ABRIDGED OVERVIEW

Pathways from university to work

A Graduate Destination Survey of the 2010 Cohort of Graduates from the Western Cape Universities

A CAPE HIGHER EDUCATION CONSORTIUM (CHEC) STUDY

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JUNE 2013

A Cape Higher Education Consortium (CHEC) Study

CHEC
Cape Higher Education Consortium

This report provides an overview of the key findings of CHEC Graduate Destination Survey.
The full report is available from CHEC.

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UNIVERSITY of the WESTERN CAPE

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Nasima Badsha
CEO: CHEC

INTRODUCTION

The main purpose of this Abridged Oveview is to provide a summary of the results of the Cape Higher Education Consortium (CHEC) Graduate Destination Survey (GDS) of the 2010 cohort of graduates from all four universities in the Western Cape. These four institutions are: the Cape Peninsula University of Technology (CPUT), University of Cape Town (UCT), Stellenbosch University (SU) and the University of the Western Cape (UWC). The cohort included graduates who received certificates and diplomas, undergraduates (3- and 4-year bachelors) and postgraduates (postgraduate diplomas, honours, master's and doctorates). The total size of the 2010 cohort was 24 710 graduates.

The CHEC GDS survey received a total of 5 560 responses – a response rate of 22.5%. Roughly half these responses were derived online (2 873 or about 52%) while the other half were captured through telephonic interviews undertaken by a call centre based in Cape Town (2 687 or about 48%). The aggregate response rates for the four institutions were as follows: CPUT (21.8%), UCT (21.9%), SU (21.6%) and UWC (26.7%). Since we relied on voluntary responses, and since we were able to link responses to details of graduates obtained from the various institutions' Higher Education Management Information Systems (HEMIS), all 5 560 responses were statistically weighted to reflect the actual socio-demographic profile of the 2010 cohort of graduates on the basis on gender, population group, qualification type and institution.

In discussing the results of the study, the discussion will be structured as follows:

1. The first section provides an overview of the extent to which GDSs are utilised both internationally and nationally. Some of the results of these studies will be highlighted.
2. The second section provides a series of demographic, socio-economic and education background detail profiling aspects of the educational and work 'life course' of the 24 710 graduates of 2010 – as they negotiate the transition from schooling into higher education and work. Data are extracted from two sources: institutional data from the four Western Cape universities involved in the study, and data acquired through the GDS itself.
3. The primary focus of the study is then presented through an outline of the seven life-course 'pathways' which constituted the transition of the 2010 cohort from higher education into work and social life. A CHAID analysis will outline which of the background factors discussed above are the strongest predictors of attaining employment.
4. The issue of 'geographical migration' is briefly examined – which constitutes a movement of young people across all seven life-course pathways identified in the preceding section. This migration is multi-directional as young people move from small towns, cities, provinces, countries and even continents to obtain, firstly, a higher education of choice, and secondly, a job after graduation.
5. The conclusion will emphasise the importance of institutionalising GDSs nationwide.

INTERNATIONAL PERSPECTIVES

Graduate Destination Surveys (GDS) are the primary research instrument used globally to determine rates of graduate employment and unemployment. Surprisingly, the literature on GDS is sparse, both in South Africa but also in most developing countries. This is because the methodology used is taxing and requires very organised management information systems (MISs) regarding graduates. Such MISs are not updated with the necessary regularity in most developing country higher education systems. Acquiring accurate contact details across multiple institutions entailing large cohorts of graduates who have already left the university system are difficult to come by.

Perhaps the most consistent work in the area of GDS has been done by Schomburg and Teichler at the International Centre for Higher Education Research, Kassel University, Germany. In 2006, they published a twelve-country study on graduate employment, focusing on countries located largely in Europe but also including Japan. The survey was undertaken four years after graduation with the graduates of 1995. Altogether 117 000 graduates were sent questionnaires in the post and 40 000 eventually responded – an overall response rate of 39%. Response rates varied from 50% in Norway to 15% in Spain (Schomburg and Teichler, 2006: 22-23). The key results of their research are highlighted in Table 1.

Table 1: Percentage distribution of 'predominant activities' since graduation in 1995	
Further studies	21
Regular employment	61
Various temporary jobs	11
Had more than one job at a time	5
Homecare	3
Unemployed	4
Other activities	8
TOTAL	113.00

Source: Schomburg and Teichler, 2006: 77
Note: Survey done in 1999 on 1995 graduate cohort; report published in 2006

Although the unemployment rate in 1999 (four years after graduation) was only 4%, there were higher rates of unemployment in the southern regions of Europe. For example, in Spain it reached 13%. Another negative feature of the European labour market identified in the Schomburg and Teichler survey was the high levels of job 'churn' – 29% of graduates changed employers once, 22% of graduates changed jobs twice in the four years surveyed, and 6% changed jobs three times or more.

In Africa, Mugabushaka, Teichler and Schomburg (2003) reported unemployment rates varying from 5% for older cohorts (who graduated in the 1980s) to 10% for younger cohorts (who graduated in the mid-1990s) – indicating a growth in the trend towards graduate unemployment. Those respondents who indicated they were employed in the Africa surveys were largely taken up by public sector employment – 73% of those surveyed. This reality makes the African problem of graduate unemployment distinct and highly dependent on the employment activities of the state (Mugabushaka et al., 2003: 67).

Outside of Teichler and Schomberg's work in Germany and Africa, the next most significant work on tracer studies is done in Australia. Annual surveys are commissioned by government and done by two science councils, the Australian Council for Education Research (ACER) and the National Centre for Vocational Education Research (NCVER).

In 2009, Graduate Careers, a private Australian research and information agency launched the Beyond Graduation Survey, which examines the outcomes and experiences of Australian graduates annually over a period of four years after completing their studies at Australian higher education institutions. A total of 6 797 graduates responded and the key results are summarised in Table 2.

Table 2: Percentage distribution of 'predominant activities' of Australian graduates in their fourth year after graduating	
Further studies	12.4
Full-time employment	71.6
Part-time employment	9.1
Unemployed	1.8
Other activities	5.1
Total	100.0

Source: Graduate Careers, 2009: 9

It is clear that graduate unemployment prior to the global recession of 2008 was a small problem in the countries of central and northern Europe, Japan and Australia. However, unemployment levels for many European countries have risen dramatically as the recession worsens and drags on through 2013 into the present period. For example, Maastricht University in the Netherlands conducted a three-cohort GDS in 2012. The first cohort graduated in the academic year 2009–2010 (surveyed in 2012), the second cohort graduated in the academic year 2005–2006 (six years prior to the 2012 survey), and the third cohort graduated in the academic year 2000–2001 (eleven years prior to the 2012 survey). Table 3 shows the results and highlights the impact of the global recession clearly, particularly for the youngest cohort who are experiencing a 8% unemployment rate as compared with the two older cohorts who have rates of unemployment at 3% (6 years after graduation) and 2% (eleven years after graduation). The authors of the Maastricht GDS note that a substantial part of this unemployment rate is frictional (temporary difficulties in the match between supply of new graduates and the immediate availability of jobs in their fields). However, one possible exception to this rule may be Arts and Social Science graduates. Among the 2009/2010 cohort, Arts and Social Science graduates experienced a 24% unemployment rate and for the 2005–2006 cohort a 10% unemployment rate. These are very high rates suggesting more permanent difficulties in entering the labour market with qualifications in this specific field (ROA, 2012: 2).

Table 3: Unemployment levels of three graduate cohorts at Maastricht University, 2012			
	% unemployed		
Academic field:	2009–2010 cohort	2005–2006 cohort	2000–2001 cohort
Business and Economics	5	2	1
Health, Medicine and Life Sciences	3	2	1
Arts and Social Sciences	24	10	1
Psychology and Neuroscience	11	4	4
Law	9	0	6
Average: Maastricht University	8	3	2

Source: ROA Fact Sheet, 2012: 2.

Unemployment rates are also high in Latin America and Africa – even prior to the recession of 2008. In Brazil, graduate unemployment has reached a high of 16.4%, reflecting a severe mismatch between the demand and supply of skilled person power (Rodriguez et al., 2008: 208). The next section will review the use of GDSs in South Africa where graduate unemployment rates – as in Brazil – are alleged to be high.

INSTITUTIONAL SURVEYS

Graduate destination research is highly underdeveloped in South Africa and there is no systematic attempt to understand graduate pathways outside of a few sporadic institutionally-based surveys. One instrument, 'exit surveys' of learners at their graduation ceremonies, has been used at a number of local institutions. These surveys aim to gather a quick 'snapshot' of job search behaviour, employment status, entry-level salaries as well as satisfaction with the higher education institution, the

curriculum they offer and its relevance to the workplace.

UCT has the longest history of doing such surveys, having started in 1997. In 2009, for example, the return rate was 51% of all graduates (3 029 people), a relatively high achievement for surveys of this nature. This survey reported a very low incidence of unemployment – the status of only 3% of graduates was unknown, whereas all other graduates had either obtained employment or were entering further studies (UCT, 2009).

SU conducted exit surveys up until 2003. The survey of 2003, with 5 249 responses, indicated that 53% of graduates already had jobs by the time of graduation, a further 40% indicated they would study further, and only 6% were still seeking employment (SU, 2003: 1).

Exit surveys were also discontinued at CPUT in 2010. What is significant here are the higher levels of graduate unemployment at CPUT at the moment of graduation – 20% in 2009 (Richter, 2009). Graduate unemployment here is nearly seven times as high as the levels at UCT and three times higher than unemployment levels at SU.

UWC began administering graduate exit surveys in 2002 through their Institutional Planning Office. In 2012 UWC introduced an online questionnaire to replace the paper-based survey of the past. The link to the questionnaire and the request for all students to complete it are included in the pre-graduation information sent to them in preparation for their ceremony. Of the graduates who completed the survey between March 2012 and March 2013 graduations, 51% are pursuing further studies, 25% are now employed fulltime and 16% indicated that they are unemployed and looking for a job.

As will be seen later in this report, these early signals of unemployment in the institutional exit surveys are validated by the results of the 2012 CHEC study of the 2010 cohort of graduates.

THE HSRC SURVEY

In 2005 the Human Sciences Research Council (HSRC) undertook a *Student Retention and Graduate Destination* study. The core of the study entailed a tracer survey of the 2003 cohort of tertiary 'leavers' (drop-outs) and graduates at seven selected public higher education institutions, namely, the University of the Witwatersrand (Wits) in Johannesburg, the former Pretoria Technikon (now Tshwane University of Technology), Stellenbosch University (SU), the former Peninsula Technikon (now part of the Cape Peninsula University of Technology), the University of the Western Cape (UWC), the University of Fort Hare (UFH), and the former University of the North (now the University of Limpopo). Between June and September 2005 a postal survey of 34 548 questionnaires was administered. The survey yielded 5 491 valid responses – a 16% response rate.

One of the most striking sets of data arising from the HSRC study is the strong evidence of the contrasting socio-economic backgrounds of students who attend these seven institutions. Whereas poor students constituted only 50% and 54% of students enrolled at Wits and Stellenbosch Universities respectively (both historically advantaged institutions [HAIs]), poor students constituted 82% of the cohorts at the universities of Fort Hare and North (both historically disadvantaged institutions [HDIs]).

Another core finding was the highlighting of the extent of drop-out and failure in higher education (what the HSRC study prefers to refer to as 'leaving'), particularly among African students. Table 4 highlights the core data.

Table 4: Percentage distribution of students graduating or leaving by race, seven higher education institutions, 2005 HSRC Study

	African	Coloured	Indian	White	Total
Students graduating	39.0	46.2	57.5	66.3	47.2
Students leaving	61.0	53.8	42.5	33.7	52.8
Total	100.0	100.0	100.0	100.0	100.0

Source: Letseka et al., 2010

Gross inequalities in higher education achievement are evident in Table 4. Approximately 66% of whites graduate, far exceeding the 39% graduation rate for African students. African females appear to be the most disadvantaged, with a graduation rate of only about 34% (Letseka et al., 2010).

