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STATISTICS UPDATE

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Features:

- Special Report:
  ABS Y2K Survey findings 'Use of technology by business, June 1999'
- Latest results from household, farm and government use of IT surveys
- New survey of Internet Service Providers planned
- ABS investigating statistical indicators of the knowledge based economy and society
INDEX

1. Introduction 3
2. Information Technology (IT) Statistics 3
   2.1 Summary of activities 3, 4
   2.2 Surveys of household use of IT 4, 5
   2.3 Farm use of IT 5
   2.4 Government use of IT 6
   2.5 IT statistical developments 6
     2.5.1 Quarterly Internet activity survey planned 6, 7
     2.5.2 Household use of IT surveys 7
     2.5.3 Business use of IT surveys 7
     2.5.4 Farm use of IT surveys 7
     2.5.5 Government use of IT surveys 8
   2.6 Publications containing IT statistics 8
     2.6.1 IT use publications 8
     2.6.2 IT industry publications 9
3. Research & experimental development (R&D) statistics 9
4. The innovation statistics project 10
   5.1 Introduction 10, 11
   5.2 Summary of findings 11, 12
   5.3 Table 'Proportion of businesses using technology by industry' 13, 14
6. Contacts for further information 15
1. INTRODUCTION

Welcome to the 2nd edition of the ABS Science and Technology Statistics Update. We hope you find it useful and would very much appreciate any feedback you have to offer.

Please send any comments to Sheridan Roberts at sheridan.roberts@abs.gov.au or phone (02) 6252 5019.

The purpose of the Update is to let you know about the range of science and technology indicators which are produced by the ABS and to provide you with information on statistical developments and data releases.

For your interest, we have included some highlights from the most recent releases and a special feature article which provides 1999 data on the type of technologies used by businesses in Australia.

2. INFORMATION TECHNOLOGY (IT) STATISTICS

2.1 Summary of activities

- Surveys of the information technology and telecommunications industries are currently being conducted in respect of the financial year 1998-99. Industries being surveyed include computer services, telecommunications, IT manufacturing and IT wholesaling.

- Surveys of the use of information technology by businesses and government organisations were conducted in respect of 1997-98 and will be repeated for 1999-2000. From this year, business use surveys will be conducted annually and government use surveys every two years.

- Surveys of IT use by farms were conducted in 1998 and 1999. Core items on use of computers and the Internet are expected to be collected annually from now on.

- Household use of IT data are currently collected each quarter by the ABS Population Survey Monitor (PSM). Due to changes to the ABS household survey program, the PSM will cease at the end of this year. More information on this development is presented in 2.5.2.

- On the infrastructure side, ABS is developing a new quarterly survey of internet service providers (ISPs) so that we can better understand some of the infrastructure issues which affect the use of information technologies by households and businesses. We expect that the survey will go into the field this July. For more information, see 2.5.1.
The 2001 Population Census will contain two questions on IT. The questions will be asked of each person in the household and will provide a large dataset able to provide finer regional data and cross classification against a wide range of socio-economic and other variables. The first question to be asked is whether the person used a computer in the last week; the second question is whether s/he used the Internet. The Internet question will be split by location of use, the choices being home, work or other.

The supplementary topic for the April 2000 Labour Force survey is children's culture/leisure activities. The survey includes a number of questions on children's use of computers and the Internet, for instance, whether they used a computer/the Internet in the previous 12 months; and where, what for and how often they use a computer or the Internet. The survey will also include household level information on computers and Internet access. As the sample population in the Monthly Labour Force Survey is significantly larger than that used for the Household Use of Information Technology Survey, there will be an opportunity to produce some regional IT statistics from this collection.

2.2 Surveys of household use of IT

To date, data from each of the four 1999 Household Use of Information Technology surveys have been released in the quarterly publication Use of the Internet by Householders, Australia (Cat. no 8147.0). Data from the 1999 surveys have been consolidated to produce average annual estimates at State and Territory levels and results will soon be published in Household Use of Information Technology, Australia, 1999 (Cat. no 8146.0). Previous editions of this publication are available for 1998 and 1996.

