PRESS RELEASE

![MIC - Ministry of Internal Affairs and Communications]

May 31, 2019

"Communications Usage Trend Survey" in 2018 Compiled

The Ministry of Internal Affairs and Communications (MIC, Japan) has compiled its Communications Usage Trend Survey, a survey of the communication services usage by households and businesses at the end of September 2018.

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 e-Stat, 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 The household ownership rate for smartphones reaches about 80%. Meanwhile, the rate for fixed-line telephones is about 60%.
2 The percentages of social networking service users among individuals and businesses increase. (Individuals: 60.0% (up 5.3 points) / Businesses: 36.7% (up 7.8 points)
3 About 20% of businesses have introduced or were planning to introduce IoT and AI systems or services to collect digital data.

[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 also has conducted the household survey by prefecture since 2010.

	Households*	Businesses
Survey period	October – December 2018	
Survey area	Nationwide	
Scope of attributes / Level of survey	Households headed by someone aged 20 or older (as of April 1, 2018) 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 households [39,355 households]	5,877 businesses [4,654 businesses]
Effective responses [%]	16,255 households (42,744 persons) [41.3%]	2,119 businesses [45.5%]
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 2018, 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 [6,369]	2,354 households (6,214 persons) [37.0%]
Simplified version	33,984 [32,986]	13,901 households (36,530 persons) [42.1%]

Highlights of the Communications Usage Trend Survey in 2018

Highlights of the Survey

- The household ownership rate for smartphones reaches about 80%. Meanwhile, the rate for fixed-line telephones is about 60%.

- The percentages of social networking service users among individuals and businesses increase. (60% for individuals, 36.7% for businesses)
Among purposes for using SNS, the percentage for "to find information on topics of interest" rises to 57.4% among individuals and that for "company profile/recruitment" to 40.6% among businesses.

- About 20% of businesses have introduced or are planning to introduce IoT and AI systems or services to collect digital data.

<Note>

*Graphs with titles including (businesses) are based on the survey of businesses and colored orange.
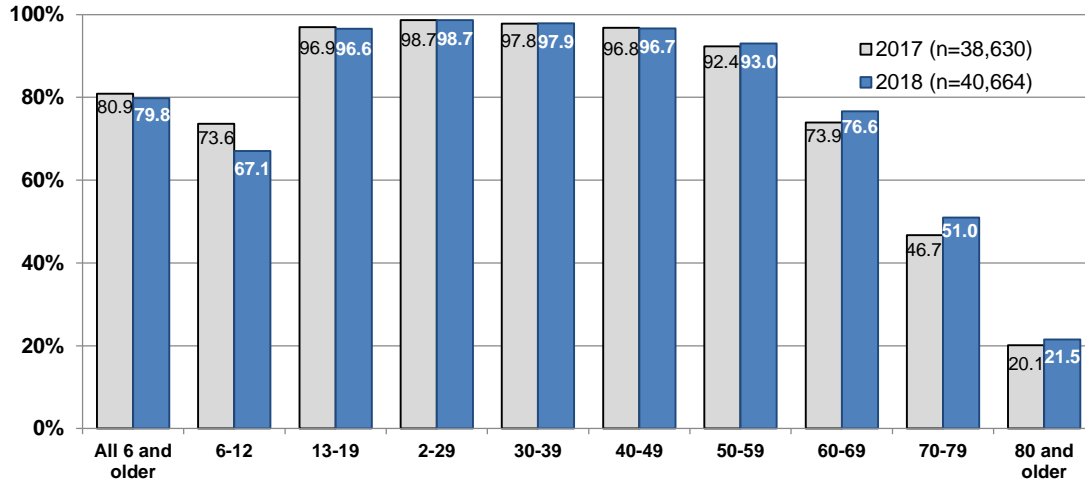 Those with titles including (households) are based on the survey of households, and including (individuals) are based on the survey of household members. Both (households) and (individuals) are colored blue.

*Non-responses were excluded except in the graphs of "Ownership of common communication devices (households)" in Page 3.
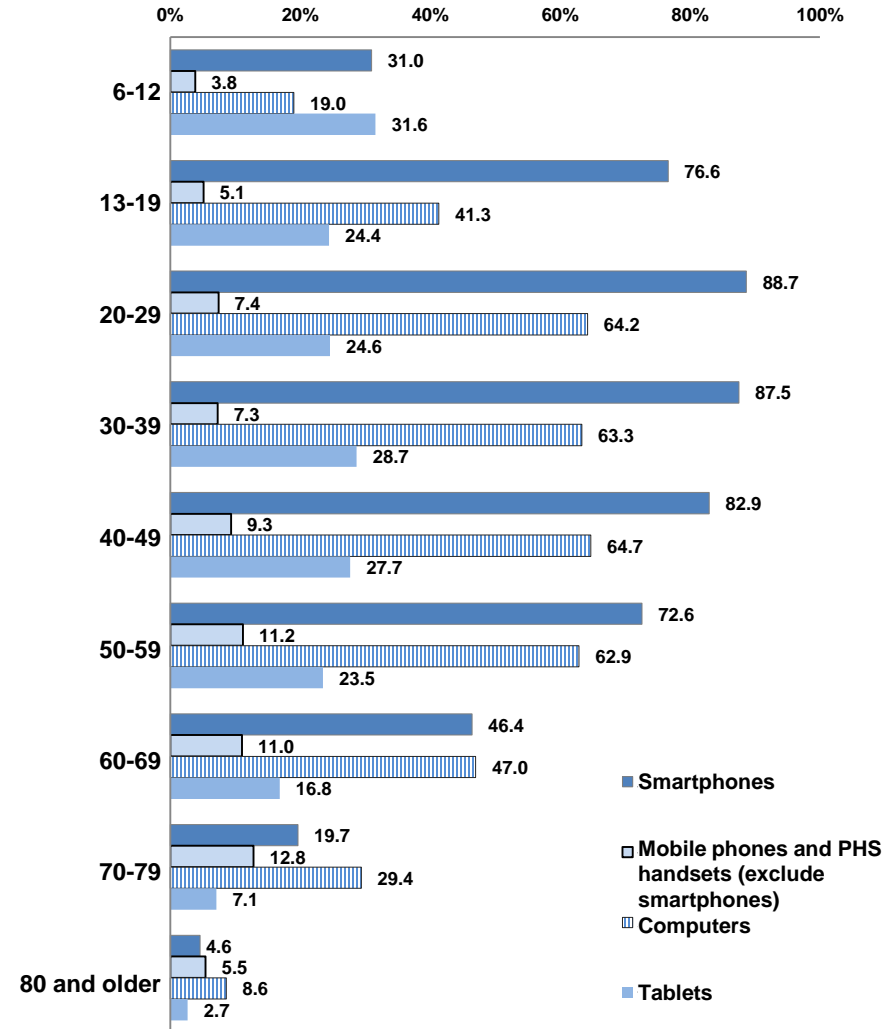
1. Internet Usage Trends

The Internet usage rate remains almost unchanged. Internet users account for more than 90% of people aged between 13 and 59. Smartphones are used more frequently than computers for Internet access.

Internet usage (individuals)

2017 (n=38,630)
2018 (n=40,664)

Age group	2017	2018
All 6 and older	80.9	79.8
6-12	73.6	67.1
13-19	96.9	96.6
2-29	98.7	98.7
30-39	97.8	97.9
40-49	96.8	96.7
50-59	92.4	93.0
60-69	73.9	76.6
70-79	46.7	51.0
80 and older	20.1	21.5

Usage of Internet access devices (individuals)

Device	2018 (n=40,664)	2017 (n=38,630)
Smartphones	59.5	59.7
Computers	48.2	52.5
Tablets	20.8	20.9
Home game consoles	9.7	8.8
Mobile phones and PHS handsets (exclude smartphones)	8.8	9.9
Internet-enabled TV receivers	6.5	7.2
Other	1.4	1.1
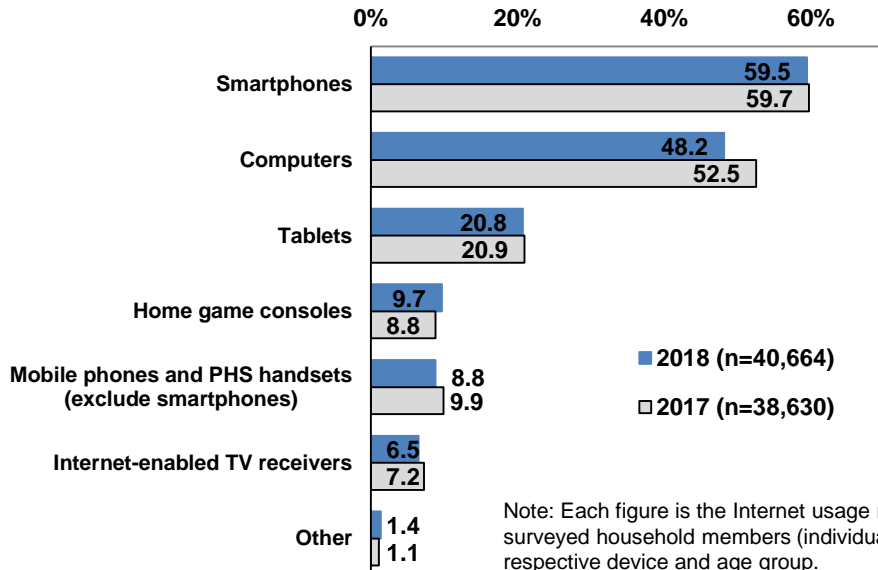
Note: Each figure is the Internet usage rate among surveyed household members (individuals) for the respective device and age group.

Usage of Internet access devices by age group (individuals)

Legend: Smartphones; Mobile phones and PHS handsets (exclude smartphones); Computers; Tablets

Age group	Smartphones	Mobile phones and PHS handsets (exclude smartphones)	Computers	Tablets
6-12	31.0	3.8	19.0	31.6
13-19	76.6	5.1	41.3	24.4
20-29	88.7	7.4	64.2	24.6
30-39	87.5	7.3	63.3	28.7
40-49	82.9	9.3	64.7	27.7
50-59	72.6	11.2	62.9	23.5
60-69	46.4	11.0	47.0	16.8
70-79	19.7	12.8	29.4	7.1
80 and older	4.6	5.5	8.6	2.7

Note: Excluding Internet-enabled TV receivers, home game consoles, and other.

Ownership of common communication devices (households) (2010-2018)

The household ownership rate for smartphones increases to about 80%, exceeding that for fixed-line telephones at 64.5% and that for personal computers at 74.0%.

Fixed-line telephone

Mobile devices (overall)
(Mobiles phones / PHS handsets and smartphones)

Smartphones
79.2%

Computers
74.0%

Fixed-line telephone
64.5%

Tablets
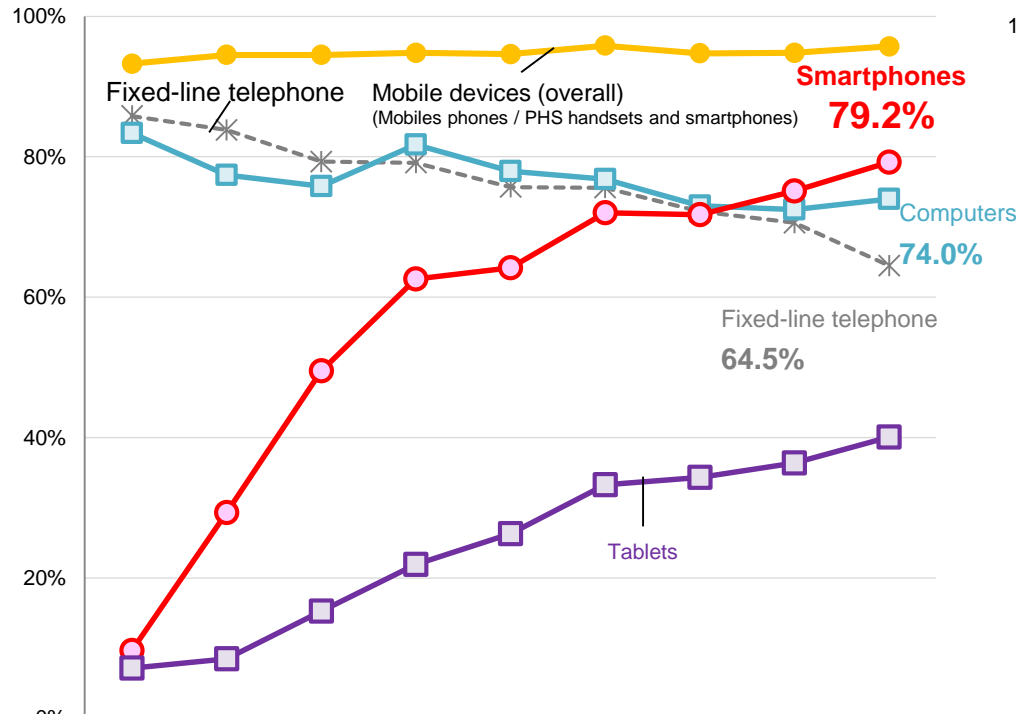
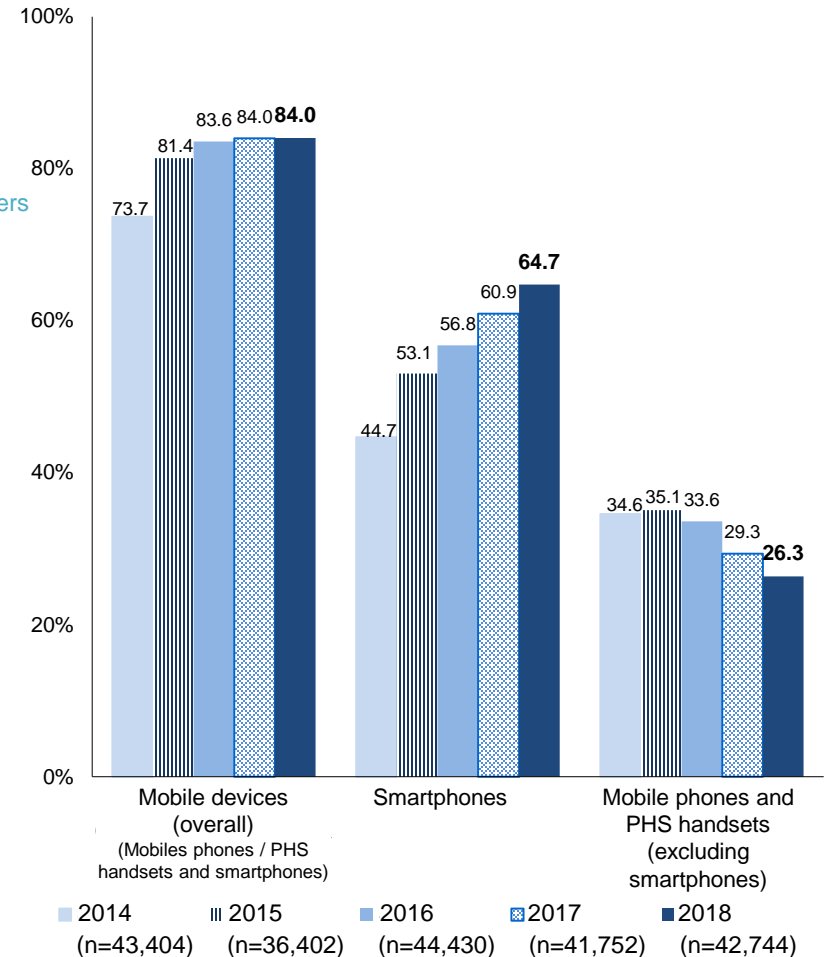|	2010	2011	2012	2013	2014	2015	2016	2017	2018
Fixed-line telephone	85.8	83.8	79.3	79.1	75.7	75.6	72.2	70.6	64.5
Computers	83.4	77.4	75.8	81.7	78.0	76.8	73.0	72.5	74.0
Smartphones	9.7	29.3	49.5	62.6	64.2	72.0	71.8	75.1	79.2
Mobile devices (overall)	93.2	94.5	94.5	94.8	94.6	95.8	94.7	94.8	95.7
Tablets	7.2	8.5	15.3	21.9	26.3	33.3	34.4	36.4	40.1

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

Ownership of mobile devices (individuals) (2014-2018)

Ownership is increasing for smartphones while decreasing for mobile phones and PHS handsets (excluding smartphones).

Mobile devices (overall)
(Mobiles phones / PHS handsets and smartphones): 73.7, 81.4, 83.6, 84.0, **84.0**

Smartphones: 44.7, 53.1, 56.8, 60.9, **64.7**

Mobile phones and PHS handsets (excluding smartphones): 34.6, 35.1, 33.6, 29.3, **26.3**

2014	2015	2016	2017	2018
(n=43,404)	(n=36,402)	(n=44,430)	(n=41,752)	(n=42,744)

The percentages of social networking service users among individuals and businesses increase. Among purposes for using SNS, the percentage for "company profile/recruitment" increases among businesses and that for "to find information on topics of interest" rises among individuals.

Social media(note) usage (businesses)

(Note) Social media covers social networking services, blogs, video-sharing sites, etc.

Industry	2018	2017
Overall (n=2,072 / n=2,573)	36.7	28.9
Construction (n=296 / n=309)	26.3	18.8
Manufacturing (n=368 / n=374)	23.7	19.4
Transport / mailing (n=304 / n=323)	24.1	16.5
Wholesale / retail (n=284 / n=307)	46.9	32.1
Financial / insurance (n=131 / n=138)	51.7	39.2
Real estate (n=132 / n=139)	58.7	46.2
Information and communications (n=239 / n=643)	46.4	40.8
Service and other industries (n=318 / n=340)	43.4	36.9

■ : 2018
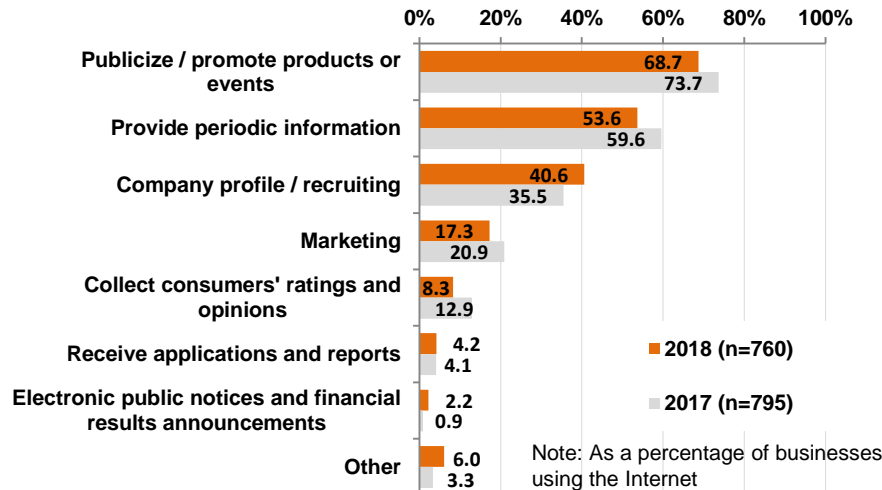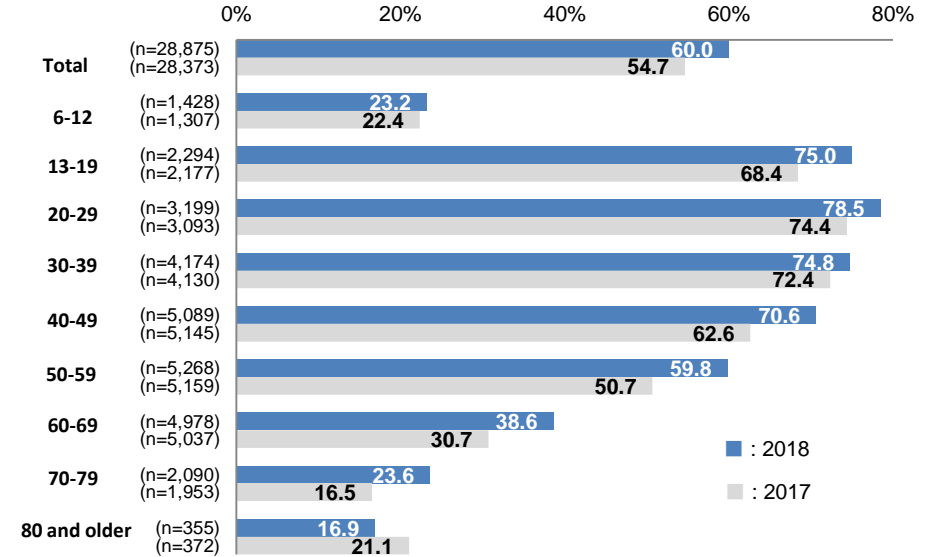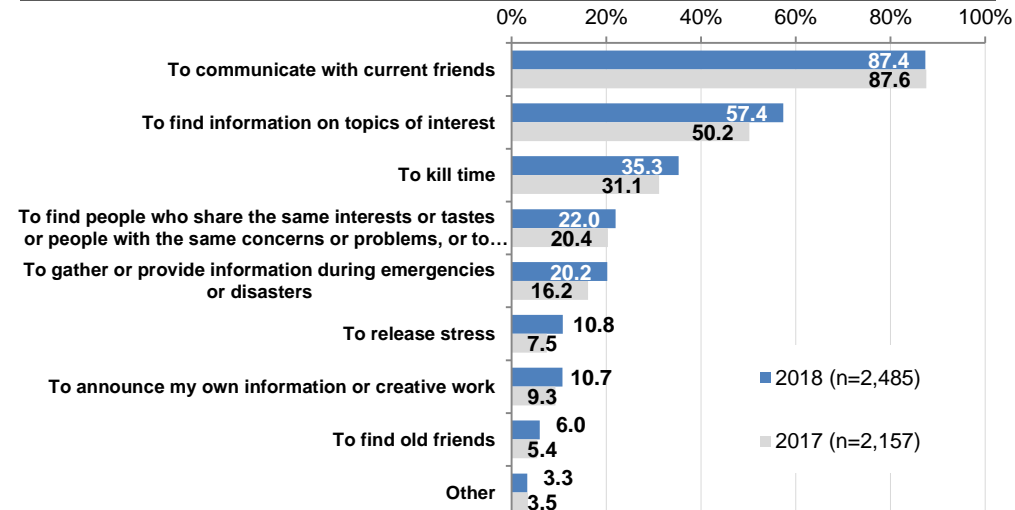□ : 2017

Social networking service usage (individuals)

Age	2018	2017
Total (n=28,875 / n=28,373)	60.0	54.7
6-12 (n=1,428 / n=1,307)	23.2	22.4
13-19 (n=2,294 / n=2,177)	75.0	68.4
20-29 (n=3,199 / n=3,093)	78.5	74.4
30-39 (n=4,174 / n=4,130)	74.8	72.4
40-49 (n=5,089 / n=5,145)	70.6	62.6
50-59 (n=5,268 / n=5,159)	59.8	50.7
60-69 (n=4,978 / n=5,037)	38.6	30.7
70-79 (n=2,090 / n=1,953)	23.6	16.5
80 and older (n=355 / n=372)	16.9	21.1

■ : 2018
□ : 2017

Purpose / application of social media usage (businesses)

Purpose	2018	2017
Publicize / promote products or events	68.7	73.7
Provide periodic information	53.6	59.6
Company profile / recruiting	40.6	35.5
Marketing	17.3	20.9
Collect consumers' ratings and opinions	8.3	12.9
Receive applications and reports	4.2	4.1
Electronic public notices and financial results announcements	2.2	0.9
Other	6.0	3.3

■ 2018 (n=760)
□ 2017 (n=795)

Note: As a percentage of businesses using the Internet

Purposes of social networking service usage (individuals)

Purpose	2018	2017
To communicate with current friends	87.4	87.6
To find information on topics of interest	57.4	50.2
To kill time	35.3	31.1
To find people who share the same interests or tastes or people with the same concerns or problems, or to…	22.0	20.4
To gather or provide information during emergencies or disasters	20.2	16.2
To release stress	10.8	7.5
To announce my own information or creative work	10.7	9.3
To find old friends	6.0	5.4
Other	3.3	3.5

■ 2018 (n=2,485)
□ 2017 (n=2,157)

