INFORMATION ECONOMY INDEX

2004

Australian Government

Department of Communications,
Information Technology and the Arts

ISSN 1448-9872 (Print)

ISSN 1448-9880 (Online)

Department of Communications, Information Technology
and the Arts
GPO Box 2154
Canberra ACT 2601
Australia

Tel: 02 627 1073
Fax : 02 6271 1098
Web: www.dcita.gov.au

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Executive summary

The information economy continues to grow globally. Its influence on economics and lifestyles increases in line with the demand by Internet users for more sophisticated online products and services. In 2003, significant opportunities for participation still characterised the online world, although growth in some of the most connected countries was not as strong as in previous years. This trend was reflected in some of the indicators presented in this Index, which also shows that some activities such as online purchasing and accessing government online services are becoming household routine practices, particularly in countries where Internet use is well established. Reaching a critical mass of Internet users, however, remains a challenge outside the small circle of global information economy leaders, some of which are benchmarked here.

Individual Indicators

This report measures Australia's and 11 other countries' progress in the information economy, presenting 19 indicators relating to readiness to participate in the information economy, and the intensity of this participation. For the majority of indicators the reference period is the 3d Quarter (July to September) 2003. The indicators for the Index were chosen and developed in accordance with the following parameters (in order of importance):

- relevance of the indicator as a measure of development and progress of the information economy for each one of the countries benchmarked;
- for each indicator the data used is to be homogenous in terms of methodology, reference period and clear units of measure; and
- likelihood of future availability of compatible data for continued benchmarking.

All Indicators and corresponding scores for each country are listed on page 7.

Composite Index Rankings

The individual indicators composing the Index are distinct but complementary components of the overall information economy rankings produced for the countries benchmarked. The overall 2004 Index rankings identify the US, Canada and Sweden as the top three industrialised economies 'most connected' and most active in the global information economy. The elements of their leadership remain those that distinguished them in previous Indexes—high online participation rates, a solid and competitive infrastructure environment, and preparedness by business and government to invest resources and be engaged in online activities.

The US is ranked first with a score of 65.1 points, with highlights such as highest ranking for the number of secure servers/million inhabitants, households online, online purchasing, and Internet access by gender. Canada (64.9) is ranked second, this high ranking reflecting a strong performance in most indicators, particularly in areas such as household ownership of PCs, penetration of online government services, and the E-government Rankings. Sweden is ranked third overall (62.5 points), having outperformed other countries in the area of Internet access, leading the rankings in Internet access a) from any location; b) via home PC; c) at home and work; and d) by age group. Sweden topped the ranks also for Internet access by businesses and use of mobile phones.

In the 2004 Index Australia is ranked sixth (58 points), one in a group of countries placed immediately after the US, Canada and Sweden. This group also includes Hong Kong (ranked fourth, 59.7 points), the Netherlands (ranked fifth, 58.6 points), and the UK (ranked seventh, 55.5 points). These countries recorded strong performances in most indicators, with the Hong Kong and the Netherlands being among the leaders in a number of indicators.

Australia is ranked highly in indicators targeting Internet access (Internet access form any location and by age group), number of secure servers per million inhabitants, penetration of online government services, and most importantly price of broadband, reflecting the declining entry-level price of broadband in Australia.

Japan (52.4), Germany (49.1 points), Spain (44.2), Italy (43.4) and France (42.9) complete the rankings.

Summary of 2004 Index rankings and scores

2004 INFORMATION ECONOMY INDEX		
Rank	**Country**	**Score**
1st	US	65.1
2nd	CANADA	64.9
3rd	SWEDEN	62.4
4th	HONG KONG	59.7
5th	NETHERLANDS	58.6
6th	AUSTRALIA	58
7th	UK	55.5
8th	JAPAN	52.4
9th	GERMANY	49.1
10th	SPAIN	44.2
11th	ITALY	43.4
12th	FRANCE	42.9

Methodology

Each indicator is given equal weighting in terms of its contribution to the final ranking of countries. Depending on the type of indicator, three different scoring methodologies have been adopted.

Firstly, for the majority of indicators comprising the Index, individual country scores are derived by converting penetration levels (percentage take-up) directly to points. For example, if a country is estimated to have 72 per cent of its population 16 years and over with Internet access then that country receives 72 points for that specific indicator.

Secondly, in cases where the indicator presents comparative data on the cost of Internet access, the country with the cheapest Internet access receives the maximum number of points (in this case 100 points). All other countries receive a proportion of the maximum number of points available on the basis of their position relative to the country with the cheapest Internet access price. For example, in terms of indicator 13 - *Price of broadband access*, Japan was the cheapest country recording $US13.77 as the lower monthly rental charge for Internet access via DSL. Japan therefore received the maximum score (100 points). Spain was the most expensive country recording $US50.37, approximately 3.66 times more expensive than Japan. On this basis Spain received 27 points (100/3.66).

Thirdly, in cases where the disparity in access between males and females or age groups is measured, points have been allocated on the basis of the difference in access levels, eg. for the US, where 83 per cent of males and 82 per cent of females have Internet access, the score is 100 - (83 - 82) = 99. This approach was also adopted for indicator 11, (per cent of persons 16 years and over with Internet access by age group), with one slight variation; only the differences in Internet access levels between persons aged 65 years and over (consistently the lowest users of the Internet) and persons aged 16-24 years (consistently the highest users of the Internet) were taken into account.

The data presented in the Index is summarised in the following table. For each country the table presents:

- individual scores for each indicator;
- a total score calculated across all indicators;
- an average score, which is used to produce the final country ranking, calculated by taking the total number of points each country received and dividing by the number of indicators for which data is available; and
- a final ranking from 1 to 12 (12 being the lowest rank).

Ref No .	INDICATOR
1	Percentage of persons 16 years and over with use of a mobile phone
2	Percentage of households which own / lease a PC
3	Percentage of households online
4	Internet connection speeds
5	Broadband households as a percentage of total households
6	Percentage of persons 2 years and over with Internet access via a home PC
7	Percentage of persons 16 years and over with Internet access from any location
8	Percentage of persons 16 years and over with Internet access at home or work
9	Wireless Internet access
10	Percentage of persons 16 years and over with Internet access by gender
11	Percentage of persons 16 years and over with Internet access by age group
12	Number of secure servers per million inhabitants
13	Price of broadband access
14	Average number of Internet sessions and hours online per month
15	Percentage of persons 16 years and over purchasing online
16	E-readiness rankings
17	Percentage of businesses online
18	Penetration of online government services
19	E-government rankings

Ref. No.	AUS	Can	Fra	Ger	HK	Ita	Jap	Ned	Spain	Swe	UK	US
1	72	55	57	72	75	80	51	79	66	**84**	76	64
2	65	**75**	45	53	68	53	42	70	54	73	55	70
3	56	64	31	47	61	46	39	63	42	66	58	**68**
4	21	58	47	30	**84**	24	56	42	40	35	27	39
5	9	36	11	10	**50**	9	28	21	14	21	13	23
6	59	68	33	49	63	43	47	67	35	**70**	50	**70**
7	84	79	63	67	72	60	33	79	62	**89**	80	83
8*	109	110	50	83	93	68	69	107	67	**133**	94	110
9	19	27	16	27	23	17	**70**		14	29	31	24
10	96	97	91	82	97	84	89	92	89	95	98	**99**
11	50	48	28	25		24		38	25	**64**	58	
12	64	66	11	26		5	15	22	9	37	46	**100**
13	62	56	43	43		32	**100**	65	27	38	42	51
14*	28		33	31	**43**	19	39	28	31	27	27	37
15	33	35	18	34	14	11	21	32	14	40	43	**58**
16	79	79	73	78	80	71	69	80	72	**83**	**83**	80
17	89	95	73	96	44	91	92	91	92	**99**	84	94
18	36	**39**	30	16	28	34	24	14	33	33	22	22
19	70.5	**80.5**	63	63		54.5	60	65	54.5	71	68	80
Total	1101.5	1168	816	932	895	825.5	944	1055	840.5	1187	1055	1172
# indicators	19	18	19	19	15	19	18	18	19	19	19	18
Score	58	64.9	42.9	49.1	59.7	43.4	52.4	58.6	44.2	62.5	55.5	65.1
Ranking	6	2	12	9	4	11	8	5	10	3	7	1

* Combined score
Leading score for each indicator in bold numbers.

AUSTRALIA'S POSITION RELATIVE TO OTHER COUNTRIES

A short summary of Australia's standing against each of the indicators follows with more detailed analysis included in the main body of the report.

1. Percentage of persons 16 years and over with use of a mobile phone

2004 Index Top Rankings

1	Sweden	84%
2	Italy	80%
3	Netherlands	79%
5	Australia	72%

2. Percentage of households which own / lease a PC

2004 Index Top Rankings

1	Canada	75%
2	Sweden	73%
3	US, Netherlands	70%
6	Australia	65%

3. Percentage of households online

2004 Index Top Rankings

1	US	68%
2	Sweden	66%
3	Canada	64%
7	Australia	56%

4. Internet connection speeds

2004 Index Top Rankings

1	Hong Kong	84%
2	Canada	58%
3	Japan	56%
12	Australia	21%

5. Broadband households as percentage of total households

2004 Index Top Rankings

1	Hong Kong	50%
2	Canada	36%
3	Japan	28%
11	Australia	9%

6. Percentage of persons 2 years and over with Internet access via a home PC

2004 Index Top Rankings

1	Sweden	70%
1	US	70%
3	Canada	68%
6	Australia	59%

7. Percentage of persons 16 years and over with Internet access from any location

2004 Index Top Rankings

1	Sweden	89%
2	Australia	84%
3	US	83%

8. Percentage of persons 16 years and over with Internet access at home or work

2004 Index Top Rankings

1	Sweden	133p
2	US, Canada	110p
4	Australia	109p

9. Wireless Internet access

2004 Index Top Rankings

1	Japan	70%
2	UK	31%
3	Sweden	29%
8	Australia	19%

10. Percentage of persons 16 years and over with Internet access by gender

2004 Index Top Rankings

1	US	99%
2	UK	98%
3	Canada	97%
5	Australia	96%

11. Percentage of persons 16 years and over with Internet access by age group

2004 Index Top Rankings

1	Sweden	64%
2	UK	58%
3	Australia	50%

12. Number of secure servers per million inhabitants

2004 Index Top Rankings

1	US	100%
2	Canada	66%
3	Australia	64%

13. Price of broadband access

2004 Index Top Rankings

1	Japan	100%
2	Netherlands	65%
3	Australia	62%

14. Average number of Internet sessions & hours online per month

2004 Index Top Rankings

1	Hong Kong	43%
2	Japan	39%
3	US	37%
8	Australia	28%

15. Percentage persons 16 years and over with Internet access purchasing online

2004 Index Top Rankings

1	US	58%
2	UK	43%
3	Sweden	40%
6	Australia	33%

16. E-readiness rankings

2004 Index Top Rankings

1	UK	83%
1	Sweden	83%
3	US, Netherlands & Kong Kong	80%
6	Australia	79%

17. Percentage of businesses online

2004 Index Top Rankings

1	Sweden	99%
2	Germany	96%
3	Canada	95%
9	Australia	89%

18. Penetration of online government services

2004 Index Top Rankings

1	Canada	39%
2	Australia	36%
3	Italy	34%

19. E-government rankings

2004 Index Top Rankings

1	Canada	80.5p
2	US	80p
3	Sweden	71p
4	Australia	70.5p

A. READINESS TO PARTICIPATE IN THE INFORMATION ECONOMY

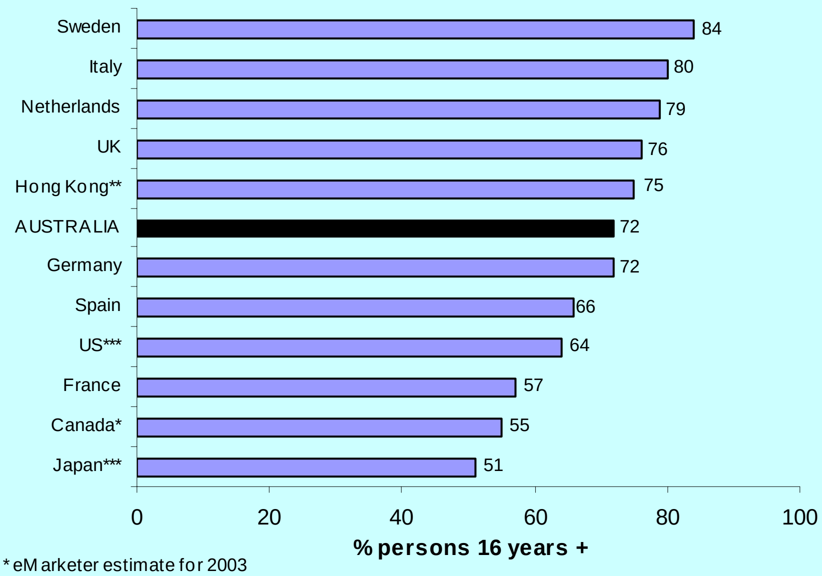
Consumer use of technologies

Part A of the Index focuses on indicators measuring the level of adoption of key information and communication technologies (ICT), the Internet in particular, by households and the general population. Measuring the adoption and use of the Internet provides insight into the preparedness of national populations to participate in and benefit from the emerging Information Economy. Particularly useful in a policy context is the benchmarking of broadband connectivity amongst consumers, as demand for broadband technology reflects an increasing need for efficiency, higher quality electronic service delivery and online content.

