The Prevalence, Depth, and Severity of Food Insecurity in the United States from 2001 to 2013

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Reasons for Looking at Food Insecurity in High Income Countries

- Serious consequences
  - in own right
  - negative health outcomes

Health Consequences Associated with Food Insecurity

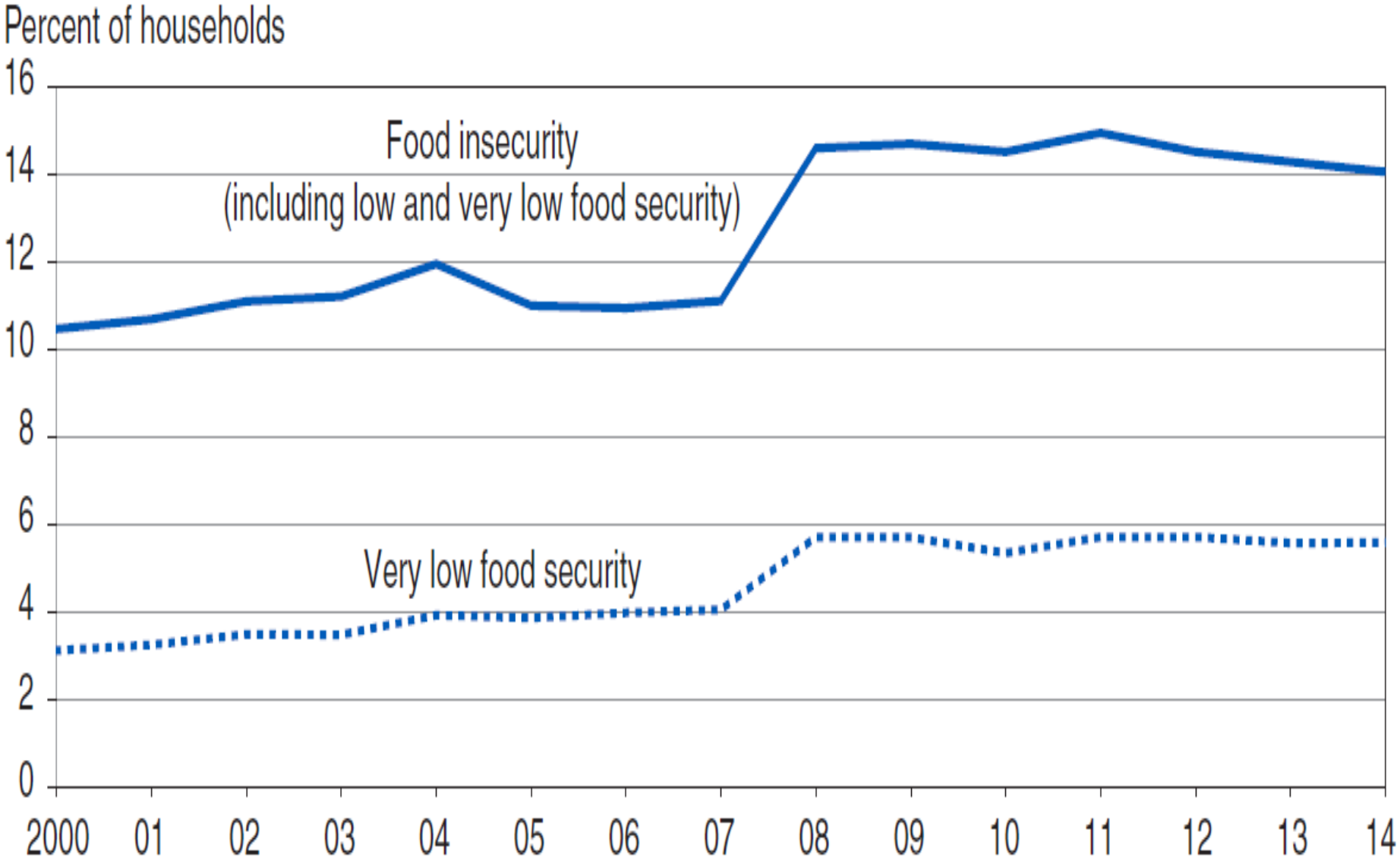
- Children
  - birth defects
  - anemia
  - lower nutrient intakes
  - cognitive problems
  - aggression and anxiety
  - being hospitalized
  - being in poorer general health
  - having asthma
  - behavioral problems
  - depression
  - worse oral health
- Adults
  - lower nutrient intakes
  - mental health problems
  - diabetes
  - hypertension
  - hyperlipidemia
  - poor outcomes on health exams
  - being in poor or fair health
  - poor sleep outcomes
  - depression
  - having limitations in activities of daily living

Reasons for Looking at Food Insecurity in High Income Countries

- Serious consequences
  - in own right
  - negative health outcomes
- Not completely characterized by income
- Policy
  - a central goal of USDA is to alleviate food insecurity
  - annual reports are closely followed by policymakers

