

DESIGNING DATA FELLOWSHIPS

TO EMPOWER YOUTH WITH THE SKILLS
NEEDED TO SUCCEED IN THE GROWING
GLOBAL DIGITAL ECONOMY



ABBREVIATIONS

CAFDO	Francophone Open Data Conference
COSCI	Council of NGOs Fighting AIDS and Other Pandemics in Côte d'Ivoire
CSO	Community Service Organization
DCDJ	Des Chiffres et Des Jeunes (Figures and Youth)
DCLI	Data Collaboratives for Local Impact
DP	Development Partner
ENSEA	Ecole Nationale Supérieure de Statistique et d'Economie Appliquée d'Abidjan
MCC	Millennium Challenge Corporation
NGO	Non-Governmental Organization
PEPFAR	President's Emergency Plan for AIDS Relief
PNLS	Programme National de Lutte Contre le Sida
YALI	Young African Leadership Initiative

This resource is for community leaders, organizations, or government agencies seeking to build Data Fellowships.

Les Fellows et l'impact du Projet DCDJ dans l'amélioration de l'écosystème des données en Côte d'Ivoire

Jeudi 26 novembre
10h - 12h Temps universel
Inscription obligatoire

Rejoignez-nous sur Zoom
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Code secret : 542216

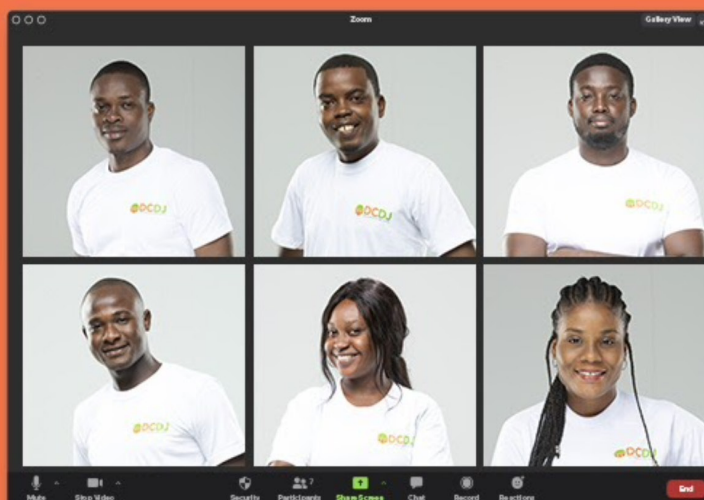


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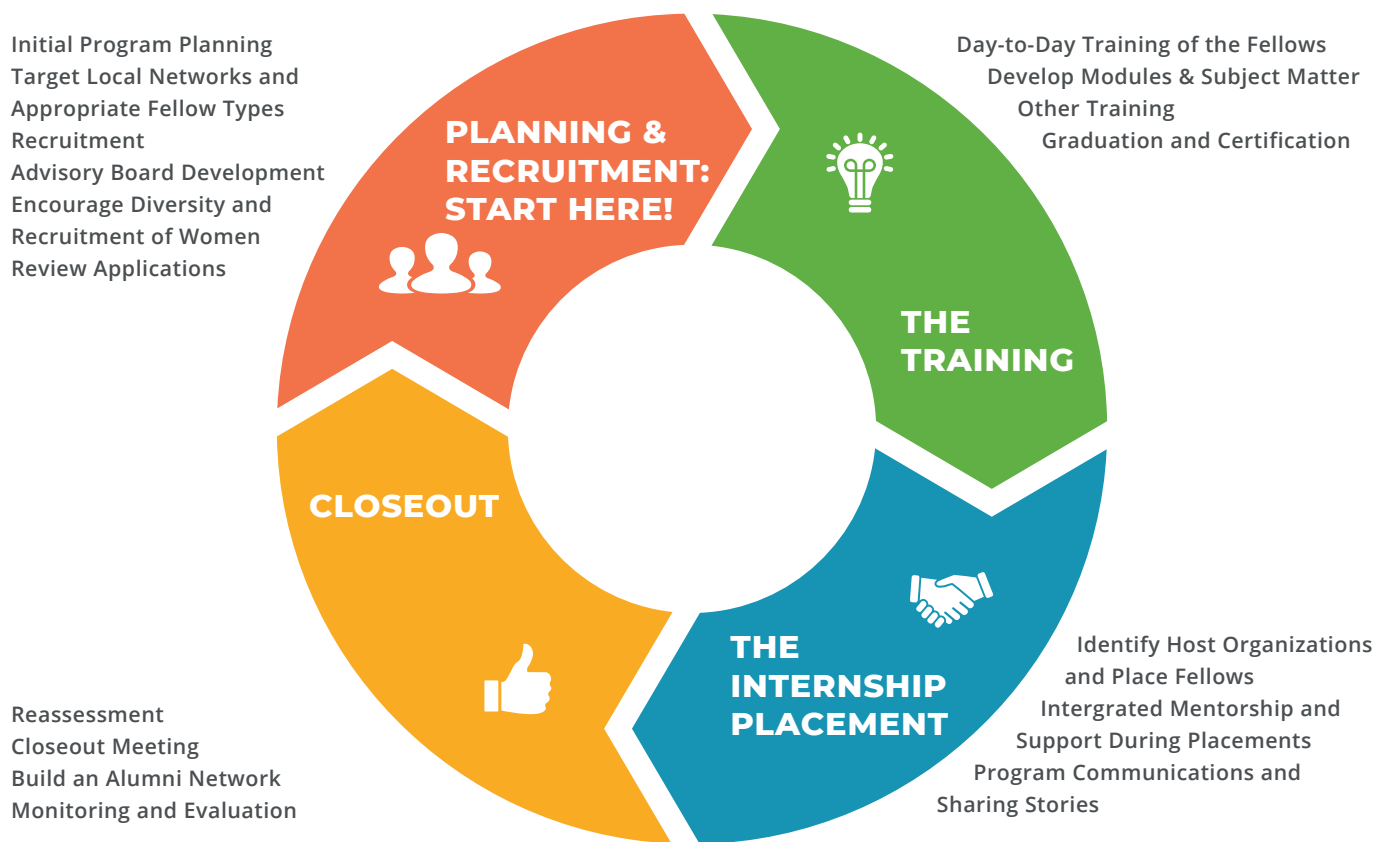
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I. INTRODUCTION

To support an improved data ecosystem at the national and local levels, it is essential to develop a skilled data science and STEM workforce.

