

# Demand Drivers of Food and Agribusiness to 2030

Allan Gray  
Purdue University



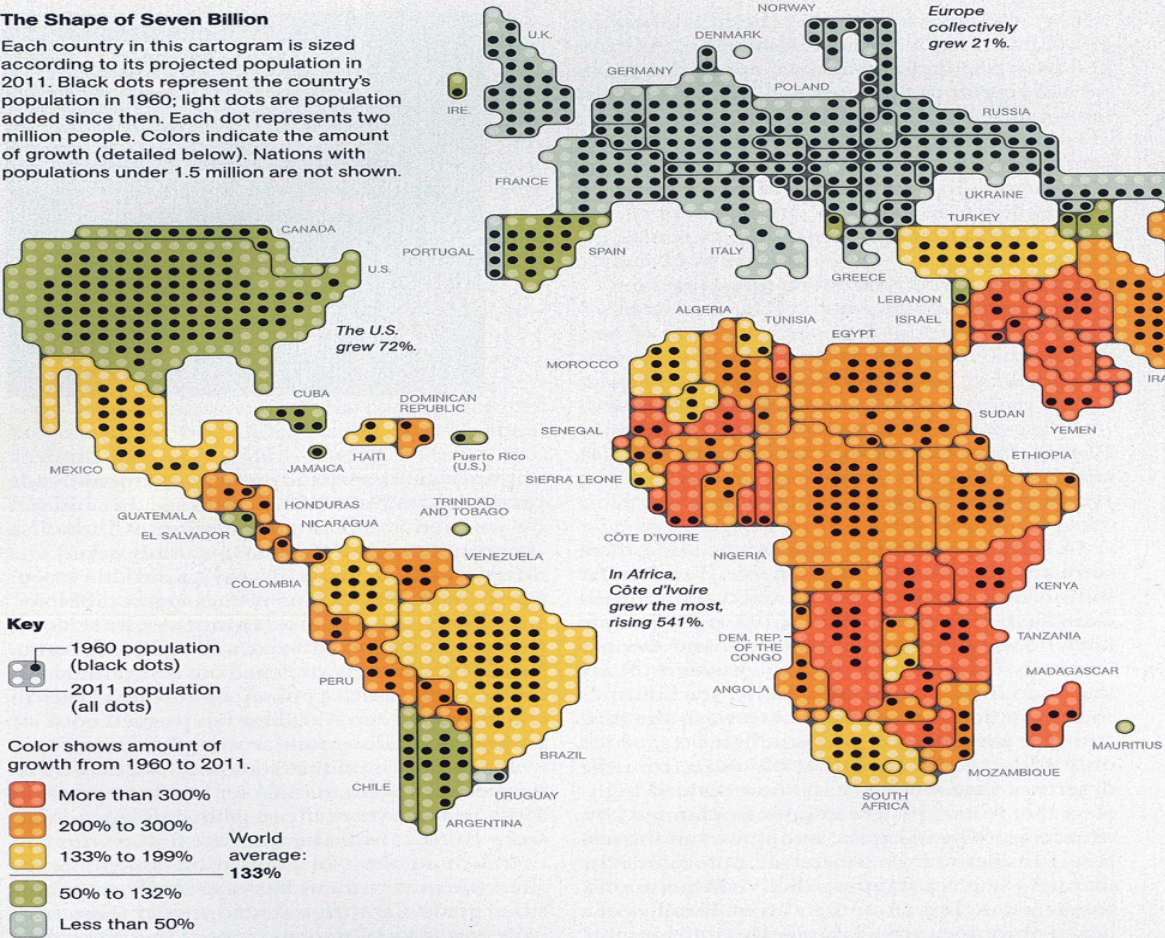
# POPULATION

The less developed world will account

for more than 95 percent of future population growth.

## The Shape of Seven Billion

Each country in this cartogram is sized according to its projected population in 2011. Black dots represent the country's population in 1960; light dots are population added since then. Each dot represents two million people. Colors indicate the amount of growth (detailed below). Nations with populations under 1.5 million are not shown.



**Key**

- 1960 population (black dots)
- 2011 population (all dots)

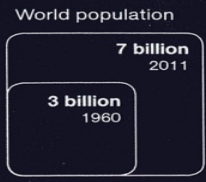
Color shows amount of growth from 1960 to 2011.

