Results of the School Nutrition Dietary Assessment Study (SNDA-III)

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USDA Food and Nutrition Service

Presentation at SNA-ANC
July 20, 2008, Philadelphia, PA

School Nutrition : Select Events Chronology 1989-present

1989: NRC Diet and Health Report
1990: Dietary Guidelines for Americans, 3rd edition (fat & sat.fat)
1991: Children's Diets in the Mid-1990s **published (NHANES 1994-96 data)**
1991-92: SNDA-1 data collected (RDAs good; fat/sat.fat average: 38%/15%); Food Guide Pyramid
1992-93: Dietary Guidelines implementation funding began ($2m);
Meal Cost Study-I data collected
1993: SNDA-1 findings published; work begins on SMI rule
1994: SMI proposed rule published for comment
1995: DGA 1995; SMI final rule published; *Team Nutrition* begins; HEI-1995 **publishe**
1996: NET Program appropriations end; School Food Purchase-II data collected
1997-98: SMI Implementation Study began 3 year data collection
1998-99: SNDA-2 data collected; School Food Purchase Study-II published
1999: FNS Healthy School Nutrition Environment forum
2000: Call to Action (USDA, 5 leading medical associations)
DGA 2000; *Changing the Scene* toolkit published by USDA
2001: SNDA-2 report published
2002: SMI Implementation Study 3rd & final report published
2004: CN & WIC Reauthorization *(June 30, 2004)*
2005: DGA 2005; *HealthierUS* School Challenge; *Making it Happen;*
SNDA-3 data collected; HEI-2005 **published**
2005-06: School Meal Cost-II **data collected**
2007: SNDA-III report published
2008: School Meal Cost-II report published; FNS contracts with IOM

Update RDAs to DRIs

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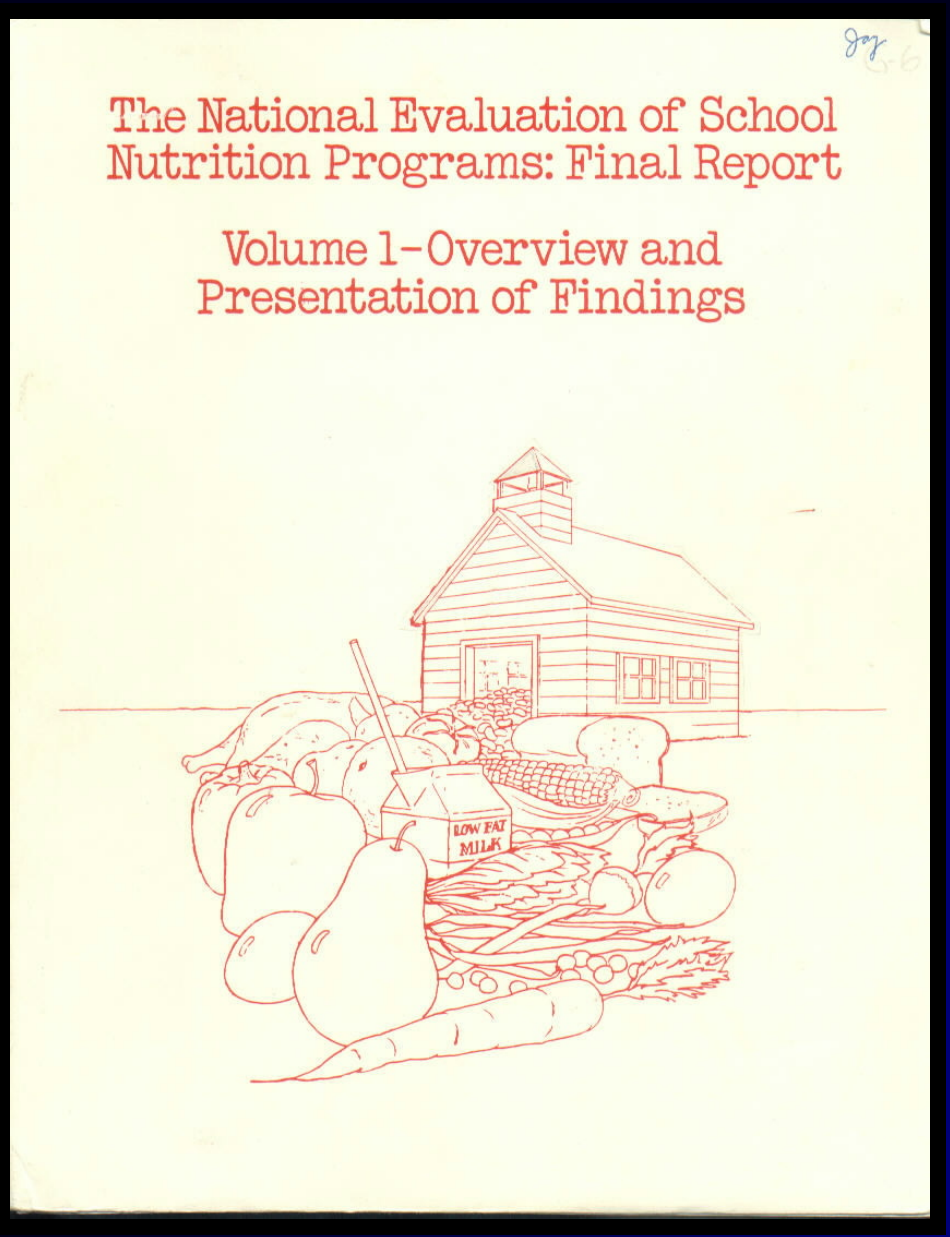

1983 NESNP-1
data from
School Year 1980-81

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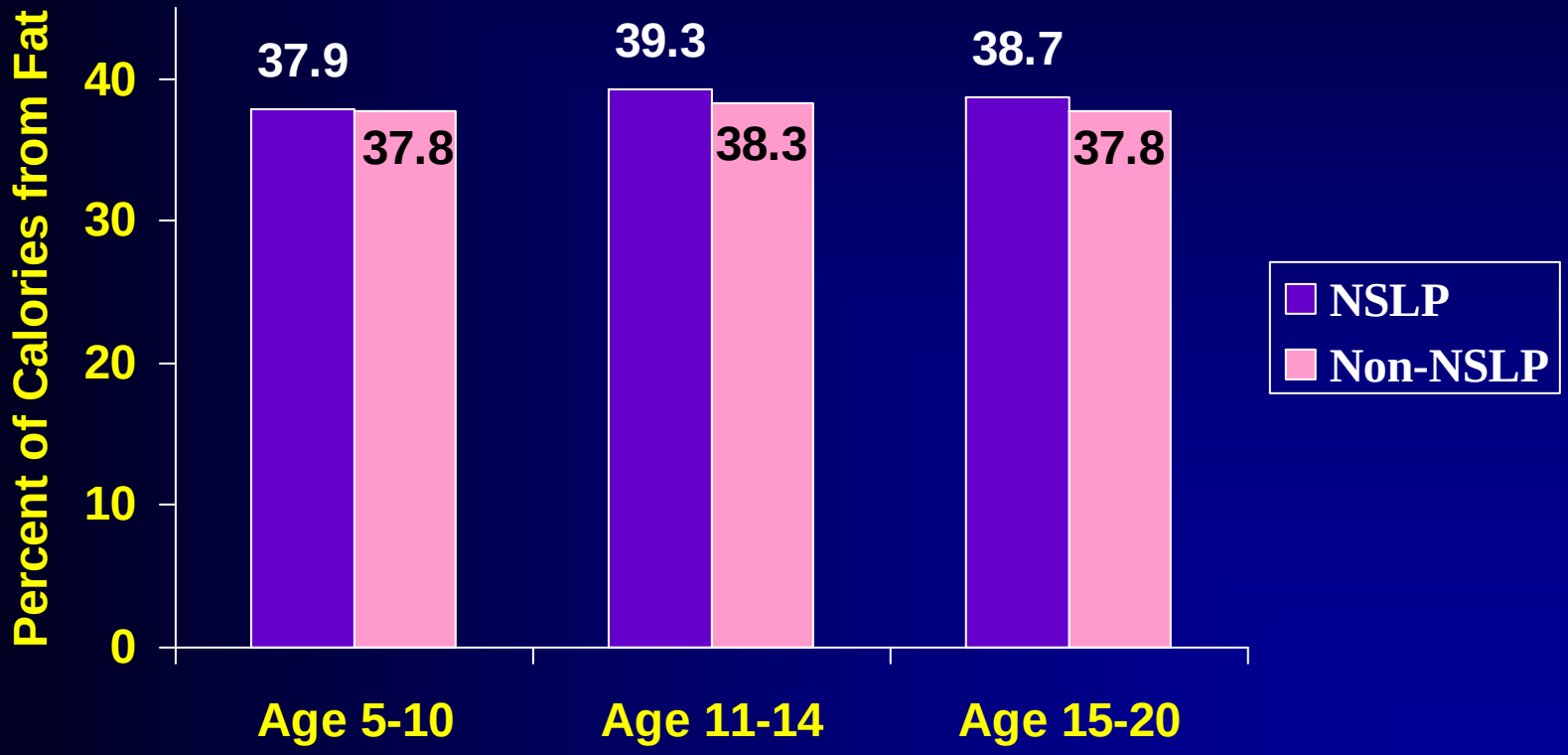
National Evaluation of School Nutrition Programs (NESNP)

Percent of Calories from Fat at Lunch
Nationally Representative Data from School Year 1980-81



Source: *The Sodium and Macronutrient Content of USDA School Lunches.* Jan. 1988
N = 5,740

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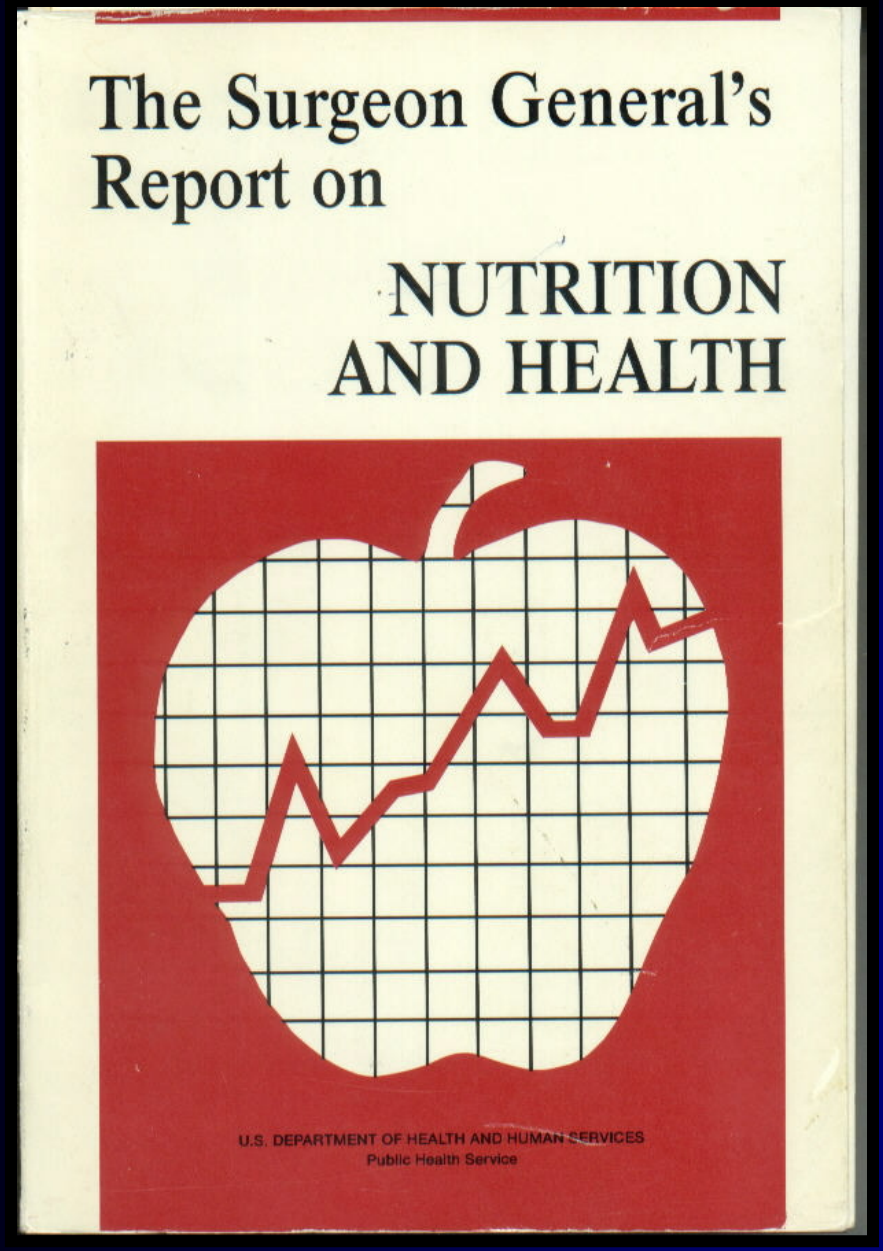

1988
Surgeon General's Report on Nutrition and Health

Did not recommend a quantitative limit on fat or saturated fat

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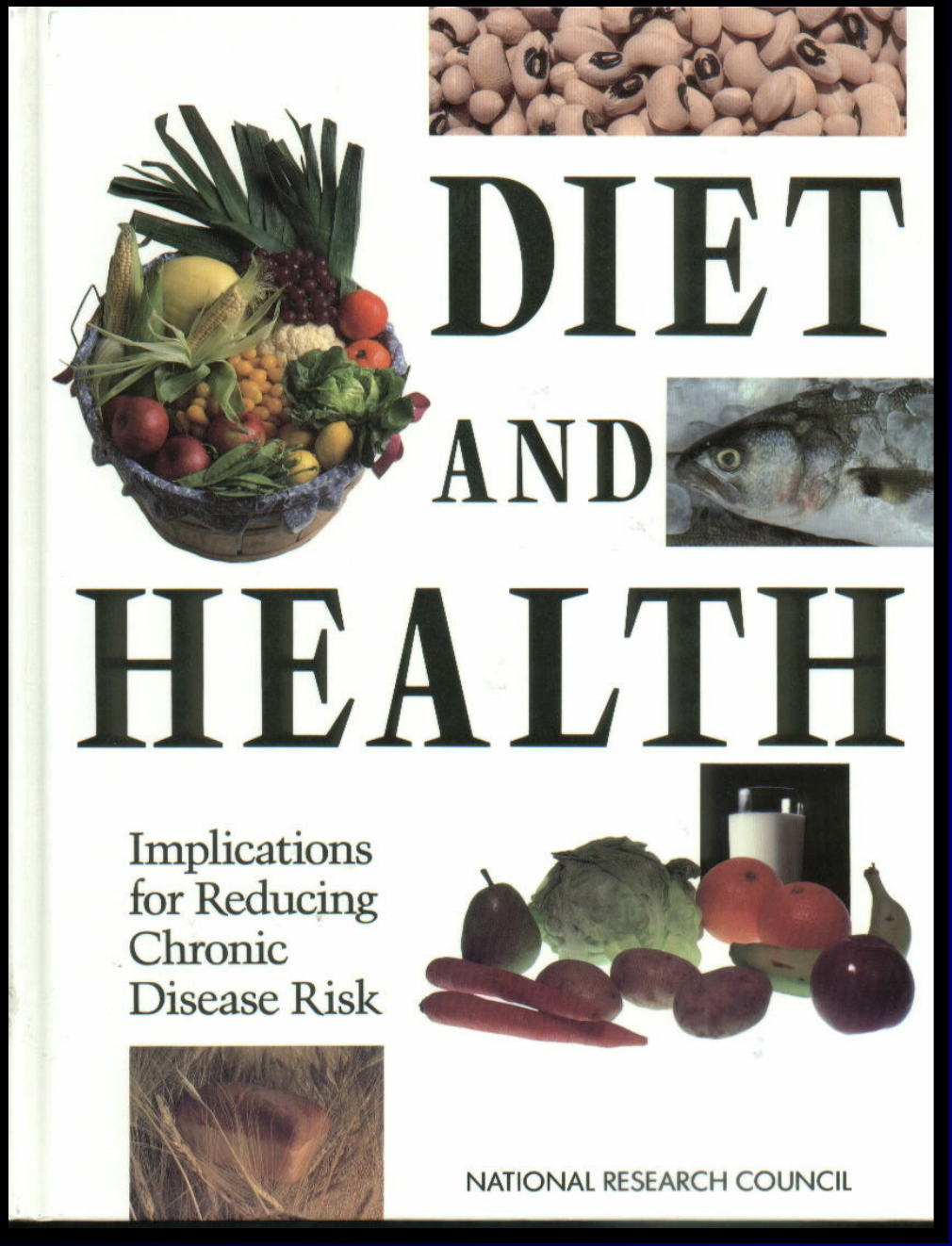

