

COLOMBIA

USING INFORMATION AND COMMUNICATION TECHNOLOGIES TO ADDRESS AIR POLLUTION IN COLOMBIA

TERMS OF REFERENCE

1. Background and Justification

- 1.1. This consultancy focuses on climate and environmental risk, and actions to manage, adapt, and mitigate the impacts of air pollution. Air pollution is a serious concern in Latin America and the Caribbean (LAC). More than 50% of the population of the region live in areas where air quality does not meet standards recommended by the World Health Organization.¹ Air pollution in LAC has been causally linked to infant mortality, lost income for poor households, and poor educational outcomes (Arceo, Hanna, and Oliva, 2016; Hanna and Oliva, 2014; Miller and Ruiz-Tagle, 2015; Miller and Vela, 2013).
- 1.2. This consultancy seeks to improve the evidence needed to design, administer and implement information-oriented air pollution and climate change policies and programs. Specifically, it will provide evidence on the effect of distributing accurate, real-time, salient information air pollution information through information and communication technologies.
- 1.3. The research team for this consultancy will be directed by Allen Blackman (CSD/CSD) and Bridget Hoffmann (RES/RES).

2. Objectives

- 2.1. The main objective of this consultancy is to contribute to the development of a logistics and management strategy and implementation of a randomized controlled trial (RCT) that will measure the effect of providing air quality information via a smartphone application called Aire Bogotá on Bogotá university students' avoidance behavior and environmental attitudes.

3. Scope of Services

- 3.1. The requirements to make this project successful include personnel with experience conducting RCTs in Colombia, administering and managing surveys and informational treatments, collecting, compiling and analyzing data using Stata, and coding an electronic survey instrument for use with a computer/tablet.
- 3.2. In addition, the project will require close collaboration with the research team (and their Research Assistants, Postdocs, or Research Fellows) and any other counterparts or collaborators.
- 3.3. The total duration of the contract is not to exceed 24 months.

4. Key Activities

- 4.1. Institutional Review Board (IRB) project certification
 - 4.1.1 The firm will assist the research team in obtaining IRB project certification from any IRBs necessary for implementation of the project, including by assisting in responding to IRB questions and concerns and submitting modifications.

¹ <http://data.worldbank.org/indicator/EN.ATM.PM25.MC.ZS/countries/MX-XJ-CL?display=graph>.

- 4.2. Design survey instruments, informational treatments, and system for incentivizing engagement with the smartphone application:
 - 4.2.1 The firm will finalize all draft materials to be used in baseline and endline surveys, including the surveys themselves, the implicit association test (IAT), scripts, protocols and handouts for administering informational treatments, randomized encouragement to download and engage with the smartphone application. It will also finalize the logistics and data management plan for an email campaign for incentivizing engagement with the smartphone application that will include validating engagement from the email campaign.
- 4.3. Plan for organizing baseline and endline workshops
 - 4.3.1. The firm will develop a logistics plan for organizing workshops to be held at Rosario Experimental and Behavioral Economics Lab (REBEL) at which baseline and endline surveys will be administered and for randomly selecting half of the baseline workshops for treatment (informational treatments and randomized encouragement to download and engage with the smartphone application).
- 4.4. Study sample
 - 4.4.1. The firm will collaborate with REBEL on reviewing their recruitment strategy, so it is aligned with the study objectives.
- 4.5. Field staff facilitators
 - 4.5.1. IPA field staff will facilitate the pilot survey, baseline survey, informational treatments and endline surveys and associated IATs. They will be in charge of assisting participants with survey and IAT.
- 4.6. Pilot survey and informational treatments
 - 4.6.1. The firm will work with REBEL to administer the pilot survey, including the informational treatments and the randomized encouragement to download the smartphone application.
 - 4.6.2. The firm will collect, compile, clean, and help analyze the pilot survey data.
 - 4.6.3. Based on an analysis of the baseline survey data, the firm will suggest any necessary changes in baseline survey, informational treatment, and/or survey implementation procedures.
- 4.7. Focus groups after pilot survey
 - 4.7.1. Conduct a total of three focus groups of three subsample participants in the pilot survey to get feedback on baseline survey, the IAT, informational treatment and email campaign. Each focus group will be comprised of four to seven people. All focus groups will be conducted after the pilot survey but before the baseline survey.
- 4.8. Baseline survey and informational treatments
 - 4.8.1. The firm will work with REBEL to administer the baseline survey on computers in the REBEL laboratory, including the informational treatments and the randomized encouragement to download the smartphone application.