- More than 300%
- 200% to 300%
- 133% to 199%
- 50% to 132%
- Less than 50%

World average: **133%**

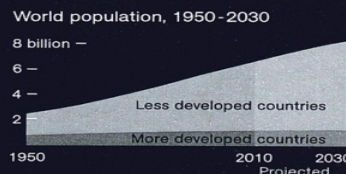
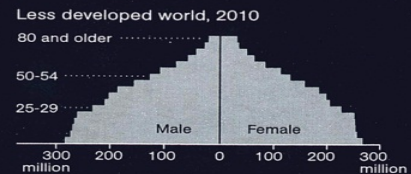
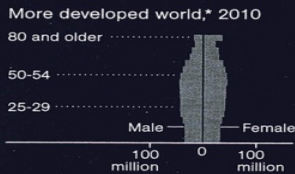
**There are more than twice as many people on the planet today as there were in 1960.**

World population has never doubled this quickly before, but it is unlikely to double again. The era of explosive growth is expected to end by 2050, at more than 9 billion people, with an estimated range of 8 to 10.5 billion people.



## Youthful momentum

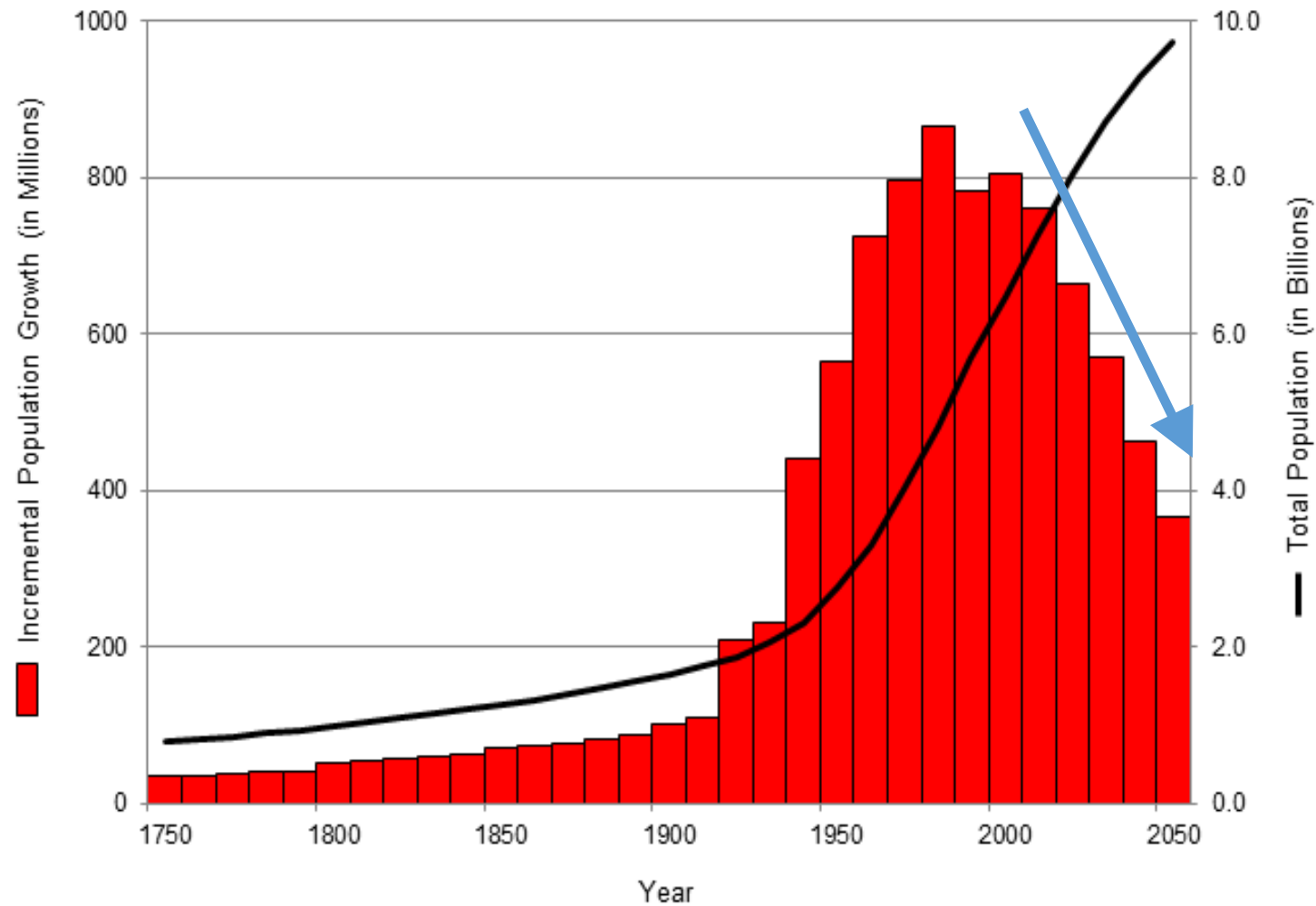
Age-distribution pyramids (right) show why the overwhelmingly young populations of developing countries will produce almost all the future population increase. Even with falling birthrates, the world's population is still growing by about 80 million people a year.



