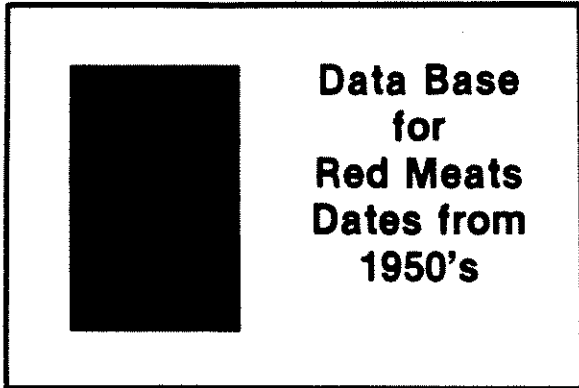


Red Meat: Nutrient Composition and Actual Consumption

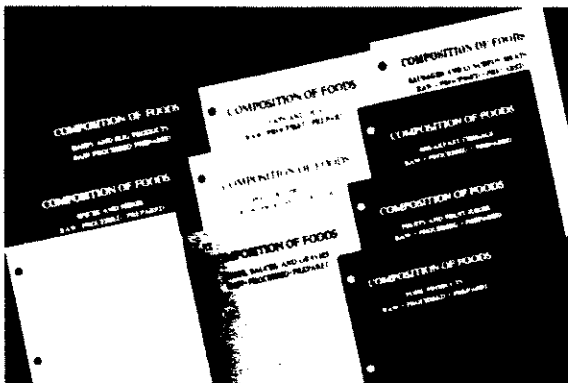


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From the early 1960's to the early 1980's, the composition data available to portray the nutrient content of red meat came from research done during the late 1950's. Those data, of course, represented the livestock populations, laboratory technology and retail practices then in existence.

This information appeared in USDA Handbook No. 8, which has been almost universally accepted as the primary reference for food composition in the United States.



In the new USDA Handbook 8 series, each class of foods is published in a separate section with a full page devoted to each food entity, providing a more comprehensive and clear nutrient profile than appeared in previous versions of USDA Handbook 8. The new pork data which I will review today have already been published in Handbook 8-10. The lamb

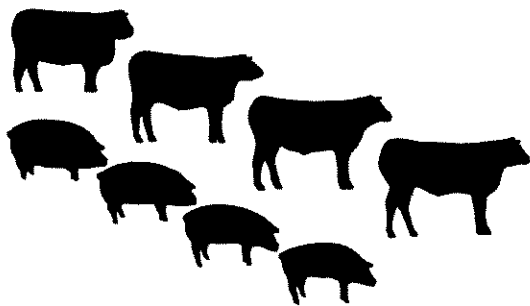
data were published in the Sept./Oct. 1984 issue of the Journal of Food Science and the beef data are expected to be approved for publication shortly. The latest information is that USDA Handbooks for beef and lamb will both be available by the fall of this year (1985).

CHANGES IN

- Livestock Population
- Laboratory Technology
- Consumers' Perspective on Fat
 - Retail Practices
 - Fat Tissue Consumption

Why did we feel it was necessary to conduct new nutrient composition studies? A number of factors which affected the nutrient content of red meat changed over the three decades between the 1950's and the 1980's.

THE MOVE TO LEANNESS



The beef industry's perception of the ideal animal during the early 1950's included a relatively light mature weight and the propensity to fatten at an early age. The ideal body type tended toward being short-legged, short and deep in the body, with appreciable evidence of body fatness at market weight.

By the 1970's and 1980's, scientifically definitive cross breeding of traditional breeds -- and the introduction of European breeds into the American beef genetic pool -- had resulted in a dramatic change in the characteristics of the typical beef animal.



Improved nutrition and other management practices also contributed to this phenomenon. Longer-bodied, longer-legged, taller, more muscular animals with greater potential for muscle development and less inclination to deposit fat now represent the ideal.



As a result of diligent efforts on the part of the beef industry, lean meat production per head has increased by an estimated 75 pounds over that three-decade period. Cattle have become heavier at appropriate marketing time and simultaneously have become leaner.



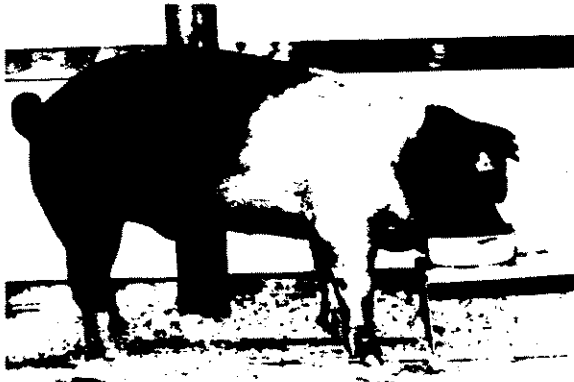
The hog was prized for centuries, not only for its ability to convert plant materials to tasty and nutritious lean meat, but also because of its ability to convert plant materials to fat tissue, which is converted to lard for edible purposes. However, in recent times the direct extraction of oils from plant sources has been developed as a more economical means of providing edible oils. By the late 1940's the competitive pressure of plant-source oils on lard values produced a clear economic signal to hog producers that hog values could be markedly improved by increasing leanness and decreasing fatness.



However, because of the historic dual role of the hog, the ideal market hog of the early 1950's was short-

legged, short- and deep-bodied, matured at relatively light weights and had ample evidence of body fatness at market weight.

As with cattle, but probably at a somewhat earlier date, hog producers responded rapidly to consumer demands for increased leanness and decreased fatness. Over the three decades from the early 1950's to the early 1980's, intensive genetic pressures and improved nutrition and management practices combined to dramatically change the composition of the hog. Longer legs, a longer and shallower body, bulging muscles and minimal evidence of fatness now characterize the ideal market animal. While dressed carcass weight has remained constant over that time period, lean meat production per head has been estimated to have increased by about 30%.



Both cattle and lambs are marketed at heavier weights today than they were in the 1950's. In spite of increased weights which would generally be associated with increased fatness, genetic changes have permitted simultaneous weight increase and decreased fatness. Fed cattle and lambs are estimated to have about 6% less fat than their counterparts of three decades ago.

