



Effects of Agricultural Policies on Human Nutrition and Obesity

Stephen A. Vosti
Julian Alston (PI)
Daniel Sumner
Lucia Kaiser



**Agricultural
Issues Center**



**Department of Agricultural
and Resource Economics**

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Motivation

“[Our] cheap-food farm policy comes at a high price: ... [with costs including] the obesity epidemic at home – which most researchers date to the mid-70s, just when we switched to a farm policy consecrated to the overproduction of grain.” (NYT, 2003, Michael Pollan)

- **This view has become accepted as a fact, in spite of**
 - **No real evidence presented**
 - **Questions about the nature of effects**
 - **Grounds for skepticism about the size of effects**



Objectives and Research Activities

- **Key Objectives**
 - **Better understand the effects of selected agricultural policies on obesity**
 - **Identify policy *culs-de-sacs***
 - **Based on policy-outcome links that never existed**
 - **Based on policy-outcome links that have changed over time**
 - **Identify agricultural policy options for helping to address the obesity problem**
 - **Mechanisms**
 - **Unexpected side-effects**
 - **Likely size of effects**
- **Selected Elements of Our Research Program**
 - **Price Trends**
 - **Farm Bill**
 - **Commodity Subsidies**
 - **Food Stamp Program**
 - **Market for Sweeteners**
 - **Latino Toddlers Participating in WIC Program**



Trends in Commodity and Food Prices

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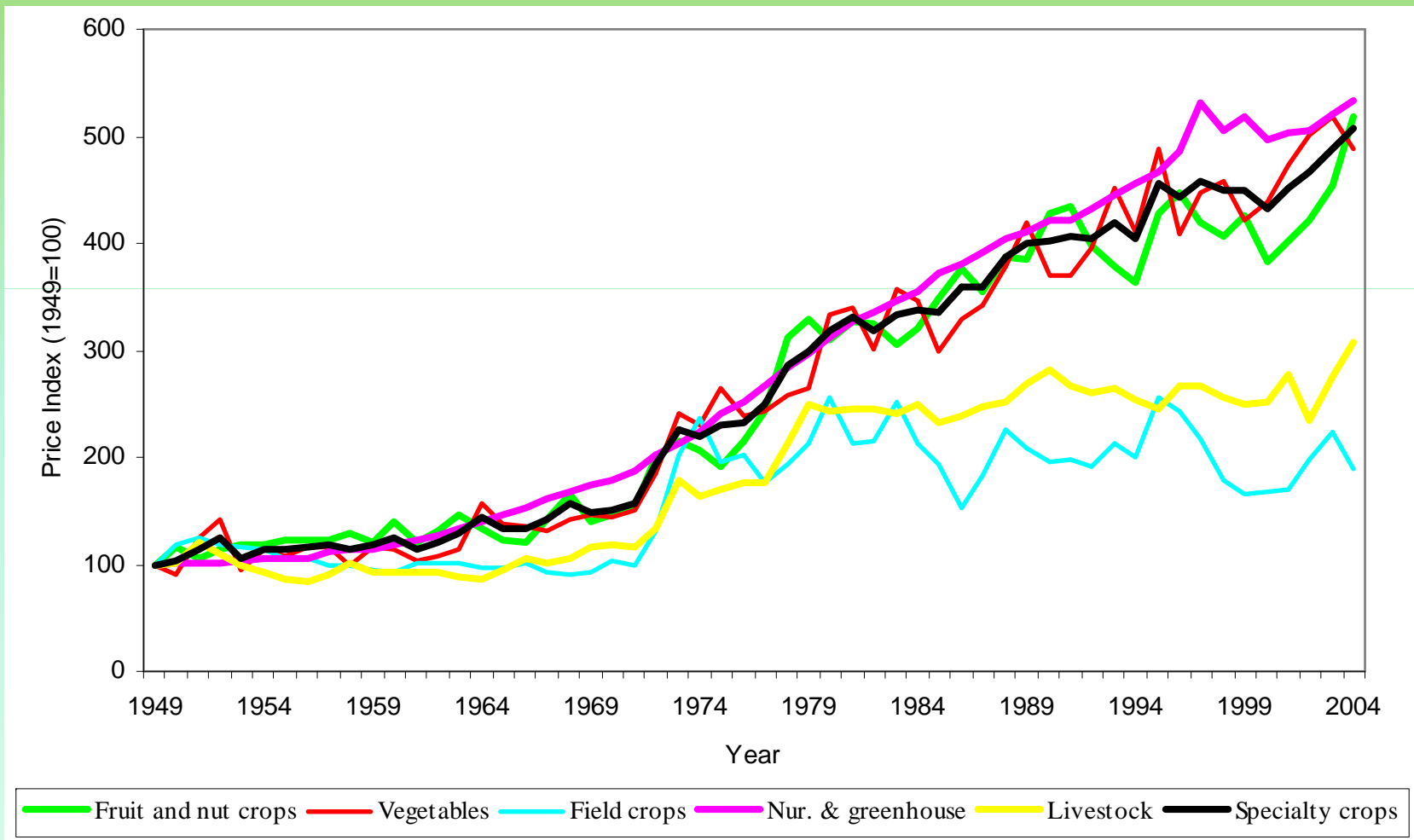
One Key Driving Force

or

**“Healthy Foods Are Increasingly Out
of Reach to the Poor (and Bad
Agricultural Policy Is Responsible).”**



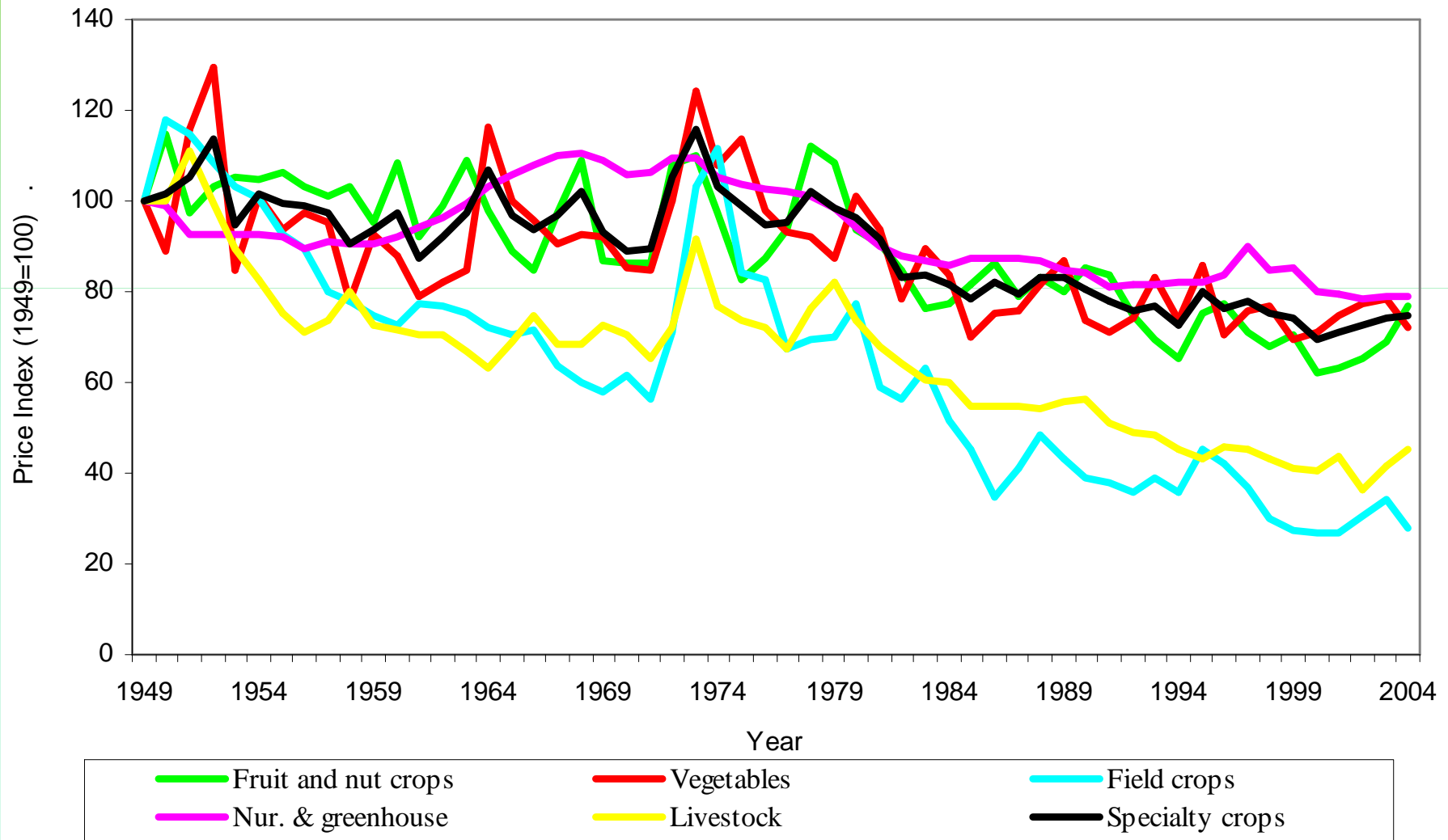
Nominal Commodity Prices Received by Farmers Have Increased