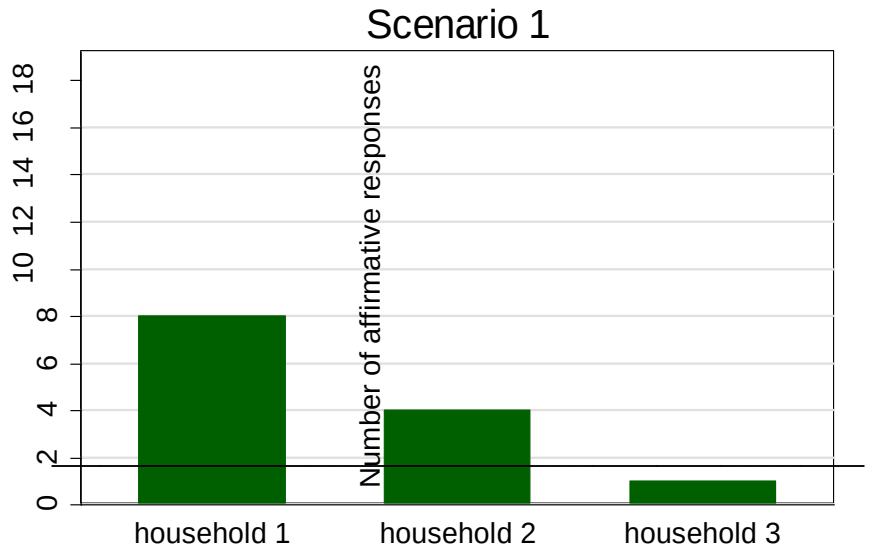
Defining Food Insecurity

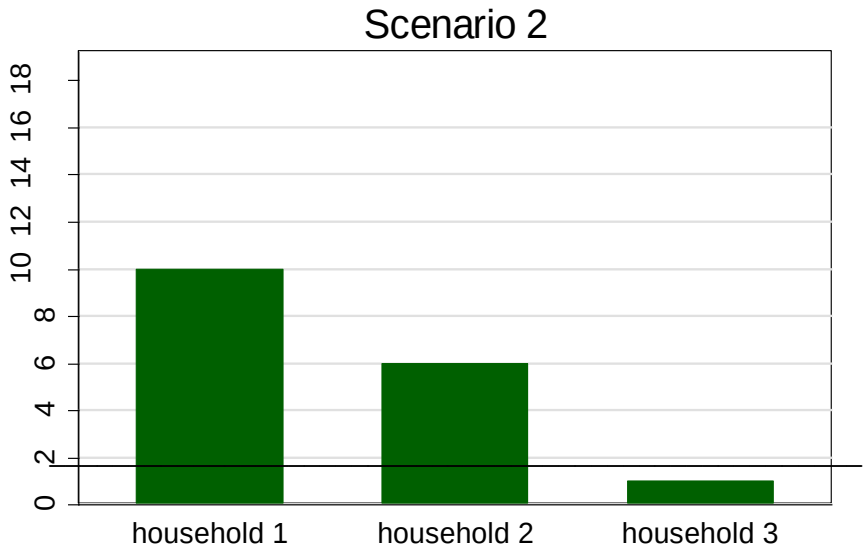
- A household's food insecurity status is based on responses to 18 questions in the Core Food Security Module (CFSM)
- Examples of questions:
  - "I worried whether our food would run out before we got money to buy more"
  - "Did you or the other adults in your household ever cut the size of your meals or skip meals because there wasn't enough money for food"
  - "Were you ever hungry but did not eat because you couldn't afford enough food"
  - "Did a child in the household ever not eat for a full day because you couldn't afford enough food"
- Categories
  - food insecure if have 3 or more affirmative responses
    - no distinction between number of affirmative responses

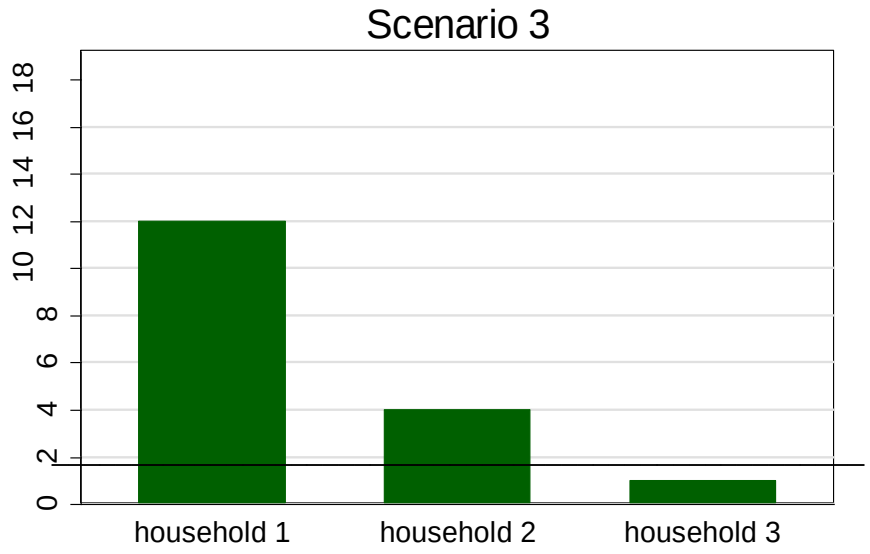


Source: USDA, Economic Research Service using data from U.S. Department of Commerce, U.S. Census Bureau, Current Population Survey Food Security Supplement.