1989
National Research Council
Diet and Health Report

TOTAL FAT
All individuals:
Less than or equal to 30 percent of calories
Population mean:
Substantially below 30 percent of calories

SATURATED FAT
All individuals:
less than 10 percent of calories
Population mean :
7 to 8 percent of calories

CHOLESTEROL: Less than 300 mg

SODIUM: limit salt (sodium chloride) to 6 grams or less (2400mg sodium)

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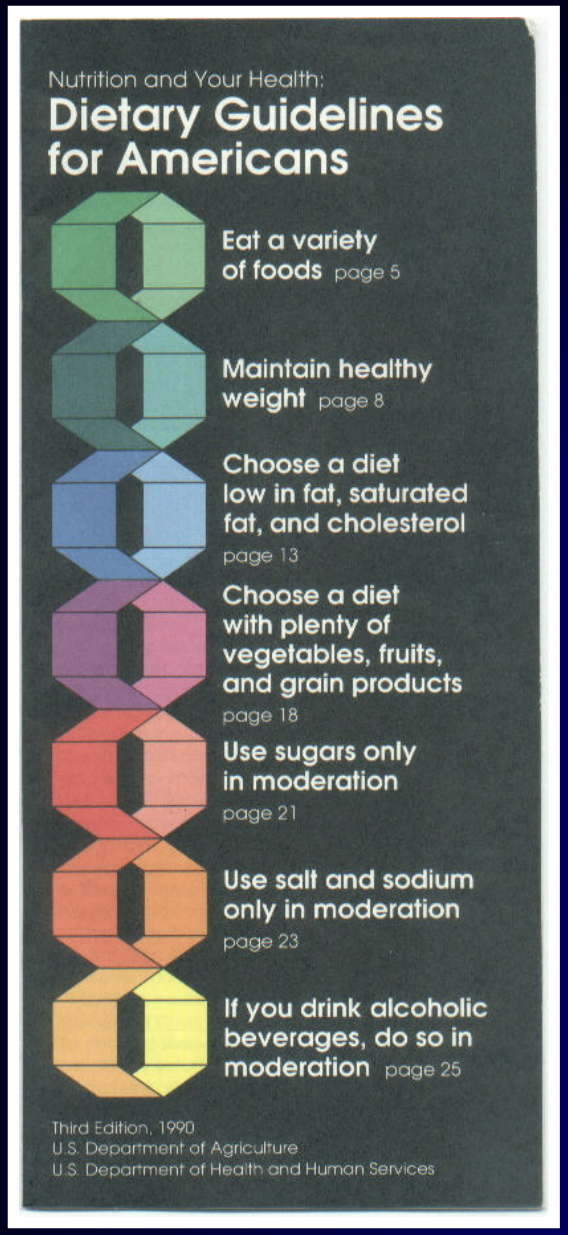

1990

Dietary Guidelines for Americans **first adopt quantitative limits for total fat and saturated fat**

- **Total Fat:** An amount that provides ***30 percent or less*** of calories is suggested

- **Saturated Fat:** An amount that provides ***less than 10 percent*** of calories is suggested

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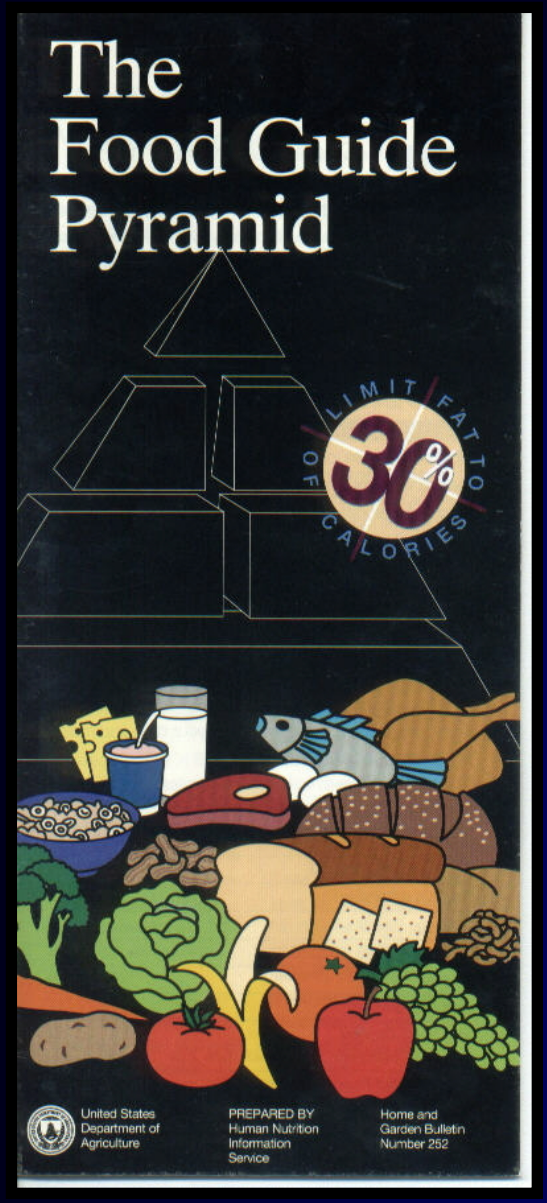
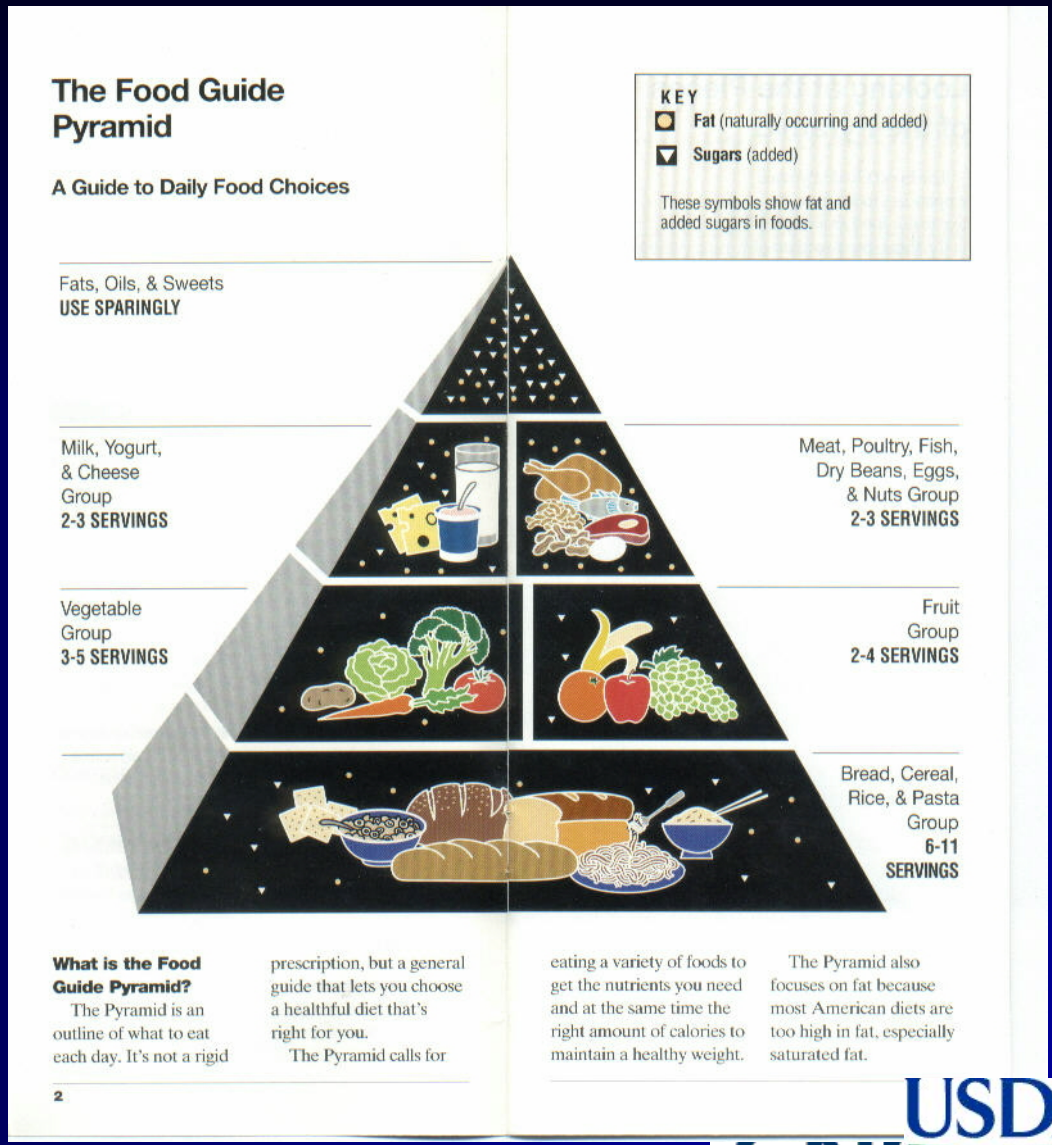
1992: The Food Guide Pyramid





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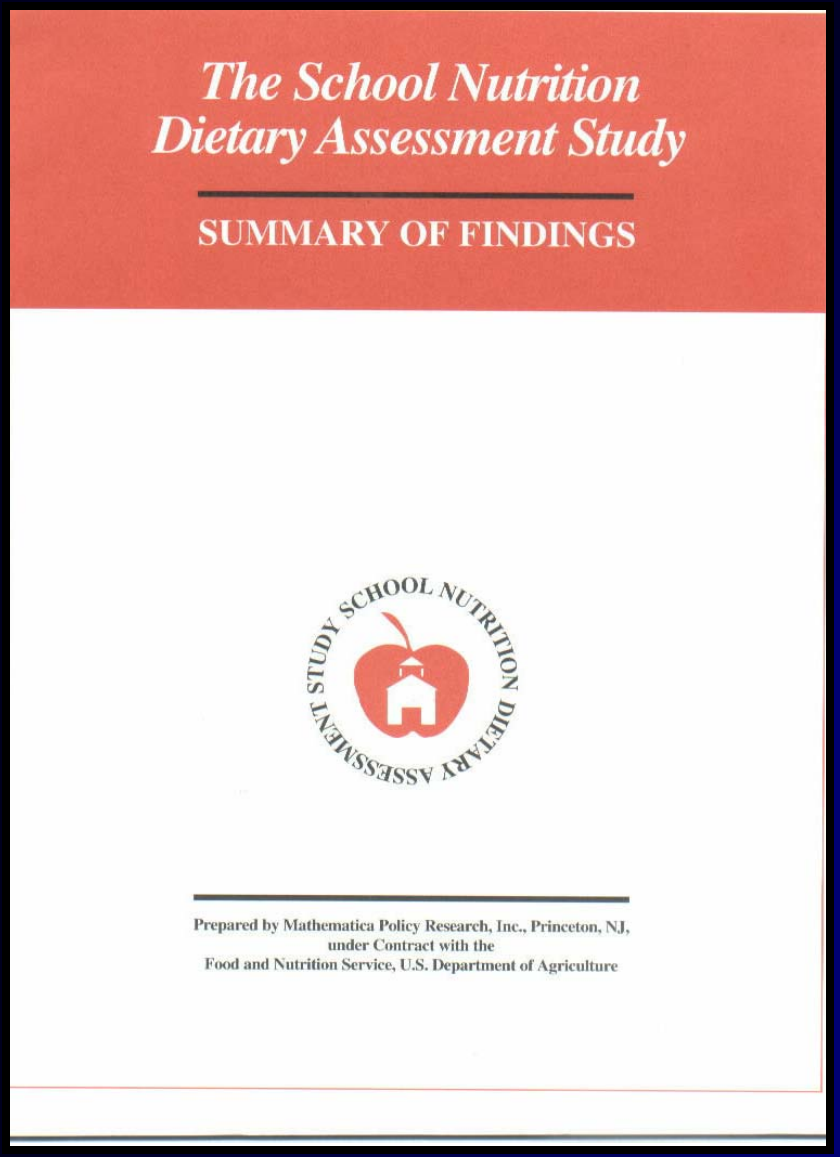

1993 SNDA-1

data from School Year 1991-92

Contractor:
Mathematica Policy Research (MPR)

MPR Co-Principal Investigators:
John Burghardt
Barbara Devaney

FNS Project Officers:
Leslie Christovich
Patricia McKinney

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Select Findings from SNDA-1

Nationally Representative Findings from SY1991-92

NSLP Lunches

- Provided 1/3 of more of the 1989 RDA for calories & nutrients studied
- Fat and saturated fat offered and consumed exceed 1990 Dietary Guidelines-based standard (fat 38% / 37%; saturated fat 15% / 14%)
- 34% of elementary schools and 71% of secondary schools offered a *choice* that met 30% fat, but …
- only 1%of schools averaged 30% calories from fat or less
- Met NRC level cholesterol, but not for sodium and carbohydrate

SBP Breakfasts

- Provided 1/4 or more of the 1989 RDA for calories & nutrients studied, except for zinc
- Fat (31% of calories) was close to meeting the 1990 Dietary Guidelines, but saturated fat (14% offered; 13% consumed) was not
- Met NRC level for cholesterol & carbohydrate, but not sodium

N = 545 schools; 3,350 students

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CSFII Analysis of Diets of School-Aged Children

Two FNS-Sponsored Reports

- Children's Diets in the Mid-1990s
- Changes in Children's Diets, 1989-1991 to 1994-1996

Contractor: Mathematica Policy Research (MPR)
Authors: Phil Gleason & Carol Suitor
USDA Project Officer: Edward Herzog