Source: Alston, J. M. and P. G. Pardey. 2006. Public Funding for Research into Specialty Crops. Paper Prepared for the CAL-MED Workshop, USDA ERS



Real Commodities Prices Received By Farmers Have Generally Declined

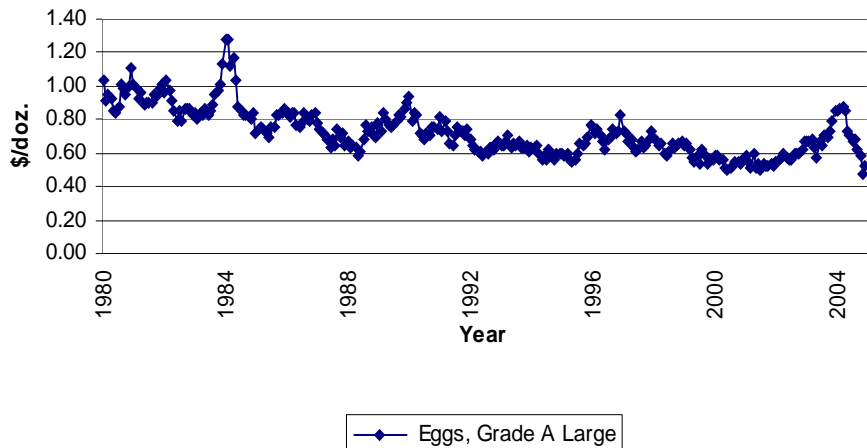


Source: Alston, J. M. and P. G. Pardey. 2006. Public Funding for Research into Specialty Crops. Paper Prepared for the CAL-MED Workshop, USDA ERS

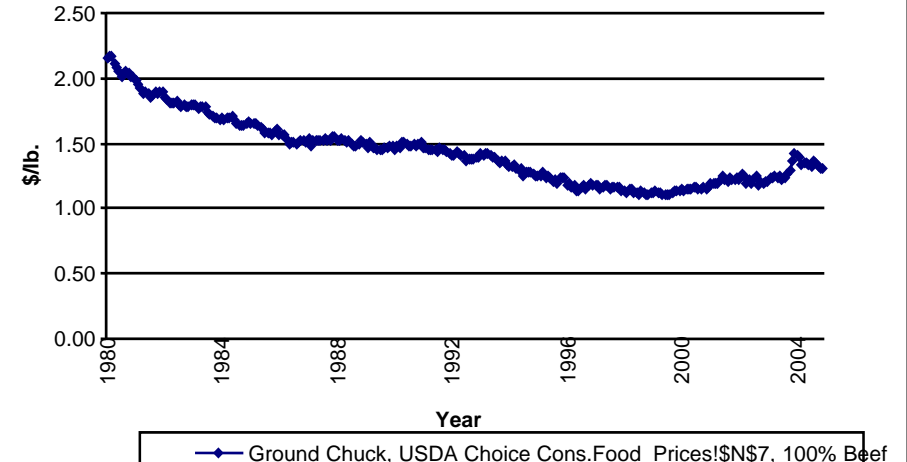


Prices Paid By Consumers Have Also Generally Fallen, but Less Swiftly Than Commodity Prices

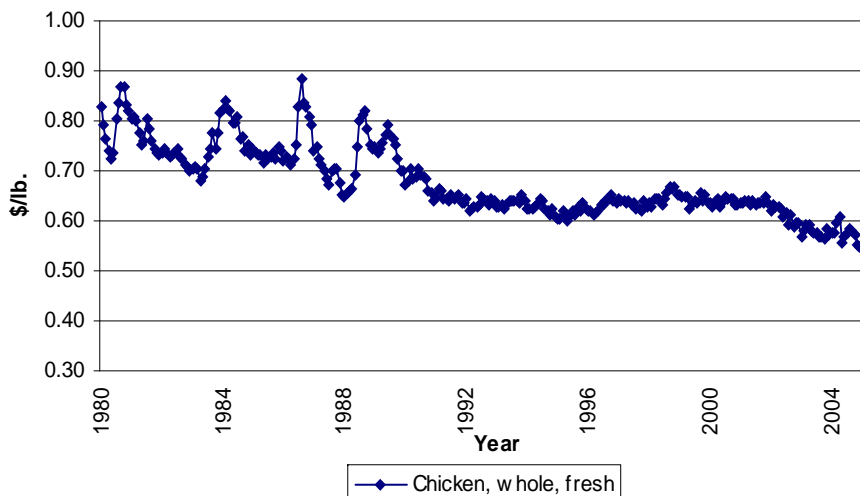
Consumer Prices for Eggs Deflated by CPI (food at home)



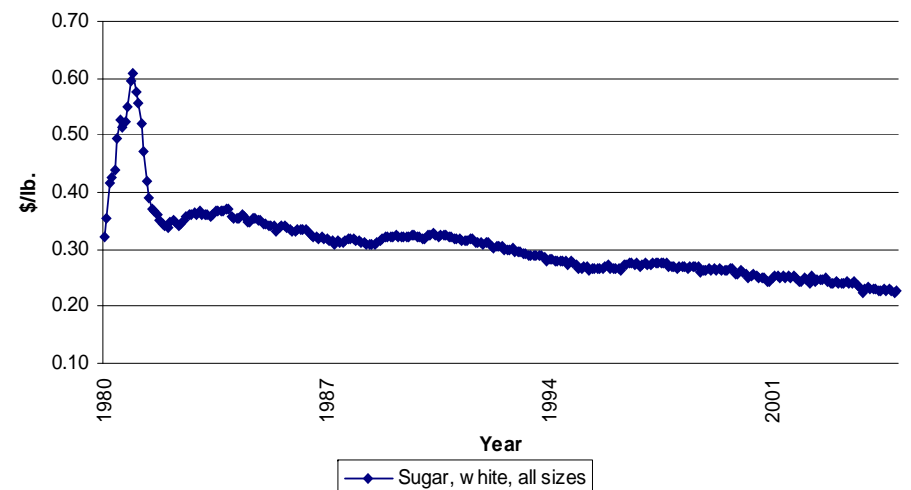
Consumer Prices for Ground Beef Deflated by CPI (food at home)



Consumer Prices for Chicken deflated by CPI (food at home)



Consumer Prices for White Sugar Deflated by CPI (food at home)



