CASE STUDY
MEXICO CITY FELLOWSHIP PROGRAM
CÓDIGOCDMX

This Case Study documents the Code for Mexico City Fellowship program to serve as a helpful reference to support partners in other countries in the development and implementation of their own programs. The following is a living document serving anyone with the desire to replicate or remix parts of this civic technology program for their own purposes. Produced (originally) in collaboration between Code for America's International Programs Manager, Lynn Fine, and Oscar Montiel, Code for Mexico City's Fellowship Program Coordinator.

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BACKGROUND

Mexico City is a booming metropolis whose area is home to over 20 million people, or nearly 20% of Mexico's total population. As a complex urban center, the city faces a wide number of challenges in providing its citizens with adequate services. Mexican citizens have a tendency towards low confidence in their government, straining the democratic relationship. Mexico ranks 106 out of 177 countries in Transparency International's Corruption Perception Index ranking and falls in the 36th percentile according to the World Bank's Worldwide Governance Indicators. Within this greater context, Mexico City's government has a keen interest in improving access to information and its governance in a citizen-centered way.

ACCESS TO INFORMATION AND OPEN DATA IN MEXICO CITY

Mexico has an access to information law that is generally upheld, but requests for information are very time consuming, and the data that is released is generally not compatible with the development of technology applications. For example, information is oftentimes released in PDF formats instead of machine-readable ones and the data must be scrapped before it can be inputted into technology applications. The Dirección General de Gobernabilidad de Tecnologías de la Información y Comunicación (General Directorate of Information Technology Governance, DGTIC) took a step in a positive direction through the creation of an open data site; however, the resource was rarely utilized due to user-experience issues and data-format choices that were not amenable to development.

Mexico City's Open Government working group sought to improve upon this. Convened in January 2014 by Mexico City's "Laboratorio para la Ciudad" (Government Innovation Lab, also known as the "Lab for the City"), the group is made up of the Mexico City government's Coordination for the Modernization of Public Administration department (CEGEMA), DGTIC, the City Controller's Office, the Attorney General's Office, and PIDES (an NGO that facilitates interinstitutional dialogues). Thanks to their efforts, the Open Data portal was created again from scratch. This data portal has a new back-end which will make city data interoperable, as well as better automate the process and has much more user-friendly interfaces. At the same time, the working group is now creating an Open Government Law that would mandate best practices for open data and open software, among other initiatives.

This context coupled with constrained financial resources has paved the way for new approaches that save government money, involve citizens in the democratic process, and leverage technology as a tool to facilitate improved trust, accountability, efficiency, collaboration, and innovation.

MEXICO CITY'S GOVERNMENT INNOVATION LAB

Mexico City's Lab for the City was founded as a creative think-tank and experimental space for the government of Mexico City - the first of its kind at the city level in Latin America that brings together stakeholders within the civic tech space. It is the product of a partnership between an ambitious new Mayor and citizens committed to harnessing innovation to positively impact their city. The Lab's primary staff is comprised of a multidisciplinary team of 20 people (artists, architects, urban psychologists, designers, historians, sociologists, techies, economists, etc.) and officially launched in June 2013. Working in a studio-like manner, the Lab environment fostered creativity and collaboration with an overarching strategy articulated as "Provocations." For example, "Provocation No. 001: Government as Platform" includes programs, prototypes, pilots, and events that further Mexico City's Open Government strategic agenda. The Lab has an explicit mandate to promote civic innovation and urban creativity, and is challenged to "do things differently." It exists in an interesting space as it is both part of government, operating with funding from Mexico City's municipality, as well as with funding from other sources, such as the Omidyar Network and the Hewlett Foundation. This unique structure provides the Lab with a level of autonomy and free range for experimentation and creativity that is distinct from other government offices in Mexico City and explicitly encourages innovation. This agenda includes initiatives ranging from policies and new legislation, to the implementation of a Code for America-inspired Fellowship program, "Código para la Ciudad de México" (Código CDMX).

THE BEGINNING OF THE FELLOWSHIP

In September of 2013, Code for America's (CfA) International Program Code for All was managed by Catherine Bracy, now CfA's Director of Community Organizing. The Lab's leadership contacted CfA to work with their team. They discussed how best to adapt the CfA Fellowship program and tailor its structure to fit The Lab's priorities, as well as the unique situation in Mexico City. Catherine worked together with The Lab staff, and advised the leadership of their Fellowship program to create the "Código CDMX" Fellowship program.

Catherine's advising involved all aspects of starting a Fellowship program, drawing upon CfA's experience. This included applicant selection, staff training, the program's structural design, all while strategically considering the specific needs of Mexico City and those of a Fellowship program run out of a government innovation lab. These conversations allowed for variations in the unique design of Código CDMX (more on that later).

Building on these conversations, in June of 2013 the lead organizers of the Código CDMX program gathered together with the leadership teams from other countries who had also embarked on the implementation of adaptations of CfA-inspired programming in their own countries (Code for Germany and Code for the Caribbean). The meeting served to address specific program challenges and to convene civic technology experts from different parts of the globe to connect and share their lessons learned. You can view the agenda for that training here.

BUILDING A NEW MODEL

CfA Fellows are organized in teams of three people (made up of a combination of developers, designers, programmers, project managers, urbanists, and activists). Each team works with a different city in the United States. These cities have applied to work with CfA and been selected as a "Fellowship City" for the 11-month program. For the CfA Fellowship program, the city partners fund 50% of the program, with the remaining funds mostly coming from CfA. The partnering cities recommend issues that the Fellows will work on during the process of developing applications and are also prepared to support "emergent outcomes." Emergent outcomes are mainly solutions that fall outside of the scope of the original problem but address an issue that's important to the city and arise during the course of the Fellowship program.

CfA's Fellowship program is managed by CfA itself, so Fellows are not absorbed into a larger government structure. CfA Fellowship teams are matched with a government partner (normally a CfA "champion") who works within the Fellowship City's municipal government that they are matched with. CfA Fellows are based in CfA HQ in San Francisco and travel an average of four times to their partner cities to hold meetings, conduct user research, and engage in other program activities.

Código CDMX chose to hire six Fellows. Fellows were given the opportunity to choose the issues they wanted to tackle and were instructed to loosely base these decisions on the city's "General Development Plan" (which outlined loose goals for the the five participating Ministries), as well as conversations held during the induction period. Unlike the standard CfA program, Mexico City Fellows would work in the same city where they live and with only one city government.

As part of the Código CDMX model, a permanent Volunteer Brigade was formed (three volunteers for each Fellow) to support the overall program. Brigade members were Mexico City residents with backgrounds in design, sociology, and architecture, among others. The idea was that the Lab`s permanent Brigade team would provide insight into the subject matter of the problems that the Fellows decided to tackle and would contribute to continued development and handover of projects once the Fellowship finished. This too was a sizeable departure from CfA's traditional Fellowship program structure. While CfA fosters the existence and sustainability of Brigades (citizen volunteer chapters that work with their local governments to use technology to improve their communities) in Fellowship cities, these are community-driven and not explicitly assigned to support Fellows working with those cities.

THE LAB'S FELLOWSHIP STAFF

The Código CDMX program was developed and implemented by a dedicated team of Lab staff:

I.   GABRIELLA GOMEZ-MONT - Founder and head of the Lab. Gabriella cultivates political will within Mexico City's different government departments while sustaining Mayoral support for the program and the Lab's various complementary activities. With regards to the Fellowship, she was the primary liaison between CfA's technical advisors and the Lab staff. She upheld the strategic thinking and "big picture" motives behind the Fellowship program within the larger Lab framework.