JOHN TOMANIO, NGM STAFF. CARTOGRAM: XNR PRODUCTIONS AND JOHN TOMANIO  
SOURCE: UNITED NATIONS



With slower global growth rate, the absolute decadal increment is shrinking



Annual increments to global population (10-year average), 1750-2050: Source: UNPD, 2000, 2011



# CONSUMPTION

Wealthy nations use the most

resources now, but emerging economies are catching up fast.

## Appetites of the Seven Billion

How much impact does each country have on Earth's resources? One way to approximate a nation's consumption is to look at its gross domestic product (GDP)—the total production of goods and services in a year by its residents, firms, and government. In this cartogram, countries are sized according to their GDP for 2009. Black dots show GDP in 1980, or latest year available; light dots show growth since then. Each dot represents \$20 billion.\* A country's color indicates its GDP per person (detailed in the key below).

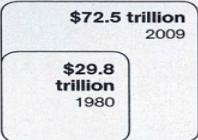


\*TO COMPARE THE GROSS DOMESTIC PRODUCT OF THE COUNTRIES ON THIS MAP, GDP WAS CONVERTED TO CONSTANT INTERNATIONAL DOLLARS USING PURCHASING POWER PARITY RATES. IN THIS CONVERSION AN INTERNATIONAL DOLLAR HAS THE SAME PURCHASING POWER THAT A U.S. DOLLAR HAS IN THE UNITED STATES.

## The world's gross domestic product\* more than doubled from 1980 to 2009.

Economic development in China and India accounts for much of the recent rise and will continue to drive it. Global economic growth, and the improved standard of living it offers, means that resources are being consumed at record levels.

World GDP



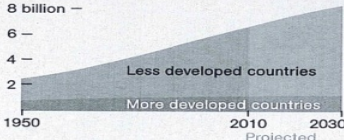
## Demand on natural resources will continue to increase.

Earth's finite resources will be stressed both by rising prosperity and sheer numbers of people (graphs, right). The consumption of resources now enjoyed in the wealthiest nations will be difficult to sustain worldwide.

Source: "Seven Billion". National Geographic, January 2011

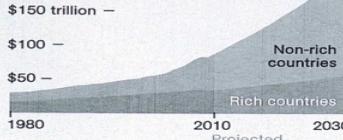
JOHN TOMANIO, NGM STAFF. CARTOGRAM: XNR PRODUCTIONS AND JOHN TOMANIO. SOURCES: WORLD BANK; CIA WORLD FACTBOOK; ECONSTATS (CARTOGRAM); UN (POPULATION GRAPHIC); OXFORD FORECASTING (GDP GRAPHIC); U.S. ENERGY INFORMATION AGENCY (ENERGY GRAPHIC); OECD IS THE ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

World population, 1950-2030



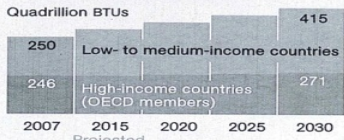
\*"MORE DEVELOPED" IS DEFINED IN THESE UN STATISTICS AS THE U.S., CANADA, EUROPE, JAPAN, AUSTRALIA, AND NEW ZEALAND.

World GDP, 1980-2030



\*"RICH" INCLUDES THE UN'S MORE DEVELOPED COUNTRIES PLUS CYPRUS, HONG KONG, ISRAEL, SINGAPORE, SOUTH KOREA, AND TAIWAN.