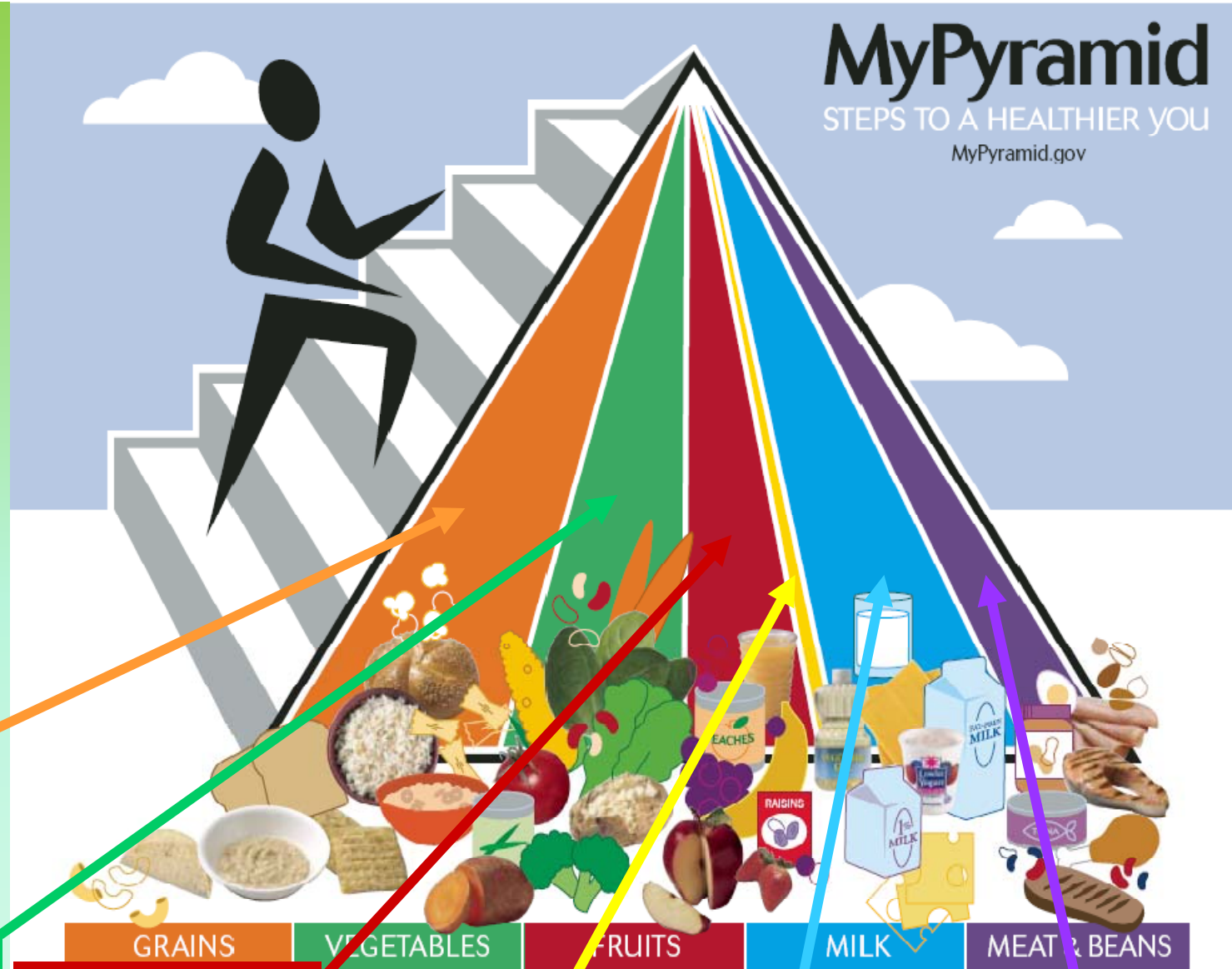


MyPyramid

STEPS TO A HEALTHIER YOU

MyPyramid.gov

Almost All Consumer Prices for Foods Have Fallen, Some More Swiftly Than Others



White Bread: 0.0
 Rice: -.029
 Pasta: -.020

Lettuce: -.009
 Tomatoes: +.004
 Carrots: -.009
 Potatoes: 0.0

Bananas: -.013
 Apples: -.009
 Oranges: 0.0
 Grapefruit: -.004

White Sugar: -.024
 Butter: -.013

Milk: -.011
 Cheese: -.033

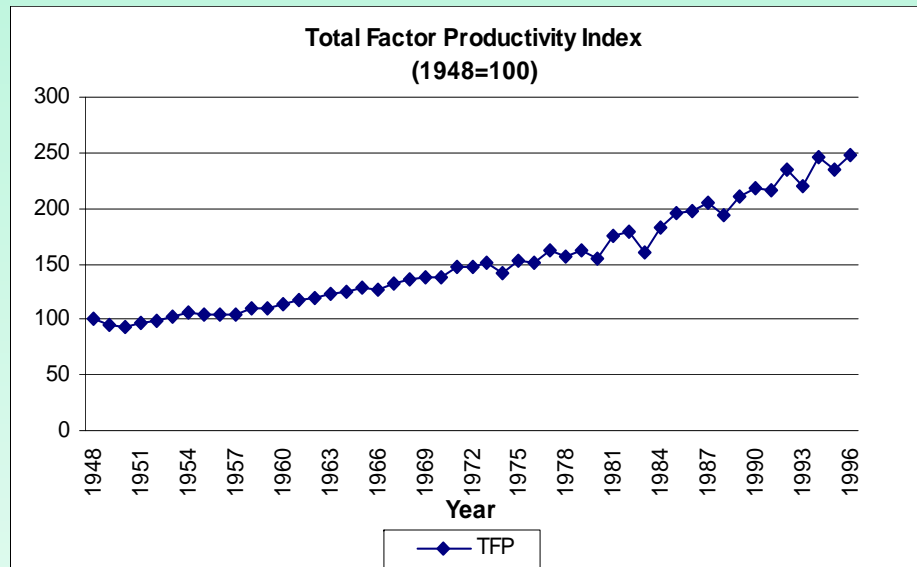
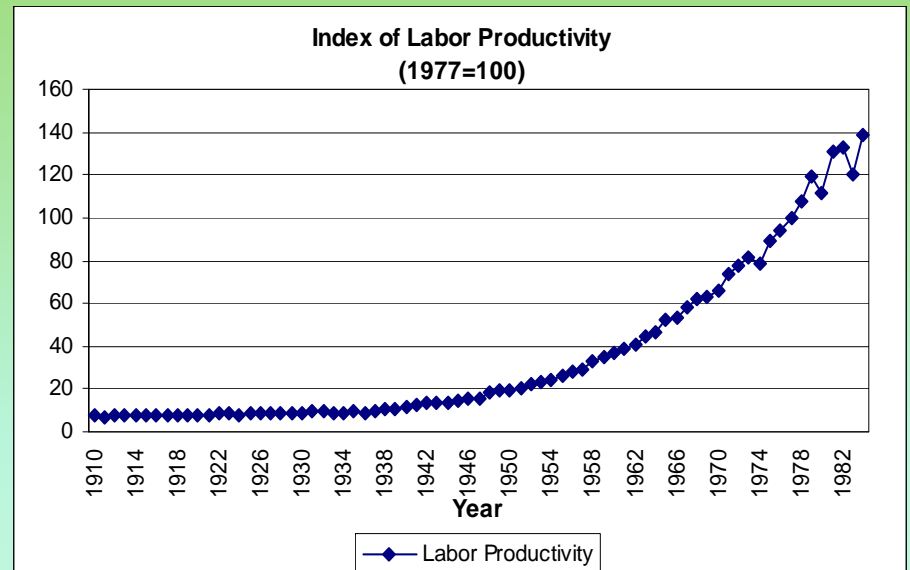
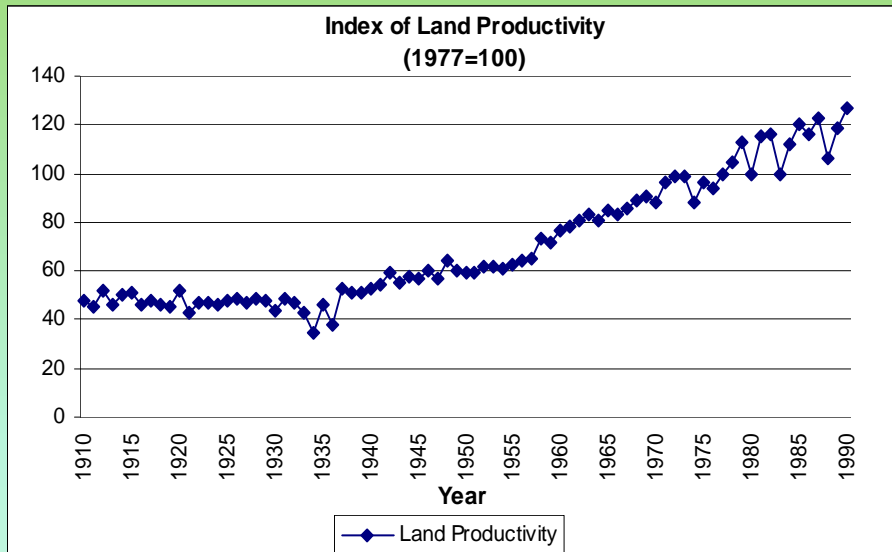
Turkey: -.026
 Chicken: -.012
 Eggs: -.019
 Beef: -.021

Statistics report proportional changes in real prices over 1980-2003: Data sources USDA