1. Percentage of persons 16 years and over with use of a mobile phone

Score

	Points
Sweden	84
Italy	80
Netherlands	79
UK	76
Hong Kong	75
Australia	72
Germany	72
Spain	66
US	64
France	57
Canada	55
Japan	51



% persons 16 years and over with use of a mobile phone - September 2003
(Nielsen//NetRatings. Copyrighted. All rights reserved)

* eMarketer estimate for 2003
** 2nd Quarter 2003 data
*** % of persons 16 years and over who personally have a mobile phone

The use of mobile phones is entrenched in Europe, Australia and Hong Kong. The US[1] (64 per cent) and Canada (55 per cent) also performed well. In the 3rd Quarter 2003, Sweden was the country with the highest percentage (84 per cent) of persons aged 16 years and over with use of a mobile phone, followed by Italy (80 per cent), the Netherlands (79 per cent), the UK (76 per cent), Hong Kong (75 per cent in the 2nd Quarter 2003), Australia and Germany (72 per cent each).

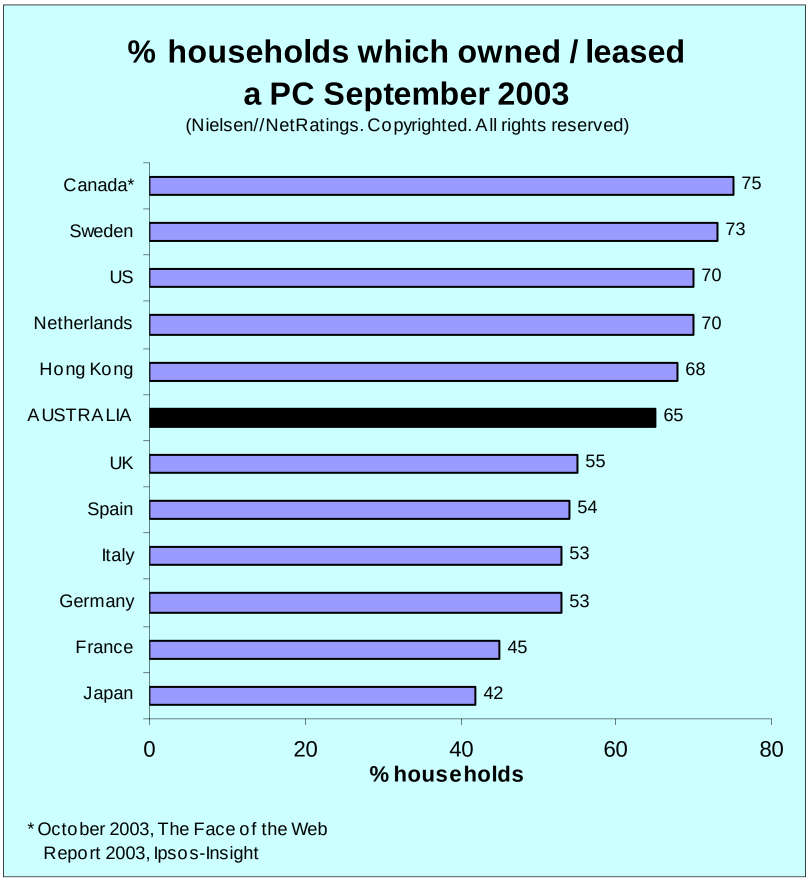
September 2002 to September 2003: Sweden remained the best performer in 2003 (from 72 per cent in 2002 to 84 per cent in 2003). Italy and the UK also continued to be highly ranked. Australia's percentage increased from 65 per cent in 2002 to 72 per cent in 2003.

[1] Data for the US and Japan is relative to persons who personally have a mobile phone and not persons with use of a mobile phone. Percentages of persons with use of a mobile phone may be higher than percentages of persons who personally have a mobile phone, as persons may have use a mobile phone without personally owning one.

2. Percentage of households which owned / leased a PC

Score

	Points
Canada	75
Sweden	73
US	70
Netherlands	70
Hong Kong	68
Australia	65
UK	55
Spain	54
Italy	53
Germany	53
France	45
Japan	42



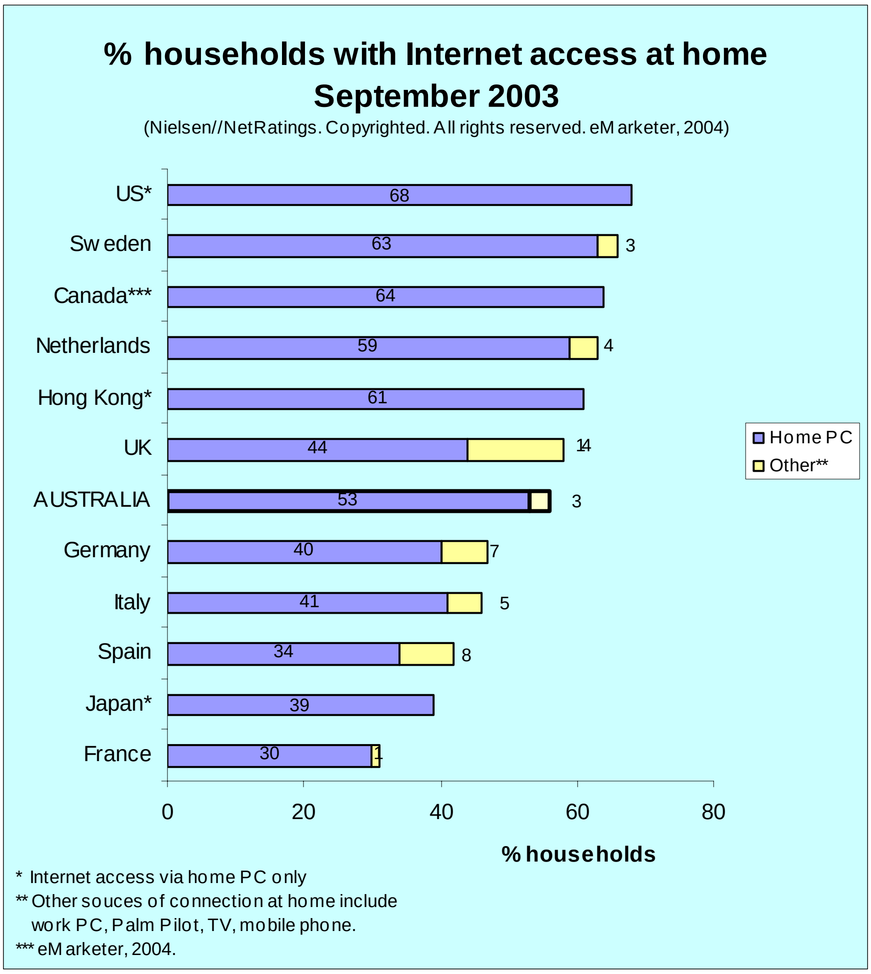
PCs are a common feature in the majority of households in the countries benchmarked in the Index, with ownership reaching 70 per cent or more of households in Canada (75 per cent), Sweden (73 per cent), the US (70 per cent) and the Netherlands (70 per cent). Percentages of PC ownership are equally healthy in the remaining countries, with Australia being ranked 6th (65 per cent) after Hong Kong (68 per cent), and ahead of the UK (55 per cent), Spain (54 per cent), Italy (53 per cent), Germany (53 per cent), France (45 per cent) and Japan (42 per cent). The level of PC ownership within a community is important as PCs remain the most used Internet access technology.

September 2002 to September 2003: Sweden and the US (ranked 1st and 2nd in 2002) followed Canada in 2003. In 2002 Australia and the Netherlands were ranked equal 4th (65 per cent). Twelve months later the Netherlands was ranked outright 4th (70 per cent), ahead of Hong Kong (68 per cent) and a stable Australia (65 per cent). From 2002 to 2003 PC ownership increased in all the other countries benchmarked with the exception of the UK, where the percentage remained unchanged at 55 per cent. France and Japan confirmed their 2002 low ranking in 2003.

3. Percentage of households online

<u>Score</u>

	Points
US	68
Sweden	66
Canada	64
Netherlands	63
Hong Kong	61
UK	58
Australia	56
Germany	47
Italy	46
Spain	42
Japan	39
France	31



Home PCs are the preferred point of Internet access by the vast majority of Internet users ahead of work PCs, television, mobile phones and other hand held devices (eg. Palm Pilot). This is for a number of reasons including the already high level of PC adoption by households, familiarity with PC technology, availability and cost.

In the third Quarter 2003 the US was the country with the highest percentage of households with Internet access (68 per cent), ahead of Sweden (66 per cent), Canada (64 per cent), the Netherlands (63 per cent), Hong Kong (61 per cent), the UK (58 per cent) and Australia (56 per cent). The lower half of the rankings listed the remaining countries, with Japan (39 per cent) and France (31 per cent) ranked 11th and 12th.

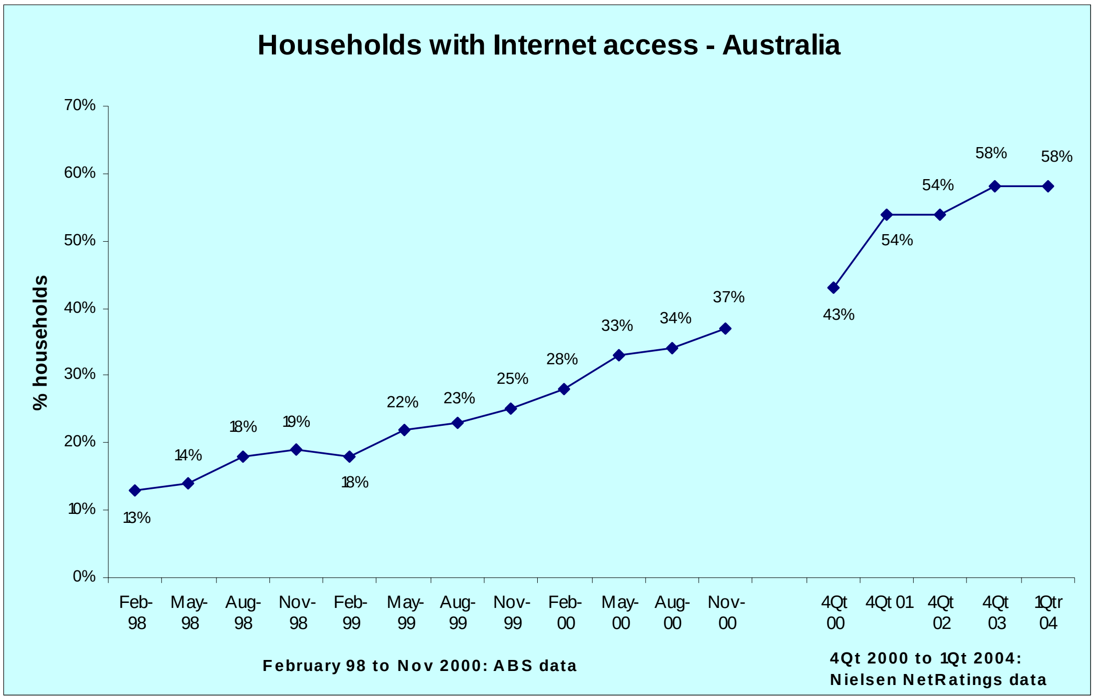
September 2002 to September 2003: In the period being considered all countries benchmarked showed increasing percentages of household Internet access with the only exception of Hong Kong (unchanged at 61 per cent). The greatest increase in the level of Internet access at home was recorded for Spain (from 30 per cent to 42 per cent), a country markedly improving its performance from traditionally lower levels of Internet access. The US replaced Sweden at the top of the rankings as a result of solid growth in the previous 12 months (from 60 per cent in 2002 to 68 per cent in 2003). Other countries that performed well were the Netherlands (from 56 per cent to 63 per cent), the UK (from 52 per cent to 58 per cent), and Canada (from 59 per cent to 64 per cent), while Australia showed a 2 per cent increase (from 54 per cent in 2002 to 56 per cent in 2003).

Trend over time for Australia

The following chart shows the Internet adoption curve for households since February 1998, when the Australian Bureau of Statistics (ABS) first began monitoring Internet take up. The ABS series tracked Internet adoption levels from February 1998 to November 2000, when the ABS discontinued its regular household ICT survey program. From December 2000 to December 2003, household connectivity levels in Australia are tracked using data collected by AC Nielsen.