A Data Fellowship program such as the DCDJ Fellowship can address the following constraints to greater data use: **(1.) Technical Capacity:** Local data innovation efforts are focused on tech and app development, and not on developing broader data literacy, data use or practical data science skills; and **(2.) Data Demand:** Civil society, government, private sector and citizens historically have not valued data use in decision-making. Additionally, by

building cohorts of young individuals with data skills, Fellowship programs can also help bridge gaps in human resources that many local communities face. In “Section IV. Data Fellowship How-To Guide: A Step-by-Step Process” below, we outline each step of planning and implementing a Data Fellowship in detail. However, an overview of the process and its intermediary steps is as follows, starting at “Planning and Recruitment:”



Data fellowships can be cohort-based, with each successive cycle improving upon the previous in order to adapt to the needs of the program.

I.I BACKGROUND & CONTEXT

[Des Chiffres et Des Jeunes \(DCDJ\)](#) is a program led by [Development Gateway \(DG\)](#) and overseen by the MCC-PEPFAR [Data Collaboratives for Local Impact \(DCLI\)](#) Program. DCLI is designed and managed by MCC and funded by PEPFAR, and aims to empower individuals, communities, and organizations, including stakeholders in subnational areas, to use data to improve lives, contribute to ending HIV/AIDS, and help address local development needs and priorities.

One of DCDJ's core activities was the establishment of a Data Fellowship, implemented together with a local partner, [SEJEN CI](#). The Fellowship trains groups of young individuals, who are competitively selected for cohorts of Fellows to complete a data science

training program. After 8 weeks of “data bootcamp”-style training at the ENSEA campus in Abidjan, the Fellows either return to their home organizations to apply skills, or are placed in government or NGOs key to DCLI program objectives. The Fellowship creates an active learning network, builds data supply and use in health institutions, and increases professional capacity and career prospects for young Ivorians.

This resource aims to provide simple instructions that other actors aspiring to develop their own Data Fellowship programs can follow.

I.II WHY A DATA FELLOWSHIP?

A Data Fellowship program can be used to enlist local youth in support of a particular development program, such as was the case for DCDJ whose mandate was to strengthen the Ivorian data ecosystem and in doing so, leverage, or build on the local talent. At the same time, Data Fellowships empower youth and prepare them for the opportunities of the growing global digital economy, while enabling data innovations among all sorts of organizations such as local and national government facilities, not-for-profit organizations, and development partners. A data-focused Fellowship leverages and complements existing national investments in technology, enables youth to build their own skills and employability, and drives demand for more data use.

When the DCDJ Fellowship program began, Côte d'Ivoire already had a burgeoning technology-enabled population—including an impressive network of [YALI Fellows](#), an [active OpenStreetMap community](#), tech entrepreneurs, and expanding [hubs/labs around the country](#)—but DG's initial research and scoping revealed that many Ivorians were still skeptical of data's **usefulness**. Our theory of change was that **a cadre of Data Fellows, equipped with appropriate skills and resources, can catalyze innovative ways to use data to mitigate HIV/AIDS, improve health and education among marginalized groups, and promote economic growth and wellbeing in communities**. These same Fellows could also increase data use in other sectors as they progress in their careers. The Data Fellowship program was developed

to spark various data use initiatives that would also sustain, link, and inspire others to develop similar programs, **while seeding a new learning network of Fellows that can continue to hold impact beyond the length**

of the Fellowship. We also aimed to secure Fellows jobs within our network of NGOs and CSOs following successful internships.

I.III INITIAL CONSIDERATIONS

Whether your Data Fellowship is initiated by the local government administration itself or by development partners, CSOs, or champion organizations, the key steps will be similar. It may be funded through program or institutional funding, and must be supported by other relevant actors in the ecosystem. The Fellowship must have a clear owner, and we encourage that it is also backed by a university or academic institution.

The amount of time for each cohort can vary based on ecosystem needs and the implementing organization. Per cohort, recruitment and training can be from 2-5 months, with 6-9 month internships. We believe that Fellowship programs are most effective with several cohorts. This means that the program could run from 2-4 years, and methods should be continually fine-tuned during this time.

II. DATA FELLOWSHIP HOW-TO GUIDE: STEP BY STEP

In full, DCDJ spent 2.5 years training and placing three cohorts of Data Fellows, each of which consisted of two-month trainings and a six-to-eight-month internships. Depending on other ongoing DCDJ work and the social/political context, the amount of time between cohorts varied slightly.

II.I PLANNING AND RECRUITMENT

II.I.I Initial Program Planning

Allow significant lead time (4-6 months or more) between beginning initial planning and the program's intended start date. Additionally, establish a strong internal communications plan within the program team, and an external communications plan with any funders and other key stakeholders. DCDJ began planning for the Fellowship in May 2018, and launched

the first round of training in October 2018. Within those 5 months of planning, we engaged the most appropriate networks in the country or region, and refined our approach to attract and retain talent.

For DCDJ, the first step was to identify SEJEN CI as our local training partner. With SEJEN CI onboard to lead the data science training at [Ecole Nationale Supérieure de Statistique et](#)

[d'Economie Appliquée d'Abidjan \(ENSEA\)](#), we were able to begin breaking down tasks, identify which organization would lead which parts of the Fellowship, plan for Fellows' training, and begin the Fellows recruitment process.

II.I.II. Target Local Networks and Appropriate Fellow Types

For any Fellowship program, paying special attention to the recruitment process is essential – this shapes the cohort and the eventual success of the program. We recommend that you leverage existing local networks, specifically if your recruiting plans target youth, women, or other marginalized groups.

It is important that all local communications happen in the focus area's native language, and that communications consider local context. For example, in advertising for the DCDJ Fellowship, we used radio, Whatsapp, and local newspapers to advertise and recruit each cohort in French, rather than other methods that might be more targeted towards US-based audiences.

We also recommend that Fellowships include **more than one Fellow type**, to spur demand for data-driven decision-making across diverse institutions. The DCDJ Data Fellowship supported two types of Fellows: Technical and Staff Fellows:

- **Technical Fellows** are recent graduates with academic backgrounds in technology or math and science (engineering, statistics, etc). Most Technical Fellows apply, then complete the full recruitment process and training and are ultimately placed within a government agency or civil organization for internship.
- **Staff Fellows** are already employed in data-focused roles for PEPFAR

implementing partners (often NGOs), and are paid by their home organizations to undergo training. Staff Fellows' curriculum is shorter, to better fit their needs and enable them to return to their home organization sooner, with updated skills.

