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CARBONATED SOFT DRINK DEMAND: ARE NEW PRODUCT INTRODUCTION STRATEGIES A VIABLE APPROACH TO INDUSTRY LONGEVITY

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CARBONATED SOFT DRINK DEMAND: ARE NEW PRODUCT INTRODUCTION STRATEGIES A VIABLE APPROACH TO INDUSTRY LONGEVITY

By

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ABSTRACT

CARBONATED SOFT DRINK DEMAND: ARE NEW PRODUCT INTRODUCTION STRATEGIES A VIABLE APPROACH TO INDUSTRY LONGEVITY

By:

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In an industry dominated by multiple product introductions differentiated at the attribute level, carbonated soft drinks (CSDs) experience demand pressure from all aspects of the beverage industry that go beyond CSDs. The main objective of this paper is to analyze demand for new and sector leading CSDs, which are characterized by multiple product consumer purchasing behavior, firm promotional activity and differentiation at the attribute level. Given the many unique strategies for innovation in CSD new product introductions (NPIs), it is imperative to find out just how effective firm innovation strategies are in using NPIs to stimulate and revitalize demand for CSDs. Using the linear approximate version of the almost ideal demand system that incorporates product attributes through distance metrics, the results of this study show how consumers react to price increases in both NPIs and sector leading CSDs. The combination of the information gained from both the own-price and cross-price elasticity results as well as the attribute results indicate the relative instability in demand found across the CSD industry, particularly for NPIs. Despite the instability, the results also provide information for product attribute categories where strategies can be formulated to aide in improving the longevity of the CSD industry.

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CHAPTER 1: INTRODUCTION

1.1 Overview

The growth of the carbonated soft drink (CSD) industry from 1960 to 1990 was remarkable and greatly outpaced the increase in population growth during the 30 year period. Per capita consumption of soft drinks increased 2.5 times over the 30 year period (Muris et al., 1993). Even though the industry saw undaunted growth for nearly 30 years, its recent decline has concerned industry analysts. Dube (2005) reported that in 1998 CSDs accounted for 49 percent of total U.S. beverage gallons consumed per capita, per year. Recently, per capita consumption of CSDs has decreased while that of bottled water and other beverages, such as functional beverages, have steadily increased.[1]

Sustainability of demand is at the forefront of the discussion of industry longevity for CSDs. Without constant innovation, there would presumably be less consumer incentive to make new purchases of CSDs, especially with the increasing number of healthier substitutes. With competitive pressures from all aspects of the beverage industry, CSDs now battle competitors in which industry analysts would have never imagined 50 years ago.[2] This competition brings to question the point of whether the focus on new product introductions (NPIs) in the CSD industry will foster industry longevity.

With new product failure and discontinuation rates of nearly 80 percent across the food and beverage industry, studying demand for new CSDs is an imperative process in formulating innovation strategies to foster future industry success. *Beverage World*

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[1] Functional beverages are those beverages that offer consumers additional benefits from their attributes, i.e. mineral enhancement.

[2] The beverage industry includes all drink products, including CSDs.

(November 15, 2003) reported approximately 1,235 total new beverage introductions in 2002, where approximately 250 survived by late 2003, which is consistent with a food and beverage industry failure rate of approximately 80 percent. The CSD industry has seen its fair share of product failures and discontinuations throughout the years. A significant failure occurred in 1985 when the introduction of New Coke (the reformulation of Coca-Cola's flagship product) was deemed one of the riskiest product introductions in CSD history (Greising, 1998). New Coke turned out to be a huge product failure and the original formula was immediate redistributed. The introduction of New Coke proved that without consumer acceptance, new products are doomed from their inception and may be detrimental to a firm's ability to effectively market to its consumer base.

With the product failure rate in the grocery business being close to 88 percent (Remilia, 2000), innovation strategists, marketers and retailers must play equal roles in ensuring effective strategy formulation. With high failure rates, NPIs can have highly negative effects on CSD firms' ability to appeal to consumers. Conner (1980) offered several ways in which product proliferation can be detrimental. These included: (1) deception from imitation or variants being marketed by all firms, (2) wasteful advertising, and (3) overwhelming consumers with a large number of introductions. Probably the most harmful of these three is flooding the market with a large number of new products. With the large number of CSDs, along with other beverages, being introduced annually, consumer decision making becomes a more strenuous process. Retailers play an important role in heavily influencing the success of NPIs. Luo et al. (2007) explained that in channel structures characterized by powerful retailers, the dominant retailers'

acceptance of a manufacturer's new product often determines the success of the new offering. For CSDs, it may be more of a fight for shelf space between branded products and private labels. Limited shelf space in most supermarkets and mass merchandisers makes marketing new CSDs a difficult task. The overall role of CSD NPIs is to stimulate demand in the beverage industry, which is characterized by consumers that are beginning to seek more in their beverage acquisitions than just thirst quenching prowess.

Buzzell and Nourse (1967) classified NPIs according to their degree of novelty: (1) distinctly new products, (2) brand proliferation/line extensions, or (3) item proliferation, repositioning, or reformulation. For CSDs, introductions stem from the addition or subtraction of attributes to an existing formulation. Chaney et al. (1991) believed that innovative behavior is the engine of economic growth and development. Given this school of thought, innovation is a necessary component to keep CSDs active in the product life cycle.[3]

The CSD industry's success for over 100 years can partly be attributed to innovation in flavoring, extravagant marketing campaigns and constant adherence to consumer fads.[4] The Encyclopedia of Global Industries (EGI) (2007) stated that the global soft drink industry is almost exclusively a marketing phenomenon.[5] Given that the actual product is a simple blend of water, sweeteners, flavors and other additives, the EGI (2007) stated that the industry's genius lies in convincing billions of consumers to drink soft drinks instead of plain water or other beverages.

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[3] The product life cycle is defined as the stages that an individual product goes through that eventually lead to elimination from the market (product death). The stages include introduction, growth, maturity and decline.

[4] Consumer fads can be defined as health trends or society's acceptance of a particular type of beverage.

[5] The term "soft drinks" represents both carbonated and non-carbonated soft drinks.

Understanding the impact that NPIs have on the CSD industry at the attribute level will aid in the study of the demand relationships between industry leading CSDs, new products and the constant pressures from the multiple substitutes that are available throughout the beverage industry. Demand relationships among CSD products must be considered to determine if NPIs provide a viable outlet to stimulate demand, both in the short-run and long-run and to determine if they provide a viable strategy for industry longevity.

Given the many unique innovation strategies for NPIs exhibited by CSD firms, it is important to find out just how effective these products are in both stimulating and revitalizing demand for CSDs. Innovations are the basis for the future of the CSD industry. With copious CSD introductions annually, well-defined innovation strategies are imperative in marketing a large number of differentiated products to a very diverse group of consumers.

1.2 Objectives

The objective of this paper is to analyze consumer demand using a linear demand system which incorporates product attributes into the estimation of the system for new CSDs and sector leading CSDs (which are characterized by multiple product consumer purchasing behavior, firm promotional activity and differentiation at the attribute level). The specific objective of this paper is to examine the substitution effects between NPIs and CSD sector leaders, which possess similar attributes, on a national basis, making full use of the attributes that each product possesses to determine if innovation strategies among CSD firms are a viable approach to industry longevity.

1.3 Organization of Research

Chapter I presented the introduction, justification, problem, and the objectives. Chapter II examines relevant literature and gives background information on the study. Chapter III presents the models and data used in the study. The study's results are presented in Chapter IV. Finally, Chapter V summarizes the results and advances the study's conclusions.

CHAPTER 2: REVIEW OF LITERATURE

2.1 Overview

The EGI (2007) stated that the term soft drink was coined to distinguish flavored drinks from hard liquor and were originally designed as a substitute for liquor in an effort to reduce alcohol consumption.[6] For a historical perspective of flavor innovations in CSDs, see Appendix 1. Today, the CSD industry is distinguished by differentiation at the attribute level. Caves (1992) defined product differentiation as distinguishing the differences of a product that set it apart from its main competitors and makes it more attractive to target consumers. Anderson (2008) noted that the key for all of the beverage companies is differentiation. Whatever the strategy, be it a new color, flavor, or formula, CSD firms will strive to create the greatest brand and product awareness with hopes of crowding out their competitors. Lancaster (1990) stated that the degree of product variety increases with the competitiveness of the market. Flavor enhancements, adjustments in calorie content and additions in functional features now lead CSD innovations.[7]

The U.S. CSD industry is highly concentrated and characterized by healthy competition. Mintel's May 2008 Carbonated Drinks Report showed that three companies dominate the CSD market.[8] For food stores, drug stores and mass merchandisers (including Wal-Mart) [FDMw], Coca-Cola is the market leader with over 38 percent

[6] Soft drinks are non-alcoholic beverages, both carbonated and non-carbonated, containing natural or artificial sweetening agents, natural or artificial flavors, and other ingredients.

[7] The addition of functional features to CSDs includes product enhancements such as adding minerals and other healthy alternatives.

[8] Mintel provides food and drink research across the world. Mintel GNPD monitors product innovation and retail success in the consumer packaged goods market worldwide.

market share followed by PepsiCo with approximately 32 percent share of the market. Cadbury Schweppes is the third major player in the CSD market and holds 20 percent share of the FDMw market. These three firms dominate the CSD industry in brand recognition and innovative clout. Some of the key historical success factors for the longevity of the CSD industry include: constant product innovation, organizational size and established brand loyalty. The EGI (2007) reported that in the early 2000s, the global soft drink industry was dominated by Coca-Cola and PepsiCo at an unprecedented level never seen in international business. Table 1 (Appendix 2) gives recent brand share information for CSDs. The table is broken down by brand and individual products for the top three CSD firms. According to Table 1, in 2007 Coca-Cola held 34 percent, Pepsi 32.1 percent and Cadbury Schweppes 21 percent of the food stores, drug stores and mass merchandiser (FDM) market for regular CSDs. Also according to Table 1, Coca-Cola held 45.7 percent, Pepsi 32.8 percent and Cadbury Schweppes 17.4 percent of the FDM market for diet CSDs. Table 2 (Appendix 2) gives current and forecasted CSD sales. According to Table 2, FDMw sales of CSDs are expected to decrease by $867 million from 2002 to 2012.

Anderson (2008) stated that as the industry-wide soft drink fight has reached its maturity point, the industry's giants have begun to rely on new products and non-carbonated beverages for sales growth. This trend has been observed over the past 20 years. Increased awareness and concern about health and dieting, changing consumer tastes and demographics, and increased competition from other beverage products are some of the main drivers causing stagnation in the CSD market. Other changes include: globalization, changing societal concerns, attitudes, lifestyles, and evolving buyer

preferences. With new technologies virtually making the world smaller, CSD firms are now creating flavors with a vibrant flare to meet the changing and sophisticated demands of consumers worldwide.

CSD firms are innovating to quench consumers' never-ending thirst for new and innovative products. CSD firms are now adding exuberant flavors to meet the sophisticated demands of consumers. Worldwide there are a few key social changes that are driving demand for specialty foods and beverages. These changes include: a growing consumer interest in world flavors and cuisines; consumers with an increasing drive for indulgence; consumers with more sophisticated palates; consumers with the ability to afford premium products; and consumers' desire to enjoy premium products on a regular basis (Packaged Facts, 2005). Purcell (2006) reported that today's consumers between the ages of 25-54 now possess a more sophisticated and adventurous taste for foods and beverages which draws them to some specialty food items.[9]

With key changes in consumers' beverage demand, there are many indicators of consumers' desire for more bold and stimulating flavors. Table 3 (Appendix 2) reveals that cherry, lemon and orange were the most frequent flavor introductions between 2001 and 2006. Mintel's May 2008 market report on carbonated drinks claimed that cherry was the top new flavor in CSDs in 2006. They reported that Coca-Cola's Black Cherry Vanilla Coke, including its diet version, attracted FDM sales of $81 million its inaugural year of 2006. They also reported that the appeal of lemon and lime soda declined among consumers as Coke with Lime, along with its diet counterpart, and Pepsi with Lime, along with its diet counterpart, saw declining sales. During the years 2005 and 2006,

[9] The term specialty food item encompasses new and innovative CSDs.

sales of Diet Coke with Lime declined 32 percent, to $77 million, while Diet Pepsi with Lime sales declined nearly 11 percent, to $30 million in the same period (Mintel Group, Carbonated Drinks – U.S. May 2008). This shows that the combination of multiple flavors, i.e. cherry and vanilla, is becoming more appealing to consumers. As shown in Table 4 (Appendix 2), low sugar, low calorie and natural introductions lead innovative product introductions other than flavor enhancements.[10]

Table 5 (Appendix 2) gives new CSD introductions by company. According to Table 5, Coca-Cola and Pepsi lead the industry in innovations. Dr. Pepper (a Cadbury Schweppes brand) also had 36 new introductions between 2002 and 2005, which is when the company started its innovative flavor introductions, such as Berries and Cream. *Beverage World* (November 15, 2003) reported approximately 1,235 total new beverage introductions in 2002, where approximately 250 survived by late 2003. This report is consistent with an industry failure rate of approximately 80 percent. *Consumer Reports* (December 1, 2005) counted 28 different kinds of Coke and Pepsi on the market, with approximately half being diet. With multiple branded products and NPIs simultaneously entering the CSD market, not only are these introductions creating competition in the beverage industry as a whole, but also are causing cannibalization within CSD brands. This type of competition is seen in Pepsi with products such as Pepsi Cola, Pepsi Vanilla, Pepsi with Lime and Pepsi Summer Mix simultaneously being offered.

With high numbers of yearly CSD introductions, it is difficult to determine which products will survive. In Mintel's examination period (2001-06) for their April 2007 report on carbonated drinks, they found that FDM sales of Diet Coke with Lime, Diet

[10] Natural CSDs are those that are free from artificial ingredients such as flavors, sweeteners and colors.

Pepsi with Lime, and Mountain Dew Live Wire all peaked in the first year and saw sales decline thereafter. Additionally, they reported that Diet Cherry Vanilla Dr. Pepper, Cherry Vanilla Dr. Pepper and Coke with Lime all peaked the second year after their introduction and then saw constant declines. They also indicated that relatively mature brand extensions, such as Mountain Dew Code Red and Diet Pepsi Twist, saw constant declines from 2001 to 2006, which consequently is after their initial introduction. These trends show that new products generally see their highest sales directly after introduction and constant declines thereafter. The sales increases show consumer willingness to try new products but the decline shows the products' lack of sustainability in consumer tastes and preferences. These sales trends may be an indication that the acquisition of these new or repositioned CSDs was merely trail in nature. This behavior may be an indication of the future success, or lack of success, these innovation strategies may potentially yield.

Reduced calorie CSDs have also seen a rise in popularity with increasing trends for healthier beverage and food products found across the U.S. Mintel's 2008 report on carbonated drinks reported that regular carbonated beverage sales declined more in FDMw's than reduced calorie sodas. They stated that sales dropped by more than 15 percent from 2002 to the time of the report and expected declining sales of approximately 2 percent per year for the next five years following the report. These trends are reinforced in Figure 1 (Appendix 3). Part of the increasing trend for reduced calorie CSDs may also be explained by the number of teens now preferring reduced calorie products. Table 6 (Appendix 2) shows teen preference for a number of reduced calorie CSDs that were introduced between 2001 and 2007. Traditional reduced calorie CSDs (i.e. Diet Coke and Diet Pepsi) were the most preferred among teens but the increasing

presence of flavor enhanced reduced calorie CSDs, i.e. Diet Coke with Lime, is getting noticeable attention from this same demographic. Another factor in increasing demand for reduced calorie CSDs could be the narrowing distinction between the taste of regular and reduced calorie CSDs.

2.2 Competition and Strategy

The EGI (2007) stated that while branded products are at the heart of the soft drink industry, private label soft drinks garner a significant share of many of the world's markets. The Cott Corporation and its private labels present themselves as strong competitors for the top CSD firms. Private label products typically compete on price and use imitation as a competitive strategy. In 2000, private labels captured nearly 14 percent of CSD volume in the U.S. and approximately 7 percent of sales (EGI, 2007). According to *Business Week* (March 21, 2005), the U.S. market for private label goods stabilized at about 16 percent. Private label manufacturers being able to control 10 to 20 percent of the market presents a significant concern to the top CSD firms. Private label manufacturers typically enjoy free rider effects from industry leaders.[11] Imitation is often one of the largest drivers of competition for CSDs. D'Aveni (1994) gave the notion that by imitating an innovators' action, a firm's rivals can enjoy the free-rider effects by sharing in the profits, or reduce the competitive advantage granted to the innovator or both. Imitation is one of the most noticeable competitive strategies for CSD firms. It is up to sector leaders to constantly innovate to sustain their competitive edge, but is this innovation a worthwhile strategy? It is the purpose of this study to provide results that will shed light on this issue.

