

Decode Your Future

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A Professional Development Growth Map for Programmers and Statisticians by Role Type

Job titles often hint at seniority or suggest a level of experience but rarely reflect the diversity of responsibilities and development needs within a role.

From technical experts to project leads, programmers and statisticians span a wide spectrum of strengths and priorities. This practical guide breaks down common role types within these job families, mapping them to key skills, development focus areas, and growth pathways.

Whether you are an early-career professional, a technical specialist, or transitioning into leadership, this guide helps identify where you are and what to focus on next.

By offering a clear structure for professional development aligned to role type, it empowers individuals to take ownership of their learning journey and supports managers in tailoring development conversations. A must-have resource for anyone seeking clarity, direction, or inspiration in navigating their career in statistical and programming roles.

The purpose of this paper is not to pigeonhole programmers and statisticians, but to provide a starting point suited to your personality, goals and strengths as you approach a professional development conversation.

It's aimed to be a valuable resource for those seeking clarity and direction, and for leaders aiming to support tailored development conversations.

Statistician

Delivery

Works on a range of clinical studies.

Consultancy

Client Facing

Statistical Programming

Project Management budgets & resourcing

Study Oversight

Statistical Methodology

Responsibilities Include

- Preparing and reviewing study documentation.
- Manipulating, summarising and analysing clinical trial data.
- Programming and validation of statistical outputs.
- Mentoring of less experienced members of the team.
- Participation in internal and client meetings.
- Building effective collaborative relationships.
- Leading team to deliver on time, to budget and with high quality work.
- Liaising with internal management.

Core Competency Areas

- Technical Excellence**
Deepen expertise in statistical methodologies and clinical trial design. Enhance programming skills in SAS and R.
- Project Delivery & Quality**
Deliver high-quality statistical outputs on time and within budget.
- Communication & Collaboration**
Become the go-to statistical consultant for clients or within the wider organisation.
- Leadership & Mentoring**
Support and mentor less experienced statisticians.
- Strategic & Innovative Thinking**
Contribute to process improvements and innovation.

Example Developmental Goals

- Development to Lead Statistician.
- Gaining experience across a range of therapeutic areas and/or phases.
- Presenting at conferences.
- Developing and executing innovative study design and/or efficiency optimisation ideas.
- Peer mentoring and/or line management.
- Authoring/presenting internal training.

Technical

Has a deep understanding of statistical methods and a flair for identifying appropriate methodology.

Responsibilities Include

- Providing statistical consultancy to clients and colleagues.
- Developing and deploying novel and computationally challenging statistical analyses.
- Developing expertise within the organisation.
- Understanding regulatory requirements related to design and analysis of studies.
- Participating in protocol and protocol summary development, review and approval.
- Author/review Statistical Analysis Plans (SAPs).
- Perform exploratory analyses.
- Review clinical study reports and provide input on interpretation of results.
- Review and input into regulatory documents and interactions.
- Ensure accuracy of all biostatistical aspects of such documents.
- Support and mentor more less experienced statisticians on the team.

Core Competency Areas

- Advanced Methodology & Innovation**
Master complex statistical techniques and their practical implementation.
- Statistical Consultancy & Communication**
Provide high-quality consultancy to internal and external stakeholders.
- Knowledge Sharing & Mentoring**
Build internal capability through training and mentoring.
- Regulatory & Clinical Understanding**
Strengthen understanding of regulatory expectations and clinical context.
- Thought Leadership & Visibility**
Build a professional profile as a technical expert

Example Developmental Goals

- Presenting at conferences and authoring papers.
- Developing and executing innovative statistical methodologies, study design and/or efficiency optimisation ideas.
- Line management and peer mentoring.
- Contributing to business process improvements and authoring/presenting internal training.

Consultancy

Client Facing

Statistical Programming

Project Management budgets & resourcing

Study Oversight

Statistical Methodology

Project Lead

Leads a team across a range of projects, ensuring delivery is both on-time and within budget. Mentors less experienced Statisticians and collaborates closely with clients.