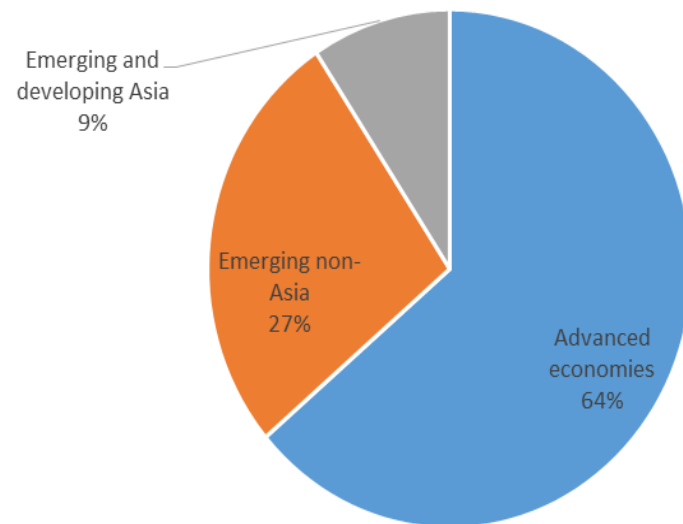
World energy consumption, 2007-2030



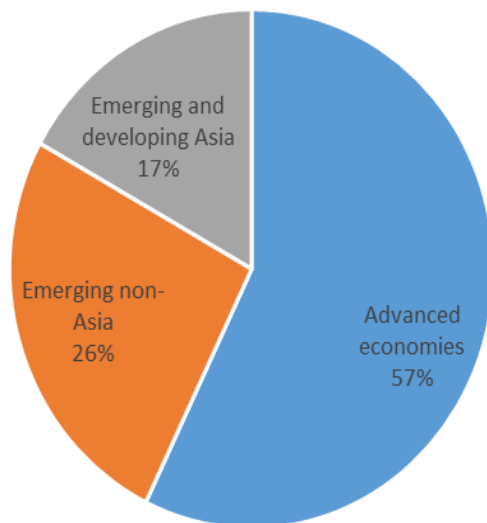
OECD MEMBERS ARE THE UN'S MORE DEVELOPED COUNTRIES PLUS CHILE, ISRAEL, MEXICO, SOUTH KOREA, AND TURKEY.



