OCCUPATION PROJECTIONS FOR JORDAN

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Foreword:

It is now widely recognized that Human Resource Development plays a critical role in the development and prosperity of a country. As a result, the development of skills and knowledge has become an important policy concern and priority for governments. Most countries have expanded their post-secondary education systems over recent years, and young people are now being actively encouraged to extend their education in order to develop the technical skills and knowledge that are essential for jobs in the 21st Century.

Governments have also taken steps to increase the information needed by young people to make occupational choices, and required by people already in the labour market to help them find new jobs. Students and workers already in the labour market need answers to questions such as the following:

- Which economic activities are likely to provide most new jobs in the future?
- Are the job prospects in some occupations much better than in others?
- In which occupations is employment likely to grow the most in the future?
- Are jobs in some occupations likely to decline over the next few years?

This Report describes an attempt by the Al-Manar Project, working within National Center for Human Resource Development (NCHRD), to provide answers to questions such as these for Jordan. The results in the Report should be useful to different types of users for making a variety of decisions:

- For students in making occupational and career choices;
- For educational institutions in identifying growth occupations, and hence for identifying changes that may be necessary in educational programs; and
- For Government in developing appropriate human resource policies and programs.

This Report provides only a beginning, and much research and analysis in Human Resource Development still needs to be carried out for Jordan. Improvements need to be made in the timeliness and quality of the data available, and studies need to be carried out on the education that individuals need in order to enter different occupations. NCHRD hopes to continue doing this type of research and analysis in the future.

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Executive Summary

Objective of this Report

The primary objective of this Report is to provide projections of employment by occupation for Jordan in 2008 and in 2009. The Report addresses questions such as the following:

- What is the projected increase in jobs in Jordan between 2004 and 2008, and between 2004 and 2009?
- How large is the projected increase in employment in economic activities and occupations?
- Which occupations are projected to increase the most over the period?
- Will jobs be lost in any occupations over the period?

One of the additional benefits of building the Model is that the quality, accuracy, and reliability of the labour market data available in Jordan have been the subject of scrutiny. As a result, suggestions have been made for improving the quality of labour market data. In addition, the Model described here can be used to generate revised projections as new or better labour market data become available, or to examine the effects of structural changes in the economy.

Outline of the Occupation Projections Model

The Occupation Projections Model used for making projections of employment by occupation can be explained in simple terms. The Jordanian economy is divided into a number of economic activities or industrial sectors defined by the outputs they produce: these include Agriculture, Manufacturing, Education and Public Administration among others. Workers are employed in different jobs or occupations in each of these economic activities; and the number of workers in different occupations depends partly on the nature of the particular economic activity, and partly on the demand for its products.

The Model assumes that the occupational structure of an economic activity will remain roughly constant over the short-run (about 3 to 5 years). Projections of employment by occupation are derived using projections of employment by economic activity in the projection year (2008 or 2009), together with the occupational structure of economic activities in the base year (2004).

Data used in the Model

Time-series data on employment by economic activity are available from two main sources in Jordan: the Employment and Unemployment Survey (EUS) which is a household survey; and the Employment Survey (ES) which is an establishment survey. The estimates of employment in the two surveys differ significantly, and they exclude non-Jordanians working in Jordan, and workers in the informal sector.

Time-series estimates of employment by economic activity for use in the Model were developed in two stages. In the first stage, a single set of time-series estimates was derived by combining the ES and EUS estimates; in the second stage, these time-series estimates were adjusted by officials in the National Center for Human Resource Development (NCHRD) and the Department of Statistics (DOS) in Jordan, to include non-Jordanians and informal workers.

Estimates of employment by economic activity and 4-digit occupations in Jordan are also available from two sources: the annual ES survey, and the 2004 Census. But the two sets of estimates are quite different for some occupations. Analysts in NCHRD and DOS compared the estimates in 2004 with estimates from other sources of data in Jordan. They then made recommendations as to which data set seemed more appropriate for different occupations: these recommendations were adopted for use in the Model.

Projections of employment by economic activity in 2008

Projections of employment by economic activity in 2008 were derived using the simple extrapolation of the trends in the adjusted time-series of employment for 1995-2004 for all economic activities except Construction and Agriculture. We used data for the period 2000-04 for Construction and Agriculture since the recent changes in these economic activities suggest that these data would provide a better indication of likely changes in employment.

The projections suggest that total employment in Jordan will increase from 1.101 million in 2004, to 1.299 million in 2008. The projected increase over the 4-year period is 18.0%; and the annual average rate of growth of total employment is 4.2%. This rate of growth of employment is somewhat higher than the annual average rate of growth of employment over the period 1995-2004 (3.6%).

The projections indicate that 198 thousand new jobs will be generated in Jordan between 2004 and 2008. Most of these new jobs will be generated in Wholesale and Retail Trade: this economic activity is projected to add 40 thousand new jobs (about 20% of all new jobs) over the period. A relatively large number of new jobs is also projected for Manufacturing (26 thousand), Construction (26 thousand), Transportation (25 thousand) and Education (23 thousand).

How reliable are the projections of employment by economic activity?

The projections suggest that between 2004 and 2008 some jobs will be lost in Agriculture and Mining & Quarrying, and that many new jobs will be created in the other economic activities. But do the projections provide a good indicator of employment in 2008?

In order to address this question, we examined the variability of the estimates of employment by economic activity over the period of the data used for the projections (2000-04 for Agriculture and Construction and 1995-2004 for the other economic activities). The analysis suggests that the projections for Agriculture, Mining &

Quarrying, Transportation and Other Community, Social & Personal Services are subject to relatively high variability; and those for the other economic activities are subject to relatively low variability.

This means that even if the trend in employment were to continue into the future, actual employment in Agriculture, Mining & Quarrying, Transportation and Other Community, Social & Personal Services may turn out to be quite different from projected employment in 2008. It follows that the projections of employment in these economic activities may not provide a good indicator of employment in 2008.

Projections of employment for 1-digit occupation groups in 2008

The projections of employment suggest that most new jobs (38 thousand) will be generated for Craft & Related Workers; 36 thousand new jobs are projected for Service Workers & Shop & Market Sales Workers, and 29 thousand new jobs are projected for Professionals. These three occupation groups together account for just over half of the new jobs projected for Jordan over the period 2004-08.

Which 4-digit occupations are projected to add the most new jobs?

The ten occupations that are projected to add the most jobs between 2004 and 2008 are shown in the table below. The number of new jobs projected in the ten occupations in the table is about 78 thousand (39% of all new jobs). It follows that the new jobs projected for Jordan over the period 2004-08 are concentrated in a small number of occupations, and that the number of new jobs in most other occupations is relatively small.

Most new jobs (19 thousand) are projected for Shop Salespersons and Demonstrators: this represents almost 10% of all new jobs between 2004 and 2008. The annual average rate of growth (4.6%) of employment for this occupation is somewhat higher than that for total employment (4.2%).

Table 1: 4-digit occupations with the most new jobs, 2004-08

Occupation	***Projected new jobs 2004-08 (000)***
Shop salespersons and demonstrators	19.0
Car, taxi and van drivers	12.9
Bricklayers and stonemasons	9.9
Primary education teaching professionals	7.0
Hairdressers, barbers, beauticians and related workers	5.8
Tailors, dressmakers and hatters	5.7
Building construction labourers	4.7
Motor vehicle mechanics and fitters	4.5
Messengers, package and luggage porters and deliverers	4.3
Helpers and cleaners in offices, hotels and other establishments	4.2
All occupations	**197.9**

Which 4-digit occupations are projected to lose jobs over the period?

Jobs are projected to be lost between 2004 and 2008 in the six 4-digit occupations shown in Table 2.

Table 2: 4-digit occupations projected to lose jobs, 2004-08

Occupation	***Jobs projected to be lost 2004-08 (000)***
Field crop and vegetable growers	1.4
Farm-hands and labourers	1.2
Dairy and livestock producers	0.6
Poultry producers	0.3
Tree and shrub crop growers	0.1
Miners and quarry workers	0.1

These occupations are all closely associated with Agriculture or Mining & Quarrying, so that the loss of jobs reflects the slowdown projected for these two economic activities. However, it should be noted that the projections for these occupations are all subject to relatively high variability, indicating that the actual level of employment in 2008 may be quite different from the projected level. This suggests that the projections may not provide a good indicator of employment in these occupations in 2008.

Which 4-digit occupations in the Professionals group are projected to add the most jobs in 2004-2008?

The ten 4-digit occupations in the Professionals group with the largest number of new jobs between 2004 and 2008 are shown in Table 3.

The ten occupations are projected to add about 22 thousand jobs over the period 2004-2008: these new jobs represent 77% of the total number of new jobs (29 thousand) projected for all Professionals over the period. Most of these new jobs (7 thousand) are projected for Primary Education Teaching Professionals. But a relatively large number of new jobs is also projected for Personnel and Careers Professionals (4 thousand), Accountants (3 thousand), Civil Engineers (2 thousand), Lawyers (2 thousand), Secondary Education Teaching Professionals (2 thousand) and Medical Doctors (2 thousand).

Table 3: 4-digit occupations in the Professionals group with most new jobs, 2004-08

Occupation	***Projected new jobs 2004-08 (000)***
Primary education teaching professionals	7.0
Personnel and careers professionals	3.8
Accountants	2.8
Civil engineers	1.8
Lawyers	1.8
Secondary education teaching professionals	1.7
Medical doctors	1.5
Nursing and midwifery professionals	0.7
College, university and higher education teaching professionals	0.7
Computer systems designers and analysts	0.6
All Professionals	**29.1**

Which 4-digit occupations in the Technicians & Associate Professionals group are projected to add the most jobs in 2004-2008?

The ten 4-digit occupations in the Technicians and Associate Professionals group with the projected largest number of new jobs over the period 2004-08 are shown in Table 4.

These ten occupations are projected to add 11.9 thousand jobs between 2004 and 2008: this represents 60% of the new jobs projected for all occupations in the Technicians and Associate Professionals group. Most new jobs in this occupation group are projected for Primary Education Teaching Associate Professionals (3 thousand new jobs); and 7 hundred new jobs are projected for Other Teaching Associate Professionals. Together these two occupations account for about one-third of all new jobs for Technicians and Associate Professionals. The relative importance of these two occupations reflects the relatively high growth of the Education economic activity.

Table 4: 4-digit occupations in the Technicians & Associate Professionals group with most new jobs in 2004-08

Occupation	***Projected new jobs 2004-08 (000)***
Primary education teaching associate professionals	3.2
Nursing associate professionals	1.7
Bookkeepers	1.5
Technical and commercial sales representatives	1.0
Administrative secretaries and related associate professionals	0.9
Administrative associate professionals not elsewhere classified	0.8
Civil engineering technicians	0.8
Photographers and image and sound recording equipment operators	0.7
Other teaching associate professionals	0.7
Electronics and telecommunications engineering technicians	0.6
All Technicians & Associate Professionals	**19.7**

Conclusions and recommendations

The projections of employment by occupation generated by the Model described in this Report are subject to error for two reasons:

- There are errors in the data used in the Model; and
- The future is uncertain, so that the outcomes are subject to error.

The projections cannot therefore be regarded as precise indicators of employment at a future date (this is true even for countries, such as Canada, with much better data and with considerable experience in making projections of employment by occupation). Projections of employment by occupation are nevertheless useful in that they provide an indication of the likely change in employment, and in the magnitude of the projected change.

Estimates of employment for 4-digit occupations are available from the annual ES and from the 2004 Census; but the estimates from the two sources differ considerably. This suggests that there may be significant response or coding errors in one or both surveys. It follows that it would be useful to carry out an analysis of the current procedures used to code the occupations of workers in Jordan. If it turned out that there have been major errors in coding the data, the data on occupations should be re-coded and used in the Model to generate more reliable projections.

The projections generated by the Model are based on quantitative data and they may not be consistent with qualitative information available in Jordan. It would therefore be useful for knowledgeable Jordanians (including business groups, researchers, government experts, economists, and decision-makers) to compare the projections with

the changes in employment that seem likely given their knowledge and other qualitative information in Jordan. Addressing questions such as the following could help to improve the quality on the results.

- Do the projections of employment by economic activity seem reasonable in the light of the current developments in the economy?
- Is it likely that the change in employment in a given economic activity, say Construction, will be as projected in the Model?
- Are the projections of employment for selected occupations (such as teachers) consistent with the prevailing view about likely changes?

The projections provide only part of the information required by students and other decision-makers. The usefulness of the projections could be improved by providing information for students and other decision-makers on the type of work involved in different occupations, on the education and training required for different occupations, and on labour market indicators (such as hourly wages and the unemployment rate) for different occupations.

The projections of employment take no account of the new jobs that would be generated by the retirement of workers now in the labour force: they therefore probably underestimate the number of new jobs that will be generated between 2004 and 2008. Analysis to project the number of new jobs that would be generated by the retirement of workers already in the labour force would improve the usefulness of the projections.

Labour market conditions are affected not only by the number of new jobs, but also by the supply of individuals qualified to work in different occupations. The education and training required for entry to different occupations vary considerably. Some occupations require little formal education and/or a short period of training: it may be relatively easy for employers to fill such jobs. But some occupations require a university degree or college certificate, and/or a long period of training: filling new jobs in such occupations may require advance planning. The usefulness of the projections could be improved by studying the potential supply of workers from different sources.

I: Introduction

I.1 Objectives of this Report

The primary objective of this Report is to provide projections of employment by occupation in Jordan in 2008 and in 2009. The Report focuses on questions such as the following:

- What is the projected increase in jobs in Jordan between 2004 and 2008, and between 2004 and 2009?
- How large is the projected increase in employment in economic activities and occupations?
- Which occupations are projected to increase the most over the period?
- Will jobs be lost in any occupations over the period?

The projections described in the Report are based on an Occupation Projections Model for Jordan. In the Model, projections are derived using the current occupational structure of each of 14 economic activities, and projections of employment in each of those economic activities. Thus the projections depend on the occupational structure of each economic activity in the base year and on the projected changes in the structure of employment by economic activity.

One of the benefits of building the Model is that the quality, accuracy, and reliability of the labour market data available in Jordan have been the subject of scrutiny. As a result, suggestions have been made for improving the quality of labour market data.

The Model described here can be used to generate revised projections as new or better labour market data become available. It can also be used to generate projections for future years. This may be particularly important if there were significant structural changes in the economy: for example, if the occupational structure of a given economic activity were to change significantly, or if the relative importance of an economic activity, such as Construction, were to change significantly.

I.2 Uses of projections of employment by occupation

Projections of employment by occupation are used for many purposes. For example:

- Occupation projections are useful for individuals in making occupational and career choices. Students are likely to be interested in factors such as wages, hours of work, and the employment prospects in different occupations. And individuals already in the labour market often seek information that would help them make decisions about changing their occupation.

- Occupation projections can be used as one of the inputs for identifying changes in the educational programs provided by educational institutions. Some

occupations (e.g. Medical Doctors) are directly related to education programs (i.e. Medicine) so that the projections in such occupations could be helpful for planning increases in enrolments. For most occupations, however, the relationship with educational programs is not always direct; but occupation projections can be used with other data (such the occupational choices of individuals with different types of education) to identify the need for changes in educational programs.

- Employers may find employment projections by occupation useful in assessing the competition they are likely to face in recruiting different types of workers. For example, employers may face difficulties in recruiting workers in the occupations with the highest projected growth, especially if the education and training required for these occupations can only be developed over a long period of time.

- Government decision-makers use occupation projections for policy and program development. For example, programs may be developed to encourage students to enter occupations with high growth prospects, or to discourage them from entering those with low growth prospects.

- Government policymakers may also use an Occupation Projections Model for determining the likely effects of a particular policy (such as encouraging growth in a given economic activity) on occupational employment.

I.3 Outline of this Report

Section II of this Report deals with the methodology used in this Report. Why do we make 'projections' instead of 'forecasts' of employment? And what is a reasonable basis or model for making projections of employment by occupation?

Section III deals with the data available in Jordan for building a model; and it describes the modifications in the data that have been necessary to produce a reasonably reliable model.

Employment in different occupations depends on the output (goods and services) produced by the economy and on the structure of employment by economic activity and occupation. Section IV provides a brief historical overview of Jordanian economy and of changes in employment over the period 1995-2004. Which economic activities have generated the largest increases in employment in Jordan?

Section V describes the projections of employment by economic activity and by occupation for Jordan in 2008 developed using an Occupation Projections Model. In which economic activities is employment projected to increase the most and least? And in which occupations is employment expected to increase the most and least? What are the job prospects for Professionals?

Projections of employment by occupation indicate the likely changes in the types of jobs if past trends were to continue. But these projections only provide part of the picture: it

is equally important to understand the changes in the supply of individuals to fill those jobs. What education and training is required for workers in different occupations? How many jobs are likely to be filled by new graduates from the education and training system, and how many by workers already in the labour market? Such questions are not answered in this Report: but the importance of addressing them is discussed in Section VI.

Section VII summarizes the conclusions of this study and makes some suggestions for revising and assessing the Model and for making long-term improvements in the Model.

Details about the structure of the Model, about the projections of employment by economic activity and about the projections of employment by occupation are included in the appendices to this Report. Projections for 2008 form the basis for the discussion in the Report; but projections for 2009 are also included in Appendix 6.

II: Summary of methodology used in this Report

II.1 Forecasts or projections?

In the literature on manpower forecasting, the terms 'prediction', 'forecast' and 'projection' have often been used interchangeably to describe future employment. The definitions of these terms are not clear, and they may mean different things to different people. It therefore seems important that we should explain what we mean when we use the term 'projection' in this Report.

In our view, the term 'prediction' indicates 'what is likely to happen': the suggested outcome is almost certain to occur. The term 'forecast' indicates 'what is likely to happen under detailed assumptions': if the detailed assumptions were not met, there would be a good chance that the forecast would not hold. The term 'forecast' is often used to describe the future level of GDP: this is generally based on detailed assumptions about the factors that affect GDP. The uncertainty of a 'forecast' is usually greater than that of a 'prediction'.

A 'projection' indicates an outcome based on a broad assumption: it therefore represents one of several possible outcomes. The uncertainty of a 'projection' is somewhat greater than that of a 'forecast'. The Model described in this Report is based on the simple extrapolation of trends. This is a broad assumption and therefore fits our definition of 'projection'. Other projections could be obtained by, say, using data for a different time-period, which may be equally reasonable.

II.2 Outline of the Occupation Projections Model used for Jordan

a. What type of model can be built for Jordan?

The type of model that can be used for making projections of employment by occupation depends on the data available for the economy. In Canada, for example, data are available on the inputs (labour, equipment, etc.) that are required for producing the different types of outputs (Agriculture, Manufacturing, etc.) that consumers and producers demand. It is therefore possible to build an economic model based on the relationships between the inputs and the outputs, and hence a model that can be used for exploring the effects of different economic factors on employment in Canada.

The data for building such a model are not available in Jordan, so that a more simple approach has to be adopted. The model used here is based on the assumption that recent trends in employment will continue into the future. There is therefore an implicit assumption that the relationship between employment and the economic factors that affect it, will continue to change as they have done in the past.

The model used here can be explained in fairly simple terms. The Jordanian economy is divided into a number of economic activities or industrial sectors defined by the outputs they produce: these include Agriculture, Manufacturing, Education and Public Administration among others. Workers are employed in different jobs or occupations in

each of these economic activities; the number of workers in different occupations depends partly on the nature of the particular economic activity and on the demand for its products. For example, most workers in Agriculture are likely to be employed in agricultural occupations; and most workers in Education are probably working as teachers. But workers in some economic activities, such as Manufacturing and Public Administration, are not often concentrated in one occupation or in an identifiable group of occupations.

The Occupation Projections Model used in this Report assumes that the occupational structure of an economic activity will remain roughly constant over the short-run (about 3 to 5 years). This means that if, for example, employment in Agriculture were to fall over the next 3 to 5 years (as seems likely), the number of jobs in agricultural occupations would tend to fall; and if employment in Education were to rise (as seems likely), the number of teaching jobs would tend to rise. Intuitively this makes sense since workers in these activities tend to be concentrated in particular occupations. But drawing conclusions about the effects of changes in employment in economic activities such as Manufacturing and Public Administration is not as straightforward since employment in these activities is spread over many occupations. The Occupation Projections Model provides a basis for deriving projections for all economic activities.

The Occupation Projections Model used here is based on two main assumptions:

1. The occupational structure of an economic activity is determined mainly by the state of technology; and
2. The effects of technology on the occupational structure of an economic activity tend to change only slowly over time.

The term ‘state of technology’ is used here to mean the factors that are used for generating the output of the firm: they include the capital stock (including the type and age of equipment) and the processes and organizational methods used for the production of output.

The first assumption (above) implies that the occupational structure is determined by the capital stock and the processes used in the production of output. This in turn implies that there can be no substitution between occupations in the production of output, and hence that the effects of changes in prices and wages will be relatively small. This is certainly reasonable over the short-run since firms and individuals will need some time to respond to labour market pressures. But it is less likely to hold over the long-run since firms will be able to make adjustments in the equipment used in production so as to employ relatively more labour in excess supply; and individuals will be able to make education and training choices that allow them to enter occupations in short supply.

The second assumption (above) implies that labour market pressures (e.g. labour shortages) will only affect the occupational structure of an economic activity over the long-run. This is a reasonable assumption since the firms within an economic activity will need time to respond to labour market pressures. Moreover, since the age of the equipment varies by firm, some firms will take longer to respond to labour market

pressures than others. Thus the average occupational structure of an economic activity will tend to change only slowly over time.

It follows that the Model used here provides a reasonable basis for making occupation projections over a period of about 3 to 5 years. But long-term projections (for say, 10 years or more) are likely to be subject to greater uncertainty because of changes in the labour market.

Another limitation in the Model should be pointed out. The Model as used here is based on data for Jordan as a whole, and it ignores regional variations in the economy. Since the economy of Amman dominates the economy of the country, the occupation projections for the country as a whole may provide a reasonable approximation of labour market developments in Amman. But the projections may be less useful for identifying labour market pressures in other governorates.

b. A simplified example of the Model

In the Model, projections of employment by occupation are derived using projections of employment by economic activity in the projection year (2008), and the occupational structure of economic activities in the base year (2004). There are three steps in the Model:

1. Project employment by economic activity (2008).
2. Derive the occupational structure by economic activity in the base year (2004).
3. Derive projections of employment by occupation (for 2008) by multiplying projected employment in each activity (in 2008) by the occupational structure in base year (2004).

These steps can be illustrated using a simplified model. For simplicity, artificial numbers are used in the table below. In the example, the economy is divided into 3 economic activities; Primary economic activities; Other Goods-producing economic activities; and Service-producing economic activities. The data shown in Step 1 indicate, for example, that the level of employment (stock of workers) in Primary economic activities in 2004 was 75 thousand; and this is projected to decline to 70 thousand in 2008. Thus these data suggest that about 5 thousand jobs will be lost in Primary economic activities. By contrast, the Services economic activity is projected to add 160 thousand jobs.

Step 1: Projections of employment by economic activity

Economic activity	***Employment in 2004 (000)***	***Projected employment in 2008 (000)***
Primary	75.0	70.0
Other Goods	320.0	370.0
Services	700.0	860.0
Total employment	**1095.0**	**1300.0**

The data in Step 2 show, for example, that 5.0% of the workers in Primary economic activities worked as Professionals; 10% of those in Other Goods-producing activities worked in this occupation group; and 15% of those in the Services activities worked as Professionals. Since total employment in Services is projected to increase substantially,

there will also be a projected increase in employment in the Professionals occupation group.

Step 2: Occupational structure by economic activity in 2004 (%)

Occupation group	Primary	Goods	Services
Professionals	5.0	10.0	15.0
Service Workers & Shop & Market Sales Workers	1.0	2.0	20.0
Craft & Related Workers	10.0	60.0	10.0
Plant & Machine Operators & Assemblers	9.0	13.0	15.0
Other	75.0	15.0	40.0
Total	100.0	100.0	100.0

This can be seen from the projections of employment by occupation shown below for Step 3. Employment in the Professionals occupation group is projected to increase from about 141 thousand to about 170 thousand; and the employment of Craft and Related Workers is projected in increase from about 270 thousand to 315 thousand.

Step 3: Derive projections of employment by occupation

Occupation group	Employment 2004 (000)	Projected employment 2008 (000)
Professionals	140.8	169.5
Service Workers & Shop & Market Sales Workers	147.2	180.1
Craft & Related Workers	269.5	315.0
Plant & Machine Operators & Assemblers	153.4	183.4
Other	384.3	452.0
Total	**1095.0**	**1300.0**

A mathematical description of the Model is included in Appendix 1 of this Report.

III: Data for the Model

III.1 Data on employment by economic activity

Time-series data on employment by economic activity are available from two main sources in Jordan: the Employment and Unemployment Survey (a household survey), and the Employment Survey (an establishment survey). However, the estimates of employment from the two surveys differ significantly: considerable analysis was therefore required to develop the time-series estimates of employment for use in the Occupation Projections Model.

a. The Employment and Unemployment Survey (EUS)

The Department of Statistics (DOS) has been conducting the EUS for a number of years so that time-series estimates of employment by economic activity are available from the EUS: but the variability of the estimates (and hence their reliability) is affected by many factors.

One of these factors is the frequency of the survey. Before the year 2000, the EUS was usually conducted on an annual basis; but since 2000 the survey has generally been conducted on a quarterly basis. An exception was made in 2004: the EUS was conducted only once in that year because the census was being conducted in the same year.

The sample size for the survey has also been changed over the years. The sample size in some of the older surveys was relatively small so that the estimates of employment in earlier years are subject to relatively high sampling variation, and hence are less reliable than the estimates in recent years.

The reliability of the estimates of employment from the EUS is affected by other factors. For example, the sampling frame excludes the population living in remote areas (most of whom are nomads), as well as those living in collective dwellings, such as hotels, hospitals, work camps and prisons. The non-Jordanian population working in Jordan (who generally live in collective dwellings) is therefore also excluded. It follows that the EUS tends to underestimate the level of employment in Jordan.

b. The Employment Survey (ES)

The ES has been conducted annually by DOS for many years. But the coverage of the survey has been changed over time. Before 1999, the survey excluded small establishments with less than 5 workers, and it included only a sample of large establishments. The survey currently covers all establishments in the public sector (excluding military and security establishments), and all establishments in the private sector with 50 or more workers; and it includes a sample of smaller establishments. It follows that the reliability of the estimates for the years before 1999 will differ from that of those since 1999.

The ES does not cover all workers in Jordan. It excludes agricultural establishments so that workers in the Agriculture economic activity are excluded. In addition, since it includes only registered establishments, it does not cover workers in the informal sector (many of whom are employed in Construction and Transportation).

c. Comparison of estimates from the EUS and ES

The estimates from the EUS and ES are expected to differ because of differences in sampling, coverage, coding, response, and other such factors. The estimates from the two surveys have been compared by Megill et. al. in their report '*Analysis for Comparing the Employment Estimates from the Different Surveys at the Department of Statistics' (*27 August 2003). A number of important conclusions emerge from their analysis:

- The EUS provides a more accurate estimate than the ES of total employment in Jordan.
- The estimates of employment are higher in the EUS than in the ES for most types of economic activity except Financial Services, Public Administration and Education.
- The ES provides more accurate estimates for economic activities with a high level of coverage, such as Public Administration, and activities which are highly concentrated in a few areas or establishments, such as Mining and Quarrying.
- The EUS provides more accurate estimates than the ES for Manufacturing, Construction, Wholesale and Retail Trade, Hotels and Restaurants, and Transportation. Megill et. al. attribute these differences to better coverage of independent workers and of workers in the informal sector, as well as some undercoverage of the newer (and mostly small) establishments in the frame of establishments used for the ES.

