report

Con Edison

Law Department
Consolidated Edison Company of New York, Inc.
4 Irving Place, New York, N.Y. 10003

November 10, 2000

FILES
C99-E-0930

By Overnight Mail

Hon. Janet Hand Deixler
Secretary
New York State
Department of Public Service
Three Empire State Plaza
Albany, New York 12223

Re: Case No. 99-E-0930

Dear Secretary Deixler:

On August 18, 2000, Con Edison filed a proposed tariff amendment concerning its liability limitations for the spoilage of food and loss of perishable merchandise during certain distribution outages. On November 1, 2000, Con Edison made a presentation to members of the Staff of the Department of Public Service concerning this proposed tariff amendment. At the request of Richard King, Esq., I am filing the enclosed copy of the presentation slides that were distributed to the Staff members attending that presentation.

Very truly yours,

Martin F. Heslin
Senior Attorney

Enclosure

c. Richard King, Esq. (by fax w/o enclosure)

The NPD Group
Custom Research Services

Value of the Perishable Contents of Refrigerators & Freezers in New York City & Westchester County

NPD

Background: NPD - Recognized Leader in Syndicated and Custom Research

Syndicated Research

- Apparel
- Automotive Products
- Consumer Electronics
- Cosmetics and Fragrances
- Food
  - In-Home Dining(NET)
  - Restaurant Dining (CREST)
- How Americans Spend Their Time
- Pharmaceuticals
- Toys & Games

Custom Research

- NPD Consumer Panel
  - InstaVue
  - Mail, Telephone, & IVR Surveys
- Internet On-Line Panel
- Analytical Expertise
  - Consumer Decision Tree
  - Marketing Mix Modeling
- Proprietary Models
  - BrandBuilder
  - ESP/Evolution
- Proprietary Interactive Access Software (PowerviewXL)

NPD

Background

NPD provides information to firms in many industries, but the majority of NPD's clients are food manufacturers

NPD

Background

Con Edison asked NPD similar questions

- Can NPD determine the value of the contents of a refrigerator & freezer that might spoil if left un-refrigerated for 12 or more hours (average value of perishable refrigerator/freezer contents)?

How much does this average vary across the Con Edison service area?

- What range of values would include 99% of all refrigerators & freezers in the Con Edison service area?

Methodology

To answer the Con Edison questions, NPD developed a "value of perishable refrigerator contents model"

1. Use zip code level consumer expenditure data to calculate the average value.

2. Calculate how much the average value varies from house to house within the zip code and across the Con Edison service area.

3. Expand the evaluation to cover the entire Con Edison service area.

Methodology - Calculate the Value

HH Value = $\left(C_{i_r} / HH_{zip} / 52 \right) + \left(C_{i_f} / HH_{zip} / 12 \right)$

C_i = Consumer Expenditures at the Zip Code Level for Food Category i.

C_{i_r} = Food Category i - perishable refrigerated food

C_{i_f} = Food Category i - perishable frozen food

HH_{zip} = Total Number of Households in the Zip Code (Census Bureau)

NPD

Methodology - Zip Code Level Data

C_i = Consumer Expenditures at the Zip Code Level for Food Category i.

Collect POS (point of sale) data … food store receipts

CLARITAS NDS

- **Calibrate using Consumer Expenditures Survey**

Bureau of Labor Statistics

Include data on other sources of food … gardens, food from work

ECONOMIC RESEARCH SERVICE
U.S. Department of Agriculture

Build an accurate model

WEFA

- **Apply the model to the data & build a GIS database**

TETRAD

AGS APPLIED GEOGRAPHIC SOLUTIONS

COMPUTER APPLICATIONS INC

Determine which categories of food to include

CORNELL
USDA Economics and Statistics System

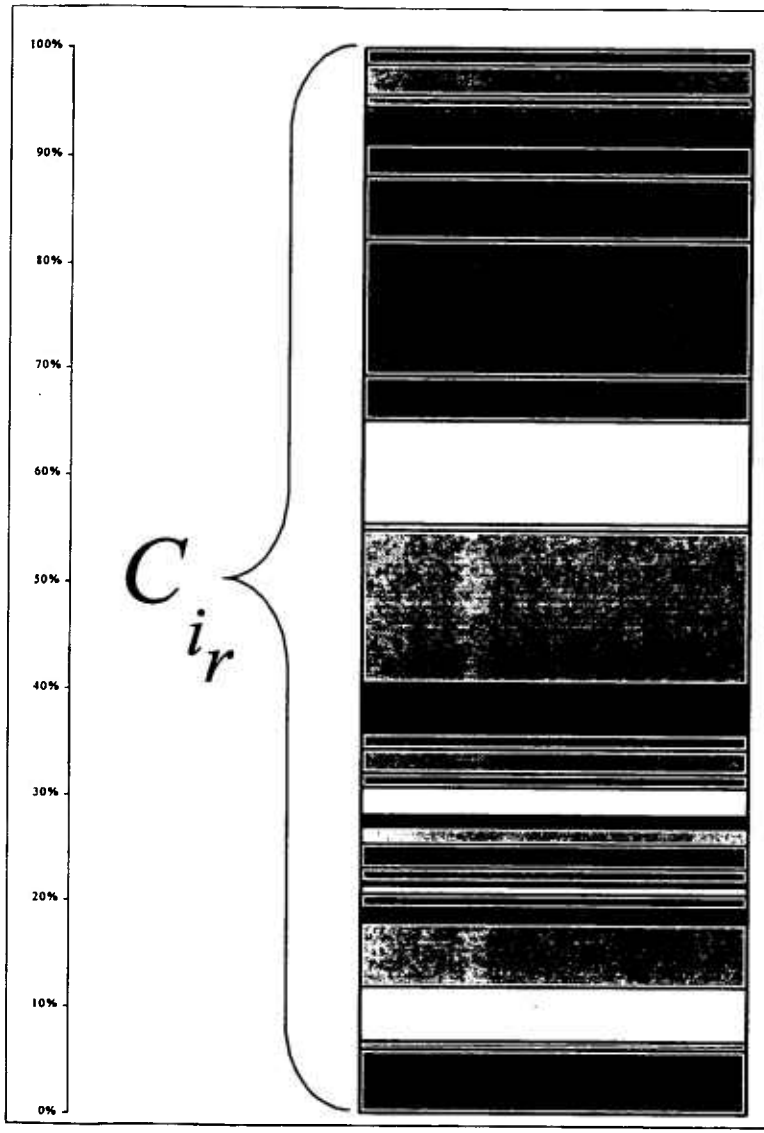
NPD

Step 1: Calculate the value of the contents of a typical refrigerator at the local level.

CORNELL UNIVERSITY

Categories of Refrigerated Food to Include

USDA Economics and Statistics System



- Prepared salads and desserts
- Jams, jellies and other sweets
- Condiments other than olives, pickles, relishes, sauces and gravies
- Olives, pickles and relishes
- Sauces and gravies
- Fats, oils and salad dressings
- Fresh fish and shellfish
- Poultry including fresh whole chicken and fresh chicken parts
- Lunchmeat including bologna, salami and liverwurst
- Pork, bacon, and fresh and canned ham
- Lamb, mutton, goat, game and organ meats - excluding canned
- Beef
- Fresh vegetables other than potatoes, lettuce & tomatoes
- Tomatoes
- Potatoes
- Lettuce
- Fresh fruits other than apples and oranges
- Oranges
- Apples
- Baby food
- Eggs
- Non-dairy cream substitute
- Margarine
- Dairy products - other, including powdered milk and fresh, canned and non-frozen yogurt
- Fresh milk and cream, excluding whole milk and nondairy substitutes
- Fresh whole milk
- Cheese
- Butter
- Fruit juice: fresh, canned and bottled

