



Australian Government
Australian Education International

A User Guide to International Student Data

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Introduction

AEI's role and goals

Australian Education International (AEI) provides leadership across all levels of government and industry to support the sustainable development of a world-class and globally connected international education and training system in Australia.

As the international arm of the Australian Government's Department of Education, Employment and Workplace Relations (DEEWR), we are well placed to work with governments and industry to realise for Australia the intellectual, cultural, economic and security benefits of internationalisation.

We seek to achieve this goal through an integrated approach to policy, regulation, international engagement and promotion.

We encourage and facilitate Australian activity through our national office in Canberra and 25 offices in Australian diplomatic missions in 17 economies.

What AEI does

Policy development and advice

With strong links to all education sectors and all levels of government, AEI provides a national focus for debate and policy development.

International and government-to-government engagement

AEI represents Australia's interests in international and multilateral bodies, and in negotiating agreements with governments around the world. We work with state and territory governments to coordinate international education policy and practice.

Quality assurance and consumer protection

Through the Education Services for Overseas Students (ESOS) legislation, AEI helps safeguard the quality and reputation of Australia's courses and institutions. We administer world's best practice in student consumer protection.

Qualifications recognition

AEI provides information on how Australian and overseas qualifications compare, and helps overseas qualified people study and work in Australia.

Market research and analysis

AEI produces research and analysis to provide industry with intelligence and advice on education markets around the world.

Stakeholder engagement

Through comprehensive stakeholder engagement, its international network and its communication tools, AEI makes sure the world knows about the quality and diversity of Australian education.

Student mobility

AEI supports student and professional mobility into and out of Australia through Endeavour Award scholarships, subsidies and international representation.

About this guide

This guide was developed by AEI's International Research and Analysis Unit (IRAU).

The purpose of this guide is to assist the Australia international education industry to understand the publicly available International Student Data released by AEI. The guide will also provide information on how to manipulate the data using the Pivot Tables published on the AEI Online website.

The AEI data is published in the AEI Online website in a series of pivot tables (Microsoft Excel files). The data provides an up-to-date time series from 2002 to the current month of onshore enrolments by international students studying in Australia on a student visa. The data is updated monthly and is generally available within six weeks of the end of a reporting month.

Prerequisites

A working knowledge of Microsoft Office Excel is required to use the AEI pivot tables. Excel versions from 2003 provide the greatest range of pivot table options. Pivot tables will work on earlier versions of excel, but not all options will be available. Pivot tables are supported by Apple Macintosh versions of excel, but some of the functionality may be different to the windows version and some options may not be available.

Note: AEI continually develops and improves the Pivot Tables. As a result pivot table content may change without notice.

Guide objectives

Once you have completed this guide you should:

- Be able to find the data on the AEI website
- Understand the source of the data
- Understand how the data are derived
- Be able to extract data from the AEI Pivot Table on the AEI website
- Be aware of the various AEI statistical products.

Throughout this manual you will see activities designed to guide you through the course. These are formatted as in the example below:

⇒ **Open the AEI website in your browser.**

If you are viewing this manual electronically, there are many links embedded into the file you can click on to take you to web pages.

If you are viewing this manual as a hard copy, simply copy the link details into the address bar of your internet browser.

The AEI Online website

Before you start using the AEI data, familiarise yourself with the AEI Online website:

www.aei.gov.au

⇒ Click the link above to open the AEI Online website in your browser.

This website is AEI's portal for disseminating market intelligence on international student activity, and includes the range of AEI statistical material. As well as pivot tables, the website includes many reports, newsletters, explanatory notes and snapshots of AEI data.

Navigating to the AEI data

The screenshot below is the AEI Online home page (as at September 2008). It may not look exactly like this when you open the page, but the panel on the right should be there with the link to International Student Data.

⇒ Click the [International Student Data](#) link indicated below.

Not currently logged in

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Australian Education International

contacts | search | products & services | shopping cart | my account | login

About AEI | Government Activities | Market Information | Events | Offshore Support | Publications & Research | Qualifications Recognition | Media

Who we are
Australian Education International (AEI) is the international arm of the Department of Education, Employment and Workplace Relations.

With around 370 000 students from 190 countries studying in Australia – and another 120 000 enrolments in Australian courses offshore – we have plenty to do to support the industry.

What we do
AEI works with industry and governments to support the international education industry, which is Australia's third-largest export earner, bringing in around \$12.5 billion in 2007.

But maybe even more importantly, what we do helps people and institutions around the world create long-term personal, cultural and intellectual relationships whose benefits reach well beyond bottom lines, business meetings and technology-based transactions.

As part of the Department of Education, Employment and Workplace Relations, AEI has a unique advantage. No other country integrates three critical components – government to government relations, national quality systems and export marketing support for industry – as Australia does for international education through AEI.

Last Modified: Thursday, 17 July 2008

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SHORTCUTS

- [International Student Data](#)
- [AEI-NOOSR Country Education Profiles Online](#)
- [Transnational Quality Strategy](#)
- [ESOS](#)
- [PRISMS](#) [CRICOS](#)
- [Australian Scholarships](#)
- [STUDY IN AUSTRALIA](#)
Live. Learn. Grow.

From the AEI Statistics main page, you can access a range of AEI statistical material, including:

- International Student Data
- Research Snapshots
- Market Data Snapshots
- other useful research material.

The screenshot shows the AEI Statistics page with the following content:

- Statistics**: AEI has available the following statistical related information on international education activities:
 - International Student Data**: Full annual and monthly [International Student Data](#), including commencements and cessations of enrolments are available for 2002 onwards.
 - Research Snapshots**: The [Research Snapshot](#) series has been developed by the International Research and Analysis Unit, AEI to provide stakeholders with summary updates on current activities and developments in international education research. The Snapshots, which will be produced regularly, will cover a range of topics relating to data research.
 - Market Data Snapshots**: The [Market Data Snapshot](#) series has been developed by AEI to provide international education stakeholders with summary market-specific data and research information. These snapshots combine the wealth of information available in the AEI International Student Data series with the AEI international network.
 - Other Research**: [Other AEI Research](#) papers on AEI student enrolment data.
 - English Australia Survey of Major ELICOS Regional Markets**: Introduction and Executive Summary of the *English Australia* (EA) report on its annual survey of the ELICOS market. The survey covered ELICOS enrolments and is available through the following links:
 - [English Australia Survey of Major ELICOS Regional Markets in 2007](#) (pdf 120kb)
 - [English Australia Survey of Major ELICOS Regional Markets in 2006](#) (pdf 116kb)
 - [English Australia Survey of Major ELICOS Regional Markets in 2005](#) (pdf 1650kb)
 - [English Australia Survey of Major ELICOS Regional Markets in 2004](#) (pdf 72kb)
 - [English Australia Survey of Major ELICOS Regional Markets in 2003](#)
 - [English Australia Survey of the ELICOS Market in 2002](#)
 - Study in Australia Website Traffic Reports**: Regular [monthly report on traffic figures](#) through AEI's student website *Study in Australia*.

WHAT'S NEW...
International Student Data

- [Latest Pivot Table \(July 2008\)](#)
- [Monthly Summary - \(July 2008\)](#)
- [Latest Top 10 Nationality Data Detailed July 2008 Data](#)

SUBSCRIBE TO AEI e-NEWSLETTER

[View e-Newsletter](#)

The WHAT'S NEW box at the top right has a link to the most recent pivot tables.

