



Commonwealth Scholarship
Commission in the UK

**Trajectories and impact of UK Commonwealth
Scholarship and Fellowship Programme alumni:
Interim quantitative analysis**

© Commonwealth Scholarship Commission in the United Kingdom (2014)

The text of this document may be reproduced free of charge in any format or medium providing that it is reproduced accurately and not in a misleading context.

The material must be acknowledged as Commonwealth Scholarship Commission in the United Kingdom copyright and the document title specified. Where third party material has been identified, permission from the respective copyright holder must be sought.

This report was written by Dr Matt Mawer, and published in December 2014.

For further information regarding the CSC Evaluation and Monitoring Programme, please contact:

Commonwealth Scholarship Commission in the UK
Woburn House
20-24 Tavistock Square
London WC1H 9HF
UK

evaluation@cscuk.org.uk
<http://bit.ly/cscuk-evaluation>

Contents

List of figures	IV
List of tables	V
Overview of schemes	VI
Analysis summary	VII
Overview of findings	VII
Recommendations	VIII
1. Introduction	1
Methodology	1
2. Respondent demographics	4
Geographical data	5
International benchmarks and residency flow	8
3. Individual capacity	10
Career trajectory	10
Perceived gains from UK CSFP	14
Post-award qualifications	16
Summary and conclusions	17
4. Networks and collaborations	19
Contacts maintained	19
Academic collaboration	23
Summary and conclusions	24
5. Impact in developmentally-relevant sectors	26
The broad view I: Impact domains	26
The broad view II: Impact types	28
Areas of development-relevant activity	29
Summary and conclusions	36
6. Attribution and the counterfactual	38
Assessing scholarship contribution	38
The counterfactual	38
Summary and conclusions	43
7. Overall conclusions	46
An overview of the findings	46
Research design considerations	47
Future research directions	49
References	51
Appendix 1: Geographical regions	55
Appendix 2: Categories of developmentally-relevant activities	56
Appendix 3: Rescaling procedure	57
Appendix 4: Overview of statistical procedures	58

List of figures

Figure 1:	Five highest contributing citizenship regions for alumni not resident in their country of citizenship _____	8
Figure 2:	Five highest current residency regions for alumni not resident in their country of citizenship _____	8
Figure 3:	Sector of employment by citizenship region (excluding regions with N<30 and 'other' responses) _____	13
Figure 4:	Scholarship gains grand mean, by citizenship region (excluding regions with N<30) _____	14
Figure 5:	Mean rating by scholarship gains category _____	15
Figure 6:	Mean rating for CSFP contribution to subsequent qualifications gained, n=332 _____	16
Figure 7:	Mean ratings for level of contribution made by UK contacts to professional development _	20
Figure 8:	Respondents (%) reporting impact in each domain _____	27
Figure 9:	Highest reported impact domain by region, N=869 _____	28
Figure 10:	Ranking of overall participation and mean involvement by citizenship region (ranked in descending order), N=858 _____	32
Figure 11:	Ranking of participation and involvement in economic growth by citizenship region (ranked in descending order), N=858 _____	32
Figure 12:	Median counterfactual ratings for higher and lower income states, excluding regions for n<30 _____	40

List of tables

Table 1:	Aggregate response data _____	2
Table 2:	Distribution of respondents by scheme code and decade of award _____	4
Table 3:	Gender profile of respondents by decade _____	5
Table 4:	Mean age at survey date and award year, by decade of award _____	5
Table 5:	Top ten citizenship regions for respondents (N=1225) _____	6
Table 6:	Top ten residence regions for respondents (N=869) _____	6
Table 7:	Residency status by decade of award (N=869) _____	7
Table 8:	Sectors of employment for those employed pre-award, N=708 _____	10
Table 9:	Mean rating of employer supportiveness for the five most frequent professional fields (N=706) _____	10
Table 10:	Respondents returning to pre-award employment posts (N=1225) _____	11
Table 11:	Respondents returning to pre-award employment posts for the five most frequent professional fields _____	12
Table 12:	Sector of employment for alumni currently working or having retired _____	12
Table 13:	Additional activities currently undertaken by alumni (N=869) _____	14
Table 14:	Academic qualifications pursued post-award, N=226 _____	16
Table 15:	Median scale ratings for communication with UK contacts _____	19
Table 16:	Median scale ratings for communication with international organisations, by citizenship region _____	21
Table 17:	Median scale ratings for communication with international organisations, by scholarship scheme _____	21
Table 18:	Proportion of respondents actively maintaining contact with UK groups _____	22
Table 19:	Proportion of respondents actively maintaining contact with UK groups, by scholarship scheme _____	22
Table 20:	Respondents reporting joint publications as a result of their Commonwealth Scholarship, by citizenship region _____	23
Table 21:	Respondents reporting collaboration leading to joint research as a result of their Commonwealth Scholarship, by citizenship region _____	24
Table 22:	Impact in socioeconomic activity and impact in government policy (N=869) _____	28
Table 23:	Impact type by highest reported domain of impact (N=869) _____	29
Table 24:	Fields of project participation (N=869) _____	30
Table 25:	Mean ratings of level of involvement in each field for male and female respondents and overall (N=869) _____	30
Table 26:	Respondents (%) reporting impact in each development-relevant field (N=869) _____	33
Table 27:	Highest impact domain for respondents that indicated socioeconomic activity impact _____	33
Table 28:	Highest impact domain for respondents that indicated government policy impact _____	34
Table 29:	Mean level of impact rating, 2014 iteration respondents only _____	35
Table 30:	Mean impact breadth by impact type (N=869) _____	35
Table 31:	Mean ranking of attribution factors (N=869) _____	38
Table 32:	Counterfactual scenario mean ratings and rating standard deviation, all respondents _____	39
Table 33:	Proportion of respondents indicating each funding source by counterfactual scenario _____	41
Table 34:	Respondents indicating Employer or government sponsorship or Self-Funding for CF Home Country _____	42
Table 35:	Probable destinations for study under CF another country (N=288) _____	43

Overview of schemes

UK-funded Commonwealth Scholarships and Fellowships can be categorised in several ways, including by funding arrangement with institutions, level of study, government department providing funding, length of tenure, and scholarship purpose.

For this report the categories used by the CSC Secretariat have been used to delineate between award types: the 'scheme code'. These two letter codes relate to a specific form of scholarship arrangement with defined fees parameters, eligible applicants, government funders, and tenure lengths. Other than the 'Split-site Scholarship' there is no doctorate-specific scheme: schemes are Master's and doctorate, Master's only, or fellowship (the latter a short-tenure professional exchange programme).

Scheme code	Description
CA	Academic Staff Scholarships: Scheme for Master's or doctoral study in the UK, recipients are academics nominated by their institution
CD	Distance Learning Scholarships: Scheme for Master's courses run by UK institutions and studied at distance (i.e. in home countries)
CE	Medical Scholarships: A historical scheme for medical training subsequently merged with 'General' scholarships scheme (CS)
CF	Academic Fellowships: Short term mobility scheme for established academic researchers and medical professionals to build skills and contacts at a UK institution
CG	Medical Fellowships: A historical scheme for medical training fellowships, for developing countries, subsequently merged with Academic Fellowship scheme (CF)
CH	Medical Fellowships: A historical scheme for medical training fellowships, for developed countries, subsequently discontinued in this form
CJ	Senior Medical Fellowships: A historical scheme for advanced medical training fellowships, subsequently merged with Academic Fellowship scheme (CF)
CN	Split-site Scholarships: Scheme in which PhD students registered at a 'home institution' elsewhere spend one year at a UK institution
CP	Professional Fellowships: Short-term mobility scheme for professionals to build skills and contacts at a UK host organisation
CR	'General' Commonwealth Scholarships: Broad scheme for Master's or doctoral study in the UK for citizens of developed countries
CS	'General' Commonwealth Scholarships: Broad scheme for Master's study, doctoral study, or medical training in the UK for citizens of developing countries
SS	Shared Scholarships: Scheme for Master's study in the UK with different cost-sharing arrangements between the CSC and universities

Analysis summary

Since 2012 the Commonwealth Scholarship Commission in the UK (CSC) has been conducting a cycle of evaluation surveys designed to generate insight into the experiences, achievements, and difficulties of our alumni. Respondents to the surveys are drawn from all of the CSC-administered scholarship schemes, over 60 disciplinary fields, 50 Commonwealth countries, and as far back as 1963. The cycle is now 60% complete; the remaining 40% of alumni will be surveyed in 2015.

This report presents an interim analysis of survey findings with the intention of laying the groundwork for a full report in 2015. Data have been analysed and formulated into four areas:

1. Individual capacity
2. Networks and collaboration
3. Impact in developmentally-relevant sectors
4. Attribution and the counterfactual.

Methodological issues in research design and data interpretation have also been highlighted by the survey analysis and these, alongside indications of future directions for CSC evaluation, have been examined in the report.

Overview of findings

Almost all Commonwealth Scholars and Fellows, including those not recruited through employers, were in full-time employment prior to undertaking their scholarship in the UK and almost all alumni are currently working full-time; a small minority are working part-time, and, as expected given the age of some respondents, some have retired from work. Alumni are likely to be currently working in the higher education or public sector, these sectors together accounting for three quarters of survey respondents and on average they will have held two positions since completing their scholarship, although the latter is of course closely linked to the time alumni have spent in the labour force. The prevalent perception amongst alumni is that gains from Commonwealth Scholarships and Fellowships are both substantial and continue to be applicable in their workplace: particularly knowledge and technical skills gained. On this evidence there is considerable support for the utility of the Commonwealth Scholarship and Fellowship Programme (CSFP) as a labour market capacity building programme at both the individual and institutional level.

The survey results show encouraging levels of engagement with development activities. Around 79% of alumni have been involved in one or more projects within the eight developmentally-relevant areas investigated, whilst 67% reported impact in socioeconomic activity and 35% reported impact in government policy. Alumni were generally involved in both policy and practice beyond immediate organisations, in many cases at national and international levels. It is also important to note that many Scholars and Fellows from higher income Commonwealth countries - not selected or funded on the basis of potential development impact - also reported contributing substantially to developmentally-relevant sectors, even if their outcomes on these measures were somewhat lower than other alumni. Evidently there is a useful degree of crossover between the priorities and achievements of the different funding bodies involved (currently and historically) in CSFP.

Activity was reported in all developmentally-relevant areas, but the largest body of work undertaken by alumni has been in education. Additionally, the preponderance of joint scholarly activity demonstrates a potentially important legacy of CSFP. Almost 4000 joint publications (and numerous other sole-authored publications) were reported as a direct result of Commonwealth Scholarships and Fellowships and approximately 30% of alumni indicated having been involved in collaborations leading to future research. Whilst the diffusion across time and geography of these outcomes should be noted, it is nonetheless important to recognise the contribution they can make in the context of developing research ecologies.

Examination of on-going international networks and collaborations reveals more mixed results. After finishing a scholarship it was relatively common for alumni to keep in contact with social and academic ties in the UK, although this varies substantially by scholarship scheme. Ties with international organisations are far less prevalent and in many cases absent entirely. Relationships built through the Commonwealth Scholarships and Fellowships are thus largely bilateral. Alumni tended to regard on-going ties with the UK as having had relatively little influence on their career development and contacts at home and abroad were amongst the lowest ranked contributors to professional success. This does not imply such relationships are inconsequential – or that there are not intangible benefits to both UK and alumni partners – but it does

highlight that the forging of long term bilateral connections is not necessarily perceived as a crucial facet of labour capacity building or generation of long-term developmental impact.

Finally, the analysis of counterfactual scenarios makes clear that very few alumni felt there was substantial prospect for having pursued a similar programme of study in lieu of a Commonwealth Scholarship or Fellowship. Whilst it is important to recognise the limits of retrospective self-reporting, alumni are often well-placed to know the contours and likely trajectory of their earlier lives and so retrospective data can be very valuable. Preliminary assessment of this retrospective data reinforces the importance of CSFP in bringing access to scholarships and fellowships to a constituency overwhelmingly confident that alternatives were scarce.

Recommendations

Several methodological recommendations for the future design of the CSC evaluation programme have emerged from the analysis. As a consequence, it is recommended that the CSC:

1. Conduct a short exercise amongst CSFP stakeholders to determine how best 'impact' and related constructs (e.g. 'socioeconomic activity') can be defined, further grounding them so that measures will be valid, reliable, and relevant. A qualitative (free-text) survey of current and future alumni in concert with a documentary analysis of CSC Secretariat and funder perspectives could provide the primary research required.
2. Investigate the possibility of using behavioural ('act-based') scales alongside opinion scales for outcome data. A small pilot exercise would initially be advisable in which the behavioural basis of the scales was validated through survey testing. Existing measures may also be useful.
3. Explore the corpus of collaborative scientific and scholarly outcomes of Commonwealth Scholarships and Fellowships through bibliometric or scientometric methods. These approaches can both chart tangible scientific outcomes of CSFP funding and the ways in which networks of collaboration have evolved and work begun under the auspice of (or catalysed by) Commonwealth awards has developed.
4. Target specific strands of the evaluation programme toward the examination of re-integration experiences immediately post-scholarship and the experiences and (potential) contributions of alumni not resident in their home country. These two foci have emerged from the interim analysis as areas in which current evaluation knowledge is lacking and, importantly, in which CSC policy can reasonably expect to be shaped by detailed evaluation.
5. Begin to build a statistical model of outcomes that goes beyond demographic variables. Data transformation to allow more sophisticated statistical analysis and multiple variable modelling, beginning with demographics, would be an appropriate starting point.

1. Introduction

Each year world governments, supranational bodies, and charitable foundations invest large sums in international scholarships for higher education. Through partly or wholly funding academic study abroad, these programmes either attract to host countries or send overseas many thousands of international students. The objectives of such schemes vary – although often not to a great extent – between historic commitments to an international community (Pietsch, 2011), public diplomacy / ‘soft power’ (Atkinson, 2010), and international development and labour market capacity building (Gilboy et al. 2004). All, however, share the common proposition that these goals can be achieved through the systematic support of current and future generations worldwide to undertake advanced academic study.

This report presents the interim results of recent evaluation research examining the outcomes of Britain’s contribution to the Commonwealth Scholarship and Fellowship Plan (CSFP). Based on survey evidence collected across three years of research - including the experiences of alumni almost as far back as the programme’s inception in 1959 – reflections are offered on what has been, and is being, achieved, where data is ambiguous, and what challenges persist for achieving the programme’s objectives.

The report aims to relate a snapshot of outcomes experienced by recipients of CSFP awards, both recent and historical. Conversely, tracking specific alumni over extended periods (i.e. longitudinal analysis) is not the concern of this analysis. Nor is it intended that this analysis should stand alone as an interpretation of the outcomes of Commonwealth Scholarships and Fellowships, but rather in concert with other quantitative and qualitative analyses produced through the evaluation programme.

The interim findings of the report are divided into four sections:

1. Individual capacity
2. Networks and collaboration
3. Impact in developmentally relevant sectors
4. Attribution and the counterfactual

These sections correspond to core aims of the Commonwealth Scholarships and Fellowships: to empower individuals, contribute to the development of international and national networks of expertise, and catalyse economic and social development.

Methodology

The survey design was a non-random population study, generating self-report data from the population of former Commonwealth Scholars and Fellows (‘alumni’). The total population of all alumni was divided into administrative subcategories based on the year in which their Commonwealth Scholarship was awarded. Three surveys have been administered, in the years 2012, 2013, and 2014; these years are referred to as the ‘iterations’ in the report. There were no systematic demographic differences between the survey subcategories beyond their differing award years. As such, the survey data has been treated as one sample collected over three years, not three separate samples of the same population. Presently the survey programme is 60% completed, with the remaining 40% of alumni planned to be surveyed in 2015.

Data were collected on the following broad topics:

- Current employment trajectory
- Perceptions of knowledge and skills gained from CSFP awards
- Involvement in developmentally-relevant activities, such as projects and government policymaking
- Scientific collaboration and international business or personal networks
- Attribution and counterfactual scenarios

Data were analysed and formulated into the thematic areas addressed in this report: 1) Individual capacity, 2) International networks, 3) Development impact, and 4) The counterfactual.

Although much of the analysis includes the full sample, changes in questions between iterations and (in some cases) questions added or omitted mean that data is not available from all survey iterations for every topic. Some aspects of the analysis will thus be listed as ‘all respondents’ but with a sample less than N=1225: in these cases the discrepancy is caused by missing data.

Survey sample

Survey iterations were sent to a population of 20% of all currently registered alumni for whom the CSC held email correspondence details. As three iterations have taken place thus far, 60% of alumni have received the survey. The remaining 40% will be surveyed in 2015, completing the survey cycle.

The survey was sent to a population of 4250 alumni, divided roughly equally across the three survey iterations in 2014 (n=1462), 2013 (n=1416), and 2012 (1372). Approximately a fifth (23%) of survey emails failed - the result of incorrect contact details being used in the survey distribution process due to defunct records - and these are excluded from the calculation of response rates. The aggregate response rate from the remaining survey emails was 37.7%.

Table 1: Aggregate response data

Sample	Respondents	
	1233	37.7%
2012	361	33.7%
2013	445	41.9%
2014	427	38.3%

The survey sample is non-random and also non-stratified, beyond the important restriction that the CSC must have current contact details and permission for their use in order to survey an alumnus. It is likely that this restriction creates a sampling bias insofar as those in contact with the CSC fall into one (or several) of the following categories:

- Recent Commonwealth Scholarship and Fellowship holders
- Retrospectively traced alumni, disproportionately likely to be those for whom contact details were available online or through similar public means or who were referred by a fellow Commonwealth Scholar
- Those who are willing for the CSC to hold (and use) their correspondence details and have not declined further contact, a group which is disproportionately likely to exclude those who had a poor experience (either with the CSC, the UK, or their institution) and would rather not remain in contact

The degree to which this sampling bias is a problem is debatable. Almost all surveys conducted by similar organisations are likely to suffer from sampling bias because reaching uncommunicative or unwilling alumni, particularly using online surveys, is very difficult (e.g. Negin, 2014). It is also likely that through more vigorous effort to keep contact with recent alumni and retrospective tracing of past alumni the sampling bias will diminish: the gap between the population in contact with the CSC and the total award holding population will increasingly narrow. Nevertheless, this potential source of bias should be borne in mind when the results of the survey exercise are considered.

As a consequence of conducting a retrospective survey the period that had elapsed between completing a Commonwealth Scholarship or Fellowship and responding to the survey differed between alumni according to the years in which they held and concluded receiving funding through the CSFP. The elapsed time between the end of the funded scholarship and responding to a survey is referred to here as the ‘survey latency’. The median survey latency was 9 years: relatively short in comparison with the historical timescale of the CSFP (see Perraton, 2009) and the survey latency range of 49 years. The shorter median latency compared to the latency range reflects the overrepresentation of Scholars from the 2000s in the sample, primarily because their contact details were more readily available and likely to be correct. Nonetheless, a latency of 9 years between completing a funded scholarship¹ and having participated in an evaluation

¹ It is worth noting that in some cases – particularly some PhDs – the end of the scholarship may be earlier than the conclusion of studies. A few scholarship recipients continue to study and complete their award after CSFP funding for their studies has concluded. In most cases, however, the end of CSFP funding is synonymous with the end of studies.

exercise is an appropriate time period across which to consider impact. It is important to examine alumni outcomes over a time period that is neither too immediate to reasonably assess long-term impact (either on alumni or of alumni) nor too lengthy for scholarships to be distant features in the respondent's life.

Data analysis

Data have been analysed through descriptive and inferential statistical techniques. Appropriate descriptive statistics have been presented for each facet of the analysis. Unless otherwise stated, percentages reported are always calculated based on those who answered the question under consideration: not the entire survey sample. Three Likert-style questions required conversion between different response scales because the majority of five-point scales were phased out to be replaced by ten-point scales in the more recent iterations of the survey. The scale conversion technique used was developed by Dawes (2002; 2008) and is detailed in Appendix 3 this process.

Inferential techniques are reported with test statistics as footnotes in the main text and supplementary materials included in Appendix 3: Overview of statistical procedures. We use the 'standard' Type 1 error rate (alpha level) of 0.05 (5%) and so accept the risk that five of each 100 such tests are likely to be 'false positives'. A conservative approach of exploring data for notable trends and then applying confirmatory testing has been adopted. Effect sizes have been noted where possible (e.g. Cramer's V). There is no current benchmark for effect sizes in this area of research and, whilst generic concepts of 'small', 'medium', and 'large' effects can be drawn from the literature, no threshold for effect size (below which associations are disregarded) has been set. It is envisaged that the threshold of effects can be considered more closely with further statistical analysis.

For reference, the following reporting conventions (acronyms, symbols, or phrases) are used:

\bar{x}	Arithmetic mean
Grand mean	The arithmetic mean of group of other means
SD	Standard Deviation
N	Total sample (i.e. of those responding to question)
n	Sub-sample (e.g. those of the total sample from a particular region)
p	Significance value (less than 0.05 indicates a significant result)
χ^2, f, h....etc.	Various test statistics
r and Cramer's V	Measure of the magnitude of an effect or association.

It may provide a helpful shorthand for readers of the statistical test results to consider that a 'statistically significant' result indicates a low probability that the findings would occur due to random variation (chance), whilst the effect size (e.g. Cramer's V, r^2) shows the magnitude of the relationship or difference. It is quite possible – and quite likely with samples as large as dealt with in this paper – to have statistically significant effects with very low magnitude and for this reason, we have included effect size measures.

2. Respondent demographics

The distribution of these respondents by decade of award and scheme code is shown in Table 2. For the purpose of both simplifying analysis and maintaining sufficiently large sub-samples for statistical analysis, all Fellows (CE, CG, CH, CJ, CF, and CP) are grouped into the category 'Fellow' within this paper. Although this reduces the granularity of analysis it overcomes problems caused when the proportion of data available from individual Commonwealth Fellowship schemes is low and, more importantly, reflects the generally applicable distinction that Fellows hold short, non-degree awards.

Table 2: Distribution of respondents by scheme code and decade of award

Scheme code	1960s	1970s	1980s	1990s	2000s	Total
CS	16	36	52	76	191	371
Fellow	6	12	32	62	137	249
CR	24	33	40	49	73	219
SS			1	16	172	189
CA		8	20	34	40	102
CD					58	58
CN				2	35	37
Grand total	46	89	145	239	706	1225

Improvements in alumni tracing procedure in the 2000s yields a much larger sample from this decade than previous decades, for whom retrospective alumni tracing was necessary. The CSC has invested in alumni tracing to a greater extent in the latter 2000s and so details for the most recent Commonwealth Scholars and Fellows (from the latter 2000s) have been most easily accessible.

The largest respondent groups are alumni of the CR and CS schemes: general doctoral or Master's scholarship programmes funded by the Foreign and Commonwealth Office (FCO) and Department for International Development (DFID) respectively. As the CR scheme is targeted at highly developed Commonwealth nations (e.g. Canada) the number of awards has not greatly increased into the 2000s, when - although tracing has been more rigorous - the focus of CSFP has increasingly been on the lower-income Commonwealth. The proportion of CS respondents, conversely, is higher for more recent decades. Commonwealth Academic Fellowships (CF), Commonwealth Academic Staff Scholarships (CA), and the Commonwealth Shared Scholarships (SS) – the latter primarily from the 2000s – also contribute substantially to the sample. Relatively few alumni from the Commonwealth Distance Learning Scholarships (CD) are present in the sample, for which there are several possible explanations:

1. CD awards are relatively recent and the proportion of Scholars having finished their course of study is lower than other award schemes.
2. CD awards are coordinated primarily through universities and Scholars have less contact with the CSC, potentially reducing response propensity
3. A separate survey programme is additionally operated alongside Distance Learning Scholarships, also potentially reducing response propensity.

It is expected that forthcoming surveys will yield more data about the long-term trajectories of Distance Learning Scholars.

The ratio of male to female respondents is approximately 2:1, which reflects the historical gender disparity in Commonwealth Scholars. The proportion of female respondents increases in more recent decades, to the point at which the ratio of male to female respondents decreases from approximately 22:1 in the 1960s to under 3:2 in the 2000s. The proportions of male and female respondents for each scheme code are largely reflective of the overall proportions of the sample and the trend towards greater parity in the more recent decades.

