

Terms of reference (TORS)

Individual consultant

Anexo I

Date: august 2020

Description of the assignment:	Data analysis services to apply the Data Powered Positive Deviance methodology in the pilot project “Safe public spaces for women in Mexico City”.
Period of assignment/services:	6 meses
Start date:	September 2020
End date:	February 2021
Project:	00115326 Accelerator Lab de México
Goals:	Use a variety of digital data and statistical methods to identify public spaces in Mexico City where women are significantly safer, or where gender-based violence is significantly lower, than in other areas with similar structural attributes. Data sources are likely to include urban infrastructure data, mobility data, security alert data, perception data, and census data.
Supervisor:	National Monitoring and Evaluation Officer-UNPD Mexico
Place for work:	Remote (with occasional face-to-face meetings, as long as the sanitary measures regarding COVID-19 allow it)
Payment terms:	Monthly payments, upon product(s) accepted by the Accelerator Lab and delivery of hourly report based on agreed hourly rate.

1. SCOPE

Traditional approaches to development face the challenge of staying current in a scenario of complex social and environmental issues that are interconnected and difficult to address. New challenges are generated faster than our ability to solve them. This has led the United Nations Development Programme (UNDP) to question: What is the best way to tackle complex, dynamic and multi-factorial challenges? How to find the most relevant solutions within the local context? How to accelerate the learning curve on what works and what does not for development?

With this in mind, UNDP created the Accelerator Labs, with presence in 60 countries, including Mexico.

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The Labs are part of an effort to inject innovation into the organization's DNA through the incorporation of new skills and approaches, such as: the implementation of portfolios of experiments, generation and analysis of real-time data, analysis of usual and unusual data sources, and partnerships with usual suspects.

For more information on the UNDP Accelerator Labs please visit: <https://acceleratorlabs.undp.org/>.

Context:

The UNDP Accelerator Labs Network and the GIZ Data Lab have formed a global alliance to test the implementation of innovative approaches to solving sustainable development challenges, such as the Data Powered Positive Deviance (DPPD) methodology. As part of this alliance, the UNDP Accelerator Lab in Mexico and GIZ Mexico are collaborating on the pilot project "Safe public spaces for women in Mexico City", where the DPPD will be incorporated under the guidance of the GIZ Data Lab team.

ABOUT POSITIVE DEVIANCE: Positive Deviance is based on the observation that in every community there are certain individuals or groups whose uncommon behaviors and strategies enable them to find better solutions to problems than their peers, while having access to the same resources and facing similar or worse challenges. Positive deviants might be farmers with better yields than their neighbors; parents who keep their children well-nourished when most are under-fed; loggers who maintain carbon stocks when others are deforesting; communities that perform significantly better in containing a pandemic such as Covid-19; or coral reef sites that have higher biomass levels.

ABOUT DATA POWERED POSITIVE DEVIANCE (DPPD): DPPD seeks to tap into large quantities of digitally recorded data to identify and better understand positive deviance. These "big" data are expected to reduce the time, cost, and effort needed to identify positive deviants at scale, and to provide early insights into the attributes that make them so. This information will then be complemented with thick data, collected through more qualitative, ethnographic methods to further uncover individual characteristics that favor the positively deviant outcome.

ABOUT THE PILOT PROJECT "SAFE PUBLIC SPACES FOR WOMEN IN MEXICO CITY": In 2019, Mexico City's mayor issued a gender-based violence alert, activating a series of measures to reduce violence against women. Some measures targeted public spaces, like renovating public corridors in the streets, and placing panic alarm buttons throughout the city. Within the DPPD framework, we aim to identify positively deviant public spaces in Mexico City where women are the safest (gender-based violence is the lowest), compared to other spaces with similar attributes, using digitally recorded data.

For more information about Data Powered Positive Deviance methodology, please review:

About the methodology:

(1) Annex A – Blogpost. Launching the Data Powered Positive Deviance Initiative by Data Powered Positive Deviance DPPD

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Case study:

(2) Annex B - Blogpost. Identifying Potential Positive Deviants (PDs) Across Rice Producing Areas in Indonesia_ An Application of Big Data Analytics and Approaches _ by Pulse Lab Jakarta

(3) Technical report: https://issuu.com/pulselabjakarta/docs/2020_june_positive_deviants

In this context, UNDP Accelerator Lab Mexico is seeking to hire a consultant to work along with the project team (UNDP Accelerator Lab Mexico, GIZ Mexico, UNDP Accelerator Labs Global Team, GIZ Data Lab). This position will require the consultant to have constant dialogue with government officials in Mexico and the international team, therefore English and Spanish are required.