Scenarios Regarding Food Insecurity







Notation

$d_i = [s_i - e]/[z - e]$ if $s_i > e$

$d_i = 0$ if $s_i \leq e$

s is the food indicator where a higher value indicates a more unfavorable food situation

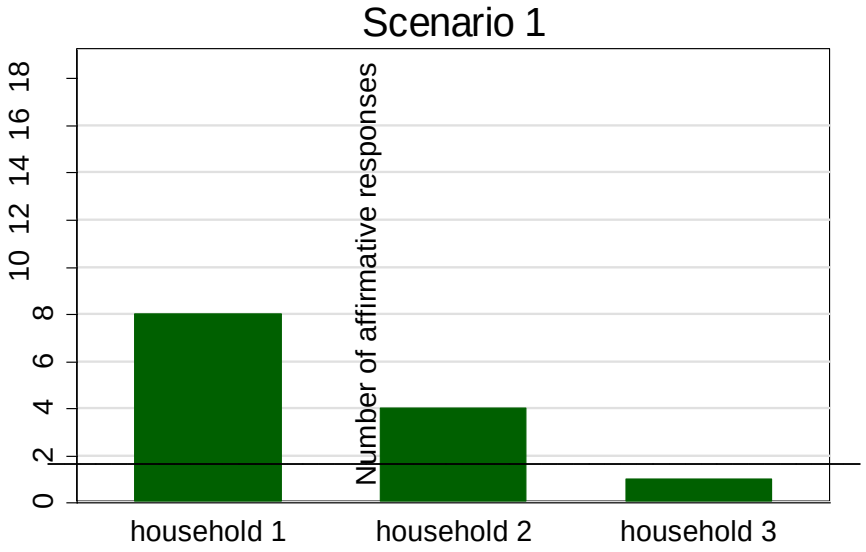
e is the benchmark such that a household is considered food insecure if and only if $s_i > e$

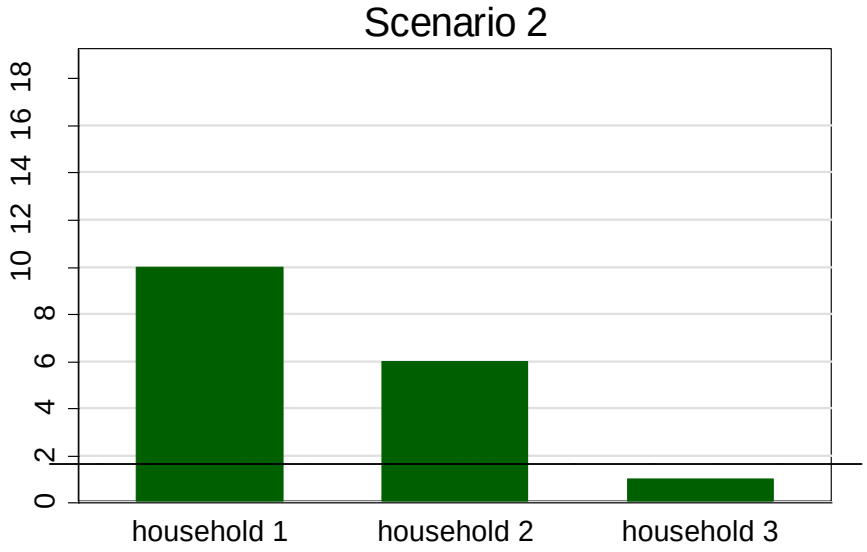
z is the most unfavorable situation with respect to food

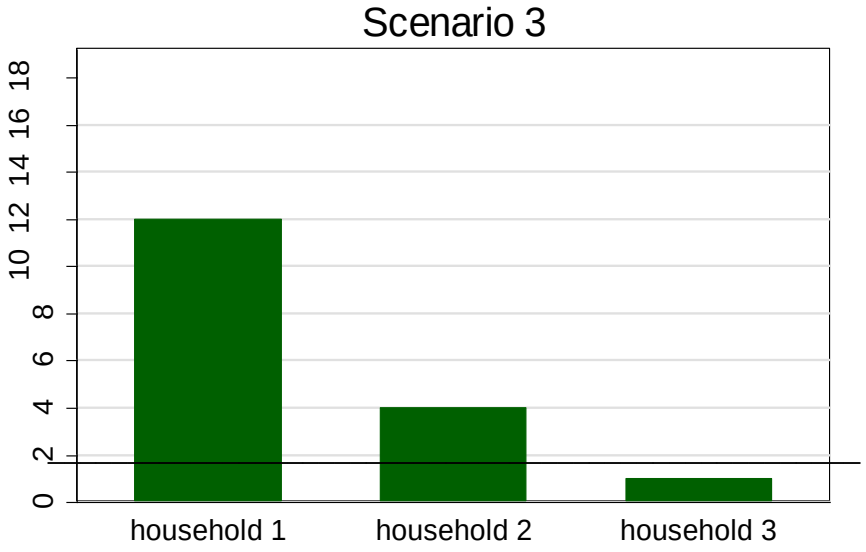
$$d^{\alpha} = \frac{\sum_{i=1}^{n} (d_i)^{\alpha}}{n}$$