II.I.III. Recruitment

Allow the online application window to be open for approximately a one-month period, which provides enough time to access a qualified applicant pool via an ongoing communications strategy that helps ensure target applicants are learning about the opportunity. Applicants should have completed about two years of study after secondary school (BAC +2 level), to ensure they have sufficient knowledge to build additional data skills.

Fellowship programs should tap into two recruitment pools. The first is **university and professional networks**—for example for DCDJ, this was graduates of ENSEA and the pool of more than 60 Ivorians who have been trained since 2014 through the State Department's Mandela Washington Fellowship (formerly YALI) program. Second, to build new capacity among youth and women, we recommend reaching out to **networks of NGOs, CSOs, and the private sector**. DCDJ worked with our local partner [COSCI](#), an association of local civil society organizations, to do this. COSCI helped expand our network to 139 Ivorian member organizations that work in communities across Côte d'Ivoire on key issues that affect youth and women.

If possible, we recommend that partner organizations nominate (i) relevant staff who can benefit from the training (e.g. M&E specialists, program managers, etc.) and (ii) youth and women who demonstrate strong potential and relevant skills.

II.I.IV. Develop an Advisory Board

We also recommend that an Advisory Board be developed before cohort recruitment begins. This can be comprised of academic advisors, local NGO leaders and staff, and members of the implementing organization. **The Advisory Board serves as a sounding board and champion of the Fellowship throughout, to maintain momentum and diagnose challenges before they occur.** It also provides an opportunity for shared learning and bringing in new perspectives to the implementation team, and helps communicate the Fellowship opportunity to each Board member's respective networks.

II.I.V. Encourage Diversity and Recruitment of Women

Data fellowship programs should encourage gender balance and diversity within cohorts. Within the data, digital, and technology fields, women's under-representation is especially acute – **just 12 percent of cloud computing, 15 percent of engineering, and 26 percent of data and artificial intelligence professionals are women.** To increase Data Fellowship program retention rates among women specifically, we suggest highlighting mentorship and extra learning support outside the classroom. We also had some women Fellows from the early cohorts become "Data Ambassadors," within their communities, spreading awareness, motivating other women to participate, and shifting the perception that the Fellowship would be too time-consuming for women with other responsibilities.

To increase women's participation and create enthusiasm, we also recommend working

closely with well-connected local women's organizations to raise fellowship awareness, and identify and encourage women applicants. For example, DCDJ worked closely with COSCI, whose network with women's groups helped DCDJ connect with more women.

The DCDJ program set out to ensure that young women, as well as men, had an opportunity to benefit from its Data Fellowship. The program started with a 16.7% women's participation rate in the first cohort. To improve numbers in the second and third cohorts, the team [identified and connected with local women networks, increased program awareness, demystified data science as a concept, and supported retention of women Fellows once accepted.](#) In the second cohort, DCDJ reached a 30% women's participation rate, and retained that number as that 30% all graduated from the program. By the third cohort, DCDJ reached 47% women's participation. ***One woman Fellow, Murielle, said "In Côte d'Ivoire, women are not interested in data science or scientific careers, but thanks to the DCDJ program, my mind was opened to a future career in data. If the data at the bottom of the ladder is broken, it will impact the results at the top [...] through each line of data, you see the lives of people that you are impacting."***

II.I.VI. Review Applicants

Following the application period, you will review applications and select successful applicants to assemble cohorts. We recommend that your team aims to have 20-30 qualified Fellows in each gender-balanced cohort depending on the size of the program. DCDJ found success with a one-month review process, which allows enough time to conduct a careful review, without extending the process too long.

From a pool of 4,679 applicants total, DCDJ selected 89 Fellows (1.8% of applicants) over the 3 cohorts, through a competitive process including online application, remote and in-person skills testing, and in-person interviews. In the first cohort, applicants took a one-hour skills assessment¹ administered online through [TestDome](#) to ensure they had the quantitative

ability to engage in a data bootcamp. Online test results were automatically passed to the Data Fellowship candidate review team. Only after they passed the test were candidates invited for interviews. However, because online testing risks fraud and potential cheating, we instead held in-person testing for the second and third cohorts, and recommend in-person testing if possible.

Fellows were carefully selected to ensure they had a sufficient academic background, the motivation to complete the program, a passion for data science, and to ensure gender balance across cohorts. DCDJ Fellows are between ages 18-35 and are spread across 3 cohorts. **We also recommend that a sufficient number of alternate candidates are accepted, to account for individuals who may have to drop out due to outside circumstances.**

Encourage Diversity and Recruitment of Women

Within the data, digital, and technology fields, women's under-representation is especially acute – just *12 percent* of cloud computing, *15 percent* of engineering, and *26 percent* of data and artificial intelligence professionals are women.



1. Please see [this link](#) for an example of a completed test form. For more information on the online test, please contact Sejen CI at info@sejen.ci.

II.II THE TRAINING

Depending on the intended outcomes of the Fellowship and the background of Fellows, we recommend that Fellows are asked to commit to the training full-time. However, we recognize that it may also be possible to deliver effective part-time training.

Based on the geographical spread of Fellows, training may consist of a combination of in-person training sessions. In the case of DCDJ, training was out of Abidjan, regional hubs, and virtually via webinar or Zoom, as our program adjusted to the reality of operating amidst the global COVID-19 pandemic.

The training should include daily lectures, testing, and assignments throughout. Training modules will depend on the outcome of the Fellowship; however, in the context of a data use fellowship, the modules should focus on enabling Fellows to take existing technical skills and become true data practitioners. DCDJ provided three levels of training, based on existing knowledge of Fellows.

II.II.I. Day-to-Day of Training the Fellows

The day-to-day of training will vary across each Fellowship. In the case of DCDJ, each Fellow underwent two months of intensive data science training led by SEJEN CI. Training was hosted at ENSEA, the national school of statistics and applied economics, well known and respected throughout CIV and West Africa. Training Fellows at ENSEA brought additional clout to the program, and exposed Fellows to other students that shared their interests.