II. PAOLA VILLAREAL - Executive Director of the Department of Technological Innovation at the Lab. A skilled programmer and technologist, Paola was the Tech-Lead for the Fellowship, providing technical support during the development of the applications the Fellows created. Charged with overseeing product development and refinement throughout the process, Paola provided the initial working methods for the Fellows based on lean development methodologies. She also served as liaison with the IT areas in the five selected secretariats working with the fellows to promote Open Data and Open Government best practices.

III. OSCAR MONTIEL - The Lab's Fellowship Program Coordinator. Three months into the Fellowship project, it became clear that the Fellows would require support beyond the technical development of their respective technology projects. They would need a person dedicated to developing their research capacities, creating a day-to-day work structure, and to identify new items that needed to be addressed in terms of capacity building, etc. Oscar came on board to provide guidance in these areas and in the refinement of additional "soft skills" found to be critical to the success of the program.

IV. THE LAB TEAM - The rest of the staff at the Lab took a very active role in designing the image and tone of the project. The Lab staff collectively drafted the selection criteria for the Fellows, created the application questionnaires, defined the training curricula, and implemented social media and press strategies. Throughout the process, there were periodic meetings where the Fellows presented the status of their projects to the team and Lab staff provided general feedback and ideas. Later on in the program, a Director from each of the Lab's departments was paired with a Fellow and acted as a mentor, and the Design department offered hands-on support to help theFellowship projects to completion.

The Lab prioritized collaboration and teamwork among the entire staff throughout the duration of the Fellowship Program, from recruitment to the launch of the final products. This proved to be critical to the success of the Fellowship program.

PUBLICIZING THE FELLOWSHIP

The recruitment process launched on June 15th 2013. The marketing materials framed the Fellowship as a fun opportunity to create social impact, with strong learning and creative benefits, and the potential for hands-on engagement in problem solving. These materials were crafted to take advantage of the desire of Mexico City residents to improve their city, intended to appeal to public service leanings. Recruitment materials included a digital media campaign which explained that Fellows would work out of Mexico City for the duration of 9 months, with compensation equivalent to a Senior Developer's average salary in a traditional company in Mexico City. Traditional methods were also employed to recruit applicants, including event based recruitment. For example, the Lab participated in TagDF and handed out fliers with information about the opportunity.

Lab staff also researched and contacted specialized tech and digital media outlets to get the word out and conducted a live-broadcast Q&A session with Telmex Hub. A special promotional video was also created to disseminate the opportunity through official government channels (the video received over 1,500 views). The video translated some of CfA's promotional videos and highlighted interviews with CfA staff to communicate the relationship between Código CDMX and CfA. The video was also published via the Lab's webpage, Facebook and Twitter, along with blogs and a TV show specialized in tech called Fractal. The video's final line: "Quieres mejorar tu ciudad? (Do you want to improve your city?) embodies the spirit of the Código CDMX Fellowship program.

EVALUATING THE APPLICANTS

150 people completed the Lab's Fellowship application to take part in the Lab's first Fellowship class. Additionally, more than 100 people applied to be part of the Volunteer Brigade. In total, more than 260 applications were received. Per capita, percentage wise, this citizen response made Código CDMX a more competitive opportunity in its first year than CfA in its fourth.

THE APPLICATION PROCESS

I. PHASE 1 (150 APPLICANTS) - The applicants were asked to explain: why they wanted to be a part of Código CDMX; their skills (the programming languages they knew, which types of software and tools they could use and experience with softer skills); what they could contribute to the Fellowship and; in which area in government they were most interested in working. The applicants also had to submit a portfolio, CV, and description of the three most important projects they had completed. The Lab's staff paid special attention to four main criteria when reviewing these applications:

A. Candidate level of interest in collaborating with the local government to develop technological solutions to city issues

B. Candidate's experience and proven abilities in programming and development of web or mobile apps.

C. Candidate's experience managing teams (communication skills, project management, etc.)

D. Candidate's ability to make a full-time commitment for the 9 month Fellowship.

II. PHASE 2 (60 APPLICANTS) - The second round of the process was a small questionnaire and a programming test. The applicants were contacted via email when selected to move on to the next round. The components of this questionnaire were:

1. Describe something complex in 250 words or less.
2. Use 50 words to explain what you could teach to people in the Fellowship.
3. Provide your Linkedin profile
4. What are you passionate about? Use no more than 50 words
5. What are willing to let go to work at Codigo CDMX?
6. What is your main skill?

III. PHASE 3 (20 APPLICANTS) - After this second round, Fellows were interviewed by a group of public servants and representatives of NGOs working on civic tech and open government to determine their compatibility with the various government Secretariat offices they would be paired with. Fellows were also assessed based on their capacity to understand the problems at hand and to build an appropriate technological intervention. Levels of commitment to public service and to the Lab's innovation mission of were also taken into account and weighed as important components of the selection criteria.

The five* Fellows selected for the 2013-2014 class of Codigo CDMX included:

CARLOS CASTELLANOS, **MEXICO CITY GOVERNMENT INNOVATION LAB FELLOW**

JUAN SANCHEZ, **HEALTH SECRETARIAT FELLOW**

MANUEL RABADE, **DEPARTMENT OF AIR QUALITY MANAGEMENT FELLOW**

MIGUEL MORAN, **SECRETARY OF TRANSPORTATION AND HIGHWAYS FELLOW**

EMANUEL ZÁMANO, **ECONOMIC DEVELOPMENT SECRETARIAT FELLOW**

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*   Initially the Lab selected six Fellows, but had to let one go because the quality, skills, and dedication of the Fellow weren't meeting the goals of the program. This Fellow began the program working with the Tourism Secretariat but didn't deliver an MVP on time and was unable to keep up with the pace of development required by the program.

SELECTING THE BRIGADISTAS

Once the Fellows were selected, the Lab team formed a volunteer corp that they called the "Brigadistas." The Brigadista program was advertised as the opportunity to be part of a team that would work alongside the Fellows in developing the applications, and the call appeared in the same websites as the Fellowship application. The selection process was based on the volunteers' experience, background, and interest in the different topics the Lab's Fellows would work on with their government partners. The Brigadistas' main role was to support the Fellows' work and better ensure the success and practical utility of the Fellowship projects. Comprised of subject matter experts, designers, urban planners and an assortment of civic minded volunteers, the expertise of the "Brigadistas" was intended to be complementary to the technical knowledge of the Fellows, with the potential to greatly contribute to the overall success of the Fellowship program's projects.

TRAINING THE SELECTED FELLOWS

Once selected for   the Código CDMX program, the Fellows started a month-long training program during September 2013, carried out by the Código CDMX team with support from CfA.

The training agenda was structured to address the following components:

- Fellowship program overview
- Product development process
- Agile development
- User-centered design
- Prototyping
- User testing
- Negotiations training

INDUCTION

The first part of the training covered general information about the Lab, as well as Mexico City's primary challenges. The focus was on understanding the mission and function of Código CDMX. Fellows were introduced to the program, provided examples and case studies of innovative work in government from CfA's experience, and were given an overview of the program. The Fellows were also trained on how to strategically develop applications, the concept of user-centered design, and on Mexico City's existing open data initiatives.

RESIDENCY (IMMERSION)

Upon completing the first portion of training, the Fellows began a two-week residency with their government partners. This critical portion of their Fellowship experience allowed the Fellows to immerse themselves in the problems and constraints facing their government partners. The Fellows were tasked with asking community members and government staff questions, and with learning as much as possible about civic needs in the city and about the needs of the Secretariat with which they were working.

