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Higher Education and Labour Market Access and Success

**STUDENT GRADUATION, LABOUR MARKET
DESTINATIONS AND EMPLOYMENT EARNINGS**

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Introduction

- ▶ Against the backdrop of rising unemployment rates in South Africa and the shortage of high-level skills in the labour market, the dual problems of low graduation rates and graduate unemployment are critically important.
- ▶ Only 30% of students enrolled in a bachelor's degree obtaining their qualifications within a five-year period (DoE, 2005).
- ▶ According to the Department of Education (DoE, 2001: 33), graduation rates of white students are almost double those of black students.
- ▶ Three broad outcomes-Graduation, Employment and Earnings.
- ▶ Three step selection process will be modelled sequentially.

Data

- ▶ HSRC's Student Retention and Graduate Destination study traces the 2002-2003 cohort of non-completers and graduates from seven selected public higher education institutions (HEIs) in South Africa.
- ▶ The 2005 Graduate Destination Survey and the 2005 Student Retention Survey given to graduates and non-completers respectively.
- ▶ Of the total survey population of 34,548 individuals (20,353 non-completers and 14,195 graduates) within the selected HEIs, there were 5,491 valid responses, representing a 15.9 % return rate.
- ▶ The sample was weighted to the original survey population. Weights were calculated as N/n where N is the number of graduates/non-completers by institution, race, gender and field of study in the survey population, and n is that number in the survey sample.

Response Rate by Institution and Race

Institution	Black African	Coloured	Indian/Asian	White	Total
University of Fort Hare	22.0%	16.7%	0%	0%	21.9%
University Stellenbosch	10.0%	14.5%	12.5%	10.0%	10.5%
University of the North	18.2%	80.0%	25.0%	0%	18.2%
University of the Western Cape	17.8%	12.4%	11.7%	10.5%	15.0%
University of the Witwatersrand	14.1%	13.2%	11.6%	7.8%	11.5%
Peninsula Technikon	14.8%	13.3%	8.7%	8.7%	14.0%
Pretoria Technikon	16.4%	8.2%	2.9%	6.7%	13.9%
Apartheid classification of institution					
Historically Black	20.3%	13.6%	13.1%	11.5%	18.5%
Historically White	17.9%	8.9%	9.3%	8.1%	13.8%
Total	19.2%	13.6%	10.6%	8.7%	15.9%

Source: Student Retention and Graduate Destination study (HSRC, 2005).

Notes: 1. Data here are weighted according to stratification by field of study, gender, race, and institution for graduates and non-completers.

Graduates and non-completers by race and gender

	African		Coloured		Indian/Asian		White		Total
	Female	Male	Female	Male	Female	Male	Female	Male	
Graduates	3,787	3,154	795	613	249	242	2,671	2,264	13,775
	34.3%	49.2%	49.4%	42.6%	60.9%	54.4%	75.6%	57.8%	47.2%
	6,941		1,408		491		4,935		13,775
Non-Completers	7,246	3,260	816	826	160	203	861	1,651	15,383
	65.7%	50.8%	50.7%	57.4%	39.1%	45.6%	24.4%	42.2%	52.8%
	10,867		1,642		363		2,512		15,383
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%
Sample Size	17,807		3,050		854		7,447		29,158
Share of total	61.1%		10.5%		2.9%		25.5%		100%

