Statistical Report on Internet Development in China

（July 2018）

中国互联网络信息中心
CHINA INTERNET NETWORK INFORMATION CENTER

Preface

In 1997 China's competent departments authorized China Internet Network Information Center (CNNIC) to organize relevant Internet entities to jointly carry out an Internet development survey, forming the practice of regularly releasing the *Statistical Report on Internet Development in China* at the beginning and middle of each year. Ever since then, CNNIC has published 41 statistical reports on Internet development in China. This report is the 42nd report. All the reports of CNNIC have witnessed the whole development process of China's soaring Internet industry. With precise data and objective analysis, the reports reflect the Internet development in China and provide a significant basis for China's government agencies, companies at home and abroad, experts and scholars to make relevant decisions and research.

In April 2018, President XI Jinping elaborated the important thought on "the Internet power" in the national conference on the work of cybersecurity and informatization. He pointed out that we should promote the reform of the global cyberspace governance system by sticking to a multilateral approach with multi-party participation, the cyberspace security is essential to the stable economy, breakthroughs should be made in core information technologies, and that the development of cybersecurity and informatization should contribute to the new model of industrialization, urbanization and agricultural modernization. As a witness to the development of the Internet, CNNIC continues to follow up the Internet development in China and conduct in-depth surveys on a broader range of areas. The Report comprehensively reflects the development of China's Internet in the first half of 2018 by displaying the data in a multi-angle all-round manner.

We hereby express our sincere gratitude to Office of the Central Cyberspace Affairs Commission, Ministry of Industry and Information Technology, National Bureau of Statistics, and Government Information and Affairs Office of General Office of the State Council, who have guided and supported this Report. Meanwhile, we would like to extend our sincere thanks to the enterprises and other related institutions, who have supported the data collection and survey in this Report.

China Internet Network Information Center (CNNIC)

July 2018

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Abstract

◇ As of the end of June 2018, the number of Internet users in China reached 802 million, with an increase of 29.68 million or 3.8% from the end of 2017. The Internet penetration reached 57.7%.

◇ As of the end of June 2018, the number of mobile Internet users in China reached 788 million, an increase of 35.09 million or 4.7% from the end of 2017. The mobile Internet users accounted for 98.3% of the total Internet user population.

◇ As of the end of June 2018, the Internet users in Chinese rural areas reached 211 million and accounted for 26.3% of the total Internet user population, with an increase of 1.0% from the end of 2017; those in Chinese urban areas reached 591 million and accounted for 73.7% of the total, with an increase of 4.9% from the end of 2017.

◇ As of the end of June 2018, the proportion of Chinese netizens using mobile phones to access the Internet was 98.3%, 0.8 percentage point more than the end of 2017; the proportion of Chinese netizens using desktops and laptops to access the Internet was 48.9% and 34.5% respectively, decreasing 4.1 and 1.3 percentage points respectively from the end of 2017; and the proportion of Chinese netizens using TV to access the Internet was 29.7%, an increase of 1.5 percentage points from the end of 2017.

◇ As of the end of June 2018, the number of IPv6 addresses in China amounted to 23555 block/32, with an increase rate of 0.53% in half a year.

◇ As of the end of June 2018, the international Internet gateway bandwidth of China was 8,826,302Mbps, with an increase rate of 20.6% in half a year.

◇ As of the end of June 2018, the number of instant message (IM) users reached 756 million, increasing 35.61 million from the end of 2017 and accounting for 94.3% of the total netizen population. The number of mobile phone IM users reached 750 million, increasing 56.41 million from the end of 2017 and accounting for 95.2% of the total mobile netizens.

◇ As of the end of June 2018, the scale of online news users in China amounted to 663 million, with an increase rate of 2.5% in half a year. The utilization ratio was 82.7%. Among them, the

scale of netizens reading online news by mobile phone reached 631 million, accounting for 80.1% of total mobile phone netizens and increasing 1.9% in half a year.

◇ As of the end of June 2018, the online shopping users in China reached 569 million, increasing 6.7% from the end of 2017 and accounting for 71.0% of the total Internet users. The scale of netizens using mobile phone to do online shopping reached 557 million, up 10.2% from the end of 2017, and the utilization ratio of mobile online shopping increased to 70.7%.

◇ As of the end of June 2018, the scale of online takeouts users in China was 364 million，increasing 6.0% from the end of 2017. Among them, the scale of users ordering online takeouts by mobile phone mounted 344 million, with an increase rate of 6.6%, and the utilization ratio reached 43.6%.

◇ As of the end of June 2018, the scale of online payment users in China reached 569 million, an increase of 7.1% from the end of 2017. The utilization rate increased from 68.8% to 71.0%. Among them, the number of those using mobile phones increased to 566 million, an increase of 7.4% from the end of 2017.

◇ As of the end of June 2018, the scale of live webcast users in China reached 425 million, an increase of 2.94 million from the end of 2017. The utilization ratio was 53.0%, 1.7 percentage points lower than at the end of 2017.

◇ As of June 2018, the scale of shared bike users in China reached 245 million, accounting for 30.6% of the total Internet Users. The user scale increased 24.32 million in the first half of 2018.

◇ As of the end of June 2018, the users of online taxi hailing services in China totaled 346 million, with an increase of 59.7 million or 20.8% from the end of 2017. Among them, the users of online special car or express car hailing services reached 299 million, an increase of 26.5% in half a year, and the utilization ratio climbed from 30.6% to 37.3%.

◇ As of the end of June 2018, the scale of online government service users in China reached 470 million, accounting for 58.6% of the total Internet user population.

Part 1 The Basic Internet Development

1. Basic Internet Resources

1.1 An Overview of Basic Internet Resources

Up to June 2018, China had 338,818,304 IPv4 addresses and 23,555 blocks/32 of IPv6 addresses. International Internet gateway bandwidth reached 8,826,302 Mbps, up 20.6% in 6 months.

Table 1 Basic Internet Resources in China Dec. 2017 - Jun. 2018

	December 2017	June 2018	Semi-annual increment	Semi-annual growth rate
IPv4	338,704,640	338,818,304	113,664	0.03%
IPv6 (block/32)	23,430	23,555	125	0.53%
International Internet bandwidth (Mbps)	7,320,180	8,826,302	1,506,122	20.6%

1.2 IP Addresses

By June 2018, the number of IPv6 addresses in China reached 23,555 blocks/32, resulting a semi-annual increase of 0.53%.

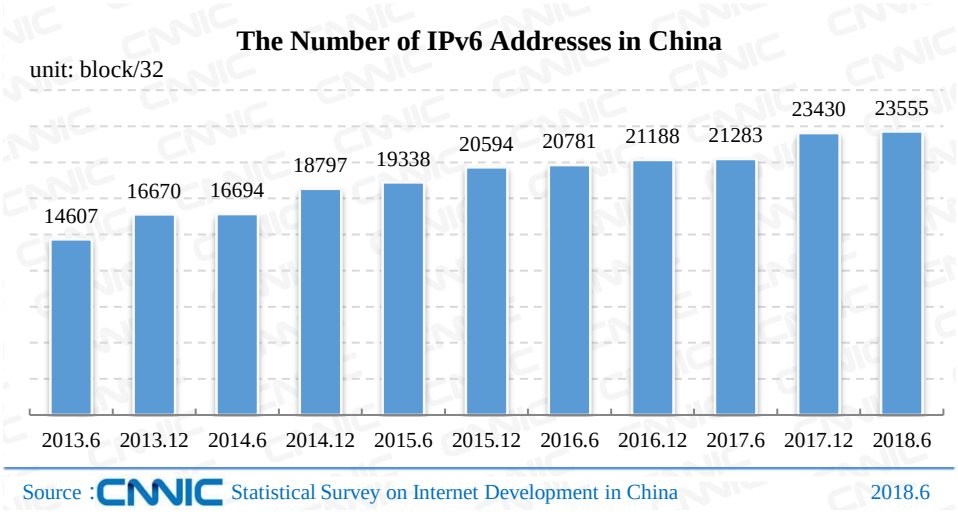


Figure 1 The Number of IPv6 Addresses in China

All IPv4 addresses had been assigned by February 2011 in the world. Since then, the total number of IPv4 addresses in China had been stable. The figure reached 338.82 million up to June 2018.

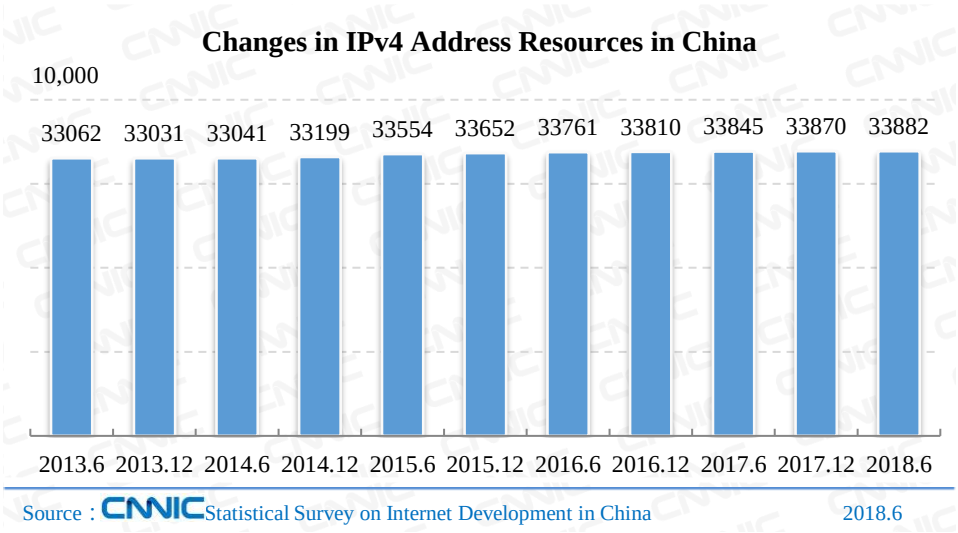


Figure 2 Changes in IPv4 Address Resources in China

1.3 International Internet Gateway Bandwidth

Up to June 2018, China had 8,826,302 Mbps of international Internet gateway bandwidth, up 20.6% in six months.

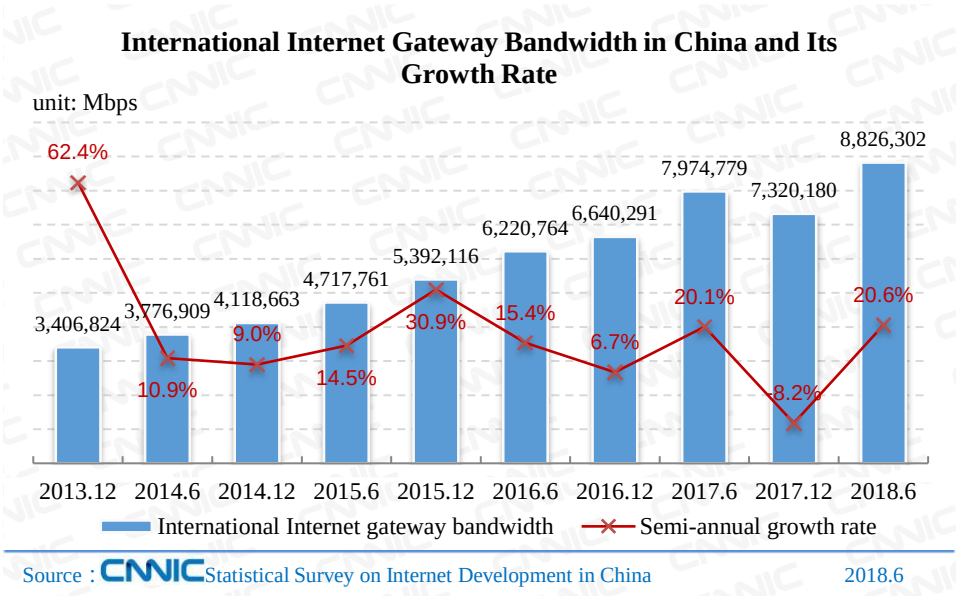


Figure 3 International Internet Gateway Bandwidth in China and Its Growth Rate

Table 2 International Internet Gateway Bandwidths of Backbone Networks

	International Internet gateway bandwidths (Mbps)
China Telecom	4,422,215
China Unicom	2,274,207
China Mobile	2,007,000
China Education and Research Network	61,440
China Science and Technology Network	61,440
Total	8,826,302

2. The Use of Internet Resources

2.1 Websites

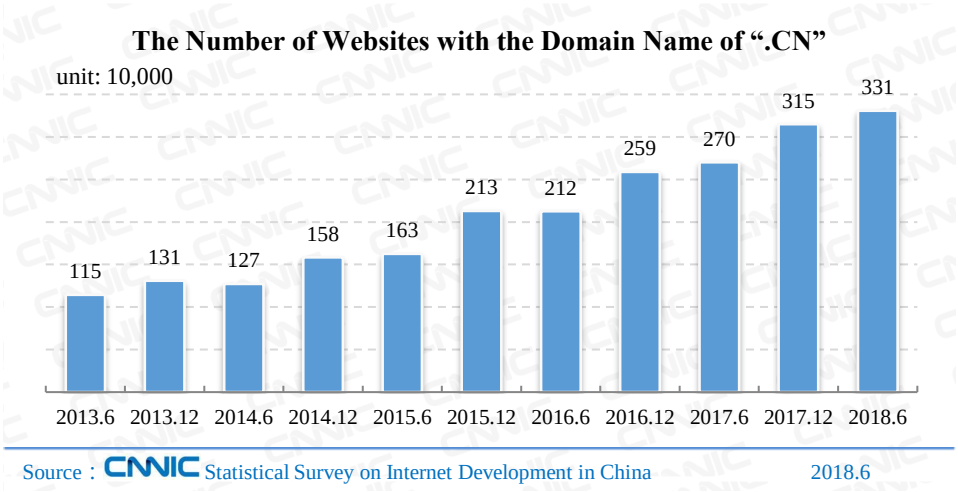
By June 2018, China had 5.44 million websites[1], representing a half-year increase of 2.0%.

Figure 4 The Number of Websites in China

Note: Websites with the domain name of ".EDU.CN" are excluded.

Up to June 2018, China had 3.31 million websites with the domain name of ".CN", representing a half-year increase of 4.9%.

[1]It refers to the websites whose domain name registrants are within the territory of the P.R.C.



Note: Websites with the domain name of ".EDU.CN" are excluded.

Figure 5 The Number of Websites with the Domain Name of ".CN"

2.2 Mobile Internet Traffic

From January to June 2018, the cumulative mobile Internet traffic totaled 26.6 billion GB, an increase of 199.6% over the same period of last year.

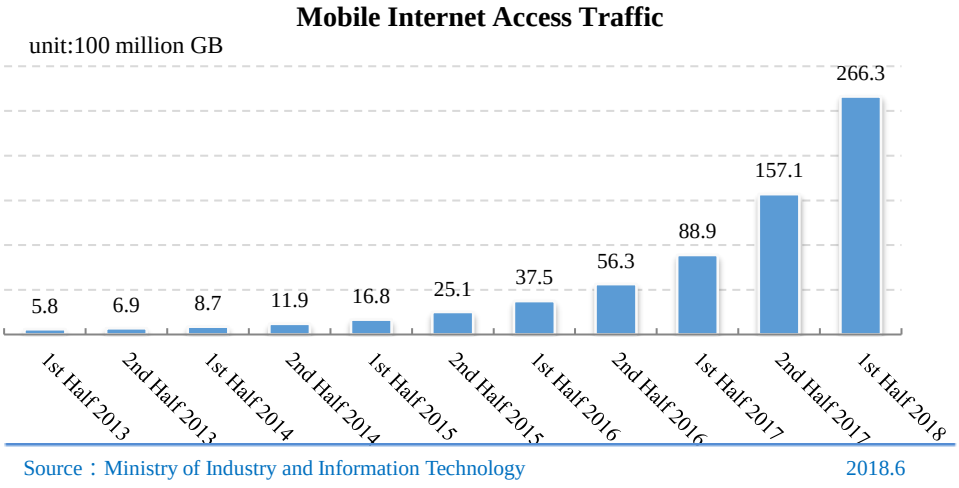


Figure 6 Mobile Internet Access Traffic

2.3 The Number of APPs

As of May 2018, 4.15 million mobile applications (App) were available on China's market.

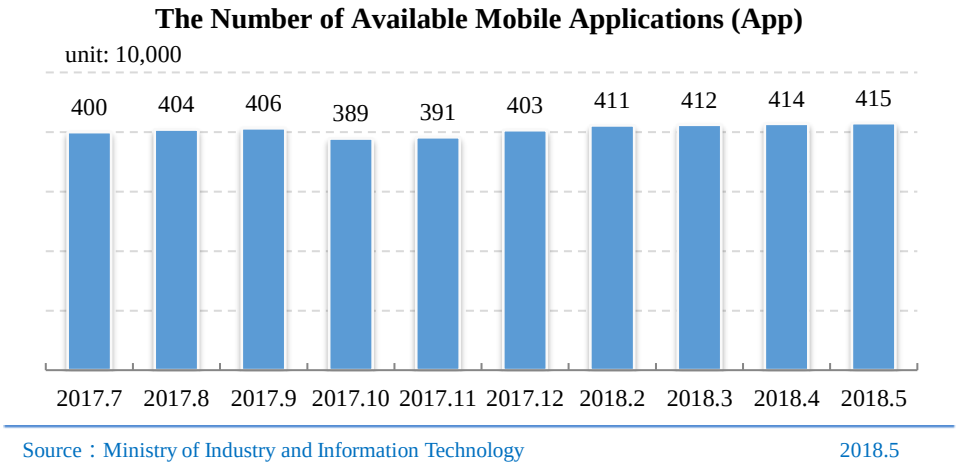


Figure 7 The Number of Available Mobile Applications (App)

Up to May 2018, China's domestic third-party application stores had more than 2.33 million mobile applications, accounting for 56.1%; the number of mobile applications provided by Apple Store (China) exceeded 1.82 million, accounting for 43.9%.

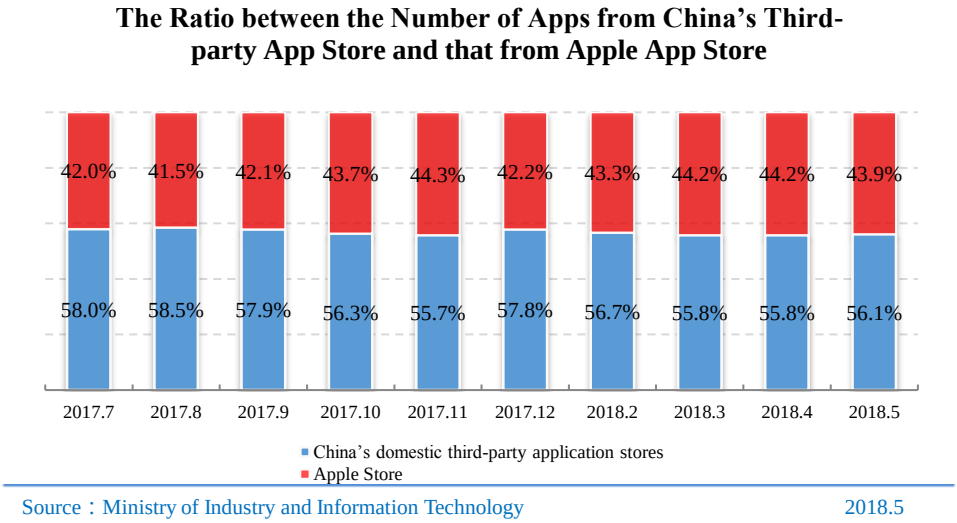
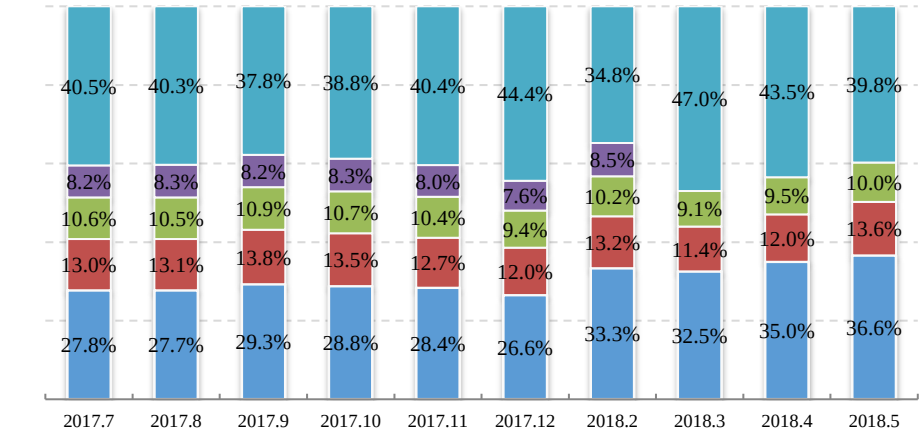


Figure 8 The Ratio between the Number of Apps from China's Third-party App Store and that from Apple App Store

2.4 The Category of APPs

Up to May 2018, the number of gaming Apps exceeded 1.52 million, ranking first and accounting for 36.6% of the total; that of life service Apps was more than 563,000, ranking second and accounting for 13.6%; and that of e-commerce Apps was over 416,000, ranking third and accounting for 10.0%.

The Proportion of Mobile Apps by Category



Source：Ministry of Industry and Information Technology 2018.5

Figure 9 The Proportion of Mobile Apps by Category

3. The Internet Access Environment

3.1 Internet Access Devices

By June 2018, 98.3% of Chinese netizens accessed the Internet via their mobile phones, a semi-annual increase of 0.8 percentage points from the end of 2017; 48.9% used desktops and 34.5% used laptops, respectively down by 4.1 and 1.3 percentage points from the end of 2017; the proportion of those accessing the Internet via their TVs amounted to 29.7%, up by 1.5 percentage points on a semi-annual basis.

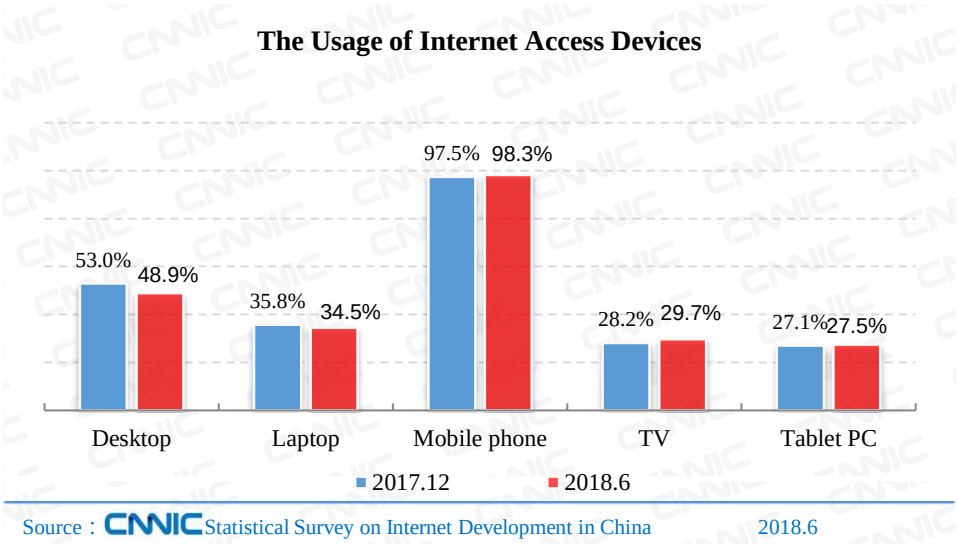


Figure 10 The Usage of Internet Access Devices

3.2 Venues of Internet Access

Up to June 2018, 82.6% of Chinese netizens accessed the Internet via computers at home, down by 3.0 percentage points from the end of 2017; the proportion of netizens who did so at Internet bars, workplaces, schools, and public places all edged up by 2.0, 4.6, 0.5, and 4.5 percentage points.

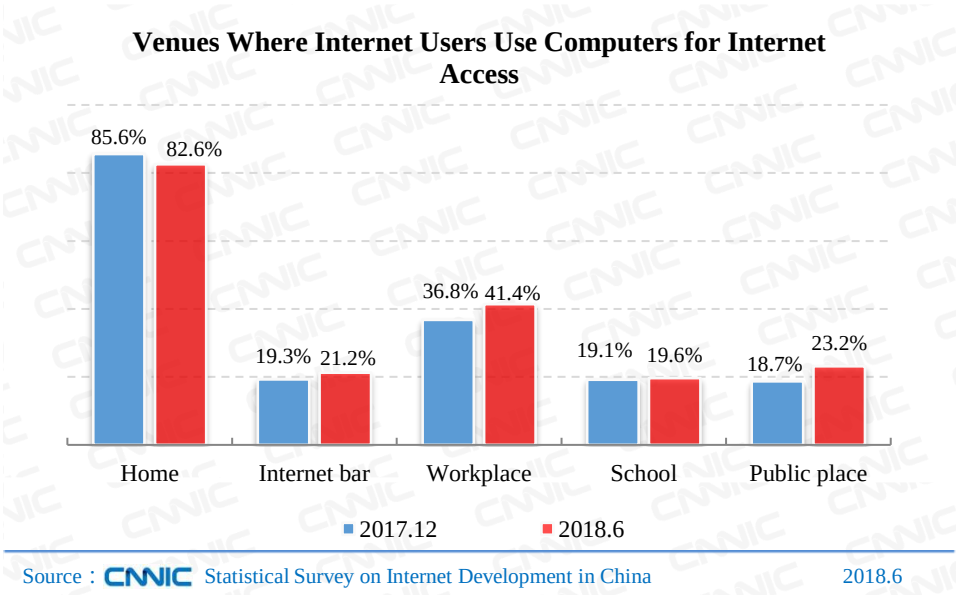


Figure 11 Venues Where Internet Users Use Computers for Internet Access

3.3 Online Duration

In June 2018, the average online duration of China's netizens was 27.7 hours per week, an increase of 0.7 hour compared with the data at the end of 2017.

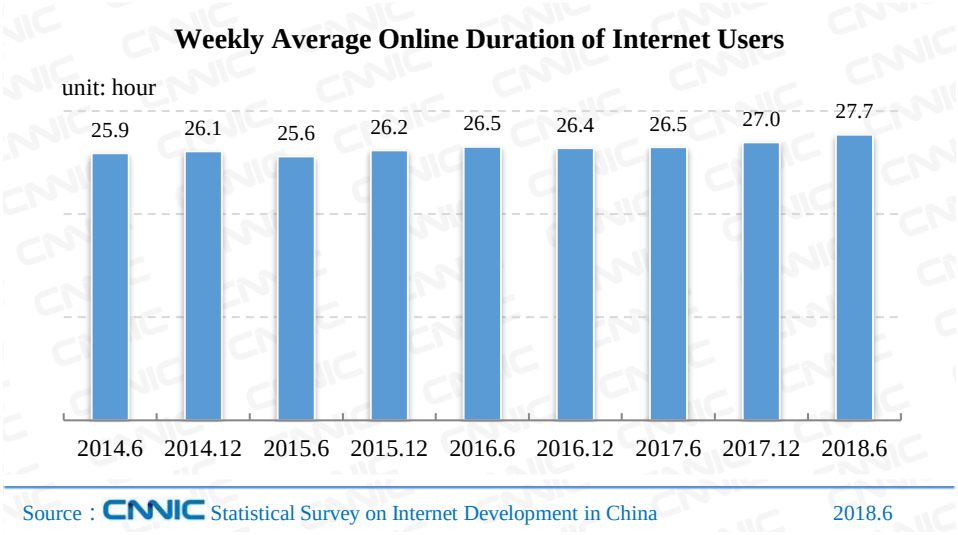


Figure12 Weekly Average Online Duration of Internet Users

3.4 The Proportion of Broadband Subscribers at the Speed of 8/20/100Mbps

As of June 2018, the number of broadband subscribers at the speed of 100 Mbps or above accounted for 53.3% of the total.