- 4.8.2. The firm will collect, compile, clean, and help analyze the baseline survey data. The analysis will be for quality control and adherence with the protocols and logistics plan and as needed to make decisions regarding the survey, logistics plan, or IAT for the endline.
- 4.9. Email system for incentivizing engagement with the smartphone application.
 - 4.9.1. The firm will implement the email system for incentivizing engagement with the smartphone application and validate interaction with the application.
 - 4.9.2. The firm will manage the incentives payments to be distributed under the supervision of REBEL.
 - 4.9.3. The firm will collect, clean, compile and help analyze data from the email system.
- 4.10. Endline survey and informational treatments
 - 4.10.1. The firm will work with REBEL to administer the endline survey.
 - 4.10.2. The firm will collect, compile, clean and help to analyze the endline survey data. The analysis will be for quality control and adherence to the protocols and logistics plans.
- 4.11. Privacy and Security of Data
 - 4.11.1. For the duration of the project, the firm will protect the privacy and security of personally identifiable information (PII) in accordance with IRB protocols including but not limited to taking the following two measures: (a) all data sets containing PII will be encrypted; and (b) all tablets and computers used in this project will be password protected regardless of whether they contain data with PII.
- 4.12. Scale of Activities
 - 4.12.1. The scale of the activities may be increased or decreased during the period of the contract, as determined and directed by Allen Blackman in writing (electronic mail). Any change that incurs a change in cost will be included by amendment to this contract.

5. Expected Outcome and Deliverables

- 5.1. IRB application documents, including responses to all queries and questions that arise after initial submission.
- 5.2. Delivery and editable digital files including all codes and programs, of all materials used in the baseline and endline surveys, and in email campaign to encourage engagement with the smartphone application including:
 - 5.2.1. Baseline and endline surveys in Microsoft Word and in SurveyCTO themselves, compatible with REBEL computers;
 - 5.2.2. The implicit association test (IAT), compatible with REBEL computers;
 - 5.2.3. Protocols, scripts and handouts for informational treatments;
 - 5.2.4. **Any randomization codes used to assign treatments**
 - 5.2.5. Protocols, scripts and handouts for the randomized encouragement to download and engage with the smartphone application; and

- 5.2.6. Logistics plan, software, protocols and scripts for implementing an email campaign for incentivizing engagement with the smartphone application.
- 5.3. A logistics plan for organizing workshops at which baseline and endline surveys will be administered and for randomly selecting half of the baseline workshops for treatment.
- 5.4. A compiled, cleaned digital version of the pilot survey data, delivered as a Stata data set that includes clear, concise labels for each variable.
- 5.5. A report on focus groups conducted after the pilot survey along with a list of recommendations for changes to the baseline survey, informational treatment, and/or survey implementation procedures, based on an analysis of the pilot survey data and the pilot surveys.
- 5.6. A compiled, cleaned digital version of the baseline survey data, delivered as a Stata data set that includes clear, concise labels for each variable.
- 5.7. A compiled, cleaned digital versions of data on email campaign to encourage engagement with the smartphone application, students responses to these emails, and resulting monetary incentives to be paid during the endline survey. This information should be delivered as a Stata data set that includes clear, concise labels for each variable.
- 5.8. A compiled, cleaned digital version of the endline survey data, delivered as a Stata data set that includes clear, concise labels for each variable.
- 5.9. Delivery of all data sets, programs or codes used in this consultancy with detailed README files that would allow replication.

6. Project Schedule and Milestones

- 6.1. Milestone 1: January 25—deliverables associated with items 5.1-5.3 above due:
 - 5.1. Submission of the IRB amendment , including responses to all queries and questions that arise after initial submission.
 - 5.2. Editable digital files of all materials used in the baseline and endline surveys, and in email campaign to encourage engagement with the smartphone application.
 - 5.3. A logistics plan for organizing workshops at which baseline and endline surveys will be administered and for randomly selecting half of the baseline workshops for treatment.
- 6.2. Milestone 2: February 15—deliverables associated with items 5.4-5.5 above due:
 - 5.4. A compiled, cleaned digital version of the pilot survey data, delivered as a Stata data set that includes clear, concise labels for each variable.
 - 5.5. A report on focus groups conducted after the pilot survey along with a list of recommendations for changes to the baseline survey, informational treatment, and/or survey implementation procedures, based on an analysis of the pilot survey data and the pilot surveys.
- 6.3. Milestone 3: March 6—deliverables associated with items 5.6 above due:
 - 5.6. A compiled, cleaned digital version of the baseline survey data, delivered as a Stata data set that includes clear, concise labels for each variable.
- 6.4. Milestone 4: May 8—deliverables associated with items 5.7 above due:

5.7. A compiled, cleaned digital versions of data on email campaign to encourage engagement with the smartphone application, students responses to these emails, and resulting monetary incentives to be paid during the endline survey.

6.5. Milestone 5: May 30—deliverables associated with items 5.9-5.10 above due:

5.8. A compiled, cleaned digital version of the endline survey data, delivered as a Stata data set that includes clear, concise labels for each variable.

