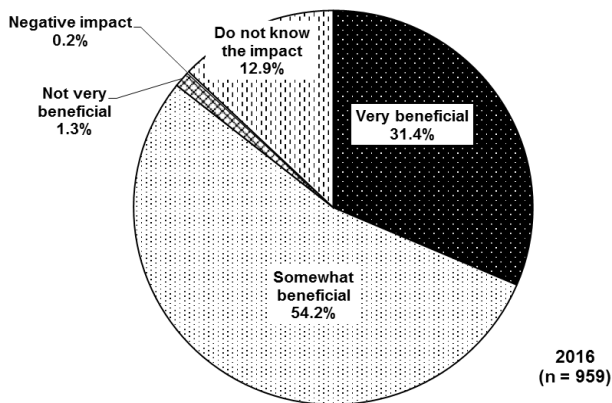
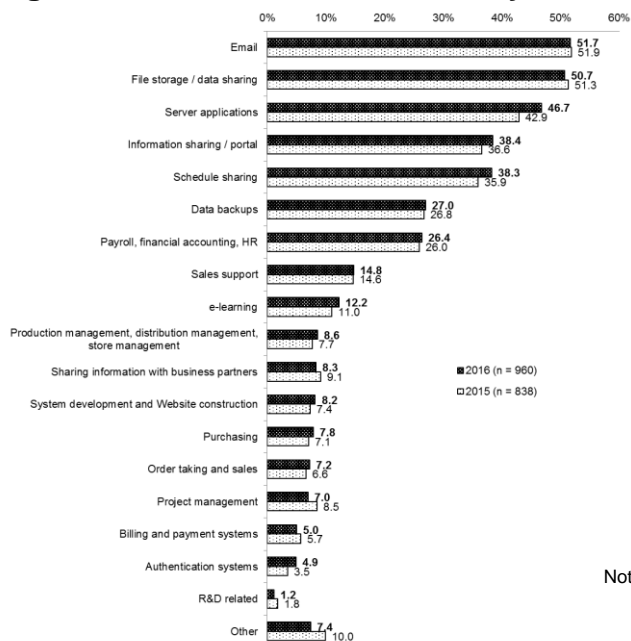


Figure 3-8: Impact of cloud computing services — 2016



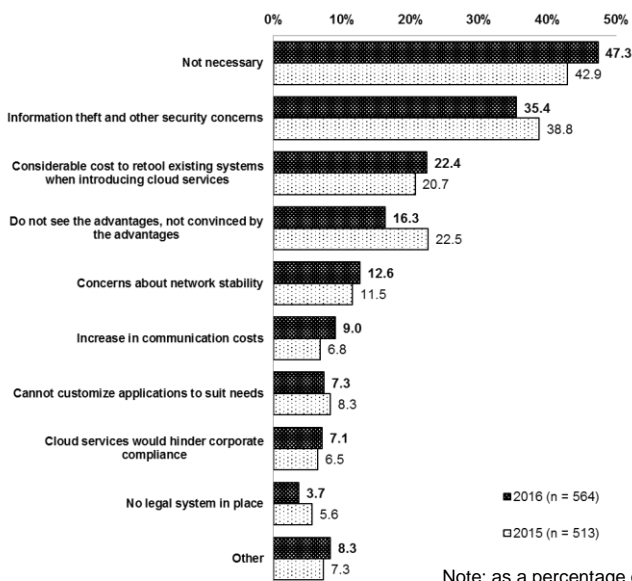
Note: as a percentage of businesses using

Figure 3-9: Cloud services used by businesses (multiple responses accepted)



Note: as a percentage of businesses using cloud services

Figure 3-10: Reasons for not using cloud services (multiple responses accepted)



Note: as a percentage of businesses which neither used nor planned to use cloud services.

4. Introduction and implementation of telework

(1) Introduction of Telework^{Note 1} (businesses)

Of the surveyed businesses, 13.3 percent have introduced telework. The two-year moving average^{Note 2} shows an uptrend since 2014-2015.

By type of telework, “mobile work” was introduced by the largest percentage, 63.7 percent. The most common percentage of telework employees was “less than 5 percent,” at 45.4 percent.

The highest ranked purpose for introducing telework was “raise efficiency (productivity) of routine business processes,” at 59.8 percent. This was followed by “reduce workers’ transportation times” (43.9 percent) and “increase customer satisfaction” (20.8 percent). Concerning the intended effects of introduction, 86.2 percent recognized either “very beneficial” or “somewhat beneficial” effects, up 3.7 points from 82.5 percent in the previous year.

Of businesses that have not implemented telework, “Work is not suited to telework” was cited by the largest percentage, 74.2 percent, as the reason for not introducing telework.

(Note 1) Telework includes working from home, satellite office work, and mobile work.

(Note 2) A moving average approach uses averages in a series of data periods that move forward with time. Figure 4-2 shows the transition of a two-year moving average (“2016” represents the 2015-2016 period, for example).

Figure 4-1: Telework introduction — 2016

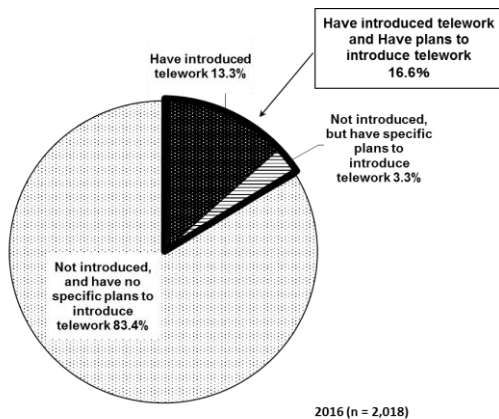


Figure 4-2: Transitions in telework introduction

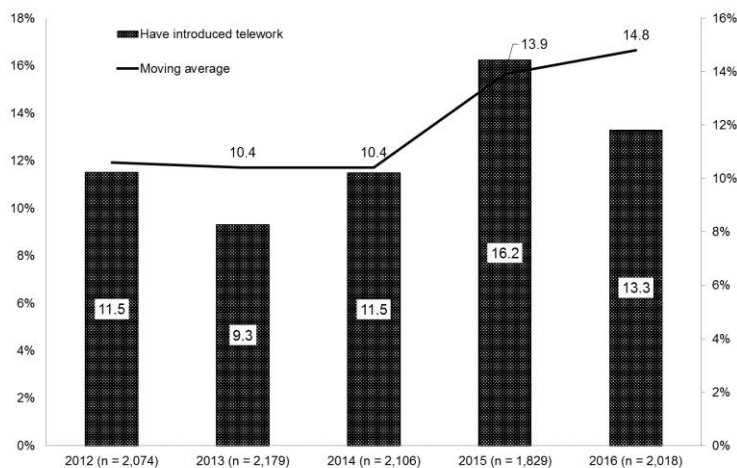
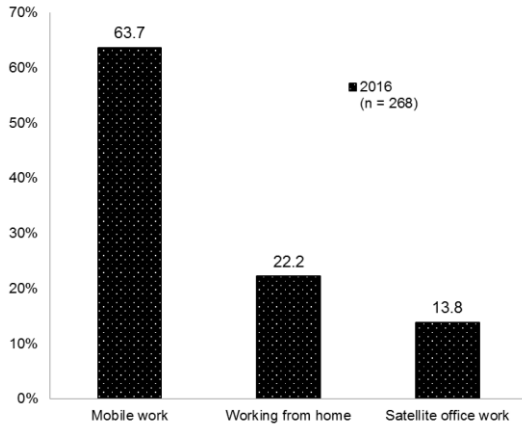
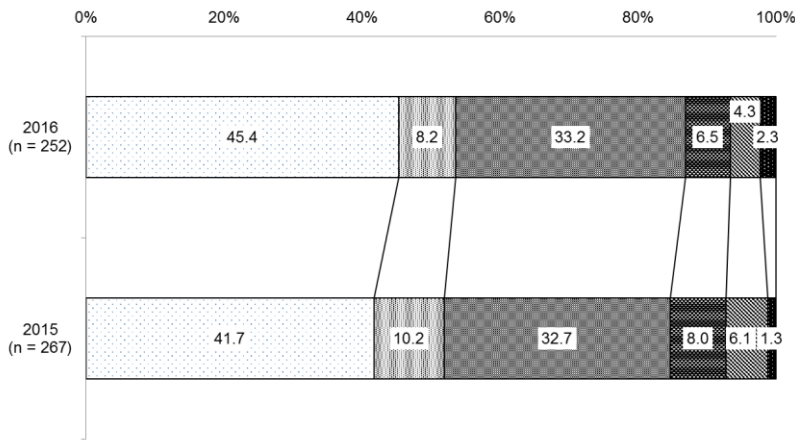


