



LABOUR MARKET CHARACTERISTICS

Thematic Report based on Census of Population and Housing 2012



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MESSAGE FROM DIRECTOR GENERAL DEPARTMENT OF CENSUS AND STATISTICS

DR. A.J. SATHARASINGHE



The Department of Census and Statistics (DCS), under the Ministry of National Policies and Economic Affairs, is the Central Government agency that collects, compiles and disseminates relevant, reliable and up-to-date statistical information required to plan and monitor progress of development and other socio-economic activities in the country. The DCS is entrusted with the duty of conducting all national censuses and surveys, and the facilitation of generating official statistics from administrative records. The Census of Population and Housing is one of the major censuses conducted decennially by the Department.

The DCS takes various steps to disseminate key findings of its censuses and surveys. This thematic publication is one such effort to disseminate findings of the Census on Population and Housing 2012, which was a landmark event, as it covered the entire country after 30 years. The report is the result of a collaboration between the DCS, UNFPA and the expertise of an external consultant.

This report is a thematic review of several aspects of the labour market in Sri Lanka. It specifically deals with the needs and employment aspirations of differently-abled persons, analysis of science and technical workers, unemployment rates and labour force participation. The objective of the report is to provide policy makers with

comprehensive analysis to enhance the economic growth of the country.

I hope that this report will be used as a reference guide and tool by policy makers and decision makers involved in the improvement of the labour market, economic growth and development.

Dr. A.J. Satharasinghe

Director General

Department of Census and Statistics

MESSAGE FROM UNFPA COUNTRY REPRESENTATIVE

MR. ALAIN SIBENALER



We at the United Nations Population Fund, UNFPA Sri Lanka, are pleased to have supported the Department of Census and Statistics to develop this crucial and timely report on 'Labour Market Characteristics of Sri Lanka'.

Data from the Population and Housing Census 2012 suggests that at least 8.7% per cent of the population is experiencing at least one partial or full difficulty. In reaping the benefits of the demographic dividend and in ensuring that youth achieve their full potential, it is imperative that national prioritization is made in ensuring decent work for all.

With such rapidly shifting population dimensions of Sri Lanka, there is a need for continuous research and evidence to formulate short, medium and long term development strategies which analyses and documents demographic shifts. The labour market characteristics will influence how policymakers and decision makers plan and budget for Sri Lanka's future development.

The objective of this publication is to provide a comprehensive, yet simple overview of Sri Lanka's labour force and provide insight on persons living with difficulties, the prevalence and types of science and technology workers, unemployment rates, and labour force participation rates, at an education and district level.

The analysis is based on the latest available information from the Population and Housing Census 2012, surveys, research studies and administrative records. But as we go beyond data, we believe that it is important to show how the data in this report bring emerging issues to the forefront of the nation's development agenda. We hope that the evidence-based policy directions outlined in this publication will serve as a reference guide for policy makers and planners for many years to come.

As Representative of the United Nations Population Fund (UNFPA) in Sri Lanka, I am proud that we are part of Sri Lanka's journey as a newly emerging middle income country. We stand ready to provide continued assistance and commitment to the Government of Sri Lanka and all key stakeholders to link data to national development planning and budgeting

Making information on labour market outcomes accessible to the public is a first step towards building awareness on the trends and in highlighting the gaps that need to be addressed.

Mr. Alain Sibener

UNFPA Representative in Sri Lanka

CHAPTER 1 INTRODUCTION¹

1.1 ABOUT THIS REPORT

This report uses information from the Census of Population and Housing 2012 (Census 2012) to conduct labour market analyses that were not possible with other data sources. The main regular source of information on the labour market in Sri Lanka is the Labour Force Survey (LFS) conducted by the Department of Census and Statistics. This survey comprises a sample of 25,000 households collected through interviews conducted year around. The LFS survey is able to provide a wide range of information on the labour market and it can be disaggregated down to the district level. However given its size, labour market information on incidents that occur less frequently and information at the divisional secretariat level (DS level) cannot be obtained from the LFS. The objective of this paper is to fill this gap in research. The report will specifically focus on the following research areas:

- a) Labour market outcomes of the population with difficulties
- b) The prevalence and types of science and technology workers in Sri Lanka
- c) Unemployment rates, by education level and DS level
- d) Labour force participation rate, by education level and DS level

1.2 NATIONAL PRIORITIES FOR THE LABOUR MARKET FOR POPULATION WITH DIFFICULTIES

According to the Census of Population and Housing 2012 of the 18,615,577 million five years and above population of Sri Lanka 1,617,924 million (or 8.7 per cent) have either partial or full difficulties in seeing, hearing, walking, cognition, self-care or communication (Department of Census and Statistics, 2012). Among the population with difficulties, the most prevalent difficulty was in seeing, with every 87 persons per population of 1000 having a seeing difficulty. In the order of prevalence the other difficulties are, walking, hearing, cognition, self-care and communication.

It is a fundamental right of a person to earn a living. This right is legally recognized in Sri Lanka. As such, the country has an obligation to ensure that all have access to productive employment. However, unless affirmative action is taken to assist the differently abled they get side lined, since the society usually caters for the needs and the employment aspirations of persons without difficulties. Publishing information on the labour market outcomes of differently abled persons is a first step towards building awareness on the needs of the differently abled persons and drawing attention to their need for participating in the labour market. Given the low incidence of differently abled individuals and lack of information on persons with difficulties, LFS data is not sufficient to estimate labour market outcomes of differently abled individuals. Section 2 of this paper will examine the labour market outcomes of differently abled persons.

1.3 NATIONAL PRIORITIES FOR SCIENCE AND TECHNOLOGY WORKERS

It is now well recognized world over that highly skilled workers are "essential for the development and diffusion of knowledge and constitute the crucial link between technological progress and economic growth, social development and environmental well-being".² New technologies are being developed at a very rapid phase globally. To keep up with these changes highly skilled science and technology workers are essential to find uses for existing technologies and to develop new ones. Given that skilled science and technology workers are time consuming and costly to train, to keep up with technological change, first countries need to plan for skilled workers in science and technology so that an adequate supply of workers with required skill levels and skill types are available. Second countries need to ensure that trained science and technology workers are fruitfully employed so that the investments made in them are not wasted. Such planning is possible only when comprehensive information on the stock and flow of science and technology workers in a country are available.

¹ This report was prepared by Nisha Arunatilake of the Institute of Policy Studies of Sri Lanka. The author appreciates statistical support by Vidanagamage Tharaka Anuruddha with guidance from Indu Bandara. 29th March 2016.

² Organization For Economic Co-Operation and Development (1995), page 3

Recognizing the importance of measuring the prevalence of Science and Technology workers the Section 3 of this paper will look at the demand and supply of science and technology workers in Sri Lanka.

1.4 UNEMPLOYMENT RATE, BY EDUCATION LEVEL AND DS LEVEL

Detailed information on unemployment is available from the LFS data. However, with LFS data we can analyze unemployment rates only at the district level. With the Census 2012 data we are able examine unemployment rates at the DS level. Section 4 of this report closely examines the

relationship between unemployment and vocational education, using the more detailed data available with Census 2012.

1.5 LABOUR FORCE PARTICIPATION RATE, BY EDUCATION AND DS LEVEL

As with information on unemployment, the information on labour force participation rates is mainly available from the LFS data. Section 5 looks at labour market participation from two new perspectives. First it conducts an analysis of the spatial variations in the labour market disaggregated down to the DS level. This analysis allows one to examine whether the differences in the labour force participation are mainly due to differences between districts or differences within districts. The Census 2012 data includes also information on vocational training. Section 5 of this report looks at the influence of vocational training on the labour force participation rates.

CHAPTER 2

THE LABOUR MARKET FOR POPULATION WITH DIFFICULTIES

KEY FINDINGS

- About 1,617,924 persons (or 8.7 per cent of the 5 and above population) are experiencing at least one partial or full difficulty.
- The most prevalent difficulty is the difficulty in seeing, with a rate of 54 persons per 1000 population with a difficulty in seeing. This is followed by the prevalence in walking difficulties (39 persons per 1000) and hearing difficulties (21 persons per 1000).

The labour force participation rate of the population with difficulties is low (29.1 per cent compared to 54.2 per cent for those without difficulties).
- The unemployment rate for those with difficulties is also low (2.4 per cent compared to 6.9 per cent for those without difficulties).
- Persons with difficulties were most likely (compared to those without difficulties) to be in vulnerable employment (45.7 per cent were own account workers and 7.6 per cent were unpaid family workers).
- A lesser proportion of persons with difficulties were government workers, compared to the persons with no difficulties.
- The proportion of individuals in government employment varied across different types of difficulties. Compared to other types of individuals a higher proportion those who had difficulties in walking and seeing were government employees. The proportion of workers with these difficulties who were government workers was close to the proportion of workers without any difficulty who were government employees.
- Surprisingly, a higher proportion of individuals with full difficulties in seeing, hearing and walking were government employees than those with partial difficulties in seeing, hearing and walking.
- The proportion of youth (15 to 29 year olds) with difficulties who were government employees was the same as the proportion of youth without difficulties who were government workers. The proportion of workers who were government employees were high (compared to workers with no difficulties) for those with difficulties in self-care and full or partial difficulties in walking.

2.1 INTRODUCTION

Who is a person with difficulties?

Legally, “any person who, as a result of any deficiency in his physical or mental capabilities, whether congenital or not, is unable by himself to ensure for himself, wholly or partly, the necessities of life” is defined to be disabled in Sri Lanka (Government of Sri Lanka, 1996).

National policies for supporting persons with difficulties

Several policies and legislation to support persons with disabilities have been enacted or adapted in the last 25 years. These include: a) the ‘Rehabilitation of the Visually Handicapped Trust Fund, Act No.9 of 1992; b); Protection of the Rights of Persons with Disabilities Act, No.28 of 1996; and, c) the National Policy on Disability for Sri Lanka of 2003.

The Visually Handicapped Trust Fund was established by an act of parliament in 1992 with two main objectives. First it aims to provide educational and vocational training facilities for the visually handicapped. Second, it aims to create employment opportunities or provide financial support for starting self-employment activities for the visually handicapped (Government of Sri Lanka, 1992).

In 1996, the government established a National Council for Persons with Disabilities by an act of parliament. The overall objective of this council is the promotion, advancement and protection of the rights of persons with disabilities in Sri Lanka (Government of Sri Lanka, 1996).

The National Policy on Disability for Sri Lanka has developed policies and strategies to include persons with disabilities in various aspects of life, including employment (Ministry of Social Welfare, 2003). This policy states that persons with disabilities will have their right to employment fulfilled, taking into consideration the difficulties encountered by persons with disabilities in carrying out daily activities, imposed by both their physical and/or mental limitations as well as other personal and environmental factors impinged on persons with disabilities. The strategies outlined for improving access to persons with disabilities include the following (Ministry of Social Welfare, 2003): 1) Non-discrimination in employment and employment support services; 2) providing tax incentives to employers to create enabling environments to employ people with disabilities; 3) Non-discrimination of persons with disabilities in remunerating them for their work; 4) Encouraging employers to make simple adjustments to their work spaces to facilitate employment of persons with disabilities; 5) Encouraging employers to provide work experience (even when employment is not possible) and considering adjusting work requirements to enable persons with disabilities to work; 6) Encouraging employers to educate workers and counselors in the work place to be supportive of persons with disabilities; and, 7) Encouraging applications by qualified persons with disabilities.

The rest of this section will assess the labour market outcomes for persons with and without difficulties to assess the challenge of employment for persons with difficulties.

2.2 LABOUR MARKET INDICATORS FOR POPULATION WITH DIFFICULTIES

How persons with difficulties are captured in the census 2012?

The question P14 of the Population Census 2012 measures different abilities of individuals.³ This question asks individuals to state their physical and mental difficulties in seeing, hearing, walking, cognition, self-care and communication. Information on whether the difficulty is partial or full is also obtained.

THE LABOUR MARKET FOR POPULATION WITH DIFFICULTIES CONTD.

As seen about 1,617,924 persons (or 87 for every 1000 population) are experiencing at least one partial or full difficulty. Amongst persons with difficulties 'difficulties in seeing' is the most

prevalent difficulty (with a seeing difficulty rate of 54 per 1000 population). This is followed by 'difficulties in walking' (39 per 1000 population) and difficulties in hearing (21 per 1000 population) (see table 1).

Table 1. Population aged 5 years and over by type of difficulty

| | Difficulty (Number) | Rate per 1000 population |
|-------------------------|---------------------|--------------------------|
| Total with difficulties | 1,617,924 | 87 |
| Seeing | 996,939 | 54 |
| Hearing | 389,077 | 21 |
| Walking | 734,213 | 39 |
| Cognition | 343,689 | 18 |
| Self-care | 197,575 | 11 |
| Communication | 180,833 | 10 |

Source: Calculated using Census of Population and Housing 2012 data.

Note: Percentages do not add up as some have multiple disabilities.

2.3 LABOUR MARKET OUTCOMES FOR PERSONS WITH DIFFICULTIES⁴

Labour force participation rate (LFPR) of persons with difficulties

The labour force participation rate is a measure of the proportion of a country's working-age population that engages actively in the labour market, either by working or by looking for work (International Labour Organization, 2015). It provides a measure of the relative size of the population available for engaging in economic activities.

The LFPR of the population with difficulties is 29.1 per cent. This is low compared to those without difficulties. The LFPR for those without difficulties was almost twice (1.9 times) that of those with difficulties (see Table 2). The labour force participation of both males and females

with difficulties showed similar trends with the LFPR of males without difficulties being 1.7 times that of those with difficulties and the LFPR of females without difficulties being 1.9 times that of those with difficulties (see Table 2).

Among those with difficulties, the labour force participation rates are highest for those with difficulties in seeing (Table A3. 1). Close to a third of those with difficulties in seeing were in the labour force, and more than half of the males with difficulties in seeing were in the labour force. For all other difficulties, less than a fifth of the working age population was in the labour force. The labour force participation was lowest (at 7.4 per cent) for those with difficulties in self-care.