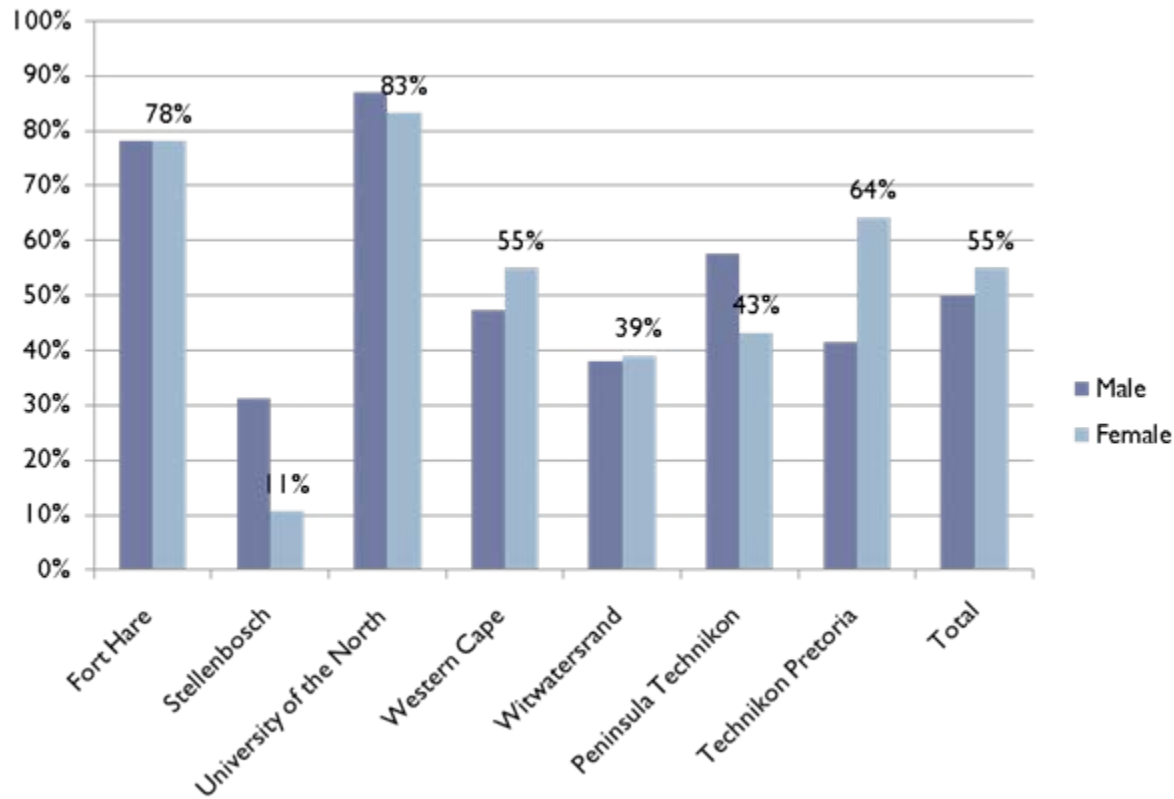
Source: Authors' calculations using data from the Student Retention and Graduate Destination study (HSRC, 2005).

Notes: 1. Data here are weighted according to stratification by field of study, gender, race, and institution for graduates and non-completers.