Table 3: Gender profile of respondents by decade

Decade of award	Female	Male
1960s	4.4%	95.7%
1970s	15.7%	84.3%
1980s	19.3%	80.7%
1990s	31.0%	69.0%
2000s	41.6%	58.4%
Total	33.6%	66.4%

Finally, the age profile of survey respondents can be broken down into two main components: age at the award of funding and age at the survey (i.e. in 2012, 2013, or 2014). As might be expected, the mean age at the survey date varies in relation to the decade in which a scholarship was held. Many respondents had completed Commonwealth Scholarships or Fellowships decades prior to receiving the current survey and this demands that analysis of cross-sectional data be sensitive to the many years of additional working life of earlier, in comparison to recent, Scholars and Fellows.

Table 4: Mean age at survey date and award year, by decade of award

Decade of award	Age at survey (\bar{x})	Age at award (\bar{x})
1960s	73	25
1970s	64	26
1980s	56	29
1990s	49	32
2000s	39	32
Grand mean	45	31

Within the remainder of the paper the age of respondents at uptake of their Commonwealth Scholarship or Fellowship is usually deployed in quartiles (i.e. categories). The quartiles are calculated from the median and range of ages and fall as follows: Q1 [19 – 25], Q2 [26 – 30], Q3 [31-36], Q4 [37-59]. The virtue of using quartiles is both that information on age can be condensed into broader categories and, importantly, is based on the distribution of ages throughout the survey sample and not arbitrary predetermined age categories.

Geographical data

Generally, this report does not analyse country-level data, but rather uses the UN's geographical regions (UN Statistics Division, 2013): the full regional list is included in Appendix 1: Geographical regions. Two particular variables of interest are citizenship region and residence region: the former defined as the region containing the country in which citizenship is held, the latter the region containing the country of residence at the time of the survey. In a few instances respondents reported having changed citizenship country – e.g. becoming naturalised in another nation – but this was very unusual: most respondents held the same country of citizenship at the time of both their award and survey response.

Table 5: Top ten citizenship regions for respondents (N=1225)

Citizenship region	Respondents
Southern Asia	30.2%
Western Africa	15.5%
Eastern Africa	15.2%
Australia and New Zealand	10.9%
Northern America	8.5%
South-Eastern Asia	5.1%
Caribbean	5.0%
Southern Africa	4.7%
Southern Europe	1.6%
Northern Europe	1.1%

Respondent citizenship region was dominated by Africa and Southern Asia, together accounting for 65.4% of all survey respondents.

Similarly, the majority of respondents currently resided in Africa and Southern Asia. There are minor gendered differences in current region of residence, notably more frequent residence within Northern Europe, Northern America, Southern Africa and the Caribbean for female respondents and a lower residency rate in Eastern Africa. With the exception of Northern Europe, however, this distribution follows the differing citizenship countries for male and female respondents. The percentage of those currently resident in Africa and Southern Asia is lower than that of citizenship in the two regions (65.5%). This disparity could potentially reflect the absence of 2012 survey respondents in the residence data, but further analysis suggests this is not the case: excluding 2012 survey respondents from region of citizenship data *increases* percentile share for Africa and Southern Asia to 66.3%.

Table 6: Top ten residence regions for respondents (N=869)

Residence region	Respondents
Southern Asia	26.6%
Eastern Africa	12.7%
Western Africa	11.7%
Northern Europe	10.8%
Northern America	10.0%
Australia and New Zealand	8.5%
South-Eastern Asia	5.1%
Southern Africa	4.3%
Caribbean	4.0%
Eastern Asia	2.0%

The explanation for the 'missing 10%' is most probably temporary or permanent migration. Several regions have an inflated share of residence when compared with citizenship data, indicating an inward flow of. Of those survey respondents for whom residency data is available (N=869), 19.3% reported currently residing in a different country to that in which they held citizenship. Residency status does not differ substantially for any decade between genders, but does display a distinct temporal trend: the proportion of alumni resident

outside their country of citizenship has increased in more recent decades, although this trend is not statistically significant². Table 7 shows the decade trend data.

Table 7: Residency status by decade of award (N=869)

Decade of award	Resident in citizenship country		Resident in another country	
	Count	Percentage	Count	Percentage
1960s	29	90.6%	3	9.4%
1970s	47	85.5%	8	14.6%
1980s	97	85.1%	17	14.9%
1990s	135	81.8%	30	18.2%
2000s	393	78.1%	110	21.9%
Total	701	80.7%	168	19.3%

At least two questions are generated by changes in residency:

1. Do alumni leave their citizenship country for a period but return later, contributing to an impression that permanent emigration within the group is increasing when what is being reflected is the tendency for more recent alumni to still be overseas
2. Is the oft-discussed phenomenon of 'brain drain' (e.g. Teferra, 2005; Beine, Docquier, & Rapoport, 2008) - in which non-returning alumni contribute to labour flight from lower-income nations –occurring?

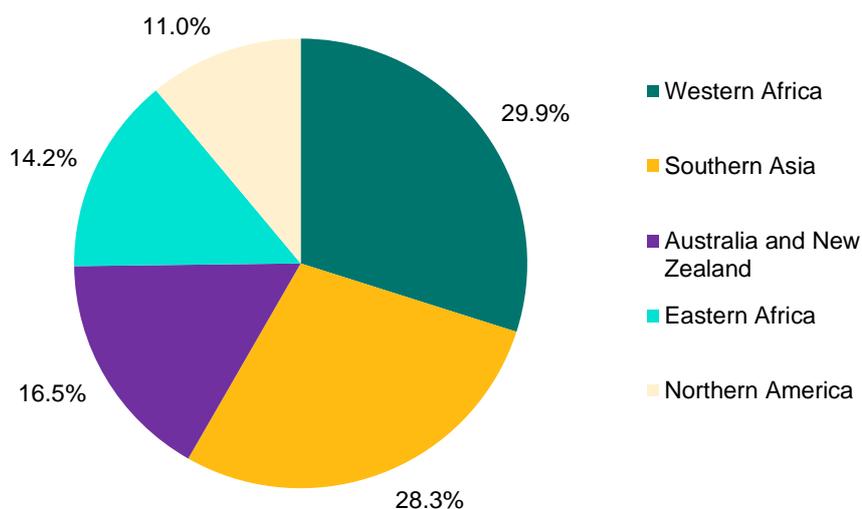
It is very difficult to address the former question with the data available from the current surveys, primarily because no measure has been taken of whether those currently resident in their citizenship country spent further time abroad post-scholarship before returning. Nor does current data does not offer detail on the duration of stay in the current country of residence. It is not possible, for example, to distinguish between a 1970s alumnus who moved to the UK last year and a 1980s alumnus who has been resident in the UK for 20 years: both simply appear in the data as non-resident in their citizenship country and current residents of the UK (Northern Europe). Beyond speculating as to the plausibility of the pattern - particularly for Scholars in the 2000s who may, for instance, be internationally mobile in their post-doc period – no detailed commentary can currently be offered on whether the survey data is disproportionately identifying early-career mobility or 'labour flight'.

The latter question, of brain drain, is conceptually complex and should consider more than geography alone. Questions must also be answered about the contribution that non-resident citizens make to their home country (such as through remittances: Adam and Page, 2005), the possibility of multiplier effects on labour capacity from additional time abroad, and a variety of other important issues. It is also important to recognise that a temporal trend indicating higher recent residency outside citizenship countries is predictable insofar as the focus of CSFP activities have shifted away from higher income countries (e.g. Australia, Canada) and toward lower income countries (e.g. Uganda, Nigeria) that are more susceptible to 'brain drain'. With these caveats, however, it is possible to break down the data to offer some insight.

Initially, the constitution of the group not resident in their citizenship country can be examined to indicate from where emigration has taken place. The majority of those who are not resident in their country of citizenship originate from Southern Asia, Western and Eastern Africa. Australia and New Zealand is very slightly overrepresented in those who are currently living outside of their country of citizenship and Northern America slightly underrepresented. The majority of those who are non-resident in their country of citizenship originate from regions with high proportions of low (or lower-middle) income countries.

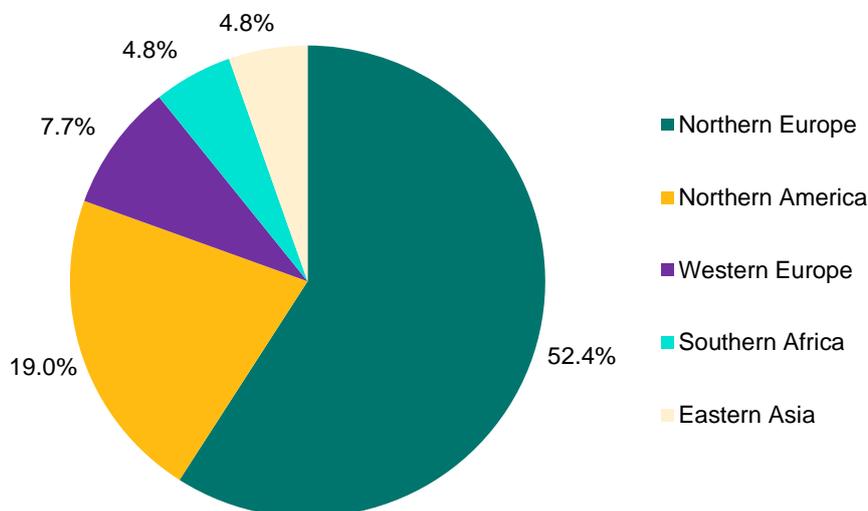
² Pearson Chi Square: $\chi^2 = 6.486$, $DF = 4$, $p = 0.166$

Figure 1: Five highest contributing citizenship regions for alumni not resident in country of citizenship



Most of those living outside of their citizenship country are resident in Northern Europe, with a substantial minority in Northern America. The former region experienced almost 10% higher residency than citizenship amongst alumni: over half of those currently non-resident in their country of citizenship were resident in Northern Europe. Of those who were currently resident in Northern Europe (N=94), only three were in countries other than the UK. Similarly, the difference in Northern American citizenship and residency is predominately due to 37 respondents resident in the United States of whom only four (11%) are (naturalised or dual) citizens.

Figure 2: Five highest current residency regions for alumni not resident in their citizenship country



The beneficiary regions from migration thus differ considerably in composition to those regions contributing the migrants. Northern Europe, Northern America, and Western Europe are dominated by high-income nations, many of them OECD members. Of those non-citizens currently residing in Southern Africa, all are in South Africa: an upper-middle income country. Similarly, of those currently resident in Eastern Asia (n=8), one is resident in China and the remainder in high income countries (Japan, Hong Kong SAR, and the Republic of Korea)

International benchmarks and residency flow

Nation-specific Human Development Index (HDI) data is calculated by the United Nations Development Programme (UNDP), most recently using data from 2012 (UNDP, 2013), by which countries can be ranked in order of relative performance against development indices. By analysing HDI data about the countries in

which alumni are resident it is possible to make some initial interpretations of residency flow. The HDI rank and score is available for 186 nations in the UNDP's 2012 index. Various sub-indices make up the HDI and in addition an inequality-adjusted HDI is also calculated, although for simplicity the base 2012 HDI score is used here.

The relative shift in HDI (better or worse) between citizenship country and current residence country was calculated for each respondent currently resident outside their citizenship country. Of this cohort, 76.8% (n=126) moved to countries with a better HDI rank, against the remaining 23.2% (n=38) migrating to worse ranked countries. The median HDI change amongst the cohort was an improvement of +110 ranks.

The data becomes further skewed when the destinations of those moving to worse-ranked HDI countries are considered. Of these alumni, only two were currently resident in low-income countries (Kenya and Rwanda) and a further two in lower-middle income countries (India and Nigeria). The remainder were resident in upper-middle income countries (South Africa, Thailand) or high income countries (UK, Germany, Switzerland, Denmark). Further, some of those who were currently resident in the low and lower-middle income countries that were not their citizenship countries had migrated from countries with relatively similar HDI profiles, such as from Ghana to Kenya or Cameroon to Nigeria. The median HDI rank change amongst the alumni for whom their residence country had a worse HDI rank than their citizenship country was -20 ranks: a considerably smaller shift than the +124 ranks for the alumni whose residence country had a better HDI rank than their citizenship country. The variation in HDI rank change between the groups is statistically significant³. The main reason for negative HDI change thus appears to be the relatively better HDI ranking of Australia, New Zealand, and Canada against the UK, rather than a movement from highly developed, high income nations to less-developed, low income nations.

A similar picture emerges if Polity 4 data - relating to the relative democratic or autocratic tendencies of a country's governance structure (Centre for Systemic Peace, 2014; Marshall, Gurr, & Jaggers, 2014) – is compared. The relative shift in Polity 4 score (higher or lower) was calculated for each respondent not currently resident in their citizenship country. Of this group, 69.1% (n=114) had migrated from countries with worse Polity 4 scores to those within better scores, against only 7.9% (n=13) who had migrated to worse scoring countries and 23% (n=38) for whom the Polity 4 score was the same for both citizenship and residency country. Unlike in HDI ranking, Australia, New Zealand, Canada, and the UK share a Polity 4 score, meaning that the majority of those in the worsening HDI change group were in the 'unchanged' Polity 4 group. The overall picture presented by changes in Polity 4 score is one of migration from less democratic to more democratic regions.

Returning to the HDI values, the calculation of relative HDI flow would seem to imply that 76.8% of alumni non-resident in their citizenship country (i.e. those moving from worse HDI ranked to better HDI ranked countries) might be considered, in crude geographic terms at least, as possible 'brain drain'. In terms of the sample, this would be 126 of the 164 non-resident citizens, representing 10.3% of the total survey sample. However, this figure would need to be adjusted for the absence of country of residence data in the 2012 survey iteration. If the same rate of non-residency is modelled for the missing 2012 data it yields a further 82 alumni estimated to be resident outside of their citizenship country⁴. Applying the 76.8% calculation determined above, a further 63 would be added to the possible 'brain drain' cohort, resulting in a total of 189 or 15.4% of the survey sample.

³ Mann-Whitney test, positive HDI change group (n=38) and negative HDI change group (n=126): W=741, p<0.001, r (effect size) = 0.73

⁴ This is calculated as the mean of the non-residency group for the two survey years for which data is available, 2014 (n=80) and 2013 (n=84).

3. Individual capacity

Like the majority of international scholarship schemes, a key marker of success for CSFP is the enhanced capacity of individual recipients. The progression of individuals into full-time employment and successful careers is a specifically individual outcome of a successful scholarship, although it is anticipated, of course, that persons in such positions are better placed to contribute to the economic, social, and political wellbeing of a country and thus carry the catalytic effect of the Commonwealth Scholarship or Fellowship. This section thus examines pre- and post-scholarship career trajectory and more abstract concepts, such as knowledge and skills.

Career trajectory

Information on alumni careers can be separated into the periods immediately prior to and following the scholarship and an alumnus' current employment activities. It is important to remember that the median survey latency was 9 years and so these two periods – immediately post-scholarship and currently – may be distinct phases of an alumnus' career.

Before and after a Commonwealth Scholarship or Fellowship

Prior to undertaking their Commonwealth Scholarship almost all candidates (92.3%) were employed in full-time paid work, with the small minority remainder predominately in part-time paid work (5.1%). In addition, approximately 22.5% were studying in some capacity, primarily whilst also in paid employment. For those on fellowship schemes and those nominated by their university employer paid work (including a small cohort self-employed) was universal. The majority of scholarship recipients were employed in the higher education sector, with a significant minority in the public sector or government. Relatively few of those who took up scholarships were working in either private business or the non-governmental sector.

Table 8: Sectors of employment for those employed pre-award, N=708

Pre-award job sector	Respondents
Higher Education Sector	51.1%
Public Sector	26.8%
Private Sector	13.4%
Non-Governmental Sector	8.1%
None of the above	0.6%

Employers were perceived to be highly supportive of application to the CSFP. The mean rating of employer supportiveness (on a ten-point scale) for the sample was $\bar{X}=8.37$ indicating that few of those applying for a Commonwealth Scholarship or Fellowship felt that their employer did not at least approve of - and in many cases actively aided – their choice. Mean ratings did not differ significantly by gender but, as Table 9 indicates, those within the educational sector particularly felt that they enjoyed substantial support from their employers.

Table 9: Mean rating of employer supportiveness for the five most frequent professional fields (N=706)

Pre-award profession	Respondents	Employer support rating (\bar{x})
Teaching and Education	362	8.85
Science, Research, Engineering and Technology	139	7.79
Health	62	7.71
Managers, Directors and Senior Officials	58	7.71
Business, Media and Public Service	43	7.32

Many of those engaged in teaching and educational activity will have been nominated for scholarships through their employer (e.g. on Academic Staff Scholarships) and thus the high level of support follows logically. Yet in other professions high mean ratings of employer support are also present: there were few who, for example, reported that they had to resign their post to pursue their Commonwealth Scholarship.

Most respondents (63.8%) who were employed pre-scholarship indicated that they had returned to the same employment post. This varied substantially both by employment sector and by scholarship scheme (which is linked to employment sector in some cases, e.g. CA). Those on scholarship schemes in which employers were involved in the application process, for instance, had a much higher rate of return to their pre-scholarship employment posts.

Table 10: Respondents returning to pre-award employment posts (N=1225)

Scholarship scheme	Returned to post
Fellow	96.3%
CN	81.5%
CA	81.2%
CS	62.9%
CD	62.5%
SS	34.7%
CR	13.2%
Sample overall	63.8%

Those who held CR scheme scholarships had the lowest rate of return to previous employment (13.2%) and this is also reflected in regional differences in which rates of return are lower in Australia and New Zealand and Northern America. Return rates also differed substantially by sector. Higher rates of return to previous employment for educational professionals are largely based on the involvement of employers in the application process for many academic staff who held scholarships (e.g. Academic Fellowships; CA Scholarships). The situation is similar for health professionals, of whom approximately 35% were Fellows, all of whom returned to their previous post after completion of their Fellowship in the UK. Within other professions return rates varies and for some (e.g. administrative professions) more data is need to draw any reliable conclusions.

On returning to their posts the majority received no immediate financial improvement; however, 44.6% did enjoy a salary increase and for 22.2% this was over a ten per cent increase. Salary increases were somewhat more common amongst those nominated by universities under the CA scheme, with 65% reporting an immediate salary improvement of some magnitude. For those on Fellowships, conversely, an immediate salary increase was gained only in 28.9% of cases. Within one year of returning to their post, 67% of alumni had secured an employment promotion. Scholars from the Commonwealth Distance Learning (CD) scheme – who tend to spend their scholarship duration simultaneously employed – and CA scheme secured promotions to a greater extent (80% and 78.3% respectively). Conversely, fewer Fellows received promotions within a year (54.1%). Interestingly, differences in promotion rates between sectors were insubstantial, despite Academic Staff Scholars reporting a higher rate of immediate salary increases. As might be expected, the majority (92.4%) of those who received a promotion within 12 months also received an accompanying salary increase.

Table 11: Respondents returning to pre-award employment posts for the five most frequent professional fields

Pre-award profession	Returned to post
Teaching and Education	80.7%
Health	77.4%
Managers, Directors and Senior Officials	53.5%
Science, Research, Engineering and Technology	43.9%
Business, Media and Public Service	37.2%
Grand Total	64.7%

For those who were not employed prior to the Commonwealth Scholarship, or did not return to the same employment post upon completion, 81% secured paid employment within one year of their return. This figure does not vary greatly by gender, scholarship scheme, or region of citizenship. Alumni indicated that their scholarship had contributed substantially to attaining their employment: the mean rating (on a ten-point scale) for contribution was $\bar{X}=8.04$ and differed very little between genders, decades in which an award was held, or scholarship schemes. Some minor regional differences were evident, such as a higher rating of contribution from Eastern African alumni ($\bar{x}=9.06$) and somewhat lower rating from Caribbean alumni ($\bar{x}=7.67$), but these data require further detailed analysis to provide a satisfactory interpretation of the differences observed.

Finally, all those who had returned to or attained employment within one year were asked to what extent their scholarship had contributed to achievements *beyond* one year. The sample mean rating (on a ten-point scale) was $\bar{X}=8.08$, indicating very high regard for the contribution made by the Commonwealth Scholarship. As with perceptions of contribution to gaining employment within 12 months, some minor variations are evident between scholarship schemes (notably slightly lower ratings from fellows) and geographical regions, but none fundamentally differ from the very high ratings assigned to the contribution of a Commonwealth Scholarship or Fellowship to future successes.

Current employment

At the time of responding to the evaluation survey, 92.9% of respondents were currently employed or had retired. Disambiguated, 79.5% were in full-time work, a further 6.4% working part time or self-employed, 2.48% working in some capacity whilst studying, and 4.6% had retired. As might be expected, those who had retired were predominately from the earlier decades (i.e. 1960s, 1970s). Continuing studying was more commonplace amongst those holding awards in the 2000s and Commonwealth Shared Scholars (SS); however, these are still a small minority in comparison to those working full-time.

Table 12: Sector of employment for alumni currently working or having retired

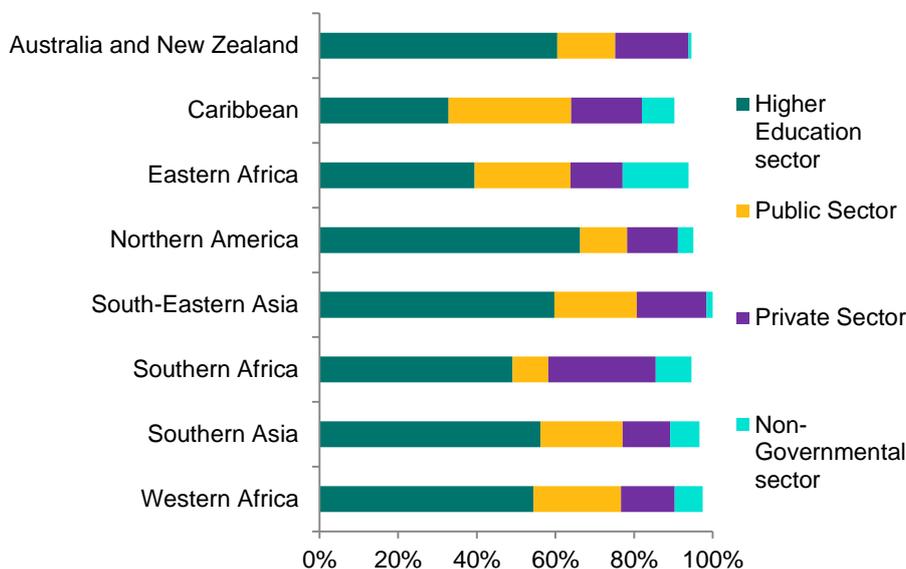
Current job sector	Respondents
Higher Education Sector	53.7%
Public Sector	19.9%
Private Sector	14.7%
Non-Governmental Sector	7.3%
Other	2.3%

Most alumni currently work in the higher education sector. No substantial differences in employment sector by gender were observable, but employment sectors varied by scholarship scheme in several respects. Firstly, and as may be anticipated, those who had held Academic Staff Scholarships (CA) currently worked predominately (although not exclusively) in the higher education sector. A slightly greater proportion of Split-site Scholars (CN) currently worked in the higher education sector than did Academic Staff Scholars.

Conversely, very few CD Scholars worked in higher education. More generally, relatively few alumni worked in the private sector or the non-governmental sector.

Employment sector also varied substantially by citizenship region, as Figure 3 demonstrates.

Figure 3: Sector of employment by citizenship region (excluding regions with N<30 and ‘other’ responses)



Lower rates of employment in higher education in the Caribbean and higher rates of employment within the non-governmental sector in Eastern Africa stand out as notable variations. More detailed analysis is required to ascertain whether regional trends in post-scholarship employment reflect national employment trends and/or have impacted on developmental outcomes.

Excluding their current position, the mean employment positions held post-scholarship was $\bar{x}=2.05$ positions, and the mean promotions received was $\bar{x}=1.74$. The mean for female alumni was slightly lower for both variables, although only for the latter (number of promotions) was this statistically significant⁵. If attainment of positions and promotions is disaggregated by region of citizenship (excluding regions with fewer than 30 respondents), Respondents from Australia and New Zealand and Northern America reported markedly higher amounts of positions and promotions. However, no statistically significant difference was evident between regions on either measure if we control for differences in survey latency. Whilst both decade of award and region of citizenship were correlated with amount of positions and promotions reported, decade in which an award was held was a stronger correlate, with higher frequency of positions and promotions the longer an alumnus had been in the labour force. Viewed in this light, overall regional variations are much more likely to be a function of disparities in survey latency than reflecting any interesting regional difference in experiences.