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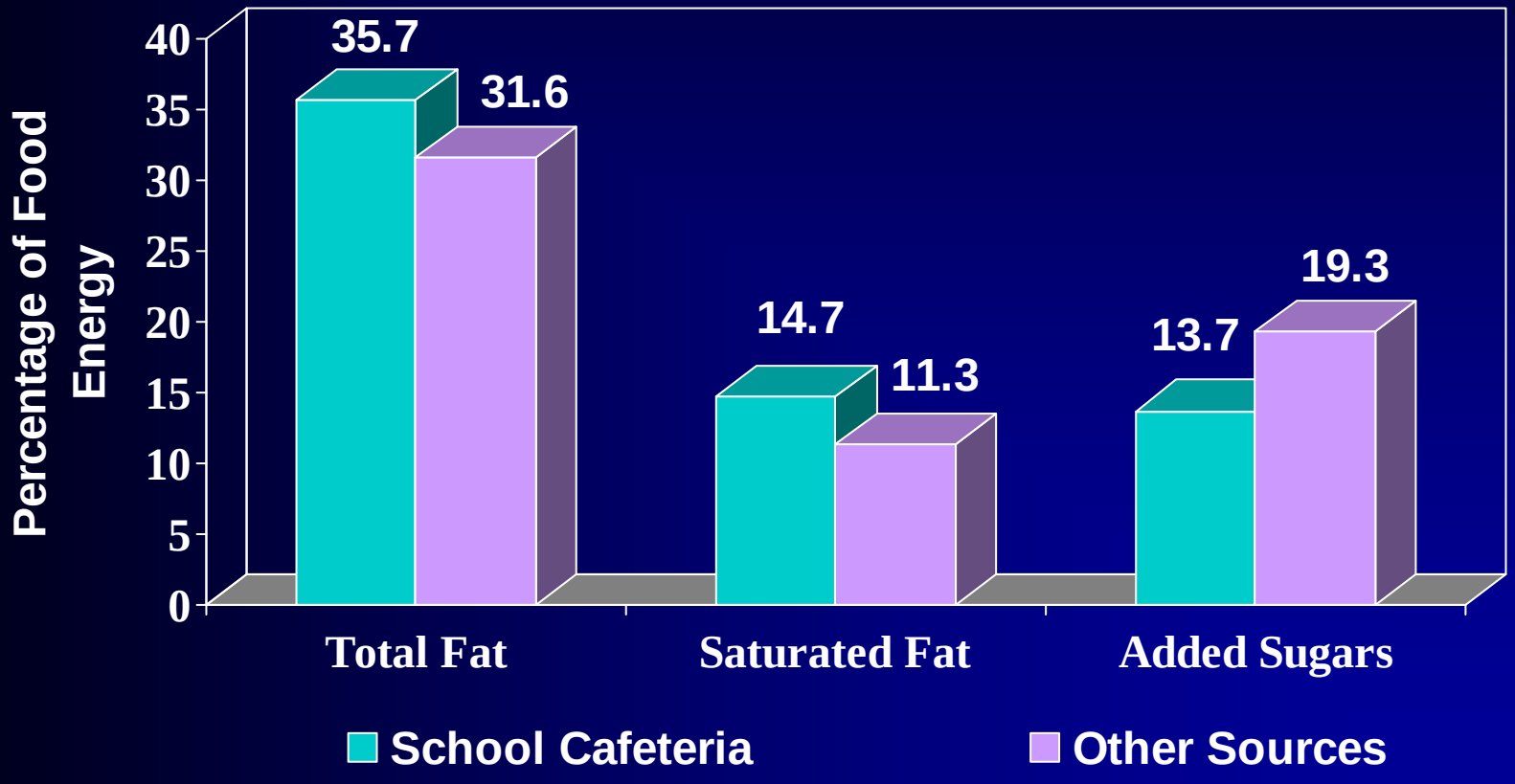
Mean 24-Hour Intake by Where Food Obtained by Children Ages 6-18 Years on School Days, 1994-96



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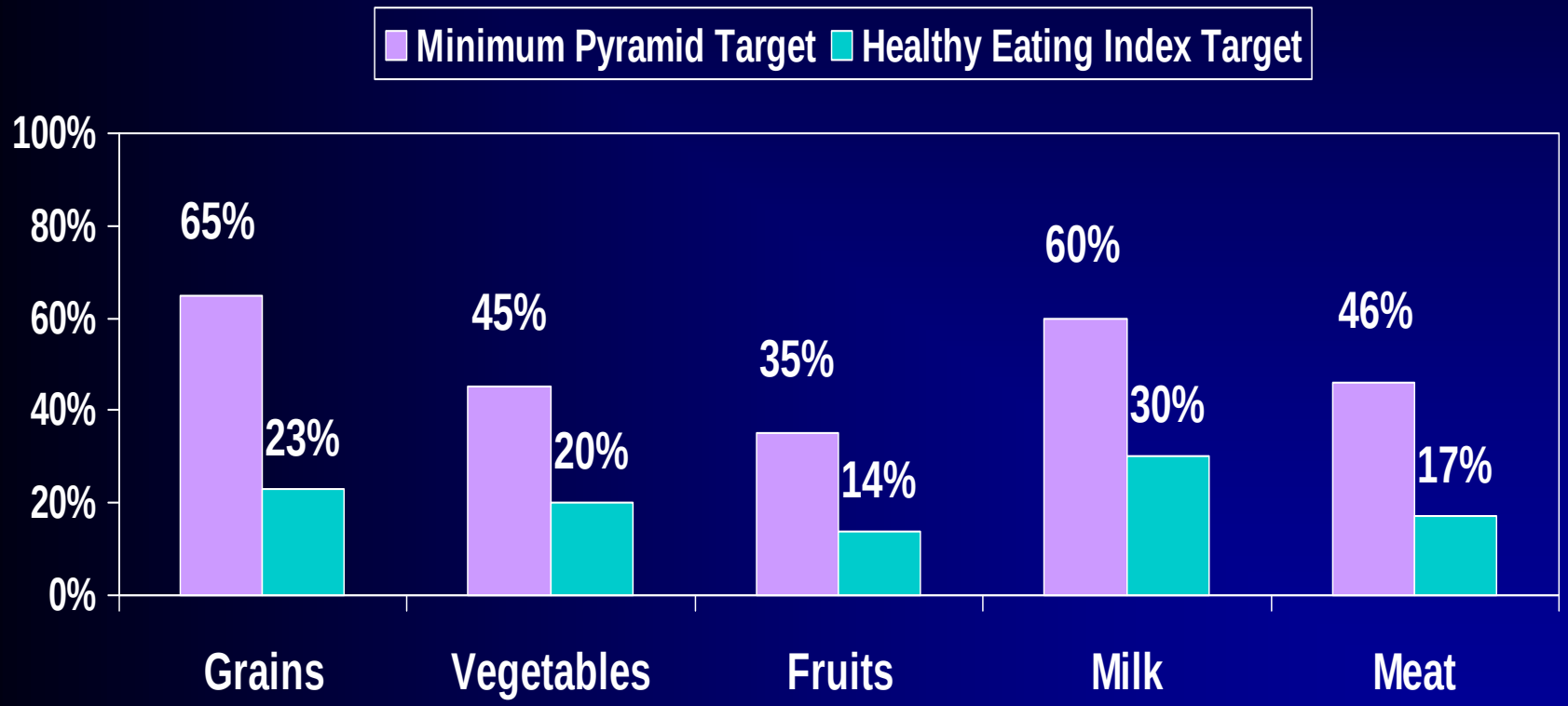
Percentage of School-Age Children Meeting Food Group Targets, 1994-96



Based on original Food Guide Pyramid-1992 and HEI-1995

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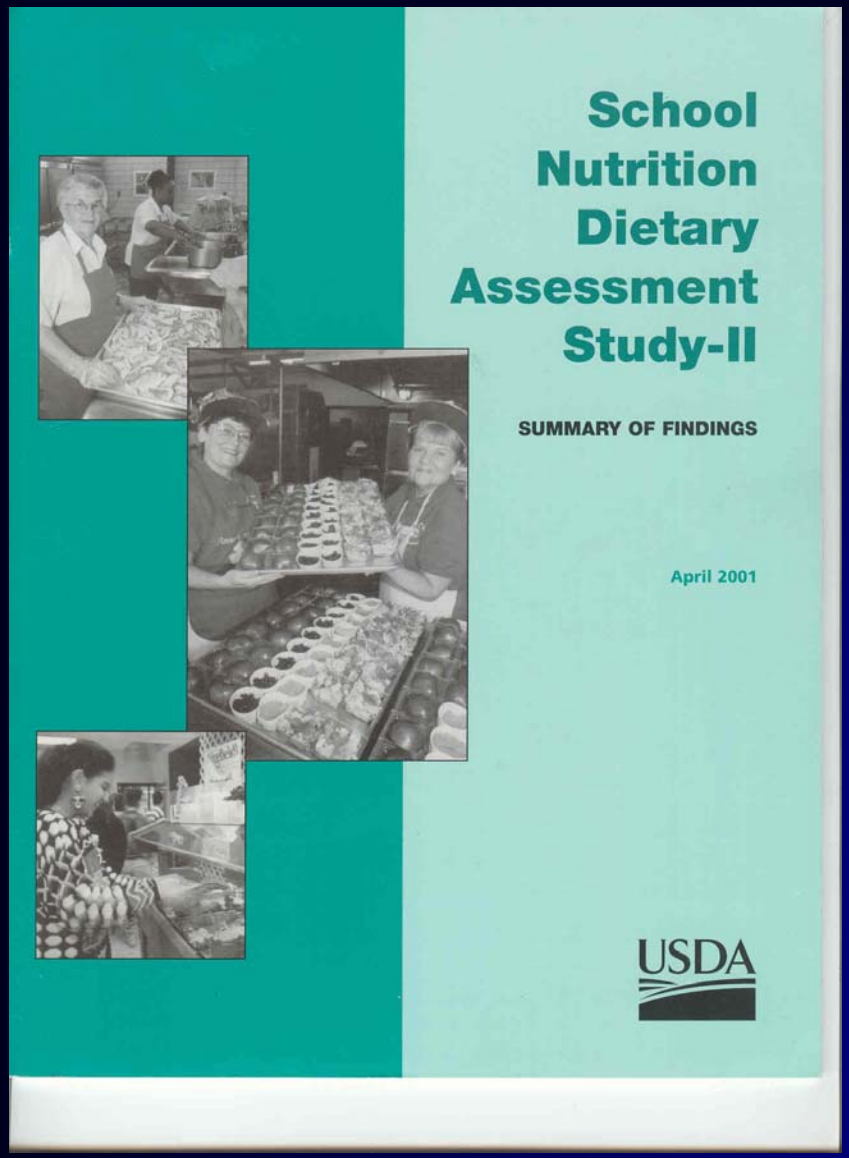

2001 SNDA-II

data from School Year 1998-99

Contractor:
Abt Assocaites

Abt Project Director:
Mary Kay Fox

FNS Project Officers:
John Endahl
Patricia McKinney

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Select Findings from SNDA-II

Nationally Representative Findings from SY1998-99

NSLP Lunches

- Still provided 1/3 of more of the 1989 RDA for calories & nutrients studied
- Fat and saturated fat offered improved from 1991-92, but still exceed 1990 Dietary Guidelines-based standard (average fat 34% of calories; saturated fat 12%)
- 82% of elementary schools and 91% of secondary schools offered a *choice* that met 30% calories from fat, *up from 34% and 71% in 1991-92*
- About 20%of schools averaged 30% calories from fat or less, *up from 1% in 1991-92*
- Met NRC-based level cholesterol, but not for sodium or carbohydrates

SBP Breakfasts

- Provide 1/4 or more of the 1989 RDA nutrients studied, except calories
- Total fat (26% of calories) met the 1990 Dietary Guidelines-based standard, and came close to meeting saturated fat (about 10% of calories served)
- Met NRC-based level for cholesterol & carbohydrates; sodium met standard for elementary schools but not secondary schools

N = 1075 cafeteria managers + 430 SFA directors (no student interviews)

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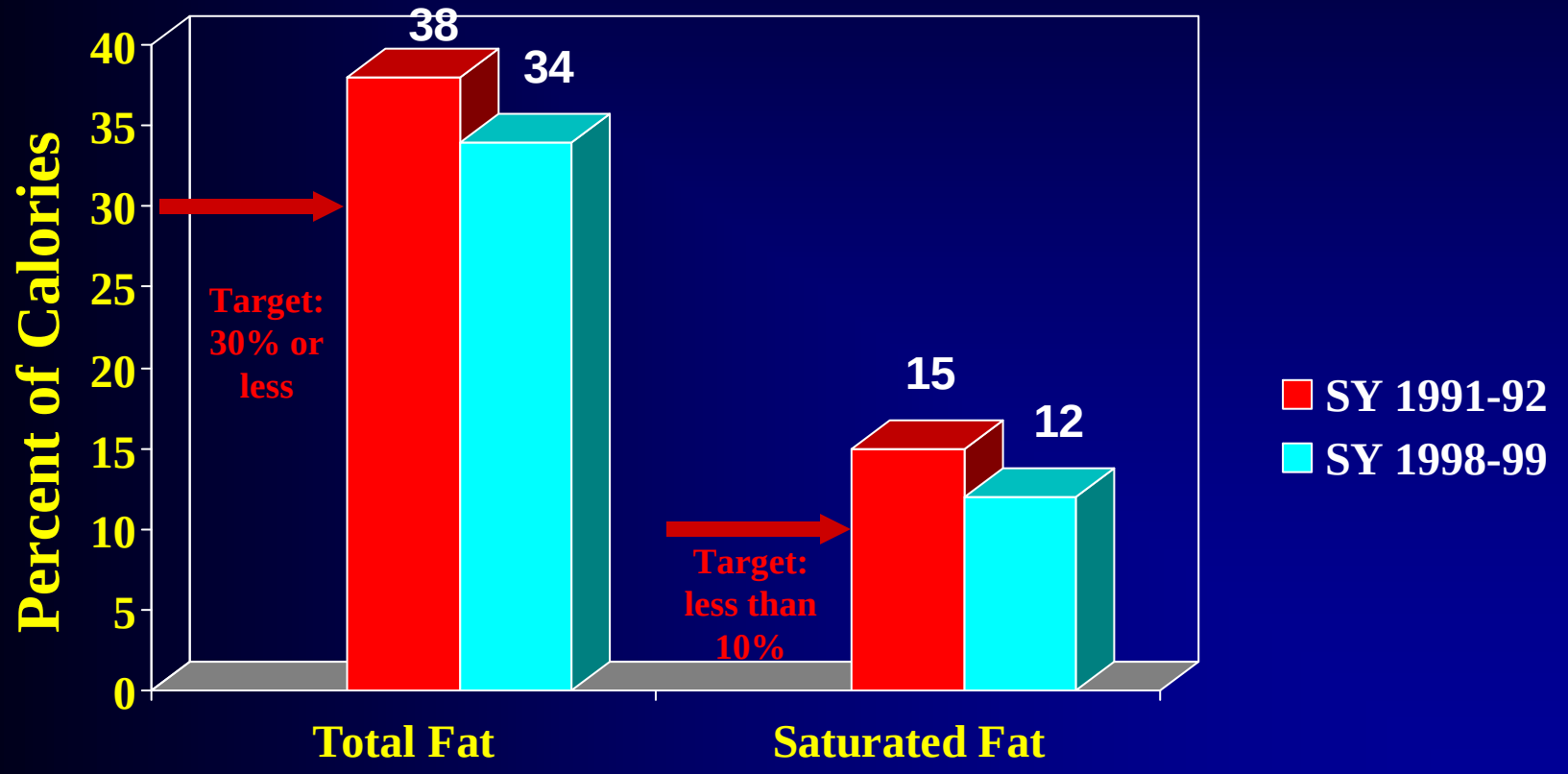
School Lunches Were Significantly Lower in Fat and Saturated Fat