Megill et. al. recommend that consideration should be given to the development of a single employment data series based on the ES and EUS. They also recommend that:

- ES data should be used for Public Administration, Mining and Quarrying, Electricity, Gas and Water, Financial Services, and any other economic activity considered to have good coverage in the establishment frame.
- An evaluation team should be set up to determine if the ES is a more accurate source of employment data for Education and Health activities.
- The employment estimates for the remaining economic activities could be based on the EUS, which has a better coverage of informal activities.

d. Developing a single set of time-series estimates for the Model

We developed the time-series employment data for use in the Occupation Projections Model in two stages. In the first stage, we combined the annual estimates of employment by economic activity based on the EUS and ES following the recommendations by Megill et. al. Data for the period 1995-2004 were provided by officials in the National Center for Human Resource Development (NCHRD) and the Department of Statistics (DOS).

In the second stage, these time-series estimates were adjusted by officials in NCHRD/DOS to include non-Jordanians and informal workers. The adjusted estimates by economic activity for each year over the period 1995-2004 are included in Table A2.1, Appendix 2.

The adjusted estimates of employment differ considerably from the initial estimates. For example, the data in Table III.1 show that including non-Jordanians (in which we include informal workers) adds 100 thousand to estimated employment in 1995. Moreover, the estimated number of non-Jordanians varies considerably over the period: it was lowest in 2000 (99 thousand) and highest in 2004 (158 thousand). Thus there has been a large growth in the employment of non-Jordanians since 2000.

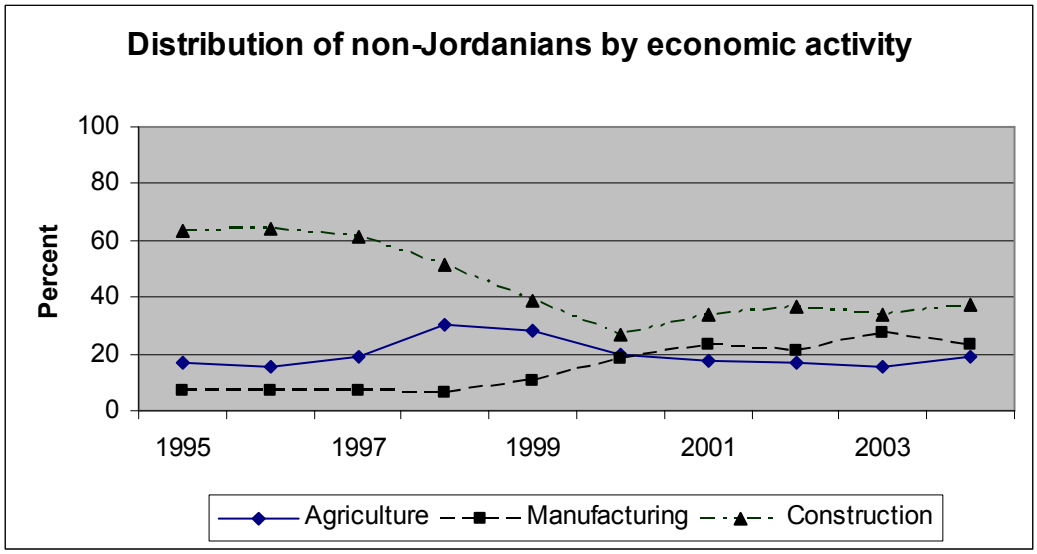
Table III.1: Number of Jordanian and non-Jordanian workers (000), 1995-2004

Nationality of worker	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Jordanian	689.1	752.1	774.7	849.4	864.7	876.7	906.1	920.5	942.5	943.1
Non-Jordanian	110.0	107.4	102.7	105.2	107.2	99.3	103.7	108.1	128.8	157.6
Total (000)	**799.1**	**859.5**	**877.4**	**954.6**	**971.9**	**976.0**	**1009.8**	**1028.6**	**1071.4**	**1100.7**

Note that non-Jordanian includes informal workers.

The relative importance of the adjustments for non-Jordanian workers varies significantly by economic activity. The vast majority of non-Jordanians are employed in three economic activities: Agriculture, Manufacturing and Construction. In 1995, 87% of all non-Jordanian workers were employed in these three economic activities; and although the proportion had fallen by 2004, it was still nearly 80%.

Figure III.1: Distribution (%) of non-Jordanian workers by economic activity, 1995-2004



Note that non-Jordanians include informal workers.

But the relative importance of these three economic activities in providing employment for non-Jordanians has changed dramatically over the period (see Figure III.1). In 1995, over 60% of all non-Jordanian workers were employed in Construction; and 17% and

7% were employed in Agriculture and Manufacturing respectively. But in 2000, the proportions were quite different: 27% were employed in Construction, 20% in Agriculture, and 19% in Manufacturing.

III.2 Data on employment by economic activity and 4-digit occupation

a. Data available for Jordan

Estimates of employment by economic activity and 4-digit occupations are required for the Occupation Projections Model. Such estimates are available from two sources in Jordan: the annual ES survey, and the 2004 Census. But examination of the data shows that the estimates from the two sources are quite different.

The data in Table III.2 show estimates of employment for 1-digit occupation groups in the 2004 Census and in the ES for 2000, 2001 and 2002. Although ES data for 2003 are available, the occupation codes used for the 2003 data are quite different in some cases from those for previous years. Thus the data for 2003 are not comparable with the data for 2000 to 2002: they could not therefore be used for the analysis in this Report.

Table III.2: Estimates of employment (000) by 1-digit occupation: ES 2000, 2001, 2002 and Census 2004

	Adjusted[1]			Census
1-digit Occupation	ES 2000	ES 2001	ES 2002	2004
Legislators, Senior Officials & Managers	44.0	27.0	31.5	1.2
Professionals	156.5	182.1	182.3	190.5
Technicians & Associate Professionals	130.1	117.5	111.3	110.5
Clerks	110.3	110.4	111.3	53.1
Service Workers & Shop & Market Sales Workers	160.1	164.6	167.0	129.9
Skilled Agricultural & Fishery Workers	31.9	33.8	33.5	24.2
Craft & Related Workers	130.7	127.7	122.6	227.7
Plant & Machine Operators & Assemblers	73.6	77.7	83.4	127.1
Elementary Occupations	157.3	153.5	151.6	130.2
All occupations	**994.4**	**994.4**	**994.4**	**994.4**

Note: 1 - Adjusted to include Agriculture, and so that total employment in each ES is the same as that in the Census.

The ES estimates differ from the Census estimates for several reasons. One reason is that the ES excludes workers in Agriculture: the ES estimates shown in Table III.2 have therefore been adjusted to include workers in Agriculture using the occupational distribution for this economic activity in the Census as an approximation. The Census data and the ES data also differ in the estimate of total employment. The data in the table have been adjusted so that the estimated total employment in the ES is the same as that in the Census: thus the numbers in different columns can be compared directly.

The data in the table show that although the adjusted ES estimates for 'Legislators, Senior Officials & Managers' vary considerably from year to year, they are all consistently much higher than the Census estimate. This suggests that there may be significant response and coding errors in the data for this occupation group in the Census and/or in the ES.

Moreover, the Census estimate for 'Legislators, Senior Officials & Managers' seems to be far too low to be realistic: it is hard to believe that there are only 1.2 thousand workers in this occupation group in Jordan. A recent report on the labour market in Canada indicates that employment in Management occupations in that country in 2003 was 1.4 million (*Looking Ahead: A 10-Year Outlook for the Canadian Labour Market*, HRSDC, October 2004, p.53.). Total employment in Canada in 2003 was 14.6 million so that occupations in Management represent 9.4% of total employment. By contrast, the estimate for Jordan represents only 0.1% of total employment in that country.

Differences are to be expected in the proportion of Managers in Canada and in Jordan because of differences in the occupational structure of industries and in the occupational classification systems used. But the difference is so large that it seems reasonable to conclude that there may be significant coding errors in the Census data for Jordan.

Table III.3: Percentage difference between ES estimates of employment between 2000 and 2001, and between 2001 and 2002, for 1-digit occupations

1-digit Occupation	% change in ES between 2000 and 2001	% change in ES between 2001 and 2002
Legislators, Senior Officials & Managers	-38.5	16.7
Professionals	16.4	0.1
Technicians & Associate Professionals	-9.7	-5.3
Clerks	0.1	0.8
Service Workers & Shop & Market Sales Workers	2.8	1.5
Skilled Agricultural & Fishery Workers	6.1	-1.1
Craft & Related Workers	-2.3	-4.0
Plant & Machine Operators & Assemblers	5.6	7.3
Elementary Occupations	-2.4	-1.3
All occupations	**0.0**	**0.0**

The high variation in the adjusted ES estimates from one year to the next is not surprising since the ES is based on a sample of establishments. But as the data in Table III.3 show, the difference is much larger for 'Legislators, Senior Officials & Managers' than for any other group. This suggests that response and coding errors may be much larger for this occupation group than for any other occupation group.

These differences between the ES and Census estimates for 1-digit occupation groups indicate that there are likely to be major coding errors in the data. But are there significant differences for 4-digit occupations (which form the basis of the Model)?

To address this question, we examined the ES and Census estimates for selected 4-digit occupations within each 1-digit occupation group. The estimates for selected 4-digit

occupation groups within the 1-digit occupation group 'Legislators, Senior Officials & Managers', are shown in Table III.4.

Table III.4: Estimates of employment (000) for selected 4-digit occupations for 'Legislators, Senior Officials & Managers': ES 2000, 2001, 2002 and Census 2004

4-digit Occupation		Adjusted[1]			Census 2004
		ES 2000	ES 2001	ES 2002	
1120	Senior government officials	3.4	0.8	0.7	0.2
1121	Specialized departmental managers	0.0	2.6	3.1	0.0
1210	Directors and chief executives	3.6	2.7	3.0	0.0
1226	Production and operations department managers in transport, storage and communications	0.5	0.5	1.5	0.0
1231	Finance and administration department managers	3.0	3.0	2.5	0.0
	Legislators, Senior Officials & Managers	**44.0**	**27.0**	**31.5**	**1.2**

1 - Adjusted to include Agriculture, and so that total employment in each ES is the same as that in the Census.

The data in Table III.4 show that the ES estimates for the selected 4-digit occupations are all much higher than the Census estimate: thus the difference between the ES and Census estimates is not confined to one or two 4-digit occupations. Moreover, the variability in the ES estimates is much higher for some occupations than for others. For example, the estimate for 'Senior Government Officials' in 2000 is nearly 325% higher than that for 2001; but the estimate for 'Directors and Chief Executives' in 2000 is only about 33% higher than that in 2001.

Examination of data similar to the data in Table III.4 for selected 4-digit occupations within each of the other 1-digit occupation groups led to four main conclusions:

- In some occupations the Census estimate is consistently higher than the ES estimates;
- In some occupations the Census estimate is consistently lower than the ES estimates;
- In some occupations the Census estimate is roughly the same as the ES estimates; and
- In some occupations the ES estimates vary considerably from one year to the next.

These conclusions suggest that using the Census data instead of the ES data in the Model will lead to lower projections for some occupations, and to higher projections for others. For example, using Census data instead of ES data will generate considerably lower estimates for occupations in the 'Legislators, Senior Officials & Managers' group, but considerably higher estimates for some occupations in the 'Craft & Related Workers' occupation group.

b. Should Census or ES data be used in developing the Model?

The analysis above suggests that the projections of employment by occupation generated by the Model would be quite different if we were to use Census data instead of ES data in the Model. At the same time, if we were to use ES estimates in the Model,

the employment projections by occupation would be subject to high variability: and this variability would be more important for some occupations than others. So which data set would provide the best choice for the Model?

There is no objective way of choosing between the ES and Census data without detailed analysis of both data sets. We therefore decided to develop two versions of the Model: one based on ES data, and the other based on Census data.

Version 1 of the model was based on the occupational structure of each economic activity from the ES for the years 2000, 2001, and 2002: we used the average for the three years to minimize the effects of sampling variation. In addition, since workers in Agriculture are not covered in the ES, we included the occupational structure of Agriculture from the Census to ensure that this version of the Model would be complete.

Version 2 of the Model is based on the 2004 Census estimates of the occupational structure of each economic activity.

We used the two versions of the Model together with the adjusted estimates of employment by economic activity for 2004 (shown in Table A2.1 in Appendix 2) to derive estimates of the stock of workers by occupation in 2004. The two sets of estimates turned out to be quite different for some occupations: for example, the estimate from the ES Model for 'Legislators, Senior Officials & Managers' was much higher than that from the Census Model. Analysts in NCHRD and DOS compared the estimates derived for 2004 with estimates from other sources of data in Jordan. On the basis of such comparisons they were able to conclude that:

- The ES Model seemed to provide a better estimate than the Census Model for some occupations (such as 'Civil Engineers').
- The Census Model seemed to provide a better estimate than the ES Model for some occupations (such as 'Medical Doctors').
- For some occupations (such as 'Accountants') it was not clear if the estimate from the ES Model or the Census Model would be more accurate: the analysts suggested that in such cases the average of the estimates from the ES Model and Census Model should be used as the estimate of employment.

The estimates of the stock of workers by occupation in 2004 used in this Report have been derived using these recommendations of the NCHRD/DOS analysts. The estimates obtained in this way were further adjusted to ensure that the sum of the adjusted estimates over all occupations would be the same as estimated total employment in 2004. Projections of employment by occupation in 2008 (and in 2009) were derived in a similar way: this ensures that the projections are consistent with the estimated stock in 2004.

III.3 Some conclusions about the data for the Model

Two sets of data are required for the Occupation Projections Model: time-series estimates of employment by economic activity; and estimates of employment by economic activity and 4-digit occupation.

Our examination of the employment data for 1995-2004 shows that including estimates of the employment of non-Jordanians leads to considerably different estimates of employment in Jordan. The differences are particularly marked for Agriculture, Manufacturing and Construction; and the trend in employment for these three economic activities is quite different when non-Jordanians are included. It follows that the projections generated by the Occupation Projections Model would be quite different if non-Jordanians were excluded from the Model.

Estimates of employment by economic activity and 4-digit occupation are available from the ES and the 2004 Census. Our examination of these data suggests that it is likely that there are significant response and coding errors in the data from the ES and/or the 2004 Census. Analysts in NCHRD/DOS have made recommendations as to whether the ES data or the Census data provides a better estimate of employment in each occupation in 2004. And we have followed their recommendations in developing the projections from the Model. However, this should only be seen as a short-term solution, and we believe that in the long-term steps should be taken to improve the quality of the data.

IV: Historical overview of the economy and employment in Jordan

IV.1 Overview of the economy

Jordan has a relatively small population (estimated at 5.5 million in 2005) with limited natural resources and a relatively small industrial base. The country is located in one of the most politically unstable regions in the world – it has borders with Israel, Palestine, Iraq, Saudi Arabia, and Syria. Economic and political factors in this region have therefore played a major role in the economic development of the country.

Most of the land in Jordan is semi-arid: the Agriculture sector is small and is concentrated in the Jordan River valley. Jordan has no oil; but it has had close ties with the oil-producing countries in the Gulf States and has benefited from the oil boom there. For example, the oil shocks in the early 1970s and early 1980s generated a significant demand for foreign workers in the Gulf States, and many Jordanians left Jordan to take jobs there. Developments in the Gulf States have also had negative effects on the Jordanian economy. For example, the Gulf War caused many Jordanian workers to return home in 1991: this led to a sharp decline in remittances by Jordanians working abroad (and thus to a decline in GDP), and to a significant increase in unemployment.

Jordan has been subject to large population flows over time: these include inflows of about 450,000 people from Palestine during 1946-50, about 400,000 people from the West Bank and Gaza in 1967, and the return of about 300,000 Jordanian workers from the Gulf States in 1991 (after the Gulf War). More recently, the War in Iraq has led to an influx of people from that country and it has generated a significant increase in investment in Jordan.

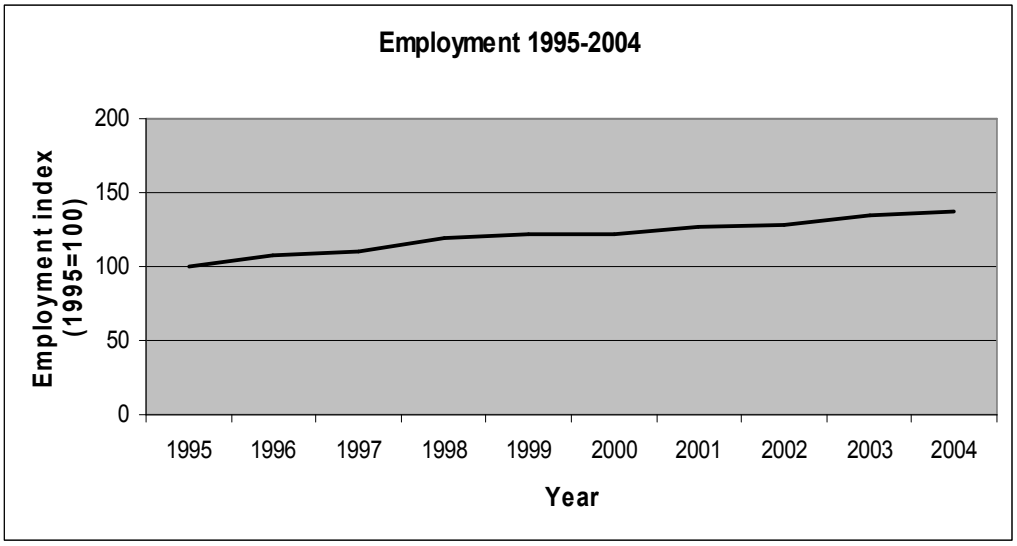
Migration flows such as these have had a significant impact on the labour force in Jordan. Non-Jordanians working in Jordan tend to have lower skills and less education than Jordanians, and a large proportion of non-Jordanians have found jobs in the Construction and Transportation sectors.

To summarize, the growth of the Jordanian economy has been dominated by external factors. Thus the future growth of the economy – and hence the number of new jobs generated in Jordan – could be determined by economic and political developments in the region and on migration flows to Jordan. The Model described here is based on the assumption that the effects of such external factors will not be significant.

IV.2 Recent changes in employment

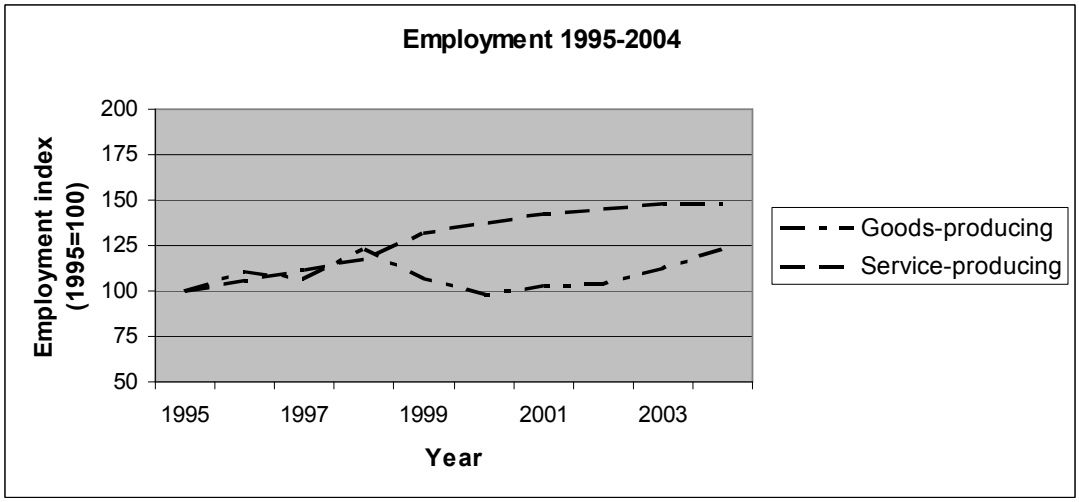
In 1995, total employment in Jordan was almost 800 thousand; and employment had grown to just over 1100 thousand in 2004. This represents an annual average rate of increase of 3.6% over the 10-year period. The increase in total employment was fairly consistent over the period (see Figure IV.1).

Figure IV.1: Total employment in Jordan, 1995-2004 (1995=100)



However, the increase in employment over the period was considerably higher for service-producing economic activities (which include Trade, Transportation, Public Administration, Education, Health & Social Work among others), than for goods-producing economic activities (Agriculture, Mining & Quarrying, Manufacturing, Construction, and Electric, Gas and Water Supply).

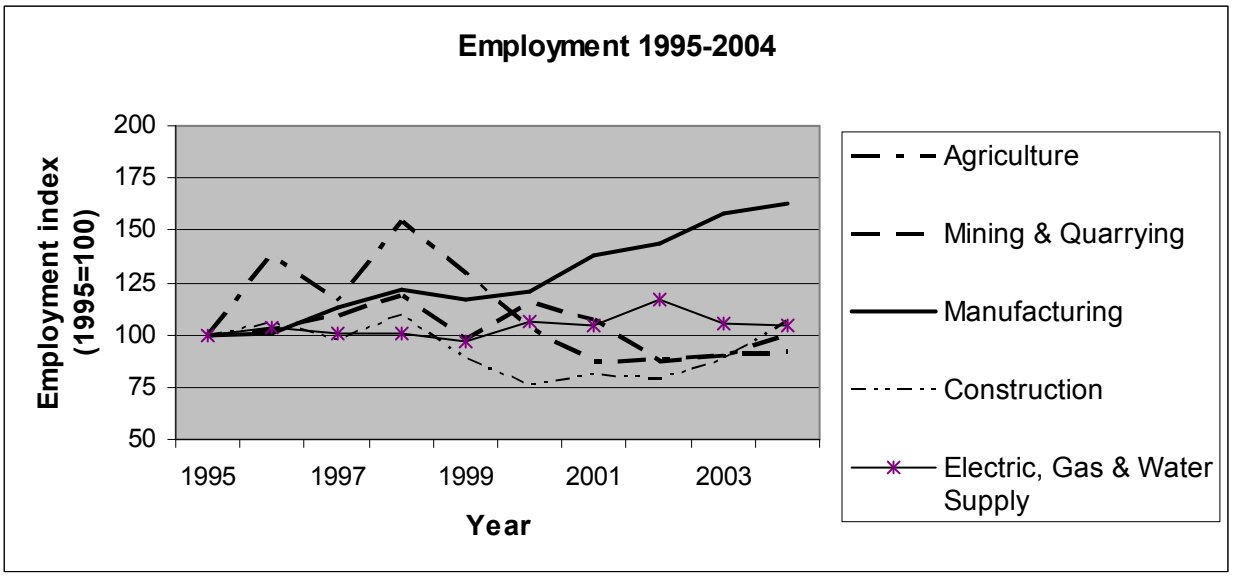
Figure IV.2: Employment in goods- producing and service-producing economic activities, Jordan 1995-2004 (1995=100)



Employment in service-producing activities grew consistently over the period (see Figure IV.2), and at a relatively high annual average rate of growth of 4.4%. By contrast, the annual increase in employment for goods-producing economic activities was quite irregular, and employment in 2004 was at the same level as in 1998. The annual average rate of growth of employment in goods-producing economic activities between 1995 and 2004 was 2.3% (almost half the annual average rate of growth for service-producing economic activities).

As would be expected, the change in employment over the 10-year period has been quite different for each of the economic activities within the goods-producing activities (see Figure IV.3). Employment in Agriculture and in Mining & Quarrying fell, while that in Electric, Gas and Water Supply and in Construction, increased by about 5% over the period. By contrast, employment in Manufacturing increased by over 60% over the period.

Figure IV.3: Employment in goods- producing economic activities, Jordan 1995-2004 (1995=100)



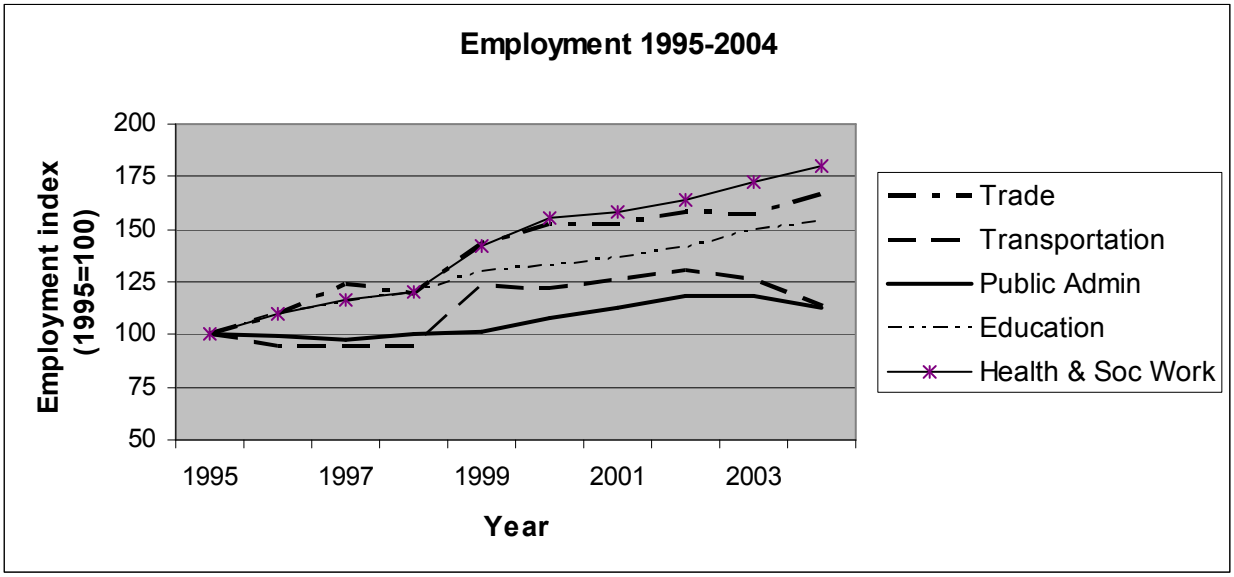
The graphs in Figure IV.3 generally show that employment in these economic activities varied considerably from one year to the next. For example, employment in Agriculture increased by nearly 40% between 1995 and 1996; but it fell by almost 16% between 1996 and 1997. If this variability in employment were to continue into the future, then the projections of employment for these economic activities would be subject to relatively high variability. It follows that the projections of employment will be subject to some uncertainty and that the effects of this uncertainty should be taken into account in using the projections of employment by occupation.

The change in employment in each of the individual economic activities within the service-producing activities between 1995 and 2004 was quite different from that for those within the goods-producing economic activities. The graphs in Figure IV.4 (for five selected service-producing activities) show that employment in these activities all increased markedly over the period. Employment in Health & Social Work showed the highest increase (nearly 80%) of the economic activities in the graph; and the lowest increase was for Public Administration (13%).

Moreover, the annual variation in employment in each of the service-producing economic activities was generally much lower than that for employment in the goods-producing economic activities. It follows that the projections of employment in the service-producing activities will be subject to less uncertainty than projections in the

goods-producing activities. This implies that the projections of employment for occupations more closely associated with the service-producing economic activities (such as Medical Doctors) will be more reliable that those for occupations more closely associated with goods-producing activities (such as Carpenters and Joiners).

Figure IV.4: Employment in selected service-producing economic activities, Jordan 1995-2004 (1995=100)



The data in Table IV.1 show estimates of employment by economic activity for 1995 and for 2004, as well as the percentage change in employment for each economic activity over the period. The table also includes estimates of the share of employment in each economic activity for 1995 and 2004.

Table IV.1: Estimated Employment by Economic Activity, Jordan 1995 and 2004

Economic activity	*Employment (000)*		*% Change in employment 1995-2004*	*% employment share in*	
	1995	*2004*		*1995*	*2004*
Agriculture	68.2	67.7	-0.7	8.5	6.2
Mining & Quarrying	8.1	7.5	-7.4	1.0	0.7
Manufacturing	103.5	168.4	62.7	13.0	15.3
Electric, Gas and Water Supply	13.4	14.0	4.5	1.7	1.3
Construction	124.7	132.4	6.2	15.6	12.0
Wholesale and Retail Trade	118.6	197.9	66.9	14.8	18.0
Hotels and Restaurants	15.0	31.5	110.0	1.9	2.9
Transportation	81.2	92.4	13.8	10.2	8.4
Financial Intermediation	16.5	18.2	10.3	2.1	1.7
Real Estate, Renting and Business Activities	19.9	36.2	81.9	2.5	3.3
Public Administration and Compulsory Social Security	72.0	81.1	12.6	9.0	7.4
Education	94.5	145.0	53.4	11.8	13.2
Health and Social Work	27.8	49.9	79.5	3.5	4.5
Other Community, Social & Personal Services	35.8	58.4	63.1	4.5	5.3
TOTAL EMPLOYMENT	**799.1**	**1100.7**	**37.7**	**100.0**	**100.0**

Source: Data provided by NCHRD/DOS

The data in Table IV.1 show that in 1995 employment was highest for Construction (nearly 125 thousand). Employment was also relatively high for Wholesale and Retail Trade (119 thousand) and for Manufacturing (104 thousand). These three economic activities together accounted for 43% of total employment in 1995.