There is a Search link on the AEI Online website. The screenshot below highlights this:

The screenshot shows the top navigation bar with the following elements:

- Australian Government logo and text.
- Navigation links: [contacts](#), [search](#) (highlighted), [products & services](#), [shopping cart](#), [my account](#), [login](#).
- Secondary navigation links: [About AEI](#), [Government Activities](#), [Market Information](#), [Events](#), [Offshore Support](#), [Publications & Research](#), [Qualifications Recognition](#), [Media](#).

International student data

The International Student Data page includes:

Monthly Summaries of International Student Enrolment Data

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Australian Government
Australian Education International

contacts | search | products & services | shopping cart | my account | login

About AEI | Government Activities | **Market Information** | Events | Offshore Support | Publications & Research | Qualifications Recognition | Media

OVERVIEW
CURRENT MARKET INFORMATION
APPLY FOR MIP
E-NEWSLETTER
ITEMS OF INTEREST
ACTIVITIES
STATISTICS
International Student Data
Study in Australia
Website Traffic Reports

International Student Data

On this page:

- [Monthly Summaries of International Student Data](#)
- [International Student Data, 2002 Onwards](#)
- [Final Annual International Student Enrolment Statistics, 2000 and 2001](#)
- [Explanatory Notes for AEI Enrolment Data](#)
- [Other Statistical Sources](#)

Monthly Summaries of International Student Enrolment Data

- 2008**

Month
December (not yet available)
November (not yet available)
October (not yet available)
September (not yet available)
August (not yet available)
July (pdf 33kb or rtf 1.11Mb)
June (pdf 60kb or rtf 3.09Mb)
May (pdf 60kb or rtf 3.10Mb)
April (pdf 58kb or rtf 3.05Mb)
March (pdf 53kb or rtf 2.72Mb)
February (pdf 52kb or rtf 3.01Mb)
January (pdf 51kb or rtf 2.96Mb)

- [2007](#)
- [2006](#)
- [2005](#)

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- These summaries are published monthly and provide a commentary on the latest AEI data and trends.
- They are available as PDF files (requires Acrobat Reader), or as RTF files (requires Microsoft Word or similar).
- Reports are available for elapsed months of the current year and for months of previous years by clicking the year links.

Other Reports and Statistics

International Student Data

International student data are provided for 2002 onwards. These include enrolment data by month, and data on commencements and cessations of enrolments, as well as annual summaries. The data are depicted in a number of ways with several tables being available for free. More detailed information can be accessed through AEI's Market Information Package (MIP) or generated on a fee-for-service basis.

- [2008](#)
- [2007](#)
- [2006](#)
- [2005](#)
- [2004](#)
- [2003](#)
- [2002](#)

[\[Return to Top\]](#)

Final Annual International Student Enrolment Statistics for 2000 and 2001

- [Year 2001 Final International Student Enrolments](#)
- [Year 2000 Final International Student Enrolments](#)

[\[Return to Top\]](#)

Explanatory Notes

- [Explanatory notes for AEI International Student Data](#)

[\[Return to Top\]](#)

Other Statistical Sources

- [Link to Education Resources on the Australian Bureau of Statistics Website](#)
- [Department of Immigration and Citizenship](#)
- [English Australia](#)

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- These links lead to the monthly pivot tables for the current year and for previous years. Data for previous years can be accessed by clicking on the year of interest.
- They also provide a suite of detailed data from 2002 onwards, by a range of variables including Nationality, State, Sector and Month.
- The Explanatory Notes clarify common data related terms such as enrolments, commencements, nationality, sector, provider type, level and field of study, counting methodology, and describe AEI data sources.

⇒ **Click the link under International Student Data to the current year.**

Monthly Time Series of Student Enrolments—Summaries by Sector

Monthly Time Series of Student Enrolments for 2008 – Summaries by Sector

The following tables give a month by month analysis of international student data by sector including information on enrolments, commencements, finishes and year to date totals. More detailed data are contained in the '2008 Detailed Monthly Tables' section below.

Changes to the monthly data
AEI has made some changes to AEI international student enrolment data to enhance the usefulness of the data to industry.

In response to industry feedback about the reliability of current finishes data, these data have been removed from Tables 1 to 6. AEI will investigate whether a more accurate indicator can be used to determine the reason for an enrolment ceasing.

Please click on the images below to view the tables individually or a full set of the [tables 1 to 6](#) (pdf 105kb) are available to download.

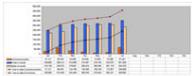
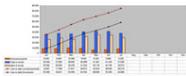
Table 1: All Sectors  **Table 2: ELICOS** 

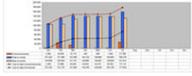
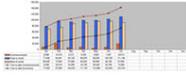
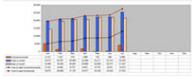
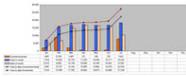
Table 3: Higher Education  **Table 4: VET** 

Table 5: Schools  **Table 6: Other** 

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- These tables give a month by month analysis of international student enrolments and commencements by sector, and for all sectors combined. You can either:
 - Click on the charts individually to view them in a new browser window, or
 - Click the [tables 1 to 6](#) link highlighted in the red box above. This opens a freely available PDF file containing data and charts of AEI data up to the current reference month.

Pivot Tables

2008 Pivot Tables

Note: Items marked with (*) are available only to organisations who have access to AEI's Market Information Package (MIP). For non-MIP clients access arrangements are outlined in Accessing AEI Monthly Statistics.

Changes to the monthly data

AEI has made some changes to AEI international student enrolment data to enhance the usefulness of the data to industry.

The VTE sector has now been renamed to VET.

In response to industry feedback about the reliability of current finishes data, these data have been removed from the detailed pivot table. AEI will investigate whether a more accurate indicator can be used to determine the reason for an enrolment ceasing.

The initial display of the pivot table has been re-designed to improve manipulation of the table.

Basic Pivot Table 2008 (zip 7.40 MB)	Includes the variables Sector, Nationality, Month and Year for year-to-date enrolments and commencements. AEI advises that the pivot table is compatible with Excel 2003 or later.
Standard Pivot Table 2008 (zip 13.33 MB)(*)	Includes those available in the Basic Pivot Table and also includes State and Territory, Broad Field of Education, Level of Study, Region and Provider Type. Warning - Unzipped file is approximately 82Mb. AEI advises that the pivot table is compatible with Excel 2003 or later.
Detailed Pivot Table 2008 (zip 45.53 MB)(*)	Includes those available in the Basic Pivot Table and also includes State and Territory, Broad Field of Education, Narrow Field of Education, Detailed Field of Education, Level of study, Region and Provider type. Warning - Unzipped file is approximately 348Mb. AEI advises that the pivot table is compatible with Excel 2003 or later.

To assist you with using the AEI Pivot Tables is the [AEI User Guide to International Student Data](#), which provides some basics to get you started with using the pivot tables.

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The Basic Pivot Table

- is available for free to all users of the internet
- contains a limited number of variables, but provides sufficient information to understand the major trends in Australia's international education enrolments and commencements since 2002.