Responsibilities Include

- Authoring/reviewing prespecified analysis documentation.
- Reviewing output specifications including standardised analysis data specifications.
- Identifying data and standards issues.
- Performing complex statistical analyses.
- High level review of outputs to ensure quality.
- Builds effective collaborative relationships.
- Become the go-to person to provide stats consultancy advice.
- Leading the team to deliver on time, to budget and with high quality work.
- Providing support and mentoring for more less experienced statisticians on the team.

Core Competency Areas

- Project Leadership & Delivery**
Ensure timely, high-quality, and budget-conscious delivery of statistical work.
- Client Engagement & Consultancy**
Build strong, trust-based relationships with clients.
- Team Leadership & Mentoring**
Support the development of less experienced statisticians.
- Scientific & Technical Oversight**
Maintain high scientific and technical standards across projects.
- Strategic Contribution & Visibility**
Contribute to business growth and internal initiatives.

Example Developmental Goals

- Presenting at conferences.
- Line management and peer mentoring.
- Business process improvements and internal training.
- Taking ownership of a project and bringing forward new ideas and processes for implementation.
- Sharing scientific, technical and practical knowledge within the team and with colleagues.

Consultancy

Client Facing

Statistical Programming

Project Management budgets & resourcing

Study Oversight

Statistical Methodology

Pharmaceutical Lead

A natural leader and self-starter. Keen to work more directly with clients, acting as an extension to their team.

Responsibilities Include

- Acting as the lead statistician.
- Understanding the regulatory requirements related to design and analysis of studies.
- Participating in the protocol summary development.
- Performing sample size calculations and study design simulations.
- Participating in protocol development, review and approval.
- Review data management related documents.
- Authoring/reviewing pre-specified statistical analysis.
- Participating in data review/evaluation meetings and other study-related meetings and activities.
- Performing exploratory analyses.
- Reviewing and providing input into regulatory documents and interactions.
- Support and mentor more less experienced statisticians on the team.

Core Competency Areas

- Client Partnership & Strategic Leadership**
Act as a seamless extension of the client's team.
- Regulatory & Clinical Expertise**
Ensure statistical deliverables meet regulatory expectations.
- Oversight & Quality Assurance**
Oversee CRO deliverables and ensure statistical integrity.
- Mentoring & Team Development**
Support the growth of less experienced statisticians.
- Innovation & Thought Leadership**
Contribute to innovative study design and operational efficiency.

Example Developmental Goals

- Presenting at conferences.
- Developing and executing innovative study design and/or efficiency optimisation ideas.
- Line management and peer mentoring.
- Contributing to business process improvements and authoring/presenting internal training.

Consultancy

Client Facing

Statistical Programming

Project Management budgets & resourcing

Study Oversight

Statistical Methodology

Programmer

Delivery

Works on a range of clinical analysis and will program and QC outputs following specifications and good programming practice.

SCE Expertise

Client Facing

Statistical Programming

Project Management

Study Oversight

Data Standards Expertise

Responsibilities Include

- Developing specifications that conform to CDISC or other data standards.
- Attending and contributing to internal and client study team meetings.
- Communicating directly with other study team members and client key contacts.
- Sharing updates on ongoing work internally and at client meetings.
- Collaborating with the internal team to deliver high quality work on time and to budget.
- Contributing programming expertise and wider industry knowledge as required.
- Providing support and mentoring for more inexperienced members on the team.

Core Competency Areas

- Advance programming proficiency.
- Deepen understanding of industry data standards.
- Strengthen QC and validation techniques.
- Enhance communication and presentation skills.
- Develop mentoring and leadership capabilities.

Example Developmental Goals

- Potential to develop into lead programmer or technical role.
- Gaining experience across different therapeutic areas and phases.
- Presenting internally and externally.
- Peer mentoring and/or line management.
- Developing innovative solutions to aid study reporting.
- Contributing to initiatives.

Technical

Flair for computing environments and programming languages or deep knowledge of technical data standards. Have aptitude for developing technical solutions and advising team members and stakeholders, with an appetite for innovation.

Responsibilities Include

- Support the specification, development, validation, delivery and adoption of SAS & R tools and techniques following the software development lifecycle (SDLC) as applied to clinical trials.
- Provide technical expertise to support the delivery teams.
- Validation and oversight of biostatistics platforms and tools and the creation and maintenance of associated documentation.
- Act as the subject matter expert (SME) in the business, providing technical insight and consultancy.
- Share technical and wider industry knowledge (including clinical trial, therapeutic area and scientific context) with the client study teams and internal colleagues.