One of the main purposes of the *Student Retention and Graduate Destination* study was to determine graduate destinations, and in particular, whether they found employment or not. Table 5 suggests very high unemployment rates:

Table 5: Percentage distribution of graduate unemployment rates by race and institution, 2005

	Rate of unemployment amongst (%)				
Institution:	African	Coloured	Indian	White	Total
University of Fort Hare (HDI)	56	-	-	-	67
Stellenbosch University (HAI)	55	15	-	12	13
University of the North (HDI)	42	-	-	-	57
University of the Western Cape (HDI)	42	14	21	-	30
University of the Witwatersrand (HAI)	29	-	16	7	23
Peninsula Technikon (HDI)	51	23	-	-	41
Technikon Pretoria (HAI)	38	-	-	6	27
All 3 HAIs	42	21	11	10	27
All 4 HDIs	40	13	-	6	35
Total	41	18	14	9	32

Source: Bhorat et al., 2010

Racially differentiated pathways are clearly evident in Table 5. A comparison between the total unemployment rates of African graduates and leavers (41% and 48% respectively) and those for white graduates and leavers (9% and 5% respectively) highlight these stark differences.

As will be observed later in the analysis, the HSRC results on unemployment differ significantly with those of the CHEC GDS. These differences suggest that the HSRC sample may have been unduly influenced by high response rates from both unemployed graduates and unemployed leavers, which pushed the average unemployment rate to levels far higher than those evident in the CHEC survey.

A SOCIO-ECONOMIC AND EDUCATIONAL PROFILE OF THE 2010 COHORT

The discussion now shifts to examine a series of eleven socio-economic and education data which will provide a useful background profile of the 2010 cohort. The four Western Cape higher education institutions involved in the GDS will also be profiled.

Data used here comes from two sources: firstly, it comes from the institutions themselves via their Higher Education Management Information Systems (HEMIS) submissions to the Department of Higher Education and Training (DHET) for the year 2010. Secondly, data comes directly from the GDS itself, which asked several socio-economic background questions. Profiling data discussed here includes the following eleven items:

- Regional data:
  - Regional output of graduates
  - Postgraduate production in the Western Cape
  - Number of international students graduating from Western Cape universities
- Socio-economic and schooling data:
  - Parental education
  - Private schooling
  - Financing of university studies
  - Bursary support
  - Achievement scores in Grade 12 in mathematics and physical science
- Higher education data:
  - Participation in extramural activities
  - Career guidance received
  - Internships or work placements

WEIGHTING OF THE GDS RESPONDENT DATA

Data from the HEMIS and the GDS can't be used together, compared and contrasted in a straightforward fashion. This is because the total population of the HEMIS database is 24 710 graduates, whereas the GDS respondent database is only 5 560 graduates (out of the 24 710). To be able to jointly analyse the two datasets requires that the GDS respondent database is weighted. As indicated earlier, the CHEC GDS obtained a 22.5% response rate from graduates who were contactable and who chose to respond. Once the data had been properly cleaned, the data was weighted to account for variation in response rates between key sub-strata. The use of statistical weights is necessary if a dataset is not based on a 100% response rate from a random sample, which is indeed the case with the GDS. The 22.5% response rate was not distributed evenly across particular sub-strata, as can be seen in Table 6. Because of this unevenness, the chosen sub-strata had to be weighted to take into account the actual number of graduates in each particular stratum.

A statistical weight was calculated for each sub-stratum by simply dividing the total number of graduates in a particular sub-stratum by the number of responses in the same sub-stratum, with the result then serving as a factor by which all responses in that particular sub-stratum would be multiplied to reflect the actual number of graduates in that sub-stratum.

Regional data

Regional output of graduates

The four universities that participated in the GDS are all based in the Western Cape, and so it is appropriate, as a first step in painting an overarching background to the 2010 cohort, that we examine regional higher education dynamics. Table 7 highlights the fact that the Western Cape has the second highest graduate output by province – a figure of 19% which is significantly behind that of Gauteng which produced about 34% of all graduates in 2010. The Western Cape's graduate output as a ratio of the size of the provincial population is high but it should be noted that other provinces have far higher population sizes and therefore far higher pressures of access to institutions of higher learning.

Higher education institutions are national institutions and enrolment patterns are determined by this reality – students are free to study at their institution of choice across the country if they meet the admission criteria. They are not restricted to enrol in an institution in their home province. There is therefore not a neat correlation between home province of graduates (their home before embarking on higher education) and provincial graduate output. However, it is useful to examine provincial graduate output data – with the above rider in mind – because learner places and graduate output are not evenly distributed by institutions across the country.

Table 6: Response rate (%) by institution, qualification type, race and gender

		CPUT		UCT		SU		UWC		Total
		PD and UG	PG	PD and UG	PG	PD and UG	PG	PD and UG	PG	
African	Female	24.4	6.9	20.0	21.7	30.8	25.7	28.6	27.5	24.7
	Male	27.3	20.8	19.4	27.0	28.4	27.1	32.3	31.0	27.1
Coloured	Female	21.0	0.0	20.3	25.3	21.1	16.1	23.4	26.0	21.1
	Male	22.0	12.5	18.6	24.1	18.0	26.8	28.7	26.4	23.4
Asian	Female	22.4	0.0	18.9	24.8	31.6	23.1	26.8	21.7	23.1
	Male	18.5	0.0	15.8	20.6	11.1	25.9	15.3	13.7	17.4
White	Female	12.8	6.5	21.6	22.6	18.8	23.0	25.4	25.5	20.2
	Male	16.7	8.7	22.9	21.7	19.7	21.8	21.6	32.6	20.6
Other/unknown	Female	N/A	N/A	20.6	18.7	N/A	N/A	19.0	4.3	18.2
	Male	N/A	N/A	25.4	29.3	N/A	N/A	35.3	34.8	29.1
Total		22.2	9.4	20.8	23.1	20.0	22.9	26.7	26.7	22.5

Source: CHEC, 2013
Note: PD – Pre-degree qualifications such as certificates and diplomas; UG = undergraduate; PG = postgraduate

Table 7: Proportions of graduates as a percentage of provincial population and total graduate output, 2010

	Total population (Census 2011)	Graduates (National HEMIS 2010)	Provincial graduates as a share of total provincial population (as a %)	Provincial share of total graduate population of 1 27 249 (as a %)
EC	6 562 053	13 229	0.20	10.4
FS	2 745 590	7 955	0.29	6.3
GP	12 272 263	43 454	0.35	34.1
KZN	1026 7300	17 023	0.17	13.4
LP	5 404 868	5 936	0.11	4.7
NW	3 509 953	15 083	0.43	11.9
WC	5 822 734	24 569	0.42	19.3
Total	46 584 761	127 249	0.27	100.0

Source: Census 2011, National HEMIS 2010, DHET website, Table 2.13 for all institutions, 2010.
Note: Data excludes UNISA.

A second observation regarding provincial output – which is evident in Table 8 – is the fact that 26% of qualifications awarded nationally by higher education institutions in 2010 were postgraduate awards, but this figure is significantly higher in the Western Cape, which leads all other regions in the production of postgraduate qualifications at 35.8% of total graduate output.

Table 8: Graduate output by province and qualification type, 2010

	Non-degree and undergraduate		Postgraduate		Total	
	Count	%	Count	%	Count	%
EC	10 296	77.8	2 933	22.2	13 229	100.0
FS	5 178	65.1	2 777	34.9	7 955	100.0
GP	32 346	74.4	11 108	25.6	43 454	100.0
KZN	14 209	83.5	2 814	16.5	17 023	100.0
LP	4 785	80.6	1 151	19.4	5 936	100.0
NW	11 146	73.9	3 937	26.1	15 083	100.0
WC	15 763	64.2	8 809	35.8	24 572	100.0
UNISA	19 460	74.6	6 613	25.4	26 073	100.0
Total	113 183	73.8	40 142	26.2	153 325	100.0

Source: National HEMIS data, DHET website, 2010

Table 9 shows that SU and UCT make up the largest contribution to postgraduate production – about 54% and 47% of their 2010 graduates achieved postgraduate qualifications. UWC, although held back in the period prior to 1990 by apartheid policies (when higher degrees were not prioritised at HDIs), is fast catching up with 35% of its 2010 graduates attaining postgraduate qualifications.

Table 9: Number and percentage of 2010 Western Cape graduates with different qualification types by institution

	Undergraduate and non-graduates		Postgraduate		Total	
	Count	%	Count	%	Count	%
CPUT	7 229	97.2	212	2.8	7 441	100.0
UCT	3 263	52.9	2 902	47.1	6 165	100.0
SU	3 363	45.6	4 017	54.4	7 380	100.0
UWC	2 393	64.3	1 331	35.7	3 724	100.0
Total	16 248	65.8	8 462	34.2	24 710	100.0

Source: Institutional HEMIS data for 2010

International graduates

A further observation of note regarding regional dynamics is the size of international students within the graduating 2010 cohort. UCT stands out as the institution with the greatest proportion of international students – they comprise about 19% of its total graduate population. The total number of international students who graduated in South African universities in 2010 was 11 383 (95% who originate from other African countries), and the Western Cape hosted 2 851 of these graduates (or about 25%).

Socio-economic and schooling data

Parental education

Levels of parental education serve as the most important proxy for socio-economic background, particularly if accurate details of parental income were not accessible (as was the case in this GDS). Parental education is also a key influence on whether

their children finish secondary school, gain admission to higher education and succeed (Ball, 2010). The data suggests that 38% and 36% of graduates at UCT and SU had a mother or female guardian with a university degree or higher, compared to only 15 and 14% at CPUT and UWC. These inequities across institutions widen with regard to the education of fathers and/or male guardians. In this instance, about 47% and 44% of 2010 graduates at UCT and SU had fathers with university degrees, whereas only 18% and 15% of graduates at UWC and CPUT had fathers with these qualifications (CHEC, 2013: Tables 5.9 and 5.10: 29).

Table 10: Number and percentage of 2010 Western Cape graduates from different nationalities by institution

	South African		International		Total	
	Count	%	Count	%	Count	%
CPUT	6 868	92.3	573	7.7	7 441	100.0
UCT	4 971	80.6	1 194	19.4	6 165	100.0
SU	6 731	91.2	649	8.8	7 380	100.0
UWC	3 289	88.3	435	11.7	3 724	100.0
Total	21 859	88.5	2 851	11.5	24 710	100.0

Source: Institutional HEMIS data for 2010

About 52% of the fathers/male guardians and 43% of the mothers/female guardians of white graduates have university qualifications, whereas this figure drops dramatically to 21% and 19% for Africans and 16% and 12% respectively for coloured graduates. For UCT and SU, the data in the previous paragraph suggests high levels of parental education. For UWC and CPUT, the numbers are much lower but are likely to be far higher than the average education levels for father and mothers of graduates at other higher education institutions nationally (CHEC, 2013: Tables 5.9 and 5.10: 29).

Private schooling

Attendance at a private school is also a proxy for socio-economic class status, as it is often the wealthier who can afford to send their children to private schools. Table 11 indicates that a significant proportion of the 2010 graduate cohort attended private schooling prior to studying at Western Cape institutions of higher learning. Overall, about 17% attended private schooling. This is far above the national average as determined by Census 2011 which put the figure for attendance at private schooling nationally at 7.3% (Stats SA, Fact Sheet: 3). More interesting though is the enrolment of persons with private schooling at UCT – they constitute 35% of the 2010 UCT graduate cohort.