But the relative importance of these economic activities had changed considerably by 2004. The increase in employment in Construction over the period was lower than that for other economic activities, so that by 2004 Construction was the fourth largest economic activity in terms of employment. In 2004, the three largest economic activities in terms of employment were Wholesale and Retail Trade (198 thousand), Manufacturing (168 thousand) and Education (145 thousand): employment in these three economic activities accounted for 46% of total employment in 2004.

The change in the relative importance of employment in Construction is interesting. The share of employment in Construction fell markedly – from 15.6% in 1995 to 12.0% in 2004. It follows that employment in the occupations most closely associated with this activity (e.g. Carpenters and Joiners) would probably have declined over the period. If this trend were to continue over the next few years, employment in such occupations would be expected to fall.

IV.3 Employment by occupation

Reliable time-series estimates of employment by occupation are not available for Jordan. Time-series estimates are available from the ES, but these estimates do not include workers in Agriculture: thus estimates of employment by occupation derived from the ES will be biased. Time-series estimates are also available from the EUS. However, analysis of time-series estimates of employment from the EUS suggest that employment for the occupation group 'Legislators, Senior Officials & Managers' fell dramatically between 1999 and 2000. The decline seems to be far too large to be attributable to changes in the labour market. It suggests, instead, that there has been a change in the information provided by respondents, or in the way these responses are coded in occupations. This suggests, in turn, that the recent EUS estimates are likely to be unreliable.

The data used in the analysis in this section (see Table IV.2) have therefore been derived from two sources. The estimates for 1995 and 1999 are derived from the EUS; and the estimates for 2004 have been derived from the Occupation Projections Model and the estimated employment by economic activity in 2004. Thus the estimates used for 2004 are the same as the estimates of employment by occupation used for estimating the projected growth in employment by occupation.

The data for the three years show broadly similar patterns. In each of the three years, employment was largest for 'Craft & Related Workers': employment in this group represented about one-fifth of total employment. This is not surprising since workers in these occupations form a significant proportion of employment in Manufacturing and Construction, which are among the largest economic activities in Jordan.

Table IV.2: Estimated employment by Occupation, Jordan 1995, 1999 and 2004

1-digit Occupation	*Estimated 1995 (%)*	*Estimated 1999 (%)*	*Estimated stock 2004 (%)*
Legislators, Senior Officials & Managers	1.8	1.2	3.2
Professionals	12.3	14.0	14.7
Technicians & Associate Professionals	11.0	11.5	9.5
Clerks	9.3	8.3	9.2
Service Workers & Shop & Market Sales Workers	14.1	13.8	15.0
Skilled Agricultural & Fishery Workers	6.4	5.4	2.7
Craft & Related Workers	21.4	18.0	19.9
Plant & Machine Operators & Assemblers	15.7	14.1	10.7
Elementary Occupations	8.0	13.7	15.2
Total	**100.0**	**100.0**	**100.0**

Source: Estimates for 1995 and 1999 based on EUS. Stock for 2004 estimated using Occupation Projections Model and estimated employment by economic activity in 2004

The changes in employment in the various occupation groups make sense. For example, the employment of 'Professionals' has increased consistently over the period: this would be expected since the increased use of technology would likely have led to an increase in the skills and knowledge, and hence in the education and training, required for many jobs. Similarly, the employment of 'Skilled Agricultural & Fishery Workers' has fallen over the 10 years; this would be expected because of the long-term decline in Agriculture.

The employment of 'Craft & Related Workers' and 'Plant & Machine Operators & Assemblers' fell over the period: this would seem to be consistent with fall in the share of employment in Construction over the period (see Table IV.1).

It is somewhat surprising that the employment of 'Elementary Occupations' has increased to such a degree over the 10 year-period. 'Elementary Occupations' are associated with the first skill level in the International Classification of Occupations (ISCO-88): this skill level is measured in terms of category 1 of the International Standard Classification of Education (ISCED). It is equivalent to primary education, which generally begins at ages 5-7 years and lasts for about 5 years.

The increase in the employment of 'Elementary Occupations' implies that the proportion of jobs requiring the lowest level of education in Jordan, has increased over the period. This is somewhat surprising; further analysis of detailed data for 2004 may shed light on the reasons for this increase.

V: Employment outlook in 2008

V. 1 Outlook for employment by economic activity

a. Projections of employment by economic activity

Projections of employment for each economic activity in 2008 were derived using the simple extrapolation of time-series data for 1995-2004 for each economic activity except Agriculture and Construction. For Construction and Agriculture we used data for the period 2000-04: the recent changes in these economic activities suggest that the data for this period would provide a better indication of likely changes in employment.

Table V.1: Employment in 2004 and projections for 2008 by economic activity

Economic activity	*Estimated employment 2004 (000)*	*Projected employment 2008 (000)*	*Percentage Change 2004-08*	*Annual average rate of growth 2004-08 (%)*
Agriculture	67.7	62.1	-8.2	-2.1
Mining & Quarrying	7.5	7.1	-4.9	-1.2
Manufacturing	168.4	194.8	15.6	3.7
Electric, Gas and Water Supply	14.0	15.0	7.2	1.7
Construction	132.4	157.9	19.3	4.5
Wholesale and Retail Trade	197.9	237.9	20.2	4.7
Hotels and Restaurants	31.5	40.4	28.1	6.4
Transportation	92.4	117.0	26.6	6.1
Financial Intermediation	18.2	20.2	11.1	2.7
Real Estate, Renting and Business Activities	36.2	50.1	38.3	8.4
Public Administration and Compulsory Social Security	81.1	91.8	13.1	3.1
Education	145.0	167.5	15.5	3.7
Health and Social Work	49.9	61.2	22.6	5.2
Other Community, Social & Personal Services	58.4	75.6	29.5	6.7
TOTAL EMPLOYMENT	**1100.7**	**1298.6**	**18.0**	**4.2**

Source: Based on the Occupation Projections Model: the projections in the table are based on data for 2000-04 for Agriculture and Construction, and for 1995-2004 for all other economic activities.

The projections in Table V.1 suggest that total employment in Jordan will increase from 1.101 million in 2004, to 1.299 million in 2008. The projected increase over the 4-year period is 18.0% and the annual average rate of growth of total employment is 4.2%. This rate of growth of employment is somewhat higher than the annual average rate of growth of employment over the period 1995-2004 (3.6%).

Employment is projected to increase in all economic activities except Agriculture and Mining and Quarrying. For the other economic activities, the annual average rate of growth of employment is highest for Real Estate, Renting and Business Activities (an annual average rate of growth of 8.4%). But the rate of growth also exceeds 6% for three other economic activities: Hotels and Restaurants; Transportation; and Other Community, Social & Personal Services. For Wholesale and Retail Trade the rate of

growth is somewhat lower at 4.7%: but employment in this economic activity formed a significant proportion (18%) of total employment in 2004, so that the growth of this economic activity will likely have a considerable impact on the growth and structure of employment by occupation in Jordan.

The projections were obtained using the linear regression function in Microsoft Excel. The parameters of the regression equations used to derive the projections for each economic activity are included in Appendix 3: Appendix 3 also includes graphs showing the trend in the data together with the projection line for each economic activity.

b. How many new jobs are likely to be generated between 2004 and 2008?

The data in Table V.1 have been used to derive the projected number of new jobs (i.e. the projected change in employment) by economic activity. The data in Table V.2 show that the projections indicate that 198 thousand new jobs will be generated in Jordan between 2004 and 2008.

The changes in employment by economic activity imply that the structure of employment in Jordan will change significantly over the 4-year period. The number of new jobs in Agriculture and Mining & Quarrying is projected to decline, while that in Construction and Manufacturing and in the service-producing activities is projected to increase considerably.

Table V.2: Projected number of new jobs (000) in 2004-08 by economic activity

Economic activity	*Employment in 2004*	*Projected number of new jobs 2004-08*
Agriculture	67.7	-5.6
Mining & Quarrying	7.5	-0.4
Manufacturing	168.4	26.4
Electric, Gas and Water Supply	14.0	1.0
Construction	132.4	25.5
Wholesale and Retail Trade	197.9	40.0
Hotels and Restaurants	31.5	8.9
Transportation	92.4	24.6
Financial Intermediation	18.2	2.0
Real Estate, Renting and Business Activities	36.2	13.9
Public Administration and Compulsory Social Security	81.1	10.7
Education	145.0	22.5
Health and Social Work	49.9	11.3
Other Community, Social & Personal Services	58.4	17.2
TOTAL EMPLOYMENT	**1100.7**	**197.9**

Source: Based on the Occupation Projections Model: the projections in the table are based on data for 2000-04 for Agriculture and Construction, and for 1995-2004 for all other economic activities.

Most of these new jobs will be generated in Wholesale and Retail Trade: this economic activity is projected to add 40 thousand new jobs (about 20% of all new jobs) over the period. A relatively large number of new jobs is also projected for Manufacturing (26 thousand), Construction (26 thousand), Transportation (25 thousand) and Education (23 thousand).

By contrast, employment in Agriculture and in Mining & Quarrying is projected to decline between 2004 and 2008. The projections suggest that about 6 thousand jobs will be lost in Agriculture; and 4 hundred jobs will be lost in Mining & Quarrying.

c. How reliable are the projections?

Do the projections provide a good indication of employment in the various economic activities in 2008? Or are they subject to so much variability (because of the uncertain effects of political and economic factors) that they can only provide poor indicators of actual employment in that year?

Questions such as these can be addressed by studying the annual variation in employment over the time-period used for making the projections: 2000-04 for Agriculture and Construction, and 1995-2004 for the other economic activities. If the annual variation over the period were small, then it would seem reasonable to assume that the difference between the projected employment and actual employment in 2008 would be small: the projection would then provide a good indicator of employment. By contrast, if the annual variation over the period were large, it would seem reasonable to assume that the projection may provide a poor indicator of employment in 2008.

Table V.3: Optional projections of employment by economic activity in 2008 (000)

Economic activity	*Projected employment*	*Lower option*	*Upper option*	*Upper option minus lower option (%)**
Agriculture	62.1	57.9	66.3	13.5
Mining & Quarrying	7.1	6.4	7.7	18.3
Manufacturing	194.8	190.6	198.9	4.3
Electric, Gas and Water Supply	15.0	14.6	15.4	5.3
Construction	157.9	152.2	163.6	7.2
Wholesale and Retail Trade	237.9	230.8	245.1	6.0
Hotels and Restaurant	40.4	38.6	42.2	8.9
Transportation	117.0	110.5	123.5	11.1
Financial Intermediation	20.2	19.3	21.0	8.4
Real Estate, Renting and Business Activities	50.1	48.1	52.1	8.0
Public Administration and Compulsory Social Security	91.8	89.6	93.9	4.7
Education	167.5	165.6	169.4	2.3
Health and Social Work	61.2	60.1	62.3	3.6
Other Community, Social & Personal Services	75.6	71.3	79.9	11.4
TOTAL EMPLOYMENT	**1298.6**	**1255.8**	**1341.4**	**6.6**

Source: Based on the Occupation Projections Model: the projections in the table are based on data for 2000-04 for Agriculture and Construction, and for 1995-2004 for all other economic activities.
** : The range between upper and lower projections expressed as a % of projected employment.*

The data in Table V.3 show the projections of employment by economic activity in 2008, together with a lower and upper option based on the variability of employment over the period 2000-04 for Agriculture and Construction, and 1994-2005 for the other economic activities. The derivation of the two options is described in Appendix 4.

The options show that the projections of total employment vary from 1255.8 thousand to 1341.4 thousand: this range represents 6.6% of projected total employment. The range in the projections is greater than 10% of projected employment for Agriculture, Mining & Quarrying, Transportation and Other Community, Social & Personal Services. This suggests that the projections for these economic activities are subject to relatively high variability. Thus the projections of employment for these economic activities may not provide a good indicator of employment in 2008.

The range between the lower and upper option is relatively small for most other economic activities: for example, it is only 4.3% for Manufacturing, and it is only 2.3% for Education. It would therefore seem reasonable to assume that the projections for these economic activities would provide a good indicator of employment in 2008.

The variability of the projections of employment by economic activity will affect the variability of the projections of employment by occupation. For example, since the projection of employment for Agriculture is subject to relatively high variability, the projections of employment in the occupations closely associated with this economic activity (such as Market Gardeners and Crop Growers) will also be subject to high variability: these projections may not therefore provide a reliable indicator of employment in those occupations.

By contrast, since the projection for Manufacturing is subject to relatively low variability, the projections of employment in the occupations closely associated with this activity (such as Cement and Other Mineral Products Machine Operators) will also be subject to relatively low variability: the occupation projections may therefore provide a fairly reliable indicator of employment.

The two options for projected employment by economic activity have been used in the Model to derive a range for the projections of employment by occupation, and hence to provide a basis for examining the variability in the projections.

V.2 Projections of employment for 1-digit occupations in 2008

The data in Table V.4 show the estimated stock in 2004 and projected employment in 2008 for 1-digit occupations; the table also includes the number of new jobs that are projected to be generated between 2004 and 2008, as well as the projected annual average rate of growth of employment in each 1-digit occupation group.

The projections suggest that new jobs will be generated in most occupation groups between 2004 and 2008. The only exception is Skilled Agricultural & Fishery Workers: the projections suggest that 2.5 thousand jobs for Skilled Agricultural & Fishery Workers will be lost over the period. This is not surprising since employment in the economic activity Agriculture is projected to fall between 2004 and 2008.

Most new jobs (38 thousand) are projected for Craft & Related Workers; 36 thousand new jobs are projected for Service Workers & Shop & Market Sales Workers, and 29 thousand new jobs are projected for Professionals. These three occupation groups

together account for just over half of the new jobs projected for Jordan over the period 2004-08.

Table V.4: Employment (000) by Occupation, 2004 and 2008 (projected)

1-digit Occupation	*Estimated stock in 2004*	*Projected employment in 2008*	*Number of new jobs, 2004-08*	*Annual average rate of growth of employment (%)*
Legislators, Senior Officials & Managers	35.6	42.8	7.1	4.7
Professionals	161.4	190.5	29.1	4.2
Technicians & Associate Professionals	104.6	124.3	19.7	4.4
Clerks	100.7	120.7	20.0	4.6
Service Workers & Shop & Market Sales Workers	165.0	201.4	36.4	5.1
Skilled Agricultural & Fishery Workers	30.1	27.6	-2.5	-2.1
Craft & Related Workers	218.6	256.4	37.7	4.1
Plant & Machine Operators & Assemblers	117.7	141.2	23.5	4.7
Elementary Occupations	166.9	193.7	26.9	3.8
TOTAL EMPLOYMENT	**1100.7**	**1298.6**	**197.9**	**4.2**

Source: Based on the Occupation Projections Model

The projected annual average rate of growth of employment (Table V.4) varies somewhat by occupation group. It is relatively high for several occupation groups including: Legislators, Senior Officials & Managers; Technicians & Associate Professionals; Clerks; Service Workers & Shop & Market Sales Workers; and Plant & Machine Operators & Assemblers. And it is about average for Professionals. By contrast, it is considerably below average for Skilled Agricultural & Fishery Workers and somewhat below average for Elementary Occupations.

The data in Table V.5 show the lower and upper options for the number of new jobs projected by occupation. For example, the data in the table show that the options suggest that the new jobs for Service Workers & Shop & Market Sales Workers will probably lie between 29.4 thousand and 43.4 thousand. The range represents a relatively small proportion (±3.5%) of the projected level of employment in the occupation in 2008.

Table V.5: Projected range in number of new jobs (000) in 2004-08 by occupation

1-digit occupation	*Projected new jobs*	*Lower option*	*Upper option*	*Range in options (%)**
Legislators, Senior Officials & Managers	7.1	5.5	8.8	±3.8
Professionals	29.1	24.4	33.8	±2.5
Technicians & Associate Professionals	19.7	16.2	23.1	±2.8
Clerks	20.0	15.6	24.3	±3.6
Service Workers & Shop & Market Sales Workers	36.4	29.4	43.4	±3.5
Skilled Agricultural & Fishery Workers	-2.5	-4.9	-0.1	±8.8
Craft & Related Workers	37.7	28.1	47.3	±3.7
Plant & Machine Operators & Assemblers	23.5	17.8	29.3	±4.1
Elementary Occupations	26.9	18.7	35.0	±4.2
TOTAL EMPLOYMENT	**197.9**	**150.9**	**244.9**	**±3.6**

Source: Based on the Occupation Projections Model

**: Range for options is expressed as a percentage of projected employment in 2008*

By contrast, the projections suggest that the number of jobs for Skilled Agricultural & Fishery Workers that will be lost between 2004 and 2008 will probably fall between 1 hundred and 4.9 thousand. The range represents a relatively high proportion (±8.8%) of the projected level of employment in the occupation in 2008. Notice that even after allowing for some variation in the projections, it seems highly likely that there will be some job loss in this occupation group.

The percentage range in the options (Table V.5) also provides useful information for decision-making. For example, since the projection for Skilled Agricultural & Fishery Workers is subject to much higher variability than that for Service Workers & Shop & Market Sales Workers, the latter can probably be used with greater confidence than the former.

V.3 Projections of employment for selected 3-digit occupations for Professionals in 2008

The data in Table V.6 show the estimated stock in 2004 and projected employment in 2008 for the five largest 3-digit occupations for Professionals; the table also includes the number of new jobs that are projected to be generated between 2004 and 2008, as well as the projected annual average rate of growth of employment in each of these occupations.

Table V.6: Projected employment 2008, new jobs and annual rate of growth 2004-08 for largest 3-digit occupation groups in Professionals group

Occupation (3-digit)	Estimated stock 2004 (000)	Projected employment 2008 (000)	New jobs 2004-08 (000)	Annual average rate of growth 2004-08 (%)
Architects, Engineers And Related Professionals	21.5	25.9	4.4	4.8
Health Professionals (Except Nursing)	13.8	16.7	2.9	4.8
Secondary Education Teaching Professionals	11.2	12.9	1.7	3.6
Primary And Pre-Primary Education Teaching Professionals	47.6	54.7	7.1	3.6
Business Professionals	39.1	46.3	7.2	4.3
ALL PROFESSIONALS	**161.4**	**190.5**	**29.1**	**4.2**

Source: Based on the Occupation Projections Model

Employment for Professional occupations was highest for Primary and Pre-Primary Education Teaching Professionals in 2004 (47.6 thousand) and projected for 2008 (54.7 thousand). But the employment of Business Professionals (which includes Personnel and Careers Professionals and Accountants) was almost as large: 39.1 thousand in 2004 and 46.3 thousand projected for 2008. Notice also that the projected annual average rate of growth of employment is lower than average for Primary and Pre-Primary Education Teaching Professionals, but slightly above average for Business Professionals. As a result, slightly more new jobs are projected for Business Professionals.

In 2004, there were almost 22 thousand Architects, Engineers and Related Professionals in Jordan; this number is expected to grow to 26 thousand in 2008. Notice also that the projected annual average rate of growth in employment for this occupation is 4.8%, which is much higher than average. Thus employment for Architects, Engineers and Related Professionals is projected to grow at a much higher rate than many other occupations in the Professionals group.

V.4 Projections of employment for selected 4-digit occupations in 2008

The projections of employment in 1-digit, 3-digit and 4-digit occupations for 2008 are included in Appendix 5. However, some of these projections are used here to address the following four questions:

- Which are the ten 4-digit occupations in which most new jobs will be added between 2004 and 2008?
- In which 4-digit occupations will jobs be lost between 2004 and 2008?
- Which are the ten 4-digit occupations in the Professionals group in which most new jobs will be added between 2004 and 2008?
- Which are the ten 4-digit occupations in the Technicians & Associate Professionals group in which most new jobs will be added between 2004 and 2008?

a. Which 4-digit occupations are projected to add the most new jobs?

The ten 4-digit occupations which are projected to add the most new jobs between 2004 and 2008 are shown in Table V.7.

Table V.7: The ten 4-digit occupations projected to add the most new jobs in 2004-08

Code	*Occupation title*	*Stock 2004 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth (%)*	*Range in options (%)*
5220	Shop salespersons and demonstrators	96.4	19.0	4.6	±2.9
8322	Car, taxi and van drivers	58.5	12.9	5.1	±4.6
7122	Bricklayers and stonemasons	53.2	9.9	4.4	±5.2
2331	Primary education teaching professionals	46.5	7.0	3.5	±1.0
5141	Hairdressers, barbers, beauticians and related workers	20.1	5.8	6.5	±5.6
7433	Tailors, dressmakers and hatters	37.5	5.7	3.6	±2.0
9313	Building construction labourers	26.1	4.7	4.3	±5.1
7231	Motor vehicle mechanics and fitters	23.0	4.5	4.5	±3.2
9151	Messengers, package and luggage porters and deliverers	23.1	4.3	4.3	±3.3
9132	Helpers and cleaners in offices, hotels and other establishments	18.3	4.2	5.3	±3.3
TOTAL EMPLOYMENT		**1100.7**	**197.9**	**4.2**	**±3.6**

Most new jobs (19 thousand) are projected for Shop Salespersons and Demonstrators: this represents almost 10% of all new jobs between 2004 and 2008. The annual average rate of growth (4.6%) of employment for this occupation is somewhat higher than that for total employment (4.2%). And the range of options for this occupation is relatively small (±2.9), so that the projection is likely to be a good indicator of employment in the occupation.

The number of new jobs projected in the ten occupations shown in Table V.7 is 78 thousand (39% of all new jobs). It follows that the new jobs projected for Jordan over the period 2004-08 are concentrated in a small number of occupations, and that the number of new jobs in most other occupations is relatively small.

b. In which 4-digit occupations will jobs be lost between 2004 and 2008?

Jobs are projected to be lost between 2004 and 2008 in six 4-digit occupations (see Table V.8). The occupation with the largest projected loss is Field Crop and Vegetable Growers: about 1.4 thousand jobs are projected to be lost in this occupation.

Table V.8: The 4-digit occupations projected to lose jobs in 2004-08

Code	*Occupation title*	*Stock 2004 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth (%)*	*Range in options (%)*
6111	Field crop and vegetable growers	16.7	-1.4	-2.2	±8.9
9211	Farm-hands and labourers	20.0	-1.2	-1.5	±8.1
6121	Dairy and livestock producers	7.4	-0.6	-2.2	±8.9
6122	Poultry producers	3.8	-0.3	-2.2	±8.9
6112	Tree and shrub crop growers	1.3	-0.1	-2.2	±8.8
7111	Miners and quarry workers	2.1	-0.1	-0.7	±8.1
TOTAL EMPLOYMENT		**1100.7**	**197.9**	**4.2**	**±3.6**

The occupations in Table V.8 are closely associated with Agriculture and Mining & Quarrying, so that the loss of jobs reflects the slowdown projected for these two economic activities. Note, however, that the range in the options in each case is well above the average for total employment, indicating that the actual level of employment may be quite different from the projected level. This suggests that the projections may not provide a good indicator of employment in 2008.

c. Which 4-digit occupations in the Professionals group are projected to add the most jobs in 2004-2008?

The ten 4-digit occupations in the Professionals group with the largest number of new jobs between 2004 and 2008 are shown in Table V.9.

Most new jobs (7.0 thousand) are projected for Primary Education Teaching Professionals. A relatively large number of new jobs is also projected for Personnel and Careers Professionals (3.8 thousand) and Accountants (2.8 thousand). Other occupations with a relatively high number of new jobs include Civil Engineers (1.8

thousand), Lawyers (1.8 thousand), Secondary Education Teaching Professionals (1.7 thousand) and Medical Doctors (1.5 thousand).

Table V.9: The ten 4-digit occupations for Professionals projected to add the most new jobs in 2004-08

Code	*Occupation title*	*Stock 2004 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth (%)*	*Range in options (%)*
2331	Primary education teaching professionals	46.5	7.0	3.5	±1.0
2412	Personnel and careers professionals	21.2	3.8	4.2	±3.3
2411	Accountants	15.0	2.8	4.4	±3.5
2142	Civil engineers	9.1	1.8	4.7	±4.6
2421	Lawyers	5.5	1.8	7.3	±3.7
2320	Secondary education teaching professionals	11.2	1.7	3.6	±1.0
2221	Medical doctors	7.0	1.5	5.0	±1.7
2230	Nursing and midwifery professionals	3.2	0.7	5.0	±1.7
2310	College, university and higher education teaching professionals	4.5	0.7	3.6	±1.0
2131	Computer systems designers and analysts	2.4	0.6	5.6	±3.4
All Professionals		**161.4**	**29.1**	**4.2**	**±2.5**

Employment in these ten occupations is estimated to be 125.6 thousand in 2004: this represents 77.8% of the total estimated employment of all Professionals in 2004. The ten occupations are projected to add about 22 thousand jobs over the period 2004-2008: these new jobs represent 77.0% of total number of new jobs projected for all Professionals over the period.

Primary Education Teaching Professionals, Secondary Education Teaching Professionals and College, University and Higher Education Teaching Professionals form a particularly important component in the Professionals group. Employment in these three occupations was 62.2 thousand in 2004 (almost 39% of the total employment of all Professionals). The three occupations are projected to add 9.4 thousand jobs over the period (almost one-third of all new jobs projected for Professionals).

The projections for Medical Doctors and Nursing and Midwifery Professionals are also interesting. Employment in these two occupations in 2004 was 10.2 thousand (6.3% of the total employment of Professionals). But the rate of growth in employment for these two occupations is much higher than that for all Professionals; 2.2 thousand new jobs are projected in these two occupations (this represents 7.5% of all new jobs projected for the Professionals group).

The data in Table V.9 also show that the range in the options is relatively low for the ten occupations: this suggests that the projections for these occupations provide a good indicator of employment in 2008.

d. Which 4-digit occupations in the Technicians & Associate Professionals group are projected to add the most jobs in 2004-2008?

The ten 4-digit occupations in the Technicians and Associate Professionals group with the largest number of new jobs over the period 2004-08 are shown in Table V.10.

These ten occupations are projected to add 11.9 thousand jobs between 2004 and 2008: this represents 60% of the new jobs projected for all occupations in the Technicians and Associate Professionals group.

Most new jobs in this occupation group are projected for Primary Education Teaching Associate Professionals (3.2 thousand new jobs); and 0.7 thousand new jobs are projected for Other Teaching Associate Professionals. Together these two occupations account for about one-third of all new jobs for Technicians and Associate Professionals. The relative importance of these two occupations reflects the relatively high growth of the Education economic activity.

Table V.10: The ten 4-digit occupations for Technicians & Associate Professionals projected to add the most new jobs in 2004-08

Code	*Occupation title*	*Stock 2004 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth (%)*	*Range in options (%)*
3310	Primary education teaching associate professionals	21.6	3.2	3.6	±1.0
3231	Nursing associate professionals	7.7	1.7	5.0	±1.8
3433	Bookkeepers	8.4	1.5	4.1	±3.4
3415	Technical and commercial sales representatives	5.0	1.0	4.5	±3.0
3431	Administrative secretaries and related associate professionals	5.1	0.9	4.3	±3.7
3439	Administrative associate professionals not elsewhere classified	4.6	0.8	4.1	±2.8
3112	Civil engineering technicians	3.9	0.8	4.6	±4.2
3131	Photographers and image and sound recording equipment operators	2.5	0.7	6.3	±3.2
3340	Other teaching associate professionals	3.6	0.7	4.3	±2.2
3114	Electronics and telecommunications engineering technicians	2.7	0.6	5.4	±4.4
All Technicians & Associate Professionals		**104.6**	**19.7**	**4.4**	**±2.8**

VI: Improving the usefulness of the occupation projections

VI.1 Limitations in the usefulness of the projections

The projections of employment by occupation provide indicators of the likely changes in the number and types of jobs if past trends were to continue. But the usefulness of the projections may be limited for a number of reasons. These include:

- Errors in the projections may limit their usefulness for decision-making.
- Projections of employment by occupation provide only part of the information required by students and other decision-makers.
- The projections of employment may be underestimates because they take no account of the new jobs that would be generated by the retirement of workers now in the labour force.
- Labour market conditions are affected not only by the number of new jobs, but also by the supply of individuals qualified to work in different occupations.