Figure 4-3: Type of telework introduced — 2016



Note: as a percentage of businesses which have introduced telework

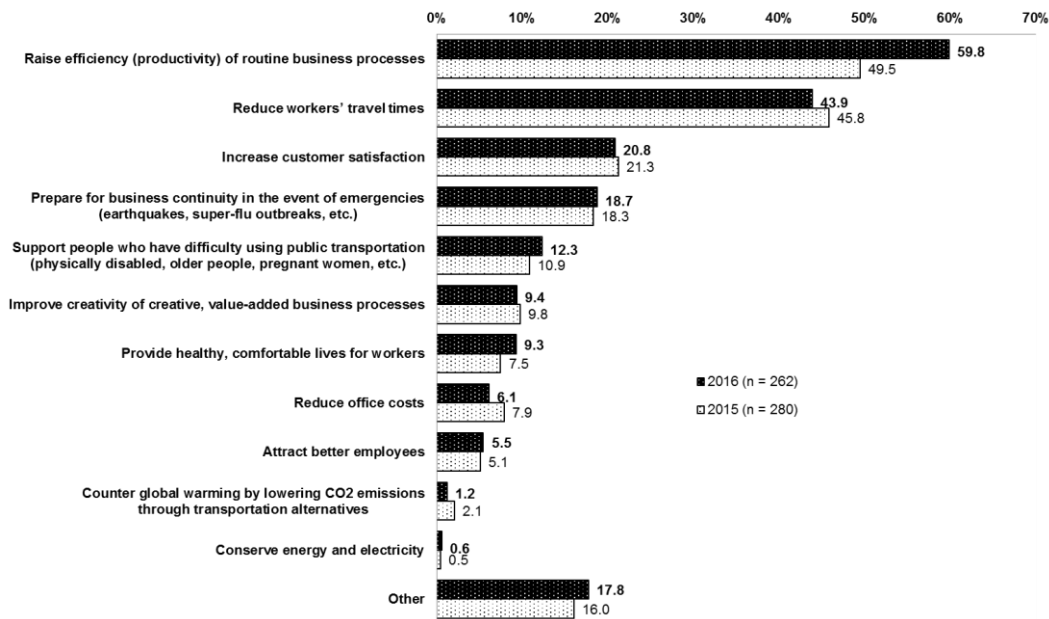
Figure 4-4: Percentage of employees using telework



□ Less than 5 percent ▨ 5 percent to less than 10 percent ▩ 10 percent to less than 30 percent
 ■ 30 percent to less than 50 percent ▤ 50 percent to less than 80 percent ▥ 80 percent or more

Note: as a percentage of businesses which have introduced telework

Figure 4-5: Purposes of introducing telework (multiple responses accepted)



Note: as a percentage of businesses which have introduced telework

Figure 4-6: Telework benefits — 2016

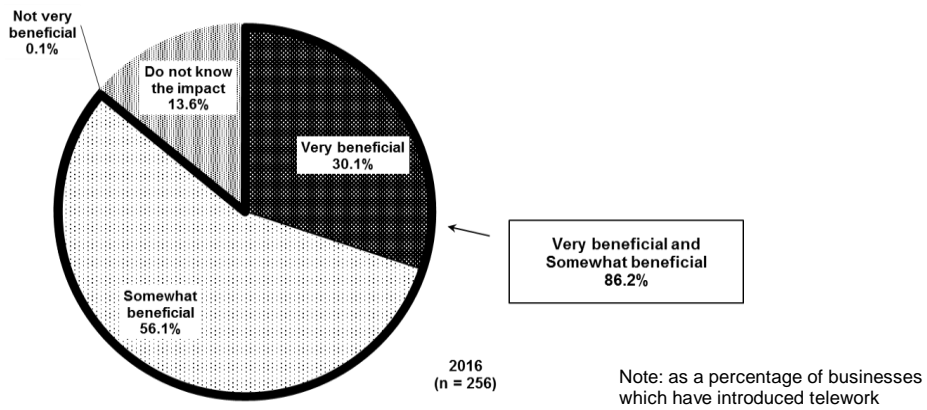
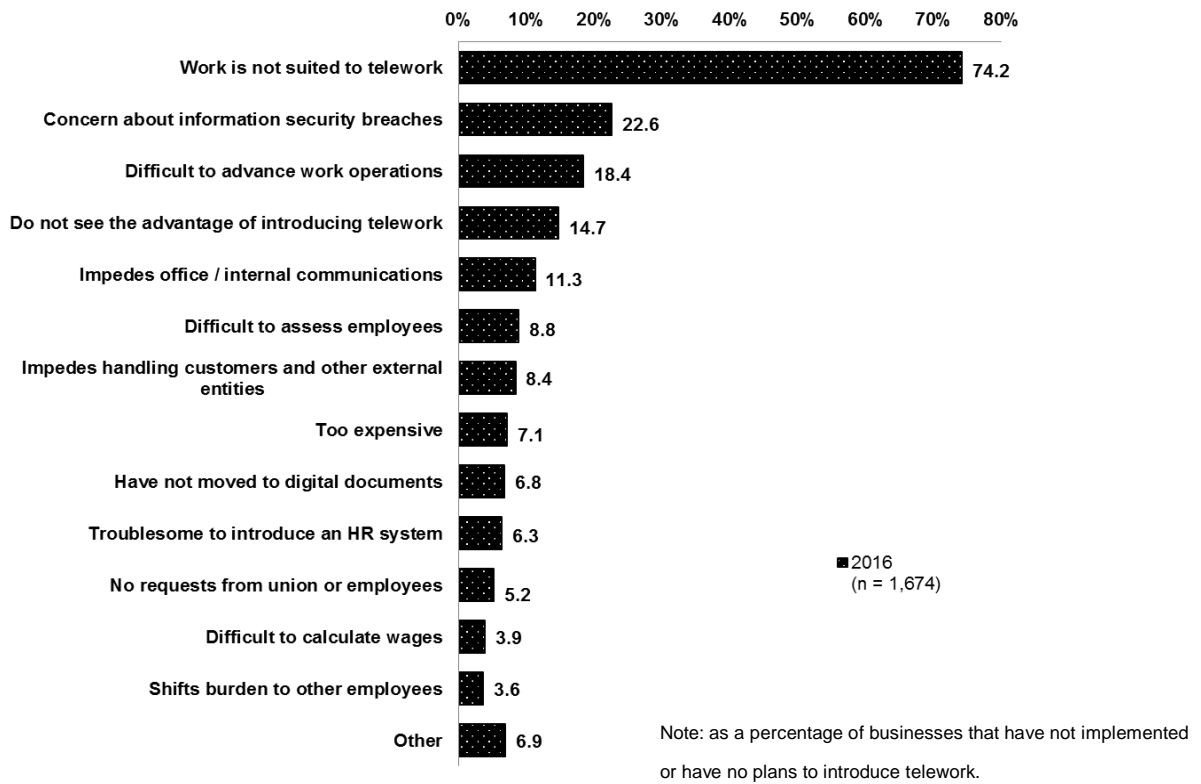


Figure 4-7: Reasons for not introducing telework — 2016 (multiple responses accepted)



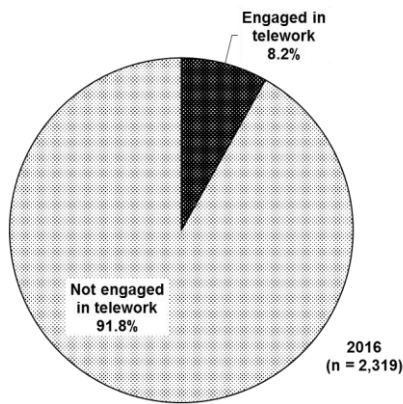
(2) Engagement in telework (individuals)

Of individuals aged 15 or older and working for companies or other organizations, 8.2 percent had the experience of engaging in telework. By type of telework, the engagement rate for mobile work was the highest at 64.2 percent.

