Consumer Use Of The Internet & Mobile Web 2020-2021

Richard K. Miller & Associates
since 1972
CONSUMER USE OF THE INTERNET & MOBILE WEB 2020-2021

5th Edition

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**CONSUMER USE OF THE INTERNET & MOBILE WEB 2020-2021**
PART I: OVERVIEW
1.1 Use Of The Internet

Since 2000, the Center for the Digital Future (www.digitalcenter.org), University of Southern California, Annenberg School for Communication has conducted the Digital Future Project.

The Digital Future Project 2018 reports use of the Internet among U.S. adults and weekly hours online among Internet users as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Pct. of Adults</th>
<th>Weekly Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>67%</td>
<td>9.4</td>
</tr>
<tr>
<td>2001</td>
<td>72%</td>
<td>9.8</td>
</tr>
<tr>
<td>2002</td>
<td>71%</td>
<td>11.1</td>
</tr>
<tr>
<td>2003</td>
<td>76%</td>
<td>12.5</td>
</tr>
<tr>
<td>2005</td>
<td>79%</td>
<td>13.3</td>
</tr>
<tr>
<td>2006</td>
<td>78%</td>
<td>14.0</td>
</tr>
<tr>
<td>2007</td>
<td>79%</td>
<td>15.3</td>
</tr>
<tr>
<td>2008</td>
<td>80%</td>
<td>17.3</td>
</tr>
<tr>
<td>2009</td>
<td>82%</td>
<td>19.0</td>
</tr>
<tr>
<td>2010</td>
<td>82%</td>
<td>18.3</td>
</tr>
<tr>
<td>2012</td>
<td>86%</td>
<td>20.4</td>
</tr>
<tr>
<td>2013</td>
<td>88%</td>
<td>20.5</td>
</tr>
<tr>
<td>2014</td>
<td>91%</td>
<td>21.5</td>
</tr>
<tr>
<td>2015</td>
<td>90%</td>
<td>23.5</td>
</tr>
<tr>
<td>2016</td>
<td>91%</td>
<td>23.6</td>
</tr>
<tr>
<td>2018</td>
<td>90%</td>
<td>22.5</td>
</tr>
</tbody>
</table>

Note: Surveys were not conducted in 2004, 2011 and 2017.

The Digital Future Project 2018 reported that 92% of adult men and 88% of adult women used the Internet in 2018.

According to eMarketer (www.emarketer.com), Internet user penetration by race/ethnicity is as follows (percentage of U.S. adults in each group):

- Caucasian: 84%
- African-American: 83%
- Asian: 83%
- Hispanic/Latino: 79%
- Native American, Hawaiian and Pacific Islanders: 77%
1.2 Devices Used For Internet Connection

The Digital Future Project 2018 reported devices used to connect to the Internet in 2018 as follows (percentage of Internet users):

- Computer: 89%
- Mobile phone: 83%
- Tablet: 55%

Among Internet users who connect through two or more devices, the device used most often is as follows (percentage of respondents):

- Mobile phone: 45%
- Computer: 44%
- Tablet: 11%

Among Internet users who connect through three or more devices, the device used most often is as follows (percentage of respondents):

- Computer: 43%
- Mobile phone: 38%
- Tablet: 19%

By device, eMarketer assessed the number of U.S. Internet users as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Dual Desktop/Laptop and Mobile Users</th>
<th>Desktop/Laptop Only Users</th>
<th>Mobile Only Users</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>204.0 million</td>
<td>24.7 million</td>
<td>32.1 million</td>
<td>260.8 million</td>
</tr>
<tr>
<td>2016</td>
<td>210.4 million</td>
<td>20.3 million</td>
<td>36.6 million</td>
<td>267.4 million</td>
</tr>
<tr>
<td>2017</td>
<td>214.6 million</td>
<td>17.9 million</td>
<td>40.7 million</td>
<td>273.3 million</td>
</tr>
<tr>
<td>2018</td>
<td>219.3 million</td>
<td>15.2 million</td>
<td>44.5 million</td>
<td>278.0 million</td>
</tr>
<tr>
<td>2019</td>
<td>221.1 million</td>
<td>12.9 million</td>
<td>47.2 million</td>
<td>281.2 million</td>
</tr>
<tr>
<td>2020</td>
<td>222.6 million</td>
<td>11.5 million</td>
<td>49.8 million</td>
<td>283.9 million</td>
</tr>
<tr>
<td>2021</td>
<td>223.5 million</td>
<td>10.7 million</td>
<td>52.3 million</td>
<td>286.4 million</td>
</tr>
</tbody>
</table>

1.3 Technology Adoption

Pew Research Center (www.pewresearch.org) reported technology adoption among U.S. adults in 2019 as follows (percentage of U.S. adults):

- Use the Internet: 88%
- Own a smartphone: 81%
- Have broadband at home: 73%
- Use social media: 69%
- Own a tablet: 51%

In 2019, 37% of online adults primarily used a smartphone to access the Internet, 19% only used a smartphone to go online. This is an increase from 19% that primarily used a smartphone for access in 2013.
Among smartphone users in 2019, the preferred way of accessing the Internet is as follows:
- Smartphone: 46%
- Desktop, laptop, or tablet computer: 30%
- Smartphone or computer equally: 23%

### 1.4 Home Broadband
In 2019, 73% of adults accessed the Internet using broadband at home. The following are the demographics of these Internet users:

**Age**
- 18-to-29: 77%
- 30-to-49: 77%
- 50-to-64: 79%
- 65 and older: 59%

**Education**
- High school or less: 56%
- Some college: 77%
- College degree: 93%

**Ethnicity/Race**
- Black: 66%
- Caucasian: 79%
- Hispanic: 61%

**Income**
- Less than $30,000: 56%
- $30,000 to $74,999: 76%
- $75,000 or more: 92%

**Community**
- Urban: 76%
- Suburban: 79%
- Rural: 63%

### 1.5 Broadband Access Providers
Leichtman Research Group (www.leichtmanresearch.com) reported 98.72 million households with broadband access as of April 2019, distributed by provider as follows:

**Cable Providers**
- Comcast: 27,597,000
- Charter: 25,687,000
1.6 Spending For Internet Access

PricewaterhouseCoopers (PwC, www.pwc.com) assessed consumer spending for Internet access in 2018 as follows:
- Mobile access: $112 billion
- Broadband: $ 59 billion
- Total: $171 billion

PwC forecasts total spending to increase to $193 billion by 2021.

1.7 Communities Without High-Speed Access

According to a 2018 study by Pew Research Center, residents in many areas in the U.S. still do not have access to high-speed Internet. Adults report access problems as follows:

<table>
<thead>
<tr>
<th>Location</th>
<th>Major Problem</th>
<th>Minor Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>24%</td>
<td>34%</td>
</tr>
<tr>
<td>Urban</td>
<td>13%</td>
<td>30%</td>
</tr>
<tr>
<td>Suburban</td>
<td>6%</td>
<td>27%</td>
</tr>
</tbody>
</table>

1.8 Internet User Global Census

The International Telecommunication Union (ITU, www.itu.int), the United Nations’ specialized agency for information and communication technologies, reports the number of Internet users worldwide as follows:
<table>
<thead>
<tr>
<th>Year</th>
<th>Users</th>
<th>Penetration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>14.161 million</td>
<td>0.3%</td>
</tr>
<tr>
<td>1994</td>
<td>25.454 million</td>
<td>0.4%</td>
</tr>
<tr>
<td>1995</td>
<td>44.838 million</td>
<td>0.8%</td>
</tr>
<tr>
<td>1996</td>
<td>77.433 million</td>
<td>1.3%</td>
</tr>
<tr>
<td>1997</td>
<td>120.758 million</td>
<td>2.0%</td>
</tr>
<tr>
<td>1998</td>
<td>188.023 million</td>
<td>3.1%</td>
</tr>
<tr>
<td>1999</td>
<td>280.866 million</td>
<td>4.6%</td>
</tr>
<tr>
<td>2000</td>
<td>414.794 million</td>
<td>6.8%</td>
</tr>
<tr>
<td>2001</td>
<td>502.292 million</td>
<td>8.1%</td>
</tr>
<tr>
<td>2002</td>
<td>665.065 million</td>
<td>10.6%</td>
</tr>
<tr>
<td>2003</td>
<td>781.435 million</td>
<td>12.3%</td>
</tr>
<tr>
<td>2004</td>
<td>913.327 million</td>
<td>14.2%</td>
</tr>
<tr>
<td>2005</td>
<td>1.030 trillion</td>
<td>15.8%</td>
</tr>
<tr>
<td>2006</td>
<td>1.162 trillion</td>
<td>17.6%</td>
</tr>
<tr>
<td>2007</td>
<td>1.373 trillion</td>
<td>20.6%</td>
</tr>
<tr>
<td>2008</td>
<td>1.575 trillion</td>
<td>23.3%</td>
</tr>
<tr>
<td>2009</td>
<td>1.766 trillion</td>
<td>25.8%</td>
</tr>
<tr>
<td>2010</td>
<td>2.023 trillion</td>
<td>29.2%</td>
</tr>
<tr>
<td>2011</td>
<td>2.231 trillion</td>
<td>31.8%</td>
</tr>
<tr>
<td>2012</td>
<td>2.494 trillion</td>
<td>35.1%</td>
</tr>
<tr>
<td>2013</td>
<td>2.728 trillion</td>
<td>38.0%</td>
</tr>
<tr>
<td>2014</td>
<td>2.956 trillion</td>
<td>40.7%</td>
</tr>
<tr>
<td>2015</td>
<td>3.185 trillion</td>
<td>43.4%</td>
</tr>
<tr>
<td>2016</td>
<td>3.417 trillion</td>
<td>46.1%</td>
</tr>
<tr>
<td>2017</td>
<td>3.650 trillion</td>
<td>48.4%</td>
</tr>
<tr>
<td>2018</td>
<td>3.896 trillion</td>
<td>51.9%</td>
</tr>
</tbody>
</table>
USE OF SMARTPHONES

2.1 Smartphone Owners
According to Pew Research Center (www.pewresearch.org), 81% of U.S. adults owned a smartphone in 2019. The demographics of smartphone users was as follows:

**Age**
- 18-to-29: 96%
- 30-to-49: 92%
- 50-to-64: 79%
- 65 and older: 53%

**Education**
- High school or less: 71%
- Some college: 85%
- College degree: 91%

**Ethnicity/Race**
- Black: 80%
- Caucasian: 82%
- Hispanic: 79%

**Income**
- Less than $30,000: 71%
- $30,000 to $74,999: 83%
- $75,000 or more: 95%

**Community**
- Urban: 83%
- Suburban: 83%
- Rural: 71%

2.2 Time Spent Using Mobile Devices
eMarketer (www.emarketer.com) assesses time spent using mobile devices among U.S. adults as follows (hours:minutes):
2.3 Internet Access Via Smartphone

In 2019, 37% of adults said that they mostly go online using a smartphone. By age, they are as follows (source: Pew Research Center):

- 18-to-29: 58%
- 30-to-49: 47%
- 50-to-64: 27%
- 65 and older: 15%

Seventeen percent (17%) of adults went online in 2019 using only a smartphone. By age, they are as follows (source: Pew Research Center):

- 18-to-29: 22%
- 30-to-49: 18%
- 50-to-64: 14%
- 65 and older: 12%

2.4 Mobile Phone Activities

The Digital Future Project 2018, by the Center for the Digital Future (www.digitalcenter.org), University of Southern California, Annenberg School for Communication, reports mobile phone activities among U.S. adults. This assessment is presented in Chapter 5.
2.5 Dependence On Smartphones

A study of Android users by Dscout (www.dscout.com) found that people, on average, touch their smartphone 2,617 times a day.

In aggregate, Americans looked at their smartphone more than 9 billion times per day, according to Deloitte (www.deloitte.com). About one-half wake up at least once during the night and check their phones. Two-thirds of smartphone owners check their device within 15 minutes of waking up; 90% do so within an hour.

In the Teen Smartphone Addiction National Survey 2018, by Screen Education (www.screeneducation.org), 60% of teens said that their friends were addicted to their smartphone.

2.6 5G Technology

5G is the fifth generation cellular network technology. The first deployments in the U.S. were in April 2019.

A 2019 survey by Matrixx Software (www.matrixx.com) asked mobile users their attitudes toward 5G mobile services. Responses were as follows (percentage of respondents):

• Availability of 5G capabilities will influence decision to change/upgrade existing phone: 52%
• Willing to pay more for 5G-enabled smartphones and other devices: 38%
• Would choose to switch carriers based on accessibility to 5G: 37%
• Would pay more to access a 5G network: 34%
TRENDS

3.1 Overview
Since 2000, the Center for the Digital Future (www.digitalcenter.org), University of Southern California, Annenberg School for Communication has conducted the Digital Future Project. The annual report is the longest continuing study of its kind.

This chapter includes year-to-year data on various topics assessed in Digital Future Project 2018. (Note: Surveys were not conducted in 2004, 2011, and 2017.)

3.2 Internet Use At Home
Among adults who use the Internet, time spent weekly using the Internet at home has been as follows:

- 2000: 3.3 hours
- 2001: 5.9 hours
- 2002: 6.8 hours
- 2003: 6.9 hours
- 2005: 8.8 hours
- 2006: 8.9 hours
- 2007: 10.0 hours
- 2008: 10.1 hours
- 2009: 10.6 hours
- 2010: 12.3 hours
- 2012: 14.1 hours
- 2013: 14.1 hours
- 2014: 16.1 hours
- 2015: 17.2 hours
- 2016: 17.6 hours
- 2018: 17.8 hours

3.3 Internet Use At Work
Time spent weekly using the Internet at work has been as follows:

- 2003: 6.2 hours
- 2005: 6.5 hours
- 2006: 6.8 hours
- 2007: 7.2 hours
- 2008: 7.7 hours
- 2009: 8.7 hours
- 2010: 9.4 hours
- 2012: 10.0 hours
- 2013: 10.8 hours
- 2014: 11.7 hours
- 2015: 13.5 hours
- 2016: 14.3 hours
- 2018: 14.2 hours
3.4 Surfing The Web
When asked how often users go online without a specific destination, adult Internet users responded as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Often</th>
<th>Sometimes</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>25%</td>
<td>47%</td>
<td>29%</td>
</tr>
<tr>
<td>2006</td>
<td>30%</td>
<td>44%</td>
<td>26%</td>
</tr>
<tr>
<td>2007</td>
<td>27%</td>
<td>51%</td>
<td>22%</td>
</tr>
<tr>
<td>2008</td>
<td>30%</td>
<td>50%</td>
<td>20%</td>
</tr>
<tr>
<td>2009</td>
<td>29%</td>
<td>52%</td>
<td>29%</td>
</tr>
<tr>
<td>2010</td>
<td>30%</td>
<td>52%</td>
<td>28%</td>
</tr>
<tr>
<td>2012</td>
<td>33%</td>
<td>46%</td>
<td>21%</td>
</tr>
<tr>
<td>2013</td>
<td>32%</td>
<td>49%</td>
<td>20%</td>
</tr>
<tr>
<td>2014</td>
<td>41%</td>
<td>43%</td>
<td>16%</td>
</tr>
<tr>
<td>2015</td>
<td>37%</td>
<td>47%</td>
<td>17%</td>
</tr>
<tr>
<td>2016</td>
<td>37%</td>
<td>48%</td>
<td>14%</td>
</tr>
<tr>
<td>2017</td>
<td>31%</td>
<td>51%</td>
<td>18%</td>
</tr>
</tbody>
</table>

3.5 Children And The Internet
Adult Internet users with children in the household assessed their children’s time spent online as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Too Much</th>
<th>Just Right</th>
<th>Too Little</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>11%</td>
<td>79%</td>
<td>10%</td>
</tr>
<tr>
<td>2001</td>
<td>16%</td>
<td>72%</td>
<td>12%</td>
</tr>
<tr>
<td>2002</td>
<td>18%</td>
<td>69%</td>
<td>13%</td>
</tr>
<tr>
<td>2003</td>
<td>15%</td>
<td>76%</td>
<td>10%</td>
</tr>
<tr>
<td>2005</td>
<td>19%</td>
<td>72%</td>
<td>9%</td>
</tr>
<tr>
<td>2006</td>
<td>21%</td>
<td>70%</td>
<td>10%</td>
</tr>
<tr>
<td>2007</td>
<td>25%</td>
<td>66%</td>
<td>9%</td>
</tr>
<tr>
<td>2008</td>
<td>28%</td>
<td>69%</td>
<td>4%</td>
</tr>
<tr>
<td>2009</td>
<td>23%</td>
<td>71%</td>
<td>6%</td>
</tr>
<tr>
<td>2010</td>
<td>28%</td>
<td>69%</td>
<td>4%</td>
</tr>
<tr>
<td>2012</td>
<td>32%</td>
<td>65%</td>
<td>3%</td>
</tr>
<tr>
<td>2013</td>
<td>31%</td>
<td>63%</td>
<td>6%</td>
</tr>
<tr>
<td>2014</td>
<td>34%</td>
<td>60%</td>
<td>7%</td>
</tr>
<tr>
<td>2015</td>
<td>44%</td>
<td>53%</td>
<td>3%</td>
</tr>
<tr>
<td>2016</td>
<td>41%</td>
<td>55%</td>
<td>5%</td>
</tr>
<tr>
<td>2018</td>
<td>43%</td>
<td>54%</td>
<td>4%</td>
</tr>
</tbody>
</table>

3.6 Internet And The Political Process
Online adults were asked if they thought the Internet has become important for the political campaign process. Responses were as follows:
<table>
<thead>
<tr>
<th>Year</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>34%</td>
<td>28%</td>
<td>24%</td>
<td>8%</td>
<td>6%</td>
</tr>
<tr>
<td>2006</td>
<td>27%</td>
<td>29%</td>
<td>24%</td>
<td>11%</td>
<td>9%</td>
</tr>
<tr>
<td>2007</td>
<td>28%</td>
<td>32%</td>
<td>25%</td>
<td>8%</td>
<td>8%</td>
</tr>
<tr>
<td>2008</td>
<td>30%</td>
<td>30%</td>
<td>27%</td>
<td>7%</td>
<td>7%</td>
</tr>
<tr>
<td>2009</td>
<td>38%</td>
<td>31%</td>
<td>19%</td>
<td>8%</td>
<td>5%</td>
</tr>
<tr>
<td>2010</td>
<td>33%</td>
<td>36%</td>
<td>18%</td>
<td>7%</td>
<td>7%</td>
</tr>
<tr>
<td>2012</td>
<td>39%</td>
<td>31%</td>
<td>20%</td>
<td>6%</td>
<td>4%</td>
</tr>
<tr>
<td>2013</td>
<td>42%</td>
<td>29%</td>
<td>19%</td>
<td>5%</td>
<td>6%</td>
</tr>
<tr>
<td>2014</td>
<td>42%</td>
<td>32%</td>
<td>18%</td>
<td>5%</td>
<td>4%</td>
</tr>
<tr>
<td>2015</td>
<td>44%</td>
<td>34%</td>
<td>15%</td>
<td>4%</td>
<td>2%</td>
</tr>
<tr>
<td>2016</td>
<td>51%</td>
<td>32%</td>
<td>11%</td>
<td>4%</td>
<td>2%</td>
</tr>
<tr>
<td>2018</td>
<td>51%</td>
<td>33%</td>
<td>11%</td>
<td>3%</td>
<td>2%</td>
</tr>
</tbody>
</table>

### 3.7 Market Resources


Center for the Digital Future, University of Southern California, Annenberg School for Communication, 300 S. Grand Avenue, Suite 3950, Los Angeles, CA 90071.  
(213) 437-4433.  ([www.digitalcenter.org](http://www.digitalcenter.org))
ONLINE ACTIVITIES

4.1 Overview
The 2018 Digital Future Project, by the Center for the Digital Future (www.digitalcenter.org), University of Southern California, Annenberg School for Communication), asked Internet users about their engagement in various types of online activities. This chapter presents findings of the survey.

4.2 Activities By Adult Internet Users
When asked how frequently they engaged in various online activities, adult Internet users responded as follows:

**Browse The Web**
- Several times a day: 35%
- Daily: 33%
- Weekly: 15%
- Monthly: 5%
- Less than monthly: 7%
- Never: 6%

**Buy Things**
- Several times a day: 2%
- Daily: 5%
- Weekly: 28%
- Monthly: 34%
- Less than monthly: 25%
- Never: 7%

**Check Email**
- Several times a day: 52%
- Daily: 31%
- Weekly: 8%
- Monthly: 2%
- Less than monthly: 3%
- Never: 4%
Compare Prices Of Products/Services
- Several times a day: 3%
- Daily: 12%
- Weekly: 34%
- Monthly: 22%
- Less than monthly: 17%
- Never: 12%

Distance Learning For A Degree Or Job Training
- Several times a day: 2%
- Daily: 5%
- Weekly: 5%
- Monthly: 6%
- Less than monthly: 17%
- Never: 66%

Download/Listen To Music
- Several times a day: 20%
- Daily: 22%
- Weekly: 19%
- Monthly: 9%
- Less than monthly: 15%
- Never: 16%

Download/Watch Videos
- Several times a day: 16%
- Daily: 24%
- Weekly: 21%
- Monthly: 10%
- Less than monthly: 13%
- Never: 17%

Find/Check A Fact
- Several times a day: 13%
- Daily: 24%
- Weekly: 30%
- Monthly: 13%
- Less than monthly: 12%
- Never: 8%
Gamble
- Several times a day: 2%
- Daily: 3%
- Weekly: 6%
- Monthly: 3%
- Less than monthly: 14%
- Never: 74%

Get Information For School/Work (among students only)
- Several times a day: 31%
- Daily: 37%
- Weekly: 19%
- Monthly: 4%
- Less than monthly: 3%
- Never: 6%

Get Product Information
- Several times a day: 5%
- Daily: 20%
- Weekly: 35%
- Monthly: 19%
- Less than monthly: 16%
- Never: 6%

Instant Messaging/Chat
- Several times a day: 27%
- Daily: 29%
- Weekly: 15%
- Monthly: 6%
- Less than monthly: 12%
- Never: 12%

Investing
- Several times a day: 1%
- Daily: 3%
- Weekly: 4%
- Monthly: 5%
- Less than monthly: 14%
- Never: 74%
Listen To Online Radio

- Several times a day: 6%
- Daily: 15%
- Weekly: 14%
- Monthly: 9%
- Less than monthly: 17%
- Never: 39%

Look At Religious/Spiritual Sites

- Several times a day: 2%
- Daily: 10%
- Weekly: 12%
- Monthly: 7%
- Less than monthly: 20%
- Never: 49%

Look At Sites With Sexual Content

- Several times a day: 2%
- Daily: 6%
- Weekly: 15%
- Monthly: 8%
- Less than monthly: 12%
- Never: 57%

Look For Health Information

- Several times a day: 3%
- Daily: 8%
- Weekly: 21%
- Monthly: 25%
- Less than monthly: 31%
- Never: 13%

Look For Humorous Content

- Several times a day: 8%
- Daily: 18%
- Weekly: 16%
- Monthly: 9%
- Less than monthly: 22%
- Never: 27%
Look For News
• Several times a day: 14%
• Daily: 35%
• Weekly: 21%
• Monthly: 8%
• Less than monthly: 12%
• Never: 10%

Look For Travel Information
• Several times a day: 2%
• Daily: 5%
• Weekly: 11%
• Monthly: 22%
• Less than monthly: 42%
• Never: 18%

Look For Jobs/Work
• Several times a day: 4%
• Daily: 6%
• Weekly: 8%
• Monthly: 9%
• Less than monthly: 29%
• Never: 45%

Look Up A Definition
• Several times a day: 7%
• Daily: 17%
• Weekly: 31%
• Monthly: 19%
• Less than monthly: 18%
• Never: 8%

Make Travel Reservations
• Several times a day: 1%
• Daily: 2%
• Weekly: 4%
• Monthly: 14%
• Less than monthly: 50%
• Never: 30%
### Make/Receive Phone Calls
- Several times a day: 7%
- Daily: 11%
- Weekly: 14%
- Monthly: 8%
- Less than monthly: 19%
- Never: 41%

### Online Dating
- Several times a day: 2%
- Daily: 6%
- Weekly: 5%
- Monthly: 2%
- Less than monthly: 14%
- Never: 72%

### Pay Bills/eBanking
- Several times a day: 3%
- Daily: 11%
- Weekly: 30%
- Monthly: 31%
- Less than monthly: 6%
- Never: 21%

### Play Games
- Several times a day: 14%
- Daily: 20%
- Weekly: 16%
- Monthly: 7%
- Less than monthly: 12%
- Never: 32%

### Post On Discussion Boards
- Several times a day: 6%
- Daily: 10%
- Weekly: 12%
- Monthly: 10%
- Less than monthly: 22%
- Never: 40%
### Post On Social Networking Sites
- Several times a day: 10%
- Daily: 15%
- Weekly: 20%
- Monthly: 12%
- Less than monthly: 12%
- Never: 32%

### Post Self-Made Content (Photos/Videos)
- Several times a day: 3%
- Daily: 8%
- Weekly: 14%
- Monthly: 14%
- Less than monthly: 19%
- Never: 42%

### Re-post/Share Links/Content Created By Others
- Several times a day: 5%
- Daily: 12%
- Weekly: 22%
- Monthly: 11%
- Less than monthly: 21%
- Never: 29%

### Read Blogs
- Several times a day: 4%
- Daily: 10%
- Weekly: 16%
- Monthly: 12%
- Less than monthly: 18%
- Never: 40%

### Sell Things
- Several times a day: 1%
- Daily: 2%
- Weekly: 4%
- Monthly: 11%
- Less than monthly: 32%
- Never: 52%
Visit Social Networking Sites
- Several times a day: 32%
- Daily: 28%
- Weekly: 12%
- Monthly: 5%
- Less than monthly: 7%
- Never: 16%

4.3 Online Content
When asked how frequently they access various types of online content, adult Internet users responded as follows:

Music Subscription
- Often: 31%
- Sometimes: 17%
- Rarely: 13%
- Never: 39%

News - Pay
- Often: 7%
- Sometimes: 9%
- Rarely: 9%
- Never: 75%

Sports - Pay
- Often: 7%
- Sometimes: 10%
- Rarely: 11%
- Never: 71%

4.4 Market Resources
Digital Future Project, Center for the Digital Future, University of Southern California, Annenberg School for Communication, 300 S. Grand Avenue, Suite 3950, Los Angeles, CA 90071. (213) 437-4433. (www.digitalcenter.org)
5

MOBILE DEVICE ACTIVITIES

5.1 Overview
Since 2000, the Center for the Digital Future (www.digitalcenter.org), University of Southern California, Annenberg School for Communication has conducted the Digital Future Project.
Since 2010, the Center has surveyed Internet users that use mobile/smartphones about their mobile activities.
This chapter includes year-to-year data on various topics assessed in Digital Future Project 2018. (Note: Surveys were not conducted in 2011 and 2017.)

5.2 Activities By Adult Mobile Device Users
When asked about use of various mobile device features and applications, adult Internet users that use mobile/smartphones responded as follows:

Access Social Networking Sites
• 2010: n/a
• 2012: 42%
• 2013: 44%
• 2014: 55%
• 2015: 61%
• 2016: 69%
• 2018: 65%

Check Into Locations
• 2010: n/a
• 2012: 15%
• 2013: 12%
• 2014: 31%
• 2015: 36%
• 2016: 38%
• 2018: 37%

Download Ringtones/Music/MP3 Files/Videos
• 2010: 16%
• 2012: 28%
• 2013: 19%
• 2014: 32%
• 2015: 35%
• 2016: 36%
• 2018: 33%
<table>
<thead>
<tr>
<th>Service</th>
<th>Year 2010</th>
<th>Year 2012</th>
<th>Year 2013</th>
<th>Year 2014</th>
<th>Year 2015</th>
<th>Year 2016</th>
<th>Year 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Email</td>
<td>21%</td>
<td>56%</td>
<td>55%</td>
<td>66%</td>
<td>72%</td>
<td>79%</td>
<td>78%</td>
</tr>
<tr>
<td>GPS Mapping Services</td>
<td>12%</td>
<td>45%</td>
<td>45%</td>
<td>55%</td>
<td>65%</td>
<td>71%</td>
<td>72%</td>
</tr>
<tr>
<td>Instant Messaging</td>
<td>11%</td>
<td>30%</td>
<td>29%</td>
<td>46%</td>
<td>50%</td>
<td>58%</td>
<td>58%</td>
</tr>
<tr>
<td>Picture/Video Messages</td>
<td>38%</td>
<td>60%</td>
<td>54%</td>
<td>63%</td>
<td>69%</td>
<td>77%</td>
<td>76%</td>
</tr>
<tr>
<td>Play Games</td>
<td>23%</td>
<td>43%</td>
<td>43%</td>
<td>51%</td>
<td>54%</td>
<td>58%</td>
<td>56%</td>
</tr>
<tr>
<td>Streaming Video/Music</td>
<td>13%</td>
<td>37%</td>
<td>41%</td>
<td>51%</td>
<td>59%</td>
<td>67%</td>
<td>67%</td>
</tr>
<tr>
<td>Take Pictures</td>
<td>60%</td>
<td>79%</td>
<td>70%</td>
<td>76%</td>
<td>83%</td>
<td>89%</td>
<td>88%</td>
</tr>
</tbody>
</table>
5.3 Market Resources


Center for the Digital Future, University of Southern California, Annenberg School for Communication, 300 S. Grand Avenue, Suite 3950, Los Angeles, CA 90071. (213) 437-4433. (www.digitalcenter.org)
6

RELIABILITY & ACCURACY OF ONLINE INFORMATION

6.1 Overview
The 2018 Digital Future Project, by the Center for the Digital Future (www.digitalcenter.org), University of Southern California, Annenberg School for Communication, asked adult Internet users their views on the reliability and accuracy of information on the Internet. This chapter presents findings of the survey.

6.2 User Assessment
How much of the information on the Internet overall do you think is reliable?
• All: 1%
• Most: 31%
• About one half: 49%
• A small portion: 18%
• None: <1%

How much information posted by various groups do you think is generally reliable?
• Posted on government websites: 67%
• Posted by established media: 56%
• Posted on search engines: 47%
• Posted by individuals: 13%
• Posted in social networking sites: 9%

How much of the information on social networking sites do you feel is reliable and accurate?
• All: 1%
• Most: 8%
• About one half: 35%
• A small portion: 52%
• None: 4%

How much of the information on government sites do you feel is reliable and accurate?
• All: 11%
• Most: 56%
• About one half: 22%
• A small portion: 10%
• None: 2%

How much of the information by established media do you feel is reliable and accurate?
• All: 6%
• Most: 50%
• About one half: 26%
• A small portion: 15%
• None: 4%

How much of the information provided by search engines do you feel is reliable and accurate?
• All: 3%
• Most: 44%
• About one half: 38%
• A small portion: 15%
• None: <1%

How much of the information by individuals do you feel is reliable and accurate?
• All: 1%
• Most: 12%
• About one half: 36%
• A small portion: 45%
• None: 6%

6.3 Market Resources
Digital Future Project, Center for the Digital Future, University of Southern California, Annenberg School for Communication, 300 S. Grand Avenue, Suite 3950, Los Angeles, CA 90071. (213) 437-4433. (www.digitalcenter.org)
7

DIGITAL ADVERTISING

7.1 Market Assessment

According to the *IAB Internet Advertising Revenue Report*, by the Interactive Advertising Bureau (IAB, www.iab.net) and PricewaterhouseCoopers (PwC, www.pwc.com), digital advertising spending has been as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Desktop/Laptop</th>
<th>Mobile</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>$12.5 billion</td>
<td>-</td>
<td>$12.5 billion</td>
</tr>
<tr>
<td>2006</td>
<td>$16.9 billion</td>
<td>-</td>
<td>$16.9 billion</td>
</tr>
<tr>
<td>2007</td>
<td>$21.2 billion</td>
<td>-</td>
<td>$21.2 billion</td>
</tr>
<tr>
<td>2008</td>
<td>$23.4 billion</td>
<td>-</td>
<td>$23.4 billion</td>
</tr>
<tr>
<td>2009</td>
<td>$22.7 billion</td>
<td>-</td>
<td>$22.7 billion</td>
</tr>
<tr>
<td>2010</td>
<td>$25.4 billion</td>
<td>-</td>
<td>$26.0 billion</td>
</tr>
<tr>
<td>2011</td>
<td>$30.1 billion</td>
<td>$1.6 billion</td>
<td>$31.7 billion</td>
</tr>
<tr>
<td>2012</td>
<td>$33.2 billion</td>
<td>$3.4 billion</td>
<td>$36.6 billion</td>
</tr>
<tr>
<td>2013</td>
<td>$35.7 billion</td>
<td>$7.1 billion</td>
<td>$42.8 billion</td>
</tr>
<tr>
<td>2014</td>
<td>$37.0 billion</td>
<td>$12.5 billion</td>
<td>$49.5 billion</td>
</tr>
<tr>
<td>2015</td>
<td>$38.9 billion</td>
<td>$20.7 billion</td>
<td>$59.6 billion</td>
</tr>
<tr>
<td>2016</td>
<td>$35.9 billion</td>
<td>$36.7 billion</td>
<td>$72.6 billion</td>
</tr>
<tr>
<td>2017</td>
<td>$38.2 billion</td>
<td>$50.1 billion</td>
<td>$88.3 billion</td>
</tr>
<tr>
<td>2018</td>
<td>$37.6 billion</td>
<td>$69.9 billion</td>
<td>$107.5 billion</td>
</tr>
</tbody>
</table>

Advertising spending by format in 2018 was distributed as follows:

<table>
<thead>
<tr>
<th>Format</th>
<th>Desktop</th>
<th>Mobile</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Search</td>
<td>48%</td>
<td>43%</td>
<td>45%</td>
</tr>
<tr>
<td>Banner</td>
<td>23%</td>
<td>36%</td>
<td>31%</td>
</tr>
<tr>
<td>Digital video</td>
<td>16%</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td>Other</td>
<td>13%</td>
<td>6%</td>
<td>9%</td>
</tr>
</tbody>
</table>

Social media advertising revenue has been as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>$ 2.9 billion</td>
</tr>
<tr>
<td>2013</td>
<td>$ 4.5 billion</td>
</tr>
<tr>
<td>2014</td>
<td>$ 6.0 billion</td>
</tr>
<tr>
<td>2015</td>
<td>$10.8 billion</td>
</tr>
<tr>
<td>2016</td>
<td>$16.3 billion</td>
</tr>
<tr>
<td>2017</td>
<td>$22.1 billion</td>
</tr>
<tr>
<td>2018</td>
<td>$28.9 billion</td>
</tr>
</tbody>
</table>
emarker.com) assesses digital ad spending in 2018 and the 2016-2019 compound annual growth rate (GAGR) by sector as follows:

<table>
<thead>
<tr>
<th>Sector</th>
<th>2018 Spending</th>
<th>2016-2019 CA GR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail</td>
<td>$23.50 billion</td>
<td>14.9%</td>
</tr>
<tr>
<td>Automotive</td>
<td>$13.57 billion</td>
<td>14.4%</td>
</tr>
<tr>
<td>Financial services</td>
<td>$13.05 billion</td>
<td>14.8%</td>
</tr>
<tr>
<td>Telecom</td>
<td>$11.43 billion</td>
<td>13.5%</td>
</tr>
<tr>
<td>Consumer goods</td>
<td>$9.40 billion</td>
<td>15.2%</td>
</tr>
<tr>
<td>Travel</td>
<td>$8.59 billion</td>
<td>13.2%</td>
</tr>
<tr>
<td>Computing/electronics</td>
<td>$8.33 billion</td>
<td>16.6%</td>
</tr>
<tr>
<td>Media</td>
<td>$6.52 billion</td>
<td>16.8%</td>
</tr>
<tr>
<td>Entertainment</td>
<td>$5.45 billion</td>
<td>17.7%</td>
</tr>
<tr>
<td>Healthcare/pharma</td>
<td>$2.84 billion</td>
<td>11.7%</td>
</tr>
<tr>
<td>Other</td>
<td>$4.61 billion</td>
<td>15.3%</td>
</tr>
</tbody>
</table>

7.2 Market Leaders

emarker.com assesses revenue share of the $107.5 billion digital ad spending in 2018 as follows:

<table>
<thead>
<tr>
<th>Platform</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Google</td>
<td>38.2%</td>
</tr>
<tr>
<td>Facebook</td>
<td>21.8%</td>
</tr>
<tr>
<td>Amazon</td>
<td>6.8%</td>
</tr>
<tr>
<td>Microsoft/LinkedIn</td>
<td>4.1%</td>
</tr>
<tr>
<td>Verizon/Yahoo!/AOL</td>
<td>3.4%</td>
</tr>
<tr>
<td>All other</td>
<td>25.7%</td>
</tr>
</tbody>
</table>

7.3 Overall Attitude Toward Digital Ads

A 2018 survey by Janrain (www.janrain.com) asked U.S. Internet users their overall opinion about digital ads. Responses were as follows (percentage of respondents):

- Too aggressive in following me on every device or browser: 42%
- Understand my interests and needs, but that’s creepy: 19%
- Appeal to certain interests when I'm no longer interested: 11%
- Don’t understand my interests or needs at all: 8%
- Don’t come from brands that I know or trust: 6%
- Understand my interests and needs: 6%
- No opinion: 9%

AdReaction, a 2018 study by Kantar Millward Brown (www.millwardbrown.com), reported Internet users’ attitudes toward digital ads now compared with three years ago as follows (percentage of respondents):

- Ads are appearing in more places now: 79%
- I see more ads now: 74%
- Ads are more intrusive now: 71%
- Ads now fit together better across different ad formats: 47%
- Ads tell better stories now: 41%
- Ads are now more confusing: 33%

“While many people understand that advertising is a necessary burden that comes with viewing free content, the current state of digital advertising is still annoying a lot of folks.”

eMarketer, 10/16/18

7.4 Ad Frequency And Content

A majority of consumers would like more control over the branded content they receive from marketers. When asked in a March 2019 survey by Alliance Data (www.alliancedata.com) about their expectations about control of receiving branded digital content, responses were as follows (percentage of respondents):
- Would like more control over frequency of receiving branded content: 69%
- Would like more control over content: 63%

*The Shopper’s Journey To Loyalty*, a June 2019 report by Yes Marketing (www.yesmarketing.com), reported digital shoppers’ feelings about the frequency of retailer communications as follows (percentage of respondents):

<table>
<thead>
<tr>
<th></th>
<th>Just Right</th>
<th>Too Frequent</th>
<th>Not Frequent Enough</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social media:</td>
<td>64%</td>
<td>29%</td>
<td>7%</td>
</tr>
<tr>
<td>Display ads:</td>
<td>62%</td>
<td>32%</td>
<td>6%</td>
</tr>
<tr>
<td>SMS:</td>
<td>61%</td>
<td>29%</td>
<td>10%</td>
</tr>
<tr>
<td>Email:</td>
<td>60%</td>
<td>36%</td>
<td>5%</td>
</tr>
<tr>
<td>Push notifications:</td>
<td>57%</td>
<td>34%</td>
<td>9%</td>
</tr>
</tbody>
</table>

7.5 Influence On Purchase Decisions

A survey by Fluent (www.fluentco.com) asked Millennials the affect of digital ads and promotions on purchase decisions. Responses were as follows (percentage of respondents):
Ads On News And Entertainment Websites
• All the time: 11%
• Most of the time: 13%
• Some of the time: 20%
• On a few occasions: 19%
• Never: 37%

Ads On Social Media
• All the time: 12%
• Most of the time: 12%
• Some of the time: 20%
• On a few occasions: 19%
• Never: 37%

Promotional Emails
• All the time: 13%
• Most of the time: 13%
• Some of the time: 22%
• On a few occasions: 20%
• Never: 32%

Promotional Text Messages (SMS)
• All the time: 11%
• Most of the time: 14%
• Some of the time: 17%
• On a few occasions: 14%
• Never: 44%

A survey by PricewaterhouseCoopers (www.pwc.com) asked Internet users which social media activities influence their online shopping. Responses were as follows (percentage of respondents):
• Reading reviews, comments, feedback: 45%
• Receiving promotional offerings: 44%
• Viewing ads: 30%
• Staying on top of current fashion and product trends: 25%
• Writing reviews, comments, feedback: 22%
• Associating with particular brands or retailers: 20%
• Purchasing products directly via a social media channel: 16%

7.6 Ad Blocking
eMarketer (www.emarketer.com) assessed the percentage of U.S. Internet users that block ads as follows:
A 2018 survey by GlobalWebIndex (www.globalwebindex.com) asked Internet users the primary reasons that they block ads. Responses were as follows (percentage of respondents):

- Too many ads are annoying or irrelevant: 51%
- There are too many ads on the Internet: 50%
- Ads are too intrusive: 47%
- Ads sometimes contain viruses: 42%
- Ads take up too much screen space: 40%
- To speed up page loading times: 37%
- Generally try to avoid ads of all types on TV and online: 29%
- To avoid having to see video ads before watching clips/shows: 29%
- Ads might compromise my online privacy: 27%
- Want to stop data allowance from being used up: 25%

Omnicom Media Group (www.omnicom.com) found reasons that U.S. Internet users use ad blockers as follows:

- Don't want to deal with pop-up ads: 45%
- Tired of being bombarded by ads: 40%
- Want to block pre-roll ads that prevent access to content: 30%

7.7 Market Resources
Advertising Age, 711 Third Avenue, New York, NY 10017. (212) 210-0100. (www.adage.com)
eMarketer, 11 Times Square, New York, NY 10036. (800) 405-0844. (www.emarketer.com)
Interactive Advertising Bureau, 116 East 27th Street, 7th Floor, New York, NY 10016. (212) 380-4700. (www.iab.net)
TOP DIGITAL MEDIA PROPERTIES

8.1 Top Multi-Platform Properties

According to comScore (www.comscore.com), the top digital media properties (desktop and mobile) ranked by unique visitors in May 2019 are as follows:

- Google Sites: 252.01 million
- Facebook: 217.21 million
- Microsoft Sites: 212.74 million
- Verizon Media: 208.10 million
- Amazon Sites: 206.32 million
- Comcast NBCUniversal: 177.19 million
- CBS Interactive: 159.86 million
- Hearst: 157.40 million
- Apple: 154.95 million
- PayPal: 150.11 million
- The Walt Disney Company: 147.94 million
- Turner Digital: 147.80 million
- Twitter: 147.57 million
- Meredith Digital: 140.99 million
- The Weather Company: 132.79 million
- Wikimedia Foundation Sites: 129.25 million
- Snapchat: 125.42 million
- USA Today Network: 124.46 million
- CafeMedia: 121.27 million
- Wal-Mart: 119.03 million
- Fox Corporation: 113.86 million
- Pinterest: 107.46 million
- eBay: 106.66 million
- Zillow Group: 102.45 million
- Linkedin: 102.15 million
- Freestar: 101.31 million
- Condé Nast Digital: 100.33 million
- Yelp: 99.08 million
- Spotify: 96.72 million
- Penske Media Corp: 96.16 million
- Netflix: 94.36 million
- New York Times Digital: 92.72 million
• Pandora.com: 85.91 million
• Mediavine: 85.23 million
• WashingtonPost.com: 84.90 million
• Dotdash: 82.12 million
• Vox Media: 81.17 million
• Insider: 79.02 million
• Mail Online/Daily Mail: 78.19 million
• TripAdvisor: 77.34 million
• Reddit: 76.43 million
• WebMD Health: 76.02 million
• Healthline: 75.29 million
• BuzzFeed: 75.24 million
• Fusion Media Group: 71.83 million
• Complex: 65.54 million
• Leaf Group: 64.94 million
• NYPost Network: 64.84 million
• Expedia Group: 64.16 million
• Future Publishing Limited: 63.31 million

8.2 Top Desktop Properties

The top desktop properties ranked by unique visitors in May 2019 are as follows (source: comScore):

• Google Sites: 176.64 million
• Microsoft Sites: 173.66 million
• Verizon Media: 131.71 million
• Amazon Sites: 106.88 million
• Facebook: 100.40 million
• Apple: 52.94 million
• CBS Interactive: 44.22 million
• Wikimedia Foundation Sites: 42.11 million
• eBay: 40.61 million
• Comcast NBCUniversal: 40.08 million
• Dropbox Sites: 39.24 million
• PayPal: 37.99 million
• Spotify: 37.23 million
• Linkedin: 36.82 million
• The Walt Disney Company: 36.44 million
• Wal-Mart: 36.13 million
• Hearst: 35.99 million
• Freestar: 35.80 million
• Dotdash: 35.15 million
• Yelp: 34.52 million
• Turner Digital: 33.59 million
- Pinterest: 32.17 million
- Twitter: 32.16 million
- Adobe Sites: 32.12 million
- Valve Corporation: 31.80 million
- Zillow Group: 30.35 million
- Reddit: 29.81 million
- Meredith Digital: 29.16 million
- CafeMedia: 28.99 million
- Expedia Group: 28.55 million
- USA Today Network: 28.53 million
- TripAdvisor: 27.65 million
- Roblox.com: 26.86 million
- Netflix Inc.: 25.51 million
- The Weather Company: 24.51 million
- Future Publishing Limited: 23.77 million
- WebMD Health: 23.42 million
- New York Times Digital: 23.07 million
- Quizlet.com: 22.56 million
- JPMorgan Chase Property: 21.45 million
- Mediavine: 20.98 million
- The Home Depot: 20.97 million
- Indeed: 20.46 million
- craigslist: 19.79 million
- FANDOM Sites: 18.78 million
- Leaf Group: 18.71 million
- Penske Media Corp: 18.36 million
- Ziff Davis Tech: 18.05 million
- Stack Information Services: 18.02 million
- Bank of America: 17.84 million

8.3 Ad Networks

The top ad networks ranked by unique visitors in May 2019 are as follows (source: comScore):

<table>
<thead>
<tr>
<th>Ad Network</th>
<th>Unique Visitors</th>
<th>Reach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Google Ad Network:</td>
<td>197.60 million</td>
<td>88.5%</td>
</tr>
<tr>
<td>Conversant:</td>
<td>162.85 million</td>
<td>73.0%</td>
</tr>
<tr>
<td>Media.net Contextual Ads:</td>
<td>150.91 million</td>
<td>67.6%</td>
</tr>
<tr>
<td>AcuityAds:</td>
<td>72.79 million</td>
<td>32.6%</td>
</tr>
<tr>
<td>Viant:</td>
<td>49.70 million</td>
<td>22.3%</td>
</tr>
<tr>
<td>GumGum:</td>
<td>47.18 million</td>
<td>21.1%</td>
</tr>
<tr>
<td>Bidtellect:</td>
<td>38.87 million</td>
<td>17.4%</td>
</tr>
<tr>
<td>AdBlade Network:</td>
<td>10.87 million</td>
<td>4.9%</td>
</tr>
<tr>
<td>AdSupply:</td>
<td>8.52 million</td>
<td>3.8%</td>
</tr>
</tbody>
</table>
• true_X_ media: 5.09 million 2.3%
• InSkin Media: 5.02 million 2.3%
• CPX Interactive: 3.24 million 1.5%
• Solve Media: 1.35 million 0.6%
• Federated Media: 1.18 million 0.5%
• Ezanga.com: 1.08 million 0.5%
• Lycos Network: 450,000 0.2%
• Gamut - Network: 282,000 0.1%
• YesUp Ecommerce Solutions Inc.: 199,000 0.1%
• Intergi Games Network: 65,000 0.0%
• Fox Audience Network: 30,000 0.0%

8.4 Market Resources
comScore, 11950 Democracy Drive, Suite 600, Reston, VA 20190. (703) 438-2000. (www.comscore.com)
PUBLICALLY TRADED INTERNET CORPORATIONS

9.1 Overview
Companies involved in the following activities comprise the Internet sector:
• Domain names
• E-commerce companies
• Online entertainment (gaming, television networks, video and mobile games)
• Online financial services (banking, brokerage, transactions)
• Online services (coupons, dating, real estate, travel)
• Search engines
• Social media
• Websites and online content

Stocks for 49 U.S. Internet companies were traded on the New York Stock Exchange and NASDAQ at the end of 1st Quarter 2019. Distribution by market capitalization was as follows:
• Large-cap (over $10 billion): 18
• Mid-cap (over $2 billion and under $10 billion): 14
• Small-cap (over $300 million and under $2 billion): 17

9.2 Revenue And Market Capitalization
Publically traded Internet corporations, FY2018 revenue, and market capitalization are as follows:

<table>
<thead>
<tr>
<th>Company</th>
<th>Ticker</th>
<th>FY2018 Revenue</th>
<th>Market Cap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amazon:</td>
<td>AMZN</td>
<td>$232.9 billion</td>
<td>$831.3 billion</td>
</tr>
<tr>
<td>Apple Inc.:</td>
<td>AAPL</td>
<td>$265.6 billion</td>
<td>$827.7 billion</td>
</tr>
<tr>
<td>Facebook:</td>
<td>FB</td>
<td>$ 55.8 billion</td>
<td>$408.5 billion</td>
</tr>
<tr>
<td>Alphabet Inc. [Google]:</td>
<td>GOOG</td>
<td>$136.8 billion</td>
<td>$405.9 billion</td>
</tr>
<tr>
<td>Netflix:</td>
<td>NFLX</td>
<td>$ 15.8 billion</td>
<td>$154.7 billion</td>
</tr>
<tr>
<td>Salesforce.com:</td>
<td>CRM</td>
<td>$ 10.5 billion</td>
<td>$120.1 billion</td>
</tr>
<tr>
<td>Paypal:</td>
<td>PYPL</td>
<td>$ 11.2 billion</td>
<td>$113.2 billion</td>
</tr>
<tr>
<td>Booking Holdings:</td>
<td>BKNG</td>
<td>$ 14.5 billion</td>
<td>$ 78.6 billion</td>
</tr>
<tr>
<td>eBay:</td>
<td>EBAY</td>
<td>$ 10.7 billion</td>
<td>$ 35.7 billion</td>
</tr>
<tr>
<td>Twitter:</td>
<td>TWTR</td>
<td>$  3.0 billion</td>
<td>$ 23.8 billion</td>
</tr>
<tr>
<td>VeriSign:</td>
<td>VRSN</td>
<td>$  1.2 billion</td>
<td>$ 21.3 billion</td>
</tr>
<tr>
<td>CoStar Group:</td>
<td>CSGP</td>
<td>$  1.2 billion</td>
<td>$ 16.9 billion</td>
</tr>
<tr>
<td>Company</td>
<td>Symbol</td>
<td>Revenue 2020 (Million)</td>
<td>Revenue 2021 (Million)</td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------</td>
<td>------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Expedia</td>
<td>EXPE</td>
<td>$11.2 billion</td>
<td>$16.9 billion</td>
</tr>
<tr>
<td>Go Daddy</td>
<td>GDDY</td>
<td>$2.7 billion</td>
<td>$12.6 billion</td>
</tr>
<tr>
<td>Wayfair</td>
<td>W</td>
<td>$2.7 billion</td>
<td>$12.6 billion</td>
</tr>
<tr>
<td>Etrade</td>
<td>ETFC</td>
<td>$3.0 billion</td>
<td>$12.1 billion</td>
</tr>
<tr>
<td>Akamai Technologies</td>
<td>AKAM</td>
<td>$2.7 billion</td>
<td>$11.5 billion</td>
</tr>
<tr>
<td>Snapchat</td>
<td>SNAP</td>
<td>$1.2 billion</td>
<td>$10.5 billion</td>
</tr>
<tr>
<td>Etsy</td>
<td>ETSY</td>
<td>$604 million</td>
<td>$8.4 billion</td>
</tr>
<tr>
<td>GrubHub</td>
<td>GRUB</td>
<td>$1.0 billion</td>
<td>$7.2 billion</td>
</tr>
<tr>
<td>TripAdvisor</td>
<td>TRIP</td>
<td>$1.6 billion</td>
<td>$6.6 billion</td>
</tr>
<tr>
<td>Zillow</td>
<td>Z</td>
<td>$1.3 billion</td>
<td>$5.6 billion</td>
</tr>
<tr>
<td>Wix.com</td>
<td>WIX</td>
<td>$604 million</td>
<td>$5.0 billion</td>
</tr>
<tr>
<td>Zynga</td>
<td>ZNGA</td>
<td>$907 million</td>
<td>$4.8 billion</td>
</tr>
<tr>
<td>J2 Global</td>
<td>JCOM</td>
<td>$1.1 billion</td>
<td>$4.1 billion</td>
</tr>
<tr>
<td>Lending Tree</td>
<td>TREE</td>
<td>$765 million</td>
<td>$4.1 billion</td>
</tr>
<tr>
<td>Match.com</td>
<td>MTCH</td>
<td>$1.7 billion</td>
<td>$3.8 billion</td>
</tr>
<tr>
<td>CarGurus</td>
<td>CARG</td>
<td>$454 million</td>
<td>$3.6 billion</td>
</tr>
<tr>
<td>Yelp</td>
<td>YELP</td>
<td>$943 million</td>
<td>$3.0 billion</td>
</tr>
<tr>
<td>Cogent Communications</td>
<td>CCOI</td>
<td>$520 million</td>
<td>$2.3 billion</td>
</tr>
<tr>
<td>Stars Group</td>
<td>TSG</td>
<td>$1.3 billion</td>
<td>$2.3 billion</td>
</tr>
<tr>
<td>Groupon</td>
<td>GRPN</td>
<td>$2.6 billion</td>
<td>$2.0 billion</td>
</tr>
<tr>
<td>Stamps.com</td>
<td>STMP</td>
<td>$587 million</td>
<td>$1.7 billion</td>
</tr>
<tr>
<td>Shutterstock</td>
<td>SSTK</td>
<td>$623 million</td>
<td>$1.6 billion</td>
</tr>
<tr>
<td>Shutterfly</td>
<td>SFLY</td>
<td>$2.0 billion</td>
<td>$1.5 billion</td>
</tr>
<tr>
<td>Angie’s List</td>
<td>ANGI</td>
<td>$1.1 billion</td>
<td>$1.4 billion</td>
</tr>
<tr>
<td>Blucora</td>
<td>BCOR</td>
<td>$560 million</td>
<td>$1.4 billion</td>
</tr>
<tr>
<td>NIC Inc</td>
<td>EGOV</td>
<td>$345 million</td>
<td>$1.1 billion</td>
</tr>
<tr>
<td>PC Connection</td>
<td>CNXN</td>
<td>$2.7 billion</td>
<td>$1.1 billion</td>
</tr>
<tr>
<td>Endurance International</td>
<td>EIGI</td>
<td>$1.1 billion</td>
<td>$1.0 billion</td>
</tr>
<tr>
<td>Quotient</td>
<td>QUOT</td>
<td>$387 million</td>
<td>$949 million</td>
</tr>
<tr>
<td>Boingo Wireless</td>
<td>WIFI</td>
<td>$204 million</td>
<td>$935 million</td>
</tr>
<tr>
<td>Monotype Imaging</td>
<td>TYPE</td>
<td>$246 million</td>
<td>$821 million</td>
</tr>
<tr>
<td>Tucows</td>
<td>TCX</td>
<td>$346 million</td>
<td>$817 million</td>
</tr>
<tr>
<td>Care.com</td>
<td>CRCM</td>
<td>$174 million</td>
<td>$790 million</td>
</tr>
<tr>
<td>True Car</td>
<td>TRUE</td>
<td>$354 million</td>
<td>$765 million</td>
</tr>
<tr>
<td>Overstock.com</td>
<td>OSTK</td>
<td>$1.7 billion</td>
<td>$707 million</td>
</tr>
<tr>
<td>Land’s End</td>
<td>LE</td>
<td>$1.4 billion</td>
<td>$571 million</td>
</tr>
<tr>
<td>PetMed Express</td>
<td>PETS</td>
<td>$273 million</td>
<td>$460 million</td>
</tr>
</tbody>
</table>
10

PRIVACY ISSUES

10.1 Overview

According to a December 2018 report by Kantar (www.kantar.com), the following percentages of U.S. Internet users, by age, are concerned about their personal information and privacy (percentage of respondents):

- 18-to-24: 57%
- 25-to-34: 70%
- 35-to-44: 73%
- 45-to-54: 74%
- 55 and older: 84%

The 2018 Data Privacy Report, by Sailthru (www.sailthru.com), reported consumers’ feelings about brands buying and selling their personal data as follows (percentage of respondents):

- Very uncomfortable: 55%
- Very comfortable: 5%
- Somewhat comfortable: 3%
- Uncertain: 25%

10.2 Attitudes About Privacy

Americans’ Attitudes About Privacy, Security, And Surveillance, by Pew Research Center (www.pewresearch.org), reported the following attitudes among U.S. adults:

- Ninety-three percent (93%) of adults say that being in control of who can get information about them is important.
- Ninety percent (90%) say that controlling what information is collected about them is important.
- Americans say they do not wish to be observed without their approval; 88% say it is important that they not have someone watch or listen to them without their permission.
- Eighty-five percent (85%) of adults say that not being disturbed at home is important.
- The following percentages of adults say they are not confident that records of their activity maintained by various online entities will remain private and secure:
  - Online advertisers who place ads on the websites they visit: 75%
  - Social media sites they use: 69%
- Search engine providers: 66%
- Online video sites they use: 66%

- Adult Internet users think that various online entities should not save records or archives of their activity:
  - Online advertisers who place ads on the websites they visit: 50%
  - Social media sites they use: 40%
  - Search engine providers: 40%
  - Online video sites they use: 44%

- Just 6% of adults say they are ‘very confident’ that government agencies can keep their records private and secure, while another 25% say they are ‘somewhat confident.’