The Standard Pivot Table and Detailed Pivot Table

- contain additional variables as detailed in the boxes to the right of the links
- Access to these files is restricted to subscribers to the Market Information Package (MIP).

Downloading AEI pivot tables and using Zip files

Notes:

This part of the manual applies to computers using windows operating systems only. WinZip must be installed on the destination computer.

The excel files available on the AEI website are converted into zip files.

A zip file contains all the information in a normal file, but is a fraction of the size of the normal file. This minimises the space the file takes up on the AEI server and reduces the volume of data that is downloaded.

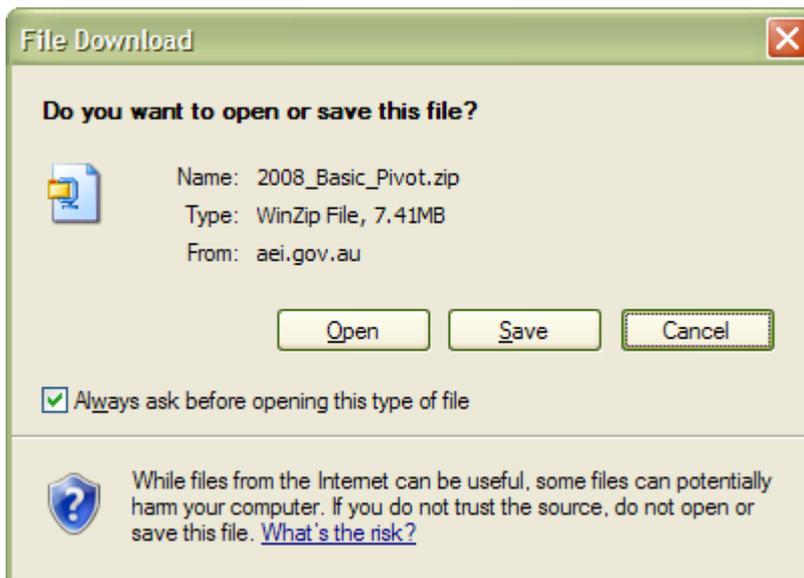
When you download a pivot table file off the AEI website, the file needs to be “unzipped” or uncompressed before it can be used. WinZip is the program used to do this.

To download, unzip and use AEI pivot tables:

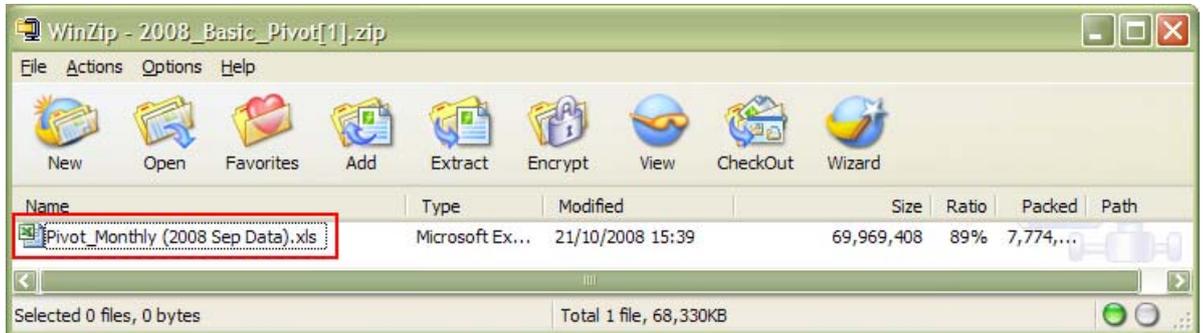
- Navigate to the AEI website page with the pivot tables
- Click the pivot table for downloading. In this example it's the Basic Pivot Table

Basic Pivot Table 2008 (zip 7.19MB)	Includes the variables Sector, Nationality, Month and Year for year-to-date enrolments and commencements. AEI advises that the pivot table is compatible with Excel 2003 or later.
--	--

The dialogue box below opens:



Click Open. This will activate WinZip:



The pivot table file can be seen in the WinZip window.

To unzip and open the pivot table file, just double click the file name. The file will automatically unzip and open.

Detailed Monthly Tables (PDF and Excel formats)

2008 Detailed Monthly Tables

The detailed monthly tables expand on the information provided in tables one to six. These tables include information on monthly enrolments, commencements and year to date data. Monthly data adds new enrolments for the month to the number at the start of month.

Tables 7 to 12 contain information about each Sector by top 10 Nationalities and State and Territory. The focus of these tables has changed from counting the enrolment and commencement activity during the reference month to counting the year-to-date activity up to and including the reference month.

The data in the following tables is updated throughout the year resulting in some revision to previously published data.

Note: Items marked with (*) are available only to organisations who have access to AEI's Market Information Package (MIP). For non-MIP clients access arrangements are outlined in Accessing AEI Monthly Statistics.

Tables 7 to 12 (PDF)	Tables 13 to 26 (PDF) (*)	Tables 7 to 26 (Excel) (*)
January (pdf 173kb)	January (pdf 536kb)	January (xls 2.52Mb)
February (pdf 173kb)	February (pdf 604kb)	February (xls 2.58Mb)
March (pdf 172kb)	March (pdf 595kb)	March (xls 2.59Mb)
April (pdf 179kb)	April (pdf 598kb)	April (xls 2.59Mb)
May (pdf 173kb)	May (pdf 596kb)	May (xls 2.59Mb)
June (pdf 179kb)	June (pdf 2.49Mb)	June (xls 2.60Mb)
July (pdf 173kb)	July (pdf 637 kb)	July (xls 2.70Mb)
August (pdf 172kb)	August (pdf 625 kb)	August (xls 2.7Mb)
September	September	September
October	October	October
November	November	November
December	December	December

Monthly Tables 7 to 12

Available to all users

PDF Format

Monthly Tables 13 to 26

MIP Subscribers Only

PDF Format

Monthly Tables 13 to 26

MIP Subscribers Only

Excel Format

⇒ Click the link to the most recently available Tables 7 to 12.

Note: PDF files required Adobe Acrobat Reader to open. This can be downloaded at:

www.adobe.com

Other Useful Information on the AEI website

Research and Market Data Snapshots

The Research Snapshot series was developed to provide stakeholders with one-page summary updates on current activities and developments in international education data and research. The series provide examples of the ways in which Detailed Pivot Table data can be manipulated to meet an individual users needs.

Similarly, Market Data Snapshots present a one-page summary of market-specific data together with local insights from AEI's International Network to help explain trends in enrolment data from overseas markets.

Research papers

A number of research papers have been developed by AEI to provide international education industry stakeholders with the findings of more detailed analysis of AEI's international student database.

Using Pivot Tables in Excel

Pivot Tables are a powerful, yet easy to use, data analysis tool that enables you to reorganise, filter, group and summarise data by dragging and dropping variables into and out of a table.

The data can be located within the excel file itself, or the pivot table can be linked to an external data source such as an Access database.

In this part of the manual some of the information is presented as text and images, and other information is presented in the form of exercises.

Understanding Grouping

Before starting to use Pivot Tables, it is important to understand the concept of grouping.