As to whether or not individuals would like to engage in telework, 22.4 percent selected the reply “would strongly like to engage in telework” or “would rather like to engage in telework.”

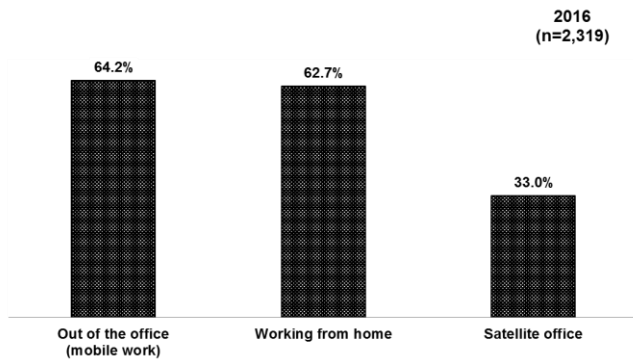
Of individuals who would like to engage in telework but who did not engage in it, 55.2 percent selected “There is not a telework system at the employer” while 50.6 percent cited “Work is not suited to telework.”

Figure 4-8: Engagement or non-engagement in telework



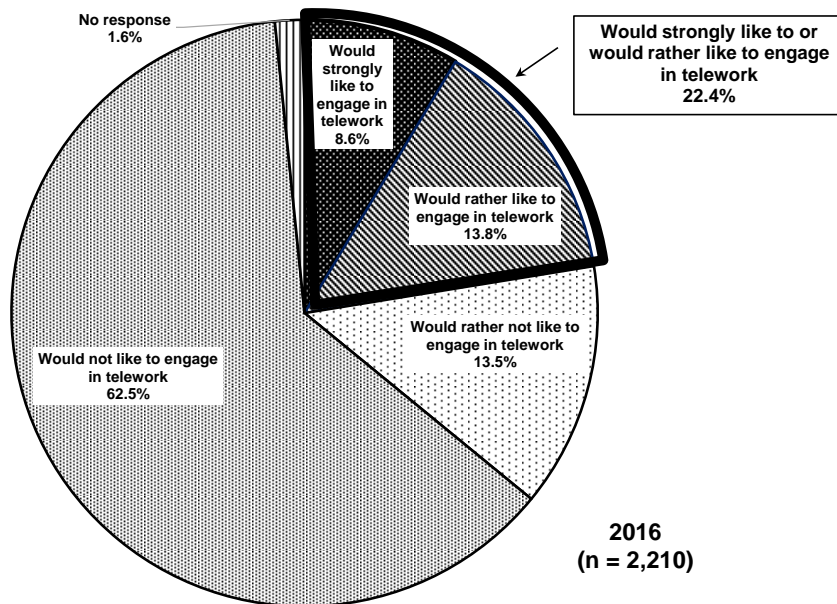
Note: as a percentage of individuals aged 15 or older and working for companies and other organizations

Figure 4-9: Type of telework (multiple responses accepted)



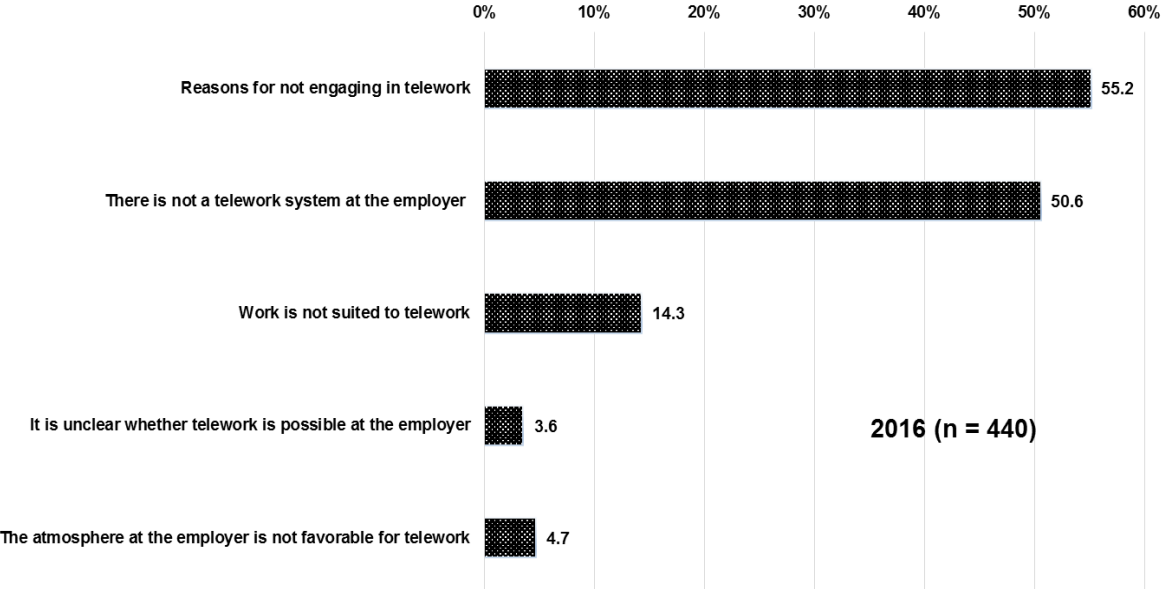
Note: as a percentage of individuals who engaged in telework

Figure 4-10: Whether or not individuals would like to engage in telework



Note: as a percentage of individuals who have not engaged in telework
 No responses were included in the calculation for Figure 4-8 in order to look at the proportions of individuals who would like to engage in telework and individuals who would not like to do so among individuals who replied that they had no experience of engaging in telework.

Figure 4-11: Reasons for not engaging in telework — 2016 (multiple responses accepted)



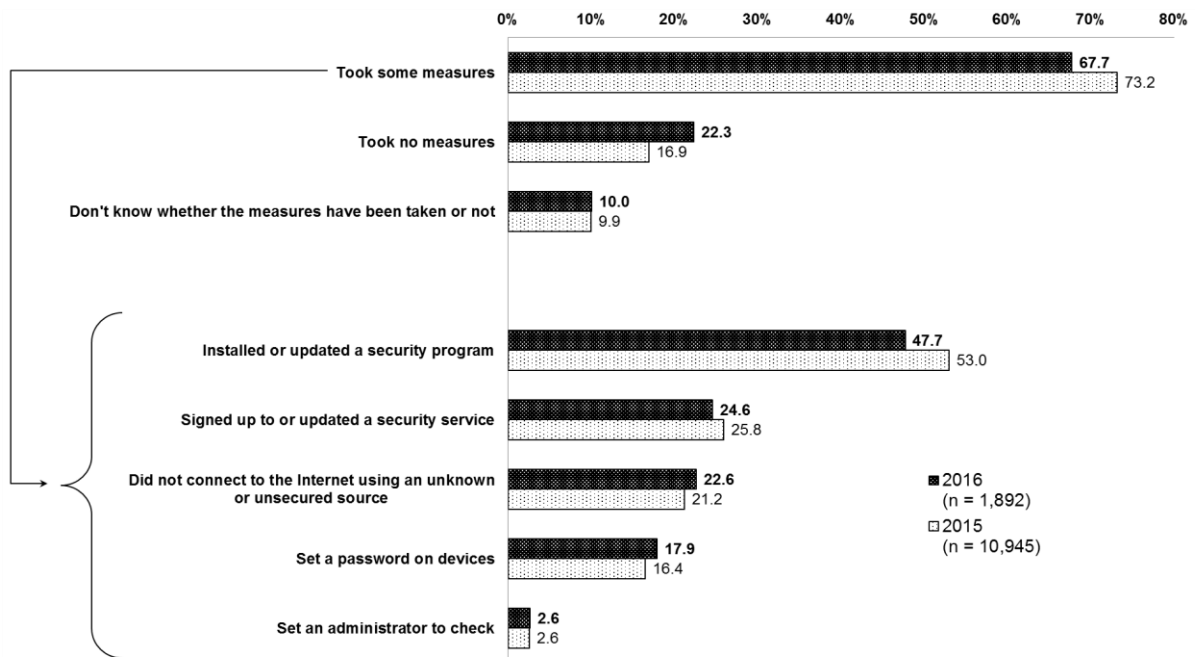
Note: as a percentage of individuals who would like to engage in telework

5. Safety and security efforts

(1) State of security measures (households)

Among households that use the Internet, 67.7 percent have taken some security measures. The most common security measures taken were “installed or updated a security program,” at 47.7 percent. This was followed by “signed up to or updated a security service” (24.6 percent) and “did not connect to the Internet using an unknown or unsecured source” (22.6 percent).