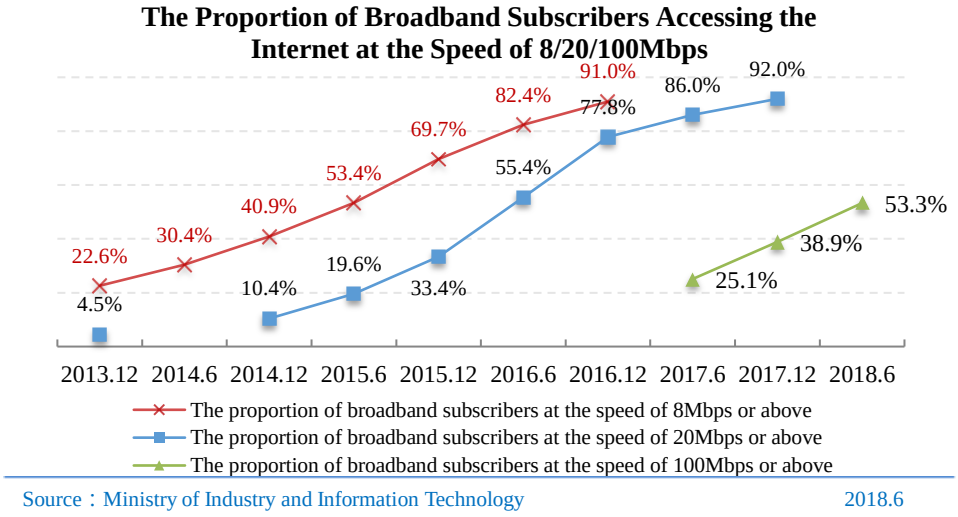


Figure 13 The Proportion of Broadband Subscribers Accessing the Internet at the Speed of 8/20/100Mbps

3.5 The Scale and Proportion of Fiber Broadband Users

From January to June 2018, the Fiber To The Home (FTTH/0) subscribers increased 34.57 million. Their number totaled 328 million and accounted for 86.8% of all broadband subscribers, an increase of 2.5 percentage points from the end of 2017.

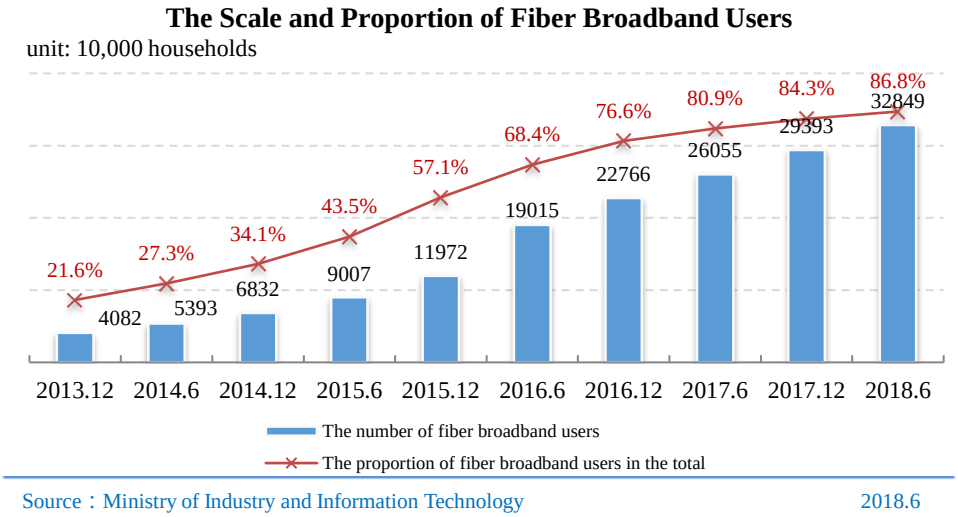
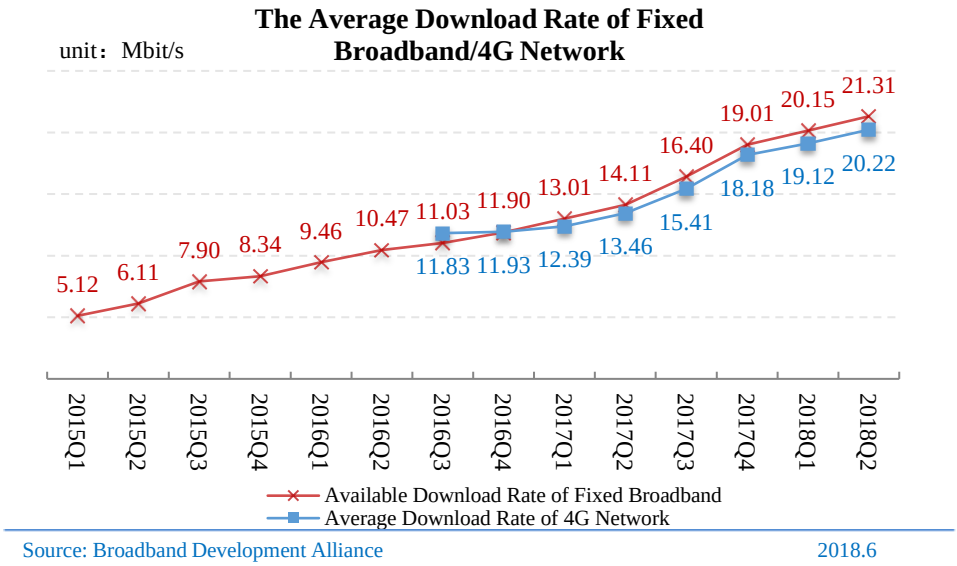


Figure 14 The Scale and Proportion of Fiber Broadband Users

3.6 Average Download Rate on the Internet

In the second quarter of 2018, the weighted average of peak-time and non-peak-time download speed[2] for fixed broadband users was 21.31 Mbit/s, up by 51.0% from the corresponding period of 2017; the average download speed for mobile broadband users accessing the Internet via 4G network was 20.22 Mbit/s, up 50.2% from the second quarter of 2017. In the second quarter of 2018, the download rate of fixed broadband and 4G network users in China exceeded 20 Mbit/s.

[2]The weighted average of peak-time and non-peak-time download speed is obtained through the following steps: dividing the number of samples detected at peak time and non-peak time by the total sample size of the peak and non-peak time respectively, to obtain two quotients; multiplying the two quotients by the peak-time average and the non-peak-time average respectively, to obtain two products; summing up the two products to obtain the weighted average of peak-time and non-peak-time download speeds.



Source: Broadband Development Alliance 2018.6

Figure 15 The Average Download Rate of Fixed Broadband/4G Network

Part 2 The Development of Internet Applications

1. The Use of the Internet

1.1 The Overall Scale of Internet Users

Up to June 2018, there were 802 million Internet users in China, a semi-annual increase of 29.68 million or 3.8%, with its Internet penetration reaching 57.7%.

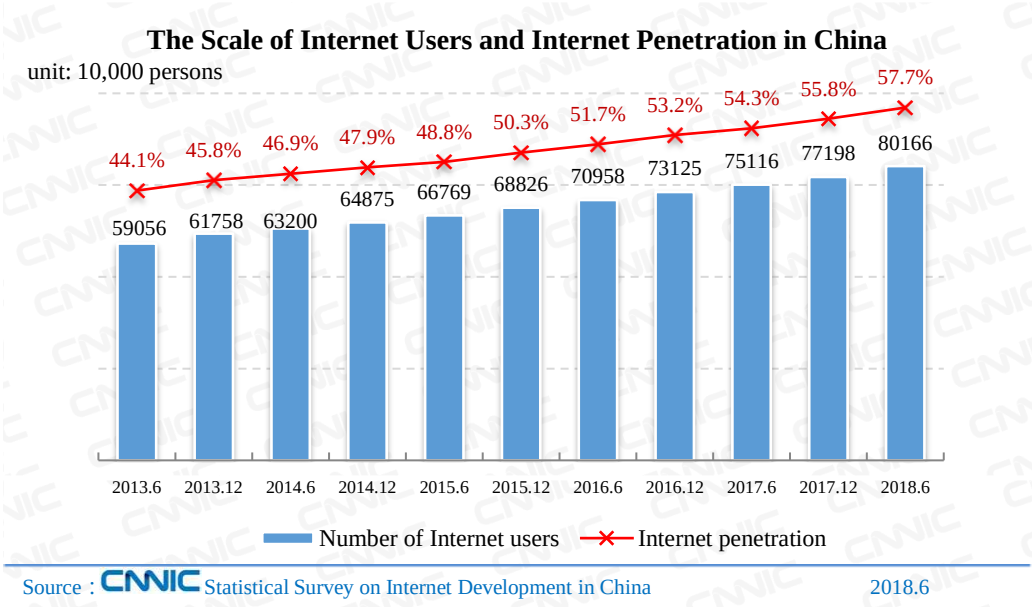


Figure 16 The Scale of Internet Users and Internet Penetration in China

Up to June 2018, there were 788 million mobile Internet users in China, a semi-annual increase of 35.09 million or 4.7%. The mobile netizens accounted for 98.3% of the total netizen population, compared to 97.5% in 2017. The proportion of mobile netizens further climbed on a higher base.

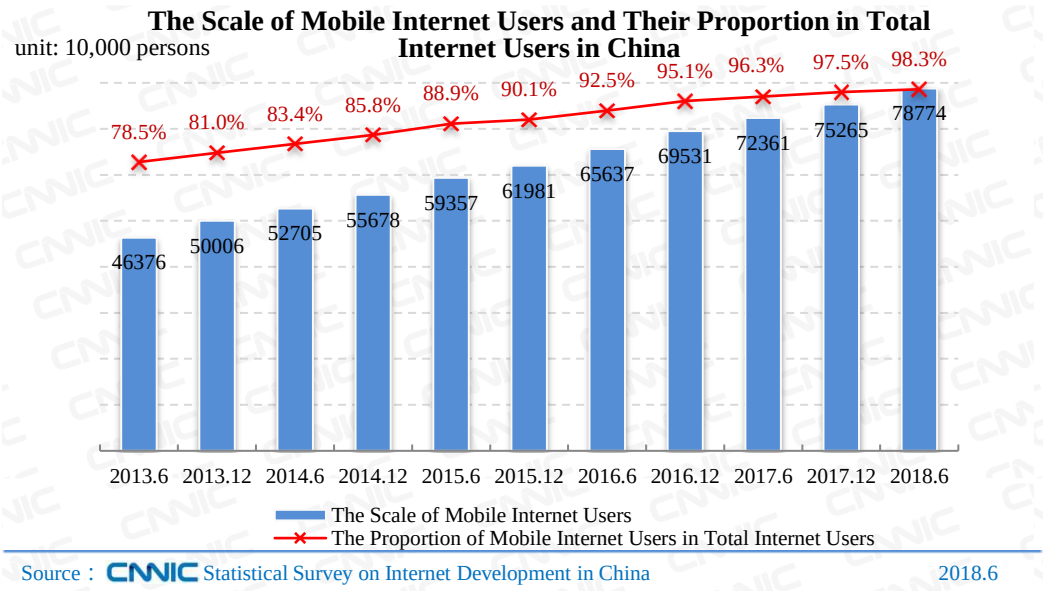


Figure 17 The Scale of Mobile Internet Users and Their Proportion in Total Internet Users in China

1.2 The Urban-Rural Structure of Internet Users

Up to June 2018, China had 211 million rural Internet users, accounting for 26.3% of the national total, an increase of 2.04 million or 1.0% from the end of 2017; it had 591 million urban Internet users, accounting for 73.7%, an increase of 27.64 million or 4.9% from the end of 2017. China's continuous urbanization has resulted in a progressive rise in urban population and a gradual decline in rural population. As a result, the demographic structure of urban and rural netizens has undergone slight changes.

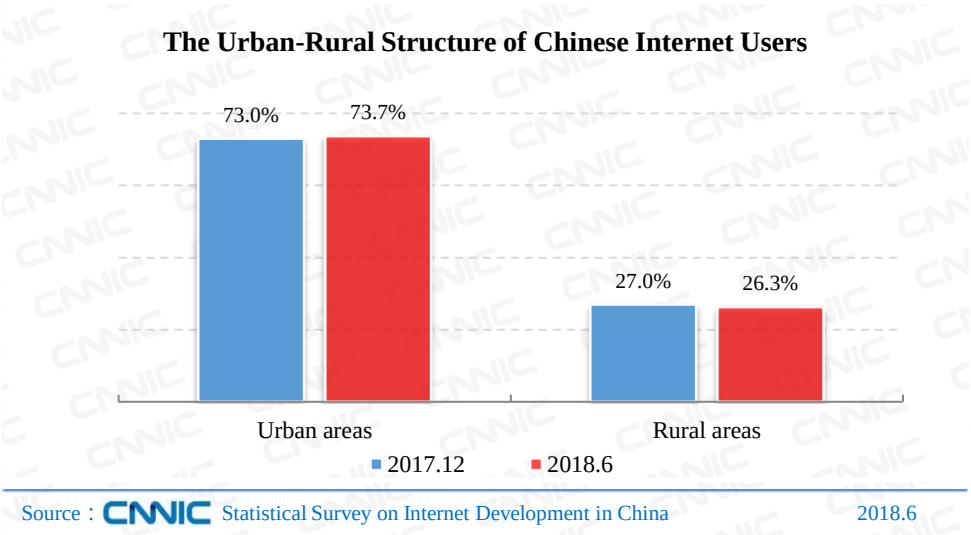


Figure 18 The Urban-Rural Structure of Chinese Internet Users

As of June 2018, the Internet penetration in China's urban areas was 72.7% and that in China's rural areas was 36.5%, both of which increased compared with the end of 2017. The former is significantly higher than the latter. Because of different levels of economic development in urban and rural areas, urban and rural netizens vary in the use of various applications. The utilization rate of urban netizens using applications concerning online shopping, travel booking, online payment, and Internet wealth management is higher than that of rural netizens, while urban and rural netizens show a small difference in the utilization rate of instant messaging, online music, online video, and other applications.

1.3 The Status Quo of Non-Netizens

Rural residents took up a dominant part of non-netizens. By June 2018, there were 588 million non-netizens in China, with 37.8% of whom living in urban areas and 62.2% in rural areas.

Shortage of Internet-using skills and limited literacy are major factors preventing non-netizens from accessing the Internet. According to the survey, the proportions of non-netizens with limited computer or Internet knowledge, as well as educational attainments, such as knowing nothing about Pinyin, were 49.0% and 32.5%, respectively. Age is another primary reason non-netizens do not use the Internet. 13.7% of the population who did not use the Internet claims they are too old or too young. Non-netizens showing no demands or interests accounted for 10.2%. Less than 10% of the population thinks little time reserved for the Internet or access barriers, like lack of network

equipments or inabilities to connect broadband, are key factors preventing themselves from surfing on the Internet.

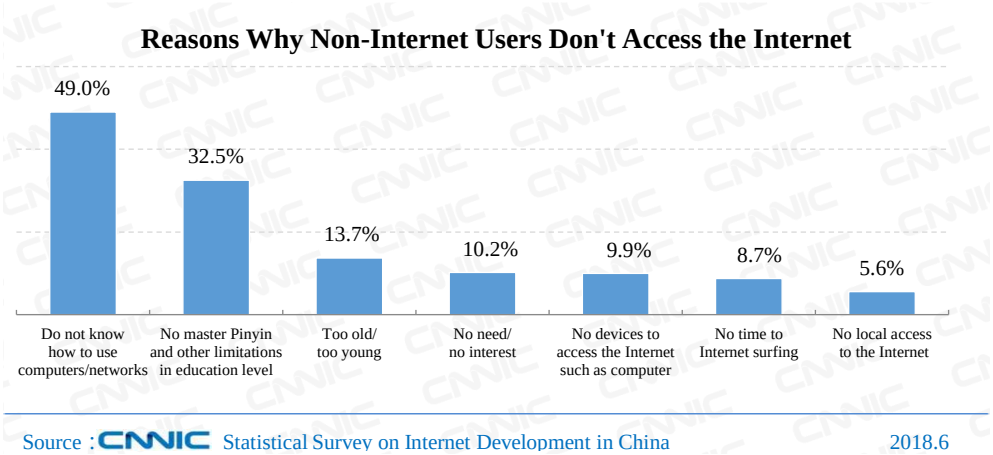


Figure 19 Reasons Why Non-Internet Users Don't Access the Internet

The factors that prompt non-netizens to use the Internet can mainly be categorised into three parts. First, these non-netizens need to improve their Internet-using skills and literacy. 15.9% of non-Internet users are willing to receive free online training and guidance so that they can use the Internet. Second, non-netizens are provided with relevant devices or reduced Internet access expenses to ensure that the Internet is accessible and affordable. The proportion of non-netizens who said they would like to surf on the Internet because of a reduced cost was 13.7%, while the proportion of non-netizens who said they would like to surf on the Internet if equipped with accessible Internet devices was 13.2%. Third, people can use the Internet to meet their daily needs and ease their living. The proportions of non-netizens being willing to use the Internet for reasons such as communicating with family members and relatives, increasing income, facilitating the purchase of goods, and obtaining professional information were 15.4%, 11.5%, 10.4%, and 11.1%, respectively.

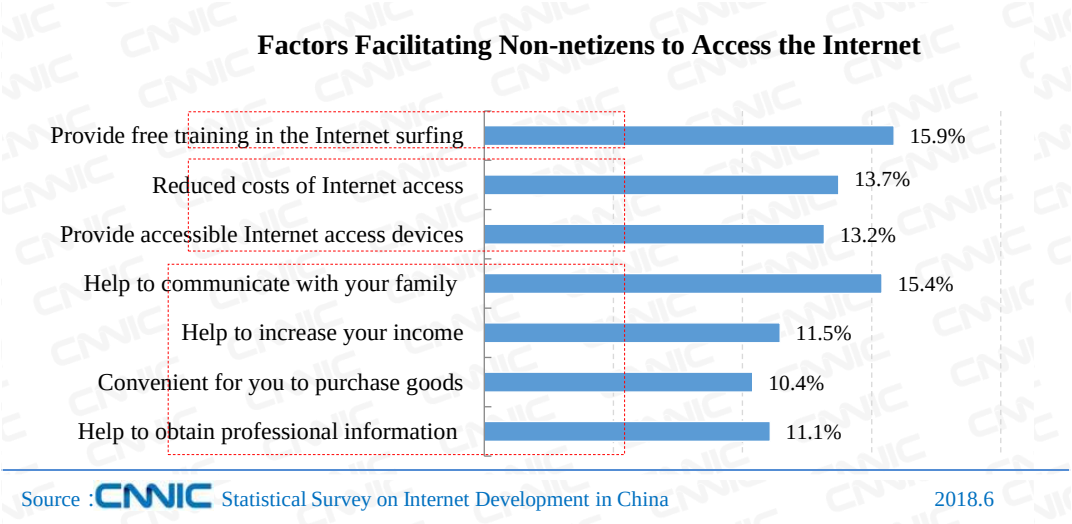


Figure 20 Factors Facilitating Non-netizens to Access the Internet

2. The Attribute Structure of Internet Users

2.1 Gender Structure

Up to June 2018, the male-to-female ratio was 52.0:48.0 among China's Internet users; as of the end of 2017, the male-to-female ratio was 51.2:48.8[3] in the total Chinese population. These ratios indicate that the gender structure of Chinese netizens became closer to that of the total population.

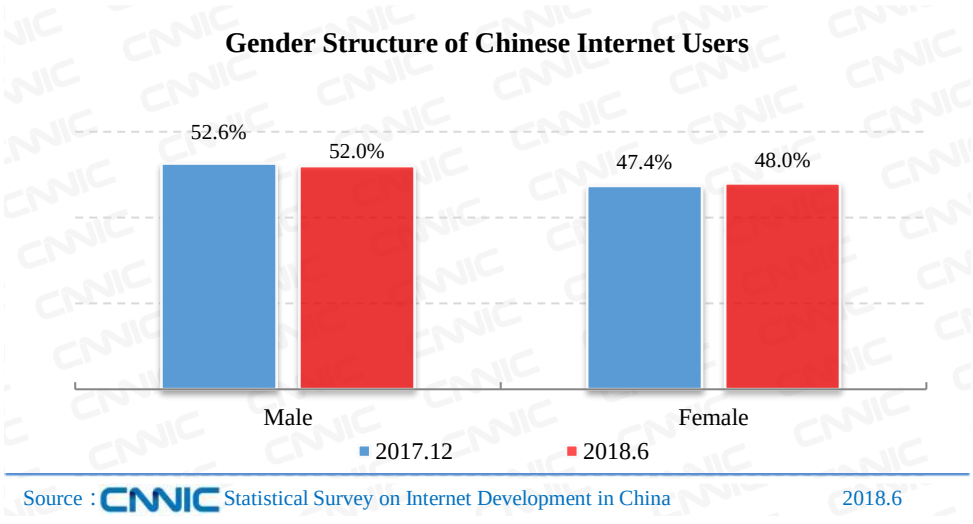


Figure 21 Gender Structure of Chinese Internet Users

[3]Source: *Statistical Bulletin 2017* issued by China National Bureau of Statistics

2.2 Age Structure

An overwhelming majority of Chinese netizens belong to teenagers, young people, and middle-aged groups. Up to June 2018, of Chinese Internet users, 70.8% aged 10-39. Among them, 27.9% aged 20-29, 18.2% aged 10-19 and 24.7% aged 30-39, showing little change from the end of 2017. The proportion of middle-aged netizens aged 30 - 49 increased to 39.9% from 36.7% at the end of 2017, with the Internet penetration rising among middle-aged people.

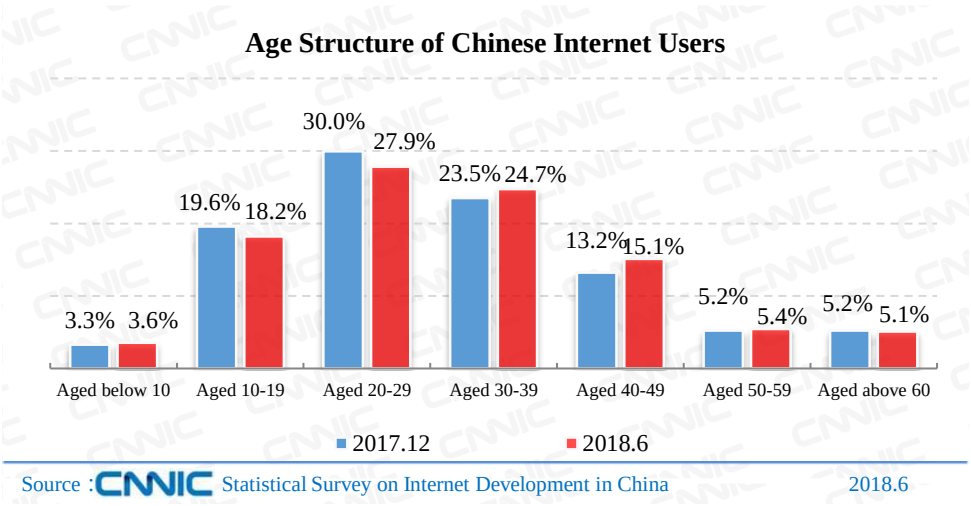


Figure 22 Age Structure of Chinese Internet Users

2.3 Education Structure

China's netizens are concentrated on secondary educational levels. As of June 2018, the proportions of netizens graduating from junior middle schools as well as senior middle schools/vocational schools/technical schools were 37.7% and 25.1% respectively. The proportions of Internet users holding a diploma from junior colleges and universities or above were 10.0% and 10.6% respectively.

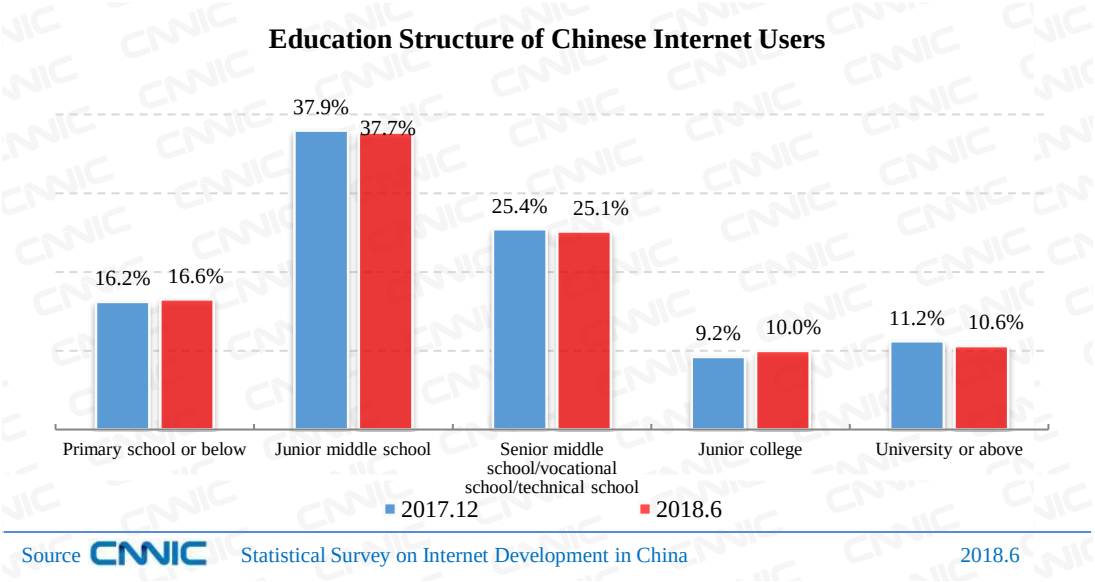


Figure 23 Education Structure of Chinese Internet Users

2.4 Profession Structure

Up to June 2018, of Chinese Internet users, 24.8% were students from middle schools; 20.3% were self-employed businessmen/freelancers; 12.2% were enterprise managers and ordinary staff members. The occupational structure of Chinese Internet users remained stable.

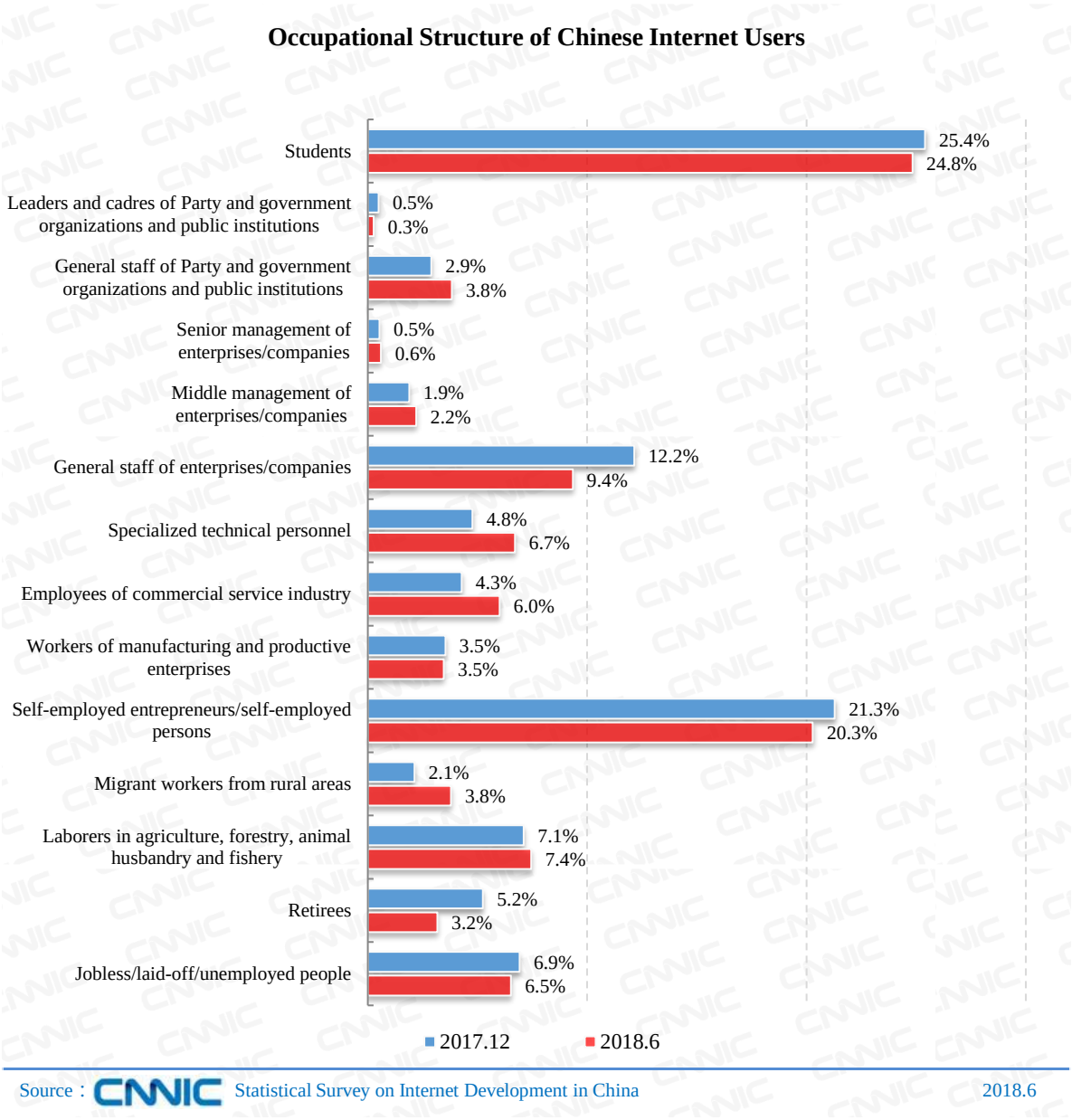


Figure 24 Occupational Structure of Chinese Internet Users

2.5 Income Structure

Netizens with a monthly income[4] at the level ranging from 2,000 to 5,000 yuan constitute the largest part of the total. By June 2018, the proportions of netizens with a monthly income of RMB 2001-3000 and RMB 3001-5000 were 15.3% and 21.5%, respectively. In the first half of 2018, the

[4]Specifically, the income of students includes living allowances provided by families, salary earned from work-study programs, scholarships and others. The income of peasants includes the living allowances provided by children, income of agricultural production, and government subsidy. The income of those who are jobless, laid off or unemployed includes the living allowances provided by children, government relief and subsidy, pension, and subsistence allowances. The income of retirees includes the living allowances provided by children and pension.

proportions of non-income and high-income people increased. The proportion of non-income netizens rose by 2.7 percentage points over the end of 2017, while that of netizens earning a monthly income of more than 5000 yuan went up by 4.5 percentage points from the end of 2017.

