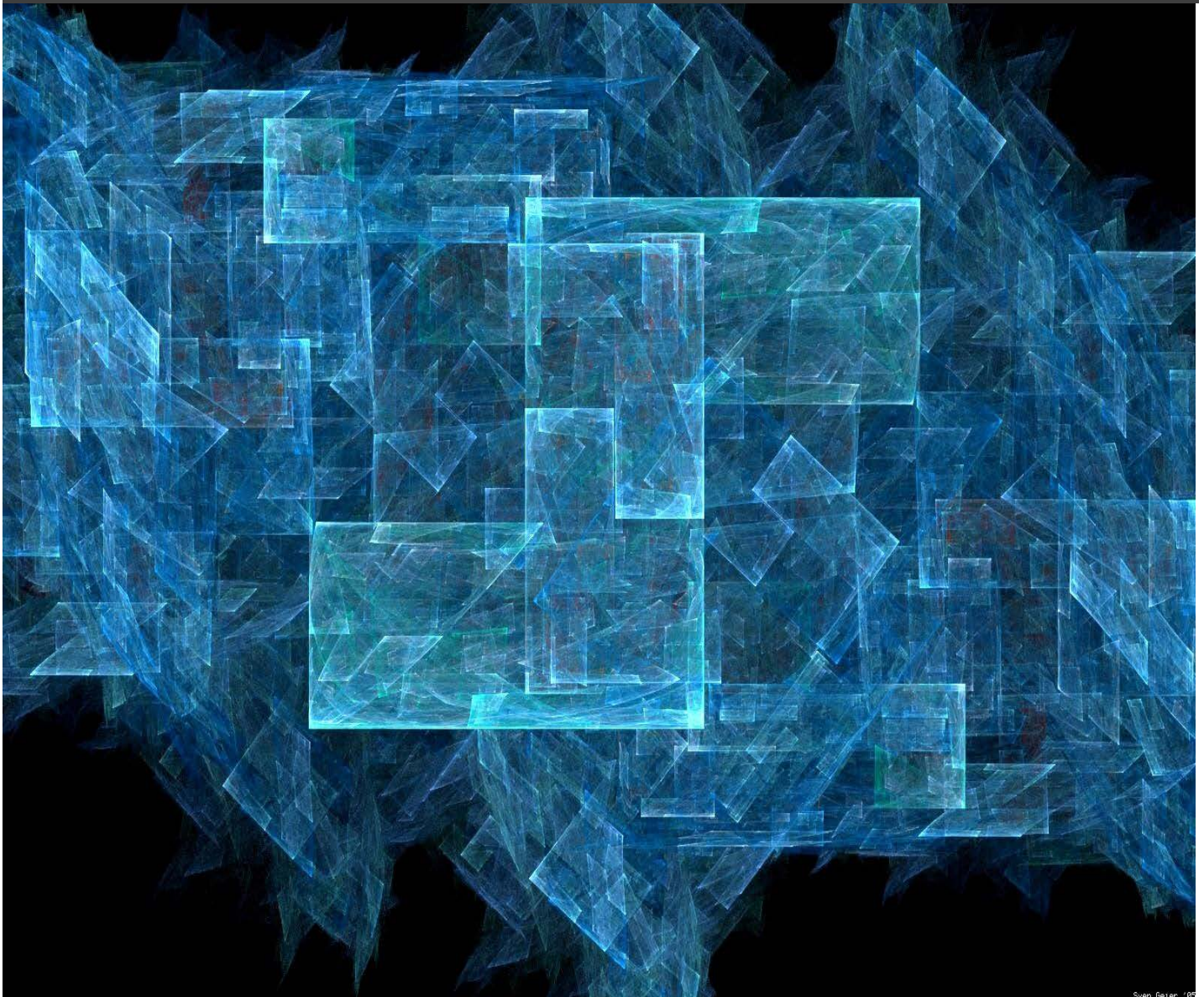


Government Statistician Group

Statistician and Data Science

Career Pathways



Government Statistician Group Statistician and Data Science Career Pathways

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If you have any feedback on this document please

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Introduction

Statistics and data enable us to understand the world. Professional statisticians work in the Analysis Function at the heart of government. Their influence extends from data collection and publications to providing an unbiased evidence base for effective decision making. Statisticians' analysis and skills are essential to improving the operational services government provides. In today's constantly evolving data landscape the need for professional statisticians is greater than ever.