The employment-to-population ratio⁵ for those with difficulties is 28.4 per cent, compared to 50.4 per cent for those without difficulties. The employment-to-population ratios for both males and females were low for those with difficulties compared to those without difficulties (see Table 2).

⁴ The labour market indicators presented here are different from those available from the Labour Force Survey data, as the information captured by the Census is different to the information captured by the Labour Force Survey. Annex 1 provides the definitions of labour market indicators used in this report.

⁵ The employment-to-population ratio provides information on the ability of an economy to provide employment.

The unemployment rate for the 15 and above population with difficulties (2.4 per cent) is lower than that for the unemployment rate for the population without difficulties (6.9 per cent). This is possibly due to the fact that the population with difficulties is less likely to enter the labour force or they are discouraged workers. By type of difficulty unemployment was highest for females with difficulties in self-care, followed by for females with difficulties in communication. This indicates that these females have a desire to be engaged in economic activities but are unable to do so.

Table 2. Population aged 15 years and over by economic activity and difficulty status

| | Total population 15 and over | | | With difficulties ¹ | | | Without difficulties | | |
|-------------------------------------|------------------------------|-------|--------|--------------------------------|------|--------|----------------------|-------|--------|
| | Total | Male | Female | Total | Male | Female | Total | Male | Female |
| Total | 15,228 | 7,266 | 7,962 | 1,559 | 663 | 895 | 13,669 | 6,603 | 7,066 |
| Employed ('000) | 7,335 | 5,191 | 2,145 | 442 | 302 | 140 | 6,893 | 4,889 | 2,004 |
| Unemployed ('000) | 522 | 300 | 222 | 11 | 6 | 5 | 511 | 294 | 217 |
| Economically Inactive ('000) | 7,370 | 1,775 | 5,595 | 1,106 | 355 | 750 | 6,265 | 1,420 | 4,845 |
| Labour force ('000) | 7,857 | 5,491 | 2,366 | 453 | 308 | 145 | 7,404 | 5,183 | 2,221 |
| Labour force participation rate (%) | 51.6 | 75.6 | 29.7 | 29.1 | 46.4 | 16.2 | 54.2 | 78.5 | 31.4 |
| Unemployment rate (%) | 6.6 | 5.5 | 9.4 | 2.4 | 2.0 | 3.3 | 6.9 | 5.7 | 9.8 |
| Employment-to-population ratio | 48.2 | 71.4 | 26.9 | 28.4 | 45.6 | 15.6 | 50.4 | 74.0 | 28.4 |

Source: Calculated using Census and Population and Housing 2012 data.

Note: 1. This section includes persons with at least one partial difficulty.

Where is the population with difficulties employed?

Majority of the 15 and above population with difficulties were employed as own account workers. This result remained true irrespective of the type of difficulty. About a third of the 15 and above population with difficulties was employed as private sector employees. Again this result was largely consistent across different types of difficulties, with the exception of difficulties in self-care and communication (see Table A3. 1 and Table A3. 1 in Annex 3).

THE LABOUR MARKET FOR POPULATION WITH DIFFICULTIES CONTD.

Table 3. Employed with difficulties by type of difficulty and sector of employment

| | Total employed population with difficulties | Type of difficulty | | | | | |
|--------------------------|---|--------------------|---------|---------|-----------|-----------|---------------|
| | | Seeing | Hearing | Walking | Cognition | Self-care | Communication |
| Total | 442,138 | 307,485 | 70,088 | 127,109 | 40,841 | 11,980 | 22,626 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Government employee | 8.9 | 9.3 | 4.0 | 7.8 | 4.8 | 14.2 | 5.0 |
| Semi Government employee | 2.4 | 2.4 | 1.5 | 2.3 | 1.9 | 1.8 | 2.5 |
| Private sector employee | 32.8 | 32.4 | 35.0 | 29.3 | 32.2 | 26.2 | 40.9 |
| Employer | 2.6 | 2.5 | 2.5 | 3.0 | 3.9 | 8.3 | 4.8 |
| Own account worker | 45.7 | 46.2 | 48.6 | 48.3 | 45.3 | 37.6 | 35.2 |
| Unpaid family worker | 7.6 | 7.2 | 8.3 | 9.2 | 11.8 | 11.9 | |

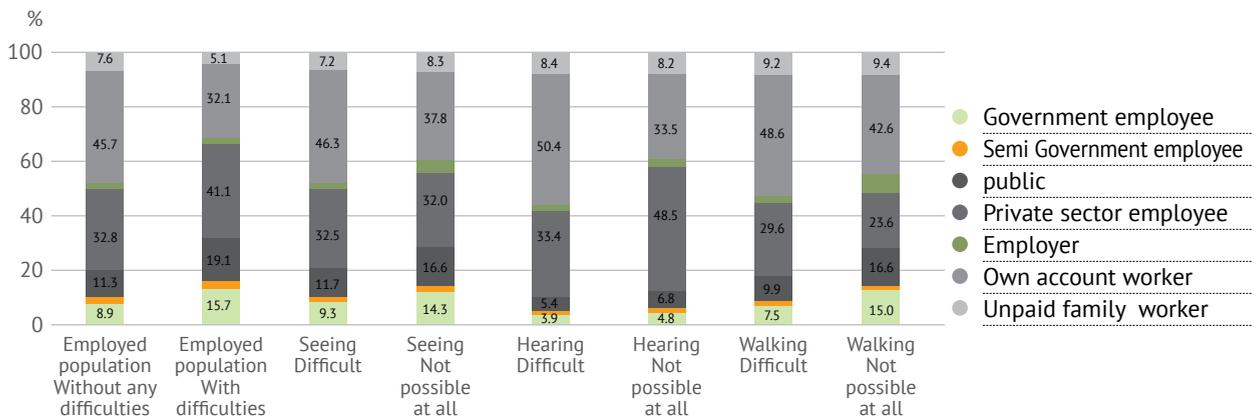
Source: Calculated using Census and Population and Housing 2012 data.

Note: 1. This section includes persons with at least one partial difficulty. Calculations are for 15 and above population

Relative to the employed population without any difficulty, the employed population with difficulties was more likely to be employed as own account workers and unpaid family workers (see Figure 1). Although of the total employed population without any difficulty 15.7 per cent were employed in the government sector, only 8.9 per cent of those with difficulties were employed in the government sector. Among people the different types of difficulties, those with hearing difficulties were least likely to be employed by the government, for example, compared to 15.7 percent of those without difficulties in the government sector, only 4.8 per cent of those not at all able to hear were employed in the government sector. Those who were unable to see at all or unable to hear at all were almost as likely to be employed by the government as those who were without any difficulties (see Figure 1). The employment prospects in the private sector were higher for those unable to hear at all than for those without any difficulty.

(See Table A3. 2 and Table A3. 3 in Annex 3 for a full table on employed population by type and level of difficulty and sector of employment).

Figure 1. Employed by type and level of difficulty and sector of employment



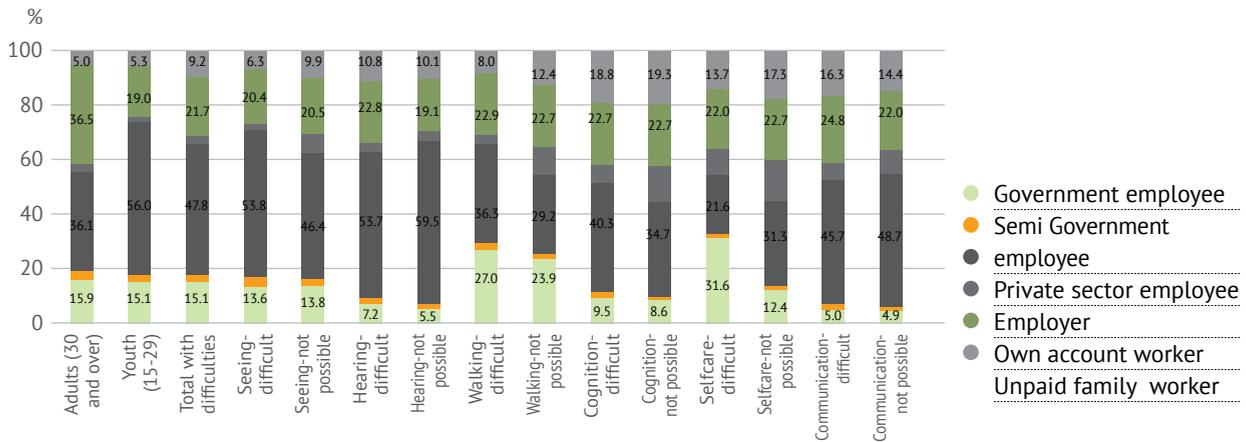
Source: Calculated using Census and Population and Housing 2012 data.

Note: Calculations are for employed population 15 and over.

For youth, having a difficulty does not seem to impede employment in the government sector. Same proportion of youth with and without difficulties were employed in the government sector (see Figure 2). This could possibly mean that the employment prospects for those with difficulties have improved for younger cohorts.

Youth employment in the government sector varied across different types of difficulties. By types of difficulty, the proportion employed in the government sector was highest for those with difficulties in self-care. Those with difficulties in walking also had a relatively higher proportion employed in the government sector (see Figure 2). In comparison those with communication, hearing and cognition difficulties were least likely to be employed in the government sector.

Figure 2. Youth (15-29) employed by type and level of difficulty and sector of employment



Source: Calculated using Census and Population and Housing 2012 data.

THE LABOUR MARKET FOR POPULATION WITH DIFFICULTIES CONTD.

Policy Recommendations

- As a large proportion (about 8.7 per cent) of the 5 and above population is experiencing some form of difficulty policies for including them in the labour market are important.
- According to the National Policy on Disability for Sri Lanka, employment is considered as a right. As discussed earlier in this section, Sri Lanka has put in place several Acts, policies and trust funds to improve the employability of persons with difficulties and help them secure employment. However, the labour force participation rate for persons with difficulties is close to half that of the persons without any difficulty. The unemployment amongst persons with difficulties is low, compared to those without difficulties. This could possibly be due to discouragement. Further, the persons with difficulties mostly found employment as own account workers. This may be due to lower prospects for other forms of employment or problems in accessing other forms of employment. These statistics suggests that the current initiatives by the government to train and assist persons with difficulties to obtain employment can be improved further. Affirmative action to facilitate employment opportunities for persons with difficulties could help improve the labour force participation of persons with difficulties. These could be in the form of, assistance to firms to modify their work spaces to accommodate persons with difficulties, formal recognition of firms employing persons with difficulties, tax concessions for employing persons with difficulties.
- In general, the proportion of government workers was less amongst persons with difficulties than amongst persons without difficulties. This suggests that the employment prospects for persons with difficulties are less in government employment. However, the proportion of workers in government employment was high for some types of difficulties (i.e., persons who were unable to walk and see). Action should be taken to support the employment of all types of persons with difficulties. Special attention should be given to the employment of persons with difficulties, who are at present experiencing lower labour force participation rates.
- The proportion of youth with difficulties who were in government employment was similar to the proportion of youth without difficulties in government employment. This possibly suggests that the policies for including persons with difficulties in public sector employment have improved overtime. These efforts should be continued and carried out for persons with all types of difficulties.

CHAPTER 3

SCIENCE AND TECHNOLOGY WORKERS IN SRI LANKA

KEY FINDINGS

- 13.3 per cent of the 15 and above population in Sri Lanka were tertiary educated. Of this 3.3 per cent were with university-level tertiary education and 10 per cent were with technical-level tertiary education. As this includes tertiary education in all fields, those with a tertiary education in a science and technology (S&T) field will be less.
- Of the employed, 13.2 per cent (or 965,387) were in S&T occupations. Of this, 6.8 per cent were professionals and 6.4 per cent were associate professionals. Of the professionals, 60 per cent were teachers and a further 17 per cent are health professionals.
- Only a fraction of the tertiary educated was in S&T employment. Of those with university level-tertiary education 51.0 per cent were in S&T occupations, of those with technical level-tertiary education 14.2 per cent were in S&T occupations.
- A large proportion of tertiary educated (21.7 per cent of university-level tertiary educated and 38.0 per cent technical level-tertiary educated) were not in the labour force.
- A large proportion (51.0 per cent) of S&T workers was not having any tertiary level education, indicating they were not formally trained to be S&T workers, but work in S&T occupations.
- The unemployment rate is higher for tertiary educated. Technical-level tertiary educated have an unemployment rate of 9.3 per cent and the university level tertiary-educated have an unemployment rate of 8.2 per cent, both these rates higher than the overall unemployment rate of 6.6 per cent.
- The proportion of workers without a tertiary level education was particularly high for 'science and engineering associate professionals' and 'business and administration associate professionals' categories of S&T workers.

SCIENCE AND TECHNOLOGY WORKERS IN SRI LANKA CONTD.

3.1 WHO ARE SCIENCE AND TECHNOLOGY WORKERS?

It is now well recognized world over that science, technology and innovation is essential for staying competitiveness and driving growth. The backbone of science, technology and innovation is a highly skilled workforce. In recognition of this fact many developed countries have reoriented their policies to train and attract individuals to become science and technology workers. More resources given to science education and change of migration policies to attract more skilled workers are some examples of strategies adapted by developed countries to increase the proportion of science and technology (S&T) workers in their countries. In order to monitor the prevalence of S&T workers the Organization for Economic Co-Operation and Development (OECD) countries developed a methodology for measuring S&T workers which is detailed in the Canberra Manual developed by the OECD (Organization For Economic Co-Operation and Development, 1995). According to this, science and technology workers are those with a tertiary education (i.e., with an education level of 5 or more according to the International Standard Classification of Education (ISCED)) and/or employed in a science and technology occupation.

3.2 FRAMEWORK FOR MEASURING SCIENCE AND TECHNOLOGY WORKERS

According to the Canberra Manual "Human Resources in Science and Technology (HRST) would ideally refer to the human resources actually or potentially devoted to the systematic generation, advancement, diffusion and application of scientific and technological knowledge"⁶ Defining HRST is not easy as the term science and technology as well as the workers in science and technology is interpreted differently by different stakeholder groups.