These limitations are briefly discussed below.

VI.2 Errors in the projections

The projections of occupational employment derived from the Model described in this Report are subject to error for two reasons:

- There are errors in the data used in the Model; and
- The future is uncertain, so that the outcomes are subject to error.

These two types of error occur for projections of occupational employment in *any* economy. In Canada, for example, the labour market data available are highly reliable; but there are still errors in the data used in the Occupation Projections Model for Canada. And although a sophisticated model is used for making projections of employment by sector in Canada, errors are inherent in the projected outcomes partly because of the uncertainty of the future.

The data used for the Occupation Projections Model for Jordan are subject to error for two main reasons:

- There are errors in the data on employment by economic activity; and
- There are errors in the data on employment by 4-digit occupation for each economic activity

The estimates of employment by economic activity currently available for Jordan exclude estimates of non-Jordanian and informal workers, who may form a significant part of the labour force in Jordan (see NCHRD, November 2004, p.7). The available

time-series data were adjusted by officials in NCHRD/DOS to include non-Jordanian and informal workers before the time-series data were used in the Model. This seemed to be a reasonable procedure in the short-run: but the adjusted data may nevertheless include errors. In the longer-term, methods should be developed for including these excluded workers in the employment estimates for Jordan.

Estimates of employment by economic activity and 4-digit occupation (which are required for the Occupation Projections Model) are available from two sources in Jordan: the ES (an annual survey), and the decennial census. The analysis carried out for this Report showed that the estimates from the two sources differ considerably. Officials in NCHRD/DOS concluded, after analysis of the data, that the ES estimate seemed to be more reasonable than the Census estimate in some cases, and *vice versa*: the estimate that seemed to be more reasonable was used in the Model. In some cases it was difficult to choose between the two estimates: in such cases the average of the two estimates was used in the Model.

This procedure seemed to provide a reasonable approach for developing projections at this time. However there is clearly a need for analysis to determine the reasons for the differences in the occupation data from the two sources; and additional analysis is necessary to ensure that the occupations of workers are accurately coded in the future. An occupation implicitly includes important information about the skills and knowledge of workers, so that the accurate coding of occupations is essential for understanding the labour market and for making reliable projections.

VI.3 Additional information required for decision-making

Projections of employment by occupation provide information on the likely number of jobs by occupation. This information is useful for job-seekers and other decision-makers. But information on factors such as hours of work, working conditions, education and training requirements, wages and the unemployment rate in different occupations is an equally important input for decision-making.

In Canada, information other than projections of employment by occupation is available from a number of sources. For example, information on such factors is available online in the *Job Futures* website. *Job Futures* is a Canadian career tool designed to help individuals plan their job changes and their careers. It provides useful information on about 226 occupational groups; and it provides information on the work experiences of recent graduates from 155 programs of study.

As an example, consider the type of information provided in *Job Futures* for Retail Salespersons and Sales Clerks: this occupation is similar to, but not identical with, the occupation Shop Salespersons and Demonstrators in Jordan. The information available for Retail Salespersons and Sales Clerks in *Job Futures* is summarized in Table VI.1.

Information of this type provides an important supplement to projections of employment by occupation. It enables job-seekers to get a picture of: the type of work involved in an occupation; the education training and experience required; and the work prospects. It

therefore provides a basis for job-seekers to make more informed choices about jobs and careers. Such detailed information is not available for Jordan: but developing a plan to collect this type of information should be considered.

Table VI.1: A summary of information available for Retail Salespersons and Sales Clerks in *Job Futures*

Type of work	***Education, training and experience required***	***Work Prospects***
Assist customers with purchases of merchandise or rental arrangements in person and through Internet-based electronic commerce. Provide information/advice on merchandise. Estimate and quote prices, credit terms, trade-in allowances, warranties, and delivery dates. Prepare sales, rental or leasing contracts and accept cash, cheques, credit cards, and automatic debit payments. Assist in the display of merchandise/other activities. Maintain sales records for inventory control and operate computerized inventory control/re-ordering systems.	You may need a high school diploma. You often need to demonstrate sales ability and product knowledge when selling complex or valuable merchandise such as automobiles, antiques, and computers. You may also need a university degree or college diploma, as well as specific subject matter courses or training. Employers may also provide technical or sales training programs. With experience and additional training, you may move up the ranks to a retail supervisory position. Many recent entrants have a high school diploma, and almost 3 in 10 have a trade/vocational certificate or community college diploma.	Employment growth is below average because more people are turning to the Internet to research products, comparison shop, and purchase goods. Hourly wages ($10.22) are low compared to the average ($16.91), although the rate of wage growth is average. The unemployment rate (5.6%) is about average (5%). A large number of school-leavers/immigrants seek to fill these job openings.

Source: Obtained online from Service Canada website

VI.4 New jobs generated by the retirement of workers already in the labour force

The projections of employment by occupation provide an indication of the number of new jobs that would be generated if past trends were to continue into the future: but they exclude the number of new jobs that would be generated through the retirement of workers already in the labour force.

The number of jobs generated in an occupation by the retirement of current workers depends on two main factors: the age distribution of workers in the occupation, and the age at which they retire. The effects of these two factors may differ considerably from one occupation to the other. Workers in a given occupation may be older than those in another occupation, so that the jobs generated by retirement may be higher for the former than the latter. Similarly, because of differences in factors such as working conditions and wages, workers in different occupations may retire at different ages. It follows that projections of the number of jobs generated by retirement could be developed if data were available on the age distribution of workers in each occupation and on the age at which they retire.

Data on the age distribution of workers in different occupations are available in the 2004 Census: but, as noted above, there is evidence that the occupation data in the Census

are biased. Some initial analysis should be undertaken to determine if this bias is reflected in the age distribution of workers in different occupations.

VI.5 Supply adjustments

Projections of employment by occupation provide estimates of the jobs that are likely to be required in the future. But they provide no information on the availability of individuals to fill those jobs. Will there still be new jobs to be filled by the time that students complete their education and join the labour market? Will individuals with the required skills and knowledge be available to fill the new jobs? How many jobs are likely to be filled by new graduates from the education and training system, and how many by workers already in the labour market? How many jobs will be filled by non-Jordanians?

These questions are important, but addressing them is complex: it requires detailed quantitative data that may not be available in Jordan at this time. Steps should be taken to develop these data over the long-term; but in the short-term, some attempt can be made to address these questions using the quantitative information available, as well as qualitative information obtained from knowledgeable individuals and experts in Jordan.

- Will there still be new jobs to be filled by the time that students graduate and join the labour market?

  There is no guarantee that the projected number of new jobs will still be available when students graduate and join the labour market. The projections are based on the assumption that past trends will continue into the future. But the future is uncertain and economic or political conditions may change sufficiently to generate changes in employment that do not fit the trend. Students should be encouraged to maintain flexibility in the skills and knowledge they acquire, and to change their plans as labour market conditions change.

- Will individuals with the required skills and knowledge be available to fill the new jobs?

  The education and training required for entry to an occupation vary from one occupation to the other. Little formal education is required for some occupations; and the required training can sometimes be obtained in a short period of time. The availability of individuals to fill such jobs will depend primarily on factors such as wages, working conditions, and the demand for similar jobs. As an example, little formal education may be required for individuals who want to work as Shop Salespersons and Demonstrators; and it may be possible for employers to provide the training required for this occupation over a short time period. It may therefore be relatively easy for employers to fill such jobs.

  By contrast, a university degree is required for entry to some occupations; and the required training can often only be provided over a long period of time. The availability of individuals to fill such jobs will be determined primarily by the number of students enrolled in the required education and training programs, and

on special requirements (such as a licence or certification) for jobs in the particular occupation. Primary Education Teaching Professionals is an example of such an occupation. Filling new jobs in such occupations may therefore require advance planning.

- How many jobs are likely to be filled by workers already in the labour market, and how many by new graduates from the education and training system?

  Individuals already in the labour market may provide an important source of the potential labour supply for some occupations. This will depend in part on the requirements for entry into occupations: the relevant factors include the education and training required, and the need for a licence or certificate for employment.

  Some occupations may require very little formal education or training, and workers may not need a licence or certificate to enter the occupation. Shop Salespersons and Demonstrators may be an example of such an occupation. Workers already in the labour market may be encouraged to move to the occupation if working conditions, wages and other similar factors were better than in the occupation in which they were working. Thus many new jobs in the occupation could probably be filled by workers already in the labour market.

  By contrast, considerable formal education or training may be required before individuals can enter some occupations. Primary Education Teaching Professionals is an example: a post-secondary diploma or certificate may be required for individuals to enter the occupation. In such occupations, most new jobs will probably be filled by new graduates from the education and training system.

- How many jobs will be filled by non-Jordanians entering to Jordan, and how many jobs will be created by employed Jordanians leaving Jordan?

  As noted earlier, many people enter Jordan each year from neighbouring countries. Non-Jordanians working in Jordan often have lower skills and less education than Jordanians, so that they tend to take jobs in occupations with low formal education and training requirements. If the in-flow of non Jordanians were to continue as in recent years, many of the new jobs with low education and training requirements would probably be filled by non-Jordanians. The occupation Messengers, Package and Luggage Porters and Deliverers is an example of such an occupation.

  At the same time, many Jordanians have left Jordan to take jobs in the Gulf States and in other countries. Workers who leave Jordan tend to have specific skills or knowledge that can only be obtained through considerable formal education and training. If this out-flow were to continue as it has in the past, it would generate additional new jobs with relatively high education and training requirements.

VII: Conclusions and recommendations

VII.1 Does the Model provide a reasonable basis for projecting employment by occupation in Jordan?

The projections of employment by occupation generated by the Model described in this Report are subject to error for two reasons:

- There are errors in the data used in the Model; and
- The future is uncertain, so that the outcomes are subject to error.

The projections cannot therefore be regarded as precise indicators of employment at a future date (this is true even for countries, such as Canada, with much better data and with considerable experience in making projections of employment by occupation). Projections of employment by occupation are nevertheless useful in that they provide an indication of the likely change in employment, and in the magnitude of the projected change.

The reliability of the occupation projections depends partly on the reliability of the data on the occupational structure of each economic activity available for Jordan. Estimates of employment by economic activity and 4-digit occupation are available from two sources in Jordan: the ES (an annual survey), and the decennial Census. But the analysis for this Report showed that the estimates from the two sources differ considerably. Officials in NCHRD/DOS compared the ES and Census estimates for 2004 with data from other sources; their recommendations as to which was the better estimate, were used for deriving the projections generated by the Model.

This seemed to be a reasonable strategy in the short-run: but the reasons for the differences between the data from the ES and from the Census should be examined, and steps should be taken to improve the data over the long-run. It would be useful to carry out an analysis of the current procedures used to code the occupations of workers in Jordan. If it turned out that there have been major errors in coding the data, the data on occupations should be re-coded: these data could then be used in the Model to generate more reliable projections.

VII.2 Assessing the projections

The Occupation Projections Model described in this Report is a quantitative model: the projections generated by the Model are based on analysis of the available data and on the extrapolation of the trends in these data. The projections are therefore the result of a mechanical process and they may not be consistent with qualitative information available in Jordan. It would be helpful for knowledgeable Jordanians (including business groups, researchers, government experts, economists, and decision-makers) to compare the projections with the changes in employment that seem likely given their knowledge and other qualitative information in Jordan.

Addressing questions such as the following could help to improve the quality on the results.

- Do the projections of employment by economic activity seem reasonable in the light of the current developments in the economy?
- Is it likely that the change in employment in a given economic activity, say Construction, will be as projected in the Model?
- Are the projections of employment for selected occupations (such as teachers) consistent with the prevailing view about likely changes?

The projections should also be assessed by examining the effects of changes in the assumptions in the Model.

- How much would the projections of employment by occupation change if the rate of growth of employment in a given economic activity, say Construction, were lower than assumed?
- What would be the effects of, say, using a different occupational distribution for a specific economic activity?

Addressing such questions would provide a better understanding of the workings of the Model.

Updating the Model to include new or modified data would also provide a basis for assessing the projections. Data from the ES form an essential input for the Model. ES data on employment by 4-digit occupation and economic activity for the period 2000-02 were used for deriving the occupational distribution of each economic activity. Similar data are also available for ES for 2003; but these data could not be used because of differences in the coding of occupations for 2003 compared with 2000-02. It would be useful if steps could be taken to correct these differences in the data for 2003 so that more recent data could be used in the Model.

VII.3 Suggestions for improving the usefulness of the projections

The projections of employment by occupation provide only part of the information required by students and other decision-makers. The usefulness of the projections could be improved by providing information for students and other decision-makers on the type of work involved in different occupations, on the education and training required for different occupations, and on labour market indicators (such as hourly wages and the unemployment rate) for different occupations.

In addition, the projections of employment take no account of the new jobs that would be generated by the retirement of workers now in the labour force: they therefore probably underestimate the number new jobs that will be generated between 2004 and 2008. Analysis to project the number of new jobs that would be generated by the retirement of workers already in the labour force would help to improve the usefulness of the projections.

Labour market conditions are affected not only by the number of new jobs, but also by the supply of individuals qualified to work in different occupations. The education and training required for entry to different occupations vary considerably. Some occupations require little formal education and/or a short period of training: it may be relatively easy for employers to fill such jobs. But some occupations require a university degree or college certificate, and/or a long period of training: filling new jobs in such occupations may require advance planning. Analysis of the potential supply of workers from different sources would help to improve the usefulness of the projections.

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Bergeron, Louis-Phillippe, Kevin Dunn, Mario Lapointe, Wayne Roth, and Nicolas Tremblay-Côté: *Looking Ahead: A Ten-Year Outlook for the Canadian Labour Market, 2004-2013*, Human Resources and Skills Development (HRSDC) Canada, Gatineau, Québec, October 2004.

Appendix 1: Mathematical description of the Model

In the Occupation Projections Model, projections of employment by occupation are derived using projections of employment by economic activity in the projection year (2008), and the occupational structure of economic activities in the base year (2004). The projections are derived using linear equations of the following type:

$$OE_{occ1,\ 2008} = (OE_{occ1,\ 2004})/(EA_{1,2004})*(EA_{1,2008}) + (OE_{occ1,\ 2004})/(EA_{2,2004})*(EA_{2,2008}) + \ldots (OE_{occ1,\ 2004})/(EA_{14,2004})*(EA_{14,2008})$$

In this equation, the subscript *occ1* represents the first 4-digit occupation in the occupation classification used in Jordan (i.e. Legislators [occupation code 1110]). EA_1 represents the level of employment in economic activity *1* (Agriculture), EA_2 represents employment in economic activity *2* (Mining & Quarrying), and so on. The subscripts *2004* and *2008* represent the base year and projection year respectively.

These equations can be expressed in matrix notation as:

OE = OC*EA

In this equation:

- **OE** is a column vector with about 350 rows, each representing projected employment in a 4-digit occupation in 2008;
- **OC** is a matrix with 14 columns (the economic activities in the Model) and about 350 rows showing the proportion of employment in each occupation and economic activity; and
- **EA** is a column vector showing employment in 14 economic activities in 2008.

Appendix 2: Time-series estimates of employment by economic activity

As noted in this Report, time-series estimates of employment by economic activity in Jordan are available from the EUS and the ES. However, the two sets of estimates differ significantly, and they have been compared by Megill *et al* in a report prepared for the Department of Statistics (DOS) '*Analysis for Comparing the Employment Estimates from the Different Surveys at the Department of Statistics' (*27 August 2003). Megill *et al* concluded that:

- The ES provides more accurate estimates of employment for economic activities with a high level of coverage, such as Public Administration, and for activities which are highly concentrated in a few areas or establishments, such as Mining and Quarrying.
- The EUS provides more accurate estimates than the ES for Manufacturing, Construction, Wholesale and Retail Trade, Hotels and Restaurants, and Transportation.

We followed these conclusions in developing an initial set of single time-series estimates of employment by economic activity for use in the Occupation Projections Model. The source of the initial estimate for the time-series data for each economic activity is shown in Table A2.1.

Table A2.1: Source of initial estimate of employment for a single time-series

Economic activity	*Source of initial estimate*
Agriculture	**EUS**
Mining & Quarrying	**ES**
Manufacturing	**EUS**
Electric, Gas and Water Supply	**ES**
Construction	**EUS**
Wholesale and Retail Trade	**EUS**
Hotels and Restaurant	**EUS**
Transportation	**EUS**
Financial Intermediation	**ES**
Real Estate, Renting and Business Activities	**ES**
Public Administration and Compulsory Social Security	**ES**
Education	**ES**
Health and Social Work	**ES**
Other Community, Social & Personal Services	**EUS**

Estimates of employment by economic activity from the EUS and ES for the period 1995-2004 were provided by officials in the National Center for Human Resource Development (NCHRD) and the Department of Statistics (DOS) in Jordan. The data from the EUS refer to the 3rd Quarter in the year so that the reference period would be roughly the same as that for the ES.

These initial time-series estimates were then adjusted by officials in NCHRD and DOS to take account of non-Jordanians. The adjusted time-series data for Jordanians are shown in Table A2.2; and the adjusted data for non-Jordanians are shown in Table A2.3. The adjusted estimates for Jordanians and non-Jordanians are shown in Table A2.4: these data were used in the Model.

Table A2.2: Adjusted Employment (000) by Economic Activity, 1995-2004: Jordanians

Economic activity	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Agriculture	49.5	77.3	59.6	73.2	58.0	50.7	41.3	41.6	41.5	37.6
Mining & Quarrying	7.8	7.9	8.6	9.2	7.7	9.1	8.5	6.9	7.1	7.0
Manufacturing	96.0	96.1	109.2	119.2	109.8	106.2	118.7	126.1	128.2	131.7
Electric, Gas and Water Supply	13.4	13.8	13.4	13.4	12.9	14.2	13.9	14.6	14.1	14.0
Construction	55.0	62.2	59.2	81.8	67.9	67.9	65.5	59.1	66.6	73.7
Wholesale and Retail Trade	116.4	127.9	145.1	139.3	160.2	166.0	170.8	176.8	174.1	186.4
Hotels and Restaurant	12.4	13.8	16.7	22.4	19.5	20.9	24.0	20.5	23.9	22.8
Transportation	79.8	75.4	75.2	75.2	98.2	97.5	100.9	103.8	100.3	90.7
Financial Intermediation	16.2	16.9	15.9	16.5	17.1	19.6	20.5	17.8	18.1	18.0
Real Estate, Renting and Business Activities	18.4	19.1	24.1	21.6	27.5	30.1	38.1	37.2	37.4	34.7
Public Administration and Compulsory Social Security	67.8	67.6	66.9	69.2	69.5	74.0	77.2	81.7	82.4	77.8
Education	93.6	102.6	108.2	112.2	121.7	123.8	127.6	131.3	140.4	143.5
Health and Social Work	27.2	30.0	31.6	32.9	38.9	42.4	43.4	44.8	46.7	48.8
Other Community, Social & Personal Services	35.6	41.4	41.1	63.3	55.8	54.3	55.7	58.2	61.7	56.4
Total	**689.1**	**752.1**	**774.7**	**849.4**	**864.7**	**876.7**	**906.1**	**920.5**	**942.5**	**943.1**

Table A2.3: Adjusted Employment (000) by Economic Activity, 1995-2004: non-Jordanians

Economic activity	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Agriculture	18.7	16.6	19.2	31.8	30.1	19.6	18.2	18.4	20.3	30.1
Mining & Quarrying	0.3	0.3	0.3	0.4	0.3	0.3	0.2	0.2	0.2	0.4
Manufacturing	7.5	7.9	7.4	6.9	11.1	18.5	24.1	23.0	35.5	36.7
Electric, Gas and Water Supply	0.0	0.0	0.0	0.1	0.0	0.0	0.1	1.0	0.0	0.0
Construction	69.8	69.0	62.8	54.3	41.7	26.8	35.1	39.5	43.2	58.7
Wholesale and Retail Trade	2.1	2.1	1.9	2.0	8.9	15.1	9.8	10.3	12.0	11.6
Hotels and Restaurant	2.5	2.7	2.5	2.2	5.8	7.9	5.1	5.6	7.2	8.7
Transportation	1.4	1.5	1.6	1.5	1.6	1.7	1.7	2.0	1.7	1.8
Financial Intermediation	0.2	0.2	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.2
Real Estate, Renting and Business Activities	1.5	1.7	1.6	1.1	0.8	2.3	0.9	0.7	1.4	1.5
Public Administration and Compulsory Social Security	4.2	3.6	3.3	2.9	3.6	3.4	3.9	3.6	3.0	3.3
Education	0.9	1.0	1.1	1.0	1.2	1.2	1.5	1.7	1.2	1.5
Health and Social Work	0.5	0.6	0.6	0.5	0.7	0.8	0.6	0.7	1.3	1.1
Other Community, Social & Personal Services	0.2	0.2	0.2	0.5	1.2	1.5	2.5	1.4	1.7	2.0
Total	**110.0**	**107.4**	**102.7**	**105.2**	**107.2**	**99.3**	**103.7**	**108.1**	**128.8**	**157.6**

Table A2.4: Adjusted Employment (000) by Economic Activity, 1995-2004: Jordanians and non-Jordanians

Economic activity	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Agriculture	68.2	93.8	78.9	105.0	88.0	70.3	59.6	60.0	61.8	67.7
Mining & Quarrying	8.1	8.3	8.9	9.6	7.9	9.4	8.7	7.1	7.3	7.5
Manufacturing	103.5	104.0	116.7	126.0	121.0	124.7	142.8	149.1	163.7	168.4
Electric, Gas and Water Supply	13.4	13.8	13.4	13.4	12.9	14.2	14.0	15.6	14.1	14.0
Construction	124.7	131.3	122.0	136.1	109.7	94.7	100.6	98.6	109.8	132.4
Wholesale and Retail Trade	118.6	130.0	146.9	141.3	169.1	181.1	180.6	187.1	186.1	197.9
Hotels and Restaurant	15.0	16.5	19.2	24.6	25.3	28.7	29.2	26.1	31.2	31.5
Transportation	81.2	76.9	76.8	76.6	99.8	99.2	102.6	105.8	102.0	92.4
Financial Intermediation	16.5	17.1	16.0	16.5	17.2	19.7	20.5	17.9	18.2	18.2
Real Estate, Renting and Business Activities	19.9	20.8	25.7	22.6	28.3	32.4	39.0	37.9	38.8	36.2
Public Administration and Compulsory Social Security	72.0	71.2	70.2	72.2	73.1	77.5	81.1	85.3	85.4	81.1
Education	94.5	103.7	109.3	113.3	122.9	125.0	129.1	133.0	141.6	145.0
Health and Social Work	27.8	30.5	32.2	33.4	39.6	43.3	44.0	45.5	48.0	49.9
Other Community, Social & Personal Services	35.8	41.7	41.3	63.8	57.0	55.8	58.1	59.6	63.5	58.4
Total	**799.1**	**859.5**	**877.4**	**954.6**	**971.9**	**976.0**	**1009.8**	**1028.6**	**1071.4**	**1100.7**

Appendix 3: Projections of employment by economic activity

Projections of employment by economic activity in 2008 (and 2009) were obtained by the simple extrapolation of the time-series data in Table A2.4. These data were used to estimate the parameters of a linear regression equation (using Microsoft Excel) for employment for each economic activity.

As noted in the text of this Report, we used data for 2000-04 for making the final projections for Agriculture and Construction; but we used data for 1995-2004 for making the projections for all other economic activities.

For Agriculture and Construction, the data were expressed in index form (with employment in 2000 =100) before the regression estimates were derived; for the other economic activities, the data were expressed in index form (with employment in 1995 =100) before the regression estimates were derived. It follows that projections derived using the regression parameters in Table A3.1 must be adjusted by multiplying the projections by employment in 2000, or 1995, depending on the particular economic activity. Note also that projections derived using the numbers in the table may differ from those generated by the Model because of rounding errors. 94.7

Table A3.1: Employment by economic activity 1995 (000), and parameters of linear regression equations used for projecting employment

Economic activity	*Estimated employment 1995*	*Estimated employment 2000*	Intercept	Slope	R^2
Agriculture	N.A.	70.3	92.1	-0.4	0.009
Mining & Quarrying	8.1	N.A.	111.6	-1.7	0.231
Manufacturing	103.5	N.A.	88.3	7.1	0.941
Electric, Gas and Water Supply	13.4	N.A.	98.5	1.0	0.289
Construction	N.A.	94.3	86.4	8.9	0.781
Wholesale and Retail Trade	118.6	N.A.	97.8	7.4	0.922
Hotels and Restaurants	15.0	N.A.	97.7	12.3	0.873
Transportation	81.2	N.A.	92.0	3.7	0.570
Financial Intermediation	16.5	N.A.	98.5	1.7	0.346
Real Estate, Renting and Business Activities	19.9	N.A.	86.8	11.8	0.861
Public Administration and Compulsory Social Security	72.0	N.A.	93.5	2.4	0.795
Education	94.5	N.A.	97.5	5.7	0.986
Health and Social Work	27.8	N.A.	91.1	9.2	0.972
Other Community, Social & Personal Services	35.8	N.A.	109.4	7.3	0.615

Notes: Data for 2000-04 were used for projections for Agriculture and Construction, and for 1995-2004 for all other economic activities.

The coefficient of multiple determination (R^2) for each equation (economic activity), is also shown in Table A3.2. The coefficients for some economic activities (such as Manufacturing) are close to 1 (the maximum possible value), indicating that the equations provide a good fit of the data. This means that if the past trend were to

continue into the future, the projections for 2008 would provide a reasonably good indication of future employment for those economic activities.

The coefficients are close to 0 (the minimum possible value) for some economic activities (such as Agriculture) indicating that the regression equation does not provide a very good fit of the data. This means that even if the past trend were to continue into the future, the projection for 2008 may not provide a good indicator of future employment in that economic activity.

It is also interesting to examine the graphs of employment for the time-period used for deriving the projections for each economic activity: 2000-04 for Agriculture and Construction, and 1995-2004 for all other economic activities. These graphs are shown in Figures A3.1 through A3.14. Although projections for 2008 are discussed in the text of this Report, projections for 2009 are included in Appendix 6: the graphs therefore show projections to 2009. The graphs are shown in index form with employment in 2000 = 100 for Agriculture, and with employment in 1995 = 100 for all other economic activities.