The Residency aimed to give Fellows learnings in two main areas. On one hand, they were to learn as much as possible about the experience of Mexico City residents interacting with government (which they were then expected to pass on to to their government partners). On the other, they were asked to form an accurate picture of their government partner and all of the complexities entailed within that Secretariat in using technology to better provide its constituents with services and channels for civic engagement. During the residency, the Fellows went to the ministries and worked at their government partner's offices to figure out what would be the best tool to develop.

COMMUNICATIONS TRAINING

The third part of training was focused on communications skills, such as negotiation and public speaking. Fellows were given tips about how to best communicate with their city partners to gain a deeper understanding of all the different stakeholder's interests. This insight would later be used to inform the development of their applications and to navigate complex political environments.

STRENGTHENING TIES BETWEEN THE CIVIC HACKER COMMUNITY AND GOVERNMENT: **DATA LAB AND HACKDF**

To further promote the Fellowship program and highlight the importance of Open Government and Open Data in Mexico City, the Lab launched HackDF over the last weekend of January 2014. This was the first data festival in the city and consisted of an app challenge and five different workshops, all based on previously unavailable government data.

The event required significant preparation to make it a success. During the six weeks prior to HackDF, the Fellows worked intensely on opening, and curating all available data, and developed a tool to facilitate access to these resources for developers, data analysts, and others interested in using them. The tool is called Laboratorio de Datos (DataLab), a website which currently hosts 27 datasets and 10 APIs from 13 different government offices.

The first version of the DataLab was created as a prototype for an interoperable open data portal for Mexico City's different government agencies, built to encourage developers and entrepreneurs to build off of this platform and to build a community around it. The DataLab was a key step in the Lab's plan to foster a growing innovation ecosystem in Mexico City with close ties to the local government. The datasets hosted on the site have since been downloaded more than 6,000 times and the APIs had more than 3 million requests in the first four months since its launch.

Equipped with the promise of government data thanks in large part to the DataLab project, Hack DF attracted 500 people who participated for 48 continuous hours (and there was a line down the block from eager participants that could not fit in the room - a testament to the growing civic hacker community in Mexico City). 53 different projects came out of the event, all of which use open government data. HackDF not only served to convene a community around these new datasets and APIs, it also demonstrated the public's interest in using government open data.

During the HackDF event, the Fellows acted as mentors to teams working on projects. Their knowledge of the data and the way the DataLab was built equipped them to explain and assist participants effectively. The Hackathon not only proved the Lab's hypothesis that there was a vibrant (though previously untapped) civic hacking community in Mexico City, but also activated this community and harnessed their skills. Additionally it opened a new way for the civic hacker community and the IT departments within different government departments to work with each other, since the "owners" of the data sets (many of them government counterparts for the Fellowship program projects) all functioned as mentors throughout and following the event.

Moreover, since the Fellows were intimately involved in creating the new APIs and getting the datasets ready, both HackDF and the DataLab were a great excuse for the Fellows to work across 13 of Mexico City's government departments. This built trust in the Fellowship program and spread the culture of open data, open code and civic innovation as well as encouraged the sharing of best practices between government IT departments.

PROBLEM & SOLUTION DISCOVERY

The Mayor of Mexico City, Miguel Ángel Mancera, personally suggested the five different secretariats the Fellows would work with: Tourism and Culture, Transport, Health, Environment, and Economic Development due to their strategic nature for the 2014 Mexico City agenda.

Before officially beginning their involvement in the Fellowship program, the different government partners set specific goals for their departments as part of the "General Development Plan" for the city. With those goals in mind, the Fellows began the program by conducting research, interviewing people, and devising surveys to inform the project they would later develop. In addition to speaking to government counterparts as a central piece of the Residency component, the Fellows interviewed subject matter experts and potential users of their applications. For example, the Fellow working on public health issues interviewed Mexico City youth about why they don't engage in preventive health. The Fellow working on transportation interviewed over 300 taxi drivers and taxi users (see the process component of the project section for more details). Through these interviews, Fellows honed in on the specific nature of the problem they planned to tackle and began to formulate ideas about how technology could play a role in their solution.

Once the Fellows better understood the problem they intended to address with technology, the rest of their time was divided up into four overlapping phases to address specific objectives in a manner that allowed for consistent experimentation, reassessment, and re-testing. Those phases and the approximate duration of each are outlined below.

INFORMATION DIAGNOSIS AND OPENING DATA
(1 MONTH)

The Fellows worked with their government partners to determine the datasets they would need as inputs for their projects. Throughout the Fellowship they worked with their government partner to implement the necessary steps to make those datasets available.

MINIMUM VIABLE PRODUCT (MVP)
(2-3 MONTHS)

As their understanding of the problem improved with new exposures to relevant data, Fellows developed an MVP. An MVP was a very basic prototype and served as a simple way to explain their idea and to test the viability of the technological solution they were considering with both lab staff and their government counterparts. The prototype was used to gain feedback from peers and was intended to foster very short and tight feedback loops, allowing for small changes to be made so that the product could evolve based on suggestions and a continuously refined understanding of the problem space.

PRODUCT DEVELOPMENT
(2-3 MONTHS)

A more robust refinement of the MVP followed, which allowed Fellows to focus their efforts on building out the technical components of their idea, especially from a graphic design, access, and citizen-usability standpoint. At the end of this phase the Fellows had created a full-fledged beta version of their product.

TESTING
(2 MONTHS)

The Fellows took their products out into the world so that real people and key users could test their products, identify bugs, usability issues, and make suggestions for improvement prior to the final hand-off of their product to their government counterpart.

THE FELLOWSHIP PROJECTS

Each Fellow worked with a specific government department with whom they were matched based on the department's specific needs, the Fellow's interest in the subject matter, and their unique skillset.

EVENTARIO MAKING IT EASIER FOR MEXICO CITY RESIDENTS TO FIND EVENTS NEAR THEM AND CONNECT TO THEIR COMMUNITIES
(HTTP://EVENTARIO.MX/)

Mexico City is a thriving metropolis but its residents can feel unconnected to each other and overwhelmed by the multitude of activities in the city because they have no easy way to sort and filter events based on their preferences. Code for Mexico City Fellow Carlos Castellanos worked with government partners in the Mexico City Tourism and Culture Secretariats to create a more robust database of the city's events and activities and then built Eventario to give citizens a better experience discovering them. Doing so required coordinating and opening data across multiple government agencies; this came to form the foundation of DataLab which powered the Lab's other Fellowship projects.
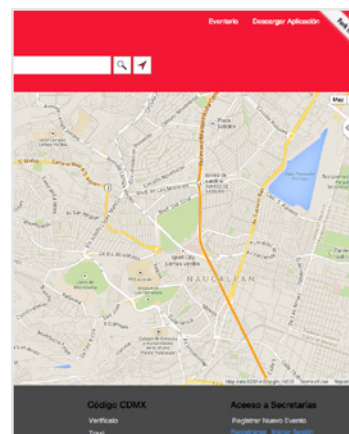
- GOVERNMENT PARTNER: **LABORATORIO PARA LA CIUDAD**
  (Mexico City's Government Innovation Lab, http://datos.labplc.mx/)
- CÓDIGO CDMX FELLOW: **CARLOS CASTELLANOS**

> " *I code for Mexico City because it's a great chance to use my knowledge and contribute to society. Through Code for Mexico City I hope to find solutions that improve the city, working alongside people directly involved in critical matters.*
> - *Carlos Castellanos, Código CDMX Fellow working with the Lab*

Carlos began his Fellowship journey in the unique situation of working directly with the Lab. This positioning provided him with a large degree of flexibility for the development of his Fellowship project.