“The majority of Americans believe it is important that they be able to maintain privacy and confidentiality in commonplace activities of their lives. Most strikingly, these views are especially pronounced when it comes to knowing what information about them is being collected and who is doing the collecting. These feelings also extend to their wishes that they be able to maintain privacy in their homes, at work, during social gatherings, at times when they want to be alone and when they are moving around in public.”

Pew Research Center

10.3 Online Privacy

The following are findings from a survey on consumer privacy by TrustArc (www.trustarc.com):

- Ninety-two percent (92%) of U.S. Internet users worry about their privacy online. Forty-five percent (45%) are more worried than they were one year ago.
- Fifty-six percent (56%) of U.S. Internet users trust businesses with their personal information; 44% do not have this trust.
- Sixty-four percent (64%) of adult consumers think online privacy should be a human right; 37% think losing online privacy is part of being more connected.
• Twenty-two percent (22%) of U.S. Internet users do not trust anyone to protect their online privacy.
• Companies collecting and sharing personal information with other companies is the top concern among U.S. Internet users about their online privacy; 37% of adult consumers rate this as their #1 concern.
• Eighty-nine percent (89%) of U.S. Internet users avoid doing business with companies they do not believe protect their online privacy.
• Seventy-four percent (74%) of U.S. Internet users have moderated their online activity in the past year due to privacy concerns. The following are actions taken:
  - Have not clicked on an online ad: 51%
  - Withheld personal information: 44%
  - Stopped using a website: 36%
  - Have not downloaded an app product: 32%
  - Stopped using an app: 29%
  - Stopped an online transaction: 28%
• Seventy-eight percent (78%) of U.S. Internet users believe they are primarily responsible for protecting their privacy online; 22% do not trust anyone other than themselves to protect their privacy online. The following are steps taken to protect privacy in the past year:
  - Deleted cookies: 55%
  - Changed privacy settings: 29%
  - Turned off location tracking: 29%
  - Read privacy policies: 16%

10.4 Violations Of Privacy Online

The 2018 Digital Future Project, by the Center for the Digital Future (www.digitalcenter.org), University of Southern California, Annenberg School for Communication, reported that online adults have concerns about entities violating their privacy online as follows:
• Corporations: 57%
• Government agencies: 52%
• Other people: 47%

Twenty percent (20%) of online adults report having their privacy violated online within the prior year; 13% say these violations affected their job/career, had financial consequences, affected personal relationships, or were embarrassing. Three percent (3%) of adults say that privacy violations caused considerable problems; 1% reported serious problems.

Participants in the 2018 Digital Future Project survey voiced the following views about online privacy:
• I actively protect my privacy online: 72%
• I have nothing to hide: 58%
• There is no privacy, get over it: 52%
• I feel that I can control my privacy online: 44%
• Concerns about privacy online are exaggerated: 18%

10.5 Actions Taken To Protect Privacy

A 2018 survey by Blue Fountain Media (www.bluefountainmedia.com) found adult Internet users have taken the following actions to protect their digital privacy (percentage of respondents):
• Regularly clear their cookies or web browser history: 51%
• Enable two-step verification for passwords: 45%
• Opt out of cookie use or refuse to provide information: 44%
• Create another email account to sign up for services: 31%
• Sign up with a security company to keep information safe: 17%
• Ditch their Alexa because of its enabled microphone: 5%

Thomson Reuters (www.thomsonreuters.com) found in its 2018 Facebook Poll that adult Internet users have taken actions to protect their digital privacy as follows (percentage of respondents):
• Switched to ‘private mode’ on browser: 22%
• Placed tape over camera on computer or mobile device when not using it: 17%
• Changed user ID on Facebook, Twitter, or other social media network: 14%
• Changed primary Internet browser: 10%
• Unplugged smart TV or other digitally connected device when not in use: 10%
• Started using specialized privacy oriented communication services like Signal, WhatsApp, Wickr, or Confide: 4%
• Traded in smart TV or other digital device for simpler replacement: 3%
• Other: 6%

“As consumers continue to worry about their personal data and how it's being used by marketers, many are taking various measures to ensure a more secured online experience.”

eMarketer, 6/12/18
10.6 Whom Do Consumers Trust?

The Harris Poll (www.theharrispoll.com) asked adults how much trust they have in various entities handling their personally identified information (such as credit card information, contact information and so forth) in a properly confidential and secure manner. Responses were as follows:

<table>
<thead>
<tr>
<th>Entity</th>
<th>Trust</th>
<th>Don’t Trust</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health providers (e.g., doctors and hospitals):</td>
<td>79%</td>
<td>21%</td>
</tr>
<tr>
<td>Major online retailers (e.g., Amazon, eBay):</td>
<td>74%</td>
<td>26%</td>
</tr>
<tr>
<td>Banks and brokerage companies:</td>
<td>68%</td>
<td>32%</td>
</tr>
<tr>
<td>Small or independent online retailers:</td>
<td>55%</td>
<td>45%</td>
</tr>
<tr>
<td>State and local governments:</td>
<td>52%</td>
<td>48%</td>
</tr>
<tr>
<td>Search and portal sites (e.g., Google, Yahoo!):</td>
<td>49%</td>
<td>51%</td>
</tr>
<tr>
<td>Federal government:</td>
<td>48%</td>
<td>52%</td>
</tr>
<tr>
<td>Social networking sites (like Facebook or MySpace)</td>
<td>28%</td>
<td>72%</td>
</tr>
</tbody>
</table>

By age, adults trust the following entities handling their personal identification:

<table>
<thead>
<tr>
<th>Entity</th>
<th>18-to-34</th>
<th>35-to-44</th>
<th>45-to-54</th>
<th>55+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health providers (e.g., doctors and hospitals):</td>
<td>78%</td>
<td>78%</td>
<td>76%</td>
<td>82%</td>
</tr>
<tr>
<td>Major online retailers (e.g., Amazon, eBay):</td>
<td>74%</td>
<td>72%</td>
<td>74%</td>
<td>76%</td>
</tr>
<tr>
<td>Banks and brokerage companies:</td>
<td>70%</td>
<td>65%</td>
<td>63%</td>
<td>71%</td>
</tr>
<tr>
<td>Small or independent online retailers:</td>
<td>55%</td>
<td>58%</td>
<td>58%</td>
<td>53%</td>
</tr>
<tr>
<td>State and local governments:</td>
<td>61%</td>
<td>52%</td>
<td>49%</td>
<td>46%</td>
</tr>
<tr>
<td>Search and portal sites (e.g., Google, Yahoo!):</td>
<td>55%</td>
<td>54%</td>
<td>50%</td>
<td>41%</td>
</tr>
<tr>
<td>Federal government:</td>
<td>58%</td>
<td>51%</td>
<td>48%</td>
<td>39%</td>
</tr>
<tr>
<td>Social networking sites (like Facebook or MySpace)</td>
<td>42%</td>
<td>34%</td>
<td>27%</td>
<td>14%</td>
</tr>
</tbody>
</table>

Adults said they view the following as a threat to their privacy:

- Cyber-criminals: 88%
- Social networking sites (e.g., Facebook, Google+): 70%
- People with wearable, camera-equipped devices: 63%
- The federal government: 60%
- People with camera-equipped phones: 59%
- State and local governments: 56%
- Search and portal sites (e.g., Google, Yahoo!): 53%
- Banks and brokerage companies: 43%
- Small or independent online retailers: 42%
- Major online retailers (e.g., Amazon, eBay): 35%
- Health providers (e.g., doctors and hospitals): 31%

10.7 Use Of Facial Recognition Technology

A few retail companies and many major cities are reported to be using facial recognition software. Municipal agencies use facial recognition for surveillance and law enforcement. Retailers use the technology to track customer buying habits, alert sales
staff to shoppers’ preferences and previous purchases as soon as they enter stores, and to thwart shoplifting.

A 2018 survey by The Brookings Institution (www.brookings.edu) asked U.S. adults how they feel about the use of facial recognition software in retail stores. Responses were as follows (percentage of respondents):

- Very unfavorable: 33%
- Somewhat unfavorable: 17%
- Somewhat favorable: 11%
- Very favorable: 16%
- Uncertain: 23%

“If we fail to think these things through, we run the risk of suddenly finding ourselves in the year 2024 and our lives are going to look a little too much like out of the book 1984.”

Brad Smith, President
Microsoft, 10/18

In February 2019, San Francisco became the first major U.S. city to impose a ban on the use of facial recognition by government agencies.
SECURITY THREATS

11.1 Overview

According to *Americans and Cybersecurity*, by Pew Research Center (www.pewresearch.org), 64% of U.S. adults have been impacted by at least one type of online data theft. The following are types of data theft experienced (percentage of U.S. adults):

- Have had fraudulent charges on credit cards: 41%
- Received notices that some type of sensitive information (like an account number) had been compromised: 35%
- Someone had taken over an email account: 16%
- Received notices that their Social Security number had been compromised: 15%
- Attempt to take out loans or lines of credit in their name: 14%
- Someone had taken over social media accounts: 13%
- Someone had impersonated them in order to file fraudulent tax returns: 6%

According to Qualtrics (www.qualtrics.com), about half of U.S. Internet users have an online security issue each year. Types of online security issues are as follows:

- Received a notice that personal information (e.g., username, password, credit card number, Social Security number, or insurance policy number) may have been compromised: 41%
- Online account hacked: 23%
- Password stolen: 17%

11.2 Identity Fraud

The Bureau of Justice Statistics (www.bjs.gov) classifies identity theft as follows:

- Misuse of an existing account such as a credit card or online account: 86% of incidents
- Unauthorized use of personal information to open a new account: 4% of incidents
- Misuse of personal information for fraudulent purposes such as getting medical care, housing, a job, or other benefits: 3% of incidents
- Multiple types of theft: 7% of incidents

According to the 2019 *National Crime Victimization Survey*, by the Bureau of Justice Statistics, 19.4% of people ages 16 and older has been a victim of identity theft at least once in his or her lifetime; 10% were a victim in the past year.
Javelin Strategy & Research (www.javelinstrategy.com) provides the following assessment of identity fraud in the United States:

<table>
<thead>
<tr>
<th>Year</th>
<th>Fraud Victims</th>
<th>Fraud Losses</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>11.6 million</td>
<td>$18.8 billion</td>
</tr>
<tr>
<td>2012</td>
<td>12.6 million</td>
<td>$21.8 billion</td>
</tr>
<tr>
<td>2013</td>
<td>13.1 million</td>
<td>$19.1 billion</td>
</tr>
<tr>
<td>2014</td>
<td>12.7 million</td>
<td>$16.2 billion</td>
</tr>
<tr>
<td>2015</td>
<td>13.1 million</td>
<td>$15.3 billion</td>
</tr>
<tr>
<td>2016</td>
<td>15.4 million</td>
<td>$16.0 billion</td>
</tr>
<tr>
<td>2017</td>
<td>16.7 million</td>
<td>$16.8 billion</td>
</tr>
<tr>
<td>2018</td>
<td>14.4 million</td>
<td>$14.7 billion</td>
</tr>
</tbody>
</table>

**11.3 Malware**

Malware refers to Internet-based programs of malicious intent that download software onto a computer. The following are the most common forms of malware:

**Spyware**
- Spyware refers to programs that surreptitiously monitor activity on a computer system and report that information to others without the user’s consent.

**Ransomware**
- Ransomware is a type of malware which restricts access to the computer system that it infects and demands a ransom be paid to the creator of the malware in order for the restriction to be removed. Some forms of ransomware encrypt files on the system’s hard drive, while some may simply lock the system and display messages intended to coax the user into paying.

**Trojan Horses**
- Trojan Horse is a general term for malicious software that a user willingly allows to be downloaded onto their computer.

**Viruses**
- Viruses are programs that can replicate their structures or effects by infecting other files or structures on a computer. The common use of a virus is to take over a computer to steal data.

**Worms**
- Worms are programs that can replicate themselves throughout a computer network to perform malicious tasks throughout.
11.4 Phishing
Phishing is an e-mail fraud method in which the perpetrator sends out email in an attempt to gather personal and financial information from recipients.

According to PhishMe (www.phishme.com), 91% of cyber attacks start with a phish. The top reasons people are duped by phishing emails are curiosity (13.7%), fear (13.4%), and urgency (13.2%), followed by reward/recognition, social, entertainment, and opportunity.

An estimated 160 million phishing emails are sent globally every day. Approximately 10%, or 16 million, make it through spam filters. Among these phishing emails, an estimated 800,000 embedded links are clicked, with some 80,000 people falling for a scam every day. The result: stolen identities, financial loss, credit card fraud, and other Internet scams.

Estimates of the number of U.S. adults who have replied to phishing email range from 7% to 14%; about 3% have entered bank details on a site they did not know.

The Security Division of EMC (www.emc.com) estimates global annual losses from phishing at $1.5 billion.

11.5 Data Breaches
Many data breaches occur when corporate databases are hacked, and consumers can do little about such incidences. But many data breaches occur because people do not adequately protect their access passwords.

The following are some of the largest U.S. data breaches:
- Yahoo!: 3.0 billion accounts (2013)
- Yahoo!: 500 million accounts (2014)
- Friend Finder Networks: 412 million accounts (2016)
- LinkedIn: 165 million accounts (2012)
- Equifax: 146 million accounts (2017)
- eBay: 145 million accounts (2014)
- Target: 110 million accounts (2013)
- Capital One: 100 million accounts (2019)
- JP Morgan Chase: 76 million accounts (2014)
- Anthem: 79 million accounts (2015)

11.6 Security Threats To Mobile Devices
According to Skycure (www.skycure.com), a wireless security company, almost a quarter of mobile devices are exposed to security attacks 30 days after being online, either via Wi-Fi or cellular networks. After four months, over 40% of devices become exposed to an attack.

According to Kaspersky Lab (www.kaspersky.com), the top mobile device threats are as follows:
• Data leakage caused by mobile apps
• Unsecured wi-fi
• Network spoofing
• Phishing attacks
• Spyware
• Broken cryptography
• Improper session handling

The 2019 Identity Fraud Study, by Javelin Strategy & Research, reported that mobile phone account takeover fraud is on the rise, from 380,000 incidences in 2017 to 679,000 incidences in 2018.

11.7 Use Of Public Wi-Fi

Precision Opinion (www.precisionopinion.com) reported adult access of the Internet via free public wi-fi as follows (percentage of respondents):

- At least once a day: 8.2%
- At least a few times a week: 9.2%
- Once a week: 11.3%
- Once a month: 12.7%
- Once every few months: 17.1%
- Never: 40.2%

When asked the extent to which they believe free public wi-fi is safe, responses were as follows (percentage of respondents):

- Very safe: 4.8%
- Somewhat safe: 39.1%
- Not too safe: 27.6%
- Not safe at all: 21.6%
- Uncertain: 6.9%

11.8 Passwords

According to Cybersecurity Ventures (www.cybersecurityventures.com), 8.2 million passwords are pilfered each day.

Consumers frequently expose their personal information by sharing passwords, failing to adequately protect passwords, or using passwords that are easy for a hacker to guess.

According to a survey by Harris Poll (www.theharrispoll.com), 45% of adults have either trusted someone with, or been entrusted with, a password, with email (23%) and streaming services (21%) leading the list of shared passwords. Sixty-four percent (64%) of Millennials (ages 18-to-34) admit to sharing or receiving passwords; 37% of adults ages 35 and older have done so. Consumers may think that sharing a Netflix
password is harmless. But, if part of that password aligns with an email or another password, it becomes easier for hackers to gain access to very personal information. According to Americans and Cybersecurity, adults use the following methods to keep track of their online passwords (percentage of Internet users):

<table>
<thead>
<tr>
<th>Use</th>
<th>Use Most Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memorize them:</td>
<td>86%</td>
</tr>
<tr>
<td>Write them down on paper:</td>
<td>65%</td>
</tr>
<tr>
<td>Save in a note on computer or mobile device:</td>
<td>49%</td>
</tr>
<tr>
<td>Save in their Internet browser:</td>
<td>18%</td>
</tr>
<tr>
<td>Use password management program:</td>
<td>12%</td>
</tr>
</tbody>
</table>

Considering the large number of password-protected accounts that most adults have and that they generally memorize passwords, it is not surprising that they frequently need help accessing online accounts. Harris Poll found that 81% have asked for assistance (hints, security questions, password resets, etc.) to access any of their accounts or apps, 62% needed assistance multiple times a year, and 23% of people seek help at least once a month. Many people seem to dread resetting passwords. In a recent Harris Poll, 41% of people said they would rather give up their favorite food for a month than go through the password reset process for all their online accounts.
PART II: ANALYTICS
TOP WEBSITES

12.1 Alexa Ranking

Alexa Internet (www.alexa.com), a subsidiary of Amazon.com, provides commercial web traffic data, global rankings, and other information on 30 million websites.

Alexa Internet ranked the Top 50 U.S. and Canadian websites based on traffic in March 2019 as follows (minutes:seconds):

<table>
<thead>
<tr>
<th>United States</th>
<th>Daily Time on Site</th>
<th>Daily Pageviews Per Visitor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Google.com</td>
<td>8:14</td>
<td>10.69</td>
</tr>
<tr>
<td>2. Youtube.com</td>
<td>8:52</td>
<td>5.09</td>
</tr>
<tr>
<td>3. Facebook.com</td>
<td>9:31</td>
<td>3.94</td>
</tr>
<tr>
<td>4. Amazon.com</td>
<td>7:42</td>
<td>7.61</td>
</tr>
<tr>
<td>5. Wikipedia.org</td>
<td>4:17</td>
<td>3.16</td>
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<tr>
<td>6. Reddit.com</td>
<td>11:26</td>
<td>7.32</td>
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<td>7. Twitter.com</td>
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<td>13. Twitch.tv</td>
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<td>2.84</td>
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<td>14. Microsoftonline.com</td>
<td>1:12</td>
<td>1.91</td>
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<tr>
<td>15. Instructure.com</td>
<td>9:36</td>
<td>8.63</td>
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<td>16. Pornhub.com</td>
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<td>17. Live.com</td>
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<td>18. Craigslist.org</td>
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<td>19. Imgur.com</td>
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Canada

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<th>Daily Pageviews</th>
<th>Per Visitor</th>
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<td>Bing.com</td>
<td>2:36</td>
<td>2.10</td>
<td></td>
</tr>
</tbody>
</table>

### 12.2 Quantcast Ranking

Quantcast ([www.quantcast.com](http://www.quantcast.com)) ranks websites based on the number of people in the United States who visit each site within a month. It includes sites with estimated traffic as well as sites with traffic that Quantcast has independently verified. Quantcast directly measures site traffic through the implementation of the Quantcast asynchronous tag on each website.

Of the Top 100 sites in March 2019, 56 allowed Quantcast to monitor their traffic; traffic for 44 sites was estimated.

The Top 100 websites for March 2019 were as follows:
<table>
<thead>
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<th>Rank</th>
<th>Website</th>
<th>Visitors</th>
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**CONSUMER USE OF THE INTERNET & MOBILE WEB 2020-2021**

• 69 •
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### 12.4 Market Resources


Quantcast, 201 3rd Street, San Francisco, CA 94103. (415) 738-4755. (www.quantcast.com)
TRAFFIC STATISTICS FOR TOP WEBSITES

13.1 Overview
Quantcast (www.quantcast.com) assesses websites based on the number of people in the United States who visit each site within a month. The assessment includes sites with estimated traffic as well as sites with traffic that Quantcast has independently verified.

13.2 Monthly Traffic
Quantcast assessed the number of visits to major U.S. consumer websites in March 2019 as follows:
- 100percentfedup.com: 968,411
- 1011now.com: 774,801
- 10news.com: 1,516,390
- 123rf.com: 696,270*
- 12up.com: 418,424*
- 13abc.com: 731,787
- 1800flowers.com: 797,273*
- 1800petmeds.com: 557,963*
- 1iota.com: 504,720
- 23andme.com: 1,304,914*
- 247sports.com: 7,889,778
- 247wallst.com: 951,449
- 40aprons.com: 490,899
- 411.com: 657,384
- 4chan.org: 762,421*
- 53.com: 2,574,085*
- 6pm.com: 668,407*
- 7eerr.net: 427,114*
- 800notes.com: 1,032,462*
- 9gag.com: 539,283*
- 9news.com: 408,915*
- 9to5google.com: 653,912
- 9to5mac.com: 1,657,006
- aa.com: 1,646,474*
• aaa.com 2,453,598*
• aarp.org 3,894,069*
• abc.net.au 492,747*
• abc12.com 992,989
• abc15.com 3,200,405
• abcactionnews.com 2,514,783
• abcya.com 610,275*
• abebooks.com 574,882*
• about.com 1,005,807*
• above.com 695,667*
• academia.edu 1,069,638*
• academy.com 1,291,692*
• acehardware.com 1,542,870*
• act.org 509,220*
• actblue.com 1,194,167*
• actionnewsjax.com 723,006
• active.com 575,732*
• activebeat.com 2,096,276*
• acura.com 445,523*
• addapinch.com 613,604*
• adidas.com 1,047,553*
• adobe.com 7,924,165*
• adobelogin.com 742,960*
• adoptapet.com 939,155*
• adorama.com 482,401*
• adp.com 6,933,824*
• adremover.org 502,511*
• adrunnr.com 484,562*
• advanceautoparts.com 2,932,606*
• advocate.com 1,168,218
• adweek.com 1,740,565
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CONSUMER USE OF THE INTERNET & MOBILE WEB 2020-2021
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- androidpolice.com 2,429,717
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CONSUMER USE OF THE INTERNET & MOBILE WEB 2020-2021

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• bbc.co.uk 4,383,250*
• bbc.com 4,933,988*
• bbt.com 3,743,875*
• beautifultrendstoday.com 3,858,922
• become.org 636,337*
• bedbathandbeyond.com 988,759*
• beenverified.com 4,931,963*
• behindthesteelcurtain.com 582,547
• beinsports.com 444,737
• beliefnet.com 2,012,582
• belk.com 1,874,605*
• benzinga.com 824,889
• berkley.edu 1,092,591*
• berkshirehathawayhs.com 826,871
• berries.com 488,938*
• bestadbid.com 497,911*
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• bestplaces.net 1,953,564
• bestproducts.com 408,009
• bestreviews.guide 2,343,064*
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• bettycrocker.com 1,558,567*
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CONSUMER USE OF THE INTERNET & MOBILE WEB 2020-2021
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- consumeraffairs.com 1,181,331*
- consumercellular.com 1,076,296*
- consumerreports.org 5,159,495*
- consumersadvocate.org 416,772*
- consumersearch.com 622,810*
- content-ad.net 1,364,504*
- convertkit-mail2.com 494,994*
- cookieandkate.com 403,753*
- cookinglight.com 1,095,350*
- coolimba.com 7,405,138
- coolmathgames.com 1,540,282*
- corestandards.org 567,416
- cornell.edu 3,206,661*
- cosmopolitan.com 5,355,811*
- costco.com 2,668,491*
- costcotravel.com 546,925*
- countryliving.com 1,596,358*
- couponcabin.com 789,616*
- coupons.com 2,949,527*
- coursehero.com 3,405,728*
- coursera.org 428,594*
- covers.com 634,511
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CONSUMER USE OF THE INTERNET & MOBILE WEB 2020-2021
• 86 •
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CONSUMER USE OF THE INTERNET & MOBILE WEB 2020-2021

• 87 •
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• flickr.com 4,365,729*
• flightaware.com 6,204,033
• flooranddecor.com 782,092*
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• followmyhealth.com 494,029*
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• food52.com 3,349,064
• foodandwine.com 839,387*
• foodnetwork.com 1,785,457*
• fooducate.com 1,560,296
• fool.com 717,819
• footlocker.com 626,266*
• force.com 2,861,816*
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• fox4now.com 433,711
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• foxbusiness.com 1,485,293*
• foxnews.com 14,405,484*
• foxsports.com 1,073,624*
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• frtyk.com 616,485*
• frvr.com 513,325*
• frys.com 944,397*
• ftc.gov 599,109*
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• funk.com 658,084
• furaffinity.net 1,457,747
• furniturerow.com 542,698*
• futurism.com 842,215
• ga.gov 471,855*
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• gameskinny.com 756,344
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• gasbuddy.com 608,388*
• gate.cc 496,286*
• gawker.com 740,469
• gazette.com 940,007
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• gearpatrol.com 1,999,151
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• geology.com 444,992*
• georgetakei.com 475,691
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• gethuman.com 503,175*
• getitfree.us 843,635
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• journeys.com 440,005*
• jpost.com 654,691*
• jsonline.com 542,316*
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• justfly.com 1,537,701*
• justia.com 1,046,280*
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• justinweather.com 442,354*
• justsomething.co 400,910
• jw.org 853,175*
• kahoot.it 1,144,300*
• kaiserpermanente.org 1,415,879*
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• lifehack.org 555,564*
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• liveleak.com 3,767,886
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• macrumors.com 3,848,822
• macworld.co.uk 1,253,461*
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• manyvids.com 466,884*
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• marcos.com 1,212,239*
• marieclaire.com 773,236*
• marketbeat.com 647,234*
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• maxpreps.com  1,624,395*
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CONSUMER USE OF THE INTERNET & MOBILE WEB 2020-2021

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CONSUMER USE OF THE INTERNET & MOBILE WEB 2020-2021
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CONSUMER USE OF THE INTERNET & MOBILE WEB 2020-2021
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• texasroadhouse.com 868,287*
• textnow.com 736,228*
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• theamericanconservative.com 700,511*
• theamericanmirror.com 1,240,133
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• thebump.com 580,445*
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• thecollegeinvestor.com 738,908*
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• thecrazytourist.com 616,003*
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• thedenverchannel.com 1,870,467
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• theepochtimes.com 4,023,603
• thefader.com 778,024
• thefederalistpapers.org 981,067
• thefreedictionary.com 2,891,074*

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- thegatewaypundit.com 1,727,560*
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- theodysseyonline.com 1,810,030*
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- thepoliticalinsider.com 714,988
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- therealdeal.com 1,348,207
- therecipecritic.com 682,658*
- theringer.com 831,809*
- theroot.com 7,081,125
- theslowroasteditalian.com 601,577
- thestate.com 1,291,030
- thestranger.com 1,251,052
- thestreet.com 1,189,324*
- thetakeout.com 3,094,491
- thetruthaboutguns.com 1,643,002
- theverge.com 12,452,418
- thevintagenews.com 403,088*
- theweathernetwork.com 453,079*
- theweek.com 2,826,000
- thewindowsclub.com 890,475*
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- thinkprogress.org 571,928*
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- thisoldhouse.com 2,267,099
- thoughtcatalog.com 8,933,936
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- thriftbooks.com 861,115*
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- timeanddate.com 6,510,477*
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- tinyurl.com 4,888,020
- tjx.com 1,018,975*
- tmj4.com 1,164,114
- tmz.com 5,432,999*
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- tomshardware.com 3,226,602*
- tones7.com 402,867*
- top5.com 2,049,731
- topix.com 3,198,629
- topix.net 2,368,736
- topixblackbeat.com 1,372,364
- topixoffbeat.com 3,027,490
- topixpassport.com 1,219,340
- topixpawsome.com 766,345
- topixrewind.com 1,010,168
- topixstars.com 6,130,185
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- toptenreviews.com 732,243*
- torrid.com 491,790*
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- tourneymachine.com 436,135

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• towleroad.com
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• townhall.com
• toyota.com
• txpapassport.com
• tracfone.com
• trackwrestling.com
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• tractorsupply.com
• tradesy.com
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• transunion.com
• travelandleisure.com
• travelchannel.com
• traveldclick.com
• travelermaster.com
• travelocity.com
• travelzoo.com
• treasurydirect.gov
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• trello.com
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• trulia.com
• trustedreviews.com
• trustpilot.com
• truthfinder.com
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• tunefind.com
• turnitin.com
• turnto23.com
• tusplus.com
• tvguide.com
• tvropes.org
• twentytwowords.com

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• twitter.com 13,094,007*
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**CONSUMER USE OF THE INTERNET & MOBILE WEB 2020-2021**

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• zzounds.com 668,966*

* Estimated

13.3 Market Resources
Quantcast, 201 3rd Street, San Francisco, CA 94103. (415) 738-4755. (www.quantcast.com)
PART III: ONLINE ACTIVITIES & CONTENT
14

BLOGS

14.1 Overview

Blogs, a portmanteau of the term ‘Web log,’ are websites, usually maintained by an individual, with regular entries of commentary, descriptions of events, or other content such as graphics or video. Entries are commonly displayed in reverse-chronological order. The majority are interactive, allowing visitors to leave comments and even message each other.

“Blogging has reinvented a media landscape previously dominated by the mass-media broadcast industry. People now have more sources from which to obtain their news. [Blogs] have been instrumental in helping the Web become the participatory medium it was always envisioned to be.”

100 Ideas That Changed The Web

14.2 Use Of Blogs

According to the 2018 Digital Future Project, by the Center for the Digital Future (www.digitalcenter.org), University of Southern California, Annenberg School for Communication, the frequency at which online adults read blogs is as follows:

- Several times a day: 4%
- Daily: 10%
- Weekly: 16%
- Monthly: 12%
- Less than monthly: 18%
- Never: 40%
14.3 Bloggers

According to Blogging.org, there are 31 million bloggers in the U.S.

_____________________________________________________

“Blogging is having an incredibly positive impact on their lives, with bloggers receiving speaking or publishing opportunities, career advancement, and personal satisfaction.”

Technorati

_____________________________________________________

Technorati (www.technorati.com) provides the following distribution of U.S. adult bloggers:

Gender
• Female: 43%
• Male: 57%

Age
• 18-to-34: 42%
• 35 and older: 58%

Household Income
• Less than $75,000: 49%
• $75,000 and higher: 51%

Education
• High school or some college: 26%
• College graduate: 74%

14.4 Characteristics Of Blogs

According to Technorati, 90% of bloggers say they post about brands, music, movies, and books. Four in five bloggers post brand or product reviews, with 37% posting such content frequently.

The lines between what a blog is and what a mainstream media site is have blurred. Larger blogs are taking on more characteristics of mainstream sites and mainstream sites are incorporating styles and formats of blogs.
According to The Bivings Group (www.bivings.com), 95 of the 100 largest U.S. newspapers have reporter blogs.

The majority of bloggers have advertising on their blogs. According to Technorati, the mean annual revenue is $6,000 among those with advertising, with $75,000 or more in revenue for those with 100,000 or more unique visitors per month. Blog ads earn CPMs (i.e., cost per impression) on par with large publishers.

Spam and splogs (spam blogs) are an increasing problem in the blogosphere. Between 3,000 and 7,000 new splogs are created each day, according to Technorati.

### 14.5 Top Blogs

Ranked by number of visits in June 2019, the top online blogs are as follows (source: SimilarWeb [www.similarweb.com]):

- Business Insider (www.businessinsider.com): 187.74 million
- Buzzfeed (www.buzzfeed.com): 96.20 million
- Gizmodo (www.gizmodo.com): 60.97 million
- Huffington Post (www.huffingtonpost.com): 58.90 million
- The Verge (www.theverge.com): 57.57 million
- Engadget (www.engadget.com): 50.50 million
- HowToGeek (www.howtogeek.com): 48.29 million
- Kotaku (www.kotaku.com): 45.30 million
- The Daily Beast (www.thedailybeast.com): 39.79 million
- TMZ (www.tmz.com): 38.47 million
- LifeHacker (www.lifehacker.com): 32.41 million
- Mashable (www.mashable.com): 25.26 million
- Tech Crunch (www.techcrunch.com): 23.74 million
- Deadspin (www.deadspin.com): 22.18 million
- Refinery 29 (www.refinery29.com): 17.22 million
- Jezebel (www.jezebel.com): 13.79 million
- Lonely Planet (www.lonelyplanet.com): 13.73 million
- Hacker Noon (www.hackernoon.com): 13.43 million
- Cheezburger (www.cheezburger.com): 10.85 million

### 14.6 Blog Platforms

There are various platforms designed specifically for blogs. According to Blogger.org, content is distributed on blog platforms as follows:

- WordPress: 43%
- Blogger: 35%
- Tumblr: 7%
- Typepad: 6%
- Other: 9%
Over 58 million posts are published monthly on WordPress, the largest blog platform. Every day, over one million new articles and over two million comments are published.
15

COMPUTER & VIDEO GAMES

15.1 Market Assessment

According to the Entertainment Software Association (ESA, www.theesa.com) and The NPD Group (www.npd.com), total consumer spending on computer and video games has been as follows:

- 2014: $22.4 billion
- 2015: $25.3 billion
- 2016: $30.5 billion
- 2017: $36.9 billion
- 2018: $43.4 billion

Distribution in 2018 was as follows (change from previous year in parenthesis):

- Software including in-game purchases and subscriptions: $35.8 billion (18%)
- Hardware, including peripherals: $ 7.5 billion (15%)

*Bloomberg Businessweek* estimates the U.S. market for used video games at $1.6 billion.

The *Global Games Market Report*, by Newzoo (www.newzoo.com), reported the video games market as follows:

- 2014: $ 75.2 billion
- 2015: $ 80.5 billion
- 2016: $ 86.1 billion
- 2017: $108.9 billion
- 2018: $138.7 billion

15.2 Participation

According to 2019 Essential Facts About the Computer and Video Game Industry, by ESA, over 166 million adults in the U.S. play video games; three-quarters of all Americans have at least one gamer in their household.

According to Pew Research Center (www.pewresearch.org), the percentage of adults, by age, who play video games on a computer, TV, game console, cellphone, or other portable device is as follows:

- 18-to-29: 60%
- 30-to-49: 53%
50-to-64: 32%
65 and older: 24%

Young men are the most likely to play video games. Among men under age 30, 72% often or sometimes play games, compared with 49% of their female counterparts. Among people ages 50 or older, however, men and women are about equally likely to often or sometimes play video games; 27% of men and 30% of women do so.

According to ESA, 79% of gamers say that video games provide them with mental stimulation; 78% report that gaming provides relaxation and stress relief. The role of video games in the American family is also changing: 74% of parents believe video games can be educational for their children; 57% enjoy playing games with their child at least weekly.

### 15.3 Types of Games

The following types of online games are played most often (source: ESA):

- Casual/social games: 30%
- Puzzle, board game, game show, trivia, card games: 28%
- Action, sports, strategy, role-playing: 24%
- Persistent multi-player universe: 11%
- Other: 8%

Forty-four percent (44%) of gamers play on their smartphone; 33% play on their wireless device.

The following types of mobile games are played most often:

- Casual/social games: 46%
- Puzzle, board game, game show, trivia, card games: 31%
- Action, sports, strategy, role-playing: 11%
- Persistent multi-player universe: 4%
- Other: 9%

The popularity of casual/social gaming increased 55% since 2012, according to the ESA. Among all gamers, 47% now play social games.

### 15.4 Game Genres

According to The NPD Group’s Retail Tracking Service, video and computer game sales (units sold) are distributed by genre as follows:

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<th>Genre</th>
<th>Video Games</th>
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<td>0.2%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Casual</td>
<td>2.3%</td>
<td>28.3%</td>
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</table>
- Children’s entertainment: 0.3% 0.1%
- Family entertainment: 5.5% 0.6%
- Fighting: 3.9% 0.0%
- Flight: 0.1% 0.7%
- Racing: 4.6% 0.4%
- Role-playing: 7.0% 12.3%
- Shooter: 20.0% 7.1%
- Sport games: 12.7% 0.3%
- Strategy: 3.4% 38.4%
- Other games/compilations: 1.2% 2.3%

15.5 Casual and Social Games
Casual games, also called social games because they generally involve online social networking, have become immensely popular. The category includes games such as solitaire played on desktop or mobile platforms and classic two-player games such as Scrabble and Words With Friends.

eMarketer (www.emarketer.com) estimates that 73.7 million people, or 40% of Internet users, are social gamers, playing at least one game on a social network at least once a month.

Facebook overwhelmingly dominates as the top social gaming destination, with 83% of weekly gamers playing on the site. For many, game play is their main reason to use such sites; about one-half of the time players log in to social sites is to play.

Casual gamers differ sharply from those who make up the video gaming demographic. According to Information Solutions Group (ISG, www.isgconsulting.com), 89% of casual gamers are 30 or older, 72% are female, and 53% are married with kids. Nearly half are college graduates.

Casual gamers play to relax – the same reason people play solitaire, dominoes, or mahjong. The games can be played for 5 minutes or for hours at a stretch.

ISG reported the demographics of those playing casual social games as follows:

Gender
- Female: 54%
- Male: 46%

Age
- 18-to-21: 9%
- 22-to-29: 21%
- 30-to-39: 17%
- 40-to-49: 14%
- 50-to-59: 18%
- 60 and older: 20%
15.6 Mobile Gaming

eMarketer assesses the number of U.S. mobile gamers as follows:

- 2018: 142.9 million (52.8% of mobile phone users)
- 2019: 147.8 million (54.0% of mobile phone users)
- 2020: 151.7 million (54.8% of mobile phone users)
- 2021: 154.6 million (55.3% of mobile phone users)
- 2022: 157.2 million (55.7% of mobile phone users)

Mobile gaming revenues in 2018 were $3.77 billion, distributed as follows:

- In-game: $1.79 billion
- Download: $1.33 billion
- Ad-supported: $655 million

15.7 Gaming Networks

Gaming networks provide a platform for gamers to play or watch games online. Twitch.tv and Steam (www.steampowered.com), among other networks, have become immensely popular within the past few years.

Twitch.tv reports one million broadcasters and 45 million unique monthly visitors.

______________________________________________________________
“During its peak hours, according to one report, Twitch is the web’s fourth largest source of traffic, behind Netflix, Google, and Apple.”

Time

______________________________________________________________

Amazon acquired Twitch in September 2014 for $1 billion. Steam offers 3,500 games and reports more than 75 million players. In total, 781 million games are registered to members.

15.8 Market Resources


Gains Through Gaming Lab, North Carolina State University, Department of Psychology, Box 7650, Raleigh, NC 27695. (919) 515-2251. (www.gainsthroughgaming.org)
Game Center at New York University, 721 Broadway, New York, NY 10003. (646) 997-0746. (http://gamecenter.nyu.edu)

Games+Learning+Society Center, University of Wisconsin-Madison, 1401 University Avenue, 2nd Floor, Madison, WI 53715. (608) 265-8739. (www.gameslearningsociety.org)

The NPD Group, 900 West Shore Road, Port Washington, NY 11050. (516) 625-0700. (www.npd.com)
16

DIGITAL BANKING

16.1 Consumer Use Of Digital Banking

Javelin Research & Strategy (www.javelinstrategy.com) assessed adoption rates of digital banking as follows:

<table>
<thead>
<tr>
<th></th>
<th>Online Banking</th>
<th>Mobile Banking</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>68%</td>
<td>38%</td>
</tr>
<tr>
<td>2018</td>
<td>74%</td>
<td>53%</td>
</tr>
<tr>
<td>2021</td>
<td>76%</td>
<td>58%</td>
</tr>
</tbody>
</table>

“Going to the bank was once an errand that required getting up early on a Saturday or taking a long lunch. With online and mobile banking options, however, gone are the days of driving to the bank to deposit a check or even open a checking or savings account.”

CreditCards.com

According to a survey by Mitek (www.mitek.com), digital channels are the most popular way for customers to open credit, savings, and checking accounts. Seventy-two percent (72%) of consumers now use digital channels to open a checking account, up from 12% in 2014.

According to Javelin, Millennials use smart devices to open checking accounts at 1.5 times the rate of older generations (27% versus 19%). However, many Millennials have thin credit files that often prevent their identities from being successfully verified as part of a digital account opening flow.

16.2 Digital Banking Activities

According to Morning Consult (www.morningconsult.com), U.S. Internet users
used digital banking services in 2018 as follows (percentage of respondents):

- Check account status/balance: 81%
- Pay bills: 63%
- Deposit checks: 45%
- Contact customer service: 45%
- Make person-to-person payments: 32%
- Trade stocks: 8%

16.3 Mobile Financial Services

eMarketer (www.emarketer.com) estimates that 115.6 million adults, or 49% of mobile phone users, used mobile banking in 2018, a 6.6% increase from the prior year.

According to the Board of Governors of the Federal Reserve System (www.federalreserve.gov), 53% of smartphone owners with a bank account used mobile banking in 2018, virtually the same percentage that had done so in 2015.

The three most common mobile banking activities among mobile banking users were as follows:
- Checking account balances or recent transactions: 95%
- Transferring money between an individual’s own accounts: 58%
- Receiving an alert (e.g., a text message, push notification, or e-mail) from their bank: 56%

16.4 Sending And Receiving Money

The Digital Payments Adoption Study, published in 2018 by Early Warning Signs (www.earlywarningsigns.com), reported that U.S. digital banking users, by generation, send and receive money via the following methods (percentage of respondents):

<table>
<thead>
<tr>
<th>Method</th>
<th>Millennials</th>
<th>Gen Xers</th>
<th>Baby Boomers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online or mobile P2P</td>
<td>75%</td>
<td>69%</td>
<td>51%</td>
</tr>
<tr>
<td>Cash or check</td>
<td>68%</td>
<td>68%</td>
<td>72%</td>
</tr>
<tr>
<td>Bank or credit card smartphone app</td>
<td>60%</td>
<td>43%</td>
<td>23%</td>
</tr>
<tr>
<td>Bank or credit card website</td>
<td>52%</td>
<td>51%</td>
<td>47%</td>
</tr>
<tr>
<td>Wire transfer</td>
<td>14%</td>
<td>14%</td>
<td>11%</td>
</tr>
</tbody>
</table>

16.5 Peer-To-Peer Payments

Peer to peer (P2P) payments allow the transfer of funds between two parties using their individual banking accounts or credit cards through an online or mobile app.

Ranked by number of users in 2018, the most popular P2P payment platforms are as follows (source: eMarketer):
- Zelle: 27.4 million
- Venmo: 22.9 million
- Square Cash: 9.5 million
The use of P2P payments is projected to increase 25% in 2019, with growth being driven by adoption of the payment method among all age demographics. About one-half of Baby Boomers use P2P payments.

“While mobile peer-to-peer (P2P) payment apps may have first found popularity with Millennials as a way to split joint utility bills and bar tabs, adoption has also spread to older generations.”

eMarketer, 7/20/18

Consumers feel comfortable using P2P payments because the services are offered in conjunction with major banks. Zelle is a network of large financial institutions including Bank of America, Citi, JPMorgan Chase, and Wells Fargo. eMarketer forecasts P2P users, by platform, in 2022 as follows:

- Zelle: 56.1 million
- Venmo: 38.7 million
- Square Cash: 16.2 million

### 16.6 Customer Loyalty

A survey by Accenture Consulting (www.accenture.com) asked adults about digital services that would increase loyalty to their primary bank. Responses were as follows (percentage of respondents):

- Locating discounts: 45%
- Helping in the car buying process: 43%
- Simplifying the home buying process: 41%
- Providing more personalized service: 40%
- Helping to proactively pay and manage bills: 39%
- Providing actionable financial advice on a proactive, real-time basis: 39%

### 16.7 Robo-Advice

Robo-advice is the use of automation and digital banking techniques to assist customers with their financial needs. It uses questionnaires and advanced algorithms to profile customers and make insight-based financial recommendations.

A survey by Accenture found that 46% of adults are willing to bank using robo-advice in the future.
17.1 Online Reservations
There are several online reservations services operating throughout the U.S. Restaurants use the services to avoid developing reservation technology and managing the reservation process. Diners find the services to be convenient.

OpenTable (www.opentable.com), the largest service, provides reservation services for more than 47,000 restaurants and seats more than 26 million diners per month. Other online reservations services include Resy (www.resy.com), Tock (www.tockhq.com), and Yelp Reservations (www.yelpreservations.com).

17.2 Digital Ordering
According to Toast (http://pos.toasttab.com), a restaurant technology platform, 81% of adult Internet users have ordered from a restaurant’s website or mobile app.

The NPD Group (www.npd.com) reported that the use of mobile apps, text messages, and the Internet to order food from a restaurant or other foodservice outlet accounts for 3% of all restaurant traffic, or 1.9 billion foodservice visits annually.

Fifty percent (50%) of digital orders come at dinner time, and 35% of digital ordering includes parties with kids. People under age 35 and those with higher household incomes are among above-average users of digital ordering. When consumers order digitally, they are twice as likely to order on a deal; 29% include coupon use.

People under age 35, African-American consumers, and those with high household income are above average users of digital ordering.

Restaurant digital orders increased at an average annual rate of 23% from 2013 through 2018 and are projected to triple in volume by 2020, according to The NPD Group.

