

# Antibiotics in food animal production: A journey rather than a destination



Dan Thomson  
Kansas State University

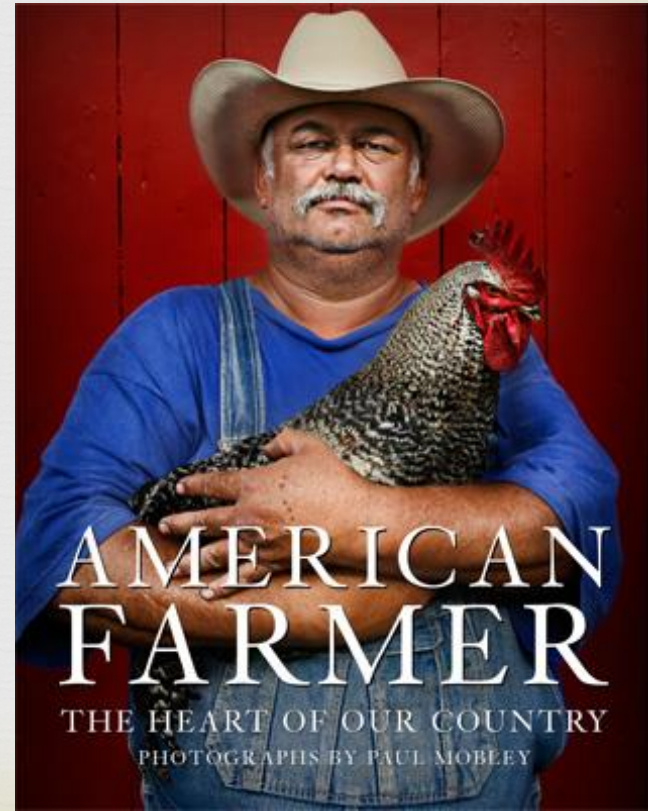
# Farm and ranch issues



☞ Fear of the uninformed and unknown

☞ Lack of consumer attachment

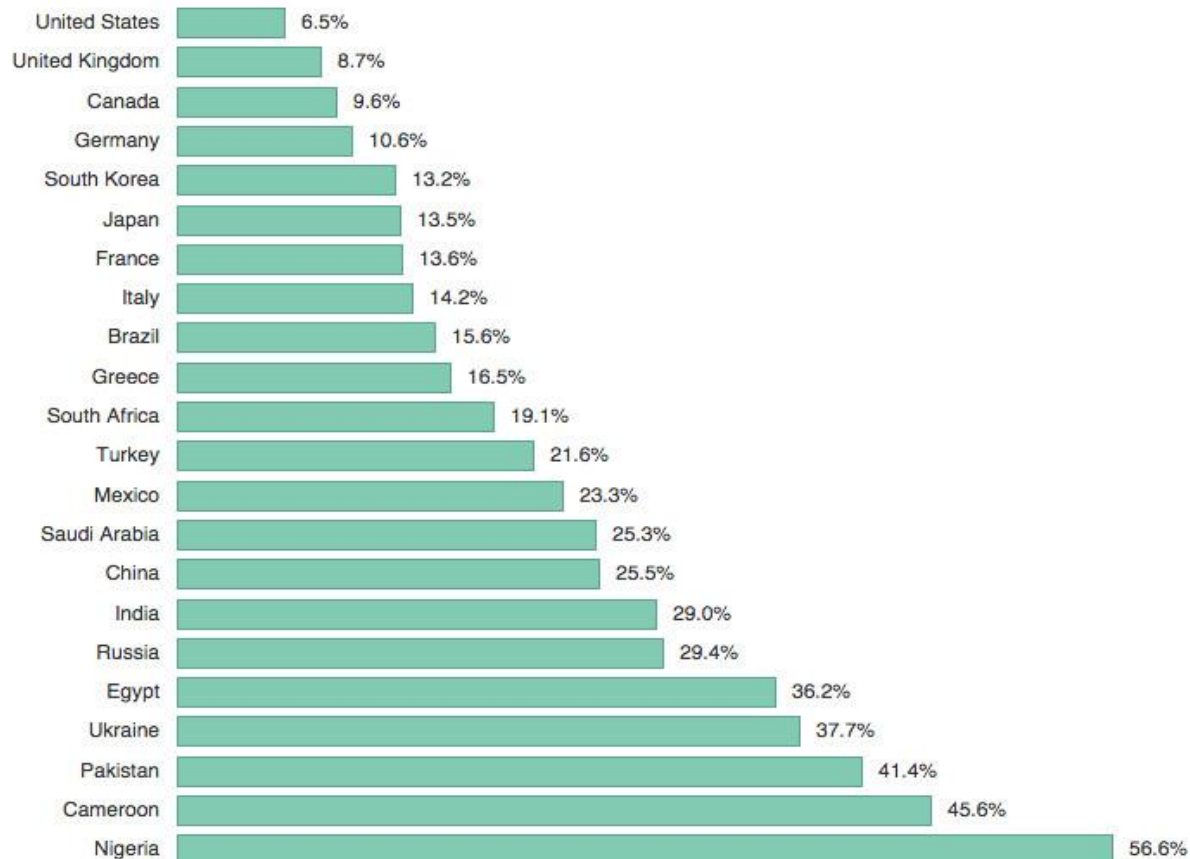
☞ We live in a 1<sup>st</sup> world country



.....and food is free

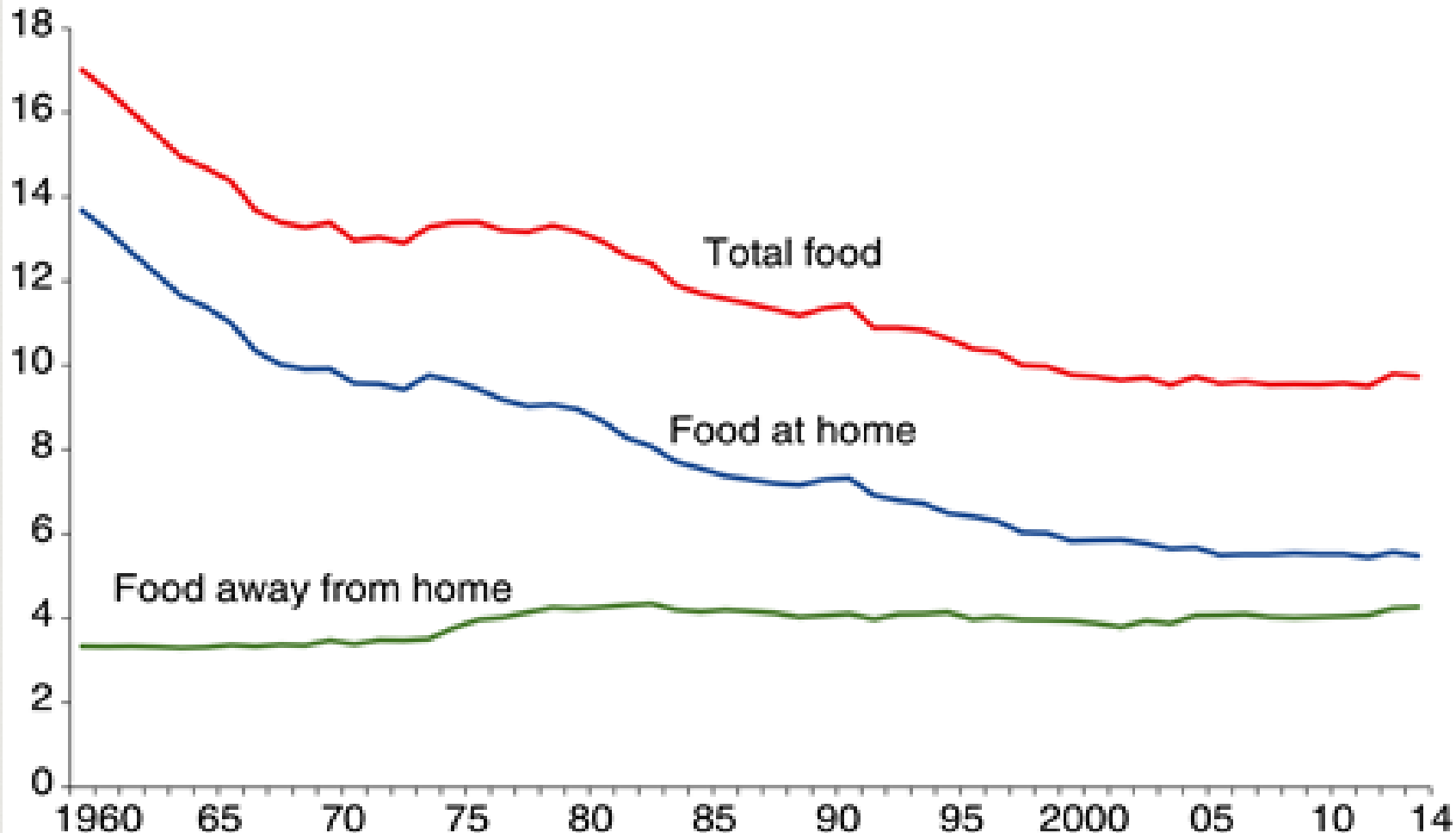
## How much countries spend on food

Selected countries, 2014, as % of household expenditures



## Percent of per capita disposable income spent on food in the United States, 1960-2014

Percent of income



Source: USDA, Economic Research Service, Food Expenditure Series.

# Adult Obesity in the United States



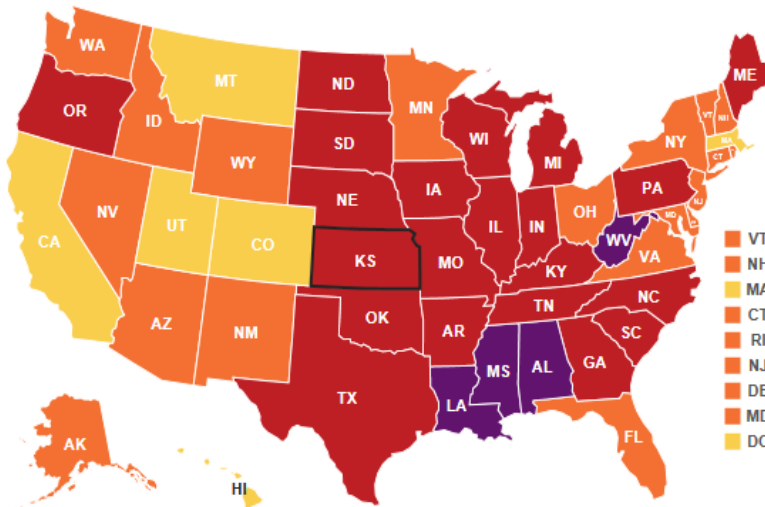
Updated September 1, 2016: According to the most recent data, adult obesity rates now exceed 35 percent in four states, 30 percent in 25 states and are above 20 percent in all states. Louisiana has the highest adult obesity rate at 36.2 percent and Colorado has the lowest at 20.2 percent. U.S. adult obesity rates decreased in four states (Minnesota, Montana, New York and Ohio), increased in two (Kansas and Kentucky) and remained stable in the rest, between 2014 and 2015. This marks the first time in the past decade that any states have experienced decreases — aside from a decline in Washington, D.C. in 2010.

## Adult Obesity Rate by State, 2015

Select years with the slider to see historical data. Hover over states for more information. Click a state to lock the selection. Click again to unlock.