I. THE PROBLEM - Carlos' original task was to figure out the best way to present government data so that developers, data scientists, and anyone interested in working with that information would have easy access. He was also interested in how to help different government departments better share and coordinate their efforts using data from their departments. While exploring the existing sites for Mexico City's government departments, Carlos found that each had distinct formats, sometimes for relatively similar data. This decreased the potential for cross-functionality and inter-departmental collaboration, and fostered inefficiencies and redundancies. For example, both the Transportation and Environment Secretariats managed data sets about cars in Mexico City with no cross-checking or synchronization. Oftentimes, data they had was inconsistent or duplicated. As a result, local government was losing money whenever these datasets had to be reconciled, not to mention the fact that they were paying people from different departments to complete duplicate tasks. To overcome these inefficiencies and the general lack of communication among departments, Carlos led a campaign to clean and curate the data into computer-friendly formats that would live in the DataLab.

Another (related) issue that Carlos identified was that both the Tourism and Culture Secretariats had their own information about events happening in Mexico City, but they weren't sharing that information or collecting it in a standardized format. As a result, events would be logged by one government staff person without crucial information (like date or location), while another department had logged that missing information in another place. Furthermore, events were rarely georeferenced, and were oftentimes registered multiple times, wasting valuable government staff resource time.

II. THE PROCESS - In order to begin merging data portals, Carlos conducted numerous interviews with government officials and collaborated with the other Código CDMX Fellows. He learned everything there was to know about the duplicate datasets plaguing Mexico City government departments, and discussed what government officials felt they needed to do their jobs better. He interviewed citizens to find out what information they most valued when it came to events happening in their city. He learned what information was most important to residents and why, discovering that many people who live in Mexico City are not from there but move for work. For these residents in particular, local events were a key way to facilitate their transition and build community.

III. THE SOLUTION - First, Carlos decided to create an API for government data to make it possible for the government's datasets to work together. He then opened a variety of government datasets. Through the API, he laid the groundwork for the different secretariats to share and use the same information, creating a central location for event management and eliminating public administration redundancies. Then, he created a standard form for inputting event information. Next, he created an application for citizens to find out about events happening in their city and to search events by time,

proximity to current location, event type, and more (as he had found that these were the event details most important to residents).

Carlos's work served as a building block for future endeavors. On the government side, by creating an API, opening up datasets, and making moves towards more standardized processes, Carlos helped foster a culture of openness, collaboration, and efficiency within Mexico City's government. His work also served as a convening force among secretariats, prompting conversations about project collaborations and data sharing - practices that are useful for improved public administration and service delivery. On the citizen side, he developed a useful tool that can improve people's lives by building community, promoting cultural engagement, and giving people a way to find events aligned with their interests and availability.

CUIDATE USING GAMIFICATION TO FOSTER HEALTHY BEHAVIOR
(HTTP://CUIDAMISALUD.MX/)

Mexico has extremely high obesity rates and has surpassed the United States with one of the highest rates of Type-2 diabetes in the world. Seven out of ten Mexicans are overweight. Young people are especially unlikely to prioritize preventative health. Ten years from now, if these trends continue, the Health Secretariat will not have adequate funding to provide for the health care needs of Mexico City's residents. CUIDATE makes staying active fun--and rewards citizens for taking care of themselves. Code for Mexico City Fellow Juan Sanchez worked with the Health Secretariat to create an app that allows residents to track their healthy activities and earn points that can be redeemed for movie tickets or other prizes. The app surfaces some of the same outdoor, healthy activities (like road races) made available through Eventario and you can even track rides taken with EcoBici, the city's bike share service, and share your activity with friends, encouraging a little healthy competition.

CHÉCATE AQUÍ HELPING PEOPLE IN MEXICO CITY FIND AND ACCESS FREE HEALTH CARE (HTTP://CHECATEAQUI.MX)

All Mexico City residents have access to free health clinics but many of them, and youth in particular, don't know how to find them and don't prioritize preventive care. There is no easy way for people to search for and find health centers that offer free services. Juan Sanchez, a Code for Mexico City Fellow, worked with the Health Secretariat to develop an application that maps all of the health centers in the city, helping residents find the clinic that meets their needs.
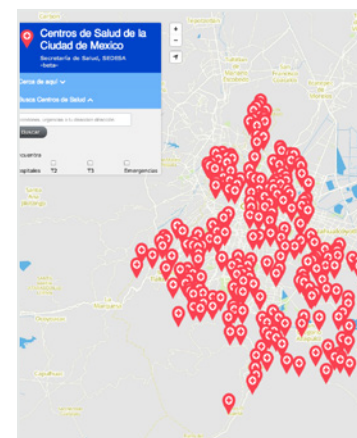
- GOVERNMENT PARTNER: **SECRETARIA DE SALUD** (Health Secretariat)
- CÓDIGO CDMX FELLOW: **JUAN SANCHEZ**

> " *I became a Código DF Fellow because I was excited about having the opportunity to do research and develop something real and useful."*

Juan started his Fellowship engagement by asking his government partner: "what are the biggest public health challenges that your Secretariat faces?" Through interviews with citizens and government officials, Juan looked for overlap between the problems his government counterparts identified and those discovered from the research he and his "Brigadistas" (which included a volunteer biologist) undertook.

I. THE PROBLEM(S) - Juan and his team identified two main problems:
   A. While most older adults engage in preventive health care, many youth in Mexico City do not go to the clinic for check-ups, explaining that they did not:
      1. Have enough time to get check-ups.
      2. Know how to schedule a check-up.
      3. Care enough about getting check-ups.
      4. Know where to go to get a check-up.

      While other reasons did surface, these in particular were concerning as they showed that health was not of high priority for youth who also did not know where to access health care centers. Carlos wondered what could be done to change this mentality and wanted to create avenues for more preventative health care behaviors.

   B. According to a world report in US News Report, Mexico has one of the highest Obesity rates, and according to "Changing Diabetes Barometer", they also have one of the highest Type 2 Diabetes rates in the world. If these figures continue, in ten years the government will not have sufficient funds to provide adequate health care.

It is worth noting that another public health challenge Juan identified was the need for improved education around reproductive services, such as a better resource for finding clinics with abortion services. However, after careful consideration, Juan dismissed devising a technological tool to address this issue. He determined that due to the communication and socially intensive nature of the challenge, a technological intervention wouldn't be appropriate and likely ineffective.
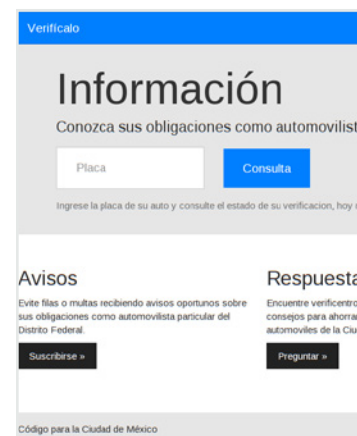
II. THE PROCESS - At first Juan and his team recognized that the problems they identified were highly social in nature. Through consulting with regular citizens as well as reaching out to experts in health and organizations focused on improving public health outcomes, they began to see how technology could play a role in improving health outcomes in Mexico City. They saw that there were practical and concrete mechanisms to prompt healthier behavior. For example, for many citizens the problem was one of awareness which technology could address: they did not know where to go to get care and were not aware of the free public health offerings in Mexico City. Furthermore, there were few avenues to encourage healthier behavior in a way that would resonate with young people.