Figure A3.1: Employment in Agriculture 2000-2004, and projection to 2009 (Employment in 2000 = 100)

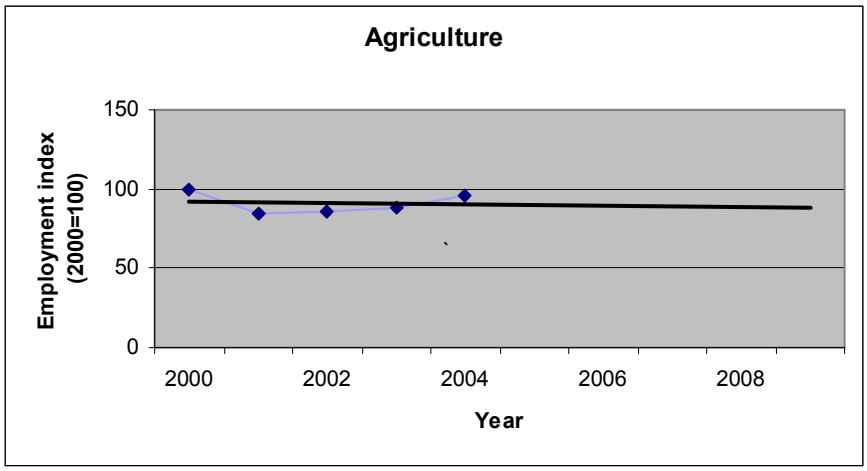


Figure A3.2: Employment in Mining & Quarrying 1995-2004, and projection to 2009, (Employment in 1995 = 100)

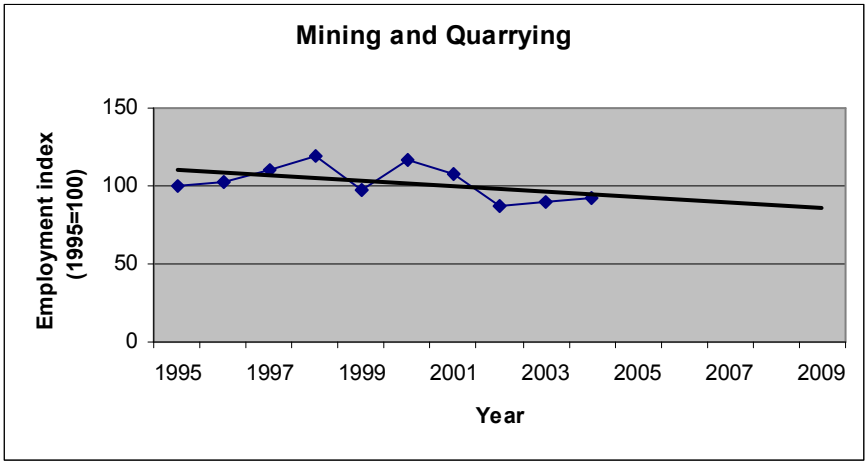


Figure A3.3: Employment in Manufacturing 1995-2004, and projection to 2009, (Employment in 1995 = 100)

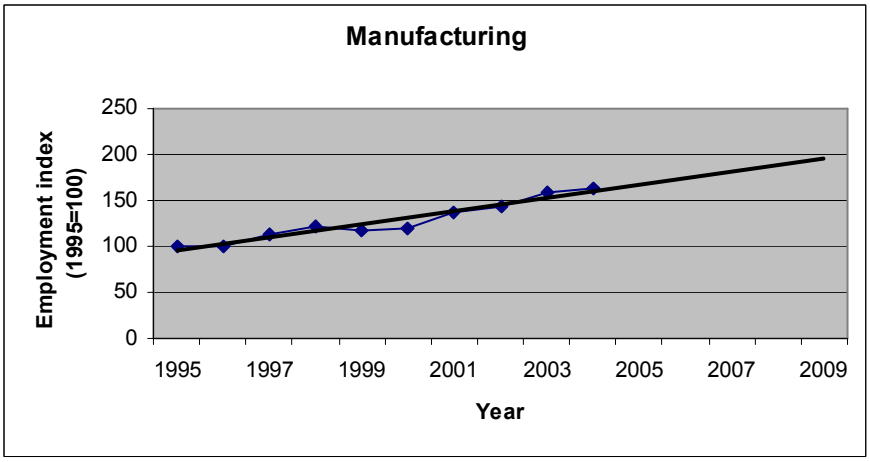


Figure A3.4: Employment in Electric, Gas & Water Supply 1995-2004, and projection to 2009, (Employment in 1995 = 100)

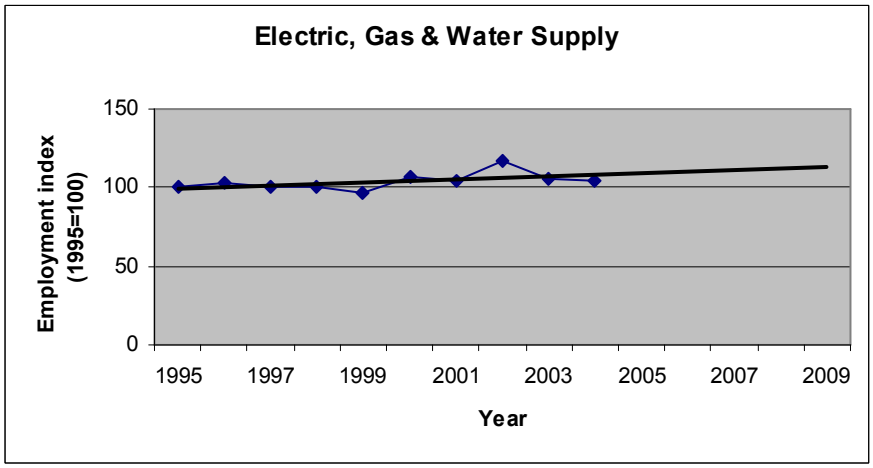


Figure A3.5: Employment in Construction 1995-2004, and projection to 2009, (Employment in 2000 = 100)

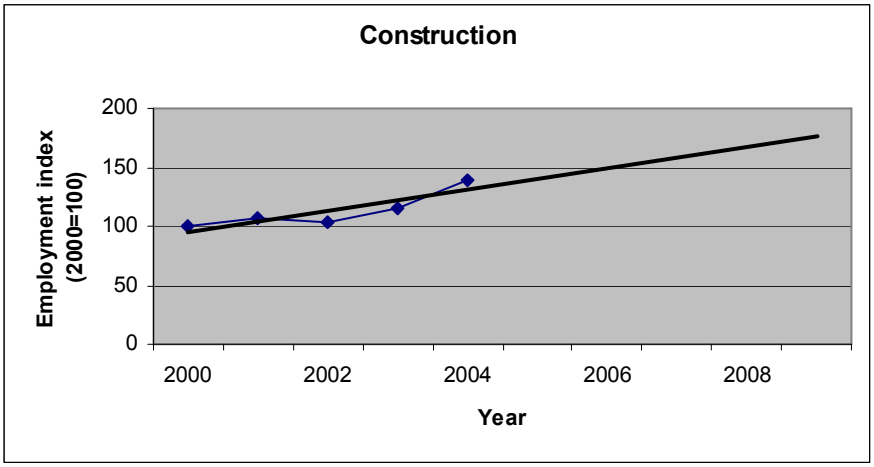


Figure A3.6: Employment in Wholesale & Retail Trade 1995-2004, and projection to 2009, (Employment in 1995 = 100)

Figure A3.7: Employment in Hotels & Restaurants 1995-2004, and projection to 2009, (Employment in 1995 = 100)

Figure A3.8: Employment in Transportation 1995-2004, and projection to 2009, (Employment in 1995 = 100)

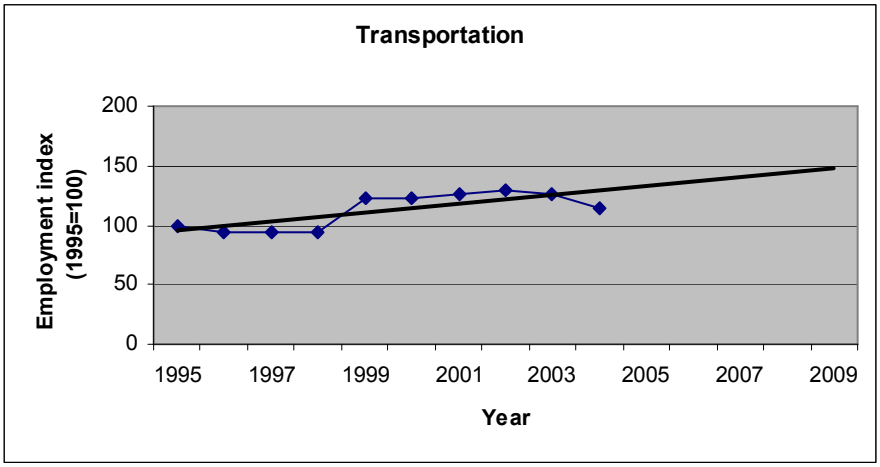


Figure A3.9: Employment in Financial Intermediation 1995-2004, and projection to 2009, (Employment in 1995 = 100)

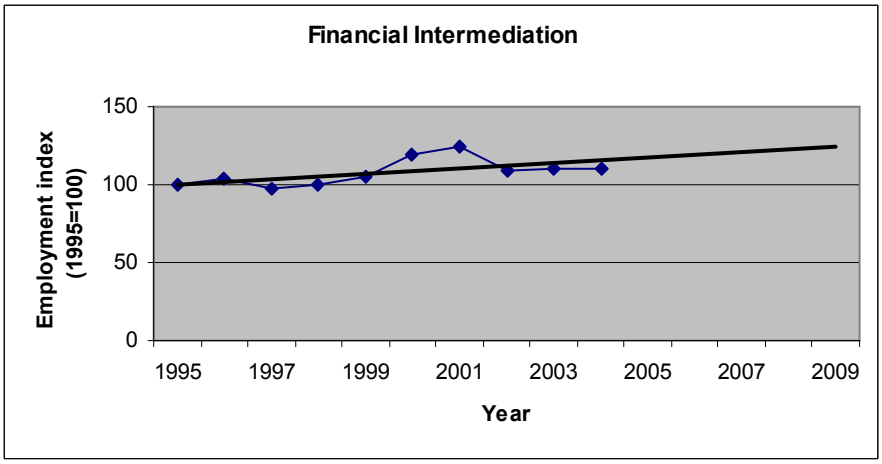


Figure A3.10: Employment in Real Estate, Renting & Business Activities 1995-2004, and projection to 2009, (Employment in 1995 = 100)

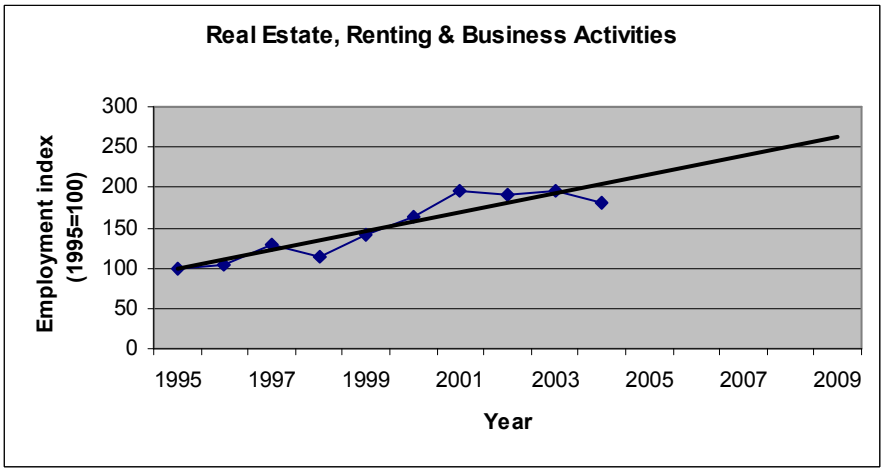


Figure A3.11: Employment in Public Administration 1995-2004, and projection to 2009, (Employment in 1995 = 100)

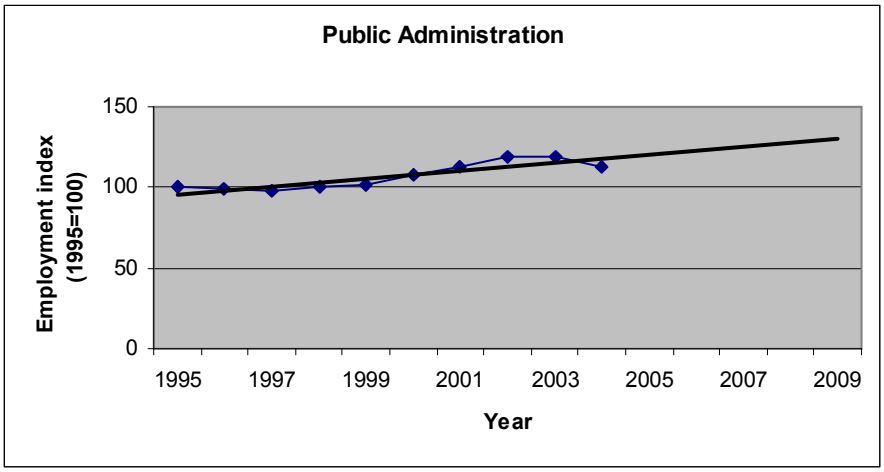


Figure A3.12: Employment in Education 1995-2004, and projection to 2009, (Employment in 1995 = 100)

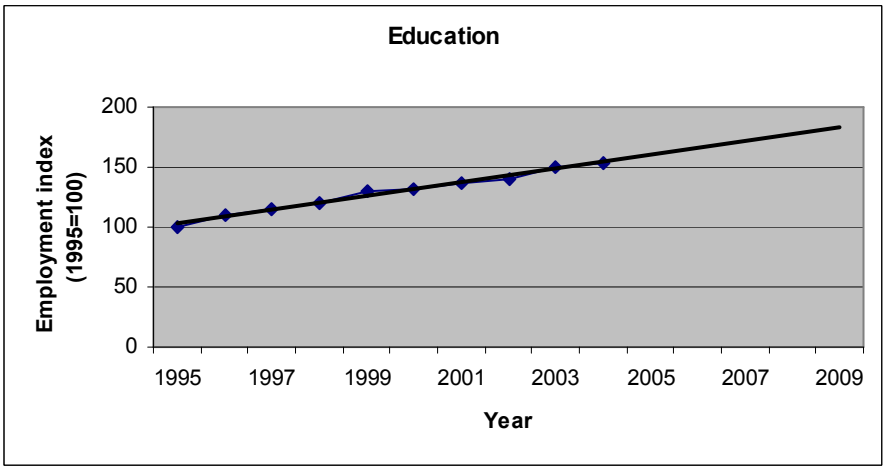


Figure A3.13: Employment in Health & Social Work 1995-2004, and projection to 2009, (Employment in 1995 = 100)

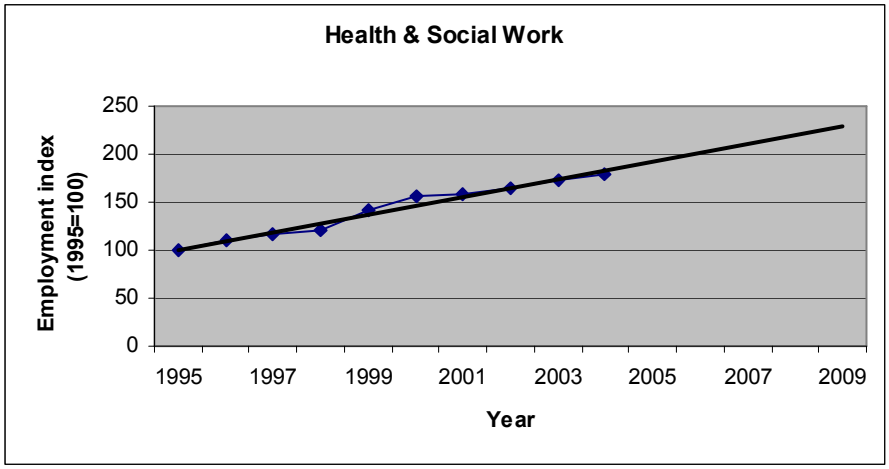
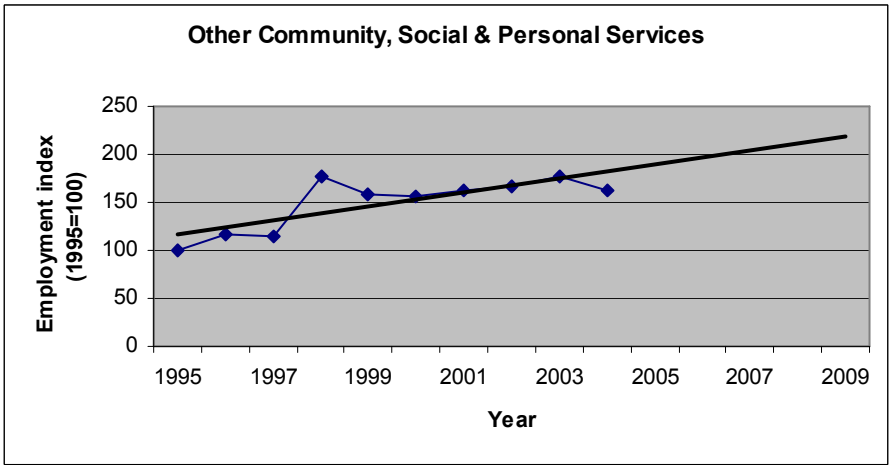


Figure A3.14: Employment in Other Community, Social & Personal Services 1995-2004, and projection to 2009, (Employment in 1995 = 100)



Appendix 4: The potential variability of the employment projections

The potential variability of the projections of employment by economic activity can be studied by examining the annual variation in employment over the time-period used for making the projections: 2000-04 for Agriculture and Construction and 1995-2004 for the other economic activities. If the annual variation over the period were small, then it would seem reasonable to assume that the difference between the projected employment and actual employment in 2008 would be small: the projection would then provide a good indicator of employment. By contrast, if the annual variation over the period were large, it would seem reasonable to assume that the projection could provide a poor indicator of employment in 2008.

Table A4.1: Average absolute deviation from the trend in employment for Agriculture and Construction based on data for 2000-04, and range used in Model (% of employment in 2000)

Economic activity	*Average absolute deviation from trend (% of value in 1995)*	*Range used in Model (% of value in 1995)*	*Lower option (000)*	*Upper option (000)*
Agriculture	5.8	±6.0	57.9	66.3
Construction	6.1	±6.0	152.2	163.6

Source: Based on the Occupation Projections Model: projections based on data for 2000-04.

The data in Column (2) in Table A4.1 show the average absolute annual deviation from the trend in employment for Agriculture and Construction for the period 2000-04: these data are shown in index form (with employment in 2000 set to 100).These deviations are relatively small, so that the projections for these two economic activities are likely to be fairly reliable.

Similar data are shown in Table A4.2 for the other economic activities, that is, for all economic activities except Agriculture and Construction. The data in Table A4.2 are based on time-series data for the period 1995-2004: these data are shown in index form (with employment in 1995 set to 100).

The data in Table A4.2 show that the average absolute deviation was more than 10% for three economic activities: Hotels and Restaurants; Real Estate, Renting and Business Activities; and Other Community, Social and Personal Services. Thus the employment estimates for these activities have varied significantly from one year to the next between 1885 and 2004: and if this pattern of variation were to continue into the future, projected employment could be quite different from actual employment in 2008. Thus the projections of employment for these activities could be subject to considerable variability or uncertainty: they may not therefore provide a reliable indicator of employment in these activities.

By contrast, the average absolute deviation from the trend is 4% or lower for five economic activities: Manufacturing; Electric, Gas and Water Supply; Public Administration and Compulsory Social Security; Education; and Health and Social Work. If the pattern of variation over the period 1995-2004 were to continue into the future, the projections of employment for these economic activities would be subject to

relatively low variability or uncertainty: it would therefore seem reasonable to assume that these projections would provide a fairly reliable indicator of employment in 2008.

Table A4.2: Average absolute deviation from the trend in employment all economic activities (except Agriculture and Construction) based on data for 1995-2004 and range used in Model (% of employment in 1995)

Economic activity	*Average absolute deviation from trend (% of value in 1995)*	*Range used in Model (% of value in 1995)*	*Lower option (000)*	*Upper option (000)*
Mining & Quarrying	8.0	±8.0	6.4	7.7
Manufacturing	4.3	±4.0	190.6	198.9
Electric, Gas and Water Supply	3.1	±3.0	14.6	15.4
Wholesale and Retail Trade	5.5	±6.0	230.8	245.1
Hotels and Restaurant	12.0	±12.0	38.6	42.2
Transportation	8.3	±8.0	110.5	123.5
Financial Intermediation	5.4	±5.0	19.3	21.0
Real Estate, Renting and Business Activities	10.4	±10.0	48.1	52.1
Public Administration and Compulsory Social Security	3.2	±3.0	89.6	93.9
Education	1.6	±2.0	165.6	169.4
Health and Social Work	3.5	±4.0	60.1	62.3
Other Community, Social & Personal Services	12.0	±12.0	71.3	79.9

Source: Based on the Occupation Projections Model: projections based on data for 1995-2004.

In order to examine the effects of the variability of the projections of employment by economic activity on the projections of employment by occupation, we derived two other projections of employment by economic activity (in Table A4.1 and Table A4.2 we refer to these as the lower option and the upper option). The data in Column (3) in each table shows the range (as a percentage of the values in 1995) used in the Model for deriving the lower and upper options for employment in 2008. The range has been set as the rounded value of the average absolute deviation from the trend for employment in each economic activity.

The data in Column (4) and (5) in Table A4.1 and Table A4.2 show the employment projections in 2008 based on the lower and upper option respectively. The options suggest, for example, that employment in 2008 for Agriculture could lie between 57.9 thousand and 66.3 thousand. This range of about 9 thousand is large relative to the projection, so that the projection for this economic activity may not be a good indicator of employment in 2008. By contrast, the options suggest that employment in 2008 for Manufacturing could lie between 190.6 thousand and 198.9 thousand. This range, of about 8 thousand, is relatively small: it suggests that the projection of employment in this economic activity may be a reasonably good indicator of actual employment in 2008.

The lower and upper options for the projections of employment by economic activity in 2008 were used in the Occupation Projections Model to derive a range for the projections of employment by occupation.

Appendix 5: Projections of employment for 4-digit occupations in 2008

The data in Table A5.1 show the estimated stock in 2004 and the employment projections in 2008 for 1-digit, 3-digit and 4-digit occupations. The estimates are rounded to the nearest thousand since exact numbers would tend to create a false sense of the reliability of the projections. Occupations with an estimated stock in 2004 of 0.1 (thousand) are excluded from the table.

The table also includes the number of new jobs (in thousands) projected for the period 2004-08, as well as the annual average rate of growth in employment (%). A lower and upper option (as a percentage of the employment projection) is also included in the table.

Table A5.1: Projected employment 2008, and projected new jobs and annual rate of growth, 2004-08

Occupation (1-DIGIT), (3-DIGIT) and (4-digit)	*4-digit Code*	*Estimated stock 2004 (000)*	*Projected employment 2008 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth 2004-08 (%)*	*Lower option (% of projection)*	*Upper option (% of projection)*
LEGISLATORS, SENIOR OFFICIALS & MANAGERS		**35.6**	**42.8**	**7.1**	**4.7**	**-3.8**	**3.8**
LEGISLATORS		0.5	0.6	0.1	3.3	-2.4	2.4
Legislators	1110	0.5	0.6	0.1	3.3	-2.4	2.4
SENIOR GOVERNMENT OFFICIALS		2.5	2.9	0.4	3.6	-2.8	2.8
Senior Government Officials	1120	2.5	2.9	0.4	3.6	-2.8	2.8
SENIOR OFFICIALS OF SPECIAL-INTEREST ORGANISATIONS		0.9	1.1	0.2	5.8	-4.0	4.0
Senior officials of employers', workers' and other economic-interest organisations	1142	0.2	0.3	0.1	6.5	-5.6	5.6
Senior officials of humanitarian and other special-interest organisations	1143	0.7	0.8	0.2	5.6	-3.4	3.4
DIRECTORS AND CHIEF EXECUTIVES		3.4	4.1	0.7	4.6	-3.8	3.8
Directors and chief executives	1210	3.4	4.1	0.7	4.6	-3.8	3.8
PRODUCTION AND OPERATIONS DEPARTMENT MANAGERS		5.0	6.0	0.9	4.4	-3.9	3.9
Production and operations department managers in agriculture, hunting, forestry and fishing	1221	0.3	0.3	0.0	3.3	-2.4	2.4
Production and operations department managers in manufacturing	1222	0.8	0.9	0.1	3.7	-3.2	3.2

Occupation (1-DIGIT), (3-DIGIT) and (4-digit)	*4-digit Code*	*Estimated stock 2004 (000)*	*Projected employment 2008 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth 2004-08 (%)*	*Lower option (% of projection)*	*Upper option (% of projection)*
Production and operations department managers in construction	1223	0.5	0.6	0.1	4.4	-4.8	4.8
Production and operations department managers in wholesale and retail trade	1224	0.3	0.3	0.1	5.1	-3.3	3.3
Production and operations department managers in restaurants and hotels	1225	0.7	0.9	0.2	6.0	-5.1	5.1
Production and operations department managers in transport, storage and communications	1226	0.9	1.1	0.2	5.0	-4.8	4.8
Production and operations department managers in business services	1227	1.0	1.1	0.1	3.3	-3.9	3.9
Production and operations department managers not elsewhere classified	1229	0.6	0.7	0.1	4.3	-2.3	2.3
OTHER DEPARTMENT MANAGERS		6.4	7.6	1.3	4.6	-3.8	3.8
Other departments managers	1230	0.3	0.3	0.1	5.3	-2.6	2.6
Finance and administration department managers	1231	3.2	3.9	0.6	4.7	-4.0	4.0
Personnel and industrial relations department managers	1232	0.4	0.4	0.1	4.4	-3.9	3.9
Sales and marketing department managers	1233	0.9	1.0	0.2	4.7	-3.5	3.5
Advertising and public relations department managers	1234	0.3	0.4	0.1	4.8	-3.8	3.8
Supply and distribution department managers	1235	0.6	0.7	0.1	4.3	-3.7	3.7
Computing services department managers	1236	0.4	0.5	0.1	4.5	-3.8	3.8
Research and development department managers	1237	0.2	0.3	0.0	4.1	-3.1	3.1
GENERAL MANAGERS		16.9	20.5	3.6	4.9	-3.9	3.9
General managers in manufacturing	1312	2.2	2.6	0.3	3.6	-2.1	2.1
General managers in construction	1313	4.8	5.7	0.9	4.5	-5.2	5.2
General managers in wholesale and retail trade	1314	4.1	4.9	0.8	4.7	-3.0	3.0
General managers of restaurants and hotels	1315	0.7	0.9	0.2	6.2	-4.3	4.3
General managers in transport, storage and communications	1316	1.1	1.4	0.3	5.9	-5.1	5.1
General managers of business services	1317	1.5	2.0	0.4	6.5	-3.7	3.7

Occupation (1-DIGIT), (3-DIGIT) and (4-digit)	*4-digit Code*	*Estimated stock 2004 (000)*	*Projected employment 2008 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth 2004-08 (%)*	*Lower option (% of projection)*	*Upper option (% of projection)*
General managers in personal care, cleaning and related services	1318	0.2	0.3	0.1	6.1	-4.3	4.3
General managers not elsewhere classified	1319	2.3	2.8	0.5	5.5	-3.9	3.9
PROFESSIONALS		**161.4**	**190.5**	**29.1**	**4.2**	**-2.5**	**2.5**
PHYSICISTS, CHEMISTS AND RELATED PROFESSIONALS		0.7	0.8	0.1	3.7	-2.9	2.9
Chemists	2113	0.4	0.5	0.1	4.1	-2.7	2.7
Geologists and geophysicists	2114	0.2	0.2	0.0	2.9	-3.8	3.8
MATHEMATICIANS, STATISTICIANS AND RELATED PROFESSIONALS		0.2	0.2	0.0	3.7	-2.5	2.5
Statisticians	2122	0.2	0.2	0.0	3.7	-2.5	2.5
COMPUTING PROFESSIONALS		3.6	4.5	0.9	5.6	-3.4	3.4
Computer systems designers and analysts	2131	2.4	3.0	0.6	5.6	-3.4	3.4
Computer programmers	2132	1.1	1.3	0.3	5.5	-3.5	3.5
ARCHITECTS, ENGINEERS AND RELATED PROFESSIONALS		21.5	25.9	4.4	4.8	-4.3	4.3
Architects, town and traffic planners	2141	1.7	2.2	0.5	6.3	-3.9	3.9
Civil engineers	2142	9.1	10.9	1.8	4.7	-4.6	4.6
Electrical engineers	2143	2.9	3.4	0.5	4.4	-4.2	4.2
Electronics and telecommunications engineers	2144	2.3	2.8	0.5	5.1	-4.0	4.0
Mechanical engineers	2145	3.3	3.8	0.6	4.1	-4.2	4.2
Chemical engineers	2146	1.1	1.4	0.2	5.2	-3.5	3.5
Mining engineers, metallurgists and related professionals	2147	0.3	0.4	0.1	4.2	-4.5	4.5
Architects, engineers and related professionals not elsewhere classified	2149	0.8	1.0	0.2	5.0	-3.9	3.9
LIFE SCIENCE PROFESSIONALS		2.8	2.9	0.1	1.2	-5.3	5.3
Biologists, botanists, zoologists and related professionals	2211	0.2	0.2	0.0	3.4	-2.7	2.7
Agronomists and related professionals	2213	2.5	2.6	0.1	0.9	-5.7	5.6

