Overview of Meat Inspection

Dr. Garcia

Red Meat

- Red Meat- the edible parts of the muscle of CATTLE, SHEEP, SWINE, AND GOATS which is skeletal or which is found in the tongue, in the diaphragm, in the heart or in the esophagus, with or without the accompanying and overlaying fat, and the portions of bone, skin, sinew, nerve, and blood vessels which normally accompany the muscle tissue and which are not separated from it in the process of dressing.
- It does not include the muscle found in the lips, snout, or ears.

White Meat

- White Meat- the edible part of muscle of chickens, turkeys, ducks, geese, or guineas with or without the accompanying and overlaying fat, and the bone, skin, sinew, nerve, and blood vessels which normally accompany the muscle

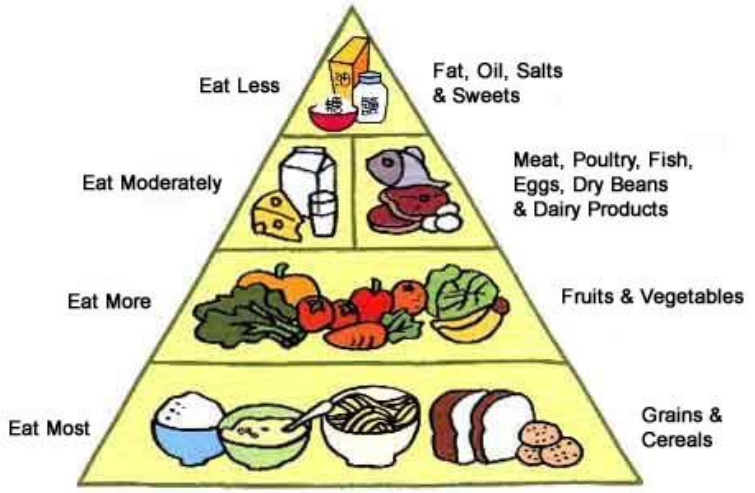
Market value of livestock, poultry, and their products sold in 2012

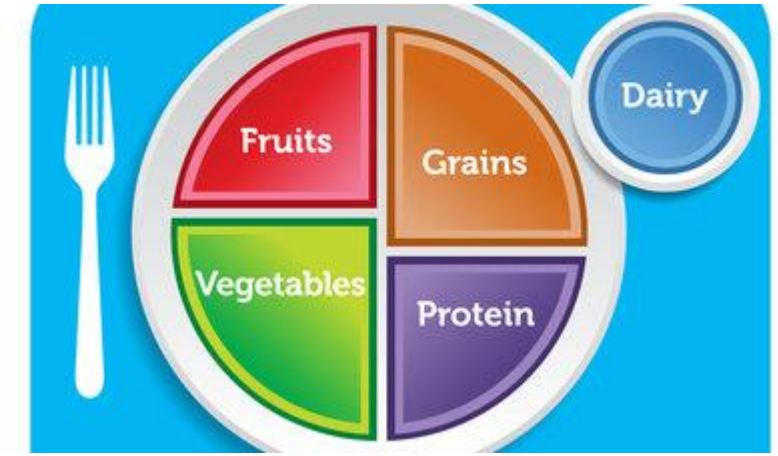
1 dot = $20 million

Source: USDA, Economic Research Service using data from USDA, National Agricultural Statistics Service, 2012 Census of Agriculture.

DIET

- While Americans are consuming more vegetables and fruit than in 1970, the average U.S. diet still falls short of the recommendations in the 2015-2020 Dietary Guidelines for Americans for these major food groups.
- Americans, on average, consumed more than the recommended amounts of meat, eggs, and nuts and grains in 2014.



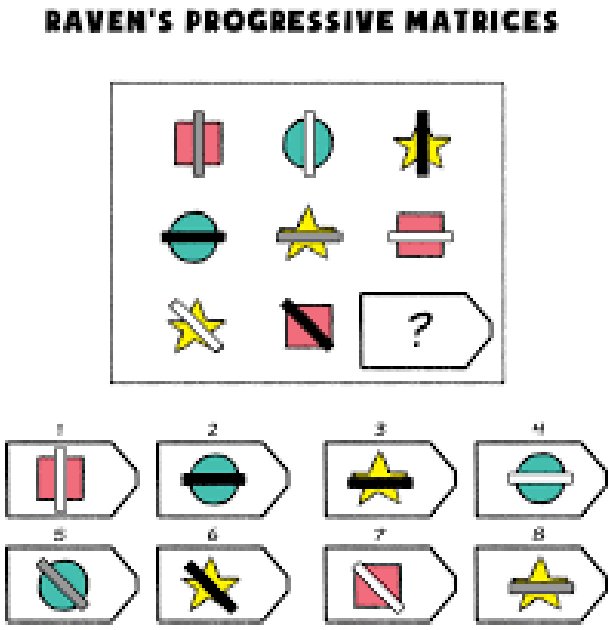


The Impact of Dietary Intervention on the Cognitive Development of Kenyan School Children

- Vegetable stew
- Vegetable and oil
- Vegetable and milk
- Vegetable and meat

Raven’s

- The Raven's is widely used as a culturally reduced test of fluid intelligence, thus tapping into on-the-spot reasoning and problem-solving ability as opposed to accumulated factual knowledge.