In addition to their primary paid employment many respondents were involved in additional activities ranging from further study to part-time consultancy. Consultancy activities were undertaken regularly by about a fifth of the sample, with alumni working within the non-governmental and higher education sectors reporting slightly higher rates of consultancy. Similarly, voluntary work was undertaken by approximately a quarter of the sample. Additional part time work was less usual, however, regardless of the sector in which the respondent was primarily employed.

⁵ Full statistical results for this element of the analysis can be found in appendix 4

Table 13: Additional activities currently undertaken by alumni (N=869)

Additional activity	Respondents
Voluntary work	26.0%
Consultancy	21.6%
Study	11.7%
Care	11.4%
Part-time work	6.5%
Self-employment	5.6%
Other	3.4%

Perceived gains from Commonwealth Scholarships and Fellowships

Beyond the perception of contribution to securing post-scholarship qualifications and employment, alumni reported their scholarship gains more broadly. The topics for these questions covered both the gains from the study experience itself (e.g. accessing equipment that would otherwise have been unavailable, increasing specialist knowledge) and gains in post-scholarship application of knowledge (e.g. making changes in the workplace or teaching others).

Ten topical statements were posed and answered on a five-point Likert scale. A grand mean of $\bar{X} = 4.36$ across the 10 statements was calculated. The grand mean falls between ‘agree’ and ‘strongly agree’ points of the measurement scale, indicating having secured substantial gains. Minor variations in the grand mean are observable between the different demographic categories. Regional differences, for instance, are statistically significant⁶, although in all cases the grand mean remains between the ‘agree’ and strongly agree’ points on the measurement scale.

Figure 4: Scholarship gains grand mean, by citizenship region (excluding regions with N<30)



The most notable differences are the lower mean gains ratings of Australia and New Zealand and Northern America, both below the sample grand mean of $\bar{X}=4.36$. In both cases, however, the difference in means is small. A similar effect is evident in variations by scheme code - also statistically significant⁷ - in which CR alumni reported disproportionately low ratings in comparison to other scholarship schemes. More generally, male alumni reported greater gains than female alumni. Whilst the gendered difference is statistically

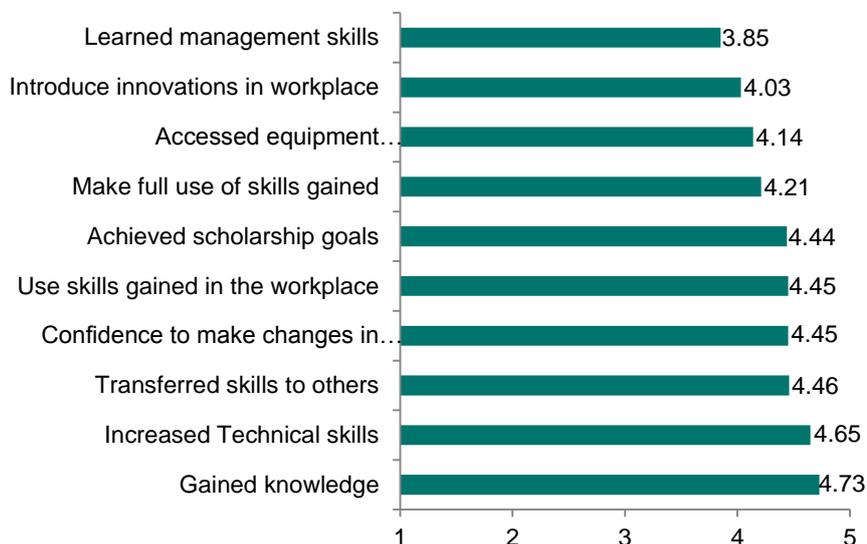
⁶ Kruskal-Wallis One-Way Analysis of Variance (Factor = Region of citizenship (excluding N<30); Response = scholarship gains grand mean): H = 36.20, DF = 7, p<0.001.

⁷ Kruskal-Wallis One-Way Analysis of Variance (Factor = scheme code; Response = scholarship gains grand mean): H = 27.53, DF = 6, p<0.001.

significant⁸ it too represents a small magnitude of variation, a difference in mean of $\bar{x}=4.38$ for male alumni and $\bar{x}=4.32$ for female alumni (a small effect size of $r = 0.078$). No differences were evident between decades in which an award was held.

Examining the ten topical statements individually it is clear all are rated positively and, with the exception of 'learning management skills', all fall between the 'agree' and 'strongly agree' points on the scale.

Figure 5: Mean rating by scholarship gains category



Mean ratings are particularly high for those categories relating to gaining skills, teaching them to others, and applying them in the workplace. The efficacy of labour market capacity building through the CSFP thus seems to be well supported here, although with the caveat that these are non-triangulated self-report measures.

Having gained knowledge was the highest rated category both overall and almost always when data is disaggregated by demographic variables. The exception being a marginally higher rating for increasing technical skills amongst Eastern African alumni, although the mean rating for having gained knowledge is still as high for Eastern African alumni as the sample mean. Learning management skills was the only category in which the mean rating was located between 'neutral' and 'agree' on the measurement scale. The ratings for learning management skills also vary by decade - the trend of more recent Scholars and fellows reporting higher ratings is statistically significant⁹ - and by region: alumni from Australia and New Zealand and Northern America reported lower ratings for learning management skills. However, because alumni from these regions make up a larger proportion of those holding awards in earlier decades it is difficult to interpret the trend. It is possible, for instance, that Scholars in earlier decades (especially the 1960s) placed lesser emphasis on learning management skills, which in turn is reflected in ratings from that period. Alternatively, Scholars from highly developed, higher income Commonwealth states may have placed lesser emphasis (or undertook courses with lesser emphasis) on learning management skills and this is reflected in the ratings for decades in which they were more numerous represented.

A statistically significant gender difference is evident in ratings of capacity to introduce innovations in the workplace, with male alumni indicating higher capacity than female alumni¹⁰. The most immediate interpretation of this disparity is gendered disadvantage in employment, but it is important to note that for both male and female alumni the rating for introducing innovations in the workplace is relatively high ($\bar{x}=4.11$ and $\bar{x}=3.88$ respectively), it is merely that the rating offered by male alumni is greater still. Further and more detailed analysis, going beyond demographic variables, would be necessarily to provide a satisfactory explanation for such differences.

⁸ Mann-Whitney test, Male scholarship gains grand mean (n=812) and female scholarship gains grand mean (n=412): $W=513410$, $p=0.006$, r (effect size) = 0.08

⁹ Kruskal-Wallis One-Way Analysis of Variance (Factor = Decade of award; Response = learned management skills mean rating): $H = 51.79$, $DF = 4$, $p<0.001$.

¹⁰ Mann-Whitney test, Male (n=808) and female (n=406) introducing innovations mean rating: $W=511915.5$, $p=0.0001$, r (effect size) = 0.105

Post-award qualifications

After completing their Commonwealth award approximately 38% of alumni reported undertaking further qualifications. Of the sample, 25% undertook further academic study, whilst 25% undertook professional qualifications, and 12.5% completed both.

Table 14: Academic qualifications pursued post-award, N=226

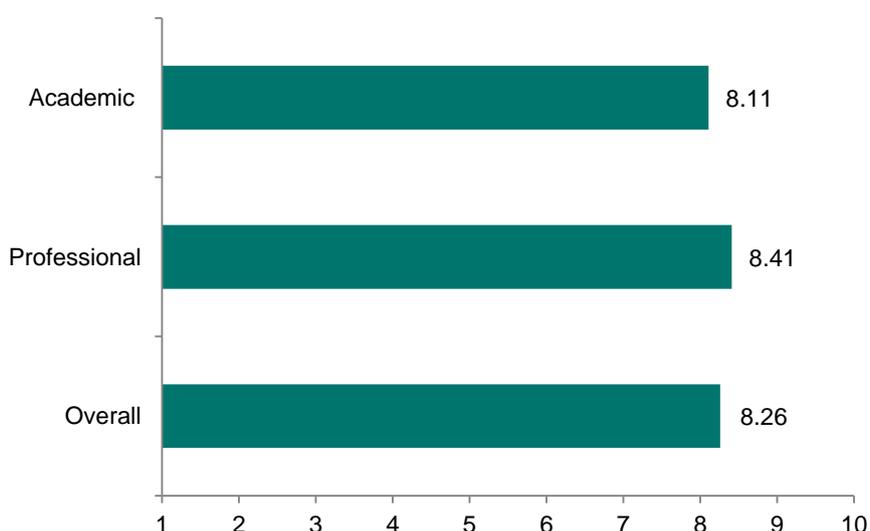
Academic qualification	N	%
Doctorate	117	51.8%
Taught Master's	46	20.4%
Postgraduate diploma/certificate	43	19.0%
Research Master's	9	4.0%
Clinical training	6	2.7%
Undergraduate	5	2.2%

Professional qualifications varied greatly, but chartering qualifications or fellow status in guilds or representative bodies are indicative of those commonly reported. For those undertaking further academic study the most common purpose was to obtain a doctorate. Other postgraduate study – both taught Masters' and postgraduate diplomas or certificates – accounted for about 40% of further qualifications, although research Masters' were completed by very few alumni. Similarly, clinical training was infrequently pursued: presumably as such training would only apply to those in the medical professions. Several alumni undertook additional undergraduate study, although it is unclear whether this was as part of diversification of an employment role, personal interest, or a career change.

The most common destinations for further study were Northern Europe and Northern America; particularly for academic qualifications. Doctorates, in particular, tended to be pursued in Northern Europe, with 56.4% of alumni who pursued such an award undertaking it in the region. Locations for the study of professional qualifications varied to a greater extent, although Northern Europe and Northern America remained the top destinations.

For both academic and professional qualifications, respondents indicated strongly that the prior Commonwealth award had contributed significantly to their attainment. Of those who studied further courses, chartered professionally, or pursued fellowships of various kinds, there is very strong support for the catalysing role played by the UK CSFP award they had previously received.

Figure 6: Mean rating for CSFP contribution to subsequent qualifications gained, n=332



Summary and conclusions

Prior to undertaking their Commonwealth Scholarship or Fellowship almost all recipients were in paid employment; the majority in the higher education sector, although with a significant minority within the public or governmental sector. Employers were generally perceived to have been very supportive of application to the CSFP, especially those within higher education. Most alumni returned to the post they held prior to their scholarship, gained promotion within one year (with an accompanying salary rise). For alumni who did not return to their previous employment (or who were not employed pre-scholarship), 81% secured a job within one year. The Commonwealth Scholarship was widely perceived to have been instrumental in achieving this new post. All those who either gained employment or returned to their post rated the Commonwealth Scholarship or Fellowship as a significant contributing factor to their future successes.

Employment advances such as promotions and salary increases within one year were experienced at a higher rate by Distance Learning Scholars and Academic Staff Scholars (up to 80%) and a lower rate by Fellows, likely reflecting that Fellowships are shorter professional development activities and are less likely to be critical requirements for institutional progression (as a doctorate, for instance, might be). This is an important aspect of the scholarship scheme profiles to consider when interpreting the data on individual outcomes. It is not anticipated, for instance, that labour market trajectory is entirely transformed by a three-month fellowship in the same manner as it might be from a three-year doctorate and so relatively lesser gains by the Fellows cohort should be seen in this light.

After completing their scholarship approximately 38% of alumni studied further qualifications, either immediately or at a later stage in their careers. Just over half of those pursuing further academic qualifications undertook doctorates and so their Commonwealth Scholarship was an intermediate step in their educational journey. Alumni indicated that their Commonwealth Scholarship was a significant help in attaining subsequent qualifications beyond the degree they were funded to study in the UK.

At the time of the surveys, around 93% of alumni were in paid employment or had retired. Similar to pre-scholarship employment, the majority were working in the higher education sector with a significant minority in the public sector: although regional variations (such as lower higher education employment in the Caribbean) should be noted. Alumni held an average of just over two (2.05) employment positions between completing their scholarship and participating in the survey, with an average of 1.75 promotions within the same time period. The best predictor of both variables that was examined in the analysis was decade of award, likely as a proxy measure for time in the labour market post-scholarship. Interpreting positions and promotions data is difficult because career trajectories depend to a significant extent on labour market structure in countries and employment sectors. As the Global State of Young Scientists report (Friesenhahn & Beaudry, 2014), for instance, has noted, early career academics in some countries go through a series of temporary post-doctoral positions before finding longer term contracts, whereas in other countries they move more or less immediately into permanent faculty jobs. As such, greater numbers of positions may reflect the preponderance of temporary posts, greater opportunities for mobility (e.g. between numerous high quality higher education employers), or one of a host of other possible explanations: particularly as a large majority of respondents worked in the higher education sector and/or as science research professionals.

Some alumni were also involved in activities additional to their primary employment, notably voluntary work and consultancy: the latter particularly for those working within the public and higher education sectors. Although the number of alumni involved in additional activities was not insignificant, it was also not high and did not represent a majority of respondents. This relatively low-level of additional activities suggests that Development-related work (see Section 5) has been conducted predominately through primary employment and not additional activities. Other analysts have commented on the propensity for public sector and university employees to also be involved in consultancy activities (e.g. Webb, 2009) and so it is unsurprising that this trend is reflected in the CSC evaluation data, although it should be noted that for neither sector was regular consultancy more widespread than 30% of respondents.

Finally, there was a widespread perception amongst alumni that substantial gains had been made both in developing and applying skills. Male alumni tend to report higher ratings of scholarship gains than female alumni, although the difference is relatively small and should be considered in the context of high reported gains for both groups. It was evident that gaining, applying, and propagating knowledge were the strongest areas of scholarship gains, providing evidence for the labour market capacity building function of scholarships. Lower ratings of the capacity to introduce innovations in the workplace may reflect some of the difficulties alumni can often face on returning to employment post-scholarship, particularly if managers are reluctant to endorse ideas imported from overseas study, resources are lacking to underpin innovative practice, or institutions display particularly high levels of obduracy (see Negin et al., 2014). Evaluations have also suggested that 'Institutional brain drain' – the migration of returning scholarship alumni away from pre-scholarship employment positions - has been influenced by the pursuit of employment both with better prospects and the potential to apply knowledge and transform institutional practices (Webb, 2009: Ramboll

Management consulting, 2012: van der Aa, Willemsen, & Warmerdam, 2012). It is important to note, however, that even though capacity to introduce innovations in the workplace had the lowest mean rating it was still rated positively: it is merely the 'least positive' of an array of scholarship gains.

4. Networks and collaborations

Another important outcome of Commonwealth Scholarships and Fellowships is the maintenance of links between alumni and both the UK and Commonwealth institutions internationally. In some cases it is anticipated that such links may lead to collaboration across the Commonwealth and, particularly, between the UK and lower-income Commonwealth states. The extent to which alumni maintained contact with groups within the UK and internationally with whom they formed associations during their Commonwealth Scholarship has been explored within the surveys. Separately, and more specific to academic collaboration, alumni involvement in joint publications and/or collaboration leading to research as a result of their scholarships has been examined.

Contacts maintained

Maintenance of contacts between alumni and UK groups has been measured on a four-point ordinal scale, presented to respondents as follows:

1. I do not maintain contact with this group
2. I receive emails / correspondence but do not contact the group myself
3. I occasionally communicate with this group
4. I regularly communicate with this group

Each level of the scale has been accorded a value of between 1 and 4, where 1 was 'I do not maintain contact with this group' and 4 was 'I regularly communicate with this group'.

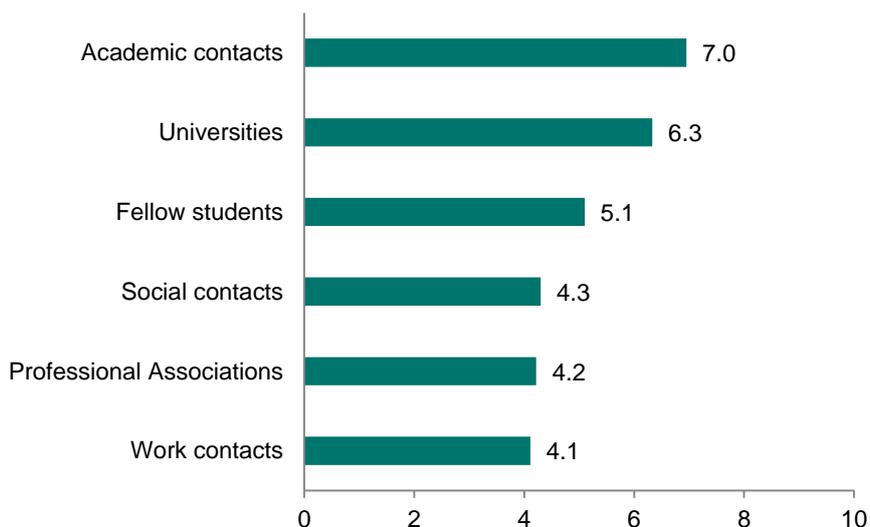
For most UK groups the median scale rating is 3, indicating that occasional contact was (actively) maintained. This median drops to 2 – receiving emails or other correspondence only ('passive' contact) – for UK professional associations and work contacts. Numerous regional variations are evident, but none indicate an overall trend of lower or higher levels of maintained contact in particular regions. Disaggregating data by scholarship scheme, however, shows that CD alumni reported lower median contact ratings in several areas: most notably social, work, and professional associations in the UK. Fellows too reported lesser levels of communication with social contacts in the UK. These tendencies are expected insofar as CD alumni, having been distance learners, did not spend substantial time in the UK: academic and institutional contacts are thus far more likely to be the primary ties these alumni maintain. Fellows, have a short tenure in the UK (focused on professional activities) And it seems to follow then that abiding social links are less likely to have formed than during protracted postgraduate study programmes.

Table 15: Median scale ratings for communication with UK contacts

UK group	Median rating
Universities	3
Academic contacts	3
Fellow students	3
Social contacts	3
Professional Associations	2
Work contacts	2

For the most recent survey iteration those respondents indicating that they maintained any contact with a group rated the perceived contribution of these contacts to their professional development.

Figure 7: Mean ratings for level of contribution made by UK contacts to professional development



Contribution ratings are relatively low, with only two groups (academic contacts and universities) rated above the scale midpoint (5.5) for contribution. Ratings are lower still for Distance Learning Scholars: as low as $\bar{x}=2.5$ for UK work contacts. It is important to note that the structure of the survey means that only those who noted they maintained some relationship with UK work contacts would have answered this question and so it is evident that not only do CD alumni maintain UK contacts to a lesser degree but also those that do maintain contacts perceive them to contribute relatively little to their professional development. A small difference between ratings given by male and female alumni is evident, but this is not large enough to indicate a substantial divergence. Ratings are also lower for alumni who hold citizenship in the Caribbean, although no immediate explanation is forthcoming for this should be the case.

Overall, the impression given is that contacts maintained with the UK are not very influential in professional development and achievements, although it may be difficult to effectively measure what ‘contribution’ means beyond collaborative activity. This disposition does reflect the ranking of contacts as the least important contributing factor to professional success, discussed later in the report.

Respondents were also asked about their level of contact with both Commonwealth specific (e.g. Commonwealth Association of Architects) and other international organisations. Data is available on Commonwealth contacts for all survey iterations, but only on other international contacts for the 2014 iteration when the survey structure was disambiguated to facilitate this facet of the analysis. The scale for international contacts differs slightly to that used for UK contacts, assessing whether contacts were made and to what extent they were maintained:

1. No contact made
2. Yes, but I did not maintain contact
3. I receive emails / correspondence but do not contact the group myself
4. I occasionally communicate with this group
5. I regularly communicate with this group

As before, each level of the scale has been accorded a value, where 1 was ‘No contact made’ and 5 was ‘I regularly communicate with this group’.

Unlike UK groups, contact with international organisations was far less widespread. The median scale rating for Commonwealth organisations was 2, whilst for other international organisations it was 1, indicating either lapsed contact or no contact made at all. Regional variations are also more substantial for international contacts.

Table 16: Median scale ratings for communication with international organisations, by citizenship region

Citizenship region	Median contact level maintained	
	Commonwealth organisations	Other international organisations
Australia and New Zealand	1	1
Caribbean	3	1
Eastern Africa	2.5	2
Northern America	1	1
South-Eastern Asia	2	2
Southern Africa	1	1
Southern Asia	2	1
Western Africa	2	2

Higher ratings of contact maintained by Caribbean citizens with Commonwealth organisations is particularly interesting in light of the generally lower contact those same citizens maintained with the UK (and lower perceived contribution of such contact to professional development). Caribbean Scholars reported links that, whilst still predominately bilateral, also include multilateral connections (through international organisations). For some alumni holding citizenship in some regions (e.g. Northern America) the medians indicate that international links were never made, let alone maintained.

Numerous variations by scholarship scheme were evident. Ratings given by CD alumni were high and indicated a median of 'passive contact' with Commonwealth organisations and occasional active contact with other international organisations: the latter being the highest rating for that variable for any respondent group. However, it is possible that the ratings shown are the product of high variability in small samples (For CD respondents, n=15) and a more reliable corpus of data will be available after the survey cycle is completed in 2015.

Table 17: Median scale ratings for communication with international organisations, by scholarship scheme

Scholarship scheme	Median contact level maintained	
	Commonwealth organisations	Other international organisations
CD	3	4
CN	3	1.5
CS	3	1
CA	2	2
Fellow	2	1
SS	2	2
CR	1	1

An alternative approach to measuring contacts maintained is to analyse the proportion of the sample that indicated they occasionally or frequently communicated with the group or organisation, essentially the proportion who maintain 'active contact'. This was calculated as the percentage of the sample that indicated the highest two scale points (3&4 or 4&5 for the UK groups and international links questions respectively) in their response.

Table 18: Proportion of respondents actively maintaining contact with UK groups

UK group	Active contact maintained (%)
Academic contacts	67.4%
Fellow students	66.2%
Social contacts	61.5%
Universities	54.5%
Work contacts	35.1%
Professional Associations	33.7%

As the sample medians indicated, academic colleagues and social contacts (both fellow students and other social contacts) were the most actively maintained connections, with somewhat fewer alumni maintaining regular contact with a UK university, and fewer still with work contacts or a professional association. There are, however, substantial variations between scholarship schemes.

Table 19: Proportion of respondents actively maintaining contact with UK groups, by scholarship scheme

UK Group	Scholarship scheme						
	CA	CD	CN	CR	CS	Fellow	SS
Universities	69.3%	31.6%	56.8%	64.4%	50.4%	57.2%	46.2%
Fellow students	70.1%	60.3%	67.6%	77.2%	66.0%	46.0%	77.7%
Academic contacts	85.6%	49.1%	78.4%	70.8%	62.8%	68.1%	65.8%
Work contacts	38.2%	9.1%	32.4%	51.6%	30.3%	41.2%	24.9%
Social contacts	60.4%	29.8%	64.9%	80.7%	63.6%	46.5%	63.1%
UK Professional Associations	39.1%	20.4%	33.3%	29.1%	35.2%	41.3%	27.9%

Distance learners (CD), for instance, maintained active contact with fewer UK bodies than most other scholarship scheme alumni. Academic Staff Scholars (CA) continued active contact with their academic and university contacts to a greater extent than other alumni and, given the focus of that scholarship scheme, this is likely to translate to active collaboration in some cases (see below). These patterns certainly might be expected given the profiles of the scholarship schemes. The high rates of maintaining active communication with academic and social/student contacts reported by CR (developed Commonwealth) scheme alumni is less easily explained by the scholarship scheme itself, but demonstrates the potential legacy of social exchange as a result of the CSFP¹¹.

At the international level, few alumni actively maintained contacts: only 17.8% reported active communication with Commonwealth organisations and 21% with other international organisations. Maintenance of communication was somewhat higher for male alumni and this difference is statistically significant for communication with Commonwealth organisations (but not for other international organisations), although the effect size is very low¹². The trend is thus that international contacts are made by some (but not all) alumni but are maintained by very few; even in a passive sense of only receiving email newsletters or other such correspondence.