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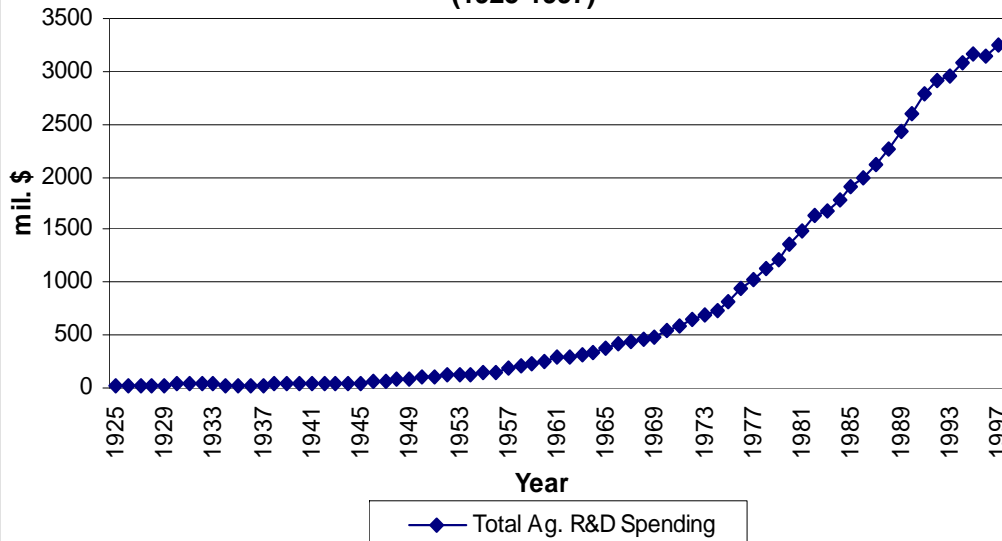
Trends in Aggregate Agricultural Productivity



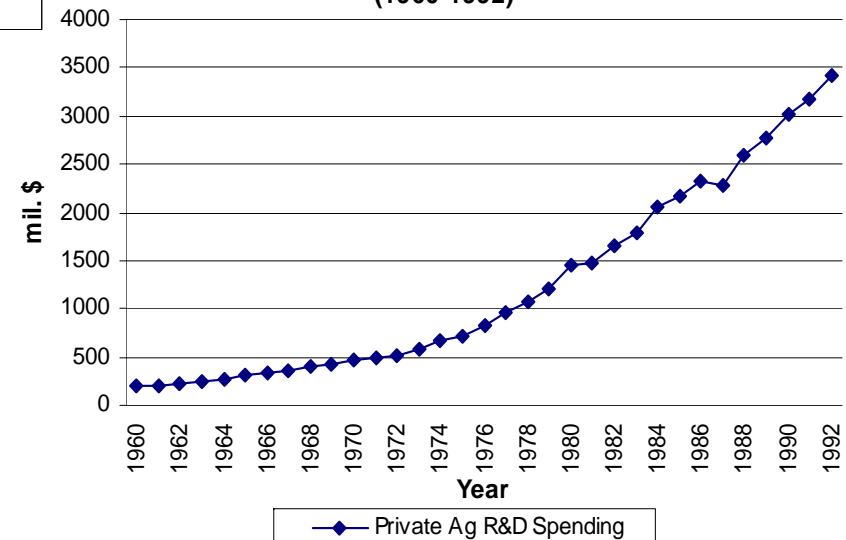


Public Sector and Private Sector Trends in Agricultural R&D Spending

Total Federal and State Spending on Ag. R&D
(1925-1997)



Total Private Sector Spending on Ag R&D
(1960-1992)





The Effects of U.S. Farm Subsidies on Obesity

or

**“If It Weren’t for Corn Subsidies,
We’d All Be as Slender as Reeds”**



Logical Sequence Linking Farm Subsidies to Obesity

- First, *farm subsidies* must have made farm commodities that are important ingredients of relatively fattening foods significantly more abundant and cheaper.
- Second, the lower commodity prices *caused by farm subsidies* must have resulted in significantly lower costs to the food industry, and cost savings to the food marketing firms must have been passed on to consumers in the form of lower prices of relatively fattening food.
- Third, food consumption patterns must have changed significantly in response to these policy-induced changes in the relative prices of more-fattening versus less-fattening foods.



USDA Budget, 2007

USDA Program	Expenditure in 2007 <i>billions of dollars</i>	Percent of Total <i>percent</i>
Food, Nutrition, and Consumer Services	54.4	43.3
Farm Service Agency (<i>farm programs</i>)	33.9	27.0
Rural Development	14.4	11.5
Natural Resources and Environment	7.7	6.1
Foreign Agricultural Service	5.2	4.1
Risk Management (mainly crop insurance)	4.2	3.3
Res., Educ. and Econ. (<i>mainly ag. R&D</i>)	2.3	1.8
Marketing and Regulatory Programs	1.7	1.4
Other	1.8	1.4
TOTAL	125.6	100.0



Fundamental Misconceptions Regarding The Effects of Agricultural Policies

- **Directions of Effects on Production and Prices Are Not the Same for All Policies, e.g., ...**
 - Sugar is more expensive due to trade and other policies
 - Corn and soybeans are probably cheaper than they otherwise would be
 - Dairy policies make milk products more expensive, but policies that make animal feed cheap work in the opposite direction
 - Some of these effects might actually help reduce obesity
 - E.g., more expensive sugar and dairy products may reduce calorie and fat consumption
- **Magnitudes of Effects Are Generally Small, e.g., ..**
 - Policy effects on the prices of most field crops (e.g., wheat, corn and soybeans) are small
 - Policy effects on other commodities (e.g., rice, cotton and sugar) are larger



Production and Price Effects of Eliminating U.S. Commodity Programs and Policies

	% Change in Output in 2016*	% Change in Producer Prices in 2016*
Soybeans	-2.86	-1.14
Wheat	-7.58	1.52
Maize	-3.79	0.26
Rice	-11.71	-3.87
Cotton	-13.88	-6.10
Cane and beet	-33.31	-15.30
Fruit and vegetables	4.42	-5.16
Beef cattle	1.44	-3.31
Pigs and poultry	0.41	-0.01
Milk	-0.45	-0.01

Source: McDonald et al. 2006, reported in Alston 2007.

(*based on the differences in 2016 between the prices and quantities that emerge from a status quo policy scenario and those that emerge from a scenario in which all commodity programs are gradually eliminated over the period 2006-2016)



Conclusions for the U.S. and Policy Implications

- **The U.S. Farm Bill's Commodity Programs are Inefficient and Unfair**
 - These are good (and sufficient) reasons to eliminate them
 - But do NOT expect that action to affect obesity, because ...
- **Commodity Programs' Effects on Commodity Prices Are Generally Small and Varied**
- **The Effects of Commodity Prices on Food Prices Is Declining**
- **The Responsiveness of Food Demand to Changes in Food Prices Is Generally Low**



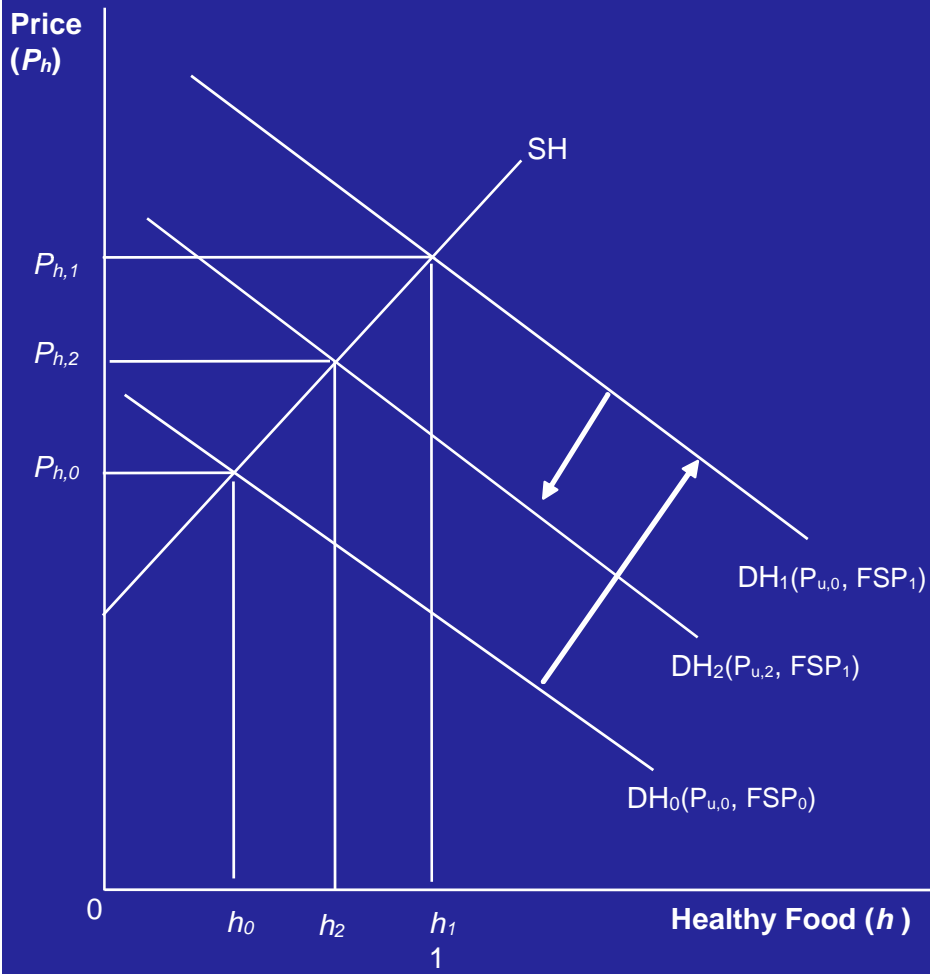
An Economic Assessment of A Proposed Change to the Food Stamp Program