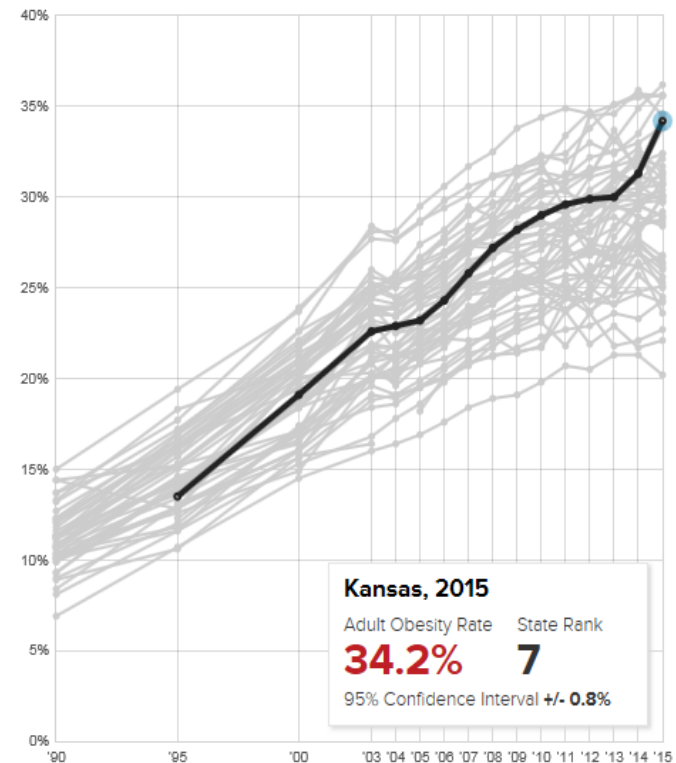
### Percent of obese adults (Body Mass Index of 30+)

0 - 9.9%   10 - 14.9%   15 - 19.9%   20 - 24.9%   25 - 29.9%   30 - 34.9%   35%+

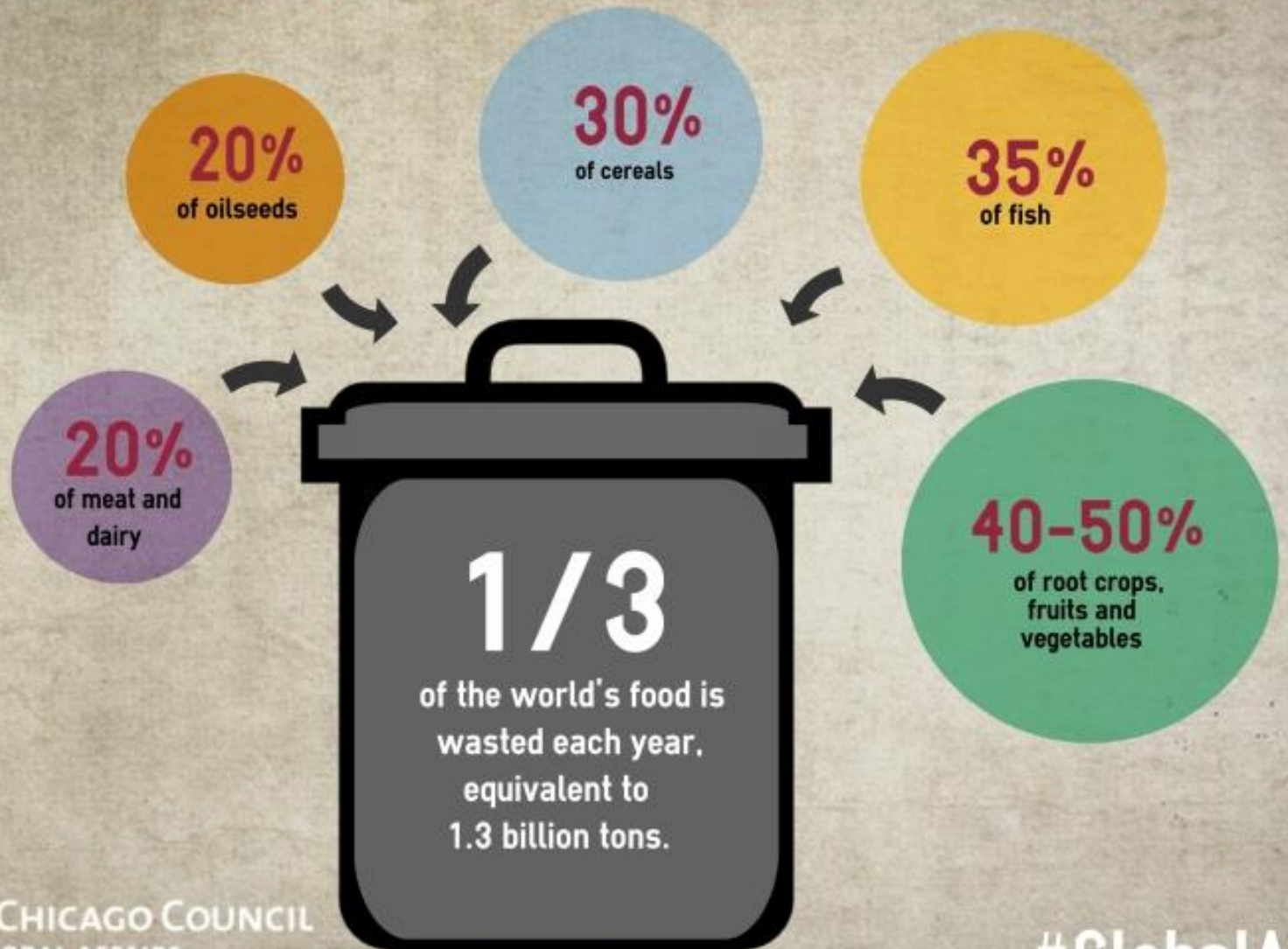


All States   West   Midwest   South   Northeast

## Adult obesity rates, 1990 to 2015



# ANNUAL GLOBAL FOOD WASTE



THE CHICAGO COUNCIL  
ON GLOBAL AFFAIRS

[thechicagocouncil.org/globalag](http://thechicagocouncil.org/globalag)

#GlobalAg

Source: UN Food and Agriculture Organization (FAO)

# ONE BEEF CONCEPT

Cow-Calf



Weaning

Stocker/Backgrounder



Feedyard

U.S. PACKING



Retail / Foodservice

Harvest/Fabrication

Healthy  
Cattle

External  
inputs

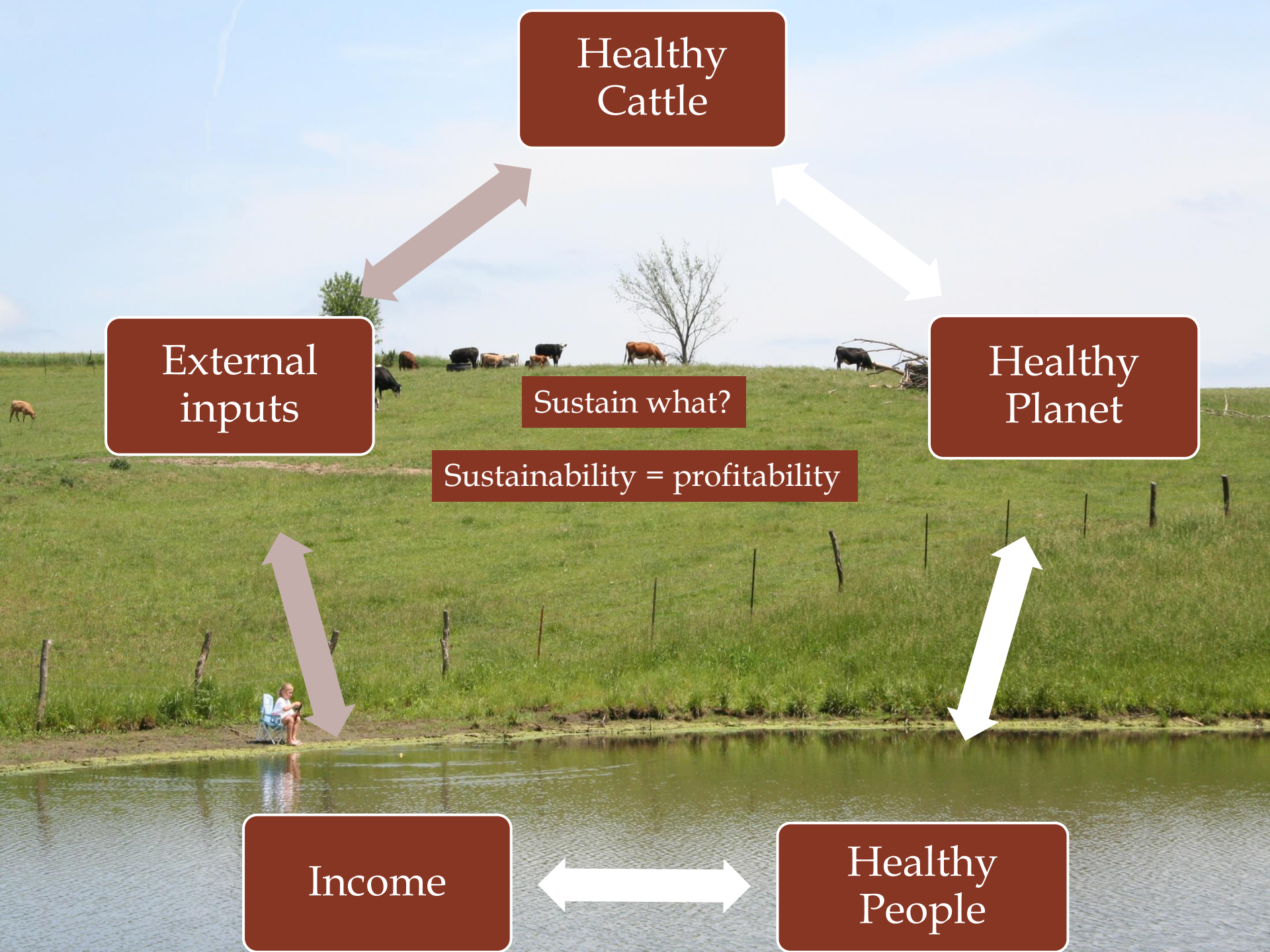
Healthy  
Planet

Sustain what?

Sustainability = profitability

Income

Healthy  
People





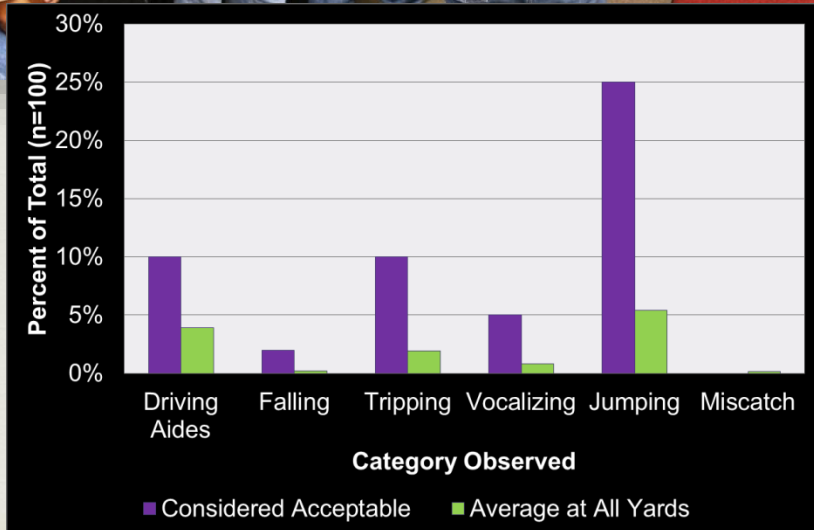


# Animal Welfare

## Summary of Global Consumer Attitudes

*December 2011*

# Loss of trust - Audits



**FEEDYARD  
ASSESSMENT**

**Assessor's Guide**  
REVISED JUNE 2009



Funded by  
The Beef Checkoff

**A SAFE, WHOLESOME AND  
HEALTHY BEEF SUPPLY**

# Creating culture verses checking a box



# Impact of No-Antibiotics Ever / Raised Without Antibiotics Production on Animal Welfare

- ❖ Randall Singer  
Mindwalk Consulting Group, LLC  
University of Minnesota
- ❖ Dan Thomson  
Thomson Livestock Consulting, LLC  
Kansas State University
- ❖ Jennifer Wishnie  
Wishnie Consulting, LLC and  
California Polytechnic University
- ❖ Mallory Gage  
Gage Group Consulting, LLC
- ❖ Leah Porter  
Mindwalk Consulting Group, LLC
- ❖ Amanda Beaudoin  
Mindwalk Consulting Group, LLC  
University of Minnesota