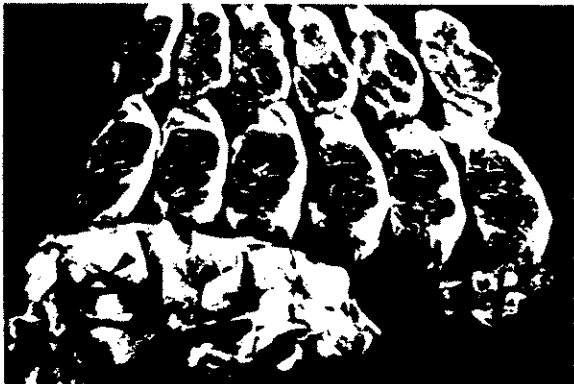
Market weight for hogs has stayed quite constant over the past 30 years, but improved genetic and management practices have resulted in fat reduction

estimated at 23% and a corresponding increase in leanness.

The consumer's message that lean is in and that fat is out has been heard loud and clear by America's livestock producers. The need for some intramuscular fat has long been recognized for its contribution to quality (taste-appeal). Refinement of that threshold and limiting the fat deposits in other places remains a challenge, but continues to be addressed. Based upon the record of the past it seems reasonable to expect continued progress toward optimal nutrient composition consistent with maximized eating satisfaction.

Consumers during the early 1950's were relatively uncritical of retail cuts containing significant quantities of intermuscular fat as well as fat on the outer perimeter of the cut. While the surface fat can be removed from a cut such as this chuck blade pot roast, removal of the intermuscular fat is impossible without making the cut essentially unrecognizable. Over the past three decades retailers have increasingly come to recognize the consumer's objection to the presence of such fat and have modified their methods accordingly.

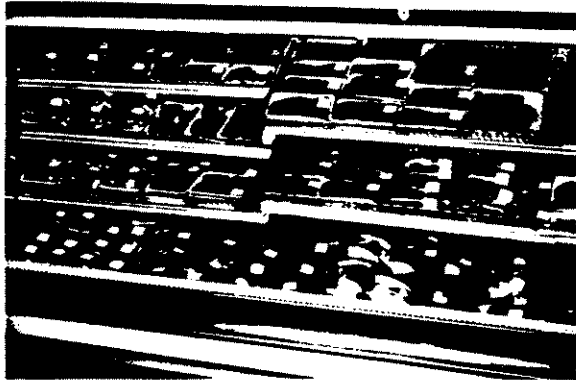




Retailers have, in many cases, begun to offer cuts produced by separating muscles in groups, which permits the removal of intermuscular fat prior to presenting the retail cut for sale. By such techniques the consumer is offered a meat entity which is essentially totally lean.

During the 1950's consumers in general seemed to accept cuts such as the one pictured here with a very ample cover of subcutaneous fat. In fact, many considered the absence of a significant amount of such fat to constitute evidence of inferior quality.

If steaks which had an amount of surface fat on them that was acceptable in the 1950's were trimmed to a fat level making them acceptable in the 1980's one would have to remove about the amount of fat shown in the foreground of this slide. Changes in consumers' demand for, or tolerance of, fat attached to retail cuts of meat has indeed undergone marked change during the past three decades. Retailers in general have responded to that changed attitude by employing closer trim on retail cuts in addition to offering cuts prepared by muscle separation in order to permit removal of intermuscular fat.



The objective of the red meat industry in the 1980's is a retail meat case in which maximized lean meat is obvious and the presence of fat is at a minimum.

<i>FOOD COMPONENTS ANALYZED</i>		
Protein	Potassium	Vitamin B-6
Fat	Magnesium	Vitamin B-12
Moisture	Manganese	Folacin
Ash	Thiamin	Tocopherol
Iron	Riboflavin	Cholesterol
Zinc	Niacin	
Sodium		
Fatty Acid Profile		

In 1978 the USDA, with support from the red meat industry, embarked on a massive study designed to update the data base for the nutrient composition of red meats. As this slide shows, the components analyzed are much more comprehensive than those contained in previous versions of USDA Handbook 8. Analytical work was conducted primarily by laboratories of the USDA or under their direction in other laboratories. Michigan State University and the University of Kentucky cooperated with the USDA in certain of the analyses for the beef nutrient composition studies.

<i>COMPOSITE</i>	
	<u>% Contribution</u>
Top Round Steak	11.30
Bottom Round Steak	7.02
Eye of Round Steak	7.21
Tip Roast	18.42
Wedge Bone Sirloin Steak	4.97
Top Loin (Strip) Steak	8.00
Tenderloin Steak	4.50
Rib Steak	6.20
Rib Roast	8.67
Arm Pot Roast	5.59
Blade Pot Roast	8.73
Brisket	9.39

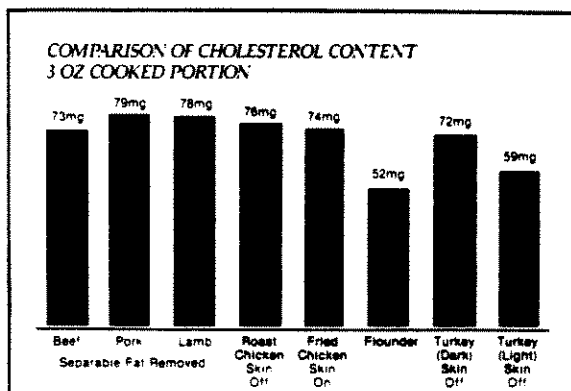
In order to be able to discuss beef, pork or lamb as a single entity it is necessary to derive a composite. This slide shows the extent of the contribution of each of the retail cuts analyzed in the beef study to the total composite. In the case of both

pork and lamb, the method of compositing was similar to that shown here for beef. All will undoubtedly be refined over time as better estimates of the contribution of each entity to the total become available.

COOKING METHODS		
Braise	Broil	Roast
Arm Pot Roast	Rib Steak	Rib Roast
Blade Pot Roast	Top Round Steak	Tip Roast-left
Brisket-top	Wedge Bone Sirloin	Tip Roast-right
Brisket-bottom	Tenderloin Steak	Eye of Round Roast
Bottom Round Steak	Top Loin (Strip) Steak	

As this slide shows for beef, each retail cut was cooked by the method deemed most suitable for it. Similar care was taken to apply the most appropriate cooking method to each retail cut of pork and lamb as well.