Financing of studies

The question of how young people finance their studies in higher education is a major education policy issue globally. In South Africa, there is a National Student Financial Aid Scheme (NSFAS) set up specifically to support students from poor backgrounds to access higher education. In a surprising turn in this GDS, the greatest source of funding for UWC and CPUT graduates, as reported by graduates in the GDS, did not come from NSFAS but came from the graduates themselves – at 28% and 29% of funding sources respectively:

The second biggest source of income identified by the GDS for funding the costs of study for CPUT and UWC students is NSFAS bursaries – at about 27% and 18% of graduates at these two campuses (CHEC, 2013: Table 6.1: 31).

A third source of bursary funding – from private corporations and benefactors – also plays a sizeable role. Indeed, if all types of bursaries are added together, they comprise 12 232 or 35% of the 34 539 funding instances listed by respondents. Caution is required here in adding the two bursary sets together because some students had access to more than one source of funding, with an average of 1.4 funding sources per graduate (CHEC, 2013: Table 6.1: 31).

Africans are the largest beneficiaries of NSFAS bursaries (at 58%) and whites the lowest (at 11%). Africans also receive the largest slice of private bursaries – at 36% for Africans and 35% for whites (CHEC, 2013: Table 6.3: 32).

Achievement scores in Grade 12

Achievement scores in Grade 12 mathematics and physical science are critical factors in determining whether young people can access higher education. They also determine whether they can enrol for particular high-status professional fields like medicine and engineering which require high scores in these fields. It is now an established fact that the distribution of good scores in Grade 12 mathematics and physical science is heavily shaped by the legacy of apartheid's policies of race-based school education and neighbourhood segregation. These patterns of poor achievement in mathematics and physical science in township and rural schools continue long after the advent of democracy and non-racial education (many of the 2010 graduates would have enrolled for Grade 1 in 1994 and 1995).

Table 13 provides evidence of school achievement inequalities in mathematics that still persist in South Africa. Whereas about 62% of UCT undergraduates and 65% of SU undergraduates entered higher education with a higher grade (HG)

Table 11: Type of high school attended by members of the 2010 Western Cape graduate cohort by race

	African		Coloured		Indian		White		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
Public	5 374	87.8	5 625	89.6	557	70.1	6 564	76.6	18 120	83.3
Private/ndependent	745	12.2	651	10.4	238	29.9	2 005	23.4	3 639	16.7
Total	6 119	100.0	6 276	100.0	795	100.0	8 569	100.0	21 759	100.0

Source: CHEC, 2013. Survey Question: Q1.1.2
Note: Includes only graduates who mostly lived in South Africa while attending high school.
Excludes 2% of graduates classified as 'other' or not classified at all. Excludes 0.2% of graduates who attended home schooling mostly.

Table 12: Sources and instances of funding the costs of acquiring a qualification (registration, tuition and book fees), 2010 Western Cape graduate cohort

	Institution									
	CPUT		UCT		SU		UWC		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
Free provision because a parent was a member of the university staff	163	1.7	267	2.9	291	2.8	105	2.0	826	2.4
My own funds	2 805	28.7	1 529	16.6	2 432	23.5	1 456	28.1	8 223	23.8
Funds or loans from my parents/guardians	1 683	17.2	2 798	30.3	2 494	24.1	827	16.0	7 801	22.6
Funds or loans from other family members or acquaintances	119	1.2	264	2.9	246	2.4	161	3.1	790	2.3
Funds or loans from my employer	494	5.0	470	5.1	631	6.1	185	3.6	1 780	5.2
NSFAS bursary/loan	2 630	26.9	666	7.2	644	6.2	949	18.3	4 890	14.2
NRF bursary	377	3.9	469	5.1	370	3.6	302	5.8	1 517	4.4
A bursary or scholarship from my university	214	2.2	1 137	12.3	1 059	10.2	312	6.0	2 722	7.9
A private bursary or scholarship	607	6.2	993	10.8	1 007	9.7	496	9.6	3 103	9.0
A bank loan	295	3.0	395	4.3	881	8.5	130	2.5	1 701	4.9
Other	403	4.1	236	2.6	285	2.8	261	5.0	1 186	3.4
Total	9 790	100.0	9 224	100.0	10 340	100.0	5 184	100.0	34 539	100.0

Source: CHEC, 2013
Survey Questions: Q2.2 and Q2.2.1
Note: The total of 34 539 responses around 'sources of funding' will necessarily be higher than the total population of 24 710 graduates as graduates could have reported multiple sources of funding.

Table 13: Number and percentage of 2010 Western Cape undergraduates with Grade 12 mathematics by level and institution

	CPUT		UCT		SU		UWC		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
HG	986	13.6	2 011	61.6	2 168	64.5	376	15.7	5 541	34.1
SG	3 650	50.5	480	14.7	979	29.1	1 090	45.5	6 199	38.2
LG	111	1.5	0	.0	4	.1	39	1.6	154	.9
Other	29	.4	0	.0	0	.0	0	.0	29	.2
None	2 453	33.9	772	23.7	212	6.3	888	37.1	4 325	26.6
Total	7 229	100.0	3 263	100.0	3 363	100.0	2 393	100.0	16 248	100.0

Source: Institutional HEMIS data for 2010
Note: Undergraduate only.

Table 14: Number and percentage of 2010 Western Cape undergraduates with Grade 12 mathematics by performance and institution

	CPUT		UCT		SU		UWC		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
A (80-100%)	340	7.8	1 037	41.7	1 098	34.8	138	9.2	2 613	22.7
B (70-79%)	388	8.9	489	19.7	642	20.4	135	9.0	1 654	14.4
C (60-69%)	731	16.8	459	18.5	599	19.0	237	15.7	2 026	17.6
D (50-59%)	962	22.1	304	12.2	515	16.3	331	22.0	2 112	18.4
E-H (0-49%)	1 927	44.3	195	7.9	297	9.4	664	44.1	3 083	26.8
Total	4 348	100.0	2 484	100.0	3 151	100.0	1 505	100.0	11 488	100.0

Source: Institutional HEMIS data for 2010
Note: Undergraduate only.

certificate in mathematics, only about 14% and 16% did so at CPUT and UWC respectively. Similarly, whilst about 61% of UCT's graduates and 55 of SU's graduates obtained either 'A' or 'B' symbols in mathematics, only about 18% of UWC and 17% CPUT graduates did so.

Higher education data

The next section discusses three specific aspects of higher education which are believed to influence and strengthen the chances of gainful employment after graduation. These factors are: participation in extra-curricula activity; provision of effective career guidance; and existence of opportunities for internships and work placements during university life. The GDS posed questions to the respondents of the 2010 cohort in each of these areas. The results will now be discussed.

Extra-curricula activities

Table 15 provides an account of participation in specific extra-curricular items such as student governance and cultural organisations. It is clear that sports organisations are the most popular, whereas student politics and student governance activities feature relatively low down on the list of campus priorities. Interestingly, UWC offers the highest proportion of places for learners to participate in university life as teaching and laboratory assistants – with 36% of all UWC graduates participating in these activities in 2010 – a figure far higher than what was achieved at the three other campuses.

Table 15: The 2010 Western Cape graduate cohort by participation in extra-curricular activity by specific type

	Institution									
	CPUT		UCT		SU		UWC		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
Faculty/academic societies	67	2.7	777	11.3	587	8.5	135	7.0	1 565	8.6
Sports teams	726	29.3	1 298	19.0	1 655	24.1	355	18.3	4 035	22.2
Cultural organisations	250	10.1	866	12.6	814	11.8	146	7.5	2 076	11.4
Religious organisations	248	10.0	663	9.7	623	9.1	196	10.1	1 730	9.5
Student governance	257	10.4	358	5.2	358	5.2	122	6.3	1 095	6.0
Residence committees	216	8.7	532	7.8	1 144	16.7	101	5.2	1 993	11.0
Tutor/teaching assistant	347	14.0	1 340	19.6	914	13.3	480	24.7	3 081	17.0
Research/laboratory assistant	102	4.1	405	5.9	346	5.0	213	10.9	1 066	5.9
Other	264	10.7	609	8.9	431	6.3	197	10.1	1 501	8.3
Total	2 477	100.0	6 847	100.0	6 873	100.0	1 946	100.0	18 143	100.0

Source: CHEC, 2013
Survey Question: Q2.1.1.1
Note: Includes only graduates who studied mostly full-time towards the qualification they obtained in 2010 and who participated in any additional activities.

Extra-curricular activity does not seem to be heavily stratified by race. For example, there are equally low levels of participation in student governance with 8% for Africans and 5% amongst the white graduates of 2010 (CHEC, 2013: Table 6.7: 34).

Career guidance

Another function of tracer surveys is to determine the degree to which university learners received appropriate career guidance and opportunities for internships and work placements. About 43% of full-time learners who graduated in 2010 at Western Cape universities received some form of career guidance. Table 16 highlights specific items of career guidance most often utilised. The data illustrates the importance of direct access and informal talks with lecturers as the most common form utilised by the 2010 cohort followed by the more formal attendance at career expos – at about 25% and 21% respectively. Talks by private companies on campus are the third most commonly used form of career advice. Overall, these utilisation rates are low.

Internships and work placements

Participation levels in internships and work placements at UCT, SU and UWC are low – between 26% and 28% as is evident in Table 17. In contrast, the CPUT provided 70% of learners with opportunities to acquire first-hand experience of work whilst studying for a career-orientated qualification. This result is appropriate given CPUTs career-orientated institutional mission.

The low levels of participation in these key pre-employment learning opportunities are 'warning signals' to the four higher education institutions in the Western Cape to consider some form of intervention to improve the overall package of career guidance, internships and work placements offered to students.

This review of eleven 'background' factors provides contradictory results which display a wide diversity of human capabilities. In some ways, they suggest that the Western Cape is the leading province in terms of the development of human capital, particularly with respect to the production of postgraduates. However, in other ways these indicators suggest that a number of inequalities and low achievement scores persist in the province and have not been attended to adequately since the advent of democracy in 1994. Further discussion of these background factors will be presented in a later section on what factors are the strongest predictors of employment.

Table 16: Members of the 2010 Western Cape graduate cohort on specific items of career guidance most often utilised by their universities

	Institution									
	CPUT		UCT		SU		UWC		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
Aptitude tests	119	2.4	118	1.9	153	3.8	55	2.6	446	2.5
Personal discussions with a lecturer	1 536	31.2	1 203	18.9	1 040	25.8	667	30.8	4 446	25.4
Personal discussions with a career counsellor	386	7.8	796	12.5	269	6.7	179	8.3	1 631	9.3
Visits to career expos	913	18.5	1 440	22.7	866	21.4	537	24.8	3 756	21.5
Visits to or talks by private companies	699	14.2	1 209	19.0	666	16.5	323	14.9	2 897	16.6
Work experience with private companies	576	11.7	558	8.8	373	9.2	122	5.6	1 628	9.3
Information on further studies	540	11.0	905	14.3	579	14.3	243	11.2	2 267	13.0
Other	155	3.1	119	1.9	91	2.3	43	2.0	409	2.3
Total	4 925	100.0	6 348	100.0	4 037	100.0	2 169	100.0	17 479	100.0

Source: CHEC, 2013
Survey Question: Q2.1.2.1
Note: Includes only graduates who studied mostly full-time towards the qualification they obtained in 2010 and who received any form of career guidance.

Table 17: Participation in internships and/or work placements that formed part of the requirements of the qualification, 2010 Western Cape graduate cohort

	Institution									
	CPUT		UCT		SU		UWC		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
Yes	4 059	70.4	1 387	27.1	1 518	28.0	773	26.6	7 737	40.3
No	1 710	29.6	3 733	72.9	3 895	72.0	2 138	73.4	11 475	59.7
Total	5 769	100.0	5 119	100.0	5 413	100.0	2 911	100.0	19 212	100.0

Source: CHEC, 2013
Survey Question: Q2.1.3
Note: Includes only graduates who studied mostly full-time towards the qualification they obtained in 2010.