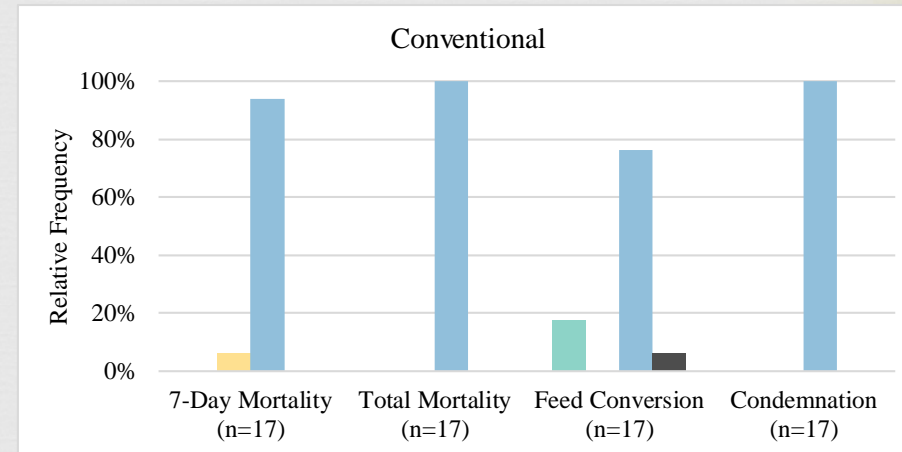
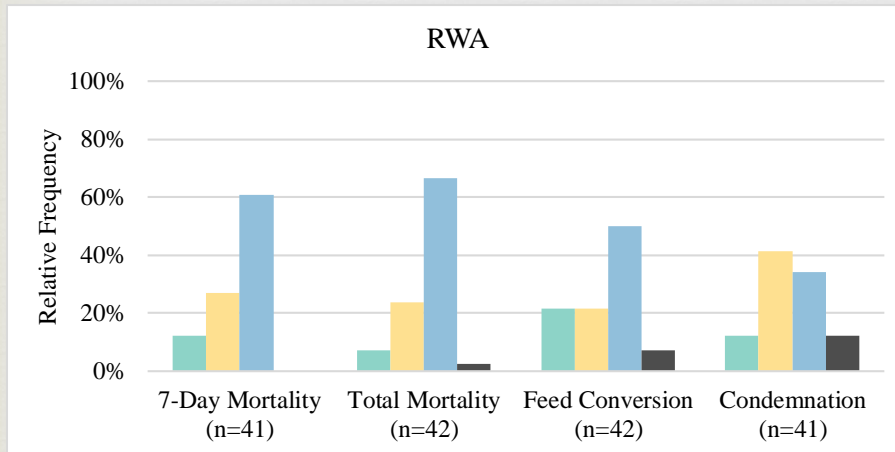
# Characteristics of Participants

	<b>Total</b>	<b>Broiler</b>	<b>Turkey</b>	<b>Swine</b>	<b>Beef</b>	<b>Dairy</b>
<b>Role</b>	<b>565</b>	<b>69</b>	<b>23</b>	<b>148</b>	<b>244</b>	<b>81</b>
Practicing Veterinarian	43.9%	31.9%	52.2%	37.6%	43.4%	64.2%
Research/Academic/Government Veterinarian	5.1%	1.5%	4.4%	4.7%	4.1%	12.4%
Research/Academic/Government Non-veterinarian	1.1%	2.9%	-	0.7%	1.2%	-
Manager/Producer/Grower/Rancher/Owner	37.9%	26.1%	26.1%	47.3%	44.3%	14.8%
Technical Services	7.8%	29.0%	13.0%	5.4%	2.9%	7.4%
Other	4.3%	8.7%	4.4%	4.1%	4.1%	1.2%
<b>Country of Experience</b>						
United States	95.2%	86.8%	95.8%	96.0%	97.5%	92.6%
International	4.8%	13.2%	4.2%	4.1%	2.5%	7.4%
<b>Experience with RWA</b>						
Current Experience	42.7%	63.8%	95.7%	33.8%	36.1%	45.7%
Previous Experience	13.5%	2.9%	-	20.3%	13.5%	13.6%
No Experience	43.9%	33.3%	4.4%	46.0%	50.4%	40.7%

# Factors Contributing to Decision to Raise Animals RWA or Conventionally

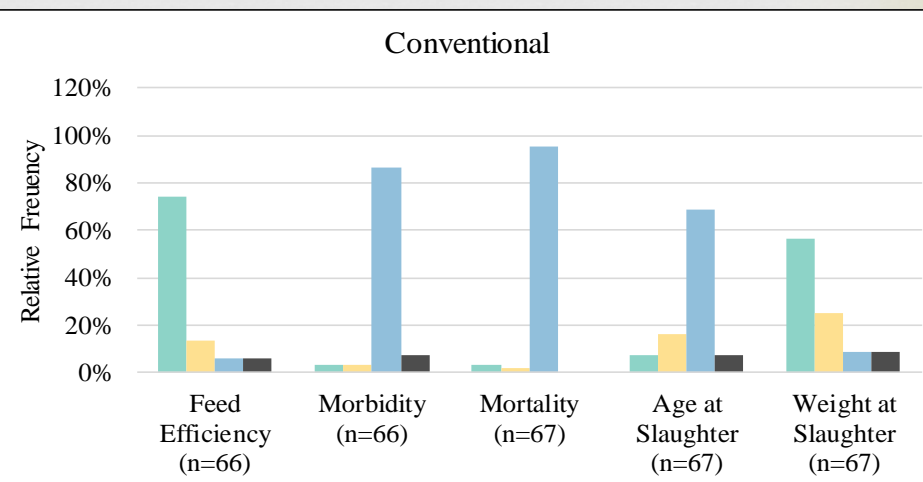
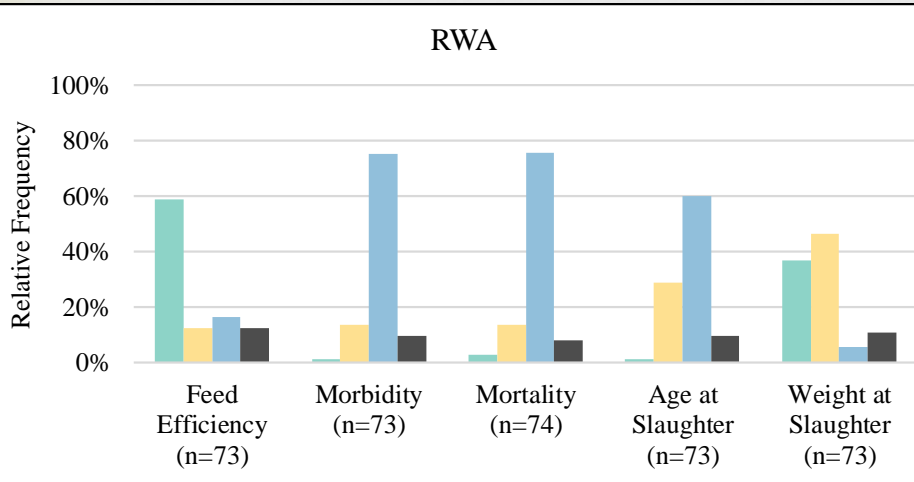
	<b>Broiler</b>	<b>Turkey</b>	<b>Swine</b>	<b>Beef</b>	<b>Dairy</b>
<b>RWA Respondents</b>	<b>42</b>	<b>22</b>	<b>75</b>	<b>116</b>	<b>44</b>
To decrease antibiotic resistance	26.2%	9.1%	13.3%	19.8%	2.3%
To improve animal health and welfare	35.7%	13.6%	13.3%	15.5%	9.1%
To increase sale price of animals/product	26.2%	36.4%	54.7%	38.8%	9.1%
To gain market entry into a retail program	31.0%	54.6%	40.0%	27.6%	9.1%
To fulfill a client/customer request	83.3%	81.8%	69.3%	65.5%	77.3%
To eliminate the use of medically important antibiotics	19.1%	4.6%	8.0%	9.5%	4.6%
<b>Conventional Respondents</b>	<b>17</b>	<b>1</b>	<b>67</b>	<b>121</b>	<b>31</b>
Not profitable	29.4%	-	28.4%	20.7%	6.5%
Concerned about negative impacts to animal health and welfare	94.1%	-	76.1%	65.3%	64.5%
No market pressure	17.7%	-	31.3%	25.6%	19.4%
Not a sustainable consumer trend	41.2%	-	25.4%	12.4%	9.7%
Food safety concerns	17.7%	-	28.4%	8.3%	19.4%
Already eliminated the use of medically important antibiotics	5.9%	-	22.4%	5.0%	9.7%
Already raising animals in a responsible use program	58.8%	-	73.1%	56.2%	71.0%

# Impacts on Production and Management Broiler



■ Decreased   
 ■ No Change   
 ■ Increased   
 ■ Not sure

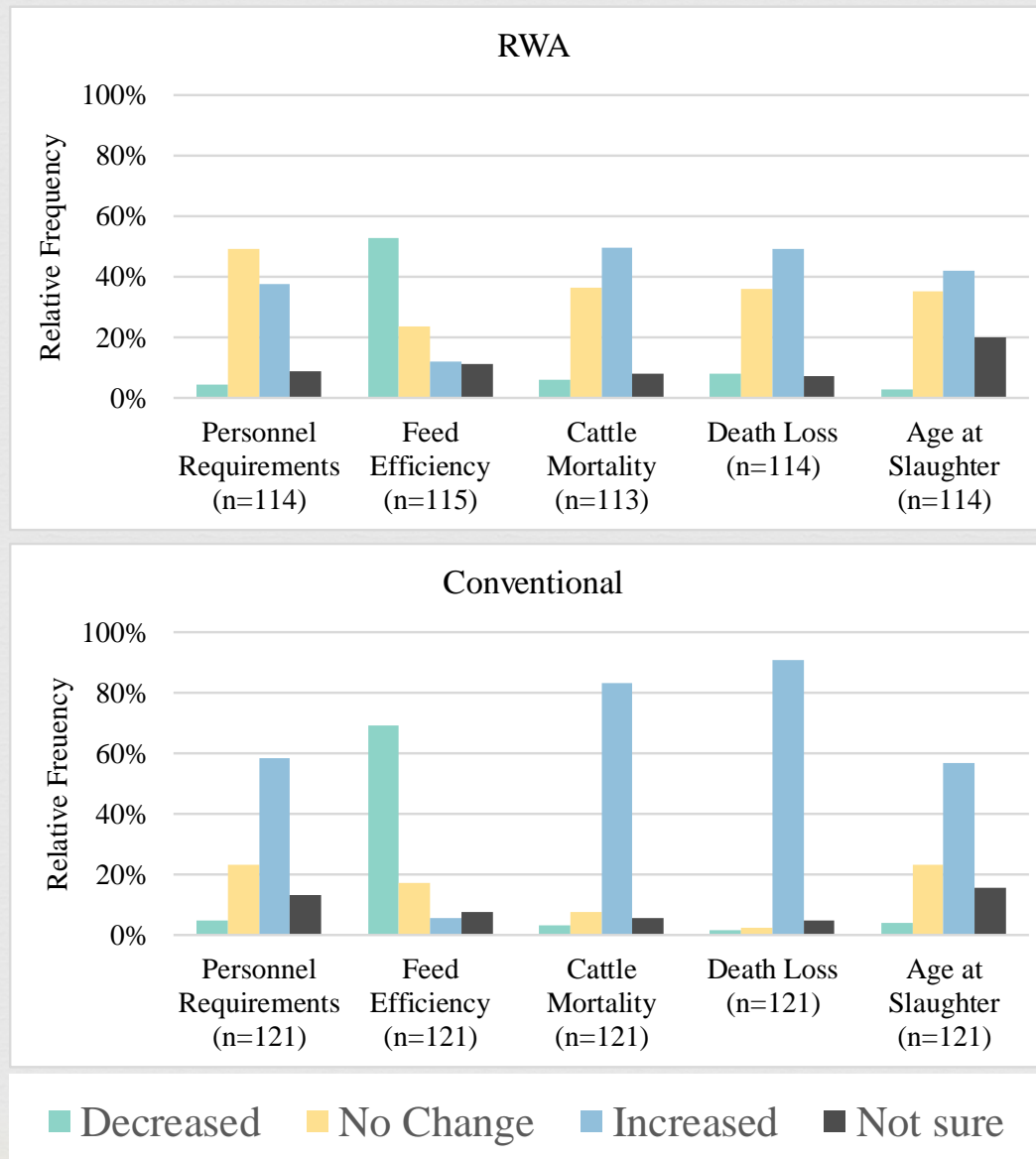
# Impacts on Production and Management Swine