- **Proposed Changes**
 - **Restrict the Use of Food Stamps for ‘Unhealthy’ Foods**
- **What Would the Likely Effects On:**
 - **Food consumption of FSP participants**
 - **Food consumption of eligible non-participants**

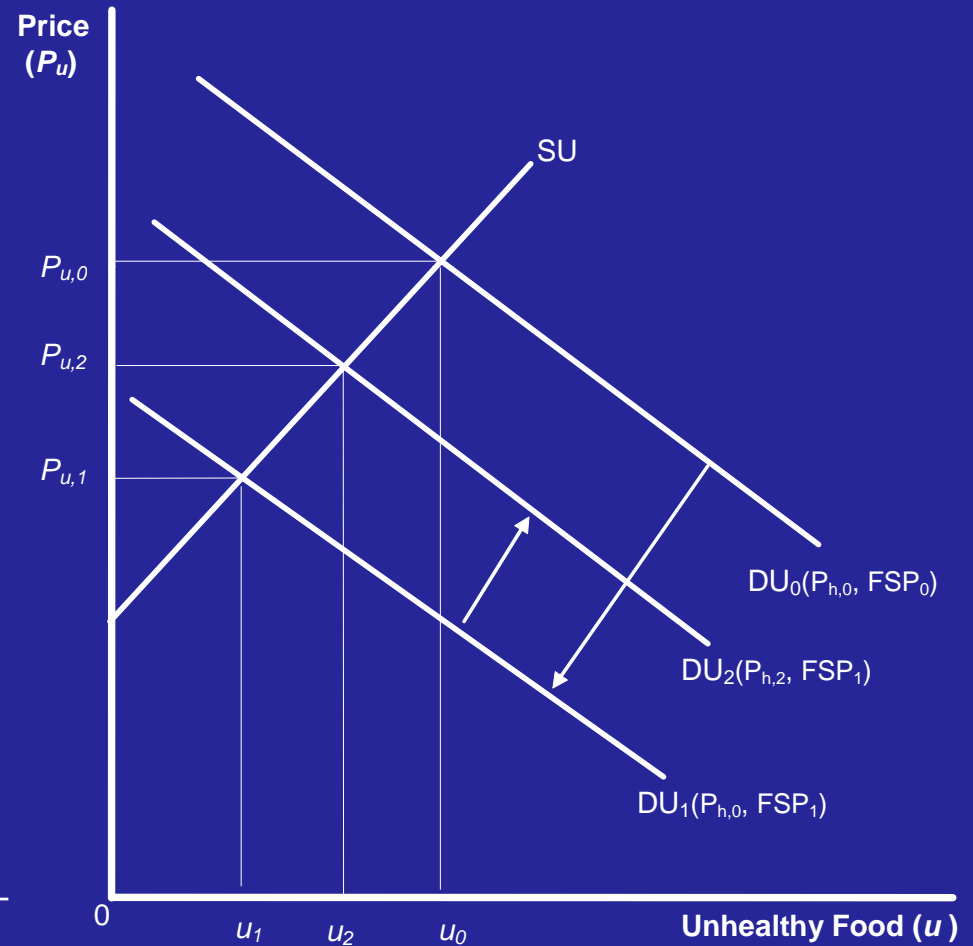


Supply Response to Policy Change

The Market for "Healthy" Food



The Market for "Unhealthy" Food





Main Conclusions

- **Restriction of food stamps to only healthy foods may have unintended consequences**
 - **If constraint is not binding (because “healthy” food expenditure exceeds food stamp value) no effect**
 - **If constraint is binding**
 - **Reduced participation by some eligible households**
 - **Reduced consumption of “unhealthy” foods by some FSP households => induced price changes and increased consumption of “unhealthy” foods by non-participants**
- **Targets and instruments**
 - **Use food stamps to provide food for the poor**
 - **Use other policies to encourage a healthy diet**



An Economic Analysis of the Market for Sweeteners

or

**“If It Weren’t for HFCS, We’d All
Be Svelte”**

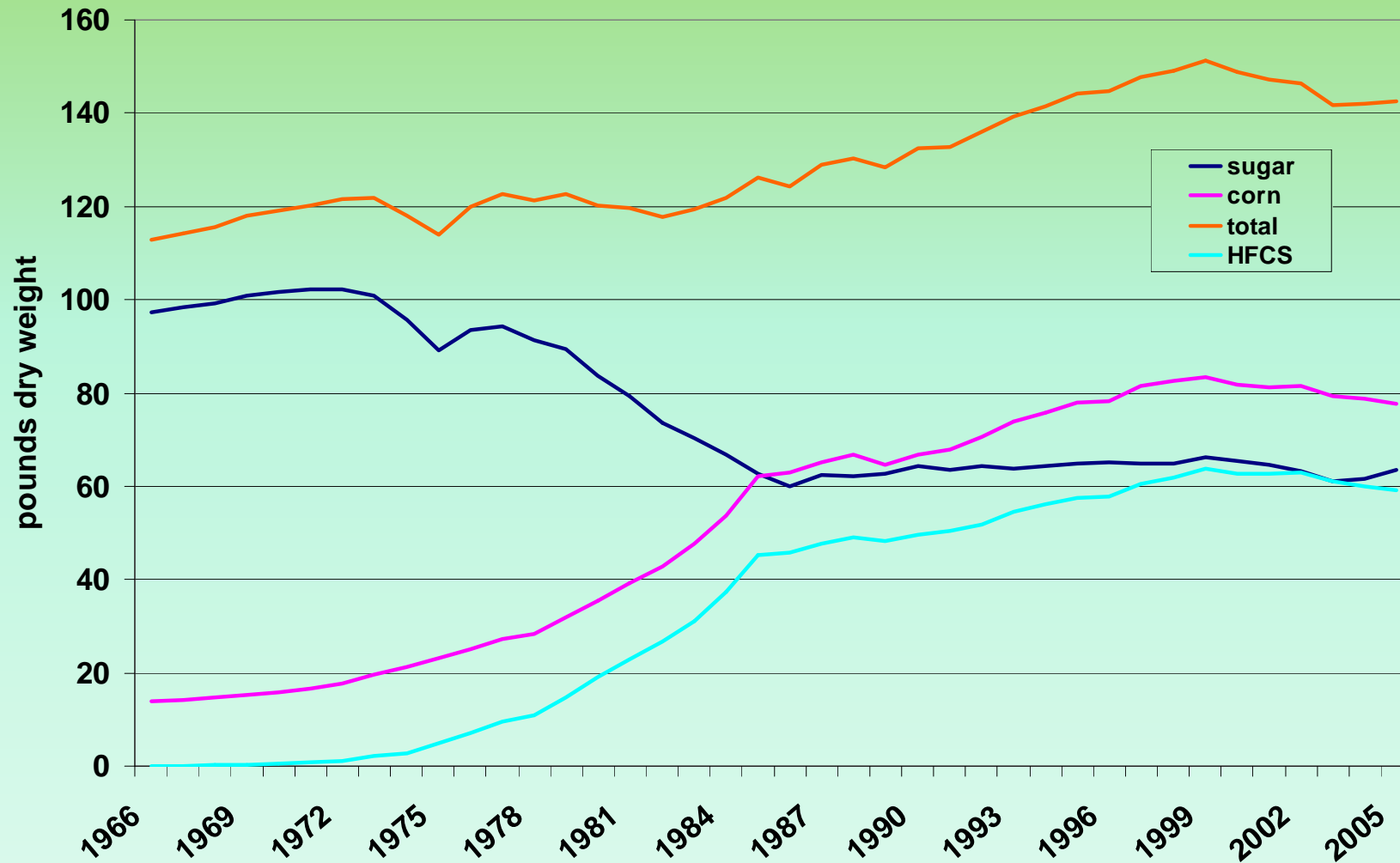


Issues Addressed

- **What Is the Influence of Farm Policy on Changes in Added Sugar in the US Diet?**
- **Has Farm Policy Contributed to the Change in Sweetener Consumption and Composition?**
- **What Is its Contribution Today?**