The Government Statistician Group (GSG) is the civil service profession for statisticians and data scientists. Statisticians' skills are in high demand in government as analysts, producers of official statistics and data scientists. In all of their job roles they use their recognised professional standards to ensure the quality and integrity of their work. The profession works within the Government Statistical Service (GSS), the community for all civil servants working in the collection, production and communication of official statistics.

The GSS strategy 'Better Statistics Better Decisions' describes the way that statisticians and data scientists work: Helpful, Innovative, Capable, Efficient and Professional. They do this through their breadth of skills, in statistical and data science methods, as well as in people management and communications.

This document sets out the career pathway for Government Statisticians and provides detail on likely roles, skills and requirements and progression from entry level to Grade 6 Principal Statistician or Data Scientist. This is a living document which will be informed and updated through ongoing consultation with professional statisticians from across government.

This document is structured to provide guidance on the grading structure of the profession.

GSG Frameworks:

Statistical Pillars, Competencies, & Job Skill Families

Professional statisticians and data scientists can expect to take up analytical roles within the Government Statistical Service. Analysts in government use their skills and experience to **describe** and **investigate** data, and **guide** their colleagues.

Roles specifically within the statistics profession normally require both technical expertise in statistical and data science methods, and general skills from the Civil Service Competency Framework. Depending on an individual's preferences and aspiration, it is possible to focus primarily on technical development and become a technical specialist (such as a Data Scientist or a Methodologist), or focus on building both technical and general skills. Skills are acquired by formal learning, further qualifications and on the job learning. Guidance on how to become a technical specialist are set out in the Learning Pathways (pages 10-12) such as the data science offering from the Learning Academy which will help staff to develop skills needed to progress.

The [GSG Competency Framework](#) sets out what members of the statistical profession are expected to achieve in addition to the Civil Service Competency Framework (CSCF). It can be used in performance management discussions, objective setting at the start of each performance year, or when moving posts.

The framework is structured into the five statistical pillars (Helpful, Innovative, Capable, Efficient and Professional), which describe **how** members of the statistics profession achieve strategic objectives. Within each of the five pillars, competencies are grouped into four statistical strands (Acquiring data/Understanding customer needs, Data analysis, Presenting and disseminating data effectively and Working with credibility) that outline **what** members of the statistics profession will do to deliver strategic objectives.



Figure 1. Statisticians in government use different skills encompassing the Statistical Pillars, which in turn encompass their Professional Competencies

Grade Descriptions

Entry to, and progression through, the profession is through assessment of both technical and general skills. The different grades for the statistics profession are set out below

Grade	Description and Responsibilities of grade
Statistical Officer / Trainee Data Scientist <u>GSG competency Level 1</u>	<ul style="list-style-type: none">• Supervised by more senior statisticians/ data scientists• Responsible for own work and contributes to statistical or data science production• Gains experience working within a statistical or data science role using formal statistical qualifications gained from previous education or roles• Can expect to develop strong working knowledge of tools and methods.
Higher Statistical Officer / Junior Data Scientist <u>GSG competency Level 2</u>	<ul style="list-style-type: none">• Responsible for aspects of statistical production or data science projects• May manage junior grades including non analysts• Able to communicate and champion statistics or data scientists in their own area of work• Continues to develop their technical skills
Senior Statistical Officer / Data Scientist <u>GSG competency Level 2</u>	<ul style="list-style-type: none">• Responsible for multiple aspects of statistical production or data science analytical projects• Often manages teams of analysts and non analysts• Can develop expertise in technical skills through further training /qualifications
Principal Statistician G7 / Senior Data Scientist <u>GSG competency Level 3</u>	<ul style="list-style-type: none">• Head of statistical/data science teams, responsible for statistical/data science production or areas.• Are often regarded as topic experts and champions for their topic area, and their team's work.• Can develop expertise in technical skills through further training /qualifications
Principal Statistician G6 / Principal Data Scientist <u>GSG competency Level 3</u>	<ul style="list-style-type: none">• Head of multiple statistical or data science teams, responsible for whole programs of statistical and data science work• Have an overview of the statistical, data and political environment and are champions for the use of statistics and data science across government.

