

5 August 2020

## TERMS OF REFERENCE

### **Consultancy to Produce Guidance on the Ethical Implications of Predictive Analytics for Children Ethics in Evidence Generation**

#### **Background**

UNICEF's Office of Research-Innocenti (UNICEF-Innocenti) has become a globally recognized leader in addressing critical issues in ethics in evidence generation involving children. Part of this process has involved producing and disseminating resources pertaining to ethical considerations within evidence generation involving particular technologies, child cohorts and contexts.

In the creation of the Ethical Research Involving Children Compendium (2013), UNICEF Innocenti, established itself as a key global player in supporting and developing products to encourage ethical evidence generation involving children. However, while this resource was a seminal piece of work in this area, contemporary environments, and particularly those of children are changing rapidly. As noted in Berman et al., (2016)

*'In much of the world, children's lives have changed dramatically over the last generation. New risks have emerged or expanded ...but tremendous advances have also been made ...Other transformations could be argued to have brought both positive and negative changes in the vast array of factors shaping children's lives (e.g. the emergence and pervasiveness of the Internet and the rise of globalization)'<sup>1</sup>.*

Within these contexts, UNICEF needs to continue to gather significant data and undertake research to better understand children's lives. It also concurrently needs to lead in the interrogation and understanding of the ethical implications and potential strategies for addressing the myriad of ethical issues relating to the technological advances and the complex contexts within which research with children is being undertaken.

To support this work and data collection more broadly, UNICEF's Responsible Data 4 Children Initiative (RD4C) seeks to build awareness regarding the need for special attention to data issues affecting children. This framework is critical as the technological landscape of children's lives change and with the ever-increasing collection, use, linking and sharing of their data. These principles and approach allow us to engage with governments, communities, and development actors to put the best interests of children and a child rights approach at the centre of our data activities. Drawing upon field-based research and established good practice, RD4C aims to highlight and support best practice in our work; identify challenges and develop practical tools to assist practitioners in evaluating and addressing them; and encourage a broader discussion on actionable principles, insights, and approaches for responsible data management.

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<sup>1</sup> Berman, G., Hart, J., O'Mathúna, D., Mattellone, E., Potts, A., O'Kane, C., Shusterman, J., and Tanner, T. (2016). What We Know about Ethical Research Involving Children in Humanitarian Settings: An overview of principles, the literature and case studies, Innocenti Working Paper No. 2016-18, UNICEF Office of Research, Florence, p.11.

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Together, UNICEF-Innocenti, reflecting and engaging with the RD4C Initiative and principles aims to create tools and resources that support ethical evidence generation from and in collaboration with children. In this way UNICEF can and will continue to advocate for ethical and reflexive practices, particularly in the use of technologies for evidence. In the context of the COVID-19 Pandemic and the significant shift to online engagement with children, this is now more critical than ever.

## **Rationale**

Predictive analytics (PA) holds promises of efficiency and foresight, presenting possibilities to alleviate some of the burden of service systems at relatively low cost, allowing for the detection of unknown correlates, facilitating better and potentially more accurate assessments and targeting, and creating responsive technologies that may improve aspects of an individual's or cohorts quality of life, and support achievement of the SDGs. For all these potential benefits however, there are substantial caveats and concerns pertaining to problem specification, data sets utilized, analysis, applications and prediction more generally. Each of these issues raises questions for the general case of PA. However, consistent with Berman and Albright (2018), there are very specific considerations when using predictive analytics in relation to children. This holds true in instances where models are specifically targeted at children as well as those examples where algorithms are developed to target a population that includes but is not exclusively focused on children. UNICEF is increasingly exploring the potential use of predictive analytics in our data work at both global and local levels. This frequently includes partnerships with third parties to undertake this work in collaboration with or on behalf of UNICEF

This consultancy is focused largely on the ethical implications and consideration in relation to predictive data that may be used to inform service provision, opportunities or profiles focused on, or inclusive of, children. To this end, comprehensive guidance on appropriate application, development, use, implementation and evaluation of predictive analytics models and algorithms, firmly embedded in human rights principles and directly reflecting the RD4C guidance, is required. This guidance is needed to support UNICEF staff and field partners to assess and make decisions on the appropriateness of advocating for or adopting predictive analytics solutions for children, reflecting the ethical implications of these decisions. Further it is hoped that the guidance will reflect on the implications in relation to issues such as data privacy, consent, safety, harms and benefits and the impacts on voices of children that we work with and for.