17.3 Ordering And Delivery Options
The 2018 Foodservice Industry Report, by TrendSource (www.trendsource.com), asked adults the likelihood they would use select restaurant ordering and delivery options. Responses were as follows:
Delivery Through the Restaurant’s App:
- Extremely likely: 13.1%
- Very likely: 16.2%
- Somewhat likely: 22.2%
- Slightly likely: 20.5%
- Not at all likely: 28.0%

On-Site Meal Pickup Through The Restaurant’s App:
- Extremely likely: 12.7%
- Very likely: 20.2%
- Somewhat likely: 24.8%
- Slightly likely: 20.8%
- Not at all likely: 21.5%

Delivery Through A Third-Party App:
- Extremely likely: 6.7%
- Very likely: 10.0%
- Somewhat likely: 16.8%
- Slightly likely: 20.5%
- Not at all likely: 45.9%

On-Site Meal Pickup Through a Third-Party App:
- Extremely likely: 4.8%
- Very likely: 9.3%
- Somewhat likely: 17.1%
- Slightly likely: 21.8%
- Not at all likely: 47.0%

17.4 App-Based Delivery Services
A host of startups are offering on-demand meal delivery on items ordered via smartphone apps. These restaurant delivery services use a model similar to that developed by Uber and Lyft.

Ranked by number of users as of September 2018, the largest food delivery services are as follows (source: Verto Analytics [www.vertoanalytics.com]):
- GrubHub: 17.2 million
- DoorDash: 15.5 million
- UberEats: 8.1 million
- Postmates: 2.8 million

According to Market Force Information (www.marketforce.com), 36% of adults used a food delivery service to deliver a restaurant meal in 2018. By age, those that did so were as follows:
- 18-to-24: 55%
- 25-to-34: 49%
- 35-to-44: 40%
- 45-to-54: 33%
- 55-to-64: 26%
- 65 and older: 17%
According to The NPD Group, the number of restaurant deliveries ordered in 2018, by generation, were as follows (change from prior year in parenthesis):

- Millennials: 553 million (3%)
- Generation Z: 552 million (13%)

Pentallect Inc. (www.pentallect.com) assessed the U.S. third-party food delivery market in 2018 at $13.0 billion. The market is projected to grow to $24.5 billion by 2020.
18.1 Adult Readers

Pew Research Center (www.pewresearch.org) reports that 28% of adult readers read an ebook in 2018, a number that has been relatively unchanged since 2014.

The demographics of ebook readers is as follows:

**Gender**
- Female: 29%
- Male: 27%

**Age**
- 18-to-29: 35%
- 30-to-49: 32%
- 50-to-64: 24%
- 65 and older: 19%

**Race/Ethnicity**
- Black: 23%
- Hispanic: 18%
- White: 31%

**Education**
- Less than high school: 11%
- High school grad: 19%
- Some college: 32%
- College graduate: 41%

**Household Income**
- < $30,000: 19%
- $30,000 to $49,999: 26%
- $50,000 to $74,999: 33%
- $75,000 and higher: 40%

**Community**
- Rural: 22%
- Suburban: 30%
- Urban: 29%
18.2 E-readers

According to eMarketer (www.emarketer.com), 29% of adults own an e-reader; 53% own a tablet. Ownership of these devices is increasing annually at about 3% and 4%, respectively.

The growth in use of these devices has paralleled the increase in eBook reading. Pew Research Center reports that 28% of adults use their device to read eBooks.

“When Apple introduced the iPad in 2010, many thought it would make dedicated eBook readers obsolete. It turns out that didn’t happen.”

eMarketer

Among adults who owned an eBook reader, a tablet, a desktop, and a smartphone, the following percentages read an eBook on their devices (source: Pew Research Center):

- E-reader: 87%
- Tablet: 78%
- Smartphone: 32%
- Computer: 31%

In a survey by The Harris Poll (www.theharrispoll.com), adults reported their reading activities as follows:

- Only read print books: 48%
- Read more print books than eBooks: 17%
- Read print books and eBooks about the same: 14%
- Read more eBooks than print books: 15%
- Only read eBooks: 6%

“According to Harris, adults are far more likely to only read printed books than eBooks or a mix of the two.”

eMarketer
19

EMAIL

19.1 Use Of Email

The 2018 Digital Future Project, by the Center for the Digital Future (www.digitalcenter.org), University of Southern California, Annenberg School for Communication, reports that adult Internet users check email as follows:

- Several times a day: 52%
- Daily: 31%
- Weekly: 8%
- Monthly: 2%
- Less than monthly: 3%
- Never: 4%

The total volume of email dropped about 10% since 2010, in large part because younger users prefer mobile devices and faster communications, like text messaging. Still, email remains the essential Internet service.

_________________________________________________________________

"With the rise of social media and texting, some saw email as a communication vehicle that would eventually disappear. However, this mode of messaging is still an inescapable part of everyday life."

eMarketer, 9/27/18

_________________________________________________________________

The Inbox Report 2018, by Fluent (www.fluentco.com), reported that adults used email in 2018 as follows (percentage of respondents):

- About the same as 2017: 63%
- Less than prior year: 22%
- More than prior year: 15%
Adults reported that they check their email as follows (source: Fluent):

- Many times a day: 24%
- As each email arrives: 19%
- A few times a day: 20%
- Once a day: 19%
- Less than once a day: 19%

19.2 Devices Used For Email

The Inbox Report 2018 reported devices most used to check emails as follows:

- Smartphone: 75%
- Laptop/desktop: 29%
- Tablet: 21%

“Smartphone-first consumers can be reached more readily than other consumers because they check their email more frequently than those who primarily use other devices.”

Center for Media Research

19.3 Personal And Work Email

Personal and work emails are mingled for many adults as both are often directed or forwarded to the same inbox.

According the 2018 Consumer Email Survey, by Adobe Systems (www.adobe.com), personal email usage was up 17% over 2017 among smartphone-owning adults who worked in an office. The survey found that office workers are spending 17% more time on personal emails year-over-year and about 20% more on work emails.

Forty-five percent (45%) of people use their smartphone to check for their work email, with the percentage rising to 63% for personal email.

The time spent on work email is increasing by 28% each year, while personal email communication is increasing by 6%.

Adobe reported that adults consider their ‘go-to’ email device as follows (percentage of respondents):
<table>
<thead>
<tr>
<th>Personal primary</th>
<th>Work primary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smartphone:</td>
<td>63%</td>
</tr>
<tr>
<td>Deskop/laptop:</td>
<td>29%</td>
</tr>
<tr>
<td></td>
<td>45%</td>
</tr>
<tr>
<td></td>
<td>49%</td>
</tr>
</tbody>
</table>
20

EVENT TICKETING

20.1 Overview

From Broadway theatre to sporting events and rock music concerts to orchestra performances, the bulk of tickets for live events are now sold online.

Live event operators and venues typically contract for online ticket sales. Ticketmaster (www.ticketmaster.com), which sells over 150 million tickets valued at about $10 billion annually, is the largest primary ticket broker.

Online booking of live event is migrating from desktop and laptop platforms to smartphones and tablets. According to The Harris Poll (www.theharrispoll.com), 22% of U.S. smartphone users have booked event tickets via their device.

20.2 Secondary Ticketing

The reselling of event tickets is referred to as the secondary ticketing market. In the secondary ticketing marketplace, tickets for major events such as Super Bowl, the Kentucky Derby, and concerts by star performers are commonly resold for more than face value.

Richard K. Miller & Associates (www.rkma.com) estimates the secondary ticket market at $8 billion to $10 billion. The amount could be much higher; no one knows for certain because so much of the selling can never be tracked. Many tickets to major events such as the Super Bowl and Kentucky Derby are bundled in travel packages without the ticket price being broken out.

According to Online Event Ticket Sales, by IBISWorld (www.ibisworld.com), there are 2,682 companies in the U.S. secondary ticketing market with 2018 sales of $9.0 billion. The following are among the largest secondary ticket providers:

- Coast to Coast Tickets (www.coasttocoasttickets.com)
- eBay (www.ebay.com)
- Go Tickets (www.gotickets.com)
- RazorGator (www.razorgator.com)
- SeatGeek (www.seatgeek.com)
- StubHub (www.stubhub.com)
- TickCo (www.tickco.com)
- Ticket Liquidator (www.ticketliquidator.com)
- Ticketmaster (www.ticketmaster.com)
- TicketsNow (www.ticketsnow.com)
With about a 50% share of the secondary ticket market and $3 billion in annual ticket sales, according to *Bloomberg Businessweek*, StubHub is the largest operator. Ticketmaster, with an 11% marketshare, ranks second.

As competition in the segment has increased, the main players have created sub-niches for themselves to establish market differentiation. RazorGator, for example, specializes in the corporate travel market; StubHub works primarily through fan-to-fan connections and advertises heavily in mass media; TicketsNow takes sales listings only through prescreened, licensed brokers; and Ticketmaster works in a more traditional vendor capacity, only selling tickets on the secondary market for its own TeamExchange clients.

### 20.3 Ticketing Through Social Networks

Ticketmaster makes tickets to sports events available through Twitter and Facebook. Via Facebook, users can see where friends are sitting on an interactive map.

According to LiveAnalytics (www.liveanalytics.com), the research arm of Ticketmaster, 14% of those who purchase sports tickets from Ticketmaster are influenced to attend a game by a Facebook post, 20% use social media to invite friends to attend with them, and 47% are interested in seeing where their Facebook friends are sitting. LiveAnalytics also found that 16% of sports ticket buyers use their mobile phone to check in at the game to a location-based platform such as Foursquare.

### 20.4 Sporting Events Ticketing

Consumers spend roughly $20 billion annually for tickets to sporting events. Increasingly, tickets are sold online; over 50% of individual game tickets are sold online. Online sales allow teams to gain access to a wealth of data about their customers. The average NBA franchise, for example, has 500,000 names in its database, and some big-market teams have double that number.

Once worried that ticket resales would eat into overall sales, major sports leagues have realized these concerns were unfounded, and many teams have begun contracting with secondary ticket resellers, primarily as a service to their season-ticket holders. Surveys show that season-ticket holders – who contribute about 80% of overall ticket revenue – worry about unused tickets, thus offering them the option to resell tickets is one of the best ways of retaining season-ticket holders.

According to *SportsBusiness Journal*, between 11% and 39% of primary ticket inventory goes unsold. ScoreBig (www.scorebig.com), dubbed a Priceline.com for sports tickets, launched an online service in 2010 that aids teams in moving unsold tickets. ScoreBig secures inventory from teams, leagues, venues, promoters, or anyone else holding large blocks of unsold seats and sells it based on preference in price, location, and game. The model is loosely based on travel sites that sell hotel rooms or airline tickets at discounted rates.
21

FANTASY SPORTS

21.1 Overview
Fantasy sports dates to the 1960s. Fantasy sports leagues, originally called rotisserie leagues, where players draft teams from professional sports rosters and follow season-long statistics to compile their scores, date to the 1980s.

Daily fantasy sports (DFS), which dates to 2007 and surged in popularity in 2014, is similar to season-long competitions but last for just one day. In general, DFS does not compete for the same players as season-long games.

An assessment for the Fantasy Sports Trade Association (FSTA, www.fsta.org) by Ipsos (www.ipsos.com) estimates participation in fantasy sports in the U.S. and Canada at 60 million people. Eighty-two percent (82%) of all players play in a season-long league, 19% exclusively play daily formats, and 17% play both formats.

While fantasy sports leagues for football, baseball, basketball, and hockey are most popular, the range of sports attracting fantasy play includes virtually every category of sport and competition. There are even fantasy leagues for bass fishing.

The legalization of sports gambling in 2018 will impact fantasy sports. A 2018 survey by Ipsos for the FSTA found that 79% of fantasy sports players who are not current sports wagerers say they will likely participate in sports betting once legalized in their state.

21.2 Market Assessment
Estimates of total spending for traditional fantasy sports are as high as $5 billion annually – up to $500 per player – for publication subscriptions, league entrance fees, mail-order draft kits, fantasy software, and other products. League entrance fees are returned to winning players, however, so net spending is considerably less than the $5 billion figure. The FSTA places annual net spending at $1.7 billion.

Each year, 1.5 million people pay more than $1 billion in DFS tournament fees. FanDuel (www.fanduel.com), the largest DFS site, reported paying out over $400 million in prizes (i.e., returning a percentage of entry fees to winners).

SportsBusiness Journal estimates annual net spending (i.e., total entry fees minus prizes) for daily fantasy sports at $660 million.
21.3 Demographics

According to an ESPN Sports Poll (http://espn.go.com/sportsnation/polls), the percentages of people by age and gender who play online fantasy sports daily are as follows:

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Men (%)</th>
<th>Women (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-to-17</td>
<td>6.8</td>
<td>1.0</td>
</tr>
<tr>
<td>18-to-34</td>
<td>8.0</td>
<td>1.7</td>
</tr>
<tr>
<td>35-to-54</td>
<td>8.4</td>
<td>1.1</td>
</tr>
</tbody>
</table>

The following percentages play online fantasy sports weekly:

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Men (%)</th>
<th>Women (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-to-17</td>
<td>12.5</td>
<td>5.1</td>
</tr>
<tr>
<td>18-to-34</td>
<td>13.5</td>
<td>3.0</td>
</tr>
<tr>
<td>35-to-54</td>
<td>8.4</td>
<td>1.5</td>
</tr>
</tbody>
</table>

21.4 Season-Long Fantasy Sports

Fantasy players create teams using real statistics from actual players and compete with other players in a league based on the performance of their fantasy team. Leagues typically consist of between eight and 14 teams. Fantasy players pay an entry fee to play; winning players receive cash prizes.

“In a typical league, a dozen or so participants chip in money – $20 on the low end and $1,300 or more for high-stakes contests. The team with the best aggregate statistics wins at the end of the regular season and takes the lion’s share of prize money.”

Forbes

League winners can earn a grand prize of $100,000 in national competitions such as NBC Sports’ national fantasy baseball competition, a season-long contest of 26 leagues and 309 teams.

At the pinnacle of traditional fantasy sports are football leagues where winning participants can make as much as $300,000 in a good year.
21.5 Daily Fantasy Sports

FanDuel and Draft Kings (www.draftkings.com) garner 96% of the DFS market. Revenue for the two companies are estimated at $180 million and $150 million, respectively.

The high stakes of daily fantasy sports has attracted high rollers who use sophisticated research and improve their chances by submitting multiple entries. According to RotoGrinders (www.rotogrinders.com), the top 100 players on FanDuel and DraftKings win, on average, 330 times every day they play. The top 10 players win 873 daily plays.

DFS affords a huge advantage to skilled players. An assessment Major League Baseball DFS by McKinsey & Company (www.mckinsey.com) found 91% of DFS player profits were won by 1.3% of players. A survey of fantasy sports players conducted by Eilers Research (www.eilersresearch.com) found that 70% of participants have lost money.
22

FITNESS TRACKING

22.1 Types Of Tracking

Those who monitor their fitness, health, and wellbeing via apps, smartphones, wearable fitness trackers, or websites are dubbed ‘self-trackers.’ A survey by RocketFuel (http://rocketfuel.com) reported that self-trackers were monitoring the following parameters:

- Weight: 51%
- Number of calories burned: 47%
- Number of steps taken: 47%
- Diet (calories consumed): 42%
- Heart rate: 33%
- Blood pressure: 25%
- Quality of sleep: 25%
- Body fat: 24%
- Average running speed: 21%
- Mood: 13%

A survey by Makovsky Health (www.makovksy.com) and Kelton Research (http://keltonglobal.com) asked U.S. Internet users reasons that they use, or would use, a wearable health/fitness device. Responses were as follows:

- Track fitness: 48%
- Help with personal health issues: 41%
- Track diet and nutrition: 33%
- Track sleeping conditions: 29%
- Manage stress and mental health: 27%
- Other: 2%
- Would never use a wearable device: 19%

The NPD Group (www.npd.com) reported that 44% of activity tracking devices sold include a heart rate monitor.

22.2 Fitness Apps

According to Parks Associates (www.parksassociates.com), 42% of U.S. smartphone/tablet owners use at least one fitness app. Among these people, more
than one-third use two or more fitness apps. Fitness app users participate in fitness activities as follows:

- Track fitness programs: 57%
- Log food and calories: 45%
- Use health/fitness coaching services: 18%

Parks Associates assessed that smart watches were used in 13.3 million U.S. broadband households. Among these users, fitness activities engaged in are as follows:

- Track steps: 60%
- Monitor heart rate: 52%
- Track calories burned: 47%
- Set/use timer: 43%
- Track location of route run/walked/biked: 38%

22.3 Fitness Tracking Devices

Consumer Technology Association (www.cta.tech) estimates U.S. sales of 43 million fitness tracking devices in 2018; sales totaled $3.6 billion.

The following are the most popular fitness tracking devices:

- Apple Watch (www.apple.com/watch/)
- Fitbit Charge (www.fitbit.com/charge)
- Garmin Vivofit (http://sites.garmin.com/en-US/vivo/)
- Jawbone UP3 (https://jawbone.com/store/buy/up3)
- Microsoft Band (www.microsoft.com/microsoft-band/en-us)
- Samsung Gear Fit (www.samsung.com/us/mobile/wearable-tech/SM-R3500ZKAXAR)

According to The NPD Group, Fitbit is the market leader, with a 67% share; Jawbone has a 14% marketshare.
23.1 Overview
Genealogy is second in popularity only to gardening among American hobbies, according to *The New York Times*. According to IBISWorld (www.ibisworld.com), there are 10,088 ancestry research businesses in the United States; combined revenue is $1 billion.

23.2 Genealogy Research Online
Through the Internet, the number of resources available to genealogists has vastly increased.

According to *The Wall Street Journal*, The Generations Networks – founded as MyFamily.com, Inc. nearly a decade ago and now operating eight sites including Ancestry.com – has built its $200 million a year businesses primarily by selling subscriptions to passionate family historians for access to archives that track family lineage. Ancestry.com’s 2.2 million paying subscribers have created over 60 million family trees and more than 6 billion profiles. About 4% of subscribers cancel every month, however – meaning roughly half the customer base turns over every year – because many stay active only while engaged in a research project.

Geni.com, acquired by MyHeritage in 2012, offers a genealogy model based on connecting living relatives. The site is part genealogy, part six degrees of separation: Instead of paying a fee to research family records buried in archives, users build their own family trees using the knowledge of living relatives.

Rather than user fees, Geni sells advertising and also generates revenue by creating premium accounts and selling products such as posters or coffee-table books of family trees. Without any traditional marketing, the site had more than 100,000 users in the first month following its January 2007 launch.

Geni.com incorporates some of the elements of popular social-networking and user-generated content sites such as Wikipedia and MySpace. Geni has over 100 million profiles and more than 6 million users.

23.3 Top Genealogy Websites
*Genealogy In Time* (www.genealogyintime.com) ranked the top U.S.-based genealogy websites based on the number of monthly visitors as follows:
<table>
<thead>
<tr>
<th>Category</th>
<th>Website</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Records</td>
<td>Ancestry.com (<a href="http://www.ancestry.com">www.ancestry.com</a>)</td>
<td>Records</td>
</tr>
<tr>
<td>Cemetery*</td>
<td>Find A Grave (<a href="http://www.findagrave.com">www.findagrave.com</a>)</td>
<td>Cemetery*</td>
</tr>
<tr>
<td>Records*</td>
<td>FamilySearch (<a href="http://www.familysearch.org">www.familysearch.org</a>)</td>
<td>Records*</td>
</tr>
<tr>
<td>Family tree</td>
<td>MyHeritage.com (<a href="http://www.myheritage.com">www.myheritage.com</a>)</td>
<td>Family tree</td>
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44. Access Genealogy (www.accessgenealogy.com): Search engine*
45. ObituariesHelp.org (www.obituarieshelp.org): Links*
46. Historic Mapworks (www.historicmapworks.com): Records
47. Forever (www.forever.com): Services
50. One Great Family (www.onegreatfamily.com): Family tree
51. DNAeXplained (http://dna-explained.com): Blog*
52. RecordsBase (www.recordsbase.com): Records
53. Interment (http://interment.net): Cemetery*
54. Geneabloggers (www.geneabloggers.com): Blog*
55. Katagogi (www.katagogi.com): Forum*
56. Newspaper Obituaries on Net (http://newspaperobituaries.net): Links*
57. We Relate (www.werelate.org): Wiki*

* Free site
24.1 Searches For Health Information

The Harris Poll (www.theharrispoll.com) found that 89% of online adults, or 74% of all adults, had used the Internet to search for health-related information in the prior year; 60% had done so in the prior month. Among those who searched for health-related information in the prior month, 19% did so 10 or more times.

Adults who have looked online for information about health topics say they usually use the following sources:

- Search engines: 69%
- Medical websites: 62%
- Forums: 16%
- Social media websites: 8%
- Other: 11%

Among those who have searched for health-related information, 90% said the information they obtained is reliable; only 4% believed it is unreliable. Fifty-seven percent (57%) of those who conducted online searches discussed the information they found with their doctor.

“Consumers’ use of the Internet for health information is now on par with their use of the more traditional, longstanding sources of books, magazines and newspapers, and friends or relatives.”

American Hospital Association

According to the Pew Internet & American Life Project (www.pewinternet.org), 80% of online adults search for health information on the Internet. The following are percentages of Internet users who have performed an online search related to specific
health topics:
• Specific disease or medical problem: 66%
• Certain medical treatment or procedure: 55%
• Exercise or fitness: 52%
• Prescription or over-the-counter drugs: 45%
• Health insurance, including Medicare/Medicaid: 37%
• Alternative treatments or medicines: 35%
• How to lose weight or weight control: 33%
• Depression, anxiety, stress, or mental health: 28%
• Experimental treatments or medicines: 20%
• How to stay healthy on a trip overseas: 12%
• Other health issues: 26%

24.2 Physician Services Online

All 50 states now allow online visits without face-to-face preliminary meetings between patients and doctors. Over 50% of doctors communicate with patients online.

According to the Survey Of Health Care Consumers, by the Deloitte Center for Health Solutions (www.deloitte.com), 55% of healthcare consumers want to communicate with their doctors via email to exchange health information and to get answers to questions. Sixty-eight percent (68%) are interested in remote monitoring devices that allow self-monitoring of their condition and electronic reporting of results to their physician.

A survey by Lightspeed Research (www.lightspeedresearch.com) asked consumers how they would like to communicate with their primary care physician. Approximately 60% of survey respondents said they would like to use email for communication. Reasons given were as follows (percent of respondents):
• Saves me time because I don’t have to see the doctor: 59%
• There is less time waiting for an appointment: 56%
• I don’t have to go to a waiting room with other ill people: 51%
• It is quicker than a regular consultation so the doctor has more time to see patients: 50%
• It would be cheaper: 50%
• I would have a written set of instructions from the doctor that I could refer to: 49%
• Saves on transportation costs: 45%
• I do not have to miss work: 44%
• I may feel too ill to travel: 34%
• It is less embarrassing: 15%

A study published in Health Affairs reported that patients who use e-mail to communicate with their doctors not only save time and money, but also have healthier outcomes. The study reviewed more than 500,000 patient-doctor e-mails sent within the Kaiser Permanente network and found that people with hypertension or diabetes
who corresponded via e-mail with their doctors managed their blood pressure and blood sugar better than those who did not.

24.3 Online Sources For Health Information

A survey by Makovsky Health (www.makovskyhealth.com) found that adults spend, on average, 52 hours looking for health information on the Internet annually. Online resources used are as follows (percentage of respondents):

- WebMD: 53%
- Wikipedia: 22%
- Health magazine websites: 19%
- Advocacy group websites: 16%
- YouTube: 10%
- Facebook: 10%
- Blogs: 10%
- Pharmaceutical company websites: 9%

24.4 Use Of Social Media For Healthcare

The Mayo Clinic Center for Social Media (https://network.socialmedia.mayoclinic.org) reports on social networking activities of 1,616 community hospitals. In 2018, hospital use of various social sites was as follows:

- Facebook: 1,305
- 4Square: 1,078
- Twitter: 1,021
- YouTube: 721
- LinkedIn: 658
- Blog: 216

Social media use for each of the community hospitals is posted online at (https://network.socialmedia.mayoclinic.org/hcsmi-grid).

Based on surveys by PricewaterhouseCoopers (www.pwc.com), Hospitals & Health Networks reported consumer use of social media to seek health information as follows:

- Health-related consumer reviews: 42%
  - Medications or treatments: 12%
  - Doctors: 11%
  - Hospitals and medical facilities: 10%
  - Health insurers: 9%
- Friends/family health experiences: 32%
- Other patients’ experience with their disease: 29%
- Health-related videos/images posted by patients: 24%
24.5 Use Of Health Apps

There were an estimated 300,000 health- and healthcare-related apps worldwide in 2018. Over 3,000 global health organizations have developed at least one app. According to IQVIA (www.iqvia.com), 69% target consumers and patients, while 31% were built for use by clinicians. There were an estimated 3.5 billion medical and health app downloads in 2018.

Over 100,000 mobile health apps are brought to market each year, according to Research 2 Guidance (www.research2guidance.com).

24.6 Online Patient Groups

Social networks have long been used to create communities of people seeking a wide range of information as well as to make connections. Most-advanced among healthcare-focused social networks are online patient groups where participants chart their medical histories in detail. Along with providing insight and support for group members with similar conditions, these groups have become invaluable partners to physicians and researchers searching for cures. Patient groups which operate this patients-as-partners model are sometimes referred to as Health 2.0 or Patients 2.0.

There are several hundred online patient groups, most of which provide support for single diseases or rare conditions. The larger groups have sub-groups that address numerous conditions. The following are some of the more prominent groups:

• Army Of Women (www.armyofwomen.org): in partnership with the Avon Foundation for Women (www.avonfoundation.org) has helped 360,000 women sign up for breast-cancer-prevention research
• Association of Cancer Online Resources (www.acor.org): a collaboration of 142 online cancer groups that work with researchers to inform patients of clinical trials, tissue banks, and genetic studies
• CureTogether (www.curetogether.com): with 6,600 members, helps people anonymously track and compare health data, contribute data to research, better understand their bodies, and make more informed treatment decisions
• Diabetic Connect (www.diabeticconnect.com): over 35,000 registered users who share advice on managing their condition
• LMSarcoma Direct Research Foundation (www.lmsrd.org): a resource for patients with leiomyosarcoma, a rare soft-tissue cancer
• Myeloproliferative Disorders (www.mpdinof.org): for patients with blood cancer who provide DNA samples to researchers and participate in quality-of-life studies
• Patients Like Me (www.patientslikeme.com): over 300,000 active members share information about 2,300 conditions, including chronic diseases such as amyotrophic lateral sclerosis (ALS), chronic fatigue syndrome, epilepsy, fibromyalgia, HIV/AIDS, Parkinson’s disease, mood disorders, and multiple sclerosis
• Trusera (http://blog.trusera.com): online health network where people can share about real-world health experiences, ask a question, or provide an answer
A survey by the Strategic & Analytic Consulting Group at Epsilon (www.epsilon.com) found that 40% of adults use social media sites such as these to guide decision making related to their health.

24.7 Searching Online For Healthcare Providers

According to the Center for Health System Change (www.hschange.com), 11% of American adults look for a new primary care physician each year, 28% need a new specialist physician, and 16% undergo a medical procedure at a new facility. Many conduct searches for these services online.

Pew Internet & American Life Project (www.pewinternet.org) found that 57% of people use online sources when in need of information or assistance in dealing with health or medical issues.

Forty-seven percent (47%) of adults have looked online for information about doctors or other healthcare professionals. Thirty-eight percent (38%) have looked online for information about hospitals or other medical facilities.

24.8 Online Appointments

ZocDoc is an online service that allows patients to find a nearby doctor or dentist with real-time availability. Appointments may be booked online at ZocDoc.com or via mobile app. A Spanish-language version, ZocDoc en Español, is available.

Launched in 2007, ZocDoc reports more than 2.5 million monthly users. The service is free to patients. Doctors pay a $250 monthly fee to be listed in ZocDoc’s directory.
25.1 Audience Assessment

*The Wall Street Journal* estimates there are approximately 30,000 Internet radio stations in the U.S.

According to a survey by Triton Media Group (www.tritondigital.com), of all Americans ages 12 and older, 47% of the population – roughly 124 million people – listen to Internet radio at least once a month.

Higher percentages of teens and younger adults make up the listening audience, with 75% of Americans ages 12-to-24 listening to Internet radio over a given month compared to 50% of those ages 25-to-54.

A report by Edison Research (www.edisonresearch.com) and Triton Digital put the number of weekly digital radio listeners at 44% of the population ages 12 and older.

25.2 Top Internet Radio Markets

According to The Media Audit (www.themediaaudit.com), the following are the metropolitan areas where the highest percentage of adults have listened to Internet radio each week:

- Charleston, SC: 29.3%
- Atlanta, GA: 27.2%
- Salt Lake City, UT: 27.0%
- Boston, MA: 26.0%
- Southern New Hampshire: 25.1%

25.3 Top Internet Radio Groups

The top local Internet radio groups, ranked by reach, are as follows (source: The Media Audit):

- Clear Channel (Cincinnati, OH): 9.1%
- Entercom Radio (Buffalo, NY): 8.5%
- Clear Channel (Lexington, KY): 8.2%
- Clear Channel (Tampa-St. Petersburg, FL): 7.7%
- Clear Channel (Houston, TX): 7.6%
- Clear Channel (Pittsburgh, PA): 7.5%
- Entercom Radio (Seattle-Tacoma, WA): 7.5%
25.4 Connected Radio

One of the growth areas for radio is connected radio, where users connect through the Internet (wired or wireless) to radio stations or audio streams throughout the world. Content aggregators let users choose from hundreds of music and talk categories.

One site offering the service is RadioTime.com, which provides access to more than 100,000 radio stations and shows. Another site, Reciva.com, is like an electronic TV guide for online audio streams and offers more than 60 genres. Both of these companies generate revenue from a license fee they charge each radio manufacturer carrying their playlists.

Connected technology also includes devices that access Internet content. Livio Connect (www.livioradio.com), for example, has contracted to stream select content to these devices. In a venture with National Public Radio, Livio developed the NPR Radio, which retails for $200 and features more than 800 NPR stations. A Pandora Livio Radio is available and provides users with automatic music selections from 20,000 Internet radio streams from around the world and without subscriptions or monthly fees.

25.5 Market Resources

Radio and Internet Newsletter, 65 E. Wacker Place, Suite 930, Chicago, IL 60601. (312) 284-2444. (www.kurthanson.com)

Triton Digital, 15303 Ventura Boulevard, Sherman Oaks, CA 91403. (818) 528-8860. (www.tritondigital.com)
26

MAPS & NAVIGATION APPS

26.1 Web Mapping
Web mapping is the process of developing and using maps using geographical information systems (GIS) technology. Web mapping dates to 1994 when researchers at University of Minnesota created UMN MapServer, a Web-based tool for exploring a million acres of U.S. Forestry Service land. OpenStreetMap (www.openstreetmap.com) and MapQuest (www.mapquest.com) popularized web mapping for the general public.

“Maps are no longer about geographical landscapes, they are about data. Where maps were static, they are now dynamic. Where before we turned the page of an atlas, now we pan and zoom our way around a screen.”

100 Ideas That Changed The Web

26.2 Use Of Map Apps
comScore (www.comscore.com) reported that U.S. Internet users do almost all of their map activity via mobile devices, with more than 90% of users’ time spent with maps using either tablet or smartphone apps since 2013.

“Map usage has exploded in the smartphone era, with double-digit gains in users and usage now accounting for billions of minutes of mobile device time each month.”

eMarketer
eMarketer (www.emarketer.com) assesses the number of smartphone map/navigation app users as follows (percentage of smartphone users in parenthesis):

- 2017: 141.5 million (65.0%)
- 2018: 149.6 million (66.2%)
- 2019: 155.5 million (66.8%)
- 2020: 160.2 million (67.7%)
- 2021: 164.2 million (67.6%)

### 26.3 Top Map Sites

Ranked by number of users in April 2018, the following were the most popular mapping sites and apps (source: comScore [www.comscore.com]):

- Google Maps: 154.4 million
- Waze: 25.6 million
- Apple Maps: 23.3 million
- Mapquest: 20.9 million
- Google Earth: 5.2 million
- Yahoo! Maps: 2.8 million

Google Maps (https://maps.google.com) has been the most popular digital map site since 2010, when it surpassed MapQuest in usage. The site provides directions, interactive maps, and satellite/aerial imagery of the United States and most countries worldwide. Google replaced its classic map with New Google Map and Lite Mode in April 2015.

Apple Maps (www.apple.com/ios/maps/) was launched in 2012 to replace Google Maps as the default map service on iOS devices. Apple Maps features the unique ‘Flyovers’ mode, a feature that enables a user to explore densely populated urban centers in a 3D landscape composed of models of buildings and structures.

Waze, owned by Google, is the most popular app; Apple Maps is the second most popular. Both work on smartphones that have GPS support.

### 26.4 Online Cartography

Advances in user-friendly digital mapping technology have turned millions of Internet users into amateur cartographers. In the race to popularize their map services, Google, Microsoft, and others have created tools that allow people with minimal technical skills to do what only professional mapmakers were able to do before.

At Google Maps, more advanced tools allow users to create personalized, annotated, customized maps, complete with placemarks, lines, or shapes. Additional content can be added, including rich text, photos, and videos. Maps can then be shared or opened in Google Earth. My Maps (www.google.com/mymaps), unveiled by Google in 2007, makes it easy for users to create the maps.
User-generated maps cover a wide range of interests. There are maps of biodiesel fueling stations in New England, yarn shops in Illinois, and hydrofoils around the world. Some maps display real-time activities such as the route of whale migration.
27.1 Overview

Messaging on the Internet and mobile devices takes three primary forms, as follows:

- Instant messaging (IM)
- Text messaging, or texting, between mobile devices via SMS (short message service)
- Mobile messaging via apps

Successive generations of digital communications – IM, texting, and apps – have cut into a world of digital communications that was once the sole domain of email.

“The decline of e-mail corresponds neatly to the dawn of the mobile era. Let’s face it: e-mail has historically been an activity. You sit down to do it. You fill up a block of time. But instantaneous written messages are different. These are neatly tailored to fit in just about any time: before a movie, in a taxi, waiting for lunch. And because these notes are invariably brief, they’re a natural for smartphone typing. With these formats, you also have control over who can correspond with you, which you usually don’t in e-mail. As a bonus, none of these channels have been overrun by spam.”

*Scientific American*
27.2 Instant Messaging

Most social networking sites offer instant messaging (IM) features. Facebook Chat is a form of instant messaging, and Twitter can be thought of as a Web 2.0 instant messaging system.

According to the 2018 Digital Future Project, by the Center for the Digital Future (www.digitalcenter.org), University of Southern California, Annenberg School for Communication, adult Internet users engage in instant messaging as follows:

- Several times a day: 27%
- Daily: 29%
- Weekly: 15%
- Monthly: 6%
- Less than monthly: 12%
- Never: 12%

Fifty-eight percent (58%) of smartphone users send instant messages using their device.

27.3 Text Messaging

The introduction of smartphones and similar devices in the early 2000s gave rise to SMS, or text messaging. Texting is now more popular on smartphones than voice communications.

According to the 2018 Digital Future Project, 89% of adult smartphone users send/receive text messages using their device, an increase from 62% that did so in 2010 and 31% in 2007. Twenty-seven percent (27%) say that text messaging is the most important function of their mobile device use.

Mobile Messaging Futures, by Portio Research (www.portioresearch.com), estimates that about 2.4 trillion text messages were sent in 2018, a number that has been relatively unchanged since 2011.

IBM Watson Campaign Automation (www.ibm.com/watson/marketing-automation) assesses texting similarly, estimating that 6 billion SMS texts are sent per day in the U.S. According to OpenMarket (www.openmarket.com), 72% of Millennials text 10 or more times a day; 31% text more than 50 times a day.

_________________________________________________________________
“SMS is the first choice for consumers ages 18-to-34 for engagement, with texting cited as their most preferred communications channel.”

Center for Media Research
27.4 Mobile Messaging Apps

Apps from over-the-top (OTT) mobile messaging providers bypass cellular carriers to offer text messaging.

“The appeal of the apps is simple. They are faster to use than email, and they generally allow you to send text, links, video and photos to friends more cheaply than traditional texting services offered by wireless carriers like AT&T or Verizon.”

The New York Times

Parks Associates (www.parksassociates.com) reported use of messaging apps as follows (percentage of mobile messaging app users):

- Facebook Messenger: 73%
- iMessage: 32%
- Snapchat: 28%

Snapchat has the highest percentage of users in the under-35 age group, followed by WhatsApp and Facebook Messenger. Nearly 75% of Snapchat users are under 35, compared to 58% of WhatsApp users and 47% of Facebook Messenger users. While WhatsApp users are mostly male, nearly 60% of Facebook Messenger and Snapchat users are female.
28

NEWS

28.1 Use Of Digital News Sites

State of the News Media 2018, by Pew Research Center for Journalism and Media (www.journalism.org), reported that 43% of adults often get their news from digital media sources; 93% of adults get at least some of their news from the Internet. The 43% of adults using digital news sites make this second only to television as the most frequently accessed type of media source. That trails the 50% who often get news from a television source but outpaces both radio (25%) and print newspapers (18%).

28.2 Digital Native News Publishers

Pew Research Center dubs digital news organizations not tied to a legacy platform as “digital native news sites.”

There are 35 digital native news publishers that meet the following criteria: they were “born on the web,” cover a range of news subjects, and receive a minimum of 10 million unique visitors, as measured by comScore (www.comscore.com). User-generated and aggregated content platforms (e.g., Medium, Reddit, and Wikipedia), and branded content such as NBA.com, are excluded.

The following are 35 digital native news sites:

- 12up.com
- 247sports.com
- Bgr.com
- Bleacherreport.com
- Breitbart.com
- Businessinsider.com
- Bustle.com
- Buzzfeed.com
- Cnet.com
- Deadspin.com
- Digitaltrends.com
- Eater.com
- Elitedaily.com
- Gamespot.com
- Gizmodo.com
- Huffingtonpost.com
- Ibtimes.com
- Ign.com
- Investopedia.com
- Jezebel.com
- Mashable.com
- Maxpreps.com
- Politico.com
- Qz.com
- Refinery29.com
- Sbnation.com
- Slate.com
- Thedailybeast.com
- Theverge.com
- Thrillist.com
- Tmz.com
- Topix.net
- Uproxx.com
- Upworthy.com
- Vox.com

CONSUMER USE OF THE INTERNET & MOBILE WEB 2020-2021
These sites include broad-interest sites such as the Huffington Post and BuzzFeed, as well as sites focused on a narrower range of subjects such as business (qz.com), the entertainment industry (TMZ.com), or politics (Salon.com).

The average number of monthly unique visitors for the 35 digital-native news outlets has been as follows:

- 2014: 18.98 million
- 2015: 20.35 million
- 2016: 22.81 million
- 2017: 21.71 million
- 2018: 22.01 million

28.3 News From Social Media Sites

*News Use Across Social Media Platforms 2018*, by Pew Research Center, reported social media platforms from which social media users get news as follows (percentage of respondents):

- reddit: 73%
- Twitter: 71%
- Facebook: 67%
- YouTube: 38%
- Instagram: 32%
- LinkedIn: 30%
- Tumblr: 29%
- Snapchat: 29%
- WhatsApp: 18%

28.4 Market Resources


29

ONLINE DATING

29.1 Overview
One in three modern marriages in the U.S. start online, according to Fortune (July 2018). According to The Economist, 70% of U.S. gays and lesbians met their partner online.

“The Internet has transformed the way people work and communicate. It has upended industries, from entertainment to retailing. But its most profound effect may well be on the biggest decision that most people make – choosing a mate.”

The Economist, 8/18/18

According to Pew Research Center (www.pewresearch.org), 59% of adults view online dating as a good way to meet people, whether they have used such sites or not. Twenty-nine percent (29%) of people say they know someone who has found a spouse or long-term partner through online dating.

29.2 Use Of Online Dating Services
A 2018 survey by Morning Consult (www.morningconsult.com) found the following percentages of adults had used dating apps or services (percentage of respondents):

Gender
• Female: 28%
• Male: 31%
Age
• 18-to-29: 44%
• 30-to-44: 37%

According to the 2018 Digital Future Project, by the Center for the Digital Future (www.digitalcenter.org), University of Southern California, Annenberg School for Communication, 36% of Internet users have used or would consider using an online dating site. Of that group, 25% have already used one of these sites. Sixty-four percent (64%) have never used an online dating site and have no interest in doing so. Among those who have used online dating sites, experiences have been as follows:
• Did not date anyone: 34%
• Casually dated one or more people: 31%
• Entered a relationship: 15%
• Got engaged or married: 13%
• Not looking for a relationship: 7%

29.3 Market Assessment
Dating Services Industry in the U.S., an April 2019 report by IBISWorld (www.ibisworld.com), estimated that consumers spent $3.0 billion annually for online dating site memberships and services. The 2014-2019 average annual growth rate was 11%.

29.4 Top Online Dating Sites
Ranked by number of visits in June 2019, the top online dating sites are as follows (source: SimilarWeb [www.similarweb.com]):
• Tinder - app (www.tinder.com): 63.02 million
• Plenty Of Fish (www.pof.com): 59.08 million
• Match (www.match.com): 32.30 million
• Ok Cupid (www.okcupid.com): 31.63 million
• Zoosk (www.zoosk.com): 26.24 million
• Our Time (www.ourtime.com): 8.38 million
• Bumble - app (www.bumble.com): 4.18 million
• eHarmony (www.eharmony.com): 4.01 million
• Black People Meet (www.blackpeoplemeet.com): 3.83 million
• MatureQualitySingles (www.mature-qualitysingles.com): 2.68 million
• Farmers Only (www.farmersonly.com): 2.06 million
• Elite Singles (www.elitesingles.com): 1.10 million
• Grindr - app (www.grindr.com): 1.09 million
• BBPeopleMeet (www.bbpeoplemeet.com): 1.07 million
• BBW Cupid (www.bbwcupid.com): 993,000
• SingleParentMeet (www.singleparentmeet.com): 987,000
• Christian Mingle (www.christianmingle.com): 807,000
• Udate (www.udeate.com): 415,000
• LoveAndSeek (www.loveandseek.com): 397,000
• JDate (www.jdate.com): 373,000
• Christian Cupid (www.christiancupid.com): 311,000

29.5 Market Leaders

Match Group (www.mtch.com), a publically traded company, dominates the online dating sector. The company owns Match.com, Meetic, OK Cupid, OurTime, Plenty Of Fish, Tinder, and other popular dating sites.

Match Group revenue has been as follows:

- 2014: $888,000
- 2015: $910,000
- 2016: $1.12 billion
- 2017: $1.33 billion
- 2018: $1.73 billion

“Although often overlooked for its FANG brethren (Facebook, Amazon, Netflix, Google), Match Group outperforms them all and has profit margins that are better than the A, N, and G.”

*Fortune*, 7/1/18

29.6 Dating Apps

Smartphone dating apps, most of which are free, have surged in popularity. AppAnnie (www.appannie.com) ranked the top dating sites by number of U.S. active users in 2018 as follows:

1. Tinder
2. Plenty Of Fish
3. Bumble
4. OK Cupid
5. Grindr

Tinder (www.tinder.com), among the first dating apps, is the market leader. The
app allows users to filter potential matches by age, sex and location only; profiles consist of a few photos from Facebook and a couple of lines of text. *The Economist* estimates that Tinder produces 26 million matches each day.

“In 2013, Tinder, a startup, introduced the masterfully simple idea of showing people potential partners and having them simply swipe right for ‘yes’ and left for ‘no’; when two people swiped right on each other’s pictures they were put in contact with each other. It proved a huge hit.”

*The Economist, 8/18/18*

eMarketer estimates that 25.7 million U.S. smartphone users used a dating app at least once a month in 2018. That figure is projected to increase to 36.1 million by 2022.
30

ONLINE GAMBLING

30.1 Market Assessment

The American Gaming Association (www.americangaming.org) estimates that 15 million Americans have placed bets via the Internet.

According to The Nielsen Company (www.nielsen.com), 8.1% of adults online gamble on the Internet, compared with 6.9% who gamble in a casino. Online gambling is most popular among households with lower incomes. Those with an annual income between $25,000 and $35,000 are over 25% more likely than the average Web user to engage in online gambling. In contrast, those with an annual household income of over $150,000 are 22% less likely than the average Web user to gamble online.

Global Betting and Gaming Consultants (www.gbgc.com) assesses annual global revenue for online gambling sites at $30 billion.

Estimates of annual online gambling spending by Americans range from $4 billion to $16 billion; total U.S. handle is estimated at more than $100 billion.

Delaware, Nevada, and New Jersey are the only states to legalize online gambling. Legislation enabling online gaming has been considered in California, Massachusetts, New York, and Pennsylvania.

“Somewhat surprisingly, there has not yet been a flood of other states approving Internet wagering. Although bills have been offered in a variety of jurisdictions, a number of states have either rejected Internet gaming or shown no urgency in deciding to adopt it.”

Lloyd D. Levenson, Esq.
Chair, Casino Law Practice
Cooper Levenson
30.2 Online Parimutuel Wagering

Account wagering or advance deposit wagering (ADW) on horse racing was the only form of online wagering legal in the United States until 2013. Changes made in 2000 to the federal Interstate Horse Racing Act allow state-licensed interstate interactive parimutuel betting.

Most ADW is processed through wagering hubs licensed in Oregon, which created conditions favorable to ADW operators in 1999. Other states, including California and Indiana, also enable ADW.

Consumers spend about $1.2 annually, or about 25% of total horse racing handle, via ADW.

30.3 Offshore Internet Gaming Sites

Because of legal issues in the United States, online card rooms and casino portals typically base their computer servers offshore.

According to Casino City’s iGaming Business Directory, there are approximately 2,200 gaming sites that offer wagering (excluding those which do not offer real-money wagering, such as free-play sites). Sites are classified by category as follows:
- Casino portals
- Poker portals
- Sports betting portals
- Bingo portals

The directory ranks the sites based on overall website traffic; the following have the highest traffic:

Casino Portals
- 32Red Online Casino (www.32red.com)
- 888 Casino (www.888casino.com)
- All Slots Casino (www.allslotscasino.com)
- bet365 Casino (http://casino.bet365.com)
- Betfred Casino (www.betfredcasino.com)
- Casino.com (www.casino.com)
- EuroGrand (www.eurogrand.com)
- ME Casino (http://casino.metro.co.uk)
- Online Vegas (www.onlinevegas.com)
- Party Casino (www.partycasino.com)
- Sky Vegas (www.skyvegas.com)
- SportingBet (www.sportingbet.com)
- Stan James Casino (www.stanjames.com/casino)
- Unibet Casino & Games (www.unibet.com/casino)
Poker Portals
- bwin France (www.bwin.fr/en)
- ClubWPT (www.clubwpt.com)
- ComeOn (www.comeon.com)
- Full Tilt Poker (www.fulltiltpoker.com)
- Ladbrokes Poker (http://poker.ladbrokes.com)
- Party Poker (www.partypoker.com)
- Party Poker Italy (http://partypoker.it)
- PKR (www.pkr.com)
- Poker Kings (www.pokerkings.com)
- PokerStars (www.pokerstars.eu)
- WPTpoker (www.wptpoker.com)

Sports Book Portals, Racing Book Portals, and Betting Exchanges
- bet-at-home (www.bet-at-home.com)
- bet365 Sportsbook & Racebook (www.bet365.com)
- Betfair Sportsbook & Racebook (http://sports.betfair.com)
- Bettor (www.bettor.com)
- bwin Sportsbook (www.bwin.com)
- Ladbrokes Sportsbook & Racebook (http://sports.ladbrokes.com)
- Paddy Power Sportsbook (www.paddypower.com)
- Pinnacle Sports (www.pinnaclesports.com)
- Racing Post Betting Site (http://betting.racingpost.com)
- SBOBET Sportsbook & Casino (www.sbobet.com)
- Scandic Bookmakers (www.scandicbookmakers.com)
- Singapore Pools (www.singaporepools.com.sg)
- SkyBet Sports (www.skybet.com)
- TAB Sportsbet (www.tab.com.au)
- TVG Interactive Horseracing (www.tvg.com)
- TwinSpires (www.twinspires.com)
- ZEturf (www.zeturf.com)

Bingo Portals
- 123Bingo Online (www.123bingoonline.com)
- bet365 Bingo (http://bingo.bet365.com)
- Betsson Bingo, Games & Scratch Cards (http://bingo.betsson.com)
- Bingo Hall (www.bingohall.com)
- Foxy Bingo (www.foxybingo.com)
- Jackpotjoy (www.jackpotjoy.com)
- Mecca Bingo (www.meccabingo.com)
- Sky Bingo (www.skybingo.com)
- Sun Bingo (www.sunbingo.co.uk)
- Tombola (www.tombola.co.uk)
- Unibet Bingo and Skill Games (www.unibet.com/bingo)
30.4 Market Resources

Casino City Press, 95 Wells Avenue, Newton, MA 02459. (617) 332-2850. (www.casinocitypress.com)

31

PERSONAL WEBSITES

31.1 Objectives And Content
People create a personal website for a variety of reasons. They serve as a space of personal expression and social networking among people with similar interests. Personal websites can include information about hobbies, family genealogy, opinions or support for causes, an online journal, and more.

Websites can be created to support a person’s career or business endeavors. Some sites host resumes, portfolios, examples of written work, music clips, videos, or an online shop. According to CareerBuilder (www.careerbuilder.com), 29% of workers, including 44% of people ages 25-to-24, have a side gig; many create a website to promote this activity.

Some websites are created temporarily for a special occasion, such as a wedding.

31.2 Creating And Hosting A Website
Numerous online services are available that let people design, build, and host their own website. Many are free and derive income from fees for optional add-ons or advertising. The following are among the more popular services:
- About.me (www.about.me)
- Angelfire (www.angelfire.com)
- Boldgrid (www.boldgrid.com)
- eHost (www.ehost.com)
- Enthuse.me (www.enthuse.me)
- Flavors.me (www.flavors.me)
- Jimdo (www.jimdo.com)
- Moonfruit (www.moonfruit.com)
- Own-Free-Website (www.own-free-website.com)
- Register.com (www.register.com)
- Site123 (www.site123.com)
- SiteBuilder (www.sitebuilder.com)
- SnackWebsites (www.snackwebsites.com)
- Somewhere (www.somewhere.com)
- Squarespace (www.squarespace.com)
- Strikingly (www.strikingly.com)
• uCoz (www.ucoz.com)
• Vizualize.me (www.vizualize.me)
• Web.com (www.web.com)
• webnode (https://us.webnode.com)
• Webs (www.webs.com)
• Website (www.website.com)
• Websitebuilder (www.websitebuilder.com)
• Webstarts (www.webstarts.com)
• Weebly (www.weebly.com)
• Wix.com (www.wix.com)
• WordPress (https://wordpress.com)
• Yola (www.yola.com)
• Zoho (www.zoho.com/sites)

Wix.com, the largest among these services, reported 150 million users as of July 2019, a count that includes both personal and business users.
PHOTO SHARING

32.1 Digital Photos

Worldwide Image Capture Forecast, by InfoTrends (www.infotrends.com), estimates people took 1.3 trillion digital photos worldwide in 2018. Popular Photography assesses that about one trillion digital photos are taken worldwide each year.