III. THE SOLUTION(S) - Juan opened the Health Secretariat's data and found that there were more than 220 health centers in Mexico City that offer free care to residents. The Secretariat's database included detailed information on the types of services offered, location, and hours of operation for each center - but this resource was under utilized and difficult to navigate. Juan created a web application to map all of the health centers and added functionality such as a "find the nearest health center to you" feature, and search functions to filter by type of service or hours of operation. Juan was concerned about access to this application, especially for those with limited resources, but discovered that many people in Mexico City have smartphones. While some could not afford robust data plans, they would still have sufficient access to the application due to the abundance of free wifi in public spaces in Mexico City.

Next, to encourage healthier behavior, Juan developed a gamification application. He wanted to encourage healthy habits and created a health dashboard. Called "Cuidate" (which loosely translates to "Take Care of Yourself"). The dashboard defines healthy actions that you can take, and proposes activities and events that one can do to improve their health (pulling mainly government event information from the API that Carlos had made). Players earn points for performing activities that are good for their health (running, eating a healthy meal, etc.) and can share that information with their friends via social media. Verifiable activities (such as attendance at a Health Secretariat event) earn vouchers exchangeable for movie stubs and other rewards. The platform also lets users opt-in for reminders about certain health-related activities.

Additionally, the Health Secretariat plans to use the platform to gather information about its users such as the kinds of events they attend and reasons why don't they go to the doctor and use this data to inform future policy decisions.

VERIFÍCALO GIVING PEOPLE A ONE STOP DIGITAL SHOP FOR ALL OF THEIR POLLUTION-PREVENTING CAR NEEDS (HTTP://VERIFICALO.MX/)

Mexico City is plagued by high pollution rates, with transport responsible for 60% of carbon emissions. In response, the city has enacted an assortment of policies to cut down on emissions such as limiting the number of days a week that each car can circulate and requiring regular smog checks. The multitude of policies and regulations are confusing and spread out over various departments. Working with the Environment Secretariat, Code for Mexico City Fellow Manuel Rabade built **VERIFÍCALO**, a website that aggregates all of these policies and requirements into one place and allows car owners to enter their registration information and get back tailored information about their own obligations (which days they can drive, when their next smog check is required and where they can get one, whether they have any outstanding tickets, and what taxes they owe). It also allows citizens to sign up for text message reminders about all of these things. By making this data actionable and putting the citizen at the center of the experience, Verifícalo makes it vastly easier for citizens to comply with clean air regulations and helps Mexico City mitigate air pollution.

- GOVERNMENT PARTNER: **SECRETARIA DE MEDIO AMBIENTE** (Environment Secretariat, Department of Air Quality Management)
- CÓDIGO CDMX FELLOW: **MANUEL RABADE**

> " *I joined the Fellowship program because I was excited about building things that would be useful for such a large population. I thought it would be a great learning experience and opportunity to apply things I already knew.*

I. THE PROBLEM - According to the Journal for Society and Justice and the World Health Organization, Mexico is plagued by high pollution rates, with transportation pollution leading to 14,700 deaths in 2010. As a result, Mexico City has enacted a range of policies to cut down on emissions. These include limiting the number of days a week that a given car can circulate in the city and requiring regular smog checks for cars. The Secretariat has also invested in various monitoring centers throughout the city to collect information about air quality rates to inform policy decisions. While the Environment Secretariat has a reputation as being very professional with vast amounts of technical knowledge, similar to the Health, Culture and Tourism Secretariats, the Environment Secretariat's efforts are also hampered by closed data and a failure to effectively communicate with other departments. For example, the Transport

Secretariat was also responsible for oversight of smog checks but there was no clear way to share information between the two secretariats. As a result, while citizens were required to undergo routine smog checks there was no easy way to figure out where they needed to go, whether or not they were eligible to undergo a smog check (one's car had to be ticket free with taxes paid in full), or how to resolve any outstanding issues.

By keeping their information closed, other organizations and interested parties were not able to use the information the Secretariat gathered to inform and advance their own environmental work. In this manner, the Secretariat's work had become too technical and removed from the people they aimed to serve and was not being used for the greater good of Mexico City residents.

II. THE PROCESS - Through extensive interviews with members of multiple Secretariats and car owners, Manuel came to a clearer understanding of the different components of the problem. Then, he worked on opening up the existing data portals; a multi-layered process aiming to improve the functionality of the services the agency offered and make air quality data useful for the public. As a result of his efforts, air quality data was made available to the public in real time instead of (at best) monthly. This laid the groundwork for people to use that air quality data for other apps. For example, it greatly complemented Mexico City's bike share app "Ecobici" (https://www.ecobici.df.gob.mx/) by making it possible to integrate air quality information with bike routes and provide valuable information about the most frequently transited routes and user's demographics. His efforts also made it possible for citizens to see comprehensive information about where citizens were taking their cars for smog checks. This included information on smogcheck clearance rates. Higher than average clearance rates aroused suspicion and pointed to likely instances of corruption that the government could then investigate.

III. THE SOLUTION - Manuel created "Veríficalo." Working on both web and mobile, Veríficalo acts as one point of contact for people to go to for all of the things that used to be buried in a multitude of government websites. With Veríficalo, car owners could now go to one site and see information about:
  A. outstanding tickets and information on how to pay.
  B. taxes owed.
  C. when they need to do their next smog check.
  D. the days when they are not supposed to drive.
  E. the centers where they can take your car to be checked with the option of searching for a center based on their zip code.

The site even provides the option of receiving text message reminders for citizens.

By synthesizing all of this information, Manuel made the administration of environment-friendly policies more efficient for the Environment Secretariat. Additionally, he created a user-friendly service for citizens to save them time and facilitate improved compliance with earth-friendly policies which would hopefully improve air pollution conditions in Mexico City and even save lives.

TRAXI EMPOWERING MEXICO CITY RESIDENTS TO MAKE SMARTER AND SAFER TRANSPORTATION DECISIONS (HTTP://TRAXI.MX/)

Mexico City residents are very dependent on taxis for transportation. There are over 133,000 registered legal taxis and many more illegal ones, but it is very difficult to differentiate between the two. Illegal taxis may look like sanctioned taxis but they do not undergo the same safety evaluation process or pay the same fees. Code for Mexico City fellow Miguel Moran worked with SETRAVI to create Traxi which allows riders to look up a credential number, see whether it is sanctioned, and receive a confidence score and other rider-generated rating information. Traxi is also equipped with a panic button that, when activated, transmits a rider's location to an emergency contact. By empowering residents with information and tools, Traxi makes transportation in Mexico City safer.

- GOVERNMENT PARTNER: **SECRETARIA DE TRANSPORTE Y VIALIDAD** (Transportation and Highway Secretariat)
- CÓDIGO CDMX FELLOW: **MIGUEL MORAN**

> " *I code for Mexico City to face the problems of a megalopolis using technology that is not always accessible to everyone. That's the biggest challenge.*

I. THE PROBLEM - The SETRAVI is the Mexico City government agency responsible for managing all of Mexico City's various forms of transportation, includingv taxis, microbuses, "combis," freight, and individual cars. The secretariat also has responsibility for street planning. Mexico City residents are very dependent on taxis for transportation. As a sprawling metropolis there are over 133,000 registered legal taxis and many illegal taxis (with about half of Mexico City's population, NYC functions with 15,000 registered taxis). There are more taxis than is necessary for the population size, but the government does not have accurate information about which routes are most used to inform where to concentrate legal taxis. It is also very difficult to tell the difference between registered and illegal taxis, exposing citizens to unsafe situations while riding in illegal taxis and undercutting a valuable source of revenue for SETRAVI as illegal taxis continue to operate without paying proper fees.