[11] Free rider effects come in the context of private label firms enjoying the innovative technologies that larger firms finance, hence mimicking their product introductions.

Table 7 (Appendix 2) gives an indication of the constant pressures CSDs face in NPIs from other beverage industries. Table 7 shows that the ready-to-drink (RTD) juice and bottled water industries lead the competitive charge against CSDs, having approximately 1,947 and 524 NPIs, respectively, between 2002 and 2008. Mintel's May 2008 market report on carbonated drinks speculated that demand for all CSDs will continue to fall as Americans pursue healthier products. They reported that regular CSD consumption dropped notably between 2003 and 2007, with approximately 5.5 million consumers halting consumption. With this trend in CSDs, they also reported that bottled water gained 19 million consumers between 2003 and 2007, indicating the product's increasing presence in the market and consumers' ultimate acceptance of a product even though it is readily available to them, un-bottled, in their households. Recent trends in per capita consumption of beverages are shown in Figure 2 (Appendix 3). Figure 2 indicates that per capita consumption of CSDs decreased by 4.1 gallons while that of bottled water increased by 9.8 gallons between 2000 and 2006.

With the growing demand for healthier, functional beverages, CSD firms are now relying on beverages such as juices and flavored waters to diversify their product portfolios. The Encyclopedia of Emerging Industries (EEI) (2007) reported that the top three beverage industries are soft drinks, bottled water and fruit juices/drinks, respectively. Dubbed the "new aged" drinks, premium bottled beverages have met the new millennium as a product with immense potential, drawing consumers' taste buds away from soft drinks and alcoholic beverages (EEI, 2007).[12] According to the Beverage Marketing Corporation (2002), U.S. per capita consumption of "new age" beverages

[12] New aged beverages are classified as such because they offer more benefits to meet the ever changing demands of consumers than beverages of the past.

increased 134 percent from 1994 to 2002, reaching approximately 16.9 gallons per year. In wholesale dollars, total revenues for new aged beverages reached $11.6 billion in 2002. The Beverage Marketing Corporation (February 10, 2005) stated that flavored waters' share of sales could bring in over $800 million by 2009 on the high-end forecast, or nearly $600 million in the medium-growth forecast. Functional beverages in the U.S. have evolved beyond the niche category of health and wellness drinks. Beverages such as sports drinks, RTD tea and bottled waters have added a new dimension to this market with an increased emphasis on convenience, novelty, fun and image. There has also been an increasing trend towards juices and juice drinks enriched with herbs, botanicals and nutraceuticals (Sorenson & Bogue (2006), Weisberg (2001)). Hasler (2000) noted that key factors driving the interest in functional food include the growing self-care movement, changes in food regulations and overwhelming scientific evidence highlighting the critical link between diet and health.

Even though functional beverages have entered the market in a very impactful way, one key feature that has seemingly been neglected in some products is taste and flavoring. In some cases this has deterred consumer acceptance of some functional drinks, which may be a positive demand booster for CSDs (Sorenson & Bogue (2006), Cavallo (2000), Cosgrove (2004), Foote (2002)). Just as flavoring is important for CSDs, the EEI (2007) stated that formulation and flavoring are ongoing preoccupations of premium beverage companies. With growing demand for vitamins, minerals, and other health-related products, the challenge for flavoring companies trying to follow this trend is to provide beverage companies with nutritionally sound, yet tasty products. New functional beverage introductions have steadily increased since 2000. Table 8 (Appendix

2) shows the recent new functional beverage introductions. Table 8 indicates that weight control and vitamin enhanced introductions lead the innovative charge against CSDs for functional beverages. This category is evidence of the health trends in beverage consumption in the U.S.

With more healthier, nutritional substitutes available, CSD innovation strategies are even more imperative to make industry longevity possible. Figure 3 (Appendix 3) shows actual and predicted functional beverage sales as forecasted by Mintel's August 2007 market report on functional beverages. The same report predicted FDM sales of functional beverages to double between 2002 and 2012 (as shown in Figure 3). Mintel's forecasted sales of carbonated beverages and other non-alcoholic beverages are shown in Table 9 (Appendix 2). Table 9 shows that bottled water, sports and energy drinks, coffee/RTD coffee and tea/RTD tea are all expected to increase in sales up to 2012 whereas CSDs and juice/juice drinks are expected to experience sales declines.

The EGI (2007) stated that some industry analysts believe that the traditional concept of equating soft drinks primarily with carbonated beverages, particularly colas, must be revised to reflect the growing popularity of other RTD beverages, such as teas, coffees, herbal beverages, juices, and sports and energy drinks. Table 10 (Appendix 2) exhibits Coca-Cola's and PepsiCo's diversification into other RTD markets. Diversifying into these markets has also added another group of competitors for these traditional CSD firms including: Proctor & Gamble (U.S.); Danone (France); Nestle Beverages (Switzerland); and Unilever (England). For Coca-Cola and PepsiCo, these product diversifications have put extra pressure on their CSD lines. Given this increased pressure, impeccable innovation strategies are imperative.

Given other market pressures, it is even more important for CSD firms to continue to innovate in flavoring and other CSD attributes to foster industry longevity. Another way Coca-Cola has managed to add to its CSD consumer base is by aggressively marketing some of its reduced calorie CSDs to men. Products such as Coke Zero and Diet Coke Plus help to progress this trend. PepsiCo has not only diversified its portfolio to include stimulating, hydrating, and invigorating products, but it has also introduced cutting-edge products like Tava, Pepsi's first premium soft drink, and Pepsi Raw, which squarely align with emerging consumer health trends.

Offering limited edition products has enabled marketers and strategists to capitalize on seasonal trends without making long-term commitments. PepsiCo has been very strategic in their innovation strategies in this arena. For example, in 2004 the company introduced Mountain Dew Pitch Black for 10 weeks, which had a black grape flavor. In 2005, the company introduced Mountain Dew Pitch Black II, with sour black grape flavoring, which followed the same trend as Mountain Dew Pitch Black. Both of these campaigns ran for 10 weeks leading up to Halloween in their respective years (Mintel Group, Carbonated Drinks – U.S. May 2008). Other seasonal products from Pepsi included Holiday Spice and Sierra Mist Cranberry Splash, which were Christmas promotions (Mintel Group, Carbonated Drinks – U.S. May 2008). Limited edition and seasonal product introductions offer a different flare from that of traditional CSD marketing and innovation. This type of strategy is seen in other industries (i.e. candy and snack cakes) and has proven to be successful in stimulating short-term demand for products themed around a given season or holiday. For CSDs, this is a new territory with immense potential.

Some CSD firms are now making an effort to use consumer feedback in formulating new products. In late 2007, Mountain Dew launched a consumer driven campaign aimed at an NPI. Termed DEWmocracy, online participants were allowed to determine the flavor, color, name, logo and label of a product that they create. Participants eventually would vote on their favorite of many combinations, and three were selected. The selected products, termed Supernova™, Voltage™ and Revolution™ were put up for a national vote. Participants then promoted their favorite drink to friends using branded campaign tools that are available through the DEWmocracy website and may be used through various social networks. The selected drink will be Mountain Dew's newest product. Mountain Dew states that the purpose of this campaign is to allow consumers to help create the next Mountain Dew line extension. Their goal is to provide loyal supporters a rich, involving, online experience that serves to bring the community closer together by way of taking them on a journey from deep in a mythic world all the way back to their store shelves (PepsiCo, DEWmocracy).

2.3 Consumer Adoption

An important aspect in determining the sustainability of demand for a given product(s) is consumer adoption. Table 11 (Appendix 2) gives some reasons as to why consumers are trying new beverages. From this table it can be inferred that consumers are trying new beverages because of innovative labeling/bottling and flavor enhancements of a preferred brand. Tables 12 and 13 (Appendix 2) both give an indication as to what types of products consumer are trying by demographic. These tables show that women and people between the ages of 18 to 24 are typically more apt to try new, cutting edge beverages. It may be inferred from the information presented in

these tables that young women are more inclined to try flavor enhanced beverage than any other consumer demographic.

2.4 Demand Studies

Demand studies that apply an array of empirical models to examine retail level market data across a variety of food and beverage industries are a valuable primer in evaluating the overall demand landscape of the CSD product category. The studies here offer different approaches to examine a common interest in demand analysis across all categories. The intuition gained from these studies offers insight for a study of CSD NPIs, particularly as it relates to attribute effects and differences.

Draganska and Jain (2005) and Kim et al. (2002) used yogurt as a product category for study. The differentiation found in yogurt products is comparable to that of CSDs. Draganska and Jain (2005) used retail-level scanner data from the yogurt category and a consumer choice model to determine the effect that the number of variants in a product line has on the selection of a product line. Special attention was given to flavor possibilities and the consumer decision was derived from a utility maximization model. To incorporate consumer heterogeneity, a discrete-choice random coefficients model was used. Kim et al. (2002) proposed a demand model for the yogurt industry based on a translated additive utility structure. Using purchasing data of different varieties of yogurt, the model nested the linear utility structure, while allowing for the possibility of a mixture of corner and interior solutions where more than one but not all varieties are selected. The authors found that some households purchased mostly or exclusively one variety and highly valued popular flavors. They also found that there would be

substantial utility loss from the removal of popular flavors and heavy compensation would be required for the removal of preferred varieties.

In the beverage industry, each category is differentiated at the attribute level. The next few studies exhibit different approaches to demand analysis in various beverage industries. Brown et al. (1994) used weekly retail-level data on juice products. They used the Rotterdam Model and the Wu-Hausman test to examine the possibility of endogeneity of total juice expenditure in conditional demand specifications for individual juices. Xiao et al. (1998) used the Rotterdam model to evaluate patterns in non-alcoholic drink demand. Time-series data encompassing consumption, pricing, and advertising for fluid milk, fruit juices, soft drinks, coffee and tea were used to complete the study. The results showed that the major factor governing the increase in per capita soft drink consumption was structural change. This was found to be the dominant pattern for the last 25-30 years.

2.5 Traditional Demand Theory

A common approach to analyzing demand as it relates to product characteristics lies within Lancaster's demand model. Ratchford (1975) summarized Lancaster's demand model in a mathematical form which is shown in Equation 1;

$$(1) \quad Max\ U(z)_{subject\ to}\ px \leq K \quad with\ z = Bx,$$

where z represents a vector of characteristics, p represents a vector of prices, K represents income and B is an $(r\ x\ n)$ matrix which transformed the n goods into r characteristics. Goods x are transformed into characteristics z through the relation $(z = Bx)$. Matrix B represents consumption technology.

Ratchford (1975) gave an overview of Lancaster's demand model. This model states that utility is derived from the properties or characteristics which goods possess

rather than the goods themselves, as opposed to traditional theory which is not inclusive of product characteristics. Berry (1994) and Anderson et al. (1992) found empirical and theoretical evidence of this, respectively. In a general sense, traditional demand theory can refer to the analogy of consumer choice under a budget constraint and the consequent production of the change in a consumer's chosen collection of goods when prices change (Lancaster, 1971). The models outlined by Lancaster (1966, 1971 and 1991) all take demand theory beyond the traditional sense by being inclusive of the rich information that comes from product characteristics. He argued that goods do not give utility, but that consumers derive utility from the characteristics that goods possess. In other words, consumers buy goods based on the attributes they offer. Preference is a function of attributes and must be defined in terms of properties of the good itself, i.e. calories, sugar and flavor.

Ratchford (1975) explained several conditions under which Lancaster models are useful. The model also explains the role of price in determining the demand for differentiated products. In the case of the CSD products studied here, the point of differentiation will be in flavor and calorie content. The model also provides a framework for estimating the sensitivity of demand to relative price of a brand. The model also provides a theoretical perspective for brand share determination and gives an economic explanation for the theory of brand loyalty.

Given the implications obtained from Lancaster's work, a model that explicitly takes into consideration product characteristics is beneficial for CSDs. Dube (2004), Berry (1994) and Fader and Hardie (1996) all used a Lancaster based approach to model product alternatives in terms of their underlying product attributes. Random coefficients

for product attributes allow for flexible substitution patterns. Dube (2004) assumed that if consumers have a preference for a product, they will tend to substitute the product with similar products. Chan (2006) also found evidence of this. If consumers have a preference for reduced calorie soft drinks, they will potentially substitute these with other reduced calorie soft drinks. Pofahl (2008) stated that new product valuation is inherently dependent on the estimation of substitution patterns between similar products in a category.

One of the most difficult processes in traditional consumer theory is the introduction of a new product. The new products used in this study were introduced between 2001 and 2005. The introduction of a new product here simply means the addition or subtraction of one or more attributes to the existing formula. Lancaster (1991) expressed that if a new good possesses characteristics in the same proportion as some existing good that it will simply fail to sell if its price is too high or will completely replace the old good if its price is sufficiently low. This also brings imitation and competing flavors to the forefront. Additionally a model is needed that can be transformed to explain substitutability and complementarity in products. In determining the sustainability in demand of CSD products, explaining cross price relationships between NPIs and industry leaders is vital.

2.6 Almost Ideal Demand System

In the arena of demand studies, a number of models exhibit desirable properties according to demand theory. Some of these models include the Rotterdam model, logit demand, linear demand, log-linear demand and the almost ideal demand system (AIDS). The AIDS of Deaton and Muellbauer (1980b) is probably one of the most widely used

demand specifications. According to Deaton and Muellbauer, it is derived as a first-order approximation to any demand function resulting from an individual's utility maximization. Wilson (1994) stated that an important feature of the AIDS is that the expenditure levels are allowed to impact the distribution of shares. For a study dealing with differentiated products or any products at the market level (particularly with scanner data), the AIDS has proven to be a successful empirical tool in examining such data. Larue et al. (1991) stated that the AIDS has convenient properties such as exact aggregation and being a first-order approximation to any demand system and has been used in many demand studies of beverage products (they studied alcoholic beverages). Several studies made use of the AIDS or its linear counterpart, the linear approximate (LA) AIDS, include Dhar et al. (2003), Cotterill and Putsis (2000), Carew et al. (2004), Cotterill and Samson (2002), Seale et al. (2002) and Larue et al. (1991). Cotterill and Putsis (2000) and Cotterill and Samson (2002) both applied the LA-AIDS approach to Information Resources Inc. (IRI) market-level data. All other studies made use of IRI market-level data or some other form of scanner data. The only exceptions are Seale et al. (2002) and Larue et al. (1991) which used import data and sales summary report data, respectively. Of these studies, Dhar et al. (2003) used CSD data in its empirical analysis and Carew et al. (2004), Seale et al. (2002), and Larue et al. (1991) made use of wine data.

Alston et al. (1994) stated that even though the AIDS possesses many properties desired in an empirical demand study, it sometimes is difficult to estimate. To simplify, Deaton and Muellbauer (1980b) suggested using the linear approximate version of the AIDS. Cotterill and Putsis (2000) gave a number of reasons why the LA-AIDS is

preferable to other demand analyses and functional form specifications. They stated that it is derived from the underlying choice axioms in utility theory. This is where individual behavior can be aggregated to consistently estimate demand parameters from market-level data and it gives a first-order approximation to any "true" demand system functional form. The model is also sufficiently flexible so as not to unduly constrain channel behavior and market power. Alston et al. (1994) stated that the LA-AIDS is, in general, not an integral demand system, but its widespread popularity appears to be based on the fact that it is comparatively easy to estimate, combined with the belief that it is a reasonably good approximation of the true AIDS. For a study of products differentiated at the attribute level, a flexible model should provide an unbiased parameter estimator of demand and elasticities. The LA-AIDS will be used to provide the empirical analysis of the study.

2.7 Distance Metrics

For a study of CSDs, a model is needed that is prudent enough in parameter space to handle a large number of differentiated products and also incorporates attributes into the space. The Distance Metrics (DM) approach of Pinkse et al (2002), Pinkse and Slade (2004), Pofahl and Richards (2008) and Pofahl (2008) will enable this study to deal with the differentiation in attributes of CSDs and also a large number of products. It incorporates observable attributes that are important in consumer purchase decisions for soft drinks. In this approach, attribute differences are considered an important driver of consumer demand. The DM approach makes use of the important information found in product attributes and provides a measurable way to estimate their effects on demand. Comparative to other attribute models, the DM approach captures the notion that

proximity in attribute space increases the competition between products. With its attribute proximity approach, the DM approach can be used with a representative demand system. Whereas the work of Lancaster was theoretical in nature, the DM approach incorporated into the LA-AIDS will provide an empirical approach to make use of the valuable information found in product attributes.