“The Web has become an extension of our identities. Displaying our interests – or at least the interests we wish to present to the world – offers friends and followers a snapshot of our personality. There is no easier way to do this than through images.”

100 Ideas That Changed The Web

32.2 Photo Uploads To The Web

InfoTrends assessed that 6.0 trillion digital photos were stored in 2018, an increase from 4.7 trillion in 2017 and 2.7 trillion in 2014. Social network sites generally do not make public the number of photos that are uploaded, but several analysts have made estimates.

Gizmodo (www.gizmodo.com) estimates that there are 300 million photo uploads to Facebook every day.

ClickZ (www.clickz.com) assessed 80 million photos are posted on Instagram daily; 91% of Instagram posts are photos.

Mary Meeker, partner at Kleiner Perkins (www.kpcb.com), estimated in State of the Internet that people upload 1.8 billion images to Facebook, Instagram, Flickr, Snapchat, and WhatsApp every day.
**32.3 Photo Sharing Sites**

Ranged by monthly visits in June 2019, the top photo sharing sites are as follows (source: SimilarWeb [www.similarweb.com]):

- Instagram (www.instagram.com): 3.22 billion
- Imgur (www.imgur.com): 417.72 million
- Deviant Art (www.deviantart.com): 178.10 million
- Flickr (www.flickr.com): 96.02 million
- Image Bam (www.imagebam.com): 24.33 million
- Shutterfly (www.shutterfly.com): 12.63 million
- We Heart It (www.weheartit.com): 11.94 million
- Image Venue (www.imagevenue.com): 11.08 million
- Photobucket (www.photobucket.com): 10.59 million
- Smug Mug (www.smugmug.com): 8.21 million
- Tiny Pic (www.tinypic.com): 6.39 million
- Image Shack (www.imageshack.com): 5.18 million
- Snapfish (www.snapfish.com): 2.03 million
- Twitpic (www.twitpic.com): 1.16 million

**32.4 Sharing Creators And Curators**

According to the Pew Internet & American Life Project [www.pewresearch.org], those who share photos online are as follows:

**Creators**
- Fifty-two percent (52%) of adult Internet users post original photos online that they themselves have created.

**Curators**
- Forty-two percent (42%) of adult Internet users repost photos they find online onto sites designed for sharing images with many people.

By demographic group, those who share photos (and videos) online are as follows:

<table>
<thead>
<tr>
<th>Gender</th>
<th>Creators</th>
<th>Curators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female:</td>
<td>56%</td>
<td>49%</td>
</tr>
<tr>
<td>Male:</td>
<td>48%</td>
<td>36%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>Creators</th>
<th>Curators</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-to-29:</td>
<td>79%</td>
<td>61%</td>
</tr>
<tr>
<td>30-to-49:</td>
<td>56%</td>
<td>48%</td>
</tr>
<tr>
<td>50-to-64:</td>
<td>37%</td>
<td>30%</td>
</tr>
<tr>
<td>65 and older:</td>
<td>19%</td>
<td>14%</td>
</tr>
</tbody>
</table>
### Education
- High school: 49% 43%
- Some college: 54% 46%
- College graduate: 53% 39%

### Household Income
- Less than $30,000: 55% 52%
- $30,000 to $49,999: 48% 31%
- $50,000 to $74,999: 53% 46%
- $75,000 and more: 54% 39%

### 32.5 Mobile Phone Use For Photo Taking
According to the 2018 Digital Future Project, by the Center for the Digital Future (www.digitalcenter.org), University of Southern California, Annenberg School for Communication, 88% of mobile phone users use their device to take pictures; 75% take videos.

According to a survey conducted by Edelman (www.edelman.com) for Shutterfly (www.shutterfly.com), 81% of people who had taken at least 10 digital photos in the three months prior to polling used mobile phones and smartphones; 55% used point-and-shoot digital cameras, the second-highest response. Among those using mobile phones to take pictures, the frequency of this activity was as follows:
- Several times a day: 24%
- Daily: 40%
- A few times a week: 36%
33.1 Overview
A podcast is a digital audio file made available on the Internet or for downloading to a portable media player. The earliest podcasts were audio-only files, but today are just as likely to be video. Podcasts consist of an episodic series of audio, video, digital radio, PDF, or ePub files subscribed to and downloaded through web syndication or streamed on-line to a computer or mobile device.

A podcatcher, or podcast client, is a website used to download various media via an RSS or XML feed. They generally allow users to manually subscribe directly to a feed by providing the URL; some also include a directory of high-profile podcasts. Apple’s iTunes, which added podcatching to its iTunes software in 2005, is the largest podcast client. Top shows routinely gather over one million listens per month.

The following links to a list of podcatchers: www.rkma.com/podcatchers.pdf.

33.2 Podcast Listeners
According to Pew Research Center (www.pewresearch.org), the number of people ages 12 and older that listen to podcasts has been as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Ever</th>
<th>In The Past Month</th>
<th>In The Past Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>11%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2007</td>
<td>13%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2008</td>
<td>18%</td>
<td>9%</td>
<td>-</td>
</tr>
<tr>
<td>2009</td>
<td>22%</td>
<td>11%</td>
<td>-</td>
</tr>
<tr>
<td>2010</td>
<td>23%</td>
<td>12%</td>
<td>-</td>
</tr>
<tr>
<td>2011</td>
<td>25%</td>
<td>12%</td>
<td>-</td>
</tr>
<tr>
<td>2012</td>
<td>29%</td>
<td>14%</td>
<td>-</td>
</tr>
<tr>
<td>2013</td>
<td>27%</td>
<td>12%</td>
<td>7%</td>
</tr>
<tr>
<td>2014</td>
<td>30%</td>
<td>15%</td>
<td>8%</td>
</tr>
<tr>
<td>2015</td>
<td>33%</td>
<td>17%</td>
<td>10%</td>
</tr>
<tr>
<td>2016</td>
<td>36%</td>
<td>21%</td>
<td>13%</td>
</tr>
<tr>
<td>2017</td>
<td>40%</td>
<td>24%</td>
<td>15%</td>
</tr>
<tr>
<td>2018</td>
<td>44%</td>
<td>26%</td>
<td>17%</td>
</tr>
<tr>
<td>2019</td>
<td>51%</td>
<td>32%</td>
<td>22%</td>
</tr>
</tbody>
</table>
“Weekly podcast listeners tend to be more educated and have higher incomes when compared to the rest of the population. Thirty percent (30%) of Americans with a college degree listen to podcasts weekly compared with the 12% of Americans without a college degree who are listening weekly. And you’re twice as likely to be a weekly podcast listener if you make $100k or above than if you make $50k or below.”

Pew Research Center

eMarketer (www.emarketer.com) assesses the number of U.S. podcast listeners as follows:
• 2018: 73.0 million
• 2019: 76.8 million
• 2020: 79.2 million
• 2021: 81.6 million
• 2022: 83.8 million

33.3 Podcast Hosts Networks
Apple, the dominant podcast host in the U.S., owns an estimated 60% of podcast consumption.
There are approximately 50 podcast networks in the United States. Many do not release data on the number of downloads.
Libsyn (www.libsyn.com), one of the largest podcast hosting companies, hosted 28,000 shows and reported 3.3 billion annual requests for downloads.
RawVoice (www.rawvoice.com), which hosts 20,000 shows, reports downloads tripled between 2010 and 2018.

33.4 Most Popular Podcasts
 Ranked by total mobile and desktop unique U.S. monthly audience, the following were the top podcast publishers in June 2019 (source: Podtrac [www.podtrac.com]):
Based on total U.S. audience, the following were the top podcasts in June 2019 (source: Podtrac):
2. Stuff You Should Know (iHeartRadio)
3. This American Life (This American Life/Serial)
4. Up First (NPR)
5. The Ben Shapiro Show (Daily Wire)
6. RadioLab (WNYC Studios)
7. Pardon My Take (Barstool Sports)
8. Planet Money (NPR)
9. TED Radio Hour (NPR)
10. Wait Wait...Don’t Tell Me! (NPR)
11. Fresh Air (NPR)
12. Call Her Daddy (Barstool Sports)
13. Hidden Brain (NPR)
14. TED Talks Daily (PRX)
15. Freakonomics (Freakonomics)
16. The Shrink Next Door (Wondery)
17. How I Built This (NPR)
18. The Ron Burgundy Podcast (iHeartRadio)
19. The Moth (PRX)
20. NPR Politics Podcast (NPR)

### 33.5 Top Apple-Hosted Podcasts
The following were Apple’s top podcasts in 2018:
- *The Daily*
- *The Joe Rogan Experience*
- *Stuff You Should Know*
- *Fresh Air*
- *The Dave Ramsey Show*
- *My Favorite Murder*
• Ted Talks Daily
• Up First
• The Ben Shapiro Show
• Pod Save America
• This American Life
• Ted Radio Hour
• Planet Money
• Pardon My Take
• Freakonomics Radio
• The Dan Le Batard Show with Stugotz
• Up and Vanished
• Oprah’s Supersoul Conversations
• The Bill Simmons Podcast
• Stuff You Missed in History Class
• Hidden Brain
• The Herd with Colin Cowherd
• NPR Politics Podcast
• Radiolab
• The Adam Carolla Show

The following were the most downloaded among new podcasts hosted by Apple in 2018:
• Armchair Expert with Dax Shepard
• The Daily Show with Trevor Noah: Ears Edition
• Today, Explained
• Dr. Death
• The Morning Toast
• Business Wars
• The Wilderness
• Conspiracy Theories
• The RFK Tapes
• The Teacher’s Pet
• Aaron Mahnke’s Cabinet of Curiosities
• Oprah’s Master Class: the Podcast
• Caliphate
• 15 Minutes to Freedom
• Rise Together Podcast
• The Goop Podcast
• The Habitat
• Get Up!
• Worklife with Adam Grant
• Trump, Inc.
• The Walk
• Nobody Told Me!
• Unexplained Mysteries
• Fatal Voyage: the Mysterious Death of Natalie Wood
• The Jordan Harbinger Show
34

REVIEWS

34.1 Reading and Using Online Reviews

According to AYTM Market Research (www.aytm.com), adults who read online reviews before making a purchase or leave online reviews after making a purchase are as follows (percentage of respondents):

<table>
<thead>
<tr>
<th></th>
<th>Read Reviews</th>
<th>Post Reviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always:</td>
<td>20.1%</td>
<td>6.2%</td>
</tr>
<tr>
<td>Most of the time:</td>
<td>29.5%</td>
<td>14.8%</td>
</tr>
<tr>
<td>About half the time:</td>
<td>24.6%</td>
<td>24.2%</td>
</tr>
<tr>
<td>Rarely:</td>
<td>15.9%</td>
<td>35.2%</td>
</tr>
<tr>
<td>Never:</td>
<td>9.9%</td>
<td>19.6%</td>
</tr>
</tbody>
</table>

A survey by ChannelAdvisor (www.channeladvisor.com) found that 92% of Internet users read product reviews. Among these people, 89% have been influenced to make a purchase or deterred from purchasing a specific product as the result of reviews. Only 3% of those who have read reviews say their decisions have been unaffected by reviews.

Consumers are increasingly accessing reviews while shopping. Compete (www.compete.com) reports that 45% of smartphone users have looked at third-party or consumer reviews of a product while in a store.

The 2019 State Of Customer-Generated Content, by TurnTo (www.turnto.com), asked adult Internet users what information they found most helpful in product reviews. Responses were as follows (percentage of respondents):

- Product performance: 60%
- Purchaser satisfaction: 55%
- Product quality: 54%
- Quality over time: 50%
- Description accuracy: 49%
- Value: 44%
- A specific question: 39%
- Exceeded expectations: 33%
- Advice about use: 21%
- Reason for purchasing: 15%
“Ratings and reviews matter a great deal during the shopping process. Not only can they influence a purchase or steer consumers to one store over another, but they can also get shoppers to spend more than they intended.”

eMarketer, 2/6/19

34.2 Posting Reviews

Among those who use reviews, about a quarter also post their own opinions, according to eMarketer (www.emarketer.com).

A survey by YouGov asked Internet users who posted online consumer reviews their reasons for doing so. Responses were as follows:

- Help others make better purchase decisions: 62%
- Polite to leave feedback: 35%
- Share positive good experience: 27%
- Make sure good vendors get business: 25%
- Warn about bad experience: 13%
- Expose bad vendors: 12%
- Improve ranking as customer: 7%
- Become well known reviewer: 5%

By age, reasons for posting reviews were as follows:

<table>
<thead>
<tr>
<th>Reason</th>
<th>18-34</th>
<th>35-54</th>
<th>55+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Help others make better purchase decisions:</td>
<td>56%</td>
<td>62%</td>
<td>67%</td>
</tr>
<tr>
<td>Polite to leave feedback:</td>
<td>36%</td>
<td>38%</td>
<td>33%</td>
</tr>
<tr>
<td>Share positive good experience:</td>
<td>19%</td>
<td>27%</td>
<td>34%</td>
</tr>
<tr>
<td>Make sure good vendors get business:</td>
<td>18%</td>
<td>25%</td>
<td>30%</td>
</tr>
<tr>
<td>Warn about bad experience:</td>
<td>10%</td>
<td>11%</td>
<td>17%</td>
</tr>
<tr>
<td>Expose bad vendors:</td>
<td>8%</td>
<td>10%</td>
<td>16%</td>
</tr>
<tr>
<td>Improve ranking as customer:</td>
<td>6%</td>
<td>10%</td>
<td>3%</td>
</tr>
<tr>
<td>Become well known reviewer:</td>
<td>7%</td>
<td>6%</td>
<td>3%</td>
</tr>
</tbody>
</table>

34.3 Restaurant Reviews

The two top national sites for restaurant reviews are OpenTable (www.opentable.com) and Yelp (www.yelp.com). Each have about four million written
reviews and 15 million visitors a month. Other popular restaurant review destinations include Eat24 (www.eat24.com), Gayot (www.gayot.com), MenuPages (www.manupages.com), Zagat (www.zagat.com), and Zomato (formerly Urbanspoon; www.zomato.com).

Research by Merchant Centric (www.merchantcentric.com) and Xenial (www.xenial.com) found 141 million reviews were posted for the 10 most-reviewed restaurant categories in 2018, a 64% increase from the prior year.

According to the National Restaurant Association (www.restaurant.org), 57% of consumers say they will avoid a business that has negative reviews and ratings.

A study by Harvard Business School (www.hbs.edu) reported that a one-star Yelp rating increase can lead to a 5% to 9% boost in revenue for a restaurant. A half-star improvement on Yelp’s 5-star rating makes it 30% to 49% more likely that a restaurant will sell out seats during peak hours.

### 34.4 Travel Reviews

Among all product and service categories, travel reviews are the most used by consumers.

According to Forrester Research (www.forrester.com), approximately one-third of travelers who research trips via the Internet read reviews. Of those who book hotels online, a third have changed plans based on other travelers’ comments.

Expedia-owned TripAdvisor (www.tripadvisor.com), the largest online travel review site, had posted more than 460 million consumer reviews of hotels, attractions, and restaurants across the globe at year-end 2018. The site had 79.4 million unique monthly U.S. visitors in 2018, according to comScore (www.comscore.com).

TripAdvisor has acquired such popular travel sites as Smartertravel.com, IndependentTraveler.com, CruiseCritic.com, and SeatGuru.com.
35

SEARCH

35.1 Desktop Search Queries

comScore (www.comscore.com) reported 15.81 billion desktop search queries in the U.S. in May 2019; comScore does not assess mobile search queries.

According to comScore, desktop search queries in May 2019 using the four major search engines were as follows:

- Google sites: 9.92 billion
- Microsoft sites, primarily Bing: 3.94 billion
- Verizon sites, primarily Yahoo!: 1.82 billion
- Ask.com: 150 million

35.2 Importance Of Online Search

Search engines have become one of the most important segments of the online experience for Internet users. After email, search is the second-most-used Internet application.

According to the Pew Research Center (www.pewresearch.org), 49% of Internet users use search engines on a typical day.

According to Edelman (www.edelman.com), search engines are the most-trusted media source. Sixty-seven percent (67%) of Internet users trust search engines for information. For comparison, 57% of people trust traditional media.

35.3 Search Categories

According to Experian Hitwise (www.experian.com/hitwise/), traffic (website visits) for various categories originates from search engines as follows:

- Education: 45%
- Health and medical: 44%
- Food and beverage: 40%
- Music: 39%
- Community: 35%
- Travel: 33%
- Government: 32%
- Shopping and classifieds: 26%
- Aviation: 25%
35.4 Product Search

According to a 2018 survey by Adeptmind (www.adeptmind.com), 47% of U.S. Internet users started product searches on Amazon; 35% went to Google first.

The leading method among digital shoppers surveyed by Salsify (www.salsify.com) in 2018 was searching and buying on Amazon (41%) followed by searching on Google then buying on Amazon (28%).

A 2018 analysis by Jumpshot (www.jumpshot.com) of multi-device traffic on its platform found that Amazon had 54% share of product searches; Google had 46%.

__________________________________________________________

“Google might leave Bing and Yahoo in the dust for visits, but the popular search engine has been losing ground to Amazon as the go-to platform for product search.”

eMarketer, 9/7/18

__________________________________________________________

35.5 Visual Search

Ecommerce sites Amazon and eBay, among others, now provide visual search tools that allow users to submit images as queries instead of text. This technology is also used by social media sites like Snapchat, which lets users take a picture of an item and buy it on Amazon or Pinterest.
“In theory, visual search can make the digital path to purchase for consumers even more seamless than it already is. See something you want to buy out in the wild? Just take a picture and let a visual search engine guide you to a product page.”

eMarketer, 1/2/19

Sixty-two percent (62%) of Millennial and Generation Z consumers said in a 2018 survey by ViSenze (www.visenze.com) that they would like visual search capabilities enabling them to quickly discover and identify the products on their mobile devices.

The Ecommerce Survey, conducted in December 2018 by eMarketer (www.emarketer.com), found that 10% of Internet users had used visual search; 3% use it regularly. Forty-eight percent (48%) who had not used visual search were interested in trying it. Among those ages 18-to-34, 13% had used visual search; 53% were interested in doing so.
36.1 Overview

An informal survey by Stack Exchange (http://writers.stackexchange.com) found that 80% of the U.S. population have an interest in writing a book and getting it published sometime in their lifetime. Only a fraction, however, pursue this aspiration seriously. It is estimated that slightly under one million adults are actually writing seriously with a goal of getting published. Most have a turnaround, or period of time they stick to writing, of about 3.5 years.

The Internet has been a boon for writers who wish to self-publish in electronic format without dealing with a publisher or incurring the cost of publishing in print format. Forbes estimates that about 300,000 to 500,000 books are self-published each year.

“Anyone with access to the Internet can be a publisher.”

The Economist

Millions of people who write for enjoyment, of course, have no intention of becoming published nor the illusion that they will ever pen a best-seller.

36.2 Electronic Publishing

Ebooks are generally published in ePub, Mobi, and printable PDF formats. Most self-published authors use a publishing platform to prepare manuscripts for publication, generate files in these formats, and host the eBook. Publishing platforms include the following:

• Amazon Kindle Direct Publishing (https://kdp.amazon.com)
• Blurb (www.blurb.com)
• Bookbaby (www.bookbaby.com)
• Breezeway Books (www.breezewaybooks.com)
• CinnamonTeal Publishing (www.cinnamonteal.in)
Some writers prepare their own manuscripts, use a service to generate files in the proper format, and host the ebook on their personal website. Services that generate ebook-format files include the following:

- Adobe’s InDesign (www.adobe.com/products/indesign.html)
- Booqula (www.booqula.com)
- dotEPUB (https://dotepub.com)
- QuarkXpress (www.quark.com/products/quarkxpress/)

36.3 eBook Publishers

The Author Earnings Report (www.authorearnings.com), an author-focused assessment of ebook publishing, reports market share of ebook unit sales as follows:

- Indie published: 37%
- Small- and medium-sized publishers: 18%
- Amazon published: 14%
- Uncategorized single-author publisher: 8%

The Author Earnings Report assessed ebook pricing as follows:

- Indie published ebooks generally sell for 99¢ to $3.99.
- Most Amazon imprint ebooks are priced at $4.99.
- Big Five publisher prices are typically in the $9.99 to $14.99 range.

Ebook author earnings were distributed as follows (source: the Author Earnings Report):

- Indie published: 38%
- Big Five publishers: 23%
- Small- and medium-sized publishers: 22%
- Amazon published: 12%
- Uncategorized single-author publisher: 5%
36.4 Author Earnings

Stories of successful self-published authors are well publicized. The New York Times, for instance, reported on Meredith Wild, who sold 1.4 million copies of her self-published erotic novels on Amazon and other sites, and subsequently launched Waterhouse Press to publish for other authors. And Forbes reported on John Milton, a self-published writer who draws $450,000 a year from Amazon.com. In actuality, such success is rare among the millions of authors that have self-published.

According to The New York Times, 40 self-published authors have sold more than one million ebook copies in the last five years.

Competition in the ebook market is on the rise. There are now over 4 million titles in the Kindle Store; in 2012 there were 600,000. Approximately one-third of the list of 100 best-selling Kindle ebooks each week are self published.

Amazon.com dominates that market for sales of ebooks. Eighty-five percent (85%) of all non-traditionally published book sales of any format and 50% of traditionally published book sales occur on Amazon.com.

According to the Author Earnings Report, 9,900 authors earn $10,000 a year on more from their Amazon U.S. sales alone. Approximately 4,600 authors earn more than $25,000 annually. Among these authors, 40% of these are indie authors deriving at least half of their income from self-published titles, 35% are Big Five authors deriving the majority of their income from Big Five-published titles, and 22% are authors who derive most of their income from titles published by small- or medium-sized traditional publishers.

Over 2,500 authors earn $50,000 or more a year from sales on Amazon.com. Among these authors, 1,080 are independent, self-published authors. Approximately 1,340 authors earn $100,000 a year from Amazon.com sales; half of them are independents and Amazon-imprint authors.

Approximately 1,120 authors earn $250,000 or more from sales on Amazon. An estimated 565 self-published authors are in this group; 220 debuted in the past five years.
32

SPORTS ONLINE

32.1 Digital Sports Media Traffic

According to comScore (www.comscore.com), digital sports media generated a cumulative audience of 186.86 million in January 2019. The average time spent on sports content was 99.3 minutes per visitor.

Ranked by number of unique visitors, the most popular sports sites were as follows:

- ESPN: 94,962,000
- CBS Sports: 69,157,000
- NFL Internet Group: 58,604,000
- Yahoo Sports-NBC Sports Network: 57,667,000
- USA Today Sports Media Group: 49,840,000
- Bleacher Report-Turner Sports Network: 49,643,000
- SB Nation: 40,067,000
- Sports Illustrated sites: 28,178,000
- Minute Media: 22,526,000
- MSN Sports: 18,021,000
- MLB: 13,132,000
- Fox Sports Digital: 13,031,000
- Deadspin.com: 11,504,000
- Fox News Sports: 10,918,000
- NESN: 10,094,000

Total time spent on sports sites was as follows:

- ESPN: 5.31 billion minutes
- Yahoo Sports-NBC Sports Network: 3.10 billion minutes
- NFL Internet Group: 1.70 billion minutes
- Bleacher Report-Turner Sports Network: 1.30 billion minutes
- CBS Sports: 1.24 billion minutes
- MSN Sports: 542 million minutes
- USA Today Sports Media Group: 490 million minutes
- Minute Media: 428 million minutes
- SB Nation: 403 million minutes
- Sports Illustrated sites: 193 million minutes
Digital traffic has fluctuated between 170 million and 190 million unique visitors since 2016, with traffic varying seasonally and with major events, but with no overall increase.

“Amid all the industry debate around declining TV ratings for many major sports properties, another media measurement issue lurks quietly in the background: a marked retreat in the overall audience and consumption for digital sports media. Monthly reports from measurement agency comScore tracking online and mobile traffic have shown a consistent trend of smaller overall audiences and dramatically lower consumption for sports properties. There has been an overall macro-level flattening of the category, and there is probably only so much room for growth in what is now a mature segment.”

SportsBusiness Daily, 2/20/19

37.2 Live Sports Online

The following is a summary of some of the live sports events accessible online:

- ESPN3 features millions of hours of live events online, including MLB, NBA and WNBA basketball, Major League Lacrosse, NCAA baseball, NCAA basketball (both men’s and women’s), NCAA football games, NCAA lacrosse, all four Grand Slam tennis events, major golf championships, high school football, Canadian Football League, Premier League and other major international soccer leagues, cricket (international), rugby (international), American Le Mans Series races, FIFA World
Cup, and more. ESPN3 allows fans to switch among as many as 20 events in a main viewing window. To watch ESPN3, a user’s Internet service provider must have a licensing agreement with ESPN.

- More than five million college basketball fans watch March Madness on their computers, streamed by CBS SportsLine and available for free at NCAA.com.
- Major League Baseball draws more than one million subscribers to its $89 MLB.tv package of live baseball games and highlights.
- More than 300 live college football games are offered on sports sites such as ESPN3 and CSTV.com.
- Most regular-season out-of-market hockey games are streamed on NHL.com.

Marquee events such as championship series and all-star games that drive television ratings are generally available only on television and not streamed online.

### 37.3 Independent Sports Sites

Several independent sports sites have gained a large online following without being under the control of a TV network, league, or major online portal. The following are the largest of such sites (source: *SportsBusiness Journal*):

- 24/7 Sports ([www.247sports.com](http://www.247sports.com))
- Big Lead Sports ([www.thebiglead.com](http://www.thebiglead.com))
- Bleacher Report ([www.bleacherreport.com](http://www.bleacherreport.com))
- SB Nation ([www.sbnation.com](http://www.sbnation.com))
- Sports Media Ventures ([www.thepostgame.com](http://www.thepostgame.com), [www.sportsfanlive.com](http://www.sportsfanlive.com))

### 37.4 Sports Social Media

Catalyst, an IMG company ([www.catalystimg.com](http://www.catalystimg.com)), conducted the *Sports Fan Engagement Study* to examine sports-related social media activities among avid sports fans. The following is a summary of the study:

**Which of the following social media sites do you use in relation to sports?**

- Facebook: 75%
- YouTube: 54%
- Twitter: 37%
- Instagram: 18%

**By sport, which social media sites do you use?**

<table>
<thead>
<tr>
<th></th>
<th>Soccer</th>
<th>NBA</th>
<th>College Basketball</th>
<th>College Football</th>
<th>MLB</th>
<th>NFL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facebook:</td>
<td>72%</td>
<td>70%</td>
<td>71%</td>
<td>72%</td>
<td>72%</td>
<td>78%</td>
</tr>
<tr>
<td>YouTube:</td>
<td>78%</td>
<td>60%</td>
<td>63%</td>
<td>51%</td>
<td>42%</td>
<td>37%</td>
</tr>
<tr>
<td>Twitter:</td>
<td>45%</td>
<td>39%</td>
<td>41%</td>
<td>36%</td>
<td>36%</td>
<td>32%</td>
</tr>
<tr>
<td>Instagram:</td>
<td>25%</td>
<td>25%</td>
<td>19%</td>
<td>14%</td>
<td>17%</td>
<td>12%</td>
</tr>
</tbody>
</table>
On a typical game day, which social media do you use?

- **Facebook**
  - Before game: 50%
  - During game: 54%
  - After game: 70%

- **YouTube**
  - Before game: 15%
  - During game: 10%
  - After game: 59%

- **Twitter**
  - Before game: 48%
  - During game: 64%
  - After game: 64%

- **Instagram**
  - Before game: 35%
  - During game: 54%
  - After game: 56%

### 37.5 Sports League/Organization Followers

Hookit (www.hookit.com) assesses sports fan engagement based on social media interactions. Hookit tracks every league, team, player, event, venue, and brand in sports.

Ranked by number of social media followers in June 2019, the top leagues, tours, and organizations were as follows:

- National Basketball Association: 157.6 million
- National Football League: 62.7 million
- Ultimate Fighting Championship: 50.9 million
- International Olympic Committee: 31.0 million
- Major League Baseball: 22.9 million
- National Hockey League: 16.6 million
- World Surf League: 12.7 million
- Major League Soccer: 8.3 million
- ATP World Tour: 7.1 million
- PGA Tour: 6.9 million
- Professional Bull Riders: 4.2 million
- Women’s Tennis Association: 4.2 million
- Arena Football League: 2.6 million
- Women’s National Basketball Association: 2.5 million
37.6 Athlete Followers

Ranked by number of social media followers in June 2019, the top athletes were as follows (source: Hookit):

**Major League Baseball**
- Mike Trout: 3.0 million
- Yu Darvish: 2.2 million
- David Price: 1.8 million
- Robinson Cano: 1.8 million
- Masahiro Tanaka: 1.6 million

**Major League Soccer**
- Wayne Rooney: 55.9 million
- Zlatan Ibrahimovic: 32.0 million
- Bastian Schweinsteiger: 14.2 million
- Nani: 10.7 million
- Bacary Sagna: 3.3 million

**National Basketball Association**
- Lebron James: 66.1 million
- Dwyane Wade: 33.1 million
- Stephen Curry: 27.3 million
- Paul George: 13.4 million
- Pau Gasol: 11.9 million

**National Football League**
- Tom Brady: 11.2 million
- Russell Wilson: 7.6 million
- JJ Watt: 7.5 million
- Odell Beckham: 5.4 million
- Julian Edelman: 4.9 million

**National Hockey League**
- Alex Ovechkin: 2.7 million
- Henrik Lundqvist: 1.6 million
- P.K. Subban: 1.3 million
- Carey Price: 890,300
- Vladimir Tarasenko: 629,700

**Women’s National Basketball Association**
- Skylar Diggins-Smith: 1.1 million
- Candace Parker: 811,200
- Maya Moore: 713,000
- Elena Delle Donne: 550,700
- Brittney Griner: 325,300
STREAMING MUSIC SERVICES

38.1 Overview

Services that offer on-demand music streaming of full-length content over the Internet have become popular. Streaming services provide music without requiring the listener to purchase a file to download. Many sites include features for browsing by song title, artist, and genre. Such sites generally offer free, ad-supported listening and a commercial-free subscription option.

CivicScience (www.civicscience.com) reported types of streaming music services used by adult Internet users in 2018 as follows (percentage of respondents):

- Free streaming services only (e.g., iHeartRadio, Pandora's and Spotify's free services): 31%
- Both paid and free streaming services: 9%
- Paid, premium streaming services only (e.g., Pandora One, Rhapsody, Spotify Premium): 8%
- Never listen to streaming services: 51%

38.2 Market Assessment

The Recording Industry Association of America (RIAA, www.riaa.org) reported paid streaming music subscriptions and revenue as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>No. Subscriptions</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>10.8 million</td>
<td>$2.3 billion</td>
</tr>
<tr>
<td>2016</td>
<td>22.7 million</td>
<td>$4.0 billion</td>
</tr>
<tr>
<td>2017</td>
<td>35.3 million</td>
<td>$5.7 billion</td>
</tr>
<tr>
<td>2018</td>
<td>50.2 million</td>
<td>$7.4 billion</td>
</tr>
</tbody>
</table>

38.3 Demographics

The following is the demographic distribution of consumers of music streaming services (source: Music Watch [www.musicwatchinc.com]):

<table>
<thead>
<tr>
<th>Gender</th>
<th>Music Streamers</th>
<th>Paid Subscribers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>53%</td>
<td>50%</td>
</tr>
<tr>
<td>Male</td>
<td>47%</td>
<td>50%</td>
</tr>
</tbody>
</table>
A 2018 survey by YouGov (www.yougov.com) reported use of streaming music services by race/ethnicity as follows (percentage of respondents):

- Black: 48%
- Hispanic: 39%
- Caucasian: 37%

### 38.4 Streaming Service Listener Share

eMarketer (www.emarketer.com) assessed U.S. digital audio listener penetration in March 2019 as follows (percentage of digital audio listeners):

- Pandora: 35.4%
- Spotify: 31.9%
- Amazon Music: 17.5%
- Apple Music: 16.3%

The number of listeners of the two dominant streaming services, Pandora and Spotify, are assessed as follows (source: eMarketer):

<table>
<thead>
<tr>
<th></th>
<th>Pandora</th>
<th>Spotify</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>77.5 million</td>
<td>24.1 million</td>
</tr>
<tr>
<td>2016</td>
<td>77.6 million</td>
<td>35.7 million</td>
</tr>
<tr>
<td>2017</td>
<td>76.1 million</td>
<td>46.7 million</td>
</tr>
<tr>
<td>2018</td>
<td>72.7 million</td>
<td>57.4 million</td>
</tr>
<tr>
<td>2019</td>
<td>72.4 million</td>
<td>65.3 million</td>
</tr>
<tr>
<td>2020</td>
<td>72.2 million</td>
<td>70.5 million</td>
</tr>
<tr>
<td>2021</td>
<td>73.7 million</td>
<td>72.2 million</td>
</tr>
<tr>
<td>2022</td>
<td>76.2 million</td>
<td>72.1 million</td>
</tr>
<tr>
<td>2023</td>
<td>78.2 million</td>
<td>72.0 million</td>
</tr>
</tbody>
</table>

“Pandora may be the most popular music streaming service in the U.S., but it won’t retain the No. 1 spot for much longer. Spotify will surpass Pandora in terms of users by 2021.”

eMarketer, 3/24/19
39.1 Market Assessment
Online travel booking is used primarily for trips with few components, like airline reservations or lodging. Vacation packages and other trips with a number of segments are generally purchased offline. Corporate travel is generally booked offline.

According to PhoCusWright (www.phocuswright.com), online travel reservations comprise over 40% of the total travel market. Excluding corporate travel, which is typically booked offline through travel agents and in-house travel departments, online booking surpassed offline in 2007. Over 60% of leisure and individually booked business travel reservations are made online.

The figures are actually higher because most trips planned through traditional travel agents are booked online.

eMarketer assesses U.S. digital travel sales as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Desktop</th>
<th>Mobile</th>
<th>Total Online</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>$118 billion</td>
<td>$32 billion</td>
<td>$150 billion</td>
</tr>
<tr>
<td>2015</td>
<td>$116 billion</td>
<td>$52 billion</td>
<td>$168 billion</td>
</tr>
<tr>
<td>2016</td>
<td>$116 billion</td>
<td>$65 billion</td>
<td>$181 billion</td>
</tr>
<tr>
<td>2017</td>
<td>$114 billion</td>
<td>$75 billion</td>
<td>$190 billion</td>
</tr>
<tr>
<td>2018</td>
<td>$112 billion</td>
<td>$86 billion</td>
<td>$198 billion</td>
</tr>
<tr>
<td>2019</td>
<td>$111 billion</td>
<td>$95 billion</td>
<td>$206 billion</td>
</tr>
</tbody>
</table>

39.2 Travel Research and Booking Online
eMarketer estimates that 117.6 million adults, or 61% of Internet users, research travel online; 98.3 million (51%) book online.

A survey by Fuel (www.fueltravel.com) found that leisure travelers use the following sources when beginning to research a trip (percentage of respondents):

- Search engine: 48.4%
- Supplier website: 20.4%
- Online travel agent: 13.9%
- Review site: 5.8%

39.3 Travel Booking Demographics
While the perception may be that younger demographics are more likely than their older counterparts to book travel online, that is not the case.
According to a recent survey by AARP (www.aarp.org), the following percentages of older leisure travelers research and book travel online:

<table>
<thead>
<tr>
<th>Research</th>
<th>Book</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-to-59:</td>
<td>78%</td>
</tr>
<tr>
<td>60-to-69:</td>
<td>91%</td>
</tr>
<tr>
<td>70-to-79:</td>
<td>85%</td>
</tr>
<tr>
<td>80 and older:</td>
<td>85%</td>
</tr>
</tbody>
</table>

### 39.4 Use Of Mobile Devices

eMarketer assesses the number of adults using mobile devices to book travel as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
<th>Pct. of Digital Travel Bookers</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>38.3 million</td>
<td>35.9%</td>
</tr>
<tr>
<td>2015</td>
<td>48.8 million</td>
<td>43.8%</td>
</tr>
<tr>
<td>2016</td>
<td>59.8 million</td>
<td>51.8%</td>
</tr>
<tr>
<td>2017</td>
<td>69.2 million</td>
<td>59.2%</td>
</tr>
<tr>
<td>2018</td>
<td>78.8 million</td>
<td>64.8%</td>
</tr>
<tr>
<td>2019</td>
<td>86.8 million</td>
<td>69.8%</td>
</tr>
</tbody>
</table>

Mobile travel bookers use the following devices for booking (percentages add to >100% because many bookers use both devices):

<table>
<thead>
<tr>
<th>Year</th>
<th>Smartphone</th>
<th>Tablet</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>79.7%</td>
<td>65.6%</td>
</tr>
<tr>
<td>2015</td>
<td>78.6%</td>
<td>64.4%</td>
</tr>
<tr>
<td>2016</td>
<td>79.1%</td>
<td>61.1%</td>
</tr>
<tr>
<td>2017</td>
<td>79.5%</td>
<td>59.6%</td>
</tr>
<tr>
<td>2018</td>
<td>79.2%</td>
<td>59.2%</td>
</tr>
<tr>
<td>2019</td>
<td>79.2%</td>
<td>59.1%</td>
</tr>
</tbody>
</table>

Mobile ad spending by the U.S. travel industry is assessed as follows (source: eMarketer):

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>$3.44 billion</td>
</tr>
<tr>
<td>2014</td>
<td>$4.20 billion</td>
</tr>
<tr>
<td>2015</td>
<td>$4.85 billion</td>
</tr>
<tr>
<td>2016</td>
<td>$5.55 billion</td>
</tr>
<tr>
<td>2017</td>
<td>$6.10 billion</td>
</tr>
<tr>
<td>2018</td>
<td>$6.69 billion</td>
</tr>
<tr>
<td>2019</td>
<td>$7.27 billion</td>
</tr>
</tbody>
</table>
PART IV: E-COMMERCE
E-COMMERCE MARKET ASSESSMENT

40.1 E-Commerce Spending

According to the U.S. Department of Commerce (www.doc.gov), e-commerce sales in the U.S. have been as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>E-commerce Sales</th>
<th>Percent of Total Retail Sales</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>$ 86.3 billion</td>
<td>2.3%</td>
<td>25%</td>
</tr>
<tr>
<td>2006</td>
<td>$114.6 billion</td>
<td>2.8%</td>
<td>33%</td>
</tr>
<tr>
<td>2007</td>
<td>$132.8 billion</td>
<td>3.2%</td>
<td>16%</td>
</tr>
<tr>
<td>2008</td>
<td>$132.3 billion</td>
<td>3.3%</td>
<td>no change</td>
</tr>
<tr>
<td>2009</td>
<td>$134.9 billion</td>
<td>3.7%</td>
<td>2%</td>
</tr>
<tr>
<td>2010</td>
<td>$167.7 billion</td>
<td>4.3%</td>
<td>24%</td>
</tr>
<tr>
<td>2011</td>
<td>$194.7 billion</td>
<td>4.7%</td>
<td>16%</td>
</tr>
<tr>
<td>2012</td>
<td>$225.5 billion</td>
<td>5.0%</td>
<td>16%</td>
</tr>
<tr>
<td>2013</td>
<td>$264.3 billion</td>
<td>5.7%</td>
<td>17%</td>
</tr>
<tr>
<td>2014</td>
<td>$304.9 billion</td>
<td>6.5%</td>
<td>15%</td>
</tr>
<tr>
<td>2015</td>
<td>$341.7 billion</td>
<td>7.3%</td>
<td>15%</td>
</tr>
<tr>
<td>2016</td>
<td>$393.5 billion</td>
<td>8.1%</td>
<td>15%</td>
</tr>
<tr>
<td>2017</td>
<td>$453.5 billion</td>
<td>8.9%</td>
<td>16%</td>
</tr>
<tr>
<td>2018</td>
<td>$513.6 billion</td>
<td>9.7%</td>
<td>14%</td>
</tr>
</tbody>
</table>

“Despite all this growth, online purchases remain a very small portion of retail sales. Over 90% of all United States retail commerce still takes place in physical stores.”

The New York Times

E-commerce sales by quarter in 2018 were as follows (change from same quarter in previous year in parenthesis):
• First quarter: $113.2 billion (16.1%)
• Second quarter: $120.5 billion (15.4%)
• Third quarter: $121.4 billion (14.3%)
• Fourth quarter: $158.5 billion (11.4%)

40.2 E-Commerce Sales Growth

According to eMarketer (www.emarketer.com), U.S. retail e-commerce sales growth in 2018, by product category, was as follows:
• Computer and consumer electronics: 14.4%
• Toys and hobby: 16.2%
• Food and beverage: 16.0%
• Furniture and home furnishings: 15.7%
• Health, personal care, and beauty: 15.4%
• Auto products and parts: 15.6%
• Apparel and accessories: 15.2%
• Books, music, and video: 15.0%
• Office equipment and supplies: 13.3%

40.3 E-Commerce Sales Share

E-commerce sales share in 2019, by product category, was assessed as follows (source: eMarketer):
• Books, music, and video: 50.8%
• Computer and consumer electronics: 39.3%
• Office equipment and supplies: 32.4%
• Toys and hobby: 31.4%
• Apparel and accessories: 26.1%
• Furniture and home furnishings: 21.0%
• Health, personal care, and beauty: 9.6%
• Auto products and parts: 4.2%
• Food and beverage: 2.0%

Note: read as 50.8% of books, music, and video sold digitally; 49.2% sold in-store

40.4 Holiday Shopping Online

U.S. holiday e-commerce sales have been as follows (source: eMarketer):

<table>
<thead>
<tr>
<th>Year</th>
<th>E-Commerce Sales</th>
<th>Pct. of Total Holiday Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>$ 70.15 billion</td>
<td>8.3%</td>
</tr>
<tr>
<td>2015</td>
<td>$ 80.04 billion</td>
<td>9.3%</td>
</tr>
<tr>
<td>2016</td>
<td>$ 91.15 billion</td>
<td>10.1%</td>
</tr>
<tr>
<td>2017</td>
<td>$106.14 billion</td>
<td>11.2%</td>
</tr>
<tr>
<td>2018</td>
<td>$123.73 billion</td>
<td>12.3%</td>
</tr>
</tbody>
</table>

Note: excludes travel and event tickets
The top online holiday season shopping days in 2018, ranked by retail e-commerce sales, were as follows (source: Adobe [www.adobe.com]):

- Cyber Monday (November 26): $7.87 billion
- Black Friday (November 23): $6.22 billion
- Thanksgiving (November 22): $3.68 billion
- November 25: $3.39 billion
- November 24: $3.05 billion
- November 27: $2.97 billion
- Green Monday (December 10): $2.87 billion
- December 11: $2.55 billion
- December 17: $2.52 billion
- December 9: $2.41 billion

### 40.5 Market Resources

*Quarterly Retail E-Commerce Sales*, U.S. Census Bureau.
(www.census.gov/retail/mrts/www/data/pdf/ec_current.pdf)
41

E-COMMERCE MARKET LEADERS

41.1 Marketshare Leaders

Ten companies accounted for 67.0% of total U.S. e-commerce sales in 2018. Marketshare was as follows (source: eMarketer):

- **Amazon:** 44.8%
- **eBay:** 6.8%
- **Walmart:** 4.0%
- **Apple:** 3.8%
- **The Home Depot:** 1.6%
- **Best Buy:** 1.3%
- **Macy’s:** 1.3%
- **Qurate Retail Group (QVC, HSN, Zulily):** 1.2%
- **Costco:** 1.1%
- **Wayfair:** 1.1%

eMarketer assesses e-commerce sales for the Top 10 companies as follows (change from prior year in parenthesis):

<table>
<thead>
<tr>
<th>Company</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amazon</td>
<td>$190.5 billion</td>
<td>$234.6 billion</td>
<td>$282.5 billion</td>
</tr>
<tr>
<td>eBay</td>
<td>$ 34.4 billion</td>
<td>$ 35.6 billion</td>
<td>$ 36.3 billion</td>
</tr>
<tr>
<td>Walmart</td>
<td>$ 15.0 billion</td>
<td>$ 21.0 billion</td>
<td>$ 27.8 billion</td>
</tr>
<tr>
<td>Apple</td>
<td>$ 17.1 billion</td>
<td>$ 19.9 billion</td>
<td>$ 22.9 billion</td>
</tr>
<tr>
<td>The Home Depot</td>
<td>$ 6.5 billion</td>
<td>$ 8.2 billion</td>
<td>$ 10.1 billion</td>
</tr>
<tr>
<td>Best Buy</td>
<td>$ 5.9 billion</td>
<td>$ 6.6 billion</td>
<td>$ 7.5 billion</td>
</tr>
<tr>
<td>Macy’s</td>
<td>$ 5.8 billion</td>
<td>$ 6.6 billion</td>
<td>$ 7.4 billion</td>
</tr>
<tr>
<td>Qurate</td>
<td>$ 3.4 billion</td>
<td>$ 6.5 billion</td>
<td>$ 7.5 billion</td>
</tr>
<tr>
<td>Costco</td>
<td>$ 4.6 billion</td>
<td>$ 6.0 billion</td>
<td>$ 7.7 billion</td>
</tr>
<tr>
<td>Wayfair</td>
<td>$ 4.1 billion</td>
<td>$ 5.8 billion</td>
<td>$ 7.7 billion</td>
</tr>
</tbody>
</table>

41.2 Most Visited Retail Websites

Quantcast (www.quantcast.com) assesses websites based on the number of people in the United States who visit each site within a month. The assessment includes sites with estimated traffic as well as sites with traffic that Quantcast has independently verified.

Based on the number of monthly unique visitors, Quantcast ranked retail websites in 2019 as follows:
<table>
<thead>
<tr>
<th>Website</th>
<th>Unique Visitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>amazon.com</td>
<td>36,813,204</td>
</tr>
<tr>
<td>ebay.com</td>
<td>24,171,246</td>
</tr>
<tr>
<td>walmart.com</td>
<td>6,655,808</td>
</tr>
<tr>
<td>overstock.com</td>
<td>4,824,980</td>
</tr>
<tr>
<td>cvs.com</td>
<td>4,086,407</td>
</tr>
<tr>
<td>kohls.com</td>
<td>3,783,772</td>
</tr>
<tr>
<td>staples.com</td>
<td>3,666,356</td>
</tr>
<tr>
<td>kroger.com</td>
<td>3,555,452</td>
</tr>
<tr>
<td>autotrader.com</td>
<td>3,416,833</td>
</tr>
<tr>
<td>forever21.com</td>
<td>3,308,690</td>
</tr>
<tr>
<td>walgreens.com</td>
<td>3,094,797</td>
</tr>
<tr>
<td>advanceautoparts.com</td>
<td>2,932,606</td>
</tr>
<tr>
<td>dillards.com</td>
<td>2,882,896</td>
</tr>
<tr>
<td>costco.com</td>
<td>2,668,491</td>
</tr>
<tr>
<td>zappos.com</td>
<td>2,628,113</td>
</tr>
<tr>
<td>etsy.com</td>
<td>2,485,336</td>
</tr>
<tr>
<td>nike.com</td>
<td>2,441,516</td>
</tr>
<tr>
<td>ulta.com</td>
<td>2,417,676</td>
</tr>
<tr>
<td>gap.com</td>
<td>2,241,236</td>
</tr>
<tr>
<td>cabelas.com</td>
<td>2,200,885</td>
</tr>
<tr>
<td>redbubble.com</td>
<td>2,166,579</td>
</tr>
<tr>
<td>newegg.com</td>
<td>2,058,353</td>
</tr>
<tr>
<td>oreillyauto.com</td>
<td>2,051,691</td>
</tr>
<tr>
<td>petsmart.com</td>
<td>2,000,435</td>
</tr>
<tr>
<td>hobbylobby.com</td>
<td>1,939,583</td>
</tr>
<tr>
<td>belk.com</td>
<td>1,874,695</td>
</tr>
<tr>
<td>biglots.com</td>
<td>1,799,663</td>
</tr>
<tr>
<td>officedepot.com</td>
<td>1,782,624</td>
</tr>
<tr>
<td>lowes.com</td>
<td>1,771,727</td>
</tr>
<tr>
<td>jcpenney.com</td>
<td>1,689,824</td>
</tr>
<tr>
<td>petco.com</td>
<td>1,677,200</td>
</tr>
<tr>
<td>nordstromrack.com</td>
<td>1,662,219</td>
</tr>
<tr>
<td>bloomingdales.com</td>
<td>1,644,563</td>
</tr>
<tr>
<td>wix.com</td>
<td>1,604,675</td>
</tr>
<tr>
<td>bestbuy.com</td>
<td>1,462,692</td>
</tr>
<tr>
<td>dsw.com</td>
<td>1,433,800</td>
</tr>
<tr>
<td>bathandbodyworks.com</td>
<td>1,422,551</td>
</tr>
<tr>
<td>joann.com</td>
<td>1,389,757</td>
</tr>
<tr>
<td>publix.com</td>
<td>1,370,738</td>
</tr>
<tr>
<td>sherwin-williams.com</td>
<td>1,338,081</td>
</tr>
<tr>
<td>samsclub.com</td>
<td>1,334,720</td>
</tr>
<tr>
<td>chewy.com</td>
<td>1,314,694</td>
</tr>
<tr>
<td>landsend.com</td>
<td>1,299,217</td>
</tr>
<tr>
<td>sallybeauty.com</td>
<td>1,129,493</td>
</tr>
</tbody>
</table>
• basspro.com: 1,093,969
• neimanmarcus.com: 1,057,841
• adidas.com: 1,047,553
• guitarcenter.com: 1,028,751
• ikea.com: 993,632
• bedbathandbeyond.com: 988,759
• shoecarnival.com: 958,282
• lumberliquidators.com: 950,759
• dollartree.com: 914,718
• lululemon.com: 910,758
• target.com: 875,496
• autozone.com: 857,773
• dollargeneral.com: 855,806
• aldi.us: 832,645
• macys.com: 791,025
• safeway.com: 785,838
• orientaltrading.com: 753,271
• meijer.com: 748,427
• hm.com: 746,368
• jcrew.com: 676,891
• llbean.com: 656,192
• nordstrom.com: 644,500
• footlocker.com: 626,266
• menards.com: 603,091
• dickssportinggoods.com: 548,477
• levi.com: 524,931
• vitaminshoppe.com: 489,253
• pepboys.com: 462,862
• lanebryant.com: 455,005
• albertsons.com: 429,587
• jjill.com: 409,825
• hanes.com: 401,106
MOBILE COMMERCE

42.1 Overview

The use of a smartphone or tablet to assist in shopping, or even to make a purchase, continues to increase in popularity. Product research, price comparisons, and mobile coupon redemption are the most common uses of mobile devices by shoppers. Many smartphone users also use their device to make a purchases, an activity typically referred to as ‘mobile commerce’ or ‘m-commerce.’