In summary, the chart shows that:

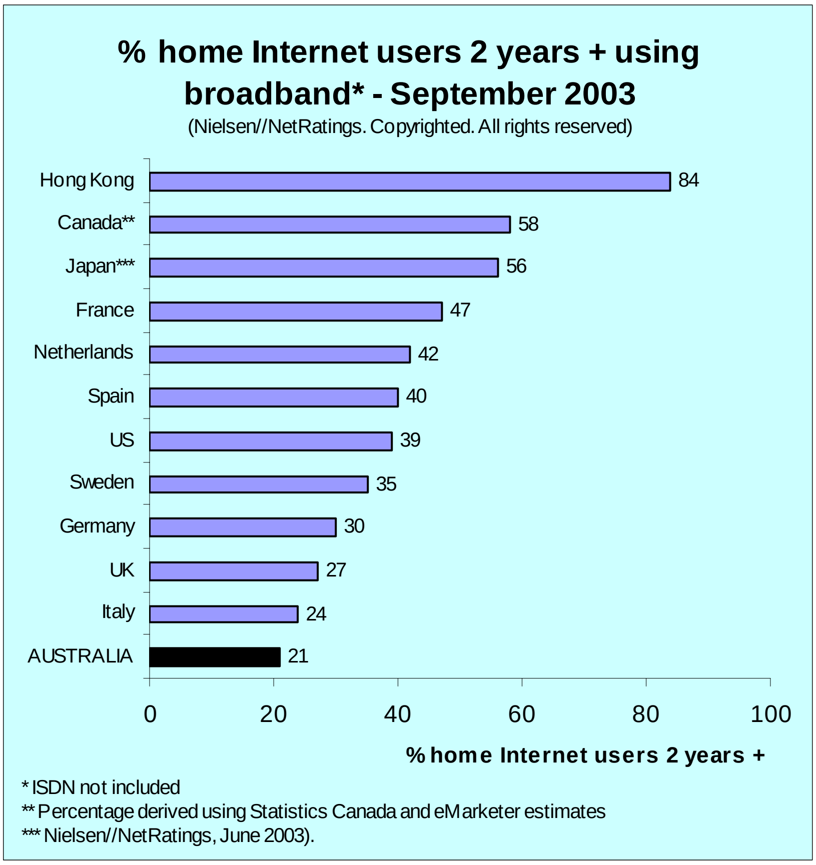
- Australia experienced phenomenal growth in household connectivity levels during the period covering February 1998 to June 2001. Specific points to note include:
  - at February 1998, 13 per cent of Australian households were estimated to be online by the ABS.
  - In the thirty-three months to November 2000, household connectivity increased to approximately 37 per cent, reaching 50 per cent by the end of 2nd Quarter 2001. This represented an increase of 285 per cent during this period.
- A significant slow-down in growth in households online from the second half of 2001 typified by:
  - the Internet adoption curve for households in Australia showed a holding pattern in 2001, with levels of household Internet access stable on 54 per cent from the end of 2001 and throughout 2002. This pattern of stabilisation was also found in other benchmarked countries with household connectivity levels in excess of 50 per cent.
- In 2003 the percentage of households with Internet access increased to 58 per cent.



4. Internet connection speeds

Score

	Points
Hong Kong	84
Canada	58
Japan	56
France	47
Netherlands	42
Spain	40
US	39
Sweden	35
Germany	30
UK	27
Italy	24
Australia	21



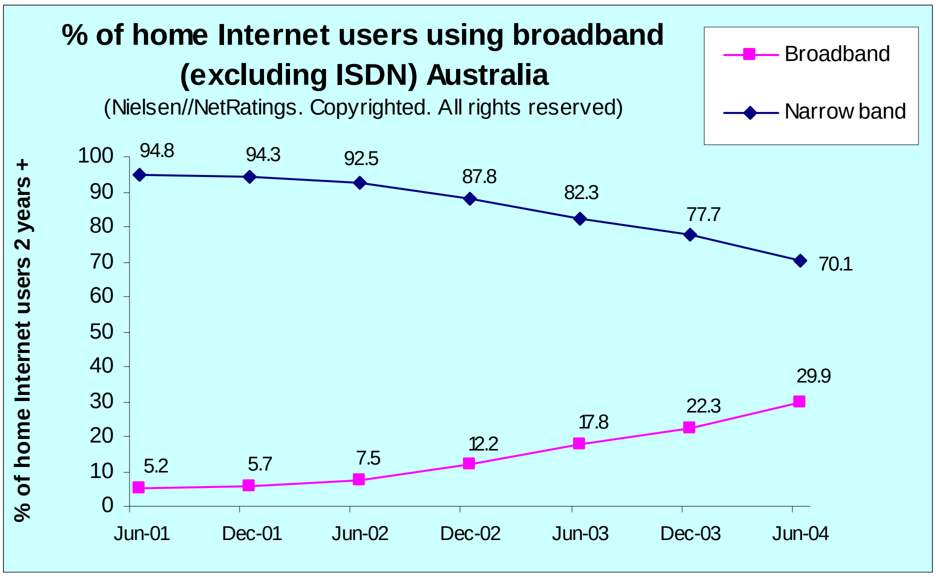
Internet access through broadband technology allows users to access high bandwidth interactive services (e.g. e-learning, interactive games) and download rich and larger amounts of online content at greater speed in an operating environment that is "always on". The graph above suggests that an increasing number of Internet users are adopting broadband technology as a means to enjoy more sophisticated and dynamic electronic service delivery solutions.

Hong Kong has performed very well in the broadband Internet access category since the first Index was first produced, and in the 3rd Quarter 2003 continued to lead other countries by a clear margin (84 per cent compared to 58 per cent for the second ranked country, Canada). Japan followed with 56 per cent (June 2003 reference period), followed by France with 47 per cent, ahead of the Netherlands (42 per cent), Spain (40 per cent), the US (39 per cent), Japan (38 per cent), Sweden (35 per cent), Germany (30 per cent), the UK (27 per cent), Italy (24 per cent), and Australia (21 per cent).

September 2002 to September 2003:

Broadband use increased substantially in all countries benchmarked, in some countries more than doubling the 2002 percentage (e.g. Australia, which increased in the percentage of broadband home Internet users from 9 per cent in 2002 to 21 per cent in 2003, and Spain, from 19 per cent to 40 per cent in the same period). All countries recorded increases in double figures from 2002 to 2003, ranging from 10 per cent in Germany (from 20 per cent to 30 per cent), to 22 per cent for France (from 25 per cent in 2002 to 47 per cent in 2003). Hong Kong remained the best performing country in 2003. More recent figures for Australia presented in the graph following show that the shift to broadband in Australian homes is progressing rapidly.

Trend over time for Australia

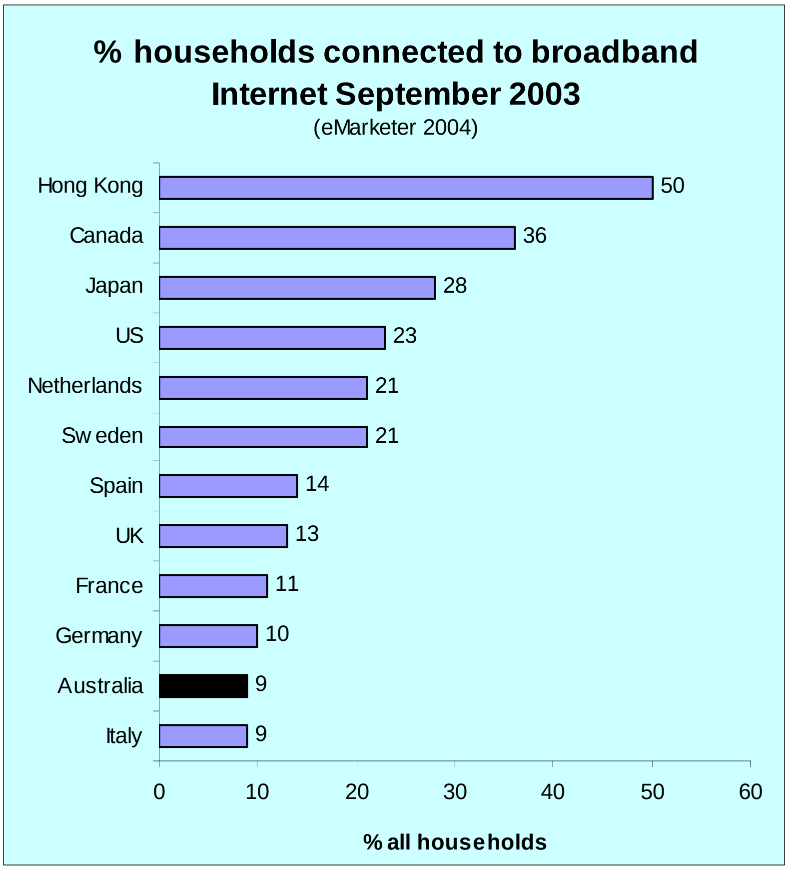


The data from AC Nielsen presented beside indicates that an increasing proportion of home Internet users in Australia are choosing to access the Internet via broadband rather than narrowband technologies and that while the overwhelming majority of home Internet access the Internet via dial-up services the shift to broadband is clearly pronounced and will be sustained for some time to come. The adoption or shift towards broadband by home Internet users has become more pronounced since June 2002, when the percentage of home Internet users accessing the Internet via broadband (excluding ISDN) was 7.5 per cent. In June 2004, 24 months later, the proportion of home Internet users accessing the Internet via broadband connection had reached 30 per cent, an increase of 300 per cent.

5. Broadband households as percentage of total households

Score

	Points
Hong Kong	50
Canada	36
Japan	28
US	23
Netherlands	21
Sweden	21
Spain	14
UK	13
France	11
Germany	10
Australia	9
Italy	9



Hong Kong consolidates its leadership in the broadband arena recording also the highest estimated percentage of total households with broadband connection (50 per cent) in 2003. Hong Kong has a substantial lead over Canada (36 per cent), Japan (28 per cent), the US (23 per cent), the Netherlands and Sweden (21 per cent each), and the rest of the other countries.

September 2002 to September 2003: Hong Kong and Canada continue to show a distinct lead for this indicator, both improving their performance decisively (HK from 38 per cent to 50 per cent, and Canada from 29 per cent to 36 per cent). All other countries benchmarked showed a growing trend in the percentage of total households accessing the Internet via broadband technology. The percentages were: Japan from 16 per cent to 28 per cent, the Netherlands from 11 per cent to 21 per cent, the US from 16 per cent to 23 per cent, Sweden from 17 per cent to 21 per cent, Spain from 8 per cent to 14 per cent, the UK from 5 per cent to 13 per cent, France from 6 per cent to 11 per cent, Germany from 8 per cent to 10 per cent, Australia from 4 per cent to 9 per cent, and Italy from 4 per cent to 9 per cent.

Internet access versus Internet use

The charts for indicators six to ten present data on some of the aspects of Internet access by population, including data on the actual Internet usage rate amongst individuals who have Internet access. The data shows that the majority of countries benchmarked have rates of Internet access in excess of 50 per cent of the adult population. Internet access remains strong across countries even when the total population (persons aged two years or more) is considered.

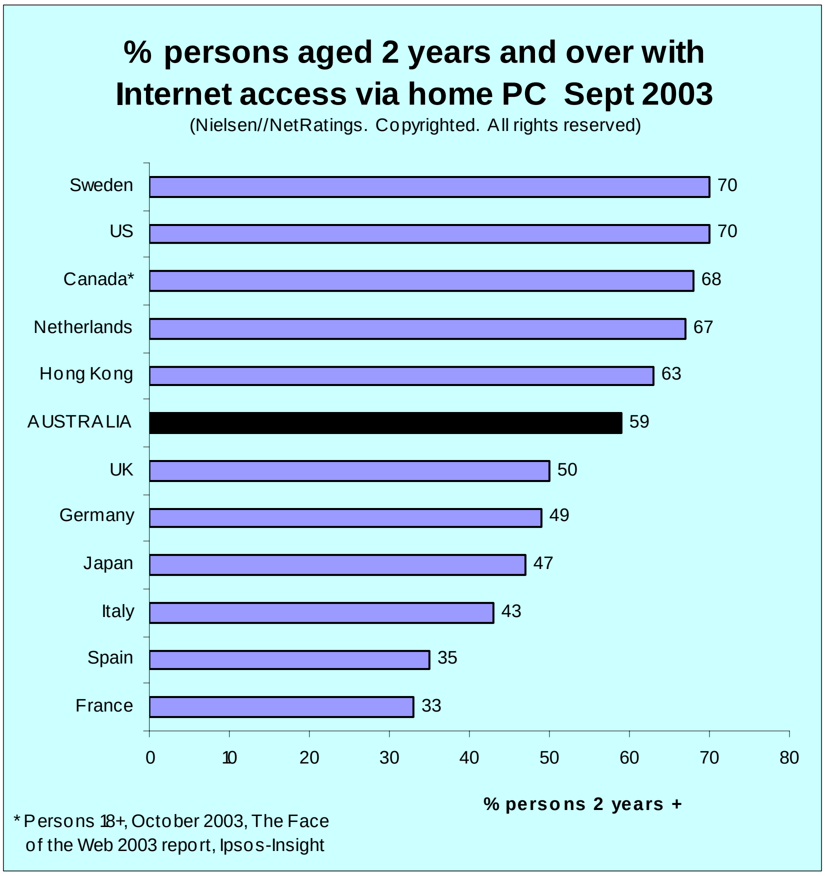
Internet access at home offers Internet users the opportunity to go online at any time of the day, any day of the week, to perform activities that they would have not otherwise been able to perform, for example, outside business hours. Tasks like banking, shopping and information access and retrieval can be performed electronically in the comfort of one's home, a convenient and cost effective alternative to the traditional way of performing these activities in person.

