Demographics and the Marketing of Asian Ethnic Produce in the Mid-Atlantic States

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May 2006

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Acknowledgements

The authors wish to acknowledge several individuals who provided useful comments and guidance in the course of this study. At the New Jersey Department of Agriculture, we recognize the valuable input of Secretary Charles Kuperus, Marketing Specialist Maureen Scaramella, and Division of Marketing and Development Director Al Murray. Input from the Food Innovation Center (FIC), most notably Diane D. Holtaway, Business Development Specialist is also greatly appreciated. Lucas J. Marxen, Research Analyst, Food Policy Institute and Soo-Kyung Lee, Assistant Professor, Nutritional Sciences, Rutgers University also provided valuable suggestions in the process of preparing the surveys. Bill Sciarappa, Agriculture and Resource Management Agent, and Albert Ayeni, Assistant Director – International Programs, Rutgers University, made significant contributions in translating survey and research findings into appropriate marketplace recommendations. This research was supported by a grant provided to the Department of Agricultural, Food and Resource Economics (DAFRE) and Food Policy Institute (FPI) at Rutgers by the U.S. Department of Agriculture (USDA) – Agricultural Marketing Service (AMS) and New Jersey Department of Agriculture (NJDA), grant agreement #12-25-G-0398 "Demographics and the Marketing of Ethnic Produce in the Mid-Atlantic States," The opinions expressed in the article are those of the authors and do not necessarily reflect official positions or policies of the USDA, NJDA, DAFRE, FPI, or Rutgers University.

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Executive Summary

Continued land development, rising production costs and increased competition from low-cost suppliers from outside of the region are creating new challenges for traditional agriculture in the Northeast. Farmers in the Northeast operate on a relatively small land base with high production costs, making it particularly difficult for viable production of crops which require substantial acreage in order to break even. This study was initiated to help farmers in this area to identify, size, and seize market niche opportunities for agricultural crops that can be locally grown. Key research findings indicate increased market profitability will be attained by helping retailers and growers exploit the comparative advantages associated with proximity to large, dense, high income population concentrations.

Justification for Research: Ethnic Market Niche Opportunity

Asian consumers are identified as a substantial ethnic market niche opportunity, as a result of their prevalence and significant growth in the United States, and even more notable growth in the Northeast, as well as their substantial buying power. Asians are the fastest growing single race segment in the nation in terms of population growth (48%; Census 1990 to Census 2000), and their absolute growth in the Northeast is the largest of any other race category in the region (increase of 795,000 people; Census 1990 to Census 2000). The median income for Asians exceeds the national totals for all races and has consistently done so since before 1990 (US Census Bureau; Current Population Survey; 1987 to 2000). Studies project that the national buying power for Asians as a group is expected to continue (quadrupling from 1990 to 2009, reaching ~$528 billion in 2009; Humphreys, 2004) and exceed the growth rate expectations of other major race segments (and the nation as a whole) over the same time period.

The focus of this research is refined for statistical and budgetary purposes, so that any cultural differences among Asian sub-groups are adequately addressed. As such, the research is limited to the Mid-Atlantic division of the Northeast region, given its significant Asian population, corresponding absolute growth, and relative magnitude of each in the region. The Mid-Atlantic division (as defined by the Census Bureau) includes New Jersey, New York and Pennsylvania. These three states account for 82% of the population (Census 2000) and 82% of the population growth (Census 1990 & Census 2000) in the Northeast region. The study focuses on Chinese, Asian Indian and Korean consumers because they are the three largest Asian sub-groups in both the Mid-Atlantic and larger Northeast region, accounting for 70% or more of the population and absolute growth in each of these areas.

The topic of research is fresh Asian ethnic fruits and vegetables, and in particular those preferred and purchased by Chinese, Indians, and Koreans. The perishable nature of fresh produce and the increasing growth in these Asian segments are ideal for marketing research in an attempt to exploit the local growers' comparative advantages associated with close proximity to large ethnic markets.

The general objective of this study is to document the available opportunities for Mid-Atlantic farmers to grow ethnic crops from a market demand perspective. This is accomplished primarily through the (1) quantification of the local market opportunity, (2) identification of appropriate ethnic crops for production and marketplace entry, and (3) location of ethnic population concentrations and distribution outlets to target market demand. The research included the development, administration, data collection and results analysis from an ethnic consumer survey. This study assesses the survey results of 447 ethnic consumers of three different Asian ethnicities (Chinese, Indian, and Korean) in the Mid-Atlantic states to understand their socio-demographic characteristics, shopping patterns, preferences and related practices, and ethnic produce purchases.

Quantification of Market Opportunity

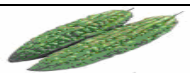
Consumer survey responses were used to estimate the market opportunity for Chinese, Indians, and Koreans in the Mid-Atlantic states. Average monthly ethnic produce expenditure per person was derived to minimize (or normalize) the variability that exists among ethnicities in terms of surveyed respondents' frequency of visits, expenditure per visit, and size of household. These expenditures are annualized (i.e. multiplied by 12) and applied to the larger populations for each respective ethnicity, to estimate the size of the Mid-Atlantic ethnic produce markets within a 95% confidence interval as follows (in millions); $213M to $282M for Chinese, $162M to $215M for Indian, and $79M to $102M for Koreans, totaling $454M to $600M for all three segments combined.

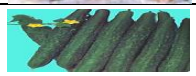
Identification of Potential Crops for Local Market Entry

Select produce items for each ethnicity, deemed feasible for production in this region, were ranked on the basis of expenditures, to prioritize subsequent production efforts, so that growers may to begin to address these sizeable local ethnic markets in a more effective manner. The top five produce items purchased in each group, ranked in descending order on the basis of average weekly respondent expenditure are as follows (with the corresponding quantity, price, and resulting expenditures);

Selected Produce Items Ranked by Avg. Weekly Respondent (Household) Expenditure

CHINESE **Produce variety**	**Average Quantity/week**	**Average Price ($)**	**Avg Weekly Exp $ (Price * Qty)**
Flower Chinese Cabbage (Nabana) Cai xin 菜心	2.40 bunches	$1.32	$3.18
Edible Snow Peas (Chinese Peas) Wan dou 豌豆	1.53 lbs	$1.76	$2.68
Chinese Kale (Chinese Broccoli) Gail an 芥蓝	1.91 bunches	$1.39	$2.66
Bitter Gourd (Bitter Melon) Gu gua 苦瓜	2.08 lbs	$1.27	$2.65
Oriental Eggplant (Asian Eggplant) Qie zi 茄子	2.06 lbs	$1.14	$2.36

ASIAN INDIAN **Produce variety**	**Average Quantity/week**	**Average Price ($)**	**Avg Weekly Exp $ (Price * Qty)**
Bitter Gourd Karela 	2.07 lbs	$1.52	$3.14
Okra Bhindi	2.10 lbs	$1.57	$2.95
Yam, Colocasia Arbi	1.50 lbs	$1.44	$2.95
Mustard Leaves Sarson	1.94 bunches	$1.30	$2.73
Black Eyed Beans Rongi	1.57 lbs	$1.45	$2.69

KOREAN **Produce variety**	**Average Quantity/week**	**Average Price ($)**	**Avg Weekly Exp $ (Price * Qty)**
White nectarine 백도	2.16 lbs	$1.74	$3.76
Apple, fuji 후지 사과	2.95 lbs	$1.15	$3.39
Korean cabbage	3.45 lbs	$0.75	$2.58
Korean cucumber 한국 오이 	2.13 lbs	$1.12	$2.39
Green onion 파	2.88 bunches	$0.81	$2.32

Location of Ethnic Population Concentrations and Marketplace Proximity

Mapping tools were developed to locate significant ethnic population concentrations and create the ability to target specific ethnic markets. New Jersey was selected as a case study to demonstrate the applications of these mapping tools. Separate Chinese, Indian, and Korean maps were generated to identify the respective population concentrations, by municipality, within the state (top-down approach; Appendix C). The top 10 municipalities (in terms of population) for each group were identified, representing more than one-quarter of the respective state populations for each as follows;

Top 10 NJ Municipalities (Descending Population Order)

Asian Indian

Edison Twp
Jersey City
Woodbridge
Piscataway Twp
Parsippany-Troy Hills Twp
South Brunswick Twp
Franklin Twp
Plainsboro Twp
Old Bridge Twp
North Brunswick Twp

Population

Top 10 = 65,334
NJ = 169,180
Top 10 account for 39% of NJ

Chinese

Edison Twp
Jersey City
East Brunswick Twp
Parsippany-Troy Hills Twp
Piscataway Twp
Marlboro Twp
Fort Lee Boro
West Windsor Twp
Plainsboro Twp
Livingston Twp

Population

Top 10 = 26,297
NJ = 100,355
Top 10 account for 26% of NJ

Korean

Palisades Park Boro
Fort Lee Boro
Edison Twp
Cliffside Park Boro
Ridgefield Boro
Leonia Boro
Jersey City
Cherry Hill Twp
Tenafly Boro
Paramus Boro

Population

Top 10 = 23,555
NJ = 334,884
Top 10 account for 36% of NJ

In addition, 83 New Jersey farmers' markets were located and ranked based on the respective size of Chinese, Indian, and Korean populations within a 5 mile radius of each (bottom-up approach; Appendix D). Farmers' markets having the 5 largest respective ethnic populations within close (5 mile) proximity were identified as potential distribution outlets for ethnic produce. A total of 11 distinct farmers' markets are identified based on this criterion. (The first two alone have the ability to reach and/or serve 17% or more of the New Jersey populations, respectively.)

NJ Farm Markets within 5-Mile Proximity to Significant Chinese/Indian/Korean Concentrations*

County	City	Farm Market	Asian Indian Population	Chinese Population	Korean Population
Middlesex	Metuchen	Metuchen Farmers Market	29,367	9,180	2,765
Bergen	Teaneck	Teaneck Farmers Market	11,658	7,738	24,619
Bergen	Fort Lee	Fort Lee Farmers Market	7,451	5,755	22,352
Bergen	Englewood	Englewood Farmers Market	7.921	6,224	21,941
Hudson	Hoboken	Hoboken Farmers Market	18,709	5,333	2,677
Union	Rahway	Rahway Farmers Market	18,571	4,608	1,523
Hudson	Jersey City	Sgt. Anthony Park Farmers Market	18,474	5,807	2,911
Middlesex	Highland Park	Highland Park Farmers Market	17,935	7,659	2,587
Bergen	Hasbrouck Heights	Hasbrouck Heights Farmers Market	13,629	4,362	15,601
Somerset	Somerset	Franklin Township Farmers Market	16,233	6,957	2,488
Bergen	Rutherford	Rutherford Farmers Market	14,279	3,763	6,048

**Significant concentrations are defined by 5 largest Asian Indian, Chinese and Korean populations, respectively, within a 5 mile radius of a given farm market (ethnicity defined per 2000 Census Summary Files 1&3).*

Verification and Amplification of Results: Recommendations for Future Research

This study also assessed the survey results of the 447 ethnic consumer responses to relate their socio-demographic characteristics, shopping patterns, preferences and related practices to their ethnic produce purchase-related behaviors. Relevant variations among ethnicities in terms of characteristics, shopping patterns, preferences, and practices were identified, and consumer behavior models were developed to determine the significance of such differences. These models predict the purchase-related actions of consumers, based upon specific consumer profile attributes, to assist in the marketing decisions associated with promoting locally grown ethnic produce. The details of these models are contained in the research report (Section 5.2 and Conclusions).

This report should be considered to be exploratory research in that it identifies potential opportunities for farmers in the region to grow ethnic produce. The resulting market demand assessment for ethnic produce is a key component in recommending appropriate crops for production. However, crop production recommendations should ultimately be based on further production feasibility, yield determination, and net profitability estimates to further prioritize these proposed crops. Toward that end, a National Research Initiative (NRI) program under the Agricultural Prosperity for Small and Medium Sized Farms is being funded to expand the scope of ethnic marketing and production research to the entire east coast. Under this NRI project, field demonstration plots for the top valued selected ethnic produce will be established in New Jersey, Florida and Massachusetts with the help of production experts. This subsequent research will provide the additional production data and profitability information necessary to make better informed decisions as to which locally grown ethnic crops are most likely to be successful (profitable) in serving the larger ethnic market opportunities along the east coast.

1. Introduction

Access and proximity to large nearby population concentrations, high population density in general, and high per capita income have traditionally been competitive advantages for commercial farmers in the Mid-Atlantic states and larger Northeast region. However, as population in this already densely populated area has increased, so has land development, causing the commercial growers in the area to operate on a relatively small land base with high production costs. Encroachment on farmland, coupled with the challenge to maintain profitability, make it particularly difficult for viable production of larger-scale agronomic crops which require substantial acreage in order to break even. In addition, modern produce distribution practices are allowing commodity products from distant areas, with lower production costs, to be shipped into the Northeast region's population centers. Rising production costs and increased competition from outside of the region are creating new challenges for traditional agriculture in the Northeast region to remain competitive.

In response to these new challenges and to remain profitable, many farmers in the region have been shifting production and adopting methods to grow higher value horticultural and specialty crops (i.e. non-commodity crops which command a premium). Such crops are usually targeted toward a specific, small consumer base or market niche that is particularly interested in and highly values the inherent uniqueness of the crop. The shift from agronomic crops to the higher value horticultural crops has also increased local competition to the established fruit and vegetable farmers, thus creating continual pressure to seek alternative and newer crops.

This study was initiated to help the commercial growers in this area rediscover their competitive advantages, by further identifying, sizing, and exploring market niche opportunities for agricultural crops that can be locally grown. Specifically, given that the concentration of population surrounding growers in this area is rich in ethnic diversity and that there is an established link between food and culture for many of these ethnic communities (Bhugra, 1999), this study seeks to explore some ethnic market niche opportunities for agricultural products. The changing agriculture patterns in the Northeast, coupled with farmers' need to explore and adopt new crops and practices in order to sustain profitability, provide compelling reasons to identify local ethnic market niches for fresh ethnic produce and assess the associated consumer demand and purchase patterns. Prior research conducted in the region supports the claim that growing demand for ethnic produce provides a potential opportunity for farmers in the

Northeast (Tubene, 2001). Therefore, this study seeks to quantify significant local demand for ethnic produce and suggest products for potential local production, locate ethnic consumer concentrations, and identify existing distribution outlets in close proximity to these consumers to prepare growers to meet the rising local demand.

The study targets Asian consumers as an ethnic market niche opportunity, chosen for their prevalence and significant growth in the US, and even more notable growth in the Northeast. The Asian population percentages and recent growth trends in the Northeast are consistent with (and slightly higher than) Asian representation and trends at a national level (Census 2000; 4.0% and 3.6% Asian population in Northeast and US, respectively, with respective growth over Census 1990 at 60% and 48% for Northeast and US). Correspondingly, the Northeast's *absolute* population growth (in terms of number of people) of Asians exceeds that of any other race category, contributing significantly to the overall population growth for this region. This is not the case at a national level where, although the Asian growth rate exceeds that of Whites and Blacks, the absolute Asian population growth does not. Further, the Northeast accounts for roughly one-quarter of the national Asian growth, yet represents 9% of the total population growth nation-wide. Research also finds that strong growth trends exist for other ethnic groups, such as Hispanic or Latino (which span many races), which may warrant further examination at a country of origin level (Table 1.1). However, this study acknowledges these trends and chooses to target the Asian market, given its more rapid emergence in the Northeast relative to national trends.

Table 1.1: Population by Race and Hispanic Origin

United States & Northeast Region
Growth: 2000 Census vs. 1990 Census

RACE	United States 1990	United States 2000	United States Growth	United States % Chg	Northeast 1990	Northeast 2000	Northeast Growth	Northeast % Chg
One Race:								
White	199,686,070	211,460,626	11,774,556	6%	42,068,904	41,533,502	-535,402	-1%
Black or African American	29,986,060	34,658,190	4,672,130	16%	5,613,222	6,099,881	486,659	9%
American Indian and Alaska Native	1,959,234	2,475,956	516,722	26%	125,148	162,558	37,410	30%
Asian	6,908,638	10,242,998	3,334,360	48%	1,324,865	2,119,426	794,561	60%
Native Hawaiian/Other Pacific Islander	365,024	398,835	33,811	9%	10,510	20,880	10,370	99%
Some other race	9,804,847	15,359,073	5,554,226	57%	1,666,580	2,429,670	763,090	46%
Two or more races	N/A	6,826,228	6,826,228	NA *	N/A	1,228,461	1,228,461	NA *
	==========	==========	==========	=====	==========	==========	==========	=====
TOTAL	248,709,873	281,421,906	32,712,033	13%	50,809,229	53,594,378	2,785,149	5%
Northeast % of US: Asian Growth							*24%*	
Northeast % of US: Total Growth							*9%*	

HISPANIC OR LATINO	United States 1990	United States 2000	United States Growth	United States % Chg	Northeast 1990	Northeast 2000	Northeast Growth	Northeast % Chg
Hispanic or Latino (of any race)	22,354,059	35,305,818	12,951,759	58%	3,754,389	5,254,087	1,499,698	37%
Not Hispanic or Latino	226,355,814	246,116,088	19,760,274	9%	47,054,840	48,340,291	1,285,451	3%
	==========	==========	==========	=====	==========	==========	==========	=====
TOTAL	248,709,873	281,421,906	32,712,033	13%	50,809,229	53,594,378	2,785,149	6%

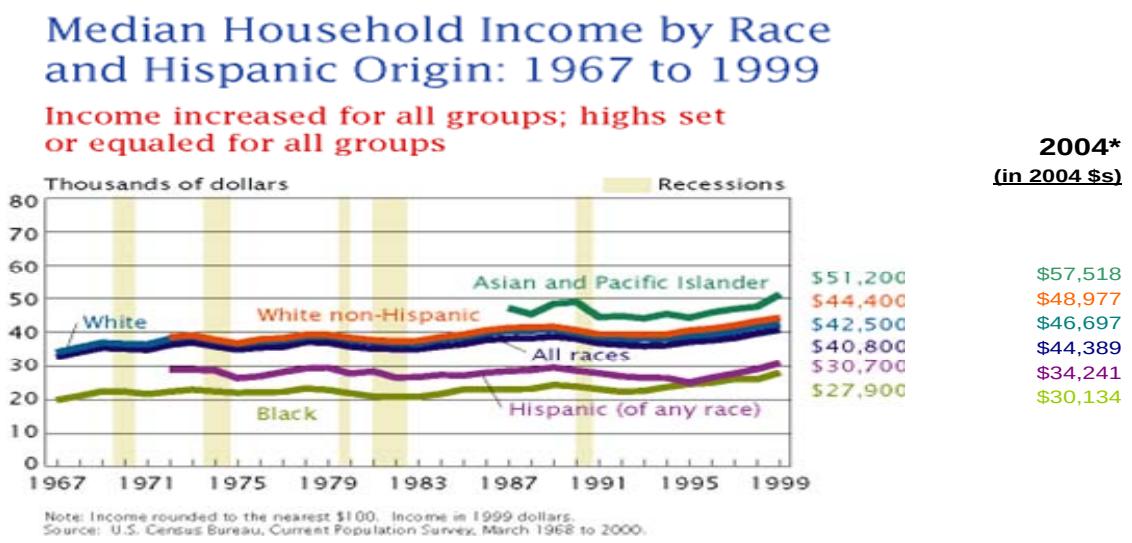
Source: Census 1990 & 2000

* *Note that growth 1990 to 2000 growth may be slightly understated, as 2000 population by race reflects one race only (i.e. excl. persons with two or more races, which is shown separately), while the 1990 population is by "primary" race.*

Population in the "Two or more races" category, represents 3% or less of the total population for US, Mid-Atlantic, or state-level data (i.e. Mid-Atlantic's NJ, NY, and PA) and is considered nominal for comparisons between categories

Another consideration for selection, and for which the Asian group stands out at a national level, is the purchasing power for each ethnic population segment. With median household income as the selection criteria (as an indicator of buying ability), Asians far exceed the national totals for all races combined, as well as Whites, Blacks, and Hispanics (of any race), and have consistently done so since before 1990 (US Census Bureau; Current Population Survey; 1987 to 2000, and 2004 CPS; Figure 1.1).

Figure 1.1: Median Household Income by Race and Hispanic Origin



* Source: *U.S. Census Bureau, Current Population Survey, 2004 Annual Social and Economic Supplement. Table: HINC-01. Selected Characteristics of Households, by Total Money Income in 2004*

Moreover, with purchase power defined as the total disposable income available after taxes for expenditures on goods and services, recent studies project the nation's buying power for Asians as a group will be seen to more than quadruple over the nineteen-year period from 1990 to 2009 (Humphreys, 2004). This rise is projected starting at $118 billion in 1990, climbing to $269 billion in 2000, and ultimately reaching $528 billion in 2009, representing a continued growth expectation. This same study reveals that this more than four-fold increase over a nineteen-year period which exceeds projections for the nation as a whole (159%), as well as for the other major race segments of Whites (140%), African American (203%), and American Indians (240%), and rivals that of Hispanics of any race (347%) over the same time frame. Such a rapid increase in purchasing power for Asians is attributed to the combination of fast growing population (supported in part by continued immigration) and generally higher paying jobs (income). This increased wage earning ability is most likely a result of higher education levels relative to the average American.

The geographic focus of this study is further refined to include only the Mid-Atlantic division of the Northeast region, chosen for its significant percentage of both the Northeast Asian population and its recent growth (82% of both the Northeast Asian population and its growth over the previous decade;

Census 2000 & 1990 - Table 1.2 & Table 1.3). Given this significant Asian population in the Mid-Atlantic division (exceeding the 74% overall Mid-Atlantic portion of the Northeast population; Census 2000), this division serves as the primary component of Asian (and other) growth trends, in the Northeast region. As such, for statistical data gathering purposes (such as sample size limitations), the study is limited to the three Mid-Atlantic states which include New Jersey, New York, and Pennsylvania. The research is directed at these three Mid-Atlantic states with the recognition that the Asian growth trend does extend (but to a lesser extent) to the New England state neighbors in the larger Northeast region, as does the market potential for all local growers serving this area.

Table 1.2: Population by Race

Northeast Region; Division Comparison
2000 Census

	Northeast Region	New England Division	% of Region	Mid-Atlantic Division	% of Region
One race					
White	41,533,502	12,050,905	29%	29,482,597	71%
Black or African American	6,099,881	719,063	12%	5,380,818	88%
American Indian and Alaska Native	162,558	42,257	26%	120,301	74%
Asian	2,119,426	374,361	18%	1,745,065	82%
Native Hawaiian and Other Pacific Islander	20,880	5,316	25%	15,564	75%
Some other race	2,429,670	448,315	18%	1,981,355	82%
Two or more races	1,228,461	282,300	23%	946,161	77%
	==========	==========		==========	
	53,594,378	13,922,517	26%	39,671,861	74%

Source: Census 2000

Table 1.3: Population Growth by Race

Unites States, Northeast Region, & Mid-Atlantic Division
Change: 2000 Census vs. 1990 Census

RACE	US	% Chg	Northeast	% Chg	Mid-Atlantic	% Chg
One Race:						
White	11,774,556	6%	-535,402	-1%	-553,324	-2%
Black or African American	4,672,130	16%	486,659	9%	395,143	8%
American Indian and Alaska Native	516,722	26%	37,410	30%	27,947	30%
Asian	3,334,360	48%	794,561	60%	649,139	59%
Native Hawaiian and Other Pacific Islander	33,811	9%	10,370	99%	7,771	100%
Some other race	5,554,226	57%	763,090	46%	596,738	43%
Two or more races	6,826,228	NA *	1,228,461	NA *	946,161	NA *
	==========	=====	==========	=====	==========	=====
TOTAL	32,712,033	13%	2,785,149	5%	2,069,575	6%

Mid-Atlantic compared to NE
82%

Source: Census 1990 & 2000

* *Note that growth 1990 to 2000 growth may be slightly understated, as 2000 population by race reflects one race only (i.e. excl. persons with two or more races, which is shown separately), while the 1990 population is by "primary" race.*

Population in the "Two or more races" category, represents 3% or less of the total population for US, Mid-Atlantic, or state-level data (i.e. Mid-Atlantic's NJ, NY, and PA) and is considered nominal for growth comparisons between categories

Further, relative to the ramifications of a particular ethnic group's purchase power, a closer look at median household incomes in the Northeast reveals that the Asian incomes in the Mid-Atlantic division (vis-à-vis New England) exceed those of the region in total (Table 1.4). This fact supports the rationale for selecting these three states, specifically for the purpose of targeting high income Asian consumer populations (with significant buying power) in an effort to assist growers to identify, seize, and profit from such market opportunities in the Northeast. Many grower recommendations as a result of studying the Mid-Atlantic Asian market demand should be beneficial and transferable to the larger group of Northeast growers who are well-positioned for similar opportunities.