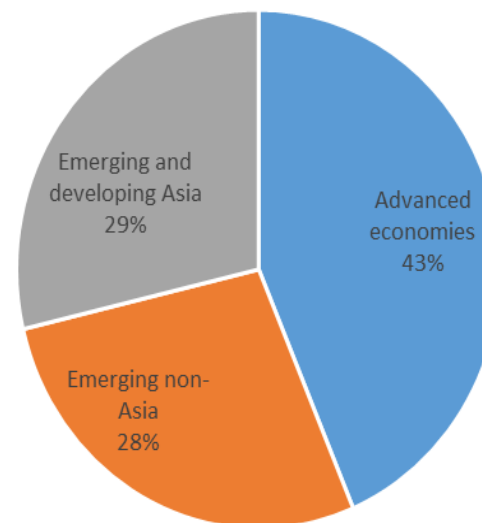
1980 Share of World Purchasing Power



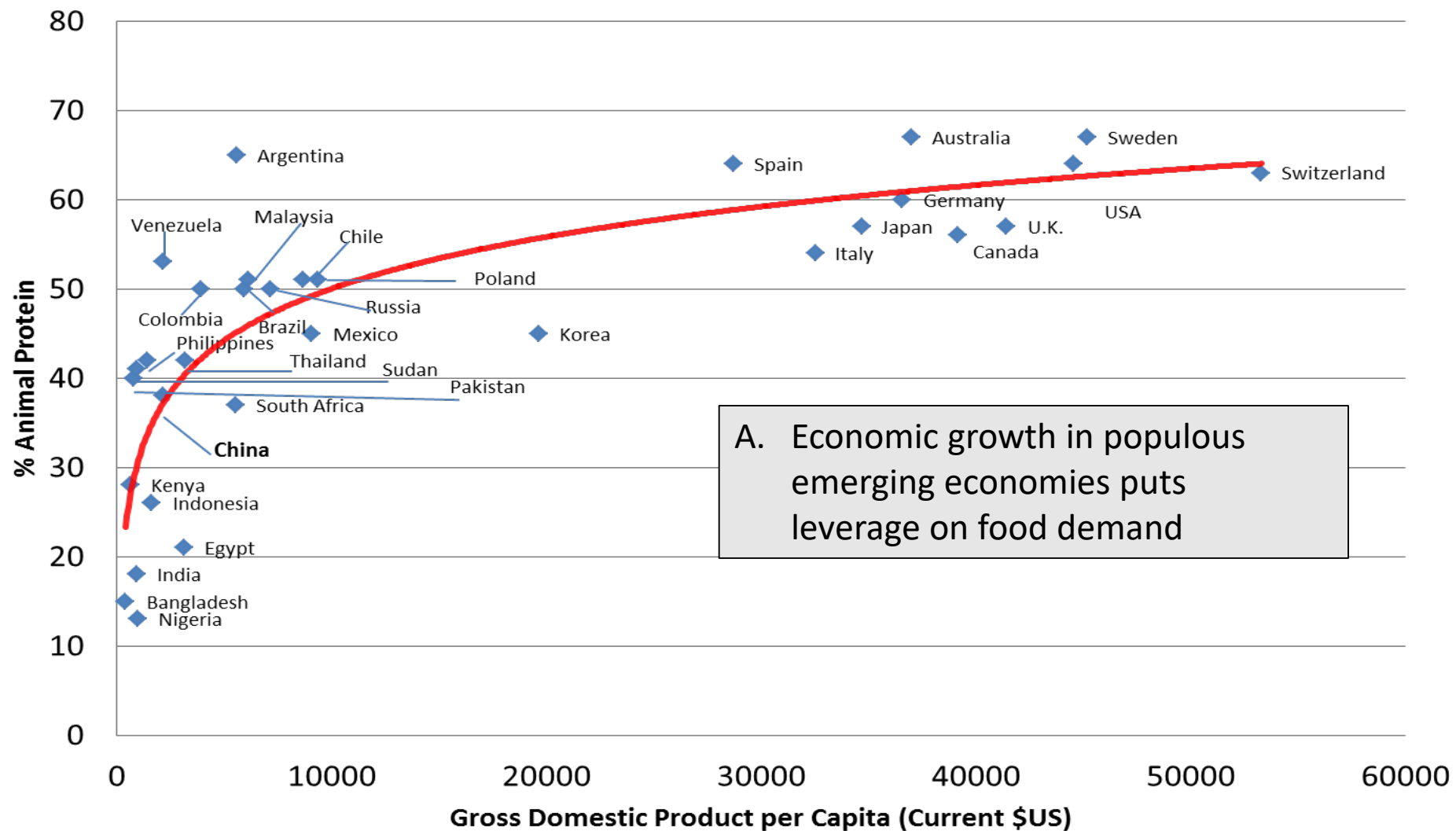
2000 Share of World Purchasing Power



2013 Share of World Purchasing Power

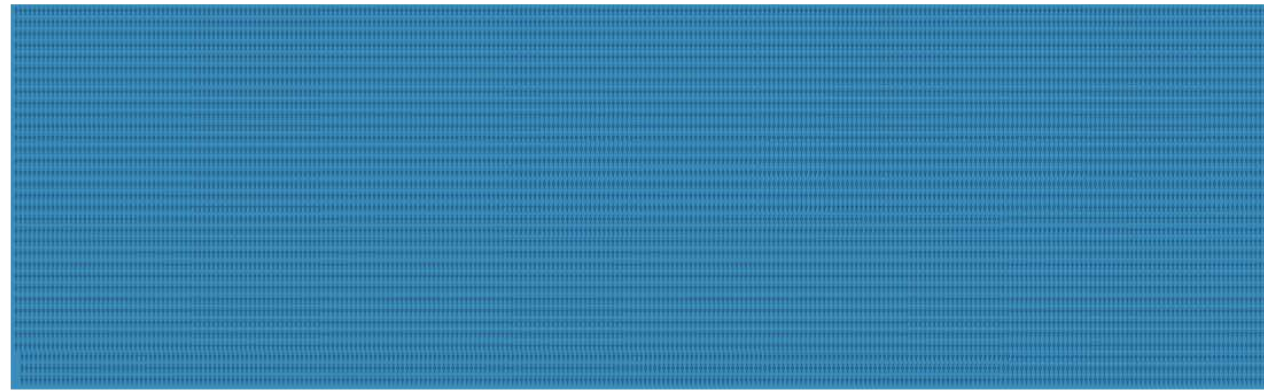


## Animal Protein as a Percent of Total Protein by GDP, Selected Countries 2005-2007



AVG. INCOME \$31,000  
SHARE OF INCOME 67.1%

9,000 of 10,000



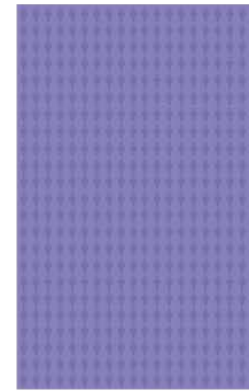
AVG. INCOME \$134,000  
SHARE OF INCOME 13.0%