II.II.II. Develop Modules and Subject Matter

The topics covered in this Data Science Fellowship curriculum include the foundations of [data science, statistics, math, Linux](#)

[terminals, data visualization, database administration, statistical software, survey methodology and practice, Python programming, machine learning, and business processes](#). When developing the modules, organizers should account for the Fellowship's specific goals – beyond the technical basics, what else is the Fellowship trying to accomplish? We trained full-time Fellows on advanced statistical and visualization skills, and the application of open data to national and subnational priorities. Part-time Fellows were trained on building basic data analysis skills and using data to solve their day-to-day challenges. The Technical Fellows' six modules were split into the following:

- Data wrangling using spreadsheets
- Data validation using spreadsheets
- Data wrangling using Python
- Data validation using Python
- Data anonymization using Python
- Legal context related to data sharing and access to government data.

DCDJ Technical Fellows also received **thematic training** on data quality, gender-smart programming, health and HIV/AIDS responses, and communications. This enables Fellows to expand their breadth of relevant knowledge and prepare them even more fully for the workforce. We suggest that thematic training remains flexible to the objectives of the program, the needs and qualifications of the Fellows and institutions you will work with.

The Staff Fellows' four modules were split into the following:

- Data wrangling using spreadsheets

- Data validation and data anonymization using spreadsheets
- Field data collection with Open Data Kit (ODK)
- Legal context related to data sharing and access to government data.

To track success and retention of the Fellows, two indicators were collected weekly: Fellows' participation in the teleconference calls held every week by DCDJ; and submission and quality of the homework assignments.

We also recommend that if possible, **content should be open source** and available for program replication and scaling.

II.II.III. Other Training

We recommend that Fellows participate in additional training activities in the partners' thematic focus areas. This will also help Fellows get acquainted with processes at potential placement organizations. It will also support them to draw on industry expertise based on their own background and interests. For example, given that internship placement was important to the DCDJ Fellowship, the Fellows were trained in basic English, consulting and client engagement, and professionalism in the health sector.

II.I.IV. Graduation and Certification

To build community and enthusiasm across the graduating fellowship cohort, as well as encourage participation of future cohorts, we recommend that trained Fellows receive **an official certification of completion**. This helps them build professional credibility and provides them with more information for their resume. Additionally, taking time to celebrate the Fellows' graduation allows them a valuable touchpoint to reflect on accomplishments and how they will use skills in their upcoming placements.

Even though Fellow types may differ slightly, the certification should provide the same level of prestige for each. As the world accelerates into a largely digital future, job applicants need the recognition – and the practice of utilizing those skills and experiences – to be truly competitive in a challenging employment landscape. For example, in the last five years in Cote d'Ivoire, [unemployment even for those with tertiary degrees hovers around 38%](#). Professionally trained individuals fare better, but still face an unemployment rate of 23%. With an official Certificate of Completion, DCDJ Fellows reported that they had better luck finding full-time offers after their internships than before.

The [@sejenci](#) [@dcdjci](#) [#datafellows](#) are very excited about putting their data science knowledge into practice as part of their tech placements with organizations and Government Ministries [#data4localimpact](#) [#data4socialgood](#) [@PEPFAR](#) [@MCC_Data](#) [@EnseaO](#) [@DGateway](#)



1:01 PM - 15 Mar 2019

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17



II.III THE INTERNSHIP PLACEMENTS

II.III.I. Identify Host Organizations and Place Fellows

This step will first require short-listing and identifying host institutions willing and able to meaningfully utilize and empower Fellows. This also includes having a need for Fellows, providing a workspace, providing access to data/information, and giving regular oversight and support. Prior to placing Fellows, it is helpful to work with each host institution to define the parameters of the placement; develop work plans, objectives, milestones, and goals; and match hosts with the most appropriate Fellow. Additionally, DCDJ put in place a standard site assessment asking whether they empowered Fellows to propose

solutions in a way that allowed the project team to measure impact.

Following their initial training, the DCDJ Data Fellows were placed across 63 different institutions for their six- to eight-month paid internships. In the first cohort, 26 Fellows were placed directly into government agencies, across 14 different ministries and departments of interest to the DCLI program (Ministry of Health, Ministry of Planning, Ministry of Education, Ministry of Women Affairs, etc.). In the subsequent cohorts, 41 Fellows were placed in NGOs and CSOs aligned with PEPFAR objectives.



**ODOUKOU
Ayi Audrey
Léonce**
Cohorte **3**

Motivation de participation au projet :
Passion pour les données, apprendre à transformer et à utiliser la donnée pour une prise de décisions efficiente, avoir une première expérience dans le monde professionnel

Problème à résoudre :
Renforcer les capacités du personnel dans l'utilisation et la manipulation des données (nettoyage, agrégation, visualisation, transmission, bases et outils de données)

Solution apportée :
Formation en visualisation des données

Plus-value du projet à l'expérience et aux compétences personnelles :
Compétences en data science, en leadership, en entrepreneuriat, en techniques de recherche d'emploi. Il m'a également aidé à agrandir mon carnet d'adresses.

Site de stage :
HGS Privé CEPREF Yopougon Attié

DCDJ

HIGHLIGHT EXAMPLES OF FELLOWS' WORK



Motivation de participation au projet :
Ma passion pour le développement des bases de données, l'analyse et la production des dashboards.

Problème à résoudre :
Amélioration de la rétention et la couverture de la charge virale des patients VIH suivis dans les centres de santé soutenus par l'ICAP.

Solution apportée :
Module de relance via SMS des patients VIH attendu pour le renouvellement des ARV, de la consultation clinique et la réalisation des examens biologiques (Charge Virale, CD4, TGO etc.)

Plus-value du projet à l'expérience et aux compétences personnelles :
Amélioration de mes connaissances en python, en statistiques et Data Science.