Table 1.4: Median Household Income by Race

Total Money Income 2004

	United States				Northeast
Total (all races)	$44,389				
White (alone)	$46,697				
Black (alone)	$30,134				
Asian (alone)	$57,518	===>	Asiand (alone)		$55,354
			New England		$54,589
			Mid-Atlantic		$55,387
Hispanic (of any race)	$34,241				

Source: Current Population Survey
Table: HINC-01. Selected Characteristics of Households, by Total Money Income in 2004

U.S. Census Bureau, Current Population Survey, 2004 Annual Social and Economic Supplement.
Households as of March of the following year.

Within the Mid-Atlantic division category, the Asian group is further disaggregated to explore the specific ethnicities within the category, as cultural differences, agricultural practices, and general food preferences which can significantly vary across the continent's many countries of origin. The term "Asian" is generally an all-encompassing term referring to persons whose familial roots originate from many countries, ethnic groups and cultures of the Asian continent, including the Asian Indian subcontinent and Southeast Asian populations. For these research purposes, the Asian population was examined at a country of origin level, as represented by Census Bureau data. The three largest Asian population segments, in terms of size in the Mid-Atlantic, are Chinese, Indians and Koreans, in that order (and consistent with the relative magnitude for the larger Northeast region; Census 2000 – Table 1.5). The same three Asian segments also rank as the top three, in terms of absolute population growth, driving the overall Asian growth in the Mid-Atlantic and larger Northeast region. As a result, these three segments were chosen as the focus of the study.

Table 1.5: Population by Asian Race; Country of Origin

Northeast Region & Mid-Atlantic Division
Growth: 2000 Census vs. 1990 Census

	Northeast				MidAtlantic			
	1990	2000	Growth	% Chg	1990	2000	Growth	% Chg
Asian	1,324,865	2,119,426	794,561	60%	1,095,926	1,745,065	649,139	59%
Asian Indian	285,103	554,302	269,199	94%	248,821	478,145	229,324	92%
Chinese	445,089	691,755	246,666	55%	372,790	575,779	202,989	54%
Filipino	142,958	202,100	59,142	41%	127,565	181,432	53,867	42%
Japanese	74,202	76,350	2,148	3%	59,147	58,935	-212	0%
Korean	182,061	246,144	64,083	35%	160,975	216,807	55,832	35%
Vietnamese	60,509	115,487	54,978	91%	38,772	69,035	30,263	78%
Other Asian category	134,943	201,012	66,069	49%	87,856	139,210	51,354	58%
Two or more Asian categories	N/A	32,276	32,276	N/A *	N/A	25,722	25,722	N/A *

Source: Census 1990 & 2000

* *Note that growth 1990 to 2000 growth may be slightly understated, as 2000 population by race reflects one race only (i.e. excl. persons with two or more races, which is shown separately), while the 1990 population is by "primary" race.*

Population in the "Two or more races" category, represents 3% or less of the total population for US, Mid-Atlantic, or state-level data (i.e. Mid-Atlantic's NJ, NY, and PA) and is considered nominal for comparisons between categories

The research area is fresh Asian ethnic fruits and vegetables, and in particular those preferred by Chinese, Indians, and Koreans. The perishable nature of such crops, combined with the local growth in these Asian segments, will well positions farmers in the region who grow such crops to exploit the comparative advantages associated with marketplace proximity. The study seeks to assist growers adjust to and address new trends, diversify their crop enterprises through the selection of additional high value crops, and evolve into alternative and value-added enterprises, as necessitated for their economic survival and competitive edge in the marketplace. The ever-growing Mid-Atlantic ethnic diversity and opportunity offered by ethnic produce markets (and largely untapped by local growers), lend themselves to market transition for Mid-Atlantic communities in general and farmers in particular.

The overall objective of this study is to define the available opportunities for Mid-Atlantic farmers to grow ethnic crops from a market demand perspective. There are five primary project components. First, the composition and demographic characteristics of Asian consumers who buy ethnic produce are determined in an attempt to create demographic profiles for the ethnic groups studied. These

characteristics include neighborhood, household (size and ages), residency (i.e. years in current state), gender, occupation, and income.

Second, specific shopping patterns of Asian consumers of ethnic produce are summarized as to their expenditures on all fruits and vegetables, purchases of ethnic produce, and visitation to ethnic grocery stores and other establishments for ethnic produce (frequency, distance traveled, types of outlets, etc.).

Third, opinions, preferences, and practices that influence consumers' decisions to purchase ethnic produce are analyzed. This is done in an effort to ultimately link these patterns, opinions, and attribute preferences to demographic profiles and establish relationships among them which influence purchases.

Fourth, ethnic produce expenditures of a sampling of Asian consumers are quantified in order to estimate the produce expenditures for the larger population (in the Mid-Atlantic division). Spending patterns such as amount spent on ethnic produce per visit, number of visits to ethnic grocery stores and willingness to pay a premium for ethnic produce are analyzed.

Finally, survey sample data is utilized to arrive at Mid-Atlantic produce expenditure estimates, predictive models of consumer buying behaviors, and enhanced methods for identifying geographic concentrations of ethnic consumers. Specifically, with regard to significant research beyond the analysis of survey sample data, the study extrapolates the produce expenditure data to approximate the current size of the Chinese, Indian, and Korean produce markets in the Mid-Atlantic division. Expenditures for thirteen selected varieties of ethnic produce (for each of the three ethnic groups) are assessed and ranked in order to prioritize individual ethnic crops (and opportunities) on the basis of highest market potential. Relevant data pertaining to consumer characteristics, shopping patterns, and beliefs are incorporated into econometric models and used to predict ethnic consumer buying behaviors for Chinese, Indian, and Korean populations in the Mid-Atlantic states. Mapping tools are developed and utilized to locate geographic concentrations of ethnic populations within the state of New Jersey and identify existing distribution outlets (farmers markets) within close proximity to these concentrations, demonstrating the methodological benefits of such applications in further isolating and more specifically targeting appropriate local markets in other states.

2. Research Approach

The research approach entailed the use of a mail-administered written survey that was sent to and completed by the self-identified principal grocery shopper for each household. Prior to survey administration, a panel of experts consisting of members from New Jersey Department of Agriculture, Rutgers Cooperative Research and Extension, Food Policy Institute, Food Innovation Center, Department of Food and Resource Economics (Rutgers University) and New Use Agriculture and Natural Plants Products Program was formed to provide input, offer suggestions, and ultimately review the three ethnic group selections and varieties of fruits and vegetables included in the questionnaire for each Asian group. In addition, input from representatives in each of the respective ethnic groups and on investigator visits to Chinese, Indian, and Korean grocery stores were incorporated into the overall design of the survey and the crop selection therein. The final crop selections were based upon the combined inputs of these regional experts, crop specialists, and ethnic representatives. More specifically, crop lists for each respective ethnic group were compiled from the produce items identified and deemed appropriate (i.e. relatively popular and/or commonly consumed) by these qualified specialists. These lists of crops were further subjected to a series of considerations including but not limited to the known presence of existing marketplace and/or production constraints (e.g. climate, cost, regulations, seed supply, compatibility to be grown in this region, or other potential barriers to entry) and their relative importance and potential impact in the Northeast region. Priority was given to crops most likely to help local growers realize comparative advantages associated with their proximity and access to densely populated, high income, ethnic communities (e.g. specialty crops with short post-harvest life were given priority over commodity crops with long shelf life and less-perishable crops such as beans and certain peppers used primarily as spices). Specific consideration was given for the growing cycle of specialty crops and their adaptability to the climatic patterns in the Mid-Atlantic states (and larger Northeast region) in arriving at the selection of 13 crops for each ethnic community. That is, due to climatic conditions in these states, only crops that are able to be grown within the production window or season of the region (spring and summer), were included. This precluded the selection of many of the perennial tropical fruits and vegetables that simply cannot be field grow in this region, and further refined the focus to primarily vegetables.

Upon completion of the crop selection and survey design process, the questionnaires were mailed to samples of Chinese, Asian Indian, and Korean residences (households) throughout New Jersey, New York, and Pennsylvania. Separate surveys were mailed to members of each respective ethnic group, the

only survey variation being references to the specific ethnic group's name, country of origin, and produce items selected for inclusion (varying for respective cultures, tastes/preferences, and popularity; see Appendix A for basic survey without crop lists).

The survey objective was to gather relevant consumer information such as demographics, shopping patterns and preferences, expenditures on selected ethnic produce, and willingness to pay premiums over traditional American produce. The data collected was utilized to analyze ethnic consumers' patterns of purchase and propensity to purchase ethnic produce and estimate the associated market potential. The ultimate goal was to develop models, based on an understanding of the survey data, to predict consumer purchase-related behaviors based upon the relevant consumer attributes (profiles) identified for modeling purposes. These behavior predictions were developed for use with mapping tools to provide ethnic produce marketing recommendations based upon the profiles of identifiable (targeted) ethnic consumer population concentrations.

The remainder of the report addresses the specific research components in detail. The sampling and data collection processes are documented, survey results and subsequent modeling outcomes are presented and analyzed, and recommendations for policy changes, program plans, and further research are provided.

3. Sampling, Responses, and Associated Data Limitations

Consistent with the rationale for selecting the Mid-Atlantic division and three ethnic groups of study, samples of the populations were identified to receive mailings of the survey. Specifically, sample targets were identified based on 2000 Census populations for Chinese, Asian Indians, and Koreans in the three Mid-Atlantic states (NJ, NY, PA). A sample size of 1800 surveys was statistically determined, with 600 surveys for each of the three groups. Further sample size requirements were established, based upon ethnic group by state, in accordance with a stratified random sampling method (i.e. stratified random sampling was used where the sample is selected such that the Asian groups of interest are represented in the same proportion as they occur in the population, per Census 2000).

Lead-list mail (address) data for Chinese, Indian, and Korean households in the Mid-Atlantic states were purchased from InfoUSA.com. Based on random sampling of these leads, and consistent with the

aforementioned stratified sampling methodology, questionnaires were sent to each ethnic group in New Jersey, New York and Pennsylvania, accordingly. The survey packet included a cover letter, questionnaire, return address stamped envelope and a dollar bill (to serve as incentive to follow-through with completion). Gentle reminder cards were also sent to those who did not respond within two weeks.

A total of 447 surveys were returned (see Appendix A for sample questionnaire). A roughly 25% response rate was realized and was fairly consistent across groups. The usable surveys by group were 152 from Chinese, 135 from Indians, and 160 from Koreans, with overall response rates of 25%, 23% and 27%, respectively. Given the slight difference in response rates for the respective Asian ethnic groups, there are associated variability implications for any subsequent data analysis. More specifically, a slight difference in the level of precision exists for estimating the sample mean and the true value of the population mean (i.e. margin of error). To assess these differences, the corresponding margin of error was calculated for each ethnic group, based upon the sample of surveys received, relative to the respective populations (Census 2000 Population). These calculations assumed a normal response distribution and criteria of 95% confidence interval targeted for these research purposes (Six Sigma, 2005).

The results indicate that any predicted statistic (such as the expenditure on ethnic produce) for each of the three ethnic groups based on the total response by each ethnic group (irrespective of the State it came from) will have a margin of error of approximately 8% in this study, in order to achieve the desired 95% confidence interval. Further, the variability in error is relatively small across groups (<1%; Table 3.1).

Table 3.1: Survey Sample Size and Response Rate

Mid-Atlantic Chinese, Indian, & Korean Surveys
Surveys Sent and Received;
Corresponding Margin of Error and Response Rate

	Chinese				Indian				Korean				Total			
	Population*	Surveys			Population*	Surveys			Population*	Surveys			Population*	Surveys		
		Sent	Rec'd	Rate		Sent	Rec'd	Rate		Sent	Rec'd	Rate		Sent	Rec'd	Rate
NJ	100,355	105	28	27%	169,180	212	70	33%	65,349	181	52	29%	334,884	498	150	30%
NY	424,774	443	107	24%	251,724	316	48	15%	119,846	332	76	23%	796,344	1,091	231	21%
PA	50,650	53	17	32%	57,241	72	17	24%	31,612	88	32	36%	139,503	213	66	31%
Mid-Atlantic	**575,779**	**601**	**152**	**25%**	**478,145**	**600**	**135**	**23%**	**216,807**	**601**	**160**	**27%**	**1,270,731**	**1,802**	**447**	**25%**
Margin of Error @ 95% CI			**8.0%**				**8.4%**				**7.8%**					

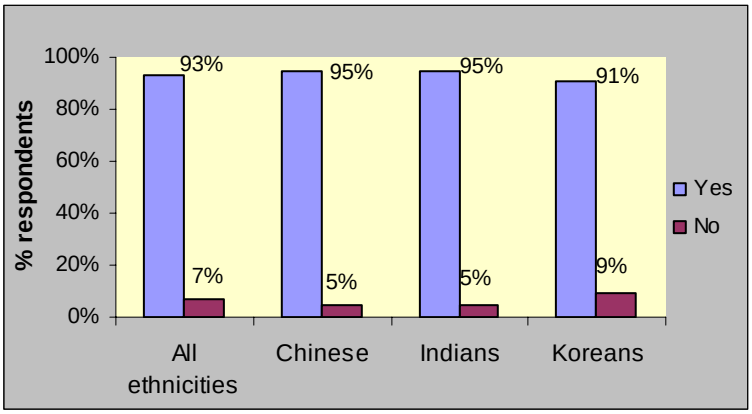
* Source: Census 2000 Population

Given that the questionnaires were drafted in English, it should also be noted that there may be a response bias, as some of the ethnic respondents who do not fluently speak (or read) English may not have responded to the survey. Further, the survey was to be completed by the principal grocery shopper in the family, as deemed appropriate by the respondent. The results that follow are, in certain instances, based upon the respondent-specific socio-demographic information, in addition to socio-demographic information for the household. While this is considered to be the appropriate individual-specific information (e.g. gender, age, birthplace, etc.) for this research purpose, the individual socio-demographic for any other shoppers in a household are not reflected. The extent to which other household members shop for ethnic produce may vary and could influence the household expenditures accordingly.

4. Survey Results

The survey results have been grouped under four sub-categories; (4.1) socio-demographic characteristics of survey respondents, (4.2) shopping patterns of respondents, (4.3) opinions, preferences and related practices of respondents, and (4.4) produce expenditures of respondents. The characteristics of all survey respondents are analyzed. However, a majority of the shopping patterns and preferences, and all reported ethnic produce expenditures reflect responses from only those respondents who met the questionnaire criteria for ethnic produce "consumer". Specifically, Chinese, Indian, and Korean consumers are defined as those who bought ethnic (Chinese/Indian/Korean) produce in the past year. More than 90% of each of the respective Asian sub-groups met this criteria, with a combined total of 93% of the respondents (all 3 ethnicities combined) qualifying as ethnic produce consumers (Question #1). The variation across groups is considered minimal (Figure 4.1).

Figure 4.1: Respondents Purchasing Ethnic Produce (in the Past Year)



N=447 N=152 N=135 N=160

In general, a significant majority of respondents bought ethnic produce within the past year and qualified to answer all questions in the survey. Further, given the relatively few non-purchasers that responded, the research does not attempt to compare characteristics between purchasers and non-purchasers (within the designated one year prior timeframe), as the separate sample sizes are not sufficient for statistical purposes. Rather, the analysis attempts to profile the ethnic consumers (regardless of whether or not they purchase ethnic produce specifically) and relate this to their decisions to purchase ethnic produce (or not) in the subsequent demand model outcomes. The number of responses included in each of the analysis that follows is provided accordingly.

4.1. Characteristics of Survey Respondents

The respondent characteristics surveyed are primarily socio-demographic in nature, but also include specific elements with regard to residency to determine if acculturation (e.g. respondent's age, birthplace, or years as a United States resident) impacts consumer spending patterns and preferences. In addition, general patterns and preferences for all produce, irrespective of ethnic origin, are assessed.

Residency

With regard to residency, respondents in each of the three groups categorized their neighborhood as follows: more than half (54%-61%) are Suburban; another 35%-40% are Urban; and less than 5% are rural (question # 27). The variation across groups is considered minimal (Table 4.1).

Table 4.1: Type of Respondents' Neighborhoods as Self-Reported

Type	Overall	Chinese	Indian	Korean
Urban	38%	37%	36%	41%
Suburban	58%	60%	61%	54%
Rural	4%	3%	3%	5%
Total	**100%**	**100%**	**100%**	**100%**
	N=413	N=139	N=125	N=149

More than half of the respondents in each of the three groups (53%-70%) have lived in their current state of residence for more than 10 years (Question #28). Therefore, although migration between states may exist, it does not appear to be present in a majority of the cases, as most respondents have maintained residency in the state for more than a decade (Table 4.2). This helps to establish that, although significant migration across states could potentially make it difficult to characterize states based on the sample data, this is not a significant concern with this sample.

Table 4.2: Number of Years that Ethnic Respondents have Lived in their Respective States

Number of years	Overall	Chinese	Indian	Korean
0 to 10	36%	30%	47%	33%
11 to 20	35%	37%	38%	31%
21 to 30	18%	18%	11%	24%
31 to 40	7%	10%	2%	8%
41 to 50	3%	5%	0%	3%
51 to 60	1%	1%	2%	0%
61 to 100	1%	1%	0%	2%
Total	**100%**	**100%**	**100%**	**100%**
	N=435	N=147	N=133	N=155

Country of Birth, Age Upon Arrival to US, and Current Age

The survey asked for the respondent's country of birth (US, country of ethnic origin; China/India/Korea, or other; Question #37) and respondent's age upon first arrival to the United States, where applicable (Question #38). The responses revealed that a large majority of the respondents (86%-95%) from each group were born outside the United States, usually in the country of origin for their respective ethnicity (i.e. China/India/Korea), with the exception of the Chinese group whose non-US born respondents originated in equal proportions from China versus the sum of all other countries (other than US or China). The average age upon arrival to the US, for those not born here, is between 25 and 27 ½ years of age (Table 4.3).

Table 4.3: Country of Birth and Age of Respondent upon Arrival to US

Country of Birth	Overall	Chinese	Indian	Korean
Born in US	10%	14%	5%	11%
Born in Country of Ethnicity	67%	43%	77%	82%
Born outside of US, other than Country of Ethnicity	23%	43%	19%	8%
Total	**100%**	**100%**	**100%**	**100%**
	N=439	N=148	N=132	N=159

Age upon arrival to US, if born outside US (Avg Yrs)	26.1	24.9	27.5	25.8
	N=365	N=121	N=117	N=127

Approximately half of the respondents in each group are 36-50 years of age (Question #32). The other half for each group are distributed roughly equally between the 15-year ranges preceding and following this (i.e. 21-35 years and 51-65 years), with a remainder of 11% or less in each group being over 65 years of age (Table 4.4).

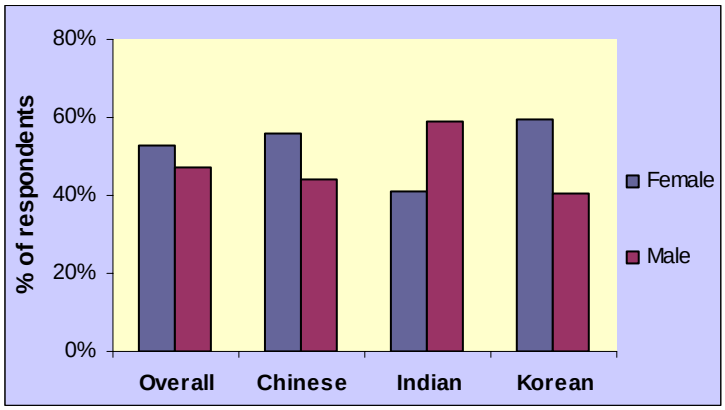
Table 4.4: Age of Respondents

Age (Years)	Overall	Chinese	Indian	Korean
Less than 20	0.5%	0.7%	0.0%	0.6%
21-35	22.6%	17.7%	29.5%	21.4%
36-50	46.6%	52.4%	44.7%	42.8%
51-65	22.1%	20.4%	22.0%	23.9%
Over 65	8.2%	8.8%	3.8%	11.3%
Total	**100%**	**100%**	**100%**	**100%**
	N=438	N=147	N=132	N=159

Gender

The gender of respondents for each group is split, within ten percentage points of each other (i.e. 50% +/- 10% for Men/Women; Question #31). However, there are slightly more male (just under 60%) than female (~40%) respondents in the Indian group, in contrast to more females in the other two groups (Figure 4.2).

Figure 4.2: Gender of Respondents

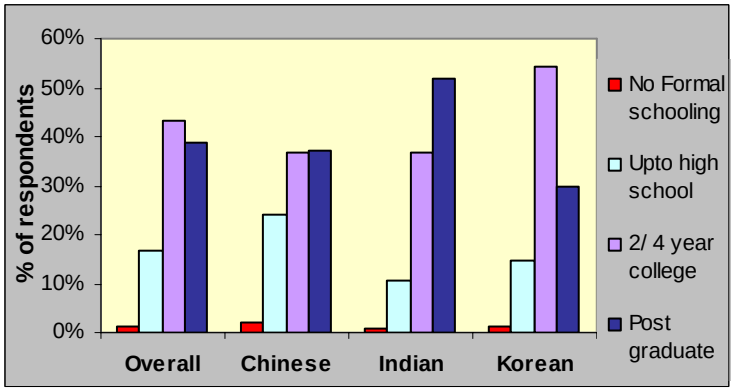


N=437 N=148 N=132 N=157

Education and Occupation

Approximately three-quarters or more of respondents in each group are college graduates (either two/four year colleges or post-graduate; Question #33). Further, just over half of the Indian respondents have post-graduate degrees (Figure 4.3).

Figure 4.3: Education Levels of Respondents



N=434 N=145 N=131 N=158

A large majority of respondents in each group are employed (primarily by others with fewer being self-employed), while those not employed are basically distributed evenly among retired, full-time homemaker, or otherwise unemployed (includes "other"; Question #34). Further, the proportions across groups are fairly consistent (i.e. 70%/30% employed/unemployed and 10% in each unemployed category), with the exception of the Indian group which has a higher proportion of employed (80%), in which means each of the unemployed categories is lower (5%-8% in each; Table 4.5). This could

correlate to the higher education levels found in this group, as one might expect those with higher education levels to have higher employment rates.

Table 4.5: Occupation of Respondents

Occupation	Overall	Chinese	Indian	Korean
Employed by others	52%	53%	67%	39%
Self-employed	20%	17%	13%	29%
Full-time homemaker	10%	12%	8%	10%
Retired	8%	8%	5%	11%
Unemployed	4%	5%	3%	3%
Other	6%	5%	5%	7%
Total	**100%**	**100%**	**100%**	**100%**
	N=439	N=148	N=132	N=159

Marital Status

More than three-quarters of respondents in each group are married. Relatively few are divorced, separated or widowed (less than 5% in each), while most remaining respondents are single (5%-16% single and 3% or less in an "other" category; Question #36). The Korean group has a slightly lower proportion of married respondents than Chinese and Indian, whereas the proportion of single and widowed Korean respondents is higher (Table 4.6).