To avoid confusion in interpreting statistics it is necessary to define the scope with which this framework is developed. To avoid confusion in interpreting statistics the scope of HRST is limited only to highly skilled people in science and technology activities are included, as described below.⁷ HRST is defined using both occupations as well as qualifications, as each method is useful for accounting for different aspects of HRST. The occupation approach gives information on the potential demand for HRST in the country, while the education approach provides information on the possible skill pool available for HRST. This framework tries to keep to international standards to the extent possible. But in instances where internationally comparable data are not readily available for Sri Lanka, alternate means of nationally acceptable methods are used.

The HRST workforce in a country includes those who have qualified to be S&T workers, as well as those who are working in S&T occupations. Not all who have qualified to be S&T workers will be working in S&T occupations (e.g., an IT graduate who has quit the work force to raise a family). Also, all those who are working in S&T occupations are qualified as S&T workers (e.g., a high school graduate who is promoted to be an IT hardware engineer through experience). HRST is defined using both qualification and occupation in order to capture both supply and demand aspects of HRST. The qualification approach tells us the number of qualified people available in the country. The occupation approach tells us the number of people required in S&T activities at required levels. The following acronyms are used to differentiate these different types of human resources in science and technology (HRST).

⁶ Organization For Economic Co-Operation and Development (1995), page 9.

⁷ 1. Following the Canberra Manual we define two types of HRST: "University level- HRST" and "technical level- HRST". University level- HRST include people who are currently or has the potential to in future to be engaged in science and technology activities requiring at least a university degree. Technical level- HRST includes people who are working in science and technology activities requiring a vocational level qualification. People below technical level, such as clerical staff are excluded from this framework.

- HRST** - Persons with a tertiary education⁸ and/or employed in science and technology
HRSTE* - Persons with tertiary education⁹
HRSTE* - Uni – Persons with university level tertiary education
HRSTE* - Tech – Persons with technical level tertiary education
HRSTO - Persons employed in science and technology occupations (ISCO-08 major groups 2 and 3)¹⁰
HRSTC persons with tertiary education and employed in science and technology (HRST core)
SE Scientists and engineers

Globally there is no consensus on what should be included under Science and Technology fields. It is broadest context HRST can be defined as “everyone who has successfully completed post-secondary education (or is working in an associated S&T occupation). More narrowly it covers only those with at least university-level qualifications in natural sciences or engineering (or working in an associated S&T occupation)”¹¹. How S&T workers were defined in this paper is explained in detail in Annex 2.

3.3 WHY IT IS IMPORTANT TO MEASURE SCIENCE AND TECHNOLOGY WORKERS?

There are several reasons why a country may need information on science and technology workers (S&T workers). First, a measure of S&T workers is needed for planning for future science and technology related training needs of the country and to ensure the productive use of science and technology qualified persons in the economy. The users of S&T workers can range from policy makers, human resource managers, private sector, different industries, employers, international agencies, and academics. Some of these will need to understand the current situation of S&T workers in the country, while others will need to plan for the future.

Second, internationally the stock and flow of S&T workers is seen as a strategic measure of a country’s technology and economic base, as well as its environmental and general well-being. Information on the size, trends and the composition of a country’s S&T workers is used to measure the potential of a country to sustain economic growth and be innovative and competitive. Comprehensive information on S&T workers cannot be obtained from sample surveys as the incidence of some types of industries and occupations are small. Hence a census provides an opportunity for measuring the size and spread of science and technology workers of a country.

Third, census data can also be used to obtain the characteristics of the S&T workers pool (i.e., age profile, available skill types). This will provide information on the future retirements and the need for training for replacements.

Fourth, the restructuring of the economy will change the demand for different types of HRST in terms of size and field of specialization. Better information on the size and types of HRST will facilitate identifying human resource gaps and planning to meet the changing demand. For example, preliminary studies indicate that in Sri Lanka many work as Science and Technology workers without having the qualifications to do so (see Box 1). This indicates that the demand for science and technology workers in the country is much higher than its supply. Unless, the supply of workers are increased to match that of the demand, the productivity of the science and technology sector in the country will suffer as workers who are not qualified to carry out science and technology work will engage in working in science and technology fields.

⁸ Tertiary educated people are those with an education level of 5 or above according to the International Classification of Education (ISCED).

⁹ Only human resources with a tertiary education are included in HRSTE globally. Since in Sri Lanka we are unable to identify field of study, we only consider level of education (e.g., secondary, tertiary etc.). A “*” is included to indicate the difference.

¹⁰ Following (OECD, 2009) we take professionals (ISCO-08 major group 2) and associate professionals (ISCO-08 major group 3) to be persons in S&T occupations.

¹¹ Organization For Economic Co-Operation and Development (1995), page 8

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Fifth, information on HRST will help to identify labour market imbalances in terms of skill shortages, unemployment or underemployment. This would be useful for planning education and training. Lastly, information on flows of HRST workers will be useful for assessing the ability of the country to retain HRST and to assess 'brain drain' and 'brain gain'.

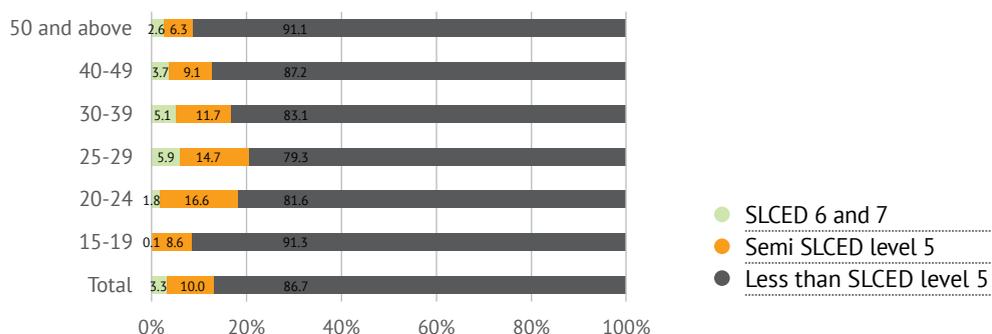
3.3 HUMAN RESOURCES IN SCIENCE AND TECHNOLOGY - RESULTS

Working age population with tertiary level education (HRSTE)

Only 3.3 per cent (or 499,563) of the population were having a university level tertiary education (Figure 3). Of this 454,991 were only with degrees (HRSTE*Uni) and only 44,572 were having a post graduate qualification. About 1,527,001 (or 10 per cent of the population) were having technical level tertiary education (HRSTE*Tech). Majority (86.7 per cent) were without a tertiary level education.

Those in younger age cohorts are more educated. Of the 25 to 29 year olds 5.9 per cent were with university level tertiary educated (HRSTE*Uni) while only 5.1 per cent of the 30 to 39 year olds and 3.7 per cent of the 40 to 49 year olds were with a university level education. A higher proportion of younger individuals were also with more technical-level tertiary education (Figure 3).

Figure 3. Population aged 15 and over, by level of education and age



Source: Calculated using Census and Population and Housing 2012 data.

Note: SLCED level 7 = post graduate degree; SLCED level 6 = graduate; SLCED level 5 = A-Levels plus vocational training;

Working age population in S&T occupations (HRSTO)

Of the total 15 and above population 13.2 per cent (or 965,387) were in S&T occupations (occupations falling within major ISCO 08 major groups 2 and 3) in Sri Lanka. Of these, 499,505 (6.8 per cent) were professionals while 465,882 (6.4 per cent) were associate professionals (See Table 4). A large proportion (39.4 per cent) of the professionals were university level tertiary educated, however only 4.2 per cent have studied beyond the degree level. A large proportion of professionals (35.8 per cent) and associate professionals (67.6 per cent) were without a tertiary level education (See Table 4). Majority (60 per cent) of the professionals were teachers, while a large proportion (17.4 per cent) were health professionals (see Figure 4). The largest proportion of associate professionals was business and administrative professionals.

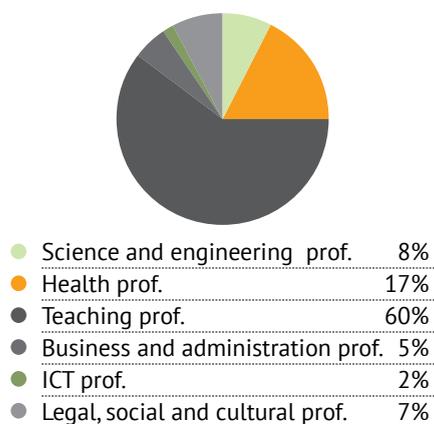
Table 4. Working age population in S&T occupations, by level of education

| | | SLCED level 7 | SLCED level 6 | SLCED level 5 | Less than SLCED level 5 | |
|---|-----|---------------|---------------|---------------|----------------------------|-----------|
| Total Employed | No. | 7,335,432 | 35,530 | 323,364 | 858,116 | 6,118,422 |
| | % | 100 | 0.5 | 4.4 | 11.7 | 83.4 |
| Professionals | No. | 499,505 | 20,834 | 175,934 | 123,740 | 178,997 |
| | % | 100 | 4.2 | 35.2 | 24.8 | 35.8 |
| Technicians and Associate Professionals | No. | 465,882 | 4,205 | 53,589 | 93,108 | 314,980 |
| | % | 100 | 0.9 | 11.5 | 20.0 | 67.6 |

Source: Calculated using Census and Population and Housing 2012 data.

Note: Calculations are for 15 and above population.

Figure 4. Distribution of professionals, by occupation

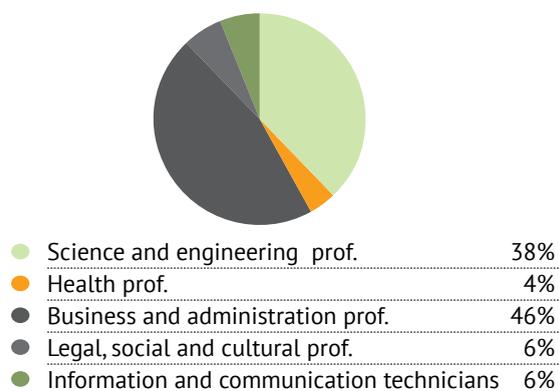


Source: Calculated using Census and Population and Housing 2012 data.

Note: These are occupations in ISCO 08 major group 2.

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Figure 5. Distribution of associated professionals, by occupation



Source: Calculated using Census and Population and Housing 2012 data.

Note: These are occupations in ISCO 08 major group 3.

Tertiary qualified individuals in S&T occupations (HRSTC)

Only a small proportion of the population is tertiary educated in Sri Lanka. Of the total 15 and above population 6.3 per cent were in S&T occupations and 41.8 per cent were in all other occupations. Of those in S&T occupations, 48.8 per cent were having a tertiary level education (university level or technical level).

Not all tertiary educated were in S&T employment. Of those with degrees (HRSTE*-Uni) 51.0 per cent were in S&T occupations. However, although those with degrees are educated for professional level occupations, 11.6 per cent of the university level tertiary educated (HRSTE*-Uni) were in associate professional level occupations and a further 20.9 per cent were employed, but not in an S&T occupation. This indicates that some HRSTE*-Uni are potentially under employed. Of those with tertiary level vocational training (HRSTE*-Tech) 14.2 per cent were in S&T occupations. Of them 8.1 per cent were in professional level occupations. Of the HRSTE*-Tech 42.0 per cent were employed in none S&T occupations, indicating that they are potentially under employed.

The issues faced by human resources in science and technology in Sri Lanka are summarized in Figure 6. The biggest issue in monitoring HRST in Sri Lanka is the lack of information. Although, Census 2012 provides much of the information needed, still information on the fields of study undertaken by individuals are missing. If we disregard the field of study, there are still several issues with the supply and demand for science and technology workers in Sri Lanka. Of the 15 and above population in the country only 3.1 per cent (471, 411) are tertiary educated and in an S&T occupation (HRSTC). Most tertiary educated are either not in an S&T occupation (4.9 per cent), unemployed (0.8 per cent) or not active in the labour market (4.5 per cent). This indicates that the country is not making full use of the limited supply tertiary educated population in the country. On the other hand, of the 15 and above population 3.2 per cent were in an S&T occupation, but not tertiary educated. This suggests that the demand for S&T employment is not fully met by the tertiary educated. This phenomenon of some tertiary educated not in S&T occupations and some S&T occupations done by those without a tertiary education could signal either low quality of education or low quality of S&T employment or both. For example, even if a person has a tertiary level education, if that education does not provide him with the skills needed to do an S&T occupation, he will not be hired to do an S&T occupation. On the other hand, some with tertiary level education may prefer to do a non S&T occupation if that occupation has better remuneration and working conditions.