Per Capita Sweetener Consumption

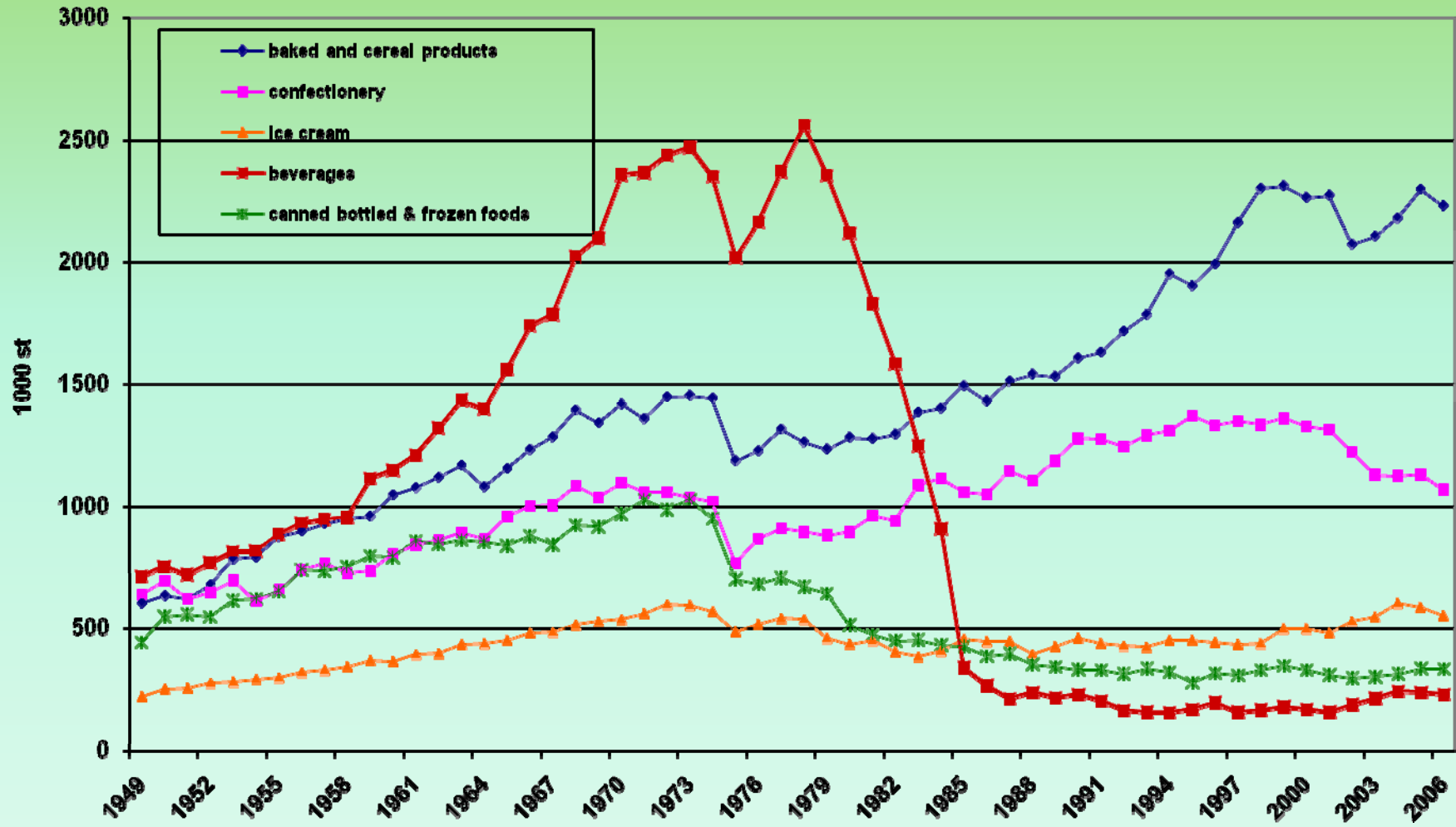


Source: USDA/Economic Research Service

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Industrial Use of Sugar, by Product Group

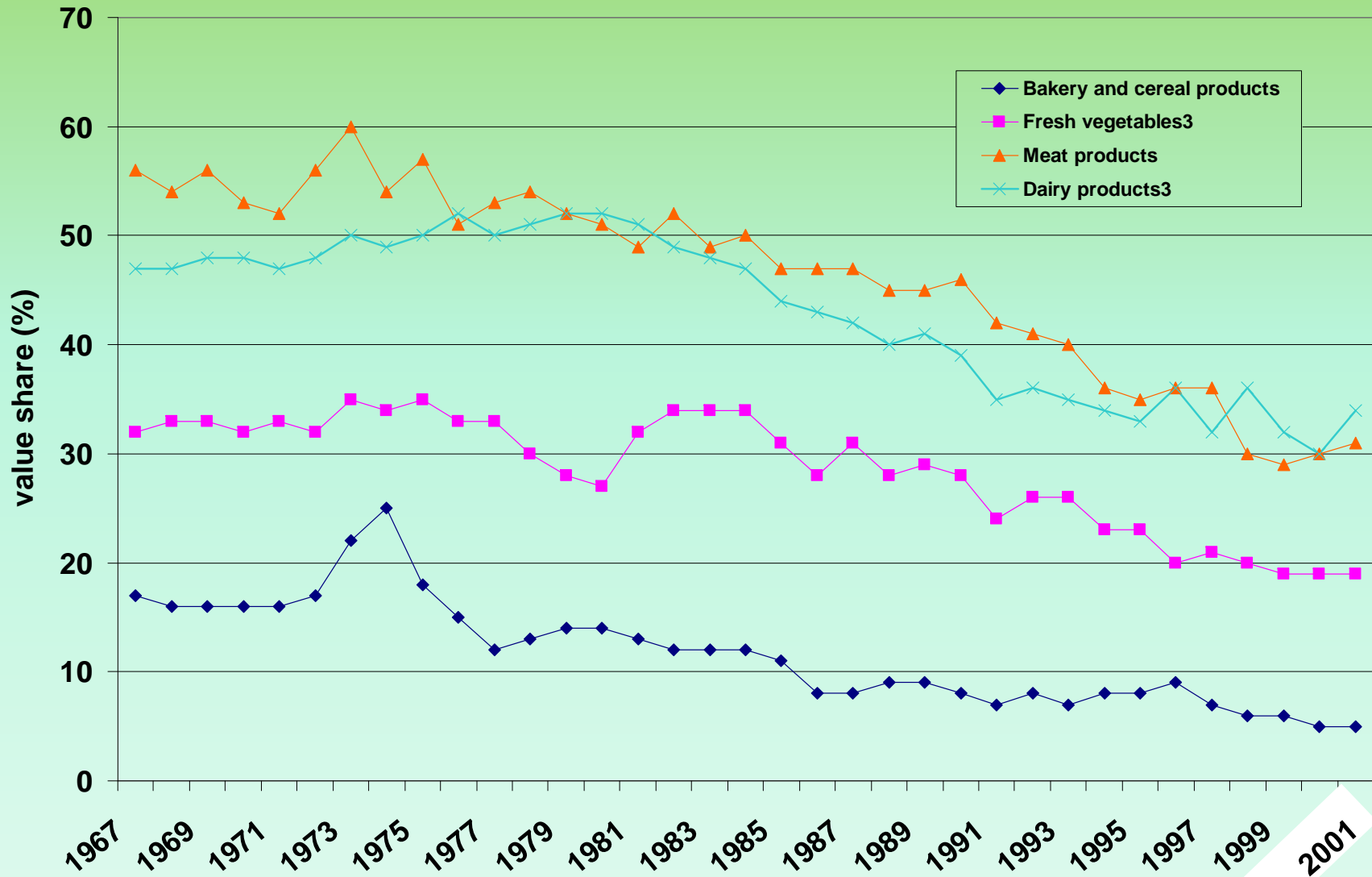


Source: Calculated from U.S. Census Bureau

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Farm Value Share in Retail Cost for Processed Food Products



Source: USDA/Economic Research Service

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Changes in US Sugar Market

Correlations among raw, whole, and retail sugar prices

Time period	Retail, wholesale refined	Wholesale refined, raw	Retail, raw
1960-1981	0.97	0.99	0.94
1982-2006	0.44	0.58	0.14
1995-2006	0.60	0.65	0.01