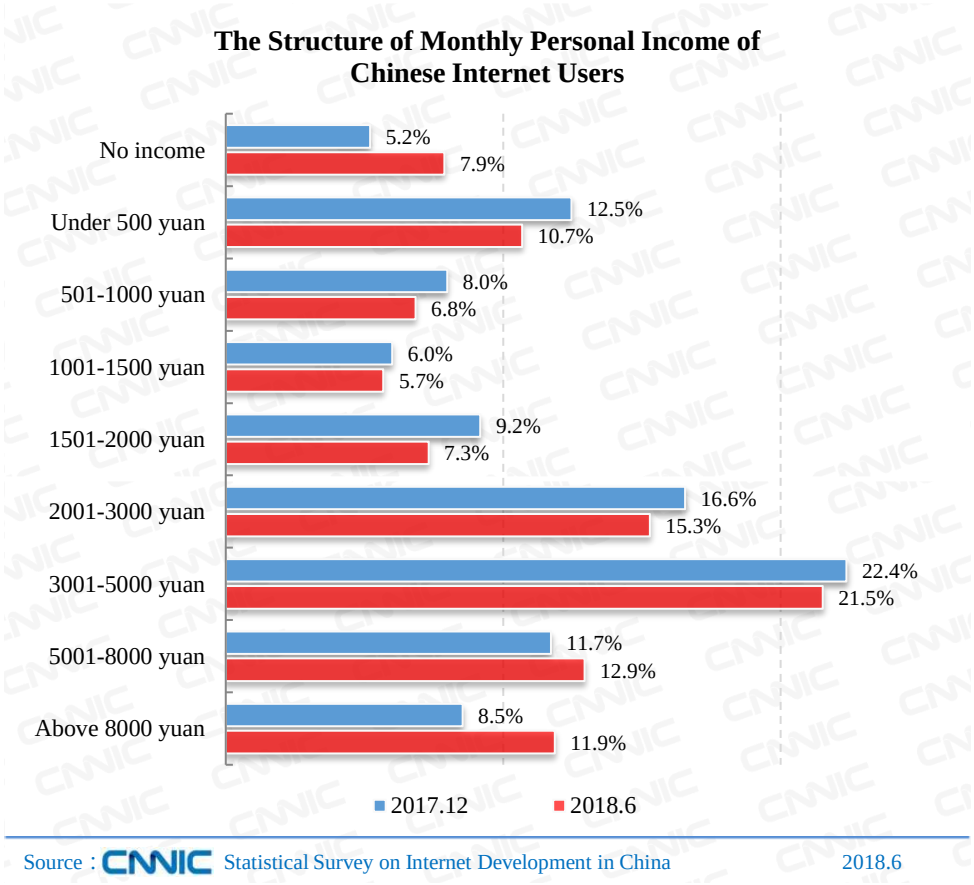


Figure 25 The Structure of Monthly Personal Income of Chinese Internet Users

3. The Development of Personal Internet Applications

In the first half of 2018, China's personal Internet applications maintained a sound developing momentum. The user scale of Internet wealth management increased significantly, with a half-year growth rate of 30.9%. The user scale of online taxi-hailing and online tailored taxi services/fast ride grew by 20.8% and 26.5% respectively on a semi-annual basis, second only to Internet wealth management. Short video applications rose rapidly with a utilization rate of 74.1%.

The user scale of basic applications has steadily increased, and the content optimization process of comprehensive platforms has been accelerated.

Instant messaging, search engines, online news, and social networking serve as basic

applications, with user scale keeping growing steadily. Regarding instant messaging products， the differentiated service content, the strict content supervision, and specialized application scenarios were the three principal directions of industrial development in the first half of 2018. With the fierce competition for traffic between different search engines, which drives the commercialization process, enterprises have continuously increased their investment in artificial intelligence to help search engines continue to expand the fields such as content distribution and hardware development. In the area of online news, the competent government departments intensified efforts to deliver better content of online news in the first half of the year, which facilitates greater integration of traditional news media with Internet news media. News We-Media has developed from individual units to new-type media organizations, and become more commercialized. Mobile social applications have been growing in popularity to serve as main channels for netizens to consume their fragmented time.

The utilization rate of Internet wealth management has increased significantly, and the market has developed in an orderly and standardized manner

The utilization rate of Internet wealth management in China has increased from 16.7% at the end of 2017 to 21.0% in June 2018. The number of Internet wealth management users has increased by 39.74 million, with a half-year growth rate of 30.9%. The user scale of Internet wealth management in China has continued to expand, and wealth management habits of Internet users have been gradually developed. The asset management business has put an end to rigid redemption to reduce business risks of financial institutions as well as regulatory arbitrage, further improve the proactive management capability of institutions, and accelerate the transformation of Internet wealth management products from principal-protected types to net-asset-value types. The decelerated issue of money funds and the expedited registration of P2P lending and financing has guided Internet wealth management market towards the road of rational and standardized development.

E-commerce and social applications have been deeply integrated, and the utilization ratio of mobile payment has kept growing

As of June 2018, China’s online shopping users and those using online payment accounted for

71.0% of the total Internet users. Online shopping and Internet payment Apps have enjoyed a high proportion of Internet users. For one thing, e-commerce, social applications, and digital content have been integrated with each other, the social e-commerce model has expanded the e-commerce business, and e-commerce enterprises have launched diversified shopping scenarios with digital content. On this basis, e-commerce as a whole has maintained stable development and played an essential role in coordinating the supply-side structural reform, boosting employment, and revitalizing rural areas. For another, most payment agencies have been connected to the unified clearing platform for online payment, improving the transparency of funds and the security of online payment. The proportion of Internet users using online payment has increased from 68.8% in December 2017 to 71.0% in June 2018.

Internet-based entertainment has developed healthily, and short video applications have emerged rapidly.

In the first half of 2018, because of strong demand in the online entertainment market, corresponding policies were introduced to promote and guide the healthy development of the online entertainment industry. Original works of online music gain support from people, online literature users have various ways of reading, and diverse online game types and excellent game content go viral. As short video applications emerge rapidly, 74.1% of netizens have used these applications to meet their fragmented entertainment needs. In the meantime, the content of online culture and entertainment has been further standardized, the copyright environment of online music and literature has been gradually improved, and illegal content of online games has been rectified. The video industry has built an ecosystem with content as its core, and live streaming platforms have entered the stage of refined operation.

Shared travel users have grown at a high rate, and market resources have been further integrated.

In the first half of 2018, 30.6%, 43.2% and 37.3% of netizens used a shared bike, online taxi-hailing services, and online tailored taxi services/fast ride respectively, up by 11.0%, 20.8%, and 26.5% compared with the end of 2017. The shared bike market showed a multipal-giant competition. Shared bike companies tried to expand their revenue sources in various ways and began to provide

deposit-free services to avoid risks. There is a cross-sector integration phenomenon in the online car-hailing industry. Platforms and enterprises have carried out a comprehensive plan regarding travel services to start to expand from a single business to a platform-based ecology.

Table3 Usage Rate of Internet Applications by Chinese Netizens Dec. 2017 - Jun. 2018

	2017.12		2018.06		
Applications	Number of Internet users (10,000)	The percentage of Internet users using the application	Number of Internet users (10,000)	The percentage of internet users using the application	Semi-annual growth rate
Instant messaging	72023	93.3%	75583	94.3%	4.9%
Search engine	63956	82.8%	65688	81.9%	2.7%
Online news	64689	83.8%	66285	82.7%	2.5%
Online video	57892	75.0%	60906	76.0%	5.2%
Online music	54809	71.0%	55482	69.2%	1.2%
Online payment	53110	68.8%	56893	71.0%	7.1%
Online shopping	53332	69.1%	56892	71.0%	6.7%
Online games	44161	57.2%	48552	60.6%	9.9%
Online banking	39911	51.7%	41715	52.0%	4.5%
Online literature	37774	48.9%	40595	50.6%	7.5%
Travel booking[5]	37578	48.7%	39285	49.0%	4.5%
E-mail	28422	36.8%	30556	38.1%	7.5%
Internet wealth management	12881	16.7%	16855	21.0%	30.9%
Weibo	31601	40.9%	33741	42.1%	6.8%
Map query	49247	63.8%	52419	65.4%	6.4%
Online meal ordering	34338	44.5%	36387	45.4%	6.0%
Online education	15518	20.1%	17186	21.4%	10.7%

[5]Travel booking: It is defined in this report as booking air tickets, hotel, train tickets and travel & vacation products via the Internet in the last 6 months.

	2017.12		2018.06		
Applications	Number of Internet users (10,000)	The percentage of Internet users using the application	Number of Internet users (10,000)	The percentage of internet users using the application	Semi-annual growth rate
Online taxi-hailing services	28651	37.1%	34621	43.2%	20.8%
Online tailored taxi or fast ride	23623	30.6%	29876	37.3%	26.5%
Live streaming[6]	42209	54.7%	42503	53.0%	0.7%
Shared bike	22078	28.6%	24511	30.6%	11.0%

Table4 Usage Rate of Mobile Applications by Chinese Netizens Dec. 2017 - Jun. 2018

	2017.12		2018.06		
Applications	Number of Internet users (10,000)	The percentage of Internet users using the application	Number of Internet users (10,000)	The percentage of Internet users using the application	Semi-annual growth rate
Mobile instant messaging	69359	92.2%	75000	95.2%	8.1%
Mobile news	61959	82.3%	63128	80.1%	1.9%
Mobile search	62398	82.9%	63740	80.9%	2.2%
Mobile music	51173	68.0%	52323	66.4%	2.2%
Mobile video	54857	72.9%	57786	73.4%	5.3%
Mobile payment	52703	70.0%	56608	71.9%	7.4%
Mobile shopping	50563	67.2%	55717	70.7%	10.2%
Mobile game	40710	54.1%	45833	58.2%	12.6%
Mobile banking	37024	49.2%	38227	48.5%	3.3%
Cell phone	34352	45.6%	38065	48.3%	10.8%

[6]Live streaming services surveyed for this report include live sport broadcasting, host live show, live game streaming, and live concert streaming.

	2017.12		2018.06		
Applications	Number of Internet users (10,000)	The percentage of Internet users using the application	Number of Internet users (10,000)	The percentage of Internet users using the application	Semi-annual growth rate
literature					
Mobile travel booking	33961	45.1%	35862	45.5%	5.6%
Mobile email	23276	30.9%	25695	32.6%	10.4%
Mobile education course	11890	15.8%	14221	18.1%	19.6%
Mobile microblog	28634	38.0%	31557	40.1%	10.2%
Mobile map and mobile navigation	46504	61.8%	50467	64.1%	8.5%
Mobile meal ordering	32229	42.8%	34359	43.6%	6.6%

3.1 The Development of Basic Applications

Instant messaging

Up to June 2018, China had 756 million instant messaging users, accounting for 94.3% of the total and representing an increment of 35.61 million from the end of 2017. Users of mobile instant messaging reached 750 million, constituting 95.2% of mobile netizens and recording a semi-annual increase of 56.41 million from the end of 2017.

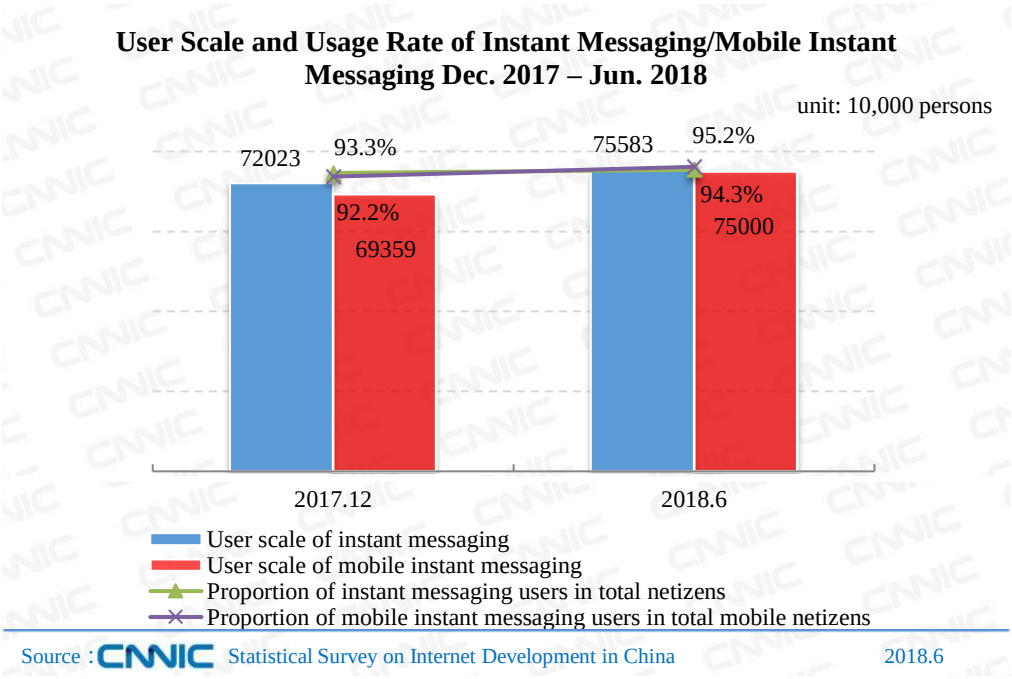


Figure 26 User Scale and Usage Rate of Instant Messaging/Mobile Instant Messaging Dec. 2017 – Jun. 2018

China's instant messaging market continued to develop smoothly in the first half of 2018. When it comes to the development trend of the industry, there are three main directions, namely, the differentiated service content of instant messaging products, the strict content supervision, and specific application scenarios.

First, differentiated services of instant messaging products were more apparent in the first half of 2018. In the field of social contacts between acquaintances, instant messaging products represented by QQ and WeChat have developed towards different directions. Among them, QQ has focused on catering to entertainment-oriented features of young users and worked to meet the entertainment-oriented information needs of young users through information flow services. WeChat has provided users with online and offline services such as retail, e-commerce, life services, government affairs, and people's livelihood by continuously improving the functionality of applets. Regarding unfamiliar social contacts, Momo purchased Tantan in February 2018 to further consolidated its market position in this field.

Second, the content supervision of instant messaging products is stricter than before. In particular, the bad content from instant messaging groups is highly concerned by regulators and

enterprises. Take WeChat as an example. Since February 2018 WeChat has taken measures to deal with illegal content including Spring Festival activities with user-induced behaviors, short video links without permission to broadcast audio-visual programs on the information network, and "abuse groups" with uncivilized behaviors such as verbal abuse and regional discrimination. Since the Cyberspace Administration of China issued the *Regulations on the Management of Information Services of Internet Groups* in September 2017, relevant watchdogs have cracked down on bad content such as vulgarity, gambling, and rumors spreading through group channels. By implementing the main responsibilities of group management, the instant messaging space is no longer "beyond the law."

Third, instant messaging products applied to office scenarios have been more specialized. As representatives of these products, DingTalk, and WeChat Work maintained a sustained growth in user scale in the first half of the year and promoted the mutual connection of product data. According to DingTalk's data, by the end of March 2018, more than 7 million enterprises joining DingTalk had already been organized to be connected with mobile Taobao, which helped enterprises to upgrade the digital level of offline retail scenarios. According to the data released by WeChat Work, the number of registered enterprises in the first five months of 2018 increased by 180% and the number of users increased by 500% compared with the same period in 2017. WeChat Work began to realize the intercommunication with personal WeChat to enhance users' access to products.

Search Engine

Up to June 2018, China had 657 million search engine users, a semi-annual increase of 17.31 million or 2.7% over the end of 2017. It also had 637 million mobile search users, a half-year increase of 13.42 million or 2.2%. The utilization ratios of search engine and mobile search were 81.9% and 80.9%, respectively.

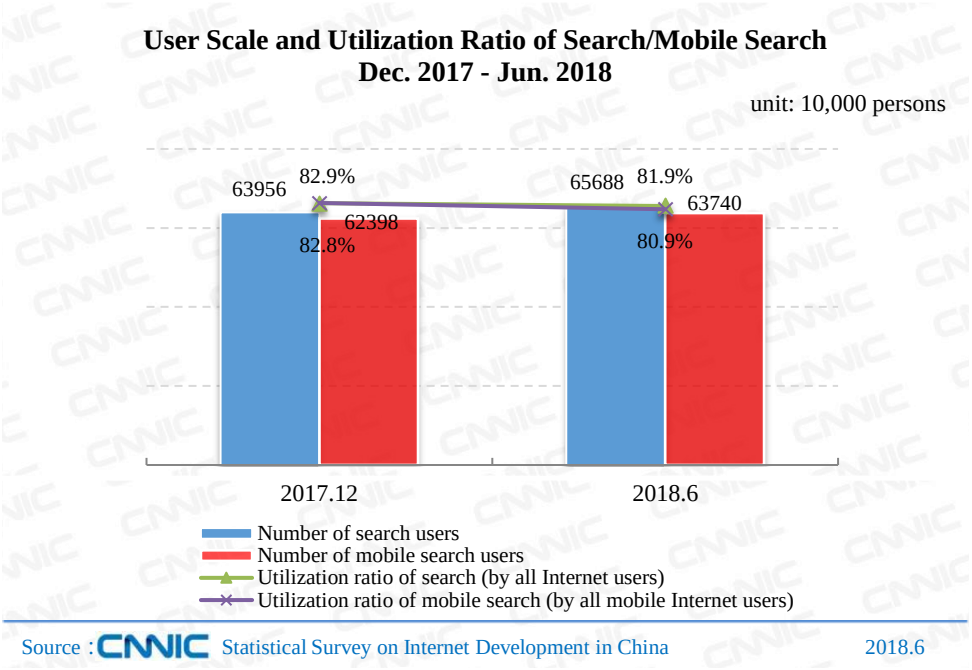


Figure 27 User Scale and Utilization Ratio of Search/Mobile Search Dec. 2017 - Jun. 2018

In 2018, the fierce competition for traffic between different search engines improved capabilities of commercialization. Within the market, scale dividends of mobile traffic were reduced to drive search engines to increase cooperation with traffic channels and mobile phone manufacturers, thereby resulting in higher costs for acquiring traffic. According to financial results of relevant enterprises, in the first quarter of 2018, the traffic-acquiring costs of Sogou and Baidu and the operating costs of 360 Internet advertisements and services increased on year-on-year basis. Outside the market, due to the increasing demand of netizens for vertical information search, Apps on e-commerce, life service, news, and video have diverted more traffic, thus exerting impacts on the search engine advertising market. In this context, search engine enterprises perfected bidding products and improved advertiser's delivery efficiency through artificial intelligence technologies, so that they could achieve revenue growth by enhancing capabilities of commercialization. According to relevant financial reports, in the first quarter of 2018, Baidu's online marketing revenue increased by 23% year-on-year, Sogou search's revenue rose by 55% compared with a year earlier, and 360's Internet advertising and service revenue grew by 54% from a previous year. In the future, traditional search engines need to face traffic competition by providing more sophisticated vertical search services to individual users, especially meeting the "one search, one reach" demand of different users for information, services, and products at the mobile end, and

adequately solving the problem of medical advertising market, so as to achieve sustainable and stable development.

Online News

As of June 2018, China had 663 million online news readers, accounting for 82.7% of all netizens, with a semi-annual increase rate of 2.5%. Specifically, 631 million people, or 80.1% of mobile Internet users, read news on their phones, with a semi-annual increase of 1.9%.

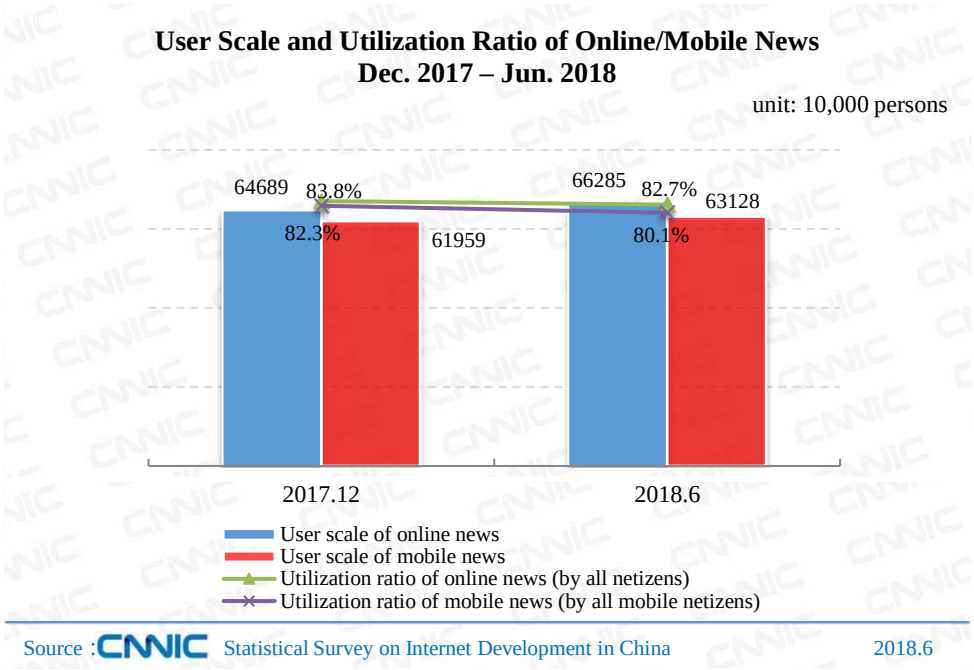


Figure 28 User Scale and Utilization Ratio of Online/Mobile News Dec. 2017 – Jun. 2018

In the first half of 2018, China's online news industry showed the following three characteristics.

First of all, competent national departments doubled efforts to develop online news and information content in the first half of the year so as to create clean cyberspace. With the rapid development of the online news industry, some enterprises immersed themselves in the pursuit of growth rate while ignoring the management of content quality, resulting in false, vulgar, pornographic and other illegal information flooding the network. The national competent department shall strengthen the management of cyberspace and the development of Internet content according to relevant laws, work to conduct positive publicity, foster a positive and healthy Internet culture, and guide the correct value orientation, so as to create a clean and positive cyberspace for

the majority of netizens, especially young netizens.

Then, traditional news media and online news media were integrated deeply to provide users with more authoritative, valuable and comprehensive news and information. Baidu and Xinhua News and Information Center reached strategic cooperation in content distribution, artificial intelligence, and search engine in the first half of the year to jointly explore a new media operation model of "content + channel + search + big data." Relying on Baidu's artificial intelligence and search engine technologies, high-quality and original news content was recommended to a broader audience in a fast and direct way. The in-depth cooperation between the traditional news media and online news media, for one thing, expanded the content audience for the traditional news media and is conducive to the dissemination of more positive mainstream news and information. For another, it also delivered high-quality content to the online news media.

Finally, online news We-Media developed from individual units to new-type media organizations and became more commercialized. In order to stably and continuously produce high-quality content, most of the leading online news We-Media have stepped up efforts to bring in talents from the traditional media and gradually set up professional and complete operation teams to develop themselves into a company and an institution. The ways of making profits from We-Media are much more diversified. In addition to traditional commercial models such as advertising, membership fees, and bonuses, We-Media will further tap the community value and channel value and carry out IP operation[7] of goods, services, and information by means of online-offline linkage based on characteristics of community interests and hobbies.

Social Applications

As of June 2018, the utilization ratios of WeChat Moments and Qzone reached 86.9% and 64.7% respectively and remained stable. As short videos and MCN[8] institutions flourish, the value of Weibo in fan interaction and content distribution has been further strengthened, with a usage ratio of 42.1%, up by 1.2 percentage points from the end of 2017. The user scale of Weibo increased

[7] IP (Intellectual Property) operation refers to keeping trying more operation means according to the types, characteristics, and user attributes of works.

[8] MCN: Multi-Channel Network, a product form of multi-channel network. MCN institutions are mainly responsible for combining high-quality Professional Generated Content (PGC) or User Generated Content (UGC) in different types and content on platforms, so as to provide operation, business, marketing, and other services for content authors in a platform-based operation model to help commercialize PGC or UGC.

by 6.8 % in half a year.

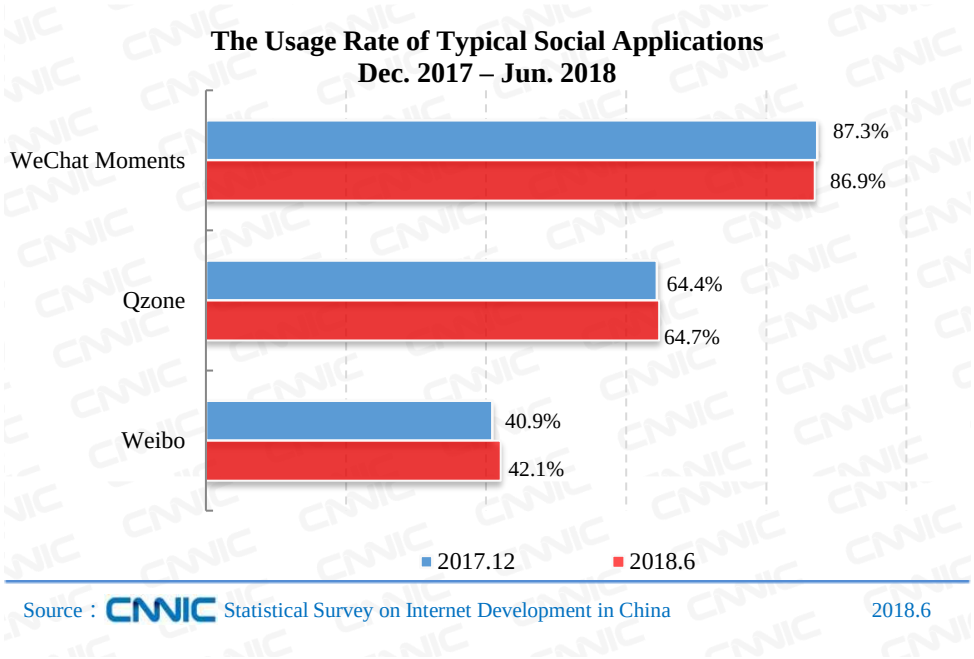


Figure 29 The Usage Rate of Typical Social Applications Dec. 2017 – Jun. 2018

In 2018, Mobile social applications were growing in popularity to serve as main channels for netizens to consume their fragmented time.