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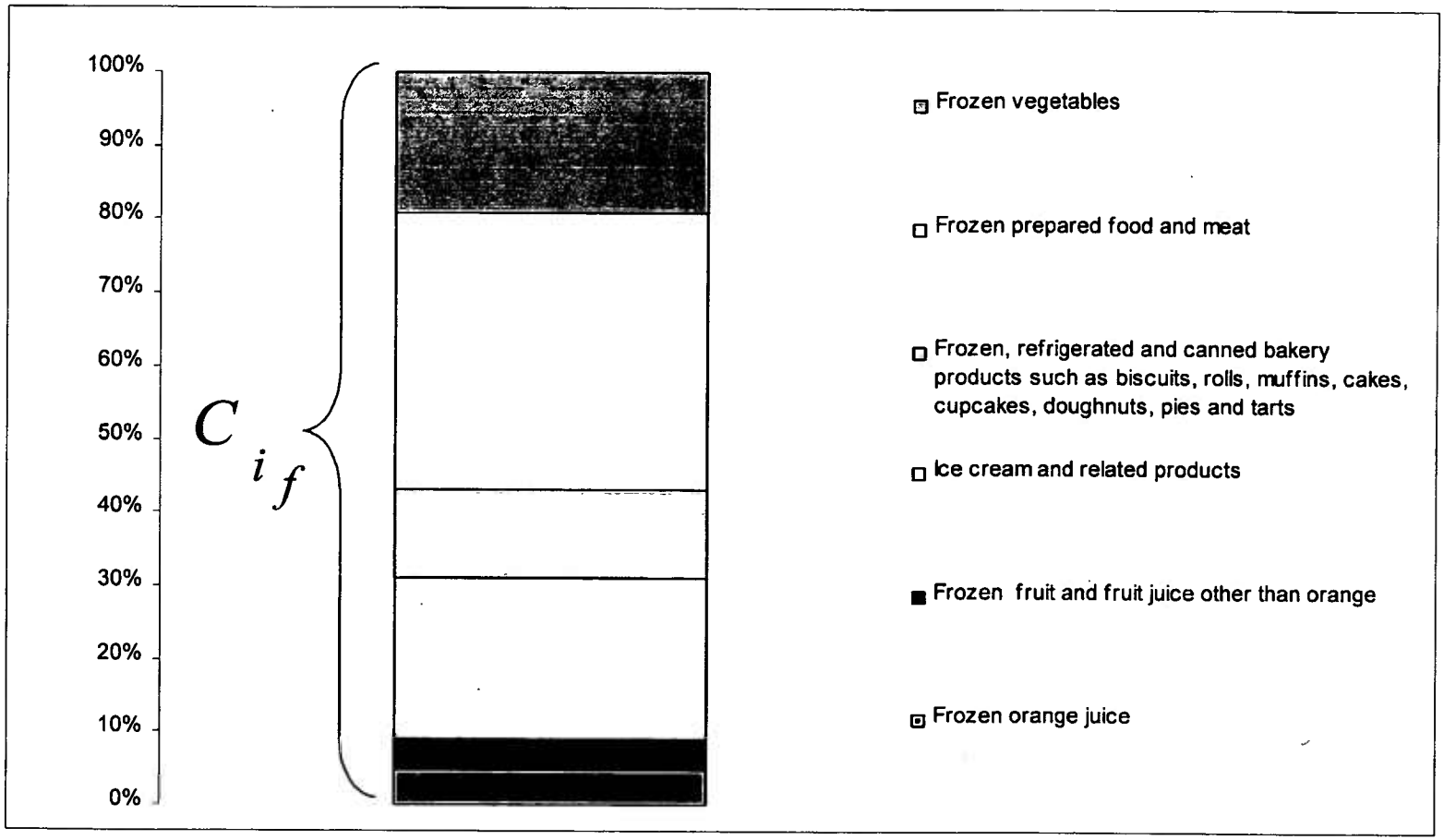
Categories of Frozen Food to Include

CORNELL UNIVERSITY
USDA Economics and Statistics System



NPD

Methodology - Calculate the Value

HH Value =

$$\left(C_{i_r} / HH_{zip} / 52 \right) + \left(C_{i_f} / HH_{zip} / 12 \right)$$

The model is based on two assumptions:

All refrigerated food is purchased / consumed on a weekly basis and that the refrigerator contains a full weeks worth of food. (i.e. 52 in the equation)

All frozen food is consumed on a monthly basis and that the freezer contains a full months worth of food. (i.e. 12 in the equation)

CORNELL

USDA Economics and Statistics System

AgNIC AGRICULTURE NETWORK INFORMATION CENTER

NPD

WEFA

TETRAD AGS APPLIED GEOGRAPHIC SOLUTIONS COMPUTER APPLICATIONS INC

+

CORNELL UNIVERSITY

USDA Economics and Statistics System

Household Calculation

The perishable contents of a typical refrigerator in Washington Heights (Zip Code 10033) = $ 44.60

The perishable contents of a typical freezer in Washington Heights (Zip Code 10033) = $ 24.80

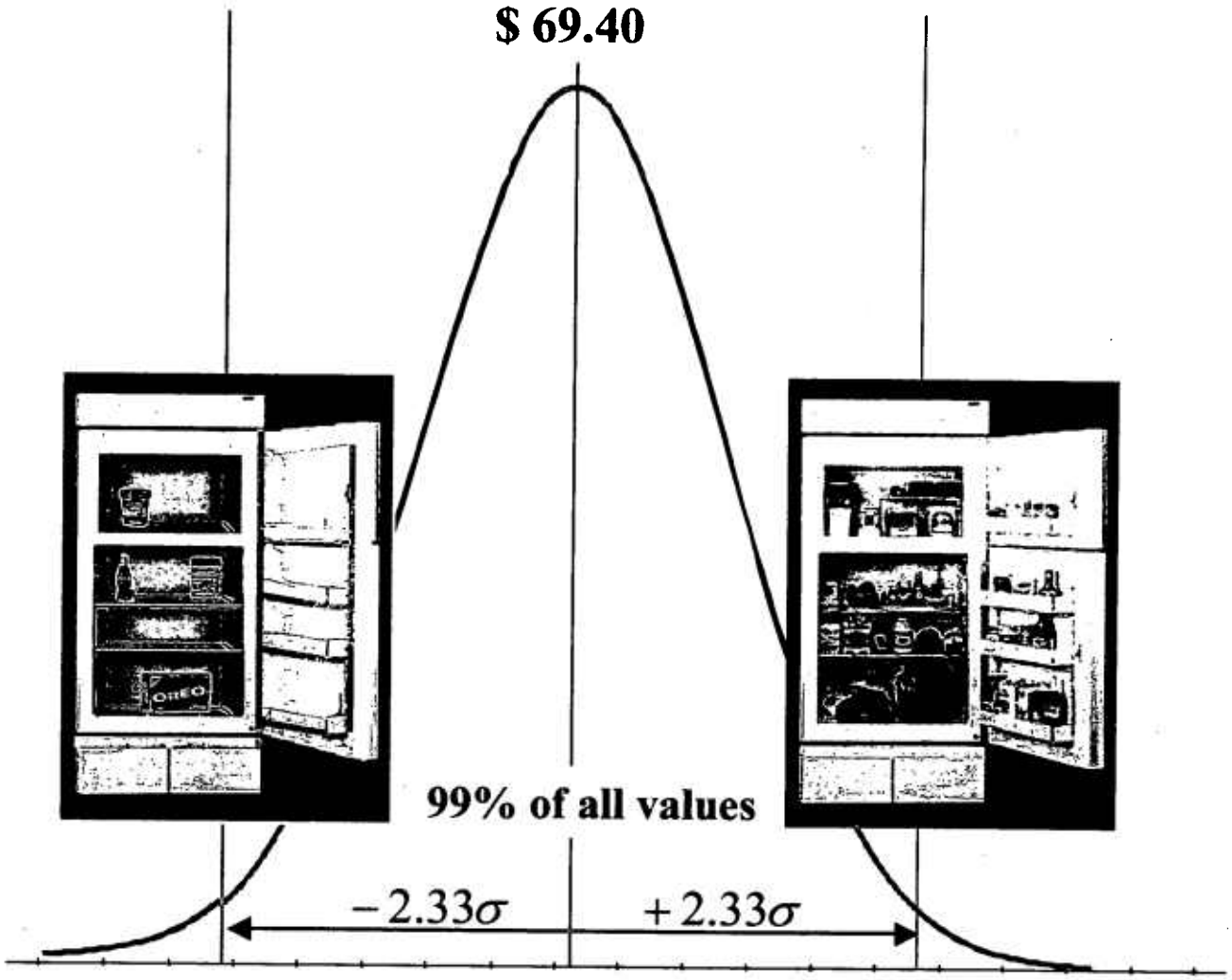
The total perishable contents = $ 69.40

Next Question: How much does the value of perishable refrigerator & freezer contents vary from house to house in Washington Heights and across the Con Edison service area?