400 of 10,000



AVG. INCOME \$359,000  
SHARE OF INCOME 3.3%

40 of 10,000



AVG. INCOME \$3,400,000  
SHARE OF INCOME 0.9%

1 of 10,000



500 of 10,000

AVG. INCOME \$94,000  
SHARE OF INCOME 11.6%



50 of 10,000

AVG. INCOME \$230,000  
SHARE OF INCOME 2.7%



9 of 10,000

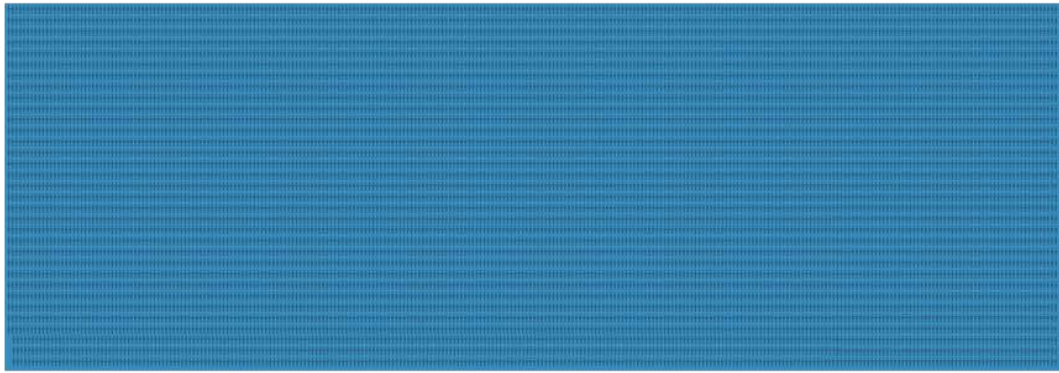
AVG. INCOME \$780,000  
SHARE OF INCOME 1.5%



1975

AVG. INCOME \$30,000  
SHARE OF INCOME 52.1%

9,000 of 10,000



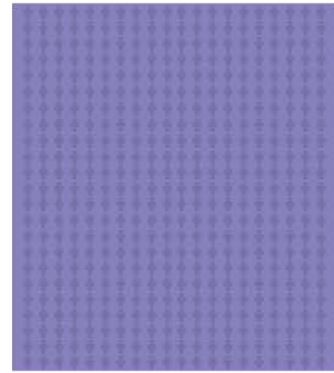
AVG. INCOME \$206,000  
SHARE OF INCOME 16.0%

400 of 10,000



AVG. INCOME \$798,000  
SHARE OF INCOME 6.2%

40 of 10,000



AVG. INCOME \$24,000,000  
SHARE OF INCOME 4.6%

1 of 10,000



500 of 10,000

AVG. INCOME \$126,000  
SHARE OF INCOME 12.1%



50 of 10,000

AVG. INCOME \$418,000  
SHARE OF INCOME 6.2%



9 of 10,000

AVG. INCOME \$2,800,000  
SHARE OF INCOME 4.9%



2010

On Average, food expenditures are  
less than 10% of income in the  
U.S.  
But is average a good indicator?



# CAN AFFORD HIGHER COST FOOD CHOICES



AVG. INCOME \$206,000  
SHARE OF INCOME 16.0%

400 of 10,000



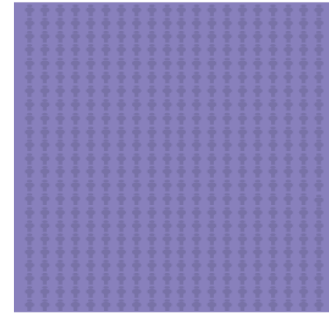
500 of 10,000

AVG. INCOME \$126,000  
SHARE OF INCOME 12.1%



AVG. INCOME \$798,000  
SHARE OF INCOME 6.2%

40 of 10,000



AVG. INCOME \$24,000,000  
SHARE OF INCOME 4.6%

1 of 10,000

50 of 10,000

AVG. INCOME \$418,000  
SHARE OF INCOME 4.1%

9 of 10,000

AVG. INCOME \$2,800,000  
SHARE OF INCOME 4.9%

2010

# Consumer Preferences for Food...

- **Fifty-seven percent of mothers purchased more food with natural ingredients** in the past year than 10 years ago, according to a survey by Chr. Hansen and Qualtrics. Eighty percent of respondents noted they would be more likely to purchase an item if it has naturally derived ingredients.
- **Walmart made a commitment to a more sustainable food system.** Initiatives include improving the affordability of food, increasing access, make healthy eating easier and improve the safety and transparency of the food chain.

Source: The Food Institute's Daily Brief



\* Meets the Humane Farm Animal Care Program standards, which include nutritious diet without antibiotics, or hormones, animals raised with shelter, resting areas, sufficient space and the ability to engage in natural behaviors.

## General Mills Adds Organic Foods With Purchase of Annie's

By Nick Turner · Sep 9, 2014 6:40 PM ET 9 Comments Email Print

**General Mills Inc. (GIS)**, the maker of Cheerios, Bisquick and Yoplait, is acquiring Berkeley, California-based **Annie's Inc. (BNNY)** for about \$820 million, gaining a popular lineup of natural and organic foods.