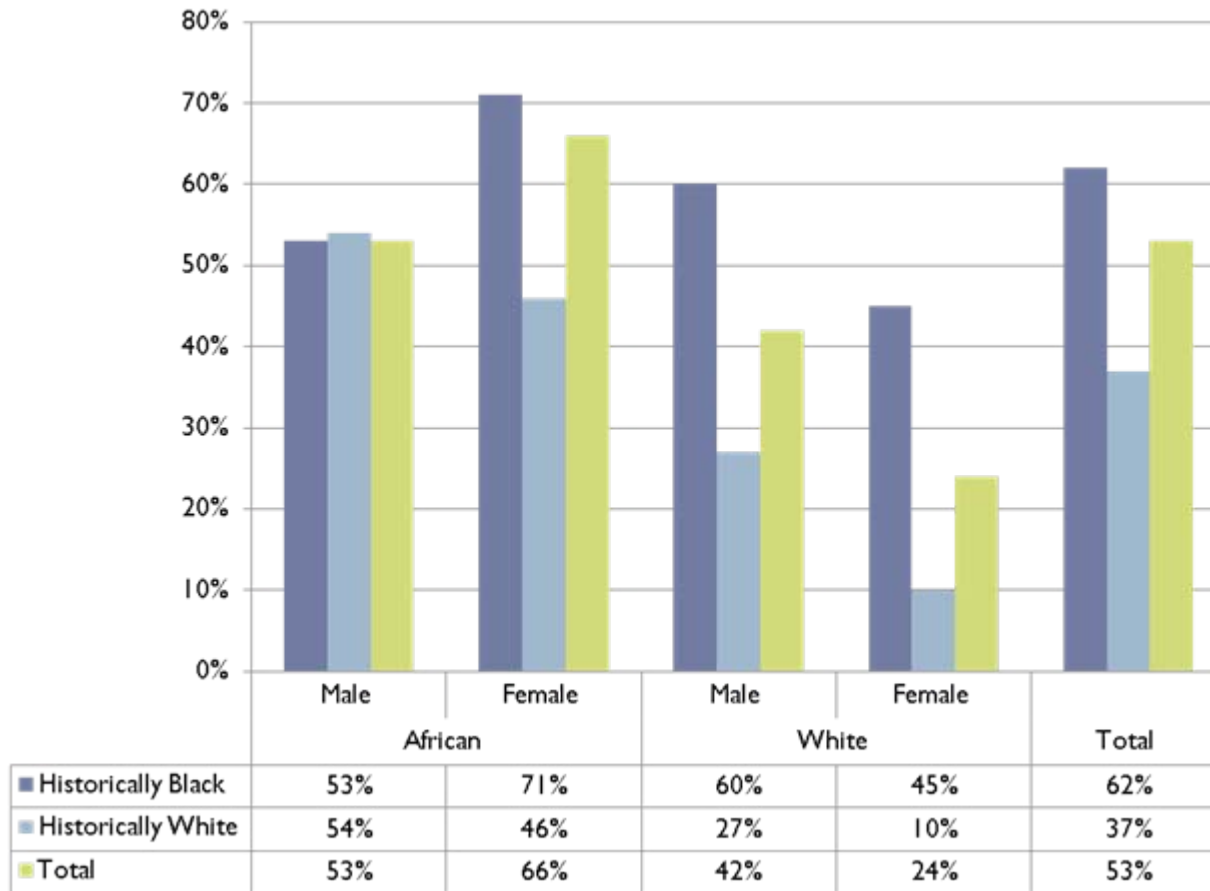
2. The sum of our weights do not equal the population total of 34,548 (the total number of graduates and non-completers in 2002-2003) since some students in our sample were not identified as graduates or non-completers by the institution.

- ▶ Approximately 39% of Africans are graduates, 61% are non-completers.
- ▶ Approximately 66% of Whites are graduates, 34% are non-completers.

Non-completion rates by gender and institution



Non-completion rates by *Apartheid* classification of institution



Note: The non-completion rates for each racial group at each institution were calculated by dividing the number of non-completers of each race and institution by the corresponding total number of graduates and non-completers. For the purposes of this study, the population (enrolment) was taken to be the total number of graduates and non-completers.

Initial Results

- ▶ Non-completion rates are higher for Africans than for Whites. 61% of Africans sampled were non-completers, whilst this estimate was 34% for Whites.
- ▶ Non-completion rates at HBIs (62%) are significantly higher than those at HWIs (37%).
- ▶ Overall, non-completion higher for females than for males.
- ▶ The highest non-completion rate are for African females at HBIs (71%).
- ▶ At HBIs, gender effect is observed, with higher non-completion rates for females than males, whereas at HWIs, higher non-completion rates for males are observed.

Higher Education Transition: A Descriptive Overview

Mean individual characteristics by *apartheid* classification of institution

Variable	Institution type			Graduates	Non-Completers	Total
	(Apartheid classification)					
	HB-Africans	HW-Africans	HW-Whites			
Individual characteristics						
Male	0.35*	0.47	0.5	0.46	0.41	0.43
Female	0.65*	0.53	0.47	0.54	0.59	0.57
Business/Commerce	0.18	0.18	0.13	0.16	0.18	0.17
Education	0.19*	0.13	0.03	0.12	0.13	0.12
Humanities	0.33*	0.31	0.32	0.35	0.28	0.32
SET	0.21*	0.34	0.38	0.34	0.23	0.28
Home language English	0.06	0.07	0.45	0.25	0.13	0.18
Mean entry points	19.5	20.9	37.4	26.5	22.2	0.52
A in Maths	0.02	0.03	0.32	0.15	0.05	0.52
A in English	0.01	0.01	0.27	0.1	0.05	0.52
Merit/Distinction in SCE	0.5	0.51	0.59	0.49	0.51	0.51
Lectured/not lectured	0.87*	0.96	0.99	0.94	0.89	0.93
Studying part-time	0.25*	0.15	0.08	0.2	0.19	0.2
Urban school attended	0.93	0.92	0.84	0.59	0.72	0.65
Received scholarship/loan	0.47*	0.64	0.42	0.51	0.42	0.46