Site de stage : ICAP



**KOFFI
KOFFI
Martial**
Cohorte **2**

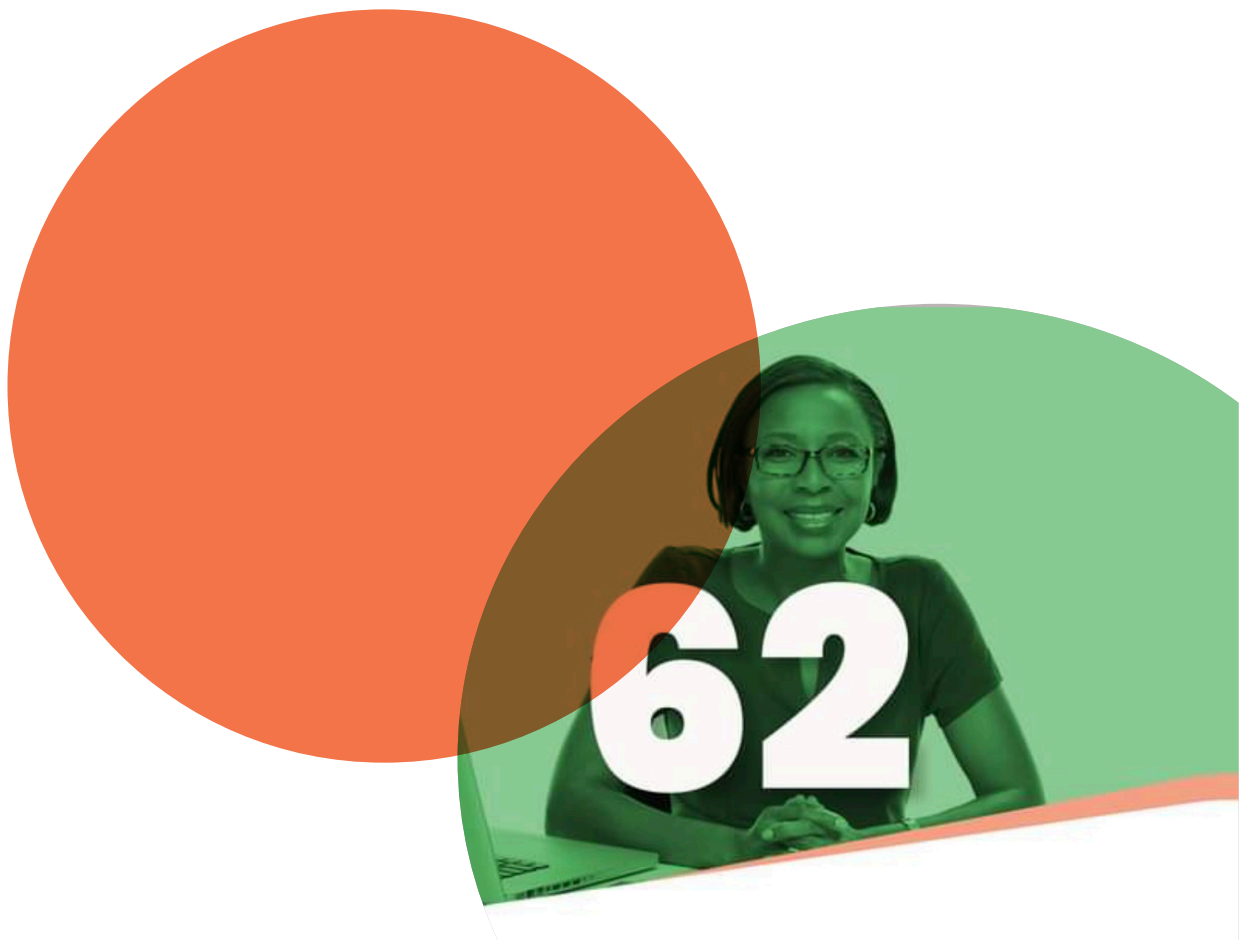
DCDJ

II.III.II. Integrated Mentorship and Support During Placements

To achieve successful data internships, Fellows need to be supported by both the host organizations themselves as well as Fellowship program mentors.

Mentorship and coaching should be tailored to the Fellows' best-fit level of personal attention. From the start of recruitment to the end of their internships, Fellows should receive personalized coaching and mentoring from staff. **Based on our program findings, direct mentorship is a key piece to ensuring participation and engagement, especially for women who are less likely to dive into a program like the Fellowship without reassurance by peers.** During placements, DCDJ Fellows also receive technical support from SEJEN CI on implementing innovative data-driven solutions.

Fellowship mentors can connect with Fellows through simple, cost-effective methods like WhatsApp. Additionally, if financial resources exist, Fellowships can host knowledge sharing and networking events, as well as facilitating partnerships between Fellows, local tech hubs, and the private sector to enhance their collective impact. If needed, Fellows should work with developers to target remaining skills gaps—for example, in topics like Agile methodology and coding with open-source technologies.



II.III.III. Program Communications and Sharing Stories

Each Fellow's experience and value-add is unique. It is important to surface the stories and experiences of Fellows throughout, to help share learnings and successes, build legitimacy around the program, and help Fellows showcase their professional accomplishments to future employers. Throughout the program, you can focus on capturing, documenting, and refining impact stories and lessons learned, sharing via blog series, use stories and/or public-facing platforms if possible. If working with partners, make sure to cross-post blogs across both partners' audiences, to share key program findings.

Because the goal of the fellows placement is to transform and impact their environment, a wide range of stories can come out of a single Fellowship cohort. For example in DCDJ, [one Fellow working with a PEPFAR implementer helped it reduce one internal data process from taking 10 days, to being completed in under an hour](#). Another Fellow [enabled doctors and others working in traditional medicine to collect better data by using a tool instead of reporting by hand](#) – which previously caused them to fail to meet Ministry of Health reporting requirements. And another young woman Fellow [replaced an old Excel data management system with a dashboard that was better able to keep up with Ministry HIV/AIDS data tracking needs](#). Stories like these are embedded in the experience of each Fellow.



**ARRA APEH
Landry Christian**

Cohorte 1

Motivation de participation au projet :
Ma passion pour l'Analyse des données.

Problème à résoudre :
Manque d'outils de gestion des données, non promptitude des données, incohérence dans données collectées, manque d'outil et de méthode d'analyse et de visualisation des données.

Solution apportée :
Application web pour la gestion des données du programme, facilitant la promptitude des données pour le rapportage des AMD et M&E, résolvant le problème d'incohérence des données, ainsi qu'un Dashboard facilitant l'analyse et la visualisation des données.

Plus-value du projet à l'expérience et aux compétences personnelles :
-Capacité à diriger plusieurs équipes à la fois
-Capacité à travailler sous pression
-Connaissance en Data Science (Machine Learning)
-Connaissance en développement web (basique).

Site de stage :
APROSAM-SP

II.IV CLOSEOUT

II.IV.I. Reassessment

Before a cohort closeout, a re-assessment of cohort recruitment and curriculum must be conducted, to ensure that each cohort improves on the last – and continues to be adjusted for evolving Fellowship placements.