Annie's investors will receive \$46 a share in cash, General Mills said in a statement, 37 percent above its closing price yesterday. The deal, slated to close this year, will pair Annie's products with General Mills' existing organic foods, including the Cascadian Farm and Food Should Taste Good brands.



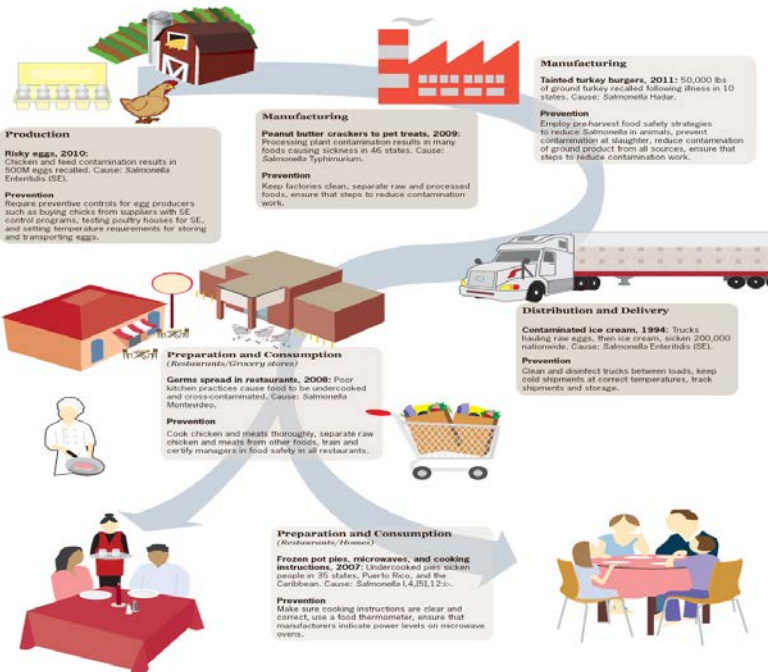
Sep 9 (Bloomberg) — Bloomberg's Julie Hyman reports on the \$820 million purchase of Annie's by General Mills, as the company expands its natural and organic offerings. She speaks on "Market Makers."



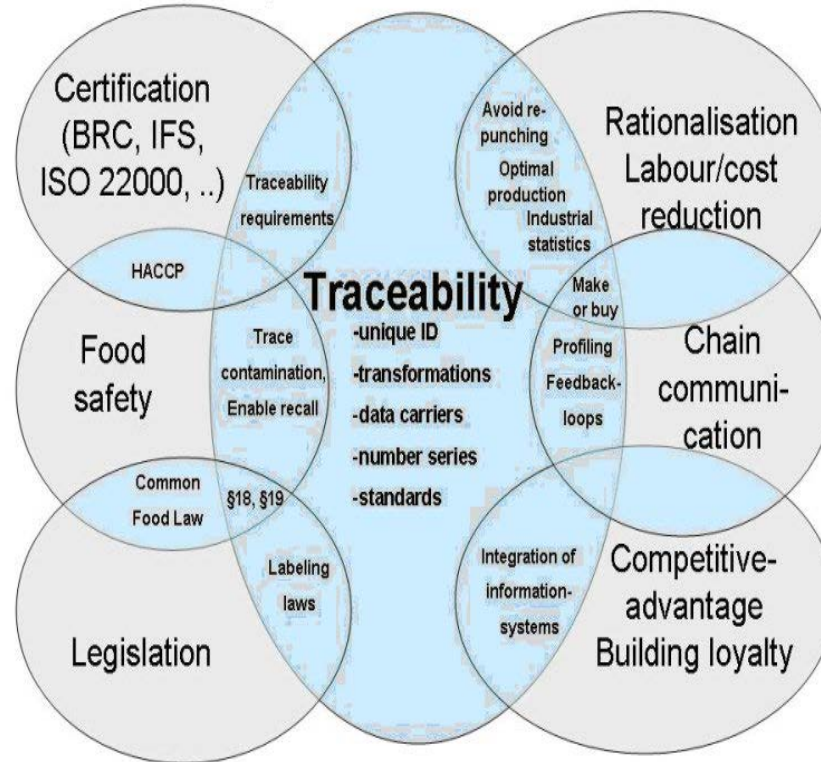




**Food Safety System  
Certification 22000**



## Traceability drivers in the food sector:



Petter Olsen 2006 - © Fiskeriforskriving - May be copied if source is acknowledged



A field-to-table global product portfolio



SunOpta Inc. is a leading global company specializing in the sourcing, processing and packaging of natural, organic and specialty food products. Integrated from seed through packaged products and with a focus on strategically significant vertically integrated business models, we can deliver the best quality and value.