n is the number of households in the group

Scenarios Regarding Food Insecurity



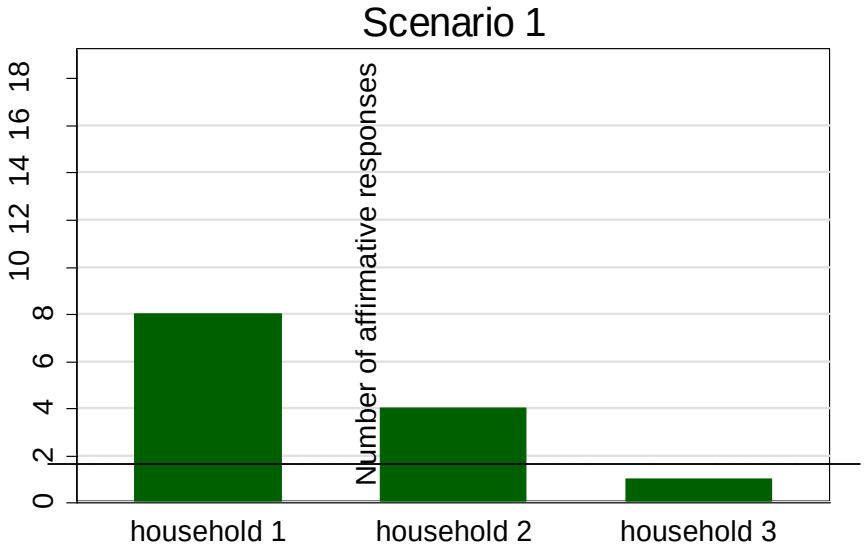


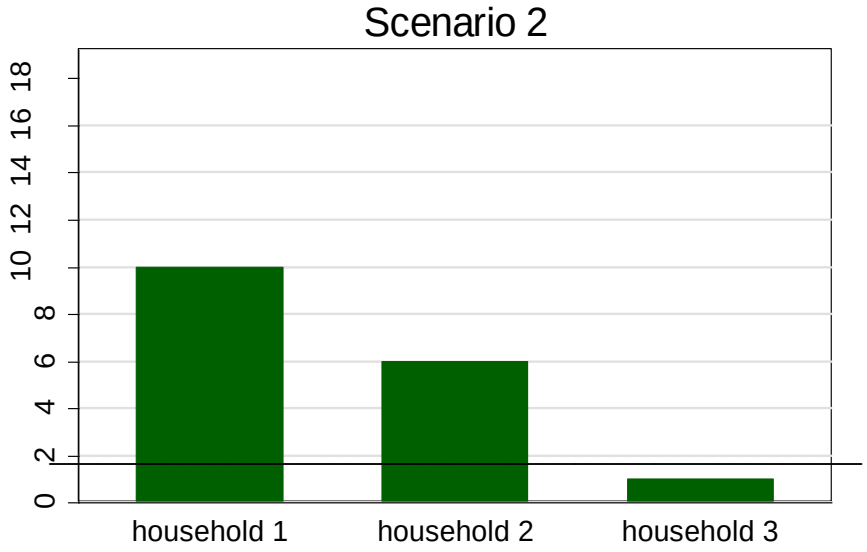


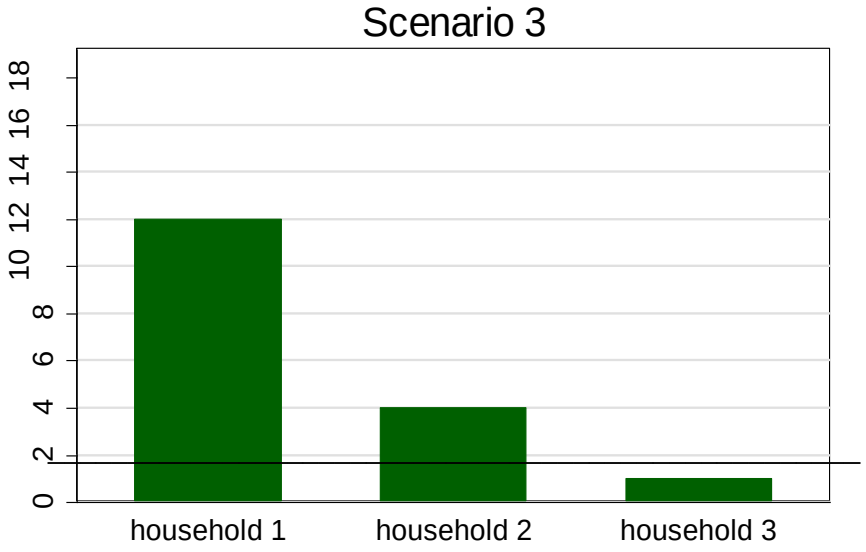
$\alpha=0$

Level of food insecurity is the same in all three scenarios