NPD

Step 2: How much does the typical value vary across the Con Edison service area?

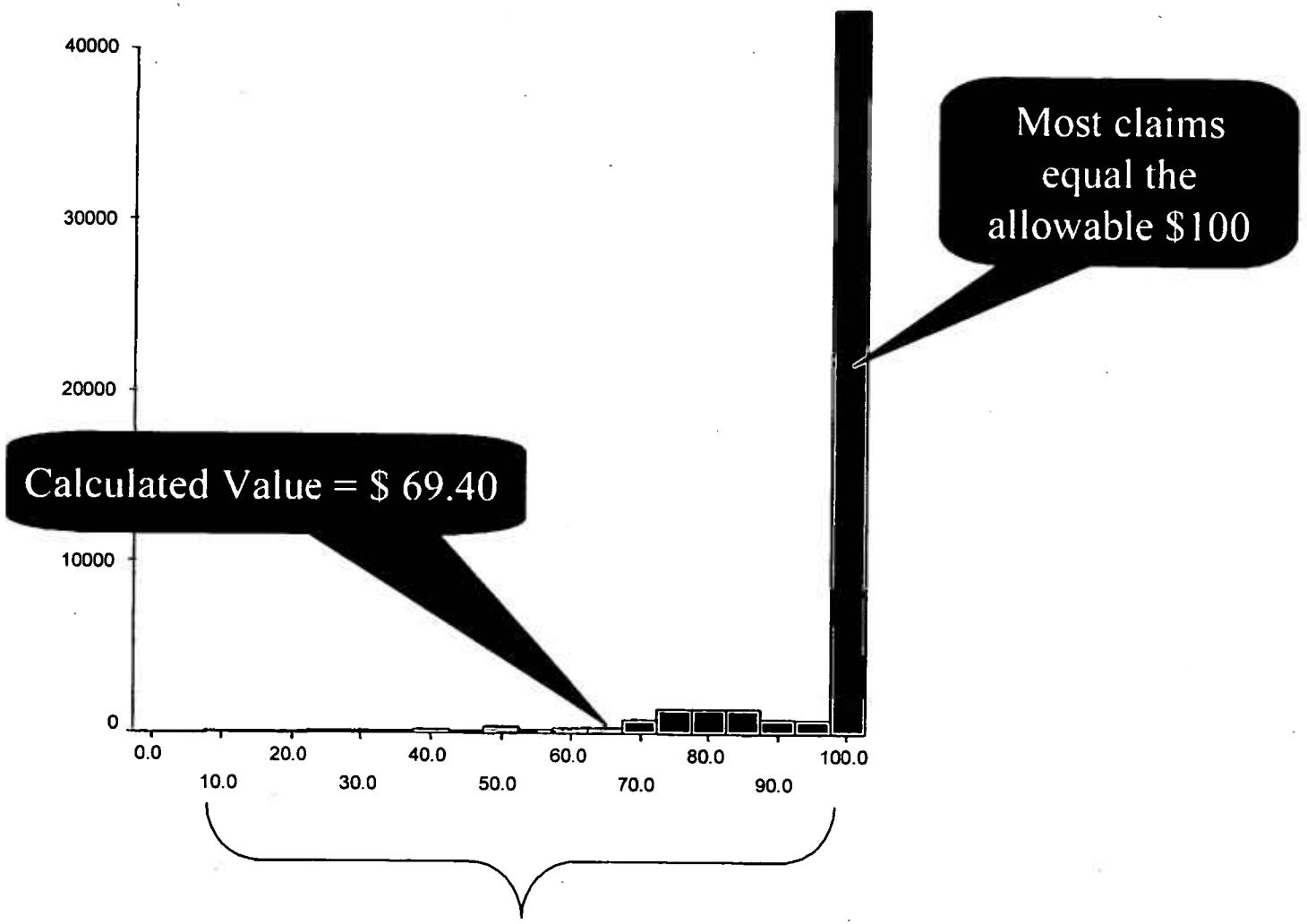
The value of the contents of refrigerators are likely to follow a normal distribution.



If the Con Edison claim data is normal, the standard deviation can be calculated and the variance across the Con Edison service area can be determined.

NPD

Step 2: How much does the typical value vary across the Con Edison service area?



Are the claims of less than $ 100.00 normally distributed … or do they build to the allowable $ 100.00 maximum claim?

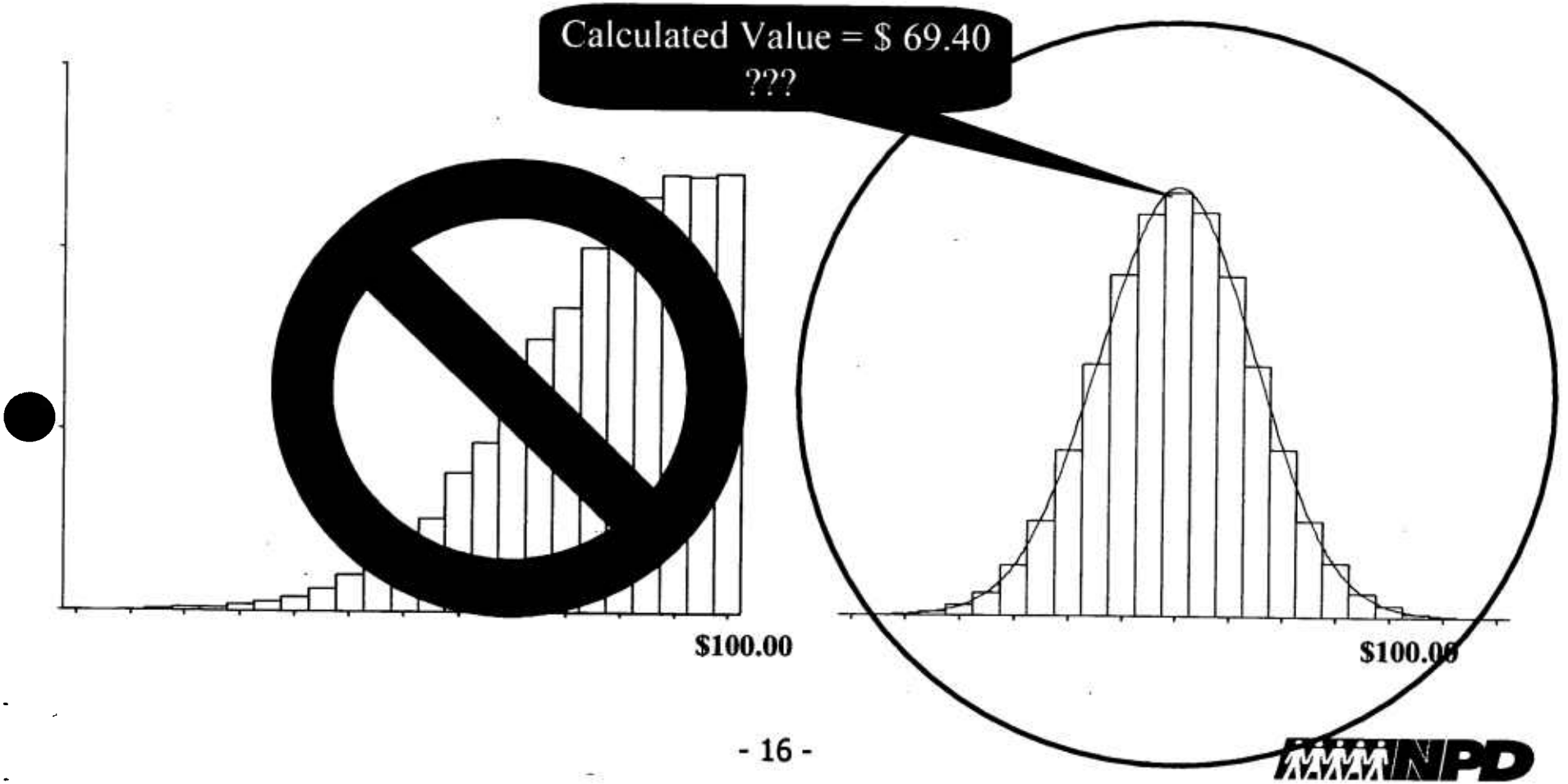
NPD

Step 2: How much does the typical value vary across the Con Edison service area?