The DM approach, when applied to a representative demand system, allows a large number of differentiated products to be considered. It shows the important role of attribute proximity in determining the competitive relationships among differentiated products. It also reflects the intuition that products possessing similar characteristics compete on price much more than those that are dissimilar. Pofahl and Richards (2008) stated that the fundamental insight of the DM approach is that each product in a category can be viewed as a unique combination of characteristics and that substitution patterns between those products is to be determined by their relative proximity within the multi-dimensional characteristic space. Estimation can then be carried out using standard econometric techniques.

CHAPTER 3: METHODOLOGY

3.1 Overview

The LA-AIDS is best suited to analyze the retail-level data used in this study. In addition to the work of Cotterill and Putsis (2000) and Alston et al. (1994) presented in Chapter 2, Deaton and Muellbauer (1980a) stated that the LA-AIDS has the desirable aggregation properties and is a preferred functional form for analyzing market level data. Given the flexible properties of the LA-AIDS, product attributes will be incorporated into Deaton and Muellbauer's LA-AIDS through distance metrics (Pinkse et al (2002), Pinkse and Slade (2004), Pofahl and Richards (2008), Pofahl (2008)). The incorporation of product attributes allows the analysis of product differentiation in the CSD industry.

3.2 Demand Model

Following Pofahl and Richards (2008) and Pofahl (2008), the DM approach will be applied to Deaton and Muellbauer's (1980a, 1980b) LA-AIDS. The LA-AIDS is presented in Equation 2;

$$(2)\ w_{it} = \alpha_i + \sum_{j=1}^{N} \gamma_{ij} \ln(p_{jt}) + \beta_i \ln\left(\frac{X_t}{P_t^*}\right),$$

where α, β and γ are parameters, $i \in (1,...,N)$ is an index of products, $t \in (1,...,T)$ is a time index, $p_{jt} = (p_{1t},...,p_{Nt})$ is a vector of retail prices, $q_t = (q_{it},...,q_{Nt})$ is a vector of product quantities demanded, $X_t = \Sigma_i p_{it} q_{it}$ is total expenditure in time t, $w_{it} = \frac{p_{jt} q_{jt}}{x_t}$ is expenditure share for product i in time t, $\ln P_t$ is a price index and

$\left(\frac{X_t}{P_t^*}\right)$ is the real expenditure level. Here, $\ln P_t^*$ is the log-linear analogue of the Laspeyres price index, which is similar to Stone's price index of Green and Alston (1990). Stone's price index is used as an empirical approximation to a theoretical translog price index (Moschini, 1995). Typically studies that use the LA-AIDS incorporate Stone's Price Index but Moschini (1995) cautioned the use of Stone's price index due to invariance in choice of units of measurement for prices and quantities. This is the primary reason Laspeyres price index is used here. According to Capps et al. (2003) the use of P_t^* simplifies the estimation of the demand system. Moschini (1995) results showed that the AIDS and LA-AIDS virtually yield the same results.

3.3 Distance Metrics

Given that the empirical application of this study that includes 26 products, estimation of the system may be problematic due to low degrees of freedom. To reduce the dimensionality of estimation, product attributes are introduced into the LA-AIDS in a way that reduces the overall parameter dimensions of this model. Distance metrics can either be represented as a discrete or continuous variable. For continuous metrics, the Euclidian distance is used to measure closeness of two products in attribute space. As adopted from Pinkse and Slade (2004), Pofahl and Richards (2008) and Pofahl (2008), Equation 3 expresses the euclidian distance method;

$$(3)\, d^L = \left(1 + 2\sqrt{\left(L_i - L_j\right)^2}\right)^{-1},$$

where L_i represents product A_1 and L_j represents product A_2. The euclidian distance is mathematically expressed as $\sqrt{(L_i - L_j)^2}$. The euclidian distance method can also be written as an aggregate of all attributes as expressed in Equation 4;

$$(4)\, d_{i,j}^{L,M,N} = \frac{1}{1+2\sqrt{(L_i - L_j)^2 + (M_i - M_j)^2 + (N_i + N_j)^2}},$$

where L_i = product A_1, L_j = product A_2, M_i = product B_1, M_j = product B_2, N_i = product C_1 and N_j = product C_2.[13] Discrete metrics are typically represented by a *(0, 1)* scale, which equals 1 if a product contains a certain attribute and 0 otherwise. A generalized representation of both continuous and discrete distance metrics is given by Equation 5;

$$(5)\, g(d;\lambda) = \sum_{m}^{D^*} I(d^D = m) g_m(d^C),$$

where I is an indicator function, either 1 or 0 for a discrete measure. The discrete metric equals 1 if two products share the same attribute. The variable d^D is a compound discrete measure, where d can equate to $m=1 \ldots D^*$ different values. The variable d^C is a vector of continuous metrics, i.e. calorie content. The function used to replace all cross price parameters in the original demand system is $g(d_{ij};\lambda_k)$. Here, $g(\cdot)$ is some function of d_{ij}, a vector of distance metrics. The variable λ is a vector of parameters corresponding to each distance metric. The variable $g(\cdot)$ is chosen by the researcher and is a linear function of several discrete and continuous attributes. Pinkse et al. (2002) recommended the use of a semi-parametric technique such as a series expansion method

[13] The problem with the specification in Equation 4 is that while the effects of each individual attribute can be captured, they cannot be separated from one another.

in selecting the specification of $g(\cdot)$. Pofahl (2008) used a linear function of the discrete and continuous attributes because the author found that the specification of Pinkse et al. (2002) was insensitive to a wide array of choices, which is the case with CSDs.

3.4 Distance Metrics Applied to LA-AIDS

As referenced from Pofahl (2008), given the number of products included in the empirical model, estimation of the original LA-AIDS could be problematic from a degrees of freedom standpoint. The DM approach reduces the dimensionality of demand estimation. Without imposing any theoretical demand restrictions on the LA-AIDS, *N(N+2)* parameters would normally be estimated. Imposing symmetry, homogeneity, and adding up reduces the number of parameters to *N(N+3)/2-1* parameters. Distance metrics reduces the number of parameters to *3N+K* parameters (*K* is the number of distance metrics), assuming that $g(\cdot)$ is specified as a linear function of distance metrics.[14] This is done by modeling the LA-AIDS cross price coefficient $\left(\gamma_{ij}\right)$ as a function of different distance measures between product *i* and *j*. The application of the DM approach to the LA-AIDS is mathematically represented by Equation 6;

$$(6)\ w_{it} = \alpha_i + \gamma_{ii}\ln(p_{it}) + \sum_{j \neq 1}^{N} g_{ij}(d_{ij};\lambda)\ln(p_{jt}) + \beta_i \ln\left(\frac{X_t}{P_t^*}\right).$$

Equation 6 is an extension of Equation 2 where Equation 5 has been incorporated into the model. The mathematical representation of how distance metrics are incorporated into the model parameters is exhibited in Equations 7 through 13;

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[14] With N = 26 products and K = 5 distance metrics, without imposing any theoretical demand restrictions, the LA-AIDS would yield 728 parameters. Incorporating distance metrics into the LA-AIDS reduces the number of parameters to 83.

$$(7)\quad w_1 = \alpha_1 + \gamma_{11}\ln p_1 + \gamma_{12}\ln p_2 + \gamma_{13}\ln p_3$$

$$\downarrow$$

$$(8)\quad \gamma_{11} = \lambda_0 + \lambda^L d_{11}^L + \lambda^M d_{11}^M$$
$$(9)\quad \gamma_{12} = \lambda_0 + \lambda^L d_{12}^L + \lambda^M d_{12}^M$$
$$(10)\quad \gamma_{13} = \lambda_0 + \lambda^L d_{13}^L + \lambda^M d_{13}^M$$

$$\downarrow$$

$$(11)\quad \begin{aligned} w_1 = {} & \alpha_1 + (\lambda_0 + \lambda^L d_{11}^L + \lambda^M d_{11}^M)\ln p_1 + (\lambda_0 + \lambda^L d_{12}^L + \lambda^M d_{12}^M)\ln p_2 \\ & + (\lambda_0 + \lambda^L d_{13}^L + \lambda^M d_{13}^M)\ln p_3 \end{aligned}$$

$$\downarrow$$

$$(12)\quad \begin{aligned} w_1 = {} & \alpha_1 + \lambda_0 \ln p_1 + \lambda^L d_{11}^L \ln p_1 + \lambda^M d_{11}^M \ln p_1 + \lambda_0 \ln p_2 + \lambda^L d_{12}^L \ln p_2 \\ & + \lambda^M d_{12}^M \ln p_2 + \lambda_0 \ln p_3 + \lambda^L d_{13}^L \ln p_3 + \lambda^M d_{13}^M \ln p_3 \end{aligned}$$

$$\downarrow$$

$$(13)\quad \begin{aligned} w_1 = {} & \alpha_1 + \lambda_0(\ln p_1 + \ln p_2 + \ln p_3) + \lambda^L(d_{11}^L \ln p_1 + d_{12}^L \ln p_2 + d_{13}^L p_3) \\ & + \lambda^M (d_{11}^M \ln p_1 + d_{12}^M \ln p_2 + d_{13}^M \ln p_3) \end{aligned}.$$

3.5 Uncompensated Price Elasticities

The general expression for uncompensated price elasticities computed from the LA-AIDS as expressed by Green and Alston (1990) is represented in Equation 14;

$$(14)\,\varepsilon_{ij} = -\delta_{ij} + \frac{\left(\gamma_{ij} - \beta_i \dfrac{d\ln P}{d\ln P_j}\right)}{w_i},$$

where δ_{ij} represents Kronecker's delta which equals 1 when $i=j$ and 0 otherwise. For the LA-AIDS we use P^* instead of P. Equation 15 exhibits how distance metrics are incorporated into the elasticity equation:

$$(15)\ \varepsilon_{ij} = -\delta_{ij} + \frac{\left(g(d;\lambda) - \beta_i \frac{d \ln P}{d \ln P_j} \right)}{w_i},$$

where the variable γ_{ij} (from Equation 14) is replaced by the DM function. The uncompensated elasticities are calculated in the same manner as the original LA-AIDS model, but the distance metric function replaces the cross-price coefficients. Equation 6 will be estimated along with the uncompensated price elasticities for CSD retail data.

3.6 Data

Information Resources Inc. national and regional market-level (scanner) data for CSD products in the U.S. for 65 quad (4) week intervals from September 1, 2002 to August 29, 2007 was used to compile the data used in this study. CSDs are available in two forms, packaged and fountain. As in Dube (2004), this analysis will be conducted at the UPC level. The 144 ounce package size (12 can package) will be examined only. From the list of 26 products chosen for this study, 13 were new product introductions (NPIs). All products used in the study are shown in Table 14 (Appendix 1). These products were introduced between 2001 and 2005. Diet Pepsi Twist and Pepsi Vanilla were aggregated, respectively, due to multiple UPCs at the 144 ounce level for each product. Additionally, among the 26 products selected for this study 13 were sector

leaders.[15] All products were aggregated, respectively, due to multiple UPCs at the 144 ounce level for each product, with the exception of Sprite Zero, where there is only one UPC included in the data.

Of the new products, five are regular CSDs with flavor enhancements, five are reduced calorie CSDs with flavor enhancements, one is a zero calorie CSDs, one is a mid-calorie CSD and one is a reduced calorie CSD that uses a popular sugar substitute. The study uses 30 post-introduction observations to estimate the demand system, estimation starts at period 36 and ends at period 65. An analysis is done at the regional level to account for any regional fluctuations in demand.[16] In the model, data for each region is stacked by product, which gives 240 observations. Indicator variables are included to account for regional differences. The weighted average price for each product in each quad week period was calculated. Price summary statistics are presented in Table 15 (Appendix 2).

In addition to sales data, nutritional data for calories, sodium and caffeine content were collected from internet sources. Due to inconsistencies in firm reporting, caffeine content is not defined on a continuous basis. Instead indicator variables for products that contain caffeine are used. Table 14 (Appendix 2) gives attribute information for each CSD. In a similar fashion, variables for brand and flavor are created. The discrete metric for caffeine will equal 1 if two products contain caffeine and 0 otherwise. The same type of metric is used for brand where the metric is equal to 1 if two products are of the same

[15] Sector leader refers to an industry leading product or a top product in a category, i.e. regular CSD or diet CSD.

[16] The data is broken down regionally as follows: California, Great Lakes, Mid-South, Northeast, Plains, South Central, Southeast, and West. These regions encompass all areas of the U.S. and were pre-designated by the data.

brand and 0 otherwise. The flavor metric is defined with three values, 1 if two products have the same primary and secondary flavors (or if 2 products have the same primary flavor but have no secondary flavor), 0.5 if the products have the same primary flavor but differ in their secondary flavor, and 0 otherwise. These methods were adopted from Pofahl (2008). Calories and sodium are reported on a continuous basis using the contents of the attribute per product on an 8 ounce basis. The euclidian distance method introduced earlier is used to compute the continuous metrics for attribute proximity. The function used to replace all cross price parameters in the original demand system is shown in Equation 17:

$$(16)\, g_{ij} = \lambda_0 + \lambda_{CF} d^{CF} + \lambda_{BR} d^{BR} + \lambda_{FL} d^{FL} + \lambda_{CL} d^{CL} + \lambda_{SD} d^{SD}.$$

This equation is entered back into the original LA-AIDS. The last of the 26 share equations is dropped and the remaining 25 are estimated using Seemingly Unrelated Regression.[17]

[17] By this rule, Sprite Zero is dropped from the system of equations.

CHAPTER 4: RESULTS

4.1 Model Summary Statistics

Time Series Processor (TSP™) software was used to estimate the empirical model of this study. Summary statistics for each share equation are presented in Tables 16 and 17 (Appendix 1).[18] Due to the serial correlation that is typically found in data, in this case retail-level data, where information is reported over time, an autoregressive version of the LA-AIDS model was used and yielded a simultaneous autoregressive lag coefficient (ρ) of 0.426370.[19] In a general sense, this coefficient represents the correlation between current and lagged values of the estimated regression errors. The average Durbin-Watson (DW) statistic for the model was 1.778215, which is within an acceptable range. The DW statistics for all 25 share equations ranged from 0.70318 to 2.85425.[20] The average R^2 statistic for all 25 share equations was 0.862034.[21] The R^2 statistics for the 25 share equations ranged from 0.61627 to 0.99574. Combined, the DW statistics and R^2 statistics indicate relatively good performance of the empirical model.

4.2 Uncompensated Own-Price Results

The uncompensated own-price results for the empirical model are presented in Tables 16 and 17 (Appendix 1).[22] In general, most of the own-price coefficients for the

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[18] The statistics for the CSD NPIs are presented in Table 16 and those for CSD sector leaders are presented in Table 17.
[19] An autocorrelation coefficient of 1 is believed to be high.
[20] A range of values is reported due to the empirical model consisting of a system of equations.
[21] R^2 coefficients are the proportion of variability in the data that is accounted for by the model, and the Durbin-Watson (DW) statistics are indicators of autocorrelation.
[22] The own-price results for the CSD NPIs are presented in Table 16 and those for CSD sectors leaders are presented in Table 17.

model were found to be statistically significant and elastic, meaning the parameter estimates were less than negative (-) 1.[23] This is usually an expected outcome in studies of differentiated products across all industries. This consumer response to higher prices stems from a large number of substitutes being available.[24] There are a large number of available substitutes within the CSD category and the overall beverage industry as shown in the previous chapters. Due to this high number of substitutes, it was expected that the results would show that consumers would be more responsive to price changes, particularly given the level of elastic prices typically found among retail food and beverage products.

Tables 16 and 17 (Appendix 2) present the own-price results for CSD NPIs and sector leaders, respectively. Some of the most elastic own-price coefficients were found among NPIs, as shown in Table 16.[25] The average own-price coefficient for the CSD NPIs (Table 16) was -1.5560. The average own-price coefficient for the CSD sectors leaders (Table 17) was -1.4023. These average coefficients show that consumers tend to be more responsive to price changes in CSD NPIs. One exception to the mostly elastic coefficients was the own-price coefficient for Diet Coke (-0.590475), found in Table 17. This inelastic coefficient indicates that consumers are not as responsive to price changes for Diet Coke. Given the elastic nature of the own-price results presented it can be determined that no matter what type of CSD, price increases for these products lead to decreased quantity demand.