"Internet access at work facilitates networking, communication and research, and investment in ICT in the workplace is in fact a major driver of efficiency and productivity. The Internet as a key enabling ICT has the potential to deliver significant organisational transformation through the application of e-business models to key areas such as customer relationship management (CRM), administrative operations, and knowledge and supply chain management."[2]

6. Percentage of persons two years and over with Internet access via a home PC

Score

	Points
Sweden	70
US	70
Canada	68
Netherlands	67
Hong Kong	63
Australia	59
UK	50
Germany	49
Japan	47
Italy	43
Spain	35
France	33



Seventy per cent of persons aged two years or more in Sweden and the US had Internet access via home PC in the third Quarter 2003, and this was the highest percentage

[2] p. 25, Information Economy Index, NOIE, 2003

recorded for this indicator. Canada followed with 68 per cent, preceding the Netherlands (67 per cent), Hong Kong (63 per cent), Australia (59 per cent), and the UK (50 per cent). Countries with percentages lower than 50 per cent were Germany (49 per cent), Japan (47 per cent), Italy (43 per cent), Spain (35 per cent), and France (33 per cent).

September 2002 to September 2003: in 2003, all countries except Italy, Japan and Hong Kong improved on their 2003 performance. The US (from 64 per cent in 2002 to 70 per cent in 2003) shared the top ranking position with Sweden (from 69 per cent in 2002 to 70 per cent in 2003) for this indicator. Of the top performers, Canada was the country which improved the most for this indicator (from 57 per cent in 2002 to 68 per cent in 2003[3]).

The Netherlands (from 63 per cent to 67 per cent) followed ahead of Hong Kong (from 64 per cent in 2002 to 63 per cent in 2003), Australia (from 57 per cent in 2002 to 59 per cent in 2003), the UK (unchanged at 50 per cent), Germany (from 44 per cent to 49 per cent), Japan (from 49 per cent to 47 per cent), Italy (from 50 per cent to 43 per cent), Spain (from 27 per cent to 35 per cent) and France (from 26 per cent to 33 per cent).

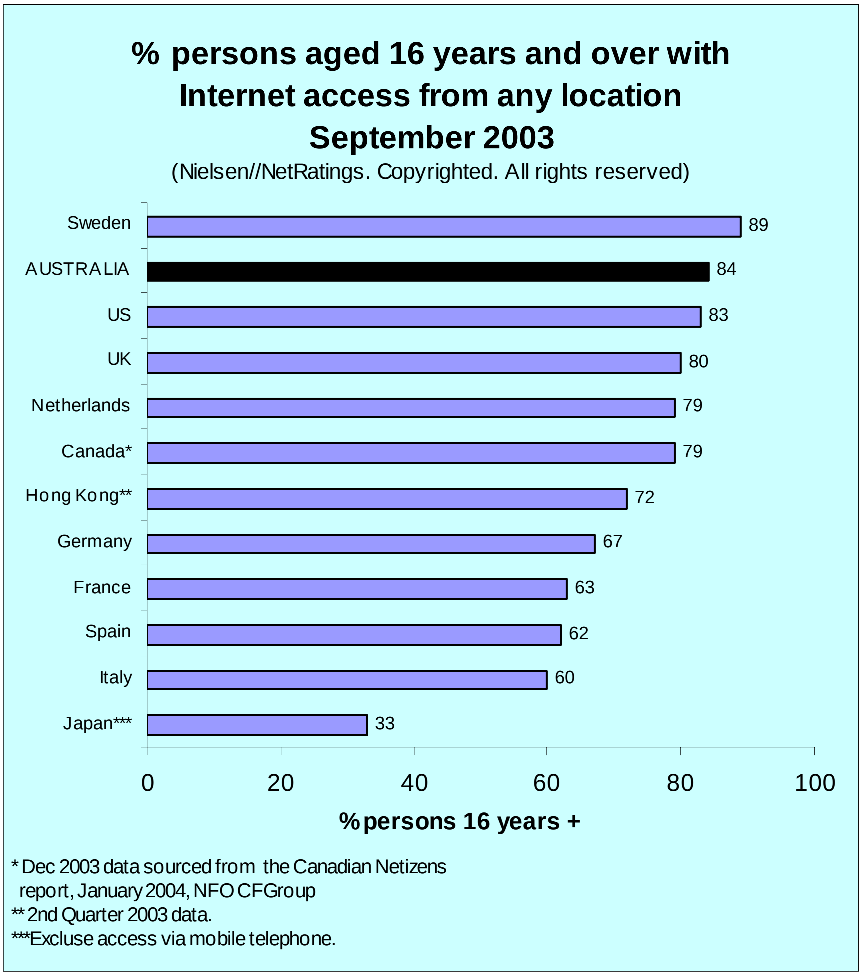
[3] The data source for Canada for 2002 was the NFO WorldGroup, while for 2003 was The Face of the Web 2003 report by Ipsos-Insight. This change may account in part for the differences in scores recorded for Canada in the two reference periods.

7. Percentage of persons 16 years and over with Internet access from any location

Indicator seven measures the level of Internet access from any location, thus providing an insight in the overall trend of participation irrespective of point of access. Indicator 8 specifically measures Internet access from the two most popular points of Internet access in all countries benchmarked, home and work.

Score

	Points
Sweden	89
Australia	84
US	83
UK	80
Netherlands	79
Canada	79
Hong Kong	72
Germany	67
France	63
Spain	62
Italy	60
Japan	33



The graph beside shows the majority of adult populations in the countries identified has Internet access. Sweden (89 per cent), Australia (84 per cent), the US (83 per cent), the UK (80 per cent), the Netherlands and Canada (79 per cent each) were the leading performers in terms of per cent of persons aged 16 years and over with Internet access from any location. The next ranked country was Hong Kong (72 per cent in the second Quarter 2003), followed by Germany (67 per cent), France (63 per cent), Spain (62 per cent), Italy (60 per cent) and Japan (33%). Data for Japan excludes access to the Internet via a mobile telephone, which disadvantages Japan in terms of rankings as Japan is a world leader in terms of usage of internet enabled mobile phones. However, indicator *10, wireless Internet access,* seeks to correct this by presenting data on the proportion of mobile users accessing the Internet via their mobile telephone.

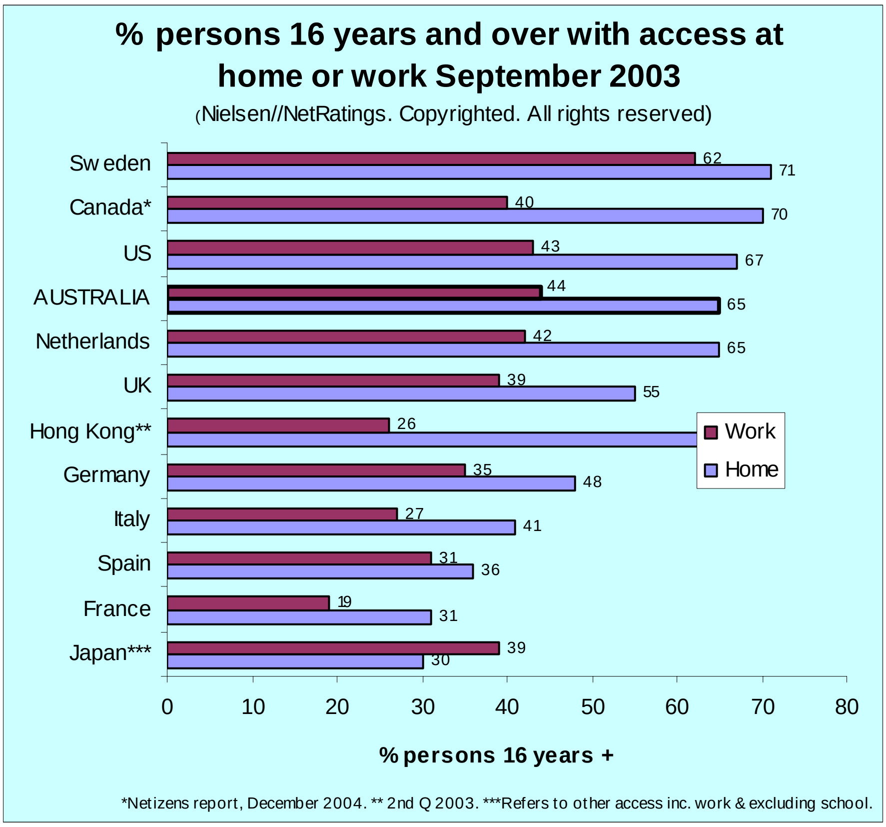
September 2002 to September 2003: As a result of a strong performance in 2003 for this indicator (from 72 per cent in 2002 to 84 per cent in 2003) Australia improved its ranking from 5th in 2002 to 2nd in 2003 behind only Sweden (from 85 per cent in 2002 to 89 per cent in 2003). Other notable performances were those of Spain (from 47 per cent in 2002 to 62 per cent in 2003), the UK (from 68 per cent in 2002 to 80 per cent in 2003), and Germany (from 58 per cent in 2002 to 67 per cent in 2003).

The US (from 78 per cent to 83 per cent), Canada (from 73 per cent to 79 per cent), Hong Kong (from 71 per cent to 72 per cent), France (from 56 per cent to 63 per cent), and Italy (from 55 per cent to 60 per cent), also recorded percentage increases in the period considered.

8. Percentage of persons 16 years and over with Internet access at home or work

Score: home or work combined

	Points
Sweden	133
US	110
Canada	110
Australia	109
Netherlands	107
UK	94
Hong Kong	93
Germany	83
Japan	69
Italy	68
Spain	67
France	50



Access @ home

Sweden (71 per cent), Canada (70 per cent), the US (67 per cent), Hong Kong (67 per cent), Australia (65 per cent) and the Netherlands (65 per cent) recorded the highest percentages, ahead of the UK (55 per cent) and Germany (48 per cent). The percentages recorded for Italy (41 per cent), Spain (36 per cent), and France (31 per cent) Japan (30 per cent) were significantly lower than those recorded by the top ranked countries.

Access @ work

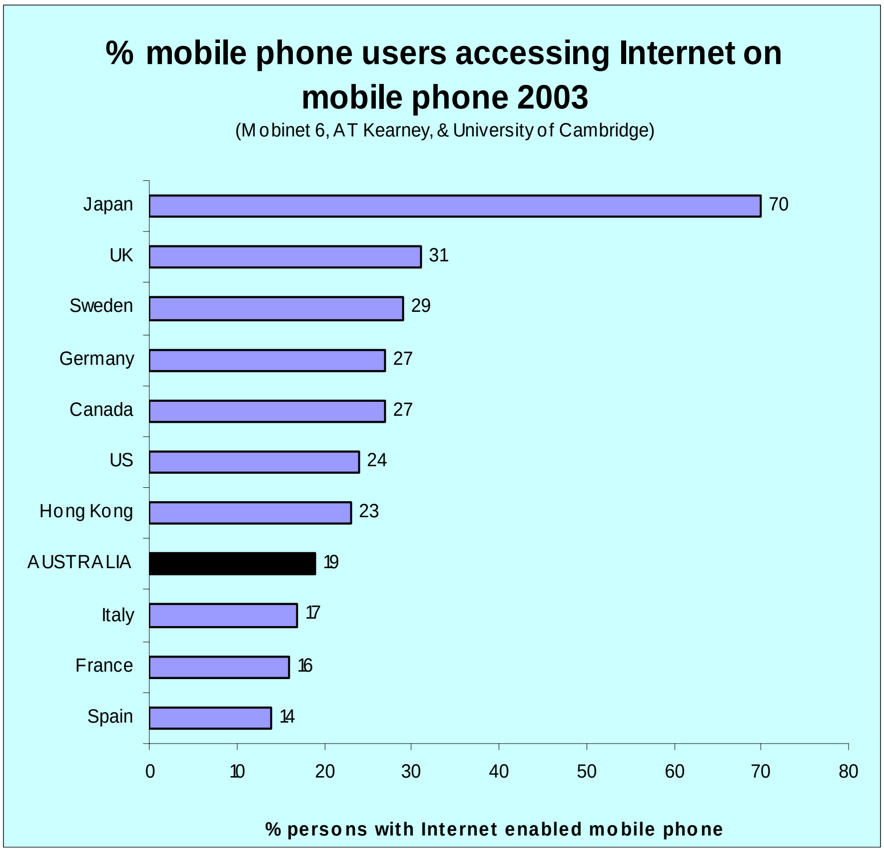
Sweden was ranked first also in terms of Internet access at work, dominating the rankings (62 per cent) ahead of Australia (44 per cent), the US (43 per cent), the Netherlands (42 per cent), Canada (40 per cent), the UK (39 per cent), Germany (35 per cent), Spain (31 per cent), Italy (27 per cent), Hong Kong (26 per cent) and France (19 per cent). Data for Japan related to other sites of access outside the home and school.

September 2002 to September 2003: Sweden increased its combined total from 114 points in 2002 to 133 points in 2003. The US (from 105 in 2002 to 110 in 2003) and Canada (from 98 to 110) were ranked equal second ranking behind Sweden and ahead of Australia (from 89 in 2002 to 109 in 2003). Australia's higher score followed a much improved performance in Internet access at work (from 31 per cent in 2002 to 44 per cent in 2003). In 2003 all countries benchmarked except Hong Kong and Italy (score remained stable respectively at 93 and 68), and France (from 53 in 2002 to 50 in 2003) improved on their 2002 score as follows: the Netherlands from 89 to 107, the UK from 89 to 94, Germany from 75 to 83, and Spain from 54 to 67.8.

9. Wireless Internet access

Score

	Points
Japan	70
UK	31
Sweden	29
Germany	27
Canada	27
US	24
Hong Kong	23
Australia	19
Italy	17
France	16
Spain	14



In 2003, 70 per cent of persons with mobile phones in Japan accessed the Internet on their phone. Japan had a decisive lead on the remaining countries which recorded the following percentages: the UK 31 per cent, Sweden 29 per cent, Germany 27 per cent, Canada 27 per cent, the US 24 per cent, Hong Kong 23 per cent, Australia 19 per cent, Italy 17 per cent, France 16 per cent, and Spain 14 per cent. Data for this indicator for the Netherlands was not available.