Source: School Nutrition Dietary Assessment Study-II (School Year 1998-99)

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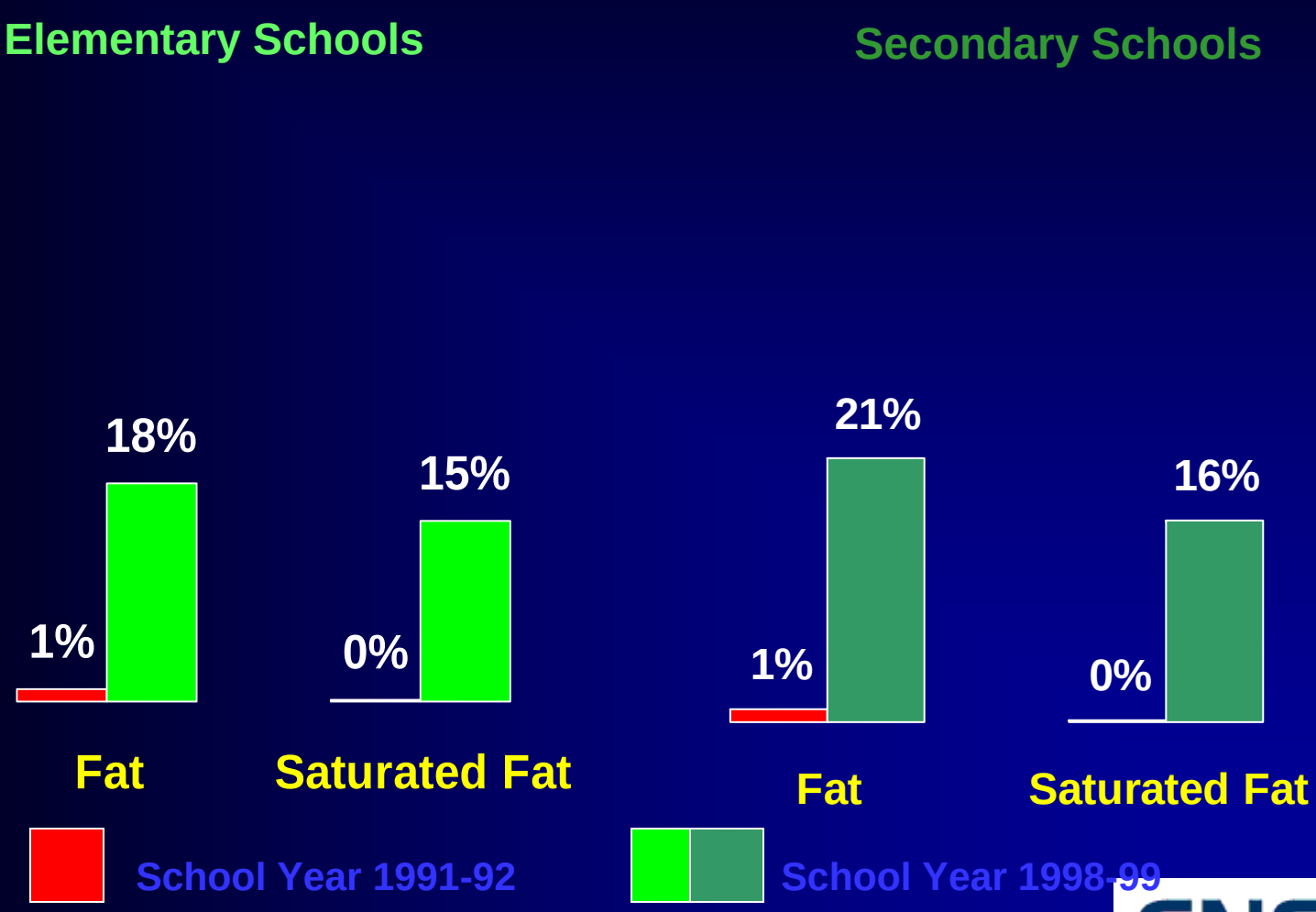
Percent of Schools Meeting the Fat or Saturated Fat Standards for Lunches *Offered*



Source: School Nutrition Dietary Assessment Study-II (School Year 1998-99)

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What was the take-away message from SNDA-II?

Where do we go from here?

- Great progress has been made, but we need to maintain the commitment to *continued improvement* in school meals
- We must enhance our efforts to *educate and motivate students* to select balanced meals low in fat, saturated fat and sodium when they are offered
- We need to work toward healthy school meals and *school environments* that promote the health and nutritional well-being of our Nation's children
- We need to plan again to study and report on our progress

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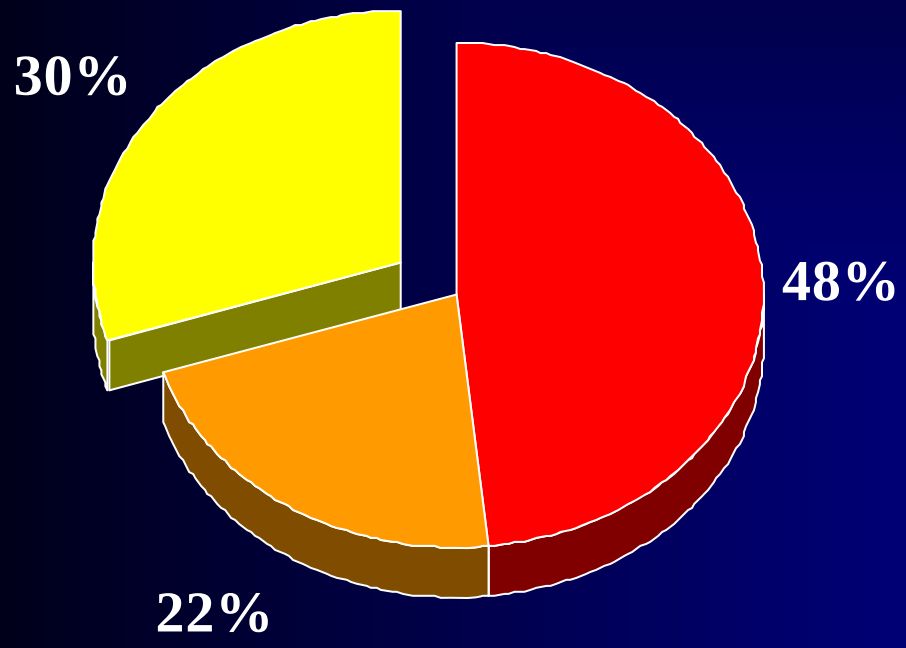
SNDA-III
School Year 2004-05

Contractor: Mathematica Policy Research MPR)

MPR Project Director: Anne Gordon

FNS Project Officer: Patricia McKinney

Most Schools Still Use Food-based Menu Planning



SNDA-III SY2004-05

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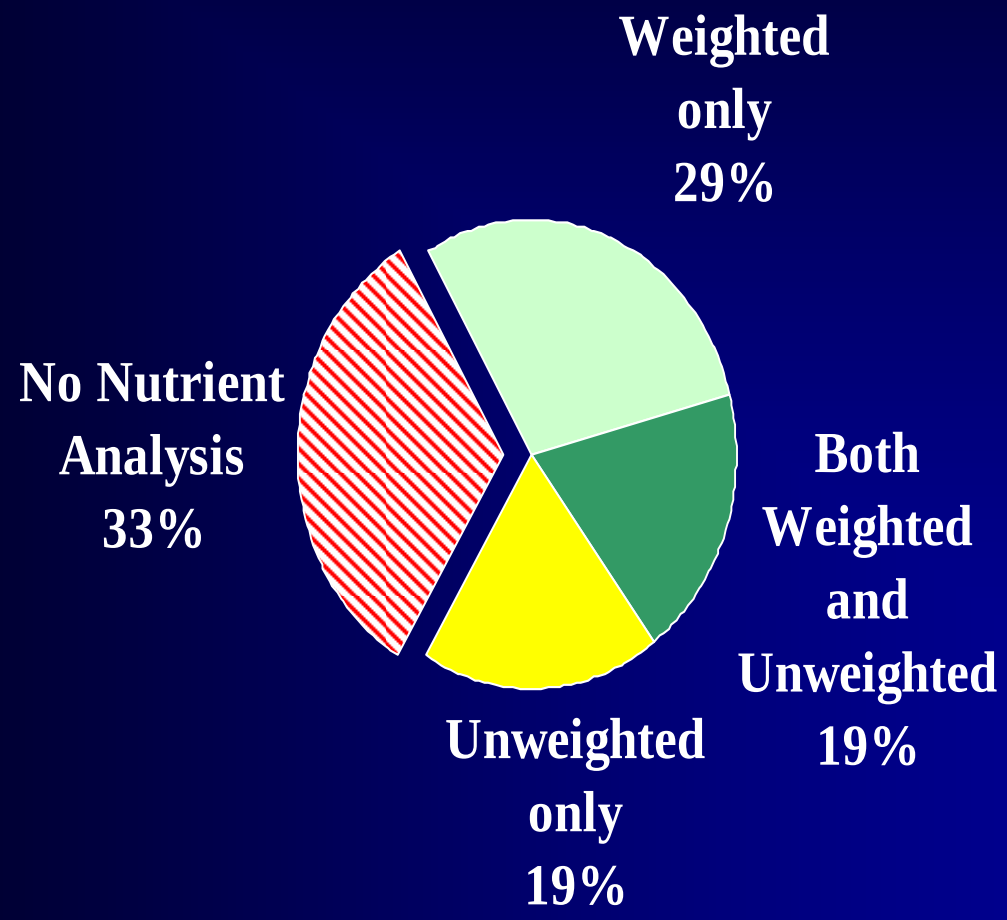
2/3 of Schools Do Nutrient Analysis SY2004-05



Source: SNDA-3 Preliminary table III.9

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Key Questions We'll Be Discussing Today

1. Are USDA school meals meeting SMI nutrition standards?
2. What progress has been made since SNDA-II (SY1998-99)?
3. What do we know about the diets of participants and nonparticipants?

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SNDA-III Study Design

- Nationally representative of all public schools participating in the NSLP in the 48 contiguous States and DC
- Data on meals offered and meals served as well as student's 24-hour dietary intake
- 129 SFAs in 36 States
- 398 Schools
- Approximately 2300 Students in 287 of those schools
- Data collected in Spring 2005

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The report offers many different types of comparisons. What one concludes depends on what one looks at.

- Lunch or breakfast,
- Meals offered vs. meals served,
- School level,
- Nutrient,
- Current level vs. comparison to 1998-1999;
- Participant vs. nonparticipant, and
- Other breakdowns (big schools, rural schools, results by gender, etc.).

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Three concepts to keep in mind:

- **Average Meals as *Offered***
  - -- Unweighted analyses
  - -- Equal weight to items within menu choice

- **Average Meals as *Served*** ***(Selected by students)***
  - -- Weighted analysis
  - -- More weight to frequently selected items

- ***"Standards"*** ***(DRIs, RDAs, DGAs, "benchmarks")***

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NSLP/SBP:
Current Requirements for Reimbursable Meals
Nutrients

- **Nutrients** in meals are averaged over a school week; weekly averages must meet regulatory standards
  - 1/3 of **1989** RDA for protein, calcium, iron, vitamin A and vitamin C at lunch; 1/4 of RDA for these nutrients at breakfast
  - Appropriate level of calories for age/grade groups
  - Consistent with the **1995** DGA
    - **Limit the percent of calories from total fat to 30% of the actual number of calories offered**
    - **Limit the percent of calories from saturated fat to less than 10% of the actual number of calories offered**
    - **Reduce sodium and cholesterol levels**
    - **Increase the level of dietary fiber**

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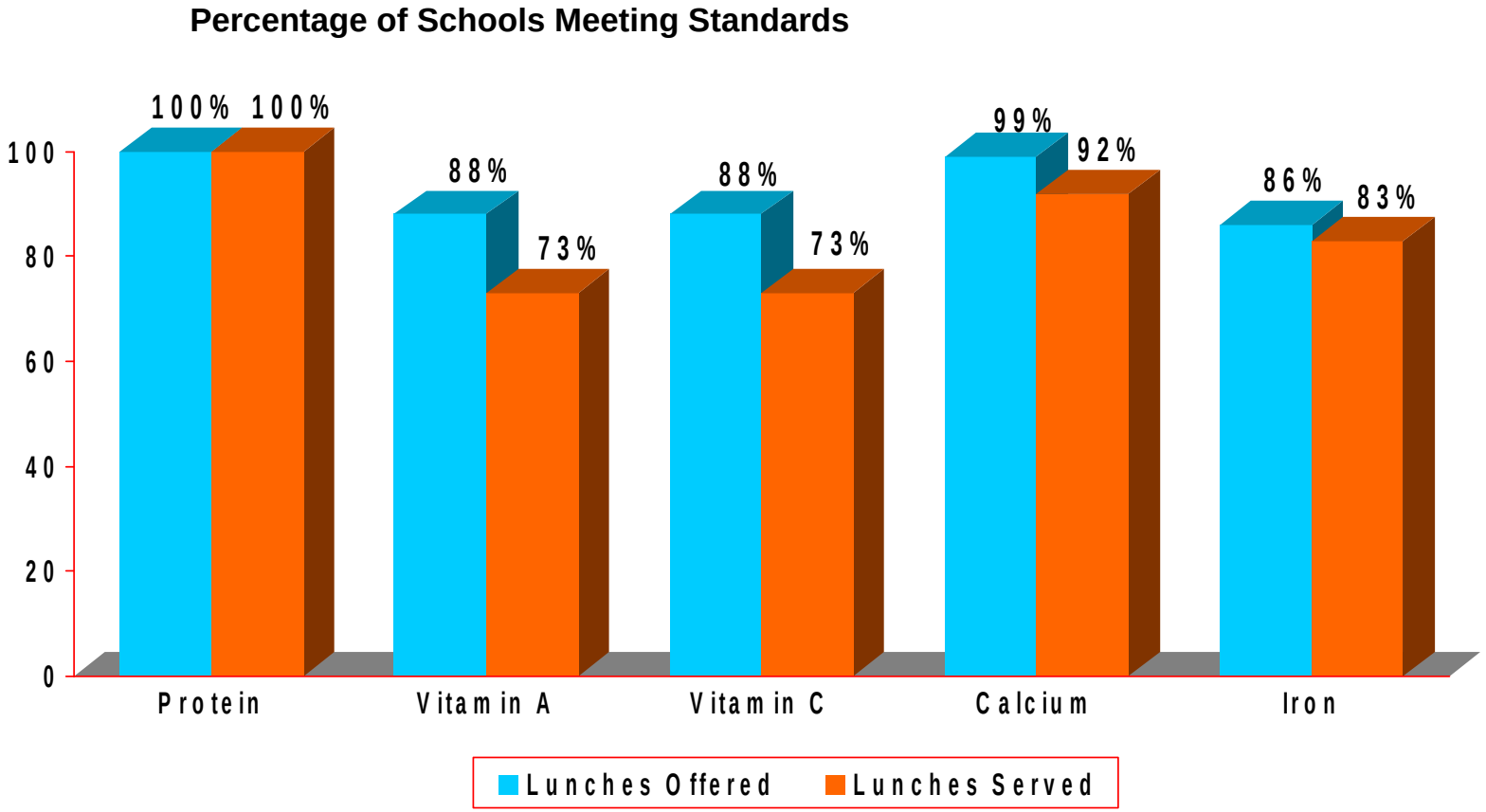
1. Are School Meals Meeting SMI Nutrition Standards?