Consider the list below of fictional office staff:

Name	Gender	Eye Colour
Barnsey	Male	Blue
Tezza	Female	Brown
Kazza	Female	Hazel
Davo	Male	Blue

Robbo	Male	Blue
Shazza	Female	Brown
Jono	Male	Brown
Wazza	Male	Hazel
Damo	Male	Blue
Fifi	Female	Green

There are 10 records in the list. The name column identifies individuals, but the gender and eye colour columns do not.

The name column means we must have one record per individual.

For analysis purposes we may not need to know the names of individuals, so we can group the data and count the records for each entry:

Grouping based on Gender:		Grouping based on Eye Colour:		
Gender	Count		Eye Colour	Count
Female	4		Blue	4
Male	6		Brown	3
Total	10		Hazel	2
			Green	1
			Total	10

Now, instead of 10 rows, we have 2 rows for Gender and 4 rows for Eye Colour (but we can no longer see which individual is which gender or eye colour). To add more value, we can construct different groupings of eye colours and genders, summing the number of records at each intersection:

Eye Colour	Gender	Count					
Blue	Female	0					
	Male	4			Female	Male	Total
Brown	Female	2		Blue	0	4	4
	Male	1	OR	Brown	2	1	3
Hazel	Female	1		Hazel	1	1	2
	Male	1		Green	1	0	1
Green	Female	1		Total	4	6	10
	Male	0					
Total		10					

Importantly, in every case the total number of records equals 10.

We would not usually group on the names because this would not summarize our data. We would still end up with 10 rows.

⇒ [Open the Basic Pivot table on the AEI website](#)

Structure of a Pivot Table

The diagram shows a Pivot Table in an Excel spreadsheet. The table is structured as follows:

	A	B	C	D	E	F	G	H	I
1									
2	Month	Aug							
3	State	(All)							
4	Nationality	(All)							
5									
6	Sum of DATA YTD Enrolments	Year							
7	Sector	2002	2003	2004	2005	2006	2007	2008	
8	ELICOS	44,294	47,358	48,527	48,493	56,736	75,793	92,627	
9	Schools	21,567	25,335	26,031	23,878	23,028	25,181	27,541	
10	VET	47,201	50,207	51,471	57,509	70,928	102,655	147,073	
11	Higher Education	112,563	131,745	147,723	159,518	165,984	171,392	179,136	
12	Other	22,070	24,079	24,201	24,347	24,479	25,352	28,012	
13	Grand Total	247,695	278,724	297,953	313,745	341,155	400,373	474,389	
14									
15									

Labels in the diagram point to the following elements:

- Page Fields:** Month, State, Nationality
- Data Field:** Sum of DATA YTD Enrolments
- Row Field:** Sector
- Column Field:** Year
- Page Field Item:** Aug
- Column Items:** 2002, 2003, 2004, 2005, 2006, 2007, 2008
- Row Items:** ELICOS, Schools, VET, Higher Education, Other
- Data Area:** The numerical data cells in the table.

Diagram 1—Structure of a Pivot Table

The following points refer to the example above.

Fields

- In the pivot table you will see a series of fields, such as Month, State, Nationality, Sector, Year and Sum of DATA YTD Enrolments.
- Within the fields are Items. For example the items of the field called Sector are:
 - ELICOS
 - Schools
 - VET
 - Higher Education
 - Other
- Fields enable the data to be either **filtered** or **summarised**.
- There must also be at least one **data field** in the table to provide the numbers for the summary. In the example above it is **DATA YTD Enrolments**.
- All of the fields can be moved with the mouse to different areas in the pivot table to give different summaries of the data.
- Clicking the down-arrow at the right of the field name will reveal the **item selector** of the field, showing the items that make it up.

Page Area

- *Bright Yellow highlight in diagram 1*
- The page area is used to locate the fields used for **filtering** the data.
- It can also be used as a convenient place to locate fields not currently being used (also see the Pivot Table Field List).
- When viewing the items of a field that is in the Page Area, only one item can be selected for filtering.

In the example above the Month, State and Nationality fields are in the PAGE area and the Month field has been set to **Aug**. This filter is reflected in the numbers in the data area.

Data Area

- *Green highlight in diagram 1*
- This area contains the numeric summaries determined by the organisation of the fields in the row, page and column areas.
- In the examples above the data field is **DATA YTD Enrolments**
- The type of summary used in the example is **SUM**, giving: **Sum of DATA YTD Enrolments**.
- See below for more way to summarised the data.

IMPORTANT

When using AEI pivot tables, data fields are prefixed by the word DATA. These are the only fields that should be placed in the data area.

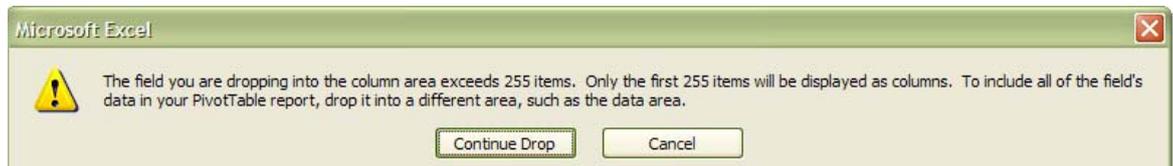
Row Area

- *Pale Yellow highlight in diagram 1*
- The items of fields placed in the row area will be displayed and the summaries created will form the rows of the data area.
- In the example above the Sector field is in the row area.
- For fields in the row area, when the items are revealed, selection boxes appear next to each item enabling selection of specific items.

Column Area

- *Blue Yellow highlight in diagram 1*
- The items of fields placed in the column area will be displayed and the summaries created will form the columns of the data area.
- In the example above the Year field is in the row area.
- The same item selection rules apply to fields in the row area and column areas.
- Note that in Excel 2003 and previous versions, the maximum number of columns is 256. If you try to add a field with more than 255 items to the

column area, the following dialogue box will appear:



- In this case the data will not be very useful or readable. You should reorganise the fields so the data is more usefully displayed.

Pivot Table Field List

Not all available fields need to be shown in the Page, Row, Column or Data areas. To simplify using the pivot table, only those fields currently being used need to be displayed.

- A full list of all the fields available can be seen in the **Pivot Table Field List**.
- To open the Pivot Table Field List:
 - Hover over the pivot table with the mouse pointer and right-click to reveal the Pivot Table Sub-Menu
 - Select **Show Field List**
- Fields that are currently displayed on the pivot table are shown in bold
- Fields that are not displayed are shown in normal font
- To display a field not already on the pivot table:
 - Use the mouse to select the field from the Pivot Table Field List
 - Drag/Drop it to the appropriate area on the pivot table
 - The field will now be shown in bold in the field list
- To remove a field that is currently displayed on the pivot table:
 - Select the field to be removed with the mouse
 - Drag it out of the pivot table area until you see a red X beside the mouse icon
 - Drop the field icon
 - The field will now appear in the Pivot Table field List in normal font.
- The Pivot Table Field List can be locked to the sides of the screen. Drag the box to the left or right and when positioned correctly it will snap to the side and expand out. In this position it will remain displayed while a cell in the pivot table is selected.

- ⇒ Identify the Page, Row, Column, Data Areas on the AEI Basic Pivot table, and open the Pivot Table Field List.

Using Fields to summarise data

Moving Fields

- Fields in any part of the pivot table can be moved to any other part of the pivot table.
- To move fields simply select them with the mouse and drag/drop them in the new location.
- When you move fields around, you will see the cursor change indicating the area into which the field is to be dropped.
- Be careful where you locate data fields—they should only be in the data area.