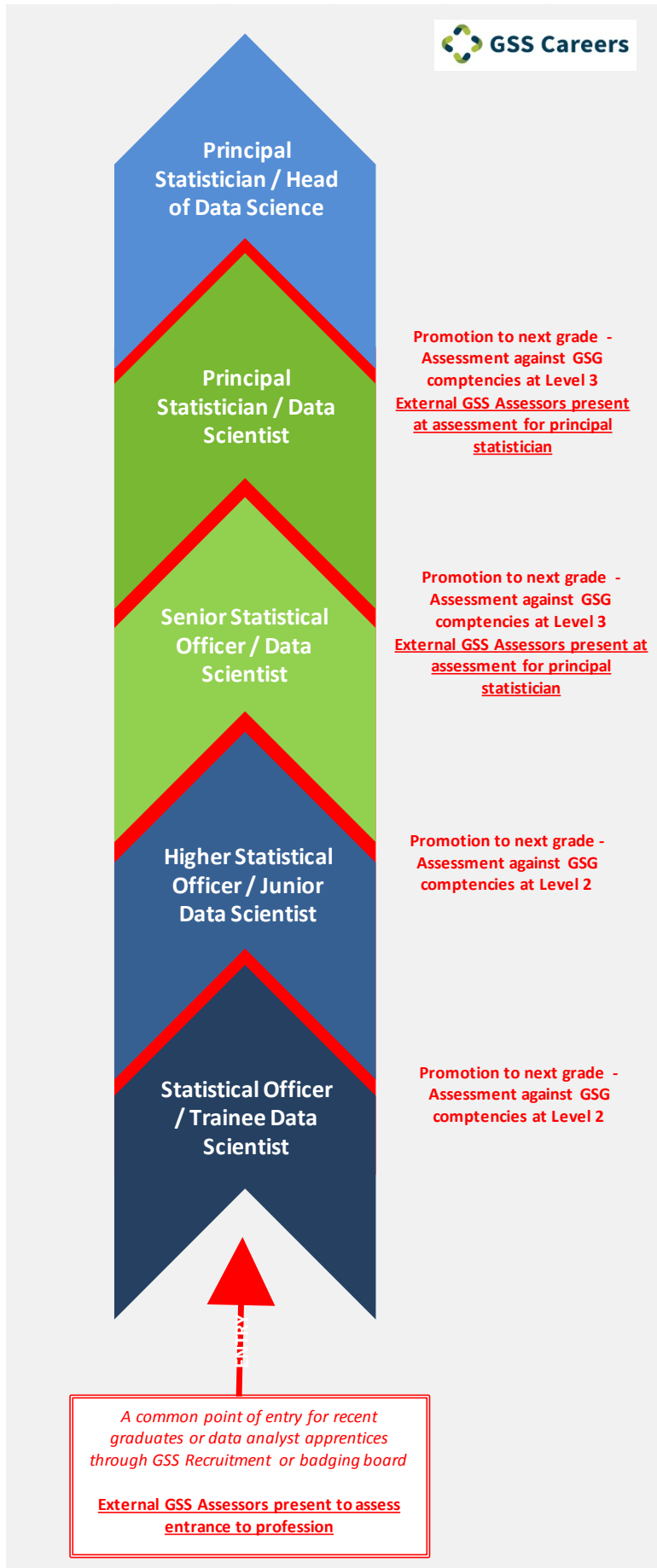


Figure 2. Pathway for Statisticians and Data Scientists, linking to GSG competencies levels

Lateral Moves

Lateral moves to different roles at the same grade are recommended to gain a breadth of skills, and exposure to different working environments. Moves can take place within the same department or between different departments, and can be part of a managed exercise that involves more than one member of staff, or ad hoc placements.