¹¹ Holden and Tryhorn (2013) and the House of Lords select committee on soft power and the UK's influence (2014) have both discussed the importance of such legacies for the UK

¹² Commonwealth organisations: Pearson chi-square: $\chi^2 = 6.538$, $DF = 1$, $p = 0.011$, Cramer's $V = 0.005$.
Other international organisations: Pearson chi-square: $\chi^2 = 3.403$, $DF = 1$, $p = 0.065$

Academic collaboration

Professional activity conducted between higher education communities is another indicator of networks created, sustained, or strengthened as a result of the CSFP. The two main measures of collaborative activity available within the current surveys are joint publication and collaboration leading to joint projects as a result of a Commonwealth Scholarship or Fellowship.

Joint academic publication as a result of Commonwealth Scholarships or Fellowships was reported by 44.6% of respondents. For those who currently worked in the higher education sector the figure was 53%: not substantially different from the sample overall. Male alumni published jointly to a greater extent than female alumni (49.7% versus 34.5% respectively), far more so than would be implied by the slightly greater proportion of male alumni working in higher education as opposed to other sectors when compared to female alumni. As might be expected, higher proportions of CA alumni and Fellows (including Academic Fellows) reported joint publication, whereas CD alumni reported joint publication in much lower proportions.

Regional differences in joint publication partly reflect instances of geographic areas in which current employment in higher education is lower.

Table 20: Respondents reporting joint publications as a result of their Commonwealth Scholarship, by citizenship region

Citizenship region	Joint publications
Australia and New Zealand	55.6%
Southern Asia	53.0%
South-Eastern Asia	50.8%
Western Africa	42.1%
Northern America	39.4%
Southern Africa	38.6%
Eastern Africa	32.3%
Caribbean	19.7%
Grand total	44.4%

Fewer alumni holding citizenship in the Caribbean and Eastern Africa, for instance, reported working in the higher education sector and so (broadly) we might expect fewer joint publications, although the proportion of those reporting joint publication is in both cases lower than the proportion currently working in higher education (substantially lower in the case of the Caribbean). Similarly, for Northern America the rate of joint publications is substantially below the rate of those currently working in higher education: 67.7% currently working in higher education versus 39.4% indicating joint publications as a result of their Commonwealth Scholarship. Participation in joint scholarly work directly as a result of a Commonwealth Scholarship or Fellowship is thus relatively commonplace, but somewhat uneven in its geographical distribution.

The volume of joint publications reported is substantial. Respondents indicated a total of 3904 collaborative publications as a consequence of Commonwealth awards, with substantial variability between alumni and some notable outliers. The volume of publications reported by any one alumnus ranged from 0 to 400, with a handful of respondents indicating above 100 joint publications. As such, the mean joint publications per alumnus ($\bar{x}=10.8$) is not particularly informative without excluding the outliers: the median of 3 joint publications per alumnus is likely a more helpful measure. The median of joint publications reported does not vary substantially between any of the demographic subgroups (gender, scholarship scheme, decade of award, region of citizenship): a median of between 2 and 4.5 joint publications for all groups. Generally, the median of joint publications reported for those holding scholarships in more recent decades is slightly lower than those from prior decades, although the 1960s does not fit the trend well: median joint publications for alumni holding awards in that decade is actually lower than those from the 1970s and 1980s. Some regional variations are also evident, but no trend (e.g. higher volumes of publication in highly developed states) apparent.

Collaboration leading to joint research was less widespread than co-authorship. Almost 29% of respondents reported collaboration leading to joint research as a result of their Commonwealth Scholarship, and, like participation in joint publication, collaboration was somewhat higher for male alumni (31.5%) than female alumni (24%). Regional variations were again apparent, although somewhat less so than for joint publications. With the exception of the Caribbean, regional collaboration rates were clustered within a range of around 9 percentage points (as opposed to a range of over 20 percentage points for joint publications).

Table 21: Respondents reporting collaboration leading to joint research as a result of their Commonwealth Scholarship or Fellowship, by citizenship region

Citizenship region	Collaboration leading to research
Australia and New Zealand	33.8%
Northern America	31.7%
Western Africa	30.5%
Southern Africa	29.8%
Eastern Africa	27.4%
South-Eastern Asia	27.0%
Southern Asia	25.7%
Caribbean	16.4%
Grand total	28.0%

Scholarship scheme code was predicted participation in research leading to joint projects to a lesser degree than joint publications. CA alumni reported the highest rate of participation (36.3%) and CD the lowest (17.2%), but the deviance between alumni of different schemes is substantially less than for joint publications. If decade of award is overlaid onto scholarship scheme then a clear trend emerges for a greater proportion of CA alumni to have been involved in joint projects in prior decades, with the lowest proportions for 2000s and the highest for the 1960s. Such a trend emerges only for the CA scholarship alumni, however, and there is no pattern in participation by decade of award alone.

Summary and conclusions

Survey findings on contacts maintained demonstrate that the bilateral ties between UK groups and alumni tend to be much more actively maintained than international ties created (or in many cases, not created) during a Commonwealth Scholarship.

For UK university and social contacts (academics, institutions, friends and peers) occasional direct communication is commonplace, whereas for international organisations only in a minority of instances was contact maintained at all. Distance learners, having not spent time in the UK, reported low rates of subsequent contact with UK groups of all kinds, with the exception of the academic staff who were their primary contact with the UK during their Commonwealth Scholarship. Similarly, the perceived contribution of any ties with UK groups to subsequent professional development was very low for Distance Learning Scholars, although this should be set in the context of such ratings being relatively low across all demographic groups. Academic Staff Scholars tended towards greater frequency of communication with academic contacts than other Scholars and this too follows from the nature of the scholarship itself. The picture emerging from analysis of networks maintained by alumni is that such activity is 1) bilateral, with little connection to international networks, 2) not particularly active in the professional spheres, but rather a social network, and 3) regarded as exerting relatively small influence on professional development.

Collaboration resulting from Commonwealth Scholarships and Fellowships presents a positive picture, with approximately 50% of alumni involved in joint publications and 30% involved in collaboration leading to future research work directly resulting from their Scholarship or Fellowship. A notable gender difference was evident on both measures, with female alumni reporting a lesser extent of both joint publication and collaboration leading to further research. An explanation for this difference is not immediately forthcoming from the demographic analysis presented in this paper and would need to be explored in more detail, likely also with some reference to international data on female participation in scholarly activity within different sectors and countries.

In total almost 4000 joint publications were reported, at a median of 3 per alumnus, although the range was very large and some alumni reported as many as 400 joint publications. Whilst the survey exercise does not offer us further detail on the nature of these publications it is clear that a substantial body of scholarly work has emerged partially as a consequence of the CSFP. Additionally, this tally does not include sole-authored journal articles, which are examined elsewhere in the survey and would contribute substantially to the publications total.

The existence of such a corpus indicates that bibliometric (e.g. Evidence, 2010; Kahn, 2011) and other scientometric methods (e.g. Lane, 2009) might prove useful tools in tracking the more diffuse long-term impact catalysed by Commonwealth Scholarships and Fellowships. It is difficult to establish through the current data, for instance, whether collaborating alumni are undertaking joint activity with UK contacts specifically or simply as a result of their work in the UK (but not necessarily with UK collaborators). If the former were the case then this would be a powerful endorsement of the capacity of Commonwealth Scholarships and Fellowships to help build professional networks, with almost 30% of alumni continuing their professional relationship with international collaborators in the UK. It would also be noteworthy if this figure applied solely to further research undertaken in citizenship countries, particularly in the lower income Commonwealth states in which developing research capacity and high-level knowledge outputs is often a serious challenge (Bunting, Cloete, and van Schalkwyk, 2013). Nonetheless, it would be useful to disambiguate these possible interpretations of the results in order to better establish the stakeholders in joint projects and thus the scholarly legacy of the CSFP, a task for which bibliometric approaches may be well suited.

5. Impact in developmentally-relevant sectors

To begin assessing the catalytic impacts of the CSFP the survey examined respondents' involvement in developmentally-relevant activities. Activities were deemed to be of developmental relevance if they fell into one of the following focus categories:

1. Environmental Issues
2. Health
3. Governance, Security & Conflict
4. Gender Equality
5. Poverty Reduction
6. Education
7. Population Growth & Development
8. Economic Growth & the Private Sector

We have explored activities from several angles. Initially, the domain of impact was assessed, followed by involvement in projects within developmentally relevant sectors, and finally by perceived impact on socioeconomic activity or government policy. 'Socioeconomic activity' and 'government policy' – like 'impact' - were not defined within the surveys to allow for a wide interpretation of how these terms may be relevant to the diverse sectors in which alumni are active, although inevitably this means that understanding will vary and this should be borne in mind when considering the analysis below. For the purposes of defining 'impact' broadly we worked from respondents' own perceptions of what impact has meant to them¹³.

It is important to note that not all Commonwealth Scholarships are (or have been) awarded to recipients with developmental aims. Particularly in schemes aimed at the higher-income Commonwealth states (e.g. CR scholarships) there is no assumption that the recipient should be involved in development activity and thus any impact toward development ends is (in terms of CSFP policy at least) a serendipitous outcome.

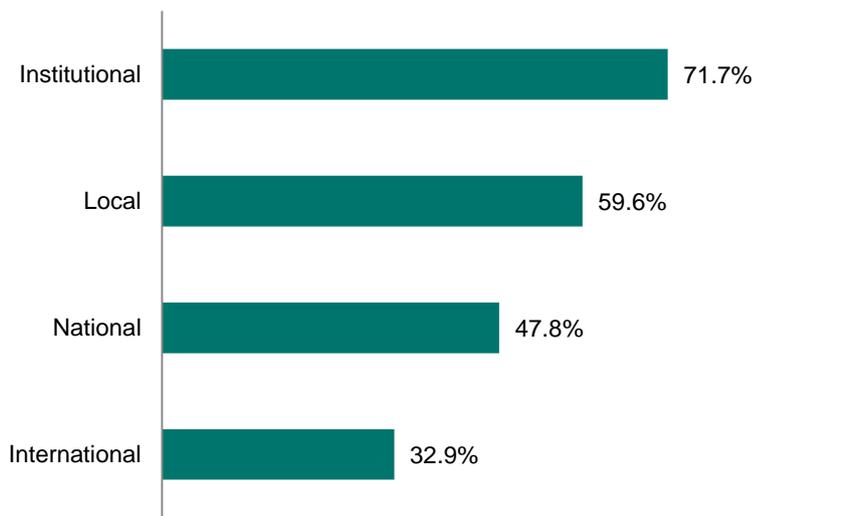
The broad view I: Impact domains

At the macro level, respondents indicated the domains (institutional, local, national, international) in which they had exerted impact. Domains were not mutually exclusive and so respondents could indicate the levels at which they did and did not have impact.

The data reveal a strong trend of declining impact as the domain becomes progressively wider (more global). A sizeable majority of respondents indicated impact at an institutional level (71.7%), declining through local and national levels to a minority of about a third (32.9%) of respondents indicating impact at an international level. Interpretations of this data are difficult without a benchmark and thus what represents an acceptable (or expected) level of influence depends somewhat on the disposition of the analyst. If generalised to the award holding population, a rate of 32.9% would be almost 8000 alumni from the CSFP exerting some form of impact at the international level, although such generalisations are almost certainly subject to the twin biases of surveys capturing the highest performing alumni most readily (positive response bias) and the vagaries of defining 'international' impact.

¹³ To avoid verbiage we do not included 'perceived' in all sentences (e.g. 'domains in which participants perceived they had exerted impact') but it should be taken that analyses refer to self-report data and thus to respondents' perceived impacts.

Figure 8: Respondents (%) reporting impact in each domain



It is possible to examine the differences in scores for each impact domain by assigning a rank value of between zero ('none reported') and four ('international') to each. In this ranking, an alumnus who reported international domain impact would score a rank of 4, whilst an alumnus reporting national domain impact would score 3, and so forth. Those who reported no impact at any level and those missing data (from respondents who elected not to complete the question) were assigned a rank of 0.

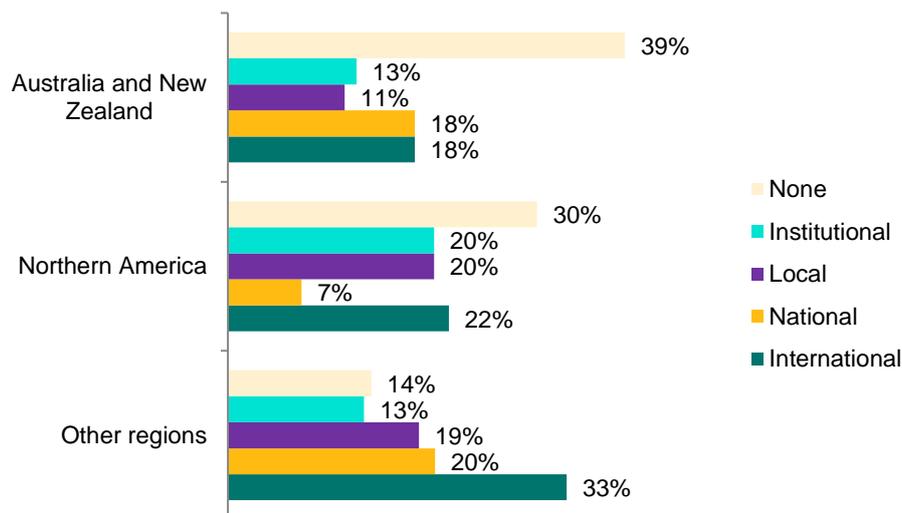
The median highest impact domain for the sample was the 'national' level (3). However, highest reported impact domain is lower for female (2: or 'local' level) than male alumni (3: 'national' level) and this difference is statistically significant¹⁴, although the effect size is very small. The magnitude of the difference between male and female reported impact varies, but is most pronounced at the national level where 13.44% fewer female respondents reported impact. Interestingly, the divergence between male and female reported impact is at its lowest at the international level, with only 6.13% fewer female alumni reporting impact.

Several factors suggest that a smaller proportion of alumni from high-income Commonwealth nations had lower impact within each domain. The impact of CR Scholars is consistently lower than those from other schemes, as might be expected. At the institutional level, for instance, 51.9% of CR alumni reported institutional level impact, against the overall sample percentage of 71.7%. Similarly, the lowest percentages of impact reported for each domain were for awards held in the 1960s when CR alumni constituted just over half of all survey respondents: a proportion that declines by decade to only around 10% CR survey respondents from the 2000s.

Analysis by citizenship region also indicated lower impact for Australia and New Zealand and Northern America. The most frequently reported highest impact domain for respondents holding citizenship in Northern America or Australia and New Zealand was 'none', whereas for the remaining regions the most frequently reported highest impact domain was 'international', as Figure 9 shows.

¹⁴ Mann-Whitney test, female (n=308) and male (n=561): $W=253852.5$, $p=0.0044$, r (effect size) = 0.006

Figure 9: Highest reported impact domain by region, N=869



There is a statistically significant difference in the mean ratings for highest impact domain by region¹⁵. Highest impact domain for Australia and New Zealand and Northern America are lower, whereas Eastern Africa, Southern Asia, and South-Eastern Asia are higher. Highest impact domain for Southern Africa (dominated by South African alumni) is also low but the difference is not statistically significant¹⁶. A correlation of highest impact domain with country of citizenship HDI rank is statistically significant¹⁷, but the magnitude of the correlation is very small: many alumni from countries with poorer HDI scores (e.g. Ghana, Nigeria, Kenya, and so forth) have reported similar highest impact domain ratings and so any relationship between HDI and impact is likely non-linear.

The broad view II: Impact types

In addition to impact domains, survey data has been collected on impact types within the broad categories of 'socioeconomic activity' and 'government policy'. As Table 22 indicates, impact in socioeconomic activity is much higher than in government policy, with close to double those reporting government policy impact reporting socioeconomic activity impact.

Table 22: Impact in socioeconomic activity and impact in government policy (N=869)

	Reported impact
Socioeconomic activity	66.9%
Government policy	35.1%

As might be expected, impact in socioeconomic activity and government policy was more common amongst those also reporting impact in higher domains. In particular, government policy influence is concentrated with those respondents whose highest reported impact level was either national or international. Some respondents who reported having no impact in any domain (institutional, local, national, and international) still reported both socioeconomic and government policy influence, indicating one of the potential ambiguities in the data.

¹⁵ Kruskal-Wallis One-Way Analysis of Variance (Factor = Region of citizenship (excluding N<30); Response = Highest impact domain score): $H = 46.89$, $DF = 7$, $p < 0.001$.

¹⁶ Mann-Whitney test, Southern Africa region (n=37) and All other regions (n=785): $W = 12652$, $p = 0.0613$

¹⁷ Spearman's Rho: $r(867) = 0.136$, $p < 0.01$

Table 23: Impact type by highest reported domain of impact (N=869)

Highest Impact domain	Socioeconomic Activity	Government policy
None	36.5%	18.0%
Institutional	53.8%	20.2%
Local	65.6%	20.4%
National	79.9%	46.8%
International	82.8%	53.0%

Similar trends pervade the impact type as do the impact domain data. CR alumni have reported impact in socioeconomic activity less frequently than other schemes, reinforcing the indication of lower developmental impact in the higher income Commonwealth nations. Interestingly the trend does not persist for government policy influence, in which CR alumni reported impact to a slightly *greater* extent than the sample overall. This is surprising because initial analysis seems to suggest a relationship between reporting socioeconomic activity and government policy impact and higher reported impact domains. Plausible explanations include a mediating variable that is not analysed here (and potentially not measured in the survey) or possible ambiguity in how the questions on impact level and impact type are interpreted.

The proportion of female alumni reporting impact in both socioeconomic activity and government policy is lower than their male counterparts (although this is only statistically significant for government policy influence¹⁸): 28.6% of female alumni, against 38.7% of male alumni, reported impact. The gendered trend in the highest reported impact domain and the disparity in reported government policy influence both support the conclusion that female alumni have had lesser influence both at the highest levels and, in particular, in shaping government policy. However, the disparity between the proportion of male and female alumni reporting impact at the international level is the *lowest*, not highest, of all levels, complicating the picture considerably.

Regional differences also persist through the data on impact type. Earlier commentary about the developed Commonwealth nations is supported by lesser levels of socioeconomic impact for regions such as Northern America (40.6%) and Australia and New Zealand (34.5%). Once again, this trend does not continue within the reporting of government policy influence, in which respondents from both Northern America and Australia and New Zealand report government policy influence in approximately the same proportions as the sample overall. Alumni from Western and Eastern Africa stand out as reporting disproportionately higher socioeconomic impact (80.8% and 87.3% respectively), but only for the latter is this also the case for government policy influence: 41.3% of Eastern African alumni report such impact.

Finally, government policy influence appears to decline the more recently a scholarship was held¹⁹, although the effect size is very small. Although it would seem sensible to suggest that those who finished their scholarships longest ago are most likely to have achieved impacts within their careers, the initial evidence to support this proposition (at a macro level at least) appears quite weak.

Areas of development-relevant activity

A more granulated analysis is possible using data on the fields in which alumni have been involved in developmentally-relevant activities. Survey data was collected on two main aspects of such activity:

1. Involvement in projects within the eight developmentally relevant categories
2. Impact on socioeconomic activity or government policy in the eight categories.

A complete list of the sub-categories for each field is listed in Appendix 2. In the 2012 survey iteration development activity involvement was likely overestimated due to differences in the question structure and would present a threat to analytical validity if it were pooled with 2013 and 2014 data: 2012 iteration data is thus excluded in this section. The remaining survey sample for this section of the analysis is large (N=869) and sufficient for detailed examination.

¹⁸ Government Policy impact: Pearson chi-square: χ^2 (N=869)=1.425, DF=1, p=0.233: Socioeconomic activity: Pearson chi-square: χ^2 (N=869)=1.425, DF = 1, p= 0.233

¹⁹ Pearson Chi-Square: $\chi^2 = 26.322$, DF = 4, p< 0.000, Cramer's V = 0.0303

Developmentally-relevant projects

In total, 684 alumni reported participating in one or more projects: 78.7% of the question sample. It was possible for alumni to indicate involvement in multiple project fields and many did so: the sample median was two project fields. Some aspects of project participation reflect the macro-analysis of impact domain and type quite clearly. Low levels of involvement in governance-related projects, for instance, reflect lower impact at national and international levels, coupled with lesser impact on government policy than on socioeconomic activity.

Project participation level differ by gender in several fields: participation in projects concerning environmental issues and economic growth is disproportionately reported by male alumni, whereas those concerning gender equality are predominately reported by female alumni. In other areas, such as education, the differences are insubstantial. When data are examined by scholarship scheme more substantial differences become manifest. Participation in projects is low for CR alumni across all fields, continuing the pattern from the impact macro-indicators. This observation is also supported by regional variations in project involvement, with Australia and New Zealand reporting lower project participation. Northern American alumni reported lower participation, but to a lesser extent than Australia and New Zealand and, in some areas (e.g. education, health), to a lesser extent than Southern African alumni.

Table 24: Fields of project participation (N=869)

Project field	Respondents
Education	56.0%
Environment	35.9%
Health	33.3%
Economic growth	27.3%
Poverty	25.8%
Gender	20.5%
Governance	19.5%
Population growth	8.8%

Shared Scholarships (SS) alumni reported a more even distribution of participation between the project fields, and participation in population growth and development related projects is considerably higher for SS alumni than those of other schemes, although it remains a small minority of respondents (14.6%). Academic Staff Scholarships (CA) alumni reported greater educational project involvement. However, whilst both CA alumni and Academic Fellows (CF) were disproportionately involved in education projects, the group with highest reported involvement were Medical Fellows (approximately 75%: although the lower sample size of N=28 should be borne in mind). This may reflect the knowledge transfer function of Medical Fellowships in which theoretical expertise and practical techniques are relayed to colleagues on return from the UK, but further detail on the nature of project involvement would be required to substantiate this possibility.

Western and Eastern Africa appear to be regional hubs for project involvement, with alumni reporting participation in all forms of projects to a greater extent. Involvement in projects related to poverty reduction is particularly high in Eastern Africa: 45.2%, against the sample overall percentage of 25.8%. Taken with the disproportionately low involvement in highly developed Commonwealth nations, engagement with developmentally-relevant projects appears largely to follow the predictable pattern that involvement is highest in lower income regions in which development activities are in most numerous operation.

Project involvement ratings

The second measure of development project activity was the 'level of involvement' alumni perceived they had in projects in which they had participated. Ratings (out of 10) of the level of involvement in projects largely follow the same trends as data on project participation:

Table 25: Mean ratings of level of involvement in each field for male and female respondents and overall (N=869)

Project field	\bar{x} Male	\bar{x} Female	\bar{x} Overall
Education	8.08	8.39	8.19
Health	6.50	6.98	6.66
Environment	6.23	6.82	6.40
Poverty	6.47	6.13	6.35
Gender	5.85	6.88	6.32
Economic growth	5.94	6.22	6.03
Governance	5.94	6.22	6.03
Population growth	4.28	4.18	4.24
Grand mean	$\bar{x}_M = 6.16$	$\bar{x}_F = 6.48$	$\bar{X}_{Ovr} = 6.28$

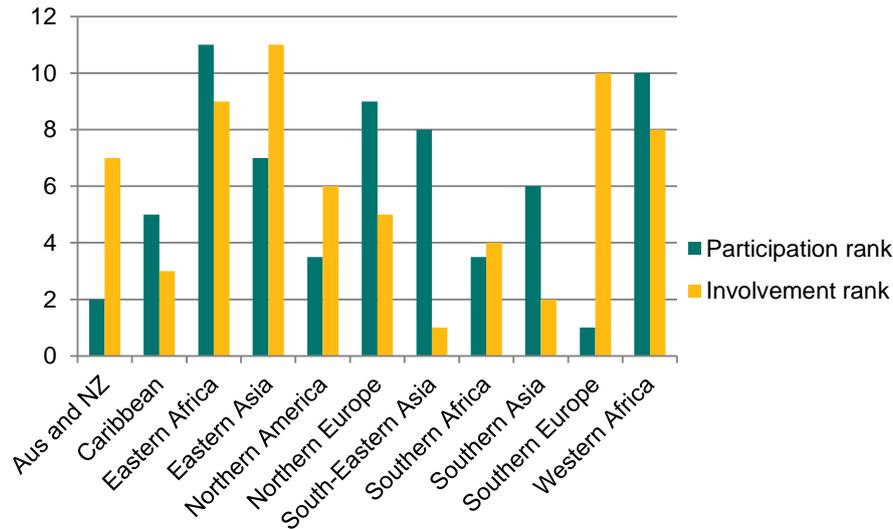
The mean level of involvement is highest for educational projects, just as the most populous field for project involvement was education. Similarly, mean ratings of involvement in population growth and development projects are the lowest, just as that was the least reported field of participation. For those participating in projects the level of involvement was generally relatively high – the grand mean (Grand $\bar{X}_{Ovr} = 6.28$) is above the scale midpoint (5.5) – but also reflected that in those areas where participation was low (e.g. population growth) involvement tended to be low even when alumni did participate.

