**Seed grant application form**

Human Trafficking Research Initiative

Round 2

**INSTRUCTIONS**

Please fill in this form using Calibri 12-point font, single spaced. Double-click on response boxes to mark your preference. Please refer to the [guidelines](https://www.poverty-action.org/publication/application-guidelines-human-trafficking-research-initiative-rfp-seed-round-2) for additional assistance in filling out the form. This form – along with other required documents – should be submitted in our online portal at: <https://innovationsforpovertyaction.formstack.com/forms/htri_partnership_piloting_and_seed_grants_rfp_round_2>

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| **Title of Proposed Research Project** | **Country(ies)** |
| Machine Learning to Show Trends of Human Trafficking Behavior and Country Development | All |

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| **Principal Investigator(s), Researchers, and Implementing Organization(s)** |
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| **Total Funding Requested from the Human Trafficking Research Initiative (in USD)** | $ |

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| **Funding Type (max 100 words)** | |
| If applicable, please add any additional clarifying information below, such as dataset sources. | Travel/exploratory grant  Pilot  Existing data analysis/project idea building  Other \_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Using data from Counter Trafficking Data Collaborative (CTDC) (<https://www.ctdatacollaborative.org/>) | |

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| **Project Snapshot/Abstract (max 800 words)** |
| Please briefly summarize the motivation, proposed activities, and major goals of this grant. If your proposal includes analysis of existing data or desk research, please describe your analytical framework in detail. |
| The goal of this project is to use existing data to develop a mathematical model to predict the country of origin for victims of international trafficking. So far, we have created summary statistics for each country contained in the dataset, and manually determined each country’s stage in Frank Notestein’s Demographic Transition Model (DTM). Using this, we have been able to develop a fairly accurate linear model to predict the stage in development of a victim’s country of origin, as well as the country in which they were exploited. This model has been created by using 21 categorical variables from the CTDC Dataset and seems very promising after initial residual analyses. Every step of the process has been documented, and the goal for this grant would be to make the model more detailed and optimize it using a machine learning algorithm. The intention is to use this model to help create a formula or algorithm to determine what aspects of human trafficking have the greatest influence of where a victim is transported. This model would then be used to develop a working method of determining global human trafficking “highways” for different types of trafficking (labor, sexual, etc.).  The motivation of this project is to systematically develop a model using variables in the CTDC dataset, to predict the stage of DTM for citizenship country and exploitation country for victims of trafficking. We believe that categorically defining a country’s stage in demographic transition is the key to creating a functioning model of human trafficking. A countries stage in demographic transition has been shown to have a direct impact on the type of industries that exist within a country, and we believe this naturally would apply to human trafficking as well. For example, a country which is further in development, would likely have more widespread sex trafficking than labor trafficking, or vis versa.  Our planned activities include fine-tuning the model with linear transformations, as well as certain parameters which were estimated but need to be more exact to improve the model. Additionally, using the optimal model we discovered, determining why certain parameters are better at predicting a country’s stage in DTM than others, in the realm of human trafficking. Our model only uses certain parameters, and it would be beneficial to analyze why these parameters are the best at predicting stage of development. Our most important goal is to qualitatively explain the model in a way that can be understood by those who create policies for international trafficking. By using this model, we can determine what aspects of human trafficking have the greatest impact on where a victim comes from, and where they end up while being exploited.  Given the large time commitment given by those involved with the project, the grant will serve as wages for these personnel, and will allow them to stay committed to the project and allow us to complete it in a timely manner. The dataset being used is publicly available and has been properly anonymized. We manually determined the stage in DTM for each country in the dataset and added it to each observation. Additionally, all the binary classification variables were converted to 1 if the trait was observed, and 0 if it was not. So far, we have attempted to use K-Nearest Neighbors to classify observations by the citizenship or exploiting country’s stage in DTM. We have also binarized the data into a string of ones and zeros and using the new string as a value linked with a specific stage in DTM for citizenship or exploitation country. In the future this grant would allow us to use a “Support Vector Machine” method of classification, as this method is computationally expensive.  Each step used in developing a model will be kept track of in an R or Python notebook file, which can then be knitted as a PDF. This allows us to be transparent with the methods of classification used, as well as show the methodology used throughout the entire process.  Secondly, we want to use this model to create visualizations of global human trafficking in GIS software. This will tie everything together in a way that can be easily communicated to policymakers, and other researchers. These visualizations will help to show if other correlations exist with stage in DTM and aspects of human trafficking, such as the proportion of of a country’s exploited citizens, who are exploited in a secondary country. This will help shed light on the global human trafficking network and help use DTM to further classify countries into the role they serve in human trafficking. |