Occupation (1-DIGIT), (3-DIGIT) and (4-digit)	*4-digit Code*	*Estimated stock 2004 (000)*	*Projected employment 2008 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth 2004-08 (%)*	*Lower option (% of projection)*	*Upper option (% of projection)*
HEALTH PROFESSIONALS (EXCEPT NURSING)		13.8	16.7	2.9	4.8	-2.0	2.0
Medical doctors	2221	7.0	8.5	1.5	5.0	-1.7	1.7
Dentists	2222	2.0	2.5	0.4	5.0	-1.7	1.7
Veterinarians	2223	0.4	0.4	0.0	2.2	-4.2	4.2
Pharmacists	2224	2.6	3.1	0.5	4.5	-2.7	2.7
Health professionals (except nursing) not elsewhere classified	2229	1.8	2.2	0.4	4.9	-1.8	1.8
NURSING AND MIDWIFERY PROFESSIONALS		3.2	3.9	0.7	5.0	-1.7	1.7
Nursing and midwifery professionals	2230	3.2	3.9	0.7	5.0	-1.7	1.7
COLLEGE, UNIVERSITY AND HIGHER EDUCATION TEACHING PROFESSIONALS		4.5	5.1	0.7	3.6	-1.0	1.0
College, university and higher education teaching professionals	2310	4.5	5.1	0.7	3.6	-1.0	1.0
SECONDARY EDUCATION TEACHING PROFESSIONALS		11.2	12.9	1.7	3.6	-1.0	1.0
Secondary education teaching professionals	2320	11.2	12.9	1.7	3.6	-1.0	1.0
PRIMARY AND PRE-PRIMARY EDUCATION TEACHING PROFESSIONALS		47.6	54.7	7.1	3.6	-1.0	1.0
Primary education teaching professionals	2331	46.5	53.4	7.0	3.5	-1.0	1.0
Preprimary education teaching professionals	2332	1.1	1.3	0.2	3.7	-1.2	1.2
SPECIAL EDUCATION TEACHING PROFESSIONALS		0.2	0.3	0.0	3.9	-1.3	1.3
Special education teaching professionals	2340	0.2	0.3	0.0	3.9	-1.3	1.3
OTHER TEACHING PROFESSIONALS		0.9	1.1	0.1	3.6	-1.2	1.2
School inspectors	2352	0.8	0.9	0.1	3.6	-1.0	1.0
BUSINESS PROFESSIONALS		39.1	46.3	7.2	4.3	-3.4	3.4
Accountants	2411	15.0	17.8	2.8	4.4	-3.5	3.5
Personnel and careers professionals	2412	21.2	25.0	3.8	4.2	-3.3	3.3
Business professionals not elsewhere classified	2419	2.9	3.5	0.6	4.7	-3.5	3.5
LEGAL PROFESSIONALS		6.4	8.3	1.9	6.8	-3.5	3.5
Lawyers	2421	5.5	7.3	1.8	7.3	-3.7	3.7

Occupation (1-DIGIT), (3-DIGIT) and (4-digit)	*4-digit Code*	*Estimated stock 2004 (000)*	*Projected employment 2008 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth 2004-08 (%)*	*Lower option (% of projection)*	*Upper option (% of projection)*
Judges	2422	0.8	0.9	0.1	3.3	-2.4	2.4
ARCHIVISTS, LIBRARIANS AND RELATED INFORMATION PROFESSIONALS		1.1	1.3	0.2	3.9	-1.9	1.9
Librarians and related information professionals	2432	0.6	0.7	0.1	3.9	-2.0	2.0
Specialized Workers in Stores & Warehouses	2433	0.4	0.5	0.1	4.0	-1.8	1.8
SOCIAL SCIENCE AND RELATED PROFESSIONALS		2.2	2.6	0.4	4.6	-2.7	2.7
Economists	2441	0.3	0.3	0.1	4.6	-3.7	3.7
Sociologists, anthropologists and related professionals	2442	0.3	0.3	0.0	3.7	-1.6	1.6
Philologists, translators and interpreters	2444	0.5	0.6	0.1	5.9	-3.7	3.7
Psychologists	2445	0.7	0.8	0.1	3.7	-1.3	1.3
Social work professionals	2446	0.4	0.5	0.1	5.1	-3.5	3.5
WRITERS AND CREATIVE OR PERFORMING ARTISTS		1.6	2.0	0.4	6.0	-4.8	4.8
Authors, journalists and other writers	2451	0.9	1.1	0.2	5.9	-4.6	4.6
Composers, musicians and singers	2453	0.4	0.5	0.1	6.4	-5.4	5.4
Film, stage and related actors and directors	2455	0.2	0.3	0.1	6.2	-5.1	5.1
RELIGIOUS PROFESSIONALS		0.9	1.1	0.2	4.2	-3.4	3.4
Specialists in Religion	2460	0.9	1.1	0.2	4.2	-3.4	3.4
TECHNICIANS & ASSOCIATE PROFESSIONALS		104.6	124.3	19.7	4.4	-2.8	2.8
PHYSICAL AND ENGINEERING SCIENCE TECHNICIANS		16.5	19.7	3.2	4.5	-4.0	4.0
Chemical and physical science technicians	3111	0.6	0.7	0.1	3.2	-2.8	2.8
Civil engineering technicians	3112	3.9	4.6	0.8	4.6	-4.2	4.2
Electrical engineering technicians	3113	3.4	4.0	0.6	4.1	-3.9	3.9
Electronics and telecommunications engineering technicians	3114	2.7	3.4	0.6	5.4	-4.4	4.4
Mechanical engineering technicians	3115	2.7	3.1	0.4	3.8	-3.6	3.6
Chemical engineering technicians	3116	0.3	0.3	0.0	2.9	-3.3	3.3
Draughtspersons	3118	2.2	2.7	0.5	5.2	-4.2	4.2

Occupation (1-DIGIT), (3-DIGIT) and (4-digit)	*4-digit Code*	*Estimated stock 2004 (000)*	*Projected employment 2008 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth 2004-08 (%)*	*Lower option (% of projection)*	*Upper option (% of projection)*
Physical and engineering science technicians not elsewhere classified	3119	0.6	0.8	0.1	4.2	-3.3	3.3
COMPUTER ASSOCIATE PROFESSIONALS		4.5	5.4	0.9	4.9	-3.3	3.3
Computer assistants	3121	3.0	3.5	0.6	4.4	-3.2	3.2
Computer equipment operators	3122	0.8	1.0	0.2	4.5	-3.3	3.3
Industrial robot controllers	3123	0.7	0.9	0.2	7.3	-3.7	3.7
OPTICAL AND ELECTRONIC EQUIPMENT OPERATORS		3.3	4.1	0.9	6.0	-3.1	3.1
Photographers and image and sound recording equipment operators	3131	2.5	3.2	0.7	6.3	-3.2	3.2
Medical equipment operators	3133	0.5	0.6	0.1	5.0	-1.8	1.8
SHIP AND AIRCRAFT CONTROLLERS AND TECHNICIANS		0.9	1.1	0.2	5.4	-4.8	4.8
Aircraft pilots and related associate professionals	3143	0.4	0.5	0.1	5.8	-5.1	5.1
Air traffic controllers	3144	0.3	0.4	0.1	5.1	-4.5	4.5
SAFETY AND QUALITY INSPECTORS		1.2	1.4	0.2	4.1	-2.8	2.8
Safety, health and quality inspectors	3152	1.2	1.4	0.2	4.1	-2.8	2.8
LIFE SCIENCE TECHNICIANS AND RELATED ASSOCIATE PROFESSIONALS		0.3	0.4	0.0	1.2	-4.6	4.6
Agronomy and forestry technicians	3212	0.2	0.2	0.0	-0.8	-7.1	7.1
MODERN HEALTH ASSOCIATE PROFESSIONALS (EXCEPT NURSING)		5.1	6.1	1.0	4.6	-2.1	2.1
Sanitarians	3222	0.8	1.0	0.2	4.7	-1.9	1.9
Optometrists and opticians	3224	0.3	0.3	0.1	4.6	-2.5	2.5
Dental assistants	3225	0.5	0.7	0.1	4.6	-1.8	1.8
Physiotherapists and related associate professionals	3226	0.2	0.2	0.0	5.0	-2.0	2.0
Pharmaceutical assistants	3228	2.3	2.7	0.5	4.7	-2.3	2.3
Modern health associate professionals (except nursing) not elsewhere classified	3229	0.7	0.8	0.1	4.9	-1.8	1.8
NURSING AND MIDWIFERY ASSOCIATE PROFESSIONALS		8.4	10.2	1.8	5.0	-1.7	1.7

Occupation (1-DIGIT), (3-DIGIT) and (4-digit)	*4-digit Code*	*Estimated stock 2004 (000)*	*Projected employment 2008 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth 2004-08 (%)*	*Lower option (% of projection)*	*Upper option (% of projection)*
Nursing associate professionals	3231	7.7	9.3	1.7	5.0	-1.7	1.8
Midwifery associate professionals	3232	0.7	0.9	0.2	5.1	-1.7	1.7
PRIMARY EDUCATION TEACHING ASSOCIATE PROFESSIONALS		21.6	24.8	3.2	3.6	-1.0	1.0
Primary education teaching associate professionals	3310	21.6	24.8	3.2	3.6	-1.0	1.0
PRE-PRIMARY EDUCATION TEACHING ASSOCIATE PROFESSIONALS		2.8	3.3	0.4	3.8	-1.2	1.2
Preprimary education teaching associate professionals	3320	2.8	3.3	0.4	3.8	-1.2	1.2
SPECIAL EDUCATION TEACHING ASSOCIATE PROFESSIONALS		0.4	0.5	0.1	3.9	-1.6	1.7
Special education teaching associate professionals	3330	0.4	0.5	0.1	3.9	-1.6	1.7
OTHER TEACHING ASSOCIATE PROFESSIONALS		3.6	4.3	0.7	4.3	-2.2	2.2
Other teaching associate professionals	3340	3.6	4.3	0.7	4.3	-2.2	2.2
FINANCE AND SALES ASSOCIATE PROFESSIONALS		8.5	10.4	1.9	5.1	-3.6	3.6
Securities and finance dealers and brokers	3411	0.6	0.8	0.2	6.9	-3.7	3.7
Insurance representatives	3412	0.4	0.5	0.1	5.2	-3.7	3.7
Estate agents	3413	0.4	0.5	0.1	7.2	-4.0	4.0
Travel consultants and organisers	3414	0.3	0.4	0.1	5.8	-5.2	5.2
Technical and commercial sales representatives	3415	5.0	6.0	1.0	4.5	-3.0	3.0
Buyers	3416	0.5	0.6	0.1	4.4	-4.0	4.0
Appraisers, valuers and auctioneers	3417	1.4	1.7	0.3	5.8	-5.3	5.3
BUSINESS SERVICES AGENTS AND TRADE BROKERS		2.0	2.5	0.5	5.7	-5.1	5.1
Clearing and forwarding agents	3422	1.9	2.4	0.5	5.8	-5.2	5.2
ADMINISTRATIVE ASSOCIATE PROFESSIONALS		18.8	22.0	3.3	4.1	-3.3	3.3
Administrative secretaries and related associate professionals	3431	5.1	6.0	0.9	4.3	-3.7	3.7
Legal and related business associate professionals	3432	0.5	0.6	0.1	3.5	-3.0	3.0
Bookkeepers	3433	8.4	9.8	1.5	4.1	-3.4	3.4

Occupation (1-DIGIT), (3-DIGIT) and (4-digit)	*4-digit Code*	*Estimated stock 2004 (000)*	*Projected employment 2008 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth 2004-08 (%)*	*Lower option (% of projection)*	*Upper option (% of projection)*
Statistical, mathematical and related associate professionals	3434	0.2	0.2	0.0	3.8	-2.8	2.8
Administrative associate professionals not elsewhere classified	3439	4.6	5.4	0.8	4.1	-2.8	2.8
CUSTOMS, TAX AND RELATED GOVERNMENT ASSOCIATE PROFESSIONALS		2.9	3.4	0.5	4.0	-2.9	2.9
Customs and border inspectors	3441	2.1	2.4	0.3	4.0	-2.7	2.7
Government tax and excise officials	3442	0.7	0.8	0.1	4.4	-3.7	3.7
Government social benefits officials	3443	0.2	0.2	0.0	3.4	-2.2	2.2
SOCIAL WORK ASSOCIATE PROFESSIONALS		0.2	0.3	0.0	4.1	-2.0	2.0
Social work associate professionals	3460	0.2	0.2	0.0	4.6	-1.9	1.9
ARTISTIC, ENTERTAINMENT AND SPORTS ASSOCIATE PROFESSIONALS		1.9	2.4	0.5	5.5	-4.1	4.1
Decorators and commercial designers	3471	0.9	1.1	0.2	5.2	-3.8	3.8
Street, night-club and related musicians, singers and dancers	3473	0.3	0.4	0.1	5.6	-4.3	4.3
Athletes, sportspersons and related associate professionals	3475	0.7	0.8	0.2	5.7	-4.5	4.5
RELIGIOUS ASSOCIATE PROFESSIONALS		1.7	2.0	0.3	4.8	-3.9	3.9
Religious associate professionals	3480	1.7	2.0	0.3	4.8	-3.9	3.9
CLERKS		**100.7**	**120.7**	**20.0**	**4.6**	**-3.6**	**3.6**
SECRETARIES AND KEYBOARD-OPERATING CLERKS		20.7	25.1	4.4	5.0	-3.3	3.3
Stenographers and typists	4111	4.5	5.2	0.8	4.0	-2.8	2.8
Data entry operators	4113	0.8	0.9	0.1	3.9	-3.3	3.3
Secretaries	4115	15.4	18.9	3.5	5.3	-3.5	3.5
NUMERICAL CLERKS		15.5	18.2	2.7	4.1	-3.6	3.6
Accounting and bookkeeping clerks	4121	14.0	16.4	2.4	4.1	-3.7	3.7
Statistical and finance clerks	4122	1.5	1.8	0.2	3.7	-3.3	3.3
MATERIAL-RECORDING AND TRANSPORT CLERKS		20.0	23.8	3.9	4.5	-3.8	3.8

Occupation (1-DIGIT), (3-DIGIT) and (4-digit)	*4-digit Code*	*Estimated stock 2004 (000)*	*Projected employment 2008 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth 2004-08 (%)*	*Lower option (% of projection)*	*Upper option (% of projection)*
Stock clerks	4131	8.0	9.5	1.5	4.3	-3.4	3.4
Production clerks	4132	3.6	4.3	0.7	4.3	-3.3	3.3
Transport clerks	4133	8.3	10.1	1.7	4.9	-4.4	4.4
LIBRARY, MAIL AND RELATED CLERKS		19.8	23.3	3.5	4.1	-3.4	3.4
Library and filing clerks	4141	18.5	21.7	3.2	4.1	-3.4	3.4
Mail carriers and sorting clerks	4142	1.3	1.6	0.2	4.4	-3.5	3.5
OTHER OFFICE CLERKS		0.7	0.9	0.1	4.7	-2.8	2.8
Other office clerks	4190	0.7	0.9	0.1	4.7	-2.8	2.8
CASHIERS, TELLERS AND RELATED CLERKS		10.9	13.1	2.2	4.7	-3.5	3.5
Cashiers and ticket clerks	4211	8.5	10.3	1.8	4.9	-3.5	3.5
Debt-collectors and related workers	4215	2.3	2.7	0.4	4.0	-3.5	3.5
CLIENT INFORMATION CLERKS		12.3	15.2	2.9	5.3	-4.4	4.4
Travel agency and related clerks	4221	2.8	3.5	0.7	5.9	-5.3	5.3
Receptionists and information clerks	4222	5.3	6.6	1.2	5.4	-4.1	4.1
Telephone switchboard operators	4223	4.2	5.1	0.9	4.9	-4.0	4.0
RENTAL OFFICE CLERKS		0.9	1.2	0.3	8.1	-3.9	3.9
Rental clerk	4230	0.4	0.5	0.1	8.2	-4.0	4.0
Rental office clerks	4231	0.5	0.7	0.2	8.0	-3.9	3.9
SERVICE WORKERS & SHOP & MARKET SALES WORKERS		**165.0**	**201.4**	**36.4**	**5.1**	**-3.5**	**3.5**
TRAVEL ATTENDANTS AND RELATED WORKERS		4.0	5.0	1.0	5.7	-4.6	4.6
Travel attendants and travel stewards	5111	2.9	3.6	0.7	5.6	-4.3	4.3
Transport conductors	5112	1.1	1.3	0.3	6.0	-5.4	5.4
HOUSEKEEPING AND RESTAURANT SERVICES WORKERS		21.4	27.0	5.6	6.0	-4.2	4.2
Housekeepers and related workers	5121	3.5	4.4	0.9	6.1	-4.8	4.8
Cooks	5122	10.2	12.9	2.7	5.9	-4.1	4.1
Waiters, waitresses and bartenders	5123	7.7	9.8	2.0	6.0	-4.2	4.2
PERSONAL CARE AND RELATED WORKERS		0.9	1.0	0.2	4.5	-1.7	1.7

Occupation (1-DIGIT), (3-DIGIT) and (4-digit)	*4-digit Code*	*Estimated stock 2004 (000)*	*Projected employment 2008 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth 2004-08 (%)*	*Lower option (% of projection)*	*Upper option (% of projection)*
Child-care workers	5131	0.6	0.7	0.1	4.3	-1.5	1.5
Institution-based personal care workers	5132	0.3	0.3	0.1	4.9	-2.1	2.1
OTHER PERSONAL SERVICES WORKERS		20.2	26.1	5.8	6.5	-5.6	5.6
Hairdressers, barbers, beauticians and related workers	5141	20.1	26.0	5.8	6.5	-5.6	5.6
PROTECTIVE SERVICES WORKERS		4.6	6.0	1.3	6.6	-3.7	3.7
Fire-fighters	5161	0.4	0.4	0.1	4.5	-4.6	4.6
Police officers	5162	2.2	2.8	0.7	6.8	-3.6	3.6
Protective services workers not elsewhere classified	5169	2.1	2.7	0.6	6.6	-3.6	3.6
SHOP SALESPERSONS AND DEMONSTRATORS		96.4	115.5	19.0	4.6	-2.9	2.9
Shop salespersons and demonstrators	5220	96.4	115.5	19.0	4.6	-2.9	2.9
SCIENTIFIC & MEDICAL OFFICE SUPPLIES SALESPERSONS		16.0	19.2	3.2	4.6	-2.9	2.9
Stationery salespersons	5310	2.3	2.7	0.5	4.6	-2.9	2.9
Educational salespersons	5311	1.1	1.3	0.2	5.0	-3.2	3.2
Medical instruments salespersons	5312	1.2	1.4	0.2	4.5	-2.8	2.8
Construction materials salespersons	5313	4.6	5.5	0.9	4.5	-2.8	2.8
Construction tools salespersons	5314	1.5	1.8	0.3	4.6	-2.9	2.9
Cars & bicycles salespersons	5316	1.3	1.6	0.3	4.6	-2.9	2.9
Cars & spare parts salespersons	5317	4.0	4.8	0.8	4.6	-2.9	2.9
INDUSTRIAL & AGRICULTURAL SUPPLIES SALESPERSONS		1.3	1.6	0.3	4.6	-2.9	2.9
Industrial equipment salespersons	5340	0.5	0.6	0.1	4.6	-2.9	2.9
Agricultural equipment salespersons	5341	0.8	1.0	0.2	4.6	-2.9	2.9
SKILLED AGRICULTURAL & FISHERY WORKERS		**30.1**	**27.6**	**-2.5**	**-2.1**	**-8.8**	**8.8**
MARKET GARDENERS AND CROP GROWERS		18.5	17.0	-1.5	-2.1	-8.7	8.7
Field crop and vegetable growers	6111	16.7	15.3	-1.4	-2.2	-8.9	8.9
Tree and shrub crop growers	6112	1.3	1.2	-0.1	-2.2	-8.8	8.8
Gardeners, horticultural and nursery growers	6113	0.5	0.5	0.0	1.1	-4.8	4.8

Occupation (1-DIGIT), (3-DIGIT) and (4-digit)	*4-digit Code*	*Estimated stock 2004 (000)*	*Projected employment 2008 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth 2004-08 (%)*	*Lower option (% of projection)*	*Upper option (% of projection)*
MARKET-ORIENTED ANIMAL PRODUCERS AND RELATED WORKERS		11.3	10.3	-1.0	-2.2	-8.9	8.9
Dairy and livestock producers	6121	7.4	6.8	-0.6	-2.2	-8.9	8.9
Poultry producers	6122	3.8	3.4	-0.3	-2.2	-8.9	8.9
FORESTRY AND RELATED WORKERS		0.2	0.2	0.0	-0.7	-6.8	6.8
Forestry workers and loggers	6141	0.2	0.2	0.0	-0.7	-6.8	6.8
CRAFT & RELATED WORKERS		**218.6**	**256.4**	**37.7**	**4.1**	**-3.7**	**3.7**
MINERS, SHOTFIRERS, STONE CUTTERS AND CARVERS		2.8	2.9	0.0	0.3	-6.7	6.7
Miners and quarry workers	7111	2.1	2.0	-0.1	-0.7	-8.1	8.1
Stone splitters, cutters and carvers	7113	0.7	0.8	0.1	3.1	-3.3	3.3
BUILDING FRAME AND RELATED TRADES WORKERS		65.4	77.6	12.2	4.4	-5.3	5.2
Bricklayers and stonemasons	7122	53.2	63.1	9.9	4.4	-5.3	5.2
Concrete placers, concrete finishers and related workers	7123	7.2	8.5	1.3	4.4	-5.2	5.2
Carpenters and joiners	7124	5.0	6.0	0.9	4.4	-5.3	5.3
BUILDING FINISHERS AND RELATED TRADES WORKERS		21.1	25.0	3.9	4.3	-5.0	5.0
Floor layers and tile setters	7132	4.7	5.6	0.9	4.4	-5.2	5.2
Plasterers	7133	1.7	2.0	0.3	4.4	-5.2	5.2
Glaziers	7135	0.4	0.5	0.1	4.0	-3.2	3.2
Plumbers and pipe fitters	7136	7.8	9.2	1.4	4.2	-5.0	5.0
Building and related electricians	7137	4.8	5.7	0.9	4.4	-5.2	5.2
Conditions Workers	7138	1.7	2.0	0.3	4.3	-3.6	3.6
PAINTERS, BUILDING STRUCTURE CLEANERS AND RELATED TRADES WORKERS		6.9	8.2	1.3	4.4	-5.1	5.1
Painters and related workers	7141	6.7	8.0	1.3	4.4	-5.1	5.1

Occupation (1-DIGIT), (3-DIGIT) and (4-digit)	*4-digit Code*	*Estimated stock 2004 (000)*	*Projected employment 2008 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth 2004-08 (%)*	*Lower option (% of projection)*	*Upper option (% of projection)*
METAL MOULDERS, WELDERS, SHEET-METAL WORKERS, STRUCTURAL- METAL PREPARERS, AND RELATED TRADES WORKERS		15.2	17.7	2.5	3.8	-3.0	3.0
Metal moulders and coremakers	7211	0.3	0.3	0.0	3.6	-2.0	2.0
Welders and flamecutters	7212	2.5	2.9	0.4	3.9	-3.9	3.9
Sheet metal workers	7213	3.5	4.1	0.6	4.0	-3.3	3.3
Structural-metal preparers and erectors	7214	8.9	10.3	1.4	3.7	-2.6	2.6
BLACKSMITHS, TOOL-MAKERS AND RELATED TRADES WORKERS		4.6	5.3	0.7	3.7	-2.5	2.5
Blacksmiths, hammer-smiths and forging-press workers	7221	1.0	1.1	0.1	3.4	-2.5	2.5
Tool-makers and related workers	7222	3.5	4.1	0.6	3.7	-2.5	2.5
MACHINERY MECHANICS AND FITTERS		26.4	31.5	5.0	4.5	-3.2	3.2
Motor vehicle mechanics and fitters	7231	23.0	27.5	4.5	4.5	-3.2	3.2
Aircraft engine mechanics and fitters	7232	0.3	0.4	0.1	5.6	-4.9	4.9
Agricultural- or industrial-machinery mechanics and fitters	7233	3.1	3.6	0.5	3.8	-3.2	3.2
ELECTRICAL AND ELECTRONIC EQUIPMENT MECHANICS AND FITTERS		11.3	13.3	2.0	4.2	-3.3	3.3
Electrical mechanics and fitters	7241	8.7	10.2	1.5	4.2	-3.2	3.2
Electronics fitters	7242	0.6	0.8	0.1	5.1	-3.6	3.6
Electronics mechanics and servicers	7243	0.8	1.0	0.2	5.2	-3.4	3.4
Telegraph and telephone installers and servicers	7244	0.5	0.6	0.1	5.3	-4.8	4.8
Electrical line installers, repairers and cable jointers	7245	0.7	0.8	0.1	2.0	-2.8	2.8
PRECISION WORKERS IN METAL AND RELATED MATERIALS		1.3	1.5	0.2	3.7	-2.2	2.2
Jewellery and precious-metal workers	7313	1.1	1.3	0.2	3.6	-2.1	2.1
POTTERS, GLASS-MAKERS AND RELATED TRADES WORKERS		0.5	0.5	0.1	3.9	-2.5	2.5
Glass makers, cutters, grinders and finishers	7322	0.2	0.2	0.0	3.8	-2.7	2.7
PRINTING AND RELATED TRADES WORKERS		2.6	3.0	0.4	4.0	-2.3	2.3
Compositors, typesetters and related workers	7341	1.6	1.8	0.3	3.9	-2.2	2.2

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Photographic and related workers	7344	0.4	0.5	0.1	4.9	-2.7	2.8
Bookbinders and related workers	7345	0.4	0.4	0.1	3.6	-2.1	2.1
FOOD PROCESSING AND RELATED TRADES WORKERS		10.2	11.8	1.7	3.9	-2.3	2.3
Butchers, fishmongers and related food preparers	7411	2.4	2.9	0.5	4.4	-2.7	2.7
Bakers, pastry-cooks and confectionery makers	7412	7.1	8.2	1.1	3.7	-2.1	2.1
Dairy-products makers	7413	0.4	0.5	0.1	3.6	-2.1	2.1
WOOD TREATERS, CABINET-MAKERS AND RELATED TRADES WORKERS		8.8	10.2	1.4	3.6	-2.1	2.1
Cabinet makers and related workers	7422	8.7	10.0	1.3	3.6	-2.1	2.1
TEXTILE, GARMENT AND RELATED TRADES WORKERS		39.7	45.7	6.0	3.6	-2.0	2.0
Weavers, knitters and related workers	7432	0.4	0.4	0.1	3.6	-2.0	2.0
Tailors, dressmakers and hatters	7433	37.5	43.2	5.7	3.6	-2.0	2.0
Upholsterers and related workers	7437	1.6	1.9	0.2	3.7	-2.1	2.1
PELT, LEATHER AND SHOEMAKING TRADES WORKERS		1.8	2.2	0.3	4.2	-2.6	2.6
Shoe-makers and related workers	7442	1.7	2.0	0.3	4.2	-2.6	2.6
PLANT & MACHINE OPERATORS & ASSEMBLERS		117.7	141.2	23.5	4.7	-4.1	4.1
MINING- AND MINERAL-PROCESSING PLANT OPERATORS		2.1	2.4	0.3	3.6	-4.1	4.1
Mineral-ore- and stone-processing-plan operators	8112	1.2	1.3	0.2	3.3	-3.2	3.2
Well drillers and borers and related workers	8113	0.8	1.0	0.2	4.2	-5.2	5.2
METAL-PROCESSING-PLANT OPERATORS		1.0	1.1	0.1	3.5	-2.1	2.1
Metal melters, casters and rolling-mill operators	8122	0.3	0.4	0.0	3.4	-2.1	2.1
Metal drawers and extruders	8124	0.6	0.6	0.1	3.6	-2.0	2.0
GLASS, CERAMICS AND RELATED PLANT OPERATORS		0.4	0.5	0.1	3.6	-2.1	2.1
Glass and ceramics kiln and related machine operators	8131	0.4	0.5	0.1	3.6	-2.1	2.1