Most Schools Served Lunches that Met Standards for Key Nutrients that Contribute to a Healthy Diet



Source: School Nutrition Dietary Assessment-III, Menu Survey, SY 2004-2005.

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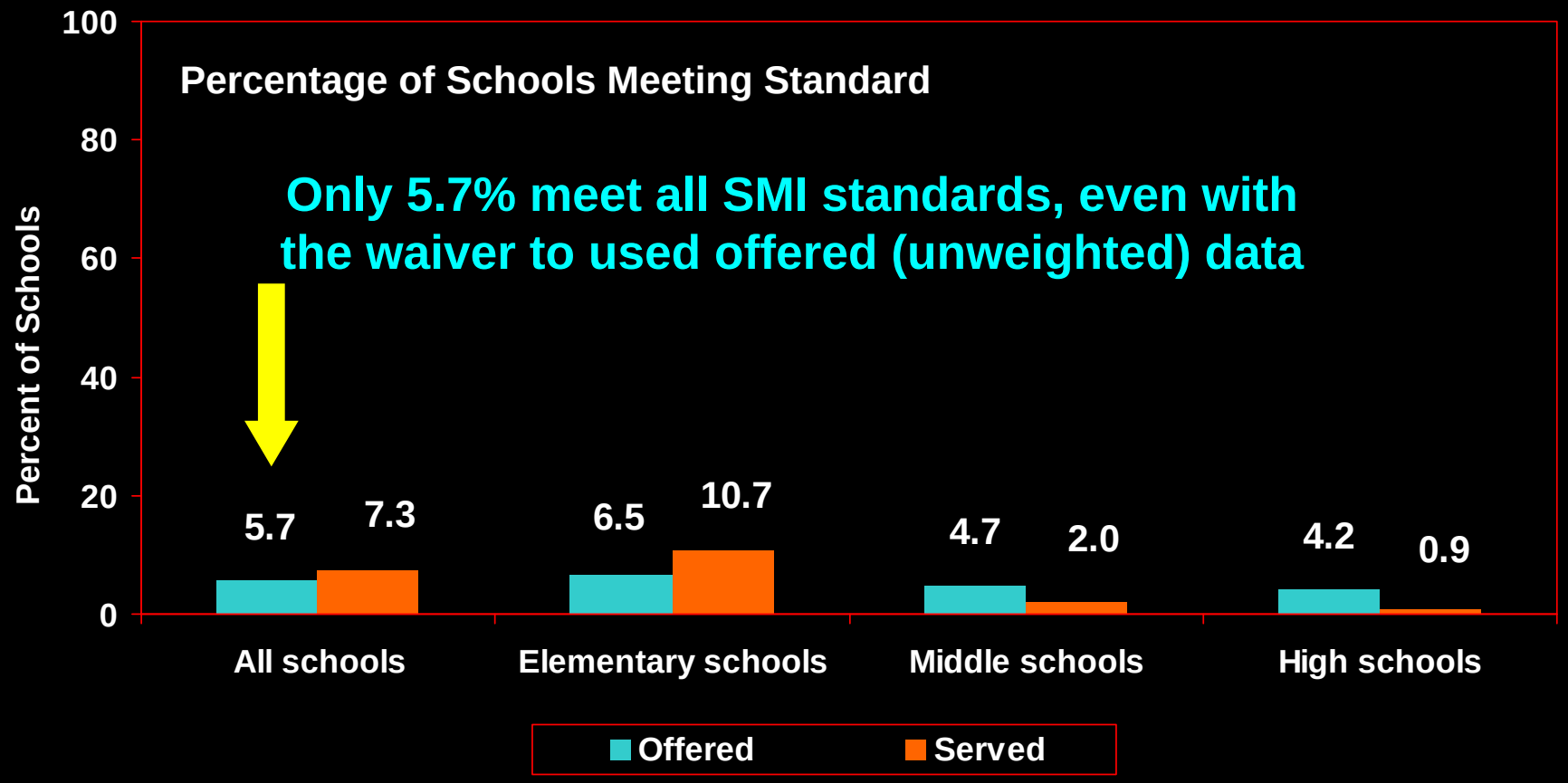
Few Schools Met All SMI Standards for a Reimbursable Lunch



SOURCE: SNDA-III, Menu Survey, school year 2004-05.

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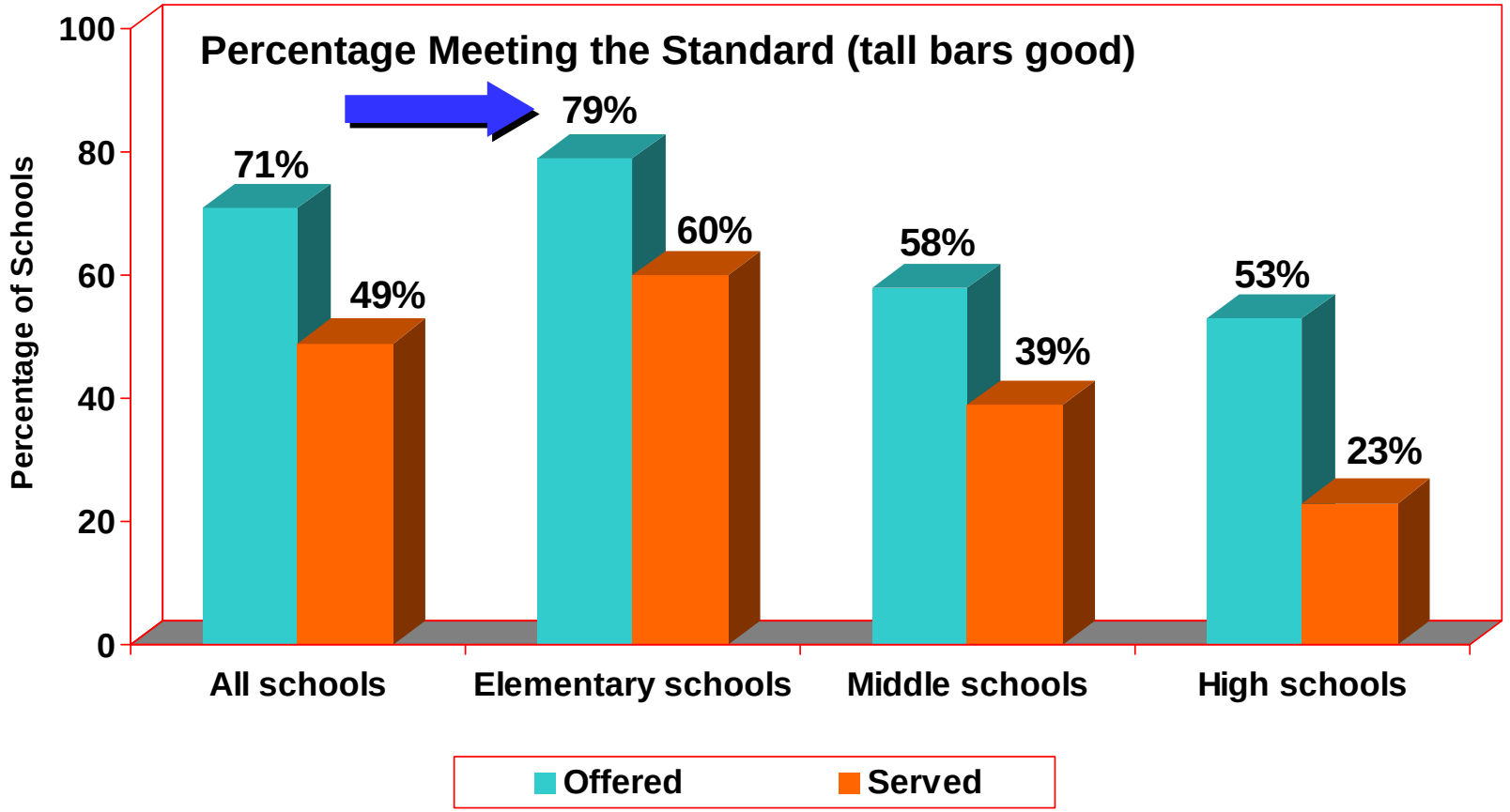
Seventy-nine Percent of Elementary Schools Offered Lunches that Met the Calorie Standard



SOURCE: SNDA-III, Menu Survey, school year 2004-05.

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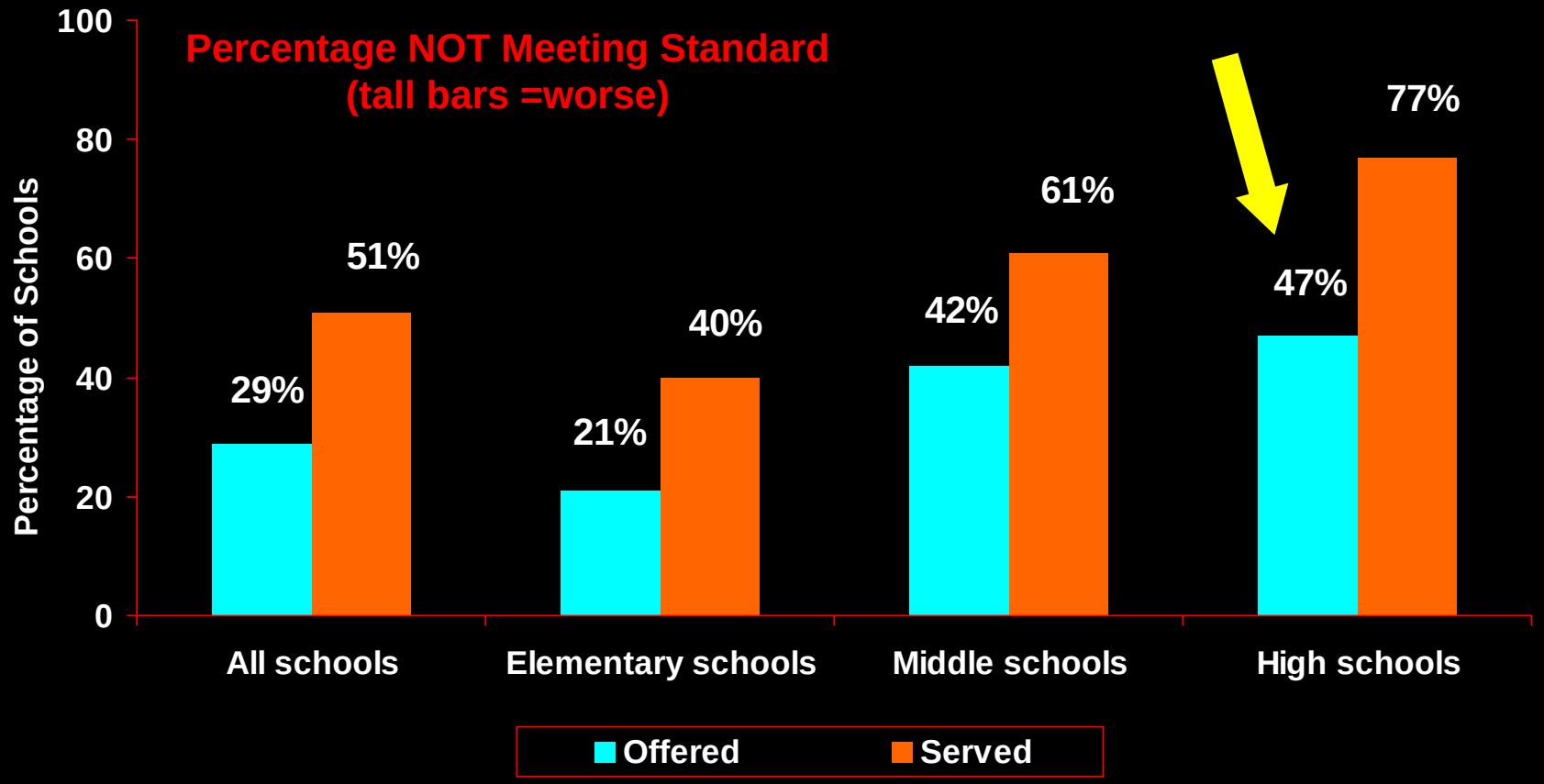
Food & Nutrition Service

About Half of High Schools Offered Lunches that *Failed* to Meet the Calorie Standards for Reimbursement



SOURCE: SNDA-III, Menu Survey, school year 2004-05.

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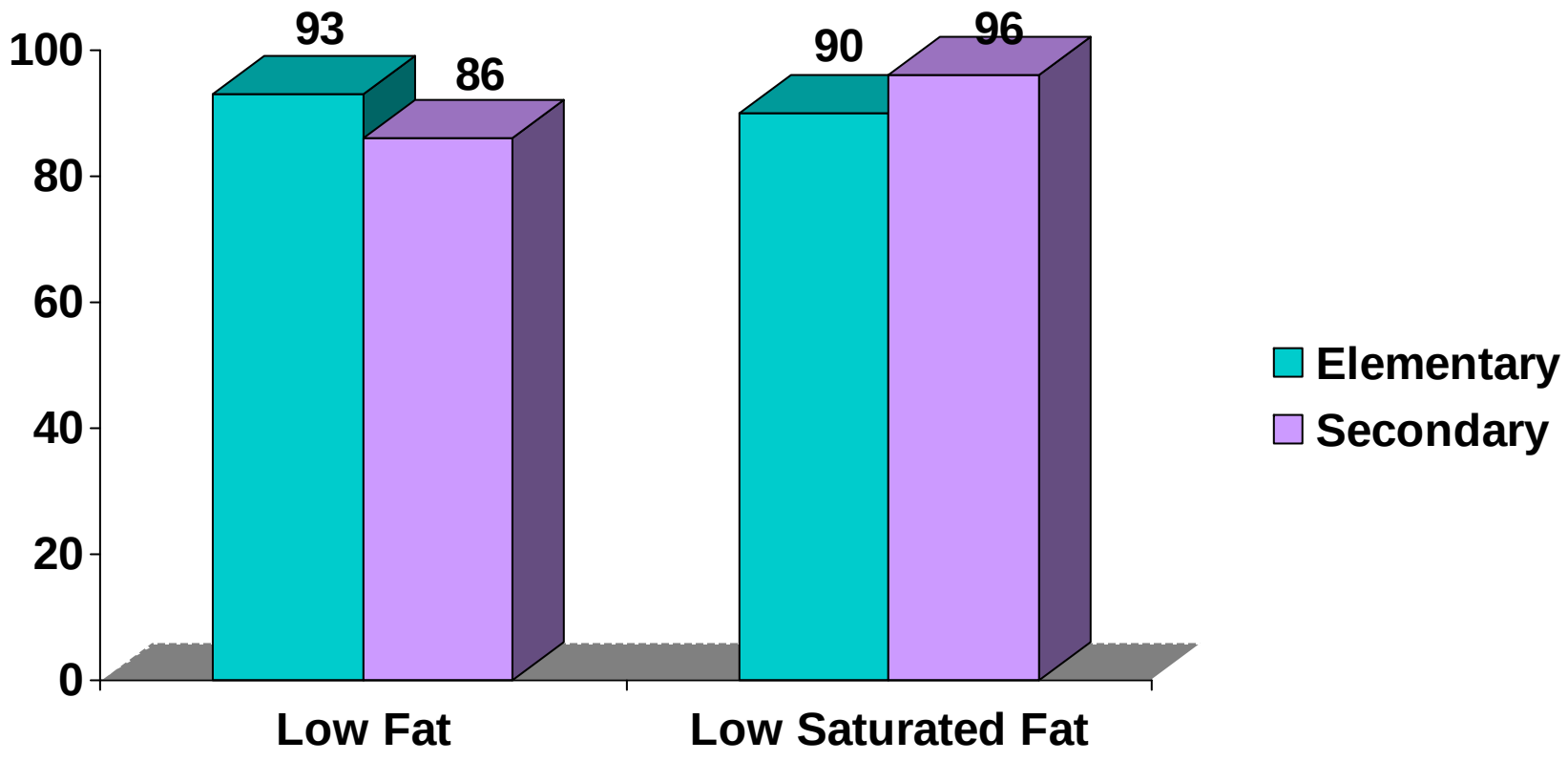
Low Fat and Low Saturated Fat Lunch Options Were Widely Available

Percentage of Schools Offering Students *Opportunity to Select*



Source: School Nutrition Dietary Assessment-III, Menu Survey, SY 2004-2005.