Stacking Fields

- Fields can be stacked in the row or column areas, enabling more complex summaries of the data
- To stack fields, select the fields and drag/drop them in the appropriate area.
- You can stack several fields in the row and/or column areas, but stacking too many fields can make the data difficult to read.
- In the example below, the **State** (blue highlight) and **Sector** (yellow highlight) fields are **stacked** in the Row Area, providing a breakdown of enrolments data by State and Sector (Row) and Year (Column), for year-to-date August (Page Area).

	A	B	C	D	E	F	G	H	I
1	Month	Aug							
2	Nationality	(All)							
3									
4	Sum of DATA YTD Enrolments		Year						
5	State	Sector	2002	2003	2004	2005	2006	2007	2008
6	NSW	ELICOS	19,944	18,759	18,801	19,285	22,986	31,642	38,515
7		Schools	6,946	8,318	8,584	7,488	7,030	7,905	9,266
8		VET	23,233	24,860	25,622	28,316	34,719	48,549	67,030
9		Higher Education	39,164	45,353	51,779	57,297	59,418	60,984	61,645
10		Other	8,476	9,056	8,983	8,864	8,498	8,721	9,496
11	NSW Total		97,763	106,346	113,769	121,250	132,651	157,801	185,952
12	VIC	ELICOS	9,177	10,973	11,299	10,367	12,026	18,284	22,139
13		Schools	6,715	7,864	7,838	7,122	6,721	7,444	8,096
14		VET	11,554	11,621	12,046	14,632	20,175	33,735	48,355
15		Higher Education	35,382	42,314	47,077	49,863	51,768	54,049	57,049
16		Other	5,581	5,620	5,444	5,450	5,668	6,115	6,754
17	VIC Total		68,409	78,392	83,704	87,434	96,358	119,627	142,393
18	Grand Total		166,172	184,738	197,473	208,684	229,009	277,428	328,345
19									
20									

Filtering Data

Fields in the PAGE area can be used to filter the data. For example you may just want to analyse data for one particular sector.

To apply a filter, do the following:

- Make sure the field to be filtered is in the Page Area
(If the Sector field is not in the page area, use the mouse to drag it there)
- Click the down-arrow at the right of the field box.
This will reveal the items of the field.
Because the field is in the **page area**, only one item can be selected
- Click the item to be filtered on, and click OK
- The data and summaries will now reflect the filter applied
- The field will show the value of the filter applied
- To remove the filter, follow the same procedure, but select **(All)**.
- In the example below you can see that the items of the Sector field are (All) and ELICOS, Schools, VET, Higher Education and Other. Higher Education is selected and this is reflected in the Sector field on the pivot table.

	A	B	C	D	E	F	G	H	I
1									
2	Month	Aug							
3	Sector	Higher Education							
4	Nationality	(All)							
5									
6	Sum of DATA YTD Enrolments	Year							
7	State	2002							
8	NSW	39,164							
9	VIC	35,382							
10	QLD	17,789							
11	SA	4,921							
12	WA	11,181							
13	TAS	1,131	1,346	1,604	1,874	2,186	2,368	2,526	
14	NT	218	204	152	160	211	274	334	
15	ACT	2,777	3,521	3,794	3,902	3,941	4,052	4,447	
16	Grand Total	112,563	131,745	147,723	159,518	165,984	171,392	179,136	
17									

	2006	2007	2008
Higher Education	59,418	60,984	61,645
Other	51,768	54,049	57,049
VET	23,364	23,849	25,843
Schools	10,398	11,140	11,720
ELICOS	4,698	14,676	15,572

Selecting Data

When fields are displayed in the row or column areas you can use the Item Selector to limit what data is displayed. This is similar to applying a filter, but you can select more than one item from the field to display.

- The Item Selector is a good way to see what items are contained within a Field, if the field name is ambiguous
- In the example below, the Sector field items are shown with just ELICOS and VET selected
- When specific selections are made the summaries in the data area and grand totals reflect these selections

- The **(Show All)** option enables you to over-ride an existing selection. Clicked once it will SELECT ALL items. Clicked a second time it will DE-SELECT ALL items
- The example below shows the items of the Sector field with just ELICOS and VET selected and displayed

	A	B	C	D	E	F	G	H
1	Month	Aug						
2	State	(All)						
3	Nationality	(All)						
4								
5	Sum of DATA YTD Enrolments	Year						
6	Sector	2002						
7	ELICOS	44,294						
8	VET	47,201						
9	Grand Total	91,495						
10								
11								

<input type="checkbox"/> (Show All)
<input checked="" type="checkbox"/> ELICOS
<input type="checkbox"/> Schools
<input checked="" type="checkbox"/> VET
<input type="checkbox"/> Higher Education
<input type="checkbox"/> Other

OK Cancel

	2007	2008
736	75,793	92,627
928	102,655	147,073
664	178,448	239,700

IMPORTANT

- If you make a selection of items in a field that is in the row or column area, and then MOVE this field to the Page Area, the selection will be retained and the data will be filtered based on this
- In the example above if the Sector field is moved to the Page Area, the selection (ELICOS and VET) will be retained and the data and summaries displayed will reflect this
- The Sector page field item will show **(Multiple Items)**
- To change the selection of items or to include all items, you must move the field to the row or column area and open the item selector to make you new selection

	A	B	C	D	E	F	G	H	I
1	Month	Aug							
2	Nationality	(All)							
3	State	(All)							
4	Sector	(Multiple Items)							
5									
6	Sum of DATA YTD Enrolments	Year							
7		2002	2003	2004	2005	2006	2007	2008	
8	Total	91,495	97,565	99,998	106,002	127,664	178,448	239,700	
9									
10									

Drill Through

Drill Through enables you to view the raw data that makes up the summaries on the screen. This is especially useful if you are using the Standard or Detailed pivot tables from the AEI website.

To drill through, select a number in the pivot table and double click on it. A new worksheet will open with the raw data.

Sorting Items and Data

It is often convenient to sort items in different ways. For example you may want to sort Nationality alphabetically, or by the number of enrolments.

To sort items by name:

- Locate the field to be sorted in the row or column area
- Select one cell in the item list
- Click the sort buttons in the menu at the top of the screen to sort the

items based on their name: 

To sort items by data values:

- Locate the field to be sorted in the row or column area
- Select one cell in the data area
- Click the sort buttons in the menu at the top of the screen to sort the

items based on their data values: 

Grouping Items

You may wish to group part of an item list, and view the remaining items as individual items.

For instance you may wish to look at data for New South Wales, Victoria and Queensland as individual states, but group all the other states into a single item, and show aggregate data for the group.

When items are grouped like this, the data aggregates based on the groupings.