The mobile social industry chain continues to expand to make innovations in the model of "social +" applications. With the gradual disappearance of demographic dividends from the mobile Internet, social platforms have also begun to conform to the market trend, penetrating into such fields as advertising, short videos, e-commerce, games, education, and payment. They have used the endorsement of social relations to attract users and obtain commercial benefits, which, in return, give new vitality to these social platforms. In the field of e-commerce, it is a breakthrough for e-commerce development that new-type social e-commerce enterprises have created products with a high performance-to-price ratio to attract users to share their shopping experience and orders via social platforms, enhance online-shopping trust, and reduce e-commerce costs for attracting customers. However, social platforms had monetized traffic and developed diversified business models, both of which achieve win-win results. In the field of Internet celebrities, social platforms have also provided a complete ecological system for Internet celebrities and created a mature standardized Internet celebrity industry, so as to achieve a win-win situation for social platforms, Internet celebrities, and brokerages. The social media represented by Weibo has become the

preferred operating platform for most Internet celebrities by virtue of its model of rapid transmission and its ability to attract fans.

As the disclosure of users' privacy is prominent, social platforms must assume their main responsibility of protecting users' privacy. In March 2018, information relating to more than 50 million users of Facebook, the US-based social networking site, was leaked, arousing the attention of users and media. The urgency and importance of protecting personal online information were highlighted. In conducting their daily social networking behaviors, users can produce a large amount of personal information, social relations, geographical locations, and other information, which will be developed into a huge information database. Social applications can mine the data to create new economic value and give birth to data transactions. Social platforms must take the initiative to shoulder the responsibility of safeguarding the privacy of users, strengthen R&D and innovation of security technologies, and, from the perspective of technology and application, protect data security in the course of social networking.

3.2 The Development of Business Transaction Related Applications

Online shopping

Up to June 2018, China had 569 million online shopping users, accounting for 71.0% of the total netizen population and representing an increase of 6.7% from the end of 2017. The number of mobile shoppers reached 557 million, with a semi-annual growth rate of 10.2% and a utilization ratio of 70.7%. In the first half of 2018, the volume of China's online retail transactions reached 4081 billion yuan[9], up by 30.1% on year-on-year basis, and continued to maintain steady growth momentum.

[9]Source: China National Bureau of Statistics.

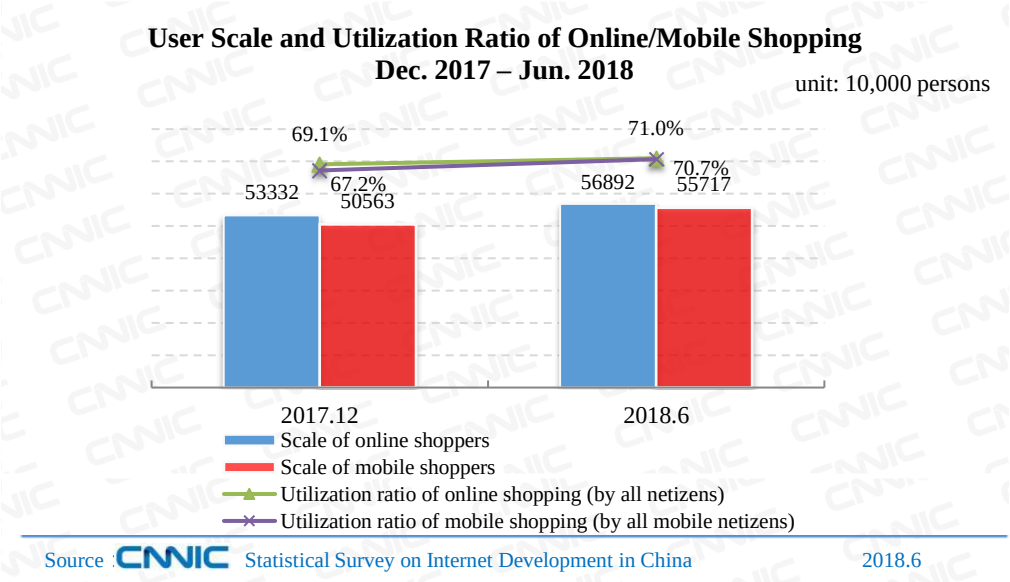


Figure 30 User Scale and Utilization Ratio of Online/Mobile Shopping Dec. 2017 – Jun. 2018

In the first half of 2018, viewed from the industry landscape, various e-commerce platforms accelerated offline integration and promoted the camp-based development of the retail industry. Alibaba, Tencent, and JD have used their capital, traffic, and technology advantages to consolidate real retail enterprises through investment, mergers and acquisitions, and strategic cooperation, gradually forming two camps of "Ali" and "JD-Tencent." The development of online-offline integration will help change the current situation of the "small but scattered" retail industry with "many segments," promote circulation efficiency and innovation of industry model. Meanwhile, real retail enterprises also provide online platforms with a "face-to-face" consumption scenario, expanding new space for the innovation of retail model. However, the "camp-based" industry may lead to the flow of commercial retail resources into a few platforms and increase risks such as unfair competition and monopoly.

Viewed from the industry trend, e-commerce has been integrated with social networking and content more closely. WeChat applet, JD and Taobao launched social e-commerce applications such as "group ordering" and "Taobao special price," reflecting that social networking is becoming a meaningful way to expand e-commerce business. Also, e-commerce and content business have been integrated with each other more rapidly. E-commerce platforms created diversified shopping scenarios through short videos, such as Taobao's short video application for life consumption. The content platform expanded e-commerce business across sectors, and some short video companies

purchased links from e-commerce businesses.

From the perspective of users, the stratification of online retail consumer groups has become increasingly prominent. As such, meeting the needs of different consumer groups has become the focus of driving the development of the online retail market. As the main group in the online retail stock market, high-income young users in first and second-tier cities pay more attention to the quality of shopping and consumption experience. NetEase Yanxuan, Fresh Hema and other quality e-commerce as well as new forms of industry have upgraded the consumption of the young group. The "long tail" group of middle-aged and elderly consumers in the third and fourth-tier cities has become new users in the online retail market. Social platforms can meet the needs of such consumers for prices and upgraded consumption through the low-price and group-buying model.

Online Meal Ordering

Up to June of 2018, 364 million Internet users had ordered meals online, representing a half-year increment of 6.0% from the end of 2017. The user scale is on the increase. Specifically, 344 million of them did it via mobile phones, an increase of 6.6%, and their proportion in the total increased to 43.6%.

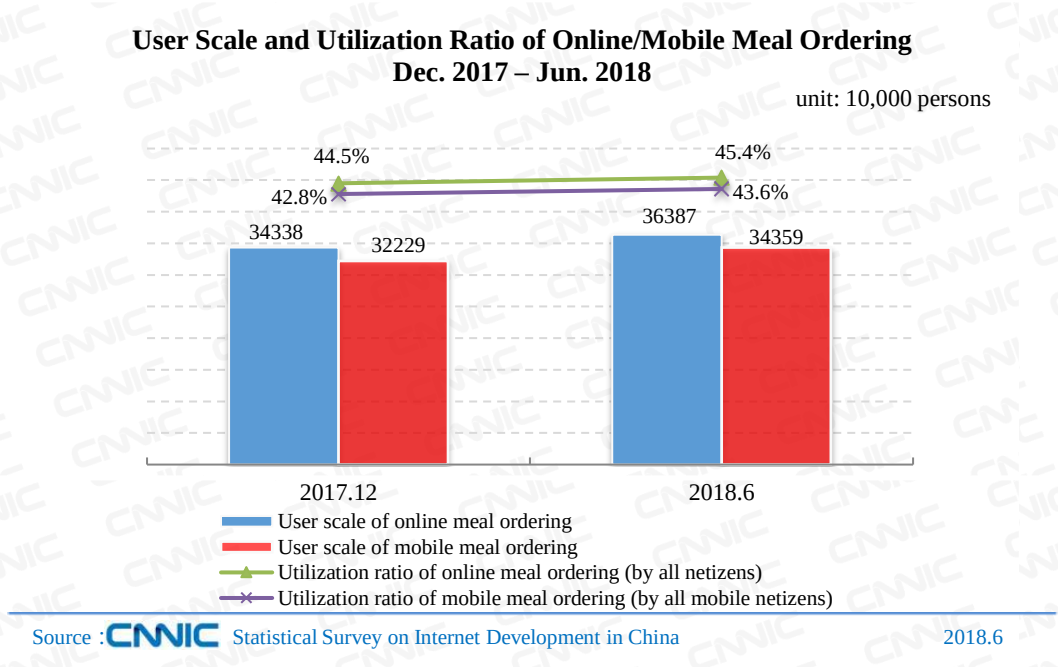


Figure 31 User Scale and Utilization Ratio of Online/Mobile Meal Ordering Dec. 2017 – Jun. 2018

Regarding policy environment, relevant regulatory policies of the online meal ordering industry tend to be improved. In the first half of the year, the *Measures for Supervision and Management of Food Safety of Online Catering Services* were implemented to impose requirements on both real entities and food business licenses of online meal ordering, further defining responsibilities of platforms and catering businesses. Regulatory policies have been improved to benefit the standardized development of the industry, but they have also raised the entry threshold to a certain extent.

In terms of industry landscape, the market of online meal ordering remained relatively stable in the first half of 2018. Meituan Takeout and Eleme still occupied main market shares. In April 2018, Eleme was purchased and wholly owned by Alibaba, with industry resources further converged. Under the dual effects of policy tightening and resource gathering, it is expected that the industry will maintain the current landscape in the next stage, making it more difficult to see a large takeout platform again.

Regarding industrial development, the takeout delivery and logistics system has been continuously improved, and short-distance logistics has been used to connect various fields of life services. With the help of new technologies such as big data and artificial intelligence, the delivery efficiency has been dramatically improved. The mainstream delivery platform in the market can control the average delivery time of orders within 30 minutes, thanks to the intelligent delivery system. After building an efficient delivery system, the takeout platforms expanded business radius by taking advantage of instant delivery, so as to develop an ecological system in the field of living services. For example, Eleme underpins Alibaba's new retail ecosystem. Meituan launched its offline retail store Zhangyushengxian to develop the retail ecology integrated with takeout, delivery, and catering.

Travel Booking

By June 2018, the number of online travel booking[10] users had reached 393 million, an increase of 17.07 million or 4.5% over the end of 2017. The proportions of Internet users booking tickets, hotels, train tickets, and travel and vacation products online were 23.8%, 25.7%, 40.1%,

[10]Online travel booking covers the booking of air tickets, hotels, train tickets and travel & vacation products via the Internet.

and 12.1%, respectively. Specifically, the number of users booking travel and vacation products grew fastest, with a semi-annual growth rate of 9.7%.

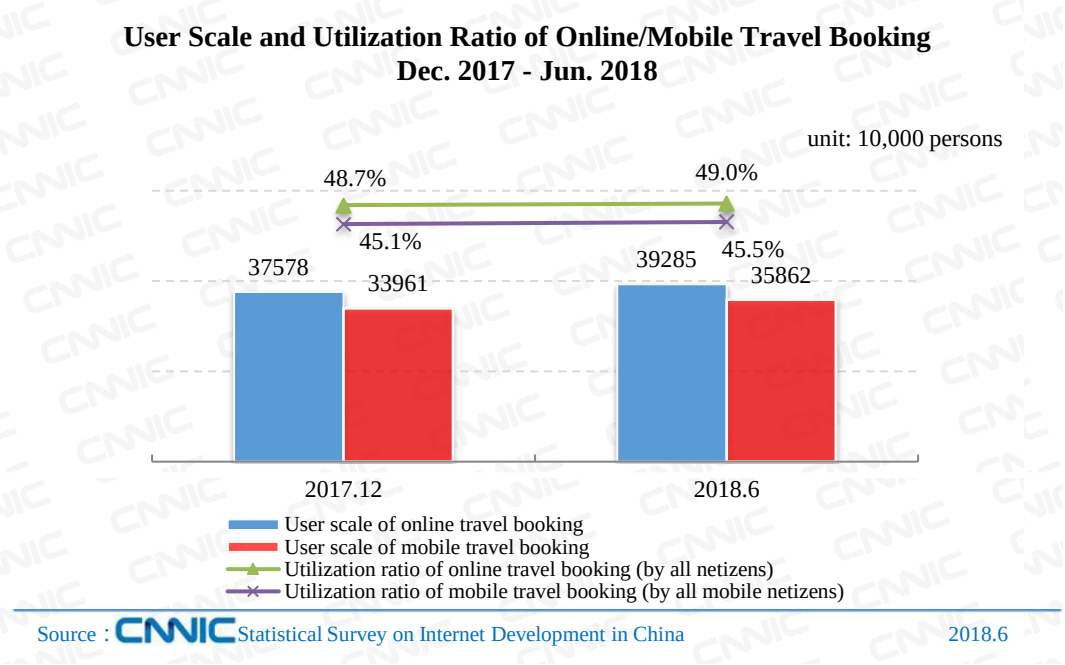


Figure 32 User Scale and Utilization Ratio of Online/Mobile Travel Booking Dec. 2017 - Jun. 2018

In the field of online air-ticket booking, the air ticket business of Online Travel Agency (OTA) platforms has developed internationally on a large scale to alleviate the impact of the adjustment of marketing channels. As for international ticketing, thanks to the demand growth of outbound travel market and the continued expansion of overseas markets of OTA platforms, the large increase in international ticket bookings has brought steady revenue. In domestic ticketing, affected by the trend of consumption upgrading, the potential of tourism demand is stimulated. The large-scale growth of local ticket business on OTA platforms alleviates the impact of zero commission. “Enhancing direct selling and reducing agent distribution” has prompted small and medium-sized ticketing agents to switch to the third and fourth-tier cities or to carry out business transformation, while business travel management services have become the focus of OTA platforms to expand ticket business.

Regarding the hotel reservation, OTA platforms have consolidated their supply chain resources to accelerate direct supply. The upstream hotel suppliers have operated as a group to improve the efficiency of the supply chain, while the downstream OTA platforms have achieved the direct

connection with hotels through B2B channels to build the core competitiveness. The direct connection mode of hotels will highlight the "Matthew Effect" of the strong alliance, break the original ecological pattern and re-divide the profit space of the hotel reservation market by bundling brands, technologies, resources and services of hotel suppliers and OTA platforms to integrate a new service value chain.

In the field of travel and vacation product reservation, the consumption upgrading of Chinese residents and potentials of tourist demand have stimulated the rapid development of this market. According to the data from the National Bureau of Statistics, in the first half of 2018, the growth rate of the consumption expenditure per capita across China was slightly higher than that of the disposable income, and the fomer accounted for 68.3% of the latter. From 2015 to 2017, China's gross tourism revenue grew by about 10% year by year, and outbound tourists maintained a growth rate of about 5%[11]. The rapid development of tourism has driven the growth of the number of tourists booking travel and vacation products.

3.3 The Development of Internet Finance Applications

Internet wealth management

Up to June 2018, Internet wealth management products had been purchased by 169 million netizens, up by 30.9% over the end of 2017, showing a high-rate growth momentum. The utilization ratio of Internet users reached 21.0%, up by 4.3 percentage points over the end of 2017.

[11]Source: *China Tourism Statistics Bulletin* and the *2018 Report on China's Entry-Exit Tourism Development*.

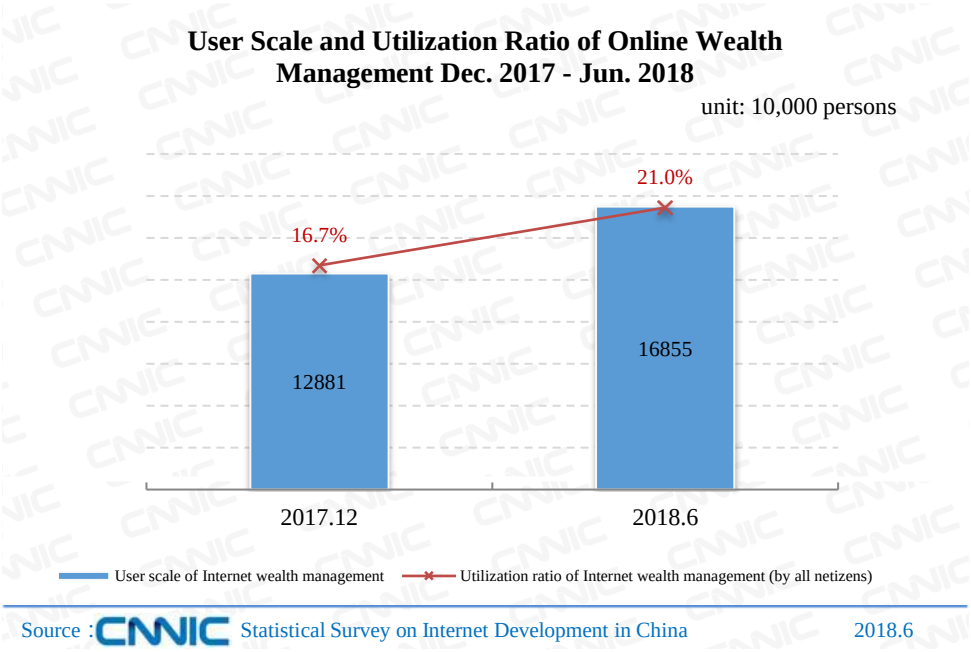


Figure 33 User Scale and Utilization Ratio of Online Wealth Management Dec. 2017 - Jun. 2018

Against the backdrop of financial deleveraging, in the first half of 2018, China further strengthened its supervision of Internet wealth management and tightened its supervision policies in various fields such as monetary fund, Internet-based banking financing, and P2P lending and financing, so as to ensure the compliance of markets.

Regarding bank-based wealth management and money funds, in the first half of 2018, the asset management business put an end to rigid redemption, and the T + 0 redemption amount of monetary funds was further limited, which reduced industry risks and standardized the industry development. First, ending rigid redemption reduced business risks of financial institutions as well as regulatory arbitrage and further improved the proactive management capability of institutions. Secondly, further accelerating the transformation of Internet wealth management products from principal-protected types to net-asset-value types will help boost innovations of wealth management products. Thirdly, the issue of money funds slowed down, seen from the fact that 71 money funds were set up from January to September 2017 and only one has been established since the beginning of 2018[12]. Super-large wealth management platforms such as Yu'e Bao have been "diverted" by providing multiple money fund products; therefore, Internet wealth management products have been gradually realigned with the original intention of small-sum inclusive products.

[12] Source: Securities Daily

Regarding P2P lending and financing, the filing and registration were accelerated in the first half of 2018. Also, local regulatory authorities stipulated that the business scale of online loan platform shall not be increased or non-compliant business shall not be added, and various policies forced the industry to accelerate its transformation. First of all, the industry's excessive growth momentum was effectively curbed. In the first half of 2018, the turnover, the loan balance and the number of platforms of online loan industry all decreased significantly. Secondly, non-compliance platforms must be eliminated as soon as possible, further minimizing risks. From January to May 2018, 73 platforms were involved in difficult cash withdrawal, escaping with money, and intervention of economic crime investigation departments; 170 platforms[13] suspended and transformed their business; high-rebate, self-financing, and illegal fund-raising platforms were expedited to be withdrawn from the market. Finally, the compliance development of the industry is embarking on the right track. The number of P2P lending platforms required to appoint commercial banks as fund custodians increased by 64.3%[14] year-on-year. 117 P2P lending platforms[15] are connected to the information disclosure system of Internet Finance Association.

Online payment

By the end of June 2018, China has had a total of 569 million online payment users, a semi-annual increment of 37.83 million people or 7.1%, with the utilization ratio rising from 68.8% to 71.0%. Online payment has become one of the applications with a high proportion of Internet users in China. Specifically, China had 566 million mobile payment users, a semi-annual growth of 7.4%, with the utilization ratio increasing from 70.0% to 71.9%.

13 Source: www.wdzj.com
14 Source: The *National P2P Credit Industry Bulletin in June 2018*.
15 Source: The National Internet Finance Association of China

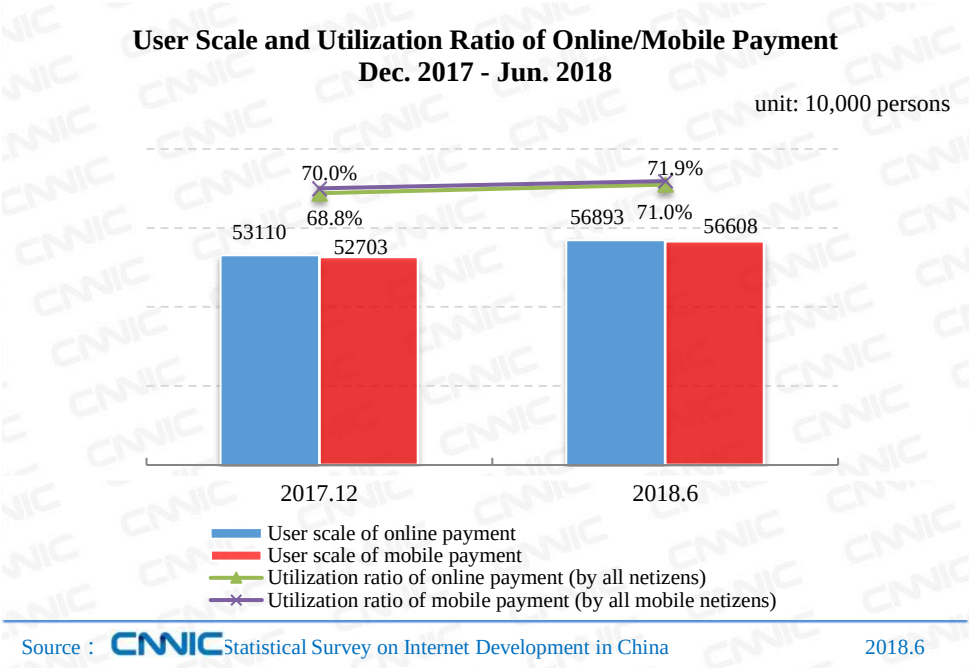


Figure 34 User Scale and Utilization Ratio of Online/Mobile Payment Dec. 2017 - Jun. 2018

According to relevant data, the proportion of Internet users paying their offline bills via mobile phones increased from 65.5% in December 2017 to 68.0%. Specifically, the utilization ratio of urban users was 71.9%, and that of rural users was 57.0%. Of the users who payed their offline bills via mobile phone, 44.0% preferred mobile payment, showing 5 percentage points higher than December 2017. Of these mobile payment users, 46.8% were urban netizens, and 36.5% were rural ones.

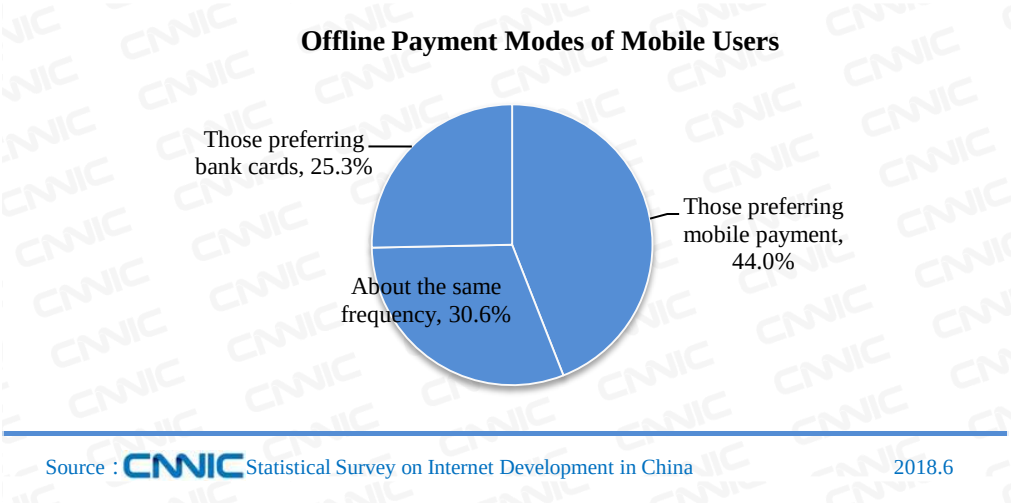


Figure 35 Offline Payment Modes of Mobile Users

In the first half of 2018, online payment applications showed the following characteristics.

First, the policies, such as the *Notice on Transferring the Online Payment Business of Non-Bank Payment Institutions from Direct Connection Mode to Unified Clearing Platform* and the *Notice of the General Office of the People's Bank of China on the Implementation of Collective Deposit of Clients' Reserve Funds of Payment Institutions*, were gradually implemented to improve the transparency and security of online payment funds significantly. By doing so, the online payment industry will enter a new stage of orderly controllable development. Second, the mobile payment market is still in the dual-giant competitive landscape, but it welcomes new strong entrants. The proportion of mobile payment users paying their offline bills via WeChat and Alipay reached 95.6% and 78.1% respectively, which almost covered the mobile payment user group. China UnionPay joined hands with commercial banks and payment institutions to launch a unified banking App called Cloud Flash Payment, which boasts a massive user base, some brand advantages, and various payment methods such as NFC and QR Code. If new businesses can take advantage of resources to give impetus to specific payment scenarios, they will be expected to have an impact on the existing market pattern.

3.4 The Development of Online Entertainment Applications

Online music

Up to June 2018, the user scale of online music was 555 million, accounting for 69.2% of the total and representing a semi-annual increment of 6.73 million. Mobile music users reached 523 million, constituting 66.4% of the total mobile netizens and recording a half-year increase of 11.50 million.

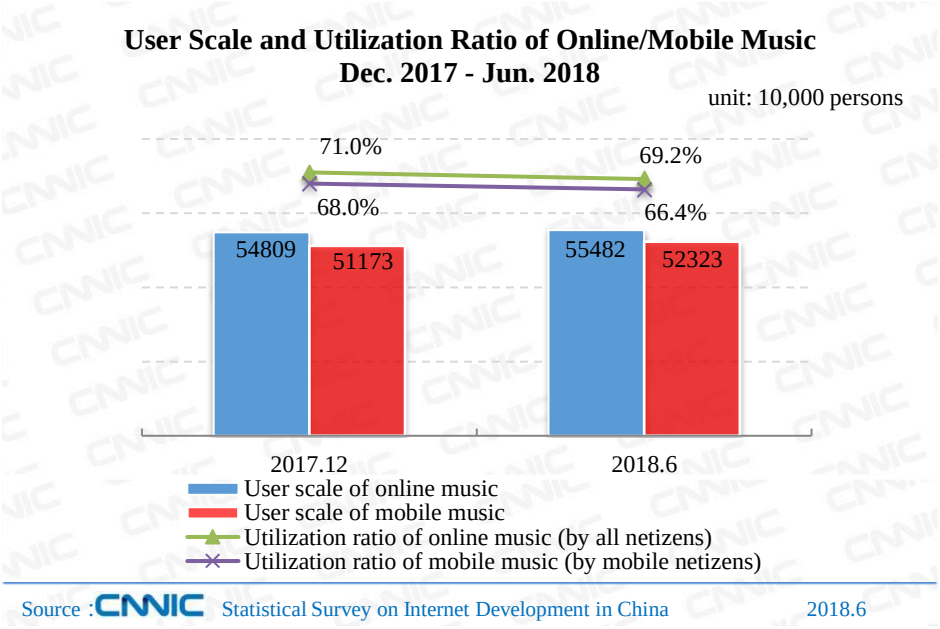


Figure 36 User Scale and Utilization Ratio of Online/Mobile Music Dec. 2017 - Jun. 2018

In the first half of 2018, China's online music market maintained its sound development momentum, thanks to growing market competition, gradually opening copyright environment, and strong support for original content.

Judged from the market pattern, the competition in the online music market is fiercer than 2017. Although the market continued the competition landscape dominated by QQ Music and NetEase Cloud Music, Taihe Music Group completed a range of adjustments including financing, mergers and acquisitions and brand upgrading in June, which is expected to have an impact on the current market pattern of online music. Also, some of the short-video companies participated in the market competition in the first half of the year by creating original music.

From the perspective of copyright environment, an online music copyright environment, dominated by a few exclusive copyrights and supplemented by a majority of open copyrights has gradually taken shape. In February, the *National Copyright Administration Promotes Copyright Cooperation between Tencent Music and NetEase Cloud Music* was released by the National Copyright Administration of the People's Republic of China to urge Tencent Music and NetEase Cloud Music to reach an agreement on the copyright cooperation of online music, so that the two online music platforms can authorize to each other more than 99% of their exclusive music works and provide music works licensing for other online music platforms. By taking this opportunity, the

industry has gradually changed from closed competition aimed at monopolizing copyright in 2017 to open competition aimed at sharing copyright.