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[23] Only one product, Diet Pepsi with Lime, was found to be not significant.
[24] CSD products with many substitutes is only one of the many factors that influence elasticity of demand. Other factors can include available consumer disposable income and price of the product.
[25] 7 Up Mixed Berry, Diet Coke with Splenda, Coke with Lime and Pepsi with Lime all had own-price coefficients less than negative (-) 2.

Because of the volatile nature of CSD product performance, it is virtually impossible to predict the market success of such a large number of annual product introductions for this industry. With *Beverage World*'s (November 15, 2003) report of 1,235 total new beverage introductions in 2002, with only approximately 250 surviving by late 2003, the own-price results for CSD NPIs (Table 16) indicate to product innovation strategists that well thought out pricing strategies are essential to the long-term viability of CSD NPIs. The results presented here indicate that price increases lead to negative responses in quantities demanded of CSDs from consumers. Hence, product innovation strategies must account for the price instability which is common for products differentiated at the attribute level, such as CSDs. The question for innovation strategists is whether they can accurately account for consumer purchasing deterrents, such as price fluctuations, in developing sustainable innovation strategies for new products.

Overall, the own-price results exhibited an expected outcome of mostly elastic (negative) products. This type of outcome in industries of multiple, highly differentiated products (at the attribute level) usually stems from high price sensitivity that comes from a number of possibilities.[26] Though these products are differentiated at the attribute level, there are many imitations at the attribute level across CSD brands.[27] Given the imitations at the attribute level, consumers look to other determinants, such as price, to make ultimate purchasing decisions.

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[26] Some of these possibilities include: the number of substitutes, percentage of the disposable budget spend on CSDs and the nature of the retail market.

[27] An example of these imitations is Pepsi introducing Pepsi Vanilla in response to Coca-Cola's Vanilla Coke.

4.3 Uncompensated Cross-Price Results

The empirical results for the uncompensated cross-price elasticities are presented in Tables 18-29 (Appendix 2). Approximately 93 percent of the cross-price coefficients estimated in this study were found to be statistically significant at the 1, 5 and 10 percent levels of significance. There were approximately 572 total statistically significant parameter estimates, of which 523 were statistically significant at the 1 percent level, 41 at the 5 percent level and 8 at the 10 percent level of significance.[28]

The cross-price results are interpreted as follows; a one percent change in the price of Product A (row 1) yields in a certain percentage change in the quantity demanded for Product B (column 1). The parameter estimates with a negative (-) value are considered complements whereas those with positive (+) values are considered substitutes. A complementary relationship indicates that an increase in the price of Product A causes a decrease in the quantity demanded of Product B. A substitute relationship indicates that an increase in the price of Product A causes an increase in the quantity demanded of product B.[29] In highly competitive industries, such as the CSD industry, substitute and complementary relationships play an important role in deriving product innovation strategies. These relationships must be considered to avoid brand name/product damage such as cannibalism and extreme substitutability across and within brands. These relationships also determine the likelihood of whether NPIs can successfully compete with sector leading products. This competition is also a leading factor in cannibalistic outcomes for industry players.

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[28] Approximately 20 of the parameter estimates were found not to be statistically significant.

[29] A value of zero indicates that two products are unit elastic, meaning they are neither complement products or substitute products.

Tables 18 – 21 (Appendix 2) present substitute and complementary relationships (cross-price coefficients) for a given one percent price increase in Coca-Cola products. Table 18 presents the cross-price results for a given one percent price increase in reduced calorie Coca-Cola products and the effects of those price increases on the quantity demanded of reduced calorie Coca-Cola products. Of the 25 reduced calorie product relationships presented in Table 18, 18 complementary relationships were found in reduced calorie Coca-Cola products.[30] This gives an indication of consumers purchasing multiple types of reduced calorie Coca Cola products together. There were 5 substitute relationships found among reduced calorie Coca-Cola products. Table 19 presents the cross-price results for a given one percent price increase in regular Coca-Cola products and the effects of those price increases on the quantity demanded of regular Coca-Cola products. Of the 9 regular CSD relationships presented in Table 19, 6 complementary relationships were found, again indicating the purchase of multiple Coca-Cola products together.[31] Table 20 presents the results for a given one percent increase in the price of regular Coca-Cola products and the effects of those price increases on the quantity demanded of reduced calorie Coca-Cola products. Of the 15 relationships presented in Table 20, 5 substitute relationships were found and two complementary relationships were found.[32] Table 21 presents the cross-price results for a given one percent price increase in all Coca-Cola products and the effects of those price increases on the quantity demanded of other branded products.[33] Of the 136 relationships presented in Table 21,

[30] Two of the relationships in Table 18 were found not to be statistically significant.
[31] Three of the relationships in Table 19 were found not to be statistically significant.
[32] Eight of the relationships in Table 20 were found to not be statistically significant.
[33] Other branded products refer to Pepsi and Cadbury Schweppes products.

126 substitute relationships were found.[34] A total of 6 complementary relationships were found in Table 21.

For Coca-Cola, the results of Tables 18 and 19 indicate that consumers are mostly purchasing multiple types of the same category Coca-Cola products together.[35] The results of Table 20 indicate that given price increases, overall consumers are substituting regular Coca-Cola products with reduced calorie Coca-Cola products.[36] The results of Table 21 indicate a high level of substitution between brands. Substitution between brands is expected when pricing plays a significant role in the consumer decision making process when multiple imitations are available across brand lines. As the price of one branded product increases, price sensitive consumers will usually seek cheaper alternatives if their available disposable income largely determines their retail food and beverage purchases.

Tables 22 – 25 (Appendix 2) present substitute and complementary relationships for price increases in Pepsi products. Table 22 presents the cross-price results for a given one percent price increase in reduced calorie Pepsi products and the effects of those price increases on the quantity demanded of reduced calorie Pepsi products. Of the 36 reduced calorie product relationships presented in Table 22, 32 complementary relationships were found among reduced calorie products.[37] These results mirror the results for reduced calorie Coca-Cola products. There was one substitute relationship found among reduced calorie Pepsi products. Table 23 presents the cross-price results for a given one percent

[34] Four of the relationships in Table 21 were found not to be statistically significant.
[35] Same category products refer to regular and reduced calorie Coca-Cola products, respectively.
[36] Even though over half of the results of Table 20 were found to be not statistically significant, the results that were found to be significant give us an indication of this trend.
[37] Three of the relationships in Table 22 were found not to be statistically significant.

price increase in regular Pepsi products and the effects of those price increases on the quantity demanded of regular Pepsi products. Of the 16 relationships presented in Table 23, 8 complementary relationships were found.[38] These results for Pepsi also mirror the results for regular Coca-Cola products. Table 24 presents the cross-price results for a given one percent price increase in regular Pepsi products and the effects of those price increases on the quantity demand of reduced calorie Pepsi products. Of the 24 total relationships presented in Table 24, 6 complementary relationships and 8 substitute relationships were found between these two types of Pepsi products.[39] Table 25 presents the cross-price results for a given one percent price increase in all Pepsi products and the effects of those price increases on the quantity demanded of other branded products.[40] Of the 150 relationships presented in Table 25, 133 substitute relationships were found.[41] A total of 14 complementary relationships were found in Table 25.

The results for Pepsi products reinforce the results that were presented for Coca-Cola products. The results of Table 22 overwhelmingly indicate that consumers are purchasing multiple types of reduced calorie Pepsi products together. The results of Table 23 also show the trend of purchasing multiple types of regular Pepsi products together. The results of Table 24 show some indication of substitution from regular Pepsi products to reduced calorie Pepsi products, but not as much as the Coca Cola case.[42] The results of Table 25 indicate the expected substitution trends between brands, as also

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[38] Four of the relationships in Table 23 were found to be not statistically significant.
[39] 10 of the relationships in Table 24 were found to be not statistically significant.
[40] Other branded products refer to Coca-Cola and Cadbury Schweppes products.
[41] Three of the relationships in Table 25 were found not to be statistically significant.
[42] Nearly half of the relationships presented in Table 24 were found to be not statistically significant.

shown in the Coca-Cola case. The results for Pepsi and Coca-Cola are almost identical in the relationships between regular, reduced calorie and branded products, respectively.

Tables 26 – 29 (Appendix 2) present the substitute and complementary relationships for price increases in Cadbury Schweppes products. Table 26 presents the cross price results for a given one percent price increase in reduced calorie Cadbury Schweppes products and the effects of those price increases on the quantity demanded of reduced calorie Cadbury Schweppes products. All 9 of the reduced calorie product relationships presented in Table 26 were found to be complements.[43] The results of Table 26 closely mirror the results found for Coca-Cola and Pepsi. Table 27 presents the cross-price results for a given one percent increase in the price of regular Cadbury Schweppes products and the effects of those price increases on the quantity demanded of regular Cadbury Schweppes products. Of the 16 product relationships presented in Table 27, 10 complementary relationships were found.[44] There were also 5 substitute relationships found in Table 27. Table 28 presents the cross-price results for a given one percent price increase in regular Cadbury Schweppes products and the effects of those price increases on the quantity demand of reduced calorie Cadbury Schweppes products. Of the 12 product relationships presented in Table 28, 8 substitute relationships were found and one complement was found, showing that consumers are mostly substituting regular Cadbury Schweppes products with reduce calorie Cadbury Schweppes products.[45] Table 29 presents the cross-price results for a given one percent price increase in all Cadbury Schweppes products and the effects of those price increases on the quantity

[43] All of the relationships in Table 26 were found to be statistically significant.
[44] One relationship in Table 27 was found to be not statistically significant.
[45] Three of the relationships in Table 28 were found to be not statistically significant.

demanded of other branded products.[46] Of the 126 relationships presented in Table 29, 116 substitute relationships were found, which is consistent with the results found for Coca-Cola and Pepsi.[47] A total of 10 complementary relationships were found in Table 29.

The results for Cadbury Schweppes products reinforce the results that were found for both Coca-Cola and Pepsi products. All of the reduced calorie relationships found in Table 26 were found to be complements. This gives some indication that consumers tend to purchase multiple types of reduced calorie Cadbury Schweppes products together. This same trend is found in Table 27 for regular Cadbury Schweppes products, although all relationships presented did not exhibit complementarity. Table 28 also indicates that consumers are substituting regular Cadbury Schweppes products with reduce calorie Cadbury Schweppes products. Table 29 indicates the expected substitution trend between brands, as found with Coca-Cola and Pepsi products in Tables 21 and 25 respectively.

Given the cross-price results presented here, it can be concluded that the complementary relationships exhibited within brand are an indication that consumers are buying multiple products of a single brand together. This complementarity is found within brand between reduced calorie products and regular products, respectively, for all three brands presented. Given the number of complementary relationships that were found among reduced calorie CSDs, this may give some empirical validation to the increasing trend for reduced calorie CSDs as reported by Mintel's May 2008 report on carbonated drinks (shown in Figure 1 of Appendix 3). The results also indicate some

[46] Other branded products refer to Coca-Cola and Pepsi products.
[47] All coefficients in Table 29 were found to be statistically significant.

cannibalization within brand between reduced calorie and regular CSDs. Because the typical consumer is becoming more health conscious, there is a noticeable upward trend in the purchases of reduced calorie CSDs. This is also shown in the results where consumers are substituting regular CSD products with reduced calorie CSD products. This substitution trend is causing decreased sales in regular CSDs for all three firms analyzed in this study. The increasing trend in reduced calorie CSDs may provide potential for increased demand for NPIs in this attribute category given the overall upward trend despite a dismal outlook for CSDs as a whole.[48] Additionally, a high level of substitutability was found between brands. This was an expected outcome for these retail level beverage products. On average, when prices increase, price sensitive consumers will seek cheaper alternatives that imitate their current purchases at the attribute level. For the three CSD firms analyzed in this study, imitation at the attribute level is a key competitive strategy and the substitution between brands exhibited in the study highlights the impact of imitation.

4.4 Distance Metrics

The distance metrics results from the study's empirical model are presented in Table 30 (Appendix 2). Four of the five distance metrics (product attributes) variables were found to be statistically significant.[49] These results represent the interaction of each distance metric and cross-price parameter. The negative values associated with the brand and sodium attributes indicate that price competition is lower between same brand products and products with close sodium content. This implies also complementarity among same brand products and products with close calorie content. The calorie

[48] Table 2 (Appendix 2) gives current and forecasted CSD sales.
[49] The caffeine attribute was found to be not statistically significant.

attribute also carried a negative value. These values indicate that for these three attributes, consumers are more concerned with the product attributes rather than price. The flavor attribute possessed a positive value indicating that price competition is stiffer between products that possess the same flavor. This implies substitution between products possessing the same flavor.

The results presented here reinforce the results of Sorenson and Bogue (2006) that showed that purchasers of soft drinks were found to be most influenced by added ingredients and flavors. Price competition will be stiffer if consumers are facing a purchase decision between two products that have desirable attributes. For health conscious consumers (those that pay attention to sodium and calorie content), price is shown to be less of a factor in making product selections and these consumers will potentially disregard higher prices for healthier products. In developing innovation strategies, CSD manufacturers should begin expanding their focus on product attribute effects as they relate to consumer demand. In a highly differentiated market at the attribute level as CSDs, attributes are becoming more of a determining factor in consumer decision making than price alone.

4.5 Regional Effects on Demand

The coefficients for the regional effects in CSD demand are presented in Tables 31 and 32 (Appendix 2). Approximately 76 percent of the estimated coefficients in these tables are significant at the 1, 5, or 10 percent levels. The U.S. regions examined are: California, Great Lakes, Mid-South, Northeast, Plains, South Central and Southeast. The base region in the study is the West region. For the results presented, a negative (-) value indicates that there is a decrease in demand for a product in a given region as compared

to the base region, and vice versa for positive (+) values. Positive (+) values give an indication that it may be better for product innovation strategists to introduce a product in a given region as opposed to the base region, given an increase in demand in a region compared to the base. Table 31 (Appendix 2) presents the regional results for CSD NPIs.[50] Table 32 (Appendix 2) presents the regional results for CSD sector leaders.[51]

For the CSD NPIs presented in Table 31, reduced calorie CSDs showed the best potential for increased demand in the Northeast, South Central and Southeast as compared to the West (base) region. Reduced calorie CSDs with lime flavor enhancements (Diet Coke with Lime and Diet Pepsi with Lime), as well as Coke Zero, Diet Coke with Splenda and Coke C-2 showed increased demand in other regions when compared to the West region. Additionally, reduced calorie CSDs, Diet Pepsi with Lime, Coke Zero and Diet Coke with Lime specifically, were found to have statistically significant values in all regions. Most of the values reported for Diet Pepsi with Lime and Diet Coke with Lime were negative, which is an indication that the introduction of these products in those regions added no benefit to firms when compared to the West region, given the decreased demand presented. Coke Zero was found to have positive values in 6 of the 7 regions presented, which shows increased demand when compared to the West region.[52] Of the results presented in Table 31, Coke Zero is shown to have the most positive values for NPIs in the study, which indicates that this product has potential for increased demand across the regions listed as compared to the West region. Also for

[50] Of the 91 coefficients presented in this table, 50 are statistically significant. More specifically, 11 are positive coefficients and 39 are negative coefficients.
[51] Of the 84 total coefficients presented in this table, 77 are statistically significant, where 35 have positive values and 42 have negative values.
[52] The only region that had a negative value was the Plains region.

the NPI regional results, Diet Pepsi Vanilla, Diet Pepsi with Lime, Pepsi with Lime and Diet Coke with Lime were found to have negative values for most of the regions presented.[53] These negative values show decreased demand when compared to the West region. The introduction of these products in the study's regions may prove to add no benefit to firms, when compared to the West region, given the decreased demand reported in these results.

For the sector leading CSDs presented in Table 32, Coca-Cola products (Coke, Sprite, Diet Coke) and some Pepsi products (Mountain Dew, Diet Mountain Dew) showed the best potential for survival given increased demand in most regions when compared to the West region. In Table 32, Coke, Sprite, Dr. Pepper, Mountain Dew, Diet Dr. Pepper, Diet 7 Up and Diet Mountain Dew were all found to have statistically significant values in all regions. Coke and Sprite had positive values in all regions except the Great Lakes and Plains regions, which were negative. This indicates decreased demand for the Plains region when compared to the West region. The other coefficients indicate good survival potential for Coke and Sprite in the California, Mid South, Northeast, South Central and Southeast regions. Dr. Pepper and Diet 7 Up only had positive values in two regions, respectively. For these two products overall, this gives an indication that when compared to the West region, there is a decrease in demand for those regions with negative coefficients. Additionally, Diet Coke was found to have positive values in 5 out of 7 regions. This gives a good indication of survival for Diet Coke across the country, when compared to the West region. Pepsi was found to have negative

[53] For these four products, the only region that did not have a negative value was the Northeast region. For Diet Coke with Lime and Diet Pepsi with Lime, the non-negative value was positive and for Diet Pepsi Vanilla and Pepsi with Lime the non-negative value was not statistically significant.

values in 6 out of 7 regions, which shows decreased demand for the product when compared to the West region. Diet Pepsi and Pepsi One were found to have negative values in 5 of 7 regions which shows overall decreased demand when compared to the West region.