Scenarios Regarding Food Insecurity





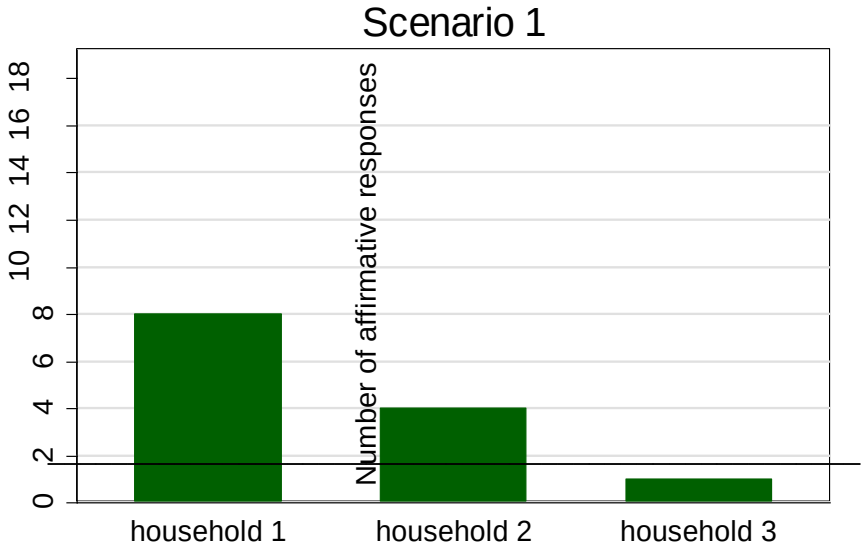


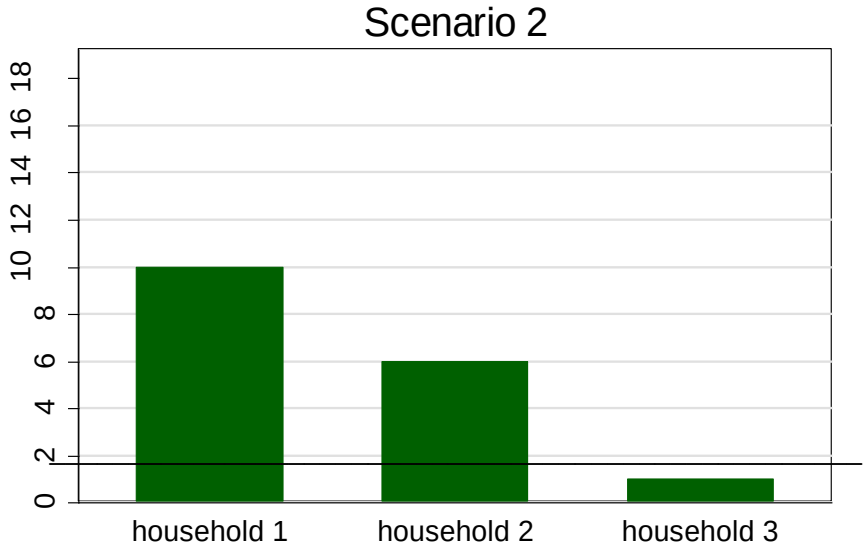
α=1

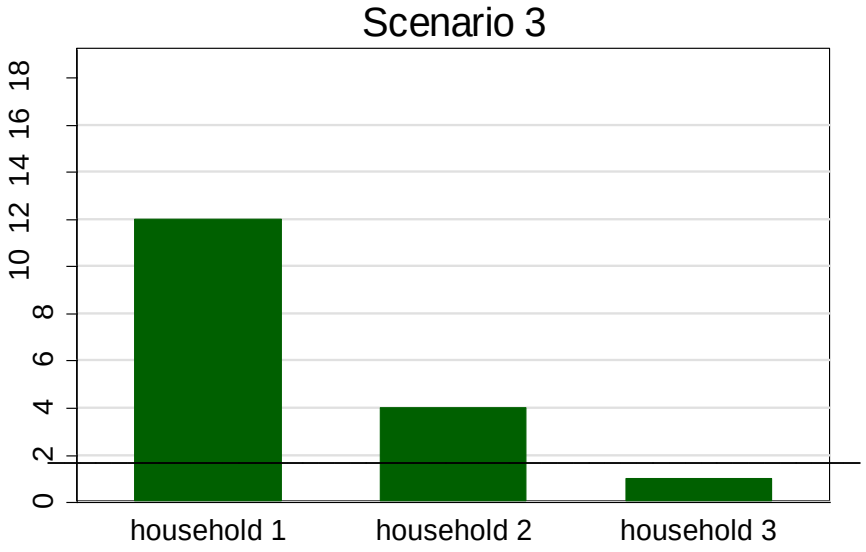
Level of food insecurity is higher in scenarios 2 and 3 than in scenario 1