Key indicators from the November 1999 Household Use of Information Technology survey included:

- Half of all Australian households (3.5 million households) had a home computer in November 1999, an increase of 7% over the November 1998 estimate of 3.2 million households.
- A quarter of all households (or 1.7 million households) had home Internet access compared with 19% in November 1998.
- In the 12 months to November 1999, just over 6.0 million adults (44% of Australia's adult population) accessed the Internet compared to 4.2 million adults in the 12 months to November 1998.
- Nearly 6% of Australian adults (803,000) used the internet to purchase or order goods or services for their own private use in the 12 months to November 1999.
- In the three months to November 1999, 4% of adults used the Internet to pay bills or transfer funds, 2% used an electronic information kiosk to pay bills, 41% used the telephone to pay bills or transfer funds, 62% used EFTPOS and 72% used an ATM.
- At November 1999, there were 468,000 adults (5% of all employed adults) who were able to access an employer's computer from home through a modem. An estimated 352,000 of these (75%) had an agreement with their employer to work from home.
Late in 1999, the data items collected on the Household Use of Information Technology survey were reviewed. This resulted in changes to the survey questionnaire being used for the year 2000 surveys. There are now additional questions on Internet shopping, barriers to Internet shopping and use of the Internet to access services including government and financial services. The year 2000 surveys also include questions on several newer home technologies such as webcam, DVD, CDMA phones and Internet access through set top boxes or mobile phones. The first release of year 2000 data is expected to occur in May this year.

2.3 Farm use of IT

Preliminary results from the information technology (IT) questions on the 1998-99 Agriculture Commodity Survey were released in December. Highlights from the release include:

- An estimated 49% of Australia's 147,160 farms used a computer at the end of March 1999, a 26% increase over the number of farms using a computer at March 1998.
- The proportion of farms using the Internet increased from 11% to 20% over the same period.
- The Northern Territory (65%), the Australian Capital Territory (62%) and Western Australia (59%) had the highest proportion of farms using a computer, and the largest increase in the number of farms using a computer occurred in Tasmania (up 36% over March 1998).
- The Statistical Divisions in each State (outside the capital city Statistical Divisions) with the highest proportion of farms using a computer were Murray (58%) in New South Wales, Mallee (58%) in Victoria, Mackay (58%) in Queensland, Eyre (57%) in South Australia, Northern (50%) in Tasmania and Kimberley and Upper Great Southern (both 65%) in Western Australia.
- The Northern Territory (36%) and the ACT (29%) had the highest percentage of farms using the Internet. The largest increase in the number of farms using the Internet occurred in Tasmania (up 104% over March 1998).
- The Statistical Divisions outside capital cities in each State with the highest proportion of farms using the Internet were Illawarra (30%) in New South Wales, Mallee (29%) in Victoria, Mackay (25%) in Queensland, Outer Adelaide and Murray Lands (both 23%) in South Australia, Central and Kimberley (both 27%) in Western Australia, and Southern (29%) in Tasmania.

More information can be obtained from the publication Use of Information Technology on Farms, Australia, 1998-99, Preliminary (Cat. no. 8134.0). A supplementary survey of farms with Internet access was also conducted in 1999 and information will be released in Use of Information Technology on Farms, Australia, 1998-99 (Cat. no. 8150.0) due for release in April.
2.4 Government use of IT

Figures released in December show:

- Across all government organisations in Australia, there were just over half a million PCs (507,000) accessed by 543,000 authorised PC users at the end of June 1998. More than a third of those users were authorised to access the Internet (209,000). State departments and agencies accounted for almost half with 231,000 PCs, 259,000 PC users and 92,000 Internet users.

- At the end of June 1998, almost three-quarters (73%) of government organisations had Internet access. Federal government had the highest level, with 100% of Federal departments and agencies having Internet access. Of these, 22% restricted their employees' access to specific websites.

- Of the government organisations without access to the Internet at the end of June 1998, 57% intended to obtain it within the next 12 months. With these organisations representing 15% of all government organisations, the expected rate of Internet access for all government organisations by June 1999 was 88%.

- Federal departments and agencies offered the highest level of support for information technology and telecommunications (IT&T), with 4.6% of employees being IT&T support personnel, compared with only 1.5% in State/Territory departments and agencies and 1.4% in local government.