Figure 5-1: State of security measures (households) (multiple responses accepted)



Note: as a percentage of households with at least one person who used the Internet in the past one year

[Samples in the current survey]

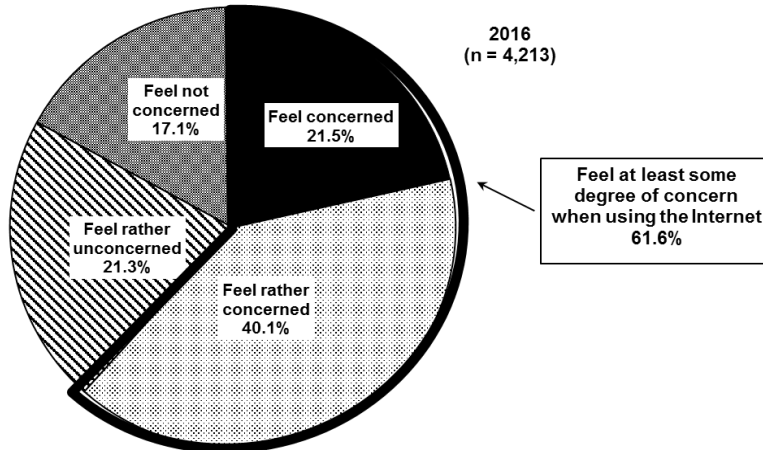
In the current survey, a simplified survey form covering a limited range of matters was used in addition to the existing survey form, with these two versions of the survey form sent to different samples. As a result, there is a difference between the current and previous surveys in the number of samples, so care should be taken when comparison is conducted.

(2) Concerns about using the Internet (individuals)

Of individuals aged 12 or older who used the Internet, 61.6 percent said that they “feel concerned” or “feel rather concerned” when using the Internet.

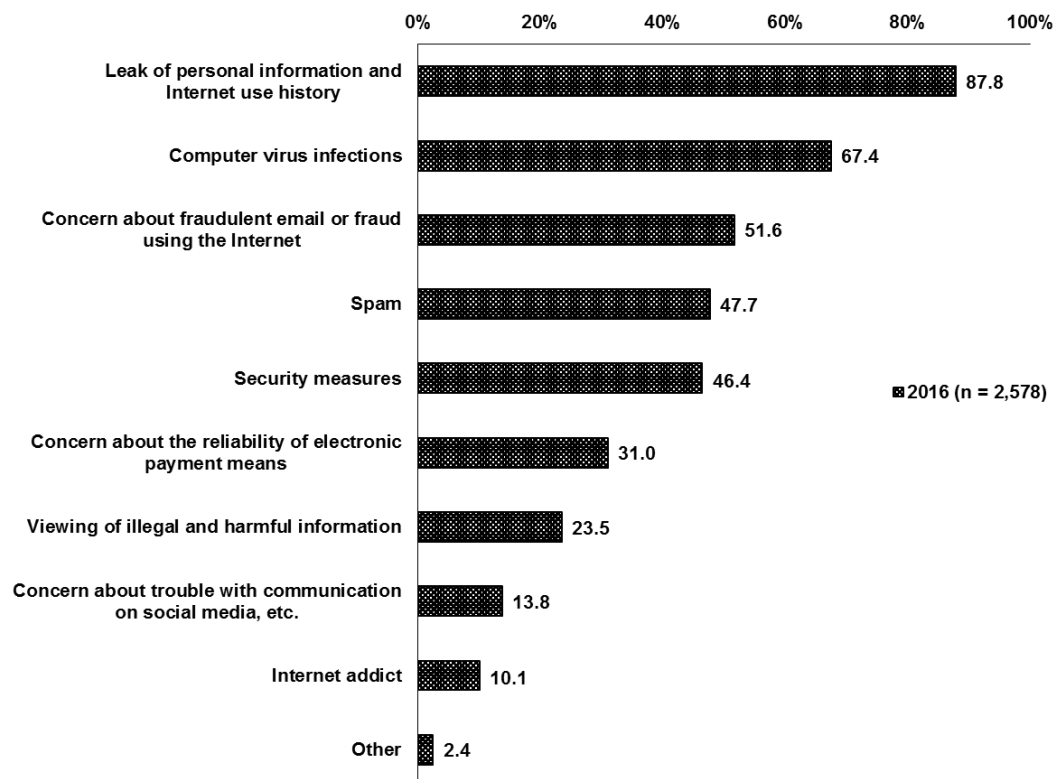
Specifically, “leak of personal information and Internet use history” was cited by the largest percentage, 87.8 percent, followed by “computer virus infections (67.4 percent) and “concern about fraudulent email or fraud using the Internet” (51.6 percent).

Figure 5-2: Concerns about using the Internet — 2016



Note: as a percentage of Internet users aged 12 or older

Figure 5-3: Types of concerns about using the Internet — 2016 (multiple responses accepted)



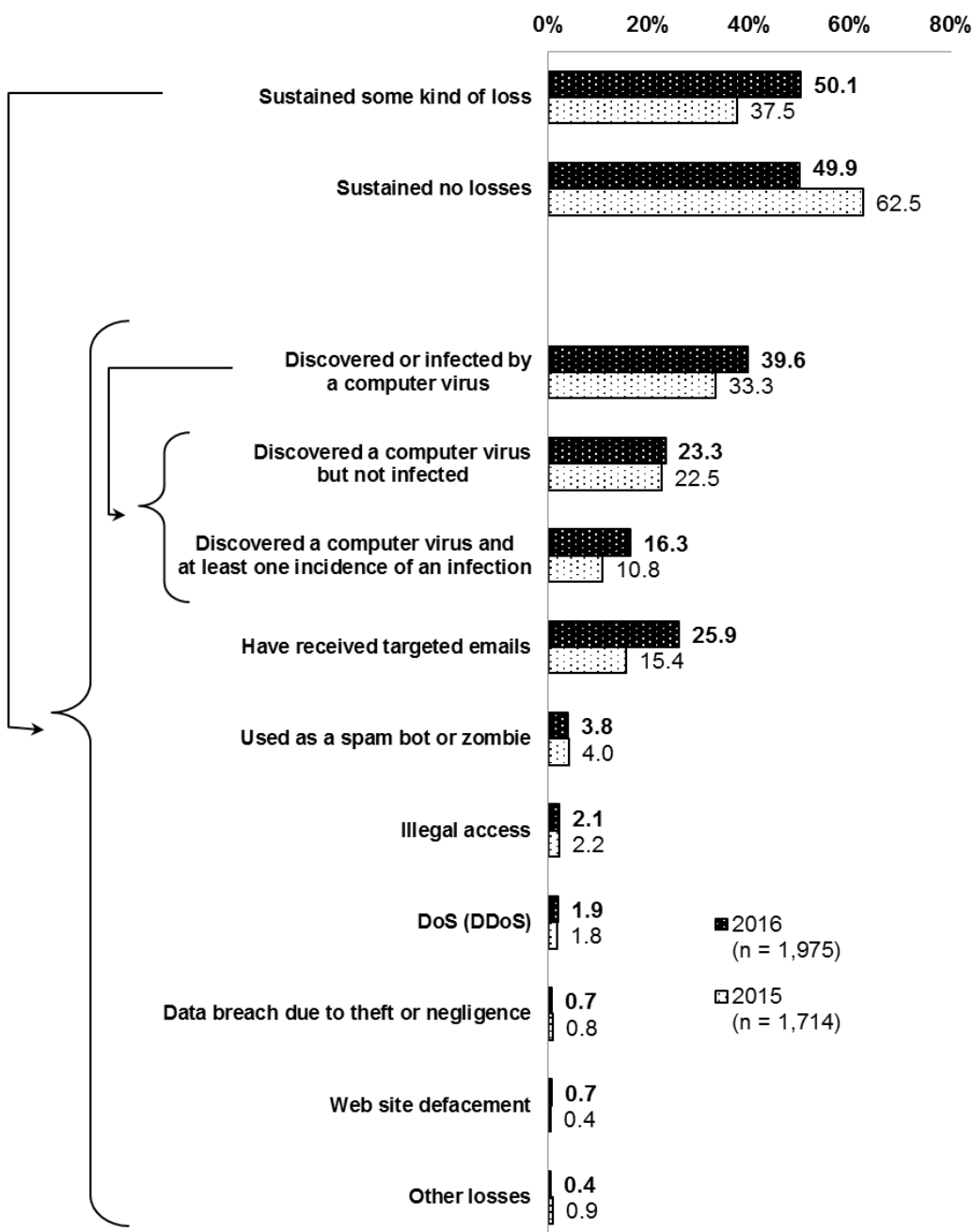
Note: as a percentage of individuals who replied either that they “feel concerned” or that they “feel rather concerned” when using the Internet

(3) Security breaches against information-communication networks and security measures implemented (businesses)

Among businesses that used information-communication networks, 50.1 percent reported some kind of loss resulting from a security breach during the use of information-communication networks in the past year. By type of security breach, 39.6 percent discovered or were infected by a computer virus and 25.9 percent received targeted emails.