Level of food insecurity is the same in scenarios 2 and 3

Scenarios Regarding Food Insecurity



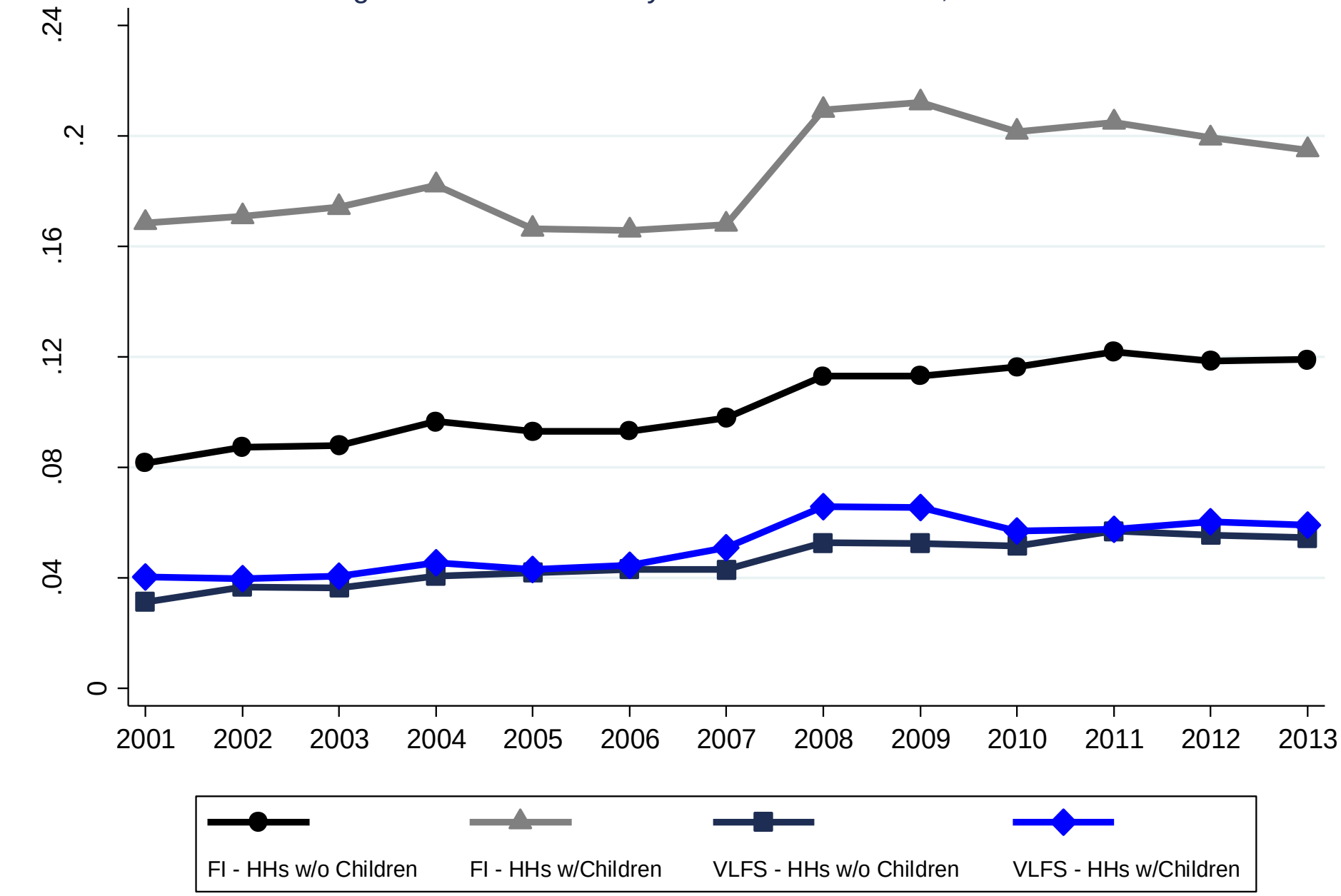




$\alpha=2$

Level of food insecurity is highest in scenario 3, next highest in scenario 2, and lowest in scenario 1