To group items:

- Locate the field containing the items to be grouped in a row or column area. For this example use Row Area
- Using the mouse and holding down the Ctrl key, select the items to be grouped. In the example above, this would be Western Australia, South Australia, Australian Capital Territory, Tasmania and the Northern Territory

- Right-click in the selected cells and select **Group and Show Detail** ⇒ **Group...**
- The table now has a new field called **State2** added:
 - In the **State2** field the grouped states are collectively shown as **Group1**
 - Aggregations in the data area reflect the grouping
 - The **State** field remains in the **Row Area**. This can be moved to the Page Area
- See the example below:

	A	B	C	D	E	F	G	H	I
1	Month	Aug							
2	Sector	(All)							
3	Nationality	(All)							
4	State	(All)							
5									
6	Sum of DATA YTD Enrolments	Year							
7	State2	2002	2003	2004	2005	2006	2007	2008	
8	NSW	97,763	106,346	113,769	121,250	132,651	157,801	185,952	
9	VIC	68,409	78,392	83,704	87,434	96,358	119,627	142,393	
10	QLD	38,834	44,468	48,369	49,904	53,591	59,004	72,318	
11	Group1	42,689	49,518	52,111	55,157	58,555	63,941	73,726	
12	Grand Total	247,695	278,724	297,953	313,745	341,155	400,373	474,389	
13									
14									

⇒ Using the AEI Basic Pivot Table, practise moving and stacking fields, filtering and selecting data, drilling through, sorting by item lists and data values.

Summarising Data in Pivot Tables

There are many ways to summarise the data in a pivot table. As well as simple aggregations of data, you can find differences, percentages, contributions and more.

You can concurrently show different kinds of summaries for the same data field. For example you can show the year to date enrolment volumes, the change on the previous year, and the percentage change.

We will investigate how to use different types of summaries in the exercise below.

⇒ EXERCISE 1

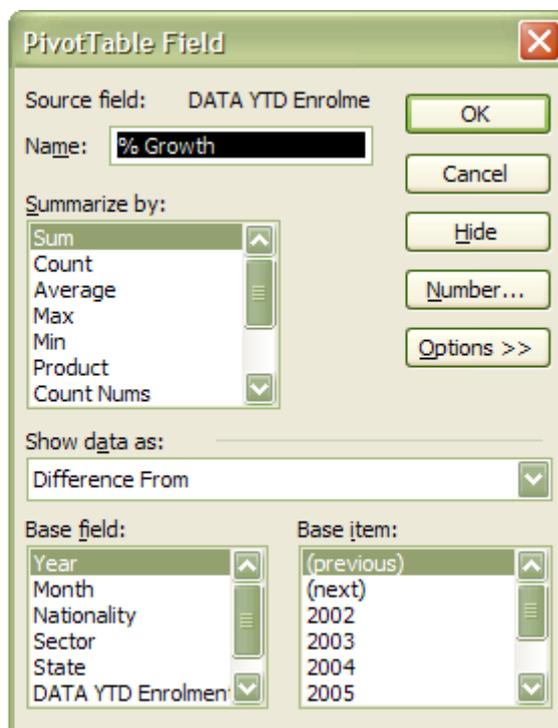
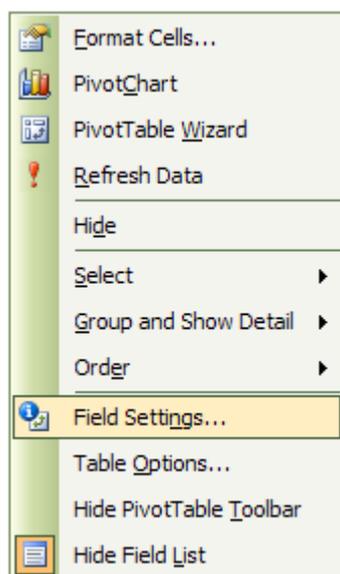
Use the AEI Basic Pivot Table to show Year-to-Date Enrolments, Differences from Previous Year and Percentage Growth, by Sector and Year:

1. Close and re-open the AEI Basic Pivot Table
2. Organise the table as follows:
 - Month, Sector, State and Nationality fields are in the **Page Area**.
 - The Year field is in the **Column Area**

- The DATA YTD Enrolments field is in the **Data Area**
3. The DATA YTD Commencements field is not displayed
(Open the Data item selector, click the item called **Sum of Data YTD Commencements** to de-select it and click OK)
 4. Check that the Month field has a filter for the current month applied
 5. Open the Pivot Table Field List (right click in the data area ⇒ Show Field List)
 6. Drag the field called **DATA YTD Enrolments** into the **data area**
 7. Repeat step 6
 8. Drag the Data field to the **Row Area**. Your pivot table should now look like this (the Month filter and data may be different):

	A	B	C	D	E	F	G	H	I
1	Month	Aug							
2	Sector	(All)							
3	State	(All)							
4	Nationality	(All)							
5									
6		Year							
7	Data	2002	2003	2004	2005	2006	2007	2008	
8	Sum of DATA YTD Enrolments	247,695	278,724	297,953	313,745	341,155	400,373	474,389	
9	Sum of DATA YTD Enrolments2	247695	278724	297953	313745	341155	400373	474389	
10	Sum of DATA YTD Enrolments3	247695	278724	297953	313745	341155	400373	474389	
11									
12									

9. Right-click on the cell called **Sum of YTD Enrolments2** and select Field Settings.
The PivotTable Field dialogue box opens.



10. In the Name: box type "Growth"
11. Click the Options >> button
This reveals the Show data as: component
12. Click the drop-down button (currently set to Normal)
13. Select "Difference From" from the "Show data as" box
14. Select Year from the Base field box
15. Select (Previous) from the Base item box
16. Click OK
17. Right-click on the cell called Sum of YTD Enrolments3 and select Field Settings
The PivotTable Field dialogue box opens
18. In the Name: box type "% Growth"
19. Click the Options >> button
This reveals the Show data as: component

20. Click the drop-down button (currently set to Normal)
21. Select "% Difference From" from the "Show data as" box
22. Select Year from the Base field box
23. Select (Previous) from the Base item box
24. Click OK.

Your pivot table should now look like this (the Month filter and data may be different):

	A	B	C	D	E	F	G	H	I
1	Month	Aug							
2	Sector	(All)							
3	State	(All)							
4	Nationality	(All)							
5									
6		Year							
7	Data	2002	2003	2004	2005	2006	2007	2008	
8	Sum of DATA YTD Enrolments	247,695	278,724	297,953	313,745	341,155	400,373	474,389	
9	Growth		31029	19229	15792	27410	59218	74016	
10	% Growth		12.53%	6.90%	5.30%	8.74%	17.36%	18.49%	
11									
12									

25. Finally, move the Sector field into the row area, to the left of the Data fields to break the data down by sectors.

Your pivot table should now look like this (the Month filter and data may be different):