Looking at claims of less than $ 100.00

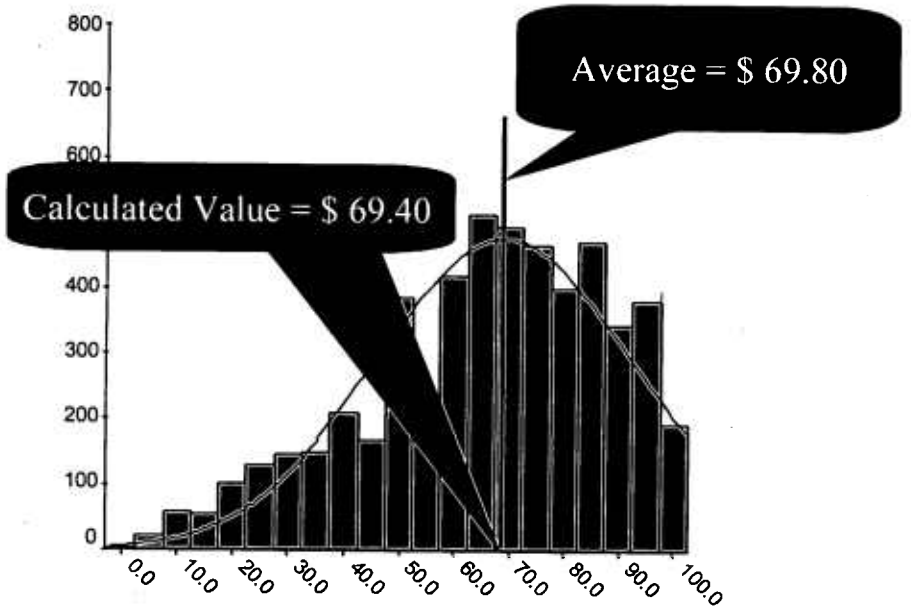
If the less than $100.00 claims form a distribution that builds to $100.00 we can only guess the value of the standard deviation.

If the less than $100.00 claims form a normal distribution we can calculate the standard deviation.



Step 2: How much does the typical value vary across the Con Edison service area?

Looking at claims of less than $ 100.00

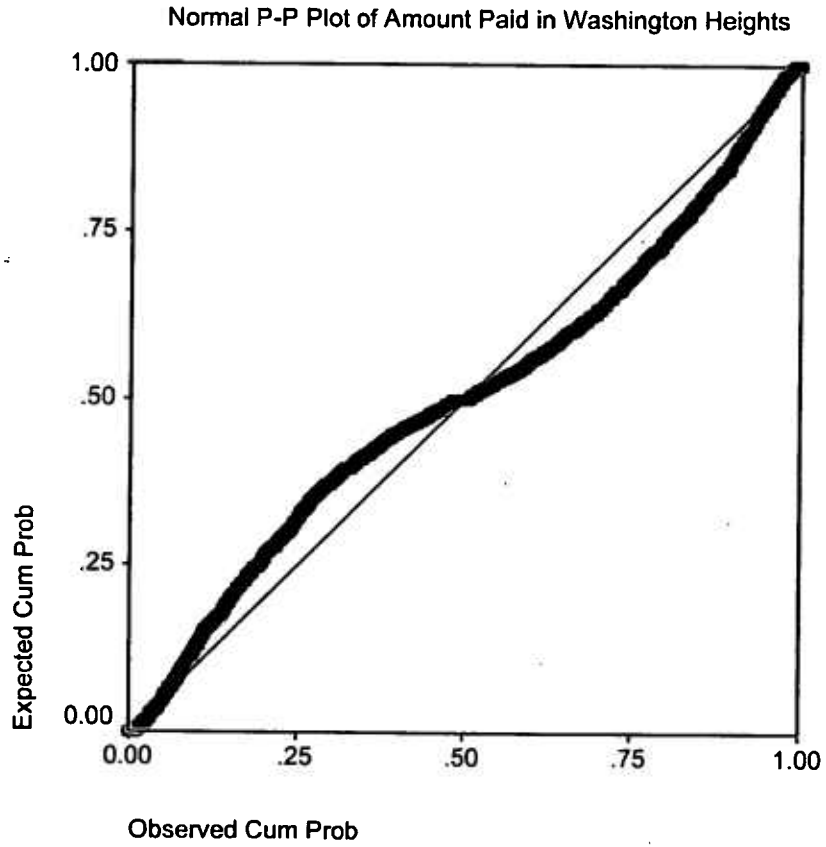


5,591 claims of < $ 100.00 Average = $ 69.80 Standard Deviation = $ 23.00

NPD

Step 2: How much does the typical value vary across the Con Edison service area?

If the less than $100.00 claims formed a perfect normal distribution the cumulative probability distributions would fall on the diagonal line.

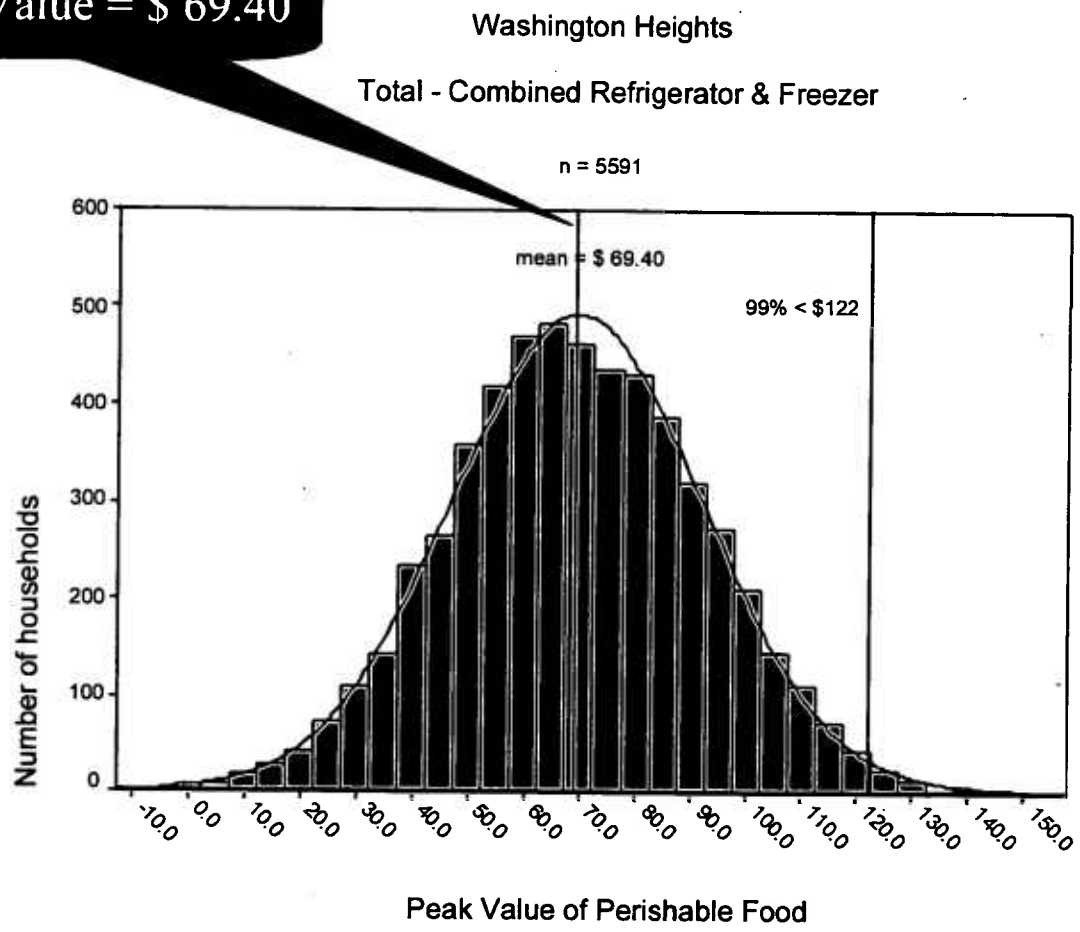


The standard deviation for Washington Heights = $ 23.00

Step 2: Combining the typical value with the variance

99% of all refrigerators & freezers in Washington Heights would have a content value of less than $ 122.00