# Food safety: No guarantees



Spinach recall: 5 faces. 5 agonizing deaths. 1 year later.

Updated 9/24/2007 1:08 AM | Comments 97 | Recommend 26 | E-mail | Save | Print | Reprints & Permissions | RSS

## FOOD SAFETY MODERNIZATION ACT

10 FACTS

YOU SHOULD KNOW

Good Choice

Bad Choice

<http://GodsWayToHealth.wordpress.com>



USDA ORGANIC		Apples & oranges	
Below are the retail price differentials between organic and conventional foods found at a local supermarket.			
ORGANIC		CONVENTIONAL	
<b>APPLES</b>			
1 POUND RED DELICIOUS	\$2.49	1 POUND RED DELICIOUS	\$1.99
<b>ORANGES</b>			
BAG OF NAVEL (8-9 IN A BAG)	\$5.99	BAG OF NAVEL (8-9 IN A BAG)	\$4.50
<b>MILK</b>			
HALF-GALLON 2 PERCENT	\$4.09	HALF-GALLON 2 PERCENT	\$1.76
<b>EGGS</b>			
1 DOZEN	\$3.99	1 DOZEN	\$1.79
<b>BREAD</b>			
LOAF OF SEVEN-GRAIN	\$5.69	LOAF OF SEVEN-GRAIN	\$3.99
<b>BROCCOLI</b>			
1 POUND CROWNS	\$2.99	1 POUND CROWNS	\$2.49
<b>POTATOES</b>			
5-POUND BAG OF RUSSET	\$5.99	5-POUND BAG OF RUSSET	\$3.99



# GMO LABELING

## THE GREAT DEBATE

58%  
AT LEAST  
SOMEWHAT  
FAMILIAR  
WITH GMO  
DEBATE

The presence and labeling of genetically modified organisms (GMOs) in our food has been hotly debated by consumers, manufacturers, scientists, and governments alike. A new Harris Poll reveals consumers' perspectives on GMO labeling.

JONES SAYS:

### Attitudes towards GMOs

SMITH SAYS:

What we don't know about GMO's is part of the problem, as there have been no long-term studies about the impact of GMO foods on human health, on the need for pesticides and herbicides or how changing the genetic make-up of plants might create harder to kill weeds or superbugs.

58%

AGREE  
WITH  
JONES

42%

AGREE  
WITH  
SMITH

GMO's are not new and have been widely used by farmers for more than 20 years. They have been tested and approved by food safety experts as safe for human consumption and have created more productive plants allowing for more food to be grown on fewer acres.

### GMO labeling legislation

75%

SUPPORT

9%

OPPOSE

### Supporters believe legislation should be held by...

22%

STATE GOVT

78%

FEDERAL GOVT

### GMO labeling is...

81%

A HEALTH AND  
SAFETY ISSUE

19%

AN ENVIRONMENTAL  
ISSUE

### Should GMO labeling be mandatory?

JONES SAYS:

SMITH SAYS:

There should be mandatory GMO labeling as consumers have a right to know what is in their food or whether it has been altered or changed in some way that is not natural and could impact consumer health.

80%

AGREE  
WITH  
JONES

20%

AGREE  
WITH  
SMITH

Mandatory GMO labeling is not necessary as it could be seen as a warning or imply that the food is somehow inferior or unsafe. The labeling should be done voluntarily by food manufacturers as they are in the best position to know what is appropriate for their consumers.

the harris poll.

www.theharrispoll.com

Source: Harris Poll of 2,015 U.S. adults surveyed online from April 29 - May 3, 2016

MAY 8, 2016 @ 11:00 AM 23,163

The Litt

## Shift To Cage-Free Eggs Is Likely To Disappoint

### Cage-free eggs: a PR battle or concern for animal welfare?



### McDonald's USA and Canada Commit to Cage-Free Eggs



13 MILLION

Number of cage-free eggs we currently source per year in the U.S.



10 Years

Timeline to fully transition to cage-free eggs.



United States Department of Agriculture

### PROPOSED RULE: Organic Livestock & Poultry Practices

Proposed changes to the organic regulations would address organic livestock & poultry living conditions, health care, handling & transport.

### Proposed Provisions include:



### Phased-in implementation

60 DAYS for public comment  
[www.regulations.gov](http://www.regulations.gov)

Agricultural Marketing Service

National Organic Program

USDA is an equal opportunity provider, employer, and lender.