Many health professionals currently advocate that dietary fat provide no more than 30% of caloric intake and that saturated fat provide no more than 10% of calories. In addition a daily dietary limit of 300 mg of cholesterol is often a part of such recommendations. In considering these recommendations, let's look first at cholesterol. I will discuss fat and saturated fat a bit later on.



In studying the data one should recognize the analytical error in determining cholesterol content. Typical estimates of that error are in the range of 5%. Thus, with the exception of turkey light meat and flounder, one would conclude that all other meats in this slide are analytically similar.

There are at least two biological elements which

should also be taken into account in assessing the potential effect of shifts in dietary cholesterol: 1) the body requires cholesterol and, in the event of the total exclusion of dietary cholesterol, will synthesize between 800 and 1500 mg/day to meet those requirements; and 2) dietary cholesterol is poorly digested and absorbed by the human, with digestibility estimates ranging between 10% and 50%.

The maximum difference between the foods shown on this slide is 27 mg. Putting aside the probable sampling error and the analytical error and assuming maximum digestibility of 50%, then shifting from pork to flounder, for example, would result in a reduction in body cholesterol of less than 14 mg. That reduction represents well under 2% of the minimum requirements (800 mg), which the body will synthesize even if cholesterol is not present in the diet. Most would agree that biological variances between individual humans would exceed that level.

It seems prudent to recognize also that there is a significant element in the scientific nutritional community who contend that, while reductions in dietary cholesterol may result in near-term reductions in serum cholesterol levels, the body's metabolism soon adjusts to those dietary reductions and serum cholesterol levels revert to those observed prior to the reduction.

The primary point of this slide is to demonstrate

the similarity between alternative meats with regard to their contribution to dietary cholesterol and their possible contribution to serum cholesterol levels.

LIPID PROFILES COOKED MEAT

	Per 3 oz. Serving			
	g Lipids	g Sat. Fat	g Monounsatur. Fat	g Polyunsatur. Fat
Chicken Broilers or Fryers Flesh only roasted	6.30	1.73	2.26	1.44
Chicken Broilers or Fryers Flesh and skin fried batter-dipped	14.75	3.92	6.03	3.48
Turkey All Classes Light Meat Without skin roasted	2.74	.88	.48	.65
Turkey All Classes Dark Meat Without skin roasted	6.12	2.06	1.39	1.41
Pork Roasted Composite	11.06	3.82	4.98	1.34
Beef Composite	9.40	4.50		

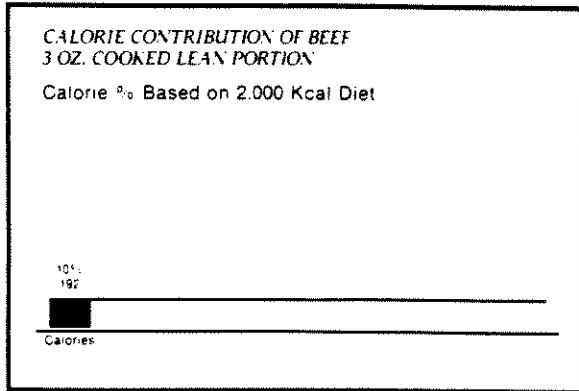
This slide examines the lipid profiles of several meats. Roast turkey light meat without skin is clearly lower than the other meats in both total lipids and in saturated fat, deriving 25 Kcal and 9 Kcal respectively from them. Turkey dark meat without skin derives 54 Kcal from fat, roast chicken without skin 57 Kcal, beef lean 85 Kcal and pork lean 100 Kcal. Saturated fat provided 19 Kcal in the case of roast turkey dark meat without skin, 16 Kcal for roast chicken without skin, 41 Kcal for beef lean and 34 Kcal for pork lean. Distinctly on the high end of the caloric scale (for obvious reasons) is batter-dipped, skin-on fried chicken, which derives 133 Kcal from fat and 35 Kcal from saturated fat.

BROILED GROUND BEEF

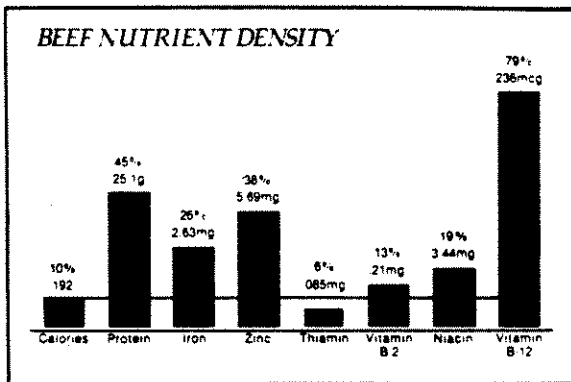
	85% Lean	80% Lean	73% Lean
Lipids - g	14.03	14.58	16.92
Cholesterol	87	87	87
Kcal	227	232	251

To this point, this discussion has centered around beef exclusive of ground beef. Regular ground beef (73% lean) when broiled derives 153 Kcal from fat and 73 Kcal from saturated fat and contributes a total of 251 Kcal. Obviously, calories from all sources are

reduced somewhat in the leaner ground beef.



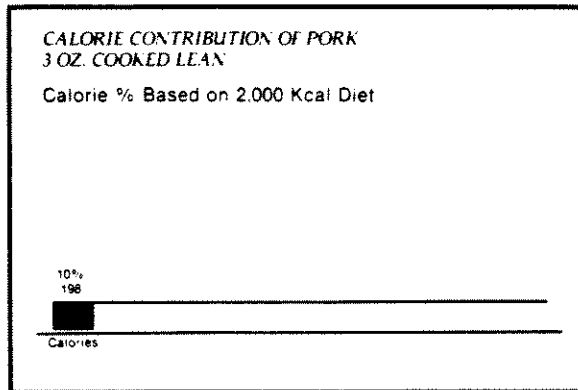
A three-ounce portion of beef lean (lean trimmed free of separable fat) provides 192 Kcal. The grade/fatness of this composite is believed to reflect the current popular grades of beef found in the marketplace. Its calorie contribution represents about 10% of a 2000 Kcal diet. About 85 of those Kcal, or a little over 4% of a 2000 Kcal diet, originate from fat. In addition, saturated fat in that three-ounce serving provides about 41 Kcal or about 2% of a 2000 Kcal diet.