Calculated Value = $ 69.40



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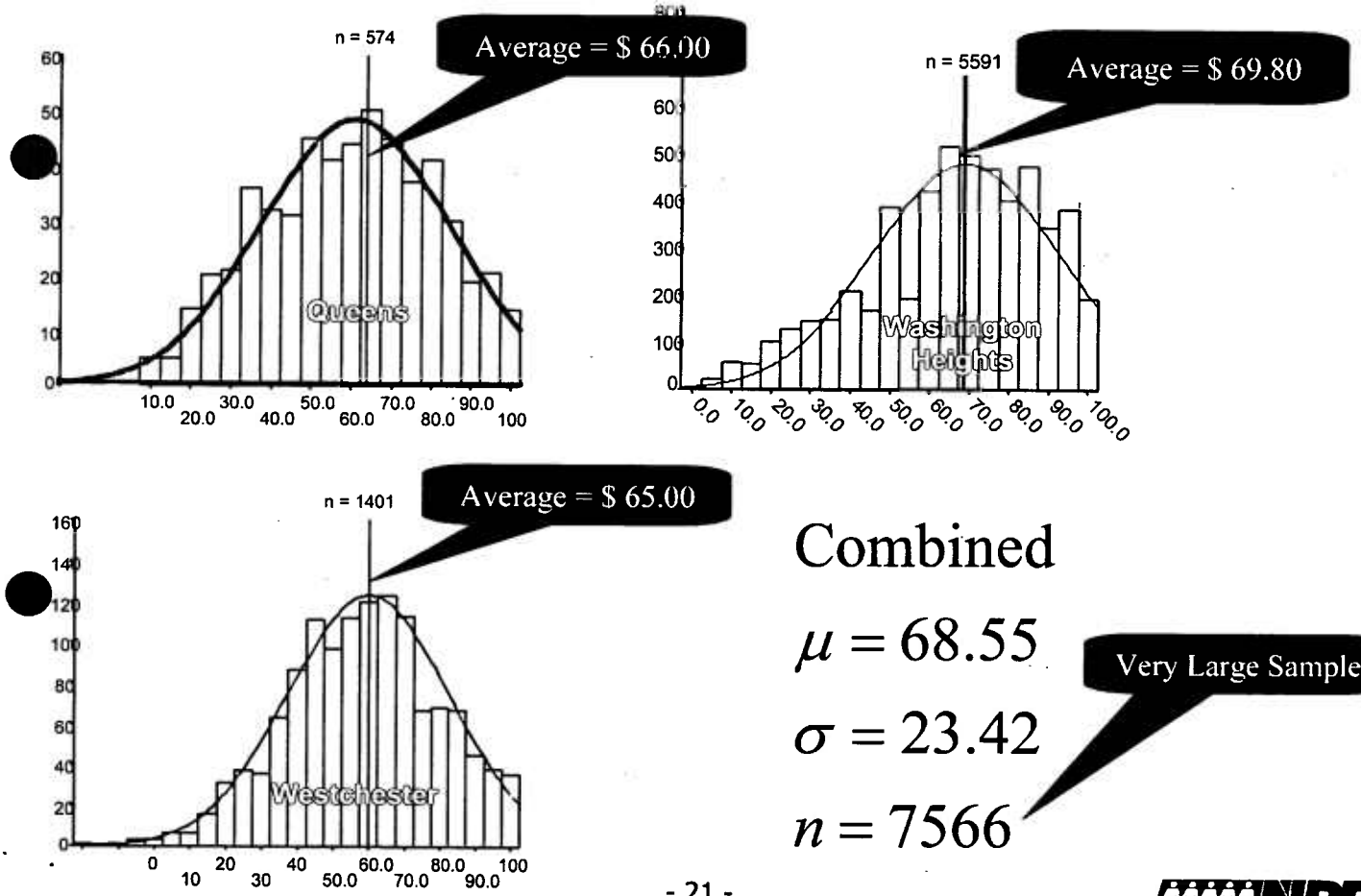
Step 2: The typical value varied uniformly across the Con Edison service area.

The Standard Deviation of the combined claims data = $23.42



Combined

$\mu = 68.55$

$\sigma = 23.42$

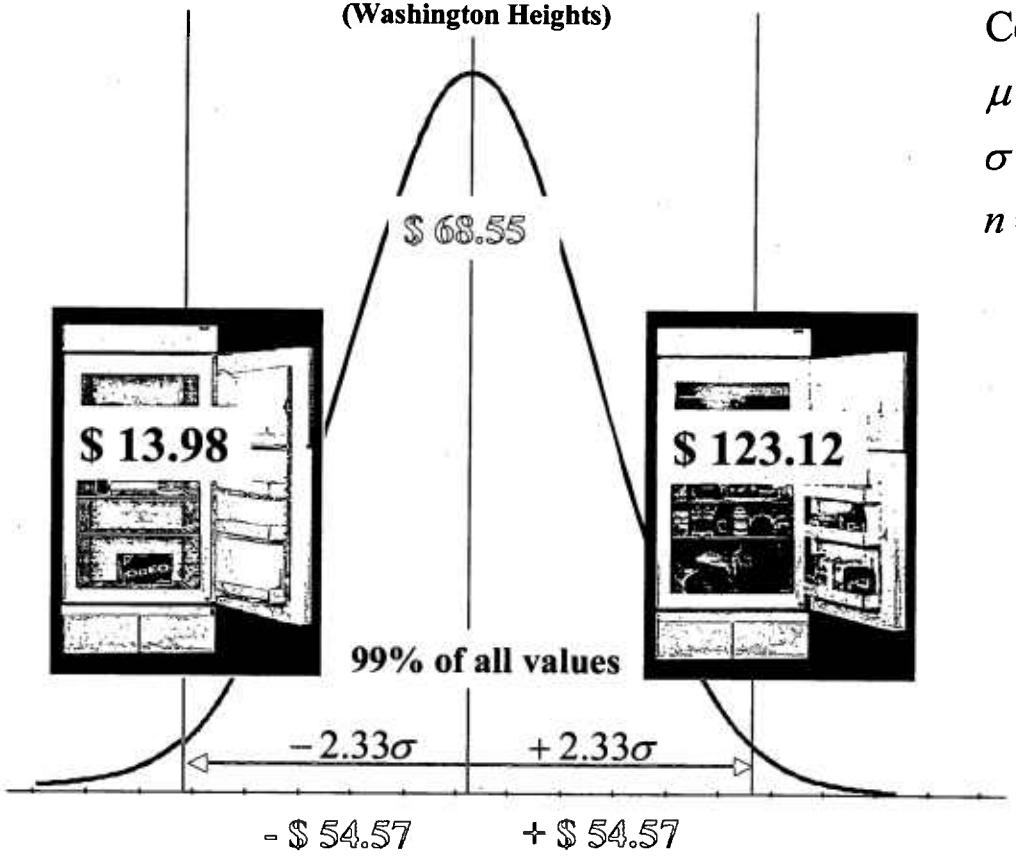
$n = 7566$

Very Large Sample

NPD

Step 2: How much does the typical value vary across the Con Edison service area?