Female involvement ratings were almost always higher than male ratings and this trend holds even for those project fields in which participation was higher for male respondents, such as economic growth and environmental issues. As such, whilst female alumni report lesser participation in some project areas, they also report a higher level of involvement in those projects in which they do participate. Similarly, whilst project participation was lower for those from highly developed Commonwealth, the mean involvement ratings for CR alumni (Grand $\bar{X}_{CR} = 6.46$) is higher than the sample grand mean, and in specific fields is substantially above the field mean. In the field of economic growth, for instance, the mean involvement rating for CR alumni is $\bar{x}_{CR} = 7.75$: well above the sample mean for that field ($\bar{x} = 6.03$). Similarly, examination of the data by citizenship region suggests that higher income regions, which had disproportionately low project participation, have higher than average ratings of involvement. In economic growth and development, the mean for the higher income Commonwealth regions is in some cases much higher than other regions: for Australia and New Zealand, economic growth $\bar{x} = 8.71$ and for Southern Africa (almost entirely South African alumni), economic growth $\bar{X} = 7.62$.

It is clear that the ratings of project involvement differ between regions to a greater extent than does participation in projects. It is possible to illustrate this effect by ranking²⁰ the participation in projects and ratings of level of involvement. The rankings are shown in Figure 10.

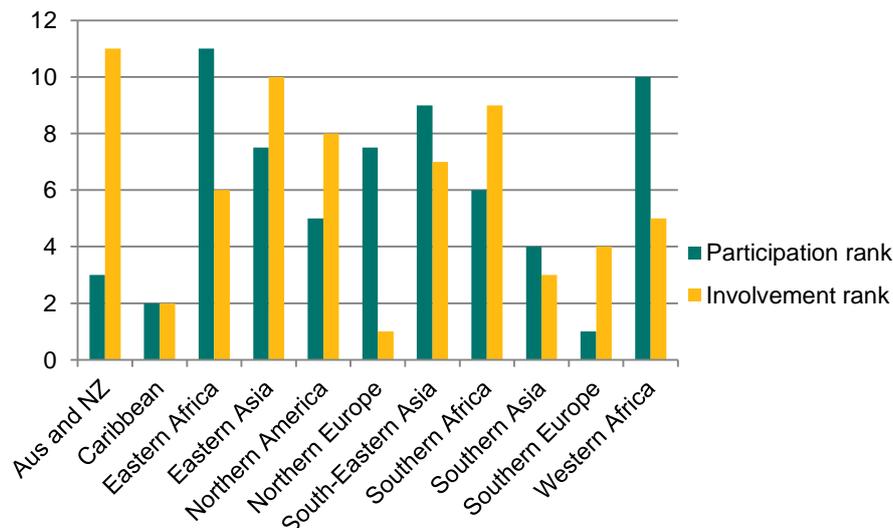
²⁰ The ranks displayed are the product of two ranking procedures. The involvement rank is the rank order of the project involvement rating grand means, by region and in descending order. For example, Eastern Asia has the highest grand mean ($\bar{X} = 7.06$) and so has the highest rank (11). The participation rank is a compound score constituted by three steps: 1) firstly, the rank order of participation in each field (where participation is taken as the percentage of the regional sample reporting involvement) is created, 2) the sum of those ranks taken, and 3) the rank order of the sum of ranks calculated. For example, Southern Europe has low participation in each field and so scores the lowest sum of ranks (12.5), yielding a final rank of 1 (the lowest rank) when the sum of ranks was itself ranked. In all cases, ties used the average rank.

Figure 10: Ranking of overall participation and involvement by citizenship region (ranked in descending order), N=858



As may be evident, those regions with low participation ranks do not necessarily have equally low involvement ranks. Some fields also have quite different arrangements of ranks. The field of economic growth, for instance, yields the ranking shown in Figure 11.

Figure 11: Ranking of participation and involvement in economic growth by citizenship region (ranked in descending order), N=858



Different trends may thus manifest in the specific development fields, such as the low overall participation but high level of involvement for Australia and New Zealand shown in Figure 11. The ranking exercise demonstrates that participation and involvement are different issues and should not be conflated: high levels of participation do not necessarily imply high levels of involvement (and vice versa). It is also important to note that 'involvement' is not necessarily synonymous with 'influence' or 'importance': a project funder, for instance, may deem themselves to have little 'involvement' in the operation of a project but be nonetheless influential.

Impacts by development field

The final area of analysis for developmentally-relevant activities is impact by field. In both socioeconomic activity and government policy, education is the most frequently reported field of activity. It is notable that the gap between education and other fields is far greater for socioeconomic activity than for government policy, indicating that proportionally fewer respondents perceived that they had significant influence on the public policy agenda (and legislation) in education than had contributed to the educational sphere generally. Population growth & development is the least frequently reported sector of impact, again mirroring the

findings for project involvement. Interestingly the corpus of those reporting impact on socioeconomic activity in governance, security, and conflict is higher than those reporting government policy impact in the same sector, although the ratio is somewhat lower than for other areas (1.8:1 against an average of 2.4:1 in other categories). Thus even in the category of governance itself, alumni have reported lesser impact on government policy than on socioeconomic activity.

Table 26: Respondents (%) reporting impact in each development-relevant field (N=869)

Field	Socioeconomic activity	Government policy
Education	50.1%	18.2%
Environmental Issues	28.3%	13.5%
Economic Growth	26.6%	10.1%
Poverty Reduction	26.5%	11.1%
Health	26.4%	11.5%
Gender Equality	20.3%	7.7%
Governance	16.8%	9.3%
Population Growth	8.3%	4.1%

Cross-tabulating these data with the highest impact level data examined earlier in the chapter reveals further trends within the distribution of impact. It becomes evident that those reporting impact in a specific field disproportionately also report a greater highest impact level: particularly the 'international' level.

Table 27: Highest impact domain for respondents that indicated socioeconomic activity impact

Socioeconomic activity field	Highest impact domain				
	None	Institutional	Local	National	International
Environmental Issues	7.1%	10.7%	16.6%	23.2%	42.3%
Health	8.5%	11.5%	17.0%	22.9%	40.2%
Governance	7.7%	10.8%	16.0%	23.1%	42.5%
Gender Equality	8.0%	11.1%	16.3%	23.6%	41.0%
Education	8.6%	10.6%	18.1%	23.2%	39.5%
Poverty Reduction	8.5%	10.1%	17.1%	22.2%	42.1%
Population Growth	7.9%	11.5%	15.7%	21.3%	43.6%
Economic Growth	8.7%	10.0%	17.6%	22.8%	40.9%

This trend is the reverse of that seen for highest reported impact levels in the sample overall. In each field of socioeconomic activity impact approximately 40% of respondents reported 'international' as their highest impact level, in contrast to much lower proportions for the other levels of impact (institutional, local, etc.). This trend is replicated in the data on government policy impact.

Table 28: Highest impact domain for respondents that indicated government policy impact

Government policy field	Highest Impact domain				
	None	Institutional	Local	National	International
Environmental Issues	8.8%	7.8%	10.3%	25.0%	48.0%
Health	7.9%	7.4%	8.9%	24.6%	51.2%
Governance	9.6%	8.0%	9.0%	26.1%	47.3%
Gender Equality	9.8%	8.7%	8.2%	26.8%	46.5%
Education	10.9%	7.3%	9.9%	25.0%	46.9%
Poverty Reduction	9.5%	7.2%	10.4%	26.0%	46.6%
Population Growth	9.7%	9.1%	8.5%	25.5%	47.3%
Economic Growth	8.8%	7.3%	9.3%	26.4%	48.2%

A greater proportion of impact is thus being accounted for by a group of alumni who report impact in the ‘international’ domain and then disproportionately constitute those reporting socioeconomic activity or government policy impact in each development field.

Additionally, the proportion of those reporting impact in a field and also reporting the ‘international’ highest impact domain is considerably higher for government policy than socioeconomic activity impact. The proportion reporting the ‘national’ highest impact domain is also higher, although not to the same extent. The primary difference appears to be that in comparison to government policy impact there is a greater tendency for respondents to have reported the ‘local’ highest impact level and then reported impact within a field of socioeconomic activity. The trend for slightly lower impact domains may reflect that socioeconomic activity is diffused across organisations and geographical spaces, in contrast to the often centralised process of policymaking. Those involved in socioeconomic activity have thus tended to predominately be acting within the education sphere and, on average, at a slightly lower impact domain than those reporting impact on government policy. In the latter case the propensity is still toward involvement in education, but the disparity between participation in education and other categories is not as pronounced as for socioeconomic impact. It should be recalled that a lower impact domain for those reporting socioeconomic activity is in the context of the greatest proportion of respondents within each sector having reported international level impact: the difference is in the distribution of the remaining respondents, not which highest impact domain was reported by the largest group.

Impact level

For the most recent survey iteration, data was collected on the respondents’ perceived level of impact (on a 10-point scale) in each of the fields in which they reported impact. Table 16 shows this data transformed into a sample mean for each field.

Table 29: Mean level of impact rating, 2014 iteration respondents only

Field	Mean impact rating (\bar{x})	
	Socioeconomic activity	Government policy
Education	7.93	7.02
Health	6.94	6.76
Governance	6.85	6.37
Environmental Issues	6.76	6.63
Gender Equality	6.69	6.92
Economic Growth	6.61	6.46
Poverty Reduction	6.55	6.44
Population Growth	6.30	6.17

All sector means are above the scale mid-point (5.5) and thus closer to the ‘most impact’ pole of the measurement scale, even for population growth & development, in contrast to its below-mid-scale project involvement ratings. Mean ratings are also highly clustered. With the exception of socioeconomic activity in education, all ratings fall within a range of less than one scale rating point (range = 0.85)

Education is the field with the highest participation and level of impact for both socioeconomic activity and government policy. Beyond this, however, ratings diverge between participation and involvement levels. Governance, security and conflict, for instance, was the second-least frequent sector for socioeconomic activity impact, but yields the third-highest level of impact. Similarly, impact on government policy in gender equality was infrequent but, of those who did report impact, the level was high: second-highest of government policy impact fields (following education). With the exception of education, the fields in which alumni are most regularly frequently involved are not necessarily the same as those they perceive themselves to have exerted the most influence.

Impact breadth

The breadth of an alumnus’ involvement in developmentally-relevant sectors was calculated by examining the total number of fields in which they had reported impact. The mean impact breadths show that those reporting socioeconomic activity impact do so on average in two (\bar{x} =2.03) fields, whereas those reporting government policy impact do so in only one field (\bar{x} =0.86). There is greater diversity of impact for each alumnus in socioeconomic activity than in government policy.

Table 30: Mean impact breadth by impact type (N=869)

	Impact breadth (\bar{x})
Socioeconomic activity	2.03
Government policy	0.86

Breadth of impact in both socioeconomic activity and government policy increases in proportion to the highest impact domain reported by respondents. The average breadth of impact in socioeconomic activity for those who reported the ‘international’ highest impact domain was \bar{x} =2.93, versus a breadth of \bar{x} =1.17 for those who reported the ‘institutional’ highest impact domain. The trend demonstrates that alumni involved in the broadest (and most influential) domains are not necessarily highly influential specialists in a single area, but tend to report being involved in a broader range of developmentally-relevant activities than other alumni. The pattern is also reproduced within data on government policy influence, with those reporting higher impact domains also reporting a greater breadth of categories in which government policy impact has been achieved.

Breadth of impact is lower for female alumni in both socioeconomic activity (\bar{x} =1.82) and government policy (\bar{x} =0.62), although the difference between male and female rating is only statistically significant for

government policy impact breadth²¹. This finding follows lower female impact ratings in both highest reported impact domain and overall socioeconomic activity and government policy impact. The pattern emerging for data on developmental impact is thus that female alumni tend to report impact less frequently, within a narrower sphere of influence (i.e. local rather than national), and in fewer sectors than male alumni: particularly concerning government policy influence.

As has been the case with other data on developmentally-relevant activity, alumni from higher-income Commonwealth states tend to report lower overall breadth of impact. Variation in breadth of impact scores by scholarship scheme is statistically significant for both socioeconomic activity and government policy, but the largest variation is the lesser breadth of socioeconomic activity impact by CR alumni. Similarly, by region it is Australia and New Zealand and Northern America that report the lowest breadth of impact for socioeconomic activity. This trend does not continue for government policy impact breadth, however, in which neither the differences between CR and non-CR schemes - nor between the regions of Australia and New Zealand and Northern America and other regions - are statistically significant.

For the breadth of impact in government policy the major trend appears to be that of decreased breadth for more-recent (e.g. 2000s) alumni in comparison to those holding awards a substantial time prior. Mean government policy influence breadth for those holding awards in the 2000s is $\bar{x}=0.77$, versus $\bar{x}=1.22$ for those holding awards in the 1960s. An anomaly, however, is the performance of Scholars and Fellows from the 1980s who score highest mean ratings on both socioeconomic activity impact breadth ($\bar{x}=2.30$) and government policy impact breadth ($\bar{x}=1.33$). It is possible that the strong performance of those holding awards in the 1980s represents a 'career pinnacle' effect, as the average age for these alumni is was 56. If this were the case, however, explaining why scores are lower for those holding awards in the 1970s (age at survey: $\bar{x}=64$) would be difficult. It is likely that one or more mediating variables not examined in this analysis influence the scores.

Finally, it is evident that Shared Scholarship (SS) alumni report considerably lower breadth of government policy influence than socioeconomic activity impact, although in the context of the relative averages ($\bar{x}_{SS} = 0.62$, Grand mean $\bar{X}=0.86$) this seems a slight effect.

Summary and conclusions

Data on development impact demonstrates both the significant breadth of involvement by former Commonwealth Scholars and Fellows and relatively high levels at which much involvement is taking place. Just over three quarters (78.7%) of alumni reported having participated in a project within one or more of the developmentally-relevant fields. Approximately two-thirds (66.9%) reported impact in socioeconomic activity and one third (35.1%) in government policy, with higher rates still for those also reporting impact in national or international domains. The median highest level of impact was 'national', which conforms relatively well with the role of the CSFP in catalysing social and economic activity within Commonwealth states.

Demographic factors alone can only hint at, rather than provide, explanations of some of the many variations found in the data. The most notable trends include:

1. Impact is most frequently reported at the institutional level, followed by local, national, and finally international levels. As the impact domain becomes more encompassing and broad, fewer alumni report exerting influence
2. In all domains, impact in socioeconomic activity is far more widespread than in government policy. Impact in government policy is concentrated with those who reported impact in 'national' and 'international' domains than local and institutional levels it is still reported less frequently than impact in socioeconomic activity
3. Education is the most frequent field of activity: both in terms of participation in projects and influence on socioeconomic activity and government policy. Population growth and development is the area of least activity.
4. Alumni from higher-income Commonwealth states score lower on most measures of developmental impact, but it is important to note that they were not awarded scholarships on the basis of potential development impact and so any such activity is a potentially advantageous additional outcome
5. The relationship between gender and impact is somewhat complex, but initial analysis suggests that female alumni tend to report impact less frequently, within a narrower sphere of influence (i.e. local

²¹ See appendix 4 for statistical test results for this section

rather than national), and in fewer sectors than male alumni: particularly concerning government policy influence.

Lesser impact in government policy than in socioeconomic activity is perhaps predictable insofar as what constitutes the latter is likely substantially broader. Depending on how socioeconomic activity is defined it might include any substantive work in production or retail, facilitation of those activities, nurturing talent (e.g. teaching) likely to be involved in those fields, or removing barriers to activity (e.g. health or environmental challenges). Government policy, conversely, is somewhat more specific in that it identifies both an activity (policymaking) and an undertaking body. The exact nature of activities in both areas will be better examined through the qualitative examples offered by alumni than by the numerical analysis detailed in this report.

Alumni active in national or international arenas are perhaps also more likely to hold employment (or at least maintain connections) with government and so their greater influence on policymaking is understandable. Nonetheless, the data does highlight the paucity of those reporting influence in any form of local government which, depending on the countries in question, may be the more extensive mechanism of governance than national or international policymaking. This trend may reflect genuine non-participation or, alternatively, may be a limitation of the term 'government policy' being potentially viewed by survey respondents as referring to national and global decision making only. It may be that national government policy is implemented by local governance structures and so in many countries the activity of 'policymaking' is more limited at local than national level.

Variations in impact by demographic variables predominately take the form of gendered and regional differences. In the former case, the data presents a complicated picture in which female alumni broadly report lower impact than male alumni, but this varies in several instances, is more pronounced for government policy than for socioeconomic activity, and may reflect participation more than the level of involvement. Regional trends are somewhat clearer: lesser reported impact of those from high income Commonwealth states and higher regional participation in projects within the regions where development projects in those fields tend to be active (e.g. Western Africa). Nonetheless, the picture here too is nuanced. The level of project involvement is often higher for the higher-income Commonwealth in areas such as economic growth and the private sector which are central to the development assistance logic of some donors (e.g. DFID).

On the topic of project participation and involvement, it is a salient scholarship policy question to consider whether lower overall participation rates in developmentally-relevant projects is an acceptable trade-off for higher involvement (and thus influence) in the projects within which those alumni do participate. If more focused, higher impact activity is measured then those from regions such as Australia and New Zealand may have attained important policy-relevant outcomes by having taken part in fewer projects but in a more influential manner (particularly in areas such as economic growth): despite not having been funded with development-related aims. Conversely, if wider participation is the more important aim then those regions or schemes in which participation in projects is least widespread might be considered the 'lowest performers' against this standard. The conundrum is, of course, hypothetical to the extent that project involvement is rarely as a direct result of actions by a body such as the CSC. Nonetheless, if citizenship region or scholarship scheme co-varies with project participation and level of involvement then award policy could theoretically shape the attainment of outcomes, for instance by shifting funding emphasis toward those regions or schemes that yield the widest involvement or those which yield the highest intensity of influence.

Finally, it is important to note that the emphasis on development as an outcome of the Commonwealth Scholarships and Fellowships has increased in recent decades (particularly the 2000s). Alumni who held their scholarships in the 1970s, for instance, were not necessarily selected on the same principles as recipients are now. It is also plausible that the interpretation of questions on 'impact' and 'development' may be quite different when made within the contexts of Canadian, Ugandan, Indian, or other alumni. Some of the historical objectives underpinning scholarships to higher income countries - leadership capacity and 'soft power' (Holden and Tryhorn, 2013) - are not well measured by the current survey design and so data is not always available to comment on whether outcomes are realised by alumni from those countries. It also remains an open question whether the activities being reported by alumni are 'national' or 'international' by an external standard and thus facilitate like-for-like comparison between regions.

6. Attribution and the counterfactual

Finally, the evaluation surveys have attempted to examine the complex questions of attribution and counterfactual possibilities: to what extent should an alumnus' successes (or failures) be considered related to their Commonwealth Scholarship or Fellowship?

The two issues examined within the surveys were the perceived contribution of various factors to professional success (attribution) and reflections on potential alternatives to a Commonwealth Scholarship or Fellowship (counterfactual). It should be noted that the CSC also runs a dedicated longitudinal counterfactual study with matched participants, although results have not yet been published.

Assessing scholarship contribution

Reliable measures of attribution are a significant challenge for any study looking at the life trajectory of alumni who have, in some cases, held their scholarship decades prior. Nonetheless, an attempt to begin addressing to what extent respondents felt their scholarships actually contributed to their professional development is necessary, if only to help establish whether other factors are rated as more prominent in shaping (especially) career trajectories.

The two most recent survey iterations thus included a question recommended by the New Economics Foundation (Vardakoulias, 2012) in which respondents ranked five factors that may have contributed to their professional achievements. The mean rank assigned across the sample is shown in Table 23.

Table 31: Mean ranking of attribution factors (N=869)

Contributing factor	Mean rank
Personal Attributes	4.1
Commonwealth Award	3.9
Contacts at Home	2.4
Contacts Abroad	2.3
Socioeconomic background	2.2

Personal attributes – which is taken here to be psychological qualities, talent, intellectual ability, and so forth – were ranked as the highest contributing factor to professional success, followed closely by the respondent's Commonwealth Scholarship. Contacts (of any kind) and socioeconomic background (class, wealth etc.) are clustered at the lower ranks, with socioeconomic background the lowest ranked of all five contributing factors.

The results of the ranking exercise indicate that most alumni felt their professional achievements were mostly driven by their individual qualities, rather than exogenous factors such as others' investment in their development or socioeconomic advantage. Whether this ranking reflects a tendency to underrate the importance of serendipity and its influence on life chances (including through contacts and access to networks) is unclear, although it may well be a fair reflection of contributing factors to the success of those who are skilled and determined enough to seek and receive funding and successfully complete international study. The fundamental result of the attribution ranking question is to reinforce the importance attached to Commonwealth Scholarships and Fellowships in contributing to and catalysing professional achievements. The difference in mean ranking between 'personal attributes' and 'Commonwealth award' is relatively small and certainly far smaller than the difference between these two factors and those of contacts and socioeconomic background.

The counterfactual

Broadly defined, a counterfactual is a plausible alternative to what happened. In this case, the likelihood of having undertaken a similar programme of study (or fellowship) without a Commonwealth Scholarship or Fellowship is the counterfactual investigated²².

²² There are a variety of approaches to the counterfactual and we have explored one specific facet in this analysis: another approach is taken through the CSC's longer-term matched-design counterfactual programme.

Three counterfactual scenarios – all preceded by ‘If you had not received a Commonwealth Scholarship / Fellowship’ – were proposed to alumni as follows:

1. How likely is it that you would have undertaken the same programme or qualification in *the UK*?
2. How likely is it that you would have undertaken the same programme or qualification in *your home country*?
3. How likely is it that you would have undertaken the same programme or qualification in *another country* (other than the UK)?

These scenarios are referred to as ‘CF UK’ (1), ‘CF home country’ (2), and ‘CF another country’ (3) for brevity. It is intended that responses to these counterfactual questions give a sense of the perceived likelihood of achieving similar ends by different means. The questions do not explore (for lack of space within a short survey) respondents’ perceptions of the differing outcomes they may have experienced had they not obtained a Commonwealth Scholarship or Fellowship but instead followed the alternative funding routes identified. It is important to note that self-report counterfactual data is (by definition) speculative and retrospective and so should be treated with due caution

Counterfactual ratings

Responses to each scenario were rated on a 1-10 scale, with one being lowest (‘impossible’) and ten (‘definitely’) being highest. Almost all respondents answered each counterfactual scenario: very little data is missing from the analysis.

Table 32: Counterfactual scenario mean ratings and rating standard deviation, all respondents

Scenario	Mean	SD
CF UK	2.72	2.39
CF home country	4.51	3.19
CF another country	4.76	2.93

As a broad observation of the results, it is considered improbable that study of a similar programme would have been possible without the support of the CSFP, least of all within the UK. Both the grand mean of counterfactual ratings ($\bar{X} = 4.00$) and the highest mean rating – for CF another country ($\bar{x} = 4.76$) – are below the midpoint on the scale (5.5).

Further analysis indicates that the differences between ratings of counterfactual scenarios are statistically significant²³. As is evident from Table 16, the higher ratings of likelihood emerge for the probability of having studied in another country, followed by the home country, and finally by the UK. Speculating on having been able to study in the UK, only slightly under 12% of all respondents indicated they would have been more likely than not (i.e. a rating of 6 or above) to have studied a similar programme in lieu of their Commonwealth Scholarship or Fellowship.