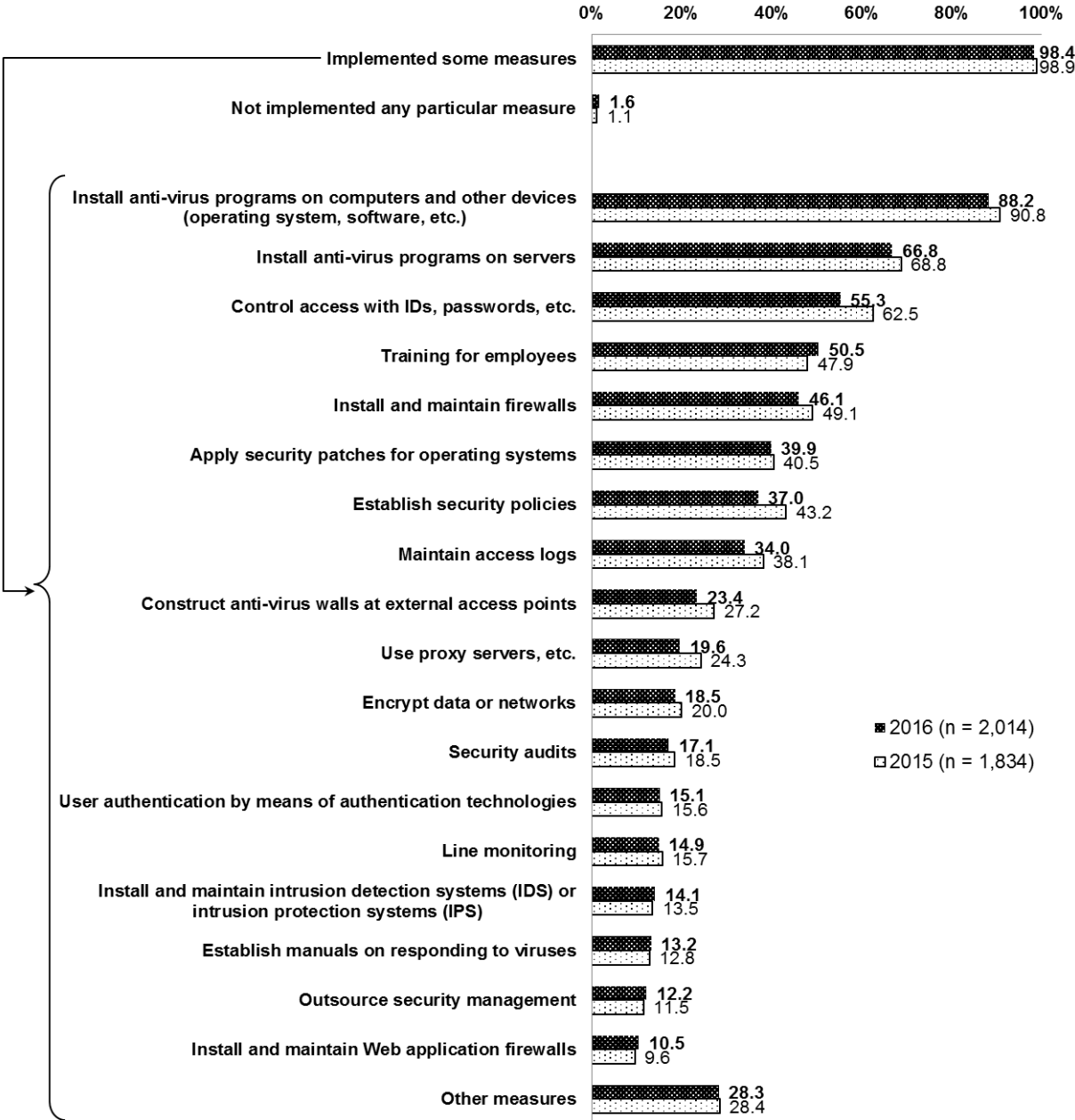
The percentage of businesses that implemented some security measures was 98.4 percent. By type of security measure, the implementation rate was highest, 88.2 percent, for “install anti-virus programs on computers and other devices (operating system, software, etc.), which was followed by “install anti-virus programs on servers” (66.8 percent) and “control access with IDs, passwords, etc.” (55.3 percent).

Figure 5-4: Security breaches that occurred in the past year during the use of information-communication networks (multiple responses accepted)



Note: as a percentage of businesses that used information-communication networks (company communication networks and the Internet)

Figure 5-5: State of security measures (multiple responses accepted)



Note: as a percentage of businesses that used information-communication networks (company communication networks and the Internet)

(4) Targeted email losses and security measures taken (businesses)

Of businesses which received targeted emails, 48.6 percent selected the reply “Targeted emails reached an employee’s device, but there were no computer virus infections,” while 25.4 percent selected “Targeted emails reached an employee’s device and there was at least one incidence of a computer virus infection.”

Of businesses that used information-communication networks, 90.3 percent implemented some security measures against targeted emails. The most common security measure was “install anti-virus programs on computers and other devices (operating system, software, etc.),” at 74.6 percent. This was followed by “install anti-virus programs on servers” (56.7 percent) and “training for employees” (44.8 percent).