II.IV.II. Closeout Meeting

At the conclusion of each cohort, all team members should meet one last time to reflect on cohort successes (and failures), and can document learnings for widespread use. Lessons learned should be codified in a cohort project report, and blog posts, use stories and other documentation should be developed as part of the close-out process.

After the final cohort of the program, the implementing entity must try to continue to support the program or identify other stakeholders who can leverage the work already completed and/or continue and carry the activity further. For the DCDJ Fellowship, case studies will be disseminated globally as a way to inform and influence future data-focused development programming.

II.IV.III. Build an Alumni Network

The DCDJ Fellows Alumni group maintains communication and builds connections across cohorts. It encourages local volunteering, job posting, exchange of ideas, and professional networking. As the Fellowship ends, DCDJ will continue to engage alumni through Facebook, WhatsApp, and other social and professional platforms.

The Fellowship alumni have also become informal community data advocates and ambassadors, volunteering locally and helping others feel more comfortable accessing and using data. In Data Fellowships, participants from past cohorts can become a resource for the program itself, running elements of the program, helping with training, and mentoring Fellows. In the case of DCDJ, women alumni were fundamental in mentoring each other, recruiting other women for each successive cohort, and continued to provide a supportive environment for women applicants.

**THE DCDJ
ALUMNI
FACEBOOK
PAGE**





The DCDJ Fellowship Cohort 1, who are also current members of the DCDJ Alumni network

The alumni network is also a source of trained professionals that can support other objectives, such as measuring program results. During the third cohort, DCDJ enlisted five alumni Fellows to survey host organizations. These experienced Fellows determined which recently developed or improved data use tools were still being used. For those that had fallen out of use, the alumni trained staff to bring tools and processes back into use, bringing the usage rate from 50% to 80%.

II.IV.IV. Monitoring and Evaluation (M&E)

M&E work serves as user validation on the program's effectiveness. Data Fellowships should plan for detailed M&E programs. Clear, measurable indicators are essential to your M&E program, and they should be tailored to your program's objectives. You may complete baseline, mid-line, and end-line survey evaluation of these indicators, or use a simpler scheme that meets your needs.²

In addition to consistently measuring how many Fellows apply, are accepted to the fellowship, and make it to the final stage in each cohort, the program should also measure how Fellows make a tangible impact on their host organizations. This is done by surveying host organizations. Statistics upon completing the fellowship (i.e. how many get hired, how many get a notable salary increase, how many are able to secure more advanced jobs) should also be measured.

Each host organization has varying data use capacities, and each intervention is context-specific. Therefore, instead of issuing identical surveys to each facility and trying to measure each data use indicator uniformly, DCDJ tailored the M&E process to accommodate each facility's different "starting lines" for data use, to identify what "real" impact means for each. The 46 PEPFAR priority facilities were divided into three tiers of capacity for data use: *Tier 1: High Capacity; Tier 2: Medium Capacity; and Tier 3: Low Capacity.*

2. A case study outlining DCDJ's M&E methodology and lessons learned is available on pg. 33 of the [Delivering Data Where it Counts consultation document](#), entitled "D. Measuring subnational data use."

Indicators include: *Availability; Data collection; Management; Sharing; Analysis; Data use culture; Decision-making processes; Satisfaction with data fellow; Community needs; Linkage and retention; and Stigma.*

One example of how M&E programs are useful is that DCDJ's M&E program uncovered that new Fellow-developed tools often fell out of use within host organizations once Fellows left. In the baseline evaluation for Fellows' impact, healthcare workers ranked how strongly they

agree to statements such as, "In the last 12 months, the data needed to make decisions has been available and accessible," and "Doctors and healthcare workers can access the data they need quickly and easily." When the numbers fell noticeably low in the second evaluation after Fellows had left, we were able to see where the team needed to focus, creating tools like adoption plans to help organizations continue to use tools.

Organizing facilities and adapting an M&E program according to their needs



III. IMPACTS

From the first two cohorts of Fellows (38 individuals) alone, 182 projects and processes were developed, including 87 data quality control tools, 39 reporting tools, 26 decision-making tools, 26 datasets, and 4 websites. At the community level, five community events were organized, and 666 people participated in data use awareness-raising activities. Fellows created a data science club, and four training modules were developed for ENSEA. There is also an informal Fellows Alumni group, which maintains communication and builds connections across cohorts beyond the length of the program.

 **182** Projects and processes developed *including*

 **26** Decision-making Tools

 **87** Data Quality Tools

 **26** Datasets

 **39** Reporting Tools

 **4** Websites

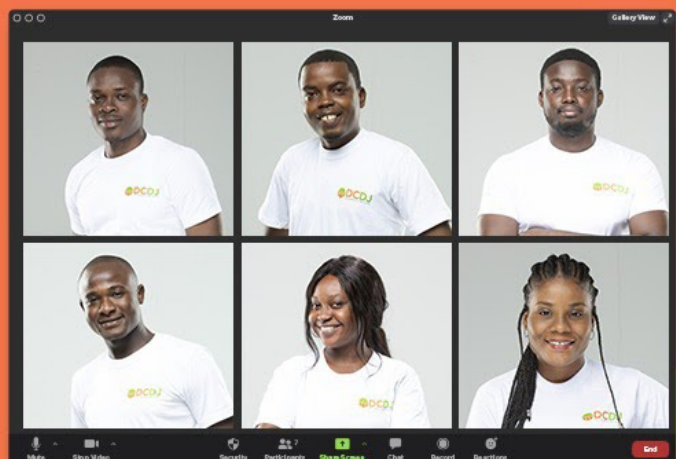
FELLOWS-LED WEBINAR ON THE IMPACTS OF THE FELLOWSHIP ON THE DATA ECOSYSTEM

LE WEBINAIRE DES FELLOWS

Les Fellows et l'impact du Projet DCDJ dans l'amélioration de l'écosystème des données en Côte d'Ivoire

Jeudi 26 novembre
10h - 12h Temps universel
Inscription obligatoire

Rejoignez-nous sur Zoom
ID de réunion : 816 6713 6187
Code secret : 542216



The Fellowship also had “soft” impacts well beyond the “hard” numbers above – each Fellow was introduced to data-focused decision making, improved their outlook on data science as a career, improved less-than-effective processes in their placement sites, supported communities, and inspired other young people. Sultan Toure, Technical Advisor to the General Director, Ministry of Planning and Development of Cote d’Ivoire, emphasized just how valued the Fellows are at placement sites, saying that Fellows at the Ministry “are just like full team and staff members. They work on more than just the information system tool, they are also in charge of proposing anything that would improve work in the Ministry of Planning, any new IT solutions to improve, and for this they have an important impact.”