June 2002 (previous Index) to April 2003 (current Index): Japan continued to lead in this indicator, although with a sizeable decrease in percentage (from 83 per cent in 2002 to 70 per cent in 2003). Other countries such as the US (down from 40 per cent in 2002 to 24 per cent in 2003), and Hong Kong (down from 37 per cent to 23 per cent in 2003) also recorded noticeable drops in performance with relative loss of rankings. As a result, the UK (from 30 per cent in 2002 to 31 per cent in 2003) was elevated into 2nd place even though it recorded a modest 1 per cent increase. The countries showing improvement over the period considered were Germany (from 14 per cent in 2002 to 27 per cent in 2003), France (from 8 per cent in 2002 to 16 per cent in 2003), Sweden (from 23 per cent in 2002 to 29 per cent in 2003), Canada (from 22 per cent in 2002 to 27 per cent in 2003) and Italy (from 15 per cent in 2002 to 17 per cent in 2003). In Australia, the percentage of persons with mobile phones accessing the Internet on their mobile phone remained unchanged at 19 per cent, while in Spain decreased from 16 per cent in 2002 to 14 per cent in 2003.

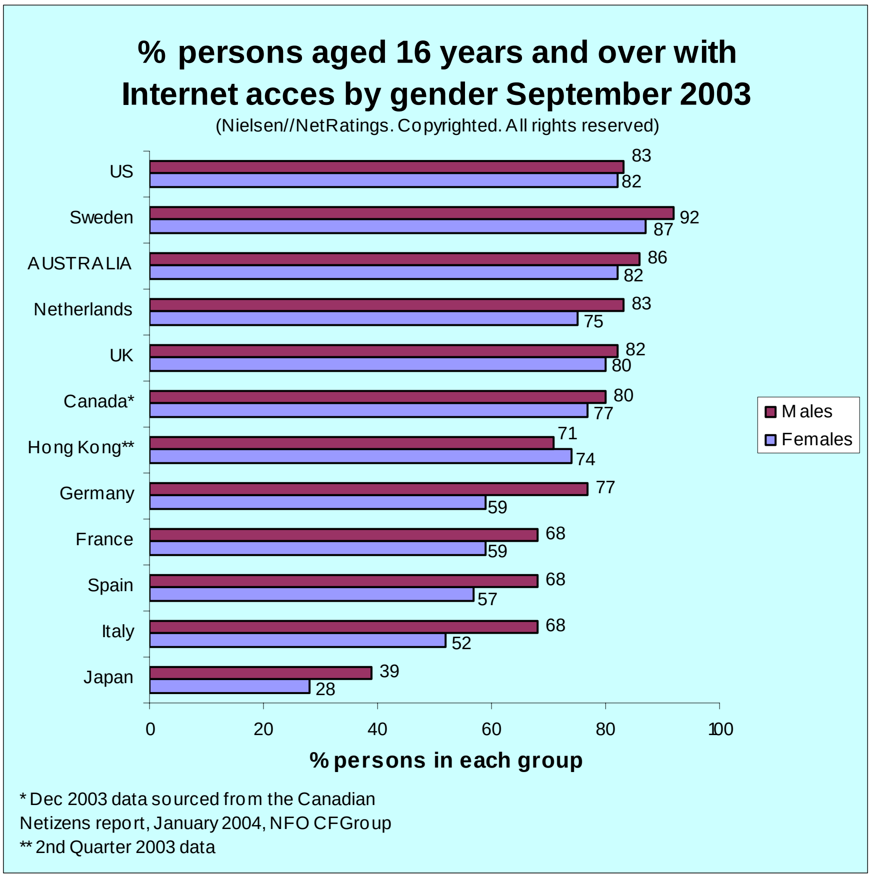
Equity of access

Factors such as education, gender or age, for example, significantly influence levels of online participation; inherent in this is the potential for the emergence of a level of inequality of access between different socio-economic groups. Indicators 10 and 11 try to capture this by examining levels of Internet access by gender and age group. Internationally comparable data relating to Internet access by other socio-economic variables, such as personal or household income is not available; however, additional data relating to Australia is available from the 2004 Current State of Play report http://www2.dcita.gov.au/ie/framework/benchmarking

10. Percentage of persons 16 years and over with Internet access by gender

Score

	Points
US	99
UK	98
Canada	97
Hong Kong	97
Australia	96
Sweden	95
Netherlands	92
France	91
Japan	89
Spain	89
Italy	84
Germany	82



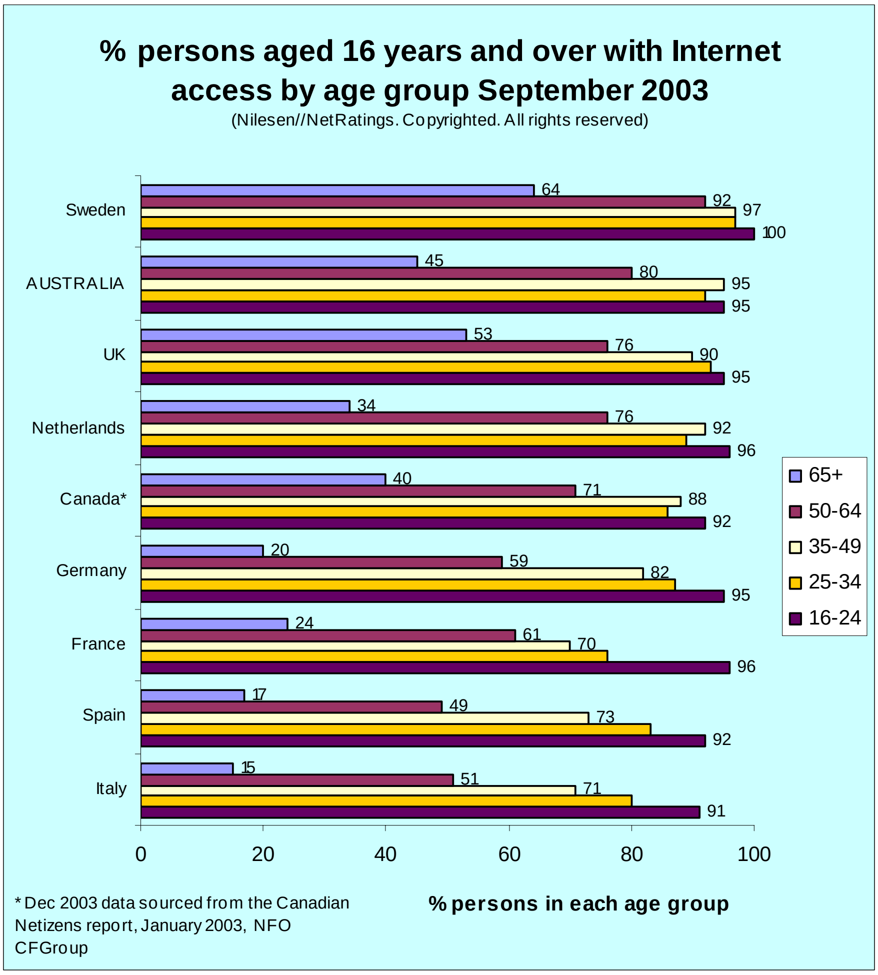
In the third Quarter 2003 the US recorded the lowest differential of 1 per cent in access between males and females, and was thus ranked first with (100 – 1 =) 99 points. The other countries scored as follows: the UK (98 points), Canada and Hong Kong (97 each), Australia (96), Sweden (95), the Netherlands (92), France (91), Japan and Spain (89 each), Italy (84) and Germany (82).

September 2002 to September 2003: in 2003, the US replaced Hong Kong (2002 top ranked country) as best performer and received 99 points. Hong Kong (from 99 points in 2002 to 97 points in 2003), Germany (from 93 points in 2002 to 82 points in 2003), Canada (from 98 in 2002 to 97 in 2003), Italy (from 95 in 2002 to 84 in 2003) Spain (from 96 to 89) and the Netherlands (from 96 to 92) scored less points in 2003 that 2002. Countries that received more points in 2003 were the UK (from 92 to 98), Australia (from 95 to 96), France (from 88 to 91), and Japan (from 87 to 89). Sweden received the same points (95) in the two Indexes.

11. Percentage of persons 16 years and over with Internet access by age group

Score

	Points
Sweden	64
UK	58
Australia	50
Canada	48
Netherlands	38
France	28
Germany	25
Spain	25
Italy	24



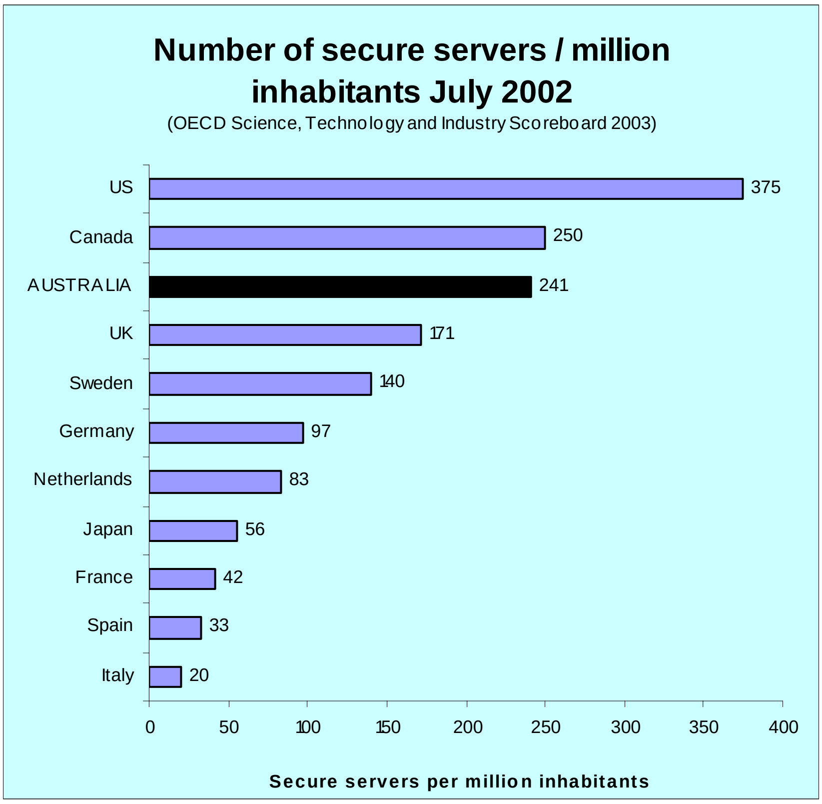
Age is a significant factor in influencing Internet access outcomes with the highest levels of disparity in Internet access occurring between the “young” and the “old”. In this indicator the focus of benchmarking is the difference in Internet access levels between age groups, one measure of the *potential digital divide* within a country. Given that, with the exception of Spain and Italy, all age groups, other than the *65 years and over* category, demonstrate Internet access levels significantly above 50 per cent, the focus of benchmarking therefore is the difference in access levels between persons aged 65 years and over and the age cohort demonstrating the highest level of Internet access in each country, usually persons aged 16-24 years in this case. Based on this measure, Sweden clearly demonstrated the lowest disparity in Internet access levels between persons aged 65 years and over and those aged 16-24 years; 36 percentage points. Sweden was followed by the UK, Australia and Canada (42, 50 and 52 percentage points respectively). The Netherlands recorded a 62 percentage points difference between Internet access levels for persons aged 65 years and over and persons aged 16-24 years. Germany, Italy, Spain and Italy recorded a 72-76 percentage point disparity in access levels between these two age groups. Points for this indicator were allocated on the same basis as indicator measuring the difference in Internet access levels between males and females.

Secure e-commerce infrastructure

12. Number of secure servers per million inhabitants

Score

	Points
US	100
Canada	66
Australia	64
UK	46
Sweden	37
Germany	26
Netherlands	22
Japan	15
France	11
Spain	9
Italy	5



Security of e-commerce transactions has become a key requirement for businesses and consumers operating in the global information economy in view of the increasing sophistication and volume of online financial transactions carried out every day. For many consumers, e-security can be the deciding factor on whether to proceed or not with an online transaction, and businesses are equally keen for robust e-security infrastructure to protect and promote their commercial interests. Secure servers are a critical element of any country's e-security environment. In 2003 the US consolidated its 2002 position as the country with the most secure servers / million inhabitants with 375 secure servers. The US received 100 points. Canada was the second ranked country with 250 secure servers / million inhabitants, and was assigned 66 points, 250 being 66 per cent of 375. Canada was ahead of Australia (64 points), the UK (46 points), Sweden (37 points), Germany (26 points), the Netherlands (22 points), Japan (15 points), France (11 points), Spain (9 points) and Italy (5 points). No OECD data was available for Hong Kong.