From the perspective of content sources, online music companies have further increased their support for original authors, bringing fresh blood to the development of the industry. By supporting original authors, the business scope of online music enterprises has extended from content distribution in the downstream of the industrial chain to content creation in the upstream of the industrial chain, thus forming the enterprises' unique core competitiveness. QQ Music, NetEase Cloud Music, and Douyin have launched their support programs for original music authors in the first half of 2018, providing support for the creation and dissemination of new content regarding multiple dimensions such as promotional resources, professional guidance, cash incentives, and customized MVs.

Online Literature

Up to June 2018, the user scale of online literature was 406 million, accounting for 50.6% of the total and representing a semi-annual increment of 28.20 million. Users of cell phone literature reached 381 million, constituting 48.3% of the total mobile netizens and recording a half-year increase of 37.13 million.

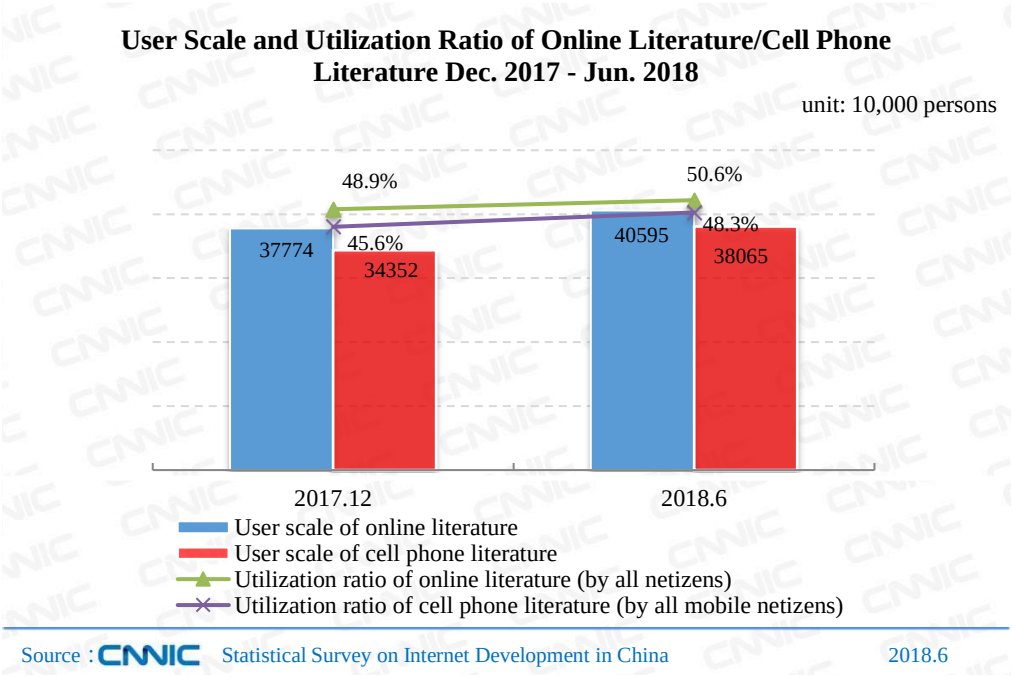


Figure 37 User Scale and Utilization Ratio of Online Literature/Cell Phone Literature Dec. 2017 - Jun. 2018

In recent years, China's digital content copyright environment has been continuously optimized to promote the vigorous development of China's online literature. In the first half of the year, the online literature industry was developed to be mainly featured by two aspects, namely, diversified revenue structure of enterprises and various reading styles of users.

First, there is a prominent trend of diversified revenue structure of online literature enterprises. According to the financial reports released in the first half of 2018 by two listed online literature companies, namely Yuewen Group and iReader Technology[16], although online reading was the core source of revenue for both companies, other business including copyright operation, hardware

[16]Both Yuewen Group and iReader Technology released their 2017 financial reports in March and April 2018.

products, and paper books also contributed to the overall revenue. In the long run, the copyright operation business will become the key to the future revenue growth of online literature enterprises. It currently ranks second and third in the overall revenue of Yuewen Group and iReader Technology respectively.

Second, there is a noticeable trend in various reading styles for online literature users. In terms of user scale, CNNIC's data showed that the number of China's audio-reading users[17] had reached 232 million by June 2018, accounting for 28.9% of the total Internet users. Seen from revenue, according to the *White Paper on Chinese Digital Reading 2017* released by the China Association of Audiovisual and Digital Publishing in April 2018, the market size of the digital reading industry in 2017 reached 15.2 billion yuan, of which the market size of the audio reading industry amounted up to 4.06 billion yuan.

Online Games

Up to June 2018, China had 486 million online game players, accounting for 60.6% of the total. The semi-annual increase of online game players was 43.91 million over the end of 2017. The number of mobile game players reached 458 million, a sharp semi-annual increase of 51.23 million, accounting for 58.2% of mobile netizens.

[17]In this report, online literature users only refer to those who read or download novels on the Internet and are independent of audio-reading users.

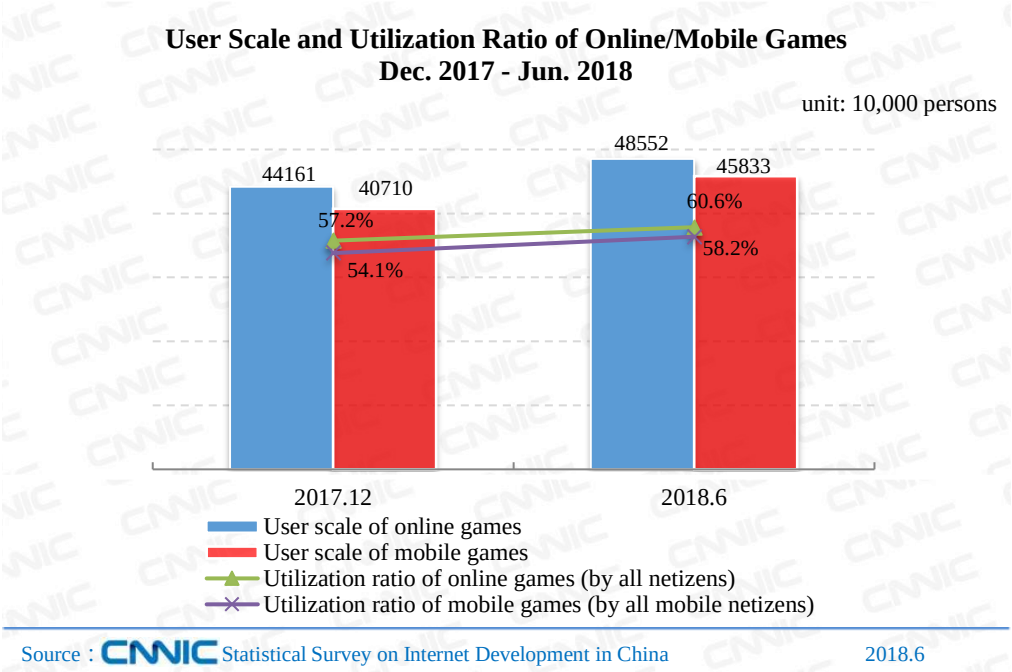


Figure 38 User Scale and Utilization Ratio of Online/Mobile Games Dec. 2017 - Jun. 2018

In the first half of 2018, China's online game industry developed steadily, with its user scale further increasing. Changes in China's online game market in the first half of the year were mainly reflected in two aspects, namely, market development and industry supervision.

Viewed from market development, diversified game types and quality game content have become the two main directions of competition in the industry. For one thing, many games designed to meet different user needs have won favor with a large number of users in a short period. Among them, Travel Frog, a low-pressure non-competitive mobile game, and Love and Producer, a casual game aimed at the female market, played a prominent role in the first half of the year. For another, with the constant maturity of China's online game market, users' taste and consumption capacity have kept improving, prompting game developers to pay more attention to the investment in game quality. In the meantime, the increasingly mature market environment also provides independent game developers with better development space.

Regarding industry supervision, all relevant departments have launched a joint crackdown on the harmful content of online games, which has significantly reduced the illegal content. In late December 2017, the Publicity Department of the Central Committee of the Communist Party of China, the Office of the Central Cyberspace Affairs Commission and other six departments jointly issued *Opinions on Strictly Standardizing the Management of Online Game Market* to take special actions to crack down on illegal acts and bad content of online games. As of March 2018, 3,975 online game applications involving online gambling, bloody violence, and vulgar pornography had been investigated and punished according to relevant laws. Online game enterprises are paying more attention to cultural attributes, educational functions and social influences of their products, and shoulder the main duty of content management.

Online video

Up to June 2018, the user scale of online video was 609 million, accounting for 76.0% of the total netizen scale and representing a semi-annual increment of 30.14 million. Users of mobile video reached 578 million, constituting 73.4% of all mobile netizens and recording a half-year increase of 29.29 million.

In 2018, the online video market remained three-pronged, and the industry content ecosystem

was gradually established. At the level of market competition, Tencent Video, iQiyi, and Youku still maintained the leading edge and occupied most of the traffic in the market. With iQiyi going public in the US, head video platforms have been incorporated into the listed enterprise system as a vital traffic entrance. At the level of industry integration, video platforms have already been integrated with video, literature, comics, music, offline entertainment, and smart entertainment hardware to develop a content ecology with film and television content as its core and derivative content as its auxiliary. Focusing on the needs of users, they have built a market competition barrier through strategic ecological arrangements. In the future, the competition in the online video market will be the one between content-based ecologies.

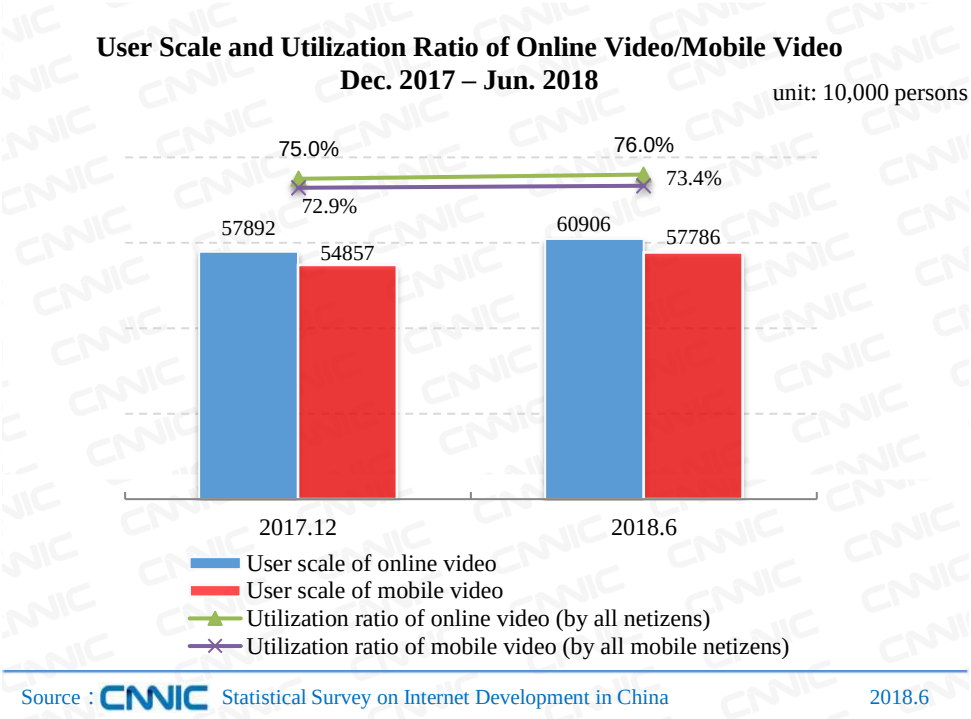


Figure 39 User Scale and Utilization Ratio of Online Video/Mobile Video Dec. 2017 – Jun. 2018

Short video applications have emerged rapidly to become the pastime of netizens, but they are also facing their development bottleneck.

As a three-dimensional information bearing mode, short video features rich and diverse content and robust interactivity, which satisfies fragmented entertainment needs of netizens and grassroots people's willing to express themselves and attracts users to play short videos. Since 2017, especially during the Spring Festival in 2018, short video applications have rapidly gained

popularity in third- and fourth-tier cities, with the user scale keeping growing. As of June 2018, the user scale of popular short video applications reached 594 million, accounting for 74.1% of the total number of Internet users[18]. The utilization ratio of online video users including those of short video applications amounted up to 88.7%, and the user size stood at 711 million[19].

With the increase of short video users and their usage time, the rate of manual and technical review cannot keep up with that of content release. As such, video content is uncontrollable to some extend and some vulgar and fake video content affects the network ecology. Meanwhile, personalized recommendation algorithms can easily cause users to indulge in these videos, leading to the phenomenon of information cocoons. Since April 2018, relevant state administrative departments have rectified illegal short video platforms and severely held illegal video websites accountable by inspecting, rectifying, withdrawing and permanently shutting down bad products, so as to force short video websites to conduct self-check and self-rectification and promote the standardized development of the industry. In the future, short video platforms need to bring into full play their advantages, strengthen cooperation with e-commerce and social and vertical media, expand the market, and build a content-based ecology, in order to achieve sustainable development.

Live Streaming

By June 2018, the user scale of live streaming had reached 425 million, a slight increase of 2.94 million from the end of 2017. The utilization ratio was 53.0%, down by 1.7 percentage points from the end of 2017. Regarding the subfields of live streaming, such as sports, games, reality shows and concerts, the utilization ratio of live sports, driven by the Russian World Cup, increased by 4.9 percentage points from the end of 2017, while the utilization ratio of the other three showed a downward trend. On the one hand, short video applications diverted some live streaming users; On the other hand, the industry entered a period of market restructuring and business reshaping, and its development tended to be stable.

[18]The user scale of short video in this survey refers to all the users who have used applications such as Douyin, Kuaishou, Huoshan, Xigua, Weishi, Pear Video, Meipai, Miaopai and Tudou over the past six months.
[19]Online video users incorporating those of short video applications include traditional online video users (users who have watched or downloaded videos online in the past six months) and short video users (users who have used short video applications such as Douyin and Kuaishou in the past six months).

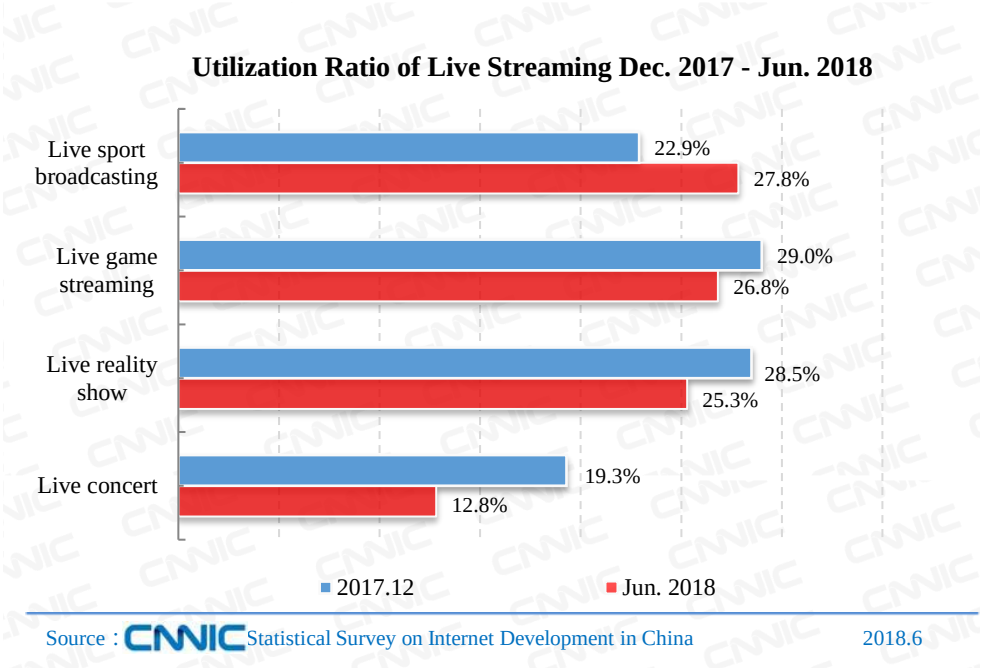


Figure40 Utilization Ratio of Live Streaming Dec. 2017 - Jun. 2018

In 2018, thanks to the increasingly standardized supervision and the accelerated consolidation of the live streaming industry, major live streaming platforms entered the stage of refined operation.

At the level of external supervision, relevant administrative departments continued to strengthen oversight over the content and lead the healthy development of the industry. The live streaming possessing real-time and interactive content lacked the control mechanism and process of professional media. Such platforms played a limited role in supervising hosts. As a result, the live streaming industry has always been the focus of relevant departments' supervision. In early 2018, the Ministry of Culture and Tourism organized a centralized law-enforcing inspection of the online performance and online game market to check and clean up prohibited content and standardize the operating order of the online cultural market; meanwhile, it carried out content supervision and inspection of live broadcasting platforms such as 6.cn, Panda, Douyu, and Huya. All these efforts can promote the orderly and healthy development of the industry.

At the level of industrial development, the live streaming industry has accelerated its integration, and the advantages of head platforms have been continuously broadened. As of the end of 2017, the number of China's companies conducting or engaging in live streaming dropped by nearly 100 compared with the end of 2016. Meanwhile, the overall revenue of the live streaming

market increased by almost 40% compared with 2016.[20] A large number of small and medium-sized live streaming companies have been shuffled out, while head platforms have developed a differentiated advantage by virtue of their stable user size and operation model. At present, four live streaming platforms have been listed, including Tiange, YY, Momo, and Huya. They have all made profits, over 80% of which came from the live streaming business. Momo's market value had exceeded US$ 10 billion by the end of May 2018, thanks to the strong growth of its live streaming business.

3.5 The Development of Public Service Applications

Shared bike

Up to June 2018, China had 245 million shared bike users, accounting for 30.6% of all netizens and representing a half-year increase of 24.32 million.

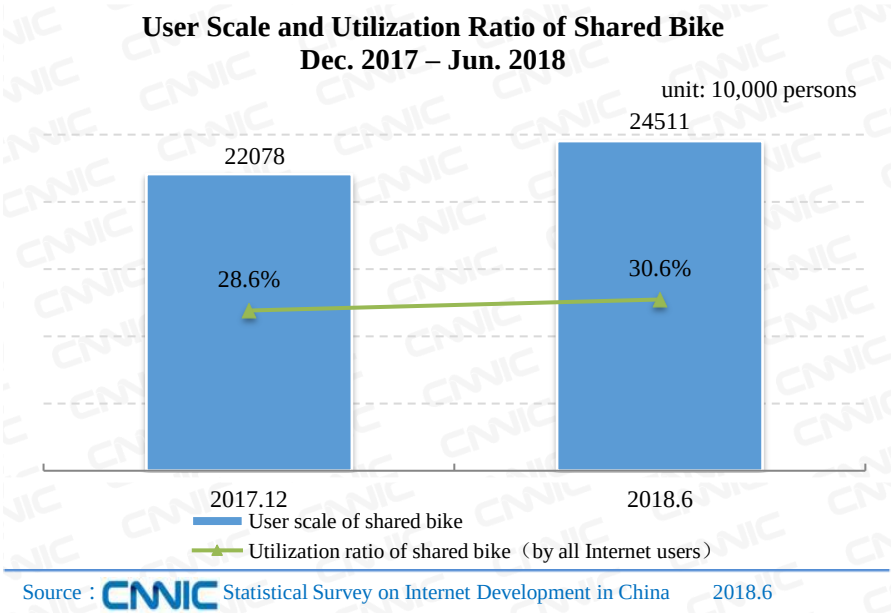


Figure 41 User Scale and Utilization Ratio of Shared Bike Dec. 2017 – Jun. 2018

With the involvement of large Internet groups such as Alibaba, Didi, and Meituan in the first half of 2018, the shared bike market has changed significantly compared with 2017, which is mainly reflected in the market pattern and operation model.

[20]Source: the *2017 Report on Online Performance (Live Streaming) Development in China* released by the Online Performance (Live Streaming) Branch of China Performance Entertainment Industry Association and Entbrains.

From the perspective of market pattern, the shared bike market shows the multi-giant competition. At the end of 2017, the elimination and consolidation of China's shared bike market ended, developing a dual-giant competitive landscape represented by Mobike and ofo. In the first half of the year, Mobike and Bluegogo were purchased by Meituan and Didi respectively, while Hellobike received a high capital increase from Alibaba's investment company. Thus, China has gradually developed a multi-giant competitive landscape in its shared bike market. Since most of the existing shared bike enterprises have been supported by well-funded groups, it is expected that the competition in this market will be more intense in the future.

From the perspective of operation model, shared bike enterprises have given top priority to the importance of business revenue, tried to expand sources of business revenue in various ways, and began to provide deposit-free services to avoid risks. First of all, Mobike and ofo raised their charges by canceling the discount of monthly cards during the Spring Festival and re-focused their business on service-oriented revenue. Secondly, shared bike enterprises represented by ofo explored the enterprise-side service model covering vehicle graphics, App-side advertisement, and yearly cards for enterprises, hoping to expand revenue sources and relieve operational pressure. Finally, Didi, Hellobike, and Mobike announced in the first half of 2018 that they would start the deposit-free model and gradually extend the model from some cities to the whole country.

Online Vehicle-hailing Services

Up to June 2018, China had 346 million Internet users hailing a taxi online, a half-year increment of 59.70 million or 20.8%. China had 299 million online tailored taxi or fast ride users, a semi-annual increase of 26.5%, and the utilization ratio increased from 30.6% to 37.3%.

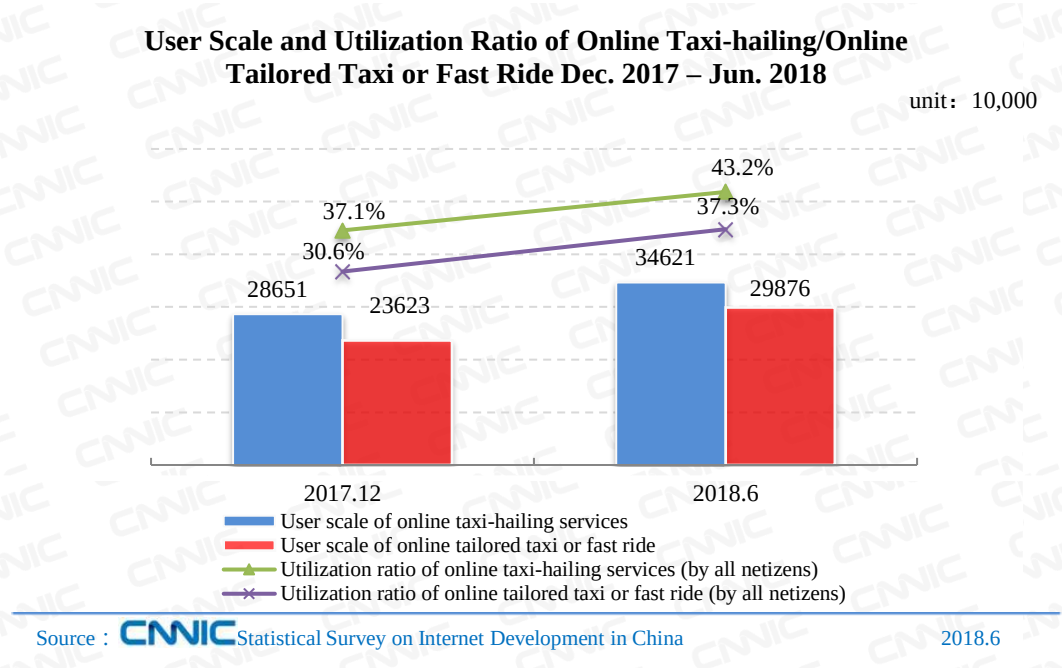


Figure 42 User Scale and Utilization Ratio of Online Taxi-hailing/Online Tailored Taxi or Fast Ride Dec. 2017 – Jun. 2018

At the level of policies and laws, the government has doubled efforts to tighten its supervision of online car-hailing platforms regarding related prominent problems. To control the market chaos in the online car-hailing industry, China issued *the Notice on Strengthening Joint Interim and Ex-Post Supervision of Online Car-Hailing Industry* in June 2018, following the introduction of new policies and local rules concerning online car-hailing services. The Notice clarifies the joint supervision and diversified governance mechanism supported by departments at all levels including transportation, cyberspace administration, communications, public security, the People's Bank of China, tax, industry and commerce administration, and market supervision. To a certain extent, online car-hailing services have eased the taxi-hailing difficulty. Strong market demand has stimulated the rapid and sustained increase of users, while passenger safety and unfair competition among online car-hailing companies have been widely criticized. We need to take into account the development of the online car-hailing industry as a whole to develop a model of government regulation and public supervision. We also need to strike a dynamic balance between breakthroughs in industry innovations and management constraints by leveraging new Internet technologies.

At the level of operation and management, online car-hailing enterprises have integrated themselves with other sectors to enter the stage of platform-based ecological arrangements. Due to

the relatively low threshold of the online car-hailing market and the unstable market pattern, market pioneers such as Didi, Shenzhou and Shouqi are facing the challenge of cross-sector competitors such as Ctrip, AutoNavi and Meituan. The online car-hailing industry has entered the stage of platform-based integration and arrangements from a single business. It has mapped out the travel field featuring mobility, intelligence and sharing, so that it can give full play to the low-cost advantage of the repeated development of users. For example, a one-stop car service platform is set up to cover many businesses such as car rental and sales, refueling, maintenance, and time-sharing leasing. The competition in the online car-hailing industry will focus on optimizing cost-profit space through resource integration, enhancing operation management to improve user experience, and realizing unmanned driving with AI technologies.

Online Education

Up to June 2018, China had 172 million online education users, a half-year increase of 16.68 million or 10.7% over the end of 2017, and the utilization ratio stood at 21.4%, up by 1.3 percentage points over the end of 2017. In particular, mobile education users numbered 142 million, a semi-annual increase of 23.31 million or 19.6%, and the utilization ratio was 18.1%, up by 2.3 percentage points from the end of 2017.

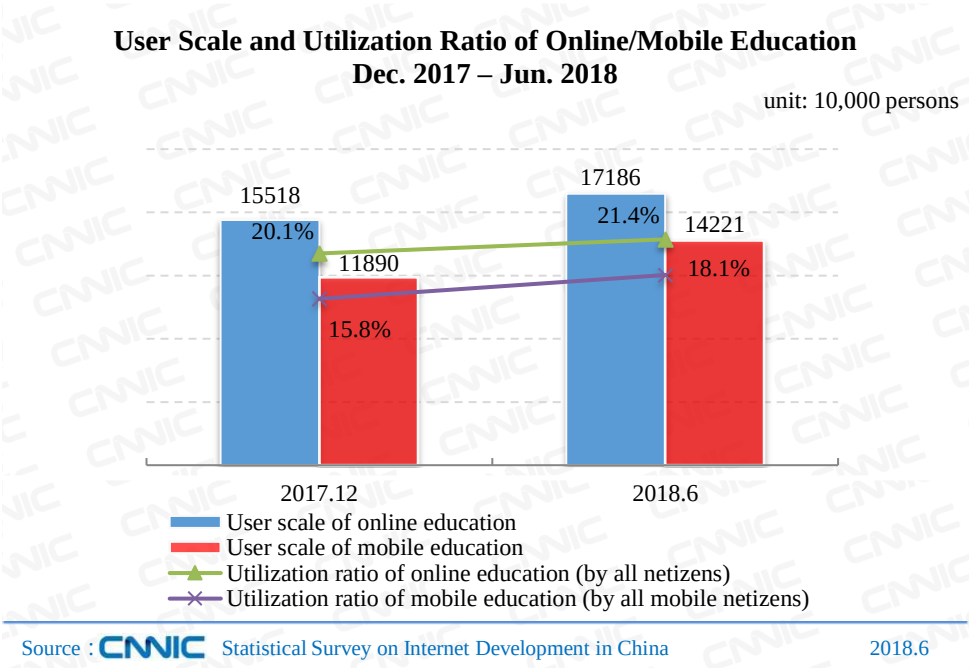


Figure 43 User Scale and Utilization Ratio of Online/Mobile Education Dec. 2017 – Jun. 2018

In the first half of 2018, the online education market grew further under the joint promotion of policies, capital, and technologies.