Cloud service usage

The percentage of businesses using cloud services continues an uptrend, reaching about 60%.
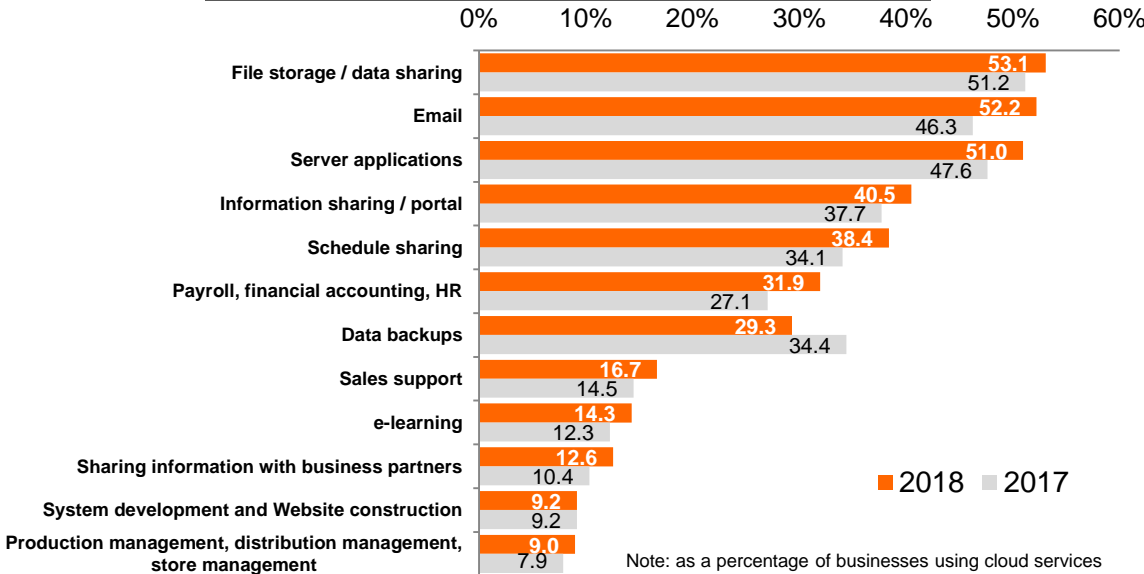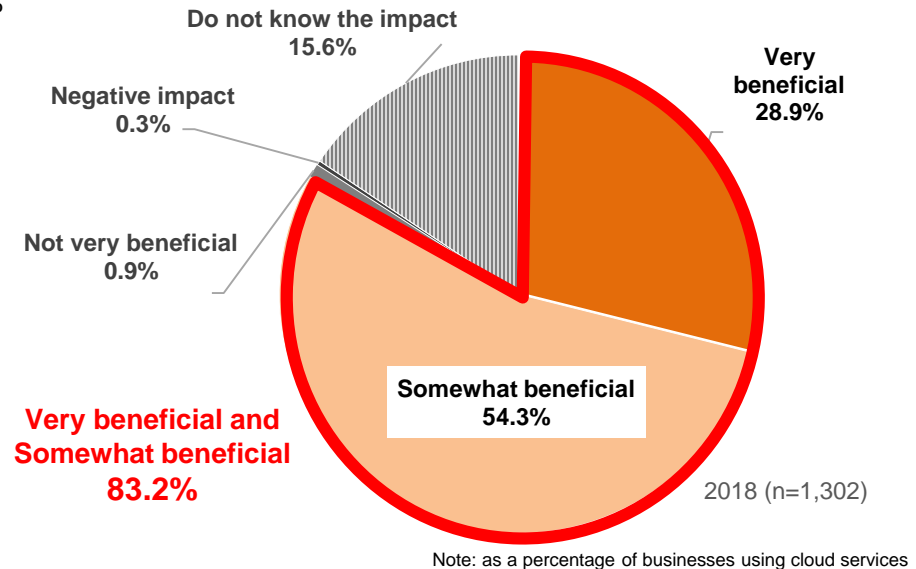The percentages of businesses using cloud services for advanced purposes such as "sales support" and "production management" are limited to low levels.
The percentage of businesses viewing cloud services as "very beneficial" or "somewhat beneficial" among cloud service-using businesses exceeded 80%.
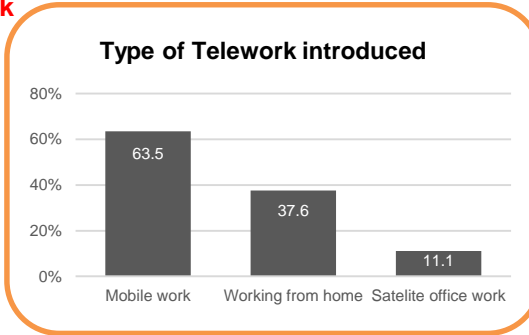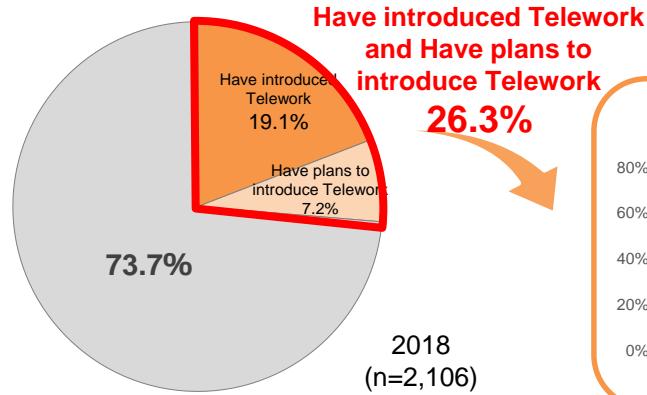
Year	Used company wide	Used by some offices or divisions	Not used, but planning to use in the future	Not used and no plans to use in the future	Do not understand cloud services
2018 (n=2,107) — 58.7%	33.1	25.6	14.1	21.5	5.7
2017 (n=2,570) — 56.9%	29.4	27.5	13.4	22.1	7.6
2016 (n=2,071) — 46.9%	24.4	22.5	14.5	29.3	9.3

■ Used company wide
▦ Used by some offices or divisions
▥ Not used, but planning to use in the future
□ Not used and no plans to use in the future
■ Do not understand cloud services

Purposes for using cloud services

Purpose	2018	2017
File storage / data sharing	53.1	51.2
Email	52.2	46.3
Server applications	51.0	47.6
Information sharing / portal	40.5	37.7
Schedule sharing	38.4	34.1
Payroll, financial accounting, HR	31.9	27.1
Data backups	29.3	34.4
Sales support	16.7	14.5
e-learning	14.3	12.3
Sharing information with business partners	12.6	10.4
System development and Website construction	9.2	9.2
Production management, distribution management, store management	9.0	7.9

■ 2018 ■ 2017

Note: as a percentage of businesses using cloud services

Impact of cloud computing services

Do not know the impact 15.6%
Negative impact 0.3%
Not very beneficial 0.9%
Very beneficial 28.9%
Somewhat beneficial 54.3%

Very beneficial and Somewhat beneficial 83.2%

2018 (n=1,302)

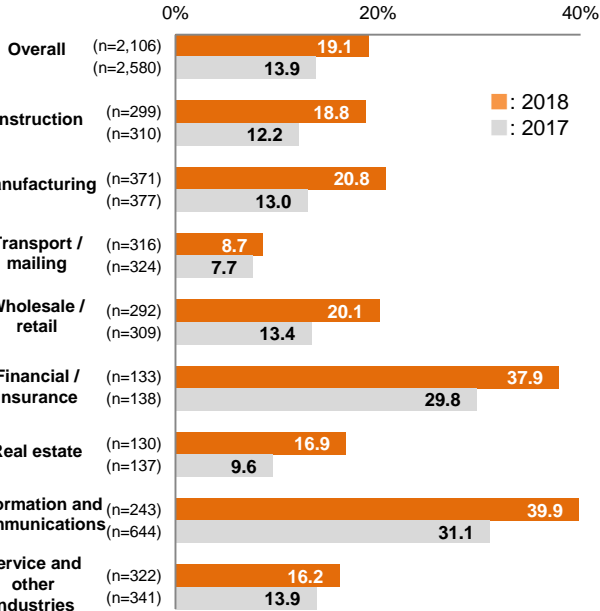Note: as a percentage of businesses using cloud services

Introduction of Telework (businesses)

Of the surveyed businesses, 26.3 percent have introduced or have plans to introduce Telework.

Have introduced Telework and Have plans to introduce Telework

26.3%

Have introduced Telework 19.1%

Have plans to introduce Telework 7.2%

73.7%

2018 (n=2,106)

Type of Telework introduced

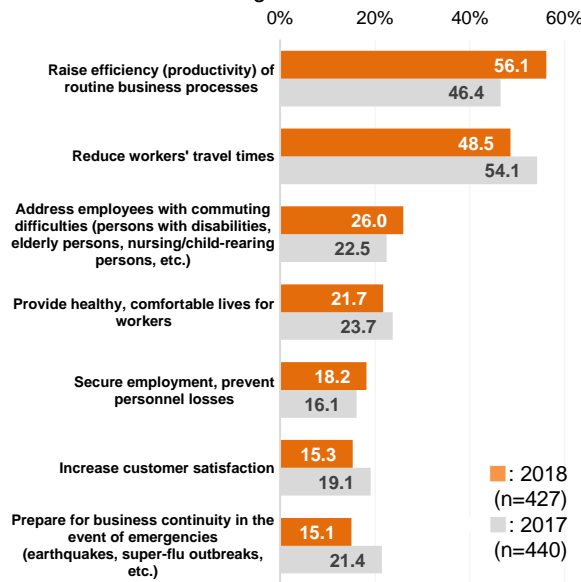| Mobile work	Working from home	Satelite office work
63.5	37.6	11.1

Introduction of Telework by industry (businesses)

Among industries, "information and communications" and "financial and insurance" industries post high growth in their Telework introduction rates to about 40%.

■: 2018
■: 2017

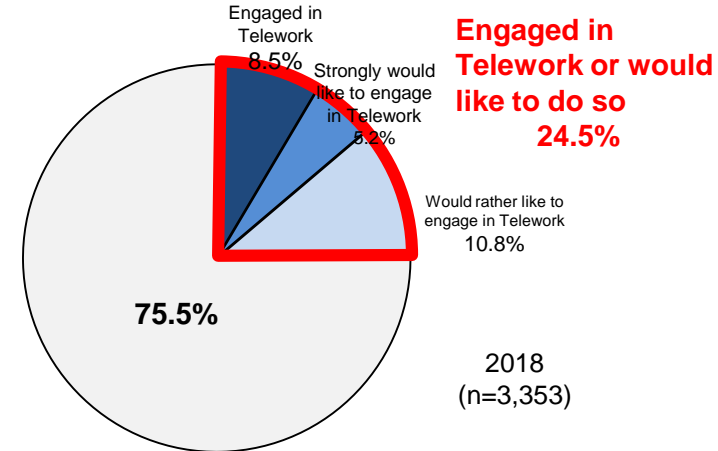| Industry	n	2018	2017
Overall	(n=2,106) / (n=2,580)	19.1	13.9
Construction	(n=299) / (n=310)	18.8	12.2
Manufacturing	(n=371) / (n=377)	20.8	13.0
Transport / mailing	(n=316) / (n=324)	8.7	7.7
Wholesale / retail	(n=292) / (n=309)	20.1	13.4
Financial / insurance	(n=133) / (n=138)	37.9	29.8
Real estate	(n=130) / (n=137)	16.9	9.6
Information and communications	(n=243) / (n=644)	39.9	31.1
Service and other industries	(n=322) / (n=341)	16.2	13.9

Purposes of introducing Telework (businesses)

Note: as a percentage of businesses which have introduced Telework

Frequently cited purposes of Telework introduction include "raising the efficiency (productivity) of routine business processes" and "reducing workers' travel times."

■: 2018 (n=427)
■: 2017 (n=440)

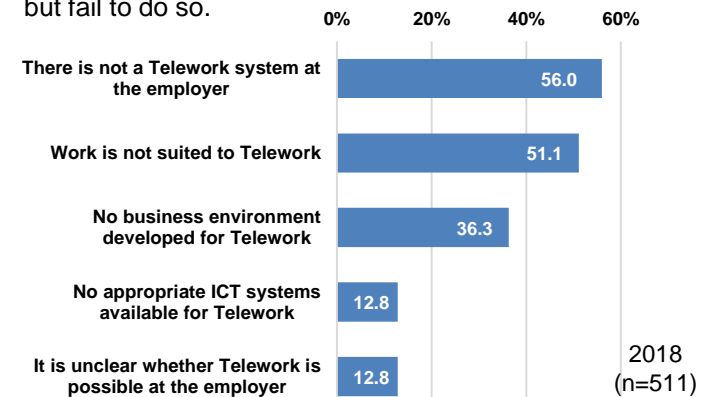| Purpose	2018	2017
Raise efficiency (productivity) of routine business processes	56.1	46.4
Reduce workers' travel times	48.5	54.1
Address employees with commuting difficulties (persons with disabilities, elderly persons, nursing/child-rearing persons, etc.)	26.0	22.5
Provide healthy, comfortable lives for workers	21.7	23.7
Secure employment, prevent personnel losses	18.2	16.1
Increase customer satisfaction	15.3	19.1
Prepare for business continuity in the event of emergencies (earthquakes, super-flu outbreaks, etc.)	15.1	21.4

Engagement in Telework (individuals)

Of individuals aged 15 or older and working for businesses or other organizations, 24.5% either engaged in Telework in the past year or said they would like to do so.

Engaged in Telework 8.5%

Strongly would like to engage in Telework 5.2%

Engaged in Telework or would like to do so 24.5%

Would rather like to engage in Telework 10.8%

75.5%

2018 (n=3,353)

Reasons for not engaging in Telework (individuals)

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

The "absence of a Telework system" is a reason cited frequently by individuals who hope to engage in Telework but fail to do so.

Reason	%
There is not a Telework system at the employer	56.0
Work is not suited to Telework	51.1
No business environment developed for Telework	36.3
No appropriate ICT systems available for Telework	12.8
It is unclear whether Telework is possible at the employer	12.8

2018 (n=511)

6. Concerns about Using the Internet (individuals)
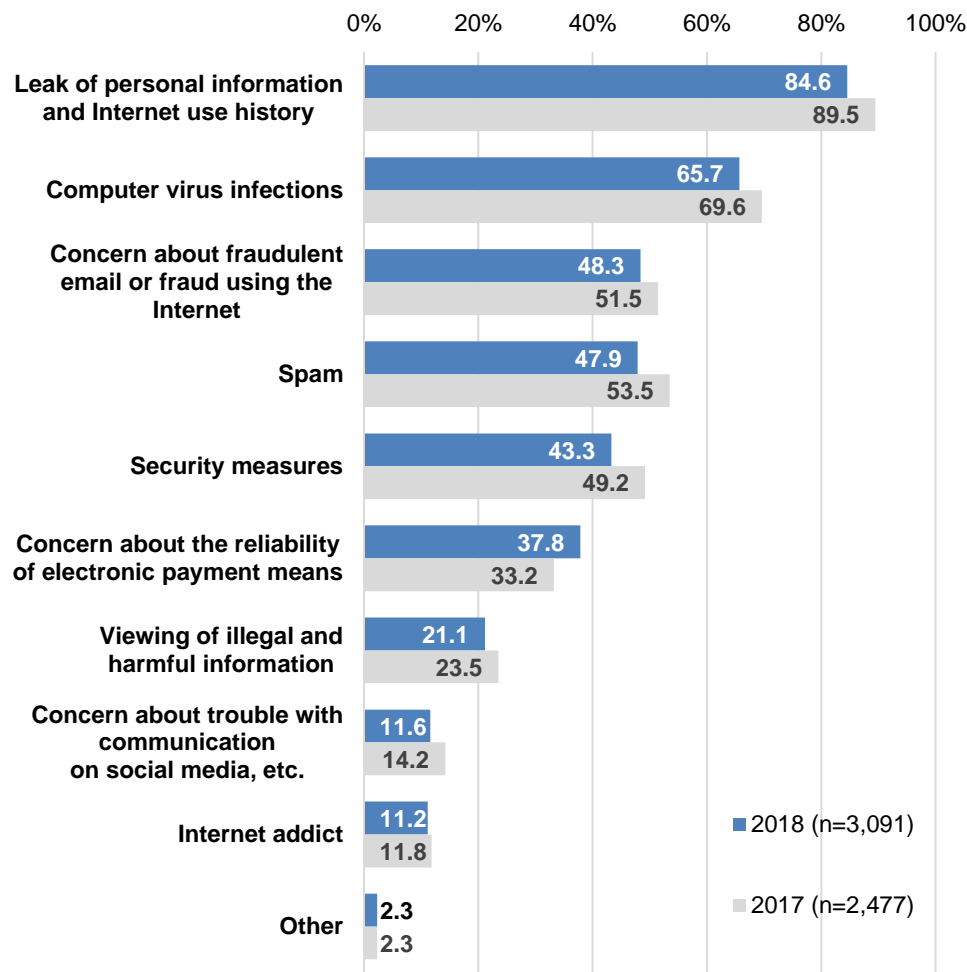
Concerns about using the Internet

Some 70% of Internet users aged 12 or more feel concerned during Internet use, rising by 3.9 points from the previous survey. Percentages of Internet users feeling concerned during Internet use are high for aged 30-79 groups.

Feel concerned **Feel rather concerned** **Feel rather unconcerned** **Feel not concerned**
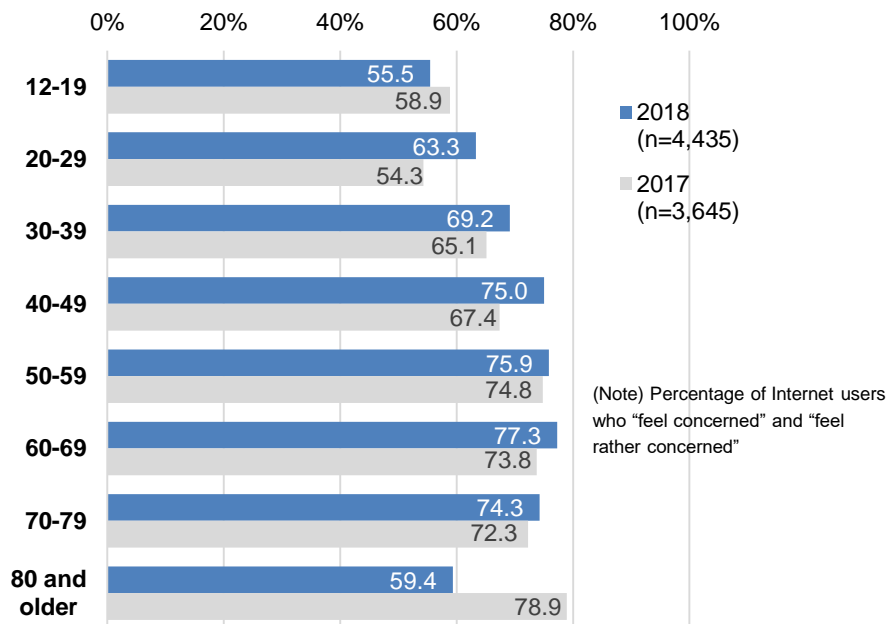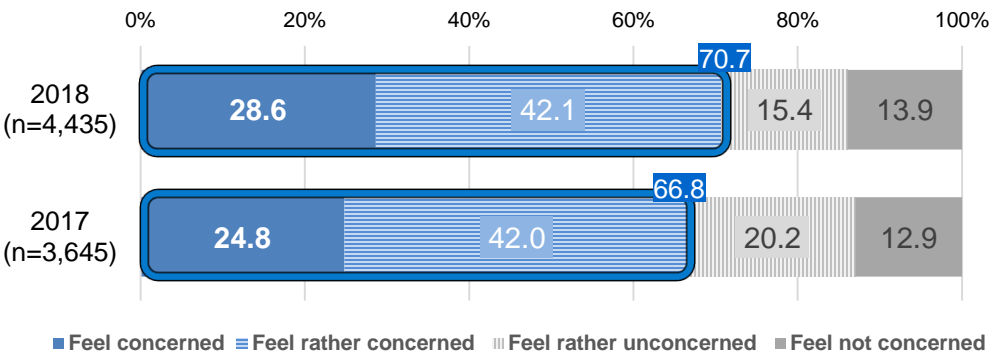
(Note) Percentage of Internet users who "feel concerned" and "feel rather concerned"

Types of concerns about using the Internet

The percentage is as high as 84.6% for "leak of personal information and Internet use history" among types of concerns about using the Internet. Particularly, the percentage for "concern about the reliability of electronic payment means" posts a rise of 4.6 points to 37.8%.
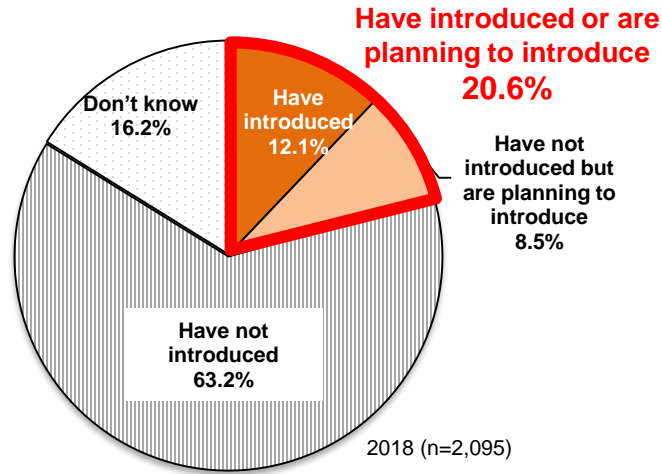

Note: as a percentage of individuals who replied either that they "feel concerned" or that they "feel rather concerned" when using the Internet

7. Collection/utilization of digital data with AI/IoT systems (businesses)
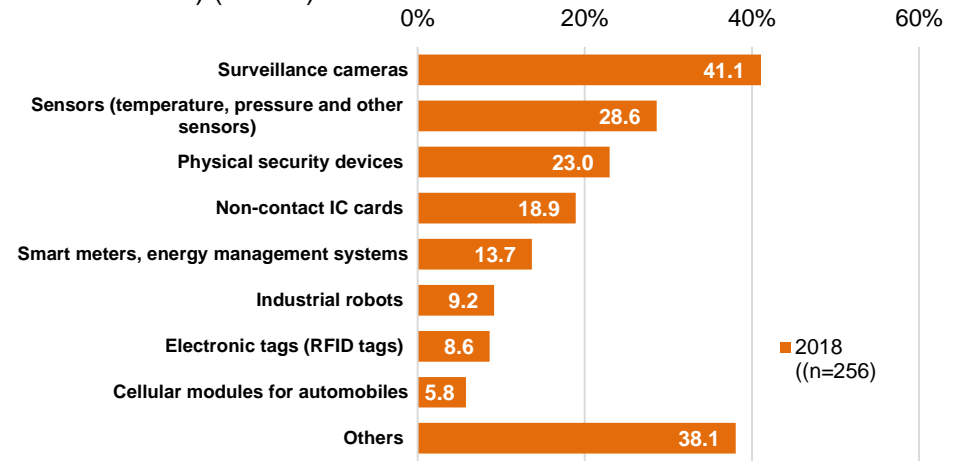
Introduction of IoT/AI systems/services

More than 20% of businesses have introduced or are planning to introduce IoT and AI systems or services to collect and analyze digital data.

Have introduced or are planning to introduce 20.6%

- Don't know 16.2%
- Have introduced 12.1%
- Have not introduced but are planning to introduce 8.5%
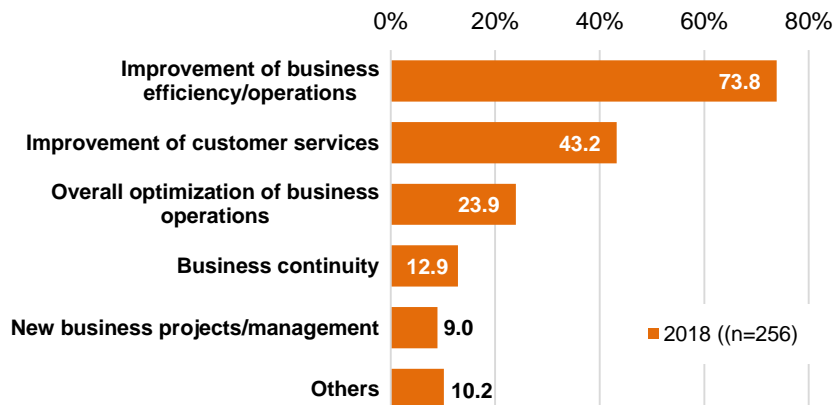- Have not introduced 63.2%

2018 (n=2,095)

Systems or services that have been introduced

The most frequently responses cited among components of IoT and AI systems or services that have been introduced are "surveillance cameras" (41.1%), followed by sensors (temperature, pressure and other sensors) (28.6%).
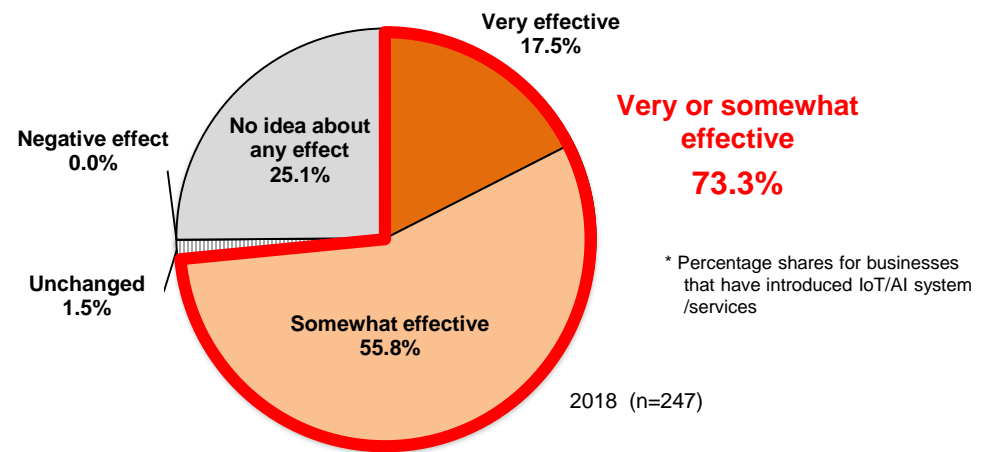
- Surveillance cameras: 41.1
- Sensors (temperature, pressure and other sensors): 28.6
- Physical security devices: 23.0
- Non-contact IC cards: 18.9
- Smart meters, energy management systems: 13.7
- Industrial robots: 9.2
- Electronic tags (RFID tags): 8.6
- Cellular modules for automobiles: 5.8
- Others: 38.1

2018 ((n=256)

Purposes of digital data collection/analysis

- Improvement of business efficiency/operations: 73.8
- Improvement of customer services: 43.2
- Overall optimization of business operations: 23.9
- Business continuity: 12.9
- New business projects/management: 9.0
- Others: 10.2

2018 ((n=256)

* Percentage shares for businesses that have introduced IoT system /services

Effects of IoT /AI system/service introduction

Very or somewhat effective 73.3%

- Very effective 17.5%
- No idea about any effect 25.1%
- Negative effect 0.0%
- Unchanged 1.5%
- Somewhat effective 55.8%

2018 (n=247)

* Percentage shares for businesses that have introduced IoT/AI system /services

Summary Findings of the 2018 Communications Usage Trend Survey

Table of Contents

> **<Note>** Data in this document exclude non-respondents in the survey (unless otherwise specified).