Given the results of Table 31, for CSD NPIs it can be concluded that Coke Zero has the best demand outlook across the country, given the increased demand found across U.S. regions. For the sector leading CSDs presented in Table 32, Coke, Sprite and Diet Coke show the best potential for increased demand in the region presented. From the results of both tables, it is clear that sector leading CSDs are evenly distributed between increased and decreased demand potential across U.S. regions when compared to the West region. For CSD NPIs, it is obvious that region matters when it comes to product introductions, given the fact that 78 percent of the coefficients presented in Table 31 have negative values. In addition, for CSD NPIs, given the decreased demand found in most regions when compared to the West region, it can be inferred that the West region may be the best region for CSD product introductions.

4.6 Results Summary

The results of this study offer demand indicators to aid in developing innovation strategies for CSDs. An important notion that can be taken from the own-price results presented here is that fluctuating prices could be a detriment to the ultimate success of product innovation strategies. In addition, product attributes are a viable outlet of information in determining innovation strategies. The combination of the information gained from both the own-price and cross-price elasticity results and attribute indicators offer crucial information for CSD product innovation strategists to formulate efficient

and effective strategies. The regional results presented in this study offer more information in determining U.S. regions where product introductions would be best served. The likelihood of survival of CSDs in the food and beverage retail market is dependent upon consumer acceptance of NPIs and sector leading products. With multiple varieties of CSDs being introduced annually, the utility that lies within product attributes is one of the determining factors, along with product pricing, in formulating adequate and effective strategies. Though the own-price and cross-prices results of this study indicate information that is to be expected of studies of differentiated products at the retail level, the information gained can be useful in determining where the CSD market is headed as far as consumer tastes and demand are concerned.

CHAPTER 5: CONCLUSION

5.1 Summary

The principle objective of this paper is to analyze demand for new and sector leading CSDs, which are characterized by multiple product consumer purchasing behavior, firm promotional activity and differentiation at the attribute level. As previously stated, given the many unique strategies for innovation in CSD NPIs, it is imperative to find out just how effective these products are in both stimulating and revitalizing demand for CSDs. The results of this study show how consumers react to price increases in both NPIs and sector leading CSDs, as well as gives an indication of how product attributes affect demand and gives some indication of the likelihood of CSD NPI survival in the U.S. through regional analysis. The study also shows the intensity of competition between regular and reduced calorie CSDs as well as CSD brands. The overall goal of this study's results is to provide product innovation strategists with an idea of the market landscape in which they will encounter in formulating future innovation strategies for CSDs.

In an industry dominated by multiple product introductions that are differentiated at the attribute level, CSDs experience demand pressure from all aspects of the beverage industry that go beyond CSDs. Within the CSD industry, competition is driven by product attributes. These attributes include brand, flavor and calorie content, to name a few. The competition between reduced calorie and regular CSDs within brand can lead to cannibalization. The cross-price elasticity results of this study give an indication of this cannibalization, where for the three brands substitution is found between regular and reduced calorie products. One positive outcome of this study is that for reduced calorie

and regular CSDs (for all brands), respectively, consumers are shown to buy multiple types of these products together.

As stated in Chapter IV, from the cross price results it can be concluded that the complementary relationships exhibited within brand are an indication that consumers are buying multiple types of a single brand together. This complementarity is found within brand between reduced calorie products and regular products, respectively, for all three brands presented. Given the number of complementary relationships that were found among reduced calorie CSDs, this may provide some empirical validation to the increasing trend for reduced calorie CSDs as reported by Mintel's May 2008 report on carbonated drinks (shown in Figure 1 of Appendix 3) where an increasing trend for reduced calorie CSDs is shown. An expected outcome was the high level of substitutability found between brands. This expectation is brought about because on average, when prices increase, price sensitive consumers will potentially seek cheaper alternatives that imitate their current purchases at the attribute level.

For attribute effects on demand, price competition is found to be stiffer if consumers are facing a decision between two products that have desirable attributes that yield the most utility in the eyes of consumers, in the case of this study, same flavor products. This also means that for health conscious consumers, price is shown to be less of a factor in making product selections and these consumers will potentially disregard higher prices for healthier products. These results indicate that in developing innovation strategies, product innovation strategists should begin expanding their focus on product attribute effects as they relate to consumer demand.

The regional variables presented in this study indicate that for CSD NPIs it can be concluded that Coke Zero has the best potential for survival across the country, given the increased demand found across U.S. regions, as well as Coke, Sprite and Diet Coke for sector leading CSDs. From the results of both tables, it is clear that sector leading CSDs are evenly distributed between increased and decreased demand potential across U.S. regions when compared to the West region. For CSD NPIs, it is obvious that the region of introduction matters when it comes to product introductions.

With competitive pressures from all aspects of the beverage industry, CSDs are now battling competitors in which industry analysts would have never imagined 50 years ago. Studies of this nature are imperative in analyzing the viability for the CSD industry in a time where the industry is losing its luster as the producer of the nation's leading beverage of choice. This study has provided information that could help product innovation strategists in developing strategies that could potentially reshape the CSD industry and reinvigorate its dwindling market base. With this information, strategists may be able to better synthesize information to formulate long-term innovation strategies.

5.2 Future Research

One limitation of this study is that it does analyze the other beverage products that consumers are substituting CSDs for, such as: bottled waters and other juices. Given previous literature that shows the increasing trends in juices, sports/energy drinks and other functional beverages, future studies may consider including the above mentioned products and also using attributes as a way of helping to more accurately predict demand.

APPENDIX 1: CSD HISTORY

A. In the history of carbonated waters, Thomas Henry is remembered as the first producer of artificial mineral waters for public sale. This probably happened between 1767 and 1768 (Riley, 1958).
B. Dr. Pepper was created in 1885 as a Texas cherry soda fountain drink (Pendergrast, 1993)
C. Developed in 1886, the drink that dominated the early years of the soft drink industry was Coco-Cola. Coca-Cola was originally formulated as a patent medicine for drugstore soda fountains in an era when citizens frequented drug stores to buy tonics and remedies for every ailment. Coca-Cola was first marketed as a potion for mental and physical disorders and it could have gone the way of myriad elixirs, tonics and cure-all concoctions that were popular at the time (Muris et al., 1993).
D. Pepsi-Cola was invented in 1889
E. Bib-Label Lithiated Lemon-Lime Soda was created in 1929 but the name was quickly changed to 7-Up
F. In 1960, Pepsi unveiled its lemon-line Teem and a range of other flavors and Coca-Cola introduced the Fanta line.
G. Coca-Cola purchased the Minute Maid Company in 1960.
H. Sprite was introduced in 1961.
I. Coca-Cola introduced Tab in 1963.
J. Pepsi introduced Diet Pepsi in 1964.
K. In 1982, Pepsi introduced Pepsi-Free and Coca-Cola introduced Caffeine-Free Coke
L. Coca-Cola introduced Diet Coke in 1982
M. In April 1985, Coca-Cola reformulated its flagship product, termed New Coke, and pulled the original formula from the market. Due to the low performance of New Coke, the original formula, termed Coca-Cola Classic, returned to the market in July 1985.
N. In 1994, Cadbury Schweppes purchased Dr. Pepper/Seven-Up Companies Inc. outright
O. Cherry Coke introduced in 1995
P. In 1998, PepsiCo acquired Tropicana
Q. Pepsi One launched in 1998
R. In 2000, Cadbury Schweppes acquired RC Cola
S. In 2001, PepsiCo acquired Gatorade through purchasing Quaker Oats
T. Mountain Dew Code Red is launched in 2001
U. Vanilla Coke is introduced in 2002
V. Pepsi Edge introduced in 2004 in response to an industry outcry for full flavored colas with less calories

APPENDIX 2: TABLES

Table 1: U.S. Food/Drug Store and Mass Merchandiser Brand Sales of Regular and Diet/Reduced Calorie Carbonated Soft Drinks, 2006 and 2007

Company	*Brand*	*2006*		*2007*		*Change 2006-07*
		$million	*%*	*$million*	*%*	*%*
Coca-Cola	**Regular Total**	**3,038**	**34.6**	**2,922**	**34**	**-3.8**
	Coke Classic	1,890	21.5	1,870	21.8	-1.1
	Sprite	584	6.7	552	6.4	-5.4
	Fanta	100	1.1	105	1.2	4.8
	Cherry Coke	87	1	88	1	0.6
	Caff. Free Coke Cl.	71	0.8	65	0.8	-8.5
	Other	307	3.5	242	2.8	-
	Diet Total	**2,216**	**45.3**	**2,232**	**45.7**	**0.7**
	Diet Coke	1,164	23.8	1,178	24.1	1.2
	Caff. Free Diet Coke	352	7.2	331	6.8	-5.8
	Coke Zero	139	2.8	191	3.9	38.1
	Sprite Zero	146	3	152	3.1	4.1
	Fresca	106	2.2	97	2	-8.2
	Diet Coke w/ Lime	79	1.6	63	1.3	-20.2
	Other	240	5	219	4.5	-
PepsiCo	**Regular Total**	**2,825**	**32.2**	**2,757**	**32.1**	**-2.4**
	Pepsi	1,496	17	1,437	16.7	-3.9
	Mtn. Dew	737	8.4	743	8.6	0.8
	Sierra Mist	182	2.1	182	2.1	0.2
	Caff. Free Pepsi	115	1.3	106	1.2	-8.5
	Wild Cherry Pepsi	73	0.8	72	0.8	-2
	Other	222	2.5	217	2.6	-
	Diet Total	**1,612**	**33**	**1,601**	**32.8**	**-0.7**
	Diet Pepsi	799	16.3	789	16.2	-1.3
	Diet Mtn. Dew	251	5.1	272	5.6	8.1
	Caff. Free Diet Pepsi	229	4.7	213	4.4	-6.7
	Sierra Mist Free	75	1.5	71	1.4	-5.4
	Diet Wild Ch. Pepsi	63	1.3	62	1.3	-1.3
	Pepsi One	43	0.9	36	0.7	-16.9
	Other	152	3.1	159	3.2	-

Source: Mintel Group, Non-alcoholic Beverages: The Market - US - April 2008 – Brand Share—Carbonated Drinks

Table 1 (continued): U.S. Food/Drug Store and Mass Merchandiser Brand Sales of Regular and Diet/Reduced Calorie Carbonated Soft Drinks, 2006 and 2007

Company	*Brand*	*2006*		*2007*		*Change 2006-07*
		$million	*%*	*$million*	*%*	*%*
Cadbury Sch.	**Regular Total**	**1,789**	**20.4**	**1,807**	**21**	**1**
	Dr. Pepper	609	6.9	604	7	-0.8
	7-Up	217	2.5	218	2.5	0.5
	Sunkist	185	2.1	196	2.3	5.9
	Canada Dry	182	2.1	190	2.2	3.9
	A&W	158	1.8	164	1.9	4.1
	Schweppes	116	1.3	119	1.4	3.1
	Other	321	3.6	316	3.6	-
	Diet Total	**858**	**17.5**	**849**	**17.4**	**-1**
	Diet Dr. Pepper	304	6.2	297	6.1	-2.3
	Diet 7-Up	106	2.2	115	2.4	8.8
	A&W	90	1.8	97	2	6.8
	Diet Sunkist	64	1.3	73	1.5	14.7
	Diet Rite	82	1.7	69	1.4	-15.9
	Other	211	4.4	200	4.1	-

Source: Mintel Group, Non-alcoholic Beverages: The Market - US - April 2008 – Brand Share—Carbonated Drinks

Table 2: U.S. Food/Drug Store and Mass Merchandiser (including Wal-Mart) Sales and Forecasts of Carbonated Soft Drinks, at Current Prices, 2002-12

Year	*Sales at current prices*		*Index*	*Index*
	$million	*% change*	*2002 = 100*	*2007 = 100*
2002	14,170	-	100	105
2003	14,026	-1	99	104
2004	13,869	-1.1	98	103
2005	13,900	0.2	98	103
2006	13,610	-2.1	96	101
2007	13,478	-1	95	100
2008*	13,362	-0.9	94	99
2009**	13,323	-0.3	94	99
2010**	13,305	-0.1	94	99
2011**	13,299	-0.1	94	99
2012**	13,303	0	94	99
* Estimated **Forecasted				
Adjusted for inflation using the All Items CPI				
Source: Mintel Group, Carbonated Drinks - US - May 2008 – Segment Performance				

Table 3: New Carbonated Drink Product Introductions in the U.S., by Flavor, 2001-06

Claims	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*Total*
Cherry	10	11	8	10	11	12	**62**
Root Beer	-	5	7	11	-	12	**35**
Lemon	14	8	6	15	9	11	**63**
Cola	8	6	14	25	12	10	**75**
Grape	-	4	6	9	7	8	**34**
Lime	8	4	6	13	11	8	**50**
Apple	-	-	-	13	8	8	**29**
Orange	14	11	9	-	11	7	**52**
Vanilla	5	-	6	7	7	-	**25**
Peach	4	-	-	-	6	-	**10**
Cream	-	-	-	-	6	-	**6**
Tea (Green)	-	-	8	8	-	-	**16**
Strawberry	6	-		8	-	-	**14**
Ginger Ale	-	-	5	-	-	-	**5**
Citrus	-	5	-	-	-	-	**5**
Tropical	-	3	-	-	-	-	**3**
Raspberry	4	-	-	-	-	-	**4**
Source: Mintel Group, Carbonated Drinks - US April 2007 – Market Size and Trends							

Table 4: New Carbonated Drink Product Introductions in the U.S., by Category, 2001-06

Claims	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*Total*
Low/no/reduced sugar	10	-	18	35	13	34	**110**
Low/no/reduced calorie	7	-	11	44	27	29	**118**
Kosher	-	13	10	-	-	22	**45**
No additives/preservatives	23	5	12	31	6	22	**99**
Low/no/reduced carb	-	-	4	20	18	14	**56**
Vitamin/mineral fortified	-	5	-	14	-	13	**32**
Seasonal	-	-	-	6	9	12	**27**
Organic	8	4	11	-	21	12	**56**
All natural	28	12	19	37	7	12	**115**
Low/no/reduced sodium	8	5	8	33	20	11	**85**
Co-branded	-	-	-	13	22	-	**35**
Novel	5	-	9	4	5	-	**23**
Children 5-12	3	-	8	-	-	-	**11**
Teenagers (13-17)	3	2	-	-	-	-	**5**
Low/no/reduced allergen	-	2	-	-	-	-	**2**
Gluten free	-	1	-	-	-	-	**1**
Vegetarian	4	-	-	-	-	-	**4**
Other	-	2	-	-	-	-	**2**

Source: Mintel Group, Carbonated Drinks – US April 2007- Market Size and Trends

Table 5: New Carbonated Drink Products in the U.S., by Company, 2002-08

Product	2002	2003	2004	2005	2006	2007	2008*	Total
Coca-Cola	22	9	20	29	29	17	7	**133**
PepsiCo	8	15	16	21	19	25	3	**107**
Jones Soda	8	14	18	8	9	6	1	**64**
Hansen's Natural	5	19	1	1	4	0	1	**31**
Dr Pepper	14	2	8	12	0	0	0	**36**
Wal-Mart	2	9	0	5	10	0	1	**27**
Dr Pepper/Seven Up	0	0	9	7	4	5	3	**28**
Target	1	0	10	0	9	6	0	**26**

* January to May

Source: Mintel Group, Carbonated Drinks – US – May 2008 – Innovation and Innovators

Table 6: Survey of Teen Diet Cola Brand Preferences, by Gender, January – November 2007