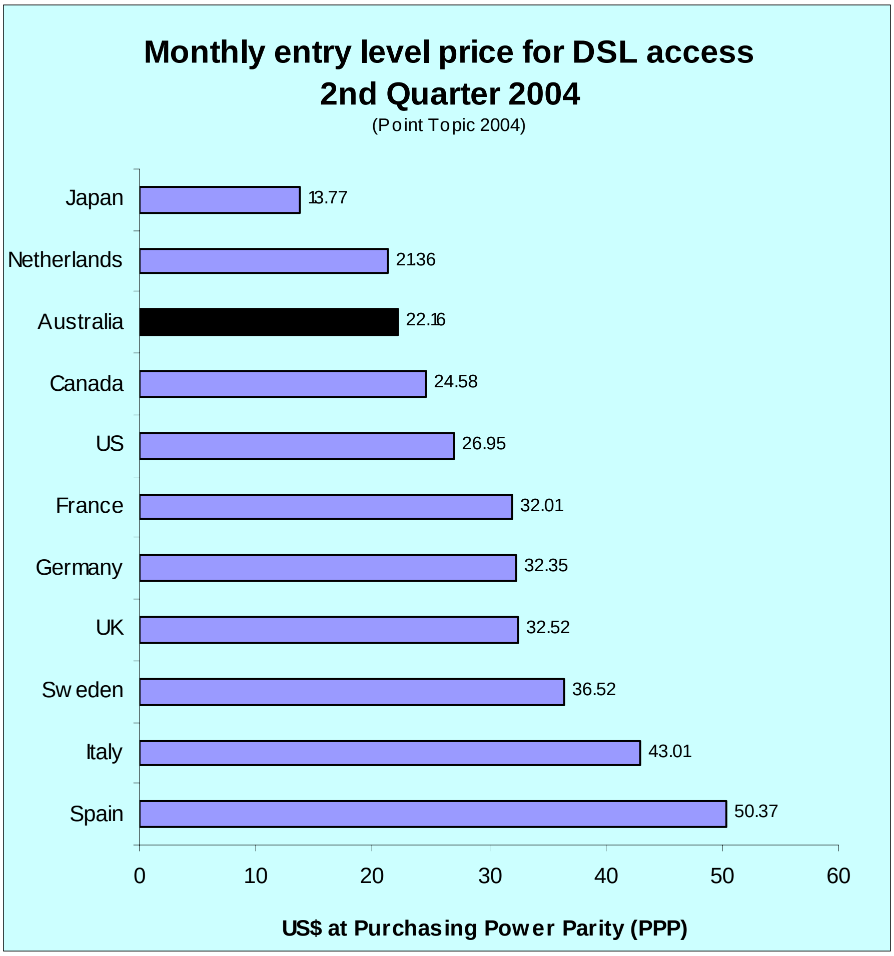
January 2002 (previous Index) to July 2002 (current Index): the US increased its number of secure servers / million inhabitants from 330 in 2002 to 375 in 2003. In 2002 Canada and Australia were equal second with 218 secure servers. In 2003, however, Canada slightly pulled away and Australia was ranked third. The UK (from 147 secure servers in 2002 to 171 secure servers in 2003) improved its ranking compared to Sweden (from 149 secure servers in 2002 to 140 secure servers in 2003), while all the other countries in 2003 maintained their 2002 ranking.

Cost of Internet access

13. Price of broadband access

Score

	Points
Japan	100
Netherlands	65
Australia	62
Canada	56
US	51
France	43
Germany	43
UK	42
Sweden	38
Italy	32
Spain	27



The data presented here is relative to the second Quarter 2004, it was produced by Point Topic as part of its *Broadband Tariff Benchmarks* study and represents entry levels prices for DSL access at PPP[4] rates in 11 of the 12 countries benchmarked in this report (data for Hong Kong was not available). Japan received the highest score (100 points) having recorded the lowest monthly rental charge for entry level DSL access (US$PPP 13.77). The Netherlands was ranked second and received 65 points[5], ahead of Australia (62), Canada (56), the US (51), France (43), Germany (43), and the other remaining countries on lower scores.

[4] Purchasing Power Parities. "PPP are price relatives, which show the ratio of the prices in national currencies of the same good or service in different countries", p.1, Purchasing Power Parities – measurement and uses, OECD Statistical Brief, March 2002.
[5] An explanation of how scores for this indicator have been assigned is provided in the Executive Summary in p.5 of this report.

B. INTENSITY OF INTERNET USE

Part B of the Index focuses on measuring and benchmarking levels of participation in the information economy, covering:

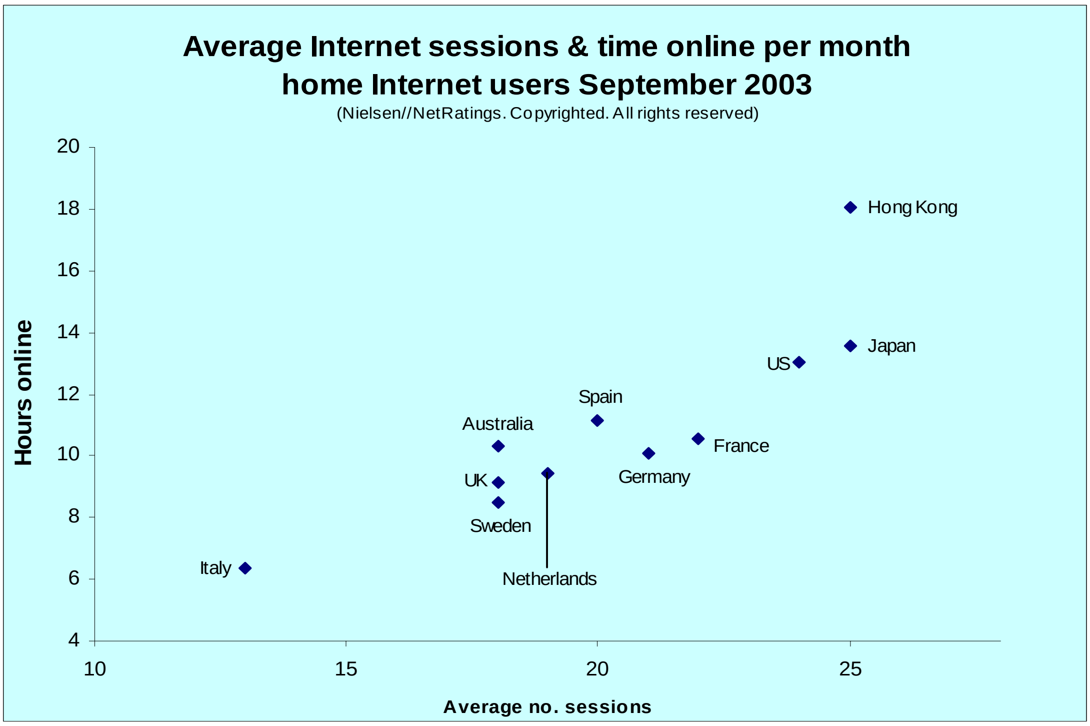
- Intensity of Internet usage, covering indicators relating to average time spent online and average number of Internet sessions per month by home Internet users;
- Adoption of e-commerce by consumers represented by the indicator relating to consumer adoption of online shopping;
- Government and business *e-readiness,* online presence and activities and their role in promoting e-commerce and online service delivery; and
- Government online presence and access of government websites by the general population from home.

14. Average number of Internet sessions and hours online per month

<u>Score: Number of sessions/month & time online/month combined</u>

	Points
Hong Kong	43
Japan	39
US	37
France	33
Germany	31
Spain	31
Netherlands	28
Australia	28
Sweden	27
UK	27
Italy	19

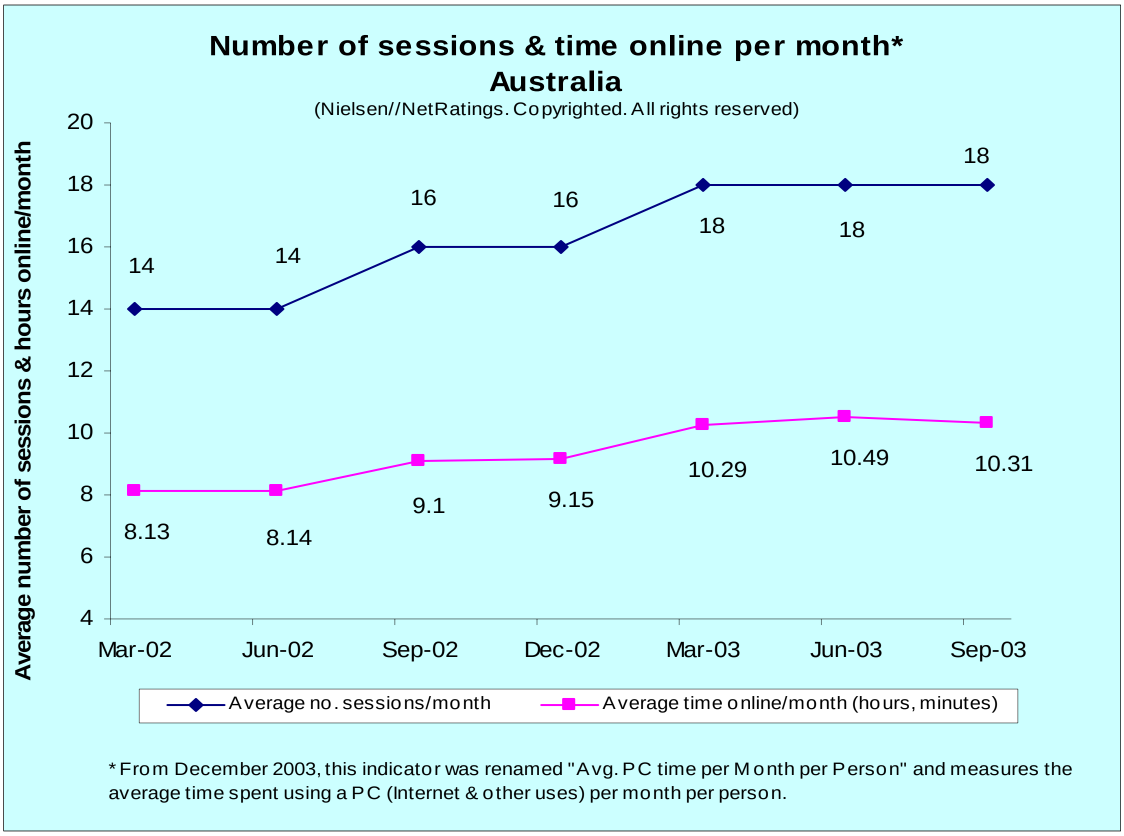
In September 2003, Internet users in Hong Kong had the highest average number of sessions (25) and stayed online the longest (18 hours) for a total combined score of 43. The range of country scores varied substantially, with the lowest ranked country, Italy (13 sessions, 6 hours online), scoring less than half the score of Hong Kong. Japan followed Hong Kong (25 sessions, 14 hours online), and was ranked ahead of the US (24 sessions, 13 hours online), France (22 sessions, 11 hours online), Germany (21 sessions, 10 hours online), Spain (20 sessions, 11 hours online), the Netherlands (19 sessions, 9 hours online), Australia (18 sessions, 10 hours online), Sweden (18 sessions, 9 hours online), and the UK (18 sessions, 9 hours online).



July 2002 to September 2003: all countries benchmarked increased their score in 2003, reflecting a general increase in the average number of Internet sessions and time spent online by Internet users across the world. In September 2003 Hong Kong was still the top ranked country for this indicator having increased its score from 36 (22 sessions/14 hours online) in 2002 to 43 (25 sessions/18 hours online) in 2003. Japan (from 21 sessions/12 hours in 2002, to 25 session/14 hours in 2003) replaced the US in second position. The US recorded a modest increase (from 22 sessions/12 hours in 2002, to 24 sessions/13 hours in 2003) in its combined score, and the other countries improved their score as follows:

- France from 18 sessions/9 hours in 2002 to 22 sessions/11 hours in 2003;
- Germany from 19 sessions/10 hours in 2002 to 21 sessions/10 hours in 2003;
- Spain from 14 sessions/8 hours in 2002 to 20 sessions/11 hours in 2003;
- the Netherlands from 17 sessions/8 hours in 2002 to 19 sessions/9 hours in 2003;
- Australia from 16 sessions/9 hours in 2002 to 18 sessions/10 hours in 2003;
- Sweden from 16 sessions/8 hours in 2002 to 18 sessions/9 hours in 2003;
- the UK from 14 sessions/7 hours in 2002 to 18 sessions/9 hours in 2003; and
- Italy from 12 sessions/6 hours in 2002 to 13 sessions/6 hours in 2003.