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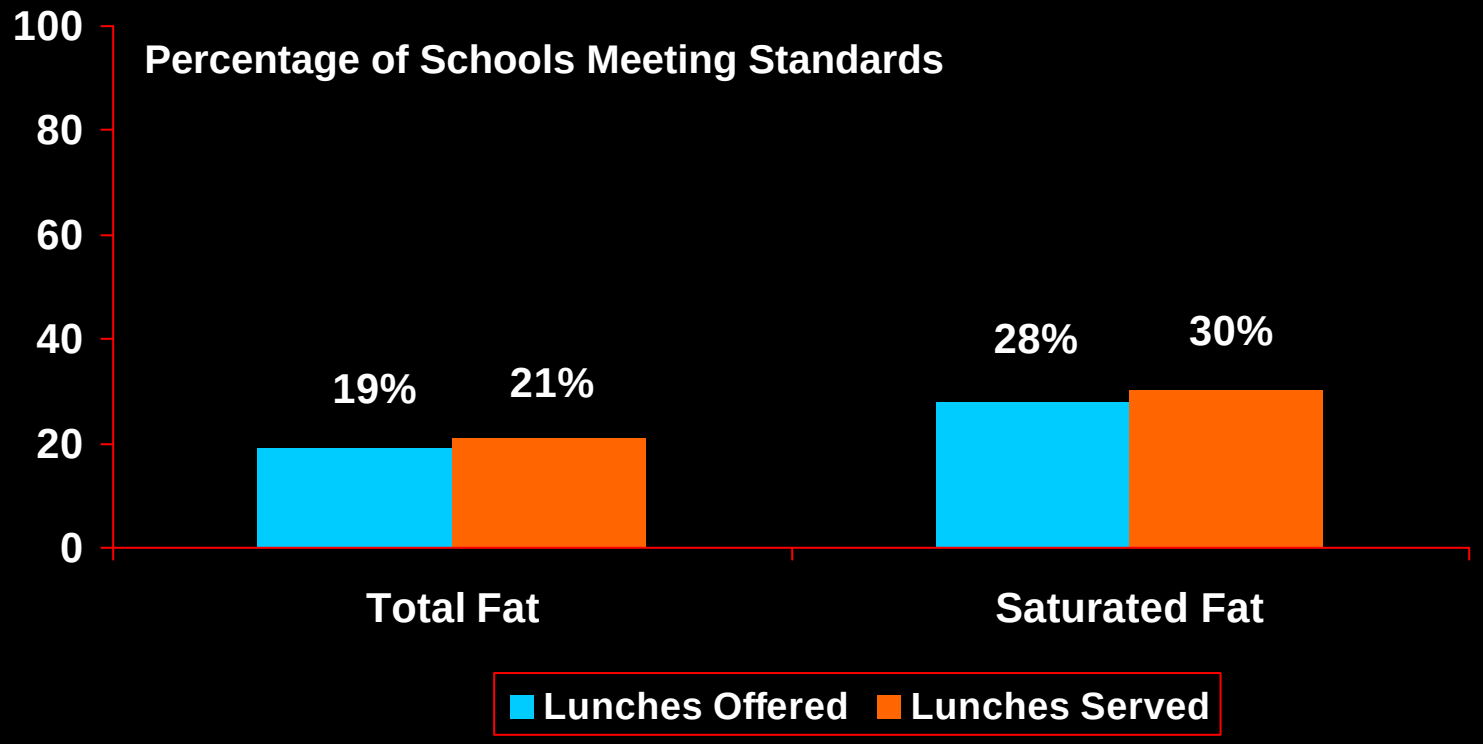
Less than One-Third of Schools Met *Standards for Reimbursable Meals* for Total Fat or Saturated Fat



Source: School Nutrition Dietary Assessment-III, Menu Survey, SY 2004-2005.

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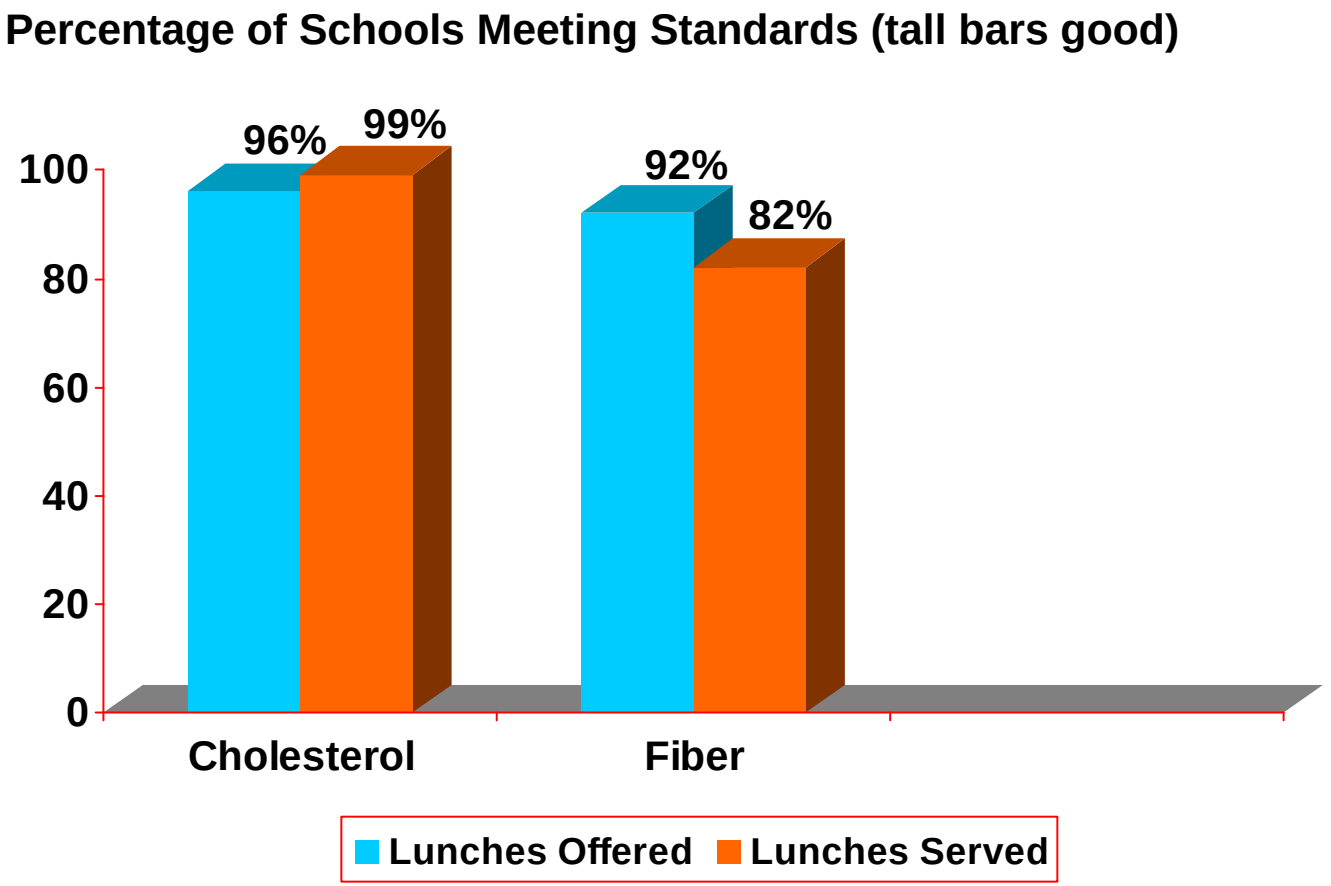
Almost All Schools Satisfied the Benchmark for Cholesterol and Fiber



Source: School Nutrition Dietary Assessment-III, Menu Survey, SY 2004-2005.
Note: Benchmarks are not requirements under SMI.

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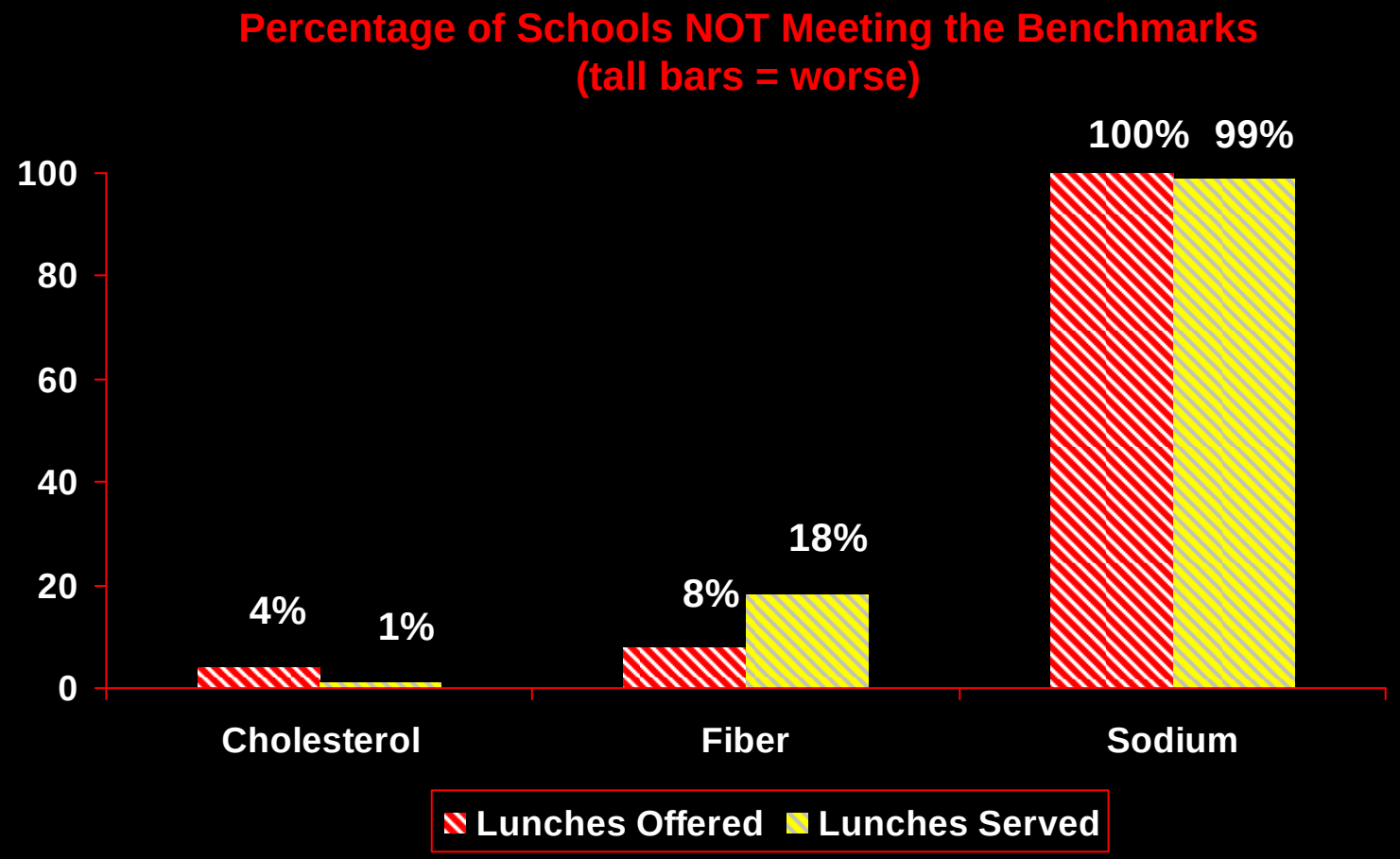
Almost All Schools Failed to Satisfy the Benchmarks for Sodium



Source: School Nutrition Dietary Assessment-III, Menu Survey, SY 2004-2005.
Note: Benchmarks are not requirements under SMI.