Table 4.6: Marital Status of Respondents

Marital status	Overall	Chinese	Indian	Korean
Married	83.5%	85.0%	91.0%	75.5%
Single	10.6%	9.5%	5.3%	16.1%
Widower	2.1%	0.7%	0.8%	4.5%
Divorced	2.1%	2.0%	2.3%	1.9%
Separated	0.5%	0.0%	0.8%	0.7%
Other	1.4%	2.7%	0.0%	1.3%
	100%	**100%**	**100%**	**100%**
	N=436	N=147	N=133	N=156

Household Size and Composition

Approximately three-quarters of the households surveyed have two to four members (Question #29). There is a slight variation across the groups in that the Indian and Korean groups reported slightly more in this range (~80%), in contrast to Chinese who reported slightly fewer (67%), due to more Chinese households with greater than four members (Table 4.7). The average family size for the Chinese, Indian, and Korean groups is 3.6, 3.6, 3.2 family members respectively.

Generally speaking, half of the households in each group have two adults, and roughly another 30% or so have either three or four. The only exception to these generalizations is the Korean group which has slightly fewer two-adult households (45.7%) and slightly more one-adult households (12.6% as compared to half or so less than that for Chinese/Indian). This is consistent with the higher Korean proportions of single and widowed respondents.

Approximately half of the households have children, although the Indian group portion was somewhat higher (~65%; Question #30). A majority of each group has one or two children, while significantly smaller portion has three (primarily the larger Chinese households), and less than 3% in each group have four or more (Table 4.8).

Table 4.7: Respondents' Household Size

Household Members (#)	Overall	Chinese	Indian	Korean
1	6%	5%	2%	9%
2	23%	25%	20%	24%
3	24%	20%	27%	24%
4	29%	22%	34%	31%
5	11%	17%	8%	8%
6 or more	8%	11%	10%	4%
Total	**100%**	**100%**	**100%**	**100%**
	N=439	N=148	N=133	N=158

Table 4.8: Respondents' Household Composition

Adults (#; 17+ years)	Overall	Chinese	Indian	Korean
0	1.7%	0.0%	1.6%	3.3%
1	8.2%	6.4%	4.8%	12.6%
2	52.9%	55.7%	58.4%	45.7%
3	19.7%	17.9%	16.0%	24.5%
4	13.0%	14.3%	15.2%	9.9%
5 or more	4.6%	5.7%	4.0%	4.0%
Total	**100%**	**100%**	**100%**	**100%**
	N=416	N=140	N=125	N=151

Children (#; <17 years)	Overall	Chinese	Indian	Korean
0	46.2%	47.9%	35.2%	53.6%
1	23.8%	20.7%	31.2%	20.5%
2	20.2%	17.1%	25.6%	18.5%
3	7.5%	12.1%	5.6%	4.6%
4	1.9%	1.4%	1.6%	2.6%
5 or more	0.5%	0.7%	0.8%	0.0%
Total	**100%**	**100%**	**100%**	**100%**
	N=416	N=140	N=125	N=151

Household Income

The household income bracket of the survey respondents is distributed over several different ranges (Question #35). More than half of the households in each group fall over a wide range from below poverty to middle income ranges including that from $20,000 up to $80,000 per year range and are fairly evenly distributed in $20,000 increments (i.e. among $20-$39K, $40-$59K, $60-$79K). Further, the median for each sample group falls in the center of this range ($40,000 up to $60,000), consistent with the total Asian population for the Mid-Atlantic division, larger Northeast region, and total United Sates ($55.4K, $55.4K, and $57.5K, respectively; cited in the Introduction – Census CPS).

Another roughly 40% of the households in each group are in are in the range of $80,000 per year or higher, and slightly *less* than half of these are in the $125,000 or more range, with the exception of Indians which have slightly *more* than half over $125,000. Likewise, examination of the average and median incomes for each sample group reveal that the average Indian household income bracket is slightly higher (i.e. $60 up to $80K) than its median, and both the average and median for the Chinese and Korean groups, respectively. This illustrates that the Indian incomes are slightly skewed toward the higher end, relative to the incomes of the Chinese and Koreans. The Indian case of more households falling into

the highest income bracket correlates with the higher education levels (more post-graduates) of Indians. The remaining households in each group (5%-13%) earn less than $20,000 per year (Table 4.9).

Table 4.9 Respondents' Household Income Range

(Annual Income before Taxes)

Salary range	Overall	Chinese	Indian	Korean
Less than 20,000	9%	13%	5%	8%
20,000 - 39,999	16%	15%	15%	18%
40,000 - 59,999	17%	15%	22%	17%
60,000 - 79,999	17%	16%	16%	18%
80,000 - 99,999	12%	14%	9%	12%
100,000 - 124,999	12%	15%	9%	11%
125,000 - 149,999	5%	3%	7%	4%
150,000 – 199,999	6%	4%	9%	7%
200,000 or more	6%	5%	8%	6%
Total	**100%**	**100%**	**100%**	**100%**
	N=406	N=136	N=124	N=146

The aforementioned socio-demographic characteristics of respondents and their households are relevant for creating ethnic consumer profiles and targeting specific ethnic markets by retailers and producers. These socio-demographic characteristics are further examined, in combination with respondent shopping patterns and preferences in the next two sections, to determine the significance of such characteristics in predicting consumer buying behaviors.

4.2. Shopping Patterns of Respondents

Produce Purchases

The respondents' average weekly expenditures for total fresh fruits and vegetables, whether traditional US or ethnic produce, is $45.48 (Question #23). This ranges from $38.60 for Koreans to $54.06 for Chinese respondents, with $43.53 for Indians being relatively close to the average for all three groups. To further assess the shopping patterns and preferences associated with ethnic produce, respondents were disaggregated into two groups; consumers and non-consumers of ethnic produce (using the aforementioned criteria of ethnic produce purchases within the past year). This distinction reveals a common occurrence (across all three groups) of higher total produce expenditures (40%-80% higher) by those who consume ethnic produce than those who typically consume traditional American produce only (Table 4.10). The patterns, preferences, and purchases of consumers who purchase ethnic produce

warrant further examination in order to determine what influences their decisions to purchase. Again, this group of consumers includes 93% of all sample respondents with more than 90% for each respective group (see also Figure 4.1).

Table 4.10 Average Respondent Produce Expenditure per Week

(Includes Chinese/Indian/Korean and Traditional American Produce)

Ethnic Produce Consumer?	Overall	Chinese	Indian	Korean	
Consumer	$47	$55	$44	$40	N=396
Non-Consumer	$29	$38	$32	$22	N=29
All Respondents	**$45**	**$54**	**$44**	**$39**	N=425
	N=425	N=149	N=126	N=150	

Shopping Frequency

The shopping patterns of respondents that follows includes the responses from those who identified themselves as having bought ethnic (Chinese, Indian, and Korean, respectively) produce in the past year, hereinafter referred to as ethnic produce "consumers".

Just under half of the ethnic produce consumer respondents in each group shop once a week (41%-48%). Another roughly 40% shop either more than once a week or once every two weeks. Fewer than 20% in each group shop once a month or less (Question #2). However, there is variation across the groups, as the Chinese typically shop slightly more frequently than their Indian and Korean counterparts; greater than two thirds shop once a week or more compared to similar proportions of Indians and Koreans respectively, who shop once every week or two (Table 4.11).

Table 4.11: Shopping Frequency for Ethnic Produce

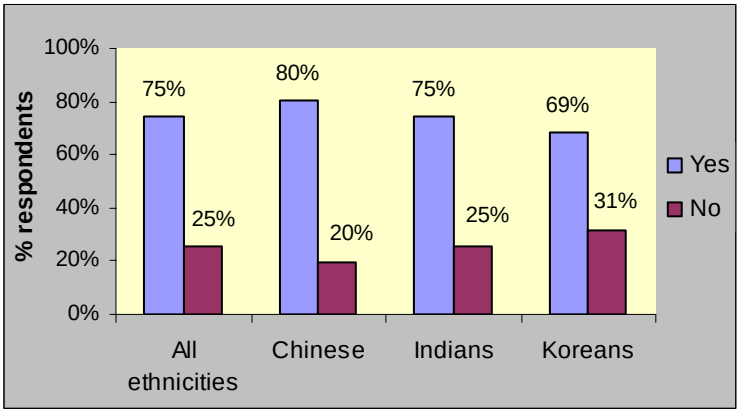
Frequency	Overall	Chinese	Indians	Koreans
More than once a week	22%	36%	15%	15%
Once a week	44%	43%	48%	41%
Once in two weeks	19%	9%	20%	27%
Once a month	10%	10%	12%	8%
Less than once a month	6%	2%	5%	9%
Total	**100%**	**100%**	**100%**	**100%**
	N=416	N=143	N=128	N=145

Multi-Store Shopping

Consumer responses indicated that approximately three-quarters shop at more than one food store for their ethnic produce (Question #4). Not surprisingly, as seemingly correlated with more frequent store visits, slightly more Chinese consumers shop multiple stores than Indians or Koreans (in that order; Figure 4.4).

To increase the understanding of what drives the store-hopping behavior, the multiple store-shopping habits must be studied in conjunction with other consumer characteristics, preferences, and practices. Once this behavior is better understood, it may be possible to distinguish the consumer profile of shoppers that may be willing to shop at a new market or store-type (i.e. have a tendency to store-hop) from those that are loyal to a particular establishment or type of establishment. This will help growers and retailers to target consumers that may be receptive to the introduction of new farm and/or ethnic produce markets in their area. This study of the profile of consumers who may be inclined to purchase from these new establishments is conducted in a subsequent modeling section of the report (Section 5.2).

Figure 4.4: Respondents Shopping More Than One Food Store for Ethnic Produce



N=415 N=143 N=127 N=145

Establishments Frequented

To ascertain which establishments consumers shop at for ethnic produce, respondents were asked to indicate all types of establishments from which they purchase ethnic produce during the peak season or "summer" months (as not all types are available at non-peak times of year). Each respondent was provided a list of five types of establishments, as well as an "other" category. They then were asked to indicate all that apply (i.e. the positive responses exceeds the number of respondents; Question #3).

More than three-quarters of the consumers in each group indicated that they purchase from ethnic stores. Although all three ethnic groups display high "brand loyalty", there is notable variation across the sample groups as the ethnic store shoppers range from 77% of Korean consumers, compared to 90% of Chinese, and a staggering 97% of Indian consumers.

Approximately 40% of the consumers surveyed indicate that they purchase ethnic produce at retail supermarkets (with relatively little variation across groups, ranging from 35% to 44%).

Between 10% and 23% of consumers surveyed indicate that they make purchases at farmers' markets, with Indians at the high extreme and Chinese and Koreans at or close to the bottom of that range.

Less than 10% of consumers surveyed in each group purchase at roadside stands, farmhouses, or elsewhere, with the exception of 14% of Chinese consumers purchasing at roadside stands (Table 4.12).

Table 4.12: Establishments Frequented for Ethnic Produce Shopping (During the Summer Season)

Establishment	Overall	Chinese	Indian	Korean	*Responses*
Ethnic fruit & vegetable stores	87%	90%	97%	77%	*364*
Retail supermarkets	38%	44%	35%	34%	*157*
Farmers' market	15%	10%	23%	12%	*62*
Roadside stands	7%	14%	5%	2%	*29*
Farmhouse	3%	2%	3%	3%	*11*
Other	6%	8%	4%	7%	*26*
Sum > 100% indicates multi-store shopping	**156%**	**168%**	**166%**	**134%**	
	N=417	N=143	N=128	N=146	

Proximity to Market

One factor that may affect consumer shopping patterns is each consumer's *ability* to shop, based upon store availability (or lack thereof). To assess store availability, consumers were asked to indicate how close the nearest ethnic store is to them (Question #7). The results reveal that more than half (53%-68%) of the consumers in each sample group has access to an ethnic market within 10 miles. Another 20% or so have a market within 10-20 miles, while fewer than 25% do not have an ethnic store within 20 miles. The Korean consumers sampled appear to have fewer stores within a 10 mile radius, relative to the Chinese and Indians sampled. A higher percentage of Koreans, relative to Chinese and Indians

consumers, indicated that the nearest store is greater than 20 miles away (Table 4.13). This could explain the fewer visits to ethnic stores, relative to the other two groups.

Lack of availability of an ethnic store (at any distance) does not appear to be an issue for the sample consumers, as only 2% or less of consumers in each group indicated that there was no such store available. (This could be because those that *do not have access to* or are not aware of such a store, may *not purchase* ethnic produce and, as a result, are not included in the sample of consumers). However, the research that follows (in modeling Section 5.2) attempts to determine whether relationships exist between consumer travel distance and consumer characteristics and/or preferences regarding ethnic stores and the produce they carry. If such relationships are identified, some relevant conclusions may be drawn regarding the type of consumer (profile) that may be more or less inclined to travel further. Further, if concentrations of such populations can be identified (geographically), this may help farmers and retailers to determine the optimal locations for any new establishments.

Table 4.13: Proximity of Ethnic Market to Respondents

Number of miles	Overall	Chinese	Indians	Koreans
0-10 miles	62%	65%	68%	53%
10-20 miles	21%	25%	15%	24%
Above 20 miles	15%	8%	16%	22%
No such store	1%	1%	1%	2%
Total	**100%**	**100%**	**100%**	**100%**
	N=416	N=143	N=128	N=145

While there are many factors that can impact the frequency of purchase and type and number of establishments visited, perhaps the most potentially limiting factor to consumers is the lack of store or market availability or lack of proximity to such a market. In those cases where access or distance to such an establishment is an issue for the consumer, one would expect to see this reflected in less frequent purchases and/or fewer visits to various types of establishments. Ultimately, this could in fact result in fewer overall purchases and expenditures on ethnic produce. However, certain consumers may travel more than others (or have less issue with doing so), based upon their preferences for ethnic markets and/or produce made available in ethnic markets, in which case their purchases (and hence, expenditures) may not be lower as a result of proximity to market. If relationships such as higher propensity to travel associated with preferences for ethnic produce and/or stores exist and can be identified, they may help to determine the optimal location for ethnic stores, in order to serve (attract) the appropriate market niche of

customers. Therefore, it becomes important to correlate consumers' access to (or distance from) such ethnic markets with their preferences and opinions to determine whether or not such relationships are present. Moreover, it is important to assess consumer preferences and opinions, to determine what influences their shopping patterns (such as multi-store shopping, or not) in order to speculate whether they are likely to respond to store, produce, or marketing attributes such as price, variety/selection, advertising, etc. The following section seeks to understand consumers' preferences and opinions regarding their ethnic produce purchases, in order to identify relevant relationships.

4.3. Opinions, Preferences, and Related Practices of Respondents

Ethnic vs. Conventional Market Comparisons

The survey asked consumers to compare products from an ethnic market to those from a typical American/conventional market. More specifically, consumers were asked to indicate whether products from ethnic markets were "better", the "same", or "worse" on the basis of product characteristics of availability, freshness, packaging, price, quality, and variety respectively (Question #8; a thru f). Although some variability in comparisons does exist across the ethnic groups for certain characteristics, a majority of respondents in all three groups find the products from ethnic markets to be more readily available, better (lower) priced, and to represent more variety, as compared to typical American/conventional stores.

In terms of freshness and quality, variability across groups is more apparent. In terms of freshness, approximately 83% or more of consumers in each of the three groups rate products from ethnic markets as "better" than or the "same" as those from typical American/conventional stores. However, in the case of Chinese and Koreans, more than 50% rate the ethnic markets as better, while less than 40% rate them as equal to typical American/conventional markets on the basis of product freshness. In the case of Indians, the converse is true (i.e. 27% rate ethnic markets "better" while 56% consider them the "same").

A similar situation exists in terms of quality. More than 90% of consumers in each of the three groups rate products from ethnic markets as "better" than or the "same" as those from typical American/conventional stores. However, more than half of Korean consumers rate ethnic markets as "better" (i.e. 59% "better", 35% "same"), whereas the Chinese consumers' responses are split equally among the categories of "better" and "same" (~47% each) and the Indian consumers rate the ethnic

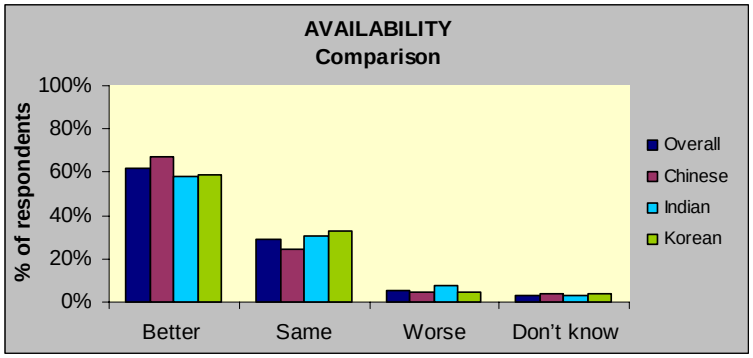
markets as the “same” more frequently than “better” (65% “same” vs. 26% “better”) on the basis of product quality.

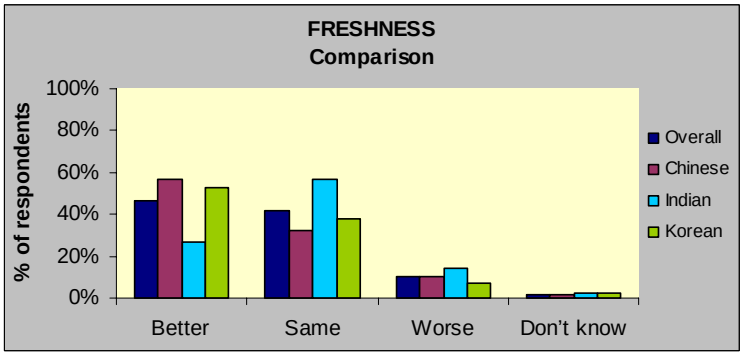
With the exception of product packaging, in the case of all product characteristics compared between markets/stores, fewer than 18% in each of the three ethnic groups rated ethnic markets as “worse” than typical American/conventional markets. The exception to the consistently equal or better ratings given to products from ethnic markets is with the roughly 29% of Chinese and Indians (respectively) that perceived the packaging for products from ethnic stores to be “worse” than that sold in typical American/Conventional markets (Figure 4.5). This exception may be due to the tendency of ethnic markets to use less packaging for produce (i.e. to offer more loose/single pieces). As such, while the packaging in ethnic stores may be considered “worse”, it is plausible that the packaging may not be considered *inferior*, but rather, *unavailable or non-existent*. Still, half or more of the consumers in each group perceived to be the packaging to be the “same” in ethnic and conventional markets (while yet another 13% or more rated the product packaging in ethnic markets to be “better”). This being the predominant perception in each of the groups, it does not necessarily suggest that improved packaging in ethnic markets is warranted, although it might increase some consumers’ preference for ethnic (relative to conventional) markets. The strong consumer response that ethnic produce is packaged similarly in terms of quality to conventional produce may in part reflect the informal nature in which ethnic produce is traditionally prepared, displayed, and handled and selected by consumers. It is not known whether consumer perceptions of loyalty result in response bias in judging one’s respective ethnic produce. That is, it is possible that ethnic shoppers that are accustomed to selecting and purchasing such products are less likely to negatively judge the packaging (or lack thereof) their own (respective) ethnic produce. Based on the results, the relative magnitude of this potential is too small to result in packaging recommendations at this time.

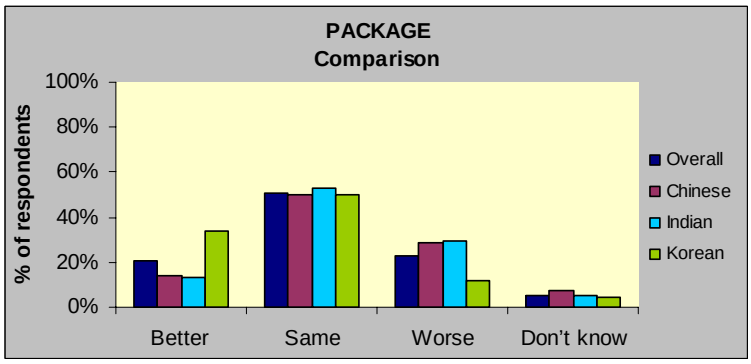
There is another distinct possibility worth noting while interpreting the aforementioned results with regard to variety. While it is a shared opinion across groups that ethnic markets offer more product variety, this could be because, in addition to offering the less common ethnic produce, ethnic grocery stores typically carry the ‘popular’ and frequently shopped produce items (e.g. potatoes, tomatoes, onions, and apples) carried in most supermarkets and other conventional establishments. As a result, *availability* (versus variety) may be the more relevant variable for comparison and rating purposes. However,

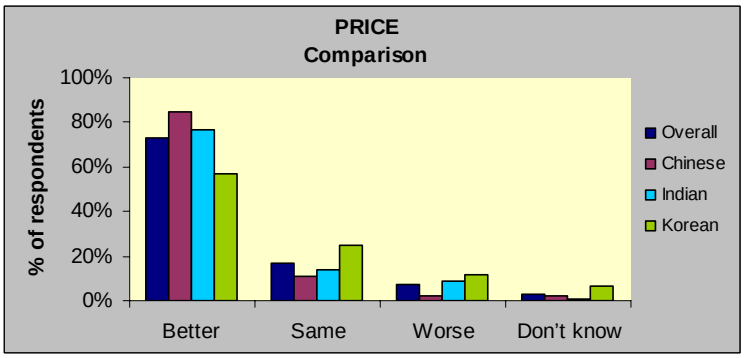
consumers' comparisons on the basis of availability and variety were similar; a majority in each group rate ethnic stores as "better" than typical American/conventional markets, based on either attribute.

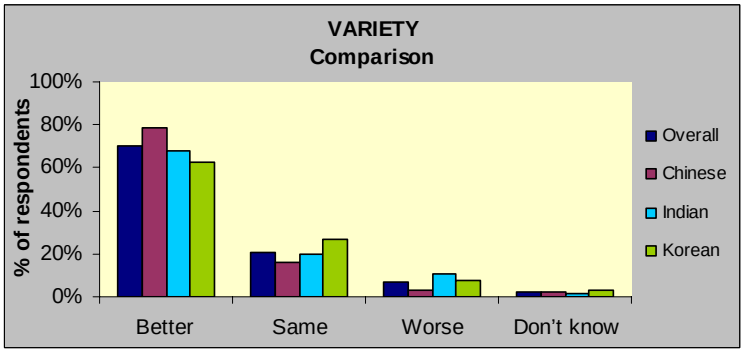
Figure 4.5: Comparison of Products from Ethnic Markets to those from American/Conventional Markets*











**Note: N=402 or more for Question #8, depending on the attribute (sub-component). The corresponding minimum responses for all attributes, by ethnicity were; Chinese=140, Indian=123, and Korean=130*

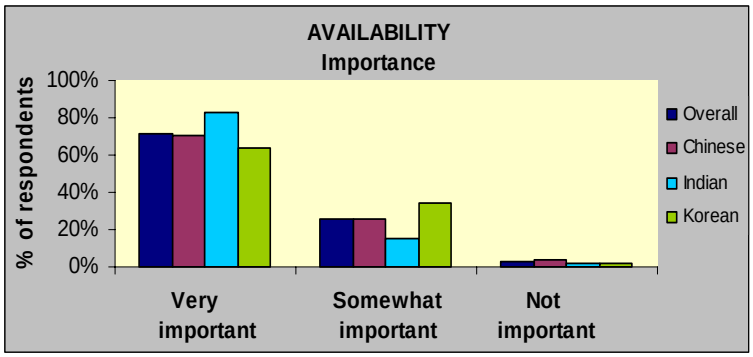
Importance of Produce Attributes

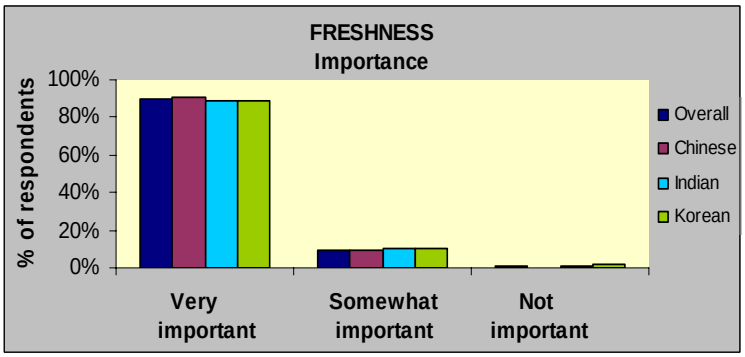
The survey also asked consumers to indicate the importance of selected produce characteristics in their decision to shop at an ethnic market (Question #11; a thru g). The same four product attributes that warrant further examination based upon the aforementioned ethnic to conventional market comparisons, were included; availability, freshness, price, and quality. In addition to these four attributes, language, location, and produce origin were added to ascertain the relative importance of these variables for shopping in ethnic markets.