THE SEVEN PATHWAYS FROM HIGHER EDUCATION TO WORK

The primary task of this GDS was to determine levels of 'graduate employment and unemployment', and to understand the differing life-course 'pathways' from higher education into work. Subsidiary questions examined included the value of work placement and internships, and the regional migration of skilled graduates in and out of the Western Cape. The conceptual framework underpinning this study recognises that preparation for the world of work is not the only function of the higher education system. Other purposes such as knowledge production in fields not directly relevant to the economy are equally important. The university system should also seek to equip young graduates to actively participate as informed citizens in democratic life. Nonetheless, the role of higher education in preparing young graduates for first-time employment in the labour market is a critical function of the university which requires our greater understanding.

GDSs highlight the extent of graduate unemployment in society. They need to be undertaken at regular intervals preferably as part of the state's routine data collection activities on the labour market so as to monitor the scale and persistence of the problem of graduate unemployment. Unfortunately, this does not occur with the required regularity in South Africa. It is for this reason that CHEC's four member institutions decided to undertake such a study. This CHEC GDS has chosen to adopt the concept of 'pathways' to describe the transition of the 2010 cohort from higher education into work and social life. In this study, at least seven different life-course pathways are identified. They are:

1. Employed graduates who were employed prior to studying for the qualification achieved in 2010 ('mature' graduates) and who have (in most cases) continued with this employment during their study years;
2. Employed graduates who have entered the labour market for the first time in 2010 and have acquired full-time employment ('young' graduates);
3. Self-employed graduates;
4. Graduates employed in the informal sector (for example, street vendors and spaza shop workers);
5. Unemployed graduates;
6. Full-time students who have continued to study; and
7. Unemployed graduates not looking for work (for example, caregivers and homemakers).

PATHWAY ONE: THE ALREADY EMPLOYED

The first and second pathways are derived from an important distinction that was made in the survey between 'young graduates' who entered the labour market for the first-time after graduating in 2010, and 'mature graduates' who already had experience of employment prior to studying for the qualification they received in 2010. The GDS was able to capture this distinction by measuring employment status at three key moments in time:

1. Employment prior to embarking on the study programme that led to the qualification obtained in 2010;
2. Employment between graduating in 2010 and 1 September 2012; and
3. Employment as on 1 September 2012 – the starting date for the launch of the survey.

Question 3.3 of the GDS asked respondents whether they were employed prior to studying for the qualification they graduated with in 2010. The results shown in Table 18 indicate that there were 8 344 'mature-age' graduates, 7 415 of whom were employed on 1 September 2012 – 30% of the total 2010 graduate cohort. The balance of 929 'mature-age' graduates in September 2012 (in Table 18) were either unemployed, studying further or were not seeking jobs because of other responsibilities like home care.

PATHWAY TWO: FIRST-TIME ENTRANTS INTO THE LABOUR MARKET

First-time entry into the labour market and securing the first full-time, formal sector job is considered the most important life-course transition for a young graduate from higher education into work. Failure to access the first job has the power to condemn young people into permanent unemployment. Early success in obtaining a secure first job shapes the future trajectory up the occupational ladder. Interventions to support young people make this transition successfully are crucial, including the career

Table 18: Previously employed 'mature-age graduates' and 'first-time entrants' in the labour market, 1 September 2012

Q3.4: Employment status on 1 September 2012:	Q3.3: What was your employment status just before you started studying towards the qualification you obtained in 2010?							
	First time entrants (previously in school, studying fulltime or unemployed but not looking for work)		Mature graduates (previously employed in the formal economy)		Other (previously employed in informal sector or unemployed and looking for work)		Total	
	Count	%	Count	%	Count	%	Count	%
Employed (in the public or private sector, or self-employed)	9 707	65.3	7 415	88.9	748	65.3	17 871	73.4
Unemployed and looking for work	1 434	9.6	385	4.6	252	21.9	2 071	8.5
Other (studying further, employed in informal sector, or not looking for work)	3 728	25.1	544	6.5	146	12.8	4 418	18.1
Total	14 869	100.0	8 344	100.0	1 146	100.0	24 359	100.0

Source: Q3.4 cross-tabulated with Q3.3.

guidance offered by universities and other agencies. Advice on approaches to job search will be significantly different for this group (who have never hunted for a job) as compared with the already employed 'mature-age' subset of the 2010 cohort.

The GDS questionnaire did not ask respondents directly whether they were first-time entrants in the labour market after graduation in 2010. However, as indicated in Table 18, it did ask respondents whether they were employed prior to studying for the qualification they graduated with in 2010. Implicit in this definition of 'mature-age' graduates is the opposite category – graduates who had no prior employment experience before studying for the 2010 qualification. These included: graduates who were still in school in that period (which would typically comprise the bulk of this category), others who were studying full-time (typically a first degree), and caregivers and gap-year students.

Table 18 provides this data. It indicates that the category of first-timers comprises 14 869 students in the period prior to studying for the 2010 qualification, of whom 9 707 (65.3%) are employed in the public and private sectors (or self-employed) on 1 September 2012. In addition, a further 3 728 are either studying further, employed in the informal economy or not looking for work (for example, caregivers). Perhaps the most significant factor revealed in Table 18 is the differing employment ratios, with unemployment amongst mature-age graduates just under half that for first-time entrants – 4.6% versus 9.6%. Table 19 indicates that this is a significant difference, with unemployment amongst first-timers numerically much larger – at 70% of all unemployed.

Table 20 provides an analysis of first-time entrants by higher education institution. CPUT has both the largest pool of first-time entrants and the highest unemployment rate within this subset of the 2010 cohort. The burden of unemployment amongst first-time entrants is clearly among African graduates, especially at CPUT where unemployment rates reach 20.2% on 1 September 2012.

Table 19: Previously employed 'mature graduates' and 'first-time entrants' employment status on 1 September 2012

Q3.4: Employment status on 1 September 2012:	Q3.3: What was your employment status just before you started studying towards the qualification you obtained in 2010?							
	First time entrants (previously in school, studying fulltime or unemployed but not looking for work)		Mature graduates (previously employed in the formal economy)		Other (previously employed in informal sector or unemployed and looking for work)		Total	
	Count	%	Count	%	Count	%	Count	%
Employed (in the public or private sector, or self-employed)	9 707	54.3	7 415	41.5	748	4.2	17 871	100.0
Unemployed and looking for work	1 434	69.2	385	18.6	252	12.2	2 071	100.0
Other (studying further, employed in informal sector, or not looking for work)	3 728	84.4	544	12.3	146	3.3	4 418	100.0
Total	14 869	61.0	8 344	34.3	1 146	4.7	24 359	100.0

Source: Q3.4 cross-tabulated with Q3.3.

Table 20: 'First-time entrants' in the labour market by higher education institution, 1 September 2012

	Institution									
	CPUT		UCT		SU		UWC		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
Employed in the private or public sector or self-employed in the private sector	2 948	69.3	2 578	64.9	2 879	62.5	1 302	62.4	9 707	65.1
Unemployed and looking for work	775	18.2	193	4.9	191	4.1	275	13.2	1 434	9.6
Other (studying further, employed in the informal sector, not looking for work)	534	12.5	1 198	30.2	1 537	33.4	510	24.5	3 780	25.3
Total	4 257	100.0	3 970	100.0	4 607	100.0	2 087	100.0	14 921	100.0

Source: Q3.4 cross-tabulated with Q3.3.
Note: Includes only 'new entrants', i.e., graduates that were (1) previously in school, (2) studying fulltime or (3) unemployed but not looking for work as per Q3.3. Includes international graduates and graduates living abroad on 1 September 2012.

Table 21: 'First-time entrants' in the labour market by race, 1 September 2012

	Population group									
	African		Coloured		Indian		White		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
Employed in the private or public sector or self-employed in the private sector	2 559	60.1	2 555	70.7	412	70.1	4 068	65.5	9 594	65.4
Unemployed and looking for work	862	20.2	282	7.8	13	2.3	248	4.0	1 405	9.6
Other (studying further, employed in the informal sector, not looking for work)	840	19.7	778	21.5	162	27.6	1 894	30.5	3 674	25.0
Total	4 261	100.0	3 614	100.0	588	100.0	6 210	100.0	14 673	100.0

Note: Includes only 'new entrants', i.e. graduates that were (1) previously in school, (2) studying fulltime or (3) unemployed but not looking for work as per Q3.3. Includes international graduates and graduates living abroad on 1 September 2012.
Excludes 2% of graduates classified as 'other' or not classified at all.

PATHWAY THREE: THE SELF-EMPLOYED

The GDS investigated the extent to which graduates opted for self-employment. Only 558 from a total of 24 710 graduates ended up in this category - 2.2% of the cohort. It must be noted that starting up your own business in less than three years after graduating is rather ambitious – hence the low participation rate.

Of those who are self-employed, 65% are white and 39% are female. The type of work undertaken by these 558 self-employed graduates varied from knowledge services as a consultant (35%) to producing goods and services for multiple clients (29%) to selling the products of other companies (10%). Just under half of the graduates from SU (46%) provided knowledge services, whereas a similar percentage of graduates from CPUT (46%) produced their own 'goods and services' – again an outcome which makes sense in terms of the institutional missions of these two higher education institutions.

The self-employed component of the 2010 Western Cape graduate cohort may be small – at 2.2% or 558 individuals/firms – but it compares reasonably well internationally. For example, self-employment amongst graduates in Australia has been measured at 2.4% of a graduate cohort – but which grew over a three-year period to 3.1% (Graduate Careers, 2010: 26). Schomburg and Teichler report a 3% mean for self-employment across their twelve-country study (2006: 51). What is interesting here is the country variation with Italy reaching 4% but Japan having almost no self-employment at all. Clearly, the choice of the self-employment pathway is determined socially, influenced by the enablers and dis-enablers society places at the disposal of the recent graduate.

PATHWAY FOUR: GRADUATES EMPLOYED IN THE INFORMAL SECTOR

Employment in the informal sector constitutes a very small sixth pathway in this study – just under 1% of the cohort and comprising 191 graduates. Additional data – for example, on the kinds of informal activity engaged in – was not collected by the GDS. Informal sector employment in this instance is most likely a protection against unemployment for the graduates who resorted to informal work. They might have done this because they could not find jobs in the formal sector that used their qualifications.

Employment trends

The next set of tables joins all employed groupings – Pathways 1, 2, 3 and 4 – to determine overall trends amongst the employed. Table 23 measures employment on 1 September 2012 across the private, public and self-employed and informal sectors. The table suggests that total employment is high, at 84% with a significant grouping employed by government (36%). Unemployment is measured at about 10% – noticeably lower compared to the results of the HSRC study in 2005 (32% unemployment).

Table 22: Reasons for opting for self-employment as at 1 September 2012

	Institution									
	CPUT		UCT		SU		UWC		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
I preferred to be my own boss or have my own business, company or practice	43	38.4	112	60.6	134	66.2	36	61.6	325	58.3
I took over a family business	0	0.0	19	10.2	8	4.2	0	0.0	27	4.9
I wanted to work from home	15	13.7	4	2.4	18	8.8	0	0.0	38	6.7
I could make more money	13	11.5	10	5.4	19	9.4	3	6.0	45	8.1
I lost my job	0	0.0	0	0.0	0	.0	0	0.0	0	0.0
I could not find a job	16	14.3	27	14.4	5	2.6	15	25.1	63	11.2
Other	25	22.1	13	7.1	18	8.8	4	7.3	60	10.7
Total	111	100.0	185	100.0	203	100.0	59	100.0	558	100.0

Source: CHEC, 2013. Survey Question: Q3.4.7
Note: Includes only graduates who were self-employed in the private sector.