By bypassing the registration process, illegal taxis circumvent the same taxation requirements applied to legal taxis, denying the Secretariat important tax revenue. Second, illegal taxi drivers do not undergo the same evaluation process of registered drivers, who have to pass a set of safety precautions and background checks. Finally, Mexico City residents often complain of being "taken for a ride" in taxis that veer off course for higher fares. Other residents (especially women) express concern for their safety while riding alone in taxis.

II. THE PROCESS - First, Miguel learned as much as possible about the needs of transport users and taxi drivers in Mexico City. Working jointly with two Brigadistas (Sergio, an architect and activist, and Antwan, an IT worker), he talked to citizens, NGOs, bicycle groups, and over 300 taxi drivers to understand the problems people were facing and how technology could be best used to solve them. Miguel found that Mexico City residents were very dependent on taxis for transportation but that no one could tell the difference between those that were legal and those that were illegal.

III. THE SOLUTION - Armed with his research findings, Miguel developed a mobile application called Traxi. The application aims to deter illegal taxis from operating and to better inform citizens to make their taxi experiences safer.

It works in the following way:
A. Official taxis are required to display the credentials given to them when they register with the city on the car door. When a resident hails a taxi they can input the credential number into the application. The application then informs the user of the color and model of the taxi registered under that credential number. This is important and helpful because illegal drivers often steal credentials from legitimate taxis.
B. The application then displays a confidence rating which reflects how reliable the taxi is by pulling from data from the SETRAVI, Finance, and Environment Secretariats. This figure is based on outstanding tickets, registration status, and other factors such as accident rates.
C. The application works with Facebook so that users can see if any of their friends have ridden in that same taxi and displays reviews from past riders, similar to Yelp. In less than a minute, citizens can make more informed choices about who they ride with and improve the safety of their taxi ride.

D.   Once the resident has chosen to take a certain taxi, the app provides the option of
inputting the destination address and charting the best route while tracking the
taxi on GPS. This helps riders to view whether or not their taxi is veering off course
and also tracks useful information that the SETRAVI can draw upon later to better
plan taxi routes.

E.   Traxi is also equipped with a panic button. A rider can turn on a feature in which
the application asks once every two minutes "estas bien (are you okay)?" If the app
receives no response, the panic button is activated and the app contacts the pre-
inputted emergency contact. It then uses the routing function to alert that contact to
the taxi's location. The panic button can also be activated immediately by pushing
the phone's side button five times, sending a message to the rider's emergency
contact with the taxi's location.

Data from the app is sent to SETRAVI and the Secretariat uses this information to
better understand safety concerns, map the most common taxi routes, and make data-
informed policy changes. In this way, Traxi empowers Mexico City residents to make
more informed decisions, keeps residents safe, and provides data to the city to improve
transportation overall.

INFOMERCADO REVIVING PUBLIC MARKETS IN MEXICO CITY
(WWW.INFOMERCADO.MX)

- GOVERNMENT PARTNER:
  SECRETARIA DE DESARROLLO ECONOMICO
  (Economic Development Secretariat)
- CÓDIGO CDMX FELLOW:
  EMANUEL ZAMANO

> " *I joined Code for Mexico City because I'm interested in developing better digital tools and disseminating them so that we can impact people and help improve their everyday lives in the city.*

I. THE PROBLEM - Public markets have been a staple of Mexican society for hundreds of years. They bring together community and provide economic opportunity for small-scale farmers by limiting channels for profit skimming by intermediaries. Public markets in Mexico City have recently been undercut by supermarkets and many struggle to be competitive. There used to be legislation banning supermarkets from operating within a certain distance of markets, but it has been lifted. Outdated legislation limiting the types of improvements merchants are allowed to make to their stalls further compounds this problem, as does a lack of visibility into what products different markets have to offer. Information on public markets is not centrally located or displayed in one place. With 329 markets and 70,000 stalls in Mexico City alone, this makes it extremely challenging for a resident to find the information they need about a specific market that could sell them the item they wish to purchase.

II. THE PROCESS - Emanuel conducted in-depth user research by going to markets and asking the customers and merchants questions. With the assistance of two Brigadistas (an economist and a designer) he interviewed hundreds of people and was able to determine some of the central challenges faced by merchants, customers, and the Economic Development Secretariat and determine how technology could play a role to address them.

III. THE SOLUTION - Emanuel identified that scattered and hidden information was especially problematic for public markets. He cross referenced the Secretariat's database (of the different markets in Mexico City) with the information that individual Mexico City delegations (similar to local) had collected about the markets in their areas. He then created a platform to serve as one central place for people to find all of the information they need about public markets.

The platform provides merchants with a way to:

A. List their hours of operation and location.

B. Showcase the types of goods they carry.

C. Detail the forms of payment they accept (credit cards, checks, food tickets, etc.)

D. Locate the nearest market to their location, sorting based on category and hours of operation.

The site then publicizes this information in a user-friendly manner accessible to everyday people living in Mexico City.

Now that the information was centralized, it was important to keep it up to date. To do so, Emanuel created a mechanism for merchants to self-register and keep their stall's profiles current. While conducting his user research, Emmanuel discovered that many of those working in markets were not comfortable using computers. With these users in mind, Emanuel developed a phone-in system through which merchants could call in their details, select certain options, and provide information to an automated system that would document it and automatically load this updated information onto the platform. In this manner, both merchants and customers could benefit from improved information about public markets and the site could continue to be relevant and useful.

THE TECHNOLOGY

Throughout the Fellowship program, the focus was always placed on whether or not the application was well suited to solve the problem at hand, or the community most affected. While this was prioritized, it was also very important that the projects be technically sound and employ technology best practices. Therefore, the Fellows used three tools and approaches to ensure the reliability of their apps and APIs: GitHub, Testing, and Metrics.

GITHUB

When the fellows first started, they were storing their code in their own private repositories. Mexico City government did not have a culture of using a centralized location for their work or tasks. GitHub emerged as a tool to encourage open source collaboration on the codebases for all of the fellows' projects, and sustainability of their products. With assistance from a former CfA fellow, Ryan Closner, the fellows created GitHub repositories for each project they were working on, each with a section titled "README" that included information about:

- What the project is.
- How to install the project.
- Screenshots of the project in its live state — if applicable.
- How to use the project — if applicable.
- How to contribute to the project.
- Description of the technologies used within the project.

TESTING

The fellowship leadership team worked with the fellows to ensure that each project was technically well-tested. This included unit testing, route testing, and integration testing. The tests functioned as a safeguard against unintentional regressions, and also helped to document the expected behavior of the code clearly and consisely.

In parallel with helping the fellows create tests for each project, Ryan Closner worked with the Mexico City fellows to get their projects on a continuous integration server (Travis-CI). The purpose of a CI (continuous integration) server is to ensure that tests are run and then reported back if changes create problems. CI also helps to safeguard against contributors' unintentionally breaking parts of the application with their contributions. Each project that was integrated into a Travis-CI was given a badge on the project "README" stating whether or not the project was currently passing its tests.

METRICS

In addition to getting each project hooked into a CI server, the fellows worked to integrate metrics to display how much of the application was covered by tests into the projects as well. A higher ratio of tests ensures that the project is less likely to break and gives users a higher degree of confidence in the quality of the application and trust that it is doing what it was designed to do.