Table 5. Working age population, by S&T occupation and tertiary education

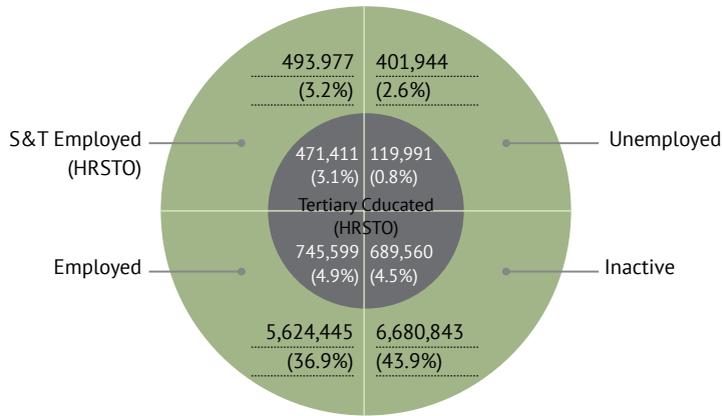
| | Total population aged 15 and over | SLCED level 6+7 | SLCED level 5 | Less than SLCED level 5 |
|---|--|--------------------|------------------|-------------------------------|
| Number | | | | |
| All employed | 7,335,432 | 358,894 | 858,116 | 6,118,422 |
| S&T Occupations | 965,387 | 254,562 | 216,848 | 493,977 |
| ISCO 08 major group 2 Professionals | 499,505 | 196,768 | 123,740 | 178,997 |
| ISCO2 08 major group 3 – Associate Professionals | 465,882 | 57,794 | 93,108 | 314,980 |
| All other occupations | 6,370,045 | 104,332 | 641,268 | 5,624,445 |
| Unemployed | 521,938 | 32,117 | 87,877 | 401,944 |
| Out of the labour force | 7,370,403 | 108,552 | 581,008 | 6,680,843 |
| Total | 15,227,773 | 499,563 | 1,527,001 | 13,201,209 |
| Labour Force | 7,857,370 | 391,011 | 945,993 | 6,520,366 |
| Unemployment rate | 6.6 | 8.2 | 9.3 | 6.1 |
| Labour Force Participation Rate | 51.6 | 78.3 | 62.0 | 49.4 |
| Distribution of the population by economic activity (%) | | | | |
| All employed | 48.2 | 71.8 | 56.2 | 46.3 |
| S&T Occupations | 6.3 | 51.0 | 14.2 | 3.7 |
| ISCO 08 major group 2 Professionals | 3.3 | 39.4 | 8.1 | 1.4 |
| ISCO2 08 major group 3 – Associate Professionals | 3.1 | 11.6 | 6.1 | 2.4 |
| All other occupations | 41.8 | 20.9 | 42.0 | 42.6 |
| Unemployed | 3.4 | 6.4 | 5.8 | 3.0 |
| Out of the labour force | 48.4 | 21.7 | 38.0 | 50.6 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |
| Distribution of the population by level of education (%) | | | | |
| All employed | 100 | 4.9 | 11.7 | 83.4 |
| S&T Occupations | 100 | 26.4 | 22.5 | 51.2 |
| ISCO 08 major group 2 Professionals | 100 | 39.4 | 24.8 | 35.8 |
| ISCO2 08 major group 3 – Associate Professionals | 100 | 12.4 | 20.0 | 67.6 |
| All other occupations | 100 | 1.6 | 10.1 | 88.3 |
| Unemployed | 100 | 6.2 | 16.8 | 77.0 |
| Out of the labour force | 100 | 1.5 | 7.9 | 90.6 |
| Total | 100 | 3.3 | 10.0 | 86.7 |

Source: Calculated using Census 2012 data.

Note: Only ISCO1 and ISCO2 categories are considered as S&T occupations. Calculations are for 15 and above population.

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Figure 6. Population aged 15 and above, by tertiary education and economic activity status

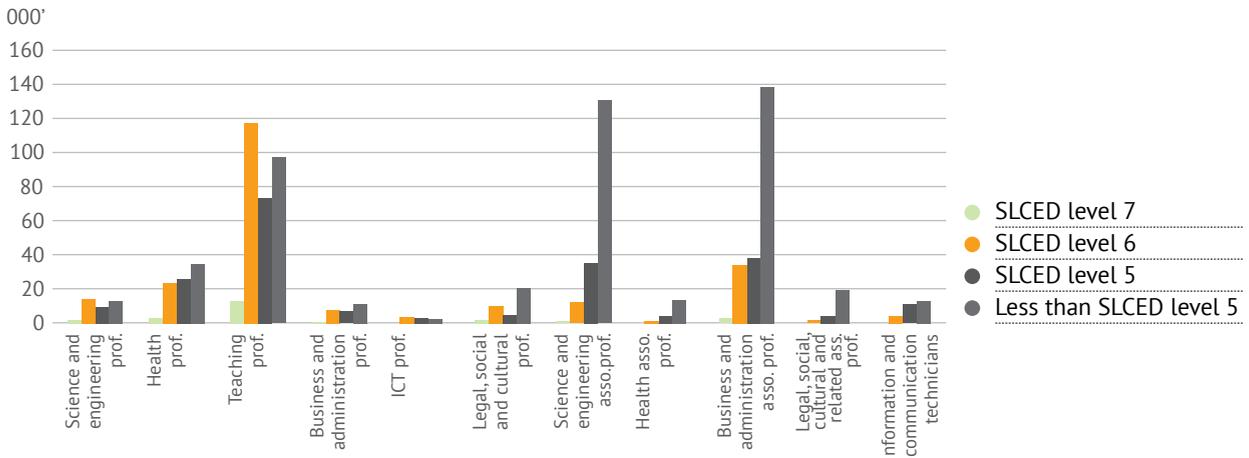


Source: Author's compilation

Note: HRSTE* – Tertiary educated human resources. HRSTO – Human resources in science and technology. Tertiary educated human resources in science and technology (HRSTC) are indicated in bold. All the numbers given in the figure adds up to the total 15 and above population in the country (15,227,773). The percentages given in parenthesis are the present of total 15 and above population.

Majority of those in S&T occupations are without a tertiary level education (see Table 5. Working age population, by S&T occupation and tertiary education.). Amongst different types of S&T occupations, only 'teaching professionals' and 'science and engineering professionals' had university level tertiary educated workers (workers with education levels SLED 6 or SLED7) (see Figure 7). In all other S&T occupations, majority of workers were without a tertiary level education. The proportion of workers in S&T occupations, without having at least an education level of SLED level 5 was particularly high for 'science and engineering associated professionals' and 'business and administration associated professionals' (see Figure 7).

Figure 7. S&T occupations, by level of education

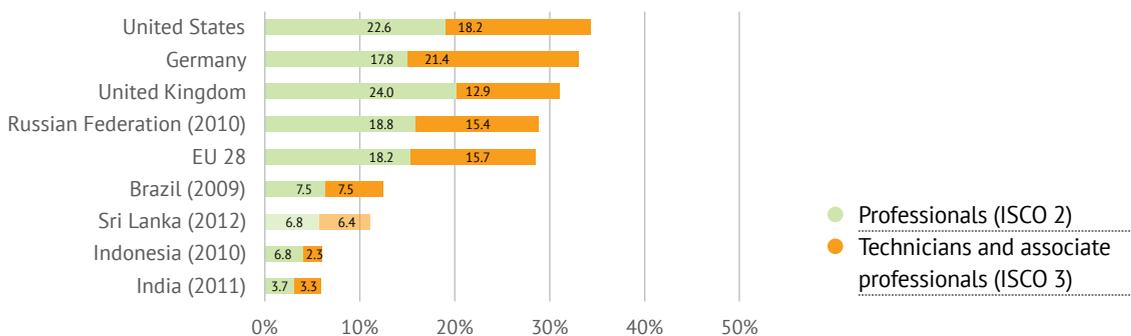


Source: Calculated using Census and Population and Housing 2012 data.

S&T workers in Sri Lanka compared to S&T workers in selected countries

The proportion of S&T workers in Sri Lanka as a per cent of total employment is 13.2 per cent. This is far below the average the European Union of 33.9 per cent (see Figure 8). However, it is better than the proportion of S&T workers in Indonesia and India. However, as both Indonesia and India are countries with very large populations, the number of S&T workers in these countries is larger, although their proportion as a per cent of total employment is smaller. Further, although a larger proportion of employed in Sri Lanka are in S&T occupations in Sri Lanka, majority of the professionals were teaching professionals (mostly at the general education level) or health care professionals. Only a small proportion were science and engineering professionals (7.7 per cent) or ICT professionals (1.9 per cent) – occupation groups that could contribute to innovation.

Figure 8. Professionals and technicians as a per cent of total employment



Source: Sri Lanka - Calculated using Census and Population and Housing 2012 data; other countries - OECD, based on European Labour Force Surveys, Eurostat; ILO Laborsta Database; and national sources, July 2013 (OECD, 2013).

Note: "Professionals" and "Technicians and associate professionals" are defined according to the International Standard Classification of Occupations 2008 (ISCO-08) major groups 2 and 3 respectively, except for Brazil, India, Indonesia, and the Russian Federation, for which the corresponding ISCO-88 groups are reported.

Conclusions and policy recommendations

- 13.3 per cent of the 15 and above population was with a tertiary level education in Sri Lanka. Majority of these were technical-level tertiary educated (10 per cent). The proportion of university level tertiary educated was very small (3.0 per cent), and only a tiny proportion (0.3 per cent) of the population were with post graduate qualifications. The proportion of the tertiary educated population increases for younger age cohorts. But, the increase is very gradual. If the country wants to move towards a knowledge based economy, initiatives will need to be taken to improve the tertiary educated in S&T fields, both at the university level and the technical level. There is a special need to expand education at the post graduate level, as only at this level is research and development activities are conducted. This can be done by encouraging international universities to setup campuses in Sri Lanka (although, there is resistance for establishing private universities at the undergraduate level this may not be the case at the post graduate level). Action can also be taken to encourage expatriates with post graduate degrees to come back to Sri Lanka.
- Only 13.2 per cent of the employed in the country were in S&T occupations. This proportion is low compared to the EU average and that for more developed countries. But it is better than that for developing countries.

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However, majority of those in S&T occupations in Sri Lanka were teachers and doctors who are doing service jobs. The proportion of in S&T jobs conducting R&D activities need to be increased for supporting innovation. Again encouraging foreign direct investments that provide opportunities for employment S&T occupations can increase the proportion of workers in S&T jobs.

- Not all who were tertiary educated were in S&T occupations. A large proportion (20.9 per cent of university-level and 42.0 per cent of technical-level) of tertiary educated were in non S&T occupations and a further proportion (21.7 per cent of university-level and 38.0 per cent of technical-level) were not in the labour force. These statistics show that the country does not make full use of tertiary educated. Further, relative to the overall unemployment rate (of 6.6 per cent) in the country, the unemployment rate for tertiary educated (8.2 per cent for university-level tertiary educated, and 9.3 per cent for technical-level tertiary educated) was high. This could be due to several reasons. This is partly due to the fact large proportion of tertiary educated has not obtained degrees in science and technology fields. Further, the quality of tertiary education may not provide the skills needed to obtain employment in an S&T field. The quality of S&T employment in the country may be low so that individuals prefer to be employed in better jobs outside the S&T field. If so measures will need to be taken to improve the S&T sector. Already efforts have been made to improve the quality of education at the tertiary level. These need to be further strengthened. In addition investments that bring in tertiary level training and S&T job creation should be encouraged.
- A large proportion (51.2 per cent) of those in S&T occupations were not formally trained. All efforts should be made to keep the tertiary educated persons in the labour force. Also, more efforts should be made to fill all S&T job opportunities with those formally trained. It is possible that those with tertiary education do not have all the soft skills needed to be employed in S&T jobs. Education at all levels should incorporate aspects that help to develop soft skills of individuals.
- Better data is needed to ascertain the proportion of tertiary educated in S&T fields. It is recommended that household surveys collect information on the type of degree obtained so that such the exact number of individuals with tertiary education in an S&T field can be determined.

CHAPTER 4

UNEMPLOYMENT RATES, BY EDUCATION LEVEL AND DS LEVEL¹²

KEY FINDINGS

- The overall unemployment rates are highest in the districts in the Northern province, followed by the districts in the Eastern and the Southern provinces. The separate unemployment rates for females and males were also highest in the districts of Northern, Eastern and Southern provinces. However, the number of unemployed is low in the district in Northern province, with the exception of Jaffna.
- Further, there are large variations in the DS level unemployment rates in the districts in the Northern and Eastern provinces.
- The unemployment rate is lowest in the Anuradhapura district followed by Colombo district.
- Amongst females who have completed secondary education (those with at least O-levels), those with a degree had the lowest unemployment. This is possible due to the practice of successive governments of absorbing unemployed degree holders to the public sector. Other than for this, those with only A-Levels were more likely to be unemployed than those with only O-levels.
- Other than for a few exceptions, females with vocational training had a lower unemployment rate at each level of education. For example, females with O-levels and vocational training had lower unemployment rates than those with just O-levels. The effect of vocational training on unemployment is mixed.

¹² The labour market indicators presented here are different from those available from the Labour Force Survey data, as the information captured by the Census is different to the information captured by the Labour Force Survey. Annex 2 provides the definitions of labour market indicators used in this report.

UNEMPLOYMENT RATES, BY EDUCATION LEVEL AND DS LEVEL CONTD.

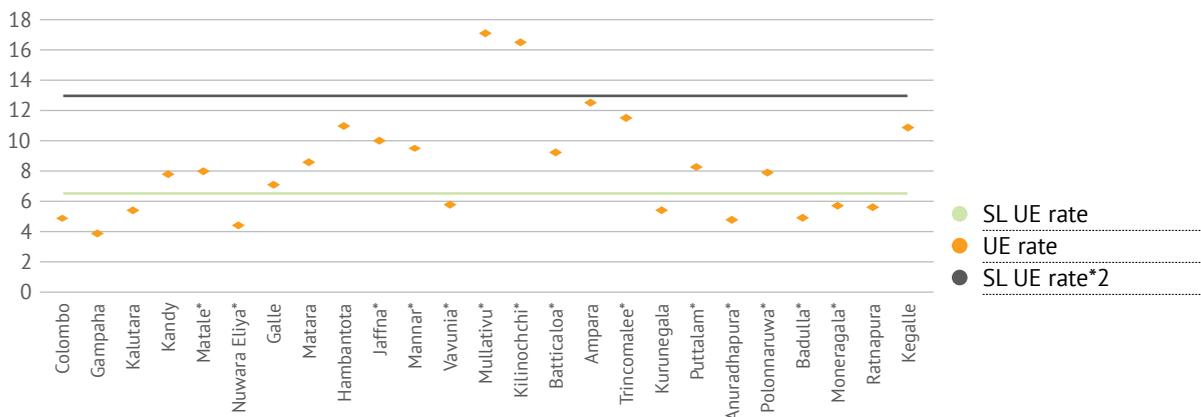
4.1 INTRODUCTION

Analysis of LFS data from the past several years show that unemployment rates have come down from 4.9 per cent in 2010 to 4.3 per cent in 2014 (Department of Census and Statistics, 2014). However, this same data shows that unemployment rates still remain high amongst some population groups. For example in 2014, the unemployment rate for females was 6.5 per cent (more than twice that of the male unemployment rate of 3.1 per cent); and, the unemployment rate for youth aged 20 to 24 was 20 per cent (around 4.7 times that of the overall unemployment rate of 4.3 per cent). The unemployment rate for those with at least A/levels was 8.1 per cent (about 1.9 times that of the overall unemployment rate of 4.3 per cent).

