

Over Commuting: An evil that eats away slowly: A Mathematical Modelling

Debajyoti Sengupta

Professor, Electronics and Communication Engineering, Institute of Engineering and Management,
Kolkata, India

Abstract:

Long commuting times are often associated with adverse effects on employees /students' health and productivity. Long-distance travel involving extended durations, multiple transfers, and repetitive routes can be physically and mentally exhausting. Repeating the same demanding travel pattern day after day often adds to fatigue and reduces overall wellbeing, both professional and social. Although the challenges associated with excessive commuting are widely acknowledged, a rigorous quantitative analysis is essential to move beyond qualitative discussions. Like we have GDP giving a snapshot of the overall economic strength of a nation, it is always better to speak in terms of numbers in order to express the harshness the employees or students face as they daily commute. Thus, a mathematical modelling to gauge the harshness people face as they daily commute is a scientific need. In this paper we tried to build a mathematical model and thereby created a new metric called "Transport Harshness Factor" (THF) taking into consideration the *gender, age, marital status, time duration of travel, total travel distance, money spent, number of hops and mode of transport (fixed or varying)* to systematically analyze and provide an objective assessment of employees' or students' positions with respect to the ease and efficiency of commuting between their place of work or study and their residence so that effective corrective measures can be taken by the management to ensure mutual growth and benefit and high productivity.

Keywords:

Commute, mathematical modelling, Transport Harshness Factor (THF), well-being.