- Expenditure on IT&T by government in Australia was $3,317 million, of which almost a quarter ($788m) was spent on wages and salaries of in-house IT&T employees, and about a quarter ($795m) on contract payments to other organisations. Of these contracts, more than two-thirds ($553m) were for outsourcing ongoing services. Most (89%) contract payments for IT&T services went to private sector service providers. Federal departments and agencies' IT&T expenses per PC user ($10,415) were almost double those of State/Territory departments and agencies ($5,290) and local government ($5,230).

Further details can be found in Government Use of Information Technology, Australia, 1997-98 (Cat. No. 8119.0).

2.5 IT statistical developments

Outlined below is a summary of current developments in ABS IT statistics.

2.5.1 Quarterly Internet activity survey planned

Because of a strong demand from government and industry users for regular statistics on Internet activity, the ABS has been investigating the feasibility of introducing a quarterly survey of businesses providing Internet access services. As a result, the Internet Activity Survey is expected to be introduced in respect of the June quarter 2000. Its main purpose will be to provide a set of regular partial indicators of Internet activity in Australia. As the survey will be a census of all Australian ISPs, it is expected that some quarterly regional data will be able to be produced.
Proposed data items include:

- Subscriber details: Number and type; Churn during the quarter; Type of connection; Amount paid (ranges); Type of access package (e.g. flat rate/month etc)
- Volume measures: On-line time (minutes) by subscriber type; Megabytes downloaded by subscriber type
- Service issues: Number of modems/lines; Details of technical support and other services offered; Number of business web sites hosted; Number of business sites with online payment
- Points of presence: Number and location of POPs; Number of subscribers per POP; Lines available; Volume of data sent to subscribers.

2.5.2 Household use of IT surveys

As mentioned above, proposed changes to the ABS household survey program will affect the collection of IT use data for households and individuals. The quarterly Population Survey Monitor (PSM) survey, through which the data are currently collected, will be conducted for the last time for the November quarter 2000. In the future, household IT data may be collected via two new regular ABS household surveys. The General Social Survey (GSS) will be conducted every third year, commencing in 2002, and will probably include some IT questions, while the Multiple Purpose Household Survey (MPHS) will be conducted in the intervening two years. The MPHS will commence in 2003 and, while it appears likely that it would include an IT topic, any decision would be based on relative priorities at the time. The ABS is currently investigating the possibility of adding a set of household use of IT questions to one of the labour surveys to be conducted during 2001.

2.5.3 Business use of IT surveys

Economy wide business technology use surveys were conducted in respect of 1993-94 (mainly on computer use) and 1997-98 (covering computer use, internet access, e-commerce activities and barriers to the use of technology).

Given the rapid increase in the number of businesses connected to the internet and their growing use of e-commerce, the ABS has decided to conduct annual collections of business IT use. Data items, methodology and procedures have been designed to allow rapid processing and dissemination of results. The next business use of technology survey will be conducted in respect of 1999-2000, and thereafter on an annual basis. The next survey will continue to collect information on business use (and non-use) of IT and will explore a number of issues concerning the Internet, web-sites and e-commerce (including the value of Internet commerce).

2.5.4 Farm use of IT surveys

Given the interest in information on the diffusion of technology in regional Australia, the ABS has decided that the annual Agriculture Commodity Survey will continue to include three core questions on farm IT use. The questions cover use of computers and the Internet and intentions to gain access to the Internet.
2.5.5 Government use of Information Technology survey

Technology use surveys of general government organisations were conducted in 1993-94 and 1997-98 and have been designed to complement the business surveys of technology use. Although many of the current data items are relevant to government organisations, there is a need to focus more on the types of services that are being provided on-line by government. By using on-line services, government becomes a key driver of growth of the information economy as well as enabling government to become more efficient. Goals in the Australian context are: all government services are to be offered on-line by 2001; a single point of access to government services; and establishment of an on-line authentication framework. It has been decided to maintain the biennial Government (use of) Information Technology survey with the next collection to be conducted in respect of 1999-2000. In developing this collection, it is intended to investigate ways of improving how the information is collected from government units and to explore the possibility of obtaining administrative by-product information on procurement and provision of on-line services.

2.6 Publications containing IT Statistics

The following IT statistics publications have recently been released or will be released in coming months.