Table 23: Total employment as at 1 September 2012, by institution

	Institution									
	CPUT		UCT		SU		UWC		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
Employed (part- or full-time) in the private sector	3 129	45.8	2 819	57.6	2 670	46.4	1 187	38.1	9 806	47.6
Employed (part- or full-time) in the public sector	2 351	34.4	1 359	27.8	2 428	42.2	1 356	43.5	7 493	36.4
Self-employed in the private sector	130	1.9	195	4.0	222	3.9	80	2.6	627	3.0
Employed in the informal sector	63	.9	79	1.6	32	.6	17	.6	191	.9
Unemployed and looking for work	1 076	15.8	311	6.4	276	4.8	419	13.4	2 082	10.1
Unemployed but not looking for work	85	1.2	129	2.6	124	2.2	56	1.8	393	1.9
Total	6 834	100.0	4 891	100.0	5 752	100.0	3 115	100.0	20 592	100.0

Source: CHEC, 2013. Survey Question: Q3.4
Note: Excludes graduates who were studying fulltime.

Employment by race

Employment by race continues to reflect apartheid-era patterns of discrimination. Data from the survey shows that, whereas 61% of whites and 58% of Indians are employed in the private sector (as at 1 September 2012), only 35% of Africans and 44% of coloureds are employed in the same sector. Indeed, African and coloured unemployment would be significantly larger if it were not for the public sector, which employs 42% of African and 45% of coloured graduates.

The public sector nationally is clearly playing a critical role in human capital formation by first, employing a significant number of young graduates from the four institutions, second, by employing more women than men, and third, by employing larger numbers of Africans and coloureds than the private sector.

Notwithstanding the positive impact of public sector employment, African graduates still have the largest unemployment rate – at 19%, followed by coloured graduates at 7%. Indians have the lowest unemployment rate at about 3%.

Employment by sector: Serving the 'public good'

Table 25 indicates that there were 17 274 graduates employed in the private, public, self-employed and informal sectors of the national economy. The strongest finding here is the indication that 47% of all graduates are employed by the public sector (described in Table 25 as the 'Community, social and personal services' sector), which is comprised of a few sub-sectors. By order of size of employment, these are:

- Education and research 18.2%
- Health and social work 13.5%
- Provincial and municipal government 11.6%
- Arts and culture, sport 4.1%
- TOTAL 47.4%

This 'public good' aspect of graduate output is an interesting and unexpected finding. For example, 64% of UWC and 56% of SU graduates from the 2010 cohort work in the 'public economy'. UCT and CPUT also have high numbers of graduates working here (42% and 41%) (CHEC, 2013: Table 7.20: 44).

The second largest employer is the 'services sector', a major part of the private sector (at 25.3%) which includes: finances, insurance, real estate, IT and business services. Participation in this sector is noticeably higher for UCT with 34% of their graduates working here – a 10% lead over graduates from the three other institutions (CHEC, 2013: Table 7.20: 44).

Table 25 highlights the central contribution of three universities to the production of teachers – SU (996 graduates), UCT (838 graduates) and CPUT (761 graduates) and UWC (541 graduates).

Similarly, the contribution of SU and UWC to the production of professionals employed in the public health sector – 19.9% and 19.4% of their 2010 graduate cohorts. UWC and CPUT lead in terms of their contribution to the production of public sector officials employed by government and municipalities CHEC, 2013: Table 7.20: 44).

Table 24: Total employment as at 1 September 2012, by race

	African		Coloured		Indian		White		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
Employed (part- or full-time) in the private sector	2 288	35.0	2 523	44.0	414	57.7	4 451	61.4	9 676	47.8
Employed (part- or full-time) in the public sector	2 762	42.2	2 599	45.3	238	33.2	1 751	24.2	7 350	36.3
Self-employed in the private sector	97	1.5	125	2.2	16	2.3	375	5.2	613	3.0
Employed in the informal sector	54	.8	21	.4	7	.9	104	1.4	187	0.9
Unemployed and looking for work	1 248	19.1	404	7.0	23	3.2	362	5.0	2 036	10.1
Unemployed but not looking for work	90	1.4	68	1.2	20	2.8	205	2.8	384	1.9
Total	6 539	100.0	5 740	100.0	717	100.0	7 249	100.0	20 246	100.0

Source: CHEC, 2013. Survey Question: Q3.4
Note: Excludes graduates who were studying fulltime. Excludes 2% of graduates classified as "other" or not classified at all.

Table 25: Total employment by sector, as at 1 September 2012

	Institution									
	CPUT		UCT		SU		UWC		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
Agriculture, hunting, forestry and fishing	75	1.4	36	0.8	161	3.2	42	1.7	313	1.8
Mining and quarrying	53	1.0	125	2.9	137	2.7	14	0.6	330	1.9
Manufacturing	385	7.1	136	3.2	114	2.2	37	1.5	671	3.9
Electricity, gas and water supply	188	3.5	113	2.7	87	1.7	31	1.2	419	2.4
Construction (including building and design)	570	10.5	244	5.7	132	2.6	18	0.7	964	5.6
Wholesale and retail trade (including sale of products, tourism, hotels and restaurants, vehicle repairs)	475	8.8	229	5.4	235	4.6	116	4.6	1 055	6.1
Transport, storage and communication, tele-communications	230	4.2	103	2.4	252	5.0	55	2.2	640	3.7
Finance, insurance, real estate, IT, and business services	1 198	22.1	1 462	34.4	1 105	21.7	601	23.9	4 367	25.3
Community, social and personal services: Health and social work	474	8.7	361	8.5	1 014	19.9	490	19.4	2 338	13.5
Community, social and personal services: Education and research	761	14.1	838	19.7	996	19.6	541	21.5	3 136	18.2
Community, social and personal services: Government and municipalities	775	14.3	181	4.3	570	11.2	470	18.7	1 997	11.6
Community, social and personal services: NGOs	39	0.7	151	3.5	113	2.2	37	1.5	340	2.0
Community, social and personal services: Entertainment, arts and culture, sport and the media	191	3.5	275	6.5	170	3.3	66	2.6	702	4.1
Total	5 416	100.0	4253	100.0	5 085	100.0	2 519	100.0	17 274	100.0

Source: CHEC, 2013. Survey Question: Q3.4.2
Note: Includes only graduates who were employed in the private or public sectors or self-employed in the private sector.

Employment by occupation

The majority of the 2010 graduates were employed as professionals – about 61%. The number of 'professionals' produced was higher at UCT and SU – 73% and 71% respectively. CPUT had the highest number of graduates employed as technicians, associated professionals, clerical, sales and craft workers – which again are all mission-appropriate employment outcomes. In contrast to the above success, it is disturbing that 394 graduates see themselves as working as 'elementary labourers'. This may be a respondent misinterpretation of the question, but it may also reflect a certain level of under-employment in the economy.

Women form the majority of professionals – 57% (CHEC, 2013: Table 7.26, 47). This statistic, plus the higher levels of female employment in professional posts in the government sector reported earlier in the text, have had a major impact on the structure of the labour market for women professionals.

Table 27 cross-tabulates 'occupational employment' with 'field of study'. The data indicates which fields of study feed particular occupational categories more than other academic fields. For example, the academic field which produces the most graduates as 'professionals' is 'education' – at 89%. This is probably because entry into the profession requires a professional university qualification. SET follows in second place at 63.4%.

The 'Business and Commerce' field of study stands out as being associated with the highest number of clerical workers employed – at 26.2%. Many of these will be low-skill jobs in the services sector.

Similarly, although 56.7% of graduates with humanities and social science degree specialisations are employed as professionals, 14.9% are employed at para-professional level and 8.2% at clerical level. Only 4.7% are appointed at managerial level. This allocation of humanities graduates across the occupational spectrum reflects the problems faced by many humanities degree holders with regard to the labour market.

Table 26: Total employment by occupation, as at 1 September 2012

	Institution									
	CPUT		UCT		SU		UWC		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
Elementary worker	113	2.1	139	3.3	91	1.8	50	2.0	394	2.3
Plant or machinery operator and assembler	39	0.7	5	0.1	14	0.3	4	0.1	62	0.4
Craft or related trade worker	52	1.0	32	0.8	17	0.3	7	0.3	108	0.6
Skilled agricultural or fishery worker	42	0.8	0	0.0	56	1.1	7	0.3	105	0.6
Service worker or shop and sales worker	405	7.5	135	3.2	183	3.6	224	8.9	947	5.5
Clerk	1 003	18.5	291	7.0	444	8.6	363	14.5	2 101	12.2
Technician or associated professional	1 218	22.5	358	8.6	360	7.0	186	7.4	2 124	12.3
Professional	2 213	40.8	3 065	73.3	3 667	71.3	1 523	60.8	10 468	60.7
Legislator, senior official or manager	309	5.7	153	3.7	250	4.9	110	4.4	822	4.8
Armed forces	31	0.6	0	0.0	57	1.1	30	1.2	119	0.7
Total	5 427	100.0	4 179	100.0	5 139	100.0	2 504	100.0	17 248	100.0

Source: CHEC, 2013. Survey Question: Q3.4.3
Note: Includes only graduates who were employed in the private or public sectors or self-employed in the private sector.

Frictional unemployment and its reduction

As indicated earlier, the GDS took two measures of unemployment which explains frictional unemployment after graduation and its reduction over time. The first measure was identifying employment between graduating in 2010 and 1 September 2012. The second measure was to identify employment on 1 September 2012 itself.

GDS results show relatively high levels of 'frictional' unemployment – short-term unemployment experienced during a transitional phase in the life course of many graduates. For many, these are temporary dynamics some of which are resolved with time. For others, as we will see in the next section, unemployment persists.

High levels of 'frictional' unemployment in the 2010–2012 period are evident. Overall unemployment was 13.9% but at UCT it was 16.4%, while at CPUT it was 16.2% and at UWC it was 15.1%. Unemployment of 2010 graduates from SU during this transitional period was significantly lower (8.6%) (CHEC, 2013: Table 7.9, 40). However, by 1 September 2012, some of this frictional unemployment had been reduced to 10.1% (see Tables 28 and 29).

A key factor in this reduction of frictional unemployment is 'type of qualification'. The number of graduates unemployed in percentage terms, and per qualification type, has not changed much for holders of diplomas and certificates (increasing slightly from 17.0% to 18.1%), but it has shrunk in percentage terms

Table 27: Occupation by six broad CESM groupings, as at 1 September 2012

	Science, engineering and technology		Business and commerce		Human and social sciences		Health sciences		Law		Education		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Elementary worker	112	2.5	77	1.6	149	5.0	8	0.3	25	4.1	23	1.4	394	2.3
Plant or machinery operator and assembler	53	1.2	9	0.2	0	0.0	0	0.0	0	0.0	0	0.0	62	0.4
Craft or related trade worker	27	0.6	13	0.3	59	2.0	0	0.0	0	0.0	9	0.5	108	0.6
Skilled agricultural or fishery worker	46	1.0	19	0.4	24	0.8	8	0.3	0	0.0	8	0.5	105	0.6
Service worker or shop and sales worker	212	4.7	331	6.9	268	8.9	54	2.1	30	4.9	52	3.1	947	5.5
Clerk	202	4.5	1 261	26.2	436	14.5	52	2.0	101	16.7	48	2.9	2 101	12.2
Technician or associated professional	1 449	32.2	317	6.6	238	7.9	72	2.7	29	4.7	20	1.2	2 124	12.3
Professional	2 147	47.7	2 394	49.7	1 671	55.6	2 378	90.0	377	62.2	1 500	89.4	10 468	60.7
Legislator, senior official or manager	186	4.1	388	8.1	138	4.6	61	2.3	32	5.3	17	1.0	822	4.8
Armed forces	65	1.4	12	0.2	21	0.7	8	0.3	13	2.1	0	0.0	119	0.7
Total	4 498	100.0	4 820	100.0	3 004	100.0	2 642	100.0	607	100.0	1 677	100.0	17 248	100.0

Source: CHEC, 2013. Survey Question: Q3.4.3
Note: Includes only graduates who were employed in the private or public sectors or self-employed in the private sector.