In the annual FutureBuy survey, by GfK (www.gfk.com), 45% of adult Internet users said in 2018 that their mobile device has become their most important shopping tool, an increase from 29% in 2015.

“What’s behind the recent e-commerce surge?
In a word: mobile. In the days before smartphones, U.S. shoppers were perhaps less inclined to scurry away from family members to start shopping on their home computers. And if they were at their friends’ or relatives’ houses, they didn’t even have that luxury. But smartphones are now with people at the dinner table, on their couches after stuffing themselves, and in-store for those who manage to peel themselves away from their TV screens. Smartphones now account for the majority of digital shopping traffic.”

eMarketer, 2/4/19
42.2 Market Assessment

eMarketer (www.emarketer.com) assesses U.S. retail m-commerce sales as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>M-Commerce Sales</th>
<th>Pct. of E-Commerce</th>
<th>Pct. of Total Retail</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>$56.67 billion</td>
<td>19.0%</td>
<td>1.2%</td>
</tr>
<tr>
<td>2015</td>
<td>$67.17 billion</td>
<td>26.0%</td>
<td>1.9%</td>
</tr>
<tr>
<td>2016</td>
<td>$130.92 billion</td>
<td>33.0%</td>
<td>2.7%</td>
</tr>
<tr>
<td>2017</td>
<td>$169.10 billion</td>
<td>37.0%</td>
<td>3.4%</td>
</tr>
<tr>
<td>2018</td>
<td>$208.04 billion</td>
<td>39.0%</td>
<td>4.0%</td>
</tr>
<tr>
<td>2019</td>
<td>$246.09 billion</td>
<td>41.0%</td>
<td>4.6%</td>
</tr>
<tr>
<td>2020</td>
<td>$294.22 billion</td>
<td>43.0%</td>
<td>5.4%</td>
</tr>
</tbody>
</table>

Mobile spending in 2018 was distributed by device as follows:

- Smartphone: $148.79 billion
- Tablet: $57.71 billion
- Other: $1.64 billion

42.3 Mobile Shopping And Buying

Many mobile users use their device to shop but make their online purchases using a laptop or desktop.

According to Adobe (www.adobe.com), m-commerce accounted for 51% of e-commerce site visits and 31% of purchases during the 2018 holiday season.

__________________________________________________________

“Mobile has become integral to the shopping experience, yet when it comes to transacting, U.S. consumers still aren’t fully on board.”

eMarketer, 11/12/18

__________________________________________________________

eMarketer assesses the percentages of mobile consumers as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Smartphone</th>
<th>Tablet</th>
<th>Total Mobile</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>51.9%</td>
<td>79.1%</td>
<td>69.7%</td>
</tr>
<tr>
<td>2015</td>
<td>52.4%</td>
<td>80.9%</td>
<td>71.2%</td>
</tr>
<tr>
<td>2016</td>
<td>53.0%</td>
<td>85.1%</td>
<td>73.9%</td>
</tr>
<tr>
<td>2017</td>
<td>53.5%</td>
<td>86.8%</td>
<td>75.7%</td>
</tr>
<tr>
<td>2018</td>
<td>53.7%</td>
<td>88.1%</td>
<td>76.0%</td>
</tr>
<tr>
<td>2019</td>
<td>53.9%</td>
<td>88.3%</td>
<td>76.2%</td>
</tr>
</tbody>
</table>
The number of smartphone buyers and percentage of total digital buyers is assessed as follows (source: eMarketer):

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
<th>Pct. of Digital Buyers</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>67.2 million</td>
<td>40.8%</td>
</tr>
<tr>
<td>2015</td>
<td>78.3 million</td>
<td>45.6%</td>
</tr>
<tr>
<td>2016</td>
<td>87.8 million</td>
<td>49.1%</td>
</tr>
<tr>
<td>2017</td>
<td>95.1 million</td>
<td>51.2%</td>
</tr>
<tr>
<td>2018</td>
<td>100.7 million</td>
<td>52.6%</td>
</tr>
<tr>
<td>2019</td>
<td>105.6 million</td>
<td>54.1%</td>
</tr>
</tbody>
</table>

42.4 Reasons Consumers Use Mobile Commerce

In a survey by Clutch (www.clutch.com), smartphone users said they use mobile-commerce apps for the following reasons (percentage of respondents):

- Receive deals and offers: 68%
- Flexibility to buy at any time: 64%
- Compare products and prices: 62%
- Save time at the store: 54%
- See a larger inventory base: 53%
- Avoid going to the store: 47%
- Save time by getting curbside pickup: 27%

"M-commerce app users say it’s all about time and money. According to a survey conducted by Clutch, almost seven in 10 m-commerce app users in the U.S. access the apps to receive deals and offers. Nearly as many said they appreciate them for the flexibility to buy at any time. For some, apps appear to address problems with the experience of shopping in-store. Roughly half of the respondents said they wanted to see larger inventories, or save time at the store, or simply avoid going to the store."

eMarketer
42.5 Drawbacks Of Shopping Via Smartphone

In a survey by AYTM Market Research (www.aytm.com), when Internet users were asked if they enjoyed purchasing products via mobile device, responses were as follows:

- Strongly agree: 10%
- Agree: 12%
- Somewhat agree: 14%
- Neutral: 25%
- Somewhat disagree: 9%
- Disagree: 10%
- Strongly disagree: 19%

Omnichannel Shoppers, a report by GfK (www.gfk.com), reported reasons shoppers prefer online shopping research and purchasing products via desktop or laptop rather than a mobile device as follows (percentage of respondents):

- Easier to see all the available products on desktop: 56%
- Easier to use devices with a bigger screen: 55%
- Difficult to compare products and retailers via smartphone: 27%
- Entering personal data not user friendly on smartphone: 26%

“M-Commerce still faces some roadblocks – most enjoy making a mobile purchase. Small mobile screen sizes are one of the major challenges.”

eMarketer

42.6 Customer Service For Mobile Shoppers

In a survey by Contact Solutions (www.contactsolutions.com), 75% of mobile shoppers said access to customer care impacts their shopping experience.

Fifty-five percent (55%) of survey respondents report that they struggle at least 20% of the time when using a mobile app to shop. Forty-three percent (43%) say they have come to expect no customer service at all from mobile apps.

Mobile shoppers respond to shopping difficulties via an app as follows (percentage of respondents):

- Close app and abandon cart: 51.3%
- Go to web using desktop or laptop: 36.9%
- Go to store and shop: 11.5%
- Call customer service: 8.2%
Ninety-five percent (95%) say that a great customer experience will make them more likely to do business again with a retailer. Ninety-two percent (92%) of shoppers say it would be helpful to have customer care automatically provided within an app to help complete a task.
43

THE ONLINE CONSUMER

43.1 Why People Shop Online

A poll of Internet users by The Nielsen Company (www.nielsen.com) asking primary reasons for shopping online found the following:

- Able to shop 24 hours a day: 81%
- Saves time: 76%
- Able to comparison shop: 61%
- Easy to find what I am looking for: 56%
- Selection of items: 49%
- Can search by brands I like: 46%
- Available product information: 46%
- Low prices: 45%
- Items are in stock: 35%
- Low shipping costs: 24%
- Recommendations for items: 15%
- Customer service and communication: 12%
- Easy to return purchases: 11%
- Gift services such as cards, wrapping, or birthday/holiday reminders: 10%

A survey by Impulse Research (www.impulseresearch.com) found the primary reasons that Millennial adults, ages 18-to-34, shop online are as follows:

- Better prices: 37%
- Avoid shopping hassles and crowds: 29%
- Convenience: 18%
- Better selection: 13%
- Direct shipping to home: 3%

A survey by Accenture (www.accenture.com) found parents with children in school liked to shop online for the following reasons (percentage of respondents):

- Save money/find discounts: 70%
- To research products and prices: 63%
- Avoid going to many stores: 40%
- Avoid boring trips for kids: 28%
- Avoid kid pressure to buy items: 17%
- School works with e-retailers to ensure supplies are in stock: 7%
43.2 Devices Used For Online Shopping

*FutureBuy*, a 2019 survey by GfK (www.gfk.com), reported devices used by U.S. online shoppers, by generation, as follows (percentage of respondents):

<table>
<thead>
<tr>
<th>Generation</th>
<th>PC</th>
<th>Smartphone</th>
<th>Tablet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Millennials</td>
<td>59%</td>
<td>73%</td>
<td>35%</td>
</tr>
<tr>
<td>Generation X</td>
<td>69%</td>
<td>59%</td>
<td>29%</td>
</tr>
<tr>
<td>Baby Boomers</td>
<td>79%</td>
<td>33%</td>
<td>22%</td>
</tr>
</tbody>
</table>

Shoppers often browse on one device, then purchase using another. According to Adobe (www.adobe.com), digital shoppers visited e-commerce sites and made purchases during the 2018 holiday season as follows (percentage of total):

<table>
<thead>
<tr>
<th>Device</th>
<th>Visits</th>
<th>Purchases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smartphone</td>
<td>51%</td>
<td>31%</td>
</tr>
<tr>
<td>Desktop</td>
<td>40%</td>
<td>60%</td>
</tr>
<tr>
<td>Tablet</td>
<td>9%</td>
<td>9%</td>
</tr>
</tbody>
</table>

43.3 Characteristics Of Online Shopping

When asked how they typically find what they’re shopping for online, responses were as follows (source: Nielsen; multiple responses allowed):

- Know the site by name: 69%
- Search engines: 62%
- Comparison shopping tools: 23%
- Subscribe to an e-newsletter from retailers: 15%
- Blogs/chat rooms/consumer reviews: 5%

Shopzilla (www.shopzilla.com) asked U.S. adults how they first saw the product they most recently purchased online. Responses were as follows:

- While surfing online: 29%
- Looking for something specific: 24%
- In email from store: 11%
- While “out and about”: 8%
- In friend’s house: 8%
- In a magazine: 7%
- In an ad: 6%
- On blog or other website content: 4%
- On Facebook: 2%
- On Pinterest: <1%
- On Twitter: <1%

*The State Of Retail 2018*, by Morning Consult (www.morningconsult.com), reported categories for which adult Internet users prefer to shop digitally vs. in-store as follows (percentage of respondents):
In-Store | Digitally | No Preference
---|---|---
• Furniture: 80% | 11% | 9%
• Shoes: 74% | 20% | 6%
• Apparel: 71% | 23% | 6%
• Beauty and grooming: 68% | 22% | 10%
• Home goods: 67% | 23% | 10%
• Apparel accessories: 63% | 26% | 11%
• Electronics/entertainment: 52% | 40% | 8%

43.4 Expectations Online

According to a survey by OneUpWeb (www.oneupweb.com), Internet users expect the following from e-commerce sites (percentage of respondents):
• Pricing/shipping information clearly stated: 96%
• Site looks credible and trustworthy: 76%
• Product displayed on homepage: 71%
• Visually appealing: 67%
• Total cost calculator: 59%
• Search function: 48%
• Privacy statement: 46%
• Onsite customer reviews: 41%
• Online customer service (live chat): 32%
• Links to social networks (Facebook, Twitter): 23%

According to a survey by A.T. Kearney (www.atkearney.com), the following attributes are important to consumers when shopping online (percentage of respondents):
• Finding specific products: 96%
• Free shipping: 93%
• Finding favorite brands: 92%
• Best price: 90%
• Ease of navigation: 88%
• Site security: 87%
• Special promotions: 78%
• Free samples: 67%
• Peer reviews: 59%
• New products: 55%

43.5 Selecting An Online Retailer

A survey by comScore (www.comscore.com) asked online shoppers the factors driving them to shop with an online retailer. Responses were as follows (percentage of respondents, two responses per survey participant):
• The ability to buy online and then make returns at the store: 62%
• The push of a coupon/promotion to my smartphone: 47%
• The ability to buy online and pick up in store: 44%
• The availability of an application designed specifically for a tablet: 41%
• The option to conduct one-click check-out online: 40%
• The ability to complete a purchase in store using mobile device: 37%
• The availability of a mobile application for a smartphone: 36%
• The availability of an in-store kiosk to browse products: 25%
• The ability to start a purchase online/completing the purchase in store: 23%
• The ability to make an appointment for an in-store consult after researching online: 18%

When asked what factors have led them to recommend an online retailer to others, responses were as follows (multiple responses allowed):
• Free shipping: 68%
• Receiving my product when expected: 47%
• Free returns: 34%
• Easy returns and exchanges: 34%
• Tracking services: 29%
• Fast credits/refunds if I return products: 25%

Eighty-two percent (82%) of consumers sometimes read online reviews and ratings when making purchasing decisions; 40% nearly always do so.

Forty-six percent (46%) feel that customer reviews help a lot to make consumers feel confident about their purchases; 45% say that reviews make companies be accountable to their customers.

43.6 Buy Online, Pick Up In-Store
A survey by King Retail Solutions (www.kingrs.com) found that 54% of online consumers have purchased products online, picked up in-store (BOPUS), and said they like the option. By demographic, the percentages are as follows:

Gender
• Female: 50%
• Male: 58%

Generation
• Baby Boomers: 41%
• Generation Xers: 57%
• Millennials: 63%

According to a 2019 survey by AYTM Market Research (www.aytm.com), reasons that Internet users use BOPUS are as follows (percentage of respondents, multiple responses allowed):

CONSSUMER USE OF THE INTERNET & MOBILE WEB 2020-2021
• 228 •
• Avoid shipping charges: 47%
• Save time by not having to shop in-store: 44%
• Pick up purchases on same day: 39%
• Guarantee an item is in stock before having to go to store: 38%
• Can take time when deciding what to purchase: 38%
• Can return items more easily: 21%
• Do not use BOPUS: 16%

In a survey by Blackhawk Engagement Solutions (www.bhengagement.com), 86% of adults who shop online said they would consider purchasing online and picking up in-store to save $10 to $50 per item; 78% said they would do so to receive an item three days earlier.

43.7 Cross-Channel Shopping

“Showrooming” is the practice where customers go to a bricks-and-mortar retail location, make a decision on what item to buy and, instead of heading to the check-out aisle, use a mobile device to find a better price online where they ultimately make their purchase. “Webrooming” occurs when consumers buy in a store after researching a purchase online.

GfK reported that 28% of consumers engage in showrooming; 41% practice webrooming. By age, those who engage in these practices are as follows:

<table>
<thead>
<tr>
<th>Age</th>
<th>Showrooming</th>
<th>Webrooming</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-to-24:</td>
<td>39%</td>
<td>34%</td>
</tr>
<tr>
<td>25-to-34:</td>
<td>32%</td>
<td>46%</td>
</tr>
<tr>
<td>35-to-49:</td>
<td>29%</td>
<td>43%</td>
</tr>
<tr>
<td>50-to-68:</td>
<td>18%</td>
<td>30%</td>
</tr>
</tbody>
</table>

Showrooming and webrooming are only two of the cross-channel shopping options used by today’s consumers. Among those who said they had searched using one channel and made a purchase through another channel, a survey by Cisco Internet Business Solutions Group (www.cisco.com/web/about/ac79) found these consumers had engaged in the following cross-channel shopping activities (percentage of respondents):

• PC-to-store: 57%
• Store-to-online: 38%
• Mobile-to-PC: 26%
• Kiosk-to-store (immediate in-store sale): 24%
• Mobile-to-store: 24%
• Kiosk-to-store (delivery to location of choice): 15%

In a survey by comScore conducted for UPS, consumers said their preferred method of access to multichannel retailers was as follows:

CONSUMER USE OF THE INTERNET & MOBILE WEB 2020-2021 • 229 •
Researching Products  |  Purchasing Products
---|---
• Online via desktop or laptop:  |  61%  |  44%
• In physical store:  |  13%  |  41%
• Online via tablet:  |  11%  |  7%
• Online via smartphone:  |  10%  |  4%
• With catalog, by phone, or email:  |  4%  |  4%

Gallup (www.gallup.com) found that use of a mobile device had increased retail store trips for 22% of consumers while decreasing store trips among 19%.

Deloitte (www.deloitte.com) reported that smartphone shoppers are 14% more likely than non-smartphone shoppers to convert in-store, even when those smartphone shoppers used a mobile app or site not belonging to the retailer. Seventy-two percent (72%) of shoppers who used their smartphone on their most recent in-store trip made a purchase while there, compared with 63% of shoppers who did not use a smartphone to assist in making a purchase during their last in-store trip.

### 43.8 Abandoned Shopping Carts

*Shopping Cart Second Thoughts*, a November 2018 report by Forter (www.forter.com), reported that 80% of online shoppers had abandoned a shopping cart. Those who have done so, by demographic, are as follows (percentage of respondents):

**Gender**
- Female: 81%
- Male: 79%

**Age**
- 18-to-24: 87%
- 25-to-34: 83%
- 35-to-44: 82%
- 45-to-54: 78%
- 55 and older: 73%

*2018 Abandoned Cart Insights*, by Content Square (www.contentsquare.com), reported primary reasons online shoppers abandon online shopping carts as follows (percentage of respondents):
- Cost: 74%
- Too many options: 9%
- Time: 8%
- Poor online experience: 7%
- Pressure: 2%
43.9 Returns

According to the United Parcel Service (UPS, www.ups.com), almost a third of online orders end up being sent back. For comparison, Consumer Returns in the Retail Industry, by National Retail Federation (www.nrf.com), reported the return rate at retail stores is 10%.

The expense of processing and shipping returned items can range from 20% to 65% of an online retailer’s cost of goods sold. Seventy-five percent (75%) of online shoppers return merchandise by shipping goods back to the merchant. The UPS survey found that 58% of consumers prefer being able to return goods to a physical store. Among those who bring back online orders to a physical store, 66% make a new purchase during that visit.

According to a 2018 survey by Narvar (www.narvar.com), product categories that online shoppers are most likely to return from a digital purchase are as follows (percentage of respondents):

- Apparel: 29%
- Consumer electronics: 16%
- Footwear and accessories: 11%
- Home products: 11%
- Other: 33%

Many online shoppers say they are reluctant to buy certain products because of concerns about the returns process. Product categories for which they are apprehensive about purchasing digitally because of the returns process are as follows (source: Radial [www.radial.com]; percentage of respondents):

- Apparel and accessories: 41%
- Jewelry and luxury items: 31%
- Groceries: 26%
- Household items: 26%
- Electronics: 24%
- Health and beauty items: 18%
- Sporting goods: 15%
44.1 Online Grocery Shoppers

According to Brick Meets Click (www.brickmeetsclick.com), 21% of adults shopped for groceries monthly in 2018, the same percentage that did so in 2017. Those that did so, by age, were as follows (percentage of respondents):

<table>
<thead>
<tr>
<th>Age Group</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-to-29</td>
<td>19%</td>
<td>22%</td>
</tr>
<tr>
<td>30-to-44</td>
<td>27%</td>
<td>26%</td>
</tr>
<tr>
<td>45-to-59</td>
<td>22%</td>
<td>19%</td>
</tr>
<tr>
<td>60 and older</td>
<td>19%</td>
<td>16%</td>
</tr>
</tbody>
</table>

The online share of total U.S. grocery sales is assessed as follows (source: Brick Meets Click):

- 2016: 3.4%
- 2017: 4.5%
- 2018: 5.5%
- 2019: 6.3%

2018 Online Grocery Shopper Study, by The Retail Feedback Group (www.retailfeedback.com), reported that digital grocery shoppers purchased from retailers as follows (percentage of respondents):

- Walmart: 33%
- Amazon: 31%
- Supermarkets: 26%
- Other: 11%

44.2 Grocery Products Purchased Online

According to a 2018 survey by Bizrate Insights (www.bizrateinsights.com), adult Internet users had purchased grocery products online as follows (percentage of respondents):

- Dry food goods: 21.4%
- Candy, prepackaged cookies, snack foods: 20.5%
- Soft drinks and non-alcoholic beverages: 13.2%
- Fresh fruit and vegetables: 12.7%
- Frozen foods: 11.5%
• Fresh meat and poultry: 11.3%
• Dairy and eggs: 11.2%
• Baked goods: 9.2%
• Perishable prepared foods: 8.7%
• Alcoholic beverages: 7.0%
• Fresh fish/seafood: 4.1%
• Ice: 2.1%
• None of these: 63.6%

44.3 Reasons For Shopping Online
Reasons that adult Internet users order groceries online are as follows (eMarketer; percentage of respondents, multiple responses allowed):
• Not having to travel to store: 82%
• Can place order whenever convenient: 78%
• Can take time to browse and shop: 73%
• Access to a wide variety of products: 73%
• No physical burden of carrying groceries: 72%

44.4 Reasons For Not Shopping Online
Among adults who have not purchased groceries online, Morning Consult (www.morningconsult.com) found reasons for not doing so as follows (percentage of respondents):
• Generally prefer to purchase in person: 65%
• Convenience: 8%
• Cost: 7%
• Not sure of the best online retailer to use: 7%
• Options available: 3%
• Other: 4%

“Even though supermarkets have upped their digital commerce offerings over the past few years and online grocery shopping has been on the rise, a good number of U.S. consumers just aren't that interested in having groceries delivered.”

eMarketer, 10/23/18
45.1 Market Assessment

Amazon.com garnered approximately one-half of all U.S. e-commerce sales in 2018, up from a one-third market share in 2015.

eMarketer (www.emarketer.com) assesses Amazon retail e-commerce sales as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Sales (billion)</th>
<th>Pct. of Total U.S. Retail E-Commerce Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>$149.79</td>
<td>38.3%</td>
</tr>
<tr>
<td>2017</td>
<td>$199.85</td>
<td>44.1%</td>
</tr>
<tr>
<td>2018</td>
<td>$258.22</td>
<td>49.1%</td>
</tr>
<tr>
<td>2019</td>
<td>$325.04</td>
<td>53.7%</td>
</tr>
</tbody>
</table>

Marketplace sales, or third-party sales, on Amazon.com are assessed as follows (source: eMarketer; change from prior year in parenthesis):

<table>
<thead>
<tr>
<th>Year</th>
<th>Sales (billion)</th>
<th>Change from Prior Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>$91.55</td>
<td>n/a</td>
</tr>
<tr>
<td>2017</td>
<td>$129.45</td>
<td>(41.4%)</td>
</tr>
<tr>
<td>2018</td>
<td>$175.54</td>
<td>(35.6%)</td>
</tr>
<tr>
<td>2019</td>
<td>$229.96</td>
<td>(31.0%)</td>
</tr>
</tbody>
</table>

45.2 Amazon Prime

U.S. Amazon Prime households are assessed as follows (source: eMarketer):

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Households</th>
<th>Pct. of All U.S. Households</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>11.7 million</td>
<td>10%</td>
</tr>
<tr>
<td>2012</td>
<td>16.4 million</td>
<td>14%</td>
</tr>
<tr>
<td>2013</td>
<td>22.8 million</td>
<td>19%</td>
</tr>
<tr>
<td>2014</td>
<td>27.9 million</td>
<td>23%</td>
</tr>
<tr>
<td>2015</td>
<td>38.0 million</td>
<td>31%</td>
</tr>
<tr>
<td>2016</td>
<td>45.6 million</td>
<td>37%</td>
</tr>
<tr>
<td>2017</td>
<td>52.1 million</td>
<td>42%</td>
</tr>
<tr>
<td>2018</td>
<td>58.7 million</td>
<td>47%</td>
</tr>
<tr>
<td>2019</td>
<td>63.9 million</td>
<td>51%</td>
</tr>
<tr>
<td>2020</td>
<td>68.7 million</td>
<td>55%</td>
</tr>
<tr>
<td>2021</td>
<td>71.7 million</td>
<td>57%</td>
</tr>
</tbody>
</table>
According to Consumer Intelligence Research Partners (www.cirpllc.com), U.S. Prime members spend an average of $1,400 a year with Amazon, compared with $700 for non-members.

*Amazon User Study 2018*, by Feedvisor (www.feedvisor.com), reported the frequency with which U.S. Amazon Prime members and non-members make a purchase on Amazon as follows (percentage of respondents):

<table>
<thead>
<tr>
<th></th>
<th>Prime Members</th>
<th>Non-Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily</td>
<td>6%</td>
<td>1%</td>
</tr>
<tr>
<td>2 or more times per week</td>
<td>18%</td>
<td>3%</td>
</tr>
<tr>
<td>Once a week</td>
<td>22%</td>
<td>9%</td>
</tr>
<tr>
<td>Once every two weeks</td>
<td>26%</td>
<td>16%</td>
</tr>
<tr>
<td>Once a month</td>
<td>20%</td>
<td>32%</td>
</tr>
<tr>
<td>Less than once a month</td>
<td>8%</td>
<td>39%</td>
</tr>
</tbody>
</table>

According to a 2018 survey by Epsilon (www.epsilon.com), reasons that Amazon Prime members shop on Amazon are as follows (percentage of respondents):

- Free shipping: 70%
- Price: 65%
- Two-day or next-day shipping: 60%
- It was so easy to buy it this way: 52%
- Can buy different things there that I need: 52%
- Regular customer and know their products: 42%
- Selection; more products available than in-store: 42%
- Return policy: 33%
- Prefer to buy online rather than go to a store: 31%
- Product reviews on Amazon website: 30%
- Unique products not sold elsewhere: 20%
- Had a gift card: 18%
- Amazon Rewards Visa credit card: 14%
- Amazon.com Store credit card: 13%
- Special offer via email: 6%
- Online chat support: 5%

### 45.3 Prime Day

Amazon celebrated its 20th anniversary with its first Prime Day in 2015, with a one-day sale designed to replicate Black Friday for Amazon customers, but boasting more deals than the November shopping tradition. Prime Day continues as an annual tradition and was extended to 36 hours in 2019 (Monday, July 15 at noon through midnight July 17).

Amazon doesn’t disclose revenue from Prime Days but several analysts estimate the spending on Amazon.com. Coresight Research (www.coresight.com) provides the following assessment:
Wedbush Securities (www.wedbush.com) estimated Amazon’s sales on Prime Day 2018 at $4.2 billion, up 33% from Prime Day 2017.

Business Insider Intelligence (https://intelligence.businessinsider.com) reported that 80% of Amazon Prime subscribers bought something at the retailer on Prime Day. Spending was as follows (percentage of respondents):

- More than $200: 34%
- $101 - $200: 19%
- $51 - $100: 14%
- $1 - $50: 13%
- $0: 20%

Prime Day has prompted other retailers to offer competing sales even if they never make mention of Prime Day specifically. According to RetailMeNot (www.retailmenot.com), 54% of retailers held sales during the 2018 event, an increase from 119 in 2017 and 27 in 2016.

According to a 2018 survey by Internet Retailer, 76% of consumers had heard of Prime Day; 30% said they planned to shop on Amazon on that day. Roughly the same amount (31%) said they planned to comparison shop at other retailers on Amazon Prime Day, with nearly an equal number (32%) saying they might do so.


In 2018, the most popular Prime Day categories on Amazon and at other retailers were as follows (percentage of customers shopping for each category):

<table>
<thead>
<tr>
<th>Category</th>
<th>Amazon</th>
<th>Other Retailers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apparel and footwear</td>
<td>20%</td>
<td>12%</td>
</tr>
<tr>
<td>Food and beverage</td>
<td>9%</td>
<td>11%</td>
</tr>
</tbody>
</table>

45.4 Assessment By Product Category

On average, Amazon has more than 80% market share across categories according to a 2018 study by Jumpshot (www.jumpshot.com), a marketing analytics platform. It has higher shares for commodity products like batteries (97%), tools (93%) and cleaning supplies (88%), for which many consumers care less about brand than price.
“If it seems like Amazon dominates most online retail categories, that’s because it does.”

eMarketer, 6/5/18

By product category, Amazon retail e-commerce sales growth in 2018 was as follows (percent change from 2017):

- Food and beverage: 40%
- Apparel and accessories: 38%
- Health, personal care, and beauty: 38%
- Furniture and home furnishings: 37%
- Toys and hobby: 31%
- Automotive and parts: 29%
- Office equipment and supplies: 29%
- Computer and consumer electronics: 23%
- Books, music, and video: 19%
- Other categories: 30%

eMarketer estimates Amazon’s U.S. sales of apparel and accessories at $39.9 billion in 2018, a 38.5% increase over 2017. Apparel and accessories represent 15% of Amazon’s total retail e-commerce sales. Amazon has a 38% market share of the apparel and accessories e-commerce category.

Amazon’s U.S. sales of health, personal care, and beauty products were $16 billion in 2018, a 37.9% increase over 2017. While only 6% of Amazon’s total retail e-commerce sales, it represents 44.3% of total retail e-commerce sales of the category.

Food and beverage (i.e., groceries) are the fastest-growing category at Amazon.com, at 42%. U.S. sales were $4.8 billion in 2018, according to eMarketer. This represents a 32% market share in this e-commerce category.

45.5 Private Label

According to Gartner L2 (www.L2inc.com), Amazon had 80 private labels in 2018, distributed by category as follows:

- Apparel, shoes, and jewelry: 86%
- Health and household: 5%
- Home and kitchen: 4%
- Grocery: 3%
- Garden and indoors: 1%
- Cross-category: 1%
Amazon’s biggest private-label categories, ranked by conversions, are as follows:

- Computer and consumer electronics: 45%
- Home and kitchen: 16%
- Office equipment and supplies: 14%
- Pet food and supplies: 5%

When looking at Amazon’s private labels compared with Macy’s, Target and Walmart, Amazon takes a 61% share, compared with 39% combined for those other three retailers. Excluding electronics, Amazon’s share is 26%.

According to a 2018 assessment of Amazon Fashion by Coresight Research, products from Amazon’s private apparel labels only make up 0.1% of the clothing sold on the site.
PART V: THE SHARING ECONOMY
46

PEER-TO-PEER MARKET

46.1 Overview

The peer-to-peer marketplace – which goes by a host of monikers such as collaborative consumption, communal consumption, asset-light lifestyle, the peer economy, the gig economy, and the sharing economy – lets individuals rent unused assets or services to other individuals. The economic downturn was the impetus for growth of the concept.

*Time* calls the sharing economy one of the 10 most important ideas that is changing the world.

There are numerous Internet-based services available to aggregate supply and demand.

The following are some examples of the sharing economy:

**Automotive and Transportation**
- Getaround, Hitch, Lyft, RelayRides, Sidecar, Turo, Uber

**Hospitality and Dining**
- Airbnb, CouchSurfing, Feastly, LeftoverSwap

**Media and Entertainment**
- Amazon Family Library, Earbits, SoundCloud, Spotify, Wix

**Retail and Consumer Goods**
- Mercari, Neighborgoods, Poshmark, SnapGoods, Tradesy

People have always bartered and traded services, but the usability of this process is unprecedented thanks to the growing number of digital devices that make matching demand and supply easier than ever.

Sharing economy business models are hosted through digital platforms that enable a more precise, real-time measurement of spare capacity and the ability to dynamically connect that capacity with those who need it. Shared access can come in five forms, as follows:
- Lending
- Renting
- Reselling
- Subscribing
- Swapping
“A variety of apps and online platforms are making it easier than ever for people to connect with customers who might like to hire them to do any number of jobs – from performing various types of online tasks to driving for ride-hailing services or cleaning someone’s home. These platforms also allow users to earn money in a range of other ways, such as sharing their possessions with others or selling their used goods or personal creations.”

Pew Research Center

46.2 Market Assessment
Uber and Airbnb are, by far, the dominant peer-to-peer companies. Revenue in 2018 was as follows:
• Uber: $50.0 billion
• Airbnb: $30.4 billion

A few P2P companies, like Uber and Airbnb, release financial information. Most are private companies, however, and maintain financial data as confidential. Thus, it is difficult to assess the size of the total peer-to-peer marketplace.

46.3 Characteristics Of The Sharing Economy
Arun Sundararajan, Ph.D., Professor at New York University’s Stern School of Business and author of The Sharing Economy (MIT Press, 2016), defines the sharing economy as an economic system with the following five characteristics:

Largely market-based
• The sharing economy creates markets that enable the exchange of goods and the emergence of new services, resulting in potentially higher levels of economic activity.

High-impact capital
• The sharing economy opens new opportunities for everything, from assets and skills to time and money, to be used at levels closer to their full capacity.
Crowd-based “networks” rather than centralized institutions or “hierarchies”

- The supply of capital and labor comes from decentralized crowds of individuals rather than corporate or state aggregates; future exchange may be mediated by distributed crowd-based marketplaces rather than by centralized third parties.

Blurring lines between the personal and the professional services

- The supply of labor and services often commercializes and scales peer-to-peer activities like giving someone a ride or lending someone money, activities which used to be considered “personal.”

Blurring lines between fully employed and casual labor, between independent and dependent employment, and between work and leisure

- Many traditional full-time jobs are supplanted by contract work that features a continuum of levels of time commitment, granularity, economic dependence, and entrepreneurship.

According to Prof. Sundararajan, the largest question for academics is whether the sharing economy simply replaces existing businesses or creates new value. People have purchased residential properties and automobiles solely to rent them out, for example, indicating the concept has an extended impact.

46.4 Benefits Of The Sharing Economy

According to The Sharing Economy, by Pricewaterhouse-Coopers (www.pwc.com), among adults who have participated in or are familiar with the sharing economy, perceived benefits are as follows:

- It is based on trust between providers and users: 89%
- It makes life more affordable: 86%
- It makes life more convenient and efficient: 83%
- It is less expensive to share goods than to own them individually: 81%
- It builds a stronger community: 78%
- It is better for the environment: 76%
- It is more fun than engaging with conventional businesses: 63%
- Access is the new ownership: 57%
- Owning feels like a burden: 43%
“A new wave of peer-to-peer, access-driven businesses is shaking up established categories. Whether borrowing goods, renting homes, or serving up micro-skills in exchange for access or money, consumers are showing a robust appetite for the sharing-based economy.”

PricewaterhouseCoopers

According to Gig Work, Online Selling, And Home Sharing, by Pew Research Center, benefits of Internet-enabled gig work are as follows (percentage of respondents):

• Are great for people who want flexible work schedules: 68%
• Are good for older people who don’t work full-time: 54%
• Are good entry-level jobs for those entering the workforce: 37%

The following are some concerns:

• The sharing economy experience is not consistent: 72%
• Do not trust sharing economy companies until they are recommended by a trusted friend: 69%
• Peer regulation is more important than government regulation in the sharing economy: 64%
## PARTICIPATION IN THE GIG ECONOMY

### 47.1 Providers

According to *Gig Work, Online Selling, And Home Sharing*, by Pew Research Center, 24% of U.S. adults earned money in the digital commerce, or “gig” economy. Activities were as follows:

- Selling goods online (such as eBay): 18%
- Selling services/labor through a digital platform (such as Uber): 8%
- Renting out property on a home-sharing site (such as Airbnb): 1%

Among those earning money by selling goods online, types of goods sold were as follows (percentage of U.S. adults):

- Used/second-hand goods: 14%
- Handmade items: 2%
- Consumer goods: 2%
- Other: 3%

Types of services sold among those earning money in the online gig economy were as follows (percentage of U.S. adults):

- Online tasks (surveys, data entry, etc.): 5%
- Ride hailing: 2%
- Shopping/delivery: 1%
- Cleaning/laundry: 1%
- Other: 2%

Demographics of adults who sell online or provide gig services are as follows (percentage of U.S. adults):

<table>
<thead>
<tr>
<th>Age</th>
<th>Sell Online</th>
<th>Provide Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-to-29</td>
<td>23%</td>
<td>16%</td>
</tr>
<tr>
<td>30-to-49</td>
<td>27%</td>
<td>10%</td>
</tr>
<tr>
<td>50-to-64</td>
<td>12%</td>
<td>4%</td>
</tr>
<tr>
<td>65 and older</td>
<td>7%</td>
<td>2%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Sell Online</th>
<th>Provide Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>11%</td>
<td>14%</td>
</tr>
<tr>
<td>Latino</td>
<td>16%</td>
<td>11%</td>
</tr>
<tr>
<td>White</td>
<td>20%</td>
<td>5%</td>
</tr>
</tbody>
</table>
Income
• Less than $30,000: 13% 10%
• $30,000 to $75,000: 22% 8%
• More than $75,000: 22% 4%

Education
• High school: 12% 9%
• Some college: 21% 9%
• College graduate: 24% 6%

Among adults who provide gig services, income is important or essential for 56%; 42% say that the income is nice but not essential. The following is a comparison of the two groups:

<table>
<thead>
<tr>
<th></th>
<th>Important/Essential</th>
<th>Nice/Not Essential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employed full-time</td>
<td>36%</td>
<td>57%</td>
</tr>
<tr>
<td>HH Income &lt;$30,000</td>
<td>57%</td>
<td>36%</td>
</tr>
<tr>
<td>Types of work</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Online tasks</td>
<td>49%</td>
<td>69%</td>
</tr>
<tr>
<td>- Ride hailing</td>
<td>32%</td>
<td>13%</td>
</tr>
<tr>
<td>- Cleaning/laundry</td>
<td>25%</td>
<td>10%</td>
</tr>
<tr>
<td>Motivations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Need to control schedule</td>
<td>45%</td>
<td>11%</td>
</tr>
<tr>
<td>- Enjoyment/something to do</td>
<td>28%</td>
<td>62%</td>
</tr>
<tr>
<td>- Other jobs are scarce</td>
<td>25%</td>
<td>12%</td>
</tr>
<tr>
<td>- To gain work experience</td>
<td>24%</td>
<td>12%</td>
</tr>
</tbody>
</table>

47.2 Users
According to The New Digital Economy, by Pew Research Center, 74% of adults have used some type of shared or on-demand online service. Types of services used and products purchased are as follows (percentage of U.S. adults):
• Purchased used or second-hand goods online: 50%
• Used programs offering same-day or expedited delivery: 41%
• Purchased tickets from an online reseller: 28%
• Purchased handmade or artisanal products online: 22%
• Contributed to online funding project: 22%
• Used ride-hailing apps: 15%
• Used online home sharing services: 11%
• Ordered delivery of groceries online from local store: 6%
• HIred someone online for task/labor services: 4%

Service use by consumers is as follows (percentage of U.S. adults):
• None: 28%
• One: 20%
The following are demographic profiles for users of peer-to-peer services, selling, and sharing:

<table>
<thead>
<tr>
<th>Category</th>
<th>Ride-Hailing</th>
<th>Home-Sharing</th>
<th>Crow dsourced Fund Raising</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>16%</td>
<td>10%</td>
<td>19%</td>
</tr>
<tr>
<td>Female</td>
<td>14%</td>
<td>13%</td>
<td>24%</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>14%</td>
<td>13%</td>
<td>24%</td>
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<tr>
<td>Latino</td>
<td>15%</td>
<td>5%</td>
<td>19%</td>
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<tr>
<td>White</td>
<td>18%</td>
<td>9%</td>
<td>16%</td>
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<tr>
<td>Age</td>
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<tr>
<td>18-to-29</td>
<td>28%</td>
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<td>30%</td>
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<tr>
<td>30-to-49</td>
<td>19%</td>
<td>15%</td>
<td>27%</td>
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<tr>
<td>50-to-64</td>
<td>8%</td>
<td>10%</td>
<td>18%</td>
</tr>
<tr>
<td>65 and older</td>
<td>4%</td>
<td>6%</td>
<td>8%</td>
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<tr>
<td>Education</td>
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<tr>
<td>High school</td>
<td>6%</td>
<td>4%</td>
<td>11%</td>
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<tr>
<td>Some college</td>
<td>15%</td>
<td>8%</td>
<td>24%</td>
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<tr>
<td>College graduate</td>
<td>29%</td>
<td>25%</td>
<td>35%</td>
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<tr>
<td>Income</td>
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<td>Less than $30,000</td>
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<td>15%</td>
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<td>$30,000 to $75,000</td>
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<td>9%</td>
<td>23%</td>
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<td>More than $75,000</td>
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<tr>
<td>Community</td>
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<td>Urban</td>
<td>21%</td>
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<td>Suburban</td>
<td>15%</td>
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<tr>
<td>Rural</td>
<td>3%</td>
<td>6%</td>
<td>14%</td>
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<tr>
<td>Demographic</td>
<td>Used Items Purchased Online</td>
<td>Speedy Delivery Programs</td>
<td>Online Ticket Resellers</td>
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<tr>
<td>Gender</td>
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<td>Male:</td>
<td>52%</td>
<td>43%</td>
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<td>Female:</td>
<td>48%</td>
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<td>Race/Ethnicity</td>
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<td>Black:</td>
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<td>50-to-64:</td>
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<td>High school:</td>
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<tr>
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<tr>
<td>College graduate:</td>
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<td>57%</td>
<td>44%</td>
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<tr>
<td>Income</td>
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<td>Less than $30,000:</td>
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<td>$30,000 to $75,000:</td>
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<td>Urban:</td>
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<td>Suburban:</td>
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<td>41%</td>
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<tr>
<td>Rural:</td>
<td>46%</td>
<td>34%</td>
<td>20%</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Handmade Goods Purchased Online</th>
<th>Groceries Ordered Online</th>
<th>Tasks/Labor Services Hired Online</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male:</td>
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<td>Female:</td>
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<td>Race/Ethnicity</td>
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<td>Black:</td>
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<td>Latino:</td>
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<tr>
<td>White:</td>
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CONSUMER USE OF THE INTERNET & MOBILE WEB 2020-2021  
• 247 •
<table>
<thead>
<tr>
<th>Category</th>
<th>18-to-29:</th>
<th>30-to-49:</th>
<th>50-to-64:</th>
<th>65 and older:</th>
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<td>Age</td>
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<td>$30,000 to $75,000:</td>
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<td>7%</td>
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<tr>
<td>Suburban:</td>
<td>23%</td>
<td>5%</td>
<td>4%</td>
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</tr>
<tr>
<td>Rural:</td>
<td>17%</td>
<td>2%</td>
<td>3%</td>
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</tbody>
</table>

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48
THE SHARING & PEER-TO-PEER MARKETPLACE

48.1 Overview
Peer-to-peer services companies are rarely the actual service provider; instead, they act as facilitator, making transactions easy and secure for both the provider and the user. They break down the barriers that otherwise exist to starting a business or having a side job for many people and make it easy and lucrative to participate in the collaborative economy.

The peer-to-peer sharing economy includes such offerings as accommodations, ride-sharing, tool rental, parking spaces, chicken rental, and more.

The most popular categories of peer-to-peer services are assessed in this chapter, as follows:
• Accommodations
• Car-sharing services
• Crowdfunding
• Fashion rental and sales
• Freelance services
• Lending
• Ride-hailing
• Secondary ticket resale
• Sharing resources

48.2 Accommodations
Individuals offer accommodations ranging from furnished houses to spare bedrooms to couches for travelers.

According to Phocuswright (www.phocuswright.com) the U.S. private accommodations market has been as follows:
• 2012: $22.9 billion
• 2013: $24.2 billion
• 2014: $25.8 billion
• 2015: $28.4 billion
• 2016: $32.0 billion
• 2017: $34.5 billion
• 2018: $36.6 billion

eMarketer (www.emarketer.com) assesses the number of Airbnb users as follows:
2015: 20.0 million  
2016: 29.0 million  
2017: 33.9 million  
2018: 38.4 million  
2019: 41.1 million  
2020: 43.3 million  
2021: 44.5 million  
2022: 45.6 million

Airbnb had 150 million users, 650,000 hosts, and 4 million listings at year-end 2018. About 11% of the 660,000 U.S. listings were reserved on a typical night in 2018. In April 2019, Airbnb reported that there had been more than 500 million guest arrivals since it was founded in 2008; hosts and guests have left more than 250 million reviews.

Forbes estimated Airbnb’s corporate valuation at $38 billion in 2019; the company is not publically traded.

VRBO and its parent company, HomeAway, list over 2.5 million rentals worldwide. HomeAway was acquired by Expedia in 2015 for $3.9 billion.

Other services include 9flats, Bed and Fed, Couchsurfing, Dwellable, Mr. B&B, Home Exchange, Noirbnb, OneFineStay, and Roomorama.

“What Airbnb has popularized – the peer-to-peer rental of apartments, homes and spare bedrooms – the market has embellished with a roster of new and growing services that offer home sharing. In a sign of a maturing market, these alternatives to Airbnb often carve potential users into niches, targeting, for example, interior design fans or gay travelers.”

The New York Times

48.3 Car-Sharing Services

Forbes estimates that roughly 50,000 of the tens of millions of cars idling in America’s driveways are available through car-sharing services. Among providers serving this market are DriveMyCar Rentals, Getaround, RelayRides, Tamyca, Turo, and WhipCar.
The business model is similar to Airbnb’s: Car owners post their vehicles on a website, and users, after their driver’s licenses are verified, ask to rent them. The sites take a cut of each transaction. Partners such as Allianz provide roadside assistance and insurance for damage, theft, and liability. Rates are discounted for longer-term rentals. Renters pay for fuel.

IBISWorld (www.ibisworld.com) combined U.S. revenue of car-sharing service companies at $1 billion in 2019; the 2014-2019 average annual growth rate was 8.9%. There are 139 companies in the sector.

48.4 Crowdfunding
Crowdfunding is the collective effort of individuals who network and pool their money to support businesses, organizations, and individuals. Funded projects can include startup companies, disaster relief, support of artists by fans, political campaigns, software and product development, and research projects.

Statistica (www.statistica.com) estimated the equity crowdfunding volume of capital raised in North America in 2018 at $17.2 billion; there were 375 crowdfunding platforms.

Crowdfunding services include GoFundMe, Catarse, Crowdcube, Indiegogo, Kickstarter, Patreon, Pozible, and StartSomethingGood.

48.5 Fashion Rental And Sales
Several companies rent special-occasion and designer apparel online. With over 100,000 items of clothing, jewelry, and accessories by some 100 designers, Rent the Runway is the largest in the sector.

While Rent the Runway does not disclose financial figures, revenues were estimated to have surpassed $100 million in 2016. The company offers a $159/month Unlimited plan which allows women to rent and wear up to three pieces at a time from sought-after contemporary design houses including Proenza Schouler, Jason Wu, and Derek Lam. They can keep an item for a month or send it back after a day, choosing new looks with a swipe of the company’s mobile app. Shipping and dry-cleaning are included.

CNBC estimated Rent the Runway’s membership at 6 million in May 2018. Rent the Runway’s valuation was estimated by The New York Times at $1.0 billion in March 2019.

Other fashion rental services include Bag Borrow or Steal, Dress Vault, Fashion Hire, and Le Tote.

Sites like Poshmark and threadUP allow individuals to sell their gently used apparel and accessories.
48.6 Freelance Services

The peer-to-peer marketplace offers an opportunity for individuals with marketable skills and talents to provide their services on a freelance basis. Sites like TaskRabbit, Care.com, Upwork, elance.com, Exec, guru.com, fiverr.com, and Amazon’s Mechanical Turk provide a marketplace for consumers looking for technology services, creative services, or business services. Everything from web developing to bookkeeping to legal services to writing to illustrating can be provided through such sites.

“Sites like TaskRabbit, Care.com and Upwork have taken the freelance market to a new level. The platforms each of these sites have built make it possible to connect those offering services with those seeking the services.”

Forbes

48.7 Lending

Peer-to-peer lending, or social lending, brings together individual borrowers and lenders via online platforms. The two biggest lending platforms are Lending Club and Prosper Marketplace, both founded in 2006 and based in San Francisco. The bulk of lending is for debt consolidation by credit-card borrowers.

Lending Club reports loans made as follows:

- 2015: $6.4 billion
- 2016: $6.4 billion
- 2017: $6.6 billion
- 2018: $7.9 billion

As of April 2019, Lending Club had made $35.9 billion in total loans since 2006. Prosper Marketplace reported that it had made a total of $15.0 billion in loans to 936,000 people since 2006.

48.8 Ride-Sharing

Services like Uber and Lyft allow individual drivers to operate like a taxi service by carrying fee-paying passengers. These apps allow users to request a ride using their smartphone, track the approach of their driver in real-time, and offer an integrated
payment and ratings system. The drivers for these services are frequently part-time workers who use their own vehicle and combine their ride-hailing work with other sources of income. Sixty percent (60%) of Uber drivers also work another job.

“Few services exemplify the modern on-demand economy more than ride-hailing apps. Uber has become technology industry shorthand for a range of services that let users connect in real time with people who are willing to be hired to do various tasks.”

Pew Research Center

Statistica assesses U.S. ride-hailing services as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Users</th>
<th>Spending</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>51.5 million</td>
<td>$37.8 billion</td>
</tr>
<tr>
<td>2018</td>
<td>58.4 million</td>
<td>$43.3 billion</td>
</tr>
<tr>
<td>2019</td>
<td>66.1 million</td>
<td>$49.6 billion</td>
</tr>
<tr>
<td>2020</td>
<td>74.3 million</td>
<td>$56.2 billion</td>
</tr>
<tr>
<td>2021</td>
<td>82.4 million</td>
<td>$62.9 billion</td>
</tr>
<tr>
<td>2022</td>
<td>90.2 million</td>
<td>$69.4 billion</td>
</tr>
<tr>
<td>2023</td>
<td>97.4 million</td>
<td>$75.4 billion</td>
</tr>
</tbody>
</table>

According to Gallup (www.gallup.com), 30% of U.S. adults used ride-sharing services in 2018. By age, those that did so are as follows:

- 18-to-29: 45%
- 30-to-49: 36%
- 50-to-64: 23%
- 65 and older: 13%

Uber was founded in 2009; Lyft launched in 2012. Combined, the two companies control 98% of the U.S. ride-hailing market.

According to SecondMeasure (https://blog.secondmeasure.com), Uber accounted for 69% of U.S. rideshare spending in May 2019; Lyft captured 29% of the market, up nearly 3 percentage points from a year prior.
“Uber controls the majority of U.S. ride-hailing but Lyft is growing twice as fast.”

Vox, 12/12/18

eMarketer assesses the number of Uber users as follows:

- 2016: 34.5 million
- 2017: 40.7 million
- 2018: 48.0 million
- 2019: 53.3 million
- 2020: 58.5 million
- 2021: 62.2 million
- 2022: 64.3 million

Lyft and Uber went public in March and May 2019, respectively. Market valuations as of July 2019 were as follows:

- Uber: $74.6 billion
- Lyft: $17.2 billion

48.9 Secondary Ticket Resale

Online brokers provide a platform for peer-to-peer sales of tickets for concerts, sport games, and other events. The online secondary ticketing market is estimated at $6 billion. While re-selling tickets online at face value is legal in all 50 states and the District of Columbia, about 15 states have some restriction on how much tickets can be marked up by sellers. The laws vary widely, depending on the state and type of event and venue, and they range in scope. Conversely, several states have relaxed their regulations by removing bans on online individual ticket auctions. Online brokers largely have to rely on sellers to abide by their respective states’ rules, yet there is no way of knowing if they actually do so. And the overall online ticket market is difficult to police given the borderless nature of the business.

The following are the largest secondary ticket providers:

- AXS (www.axs.com)
- Coast to Coast Tickets (www.coasttocoasttickets.com)
- eBay (www.ebay.com)
- Go Tickets (www.gotickets.com)
- RazorGator (www.razorgator.com)
- ReplyBuy (www.replybuy.com)
• SeatGeek (www.seatgeek.com)
• StubHub (www.stubhub.com)
• TickCo (www.tickco.com)
• Ticket Liquidator (www.ticketliquidator.com)
• Tickets.com (www.tickets.com)
• Ticketmaster (www.ticketmaster.com)
• TicketsNow (www.ticketsnow.com)

Among companies in the secondary ticketing market, StubHub is the largest. eBay acquired StubHub in 2007 for $310 million.