A number of other visible and applicable metrics were also added to the GitHub "README" of each project. One such metric is "code climate" — a Ruby plugin that systematically reads through code and makes judgements as to its quality. Displaying the code climate on the "README" gives non-technical users (who are less capable of determining the quality of the code on their own) a quick estimate as to how well written an application is and how much work it would be to maintain it. These types of plugins are useful in engaging and informing people with less technical expertise, such as government officials, about the quality of the application.

"Gemnasium" a plugin that displays how up-to-date a project's dependencies are, was also added to some of the Fellowship projects. This metric indicates how much work remains to integrate the application into a specific system.
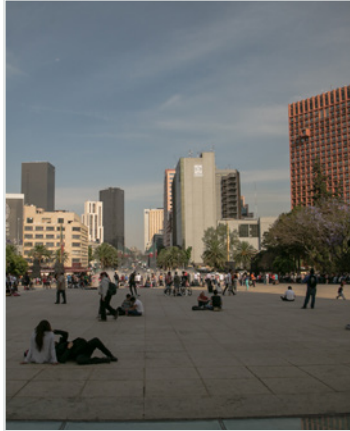
HANDOVER TO GOVERNMENTS

Now that the first stages of the fellowship applications are complete, fellows will work to refine their products with a special emphasis on usability and design. The Mexico City Fellowship leadership team has hired expert consultants to provide guidance and advice on these topics. After refining their products, the fellows will then hand over their applications to their government partners and put together a transition and sustainability plan to make the handover as smooth as possible.

While some technical aspects of this will pose challenges, direct and consistent work with government counterparts throughout the entirety of the Fellowship Program should lead to a smoother transition. Government partners have already expressed interest in linking to the fellowship applications from the secretariat homepages and driving traffic using banners and other in-house publicity tactics that the secretariats use for their own initiatives. In this way, ownership over the projects has already been fostered and will play an important role in long-term application adoption and success.

Some pending challenges are primarily technical in nature. For example, there are four or five different languages represented in this year's class of applications and it is left to be seen if the government will be able to continue development in the languages chosen. The fellows are still determining who from their government counterpart teams will maintain the additional development of the application once the fellows leave and it remains to be seen whether or not it is feasible for the city to support the technologies used in developing the application, not to mention what alternatives exist if this is not the case. The fellows must also identify where the applications live (on the City's servers, on a service like Heroku, on the Lab's infrastructure, etc.), and how maintenance costs will be handled. All stakeholders in the Fellowship also want to create a tool to evaluate the level of satisfaction among their city partners regarding the application that was created.

Overall, the projects are still prototypes. There was not enough time to develop a user base and test the concept fully. The projects have (for the most part) been well thought out and well executed, but only time will tell whether or not they actually help to solve the problems they are designed to fix.

There is also a remaining challenge regarding the "Infomercado" application specifically. The Código CDMX Fellowship team did not adequately communicate their project plans for Infomercado with their government partner. As a result, the Secretariat made headway in parallel on their own similar version of this application and are no longer interested in taking on Informercado as an ongoing government project. Infomercado will likely continue as a project and the fellow who developed it is exploring opportunities to continue the project within an incubator or startup program. This illustrates the importance of maintaining clear communication channels and actively encouraging participation with one's government partner.

In the future, it is advisable that each project have an expressly charged owner within the government department when the Fellows leave, and that documentation on each project is current and comprehensive. The Lab will also appoint its new IT director to help make a smooth transition and be available for support.

MEASURING IMPACT

While the applications created by the Fellows and their citizen-government collaborators are accomplishments in and of themselves, whether or not the applications impact quality of life for citizens remains to be seen. This impact will need to be measured and monitored on an ongoing basis, using multiple sources. Correlative indicators could include metrics such as the number of illegal taxis in operation, citizen satisfaction rates with taxi services, obesity rates, proportion of young people using free health centers, and many more. Analytics documenting usage rates for the applications will provide insight into the rate of adoption of these applications and provide clues as to how likely it is that the applications themselves are influencing their intended users.

For measurement to be feasible, it will be important for the different government secretariats to document baseline metrics and identify indicators that could signal application success. We are not ultimately concerned with whether or not governments adopt the application and promote it to their constituents but, instead, whether or not this technology help solve the problems they were designed to address.

LABORATORIO LESSONS LEARNED

FELLOWSHIP RECRUITMENT AND SELECTION

In addition to existing selection activities, future application rounds should also include a better series of challenges to test the applicants' technical knowledge and capacity. This would be helpful in better screening future fellows and in improving the matching between fellows and their government counterparts.

The Fellowship recruitment process was very competitive. Despite persistent outreach efforts, the hacking culture in Mexico City is still mostly male. This resulted in very few applications from female technologists. In future years, the Lab must engage in targeted outreach to women if it wants its program to be more representative of Mexico City's population and the diverse viewpoints. CfA and its partners believe that Fellowship teams and Brigade groups should look like the cities where they work and be representative of their community. This is something to strive for in future years of Mexico City's Fellowship program implementation.

Furthermore, although selected fellows generally possessed advanced developer capabilities, they had difficulty with the user experience and design portion of their applications, especially considering they were often working on the application designs by themselves. For future iterations of the Fellowship program it would be helpful to have a designer and user experience expert on hand from the very beginning, instead of at the end as was the case with this first generation.

COLLABORATION - WORKING WITH GOVERNMENT, FROM WITHIN GOVERNMENT

Working directly within one city government was an untested model for a CfA-style Fellowship program. At the start there was concern that working so closely within one government agency would strip the fellows of the "traveler's eye" that has proven very valuable to the success of the CfA Fellowship program. This "traveler's eye" provides an overview of the problem, helping fellows to see things clearly due to a healthy distance from the particulars of the situation at hand. Admirably, despite working so closely with their government partners, Mexico City Fellows at the Lab were able to maintain a "healthy distance" from the inner workings of the government enough to analyze issues from an outside vantage point.

The Fellowship staff was also concerned that working so closely with government partners would compromise the citizen-centered nature of the Fellowship projects, a characteristic traditionally held as central to the success of Fellowship applications. There was concern

that government rather than the city residents would become the customer. This risk was reduced through extensive user research outside of government and by encouraging fellows to assess their applications from the resident's perspective. Furthermore, working in close partnership with government partners and living in the same city they were working maximized the opportunities the Fellows had to conduct in-depth user research and instill best practices in the government departments they worked with.

Overall, being able to conduct consistent and ongoing communication with their government partners helped build constructive working relationships between the fellows and their teams. Emanuel's project with the Economic Development Secretariat, however, encountered some challenges in this collaboration. A miscommunication resulted in a gap in productive collaboration between the Secretariat and the Lab/Código CDMX for several months. During that time, the Economic Secretariat advanced the development of an application very similar to Emanuel's. At the time of project presentation, the Secretariat and Emanuel's government partner, were upset by the parallel development of similar apps, the existence of which would pose political costs for both the Lab and the Secretariat. With plans to launch their own very similar application only a month after Emanuel's, it was decided that they would not use Emanuel's application after all, leaving the Informercado platform without a clear home. The Fellowship staff attempted to dissuade them from making this decision and searched for alternative government partners but were unable to find a government agency to house Emanuel's application. As a result, the application code will live in GitHub and Emanuel is exploring opportunities to independently continue his work. This illustrates the importance of clear, consistent communication with government partners throughout the application development process.