Table 28: Employment status by qualification between graduation in 2010 and 1 September 2012

	Certificates and diplomas		Undergraduates		Postgraduates		Total	
	Count	%	Count	%	Count	%	Count	%
Employed (part- or full-time) in the private sector	1 334	42.5	2 260	42.9	2 039	40.3	5 633	41.8
Self-employed in the private sector	95	3.0	184	3.5	231	4.6	510	3.8
Employed (part- or full-time) in the public sector	1 071	34.1	1 633	31.0	2 145	42.3	4 848	36.0
Employed in the informal sector	36	1.1	96	1.8	83	1.6	215	1.6
Unemployed and looking for work	533	17.0	913	17.3	428	8.4	1 874	13.9
Unemployed, but not looking for work	68	2.2	188	3.6	140	2.8	396	2.9
Total	3 139	100.0	5 273	100.0	5 065	100.0	13 477	100.0

Source: CHEC, 2013. Survey Question: Q3.4.1.1
Notes: χ^2 (10, N = 3 032) = 70.399, p = .000 (The percentage differences above is therefore significant at the 95% confidence level.) Excludes graduates who (1) were unemployed on 1 September 2012, (2) were studying fulltime between graduating and starting the job they had on the 1st of September, or (3) started the job they had on the 1st of September 2012 soon after studying.

Table 29: Employment status by qualification on 1 September 2012

	Certificates and diplomas		Undergraduates		Postgraduates		Total	
	Count	%	Count	%	Count	%	Count	%
Employed (part- or full-time) in the private sector	2 151	43.2	4 475	53.0	3 180	44.4	9 806	47.6
Self-employed in the private sector	80	1.6	219	2.6	329	4.6	627	3.0
Employed (part- or full-time) in the public sector	1 716	34.5	2 736	32.4	3 041	42.4	7 493	36.4
Employed in the informal sector	48	1.0	78	0.9	64	0.9	191	0.9
Unemployed and looking for work	907	18.2	768	9.1	406	5.7	2 082	10.1
Unemployed, but not looking for work	73	1.5	172	2.0	149	2.1	393	1.9
Total	4 975	100.0	8 449	100.0	7 169	100.0	20 592	100.0

Source: CHEC, 2013. Survey Question: Q3.4
Notes: χ^2 (10, N = 4 633) = 175.148, p = .000 (The percentage differences above is therefore significant at the 95% confidence level.) Excludes graduates who were studying fulltime.

for holders of degrees – from 17.3% to 9.1% – a significant reduction in graduate unemployment. One of the reasons for this reduction in the unemployment of graduates with degrees is the increased role of the private economy in employing more graduates with degrees – up from 41.8% to 47.6% in a period of less than two years.

Causal factors behind these frictional dynamics are not revealed by the GDS. In the mix of possible reasons could be the timing of graduation ceremonies. Both UCT and SU had December graduations in year 2010, whereas UWC and CPUT had March 2011 graduations (for the 2010 cohort). This 'timing of graduation' factor may be part of the reason why UCT frictional unemployment is temporarily high – their graduates were in the labour market three months earlier than CPUT and UWC graduates.

Job search behaviour

Investigating the different techniques of 'job search' forms a critical part of GDSs. In this CHEC survey, sending CVs to prospective employers (18% of graduates) seems to have been the main job search technique used, followed by responding to a job advertisement in the print media (13%). However, if two techniques are grouped together – finding a job through family and friends, as well as through being asked to apply by the firm – they constitute the most commonly used search methods used by graduates. Both referrals – either through 'family and friends' or 'being asked to apply for a job' – signify prior knowledge of where to secure employment, qualities which derive from one's social connections or 'social capital'.

The concept 'social capital' signifies those social networks and family know-how that enable young family members to successfully navigate their way through the modern-day labour market into rewarding jobs and careers. Working class families, who generally have limited 'social capital' (poor social networks and access to information about educational and employment opportunities), are therefore unable to support the decisions of their graduated young with regard to employment options. In contrast, middle-class families have access to information, and are often friends or family of the managers and owners of firms, and they are more likely to influence the employment choices made by their offspring (Ball, 2010).

The influence of social capital is more telling when decomposed by race. The data suggests that those social networks structured around white students are very influential in helping find employment – 28% of white graduates used and benefited from this form of job search, whereas only 11% of Africans did (CHEC, 2013: Tables 7.32: 50). When reading the rows horizontally, as is done in Table 28, with a specific focus on the two job search techniques discussed above under the concept 'social capital', the data in Table 30 suggest that white students are able to successfully tap into those social networks that help them to find employment – 54% of such beneficiaries were White graduates, whereas only 18% of 'social capital' beneficiaries were Africans.

PATHWAY FIVE: THE UNEMPLOYED

Discussion can now shift from the four pathways comprising employment and focus on the fifth pathway which includes all unemployed graduates. A key concern at the heart of the CHEC GDS is to determine the extent of graduate unemployment.

Table 30: Primary 'job search' method of finding the job held on 1 September 2012

	Institution									
	CPUT		UCT		SU		UWC		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
A holiday job or internship gave me access to this job	541	11.1	266	6.8	222	4.9	204	8.8	1 233	7.9
Through help of a lecturer	137	2.8	161	4.1	239	5.3	108	4.6	645	4.1
Through my university's career office	208	4.3	306	7.9	226	5.0	106	4.5	847	5.4
I initially offered to work for free	23	0.5	33	0.8	48	1.1	14	0.6	118	0.8
I had to work off a bursary I got from my employer	184	3.8	285	7.3	289	6.4	91	3.9	849	5.4
I simply sent in my CV or asked for work	876	17.9	691	17.8	753	16.7	444	19.1	2 763	17.7
I responded to a job ad in the printed media	717	14.7	306	7.9	714	15.9	314	13.5	2 050	13.1
I responded to a job ad on an employment website	437	8.9	348	9.0	385	8.6	219	9.4	1 389	8.9
I responded to a job ad on a company website	351	7.2	276	7.1	198	4.4	177	7.6	1 001	6.4
I responded to a job ad in the Government Gazette	245	5.0	66	1.7	239	5.3	165	7.1	715	4.6
I placed ads or flyers advertising my services on notice boards or in post-boxes	16	0.3	0	0.0	4	0.1	7	0.3	27	0.2
I walked from door-to-door	74	1.5	13	0.3	20	0.4	37	1.6	145	0.9
Through one of the Department of Labour's employment centres	41	0.8	5	0.1	31	0.7	35	1.5	112	0.7
Through a recruitment agency or labour broker	185	3.8	181	4.7	145	3.2	76	3.3	587	3.8
Through a social network	41	0.8	70	1.8	37	0.8	15	0.7	164	1.0
Through family or friends	629	12.9	503	12.9	636	14.1	223	9.6	1992	12.8
I was headhunted or asked to apply for the job	184	3.8	378	9.7	313	7.0	93	4.0	968	6.2
Sub-total – social capital	813	16.7	881	22.6	949	21.1	316	13.6	2 960	19.0
Total	4 890	100.0	3 888	100.0	4 498	100.0	2 328	100.0	15 605	100.0

Source: CHEC, 2013. Survey Question: Q3.4.6

Note: Includes only graduates who were employed in the private or public sectors. Excludes graduates who were already in the company and did not approach or contact the company like all other job seekers. The total of 15 605 methods of 'job search' is necessarily higher than the actual number of graduates as graduates could have indicated multiple methods.

Table 31: Beneficiaries of social capital as primary 'job search' method in finding a job, 1 September 2012, by race

	African		Coloured		Indian		White		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
Beneficiaries of social capital: i.e., those who acquired a job through referrals from family and friends or through being asked to apply for the post	521	17.8	714	24.4	110	3.8	1 579	54.0	2 923	100.0

Source: CHEC, 2013

Table 32 highlights the core employment and unemployment details of the 2010 graduate cohort on 1 September 2012. The most critical piece of information here is the fact that 10% of graduates were unemployed two years after graduating – with unemployment peaking amongst CPUT graduates at 16%. Unemployment rates amongst SU and UCT graduates are relatively low – at about 5% and 6% respectively.

Respondents were also asked to outline the length of time they have been looking for a job and have been unemployed. Of those unemployed, 44% had been unemployed during 2012 (a maximum of 9 months with 1 September 2012 the key cut-off date), 38% since 2011, and 18% since 2010 (CHEC, 2013: Table 9.2, 56).

Data from the GDS shows the patterns of graduate unemployment by race. White graduate unemployment is relatively small, experienced primarily in the first year after graduation. Of those white graduates unemployed, 63% experienced unemployment only in the first year after graduation, 28% experienced unemployment over two years, and only 9% of white unemployed graduates experienced unemployment for just under three years. This is in stark contrast to African graduate unemployment: 34% of African graduates were unemployed for under a year, 43% were unemployed for under two years, and 23% for just under three years. The rate of exit out of unemployment is much more rapid for White graduates than it is for Africans where a large grouping (229 graduates) appear to be 'stuck' in unemployment for nearly three years (CHEC, 2013: Table 9.3: 56).

These patterns of unemployment over time are not that different from Schomburg and Teichler's findings in their GDS study of several European countries. For example, in three countries – Italy, Spain and France – 36%, 38% and 68% of graduates took more than 13 months to find their first job (Schomburg and Teichler, 2006: 77).

Job search behaviour of the unemployed

In the earlier discussion on 'social capital', the concept was seen as a powerful device for 25% of white graduates who benefited from family and friends who on an informed basis could advise and steer them towards employment. For the unemployed, 'social capital' as a resource was significantly weaker, varying from between about 6% for CPUT and UWC graduates to 8% for UCT and 9% for SU graduates (CHEC 2013, Table 9.8: 95). However, when examining the usage patterns of each job search item by race (see Table 33), the numbers become more revealing. Two specific activities of job search stand out that are highly racialised – 'Walking from door-to-door' (with 75% of those doing this being Africans compared to only 9% for white unemployed graduates), and 'Approaching the Department of Labour Employment Centres' (with 83% of those doing this being African as compared with only 8% for whites). The same applies to putting notices in post-boxes or on notice boards. These statistics suggest that African graduates are more inclined to use government employment services and agencies to find work, and are more desperate to find work (being more prepared to walk door-to-door looking for work) than is the case for unemployed white graduates.

Causal factors impacting on graduate unemployment

This section briefly examines which background factors are associated with unemployment. The first correlation to be investigated is that between level of unemployment and matriculation symbol attained in Grade 12 mathematics and physical science. As is evident in Table 34, unemployment increases as matriculation symbol in both mathematics and physical science declines from 'A' to 'H'. This trend is also evident in terms of employment – very high levels of employment (95%) are obtained for those with A or B symbols in mathematics. However, employment decreases to 84% and 88% for those with E to H symbols in mathematics and physical science. There is a clear correlation

Table 32: Total employment as at 1 September 2012

	Institution									
	CPUT		UCT		SU		UWC		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
Employed (part- or full-time) in the private sector	3 129	45.8	2 819	57.6	2 670	46.4	1 187	38.1	9 806	47.6
Employed (part- or full-time) in the public sector	2 351	34.4	1 359	27.8	2 428	42.2	1 356	43.5	7 493	36.4
Self-employed in the private sector	130	1.9	195	4.0	222	3.9	80	2.6	627	3.0
Employed in the informal sector	63	0.9	79	1.6	32	0.6	17	0.6	191	0.9
Unemployed and looking for work	1 076	15.8	311	6.4	276	4.8	419	13.4	2 082	10.1
Unemployed, but not looking for work	85	1.2	129	2.6	124	2.2	56	1.8	393	1.9
Total	6 834	100.0	4 891	100.0	5 752	100.0	3 115	100.0	20 592	100.0

Source: CHEC, 2013. Survey Question: Q3.4
Note: Excludes graduates who were studying fulltime.