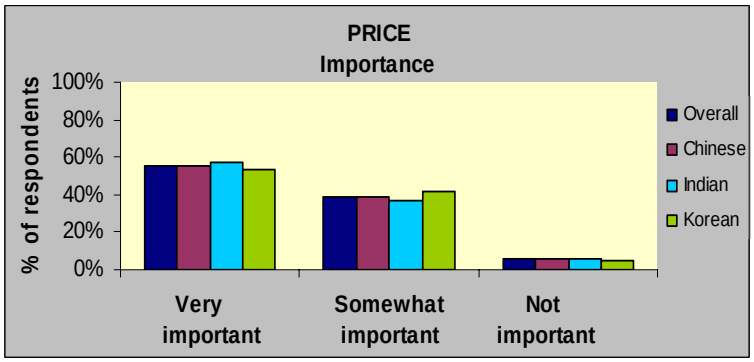
The results reveal that availability, freshness, and quality are considered "very important" by more than 70% of consumers in each group. Price, although typically believed to be more favorable (lower) in ethnic markets than in conventional establishments, is not considered as ("very") important as the other three attributes (roughly half, or 55% in each group, rated it as "very important" versus the 70% or more rating the aforementioned attributes in this category). Likewise, the additional product attributes of language, location, and origin were not considered *as* important as availability, freshness, and quality (typically 50% or less). Language was the only attribute considered "not important" by a majority of consumers in each group (between 62% and 69% in each group rated language "not important"; Figure 4.6).

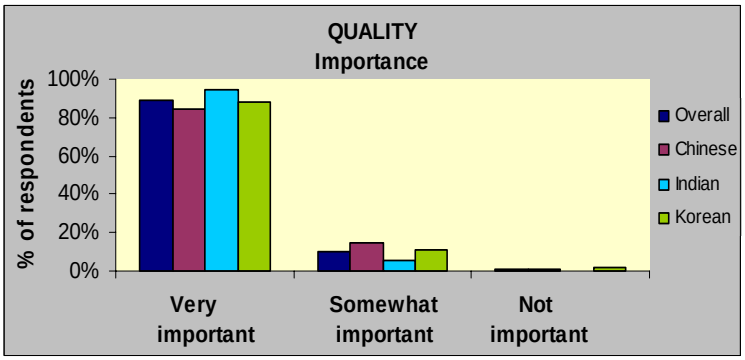
There was little variability in attribute importance ratings among the three ethnic groups, unlike the comparisons between ethnic and conventional markets which differed considerably across groups. Therefore, while the three groups rate importance similarly for the same attributes, they don't all have the same opinion as to how well these attributes are represented by the produce in their respective ethnic stores. To reiterate, Indians do not rate the freshness and quality of products sold in Indian markets as favorably (in comparison to those sold in American/conventional markets) as other ethnic groups rated the freshness and quality of products sold in their respective ethnic markets. Similarly (although with less of a contrast), the Chinese did not rate the produce quality as favorably in their respective ethnic markets as did Koreans. However, the "freshness" and "quality" attributes were *consistently* deemed "very important" by *each* group, more so than any other attribute. This is an important finding since local producers have the ability to provide fresher, better quality produce than suppliers from outside the area, as a result of the advantages associated with close proximity to market (i.e. fresh – less travel time; direct from farm to market) and reduced shipping/handling/packaging requirements necessary to reach local distribution outlets (i.e. fewer opportunities for produce to be damaged while in transport).

Figure 4.6: Attribute Importance in Shopping at an Ethnic Market*

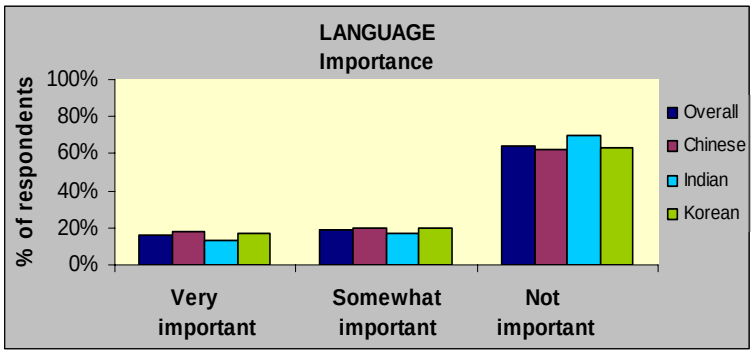


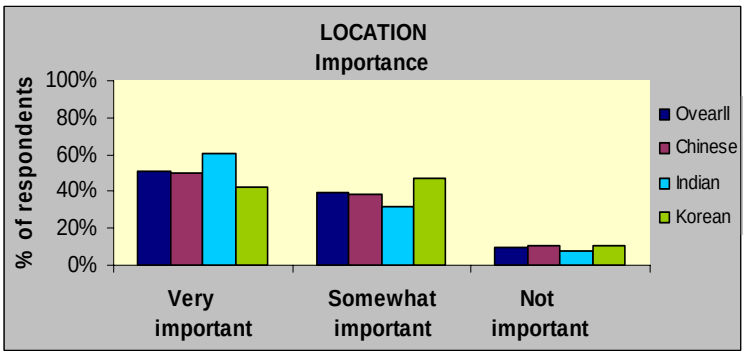


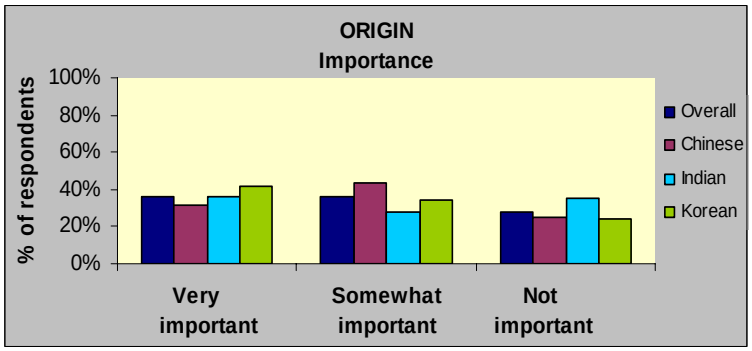




Additional Attributes*…







**Note: N=383 or more for Question #11, depending on the attribute (sub-component). The corresponding minimum responses for all attributes, by ethnicity were; Chinese=137, Indian=110, and Korean=136*

Willingness to Pay (WTP) a Premium

In addition to understanding what attributes consumers consider important in their decisions to purchase ethnic produce (and where), it is also important to analyze at what premium, if any, consumers might be willing to pay for the product (Question #9).

Overall, approximately half of the consumers surveyed are *not* willing to pay a premium for ethnic produce (i.e. a premium over the price of American/conventional produce typically sold in mainstream grocery stores), although the figure is lower for Koreans (35%). The other half of consumers surveyed

are willing to pay a premium, but a majority of these consumers are not willing to pay premiums of more than 10% for ethnic produce.

Approximately one-quarter of consumers in each group are willing to pay a 1%-5% premium, while the remaining one-quarter or so are willing to pay a premium of 6% or more. In general, a majority of those willing to pay a premium of 6% or more in each group (between 11% and 18%) are in the 6%-10% more category, with relatively few (6% or less) in each of the other 5% (WTP) increments, up to the "more than 20%" category. The most notable difference among ethnic groups across the willingness to pay categories is in the "more than 20%" category, where the portion of Chinese consumers (12%) is double the portion of Indian and Korean consumers, (5% and 6% respectively; Table 4.14).

Table 4.14: Willingness to Pay a Premium for Ethnic Produce

Opinion	Overall	Chinese	Indians	Koreans
I will not pay more	46%	49%	55%	35%
1% to 5% more	25%	24%	22%	29%
6% to 10% more	14%	11%	14%	18%
11% to 15% more	4%	4%	2%	6%
16% to 20% more	3%	1%	2%	6%
More than 20%	8%	12%	5%	6%
Total	**100%**	**100%**	**100%**	**100%**
	N=402	N=140	N=125	N=137

In theory, willingness to pay is a function of the demand for certain ethnic produce exceeding the available supply. To fully assess the presence of such a supply shortfall and the significance of an associated willingness to pay premium, the demand must be more completely analyzed, preferably via an econometric modeling approach. Such a model was developed for this research purpose and the results are shared in a subsequent section of the report (Section 5.2).

Desire for Locally Grown Ethnic Produce

One plausible way to minimize ethnic produce supply shortfalls associated with certain aspects of consumer demand such as limited availability, lack of freshness, and poor quality, is to grow these items closer to the market they serve and improve the link between growers and consumers as part of a marketing strategy to ensure freshness and higher quality (the attributes that tend to suffer as a result of the highly perishable and fragile nature of fresh produce). This could increase availability in areas which might otherwise have inadequate supply, shorten the time to market and improve freshness, and elevate

overall quality (by decreasing the extent of damage as a result of extensive shipping/handling/transport). To test the viability of this option to sell locally-grown produce, consumers were asked whether they wish to buy ethnic produce that are grown on local farms (Question #13). Approximately two-thirds or more from each ethnic group indicated that they wish to buy such produce. Slightly less than one-third from each group were "not sure" as to their desire (or not) to buy locally grown ethnic produce, while a mere 6% or less indicated that they had no desire to purchase such (locally grown) ethnic produce (Table 4.15). The relatively few negative responses corresponding to the introduction of such products and the large percentage of affirmative responses, confirms the original hypothesis that the sales of locally grown produce in this region could prove to be a successful venture for local growers and/or retailers (at least from a consumer demand perspective).

Table 4.15: Desire for Locally Grown Ethnic Produce

Want Locally Grown?	Overall	Chinese	Indians	Koreans
Yes	69%	69%	75%	65%
No	4%	3%	5%	6%
Not sure	26%	28%	20%	29%
Total	**100%**	**100%**	**100%**	**100%**
	N=409	N=142	N=124	N=143

Desire for Country of Origin Labeling

Approximately 70% or more of respondents in each group indicated that they would like grocery stores to provide information about the country of origin of the produce (a.k.a. Country Of Origin labeling, or "COOL"; Question #26 – posed to all respondents, whether they purchase ethnic produce or not). Another roughly 15% or less in each group indicated that they would not like to see this information provided in stores, while the remaining 15% or less in each group were "not sure" (Table 4.16). This suggests that the vast majority of respondents do value (and pay attention to) labels. Such attention to labeling, when combined with a strong preference for locally grown produce, could mean that locally grown ethnic produce will be well received in the ethnic marketplace (when labeled accordingly). However, to more accurately assess and, in turn, target the customers that value labeling, this factor must be further examined, in conjunction with other relevant variables that affect the consumers' decisions to purchase. This too is addressed more fully in a subsequent modeling section.

Table 4.16: Desire for Country of Origin Labeling

Want COOL?	Overall	Chinese	Indian	Korean
Yes	72%	74%	70%	71%
No	14%	9%	19%	15%
Not sure	14%	17%	11%	13%
Total	**100%**	**100%**	**100%**	**100%**
	N=433	N=150	N=133	N=150

Related Practices of Respondents

The survey also posed questions to consumers of ethnic produce to determine whether certain practices or habits influenced their decisions related to the purchase of ethnic produce. Specifically, questions regarding advertisements, pre-shopping planning, home-gardening, and dining out were asked (Questions #12, 15, 16, and 18 respectively). Generally, the results revealed that a vast majority of consumers (79%-93%) do not read internet or grocery store brochures or advertisements. Roughly half of the consumers do plan ahead for the produce they want to buy, prior to shopping. Approximately one-third of consumers have a garden at their home. Three-quarters or so of consumers eat dinner out between 1 to 3 times per week, while slightly less consumers (~60%) each lunch out in ethnic restaurants as frequently (the difference is primarily in the once per week category), as compared to relatively few consumers who eat breakfast out regularly. There is some variability among ethnic groups (the extremes are highlighted in red; Tables 4.17a & 4.17b) and it is difficult to determine whether this variability corresponds to different purchase patterns and/or decisions across the groups. Therefore, more sophisticated analysis is warranted. The variability among groups is further considered in the modeling research section of the report, where the significance (or not) of such differences is more appropriately determined.

Table 4.17a: Consumer Practices Related to Purchases of Ethnic Produce;

Reading Advertisements, Pre-planning, and Home-Gardening

Read Internet/Grocery Brochures/Advertisements?	Overall	Chinese	Indian	Korean
Yes	12.3%	7.0%	8.2%	21.0%
No	87.7%	93.0%	91.8%	79.0%
Total	**100%**	**100%**	**100%**	**100%**
	N=408	N=142	N=122	N=144
Pre-shopping planning?	**Overall**	**Chinese**	**Indian**	**Korean**
Yes	56.0%	40.9%	56.8%	69.9%
No	44.0%	59.2%	43.2%	30.1%
Total	**100%**	**100%**	**100%**	**100%**
	N=411	N=142	N=125	N=144
Home-gardening?	**Overall**	**Chinese**	**Indian**	**Korean**
Yes	34.7%	34.3%	28.8%	39.9%
No	65.3%	65.7%	71.2%	60.1%
Total	**100%**	**100%**	**100%**	**100%**
	N=412	N=143	N=125	N=144

Table 4.17b: Consumer Practices Related to Purchases of Ethnic Produce; Dining Out

	Dinner				Lunch			
Dining in Ethnic Restaurant (#x/wk)	**Overall**	**Chinese**	**Indian**	**Korean**	**Overall**	**Chinese**	**Indian**	**Korean**
0 (not regularly)	23%	16%	29%	26%	30%	22%	34%	36%
1 time per week	54%	52%	52%	57%	36%	32%	47%	32%
2 to 3 times per week	21%	29%	18%	16%	25%	30%	16%	25%
4 to 7 times per week	2%	3%	1%	1%	8%	13%	3%	7%
More than 7 x/wk	0%	1%	0%	0%	1%	2%	0%	0%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
	N=314	N=112	N=83	N=119	N=249	N=99	N=62	N=88

	Breakfast			
Dining in Ethnic Restaurant (#x/wk)	**Overall**	**Chinese**	**Indian**	**Korean**
0 (not regularly)	77%	60%	86%	92%
1 time per week	14%	25%	11%	4%
2 to 3 times per week	4%	9%	0%	2%
4 to 7 times per week	4%	7%	3%	2%
More than 7 x/wk	0%	0%	0%	0%
Total	**100%**	**100%**	**100%**	**100%**
	N=142	N=57	N=36	N=49

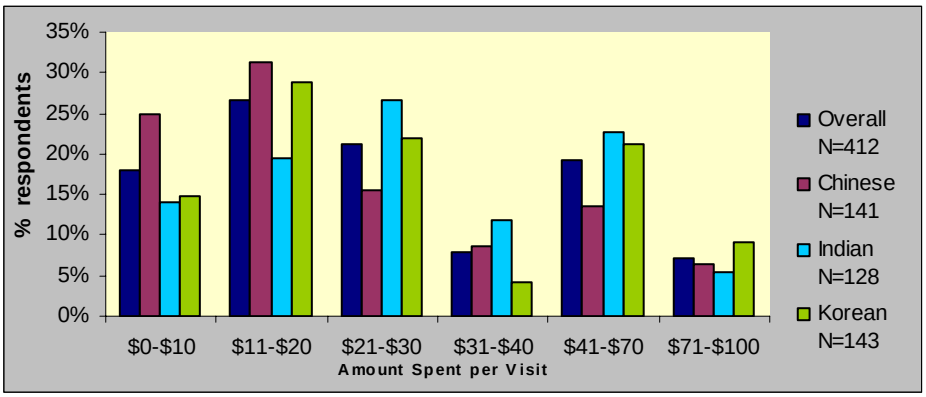
4.4. Produce Expenditures of Respondents

The survey asked consumers how much they spend for ethnic produce per visit (Question #5) and how many visits they make per month to the ethnic grocery store (Question #6). These two pieces of information are combined to calculate total monthly expenditures per month per household. These expenditures then serve as the basis for estimating total Chinese, Indian, and Korean ethnic produce expenditures in the Mid-Atlantic states, as they are used to extrapolate the sample to the larger population in that area. The data components, analysis, logic, methodology, and resulting estimations are documented in the following section of the report (Section 5). In addition, the next section quantifies the expenditures for select produce items in each respective ethnic group (Chinese, Indian, and Korean; Question #10) and ranks them (high to low) for the purpose of prioritizing crops for (potential) local production and entry into the local marketplace. Essentially, the produce expenditures are used as a proxy for market potential (i.e. higher expenditure indicates greater market potential), from a demand perspective.

Amount Spent on Ethnic Produce

Consumer spending for ethnic produce ranged from $3 to $200 per visit. However, 90% of consumers responding in each group spent $70 or less per visit. Further, two-thirds of respondents in each group spent $30 or less, but there was considerable variation across ethnic groups in the spending sub-categories (Figure 4.7). This fluctuation in expenditure is most likely a function of frequency of visits and size of household. Therefore, expenditures are further examined, in combination with these two factors, and converted to per person expenditures.

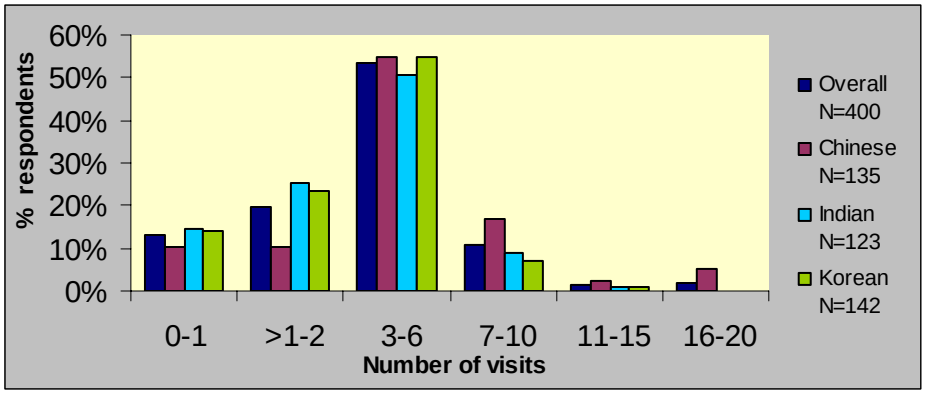
Figure 4.7: Amount Spent on Ethnic Produce per Visit



Number of Visits

The distribution of consumer responses of number of visits to an ethnic grocery store per month somewhat resembles a bell-shaped curve (skewed slightly to the left). Roughly half of the consumers responding in each group make between 3 and 6 per month. Between 20% and 35% in each group visit twice per month or less and the balance of respondents visit more frequently than six times per month, but the number of visits are distributed over a much broader range (i.e. between 7 and an extreme of 20; Figure 4.8).

Figure 4.8: Number of Visits to Ethnic Grocery Store per Month



Produce Expenditure

To enable more appropriate analysis of produce expenditures for research purposes, the amount spent per visit and frequency of visits should be viewed in combination. Based on the respective data for each respondent, the amount spent per month on ethnic produce per household is then calculated. This is done (for each respondent) by multiplying the amount spent on ethnic produce per visit by the number of visits to an ethnic grocery store per month as follows;

$$\text{ExpHH} = \text{\# Visits} \times \$/\text{Visit}$$

where;

ExpHH = Monthly Ethnic Produce Expenditure per Household

Visits = Number of Visits to Ethnic Grocery Store per month

$/Visit = Amount Spent per Visit (for household)

Further, the expenditure per household (for each consumer respondent) is then translated to a per person figure, to remove any fluctuation in expenditures associated with household size. This is done by dividing

expenditure per household by the number of members for each household (question #29; discussed in section 4.1) as follows;

$$ExpPP = ExpHH \ / \ HHSize$$

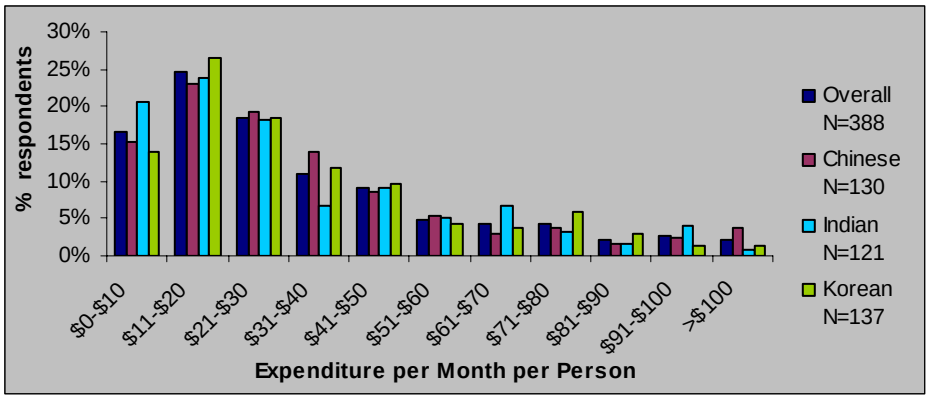
where;

ExpPP = Monthly Ethnic Produce Expenditure per Person

HHSize = Household Size (number of members)

The resulting distribution of expenditures per month per person resembles a bell-shaped curve (skewed to the left) with roughly two-thirds of each group with expenditures of $30 or less per month per person. Further, much of the variability among ethnic groups is removed when the effect of frequency of visits and household size is normalized. This reveals that the expenditures by each ethnicity are relatively similar, both in terms of distribution across the ranges and the magnitudes within (Figure 4.9).

Figure 4.9: Monthly Ethnic Produce Expenditure per Person



Monthly expenditures per person for the respective ethnic produce is generally the same, despite the fact that the survey results indicate that differences among the characteristics, patterns, and preferences of the three ethnic groups do exist. These factors may influence their decisions to purchase (to be further tested in the modeling section). As such, the local produce market potential for each group will be largely a function of each group's relative size (i.e. population) in the marketplace. However, the successful penetration of these markets will be a function of how well the differences in the consumer profiles among the groups are assessed, addressed, and exploited. The next two sections of the study address these areas, as market size and predictive consumer behaviors are quantified and evaluated.

5. Market Estimation, Consumer Behavior Modeling, and Population Mapping

5.1. Estimation of Ethnic Produce Markets and Crop Production Potential

Prior to using the ethnic produce expenditure data from the survey for estimation purposes, some basic comparisons are made to test the reasonability of this data. These comparisons utilize multiple expenditure estimates provided by respondents, in response to different questions throughout the survey.

Data Validity; Produce Expenditure Comparisons

First, the monthly ethnic produce expenditure provided by each respondent (thus per household, as previously derived; amount spent per visit multiplied by number of visits per month) is used to calculate averages by ethnicity. Average monthly ethnic produce expenditures per household reflect only those respondents that purchased ethnic produce within the past year. These averages are then compared to the (same respondents') average monthly expenditure for *all* produce, regardless of origin or ethnicity (i.e. includes Chinese/Indian/Korean *and* traditional American produce; survey Question #23, highlighted earlier in section 4.2). This comparison serves a data validity check and ensures that the estimated monthly expenditures for *ethnic* produce per household are less than the monthly expenditures for *all* produce, including ethnic and traditional American. The comparison reveals that the average expenditure for all produce, regardless of origin or ethnicity, does in fact exceed the average expenditure for ethnic produce in each group (Table 5.1).

Table 5.1: Average Monthly Produce Expenditure per Household

Ethnic Produce

Ethnic Produce Consumer?	Overall	Chinese	Indian	Korean
Consumer of ethnic produce	$117	$129	$112	$110
	N=396	N=134	N=123	N=139

All Produce (includes ethnic & traditional American produce)*

Ethnic Produce Consumer?	Overall	Chinese	Indian	Korean	
Consumer of ethnic produce	$187	$220	$177	$161	N=396
Non-Consumer (in past year)	$115	$150	$127	$89	N=29
All Respondents	**$182**	**$216**	**$174**	**$154**	N=425
	N=425	N=149	N=126	N=150	

** Monthly figures = expenditure per week x 4*

Note: this validity test was also conducted at the respondent level, with more than 75% of respondents meeting the criteria of expenditures on all produce exceeding that of ethnic produce. Further, in the fewer than 25% of respondents where this was not the case, the figures were relatively close, the discrepancy representing less than 5% of the total ethnic expenditures in question. Therefore, the ethnic expenditures reported were deemed appropriate for estimation purposes at the ethnic group level.