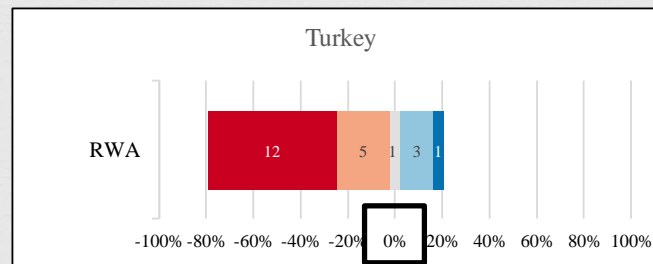
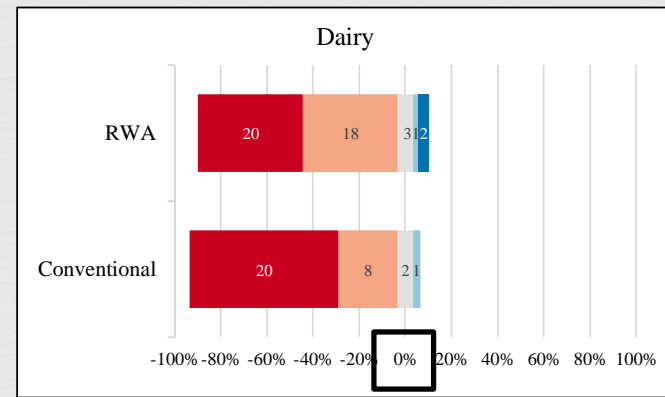
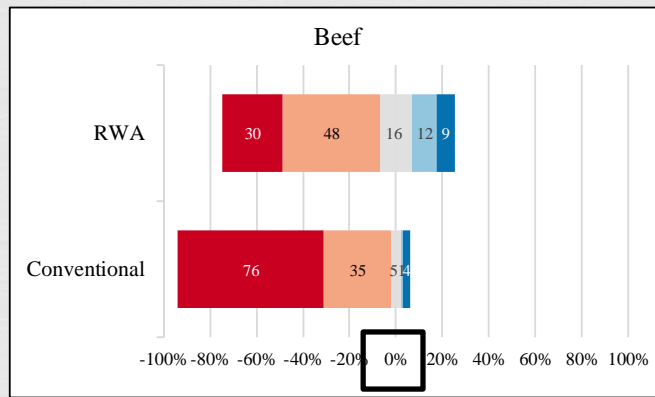
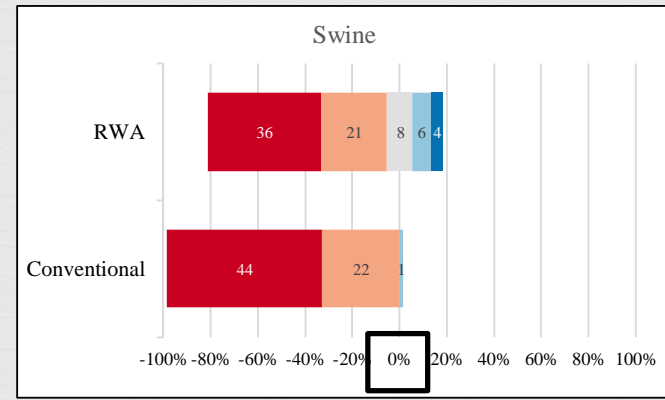
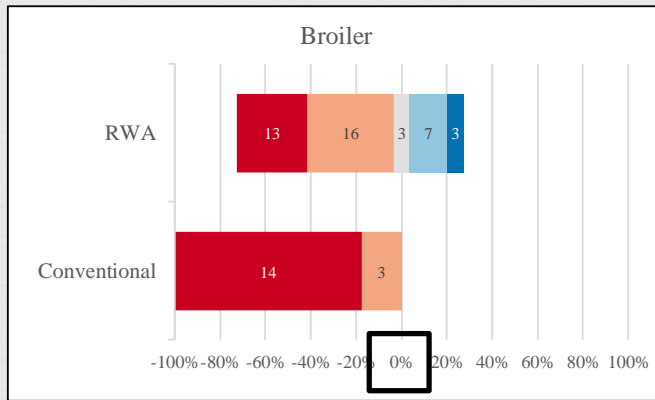
■ Decreased   
 ■ No Change   
 ■ Increased   
 ■ Not sure



# Impacts on Production and Management Beef

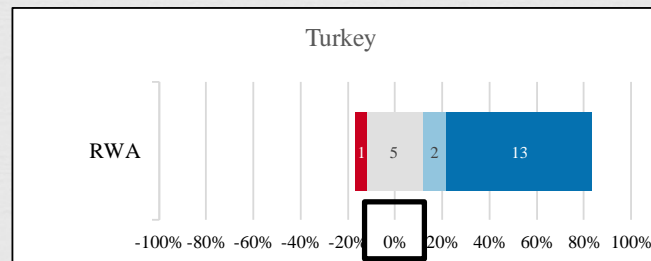
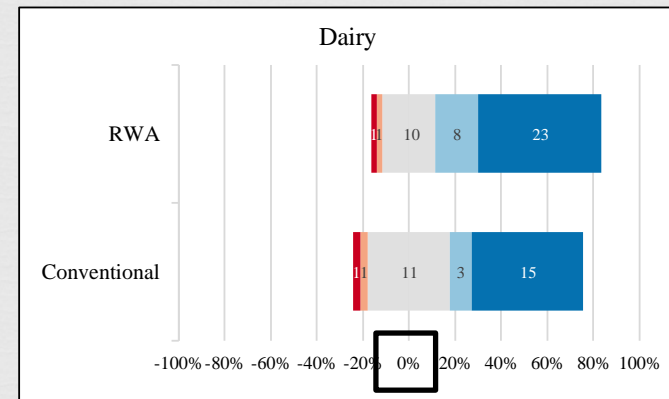
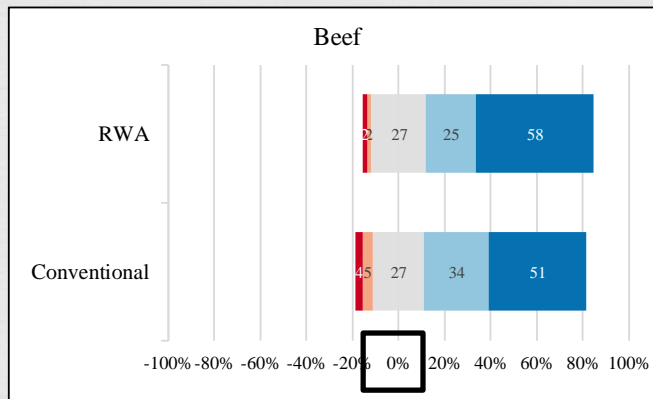
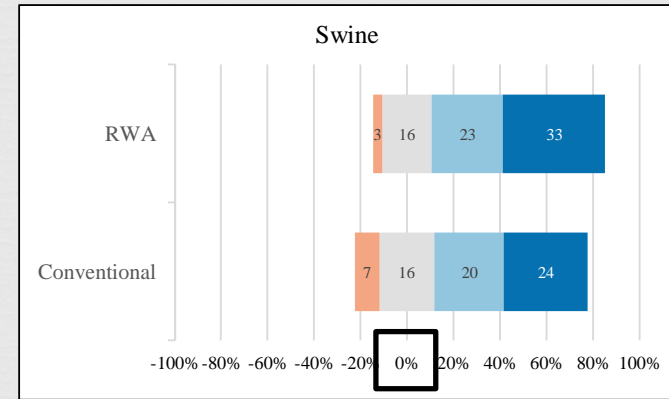
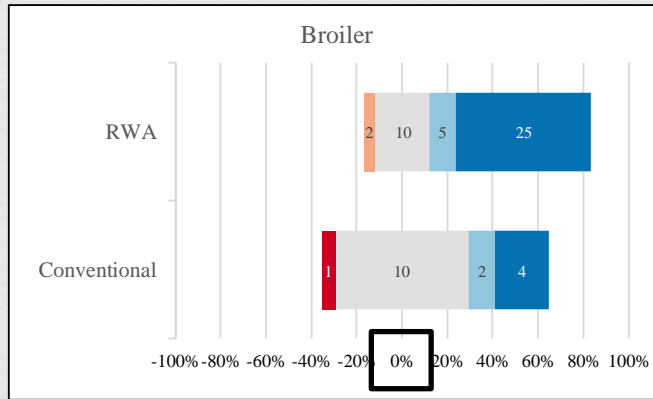


# Health & Welfare – What Respondent Believes



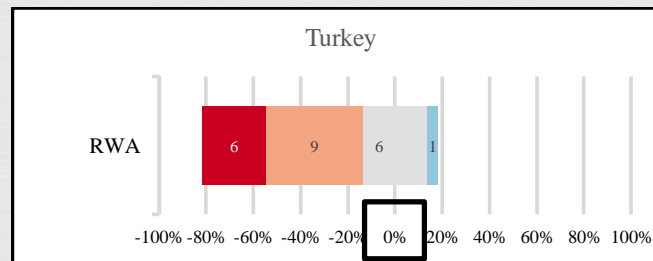
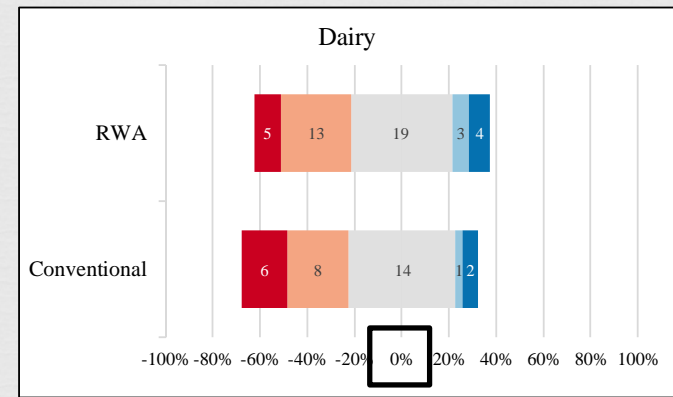
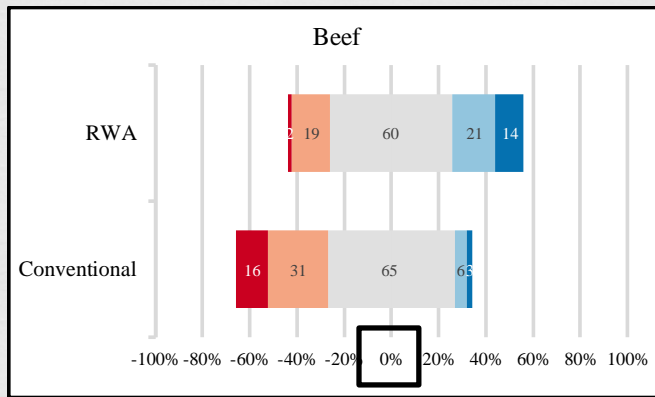
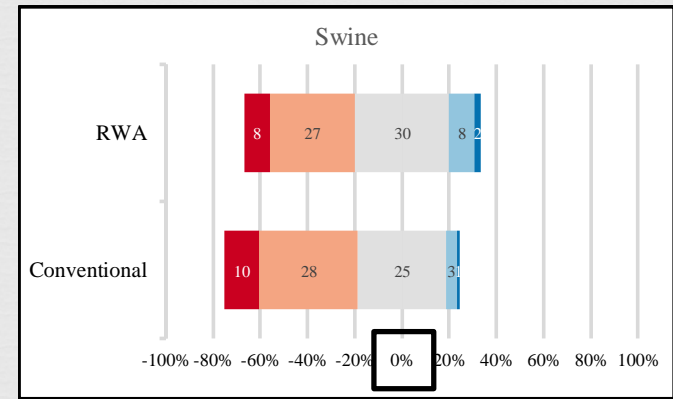
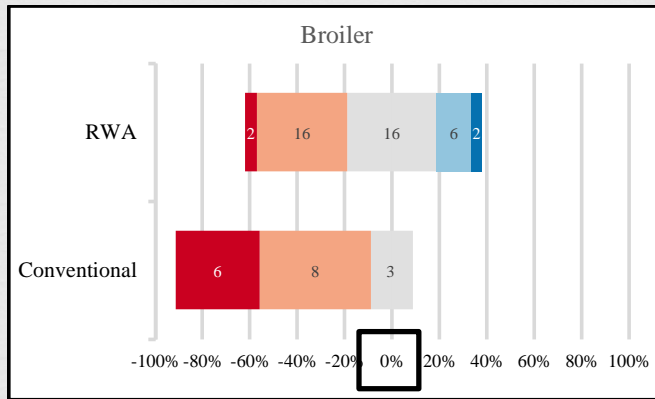
■ Significantly Worsen   
 ■ Slightly Worsen   
 ■ No Impact   
 ■ Slightly Improve   
 ■ Significantly Improve