IMPORTANT: The CV and technical proposal must be submitted in English.

EVALUATION METHOD

Individual consultants have to send their curriculum vitae (CV) in English, along with the technical proposal in English and Annex C (and, if applicable, sample of academic articles) and will be evaluated based on the following criteria:

Cumulative analysis: The contract will be awarded to the consultant who obtains the best technical-economic combination. Where the technical requirements are equivalent to 70% and the economic proposal 30% of the total score.

The technical analysis consists of 2 stages: the first phase is a documentary review of the technical proposal, the training and the professional experience of the applicants. The second phase is an interview (via videoconference). Only applicants who meet the minimum requirements (indicated indicated in the evaluation criteria) will move to the interview phase.

It should be noted that only those proposals that obtain at least 70% of the available technical points (700/1000) will be subject to economic analysis.

GENERAL CONDITIONS OF THE SERVICE

1. The consultant will work in close communication and coordination with the Acclab to comply with what is requested in these Terms of Reference.
2. During the development of the consultancy, Acclab will validate the fulfillment of the responsibilities and may agree with the consultant on adjustments required as the project develops to guarantee the fulfillment of the services, provided that these do not imply modifications in the Economic Proposal and/or non-compliance with current regulation.

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2. SCOPE OF WORK, RESPONSIBILITIES AND DESCRIPTION OF THE PROPOSED ANALYTICAL WORK

ITEM	ACTIVITY
1	<p>Stage 1. Identification of resources and data collection.</p> <ul style="list-style-type: none"> • Identify the data sources that are suitable for the analysis, including existing datasets from public sources such as the Mexico City Open Data Portal (Portal de datos de la Ciudad de México - https://datos.cdmx.gob.mx/pages/home/) and datasets from other sources that haven't been identified by the project team so far (e.g. satellite images, census data, open street maps, photographs of public spaces, location based social networks). • Identify the characteristics of each dataset, such as the level of geographic granularity; disaggregation by gender and age; frequency of data collection; recency of the dataset; time period covered by it. • Support the project team in the setup of the necessary technical requirements for obtaining access to non-public datasets that will be provided by external partners (e.g. local government agencies). • Participate in the definition of the exact study sample (i.e. public spaces) • Participate in the definition/development of a valid performance measure. • Define control variables.
2	<p>Stage 2. Identification of Positive Deviants (PD): Conduct exploratory analysis of the data to cluster public spaces and to identify outliers in terms of safety for women.</p> <ul style="list-style-type: none"> • Data cleaning. • Data merging. • Conduct a first analysis by dividing the sample into groups/clusters of public spaces having very similar contextual variables (e.g. daily inflow, neighborhood or social level). • Conduct a second analysis to identify outliers/PDs within the identified groups/clusters of public spaces. • Data-driven validation of the identified PDs using the collected secondary data sources.
3	<p>Stage 3. PD inquiry: Identification of possible predictors of performance.</p> <ul style="list-style-type: none"> • Conduct inferential and predictive analytics to identify predictors of PD performance derived from various types of data, such as, survey data, social media data, urban data, mobility data. • As part of the PD inquiry process; the project team will conduct fieldwork in public spaces identified as PDs for primary data collection (e.g interviews and ethnography). The data analyst is expected to participate in the analysis sessions to combine the findings from the ethnographic research and the data powered positive deviance method (i.e. thick data and big data) in order to form a complete picture of the PDs identified in stage 2.
4	<p>Reporting:</p> <ul style="list-style-type: none"> • Support the preparation of a technical report by developing the methodological section documenting the application of data powered positive deviance (in English). • Generate data visualizations according to the needs of the project. The creation of maps is expected, as well as plots, graphs, tables and other visualizations that ensue from the data analysis throughout the different stages of the project, and which will be part of the report. • Proof-read and give feedback to the translation of the technical report, from English into Spanish (the translation will be provided by the UDNP team).