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WOOD-PROCESSING- AND PAPERMAKING-PLANT OPERATORS		0.5	0.6	0.1	3.6	-2.0	2.0
Paper-pulp plant operators	8142	0.2	0.2	0.0	3.6	-2.0	2.0
Papermaking-plant operators	8143	0.4	0.4	0.1	3.6	-2.0	2.0
CHEMICAL-PROCESSING-PLANT OPERATORS		2.0	2.3	0.3	3.6	-2.8	2.8
Crushing-, grinding- and chemical-mixing machinery operators	8151	0.2	0.2	0.0	3.2	-3.3	3.3
Chemical-filtering- and separating-equipment operators	8153	0.2	0.2	0.0	3.6	-2.0	2.0
Petroleum- and natural-gas-refining-plant operators	8155	1.3	1.5	0.2	4.0	-2.5	2.5
Chemical-processing-plant operators not elsewhere classified	8159	0.2	0.2	0.0	1.8	-4.7	4.7
POWER-PRODUCTION AND RELATED PLANT OPERATORS		2.3	2.4	0.1	1.4	-3.3	3.3
Power-production plant operators	8161	0.4	0.4	0.0	1.6	-2.7	2.7
Incinerator, water-treatment and related plant operators	8163	1.9	2.0	0.1	1.4	-3.4	3.4
METAL- AND MINERAL-PRODUCTS MACHINE OPERATORS		6.4	7.4	1.0	3.6	-2.1	2.1
Machine-tool operators	8211	2.0	2.3	0.3	3.5	-2.1	2.1
Cement and other mineral products machine operators	8212	4.5	5.1	0.7	3.6	-2.1	2.1
CHEMICAL-PRODUCTS MACHINE OPERATORS		1.8	2.0	0.3	3.6	-2.3	2.3
Pharmaceutical- and toiletry-products machine operators	8221	1.0	1.1	0.1	3.3	-2.3	2.3
Chemical-products machine operators not elsewhere classified	8229	0.6	0.7	0.1	3.6	-2.0	2.0
RUBBER- AND PLASTIC-PRODUCTS MACHINE OPERATORS		2.3	2.6	0.3	3.6	-2.2	2.2
Rubber-products machine operators	8231	0.2	0.2	0.0	4.1	-3.8	3.8
Plastic-products machine operators	8232	2.1	2.4	0.3	3.6	-2.0	2.1
WOOD-PRODUCTS MACHINE OPERATORS		0.2	0.3	0.0	3.9	-2.3	2.3
Wood production equipment workers	8240	0.2	0.3	0.0	3.9	-2.3	2.3

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PRINTING-, BINDING- AND PAPER-PRODUCTS MACHINE OPERATORS		1.2	1.4	0.2	3.7	-2.1	2.1
Printing-machine operators	8251	0.5	0.6	0.1	3.7	-2.1	2.1
Bookbinding-machine operators	8252	0.2	0.2	0.0	3.6	-2.1	2.1
Paper-products machine operators	8253	0.5	0.5	0.1	3.6	-2.0	2.1
TEXTILE-, FUR- AND LEATHER-PRODUCTS MACHINE OPERATORS		6.0	6.9	0.9	3.6	-2.1	2.1
Fibre-preparing-, spinning- and winding machine operators	8261	0.4	0.5	0.1	3.8	-2.1	2.1
Weaving- and knitting-machine operators	8262	1.1	1.3	0.2	3.6	-2.0	2.0
Sewing machine operators	8263	4.0	4.6	0.6	3.6	-2.0	2.0
Bleaching-, dyeing- and cleaning-machine operators	8264	0.2	0.3	0.0	4.8	-3.1	3.1
FOOD AND RELATED PRODUCTS MACHINE OPERATORS		3.5	4.0	0.5	3.6	-2.1	2.1
Meat- and fish-processing-machine operators	8271	0.3	0.4	0.0	3.3	-2.3	2.3
Dairy-products machine operators	8272	0.5	0.6	0.1	3.6	-2.0	2.0
Grain- and spice-milling-machine operators	8273	0.5	0.6	0.1	3.5	-2.1	2.1
Baked-goods, cereal and chocolate-products machine operators	8274	0.7	0.8	0.1	3.6	-2.0	2.0
Fruit-, vegetable- and nut-processing-machine operators	8275	0.5	0.6	0.1	3.6	-2.0	2.0
Brewers-, wine and other beverage machine operators	8278	0.4	0.5	0.1	3.6	-2.0	2.0
Tobacco production machine operators	8279	0.4	0.4	0.1	3.6	-2.0	2.0
ASSEMBLERS		0.6	0.7	0.1	3.7	-2.4	2.4
Electrical-equipment assemblers	8282	0.3	0.4	0.0	3.6	-2.0	2.1
OTHER MACHINE OPERATORS AND ASSEMBLERS		2.3	2.7	0.4	4.2	-2.7	2.7
Other machine operators and assemblers	8290	2.3	2.7	0.4	4.2	-2.7	2.7
LOCOMOTIVE-ENGINE DRIVERS AND RELATED WORKERS		0.3	0.4	0.1	4.8	-4.4	4.4
Railway brakers, signallers and shunters	8312	0.2	0.3	0.0	4.8	-4.5	4.5
MOTOR-VEHICLE DRIVERS		79.5	97.1	17.6	5.1	-4.6	4.6

Occupation (1-DIGIT), (3-DIGIT) and (4-digit)	*4-digit Code*	*Estimated stock 2004 (000)*	*Projected employment 2008 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth 2004-08 (%)*	*Lower option (% of projection)*	*Upper option (% of projection)*
Motor-cycle drivers	8321	0.2	0.2	0.0	4.6	-4.6	4.6
Car, taxi and van drivers	8322	58.5	71.4	12.9	5.1	-4.7	4.6
Bus and tram drivers	8323	8.7	10.6	1.9	5.1	-4.0	4.0
Heavy truck and lorry drivers	8324	12.1	14.9	2.8	5.4	-5.0	5.0
AGRICULTURAL AND OTHER MOBILE-PLANT OPERATORS		3.3	3.9	0.6	4.0	-5.4	5.4
Motorised farm and forestry plant operators	8331	0.3	0.3	0.0	-0.9	-7.9	7.9
Earth-moving- and related plant operators	8332	2.0	2.3	0.4	4.3	-5.3	5.3
Crane, hoist and related plant operators	8333	1.0	1.2	0.2	4.9	-4.8	4.8
SHIPS' DECK CREWS AND RELATED WORKERS		1.9	2.4	0.5	5.8	-5.4	5.4
Ships' deck crews and related workers	8340	1.9	2.4	0.5	5.8	-5.4	5.4
ELEMENTARY OCCUPATIONS		**166.9**	**193.7**	**26.9**	**3.8**	**-4.2**	**4.2**
STREET VENDORS AND RELATED WORKERS		6.8	8.1	1.3	4.6	-2.9	2.9
Street food vendors	9111	3.4	4.0	0.7	4.5	-2.9	2.9
Street vendors, non-food products	9112	2.7	3.3	0.5	4.6	-2.9	2.9
Door-to-door and telephone salespersons	9113	0.7	0.8	0.1	4.7	-3.1	3.1
DOMESTIC AND RELATED HELPERS, CLEANERS AND LAUNDERERS		31.6	39.6	8.0	5.8	-4.2	4.2
Domestic helpers and cleaners	9131	11.9	15.3	3.4	6.5	-5.5	5.5
Helpers and cleaners in offices, hotels and other establishments	9132	18.3	22.6	4.2	5.3	-3.3	3.3
Hand-launderers and pressers	9133	1.4	1.7	0.3	5.7	-4.4	4.4
BUILDING CARETAKERS, WINDOW AND RELATED CLEANERS		2.5	3.0	0.5	4.8	-3.1	3.1
Building caretakers	9141	1.1	1.4	0.2	5.1	-3.4	3.4
Vehicle, window and related cleaners	9142	1.4	1.6	0.3	4.6	-3.0	3.0
MESSENGERS, PORTERS, DOORKEEPERS AND RELATED WORKERS		37.0	43.7	6.6	4.2	-3.5	3.5

Occupation (1-DIGIT), (3-DIGIT) and (4-digit)	*4-digit Code*	*Estimated stock 2004 (000)*	*Projected employment 2008 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth 2004-08 (%)*	*Lower option (% of projection)*	*Upper option (% of projection)*
Messengers, package and luggage porters and deliverers	9151	23.1	27.4	4.3	4.3	-3.3	3.3
Doorkeepers, watchpersons and related workers	9152	11.7	13.6	2.0	4.0	-4.1	4.1
Doorkeeper	9153	2.2	2.6	0.4	3.8	-3.3	3.3
GARBAGE COLLECTORS AND RELATED LABOURERS		8.1	9.3	1.1	3.3	-2.4	2.4
Garbage collectors	9161	8.1	9.3	1.1	3.3	-2.4	2.4
AGRICULTURAL, FISHERY AND RELATED LABOURERS		20.5	19.3	-1.2	-1.4	-8.0	8.0
Farm-hands and labourers	9211	20.0	18.9	-1.2	-1.5	-8.1	8.1
Forestry labourers	9212	0.4	0.5	0.0	1.6	-4.5	4.5
MINING AND CONSTRUCTION LABOURERS		36.6	42.8	6.2	4.0	-4.7	4.7
Mining and quarrying labourers	9311	0.9	0.9	0.0	0.9	-6.1	6.1
Construction and maintenance labourers: roads, dams and similar constructions	9312	9.6	11.0	1.4	3.5	-3.6	3.6
Building construction labourers	9313	26.1	30.9	4.7	4.3	-5.1	5.1
MANUFACTURING LABOURERS		8.8	10.2	1.4	3.7	-2.3	2.3
Assembling labourers	9321	2.2	2.6	0.4	3.9	-2.5	2.5
Hand packers and other manufacturing labourers	9322	6.6	7.6	1.0	3.6	-2.2	2.2
TRANSPORT LABOURERS AND FREIGHT HANDLERS		14.9	17.7	2.8	4.5	-3.1	3.1
Hand or pedal vehicle drivers	9331	0.2	0.3	0.1	5.8	-5.4	5.4
Freight handlers	9333	14.6	17.4	2.8	4.5	-3.1	3.1
TOTAL EMPLOYMENT		**1100.7**	**1298.6**	**197.9**	**4.2**	**-3.6**	**3.6**

Appendix 6: Projections of employment for 4-digit occupations in 2009

The data in Table A5.1 show the estimated stock in 2004 and the employment projections in 2009 for 1-digit, 3-digit and 4-digit occupations. The estimates are rounded to the nearest thousand since exact numbers would tend to create a false sense of the reliability of the projections. Occupations with an estimated stock in 2004 of 0.1 (thousand) are excluded from the table.

The table also includes the number of new jobs (in thousands) projected for the period 2004-09, as well as the annual average rate of growth in employment (%). A lower and upper option (as a percentage of the employment projection) is also included in the table.

Table A6.1: Projected employment 2009 and projected new jobs and annual rate of growth, 2004-09

Occupation (1-DIGIT), (3-DIGIT) and (4-digit)	*4-digit Code*	*Estimated stock 2004 (000)*	*Projected employment 2008 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth 2004-08 (%)*	*Lower option (% of projection)*	*Upper option (% of projection)*
Legislators, Senior Officials & Managers		**35.6**	**44.3**	**8.7**	**5.6**	**-3.3**	**3.3**
LEGISLATORS		0.5	0.6	0.1	3.8	-2.4	2.4
Legislators	1110	0.5	0.6	0.1	3.8	-2.4	2.4
SENIOR GOVERNMENT OFFICIALS		2.5	3.0	0.4	4.1	-2.7	2.7
Senior Government Officials	1120	2.5	3.0	0.4	4.1	-2.7	2.7
SENIOR OFFICIALS OF SPECIAL-INTEREST ORGANISATIONS		0.9	1.2	0.3	6.8	-3.9	3.9
Senior officials of employers', workers' and other economic-interest organisations	1142	0.2	0.3	0.1	7.4	-5.4	5.4
Senior officials of humanitarian and other special-interest organisations	1143	0.7	0.9	0.2	6.5	-3.3	3.3
DIRECTORS AND CHIEF EXECUTIVES		3.4	4.2	0.8	5.6	-3.2	3.2
Directors and chief executives	1210	3.4	4.2	0.8	5.6	-3.2	3.2
PRODUCTION AND OPERATIONS DEPARTMENT MANAGERS		5.0	6.2	1.1	5.2	-3.6	3.6
Production and operations department managers in agriculture, hunting, forestry and fishing	1221	0.3	0.3	0.0	4.1	-2.3	2.3
Production and operations department managers in manufacturing	1222	0.8	1.0	0.2	4.8	-2.6	2.6

Occupation (1-DIGIT), (3-DIGIT) and (4-digit)	*4-digit Code*	*Estimated stock 2004 (000)*	*Projected employment 2008 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth 2004-08 (%)*	*Lower option (% of projection)*	*Upper option (% of projection)*
Production and operations department managers in construction	1223	0.5	0.7	0.1	5.7	-3.3	3.3
Production and operations department managers in wholesale and retail trade	1224	0.3	0.3	0.1	6.1	-3.2	3.2
Production and operations department managers in restaurants and hotels	1225	0.7	0.9	0.2	6.8	-5.0	5.0
Production and operations department managers in transport, storage and communications	1226	0.9	1.1	0.2	5.6	-4.7	4.7
Production and operations department managers in business services	1227	1.0	1.1	0.2	3.8	-3.9	3.9
Production and operations department managers not elsewhere classified	1229	0.6	0.7	0.1	5.1	-2.2	2.2
OTHER DEPARTMENT MANAGERS		6.4	7.9	1.5	5.5	-3.4	3.4
Other departments managers	1230	0.3	0.4	0.1	6.2	-2.5	2.5
Finance and administration department managers	1231	3.2	4.0	0.8	5.6	-3.5	3.5
Personnel and industrial relations department managers	1232	0.4	0.5	0.1	5.4	-3.4	3.4
Sales and marketing department managers	1233	0.9	1.1	0.2	5.5	-3.4	3.4
Advertising and public relations department managers	1234	0.3	0.4	0.1	5.7	-3.6	3.6
Supply and distribution department managers	1235	0.6	0.7	0.1	5.2	-3.3	3.3
Computing services department managers	1236	0.4	0.5	0.1	5.3	-3.7	3.7
Research and development department managers	1237	0.2	0.3	0.1	4.9	-3.0	3.0
GENERAL MANAGERS		16.9	21.3	4.4	5.9	-3.3	3.3
General managers in manufacturing	1312	2.2	2.7	0.4	4.6	-2.1	2.1
General managers in construction	1313	4.8	6.0	1.2	5.8	-3.3	3.3
General managers in wholesale and retail trade	1314	4.1	5.0	1.0	5.6	-2.9	2.9
General managers of restaurants and hotels	1315	0.7	0.9	0.2	7.3	-4.2	4.2

Occupation (1-DIGIT), (3-DIGIT) and (4-digit)	*4-digit Code*	*Estimated stock 2004 (000)*	*Projected employment 2008 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth 2004-08 (%)*	*Lower option (% of projection)*	*Upper option (% of projection)*
General managers in transport, storage and communications	1316	1.1	1.5	0.3	6.6	-5.0	5.0
General managers of business services	1317	1.5	2.1	0.5	7.5	-3.6	3.6
General managers in personal care, cleaning and related services	1318	0.2	0.3	0.1	7.0	-4.2	4.2
General managers not elsewhere classified	1319	2.3	2.9	0.6	6.3	-3.8	3.8
Professionals		**161.4**	**196.8**	**35.4**	**5.1**	**-2.3**	**2.3**
PHYSICISTS, CHEMISTS AND RELATED PROFESSIONALS		0.7	0.9	0.1	4.4	-2.9	2.9
Chemists	2113	0.4	0.5	0.1	5.0	-2.7	2.7
Geologists and geophysicists	2114	0.2	0.2	0.0	3.3	-3.7	3.7
MATHEMATICIANS, STATISTICIANS AND RELATED PROFESSIONALS		0.2	0.2	0.0	4.3	-2.5	2.5
Statisticians	2122	0.2	0.2	0.0	4.3	-2.5	2.5
COMPUTING PROFESSIONALS		3.6	4.6	1.0	6.4	-3.3	3.3
Computer systems designers and analysts	2131	2.4	3.1	0.7	6.5	-3.3	3.3
Computer programmers	2132	1.1	1.4	0.3	6.3	-3.4	3.4
ARCHITECTS, ENGINEERS AND RELATED PROFESSIONALS		21.5	26.9	5.4	5.8	-3.4	3.4
Architects, town and traffic planners	2141	1.7	2.3	0.6	7.4	-3.5	3.5
Civil engineers	2142	9.1	11.4	2.3	5.9	-3.2	3.2
Electrical engineers	2143	2.9	3.5	0.7	5.4	-3.4	3.4
Electronics and telecommunications engineers	2144	2.3	2.9	0.6	5.9	-3.9	3.9
Mechanical engineers	2145	3.3	4.0	0.7	5.1	-3.3	3.3
Chemical engineers	2146	1.1	1.4	0.3	6.1	-3.3	3.3
Mining engineers, metallurgists and related professionals	2147	0.3	0.4	0.1	5.0	-4.0	4.0
Architects, engineers and related professionals not elsewhere classified	2149	0.8	1.0	0.2	5.9	-3.7	3.7

Occupation (1-DIGIT), (3-DIGIT) and (4-digit)	*4-digit Code*	*Estimated stock 2004 (000)*	*Projected employment 2008 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth 2004-08 (%)*	*Lower option (% of projection)*	*Upper option (% of projection)*
LIFE SCIENCE PROFESSIONALS		2.8	3.0	0.2	1.6	-4.3	4.3
Biologists, botanists, zoologists and related professionals	2211	0.2	0.2	0.0	4.1	-2.5	2.5
Agronomists and related professionals	2213	2.5	2.7	0.1	1.3	-4.6	4.6
HEALTH PROFESSIONALS (except nursing)		13.8	17.3	3.5	5.8	-1.9	1.9
Medical doctors	2221	7.0	8.8	1.8	6.1	-1.7	1.7
Dentists	2222	2.0	2.6	0.5	6.1	-1.7	1.7
Veterinarians	2223	0.4	0.4	0.0	2.8	-3.5	3.5
Pharmacists	2224	2.6	3.2	0.6	5.5	-2.6	2.6
Health professionals (except nursing) not elsewhere classified	2229	1.8	2.3	0.5	5.9	-1.8	1.8
NURSING AND MIDWIFERY PROFESSIONALS		3.2	4.1	0.9	6.1	-1.7	1.7
Nursing and midwifery professionals	2230	3.2	4.1	0.9	6.1	-1.7	1.7
COLLEGE, UNIVERSITY AND HIGHER EDUCATION TEACHING PROFESSIONALS		4.5	5.3	0.8	4.4	-1.0	1.0
College, university and higher education teaching professionals	2310	4.5	5.3	0.8	4.4	-1.0	1.0
SECONDARY EDUCATION TEACHING PROFESSIONALS		11.2	13.3	2.1	4.4	-1.0	1.0
Secondary education teaching professionals	2320	11.2	13.3	2.1	4.4	-1.0	1.0
PRIMARY AND PRE-PRIMARY EDUCATION TEACHING PROFESSIONALS		47.6	56.4	8.8	4.4	-1.0	1.0
Primary education teaching professionals	2331	46.5	55.1	8.6	4.3	-1.0	1.0
Preprimary education teaching professionals	2332	1.1	1.3	0.2	4.6	-1.2	1.2
SPECIAL EDUCATION TEACHING PROFESSIONALS		0.2	0.3	0.0	4.8	-1.3	1.3
Special education teaching professionals	2340	0.2	0.3	0.0	4.8	-1.3	1.3
OTHER TEACHING PROFESSIONALS		0.9	1.1	0.2	4.4	-1.2	1.2
School inspectors	2352	0.8	0.9	0.1	4.4	-1.0	1.0
BUSINESS PROFESSIONALS		39.1	47.7	8.6	5.1	-3.2	3.2

Occupation (1-DIGIT), (3-DIGIT) and (4-digit)	*4-digit Code*	*Estimated stock 2004 (000)*	*Projected employment 2008 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth 2004-08 (%)*	*Lower option (% of projection)*	*Upper option (% of projection)*
Accountants	2411	15.0	18.4	3.4	5.2	-3.3	3.3
Personnel and careers professionals	2412	21.2	25.7	4.5	4.9	-3.1	3.1
Business professionals not elsewhere classified	2419	2.9	3.6	0.7	5.5	-3.4	3.4
LEGAL PROFESSIONALS		6.4	8.6	2.2	7.8	-3.4	3.4
Lawyers	2421	5.5	7.6	2.1	8.4	-3.6	3.6
Judges	2422	0.8	0.9	0.1	3.8	-2.3	2.3
ARCHIVISTS, LIBRARIANS AND RELATED INFORMATION PROFESSIONALS		1.1	1.3	0.2	4.7	-1.9	1.9
Librarians and related information professionals	2432	0.6	0.8	0.1	4.6	-1.9	1.9
Specialized Workers in Stores & Warehouses	2433	0.4	0.5	0.1	4.8	-1.7	1.7
SOCIAL SCIENCE AND RELATED PROFESSIONALS		2.2	2.7	0.5	5.4	-2.6	2.6
Economists	2441	0.3	0.4	0.1	5.3	-3.6	3.6
Sociologists, anthropologists and related professionals	2442	0.3	0.3	0.1	4.5	-1.6	1.6
Philologists, translators and interpreters	2444	0.5	0.6	0.1	6.9	-3.6	3.6
Psychologists	2445	0.7	0.8	0.1	4.5	-1.3	1.3
Social work professionals	2446	0.4	0.5	0.1	6.0	-3.4	3.4
WRITERS AND CREATIVE OR PERFORMING ARTISTS		1.6	2.1	0.5	6.9	-4.7	4.7
Authors, journalists and other writers	2451	0.9	1.2	0.3	6.8	-4.5	4.5
Composers, musicians and singers	2453	0.4	0.5	0.1	7.3	-5.3	5.3
Film, stage and related actors and directors	2455	0.2	0.3	0.1	7.1	-5.0	5.0
RELIGIOUS PROFESSIONALS		0.9	1.1	0.2	4.8	-3.3	3.3
Specialists in Religion	2460	0.9	1.1	0.2	4.8	-3.3	3.3
Technicians & Associate Professionals		**104.6**	**128.4**	**23.7**	**5.2**	**-2.6**	**2.6**
PHYSICAL AND ENGINEERING SCIENCE TECHNICIANS		16.5	20.4	3.8	5.4	-3.5	3.5

Occupation (1-DIGIT), (3-DIGIT) and (4-digit)	*4-digit Code*	*Estimated stock 2004 (000)*	*Projected employment 2008 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth 2004-08 (%)*	*Lower option (% of projection)*	*Upper option (% of projection)*
Chemical and physical science technicians	3111	0.6	0.8	0.1	3.9	-2.7	2.7
Civil engineering technicians	3112	3.9	4.8	1.0	5.7	-3.2	3.2
Electrical engineering technicians	3113	3.4	4.1	0.7	4.9	-3.5	3.5
Electronics and telecommunications engineering technicians	3114	2.7	3.5	0.7	6.1	-4.3	4.3
Mechanical engineering technicians	3115	2.7	3.2	0.5	4.7	-3.2	3.2
Chemical engineering technicians	3116	0.3	0.3	0.0	3.5	-3.2	3.2
Draughtspersons	3118	2.2	2.8	0.6	6.2	-3.6	3.6
Physical and engineering science technicians not elsewhere classified	3119	0.6	0.8	0.1	5.1	-3.0	3.0
COMPUTER ASSOCIATE PROFESSIONALS		4.5	5.6	1.1	5.7	-3.2	3.2
Computer assistants	3121	3.0	3.6	0.7	5.2	-3.1	3.1
Computer equipment operators	3122	0.8	1.0	0.2	5.2	-3.2	3.2
Industrial robot controllers	3123	0.7	1.0	0.3	8.4	-3.6	3.6
OPTICAL AND ELECTRONIC EQUIPMENT OPERATORS		3.3	4.3	1.0	7.1	-3.0	3.0
Photographers and image and sound recording equipment operators	3131	2.5	3.4	0.8	7.3	-3.1	3.1
Medical equipment operators	3133	0.5	0.7	0.1	6.0	-1.8	1.8
SHIP AND AIRCRAFT CONTROLLERS AND TECHNICIANS		0.9	1.1	0.2	6.1	-4.7	4.7
Aircraft pilots and related associate professionals	3143	0.4	0.5	0.1	6.4	-5.0	5.0
Air traffic controllers	3144	0.3	0.4	0.1	5.7	-4.4	4.4
SAFETY AND QUALITY INSPECTORS		1.2	1.5	0.3	4.9	-2.7	2.7
Safety, health and quality inspectors	3152	1.2	1.4	0.2	4.9	-2.7	2.7
LIFE SCIENCE TECHNICIANS AND RELATED ASSOCIATE PROFESSIONALS		0.3	0.4	0.0	1.6	-3.7	3.7
Agronomy and forestry technicians	3212	0.2	0.2	0.0	-0.7	-5.5	5.5
MODERN HEALTH ASSOCIATE PROFESSIONALS (except nursing)		5.1	6.3	1.2	5.6	-2.1	2.1

Occupation (1-DIGIT), (3-DIGIT) and (4-digit)	*4-digit Code*	*Estimated stock 2004 (000)*	*Projected employment 2008 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth 2004-08 (%)*	*Lower option (% of projection)*	*Upper option (% of projection)*
Sanitarians	3222	0.8	1.0	0.2	5.7	-1.8	1.8
Optometrists and opticians	3224	0.3	0.3	0.1	5.6	-2.4	2.4
Dental assistants	3225	0.5	0.7	0.1	5.6	-1.7	1.7
Physiotherapists and related associate professionals	3226	0.2	0.3	0.1	6.1	-1.9	1.9
Pharmaceutical assistants	3228	2.3	2.8	0.6	5.6	-2.2	2.2
Modern health associate professionals (except nursing) not elsewhere classified	3229	0.7	0.8	0.2	5.9	-1.7	1.7
NURSING AND MIDWIFERY ASSOCIATE PROFESSIONALS		8.4	10.6	2.2	6.1	-1.7	1.7
Nursing associate professionals	3231	7.7	9.7	2.0	6.1	-1.7	1.7
Midwifery associate professionals	3232	0.7	0.9	0.2	6.1	-1.7	1.7
PRIMARY EDUCATION TEACHING ASSOCIATE PROFESSIONALS		21.6	25.6	4.0	4.4	-1.0	1.0
Primary education teaching associate professionals	3310	21.6	25.6	4.0	4.4	-1.0	1.0
PRE-PRIMARY EDUCATION TEACHING ASSOCIATE PROFESSIONALS		2.8	3.4	0.6	4.6	-1.2	1.2
Pre-primary education teaching associate professionals	3320	2.8	3.4	0.6	4.6	-1.2	1.2
SPECIAL EDUCATION TEACHING ASSOCIATE PROFESSIONALS		0.4	0.5	0.1	4.7	-1.6	1.6
Special education teaching associate professionals	3330	0.4	0.5	0.1	4.7	-1.6	1.6
OTHER TEACHING ASSOCIATE PROFESSIONALS		3.6	4.4	0.8	5.1	-2.1	2.1
Other teaching associate professionals	3340	3.6	4.4	0.8	5.1	-2.1	2.1
FINANCE AND SALES ASSOCIATE PROFESSIONALS		8.5	10.8	2.2	5.9	-3.5	3.5
Securities and finance dealers and brokers	3411	0.6	0.8	0.2	7.9	-3.6	3.6
Insurance representatives	3412	0.4	0.5	0.1	6.0	-3.6	3.6
Estate agents	3413	0.4	0.5	0.1	8.3	-3.9	3.9