A relatively complex web of connections between demographic variables and counterfactual ratings is evident from detailed analysis²⁴. There is a statistically significant difference in the counterfactual ratings of male and female alumni for both CF UK and CF Another Country, but not for CF Home Country. In both the former cases male counterfactual ratings were significantly higher. As such, female alumni found less plausible the possibility of having studied outside of their home country.

Conversely, for CF Home country (but not CF UK or CF Another Country) there is a statistically significant difference in counterfactual ratings by respondents’ age when they took up their scholarship. The trend indicates a propensity for higher counterfactual ratings for CF Home Country from those who were younger when they took up their award, although the median rating for the highest scoring age quartile remains only a rating of five on a 10-point scale. Comparing scores at the extremes of the age spectrum – age quartile 1

²³ Kruskal-Wallis One-Way Analysis of Variance (Factor = Counterfactual scenario; Response = Counterfactual score rank): $H = 368.46$, $DF = 2$, $p < 0.001$. Post-hoc Mann Whitney tests with the Bonferroni correction ($\alpha = 0.0167$) were conducted to assess each pair of Counterfactual scores: results are shown in Appendix 4.

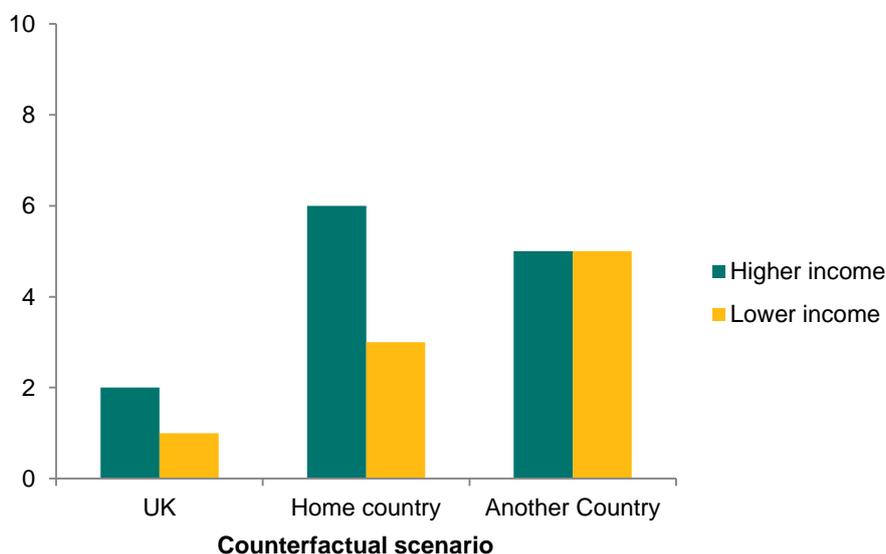
²⁴ All of the analysis described in this section uses Kruskal-Wallis One-Way Analysis of Variance as a ‘main test’ and Mann Whitney tests (with the Bonferroni correction where appropriate) to provide post-hoc analysis. As there are many results they are not included as footnotes but can be found in detail in Appendix 4.

versus age quartile 4 – yields, in the context of other results in this analysis, a substantial effect size ($r=0.22$).

A likely explanation is in the age profile of the scholarship schemes. CR scheme alumni reported higher counterfactual ratings for the CF Home Country scenario: this difference is statistically significant and yields another relatively substantial effect size ($r=0.26$). As the average age of CR Scholars at the inception of their award was lower than all other schemes, the age of those reporting higher counterfactual ratings would similarly be lower. Additionally, Fellows - for whom the age profile is much higher than many of the other schemes – reported lower ratings for the CF home country scenario than the sample generally. The latter trend seems to make sense in light of the purpose of fellowships as knowledge transfer and training vehicles: the purpose of such programmes would largely be undermined if similar expertise were readily available in an alumnus’ own country.

For all counterfactual scenarios the difference between ratings by citizenship region is statistically significant, with the largest variations evident in the CF UK and CF Home Country scenarios. A clear trend is that alumni from higher income Commonwealth states reported higher counterfactual ratings compared to lower-income, less-developed states; particularly for the CF UK and CF Home Country scenarios. By grouping the regions into broad categories²⁵ the differences in counterfactual ratings become apparent.

Figure 12: Median counterfactual ratings for higher and lower income states, excluding regions for $n<30$



As with CR alumni, the effect size for these differences is substantial in the context of this paper: for CF UK $r=0.16$ and for CF Home Country $r=0.22$. These trends illustrate two findings from the counterfactual data. Firstly, and unsurprisingly, alumni from highly developed states (such as Canada or Australia) are more likely to report a higher plausibility for undertaking a similar programme of study within their home country. Secondly, this tendency does not appear to extend to the plausibility of studying in another country which is not the UK.

Statistically significant differences between counterfactual ratings are also evident when data is disaggregated by scholarship scheme. To establish the most important trends comparisons were conducted for each scenario between the schemes whose ratings deviated most substantially from the sample mean score and all other schemes (as a group). For CF UK, the largest variation is for Shared Scholarship (SS) alumni, who report significantly lower counterfactual ratings. Both CR alumni and Fellows alike reported significant higher ratings, but the effect sizes are far lower than that for SS alumni. For CF another country there are two equally sized effects, with SS alumni reporting significantly lower ratings and CS alumni reporting significantly higher ratings. Only for CF Home Country did SS alumni report ratings close to the sample mean, although even in this case the reported ratings were still below the sample mean rating. SS alumni were thus particularly unlikely to indicate the plausibility of studying a similar programme through any arrangement other than a Commonwealth Scholarship.

Overall, the main trends emerging are:

²⁵ Defining ‘High-income, highly developed’ as the regions Australia and New Zealand, Northern America, and South-Eastern Asia, and ‘Lower-income, less developed’ as all other regions.

1. All counterfactual scores are relatively low: the grand mean is below the scale midpoint.
2. The main variance appears to come from indications of the higher plausibility for study in the UK or home country for those alumni holding citizenship in higher-income, highly-developed Commonwealth states.
3. Female alumni reported studying outside of their home country to be less plausible than did male alumni.
4. Shared Scholars also reported studying outside of their home country to be less plausible than other respondents.

Analysis of covariates, particularly of citizenship region and scholarship scheme, would yield a more detailed picture of the reasons for these trends. For instance, the strength of higher education systems within the home countries of Canadian and Australian alumni is very likely to underpin the greater propensity for higher ratings given for these counterfactual scenarios.

Alternative funding sources

For those alumni who rated a counterfactual scenario very likely (8 or higher on the 10-point scale) further information was sought on how these studies would have been funded. Respondents were presented with five possible options: the proportion of responses for each funding source for each counterfactual scenario is shown in Table 34.

Table 33: Proportion of respondents indicating each funding source by counterfactual scenario

Funding source	Respondents (%)		
	CF UK	CF home country	CF another country
Another Scholarship / Fellowship	53.9%	38.6%	81.2%
Employer or government sponsorship	20.2%	20.0%	4.4%
A combination of these sources	18.0%	27.8%	11.3%
Self-Funded	5.6%	12.2%	1.4%
Unknown	2.3%	1.4%	1.7%

The percentage of those responding that they did not know how their studies would be funded ('unknown') is very low across the three counterfactual scenarios (1.4% – 2.3%). This is a useful, if tentative, indicator that few alumni gave spuriously high ratings to counterfactual scenarios, but rather have responded by offering a specific alternative scenario. Responses of 'unknown' are excluded from the remainder of the analysis below. An initial analysis of funding source by counterfactual scenario demonstrated that the association between likely funding source and counterfactual scenario was statistically significant²⁶. Not only did respondents rate the plausibility of the three counterfactual scenarios differently, but they also indicated that the funding sources to underpin alternative scenarios would be different.

Alternative scholarships or fellowships

For each counterfactual scenario, the most frequently indicated alternative source for funding was another scholarship or fellowship²⁷. Broadly, this reflects the expense of postgraduate higher education and the low accessibility of such programmes to citizens of many Commonwealth countries, particularly when international travel and deferred earnings are added to (often substantial) tuition costs.

There are, however, some important qualifications to this observation. Although an alternate scholarship or fellowship is the primary funding source identified, there is a significant association between the decade in which an award was held and the likelihood of having indicated that another scholarship or fellowship would have funded alternate study in the respondents' home country. To facilitate analysis respondents who answered the question on alternative funding (i.e. having rated a scenario 8 or above) were divided into the two approximately equal groups of those who held their award in the 1960s to 1990s (n=142) and those who

²⁶ Pearson chi-square: $\chi^2 = 122.992$, DF = 6, $p < 0.001$, Cramer's V = 0.0915

²⁷ For an indicative list of such scholarships see Perna et al. (2014) or Mawer (2014).

held their award in the 2000s (n=149). A lower proportion of those from the 2000s group indicated that another scholarship or fellowship would have funded alternate studies than was expected²⁸.

Interestingly this is not the case for those from the highest income regions of the Commonwealth. Those from the highest and lowest income regions were equally likely to indicate that a scholarship or fellowship would fund alternate study for the CF UK and CF Another country scenarios. For CF home country, however, respondents from higher income states disproportionately indicated that they would have studied in their home country supported by another scholarship or fellowship²⁹, a trend also that holds for the most recent decade.

In sum, for alternative study in the respondent's home country the tendency to indicate another scholarship as the source of funding was lower within those who held an award in more recent decades (2000s) than earlier decade (1960s – 1990s), with the exception of those from the most-developed Commonwealth nations for whom the expectation of funding through another scholarship or fellowship was disproportionately *higher* regardless of the decade in which the award was held.

Other factors in different funding sources

Although across all three counterfactual scenarios the likely source of alternative funding was another scholarship or fellowship, a more granular analysis of response frequencies for each funding source reveals further differences. For instance:

1. Indication of 'another scholarship or fellowship' was high for CF another country, but low for CF home country
2. Indication of 'employer or government sponsorship' was low for CF another country but high for CF home country (although to a lesser extent)
3. Indication of 'self-funded' was high for CF home country and low for CF another country

These variations follow relatively predictable patterns. For instance, it is not surprising that an alumnus' own resources (self-funding) was indicated as the source of funding more often when considering the counterfactual for studying in their home country than studying in another country, given that studying outside of one's home country is often expensive and difficult. Similarly, employer or government funding for study was indicated to a lesser extent when considering the possibility of studying in another country and disproportionately more frequently (although to a lesser extent) when considering studying in a respondent's home country. It seems likely that only in a relatively few cases will the government or employers pay for workers to embark on international higher education in comparison to their funding for workers' domestic higher education.

One specific variation certainly merits further attention: female alumni indicated self-funding for home country study to a greater extent, and employer or government support to a lesser extent than did male alumni³⁰.

Table 34: Respondents indicating Employer or government sponsorship or Self-Funding for CF Home Country

Funding source	Male alumni	Female alumni
Employer or government sponsorship	25.4%	9.8%
Self-Funded	9.8%	16.7%

The effect size of this association is small and more detailed data would be required to fully understand these differences. One plausible explanation is that male recipients of Commonwealth Scholarships and Fellowships have greater access to employer and government support than female recipients. Another possible explanation is that the women had greater recourse to personal funds than the men. The two options are, of course, not mutually exclusive. Whether the women have or have not greater recourse to personal funds they may be forced to draw upon them in lieu of employer or government financial support if it is disproportionately enjoyed by men. It should be noted that the respondents under discussion are those who had already indicated the plausibility of alternative study in their home country, not men and women in the sample generally.

²⁸ Pearson Chi-Square: $\chi^2 = 23.700$, DF = 3, $p < 0.001$, Cramer's V = 0.0814

²⁹ Pearson Chi-Square: $\chi^2 = 67.475$, DF = 1, $P < 0.001$, Cramer's V = 0.236

³⁰ Pearson Chi-Square: $\chi^2 = 11.855$, DF = 3, $p = 0.008$, Cramer's V = 0.0407

Alternative destinations for study

The final element to the counterfactual data related specifically to undertaking a similar programme in another country (other than the respondent's home country or the UK). Respondents rating this scenario as highly likely (8+ on the scale) also indicated in what category of country they would have studied. The options available were: 1) another country in home region, 2) another developing country, and 3) another developed country.

Table 35: Probable destinations for study under CF another country (N=288)

Destination	Respondents
Another developed country	89.6%
Another country in home region	8.3%
Another developing country	2.1%

Almost 90% of alumni who rated studying in another country as highly likely identified 'another developed country' as their probable destination. Taken alongside the probable funding sources identified, the most plausible counterfactual scenario envisaged is to have taken up another scholarship to study in another developed. It is important, however, to set this against the backdrop that the mean rating for this counterfactual scenario is still quite low ($\bar{x} = 4.76$), even though it has the highest rating of the scenarios presented to alumni. Put differently, this is perceived to be the *most likely* of several *unlikely* scenarios.

Because such a large majority of respondents answered 'another developed country' as their probable destination it is somewhat more difficult to assess potential differences between subgroups in how the question was answered. No gender differences were observable in the proportions of respondents to each category and only very small differences were observed in responses by the decade in which alumni held their scholarship. Variations by age quartile³¹ and scholarship scheme³² were also non-significant.

Those who held Northern American or Eastern African citizenship (and who rated this counterfactual scenario as plausible) were significantly more likely to indicate they would have studied in their home region as a probable alternative to UK CSFP funding³³. For alumni holding citizenship in Northern America, all ten that indicated the likelihood of having studied in their home region were citizens of Canada and so the most plausible interpretation is that these alumni would have studied in the US: a country both in their 'home region' (Northern America) and a developed country. In light of this, the complete group of Canadian Scholars indicating they would have studied in the US may be somewhat obscured by possible division of answers between 'another country in home region' and 'another developed country'. Nonetheless, the crux of the analysis – Northern American citizens (Canadians), to a greater extent than citizens of other regions, indicated that they would studied within their home region – remains valid. For Eastern African alumni the tendency to indicate disproportionately that they would have studied in another country in their home region is more difficult to interpret. A possible explanation, in lieu of further information, may be that respondents considered South Africa – another regional HE hub – to be 'within their home region'³⁴. Alternatively, those from Eastern Africa who rated CF Another country as a plausible counterfactual and indicated that they would have studied in another country within their home region may have had specific places offered at institutions in nearby countries. Given the disproportionately low counterfactual ratings offered by Eastern African alumni for studying either in their home country or in another country, it seems unlikely that many viewed study in a nearby country as a plausible alternative to a Commonwealth Scholarship or Fellowship.

Summary and conclusions

Ratings for retrospective reflections on counterfactual scenarios are inevitably tentative, especially given the time that has elapsed since scholarships were held by many of the respondents. Nonetheless, responses to the counterfactual questions asked represent a useful starting point for analysing the possible alternatives, grounded in respondents' own perceptions.

³¹ Pearson chi-squared (four age quartiles plus 'missing'): $\chi^2 = 0.855467$, DF = 4, p = 0.931

³² Pearson chi-squared (scheme codes with all Fellows grouped): $\chi^2 = 1.35531$, DF = 6, p = 0.969

³³ Due to low cell counts Fisher's exact test was used: *Northern America*: p<0.001, *Eastern Africa*: p = 0.041

³⁴ It is worth noting here that the survey did not offer any definition of 'home region' to survey respondents. Thus whilst in our analysis we are working from UN Statistics Division geographical regions, this is unlikely to be the case for many of the respondents.

The most immediate and significant finding of the counterfactual data is that the alternate scenarios for studying are generally perceived to be unlikely. In particular, having been able to study in the UK was rated as highly improbable. Of the three scenarios presented, study in a country other than the UK or the alumnus' home country was viewed as the most probable, although the mean counterfactual score still indicated that the scenario was perceived to be unlikely.

Respondents from higher income Commonwealth states indicated a higher plausibility for study in both the UK and their home country, whilst female respondents generally reported studying outside of their home country (either in the UK or elsewhere) to be less plausible than did male respondents. Both trends bear further investigation because an explanation is not forthcoming merely from numerical analysis of the counterfactual scores. It is not immediately clear, for instance, why greater confidence in the plausibility of alternative study both at home and in one specific country overseas (the UK) is not also reflected for other international educational destinations (CF Another Country) for those from the highest income Commonwealth states.

In all cases another scholarship or fellowship was indicated to have been the most likely alternative funding source, but the proportion of respondents indicating other options varied greatly both by counterfactual scenario and then by demographic variables such as gender and decade of award. For Commonwealth Scholars and Fellows in more recent decades, for instance, the propensity to indicate scholarships as a funding source is lower: with the exception of those from the higher-income Commonwealth states, for whom scholarships are the primary alternate funding source indicated regardless of when the award was held.

Female alumni disproportionately identified self-funding as the probable financial support for studying in their home country, whilst men disproportionately identified employer support as a funding source in this scenario. For both male and female alumni another scholarship remained the most frequently cited funding source, yet the differential perception of access to personal and corporate (or public) funds bears comment. It may, for instance, indicate that female alumni had lesser access to public or corporate funding sources, potentially due to the overrepresentation of men in the employment positions and organisations able to secure access to such monies. Alternatively, it may indicate that female alumni had greater recourse to personal funds through private or family wealth and thus self-funding study in their home country was a viable option.

The latter possibility echoes Enders and Kottman's (2013) analysis of the Ford Foundation's International Fellowship Program, in which it was found that female scholarship recipients tended to be slightly 'better off' than male counterparts. Similarly, Negin et al. (2014) used parental education level and prior travel outside of Africa as rough proxies for socioeconomic status and found female scholarship holders to score higher on both than their male counterparts. Enders and Kottman have commented that the pattern of women requiring stronger 'socio-economic capital' (2013: p20) to overcome gender discrimination in attaining sufficient educational or career standing to undertake scholarships is well documented (see, for instance, World Bank, 2011), but by extension this may stratify female scholarship entrants. Bysouth and Allaburton (2012), for instance, have noted that many of the female alumni of an Australian scholarship programme in Africa appeared to be 'stars' (2012: p19), likely to have succeeded in their organisations and careers regardless of the scholarships. Whilst this does not invalidate the scholarship exercise – the award could catalyse greater or faster progress, for instance – it does raise important questions both about whether the right groups are being targeted and, as a consequence, the strength of 'impact' claims.

It is difficult to discern from the current survey data to what extent any of this commentary is relevant to former Commonwealth Scholars and Fellows. Female alumni gave lower counterfactual ratings in two of the scenarios (and no different in the other scenario) and so there is clearly little indication from these respondents that a straightforward alternative to a Commonwealth Scholarship or Fellowship was available. Female alumni attributed their 'socioeconomic background' to be more influential in having shaped their professional development, but the effect size is very slight³⁵. The CSC's evaluation surveys have not collected detailed data on the socioeconomic background of respondents and so it is not immediately clear the extent to which those receiving awards could be considered educational and social elites. It is a well-established phenomenon in the UK and elsewhere (e.g. Dearden, 1998; Jerrim, 2013; Skipp & Sadro, 2013) that those from socio-demographically elite groups frequently have increased life chances through both access to personal capacity building experiences (inside and outside of formal education) and networks of contacts. It is thus somewhat more difficult to disentangle factors such as 'contacts', 'socioeconomic background' and 'personal attributes' than the ranking question presented earlier may imply. In sum, the socioeconomic status of male and female scholarship applicants and alumni may be a topic meriting further investigation.

³⁵ Mann-Whitney test, Female ranking of 'socioeconomic background' (n=303) vs male ranking of socioeconomic background (n=526): $W=211790$, $p=0.004$, r (effect size) = 0.067.

Finally, for those indicating that study in another country would have been a plausible alternative the most likely destination would have been a 'developed state'. This is unsurprising given that most global educational hubs are highly developed, high income states and thus those with financial means (through whatever source) to undertake international education are likely to have been destined for one of these locations. The finding that Northern American respondents disproportionately indicated their 'home region' as a possibility for international study likely reflects the well-established flow of Canadians into US educational institutions, although the interpretation of Eastern African alumni indicating a similar possibility is less clear. The low proportion of respondents suggesting that a developing country would have been their destination is interesting when set in the context of another scholarship being the most probable source of funding. Although established scholarship schemes in numerous countries within Europe and North America annually support thousands of overseas entrants, so too do new and re-emerging scholarship schemes sponsored by other states. Chinese government Scholarships, for instance, fund an annual scholarship cohort that dwarfs most schemes operated by the European states and the US (see Dong and Chapman, 2008). India, Brazil, and Mexico also run a variety of scholarship programmes. Either the populations taking up scholarships to these destinations do not overlap significantly with those seeking a Commonwealth Scholarship or Fellowship, or more granulated language in the survey may be required to distinguish between different scholarship funders and destinations.

7. Overall conclusions

This interim analysis and report has been completed mainly to achieve three ends:

1. To identify indicative findings emerging from the survey exercise
2. To establish what forms of analysis will be possible and what additional work will need to be conducted in order to facilitate a more detailed understanding
3. To begin identifying future research priorities to which CSC evaluation effort might be directed

Findings related to these aims are discussed in the sections below.

An overview of the findings

Almost all alumni, including those not recruited through employers, were in full-time employment prior to undertaking their scholarship in the UK. Few, therefore, followed a purely academic route in which they pursued full-time studies in their home country (or elsewhere) and then continued in the UK. Rather their journeys were more usually to enter the labour market and then, through Commonwealth Scholarships and Fellowships, to seek further qualifications before returning predominately to their previous employment positions and their home country. Similarly, almost all alumni are currently working full-time; a small minority are working part-time, and, as expected given the age of some respondents, some have retired from work. Alumni are likely to be working in the higher education or public sector, these sectors together accounting for three quarters of survey respondents and on average they will have held two positions since completing their scholarship, although the latter is of course closely linked to the time alumni have spent in the labour force. The prevalent perception amongst alumni is that gains from Commonwealth Scholarships and Fellowships are both substantial and continue to be applicable in their workplace. In particular, application of the knowledge and technical skills gained on award and their subsequent application and knowledge transfer post-scholarship was widespread. On this evidence there is considerable support for the utility of the CSFP as a labour market capacity building programme at both the individual and institutional level.

With respect to on-going international networks and collaborations the analysis reveals more mixed results. After finishing a scholarship it was relatively common for alumni to keep in contact with social and academic ties in the UK, although this varies substantially by scholarship programme. Ties with international organisations are far less prevalent and in many cases absent entirely and thus the relationships built through the scholarship programme are largely bilateral. Whilst social and professional ties between alumni and the UK are conversant both with the development of international professional networks and agenda relating to UK soft power (e.g. Holden & Tryhorn, 2013) they are not widely regarded by alumni as central to career development. Ratings for the contribution of links with the UK to subsequent professional development were rather low and when alumni indicated the most influential contributing factors to their professional development contacts at home and abroad were amongst the lowest ranked. This does not imply such relationships are inconsequential – or that there are not intangible benefits to both UK and alumni partners – but it does highlight that the forging of long term bilateral connections is not necessarily perceived as a crucial facet of labour capacity building or generation of long-term developmental impact.

On this latter topic, developmental impact, the survey results are very encouraging. Around 79% of alumni have been involved in one or more projects within the eight developmentally-relevant areas investigated, whilst 67% reported impact in socioeconomic activity and 35% reported impact in government policy. The median domain of impact was the 'national' level for male alumni and the 'local' level for female alumni and, whilst the disparity between genders needs to be investigated, this broadly indicates involvement of alumni in both policy and practice beyond their own careers and immediate organisations. It is also important to note that many scholarship alumni from higher income Commonwealth countries - not selected or funded on the basis of potential development impact - also reported contributing substantially to developmentally-relevant sectors, even if their outcomes on these measures were somewhat lower than other alumni. Evidently there is a useful degree of crossover between the priorities and achievements of the different funding bodies involved (currently and historically) in Commonwealth Scholarships and Fellowships.

One area meriting further attention is the tendency for alumni reporting government policy influence to also report their highest impact domain to be 'national' or 'international', suggesting that policy influence is largely conceived in terms of central and overarching governmental structures, or else very few alumni are involved in local and regional governance. It would be useful to clarify this distinction in future evaluation, not least because much valuable work in policymaking and advocacy may be going unnoticed if the survey is interpreted as focusing only at the national or international level.