1. Proliferation of the Internet and Other Networks

(1) Internet usage (individuals)

The Internet usage rate has remained broadly flat. By age group, the Internet usage rate is higher than 90% in the age groups between 13 and 59 years old.

Figure 1-1: Transitions in Internet usage

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
46.3%	57.8%	64.3%	66.0%	70.8%	72.6%	73.0%	75.3%	78.0%	78.2%	79.1%	79.5%	82.8%	82.8%	83.0%	83.5%	80.9%	**79.8%**
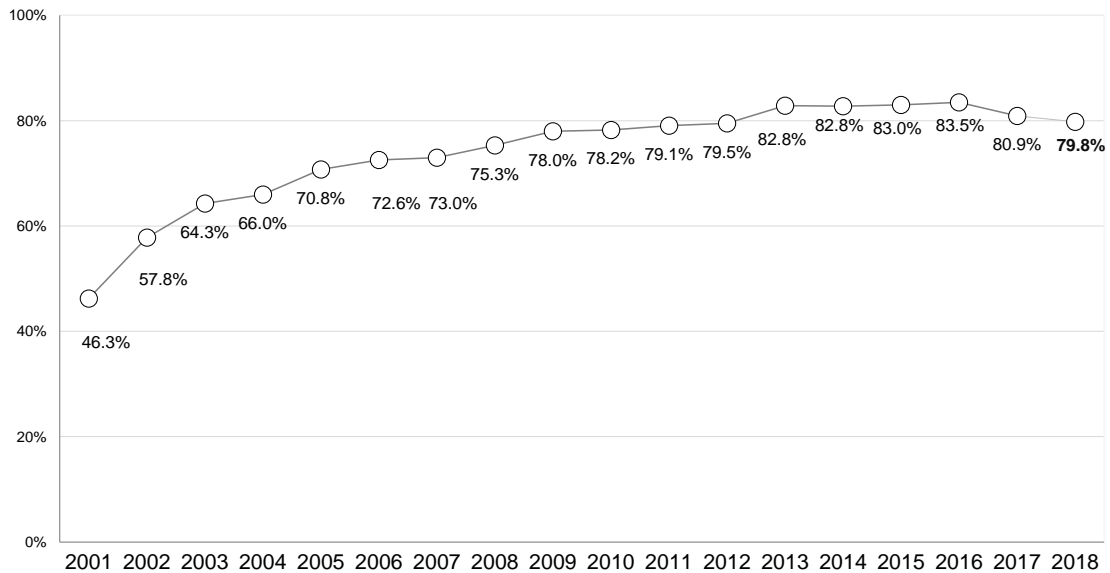
2018 (n=40,664)

Figure 1-2: Transitions in Internet usage by age group

	6-12	13-19	20-29	30-39	40-49	50-59	60-69	70-79	80 and older
2014 (n=38,110)	71.6	97.8	99.2	97.8	96.6	91.3	75.2	50.2	21.2
2015 (n=33,525)	74.8	98.2	99.0	97.8	96.5	91.4	76.6	53.5	20.2
2016 (n=40,297)	82.6	98.4	99.2	97.5	96.7	93.0	75.7	53.6	23.4
2017 (n=38,630)	73.6	96.9	98.7	97.8	96.8	92.4	73.9	46.7	20.1
2018 (n=40,664)	67.1	96.6	98.7	97.9	96.7	93.0	76.6	51.0	21.5
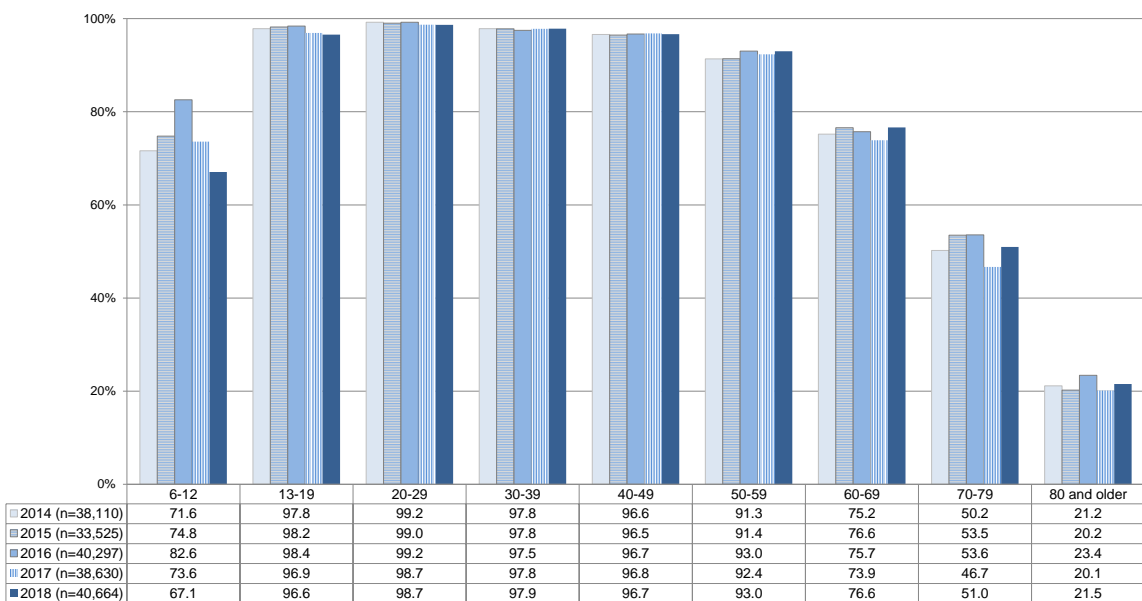
Figure 1-3: Internet usage by age and gender (2018)

Male (n=19,674)
Female (n=20,990)

	Male	Female
All 6 and older	84.0	75.9
6-12	68.3	65.8
13-19	95.7	97.5
20-29	98.0	99.3
30-39	97.6	98.2
40-49	95.8	97.5
50-59	93.3	92.7
60-69	82.4	71.1
70-79	59.7	43.6
80 and older	31.4	16.1
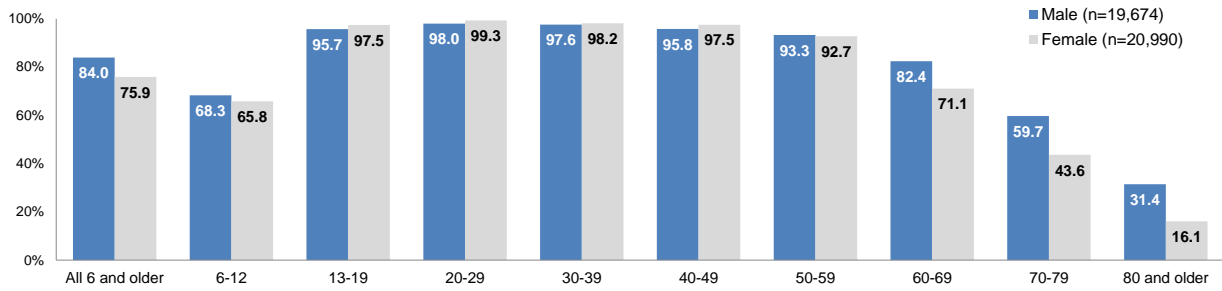
Figure 1-4: Internet usage by annual household income

2017 (n=38,630)
2018 (n=40,664)

	2017	2018
Less than ¥2 million	54.2	54.4
¥2 million to less than ¥4 million	74.1	70.6
¥4 million to less than ¥6 million	85.5	83.9
¥6 million to less than ¥8 million	89.1	87.8
¥8 million to less than ¥10 million	90.5	89.7
¥10 million and over	91.9	90.3
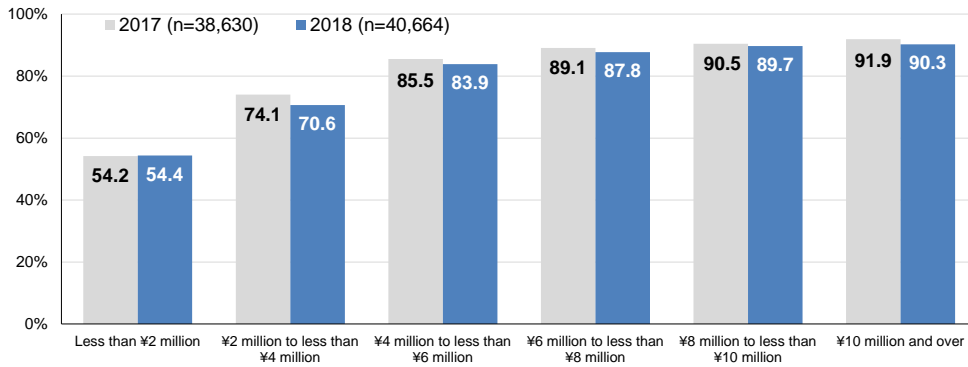
(2) Internet usage by device (individuals)

The Internet usage by device indicates that the percentage of those using smartphones for Internet access is 11.3 points higher than that of those using computer. By age group, the smartphone usage rate is higher than 70% in the age groups between 13 and 59 years old.

Figure 1-5: Internet usage by device

2018 (n=40,664)
2017 (n=38,630)

Device	2018	2017
Smartphones	59.5	59.7
Computers	48.2	52.5
Tablets	20.8	20.9
Home game consoles	9.7	8.8
Mobile phones and PHS handsets (exclude smartphones)	8.8	9.9
Internet-enabled TV receivers	6.5	7.2
Other	1.4	1.1
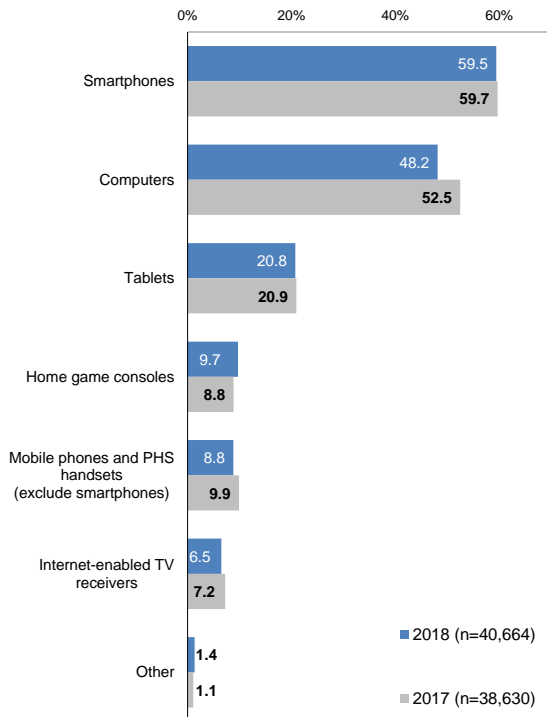
Figure 1-6: Use of Internet devices by age group

Smartphones
Mobile phones and PHS handsets (exclude smartphones)
Computers
Tablets

Age group	Smartphones	Mobile phones and PHS handsets	Computers	Tablets
6-12	31.0	3.8	19.0	31.6
13-19	76.6	5.1	41.3	24.4
20-29	88.7	7.4	64.2	24.6
30-39	87.5	7.3	63.3	28.7
40-49	82.9	9.3	64.7	27.7
50-59	72.6	11.2	62.9	23.5
60-69	46.4	11.0	47.0	16.8
70-79	19.7	12.8	29.4	7.1
80 and older	4.6	5.5	8.6	2.7

2
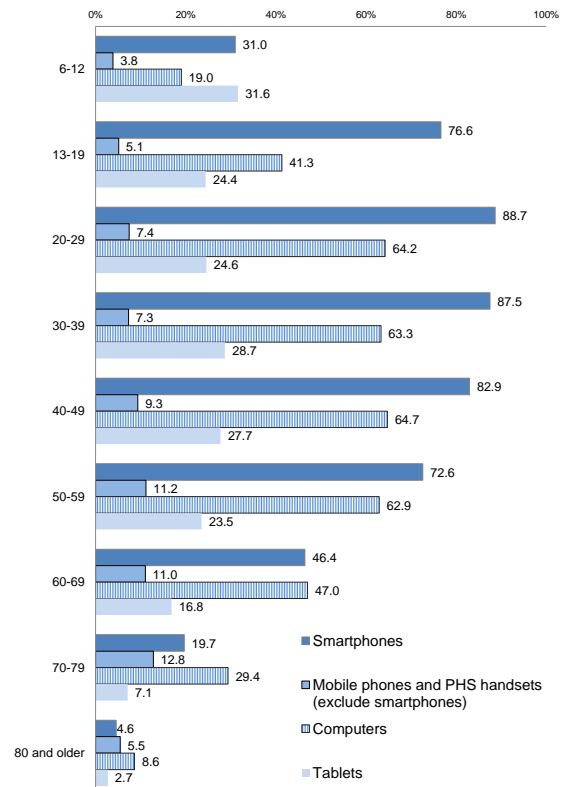
(3) Internet usage by prefecture and region (individuals)

The Internet usage by prefecture indicates that Tokyo posts the highest Internet usage rate, followed by Saitama and Osaka in that order (see the colored parts in the following table).

By region, the Internet usage rate in southern Kanto and Kinki is higher than the national average rate.

Figure 1-7: Internet usage by prefecture and device (2018)

(%)

| Prefecture (n)		Percentage of Internet users				
		Total	Computers	Mobile phones (incl. PHS)	Smartphones	Tablets
Hokkaido	(703)	76.1	41.2	8.0	54.4	17.2
Aomori	(938)	70.9	39.8	6.6	52.3	14.7
Iwate	(1,026)	69.4	37.5	8.1	49.4	15.2
Miyagi	(940)	77.4	42.8	9.3	56.0	17.8
Akita	(892)	67.1	38.6	7.3	46.9	17.2
Yamagata	(1,106)	71.7	37.6	5.8	49.0	13.6
Fukushima	(771)	72.3	40.2	8.7	50.7	15.0
Ibaraki	(834)	78.0	40.3	6.7	59.7	15.5
Tochigi	(916)	78.6	48.0	7.7	58.7	22.4
Gunma	(1,021)	78.0	42.3	7.8	56.9	17.5
Saitama	(906)	85.7	52.7	7.1	67.2	22.7
Chiba	(779)	79.9	50.4	8.9	60.8	19.8
Tokyo	(777)	88.4	60.9	11.7	68.6	28.9
Kanagawa	(799)	84.5	57.4	11.4	65.1	23.4
Niigata	(1,083)	71.3	41.5	6.5	50.1	16.7
Toyama	(1,273)	74.1	43.8	8.1	51.5	16.2
Ishikawa	(1,061)	78.2	46.0	6.6	55.8	20.2
Fukui	(933)	73.5	39.8	7.1	51.9	17.3
Yamanashi	(1,025)	75.8	44.4	7.8	56.7	15.8
Nagano	(927)	73.4	47.1	8.9	52.1	15.7
Gifu	(920)	74.9	41.8	6.6	55.1	17.6
Shizuoka	(1,068)	78.1	46.2	8.6	54.3	18.9
Aichi	(853)	82.5	52.8	5.8	64.4	20.2
Mie	(773)	77.0	44.8	6.8	54.6	19.5
Shiga	(917)	83.8	51.4	8.1	60.8	20.7
Kyoto	(925)	80.1	48.0	6.9	60.7	23.2
Osaka	(760)	84.7	50.0	12.0	62.0	20.8
Hyogo	(755)	81.7	52.4	7.9	63.2	21.4
Nara	(937)	83.0	50.0	7.4	62.5	20.1
Wakayama	(825)	74.3	40.9	7.6	52.9	19.8
Tottori	(866)	70.4	38.6	8.1	46.1	14.6
Shimane	(915)	73.4	44.3	9.9	49.6	17.9
Okayama	(822)	74.9	40.4	9.9	54.9	20.4
Hiroshima	(774)	80.2	48.0	10.0	57.1	20.7
Yamaguchi	(837)	73.3	42.1	8.8	51.8	17.5
Tokushima	(747)	74.3	39.7	6.9	52.3	18.8
Kagawa	(839)	73.4	45.4	8.6	52.7	18.8
Ehime	(774)	73.9	43.1	8.4	54.1	17.6
Kochi	(709)	68.8	35.5	8.5	49.1	14.7
Fukuoka	(768)	77.8	42.4	9.5	56.8	22.8
Saga	(866)	74.4	40.4	8.6	53.0	17.9
Nagasaki	(771)	74.5	41.3	7.9	54.5	18.7
Kumamoto	(825)	72.9	39.2	7.6	55.5	22.9
Oita	(790)	73.0	39.2	10.6	49.3	17.8
Miyazaki	(778)	68.1	37.3	6.3	50.9	19.3
Kagoshima	(607)	70.7	30.7	5.7	52.6	18.1
Okinawa	(533)	74.9	33.8	7.1	55.4	18.4
Total	(40,664)	79.8	48.2	8.8	59.5	20.8

Figure 1-8: Internet and smartphone usage by region (2018)

Legend: ■ Used the Internet ● Used a smartphone
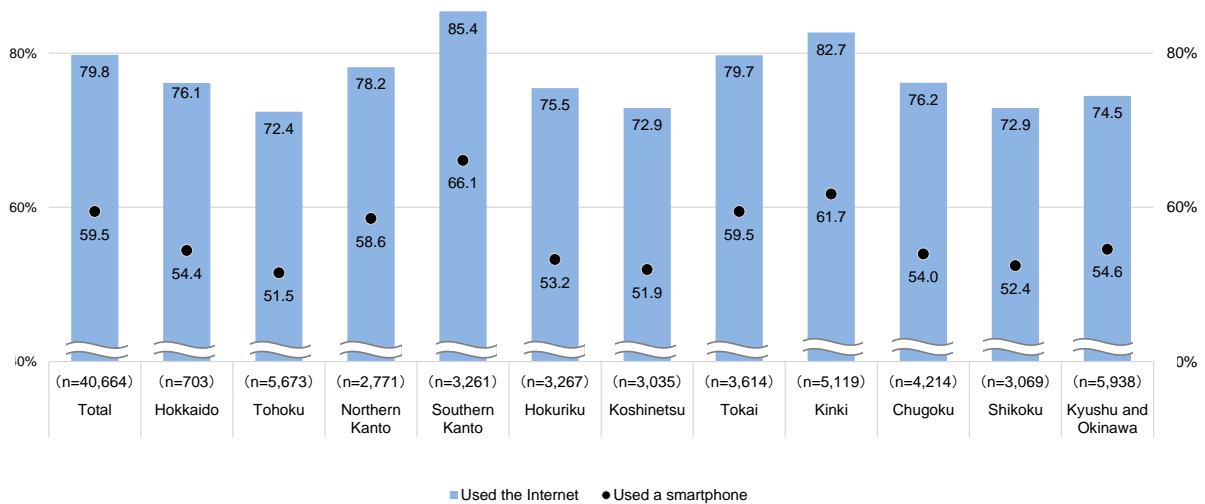
(4) Types of Internet connections (businesses)

Of the surveyed businesses, 96.8% use a broadband connection to access the Internet from their premises. Of businesses using a broadband connection, 87.9% use an optical fiber connection.

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

Connection type	2018 (n=2,074)	2017 (n=2,494)
Broadband	96.8	95.9
Optical fiber (FTTH)	87.9	86.4
Leased line	13.6	14.8
DSL	4.8	5.7
Cable TV (CATV)	3.2	2.4
BWA access service	2.3	1.7
Fixed wireless access (FWA)	1.2	1.5
Other	1.6	2.1
Narrowband	13.5	14.1
ISDN	10.2	10.2
Telephone (dial-up)	5.3	6.2

Note: as a percentage of businesses using the Internet

4
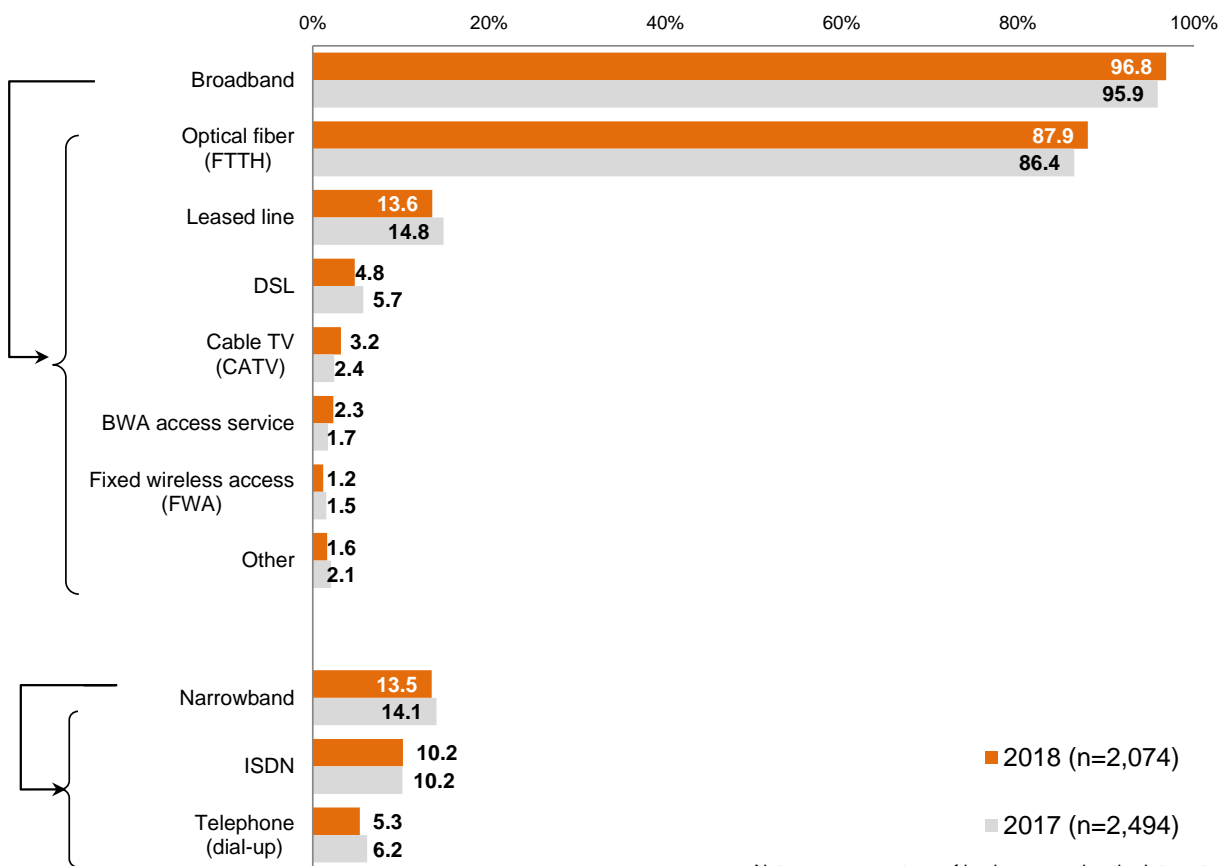
(5) Types of Internet connections (households)

Of households using a broadband connection to access the Internet from computers, tablets and other devices at home, 97.4% use a broadband connection. Of households using a broadband connection, 63.4% use an optical fiber connection and 51.3% used a mobile phone connection.

