# AN ASSESSMENT OF EMPTY BACKHAULS AND THEIR IMPACT ON PERISHABLE PRODUCE TRUCK SHIPMENTS: FLORIDA FRESH FRUITS AND VEGETABLES

by

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## Problem

Transportation costs are relatively high for fresh fruits and vegetables (FF&V), accounting for 15 percent of the retail price of FF&V versus a five percent average for the entire food industry. Concerns about fuel and energy conservation, petroleum fuel deregulation, and reregulation of the trucking industry are placing new emphasis on the problem of empty backhauls and their impact on the operating efficiency of the motor carrier transport industry with respect to fuel consumption. Fuel accounts for approximately 53 percent of the total direct variable costs of operating a refrigerated truck (reefer). Total direct variable costs per unit of FF&V transported increases as the amount of empty backhauls increases. Although no exact figures exist, it is estimated that 30-50 percent of those truck hauling Florida FF&V experience empty backhauls. Empty backhauling creates resource use inefficiencies which result in higher costs to shippers and receivers and higher prices to consumers.

## Methodology

The objective of this study is to determine the utilization of capacity in backhaul operations by individual truckers within the FF&V sector transporting Florida FF&V as a fronthaul. A backhaul survey of truckers hauling Florida FF&V was taken in an attempt to ascertain the characteristics or factors affecting the percentage of empty backhaul mileage (utilization) in the Florida FF&V transportation. The logistic function and the "tobit" methodology for limited dependent variables are used to determine the empty backhaul mileage anticipated in shipping Florida FF&V as a result of the post-survey testing (the "tobit" methodology).

## Findings and Their Significance

A trucker's utilization of capacity in backhaul operations may be affected by the length of fronthaul, commodities which may be hauled, intermediate sites which may be served, product availability and direction of movement into and out of regions of carrier domicile, owner-operator versus fleet and/or leasing, and time or experience in business. The only variable obtained from the survey data that was found to significantly effect the percentage of empty backhaul mileage was one-way fronthaul mileage.

Constraining the logistic function between complete (100 percent) and zero backhaul mileage utilization, and incorporating the variables mentioned, the empty backhaul mileage each trucker or shipper/receiver can anticipate is obtained and can graphically be portrayed for a visual assessment of backhaul mileage utilization.

Empty backhaul miles per trip represent 35 percent of the average fronthaul mileage of Florida FF&V truckers. There appears to be adequate exempt and nonexempt commodities coming into Florida to reduce this percentage; however, government regulation, lack of information concerning the locations of backhauls, the cost of finding a backhaul, and the opportunity cost of using specialized equipment to haul general freight have kept this from happening.

The cost of an empty backhaul mile represents 3.7 percent of the total roundtrip FF&V transportation bill and .65 percent of the retail value of an average truckload of Florida FF&V. Thus, if deregulation and better communications on the locations of backhauls does decrease empty backhaul mileage, the implication is that the consumer will not experience a large decrease in the retail price of Florida fresh fruits and vegetables.

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# THE DEVELOPMENT OF AN AGRIBUSINESS MANAGEMENT SIMULATION FOR CLASSROOM AND STORE MANAGEMENT TRAINING

by

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## Introduction

The University of Delaware has given financial support for this research project entitled, "SIMAG," designed to improve classroom instruction of Agribusiness courses and Agribusiness training programs. Simulations are an instructional technique in which decisions are made at various stages. The game model interacts between the simulated environment and decisions of participants. Results are fed back to the students after which they may make another set of decisions and the cycle is repeated.

Games developed for management simulation make a valuable contribution to the development of decision-making skills which are not dependent upon practice in a realistic environment. A game designed for practice of these skills as applied to the agribusiness industry compliments students' learning.

## Objectives

1. To provide an application of classroom knowledge in managing a full-line agribusiness firm:

   A. Making store policy and operation decisions

   B. Analyzing and solving managerial problems in a real world simulation.

2. To increase student comprehension of managerial techniques through application and practice via the use of PLATO.