Changes in Links Among Markets

Correlations among corn, HFCS, and carbonated drink prices

	Corn, carbonated drinks	HFCS, carbonated drinks	Corn, HFCS
1978-2006	-0.21	-0.30	0.42
1978-1992	-0.06	0.51	0.47
1993-2006	-0.28	0.07	0.33



Summary and Lessons Learned

- **Ag R&D Affects Commodity Prices**
 - Corn price has fallen faster than sugar price
 - Price of HFCS has fallen over time and lowered unit cost of sweeteners
- **Ag input costs are falling relative to other input costs in food processing**
- **Today: tenuous link between farm/commodity policy and the retail cost of sweetened goods**
- **Evidence from other high-income countries shows little relationship between consumption of sugar and sugar policies**



Latino Toddlers in the WIC Program

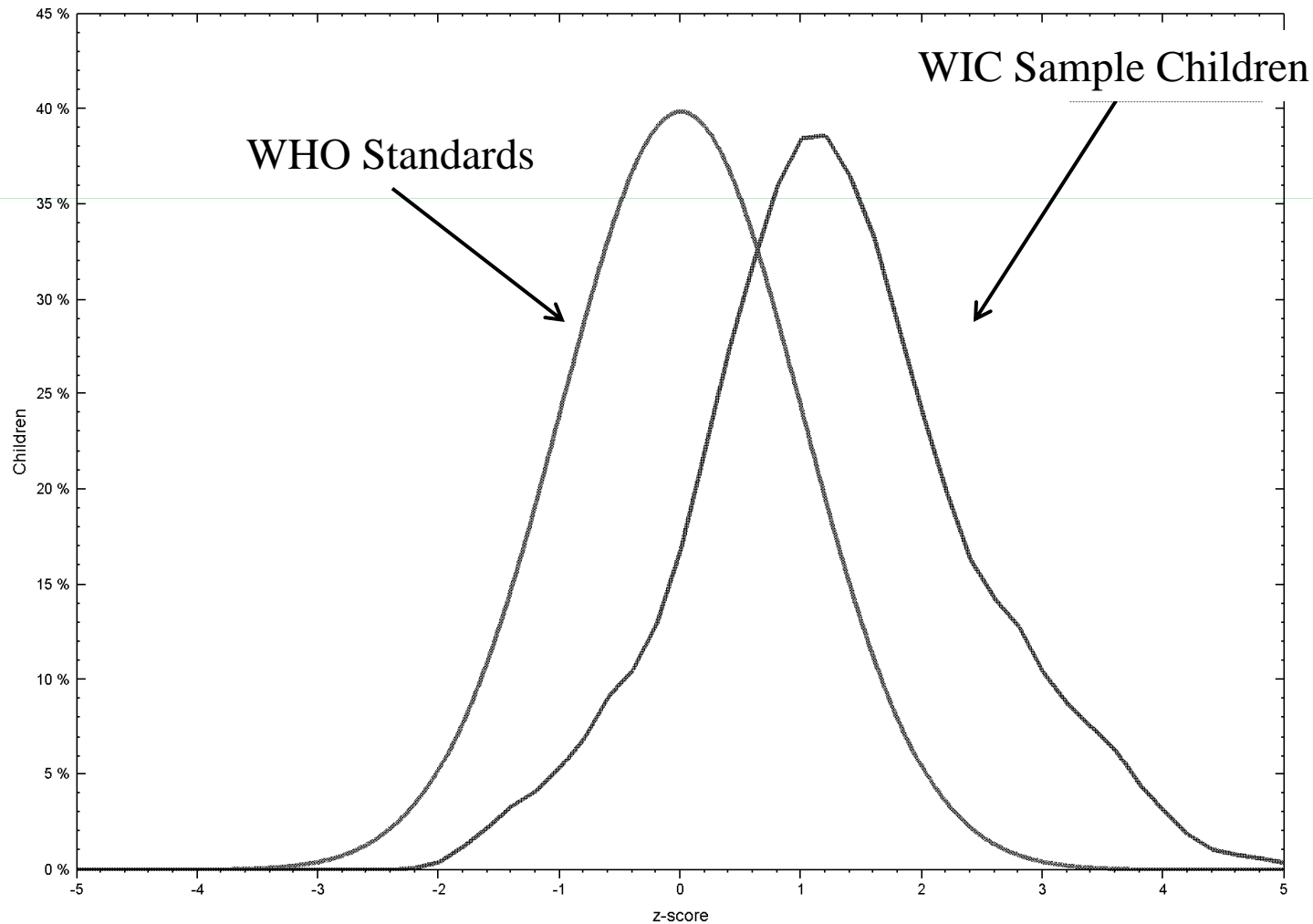
- **Research Questions**
 - What are the effects of child feeding practices on nutritional status and growth?
 - How do caregiver, household and neighborhood factors condition these effects?
- **Sample**
 - Approximately 100 Latino toddlers from the Sacramento, California area
- **Research Methods**
 - **Baseline data collection:** anthropometrics, feeding practices (new survey instrument developed), dietary intake, socioeconomic factors
 - **Second round data collection:** anthropometrics, feeding practices, dietary intake, changes in key socioeconomic factors
 - **Econometric model to identify links**



Toddler Weight Status (n=94):