Figure 1-10: Types of Internet connections for computers at home and other devices (multiple responses)
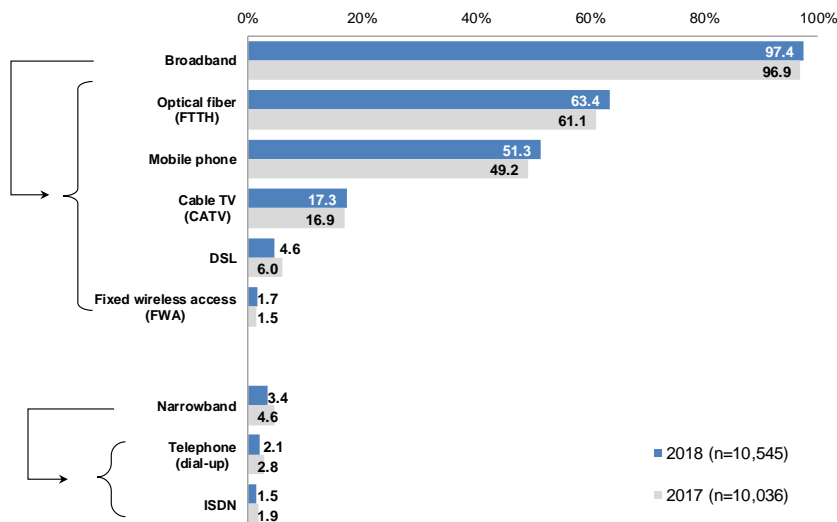
Note: as a percentage of households accessing the Internet from computers at home and other devices.

(6) Ownership of communication devices (households)

The transitions in ownership of communications devices indicate that the smartphone ownership rate rises to 79.2%, surpassing the computer ownership rate (74.0%). These are a component of the mobile device ownership rate (95.7%).

The ownership rate for "fixed-line telephone" is 64.5%.

Figure 1-11: Transitions in ownership of communication devices
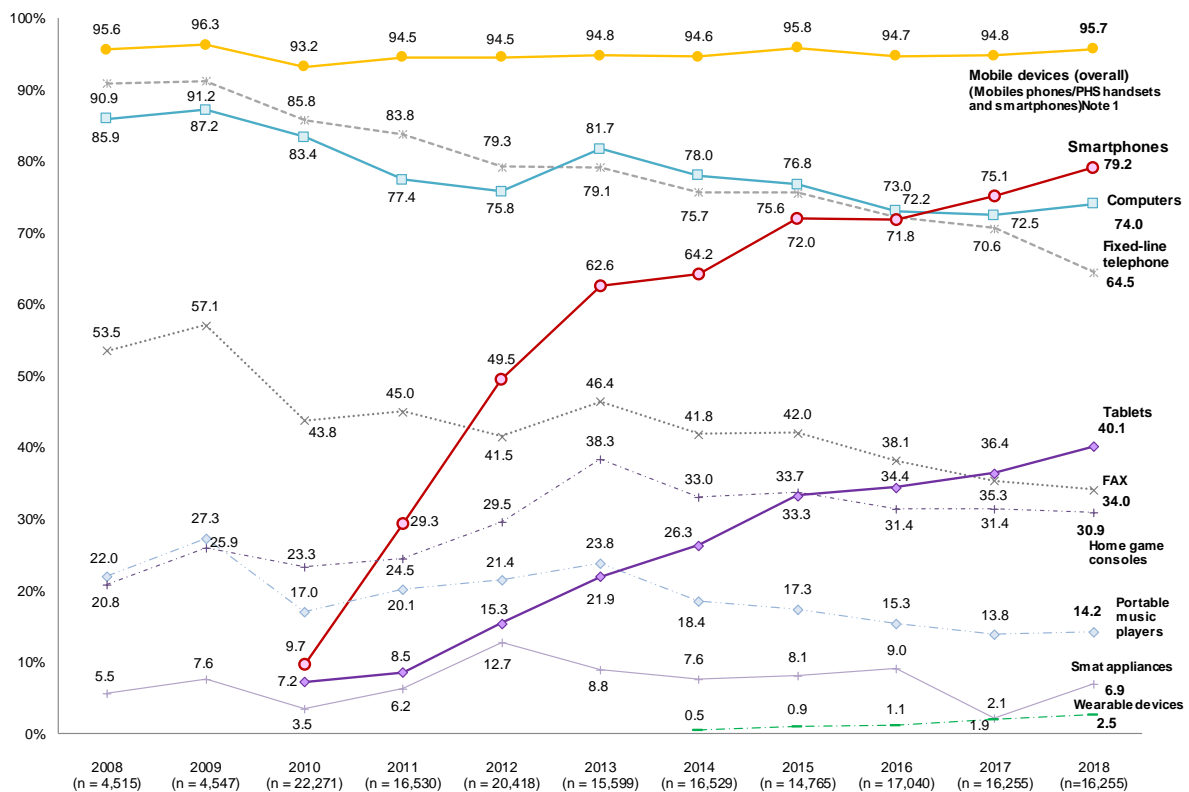
Notes: 1. "Mobile devices (overall)" include mobile phones and PHS handsets. This category also included personal digital assistants (PDAs) from 2009 to 2012 and smartphones from 2010.
2. For comparison purposes between years, these calculations do include non-responses.

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(7) Ownership of mobile devices (individuals)

Regarding the ownership of mobile devices by individuals, the ownership rate for "smartphones" is 64.7%, 38.4 points higher than the ownership rate for "mobile phones/PHS handsets" (26.3%).

By age group, the ownership rate for "smartphones" is higher than the ownership rate for "mobile phones/PHS handsets" in the age groups between 6 and 69 years old.

Figure 1-12: Transitions in ownership of mobile devices
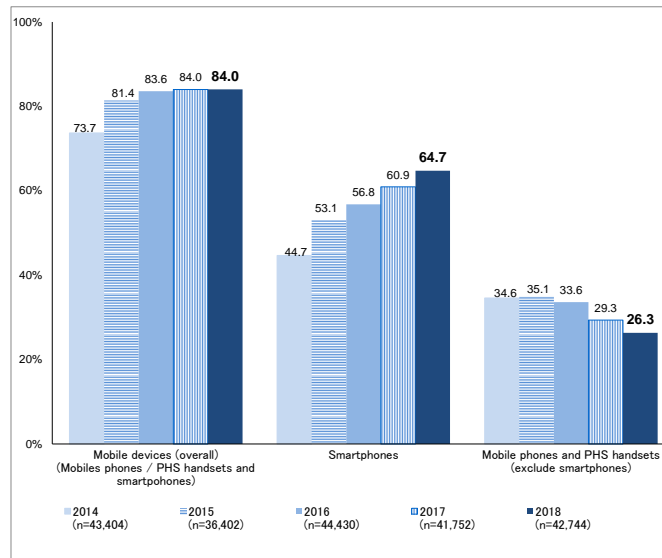
Figure 1-13: Ownership of mobile devices by age group (2018)

	Total (n=42,744)	6-12 (n=2,416)	13-19 (n=2,704)	20-29 (n=3,609)	30-39 (n=4,626)	40-49 (n=5,717)	50-59 (n=6,201)	60-69 (n=7,894)	70-79 (n=6,043)	80 and older (n=3,534)
Mobile devices (overall) (Mobiles phones / PHS handsets and smartpohones)	84.0	46.1	87.4	96.9	96.9	96.0	94.7	89.4	73.8	45.6
Smartphones	64.7	32.9	83.8	93.8	92.2	87.8	79.0	56.2	27.2	7.8
Mobile phones and PHS handsets (exclude smartphones)	26.3	18.8	10.4	11.2	14.7	18.5	25.3	39.0	49.8	38.8
Not owning	9.6	43.4	7.4	0.7	1.2	1.5	2.2	5.1	13.2	36.1

6

2. Current ICT Usage by Individuals

(1) Purposes of using the Internet

The most common usage of the Internet is "sending and receiving email," at 80.5%. This is followed by "using free weather forecast" (68.6%) and "obtaining free map/traffic information services" (67.7%).

By age group, "sending and receiving email" is a common usage across all age groups, while there are 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 (multiple responses accepted)

Purpose	2018 (n=28,875)	2017 (n=28,373)
Sending and receiving email	80.5	80.2
Viewing and posting on or opening and updating of websites and blogsites	61.2	39.0
Using social networking services	60.0	54.7
Using free calling apps or voice chat sites	61.3	55.4
Using video posting / sharing sites	60.4	53.1
Using on-demand radio, TV, and movie streaming services	26.4	22.6
Using online gaming	33.6	28.7
Entering quizzes and contests, answering questionnaires	23.1	20.7
Obtaining free map / traffic information services	67.7	63.4
Using free weather forecast	68.6	65.8
Using news sites	62.2	57.6
Using dictionary and encyclopedia sites	38.4	35.3
e-learning	9.1	8.6
Buying / exchanging goods and services	53.9	49.1
Buying / exchanging goods and services (excluding digital content purchases and financial transactions)	42.5	38.6
Buying / exchanging digital content	24.2	21.3
Financial transactions	17.4	15.3
Internet auctions	13.2	12.7
Using e-Government, e-Local Government services	7.1	5.5
Other	6.1	5.6

Notes: 1. as a percentage of Internet users
2. "Viewing and posting on, or opening and updating of, websites and blogsites" replaces "Opening updating and viewing of, and posting on websites and blogsites" in the previous survey.

■ 2018 (n=28,875)
■ 2017 (n=28,373)

Figure 2-2: Purposes of using the Internet by age group (2018, multiple responses accepted)

Note: as a percentage of Internet users

Legend:
- Total
- 13-19 (n=2,294)
- 20-29 (n=3,199)
- 30-39 (n=4,174)
- 40-49 (n=5,089)
- 50-59 (n=5,268)
- 60 and older (n=7,423)

Upper chart categories:
- Sending and receiving email
- Viewing and posting on or opening and updating of websites and blogsites
- Using social networking services
- Using free calling apps or voice chat sites
- Using video posting / sharing sites
- Using on-demand radio, TV, and movie streaming services
- Using online gaming
- Entering quizzes and contests, answering questionnaires
- Obtaining free map / traffic information services
- Using free weather forecast
- Using news sites
- Using dictionary and encyclopedia sites

Lower chart categories:
- e-learning
- Buying / exchanging goods and services
- Buying / exchanging goods and services (excluding digital content purchases and financial transactions)
- Buying / exchanging digital content
- Financial transactions
- Internet auctions
- Using e-Government, e-Local Government services

(2) Social networking service usage

> Of Internet users, 60.0% use social networking services, up 5.3 points from the previous year.
>
> Among purposes of SNS usage, "to communicate with current friends" (87.4%) is the most frequently cited. The percentage of "to find information on topics of interest" stands at 57.4%, up 7.2 points from the previous survey.

Figure 2-3: Social networking service usage
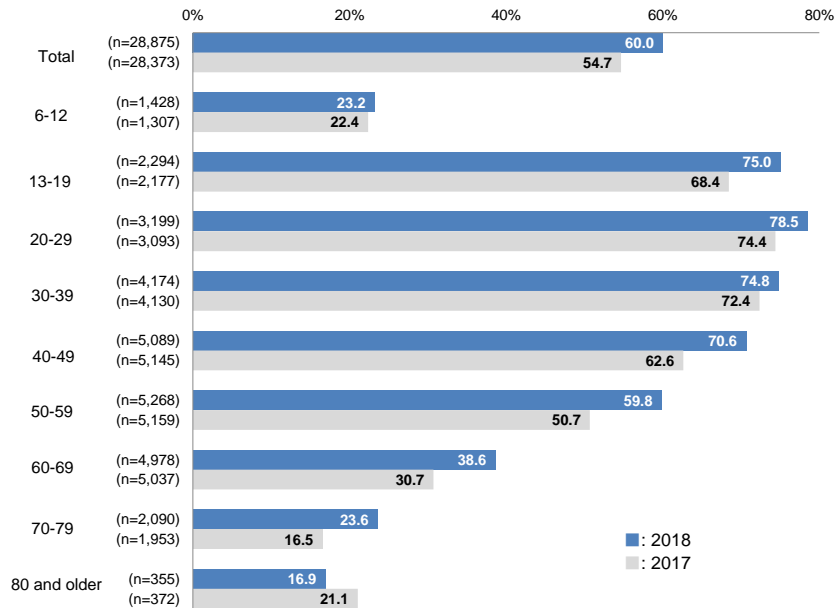
Note: as a percentage of Internet users

Figure 2-4: Purposes of social networking service usage (multiple responses accepted)
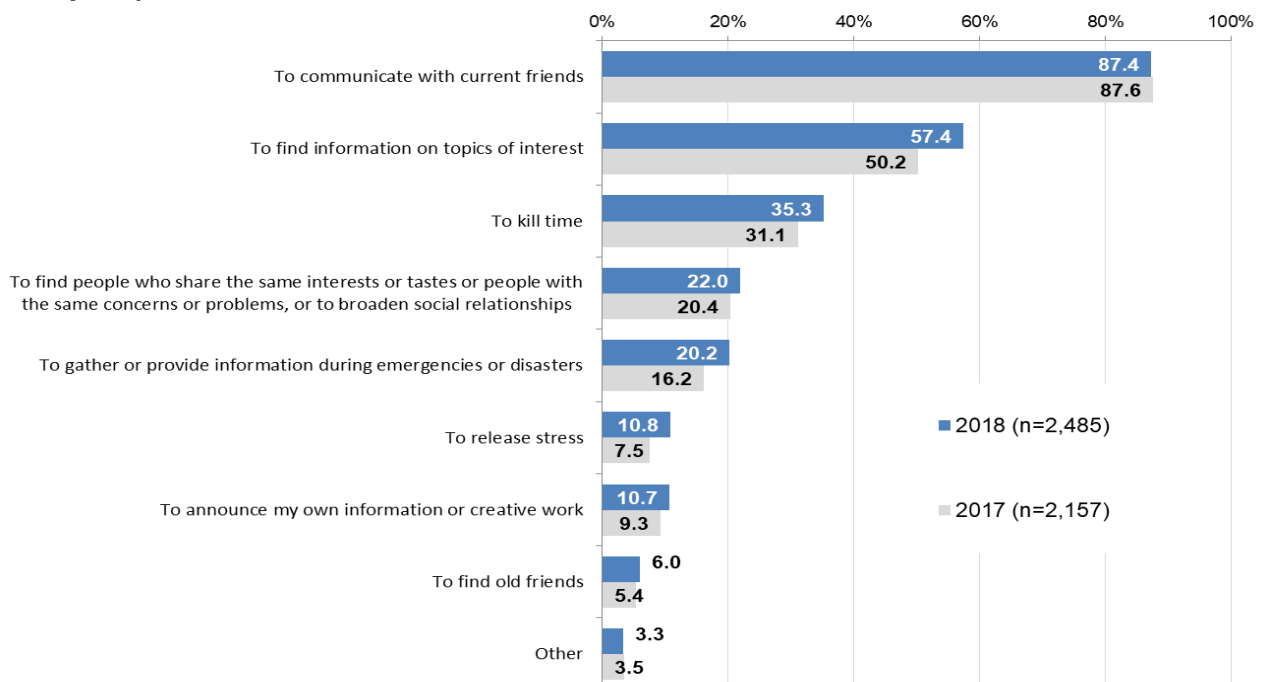
3. Current ICT Usage by Businesses

(1) Social media^(note) usage

(Note) Social media cover social networking services, blogs, video-sharing sites, etc.

> Of businesses using the Internet, 36.7% use social media services, up 7.8 points from the previous year.
>
> Among industries, the "real estate" industry features the highest social media usage rate at 58.7%, followed by the "financial / insurance" industry (51.7%) and the "wholesale / retail" industry (46.9%).
>
> Among capitalization groups, the group of businesses capitalized at levels from 1 billion to less than 5 billion posts the highest social media usage rate at 49.4%.
>
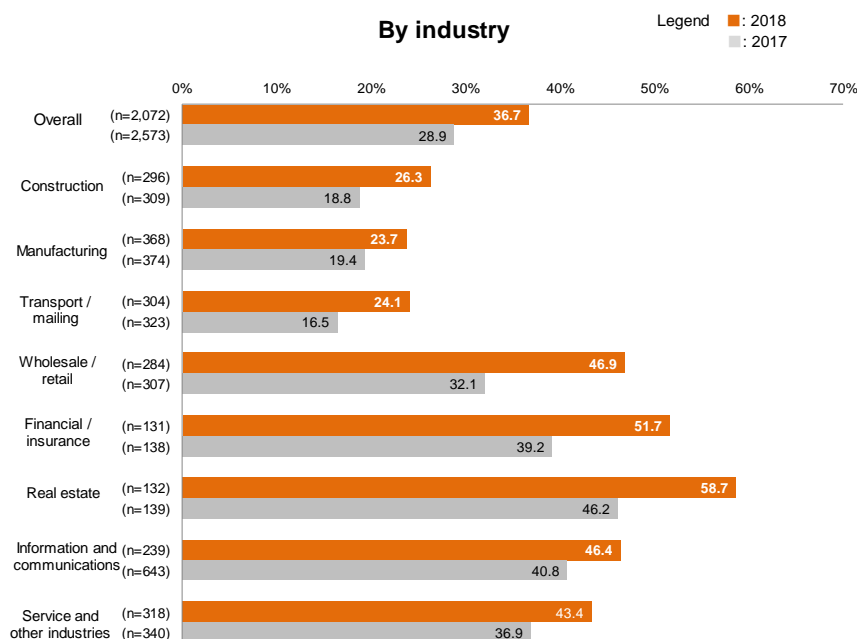> The most frequently cited purpose or application of social media is "to publicize or promote products or events" (68.7%). The percentage of "company profile and recruiting" stands at 40.6%, up 5.1 points from the previous year.

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

By industry

Legend ■: 2018 ■: 2017

Industry		2018	2017
Overall	(n=2,072) / (n=2,573)	36.7	28.9
Construction	(n=296) / (n=309)	26.3	18.8
Manufacturing	(n=368) / (n=374)	23.7	19.4
Transport / mailing	(n=304) / (n=323)	24.1	16.5
Wholesale / retail	(n=284) / (n=307)	46.9	32.1
Financial / insurance	(n=131) / (n=138)	51.7	39.2
Real estate	(n=132) / (n=139)	58.7	46.2
Information and communications	(n=239) / (n=643)	46.4	40.8
Service and other industries	(n=318) / (n=340)	43.4	36.9

Note: as a percentage of businesses using the Internet.

By capitalization

Legend ■: 2018 ■: 2017

Capitalization		2018	2017
Less than ¥10 million	(n=86) / (n=96)	39.7	33.5
¥10 million to less than ¥30 million	(n=464) / (n=543)	36.2	26.7
¥30 million to less than ¥50 million	(n=261) / (n=323)	29.6	23.5
¥50 million to less than ¥100 million	(n=504) / (n=635)	40.6	28.9
¥100 million to less than ¥500 million	(n=427) / (n=590)	30.4	28.4
¥500 million to less than ¥1 billion	(n=59) / (n=83)	32.8	37.0
¥1 billion to less than ¥5 billion	(n=130) / (n=164)	49.4	31.3
¥5 billion or more	(n=141) / (n=139)	49.3	48.6

Note: as a percentage of businesses using the Internet.

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

Publicize / promote products or events — 2018: 68.7, 2017: 73.7
Provide periodic information — 2018: 53.6, 2017: 59.6
Company profile / recruiting — 2018: 40.6, 2017: 35.5
Marketing — 2018: 17.3, 2017: 20.9
Collect consumers' ratings and opinions — 2018: 8.3, 2017: 12.9
Receive applications and reports — 2018: 4.2, 2017: 4.1
Electronic public notices and financial results announcements — 2018: 2.2, 2017: 0.9
Other — 2018: 6.0, 2017: 3.3
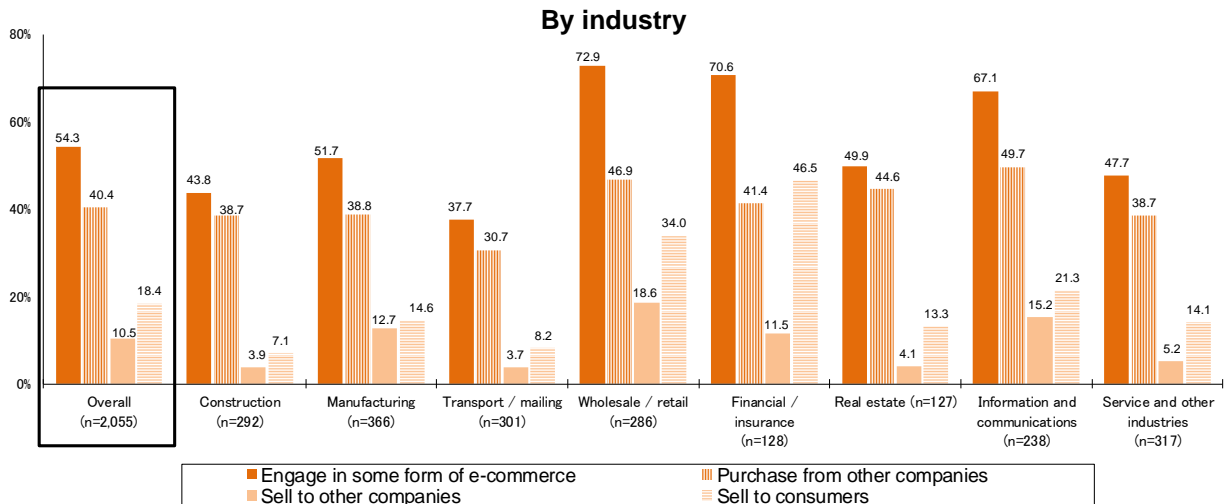
Legend: ■ 2018 (n=760) □ 2017 (n=795)

(2) E-commerce usage

E-commerce (purchasing or selling over the Internet) users account for 54.3% of businesses, including 40.4% of those using e-commerce for "purchasing from other companies."

By industry, the "wholesale / retail" industry has the highest usage rate at 72.9%, followed by the "financial / insurance" (70.6%) and the "information and communications" (67.1%).

Among businesses that use the Internet for sales, the most frequently cited Internet sales model is "e-store (own site)" (68.0%), followed by "e-store (store in an e-mall)" (44.9%).