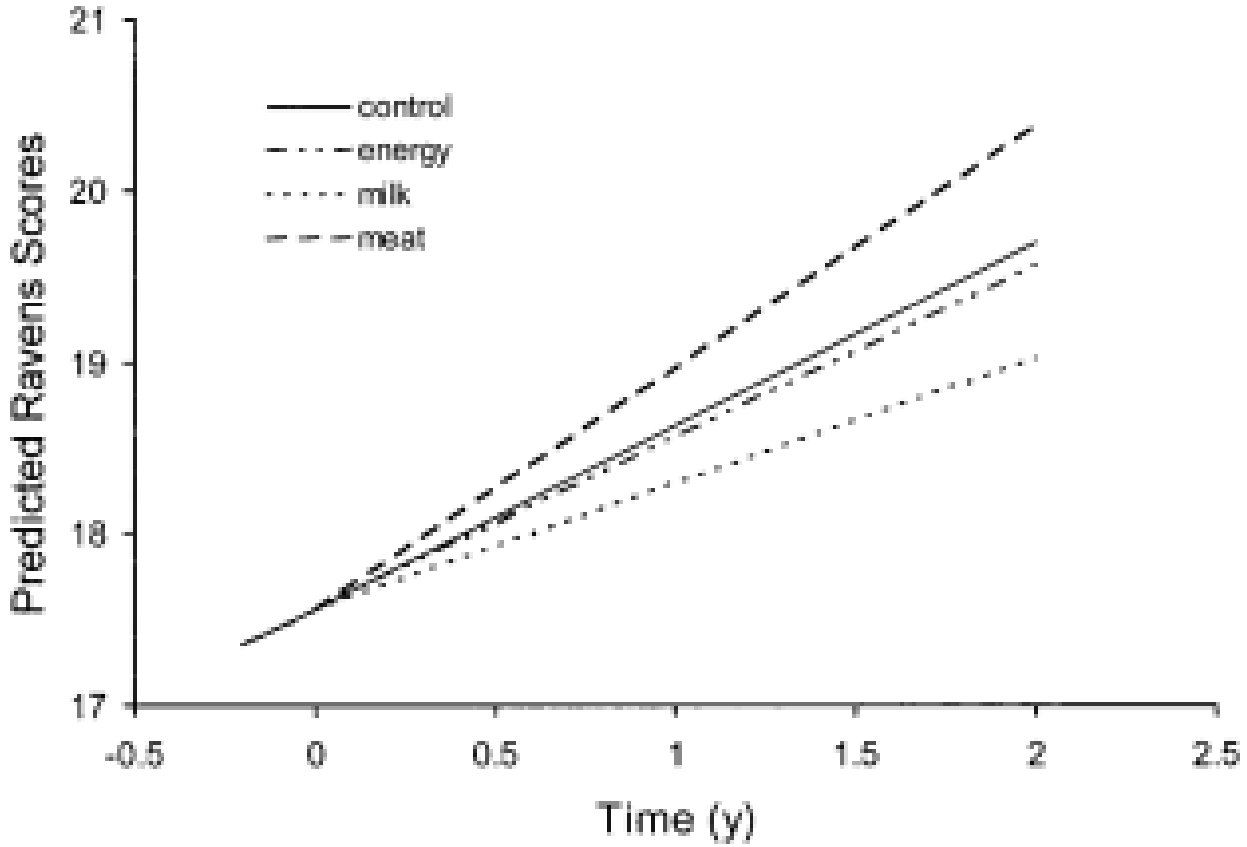
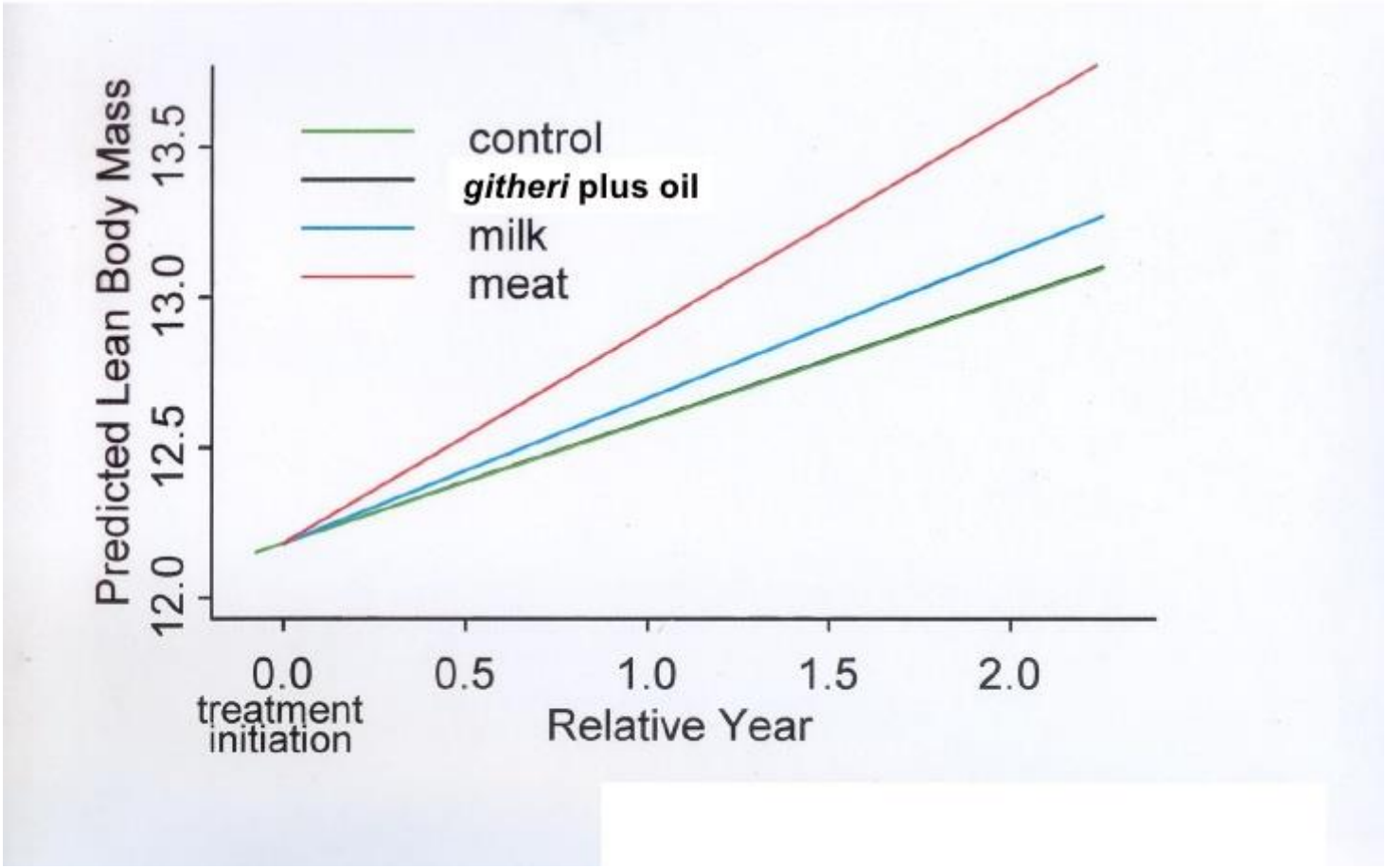