Carbonated Soft Drink	*All(%)*	*Male(%)*	*Female(%)*
Diet Coke	62	60	63
Diet Pepsi	48	40	53
Coca-Cola Zero	23	31	17
Diet Cherry Coke	19	19	19
Caffeine Free Diet Coke	15	14	15
Coca-Cola C2	13	18	10
Pepsi One	12	14	11
Diet Coke with Lime	11	9	12
Diet Coke with Lemon	10	9	11
Diet Pepsi Vanilla	10	8	11
Diet Pepsi with Lime	9	9	9
Diet Coke with Splenda	8	8	8
Caffeine Free Diet Pepsi	8	7	8
Base: 561 teens aged 12-17 who drink diet cola; 212 males, 349 females			
Note: Excluding brands with less than 8% penetration			
Source: Mintel Group, Carbonated Drinks – US – May 2008 – Teen Consumption			

Table 7: U.S. New Non-Alcoholic Beverage Introductions, 2003-08

Beverage Category	*2003*	*2004*	*2005*	*2006*	*2007*	*2008**	*% Change 2003-07*
All channels							
RTD juice/juice drinks	289	564	391	313	306	84	5.9
Carbonated beverages	84	212	153	146	118	46	40.5
Sports drinks	17	31	29	12	36	29	111.8
Energy drinks	24	67	64	70	30	82	25
Bottled water	65	116	107	99	106	31	63.1
RTD iced tea	28	69	48	52	58	14	107.1
Total	**507**	**1,059**	**792**	**692**	**654**	**286**	**29**
Supermarkets only							
RTD juice/juice drinks	245	487	317	257	218	-	-11
Carbonated beverages	62	164	122	102	81	-	30.6
Sports drinks	16	26	29	10	26	-	62.5
Energy drinks	24	62	57	50	21	-	-12.5
Bottled water	57	93	96	78	82	-	43.9
RTD iced tea	25	65	41	40	49	-	96
Total	**429**	**897**	**662**	**537**	**477**	-	**11.2**
* January to March							
Source: Mintel Group Consumer Choices in the Beverage Aisle – US – April 2008 – Retail Channels—Supermarkets							

Table 8: New Functional Beverage Introductions in the U.S. by Beverage Type, 2002-07

Beverage Type	*2002*	*2003*	*2004*	*2005*	*2006*	*2007**	*Total*
Functional—other	16	30	17	17	39	30	**149**
Vitamin/mineral-fortified	9	7	14	17	20	18	**85**
Organic	-	-	8	9	24	16	**57**
Kosher	-	-	-	-	12	14	**26**
Functional—digestive	-	-	-	10	9	11	**30**
Functional—cardiovascular	-	5	-	9	12	11	**37**
All-natural	3	6	14	-	-	10	**33**
Low/no/reduced cholesterol	-	-	-	-	-	7	**7**
No additives/preservatives	-	6	-	-	10	7	**23**
Functional—immune system	3	-	-	11	-	6	**20**
Weight control	21	28	29	9	10	-	**97**
Functional—brain/nerve system	3	-	4	10	9	-	**26**
Vegetarian	-	-	-	-	8	-	**8**
Low/no/reduced carb	7	-	8	7	-	-	**22**
Functional—beauty benefits	-	3	-	4	-	-	**7**
Innovative ingredient	-	4	10	-	-	-	**14**
Low/no/reduced fat	2	-	10	-	-	-	**12**
Low/no/reduced sugar	-	4	5	-	-	-	**9**
Novel	3	13	-	-	-	-	**16**
Female	2	-	-	-	-	-	**2**

* January to August

Source: Mintel Group, Functional Beverages – US August 2007- Market Size and Trends

Table 9: U.S. Sales and Forecasts of Non-Alcoholic Beverages, at Current Prices, 2002-12

Year	*CSDs**	*Juice/juice drinks*	*Bottled water*	*Sports/energy drinks*	*Coffee/RTD coffee*	*Tea/RTD tea*
	$million	*$million*	*$million*	*$million*	*$million*	*$million*
2002	14,170	17,184	7,901	3,830	4,804	1,778
2003	14,026	16,913	8,526	3,894	4,566	2,043
2004	13,869	16,649	9,169	4,129	4,735	2,050
2005	13,900	16,319	10,013	6,664	5,914	2,673
2006	13,610	15,641	10,980	8,475	6,189	3,127
2007	13,478	15,189	11,782	10,073	6,482	3,580
2008**	13,362	15,123	12,641	11,186	6,931	3,991
2009***	13,323	15,056	13,520	12,323	7,391	4,412
2010***	13,305	14,989	14,411	13,477	7,857	4,839
2011***	13,299	14,918	15,341	14,681	8,343	5,284
2012***	13,303	14,843	16,310	15,937	8,850	5,748

* Food Store, Drug Store and Mass Merchandiser (including Wal-Mart) sales only

** Estimated *** Forecasted

Source: Mintel Group, Carbonated Drinks – US – May 2008 – Competitive Context

Table 10: Carbonated Soft Drink Firm Diversification

Type	Coca-Cola	Pepsi
Bottled Water	Dasani	Aquafina
Sports Drink	Powerade	Gatorade
Tea	Nestea	Lipton
Juice	Minute Maid	Tropicana

Table 11: Survey of Reasons for Trying New Beverages, February 2007

Reason	*%*
I have not tried a new beverage in the past 12 months	36
Just caught my eye	**31**
Was a different flavor of a brand I like	22
I had a coupon for it	**19**
I saw it advertised on television	18
It was recommended to me	**15**
I saw someone else drinking it	10
Has new packaging	**6**
It was the only drink available	5
Had ingredients it did not have before	**5**
Some other reason (Please specify)	3
Base: 2,000 adults (18+)	
Source: Mintel Group, Carbonated Drinks - US – April 2007 – The Consumer – Attitudes and Behavior	

Table 12: Survey of New Carbonated Beverage Trials in the U.S., by Gender, December 2004 (%)

Reason	*All*	*Male*	*Female*
Did you have flavored cola, such as Vanilla Pepsi or Cherry Coke?	20	21	19
Did you have a mid-calorie cola, such as Pepsi Edge or Coke C2?	**11**	**13**	**9**
Did you have a nutritionally enhanced carbonated beverage, such as 7-UP PLUS with fruit juice, calcium, and Vitamin C?	11	13	9
Did you have a milk-based carbonated beverage, such as RPM (Refreshing Power Milk)?	**3**	**2**	**3**
Base: 762 adults age 18 (+) who drink carbonated beverages			
Source: Mintel Group, Carbonated Drinks – US – March 2006 – The Consumer			

Table 13: Survey of New Beverage Trial (one week period), by Age, December 2004 (%)

Reason	*All*	*18-24*	*25-34*	*35-44*	*45-54*	*55-64*	*65+*
Did you have flavored cola, such as Vanilla Pepsi or Cherry Coke?	20	37	18	16	26	16	8
Did you have a mid-calorie cola, such as Pepsi Edge or Coke C2?	**11**	**20**	**10**	**11**	**8**	**7**	**9**
Did you have a nutritionally enhanced carbonated beverage, such as 7-UP PLUS with fruit juice, calcium, and Vitamin C?	11	19	13	11	8	6	9
Base: 762 adults age 18 and over who drink carbonated beverages							
Source: Mintel Group, Carbonated Drinks – US – March 2006 – The Consumer							

Table 14: Carbonated Soft Drink Product Attributes

Product	Brand	Flavor 1	Flavor 2	Cals	Sod.	Caff.
7 Up Mixed Berry*	Cadbury Sch.	Citrus	berry	10	20	0
Diet Cherry Van. Dr. Pepper*	Cadbury Sch.	Pepper	cherry	0	45	1
Diet Coke w/ Splenda*	Coca-Cola	cola	-	1	28	1
Diet Pepsi Vanilla*	Pepsi	cola	vanilla	0	25	1
Coke w/ Lime*	Coca-Cola	cola	lime	98	25	1
Diet Pepsi w/ Lime*	Pepsi	cola	lime	0	25	1
Pepsi w/ Lime*	Pepsi	cola	lime	100	16	1
Cherry Vanilla Dr. Pepper*	Cadbury Sch.	Pepper	cherry	100	40	1
Coke Zero*	Coca-Cola	cola	-	0.7	28	1
Diet Pepsi Twist*	Pepsi	cola	lemon	0	24	1
Coke C-2*	Coca-Cola	cola	-	45	30	1
Diet Coke w/ Lime*	Coca-Cola	cola	lime	2	28	1
Pepsi Vanilla*	Pepsi	cola	vanilla	110	24	1
Coke	Coca-Cola	cola	-	97	33	1
Pepsi	Pepsi	cola	-	100	20	1
Sprite	Coca-Cola	citrus	lemon	96	47	0
7 Up	Cadbury Sch.	Citrus	lemon	100	25	0
Dr. Pepper	Cadbury Sch.	Pepper	-	100	35	1
Mountain Dew	Pepsi	dew	citrus	110	40	1
Diet Coke	Coca-Cola	cola	-	1	28	1
Diet Pepsi	Pepsi	cola	-	0	25	1
Diet Dr. Pepper	Cadbury Sch.	Pepper	-	0	35	1
Diet 7 Up	Cadbury Sch.	Citrus	lemon	0	30	0
Diet Mountain Dew	Pepsi	dew	citrus	0	35	1
Pepsi One	Pepsi	cola	-	1	25	1
Sprite Zero	Coca-Cola	citrus	lemon	2.4	24	0
*New Introduction (introduced between 2001 and 2005)						
All product based on 8 ounces						
Data obtained from multiple internet sources						

Table 15: Price Summary Statistics for Carbonated Soft Drinks Used in the Study

Product	Mean Price	Minimum	Maximum	Variance
7 Up Mixed Berry	3.13578	2.43267	4.31406	0.096362
Diet Cherry Van. Dr. Pepper	3.28673	2.8693	3.85289	0.039228
Diet Coke w/ Splenda	3.29898	2.78008	4.73994	0.064267
Diet Pepsi Vanilla	3.19336	2.59275	3.89594	0.04648
Coke w/ Lime	3.24029	2.78492	4.04021	0.052424
Diet Pepsi w/ Lime	3.16782	2.54767	3.75399	0.048527
Pepsi w/ Lime	3.11582	2.57096	3.81361	0.055249
Cherry Vanilla Dr. Pepper	3.20743	0*	3.91391	0.17215
Coke Zero	3.10526	0*	3.97029	0.51285
Diet Pepsi Twist	3.02745	0*	4.63177	0.7196
Coke C-2	3.32864	2.6319	4.3756	0.062271
Diet Coke w/ Lime	3.24521	2.76323	3.80853	0.046377
Pepsi Vanilla	3.13878	0*	5.28957	0.30096
Coke	3.14774	2.67479	3.71136	0.04395
Pepsi	3.05271	2.57568	3.70232	0.041192
Sprite	3.14421	2.64078	3.72754	0.045593
7 Up	3.07033	2.51215	4.03611	0.066931
Dr. Pepper	3.21677	2.84653	3.81686	0.035571
Mountain Dew	3.14538	2.63394	3.71651	0.032965
Diet Coke	3.18278	2.71373	3.74276	0.047143
Diet Pepsi	3.10079	2.62824	3.73694	0.042178
Diet Dr. Pepper	3.25681	2.85655	3.84479	0.041889
Diet 7 Up	3.2034	2.71315	4.19147	0.073841
Diet Mountain Dew	3.1975	2.64408	3.75082	0.036308
Pepsi One	3.17294	2.68735	3.75137	0.040082
Sprite Zero	3.25212	2.75768	3.79947	0.046497
* Due to product introduction				
Information Resources Inc. market level carbonated soft drink data				

Table 16: Own-Price Elasticity Results and Share Equation Summary Statistics for Carbonated Soft Drink New Product Introductions

Share Equation	Own Price Estimate	t-stat	P-value	R^2	Adjusted R^2	Durbin-Watson
Pepsi w/ Lime	-2.51204	-5.87591	0.000	0.81968	0.82057	1.38049
Diet Coke w/ Splenda	-2.50665	-4.72067	0.000	0.81527	0.81619	1.66059
7 Up Mixed Berry	-2.48851	-4.99262	0.000	0.61627	0.61818	1.78705
Coke w/ Lime	-2.02115	-5.86549	0.000	0.83546	0.83628	0.79907
Coke Zero	-1.78287	-8.55642	0.000	0.88158	0.88217	1.50005
Pepsi Vanilla	-1.78136	-6.51422	0.000	0.74411	0.74538	0.83543
Diet Coke w/ Lime	-1.45575	-5.98092	0.000	0.91309	0.91352	1.35991
Diet Pepsi Twist	-1.45039	-4.90472	0.000	0.82258	0.82346	0.70318
Ch. Van. Dr. Pepper	-1.2984	-4.31555	0.000	0.78644	0.7875	0.93318
Diet Ch. Van. Dr. Pepper	-1.03378	-5.63215	0.000	0.76958	0.77073	0.76081
Coke C-2	-0.850895	-2.52985	0.011	0.6396	0.6414	1.04651
Diet Pepsi Vanilla	0.509999	1.91655	0.055	0.90491	0.90538	1.40909
Diet Pepsi w/ Lime	0.099055*	0.487921	0.626	0.95206	0.9523	2.12247

* Not significant at the 1, 5 or 10 percent levels.

Table 17: Own-Price Elasticity Results and Share Equation Summary Statistics for Carbonated Soft Drink Sector Leaders

Share Equation	Own Price Estimate	t-stat	P-value	R^2	Adjusted R^2	Durbin-Watson
7 Up	-2.04088	-19.2095	0.000	0.973	0.97313	1.75844
Diet 7 Up	-1.89258	-24.5825	0.000	0.97715	0.97726	1.83841
Mountain Dew	-1.56973	-27.4508	0.000	0.98098	0.98108	2.4597
Pepsi	-1.53911	-32.7618	0.000	0.89059	0.89113	2.78259
Diet Mountain Dew	-1.46201	-17.3669	0.000	0.97147	0.97161	1.99259
Dr. Pepper	-1.4592	-21.5935	0.000	0.99574	0.99576	2.20067
Diet Dr. Pepper	-1.45188	-22.8815	0.000	0.97527	0.97539	1.76723
Diet Pepsi	-1.39073	-25.1329	0.000	0.94459	0.94487	2.84574
Sprite	-1.19276	-10.2163	0.000	0.91357	0.914	2.52659
Coke	-1.17606	-13.5067	0.000	0.88057	0.88116	2.85425
Pepsi One	-1.0623	-9.49296	0.000	0.89659	0.89711	2.49752
Diet Coke	-0.590475	-4.05885	0.000	0.6507	0.65244	2.63382

* Not significant at the 1, 5 or 10 percent levels.