Figure 3-3: E-commerce usage by industry and capitalization (2018)

By industry

Industry	Engage in some form of e-commerce	Purchase from other companies	Sell to other companies	Sell to consumers
Overall (n=2,055)	54.3	40.4	10.5	18.4
Construction (n=292)	43.8	38.7	3.9	7.1
Manufacturing (n=366)	51.7	38.8	12.7	14.6
Transport / mailing (n=301)	37.7	30.7	3.7	8.2
Wholesale / retail (n=286)	72.9	46.9	18.6	34.0
Financial / insurance (n=128)	70.6	41.4	11.5	46.5
Real estate (n=127)	49.9	44.6	4.1	13.3
Information and communications (n=238)	67.1	49.7	15.2	21.3
Service and other industries (n=317)	47.7	38.7	5.2	14.1

By capitalization

Legend:
- Engage in some form of e-commerce
- Purchase from other companies
- Sell to other companies
- Sell to consumers

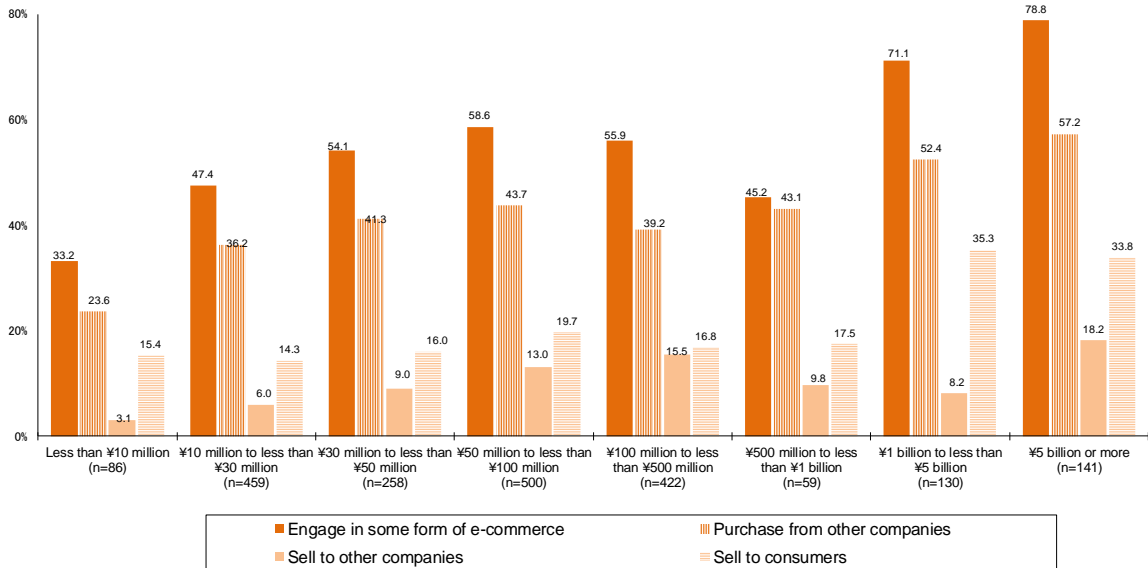| Category	Engage in some form of e-commerce	Purchase from other companies	Sell to other companies	Sell to consumers
Less than ¥10 million (n=86)	33.2	23.6	3.1	15.4
¥10 million to less than ¥30 million (n=459)	47.4	36.2	6.0	14.3
¥30 million to less than ¥50 million (n=258)	54.1	41.3	9.0	16.0
¥50 million to less than ¥100 million (n=500)	58.6	43.7	13.0	19.7
¥100 million to less than ¥500 million (n=422)	55.9	39.2	15.5	16.8
¥500 million to less than ¥1 billion (n=59)	45.2	43.1	9.8	17.5
¥1 billion to less than ¥5 billion (n=130)	71.1	52.4	8.2	35.3
¥5 billion or more (n=141)	78.8	57.2	18.2	33.8

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

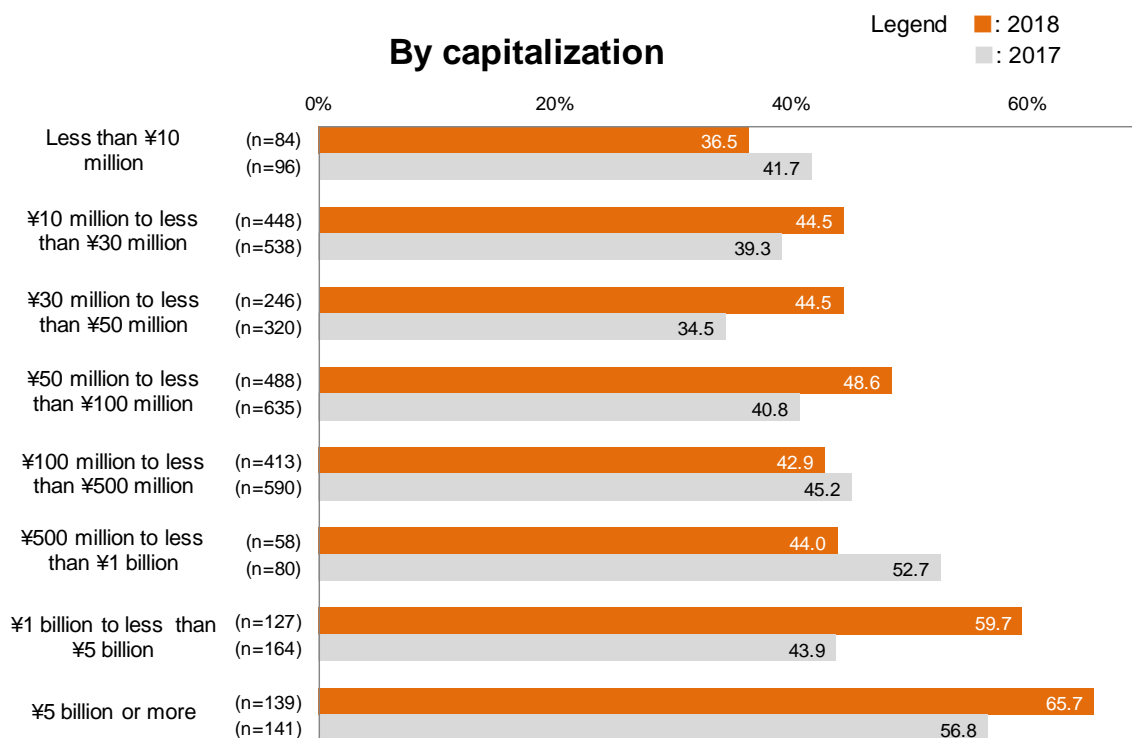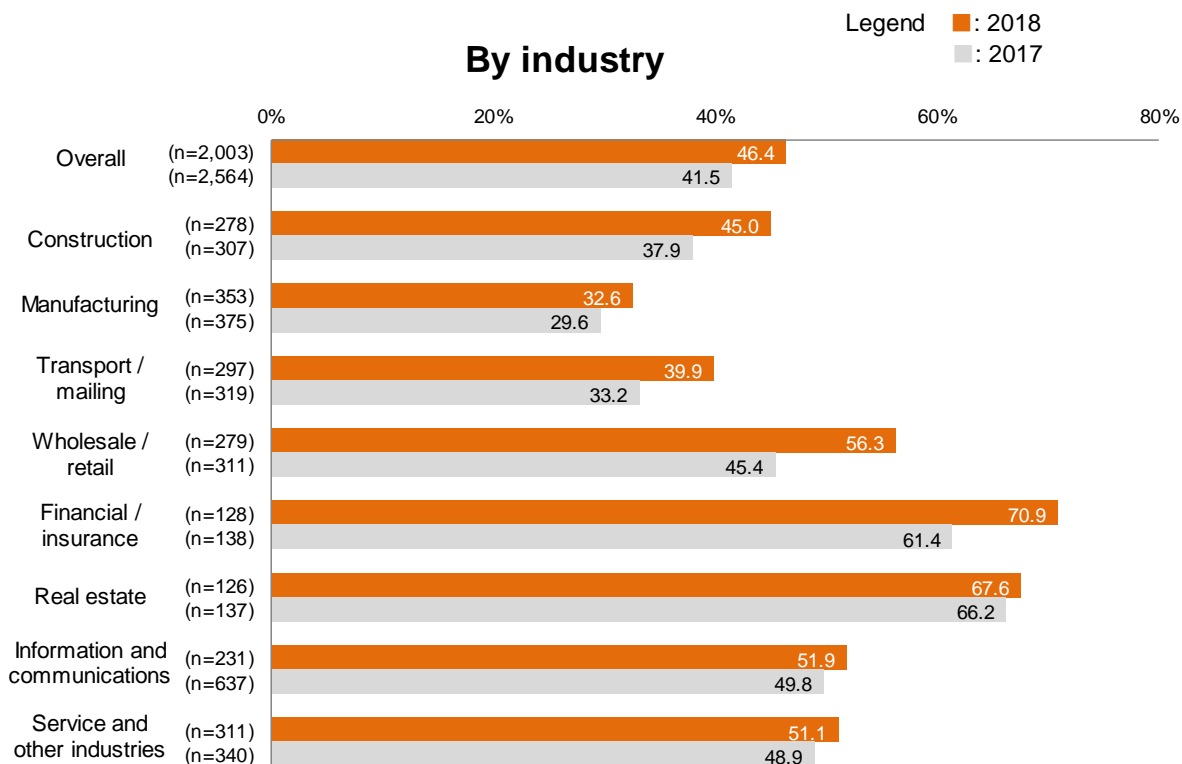| Model	2018 (n=375)	2017 (n=433)
E-store (own site)	68.0	68.9
E-store (store in an e-mall)	44.9	42.4
Sales broker	8.9	8.8
Online trading	2.3	1.3
Other	6.7	8.3
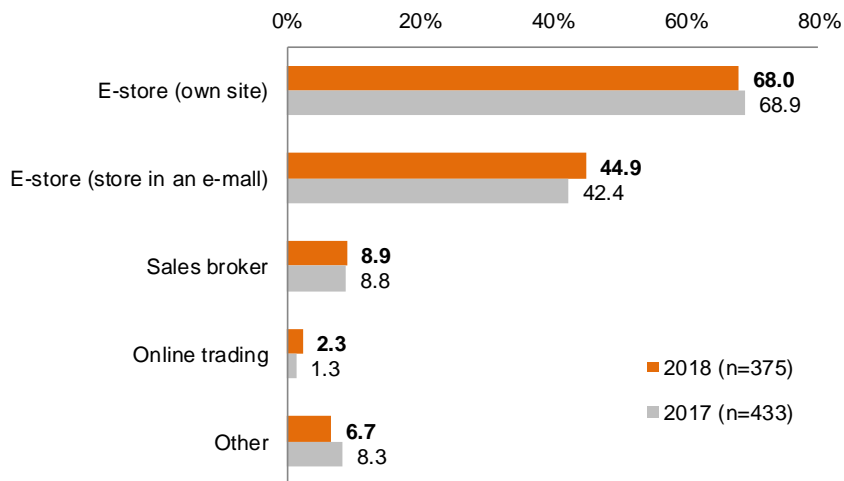
Note: as a percentage of businesses that used the Internet for sales

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(3) Use of Internet advertising

Of the responding businesses, 46.4% use Internet advertising, up 4.9 points from the previous year.

By industry, the "financial / insurance" industry posts the highest Internet advertising usage rate at 70.9%, followed by the "real estate" (67.6%) and the "wholesale / retail" (56.3%).

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

By industry

Legend ■: 2018 ■: 2017

Industry		2018	2017
Overall	(n=2,003) / (n=2,564)	46.4	41.5
Construction	(n=278) / (n=307)	45.0	37.9
Manufacturing	(n=353) / (n=375)	32.6	29.6
Transport / mailing	(n=297) / (n=319)	39.9	33.2
Wholesale / retail	(n=279) / (n=311)	56.3	45.4
Financial / insurance	(n=128) / (n=138)	70.9	61.4
Real estate	(n=126) / (n=137)	67.6	66.2
Information and communications	(n=231) / (n=637)	51.9	49.8
Service and other industries	(n=311) / (n=340)	51.1	48.9

By capitalization

Legend ■: 2018 ■: 2017

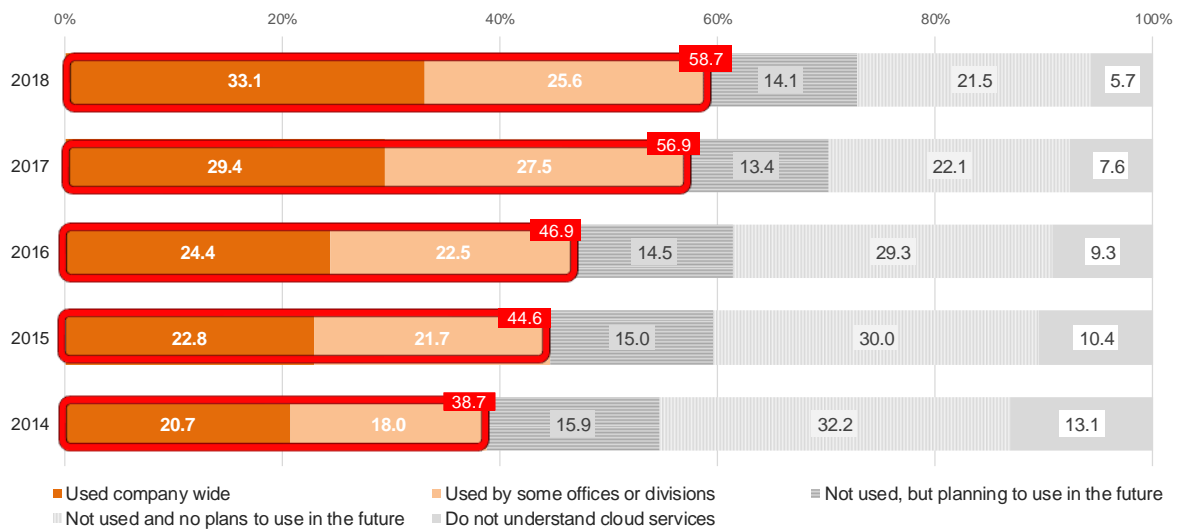| Capitalization		2018	2017
Less than ¥10 million	(n=84) / (n=96)	36.5	41.7
¥10 million to less than ¥30 million	(n=448) / (n=538)	44.5	39.3
¥30 million to less than ¥50 million	(n=246) / (n=320)	44.5	34.5
¥50 million to less than ¥100 million	(n=488) / (n=635)	48.6	40.8
¥100 million to less than ¥500 million	(n=413) / (n=590)	42.9	45.2
¥500 million to less than ¥1 billion	(n=58) / (n=80)	44.0	52.7
¥1 billion to less than ¥5 billion	(n=127) / (n=164)	59.7	43.9
¥5 billion or more	(n=139) / (n=141)	65.7	56.8

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(4) Cloud computing service usage

Of the surveyed businesses, 58.7% use cloud computing services (cloud services), up 1.8 points from 56.9% in the previous year.

As for the effects of the use of cloud services, 83.2 recognized either "very beneficial" or "somewhat beneficial" effects.
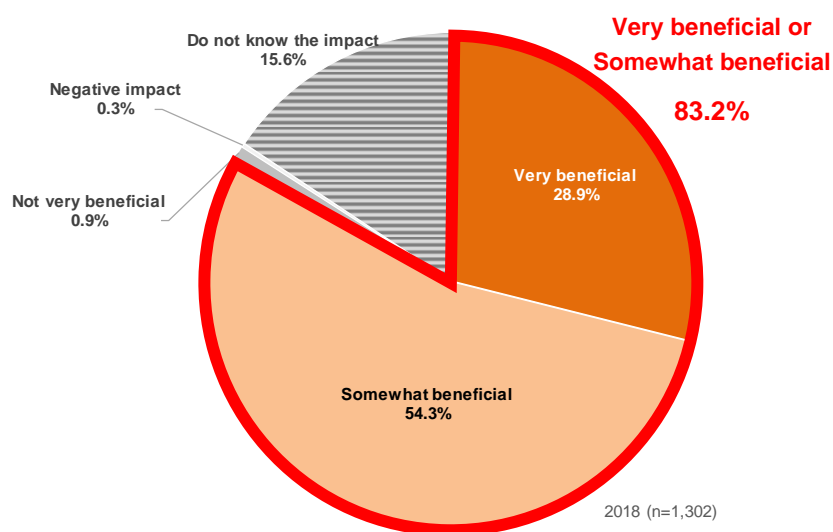
The most frequently cited among cloud services is "file storage and data sharing" (53.1%), followed by "e-mail" (52.2%) and "server applications" (51.0%). Users of advanced services such as "sales support" and "production management" are limited.

Figure 3-6: Transitions in cloud service usage

Year	Used company wide	Used by some offices or divisions	Not used, but planning to use in the future	Not used and no plans to use in the future	Do not understand cloud services
2018	33.1	25.6	14.1	21.5	5.7
2017	29.4	27.5	13.4	22.1	7.6
2016	24.4	22.5	14.5	29.3	9.3
2015	22.8	21.7	15.0	30.0	10.4
2014	20.7	18.0	15.9	32.2	13.1

(2018: 58.7; 2017: 56.9; 2016: 46.9; 2015: 44.6; 2014: 38.7)

Note: The 2017 survey treated information and communications companies as a single industry and indicated that ICT industry members' share of the whole of survey targets increased from the previous year. Attention must be paid to this point for historical analysis. (Until the 2016 survey, ICT companies had been treated as a component of the services and other industries. See Figure 3-8 for a breakdown by industry.)

Figure 3-7: Impact of cloud computing services (2018)

- Do not know the impact 15.6%
- Negative impact 0.3%
- Not very beneficial 0.9%
- Very beneficial 28.9%
- Somewhat beneficial 54.3%
- Very beneficial or Somewhat beneficial 83.2%

2018 (n=1,302)

Note: as a percentage of businesses using cloud services

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Figure 3-8: Cloud service usage by industry and capitalization

By industry

Legend ■ : 2018
■ : 2017

Industry	2018	2017
Construction	(n=298) 65.1	(n=310) 57.4
Manufacturing	(n=370) 54.3	(n=375) 57.6
Transport / mailing	(n=314) 50.8	(n=321) 49.3
Wholesale / retail	(n=292) 64.4	(n=309) 57.9
Financial / insurance	(n=134) 80.5	(n=138) 70.4
Real estate	(n=130) 72.9	(n=137) 69.4
Information and communications	(n=243) 84.5	(n=640) 78.5
Service and other industries	(n=326) 54.4	(n=340) 53.2

By capitalization

Legend ■ : 2018
■ : 2017

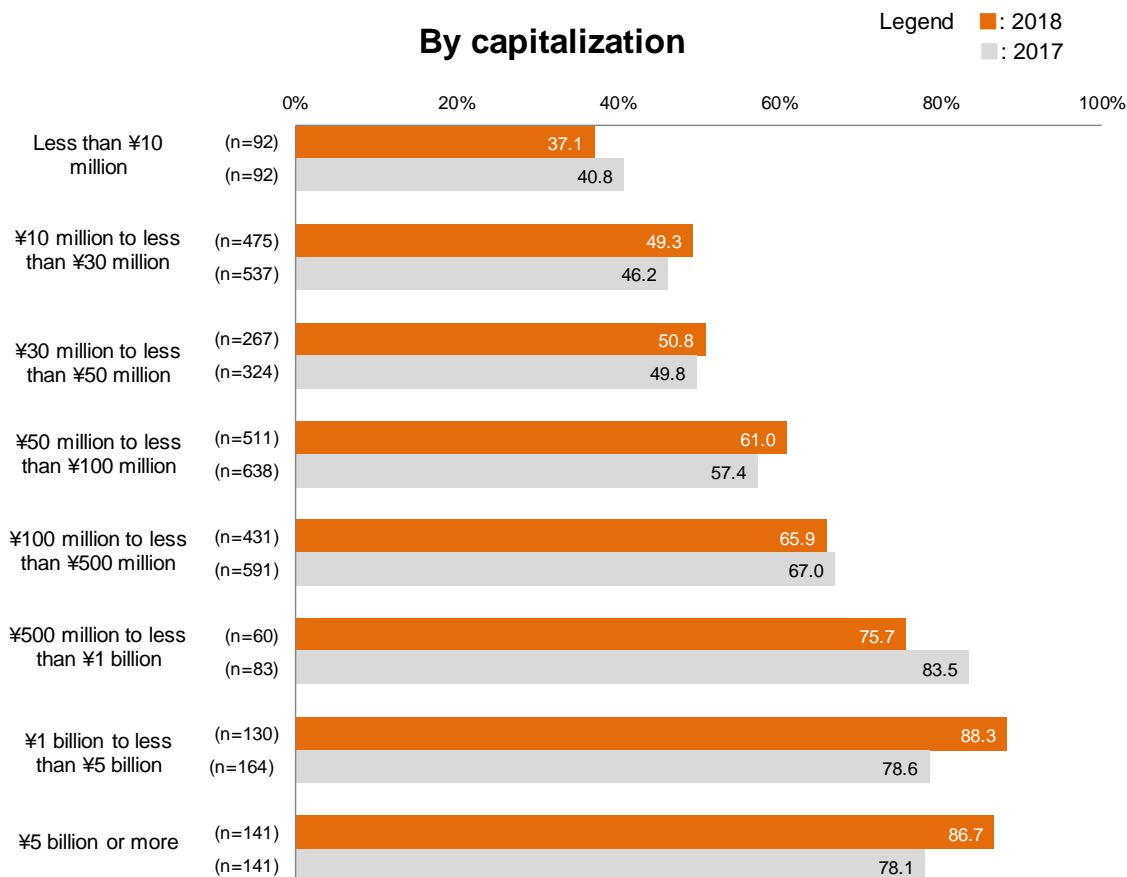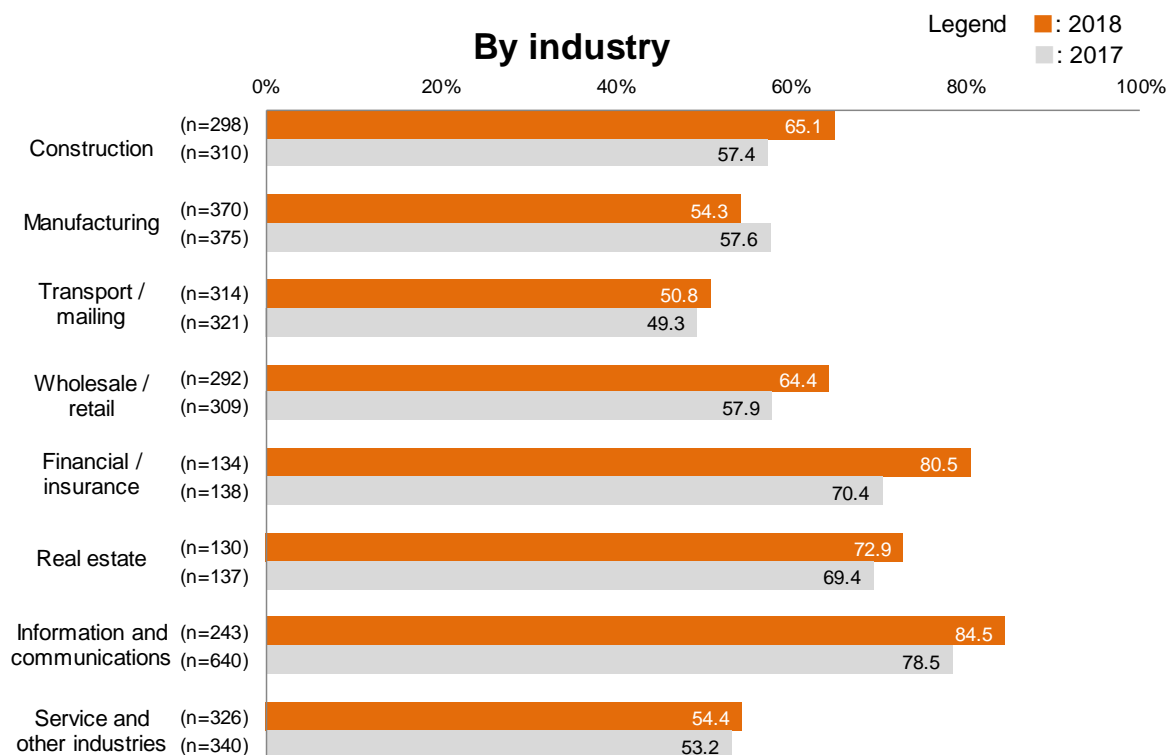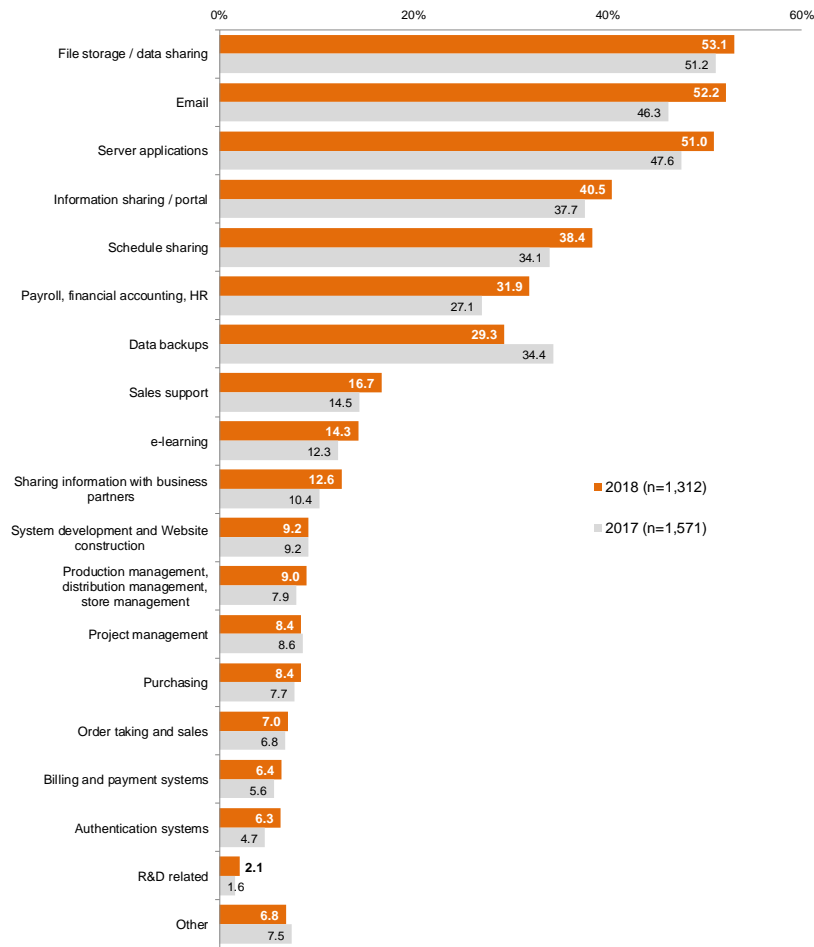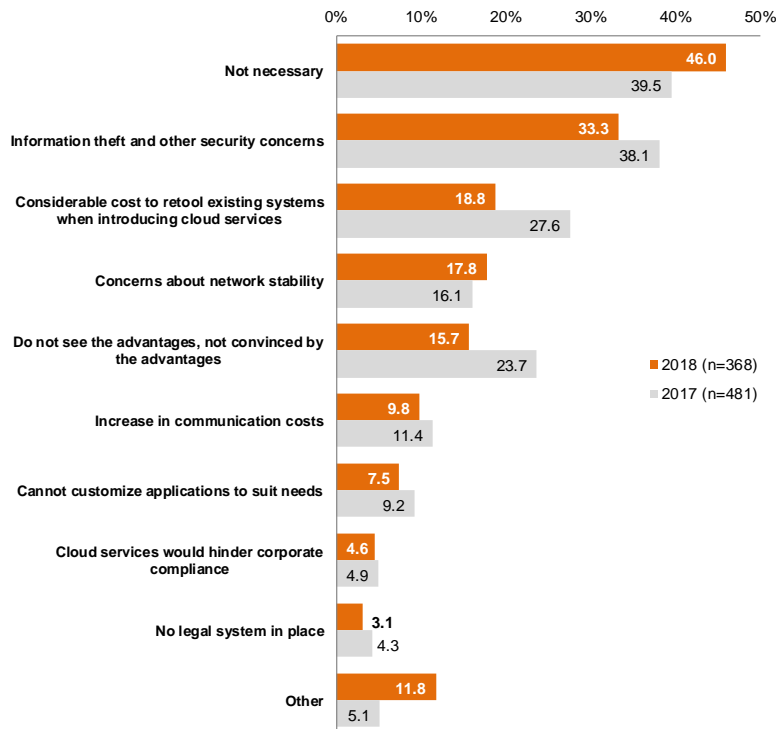| Capitalization	2018	2017
Less than ¥10 million	(n=92) 37.1	(n=92) 40.8
¥10 million to less than ¥30 million	(n=475) 49.3	(n=537) 46.2
¥30 million to less than ¥50 million	(n=267) 50.8	(n=324) 49.8
¥50 million to less than ¥100 million	(n=511) 61.0	(n=638) 57.4
¥100 million to less than ¥500 million	(n=431) 65.9	(n=591) 67.0
¥500 million to less than ¥1 billion	(n=60) 75.7	(n=83) 83.5
¥1 billion to less than ¥5 billion	(n=130) 88.3	(n=164) 78.6
¥5 billion or more	(n=141) 86.7	(n=141) 78.1

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

Note: as a percentage of businesses using cloud services

Service	2018 (n=1,312)	2017 (n=1,571)
File storage / data sharing	53.1	51.2
Email	52.2	46.3
Server applications	51.0	47.6
Information sharing / portal	40.5	37.7
Schedule sharing	38.4	34.1
Payroll, financial accounting, HR	31.9	27.1
Data backups	29.3	34.4
Sales support	16.7	14.5
e-learning	14.3	12.3
Sharing information with business partners	12.6	10.4
System development and Website construction	9.2	9.2
Production management, distribution management, store management	9.0	7.9
Project management	8.4	8.6
Purchasing	8.4	7.7
Order taking and sales	7.0	6.8
Billing and payment systems	6.4	5.6
Authentication systems	6.3	4.7
R&D related	2.1	1.6
Other	6.8	7.5

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

Reason	2018 (n=368)	2017 (n=481)
Not necessary	46.0	39.5
Information theft and other security concerns	33.3	38.1
Considerable cost to retool existing systems when introducing cloud services	18.8	27.6
Concerns about network stability	17.8	16.1
Do not see the advantages, not convinced by the advantages	15.7	23.7
Increase in communication costs	9.8	11.4
Cannot customize applications to suit needs	7.5	9.2
Cloud services would hinder corporate compliance	4.6	4.9
No legal system in place	3.1	4.3
Other	11.8	5.1

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

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4. Introduction and implementation of Telework

(1) Introduction of Telework (businesses)

Of the surveyed businesses, 19.1% have introduced Telework.