Second, the average monthly ethnic produce expenditure (per household) for each ethnic group is further validated when compared to the sum of expenditures for each of the 13 ethnic fruits and vegetables included in the survey for the respective ethnic groups (Question #10). As one would expect, the total ethnic produce expenditures in each group *exceeds* the sum of the expenditures for the respective 13 produce items (in each ethnicity*)*. (Note: this validity test was also conducted at the respondent level, with approximately 90% of respondents meeting the criteria of expenditures on ethnic produce exceeding that of the sum of select 13 ethnic produce items.) Therefore, the ethnic produce expenditures are deemed appropriate for estimation purposes at the total level.

Once these two comparisons and/or tests of reasonability have been performed, the estimation process proceeds accordingly as described below.

Expenditure Estimates

Average monthly ethnic produce expenditure per person is then calculated for each ethnic group. This is done by averaging the per person figures previously calculated in section 4.4, which is the equivalent of dividing the aforementioned average household figures by the average number of people per household for each respective ethnicity. The monthly averages are then annualized (i.e. multiplied by 12), to arrive at approximate annual expenditures per person, for each ethnic group. This provides the average ethnic produce expenditure per person per month, and per year (i.e. x 12), for each ethnic group (Table 5.2).

Table 5.2: Average Ethnic Produce Expenditure per Person

Average Expenditure	Overall	Chinese	Indian	Korean
$ per month	$35	$36	$33	$35
$ per year	$415	$430	$394	$419
	N=388	N=130	N=121	N=137

Finally, these average annual ethnic produce expenditures per person are extrapolated to the respective ethnic populations in the Mid-Atlantic states. However, given the statistical sampling procedure used for the study, this extrapolation is done in an interval fashion, such that upper and lower bounds are estimated, within a 95% Confidence Interval (i.e. +/-2 Std Errors of the average expenditure). The resulting upper and lower bounds for each ethnicity are shown in Table 5.3.

Table 5.3: Annual Expenditure Estimates per Person

	Chinese	Indian	Korean
# Respondents (sample size, n)	130	121	137
Average Annual Expenditure Per Person	*$430*	*$394*	*$419*
Std Dev	*$348*	*$317*	*$315*
Std Error	*$31*	*$29*	*$27*
Lower Bound	**$370**	**$338**	**$366**
Upper Bound	**$490**	**$451**	**$472**

Expenditure Extrapolation

The calculated lower and upper bounds for each ethnic group in the sample are then combined with Census 2000 population data for each ethnic group, to extrapolate to the larger populations in the Mid-Atlantic area. The same 2000 Census population data that was cited and used to prioritize and select the ethnic groups of study, is also utilized for extrapolation purposes. Specifically, the sample's annual expenditures per person are applied to the (2000) population figures for Chinese, Indians and Koreans in each Mid-Atlantic state (NJ, NY, and PA) to arrive at lower and upper bound estimates for each group, by state. The results estimate, with 95% confidence, that the ethnic produce markets, by ethnicity, are as follows (in $millions); $213M to $282M for Chinese, $162M to $215M for Indian, and $79M to $102M for Koreans (Table 5.4), or $454M to $600M for all three segments combined .

Table 5.4: Estimated Mid-Atlantic Asian Produce Market for Chinese, Indian, and Korean Consumers

	Chinese			Asian Indian			Korean		
		Annual Exp. ($Millions)			Annual Exp. ($Millions)			Annual Exp. ($Millions)	
	Population	Lower Bound	Upper Bound	Population	Lower Bound	Upper Bound	Population	Lower Bound	Upper Bound
Mid-Atlantic	**575,779**	**$213**	**$282**	**478,145**	**$162**	**$215**	**216,807**	**$79**	**$102**

Prioritization of Production Opportunities

In addition to the respondents' produce expenditures which were used to estimate the potential market opportunity in each of the three Asian sub-groups, the survey respondents' expenditures for the thirteen respective (select) ethnic produce items are also utilized. As indicated earlier, the thirteen ethnic produce items for each respective ethnic group were selected based upon their potential for production in the Mid-Atlantic states and larger Northeast region, with specific consideration for the growing cycle of specialty crops and their conduciveness to the climatic patterns in the area. The individual respondent expenditures for each item are calculated based on the corresponding quantity purchased and price paid for each, in an attempt to prioritize individual ethnic crops (on the basis consumer expenditures) and target crops with the highest market potential in the Mid-Atlantic area. The top five produce items in each group and the average weekly consumer expenditure used to rank them are shown in Table 5.5.

Table 5.5: Top Five Selected Produce Items
(on the basis of average weekly respondent expenditures)

Chinese		Indian		Korean	
Produce Item	**Avg $/wk**	**Produce Item**	**Avg $/wk**	**Produce Item**	**Avg $/wk**
Flower Chinese Cabbage	$3.18	Bitter Gourd	$3.14	White Nectarine	$3.76
Edible Snow Peas	$2.68	Okra	$2.95	Fuji Apple	$3.39
Chinese Kale	$2.66	Yam	$2.95	Korean Cabbage	$2.58
Bitter Gourd	$2.65	Mustard Leaves	$2.73	Korean Cucumber	$2.39
Oriental Eggplant	$2.36	Black Eyed Beans	$2.69	Green Onions	$2.32

While only five were selected to be included in Table 5.5, many of the remaining eight produce items in each group followed closely behind these top five, in terms of average weekly expenditure, with five or fewer items in each group with average expenditures of below $2.00 per week. The produce variety (item), average weekly quantity, price, and resulting expenditure are shown, ranked in descending order by expenditure, for Chinese, Indian, and Korean in Tables 5.6, 5.7, and 5.8, respectively.

Table 5.6: Selected Chinese Produce Items Ranked by Expenditure (based upon average weekly respondent-reported Quantity * Price)

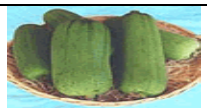
Produce variety		Average Quantity/week	Average Price ($)	Avg Weekly Exp $ (Price * Qty)
Flower Chinese Cabbage Nabana Cai xin 菜心		2.40 bunches	$1.32	$3.18
Edible Snow Peas (Chinese Peas) Wan dou 豌豆		1.53 lbs	$1.76	$2.68
Chinese Kale (Chinese Broccoli) Gail an 芥蓝		1.91 bunches	$1.39	$2.66
Bitter Gourd (Bitter Melon) Gu gua 苦瓜		2.08 lbs	$1.27	$2.65
Oriental Eggplant (Asian Eggplant) Qie zi 茄子		2.06 lbs	$1.14	$2.36
Pak Choy (Large Loose-Leaf/ White Petiole Type) Xiao bai cai 小白菜		2.28 lbs	$1.01	$2.31
Oriental Spinach Bo cai 菠菜		2.16 bunches	$1.06	$2.30
Edible Luffa (Sponge Gourd) Ci gua 丝瓜		1.69 lbs	$1.33	$2.24
Winter Melon (Wax Gourd) Dong gua 东瓜		2.07 lbs	$0.91	$1.87
Chinese Cabbage Da bai cai 大白菜		2.37 lbs	$0.79	$1.86
Edamame (Edible Soybean) Mao dou 毛豆		1.31 lbs	$1.19	$1.56
Oriental Root Radish Luo bo 萝卜		2.33 lbs	$0.67	$1.55
Oriental Squash (Oriental Pumpkin) Nan gua 南瓜		1.34 lbs	$0.84	$1.13

Table 5.7: Selected Indian Produce Items Ranked by Expenditure (based upon average weekly respondent-reported Quantity * Price)

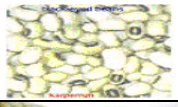
Produce variety	Average Quantity/week	Average Price ($)	Avg Weekly Exp $ (Price * Qty)
Bitter Gourd Karela	2.07 lbs	$1.52	$3.14
Okra Bhindi	2.10 lbs	$1.57	$2.95
Yam, Colocasia Arbi	1.50 lbs	$1.44	$2.95
Mustard Leaves Sarson	1.94 bunches	$1.30	$2.73
Black Eyed Beans Rongi 	1.57 lbs	$1.45	$2.69
Amaranth Paalak	1.45 bunches	$1.62	$2.54
Ridge Gourd Torai	1.88 lbs	$1.34	$2.52
White Pumpkin Khadu, Lauki	1.88 lbs	$1.08	$2.30
Cluster Beans Gawar Phali	1.59 lbs	$1.53	$2.30
Fenugreek Leaves Methi	2.05 bunches	$1.38	$1.83
Mint Leaves Pudina	1.32 bunches	$0.92	$1.78
Bottle Gourd Ghiya Loki	1.86 lbs	$1.05	$1.67
Coriander Dhaniya	2.14 bunches	$0.73	$1.51

Table 5.8: Selected Korean Produce Items Ranked by Expenditure (based upon average weekly respondent-reported Quantity * Price)

Produce variety	Average Quantity/week	Average Price ($)	Avg Weekly Exp $ (Price * Qty)
White nectarine 백도	2.16 lbs	$1.74	$3.76
Apple, fuji 후지 사과	2.95 lbs	$1.15	$3.39
Korean cabbage	3.45 lbs	$0.75	$2.58
Korean cucumber 한국 오이	2.13 lbs	$1.12	$2.39
Green onion 파	2.88 bunches	$0.81	$2.32
Mushroom 버섯	1.26 lbs	$1.70	$2.15
Bean sprout 콩나물	1.66 numbers	$1.19	$1.96
Sesame leaves 깻잎	1.46 bunches	$1.30	$1.90
Long, hot green pepper 고추	1.16 lbs	$1.61	$1.87
Green squash 호박	1.64 lbs	$1.11	$1.83
Korean radish 무	1.98 bunches	$0.92	$1.82
Kirby Cucumber 커비 오이	2.24 lbs	$0.72	$1.62
Red lettuce 꽃상추	1.35 bunches	$1.01	$1.37

5.2 Predictive Consumer Behavior Models

The objective of this section is to model some key dependent consumer behavior variables such as willingness to pay a premium for ethnic produce; traveling long distances to ethnic produce stores, multi-store shopping, and buying products based upon label information for (or interest in or attention to) country of origin for ethnic produce. Four distinct models were developed in order to identify the consumer demographics, preferences and opinions, and purchase patterns (i.e. independent variables) that influence such behaviors (Nemana, 2005). The four models and the definitions (Table 5.9) for the relevant variables are as follows;

Model 1: Willingness to pay a premium of more than 10% for ethnic produce (WTP)

$$\begin{aligned} WTP = {} & \beta_0 + \beta_1 ADVT + \beta_2 ALLSPEND + \beta_3 AVAILIMP \\ & + \beta_4 PRICE + \beta_5 YEARSINIUS + \beta_6 GARDEN \\ & + \beta_7 ADULTS + \beta_8 GRAD + \beta_9 INCGR60 \\ & + \beta_{10} GENDER + \beta_{11} AGE + \beta_{12} KOREAN \\ & + \beta_{13} CHINESE + \beta_{14} NEWJERSEY + \beta_{15} NEWYORK + u \end{aligned}$$

Model 2: Traveling distances of more than 20 miles ethnic produce market (MILES)

$$\begin{aligned} MILES = {} & \beta_0 + \beta_1 ADVT + \beta_2 ALLSPEND + \beta_3 PRICE \\ & + \beta_4 AVAIL + \beta_5 LOCIMP + \beta_6 YEARSINIUS \\ & + \beta_7 GARDEN + \beta_8 ADULTS + \beta_9 GRAD \\ & + \beta_{10} INCGR60 + \beta_{11} GENDER + \beta_{12} AGE + \beta_{13} CHINESE \\ & + \beta_{14} INDIAN + \beta_{15} NEWJERSEY + \beta_{16} NEWYORK + u \end{aligned}$$

Model 3: Visitation to multiple stores for purchasing ethnic produce (MORESTR)

$$\begin{aligned} MORESTR = {} & \beta_0 + \beta_1 ADVT + \beta_2 AVAIL + \beta_3 LANGIMP \\ & + \beta_4 ORIGINIMP + \beta_5 FRESH + \beta_6 LCLFARM \\ & + \beta_7 PRICE + \beta_8 LUNCH + \beta_9 YEARSINIUS \\ & + \beta_{10} GARDEN + \beta_{11} ADULTS + \beta_{12} GRAD \\ & + \beta_{13} INCGR60 + \beta_{14} GENDER + \beta_{15} AGE + \beta_{16} CHINESE \\ & + \beta_{17} INDIAN + \beta_{18} NEWJERSEY + \beta_{19} NEWYORK + u \end{aligned}$$

Model 4: Preference for Country of Origin Labeling (ORIGIN)

$$\begin{aligned} ORIGIN = {} & \beta_0 + \beta_1 ADVT + \beta_2 ALLSPEND + \beta_3 AVAILIMP + \beta_4 LOCIMP + \beta_5 \\ & QLTYIMP + \beta_6 LUNCH \\ & + \beta_7 PLANTOBUY + \beta_8 MARRIED + \beta_9 YEARSINIUS \\ & + \beta_{10} GARDEN + \beta_{11} ADULTS + \beta_{12} GRAD \\ & + \beta_{13} INCGR60 + \beta_{14} GENDER + \beta_{15} AGE + \beta_{16} CHINESE \\ & + \beta_{17} KOREAN + \beta_{18} NEWJERSEY + \beta_{19} NEWYORK + u \end{aligned}$$

Table 5.9: Description of Model Variables

Label	Variable measure	Value
MILES	Drive more than 20 miles to go to an ethnic market; **dependent variable**	= 1 if drive >20 miles; Otherwise 0
WTP	Willingness to pay a more than 10% premium for ethnic produce as compared to traditional/American produce; **dependent variable**	= 1 if willing to pay >10%; Otherwise 0
ORIGIN	Like grocery stores to provide information about the country of origin of produce; **dependent variable**	= 1 if desire COOL; Otherwise 0
MORESTR	Regularly shop at more than one store to buy Asian ethnic produce; **dependent variable**	= 1 if shop at >1 store; Otherwise 0
ADVT	Read advertisement brochures in the internet regularly	= 1 if read regularly; Otherwise 0
ALLSPEND	Consumer expenditure on all fruits and vegetables (including U.S. and ethnic)	= expenditures in $s
AVAILIMP	Availability is an important factor while shopping for ethnic produce	= 1 if important or very important; Otherwise 0
LOCIMP	Location of store is an important factor while shopping for ethnic produce	= 1 if important or very important; Otherwise 0
QLTYIMP	Quality of produce is an important factor while shopping for ethnic produce	= 1 if important or very important; Otherwise 0
LANGIMP	Language is an important factor while shopping for ethnic produce	= 1 if important or very important; Otherwise 0
ORIGINIMP	Origin of produce is an important factor while shopping for ethnic produce	= 1 if important or very important; Otherwise 0
PRICE	How do products from ethnic produce market compare with American produce in terms of price	= 1 if better; Otherwise 0
FRESH	How do products from ethnic produce market compare with American produce in terms of freshness	= 1 if better; Otherwise 0
AVAIL	How do products from ethnic produce market compare with American produce in terms of availability	= 1 if better; Otherwise 0

Table 5.9: Description of Model Variables

(continued)

Label	Variable measure	Value
YEARSINUS	How old were you when you arrived in the U.S. if not born here	= # of years
GARDEN	Have a garden at home	= 1 if have a garden; Otherwise 0
PLANTOBUY	Before shopping, plan what produce to purchase	=1 if pre-plan; Otherwise 0
LCLFARM	Wish to purchase ethnic produce grown on local farms	=1 if desire locally grown; Otherwise 0
LUNCH	Number of lunches eaten outside per week	= # of lunches
ADULTS	Number of adults (greater than age 17) in a household	= # >17 years of age in household
GRAD	Graduate degree	= 1 if respondent has graduate degree; Otherwise 0
MARRIED	Marital status	= 1 if married; Otherwise 0
INCGR60	Income greater than or equal to $60,000	= 1 if annual income $60K or more; Otherwise 0
GENDER	Gender – female	= 1 if female; Otherwise 0
AGE	Age 36 to 50 years	= 1 if age is 36 to 50 years; Otherwise 0
CHINESE	Ethnicity dummy	= 1 if Chinese; Otherwise 0
KOREAN	Ethnicity dummy	= 1 if Korean; Otherwise 0
INDIAN	Ethnicity dummy	= 1 if Indian; Otherwise 0
PA	State dummy	= 1 if resident of PA; Otherwise 0
NEWJERSEY	State dummy	= 1 if resident of NJ; Otherwise 0
NEWYORK	State dummy	= 1 if resident of NY; Otherwise 0

A Logit modeling technique was chosen for these research purposes, as it utilizes a cumulative logistic probability function. The Logit model assumes that the probability of observing a specific outcome (e.g. an individual consumer is willing to pay a premium for ethnic produce as compared to traditional American produce), is dependent on the consumers and their respective responses for each independent variable. The likelihood of observing the outcome of the dependent variable is modeled as a function of explanatory variables that included different characteristics, preferences, and shopping patterns of each consumer. The variables in the estimation analysis are binary; a one being 'yes' and zero being 'no'.

The study's four qualitative choice models were constructed as Logit models to test the dependent variables and to predict the probability of the success of the event (1 for an event; 0 for a non-event). The predictive power of the success of events in the models (i.e. the probability of correct prediction) ranges from 71% to 85%, all of which are deemed acceptable for the purpose of predicting the behaviors of the corresponding larger populations of consumers, based upon the respective significant independent variables. Only those variables which are significant (i.e. significant at either 90%, 95%, or 99%; alpha values at 0.1, 0.05, and 0.001, respectively) are discussed in the analysis that follows. Further, particular attention is given to the variables which are socio-demographic (versus perception-based) and which may be utilized to help to identify and target consumers based on identifiable criteria. In addition, the results of each model are available in their entirety in Appendix B.

Model 1: Willingness to Pay (WTP) a Premium of More Than 10% for Ethnic Produce

The WTP variable is modeled against some of the consumer 'belief' variables (such as price perception and importance of availability of ethnic produce), the number of adults in the household (as a proxy for generational effects), demographic variables such as age, gender, education etc. and fixed effects for the states and ethnicities (dummy variables). A criterion of more than 10% is established for the dependent WTP variable, based on the interest in the roughly 15% of survey respondents that indicated they would be willing to pay such a premium. The WTP criteria of 1%-5% and 6%-10% were found to be less discriminating when identifying target consumers, given that relatively larger percentages of respondents fell into each these categories.

Results derived from the model indicate that consumers in households earning greater than $60K seem 9% less willing to pay a premium of more than 10% as compared to consumers in lower income

groups, despite the counter-intuitive nature of this response, given that produce purchases represent a relatively small portion of total expenditures for high income consumers. However, it is plausible that, due to their higher income, they have more luxury-type food alternatives available to them (e.g. eating out), than their lower-earning counterparts who view ethnic produce as more of a staple in their diet.

Females are 13% more likely to pay a premium of more than 10% for ethnic produce than male shoppers.

In addition, ethnicity and state of residency (dummy variables) appear to play a significant role in consumer's willingness to pay a premium. For example, Koreans and Chinese are 16% and 13% less likely to be willing to pay a premium, respectively, than Indians. Further, consumers in New York and New Jersey are 9% and 7%, respectively, more likely to be willing to pay a premium than those from Pennsylvania.

Interestingly, consumers who rate availability as an important factor while shopping for ethnic produce are (6%) less likely to be willing to pay a premium of more than 10% for their ethnic produce. This suggests that produce does not command a premium of more than 10% (even by those profiled as more likely WTP), merely by being made available in ethnic stores. Rather, it may need to be promoted to certain types of consumers whose profiles are identified in the study.

As a result of these model predictions, it would be most beneficial to growers and retailers to place premiums of greater than 10% on ethnic produce purchased by consumers earning less than $60,000 annual income, females, Indians, and New York/New Jersey residents.

Model 2: Traveling Distances of More than 20 Miles to Ethnic Produce Markets (MILES)

A distance threshold of "above 20 miles" was established to distinguish those customers who are willing to drive relatively long distances (versus 0-10 miles or 10-20 miles) to purchase ethnic produce and perceive that the benefits from doing so outweigh the associated costs (e.g. time/opportunity cost and/or transportation costs). As was the case with WTP, approximately 15% or so of respondents in each ethnic group meet the selected criteria. If such clients are identifiable to retailers, successful (targeting of) marketing to them, could result in increased clientele for retailers and growers who might not reach/serve these customers otherwise, through their typical, more local efforts. Further, distinguishing these potential (traveling) customers from other consumers who are less likely to travel long distances, and

identifying where they reside, will help to develop recommendations as to the optimal locations for potential new ethnic produce retail establishments. Once these consumers can be profiled based upon ethnicity and basic geography (i.e. state of residency), they may be more appropriately targeted through the use of population maps to help identify large concentrations of ethnicities (within a state). Such maps have been developed for these research purposes and the applications for each are discussed in greater detail in the next section.

The dependent variable in this model is the respondents who drive more than 20 miles to purchase their desired ethnic fruits and vegetables. The results indicate that middle-aged consumers (36 to 50 years of age) are 8% less likely to drive than their younger or older counterparts (<36 or >50 years of age). In addition, the model reveals that Chinese are 11% more likely to drive more than 20 miles than their Korean counterparts (although this is not the case for Indians). Conversely, Koreans are 11% *less* likely to travel more than 20 miles than Chinese. Therefore, if consumer proximity to market is a concern for retailers building/introducing new ethnic produce establishments into the local marketplace, generally speaking (all other factors being the same), it is more important to build markets stocking Korean produce closer (i.e. within 20 miles) to Korean population concentrations than it is to build Chinese establishments to large concentrations of Chinese populations, as the Chinese are more inclined to travel farther. This could be helpful, especially from an opportunity cost perspective, when determining new location spots and/or for retailers of larger chain-stores (e.g. supermarkets) to optimize and/or prioritize their ethnic produce selections (among ethnicities) across their multiple locations.

Model 3: Visitation to Multiple Stores for Purchasing Ethnic Produce (MORESTR)

This dependent variable in this model is those that shop regularly at more than one store for their ethnic produce purchases. The results reveal that ethnic consumers that have their own garden at home are 20% less likely to shop at more than one store for their ethnic produce purchases.

Ethnicity also seems to play a significant role while modeling multi-store shopping. Chinese and Indians seem to be more likely to shop one store (i.e. 12% and 21% less likely to shop multiple stores) when shopping for ethnic produce, as compared to Koreans.

Price does not appear to play a role while modeling store-switching behavior. Intuitively, this might seem to play a key role during the consumer decision-making process. However, when factors other than price

are controlled for (included) in the model, price does not turn out to be a significant variable. This could be because stores carrying ethnic produce in the areas of study are generally price competitive. These results (however interpreted) suggest that ethnic consumers (in the area studied) do not tend to shop based on (lower) price(s) and therefore, would not be responsive to price slashing attempts by retailers to gain ethnic market share.

Rather, the findings suggest that smaller retailers who are trying to draw (attract) customers from shopping at larger establishments to smaller, more local and/or specialized ethnic markets, may have greater success if they target areas where consumers are not likely to have their own garden (e.g. large cities w/ little growing space in individual residences), as these consumers may be more likely to add (try) another stop for produce to their routine. Applying this same logic (using likelihood of shopping more than one store as a proxy for likeliness/willingness to try a new store), Koreans may be more receptive to the introduction of new establishments (i.e. likely to try), than Chinese and Indians, given their higher likelihood of shopping more than one store.

Model 4: Preference for Country of Origin Labeling (ORIGIN)

This model attempts to profile consumers who prefer Country of Origin Labeling (COOL) for ethnic produce. Given that there are incremental production/packaging costs associated with COOL (that may be passed onto the consumer), it is necessary to determine if consumers are particular about how and where their foods came from, in order to preliminarily test the demand (or not) for COOL to determine if the additional costs may be warranted. While the model and subsequent analysis do not extensively look into the cost-benefit questions involved with such a process, they nevertheless give a foundation for further research on this topic.

