

Effect of Transit-Oriented Development on Air Quality in Neighborhoods of Delhi

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Abstract : This study aims to find if the Transit-oriented planning and development approach benefit the quality of air in neighborhoods of New Delhi. Two methodologies, namely the land use regression analysis and the Transit-oriented development index analysis, are being used to explore this relationship. Land Use Regression Analysis makes use of urban form characteristics as obtained for 33 neighborhoods in Delhi. These comprise road lengths, land use areas, population and household densities, number of amenities and distance between amenities. Regressions are run to establish the relationship between urban form variables and air quality parameters (dependent variables). For the Transit-oriented development index analysis, the Transit-oriented Development index is developed as a composite index comprising 29 urban form indicators. This index is developed by assigning weights to each of the 29 urban form data points. Regressions are run to establish the relationship between the Transit-oriented development index and air quality parameters. The thesis finds that elements of Transit-oriented development if incorporated in planning approach, have a positive effect on air quality. Roads suited for non-motorized transport, well connected civic amenities in neighbourhoods, for instance, have a directly proportional relationship with air quality. Transit-oriented development index, however, is not found to have a consistent relationship with air quality parameters. The reason could this, however, be in the way that the index has been constructed.

Keywords : air quality, land use regression, mixed-use planning, transit-oriented development index, New Delhi

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