FIGURE 1 Raven's scores by group over time.

ARM MUSCLE AREA (cm^2)



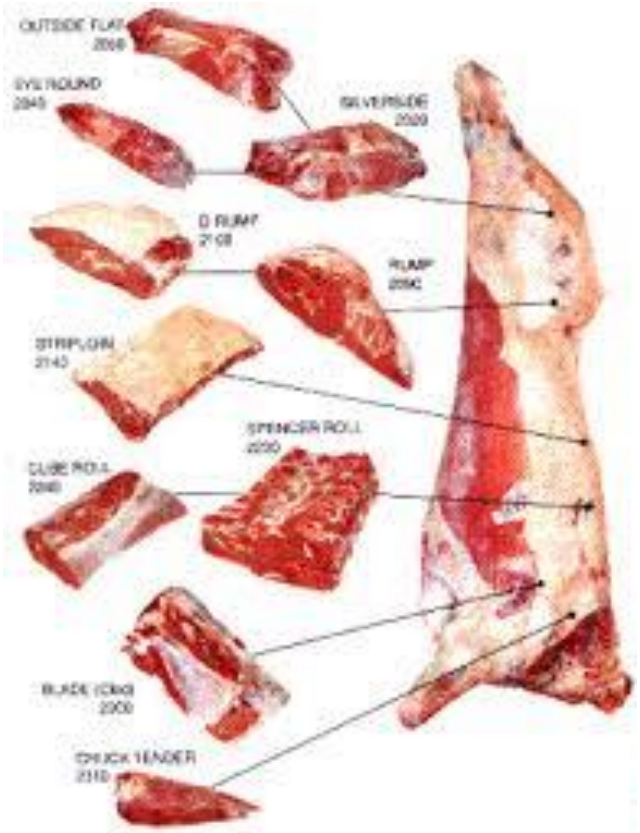
Physical Activity and Behavior

- Greatest increase in high levels of activity and on going activity in Meat group
- Greatest decrease in low levels of physical activity in Meat group
- The Meat group compared to all other groups showed:
  - Greatest increase in initiative
  - Greatest increase in leadership
  - Greatest increase in peer involvement
  - Greatest increase in positive affect

- J Nutr. 2003 Nov;133(11 Suppl 2):3965S-3971S.
- **The impact of dietary intervention on the cognitive development of Kenyan school children.**
- Whaley SE[1], Sigman M, Neumann C, Bwibo N, Guthrie D, Weiss RE, Alber S, Murphy SP.