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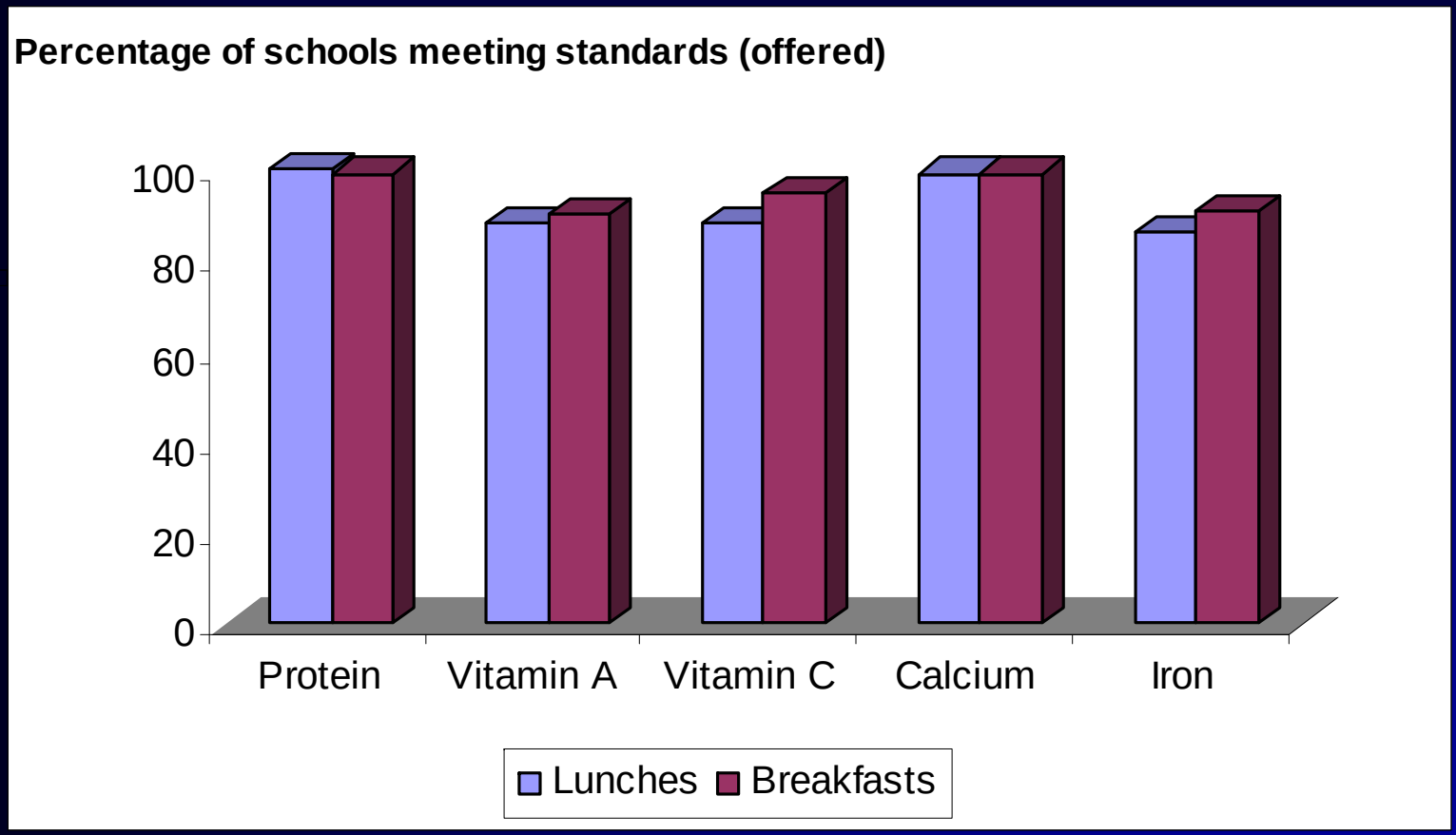
School Breakfasts and Lunches Were Similar on the Key Nutrients.



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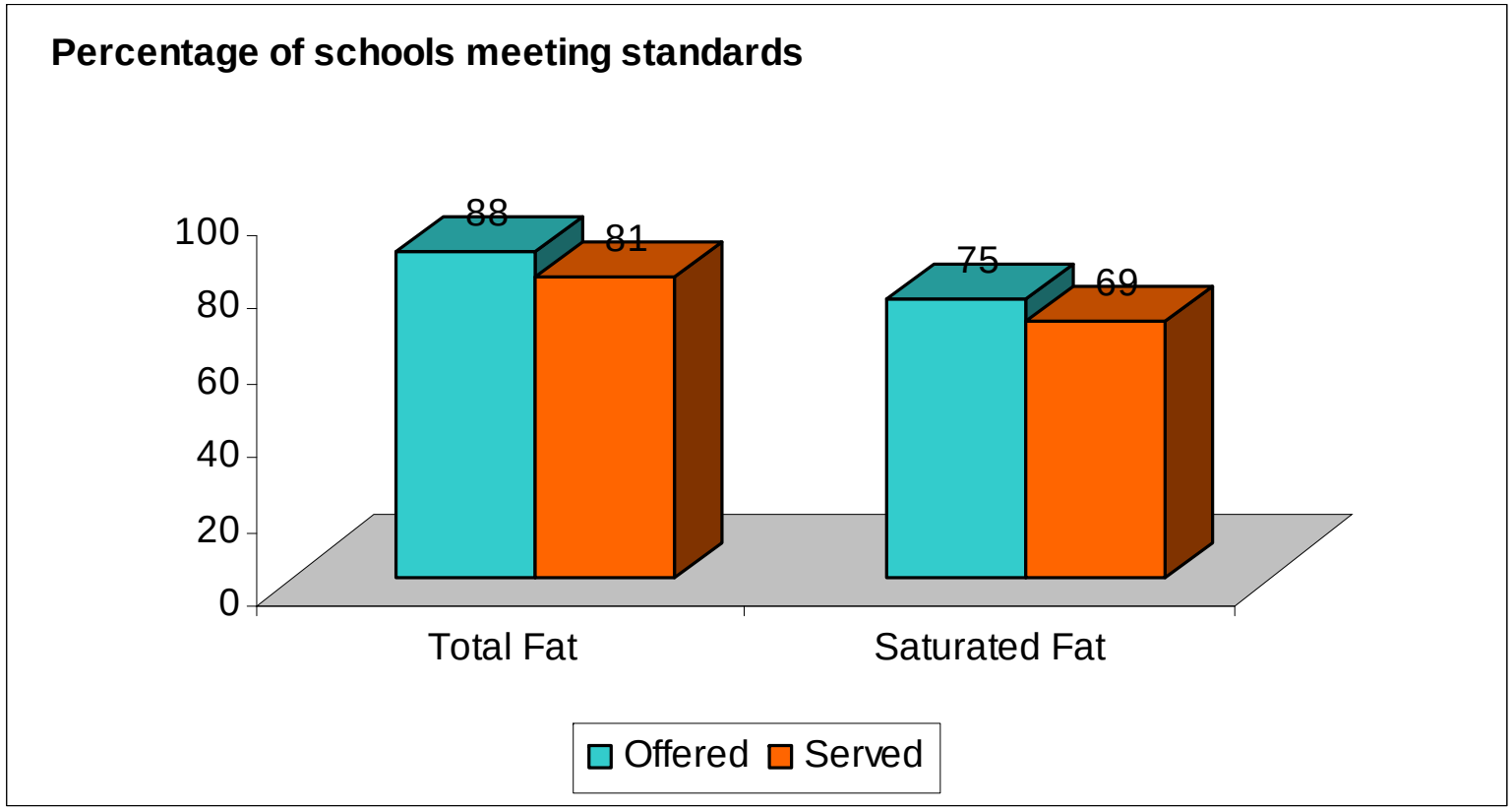
At Breakfast, Schools Usually Met SMI Standards for Fat and Saturated Fat



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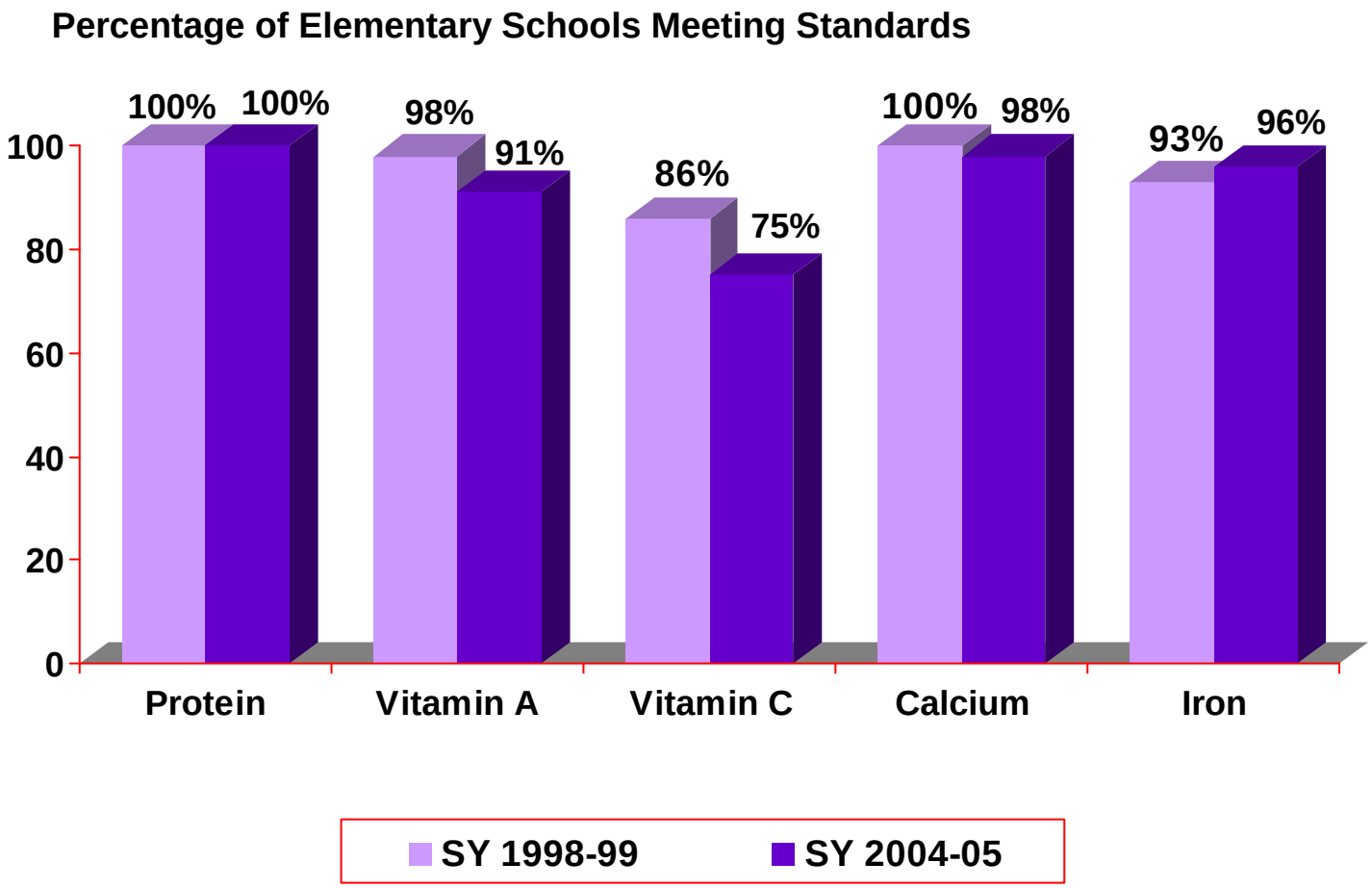
2. Have Schools Made Progress Toward Meeting SMI Standards Since 1998-99?

A High Proportion of Elementary Schools Continue to Meet SMI Standards for Key Nutrients Served at Lunch



Sources: School Nutrition Dietary Assessment-III, Menu Survey, and School Nutrition Dietary Assessment-II, Menu Survey, SY 1998-99 (Fox et al. 2001).

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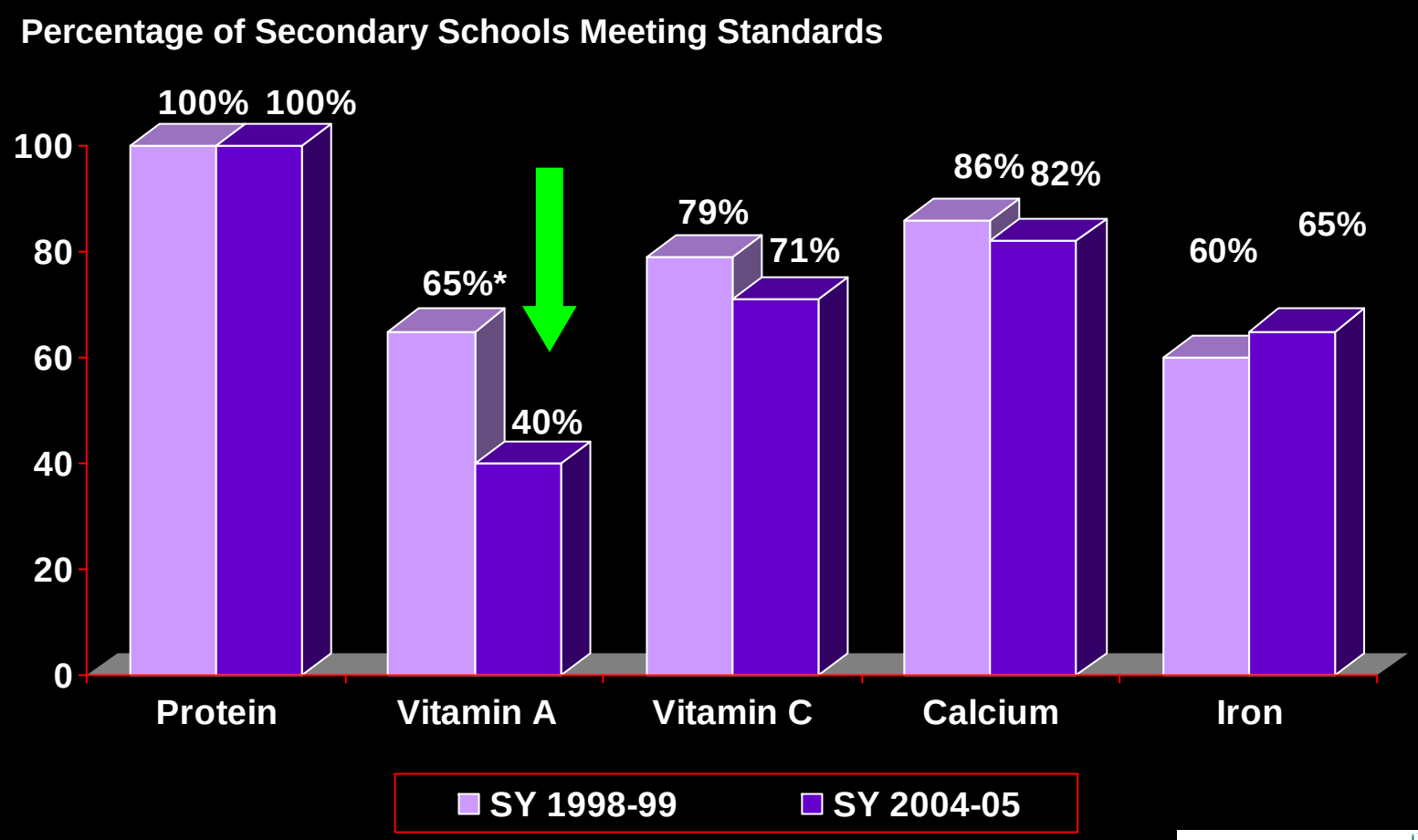
There was No Improvement in the Proportion of Secondary Schools Meeting SMI Standards for Most Key Nutrients Served at Lunch

Significantly Fewer Met the Vitamin A Standard in SNDA-III



Sources: School Nutrition Dietary Assessment-III, Menu Survey, SY 2004-05 and School Nutrition Dietary Assessment-II, Menu Survey, SY 1998-99 (Fox et al. 2001).

*Difference is statistically significant at .05 level.