Figure 1: Food Insecurity and VLFS Incidence, 2001-2013



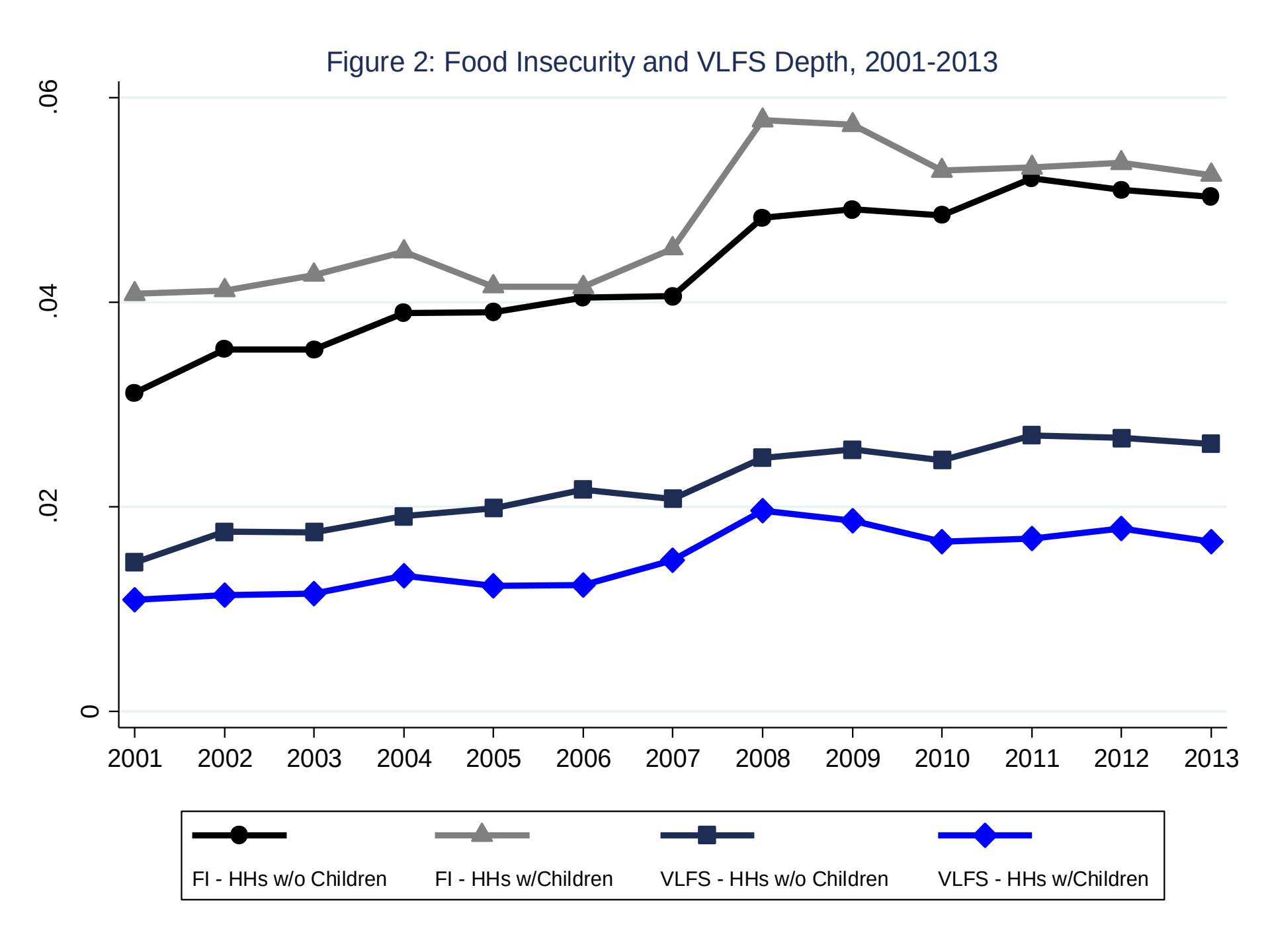
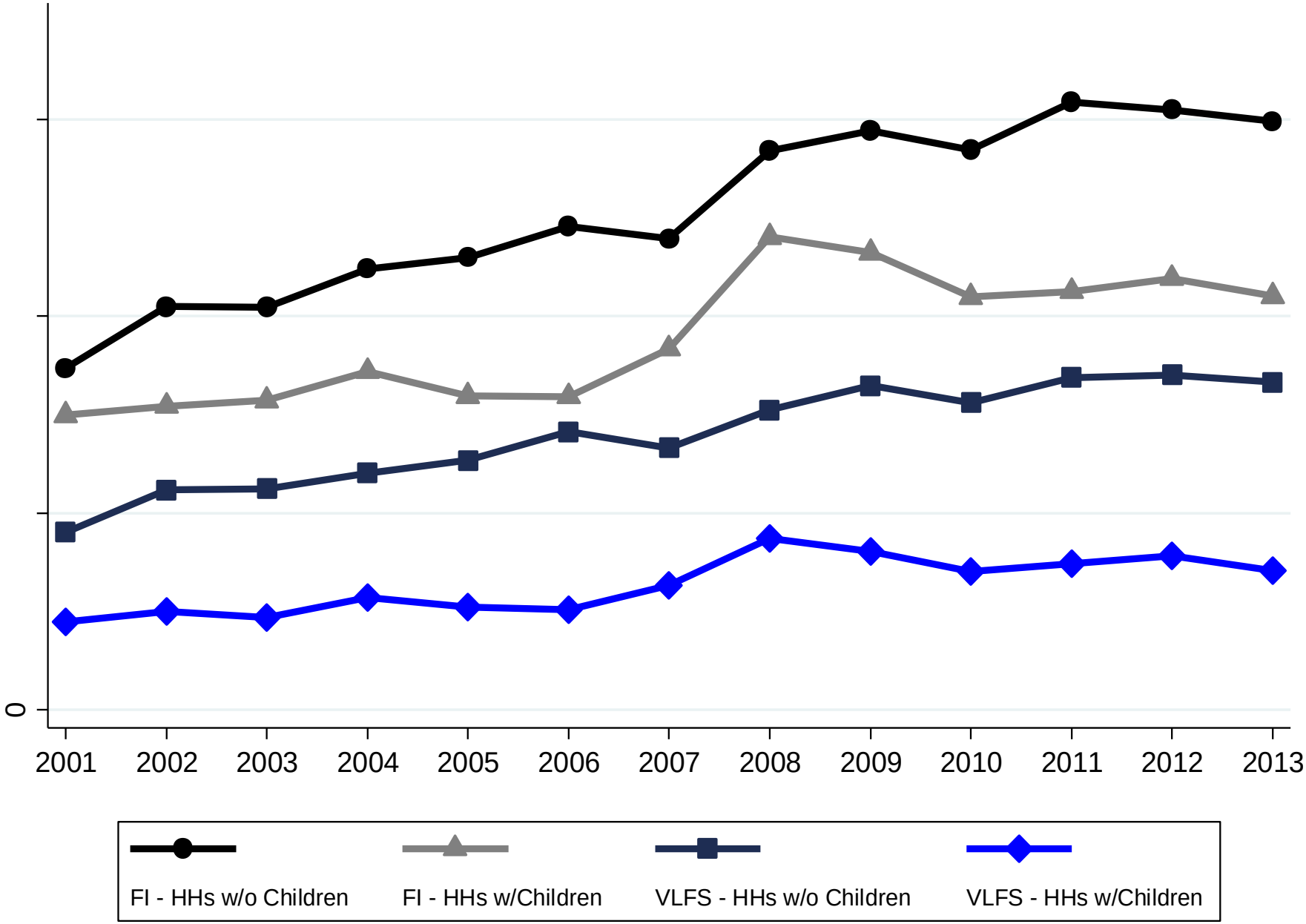