AZ Industry BEEF- Inspected

- Steer 752
- Heifer 600
- Beef Cow 144
- Dairy Cow 361
- Bull 172
- Heavy Calf 1

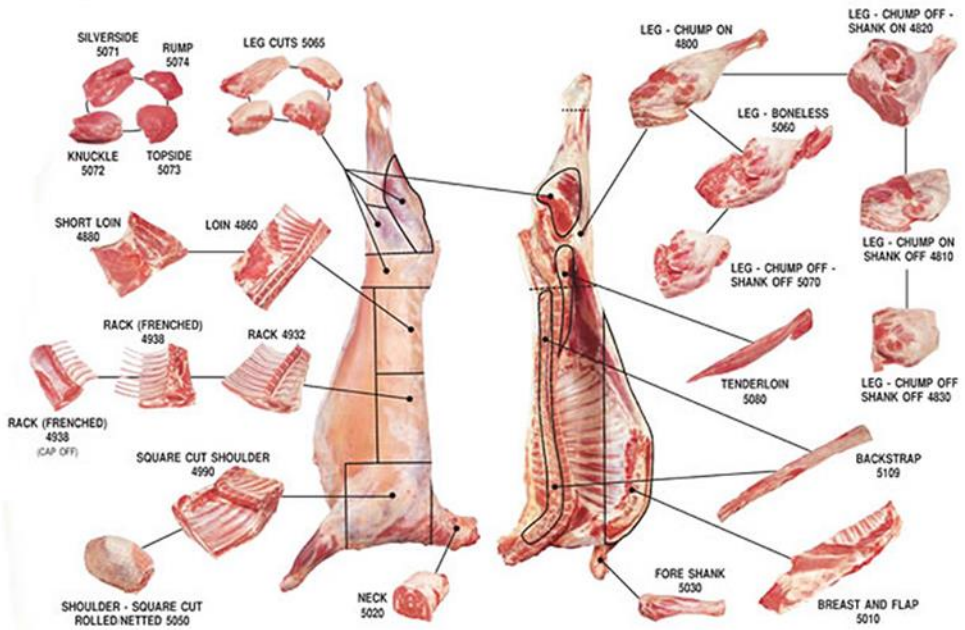


AZ Industry Swine- Inspected

- Sow 37
- Boar 25
- Market Swine 1131

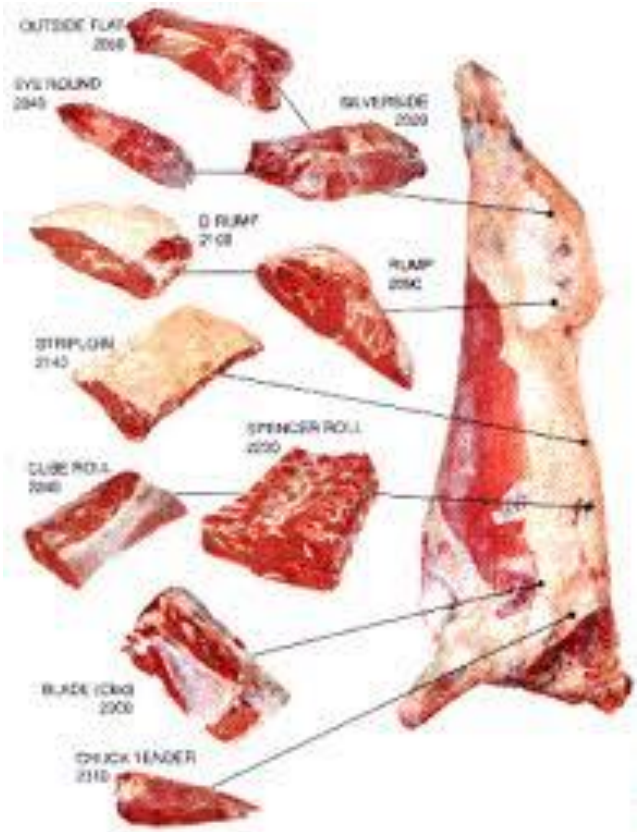
AZ Industry- Lamb Goat- Inspected

- Lamb 1888
- Sheep 1376
- Goat 1811



AZ Industry BEEF- Federally Inspected

- BEEF-50.3 Thousand head



U.S.
INSPECTED
AND PASSED BY
DEPARTMENT OF
AGRICULTURE
EST. 966

AZ Industry Swine- Federally Inspected

- Swine-500

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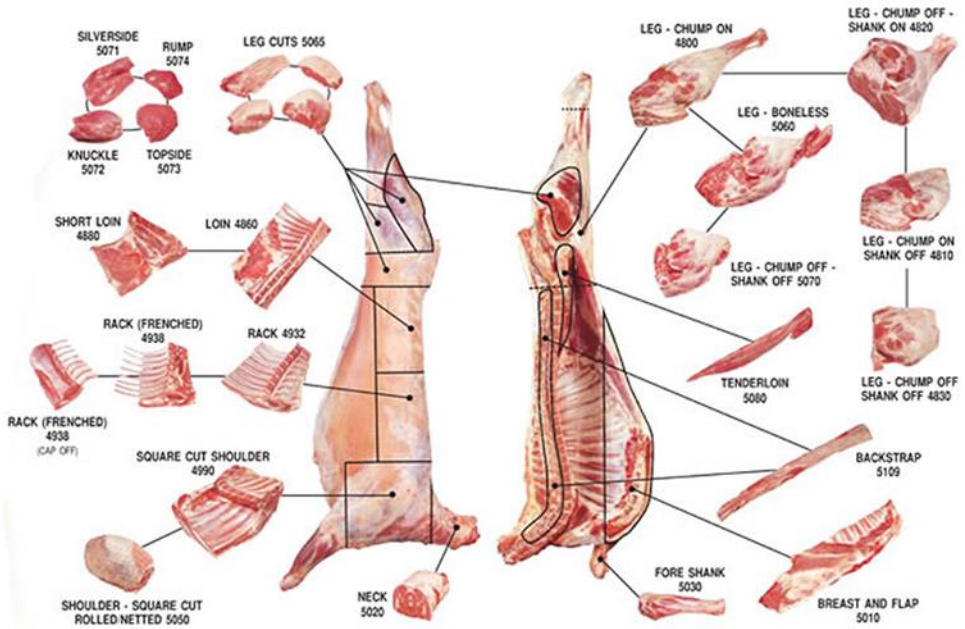
AZ Industry- Lamb Goat- Federally Inspected