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| **Primary Research Questions (max. 800 words)** | |
| Please select the anti-human trafficking category(ies) you will be researching: | Prevention  Protection  Prosecution  Partnership  Other: Identification | |
| Piloting and exploratory seed grants are intended to support preliminary research and formative project development activities. Please respond to the questions below (referencing HTRI’s [Research and Learning Agenda](https://www.poverty-action.org/publication/research-and-learning-agenda-human-trafficking-research-initiative) as well as relevant academic literature) to help describe your primary research questions:   * **What are the primary human trafficking questions you hope to answer?** Please be as specific and targeted in laying out these questions as possible. * **Why are these questions important and what gap(s) do they fill in human trafficking research?** Applicants should demonstrate a clear connection between their proposal and questions in HTRI’s Research and Learning Agenda. * **What are the primary barriers or outstanding questions you need to address at this point in time?** If applicable, please describe what constraints or knowledge gaps are preventing your team from being able to launch a viable large-scale project to answer your primary question of interest.   *Please note: at the exploratory stage, you do not need to include a detailed program or evaluation design.* | |
| Broadly speaking, our goal is to attempt to focus on the aspects of human trafficking that are often unseen. There is a lot of research into what causes human trafficking to occur, and how to aid victims after they are rescued. However, few publications exist which attempt to explain the processes behind trafficking, especially regarding type of exploit, means of control used, and other factors such as citizenship and country of exploitation. Primarily, we will be attempting to answer the question “is there a way to incorporate demographic transition into a detailed mathematical model of human trafficking?” By using demographic transition stage instead of specific countries, we will attempt to show whether trends exist for specific stages that are not present in other stages. Additionally, we want to determine what aspects of trafficking (sector, type of exploitation, means of control, etc) are determined by the stage in the DTM for country of citizenship, country of exploitation, or both.  By answering this question, we are aiding in the HTRI’s goal to identify “inefficiencies and critical evidence gaps hindering the success of international antihuman trafficking initiatives.” Answering this question accomplishes this by providing a different way to classify countries by development, as opposed to by region or population. Our model will show that for countries at certain stages, certain types of trafficking behavior and types of exploits are more prevalent than in others. This will help guide future research by providing a model that gives others a starting point. This model will also show what trends exist that were previously unknown due to a lack of research into the classification of countries into stages of demographic transition, and the effect this has on human trafficking data.  One of our secondary questions is “is there a correlation between a country’s stage of development, and the role this country plays in global human trafficking.” This question seeks to find if countries of certain stages fill certain roles in the human trafficking nexus. Much like in the global economy, some countries are producers, and some are consumers, and this often correlates with the country’s stage in development. We want to find out if there is a similarity between this global economic concept and human trafficking, or if a separate trend exists entirely.  By determining the role countries at different stages in development play, we can determine what issues may arise in certain nations as they develop. This is especially helpful in African countries which are rapidly transitioning from stage 2 to stage 3. This would allow policymakers in those areas to know what to expect as far as human trafficking is concerned and put in place policies to combat it. Also, we know that instances of extreme violence or natural disaster can “reverse” the development of a country (an example of this is Afghanistan), and by having such a model in place, we can roughly predict the effect this will have on human trafficking in those areas. | |

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| **Target Population (max. 75 words)** | |
| Please select all descriptors that apply to your target population | Survivors of sex trafficking  Survivors of forced labor/labor trafficking  Vulnerable populations/people at risk of trafficking  Adults  Children (under age 18)  Sector/area of trafficking (for example, mining, fishing, agriculture, entertainment, child begging): \_\_\_\_\_\_\_\_\_\_\_\_\_ | | |
| Please briefly describe the project’s location and/or the intended beneficiary population | | |
| The nature of this project means that it will look at trafficking at a global scale to produce a model, but the end goal is for the model to be used to help researchers and policymakers for countries that are in each stage. This model also seeks to predict what to look for in instances where a country is developing rapidly, or “reversing” in development due to conflict or natural disaster. | |