The capital market of online education was active, and the Matthew effect was prominent. In April 2018, the *Regulations of the People's Republic of China on the Implementation of the Promotion Law of Private Education (Revised Draft) (Draft for Comments)* were released, which played an important role in boosting the capital market of online education. Public data showed that the amount of investment and financing in online education in the first half of 2018 was close to the total amount of 2017. The amount of large-scale financing increased, and high-quality education projects gained popularity. Among all subdivisions, language education and K12 education received the largest amount of capital investment, with the largest single financing amount of US$ 500 million. The financing amount in STEM[21] education had the most substantial growth rate, especially in programming. Under the hot push of capital, leading enterprises such as VIP KID, Yiqi Technology, Hujiang, and VIP ABC have emerged in the online education industry, with local markets showing an oligarch trend.

The integration of online and offline education represents the future development trend. The development of online education products is based on the combination of offline education curriculum content. Only by ensuring the quality of curriculum content first can online technical support and platform interaction be meaningful. For offline education, it is also necessary to break through the limitations of the platform, technology, time and space and, thus, reach more users. In addition, online education mainly focuses on training and cannot wholly replace face-to-face education, especially in the education of personality and social ability. In the future, the integration of online and offline education will be further strengthened, online education will provide resources and tools, offline education will focus on human growth, and the two will achieve coordinated development.

[21]STEM education refers to the education of science, technology, engineering, and mathematics.

Part 3 The Development of Government Applications

1. An Overview of E-government Services

Up to June 2018, 470 million Internet users or 58.6% of all netizens received e-government services in China. Specifically, the utilization ratio of e-government services based on Alipay or WeChat civic service platform was 42.1%, which became the most popular way of using e-government services; the utilization ratio of WeChat official accounts of governments was 23.6%; and those of government websites, e-government Apps, and government Weibo were 19.0%, 11.6%, and 9.4% respectively.

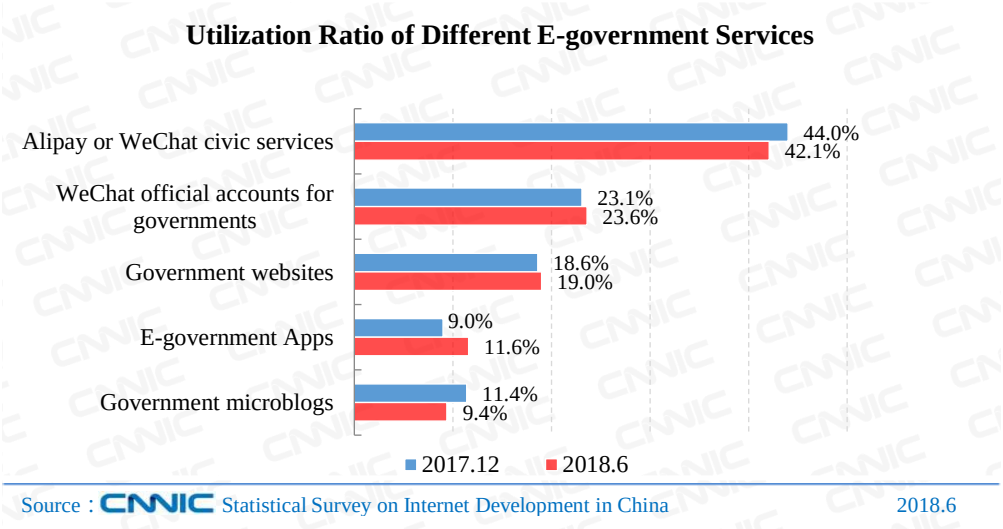


Figure 44 Utilization Ratio of Different E-government Services

2. The Operation of Government Websites

2.1 The Number and Distribution of Government Websites

As of June 2018, there were 19868 government websites[22] in China, mainly including government portals[23] and departmental websites[24]. Among them, there are 1,583 government websites for ministerial administrative units and 18,285 government websites for provincial and lower administrative units, mainly distributed in 31 provinces (autonomous regions and municipalities) and the Xinjiang Production and Construction Corps.

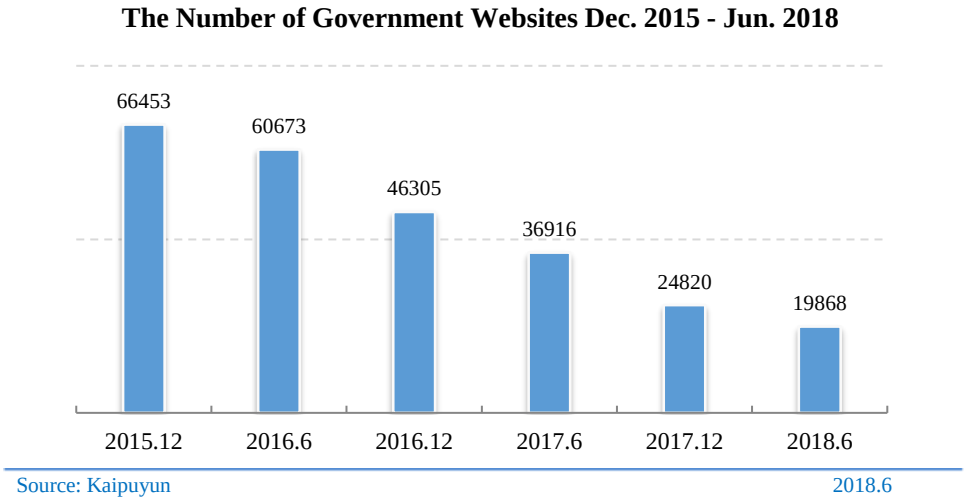


Figure 45 The Number of Government Websites Dec. 2015 - Jun. 2018

In 2015, the General Office of the State Council carried out the first national government website survey, aiming to find out the basic situation of the national government websites and effectively solve problems strongly reflected by the masses such as "untimely, inaccurate, unresponsive, and impractical" government websites. Problematic websites discovered in the census were urged to be rectified and websites with serious problems were resolutely shut down. Thus, phenomena such as "zombie" or "sleeping" government websites that served no one were

[22]Government websites refer to those run by people's governments at all levels and their departments, agencies and institutions with administrative functions on the Internet. They have the functions of information release, interpretation and response, service and interactive communication.
[23]Government portals: People's governments at or above the county level and departments under the State Council must set up government portal websites. In principle, villages, towns, and communities do not set up government portals, and there is special treatment for special needs.
[24]Departmental websites: provincial and municipal government departments, as well as institutions above the county level where the system-wide vertical management department is located, can set up their own websites as needed. In principle, county-level government departments do not set up government websites, and there is special treatment for special needs.

effectively eliminated. After more than three years of check-up and rectification, the intensification of government websites at all levels has increased significantly. By June 2018, the total number of government websites nationwide had decreased by 70.1% from December 2015. Governments at all levels have further implemented arrangements of the central government, adapted to the development and changes of the Internet, and promoted the sharing of intensive government websites.

Table 5 Number of Government Websites in Mainland China by Province Dec. 2015 - Jun. 2018[25]

Province	2015.12	2018.6	Reduction
Beijing	1065	704	33.9%
Tianjin	398	151	62.1%
Hebei	1988	583	70.7%
Shanxi	1315	418	68.2%
Inner Mongolia	2208	584	73.6%
Liaoning	1319	703	46.7%
Jilin	853	352	58.7%
Heilongjiang	1399	456	67.4%
Shanghai	713	586	17.8%
Jiangsu	3929	798	79.7%
Zhejiang	3623	741	79.5%
Anhui	3169	777	75.5%
Fujian	2612	522	80.0%
Jiangxi	1786	590	67.0%
Shandong	3951	1089	72.4%
Henan	2260	1158	48.8%
Hubei	3067	765	75.1%
Hunan	3692	706	80.9%
Guangdong	4496	1098	75.6%
Guangxi	1874	1112	40.7%
Hainan	283	121	57.2%
Chongqing	1008	324	67.9%
Sichuan	4282	1048	75.5%
Guizhou	1785	426	76.1%
Yunnan	3728	417	88.8%
Tibet	163	145	11.0%
Shaanxi	2993	705	76.4%
Gansu	1639	561	65.8%

[25]The table does not include the number of government websites of ministerial administrative units.

Province	2015.12	2018.6	Reduction
Qinghai	319	171	46.4%
Ningxia	291	161	44.7%
Xinjiang	1745	164	90.6%
Xinjiang Production and Construction Corps	205	149	27.3%
Total	64158	18285	71.5%

Source: Kaipuyun

2.2 The Distribution of Government Websites at Various Administrative Levels

As of June 2018, there were 1,583 government websites at the ministerial administrative level, accounting for 8.0% of the total and 16,275 government websites at the municipal and below administrative level, accounting for 81.9% of total. The number of government websites at all administrative levels decreased compared with the end of 2017.

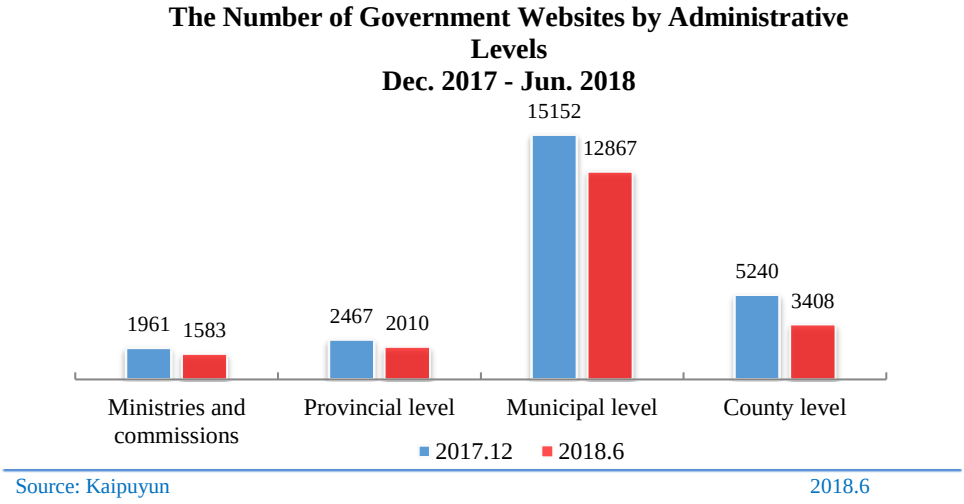


Figure 46 The Number of Government Websites by Administrative Levels Dec. 2017 - Jun. 2018

2.3 The Number of Website Columns of Government Websites at Various Administrative Levels

By June 2018, 345,000 columns on government websites had been opened at all administrative levels, of which 30,379 were at ministerial level, accounting for 8.8% of the total. Among all

columns of government websites, the number of columns of information disclosure was 229,000, ranking first and accounting for 66.4%. E-government columns accounted for 16.6%. Government update column accounted for 13.0%.

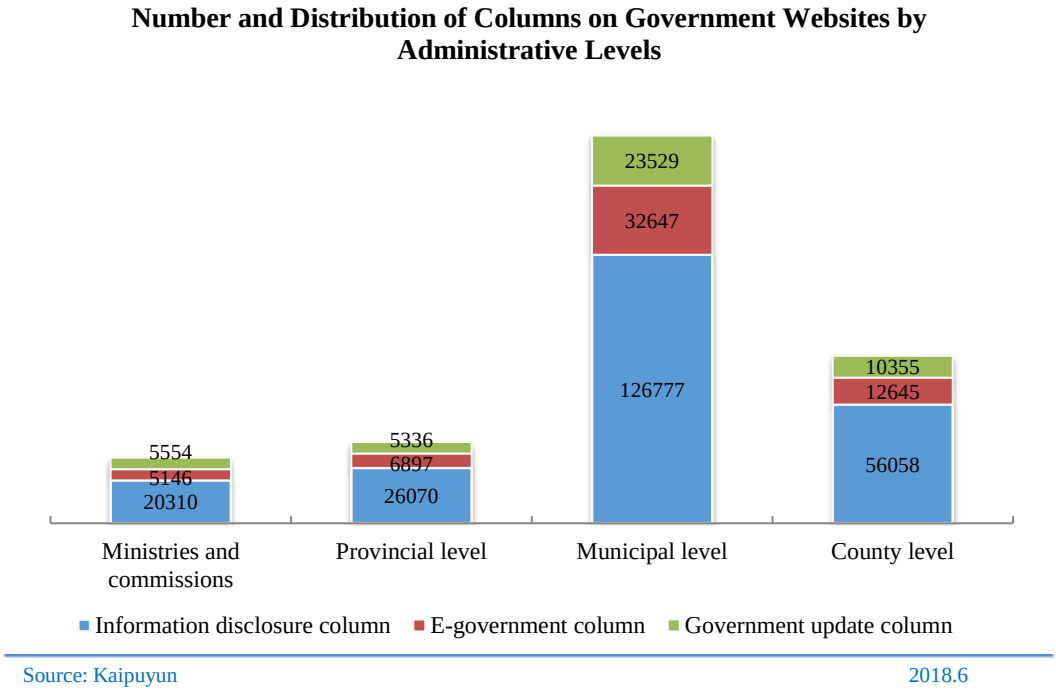


Figure 47 Number and Distribution of Columns on Government Websites by Administrative Levels

2.4 The Article Updates on the Front Pages of Government Websites at Various Administrative Levels[26]

In the first half of 2018, the number of articles updated on the homepage of China's government websites increased significantly from the end of 2017. Except for county-level government websites, the number of articles updated on the homepage of government websites at other administrative levels has increased, among which those on the homepage of ministerial-level government websites have grown most significantly, with a half-year growth rate of 22.1%.

[26]Number of articles updated on the first page of each government website

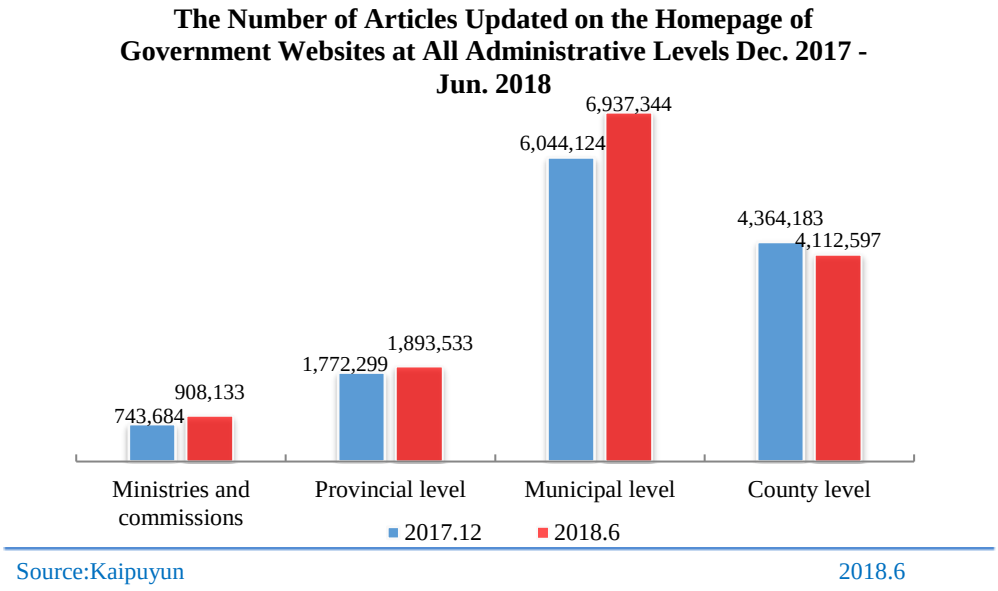


Figure 48 The Number of Articles Updated on the Homepage of Government Websites at All Administrative Levels Dec. 2017 - Jun. 2018

3. WeChat Civic Services

3.1 The Overall Use of WeChat Civic Services

The cumulative number of WeChat Civic Services users in China had reached 503 million by the end of May 2018, representing a growth of 20.6% over the end of 2017.

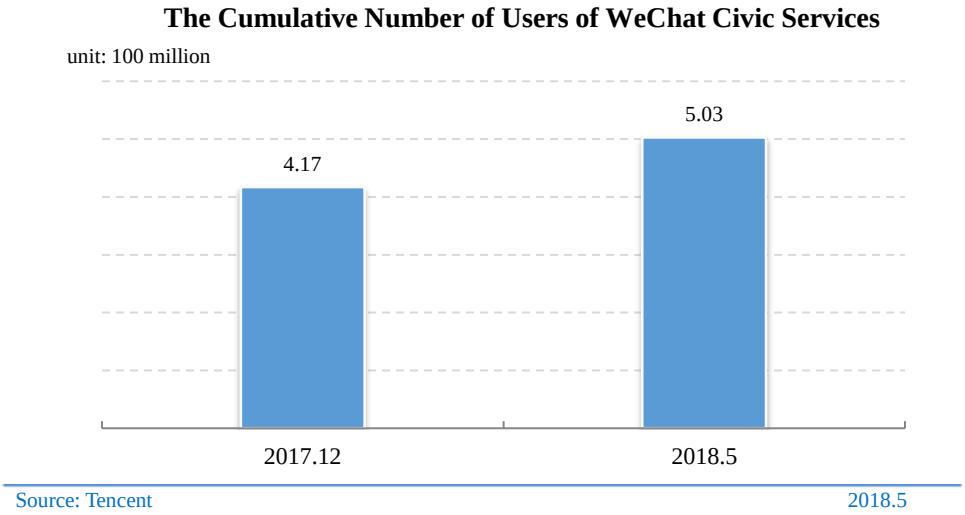


Figure 49 The Cumulative Number of Users of WeChat Civic Services

3.2 The Use of WeChat Civic Services by Province

As of May 2018, 31 provinces, autonomous regions, and municipalities directly under the central government in Mainland China launched WeChat Civic Services. Specifically, Guangdong Province had a total of 99.84 million users, ranking first in the country.

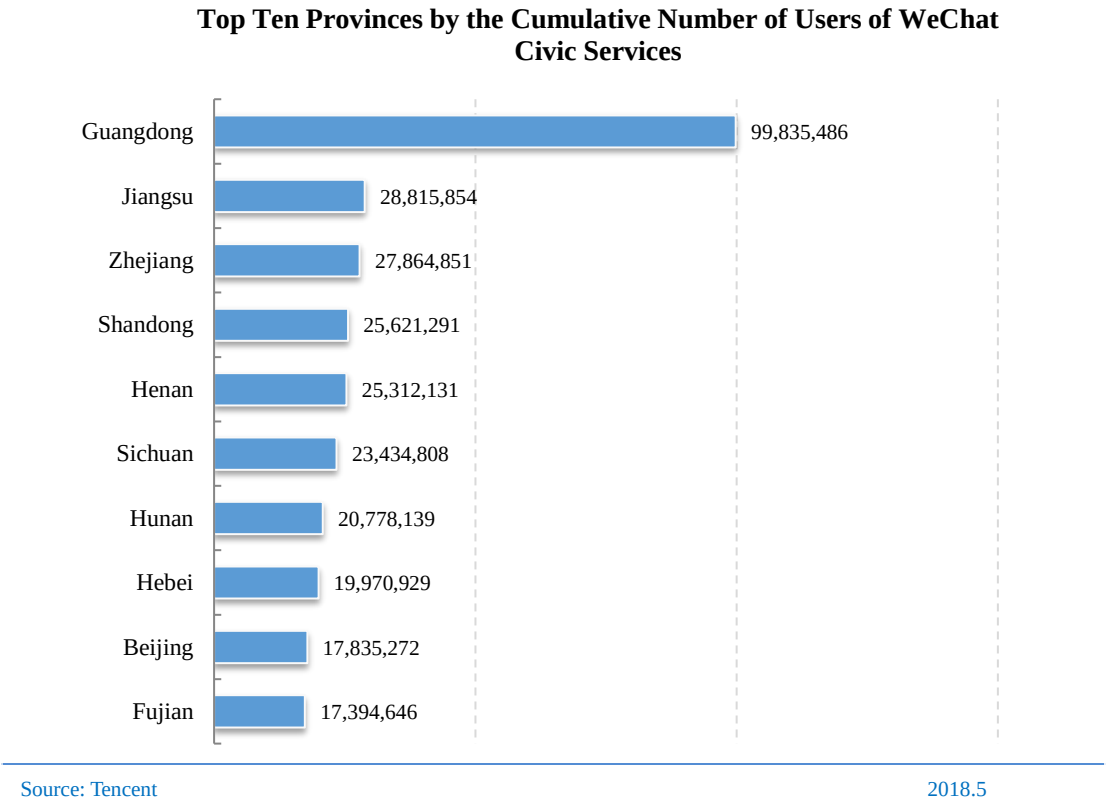


Figure 50 Top Ten Provinces by the Cumulative Number of Users of WeChat Civic Services

3.3 Fields Covered by the Services and the Distribution of Users

As of May 2018, WeChat had the largest cumulative number of users of meteorological services in civic services, with the cumulative number of users of the weather forecast and the rainfall forecast reaching 17.11 million and 10.91 million respectively. Meanwhile, WeChat Civic Services were most widely used in Guangdong Province. Regarding various kinds of services ranging from social security, transportation to tax payment, the cumulative number of users in Guangdong ranked high.

Table 6 Top 10 WeChat Civic Service Types and Their Coverage by Number of Users Jun. 2018

Type of services	Cumulative number of users	Coverage
Weather forecast	17105921	Nationwide
CNPC refueling card	12340303	Nationwide
Social security inquiry in Guangdong	11322464	Guangdong
Rainfall forecast	10905449	Nationwide
Guangdong traffic violation enquiry	10776030	Guangdong
Inquiries on college entrance examination notice	7414065	Nationwide
Guangdong transport card	5883819	Guangdong
Environmental report	5562735	Nationwide
Guangdong personal income tax inquiry	4521924	Guangdong
Guangdong entry-exit business	4334429	Guangdong

Source: Tencent

4. Government Weibo

4.1 An Overview of Government Weibo

Up to June 2018, the number of government Weibo verified by Sina had reached 137,677.

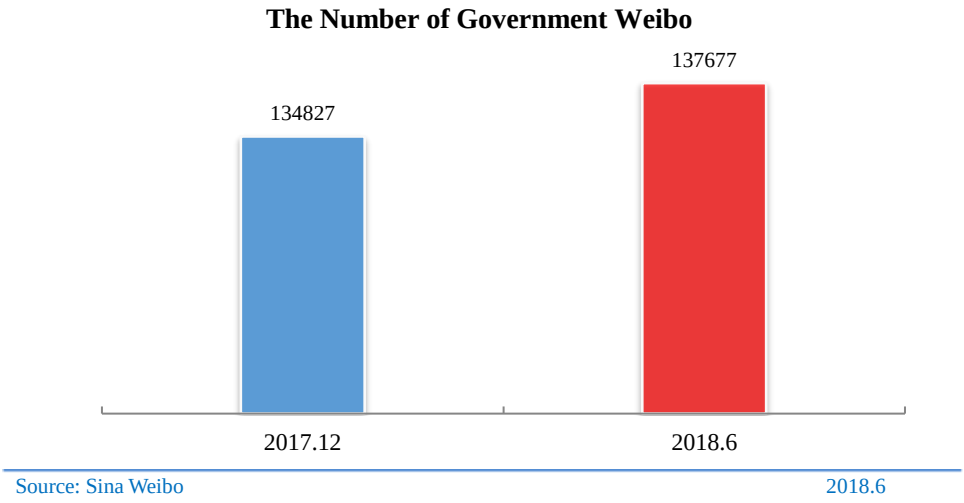


Figure 51 The Number of Government Weibo

4.2 The Distribution of Government Weibo by Province

As of June 2018, 31 provinces, autonomous regions and municipalities directly under the Central Government in Mainland China launched government Weibo. Specifically, Henan province opened 10,563 government Weibo, ranking first in the country, followed by Guangdong province with 9,936 government Weibo.

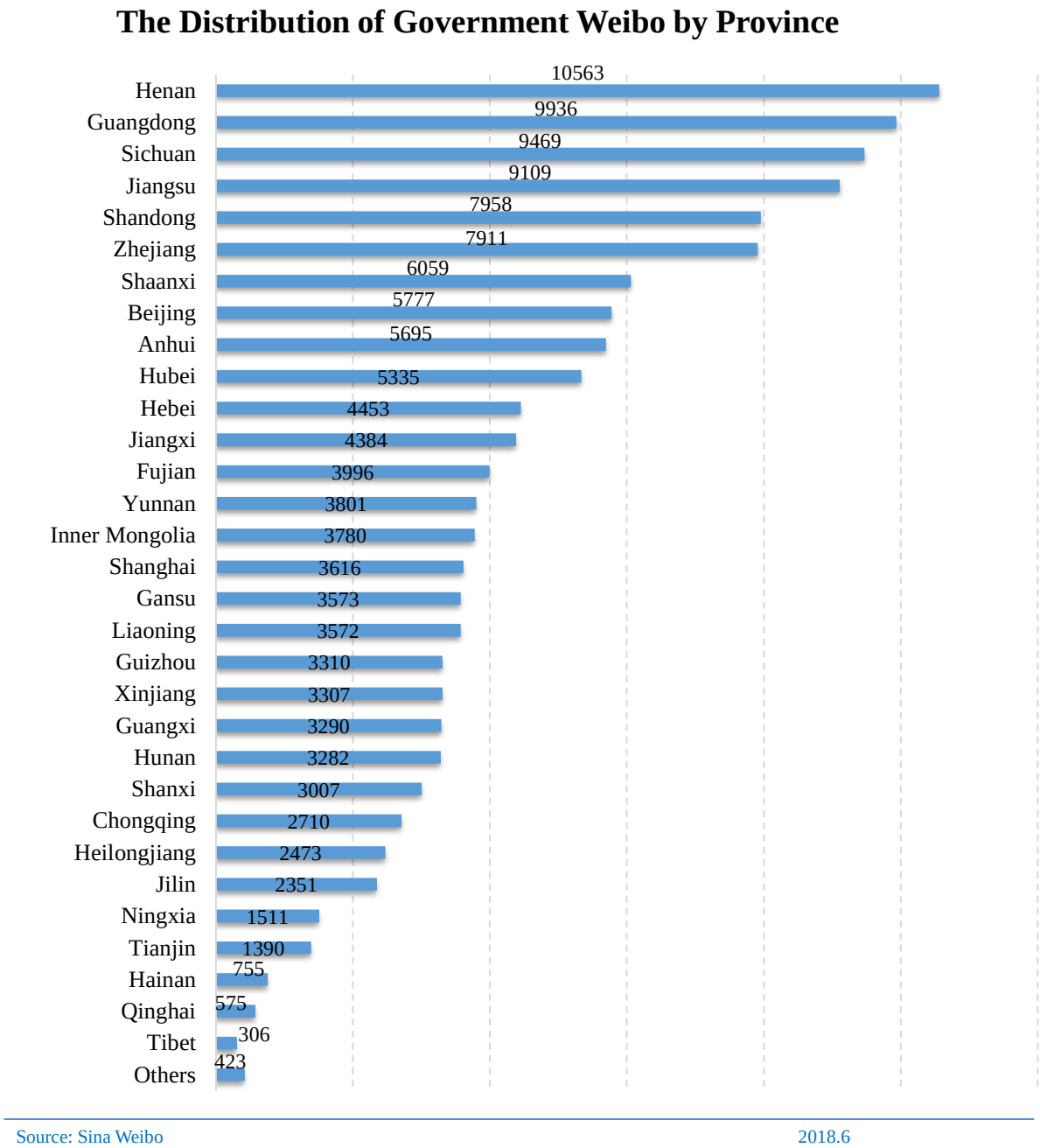


Figure 52 The Distribution of Government Weibo by Province

Up to June 2018, 172 administrative units at the provincial or ministerial levels had launched government Weibo, and administrative units at the county level or below had opened more than 120,000 government Weibo. Local government information was posted online, yielding significant results.