Lateral Move Type	Description and Skills developed
Moves to statistical/data science roles within same department	Can be part of a managed moves process involving a group of staff. These moves can also be arranged on a more ad hoc basis. Will normally develop both technical GSG and General CS competencies
Moves outside of profession to non-statistical/non-data science role within same department	Normally arranged on a more ad hoc basis to develop general CS competencies and provide valuable insight into use of statistics by non-statistical areas. As the role is not statistical, individuals would be expected to maintain their CPD during their time outside of the profession
Moves to statistical/data science roles in different department	Permanent moves or moves arranged as loans between departments. Will normally develop both technical GSG and general CS competencies
Moves outside of profession to non-statistical/non-data science role in different department	Permanent moves or moves arranged as loans between departments, to develop general CS competencies and provide valuable insight into use of statistics by non-statistical areas. As the role is not statistical, individuals would be expected to maintain their CPD during their time outside of the profession
Moves to statistical/data science roles in an external organisation	Moves arranged as a secondment between organisations. Will normally develop both technical GSG and General CS competencies, and provide valuable insight into organisations outside of the GSS.

Formal Learning

Members of the GSG are able to access a wide range of training course offered by the Learning Academy, based at the Office for National Statistics. The Learning Academy Directory is available to all members of the Government Statistical Service (GSS) who help support the delivery in Official Statistics. All courses are delivered by experts within the field of Official Statistics and Data Science.

On joining the profession, members must undertake certain training courses to introduce them to the GSG.

Mandatory Learning

- **GSG Induction**
- **GSG Foundation Course**
- **Career Checkpoint Conversation**

There is also a range of analytical training offered through the Learning Academy. The GSS website has full details.

Analytical Learning

- **GSS Statistical Training Programme**
- **MSc in Data Analytics for Government**
- **European Statistical Training Programme**
- **MSc in Official Statistics**

A new programme of Data Science Training is being developed for all GSS and GSG staff. Courses are available now for those who are keen to learn more about Data Science or develop their skills for example in Coding skills in R or Python.

Learning & Development Strategies

Formal learning is not the only way that staff can achieve the development they need. A full range of options are set out in the table below.

Table 1. L&D Strategies (Source: *Guide to preparing a Learning & Development strategy – Civil service Training & Development Centre*)

Strategy	Components	Note
On the job Learning	Observation/demonstration and practice, Delegation, Coaching, Mentoring	Most effective and efficient means of developing capability
Self-managed learning	Reading, eLearning, Further education	Effective where it supports on the job learning. Must be relevant
Deployment	Mobility, Secondment, Temporary assignments/special projects	Effective where properly planned and managed. Facilitates on the job learning
Group Learning	Cross functional teams, Communities of practice, Networking, Action learning	Key to success is the management of the group and the attributes of the individual members. Can be resource intensive
Tutor-led interventions	Training courses, Seminars, Development programmes	Must be relevant to current work situation. Opportunity to put learning into practice should be provided immediately on return to work

Analytical Learning Pathway

The analytical training offered through the Learning Academy can support a learning pathway to the achievement of GSG competencies and career development. Examples of relevant training for GSG competencies against the different grades of the statistics profession are set out below. *Please note:* -

- *Successfully undertaking a training course is not sufficient by itself to demonstrate competency achievement*
- *The examples may not be relevant for all; training requirements should be considered against the need of the individual/their role and be discussed with line managers first*
- *It may be that individuals require training at a higher or lower grade than the one indicated below; e.g. you do not need to be a Principal Statistician to take the [MSc in Data Analytics for Government](#), it is available to all grades.*