2.6.1 IT use publications

- 8147.0 Use of the Internet by Householders, Australia (a regular quarterly publication, the latest edition was released on 1 March 2000 in respect of the three months ending November 1999)
- 8146.0 Household Use of Information Technology, Australia, 1999 (expected to be released in May 2000; presents aggregated annual results from the Household Use of IT Survey including detailed state level data)
- 8129.0 Business Use of Information Technology, Australia, 1997-98 (released October 1999; preliminary results were released in Cat. no 8133.0 in April 1999)
- 8134.0 Use of Information Technology on Farms, Australia, Preliminary, 1998-99 (released in December 1999)
- 8150.0 Use of Information Technology on Farms, Australia, 1998-99 (more extensive data than 8134.0; expected to be released in April 2000)
- 8119.0 Government Use of Information Technology, 1997-98 (released in December 1999)
- 8153.0 Internet Activity, Australia, June and September quarters 2000 (expected to be released in November 2000).
2.6.2 IT industry publications

- 8143.0 Information Technology, Australia, Preliminary, 1998-99
  (expected to be released in April 2000; this publication will present preliminary
  information on IT industries)
- 8669.0 Computing Services Industry, Australia, 1998-99
  (expected to be released in August 2000)
- 8126.0 Information Technology, Australia, 1998-99
  (expected to be released in September 2000)
- 8145.0 Telecommunications Services, Australia, 1998-99
  (expected to be released in September 2000).

3. RESEARCH & EXPERIMENTAL DEVELOPMENT (R&D) STATISTICS

The processing of R&D surveys for the year 1998-99 is currently nearing completion. The
surveys covered businesses, higher education institutions, government organisations and
private non-profit organisations. Details of R&D expenditure and human resources devoted
to R&D classified by type of expenditure, location of expenditure, source of funds, type of
employee, type of activity, field of research and socio-economic objective were collected.
Details were also collected for payments and receipts for technical know-how.

Final results from the surveys will be released in the following publications:

- 8111.0 Research and Experimental Development, Higher Education Organisations,
  Australia (expected to be released in April 2000)
- 8104.0 Research and Experimental Development, Business Enterprises, Australia
  (expected to be released in June 2000)
- 8109.0 Research and Experimental Development, General Government and Private
  Non-Profit Organisations, Australia (expected to be released in July 2000)
- 8112.0 Research and Experimental Development, All Sector Summary, Australia
  (expected to be released in August 2000).

A survey of R&D undertaken by businesses in 1999-2000 is to be conducted soon, with forms
expected to be dispatched in August 2000. This survey will be the first to use the
classifications contained in the 1998 edition of the Australian Standard Research
Classification (ASRC). The Socio-economic objective (SEO) classification has been revised
and the Research fields, courses and disciplines (RFCD) classification has replaced the Field
of research (FOR) classification.

An information paper on health R&D in Australia has recently been produced by the ABS.
The paper presents statistics on health R&D carried out in Australia in 1996-97 by
businesses/organisations within the Business, General government, Higher education and
Private non-profit sectors. The paper is available on request.
4. THE INNOVATION STATISTICS PROJECT

The Innovation Survey Group has conducted two rounds of innovation surveys. The first was in respect of 1993-94 and the second in respect of 1996-97. Both surveys were mainly concerned with details of the innovation process in the Manufacturing industries, however, the 1993-94 survey also included some information in respect of other industries.

The types of information available from the 1996-97 manufacturing survey include:

- the level and types of innovation in Australian manufacturing;
- some characteristics of innovating businesses;
- the innovation capabilities of manufacturers;
- the impact of innovation on the business;
- qualitative aspects of innovative manufacturers; and
- case studies of implemented innovations.

Results from the surveys are available in the following publications:

- 8116.0 Innovation in Manufacturing
- 8121.0 Innovation in Mining
- 8118.0 Innovation in Selected Industries.

The ABS is currently moving away from the idea of directly measuring innovation. Instead, we are investigating whether we can produce a range of statistical indicators on the knowledge based economy and society. We are at a very early stage of thinking on what this entails ... so please contact us if you would like to contribute ideas.

5. SPECIAL REPORT

Findings from the ABS Y2K Survey: 'Use of Technology by Business, June 1999'

5.1 Introduction

This article represents the status of business use of technology at the end of June 1999. The information presented was compiled from the second ABS survey of Australian business regarding their progress in addressing the Year 2000 problem. Although the data were collected in the context of a survey relating to the Year 2000 problem, the measurement of use of technology was relatively independent of knowledge about or experiences with the Year 2000 problem.