- Lamb-300 Goat-



U.S.
INSPECTED
AND PASSED BY
DEPARTMENT OF
AGRICULTURE
EST. 966

Total pounds of red meat Arizona

- 42.5 million pounds
- Only 1.05 %
- 4035.7 million in the US

Inspection

Meat Inspectors identify meat as:

- Healthy (no disease)
- Sound (clean, sanitary)
- Wholesome (not adulterated)
- Properly Labeled (it is what it says it is).

Inspection

- **Functions of meat inspection**
- Detection and destruction of diseased meat and/or contaminated meat.
- Assurance of clean and sanitary handling and preparation
- Minimization of microbiological contamination of meat.
- Prevention of adulteration (the addition of harmful substances or products considered improper in certain specified quantities) and the presence of chemical or drug residues.
- Prevention of false labeling.
- Application of inspection insignia.

USDA

FSIS

Exemptions

- Exemptions from Federal or State meat inspection
- Custom slaughterers-cutters-processors of: farm animals for farmers and game animals for hunters.
- Farmers Exemption

  When meat is to be used by the farmer for his own use, for his family and for his nonpaying guests

Areas of responsibility for meat inspection

- (1) Facilities construction and operational sanitation
- (2) Antemortem inspection
- (3) Postmortem inspection
- (4) Product inspection
- (5) Laboratory determinations and assays
- (6) Control and restriction of condemned products
- (7) Marking, labeling and application of inspection insignia

(1) Facilities construction and operational sanitation

- Plants must be constructed so that they are:
- Clean (and can be cleaned).
- Do not contribute to hazards in meat.
- Operational sanitation — specifications for water supply, drainage, waste disposal, lighting, ventilation, refrigeration, insect and rodent control; manpower: continuous inspection patrol, reinspection privilege, surveillance of workers.

(2) Antemortem inspection

- Inspection of animals before slaughter, inspected in pens on the premises, on the day of slaughter, in motion and at rest.
- If acceptable, passed for slaughter

- If not,
  - U.S. Suspect — seriously crippled, reactors to T.B. test, immature animals, minor epithelioma of the eye or orbital region.

  - U.S. Condemned — "downers", deads, moribund (about to die), comatose, temperature above 105 F (106 F if swine), suspect dies in pen, animals with obvious symptoms of a disease.

Antimortem

- FSIS 5-04 Notice – Non-ambulatory disabled cattle (released in 2004) Veterinary Medical Officer to condemn:
- All non-ambulatory disabled cattle; and
- All cattle showing central nervous system symptoms regardless of whether the cattle are ambulatory.
- If not already dead, condemned livestock shall be killed by the establishment. Such animals cannot enter establishments to be slaughtered or dressed.

(3) Postmortem inspection

- Inspection after slaughter of head, viscera and carcass. Inspection proceeds simultaneously with slaughter and dressing.
- Temporary — U.S. Retained

Postmortem Inspection

- Causes for condemnation:
- Whole carcass: tuberculosis (generalized lesions), hog cholera, pneumonia, abscesses, caseous lymphadenitis, epithelioma (involvement of parotid lymph if ocular);
- Parts of carcass: abscesses, arthritis, bruises, contamination on the kill floor.