$ 69.40 = calculated value
(Washington Heights)



Combined

$\mu = 68.55$

$\sigma = 23.42$

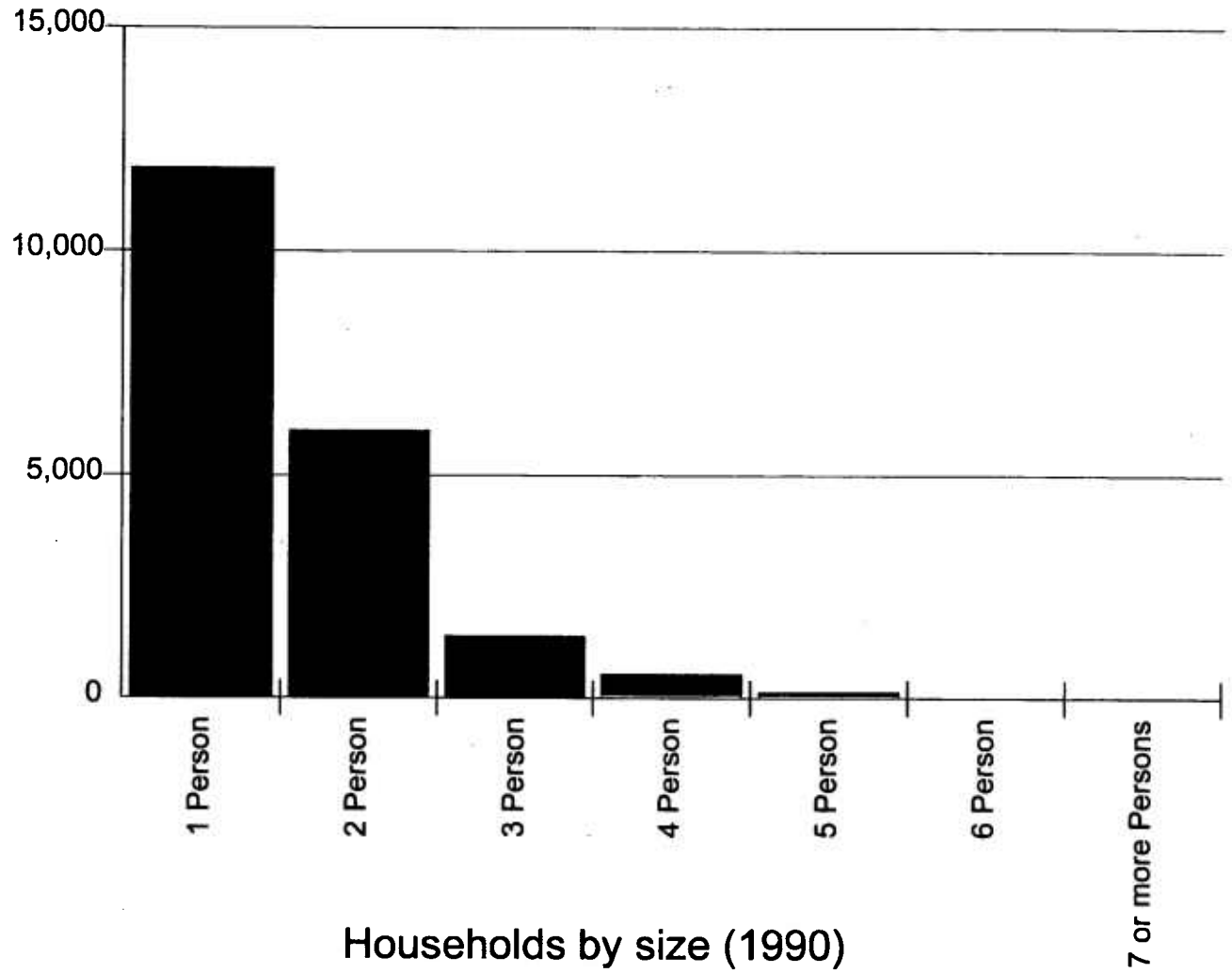
$n = 7566$

NPD

Expanding the Evaluation to Model the Entire Con Edison Service Area

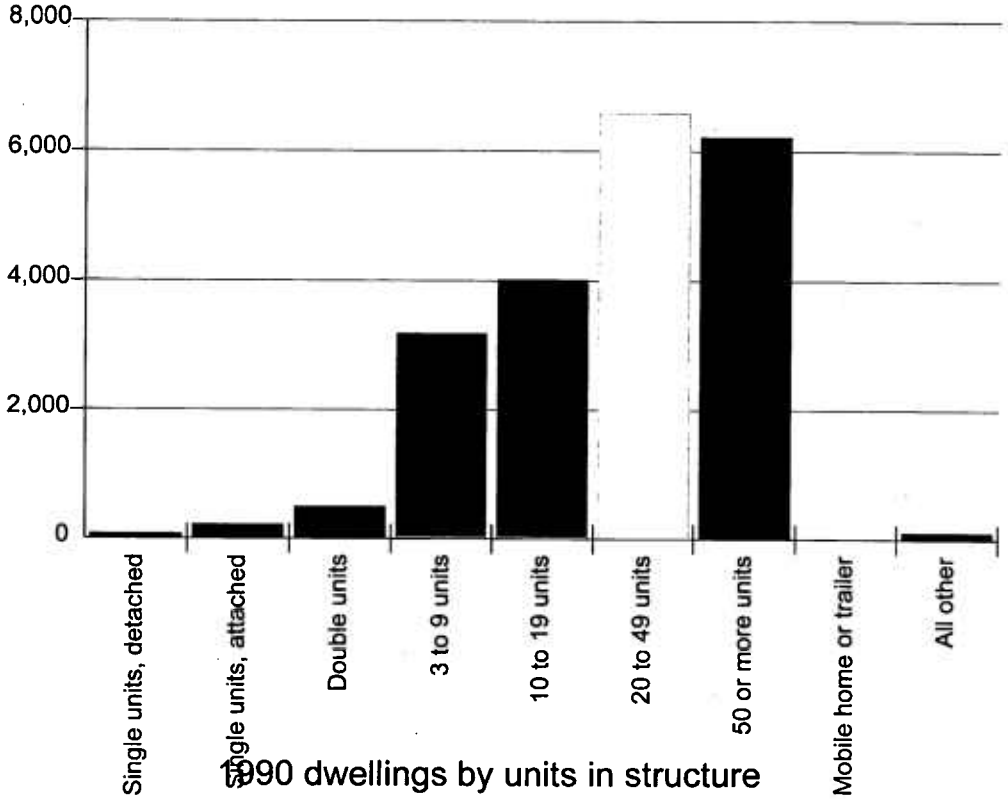
- Out of 360 residential zip codes in the area, NPD used three demographic variables to identify a representative sample:
  - Household size (the number of people living in a household)
  - Household type (single family house, small apartments, large apartment buildings)
  - Income
- The following three graphs provide an example of the distribution of the three demographics for one zip code in Manhattan (10014).
- The numbers shown are actual numbers (not percentages), so the tallest bar on each graph represents the mode (i.e., that which is most common).
- The mode is then used to create the maps of all zip codes in the five boroughs and Westchester.
- We use the mode because the rest of the analysis is based on averages (e.g., average $ spent, average consumed, etc.). Zip code averages will be affected most by what there is the most of (i.e., the mode).
- The summary slide displays all existing combinations of the three variables listed above for each of the five boroughs and Westchester.

The mode household size in Zip Code 10014 is one person.