A questionnaire was mailed to approximately 13,000 businesses from all industries of the Australian economy, with the exception of Government administration and defence, Agriculture and Religious organisations. Respondents were asked to indicate which types of technologies were used by the business by checking a 'yes' or 'no' box for each item. The questionnaire asked about hardware, software and other technologies.
For more information regarding the sampling and survey methodology, see the explanatory notes at the back of the 'Year 2000 Problem' publication (Catalogue No. 8152.0).

Business size was found to be the major determinant of the range and intensity of technology use, with larger businesses more likely to use each type of technology than smaller businesses. The relationship between industry and use of technology was more complex. The electricity, gas and water supply industry was the most technology intensive, followed by property and business services. Other industries were less consistent in their use of technology, reflecting industry specific needs. Accommodation, cafes and restaurants were least likely to use computer based technologies but reported the second highest use of electronic banking and EFTPOS. State of location made little difference to the range or intensity of technology use.

5.2 Summary of findings

At the end of June 1999, nearly all Australian businesses used at least one type of technology. For instance, an estimated 99% of businesses used communications equipment, including telephones, facsimiles, PABXs, pagers etc. The 1% of businesses which did not use communications equipment were all micro businesses (between 1 and 4 employees).

An estimated 72% of Australian businesses used a personal computer, including stand-alone and networked computers. Businesses in the property and business services industries were most likely to use a computer, with 91% of businesses reporting using a personal computer. The industries with the next highest level of computer use were electricity, gas and water supply (89%), finance and insurance (81%) and health and community services (81%). In comparison, 53% of accommodation, cafes and restaurants and 57% of retail trade businesses used a computer. Larger businesses were more likely to use a computer than smaller businesses; 100% of businesses with more than 200 employees used a computer. This compared with 94% of medium sized businesses (between 20 and 199 employees), 78% of small businesses (between 5 and 19 employees) and 69% of micro businesses.

Other computer systems (including mainframe and mid-range systems) were most commonly used by businesses in the electricity, gas and water supply industry (47%). The use of other computer systems was clearly linked to business size, with less than 10% of businesses with fewer than 20 employees reporting using other computer systems. This compared to 27% of businesses with between 20 and 199 employees and 80% of businesses with more than 200 employees.

The use of general applications software followed a similar pattern to that of personal computers. General applications software included word processing, spreadsheet and accounting packages that are available to all consumers in a standard form rather than those tailored to a particular business’ needs. Two-thirds of Australian businesses used general applications software at June 1999. The use of general applications software was most common in industries with high computer use and least common in industries with low reported computer use. All large businesses used general applications software compared to 92% of medium businesses, 71% of other small businesses and 64% of micro businesses.
Just over one third of all businesses used software designed for the business or software which although generally available had been customised for the business. Use of customised software was most common by businesses in the electricity, gas and water supply industry (74%). In comparison, 44% and 45% of business in finance and insurance and property and business services respectively used specially designed software. Only 10% of transport and storage businesses used software designed for the business. Business size influenced whether businesses were likely to use specially designed software, with large businesses being over three times more likely than micro businesses to use this software.

Over a third of all businesses used electronic mail. The highest level of use occurred in the electricity, gas and water supply industry (72%) followed by the property and business services industry (63%). These industries were also the most likely to use personal computers. This compared to 17% in accommodation, cafes and restaurants, 18% in construction and 19% in transport and storage: the three industries with the lowest use of personal computers. Size was again an important determinant of whether businesses used electronic mail. Of businesses with over 200 employees, 95% used electronic mail, compared to 63% of businesses with between 20 and 199 employees, 39% of businesses with between 5 and 19 employees and 34% of businesses with 1 to 4 employees.

An estimated 34% of Australian businesses used electronic banking or EFTPOS. Businesses in the communication services industry were most likely to use electronic banking or EFTPOS (53%), followed by accommodation, cafes and restaurants (52%), electricity, gas and water supply (49%) and retail trade (47%). Only 18% of businesses in the cultural and recreational services industry used electronic banking or EFTPOS. Large businesses were more likely than smaller businesses to use electronic banking or EFTPOS, with 85% of large businesses, 64% of medium businesses, 48% of other small businesses and 28% of micro businesses used electronic banking or EFTPOS.