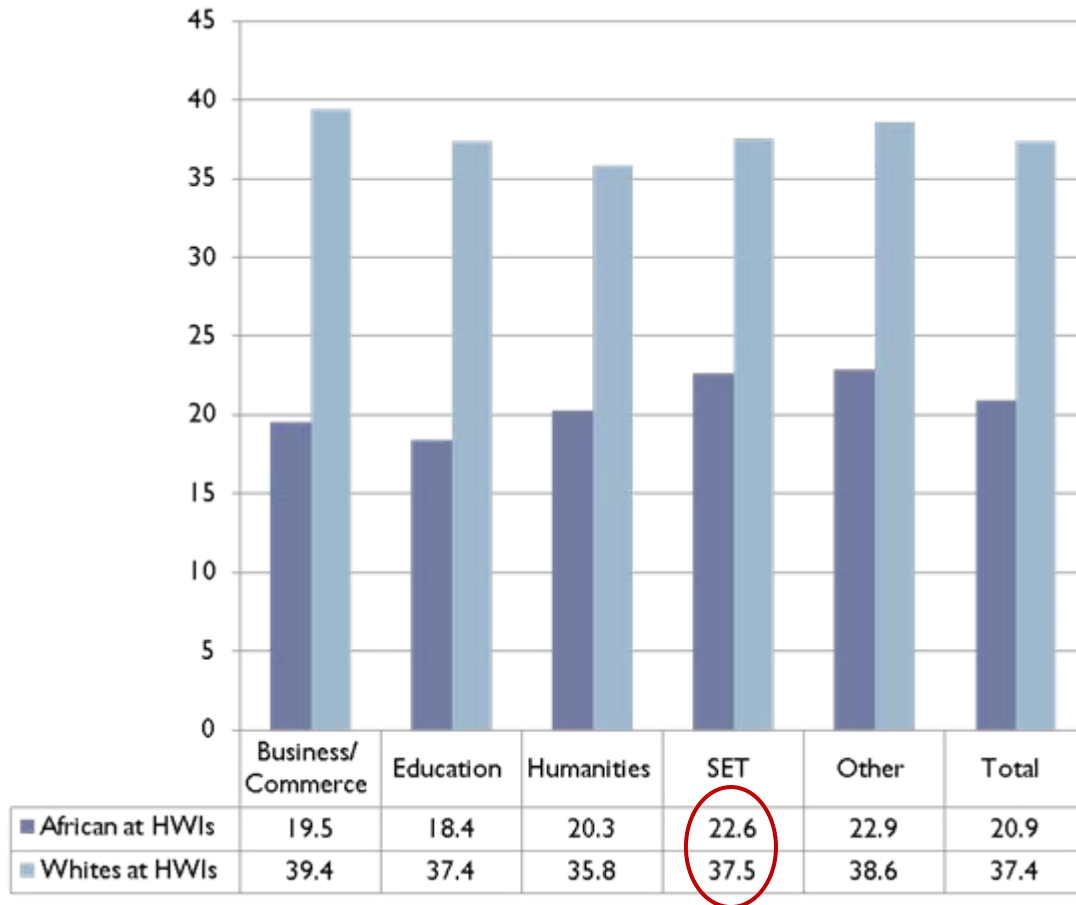
Mean household characteristics by *apartheid* classification of institution

Variable	Institution type (Apartheid classification)			Graduates	Non-Completers	Total
	HB-Africans	HW-Africans	HW-Whites			
At least one parent employed	0.52	0.59	0.90	0.70	0.61	0.65
Parental income (monthly)	4,240	5,420	40,491	16,340	7,523	11,631
Years of education of parents	6.53	7.33	12.94	9.53	7.90	8.67
Have siblings who have graduated	0.40	0.34	0.61	0.50	0.39	0.44
Parent with tertiary qualification	0.25*	0.33	0.73	0.45	0.33	0.40
Sample size	13,531	4,276	4,204	13,775	15,383	29,158
Share of total	53.58	16.93	16.65	47.24	52.76	100

Source: Authors' calculations using data from the Student Retention and Graduate Destination study (HSRC, 2005).