## **Description of the Task and Objective(s)**

In engaging with the materials produced and through participation in the activities proposed (ie webinars), the consultant should develop a sound understanding of the key ethical issues involved and the implications of predictive analytics on children's outcomes. Further, they should be supported to independently assess whether or not the use of predictive algorithms are appropriate for the purposes to which they will be applied, acknowledging potential positive but also negative impacts on children's rights. Such guidance may also be applicable to other practitioners and field staff in development and humanitarian organizations elsewhere.

The overarching research questions for this project will be:

1. What sort of relevant applications/ use cases for children are being adopted or proposed for a) Predictive Analytics and b) Machine Learning (ML) as a means of Predictive Analytics (or what role has ML had in this space, recognizing that not all future uses have been conceived)?

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2. What are the ethical issues/themes and mitigation strategies suggested by guidance documents, grey reports and the literature pertaining to the use of Predictive Analytics directly or indirectly targeting children?
  3. What are the conditions and issues that should be taken into account when deciding whether or not to advocate, support, manage or engage with Predictive Analytics programmes targeting or impacting children?

The overarching objective of the work is to clearly articulate considerations and provide support for decision making with respect to programmes and dialogues on the use of Predictive Analytics for children.

## **Methodology**

This work primarily requires:

1. A working paper

This will entail a literature review of academic and grey literature that explores the ethical issues (risks and benefits) and mitigation strategies to be considered in the development and implementation of predictive analytics to directly or indirectly make predictions pertaining to children, particularly in relation to key service areas including health, child protection, justice, education and employment. Wherever possible this should be drawn from available child focussed literature or extrapolated from more general literature and applied to children via reflection on child rights frameworks and child development theory. Explicit consideration should be given to the RD4C framework throughout.

The literature review will be complemented where possible by the development of illustrative case studies.

The review should, at minimum, include English language publications. However, reviews including publications in other languages are encouraged.

2. A brief that includes a comprehensive and accessible checklist of considerations or an appropriate decision tree to support staff to decide whether or not to advocate, support, undertake or engage with predictive analytics that impact children.

## **Outputs/Deliverables**

It is anticipated that the successful tender will produce:

1. A working paper of critical ethical issues in the use of predictive algorithms directly or indirectly impacting children, based on the literature review, which will;
  - Identify risks and benefits of predictive analytics for children; including case studies and applications in core child service areas including health, child protection, justice, education and employment. In identifying risks, it is anticipated that differentials in risk profiles of designed models vs machine learning should be explicitly considered. Wherever possible,

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literature related to the use of these analytics applied to children in Lower and Middle Income Countries (LMICs) should be cited.

- Highlight ethical issues and possible mitigation strategies with explicit reflection where appropriate on specific issues pertaining to children in LMIC's, extrapolating where evidence or analysis of impacts on children are unavailable.  
(approx. 30-40 pages).
2. A simple, clear and accessible summary piece/brief noting key ethical issues for consideration and potential mitigation strategies in addressing ethical issues in the use of predictive algorithms that may directly or indirectly impact children. This summary piece should be tailored primarily to UNICEF staff but may also be applicable to other practitioners and field staff who don't have time to read the full paper but want to have a quick reference (not more than 2-3 pages). This summary should include a clear checklist or decision tree of critical issues to critically engage with partners and consultants on how or whether to utilise predictive analytics to support child outcomes.
  3. An annotated bibliography of all the literature included in the working paper with weblinks included
  4. 2 x global webinars discussing the findings of the study

#### **Timeline for deliverables**

(The timeline is indicative and may change upon agreement between the Consultant and UNICEF)

<b>Output</b>	<b>Deadline (latest)</b>
Tender Call	19 August 2020
Tenders Due	9 September 2020
Successful Candidate Contracted	12 October 2020
Discussion with Project Managers	16 October 2020
First Outline of Paper proposed	30 October 2020
Outline of Draft Paper Agreed	6 November 2020
First Draft produced	11 December 2020
Review of first draft	22 December, 2020
Second draft produced	14 January 2021
Review of second draft	28 January 2021
Final draft and summary due	25 February 2021
2 global webinars discussing the findings of the study	March / April 2021

#### **Composition, Time Commitment and Competencies/qualifications of successful Consultant(s)**

This consultancy is open to all contractors, hereafter referred to as 'the Contractor'. It is anticipated that this project would require no more than one contractor, however, should a team be proposed (a) a clear point of contact would need to be designated (b) a justification for each team member will be required (c) the proportional time spent by each team member on the project should be clearly specified.