We also know from the LFS data that there are large variations in the unemployment rates across districts (see Figure 9).

Also, the unemployment variations in the district values are uncertain as many values need to be treated with caution due to high variations in the coefficient. The available statistics show that unemployment rates are highest in the districts in the Northern Province. The highest unemployment rates were found in the two districts most affected by the conflict, Mullaitivu and Kilinochchi. However, the total number of unemployed persons in the districts in the Northern Province was low, except in Jaffna district (See figure 10). The unemployment rates in the Eastern and the Southern provinces were also quite high.

Figure 9. Unemployment rate, by district

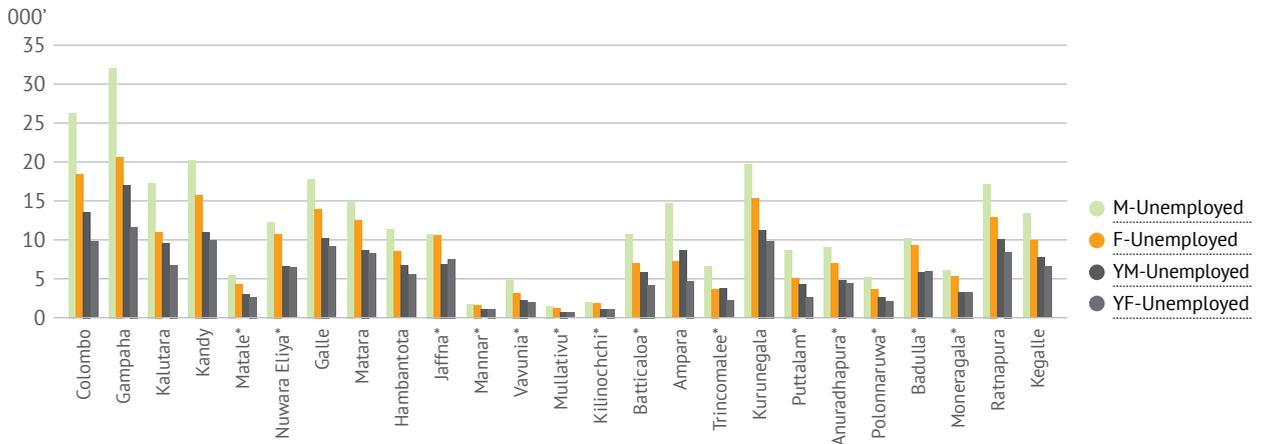


Source: Constructed using Labour Force Survey Data 2014.

Note: The district values marked with a star are to be treated with caution as the corresponding coefficient of variation values for the unemployment numbers are high.

¹³ Labour Force Survey data for all districts are available only from 2010. In 2008, the unemployment rate excluding the Northern province was 5.4 per cent (Department of Census and Statistics, 2014).

Figure 10. Youth and overall unemployment by sex (No.)



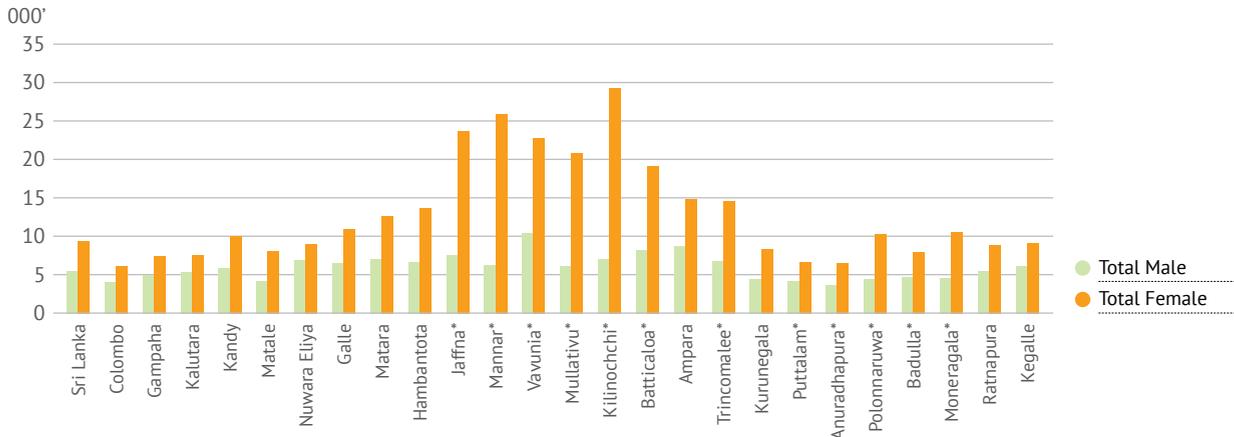
Source: Own construction using Census 2012 data.

Note: M-Unemployed – male unemployed; F-Unemployed – Female unemployed; YM-Unemployed – Unemployed male youth; YFUnemployed – Unemployed female youth

Both the female unemployment rate and the within district variation in the female unemployment rates are highest for districts in the Northern and Eastern provinces (See Figure 11 and Figure 12). The highest female unemployment rate is seen in Kilinochchi followed by that in Mannar. The highest variance in female unemployment rates is seen in Vavuniya, also all the other districts in the Northern and Eastern provinces also had high variances in the DS level unemployment rates. This suggests that the high unemployment rates in some divisional secretariats are pushing the district level unemployment rate up in these districts. However, it must be noted that the number of unemployed are low in the districts in the Northern province (Figure 9).

The male unemployment rate is highest in Vavuniya followed by that in Ampara. The within district DS level unemployment rates were also high in these two districts (See Figure 12). This suggests that very high unemployment rates in some of the divisional secretariats are keeping the unemployment rates high in these districts.

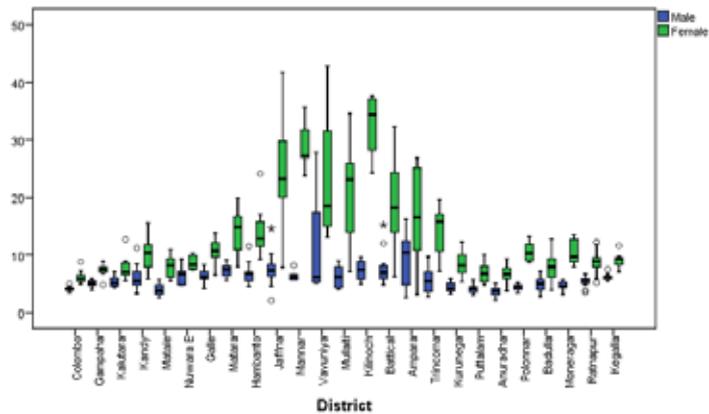
Figure 11. Unemployment rates, by districts and sex



Source: Constructed using Census 2012 data

UNEMPLOYMENT RATES, BY EDUCATION LEVEL AND DS LEVEL CONTD.

Figure 12. DS level variations in unemployment rates by district and sex

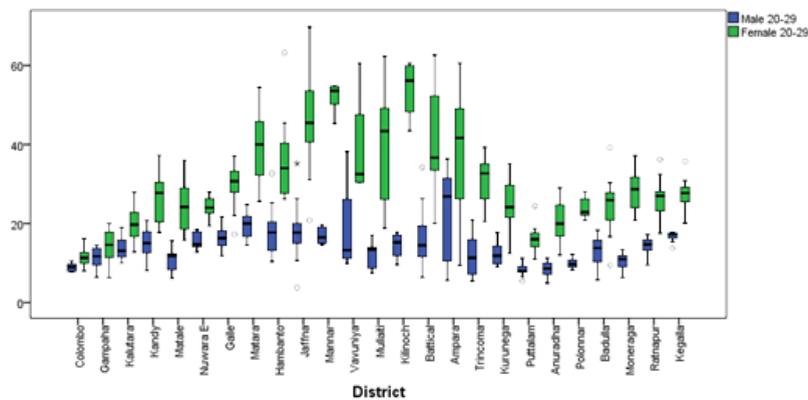


Source: Constructed using Census 2012 data.

The pattern in unemployment rates for young people (20-29 year olds) are similar to that for the overall population, but the levels of unemployment rates and the within district variances in DS level unemployment rates are higher for younger people. Again, highest female unemployment rates and DS level variances in female unemployment rates are seen for districts in the Northern and Eastern provinces. However, as per the overall unemployment levels the youth unemployment levels are low for districts in the Northern Province, except for the Jaffna district.

The unemployment rate for young males (20 to 29 year olds) is much lower than those for young females in all districts. Also, the within district variation in unemployment rates are also lower for young males, although they are higher than in the overall population.

Figure 13. DS level variations in unemployment rates by district and sex for youth (20-29 year olds)



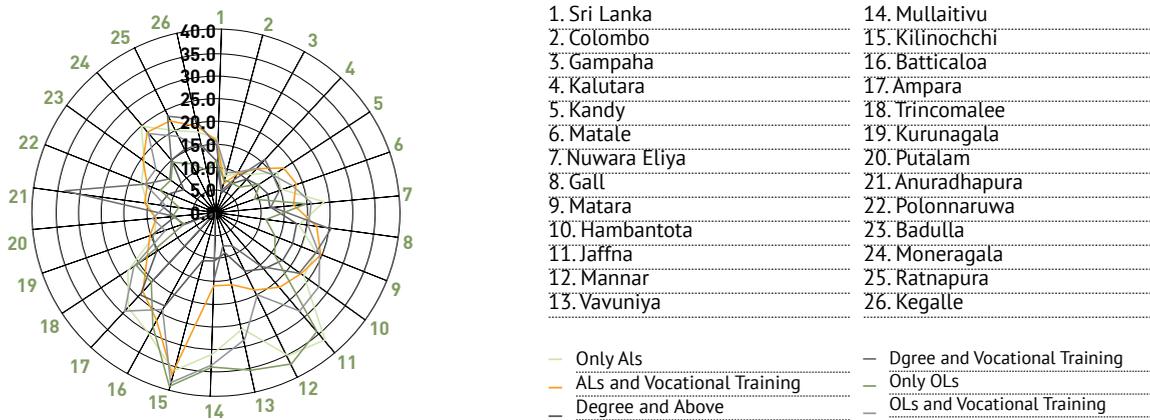
Source: Constructed using Census 2012 data.

4.2 EDUCATION AND UNEMPLOYMENT RATE

Among those with an education level of O-levels or higher, those with degrees had a lower unemployment rate. (see Figure 14). Other than for that the relationship between education and unemployment rate was not a straightforward one. In some districts those with higher levels of education had higher unemployment rates while in other districts the opposite was true.

The influence of education on female unemployment varies across districts. Among the districts in the Northern province, the female unemployment rate is highest for those with only O-levels, except in Jaffna. In Jaffna, as in most other districts, the female unemployment rate was highest for females with just A-levels (see Figure 14).

Figure 14. Female unemployment rate by level of education



Source: Constructed using Census 2012 data.

The pattern of unemployment rates across districts and education levels were somewhat different for males. Still, in general, males with degrees had the lowest unemployment rate across districts (with a few exceptions). However, in most districts, males with A-levels were more likely to be unemployed than males with O-levels.

Figure 15. Male unemployment rate by level of education



Source: Constructed using Census 2012 data.

UNEMPLOYMENT RATES, BY EDUCATION LEVEL AND DS LEVEL CONTD.

Conclusions and policy recommendations

- Overall as well as when disaggregated by gender unemployment rates were highest for the districts in the Northern province followed by those in Eastern and Southern provinces. This was especially the case for female unemployment rates. However, the number of unemployed was low for districts in the Northern province, except for Jaffna district.
- The DS level variations in unemployment rates were also very high for the districts in the Northern and Eastern provinces, and to a certain extent in the Southern province. This suggests that at least partly the high average unemployment rate in the districts in the Northern and Eastern provinces are due to high unemployment rates in selected DS divisions. Policies for reducing unemployment should examine the reasons for high unemployment rates in these DS divisions and take actions to improve employment opportunities.
- The unemployment rate was lowest for those with degrees. This is possibly due to the fact the government has successively provided public sector employment to unemployed graduates. The effect of vocational training on unemployment was mixed across gender and across districts.

CHAPTER 5

LABOUR FORCE PARTICIPATION RATES, BY DS LEVEL AND EDUCATION LEVEL

KEY FINDINGS

- There is not much variation in the labour force participation rates for males across districts. But, the labour force participation rates for females fluctuates across districts. The female labour force participation rates were highest in the Nuwara Eliya district. This is mainly due to the high concentration of estate sector population in this district.
- There is a high correlation between level of education and labour force participation rates. Further those with vocational training participate more in the labour force.
- In most of the districts, females with O-levels and vocational training participate more in the labour market than females with just A-levels.
- In the case of males, those with A-levels and vocational training (and in some districts even those with O-levels and vocational training) are more likely to participate in the labour force than males with just a degree.
- Those with vocational training participate in the labour force more, also the DS level variation in labour force participation rates are highest for those with vocational training.

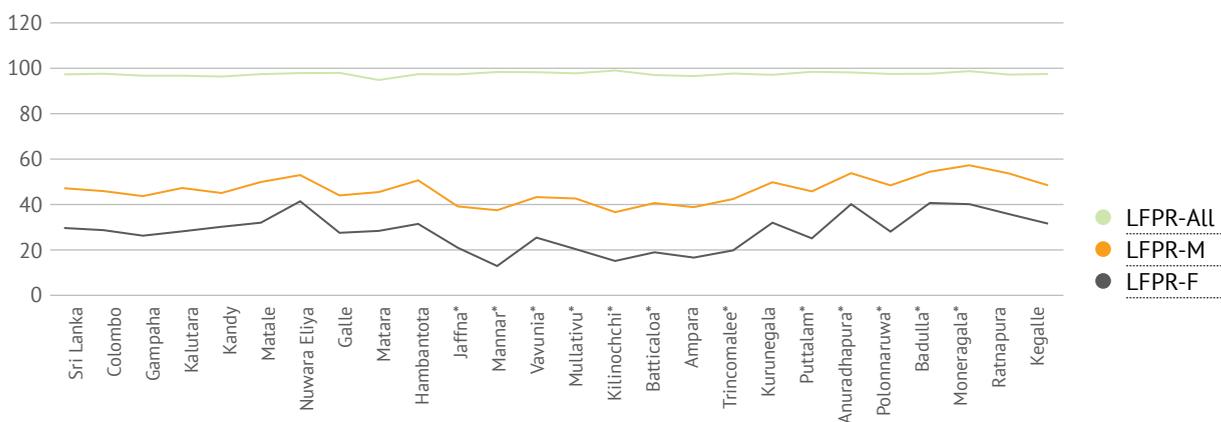
LABOUR FORCE PARTICIPATION RATES, BY DS LEVEL AND EDUCATION LEVEL CONTD.