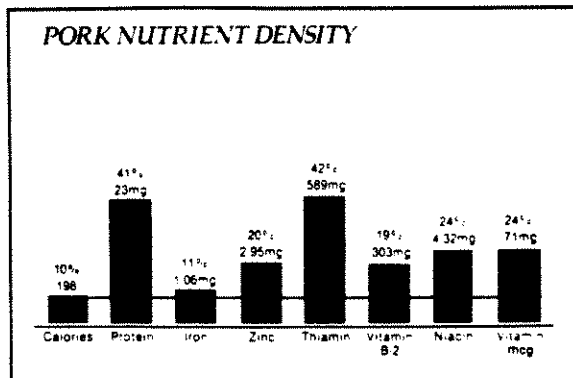
As is true for all meats, beef is appropriately described as nutrient dense. This simply means that its contribution to the requirement for a number of essential nutrients is appreciably greater than its contribution to energy needs. In comparison to its contribution to energy, beef makes 4½ times as great a contribution to the adult male's protein needs, 2½ times as great a contribution to iron needs, 3½ times as great a contribution to zinc needs, nearly 2 times as great a contribution to niacin needs and nearly 8 times as great a contribution to vitamin B-12 needs.

The iron in beef deserves special mention. Over

60% of the iron in beef is heme iron, which is much more available to the human than is non-heme iron. In addition, beef, as is true for all meats, contains the unidentified "meat factor" which enhances the availability of non-meat sources of iron when consumed in the same meal as beef.



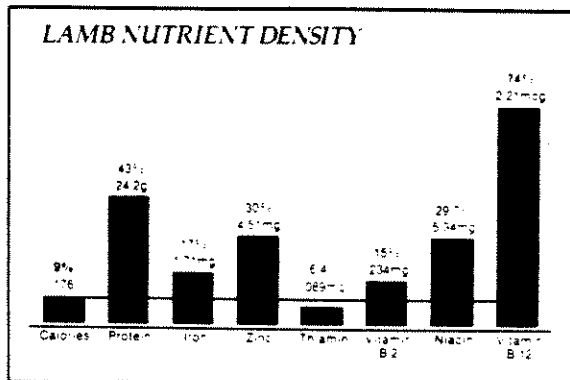
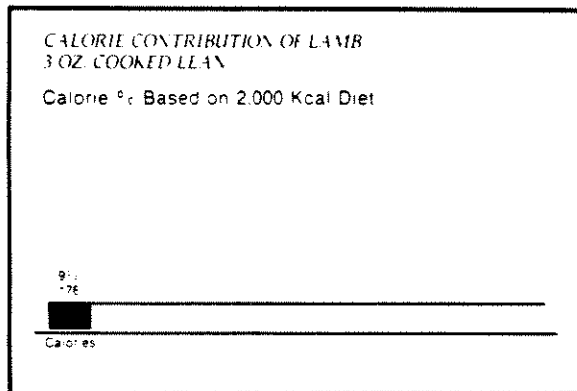
A three-ounce portion of pork lean (lean trimmed free of separable fat) provides 198 Kcal. The grade/fatness of this composite is believed to appropriately reflect fresh pork now found in the marketplace. As with beef, its calorie contribution represents about 10% of a 2000 Kcal diet. About 100 of those Kcal, or 5% of a 2000 Kcal diet, originate from fat. In addition, saturated fat in that three-ounce serving provides about 36 Kcal or less than 2% of a 2000 Kcal diet.



Fresh pork also qualifies as a nutrient dense food. In comparison to its contribution to energy pork makes 4 times as great a contribution to an adult male's protein needs, 2 times as great a contribution to zinc needs, 4 times as great a contribution to thiamin

needs, 2 times as great a contribution to riboflavin needs, nearly 2½ times as great a contribution to niacin needs and nearly 2½ times as great a contribution to vitamin B-12 needs.

While quantitatively the iron contribution of pork is similar to its contribution to energy needs, it is important to recognize that the iron in pork is more than 40% heme iron which is much more available to the human than is non-heme iron. In addition, pork, like all meats, contains the unidentified "meat factor" which enhances the availability of iron from non-meat sources when consumed in the same meal as pork.



A three-ounce portion of lamb lean (lean trimmed free of separable fat) provides 176 Kcal. The grade/fatness of this composite is believed to properly portray the nutrient composition of lamb as currently found in the marketplace. Its calorie contribution represents about 9% of a 2000 Kcal diet. About 72 of those Kcal or less than 4% were derived from fat. Moreover, saturated fat in that three-ounce portion of lamb lean provides about 40 Kcal or about 2% of a 2000 Kcal diet.

Lamb properly qualifies as a nutrient dense food. In comparison to its contribution to energy needs, lamb provides more than 4½ as great a

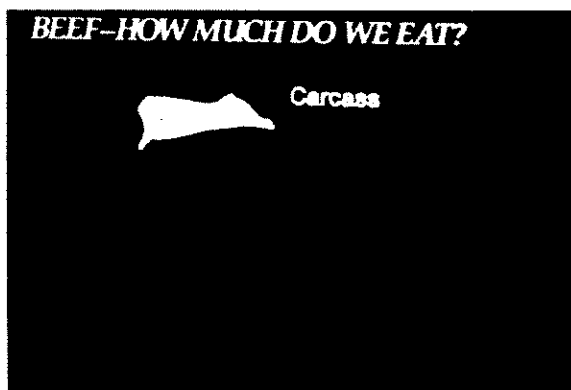
contribution to an adult male's protein needs, nearly 2 times as great a contribution to iron needs, more than 3 times as great a contribution to zinc needs, 1½ times as great a contribution to riboflavin needs, more than 3 times as great a contribution to niacin needs and nearly 7½ times as great a contribution to vitamin B-12 needs. With regard to the iron content of lamb, it is important to recognize that well over 40% of its iron is heme iron -- much more available to humans than non-heme iron. Lamb also contains the unidentified "meat factor" which enhances the availability of iron from other sources when consumed in the same meal as lamb.

How Much Meat Do Americans Eat?

A widely held perception, not only among laymen but in the scientific, governmental and other arenas as well, is that Americans are gluttonous red meat consumers. I believe that perception has arisen from the common method of reporting meat production by the USDA. For economic reasons, "carcass weight" produced has been historically reported by the USDA. That production has often been reported on a per capita basis for the purpose of observing relative production per member of the population. That carcass weight figure in 1982 amounted to about 170 pounds of red meat per person for that year. On that

basis one would conclude that consumption is about 7½ ounces per person per day. Since health care professionals generally recommend ingestion of 4 to 6 ounces per person per day from the total meat group, 7½ ounces might very well be deemed excessive. If one included poultry and fish/seafood, that figure approaches 10½ ounces, which is about 73% above the generally recommended maximum of 6 ounces.