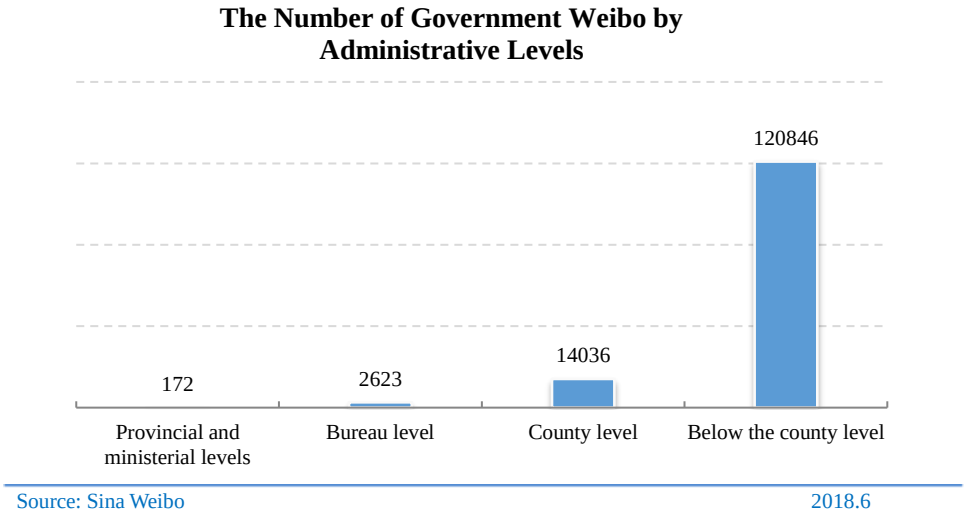


Figure 53 The Number of Government Weibo by Administrative Levels

4.3 The Composition of Organizations Operating Government Weibo

As of June 2018, government Weibo were launched by governments, social organizations, Party committees, and people's procuratorates. Governments at all levels had the most government Weibo totaling 89,832, followed by social organizations opening 34,141 Weibo. The Weibo opened by governments covered many types of service, such as public security, publicity, grassroots organizations, health and family planning, judicial administration, transport, and tourism agencies. Among these Weibo, 19,476 were launched by public security organs.

Table 7 The Composition of Weibo for Government Agencies

Primary category	Total	Proportion	Secondary category	Total
Government	89832	65.2%	Public security	19476
			Publicity	11053
			Community-level organizations	8030
			Health and family planning commissions	5002
			Judicial administration	3684
			Transportation	2898
			Travel agencies	2892
Social organizations	34141	24.8%	Youth League Committee	30833
Party Committee	5340	3.9%		
People's Procuratorate	3725	2.7%		
People's Court	3596	2.6%		
The National People's Congress	324	0.2%		
The Chinese People's Political Consultative Conference	199	0.1%		
Others	520	0.4%		
Total	137677	100.0%		

Source: Sina Weibo

4.4 The Operation of Government Weibo

Up to June 2018, the Central Committee of the Communist Young League ranked first by the number of microblog reposts, which exceeded 2.31 million in six months. In terms of fields, Weibo for security information enjoyed the highest public attention. Among the top 20 government Weibo ranked by the number of reposts, seven belonged to the field of public security. Regarding regions,Beijing worked hard to publicize its online government services in 2018. Among the top 20 government Weibo ranked by the number of reposts, Beijing had 9.

Table 8 Top 20 Government Weibo Ranked by the Number of Reposts Dec. 2017 – Jun. 2018

Ranking	Name of microblog	Province	Field	Number of fans	Number of reposts
1	The Central Committee of the Communist Youth League	Beijing	Youth League Committee	6009526	2307535
2	Crime-fighting Office, Ministry of Public Security	Beijing	Public security	29226892	1222891
3	China Fire Control	Beijing	Public security	2685544	346028
4	Chinese Anti-Cult	Beijing	Political and Legal Affairs Commission	1713346	326523
5	chinapeace.gov.cn	Beijing	Political and Legal Affairs Commission	4331954	297067
6	Yunnan Committee of the Communist Youth League	Yunnan	Youth League Committee	496350	237005
7	School Department, the Central Committee of the Communist Youth League	Beijing	Youth League Committee	1110197	236530
8	Chengdu Committee of the Communist Youth League	Sichuan	Youth League Committee	1790556	233380
9	Safe Beijing	Beijing	Public security	12464757	212303
10	Chengdu Release	Sichuan	Publicity	6648711	175925
11	China's Weather	Beijing	Meteorological services	571502	143201
12	www.qxkp.net	Anhui	Meteorological services	1144869	110477
13	Chengdu Metro	Sichuan	Transportation	743132	85080
14	Inner Mongolia Anti-Cult	Inner Mongolia	Political and Legal Affairs Commission	316171	70871
15	Tianjin Traffic Police	Tianjin	Public security	1837831	65819
16	Meteorological services, Beijing	Beijing	Meteorological services	2912931	47518
17	Shenzhen Traffic Police	Guangdong	Public security	2197126	43402
18	Hunan Expressway Police	Hunan	Public security	2157092	41223
19	Shenzhen Weather	Guangdong	Meteorological services	1705746	34652
20	Shenzhen Public Security	Guangdong	Public security	3648733	33292

Source: Sina Weibo

5. Zhengwutoutiao

5.1 An Overview of Zhengwutoutiao27

As of June 2018, the number of Zhengwutoutiao launched by Party and government organs at all levels reached 74,934, representing an increase of 4,040 from the end of 2017.

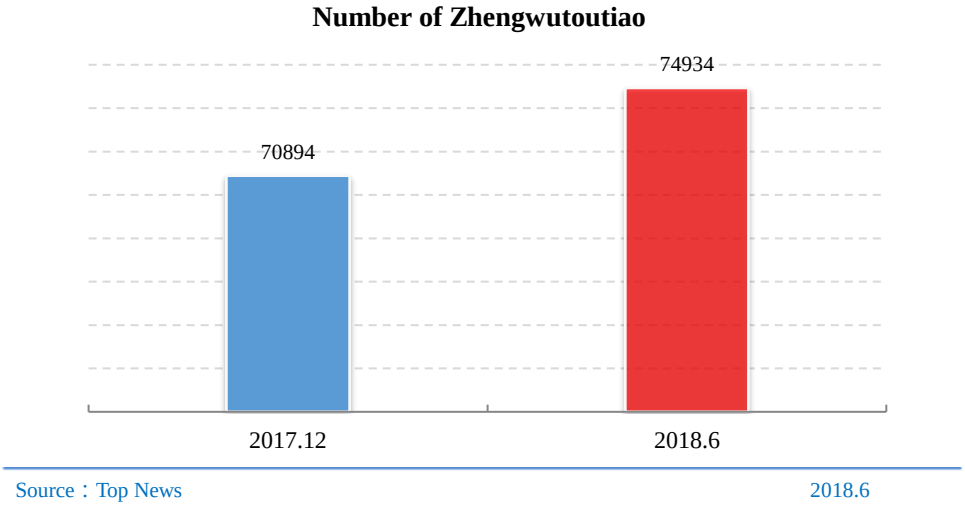


Figure 54 The Number of Zhengwutoutiao

5.2 The Distribution and Views of Zhengwutoutiao by Province

Up to June 2018, 31 provinces, autonomous regions, and municipalities directly under the Central Government in Mainland China launched Zhengwutoutiao. Specifically, the number of Zhengwutoutiao in 16 provinces exceeded 2000, and the number of Zhengwutoutiao in 8 provinces ranged from 1,000 to 2,000. Henan owned 7501 Zhengwutoutiaos, ranking first in China.

[27]Zhengwutoutiao: a public information publishing platform for governmental departments, which is based on the App Top News.

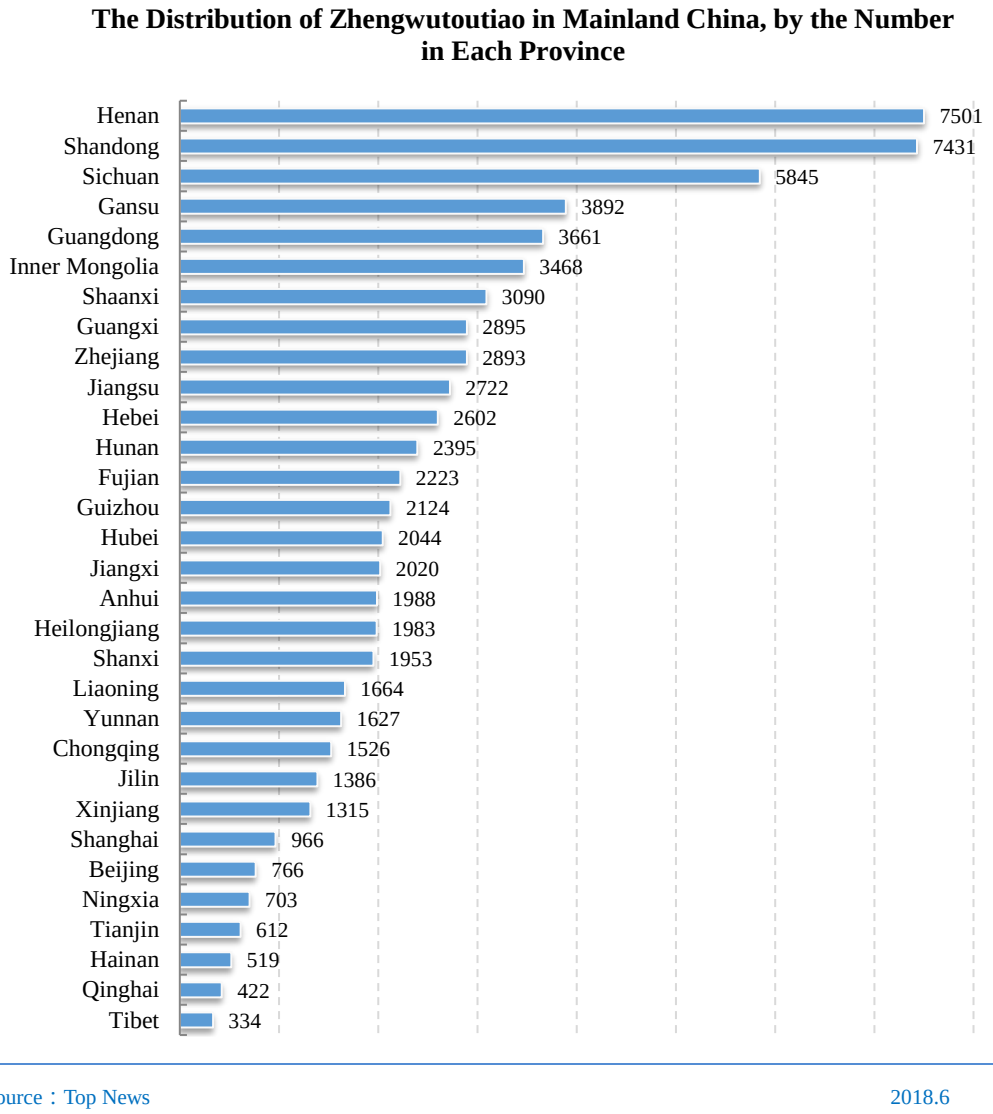


Figure 55 The Distribution of Zhengwutoutiao in Mainland China, by the Number in Each Province

Regarding views, Shandong Province ranked first in China with 1.19 billion views, and in terms of articles, Sichuan Province ranked first with 248,000 articles.

Table 9 The Top 10 Provinces, Autonomous Regions or Municipalities Directly under the Central Government Ranked by Views Dec. 2017 – Jun. 2018

	Province	Number of Zhengwutoutiao	Number of articles	Views
1	Shandong	7431	240867	1192177857
2	Guangdong	3661	159755	816676934
3	Sichuan	5845	247798	563046411
4	Hebei	2602	139676	495572735
5	Jiangsu	2722	130205	472278756
6	Jiangxi	2020	69430	432915757
7	Shaanxi	3090	204542	398905555
8	Gansu	3892	185446	387317026
9	Anhui	1988	123375	346864796
10	Guangxi	2895	94477	297468012

Source: Top News

5.3 The Composition of Organizations Operating Zhengwutoutiao

As of June 2018, more than 100 vertical systems launched Zhengwutoutiao, including public security, mass petition, procuratorate, justice, grassroots organizations, court, and the Communist Youth League. Among them, the Zhengwutoutiaos of mass petition accounted for 8.8% of the total, followed by those of grassroots organizations, accounting for 7.9%.

Table 10 Distribution of Zhengwutoutiaos Jun. 2018

Ranking	Fields Covered by Zhengwutoutiao	Number	Proportion
1	Mass petition	6587	8.8%
2	Grassroots organizations	5888	7.9%
3	Safe Beijing	4105	5.5%
4	Procuratorate	3593	4.8%
5	Court	3517	4.7%
6	Traffic police	3451	4.6%
7	Tourism	3254	4.3%
8	Associations for science and technology	3221	4.3%
9	Dissemination of laws	3005	4.0%
10	The Communist Youth League	2631	3.5%

Source: Top News

5.4 The Operation of Zhengwutoutiao

Currently, the number of Zhengwutoutiaos opened by central state organs reached 58, including the State Council, the Supreme People's Procuratorate, the Supreme People's Court, and the Ministry of Commerce. Among them, the Micro Business News launched by the Ministry of Commerce was No. 1 Zhengwutoutiao with the most views.

Table 11 Number and Views of Articles Published by Zhengwutoutiaos under the Control of Central State Organs Dec. 2017 – Jun. 2018

Name of Zhengwutoutiaos	Organization name	Number of articles	Views
Micro Business News	Ministry of Commerce	412	534477779
gov.cn	The Office of Government Information Disclosure of the General Office of the State Council	802	225498135
The website of the Central Commission for Discipline Inspection and the National Supervisory Commission	The Central Commission for Discipline Inspection	3522	215841234
Supreme People's Court	Supreme People's Court	1920	173130742
China Meteorological Administration	China Meteorological Administration	2829	132914071
Healthy China	The National Health and Family Planning Commission	1034	112638994
The Central Committee of the Communist Youth League	The Central Committee of the Communist Youth League	803	106456824
Information Release by the Ministry of National Defense	Department of National Defense	329	94971362
The Ministry of Ecological Environment	The Ministry of Ecological Environment	2202	91995259
Supreme People's Procuratorate	Supreme People's Procuratorate	2233	69775837

Source: Top News

Part 4 The Cybersecurity Administration

1. Security Incidents and Equipment Infection

1.1 Cybersecurity Problems Encountered by Internet Users

In the first half of 2018, the percentage of China's Internet users encountering cybersecurity problems increased slightly compared with the end of 2017. According to relevant data, 54% of Internet users have encountered cybersecurity problems in the past six months, up by 1.4 percentage points from the end of 2017. By distinguishing the cybersecurity problems faced by users, we can find that the proportion of users suffering from personal information leakage and account password theft has increased, while the proportion of users suffering from online fraud and virus trojan horses in equipment has decreased. Specifically, personal information leakage accounted for 28.5% or the highest proportion, up by 1.4 percentage points from the end of 2017. The proportion of Internet users who encountered viruses or trojans in the device dropped the most from the end of 2017 and stood at 18.8%, down by 3 percentage points.

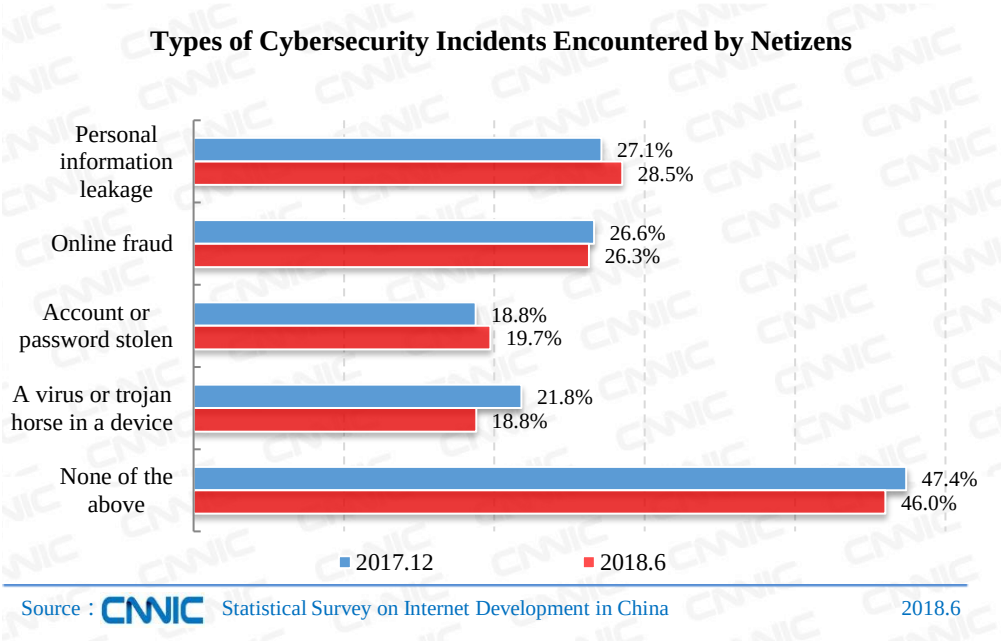


Figure 56 Types of Cybersecurity Incidents Encountered by Netizens

1.2 Fraudulences Encountered by Internet Users

Through further investigation of users who suffered online fraud in the first half of 2018, it was found that bonus-winning fraud was still the most common type of online fraud. However, the proportion of users who suffered from such fraud decreased by 11.9 percentage points to 58.6% compared with the end of 2017. The proportion of users who suffered from fake employment information also showed a significant decline to 31.0%, down by 6.8 percentage points from the end of 2017. Also, among the users who met online fraud, the proportion of users who encountered fake friend fraud, online part-time fraud, online shopping fraud, and phishing website fraud were slightly lower than those at the end of 2017.

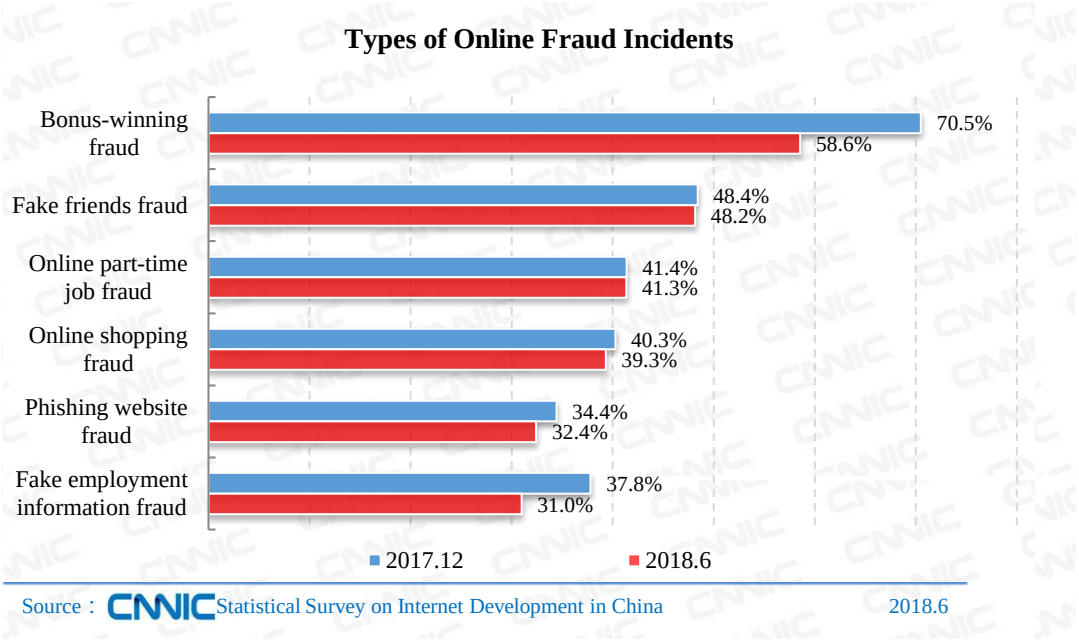


Figure 57 Types of Online Fraud Incidents

2. The Spread of Internet Virus, the Website Security and Loopholes

2.1 The Number of Terminals Infected with Virus in China

In the first half of 2018, CNCERT monitored 4.83 million terminals[28] infected with Internet

[28]The term "terminal" refers to servers and computer equipment monitored by CNCERT.

virus[29] in China, down by 61.9% from the same period of 2017. In the corresponding period of 2017, it monitored 12.69 million affected terminals.

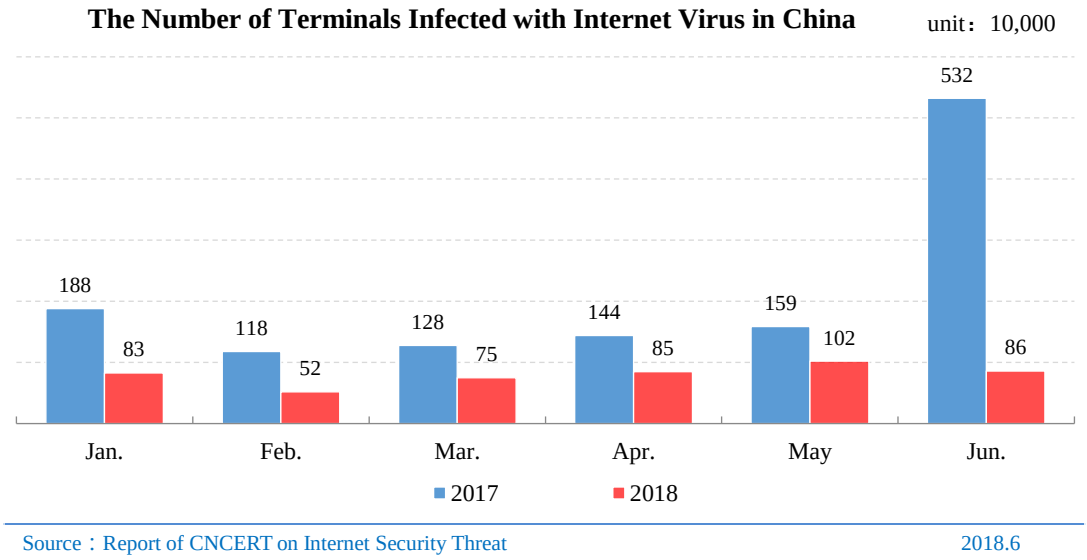


Figure 58 The Number of Terminals Infected with Internet Virus in China

2.2 The Number of Websites Tampered with by Hackers in China

In the first half of 2018, CNCERT monitored 15,672 websites tampered with by hackers[30] in China, down by 49.4% year-on-year. In the corresponding period of 2017, it monitored 30,952 websites.

[29]The term "Internet virus" refers to malicious code having network communication.
[30]Websites tampered with by hackers mean that malicious destruction or change of webpage content leads to the fact that a website is unable to work properly or inserted with abnormal webpage content by hackers.

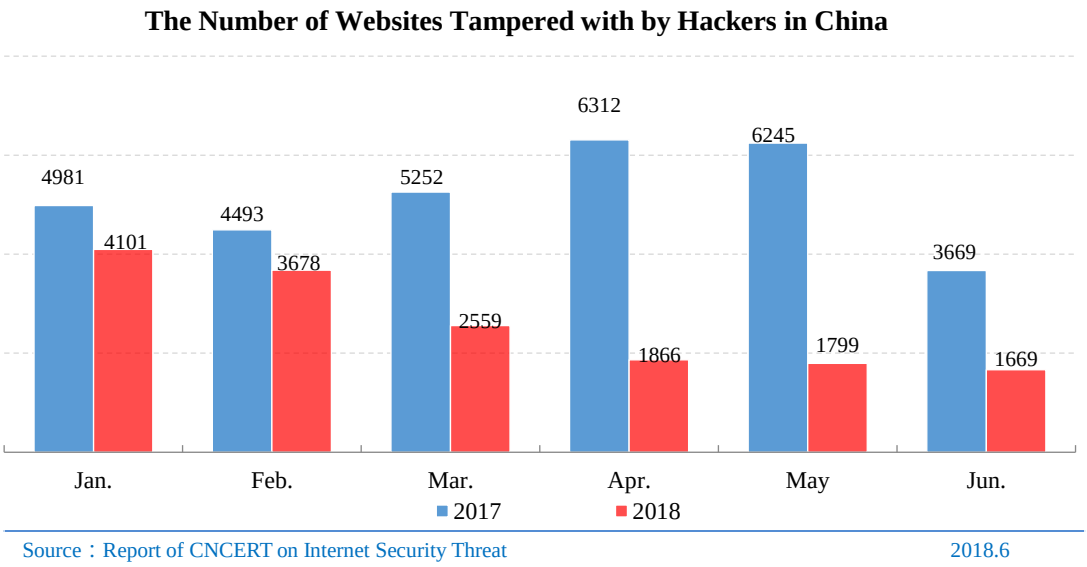


Figure 59 The Number of Websites Tampered with by Hackers in China

In the first half of 2018, CNCERT monitored 320 government websites[31] tampered with by hackers in China, down by 68.2% year-on-year. In the corresponding period of 2017, it monitored 1,007 websites.

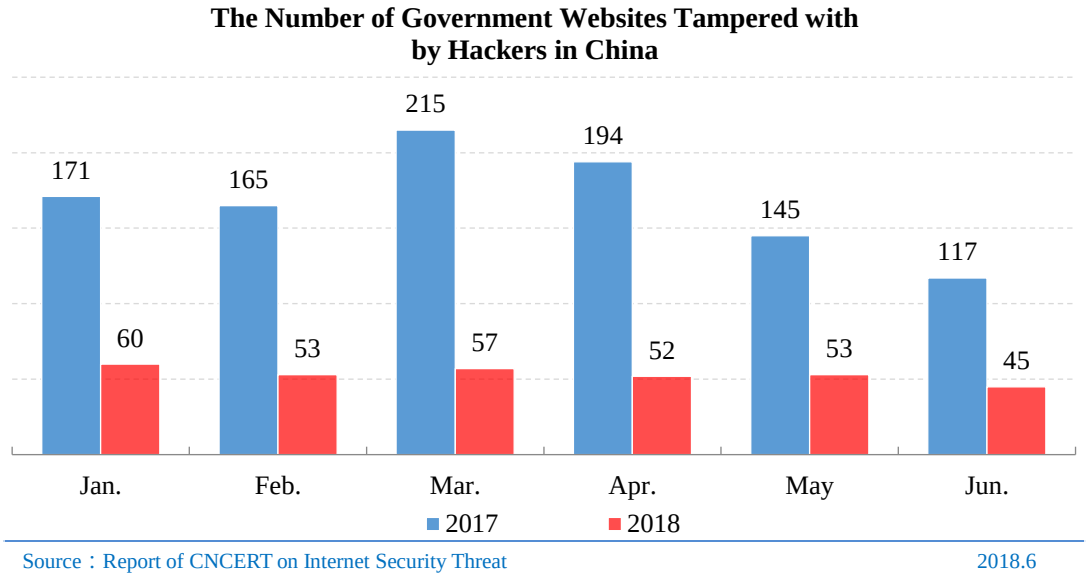


Figure 60 The Number of Government Websites Tampered with by Hackers in China

[31]Government websites refer to those websites whose English domain name ends with ". gov. cn", but we do not exclude websites with ".gov.cn" used by a few non-governmental departments.

2.3 The Number of Websites Implanted with Backdoor Malwares in China

In the first half of 2018, CNCERT monitored 16,210 websites implanted with backdoor malware in China, down by 35.2% year-on-year. In the corresponding period of 2017, it monitored 24,997 websites.

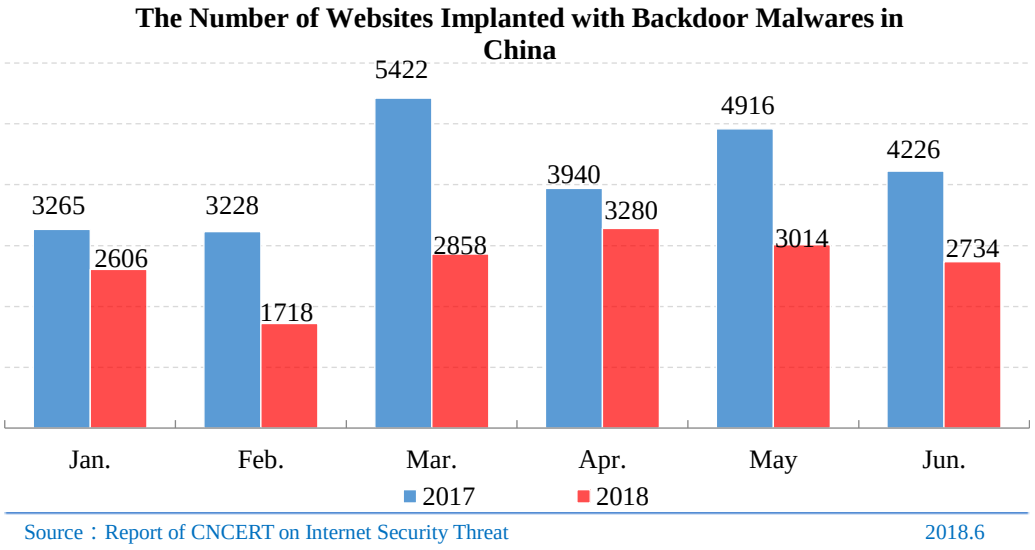


Figure 61 The Number of Websites Implanted with Backdoor Malware in China

In the first half of 2018, CNCERT observed 470 government websites implanted with backdoor malware in China, down by 55.1% year-on-year. In the corresponding period of 2017, it monitored 1,047 government websites.