5.9. Delivery of all data sets, programs or codes used in this consultancy with detailed README files that would allow replication.

7. Reporting Requirements

7.1. Progress updates to the research team by email at the end of each week.

7.2. Conference call with the research team to discuss progress and any difficulties that arise at least once every two weeks.

7.3. Reports on: (i) pilot survey and focus groups after pilot survey; (ii) baseline survey; and (iii) endline survey.

7.4. README files that provide details descriptions of data and programs/codes used in this consultancy as described in 5.10.

8. Acceptance Criteria

8.1. The deliverables from this consultancy will be accepted by Allen Blackman (CSD/CSD). The encrypted data sets will be transferred to Allen Blackman.

9. Other Requirements

9.1. In addition, this consultancy requires working closely and collaborating with the research team and their research assistants/post-docs.

9.2. No product or activity of this consultancy can be sold or generate any income. No product or activity of this consultancy can be given to any third party except as directed by Allen Blackman.

10. Payment Schedule

10.1. 30% of total payment within 30 days of delivery and acceptance of deliverables associated with Milestones 1 and 2: completed IRB application (5.1), materials used in baseline and endline surveys, and in email campaign to encourage engagement with smartphone application (5.2),, and logistics plan for workshops (5.4), and pilot survey data and list of recommended changes.

10.2. 30% of total payment within 30 days of delivery and acceptance of deliverables associated with Milestone 3 and 4: baseline survey data, email campaign data.

10.3. 40% of total payment within 30 days of delivery and acceptance of deliverables associated with Milestone 5: endline survey data and all data sets, programs and codes needed for replication.

11. Coordination

11.1. This consultancy will be coordinated by Allen Blackman (CSD/CSD). Allen Blackman will give any instructions for change, direct and monitor the progress of work, and receive and approve of deliverables.

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- 1.2. This consultancy seeks to improve the evidence needed to design, administer and implement information-oriented air pollution and climate change policies and programs. Specifically, it will provide evidence on the effect of distributing accurate, real-time, salient air pollution information through information and communication technologies.
- 1.3. The research team for this consultancy will be directed by Allen Blackman (CSD/CSD) and Bridget Hoffmann (RES/RES).

2. Objectives

- 2.1. The main objective of this consultancy is to contribute to the development and implementation of a baseline survey session of a randomized controlled trial (RCT) that will measure the effect of providing air quality information via a smartphone application called Bogotá Aire on Bogotá university students' avoidance behavior and environmental attitudes.

3. Scope of Services

- 3.1. The requirements to make this project successful include owning and operating an experimental economics computer laboratory in Bogotá, Colombia with the capacity to accommodate hundreds of student study subjects in dozens of experimental sessions; maintenance of lists of local students potentially willing to participate in such experimental sessions and an ability to recruit participants and enroll them in experimental sessions; experience administering experimental sessions in a laboratory in Colombia, for example including electronic surveys and information treatments, as part of randomized controlled trials (RCTs), and collecting and compiling data from laboratory experiments.
- 3.2. In addition, the project will require close collaboration with the research team (and their Research Assistants, Postdocs, or Research Fellows) and any other counterparts, consultants, or collaborators.
- 3.3. The total duration of the contract is not to exceed 24 months.

4. Key Activities

- 4.1. Plan for organizing baseline and endline data collection sessions
 - 4.1.1. Working with Innovations for Poverty Action in Colombia (IPA-C), the firm will develop and practice a logistics plan for organizing a series of data collection

sessions to be held at the Rosario Experimental and Behavioral Economics Lab (REBEL) at which pilot, baseline and endline surveys will be administered, and for randomly selecting half of the baseline sessions for treatment (informational treatments and randomized encouragement to download and engage with the smartphone application).

4.2. Study sample

4.2.1. Working with Innovations for Poverty Action in Colombia (IPA-C), the firm will recruit a sample of up to 1200 students to participate in the study, of these up to 200 will be pilot participants and up to 1,000 will be baseline participants. The pilot sample will be a minimum of 40 participants and the baseline sample will be a minimum of 750 participants.

4.3. Hosting data collection sessions

4.3.1. The firm will host all data collection sessions associated with the present study in, REBEL, its experimental economics computer laboratory in Bogotá.

4.4. Pilot survey and informational treatments

4.4.1. Working with IPA-C, the firm will administer the pilot survey, including the informational treatments and the randomized encouragement to download the smartphone application.

4.4.2. All data and information collected in the pilot survey will be managed by IPA-C and IPA-C will transfer (encrypted) this data to Allen Blackman. The firm will ensure that IPA can collect the data in an appropriate manner.

4.4.3. The firm will be responsible for making subject payments for participation in pilot data collection sessions.

4.5. Baseline survey, implicit association test (IAT), and informational treatments

4.5.1. Working with IPA-C, the firm will administer the baseline survey during the data collection sessions, including the IAT, and the informational treatments and the randomized encouragement to download the smartphone application (in the treatment group data collection sessions). The electronic survey instrument and IAT will be delivered by IPA-C.