Core Competency Areas

- Master SAS & R tool development using SDLC principles.
- Gain expertise in biostatistics platforms and validation.
- Deepen knowledge of data standards and compliance.
- Improve ability to translate business needs into technical solutions.

Example Developmental Goals

- Presenting at conferences.
- Contributing to business process improvements and authoring/presenting internal training.
- Providing significant contribution to internal Hackathons.
- Maximising knowledge sharing across the industry.

SCE Expertise

Client Facing

Statistical Programming

Project Management

Study Oversight

Data Standards Expertise

Lead Programmer

Lead Programmer for one or more studies, taking responsibility for leading the programmers to ensure a successful delivery.

Responsibilities Include

- Lead programmer for projects and studies.
- Contribution to project planning and maintenance of any related documents.
- Manage programming resource task assignments, scope change and risks.
- Manage delivery of projects within time and budget.
- Manage client expectations and issue resolution.
- Build effective and collaborative relationships.
- Provide support and mentoring for more inexperienced programmers.

Core Competency Areas

- Strengthen team leadership and delegation skills.
- Develop project planning and resource management capabilities.
- Deepen understanding of CDISC standards and clinical trial phases.
- Improve risk management and scope control.

Example Developmental Goals

- Potential to develop into Portfolio Lead role.
- Peer mentoring and/or line management.
- Taking ownership of a study or group of studies and implementing new ideas and processes to aid delivery.

SCE Expertise

Client Facing

Statistical Programming

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Data Standards Expertise

Portfolio Lead Programmer

Project manages one or more studies, leading a team of programmers and statisticians. May also act as Lead Programmer. Manages budget and resource and, anticipates and mitigates risks.

Responsibilities Include

- Acts as project lead for client projects and studies.
- Maintains the project plan, ensuring milestones and tasks are accurately recorded.
- Proactively manages resource, scope change and risks.
- Manages the delivery of projects to budget, quality and time.
- Manages client expectations and issue resolution
- Builds an effective collaborative relationship with the client, managing expectations.
- Leads the team to deliver on time, to budget, high quality work.
- Provides support and mentoring for more inexperienced members on the team.

Core Competency Areas

- Master resource planning, budgeting, and risk mitigation.
- Develop strategic thinking and cross-functional collaboration.
- Enhance mentoring and team development skills.
- Strengthen client relationship management.

Example Developmental Goals

- Potential to develop into management roles.
- Peer mentoring and/or line management.
- Taking ownership of a project and implementing new ideas and processes to aid delivery.
- Sharing scientific, technical and practical knowledge within the team and with colleagues.
- Opportunities to maximise business relationships across the industry.

SCE Expertise

Client Facing

Statistical Programming

Project Management

Study Oversight

Data Standards Expertise

Client Support Programmer

Works directly for clients and gains exposure to a wide range of clinical studies.

Responsibilities Include

- Working directly with clients, acting as the responsible programmer for one or more studies within a clinical project(s).
- Reviewing study documents.
- Works closely with client personnel and participates in study-related activities.
- Performs an oversight role on behalf of clients.
- Reviews and provides input into submission documentation.
- Contributes to and reviews abstracts, posters, presentations, and manuscripts for publication.
- Supports and mentors more less experienced programmers on the team.
- Builds effective collaborative relationships and providing an effective link between study discipline leads.
- Communicates with the study team and contributes programming expertise as required.
- Shares scientific, technical and wider domain knowledge.

Core Competency Areas

- Strengthen communication across disciplines and levels.
- Develop consulting and advisory skills.
- Deepen knowledge of therapeutic areas and regulatory requirements.
- Improve programming and submission support capabilities.

Example Developmental Goals

- Developing and executing innovative programming solutions.
- Contributing to business process improvement.
- Contributing to submission planning.
- Input to ad-hoc deliverables such as abstracts, posters and publications.
- Peer mentoring.

SCE Expertise

Client Facing

Statistical Programming

Project Management

Study Oversight

Data Standards Expertise