Among industries, "information and communications" and "financial and insurance" industries post high growth in their Telework introduction rates of up to about 40%.

Businesses capitalized at 1 billion yen or more post high growth in their Telework introduction rates of up to about 50%.

Among types of Telework that have been introduced, "mobile work" is the most frequently cited (63.5%).

The most common percentage of Telework employees is "less than 5%" cited by 48.4% of responding businesses.

The highest ranked purpose for introducing Telework is to "raise efficiency (productivity) of routine business processes," cited by 56.1%. This was followed by to "reduce workers' travel times" (48.5%) and to "address employees with commuting difficulties (persons with disabilities, elderly persons, nursing/child-rearing persons, etc.)" (26.0%).

Concerning the intended effects of Telework introduction, 81.6% recognize either "very beneficial" or "somewhat beneficial" effects.

Of businesses that have not implemented Telework, "work is not suited to Telework" is cited by the largest percentage, 73.1%, as the reason for not introducing Telework.
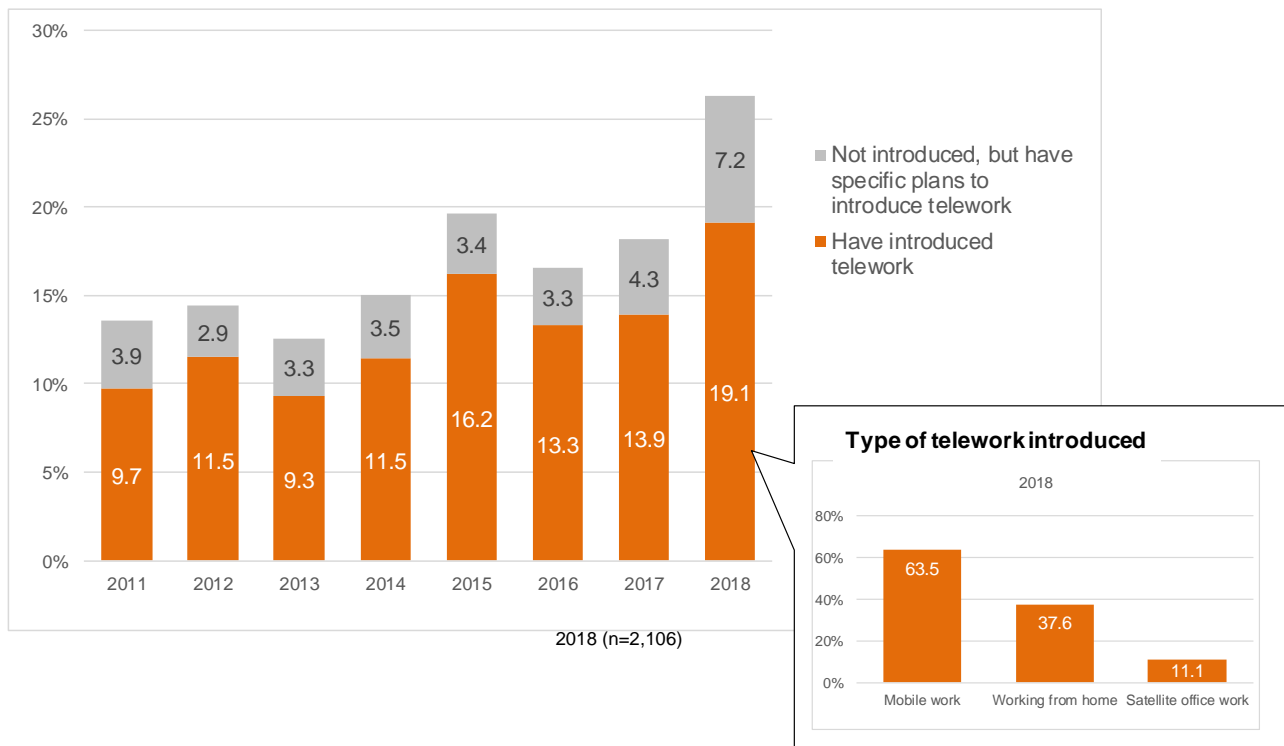
Figure 4-1: Telework introduction

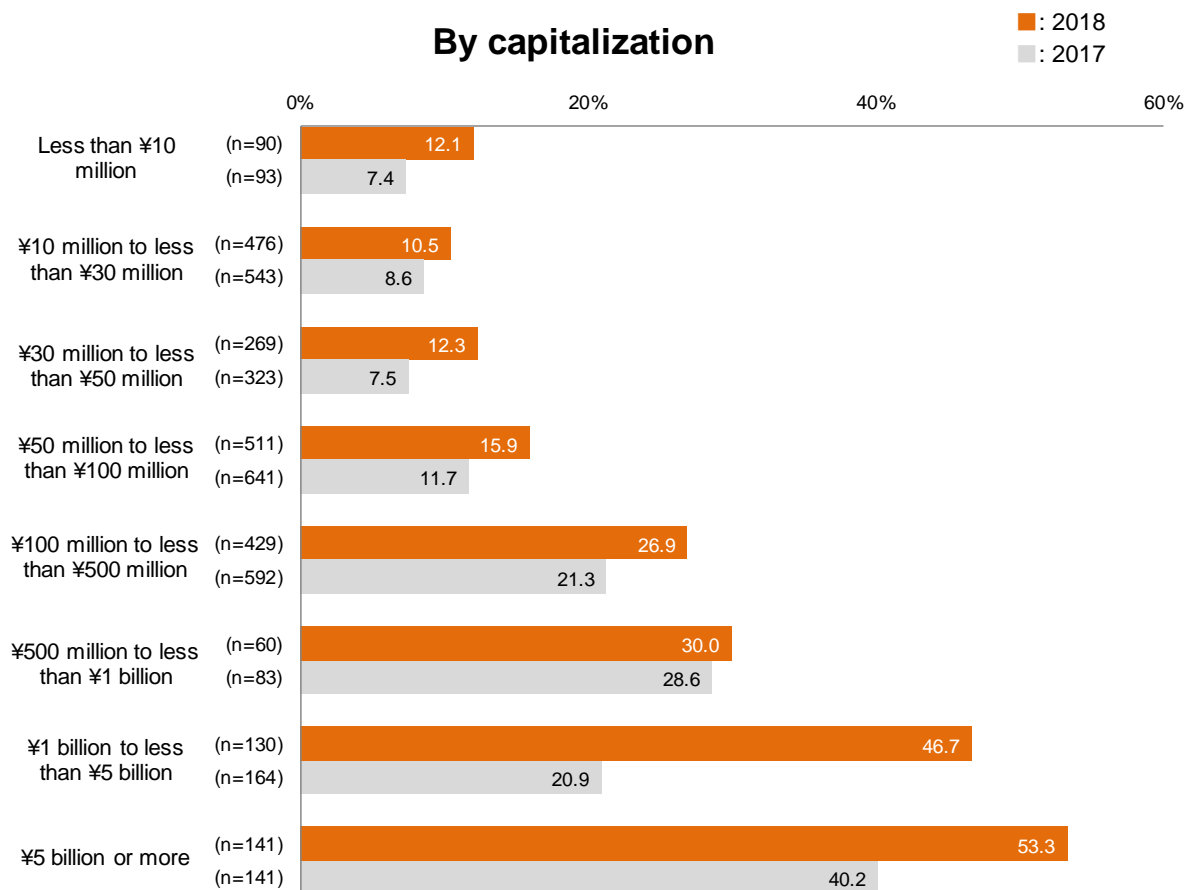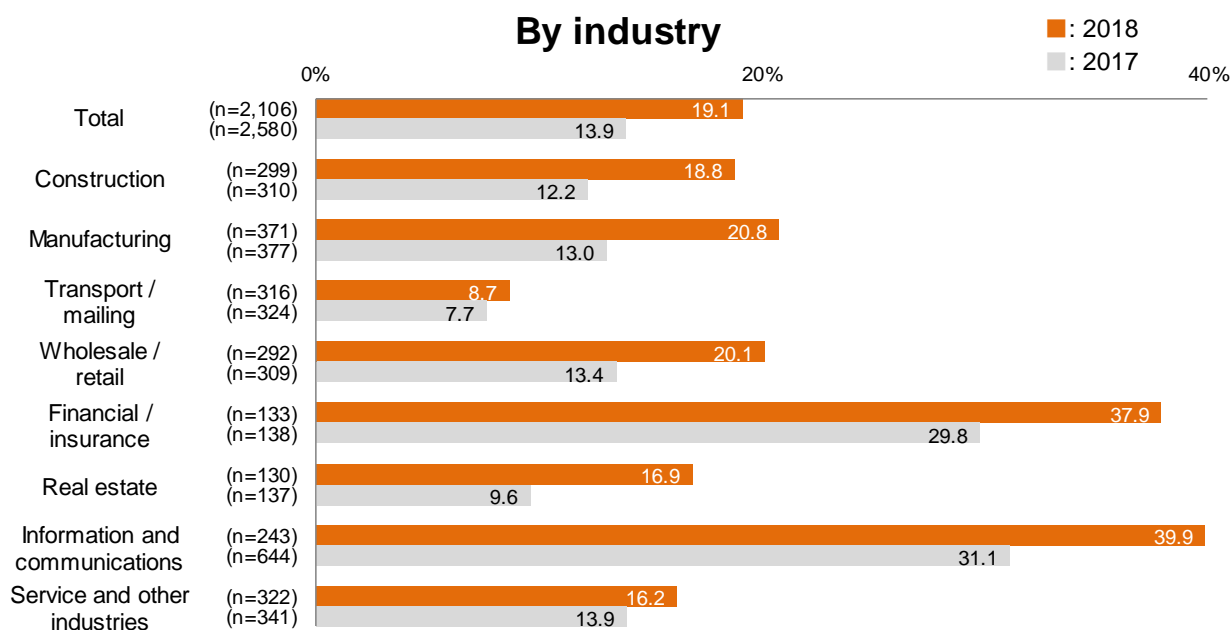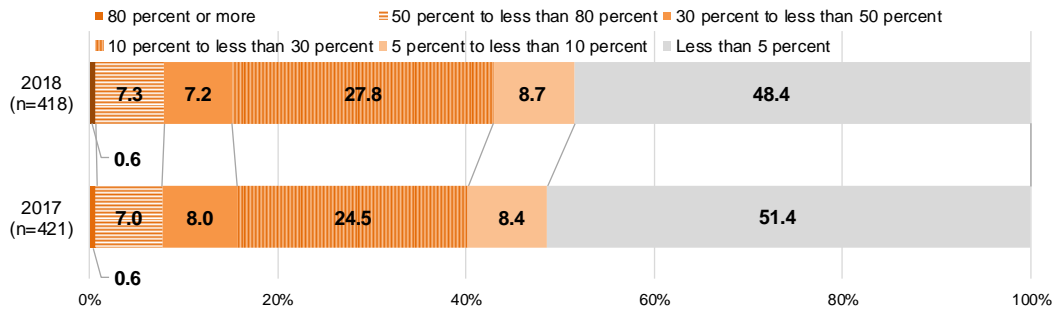# Figure 4-2: Telework introduction by industry and capitalization

By industry

■ : 2018
□ : 2017

Industry		2018	2017
Total	(n=2,106) / (n=2,580)	19.1	13.9
Construction	(n=299) / (n=310)	18.8	12.2
Manufacturing	(n=371) / (n=377)	20.8	13.0
Transport / mailing	(n=316) / (n=324)	8.7	7.7
Wholesale / retail	(n=292) / (n=309)	20.1	13.4
Financial / insurance	(n=133) / (n=138)	37.9	29.8
Real estate	(n=130) / (n=137)	16.9	9.6
Information and communications	(n=243) / (n=644)	39.9	31.1
Service and other industries	(n=322) / (n=341)	16.2	13.9

By capitalization

■ : 2018
□ : 2017

Capitalization		2018	2017
Less than ¥10 million	(n=90) / (n=93)	12.1	7.4
¥10 million to less than ¥30 million	(n=476) / (n=543)	10.5	8.6
¥30 million to less than ¥50 million	(n=269) / (n=323)	12.3	7.5
¥50 million to less than ¥100 million	(n=511) / (n=641)	15.9	11.7
¥100 million to less than ¥500 million	(n=429) / (n=592)	26.9	21.3
¥500 million to less than ¥1 billion	(n=60) / (n=83)	30.0	28.6
¥1 billion to less than ¥5 billion	(n=130) / (n=164)	46.7	20.9
¥5 billion or more	(n=141) / (n=141)	53.3	40.2

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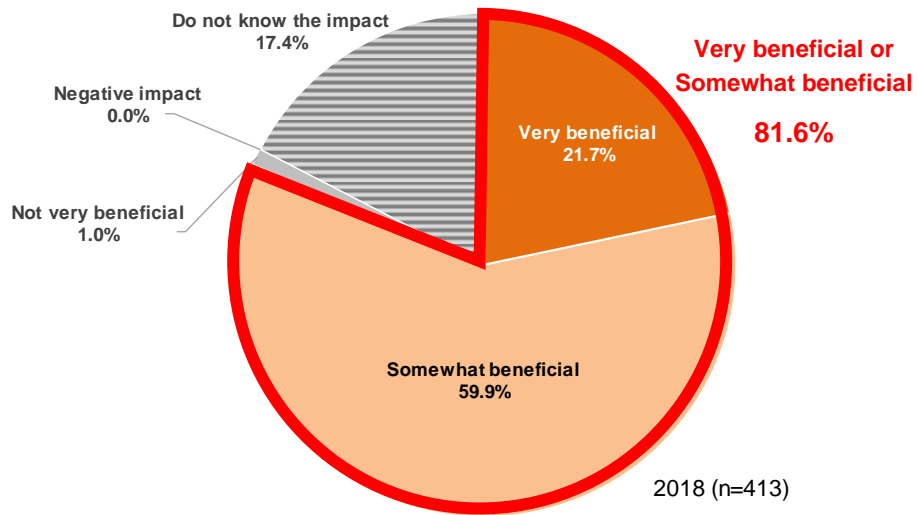## Figure 4-3: Percentage of Telework employees

Note: as a percentage of businesses which have introduced Telework

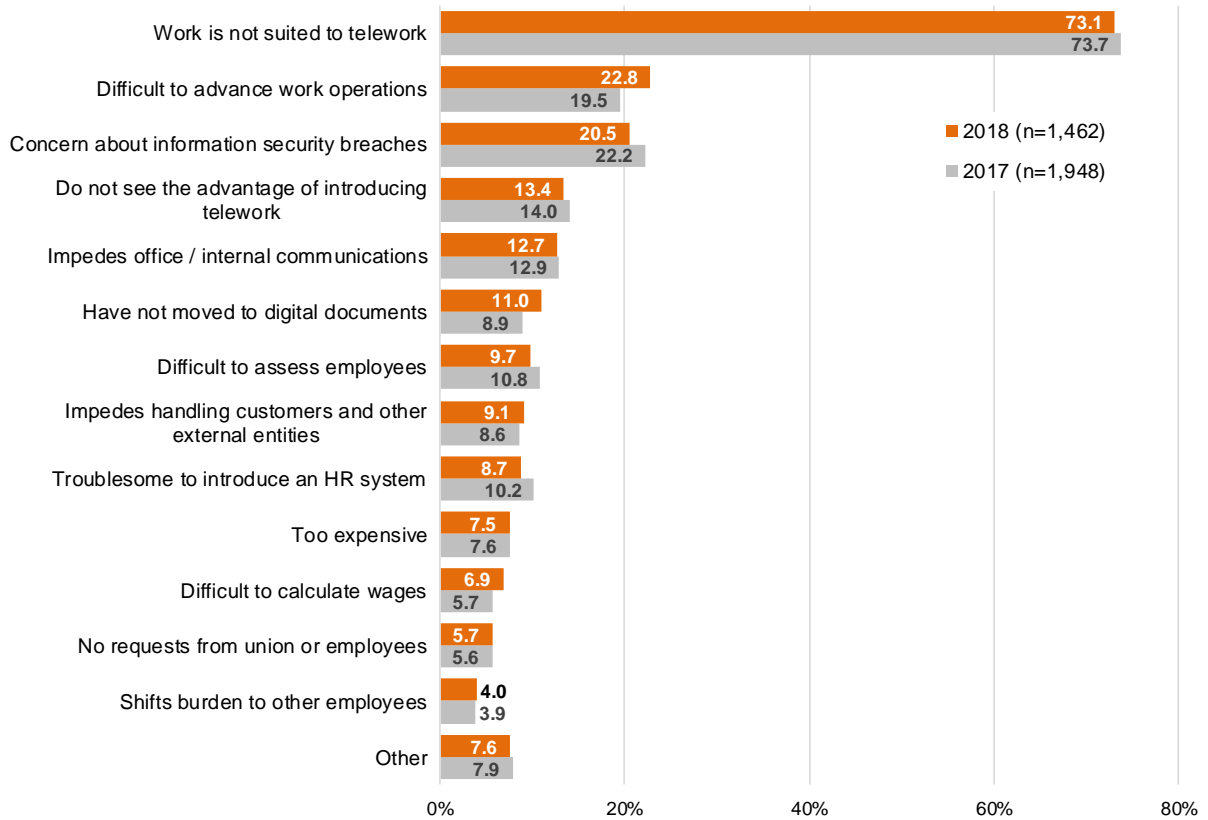## Figure 4-4: Purposes of introducing Telework (multiple responses accepted)
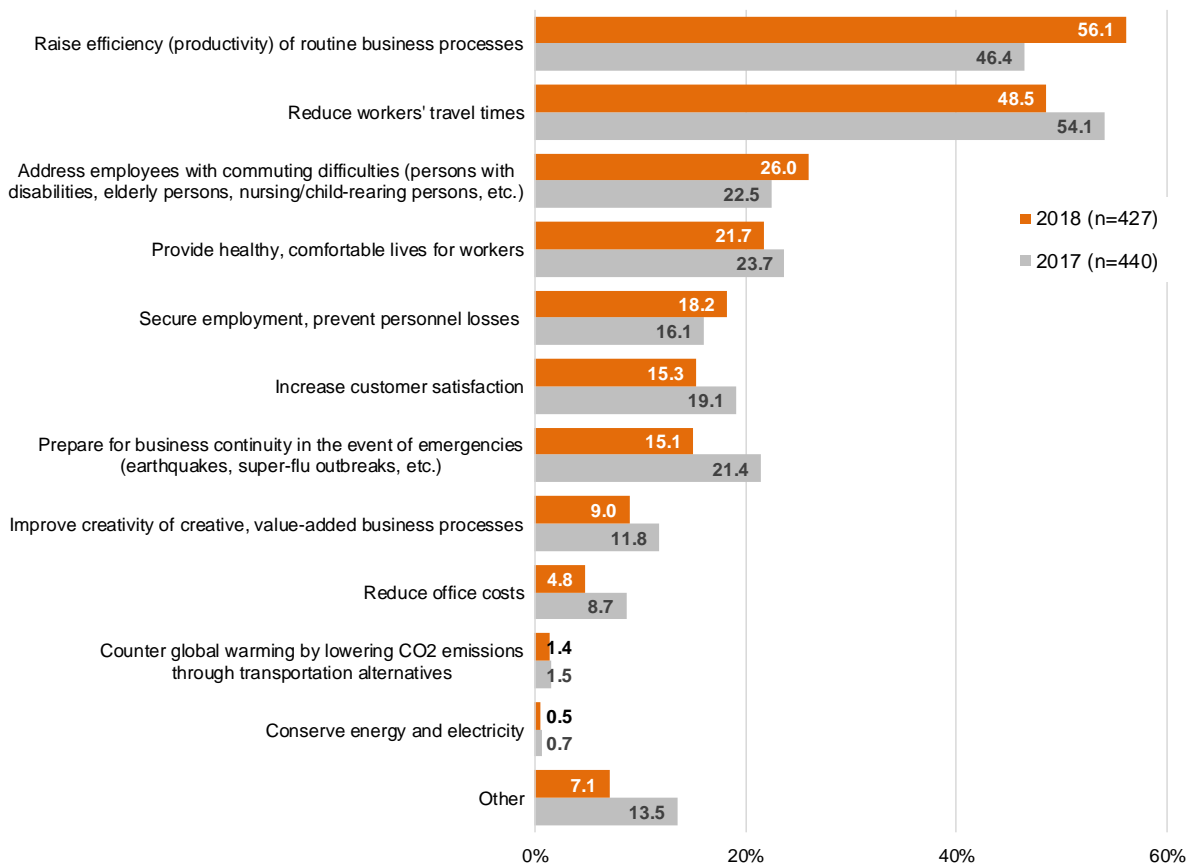
Note: as a percentage of businesses which have introduced Telework

Figure 4-5: Telework benefits (2018)

Do not know the impact
17.4%

Negative impact
0.0%

Not very beneficial
1.0%

Very beneficial
21.7%

Somewhat beneficial
59.9%

Very beneficial or
Somewhat beneficial
81.6%

2018 (n=413)

Note: as a percentage of businesses which have introduced Telework

Figure 4-6: Reasons for not introducing Telework (multiple responses accepted)

Reason	2018 (n=1,462)	2017 (n=1,948)
Work is not suited to telework	73.1	73.7
Difficult to advance work operations	22.8	19.5
Concern about information security breaches	20.5	22.2
Do not see the advantage of introducing telework	13.4	14.0
Impedes office / internal communications	12.7	12.9
Have not moved to digital documents	11.0	8.9
Difficult to assess employees	9.7	10.8
Impedes handling customers and other external entities	9.1	8.6
Troublesome to introduce an HR system	8.7	10.2
Too expensive	7.5	7.6
Difficult to calculate wages	6.9	5.7
No requests from union or employees	5.7	5.6
Shifts burden to other employees	4.0	3.9
Other	7.6	7.9

Note: as a percentage of businesses that have not implemented or have no plans to introduce Telework.