When the survey respondents were asked if they would like stores to provide country of origin information of the fruits and vegetables they buy, 83% answered in the affirmative.

Consumers who consider quality and availability to be an important factor do not favor COOL as much as others. Specifically, consumers who believe that quality and availability of ethnic produce are important factors in their purchase decision are 37% and 16% less likely, respectively, to desire COOL labeling than others. This suggests that they may not feel COOL is an indicator of quality. This might even suggest that they feel COOL is associated with lesser quality, which may be an indication that promotion of

locally grown (e.g. programs such as "Jersey Fresh") might be to the retailer's advantage when trying to enter the ethnic produce marketplace and increase availability to the consumer.

Age is also found to have significant negative impacts on COOL. Consumers that are 36 to 50 years of age are less 14% likely to desire Country of Origin labeling as much as those on either side of this range.

There is also a significant culture effect, with Koreans and Chinese 18% and 14% less likely, respectively, to desire origin labeling than Indians. This finding suggest that COOL may not be justified (from a demand standpoint) in Chinese and Korean communities (or older communities), where they may not be willing to pay a premium to cover the cost of producing this extra label information. However, this topic requires more extensive demand and cost-benefit analysis before making an appropriate recommendation to proceed with or eliminate the prospect of introducing COOL regulations for produce.

5.3. Mapping of Ethnic Population Concentrations

Mapping Methods

In addition to sizing the Mid-Atlantic ethnic produce market for the three ethnicities of study and predicting consumer behaviors relative to purchases in these markets, this research integrated the ability to more accurately identify and target consumers, geographically, by ethnicity. To the extent such mapping tools are utilized, the methods provide the capability to geographically target ethnic consumers to improve market penetration by local retailers and growers of ethnic produce. Moreover, such mapping tools will enable retailers and growers to more accurately locate consumers having the most market potential, based on the earlier findings (i.e. ethnic consumers' profiles, expenditures, and predictive behaviors) and introduce, price, distribute, and/or promote their locally grown produce accordingly. In addition, such capabilities will optimize the efforts of policy makers, specifically with regard to public interests (e.g. travel/prices/taxes), development (e.g. new store placement), and regulation (e.g. labeling).

The mapping tool examined and developed for these purposes utilized ArcGIS (Global Information System) mapping software from Environmental Systems Research Institute (ESRI). This software was used to generate maps for the Asian populations of interest (namely Chinese, Indian, and Korean) in New Jersey, by municipality, based upon 2000 Census data. New Jersey was chosen to illustrate the product of such efforts, as a map of all municipalities in the state was readily available through NJ's Department of Environmental Protection's GIS website and could be joined to Census data with relative ease.

The resulting Chinese, Indian, and Korean maps reveal the significant population concentrations of each within the state, particularly in the central and northeast sections of the state (there are also one to two municipalities in the southern half of the state, in the vicinity of the city of Camden, having significant ethnic concentrations; maps for each of the three ethnicities, along with a more detailed description of the methods used, are contained in Appendix C). The top 10 municipalities for each ethnicity, based on descending order of respective population, were identified to highlight the most significant concentrations (Table 5.10). These "top 10" municipalities account for more than 25% of the New Jersey population for each group (26%, 39%, and 36% of Chinese, Indians, and Koreans respectively), representing substantial market opportunity.

Table 5.10: NJ Ethnic Population Concentrations: Top 10 Municipalities, by Ethnicity (Descending Order of Population)

Municipality	County	Chinese	Municipality	County	Indian	Municipality	County	Korean
Edison Twp	Middlesex	5,589	Edison Twp	Middlesex	16,898	Palisades Park Boro	Bergen	6,065
Jersey City	Hudson	3,490	Jersey City	Hudson	12,973	Fort Lee Boro	Bergen	5,978
East Brunswick Twp	Middlesex	3,088	Woodbridge	Middlesex	8,592	Edison Twp	Middlesex	1,597
Parsippany-Troy Hills Twp	Morris	2,714	Piscataway Twp	Middlesex	6,067	Cliffside Park Boro	Bergen	1,588
Piscataway Twp	Middlesex	2,357	Parsippany-Troy Hills Twp	Morris	4,099	Ridgefield Boro	Bergen	1,519
Marlboro Twp	Monmouth	2,112	South Brunswick Twp	Middlesex	3,845	Leonia Boro	Bergen	1,485
Fort Lee Boro	Bergen	1,880	Franklin Twp	Somerset	3,472	Jersey City	Hudson	1,428
West Windsor Twp	Mercer	1,732	Plainsboro Twp	Middlesex	3,357	Cherry Hill Twp	Camden	1,363
Plainsboro Twp	Middlesex	1,680	Old Bridge Twp	Middlesex	3,019	Tenafly Boro	Bergen	1,294
Livingston Twp	Essex	1,655	North Brunswick Twp	Middlesex	3,012	Paramus Boro	Bergen	1,238
	Top 10	**26,297**		**Top 10**	**65,334**		**Top 10**	**23,555**
	NJ	*100,355*		*NJ*	*169,180*		*NJ*	*65,349*
	Top 10; % of NJ	*26%*		***Top 10; % of NJ***	*39%*		***Top 10; % of NJ***	*36%*

Population Source: U.S. Census Bureau (2000); compiled by Food Policy Institute, Rutgers

Mapping Possibilities and Potential

In addition to more accurately locating ethnic populations concentrations across municipalities within a state, this mapping tool can be used to quantify the ethnic populations surrounding specific locations of interest. This capability increases the ability to effectively target ethnic consumers, by identifying distribution outlets in close proximity to significant ethnic concentrations (i.e. outlets with substantial reach).

Farmers markets in New Jersey were identified to demonstrate this "bottoms-up" mapping capability (i.e. begin w/ outlet location and extend outward to assess market reach). 83 New Jersey farmers markets were identified by the New Jersey Department of Agriculture, Division of Marketing and Development. The locations for each were mapped by address geo-coding (accomplished through the use of Census TIGER/Line street files for the state) and compared to the Chinese, Indian, and Korean GIS population maps created for New Jersey.

Once a farm market (or any other produce establishment, for that matter) is located on these GIS maps, concentric circles of any (pre-determined) mile radius may be superimposed on the map with the farm market location at the center, to identify ethnicities and corresponding populations within the respective radius. The radius criteria can be adjusted to reduce (expand) the circles to assess the population density (reach) in corresponding proximity to any produce establishment and/or retail outlet identified. For the purpose of the analysis that follows, a radius of 5 miles was established as a criterion to identify substantial surrounding ethnic populations, relative to each of the 83 farmers markets identified. The complete list of New Jersey farmers markets and respective Chinese, Indian, and Korean populations within a 5 mile radius are contained in Appendix D.

The farmers markets were ranked in descending order of population within a corresponding 5 mile radius, for the respective Chinese, Indian, and Korean groups. The top 5 farmers markets for each respective ethnicity are displayed in Table 5.11. (Note that 11 farmers markets appear, as a result of some farmers markets appearing in the "top 5" for more than one ethnicity.)

Table 5.11: NJ Farm Markets within a 5-Mile Proximity to Significant Chinese/Indian/Korean Concentrations

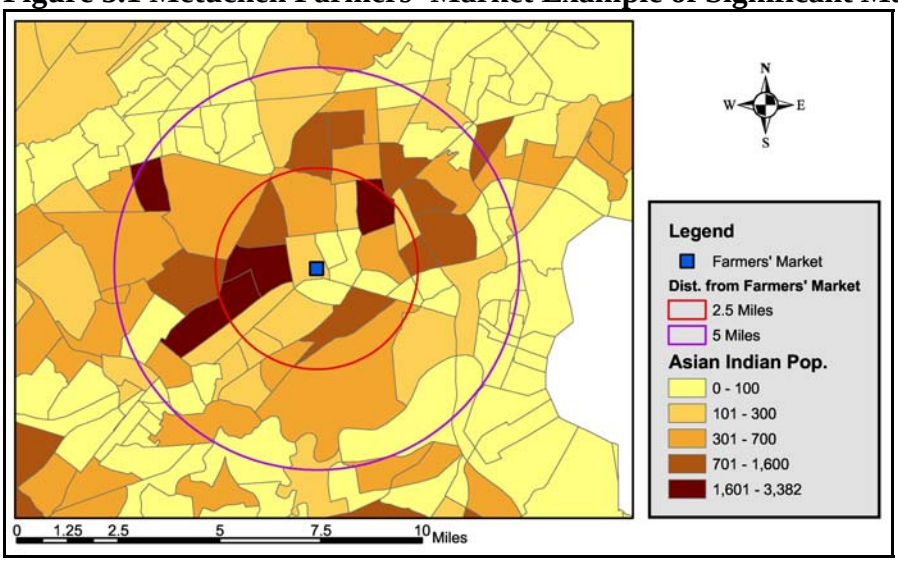
County	City	Farmers Market	Asian Indian Population	Chinese Population	Korean Population
Middlesex	Metuchen	Metuchen	29,367	9,180	2,765
Bergen	Teaneck	Teaneck	11,658	7,738	24,619
Bergen	Fort Lee	Fort Lee	7,451	5,755	22,352
Bergen	Englewood	Englewood	7.921	6,224	21,941
Hudson	Hoboken	Hoboken	18,709	5,333	2,677
Union	Rahway	Rahway	18,571	4,608	1,523
Hudson	Jersey City	Sgt. Anthony Park	18,474	5,807	2,911
Middlesex	Highland Park	Highland Park	17,935	7,659	2,587
Bergen	Hasbrouck Heights	Hasbrouck Heights	13,629	4,362	15,601
Somerset	Somerset	Franklin Township	16,233	6,957	2,488
Bergen	Rutherford	Rutherford	14,279	3,763	6,048

**Significant concentrations are defined by 5 largest Asian Indian, Chinese and Korean populations, respectively, within a 5 mile radius of a given farm market (ethnicity defined per 2000 Census Summary Files 1&3; compiled by Food Policy Institute, Rutgers).*

The first two farmers markets listed in Table 5.11 include the top ranked farmers market for each ethnicity (i.e. the Metuchen Farmers Market is top ranked for Chinese and Indian). The combined populations within a 5 mile radius of these two markets alone represent 17%, 24%, and 42% of the Chinese, Indian, and Korean populations in New Jersey respectively, illustrating the significant market reach from just two locations.

The Metuchen Farmer Market in the town of Metuchen, New Jersey in Middlesex County is used to illustrate the graphic application the mapping tool. This market was chosen for its proximity to the largest single ethnic population of any of the three groups examined (29,367; Table 5.11). In addition, it has the potential to serve the largest Chinese population within 5 miles of any farmers market (in NJ). The concentric circles shown in the Metuchen map that follows illustrate the ability to vary the radius criteria to adjust the analysis accordingly (e.g. 2.5 miles and 5 mile radii are illustrated; Figure 5.1).

Figure 5.1 Metuchen Farmers' Market Example of Significant Market Reach



Population
(in 5 Mile Radius)

Asian Indian: 29,367
Chinese: 9,180
Korean: 2,765

Population Source: U.S. Census Bureau (2000)

Application of these mapping tools will help identify the predominant ethnic groups within close proximity to a given (farmer market) location so that an appropriate mix of products (i.e. ethnic produce selections) is provided at the existing establishment.

In addition, these mapping tools will help to locate ethnic populations that may be underserved (i.e. extremely distant from existing markets) so that supply can be adjusted to better address the demand in those areas (e.g. new establishments may be appropriately located).

As yet another example of the possibilities and potential benefits of GIS mapping when combined with study findings, similar procedures and analysis may be applied to existing markets throughout the state to evaluate decisions and/or trade-offs *across* locations such as;

- *where to charge premiums* (or not) in order to maximize profitability <Model 1; WTP>,
- *how to prioritize between or optimize new market locations* based upon each ethnic groups' proximity to existing markets and their relative propensity (willingness) to travel distances <Model 2; MILES> , and
- *which new establishments would be most frequented* based on the anticipated acceptance by the respective ethnicities i.e. multi-store vs. dedicated-store shopping patterns; more vs. less willing to try a new store. <Model 3; MORESTR>

When decision-makers are provided these tools, policy makers, retailers, growers, and consumers, all stand to benefit as the ethnic produce supply is more appropriately matched to the respective consumer demand and the market approaches economic equilibrium.

6. Conclusions

This study assessed the survey results of 447 respondents of three different Asian ethnicities (Chinese, Indian, and Korean) in the three Mid-Atlantic states to relate their socio-demographic characteristics, shopping patterns, opinions, preferences, and habits to purchases of ethnic produce. In addition, the study quantified the ethnic produce expenditures for each group and analyzed their responses to estimate the size of Mid-Atlantic ethnic produce markets for each respective ethnicity. Finally, the results and analyses were used to develop predictive consumer behavior models for the populations in this region. These results can be used by public policy makers, retailers, and commercial growers in each state to identify and address niche market opportunities in the ethnic produce sector.

The characteristics of respondents and their households are relevant for creating consumer profiles and targeting specific ethnic markets. The survey results show some variation in characteristics among the three ethnicities of study, and the significance of some of these differences is tested in consumer behavior models. In addition, an analysis of the results reveals some similarities across ethnicities which can create a basic profile for the combined Asian group of Chinese, Indians, and Koreans. Survey data found that more than half of the respondents in each group reside in suburban communities and have lived in their current state of residence for more than 10 years. An overwhelming majority (86%-95% in each group) were born outside of the US, typically in their country of ethnic origin, and moved to the US between 25 and 27½ years of age. The gender of respondents is split approximately 50%/50%, plus or minus 10%. The typical household has between 2 and 4 members. Roughly half of all households have children. More than half of the households in each group have incomes between $20,000 and $80,000 per year; these are fairly evenly distributed in $20,000 increments within that range. Further, the median for each sample group falls in the center of this range ($40,000 up to $60,000), which is consistent with the total Asian population for the Mid-Atlantic division, larger Northeast region, and total United States.

The survey results reveal that a vast majority (more than 90%) of respondents in each of the three ethnic groups purchased ethnic produce within the past year. There is some variability among the three ethnic groups surveyed, in terms of shopping patterns, beliefs, and behaviors associated with these ethnic purchases. However, more than half of the consumers in each group shop once a week or more frequently for ethnic produce. Three-quarters shop at more than one food store for these purchases. When asked to indicate all the points of produce purchase, more than three quarters included ethnic food stores, more than one third included retail supermarkets, and roughly one third included either farmers' markets, roadside stands, farmhouses, or other establishments. More than three-quarters of those purchasing ethnic produce have access to an ethnic market (store) within 20 miles.

A majority (83% or more) of respondents in each group perceived ethnic markets to be the "same" or "better" than conventional American markets in terms of availability, freshness, quality, and price. In addition, availability, freshness, and quality were consistently rated "very important" by 70% or more of respondents in each ethnic group. Price, on the other hand, was not consistently considered as important. Similarly, when additional attributes such as language, location, and origin were considered, they were not deemed as important as availability, freshness, and quality.

There is some variability between ethnicities in terms of frequency of visits, expenditure per visit, and size of household. However, this variability is minimized (or normalized) with the calculation of average monthly ethnic produce expenditure per person. The resulting average monthly ethnic produce expenditure is roughly $35 per person, with minimal variation across ethnicities (ranging from $33 to $36 per person). These expenditures, when applied to the larger populations for each respective ethnicity, estimate (with 95% confidence) the size of the Mid-Atlantic ethnic produce markets to be roughly (in millions) $454M to $600M for all three segments combined; $213M to $282M for Chinese, $162M to $215M for Indian, and $79M to $102M for Koreans. (Note that, as a result of comparable expenditures per person across ethnicities, the relative size of market estimates for each ethnicity is primarily a function of the respective population of each.)

Select produce items for each ethnicity, deemed feasible for production in this region, are ranked on the basis of expenditures (Section 5.1; Tables 5.6, 5.7, & 5.8), to prioritize future research efforts, so that producers may to begin to address these sizeable local ethnic markets in a more effective manner. Given the primarily demand-focused nature of this research, additional production research is warranted in order

to more accurately assess the feasibility, yields, and potential profitability associated with each crop so that producers may effectively address these sizeable local ethnic markets. The top five ethnic produce items purchased in each group, ranked in descending order on the basis of average weekly respondent expenditure are as follows (with the corresponding expenditures in parentheses);

Chinese: Flower Chinese Cabbage ($3.18), Edible Snow Peas ($2.68), Chinese Kale ($2.66), Bitter Gourd ($2.65) and Oriental Eggplant ($2.36),

Indians: Bitter Gourd ($3.14), Okra ($2.95), Yam ($2.95), Mustard leaves ($2.73) and Black Eyed Beans ($2.69),

Koreans: White Nectarine ($3.76), by Fuji Apple ($3.39), Korean Cabbage ($2.58), Korean Cucumber ($2.39), and Green Onions ($2.32).

The development of qualitative choice models revealed specific information to further assist retailers and growers in specifically targeting those ethnic consumers that may be willing to pay a premium for, travel farther to purchase, or be more receptive to the introduction of new establishments which sell ethnic produce. The predictive power (i.e. the probability of correct prediction) for these models is quite high and ranges from 71% to 85% and the corresponding analyses are very reliable, based only on variables which are significant (i.e. significant at 90%, 95%, or 99%; alpha values at 0.1, 0.05 and 0.001, respectively). Further, the implications, conclusions, and recommendations for retailers, growers, and policy makers are based primarily on the socio-demographic and geographic variables that may be identified via readily available population data for the Mid-Atlantic area (e.g. ethnicity, state of residency, age, gender, income, etc.; versus the variables that are more "belief" or consumer perception-oriented, more subjective in nature, and more difficult to identify in larger populations of consumers).

Consumer Choice Models Implications and Resulting Recommendations

Price and Promotion:

- **WTP >10% Premium (Model 1)**
  - The results of the study's "Willingness to Pay" model suggest that premiums for ethnic produce in excess of 10% over traditional American produce should be limited to consumers earning less than $60,000 annual income, females, Indians, and New Jersey or New York residents. The results indicate that ethnic consumers meeting (one or all) of

these criteria may be more likely to purchase the produce, despite the higher price, than ethnic consumers who do not meet this description. The exact price sensitivity and impact to profitability (e.g. price elasticity implications), could vary by item and/or attribute and would require further study in order to quantify the impact.

- In addition to identifying a profile for ethnic consumers that may be willing to pay a premium, the research does offer some suggestions for retailers, growers, and policy makers in terms of which attributes may (or may not) command a premium. For example, a majority of consumers rated availability, freshness, and quality as very important produce attributes. Further, most consumers perceive the produce offered in ethnic markets (retail establishments) to be similar, if not better, than the produce offered in traditional American stores, based upon these attributes. However, those that rated availability as an important factor while shopping for ethnic produce are (6%) less likely to be willing to pay a premium of more than 10% for their ethnic produce. This suggests that produce does not command a premium of more than 10% (even by those profiled as more likely WTP), merely by being made available in ethnic stores. Therefore, retailers should more selectively target the certain types of consumers, based upon the profiles identified, in addition to enhancing and/or promoting specific attributes such as quality and freshness in order to command the higher price.

- **COOL (Model 4)**
  - In a similar consumer choice model developed to predict consumers' desire for Country of Origin labeling (COOL) for their ethnic produce, the results indicated that consumers that rate availability and quality as important are (16% and 40%, respectively) less likely to desire such labeling. This may suggest, again, that increased availability to local markets may increase purchases by consumers that are less likely to desire (and in turn, supplement the any additional costs) of COOL. Also, the promotion of quality and the promotion of COOL may be mutually exclusive, as those who feel quality is important are less likely to desire COOL. Therefore, policy makers and retailers should make decisions regarding COOL accordingly and realize that such labeling efforts may be more effective in Indian communities than Korean or Chinese (similar to profile results for WTP), and with younger consumers, as older consumers are less likely to desire COOL.

Product and Placement:

- **Multi-store Shopping (Model 3)**
  - The research finds that Koreans are (12% and 21%, respectively) more likely than Chinese and Indians to shop at more than one store for their ethnic produce. Using this likelihood as a proxy for willingness to try a new store, this suggests that Koreans may be more receptive to the introduction of new establishments (i.e. likely to try), than Chinese and Indians. Therefore, the researchers recommend that these results, along with the ethnic concentration maps (by ethnicity, state, and municipality), be utilized when making decisions regarding new store introduction (and the ethnic product mix offered) and what locations might be most effective in acquiring new customers.

  - Findings with regard to price have implications for both potential new entrants and existing retailers. The lack of significance of the price variable in the consumer choice model suggests that ethnic consumers do not tend to shop multiple stores for their ethnic produce, on the basis of price. Therefore, ethnic consumers are not more likely to shop multiple (or additional) stores, in response to price slashing attempts by retailers to acquire new customers.

- **Miles to Market (Model 2)**
  - As a result of modeling consumers' likelihood to drive more than 20 miles to purchase ethnic produce, the research suggests that retailers may be able to extent their geographic reach and corresponding clientele base, through increased marketing efforts to younger (<36 years) and much older (>50 years of age) consumers who are more likely to be willing to travel relatively long distances to purchase ethnic produce.

  - The findings also suggest that Koreans are (11%) less likely to travel farther than 20 miles to purchase ethnic produce than their Chinese counterparts. Therefore, Korean produce and/or markets may be given priority over their Chinese counterparts when choosing between which markets to build within close (i.e. 20 mile) proximity to the respective ethnic concentration, as Chinese consumers may already be adequately served by ethnic establishments beyond a 20 mile radius of their residence. This prioritization

information should be utilized, in combination with ethnic concentration maps and existing ethnic establishment data, by developers and retailers to identify appropriate locations for new stores and/or to optimize ethnic produce mix across their multiple existing locations for the retailer (e.g. large grocery chain).

The ethnic concentration maps that were developed as a result of this research (Appendix C) may be used to highlight the relative magnitude of ethnic concentrations throughout the state of New Jersey, for the purpose of assisting in future marketing decisions (price, promotion, product-mix, and *placement*). The same mapping methodology may be applied to the other Mid-Atlantic states and neighboring states in the larger Northeast region, to identify ethnic concentrations and potential clientele for Mid-Atlantic growers and retailers. The effectiveness of such maps is further increased when used in conjunction with location information for existing ethnic markets (stores) in the same area. Outlets for distribution may be selected based on proximity to relevant ethnic consumer concentrations.

The results of this report should be considered to be exploratory research in that they identify potential opportunities for farmers in the region to grow ethnic produce. The resulting market demand assessment for ethnic produce is a key component in recommending appropriate crops for production. However, crop production recommendations should ultimately be based on further production feasibility, yield determination, and net profitability estimates to further prioritize these proposed crops. Toward that end, a National Research Initiative (NRI) program under the Agricultural Prosperity for Small and Medium Sized Farms is being funded to expand the scope of ethnic marketing and production research to the entire east coast. Under this NRI project, field demonstration plots for the top valued selected ethnic produce will be established in New Jersey, Florida and Massachusetts with the help of production experts. This subsequent research will provide the additional production data and profitability information necessary to make better informed decisions as to which locally grown ethnic crops are most likely to be successful (profitable) in serving the larger ethnic market opportunities along the east coast.

References

Asp, E. 1999. Factors affecting food decisions made by individual consumers. *Food Policy* 24 (2–3), 287–294.

Barnes, S. J. and C.E.Bennet. 2002. The Asian Population:2000. A Census Brief. U.S. Department of Commerce, Washington D.C.

Bhugra, D.1999. Cultural identity and its measurement: a questionnaire for Asians. *International Review of Psychiatry*, 11 (2/3), 244-250.

Current Population Reports. 2005. Consumer Income. *Income, Poverty, and Health Insurance Coverage in the United States: 2004*. U.S. Census Bureau. U.S. Department of Commerce.

Evergreen Seeds, www.evergreenseeds.com

Govindasamy, R., A. Pingali, J. Italia and D. Thatch. 1999. Consumer response to state-sponsored marketing programs: The case of Jersey Fresh. *Journal of Extension* 37:3.