Grade	Analytical training		
	Acquiring data	Data analysis	Presenting data
Statistical Officer / Trainee Data Scientist - GSG competency Level 1	Introductory level: - Quality & Statistics , Admin Data Geography for Statistics Data Linkage Questionnaire Design and Testing Sample Design & Estimation Statistical Disclosure Control Online Python / Online R	Introductory level: - Quality & Statistics , Geography for Statistics Data Linkage Editing & Imputation Sample Design & Estimation Index Numbers Seasonal Adjustment Statistical Disclosure Control National Accounts Online R / Online Python	Introductory level: - Quality & Statistics , Statistical Disclosure Control , Communicating Statistics , Data Visualisation
Higher Statistical Officer / Junior Data Scientist - GSG competency Level 2	Introductory level: - Quality & Statistics Admin Data Geography for Statistics Data Linkage Questionnaire Design and Testing Sample Design & Estimation , Statistical Disclosure Control Big Data & Data Science Explained , Coding in Python	Introductory level: - Quality & Statistics , Geography for Statistics Data Linkage Editing & Imputation Sample Design & Estimation Index Numbers Seasonal Adjustment Statistical Disclosure Control National Accounts Coding in R	Introductory level: - Quality & Statistics Statistical Disclosure Control Communicating Statistics Data Visualisation CSL courses*: - Presenting confidently Report writing
Senior Statistical Officer / Data Scientist - GSG competency Level 2	Intermediate level: - Geography for Statistics – Spatial Analysis Sample Design & Estimation , Small Area Estimation , Advanced Python Programming	Intermediate level: - Geography for Statistics – Spatial Analysis Editing & Imputation Sample Design & Estimation Index Numbers , Hypothesis Testing Advanced R Programming	Data Visualisation CSL courses*: - Advising, briefing and drafting Advanced communication skills: presenting to large audiences Collaboration across departments, government and beyond
Principal Statistician G7 / Senior Data Scientist - GSG competency Level 3	Intermediate level: - Geography for Statistics – Spatial Analysis Sample Design & Estimation , Small Area Estimation , Advanced Python Programming The Art of the Possible Diploma in Data Analytics	Intermediate level: - Geography for Statistics – Spatial Analysis Editing & Imputation Sample Design & Estimation Index Numbers Hypothesis Testing Advanced R Programming The Art of the Possible Diploma in Data Analytics	Data Visualisation CSL courses*: - Advanced communication skills: presenting to large audiences Advising, briefing and drafting Collaboration across departments, government and beyond
Principal Statistician G6 / Principal Data Scientist - GSG competency Level 3	The Art of the Possible The 'Non-Analytical Learning' & 'Leadership & Management' pathways sections of this document might be more relevant at this stage, though some of the modules from the MSc in Data Analytics for Government might be useful; i.e. Statistical theory/Traditional survey research	The Art of the Possible The 'Non-Analytical Learning' & 'Leadership & Management' pathways sections of this document might be more relevant at this stage, though some of the modules from the MSc in Data Analytics for Government might be useful; i.e. - Data mining/Large scale Parallel processing	The Art of the Possible Data Visualisation CSL courses*: - Embracing digital to lead and innovate

* Courses available through Civil Service Learning (may need to register/sign-in to access link)

Non-Analytical Learning Pathway

Civil Service Learning offer a wide range of training that can help staff acquire and maintain the non-profession specific skills and competence required to support their development. Examples of relevant training for GSG competencies against the different grades of the statistics profession are set out below. *Please note:* -

- *Successfully undertaking a training course is not sufficient by itself to demonstrate competency achievement*
- *The examples may not be relevant for all; training requirements should be considered against the need of the individual/their role and be discussed with line managers first*
- *It may be the case that individuals require training at a higher or lower grade than the one indicated below.*