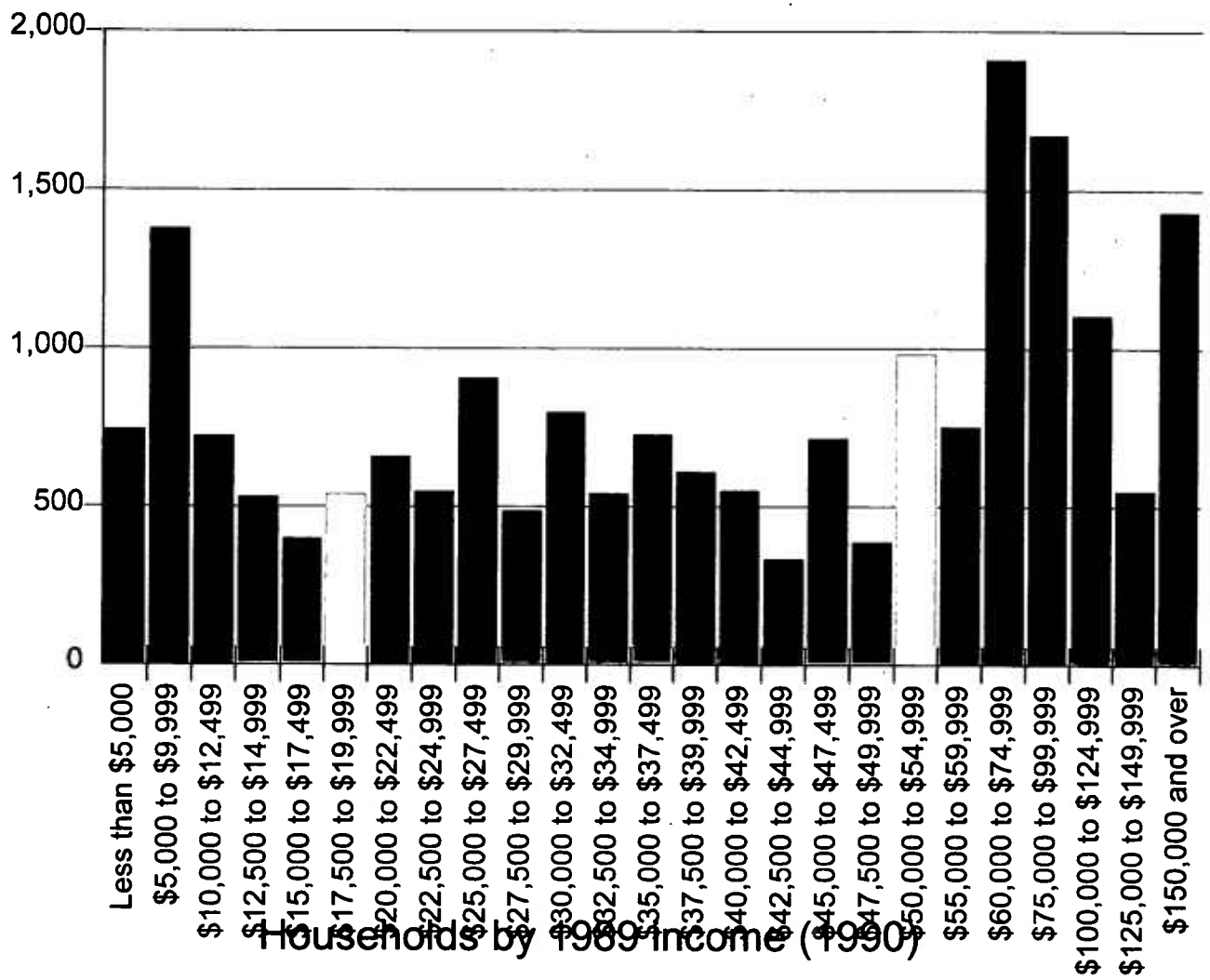
The mode household type in Zip Code 10014 is 20-49 units.

10014 New York NY



1990 dwellings by units in structure

The mode household income in Zip Code 10014 is between $60,000 and $74,999.



Demographic Variable Combinations

43 zip codes were randomly selected to be modeled and represent the Con Edison service area

Bronx

				HOUSEHOLD TYPE		
				single	2-9	10+
INCOME	<$75,000	HHSIZE	1.00		2	18
			2.00	2		2
	$75-<$150,000	HHSIZE	1.00	1		
			2.00			

Brooklyn

				HOUSEHOLD TYPE		
				single	2-9	10+
INCOME	<$75,000	HHSIZE	1.00		11	13
			2.00	1	8	1
			3+		2	
	$75-<$150,000	HHSIZE	1.00		1	
			2.00			
			3+			

Manhattan

				HOUSEHOLD TYPE
				10+
INCOME	<$75,000	HHSIZE	1.00	27
	$150,000+	HHSIZE	1.00	9

Queens

				HOUSEHOLD TYPE		
				single	2-9	10+
INCOME	<$75,000	HHSIZE	1.00	1	7	9
			2.00	18	11	3
			3+			
	$75-<$150,000	HHSIZE	1.00			
			2.00	4		1
			3+	1		

Staten Island

				HOUSEHOLD TYPE	
				single	2-9
INCOME	<$75,000	HHSIZE	1.00	1	
			2.00	8	1
			3+	2	

Westchester

				HOUSEHOLD TYPE		
				single	2-9	10+
INCOME	<$75,000	HHSIZE	1.00	2	1	3
			2.00	17	1	1
			3+	2		
	$75-<$150,000	HHSIZE	1.00	1		1
			2.00	20		
			3+	1		
	$150,000+	HHSIZE	1.00			
			2.00	16		
			3+			

Step 3: What range of values would include 99% of all refrigerators & freezers in the Con Edison service area?

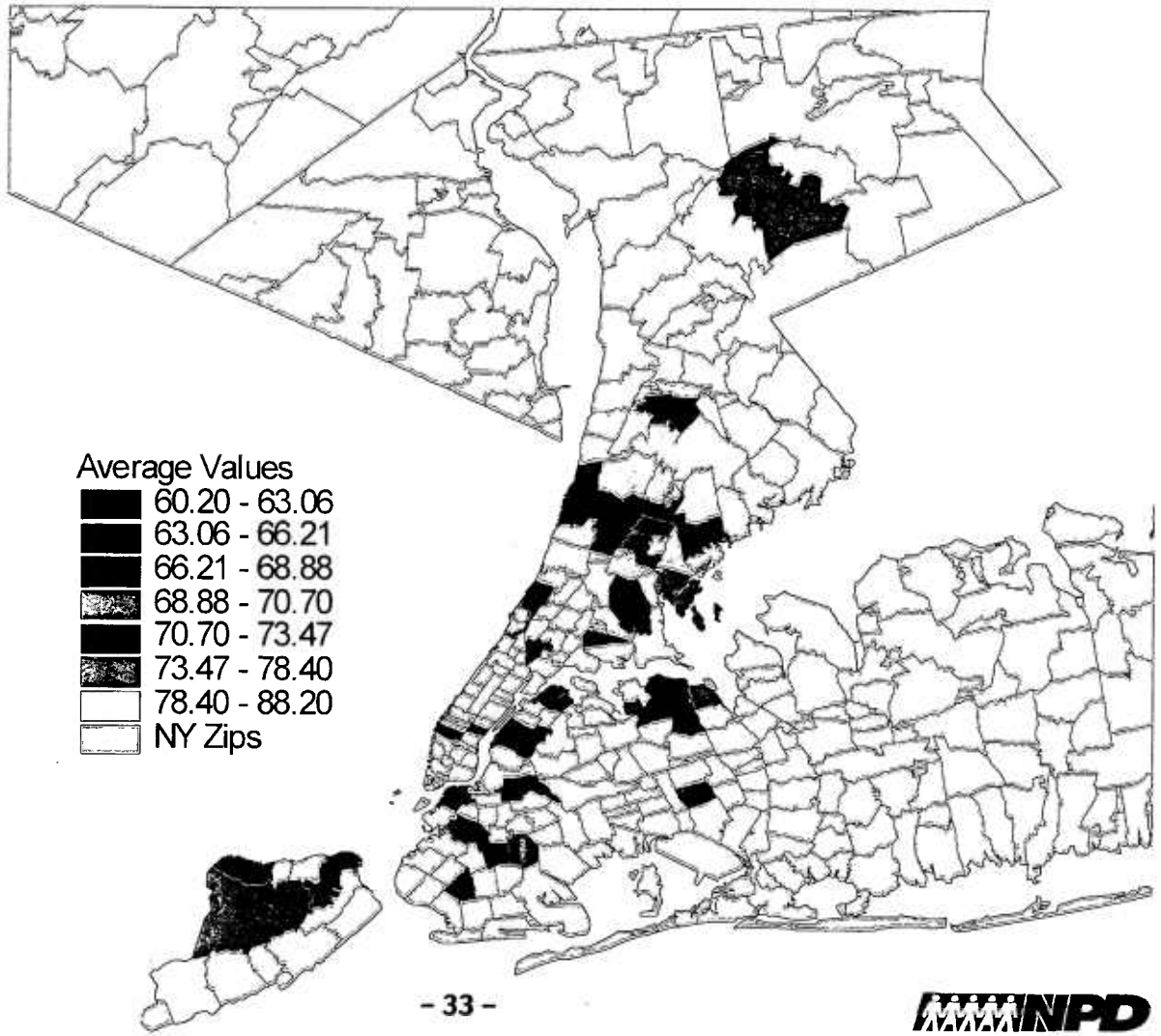
Zip Code Summary

Zip Code	Location	Household Income	Size	Type	Refrig	Frozen	Total
10461	Bronx	<$75,000	1	2-9	$41.39	$23.00	$64.39
10451	Bronx	<$75,000	1	10+	$41.06	$22.00	$63.06
10469	Bronx	<$75,000	2	1	$48.02	$26.76	$74.78
10472	Bronx	<$75,000	2	10+	$44.03	$24.00	$68.03
10464	Bronx	$75-<150,000	1	1	$44.71	$25.33	$70.05
11206	Brooklyn	<$75,000	1	2-9	$43.21	$23.00	$66.21
11201	Brooklyn	<$75,000	1	10+	$43.96	$24.92	$68.88
11203	Brooklyn	<$75,000	2	1	$50.23	$28.09	$78.32
11204	Brooklyn	<$75,000	2	2-9	$44.08	$24.26	$68.34
11226	Brooklyn	<$75,000	2	10+	$46.53	$25.76	$72.29
11237	Brooklyn	<$75,000	3+	2-9	$46.46	$25.00	$71.46
11215	Brooklyn	$75-<150,000	1	2-9	$43.91	$24.76	$68.67
10032	Washington Heights	<$75,000	1	10+	$45.33	$24.83	$70.16
10033	Washington Heights	<$75,000	1	10+	$45.61	$25.09	$70.70
10034	Washington Heights	<$75,000	1	10+	$43.65	$24.17	$67.81
10040	Washington Heights	<$75,000	1	10+	$43.84	$24.17	$68.01
10001	Manhattan	<$75,000	1	10+	$39.36	$22.00	$61.36
10017	Manhattan	$150,000+	1	10+	$39.85	$23.09	$62.94

Step 3: What range of values would include 99% of all refrigerators & freezers in the Con Edison service area?