Health care professionals' recommendations are based on the amount of food to be actually ingested. Carcass weight includes significant amounts of fat, bone and connective tissue which do not constitute a part of the edible red meat supply, as well as cooking losses and plate waste which are not ingested. Accounting for these differences between carcass weight produced and the red meat actually ingested provides a dramatically different perception of actual meat consumption (ingestion).



While beef is used here as an example, the same principle of conversion from carcass weight basis to actual meat ingested is identical for pork and lamb. Assuming that carcass weight produced equals meat consumption would be the same as reporting sweet corn consumption in a figure that represented the stalk, the husk, the cob, the silk and the corn kernels. While such a figure might very well reflect trends in

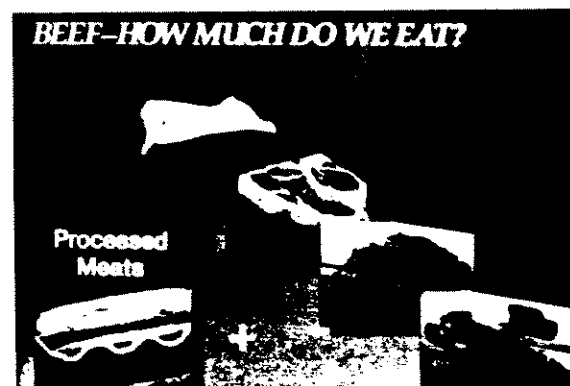
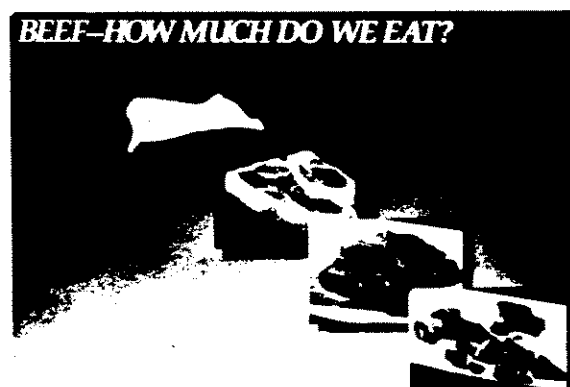
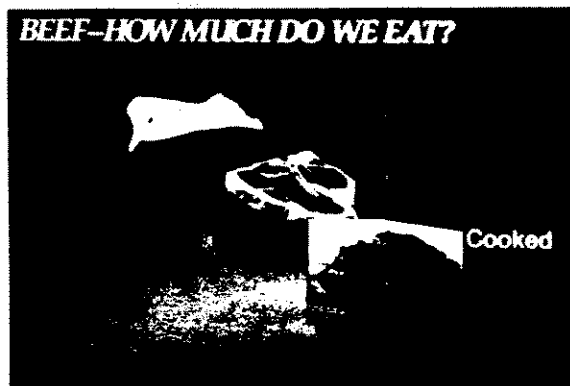
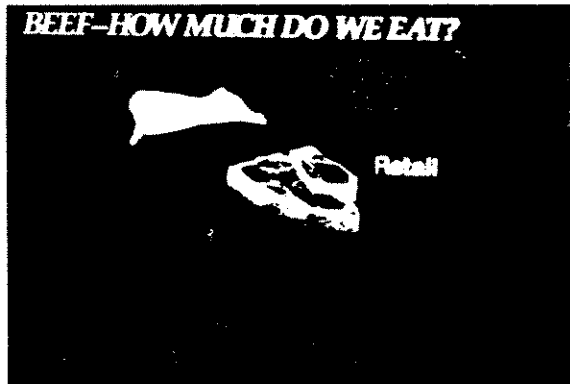
consumption levels, very few would think it an appropriate quantified number to reflect sweet corn ingestion.

Converting the carcass to retail cuts involves the removal of a portion of the fat, bones, and connective tissue, but retail cuts are still in an un-cooked state and contain bones, fat and connective tissue that are not ingested.

Removing the bones from those retail cuts represents the removal of a portion which certainly is not eaten by humans.

Calculating cooking losses and assuming the removal of half the separable fat from the cooked cut seem plausible as a means of deriving the amount of red meat actually ingested. Obviously, some amount of meat is lost through spoilage in the marketing/distribution channels and some of the lean available for consumption most assuredly is not actually ingested. In this scenario, however, it is assumed that no spoilage losses occur and that all lean tissue produced is actually ingested, along with one-half of the separable fat.

Finally, a portion of beef (about 12% on a carcass weight basis) is used in processed meat. In processed meat calculations, I have included all of the fat which typically goes into each product category.



<i>PER CAPITA BEEF CONSUMPTION</i>	
<u>Basis</u>	<u>Ounces Per Day</u>
Carcass	4.6

In the case of beef, the 104.4 pounds per capita carcass weight produced in 1982 translates to about 4.6 ounces per day.

<i>PER CAPITA BEEF CONSUMPTION</i>	
<u>Basis</u>	<u>Ounces Per Day</u>
Carcass	4.6
Retail	3.4

If one converts the 104 pounds of carcass weight beef to the 77 pounds of retail cuts produced from it, that 4.6 ounces is reduced to about 3.4 ounces. While this figure comes closer to representing beef actually ingested, it still results in a marked over-estimate.

<i>PER CAPITA BEEF CONSUMPTION</i>	
<u>Basis</u>	<u>Ounces Per Day</u>
Carcass	4.6
Retail	3.4
Boneless Retail	2.9

If one removes the bones from those retail cuts on the premise that they are not actually ingested by humans, one reduces the estimated consumption to about 2.9 ounces. However, the product is still in the uncooked state and includes some plate waste.

<i>PER CAPITA BEEF CONSUMPTION</i>	
<u>Basis</u>	<u>Ounces Per Day</u>
Carcass	4.6
Retail	3.4
Boneless Retail	2.9
Cooked Edible Portion	2.1

After cooking and after the removal of one-half the trimmable fat remaining on the cooked cut, the amount remaining to be consumed (ingested) falls to about 2.1 ounces per day.