48.10 Sharing Resources
As the sharing economy grows, so, too, do the types of items and services being offered. No item is too small to spawn a peer-to-peer market and the list seems limitless. Neighborgoods and similar sites allow people to borrow resources — like tools and kitchen appliances — directly from their neighbors. Rather than buying a specialized tool for a single project, people can connect with and borrow from their neighbors, facilitated by the platform.

“A few dozen square feet in a driveway can now produce income via Parking Panda. A pooch-friendly room in your house is suddenly a pet penthouse via DogVacay. On Rentoid, an outdoorsy type with a newborn who suddenly notices her camping tent never gets used can rent it out at $10 a day to a city slicker who’d otherwise have to buy one. On SnapGoods, a drill lying fallow in a garage can become a $10-a-day income source from a homeowner who just needs to put up some quick drywall. On Liquid, an unused bicycle becomes a way for a traveler to cheaply get around while visiting town for $20 a day.”

Forbes
CONSUMER USE OF SOCIAL MEDIA

49.1 Use Of Social Networking Sites

eMarketer (www.emarketer.com) assesses the total number of social network users (all ages) in the U.S. as follows:

- 2015: 180.1 million
- 2016: 185.7 million
- 2017: 191.1 million
- 2018: 196.3 million
- 2019: 200.6 million
- 2020: 204.1 million

49.2 Time Spent On Social Sites

Among social network users, average time spent on social sites is assessed as follows (source: eMarketer):

- 2015: 1 hour 8 minutes
- 2016: 1 hour 15 minutes
- 2017: 1 hour 14 minutes
- 2018: 1 hour 14 minutes
- 2019: 1 hour 15 minutes
- 2020: 1 hour 15 minutes

49.3 Top Sites

Pew Research Center’s Internet & American Life Project (www.pewresearch.org) has annually assessed social media use in the U.S. since 2012.

Pew reported social media use in 2019 as follows (percentage of U.S. adults):

- YouTube: 73%
- Facebook: 69%
- Instagram: 37%
- Pinterest: 28%
- LinkedIn: 27%
- Snapchat: 24%
- Twitter: 22%
- WhatsApp: 20%
- Reddit: 11%
eMarketer assesses the number of users (in millions) for four popular social media sites as follows:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Facebook</td>
<td>162.1</td>
<td>166.8</td>
<td>171.4</td>
<td>175.6</td>
<td>179.1</td>
<td>182.0</td>
</tr>
<tr>
<td>Instagram</td>
<td>57.4</td>
<td>67.2</td>
<td>76.2</td>
<td>83.6</td>
<td>89.5</td>
<td>95.1</td>
</tr>
<tr>
<td>Twitter</td>
<td>51.2</td>
<td>52.2</td>
<td>53.2</td>
<td>54.2</td>
<td>55.3</td>
<td>55.8</td>
</tr>
<tr>
<td>Pinterest</td>
<td>49.9</td>
<td>54.3</td>
<td>58.1</td>
<td>61.4</td>
<td>64.2</td>
<td>66.3</td>
</tr>
</tbody>
</table>

Penetration (percent of social network users) for these four sites is assessed as follows (source: eMarketer):

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Facebook</td>
<td>90.0%</td>
<td>89.8%</td>
<td>89.7%</td>
<td>89.4%</td>
<td>89.3%</td>
<td>89.2%</td>
</tr>
<tr>
<td>Instagram</td>
<td>31.9%</td>
<td>36.2%</td>
<td>39.9%</td>
<td>42.6%</td>
<td>44.6%</td>
<td>46.6%</td>
</tr>
<tr>
<td>Twitter</td>
<td>28.4%</td>
<td>28.1%</td>
<td>27.9%</td>
<td>27.6%</td>
<td>27.6%</td>
<td>27.3%</td>
</tr>
<tr>
<td>Pinterest</td>
<td>27.7%</td>
<td>29.2%</td>
<td>30.4%</td>
<td>31.3%</td>
<td>32.0%</td>
<td>32.5%</td>
</tr>
</tbody>
</table>

49.4 Frequency Of Use

Among users of five social media platforms, daily visits are as follows (source: Pew Research Center):

<table>
<thead>
<tr>
<th></th>
<th>Several Times</th>
<th>About Once</th>
<th>Less Than Once</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facebook</td>
<td>51%</td>
<td>23%</td>
<td>26%</td>
</tr>
<tr>
<td>Instagram</td>
<td>42%</td>
<td>21%</td>
<td>37%</td>
</tr>
<tr>
<td>Snapchat</td>
<td>46%</td>
<td>15%</td>
<td>39%</td>
</tr>
<tr>
<td>Youtube</td>
<td>32%</td>
<td>19%</td>
<td>49%</td>
</tr>
<tr>
<td>Twitter</td>
<td>25%</td>
<td>17%</td>
<td>58%</td>
</tr>
</tbody>
</table>

49.5 Social Network Access By Device

eMarketer assesses mobile-only social network users as follows:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>86.7 million</td>
</tr>
<tr>
<td>2018</td>
<td>99.2 million</td>
</tr>
<tr>
<td>2019</td>
<td>105.8 million</td>
</tr>
<tr>
<td>2020</td>
<td>111.1 million</td>
</tr>
<tr>
<td>2021</td>
<td>115.9 million</td>
</tr>
</tbody>
</table>

Desktop/laptop social network users are assessed as follows (source: eMarketer):

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>106.7 million</td>
</tr>
<tr>
<td>2018</td>
<td>100.4 million</td>
</tr>
<tr>
<td>2019</td>
<td>98.7 million</td>
</tr>
<tr>
<td>2020</td>
<td>98.3 million</td>
</tr>
<tr>
<td>2021</td>
<td>97.9 million</td>
</tr>
</tbody>
</table>
“Fewer people in the U.S. are accessing social networking sites via computers, with the majority of users now exclusively on mobile devices. As smartphone use grows, fewer Americans are using desktops and laptops to access the Internet. More than one-half of U.S. social network users will be mobile-only in 2019.”

eMarketer, 4/26/19
SOCIAL SITE TRAFFIC

50.1 Overview
Social networking sites are online platforms where people share interests. Members share ideas, pictures, posts, activities, events, and interests with people in their network.

A few social network sites are popular among the general public, most serve a niche audience with a focus on specific activities or interests.

50.2 Rank By Traffic
Based on the number of visits in March 2019, as reported by Quantcast (www.quantcast.com), the following are the most popular social networking sites:

- Facebook (www.facebook.com): 1,104,493,570
- YouTube (www.youtube.com): 221,126,432
- Instagram (www.instagram.com): 46,414,872
- Pinterest (www.pinterest.com): 21,614,684
- LinkedIn (www.linkedin.com): 17,522,384
- Goodreads (www.goodreads.com): 15,849,631
- Twitter (www.twitter.com): 13,094,007
- DeviantArt (www.deviantart.com): 10,829,788
- Vox (www.vox.com): 8,470,608
- CafeMom (www.cafemom.com): 6,875,656
- Flickr (www.flickr.com): 4,365,729
- Foursquare (www.foursquare.com): 1,867,223
- Meetup (www.meetup.com): 1,841,799
- Tagged (www.tagged.com): 1,364,664
- Classmates.com (www.classmates.com): 1,237,705
- Academia.edu (www.academia.edu): 1,069,638
- Care (www.care.com): 906,829
- MyHeritage (www.myheritage.com): 661,758
- Ravelry (www.ravelry.com): 552,394
- Spot.IM (www.spatial.im): 501,519
- CaringBridge (www.caringbridge.org): 474,825
- Influenster (www.influenster.com): 462,577
50.3 Market Resources
Quantcast, 201 3rd Street, San Francisco, CA 94103. (415) 738-4755. (www.quantcast.com)
51

USER DEMOGRAPHICS

51.1 Overview
A 2019 survey by Pew Research Center (www.pewresearch.org) assessed the demographics of users of the major social networks. This chapter provides a summary of the survey.

51.2 Facebook
According to Pew, 69% of adults used Facebook in 2019. The demographics of Facebook users are as follows:

Gender
- Female: 75%
- Male: 63%

Age
- 18-to-24: 76%
- 25-to-29: 84%
- 30-to-49: 79%
- 50-to-64: 68%
- 65 and older: 46%

Education
- High school graduate or less: 61%
- Some college: 75%
- College graduate: 74%

Household Income
- Less than $30,000: 69%
- $30,000 to $74,999: 72%
- $75,000 or more: 74%

Race/Ethnicity
- Black: 70%
- Caucasian: 70%
- Hispanic: 69%
Community
• Urban: 73%
• Suburban: 69%
• Rural: 66%

51.3 Instagram
According to Pew, 37% of adults used Instagram in 2019. The demographics of Instagram users are as follows:

Gender
• Female: 43%
• Male: 31%

Age
• 18-to-24: 75%
• 25-to-29: 57%
• 30-to-49: 47%
• 50-to-64: 23%
• 65 and older: 8%

Education
• High school graduate or less: 33%
• Some college: 37%
• College graduate: 43%

Household Income
• Less than $30,000: 35%
• $30,000 to $74,999: 39%
• $75,000 or more: 42%

Race/Ethnicity
• Black: 40%
• Caucasian: 33%
• Hispanic: 51%

Community
• Urban: 46%
• Suburban: 35%
• Rural: 21%
51.4 LinkedIn

According to Pew, 27% of adults used LinkedIn in 2019. The demographics of LinkedIn users are as follows:

**Gender**
- Female: 24%
- Male: 29%

**Age**
- 18-to-24: 17%
- 25-to-29: 44%
- 30-to-49: 37%
- 50-to-64: 24%
- 65 and older: 11%

**Education**
- High school graduate or less: 9%
- Some college: 26%
- College graduate: 51%

**Household Income**
- Less than $30,000: 10%
- $30,000 to $74,999: 26%
- $75,000 or more: 49%

**Race/Ethnicity**
- Black: 24%
- Caucasian: 28%
- Hispanic: 16%

**Community**
- Urban: 33%
- Suburban: 30%
- Rural: 10%

51.5 Pinterest

According to Pew, 28% of adults used Pinterest in 2019. The demographics of Pinterest users are as follows:

**Gender**
- Female: 42%
- Male: 15%
Age
• 18-to-24: 38%
• 25-to-29: 28%
• 30-to-49: 35%
• 50-to-64: 27%
• 65 and older: 15%

Education
• High school graduate or less: 19%
• Some college: 32%
• College graduate: 38%

Household Income
• Less than $30,000: 18%
• $30,000 to $74,999: 27%
• $75,000 or more: 41%

Race/Ethnicity
• Black: 27%
• Caucasian: 33%
• Hispanic: 22%

Community
• Urban: 30%
• Suburban: 30%
• Rural: 26%

51.6 Reddit
According to Pew, 11% of adults used Reddit in 2019. The demographics of Reddit users are as follows:

Gender
• Female: 8%
• Male: 15%

Age
• 18-to-24: 21%
• 25-to-29: 23%
• 30-to-49: 14%
• 50-to-64: 6%
• 65 and older: 1%
According to Pew, 24% of adults used Snapchat in 2019. The demographics of Snapchat users are as follows:

**Gender**
- Female: 24%
- Male: 24%

**Age**
- 18-to-24: 73%
- 25-to-29: 47%
- 30-to-49: 25%
- 50-to-64: 9%
- 65 and older: 3%

**Education**
- High school graduate or less: 22%
- Some college: 29%
- College graduate: 20%

**Household Income**
- Less than $30,000: 27%
- $30,000 to $74,999: 26%
- $75,000 or more: 22%
Race/Ethnicity
• Black: 28%
• Caucasian: 29%
• Hispanic: 22%

Community
• Urban: 29%
• Suburban: 20%
• Rural: 20%

51.8 Twitter
According to Pew, 22% of adults used Twitter in 2019. The demographics of Twitter users are as follows:

Gender
• Female: 21%
• Male: 24%

Age
• 18-to-24: 44%
• 25-to-29: 31%
• 30-to-49: 26%
• 50-to-64: 17%
• 65 and older: 7%

Education
• High school graduate or less: 13%
• Some college: 24%
• College graduate: 32%

Household Income
• Less than $30,000: 20%
• $30,000 to $74,999: 20%
• $75,000 or more: 31%

Race/Ethnicity
• Black: 24%
• Caucasian: 21%
• Hispanic: 25%

Community
• Urban: 26%
• Suburban: 22%
• Rural: 13%
51.9 WhatsApp

According to Pew, 20% of adults used WhatsApp in 2019. The demographics of WhatsApp users are as follows:

**Gender**
- Female: 19%
- Male: 21%

**Age**
- 18-to-24: 20%
- 25-to-29: 28%
- 30-to-49: 31%
- 50-to-64: 16%
- 65 and older: 3%

**Education**
- High school graduate or less: 18%
- Some college: 14%
- College graduate: 28%

**Household Income**
- Less than $30,000: 19%
- $30,000 to $74,999: 16%
- $75,000 or more: 25%

**Race/Ethnicity**
- Black: 24%
- Caucasian: 13%
- Hispanic: 42%

**Community**
- Urban: 24%
- Suburban: 19%
- Rural: 10%

51.10 YouTube

According to Pew, 73% of adults used YouTube in 2019. The demographics of YouTube users are as follows:

**Gender**
- Female: 68%
- Male: 78%
Age
• 18-to-24: 90%
• 25-to-29: 93%
• 30-to-49: 87%
• 50-to-64: 70%
• 65 and older: 38%

Education
• High school graduate or less: 64%
• Some college: 79%
• College graduate: 80%

Household Income
• Less than $30,000: 68%
• $30,000 to $74,999: 75%
• $75,000 or more: 83%

Race/Ethnicity
• Black: 77%
• Caucasian: 71%
• Hispanic: 78%

Community
• Urban: 77%
• Suburban: 74%
• Rural: 64%

51.11 Market Resources
Pew Research Center for Internet & Technology, 1615 L Street NW, Suite 700, Washington, DC 20036. (202) 419-4300. (www.pewresearch.org)
SOCIAL MEDIA ACTIVITIES

52.1 Overview
A 2019 survey by Cohen & Company (www.cohenandcompany.com) asked social media users about their activities on the five largest social platforms. This chapter provides the findings of the survey.

52.2 Facebook
Activities on Facebook are as follows (percentage of respondents):
- Viewing photos: 65%
- Sharing content with everyone: 57%
- Watching videos: 46%
- Sharing content one-to-one: 43%
- News: 38%
- Networking: 33%
- Shopping: 15%
- Promoting my business: 7%

52.3 Instagram
Activities on Instagram are as follows (percentage of respondents):
- Viewing photos: 77%
- Watching videos: 51%
- Sharing content with everyone: 45%
- Sharing content one-to-one: 31%
- Networking: 23%
- News: 18%
- Shopping: 11%
- Promoting my business: 9%

52.4 Pinterest
Activities on Pinterest are as follows (percentage of respondents):
- Viewing photos: 59%
- Shopping: 47%
• Sharing content with everyone: 21%
• Watching videos: 21%
• Sharing content one-to-one: 12%
• Networking: 10%
• News: 9%
• Promoting my business: 5%

52.5 Snapchat
Activities on Snapchat are as follows (percentage of respondents):
• Viewing photos: 64%
• Watching videos: 50%
• Sharing content with everyone: 46%
• Sharing content one-to-one: 45%
• Networking: 21%
• News: 17%
• Promoting my business: 6%
• Shopping: 5%

52.6 Twitter
Activities on Twitter are as follows (percentage of respondents):
• News: 56%
• Viewing photos: 42%
• Sharing content with everyone: 32%
• Watching videos: 32%
• Networking: 26%
• Sharing content one-to-one: 20%
• Promoting my business: 7%
• Shopping: 7%

52.7 Market Resources
Cohen & Company, 2929 Arch Street, Suite 1703, Philadelphia, PA 19104.
(215) 701-9555. (www.cohenandcompany.com)
53

PRIVACY & SECURITY ON SOCIAL MEDIA

53.1 Overview

General surveys indicate that consumers have concerns about their privacy online. However, it is difficult to ascertain their concerns about specific actions by marketers because few people really understand what these activities are.

Consumers’ concerns about privacy are also sometimes difficult to gauge because they are self-contradictory about marketer’s use of their information.

“People may claim to worry about privacy issues but look at what they actually do online ... willingly surrendering personal information for a coupon or in a Facebook discussion. The disconnect between what people say and do shows that policymakers and academics misjudge the extent to which the public really cares about the use of data about them by marketers.”

Mark Dolliver, Analyst
The Digital Privacy Dilemma

53.2 Trust In Social Networks

According to The State Of Social Media And Online Privacy, by Rad Campaign (www.radcampaign.com), 61% of U.S. Internet users do not trust that social networks protect their data and information. By demographic, those that have this opinion are as follows (percentage of respondents):

Gender
- Male: 61%
- Female: 61%
Generation

- Millennials: 56%
- Generation X: 63%
- Baby Boomers: 63%
- Seniors: 64%

A 2019 survey by Clever (www.listwithclever.com) found that 81% of Internet users have concerns about how Facebook uses their personal data. Those with concerns, by age, were as follows (percentage of respondents):
- 18-to-34: 74%
- 35-to-44: 81%
- 45-to-54: 82%
- 55 and older: 86%

53.3 Sharing Data Through Third Parties

In a survey by Vision Critical (www.visioncritical.com), 80% of Internet users said they are comfortable sharing personal information directly with a brand for the purposes of personalizing marketing messages. Only 17% said they are okay with sharing this type of information through third parties.

A 2018 incident where Facebook shared user data for voter targeting purposes brought attention to the issue.

“The utilization of third-party data has become a hot topic due to Facebook’s scandal with Cambridge Analytica, in which information was harvested without people’s permission for voter targeting purposes. People are becoming more suspicious of sharing data through third parties.”

eMarketer

When asked in a February 2019 survey by SlickText (www.slicktext.com) if Facebook sharing data with Cambridge Analytica made them concerned about how their information is used online, responses were as follows:
- Yes, extremely concerned: 27%
- Yes, very concerned: 22%
• Yes, somewhat concerned: 25%
• Not concerned: 12%
• Uncertain: 14%

A Thomson Reuters survey conducted by Ipsos (www.ipsos.com) in the wake of the Cambridge Analytica scandal found that nearly half of U.S. Facebook users hadn’t changed how frequently they use the platform; about one-quarter of the respondents said they use it more.

_________________________________________________________________

“Trust social networks with your data? Nah. Use them anyway? Yep.”

eMarketer

_________________________________________________________________
PART VII: DIGITAL VIDEO
54

VIEWING DIGITAL VIDEO CONTENT

54.1 Digital Video Viewers

eMarketer (www.emarketer.com) assesses the number of U.S. digital video viewers* as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Number (change)</th>
<th>Pct. of Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>196.1 million (5.3%)</td>
<td>61.5%</td>
</tr>
<tr>
<td>2015</td>
<td>205.8 million (5.0%)</td>
<td>64.2%</td>
</tr>
<tr>
<td>2016</td>
<td>213.2 million (4.5%)</td>
<td>66.5%</td>
</tr>
<tr>
<td>2017</td>
<td>221.8 million (2.8%)</td>
<td>67.8%</td>
</tr>
<tr>
<td>2018</td>
<td>227.5 million (2.4%)</td>
<td>69.6%</td>
</tr>
<tr>
<td>2019</td>
<td>232.1 million (1.8%)</td>
<td>69.7%</td>
</tr>
<tr>
<td>2020</td>
<td>236.0 million (1.5%)</td>
<td>70.3%</td>
</tr>
<tr>
<td>2021</td>
<td>239.2 million (3.1%)</td>
<td>70.7%</td>
</tr>
</tbody>
</table>

* Internet users of any age who watch digital video content via any device at least once a month.

eMarketer reports types of digital video viewers in 2018 as follows:

- Over-the-top viewers: 170.1 million
- Mobile gamers: 180.4 million
- Digital TV viewers: 164.3 million
- Digital movie viewers: 120.5 million
- Smartphone video viewers: 116.4 million

54.2 Time Spent With Video

eMarketer assesses the average time spent per day with video by U.S. adults as follows (hours:minutes):

<table>
<thead>
<tr>
<th>Year</th>
<th>Digital Video Devices</th>
<th>TV</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>0:46</td>
<td>4:30</td>
</tr>
<tr>
<td>2014</td>
<td>0:53</td>
<td>4:20</td>
</tr>
<tr>
<td>2015</td>
<td>1:02</td>
<td>4:10</td>
</tr>
<tr>
<td>2016</td>
<td>1:11</td>
<td>4:05</td>
</tr>
<tr>
<td>2017</td>
<td>1:19</td>
<td>3:56</td>
</tr>
<tr>
<td>2018</td>
<td>1:29</td>
<td>3:44</td>
</tr>
<tr>
<td>2019</td>
<td>1:37</td>
<td>3:35</td>
</tr>
<tr>
<td>2020</td>
<td>1:43</td>
<td>3:29</td>
</tr>
<tr>
<td>2021</td>
<td>1:49</td>
<td>3:22</td>
</tr>
</tbody>
</table>

CONSUMER USE OF THE INTERNET & MOBILE WEB 2020-2021

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54.3 Viewer Demographics

eMarketer assessed U.S. digital video viewer penetration, by age, in 2018 as follows (percentage of population in each age group):

- 0-to-11: 49.5%
- 12-to-17: 93.4%
- 18-to-24: 95.4%
- 25-to-34: 89.1%
- 35-to-44: 85.6%
- 45-to-54: 75.7%
- 55-to-64: 56.2%
- 65 and older: 39.8%
- Total: 69.8%

By generation, digital video viewers are as follows (source: eMarketer)

Generation Z/Teens
- 2017: 23.2 million (93.2% penetration)
- 2018: 23.3 million (93.4% penetration)
- 2019: 23.4 million (93.6% penetration)

 Millennials
- 2017: 64.2 million (89.1% penetration)
- 2018: 64.8 million (89.3% penetration)
- 2019: 65.1 million (89.2% penetration)

Generation X
- 2017: 51.5 million (78.5% penetration)
- 2018: 51.8 million (78.7% penetration)
- 2019: 52.1 million (79.0% penetration)

Baby Boomers
- 2017: 38.0 million (51.2% penetration)
- 2018: 37.7 million (51.5% penetration)
- 2019: 37.4 million (51.7% penetration)

Among Millennials, digital viewing time in 2019 was distributed as follows (source: Deloitte):
- Paid services: 46%
- Free, ad-supported video sites (e.g., YouTube, Sony Crackle): 29%
- Other (e.g., streaming from pay TV services, live TV services, and rental/video-on-demand): 25%
54.4 Favorite Video Content Providers

According to a 2018 survey by MullenLowe VideoHub (www.mullenlowe.com), favorite video content providers, by age, are as follows:

<table>
<thead>
<tr>
<th>Ages 13-to-17</th>
<th>Ages 35-to-49</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Netflix</td>
<td>1. Netflix</td>
</tr>
<tr>
<td>2. YouTube</td>
<td>2. YouTube</td>
</tr>
<tr>
<td>3. Hulu</td>
<td>3. Hulu</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ages 18-to-24</th>
<th>Ages 50-to-65</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Netflix</td>
<td>1. CBS</td>
</tr>
<tr>
<td>2. YouTube</td>
<td>2. Netflix</td>
</tr>
<tr>
<td>3. Amazon</td>
<td>3. NBC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ages 25-to-34</th>
<th>Ages 66 and Older</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Netflix</td>
<td>1. CBS</td>
</tr>
<tr>
<td>2. YouTube</td>
<td>2. ABC</td>
</tr>
<tr>
<td>3. HBO</td>
<td>3. NBC</td>
</tr>
</tbody>
</table>

54.5 Digital Video Platforms

Platforms used in 2019 to watch digital video were as follows (source: The Audience Project [www.audienceproject.com]):

- YouTube: 90%
- Facebook: 60%
- Instagram: 35%
- Twitter: 21%
- Snapchat: 18%
- CNN: 17%
- Fox News: 16%
- BBC: 12%
- MSNBC: 10%
- Vimeo: 9%
- New York Times: 8%
- Twitch: 8%
- Dailymotion: 6%
- Other news sites: 6%
- Other social media: 5%

54.6 Video On Social Media Platforms

According to a 2018 report by Wibbitz (www.wibbitz.com), social media platforms used by U.S. Internet users to watch video were as follows (percentage of respondents):

- YouTube: 74%
- Facebook: 60%
- Instagram: 26%
- Snapchat: 19%
- Twitter: 14%
- Pinterest: 11%
- Other: 11%
55

VIDEO HOSTING SERVICES

55.1 Overview
Video hosting services allow users to upload and share personal, business or royalty-free videos. Content ranges from short video clips to full length movies. Most services are free to content publishers and viewers. Among those supported by advertising, some share ad revenue with video publishers to encourage sharing of content. Some services host pay-per-view videos or accommodate private sharing.

55.2 Rank By Traffic
Based on the number of visits in March 2019, as reported by Quantcast (www.quantcast.com), the following are the most popular user-generated video sites:

• YouTube (www.youtube.com): 221,126,432
• Hulu (www.hulu.com): 16,307,731
• Archive.org (www.archive.org): 4,070,997
• LiveLeak (www.liveleak.com): 3,767,886
• Vimeo (www.vimeo.com): 1,979,870

The following are some other user-generated video hosting services:
• Break.com (www.break.com):
• Buzznet (www.buzznet.com):
• College Humor (www.collegehumor.com):
• Crackle (www.crackle.com):
• DaCast (www.dacast.com):
• ExpoTV (www.expotv.com):
• Funnyordie.com (www.funnyordie.com):
• GodTube (www.godtube.com):
• Mefeedia (www.mefeedia.com):
• Metacafe (www.metacafe.com):
• SchoolTube (www.schooltube.com):
• Viewster (www.viewster.com):
• Wikimedia Commons (https://commons.wikimedia.org/wiki/Main_Page)
• YouNow (www.younow.com):
OVER-THE-TOP/STREAMED VIDEO SERVICES

56.1 Overview
Streamed TV programming, or over-the-top (OTT) content, refers to delivery of media over the Internet without a multiple-system operator controlling or distributing the content.

Original programming on Netflix and other OTT services has driven the recent popularity of streamed TV programming.

Parks Associates (www.parksassociates.com) reported that 78% of U.S. broadband households subscribed to an OTT video service in 2019. Fifty-two percent (52%) of broadband households subscribed to both pay-TV and OTT services; 26% were OTT-only.

Over 200 OTT video services are available in the U.S., with services targeting particular interests or segments.

56.2 Subscription OTT Video Service Users
eMarketer (www.emarketer.com) assessed subscription OTT video service users as follows:

- 2017: 153.0 million (46.9% of U.S. population)
- 2018: 170.1 million (51.7% of U.S. population)
- 2019: 181.5 million (54.7% of U.S. population)
- 2020: 188.3 million (56.3% of U.S. population)
- 2021: 193.2 million (57.3% of U.S. population)
- 2022: 197.7 million (58.2% of U.S. population)

56.3 Market Assessment
According to PricewaterhouseCoopers (PwC, www.pwc.com), U.S. OTT revenue grew 10% in 2018 to $22.6 billion. PwC forecasts a four-year 8.8% annual compound growth rate, with revenue of $30.1 billion in 2022.

Eighty percent (80%) of revenue, or $18.2 billion in 2018, was from subscription video on demand.

The U.S. accounted for 55% of global OTT video market revenue in 2018 and is forecast to account for 52% in 2022.
### 56.4 Subscription Video Services

eMarketer assesses subscription video services in 2018 as follows:

<table>
<thead>
<tr>
<th>Service</th>
<th>Subscribers</th>
<th>Average Monthly Cost</th>
<th>Annual Cost</th>
<th>Annual Subscription Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Netflix</td>
<td>58.5 million</td>
<td>$12.66</td>
<td>$151.92</td>
<td>$ 6.15 billion</td>
</tr>
<tr>
<td>Hulu</td>
<td>26.8 million</td>
<td>$ 8.99</td>
<td>$107.88</td>
<td>$ 2.89 billion</td>
</tr>
<tr>
<td>Amazon</td>
<td>26.0 million</td>
<td>$ 8.99</td>
<td>$107.88</td>
<td>$ 2.80 billion</td>
</tr>
<tr>
<td>HBO Now</td>
<td>5.0 million</td>
<td>$14.99</td>
<td>$179.88</td>
<td>$ 899 million</td>
</tr>
<tr>
<td>CBS All Access</td>
<td>4.0 million</td>
<td>$ 7.99</td>
<td>$ 95.88</td>
<td>$ 383 million</td>
</tr>
<tr>
<td>Showtime</td>
<td>4.0 million</td>
<td>$10.99</td>
<td>$131.88</td>
<td>$ 527 million</td>
</tr>
<tr>
<td>Starz</td>
<td>3.0 million</td>
<td>$ 8.99</td>
<td>$107.88</td>
<td>$ 323 million</td>
</tr>
<tr>
<td>Sling TV</td>
<td>2.4 million</td>
<td>$30.00</td>
<td>$360.00</td>
<td>$ 871 million</td>
</tr>
<tr>
<td>Hulu with Live TV</td>
<td>2.0 million</td>
<td>$44.99</td>
<td>$539.88</td>
<td>$ 1.08 billion</td>
</tr>
<tr>
<td>DirecTV Now</td>
<td>1.5 million</td>
<td>$52.50</td>
<td>$630.00</td>
<td>$ 945 million</td>
</tr>
<tr>
<td>YouTube Premium</td>
<td>1.5 million</td>
<td>$11.99</td>
<td>$143.88</td>
<td>$ 216 million</td>
</tr>
<tr>
<td>YouTube TV</td>
<td>1.0 million</td>
<td>$49.99</td>
<td>$599.88</td>
<td>$ 599 million</td>
</tr>
<tr>
<td>PlayStation Vue</td>
<td>0.4 million</td>
<td>$57.50</td>
<td>$690.00</td>
<td>$ 276 million</td>
</tr>
<tr>
<td>fuboTV</td>
<td>0.3 million</td>
<td>$66.24</td>
<td>$794.88</td>
<td>$ 199 million</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>$18.17 billion</strong></td>
</tr>
</tbody>
</table>

### 56.5 Netflix

Paid subscriptions to Netflix, the market leader, have been as follows (source: Netflix, January 2019):

<table>
<thead>
<tr>
<th>Year</th>
<th>United States</th>
<th>International</th>
<th>Global</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>43.4 million</td>
<td>27.4 million</td>
<td>70.8 million</td>
</tr>
<tr>
<td>2016</td>
<td>47.9 million</td>
<td>41.2 million</td>
<td>89.1 million</td>
</tr>
<tr>
<td>2017</td>
<td>52.8 million</td>
<td>57.8 million</td>
<td>110.6 million</td>
</tr>
<tr>
<td>2018</td>
<td>58.7 million</td>
<td>80.8 million</td>
<td>139.3 million</td>
</tr>
</tbody>
</table>
INTERNET-CONNECTED TV

57.1 Overview
Consumers have viewed television content on their desktop computers and mobile devices and online content on their TV sets for many years. The majority of U.S. TV households have at least one television set connected to the Internet via a smart TV set, a stand-alone device (like Roku, Chromecast, Amazon Fire TV stick or set-top box, or Apple TV), a video game system, or a Blu-ray player.

57.2 Internet-Connected TV Households
According to Leichtman Research Group (www.leichtmanresearch.com), the percentage of TV households with at least one TV connected to the Internet has been as follows:
• 2010: 24%
• 2011: 30%
• 2012: 38%
• 2013: 44%
• 2014: 50%
• 2015: 57%
• 2016: 65%
• 2017: 69%
• 2018: 72%
• 2019: 74%

Adults that watch a video via a connected TV device daily have been as follows:
• 2010: 1%
• 2011: 3%
• 2012: 4%
• 2013: 6%
• 2014: 11%
• 2015: 12%
• 2016: 16%
• 2017: 25%
• 2018: 29%
• 2019: 31%

The following are findings of a 2019 survey by Leichtman Research Group:
• Fifty-three percent (53%) of adults ages 18-34 watch video on a TV via a connected device daily, compared to 31% of those ages 35-to-54 and 12% of those age 55 and older.
• Twenty-five percent (25%) of adults with a pay-TV service watch video via a connected TV device daily, compared to 49% of pay-TV non-subscribers

57.3 Connected TV Users
eMarketer (www.emarketer.com) assesses U.S. connected TV users* as follows:
• 2017: 168.1 million (51.4% of population)
• 2018: 182.6 million (55.5% of population)
• 2019: 190.0 million (57.2% of population)
• 2020: 195.9 million (58.6% of population)
• 2021: 200.4 million (59.4% of population)
• 2022: 204.1 million (60.1% of population)

* Individuals of any age who use the Internet through a connected TV at least once a month

57.4 Streaming Media Players

According to a report by Parks Associates (www.parksassociates.com), 40% of U.S. broadband households had at least one streaming media player (SMP) in 2018, an increase from 27% that owned one in 2015.

Seventy percent (70%) of streaming media player owners use their devices at least once per week; 44% use them daily. Among smart TV owners, these figures are 59% and 37%, respectively.

According to eMarketer, brands used by connect TV users were as follows:

- Roku: 38.9 million
- Google Chromecast: 36.9 million
- Amazon Fire TV: 35.8 million
- Apple TV: 21.3 million

57.5 Addressable TV Advertising

According to Gartner (www.gartner.com), segmentation for addressable TV can occur at geographic, demographic, behavioral and, in some cases, self-selected individual household levels through cable, satellite, and Internet Protocol television (IPTV) delivery systems and set-top boxes (STBs). Using this method advertisers would segment TV audiences and serve different ads or ad pods (groups of ads) within a common program or navigation screen.

U.S. addressable TV ad spending is assessed as follows (source: eMarketer; change from prior year in parenthesis):

- 2015: $410 million (104.9%)
- 2016: $760 million (84.8%)
- 2017: $1.22 billion (60.8%)

“Despite the strong penetration of the market, connected TV advertising makes up only a sliver of overall TV advertising.”

eMarketer, 8/16/18
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YOUTUBE

58.1 YouTube Traffic

According to comScore (www.comscore.com), YouTube had 142.3 million unique U.S. visitors in May 2019. There were 221,126,432 total views in the U.S. in May 2019, according to Quantcast (www.quantcast.com).

According to Pew Research Center (www.pewresearch.org), 73% U.S. adults used YouTube in 2019. By age, YouTube users were as follows:

- 18-to-24: 94%
- 25-to-29: 88%
- 30-to-49: 85%
- 50-to-64: 68%
- 65 and older: 40%

AYTM Market Research (www.atym.com) reports the frequency of Internet user visits to YouTube as follows (percentage of respondents):

- Every day: 22%
- A few times per week: 27%
- About once per week: 10%
- A few times per month: 14%
- About once per month: 4%
- Rarely: 14%
- Never: 8%

According to a 2018 report by Wibbitz (www.wibbitz.com), YouTube gets over 30 million visitors per day. In an average month, 80% of 18-to-49 year-olds watch content on YouTube. Approximately 5 billion videos are watched on YouTube every day. Eighty percent (80%) of YouTube’s views are from outside of the U.S.

YouTube delivered approximately three trillion videos worldwide in 2018. An analysis with more than 10,000 engagements apiece by Tubular Labs (www.tubularlabs.com) found the average YouTube video was longer than 14 minutes. Among the top trending YouTube videos, the average length was 4.76 minutes.
58.2 Ad Sharing With Talent Creators

eMarketer (www.emarketer.com) assesses YouTube net video ad revenue as follows:

- 2016: $2.92 billion
- 2017: $3.88 billion
- 2018: $4.33 billion
- 2019: $4.96 billion

In 2007, YouTube launched a revenue-sharing program available to the most popular video channels. Parent company Google presents advertising along with the content, giving the channel a 65% cut and retaining 45%.

YouTube also contracts with networks which recruit YouTube content creators. Each network offers a slate of services to content creators and gets them more visibility than they would promoting content themselves. Creators typically earn 30% of gross revenue from ads.

Forbes reported the top earners on YouTube in 2018 as follows:

- Ryan Toysreview (Ryan Kaji): $22.0 million
- Jake Paul: $21.5 million
- Dude Perfect (Coby and Cory Cotton, Garrett Hilbert, Cody Jones, and Tyler Tony): $20.0 million
- DanTDM (Daniel Middleton): $18.5 million
- Jeffree Star: $18.0 million
- Markiplier (Mark Fischbach): $17.5 million
- VanossGaming (Evan Fong): $17.0 million
- Jacksepticeye (Sean McLoughlin): $16.0 million
- PewDiePie (Felix Kjellberg): $15.5 million
- Logan Paul: $14.5 million

58.3 Top Channels

Social Blade (www.socialblade.com) ranked YouTube channels by number of subscribers in July 2019 as follows:

- Music: 107,047,518
- T-Series: 105,116,821
- PewDiePie: 97,511,086
- YouTube Movies: 84,702,263
- Gaming: 82,723,584
- Sports: 75,615,892
- 5-Minute Crafts: 58,284,519
- Cocomelon - Nursery Rhymes: 52,961,164
- SET India: 51,389,406
- Canal KondZilla: 50,438,360
- Justin Bieber: 45,783,984
• WWE: 45,822,444
• Dude Perfect: 43,617,702
• Badabun: 40,930,278
• Ed Sheeran: 40,644,945
• Zee Music Company: 40,393,771
• HolaSoyGerman: 39,519,697
• EminemMusic: 38,240,541
• Marshmello: 36,746,276
• Ariana Grande: 36,648,483

Ranked by number of video views, the top YouTube channels in July 2019 were as follows (source: Social Blade):

• T-Series: 76,295,313,699
• SET India: 36,107,708,054
• WWE: 33,871,809,563
• Ryan ToysReview: 30,578,749,978
• netd müzik: 30,330,600,789
• Cocomelon - Nursery Rhymes: 33,216,342,326
• Zee TV: 32,739,109,796
• Canal KondZilla: 25,355,843,055
• ABS-CBN Entertainment: 26,719,949,162
• Movieclips: 25,096,854,592
• PewDiePie: 22,167,162,596
• El Reino Infantil: 21,430,890,691
• Get Movies: 20,453,702,497
• Mama 'n' MeAbeAb: 20,255,507,656
• Little Baby Bum - Nursery Rhymes: 19,305,739,610
• JustinBieberVEVO: 18,855,614,753
• WorkpointOfficial: 19,939,345,591
• KatyPerryVEVO: 17,763,247,652
• ChuChu TV Nursery Rhymes & Kids: 17,809,513,712
• Zee Music Company: 18,430,126,310

58.4 Market Resources
Social Blade, 3008 Geiger Circle, Apex, NC 27539. (919) 355-8746.
(www.socialblade.com)

YouTube LLC, 901 Cherry Avenue, San Bruno, CA 94066. (650) 253-0000.
(www.youtube.com)
PART VIII: MOBILE APPS
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APPS

59.1 Use Of Mobile Apps

_The U.S. Mobile App Report_, by comScore (www.comscore.com), reports the distribution of time spent on digital platforms as follows:

- Share of digital time spent on mobile: 67%
- Share of digital time spent on mobile apps: 58%
- Share of digital time spent on smartphone apps: 49%
- Share of digital time spent on desktop: 33%

Average monthly time per smartphone and tablet app user, by age, was as follows:

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Smartphone</th>
<th>Tablet</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-to-24</td>
<td>93.5 hours</td>
<td>27.6 hours</td>
</tr>
<tr>
<td>25-to-34</td>
<td>85.6 hours</td>
<td>19.4 hours</td>
</tr>
<tr>
<td>35-to-44</td>
<td>78.8 hours</td>
<td>17.3 hours</td>
</tr>
<tr>
<td>45-to-54</td>
<td>62.7 hours</td>
<td>23.0 hours</td>
</tr>
<tr>
<td>55-to-64</td>
<td>55.6 hours</td>
<td>28.0 hours</td>
</tr>
<tr>
<td>65 and older</td>
<td>42.1 hours</td>
<td>23.4 hours</td>
</tr>
<tr>
<td>All ages</td>
<td>73.8 hours</td>
<td>22.6 hours</td>
</tr>
</tbody>
</table>

The distribution of time spent using apps and the web was as follows:

<table>
<thead>
<tr>
<th>Device Type</th>
<th>Apps</th>
<th>Web</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smartphone</td>
<td>88%</td>
<td>12%</td>
</tr>
<tr>
<td>Tablet</td>
<td>83%</td>
<td>17%</td>
</tr>
<tr>
<td>All mobile</td>
<td>87%</td>
<td>13%</td>
</tr>
</tbody>
</table>

The top reason cited for downloading an application, according to Nielsen (www.nielsen.com), is because apps are fun. Fifty-three percent (53%) of smartphone owners and 59% of tablet owners cite leisure or entertainment as the reason for downloading. Among tablet owners, 48% also say they download an app because they have the same or similar app on another device.

59.2 Time Spent Using Apps

According to eMarketer (www.emarketer.com), the distribution of time spent with mobile devices is as follows:
• Smartphone: 85.7%  14.3%
• Tablet:      76.5%  23.6%

eMarketer assesses average time spent per day with apps and the mobile web as follows (hours: minutes):

<table>
<thead>
<tr>
<th>Year</th>
<th>Smartphone</th>
<th>Tablet</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>1:55</td>
<td>0:25</td>
</tr>
<tr>
<td>2016</td>
<td>2:11</td>
<td>0:26</td>
</tr>
<tr>
<td>2017</td>
<td>2:25</td>
<td>0:26</td>
</tr>
<tr>
<td>2018</td>
<td>2:35</td>
<td>0:26</td>
</tr>
<tr>
<td>2019</td>
<td>2:43</td>
<td>0:27</td>
</tr>
</tbody>
</table>

### 59.3 Importance Of Apps

A 2018 survey by ThinkNow Research (www.thinknowresearch.com) asked U.S. mobile app users the importance of apps in their daily life. Responses were as follows (percentage of respondents):

<table>
<thead>
<tr>
<th>Generation</th>
<th>Very Important</th>
<th>Helpful</th>
<th>Not Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Millennials</td>
<td>45%</td>
<td>39%</td>
<td>16%</td>
</tr>
<tr>
<td>Gen Xers</td>
<td>37%</td>
<td>49%</td>
<td>14%</td>
</tr>
<tr>
<td>Baby Boomers</td>
<td>36%</td>
<td>55%</td>
<td>9%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Very Important</th>
<th>Helpful</th>
<th>Not Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>49%</td>
<td>41%</td>
<td>10%</td>
</tr>
<tr>
<td>Asian</td>
<td>44%</td>
<td>47%</td>
<td>9%</td>
</tr>
<tr>
<td>Caucasian</td>
<td>39%</td>
<td>47%</td>
<td>14%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>39%</td>
<td>46%</td>
<td>15%</td>
</tr>
</tbody>
</table>

Total: 40% 47% 14%

### 59.4 App Census

The number of apps available as of January 2019 was as follows:

- Google Play (Android): 2.10 million
- Apple App Store (iOS): 2.00 million
- Windows Store: 669,000
- Amazon App Store: 450,000
- BlackBerry World: 234,500

### 59.5 Frequency of App Use

The average smartphone downloader has 42 apps on a device, according to
Among smartphone app users, 87% use less than 10 apps on a daily basis, 55% use between one and four apps, and 32% use between five and nine. The average tablet downloader has 35 apps on the device; 89% use less than 10 apps on a daily basis.

According to *The U.S. Mobile App Report*, smartphone owners, on average, use 27 apps per month; tablet owners use 14.

Of all time spent with apps, smartphone users spend 45% of their time with their favorite app; tablet users do so with 61% of their time. The share of time users spend with their top ranked apps is as follows:

<table>
<thead>
<tr>
<th></th>
<th>Smartphone</th>
<th>Tablet</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>45%</td>
<td>61%</td>
</tr>
<tr>
<td>2</td>
<td>18%</td>
<td>18%</td>
</tr>
<tr>
<td>3</td>
<td>10%</td>
<td>8%</td>
</tr>
<tr>
<td>4</td>
<td>7%</td>
<td>5%</td>
</tr>
<tr>
<td>5</td>
<td>4%</td>
<td>3%</td>
</tr>
<tr>
<td>6</td>
<td>3%</td>
<td>2%</td>
</tr>
<tr>
<td>7</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td>8</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td>All other</td>
<td>7%</td>
<td>2%</td>
</tr>
</tbody>
</table>

Smartphone users download the following number of apps per month:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>49%</td>
</tr>
<tr>
<td>1</td>
<td>13%</td>
</tr>
<tr>
<td>2</td>
<td>11%</td>
</tr>
<tr>
<td>3</td>
<td>8%</td>
</tr>
<tr>
<td>4</td>
<td>6%</td>
</tr>
<tr>
<td>5-to-7</td>
<td>7%</td>
</tr>
<tr>
<td>8 or more</td>
<td>6%</td>
</tr>
</tbody>
</table>

### 59.6 Reasons For App Use

According to Nielsen, mobile device owners use apps for the following reasons:

<table>
<thead>
<tr>
<th></th>
<th>Smartphone</th>
<th>Tablet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alone/by myself:</td>
<td>70%</td>
<td>65%</td>
</tr>
<tr>
<td>Bored/killing time:</td>
<td>68%</td>
<td>63%</td>
</tr>
<tr>
<td>Waiting for something/someone:</td>
<td>61%</td>
<td>48%</td>
</tr>
<tr>
<td>While watching TV:</td>
<td>48%</td>
<td>54%</td>
</tr>
<tr>
<td>Before going to sleep:</td>
<td>41%</td>
<td>44%</td>
</tr>
<tr>
<td>When first wake up:</td>
<td>34%</td>
<td>27%</td>
</tr>
<tr>
<td>Improve/help what currently doing:</td>
<td>33%</td>
<td>29%</td>
</tr>
<tr>
<td>While shopping:</td>
<td>30%</td>
<td>18%</td>
</tr>
<tr>
<td>Finding a place to eat:</td>
<td>29%</td>
<td>18%</td>
</tr>
<tr>
<td>At work:</td>
<td>28%</td>
<td>20%</td>
</tr>
<tr>
<td>Socializing with friends:</td>
<td>27%</td>
<td>19%</td>
</tr>
</tbody>
</table>
According to Tune (www.tune.com), smartphone owners download apps for the following reasons (percentage of respondents):

- Has a specific task, thought the app would help: 37%
- Friend’s recommendation: 31%
- Ad for app looked interesting: 20%
- Googled something, app looked like a good answer: 13%
- App was featured by Apple or Google: 13%
- Was a customer of company, wanted to get services: 11%

### 59.7 Distribution of App Time

According to The U.S. Mobile App Report, time spent using mobile apps is distributed by category as follows:

- Social networking: 20%
- Music: 16%
- Games: 12%
- Multimedia: 7%
- Instant messengers: 5%
- Retail: 4%
- Photos: 3%
- Search/navigation: 3%
- Portals: 2%
- News/information: 2%
- All other: 26%

### 59.8 App Store Downloads

According to App Annie (www.appannie.com), there were 194 billion app downloads worldwide in 2018, a 35% increase from two years prior.

App publishers were paid $101 billion for downloads in 2018, up 75% from two years prior.

Spending for gaming apps was $81.3 billion; $19.7 billion was spent for non-gaming apps. Gaming app spending in the U.S. was $14.0 billion, second highest worldwide, behind China, where $27.5 billion was spent on gaming apps.