	A	B	C	D	E	F	G	H	I	J
1	Month	Aug								
2	State	(All)								
3	Nationality	(All)								
4										
5			Year							
6	Sector	Data	2002	2003	2004	2005	2006	2007	2008	
7	Higher Education	Sum of DATA YTD Enrolments	112,563	131,745	147,723	159,518	165,984	171,392	179,136	
8		Growth		19182	15978	11795	6466	5408	7744	
9		% Growth		17.04%	12.13%	7.98%	4.05%	3.26%	4.52%	
10	VET	Sum of DATA YTD Enrolments	47,201	50,207	51,471	57,509	70,928	102,655	147,073	
11		Growth		3006	1264	6038	13419	31727	44418	
12		% Growth		6.37%	2.52%	11.73%	23.33%	44.73%	43.27%	
13	ELICOS	Sum of DATA YTD Enrolments	44,294	47,358	48,527	48,493	56,736	75,793	92,627	
14		Growth		3064	1169	-34	8243	19057	16834	
15		% Growth		6.92%	2.47%	-0.07%	17.00%	33.59%	22.21%	
16	Schools	Sum of DATA YTD Enrolments	21,567	25,335	26,031	23,878	23,028	25,181	27,541	
17		Growth		3768	696	-2153	-850	2153	2360	
18		% Growth		17.47%	2.75%	-8.27%	-3.56%	9.35%	9.37%	
19	Other	Sum of DATA YTD Enrolments	22,070	24,079	24,201	24,347	24,479	25,352	28,012	
20		Growth		2009	122	146	132	873	2660	
21		% Growth		9.10%	0.51%	0.60%	0.54%	3.57%	10.49%	
22	Total Sum of DATA YTD Enrolments		247,695	278,724	297,953	313,745	341,155	400,373	474,389	
23	Total Growth			31029	19229	15792	27410	59218	74016	
24	Total % Growth			12.53%	6.90%	5.30%	8.74%	17.36%	18.49%	
25										

The table now shows:

- Enrolment volumes (**Sum of Data YTD Enrolments**)
Volume growth on the previous year (**Growth**)
Percentage growth on the previous year (**% Growth**)
- For year to date August of each year displayed (**Month filter = "Aug"**)
- By Sector and Year (no filters applied to these fields)

Creating and using Pivot Charts

Pivot Charts are a powerful and flexible way of visually representing data contained in pivot tables. The look and feel of the chart can be changed and the fields represented in the chart can be dragged and dropped, and filtered in the same way as in the pivot table.

Pivot Charts are linked to pivot tables. They are usually created in a separate worksheet in the pivot table file.

We will investigate how to use different types of summaries in the exercise below.

⇒ EXERCISE 2

Create a Pivot Chart to show Year-to-Date Enrolments by Year and Sector:

1. Close and re-open the AEI Basic Pivot Table
2. Organise the table as follows:
 - Month, State and Nationality fields are in the **Page Area**.
 - The Year field is in the **Column Area**
 - The Sector field is in the **Row Area**
 - The DATA YTD Enrolments field is in the **Data Area**
 - The DATA YTD Commencements field is not displayed
(Open the Data item selector, click the item called **Sum of Data YTD Commencements** to de-select it and click OK)
3. Check that the Month field has a filter for the current month applied.

4. Your pivot table should now look like this (the Month filter and data may be different):

	A	B	C	D	E	F	G	H	I
1	Month	Aug							
2	Nationality	(All)							
3	State	(All)							
4									
5	Sum of DATA YTD	Year							
6	Sector	2002	2003	2004	2005	2006	2007	2008	
7	Higher Education	112,563	131,745	147,723	159,518	165,984	171,392	179,136	
8	VET	47,201	50,207	51,471	57,509	70,928	102,655	147,073	
9	ELICOS	44,294	47,358	48,527	48,493	56,736	75,793	92,627	
10	Schools	21,567	25,335	26,031	23,878	23,028	25,181	27,541	
11	Other	22,070	24,079	24,201	24,347	24,479	25,352	28,012	
12	Grand Total	247,695	278,724	297,953	313,745	341,155	400,373	474,389	
13									
14									

5. Now the data for the chart is set up.

Next notice the Pivot Table tool bar:



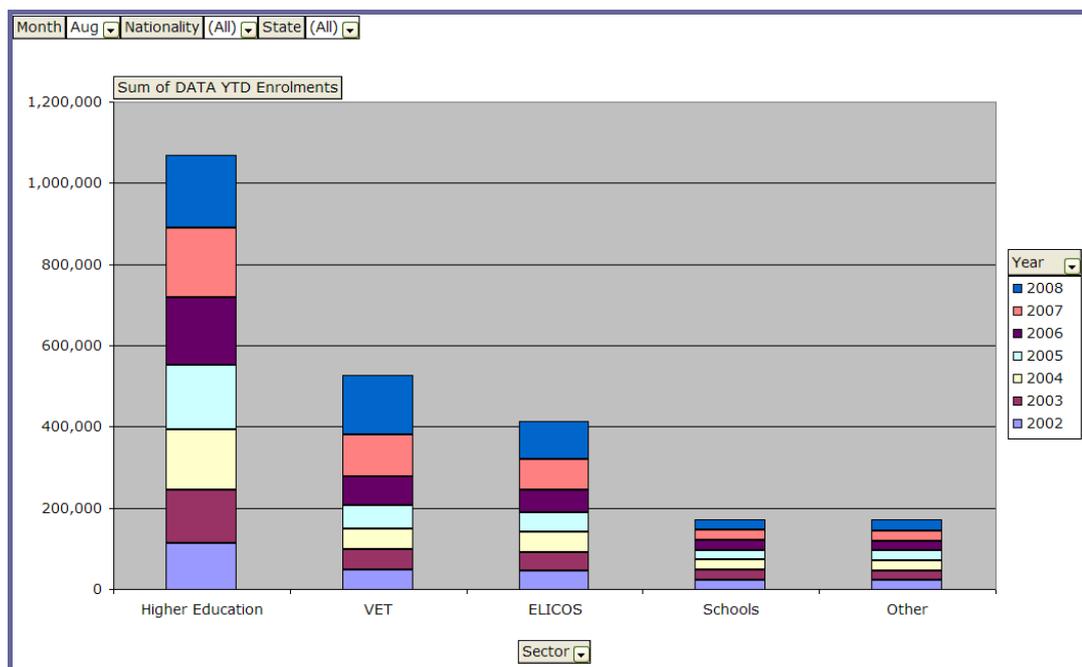
You may have to click inside the pivot table to expose the Pivot Table tool bar.

If you cannot see it, go to the top menus in Excel and select:

View ⇒ **Toolbars** ⇒ **PivotTable**

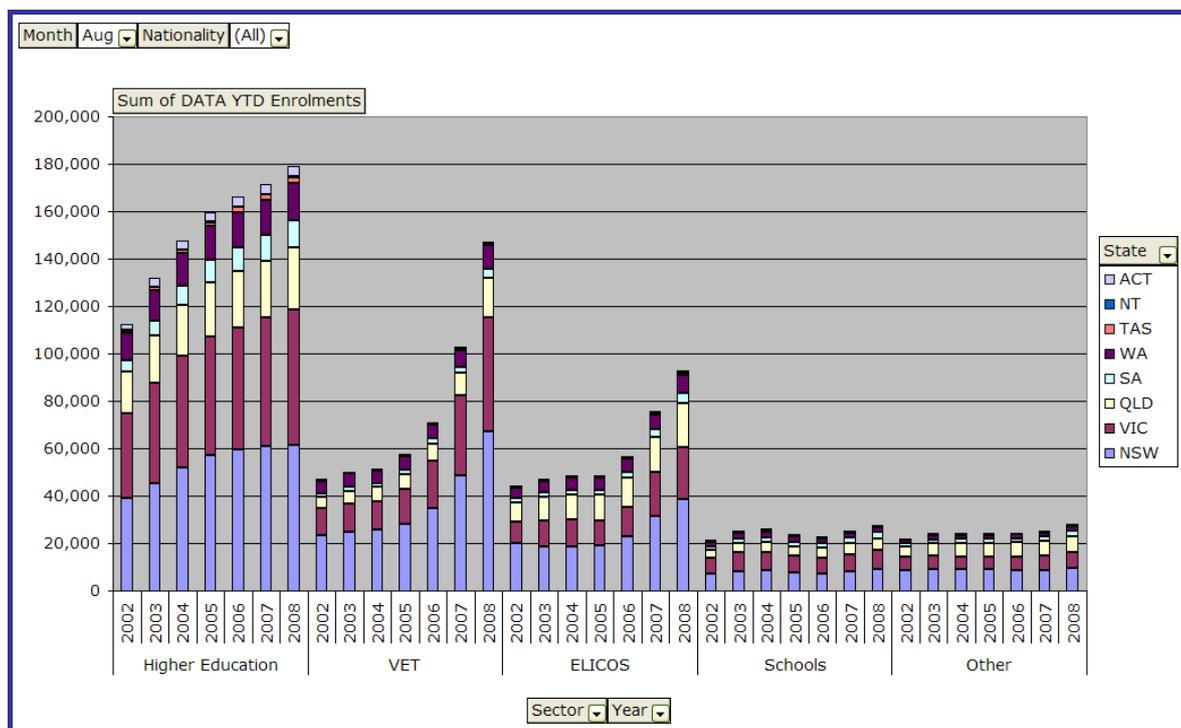
6. Select one cell inside the pivot table, and click the chart icon ⇒ 

7. The chart is displayed in a new worksheet.
Your pivot chart should now look like this (the Month filter and data may be different):



8. Notice that the fields are represented in the chart with the same drop-down arrows to the right hand side.
- o The Month, Nationality and State fields are in the **Page Area** of the chart and can be used for filtering the data
 - o The DATA YTD Enrolments field is in the **Data Area** and the summary type is set to **Sum**
 - o The Sector field is providing values for the **X axis**
 - o The Year field is providing the breakdown within each sector value. A legend is automatically generated
9. The chart is of limited use as currently set up. To make it more useful:
- o Drag/drop the Year field to the right of the Sector field. The chart will change in appearance
 - o Drag/Drop the State field to where the year was

10. Your pivot chart should now look like this (the Month filter and data may be different):



We now have a chart showing Enrolment Growth as at Year-to-date August, by Year and Sector, with a breakdown by State. We can see from this that:

VET sector enrolments are growing quickly

ELICOS enrolments are also growing, but at a slower rate and from a smaller base

Higher Education enrolments are growing at a decreasing rate

Schools and Other sector enrolments are relatively stable

To finish the exercise, manipulate the fields to determine which state is growing the fastest.

This is a very brief summary of how to use Pivot Charts. There are many other things you can do such as change the chart type, show 2 types of summary on the same chart, manipulate colours, use calculated fields and more.

Interpreting Data in Pivot Tables

Understanding the fields in a pivot table is a critical aspect of their successful use. Invalid interpretations of data can occur when field are not properly understood.

This is particularly the case when using the data fields in the AEI pivot tables. The data fields are aggregated each month through the year. So the March Enrolment and Commencements data is the sum of the January, February and March data.

So you would not sum the year-to-date enrolments or commencements data over 2 months (say July and August) because you would then be adding together the data from January to July AND January to August, giving a highly inflated result.

Therefore in most cases you would locate the Month field in the Page Area, and filter on the month required. For year to date information it would be the month of the most recent data update. For calendar year data you would set the month to December. In this case you would not see any data for the current year.

Looking at the fields we have we have used so far:

Type	Field Name	Interpretation
Display	Month	The month in which the enrolments occurred
	Sector	The sector in which the enrolments occurred
	State	The state in which the enrolments occurred
	Nationality	The nationality of the students enrolling
	Year	The year in which the enrolments occurred
Data	Sum of YTD Enrolments	The number of enrolments from 01 January to the end of the reference month in the reference year.
	Growth	This is the difference between the enrolments in one year and enrolments in the previous year. There is no figure for 2002 because there is no data for years prior to 2002.
	% Growth	This is the percentage difference between the enrolments in one year and enrolments in the previous year. There is no figure for 2002 because there is no data for years prior to 2002.

Copying Data from Pivot Tables

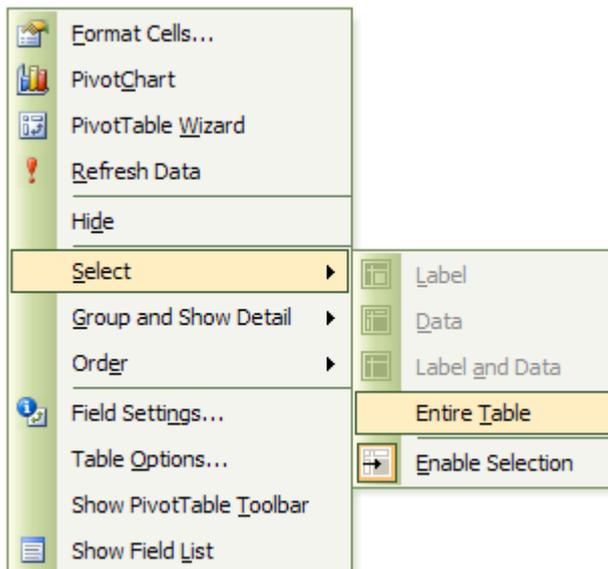
It is often useful to copy data summaries from a pivot table to another excel file for archiving, presentation or further analysis.

Care should be taken when copying data from a pivot table to another spreadsheet, especially if the new spreadsheet is to be subsequently emailed.

Depending on how you copy and paste the data, you can inadvertently copy all the data underlying the pivot table as well, which will increase the size of the excel file many-fold, although you may not be able to see the data.

To copy data from a pivot table to another excel file:

1. Select a single cell in the table and right-click
2. Choose Select ⇒ Entire Table



3. Press Ctrl + C on your computers keyboard
4. Navigate to desired cell in the destination excel file
5. Select Edit ⇒ Paste Special from the top menu, select Values and number formats and click OK



The data values will be pasted as unformatted values. The underlying data will not be pasted resulting in a smaller destination file.

See the result below:

	A	B	C	D	E	F	G	H	I
1	Month	Aug							
2	Region	(All)							
3	Nationality	(All)							
4	Level Of Study	(All)							
5	Broad Field Of Education	(All)							
6	ProviderType	(All)							
7	State	(All)							
8	Broad Field Of Study	(All)							
9	DATA As at 1st Month	(All)							
10	DATA Enrolments for Month	(All)							
11	Data Commencements for Month	(All)							
12									
13	Sum of DATA YTD Enrolments	Year							
14	Sector	2002	2003	2004	2005	2006	2007	2008	
15	Higher Education	112,563	131,745	147,723	159,518	165,984	171,392	179,136	
16	VET	47,201	50,207	51,471	57,509	70,928	102,655	147,073	
17	ELICOS	44,294	47,358	48,527	48,493	56,736	75,793	92,627	
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19	Other	22,070	24,079	24,201	24,347	24,479	25,352	28,012	
20	Grand Total	247,695	278,724	297,953	313,745	341,155	400,373	474,389	
21									

This method also the advantage that fields in the page area of the source file are copied across with the data, so users can see what filters are applicable to the data.