The Fellowship provides value-add to the Fellows’ careers, as well as to the host organizations’ goals. For example, Ali Diakite – a Fellow from the first cohort – was placed at the [Programme National de Lutte Contre le Sida \(PNLS\)](#), a government agency that leads the response against HIV/AIDS in Cote d’Ivoire. He built a Python data compilation tool that noticeably improved the PNLS process efficiency and data quality, and was then hired as a Statistician with PNLS. **Ali laid the groundwork for his career at PNLS while helping the organization advance its mission.** Out of the 86 Fellows trained, more than 40% have secured a relevant data science job after their placement. Many Fellows have gone on to continue their education in data science, and a few went abroad – with data science now a viable professional career path. Additionally, more than 10 Fellows stayed involved in the activities of the DCDJ Data Inventory platform, and at least 5 Fellows obtained employment through the alumni network after graduation.



Flore Koffi

What are your career goals after the Fellowship?

I hold a degree in mathematics and statistics, and I am passionate about data science. At the end of the program, I would like to continue to bring my knowledge for the improvement of the data ecosystem in Côte d’Ivoire.



Ivon Kolo

Why did you stay involved with DCDJ beyond your internship?

The adventure of DCDJ has been fascinating for me - and it is a great opportunity for me to help my younger brothers and sisters. Being able to guide them and give them advice is really heartwarming. A few years down the road, I see myself being a manager of a company, and content in my career.

In addition to many host organizations hiring their Data Fellows full-time, we also encouraged DPs to invest in more programming for local data users. Additionally, we participated in and led events at global, regional, and local conferences – including the [MCC DataRev](#), the [OpenGov Digital Youth Summit](#), the [Francophone Open Data Conference \(CAFDO\)](#), and more – spreading the word about the importance of fellowships such as this.

IV. KEY FINDINGS AND RECOMMENDATIONS

Key lessons organized by phase include the following:

Planning and Recruitment

- **When planning, be specific about the role of your Fellowship, and the resources needed in your implementation context.** Complete in-depth research into what other Fellowships already exist in the country/region/thematic context. Identify where gaps in service delivery exist, what the challenges faced by existing initiatives are, and what training is already underway.
- **It is essential to leverage partnerships to strengthen program sustainability.** The DCDJ Fellowship built on partnership opportunities with other CSOs, NGOs, DPs, the private sector, and the many tech hubs/labs operating in Côte d'Ivoire. Additionally, DG leveraged its existing relationship with the Government of Côte d'Ivoire to support Fellowship operation, and DCDJ also leveraged on-going investments being made by PEPFAR and MCC.
- **Hire a local and gender-balanced team.** The DCDJ Fellowship thrived based on its local team, who could connect with the Fellows in-person and communicate in French, understand their contexts and the data ecosystem in Cote d'Ivoire, and forge more genuine relationships than any in-country program where leadership is in the US. Additionally, the DG team cultivated a women-led, locally-based team within DCDJ – providing valuable

mentorship and highlighting the voices of Ivorian women working on the program. DCDJ was also able to proceed smoothly through COVID-19 due to program leadership being located in Abidjan, and little need for travel from DC to Abdjan. No major trips had to be cancelled due to the pandemic.

- **In the Côte d'Ivoire context, word-of-mouth was the most effective Fellow recruitment method,** particularly for women, many of whom decided to apply to the Fellowship because they had heard about it from friends. This necessitates building sound relationships, enthusiasm, and trust with Fellows and partner CSOs.
- **Be flexible, and plan for unforeseen circumstances and how to address them.** DCDJ's third cohort was about to begin their internships when the Covid-19 pandemic began. DCDJ and host sites worked together to adjust and proceed virtually, and Fellows were prepared to shift focus temporarily to data use for Covid-19 outcomes. In this case, DCDJ did not have to conduct training virtually – but we recommend that other Data Fellowships be prepared to do so.

The Training

- **Cohorts are useful in maximizing impact.** Cohort-based training allows for successive program improvement and fine tuning. Additionally, it allows

each cohort to become a community in itself, and strengthens the connections between Fellows beyond the length of the program.

- **Diversify skill sets across and within cohorts.** DCDJ's first cohort focused mainly on training individuals with strong information, communication and technology (ICT) skills. In our second and third cohorts, we were eager to continue diversifying skill sets across Fellows while maintaining a high level of technical rigor, balancing technical and non-technical backgrounds. This ensured that we had a wide range of individual expertise in our program, which is a more beneficial and sustainable approach. Facilitators also need to provide different levels of coaching to different types of Fellows.
- **Ensure the Fellowship also includes soft skills training.** Since Fellows are also being trained to excel in the workforce and their careers overall, do not underestimate the value of incorporating communications and other skills into the training process.

The Internship Placements

- **Focus on identifying competitive talent, then placing matching specific skill sets with the appropriate organization.** Since the fellowship is paid for, it is important that the placement organization gets “the best of the best” talent – so conduct a skills test early in the process, before Fellows are selected, in order to select those most likely to succeed.
- **Creatively encourage women to pursue data science careers after their internships.** This is a multifaceted

challenge. We found that women in Côte d'Ivoire see data science as having a high barrier to entry, which is reinforced when they do not see themselves represented in the field. DCDJ's partner COSCI's connections with women's groups helped identify, recruit, and maintain a gender-balanced cohort. Secondly, in partnership with SEJEN CI, we instituted initiatives such as after-hour labs and training help desks to support women who were not able to commit to a full time 9-5 training schedule, because of duties at home.

Closeout

- **Facilitate frequent discussions across stakeholders to share learnings, ensuring meaningful progress and knowledge-sharing.** Document use stories and case studies to promote learning across levels of government and among community partners. When DCDJ first began the Fellowship, we did not have a concrete and consistent method of documenting stories. We developed a process to retroactively tell these stories. However, showcasing Fellows' accomplishments early on, and throughout the program into the closeout phase, would have been a useful cohort recruitment tool or for placement organizations.
- **Measure the impacts of your Fellowship.** Each placement organization has different needs and priorities, so Fellows will focus efforts differently in each one. Additionally, what “finished” looks like in each organization is different. Implement a strong measurement survey that accounts for both qualitative and quantitative indicators, and ensure follow-up with placement organizations to track sustained benefits of Fellows after internships end.