4.5.2. All data and information collected in baseline survey will be managed by IPA-C and IPA-C will transfer (encrypted) the data to Allen Blackman. The firm will ensure that IPA can collect the data in an appropriate manner.

4.5.3. The firm will be responsible for making subject payments for participation in baseline data collection sessions.

4.6. Endline survey and IAT

4.6.1. Working with IPA-C, the firm will administer the endline survey, including the Implicit Association Test.

4.6.2. Payments to participants that were earned as incentives during the email campaign after the baseline sessions will be paid at the endline data collection sessions. REBEL will assist in the design of a logistics plan for these payments at the endline sessions. IPA-C and/or the research team will determine the email campaign incentive payment amounts for each participant.

4.6.3. All data and information collected in endline survey will be managed by IPA-C and IPA-C will transfer (encrypted) the data to Allen Blackman. The firm will ensure that IPA-C can collect the data in an appropriate manner.

4.6.4. The firm will be responsible for making subject payment for participation in endline data collection sessions.

4.7. Privacy and Security of Data

4.7.1. For the duration of the project, the firm will allow IPA-C access to computers used in the laboratory to implement protocols to protect the privacy and security of personally identifiable information (PII) and any other data collected in the experimental sessions in accordance with IRB protocols, including but not limited to taking the following two measures.

4.7.1.1. Removing data or access to data from computers between experimental sessions

4.7.2. For the duration of the project, any computers or tablets containing data related to this project will be password protected and any datasets or documents containing PII will be encrypted.

4.8. Scale of Activities

4.8.1. The scale of the activities may be increased or decreased during the period of the contract, as determined and directed by Allen Blackman in writing (electronic mail). Any change that incurs a change in cost will be included by amendment to this contract.

5. Expected Outcome and Deliverables

5.1. Plan for organizing baseline and endline data collection sessions.

5.2. Sample of up to 1200 students that will participate in the study, with a minimum of 750 students in the baseline sample and a minimum of 40 students in the pilot sample.

5.3. Report on data collection sessions in REBEL for pilot survey.

5.4. Report on data collection sessions in REBEL for baseline survey.

5.5. Report on data collection sessions in REBEL for endline survey.

6. Project Schedule and Milestones

6.1. Milestone 1: January 25—deliverables associated with items 5.1 above due:

5.1 Plan for organizing baseline and endline data collection sessions.

6.2. Milestone 2: February 15—deliverables associated with items 5.3 above due:

5.3 Data collection sessions in REBEL for pilot survey.

6.3. Milestone 3: March 6—deliverables associated with items 5.2 and 5.4 above due:

5.2 Sample of up to 1200 students that will participate in the study, with a minimum of 750 students in the baseline sample and a minimum of 40 students in the pilot sample.

5.4 Data collection sessions in REBEL for baseline survey.

6.4. Milestone 4: May 8—deliverables associated with items 5.5 above due:

5.5 Data collection sessions in REBEL for endline survey.

7. Reporting Requirements

7.1. Reports on:

7.1.1. Report on recruitment of students to participate in survey.

7.1.2. Logistics plan for data collection sessions associated with pilot, baseline and endline.

7.1.3. Call, email, or in person meeting to discuss pilot survey progress weekly during implementation.

7.1.4. Call, email, or in person meeting to discuss baseline survey progress weekly during implementation.

7.1.5. Call, email, or in person meeting to discuss endline survey progress weekly during implementation.

8. Acceptance Criteria

8.1. The deliverables from this consultancy will be accepted by Allen Blackman (CSD/CSD). The encrypted data sets will be transferred to Allen Blackman.

9. Other Requirements

9.1. In addition, this consultancy requires working closely and collaborating with the research team, their research assistants/post-docs, and consultants.

9.2. No product or activity of this consultancy can be sold or generate any income. No product or activity of this consultancy can be given to any third party except as directed by Allen Blackman.

10. Payment Schedule

10.1. 20% of total payment within 30 days of signing the contract .delivery and acceptance of deliverables associated with Milestone 1.

10.2. 20% of total payment within 30 days of delivery and acceptance of deliverables associated with Milestone 2: data collection sessions in REBEL for pilot survey.

10.3. 20% of total payment within 30 days of delivery and acceptance of deliverables associated with Milestone 3: data collection sessions in REBEL for baseline survey.

10.4. 40% of total payment within 30 days of delivery and acceptance of deliverables associated with Milestone 4: data collection sessions in REBEL for endline survey.

11. Coordination

11.1. This consultancy will be coordinated by Allen Blackman (CSD/CSD). Allen Blackman will give any instructions for change, direct and monitor the progress of work, and receive and approve of deliverables.