An estimated 26% of Australian businesses used electronic building management systems. These systems included electronic security systems, lighting, lifts, fire alarms and air conditioning. The use of electronic building management systems was most prevalent in the electricity, gas and water supply industry (53%) and the wholesale trade industry (40%). Businesses in the transport and storage (16%) and construction (17%) industries were least likely to use electronic building management systems. Large businesses were over four times more likely (85%) than micro businesses (20%) and about twice as likely as other small businesses (42%) to use electronic building management systems.

Electronic equipment or systems with embedded chips included the use of process control systems, cash registers, diagnostic equipment, robotics and time controlled equipment used in the day to day operations of the businesses. Equipment of these types were used by an estimated 18% of Australian businesses. By industry, 65% of electricity, gas and water supply businesses and 44% of accommodation, cafes and restaurants used electronic equipment or systems with embedded chips, whilst only 4% of transport and storage businesses used this technology. Larger businesses were more likely than smaller businesses to use electronic equipment or systems with embedded chips, with 76% of large businesses, 48% of medium businesses, 28% of other small businesses and 14% of micro businesses reporting using these technologies.
5.3 **Table: Proportion of Businesses Using Technology by Industry**

<table>
<thead>
<tr>
<th>Industry</th>
<th>Communications equipment</th>
<th>Personal computers</th>
<th>Other computer systems</th>
<th>General applications software</th>
<th>Software designed for this business</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
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<tr>
<td><strong>Mining</strong></td>
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<tr>
<td></td>
<td>99</td>
<td>72</td>
<td>8</td>
<td>70</td>
<td>27</td>
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<tr>
<td><strong>Manufacturing</strong></td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>98</td>
<td>68</td>
<td>4</td>
<td>63</td>
<td>29</td>
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<tr>
<td><strong>Electricity, gas and water supply</strong></td>
<td>99</td>
<td>89</td>
<td>47</td>
<td>87</td>
<td>74</td>
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<td><strong>Construction</strong></td>
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<td><strong>1</strong></td>
<td>57</td>
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<td><strong>Wholesale trade</strong></td>
<td>100</td>
<td>84</td>
<td>*9</td>
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<td><strong>Retail trade</strong></td>
<td>100</td>
<td>57</td>
<td>*3</td>
<td>50</td>
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<tr>
<td><strong>Accommodation, cafes and restaurants</strong></td>
<td>100</td>
<td>53</td>
<td>*2</td>
<td>49</td>
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<td><strong>Transport and storage</strong></td>
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<td><strong>Finance and insurance</strong></td>
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<td>81</td>
<td>*11</td>
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<td><strong>Property and business services</strong></td>
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<td>91</td>
<td>*4</td>
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<td><strong>Education</strong></td>
<td>100</td>
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<td>*7</td>
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<td><strong>Health and community services</strong></td>
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<td>*6</td>
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<td><strong>Cultural and recreational services</strong></td>
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<td>*5</td>
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<td><strong>Personal and other services</strong></td>
<td>100</td>
<td>64</td>
<td>*3</td>
<td>57</td>
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<td><strong>State and territory</strong></td>
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<tr>
<td><strong>New South Wales</strong></td>
<td>100</td>
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<td><strong>Victoria</strong></td>
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<td>64</td>
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<td><strong>Queensland</strong></td>
<td>99</td>
<td>72</td>
<td>*4</td>
<td>66</td>
<td>32</td>
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<td>100</td>
<td>68</td>
<td>7</td>
<td>60</td>
<td>31</td>
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<td>77</td>
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<td>70</td>
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<td><strong>Tasmania</strong></td>
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<td><strong>Northern Territory</strong></td>
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<td>71</td>
<td>7</td>
<td>66</td>
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<td><strong>Australian Capital Territory</strong></td>
<td>100</td>
<td>83</td>
<td>*3</td>
<td>80</td>
<td>42</td>
</tr>
<tr>
<td><strong>Business size</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1–4 employees</td>
<td>99</td>
<td>69</td>
<td>*2</td>
<td>64</td>
<td>28</td>
</tr>
<tr>
<td>5–19 employees</td>
<td>100</td>
<td>78</td>
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Data source: Year 2000 Survey, ABS

* Estimate has a relative standard error between 25% and 50%

** Estimate has a relative standard error greater than 50%
6. CONTACTS ....

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