

**ASSESSING THE ROLE OF ACCESSIBILITY, LAND USE
CHARACTERISTICS AND SPATIAL EFFECTS ON FREIGHT
TRIP ATTRACTION**

by
Iván Darío Sánchez-Díaz

A Thesis Submitted to the Graduate
Faculty of Rensselaer Polytechnic Institute
in Partial Fulfillment of the
Requirements for the degree of
MASTER OF SCIENCE
Major Subject: Civil Engineering

Approved by the
Thesis Adviser:

José Holguín-Veras, Ph. D., P.E.

Rensselaer Polytechnic Institute
Troy, New York

April 2012
(For Graduation May 2012)

ABSTRACT

This study analyzes the relationship between land use, accessibility and freight trip attraction (FTA) using spatial econometric techniques. The author proposes an innovative set of variables to study the influence of accessibility and land use on deliveries attracted while considering other economic characteristics such as, employment, type of commodity, and sales. The data studied represent more than 300 establishments from five different industry sectors located in New York City. The case studies are defined using industry sectors as categorical factors. Each establishment is geo-located to study the spatial distribution of the sample; and for each case of study, spatial association indicators are analyzed to assess the presence of spatial effects. Furthermore, spatial econometric techniques are implemented to account for spatial interaction between establishments. The two types of model implemented to test the statistical significance of spatial autocorrelation are the Spatial Lag Model, and the Spatial Error Model.