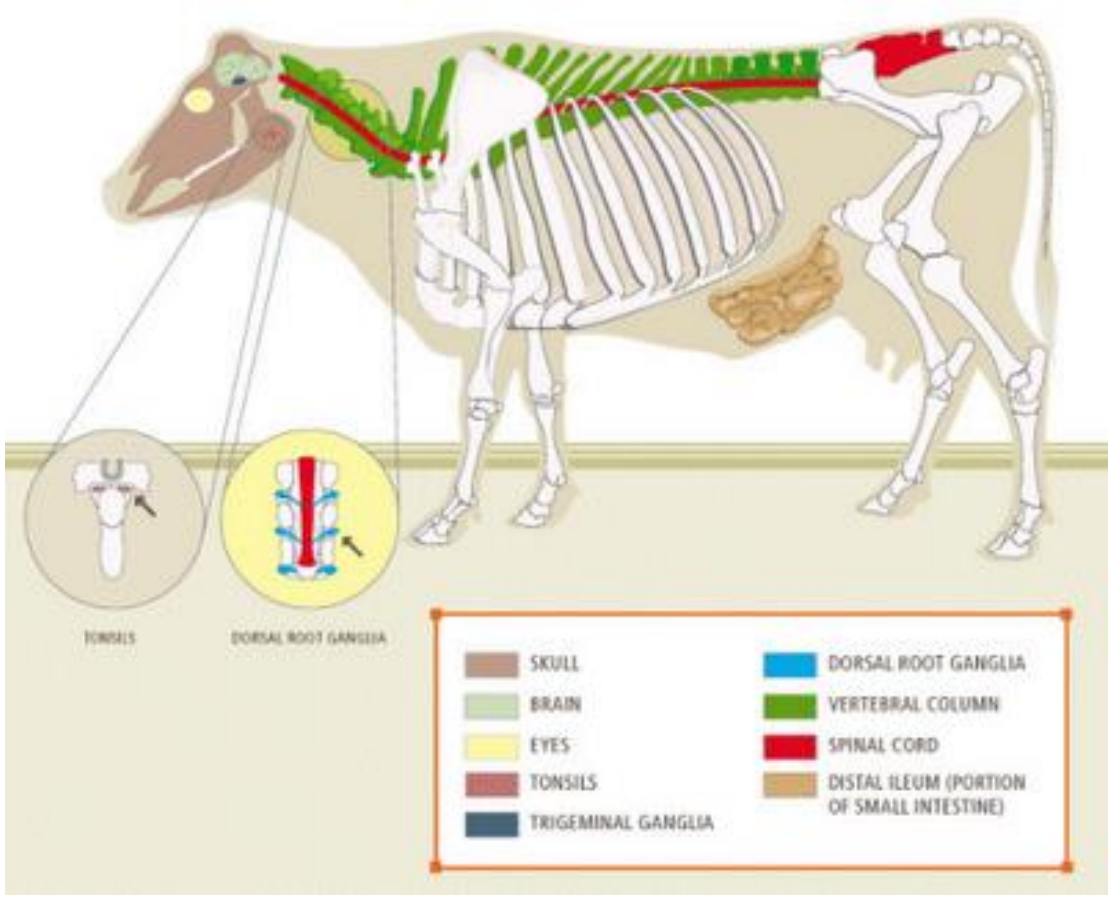
Postmortem Inspection

- Procedures for beef — examine head: lymph nodes, masseters, tongue; viscera: lungs, liver, heart, paunch, intestines, spleen; carcass: linings of thoracic, abdominal and pelvic cavities, outside surfaces, palpate kidneys, AQL.
- AQL — Acceptable Quality Level, statistical sampling plan to determine the cleanliness of all carcasses processed.
- Final
  - U.S. Inspected and Passed
  - U.S. Inspected and Condemned
  - Passed for Cooking
  - Passed for Refrigeration

USDA Inspection Mark

Postmortem SRM

- Specified Risk Materials (SRM) for Bovine Spongiform Encephalopathy (BSE)
- For cattle 30 months and older: Brain, skull, eyes, trigeminal ganglia, spinal cord, vertebral column (excluding vertebrae of the tail, the transverse processes of the thoracic and lumbar vertebrae, and the wings of the sacrum), and the dorsal root ganglia (DRG).
- For all cattle: Tonsils and distal ileum of the small intestine.



(4) Product inspection

- Reinspection privilege
  - To assure that a previously acceptable cut, carcass or product has not become sour, rancid, tainted, spoiled or adulterated
- Processed products inspection
  - Supervision of manufacturing procedures. Inspectors must be fully informed of recipes, manufacturing processes to prevent adulteration, false labeling and to assure sanitary handling.
- Inspection of boneless manufacturing beef
  - Statistically sample boneless manufacturing beef boxes.

(5) Laboratory determinations and assays

- To determine specific levels of:
  - Fat, e.g., no more than 30% in frankfurters
  - Water, e.g., no more than 10% added water in bologna
  - Curing agents, e.g., no more than 120 ppm nitrite in cured bacon
  - Phosphates, e.g., no more than 0.5% in bacon
  - Vegetable protein extenders, e.g., no more than 3.5%, in frankfurters, of textured vegetable protein
  - Meat from other species, e.g., no meat from other species in a product (detected by antigen-antibody tests)
  - Chemical residues, e.g., specific tests to detect: hormones, insecticides, pesticides

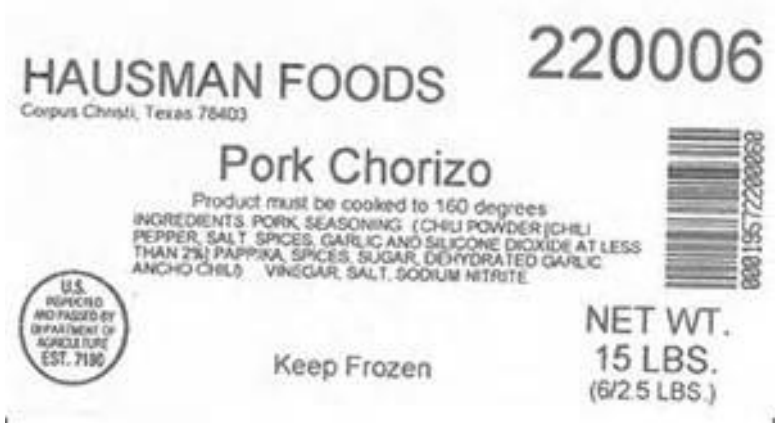
(6) Control and restriction of condemned products

- Once inspectors condemn an animal, a carcass, a cut or a product, it must be identified as U.S. Condemned and held under lock and key or in suitably marked containers and disposed of by:
  - Rendering — for inedible fats, greases or oils
  - Tanked — made into animal feed or fertilizer
  - Incinerated — burned
  - Chemically denatured — kerosene, FD & C #3 green dye, diesel, carbolic acid
  - Frozen — held at -10° F for five days and sold as animal feed

