Transportation Research & Injury Prevention Programme
Indian Institute of Technology Delhi

**INTRODUCTION**

**Objective**

The objective of TRIPP is to reduce the adverse health effects of transport by integrating mobility, safety and environmental concerns specific to India, in particular, and other less motorised countries in general. The establishment of TRIPP has facilitated interaction between faculty members from various departments within IITD and with professionals from organisations outside IITD (Indian Statistical Institute, Sanchal Hazard Centre, St. Stephen's Hospital, IDS) on complex intradisciplinary problems associated with urban transport. This group is unique because it combines expertise in transportation planning, road safety, computer sciences, biomechanics, epidemiology, medicine, social sciences and econometrics for work on transportation issues.

**Research Faculty**

- A.K. Gosain, Ph.D. IIT Delhi, Civil Engineering Department. Geographical Information Systems, hydrologic modelling, watershed management.
- A. R. Ray, PhD (Delhi University). centre for Biomedical Engineering, Biomaterials, Vaccines and Drug Delivery, Tissue Engineering, Polymer Science.
- Dinesh Mohan, Coordinator TRIPP. Ph.D. University of Michigan, Ann Arbor, centre for Biomedical Engineering. Biomechanics of human tolerance to injury, injury analysis and computer modeling of vehicle crashes.
- M. Balakrishnan, Ph.D. IIT Delhi. Computer Science and Engineering Department. Application specific processor design, FPGA based design and design tools, hardware-software codesign and system synthesis.
- Puneet Mahajan, Ph.D. Montana State University. Mechanical Engineering Department. Finite elements, contact and impact mechanics of composites, vibration behavior of tractors, helmet design.
- Sudipto Mukherjee, Ph.D. Ohio State University. Mechanical Engineering Department. Computer controlled mechanisms, kinematics, AI, robotics crash modeling, human tissue properties, mechatronics.
- V.B. Upadhyay, PhD (McMaster). Econometrics, monetary economics and development economics.

**Hazardous Centre, Sanchal Foundation, Delhi: A. K. (Dunu) Roy, Director. Working with TRIPP on analysis of transportation issues in Delhi and its relationship with land use patterns, and socio-economic issues concerning science and technology.**

**Institute of Democracy and Sustainability, Delhi: Rajendra Ravi, Director. Working on non-motorised transportation, reclamation of space, and street vendor issues.**

**St. Stephens Hospital, Delhi: Mathew Varghese. Head Department of Orthopaedics. Involved in trauma care, particularly in constructive surgery for complex trauma of the musculo-skeletal system; road accident injury control and injury epidemiology research and pre-hospital care.**

**Vision**

The shared vision of researchers at TRIPP is to produce knowledge that addresses the unique issues of less motorised countries and to set up a system of research which responds dynamically to include a heterogeneous set of practitioners collaborating on problems defined here in localised contexts but integrating international concerns in an internally consistent format. The effort is to experiment with new forms of knowledge generation where there is continuous negotiation between disciplines on the one hand and between scientists and society on the other.

**Partners**

- Institute of Democracy and Sustainability, Delhi: Rajendra Ravi, Director. Working on non-motorised transportation, reclamation of space, and street vendor issues.
- St. Stephens Hospital, Delhi: Mathew Varghese. Head Department of Orthopaedics. Involved in trauma care, particularly in constructive surgery for complex trauma of the musculo-skeletal system; road accident injury control and injury epidemiology research and pre-hospital care.

**Research students**

- Ph.D. - In Progress
  - Atif Mohd. Yunus Hingora – Highway design and traffic safety
  - Anurag Soni – Study of the effect of thigh and leg muscle activation on the response of human knee to impact loading
  - B. Kandhikyan – Constitutive models of soft tissue for human body-vehicle impact analysis
  - Dhaval Jani – Tool for positioning human body FE model
  - Hemant N. Wartakar – In-vivo measurement of constitutive properties
  - Himani Jain – Non-motorized traffic (bicycle): demand estimation and integral planning
  - Mukul Advani – Urban bus route optimization
  - O.P. Agarwal – Institutional and regulatory structure for providing urban public transport
  - Prashant Vidyadhur Bholase – To study the suitability of airbags for motorcyclists
  - P. Praveen Kumar – Dynamic studies on shell materials and ventilation in motorcycle helmets
  - P.S. Kharola – Urban Transport

- S.S.L.N. Sarma – Impact of land use on public transport

Ph.D. - Completed

- Adarsh Kumar – Effect of whole body vibrations on tractor drivers: an ergonomic and medical investigation
- Akshya Sen – Optimal pricing of urban transport - A case of Delhi
- Anjali Anand – Transportation projects and their effects on the poor: integrating a social impact assessment methodology
- B.K. Dural – Methodologies for rural road planning evaluation of selection criteria and investment decisions
- Tushar Rajaram Gawade – Stability and crashworthiness of three wheeled vehicles

**Collaboration**

Sabbatical: Faculty members from other institutions provided with free accommodation on campus and stipend. Processing time – 6 months.

Research students: Can register as casual students, or collaborate in mutual projects of interest. Processing time – 3 months.

Short term visits: Faculty members and students on short term visits can be provided local hospitality when working on joint projects. Processing time – 3 months.

- Prof. R.K. Mishra: Collaboration with the Department of Biomedical Engineering, Indian Institute of Technology Delhi, on the study of the effect of thigh and leg muscle activation on the response of human knee to impact loading.
- Dr. B. Kandhikyan: Collaboration with the Department of Biomedical Engineering, Indian Institute of Technology Delhi, on the study of the effect of thigh and leg muscle activation on the response of human knee to impact loading.
- Dr. O.P. Agarwal: Collaboration with the Department of Biomedical Engineering, Indian Institute of Technology Delhi, on the study of the effect of thigh and leg muscle activation on the response of human knee to impact loading.
- Dr. S.S.L.N. Sarma: Collaboration with the Department of Biomedical Engineering, Indian Institute of Technology Delhi, on the study of the effect of thigh and leg muscle activation on the response of human knee to impact loading.