Table 33: Methods of job search, unemployed graduates, by race, 2010 graduate cohort

	African		Coloured		Indian		White		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
I approached a lecturer	120	48.2	42	16.9	14	5.6	72	28.9	249	100.0
I approached my university's career office	177	60.6	37	12.7	10	3.4	68	23.3	292	100.0
I have offered to work for free	161	53.5	54	17.9	14	4.7	73	24.3	301	100.0
I sent my CV or asked for jobs directly	665	58.6	213	18.8	10	0.9	247	21.8	1 135	100.0
I responded to job ads in the printed media	686	62.8	236	21.6	10	0.9	160	14.7	1 092	100.0
I responded to job ads on employment websites	839	61.2	277	20.2	15	1.1	240	17.5	1 371	100.0
I responded to job ads on company websites	650	60.5	223	20.7	18	1.7	184	17.1	1 075	100.0
I responded to job ads in the *Government Gazette*	321	66.3	83	17.1	5	1.0	74	15.3	484	100.0
I placed ads or flyers advertising my services on notice boards or in post-boxes	63	76.8	0	0.0	5	6.1	14	17.1	82	100.0
I walked from door-to-door asking for work	183	75.0	35	14.3	5	2.0	21	8.6	244	100.0
I approached one of the Department of Labour's employment centres	141	83.4	9	5.3	5	3.0	13	7.7	169	100.0
I approached recruitment agencies or labour brokers	309	62.0	80	16.1	10	2.0	100	20.1	498	100.0
I approached family or friends personally	284	52.2	118	21.7	10	1.8	132	24.3	544	100.0
I used social networks	224	48.3	86	18.5	10	2.2	143	30.8	464	100.0
Other	27	32.5	17	20.5	5	6.0	34	41.0	83	100.0
Total	4 853	60.0	1 510	18.7	143	1.8	1 577	19.5	8 083	100.0

Source: CHEC, 2013. Survey Question: Q3.4.13
Note: Includes only graduates who were unemployed and looking for work on 1 September 2012. Excludes 2% of graduates classified as 'other' or not classified at all.

Table 34: Graduate unemployment by matriculation symbol in Mathematics and Physical Science (Employment/unemployment as measured on 1 September 2012)

		Employed in the private or public sector or self-employed in the private sector		Unemployed and looking for work		Total	
GRADE 12 MATHEMATICS SYMBOL							
		Count	%	Count	%	Count	%
Maths symbol	A – B	4 190	94.8	230	5.2	4 421	100.0
	C – D	3 918	90.8	396	9.2	4 315	100.0
	E – H	2 820	84.5	519	15.5	3 339	100.0
	Total	10 928	90.5	1146	9.5	12 075	100.0
GRADE 12 PHYSICAL SCIENCE SYMBOL							
Physical science symbol	A – B	2 472	96.3	95	3.7	2 567	100.0
	C – D	3 185	92.6	255	7.4	3 440	100.0
	E – H	2 040	84.8	366	15.2	2 407	100.0
	Total	7 698	91.5	716	8.5	8 413	100.0

Source: CHEC, 2013. Survey Question: Q3.4
Note: Includes only South African graduates living in South Africa on 1 September 2012. Includes undergraduates only. Maths and science results not available for postgraduates.

here, but it is not hugely punitive in terms of unemployment because graduates with poor maths and science grades are still attaining employment in large numbers.

Unemployment and home province

The home province during schooling is also a significant factor in the employment outcome for many graduates in the 2010 cohort. Table 35 shows that very high levels of unemployment exist among graduates who came from Limpopo Province (19% unemployment), North West (17%), Eastern Cape (15%) and Mpumalanga (15%). Unemployment amongst graduates who completed secondary schooling in KwaZulu-Natal and Free State is 4.1% and 6.5% – both significantly lower than the first category of provinces listed above. The sub-cohort who schooled in the Western Cape is close to the mid-point with unemployment rates at 8.5%. The very high percentages of unemployment listed here are reflections of wider inequalities in the schooling system that exists across the country. Poor Grade 12 mathematics and physical science pass rates are an annual occurrence in provinces such as Limpopo, North West, Eastern Cape and Mpumalanga. Even though all members of the 2010 cohort are by definition graduates – which means they passed the minimum requirements for the award of the higher education qualification they achieved – employers may still refer to their school grades before making decisions about employment.

Unemployment and location of childhood school

A key socio-economic indicator for poverty and wealth in South Africa is the location of the secondary school attended by those graduates who are now unemployed. The CHEC GDS asked respondents about the type of neighbourhood they grew up in whilst at senior secondary school. The vast majority of employed graduates (93%) went to school in the suburbs of the major cities and towns of South Africa. With regard to

Table 35: Unemployment by home province during secondary schooling (Employment/unemployment as measured on 1 September 2012)

	Employed in the private or public sector or self-employed in the private sector		Unemployed and looking for work		Total	
	Count	%	Count	%	Count	%
EC	2 002	84.5	368	15.5	2 370	100.0
FS	235	93.5	16	6.5	251	100.0
GP	1 202	91.7	109	8.3	1 311	100.0
KZN	1 046	95.9	45	4.1	1 091	100.0
LP	369	80.7	88	19.3	457	100.0
MP	213	84.8	38	15.2	251	100.0
NC	358	93.3	26	6.7	384	100.0
NW	231	82.8	48	17.2	279	100.0
WC	10 003	91.5	929	8.5	10 932	100.0
Total	15 659	90.4	1 666	9.6	17 326	100.0

Source: CHEC, 2013. Survey Questions: Q1.1.1 and Q3.4
Note: Includes only South African graduates living in South Africa on 1 September 2012.

Table 36: Unemployment by location of Secondary School (Employment/unemployment as measured on 1 September 2012)

	Employed in the private or public sector or self-employed in the private sector		Unemployed and looking for work		Total	
	Count	%	Count	%	Count	%
In a suburb of a town or city	12 393	92.6	992	7.4	13 385	100.0
In a township or informal settlement of a town or city	1 782	81.1	414	18.9	2 196	100.0
In a village or on a farm in a rural area	1 376	85.5	233	14.5	1 609	100.0
Total	15 552	90.5	1 639	9.5	17 191	100.0

Source: CHEC, 2013. Survey Questions: Q1.1.1 and Q3.4
Note: Includes only South African graduates living in South Africa on the 1st of September 2012.

unemployment, the GDS data suggests that there is a correlation between unemployment and schooling in a township (19% are unemployed) and rural village setting (14% unemployment). Unemployment is significantly lower for those who attended secondary schooling in the suburbs (only 7%).

PATHWAY SIX: CONTINUING HIGHER EDUCATION

Results from the GDS indicate that 31% of the 2010 cohort were registered for further studies on 1 September 2012 – with the highest registration amongst SU graduates at 33% (CHEC, 2013: Tables 11.13: 74). The bulk of these graduates (94%) were registered for continuing higher education at South African universities, and only a small number (6%) pursued further degrees at international universities (CHEC, 2013: Tables 11.10: 73).

Data in Tables 37 and 38 highlight the number of graduates who returned to the national higher education system to continue with higher education after graduation in 2010. The data measures the contribution of the four Western Cape universities to the national pool of (largely postgraduate) continuing higher education. It cannot be assumed that because a continuing student graduated at a specific Western Cape institution in 2010, they will return to that institution to continue with their higher studies after 2010. They may have enrolled at any of the other 20 universities in the national higher education system in South Africa.[1]

Table 37 confirms that a high proportion of graduates studying further on 1 September 2012 were registered for a master's degree on the 1 September 2012 – 42%. This suggests a logical sequence of studying for those graduates pursuing continuing higher education – first acquiring a bachelors degree in 2010, a honours degree between 2010 and 2012, and registering for a master's degree in the current period (September 2012). Some students have in fact progressed to a doctoral degree in this time period as well – 9% of those studying further.

Table 38 shows that former SU graduates constitute the largest grouping of continuing higher education students in the national system, at 33% of the returning national cohort, followed by CPUT at 26%, UCT at 23% and UWC 17%. Stellenbosch graduates dominate two categories of on-going higher learning in the national system – honours and master's degrees (at 38% and 41% respectively). UCT contributes the largest number of continuing learners registered for a doctoral degree (at 36.9%) but with a short lead over Stellenbosch (36.6). And as mentioned earlier, CPUT contributes the highest number of enrolments at the lower qualifications – certificates/diplomas and bachelors programmes – at 39% and 70%.

1 A small component of this contribution to the South African 'national pool' of highly educated continuing students registered for their continuing qualification overseas – 3.5% of continuing learners in the period from graduation to September 2012 and 6% as measured on 1 September 2012. This rider to the concept of 'national pool' applies to all the tables from Table 11.1 to Table 11.21. Some of the learners registered for overseas degrees will return to South Africa and form part of the 'national pool' after graduation (and perhaps after some work experience) but the extent of this 'brain gain' and 'brain loss' is not known.

Table 37: Registration for continuing higher education, by qualification type, on 1 September 2012

	Institutional origin of 2010 qualification									
	CPUT		UCT		SU		UWC		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
A certificate or diploma	366	19.1	151	8.9	287	11.8	128	10.3	931	12.8
A bachelor's degree	1 022	53.3	146	8.6	192	7.9	105	8.5	1 464	20.1
An honours degree	187	9.7	286	16.9	438	18.1	247	20.0	1 158	15.9
A master's degree	318	16.6	874	51.6	1 274	52.5	614	49.6	3 079	42.4
A doctoral degree	26	1.4	236	13.9	234	9.6	143	11.6	639	8.8
Total	1 918	100.0	1 692	100.0	2 425	100.0	1 236	100.0	7271	100.0

Source: CHEC, 2013. Survey Question: Q4.1.2
Note: Includes only graduates who were registered for and studying towards another qualification at a university on 1 September 2012. Excludes graduates registered for pre-degree purposes.

Table 38: Registration for continuing higher education, by qualification type, on 1 September 2012

	Institutional origin of 2010 qualification									
	CPUT		UCT		SU		UWC		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
A certificate or diploma	366	39.3	151	16.2	287	30.8	128	13.7	931	100.0
A bachelor's degree	1 022	69.8	146	10.0	192	13.1	105	7.2	1 464	100.0
An honours degree	187	16.1	286	24.7	438	37.8	247	21.3	1 158	100.0
A master's degree	318	10.3	874	28.4	1 274	41.4	614	19.9	3 079	100.0
A doctoral degree	26	4.1	236	36.9	234	36.6	143	22.4	639	100.0
Total	1 918	26.4	1 692	23.3	2 425	33.4	1 236	17.0	7 271	100.0

Source: CHEC, 2013. Survey Question: Q4.1.2
Note: Includes only graduates who were registered for and studying towards another qualification at a university on 1 September 2012. Excludes graduates registered for pre-degree purposes.

Whites constitute a small majority of enrolees in all the post-graduate qualification categories. For example, whites comprise 39% of all doctoral candidates whereas Africans comprise 38% (CHEC, 2013: Table 11.16: 75).

Women constitute the majority of continuing students at 56%. There is one exception – in SET where women constitute only 43% of enrolments. In all other fields, women lead (CHEC, 2013: Table 11.14: 94).