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*Requirements for the contracted individual or team:*

1. The Consultant/ team should [all] hold advanced university degrees in the Social Sciences, Public Health, Information and Communication Technologies (ICT) or related disciplines.
2. An expert with a minimum of 10 years of established credibility undertaking research and/or as a practitioner focussed on the use of ICTs /Predictive Analytics/Machine Learning preferably in low and middle-income countries.
3. Expertise or an understanding of issues pertaining to children's data and/or child rights.
4. Expertise in developing guidance products for practitioner/research staff.
5. Excellent communication skills with fluency in English.
6. Strong English report writing skills and a track record of producing high quality reports targeted at practitioner and academics audiences.
7. Strong publication record preferably relating to at least one or two of the following: Predictive Analytics/ Machine Learning, Children (preferably both) and research ethics (at least one team member).
8. Access to key international research databases such as PubMed/Medline, PsycINFO (EBSCOhost), CINAHL-ebSCO, ERIC, EmBase Social Work Abstracts and SocIndex, Scopus, and to grey literature databases.

*Preferred requirements for the contracted individual or team:*

9. Literacy in other UN languages

**Roles and responsibilities of the contractor**

The contractor is responsible for meeting all deliverables outlined above on time. All work must be original and follow the highest academic standards for referencing and citation. Under no circumstances can the contractor engage in plagiarism or breaches of copyright law. References should be inserted as footnotes and follow formatting instructions outlined in the *UNICEF Style Book*.

The contractor must ensure that all information is factually correct and supported by its references (i.e. the contractor should fact check all cited facts). The contractor must also ensure that all hyperlinks are active and accurate and the papers are edited to a professional standard.

The contractor must meet all deliverable deadlines unless otherwise agreed with UNICEF. Should the contractor not be able to meet a particular deadline they must advise UNICEF in writing at least two weeks in advance.

The contractor must respond to all requests made by UNICEF during the drafting process and ensure that all work is of a high standard.

**Duration of the consultancy**

The consultancy begins on 12 October 2020 and will conclude on March/April 2021 (contingent on preferred webinar timing) and will follow the timeline and the working days agreed. Some limited flexibility within the timeline is permissible. This time period accounts for days that will be required by UNICEF and the project advisory group to review, comment and approve the draft paper and the final report and brief.

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## Supervision and work arrangements

The assignment will be supervised by Gabrielle Berman, Senior Advisor – Ethics in Evidence Generation, UNICEF Office of Research – Innocenti, with indirect reporting to the Chief of Knowledge Management (Research), and the Statistics and Monitoring Specialist – Data & Analytics. The contractor will be required to respond to all questions and suggestions made by the consultancy supervisor and any advisory group. The contractor is to direct all queries, ideas, drafts and other deliverables to Gabrielle Berman, who will share them with relevant stakeholders and provide feedback to the contractor.

The contractor may choose when they work as long as all deliverables are met on time. The contractor will work from its own location and team members are not expected to visit the Office of Research – Innocenti in Florence, Italy. All submissions will be made electronically unless other means are needed (e.g. voluminous documents, technical problems). Communication with the Office of Research – Innocenti is to take place over email, the phone or Zoom/Skype.

## Payment Schedule

Activity/Deliverable	Amount	Payment date
• A satisfactory first draft of the paper	30%	11 December 2020
• A satisfactory final paper and summary	40%	25 February 2021
• Completion of two webinars	30%	30 April 2021 (depending on webinar schedule)

The invoices for services completed should be made out to:

UNICEF Office of Research-Innocenti  
Via Degli Alfani, 58 - 50121 Florence, Italy  
Ph: +39 055 20 33 348

and be submitted via email to Dr G. Berman, Senior Advisor, Ethics in Evidence Generation at [gberman@unicef.org](mailto:gberman@unicef.org)

## Special instructions

The contractor is to deliver all deliverables electronically, via email to Gabrielle Berman at [gberman@unicef.org](mailto:gberman@unicef.org). The contractor is to participate in teleconferences as necessary. No budget will be allocated to the contractor for telephone calls or internet usage. However, the Office of Research – Innocenti will initiate telephone calls and teleconferences whenever possible.