Occupation (1-DIGIT), (3-DIGIT) and (4-digit)	*4-digit Code*	*Estimated stock 2004 (000)*	*Projected employment 2008 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth 2004-08 (%)*	*Lower option (% of projection)*	*Upper option (% of projection)*
Travel consultants and organisers	3414	0.3	0.4	0.1	6.5	-5.1	5.1
Technical and commercial sales representatives	3415	5.0	6.2	1.2	5.4	-2.9	2.9
Buyers	3416	0.5	0.6	0.1	5.3	-3.4	3.4
Appraisers, valuers and auctioneers	3417	1.4	1.8	0.4	6.5	-5.2	5.2
BUSINESS SERVICES AGENTS AND TRADE BROKERS		2.0	2.6	0.6	6.4	-5.0	5.0
Clearing and forwarding agents	3422	1.9	2.4	0.5	6.5	-5.1	5.1
ADMINISTRATIVE ASSOCIATE PROFESSIONALS		18.8	22.7	4.0	4.9	-3.1	3.1
Administrative secretaries and related associate professionals	3431	5.1	6.2	1.1	5.1	-3.4	3.4
Legal and related business associate professionals	3432	0.5	0.6	0.1	4.1	-2.9	2.9
Bookkeepers	3433	8.4	10.1	1.7	4.9	-3.2	3.2
Statistical, mathematical and related associate professionals	3434	0.2	0.2	0.0	4.4	-2.8	2.8
Administrative associate professionals not elsewhere classified	3439	4.6	5.6	1.0	4.8	-2.7	2.7
CUSTOMS, TAX AND RELATED GOVERNMENT ASSOCIATE PROFESSIONALS		2.9	3.5	0.6	4.7	-2.8	2.8
Customs and border inspectors	3441	2.1	2.5	0.4	4.6	-2.6	2.6
Government tax and excise officials	3442	0.7	0.8	0.1	5.0	-3.6	3.6
Government social benefits officials	3443	0.2	0.2	0.0	4.0	-2.2	2.2
SOCIAL WORK ASSOCIATE PROFESSIONALS		0.2	0.3	0.1	4.9	-2.0	2.0
Social work associate professionals	3460	0.2	0.2	0.0	5.5	-1.8	1.8
ARTISTIC, ENTERTAINMENT AND SPORTS ASSOCIATE PROFESSIONALS		1.9	2.4	0.5	6.4	-3.8	3.8
Decorators and commercial designers	3471	0.9	1.1	0.2	6.4	-3.1	3.1

Occupation (1-DIGIT), (3-DIGIT) and (4-digit)	*4-digit Code*	*Estimated stock 2004 (000)*	*Projected employment 2008 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth 2004-08 (%)*	*Lower option (% of projection)*	*Upper option (% of projection)*
Street, night-club and related musicians, singers and dancers	3473	0.3	0.4	0.1	6.5	-4.2	4.2
Athletes, sportspersons and related associate professionals	3475	0.7	0.8	0.2	6.5	-4.4	4.4
RELIGIOUS ASSOCIATE PROFESSIONALS		1.7	2.1	0.4	5.5	-3.8	3.8
Religious associate professionals	3480	1.7	2.1	0.4	5.5	-3.8	3.8
Clerks		**100.7**	**124.4**	**23.7**	**5.4**	**-3.4**	**3.4**
SECRETARIES AND KEYBOARD-OPERATING CLERKS		20.7	26.0	5.3	5.9	-3.0	3.0
Stenographers and typists	4111	4.5	5.4	0.9	4.6	-2.7	2.7
Data entry operators	4113	0.8	0.9	0.2	4.5	-3.2	3.2
Secretaries	4115	15.4	19.6	4.3	6.3	-3.1	3.1
NUMERICAL CLERKS		15.5	18.7	3.2	4.8	-3.5	3.5
Accounting and bookkeeping clerks	4121	14.0	16.9	2.9	4.8	-3.5	3.5
Statistical and finance clerks	4122	1.5	1.8	0.3	4.3	-3.2	3.2
MATERIAL-RECORDING AND TRANSPORT CLERKS		20.0	24.6	4.6	5.4	-3.5	3.5
Stock clerks	4131	8.0	9.8	1.8	5.1	-3.2	3.2
Production clerks	4132	3.6	4.4	0.8	5.2	-3.1	3.1
Transport clerks	4133	8.3	10.4	2.1	5.7	-3.9	3.9
LIBRARY, MAIL AND RELATED CLERKS		19.8	23.9	4.1	4.8	-3.3	3.3
Library and filing clerks	4141	18.5	22.3	3.8	4.8	-3.2	3.2
Mail carriers and sorting clerks	4142	1.3	1.6	0.3	5.0	-3.5	3.5
OTHER OFFICE CLERKS		0.7	0.9	0.2	5.4	-2.8	2.8
Other office clerks	4190	0.7	0.9	0.2	5.4	-2.8	2.8
CASHIERS, TELLERS AND RELATED CLERKS		10.9	13.5	2.6	5.6	-3.4	3.4
Cashiers and ticket clerks	4211	8.5	10.7	2.2	5.9	-3.4	3.4
Debt-collectors and related workers	4215	2.3	2.7	0.4	4.5	-3.4	3.4

Occupation (1-DIGIT), (3-DIGIT) and (4-digit)	*4-digit Code*	*Estimated stock 2004 (000)*	*Projected employment 2008 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth 2004-08 (%)*	*Lower option (% of projection)*	*Upper option (% of projection)*
CLIENT INFORMATION CLERKS		12.3	15.6	3.3	6.1	-4.2	4.2
Travel agency and related clerks	4221	2.8	3.6	0.8	6.6	-5.2	5.2
Receptionists and information clerks	4222	5.3	6.8	1.5	6.3	-4.0	4.0
Telephone switchboard operators	4223	4.2	5.2	1.0	5.7	-3.9	3.9
RENTAL OFFICE CLERKS		0.9	1.2	0.4	9.3	-3.8	3.8
Rental clerk	4230	0.4	0.5	0.2	9.3	-3.8	3.8
Rental office clerks	4231	0.5	0.7	0.2	9.2	-3.8	3.8
Service Workers & Shop & Market Sales Workers		**165.0**	**208.7**	**43.7**	**6.1**	**-3.4**	**3.4**
TRAVEL ATTENDANTS AND RELATED WORKERS		4.0	5.2	1.1	6.4	-4.5	4.5
Travel attendants and travel stewards	5111	2.9	3.7	0.8	6.4	-4.2	4.2
Transport conductors	5112	1.1	1.4	0.3	6.7	-5.3	5.3
HOUSEKEEPING AND RESTAURANT SERVICES WORKERS		21.4	28.2	6.8	7.1	-4.1	4.1
Housekeepers and related workers	5121	3.5	4.6	1.1	7.0	-4.6	4.6
Cooks	5122	10.2	13.4	3.2	7.1	-3.9	3.9
Waiters, waitresses and bartenders	5123	7.7	10.2	2.5	7.2	-4.0	4.0
PERSONAL CARE AND RELATED WORKERS		0.9	1.1	0.2	5.4	-1.7	1.7
Child-care workers	5131	0.6	0.7	0.1	5.2	-1.5	1.5
Institution-based personal care workers	5132	0.3	0.4	0.1	5.9	-2.1	2.1
OTHER PERSONAL SERVICES WORKERS		20.2	26.9	6.7	7.4	-5.4	5.4
Hairdressers, barbers, beauticians and related workers	5141	20.1	26.8	6.7	7.4	-5.4	5.4
PROTECTIVE SERVICES WORKERS		4.6	6.2	1.6	7.6	-3.5	3.5
Fire-fighters	5161	0.4	0.4	0.1	5.2	-4.5	4.5
Police officers	5162	2.2	3.0	0.8	7.9	-3.5	3.5

Occupation (1-DIGIT), (3-DIGIT) and (4-digit)	*4-digit Code*	*Estimated stock 2004 (000)*	*Projected employment 2008 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth 2004-08 (%)*	*Lower option (% of projection)*	*Upper option (% of projection)*
Protective services workers not elsewhere classified	5169	2.1	2.8	0.7	7.7	-3.4	3.4
SHOP SALESPERSONS AND DEMONSTRATORS		96.4	119.6	23.2	5.5	-2.8	2.8
Shop salespersons and demonstrators	5220	96.4	119.6	23.2	5.5	-2.8	2.8
SCIENTIFIC & MEDICAL OFFICE SUPPLIES SALESPERSONS		16.0	19.9	3.8	5.5	-2.8	2.8
Stationery salespersons	5310	2.3	2.8	0.5	5.6	-2.8	2.8
Educational salespersons	5311	1.1	1.4	0.3	5.9	-3.2	3.2
Medical instruments salespersons	5312	1.2	1.4	0.3	5.5	-2.8	2.8
Construction materials salespersons	5313	4.6	5.7	1.1	5.5	-2.8	2.8
Construction tools salespersons	5314	1.5	1.9	0.4	5.5	-2.8	2.8
Cars & bicycles salespersons	5316	1.3	1.6	0.3	5.5	-2.8	2.8
Cars & spare parts salespersons	5317	4.0	5.0	1.0	5.5	-2.8	2.8
INDUSTRIAL & AGRICULTURAL SUPPLIES SALESPERSONS		1.3	1.6	0.3	5.5	-2.8	2.8
Industrial equipment salespersons	5340	0.5	0.6	0.1	5.5	-2.8	2.8
Agricultural equipment salespersons	5341	0.8	1.0	0.2	5.5	-2.8	2.8
Skilled Agricultural & Fishery Workers		**30.1**	**27.5**	**-2.6**	**-2.3**	**-6.6**	**6.6**
MARKET GARDENERS AND CROP GROWERS		18.5	16.9	-1.6	-2.2	-6.6	6.6
Field crop and vegetable growers	6111	16.7	15.2	-1.5	-2.3	-6.7	6.7
Tree and shrub crop growers	6112	1.3	1.2	-0.1	-2.3	-6.6	6.6
Gardeners, horticultural and nursery growers	6113	0.5	0.5	0.0	1.3	-4.0	4.0
MARKET-ORIENTED ANIMAL PRODUCERS AND RELATED WORKERS		11.3	10.3	-1.0	-2.3	-6.7	6.7
Dairy and livestock producers	6121	7.4	6.8	-0.7	-2.3	-6.7	6.7
Poultry producers	6122	3.8	3.4	-0.3	-2.3	-6.7	6.7
FORESTRY AND RELATED WORKERS		0.2	0.2	0.0	-0.7	-5.3	5.3

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Forestry workers and loggers	6141	0.2	0.2	0.0	-0.7	-5.3	5.3
Craft & Related Workers		**218.6**	**267.3**	**48.6**	**5.2**	**-2.9**	**2.9**
MINERS, SHOTFIRERS, STONE CUTTERS AND CARVERS		2.8	2.9	0.0	0.4	-6.6	6.6
Miners and quarry workers	7111	2.1	2.0	-0.1	-1.0	-8.2	8.2
Stone splitters, cutters and carvers	7113	0.7	0.8	0.1	4.0	-3.0	3.0
BUILDING FRAME AND RELATED TRADES WORKERS		65.4	81.7	16.3	5.7	-3.3	3.3
Bricklayers and stonemasons	7122	53.2	66.4	13.2	5.7	-3.3	3.3
Concrete placers, concrete finishers and related workers	7123	7.2	8.9	1.8	5.7	-3.3	3.3
Carpenters and joiners	7124	5.0	6.3	1.3	5.7	-3.3	3.3
BUILDING FINISHERS AND RELATED TRADES WORKERS		21.1	26.2	5.1	5.6	-3.3	3.3
Floor layers and tile setters	7132	4.7	5.9	1.2	5.7	-3.3	3.3
Plasterers	7133	1.7	2.1	0.4	5.7	-3.3	3.3
Glaziers	7135	0.4	0.5	0.1	5.1	-2.6	2.6
Plumbers and pipe fitters	7136	7.8	9.7	1.9	5.5	-3.3	3.3
Building and related electricians	7137	4.8	6.0	1.2	5.7	-3.3	3.3
Conditions Workers	7138	1.7	2.1	0.4	5.4	-2.9	2.9
PAINTERS, BUILDING STRUCTURE CLEANERS AND RELATED TRADES WORKERS		6.9	8.6	1.7	5.7	-3.3	3.3
Painters and related workers	7141	6.7	8.4	1.7	5.7	-3.3	3.3
METAL MOULDERS, WELDERS, SHEET-METAL WORKERS, STRUCTURAL- METAL PREPARERS, AND RELATED TRADES WORKERS		15.2	18.4	3.2	4.8	-2.5	2.5
Metal moulders and coremakers	7211	0.3	0.3	0.1	4.5	-2.0	2.0
Welders and flamecutters	7212	2.5	3.1	0.5	4.9	-3.0	3.0

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Sheet metal workers	7213	3.5	4.2	0.8	5.0	-2.7	2.7
Structural-metal preparers and erectors	7214	8.9	10.7	1.8	4.7	-2.2	2.2
BLACKSMITHS, TOOL-MAKERS AND RELATED TRADES WORKERS		4.6	5.5	0.9	4.6	-2.3	2.3
Blacksmiths, hammer-smiths and forging-press workers	7221	1.0	1.2	0.2	4.3	-2.3	2.3
Tool-makers and related workers	7222	3.5	4.2	0.7	4.7	-2.3	2.3
MACHINERY MECHANICS AND FITTERS		26.4	32.5	6.1	5.3	-3.0	3.0
Motor vehicle mechanics and fitters	7231	23.0	28.4	5.4	5.4	-3.0	3.0
Aircraft engine mechanics and fitters	7232	0.3	0.4	0.1	6.2	-4.8	4.8
Agricultural- or industrial-machinery mechanics and fitters	7233	3.1	3.7	0.6	4.7	-2.9	2.9
ELECTRICAL AND ELECTRONIC EQUIPMENT MECHANICS AND FITTERS		11.3	13.7	2.4	5.0	-3.1	3.1
Electrical mechanics and fitters	7241	8.7	10.5	1.9	5.0	-3.0	3.0
Electronics fitters	7242	0.6	0.8	0.2	6.0	-3.5	3.5
Electronics mechanics and servicers	7243	0.8	1.0	0.2	6.1	-3.3	3.3
Telegraph and telephone installers and servicers	7244	0.5	0.6	0.1	6.1	-4.5	4.5
Electrical line installers, repairers and cable jointers	7245	0.7	0.8	0.1	2.3	-2.8	2.8
PRECISION WORKERS IN METAL AND RELATED MATERIALS		1.3	1.5	0.3	4.7	-2.1	2.1
Jewellery and precious-metal workers	7313	1.1	1.3	0.2	4.6	-2.0	2.0
POTTERS, GLASS-MAKERS AND RELATED TRADES WORKERS		0.5	0.6	0.1	4.8	-2.4	2.4
Glass makers, cutters, grinders and finishers	7322	0.2	0.2	0.0	4.7	-2.6	2.6
PRINTING AND RELATED TRADES WORKERS		2.6	3.1	0.6	5.0	-2.2	2.2
Compositors, typesetters and related workers	7341	1.6	1.9	0.3	4.8	-2.1	2.1
Photographic and related workers	7344	0.4	0.6	0.1	5.9	-2.7	2.7

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Bookbinders and related workers	7345	0.4	0.5	0.1	4.6	-2.0	2.0
FOOD PROCESSING AND RELATED TRADES WORKERS		10.2	12.3	2.1	4.8	-2.2	2.2
Butchers, fishmongers and related food preparers	7411	2.4	3.0	0.6	5.4	-2.7	2.7
Bakers, pastry-cooks and confectionery makers	7412	7.1	8.5	1.4	4.6	-2.1	2.1
Dairy-products makers	7413	0.4	0.5	0.1	4.6	-2.1	2.1
WOOD TREATERS, CABINET-MAKERS AND RELATED TRADES WORKERS		8.8	10.5	1.7	4.6	-2.0	2.0
Cabinet makers and related workers	7422	8.7	10.4	1.7	4.6	-2.0	2.0
TEXTILE, GARMENT AND RELATED TRADES WORKERS		39.7	47.4	7.7	4.5	-2.0	2.0
Weavers, knitters and related workers	7432	0.4	0.5	0.1	4.6	-2.0	2.0
Tailors, dressmakers and hatters	7433	37.5	44.8	7.3	4.5	-2.0	2.0
Upholsterers and related workers	7437	1.6	1.9	0.3	4.6	-2.1	2.1
PELT, LEATHER AND SHOEMAKING TRADES WORKERS		1.8	2.2	0.4	5.1	-2.5	2.5
Shoe-makers and related workers	7442	1.7	2.1	0.4	5.1	-2.6	2.6
Plant & Machine Operators & Assemblers		**117.7**	**145.4**	**27.7**	**5.4**	**-3.9**	**3.9**
MINING- AND MINERAL-PROCESSING PLANT OPERATORS		2.1	2.5	0.4	4.6	-3.2	3.2
Mineral-ore- and stone-processing-plan operators	8112	1.2	1.4	0.2	4.2	-2.8	2.8
Well drillers and borers and related workers	8113	0.8	1.0	0.2	5.4	-3.5	3.5
METAL-PROCESSING-PLANT OPERATORS		1.0	1.1	0.2	4.4	-2.0	2.0
Metal melters, casters and rolling-mill operators	8122	0.3	0.4	0.1	4.4	-2.0	2.0
Metal drawers and extruders	8124	0.6	0.7	0.1	4.5	-2.0	2.0

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GLASS, CERAMICS AND RELATED PLANT OPERATORS		0.4	0.5	0.1	4.5	-2.0	2.0
Glass and ceramics kiln and related machine operators	8131	0.4	0.5	0.1	4.5	-2.0	2.0
WOOD-PROCESSING- AND PAPERMAKING-PLANT OPERATORS		0.5	0.7	0.1	4.5	-2.0	2.0
Paper-pulp plant operators	8142	0.2	0.2	0.0	4.5	-2.0	2.0
Papermaking-plant operators	8143	0.4	0.4	0.1	4.5	-2.0	2.0
CHEMICAL-PROCESSING-PLANT OPERATORS		2.0	2.4	0.4	4.4	-2.7	2.7
Crushing-, grinding- and chemical-mixing machinery operators	8151	0.2	0.2	0.0	4.0	-3.2	3.2
Chemical-filtering- and separating-equipment operators	8153	0.2	0.2	0.0	4.5	-2.0	2.0
Petroleum- and natural-gas-refining-plant operators	8155	1.3	1.5	0.3	4.9	-2.4	2.4
Chemical-processing-plant operators not elsewhere classified	8159	0.2	0.2	0.0	2.2	-4.7	4.7
POWER-PRODUCTION AND RELATED PLANT OPERATORS		2.3	2.5	0.2	1.7	-3.0	3.0
Power-production plant operators	8161	0.4	0.4	0.0	1.9	-2.7	2.7
Incinerator, water-treatment and related plant operators	8163	1.9	2.0	0.1	1.7	-3.1	3.1
METAL- AND MINERAL-PRODUCTS MACHINE OPERATORS		6.4	7.7	1.2	4.5	-2.0	2.0
Machine-tool operators	8211	2.0	2.4	0.4	4.5	-2.0	2.0
Cement and other mineral products machine operators	8212	4.5	5.3	0.9	4.5	-2.0	2.0
CHEMICAL-PRODUCTS MACHINE OPERATORS		1.8	2.1	0.3	4.5	-2.3	2.3
Pharmaceutical- and toiletry-products machine operators	8221	1.0	1.1	0.2	4.2	-2.3	2.3

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Chemical-products machine operators not elsewhere classified	8229	0.6	0.8	0.1	4.5	-2.0	2.0
RUBBER- AND PLASTIC-PRODUCTS MACHINE OPERATORS		2.3	2.7	0.4	4.6	-2.1	2.1
Rubber-products machine operators	8231	0.2	0.2	0.0	5.2	-2.8	2.8
Plastic-products machine operators	8232	2.1	2.5	0.4	4.5	-2.0	2.0
WOOD-PRODUCTS MACHINE OPERATORS		0.2	0.3	0.0	4.8	-2.2	2.2
Wood production equipment workers	8240	0.2	0.3	0.0	4.8	-2.2	2.2
PRINTING-, BINDING- AND PAPER-PRODUCTS MACHINE OPERATORS		1.2	1.4	0.2	4.6	-2.0	2.0
Printing-machine operators	8251	0.5	0.7	0.1	4.6	-2.1	2.1
Bookbinding-machine operators	8252	0.2	0.3	0.0	4.6	-2.0	2.0
Paper-products machine operators	8253	0.5	0.5	0.1	4.5	-2.0	2.0
TEXTILE-, FUR- AND LEATHER-PRODUCTS MACHINE OPERATORS		6.0	7.2	1.2	4.6	-2.0	2.0
Fibre-preparing-, spinning- and winding machine operators	8261	0.4	0.5	0.1	4.7	-2.1	2.1
Weaving- and knitting-machine operators	8262	1.1	1.3	0.2	4.5	-2.0	2.0
Sewing machine operators	8263	4.0	4.8	0.8	4.5	-2.0	2.0
Bleaching-, dyeing- and cleaning-machine operators	8264	0.2	0.3	0.1	5.8	-3.0	3.0
FOOD AND RELATED PRODUCTS MACHINE OPERATORS		3.5	4.1	0.7	4.5	-2.0	2.0
Meat- and fish-processing-machine operators	8271	0.3	0.4	0.1	4.2	-2.2	2.2
Dairy-products machine operators	8272	0.5	0.6	0.1	4.5	-2.0	2.0
Grain- and spice-milling-machine operators	8273	0.5	0.6	0.1	4.5	-2.0	2.0
Baked-goods, cereal and chocolate-products machine operators	8274	0.7	0.8	0.1	4.6	-2.0	2.0
Fruit-, vegetable- and nut-processing-machine operators	8275	0.5	0.6	0.1	4.6	-2.0	2.0

Occupation (1-DIGIT), (3-DIGIT) and (4-digit)	*4-digit Code*	*Estimated stock 2004 (000)*	*Projected employment 2008 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth 2004-08 (%)*	*Lower option (% of projection)*	*Upper option (% of projection)*
Brewers-, wine and other beverage machine operators	8278	0.4	0.5	0.1	4.5	-2.0	2.0
Tobacco production machine operators	8279	0.4	0.5	0.1	4.5	-2.0	2.0
ASSEMBLERS		0.6	0.7	0.1	4.7	-2.2	2.2
Electrical-equipment assemblers	8282	0.3	0.4	0.1	4.6	-2.0	2.0
OTHER MACHINE OPERATORS AND ASSEMBLERS		2.3	2.8	0.5	5.1	-2.7	2.7
Other machine operators and assemblers	8290	2.3	2.8	0.5	5.1	-2.7	2.7
LOCOMOTIVE-ENGINE DRIVERS AND RELATED WORKERS		0.3	0.4	0.1	5.4	-4.2	4.2
Railway brakers, signallers and shunters	8312	0.2	0.3	0.0	5.4	-4.3	4.3
MOTOR-VEHICLE DRIVERS		79.5	99.8	20.3	5.8	-4.5	4.5
Motor-cycle drivers	8321	0.2	0.2	0.0	5.2	-4.4	4.4
Car, taxi and van drivers	8322	58.5	73.3	14.8	5.8	-4.5	4.5
Bus and tram drivers	8323	8.7	10.9	2.2	5.8	-3.9	3.9
Heavy truck and lorry drivers	8324	12.1	15.3	3.2	6.1	-4.8	4.8
AGRICULTURAL AND OTHER MOBILE-PLANT OPERATORS		3.3	4.0	0.7	4.9	-4.2	4.2
Motorised farm and forestry plant operators	8331	0.3	0.3	0.0	-0.8	-6.1	6.1
Earth-moving- and related plant operators	8332	2.0	2.4	0.5	5.4	-3.9	3.9
Crane, hoist and related plant operators	8333	1.0	1.3	0.3	5.7	-4.3	4.3
SHIPS' DECK CREWS AND RELATED WORKERS		1.9	2.5	0.6	6.5	-5.3	5.3
Ships' deck crews and related workers	8340	1.9	2.5	0.6	6.5	-5.3	5.3
Elementary Occupations		**166.9**	**199.9**	**33.0**	**4.6**	**-3.6**	**3.6**
STREET VENDORS AND RELATED WORKERS		6.8	8.4	1.6	5.5	-2.8	2.8
Street food vendors	9111	3.4	4.2	0.8	5.4	-2.8	2.8
Street vendors, non-food products	9112	2.7	3.4	0.7	5.5	-2.8	2.8

Occupation (1-DIGIT), (3-DIGIT) and (4-digit)	*4-digit Code*	*Estimated stock 2004 (000)*	*Projected employment 2008 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth 2004-08 (%)*	*Lower option (% of projection)*	*Upper option (% of projection)*
Door-to-door and telephone salespersons	9113	0.7	0.8	0.2	5.7	-3.0	3.0
DOMESTIC AND RELATED HELPERS, CLEANERS AND LAUNDERERS		31.6	41.0	9.4	6.7	-4.1	4.1
Domestic helpers and cleaners	9131	11.9	15.9	3.9	7.4	-5.4	5.4
Helpers and cleaners in offices, hotels and other establishments	9132	18.3	23.4	5.0	6.3	-3.2	3.2
Hand-launderers and pressers	9133	1.4	1.8	0.4	6.6	-4.3	4.3
BUILDING CARETAKERS, WINDOW AND RELATED CLEANERS		2.5	3.1	0.6	5.7	-3.0	3.0
Building caretakers	9141	1.1	1.4	0.3	6.0	-3.1	3.1
Vehicle, window and related cleaners	9142	1.4	1.7	0.3	5.6	-2.9	2.9
MESSENGERS, PORTERS, DOORKEEPERS AND RELATED WORKERS		37.0	45.0	8.0	5.0	-3.2	3.2
Messengers, package and luggage porters and deliverers	9151	23.1	28.3	5.1	5.1	-3.1	3.1
Doorkeepers, watchpersons and related workers	9152	11.7	14.0	2.4	4.8	-3.6	3.6
Doorkeeper	9153	2.2	2.7	0.4	4.6	-3.0	3.0
GARBAGE COLLECTORS AND RELATED LABOURERS		8.1	9.4	1.3	3.9	-2.4	2.4
Garbage collectors	9161	8.1	9.4	1.3	3.9	-2.4	2.4
AGRICULTURAL, FISHERY AND RELATED LABOURERS		20.5	19.3	-1.2	-1.5	-6.1	6.1
Farm-hands and labourers	9211	20.0	18.8	-1.2	-1.5	-6.2	6.2
Forestry labourers	9212	0.4	0.5	0.0	2.0	-3.8	3.8
MINING AND CONSTRUCTION LABOURERS		36.6	44.7	8.1	5.1	-3.2	3.2
Mining and quarrying labourers	9311	0.9	0.9	0.0	1.0	-6.0	6.0
Construction and maintenance labourers: roads, dams and similar constructions	9312	9.6	11.3	1.8	4.3	-2.8	2.8
Building construction labourers	9313	26.1	32.4	6.3	5.5	-3.3	3.3

Occupation (1-DIGIT), (3-DIGIT) and (4-digit)	*4-digit Code*	*Estimated stock 2004 (000)*	*Projected employment 2008 (000)*	*New jobs 2004-08 (000)*	*Annual average rate of growth 2004-08 (%)*	*Lower option (% of projection)*	*Upper option (% of projection)*
MANUFACTURING LABOURERS		8.8	10.6	1.8	4.7	-2.2	2.2
Assembling labourers	9321	2.2	2.7	0.5	4.8	-2.4	2.4
Hand packers and other manufacturing labourers	9322	6.6	7.9	1.3	4.6	-2.1	2.1
TRANSPORT LABOURERS AND FREIGHT HANDLERS		14.9	18.3	3.5	5.4	-3.0	3.0
Hand or pedal vehicle drivers	9331	0.2	0.3	0.1	6.5	-5.3	5.3
Freight handlers	9333	14.6	18.0	3.4	5.3	-3.0	3.0
TOTAL EMPLOYMENT		**1100.7**	**1342.6**	**242.0**	**5.1**	**-3.2**	**3.2**