PER CAPITA BEEF CONSUMPTION

<u>Basis</u>	<u>Ounces Per Day</u>
Carcass	4.6
Retail	3.4
Boneless Retail	2.9
Cooked Edible Portion	2.1
To Processed Meat	.4

To this point this discussion has been limited to fresh meat considerations. About 0.4 ounce of beef and beef fat is consumed per capita per day in the processed state in such products as frankfurters, bologna, corned beef, pastrami, etc.

PER CAPITA BEEF CONSUMPTION

<u>Basis</u>	<u>Ounces Per Day</u>
Carcass	4.6
Retail	3.4
Boneless Retail	2.9
Cooked Edible Portion	2.1
To Processed Meat	.4
	} 2.5

Beef eaten, and therefore of interest nutritionally, is thus about 2.5 ounces per day on average for the entire U.S. population, not 4.6 ounces. The obvious criticism of this approach is that it is reflecting averages and that diet is a highly individual matter. That is obviously true and this average has all the faults and all the benefits of any average. However, the use of averages is the only available means of comparing one food to any other food. Nonetheless, as we proceed in this discussion, efforts will be made to bring about a measure of refinement to these figures.

A number of very useful food consumption

surveys have been conducted and provide excellent reflections of trends and patterns in food consumption. In all the cases with which I am familiar, however, they do not try to quantify consumption, nor to reconcile their estimates with the total amount of a particular food which was available for consumption during the time frame covered by the survey.

<i>BEEF DISAPPEARANCE</i>		
	Billions of Pounds	Daily Per Capita Oz.
Bones	3.47	.7
Bones (Imports)	.60	.1
Fats-Rendered	2.66	.5
Retail Trim, Cooking & Plate Waste Losses	4.35	.8
Fresh Consumption To Processed Meat	10.86	2.1
	2.06	.4
Total	24.00	4.6

In the case of beef, it is known that we produced about 24 billion pounds (carcass weight basis) in 1982 after netting out imports and exports as well as opening and closing freezer stocks. It is also apparent from the scenario I have described that we ingested just a little less than 13 billion pounds. As I said, consumption surveys can be very useful in providing a basis for dividing the total consuming public into use level segments, but however it is divided up, one must still account for that 13 billion pounds -- neither more nor less than that amount. In other words, if a food consumption survey suggested that Americans ate four ounces of beef per capita per day in 1982, we would find -- after doing the requisite arithmetic -- that this figure could not be correct, since that much beef was not even available for consumption during that year.

If one were to express the 62.7 pounds of pork carcasses produced per capita in 1982 as ounces per person per day, it amounts to about 2.75 ounces. That weight includes skin, which is not consumed as red meat, in addition to significant amounts of fat, bone, and connective tissue.

<i>PER CAPITA PORK CONSUMPTION</i>	
	<u>Ounces Per Day</u>
Carcass	2.75

Expressing the 59 pounds of pork retail cuts produced per person in 1982 as ounces per day results in 2.59 ounces. That figure also includes -- although in lesser amounts than in the case of the carcass weight figure -- skin, fat, bones and connective tissue which are not consumed as part of the red meat supply.

<i>PER CAPITA PORK CONSUMPTION</i>	
	<u>Ounces Per Day</u>
Carcass	2.75
Retail	2.59

<i>PER CAPITA PORK CONSUMPTION</i>	
	<u>Ounces Per Day</u>
Carcass	2.75
Retail	2.59
Cooked Edible Portion	.35

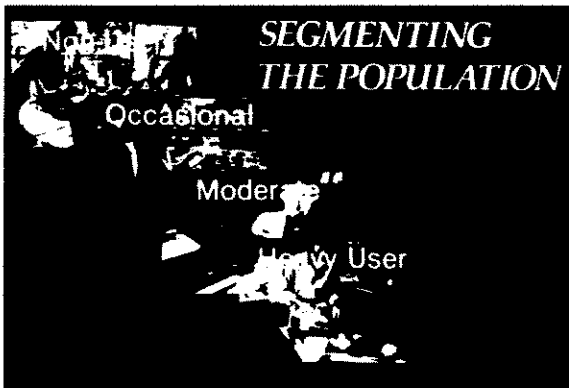
It is important to recognize that 65% to 75% of our pork supply is processed. The amount consumed on a fresh (unprocessed) basis, assuming that one-half the fat on the cooked cut is actually ingested, is slightly more than one-third ounce per person per day.

<i>PER CAPITA PORK CONSUMPTION</i>	
	<u>Ounces Per Day</u>
Carcass	2.75
Retail	2.59
Cooked Edible Portion	.35
To Processed Meats	1.10

The amount of pork consumed as processed meat amounts to about 1.1 ounces per person per day.

<i>PER CAPITA PORK CONSUMPTION</i>	
	<u>Ounces Per Day</u>
Carcass	2.75
Retail	2.59
Cooked Edible Portion	.35
To Processed Meats	1.10
	} 1.45

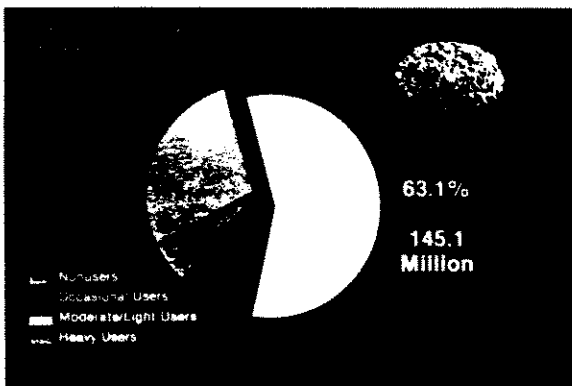
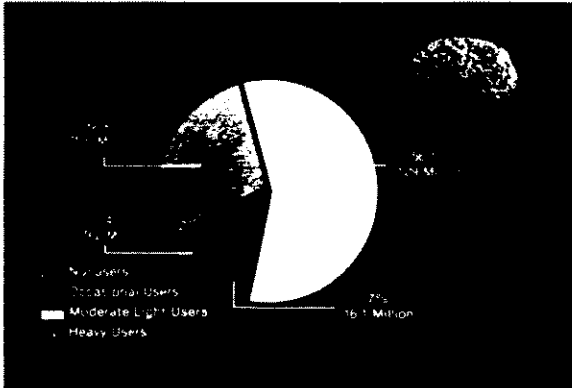
Hence our total consumption of fresh and processed pork per person per day amounts to an average of 1.45 ounces.