5.1 INTRODUCTION

With the size of the labour force growing at an increasingly slower pace, increasing labour force participation of the population is an important policy measure. Increasing the labour force participation also helps to boost incomes as then the proportion of population dependent on others reduces. However, the labour force participation rates in Sri Lanka have not changed much over the years. The labour force participation of the 15 and above population was 57.1 per cent in 2006 and it has decreased to 54.2 per cent in 2014 (Department of Census and Statistics, 2014).¹⁴ The corresponding statistics for females have also come down from 39.5 to 36.3 over the 2006 to 2014 period. When Northern and Eastern provinces are included the labour force participation rate for females decreases further down to 34.7 per cent (Department of Census and Statistics, 2014).

There is not much variation in the labour force participation rates for males across districts (Figure 16). But, the labour force participation rates for females fluctuates across districts. It is high in Nuwara Eliya, Anuradhapura, Badulla and Moneragala, all districts with more than 50 per cent of employment in agriculture. The female labour force participation rates are low in the districts in the Northern and Eastern provinces. Further studies are needed understand the low female labour force participation rates in these districts.

Figure 16. Labour force participation rates, by district and sex (2014 using LFS data)



Source: Constructed using Labour Force Survey data 2012 (Department of Census and Statistics, 2014).

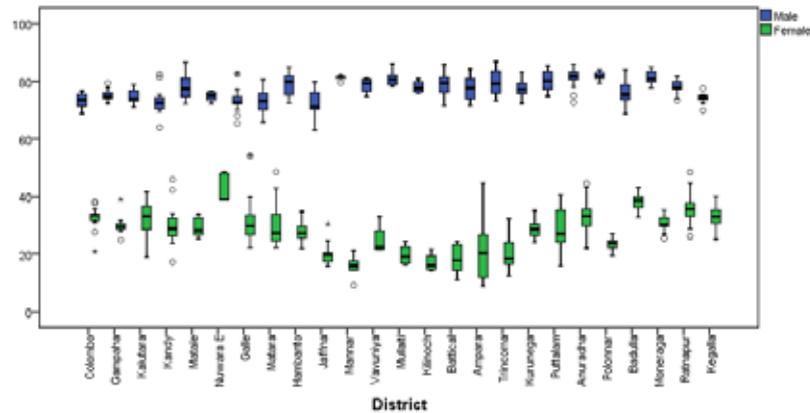
5.2 DS LEVEL VARIATIONS IN LABOUR FORCE PARTICIPATION RATES, BY DISTRICT AND SEX

Across districts the males participate more in the labour force than females (Figure 17). The male female differences in labour force participation rates were highest in the Northern and Eastern provinces. This could partly be due to cultural factors. The highest variance in DS level female labour force participation rates was in the Ampara district, followed by Galle district. Further studies are needed to better understand the reasons behind these variations in labour force participation rates within and across districts.

¹⁴ These statistics exclude the Northern and the Eastern provinces. When the Northern and Eastern provinces are included the labour force participation rate fluctuates around 53 per cent from 2011, the earliest year for which data is available for the Northern and Eastern provinces.

The female labour force participation rates were highest in the Nuwara Eliya district (Figure 17). This is mainly due to the high concentration of estate sector population in this district. According to the Census 2012 data 53.5¹⁵ per cent of the population in this district lives in the estate sector. Badulla district also has a relatively high level of female labour force participation. In this district also, a large proportion of population in the Badulla district (18.9¹⁶ per cent) lives in the estate sector.

Figure 17. DS level variations in labour force participation rates by district and sex

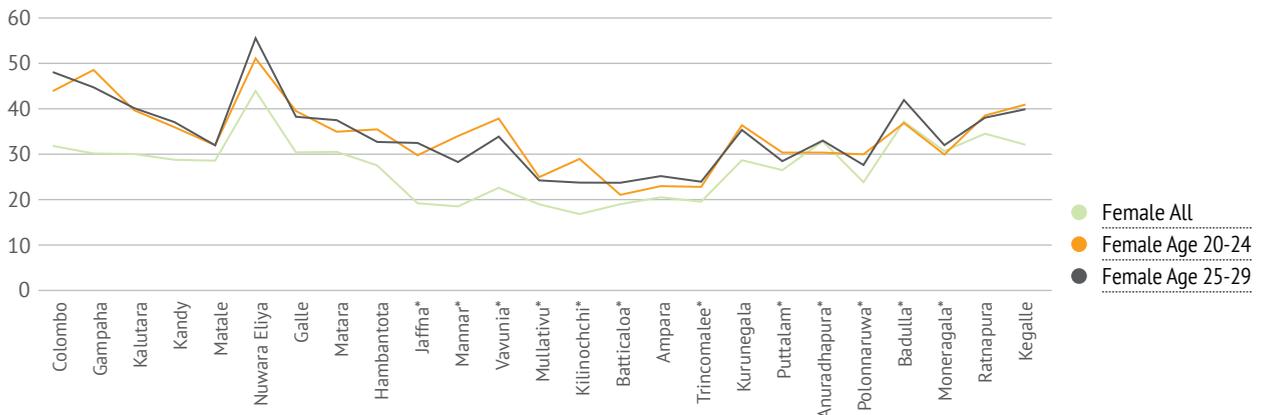


Source: Constructed using Census 2012 data.

Note: The box plots show district secretariat level variances in labour force participation rates across districts.

participation of females aged 20-24 and 25-29. In almost half the districts the labour force participation of 25-29 year olds are lower than the labour force participation of 20-24 year olds.

Figure 18. Female labour force participation rates by district and age



Source: Constructed using Census 2012 data.

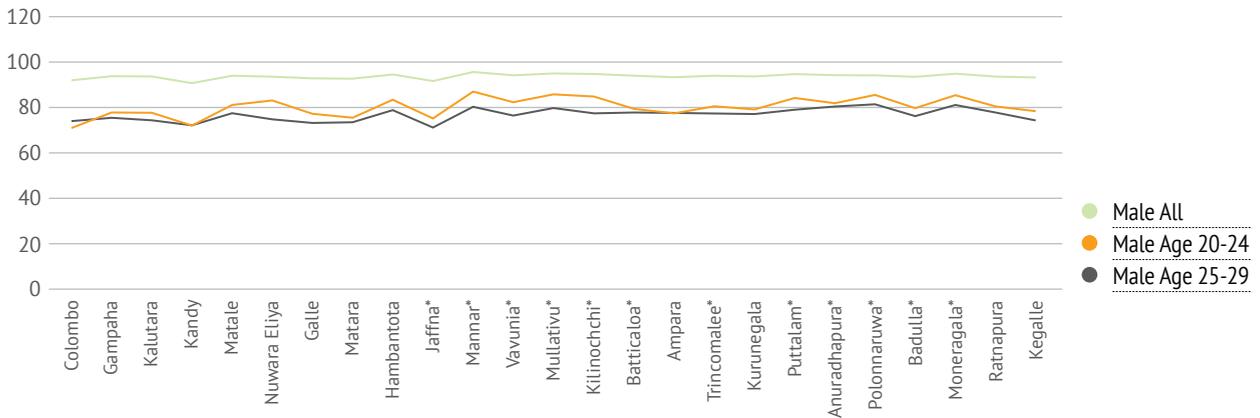
Note: The box plots show district secretariat level variances in labour force participation rates across districts.

¹⁵ Census 2012 data from (Department of Census and Statistics, 2014)

¹⁶ Census 2012 data from (Department of Census and Statistics, 2014)

LABOUR FORCE PARTICIPATION RATES, BY DS LEVEL AND EDUCATION LEVEL CONTD.

Figure 19. Male labour force participation rates by district and age



Source: Constructed using Census 2012 data.

Note: The box plots show district secretariat level variances in labour force participation rates across districts.

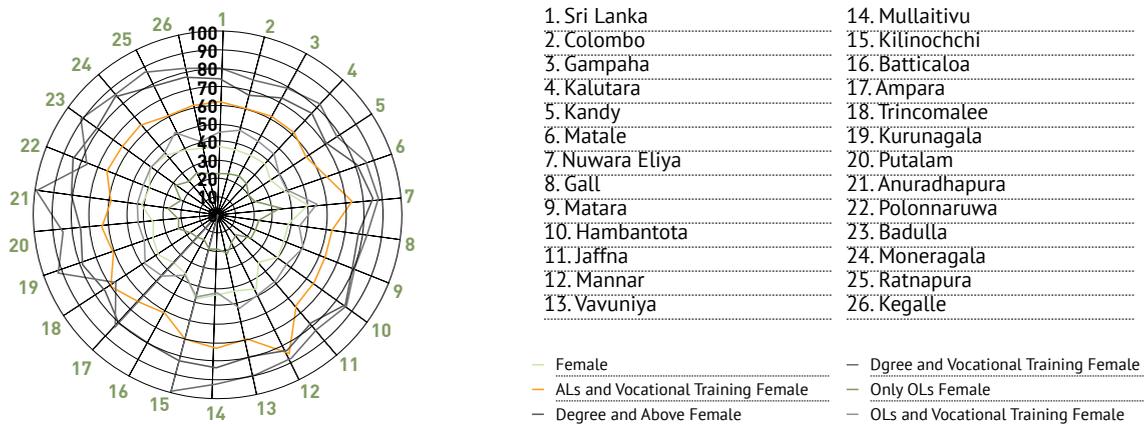
5.3 EDUCATION AND LABOUR FORCE PARTICIPATION

There is a high correlation between level of education and labour force participation rates (see Figure 20 and Figure 21). This effect is more pronounced for females. Females with degrees have higher labour force participation rates. This is consistent across all districts. Further females with vocational training participate in the labor force more. This is the case for each level of formal education. For example, Females with O-levels and vocational training participate in the labour force more than those with just O-levels, females with A-levels and vocational training participate in the labour market more than those with just A-levels and females with a degree and vocational training also participate in the labour market more than those just with a degree (see Figure 20). These differences in labour force participation rates are largely consistent across all districts. What is even more striking is that, in most of the districts, females with O-levels and vocational training participate more in the labour market than females with just A-levels.

In the case of males, those with A-levels and vocational training and in some districts even those with O-levels and vocational training are more likely to participate in the labour force than males with just a degree (See Figure 22 and Figure 23).

However, it is not clear whether those who wish to participate in the labour force undertake vocational training or whether vocational training improves labour force participation rates. Further studies will be needed to assess these influences. What is also interesting is that females with just O-levels and vocational training participate more in the labour market than those just with A-levels.

Figure 20. Female labour force participation rates by district and level of education

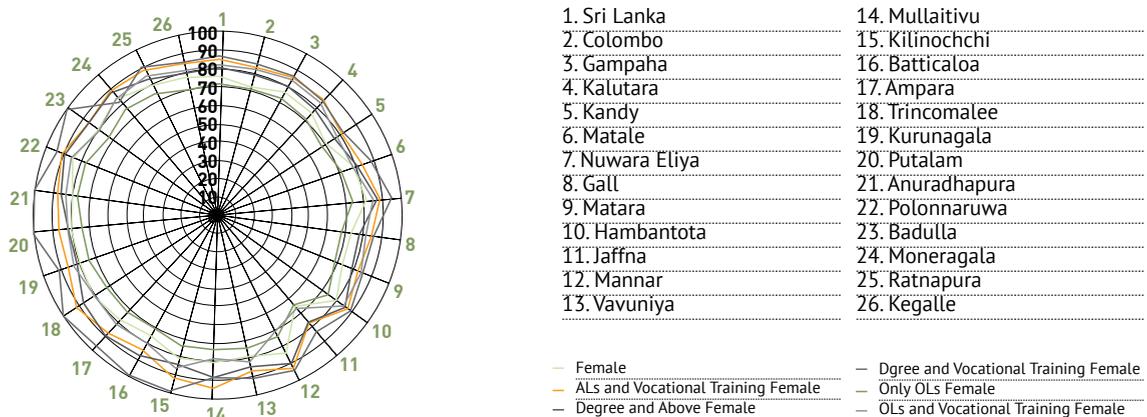


Source: Constructed using Census 2012 data.

Note: The box plots show district secretariat level variances in labour force participation rates across districts.

The correlation between labour force participation and level of education for males is also high. But, it is not as distinctive as it is for females. As for females we see that with education, the labour force participation of males improves, with highest labour force participation seen for males with a degree and vocational training.

Figure 21. Male labour force participation rates by district and level of education



Source: Constructed using Census 2012 data.

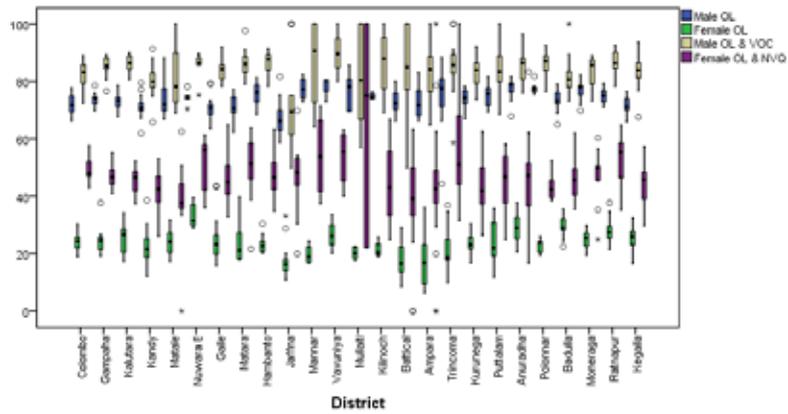
Note: The box plots show district secretariat level variances in labour force participation rates across districts.