V. BUDGET

Depending on the size, scope, and regional location of your program, budgets across different Fellowships will vary significantly. As a starting point, implementers should assume that budget costs may vary from ~\$500,000 to ~\$1,500,000, with a high percentage of these costs being allocated to the administration of the Fellowship program, as well as marketing, training, workshop, and internship stipend costs. Amounts can be scaled up or down depending on Fellowship needs. However, the budget line items to begin planning your Fellowship can be broken down as noted below. Additionally, [a budget worksheet is here](#) to help you start to think through costing your Data Fellowship.

V.I. RECOMMENDED PERSONNEL

The below rate estimations are based on the DCDJ program, aligned with local personnel rates in CIV. However, programs should adjust for their own staffing needs and regional rate structures.

- **Program Manager**, who will lead on the strategic direction, day-to-day management and supervision, and support of the full team (**rate estimation: \$400-500/day**).
- **Fellows Manager**, who will oversee the recruitment, training, support, and management of all Fellows. This individual must be located in the same region as the Fellows (**rate estimation: \$350-400/day**).
- **Fellows Management Support**, who will support the Fellows Manager and support day-to-day operations of the Fellowship (**rate estimation: \$300-350/day**).
- **Coordination & Mentoring Manager**,

also located in the same region as the Fellows. This person should work closely with the Fellows Manager to ensure that training materials meet local needs and provide ongoing mentorship with stakeholders (**rate estimation: \$350-400/day**).

- **Training Lead**, depending on the nature of the Fellowship training program, this person or team of trainers will lead the actual training of Fellows (**rate estimation: \$350-400/day**).

In addition to the above recommended personnel, other Fellowship staff, either full-time or part-time, can be determined by the implementing organization. **We also recommend that the lead organization put a strong subgranting and financial management plan in place.**

V.II. PLANNING AND RECRUITMENT

Budget should be allocated for the radio, newspaper, and web advertisement of the program. For this, we recommend budgeting about **\$500/advertisement method**. Additionally, you should allocate budget and staff costs for any in-person recruitment events

or outreach you may plan to include. Cost savings can be seen in each subsequent round of recruitment, because networks are pre-established and more people know about the program.

V.III. TRAINING

The budget for the training program should be developed carefully, whether it is internal, led by a partner, or external. The Training Lead and supporting Training team will be paid at an agreed-on rate, estimated at \$350-400/day. If training is in-person and hosted externally, there will be training facility or office rental costs. Office rentals are approximately **\$5,000/year**. There will also be associated technical equipment costs, at about **\$500/rental** per month.

To reduce training costs, DCDJ recommends partnerships in which one partner can offer a training location and technical equipment, either as a rental or an in-kind contribution. You may also choose to pay a stipend to Fellows during their training period, which would be about **\$25/day** per participant for **about 30 participants**, and will also vary regionally.

V.IV. TRAVEL AND WORKSHOPS

Budget should be allocated for the possibility of travel for potential workshops and/or graduation ceremonies at the end of each cohort training, hosted in-person, virtually, or through a hybrid approach. If Fellows or program staff are flying internationally, you should allocate **~\$2,000/international flight**. If they are flying regionally or domestically, **~\$450/domestic or regional flight**. For workshops and/or graduation ceremonies, you

may also need to rent venues and cover other workshops costs at about **\$5,000/workshop**. For example, this may include paying a stipend to workshop participants (**\$55/participant**), and lodging/per diem payments.³

It should be noted that the allocation for travel will vary depending on if all Fellows are located in one place or geographically spread across regions.

3. DCDJ used the US Government Office of Allowances per diem rate, at https://aoprals.state.gov/web920/per_diem.asp

V.V. EQUIPMENT AND SUPPLIES

Fellows may not all have their own computers, and programs should anticipate that a few may need computers to participate. We recommend

including a budget of about **\$700/computer** to ensure that enough computers are available for each Fellow during training.

V.VI. INTERNSHIP STIPEND

To attract and retain Fellows, Fellows should be financially supported during the program. You may therefore choose to provide a stipend for Fellows during their internships and/or training. DCDJ paid a **\$25/day stipend to each cohort of**

about 30 Fellows during their internships, plus a **\$5/day** transportation allocation. The Fellows were paid daily for internships ranging from **6-9 months**.

MEET THE DCDJ TEAM



VI. CONCLUSION

The DCDJ Fellowship has not only increased Fellows' skills and professional capacity, but supported a stronger national data ecosystem through building government and NGO capacity as well.

We believe that Fellowships have the potential to be used much more widely, and that they can leverage existing partnerships to have impact well beyond the length of the fellowships themselves.

In providing this guidance, we hope to encourage other groups to host Fellowships. DCDJ Fellow Ivon Kolo said, *"To develop the country, we need to continue to develop the skills of the young people and increase human capital. We need another phase."*

Though the DCDJ Fellowship has come to an end, it can be used as a starting point for others

to enter that phase. Users are free to adapt this resource, using DCDJ as an example, as they see fit.

Additionally, the ongoing conversation around how to sustain – or shift – youth's role in health decision making during the Covid-19 era remains strong, and there is a greater recognition of the importance of digital skills. With other data or technology-focused Fellowships, the data-for-development community will continue bolstering the supply and use of data and digital tools in health, engage youth as data champions, and address health information needs during pandemic recovery.

THE DCDJ FELLOWSHIP AT-A-GLANCE

2.5 Years
3 Cohorts

4,679 Applicants in the application pool
86 Fellows (1.8%) selected



Women
Cohort 1

16%



Women
Cohort 2

30%



Women
Cohort 3

46%



5 Women
Fellow
Ambassadors

63

Strategically selected institutions benefited from Fellow placements:

- 26** Fellows placed in government organizations, across **14** different Ministries and departments.
- 46** Fellows were placed into NGOs, including in **5** subnational regions.

40%

of Fellows have secured a relevant data science job after their placement, and

- 5+** Fellows found jobs through the alumni network
- 10+** Fellows stayed on to work on the DCDJ Data Inventory program.

FEEDBACK

Users are welcome to provide feedback, suggestions, and share how they have used this resource [here](#). Please note that recommendations do not need to be applied exactly as described, but instead can be adapted and enriched by users based on their local contexts, to be fit for purpose.



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