As mentioned previously, the figures used to this point represent averages for the entire resident U.S. population. Inherent in them are the same positive and negative attributes associated with any such average. Contained in that total population are non-meat eaters, the very young, the very old and others who may consume lesser amounts, etc. However, using such an average is often the only totally comparable basis available for comparing one food or food group to another. In 1982, however, Yankelovich, Skelly and White, in a study conducted for the National Live Stock and Meat Board and the American Meat Institute, provided a basis for segmenting consumers into groups according to use levels. Please note that

<i>CONSUMER SEGMENTS</i>	
	<u>Frequency</u>
Occasional Users	1 Serving/6 Weeks
Moderate/Light Users	1-3 Servings/2 Weeks
Heavy Users	4 or More Servings/2 Weeks
Nonusers	—

for each of the product groups discussed in the next several slides, the occasional and the moderate/light user groups represent between 145 and 160 million people. I am singling this group out because it represents the great majority in every product category.

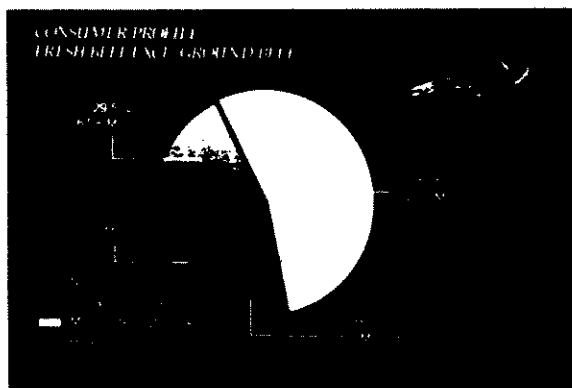


Non-users of ground beef constituted about 9.2 million or 4% of the population, and heavy users slightly less than one-third of the population. The moderate/light user groups consisting of 145 million people represented about 63% of the total.

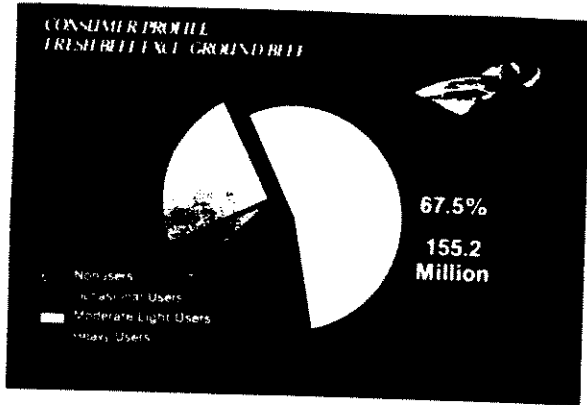
**DAILY PER CAPITA CONSUMPTION
GROUND BEEF**

Segments	Oz.
Occasional	.07
Moderate/Light Users	.44
Heavy Users	1.22
Nonusers	—
Total Population	.65

The moderate/light groups consumed less than 0.45 ounce per person per day while the average for the entire population was less than two-thirds of an ounce per person per day.



Non-users of fresh beef other than ground beef constituted 7 million people or about 3% of the total population and heavy users represented slightly less than 30% of the population. The moderate/light user groups constituted about 156 million people and

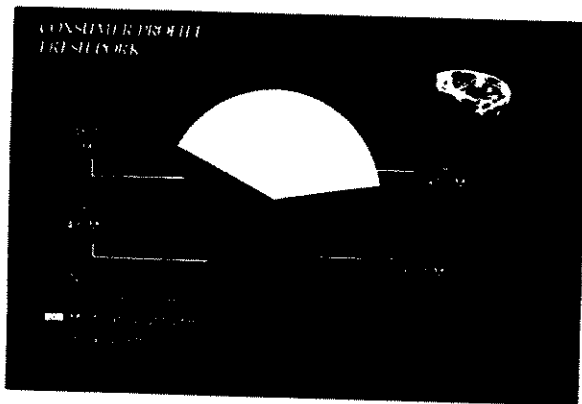


represented about two-thirds of the total population.

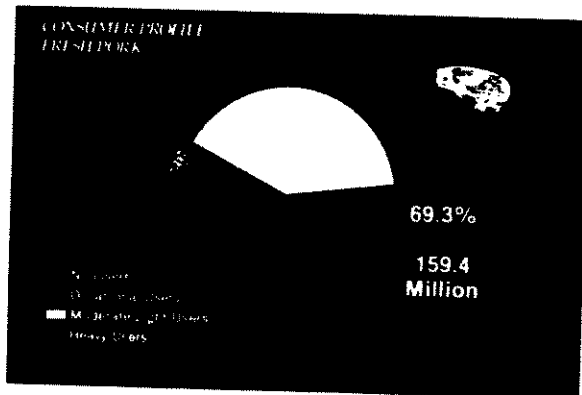
**DAILY PER CAPITA CONSUMPTION
FRESH BEEF EXCL. GROUND BEEF**

Segments	Oz.
Occasional	.17
Moderate/Light Users	.99
Heavy Users	2.98
Nonusers	—
Total Population	1.42

The moderate/light groups consumed less than one ounce per person per day while the average for the entire population was 1.42 oz./day.



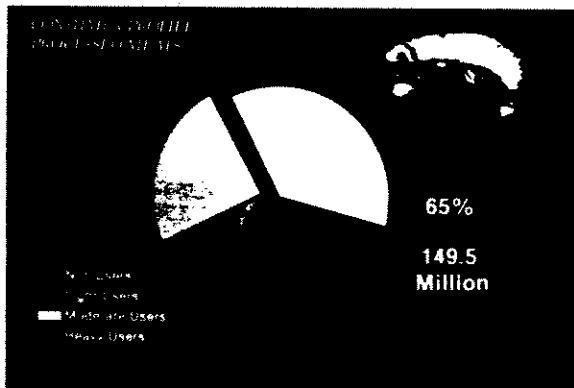
Non-users of fresh pork made up 15% of the total population. While this is pure speculation, fresh pork's larger non-user group might be due in part to religious reasons. In any event there were an estimated 34.5 million non-users of fresh pork. Heavy users were estimated at about 36 million people or about 15.7% of the total population. The occasional and moderate/light groups consisting of nearly 160 million people represented a little less than 70% of the population.