	WHO	NCHS
Normal	68.1%	77.6%
Overweight	24.5%	16%
Obese	7.4%	6.4%

Toddler Weight/Length Z-Scores

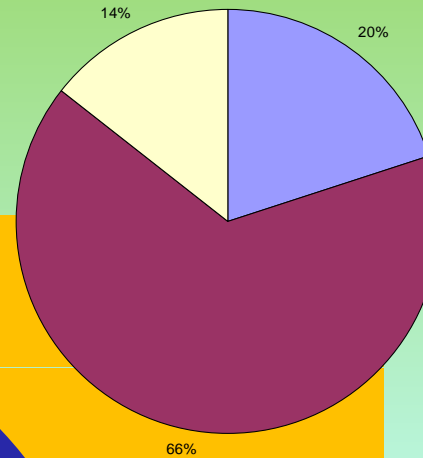




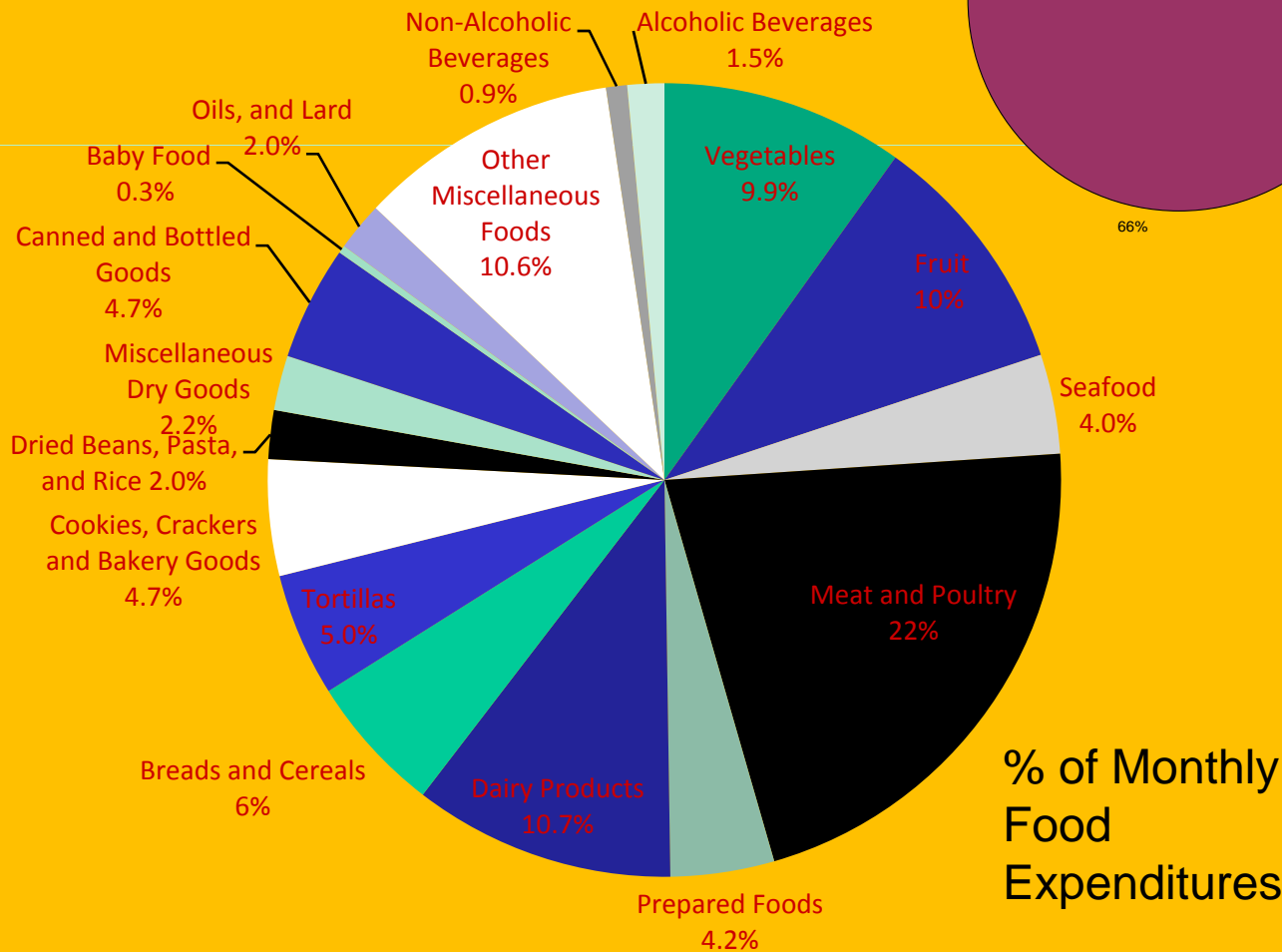
Preliminary WIC Study Results

Toddler Macronutrients

Maternal BMI (n=95):
Normal = 22%
Overweight = 37%
Obese = 41%



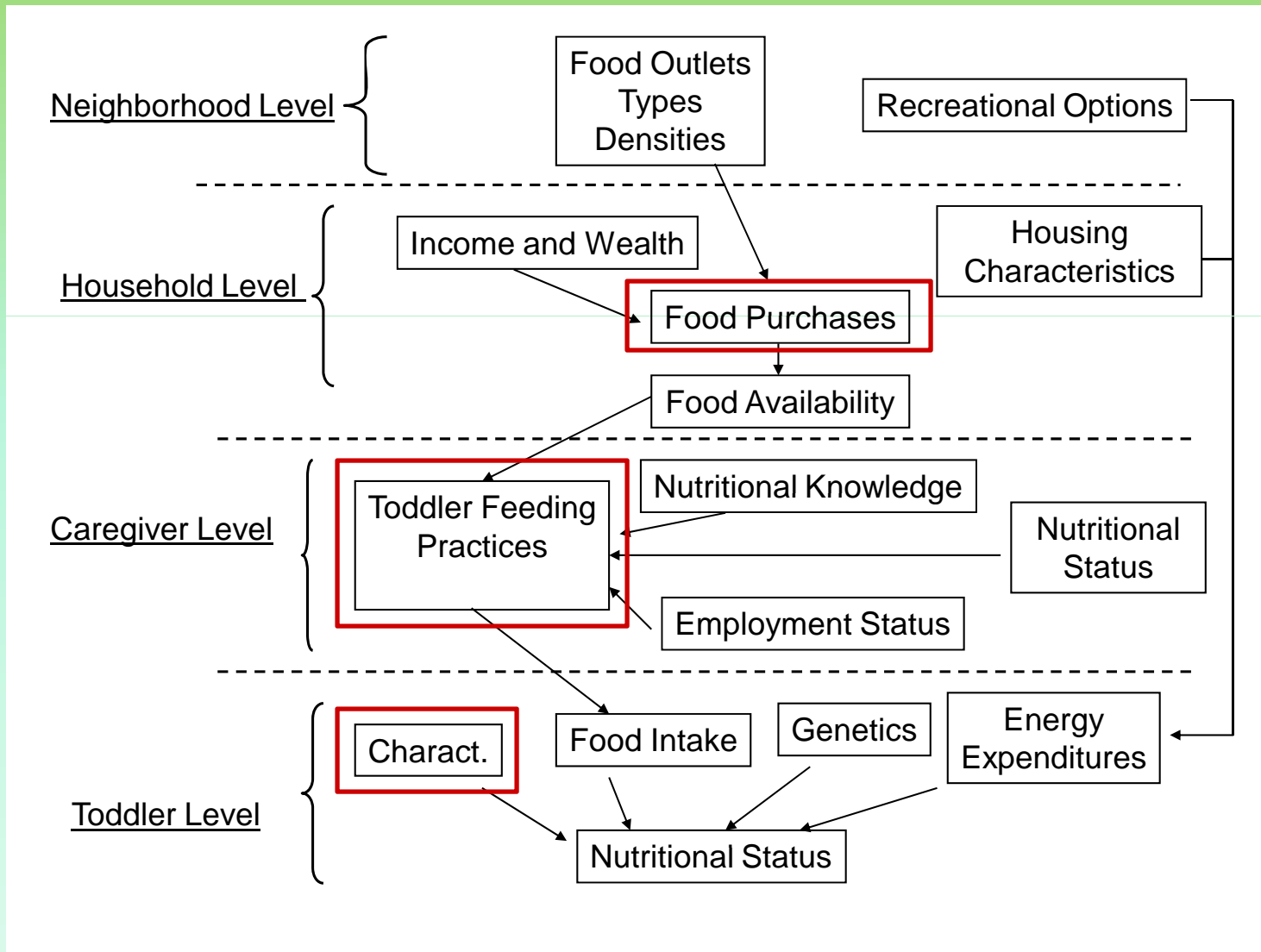
■ % calories from fat
 ■ % calories from carbohydrate
 ■ % calories from protein



Household Characteristic	Mean
<i>size of household</i>	5.24
<i>% live with extended family</i>	0.35
<i>number of children</i>	2.30
<i>born in US</i>	0.23
<i>speak English at home</i>	0.14
<i>employed</i>	0.35
<i>years of school</i>	10.88
<i>monthly income</i>	2215.13



Complex Links among Factors Potentially Influencing Toddler Nutritional Outcomes





Next Steps

- **Agricultural Policies**
 - Specialty crop R&D
 - Biofuels
- **Sweetener Study**
 - Changes in market structure
 - Model simulations
- **WIC Toddler Study**
 - Final round of data collection
 - Analysis and policy messages to WIC



Publications to Date

- Alston, J.M., D.A. Sumner, and S.A. Vosti. "Are Agricultural Policies Making Us Fat? Likely Links between Agricultural Policies and Human Nutrition and Obesity, and Their Policy Implications." *Review of Agricultural Economics* 28(3)(Fall 2006): 313-322.
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- Chaidez, V. and L. Kaiser. "Early Child-feeding Practices in Mexican Americans Deviate from Current Recommendations." Abstract published in the American Dietetic Association Journal Supplement for the American Dietetic Association Annual Meeting, September 29-Oct 1, 2007. (J Am Diet Assoc. 2007;107(supp3-Abstracts):A18)
- Beghin, J., and H.H. Jensen. "Farm Policies and Added Sugars in US Diets." "Farm Policies and Added Sugars in US Diets". 2008. CARD Working Paper, 08-WP 462, Center for Agricultural and Rural Development, Iowa State University. February.
- Alston, J.M., D.A. Sumner, and S.A. Vosti, "Farm Subsidies and Obesity in the United States." *ARE Update* 11(2) (November/December 2007): 1-4.
- Mullally, C.C., J.M. Alston, S.A. Vosti, D.A. Sumner, and M. Townsend. "Proposed Modifications to the Food Stamp Program: Likely Effects and their Policy Implications." Chapter in Elliott Blass (ed.) *Obesity: Causes, Mechanisms, and Prevention*, published by Sinauer Associates, Inc., Sunderland, MA, 2008.
- Alston, J.M., D.A. Sumner, and S.A. Vosti, "Farm Subsidies and Obesity in the United States: National Evidence and International Comparisons." Forthcoming in *Food Policy* in a special issue "Food Product Composition, Consumer Health, and Public Policy," L. Unnevehr and E. Golan (eds).
- Beghin, J., and H.H. Jensen. "Farm Policies and Added Sugars in US Diets." Forthcoming in *Food Policy* in a special issue "Food Product Composition, Consumer Health, and Public Policy," L. Unnevehr and E. Golan (eds).
- Alston, J.M. and P.G. Pardey. "Public Funding for Research into Specialty Crops." *HortScience* (2008): In Press.
- Beghin, J.C. and H.H. Jensen. Farm Policies and Added Sugars in US Diets. *Food Policy* (forthcoming 2008).
- Beghin, J.C. and H.H. Jensen. Farm Policies and Added Sugars in US Diets. CARD Working Paper 08-462.