Grade	Non-analytical training*				
	GSG Competency Framework				
	Helpful	Innovative	Capable	Efficient	Professional
Statistical Officer / Trainee Data Scientist - GSG competency Level 1	Active listening	Basic digital skills	Teamworking	Written communication	Customer insight
Higher Statistical Officer / Junior Data Scientist - GSG competency Level 2	Coaching skills for managers	Change agility	Matrix working	Effective communication	Communicating with customers
Senior Statistical Officer / Data Scientist - GSG competency Level 2	Conducting high quality conversations	Working more digitally	Influencing skills	Presenting confidently	Impact assessment
Principal Statistician G7 / Senior Data Scientist - GSG competency Level 3	Identifying customer and stakeholder requirements	The digital landscape	Running effective meetings	Advising, briefing and drafting	Commercial awareness
Principal Statistician G6 / Principal Data Scientist - GSG competency Level 3	Collaboration across departments, government and beyond	Embracing digital to lead and innovate	Delegation: achieving results through others	Advanced communicating skills: presenting to large audiences	Commercial and financial acumen for leaders

* Courses available through Civil Service Learning (may need to register/sign-in to access link)

Leadership & Management

Civil Service Learning offer training that provides support and advice for new and experienced managers and leaders. This includes: -

- [Building your team](#); courses that cover how to inspire your team and build productive relationships.
- [Dealing with challenging managing situations](#); covers how to hold effective discussions and maintain positive relationships.
- [Leading people through change](#); includes learning on engaging through storytelling, and change leaders.
- [Managing effectively](#); learn crucial skills on how to give feedback successfully and set clear objectives.
- [Recruitment and selection](#); covers how to run and manage a successful recruitment process.
- [Guides and resources for managers](#); see the range of advice and information available to help you.

Additionally, Civil Service Learning offer [management and leadership programmes](#) that develop effective management and leadership skills. Suggested management and leadership programmes for the different grades of the statistics profession, are set out below.

Grade	Leadership & management programmes
Statistical Officer / Trainee Data Scientist	New manager programme ; this programme is intended to help new managers get the basics right, develop their personal management style and build confidence as a leader
Higher Statistical Officer / Junior Data Scientist	Management fundamentals programme ; this programme has been created to help all managers develop in areas such as managing diverse teams, managing projects and risk, leading change and effective communication
Senior Statistical Officer / Data Scientist	Experienced manager programme ; covering some of the most critical components of management, helping experienced managers guide their teams through current and future challenges with confidence
Principal Statistician G7 / Senior Data Scientist	Stepping into leadership programme ; a programme developed for managers taking on broader leadership roles, starting to manage larger teams or leading across teams or departments
Principal Statistician G6 / Principal Data Scientist	Stepping into leadership programme ; a programme developed for managers taking on broader leadership roles, starting to manage larger teams or leading across teams or departments

Civil Service Competencies

The [civil service competency framework](#) sets out the required behaviours all civil servants need to demonstrate in the workplace now and in the future. The framework is used for managing performance, recruitment and promotion, used in conjunction with the [GSG Competency Framework](#) for analytical roles.

Civil Service Learning have produced a series of tools to help staff to discover their strengths and areas for development, measured against the core competency framework: -

Self-assessment tool

The [Self-assessment tool](#) is described as a simple way to kick-start your development by completing an online assessment to identify your competency strengths and areas for development.

Competency Framework 360-degree feedback tools

The 360-degree feedback tools uses feedback from your manager, reports and peers to discover your strengths and areas for development, measured against the core competency framework.

[AA and AO Competency Framework 360 feedback tool](#)

[EO Competency Framework 360 feedback tool](#)

[HEO and SEO Competency Framework 360 feedback tool](#)

[Grades 6 and 7 Competency Framework 360 feedback tool](#)

Leadership Statement 360-degree feedback tools

The Leadership Statement 360-feedback tool uses feedback from your manager, reports and peers to discover your strengths and areas for development. This tool gathers feedback on behaviours under the 4 areas of inspiring, confident, empowering, and delivery.