- Notes:**
1. Standard deviations shown in parentheses. Bold indicates significant difference at 5% of Africans with whites, or of graduates with non-completers. * Significant difference at 5% level of mean characteristic of Africans at HBIs with Africans at HWIs.
 2. Data here are weighted.
 3. Years of education of parents refers to the average of the years of education of the father and the mother. A in Maths and A in English indicates the share of the sample that obtained an A at the Higher Grade or Standard Grade. Urban school refers to individuals who attended schools in urban locations.

Mean entry points for Africans and Whites by field of study

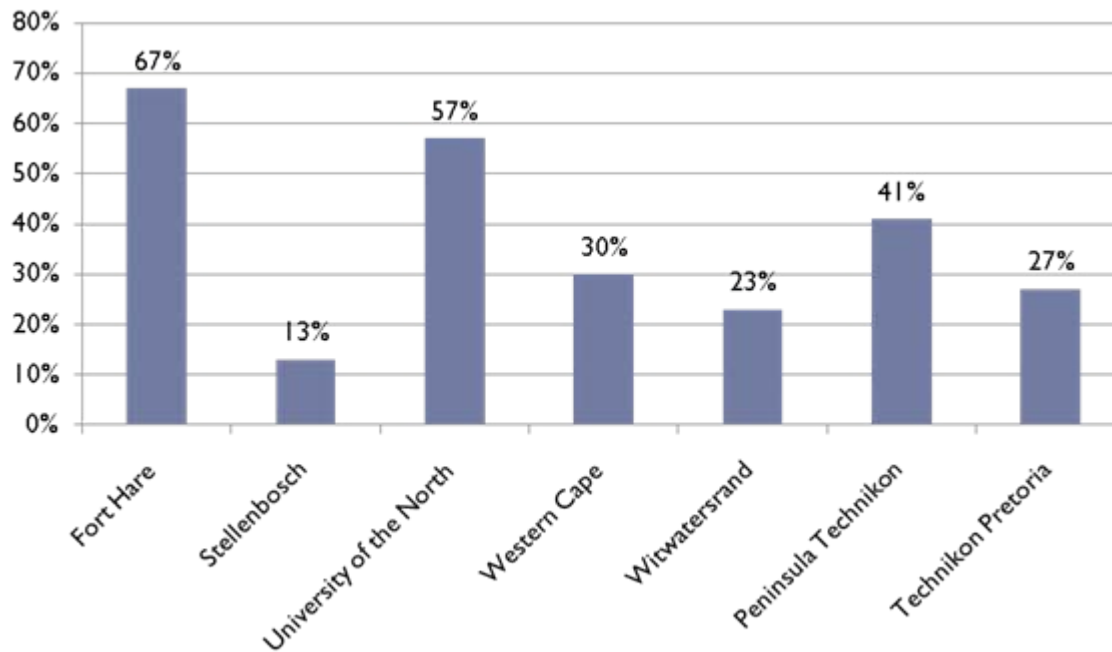


Key sample characteristics

- ▶ Significant differences between Africans at HBIs and Africans at HWIs.
- ▶ Significant differences in household characteristics by race and type of institution. For instance, the mean parental income of Africans from HBIs is significantly lower than the mean parental income of Africans from HWIs.
- ▶ Significant differences in individual and household characteristics for graduates and non-completers.
- ▶ Mean entry points of graduates are significantly lower than for non-completers, and significantly lower for African compared with Whites.