Figure 2: Food Insecurity and VLFS Depth, 2001-2013
.06
.04
.02
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
FI - HHs w/o Children
FI - HHs w/Children
VLFS - HHs w/o Children
VLFS - HHs w/Children

Figure 3: Food Insecurity and VLFS Severity, 2001-2013



Households with Children

	Prevalence	Depth	Severity
Average Values	0.186	0.048	0.019
Percent increase from low to high	27.9	41.7	60.7
Percent increase from 2001 to 2013	15.6	28.6	40.6
Percent increase from 2007 to 2013	16.1	15.9	14.7

Households without Children

	Prevalence	Depth	Severity
Average Values	0.103	0.043	0.025
Percent increase from low to high	49.6	67.7	78.2
Percent increase from 2001 to 2013	46.0	61.8	72.5
Percent increase from 2007 to 2013	21.5	24.0	24.9

	Prevalence	Depth	Severity
Income/Poverty Line	-0.037**	-0.011**	-0.005**
	(0.002)	(0.001)	(0.000)
Less than High School Degree	0.112**	0.028**	0.010**
	(0.013)	(0.005)	(0.003)
High School Degree	0.068**	0.013**	0.004*
	(0.009)	(0.003)	(0.002)
Some College but no Degree	0.043**	0.011**	0.004*
	(0.009)	(0.003)	(0.002)
Homeowner	-0.095**	-0.030**	-0.013**
	(0.008)	(0.003)	(0.002)
Non-metro Resident	-0.015	-0.008**	-0.004**
	(0.008)	(0.003)	(0.002)
African-American	0.039**	0.006	0.001
	(0.010)	(0.004)	(0.002)
Other	-0.007	-0.003	-0.001
	(0.012)	(0.004)	(0.002)
Hispanic	0.001	-0.012**	-0.008**
	(0.010)	(0.003)	(0.002)
Married	-0.088**	-0.027**	-0.011**
	(0.007)	(0.003)	(0.002)
Constant	0.382**	0.116**	0.050**
	(0.012)	(0.004)	(0.002)

	Prevalence	Depth	Severity
Poverty Rate	0.267**	0.091**	0.037**
	(0.070)	(0.023)	(0.013)
Unemployment Rate	0.666**	0.133*	0.038
	(0.202)	(0.066)	(0.036)
Median Income	-0.003	-0.001	-0.000
	(0.003)	(0.001)	(0.001)
Percent Hispanic	-0.064	-0.034	-0.019
	(0.067)	(0.022)	(0.012)
Percent African-American	-0.106	-0.060**	-0.033**
	(0.074)	(0.022)	(0.012)
Percent Homeownership	-0.040	0.002	0.001
	(0.053)	(0.017)	(0.009)
...			
2007 (year fixed effect)	0.008	0.008**	0.005**
	(0.008)	(0.003)	(0.001)
2008 (year fixed effect)	0.047**	0.022**	0.012**
	(0.008)	(0.003)	(0.001)
2009 (year fixed effect)	0.028*	0.017**	0.010**
	(0.011)	(0.004)	(0.002)
2010 (year fixed effect)	0.002	0.009*	0.006**
	(0.012)	(0.004)	(0.002)
2011 (year fixed effect)	0.001	0.007*	0.005**
	(0.012)	(0.004)	(0.002)
2012 (year fixed effect)	0.009	0.011**	0.007**
	(0.011)	(0.004)	(0.002)
2013 (year fixed effect)	0.017	0.013**	0.007**
	(0.011)	(0.004)	(0.002)
Constant	0.151**	0.033*	0.012
	(0.045)	(0.014)	(0.008)

Conclusions

- Trajectories of food insecurity differ by whether one looks at prevalence, depth, or severity
- Determinants of food insecurity differ by whether one looks at prevalence, depth, or severity
  - household level
  - state level
- Efficacy of policy interventions to reduce food insecurity may differ by whether one looks at prevalence, depth, or severity