**DAILY PER CAPITA CONSUMPTION
FRESH PORK**

<u>Segments</u>	<u>Oz.</u>
Occasional	.06
Moderate/Light Users	.36
Heavy Users	1.11
Nonusers	—
Total Population	.35

The occasional and moderate/light user groups were consuming less than 0.36 ounces per person per day and the average for the total population was about the same amount.



The Yankelovich, Skelly and White definitions of use levels for processed meats are slightly different than for fresh meats, but for the purposes of this discussion those differences are not relevant. There were about 21 million non-users of processed meats representing about 9% of the population. There were nearly 60 million heavy users, representing about 36% of the population, and the moderate/light user groups consisted of slightly less than 150 million people or about 65% of the population.

**DAILY PER CAPITA CONSUMPTION
PROCESSED MEATS**

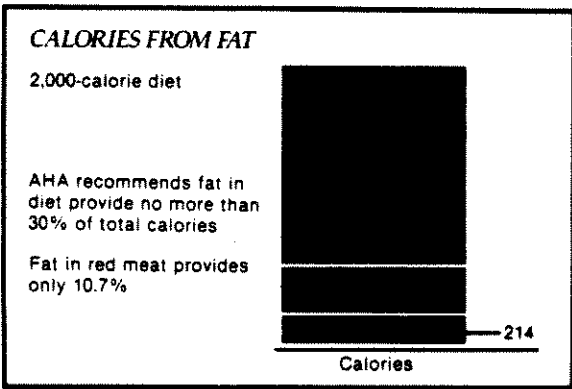
<u>Segments</u>	<u>Oz.</u>
Light Users	.47
Moderate Users	1.38
Heavy Users	3.36
Nonusers	—
Total Population	1.50

The moderate and light user groups consumed less than 1.4 ounces per person per day and the average for the total population was 1.5 oz./day.

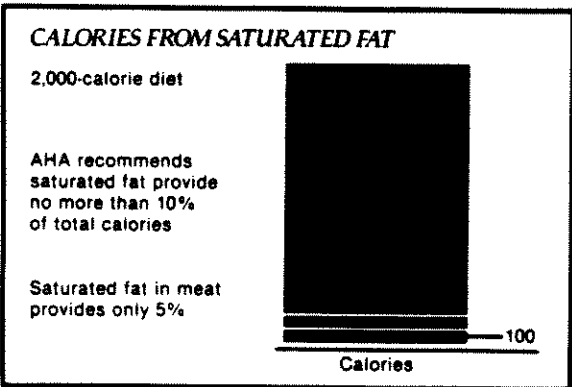
DAILY CALORIC CONTRIBUTION OF RED MEAT

	g	Kcal	
		Total Contribution	% 2000 Kcal Diet
Total Meat (3.99 oz.)	113.00	327	16.4
Total Lipids	23.70	214	10.7
Saturated Lipids	10.40	94	4.7
Unsaturated Lipids	13.30	120	6.0

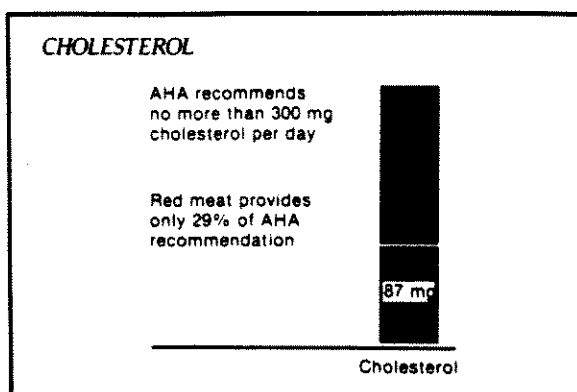
Now let's take a look at the larger picture and its implications for public health. Total red meat consumption in 1982 was slightly less than four ounces per person per day. Its contribution to dietary lipids is estimated at 23.7g, which would contribute 214 Kcal, or less than 11% of a 2000 Kcal diet. The saturated fat contribution is about 10.7g, representing 94 Kcal or 4.7% of a 2000 Kcal diet. The total Kcal contribution of that four ounces of red meat is 327 Kcal or about 16% of a 2000 Kcal diet.



Red meat provides slightly more than one-third of the commonly recommended limitation for calories from fat.



Red meat provides less than half the commonly recommended limit for calories from saturated fat.



Red meat provides less than 30% of the commonly recommended limit of cholesterol.

AVERAGE DAILY DIETARY CONTRIBUTION AND PERCENT OF ADULT MALE RDA

	Units	% of RDA
Total Meat—oz.	3.99	—
Protein—g	25.5	45.5
Iron—mg	2.476	24.8
Zinc—mg	4.771	31.8

Red meat's contribution to protein and mineral requirements is rarely challenged. Please remember, as I said earlier, that a significant portion of the iron in meat is heme iron, which is the type most easily utilized by the body. In light of what the HANES survey and other studies tell us about iron deficiency in the U.S., this contribution takes on added importance.

AVERAGE DAILY DIETARY CONTRIBUTION AND PERCENT OF ADULT MALE RDA

	Units	% of RDA
Total Meat—oz.	3.99	—
Thiamin—mg	.298	21.3
Riboflavin—mg	.258	16.1
Niacin—mg	4.277	23.8
Vit. B-12—mcg	2.130	71.0

Likewise, red meat's contribution of B-vitamins is also well established. I don't need to spell out for this audience the importance of the nutrients found in red meat. But I would like to urge you not to join those who concentrate so heavily on a single dietary aspect that other needs are ignored or take on secondary importance. As I'm sure you all know, it's the total diet that counts when it comes to guaranteeing good health. I believe that red meat, when consumed in moderation as part of a balanced, varied diet, can play an important role in helping Americans achieve the goal of nutritional adequacy.

Let me conclude by pointing out that changing



RESEARCH IN PROGRESS

- Effect of Fat Removal Prior to Cooking
- Effect of Cooking on Nutrient/Component Retention
- Plate Waste
- Consumer Segmentation Update
- Ongoing Diet/Nutrition Research

lifestyles and demands for food are an ever-present fact of life. This presentation has been designed to demonstrate our best current understanding of the role of red meat in the U.S. diet. Continuing research, of the type listed on this slide, will provide future guidance for the red meat industry as it adapts to consumers' needs and desires.