Table 18: Cross-Price Elasticity Results for the Effect of Price Increases in Reduced Calorie Coca-Cola Products on the Quantity Demand of Reduced Calorie Coca-Cola Products

	DCS	Coke Zero	Coke C-2	DCL	Diet Coke
DCS	-2.50665 [.530996]	-.105757 [.012168]	.087246 [.039934]	-.164703 [.014133]	-.016424 [.001824]
Coke Zero	-.208927 [.023512]	-1.78287 [.208366]	.084815 [.040239]	-.160857 [.014047]	-.013555 [.0016923]
Coke C-2	.038905 [.017042]	.021472 [.008832]	-.850895 [.336341]	-.018162 [.007704]	.0029089 [.001187]
DCL	-.216355 [.018894]	-.104875 [.009681]	.008157* [.023173]	-1.45575 [.243400]	-.014270 [.0013572]
Diet Coke	-.228402 [.030297]	-.056798 [.014556]	.051948* [.063354]	-.156645 [.017425]	-.590475 [.145478]
* Not significant at the 1, 5, or 10 percent levels					
[ ] Standard Errors					
Diet Coke with Splenda (DCS), Diet Coke with Lime (DCL)					

Table 19: Cross-Price Elasticity Results for the Effects of Price Increases in Regular Coca-Cola Products on the Quantity Demanded for Regular Coca-Cola Products

	Coke w/ Lime	Coke	Sprite
Coke w/ Lime	-2.02115 [.344584]	.000214* [.000415]	-.000062* [.001377]
Coke	-.147310 [.055336]	-1.17606 [.087072]	-.033422 [.005948]
Sprite	-.018953* [.023346]	-.003721 [.0015219]	-1.19276 [.116750]
* Not significant at the 1, 5, or 10 percent levels			
[ ] Standard Errors			

Table 20: Cross-Price Elasticity Results for the Effects of Price Increases in Regular Coca-Cola Product on the Quantity Demanded of Reduced Calorie Coca-Cola Products

	Coke w/ Lime	Coke	Sprite
DCS	-.033533* [.025331]	.00228 [.000782]	.001829* [.0014580]
Coke Zero	-.037421* [.025555]	.001811 [.00087]	.0005760* [.001511]
Coke C-2	-.00461* [.025295]	.002018 [.000742]	.002426 [.001437]
DCL	.108117 [.037509]	.0006034* [.0005554]	.001127* [.001484]
Diet Coke	-.089664 [.039633]	-.400522* [.003412]	-.016249 [.003830]
* Not significant at the 1, 5, or 10 percent levels			
[ ] Standard Errors			
Diet Coke with Splenda (DCS), Diet Coke with Lime (DCL)			

Table 21: Cross-Price Elasticity Results for the Effect of Price Increases in All Coca-Cola Products on the Quantity Demanded of Other Branded Products

	DCS	Coke w/ Lime	Coke Zero	Coke C-2	DCL	Coke	Sprite	Diet Coke
7UPMB	.122987 [.009112]	.257938 [.019506]	.064162 [.004726]	.301598 [.022086]	.080520 [.00598]	.00558 [.004107]	.025682 [.0019380]	.0085915 [.0006331]
DCVDP	.100624 [.009375]	.278235 [.023394]	.050983 [.004844]	.296436 [.025091]	.073949 [.00638]	.00493 [.000497]	.013354 [.001286]	.0074185 [.0006823]
DPV	.105473 [.009848]	-.161136 [.032780]	.051928 [.005123]	.342118 [.026837]	.077216 [.006631]	.006412 [.000513]	.020817 [.0015409]	.0075043 [.0006895]
DPL	.105657 [.009855]	-.089889 [.044876]	.052515 [.005127]	.341695 [.026859]	.099151 [.012603]	.006331 [.000521]	.020600 [.001545]	.007596 [.0006958]
Pepsi w/ Lime	.159797 [.012088]	.372085 [.042949]	.083440 [.006264]	.375055 [.028371]	.126923 [.013481]	.006284 [.000492]	.019795 [.001471]	.011190 [.000840]
CVDP	.126832 [.010615]	.238120 [.020818]	.066978 [.005500]	.289389 [.024594]	.083369 [.00698]	.00437 [.000417]	.017587 [.0013813]	.009002 [.0007427]
DPT	.112976 [.010117]	.190476 [.021101]	.055258 [.005251]	.350547 [.027187]	.082180 [.006822]	.006569 [.000511]	.021099 [.001540]	.0079357 [.00070377]
Pepsi Vanilla	.142494 [.011294]	.183879 [.020709]	.074286 [.005853]	.351385 [.027235]	.093712 [.007430]	.006472 [.0005017]	.020753 [.001514]	.0099596 [.0007846]
Pepsi	.205284 [.026160]	.146323 [.037777]	.152159 [.013508]	.406404 [.069967]	.089108 [.012850]	.0001227* [.003564]	-.0001899* [.004012]	.021566 [.003902]

* Not significant at the 1, 5, or 10 percent levels

[ ] Standard Errors

Diet Coke with Splenda (DCS), Diet Coke with Lime (DCL), 7 Up Mixed Berry (7UPMB), Diet Cherry Vanilla Dr. Pepper (DCVDP), Diet Pepsi Vanilla (DPV), Diet Pepsi with Lime (DPL), Cherry Vanilla Dr. Pepper (CVDP), Diet Pepsi Twist (DPT),

Table 21 (continued): Cross-Price Elasticity Results for the Effect of Price Increases in All Coca-Cola Products on the Quantity Demanded of Other Branded Products

	DCS	Coke w/ Lime	Coke Zero	Coke C-2	DCL	Coke	Sprite	Diet Coke
7 Up	.109902 [.009139]	-.269524 [.034608]	.065461 [.004729]	.271047 [.023223]	.071874 [.005987]	.0034778 [.0007457]	.025654 [.0032957]	.008987 [.000904]
Dr. Pepper	.128468 [.013585]	.200311 [.026180]	.089548 [.007006]	.246093 [.035609]	.083375 [.008745]	-.0006109* [.001776]	.0090294 [.002364]	.012589 [.0019697]
Mountain Dew	.134416 [.013430]	.241667 [.027277]	.091103 [.006930]	.272300 [.034952]	.087364 [.0086633]	.001428* [.001679]	.009768 [.00227]	.012757 [.0018642]
Diet Pepsi	.146786 [.020601]	-.262787 [.039025]	.095065 [.010675]	.401086 [.053057]	.059647 [.007923]	.004223 [.00194]	.011241 [.002431]	.013845 [.002245]
Diet Dr. Pepper	.094287 [.00988]	.255323 [.024029]	.055510 [.005115]	.256382 [.026621]	.069396 [.006620]	.001981 [.000893]	.016006 [.001742]	.008228 [.001049]
Diet 7 Up	.064961 [.007846]	.252481 [.019828]	.034203 [.004228]	-.242516 [.036098]	.050405 [.00506]	.003813 [.000495]	.028707 [.003270]	.005216 [.0064024]
Diet Mtn. Dew	.093059 [.009434]	.259825 [.023399]	.051583 [.004886]	.259213 [.025089]	.068750 [.00636]	.002526 [.000680]	.017456 [.001624]	.0076163 [.008524]
Pepsi One	.079146 [.021008]	-.234702 [.035552]	.060847 [.010039]	.418703 [.046870]	.047723 [.005613]	.007628 [.000884]	.020289 [.001552]	.0058686 [.0014697]
* Not significant at the 1, 5, or 10 percent levels								
[ ] Standard Errors								
Diet Coke with Splenda (DCS), Diet Coke with Lime (DCL)								

Table 22: Cross-Price Elasticity Results for the Effects of Price Increases in Reduced Calorie Pepsi Products on the Quantity Demanded of Reduced Calorie Pepsi Products

	DPV	DPL	DPT	Diet Pepsi	Diet Mtn. Dew	Pepsi One
DPV	.509999 [.266103]	-.515199 [.043427]	-.594285 [.075550]	-.037259 [.0031286]	-.033148 [.0062383]	-.282834 [.024499]
DPL	-.734344 [.061887]	.099055* [.203014]	-.594646 [.075552]	-.037299 [.0031299]	-.032899 [.0062395]	-.282570 [.024495]
DPT	-.306697 [.039091]	-.215069 [.027432]	-1.45039 [.295713]	-.015568 [.0019765]	-.033007 [.006233]	-.072650 [.012668]
Diet Pepsi	-.811691 [.068321]	-.563259 [.047902]	-.779911 [.088747]	-1.39073 [.055335]	-.022142 [.007033]	-.228020 [.028671]
Diet Mtn. Dew	-.207705 [.039150]	-.143747 [.027472]	-.408564 [.075837]	-.011266 [.002088]	-1.46201 [.084183]	-.022019* [.014387]
Pepsi One	-.663211 [.056757]	-.464776 [.039829]	-.458327 [.062394]	-.024903 [.002964]	-.007224* [.004672]	-1.06230 [.111904]
* Not significant at the 1, 5, or 10 percent levels						
[ ] Standard Errors						
Diet Pepsi Vanilla (DPV), Diet Pepsi with Lime (DPL), Diet Pepsi Twist (DPT)						

Table 23: Cross-Price Elasticity Results for Price Increases in Regular Pepsi Products on the Quantity Demanded of Regular Pepsi Products

	Pepsi w/ Lime	Pepsi Vanilla	Pepsi	Mountain Dew
Pepsi w/ Lime	-2.51204 [.427515]	.248463 [.069123]	.0044307 [.0009136]	.0017824* [.0016662]
Pepsi Vanilla	.174947 [.048675]	-1.78136 [.273457]	.001376 [.0006556]	-.010784 [.0021005]
Pepsi	-.487276 [.081080]	-.093101* [.092664]	-1.53911 [.046979]	.002876* [.004698]
Mountain Dew	.047455* [.058395]	-.532307 [.102571]	-.0087036 [.002080]	-1.56973 [.057183]
* Not significant at the 1, 5, or 10 percent levels				
[ ] Standard Errors				

Table 24: Cross-Price Elasticity Results for Price Increases in Regular Pepsi Products on the Quantity Demanded of Reduced Calorie Pepsi Products

	Pepsi w/ Lime	Pepsi Vanilla	Pepsi	Mountain Dew
DPV	.200353 [.049942]	.044852* [.115834]	.001646 [.0006847]	.0019390* [.001691]
DPL	.360553 [.085782]	-.183363 [.067923]	.0014294 [.0006935]	.0019524* [.001696]
DPT	.193403 [.049757]	-1.29466 [.123666]	.0015650 [.000671]	.0019915* [.001690]
Diet Pepsi	.027329* [.059080]	-.423721 [.086859]	-.005725 [.00240]	.0025317* [.002767]
Diet Mtn. Dew	.068051* [.057377]	.068875* [.081082]	-.002307 [.001022]	.009542 [.002605]
Pepsi One	.039156* [.056857]	-.411728 [.084359]	.003336 [.001196]	.0019711* [.001702]
* Not significant at the 1, 5, or 10 percent levels				
[ ] Standard Errors				
Diet Pepsi Vanilla (DPV), Diet Pepsi with Lime (DPL), Diet Pepsi Twist (DPT)				

Table 25: Cross-Price Elasticity Results for the Effects of Price Increases in All Pepsi Products on the Quantity Demanded of Other Branded Products

	DPV	DPL	Pepsi w/ Lime	DPT	Pepsi Vanilla	Pepsi	Mountain Dew	Diet Pepsi	Diet Mtn. Dew	Pepsi One
7UPMB	.305566 [.023224]	.214541 [.016299]	.552790 [.042535]	.565000 [.043859]	.785523 [.060442]	-.006941 [.001016]	.019335 [.001396]	.015410 [.0011756]	.054960 [.0039904]	.149735 [.011387]
DCVDP	.108811 [.033391]	.077121 [.023437]	.636401 [.052500]	.207161 [.064621]	.894246 [.074200]	.0075717 [.0007711]	.016338 [.0014758]	.005213 [.0017113]	.016160 [.0053183]	.132243 [.012171]
DCS	.191445 [.022498]	.135205 [.015797]	.609116 [.051366]	.404340 [.044509]	.747493 [.068655]	.011224 [.0013982]	.018110 [.001550]	.018229 [.0025641]	.039694 [.0038207]	.103367 [.027299]
Coke w/ Lime	-.194019 [.040009]	-.074173 [.038435]	.831410 [.095874]	.450236 [.049832]	.583861 [.065721]	.008040 [.000725]	.017879 [.001499]	-.0099578 [.0020269]	.053279 [.0044468]	-.094968 [.019664]
CVDP	.339685 [.028218]	.238735 [.019807]	.200471 [.061026]	.656951 [.054691]	.856736 [.071544]	.002163 [.000852]	-.015749 [.0023403]	.017040 [.0014351]	.048763 [.004278]	.167354 [.013886]
Coke Zero	.173021 [.022795]	.123068 [.016010]	.607482 [.051623]	.363938 [.045244]	.745836 [.069103]	.009968 [.0014813]	.018188 [.001633]	.016997 [.002614]	.037970 [.0039009]	.148738 [.025157]
Coke C-2	.300613 [.026648]	.211330 [.018705]	.614874 [.051395]	.596268 [.052179]	.803645 [.070296]	.012154 [.001374]	.017759 [.001507]	.023933 [.0026829]	.048562 [.004261]	.234432 [.026032]
DCL	.311704 [.026729]	.281638 [.035570]	.929144 [.099217]	.634130 [.053486]	.974463 [.078053]	.008303 [.0009169]	.018153 [.001591]	.015267 [.0014296]	.045563 [.003986]	.139020 [.012815]

[ ] Standard Errors

Diet Pepsi Vanilla (DPV), Diet Pepsi with Lime (DPL), Diet Pepsi Twist (DPT), 7 Up Mixed Berry (7UPMB), Diet Cherry Vanilla Dr. Pepper (DCVDP), Diet Coke with Splenda (DCS), Cherry Vanilla Dr. Pepper (CVDP), Diet Coke with Lime (DCL)

Table 25 (continued): Cross-Price Elasticity Results for the Effects of Price Increases in All Pepsi Products on the Quantity Demanded of Other Branded Products

	DPV	DPL	Pepsi w/ Lime	DPT	Pepsi Vanilla	Pepsi	Mountain Dew	Diet Pepsi	Diet Mtn. Dew	Pepsi One
Coke	.357191 [.039149]	.270663 [.027263]	.522937 [.077323]	.577335 [.104879]	.784748 [.112270]	-.019581 [.006667]	.018645 [.007101]	.019345 [.007350]	.073296 [.011261]	.283115 [.027986]
Sprite	.369170 [.027332]	.264511 [.019170]	.607663 [.049344]	.681966 [.056841]	.905919 [.072205]	-.0000930* [.0018973]	.018014 [.002333]	.016601 [.0023035]	.065480 [.005035]	.187248 [.013290]
7 Up	-.264148 [.040530]	-.183005 [.028431]	.184282 [.065046]	.302725 [.040830]	.383773 [.053014]	-.0017623* [.001183]	.018737 [.001610]	-.014253 [.002192]	.059135 [00.42391]	-.127344 [.019895]
Dr. Pepper	.340477 [.029217]	.245341 [.020524]	.181790 [.064812]	.624632 [.061517]	.822047 [.076943]	-.007552 [.0022513]	.016338 [.0026572]	.014784 [.002625]	-.033464 [.0076927]	.174169 [.014346]
Diet Coke	.211571 [.028691]	.160754 [.020050]	.585443 [.063717]	.374198 [.071478]	.723482 [.087761]	-.0068799* [.0042565]	.019229 [.0045503]	.014911 [.004918]	.060473 [.0075402]	.125395 [.027767]
Diet Dr. Pepper	.097725 [.033675]	.071516 [.023639]	.621686 [.052968]	.176316 [.065965]	.855945 [.074291]	.00392 [.00121]	.016551 [.001792]	.003827 [.001976]	-.077554 [.009216]	.129103 [.012099]
Diet 7 Up	.081056 [.035065]	.058116 [.024606]	.640669 [.047069]	.166602 [.068042]	.840440 [.063621]	.006724 [.000766]	.018647 [.001438]	.00363 [.001824]	.014838 [.005629]	.119102 [.010873]

* Not significant at the 1, 5, or 10 percent levels

[ ] Standard Errors

Diet Pepsi Vanilla (DPV), Diet Pepsi with Lime (DPL), Diet Pepsi Twist (DPT),

Table 26: Cross-Price Elasticity Results for the Effect of Price Increases in Reduced Calorie Cadbury Schweppes Products on the Quantity Demanded of Reduced Calorie Cadbury Schweppes Products

	DCVDP	Diet Dr. Pepper	Diet 7 Up
DCVDP	-1.03378 [.183550]	-.011645 [.0039568]	-.045864 [.0097846]
Diet Dr. Pepper	-.046579 [.015811]	-1.45188 [.063452]	-.046842 [.010003]
Diet 7 Up	-.077052 [.016013]	-.021588 [.004194]	-1.89258 [.076989]
[ ] Standard Errors			
Diet Cherry Vanilla Dr. Pepper (DCVDP)			

Table 27: Cross-Price Elasticity Results for the Effect of Price Increases in Regular Cadbury Schweppes Products on the Quantity Demanded of Regular Cadbury Schweppes Products

	7UPMB	CVDP	7 Up	Dr. Pepper
7UPMB	-2.48851 [.498436]	.050022 [.022435]	.011733 [.003632]	.0025486 [.001218]
CVDP	.175011 [.079136]	-1.29840 [.300865]	-.024940 [.005098]	-.0073775 [.001816]
7 Up	.266186 [.089537]	-.175189 [.035156]	-2.04088 [.106243]	-.00829 [.001989]
Dr. Pepper	.130531* [.092834]	-.146013 [.036345]	-.017298 [.007003]	-1.45920 [.067576]
* Not significant at the 1, 5, or 10 percent levels				
[ ] Standard Errors				
7 Up Mixed Berry (7UPMB), Cherry Vanilla Dr. Pepper (CVDP)				

Table 28: Cross-Price Elasticity Results for the Effect of Price Increases in Regular Cadbury Schweppes Products on the Quantity Demanded of Reduced Calorie Cadbury Schweppes Products

	7UPMB	CVDP	7 Up	Dr. Pepper
DCVDP	.150540 [.078219]	.159016 [.042874]	.0085278 [.003348]	.0062219 [.0013926]
Diet Dr. Pepper	.114032* [.080855]	.075846 [.025612]	.009730 [.003896]	-.018657 [.002959]
Diet 7 Up	.329324 [.088227]	.035244* [.022434]	.025366 [.006377]	.001441* [.001226]
* Not significant at the 1, 5, or 10 percent levels				
[ ] Standard Errors				
Diet Cherry Vanilla Dr. Pepper (DCVDP), 7 Up Mixed Berry (7UPMB), Cherry Vanilla Dr. Pepper (CVDP)				