Activity was reported in all developmentally-relevant areas, but the largest body of work undertaken by alumni has been in education: the sector in which most were employed pre-scholarship and remain employed presently. Certainly the preponderance of joint scholarly activity demonstrates a potentially important legacy of Commonwealth Scholarships and Fellowships. Almost 4000 joint publications (and numerous other sole-authored publications) were reported as a direct result of Commonwealth Scholarships and Fellowships and approximately 30% of alumni indicated having been involved in collaborations leading to future research. Whilst the diffusion across time and geography of these outcomes should be noted, it is nonetheless important to recognise the contribution such scholarship can make in the context of research ecologies in developing countries (see Bunting, Cloete & van Schalkwyk, 2013).

The interim analysis raises a definitional question about the activities envisaged as 'developmental'. The example of scholarly knowledge and scientific enterprise is instructive as high-level knowledge production activities are important developmentally-relevant activities in many Commonwealth countries. This proposition is contested (e.g. Newman et al. 2014), but it holds insofar as building academic research cultures and capacity is productive and useful in itself, separate to its poverty-alleviation effects for less-developed countries. It is likely, however, that academic and research staff in higher income countries are also involved in these activities, but in this case we are unlikely to consider them developmentally-relevant in the same sense as, for instance, international public health activities in partnership with low-income countries. It may be important to define what constitutes regional developmental activity in the context of the CSFP's policy priorities and incorporate assessment of these foci into the survey design.

Finally, the analysis of counterfactual scenarios makes clear that very few alumni felt there was substantial prospect for having pursued a similar programme of study in lieu of their Commonwealth Scholarship or Fellowship. An abiding concern – and often criticism – of both scholarship programmes and their evaluations is the need for a plausible counterfactual assessment to establish the magnitude of gains (if any) from substantial resource investment (Garcia, 2011). The CSC's strategy on this matter has been both to launch a counterfactual research project and to explore alumnus' retrospective reflections. Whilst it is important to recognise the limits of retrospective self-reporting, alumni are often well-placed to know the contours and likely trajectory of their earlier lives and so retrospective data can be very valuable. Preliminary assessment of this retrospective data reinforces the importance of the CSFP in bringing access through scholarships and fellowships to a constituency overwhelmingly confident that alternatives were scarce.

Research design considerations

Whilst the deficiency of a purely demographic analysis was evident from the outset, it was an important first step to establishing an understanding of future analytical directions for the survey data. The low effect sizes reported in the present paper should be sufficient evidence that a more complex statistical model (and greater validity in the measures) is required to provide a richer explanatory analysis. Nonetheless, some important directions for future evaluation have been identified, as have limitations of the current data been highlighted.

Combining primary impact and external data

Country and region level data can provide useful internationally-recognised benchmarks for exploratory analysis and the use of some external data has begun with HDI and Polity IV in the current paper. Other detailed information - e.g. labour force participation, publication rates by region or country – is held by organisations such as the International Labour Organisation, UN Institute of Statistics, and World Bank and, whilst macro-level aggregate data does not offer an understanding of alumni experiences, it can help set the context for post-scholarship journeys and achievements.

Using the UN Statistics Division's geographical sub-regions (see Appendix 1: Geographical regions) has also highlighted some of the merits and demerits of particular regional groupings. A consistent problem in the analysis has been the need to exclude regions with respondent counts too low for statistical analysis, leading to respondents from some regions (notably Melanesia and Polynesia) being consistently excluded. A broader regional grouping could be used (and has been used previously: e.g. Scurfield & Barabhuiya, 2014), but this strategy reduces granularity and could have elided some of the findings, such as that Eastern Africans (but not Western or Southern Africans) disproportionately reported studying in another country within their home region as a counterfactual option. Additionally, the survey exercise is incomplete - 40% of the total data corpus is due to be collected in 2015 - further reducing the problem of low samples for all groups except those that have only relatively small current populations (e.g. Scholars from the 1960s).

Improving data analysis options

It has become evident that data normality and gradation present obstacles for more complex statistical analysis of the survey results. Many of the scaled questions used within the survey design tend to elicit

skewed responses, particularly with the overwhelming majority at the most positive pole of the scale. Knowledge and skills questions epitomise this skewedness: the 'gained knowledge' mean rating of 4.73 on a 5-point scale, for instance. Whilst this coalescence of opinion is an important endorsement of the CSFP's outcomes it makes explanatory analysis rather more difficult because responses tend to be polar rather than normally distributed: a large cluster of 'positives' and a small cluster of 'negatives' (or the opposite for counterfactuals ratings) with little in between. The result in statistical terms has been the need for distribution-free techniques (e.g. Mann Whitney test, Kruskal Wallis one-way ANOVA) throughout the paper and a difficulty in determining interaction effects between multiple demographic variables (e.g. gender, region, and decade of award).

Moving to somewhat longer scales tends to provide better discrimination between responses (Preston and Colman, 2000), but their utility over 5-point scales is not universally accepted (e.g. Dolnicar, 2013) and, as we have seen with the counterfactual results, they too are not always amenable to complex statistical analysis due to non-normality. Several alternative approaches may be helpful. Since much of the non-normality problems concern clustered values close to the pole of the scale, it may be possible to use a data transformation (e.g. Box-Cox power transformation: see Osborne, 2010) to help make the data normal and facilitate statistical analysis. This strategy can be explored for the future but has not been pursued in the present paper, not least because no inferential analysis has previously been conducted and so the extent of data non-normality was not initially apparent.

Another approach might be to move from opinion scales to behavioural ('act-based') scales, in which a pre-determined range of behaviours are used as proxies for a construct of interest (such as leadership or application of knowledge and skills) and respondents report the frequency of those behaviours within a defined timeframe. Act-based approaches are relatively common in psychological research (e.g. Straus et al., 1996) when the constructs of interest are difficult to define in the abstract, self-reported perspectives are likely to be unhelpful, or frequency of incidence is more important to the research aims than perceptions. Unlike Likert-style opinion scales, however, act based scales do not polarise responses either side of a neutral midpoint and so are better suited to analysing variations between groups, or comparing incidence of behaviours against an established baseline, than to revealing the extent to which a proposition (such as 'I increased my technical skills') is supported by respondents.

Improving measurement accuracy

Concern with ambiguous definitions has been noted at various points in the current analysis. In particular, the examination of developmentally-relevant activities has highlighted the relatively loose definition of terms such as 'socioeconomic activity' and 'government policy' and, moreover, 'impact' as a construct. It is reasonable to avoid pre-specifying the nature of impact within a heterogeneous cohort of alumni, but the compromise for doing so is that interpretations of what constitutes 'international impact' and 'socioeconomic activity', for instance, are likely to vary (i.e. measurement non-equivalence / non-invariance). In essence, it can be unclear whether all respondents are answering these survey items with the same understanding of the concepts.

This concern is not unique to identifying measures for scholarship outcomes, but it underscores that in survey design it is often difficult to address a topic simply by phrasing it as a question (see Blair, Czaja, & Blair, 2014). Since it is a valid concern that an overly specific definition of 'impact' may elide important activities not included, two recourses are available: 1) to seek an existing 'impact' measure with sufficient breadth and established validity, or 2) to derive an original 'impact' measure. Detailed and useful attempts have been made by colleagues elsewhere (e.g. Andersen & Tobiasen, 2007) at deriving measures of scholarship effects, but a suitable outcome measure has yet to emerge that has garnered cross-national support or been extensively validated. The alternative, to design a new measure, would require a short exercise by the CSC to establish what is meant by 'impact' (and potentially other important constructs) across a range of interested groups: various alumni, current scholarship recipients, the Secretariat, and potentially DFID.

A related concern is the temporality of data: in some cases it has not been specified *when* activities of interest (e.g. involvement in developmentally-relevant projects) should have taken place. It is assumed within the context of the evaluation survey that developmentally-relevant activities have taken place *after* having completed a Commonwealth Scholarship, but this is not currently included in the survey definitions and as such a clarification would potentially improve the discrimination between pre- and post-scholarship impacts. The introduction (in 2014) of pre-award baseline surveys for most scholarship recipients will help to alleviate this concern for impact data on future alumni. Additionally, act-based scales (discussed above) must specify a time period over which behaviours are to be measured in order to be comprehensible questions and so any movement toward such scales would reduce the temporality concern for future surveys.

Future research directions

This analysis has been of one facet of the data collected by the survey cycle. Another rich seam of information lies in the free-text survey comments on topics such as the supportiveness of employers, the extent to which alumni have realised their personal scholarship goals, and the detailed description of development activities in which alumni have been involved. This form of data demands a different kind of analysis – qualitative, thematic, and detailed (see, for instance, Bryman, 2012) – and so no attempt has been made to summarise it here: the analysis of the free-text data is planned for the 2015 report on this survey cycle. Moreover, the quantitative findings of this survey should not be taken in isolation from the qualitative profiles of alumni conducted by the CSC³⁶ which often offer a richer, narrative depiction of the issues explored within the current report.

It has been indicated by alumni that a significant volume of collaborative research work has emerged from Commonwealth Scholarships and Fellowships. This suggests that bibliometric and scientific activity analyses could prove a productive approach to tracking both long-term impacts and capacity building effects in the research sector. The likelihood that all such work is directly attributable to projects undertaken whilst on Commonwealth awards is low (although a substantial proportion likely will originate directly from doctorates) and as such tracking publications may help to highlight how alumni research activity continues, evolves, and is catalysed by earlier Commonwealth Scholarships or Fellowships. Additionally, and as Weinburg et al. (2014) have observed, scientific activity often involves local spending and employment commitments that mean the process of research is tied with economic activity³⁷. Analysis of research and scholarly production might thus provide some ancillary insight into economic development to which the CSFP has contributed.

An aspect of alumni trajectories about which the survey offers relatively limited detail, however, is the experience of reintegration post-scholarship. It is evident from the data collected on individual capacity and employment trajectory that most alumni return to their previous employment (or secure employment within a year) and that knowledge gained whilst on scholarship is widely applied and transferred to others. Yet these survey statements are rather abstract and provide little insight into the process of becoming professionally and socially reintegrated after a (often extensive) period abroad. Reintegration experiences have been identified as an important period in realising the benefits of international scholarships (Nuffic, 2009; Webb, 2009; AusAid, 2011; Clift, Dassin & Zurbuchen, 2013) and so might make a fruitful focus for future data collection.

Taking a slightly different angle, it is also possible to identify specific groups whose experiences may merit direct investigation: such as alumni who are currently resident outside of their citizenship country and in a country with higher HDI. It is worth reiterating that the current data does not include how long these alumni have lived away from their home countries, nor if other alumni had been in similar positions but had subsequently returned and resided within their citizenship country at the point of receiving the survey. Notwithstanding this methodological issue, there is substantial discussion of the contribution made to their home communities and countries by expatriate scholarship alumni (e.g. Adams and Page, 2005; Dassin, 2009) and the complexities of brain drain, gain, and circulation (e.g. Tefera, 2005). Returning home is a key tenet of Commonwealth Scholarships and Fellowships, but, in the case of currently non-resident alumni, the length of time spent outside their home country is largely unknown, as are the consequences of such decisions in terms of long-term policy outcomes. The relatively small cohort of alumni not living and working within their home countries might thus make a useful constituency for understanding what factors influence international mobility post-scholarship.

Five recommendations for future evaluation

Prior to offering any recommendations it should be emphasised that the present paper is an interim analysis of an incomplete survey dataset. Whilst it is not anticipated that the findings will change dramatically in 2015 – the division of recipients into yearly cohorts was, after all, purely on administrative grounds – there is still a significant body of analytic work to be conducted. In the category of such work is the qualitative analysis of free-text commentaries from the survey and data transformation and more sophisticated statistical analysis: it should be recalled that the statistical effect sizes for analysis of demographic variables alone were rather small.

Notwithstanding these caveats, the following potentially useful directions for the immediate future of the evaluation programme arise:

³⁶ See <http://cscuk.dfid.gov.uk/category/profiles/evaluation-profiles/>

³⁷ Newman et al. (2014) critique the relationship between economic growth and research investment, but human capital building appears to be an exception and it is, of course, entirely in this mode that UK CSFP operates. The 'secondary' spending of scientific activity – in employing local scientific labour forces, producers of scientific goods and so forth (see Weinburg, et al. 2014) - is not addressed by Newman et al.

1. Conduct a short exercise amongst CSFP stakeholders to determine how best 'impact' and related constructs (e.g. 'socioeconomic activity') can be defined so that they cohere both with policy objectives and the range of post-scholarship activities that alumni feel are important contributions at least partly underpinned by Commonwealth Scholarships. One approach to this exercise would be through a qualitative (free-text) survey of current and future alumni in concert with a documentary analysis of CSC Secretariat and funder perspectives. By further grounding the definition of impact in stakeholders' perspectives it is more likely that impact measures will be valid, reliable, and relevant.
2. Investigate the possibility of using behavioural ('act-based') scales alongside opinion scales for outcome data. Defined activities validated as representative of outcomes relevant to the CSFP could be self-reported, allowing for a more direct (and valid) comparison of activities between alumni. A small pilot exercise would initially be advisable in which the behavioural basis of the scales was validated through survey testing. Existing measures may also be useful.
3. Explore the corpus of collaborative scientific and scholarly outcomes of Commonwealth Scholarships and Fellowships through bibliometric or scientometric methods. The corpus of joint academic publications, in particular, highlights the potential not only for charting tangible scientific outcomes of the CSFP, but also the ways in which networks of collaboration have evolved and work begun under the auspice of (or catalysed by) Commonwealth awards has developed.
4. Target specific strands of the evaluation programme toward the examination of re-integration experiences immediately post-scholarship and the experiences and (potential) contributions of alumni not resident in their home country. These two foci have emerged from the interim analysis as areas in which current evaluation knowledge is lacking and, importantly, in which CSC policy can reasonably expect to be shaped by detailed evaluation.
5. Begin to build a statistic model of outcomes that goes beyond demographic variables. The interim analysis has demonstrated that demographics alone are unlikely to provide substantive answers and thus data challenges and incorporation of a broader group of variables will be required. Data transformation to allow more sophisticated statistical analysis and multiple variable modelling (e.g. logistic regression, log-linear analysis), beginning with demographics, would be an appropriate starting point.

References

- Adams, R., & Page, J. (2005). 'Do international migration and remittances reduce poverty in developing countries?' *World Development*, 33 (10), 1645 – 1669. doi: 10.1016/j.worlddev.2005.05.004
- Andersen, C., & Tobiasen, A. (2007). 'Effect measurement – Norad's programme for Master's studies (NOMA): SNF-Working paper No. 13/07'. Bergen: SNF
- Atkinson, C. (2010). 'Does soft power matter? A comparative analysis of student exchange programs 1980-2006'. *Foreign Policy Analysis*, 6(1), 1-22. doi: 10.1111/j.1743-8594.2009.00099.x
- AusAID (2011). *AusAID Fiji ADA/ARDS Impact study 2011*. Canberra: AusAID
- Beine, M., Docquier, F., & Rapoport, H. (2008). 'Brain Drain and Human Capital Formation in Developing Countries: Winners and Losers'. *The Economic Journal*, 118 (528), 631–652. doi: 10.1111/j.1468-0297.2008.02135.x
- Bryman, A. (2012). *Social Research Methods* (4th ed). Oxford: Oxford University Press
- Bunting, I., Cloete, N., & van Schalkwyk, R. (2013). *An empirical overview of eight flagship universities in Africa, 2001 – 2011*. A report of the Higher Education Research and Advocacy Network in Africa (HERANA). Cape Town: Centre for Higher Education Transformation
- Bysouth, K., & Allaburton, B. (2012). *Outcomes evaluation In-Africa Australian Development scholarships management program*. Canberra: Department of Foreign Affairs and Trade.
<<http://aid.dfat.gov.au/Publications/Documents/outcomes-evaluation-ads-africa.pdf>>
- Chesterfield, R., & Dant, W. (2013). *Evaluation of LAC Higher Education scholarships program: Final report*. North Bethesda, MD: JBS International
- Clift, R., Dassin, J., & Zurbuchen, M. (2013). *Linking higher education and social change: Ford Foundation International Fellowships Program*. New York: Ford Foundation International Fellowships Program
- Colman, A., Norris, C. & Preston, C. (1997). 'Comparing rating scales of different lengths: Equivalence of scores for 5-point and 7-point scales'. *Psychological Reports*, 80 (2), 355-362. doi: 10.2466/pr0.1997.80.2.355
- Commonwealth Scholarship Commission in the United Kingdom (2013). *54th Annual Report to the Secretary of State for International Development: For the year ending 30 September 2013*. London: Commonwealth Scholarship Commission in the United Kingdom.
- Cosentino, C., Dumitrescu, A., Moortby, A., Rangarajan, A., Shaw, A., Sloan, M., Thomas, C., & Burciul, B. (2013). 'Learning across borders: The collaborative creation of a monitoring, evaluation, and learning framework for the MasterCard Foundation Scholars Program'. Paper presented at UKFIET international conference on education and development – 'Education and Development post-2015: Reflecting, Reviewing, Re-Visioning', 10-12 September 2013, Oxford.
- Dassin, J. (2009). "'Return" and "Returns": Brain Drain and the path back home'. In Volkman, T., Dassin, J., & Zurbuchen, M. (eds). *Origins, journeys and returns: social justice in international higher education*. New York: Social Science Research Council
- Dawes, J. (2002). 'Five point vs. eleven point scales: does it make a difference to data characteristics?' *Australasian Journal of Market Research*, 10 (1), 39-47.
- Dawes, J. (2008). 'Do data characteristics change according to the number of scale points used? An experiment using 5-point, 7-point and 10-point scales', *International Journal of Market Research*, 50 (1), 61-77.
- Day, R., Stackhouse, J., & Geddes, N. (2009). *Evaluating Commonwealth Scholarships in the United Kingdom: Assessing impact in key priority areas*. London: Commonwealth Scholarship Commission in the United Kingdom
- Dearden, L. (1998) "Ability, family, education and earnings in Britain", Institute of Fiscal Studies, Working Paper 98/14, doi: 10.1920/wp.ifs.1998.9814

- Deutscher Akademischer Austauschdienst [DAAD] (2013). *Knowledge - Action - Change, Three alumni surveys in review: 25 years of DAAD postgraduate courses*. Bonn: DAAD
- Dolnicar, S. (2013). 'Asking good survey questions'. *Journal of Travel Research*, 52 (5), 551-574. doi: 10.1177/0047287513479842
- Dong, L., & Chapman, D. (2008). 'The Chinese Government Scholarship Program: An effective form of foreign assistance?' *International review of education*, 54(2), 155-173. doi: 10.1007/s11159-007-9075-7
- Enders, J. (2007). 'Mobilizing marginalized talent: The International Fellowships Program'. *International Higher Education*, 46, 7-8
- Enders, J., & Kottmann, A. (2013). *The International Fellowships Program: Experiences and outcomes*. Enschede, NL: University of Twente
- Evidence (2010). *Bibliometric study of India's research output and international collaboration*. Leeds: Evidence
- Friesenhahn, I. & Beaudry, C. (2014). *The Global State of Young Scientists – Project Report and Recommendations*, Berlin: Akademie Verlag.
- Garcia, M. (2011). 'Micro-methods in evaluating governance interventions'. Evaluation Working Papers. Bonn: Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung
- Gilboy, A., Carr, H., Kane, T., & Torene, R. (2004). *Generations of quiet progress: The development impact of U.S. long-term university training on Africa from 1963 to 2003*, Volumes I, II and III. Washington, DC: USAID
- Holden, J., & Tryhorn, C. (2013). *Influence and attraction: Culture and the race for soft power in the 21st century*. Manchester: British Council
- Holmes, D., & Mergen, A. (2014). 'Converting Survey Results from 4-Point to 5-Point Scale'. *Total Quality Management and Business Excellence*, 25 (2), 175-182.
- House of Lords Select Committee on soft power and the UK's influence (2014). *First Report: Persuasion and Power in the Modern World*. <<http://www.parliament.uk/soft-power-and-uks-influence>>
- Jerrim, J. (2013) *Family background and access to 'high status' universities*. London: The Sutton Trust
- Kahn, M. (2011). 'A bibliometric analysis of South Africa's scientific outputs – some trends and implications'. *South African Journal of Science*, 107 (1), np. doi: 10.4102/sajs.v107i1/2.406
- Kirkland, J., Ransom, J., Stackhouse, J., & Taal, S. (2012) 'Commonwealth Scholarship and Fellowship Plan 2009-2012'. Paper presented at the 18th Conference of Commonwealth Education Ministers, 28-31 August 2012, Mauritius.
- Lane, J. (2009). 'Assessing the impact of science funding'. *Science*, 324 (5932), 1273-1275. doi: 10.1126/science.1175335
- Mansukhani, V., Handa, N.L. (eds) (2013). *Opening Doors: Ten years of the Ford Foundation International Fellowships Program in India*. New Delhi: Ford Foundation International Fellowships Program
- Marshall, M., Gurr, T., & Jagers, K. (2014). *Polity IV Project: Dataset users' manual*. <<http://www.systemicpeace.org/inscr/p4manualv2013.pdf>>
- Mawer, M. (2014). *A study of research methodology used in evaluations of international scholarship schemes for higher education*. London: Commonwealth Scholarship Commission in the United Kingdom
- Negin, J., Cumming, R., Vizintin, P., Howie, L., Amazan, R. & Abimbola, S. (2014). *Outcomes of tertiary scholarships for students from Kenya, Mozambique and Uganda: Results of a quantitative online survey*. Unpublished report.

- Newman, K., Evans, W., Dercon, S., Whitty, C., Harvey, M., Vince, J., Bevan, N., Cattermoul, B., McGowan, J. & Rimmer, J. (2014). *What is the evidence on the impact of research on international development?* London: Department for International Development
- Nuffic (2009). *NFP tracer 2009: 2nd draft report*. The Hague: Nuffic
- Osborne, J. (2010). 'Improving your data transformations: Applying the Box-Cox transformation'. *Practical Assessment, Research & Evaluation*, 15 (12). <<http://pareonline.net/pdf/v15n12.pdf>>
- Perna, L., Orosz, K., Gopaul, B., Jumakulov, Z., Ashirbekov, A., & Kishkentayeva, M. (2014). 'Promoting human capital development: A typology of international scholarship programs in higher education'. *Educational Researcher*, 43(2). 66-73. doi: 10.3102/0013189X14521863
- Perraton, H. (2009). *Learning abroad: A history of the Commonwealth Scholarship and Fellowship Plan*. Newcastle: Cambridge Scholars Publishing
- Pietsch, T. (2011). 'Many Rhodes: Travelling scholarships and imperial citizenship in the British academic world, 1880 – 1940'. *History of Education: Journal of the History of Education Society*, 40(6), 723-729. doi: 10.1080/0046760X.2011.594096
- Preston, C., & Colman, A. (2000). 'Optimal number of response categories in rating scales: Reliability, validity, discriminating power, and respondent preferences'. *Acta Psychologica*, 104 (1), 1-15. doi: 10.1016/S0001-6918(99)00050-5
- Ramboll Management Consulting (2012). *Final report: Evaluation of NPT and NICHE*. Berlin: Ramboll Management Consulting
- Scurfield, K., & Barabhuiya, F. (2014). *Evaluating Commonwealth Scholarships in the United Kingdom: Review of the Commonwealth Professional Fellowship scheme 2008-2011*. London: Commonwealth Scholarship Commission in the United Kingdom
- Skipp, A., & Sadro, F. (2013). *Access to grammar schools for disadvantaged pupils: A report of interviews with Grammar and Primary head teachers*. London: NatCen Social Research,
- Straus, M., Hamby, S., Boney-McCoy, S. & Sugarman, D. (1996). 'The Revised Conflict Tactics Scales (CTS2): Development and Preliminary Psychometric Data'. *Journal of Family Issues*, 7 (3), 283-316. doi: 10.1177/019251396017003001
- Teferra, D. (2005). 'Brain Circulation: Unparalleled Opportunities, Underlying Challenges, and Outmoded Presumptions'. *Journal of Studies in International Education*, 9(3), 229–250. doi: 10.1177/1028315305277619
- UN Statistics Division (2013). *Composition of macro geographical (continental) regions, geographical sub-regions, and selected economic and other groupings*. <<http://unstats.un.org/unsd/methods/m49/m49regin.htm>>
- United Nations Development Programme (2013). *Human Development Report 2013, The rise of the South: Human progress in a diverse world*. New York: United Nations Development Programme
- van der Aa, R., Willemsen, A., & Warmerdam, S. (2012). *Evaluation of the Netherlands Fellowship Programme (NFP) 2002-2010*. Rotterdam: ECORYS Nederland BV
- Vardakoulias, O. (2012). *Measuring the economic impact of Commonwealth Scholarships: Identifying Methodologies for Cost Benefit Analysis and Value for Money*. London: Nef Consulting
- Volkman, T., Dassin, J., & Zurbuchen, M. (2009). *Origins, journeys and returns: social justice in international higher education*. New York: Social Science Research Council
- Webb, S. (2009). *Australian scholarships in Cambodia: Tracer study and evaluation*. Canberra: AusAID
- Weinburg, B., Owen-Smith, J., Rosen, R., Schwarz, L., McFadden Allen, B., Weiss, R., & Lane, J. (2014). 'Science funding and short-term economic activity'. *Science*, 344 (6179), 41-43. doi: 10.1126/science.1250055

World Bank (2011). *World Development Report 2012: Gender equality and development*. Washington, D.C.: The World Bank.

