



Project Proposal for Ph.D.

Project Details (The research problem must clearly indicate the need for an interdisciplinary approach)

Project Title	Health Risk of Occupational Drivers Attributable to Climate Extremes
Project Summary (Minimum 500 and maximum 2000 characters)	Increased anthropogenic activities, land cover change, and degraded natural ecosystems have resulted in intensified environmental extremes in urban areas imposing significant health concerns. Urban traffic significantly contributes to the air pollution and high temperatures. For an occupational driver, the road is their workplace. As such, they are most exposed to the severe levels of pollution and extreme temperatures for a prolonged duration. As climate change and urbanization is expected to grow, we expect that the severity of these events shall increase both by intensity and frequency. This imposes immediate and long-term health impacts and influences the workability of the occupational drivers. The health impacts vary by nature, length and intensity of environmental extremes but also the historical exposures, personal acclimatization, working conditions, and occupational safety protection provisions. While it is difficult to manage ambient conditions, lifetime exposure or lifestyles but improving working conditions and provisioning environmental protection can help reduce exposure and improve health outcomes. Understanding exposure and the control factors can help determine needed interventions. However, the studies on understanding the impact of exposure to extreme temperatures and air pollution on physiological response and corresponding wellbeing on occupational drivers is limited. The project aims to understand the exposure of occupational drivers to environmental extremes such as air pollution and high temperatures and determine its impact on their physiological response real-world driving conditions. The study shall include both objective and subjective based methods to understand the impact on wellbeing and health outcomes. Qualitative methods shall be used to determine self-reported symptoms (neurological, systemic, and non-systemic) and psychological behaviour (stress, anxiety, anger, and depression) in relation to the exposures to environmental extremes.

Ph.D. Supervisors ⁺ (Supervisor 1 and Supervisor 2 cannot be from the same department of IITD)			
Role	Name of Faculty	Academic Unit in IITD/Institute/University	Email ID (Official)
Supervisor 1*	Deepti Jain	TRIP Centre, IIT Delhi	djain@iitd.ac.in ;
Supervisor 2	Sagnik Dey	CAS, IIT Delhi	sagnik@cas.iitd.ac.in

*Supervisor 1 must be from IIT, Delhi.

+All cells in this table are mandatory fields that need to be filled by faculty for consideration of proposal.

\$The date of superannuation of supervisors should be at least three years from the date of registration of selected candidates.

Project requirements (Student qualifications, experience required, etc)

*The candidate will be shortlisted based on common shortlisting criteria decided by ScRC (SIRe)

- Master’s degree (or equivalent) in one of the following fields: Transport Planning / Transportation Engineering; Public Health or Epidemiology; Environmental Science / Environmental Engineering; Data Science, Statistics, Atmospheric & Oceanic Sciences, Meteorology
- Skills: statistical analysis using R, Python, SPSS or STATA; spatial analysis
- A strong academic record with demonstrated interest in urban health, climate change, or occupational exposure research.
- Experience of willing to learn working with wearables and environmental monitors

Source of fellowship/funding and project number
(CSIR/UGC/DBT/ICMR/ICAR/NEET-PG/DST-INSPIRE/IRD/FITT Project details, if any)

Student's own funding from CSIR/UGC/DBT/ICMR/NEET-PG/DST-INSPIRE

Role of Faculty Members involved:

Supervisor-1	Prof. Deepty Jain: Transport; Behaviour and Occupational Exposure. She will guide development of study framework to link mobility patterns with environmental exposures and physiological responses, study design particularly fieldwork and help analyse mobility patterns, route characteristics, and activity related exposures to environmental extremes.
Supervisor-2	Prof. Sagnik Dey: Environmental Hazard, Climate Change and Health Impacts. He will guide the work of environmental exposure using satellite data, models and environmental monitors and contribute to building nexus between exposure to climate extremes and health outcomes.

Note :-

1. Approval from the respective DRC/CRC/ScRC of your Department/Centre/School will be required for using the "Full-time Institute Assistantship (Category-wise) (FIA)" for selecting the students in SRe.
2. Declaration:- Faculty members, please ensure that you have at least 3 years of service left before superannuation along with adequate sitting space & lab facilities for the SRe student.
3. PI/s are also encouraged to submit joint proposals with AIIMS, NII, JNU and institutes with which IITD has an existing MoU. If the Co-PI (Supervisor 2) is from outside IITD, kindly share his/her detailed CV.
4. If a research scholar is to be considered for selection under the project fellowship, then the project should have a minimum of two-year duration remaining.
5. A candidate applying with a valid JRF/INSPIRE/any national level fellowship should have at least two-year validity from the date of joining the Ph.D. program.
6. The third supervisor's name (if required) can be added only after the formation of Student Research Committee (SRC) subject to a strong recommendation of SRC and subsequent approval from the competent authority.
7. If Institute fellowship is being sought, then DRC approval of the parent department of Supervisor 1 is required at the time of selection.