Trend over time for Australia



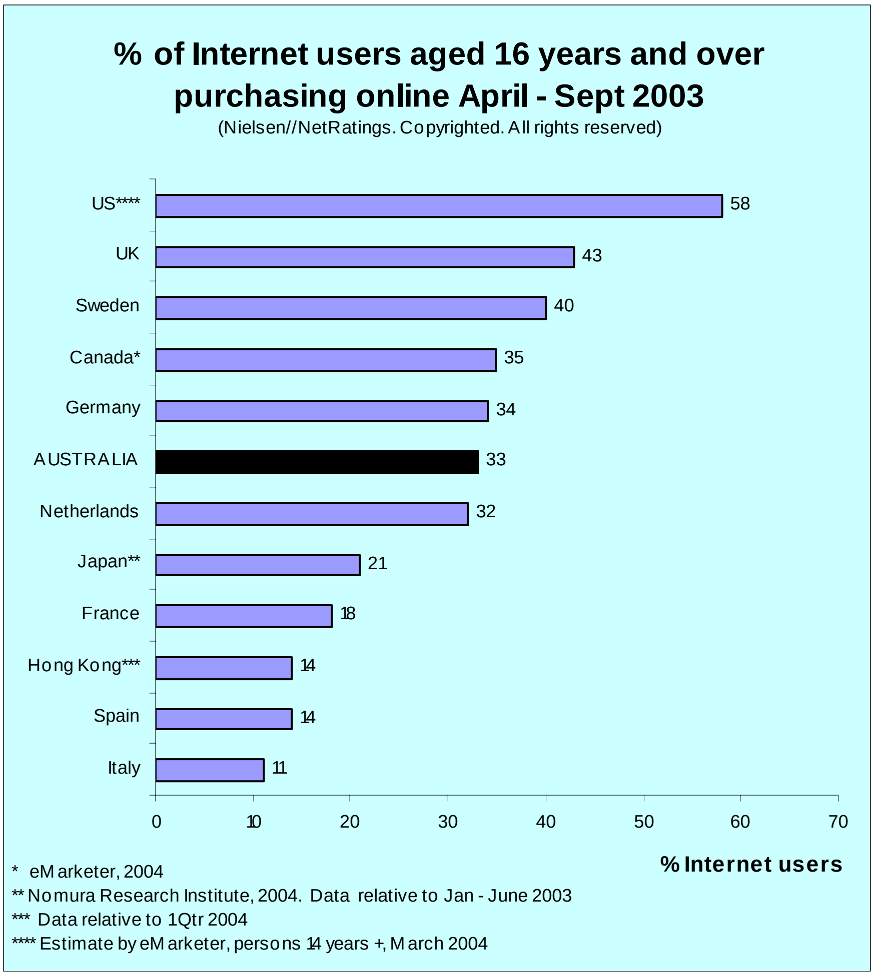
15. Percentage of Internet users 16 years and over purchasing online in the last six months

Online shopping presents tangible benefits. Convenience in terms of being able to access product ranges regardless of seller/buyer location, reduced costs, and the opportunity to shop in a retailing environment that is "always on" are some of its most attractive features. As a result of these characteristics, in the last few years online shopping has carved itself a sizeable niche within the menu of activities performed online by Internet users. The economic significance of Internet shopping compared to that of other established shopping channels, however, remains modest. The majority of the population is still not shopping online, and this is for several reasons, e.g. lack of familiarity with PC technology and the Internet, concerns about conducting financial transactions online, need to examine or "try on" products personally before purchasing. While these concerns are real, Internet shopping is growing in all countries benchmarked.

Score

	Points
US	58
UK	43
Sweden	40
Canada	35
Germany	34
Australia	33
Netherlands	32
Japan	21
France	18
Hong Kong	14
Spain	14
Italy	11

The US had the highest proportion (58 per cent) of Internet users purchasing online amongst the countries benchmarked, ahead of the UK (43 per cent), Sweden (40 per cent), Canada (35 per cent) Germany (34 per cent) and Australia (33 per cent).



September 2002 to September 2003: the US (from 32 per cent to 58 per cent), the UK (from 23 per cent to 43 per cent) and Germany (from 13 per cent to 34 per cent) showed the greatest improvement in the twelve months, while Australia (from 18 per cent to 33 per cent) and Sweden (from 26 per cent to 40 per cent) recorded sizeable increases in purchasing online participation. The higher percentage for the US may be in part due to the different sources used.

E-business

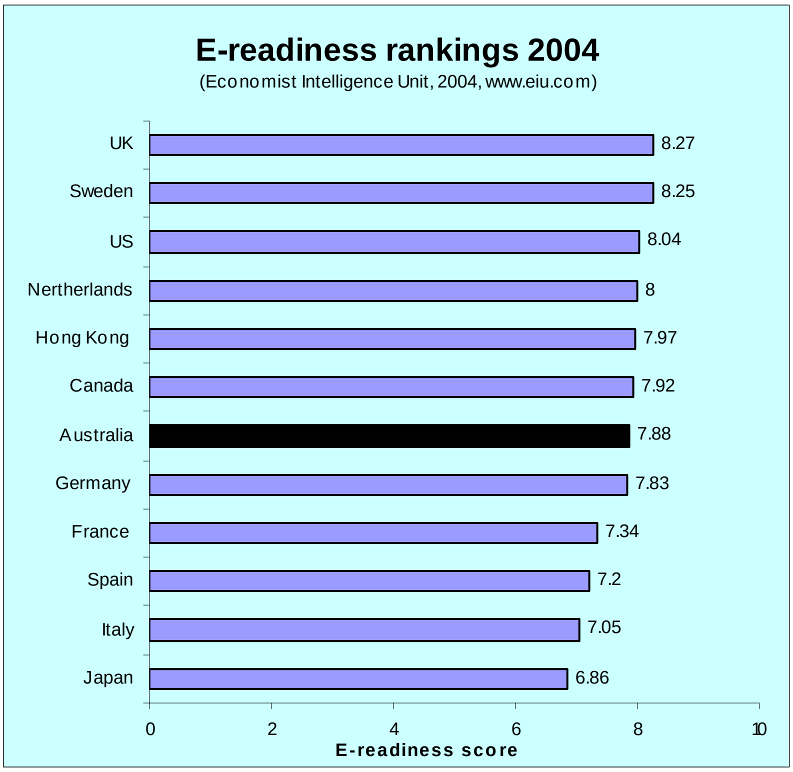
The Business-to-Consumer (B2C) and Business-to-Business (B2B) online activities benchmarked in this section of the Index are shopping online (B2C), and businesses online (B2B). Increasing participation of businesses in the information economy is a goal and a growing reality in most of the information economy leading countries, where lower business costs and increased profitability are achieved through the dynamic implementation of e-commerce policies.

Indicator 17 (E- Readiness Rankings) presents recent and relevant data that can be used for measuring performance reliably. Indicator 18 (per cent of business online), however, re-use data originally presented in the 2003 Information Economy Index. This is due to the lack of more recent comparable data on businesses online required to maintain consistency of benchmarking.

16. E-readiness rankings

Score

	Points
UK	83
Sweden	83
US	80
Netherlands	80
Hong Kong	80
Canada	79
Australia	79
Germany	78
France	73
Spain	72
Italy	71
Japan	69



The Economist Intelligence Unit (EIU) ranked Australia in 12th out of 64 countries in its Business Readiness Rankings published in 2004. Among the 12 countries benchmarked in this Information Economy Index, Australia is ranked seventh with a score of 7.88 (Australia and the other countries' scores have been rounded for benchmarking purposes and as shown in the table above).

"A country's e-readiness is essentially a measure of its e-business environment, a collection of factors that indicate how amenable a market is to Internet-based opportunities" (EIU, 2004). The EIU measured e-readiness performance across six broad categories including:

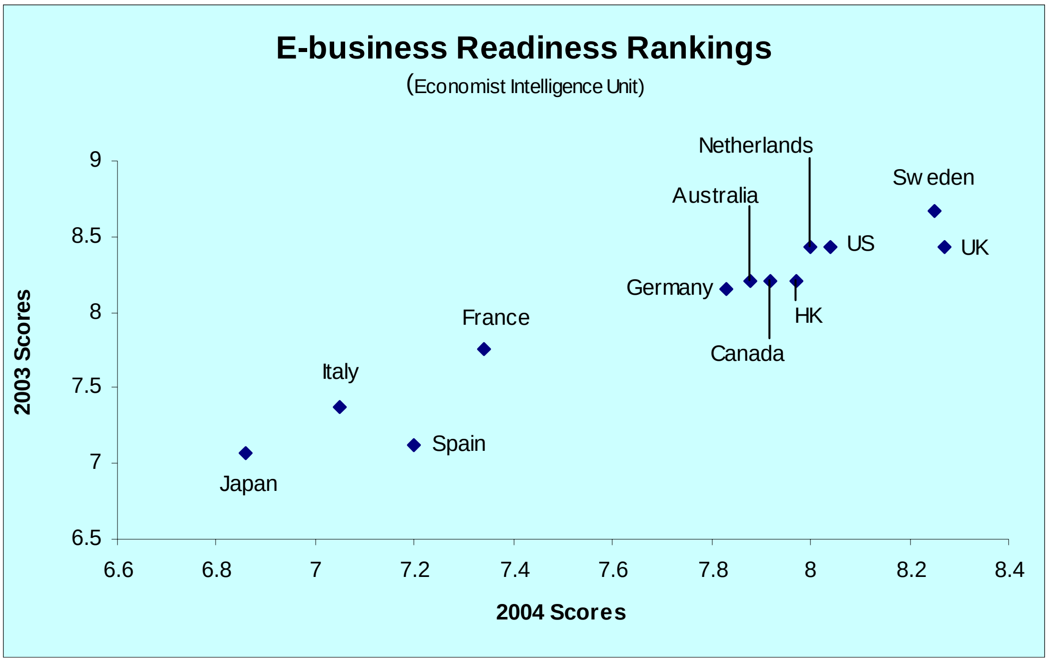
- Connectivity and technology infrastructure
- Business environment
- Consumer and business adoption
- Legal and policy environment
- Social and cultural infrastructure, and
- Supporting e-services.

Out of the 12 countries targeted in this Index, the UK was given the highest score (8.27), followed by Sweden (8.25), the US (8.04), the Netherlands (8.00), Hong Kong (7.97), Canada (7.92), Australia (7.88) and the other countries as illustrated above.

Trends over time: 2002, 2003 and 2004

The EIU published its E-readiness Rankings in May 2001, May 2002, May 2003 and April 2004. Comparison between the 2003 and 2004 Rankings is not as straightforward as it was for previous rankings because of the increased weight given to overall broadband adoption levels in 2004. This change in methodology has affected negatively the overall score of many countries. Compared with 2003, in 2004 the EIU has also added 4 more countries: Estonia, Lavtia, Lithuania, and Slovenia.

Reflecting a trend already present in the 2003 E-readiness Rankings, in 2004 Scandinavian countries continue to dominate the Rankings with Denmark, Sweden, Norway and Finland ranked in the top five positions. According to the EIU, the key factor behind the high ranking of Scandinavian countries has been effective coordination between their government organisations and the ICT industry.



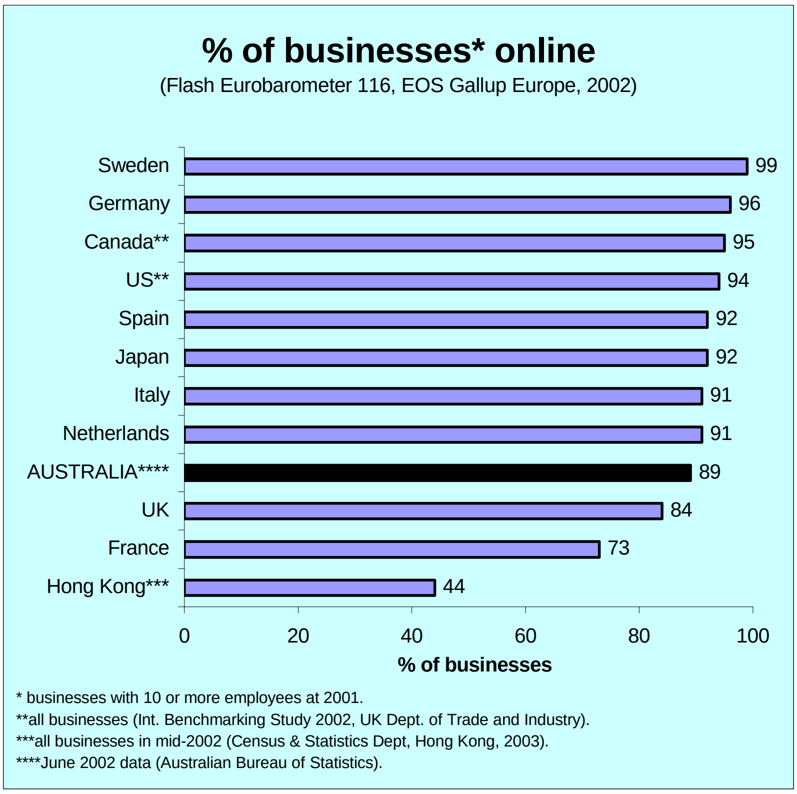
A closer look at Australia's e-readiness performance

With the exception of the category "Connectivity", Australia has maintained its general global standing and is in fact among the world leaders with only a minor fall in its score for the category "Business Environment". The fall in Australia "Connectivity" score can be attributed to the change in methodology concerning the increased weight given to levels of broadband adoption.

17. Percentage of businesses online

Score

	Points
Sweden	99
Germany	96
Canada	95
US	94
Spain	92
Japan	92
Italy	91
Netherlands	91
Australia	89
UK	84
France	73
Hong Kong	44



With the exception of Hong Kong, with only 44 per cent of businesses online, all other benchmarked countries recorded near ubiquitous Internet adoption amongst businesses with 10 or more employees (for Canada, the US and Hong Kong the base population was all businesses). Sweden, as with most other indicators relating to Internet adoption, recorded the highest level of business connectivity (99 per cent), followed by Germany (96 per cent), Canada (95 per cent), the US (94 per cent), Spain and Japan (92 per cent respectively), Italy and the Netherlands (91 per cent), Australia (89 per cent), the UK (84 per cent) and France (73 per cent).

The data presented for this indicator was also presented in the 2003 Information Economy Index. The decision to present the data also in this Index was taken after more recent reliable and comparable data on businesses online in all countries benchmarked could not be found.