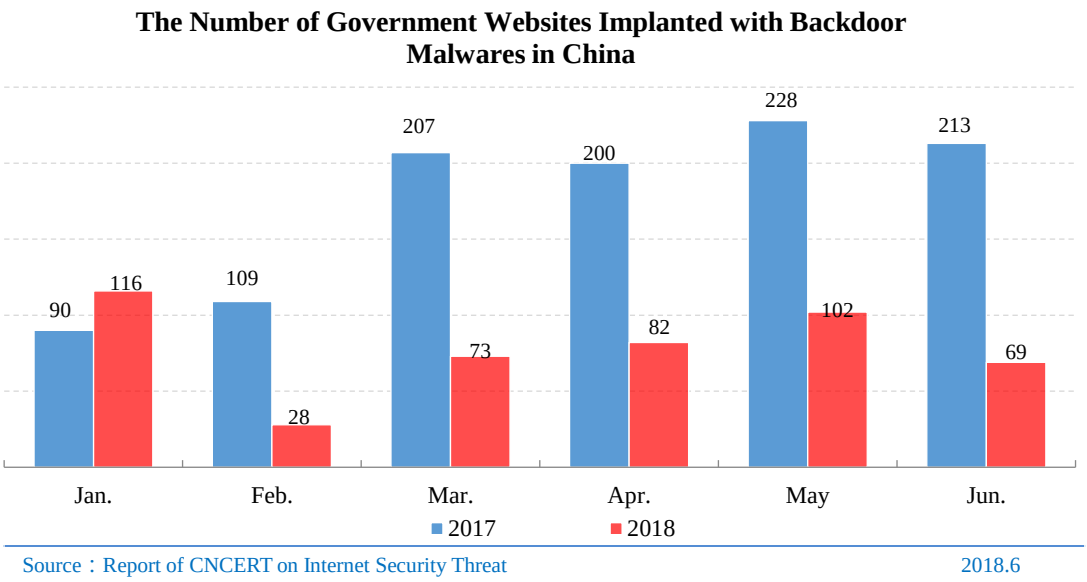


Figure 62 The Number of Government Websites Implanted with Backdoor Malware in China

2.4 The Number of Phishing Webpages Aiming at Websites in China

In the first half of 2018, CNCERT monitored 19,060 phishing webpages aiming at websites in China, up by 49.1% from 12,781 in the corresponding period of 2017.

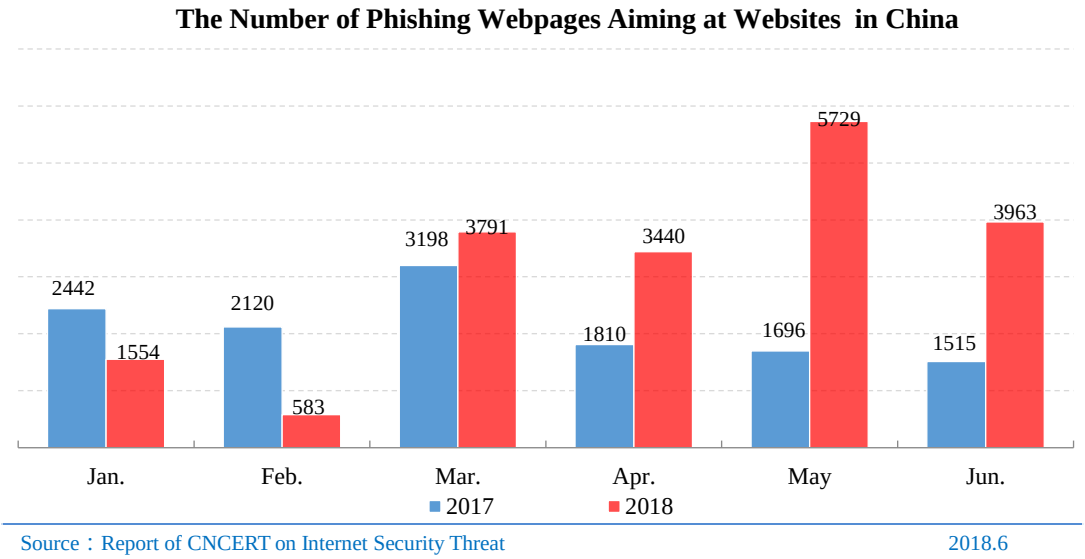


Figure 63 The Number of Phishing Webpages Aiming at Websites in China

2.5 The Number of Security Loopholes

In the first half of 2018, China National Vulnerability Database (CNVD)[32] collected 7,748 information system security loopholes, up by 16.5% from 6,653 in the corresponding period of 2017.

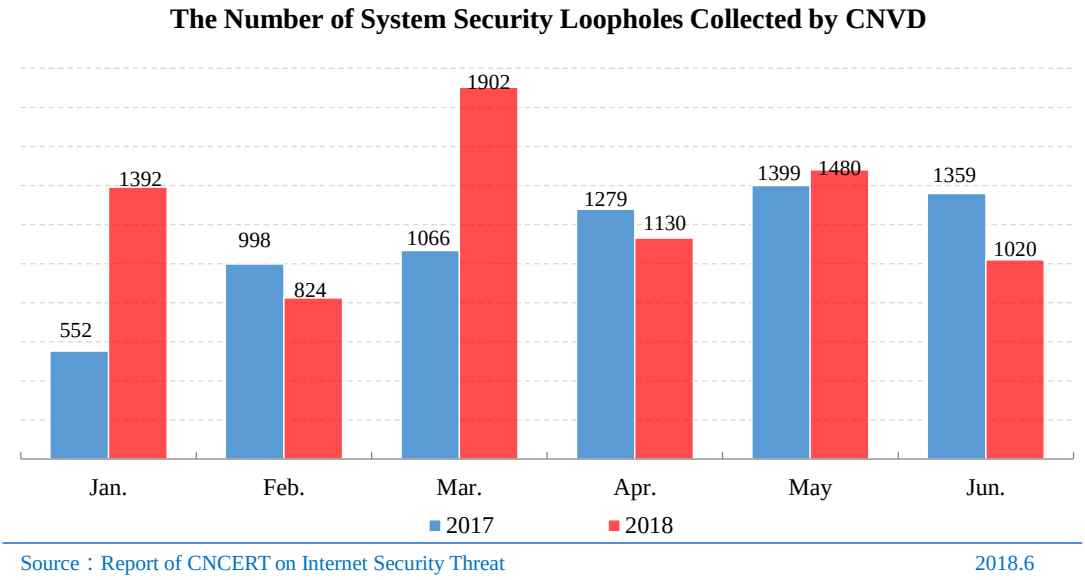


Figure 64 The Number of System Security Loopholes Collected by CNVD

Specifically, the number of high-risk system security loopholes totaled 2,608, up by 1.2% from 2,578 in the corresponding period of 2017.

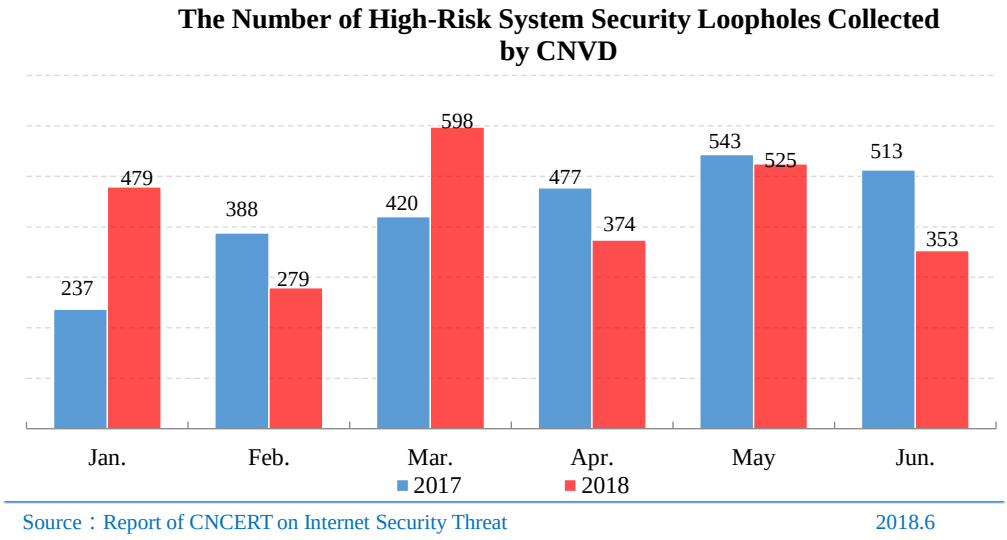


Figure 65 The Number of High-Risk System Security Loopholes Collected by CNVD

[32]China National Vulnerability Database (CNVD) is an information-sharing knowledge base for security loopholes developed by the National Computer Network Emergency Response Technical Team/Coordination Center of China (CNCERT for short), together with China's important information system units, basic telecom carriers, network security manufacturers, software vendors and Internet enterprises.

3. The Reporting and Handling of Cybersecurity Incidents

3.1 The Number of Reported Cybersecurity Incidents Received by CNCERT

In the first half of 2018, CNCERT received 54,190 reports of cybersecurity incidents, up by 12.2% from 48,283 reports in the corresponding period of 2017.

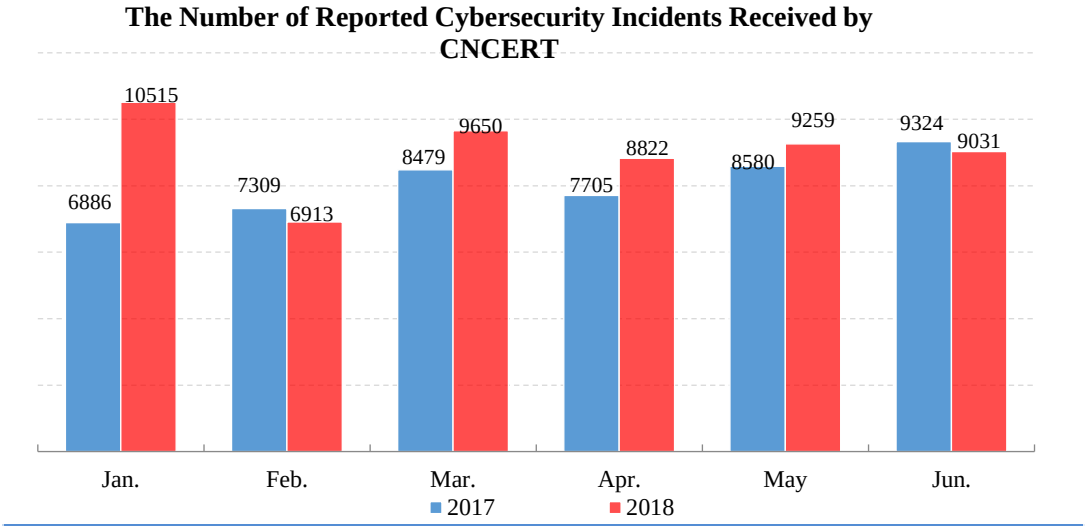


Figure 66 The Number of Reported Cybersecurity Incidents Received by CNCERT

3.2 The Handling of Reported Illegal and Inappropriate Internet Information in China

In the first half of 2018, network reporting departments at all levels nationwide accepted 39.028 million useful reports, up 117.1 % from 17.978 million in the corresponding period of 2017.

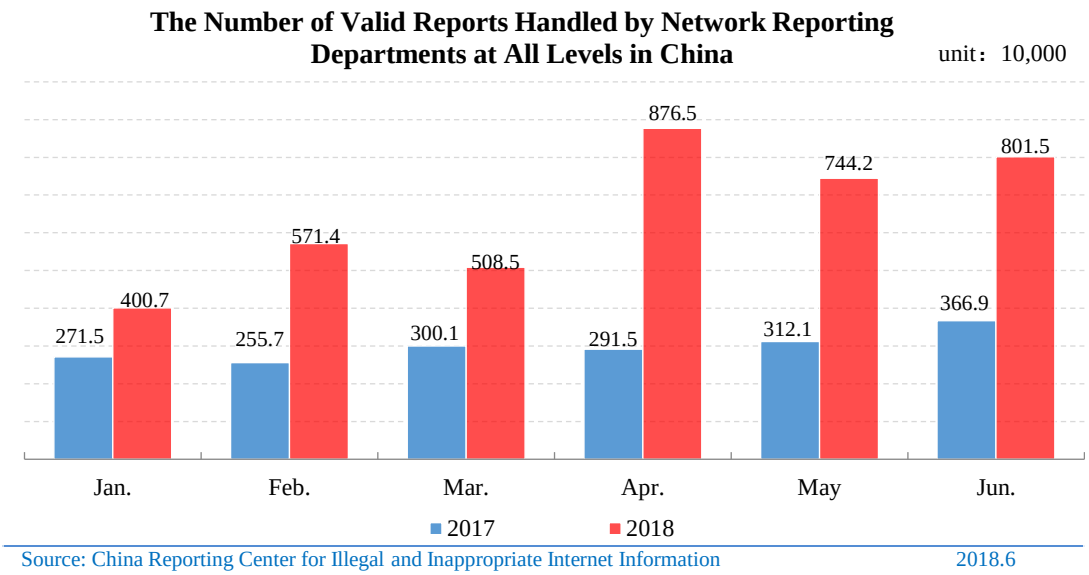


Figure 67 The Number of Valid Reports Handled by Network Reporting Departments at All Levels in China

Appendix 1 Survey Methodology

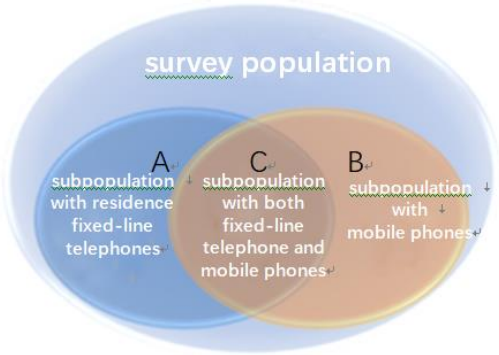
I. Survey Methodology

(I) Survey on Individual Internet Users

1.1 Survey Population

Chinese permanent residents at the age of 6 or above who have residence fixed-line telephones (including home phones, PHS and dormitory telephones) or mobile phones

◇ Division of survey population



The survey population can be divided into three categories:

Subpopulation A: Survey subpopulation using residence fixed-line telephones (including residents with home phones, PHS users, students with dormitory telephones, and other users with dormitory telephones);

Subpopulation B: Survey subpopulation with mobile phones;

Subpopulation C: Survey subpopulation with both residence fixed-line telephones and mobile phones (there is an overlap between subpopulation A and subpopulation B, and the overlapped part is subpopulation C), C=A∩B.

1.2 Sampling Method

CNNIC surveys subpopulation A, B and C. Double sampling is adopted for the survey so as to cover as many Internet users as possible. The first sampling frame is subpopulation A, the people with residence fixed-line telephones. The second sampling frame is subpopulation B, the people with mobile phones.

For the survey population with fixed-line telephones, stratified two-stage sampling is adopted.

To ensure the sufficient representativeness of samples, the whole country is divided into 31 tiers according to the province, autonomous region and municipality directly under the central government and the sampling is made independently at each tier.

The self-weighted sampling method is adopted for each province. The sample sizes for each district, city and prefecture (including the governed districts and counties) are allocated in accordance with the proportion of the people at the age of 6 or above covered by residence fixed-line telephones in the local area compared to the total covered population in the whole province.

Sampling in subpopulation B is the similar to that in subpopulation A. The whole country is divided into 31 tiers according to the provinces, autonomous regions and municipalities directly under the central government, and sampling is made independently in each tier. Samples are allocated in accordance with the proportion of the residents in each district or city, in order to make the sample allocation in each province conform to the self-weighting method.

To ensure the residence fixed-line telephones are taken with almost the same probability in each district, city or prefecture, that is, the local bureau number with more residence fixed-line telephones will more likely be taken, and to make the phone visit more feasible, the residence fixed-line telephone numbers in each district, city and prefecture are taken according to the following procedures:

For mobile phone user groups, all the mobile bureau numbers in each district, city and prefecture are sampled; a certain quantity of 4-digit random numbers are generated according to the valid sample size in each district, city or prefecture, and then combined with the mobile bureau numbers in each district, city or prefecture to form a number library (local bureau number + the random 4-digit number); randomly order the number library; dial and visit the randomly ordered number library. Survey of the subpopulation with fixed-line telephones is similar to that of the subpopulation with mobile phones: a random number is generated and combined with the local bureau number to form a telephone number, and then such number is dialed and visited. To avoid repeated sampling, only residence fixed-line telephones are visited.

1.3 Survey Method

The computer-assisted telephone interviewing (CATI) system is adopted for the survey.

1.4 Differences between survey population and targeted population

A study for the subpopulation who are not covered by telephones, conducted by CNNIC at the

end of 2005, shows that Internet users are very few in this subpopulation. Currently, the subpopulation is downsizing gradually with the development of our telecom industry. In this survey, there is an assumption, i.e.

Internet users who are not covered by fixed-line telephones or mobile phones are negligible.

(Ⅱ) Automatic Online Search and Data Report

Automatic online search is used to conduct technical statistics about the quantity of domain names and websites, and their geographical distribution. Statistical data for reporting mainly includes the number of IP addresses and international Internet gateway bandwidth.

2.1 Total Number of IP Addresses

The data of IP addresses counted by province come from the IP address databases of Asia-Pacific Network Information Center (APNIC) and CNNIC. Registered data in each database, that can be distinguished by the province which the addresses belong to, can be added respectively by province to generate data of each province. As address allocation is a dynamic process, the statistical data are only for reference. The Ministry of Industry and Information Technology, as the national competent department for IP addresses, also require IP address allocation organizations to report the quantity of IP addresses they own semiannually. To ensure the accuracy of IP data, CNNIC will compare and verify APNIC statistical data with the reported data to confirm the final quantity of IP addresses.

2.2 Total Number of Websites in China

It is worked out by CNNIC according to the lists of domain names. The lists of domain names with .CN and .中国 come from the CNNIC database, while the lists of gTLDs come from relevant international domain name registries.

2.3 International Internet Gateway Bandwidth

Through a reporting system, the Ministry of Industry and Information Technology can obtain on a regular basis the number of total bandwidth of Internet connecting Chinese operators with other countries and regions. The reported data are included in the *Statistical Report on Internet Development in China*.

II. Definitions of Terms in the Report

◇ **Internet Users or Netizens:** Chinese residents at the age of 6 or above who have used the Internet in the past 6 months.

◇ **Mobile Internet Users:** Internet users who have used mobile phones to access and surf the Internet in the past 6 months, but not limited to those surfing the Internet via mobile phones only.

◇ **Computer Internet Users:** Internet users who have used computers to access and surf the Internet in the past 6 months, but not limited to those surfing the Internet via computers only.

◇ **Rural Internet Users:** Internet users who have been living in rural areas of China in the past 6 months.

◇ **Urban Internet Users:** Internet users who have been living in urban areas of China in the past 6 months.

◇ **IP Address:** As the basic resource on the Internet, the IP address functions to identify computers, servers and other devices connected to the Internet. Connection with the Internet can be realized only when an IP address (in any form) is acquired.

◇ **Website:** It refers to a web site with a domain name itself or "www. + domain name". Such domain names include Chinese ccTLD, such as .cn and .中国, and gTLD, and registrants of the domain names are within the territory of P.R.C. For example: for the domain name of "cnnic.cn", it has only one website and the corresponding web address is "cnnic.cn" or "www.cnnic.cn". Other web addresses with such domain name as the suffix, like "whois.cnnic.cn" and "mail.cnnic.cn", are regarded as different channels of the website.

◇ **Scope of Survey:** Unless otherwise expressly indicated, data in this Report only refer to mainland China, excluding Hong Kong, Macao and Taiwan.

◇ **Deadline of Survey Data:** The deadline of the statistical survey data is June 30, 2018.

Appendix 2 Attached Tables of Basic Internet Resources

Table 1 The Number of IPv4 Addresses in Different Regions of China

Region	Number of Addresses	Equivalence
Mainland China	338,818,304	20A+49B+245C
Taiwan	35,529,728	2A+30B+36C
Hong Kong SAR	10,897,920	166B+74C
Macau SAR	335,104	5B+29C

Table 2 The Allocation of IPv4 Addresses among Organizations in Mainland China

Organization Name	Number of Addresses	Total Number of IPv4 Addresses
China Telecom	125,763,328	7A+126B+255C
China Unicom	69,866,752[note1]	4A+42B+21C
IP Address Allocation Alliance of CNNIC	61,828,864[note2]	3A+175B+111C
China Mobile	35,294,208	2A+26B+140C
China Education and Research Network	16,649,728	254B+14C
China Tietong Telecom	15,796,224[note3]	241B+8C
Others	13,619,200	207B+208C
Total	338,818,304	20A+49B+245C

Data sources: Asia-Pacific Network Information Center (APNIC) and China Internet Network Information Center (CNNIC)

Note 1: The addresses of China Unicom include the addresses of former China Unicom and former China Netcom. Specifically, the IPv4 addresses 6316032 (96B+96C) of former China Unicom are assigned by CNNIC;

Note 2: As a national Internet registry (NIR) approved by APNIC and national competent authorities in China, CNNIC has organized ISPs, enterprises and public institutions of certain size in China to set up IP Address Allocation Alliance. So far, the total number of IPv4 addresses held by the members of IP Address Allocation Alliance is 84.12 million, equivalent to 5A. The IPv4 addresses of the members of IP Address Assignment Alliance listed in the above table do not include those IPv4 addresses already assigned to former China Unicom and Tietong.

Note 3: The IPv4 addresses of China Tietong Telecom are assigned by CNNIC;

Note 4: The deadline for the above statistical data is June 30, 2018.

Table 3 The Number of IPv6 Addresses in Different Regions of China **(/32[note1])**

Region	**Number of Addresses**
Mainland China	23555 blocks /32
Taiwan	2367 blocks /32
Hong Kong SAR	386 blocks /32
Macau SAR	7 blocks /32

Table 4 The Allocation of IPv6 Addresses in Mainland China

Organization Name	**Number of IPv6 Addresses（/32[note1]）**
IP Address Allocation Alliance of CNNIC	8743 [note2]
China Telecom	4099
China Unicom	4097
China Mobile	4097
China Tietong Telecom	2049 [note3]
China Education and Research Network	18
China Science and Technology Network	17 [note4]
Others	435
Total	23555

Data sources: APNIC and CNNIC

Note 1: /32 as shown in the IPv6 address tables is a method to present IPv6 addresses, and the corresponding number of addresses is $2^{(128-32)}=2^{96}$.

Note 2: At present, the number of IPv6 addresses held by the members of IP Address Allocation Alliance of CNNIC is 10,809/32. The IPv6 addresses held by the members of IP Address Allocation Alliance listed in the above table do not include those IPv6 addresses already assigned to China Tietong Telecom and China Science and Technology Network (CSTNET).

Note 3: The IPv6 addresses of China Tietong Telecom are assigned by CNNIC.

Note 4: The IPv6 addresses of CSTNET are assigned by CNNIC.

Note 5: The deadline for the above statistical data is June 30, 2018.

Table 5 The Proportion of IPv4 Addresses in Each Province/Autonomous Region/Municipality Directly under the Central Government

Province	Proportion
Beijing	25.49%
Guangdong	9.53%
Zhejiang	6.47%
Jiangsu	4.76%
Shanghai	4.51%
Shandong	4.89%
Hebei	2.85%
Liaoning	3.33%
Henan	2.63%
Hubei	2.40%
Sichuan	2.77%
Fujian	1.94%
Hunan	2.36%
Shaanxi	1.63%
Anhui	1.65%
Heilongjiang	1.21%
Guangxi	1.38%
Chongqing	1.68%
Jilin	1.21%
Tianjin	1.05%
Jiangxi	1.73%
Shanxi	1.28%
Yunnan	0.98%
Inner Mongolia	0.78%
Xinjiang	0.60%
Hainan	0.47%
Guizhou	0.44%
Gansu	0.47%
Ningxia	0.28%
Qinghai	0.18%
Tibet	0.13%
Others	8.93%
Total	100.00%

Data sources: APNIC and CNNIC

Note 1: The above statistics are made on the basis of the location of the IP address owners.

Note 2: The deadline for the above statistical data is June 30, 2018.

Appendix 3 Supporting Organizations

We would like to express our heartfelt thanks to the following organizations that have supported the collection of data on basic resources. (Not listed in any particular order)

China Telecom

Network Center of CERNET

Network Center of CSTNET

China Unicom

China Mobile

Alibaba Cloud Computing Co. Ltd.

Beijing Jinluoshen E-commerce Co., Ltd.

Beijing Xinnet Digital Information Technology Co., Ltd.

Beijing SanFront Information Technology Co., Ltd.

Chengdu Feishu Technology Co., Ltd.

Chengdu Shijidongfang Network Communication Co., Ltd.

Chengdu West Dimension Digital Technology Co., Ltd.

Daqing Zhuochuang Multi-media Production Co., Ltd.

Foshan Yidong Network Co., Ltd.

Guangdong Huyi Network Intellectual Property Co., Ltd.

Guangdong Jinwanbang Technology Investment Co., Ltd.

Guangdong NaiSiNiKe Information Technology Co., Ltd.

Guangdong Shidai Hulian Technology Co., Ltd.

Guangxi Beibu Gulf Investment Group Co., Ltd.

Guangzhou Mingyang Information Technology Co., Ltd.

Guangzhou Yiyou Information Technology Co., Ltd.

Hainan SEZ Property Rights Exchange Center

Hangzhou 22 Network Co., Ltd.

Hangzhou E-commerce Interconnection Technology Co., Ltd.

Henan Weichuang Network Technology Co., Ltd.

Jiangsu Bangning Technology Co., Ltd.

Ningxia Hengsheng Friends Network Technology Co., Ltd.

Xiamen Nawang Technology Co., Ltd.

Xiamen 35.com Technology Co., Ltd.

Xiamen Shangzhong Online Technology Co., Ltd.

Xiamen ZZY Network Service Co., Ltd.

Xiamen eName Technology Co., Ltd.

Shanghai Best Oray Information Technology Co., Ltd.

Shanghai Chinafu Technolgoy Co., Ltd.

Shanghai Meicheng Technology Information Development Co., Ltd.

Shanghai Yovole Network Co., Ltd.

Shenzhen IDCICP Technology Co., Ltd.

Shenzhen Internet Works Online Co., Ltd.

Shenzhen Xiniu.com Co., Ltd.

Yantai DNSPOD Inc.

Zhejiang 22net Inc.

Zhengzhou Shijichuanglian Electronic Technology Development Co., Ltd.

Zhengzhou Yifang Technology & Trade Co., Ltd.

Grow Force Technology Co., Ltd.

ChinaNet (Suzhou) Co., Ltd.

Knetreg (Tianjin) Technology Co., Ltd.

We would like to express our heartfelt thanks to the following organizations that have supported the collection of data on government applications. (Not listed in any particular order)

Shenzhen Tencent Computer System Co., Ltd.

Beijing Micro Dream Network Technology Co., Ltd. (Micro-blog)

Beijing Bytedance Technology Co., Ltd.（Toutiao）

Beijing Ucap Information Techonology Co., Ltd.

We would like to express our heartfelt thanks to the following organizations that have supported the collection of data on cyber security. (Not listed in any particular order)

National Internet Emergency Center（CNCERT）

China Reporting Center for Illegal and Inappropriate Internet Information（12377）

We also extend our sincere thanks to other organizations that have helped us in the course of compiling and revising the Report.