Zip Code Summary

Zip Code	Location	Income	Size	Type	Refrig	Frozen	Total
11433	Queens	<$75,000	1	1	$46.66	$25.42	$72.08
11101	Queens	<$75,000	1	2-9	$41.51	$22.42	$63.93
11104	Queens	<$75,000	1	10+	$38.87	$21.33	$60.20
11358	Queens	<$75,000	2	1	$46.13	$25.92	$72.05
11105	Queens	<$75,000	2	2-9	$42.04	$23.26	$65.29
11354	Queens	<$75,000	2	10+	$43.16	$23.83	$66.99
11357	Queens	$75-<150,000	2	1	$46.11	$25.83	$71.95
11360	Queens	$75-<150,000	2	10+	$44.54	$25.26	$69.80
11429	Queens	$75-<150,000	3+	1	$56.37	$31.83	$88.20
10301	Staten Island	<$75,000	1	1	$44.21	$24.67	$68.87
10303	Staten Island	<$75,000	2	1	$45.89	$25.42	$71.31
10314	Staten Island	<$75,000	2	2-9	$48.72	$27.50	$76.22
10309	Staten Island	<$75,000	3+	1	$53.69	$30.59	$84.28
10801	Westchester	<$75,000	1	1	$45.97	$25.67	$71.64
10550	Westchester	<$75,000	1	2-9	$45.26	$25.09	$70.35
10701	Westchester	<$75,000	1	10+	$44.22	$24.59	$68.81
10530	Westchester	<$75,000	2	1	$49.81	$28.59	$78.40
10703	Westchester	<$75,000	2	2-9	$45.73	$25.59	$71.32
10704	Westchester	<$75,000	2	10+	$45.85	$25.92	$71.77
10708	Westchester	$75-<150,000	1	1	$46.71	$26.76	$73.47
10552	Westchester	$75-<150,000	1	10+	$44.63	$25.26	$69.88
10549	Westchester	$75-<150,000	2	1	$48.81	$27.83	$76.64
10598	Westchester	$75-<150,000	3+	1	$52.56	$30.00	$82.56
10538	Westchester	$150,000+	2	1	$51.77	$29.83	$81.60


Average Values
60.20 - 63.06
63.06 - 66.21
66.21 - 68.88
68.88 - 70.70
70.70 - 73.47
73.47 - 78.40
78.40 - 88.20
NY Zips

NPD

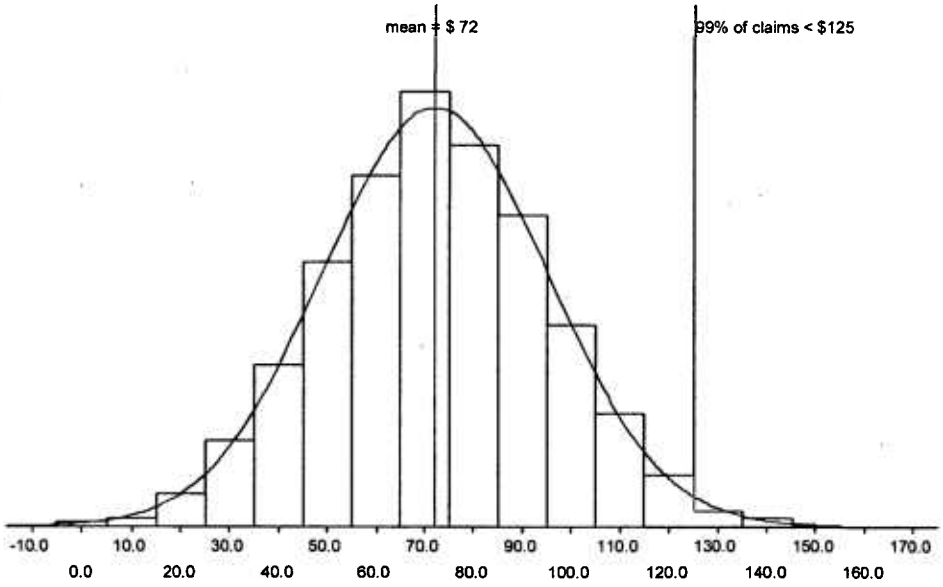
Summary: 99% of all refrigerators & freezers in the Con Edison service area have a content values of less than $ 125

Combined NYC & Westchester Summary Percentiles

	Percentiles					
	5	10	50	89	95	99
Average = $ 72 Standard Deviation = $ 23	33.71	42.63	$ 72.38	$ 100.00	$ 110.46	$ 125.33

Combined NYC & Westchester

Perishable Contents of Refrigerators & Freezers



NPD

Conclusion

Con Edison asked NPD to answer three questions:

Can NPD determine the value of the contents of a refrigerator & freezer that might spoil if left un-refrigerated for 12 or more hours (average value of perishable refrigerator/freezer contents)?

$ 72.00

How much does this average vary across the Con Edison service area?

The standard deviation = $ 23.00

What range of values would include 99% of all refrigerators & freezers in the Con Edison service area?

99% of the refrigerators & freezers in the Con Edison service area contain more than $19.00 and less than $125.00 worth of perishable food

Differences in the Food Consumer between the 1970s and the new Millenium

By

Dr. John L. Stanton

and

Dr. Richard J. George

Department of Food Marketing

Saint Joseph's University

NPD

Shift factor: More women in the work force

- More food service purchases
  - Percentage of dollar spent in supermarkets has fallen from 65% to 70% in the 1970s to 48% today (and dropping)
- More focus on convenience
  - Few meals from scratch; using complete meals in a bag such as Skillet Sensations
  - Less time spent cooking.

- According to Tyson research today's cooks want to cook *15 minutes or less*
- versus 30 minutes in the '80s;
  versus 2.5 hours

Impact on food in refrigerator

- Less total food as more food is eat from food service. More left overs
- More higher priced prepared foods will replace raw ingredients.
- Less planning with inventoried foods and more just-in-time dinners. It is estimated that in any given day in America at 4:00 PM 40% of the people do NOT know what they will have for dinner that evening.

Less breakfast and lunch foods as people eat at work sites

- Less total food kept in inventory and especially perishable foods such as luncheon meats,and breakfast meats.
- Some restaurant style frozen breakfasts and convenient foods such as pop-tarts are more prevalent.

Few families eating meals together

- Families often rely on more individual serving meals (microwaveable) which permits each family member to choose his/her time of eating and entrée.

Family size changing: One of the largest increasing family size is single person households.

- Leads to less cooking from scratch, and more convenient prepared meals.
- Has higher percentage of meals eaten from food service.
- Smaller households have smaller refrigerators with less space for inventory.

Food technology changes:

- Gas flushing of salads give produce a longer shelf life, and requires a smaller amount of total produce in the refrigerator.
- More shelf stable technology provides convenient meals that do not need refrigeration.

Conclusion:
The way people bought food and cooked in the 1970s is very different from today

Some changes would tend to increase the value of food in the refrigerator and freezer while other changes would decrease the value.

NPD

Conclusion:

- Accurately assessing the value of food in today's refrigerators and freezers requires a complete analysis and not just extrapolation of value