### 59.9 Top App Publishers

By revenue, App Annie ranked U.S. app publishers in 2018 as follows:

1. Activision Blizzard
2. InterActiveCorp (AIC)
3. Niantic
4. Netflix
5. Electronic Arts
6. Zynga
7. Time Warner
8. Google
9. MZ
10. Epic Games
11. Pandora
12. Microsoft
13. Glu
14. Scientific Games
15. Roblox
16. Scopely

59.10 Market Resources
App Annie, 23 Geary Street, Suite 800, San Francisco, CA 94108. (415) 638-6840. (www.appannie.com)
comScore, 11950 Democracy Drive, Suite 600, Reston, VA 20190. (703) 438-2000. (www.comscore.com)

TOP APPS

60.1 Most Popular Apps
Ranked by reach, the top smartphone apps (iOS and Android platforms) among adults in March 2019 were as follows (source: comScore [www.comscore.com]):

- YouTube 80.5%
- Facebook 73.7%
- Google Search 71.3%
- Google Maps 63.2%
- Facebook Messenger 62.2%
- Gmail 57.3%
- Google Play 52.7%
- Snapchat 52.3%
- Amazon Mobile 47.3%
- Instagram 46.5%
- Google Drive 38.3%
- Pandora Radio 35.5%
- Google Photos 33.5%
- Pinterest 29.8%
- Spotify 28.1%

60.2 Rank By Monthly Active Users
Ranked by combined Android and iPhone monthly active users, the top apps in 2018 were as follows (source: AppAnnie [www.appannie.com]):

Apps
1. Facebook (Facebook)
2. Facebook Messenger (Facebook)
3. Amazon (Amazon)
4. Instagram (Facebook)
5. Snapchat (Snap)
6. Netflix (Netflix)
7. Pinterest (Pinterest)
8. Pandora Music (Pandora)
9. Twitter (Twitter)
10. Spotify (Spotify)
Games
1. Pokémon GO (Niantic)
2. Candy Crush Saga (Activision Blizzard)
3. New Words With Friends (Zynga)
4. HQ - Live Trivia Game Show (Intermedia Labs)
5. Helix Jump (Voodoo)
6. Clash of Clans (Supercell)
7. Fortnite (Epic Games)
8. Solitaire by Harpan (Zynga)
9. Clash Royale (Supercell)
10. Wordscapes (PeopleFun)

60.3 Rank By Downloads
Ranked by combined iOS and Google Play downloads, the top apps in 2018 were as follows (source: AppAnnie):

Apps
1. Facebook Messenger (Facebook)
2. Instagram (Facebook)
3. Snapchat (Snap)
4. Facebook (Facebook)
5. Netflix (Netflix)
6. Tik Tok (Toutiao)
7. Bitmoji (Snap)
8. Spotify (Spotify)
9. YouTube (Google)
10. Amazon (Amazon)

Games
1. Helix Jump (Voodoo)
2. PUBG Mobile (Tencent)
3. Fortnite (Epic Games)
4. Happy Glass (AppLovin)
5. Rise Up (Serkan Ozyilmaz)
6. Love Balls (SuperTapx)
7. ROBLOX (Roblox)
8. Hole.io (Voodoo)
9. Hello Stars (Fastone)
10. Kick the Buddy (Playgendary)

60.4 Rank By Consumer Spend
Ranked by combined iOS and Google Play consumer spend, the top apps
in 2018 were as follows (source: AppAnnie):

**Apps**
1. Pandora Music (Pandora)
2. Netflix (Netflix)
3. Tinder (InterActiveCorp -IAC)
4. YouTube (Google)
5. HBO NOW (Time Warner)
6. Hulu (Hulu)
7. Bumble App (Badoo)
8. YouTube TV (Google)
9. YouTube Music (Google)
10. STARZ (Starz Entertainment)

**Games**
1. Candy Crush Saga (Activision Blizzard)
2. Fortnite (Epic Games)
3. Pokémon GO (Niantic)
4. Clash of Clans (Supercell)
5. Slotomania (Giant Network)
6. Candy Crush Soda Saga (Activision Blizzard)
7. Toon Blast (Peak Games)
8. ROBLOX (Roblox)
9. Final Fantasy XV: A New Empire (MZ)
10. Clash Royale (Supercell)

**60.5 Market Resources**
App Annie, 23 Geary Street, Suite 800, San Francisco, CA 94108. (415) 638-6840. (www.appannie.com)

comScore, 11950 Democracy Drive, Suite 600, Reston, VA 20190. (703) 438-2000. (www.comscore.com)
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MOBILE PAYMENTS

61.1 Market Assessment

Proximity mobile payments are point-of-sale transactions that use mobile devices as a payment method via tapping, waving, and similar functionality. eMarketer (www.emarketer.com) assesses the number of proximity mobile payment users as follows:

- 2014: 16.4 million
- 2015: 23.2 million
- 2016: 37.5 million
- 2017: 46.8 million
- 2018: 55.0 million
- 2019: 61.6 million
- 2020: 67.2 million
- 2021: 71.7 million
- 2022: 74.9 million

“Mobile payments have been thought to be on the cusp of widespread adoption for several years now. But most U.S. consumers have responded to the technology with a noncommittal shrug. On paper, the idea of a consumer whipping out a smartphone, tapping it against a payment terminal and going on their merry way seems like a no-brainer. The reality has been a bit different.”

eMarketer, 12/20/18

61.2 Transactions

Proximity mobile payment transaction value in the U.S. is assessed by eMarketer as follows:
• 2015: $ 9.77 billion
• 2016: $ 27.67 billion
• 2017: $ 49.29 billion
• 2018: $ 78.09 billion
• 2019: $113.79 billion
• 2020: $153.28 billion
• 2021: $189.97 billion

### 61.3 Platforms

eMarketer assesses proximity mobile payment users, by platform, as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Starbucks</th>
<th>Apple Pay</th>
<th>Google Pay</th>
<th>Samsung Pay</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>23.4 million</td>
<td>22.0 million</td>
<td>11.1 million</td>
<td>9.9 million</td>
</tr>
<tr>
<td>2019</td>
<td>25.7 million</td>
<td>24.0 million</td>
<td>12.4 million</td>
<td>11.0 million</td>
</tr>
<tr>
<td>2020</td>
<td>27.5 million</td>
<td>25.5 million</td>
<td>13.4 million</td>
<td>11.9 million</td>
</tr>
<tr>
<td>2021</td>
<td>28.7 million</td>
<td>26.6 million</td>
<td>14.3 million</td>
<td>12.7 million</td>
</tr>
<tr>
<td>2022</td>
<td>29.6 million</td>
<td>27.5 million</td>
<td>14.9 million</td>
<td>13.2 million</td>
</tr>
</tbody>
</table>

### 61.4 Peer-to-Peer Mobile Payment Apps

Mobile peer-to-peer (P2P) payments are transactions made between two individuals using a mobile phone as a payment method via mobile browsers and mobile apps.

eMarketer estimates the number of U.S. mobile P2P payment users as follows:

- 2017: 64.4 million (27.9% of mobile phone users)
- 2018: 82.5 million (35.1%)
- 2019: 96.0 million (40.4%)

_________________________________________________________
“Mobile peer-to-peer payment apps ... have been more widely adopted by U.S. consumers than proximity mobile payments.”

_________________________________________________________

The number of users, by platform, in 2018 was as follows (source: eMarketer):

- Zelle: 27.4 million
- Venmo: 22.9 million
- Square Cash: 9.5 million
“Much of the growth surrounding P2P payments was born on the back of Venmo, the PayPal-owned property that famously includes a social sharing feature, which has found a strong user base among Millennials. But Zelle, a competing P2P service that has the backing of several traditional retail banks, has quickly gained on Venmo. Zelle surpassed Venmo in user numbers in the U.S. this year.”

eMarketer, 12/20/18
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MOBILE COUPONS/REWARDS

62.1 Overview
Redemption captured by offers that shoppers load directly to their retailer loyalty accounts via a mobile device is dubbed 'load-to-card' (L2C). According to Inmar (www.inmar.com), L2C coupons accounted for 1.6% of all coupons distributed in 2018, a 29% increase from 2017, and 15% of all coupons were redeemed. In comparison, total coupon distribution and redemption declined by 12% and 16%, respectively, due primarily to decline in distribution and redemption of the free-standing insert (FSI).

“The couponing industry is undergoing a transformational shift as marketers are revising their plans and adjusting their methods to address consumer demand for more targeted, personalized digital offers.”
Inmar, 2/13/19

For many people, engagement with redeeming discounts with their mobile device is more than simply saving money. In a survey by Valassis (www.valassis.com), one-third say they feel “rewarded” by the number of deals/savings received in a given day via text, social, and app notification.

62.2 Market Assessment
eMarketer (www.emarketer.com) assesses the number of adult mobile coupon users as follows:

- 2014: 82 million
- 2015: 98 million
- 2016: 112 million
- 2017: 123 million
- 2018: 131 million
- 2019: 137 million
- 2020: 142 million

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62.3 Mobile Device Use In Shopping

According to 2019 Valassis Coupon Intelligence Report, by Valassis (www.valassis.com), 75% of adults use smartphone coupons. By generation, those that do so are as follows:

- Millennials: 88%
- Generation Xers: 83%
- Baby Boomers: 64%

Smartphone/mobile device use in shopping is as follows (percentage of U.S. adults):

- Download paperless discounts onto store ID/loyalty card while at the store: 61%
- Switch brands based on a discount notification I receive on smartphone/mobile device in the store: 58%
- Search for discounts on smartphone/mobile device in the store: 55%
- Make a purchase based on a mobile notification in the store: 51%

Use of smartphone apps in 2019 is as follows (percentage of U.S. adults):

- Grocery/drug store/supercenter savings app: 56%
- Coupon app: 47%
- Cash back/points app: 44%
- In-store shopping rewards app: 40%
- Shopping list app: 35%
- Deal comparison app: 34%

Sixty-seven percent (67%) of adults are influenced about which store to shop based on use of paperless discounts received on a smartphone or mobile device or downloaded onto store ID/loyalty card.
LOCATION-BASED APPS

63.1 Use Of Location-Based Apps

A survey by ISACA (www.isaca.com) found that 58% of smartphone users have used location-based apps, 15% use mobile apps but have not used location-based apps, and 27% do not use apps of any type. ISACA reported that 22% of smartphone users have disabled location-based features on all apps and services; 38% have done so on some apps.

A January 2019 study by The Manifest assessed the use of location-based apps by smartphone users. The following is a summary of findings:

• Thirty-seven percent (37%) of smartphone users enable location tracking. They typically do so on 6-to-11 apps.
• Eighty-one percent (81%) of smartphone users know how to adjust their device’s location settings; most not realize their attempts to block location tracking are actually ineffective.
• Most users feel safe when using apps that track their locations. Fifty-seven percent (57%) are comfortable with apps that track their location compared to 15% of smartphone users who do not want apps knowing their whereabouts.
• Forty-two percent (42%) of people find location tracking apps convenient; an additional 29% feel safer when apps know their location.
• More than double the number of men (35%) are willing to share their location with dating apps compared to women (16%).
• Among people who feel uncomfortable using location tracking apps, 52% say it’s because they feel unsafe.
• Thirty-one percent (31%) of people want complete privacy and don’t trust companies with their information.

“Many people recognize the potential benefits of location tracking features, which offer a more unique and useful experience. Still, not everyone is comfortable with or aware of how much information apps can acquire.”

The Manifest, 1/23/19
63.2 Location-Based Marketing

Location-based marketing is a marketing strategy that serves advertising or content based on someone’s current or previous location. This allows marketers to make meaningful contact with their intended customer and improve the customer experience.

Location-based marketing is enabled when people opt-in to share their location with mobile apps on their smartphone. The location data is used in three ways, as follows:

• To serve an ad in real-time
• To serve location-based content, or push notification
• Matched to a real-world point-of-interest to create a historical audience segment for advertising at a later time

63.3 Location-Targeted Ads

BIA/Kelsey (www.biakelsey.com) assesses U.S. mobile location-targeted ad spending as follows:

• 2017: $17.1 billion
• 2018: $22.1 billion
• 2019: $26.5 billion
• 2020: $31.1 billion
• 2021: $35.5 billion
• 2022: $38.7 billion

63.4 Location Data Brokers

At least 75 companies receive anonymous, precise location data from apps whose users enable location services to get local news and weather or other information, according to The New York Times. These location data brokers include IBM, which got into the business with its purchase of the Weather Channel’s apps, and Foursquare, which remade itself from a social network into a location marketing company.

Several of the location data brokers claim to track up to 200 million mobile devices in the United States. The databases reveal people’s travels in detail, accurate to within a few yards and in some cases updated more than 14,000 times a day. These companies sell, use, or analyze the data to cater to advertisers, retail outlets, and even hedge funds seeking insights into consumer behavior.
“Many location companies say that when phone users enable location services, their data is fair game. It’s a hot market, with sales of location-targeted advertising reaching an estimated $21 billion this year.”

The New York Times, 12/10/18
PART IX: VOICE TECHNOLOGIES
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DIGITAL VOICE ASSISTANTS

64.1 Use Of Digital Voice Assistants

Built into smartphones and other smart devices, digital voice assistants, or personal assistants, are bots that use voice interaction to provide information and perform various tasks for users much like a human assistant would. Siri, introduced by Apple in 2011, was the first voice assistant to enter the mainstream.

eMarketer (www.emarketer.com) estimates that 90.1 million adults used smartphone voice assistants monthly in 2018; 45.7 million used smart speakers.

“Despite this being the early days for digital voice assistants, they are already remarkably popular.”

Demo Memo

According to a survey by CivicScience (www.civicscience.com), the percentage of U.S. Internet users that used a voice assistant in 2018 was as follows:

- Smartphone: 33%
- Automobile: 11%
- Smart speaker: 9%
- Tablet: 5%
- Laptop: 3%
- Smartwatch: 3%

A 2018 survey by PricewaterhouseCoopers (www.pwc.com) found devices to which Internet users have given voice commands as follows:

- Smartphone: 57%
- Tablet: 29%
- Laptop: 29%
- Desktop: 29%
- Smart speaker: 27%
- TV remote: 21%
- Car navigation: 20%
- Wearable: 14%

Among adult smartphone users, a 2018 survey by Fluent (www.fluentco.com) found the frequency of voice assistant use as follows (percentage of respondents):

- All the time: 21%
- Sometimes: 24%
- Rarely: 19%
- Never: 46%
When users of digital voice assistants were asked in a survey by Pew Research (www.pewresearch.org) why they use the technology, responses were as follows (percentage of respondents):

<table>
<thead>
<tr>
<th>Major Reason</th>
<th>Minor Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Let me use device without my hands:</td>
<td>55%</td>
</tr>
<tr>
<td>It is fun:</td>
<td>28%</td>
</tr>
<tr>
<td>Spoken language feels more natural than typing:</td>
<td>22%</td>
</tr>
<tr>
<td>It is easier for children to use:</td>
<td>23%</td>
</tr>
</tbody>
</table>

### 64.2 Applications

When asked in a 2018 survey by PricewaterhouseCoopers about uses for voice assistant devices, users responded as follows:

- **Check weather/news:**
  - Daily: 35%
  - Monthly: 50%
  - Never: 15%

- **Play music:**
  - Daily: 33%
  - Monthly: 49%
  - Never: 18%

- **Search for something that would normally be typed into a search engine:**
  - Daily: 32%
  - Monthly: 57%
  - Never: 11%

- **Send text of email:**
  - Daily: 31%
  - Monthly: 43%
  - Never: 26%

- **Ask a question:**
  - Daily: 29%
  - Monthly: 59%
  - Never: 12%

- **Set a timer or reminder:**
  - Daily: 23%
  - Monthly: 58%
  - Never: 19%

- **Check traffic/navigation:**
  - Daily: 19%
  - Monthly: 54%
  - Never: 27%

- **Control other smart devices:**
  - Daily: 16%
  - Monthly: 28%
  - Never: 56%

- **Add items to shopping list:**
  - Daily: 13%
  - Monthly: 45%
  - Never: 42%

- **Buy/order something:**
  - Daily: 10%
  - Monthly: 40%
  - Never: 50%

---

“Consumer are becoming more comfortable using voice assistants, smart speakers, and other voice-activated devices for a variety of everyday tasks.”

eMarketer, 7/18

---

Among those who use voice technology, a 2018 survey by Fluent found applications for which smartphone users, by age, had used smartphone voice assistants as follows (percentage of respondents):

<table>
<thead>
<tr>
<th>Application</th>
<th>18-to-34</th>
<th>35 and Older</th>
<th>All Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check weather</td>
<td>61%</td>
<td>53%</td>
<td>64%</td>
</tr>
<tr>
<td>Make calls</td>
<td>63%</td>
<td>63%</td>
<td>63%</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Activity</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ask questions</td>
<td>54%</td>
<td>47%</td>
<td>57%</td>
</tr>
<tr>
<td>Shopping</td>
<td>39%</td>
<td>38%</td>
<td>40%</td>
</tr>
<tr>
<td>Play games</td>
<td>38%</td>
<td>43%</td>
<td>37%</td>
</tr>
<tr>
<td>Check/update calendar</td>
<td>34%</td>
<td>31%</td>
<td>35%</td>
</tr>
<tr>
<td>Cooking help/recipes</td>
<td>30%</td>
<td>28%</td>
<td>31%</td>
</tr>
<tr>
<td>Check traffic</td>
<td>27%</td>
<td>24%</td>
<td>28%</td>
</tr>
<tr>
<td>Plan trips; find flights/hotels</td>
<td>19%</td>
<td>16%</td>
<td>20%</td>
</tr>
<tr>
<td>Use a translation function</td>
<td>14%</td>
<td>15%</td>
<td>14%</td>
</tr>
<tr>
<td>Control smart home utilities</td>
<td>9%</td>
<td>9%</td>
<td>6%</td>
</tr>
</tbody>
</table>
65

SMART SPEAKERS

65.1 Users

eMarketer (www.emarketer.com) assesses smart speaker users* and
penetration as follows:
• 2016: 16.0 million (4.9% of population)
• 2017: 43.9 million (13.4%)
• 2018: 61.1 million (18.6%)
• 2019: 69.7 million (21.0%)
• 2020: 76.5 million (22.9%)

* Any age; use at least once a month

Users and penetration, by generation, is assessed as follows
(source: eMarketer):

<table>
<thead>
<tr>
<th>Generation</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Millennials</td>
<td>18.0 million (24.9%)</td>
<td>24.9 million (34.3%)</td>
</tr>
<tr>
<td>Generation Xers</td>
<td>12.6 million (19.2%)</td>
<td>16.5 million (25.1%)</td>
</tr>
<tr>
<td>Baby Boomers</td>
<td>6.4 million (8.7%)</td>
<td>8.2 million (11.3%)</td>
</tr>
<tr>
<td>Seniors</td>
<td>2.8 million (5.5%)</td>
<td>3.8 million (7.3%)</td>
</tr>
</tbody>
</table>

65.2 Market Leaders

U.S. smart speaker user penetration, by brand, has been as follows
(source: eMarketer):

<table>
<thead>
<tr>
<th>Brand</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amazon Echo</td>
<td>66.6%</td>
<td>63.3%</td>
</tr>
<tr>
<td>Google Home</td>
<td>29.5%</td>
<td>31.0%</td>
</tr>
<tr>
<td>Apple HomePod/other</td>
<td>8.3%</td>
<td>12.0%</td>
</tr>
</tbody>
</table>

65.3 Activities

U.S. smart speaker user penetration in 2019, by activity, was as follows
(source: eMarketer):

<table>
<thead>
<tr>
<th>Activity</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio listeners</td>
<td>80%</td>
</tr>
<tr>
<td>Inquirers</td>
<td>73%</td>
</tr>
<tr>
<td>Shoppers</td>
<td>37%</td>
</tr>
<tr>
<td>Smart-home control users</td>
<td>35%</td>
</tr>
<tr>
<td>Buyers</td>
<td>27%</td>
</tr>
</tbody>
</table>
Devices & Demographics 2018, by Fluent (www.fluentco.com), reported uses among adults with a smart speaker as follows (percentage of respondents):

- Check weather: 44%
- Ask questions: 41%
- Play audio: 33%
- Make calls: 28%
- Shop: 25%
- Play games: 23%
- Cooking assistance: 22%
- Check/update calendar: 22%
- Check traffic: 17%
- Control TV: 16%
- Travel (flights/hotels): 13%
- Control smart home utilities: 13%
66.1 Shopping With Voice Assistants

The eMarketer E-Commerce Survey, conducted in December 2018 by Bizrate Insights (www.bizrateinsights.com), reported activities by adults who own a smart speaker as follows (percentage of respondents):

<table>
<thead>
<tr>
<th>Activity</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Browsed products:</td>
<td>14%</td>
<td>20%</td>
</tr>
<tr>
<td>Asked for product recommendations:</td>
<td>15%</td>
<td>18%</td>
</tr>
<tr>
<td>Ordered movies, TV shows, music, etc.:</td>
<td>14%</td>
<td>13%</td>
</tr>
<tr>
<td>Added products to shopping cart, then finished checkout on another device:</td>
<td>10%</td>
<td>13%</td>
</tr>
<tr>
<td>Reordered products that you’ve bought before:</td>
<td>7%</td>
<td>14%</td>
</tr>
<tr>
<td>Added products to shopping cart, then purchased on smart speaker:</td>
<td>6%</td>
<td>11%</td>
</tr>
<tr>
<td>Ordered electronic devices:</td>
<td>6%</td>
<td>10%</td>
</tr>
<tr>
<td>Ordered groceries or household items:</td>
<td>6%</td>
<td>8%</td>
</tr>
<tr>
<td>None of the above:</td>
<td>64%</td>
<td>61%</td>
</tr>
</tbody>
</table>

“Smart speaker shopping aligns more with male buying behaviors; 70% of men use the devices to research products and prices. Men are less browser-focused, and their replenishment cases are a lot higher. They are also looking for a greater number of brands and items earlier in their journey, so automation is easier with men.”

eMarketer, 2/13/19

Connecting With Shoppers In The Age Of Choice, by Navar (www.navar.com), reported ways in which voice assistant users, ages 21-to-65, shop with their devices...
(percentage of respondents):
• Research products: 51%
• Add to shopping list: 36%
• Track a package: 30%
• Make a purchase: 22%
• Provide ratings or reviews: 20%
• Contact customer support: 18%
• Reorder items: 17%

66.2 Voice Buyers

eMarketer (www.emarketer.com) assesses U.S. smart speaker owners who have used their device to make a purchase with voice command as follows:
• 2017: 8.6 million (19.7% of smart speaker users)
• 2018: 17.2 million (28.2%)
• 2019: 22.7 million (32.5%)
• 2020: 25.6 million (33.4%)

“Voice commerce might one day change how people shop online. But for now, only a minority of consumers regularly use a voice-activated smart speaker to make purchases.”

eMarketer, 12/20/18

Estimates of voice buying activity vary. A variety of sources have found considerably higher levels than reported by eMarketer. A 2018 survey by Sapio Research (www.sapioresearch.com) reported that 54% of U.S. voice speaker users had made a purchase with their device. In that survey, the frequency of purchases was assessed as follows (percentage of respondents):

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every day</td>
<td>5%</td>
<td>8%</td>
</tr>
<tr>
<td>2-3 times a week</td>
<td>6%</td>
<td>7%</td>
</tr>
<tr>
<td>Once a week</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>2-3 times a month</td>
<td>10%</td>
<td>12%</td>
</tr>
<tr>
<td>Once a month</td>
<td>6%</td>
<td>8%</td>
</tr>
<tr>
<td>Once every 2-3 months</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>Once every 6 months</td>
<td>3%</td>
<td>4%</td>
</tr>
<tr>
<td>Once a year</td>
<td>2%</td>
<td>2%</td>
</tr>
</tbody>
</table>
The Sapio Research survey asked about concerns about making purchases via smart speaker. Responses were as follows:

- Security: 59% Great/Moderate, 30% Some/Slight, 12% No Concern
- Ordering wrong brand/item: 53% Great/Moderate, 35% Some/Slight, 12% No Concern
- Accidently ordering duplicates: 49% Great/Moderate, 38% Some/Slight, 14% No Concern

### 66.3 In-Store Shopping

According to a 2018 survey by Voysis (www.voysis.com), adults would use smartphone voice assistants while shopping as follows (percentage of respondents):

- Locate a product: 31%
- Learn about discounts or deals: 29%
- Compare products: 26%
- Request assistance: 21%
- Self checkout: 18%

### 66.4 Local Business Queries

Sapio Research asked voice assistant and smart speaker users about use of their devices related to shopping with local businesses. Responses were as follows (percentage of respondents):

<table>
<thead>
<tr>
<th>Address/Directions</th>
<th>Hours</th>
<th>Specific Item</th>
<th>Call Store</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female:</td>
<td>43%</td>
<td>32%</td>
<td>12%</td>
</tr>
<tr>
<td>Male:</td>
<td>41%</td>
<td>30%</td>
<td>14%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>Address/Directions</th>
<th>Hours</th>
<th>Specific Item</th>
<th>Call Store</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-to-24:</td>
<td>53%</td>
<td>27%</td>
<td>8%</td>
<td>11%</td>
</tr>
<tr>
<td>25-to-34:</td>
<td>34%</td>
<td>35%</td>
<td>17%</td>
<td>14%</td>
</tr>
<tr>
<td>35-to-44:</td>
<td>42%</td>
<td>32%</td>
<td>11%</td>
<td>15%</td>
</tr>
<tr>
<td>45-to-54:</td>
<td>44%</td>
<td>31%</td>
<td>12%</td>
<td>13%</td>
</tr>
<tr>
<td>55-to-64:</td>
<td>43%</td>
<td>29%</td>
<td>14%</td>
<td>13%</td>
</tr>
<tr>
<td>65 and older:</td>
<td>51%</td>
<td>22%</td>
<td>15%</td>
<td>8%</td>
</tr>
</tbody>
</table>

**Total** 42% Address/Directions, 31% Hours, 13% Specific Item, 13% Call Store
66.5 Voice-Search Promotions

Brands are exploring ways to attract customers to their products via voice-search.

“Experts say Alexa’s Skills and Google’s Actions – essentially apps – are good ways to dabble in the space so brands will be prepared as voice proliferates. Brands and agencies are looking to create identities for when consumers can’t see the products, such as offering recipes or developing a unique voice or audio signature that makes their brands instantly recognizable.”

Advertising Age, 1/8/18

According to Advertising Age, brands can offer voice-only deals exclusive to Amazon via the Echo device. Using Alexa, Tide’s Stain Remover app, for example, doles out advice for more than 200 types of stains. Campbell’s Kitchen helps consumers choose recipes and then helps guide the cooking process. And Nestlé has rolled out a “GoodNes” skill, which pairs voice cooking instructions with an online guide.

“Many voice applications are not about directly driving sales, but getting people to use more. [For example], ‘Here are recipe suggestions for this product’ geared toward getting people to use more of it. A byproduct: Getting people more used to engaging with your brand with voice.”

Advertising Age, 1/8/18

CONSUMER USE OF THE INTERNET & MOBILE WEB 2020-2021
• 313 •
In early 2018, Google introduced Shopping Actions, an evolution of Google Express offering products on newer platforms like Google Assistant to let people add products to a universal basket that connects mobile, browser and voice platforms for easier ordering. Early results from Shopping Actions, including the Target coupon program, found that the number of items in customers’ Google Express carts jumped an average of 20%.

Target and Google teamed up using Shopping Actions for a voice-activated coupon on Google Assistant. Consumers could activate the discount by saying or typing “spring into Target” on their Google Assistant app on iOS or Android or other device that has the voice-based feature built in. Those who activated the coupon received $15 credit toward their next Target order through Google Express.

“As consumers become increasingly accustomed to shopping and completing transactions with voice technology, it’s a natural progression to receive product or retailer coupons through the same medium.”

Center for Media Research
Research Brief, 4/20/18
PART X: TECHNOLOGY
INTERNET TECHNOLOGIES

67.1 Overview
The Internet rose from relative obscurity during the 1980s to become the dominant communications medium in the world. This chapter assesses some of the technologies that fostered this rise.

67.2 Internet Technologies

Broadband
- Deployment of broadband began in the late 1990s when digital subscriber lines (DSLs) were converted from existing copper telephone lines into a data link 30 times faster than the speed of a 56k modem. The asymmetric digital subscriber line (DSL) is still the most common form of broadband.
- In 1998, CCITT (www.itu.int), an international standards group, defined broadband service as transmission channels capable of supporting bit rates greater than about 1.5 to 2 megabits per second (Mbps).

“Before broadband the Web did not really work. Broadband meant the Web could finally compete with TV on its own terms. When the Web launched, standard dial-up speeds were 14k. A slow broadband connection today is 4Mb. That is 300 times faster, yet users still complain.”

100 Ideas That Changed The Web
Cloud Computing

• Distributed computing over a network is dubbed ‘cloud computing.’ The term originates from the stylized cloud used to depict the Internet on computer network diagrams.

• Amazon dominates cloud computing with its Amazon Web Services (AWS), launched in 2006. AWS annual revenues are estimated at $5 billion to $6 billion. Top rivals include Microsoft and Google.

• A survey by the Harris Poll (www.theharrispoll.com) for SOASTA (www.soasta.com) found 86% of cloud users said the cloud had improved their life online. Users recognize the following benefits of cloud computing (percentage of respondents):
  - Makes file sharing easier: 41%
  - Don’t have to worry about backing up data: 41%
  - Sharing photos with family and friends: 40%
  - Accessing music anywhere: 37%
  - Security: 22%
  - Makes work easier (e.g., organization): 18%
  - Can get a smartphone without paying extra for more memory: 17%

“Cloud computing is not just about sharing resources and economics of scale. It is a move away from dedicated hardware to a shared model where you pay for what you use. This means that software can be accessed from anywhere. You are no longer tied to a single machine. Files can no longer be lost. Backup is automatic. Downtime is reduced. Upgrades are built in.”

100 Ideas That Changed The Web

Collaborative Filtering

• Collaborative filtering makes automatic predictions (filtering) about a user’s interests by collecting information on preferences or tastes from many users (collaborating). It is commonly used to help people find things of interest on the Internet and is now a fundamental part of people’s Web experience.

• Alexa (www.alexa.com), acquired by Amazon in 1999, was among the first to apply collaborative filtering to the Internet. Amazon adopted the technology to present to
customers recommendations of related products based on their purchase history. When customers buy a book, for example, the Amazon bookstore provides a list of related books based on other customers’ purchase history.

- Collaborative filtering is used by social bookmarking services such as Digg. Stories appear on the front page of Digg as they are “voted up” (rated positively) by its user community. As the community becomes larger and more diverse, the promoted stories can better reflect the average interest of the community members. StumbleUpon uses collaborative filtering as the basis for its discovery engine. Last.fm applies the same approach to music and Netflix applies the technology to film.

“As the Web matures, our willingness to divulge personal information is growing. In an increasingly connected world, this data is shared across sites and applications. Collaborative filters will develop tailored experiences based on our demographics and interests as well as our purchase history. Instead of our having to seek out information, collaborative filtering will bring it to us before we have even asked for it.”

100 Ideas That Changed The Web

Domain Names
- The Domain Name System (DNS) is the system for identifying a device that is connected to the Internet. It translates numerical Web addresses into identifiable domain names.
- According to the Mozscape (http://moz.com), there are 162 billion URLs on the Internet. The top 100 domains are listed in Section 11.3 of this handbook.
“DNS servers receive billions of simultaneous requests. Millions of domain names and IP addresses are changed every day. DNS handles all of these with ease, yet its importance is more fundamental than that. Without DNS, there would have been no dot-com, and without dot-com, there would have been no dot-com revolution.”

100 Ideas That Changed The Web

Geolocation

• Geolocation identifies the geographic location of a mobile phone or Internet-connected computer terminal. Location is assessed by the device using Global Positioning System (GPS) technology. Virtually all cellphones and smartphones sold in the United States since 2010 have GPS tracking technology embedded. The advancement of geolocation technology has been rapid; the first use of GPS technology in conjunction with mobile phones dates only to 1995.

Internet Service Providers

• Internet service providers (ISPs) provide services for accessing, using, or hosting a website on the Internet.
• Pioneer ISPs were Telenet, launched by BBN Technologies in 1975; CompuServe, launched as a timesharing service in 1979; Prodigy, the first dial-up service to offer full access in 1994; and America Online (AOL), which popularized consumer use of the Internet with its free CDs. AOL was acquiring a new subscriber every six seconds in the late 1990s.
• The largest ISPs are AT&T, CenturyLink, Charter Communications, Comcast, Time Warner, and Verizon. ISP subscriber statistics are presented in section 1.5 of this handbook.
• The largest website hosting services are Bluehost, Go Daddy, Hostgator, iPower, IX Web Hosting, Lunar Pages, and Yahoo! Web Hosting.

Podcasts

• A podcast is a digital file, originally made for downloading to a portable media player. The earliest podcasts were audio-only files, but today are just as likely to be video. Podcasts consist of an episodic series of audio, video, digital radio, PDF, or ePub files subscribed to and downloaded through web syndication or streamed on-line to a computer or mobile device.
The built-in support for podcasts by Apple’s iTunes in the mid-1990s enhanced the popularity of podcasts. Video-supporting iPads in the mid-2000s took podcasts multimedia. User-generated videos became popular and broadcast media soon adopted the format.

“The podcast added another dimension to self-publishing but, more significantly, it redefined how we watch TV and listen to the radio. No longer tied to a traditional media schedule, we now consume our favorite shows where we want, whenever we want.”

100 Ideas That Changed The Web

Search Engines
• A web search engine is a software system that is designed to search for information on the World Wide Web and present results to users in a line of results often referred to as search engine results pages (SERPs). SERPs present lists of websites, webpages, images, videos, maps, and more. Search engines maintain real-time information by running an algorithm on a web crawler.
• Search applications are further assessed in Chapter 36 of this handbook.

User-Generated Content
• User-generated content (UGC) refers to content such as blogs, wikis, discussion forums, posts, chats, tweets, podcasts, pins, digital images, video, audio files, and other forms of media that is created by Internet users. The content often is made available via social media websites.
“User-generated content is at the heart of the Web – a reaction against 100 years of passive media consumption. Ever since there has been content, there has been UGC. In fact, it only became user-generated when it had an opposite – professionally made content produced for broadcast. Whenever we participate in something, we increase our understanding of it. This is the true value of UGC.”

100 Ideas That Changed The Web

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Voice Over IP

- Voice over IP (VoIP) is a technology for the delivery of voice communications and multimedia sessions over the Internet or Internet Protocol (IP) networks. Other terms commonly associated with VoIP are IP telephony, Internet telephony, broadband telephony, and broadband phone service.
- There are over 9,500 IP telephony and VoIP service providers. The most popular VoIP service is Skype, with over 600 million users.

Webcams

- A webcam is a video camera that feeds or streams its image in real time to or through a computer or computer network. The video stream may be saved, viewed, or sent on to other networks via the Internet, typically as an email attachment.
- Applications include monitoring, aerial and astro photography, security cameras, telemedicine, traffic cameras, video clips, videocalling, and videoconferencing.

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“As the Web and the physical world converge, the role of the webcam becomes more central to our online experience, so much so that the next generation of webcams are likely to be wearable.”

100 Ideas That Changed The Web
Websites

- An Internet website, or simply site, is a set of related web pages typically served from a single web domain and hosted on a web server, accessible through an Internet address known as a uniform resource locator (URL). All publicly accessible websites collectively constitute the World Wide Web and are available on a royalty-free basis to the public domain.
- The first website (info.cern.ch) was published in August 1991 by Tim Berners-Lee.
- The number of Internet sites has been as follows (sources: NetCraft and Internet Live Stats (www.internetlivestats.com):
  - 1991: 1
  - 1992: 10
  - 1993: 130
  - 1994: 2,738
  - 1995: 23,500
  - 1996: 257,601
  - 1997: 1,117,255
  - 1998: 2,410,067
  - 1999: 3,177,453
  - 2000: 17,087,182
  - 2001: 29,254,370
  - 2002: 38,760,373
  - 2003: 40,912,332
  - 2004: 51,611,646
  - 2005: 64,780,617
  - 2006: 85,507,314
  - 2007: 121,892,559
  - 2008: 172,338,726
  - 2009: 238,027,855
  - 2010: 206,956,723
  - 2011: 346,004,403
  - 2012: 697,089,489
  - 2013: 672,985,183
  - 2014: 968,882,453
  - 2015: 863,105,652
  - 2016: 1,102,474,072
  - 2017: 1,630,322,579

Wi-Fi

- Wi-Fi, or WiFi, is a local area wireless computer networking technology that allows electronic devices to network, mainly using the 2.4 gigahertz UHF and 5 gigahertz SHF ISM radio bands. Wi-Fi is governed by the Institute of Electrical and Electronics Engineers (IEEE, www.ieee.org) 802.11 standards. Personal computers, video-game consoles, smartphones, digital cameras, tablet computers,
and digital audio players use Wi-Fi to connect to the Internet via a wireless network access point, or hotspot.

“The term Wi-Fi was coined by Interbrand in 1999, and we have not looked back since. Liberated from our desks, we use Wi-Fi to surf the Web, send email, find our location, and make phone calls. Wireless networking has taken the Web mobile.”

100 Ideas That Changed The Web

• Some cities provide broadband access via Wi-Fi to large parts or all of a municipal area by deploying a wireless mesh network. According to MuniWireless (www.muniwireless.com), over 400 cities and counties in the United States have deployed wireless networks.
• Many university campuses provide Wi-Fi coverage, generally with access limited by authentication to students and faculty. Wireless Andrew, launched at Carnegie Mellon University in 1993, was the first such network.

Wikis
• A wiki is a content management system which allows collaborative modification, extension, or deletion of its content and structure. Wikis allow websites that can be edited simultaneously by multiple people.
• Ward Cunningham is credited as the developer of the first wiki software in 1995. He described the program, WikiWikiWeb, as “the simplest online database that could possibly work.”
• Wikipedia, an encyclopedia project with over 48 billion monthly visitors, is the most popular wiki on the World Wide Web, but there are many sites running many different kinds of wiki software.
INTERNET OF THINGS

68.1 Overview
Internet of Things (IoT) refers to an advanced level of networked connectivity between objects, platforms, systems, and services that enables the exchange of data. The premise behind the IoT is that any object, whether natural or manufactured, has the ability to transmit data over a network.

Eighty-three percent (83%) of U.S. adults expect the IoT to have widespread and beneficial effects on the everyday lives of the public by 2025, according to Pew Research Center (www.pewresearch.org).

68.2 Market Assessment
McKinsey (www.mckinsey.com) estimates the total IoT market size in 2020 at $3.7 billion. The compound annual growth rate has been 32.6% since 2015 when the market was assessed at $900 million.

Parks Associates (www.parksassociates.com) forecasts that U.S. consumers will buy 485 million connected devices in 2021, including smart home, connected health, mobile, and connected entertainment products. By 2022, sales will exceed 520 million units.

68.3 Applications
According to Internet Of Things Survey, by SOASTA (www.soasta.com), the most highly anticipated IoT technologies among users are as follows (percentage of respondents):

- Cars: 39%
- Smart home applications: 34%
- Heart monitors: 23%
- Fitness devices: 22%
- Pet monitors (i.e., GPS trackers): 22%
- Child monitors: 20%
- Toys: 19%
- Drones: 18%
- Glasses: 15%
- Clothes: 15%
- Sports equipment: 9%
When asked what areas they expect IoT technology to improve their lives, SOASTA survey participants responded as follows (percentage of respondents):

- Improve any activity: 77%
- Stay healthy: 47%
- Save energy: 46%
- Working out: 31%
- Work: 29%
- School: 28%
- Updating friends and colleagues: 17%
- Babysitting: 16%
- Dating: 8%

68.4 Assessment of Top IoT Markets

The three top IoT markets – wearable technology, smart homes, and connected cars – are assessed in Chapters 69, 70, and 71, respectively.

68.5 Market Resources

(www.icongrouponline.com/en/English/RTB3GF6TN2NFJ?search=internet%20of%20things)

(www.idc.com/getdoc.jsp?containerId=US44755019)
WEARABLE TECHNOLOGY

69.1 Overview

Wearable computers, commonly referred to as wearables, are electronic devices that are worn by the user on the wrist, as eyewear, or integrated with clothing. Wearables provide constant interactivity between the computer and user; there is no need to turn a device on or off. Essentially, wearable computers are like an extension of the user’s mind or body.

“When it comes to the future of computing, there is one major known and a principal unknown. The known, with almost guaranteed certainty, is that the next era of computing will be wearables. The unknown, with commensurate guaranteed uncertainty, is what these wearables will be and where on your body they will live.”

The New York Times

The most popular category of wearables is fitness trackers, which are assessed in Chapter 22 of this handbook. Smartwatches are sold by Apple, LG Electronics, Motorola Mobility, Pebble, and Samsung, among others.

Google introduced a prototype of Google Glass in 2013, a head-mounted display designed as eyewear. Approximately 10,000 of the prototypes were sold at $1,500. The device became available to the public in May 2014, but Google Glass was taken off the commercial market in January 2015.

Google continued offering Google Glass for industrial use. The device has been successful for this application.
“Companies from Samsung to Dignity Health to GE are fitting their employees with smart glasses, including the product that once was known as Google Glass. The technology has found a place on factory floors and industrial settings. Its appeal is in its hands-free nature. Factory workers need to carry rugged laptops or tablets with them throughout the day to log tasks, reference work orders or read equipment manuals. With Google Glass or other wearable devices, such as Epson's Moverio, workers can call up the content they need or log tasks easily.”

eMarketer, 1/22/19

Snapchat introduced its second edition of Spectacles video sunglasses in April 2018. Spectacles, which act as a hands-free camera to create photos and video clips for sharing directly to Snapchat, cost $149. The first edition was launched in early 2017 but taken off the market after only 220,000 pair were sold.

OMsignal (www.omsignal.com) has developed an Internet-connected shirt that functions as a breathing monitor, calorie counter, fitness tracker, heart rate monitor, and step counter. Intel has demonstrated a similar smart shirt.

An emerging class of wearables are devices that attach to the body or adhere to the skin like temporary tattoos. MC10 (www.mc10inc.com), for instance, is testing small attachable computers that include wireless antennas, and temperature and heart-rate sensors, with a tiny battery.

Researchers in the Department of Materials Science and Engineering at the University of Illinois at Urbana-Champaign have been working for nearly a decade to perfect flexible devices that can be worn on the skin or implanted internally. Researchers have been working with patients with Parkinson’s disease to monitor their motions, with dermatologists to treat skin diseases, and with beauty companies like L’Oréal to develop digital stickers that track skin hydration.

69.2 Market Assessment

eMarketer (www.emarketer.com) assesses the number of U.S. adult wearable users as follows (percentage of population in parenthesis):
• 2017: 45.8 million (18.1%)
• 2018: 51.9 million (20.3%)
• 2019: 56.7 million (22.0%)
• 2020: 60.6 million (23.3%)
• 2021: 63.9 million (24.3%)
• 2022: 67.0 million (25.3%)

The number of wearable users in 2019, by age, were as follows (source: eMarketer):
• 0-to-11: 1.1 million
• 12-to-17: 2.7 million
• 18-to-24: 9.3 million
• 25-to-34: 17.0 million
• 35-to-44: 14.0 million
• 45-to-54: 8.2 million
• 55-to-64: 4.9 million
• 65 and older: 3.3 million

The following is a comparison of the use of wearables by Millennials and Generation Xers (source: eMarketer):

<table>
<thead>
<tr>
<th></th>
<th>Millennials</th>
<th>Gen Xers</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>21.2 million</td>
<td>14.0 million</td>
</tr>
<tr>
<td>2018</td>
<td>23.8 million</td>
<td>15.4 million</td>
</tr>
<tr>
<td>2019</td>
<td>25.5 million</td>
<td>16.4 million</td>
</tr>
</tbody>
</table>

The number of smartwatch users is assessed as follows (source: eMarketer):
• 2018: 24.5 million
• 2019: 28.7 million
• 2020: 31.8 million
• 2021: 34.3 million
• 2022: 36.6 million

### 69.3 Consumer Demand

When asked in a survey by PricewaterhouseCoopers (www.pwc.com) what uses for which they want to receive from wearable technology, responses were as follows:
• Exercise smarter: 77%
• Collect and track medical information: 75%
• Eat better: 67%
• Find retail deals: 46%
• Control home appliances: 32%
• Access to entertainment: 29%
• Plug into social media: 26%
According to Kantar Insights (www.us.kantar.com), among adults that have not purchased and do not plan to purchase a wearable device, reasons are as follows (percentage of respondents):

- Price: 46%
- Functions are not useful: 33%
- Do not want to wear a watch: 30%
“Manufacturers have struggled to convince consumers to purchase wearables. An old saying may apply here: ‘jack of all trades, master of none.’ It is a fitting metaphor for the current state of the wearable market, but for consumers looking for a specific use case instead of general functionality, the future holds some promise.”

Lauren Guenveur, Director
Kantar Worldpanel

While market penetration of wearables has not met forecasts, it may be that the market is simply slower to take off than anticipated. A survey by AYTM Market Research found that 46% of U.S. adults planned to make a purchase within the next five years; another 26% said they might buy a device.
SMART HOMES

70.1 Overview
Homes with an Internet-connected controller for monitoring and control of HVAC, security, and other systems are dubbed smart homes or connected homes.

Coldwell Banker Real Estate (www.coldwellbanker.com) reported that 76% of adults think that having just one category of smart technology in a home is not enough for it to be considered smart. Sixty percent (60%) feel that a home needs to have at least three categories of smart products to be considered a smart home.

A December 2018 survey by Parks Associates (www.parksassociates.com) found that more than 40% of U.S. broadband households find the smart home concept appealing for their home.

70.2 Component Devices
Any device in the home that uses electricity can be a component of a home network. The most popular applications are door locks, lighting, home security, home theater and entertainment, and thermostat regulation.

According to Parks Associates, 27% of U.S. households had a connected home security system in 2018, making this the most common smart home component.

With the aging U.S. population, interest in the use of technology to facilitate independent living is on the rise. Parks Associates reports 17% of U.S. broadband households are interested in purchasing a system that would help them live independently as they age. Among the 12% of U.S. broadband household that are headed by a caregiver – someone caring for an aging family member or a family member with a health-related condition – 50% are very interested in independent living features for family members. Forty-five percent (45%) are very interested in a home system that senses emergencies and alerts them or first responders.

70.3 Market Assessment
According to Parks Associates, 32% of U.S. broadband households owned at least one connected device in 2018. Fifty percent (50%) of households intend to purchase a smart home device in 2019.

Interoperability among smart home devices is becoming increasingly important. Seventy-five percent (75%) of consumers planning to buy smart home devices in 2019...
value interoperability with other products in their home. In 2018, over 33% of consumers use only individual apps for discrete devices and do not have an app that controls multiple products. Twenty-five percent (25%) of smart home device owners controlled all or some of their smart devices through their home security app.

Parks Associates reported purchase intentions for smart home devices among U.S. broadband households increased by 66% year-over-year in 2019.

### 70.4 Important Features

A 2018 survey by McAfee (www.mcafee.com) reported the most important considerations among U.S. Internet users when deciding to purchase a smart home device as follows:

- Security: 36%
- Price: 32%
- Ease of use: 13%
- Product reviews from users: 8%
- Product reviews from media: 6%
- Recommendations: 3%
- Design/aesthetics: 3%

### 70.5 User Satisfaction

The Harris Poll (www.theharrispoll.com) asked smart home technology owners about their attitude toward the technology which they had installed. By age, responses were as follows (percentage of respondents):

<table>
<thead>
<tr>
<th></th>
<th>18-to-44</th>
<th>45 and Older</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>I recommend smart home technology:</td>
<td>92%</td>
<td>86%</td>
<td>91%</td>
</tr>
<tr>
<td>Smart-home products make my life easier:</td>
<td>90%</td>
<td>80%</td>
<td>87%</td>
</tr>
<tr>
<td>I would be more likely to buy a home if smart technology were already installed:</td>
<td>85%</td>
<td>71%</td>
<td>81%</td>
</tr>
<tr>
<td>I consider myself an early adopter of technology:</td>
<td>84%</td>
<td>58%</td>
<td>77%</td>
</tr>
<tr>
<td>Smart home products give me peace of mind when it comes to home security:</td>
<td>75%</td>
<td>64%</td>
<td>72%</td>
</tr>
<tr>
<td>I made my home ‘smart’ when I moved in:</td>
<td>62%</td>
<td>46%</td>
<td>57%</td>
</tr>
</tbody>
</table>

### 70.6 Market Resources


71

CONNECTED CARS

71.1 Overview
A connected car is a vehicle that is equipped with Internet access that allows the
car to communicate with other devices both inside and outside of the vehicle. Typically,
a connected car has an in-car entertainment unit and an in-dash system with a screen
from which the operations of the connections can be managed.
Connected cars give drivers access to such things as Internet, navigation, links
to roadside assistance, automatic notifications of traffic congestion, and safety alerts.
Smart devices and apps are available that interact with the car from distances.
Users can unlock their car, check the status of batteries on electric cars, find the
location of the car, or remotely activate the climate control system.
Intel (www.intel.com) reports that the connected car is the third fastest-growing
technological device after phones and tablets.

71.2 Market Assessment
Connected Car Report, by PricewaterhouseCoopers (www.pwc.com), forecasts
the value from the sale of connected car packages to end customers at $155.9 billion
globally in 2022, an increase from $65.1 billion in 2018.
IHS Automotive (www.ihs.com/industry/automotive.html) forecasts the number of
Internet-connected cars will increase globally to 152 million in 2020.
Connected car penetration in the U.S. was 39.3% in 2019 and is expected to
reach 73.6% by 2023.

71.3 Consumer Demand
A survey by McKinsey & Company (www.mckinsey.com) found that 80% of car
buyers consider connectivity “important” or “very important.”
IHS Automotive reports that over 50% of consumers are swayed by the presence
of an Internet-capable device.
According to Accenture (www.accenture.com), technology is the top selling point
for 39% of U.S. car buyers, almost triple the 14% who care most about horsepower and
handling.
### 71.4 Privacy Concerns

Connected vehicles can collect data on almost everything: where the driver lives and works, retail and restaurant visits, radio stations and playlists listened to, driving habits, and more. When a smartphone is synced to a car, the auto manufacturer can gain insight into close personal data. Some newer cars have interior cameras pointed at the driver to monitor distracted driving.

Car owners consent to the use of this data when they purchase their vehicle or services such as OnStar and SiriusXM. In the absence of regulations governing the use of this data, it is impossible to know the extent that automakers, navigation services, and others are providing this data to government agencies, insurance companies, and marketers. But it is clear that this data is being shared and sold. Seventy-two percent (72%) of car owners say that they have no idea this is happening, according to CBS News.

> “Privacy advocates point out that it's on us to start thinking about cars for what they've become: data-generating devices. Vehicles may know more about you than you think – where you've been, what you're listening to, and what kind of coffee you like. Privacy advocates are warning [that this information] may end up in the hands of advertisers or even your insurance company. Now, carmakers are rushing to turn your car's data into a revenue stream, reselling blocks of location information. Soon, a car's data may be worth more than the vehicle itself, according to one car data company. Driver data could add up to three-quarters of a trillion dollars industry-wide by 2030.”

CBS News, 11/13/18

### 71.5 Market Resources

72

VIRTUAL & AUGMENTED REALITY

72.1 Overview

Research in virtual reality (VR) – computer technology that simulates a user’s physical presence in an environment, real or imagined, allowing for user interaction – dates to the 1980s. Only recently have commercial VR products and content become available for consumers.

Augmented reality is the integration of digital information with the user’s environment in real time. Unlike virtual reality, which creates a totally artificial environment, augmented reality uses the existing environment and overlays new information on top of it. The development of AR dates to the late 1990s.

Pokémon Go, released by Nintendo in July 2016, introduced the public to augmented reality as players around the globe walked around staring at their smartphones in search of a Pikachu to add to their Pokedex. There were over 650 million Pokémon Go downloads during the first six months. The AR game generated $1 billion in revenue for Nintendo.

72.2 Market Assessment

SuperData Research (www.superdataresearch.com) assesses worldwide VR and AR revenues as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>VR</th>
<th>Mobile AR</th>
<th>AR/Mixed Reality</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>$3.6 billion</td>
<td>$1.8 billion</td>
<td>$0.5 billion</td>
</tr>
<tr>
<td>2019</td>
<td>$6.2 billion</td>
<td>$3.4 billion</td>
<td>$1.0 billion</td>
</tr>
<tr>
<td>2020</td>
<td>$9.6 billion</td>
<td>$4.7 billion</td>
<td>$2.3 billion</td>
</tr>
<tr>
<td>2021</td>
<td>$13.5 billion</td>
<td>$7.1 billion</td>
<td>$5.3 billion</td>
</tr>
<tr>
<td>2020</td>
<td>$16.3 billion</td>
<td>$9.6 billion</td>
<td>$8.2 billion</td>
</tr>
</tbody>
</table>

Research and Markets (www.researchandmarkets.com) projects that the AR/VR market will generate revenues of $55 billion by 2021. Advancements in 5G, artificial intelligence, and robotics are seen as critical to the success of AR/VR.

Digi-Capital (www.digi-capital.com) forecasts worldwide combined VA and AR spending in 2021 at $108 billion; AR will account for ¾ of that amount.
72.3 Use Of VR And AR


eMarketer (www.emarketer.com) estimated that there were 51.2 million AR users and 36.7 VR users in the U.S. at year-end 2018.

The top uses for VR include gaming, healthcare, live events such as concerts or sporting events, social interaction, marketing, and education.

A survey by Frank N. Magid Associates (www.magid.com) asked users of VR headsets about their satisfaction with the device. Three types of VR headsets were assessed: headsets designed for a specific smartphone, headsets that connect to a PC, and headsets designed for use with any smartphone. Responses were as follows:

<table>
<thead>
<tr>
<th></th>
<th>Specific Smartphone</th>
<th>PC-Based</th>
<th>Any Smartphone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Far exceeded</td>
<td>41%</td>
<td>35%</td>
<td>30%</td>
</tr>
<tr>
<td>Slightly exceeded</td>
<td>13%</td>
<td>29%</td>
<td>30%</td>
</tr>
<tr>
<td>Met expectations</td>
<td>37%</td>
<td>31%</td>
<td>31%</td>
</tr>
<tr>
<td>Slightly below</td>
<td>6%</td>
<td>2%</td>
<td>6%</td>
</tr>
<tr>
<td>Far below</td>
<td>3%</td>
<td>2%</td>
<td>3%</td>
</tr>
</tbody>
</table>

72.4 VR Applications

The use of VR in retail and marketing is in its infancy. The following are among the first commercial applications:

- Marriott Hotels has produced VR features that allow customers to visit various travel destinations.
- MasterCard has developed VR technology to give customers insights into places they would like to visit and hotels where they could stay.
- Devil’s Cut, a bourbon brand of Beam Suntory, produced a VR film that takes customers through the production process at its distillery.
- Cadillac, Lexus, and other auto manufacturers have developed VR experiences that take viewers to a virtual space where they can walk around vehicles, open the door to look inside, and configure a car of their own, even before it is available for purchase.