Guzmán, B. 2001. The Hispanic population: Census 2000 Brief. United States Census Bureau. May. http://www.census.gov/prod/2001pubs/c2kbr01-3.pdf

Humphreys, J.M. 2004. The Multicultural Economy 2004. America's Minority Buying Power. *Georgia Business and Economic Conditions*, The University of Georgia, 64(3).

Hilchey, D. 2003. Personal Communications, Community Food and Agriculture Program, Department of Rural Sociology, Cornell University, Ithaca, NY.

Lawrence, K., D. Hilchey, L. Claude, J. Ameroso and J. Nettleton. 2000. Final report—Ethnic markets and sustainable agriculture: a model for linking northeast farms and urban communities. Sustainable Agriculture Research and Education Program Report of Accomplishments, 1999. Univ. VT.

Lee, S. 1998. Asian Americans: Diverse and Growing. *Population Bulletin*, 53(2): 1-40.

Marxen, L. J., Schilling, B. J., 2005. Working Title : Analysis of Ethnic Populations in New Jersey, Food Policy Institute, Rutgers, The State University of New Jersey.

Nemana, A.. 2005. Demographics and the Marketing of Asian Ethnic Produce in the Northeastern States. Rutgers, The State University of New Jersey.

Six Sigma, http://www.isixsigma.com/library/content/c000709.asp

Tubene, S. 2001. Market Potential for Ethnic Produce in the Mid-Atlantic Region. Maryland Cooperative Extension, University of Maryland, College Park-Eastern Shore. 6 p.

References (continued)

Tubene, S., R. D. Myers, C. Mcclurg, and Y. Afantchao. 2003. Buyers and Sellers' Responses to Ethnic and Specialty Produce in the Baltimore-Washington Area. Maryland Cooperative Extension, University of Maryland, College Park-Eastern Shore. 5 p.

U. S. Census, 1994. United States Dept. of Commerce. Washington, DC.

U. S. Census, 2000. United States Dept. of Commerce. Washington, DC.

U.S. Department of Commerce. 2000. Minority Business Development Agency, Minority Purchasing Power: 2000- 2045. Washington DC.

U.S. Department of Commerce. 2000. Minority Business Development Agency, Minority Population Growth: 1995- 2050. Washington DC.

Appendix A

Ethnic Produce Consumer Survey Questionnaire

THE STATE UNIVERSITY OF NEW JERSEY
RUTGERS

Agricultural, Food and Resource Economics
Rutgers, The State University of New Jersey
55 Dudley Road • New Brunswick • New Jersey 08901-8520
732/932-9155 • FAX: 732/932-8887 • http://aesop.rutgers.edu/~agecon

The principal objective of this survey is to understand trends in Ethnic consumer's fruits and vegetables shopping. Your participation is completely voluntary and your responses will be handled with strict confidentiality. Your responses will be anonymously used only for research purposes. If you have any questions, please contact Dr.Ramu Govindasamy at (732)932-9171,x-254 by phone, or email at govindasamy@aesop.rutgers.edu. We appreciate your participation in making this study successful.

To be answered by the principal grocery shopper in your family.

1. Have you purchased Chinese/Korean/Indian fresh fruits and vegetables in the past year?
   1.☐ Yes 2.☐ No

If your answer to the above question is "No", skip questions below and go to question 20 (page 3)

2. How often do you shop for Chinese/Korean/Indian fruits and vegetables?
   1.☐ More than once a week 2.☐ Once a week 3.☐ Once in two weeks
   4.☐ Once in a month 5.☐ Less than once a month

3. Where do you buy Chinese/Korean/Indian fruits and vegetables during summer? (Check all that apply)
   1.☐ Retail Supermarkets 2.☐ Roadside stands 3.☐ Farmers' Market
   4.☐ Chinese/Korean/Indian Produce Stores 5.☐ Farmhouse
   6.☐ Other please specify_____

4. Do you regularly shop at more than one food store in order to purchase desired Chinese/Korean/Indian fruits and vegetables?
   1.☐ Yes 2.☐ No

5. How much do you spend for Chinese/Korean/Indian fruits and vegetables per visit? $_____

6. How many visits do you make to the Chinese/Korean/Indian grocery store per month? _____

7. How close is a Chinese/Korean/Indian fruits and vegetables market located to you?
   1.☐ 0-10 miles 2.☐ 10-20 miles 3.☐ Above 20 miles 4.☐ No such store

8. How do you think products from a Chinese/Korean/Indian fruits and vegetables market compare with those from a typical American/conventional fruits and vegetables market?

	Better	**Same**	**Worse**	**Don't Know**
a). In terms of Quality	1.☐	2.☐	3.☐	4.☐
b). In terms of Price	1.☐	2.☐	3.☐	4.☐
c). In terms of Package(where present)	1.☐	2.☐	3.☐	4.☐
d). In terms of Freshness	1.☐	2.☐	3.☐	4.☐
e). In terms of Variety	1.☐	2.☐	3.☐	4.☐
f). In terms of Availability	1.☐	2.☐	3.☐	4.☐

9. How much more would you be willing to pay for Chinese/Korean/Indian fruits and vegetables compared to typical American/conventional fruits and vegetables?

1.☐ I will not pay more 2.☐ 1% to 5% more 3.☐ 6% to 10% more
4.☐ 11% to 15% more 5.☐ 16% to 20% more 6.☐ More than 20%

10. What Chinese/Korean/Indian fruits and vegetables do you usually buy? Please fill the quantity of vegetables that you buy per week, circle the units (lbs, numbers or bunches) and their price per unit.

(Insert tables 5, 6, or 7 from the report listing 13 produce items for each ethnicity, titled 'Chinese/Indian/Korean fruits and vegetables: spending patterns').

11. Rate the following as most important factors for shopping at a Chinese/Korean/Indian fruits and vegetables market.

	Very important	**Somewhat important**	**Not important**
a). Price	1.☐	2.☐	3.☐
b). Location	1.☐	2.☐	3.☐
c). Availability	1.☐	2.☐	3.☐
d). Language	1.☐	2.☐	3.☐
e). Freshness	1.☐	2.☐	3.☐
f). Origin	1.☐	2.☐	3.☐
g). Quality	1.☐	2.☐	3.☐

12. Do you read food advertisements in Internet/grocery-brochures regularly to buy Chinese/Korean/Indian fruits and vegetables?

1.☐ Yes 2.☐ No

13. Do you wish to buy Chinese/Korean/Indian fruits and vegetables that are grown on local farms?

1.☐ Yes 2.☐ No 3.☐ Not sure

14. Do you prefer to buy organic Chinese/Korean/Indian fruits and vegetables if at all available?

1.☐ Yes 2.☐ No 3. ☐ Not sure

15. Before shopping, do you plan what Chinese/Korean/Indian fruits and vegetables you want to buy?

1.☐ Yes 2.☐ No

16. Do you have a garden at your home?
1.☐ Yes 2.☐ No

17. Do you grow Chinese/Korean/Indian fruits or vegetables for consumption at your home?
1.☐ Yes 2.☐ No

18. On average how many meals do you eat out per week in Chinese/Korean/Indian restaurants?
A. Breakfast_____ B. Lunch_____ C. Dinner_____

19. How much do you spend (per person) on eating out per week in Chinese/Korean/Indian restaurants?
$_____

20. Would you like to buy IPM produce?
1.☐Yes 2.☐ No 3.☐ Not Sure
(**Integrated Pest Management (IPM) is a sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools in a way that minimizes economic, health, and environmental risks.)**

21. Are you willing to buy Genetically Modified Food?
1.☐Yes 2.☐ No 3.☐ Not Sure

22. How would you classify yourself in terms of trying a newly introduced food product in the supermarket?
1.☐ Very much willing to try 2.☐ Somewhat willing to try 3.☐ Not willing to try

23. How much do you spend on <u>all</u> fruits and vegetables (traditional U.S. and Chinese/Korean/Indian) in a week? $_____

24. How much of your fruits and vegetables (traditional U.S. and Chinese/Korean/Indian) are purchased at major supermarkets?
1.☐ All 2.☐ Most 3.☐ Some 4.☐ None

25. Would you like your local grocery store to have a greater selection of Chinese/Korean/Indian fruits and vegetables?
1.☐ Yes 2.☐ No 3.☐ Not Sure

26. Would you like grocery stores to provide information about the country of origin of the fruits and vegetables you buy?
1.☐ Yes 2.☐ No 3.☐ Not sure

Your answers to the following questions will be kept strictly confidential and be used only to help us interpret the results of this survey.
<u>Background information:</u>

27. Do you consider your neighborhood?
1.☐ Urban 2.☐ Suburban 3.☐ Rural

28. How many years have you been living in New York? _____Years

29. Number of persons, including yourself in your household _____

30. Number of persons below age 17 in your household _____

31. Please select your gender: 1.☐ Female 2.☐ Male

32. In what range is your age?
1.☐ Less than 20 2.☐ 21-35 3.☐ 36-50 4.☐ 51-65 5.☐ Over 65

33. Please select the highest level of education you have completed:
1.☐ No Formal Schooling 2.☐ Up to High school
3.☐ 2 or 4 year college degree 4.☐ Post graduate

34. Which of the following best describes your current occupation?
1.☐ Retired 2.☐ Self-employed 3.☐ Employed by others
4.☐ Full-time Homemaker 5.☐ Unemployed 6.☐ Other

35. Annual-Income category of your household before taxes.
1.☐ $ Less than 20,000 2.☐ $ 20,000 - 39,999 3.☐ $ 40,000 - 59,999
4.☐ $ 60,000 – 79,999 5.☐ $ 80,000 – 99,999 6.☐ $ 100,000 – 124,999
7.☐ $ 125,000 – 149,999 8.☐ $ 150,000 – 199,999 9.☐ $ 200,000 or more

36. Which of the following best describes your current marital status? (Check one)
1.☐ Single 2.☐ Separated 3.☐ Widower
4.☐ Divorced 5.☐ Married 6.☐ Other

37. Where were you born?
1.☐ U.S. 2.☐ China/India/Korea 3.☐ Other (please specify) _____

38. If you were not born in the US, how old were you when you arrived in the US?
_____ Years old

Thank you very much for participating in this survey.

Appendix B

Model 1: Willingness to Pay a Premium of More Than 10% for Ethnic Produce

Variables	Estimates	Standard Error	Marginal Values
Intercept***	3.296	1.1568	
ADVT	0.014	0.5945	
ALLSPEND***	-0.015	0.00447	-0.001
AVAILIMP**	-0.948	0.4788	-0.062
PRICE	-0.238	0.4373	
YEARSINUS	-0.021	0.0199	
GARDEN	-0.067	0.4057	
ADULTS**	0.431	0.2270	0.062
GRAD**	0.853	0.4634	0.061
INCGR60***	-1.269	0.4897	-0.092
GENDER***	1.514	0.4302	0.125
AGE	-0.185	0.3954	
CHINESE**	-1.373	0.6230	-0.129
KOREAN***	-1.684	0.6189	-0.163
NEWJERSEY**	1.025	0.5902	0.069
NEWYORK**	1.083	0.5450	0.085

Significance: *:10 level **: .05 level ***: .01 level

McFadden's R^2 is: 0.211
Overall model fit: <0.0001
Probability of correct Prediction is : 84.6%

Model 2: Traveling Distances of More Than 20 Miles to Ethnic Produce Market

Variables	Estimates	Standard Error	Marginal Values
Intercept*	1.642	0.927	
ADVT	-0.014	0.523	
ALLSPEND	-0.006	0.005	
AVAIL*	-0.698	0.395	-0.073
PRICE	0.157	0.394	
LOCIMP*	0.687	0.369	0.077
YEARSINUS**	-0.037	0.019	-0.002
GARDEN	-0.178	0.371	
ADULTS	0.286	0.197	
GRAD	0.040	0.409	
INCGR60	-0.227	0.427	
GENDER	0.191	0.361	
AGE**	-0.710	0.368	-0.080
CHINESE**	1.091	0.477	0.107
INDIAN	0.435	0.459	
NEWJERSEY	0.596	0.528	
NEWYORK*	0.937	0.521	0.106

Significance: *:10 level **: .05 level ***: .01 level

McFadden's R^2 is: 0.12

Overall model fit: 0.02

Probability of correct Prediction is: 80.9%

Model 3: Visitation to Multiple Stores for Purchasing Ethnic Produce

Variables	Estimates	Standard Error	Marginal Values
Intercept	0.860	1.035	
ADVT	-0.988	0.710	
AVAIL**	1.211	0.501	0.168
LANGIMP**	1.565	0.651	0.306
ORIGINIMP**	-1.236	0.521	-0.168
FRESH**	-0.946	0.467	-0.139
LCLFARM**	-0.904	0.456	-0.151
LUNCH**	-0.499	0.200	-0.098
YEARSINUS	-0.001	0.019	
GARDEN***	-1.498	0.522	-0.197
ADULTS	-0.068	0.219	
GRAD	-0.266	0.460	
INCGR60	0.635	0.502	
GENDER	0.031	0.421	
AGE	0.017	0.428	
PRICE	-0.651	0.492	
INDIAN***	-1.655	0.638	-0.205
CHINESE*	-0.849	0.514	-0.117
NEWJERSEY*	1.192	0.712	0.201
NEWYORK	0.634	0.645	

Significance: *:10 level **: .05 level ***: .01 level

McFadden's R^2 is: 0.221

Overall model fit: 0.0005

Probability of correct Prediction is : 70.7%

Model 4: Preference for Country of Origin Labeling

Variables	Estimates	Standard Error	Marginal Values
Intercept*	2.872	1.741	
ADVT	0.047	0.790	
ALLSPEND	0.004	0.006	
AVAILIMP**	-1.247	0.623	-0.160
QLTYIMP***	-2.093	0.718	-0.365
LOCIMP	-0.187	0.592	
PLANTOBUY	-0.683	0.611	
LUNCH	-0.119	0.162	
MARRIED	-0.815	0.812	
YEARSINUS	0.012	0.024	
GARDEN	0.794	0.590	
ADULTS	0.195	0.264	
GRAD	-0.673	0.593	
INCGR60	0.302	0.650	
MARRIED	-0.815	0.812	
AGE**	-1.360	0.612	-0.140
CHINESE**	-2.117	0.879	-0.182
KOREAN*	-1.189	0.752	-0.110
NEWJERSEY	-0.118	0.967	
NEWYORK	0.191	0.842	

Significance: *:10 level **: .05 level ***: .01 level

McFadden's R^2 is: 0.215
Overall model fit: 0.05
Probability of correct Prediction is : 83.4%

Appendix C

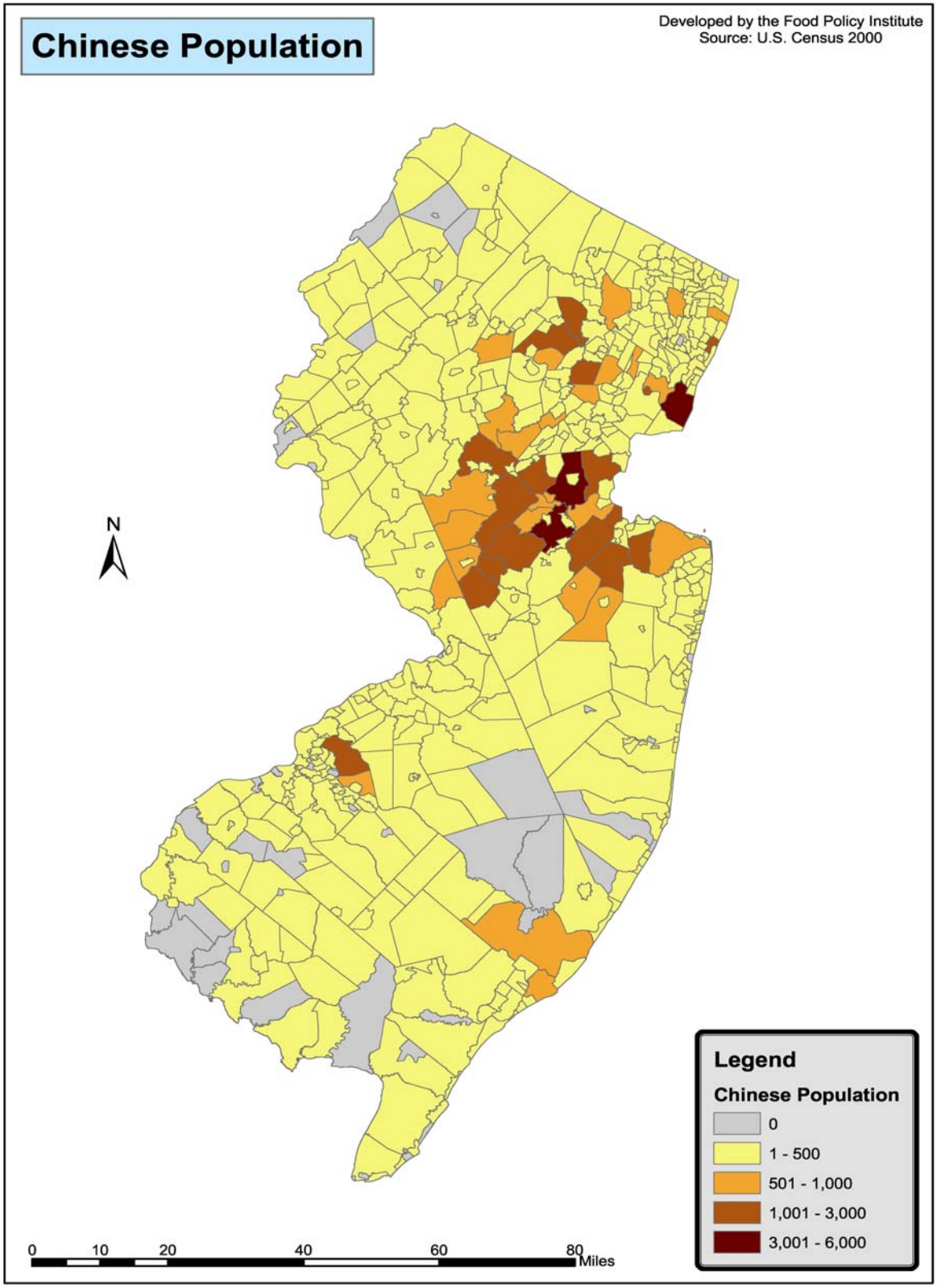
Ethnic Population Mapping Methods & Maps

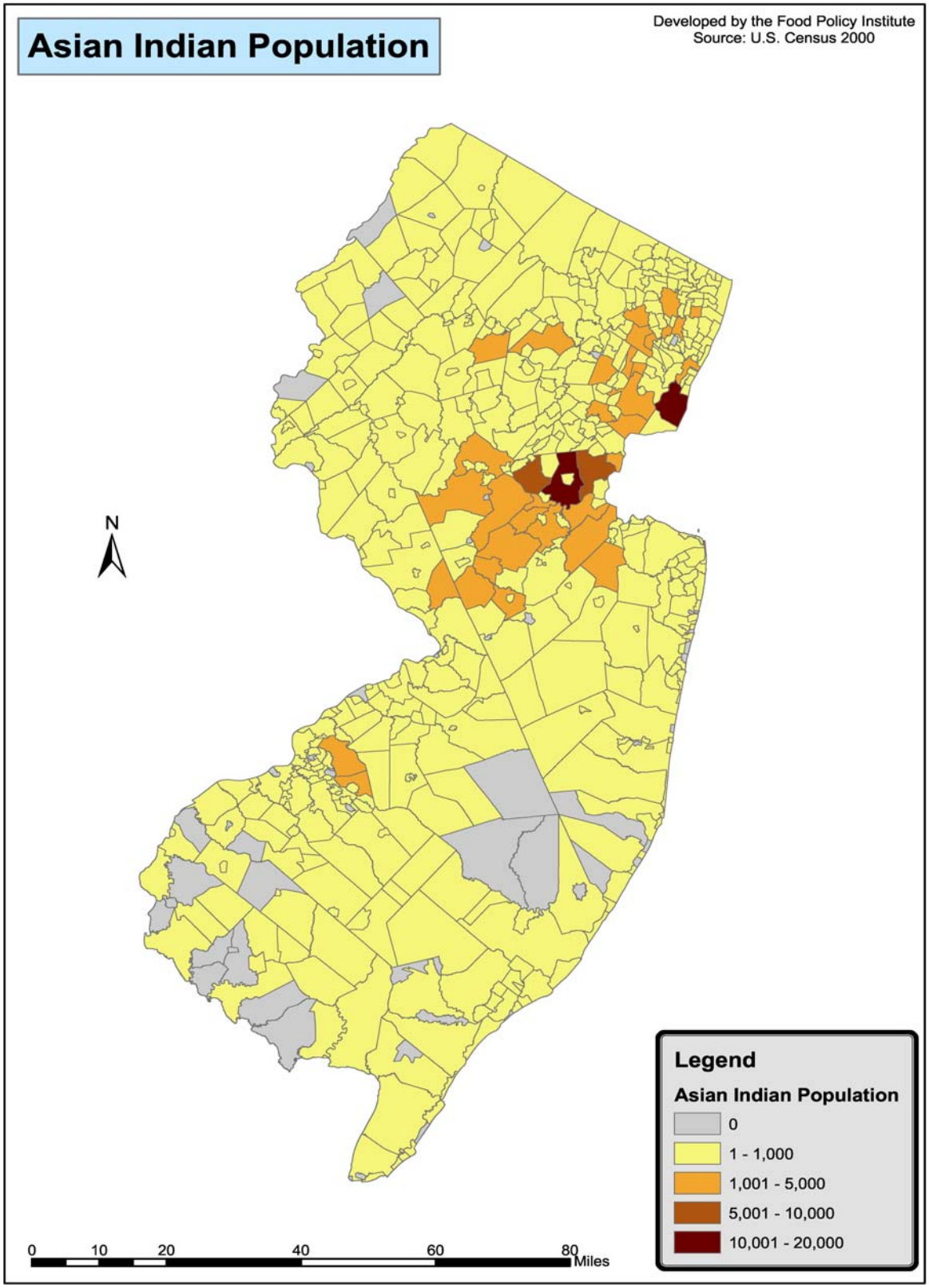
Data Collection

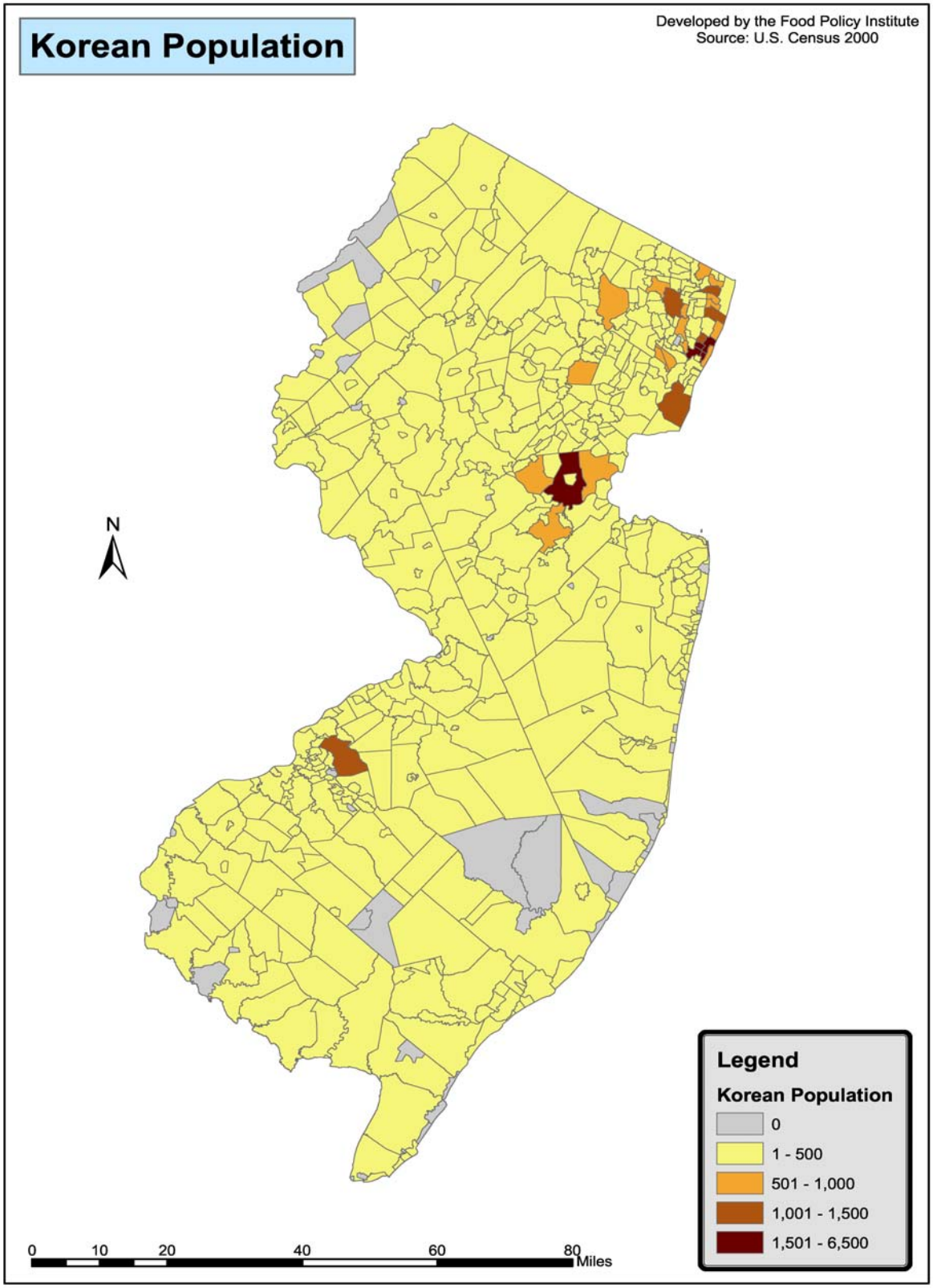
The maps were created using population data obtained from the 2000 Census Summary File 1 & 3. Data pertaining to country of origin for the major races and Hispanics was collected from Summary File 1, while ancestry data was obtained from Summary File 3. All data was collected for all municipalities in New Jersey. This data was then cleaned up and imported into a database format compatible with ArcGIS.