Vocational training affects labour force participation of both females and males in two ways. First those with vocational training are more likely to participate in the labour market, this result holds irrespective of level of education, gender or district of residence (see Figure 22 and

LABOUR FORCE PARTICIPATION RATES, BY DS LEVEL AND EDUCATION LEVEL CONTD.

Figure 23). Further, the within district variance in labour force participation rates increases with vocational training. Especially the labour force participation rate of females with A-levels and vocational training correspond with the labour force participation rates of males in some districts (Figure 23).

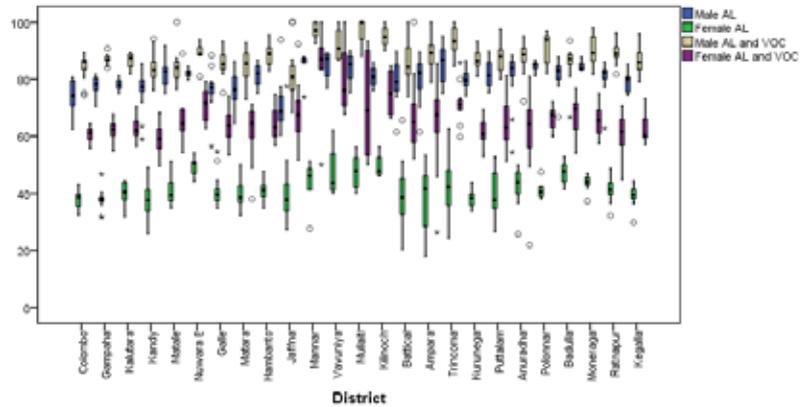
Figure 22. Labour force participation rates for those with O-levels by district, sex and vocational training



Source: Constructed using Census 2012 data.

Note: The box plots show district secretariat level variances in labour force participation rates across districts.

Figure 23. Labour force participation rates for those with O-levels by district, sex and vocational training



Source: Constructed using Census 2012 data.

Note: The box plots show district secretariat level variances in labour force participation rates across districts.

Conclusions and policy recommendations

- There is little district level variation in labour force participation rates for males. But, the labour force participation rates for females vary a lot across districts.
- There is a high correlation between education and labour force participation rates. Females with more education participate in the labour force more. Further, at each level of formal education, those with vocational training participate more in the labour force than those without vocational training. This could possibly be due to vocational training increasing the employability of individuals. It is also possible that those who are keen to participate in the labour force undertake further training to improve their employability. Further studies are needed to better understand why vocational training improves labour force participation, in order to implement affective policies for improving labour force participation of females.
- The DS level variations in labour force participation rates are higher for those with vocational training than for those without vocational training. This suggests that there are DS level factors affecting the labour force participation of females. This is specially so for females with vocational training. These factors need to be identified and rectified to improve labour force participation.

ANNEX 1. DEFINING LABOUR MARKET INDICATORS USING CENSUS DATA

Given that the questions that were asked in the Census 2012 were somewhat different from those asked in the LFS, the labour market indicators used in the analysis of LFS data cannot be used to measure labour market information using the Census data. The following labour market outcomes will be used to measure labour market outcomes using Census 2012 data in this study.

These are as follows:

Working age population – All persons who are 15 years of age or older (same definition as the LFS)

Employed – Those who were occupied as wage employee, employer, self-employed or an unpaid family worker for at least one week in the previous year (i.e., The combination of weeks under P21E and P21F is less than 52). This definition of employed would be different from the LFS definition of employed. LFS considered a person who was employed in the week prior to the survey as employed. The census considers persons who were occupied as a wage employee, employer, self-employed or an unpaid family worker for at least a week as employed.

Unemployed – (i.e. P21E = 52) According to the census only individuals who were unemployed for the full 52 weeks are considered to be unemployed. This is different from the unemployed according to the LFS, which considers persons who were seeking or available for work but had no employment during the reference week as unemployed.

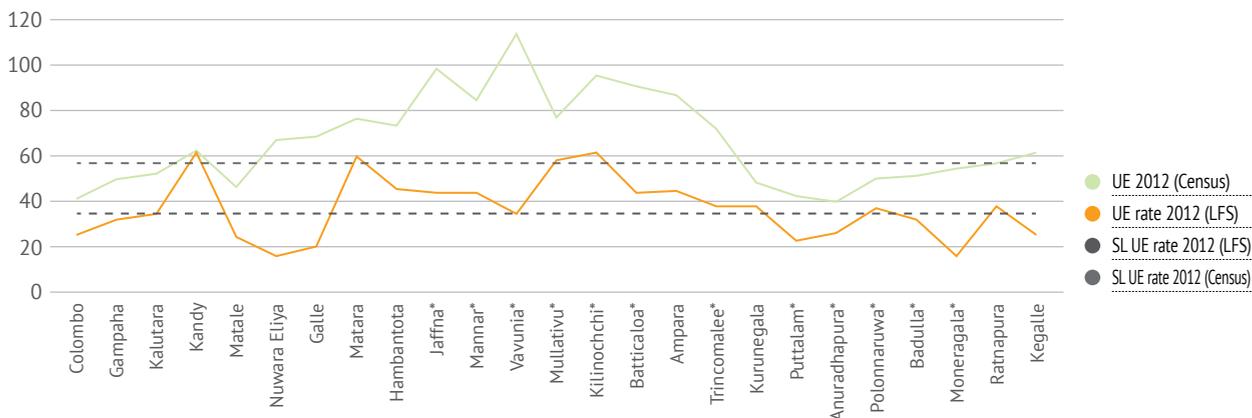
Labour Force – Employed and unemployed as define above.

Labour force participation rate – Labour force as a percent of the working age population.

Unemployment rate – Unemployed as a percent of the labour force.

Figure A1. 1 provides a comparison of the Labour Force Survey data. These two series are not directly comparable as the definitions of unemployment rates used by the two sources are different. The reference period for the labour force survey is the week prior to the survey while the reference period for the census is the year prior to the census.

Figure A1. 2 Comparison of unemployment rates, LFS and Census



Source: Constructed using Labour Force Survey Data 2012 and Census 2012 data.

Note: The LFS district values marked with a star are to be treated with caution as the corresponding coefficient of variation values for the unemployment numbers are high. The unemployment rates estimated using Census 2012 and LFS 2012 are not directly comparable as the definitions used are different.

ANNEX 2. HOW SCIENCE AND TECHNOLOGY WORKERS ARE DEFINED IN THIS REPORT

Science and Technology workers are defined by the level of education or by employment. By level of education S&T workers are people who have successfully completed education at the third level (see Box 1) in a S&T field of study (See Box 2). By employment, S&T workers are those who have not formally completed education at the third level in a science and technology field but are employed in a S&T occupation (see Box 3) where the above qualifications are normally required. (Organization For Economic Co-Operation and Development, 1995, page 16): 17

The above definition of S&T workers are provided for the OECD by the 'Canberra Manual'. This definition cannot be directly used to measure S&T workers in Sri Lanka for two reasons. First, education is not classified according to the International Standard Classification of Education (ISCED) in Sri Lanka. Second, the Census 2012 collects information only on the level of study but not on the field of study. This paper uses a customized methodology to assess the availability and distribution of Science and Technology workers in Sri Lanka.

BOX 1. EDUCATION AT THE THIRD LEVEL

Only highly skilled workers are considered to be S&T workers. In the Canberra Manual education is defined using International Standard Classification of Education (ISCED) (Organization For Economic Co-Operation and Development, 1995). ISCED defines seven categories of education, grouped into three broad levels. Only those with education at the third level are considered to be S&T workers. The third level of education includes ISCED categories 5, 6, 7 and 8. These are:

- ISCED category 5: Short cycle tertiary education;
- ISCED category 6: Bachelor's degree or equivalent level;
- ISCED category 7plus: Master's equivalent level;
- ISCED category 8: Doctoral or equivalent level;

Since the Census 2012 does not classify education using ISCED we propose an alternate definition of education at the third level in Sri Lanka. To differentiate these with the international standards we refer to these classifications as Sri Lanka levels of education (SLLED) and they will be given a parallel numbering system as described below. In the 2012 Census questionnaire question P18a asked to list the highest vocational training qualification received by those who have received any national or international vocation qualification by either passing a relevant exam or by undergoing a vocational training for more than 100 hours. Non-degree holders who list a qualification in this field will be considered to have SLLED level 5 qualifications:

- SLLED category 5 – Completed A-levels and has a vocational training qualification
- SLLED category 6 – Those with a degree or a post graduate diploma
- SLLED category 7 plus – Those with a post graduate degree or a PhD

Source: Author's compilation.

¹⁷ Education at the third level, S&T field of study and S&T occupations are described in the next three sections.

ANNEX 2. HOW SCIENCE AND TECHNOLOGY WORKERS ARE DEFINED IN THIS REPORT CONTD.

BOX 2. SCIENCE AND TECHNOLOGY FIELDS OF STUDY

The Canberra Manual refers to science and technology using a broad definition.¹⁸ In 1995, the Canberra Manual identified 21 main-fields of study, regrouped into seven broad fields. But it has been since revised based on technological changes happening around the globe. The revised list has seven broad categories as follows:

- 1.0 Natural sciences;
- 2.0 Engineering and technology;
- 3.0 Medical and Health sciences;
- 4.0 Agricultural sciences;
- 5.0 Social sciences;
- 6.0 Humanities;
- 7.0 Other fields

Source: Organization For Economic Co-Operation and Development (1995), page 24.

BOX 3. S&T OCCUPATIONS

In the Canberra manual all people employed in occupations which are classified in ISCO-88 major groups 2 or 3 or in the management subgroups 122, 123 or 131 are considered to be employed in an S&T occupation even if they do not have a third-level education qualification (Organization For Economic Co-Operation and Development, 1995).

People in occupations in ISCO-88 major group 2 or subgroups 122, 123 or 131 are to be considered university-level S&T occupation regardless of the level of their highest qualifications.

People in occupations in ISCO-88 major group 3 are to be considered technician-level HRS unless they have ISCED level 6 qualification or above (justifying their inclusion in university-level).

The Science and Technology workers are defined based on International Standard Classification of Occupations 1988 (ISCO-88) (Organization For Economic Co-Operation and Development, 1995).

The Census 2012 uses ISCO-08 to classify occupations. The latest OECD measurements of Human Resources in Science and Technology use professionals (ISCO group 2) and technicians and associate professionals (ISCO group 3) as occupations in science and technology. We will use this definition used by OECD in our calculations (OECD, 2016).

Source: Organization For Economic Co-Operation and Development (1995), page 24. (OECD, 2016)

¹⁸This list is from the Organisation for Economic Co-operation and Development (2007).

ANNEX 3 – STATISTICAL APPENDIX

Table A3.1 Population aged 15 years and over by economic activity and type of difficulty

| Type of difficulty | Gender | Total | Employed | Unemployed | Economically Inactive | Labour force | Labour force participation rate | Unemployment rate | Employment to Population ratio |
|-----------------------|--------|-----------|----------|------------|-----------------------|--------------|---------------------------------|-------------------|--------------------------------|
| All with difficulties | Male | 663,362 | 301,736 | 6,156 | 355,470 | 307,892 | 46.4 | 2.0 | 45.5 |
| | Female | 895,490 | 140,402 | 4,797 | 750,291 | 145,199 | 16.2 | 3.3 | 15.7 |
| | Total | 1,558,852 | 442,138 | 10,953 | 1,105,761 | 453,091 | 29.1 | 2.4 | 28.4 |
| Seeing | Male | 410,702 | 208,892 | 3,210 | 198,600 | 212,102 | 51.6 | 1.5 | 50.9 |
| | Female | 569,496 | 98,593 | 3,035 | 467,868 | 101,628 | 17.8 | 3.0 | 17.3 |
| | Total | 980,198 | 307,485 | 6,245 | 666,468 | 313,730 | 32.0 | 2.0 | 31.4 |
| Hearing | Male | 164,217 | 51,036 | 1,073 | 112,108 | 52,109 | 31.7 | 2.1 | 31.1 |
| | Female | 215,778 | 19,052 | 849 | 195,877 | 19,901 | 9.2 | 4.3 | 8.8 |
| | Total | 379,995 | 70,088 | 1,922 | 307,985 | 72,010 | 19.0 | 2.7 | 18.4 |
| Walking | Male | 272,846 | 79,949 | 1,696 | 191,201 | 81,645 | 29.9 | 2.1 | 29.3 |
| | Female | 446,836 | 47,160 | 1,796 | 397,880 | 48,956 | 11.0 | 3.7 | 10.6 |
| | Total | 719,682 | 127,109 | 3,492 | 589,081 | 130,601 | 18.1 | 2.7 | 17.7 |
| Cognition | Male | 132,242 | 27,283 | 1,173 | 103,786 | 28,456 | 21.5 | 4.1 | 20.6 |
| | Female | 190,483 | 13,558 | 768 | 176,157 | 14,326 | 7.5 | 5.4 | 7.1 |
| | Total | 322,725 | 40,841 | 1,941 | 279,943 | 42,782 | 13.3 | 4.5 | 12.7 |
| Self-care | Male | 73,404 | 8,772 | 442 | 64,190 | 9,214 | 12.6 | 4.8 | 12.0 |
| | Female | 99,055 | 3,208 | 391 | 95,456 | 3,599 | 3.6 | 10.9 | 3.2 |
| | Total | 172,459 | 11,980 | 833 | 159,646 | 12,813 | 7.4 | 6.5 | 6.9 |
| Communication | Male | 75,769 | 16,656 | 971 | 58,142 | 17,627 | 23.3 | 5.5 | 22.0 |
| | Female | 85,048 | 5,970 | 525 | 78,553 | 6,495 | 7.6 | 8.1 | 7.0 |
| | Total | 160,817 | 22,626 | 1,496 | 136,695 | 24,122 | 15.0 | 6.2 | 14.1 |

Source: Calculated using Census and Population and Housing 2012 data.

ANNEX 3 – STATISTICAL APPENDIX CONTD.