# Health & Welfare – What Retailer Believes



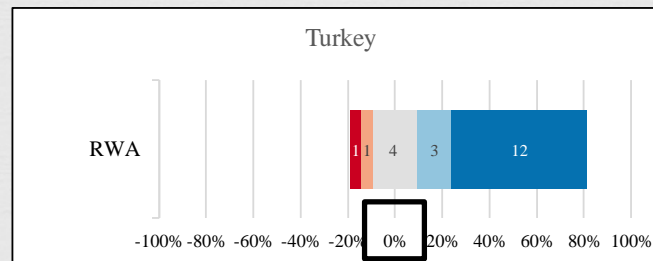
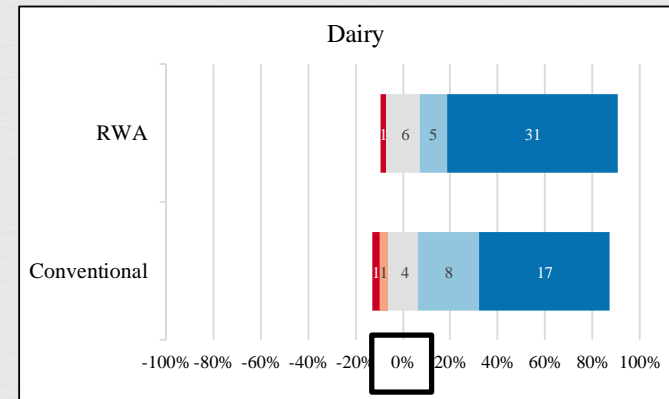
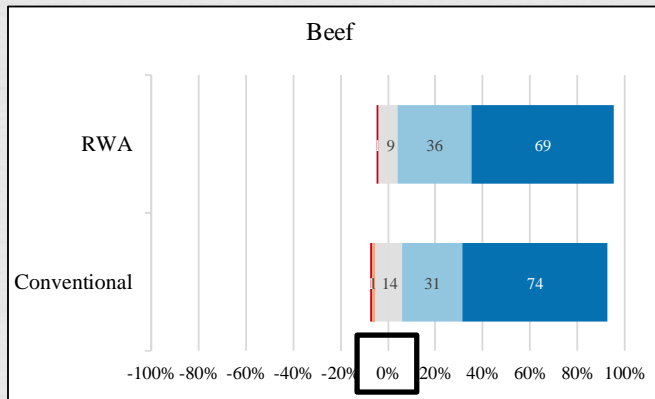
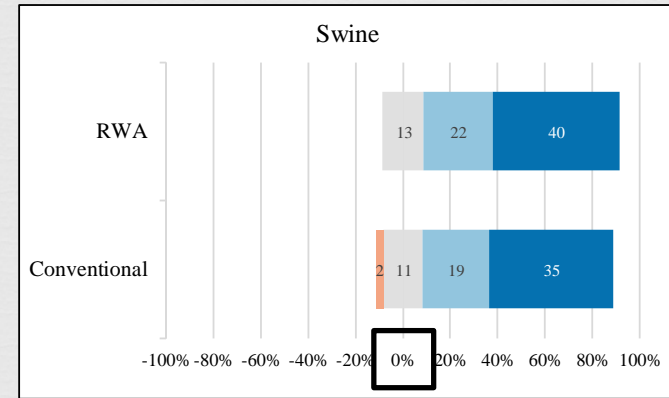
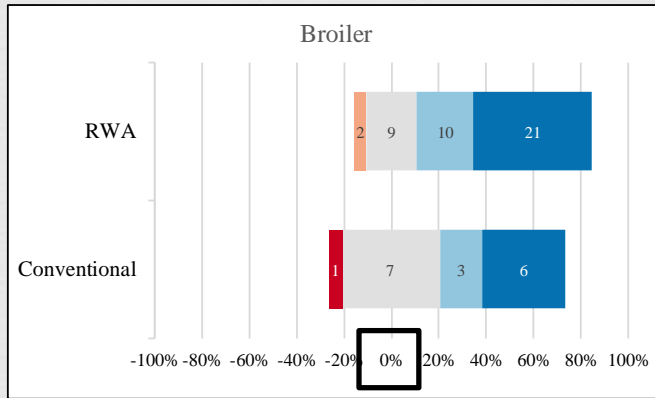
■ Significantly Worsen    
 ■ Slightly Worsen    
 ■ No Impact    
 ■ Slightly Improve    
 ■ Significantly Improve

# Food Safety – What Respondent Believes



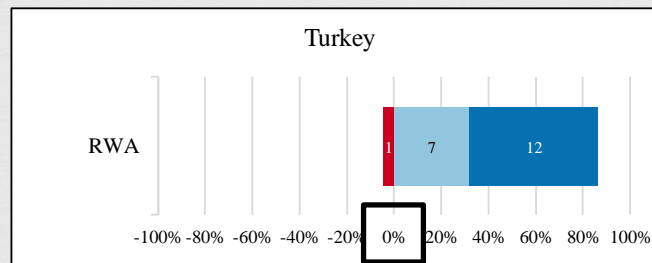
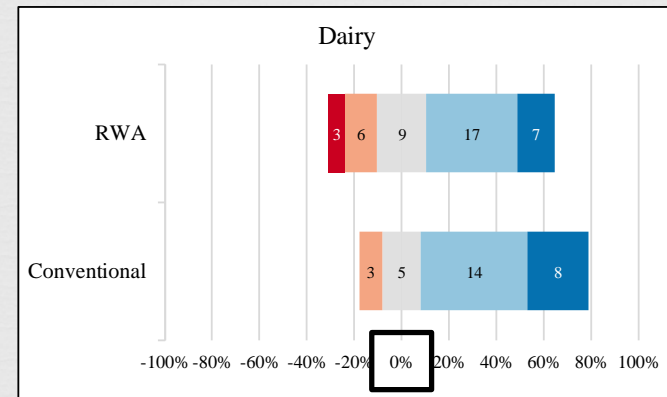
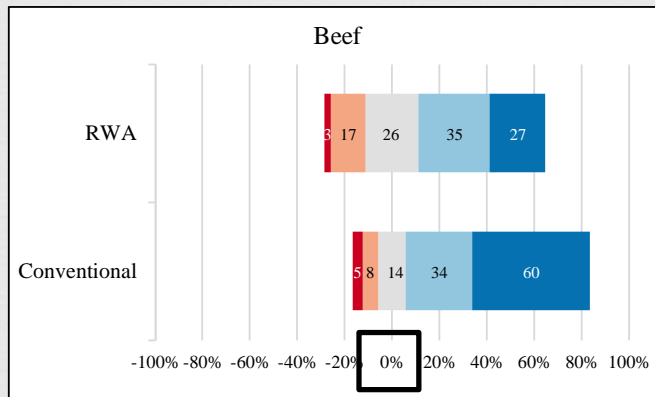
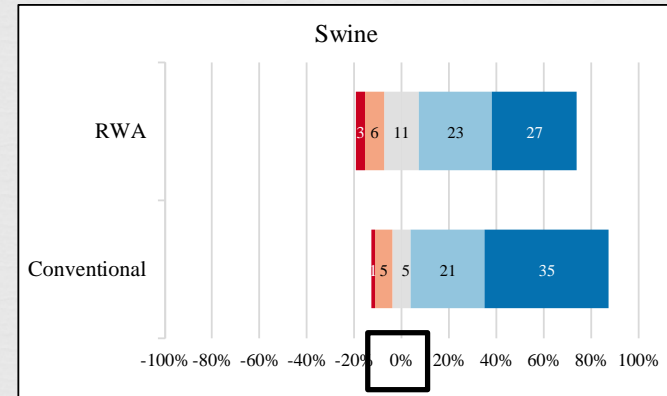
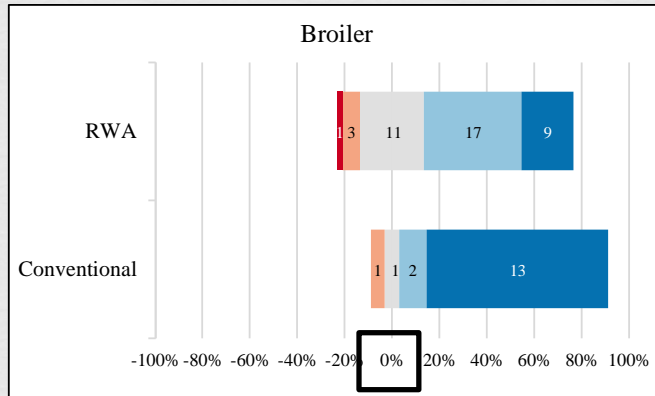
■ Significantly Worsen    
 ■ Slightly Worsen    
 ■ No Impact    
 ■ Slightly Improve    
 ■ Significantly Improve

# Food Safety – What Retailer Believes



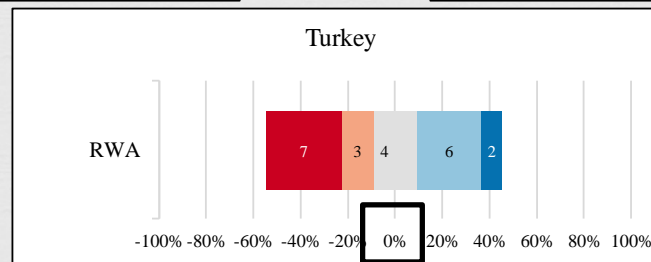
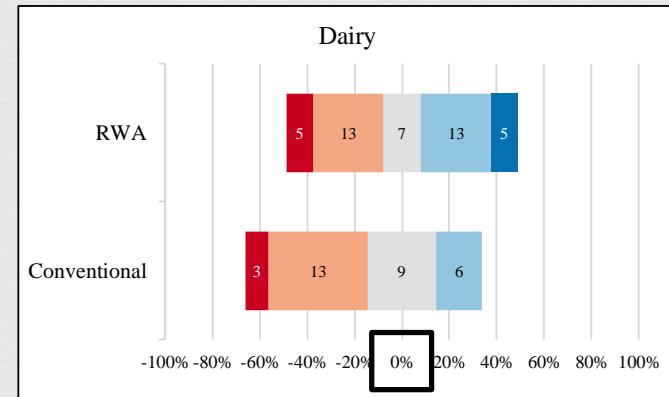
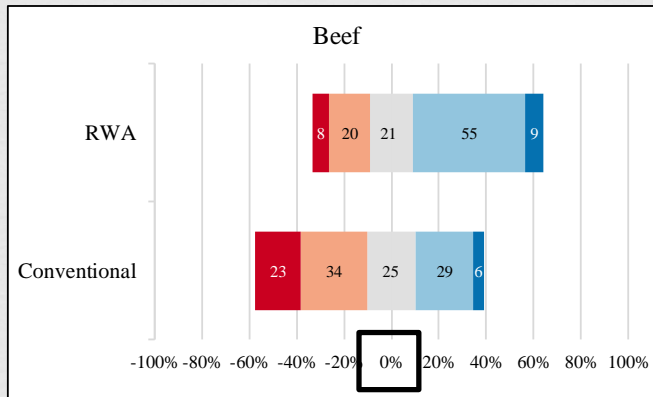
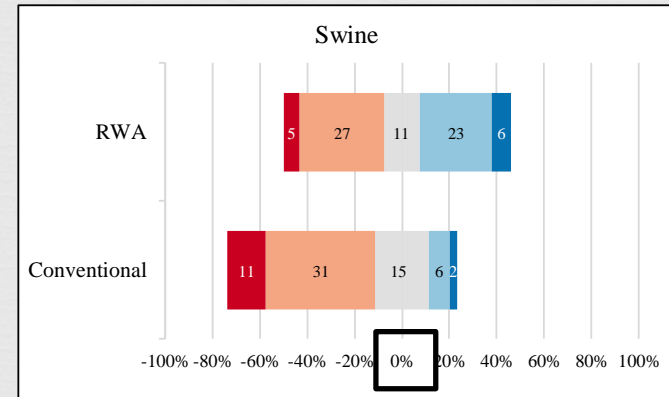
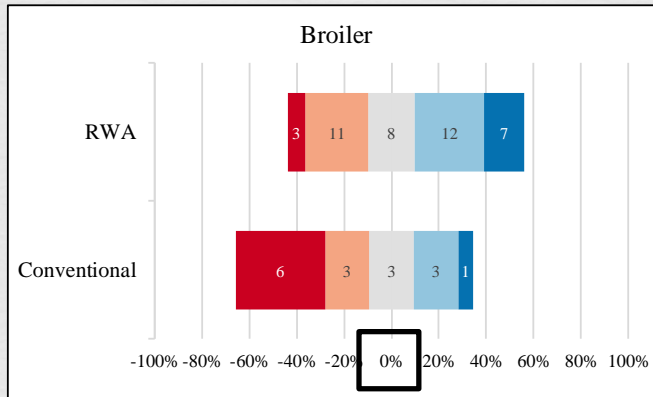
■ Significantly Worsen    
 ■ Slightly Worsen    
 ■ No Impact    
 ■ Slightly Improve    
 ■ Significantly Improve