From higher education to the labour market: A snapshot of trends

Unemployment rates (broad definition) by institution and race, broad definition



From higher education to the labour market: A snapshot of trends

Broad unemployment rates by *Apartheid* classification of institution for graduates and non-completers

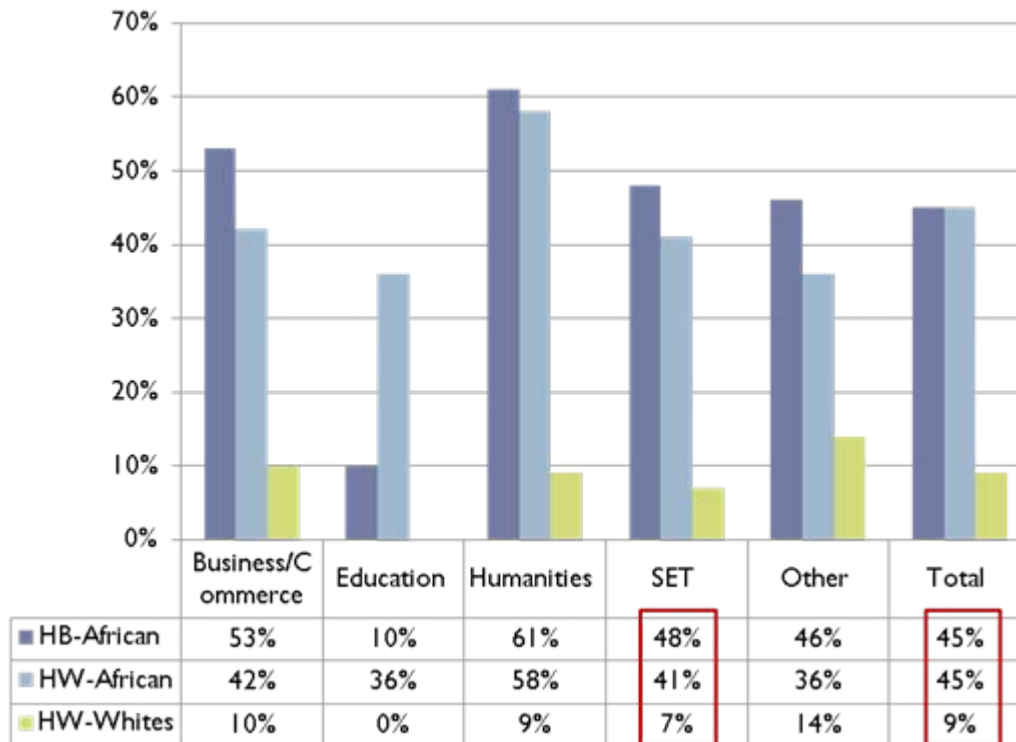
Institution	African		Coloured		Asian		White		Total
	Graduate	Non-completer	Graduate	Non-completer	Graduate	Non-completer	Graduate	Non-completer	
Historically White	42%	49%	21%	32%	11%	15%	10%	4%	27%
Historically Black	40%	48%	13%	26%	---	11%	6%	5%	35%
Total	41%	48%	18%	28%	14%	6%	9%	5%	32%

Note: G is graduates and NC is Non-completers.

Unemployment rates (broad definition) by institution and race, broad definition (standard errors in parentheses)

Institution type	Historically Black		Historically White			
Field	African		African		White	
	Graduate	Non-completer	Graduate	Non-completer	Graduate	Non-completer
Business/Commerce	48%	57%	46%	37%	14%	---
Education	9%	10%*	24%	51%*	—	—
Humanities	58%	63%	58%	58%	13%	---
SET	37%	54%	33%	52%	5%	17%
Other	42%	49%	35%	36%	19%	—
Total	40%	48%	42%	49%	10%	4%

Broad unemployment rates by field and institution type



Nominal mean monthly earnings for African and white, by field of study

Field	Historically black		Historically white			
	African		African		White	
	Graduate	Non-completer	Graduate	Non-completer	Graduate	Non-completer
Education	18,801	8,294	10,066	2,250	5,272	2,476
Humanities	9,184	3,587	13,570	4,128	10,186	5,577
SET	11,882	4,768	11,116	3,131	14,397	7,574
Other	3,821	6,508	14,669	6,022	16,630	7,199
All fields	11,980	6,098	10,797	4,016	13,151	6,594

