Internet diffusion indicators

- Host computers
- Subscribers
- Users
- Overall access, institutional connectivity and “limitation” indicators

Source: Nielsen, TAS, Network Wizards.
Internet hosts

- Most widely “misused” indicator of Internet access
- “Tight” definition
- “Scientific” method
- Regular surveys
- Marks minimum size of Internet

![Internet hosts Worldwide, millions](Image)

Source: ITU adapted from Network Wizards.

Host limitations

- Methodology changes
- Differences between Network Wizards, RIPE and national data
- Does not accurately reflect geographical location
- Does not really measure accessibility

![Internet host penetration, Mid-1997](Image)

Note: Original as reported by Network Wizards. Adjusted according to location. Source OECD.
Internet subscribers

- Well-defined
- Increasingly available
- Marks minimum boundary of users

Singapore: Internet Dial-up subscribers, 000s

As % of population

<table>
<thead>
<tr>
<th>Month</th>
<th>12.9%</th>
<th>13.0%</th>
<th>13.5%</th>
<th>13.8%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan-99</td>
<td>406</td>
<td>413</td>
<td>427</td>
<td>437</td>
</tr>
<tr>
<td>Feb-99</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mar-99</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apr-99</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Telecommunications Authority of Singapore
http://www.tas.gov.sg

Subscriber limitations

- Can be many users utilising one account
- Statistic not universally available
- Does not measure overall access

Hong Kong: Number of Internet subscribers, December 1998, 000s

Source: Office of Telecommunication Authority.
Internet users

- Better indicator of diffusion than hosts
- Previously multipliers, now surveys
- Data improving as market researchers, statistical agencies and others compile user statistics

Internet users, Worldwide, millions

<table>
<thead>
<tr>
<th>Year</th>
<th>% of population</th>
<th>Millions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>0.5%</td>
<td>26</td>
</tr>
<tr>
<td>1996</td>
<td>1.0%</td>
<td>55</td>
</tr>
<tr>
<td>1997</td>
<td>1.7%</td>
<td>98</td>
</tr>
<tr>
<td>1998</td>
<td>2.5%</td>
<td>150</td>
</tr>
</tbody>
</table>

Source: NUA (http://www.nua.ie)

User limitations

- Loose definitions makes comparing users problematic
- Wide variation in estimates
- Usage may not be as important as accessibility

“There is no way to determine how many users are on the net, besides making guesses and estimates.” —Network Wizards

Source: ITU adapted from NUA Internet Surveys
Accessibility

- Percentage of population with access to Internet is a key indicator
- The location from where users access the Internet (e.g., home, work, school) is also meaningful
- The percent of schools and businesses connected to the Internet are other useful indicators

Note: Percentages refer to share of Spanish population 14 years and older.
Source: [http://www.aui.es/](http://www.aui.es/)

Awareness

- Singapore is typical of developed countries where there is a high level of awareness of the Internet
- In developing countries, which tend to have lower levels of literacy and media exposure, many citizens are unaware of the Internet and its benefits

Source: National Computer Board.
Don’t forget

- Telephone lines
- Personal computers
- Income
- Education

**Internet & Income, 1997**

![Graph showing Internet hosts as % of population vs. GDP per capita, US$](image)

- Estonia
- Chile
- UAE

Note: Based on 100 countries. Logarithmic scale.
Source: ITU adapted from Network Wizards and UN data.

---

**Conclusions**

<table>
<thead>
<tr>
<th>BEFORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>“It is not possible to determine the exact size of the Internet, where hosts are located, or how many users there are.” —Network Wizards</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>An increase in organisations compiling Internet statistics is leading to improvements in data quality and availability</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FUTURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data on geographical location of hosts</td>
</tr>
<tr>
<td>Consistent definition of user</td>
</tr>
<tr>
<td>Improved coverage of developing countries</td>
</tr>
</tbody>
</table>

From a policymaking perspective, percentage of population with access to the Internet is the most meaningful indicator.