THE BRIGADE & THE BRIGADISTAS

CfA's Brigade program is quite distinct from the "Brigadista" group that the Mexico City team convened. CfA's Brigades are generally community-led and self-directed with their own plans and projects carried out in close collaboration with their local city government. Mexico City's Brigadistas, on the other hand, were convened by the Lab with the explicit purpose of supporting the fellowship projects. The hope was that Brigadistas would bring a complementary skill set as they generally had subject matter or design expertise that the fellows did not possess. Unfortunately, the majority of the Brigadistas lost interest in the fellowship projects early on. Their volunteer efforts were derailed by a shift in focus to other obligations, such as school or personal projects. Without clear financial incentives or project ownership, it proved difficult to sustain their involvement. In the future, if the program would like to involve subject matter experts, Brigadistas must have ownership over the project and additional incentives would likely need to be in place (ideally financial).

It is important to note that the few fellows who received sustained support from Brigadistas throughout the year found it to be a very valuable experience, and they especially appreciated the subject matter expertise that the Brigadistas provided. Finding ways to better engage non-technical and knowledgeable community members could contribute to more successful projects in the future.

Mexico City does not currently have an active CfA-style Brigade, outside of the Brigadista program which was tied to the Fellowship. There is an organizer interested in convening a more permanent Brigade in Mexico City but this concept is in its early stages. It would be hugely beneficial to future Mexico City Fellowship programs to maintain an active CfA-style Brigade that is community-led with a focus on specific projects, including people with a range of skills (including user experience and design) who are interested in supporting the Fellow's civic technology efforts. A more traditional Brigade in Mexico City could also play an important role in longer-term Fellowship app sustainability and in fostering community ownership and involvement in the Fellowship applications overall.

LESSONS LEARNED FOR
CODE FOR AMERICA

Testing different adaptations of the CfA Fellowship in other contexts is helpful in improving CfA's own program model and practices. These experiences force us to ask ourselves why we have made certain decisions about programs and whether or not they are always the right choices. Seeing how other programs operate provides a way to test our assumptions, re-think our decisions, and learn lessons from these pilot experiences.

FELLOWSHIP TEAMS

CfA Fellowship teams are typically comprised of a mixture of designers, software engineers, developers, and organizers. The Mexico City Fellowship program showed us that with outside design help and user experience consulting, it could be effective for Fellows to be comprised of fewer than three team members, even to work in a "team" of one. This is especially feasible with the presence of high-level staff support. CfA could consider offering fewer Fellows, for example, to cities that find it difficult to cover the costs of a full Fellowship team.

"BRIGADISTAS"

CfA tries to involve community partner organizations and subject matter experts in the Fellowship experience as much as possible. However, the level of involvement from community partners varies by project. CódigoCDMX Fellows whose Brigadistas remained committed found this collaboration to be very valuable to the success of their projects. Fellows spoke to the particular benefit of learning from a different perspective and found that the subject matter expertise and skills the Brigadistas possessed was complementary to their own technical efforts. For CfA, efforts to seed and strengthen Brigades in cities where Fellows are working will be helpful to spurring similar collaborations. Additionally, CfA should explore methods to better engage those with such expertise in future Fellowship projects and devise effective incentive structures and models for partner engagements to prevent the high attrition rates Mexico City experienced.

FELLOWSHIP HOUSING

CfA's Fellows traditionally live in San Francisco. The reasoning behind this decision is that housing Fellows in one central office provides the fellows with ongoing support from skilled CfA technical staff, access to training and mentors, and fosters cross-team collaborations. It is also a practical decision as it would be logistically challenging for Fellows to be constantly traveling between both places. This means that Fellows live year-round in San Francisco, spending one month in their partner cities towards the beginning of the Fellowship and generally traveling to their cities four times throughout the course of the year. The Código CDMX programs helped to surface the benefits and drawbacks of this model.

First, the Código CDMX Fellows' proximity to their partner city (as full-time residents of Mexico City) gave them virtually unlimited opportunities to conduct user research. This set an ideal stage for testing and tweaking their applications on an ongoing basis. This made fluid and continual dialogue easier with city partners which proved valuable to forming trust between the two groups as well as a sense of common purpose. Moreover, this proximity does not appear to have undermined the "traveler's eye" perspective of Fellows, which CfA considers a priority.

The decision for all CfA Fellows to primarily work from the CfA offices in San Francisco undoubtedly has many benefits but the experience of Código CDMX shows us that it also has drawbacks as well. These include limited access to users for research and testing and the absence of continuous trust building and communication with government partners. These drawbacks should be thoughtfully weighed against the benefits outlined above to determine the proper location for future Fellows to live. For example, it would be interesting for CfA to test the viability of Fellows living in their partner cities by piloting this arrangement in future years.

WHAT'S NEXT FOR MEXICO CITY?

As the Código CDMX Fellowship program comes to a close, the Lab's staff will conduct a rigorous evaluation process. This process will be employed to better understand the impact of the tools that the Fellows developed and to work on their continued sustainability. Mexico City Lab staff will also evaluate the Fellowship program itself, identify areas for improvement, and take those into account when developing future programs.

It would be advisable for the Lab staff to consider the possibility of hiring a Fellowship Director who could advise the fellowship teams and provide support structure for effective communication with government partners. Additionally, a Chief Technology Officer (CTO) could set technological expectations and standards for the Fellowship (while simultaneously not getting too bogged down in implementation). The CTO could help support tech based work outside of the Fellowship as well. The Lab's leadership has expressed interest in hiring a CTO with a data science background as well as tech skills, which would prove useful for upcoming programs. There are also plans in place to hire a Community Director, who would function as a bridge between government and civil society, with a mandate to form strong links of engagement and communication.

The Lab has been leading the open government conversations and strategies for the Mexico City government, and Código CDMX is just one of more than 20 initiatives, events, and programs that have taken place in the last year including the first open government working group within the Mexican government, programs with journalists and data, internal skill-building activities, workshops with civil society, network building, and targeted civic hacking events. (This work has been done closely with other NGOs and activists, primarily PIDES, the Lab's NGO partner for open government). The Lab is also collaborating with the Mexico City government's legal department to devise more progressive open government legislation for the city. The Lab also plans to create additional programs such as "Data Interventionist" teams that will work closely with selected ministries to create successful case studies of data-driven policy. These are just a few examples of program plans, many of which can be easily connected to the work of the fellows. Several fellows have mentioned their interest in continuing to work with government after the fellowship on specific projects.

In the future, other civic technology initiatives will likely find substantial traction in Mexico City. At the federal level, the President's Office of Digital Strategy is paving the way for additional programs. For instance, the Executive Director of Civic Innovation is developing a fellowship program to promote digital innovation strategies (such as expanded E-government services inspired in large part by Estonia and Gov.uk). This office is also working to open data, reform procurement policies to foster increased participation of civic startups in government RFPs, and issuing "challenges" to bypass constraining procurement procedures (thanks to a legislative loophole). Actions such as these set the stage for enhanced governmental support for the Lab and other civic technology initiatives at the federal level. This has important implications for city-level initiatives not only in Mexico City but also throughout the country.

These shifts in political will mark significant growth and opportunity for enhanced innovation and technology programs in other parts of Mexico. Neighboring cities can certainly adopt models similar to those pioneered in Mexico City's Lab. The progress showcased here in Mexico City also signals potential for future expansion of citizen-led activism, and is exemplary of the value to government of increased openness in the form of releasing open data. Political pressure and a changing tide towards openness throughout the country can act as the gateway for increased civic engagement, better governance, and more efficient service delivery by leveraging of lean, iterative technology practices and constructing partnerships between civic society and government. Congratulations to the Mexico City Lab, for helping pave the way for continuous civic action!

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