(2) Engagement in Telework (individuals)

Of individuals aged 15 or older and working for businesses or other organizations, 8.5% have the experience of engaging in Telework. The percentages of respondents citing "working from home" and "out of the office (mobile work)" as Telework types in which they have engaged are as high as 61.9% and 61.2%, respectively.

As to whether or not individuals would like to engage in Telework, 17.9% say that they "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 have not engaged in it, 56.0% say that "there is not a Telework system at the employer" while 51.1% say that "work is not suited to Telework."

**Figure 4-7: Having engaged and hoping to engage in Telework**
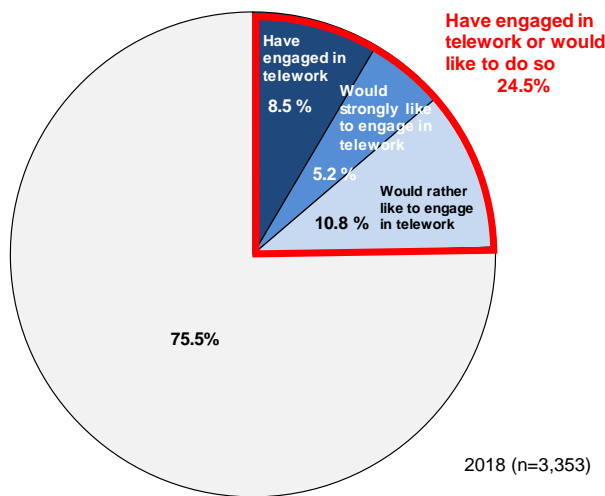
Note: as a percentage of individuals aged 15 or older and working for businesses and other organizations

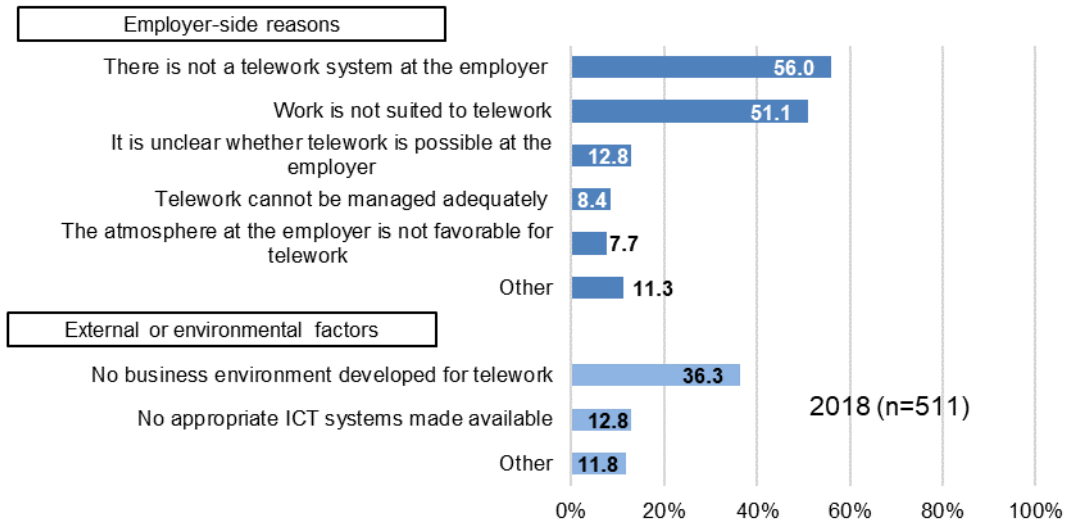**Figure 4-8: Type of Telework (multiple responses accepted)**
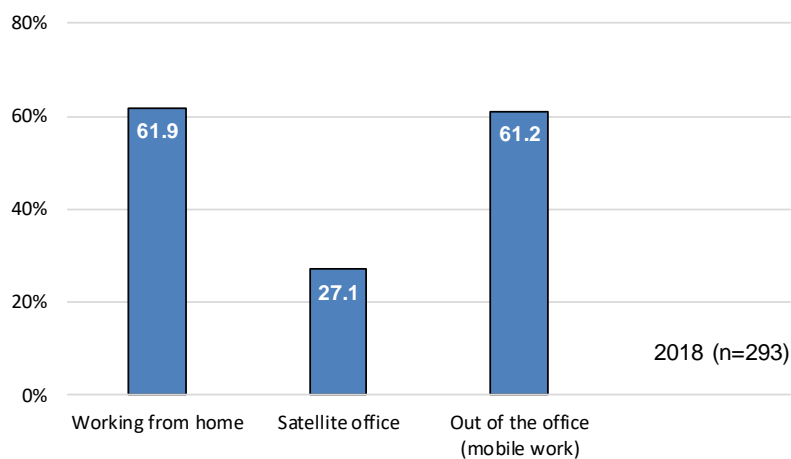
Note: as a percentage of individuals who engaged in Telework

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Figure 4-9: Whether or not individuals would like to engage in Telework

- Would strongly like to engage in telework
- Would rather like to engage in telework
- Would rather not like to engage in telework
- Would not like to engage in telework

5.9%
12.0%
17.6%
64.6%
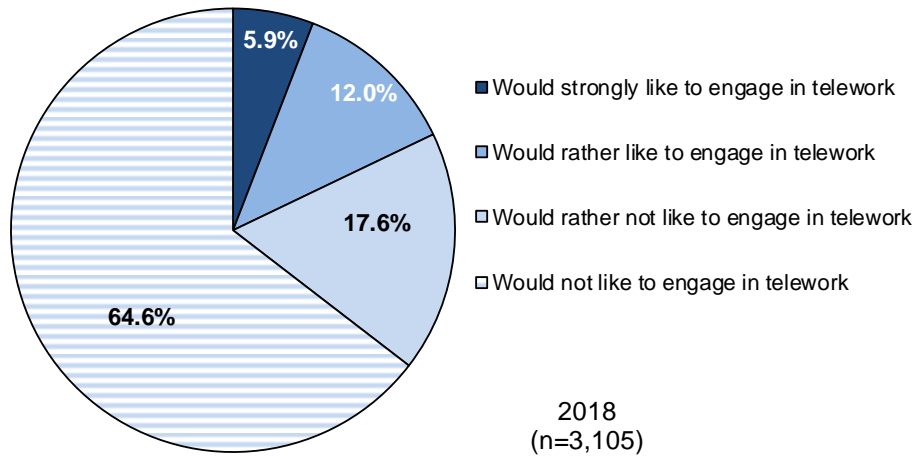
2018
(n=3,105)

Note: as a percentage of individuals who have not engaged in Telework

Figure 4-10: Reasons for not engaging in telework (2018, multiple responses accepted)


Employer-side reasons

There is not a telework system at the employer	56.0
Work is not suited to telework	51.1
It is unclear whether telework is possible at the employer	12.8
Telework cannot be managed adequately	8.4
The atmosphere at the employer is not favorable for telework	7.7
Other	11.3

External or environmental factors

No business environment developed for telework	36.3
No appropriate ICT systems made available	12.8
Other	11.8

2018 (n=511)

0%   20%   40%   60%   80%   100%

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

5. Safety and security efforts

(1) State of security measures (households)

Of households that use the Internet, 68.5% have taken some security measures. The most common security measures taken are "installing or updating a security program," at 53.4% (up 7.2 points). This is followed by "signing up to or updating a security service" (24.2%) and "setting a password on devices" (19.6%).

Figure 5-1: State of security measures (multiple responses accepted)
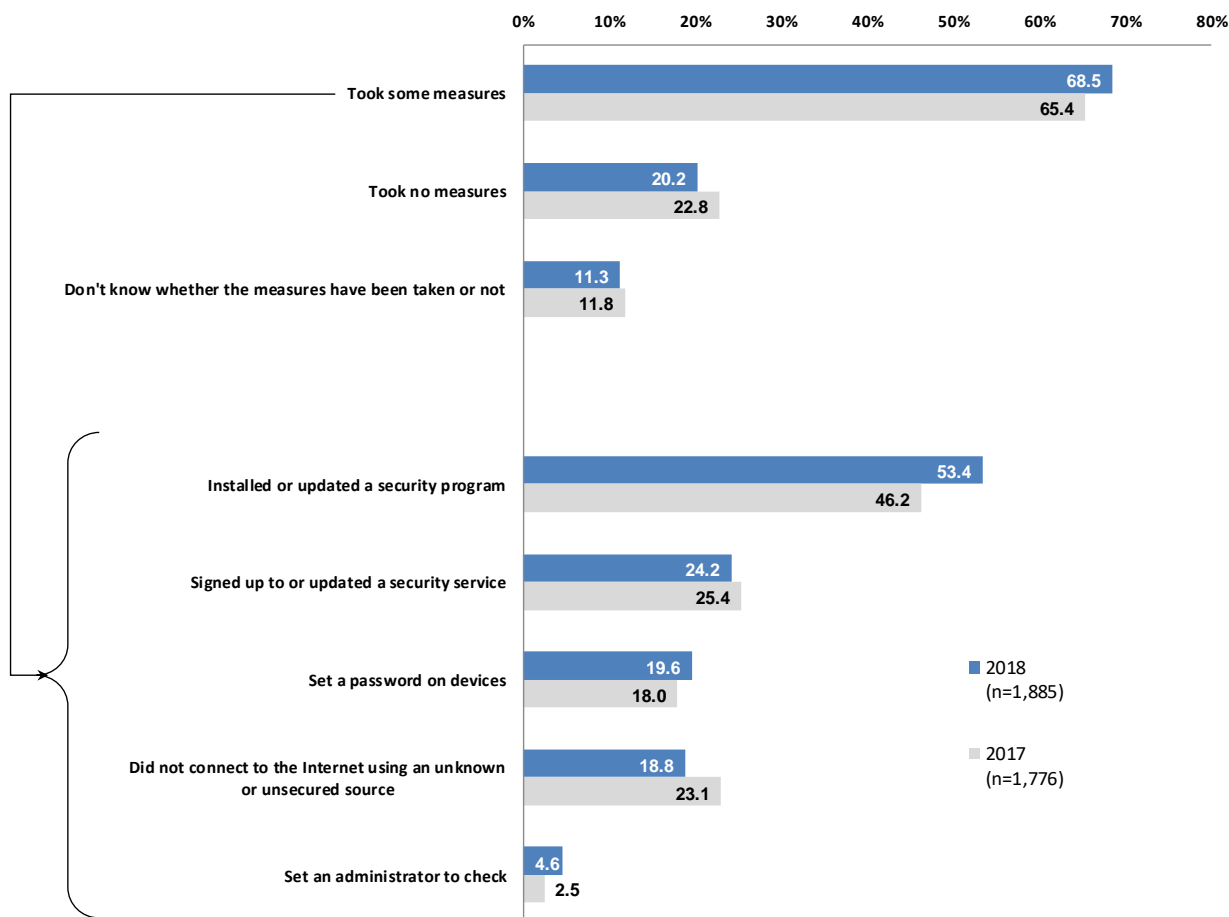
Note: as a percentage of households with at least one person who used the Internet in the past one year

(2) Concerns about using the Internet (individuals)

The combined percentage of Internet users aged 12 or more who "feel concerned" and "feel rather concerned" during Internet use stands at 70.7%, rising by 3.9 points from the previous year. A similar upward trend is seen among those aged between 20 and 79.

The most frequently cited type of concern about using the Internet is "leak of personal information and Internet use history" (cited by 84.6%), followed by "computer virus infections" (65.7%) and "concern about fraudulent email or fraud using the Internet" (48.3%). Those citing "concern about the reliability of electronic payment means" account for 37.8% of respondents, up 4.6 points.

Figure 5-2: Concerns about using the Internet

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

Note: Percentage of Internet users who "feel concerned" and "feel rather concerned"
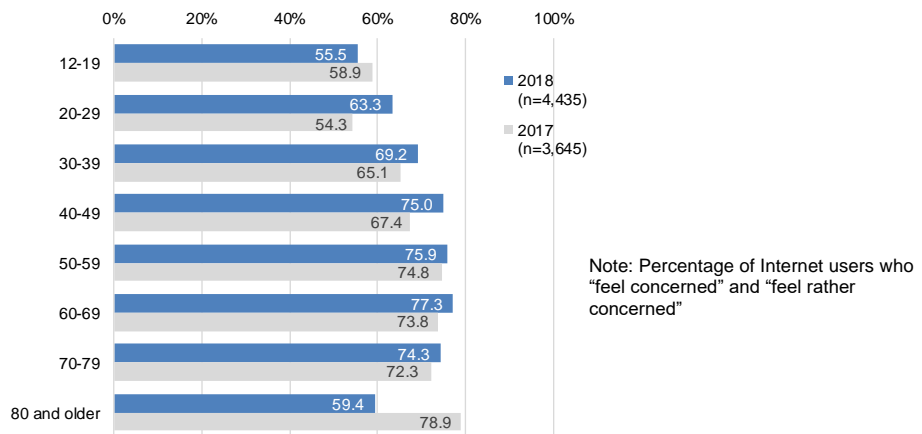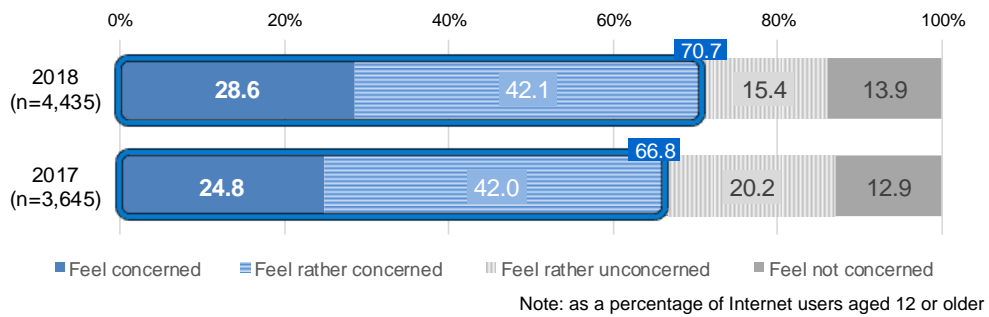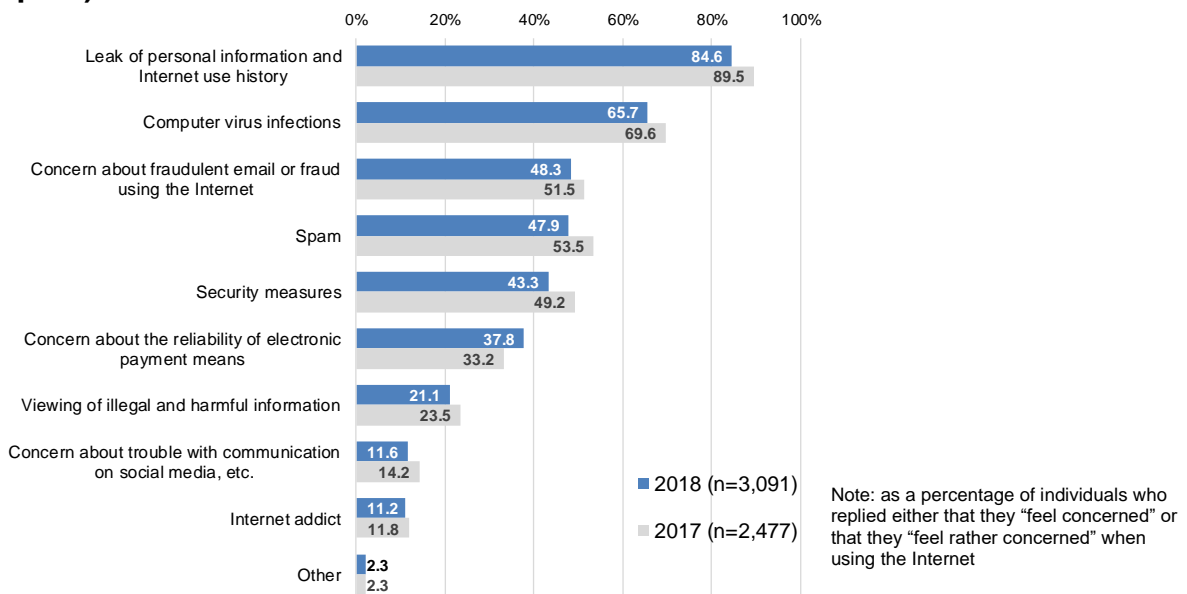
Figure 5-3: Types of concerns about using the Internet (multiple responses accepted)

Note: as a percentage of individuals who replied either that they "feel concerned" or that they "feel rather concerned" when using the Internet
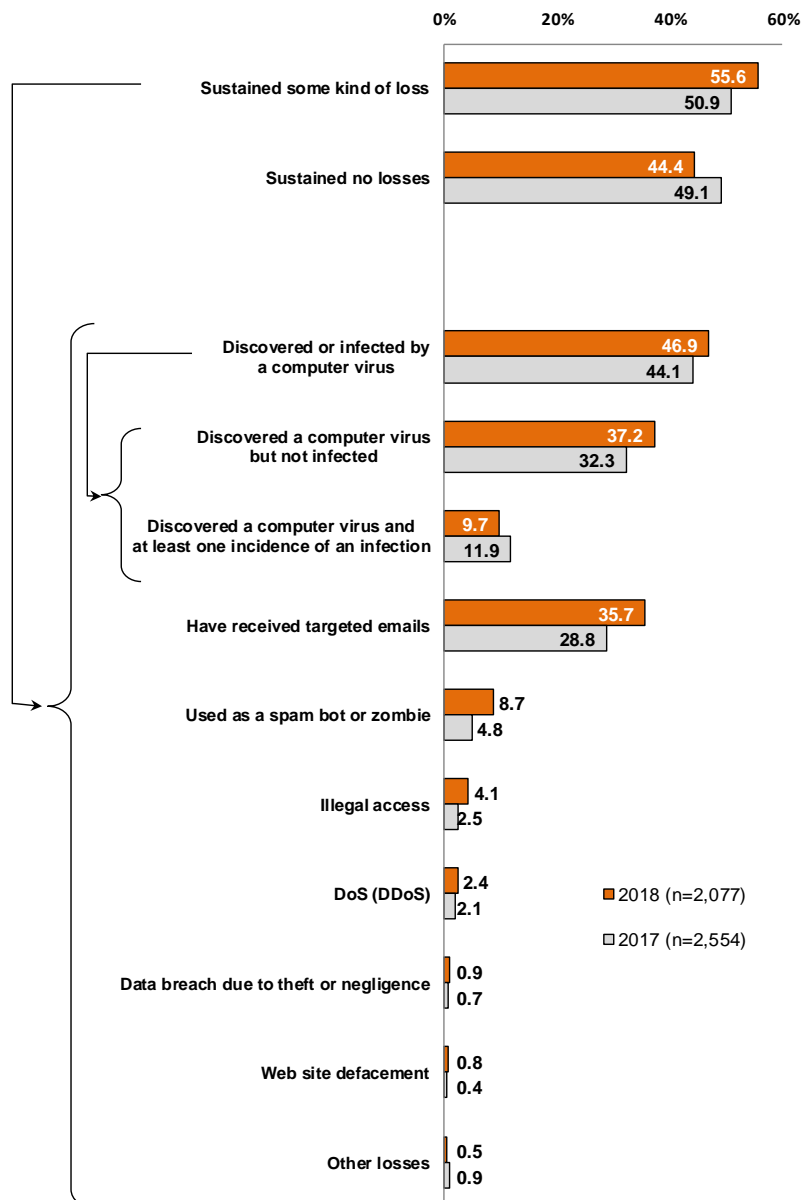
(3) Security breaches against information-communication networks and security measures implemented (businesses)

Among businesses that use information-communication networks, 55.6% report some losses resulting from a security breach during the use of information-communication networks in the past year. The most frequently cited type of security breach is "discovery of or infection with a computer virus" (cited by 46.9%), followed by "targeted emails" (35.7%, up 6.9 points).
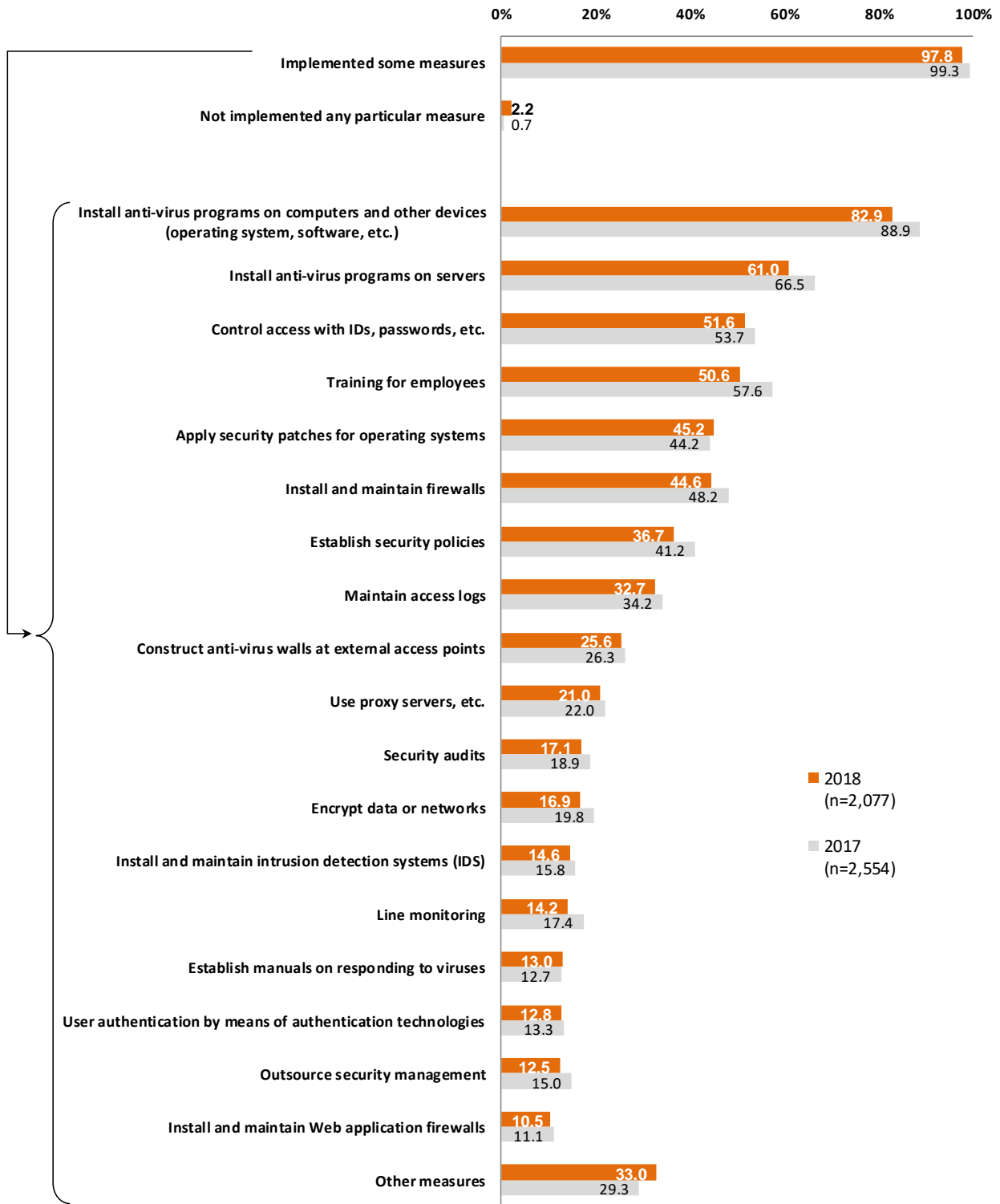
The percentage of businesses that implement some security measures is 97.8%. By type of security measure, the implementation rate is the highest at 82.9% for "installing anti-virus programs on computers and other devices (operating systems, software, etc.), followed by 61.0% for "installing anti-virus programs on servers" and 51.6% for "controlling access with IDs, passwords, etc."

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

Category	2018 (n=2,077)	2017 (n=2,554)
Sustained some kind of loss	55.6	50.9
Sustained no losses	44.4	49.1
Discovered or infected by a computer virus	46.9	44.1
Discovered a computer virus but not infected	37.2	32.3
Discovered a computer virus and at least one incidence of an infection	9.7	11.9
Have received targeted emails	35.7	28.8
Used as a spam bot or zombie	8.7	4.8
Illegal access	4.1	2.5
DoS (DDoS)	2.4	2.1
Data breach due to theft or negligence	0.9	0.7
Web site defacement	0.8	0.4
Other losses	0.5	0.9

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

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

Measure	2018	2017
Implemented some measures	97.8	99.3
Not implemented any particular measure	2.2	0.7
Install anti-virus programs on computers and other devices (operating system, software, etc.)	82.9	88.9
Install anti-virus programs on servers	61.0	66.5
Control access with IDs, passwords, etc.	51.6	53.7
Training for employees	50.6	57.6
Apply security patches for operating systems	45.2	44.2
Install and maintain firewalls	44.6	48.2
Establish security policies	36.7	41.2
Maintain access logs	32.7	34.2
Construct anti-virus walls at external access points	25.6	26.3
Use proxy servers, etc.	21.0	22.0
Security audits	17.1	18.9
Encrypt data or networks	16.9	19.8
Install and maintain intrusion detection systems (IDS)	14.6	15.8
Line monitoring	14.2	17.4
Establish manuals on responding to viruses	13.0	12.7
User authentication by means of authentication technologies	12.8	13.3
Outsource security management	12.5	15.0
Install and maintain Web application firewalls	10.5	11.1
Other measures	33.0	29.3

2018 (n=2,077)

2017 (n=2,554)

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 that received targeted emails, 8.8% say that "targeted emails reached an employee's device and there was at least one incidence of a computer virus infection," while 54.9% say that "targeted emails reached an employee's device, but there were no computer virus infections."