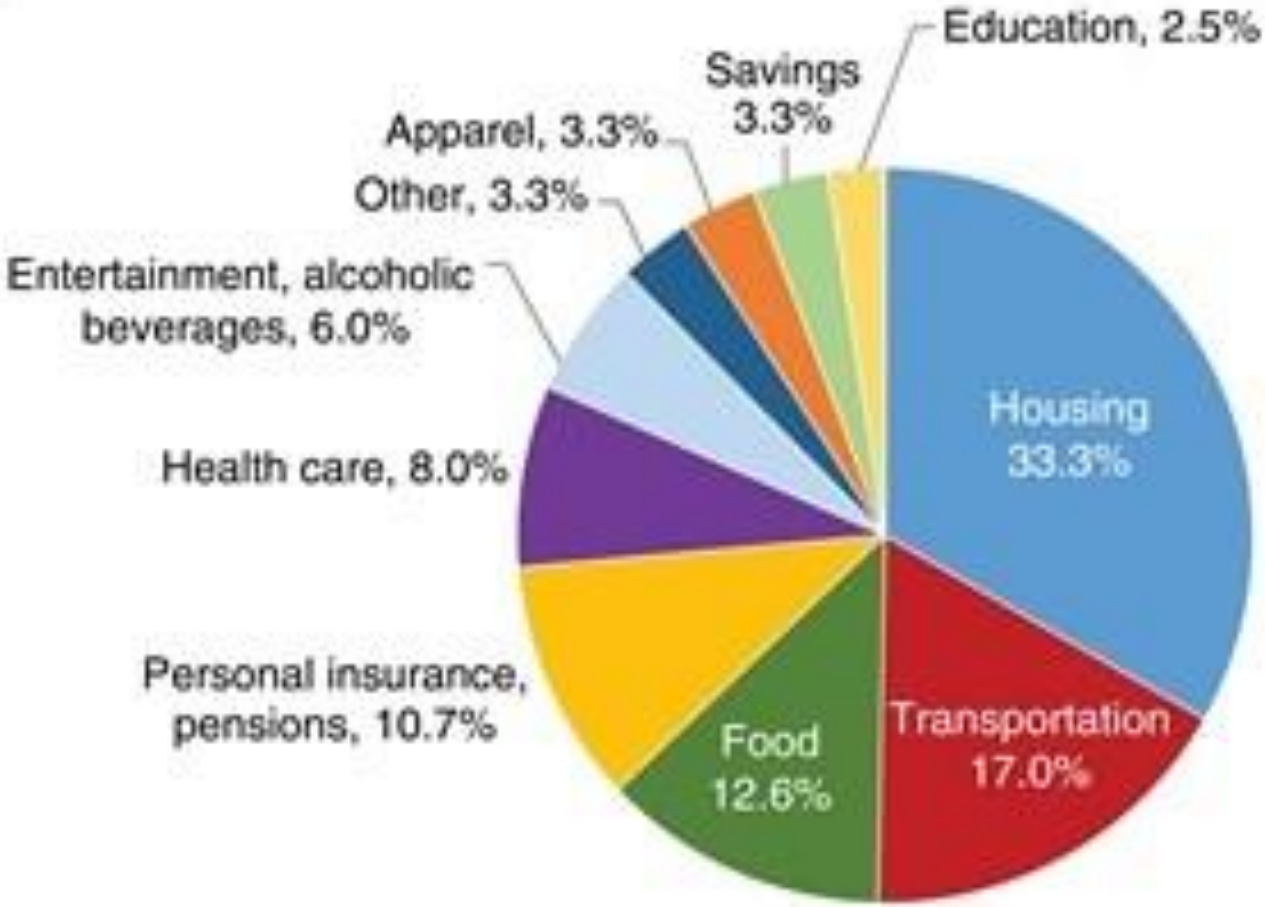
(7) Marking, labeling and application of inspection insignia

- Meat labels for prepared meat items
  - Name of product
  - Ingredients statement
  - Quantity of contents
  - Inspection legend
  - Firm's name and address

- Special markings (qualifying phrases)
  - "Keep Frozen"
  - "Cereal Added"
  - "Artificially Colored"
  - "Artificial Smoke Flavor"
  - Special Claims



Share of U.S. household consumer expenditures by major categories, 2014



Note: "Other" includes personal care products, tobacco, and miscellaneous expenditures.
Source: USDA, Economic Research Service using data from U.S. Bureau of Labor Statistics, Consumer Expenditure Survey, 2014.

HACCP

- Mandatory HACCP systems
- Microbiological testing (generic E. coli and Salmonella)
- Sanitation standard operating procedures (SSOPs)

FOOD SAFETY


7 Principles of a Foodservice HACCP Program
#1 Conduct a Hazard Analysis
- Refrigeration temps, food storage, food handling, etc
#2 Identify Critical Control Points
- Raw & cooked food temps, hold temps, cross contamination, etc
#3 Set Critical Limits For Each Critical Control Point
- Cool down periods, thaw procedures, etc
#4 Establish Critical Control Point Monitoring Requirements
- Line checks, rotation schedules, prep areas, handwashing, etc
#5 Establish Corrective Actions
- Label & date products, re-work temp checks, maintain equipment, etc
#6 Develop Procedures to Ensure Your HACCP Program is Working as Intended
- Good health dept scores, no reported illnesses, self-monitoring, etc
#7 Establish Record Keeping Procedures
- Temp logs, receiving logs, waste sheets, etc
DINE
3110 Preston Hwy, Louisville, KY 40213
502-637-3232 / 800-467-6631
www.dinecompany.com / info@dinecompany.com

HACCP

- Hazard Analysis and Critical Control Points
- Does it Work?