In a survey by Walker Sands (www.walkersands.com), adults said they foresee VR affecting their shopping experience as follows (percentage of respondents):

- I would be open to purchasing more online since VR would give a more realistic feel of the product remotely: 35%
- I would be less likely to visit a physical retail store with the introduction of VR technology: 22%
- I don’t believe that VR would affect my shopping experience: 37%
AR is being used to enhance the retail experience, allowing customers to virtually try on apparel, test shades of cosmetic products, or place furniture items in their home. Using AR technology in a mobile app or website, customers can narrow down their selections and then go to the store to try or examine the products. In-store, customers can sample numerous products and color options at once.

According to *The eMarketer E-Commerce Study*, conducted in December 2018 by Bizrate Insights (www.bizratesinsights.com), interest among adults in using AR while shopping is as follows (percentage of respondents):

- Use it regularly: 1%
- Have used but not regularly: 4%
- Have not used; very interested: 12%
- Have not used; somewhat interested: 22%
- Have not used; not interested: 50%
- Unfamiliar with concept: 11%

A survey by Interactions (www.interactionsmarketing.com) asked adult Internet users which product categories they would like to shop via AR. Responses were as follows (percentage of respondents):

- Furniture: 60%
- Clothing: 55%
- Groceries: 39%
- Shoes: 35%
- Makeup: 25%
- Jewelry: 25%
- Toys: 22%

The following are some AR retail apps:

- Gap offers an app to let shoppers try on clothes virtually at home via augmented reality. Powered by the Google Tango’s AR platform, The DressingRoom app is fairly straightforward. Shoppers first choose a Gap item they want to try on, select their size and then a 3-D virtual mannequin pops up modeling that item.
- Modiface (www.modiface.com) has developed AR technology for beauty marketers such as Sephora and L’Oréal that allow consumers to virtually try on products through a mobile app, website, or in-store tablet. The app simulates products on an uploaded photo or a live view of a customer so they can see the before and after prior to purchasing.
- Neiman Marcus’ dressing-room installed Memory Mirrors that enable shoppers to compare looks via AR.
- Target’s See It In Your Space augmented-reality feature on its mobile website encompasses more than 3,500 home items.
- Wayfair offers the View In Room 3D mobile app, which enables shoppers to see virtual furniture and home decor in their homes. It uses 3D models of Wayfair products, while internal sensors record a scale of the consumer’s room from its...
digital image. Shoppers can then move an item of furniture around their screen, allowing them to transform their homes into virtual showrooms to see products at scale, up close, and at every angle.

- AR furniture shopping experiences are also being used by Macy’s, Pottery Barn, and Williams-Sonoma, among others.

According to a January 2019 report by GfK (www.gfk.com), the following percentages of U.S. Internet users say they are more likely to visit a retail store that offers an AR or VR experience:

- Gen Z: 45%
- Millennials: 49%
- Gen X: 31%
- Baby Boomers: 16%

72.6 Market Resources

PART XI: THE WORLDWIDE WEB
GLOBAL USE OF THE INTERNET

73.1 Users, Year-by-Year

The International Telecommunication Union (ITU, www.itu.int), the United Nations specialized agency for information and communication technologies, reports the number of Internet users worldwide as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Users</th>
<th>Penetration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>14.161 million</td>
<td>0.3%</td>
</tr>
<tr>
<td>1994</td>
<td>25.454 million</td>
<td>0.4%</td>
</tr>
<tr>
<td>1995</td>
<td>44.838 million</td>
<td>0.8%</td>
</tr>
<tr>
<td>1996</td>
<td>77.433 million</td>
<td>1.3%</td>
</tr>
<tr>
<td>1997</td>
<td>120.758 million</td>
<td>2.0%</td>
</tr>
<tr>
<td>1998</td>
<td>188.023 million</td>
<td>3.1%</td>
</tr>
<tr>
<td>1999</td>
<td>280.866 million</td>
<td>4.6%</td>
</tr>
<tr>
<td>2000</td>
<td>414.794 million</td>
<td>6.8%</td>
</tr>
<tr>
<td>2001</td>
<td>502.292 million</td>
<td>8.1%</td>
</tr>
<tr>
<td>2002</td>
<td>665.065 million</td>
<td>10.6%</td>
</tr>
<tr>
<td>2003</td>
<td>781.435 million</td>
<td>12.3%</td>
</tr>
<tr>
<td>2004</td>
<td>913.327 million</td>
<td>14.2%</td>
</tr>
<tr>
<td>2005</td>
<td>1.030 trillion</td>
<td>15.8%</td>
</tr>
<tr>
<td>2006</td>
<td>1.162 trillion</td>
<td>17.6%</td>
</tr>
<tr>
<td>2007</td>
<td>1.373 trillion</td>
<td>20.6%</td>
</tr>
<tr>
<td>2008</td>
<td>1.575 trillion</td>
<td>23.3%</td>
</tr>
<tr>
<td>2009</td>
<td>1.766 trillion</td>
<td>25.8%</td>
</tr>
<tr>
<td>2010</td>
<td>2.023 trillion</td>
<td>29.2%</td>
</tr>
<tr>
<td>2011</td>
<td>2.231 trillion</td>
<td>31.8%</td>
</tr>
<tr>
<td>2012</td>
<td>2.494 trillion</td>
<td>35.1%</td>
</tr>
<tr>
<td>2013</td>
<td>2.728 trillion</td>
<td>38.0%</td>
</tr>
<tr>
<td>2014</td>
<td>2.956 trillion</td>
<td>40.7%</td>
</tr>
<tr>
<td>2015</td>
<td>3.185 trillion</td>
<td>43.4%</td>
</tr>
<tr>
<td>2016</td>
<td>3.417 trillion</td>
<td>46.1%</td>
</tr>
<tr>
<td>2017</td>
<td>3.650 trillion</td>
<td>48.4%</td>
</tr>
<tr>
<td>2018</td>
<td>3.896 trillion</td>
<td>51.9%</td>
</tr>
</tbody>
</table>

73.2 Users By Region

There were 4.383 billion Internet users worldwide in May 2019, penetration was 56.8% of the global population. Usage by region was as follows:
73.3 Users By Country

Ranked by number of Internet users, the top user countries in 2018 were as follows:

(source: ITU):

- **China**: 765,367,947
- **India**: 621,347,554
- **United States**: 244,090,854
- **Brazil**: 141,206,801
- **Japan**: 115,845,120
- **Russia**: 109,446,612
- **Indonesia**: 85,242,841
- **Mexico**: 82,470,752
- **Germany**: 69,304,405
- **Philippines**: 63,003,313
- **United Kingdom**: 62,621,016
- **Nigeria**: 52,837,331
- **France**: 52,308,536
- **Turkey**: 52,225,879
- **Iran**: 49,038,556
- **South Korea**: 49,484,084
- **Vietnam**: 47,359,575
- **Egypt**: 43,850,141
- **Spain**: 39,215,756
- **Thailand**: 36,513,941
- **Italy**: 36,387,619
- **Canada**: 33,950,632
- **Argentina**: 33,561,876
- **South Africa**: 31,858,027
- **Pakistan**: 30,557,175
- **Colombia**: 30,548,252
- **Bangladesh**: 29,673,489
- **Poland**: 29,055,924
- **Saudi Arabia**: 27,048,861
- **Malaysia**: 25,343,685
<table>
<thead>
<tr>
<th>Country</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ukraine</td>
<td>25,260,147</td>
</tr>
<tr>
<td>Morocco</td>
<td>22,072,765</td>
</tr>
<tr>
<td>Taiwan</td>
<td>21,920,626</td>
</tr>
<tr>
<td>Australia</td>
<td>21,159,515</td>
</tr>
<tr>
<td>Venezuela</td>
<td>20,564,451</td>
</tr>
<tr>
<td>Algeria</td>
<td>19,704,622</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>19,543,075</td>
</tr>
<tr>
<td>Iraq</td>
<td>18,892,351</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>16,692,456</td>
</tr>
<tr>
<td>Myanmar</td>
<td>16,374,103</td>
</tr>
<tr>
<td>Netherlands</td>
<td>15,877,494</td>
</tr>
<tr>
<td>Peru</td>
<td>15,674,241</td>
</tr>
<tr>
<td>Chile</td>
<td>14,864,456</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>13,913,699</td>
</tr>
<tr>
<td>Romania</td>
<td>12,545,558</td>
</tr>
<tr>
<td>Sudan</td>
<td>12,512,639</td>
</tr>
<tr>
<td>Ghana</td>
<td>10,922,179</td>
</tr>
<tr>
<td>Côte d'Ivoire</td>
<td>10,650,818</td>
</tr>
<tr>
<td>Uganda</td>
<td>10,162,807</td>
</tr>
<tr>
<td>Belgium</td>
<td>10,021,242</td>
</tr>
<tr>
<td>Sweden</td>
<td>9,554,907</td>
</tr>
<tr>
<td>Ecuador</td>
<td>9,521,056</td>
</tr>
<tr>
<td>Tanzania</td>
<td>9,169,603</td>
</tr>
<tr>
<td>United Arab Emirates</td>
<td>8,913,217</td>
</tr>
<tr>
<td>Kenya</td>
<td>8,861,485</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>8,358,728</td>
</tr>
<tr>
<td>Switzerland</td>
<td>7,942,864</td>
</tr>
<tr>
<td>Greece</td>
<td>7,799,565</td>
</tr>
<tr>
<td>Azerbaijan</td>
<td>7,763,795</td>
</tr>
<tr>
<td>Austria</td>
<td>7,681,957</td>
</tr>
<tr>
<td>Portugal</td>
<td>7,622,142</td>
</tr>
<tr>
<td>Yemen</td>
<td>7,548,512</td>
</tr>
<tr>
<td>Hungary</td>
<td>7,461,297</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>7,121,116</td>
</tr>
<tr>
<td>Belarus</td>
<td>7,048,231</td>
</tr>
<tr>
<td>Congo, Dem. Rep.</td>
<td>7,011,507</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>6,997,472</td>
</tr>
<tr>
<td>Guatemala</td>
<td>6,883,796</td>
</tr>
<tr>
<td>Israel</td>
<td>6,788,737</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>6,585,678</td>
</tr>
<tr>
<td>Jordan</td>
<td>6,480,202</td>
</tr>
<tr>
<td>Tunisia</td>
<td>6,400,330</td>
</tr>
<tr>
<td>Nepal</td>
<td>6,271,270</td>
</tr>
<tr>
<td>Syria</td>
<td>6,257,430</td>
</tr>
</tbody>
</table>
• Serbia: 6,182,411
• Mozambique: 6,162,217
• Cuba: 5,638,956
• Cameroon: 5,580,465
• Denmark: 5,567,278
• Cambodia: 5,441,827
• Norway: 5,120,225
• Bolivia: 4,843,916
• Finland: 4,831,170
• Singapore: 4,821,119
• Zambia: 4,760,715
• Lebanon: 4,755,187
• Senegal: 4,698,108
• Bulgaria: 4,492,326
• Zimbabwe: 4,472,992
• Slovakia: 4,446,926
• New Zealand: 4,273,353
• Angola: 4,271,053
• Paraguay: 4,160,340
• Afghanistan: 4,068,194
• Kuwait: 4,053,797
• Ireland: 4,024,552
• Oman: 3,717,818
• Costa Rica: 3,511,549
• Palestinian Territory: 3,208,312
• Moldova: 3,083,783
• Burkina Faso: 3,047,909
• Honduras: 2,977,793
• Croatia: 2,811,056
• Puerto Rico: 2,664,928
• Rwanda: 2,657,770
• Malawi: 2,566,126
• Qatar: 2,532,059
• Madagascar: 2,505,948
• Bosnia and Herzegovina: 2,437,026
• Panama: 2,371,852
• Georgia: 2,366,406
• Uruguay: 2,306,269
• Mali: 2,358,540
• Kyrgyzstan: 2,309,235
• Lithuania: 2,243,448
• Niger: 2,194,985
• Albania: 2,105,339
• Armenia: 2,043,110
• El Salvador: 1,993,079
• Tajikistan: 1,959,127
• Laos: 1,749,517
• Nicaragua: 1,732,218
• Slovenia: 1,640,893
• Macedonia: 1,589,659
• Latvia: 1,585,471
• Benin: 1,578,008
• Guinea: 1,449,758
• Bahrain: 1,431,090
• Jamaica: 1,409,888
• Libya: 1,387,116
• Haiti: 1,353,986
• Turkmenistan: 1,223,591
• Estonia: 1,153,786
• Trinidad and Tobago: 1,058,744
• Gabon: 1,019,049
• South Sudan: 1,003,542
• Sierra Leone: 1,000,575
• Chad: 968,500
• Togo: 963,795
• Cyprus: 952,369
• Botswana: 948,977
• Namibia: 933,450
• Papua New Guinea: 924,955
• Mauritania: 919,398
• Mongolia: 729,236
• Mauritius: 702,911
• Lesotho: 665,312
• Burundi: 607,311
• Luxembourg: 570,794
• Djibouti: 532,849
• Macao: 517,789
• Congo, Rep.: 455,055
• Fiji: 452,479
• Montenegro: 448,260
• Gambia: 416,753
• Eswatini: 414,278
• Brunei: 406,705
• Bhutan: 388,541
• Liberia: 377,607
• Timor Leste: 356,356
• Malta: 344,970
• Bahamas: 336,057
• Equatorial Guinea: 332,642
• Iceland: 329,196
• Cape Verde: 312,315
• Somalia: 294,851
• Guyana: 290,375
• Suriname: 275,785
• Maldives: 275,717
• Barbados: 233,604
• New Caledonia: 226,557
• French Polynesia: 205,746
• Central African Republic: 202,204
• Belize: 176,400
• Guam: 132,221
• Aruba: 102,285

73.4 Penetration By Country

Internet penetration in 2018 was as follows (source: ITU):
• Falkland Islands: 99.02%
• Andorra: 98.87%
• Bermuda: 98.37%
• Iceland: 98.26%
• Liechtenstein: 98.10%
• Kuwait: 98.00%
• Luxembourg: 97.83%
• Faroe Islands: 97.58%
• Aruba: 97.17%
• Denmark: 97.10%
• Monaco: 97.05%
• Norway: 96.51%
• Sweden: 96.41%
• South Korea: 96.10%
• Qatar: 95.94%
• Bahrain: 95.88%
• Brunei: 94.87%
• United Arab Emirates: 94.82%
• United Kingdom: 94.62%
• Gibraltar: 94.44%
• Switzerland: 93.71%
• Netherlands: 93.20%
• Taiwan: 92.78%
• Canada: 92.70%
• Japan: 90.87%
• New Zealand: 90.81%
<table>
<thead>
<tr>
<th>Country</th>
<th>Use (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hong Kong:</td>
<td>89.42%</td>
</tr>
<tr>
<td>Estonia:</td>
<td>88.10%</td>
</tr>
<tr>
<td>Austria:</td>
<td>87.94%</td>
</tr>
<tr>
<td>Belgium:</td>
<td>87.68%</td>
</tr>
<tr>
<td>Finland:</td>
<td>87.47%</td>
</tr>
<tr>
<td>Niue:</td>
<td>86.90%</td>
</tr>
<tr>
<td>Australia:</td>
<td>86.54%</td>
</tr>
<tr>
<td>Bahamas:</td>
<td>85.00%</td>
</tr>
<tr>
<td>Spain:</td>
<td>84.60%</td>
</tr>
<tr>
<td>Ireland:</td>
<td>84.52%</td>
</tr>
<tr>
<td>Singapore:</td>
<td>84.45%</td>
</tr>
<tr>
<td>Germany:</td>
<td>84.40%</td>
</tr>
<tr>
<td>Macao:</td>
<td>83.17%</td>
</tr>
<tr>
<td>Chile:</td>
<td>82.33%</td>
</tr>
<tr>
<td>Saudi Arabia:</td>
<td>82.12%</td>
</tr>
<tr>
<td>New Caledonia:</td>
<td>82.01%</td>
</tr>
<tr>
<td>Barbados:</td>
<td>81.76%</td>
</tr>
<tr>
<td>Slovakia:</td>
<td>81.63%</td>
</tr>
<tr>
<td>Israel:</td>
<td>81.58%</td>
</tr>
<tr>
<td>Anguilla:</td>
<td>81.57%</td>
</tr>
<tr>
<td>Latvia:</td>
<td>81.32%</td>
</tr>
<tr>
<td>Cayman Islands:</td>
<td>81.07%</td>
</tr>
<tr>
<td>Cyprus:</td>
<td>80.74%</td>
</tr>
<tr>
<td>Saint Kitts and Nevis:</td>
<td>80.71%</td>
</tr>
<tr>
<td>Guam:</td>
<td>80.51%</td>
</tr>
<tr>
<td>France:</td>
<td>80.50%</td>
</tr>
<tr>
<td>Oman:</td>
<td>80.19%</td>
</tr>
<tr>
<td>Malaysia:</td>
<td>80.14%</td>
</tr>
<tr>
<td>Malta:</td>
<td>80.07%</td>
</tr>
<tr>
<td>Azerbaijan:</td>
<td>79.00%</td>
</tr>
<tr>
<td>Slovenia:</td>
<td>78.89%</td>
</tr>
<tr>
<td>Czech Republic:</td>
<td>78.72%</td>
</tr>
<tr>
<td>Lebanon:</td>
<td>78.18%</td>
</tr>
<tr>
<td>Lithuania:</td>
<td>77.62%</td>
</tr>
<tr>
<td>Trinidad and Tobago:</td>
<td>77.33%</td>
</tr>
<tr>
<td>Hungary:</td>
<td>76.75%</td>
</tr>
<tr>
<td>Kazakhstan:</td>
<td>76.43%</td>
</tr>
<tr>
<td>Macedonia:</td>
<td>76.31%</td>
</tr>
<tr>
<td>Moldova:</td>
<td>76.12%</td>
</tr>
<tr>
<td>Russia:</td>
<td>76.01%</td>
</tr>
<tr>
<td>Antigua and Barbuda:</td>
<td>76.00%</td>
</tr>
<tr>
<td>Poland:</td>
<td>75.99%</td>
</tr>
<tr>
<td>Argentina:</td>
<td>75.81%</td>
</tr>
<tr>
<td>United States:</td>
<td>75.23%</td>
</tr>
</tbody>
</table>
• Belarus: 74.44%
• Portugal: 73.79%
• Puerto Rico: 72.75%
• French Polynesia: 72.70%
• Albania: 71.85%
• Costa Rica: 71.58%
• Montenegro: 71.27%
• Serbia: 70.33%
• Greece: 69.89%
• Armenia: 69.72%
• Dominica: 69.62%
• Bosnia and Herzegovina: 69.49%
• Greenland: 69.48%
• Uruguay: 68.28%
• Brazil: 67.47%
• Croatia: 67.10%
• Jordan: 66.79%
• Saint Vincent and the Grenadines: 65.56%
• Palestinian Territory: 65.20%
• Dominican Republic: 64.99%
• Turkey: 64.68%
• Virgin Islands (U.S.): 64.38%
• Venezuela: 64.31%
• Mexico: 63.85%
• Romania: 63.75%
• Bulgaria: 63.41%
• Maldives: 63.19%
• Colombia: 62.26%
• Morocco: 61.76%
• Italy: 61.30%
• Paraguay: 61.08%
• Georgia: 60.49%
• Iran: 60.42%
• San Marino: 60.18%
• Philippines: 60.05%
• Grenada: 59.07%
• Seychelles: 58.77%
• Panama: 57.87%
• Ecuador: 57.27%
• Cape Verde: 57.16%
• Ukraine: 57.12%
• Nauru: 57.00%
• South Africa: 56.17%
• Djibouti: 55.68%
• Mauritius: 55.56%
• Tunisia: 55.50%
• Montserrat: 54.55%
• China: 54.30%
• Thailand: 52.89%
• Uzbekistan: 52.31%
• Saint Lucia: 50.82%
• Gabon: 50.32%
• Fiji: 49.97%
• Vietnam: 49.57%
• Iraq: 49.36%
• Tuvalu: 49.32%
• Cuba: 49.10%
• Suriname: 48.95%
• Jamaica: 48.78%
• Peru: 48.73%
• Bhutan: 48.11%
• Algeria: 47.69%
• Belize: 47.08%
• India: 45.15%
• Egypt: 44.95%
• Côte d'Ivoire: 43.84%
• Bolivia: 43.83%
• Botswana: 41.41%
• Tonga: 41.25%
• Jersey: 41.03%
• Guatemala: 40.70%
• Marshall Islands: 38.70%
• Kyrgyzstan: 38.20%
• Ghana: 37.88%
• British Virgin Islands: 37.60%
• Saint Helena: 37.60%
• Guyana: 37.33%
• Namibia: 36.84%
• Micronesia: 35.30%
• Syria: 34.25%
• Sri Lanka: 34.11%
• Cambodia: 34.00%
• Samoa: 33.61%
• Indonesia: 32.29%
• Honduras: 32.14%
• El Salvador: 31.25%
• Sudan: 30.87%
• Myanmar: 30.68%
<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eswatini</td>
<td>30.30%</td>
</tr>
<tr>
<td>São Tomé and Príncipe</td>
<td>29.93%</td>
</tr>
<tr>
<td>Lesotho</td>
<td>29.79%</td>
</tr>
<tr>
<td>Senegal</td>
<td>29.64%</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>27.86%</td>
</tr>
<tr>
<td>Zambia</td>
<td>27.85%</td>
</tr>
<tr>
<td>Nigeria</td>
<td>27.68%</td>
</tr>
<tr>
<td>Timor Leste</td>
<td>27.49%</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>27.06%</td>
</tr>
<tr>
<td>Yemen</td>
<td>26.72%</td>
</tr>
<tr>
<td>Equatorial Guinea</td>
<td>26.24%</td>
</tr>
<tr>
<td>Vanuatu</td>
<td>25.72%</td>
</tr>
<tr>
<td>Laos</td>
<td>25.51%</td>
</tr>
<tr>
<td>Uganda</td>
<td>23.71%</td>
</tr>
<tr>
<td>Mongolia</td>
<td>23.71%</td>
</tr>
<tr>
<td>Cameroon</td>
<td>23.20%</td>
</tr>
<tr>
<td>Tajikistan</td>
<td>21.96%</td>
</tr>
<tr>
<td>Rwanda</td>
<td>21.77%</td>
</tr>
<tr>
<td>Libya</td>
<td>21.76%</td>
</tr>
<tr>
<td>Nepal</td>
<td>21.40%</td>
</tr>
<tr>
<td>Turkmenistan</td>
<td>21.25%</td>
</tr>
<tr>
<td>Mauritania</td>
<td>20.80%</td>
</tr>
<tr>
<td>Mozambique</td>
<td>20.77%</td>
</tr>
<tr>
<td>The Gambia</td>
<td>19.84%</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>18.62%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>18.02%</td>
</tr>
<tr>
<td>Kenya</td>
<td>17.83%</td>
</tr>
<tr>
<td>Tanzania</td>
<td>16.00%</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>15.88%</td>
</tr>
<tr>
<td>Pakistan</td>
<td>15.51%</td>
</tr>
<tr>
<td>Kiribati</td>
<td>14.58%</td>
</tr>
<tr>
<td>Angola</td>
<td>14.34%</td>
</tr>
<tr>
<td>Benin</td>
<td>14.12%</td>
</tr>
<tr>
<td>Malawi</td>
<td>13.78%</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>13.24%</td>
</tr>
<tr>
<td>Mali</td>
<td>12.72%</td>
</tr>
<tr>
<td>Togo</td>
<td>12.36%</td>
</tr>
<tr>
<td>Haiti</td>
<td>12.33%</td>
</tr>
<tr>
<td>Solomon Islands</td>
<td>11.92%</td>
</tr>
<tr>
<td>Afghanistan</td>
<td>11.45%</td>
</tr>
<tr>
<td>Guinea</td>
<td>11.40%</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>11.21%</td>
</tr>
<tr>
<td>Niger</td>
<td>10.22%</td>
</tr>
<tr>
<td>Madagascar</td>
<td>9.80%</td>
</tr>
</tbody>
</table>
• Congo, Rep.: 8.65%
• Congo, Dem. Rep.: 8.62%
• Comoros: 8.48%
• South Sudan: 7.98%
• Liberia: 7.98%
• Chad: 6.50%
• Burundi: 5.59%
• Central African Republic: 4.34%
• Guinea-Bissau: 3.93%
• Somalia: 2.00%
• Eritrea: 1.31%

73.5 Online Activities By Region

According to comScore (www.comscore.com), distribution of activities among Internet users is as follows:

Asia-Pacific
- Portals: 17%
- Entertainment: 10%
- Social media: 8%
- Retail: 6%
- News/information: 4%
- Other: 56%

Europe-Middle East-Africa
- Social media: 22%
- Entertainment: 11%
- Portals: 10%
- Retail: 5%
- News/information: 4%
- Other: 48%

Latin America
- Social media: 29%
- Portals: 18%
- Entertainment: 15%
- Retail: 3%
- News/information: 3%
- Other: 32%

North America
- Portals: 15%
- Social media: 14%
- Entertainment: 12%
- Retail: 5%
- News/information: 4%
- Other: 50%

73.6 Market Resources
International Telecommunication Union (ITU), Place des Nations, 1211 Geneva 20 Switzerland. +41 22 730 5111. (www.itu.int)
GLOBAL USE OF MOBILE DEVICES

74.1 Mobile Phone and Device Users

According to eMarketer (www.emarketer.com), global mobile phone use and penetration (percent of population) has been as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Users</th>
<th>Penetration</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>4.08 billion</td>
<td>58.2%</td>
</tr>
<tr>
<td>2013</td>
<td>4.33 billion</td>
<td>61.1%</td>
</tr>
<tr>
<td>2014</td>
<td>4.55 billion</td>
<td>63.5%</td>
</tr>
<tr>
<td>2015</td>
<td>4.77 billion</td>
<td>65.8%</td>
</tr>
<tr>
<td>2016</td>
<td>4.95 billion</td>
<td>67.7%</td>
</tr>
<tr>
<td>2017</td>
<td>5.15 billion</td>
<td>69.4%</td>
</tr>
<tr>
<td>2018</td>
<td>5.30 billion</td>
<td>70.9%</td>
</tr>
</tbody>
</table>

74.2 Mobile Connections By Region

Mobile connections, by region, are assessed as follows (source: Ericsson [www.ericsson.com]):

<table>
<thead>
<tr>
<th>Year</th>
<th>Asia Pacific</th>
<th>CE-ME-A*</th>
<th>Latin America</th>
<th>North America</th>
<th>Western Europe</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>2.61 billion</td>
<td>1.33 billion</td>
<td>563 million</td>
<td>320 million</td>
<td>512 million</td>
<td>5.34 billion</td>
</tr>
<tr>
<td>2011</td>
<td>2.99 billion</td>
<td>1.48 billion</td>
<td>630 million</td>
<td>349 million</td>
<td>528 million</td>
<td>5.98 billion</td>
</tr>
<tr>
<td>2012</td>
<td>3.20 billion</td>
<td>1.63 billion</td>
<td>681 million</td>
<td>361 million</td>
<td>533 million</td>
<td>6.41 billion</td>
</tr>
<tr>
<td>2013</td>
<td>3.42 billion</td>
<td>1.73 billion</td>
<td>711 million</td>
<td>364 million</td>
<td>535 million</td>
<td>6.76 billion</td>
</tr>
<tr>
<td>2014</td>
<td>3.60 billion</td>
<td>1.84 billion</td>
<td>722 million</td>
<td>381 million</td>
<td>543 million</td>
<td>7.08 billion</td>
</tr>
<tr>
<td>2015</td>
<td>3.72 billion</td>
<td>1.96 billion</td>
<td>708 million</td>
<td>393 million</td>
<td>548 million</td>
<td>7.33 billion</td>
</tr>
<tr>
<td>2016</td>
<td>3.90 billion</td>
<td>2.07 billion</td>
<td>723 million</td>
<td>408 million</td>
<td>553 million</td>
<td>7.66 billion</td>
</tr>
<tr>
<td>2017</td>
<td>4.06 billion</td>
<td>2.18 billion</td>
<td>741 million</td>
<td>420 million</td>
<td>558 million</td>
<td>7.96 billion</td>
</tr>
<tr>
<td>2018</td>
<td>4.22 billion</td>
<td>2.28 billion</td>
<td>759 million</td>
<td>429 million</td>
<td>564 million</td>
<td>8.24 billion</td>
</tr>
<tr>
<td>2019</td>
<td>4.36 billion</td>
<td>2.37 billion</td>
<td>775 million</td>
<td>436 million</td>
<td>569 million</td>
<td>8.50 billion</td>
</tr>
<tr>
<td>2020</td>
<td>4.49 billion</td>
<td>2.45 billion</td>
<td>789 million</td>
<td>441 million</td>
<td>574 million</td>
<td>8.74 billion</td>
</tr>
<tr>
<td>2021</td>
<td>4.60 billion</td>
<td>2.53 billion</td>
<td>802 million</td>
<td>446 million</td>
<td>578 million</td>
<td>8.96 billion</td>
</tr>
</tbody>
</table>

* Central Europe, Middle East, and Africa

74.3 Smartphone Connections By Region

Smartphone connections, by region, are assessed as follows (source: Ericsson):
### 7.4 Smartphone Use By Country

According to the 2018 *Global Attitudes Survey*, by Pew Research Center (www.pewresearch.com), smartphone and mobile phone use in 2018 was as follows:

#### Advanced Economies

<table>
<thead>
<tr>
<th>Country</th>
<th>Smartphone</th>
<th>Mobile Phone</th>
<th>No Mobile Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Korea</td>
<td>95%</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td>Israel</td>
<td>88%</td>
<td>10%</td>
<td>2%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>87%</td>
<td>11%</td>
<td>2%</td>
</tr>
<tr>
<td>Sweden</td>
<td>86%</td>
<td>12%</td>
<td>2%</td>
</tr>
<tr>
<td>Australia</td>
<td>81%</td>
<td>13%</td>
<td>6%</td>
</tr>
<tr>
<td>United States</td>
<td>81%</td>
<td>13%</td>
<td>6%</td>
</tr>
<tr>
<td>Spain</td>
<td>80%</td>
<td>18%</td>
<td>2%</td>
</tr>
<tr>
<td>Germany</td>
<td>78%</td>
<td>16%</td>
<td>6%</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>76%</td>
<td>19%</td>
<td>5%</td>
</tr>
<tr>
<td>France</td>
<td>75%</td>
<td>19%</td>
<td>6%</td>
</tr>
<tr>
<td>Italy</td>
<td>71%</td>
<td>20%</td>
<td>8%</td>
</tr>
<tr>
<td>Argentina</td>
<td>68%</td>
<td>16%</td>
<td>17%</td>
</tr>
<tr>
<td>Japan</td>
<td>66%</td>
<td>26%</td>
<td>8%</td>
</tr>
<tr>
<td>Canada</td>
<td>66%</td>
<td>9%</td>
<td>25%</td>
</tr>
<tr>
<td>Hungary</td>
<td>64%</td>
<td>27%</td>
<td>9%</td>
</tr>
<tr>
<td>Poland</td>
<td>63%</td>
<td>30%</td>
<td>7%</td>
</tr>
<tr>
<td>Russia</td>
<td>59%</td>
<td>34%</td>
<td>7%</td>
</tr>
<tr>
<td>Greece</td>
<td>59%</td>
<td>32%</td>
<td>10%</td>
</tr>
</tbody>
</table>
### Emerging Economies

<table>
<thead>
<tr>
<th>Country</th>
<th>Smartphone</th>
<th>Mobile Phone</th>
<th>No Mobile Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Africa</td>
<td>60%</td>
<td>33%</td>
<td>6%</td>
</tr>
<tr>
<td>Brazil</td>
<td>60%</td>
<td>23%</td>
<td>17%</td>
</tr>
<tr>
<td>Phillipines</td>
<td>55%</td>
<td>22%</td>
<td>23%</td>
</tr>
<tr>
<td>Mexico</td>
<td>52%</td>
<td>24%</td>
<td>24%</td>
</tr>
<tr>
<td>Tunisia</td>
<td>45%</td>
<td>45%</td>
<td>10%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>42%</td>
<td>28%</td>
<td>29%</td>
</tr>
<tr>
<td>Kenya</td>
<td>41%</td>
<td>45%</td>
<td>14%</td>
</tr>
<tr>
<td>Nigeria</td>
<td>39%</td>
<td>44%</td>
<td>17%</td>
</tr>
<tr>
<td>India</td>
<td>24%</td>
<td>40%</td>
<td>35%</td>
</tr>
</tbody>
</table>

“Today, it is estimated that more than 5 billion people have mobile devices, and over half of these connections are smartphones. But the growth in mobile technology to date has not been equal, either across nations or within them. People in advanced economies are more likely to have mobile phones – smartphones in particular – and are more likely to use the Internet and social media than people in emerging economies. Whether in advanced or emerging economies, younger people, those with higher levels of education, and those with higher incomes are more likely to be digitally connected.”

Pew Research Group, 2/5/19
GLOBAL USE OF SOCIAL MEDIA

75.1 Social Network Users

eMarketer (www.emarketer.com) assesses the number of social network users worldwide as follows (annual growth in parenthesis):

- 2012: 1.41 billion (17.6%)
- 2013: 1.61 billion (14.2%)
- 2014: 1.91 billion (12.5%)
- 2015: 2.14 billion (12.2%)
- 2016: 2.34 billion (9.2%)
- 2017: 2.51 billion (7.3%)
- 2018: 2.63 billion (6.2%)
- 2019: 2.82 billion (5.6%)
- 2020: 2.95 billion (4.7%)

The number of users by region in 2018 were as follows:

- Asia-Pacific: 1.489 billion
- Latin America: 292.4 million
- North America: 220.8 million
- Western Europe: 214.8 million
- Central and Eastern Europe: 213.8 million
- Africa and the Middle East: 197.2 million

75.2 Social Networking Via Mobile Devices

eMarketer assesses mobile social network users worldwide and penetration as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Users (Change)</th>
<th>Pct. of Social Network Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>1.41 billion (23.8%)</td>
<td>64.8%</td>
</tr>
<tr>
<td>2015</td>
<td>1.66 billion (18.3%)</td>
<td>66.8%</td>
</tr>
<tr>
<td>2016</td>
<td>1.88 billion (12.8%)</td>
<td>68.3%</td>
</tr>
<tr>
<td>2017</td>
<td>2.06 billion (9.6%)</td>
<td>69.2%</td>
</tr>
<tr>
<td>2018</td>
<td>2.22 billion (8.0%)</td>
<td>69.8%</td>
</tr>
<tr>
<td>2019</td>
<td>2.38 billion (7.2%)</td>
<td>70.4%</td>
</tr>
<tr>
<td>2020</td>
<td>2.52 billion (6.2%)</td>
<td>70.7%</td>
</tr>
</tbody>
</table>
### 75.3 Penetration By Country

By country, social network use is follows (source: eMarketer):

- Norway: 71.3%
- Netherlands: 69.7%
- Sweden: 64.0%
- South Korea: 60.6%
- Denmark: 62.6%
- Finland: 60.2%
- United States: 55.4%
- Canada: 55.0%
- United Kingdom: 55.0%
- Australia: 58.9%
- Russia: 50.8%
- Argentina: 49.4%
- Germany: 48.1%
- France: 43.7%
- Japan: 42.9%
- Spain: 43.9%
- Brazil: 42.5%
- Italy: 39.6%
- Mexico: 42.9%
- Indonesia: 38.6%
- China: 32.3%
- India: 15.1%

### 75.4 Most Popular Social Networks

Ranked by monthly unique visitors in May 2019, the most popular social networks are as follows:

- Facebook (United States): 2.23 billion
- YouTube (United States): 1.90 billion
- WhatsApp (United States): 1.50 billion
- Messenger (United States): 1.30 billion
- WeChat (China): 1.06 billion
- Instagram (United States): 1.00 billion
- QQ (China): 861 million
- Tumblr (United States): 642 million
- Qzone (China): 632 million
- Tik Tok [Douyin] (China): 500 million
- Sina Weibo (China): 392 million
- Twitter (United States): 335 million
- Reddit (United States): 330 million
- Baidu Tieba (China): 300 million
- LinkedIn (United States): 294 million
- Viber (Japan): 260 million
- Snapchat (United States): 255 million
- Pinterest (United States): 250 million
- Line (Japan): 203 million
- Telegram (Russia): 200 million
- Medium (United States): 60 million
76.1 Worldwide Viewership

In 2019, more than 2.4 billion people, or 60.9% of Internet users and 31.5% of the global population, watched digital video, according to eMarketer (www.emarketer.com). Digital video viewership worldwide recorded double-digit increases annually until 2017. Digital video viewing lagged for many years in developing markets such as India, Indonesia, and the Middle East and Africa, where slower mobile Internet speeds and expensive data plans tended to limit video consumption. Now, the widespread use of smartphones has spurred video viewing worldwide.

Mobile video viewers and penetration (percentage of digital video viewers) are assessed as follows (source: eMarketer):

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Viewers</th>
<th>Penetration</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>1.43 billion</td>
<td>70.5%</td>
<td>23.3%</td>
</tr>
<tr>
<td>2017</td>
<td>1.67 billion</td>
<td>75.0%</td>
<td>16.4%</td>
</tr>
<tr>
<td>2018</td>
<td>1.87 billion</td>
<td>78.4%</td>
<td>11.9%</td>
</tr>
<tr>
<td>2019</td>
<td>2.04 billion</td>
<td>80.5%</td>
<td>9.2%</td>
</tr>
<tr>
<td>2020</td>
<td>2.19 billion</td>
<td>82.1%</td>
<td>7.6%</td>
</tr>
</tbody>
</table>

According to eMarketer, 765 million people worldwide used a subscription over-the-top (OTT) video service at least once per month in 2018.

76.2 Asia-Pacific Region

Digital viewers and penetration in the Asia-Pacific region is assessed as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Viewers</th>
<th>Penetration</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>1.00 billion</td>
<td>56.8%</td>
<td>12.6%</td>
</tr>
<tr>
<td>2017</td>
<td>1.10 billion</td>
<td>58.4%</td>
<td>10.3%</td>
</tr>
<tr>
<td>2018</td>
<td>1.18 billion</td>
<td>58.9%</td>
<td>7.6%</td>
</tr>
<tr>
<td>2019</td>
<td>1.26 billion</td>
<td>59.2%</td>
<td>6.7%</td>
</tr>
<tr>
<td>2020</td>
<td>1.34 billion</td>
<td>59.4%</td>
<td>5.7%</td>
</tr>
</tbody>
</table>

The Asia-Pacific region accounts for more than half of worldwide digital video viewers, however, this represents only 27.0% of the total population in the region.
“Digital video viewers in Asia-Pacific has climbed at a steady pace due to increased smartphone penetration and mobile broadband growth, along with faster data speeds.”

eMarketer

At least half of the population in mature markets such as Australia, Japan, and South Korea view at least one digital video per month.

### 76.3 Western Europe

Digital viewers and penetration in the Western European region is assessed as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Viewers</th>
<th>Penetration</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>211.6 million</td>
<td>66.9%</td>
<td>4.3%</td>
</tr>
<tr>
<td>2017</td>
<td>219.0 million</td>
<td>68.2%</td>
<td>3.5%</td>
</tr>
<tr>
<td>2018</td>
<td>225.0 million</td>
<td>69.1%</td>
<td>2.8%</td>
</tr>
<tr>
<td>2019</td>
<td>230.2 million</td>
<td>69.9%</td>
<td>2.3%</td>
</tr>
<tr>
<td>2020</td>
<td>234.7 million</td>
<td>70.7%</td>
<td>2.0%</td>
</tr>
</tbody>
</table>

The largest digital video markets in Western Europe, ranked by 2019 viewership, were as follows:

- United Kingdom: 44.9 million
- Germany: 42.4 million
- France: 33.8 million
- Italy: 27.0 million
- Spain: 24.2 million

Approximately two-thirds of the population viewing digital video monthly in the United Kingdom. Germany, France and Spain have penetration rates of about 50%.

The Nordic countries – Denmark, Finland, Norway and Sweden – have high Internet penetration and fast connection speeds. Digital video penetration is about 70% among Internet users in these countries.

According to Penthera (www.penthera.com), Internet users in select European countries streamed TV shows/movies on their mobile devices in October 2018 as follows (percentage of Internet users):
Daily       Weekly       Monthly       Occasionally       Don’t Use
• France: 31.0% 30.0%  4.3%  12.7%  22.0%
• Germany: 33.0% 27.3%  8.0%  11.3%  20.3%
• Italy: 46.7% 27.7%  1.7%  11.3%  12.7%
• Netherlands: 34.3% 26.3%  7.0%  15.3%  17.0%
• Spain: 51.0% 23.3%  2.7%  11.3%  11.7%
• United Kingdom: 36.7% 35.0%  6.3%  11.0%  11.0%
• Total: 38.8% 28.3%  5.0%  12.2%  15.8%

76.4 Key Players
The top video sources worldwide are OTT services like Hulu, Netflix, and Vimeo and social media platforms Facebook and YouTube.

Among the top players in China, where 569.0 million digital video viewers reside, are Internet platform Sohu and video hosting site YouKu Tudou.

Among OTT video service users worldwide in 2018, 44% used Netflix. Viewers outside the U.S. accounted for 55.6% Netflix’s global audience in 2018.

In 2018, Netflix user penetration (percentage of digital video viewers) was as follows:
• United States: 64.5%
• Norway: 62.4%
• Canada: 56.3%
• Denmark: 54.9%
• Sweden: 50.2%
• Netherlands: 43.6%
• Australia: 42.7%
• Finland: 39.7%
• Germany: 35.5%
• United Kingdom: 33.8%
77.1 Sales, Year-by-Year

According to eMarketer (www.emarketer.com), global retail e-commerce sales (excluding travel and event tickets), growth, and percent to total retail sales have been, as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Sales</th>
<th>Change</th>
<th>Pct. Total Retail</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>$1.08 trillion</td>
<td>25.9%</td>
<td>5.1%</td>
</tr>
<tr>
<td>2014</td>
<td>$1.32 trillion</td>
<td>22.2%</td>
<td>5.9%</td>
</tr>
<tr>
<td>2015</td>
<td>$1.59 trillion</td>
<td>20.9%</td>
<td>6.7%</td>
</tr>
<tr>
<td>2016</td>
<td>$1.89 trillion</td>
<td>18.6%</td>
<td>7.4%</td>
</tr>
<tr>
<td>2017</td>
<td>$2.20 trillion</td>
<td>16.4%</td>
<td>8.2%</td>
</tr>
<tr>
<td>2018</td>
<td>$2.49 trillion</td>
<td>13.3%</td>
<td>8.8%</td>
</tr>
</tbody>
</table>

77.2 Digital Buyer Penetration By Region

The percentage of people ages 14 and older making at least one purchase via any digital channel – online, smartphone, or tablet – during the year has been as follows (source: eMarketer):

- 2013: 41.3%
- 2014: 42.7%
- 2015: 44.3%
- 2016: 45.4%
- 2017: 46.4%
- 2018: 47.3%

By region, digital buyer penetration is as follows (source: eMarketer):

- North America: 76.3%
- Western Europe: 76.3%
- Asia-Pacific Region: 48.9%
- Central and Eastern Europe: 44.4%
- Middle East and Africa: 35.0%
- Latin America: 31.8%

77.3 Sales By Country

By country, annual e-commerce sales are as follows (source: eMarketer):

- China: $506.3 billion
- United States: $390.0 billion
• United Kingdom: $101.5 billion
• Japan: $ 89.3 billion
• Germany: $ 54.4 billion
• France: $ 46.4 billion
• Canada: $ 34.0 billion
• Australia: $ 22.6 billion
• Russia: $ 20.6 billion
• South Korea: $ 18.5 billion
• Brazil: $ 15.6 billion
• India: $ 14.7 billion
• Denmark: $ 10.4 billion
• Italy: $ 10.5 billion
• Netherlands: $ 10.1 billion
• Spain: $ 10.4 billion
• Finland: $ 8.5 billion
• Norway: $ 8.6 billion
• Sweden: $ 7.8 billion
• Mexico: $ 5.8 billion
78.1 Market Assessment

Merchant Machine (https://merchantmachine.co.uk/) assesses global spend via mobile wallets as follows:
- 2016: $2.211 trillion
- 2017: $3.104 trillion
- 2018: $4.296 trillion
- 2019: $6.109 trillion
- 2020: $8.961 trillion
- 2021: $11.141 trillion
- 2022: $13.979 trillion

78.2 Mobile Wallet Use By Region/Country

Mobile payment activity is currently concentrated in the Far East and China, due primarily to the success of Alipay and WeChat. Mobile wallets will increasingly become the default payment mechanism in other markets via tools recently introduced by PayPal and Apple, among others, allowing wallets to be used both in-store and online. PayPal’s introduction of an HCE (Host Card Emulation) NFC solution to enable POS payments is an important advance.

The share of Internet users worldwide who used a mobile payment service in the last month as of 4th Quarter 2018, by region, was as follows (source: Statistica):
- Asia Pacific: 47%
- Latin America: 38%
- Europe: 31%
- North America: 29%
- Africa and the Middle East: 29%

According to Merchant Machine, mobile wallet usage in 2018 by country was as follows (percentage of smartphone users):
- China: 47%
- Norway: 42%
- United Kingdom: 24%
- Japan: 20%
- Australia: 19%
- Columbia: 19%
- United States: 17%
- Singapore: 17%
- Canada: 16%
- Austria: 16%
“Even as retailers grow multinational in scope, the way people pay for things differs radically from country to country.”

_The Wall Street Journal_, 3/1/19

### 78.3 Most Popular Platforms

In 2018, the number of users of global mobile payment platforms was as follows (source: Merchant Machine):

- **WeChat Pay**: 600 million
- **Alipay**: 400 million
- **Paypal**: 210 million
- **Apple Pay**: 87 million
- **Samsung Pay**: 34 million
- **Amazon Pay**: 33 million
- **Chase Pay**: 28 million
- **Android Pay**: 24 million
GLOBAL WEARABLE TECHNOLOGY

79.1 Overview
Wearable computers, commonly referred to as wearables, are electronic devices that are worn by the user on the wrist, as eyewear, or integrated with clothing. Wearables provide constant interactivity between the computer and user; there is no need to turn a device on or off. Essentially, wearable computers are like an extension of the user’s mind or body.

“When it comes to the future of computing, there is one major known and a principal unknown. The known, with almost guaranteed certainty, is that the next era of computing will be wearables. The unknown, with commensurate guaranteed uncertainty, is what these wearables will be and where on your body they will live.”

The New York Times

79.2 Market Assessment
Wearable Electronic Devices Worldwide 2018, by Gartner (www.gartner.com), assessed shipments of wearable technology as follows:

**Smartwatch**
- 2017: 41.5 million
- 2018: 53.0 million
- 2019: 74.1 million
- 2022: 115.2 million

**Wristband**
- 2017: 36.0 million
- 2018: 39.0 million
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ear-Worn</td>
<td>21.5 million</td>
<td>33.4 million</td>
<td>46.1 million</td>
<td>158.4 million</td>
</tr>
<tr>
<td>Head-Mounted Display</td>
<td>19.1 million</td>
<td>28.4 million</td>
<td>34.8 million</td>
<td>80.2 million</td>
</tr>
<tr>
<td>Sports Watch</td>
<td>18.6 million</td>
<td>19.5 million</td>
<td>21.3 million</td>
<td>27.7 million</td>
</tr>
<tr>
<td>Smart Clothing</td>
<td>4.1 million</td>
<td>5.7 million</td>
<td>6.9 million</td>
<td>19.9 million</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>140.8 million</td>
<td>178.9 million</td>
<td>225.1 million</td>
<td>453.2 million</td>
</tr>
</tbody>
</table>

### 79.3 Market Resources
Gartner, 56 Top Gallant Road, Stamford, CT 06904. (203) 964-0096. (www.gartner.com)
APPENDIX

MARKET RESOURCES


App Annie, 23 Geary Street, Suite 800, San Francisco, CA 94108. (415) 638-6840. (www.appannie.com)


Berkman Center For Internet & Society at Harvard University, 23 Everett Street, Second Floor, Cambridge, MA 02138. (617) 495-7547. (https://cyber.law.harvard.edu/research)

BIA Advisory Services, 14150 Parkeast Circle, Suite 110, Chantilly, VA 20151. (703) 818-2425. (www.biakelsey.com)


Center for Internet and Society at Stanford Law School, 559 Nathan Abbott Way, Stanford, CA 94305. (http://cyberlaw.stanford.edu/about-us)

Center for the Digital Future, University of Southern California, Annenberg School for Communication, 300 S. Grand Avenue, Suite 3950, Los Angeles, CA 90071. (213) 437-4433. (www.digitalcenter.org)

comScore, 11950 Democracy Drive, Suite 600, Reston, VA 20190. (703) 438-2000. (www.comscore.com)

Digital Content Next, 530 7th Avenue, Suite M1, New York, NY 10018. (646) 473-1000. (www.digitalcontentnext.org)

Econsultancy, 205 Hudson Street, 7th Floor, New York, NY 10013. (212) 971-0630. (www.econsultancy.com)

eMarketer, 11 Times Square, New York, NY 10036. (800) 405-0844. (www.emarketer.com)
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Quantcast, 201 3rd Street, San Francisco, CA 94103. (415) 738-4755. (www.quantcast.com)

Richard K. Miller & Associates, 2413 Main Street, Suite 331, Miramar, FL 33025. (888) 928-7562. (www.rkma.com)

SimilarWeb, 35 E. 21st Street, 9th Floor, New York, NY 10010. (800) 540-1086. (www.similarweb.com)


The Media Audit, 1400 Broadfield Boulevard, Suite 200, Houston, TX 77084. (713) 626-0333. (www.themediaaudit.com)

The Nielsen Company, 85 Broad Street, New York, NY 10004. (800) 864-1224. (www.nielsen.com)

The NPD Group, 900 West Shore Road, Port Washington, NY 11049. (516) 625-0700. (www.npd.com)

Wired, 1 World Trade Center, New York, NY 10006. (515) 243-3273. (www.wired.com)
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Chapter 4: Online Activities

Chapter 5: Mobile Device Activities

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**Chapter 69: Wearable Technology**


**Chapter 70: Smart Homes**


**Chapter 72: Virtual & Augmented Reality**


**Chapter 74: Global Use Of Mobile Devices**

**Chapter 76: Global Digital Video**


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**Chapter 78: Global Mobile Payments**


**Chapter 79: Global Wearable Technology**