Figure 5-6: Losses from targeted emails — 2016

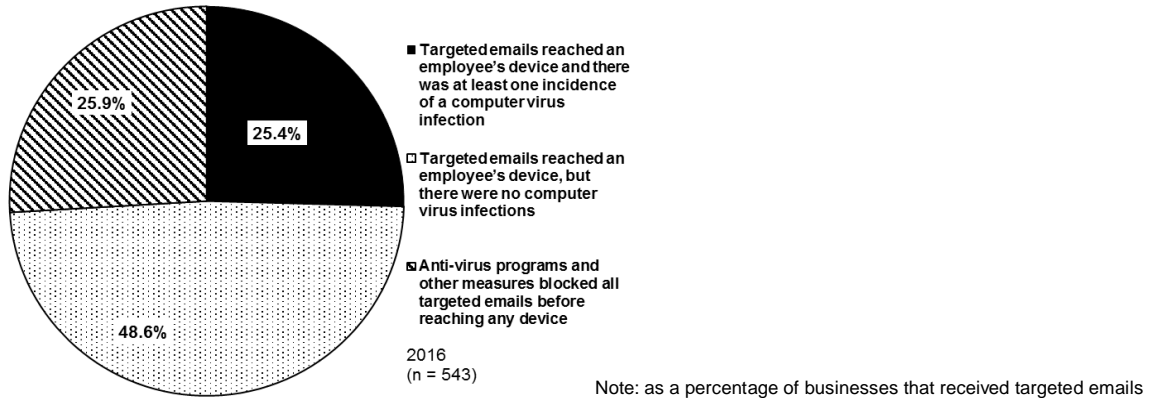
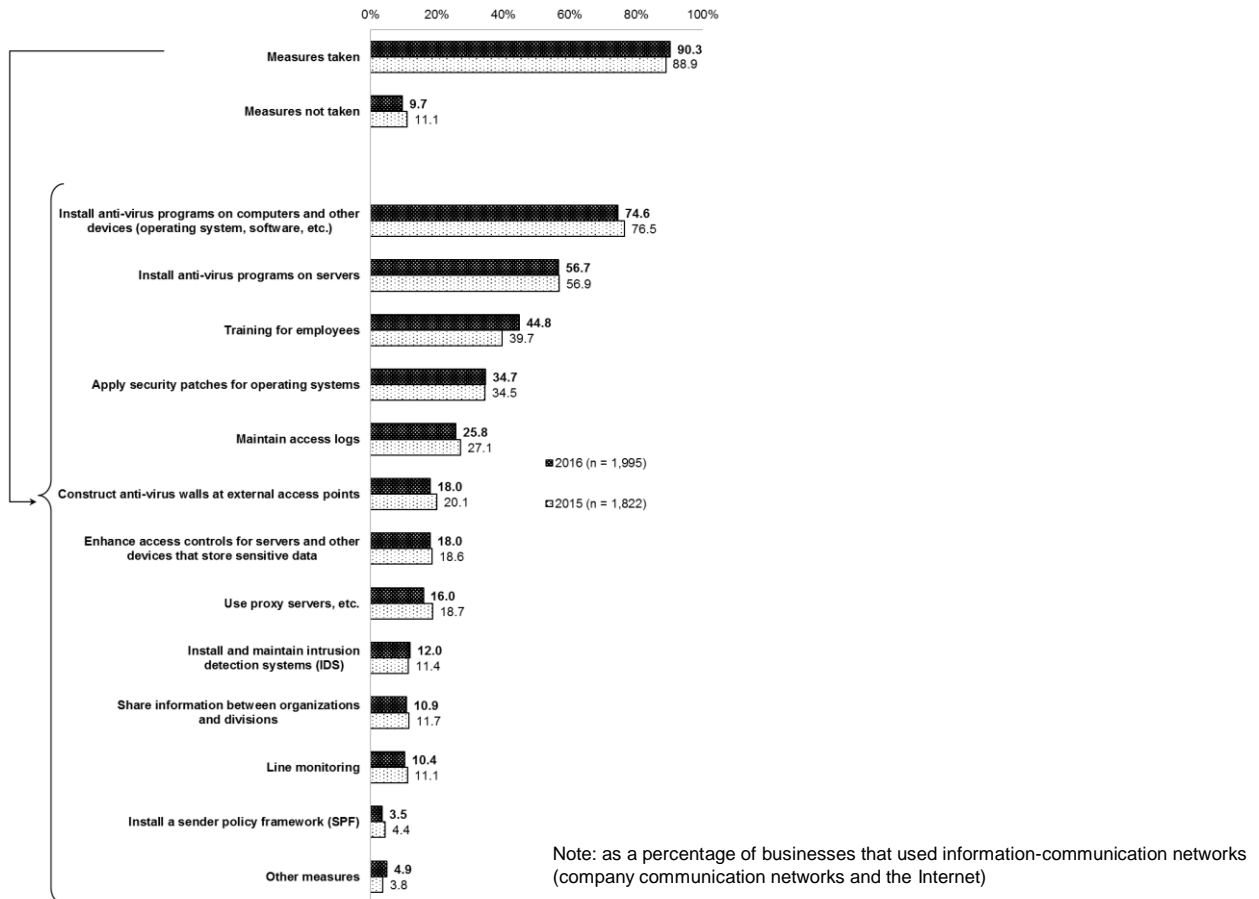


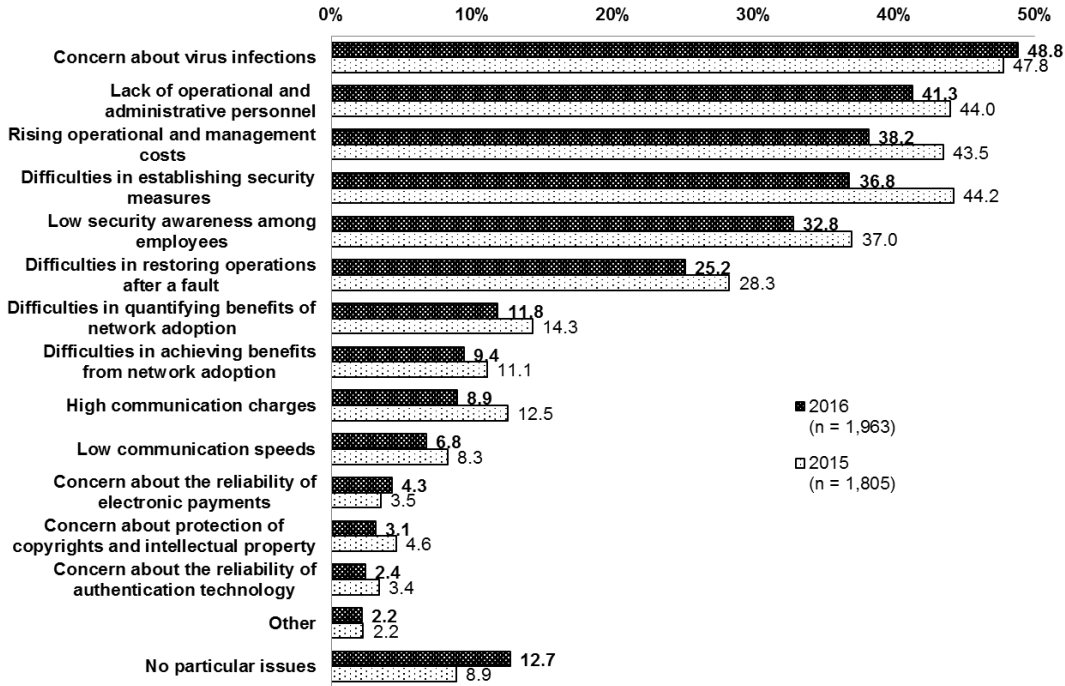
Figure 5-7: Security measures against targeted emails (multiple responses accepted)



(5) Issues associated with use of information-communication networks (businesses)

“Concern about virus infections” was cited by the largest percentage of businesses, 48.8 percent, as an issue associated with use of information-communication networks, followed by “lack of operational and administrative personnel” (41.3 percent) and “rising operational and management costs” (38.2 percent).

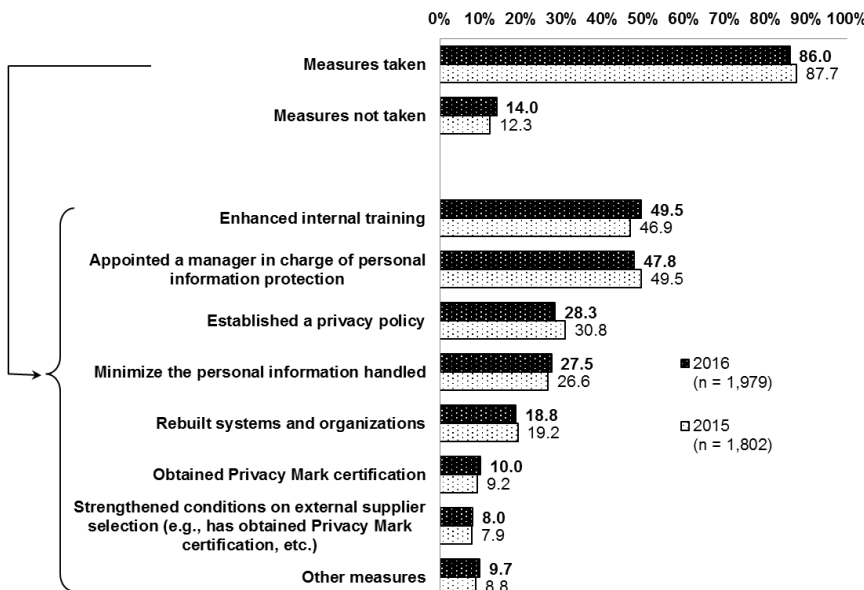
Figure 5-8: Issues associated with use of information-communication networks (multiple responses accepted)



(6) State of personal information protection measures (businesses)

86.0 percent of businesses have taken some personal information protection measures. The common measures were “enhanced internal training” (49.5 percent), a 2.6 percentage point increase from the previous year (46.9%). This was followed by “appointed a manager in charge of personal information protection” (47.8 percent) and “established a privacy policy” (28.3 percent).