Graduation, Employment and Earnings: A multivariate analysis

Referent variables

- ▶ Race: White
- ▶ Gender: Male
- ▶ Institution type: Historically White
- ▶ University or technikon: University
- ▶ Type of qualification (Degree or Certificate/Diploma): Certificate/Diploma
- ▶ Field: Science, Engineering and Technology (SET)
- ▶ School attended: Urban
- ▶ Age: 16-25
- ▶ Province: Western Cape
- ▶ Occupation: Elementary workers
- ▶ Sector: Manufacturing

The probability of graduation: Results

Dependent variable: Probability of graduation	x-bar	Marginal effects			
		I	II	III	IV
Individual characteristics					
African	0,5234	-0,1097***	-0,1258*	---	-0,0852
Coloured	0,1100	-0,1518***	-0,1292	---	-0,1410
Indian/Asian	0,0265	-0,3720*	-0,2765**	---	-0,3463*
Female	0,5730	-0,0759***	-0,0747***	---	-0,0599
African-HB	0,3840	---	---	-0,4257*	---
African-HW	0,1394	---	---	-0,3669*	---
Coloured-HB	0,0533	---	---	-0,3702*	---
Coloured-HW	0,0567	---	---	-0,4116*	---
Asian-HW	0,0209	---	---	-0,5221*	---
Other-HB	0,1702	---	---	-0,4354*	---
Scholarship/Loan	0,4919	0,1726*	0,1462*	0,1779*	0,1462*
Lectured	0,9439	-0,0601	-0,0914	0,0837	-0,0914
HBI	0,0674	-0,1342*	-0,1437*	---	-0,1545*
Technikon	0,5216	-0,0453	-0,0547	0,0486	-0,0608
Degree qualification	0,5433	0,0820***	0,0879**	0,0730***	0,0905***
Humanities	0,2901	-0,0571	-0,0437	-0,0631	---
Education	0,0935	-0,2133*	0,2136*	0,2016*	---
Commerce	0,1878	-0,0734	-0,0692	-0,1054	---
Other field	0,1149	-0,1742	-0,1782	-0,2012	---
Number observed		1,673	1,673	1,673	1673

*Significant at the 1% level. **Significant at the 5% level. ***Significant at the 10% level.

Probability of graduation: Results contd.

Schooling characteristics	x-bar	I	II	III	IV
Rural school attended	0,0663	-0,1726**	-0,1708**	-0,2359*	-0,1708**
Entry points	4,4356	-0,0134	0,0093	-0,0133	0,0093
Mathematics scores	2,6182	0,0185***	0,0191***	0,0155	0,0191***
Household characteristics					
Years of parental education	5,077	-0,0297	-0,0315	-0,0284	-0,0315
Parent who graduated	0,4540	0,1076	0,1164	0,1207	0,1164
Home language is English	0,1870	0,1529*	0,1491	0,1396**	0,1491*
Siblings with tertiary degree	0,4797	0,0913**	0,0840*	0,0990*	0,0840**
Household income	8,5876	0,0491*	0,0432**	0,0421**	0,0425**
Siblings studying in an HEI	0,3684	-0,0302	-0,0281	-0,0330	-0,0281
Tuition paid by parents	0,5180	0,0044	-0,0325	-0,0014	-0,0325

*Significant at the 1% level. **Significant at the 5% level. ***Significant at the 10% level.

Probability of finding employment: Results

Dependent variable: Probability of employment	x-bar	Marginal effects			
		I	II	III	IV
Individual characteristics					
Graduated	0,5368	0,0037	0,0007	0,0084	-0,0002
African	0,5692	-0,2811**	-0,2865**	---	-0,2666**
Coloured	0,1188	-0,0713	-0,0607	---	-0,0741
Indian/Asian	0,0235	0,0639	0,0903	---	0,0826
Female	0,5437	-0,1681**	-0,1650**	-0,1658**	-0,1568
HBI	0,6376	0,0423	---	---	0,0454**
Technikon	0,5657	0,0719*	0,0708*	0,0594*	0,0636*
Degree qualification	0,5288	0,0330	0,0366	0,0307	0,0221
Africans from HBIs	0,4241	---	---	-0,2248**	---
Africans from HWIs	0,1451	---	---	-0,2647**	---
Coloureds from HBIs	0,0602	---	---	0,0324	---
Coloureds from HWIs	0,0587	---	---	-0,0505	---
Indians/Asians from HWIs	0,0148	---	---	0,1003	---
Other from HBIs	0,1533	---	---	0,1164	---
Humanities Education	0,2921	-0,0265	-0,0190	-0,0274	---
Commerce	0,1962	0,2145**	0,2168**	0,2127**	---
Other field	0,1195	0,0520	0,0540	0,0554	---
Mathematics scores in Matriculation	0,1962	0,0642	0,0724	0,0641	---
Used social network	2,3807	0,0251**	0,0243**	0,0260**	0,0275**
26-35	0,2966	0,0232	0,0253	0,0199	0,0318
36-45	0,3663	0,0688**	0,0678**	0,0672**	0,0878**
46-55	0,0803	0,1991**	0,2018**	0,01995**	0,2487**
	0,0171	0,1854**	0,1882**	0,1845**	0,2295**