FOOD PRODUCTS AND SAFETY LAB

- Harvesting
  - Beef
  - Swine
  - Lamb
  - Goat
  - Bison
  - Ratites
  - Poultry

FPSL- Product development

Product Testing

- **Microbial Analysis – 2 Days**
  - Total Plate Count
  - Mold and Yeast
  - Generic E.coli
  - E.coli O157:H7
  - Salmonella
  - Listeria
  - Swab Kit

Product Testing

- Chemical Analysis – 2 weeks
  - Moisture
  - Protein
  - Lipid
  - Carbohydrates
  - Minerals
  - Sodium
  - Glucose
  - Cholesterol
  - Fiber
  - Calories per serving
- Available Water (1 day)
- pH (1 day)
- Alcohol Test
- Nutritional Label (2 weeks)
- ~Serving size adjustment
- ~Label adjustment

Nutrition Facts

Serving Size 1 cup (228g)
Servings per Container 2

Amount Per Serving	
Calories 280	**Calories from Fat** 130
	% Daily Value*
Total Fat 13g	20%
Saturated Fat 5g	25%
Trans Fat 2g	
Cholesterol 2mg	10%
Sodium 660mg	28%
Total Carbohydrate 31g	10%
Dietary Fiber 3g	0%
Sugars 5g	
Protein 5g	

Vitamin A 4%	•	Vitamin C 2%
Calcium 15%	•	Iron 4%

*Percent Daily Values are based on a 2,000-calorie diet. Your daily values may be higher or lower depending on your calorie needs.

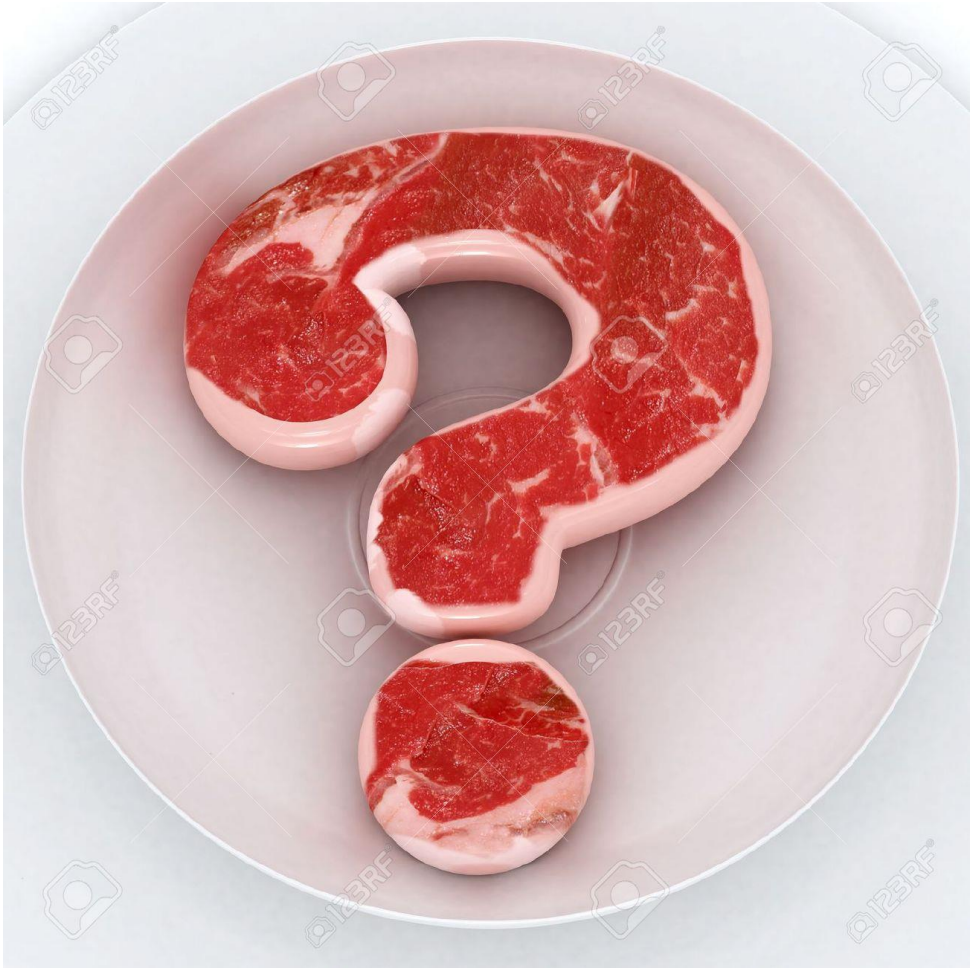
	Calories:	**2,000**	**2,500**
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Fiber		25g	30g

Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

HACCP and SSOP

- Assistance in developing HACCP and SSOP

THANK YOU!



FOOD PRODUCTS AND SAFETY LAB

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