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| **Ethical Protections/Considerations (max. 300 words)** | |
| Please describe the ethical considerations relevant to your project and how you plan to manage them. If you will be interacting with any people who may be victims of trafficking, please outline how you will respond if it is disclosed—or you strongly suspect—that someone is being trafficked. |
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| **COVID and Other Feasibility Considerations (max. 200 words)** | |
| Please discuss the overall feasibility of the project, including assumptions and risks. If you believe this project could be negatively impacted by COVID, please outline the risks and mitigation plan. |
| Much of the “heavy lifting” of cleaning and organizing data, and producing preliminary models, has already been completed, so the project is definitely feasible. All that remains is modifying these models, and finding an effective way to communicate the results to a wider audience of policymakers, law enforcement, and the public. | |

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| **Vision of Your Future Project (max. 500 words)** | |
| **How do you see your research unfolding after the proposed research activity is complete?**   * Include information about the large-scale randomized evaluation, or other large primary research project, you intend to develop based on the results of this proposed project. * If you are applying for a grant to do evidence analysis, explain the value of the results to future policymakers as well as researchers designing studies. * If you are at too early of a stage to provide this information, please describe some of the pathways you think the study could follow. |
| As previously mentioned, this model will provide a rough outline of what roles or aspects apply to countries of different stages in Demographic Transition. This will help inform policy makers in rapidly developing countries, as well as provide researchers with a starting point for their country or region-specific research. The results of this project will also show if there are underlying flaws in the type of data which is collected and provide a baseline to help screen for outliers in data and could help uncover inaccuracies that may exist in preexisting data. If the model proves to be useful, observations that deviate heavily from the model could be cause for further research. Right now, there does not exist a way to quantify how unlikely a certain type of trafficking in a certain country or region is, and this could be a starting point for those types of analyses. | |

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| **Any Other Notable Consideration (max. 200 words)** | |
| Please feel free to include any other information about your partnership or research project that does not neatly fit in any of the sections above. |
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| **Project Budget and Narrative** | | |
| Provide dollar totals by category below and submit a detailed budget separately in IPA’s online portal. | |
| **Total Funding Requested from the Human Trafficking Research Initiative** | **USD** | |
| Budget Detail: |  | |
| 1. Personnel (Salaries and Fringe) | USD | |
| 1. Travel and Transportation | USD | |
| 1. Equipment and Supplies | USD | |
| 1. Field Research and Data Collection | USD | |
| 1. Sub-Contracted Research (if applicable) | USD | |
| 1. Other Direct Costs | USD | |
| 1. Overhead (Indirect Costs) | USD | |
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| Provide a brief narrative description of what is included in each budget category below | |
| 1. Personnel (Salaries and Fringe): | | |
| 1. Travel and Transportation: | | |
| 1. Equipment and Supplies: | | |
| 1. Field Research and Data Collection: | | |
| 1. Sub-Contracted Research (if applicable): | | |
| 1. Other Direct Costs: | | |
| 1. Indirect Costs (maximum 10% or NICRA): | | |

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| **Project Timeline** | |
| Is your proposed project part of a larger ongoing project? | Yes  No |
| Tentative Project Start Date (DD / MM / YYYY) |  |
| Tentative Project End Date (DD / MM / YYYY) |  |

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| **Proposal Checklist** | | |
| Check that each item below has been completed and relevant files uploaded in the online portal [here](https://innovationsforpovertyaction.formstack.com/forms/htri_partnership_piloting_and_seed_grants_rfp_round_2). | |
| **Upload completed application form**  Please name this file: “[PI last name] [Proposal title] application form.pdf”  Acceptable file formats are: .pdf .docx .doc |  | |
| **Upload a proposed budget detailing major anticipated costs**  In addition to the above please attach a budget proposal using the HTRI Budget Template  Please name the file: “[PI last name] [Proposal title] budget.xlsx’”  Acceptable file formats are: .pdf .xlsx .doc |  | |
| **Upload CVs for all researchers on the project**  Please name each file: “[PI last name] [Researcher last name] CV.pdf’”  Acceptable file formats are: .pdf .docx |  | |
| **Upload letters of support (optional)**  Please name each file: “[PI last name] [Proposal title] letter of support.pdf’”  Acceptable file formats are: .pdf .docx |  | |
| **Read the Terms and Conditions below** |  | |