Figure 5-9: State of personal information protection measures (multiple responses accepted)

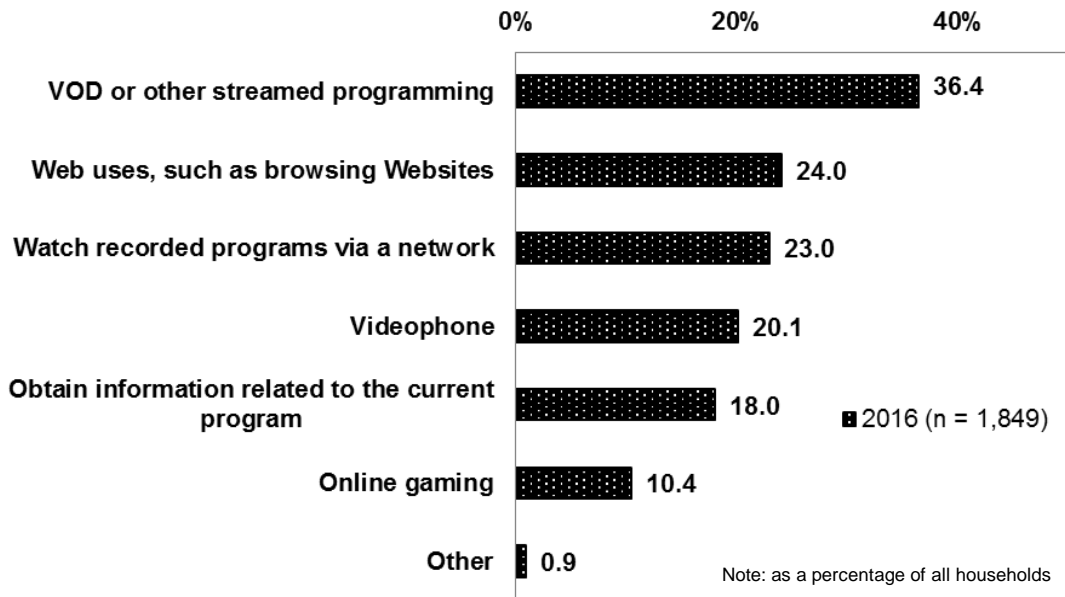


6. Usage of Internet-enabled TV receivers by households

(1) Desired usages of Internet-enabled TV receivers

“Video on demand (VOD) or other streamed programming” was cited by the largest percentage of households (36.4 percent) as a service that they would like to use through Internet-enabled TV receivers, followed by “Web uses, such as browsing Websites” (24.0 percent).

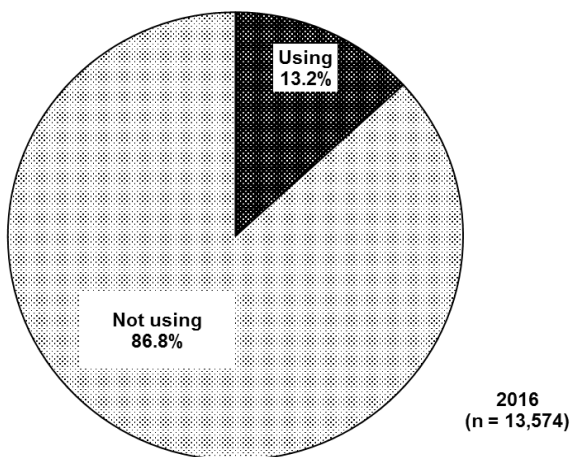
Figure 6-1: Usage of Internet-enabled TV receivers — 2016



(2) Usage of Internet-enabled TV receivers

Of households with at least one person who used the Internet in the past year, 13.2 percent used Internet-enabled TV to access the Internet.

Figure 6-2: Usage of Internet-enabled TV receivers — 2016 (multiple responses accepted)

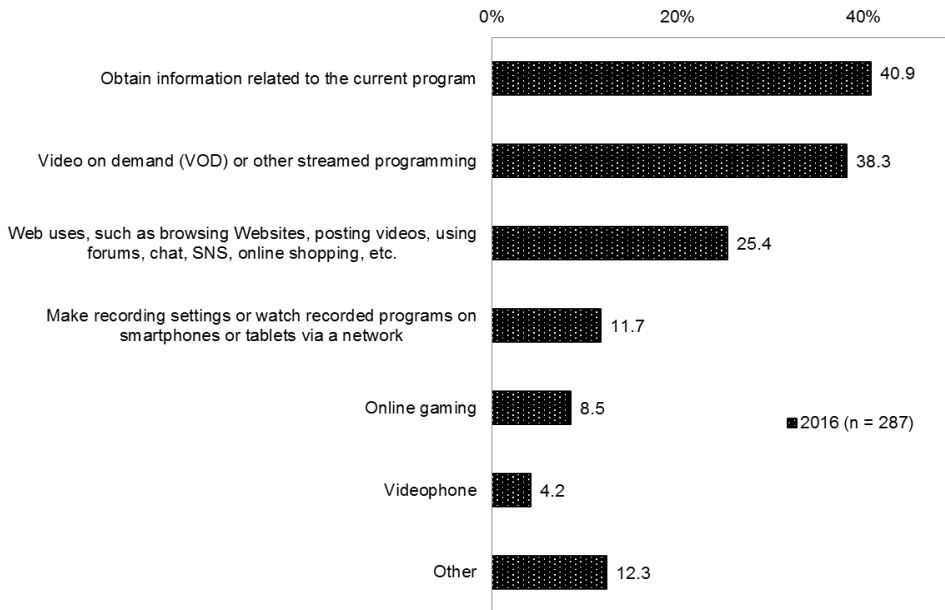


Note: as a percentage of households with at least one person who used the Internet in the past year

(3) Purposes of usage of Internet-enabled TV receivers

Looking at the purposes of usage of Internet-enabled TV receivers, “obtain information related to the current program” was cited by the largest percentage, 40.9 percent, followed by “video on demand (VOD) or other streamed programming” (38.3 percent), “web uses, such as browsing Websites, posting videos, using forums, chat, social networking, online shopping, etc.” (25.4 percent).

Figure 6-3: Purposes of usage of Internet-enabled TV receivers — 2016 (multiple responses accepted)



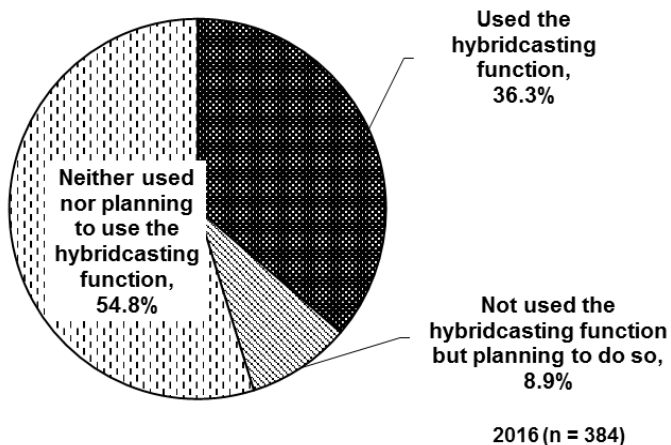
Note: as a percentage of households using Internet-enabled TV receivers to access the Internet

(4) Usage of the hybridcasting function^{Note}

Of households that used TV to access the Internet, 36.3 percent had the experience of using the hybridcasting function, while 8.9 percent plan to do so.

*The hybridcasting function refers to a service that indicates information and contents transmitted via the Internet on the broadcast display.