E-government

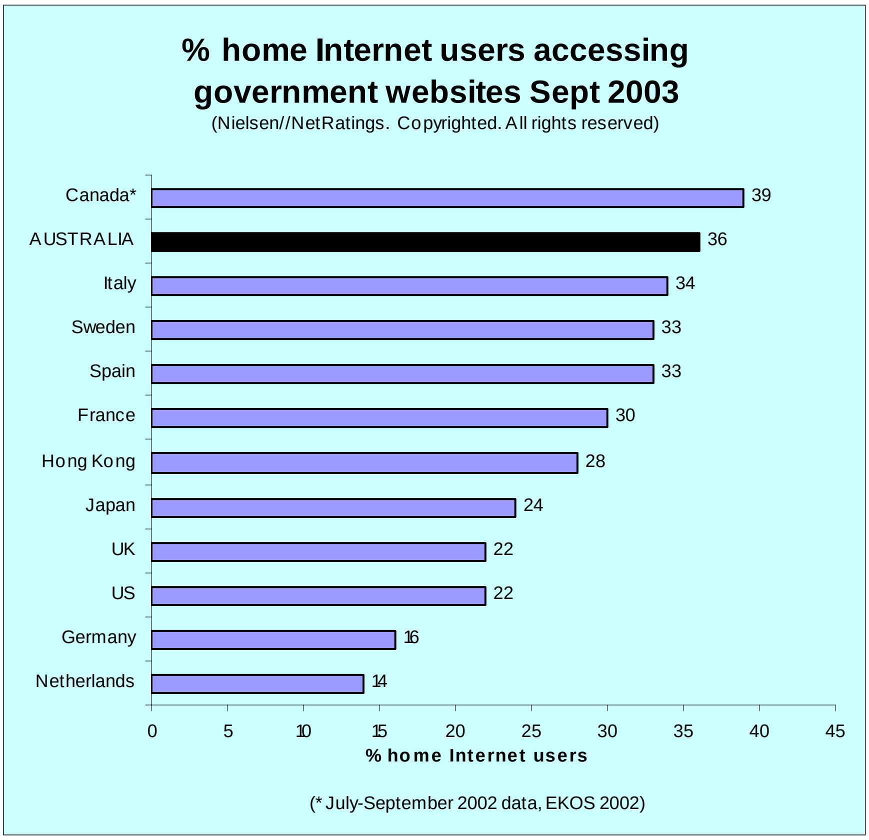
The relevance of e-government in a social and policy context is undisputed as *"government online can be a catalyst for the development of the information economy by delivering critical services online. E-government facilitates access to information resources, programs and services with an emphasis on the added efficiency dividend derived by consumers from being able to access online services without restrictions of time or place and pubic sector agencies able to deliver services more efficiently and cheaply."*[6]

This Index presents two indicators charting e-government performance: penetration of online government services (19), and e-government rankings (20).

18. Penetration of online government services

<u>Score</u>

	Points
Canada	39
Australia	36
Italy	34
Sweden	33
Spain	33
France	30
Hong Kong	28
Japan	24
UK	22
US	22
Germany	16
Netherlands	14

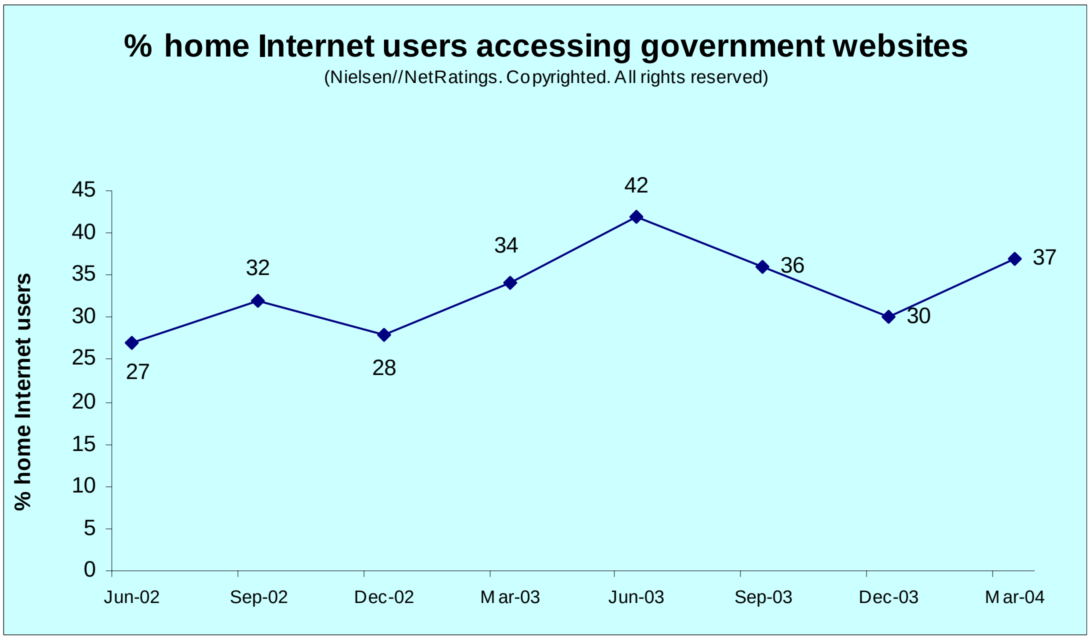


39 per cent of home Internet users in Canada accessed government websites, a strong performance considering that it refers to 2002 (2003 comparable data not available). Among the remaining countries, in the third Quarter 2003 Australia had the highest percentage (36 per cent) of Internet users accessing government websites. Australia has consistently performed well in this indicator. Italy was ranked third (34 per cent), followed by Sweden (33 per cent), Spain (33 per cent), France (30 per cent), Hong Kong (28 per cent), Japan (24 per cent), the UK (22 per cent), the US (22 per cent), Germany (16 per cent), and the Netherlands (14 per cent). As for the US and the Netherlands in this case, strong Internet penetration rates sometime do not induce equally high levels of participation across other important areas of online activity.

[6] p.46, NOIE Information Economy Index, 2003.

September 2002 to September 2003: all countries benchmarked improved their level of access to government websites, although with generally lower percentages than those recorded for online shopping. Spain (from 20 per cent to 33 per cent) showed the greatest improvement, followed by the UK (from 11 per cent to 22 per cent), Sweden (from 23 per cent to 33 per cent), Italy (from 25 per cent to 34 per cent) the Netherlands (from 5 per cent to 14 per cent), Germany (from 8 per cent to 16 per cent), France (from 23 per cent to 30 per cent), Japan (from 19 per cent to 24 per cent), Australia (from 32 per cent to 36 per cent), Hong Kong (from 24 per cent to 28 per cent), and the US (from 18 per cent to 22 per cent).

Trend for Australia overtime



19 E-government rankings

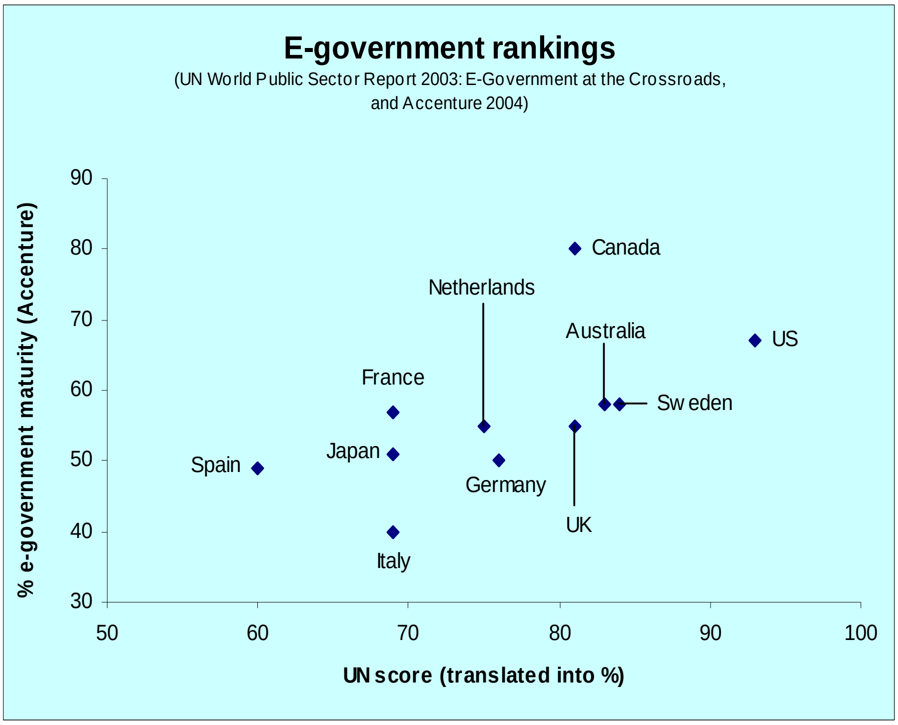
This indicator ranks countries on the basis of data from two sources: the *"UN World Public Sector Report 2003: E-Government at the Crossroads"* report, and Accenture's *"eGovernment Leadership: High Performance, Maximum Value"* report published in 2004.

The table below lists the percentages for the countries benchmarked in each of the reports[7]. The average in the third column is also the score used for the purposes of the Information Economy Index.

	UN World Public Sector Report	**Accenture**	**Score (average)**
Canada	81	80	80.5
US	93	67	80
Sweden	84	58	71
Australia	83	58	70.5
UK	81	55	68
Netherlands	75	55	65
France	69	57	63
Germany	76	50	63
Japan	69	51	60
Italy	69	40	54.5
Spain	60	49	54.5

<u>Score</u>

	Points
Canada	80.5
US	80
Sweden	71
Australia	70.5
UK	68
Netherlands	65
France	63
Germany	63
Japan	60
Italy	54.5
Spain	54.5



Canada and the US stand out in both the rankings produced by the UN and Accenture. They are followed Sweden and Australia, and further behind are ranked the UK, the Netherlands, France, Germany and Japan. Italy and Spain receive the lowest average score and are ranked equal last.

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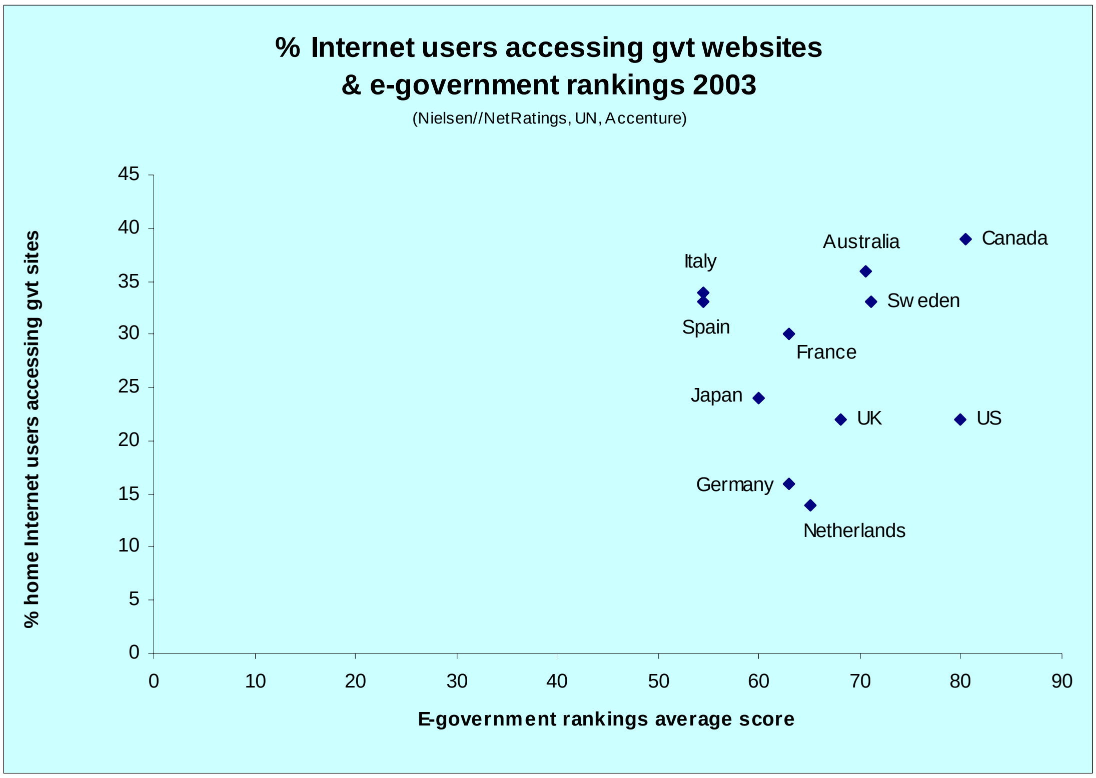
[7] For the UN report, for each country the E-Government Readiness Index Score was translated into a percentage of the maximum available score.

Internet users accessing government websites and e-government rankings



The scatter graph above maps the performance of countries on the basis of indicators 19 (vertical axis) and indicator 20 (horizontal axis). Canada, Australia and Sweden's scores are plotted the farthest away from where the axes intersect (0), indicating these countries' strong performance in both the indicators. All countries are plotted in the right half of the graph, indicating a strong general performance for indicator 20. The Netherlands, Germany, the UK, the US and Japan, however, occupy the lower half of the graph to reflect their lower scores for indicator 19.

Contact address:

ie-stats@dcita.gov.au