

## DR. ANUPRIYA

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### EDUCATION

#### **PhD in Civil Engineering, Specialisation: Transport Science**

*Imperial College London, London, United Kingdom*

**Awarded in Jun 2021**

Mar 2017 – Mar 2021

- Developed a strong understanding of the economics and engineering concepts underlying urban travel
- Gained highly relevant analytical skills in advanced statistical modelling with big data

**Thesis Title:** *Understanding the costs of urban transportation using causal inference methods*

**Supervisor:** *Professor Daniel Graham*; **Collaborator:** *Hong Kong Mass Transit Railway (MTR)*

- Significantly improved the understanding of the determinants of the operational costs of metro systems
- Reconciled engineering and economics evidence on the nature and form of congestion in road networks
- Engineered a novel data-driven approach to make peak-hour metro operations resilient to recurrent congestion
- Delivered new key performance indicators using big data to guide global best practices in metro operations

#### **M.Sc. in Transport and Sustainable Development**

**Distinction, 83%, Rank: 1/70**

*Imperial College London, London, United Kingdom*

Oct 2015 – Sep 2016

- Gained theoretical knowledge and quantitative skills in transport engineering, economics and modelling
- Developed skills in sustainability assessment of real-world civil engineering projects

**Thesis Title:** *Causal analysis of the impact of Early Bird Discount in Hong-Kong using smartcard data*

- Produced novel causal estimates of trip rescheduling elasticities of Hong Kong MTR commuters by studying the impact of a differential pricing policy intervention

#### **B.Tech. in Civil Engineering**

**Distinction, GPA: 9.62/10, Rank: 1/120**

*Indian Institute of Technology (IIT), Roorkee, India*

Jul 2010 – May 2014

- Final year project: Designed a compact, cost and energy efficient sewerage treatment plant along with an intensive storm-water drainage network for the IIT Roorkee campus; project selected for the Jed-I challenge amongst the top 22 innovative undergraduate projects in India

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### EMPLOYMENT

#### **RESEARCH AND INDUSTRY EXPERIENCE**

##### **Turing Postdoctoral Research Fellow, Imperial College London**

Aug 2021 – *ongoing*

Funded by the *Alan Turing Institute* under the *Grand Challenge III: Data-centric engineering*

- Monitoring transport networks to understand the impact of rare and high consequence events like COVID
- Developing models to big data to improve operations, planning and design of transport systems
- Developing causal inference methods to identify determinants for intervention and forecast impacts

##### **Consultant, Imperial College London**

Mar 2021 – May 2021

- Developed a [report](#) with the Centre for Cities to investigate the impact of hybrid working on cities and inform pathways for businesses and governments to alleviate its unintended socio-economic impacts

##### **Management Trainee, Coal India Limited, India**

Aug 2014 – Sep 2015

- Engineered cost-efficient designs for roads, foundations and fire-safety walls in mines
- Consolidated and coordinated the survey data processing for construction of 35000 toilets in rural schools under the ‘Swaccha Bharat Abhiyan’; received special recognition from the Government of India

##### **Visiting Researcher, Mitacs Globalink Program, Canada**

May 2013 – Jul 2013

- Improved the earthquake resistance of buildings using a novel composite alloy for reinforcement

#### **LEADERSHIP AND MANAGEMENT EXPERIENCE**

**Co-supervisor and Teaching Associate, Imperial College London** Mar 2017 – ongoing

- Co-supervising multiple PhD, masters and undergraduate research projects in transportation
- Planning and delivering tutorials in Quantitative Methods, R programming and Microeconomics to provide students with a rigorous understanding of the key concepts underpinning analysis of transport systems

**President, Indian National Student Association - Imperial Chapter** Oct 2017 – Mar 2021

- Headed the formation of this new society with the Imperial College Union to nurture Indian students at Imperial as future leaders and ambassadors for India; organised seminars and panel discussions with eminent speakers to brainstorm pathways for sustainable development in India

**Member, National Social Service, India** Jul 2012 – Jun 2020

- Successfully organised a [fundraiser](#) to provide vital relief packages to daily wage-earning families during the COVID-19 lockdown in India; raised £21000 which helped more than 1200 families
- As Secretary of NSS IIT Roorkee, operated awareness drives on healthcare, education and gender inequality in rural areas of Roorkee; initiated the provision of small-scale jobs in the IIT Roorkee campus for rural women

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## **SCHOLARSHIPS AND AWARDS**

- **Transport Strategy Centre Scholarship** for a fully funded PhD course (2017)
- **Commonwealth Scholarship** for pursuing a fully funded M.Sc. course (2015)
- **Mitacs Globalink Fellowship** for a summer research internship in Canada (2013)
- **Queen's Patron Fund Award** for promoting friendship in the Commonwealth (2017)
- **Maurice Hanson Prize** for the best performance in the M.Sc. Transport course (2017)
- **Institute Silver Medal** and multiple awards for the best performance in B.Tech. Civil (2014)

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## **ADDITIONAL SKILLS**

- **Data Science and Machine Learning:** R, Python, Stata; **Interactive Mapping and Analysis:** ArcGIS
- **Languages:** English, Hindi (Full Proficiency), Sanskrit, Spanish (Limited Working Proficiency)
- **Extra curriculars:** Fine arts (Eight-year diploma with distinction from Rabindra Bharti University, India)

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## **PUBLICATIONS**

- Anupriya, P Bansal, and DJ Graham, [Modelling the Propagation of Infectious Disease via Transportation Networks in Nature Scientific Reports](#)
- Anupriya, DJ Graham, JM Carbo, RJ Anderson, and P Bansal, [Understanding the costs of urban rail transport operations in Transportation Research Part B: Methodological](#)
- Anupriya, DJ Graham, P Bansal, D Hörcher, and RJ Anderson, [Optimal congestion control strategies for near-capacity urban metros in Physica A: Statistical Mechanics and its Applications](#)
- Anupriya, P Bansal, and DJ Graham, [Congestion in Cities: Can Road Capacity Expansions Provide a Solution? in Transportation Research Part A: Policy and Practice](#)
- Anupriya, DJ Graham, D Hörcher, RJ Anderson, and P Bansal, [Quantifying the ex-post causal impact of differential pricing on commuter trip scheduling in Hong Kong in Transportation Research Part A: Policy and Practice](#)
- JM Carbo, DJ Graham, Anupriya, D Casas, and PC Melo, [Evaluating the causal economic impacts of transport investments: evidence from the Madrid–Barcelona high-speed rail corridor in Journal of Applied Statistics](#)
- Anupriya, P Bansal, and DJ Graham, [Analytical Representations of the Fundamental Diagram of Traffic Flow for Highways: A Review of Theory and Empirics in Transport Reviews \(under revision\)](#)
- Anupriya, DJ Graham, and P Bansal, Testing for non-linearity of agglomeration effects in *Review of Economics and Statistics* (under review)
- K Chen, DJ Graham, Anupriya, P Bansal, RJ Anderson, and N Findlay, [Understanding the Capacity of Airport Runway Systems in Transportation Research Part C: Emerging Technologies \(under review\)](#)

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**References to be provided on request**