*If you have any trouble submitting online, please email this form together with the relevant supporting documents in a .zip file to:* [*ipa\_htri@poverty-action.org*](mailto:ipa_htri@poverty-action.org)

*Subject of email should be the same as the file name.*

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| General Terms and Conditions  If an applicant is awarded funding by IPA, the grant agreement may include clauses similar to the following, and the Grant Recipient must comply with them:  1. SPONSOR may review and approve materials produced for program implementation that concern respondent or beneficiary safety or wellbeing, including any training materials, awareness raising materials, and communications materials.  2. SPONSOR may review and comment on materials that are part of the design of the research project but do not directly concern respondent or beneficiary safety or wellbeing, including research plans, survey instruments and data analysis, and documents and materials on research analysis and findings, which will be made publicly available.  3. SPONSOR reserves the right to conduct a baseline assessment and/or rigorous independent evaluation of grant performance, to include the collection and analysis of timely and reliable data and information. SPONSOR has full responsibility for oversight of these evaluations to ensure an unbiased assessment of the grant activities. GRANT RECIPIENT is expected to cooperate to the fullest extent possible if selected for an assessment. No additional funds will be made available for your participation, but a SPONSOR evaluation should not add to GRANT RECIPIENT costs. IPA will notify the GRANT RECIPIENT in advance if their project is selected for an evaluation. To facilitate review and evaluation related to the performance activity, GRANT RECIPIENT shall, whenever appropriate, disclose relevant data and information. The results of the assessment may be used for the development of SPONSOR best practices, to document program impact, assess return on investment, and to assure accountability for the American people.  4. Information which might require special consideration with regard to the timing of its disclosure may derive from studies or research, during which public disclosure of preliminary invalidated findings could create erroneous conclusions, which might threaten public health or safety if acted upon. IPA may identify (based on agreement with SPONSOR) specific information and/or categories of information which the SPONSOR will furnish to IPA and GRANT RECIPIENT or that the GRANT RECIPIENT is expected to generate which is confidential. Such confidential information may be identified from time to time during the performance of the award. If it is established that information to be utilized under the award is subject to the Privacy Act, the GRANT RECIPIENT will follow the rules and procedures of disclosure set forth in the Privacy Act of 1974, and implementing regulations and policies, with respect to systems of records determined to be subject to the Privacy Act. Written advance notice of at least 55 calendar days will be provided to the IPA of the recipient’s intent to release findings of studies or research, which have the possibility of adverse effects on the public or SPONSOR, as described above. If IPA (based on response from SPONSOR) does not pose any objections in writing within the 55-calendar day period, the GRANT RECIPIENT may proceed with disclosure. Whenever the GRANT RECIPIENT is uncertain with regard to the proper handling of material under the award, or if the material in question is subject to the Privacy Act or is confidential information subject to this Provision, the recipient shall obtain a written determination from IPA (based on written determination from SPONSOR) prior to any release, disclosure, dissemination, or publication.  5. Any publications or articles resulting from the award must acknowledge the support of the SPONSOR and include a disclaimer of official endorsement as follows: “This [article] was funded [in part] by a grant from the SPONSOR. The opinions, findings and conclusions stated herein are those of the author[s] and do not necessarily reflect those of the SPONSOR”. The GRANT RECIPIENT must ensure that this disclaimer be included on all brochures, flyers, posters, billboards, or other graphic artwork that are produced under the terms of the award.  6. SPONSOR reserves a royalty-free, non-exclusive and irrevocable right to reproduce, publish, or otherwise use the work for SPONSOR purposes, and to authorize other entities, including other non-Federal entities, to do so. In addition, the SPONSOR has the right to obtain, reproduce, publish, or otherwise use data produced under a SPONSOR award.  7. All international travel charged to this an award must be on an American flag carrier. If travel was on a foreign flag carrier, a statement justifying the use of a foreign flag carrier, which meets one of the exceptions cited in the "Fly America Act", must be included with the financial report. Travel on foreign flag carrier, which does not meet one of the exceptions of the Act, will be disallowed.  