Figure 6-4: Usage of the hybridcasting function — 2016



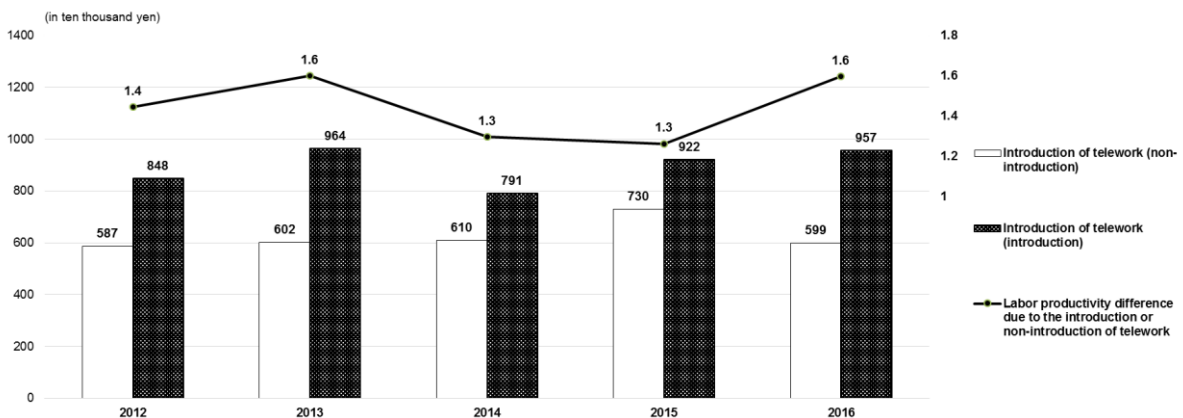
Note: as a percentage of households using Internet-enabled TV receivers to access the Internet

7. ICT and Labor Productivity at Businesses

Businesses using ICT have higher productivity per company (productivity premium) than businesses not using it with respect to all types of ICT.

Specifically, businesses implementing telework have a productivity premium of around 60 percent over businesses not implementing it. The productivity premium is 30 percent for businesses implementing ICT education and businesses using cloud services and 20 percent for businesses that have introduced systems and tools using wireless communication technology.

Figure 7-1: Trends in introduction of telework and labor productivity per company

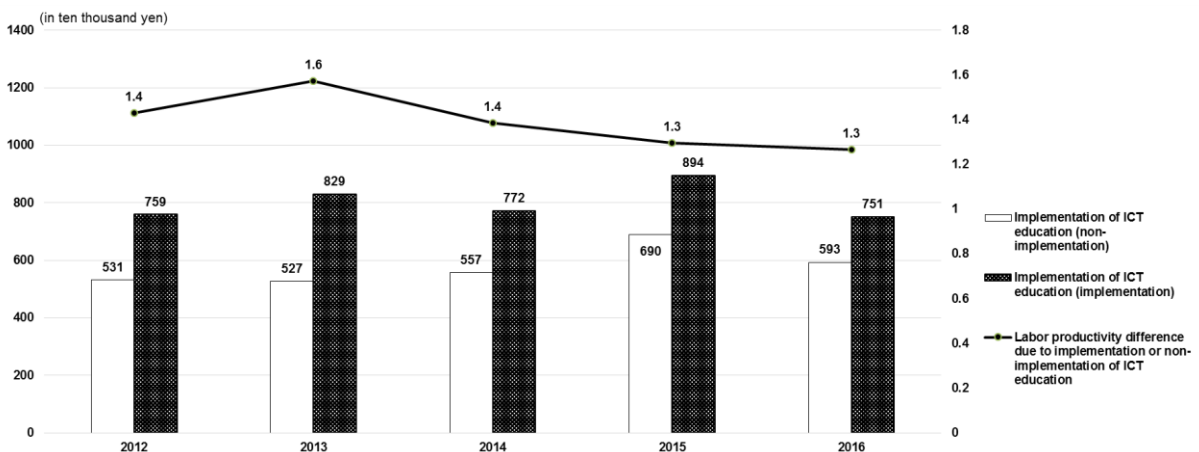


Note: The above data covers businesses that gave replies with respect to all of the categories of operating profit, personnel cost, capitalization, depreciation cost, and introduction or non-introduction of telework.

Labor productivity = (operating profit + personnel cost + depreciation cost) ÷ number of employees

The ratio represents the difference in labor productivity between businesses that have introduced telework and businesses that have not.

Figure 7-2: Implementation of ICT education and labor productivity per company

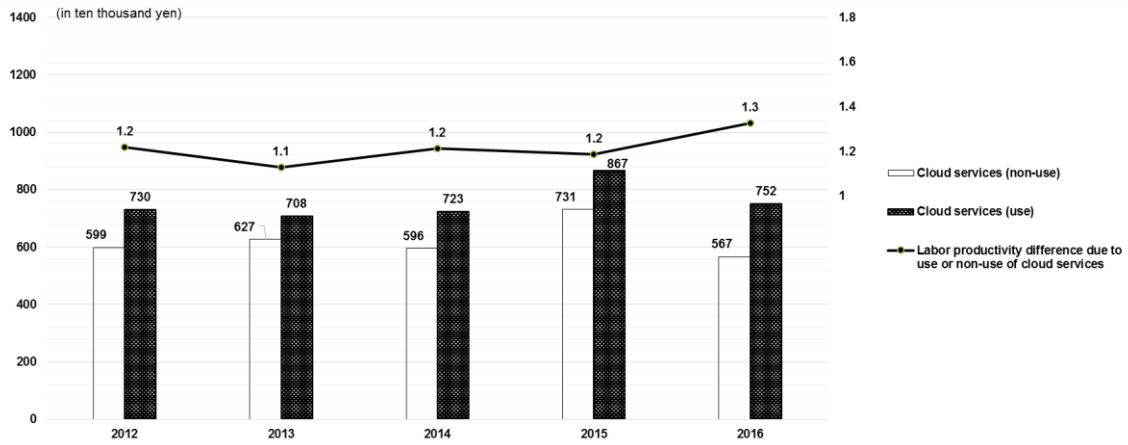


Note: The above data covers businesses that gave replies with respect to all of the categories of operating profit, personnel cost, capital, depreciation cost, and implementation or non-implementation of ICT education.

Labor productivity = (operating profit + personnel cost + depreciation cost) ÷ number of employees

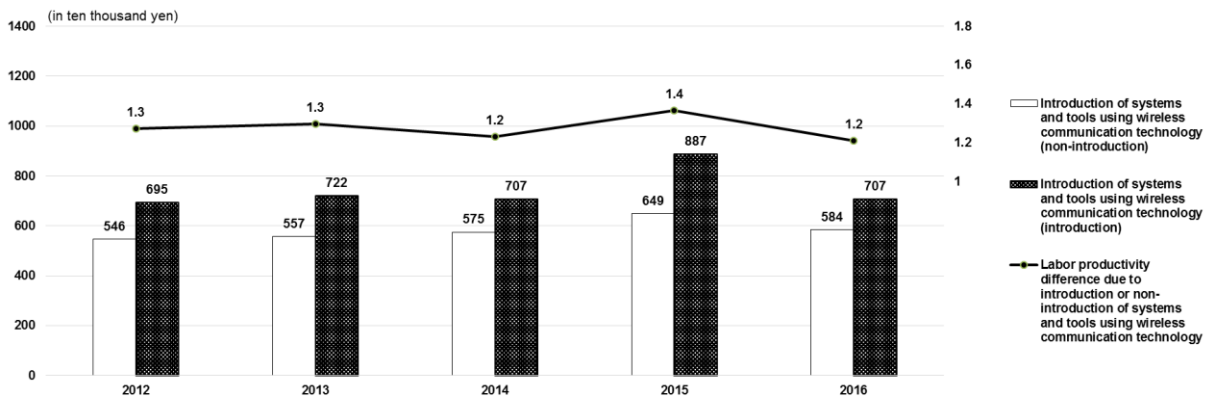
The ratio represents the difference in labor productivity between businesses that have implemented ICT education and businesses that have not.

Figure 7-3: Use of cloud services and labor productivity per company



Note: The above data covers businesses that gave replies with respect to all of the categories of operating profit, personnel cost, capital, depreciation cost, and use or non-use of cloud services.
 Labor productivity = (operating profit + personnel cost + depreciation cost) ÷ number of employees
 The ratio represents the difference in labor productivity between businesses that are using cloud services and businesses that are not.

Figure 7-4: Introduction of systems and tools using wireless communication technology and labor productivity per company



Note: The above data covers businesses that gave replies with respect to all of the categories of operating profit, personnel cost, capital, depreciation cost, and use or non-use of wireless communication technology.
 Labor productivity = (operating profit + personnel cost + depreciation cost) ÷ number of employees
 The ratio represents the difference in labor productivity between businesses that have introduced wireless communication technology and businesses that have not.
 Systems and tools using wireless communication technology include RFID tags, contactless IC cards, and network cameras and other new network-enabled devices