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5	Participation in status and analysis meetings with the project team: Throughout the duration of the contract, the consultant will participate in weekly or biweekly meetings with the local project team (UNDP Mexico and GIZ Mexico), and with the extended global team (GIZ Data Lab, UNDP Accelerator Labs Global Team).
6	Participation in meetings and/or workshops with external stakeholders: Throughout the duration of the contract, and as the need arises, the consultant will participate in meetings and/or workshops with government officials, members of academia, civil society in order to discuss and analyze the project.

2. SCOPE OF WORK, RESPONSIBILITIES AND DESCRIPTION OF THE PROPOSED ANALYTICAL WORK

ITEM	ACTIVIDAD	PRODUCTO
1	<p>Stage 1. Identification of resources and data collection.</p> <ul style="list-style-type: none"> •Identify the data sources that are suitable for the analysis, including existing datasets from public sources such as the Mexico City Open Data Portal (Portal de datos de la Ciudad de México - https://datos.cdmx.gob.mx/pages/home/) and datasets from other sources that haven't been identified by the project team so far (e.g. satellite images, census data, open street maps, photographs of public spaces, location based social networks). •Identify the characteristics of each dataset, such as the level of geographic granularity; disaggregation by gender and age; frequency of data collection; recency of the dataset; time period covered by it. •Support the project team in the setup of the necessary technical requirements for obtaining access to non-public datasets that will be provided by external partners (e.g. local government agencies). •Participate in the definition of the exact study sample (i.e. public spaces) •Participate in the definition/development of a valid performance measure. •Define control variables. 	<ul style="list-style-type: none"> -Identified datasets (raw files). -Sheet/Document with the key information and characteristics of the datasets. -Documenting the description of the study sample, valid performance measure and control variables, which will be later included in the technical report. <p>(it will take approximately 6 days / 48 hours)</p>
2	<p>Stage 2. Identification of Positive Deviants (PD): Conduct exploratory analysis of the data to cluster public spaces and to identify outliers in</p>	<ul style="list-style-type: none"> -Data sets ready for the analysis -A typology of public spaces showing each public space and the group/type it belongs to.

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	<p>terms of safety for women.</p> <ul style="list-style-type: none"> •Data cleaning. •Data merging. •Conduct a first analysis by dividing the sample into groups/clusters of public spaces having very similar contextual variables (e.g. daily inflow, neighborhood or social level). •Conduct a second analysis to identify outliers/PDs within the identified groups/clusters of public spaces. •Data-driven validation of the identified PDs using the collected secondary data sources. 	<p>-A list of PD spaces that were identified and validated (initially) within each group/type of public spaces.</p> <p>-Documenting the methods applied for grouping, identification and validation of PDs, which will be later included in the technical report.</p> <p>(it will take approximately 20 days / 160 hours)approximately 20 days / 160 hours)</p>
3	<p>Stage 3. PD inquiry: Identification of possible predictors of performance.</p> <ul style="list-style-type: none"> •Conduct inferential and predictive analytics to identify predictors of PD performance derived from various types of data, such as, survey data, social media data, urban data, mobility data. •As part of the PD inquiry process; the project team will conduct fieldwork in public spaces identified as PDs for primary data collection (e.g interviews and ethnography). The data analyst is expected to participate in the analysis sessions to combine the findings from the ethnographic research and the data powered positive deviance method (i.e. thick data and big data) in order to form a complete picture of the PDs identified in stage 2. 	<p>-A list of significant predictors of PD public spaces identified from the secondary data sources that were used in the analysis</p> <p>-Recommendations on areas that would require further investigation and collection of ground truth data based on the findings from the quantitative analysis</p> <p>-Documenting the methods applied for modeling the performance measure and its relationship with the various predictors; which will be later included in the technical report.</p> <p>(it will take approximately 15 days / 120 hours)</p>
4	<p>Reporting:</p> <ul style="list-style-type: none"> •Support the preparation of a technical report by developing the methodological section documenting the application of data powered positive deviance (in English). •Generate data visualizations according to the needs of the project. The creation of maps is expected, as well as plots, graphs, tables and other visualizations that ensue from the data analysis throughout the different stages of the project, and which will be part of the report. •Proof-read and give feedback to the translation of the technical report, from English into Spanish (the translation will be provided by the UDNP team). 	<p>-Table of contents for the technical report.</p> <p>-Visualizations for the communication of findings throughout the analysis stages (e.g. maps, plots, graphs).</p> <p>-A technical report (in English) documenting the data and methods used in the analysis, the rational for using those methods along with the underlying assumptions, challenges and opportunities.</p> <p>-Proof-read and comment the translation of the technical report (with special emphasis on the technical language).</p> <p>(it will take approximately 9 days / 72 hours)</p>