# Antibiotic use in my animals does not cause problems in humans



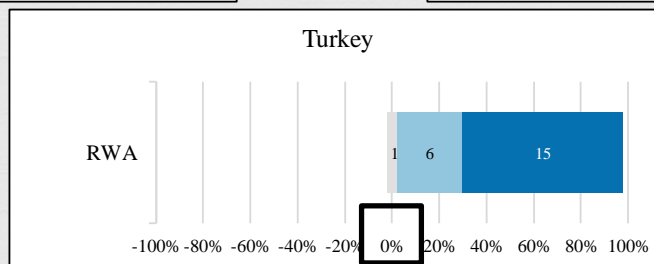
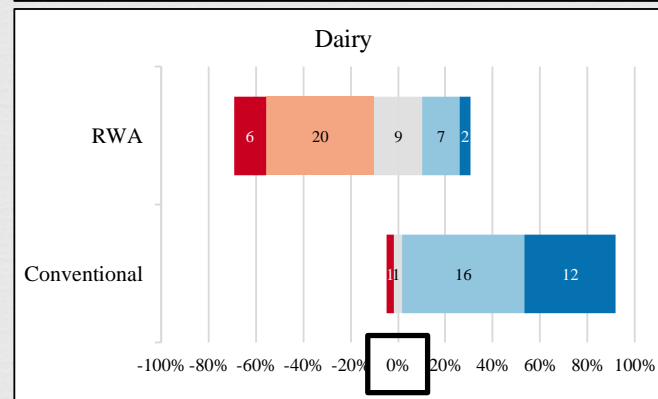
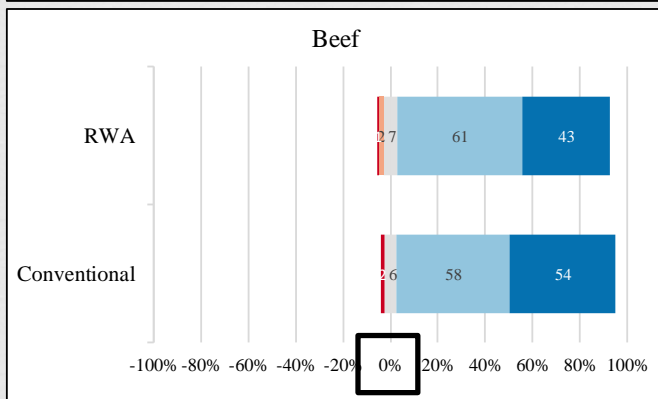
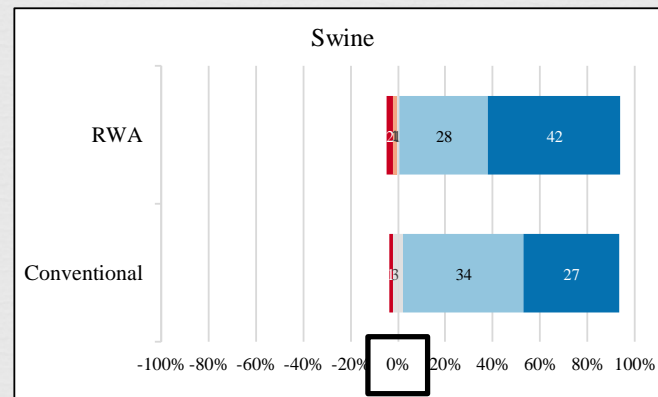
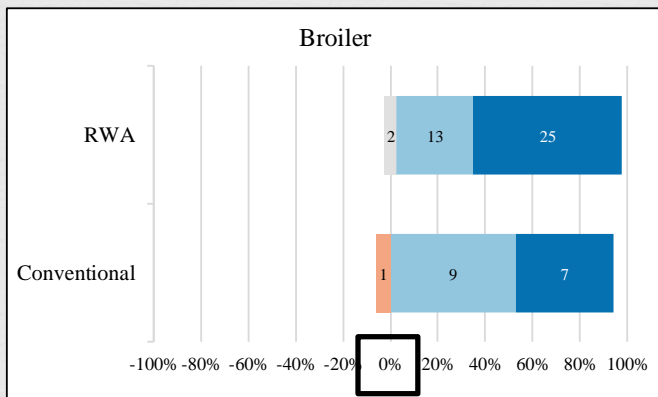
■ Strongly Disagree    
 ■ Disagree    
 ■ Neutral    
 ■ Agree    
 ■ Strongly Agree

# Antibiotic use in my animals will make it harder to treat infections in my animals in the future



■ Strongly Disagree    
 ■ Disagree    
 ■ Neutral    
 ■ Agree    
 ■ Strongly Agree

# I would be willing to treat my animals with antibiotic alternatives if they were equally effective



■ Strongly Disagree

■ Disagree

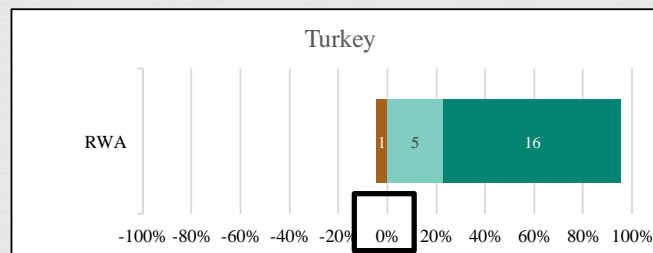
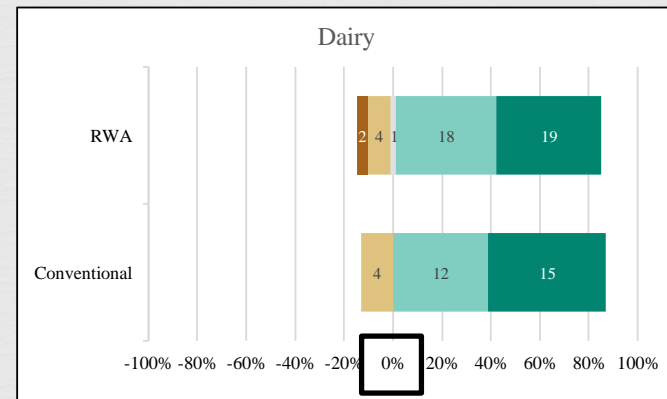
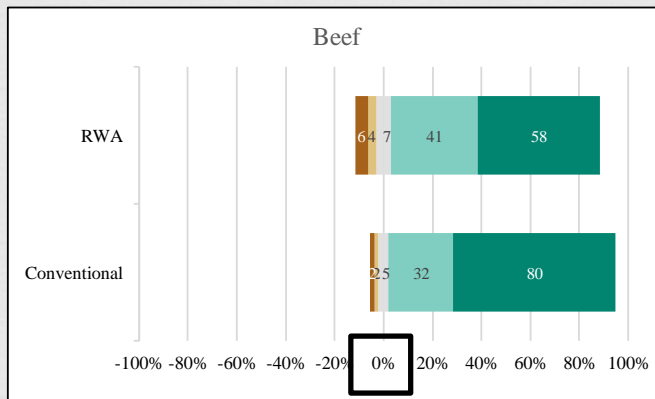
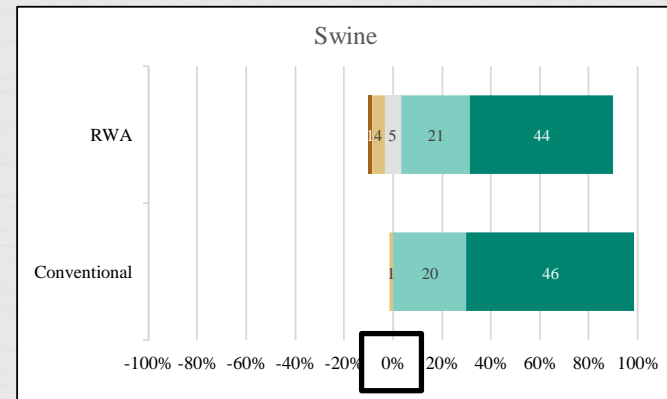
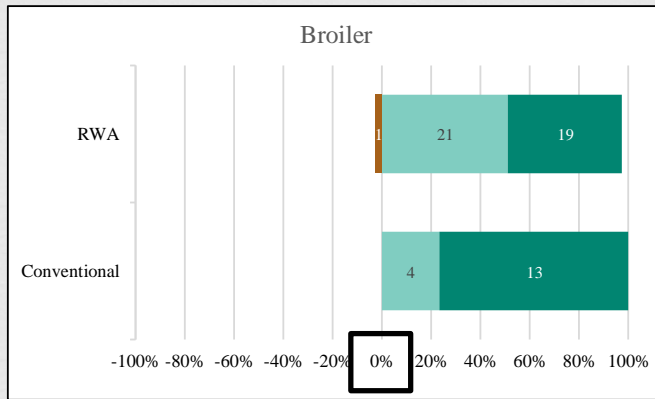
■ Neutral

■ Agree

■ Strongly Agree

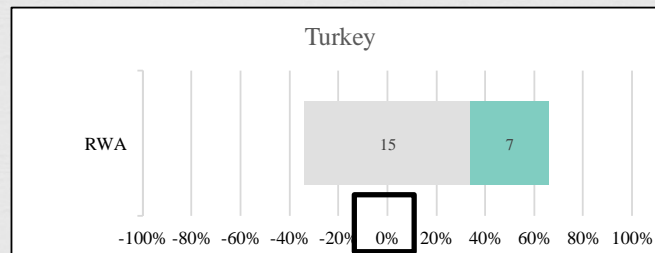
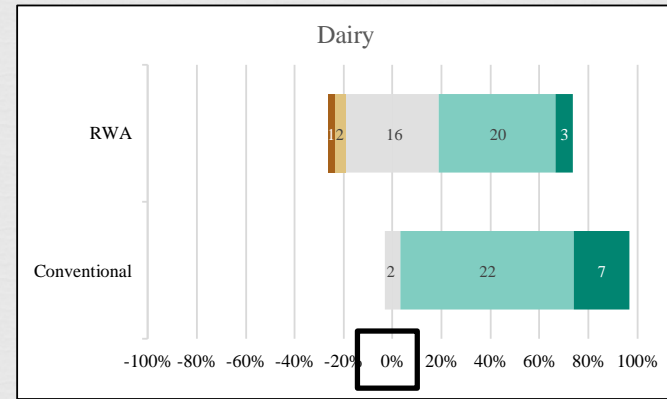
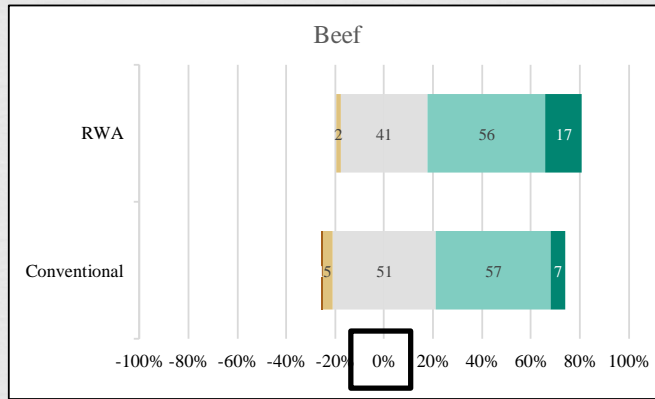
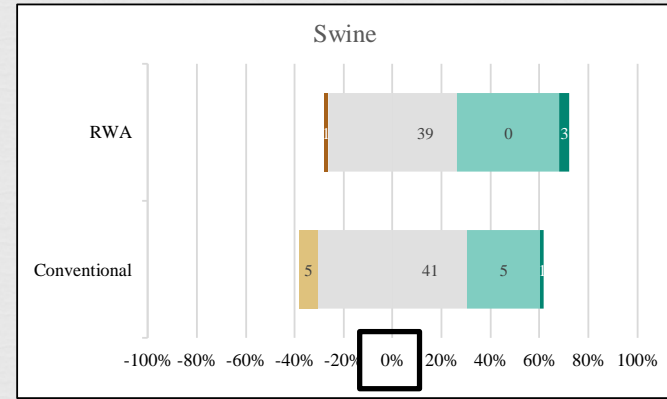
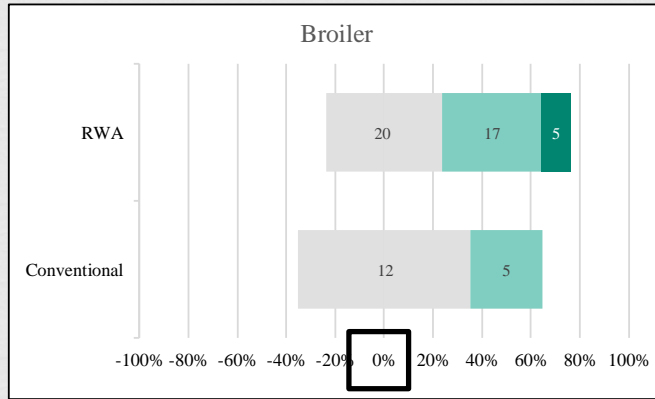