[HEO and SEO leadership statement 360 feedback tool](#)

[Grades 6 and 7 leadership statement 360 feedback tool](#)

[SCS 360-degree feedback tool](#)

Entry Criteria and Assessment

Required entry criteria to the GSG

Qualifications

For Statistical Posts:

A numerate degree with at least 25% taught statistical content at a minimum 2:2 (e.g. geography, psychology) OR

Experience in a statistical role and assessed statistical knowledge equivalent to a foundation degree/HND (Level 5)

For Data Science posts:

A first or second-class honours degree in a numerate discipline, computer science or IT equivalent which demonstrates core statistical skills; OR

A higher degree, e.g. an MSc or PhD, in Data Science, Mathematics, Statistics, Physics; OR

Have worked in a statistical/data science field and are able to demonstrate continuous professional development (via a CPD Log Book) in statistics/data science at the same level as a foundation degree/HND (Level 5).

The GSS Fast Stream:

Entry into the Statistical Fast Stream requires a minimum 2:1 in any numerate degree subject that includes formal statistical training, or an MSc post-graduate degree or higher.

The newly developed Level 4 Data Analytics apprenticeship can be used as a route into the Statistical profession. The Level 4 qualification will need to be supplemented with a Level 5 statistical qualification. GSS Careers will launch a Level 6 Data Analytics apprenticeship in 2018 with a Level 5 'exit' point which will qualify them for entrance into the profession.

Individuals wishing to join the Statistics Profession can join through recruitment into the Civil Service or can join as an existing Civil Servant.

Methods of Assessment

Assessment for new entrants

Applicants are assessed against the GSG Competency Framework for the grade they wish to enter. New entrants to the Civil Service will also be assessed against the general Civil Service Competency Framework

Assessment for existing civil servants

Existing Civil Servants can enter into the statistics profession through a 'badging board.' Boards assess applicants' technical knowledge and experience against the statistical competencies for the grade they are applying for

Maintaining Professional Membership

Continuous Professional Development (CPD) is necessary for members to maintain their knowledge and skills related to their professional lives. For members of the GSG, it involves undertaking relevant learning activity to maintain and develop statistical and data science skills as well as the broader civil service competencies. Some examples are given below – these may not be relevant for all; training requirements should be considered against the need of the individual/their role and be discussed with line managers first. It may also be the case that individuals undertake CPD at a higher or lower grade than the one indicated below

GSG members are expected to maintain a record of the amount of statistical/data science and non-statistical learning undertaken in a given year.

Grade	Professional Development opportunities
Statistical Officer / Trainee Data Scientist	<p>On the job development, learning techniques and programs as required for day-to-day role, e.g. SAS programming</p> <p>Departmental and GSS analytical project opportunities.</p> <p>Peer networking and mentoring / coaching from senior colleagues</p>
Higher Statistical Officer / Junior Data Scientist	<p>On the job development, developing expertise in techniques and programs as required for day-to-day role, e.g. SAS programming</p> <p>Formal Learning and further qualifications</p> <p>Departmental and GSS analytical project opportunities.</p> <p>Peer networking and mentoring / coaching from senior colleagues</p>
Senior Statistical Officer / Data Scientist	<p>On the job development, developing expertise in techniques and programs</p> <p>Formal Learning and further qualifications</p> <p>Departmental and GSS analytical project opportunities.</p> <p>Peer networking and mentoring / coaching from senior colleagues. Knowledge sharing and consultation</p>
Principal Statistician G7 / Senior Data Scientist	<p>Formal Learning and further qualifications</p> <p>Leadership role - championing own and team's work. Mentoring of junior staff.</p>
Principal Statistician G6 / Principal Data Scientist	<p>Formal Learning and further qualifications</p> <p>Leadership role in own department and across government - championing use of statistics and data science</p> <p>Peer networking across GSS and wider government, mentoring of junior colleagues.</p>