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5	Participation in status and analysis meetings with the project team: Throughout the duration of the contract, the consultant will participate in weekly or biweekly meetings with the local project team (UNDP Mexico and GIZ Mexico), and with the extended global team (GIZ Data Lab, UNDP Accelerator Labs Global Team).	-Meetings notes. (it will take approximately 20 hours)
6	Participation in meetings and/or workshops with external stakeholders: Throughout the duration of the contract, and as the need arises, the consultant will participate in meetings and/or workshops with government officials, members of academia, civil society in order to discuss and analyze the project.	-Meetings notes. (it will take approximately 20 hours)

Delivery method

Digital

3. REQUIREMENTS FOR EXPERIENCE AND QUALIFICATIONS

Education qualifications	
1	Undergraduate training in statistics, applied mathematics, physics, computational finance, economics, computing, engineering, or other technical disciplines related to the activities and knowledge described for this specialist. Verifiable in CV. Desirable: Graduate studies in data science, applied mathematics, physics, computational finance, economics, computing, engineering, or other related disciplines. Verifiable in CV.
2	English and Spanish language proficiency. Verifiable in CV.
Working Experience	
1	At least 4 years of work experience in data science (data analysis and data visualization). Verifiable in CV.
2	Experience in open source statistical analysis/data science frameworks like SciPy, NumPy, Pandas, R, etc., and interactive interfaces or IDEs like Jupyter Notebook, RStudio, etc. Verifiable in CV.
3	Experience in Python, R or an equivalent programming environment. Verifiable in CV.
4	Experience in CARTO, ArqGIS or an equivalent geographic information system environment. Verifiable in CV.
5	Ability to identify public databases (usual and unusual data sources). Verifiable in CV.
Technical proposal	
1	The technical proposal provides an outline of the steps and data that can be used to achieve the activities and deliverables for this project. The proposal must be written in English.
2	The applicant submits the "Annex C. Financial proposal form" with the information requested in the document.
Additional qualifications	

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1	Desirable: experience in applied research (using data analysis and visualization) on issues related to gender violence, mobility, public spaces and / or urban planning. Verifiable in CV.
2	Desirable: publication in academic journals/peer reviewed journals of minimum 1 research article in urban data analysis. Verifiable in CV. In addition, the article or articles must be submitted as an annex (the articles can be in English or Spanish).
Interview	
1	Interview with the UNDP and GIZ Data Lab team, in which the bidder demonstrates his/her experience and reflects clarity and understanding of (1) the objectives of the consultancy and these Terms of Reference; (2) the research topic and type of data that could be used in the project (safe public spaces for women); and (3) the data powered positive deviance approach (the latter based on the information attached to this Terms of Reference).
2	The interview will be conducted in English, during which the applicant expresses his/her thoughts in English in a coherent and clear manner.

4. Evaluation method

Cumulative analysis

When using this weighted scoring method, the award of the contract should be made to the individual consultant whose offer has been evaluated and determined as:

- responsive/compliant/acceptable, and
- Having received the highest score out of a pre-determined set of weighted technical and financial criteria specific to the solicitation.