Table A3. 2 Employed population by type and level of difficulties and sector of employment

| | | Total | Government employee | Semi government employee | Private sector employee | Employer | Own account worker | Unpaid family worker |
|---|---------------------|-----------|---------------------|--------------------------|-------------------------|----------|--------------------|----------------------|
| Employed population aged 15 and over without any difficulty | | 6,893,294 | 1,083,386 | 234,254 | 2,835,227 | 179,189 | 2,212,320 | 348,918 |
| Total employed population with difficulties | | 442,138 | 39,348 | 10,735 | 145,134 | 11,491 | 201,938 | 33,492 |
| Seeing | Difficult | 304227 | 28171 | 7289 | 98726 | 7399 | 140834 | 21808 |
| | Not possible at all | 3258 | 465 | 77 | 1041 | 171 | 1233 | 271 |
| Hearing | Difficult | 62772 | 2450 | 921 | 20953 | 1555 | 31645 | 5248 |
| | Not possible at all | 7316 | 354 | 140 | 3551 | 221 | 2449 | 601 |
| Walking | Difficult | 122070 | 9165 | 2869 | 36072 | 3439 | 59288 | 11237 |
| | Not possible at all | 5039 | 757 | 77 | 1191 | 396 | 2146 | 472 |
| Cognition | Difficult | 37591 | 1702 | 730 | 12092 | 1283 | 17438 | 4346 |
| | Not possible at all | 3250 | 275 | 53 | 1045 | 317 | 1069 | 491 |
| Self-care | Difficult | 8932 | 1341 | 162 | 2261 | 636 | 3530 | 1002 |
| | Not possible at all | 3048 | 363 | 54 | 879 | 353 | 975 | 424 |
| Communication | Difficult | 15758 | 769 | 453 | 6120 | 709 | 5865 | 1842 |
| | Not possible at all | 6868 | 351 | 122 | 3143 | 385 | 2104 | 763 |

Source: Calculated using Census and Population and Housing 2012 data.

Table A3.3 Employed population by type and level of difficulties and sector of employment (% of total)

| | | Total | Government employee | Semi government employee | Private sector employee | Employer | Own account worker | Unpaid family worker |
|---|---------------------|-------|---------------------|--------------------------|-------------------------|----------|--------------------|----------------------|
| Employed population aged 15 and over without any difficulty | | 100 | 15.7 | 3.4 | 41.1 | 2.6 | 32.1 | 5.1 |
| Total employed population with difficulties | | 100 | 8.9 | 2.4 | 32.8 | 2.6 | 45.7 | 7.6 |
| Seeing | Difficult | 100 | 9.3 | 2.4 | 32.5 | 2.4 | 46.3 | 7.2 |
| | Not possible at all | 100 | 14.3 | 2.4 | 32.0 | 5.2 | 37.8 | 8.3 |
| Hearing | Difficult | 100 | 3.9 | 1.5 | 33.4 | 2.5 | 50.4 | 8.4 |
| | Not possible at all | 100 | 4.8 | 1.9 | 48.5 | 3.0 | 33.5 | 8.2 |
| Walking | Difficult | 100 | 7.5 | 2.4 | 29.6 | 2.8 | 48.6 | 9.2 |
| | Not possible at all | 100 | 15.0 | 1.5 | 23.6 | 7.9 | 42.6 | 9.4 |
| Cognition | Difficult | 100 | 4.5 | 1.9 | 32.2 | 3.4 | 46.4 | 11.6 |
| | Not possible at all | 100 | 8.5 | 1.6 | 32.2 | 9.8 | 32.9 | 15.1 |
| Selfcare | Difficult | 100 | 15.0 | 1.8 | 25.3 | 7.1 | 39.5 | 11.2 |
| | Not possible at all | 100 | 11.9 | 1.8 | 28.8 | 11.6 | 32.0 | 13.9 |
| Communication | Difficult | 100 | 4.9 | 2.9 | 38.8 | 4.5 | 37.2 | 11.7 |
| | Not possible at all | 100 | 5.1 | 1.8 | 45.8 | 5.6 | 30.6 | 11.1 |

Source: Calculated using Census and Population and Housing 2012 data.

ANNEX 3 – STATISTICAL APPENDIX CONTD.

Table A3. 4 Youth (15-29) employed population, by sector of employment and type and level of difficulty

| | Total | Government employee | Semi Government employee | Private sector employee | Employer | Own account worker | Unpaid family worker |
|--------------------------------|-----------|---------------------|--------------------------|-------------------------|----------|--------------------|----------------------|
| Youth without any difficulty | 1,748,999 | 264,390 | 51,245 | 979,813 | 28,375 | 332,312 | 92,864 |
| Youth with difficulties | | | | | | | |
| Total | 22,322 | 3,375 | 641 | 10,680 | 725 | 4,841 | 2,060 |
| Seeing -difficult | 8,886 | 1,207 | 321 | 4,779 | 201 | 1,817 | 561 |
| Seeing-not possible | 586 | 81 | 15 | 272 | 40 | 120 | 58 |
| Hearing -difficult | 2,920 | 211 | 66 | 1,567 | 93 | 667 | 316 |
| Hearing-not possible | 1,497 | 83 | 29 | 891 | 57 | 286 | 151 |
| Walking -difficult | 5,248 | 1,415 | 146 | 1,906 | 160 | 1,203 | 418 |
| Walking-not possible | 1,143 | 273 | 19 | 334 | 115 | 260 | 142 |
| Cognition-difficult | 3,071 | 292 | 59 | 1,239 | 206 | 698 | 577 |
| Cognition-not possible | 981 | 84 | 14 | 340 | 131 | 223 | 189 |
| Selfcare-difficult | 1,571 | 496 | 22 | 340 | 151 | 346 | 216 |
| Selfcare-not possible | 982 | 122 | 15 | 307 | 145 | 223 | 170 |
| Communication-difficult | 2,921 | 146 | 62 | 1,336 | 176 | 724 | 477 |
| Communication-not possible | 1,793 | 87 | 23 | 873 | 157 | 394 | 259 |

Source: Calculated using Census and Population and Housing 2012 data.

Table A3. 5 Youth (15-29) employed population, by sector of employment and type and level of difficulty

| | Total | Government employee | Semi Government employee | Private sector employee | Employer | Own account worker | Unpaid family worker |
|--------------------------------|-------|---------------------|--------------------------|-------------------------|----------|--------------------|----------------------|
| Youth without any difficulty | 100 | 15.1 | 2.9 | 56.0 | 1.6 | 19.0 | 5.3 |
| Youth with difficulties | | | | | | | |
| Total | 100 | 15.1 | 2.9 | 47.8 | 3.2 | 21.7 | 9.2 |
| Seeing-difficult | 100 | 13.6 | 3.6 | 53.8 | 2.3 | 20.4 | 6.3 |
| Seeing-not possible | 100 | 13.8 | 2.6 | 46.4 | 6.8 | 20.5 | 9.9 |
| Hearing-difficult | 100 | 7.2 | 2.3 | 53.7 | 3.2 | 22.8 | 10.8 |
| Hearing-not possible | 100 | 5.5 | 1.9 | 59.5 | 3.8 | 19.1 | 10.1 |
| Walking-difficult | 100 | 27.0 | 2.8 | 36.3 | 3.0 | 22.9 | 8.0 |
| Walking-not possible | 100 | 23.9 | 1.7 | 29.2 | 10.1 | 22.7 | 12.4 |
| Cognition-difficult | 100 | 9.5 | 1.9 | 40.3 | 6.7 | 22.7 | 18.8 |
| Cognition-not possible | 100 | 8.6 | 1.4 | 34.7 | 13.4 | 22.7 | 19.3 |
| Selfcare-difficult | 100 | 31.6 | 1.4 | 21.6 | 9.6 | 22.0 | 13.7 |
| Selfcare-not possible | 100 | 12.4 | 1.5 | 31.3 | 14.8 | 22.7 | 17.3 |
| Communication-difficult | 100 | 5.0 | 2.1 | 45.7 | 6.0 | 24.8 | 16.3 |
| Communication-not possible | 100 | 4.9 | 1.3 | 48.7 | 8.8 | 22.0 | 14.4 |

Source: Calculated using Census and Population and Housing 2012 data.

ANNEX 3 – STATISTICAL APPENDIX CONTD.

Table A3.6 Population aged 15 and over by age and level of education (SLCED), 2012

| Age | Level of education | | | | |
|--------------------------|-----------------------------------|---------------|---------------|---------------|-------------------------|
| | Total population aged 15 and over | SLCED level 7 | SLCED level 6 | SLCED level 5 | Less than SCLED level 5 |
| Number | | | | | |
| Total | 15,227,773 | 44,572 | 454,991 | 1,527,001 | 13,201,209 |
| 15-19 | 1,644,249 | - | 1,088 | 141,508 | 1,501,653 |
| 20-24 | 1,532,883 | 674 | 27,258 | 253,971 | 1,250,980 |
| 25-29 | 1,552,848 | 3,602 | 88,299 | 229,009 | 1,231,938 |
| 30-39 | 3,048,492 | 12,837 | 143,766 | 357,080 | 2,534,809 |
| 40-49 | 2,645,039 | 11,800 | 86,360 | 240,429 | 2,306,450 |
| 50 and above | 4,804,262 | 15,659 | 108,220 | 305,004 | 4,375,379 |
| Per cent of total | | | | | |
| Total | 100.0 | 0.3 | 3.0 | 10.0 | 86.7 |
| 15-19 | 100.0 | - | 0.1 | 8.6 | 91.3 |
| 20-24 | 100.0 | 0.0 | 1.8 | 16.6 | 81.6 |
| 25-29 | 100.0 | 0.2 | 5.7 | 14.7 | 79.3 |
| 30-39 | 100.0 | 0.4 | 4.7 | 11.7 | 83.1 |
| 40-49 | 100.0 | 0.4 | 3.3 | 9.1 | 87.2 |
| 50 and above | 100.0 | 0.3 | 2.3 | 6.3 | 91.1 |

Source: Calculated using Census and Population and Housing 2012 data.

Table A3. 7. Employed population by S&T occupation (two digit level), by level of education (SLCED) (No.)

| Occupation (ISCO 08 code) | Total employed population | SLCED level 7 | SLCED level 6 | SLCED level 5 | Less than SLCED level 5 |
|--|---------------------------|---------------|---------------|---------------|-------------------------|
| Total employed | 7,335,432 | 35,530 | 323,364 | 858,116 | 6,118,422 |
| Employed in S&T Occupations | 965,387 | 25,039 | 229,523 | 216,848 | 493,977 |
| Professionals (2) | 499,505 | 20,834 | 175,934 | 123,740 | 178,997 |
| Science and engineering professionals (21) | 38,451 | 1,753 | 14,199 | 9,591 | 12,907 |
| Health professionals (22) | 87,087 | 3,193 | 23,412 | 26,019 | 34,463 |
| Teaching professionals (23) | 300,375 | 13,209 | 116,971 | 73,330 | 96,865 |
| Business and administration professionals (24) | 26,680 | 696 | 7,635 | 6,877 | 11,472 |
| Information and communication technology professionals (25) | 9,629 | 197 | 3,660 | 3,190 | 2,582 |
| Legal, social and cultural professionals (26) | 37,284 | 1,785 | 10,058 | 4,733 | 20,708 |
| Technicians and Associate Professionals (3) | 465,882 | 4,205 | 53,589 | 93,108 | 314,980 |
| Science and engineering associate professionals (31) | 178,760 | 1,080 | 12,202 | 35,220 | 130,258 |
| Health associate professionals (32) | 19,414 | 137 | 1,427 | 4,173 | 13,678 |
| Business and administration associate professionals (33) | 213,295 | 2,757 | 34,006 | 38,418 | 138,114 |
| Legal, social, cultural and related associate professionals (34) | 25,681 | 74 | 1,648 | 4,269 | 19,690 |
| Information and communication technicians (35) | 28,732 | 158 | 4,305 | 11,028 | 13,241 |
| Employed in non-S&T occupations | 6,370,045 | 10,491 | 93,841 | 641,268 | 5,624,445 |

Source: Calculated using Census and Population and Housing 2012 data.

ANNEX 3 – STATISTICAL APPENDIX CONTD.

Table A3. 7. Employed population by S&T occupation (two digit level), by level of education (SLCED) (%)

| Occupation (ISCO 08 code) | Total employed population | SLCED level 7 | SLCED level 6 | SLCED level 5 | Less than SLCED level 5 |
|--|---------------------------|---------------|---------------|---------------|-------------------------|
| Total employed | 100 | 0.5 | 4.4 | 11.7 | 83.4 |
| Employed in S&T Occupations | 100 | 2.6 | 23.8 | 22.5 | 51.2 |
| Professionals (2) | 100 | 4.2 | 35.2 | 24.8 | 35.8 |
| Science and engineering professionals (21) | 100 | 4.6 | 36.9 | 24.9 | 33.6 |
| Health professionals (22) | 100 | 3.7 | 26.9 | 29.9 | 39.6 |
| Teaching professionals (23) | 100 | 4.4 | 38.9 | 24.4 | 32.2 |
| Business and administration professionals (24) | 100 | 2.6 | 28.6 | 25.8 | 43.0 |
| Information and communication technology professionals (25) | 100 | 2.1 | 38.0 | 33.1 | 26.8 |
| Legal, social and cultural professionals (26) | 100 | 4.8 | 27.0 | 12.7 | 55.5 |
| Technicians and Associate Professionals (3) | 100 | 0.9 | 11.5 | 20.0 | 67.6 |
| Science and engineering associate professionals (31) | 100 | 0.6 | 6.8 | 19.7 | 72.9 |
| Health associate professionals (32) | 100 | 0.7 | 7.4 | 21.5 | 70.5 |
| Business and administration associate professionals (33) | 100 | 1.3 | 15.9 | 18.0 | 64.8 |
| Legal, social, cultural and related associate professionals (34) | 100 | 0.3 | 6.4 | 16.6 | 76.7 |
| Information and communication technicians (35) | 100 | 0.5 | 15.0 | 38.4 | 46.1 |
| Employed in non-S&T occupations | 100 | 0.2 | 1.5 | 10.1 | 88.3 |

Source: Calculated using Census and Population and Housing 2012 data.

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