Appendix 1: Geographical regions

Data for geographical regions was drawn from the UN Statistics Division's composition of geographical sub-regions. Three minor changes have been made in the constitution of regions for the purposes of this paper:

1. Cameroon has been combined with Western Africa, not Middle Africa
2. Cyprus has been combined with Southern Europe, not Western Asia.
3. Saudi Arabia has been combined with Southern Asia, not Western Asia

These changes remove two regions for which the only contributing countries were those noted above, a problem for statistical analysis as the regional sample was persistently low. In justification of the changes, Cameroon is geographically adjacent to Nigeria (Western Africa region) and is expected to share many characteristics, whilst Cyprus is a Mediterranean, high-income island comparable to the Southern European countries. The removal of Saudi Arabia to Southern Asia is justified only as an expedience: the region of Western Asia was solely constituted of one Cypriot and one Saudi case, the former a citizen of the island and the latter a citizen of India currently resident in Saudi Arabia. Whilst it would have been ideal to maintain the integrity of the regions, the incorporation of a single case in a geographically inaccurate region is not expected to notably affect the results.

The constitution of regions for those countries contributing respondents to the survey data is as follows:

Australia and New Zealand

Australia
New Zealand

Caribbean

Antigua and Barbuda
Bahamas
Barbados
Dominica
Jamaica
Saint Lucia
Saint Vincent and The Grenadines
Trinidad and Tobago

Central America

Belize

Eastern Africa

Kenya
Malawi
Mauritius
Seychelles
South Sudan
Tanzania
Uganda
Zambia
Zimbabwe

Eastern Asia

China
Hong Kong
Taiwan (Republic of China)

Melanesia

Fiji
Papua New Guinea

Northern America

Bermuda
Canada
United States

Northern Europe

United Kingdom

Polynesia

Tonga

South America

Falkland Islands
Guyana

South-Eastern Asia

Brunei Darussalam
Malaysia
Singapore

Southern Africa

Botswana
Lesotho
Namibia
South Africa
Swaziland

Southern Asia

Bangladesh
India
Maldives
Pakistan
Sri Lanka
Saudi Arabia

Southern Europe

Gibraltar
Malta
Cyprus

Western Africa

Cameroon
Ghana
Nigeria
Sierra Leone
The Gambia

Appendix 2: Categories of developmentally-relevant activities

Activities were deemed to be of developmental relevance if they fell into one of the following eight categories, each with several subcategories (with the exception of Poverty reduction). These categories were refined through an iterative process between 2007 and 2011 (particularly 2007/8), taking into account UK government development assistance priorities and the Millennium Development Goals.

The full list of categories and subcategories are as follows:

1. Environmental Issues
 - a. Climate Change
 - b. Natural resources
 - c. Water and sanitation
 - d. Agriculture and food security
 - e. Agriculture / Rural productivity
2. Health
 - a. HIV / AIDS, malaria & tuberculosis
 - b. Child / Maternal health
 - c. Preventative health
 - d. Reproductive and sexual health
3. Governance, Security & Conflict
 - a. Democracy
 - b. Human rights
 - c. Civil society
 - d. Local government
 - e. Conflict resolution
 - f. Humanitarian assistance
4. Gender Equality
 - a. Primary education
 - b. Secondary education
 - c. Tertiary education
 - d. Employment (non-agricultural)
 - e. Governance (national)
 - f. Reproductive and sexual health
5. Poverty Reduction
6. Education
 - a. Research and teaching
 - b. Primary education
 - c. Secondary education
 - d. Tertiary education
 - e. Technical and vocational training
 - f. Planning and administration
7. Population Growth & Development
 - a. Family Planning & Reproductive Health
 - b. Migration
8. Economic Growth & the Private Sector
 - a. Employment / Job creation
 - b. Administration of public finances
 - c. Trade & private sector
 - d. Entrepreneurship
 - e. Production & manufacturing

In questions using subcategories an option for 'other' was included, which offered a free-text response option for alumni to enter a field not listed within the categories above.

Appendix 3: Rescaling procedure

Due to minor changes between survey iterations, three questions needed rescaling to bring all data into the same format and to allow meaningful measures of central tendency and dispersion to be taken.

Several options were available, of which the most applicable and straightforward were those reported by Dawes (2002: 2008) and Preston and Colman (2000). The two methods are mathematical interpolations into a 10-point scale from 5-point scale data. The Preston and Colman (2000) rescaling technique involves the following formula:

$$(\text{Rating} - 1) / (\text{Scale max} - 1) \times 10$$

This yields a rating out of 10 based on the original rating and scale maximum of possible ratings. The Dawes (2002: 2008) rescaling technique involves interpolating the scale points as follows:

5-point scale	Rescaled 10-point scale
1	1
2	3.25
3	5.5
4	7.75
5	10

The following procedure was followed to test the fit of both rescaling techniques:

1. Performed Dawes rescaling technique and Preston and Colman rescaling technique on data from the 2012 and 2013 survey iterations, leaving the 2014 (10-point scale) data unaltered. This made all data a rating out of 10.
2. Took descriptive statistics for the central tendency, dispersion, and distribution shape for all data: both rescaled and original. In the case of original data these statistics were calculated for each scale group (e.g. all the 5-point scales together, the 10 point scale separately) to avoid distortion.
3. Compared fit across the first four data 'moments': mean, variance, skewness, and kurtosis
4. Chose the rescaling method that produced the closest fit to the original data through each of the four moments

After completing this analysis, the Dawes (2002: 2008) procedure achieved the best fit and was been selected as the appropriate method. More mathematically complex solutions are detailed by Colman et al. (1997) and Holmes and Mergen (2014), but the basic transformation suggested by Dawes fit our data well throughout so we did not pursue these alternatives.

Appendix 4: Overview of statistical procedures

This appendix is designed to allow the reader to see the main statistical procedures used for each section of the report. Demographic statistics are excluded from reporting, as are graphs or numerical results from normality assessments such as the Kolmogorov-Smirnov test. All data has been treated with distribution-free techniques: normality tests and assessments of skewness and kurtosis demonstrated the non-normality of all variables of interest. Data transformations have not been used in the current paper.

The main statistical procedures deployed have been the Mann Whitney test, Kruskal-Wallis one-way Analysis of Variance, and Pearson Chi Square tests. Unless otherwise stated, calculations adjusted for ties were used when techniques involved ranking. Measures of effect size (e.g. r , Cramer's V) have been included where appropriate.

Demographics

1. Comparison of HDI rank change for alumni resident in countries with higher HDI than their citizenship country and lower HDI than their citizenship country
 - a. Mann Whitney test: Positive HDI change (N=126) – negative HDI change (N=38): $W=741$, $p<0.001$, $z=9.33$, $r=0.73$
2. Test of association for home or non-home residency by decade of award
 - b. 2x5 Contingency table: Pearson Chi-square
 - i. $\chi^2(N=869)=6.486$, $DF=4$, $p=0.166$

Individual capacity

3. Demographic dimensions of scholarship gains grand mean
 - a. Gains grand mean by decade of award
 - i. Kruskal-Wallis one-way Analysis of Variance: $H(N=1224)=4.39$, $DF=4$, $p=0.355$
 - b. Gains grand mean by scholarship scheme
 - i. Kruskal-Wallis one-way Analysis of Variance: $H(N=1224)=27.53$, $DF=6$, $p<0.001$
 - c. Gains grand mean by region of citizenship
 - i. Excluding regions with $N<30$
 - ii. Kruskal-Wallis one-way Analysis of Variance: $H(N=1163)=36.20$, $DF=7$, $p<0.001$
 - d. Gains grand mean by gender
 - i. Mann Whitney test: Male gains (N=812) – female gains (N=412): $W=513410$, $p=0.0059$, $z=2.75$, $r=0.08$
4. Ratings of introducing innovations into the workplace by gender
 - e. Mann Whitney test: Male rating (N=808) – female rating (N=406): $W=511915.5$, $p<0.001$, $z=3.65$, $r=0.10$
5. Ratings of learning management skills by decade of award
 - f. Kruskal-Wallis one-way Analysis of Variance: $H(N=1220)=51.79$, $DF=4$, $p<0.001$
6. Demographic dimensions of positions and promotions post-scholarship
 - g. For all instances of 'by region of citizenship', excluding regions with $N<30$
 - h. Positions held by alumni post-scholarship
 - i. By region of citizenship for all alumni: Kruskal-Wallis one-way Analysis of Variance: $H(N=799)=47.01$, $DF=7$, $p<0.001$
 1. For 2000s award holders only: Kruskal-Wallis one-way Analysis of Variance: $H(N=438)=7.39$, $DF=5$, $p=0.193$
 - ii. Correlation with decade of award: Spearman $Rho = -0.353$, $p<0.001$
 - iii. Correlation with region of citizenship: Spearman $Rho = -0.216$, $p<0.001$
 - iv. By gender: Mann Whitney test: Male positions (N=541) – Female positions (N=303): $W=232982$, $p=0.1779$
 - i. Promotions received by alumni post-scholarship
 - i. By region of citizenship for all alumni: Kruskal-Wallis one-way Analysis of Variance: $H(N=782)=39.59$, $DF=7$, $p<0.001$
 1. For 2000s award holders only: Kruskal-Wallis one-way Analysis of Variance: $H(N=427)=4.70$, $DF=5$, $p=0.454$
 - ii. Correlation with decade of award: Spearman $Rho = -0.576$, $p<0.001$
 - iii. Correlation with region of citizenship: Spearman $Rho = -0.133$, $p<0.001$
 - iv. By gender: Mann Whitney test: Male promotions (N=533) – Female promotions (N=295): $W=235640.5$, $p<0.001$, $z=4.46$, $r=0.16$

Networks and collaboration

7. Active contacts maintained by gender
 - a. Commonwealth active contacts
 - i. 2x2 contingency table: Pearson chi square
 - ii. $\chi^2(N=1014)=6.538$, $DF=1$, $p=0.01$, Cramer's $V =0.005$
 - b. Other international contacts
 - i. 2x2 contingency table: Pearson chi square
 - ii. $\chi^2(N=427)=3.403$, $DF=1$, $p=0.065$, Cramer's $V =0.008$

Impact in developmentally relevant areas

8. Analysis of highest impact domain
 - a. Correlation of citizenship country HDI with highest impact domain
 - i. Spearman $Rho =0.136$, $p<0.001$
 - b. By region of citizenship
 - i. Excluding regions with $N<30$
 - ii. Kruskal-Wallis one-way Analysis of Variance: $H (N=822) =46.89$, $DF=7$, $p<0.001$
 - iii. Rather than performing many Mann-Whitney tests and using the Bonferroni correction, the direction of differences and of those results notable to the analysis were indicated by the z-scores for regions. Regions with z-scores beyond ± 2 have been noted in the text ('well below' or 'well above' the mean). The z-score for Southern Africa was somewhat more ambiguous and so a post-hoc Mann-Whitney test was conducted using Southern Africa and all other regions as the two groups:
 1. Mann Whitney test: Southern Africa ($N=37$) – Other regions ($N=785$): $W=12652$, $p=0.06$
 - c. By gender
 - i. Mann Whitney test: Male highest impact domain ($N=561$) – female highest impact domain ($N=308$): $W=253852.5$, $p=0.004$, $z=0.19$, $r=0.006$
9. Impact in socioeconomic activity by gender
 - d. 2x2 Contingency table: Pearson chi square
 - e. $\chi^2(N=869)=1.425$, $DF=1$, $p=0.233$
10. Impact in government policy by decade of award
 - f. 2x5 Contingency table: Pearson chi square
 - g. $\chi^2(N=869)=26.322$, $DF=4$, $p<0.001$, Cramer's $V =0.03$
11. Demographic dimensions of developmental impact breadth
 - h. Socioeconomic activity impact breadth
 - i. By gender
 1. Mann Whitney test: Male socioeconomic impact breadth ($N=561$) – female socioeconomic impact breadth ($N=308$): $W=250423$, $p=0.06$
 - ii. By scholarship scheme
 1. Kruskal-Wallis one-way Analysis of Variance: $H (N=869) =70.49$, $DF=6$, $p<0.001$
 2. Post-hoc Mann Whitney test of CR scheme alumni ($N=145$) vs non-CR scheme alumni ($N=724$): $W=42791.5$, $p<0.001$, $z=7.35$, $r=0.25$
 - iii. By decade of award
 1. Kruskal-Wallis one-way Analysis of Variance: $H (N=869) =10.58$, $DF=4$, $p=0.032$
 - iv. By region of citizenship
 1. Kruskal-Wallis one-way Analysis of Variance: $H (N=822) =96.56$, $DF=7$, $p<0.001$
 2. Post-hoc Mann Whitney test of Australia and New Zealand and Northern America ($N=156$) vs Other regions ($N=666$): $W=43572$, $p<0.001$, $z=7.73$, $r=0.27$
 - i. Government policy impact breadth
 - i. By gender
 1. Mann Whitney test: Male government impact breadth ($N=561$) – female government impact breadth ($N=308$): $W=253195$, $p=0.0023$, $z=2.59$, $r=0.09$
 - ii. By scholarship scheme
 1. Kruskal-Wallis one-way Analysis of Variance: $H (N=869) =13.45$, $DF=6$, $p=0.036$
 2. Post-hoc Mann Whitney test of CR scheme alumni ($N=145$) vs non-CR scheme alumni ($N=724$): $W=61958$, $p=0.63$
 - iii. By decade of award
 1. Kruskal-Wallis one-way Analysis of Variance: $H (N=869) =24.78$, $DF=4$, $p<0.001$
 - iv. By region of citizenship
 1. Kruskal-Wallis one-way Analysis of Variance: $H (N=822) =10.73$, $DF=6$, $p=0.151$

2. Post-hoc Mann Whitney test of Australia and New Zealand and Northern America (N=156) vs Other regions (N=666): $W=62977$, $p=0.59$

Attribution and the counterfactual

For analysis of probable funding sources, responses of 'Unknown' has been excluded from all analyses

12. Ranking of socioeconomic background by gender
 - a. Mann Whitney test: Male rankings (N=526) – Female rankings (N=303): $W=21179$, $p=0.04$, $z=1.96$, $r=0.07$
13. Comparison of mean ratings for three counterfactual scenarios
 - a. Kruskal-Wallis one-way Analysis of Variance
 - i. $H = 368.46$, $DF = 2$, $p<0.001$ (adjusted for ties)
 - b. Post-hoc Mann Whitney tests with Bonferroni correction ($\alpha = 0.0167$)
 - i. 'CF UK' (N=1224) – 'CF Home Country' (N=1220): $W= 1252421.5$, $p<0.001$, $z=13.98$, $r=0.28$
 - ii. 'CF UK' (N=1224) – 'CF Another Country' (N=1222): $W=1179650.5$, $p<0.001$, $z=18.20$, $r=0.37$
 - iii. 'CF Home Country' (N=1220) – 'CF Another Country' (N=1222): $W=1441608$, $p=0.005$, $z=2.79$, $r=0.056$
14. Demographic dimensions of counterfactual scenarios
 - b. By gender
 - i. CF UK: Mann Whitney test: male CF UK rating (N=812) – female CF UK rating (N=412): $W=520902$, $p<0.001$, $z=4.03$, $r= 0.11$
 - ii. CF Home Country: Mann Whitney test: male CF Home Country rating (N=810) – female CF Home Country rating (N=410): $W=491143$, $p=0.56$
 - iii. CF Another Country: Mann Whitney test: male CF Another Country rating (N=810) – female CF Another country rating (N=412): $W=522717.5$, $p<0.001$, $z=4.70$, $r= 0.13$
 - c. By age quartile
 - i. CF UK: Kruskal-Wallis one-way Analysis of Variance: $H (N=1137) =1.6$, $DF=3$, $p=0.66$
 - ii. CF Home Country: Kruskal-Wallis one-way Analysis of Variance: $H (N=1133) =31.16$, $DF=3$, $p<0.001$
 1. Post-hoc Mann Whitney test of Q1 ratings (N=302) vs Q4 ratings (N=270): $W=96782.5$, $p<0.001$, $z=5.2$, $r=0.22$
 - iii. CF Another Country: Kruskal-Wallis one-way Analysis of Variance: $H (N=1135) =6.42$, $DF=3$, $p=0.093$
 - d. By decade of award
 - i. CF UK: Kruskal-Wallis one-way Analysis of Variance: $H (N=1224) =16.76$, $DF=4$, $p=0.002$
 1. Post-hoc Mann Whitney test of pre-2000 award holder ratings (N=705) vs post-2000 award holder ratings (N=519): $W=414261$, $p=0.0024$, $z= 2.82$, $r= 0.08$
 - ii. CF Home Country: Kruskal-Wallis one-way Analysis of Variance: $H (N=1220) =8.88$, $DF=4$, $p=0.064$
 1. Post-hoc Mann Whitney test of pre-2000 award holder ratings (N=703) vs post-2000 award holder ratings (N=517): $W=411475$, $p=0.0032$, $z= 2.91$, $r= 0.08$
 - iii. CF Another Country: Kruskal-Wallis one-way Analysis of Variance: $H (N=1222) =19.28$, $DF=4$, $p=0.001$
 1. Post-hoc Mann Whitney test of pre-2000 award holder ratings (N=704) vs post-2000 award holder ratings (518): $W=407061$, $p=0.0001$, $z= 3.84$, $r= 0.1$
 - e. By region of citizenship
 - i. Excluding regions with $N<30$
 - ii. CF UK: Kruskal-Wallis one-way Analysis of Variance: $H (N=1163) =45.87$, $DF=7$, $p<0.001$
 1. Post-hoc Mann Whitney test of Australia and New Zealand, South-East Asia, and Northern America (N=300) vs other regions (N=863): $W=201137.5$, $p<0.001$, $z= 5.3$, $r= 0.16$
 - iii. CF Home Country: Kruskal-Wallis one-way Analysis of Variance: $H (N=1159) =91.48$, $DF=7$, $p<0.001$
 1. Post-hoc Mann Whitney test of Australia and New Zealand, South-East Asia and Northern America (N=300) vs other regions (N=859): $W=212062$, $p<0.001$, $z= 7.62$, $r= 0.22$
 - iv. CF Another Country: Kruskal-Wallis one-way Analysis of Variance: $H (N=1161) =19.91$, $DF=7$, $p=0.006$

1. Post-hoc Mann Whitney test of Australia and New Zealand, South-East Asia and Northern America (N=300) vs other regions (N=861): $W=178306$, $p=0.4199$
- f. By scholarship scheme
 - i. CF UK: Kruskal-Wallis one-way Analysis of Variance: $H(N=1224) = 39.80$, $DF=6$, $p<0.001$
 1. Post-hoc Mann Whitney tests with Bonferroni correction ($\alpha = 0.017$)
 2. Shared Scholars (N=189) vs non-Shared Scholars (1035): $W=92443$, $p<0.001$, $z=5.22$, $r=0.15$
 3. Fellows (N=249) vs non-Fellows (N=975): $W=165454.5$, $z=2.6$, $r=0.07$
 4. CR scheme (N=219) vs non-CR scheme (N= 1005): $W=146926$, $p=0.0044$, $z=2.7$, $r=0.08$
 - ii. CF Home Country: Kruskal-Wallis one-way Analysis of Variance: $H(N=1220) = 107.95$, $DF=6$, $p<0.001$
 1. Post-hoc Mann Whitney tests with Bonferroni correction ($\alpha = 0.025$)
 2. CR scheme (N=219) vs non-CR scheme (N=1001): $W=175892.5$, $p<0.001$, $z=8.93$, $r=0.26$
 3. Fellow (N=248) vs non-Fellow (N=972): $W=122469$, $p<0.001$, $z=5.84$, $r=0.17$
 - iii. CF Home Country: Kruskal-Wallis one-way Analysis of Variance: $H(N=1222) = 37.44$, $DF=6$, $p<0.001$
 1. Post-hoc Mann Whitney tests with Bonferroni correction ($\alpha = 0.025$)
 2. CS scheme (N=370) vs non-CS scheme (N=852): $W=250599$, $p<0.001$, $z=4.29$, $r=0.12$
 3. Shared Scholars (N=189) vs non-Shared Scholars (N=1033): $W=96350.5$, $p<0.001$, $z=4.31$, $r=0.12$
15. Counterfactual scenario by funding source
 - a. 4x3 contingency table: Pearson Chi-Square
 - b. $\chi^2(N=666) = 121.923$, $DF = 6$, $P\text{-Value} = 0.000$
 - c. By region of citizenship
 - i. 2x2 contingency table: Pearson Chi-Square
 - ii. Funding source grouped into non-scholarship and scholarship
 - iii. Region of citizenship grouped into developed and developing
 - iv. For each Counterfactual:
 1. CF UK: $\chi^2(n=84) = 3.208$, $DF = 1$, $P\text{-Value} = 0.073$
 2. CF Home country: $\chi^2(N=286) = 67.475$, $DF = 1$, $P\text{-Value} = 0.000$
 3. CF Another Country: $\chi^2(N=283) = 0.007$, $DF = 1$, $P\text{-Value} = 0.933$
16. 'CF Home Country' funding sources
 - d. By Gender
 - i. 4x2 contingency table: Pearson Chi-Square
 - ii. $\chi^2 = 11.855$, $DF = 3$, $p= 0.008$
 - e. By decade of award
 - i. 2x4 contingency table: Pearson Chi-Square
 - ii. Decade of award grouped into 2000s (N=142) and 1960s-1990s (N=149)
 - iii. $\chi^2 = 23.700$, $DF = 3$, $p=0.000$
 - f. By region of citizenship
 - i. Two 2x2 contingency tables: Pearson Chi-Square
 - ii. Funding source grouped into non-scholarship and scholarship, region of citizenship grouped into 'developed' and 'developing', Decade of award grouped into 2000s (N=142) and 1960s-1990s (N=144)
 - iii. For each layer:
 1. 2000s award holders: $\chi^2 = 11.845$, $DF = 1$, $p==0.001$
 2. 1960s-1990s award holders: $\chi^2 = 40.235$, $DF = 1$, $p<0.001$
17. Demographic dimensions of 'CF Another Country' destination 'another developed country'
 - a. By age quartile
 - i. Chi-Square goodness-of-fit test
 - ii. Age quartile weighted by respondent to question proportions
 - iii. $\chi^2(N=258) = 0.855467$, $DF = 4$, $p = 0.931$
 - b. By scheme code
 - i. Chi-Square goodness-of-fit test
 - ii. $\chi^2(N=258) = 1.35531$, $DF = 6$, $p = 0.969$
18. Response proportions of 'CF Another Country' destination (home region or other developed) by region of citizenship (Northern America or other)

- c. 2x2 contingency table: Fisher's exact test, $p = 0.0000064$
 - d. Region of citizenship grouped into Northern America and Other
 - e. 'CF Another country' destination grouped into Home region or Other
19. 'Response proportions of 'CF Another Country' destination (home region or other developed) by region of citizenship (Eastern Africa or other)
- f. 2x2 contingency table: Fisher's exact test, $p = 0.0406904$
 - g. Region of citizenship grouped into Eastern Africa and Other
 - h. 'CF Another country' destination grouped into Home region or Other



Commonwealth Scholarship Commission in the UK

Woburn House
20-24 Tavistock Square
London WC1H 9HF
United Kingdom

T +44 (0) 207 380 6700

F +44 (0) 207 387 2655

evaluation@cscuk.org.uk

www.dfid.gov.uk/cscuk