8. None of the funds made available herein may be used to promote, support, or advocate the legalization or practice of prostitution. Nothing in the preceding sentence shall be construed to preclude assistance designed to combat trafficking in persons, including programs for prevention, protection of victims, and prosecution of traffickers and others who profit from trafficking in persons, by ameliorating the suffering of, or health risks to, victims while they are being trafficked or after they are out of the situation that resulted from such victims being trafficked.  9. GRANT RECIPIENT certifies that, to the extent practicable, persons or entities providing legal services, social services, health services, or other assistance have completed, or will complete, training in connection with trafficking in persons.  10. Funds provided under an award are subject to Section 620M of the Foreign Assistance Act of 1961, as amended, a provision titled “Limitation on Assistance to Security Forces” (the “Leahy Amendment”). Accordingly, none of the funds under this award may be used to provide training or other assistance to any unit or member of the security forces of a foreign country if the Department of State has credible information that such unit or individual has committed a gross violation of human rights. In signing an award, the GRANT RECIPIENT agrees to exercise due diligence to ensure compliance with the Leahy Amendment provision and Department of State policy, and to cooperate with the Department of State in implementation of the requirement. The Department of State implements the Leahy Amendment requirements by vetting units or individuals proposed for training or other assistance to check for credible information of a gross violation of human rights by such units or individuals. To facilitate Department of State vetting, the Recipient must provide a set of information for proposed participants at least sixty (60) calendar days prior to commencing award activities. The GRANT RECIPIENT must collaborate with the relevant U.S. embassy on a case-by-case basis to determine if the Leahy requirement applies to specific activities or proposed participants. Individuals who are not members of the security forces but who participate in activities under the award (e.g., politicians, academics, etc.) generally do not need to be vetted. Submission Deadline: Each candidate must be cleared under Leahy vetting in advance of participation in activities funded under this award. The vetting process typically takes approximately one month but may take longer if there are a large number of candidates or if issues arise. Thus, all information on proposed candidates must be received by the embassy at least sixty (60) days in advance of the training event or other activity. The GRANT RECIPIENT agrees that it will not include any security forces candidate in training or other activities funded under this award until the State Department advises that the candidate has cleared Leahy vetting and is approved for participation.  11. GRANT RECIPIENT shall comply with the Department of State Standard Terms and Conditions for Federal Awards, as applicable. Electronic copies containing the complete text are available at: <https://www.state.gov/wp-content/uploads/2019/10/U.S.-Department-of-State-Standard-Terms-and-Conditions-10-01-2019508.pdf>  12. GRANT RECIPIENT will be responsible for reporting on progress as in a format to be provided by the HTRI Program on a schedule to be determined by mutual agreement. Progress reports must contain a comparison of actual accomplishments to the objectives of the award established for the period. This should include information on how costs are tied to accomplishments, the reasons why established goals and targets were not met, if any, and additional pertinent information including an analysis and explanation of cost overruns or high unit costs.  13. GRANT RECIPIENT will submit a budget in detail along with a written justification sufficient to determine the need and reasonableness for the proposed costs. Indirect costs will not be allowable charges against the award unless specifically included as a line item in the approved budget for the award. Indirect cost recovery for any actual indirect costs incurred by the recipient which are greater than the indirect cost line item in the approved award budget is limited up to the award amount. A non-profit organization which has not previously established an indirect cost rate with a Federal agency, that believes the Department of State should be its cognizant agency, shall submit its initial indirect cost proposal immediately after the organization is advised that the award will be made and, in no event, later than three months after the effective date of the award. For all NICRA and indirect rate inquiries please contact [AQM-NICRA@state.gov](http://AQM-NICRA@state.gov).  14. GRANT RECIPIENT may charge to the award only allowable costs as incorporated in the approved budget. Reporting of expenses will be at the major category level with a frequency to be determined by mutual agreement between the parties. Any variance between major categories of 10% or greater must be explained in writing and approved by the HTRI Program.  This list is not exhaustive and subject to change. The Grant Recipient may be required in the grant agreement to comply with other requirements from IPA and IPA’s prime donors. |