Notes: 1. *Significant at the 1% level. **Significant at the 5% level. ***Significant at the 10% level.

2. Provincial controls were included but are not shown in the table.

Probability of employment: Results contd.

<i>Dependent variable: Probability of employment</i>	<i>x-bar</i>	<i>Marginal effects</i>			
		<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>
Parent employed	0,6608	0,0064	0,0090	0,0076	0,0013
Parent graduated	0,4099	0,0559	0,0090	0,0561*	0,0559
Number observed	---	2965	2,965	2,965	2,965

*Significant at the 1% level. **Significant at the 5% level. ***Significant at the 10% level.

Returns to education: Results

Dependent variable: Log of monthly wages	Coefficients			
	I	II	III	IV
Graduated	0,1938**	0,2105**	0,1813**	0,2507**
African	0,2241	0,2089	---	-0,2858**
Coloured	0,0368	0,0266	---	-0,0816
Indian/Asian	-0,0899	-0,0649	---	-0,0564
Female	-0,1110	-0,1134	-0,1261	-0,3276**
HBI	-0,0947	---	---	-0,1379
Technikon	-0,2127**	-0,2427**	-0,1617*	-0,1072
Degree qualification	0,1222*	0,1707*	0,1257*	0,1783**
Africans from HBIs	---	---	0,0341	---
Africans from HWIs	---	---	0,0909	---
Coloureds from HBIs	---	---	-0,0988	---
Coloureds from HWIs	---	---	-0,0574	---
Indians/Asians from HWIs	---	---	-0,3028	---
Other – HBIs	---	---	-0,2470*	---
Home language is English	0,0325	---	0,0248	0,0904
Humanities	-0,1370	-0,1470	-0,1379	---
Education	-0,7135**	-0,6214**	-0,6980**	---
Commerce	0,0061	0,0063	-0,0001	---
Other field	-0,2694**	-0,2885**	-0,2708**	---
Experience	0,0784**	0,0772**	0,0784**	0,0885**
Experience squared	-0,0013*	-0,0012*	-0,0013*	-0,0014*
Log of hours per month	0,3505**	0,3512**	0,3463**	0,3376**
Constant	5,9631**	5,9719**	6,0148**	5,6792**
Lambda	-1,0098**	-1,0094**	-0,9792**	0,0025*
Number observed	1,588	1,588	1,588	1,588

Notes: I. *Significant at the 1% level. **Significant at the 5% level. ***Significant at the 10% level.
 2. Provincial, occupational and sectoral dummies were included but are not shown in the table.

Conclusions

- ▶ Completion rates of Africans and females are lower, and more so for these individuals at HBIs versus HWIs.
- ▶ The type of institution, that is, HWI or HBI, matters significantly across almost all the outcomes examined in this paper.
- ▶ Race, field of study and institution are all key determinants of graduate unemployment rates.
- ▶ The results from the graduation probit showed that race, gender, institution type, and field of study significantly influence the probability of graduating. Household characteristics such as household income and home language also play a significant role.
- ▶ The employment probit showed that Africans at both HBIs and HWIs are significantly disadvantaged than their White counterparts, even when controlling for a range of characteristics such as field of study and Matric results.
- ▶ While race and gender were significant determinants of the probability of graduation and employment, they do not seem to significantly impact on earnings when controlling for field of study and other characteristics.