* Technical Criteria weight; 70%

* Financial Criteria weight; 30%

Only candidates obtaining a minimum of 700 point would be considered for the Financial Evaluation

ITEM	EVALUATION CRITERIA	GRADE
Education qualifications		
1	Undergraduate training in statistics, applied mathematics, physics, computational finance, economics, computing, engineering, or other technical disciplines related to the activities and knowledge described for this specialist. Verifiable in CV. Desirable: Graduate studies in data science, applied mathematics, physics, computational finance, economics, computing, engineering, or other related disciplines. Verifiable in CV. A) No cumple con el requisito mínimo: 0 puntos B) Meets the minimum requirement; has an undergraduate training in a relevant field (described in the criteria): 105 puntos C) Has graduate studies in a relevant field (described in the criteria): 150 puntos	150
2	English and Spanish language proficiency. Verifiable in CV. A) No cumple con el requisito mínimo: 0 puntos C) Meets the requirement: 50 puntos	50
Working Experience		

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1	At least 4 years of work experience in data science (data analysis and data visualization). Verifiable in CV. A) No cumple con el requisito mínimo: 0 puntos B) Meets the minimum requirement; has 4 years of experience: 91 puntos C) Has 5 or more years of experience: 130 puntos	130
2	Experience in open source statistical analysis/data science frameworks like SciPy, NumPy, Pandas, R, etc., and interactive interfaces or IDEs like Jupyter Notebook, RStudio, etc. Verifiable in CV. A) No cumple con el requisito mínimo: 0 puntos C) Meets the requirement: 30 puntos	30
3	Experience in Python, R or an equivalent programming environment. Verifiable in CV. A) No cumple con el requisito mínimo: 0 puntos C) Meets the requirement: 30 puntos	30
4	Experience in CARTO, ArqGIS or an equivalent geographic information system environment. Verifiable in CV. A) No cumple con el requisito mínimo: 0 puntos C) Meets the requirement: 30 puntos	30
5	Ability to identify public databases (usual and unusual data sources). Verifiable in CV. A) No cumple con el requisito mínimo: 0 puntos C) Meets the requirement: 30 puntos	30
Technical proposal		
1	The technical proposal provides an outline of the steps and data that can be used to achieve the activities and deliverables for this project. The proposal must be written in English. A) No cumple con el requisito mínimo: 0 puntos B) Meets the requirement on a basic level: 70 puntos C) Meets the requirement with excellence: 100 puntos	100
2	The applicant submits the "Annex C. Financial proposal form" with the information requested in the document. A) No cumple con el requisito mínimo: 0 puntos C) Meets the requirement: 50 puntos	50
Additional qualifications		
1	Desirable: experience in applied research (using data analysis and visualization) on issues related to gender violence, mobility, public spaces and / or urban planning. Verifiable in CV. A) No cumple con el requisito mínimo: 0 puntos C) Meets the requirement: 40 puntos	40
2	Desirable: publication in academic journals/peer reviewed journals of minimum 1 research article in urban data analysis. Verifiable in CV. In addition, the article or articles must be submitted as an annex (the articles can be in English or Spanish). A) No cumple con el requisito mínimo: 0 puntos B) Meets the desirable requirement; has 1 article published: 28 puntos C) Meets the desirable requirement; has 2 or more articles published: 40 puntos	40

Interview		
1	<p>Interview with the UNDP and GIZ Data Lab team, in which the bidder demonstrates his/her experience and reflects clarity and understanding of (1) the objectives of the consultancy and these Terms of Reference; (2) the research topic and type of data that could be used in the project (safe public spaces for women); and (3) the data powered positive deviance approach (the latter based on the information attached to this Terms of Reference).</p> <p>A) No cumple con el requisito mínimo: 0 puntos</p> <p>B) The applicant demonstrates a clear understanding of how he/she can approach the topic of safe public spaces for women in Mexico City (the type of data and analysis that could be used). However, he/she does not demonstrate a very clear comprehension of the data power positive deviance methodology and how it could be applied: 154 puntos</p> <p>C) The applicant demonstrates a clear understanding of how he/she can approach the topic of safe public spaces for women in Mexico City (the type of data and analysis that could be used). Additionally, he/she demonstrates a very clear comprehension of the data power positive deviance methodology and how it could be applied: 220 puntos</p>	220
2	<p>The interview will be conducted in English, during which the applicant expresses his/her thoughts in English in a coherent and clear manner.</p> <p>A) No cumple con el requisito mínimo: 0 puntos</p> <p>B) Meets the language requirement on a basic level: 70 puntos</p> <p>C) Meets the language requirement with excellence: 100 puntos</p>	100
TOTAL		1000