Mapping

Using ArcGIS software from ESRI, this database was joined to a shapefile of all municipalities in the state of New Jersey that was obtained from the New Jersey Department of Environmental Protection's Geographic Information Systems webpage. For purposes of this report, maps were generated for the Asian Indian, Chinese, and Korean populations showing the population by municipality statewide and exported into a JPEG file format.


Chinese Population
Developed by the Food Policy Institute
Source: U.S. Census 2000
N
Legend
Chinese Population
0
1 - 500
501 - 1,000
1,001 - 3,000
3,001 - 6,000
0
10
20
40
60
80
Miles


Asian Indian Population
Developed by the Food Policy Institute
Source: U.S. Census 2000
N
Legend
Asian Indian Population
0
1 - 1,000
1,001 - 5,000
5,001 - 10,000
10,001 - 20,000
0
10
20
40
60
80
Miles


Korean Population
Developed by the Food Policy Institute
Source: U.S. Census 2000
N
Legend
Korean Population
0
1 - 500
501 - 1,000
1,001 - 1,500
1,501 - 6,500
0
10
20
40
60
80
Miles

Appendix D

Estimated Chinese Population Within 5 Miles of New Jersey Farmers' Markets

Compiled by the Food Policy Institute

Source: U.S. Census 2000

County	City	Farm Market	Chinese
Middlesex	Metuchen	METUCHEN FARMERS MARKET	9,180
Bergen	Teaneck	TEANECK FARMERS MARKET	7,738
Middlesex	Highland Park	HIGHLAND PARK FARMERS MARKET	7,659
Somerset	Somerset	FRANKLIN TOWNSHIP FARMERS MARKET	6,957
Bergen	Englewood	ENGLEWOOD FARMERS MARKET	6,224
Hudson	Jersey City	JOURNAL SQUARE FARMERS MARKET	6,162
Essex	East Orange	EAST ORANGE FARMERS MARKET	5,936
Hudson	Jersey City	SGT. ANTHONY PARK FARMERS MARKET	5,807
Bergen	Fort Lee	FORT LEE FARMERS MARKET	5,755
Somerset	North Plainfield	NORTH PLAINFIELD FRAMERS MARKET	5,643
Hudson	Jersey City	HARVEST SQUARE FARMERS MARKET	5,475
Essex	West Orange	WEST ORANGE FOOD MARKET	5,403
Hudson	Hoboken	HOBOKEN FARMERS MARKET	5,333
Hudson	Jersey City	HAMILTON PARK FARMERS MARKET	5,165
Hudson	Jersey City	NEWPORT PAVONIA FARMERS MARKET	5,149
Mercer	Princeton	WEST WINDSOR FARMERS MARKET	5,070
Hudson	Jersey City	VAN VORST FARMERS MARKET	4,925
Union	Westfield	WESTFIELD FARMERS MARKET	4,876
Union	Scotch Plains	SCOTCH PLAINS FARMERS MARKET	4,873
Essex	Montclair	MONTCLAIR FARMERS MARKET	4,766
Essex	Montclair	BLOOMFIELD FARMERS MARKET	4,728
Essex	Irvington	IRVINGTON FARMERS MARKET	4,727
Union	Rahway	RAHWAY FARMERS MARKET	4,608
Essex	Newark	URBAN LEAGUE FARMERS MARKET	4,532
Essex	Livingston	LIVINGSTON FARMERS MARKET	4,443
Essex	Newark	BETHANY BAPTIST CHURCH FARMERS MARKET	4,420
Essex	Newark	COMMON GREENS FARMERS MARKET	4,391
Middlesex	Middlesex	MIDDLESEX BOROUGH FARMERS MARKET	4,390
Bergen	Hasbrouck Heights	HASBROUCK HEIGHTS FARMERS MARKET	4,362
Mercer	Princeton	HERBAN GARDEN FARMERS MARKET	4,349
Union	Summit	SUMMIT FARMERS MARKET	4,300
Essex	South Orange	SOUTH ORANGE FARMERS MARKET	4,087
Somerset	Bound Brook	BOUND BROOK FARMERS MARKET	4,015
Essex	Millburn	MILLBURN FARMERS MARKET	3,970
Union	Springfield	SPRINGFIELD FARMERS MARKET I	3,812
Union	Springfield	SPRINGFIELD FARMERS MARKET II	3,812
Bergen	Rutherford	RUTHERFORD FARMERS MARKET	3,763
Morris	Boonton	BOONTON FARMERS MARKET	3,666
Passaic	Paterson	PATERSON FARMERS MARKET	3,563

Cont'd…

County	City	Farm Market	Chinese
Morris	Madison	MADISON FARMERS MARKET	3,392
Essex	Maplewood	MAPLEWOOD FARMERS MARKET	3,359
Somerset	Skillman	MONTGOMERY FARMERS MARKET	3,299
Bergen	Ridgewood	RIDGEWOOD FARMERS MARKET	3,007
Morris	Morristown	MORRISTOWN FARMERS MARKET	2,772
Bergen	Rivervale	RIVERVALE FARMERS MARKET	2,751
Union	Roselle Park	ROSELLE PARK FARMERS MARKET	2,494
Mercer	Lawrenceville	LAWRENCEVILLE FARMERS MARKET	1,941
Camden	Collingswood	COLLINGSWOOD FARMERS MARKET	1,590
Monmouth	Englishtown	ENGLISHTOWN AUCTION SALES	1,528
Monmouth	Red Bank	RED BANK FARMERS MARKET	1,248
Camden	Camden	FAIRVIEW FARMERS MARKET	1,228
Union	Elizabeth	ELIZABETH FARMERS MARKET	1,192
Atlantic	Atlantic City	ATLANTIC CITY FARMERS MARKET	1,148
Somerset	Bernardsville	BERNARDSVILLE FARMERS MARKET	916
Morris	Netcong	NETCONG FARMERS MARKET	840
Camden	Camden	CAMDEN COMMUNITY FARMERS MARKET	827
Camden	Camden	JERSEY FRESH FARMERS MARKET AT THE CAMDEN WATERFRONT	822
Mercer	Trenton	TRENTON FARMERS MARKET	811
Camden	Berlin	BERLIN FARMERS MARKET	808
Mercer	Trenton	CAPITAL CITY FARMERS MARKET	554
Burlington	Riverton	RIVERTON FARMERS MARKET	498
Atlantic	Smithville	JERSEY FRESH FARMERS MARKET AT SMITHVILLE	467
Monmouth	Belmar	BELMAR FARMERS MARKET	352
Gloucester	Woodbury	WOODBURY FARMERS MARKET	344
Hunterdon	Flemington	LIBERTY VILLAGE PREMIUM OUTLETS FARMERS MARKET	267
Burlington	Burlington	MARKET DAYS	220
Burlington	Burlington	BURLINGTON CITY FARMERS MARKET	219
Hunterdon	High Bridge	HIGH BRIDGE OPEN AIR MARKET	219
Monmouth	Highlands	HIGHLANDS FARMERS MARKET	173
Cape May	Ocean City	OCEAN CITY FARMERS & CRAFTERS MARKET	144
Cape May	Ocean City	SOUTH JERSEY FARMERS AND CRAFTERS MARKET	144
Sussex	Lafayette	OLDE LAFAYETTE VILLAGE FARMERS MARKET	101
Cumberland	Vineland	VINELAND MAIN STREET FARMERS MARKET	97
Hunterdon	Sergeantsville	SERGEANTSVILLE FARMERS MARKET	87
Burlington	Columbus	COLUMBUS FARMERS MARKET	60
Ocean	Forked River	FORKED RIVER FARMERS MARKET	59
Cumberland	Millville	MILLVILLE FARMERS MARKET	47
Cape May	Cape May	HISTORIC COLD SPRING VILLAGE FARMERS MARKET	38
Cumberland	Bridgeton	BRIDGETON RIVERFRONT FARMERS MARKET	35
Cape May	Cape May Courthouse	CAPE MAY COUNTY PARK & ZOO FARMERS MARKET	22
Salem	Salem	SALEM FARMERS MARKET	22
Cape May	West Cape May	WEST CAPE MAY FARMERS MARKET	21
Salem	Pilesgrove	COWTOWN FARMERS MARKET	5

Estimated Asian Indian Population Within 5 Miles of New Jersey Farmers' Markets

Compiled by the Food Policy Institute

Source: U.S. Census 2000

County	City	Farm Market	Asian Indians
Middlesex	Metuchen	METUCHEN FARMERS MARKET	29,367
Hudson	Hoboken	HOBOKEN FARMERS MARKET	18,709
Union	Rahway	RAHWAY FARMERS MARKET	18,571
Hudson	Jersey City	SGT. ANTHONY PARK FARMERS MARKET	18,474
Middlesex	Highland Park	HIGHLAND PARK FARMERS MARKET	17,935
Hudson	Jersey City	NEWPORT PAVONIA FARMERS MARKET	17,496
Hudson	Jersey City	HAMILTON PARK FARMERS MARKET	17,482
Hudson	Jersey City	JOURNAL SQUARE FARMERS MARKET	17,415
Hudson	Jersey City	VAN VORST FARMERS MARKET	16,454
Hudson	Jersey City	HARVEST SQUARE FARMERS MARKET	16,300
Somerset	Somerset	FRANKLIN TOWNSHIP FARMERS MARKET	16,233
Bergen	Rutherford	RUTHERFORD FARMERS MARKET	14,279
Bergen	Hasbrouck Heights	HASBROUCK HEIGHTS FARMERS MARKET	13,629
Passaic	Paterson	PATERSON FARMERS MARKET	13,151
Bergen	Teaneck	TEANECK FARMERS MARKET	11,658
Essex	Montclair	MONTCLAIR FARMERS MARKET	10,808
Somerset	North Plainfield	NORTH PLAINFIELD FRAMERS MARKET	9,888
Essex	Montclair	BLOOMFIELD FARMERS MARKET	9,521
Essex	East Orange	EAST ORANGE FARMERS MARKET	9,148
Middlesex	Middlesex	MIDDLESEX BOROUGH FARMERS MARKET	8,833
Essex	West Orange	WEST ORANGE FOOD MARKET	8,434
Essex	Irvington	IRVINGTON FARMERS MARKET	8,384
Essex	Newark	COMMON GREENS FARMERS MARKET	8,018
Bergen	Englewood	ENGLEWOOD FARMERS MARKET	7,921
Essex	Newark	URBAN LEAGUE FARMERS MARKET	7,844
Somerset	Bound Brook	BOUND BROOK FARMERS MARKET	7,563
Essex	Newark	BETHANY BAPTIST CHURCH FARMERS MARKET	7,482
Bergen	Fort Lee	FORT LEE FARMERS MARKET	7,451
Mercer	Princeton	WEST WINDSOR FARMERS MARKET	7,376
Union	Westfield	WESTFIELD FARMERS MARKET	7,279
Essex	Maplewood	MAPLEWOOD FARMERS MARKET	6,598
Essex	South Orange	SOUTH ORANGE FARMERS MARKET	6,386
Mercer	Princeton	HERBAN GARDEN FARMERS MARKET	6,020
Union	Scotch Plains	SCOTCH PLAINS FARMERS MARKET	5,875
Union	Roselle Park	ROSELLE PARK FARMERS MARKET	5,543
Essex	Millburn	MILLBURN FARMERS MARKET	5,501
Union	Springfield	SPRINGFIELD FARMERS MARKET I	5,388
Union	Springfield	SPRINGFIELD FARMERS MARKET II	5,383
Morris	Boonton	BOONTON FARMERS MARKET	4,922

Cont'd… County	City	Farm Market	Asian Indians
Union	Elizabeth	ELIZABETH FARMERS MARKET	4,689
Bergen	Ridgewood	RIDGEWOOD FARMERS MARKET	3,857
Essex	Livingston	LIVINGSTON FARMERS MARKET	3,536
Bergen	Rivervale	RIVERVALE FARMERS MARKET	3,402
Somerset	Skillman	MONTGOMERY FARMERS MARKET	3,057
Union	Summit	SUMMIT FARMERS MARKET	3,019
Morris	Morristown	MORRISTOWN FARMERS MARKET	2,402
Mercer	Lawrenceville	LAWRENCEVILLE FARMERS MARKET	2,249
Camden	Berlin	BERLIN FARMERS MARKET	2,034
Morris	Madison	MADISON FARMERS MARKET	2,004
Morris	Netcong	NETCONG FARMERS MARKET	1,784
Mercer	Trenton	TRENTON FARMERS MARKET	1,517
Atlantic	Atlantic City	ATLANTIC CITY FARMERS MARKET	1,471
Monmouth	Englishtown	ENGLISHTOWN AUCTION SALES	1,264
Camden	Collingswood	COLLINGSWOOD FARMERS MARKET	1,210
Mercer	Trenton	CAPITAL CITY FARMERS MARKET	1,138
Monmouth	Red Bank	RED BANK FARMERS MARKET	1,090
Burlington	Riverton	RIVERTON FARMERS MARKET	1,038
Burlington	Burlington	MARKET DAYS	939
Burlington	Burlington	BURLINGTON CITY FARMERS MARKET	925
Camden	Camden	FAIRVIEW FARMERS MARKET	923
Somerset	Bernardsville	BERNARDSVILLE FARMERS MARKET	897
Atlantic	Smithville	JERSEY FRESH FARMERS MARKET AT SMITHVILLE	710
Gloucester	Woodbury	WOODBURY FARMERS MARKET	595
Monmouth	Belmar	BELMAR FARMERS MARKET	523
Camden	Camden	CAMDEN COMMUNITY FARMERS MARKET	377
Camden	Camden	JERSEY FRESH FARMERS MARKET AT THE CAMDEN WATERFRONT	377
Hunterdon	Flemington	LIBERTY VILLAGE PREMIUM OUTLETS FARMERS MARKET	377
Cumberland	Vineland	VINELAND MAIN STREET FARMERS MARKET	321
Burlington	Columbus	COLUMBUS FARMERS MARKET	189
Hunterdon	High Bridge	HIGH BRIDGE OPEN AIR MARKET	188
Cape May	Ocean City	OCEAN CITY FARMERS & CRAFTERS MARKET	178
Cape May	Ocean City	SOUTH JERSEY FARMERS AND CRAFTERS MARKET	178
Monmouth	Highlands	HIGHLANDS FARMERS MARKET	147
Sussex	Lafayette	OLDE LAFAYETTE VILLAGE FARMERS MARKET	116
Hunterdon	Sergeantsville	SERGEANTSVILLE FARMERS MARKET	113
Cumberland	Millville	MILLVILLE FARMERS MARKET	107
Cumberland	Bridgeton	BRIDGETON RIVERFRONT FARMERS MARKET	62
Cape May	Cape May	HISTORIC COLD SPRING VILLAGE FARMERS MARKET	53
Cape May	Cape May Courthouse	CAPE MAY COUNTY PARK & ZOO FARMERS MARKET	37
Ocean	Forked River	FORKED RIVER FARMERS MARKET	21
Cape May	West Cape May	WEST CAPE MAY FARMERS MARKET	17
Salem	Salem	SALEM FARMERS MARKET	17
Salem	Pilesgrove	COWTOWN FARMERS MARKET	11

Estimated Korean Population Within 5 Miles of New Jersey Farmers' Markets

Compiled by the Food Policy Institute

Source: U.S. Census 2000

County	City	Farm Market	Koreans
Bergen	Teaneck	TEANECK FARMERS MARKET	24,619
Bergen	Fort Lee	FORT LEE FARMERS MARKET	22,352
Bergen	Englewood	ENGLEWOOD FARMERS MARKET	21,941
Bergen	Hasbrouck Heights	HASBROUCK HEIGHTS FARMERS MARKET	15,601
Bergen	Rutherford	RUTHERFORD FARMERS MARKET	6,048
Bergen	Rivervale	RIVERVALE FARMERS MARKET	5,830
Bergen	Ridgewood	RIDGEWOOD FARMERS MARKET	3,663
Passaic	Paterson	PATERSON FARMERS MARKET	3,441
Hudson	Jersey City	SGT. ANTHONY PARK FARMERS MARKET	2,911
Middlesex	Metuchen	METUCHEN FARMERS MARKET	2,765
Hudson	Jersey City	JOURNAL SQUARE FARMERS MARKET	2,760
Hudson	Hoboken	HOBOKEN FARMERS MARKET	2,677
Middlesex	Highland Park	HIGHLAND PARK FARMERS MARKET	2,587
Hudson	Jersey City	HAMILTON PARK FARMERS MARKET	2,504
Somerset	Somerset	FRANKLIN TOWNSHIP FARMERS MARKET	2,488
Hudson	Jersey City	NEWPORT PAVONIA FARMERS MARKET	2,467
Hudson	Jersey City	VAN VORST FARMERS MARKET	2,270
Essex	Montclair	MONTCLAIR FARMERS MARKET	2,162
Hudson	Jersey City	HARVEST SQUARE FARMERS MARKET	2,152
Essex	Montclair	BLOOMFIELD FARMERS MARKET	2,102
Essex	Livingston	LIVINGSTON FARMERS MARKET	1,689
Essex	West Orange	WEST ORANGE FOOD MARKET	1,637
Essex	East Orange	EAST ORANGE FARMERS MARKET	1,571
Union	Rahway	RAHWAY FARMERS MARKET	1,523
Somerset	North Plainfield	NORTH PLAINFIELD FRAMERS MARKET	1,519
Union	Summit	SUMMIT FARMERS MARKET	1,491
Essex	South Orange	SOUTH ORANGE FARMERS MARKET	1,421
Union	Westfield	WESTFIELD FARMERS MARKET	1,412
Mercer	Princeton	WEST WINDSOR FARMERS MARKET	1,358
Essex	Millburn	MILLBURN FARMERS MARKET	1,315
Union	Scotch Plains	SCOTCH PLAINS FARMERS MARKET	1,297
Mercer	Princeton	HERBAN GARDEN FARMERS MARKET	1,245
Union	Springfield	SPRINGFIELD FARMERS MARKET I	1,177
Union	Springfield	SPRINGFIELD FARMERS MARKET II	1,177
Essex	Irvington	IRVINGTON FARMERS MARKET	1,133
Essex	Maplewood	MAPLEWOOD FARMERS MARKET	1,127
Morris	Madison	MADISON FARMERS MARKET	1,120
Essex	Newark	URBAN LEAGUE FARMERS MARKET	1,117
Middlesex	Middlesex	MIDDLESEX BOROUGH FARMERS MARKET	1,099

Cont'd…

County	City	Farm Market	Koreans
Essex	Newark	BETHANY BAPTIST CHURCH FARMERS MARKET	1,061
Somerset	Bound Brook	BOUND BROOK FARMERS MARKET	1,028
Essex	Newark	COMMON GREENS FARMERS MARKET	1,008
Camden	Collingswood	COLLINGSWOOD FARMERS MARKET	986
Morris	Boonton	BOONTON FARMERS MARKET	851
Mercer	Lawrenceville	LAWRENCEVILLE FARMERS MARKET	789
Union	Roselle Park	ROSELLE PARK FARMERS MARKET	768
Camden	Camden	FAIRVIEW FARMERS MARKET	668
Somerset	Skillman	MONTGOMERY FARMERS MARKET	665
Morris	Morristown	MORRISTOWN FARMERS MARKET	630
Camden	Berlin	BERLIN FARMERS MARKET	603
Union	Elizabeth	ELIZABETH FARMERS MARKET	576
Mercer	Trenton	TRENTON FARMERS MARKET	513
Burlington	Riverton	RIVERTON FARMERS MARKET	461
Monmouth	Red Bank	RED BANK FARMERS MARKET	418
Mercer	Trenton	CAPITAL CITY FARMERS MARKET	410
Morris	Netcong	NETCONG FARMERS MARKET	407
Camden	Camden	JERSEY FRESH FARMERS MARKET AT THE CAMDEN WATERFRONT	281
Camden	Camden	CAMDEN COMMUNITY FARMERS MARKET	277
Burlington	Burlington	MARKET DAYS	267
Burlington	Burlington	BURLINGTON CITY FARMERS MARKET	261
Monmouth	Belmar	BELMAR FARMERS MARKET	251
Monmouth	Englishtown	ENGLISHTOWN AUCTION SALES	234
Somerset	Bernardsville	BERNARDSVILLE FARMERS MARKET	210
Atlantic	Smithville	JERSEY FRESH FARMERS MARKET AT SMITHVILLE	184
Gloucester	Woodbury	WOODBURY FARMERS MARKET	164
Burlington	Columbus	COLUMBUS FARMERS MARKET	159
Atlantic	Atlantic City	ATLANTIC CITY FARMERS MARKET	86
Hunterdon	High Bridge	HIGH BRIDGE OPEN AIR MARKET	81
Hunterdon	Flemington	LIBERTY VILLAGE PREMIUM OUTLETS FARMERS MARKET	69
Sussex	Lafayette	OLDE LAFAYETTE VILLAGE FARMERS MARKET	69
Cumberland	Millville	MILLVILLE FARMERS MARKET	63
Cape May	Ocean City	OCEAN CITY FARMERS & CRAFTERS MARKET	52
Cape May	Ocean City	SOUTH JERSEY FARMERS AND CRAFTERS MARKET	52
Cumberland	Vineland	VINELAND MAIN STREET FARMERS MARKET	51
Monmouth	Highlands	HIGHLANDS FARMERS MARKET	48
Ocean	Forked River	FORKED RIVER FARMERS MARKET	35
Cumberland	Bridgeton	BRIDGETON RIVERFRONT FARMERS MARKET	30
Hunterdon	Sergeantsville	SERGEANTSVILLE FARMERS MARKET	24
Cape May	Cape May	HISTORIC COLD SPRING VILLAGE FARMERS MARKET	22
Salem	Salem	SALEM FARMERS MARKET	19
Salem	Pilesgrove	COWTOWN FARMERS MARKET	13
Cape May	West Cape May	WEST CAPE MAY FARMERS MARKET	11
Cape May	Cape May Courthouse	CAPE MAY COUNTY PARK & ZOO FARMERS MARKET	10