## Evaluation of the Proposal

In making the final decision, UNICEF considers both technical and financial aspects. The Evaluation Team first reviews the technical aspect of the offer followed by the review of the financial offer of the technically compliant vendors. The proposals will be evaluated against the following two elements:

### a. Technical Proposal:

The technical proposal should address all aspects and criteria outlined in this Request for Proposals and will be evaluated against the following:

REF	CATEGORY	POINTS
1.	<b>The proposed team:</b> <b>Qualifications and Knowledge of Subject Matter</b> a. Qualifications; b. Experience and established credibility in research and guidance development relating to ICT, Predictive Analytics and Machine Learning, preferably in low and middle income countries. c. Experience working/researching in low and middle income countries. d. Experience involving children in research or development programming e. Specialized knowledge and publications on ICT, Predictive Analytics and Machine Learning, preferably applied to child data;	25
2.	<b>Skills and Availability</b> a. The proportion of time allocated to the project for each individual in the proposed team. b. Experience with undertaking literature reviews/producing guidance pieces in relatively short time periods c. Communication and writing skills in English. d. Fluency in English and any other language of the UN.	10
3.	<b>Proposed approach to meeting the deliverables:</b> a. Descriptions of approach is clear, detailed, and realistic and proposed staffing is sufficient to meet Request for Proposal requirements.	15
4.	<b>Corporate profile:</b> a. Financial capacity b. Experience with providing service to the United Nations and other International Organizations and/or Institutions.	5
5.	<b>Risk assessment:</b> a. Specification of an approach or any measures that will be taking to minimize negative unintended consequences and to maximize positive outcomes. b. Specification of quality assurance processes.	5
6.	<b>Overall response:</b> c. Understanding of, and responsiveness to, UNICEF requirements. a. Understanding of scope, objectives and completeness of response. b. Overall concord between UNICEF requirements and the proposals..	10
Total Technical		70
Only proposals which receive a minimum of 50 points will be considered further.		

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## b. Price Proposal

The price should be broken down for each component of the proposed work, based on an estimate of time taken which needs to be stated.

The total amount of points allocated for the price component is 30. The maximum number of points will be allotted to the lowest price proposal that is opened and compared among those invited firms/institutions which obtain the threshold points in the evaluation of the technical component. All other price proposals will receive points in inverse proportion to the lowest price; e.g.:

$$\text{Max. Score for price proposal} \times \text{Price of lowest priced proposal}$$

$$\text{Score for price proposal X} = \frac{\text{Price of proposal X}}{\text{Price of lowest priced proposal}}$$

***The Price Proposal shall include a cost breakdown for the work phases as per the deliverables and timeline described above; it should detail the days required, related expenses, any other cost elements deemed relevant and the nature of the roles if a team is proposed.***

The format shown is suggested for use as a guide in preparing the Financial Proposal. The format includes specific expenditures, which may or may not be required or applicable but are indicated to serve as examples.

### ***Financial Proposal Based on Deliverables Described in Terms of Reference\****

Description of Activity/Deliverable	All-inclusive daily fee (US\$) (identifying the proposed person as required)/ or number of items/ or percentage)	Price (in US\$)	Total Cost (US\$)
1. Deliverables: <ul style="list-style-type: none"><li>- Working paper</li><li>- Summary/brief</li><li>- Bibliography</li><li>- Webinars</li></ul>			
2. Professional Fees: (All-inclusive cost) <ul style="list-style-type: none"><li>- Team leader</li><li>- Team member</li></ul>			
3. Other project costs			
Total			

It should be noted that UNICEF will provide funding for all copy editing and formatting and these will not be part of this contract.



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**\*Payment Provisions**

UNICEF's policy is to pay for the performance of contractual services rendered or to effect payment upon the achievement of specific milestones described in the contract. UNICEF's policy is not to grant advance payments except in unusual situations where the potential contractor, whether a private firm, NGO or a government or other entity, specifies in the bid that there are special circumstances warranting an advance payment. UNICEF will normally require a bank guarantee or other suitable security arrangement.

Any request for an advance payment is to be justified and documented, and must be submitted with the financial bid. The justification shall explain the need for the advance payment, itemize the amount requested and provide a time schedule for utilization of said amount. Information about your financial status must be submitted, such as audited financial statements at 31 December of the previous year and include this documentation with your financial bid. Further information may be requested by UNICEF at the time of finalizing contract negotiations with the awarded bidder.