PATHWAY SEVEN: CAREGIVERS

Little is known about the last pathway – those who graduated, are not employed and who declare themselves not to be looking for a job. They comprise 393 graduates – or 1.9% of the 2010 cohort. Amongst them are caregivers, homemakers, persons of ill-health and beneficiaries of gap-years – graduates who take time out to travel and explore the world. This is not a significant category in South African higher education, and the causes of withdrawal from the labour market are strictly personal, not requiring any public policy intervention or concern.

WHICH FACTORS ARE THE STRONGEST PREDICTORS OF EMPLOYMENT?

This section seeks to identify, using specific statistical methods, which background factors are the strongest predictors of employment. The analysis here examines only those who graduated with certificates, diplomas and undergraduate degrees. To do this, a number of CHAID (Chi-square Automatic Interaction Detection) analyses were conducted to determine which of several 'background' factors were statistically the strongest predictors of 'employment' and 'further study'. The discussion here relates only to non-degree and undergraduate members of the 2010 cohort.

Of all five socio-demographic variables prioritised in the GDS, namely (1) gender, (2) age, (3) population group, (4) home province, and (5) type of area in which the high school was located, 'population group' emerged as statistically the strongest 'socio-demographic' predictor of employment amongst these graduates. A significantly larger percentage of white and Indian undergraduates (about 96%) were employed as opposed to Coloured (about 91%) and African (about 77%) undergraduates. When 'race' was removed from the CHAID, 'type of area in which the high school was located' emerged as the next strongest predictor, with a significantly larger percentage of graduates who attended a suburban school (about 90%) finding themselves employed as opposed to those who attended a rural or township school (about 79%).

Six 'schooling and family background' variables were prioritised in the GDS, namely: (1) level of education of the mother/female guardian; (2) level of education of the father/male guardian; (3) type of high school attended (public or private; (4) matric maths symbol; (5) matric physical science symbol; and (6) whether a sibling obtained a higher education qualification prior to or in 2010. Of these six factors, 'matric physical science symbol' emerged as statistically the strongest predictor of employment amongst undergraduates. A significantly larger percentage of undergraduates who obtained a 'B' or higher for physical science in matric (about 96%) were employed as opposed to those who obtained a 'C' or 'D' (about 91%) and in particular those who obtained an 'E' or lower (only about 84%). When 'physical science symbol' was removed from the CHAID, 'matric maths symbol' emerged as the strongest predictor, yielding a relatively similar percentage distribution to that of physical science. Academic performance in matric, particularly in maths and physical science, therefore seem strongly related to undergraduates' ability to find employment, more so than other schooling and family background factors such as parental education, type of schooling or siblings having succeeded at higher education. Yet it does not mean that these are not important influences, it simply means that maths and science are more strongly related to success in getting a job.

Four 'university background' variables were also tested as part of the CHAID analysis, namely: (1) participation in extramural activities; (2) career guidance received; (3) internships or work placements undertaken; (4) and field of study. Of the four variables, 'field of study' (as classified in terms of the four main CESMs used by the Department of Higher Education and Training [DHET]), emerged as statistically the strongest predictor of undergraduate employment. A significantly larger percentage of those who studied 'education' (about 95%) found themselves employed as opposed to those who studied 'science, engineering and technology' (about 87%) and 'humanities' or 'business and commerce' (only 83%). When 'field of study' was removed from the CHAID, 'participation in extramural activities' emerged as the strongest predictor of undergraduate employment, with a significantly larger percentage of those who participated in any extramural activities (88%) finding themselves employed as opposed to those who did not (about 84%). Thus, neither career guidance nor internships or work placements emerged as a statistically significant predictor of undergraduate employment.

THE SEVEN PATHWAYS

We now have a clearer quantitative picture of the pathways the Western Cape graduate cohort traversed after completing their qualification in 2010. The seven pathways, as described in different parts of this report, are as follows:

1	'Mature' graduates who have had prior work experience	7 415
2	Young first-time entrants into the labour market	9 707
3	Self-employed graduates working in the private sector	558
4	Employed in the informal sector	191
5	Unemployed graduates looking for work	2 082
6	Continuing to study full-time	7 586
7	Care-givers: unemployed, but not looking for work	393

GEOGRAPHICAL MIGRATIONS

The seven pathways described above represent the most known-about routes out of higher education into work. But there are other transitions which the graduates of 2010 have traversed which are not reflected in the seven pathways – but which cut across all seven categories. International migration is the most important of these and it recruits candidates from all four employment pathways described above as well as from full-time students. This pathway is beneficial to the region and country if migrants who leave the province and who go overseas come back to South Africa and share their newly acquired expertise. It is wasteful if they do not return. The GDS indicated that there are already 1 381 graduates (5.7%) from the 2010 cohort living outside the country (CHEC, 2013: Table 12.4: 82), with another 5.2% indicating they would like to leave South Africa some time in the future (CHEC, 2013: Table 12.17: 86), This constitutes a brain drain of 10.9% of the original 24 710 graduates – a significant loss.

A second geographical migration process has occurred within the 2010 cohort, but this one is based nationally, entailing graduates moving from the Western Cape to the other eight provinces. The data in Table 39 illustrates the 'pull' of the Gauteng economy with 20% of UCT's graduation segment finding employment in that province. The Gauteng 'pull' has impacted on SU as well, with 12% of its 2010 graduates finding employment in that province. However, these could also include graduates originally from these provinces returning 'home' or returning to previously held jobs.

Table 40 is an amalgam of data which joins together the provincial location of the graduates' secondary schooling and the provincial location of their employment on 1 September 2012. Data from this table suggests that the Western Cape is in a 'win-win' situation regarding the complex relationship between migration, education and employment. It is what Brown and Lauder (2012) call a 'magnet economy'. This is because the Western Cape attracts both high levels of Grade 12 students into the province from other regions to study in its higher education institutions, and several years later, the province retains the bulk of these graduates as skilled workers in the provincial economy.

Table 40 indicates that the Western Cape acquired an additional 8 085 Grade 12 students enrolled for qualifications in its four higher education institutions. It also shows that of the total cohort (excluding international students), 4 859 graduating students sought employment in other provinces (especially Gauteng), resulting in a net gain for the Western Cape of 3 226 graduates who were from provinces other than the Western Cape, but who sought employment in the Western Cape after graduation. This is a 15% gain in high-skill personnel for the province.

The significance of understanding these seven life-course 'pathways' from higher education into work and civic life, and the two associated geographical migrations – one international, the other national – is that we now have a clearer picture of the multiple life-course phases and actual geographical movements young people undergo in pursuit of a good education and job – from school, through university into work, society and further study.

We are also more aware of exactly where unemployed graduates are located – we can identify them by institution, race and gender, field of study, level of qualification, and by their home province. For those unfortunate enough to fall into a punitive combination of these variables, unemployment levels can approach 20% two years after graduation. This dataset, therefore, gives the four institutions of higher education in the Western Cape a very useful 'strategic intelligence' tool with which to plan remedial action and support for unemployed graduates in the future.

CONCLUSION: THE VALUE OF GRADUATE DESTINATION SURVEYS

The value of this GDS is not merely in its detailed depiction of the Western Cape graduate labour market. It is also about the value of the GDS to institutional planning and state higher education policy reform. GDSs are dynamic tools for university managers and government higher education planners to generate a range

Table 39: Provincial Location of employment/home on 1 September 2012 (Western Cape 2010 graduate cohort)

	Institution									
	CPUT		UCT		SU		UWC		Total	
	Count	%	Count	%	Count	%	Count	%	Count	%
EC	273	3.8	94	1.7	310	4.5	119	3.4	795	3.5
FS	19	0.3	9	0.2	102	1.5	18	0.5	148	0.6
GP	309	4.3	1 071	19.8	790	11.6	241	6.8	2 411	10.5
KZN	77	1.1	197	3.6	214	3.1	99	2.8	587	2.6
LP	43	0.6	18	0.3	51	0.7	42	1.2	154	0.7
MP	43	0.6	14	0.3	156	2.3	32	0.9	244	1.1
NC	72	1.0	25	0.5	106	1.6	49	1.4	253	1.1
NW	92	1.3	53	1.0	73	1.1	50	1.4	267	1.2
WC	6 301	87.2	3 918	72.6	5 038	73.7	2 881	81.6	18 138	78.9
Total	7 229	100.0	5 398	100.0	6 841	100.0	3 531	100.0	22 998	100.0

Source: CHEC, 2013. Survey Question: Q5.2.1
Note: Includes only graduates who were living in South Africa on 1 September 2012.

Table 40: Net effect of migration into and out of the Western Cape

INFLOW of matriculants into the Western Cape	PROVINCE	OUTFLOW from the Western Cape of skilled professionals	NET GAIN OR LOSS Net gain/ loss of skilled graduates to the Western Province	
Count		Count	Net gain/loss	%
2 829	Eastern Cape	795	2 034	71.9
366	Free State	148	218	59.6
1 779	Gauteng	2 411	-632	-35.5
1 391	KwaZulu-Natal	587	804	57.8
594	Limpopo	154	440	74.1
296	Mpumalanga	244	52	17.6
478	Northern Cape	253	225	47.1
352	North West	267	85	24.1
Total students 8 085		Outflow 4 859	Net gain 3 226	

Source: CHEC, 2013. Survey Questions: Q1.1.1 and Q5.2.1
Note: 'Inflow' is determined from the high school location of the 2010 graduate cohort. 'Outflow' is determined by the location of graduate employment on 1 September 2012. The data excludes 13 962 graduates who did their secondary schooling in the Western Cape.

of useful data about quality and satisfaction levels, university performance, graduate destinations and employability. In the case of the Western Cape 2010 GDS, all qualification levels were surveyed across all public higher education institutions in the province, providing a very detailed picture of the entire Western Cape graduate labour market (from the perspective of one cohort). This kind of picture has not been available before, and it has allowed the authors to generalise with relative confidence across important categories. It has provided a truly systemic view of how higher education works in relation to the graduate labour market in one province for the year 2010. These are findings which can be generalised to some extent in the Western Cape for the years before and the after 2010. The trends are likely to be similar, at least in the foreseeable future.

The challenge in the future is to complement the quantitative work done here with more detailed qualitative work on how employers value the various graduate attributes acquired in higher education and transferred to the workplace. Studies are also needed on local labour markets, for example, on the public sector in the Western Cape, which absorbs high levels of female professionals. Another area would be to investigate 'low skill work' by interviewing graduates who are doing clerical, sales and shop work in the wholesale and retail as well as services sectors.

But the most important next step is to put in place plans to repeat this survey every five years. Only then can medium- to long-term trends be measured. The time for sporadic and occasional efforts to research graduate destinations is over. The challenge now is to institutionalise in a creative way such graduate destination instruments into the five-yearly reporting requirements of universities across the country.

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This Graduate Destination Survey has generated an immensely important new database for understanding how tertiary education relates to labour market prospects. This report provides a first stab at analysing this data and already brings to the fore some crucial insights. Further research on this database should inform both labour market and education policies, and it is of immediate use for university planning. CHEC's initiative in this regard should be greatly lauded and they should be encouraged to undertake such tracer studies on a regular basis.

– **Professor Servaas van den Berg, Professor of the Economics of Education, Stellenbosch University**

I think the methodology section is superb … The really important consequence of this work is that it can alert the institutions to thinking forward about complex issues.

– **Professor Tim Dunne, Professor of the Statistics, University of Cape Town**

5 560 responses from the total of 24 710 graduates can be seen as a great success of the study. The response rate was 23% which is similar to graduate surveys in Europe and Japan.

– **Professor Harald Schomburg, International Centre for Higher Education Research, University of Kassel**

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