Of businesses that used information-communication networks, 97.2% have implemented some security measures against targeted emails, up 7.7 points from the previous survey. The most frequently cited security measure is "installing anti-virus programs on computers and other devices (operating systems, software, etc.)," cited by 88.8%. This is followed by "installing anti-virus programs on servers" (66.8%) and "training for employees" (58.0%).
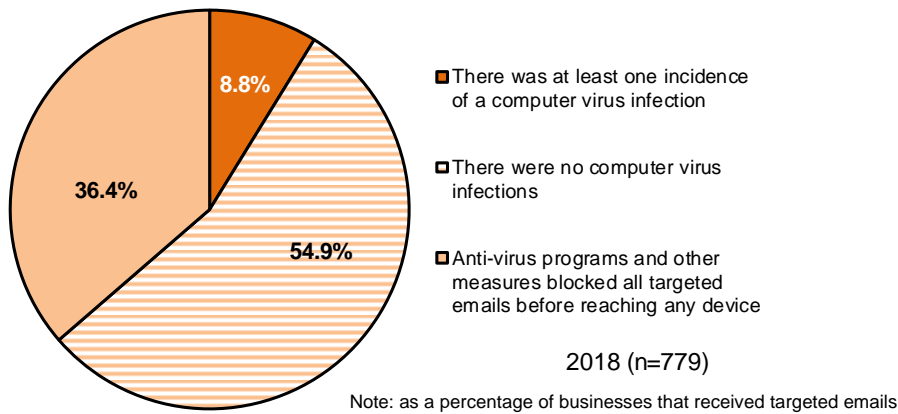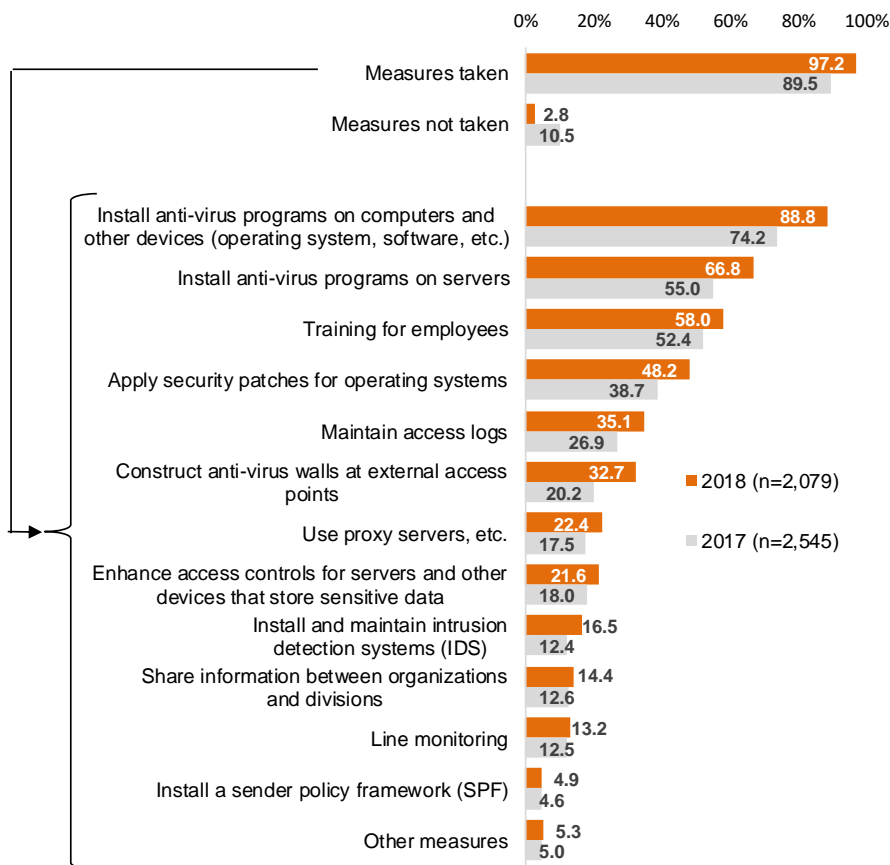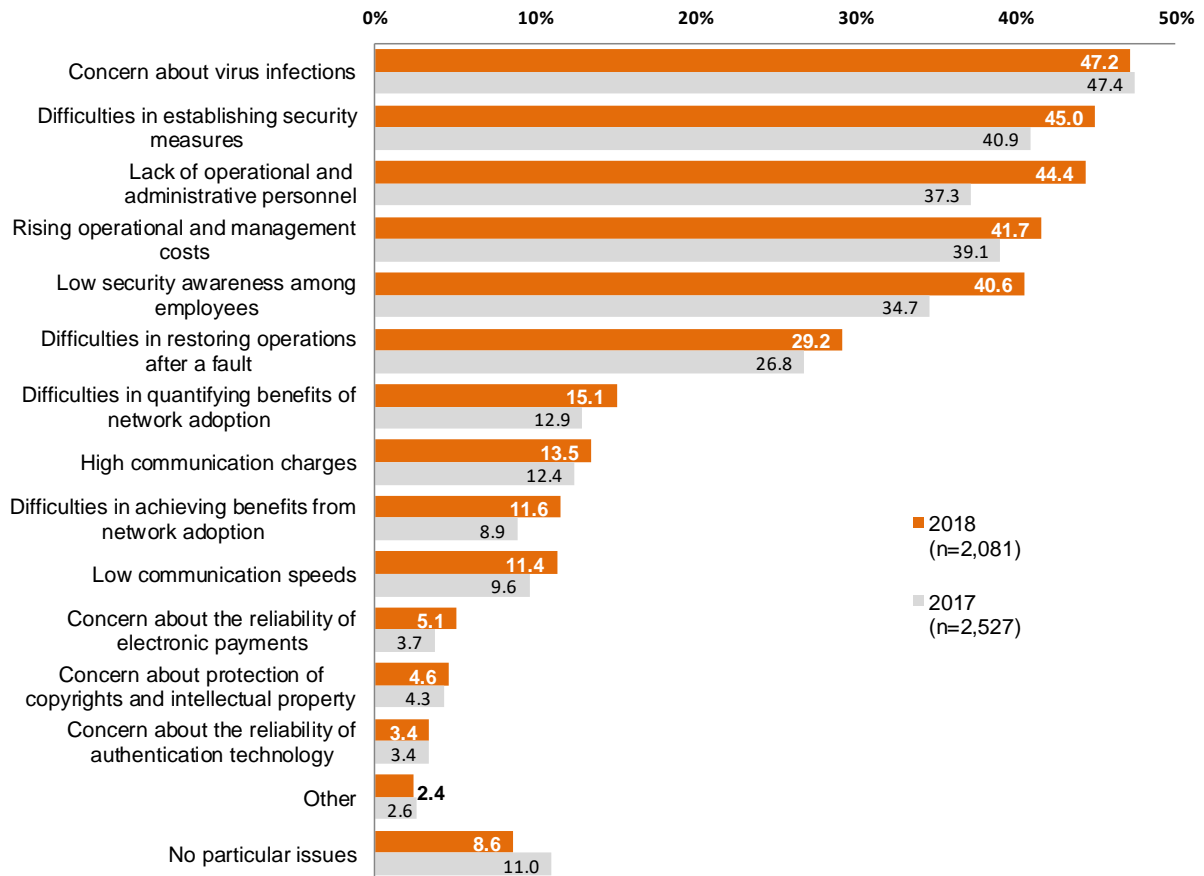
Figure 5-6: Losses from targeted emails (2018)

- There was at least one incidence of a computer virus infection
- There were no computer virus infections
- Anti-virus programs and other measures blocked all targeted emails before reaching any device

2018 (n=779)

Note: as a percentage of businesses that received targeted emails

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

Measure	2018 (n=2,079)	2017 (n=2,545)
Measures taken	97.2	89.5
Measures not taken	2.8	10.5
Install anti-virus programs on computers and other devices (operating system, software, etc.)	88.8	74.2
Install anti-virus programs on servers	66.8	55.0
Training for employees	58.0	52.4
Apply security patches for operating systems	48.2	38.7
Maintain access logs	35.1	26.9
Construct anti-virus walls at external access points	32.7	20.2
Use proxy servers, etc.	22.4	17.5
Enhance access controls for servers and other devices that store sensitive data	21.6	18.0
Install and maintain intrusion detection systems (IDS)	16.5	12.4
Share information between organizations and divisions	14.4	12.6
Line monitoring	13.2	12.5
Install a sender policy framework (SPF)	4.9	4.6
Other measures	5.3	5.0

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(5) Issues associated with use of IT networks (businesses)

"Concern about virus infections" is cited by the largest percentage of businesses, 47.2%, as an issue associated with use of IT (information-communication) networks. In remarkable changes, the percentage rises by 7.1 points to 44.4% for "lack of operational and administrative personnel" and by 5.9 points to 40.6% for "low security awareness among employees.

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

Issue	2018 (n=2,081)	2017 (n=2,527)
Concern about virus infections	47.2	47.4
Difficulties in establishing security measures	45.0	40.9
Lack of operational and administrative personnel	44.4	37.3
Rising operational and management costs	41.7	39.1
Low security awareness among employees	40.6	34.7
Difficulties in restoring operations after a fault	29.2	26.8
Difficulties in quantifying benefits of network adoption	15.1	12.9
High communication charges	13.5	12.4
Difficulties in achieving benefits from network adoption	11.6	8.9
Low communication speeds	11.4	9.6
Concern about the reliability of electronic payments	5.1	3.7
Concern about protection of copyrights and intellectual property	4.6	4.3
Concern about the reliability of authentication technology	3.4	3.4
Other	2.4	2.6
No particular issues	8.6	11.0

6. Household usage of the Internet through TVs, etc.

(1) Internet access through TVs, etc.

> As for Internet access through TVs, etc., the most frequently cited is access through TVs"
> (cited by 45.5%), followed by "access through IPTV tuners" (18.6%).

Figure 6-1 Internet access through TVs, etc. (multiple answers accepted) (2018)

Note: Percentages of households owning TVs, etc.
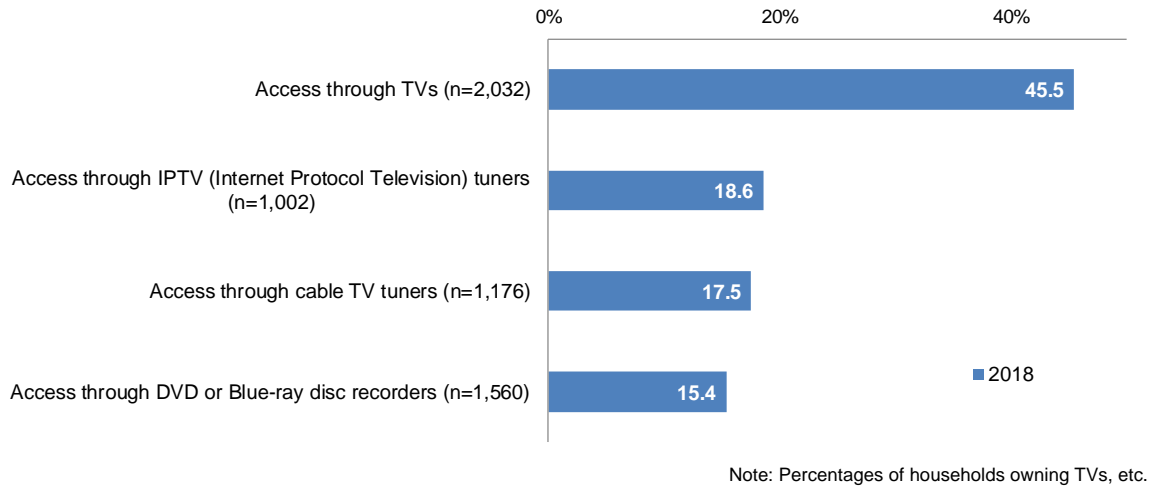
(2) Purposes of Internet usage through TVs, etc.

> Among purposes of using Internet-enabled TVs, "streamed programming (video on
> demand, or VOD)" is the most frequently cited (43.0%), followed by "obtaining
> information related to the current program" (40.9%) and "Web uses" (24.9%).

Figure 6-2 Purposes of using Internet through TVs, etc. (multiple answers accepted) (2018)

Note: Percentages of households using the Internet through TVs, etc.
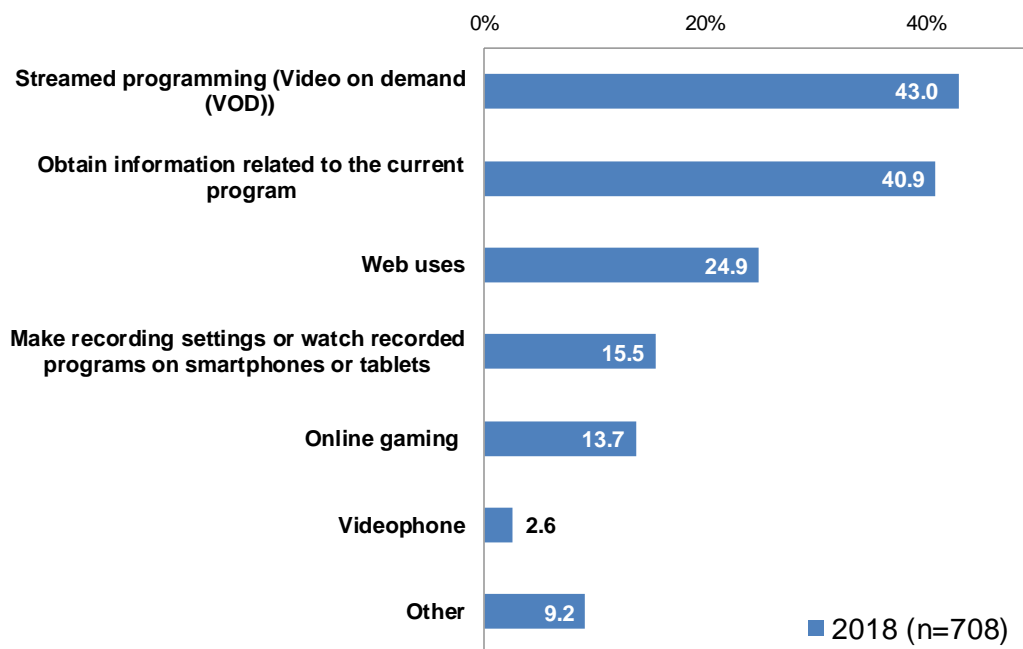
7. Collection/utilization of digital data with IoT/AI systems

(1) Introduction of IoT/AI systems/services (businesses)

Businesses that have introduced IoT and AI systems or services to collect and analyze digital data account for 12.1% of respondents. The percentage of those that have done so and are planning to do so is about 20%.

Among purposes of digital data collection/analysis, "improvement of business efficiency/operations" is the most frequently cited (73.8%), followed by "improvement of customer services" (43.2%) and "overall optimization of business operations" (23.9%).

Those saying that the introduction of IoT and AI systems or services has been "very effective" or "somewhat effective" account for 73.3% of respondents.

Figure 7-1 Introduction of IoT and AI systems or services (2018)
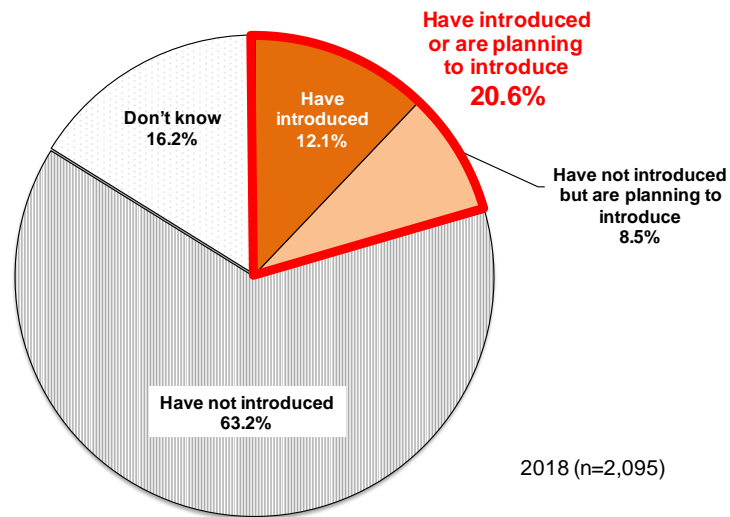
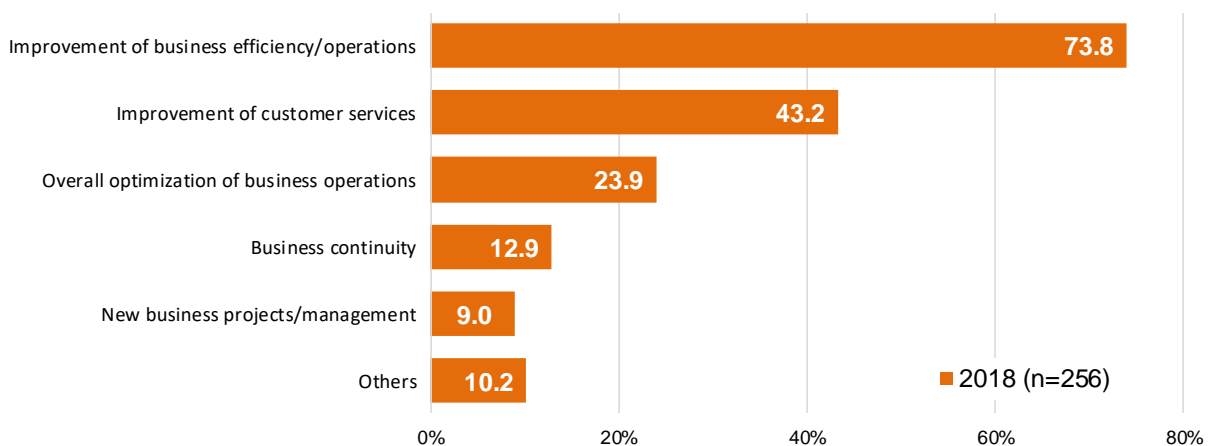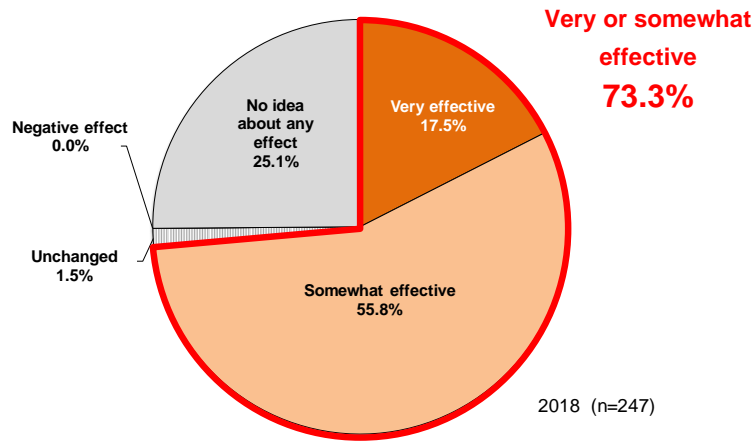**Figure 7-2 Purposes of digital data collection/analysis (2018)**

Figure 7-2 Effects of IoT/AI system/service introduction (2018)

Negative effect
0.0%

No idea
about any
effect
25.1%

Very effective
17.5%

**Very or somewhat
effective
73.3%**

Unchanged
1.5%

Somewhat effective
55.8%

2018 (n=247)

(2) Components of IoT/AI systems/services

The most frequently cited among components of IoT and AI systems or services that have been introduced are "surveillance cameras" (41.1%), followed by "sensors (temperature, pressure and other sensors)" (28.6%) and "physical security devices" (23.0%).

Figure 7-3 Components of AI/IoT systems/services (multiple answers accepted) (2018)
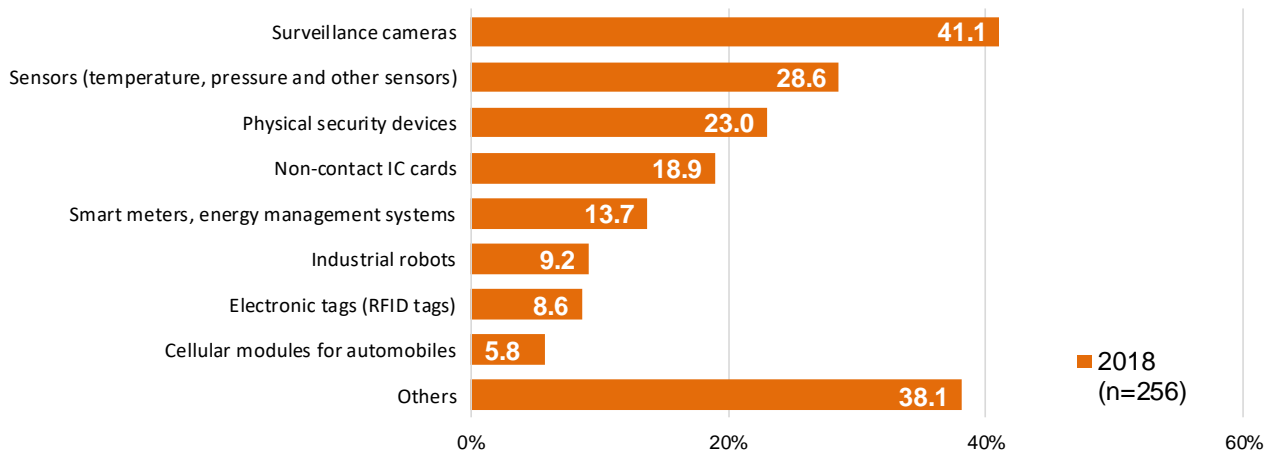
Component	2018 (%)
Surveillance cameras	41.1
Sensors (temperature, pressure and other sensors)	28.6
Physical security devices	23.0
Non-contact IC cards	18.9
Smart meters, energy management systems	13.7
Industrial robots	9.2
Electronic tags (RFID tags)	8.6
Cellular modules for automobiles	5.8
Others	38.1

2018
(n=256)

31

Figure 7-4 Components of IoT/AI systems/services by industry (multiple answers accepted) (2018)

		n	1st	2nd	3rd	4th	5th
[Total]		256	Surveillance cameras	Sensors (temperature, pressure and other sensors)	Physical security devices	Non-contact IC cards	Smart meters, energy management systems
			41.1	28.6	23.0	18.9	13.7
By industry	Construction	23	Surveillance cameras	Physical security devices	Smart meters, energy management systems	Non-contact IC cards	Industrial robots
			34.3	30.0	23.2	18.1	15.0
	Manufacturing	59	Sensors (temperature, pressure and other sensors)	Surveillance cameras	Industrial robots	Physical security devices	Non-contact IC cards
			53.7	41.2	22.0	20.9	17.5
	Transport / mailing	37	Surveillance cameras	Cellular modules for automobiles	Sensors (temperature, pressure and other sensors)	Non-contact IC cards	Physical security devices
			31.2	29.3	16.5	14.1	5.9
	Wholesale / retail	27	Surveillance cameras	Physical security devices	Non-contact IC cards	Smart meters, energy management systems	Electronic tags (RFID tags)
			43.1	17.3	12.3	9.9	7.5
	Financial / insurance	27	Non-contact IC cards	Surveillance cameras	Physical security devices	Sensors (temperature, pressure and other sensors)	Electronic tags (RFID tags) / Smart meters, energy management systems
			23.6	21.1	20.2	12.9	4.3
	Real estate	12	Surveillance cameras	Non-contact IC cards	Physical security devices	Smart meters, energy management systems	Sensors (temperature, pressure and other sensors)
			54.7	24.8	24.2	24.0	23.4
	Information and communications	40	Surveillance cameras	Physical security devices	Non-contact IC cards	Sensors (temperature, pressure and other sensors)	Electronic tags (RFID tags)
			42.3	40.7	38.5	24.6	9.6
	Service and other industries	31	Surveillance cameras	Physical security devices	Non-contact IC cards	Smart meters, energy management systems	Sensors (temperature, pressure and other sensors)
			44.7	30.1	21.0	17.3	16.2