# RWA Impacts on Cost



■ Significantly Decrease   
 ■ Slightly Decrease   
 ■ No Impact   
 ■ Slightly Increase   
 ■ Significantly Increase

# RWA Impacts on Demand



■ Significantly Decrease   
 ■ Slightly Decrease   
 ■ No Impact   
 ■ Slightly Increase   
 ■ Significantly Increase

# Survey Conclusions

- Across all surveyed commodities:
  - “to fulfill a client/customer request”
  - “Concerned about negative impacts to animal health and welfare”
    - Most already in a Responsible Antibiotic Use program
  - Huge discrepancy between what the Respondent believes and what the Customer / Retailer believes
  - Across all surveyed commodities, respondents agreed with antibiotic use does not cause problems in humans and disagreed that use leads to human infections that are more difficult to treat
  - RWA will increase the cost of food

# Lister et al. 2017

## *Journal of Food Products Marketing*

❧ “Social Issues” less important in purchasing decisions than:

❧ Safety

❧ Freshness

❧ Taste

❧ Nutrition

❧ Health

❧ Price

# Lister et al. (In press)

Importance Shares	
	<i>Ground Beef</i>
Safety	21%
Freshness	20%
Taste	12%
Health	12%
Nutrition	8%
Price	7%
Hormone Free/Antibiotic Free	7%
Animal Welfare	5%
Origin/Traceability	3%
Environmental Impact	3%
Convenience	2%

41%

18%

# Lister et al., 2017

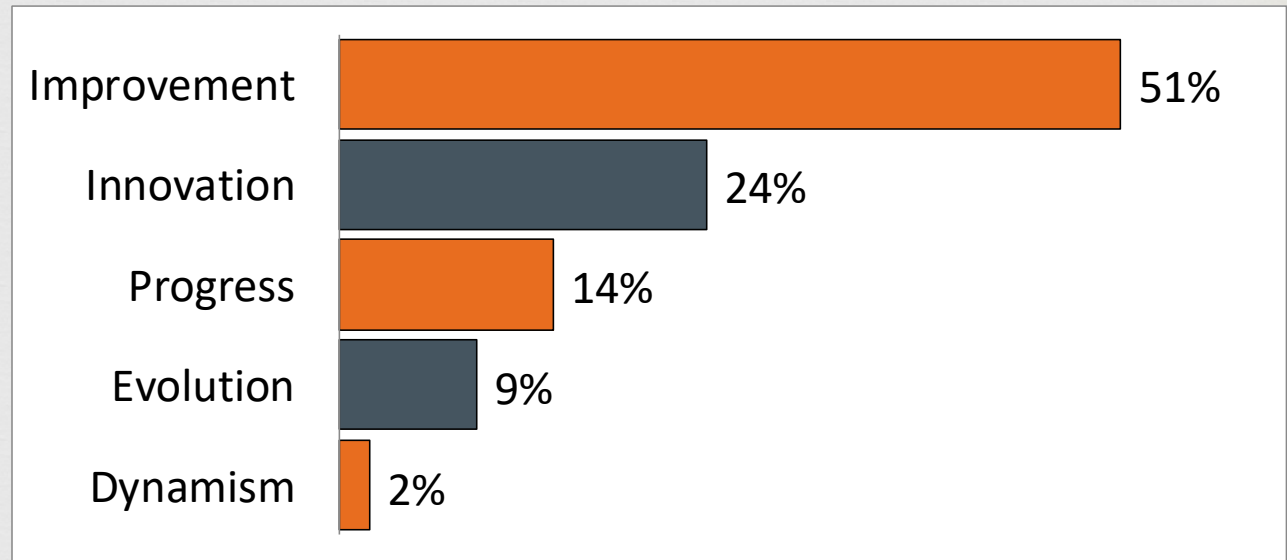
➤ “Social Issues” < safety, freshness, taste, price...

Importance Shares by Product				
	<i>Ground Beef</i>	<i>Beef Steak</i>	<i>Chicken Breast</i>	<i>Milk</i>
Safety & Freshness	41%	37%	39%	38%
Taste, Health, Nutrition, Price, Conv	41%	47%	44%	45%
<b>HF/AF, AW, Origin/Tr, Env</b>	<b>18%</b>	<b>16%</b>	<b>17%</b>	<b>17%</b>

# Consumers want continuous improvement



*Which would you most like to see in how farmers and ranchers grow and raise food for tomorrow?*



# So, the questions we need to answer....

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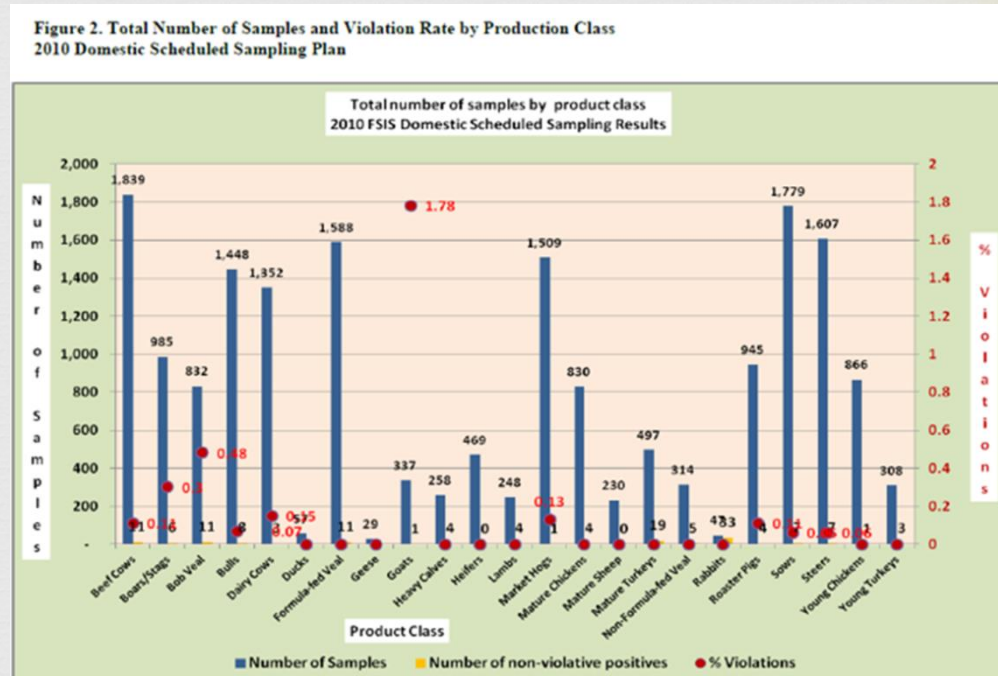
- ❧ What is the risk?
  - ❧ Is this the biggest problem or the easiest solution to marketing?
- ❧ Are there alternatives?
  - ❧ That don't cause AB resistance
  - ❧ Should we have solutions first?
- ❧ What are the consequences?



# Carcasses with no antibiotic residue by production class in 2010



- ☞ Beef cows = 99.89%,
- ☞ Dairy cows = 99.85%,
- ☞ Market Steers = 99.94%,
- ☞ Market Heifers = 100.0%,
- ☞ Market Hogs = 99.87%,
- ☞ Poultry all classes = 100.0%



(FSIS, 2012)

# ABR from cattle to humans

All companies along the way go above and beyond what is regulated



VCPR  
FDA  
Juris prudence

USDA  
Testing



USDA  
FSIS



Inspections  
State DA

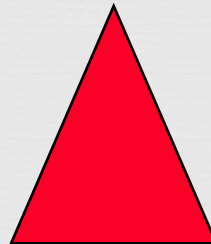






**Rich**

**Impoverished**



“From these preliminary results, Caucasians that are well educated with higher incomes are the most likely market sector to focus marketing organic vegetables to.”

**During the course  
of this presentation...**



**60 babies**  
will be born in the U.S.

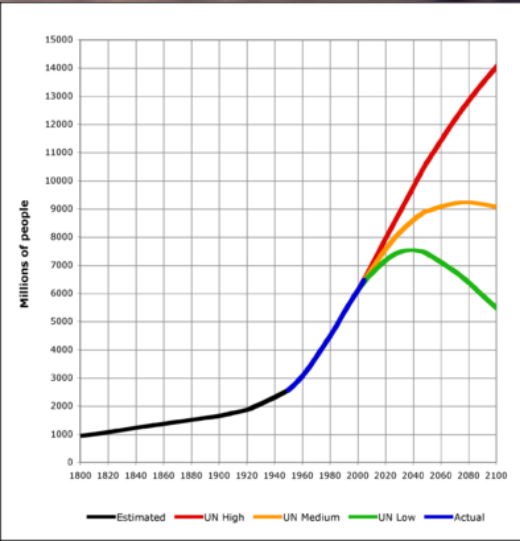
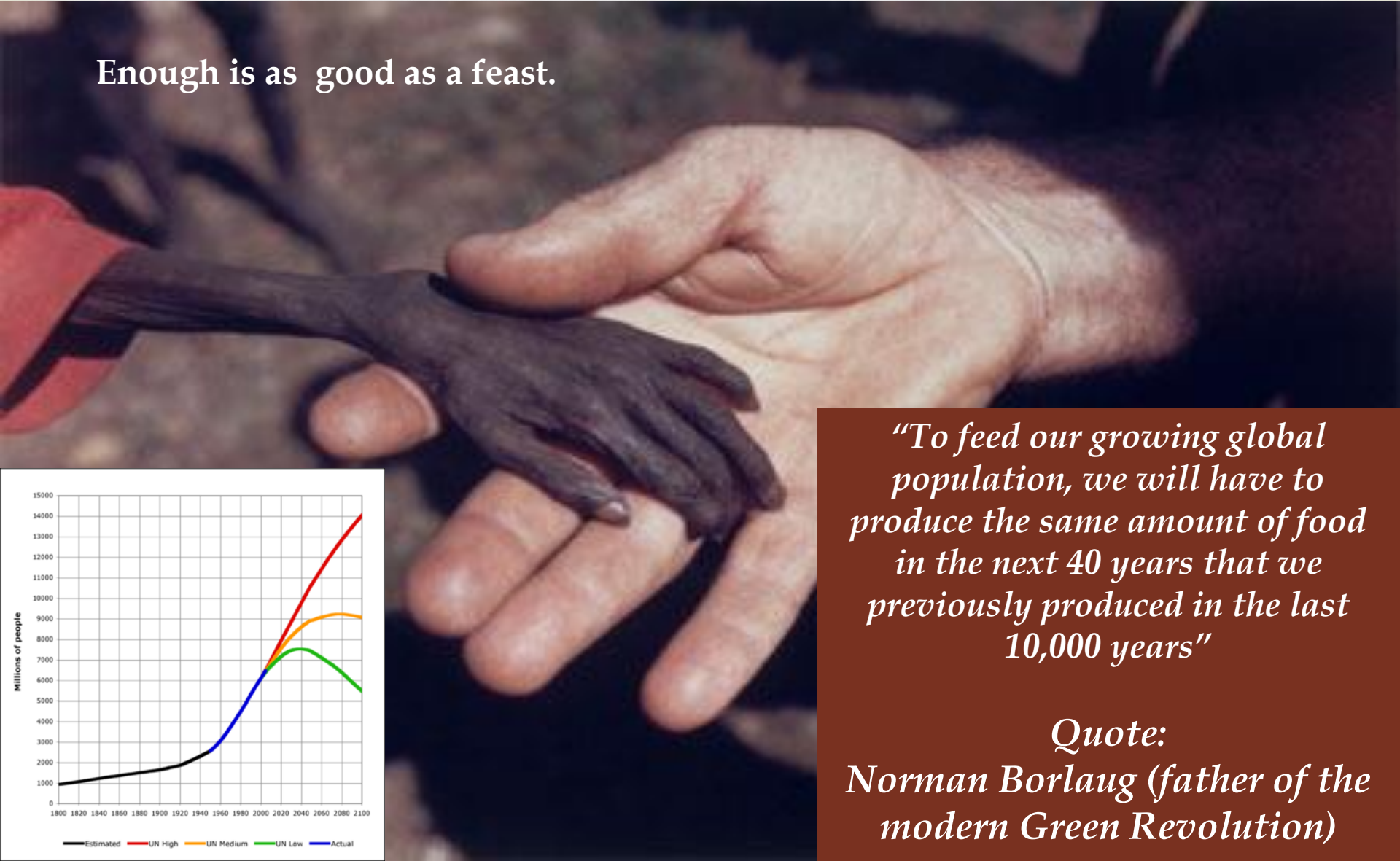
**244 babies**  
will be born in China

**351 babies**  
will be born in India



# Poverty

Enough is as good as a feast.