Table 29: Cross-Price Elasticity Results for the Effect of Price Increases in All Cadbury Schweppes Products on Quantity Demanded of Other Branded Products

	7UPMB	DCVDP	CVDP	7 Up	Dr. Pepper	Diet Dr. Pepper	Diet 7 Up
DCS	1.05244 [.078269]	.113516 [.010434]	.307479 [.025768]	.039625 [.003082]	.016549 [.001377]	.028384 [.002596]	.047233 [.005244]
DPV	.991751 [.075423]	.046277 [.014129]	.312608 [.025995]	-.036000 [.0054608]	.016800 [.001397]	.010978 [.0036385]	.021938 [.0090995]
Coke w/ Lime	1.02389 [.077299]	.146889 [.012059]	.269730 [.023362]	-.042201 [.0056379]	.014513 [.0012553]	.037142 [.0030461]	.084091 [.006206]
DPL	.991116 [.075410]	.046550 [.014128]	.312471 [.025981]	-.035797 [.005461]	.016894 [.001397]	.011324 [.0036384]	.022496 [.009095]
Pepsi w/ Lime	.982790 [.075558]	.148496 [.012151]	.101373 [.030751]	.014328 [.004766]	.0054931 [.00168]	.038147 [.0031144]	.092687 [.0066597]
Coke Zero	1.05001 [.078735]	.106682 [.010520]	.306693 [.025803]	.040801 [.003218]	.017096 [.0014042]	.028208 [.002614]	.045281 [.005469]
DPT	.950274 [.073691]	.046276 [.014137]	.313921 [.026062]	.021978 [.0027288]	.016826 [.001404]	.010877 [.003642]	.023652 [.0091204]
Coke C-2	1.10792 [.081076]	.144089 [.011921]	.302575 [.025544]	.043307 [.0032253]	.015380 [.0013404]	.033861 [.002919]	-.069040 [.010517]
DCL	1.04560 [.078187]	.127865 [.010868]	.307026 [.025774]	.040281 [.003146]	.016854 [.0013893]	.032986 [.002690]	.057330 [.005136]

[ ] Standard Errors

7 Up Mixed Berry (7UPMB), Diet Cherry Vanilla Dr. Pepper (DCVDP), Cherry Vanilla Dr. Pepper, Diet Coke with Splenda (DCS), Diet Pepsi Vanilla (DPV), Diet Pepsi with Lime (DPL), Diet Pepsi Twist (DPT), Diet Coke with Lime (DCL)

Table 29 (continued): Cross-Price Elasticity Results for the Effect of Price Increases in All Cadbury Schweppes Products on Quantity Demanded of Other Branded Products

	7UPMB	DCVDP	CVDP	7 Up	Dr. Pepper	Diet Dr. Pepper	Diet 7 Up
Pepsi Vanilla	.983457 [.075598]	.146717 [.012082]	.304604 [.025368]	.020536 [.002674]	.016286 [.001366]	.036769 [.0030635]	.085376 [.006323]
Coke	1.04551 [.165205]	.181745 [.029076]	.242333 [.045585]	.070925 [.014821]	.023799 [.0047512]	.075892 [.0064275]	.155277 [.011488]
Pepsi	-.932218 [.157922]	.172868 [.020655]	.086474 [.039572]	.029657 [.010435]	.013960 [.003392]	.069438 [.0047519]	.141752 [.0089073]
Sprite	1.39182 [.113054]	.115051 [.011559]	.276862 [.023908]	.075473 [.0082905]	.020015 [.001732]	.051958 [.0031765]	.157299 [.014408]
Mountain Dew	1.13748 [.093044]	.139944 [.013663]	-.275996 [.041480]	.055509 [.0054115]	.018790 [.001853]	.048197 [.003324]	.114148 [.006993]
Diet Coke	.999479 [.116543]	.136319 [.019145]	.296087 [.034715]	.056588 [.009321]	.024436 [.0031064]	.057238 [.004365]	.093815 [.007832]
Diet Pepsi	.963698 [.086802]	.058355 [.016243]	.306573 [.028234]	-.027015 [.006994]	.020977 [.001979]	026262 [.004058]	.046613 [.009448]
Diet Mtn. Dew	1.10640 [.081894]	.043327 [.014225]	.276152 [.024705]	.049673 [.003652]	-.012830 [.002225]	-.051909 [.006270]	.028852 [.009087]
Pepsi One	.986329 [.075209]	.114264 [.010466]	.312264 [.025967]	-.035507 [.005464]	.017029 [.001398]	.029231 [.002641]	.064749 [.005708]
[ ] Standard Errors							
7 Up Mixed Berry (7UPMB), Diet Cherry Vanilla Dr. Pepper (DCVDP), Cherry Vanilla Dr. Pepper,							

Table 30: Distance Metric Results

Parameter	Estimate	Error	t-stat	P-value
Constant (M_0)	1.39E-03	9.87E-05	14.0347	0.000
Brand (M_1)	-1.12E-03	1.16E-04	-9.6605	0.000
Flavor (M_2)	6.48E-04	2.14E-04	3.03108	0.002
Caffeine (M_3)*	-5.22E-05	9.12E-05	-0.5724	0.567
Calories (M_4)	-8.78E-04	1.36E-04	-6.4362	0.000
Sodium (M_5)	-2.37E-03	1.93E-04	-12.278	0.000
* Not significant at the 1, 5, or 10 percent levels				

Table 31: Regional Variable Results for Carbonated Soft Drink New Product Introductions

	California	Great Lakes	Mid South	Northeast	Plains	South Central	Southeast
7UPMB	1.07E-03*	4.26E-04*	-1.05E-03*	-1.25E-03	6.44E-05*	-5.65E-04*	-1.65E-03
DCVDP	5.70E-04*	-9.62E-04*	-1.82E-03	1.56E-05*	4.22E-04*	-3.91E-04*	-1.55E-03*
DCS	-2.88E-05*	-2.15E-03	3.80E-04*	-2.90E-03	-4.50E-03	2.27E-03	3.74E-03
DPV	-1.39E-03	-2.37E-03	-4.09E-03	4.95E-04*	-2.24E-03	-3.79E-03	-2.79E-03
Coke w/ Lime	-3.01E-04*	-2.00E-03	-1.94E-03	-2.64E-04*	-1.07E-03*	-4.70E-04*	5.71E-04*
DPL	-2.51E-03	-2.75E-03	-5.15E-03	2.50E-03	-4.00E-03	-6.84E-03	-4.64E-03
Pepsi w/ Lime	-1.00E-03	-8.19E-04	-1.86E-03	7.24E-04*	-1.12E-03	-2.32E-03	-1.25E-03
CVDP	-1.45E-04*	-9.17E-04*	-2.86E-03	-2.79E-03	7.54E-04*	-1.84E-04*	-2.07E-03
Coke Zero	7.33E-03	3.48E-03	5.77E-03	7.33E-03	-4.07E-03	5.53E-03	7.41E-03
DPT	1.72E-04*	-1.17E-03*	-2.53E-03	1.02E-03*	-1.05E-03*	-2.85E-03	-2.66E-03
Coke C-2	2.05E-03*	-3.13E-04*	-7.21E-04*	-1.31E-03*	-5.06E-04*	8.71E-04*	3.34E-03
DCL	-3.56E-03	-3.21E-03	-5.21E-03	3.73E-03	-5.91E-03	-6.73E-03	-2.62E-03
Pepsi Vanilla	2.28E-04*	-6.92E-04*	-1.33E-03	-4.47E-04*	-4.04E-04*	-2.67E-04*	-5.67E-04*

* Not significant at the 1, 5, or 10 percent levels

7 Up Mixed Berry (7UPMB), Diet Cherry Vanilla Dr. Pepper (DCVDP), Diet Coke with Splenda (DCS), Diet Pepsi Vanilla (DPV), Diet Pepsi with Lime (DPL), Cherry Vanilla Dr. Pepper (CVDP), Diet Pepsi Twist (DPT), Diet Coke with Lime (DCL)

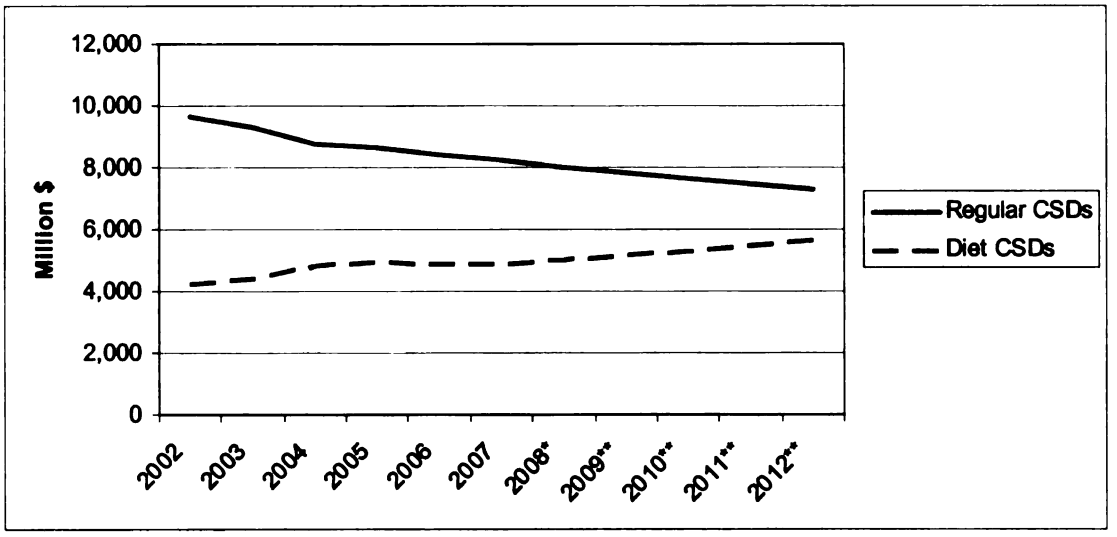
Table 32: Regional Variable Results for Carbonated Soft Drink Sector Leaders

	California	Great Lakes	Mid South	Northeast	Plains	South Central	Southeast
Coke	0.047164	-0.0215	0.016197	0.014722	-0.033952	0.073008	0.044129
Pepsi	-0.027066	-0.018243	-0.01989	-2.60E-03*	-0.020259	-0.103579	-0.047798
Sprite	4.47E-03	-8.20E-03	8.26E-03	0.012995	-0.010181	0.022332	0.020776
7 Up	0.03002	3.39E-03	-0.018052	-0.017993	1.07E-03*	-6.87E-03	-0.018085
Dr. Pepper	-0.020641	-0.03049	-8.52E-03	-0.046313	8.85E-03	0.110613	-0.017484
Mountain Dew	-0.040562	0.04258	0.031531	-0.013199	0.049666	-0.032081	0.014645
Diet Coke	0.017734	0.0238	1.91E-03*	0.023103	0.016429	4.93E-04*	0.022032
Diet Pepsi	-9.34E-03	3.33E-03*	-0.019014	0.014301	-8.02E-03	-0.061983	-0.030482
Diet Dr. Pepper	-1.78E-03	-2.14E-03	7.74E-03	-5.29E-03	7.52E-03	0.026628	2.70E-03
Diet 7 Up	8.62E-03	4.29E-03	-6.93E-03	-6.47E-03	-1.46E-03	-6.81E-03	-7.28E-03
Diet Mtn. Dew	-9.62E-03	0.013458	0.016549	-4.05E-03	0.017519	-8.79E-03	7.90E-03
Pepsi One	-4.73E-04*	-2.05E-03	-2.01E-03	6.44E-04	-3.20E-03	-4.14E-03	-1.64E-03

* Not significant at the 1, 5, or 10 percent levels

APPENDIX 3: FIGURES

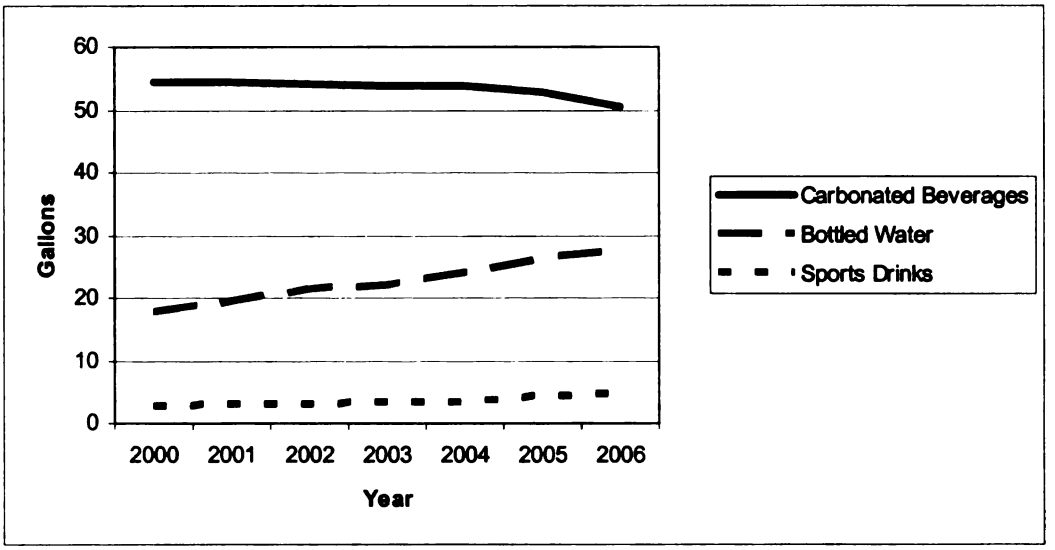
Figure 1: Food/Drug Store and Mass Merchandiser Sales and Forecasts of Carbonated Soft Drinks



* Estimated ** Forecasted

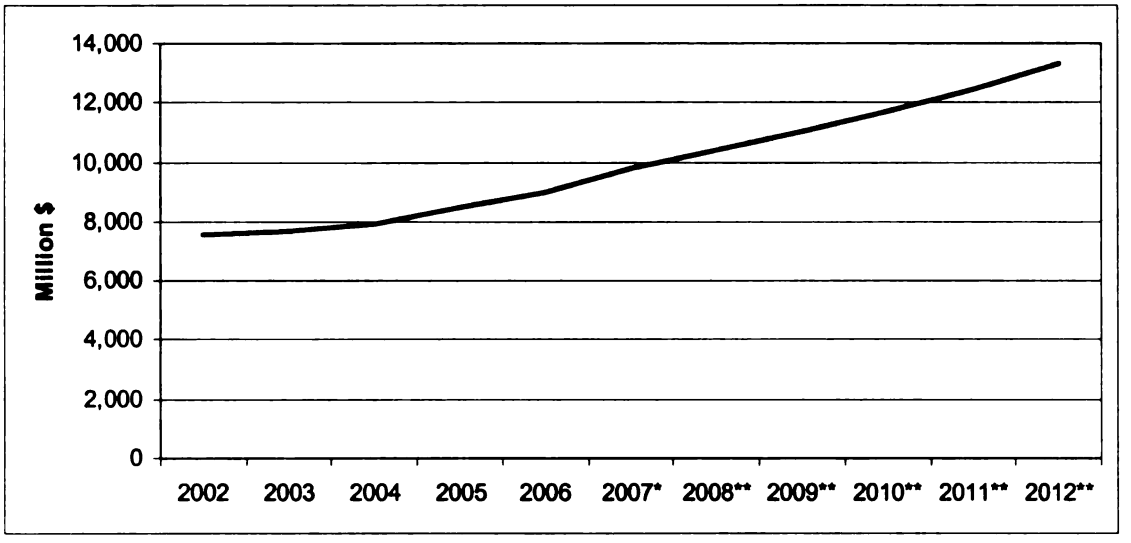
Source: Mintel Group, Carbonated Drinks - US - May 2008 - Segment Performance

Figure 2: Per Capita Consumption of Carbonated Soft Drinks, Bottled Water and Sports Drinks, 2000-06



Source: Mintel Group, Carbonated Drinks - US - April 2007 - Market Drivers

Figure 3: Food/Drug Store and Mass Merchandiser Functional Beverage Sales



* Estimated ** Forecasted

Note: Excludes sales through Wal-Mart

Source: Mintel Group, Functional Beverages - US - August 2007

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