*“To feed our growing global population, we will have to produce the same amount of food in the next 40 years that we previously produced in the last 10,000 years”*

*Quote:  
Norman Borlaug (father of the modern Green Revolution)*

# Poverty in the U.S.



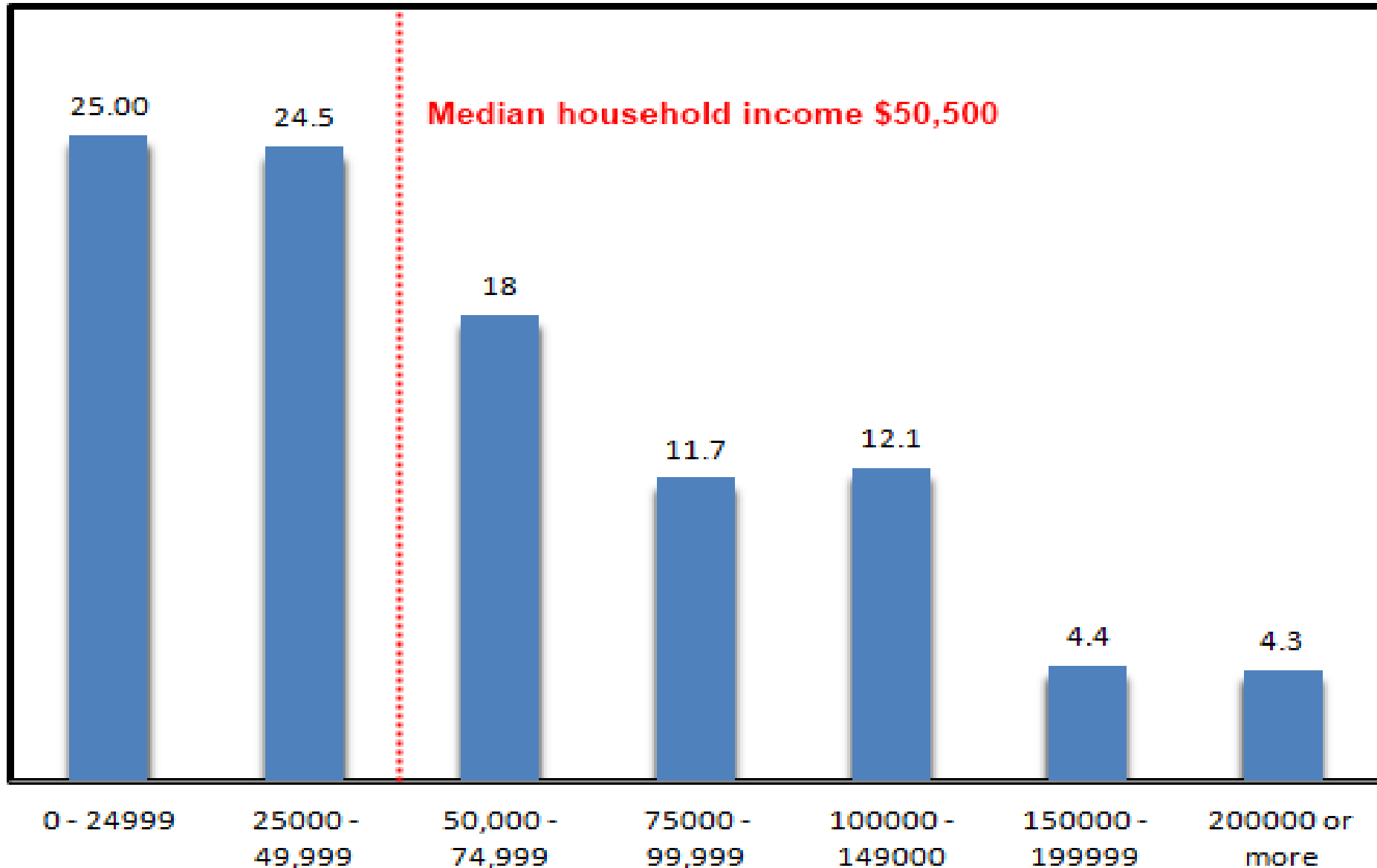
- Established by tripling the inflation-adjusted cost of a minimum food diet in 1963
- Adjusted for number of people and age

Household Size	100%	133%	150%	200%	250%	300%	400%
1	\$11,770	\$15,654	\$17,655	\$23,540	\$29,425	\$35,310	\$47,080
2	15,930	21,187	23,895	31,860	39,825	47,790	63,720
3	20,090	26,720	30,135	40,180	50,225	60,270	80,360
4	24,250	32,253	36,375	48,500	60,625	72,750	97,000
5	28,410	37,785	42,615	56,820	71,025	85,230	113,640
6	32,570	43,318	48,855	65,140	81,425	97,710	130,280
7	36,730	48,851	55,095	73,460	91,825	110,190	146,920
8	40,890	54,384	61,335	81,780	102,225	122,670	163,560

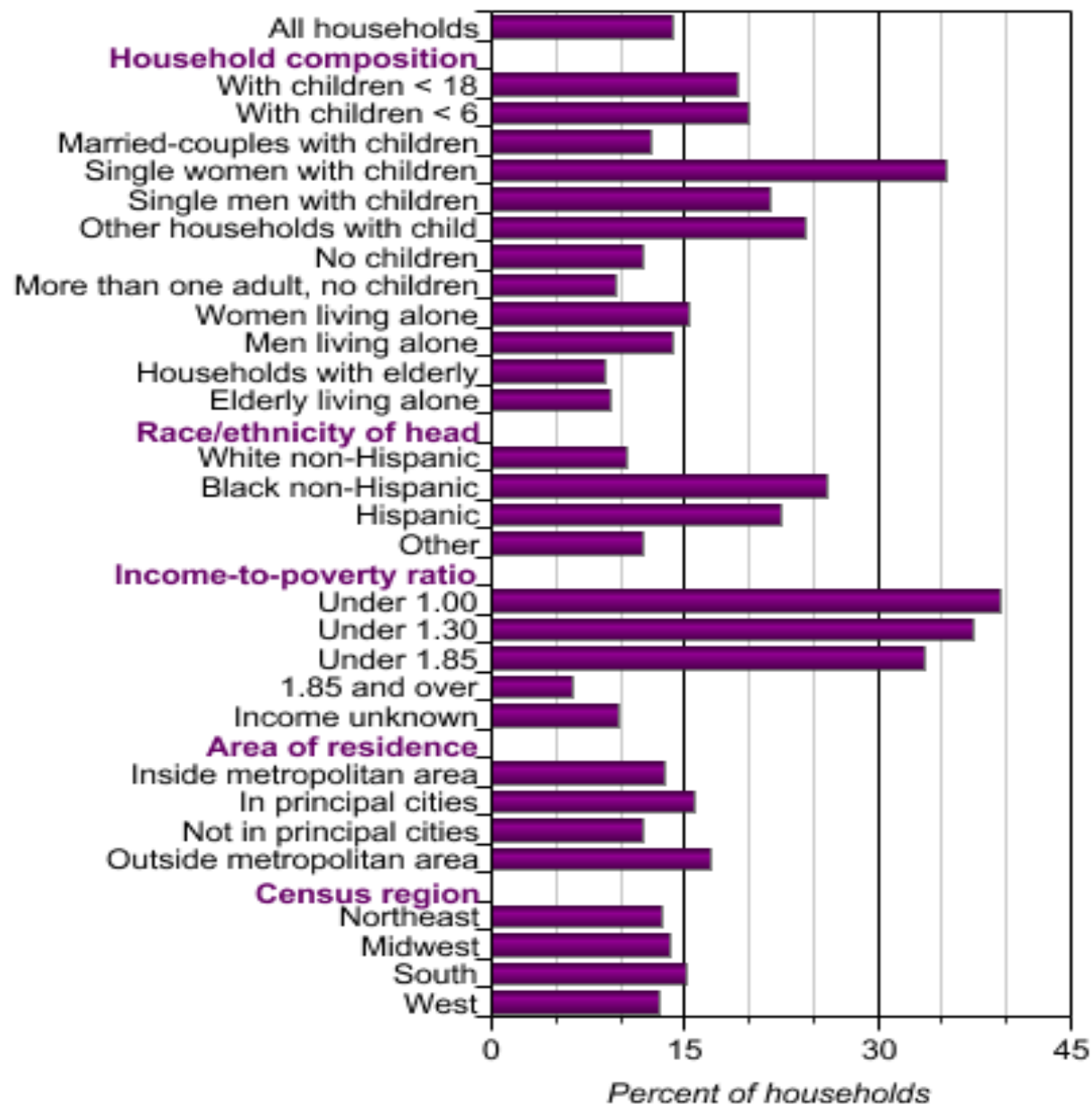


# Percent of US Households - Income level

mybudget360.com

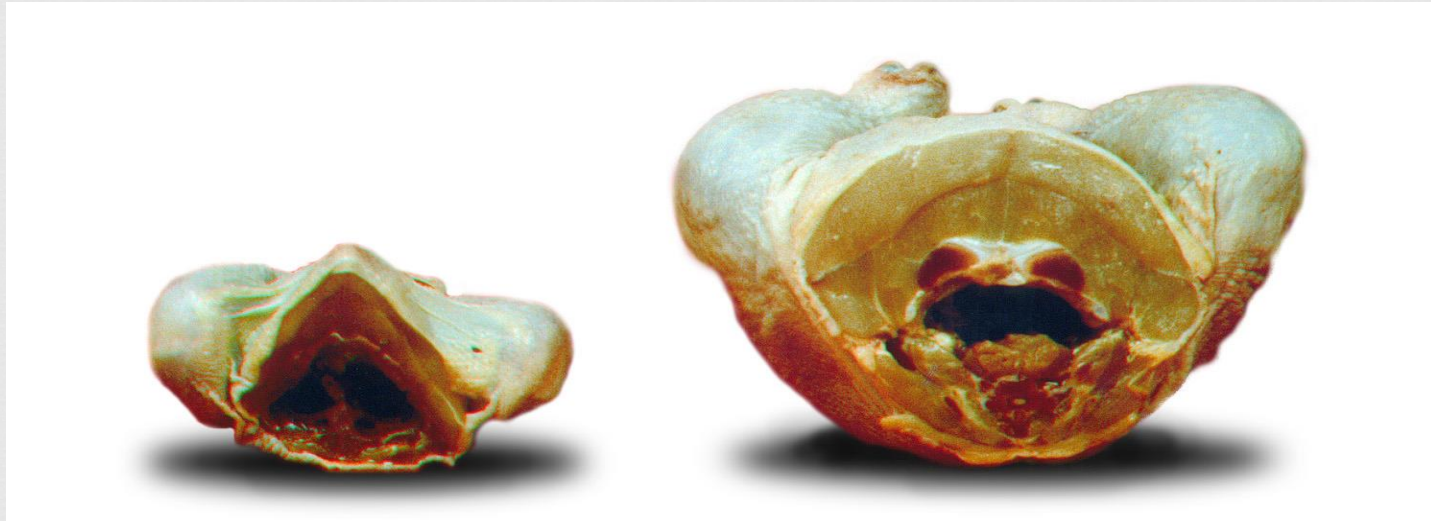


## Prevalence of food insecurity, 2014



Source: Calculated by ERS using data from the December 2014 Current Population Survey Food Security Supplement.

# Explain this to single mom with two children to feed



Year : 1957

Time to market: 120 days

Average Weight: 1.4 kgs

Average Conversion : >3

Year : 2009

Time to market: 42 days

Average Weight: 2.6 kgs

Average Conversion : 1.7

# There's enough on this planet for everyone's needs but not for everyone's greed" – Gandhi



- ❧ *"If we can spend the early decades of the 21st century finding approaches that meet the needs of the poor in ways that generate profits and recognition for business, we will have found a sustainable way to reduce poverty in the world." – Bill Gates*
- ❧ It is hard to get a starving person to worry about sustainability for the next 100 years.
- ❧ Conventionally raised food is the same as organic or naturally raised food in safety, nutrition and wholesomeness.
- ❧ Do we have a problem?
- ❧ Don't just do something, think.

We need strong, humane leadership in our country to not undo all the good we have done for our people.