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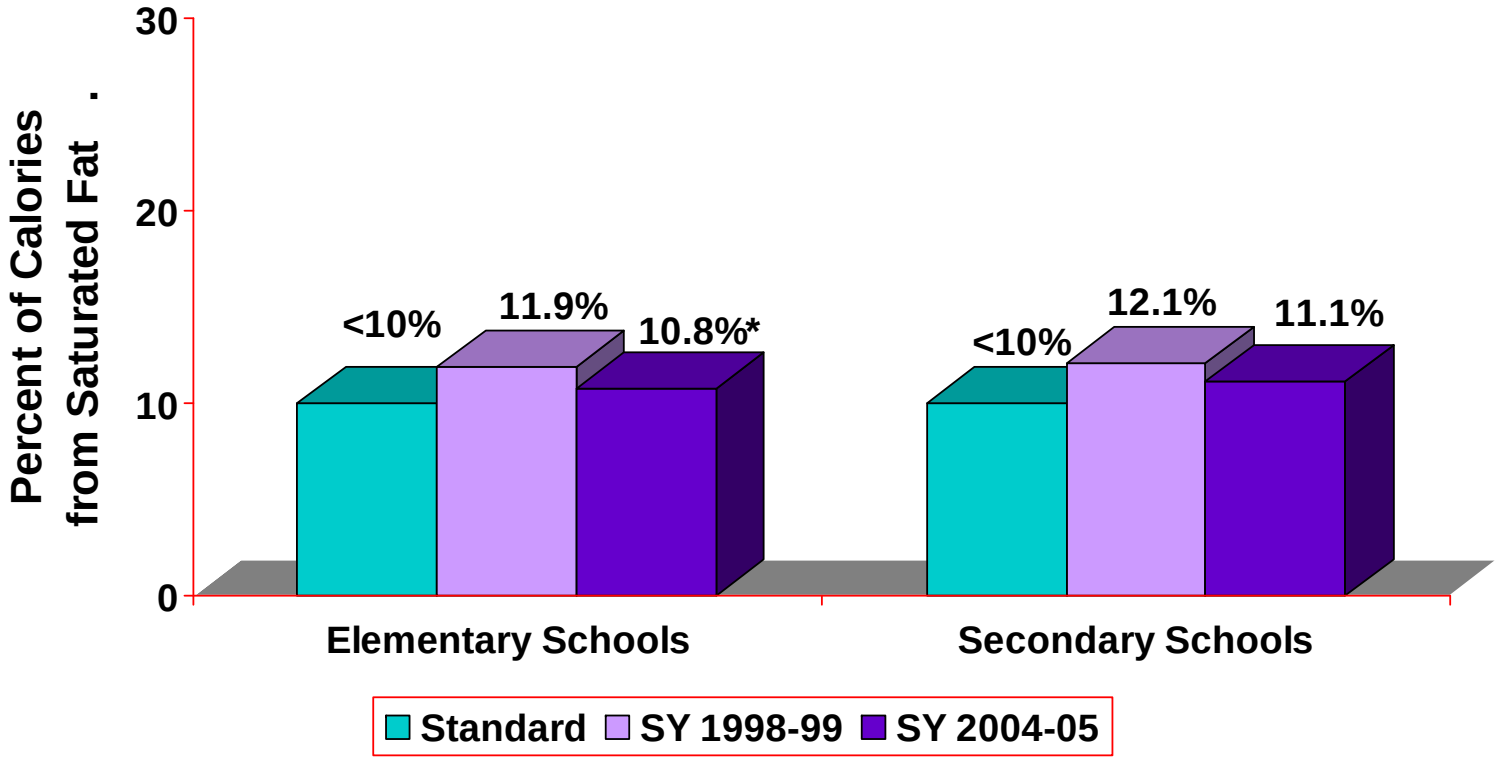
Average Calories from Saturated Fat Declined between SY 1998-99 and SY 2004-05 in Lunches as *Served*



SOURCES: SNDA-III, Menu Survey, SY 2004-05 and SNDA-II, Menu Survey, SY 1998-99.
*Difference is statistically significant at 0.05 level.

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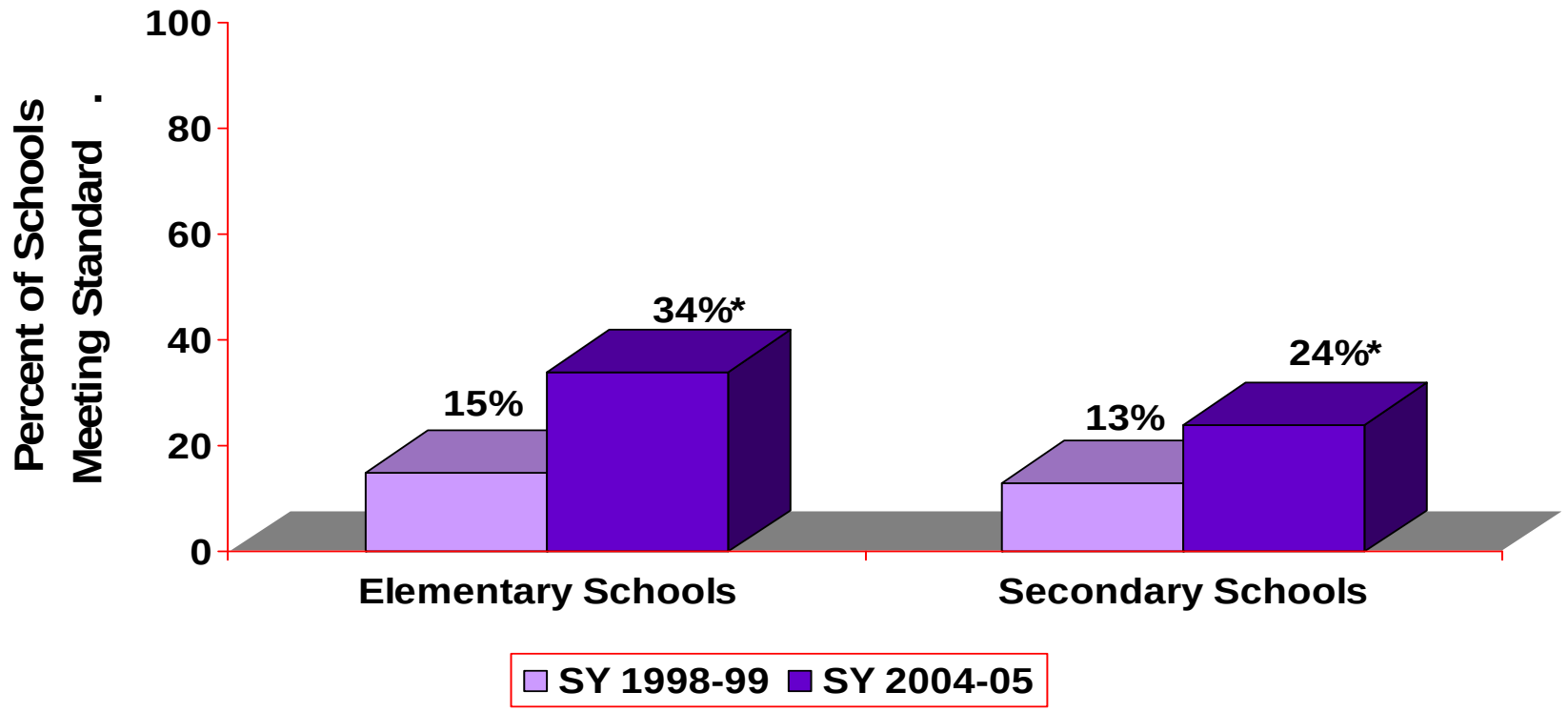
Food & Nutrition Service

AND More Schools Met Saturated Fat Standard in Lunches *Served* in SY 2004-05



SOURCES: SNDA-III, Menu Survey, SY 2004-05 and SNDA-II, Menu Survey, SY 1998-99.
*Difference is statistically significant at 0.05 level.

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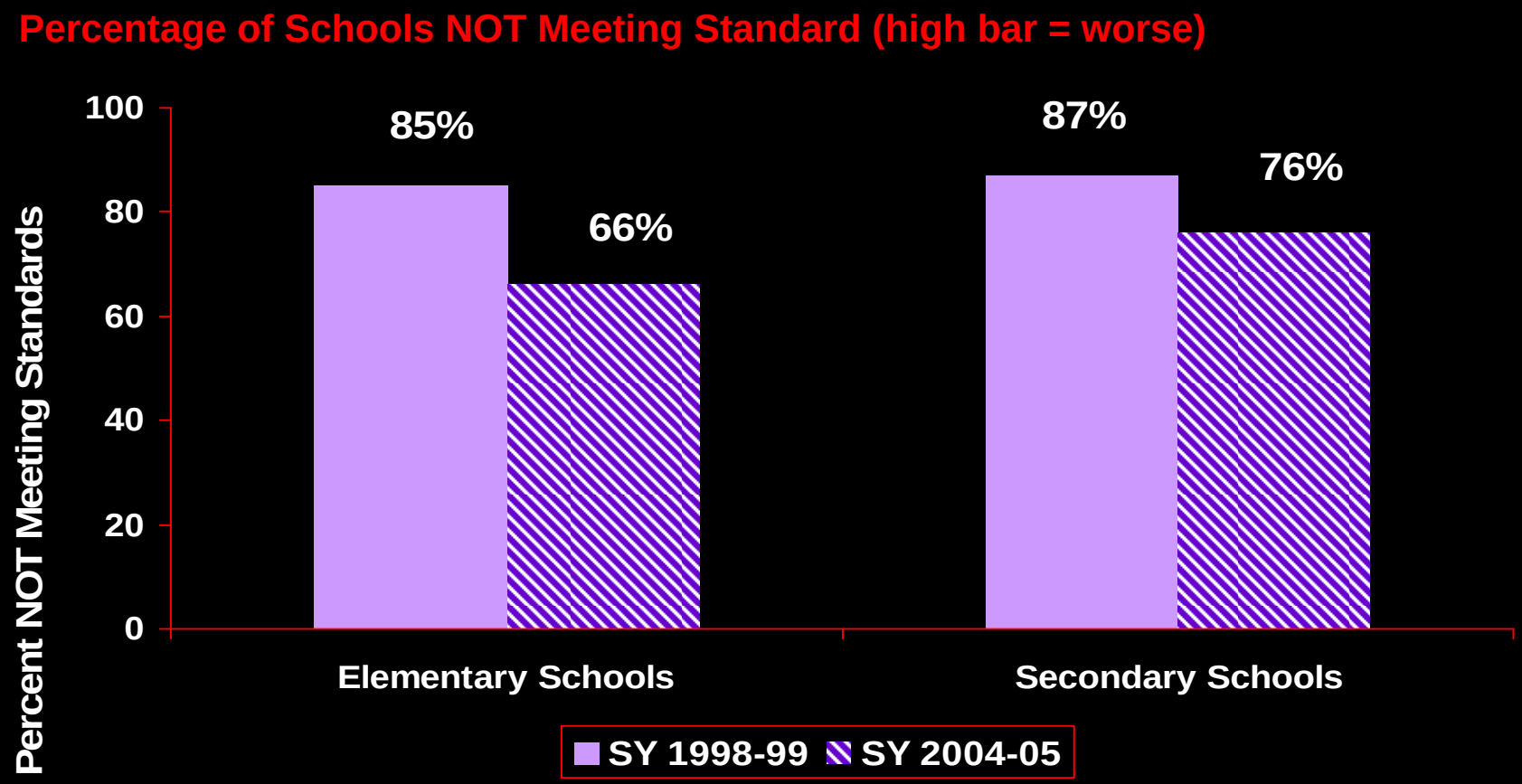
Food & Nutrition Service

But More than Two-thirds of Schools Still Do Not Meet the Meal Reimbursement Standards for Saturated Fat



SOURCES: SNDA-III, Menu Survey, SY 2004-05 and SNDA-II, Menu Survey, SY 1998-99.
*Difference is statistically significant at 0.05 level.

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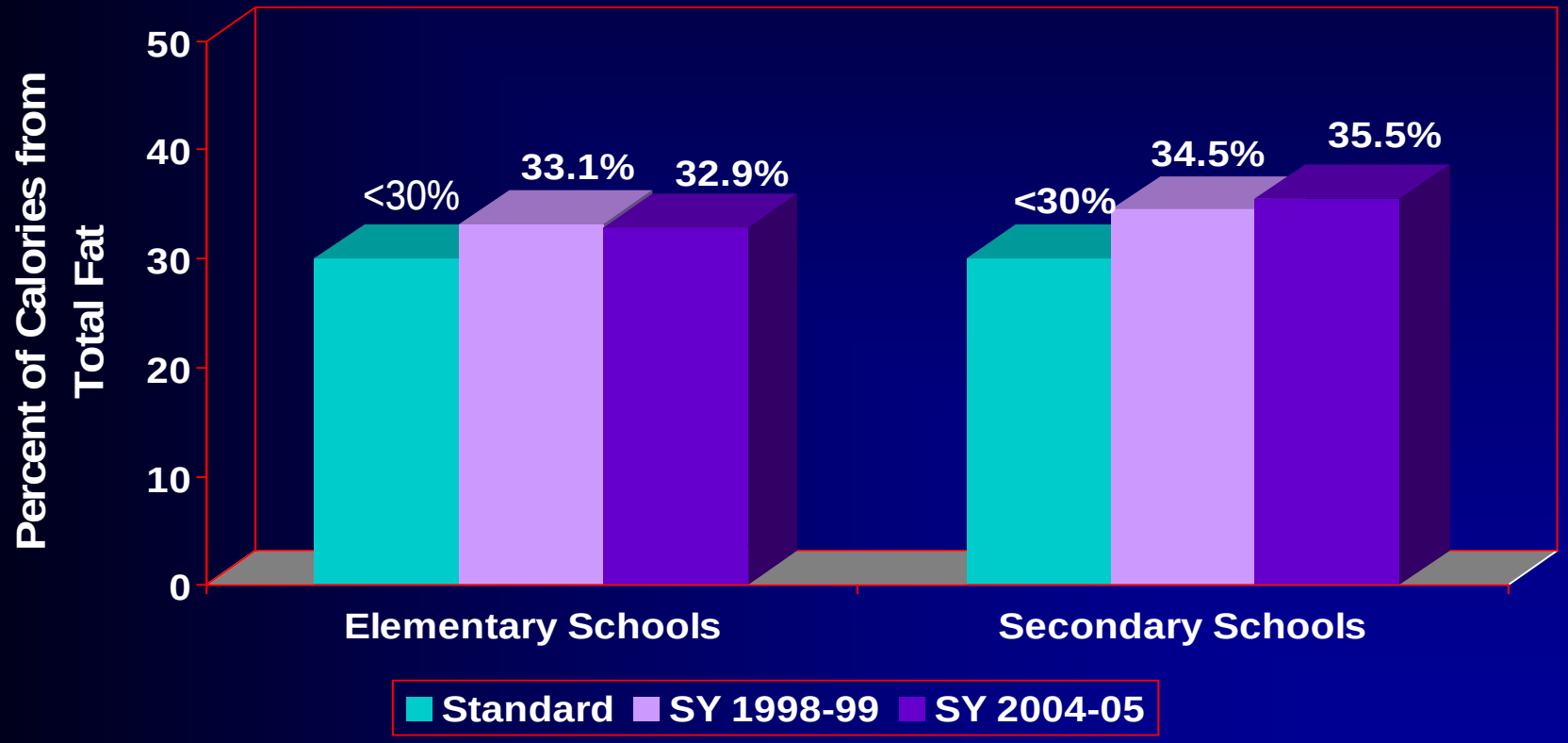
Between SY 1998-99 and SY 2004-05, *Average* Calories from *Total Fat* in Lunches as *Served* Were Unchanged



SOURCES: SNDA-III, Menu Survey, SY 2004-05 and SNDA-II, Menu Survey, SY 1998-99.

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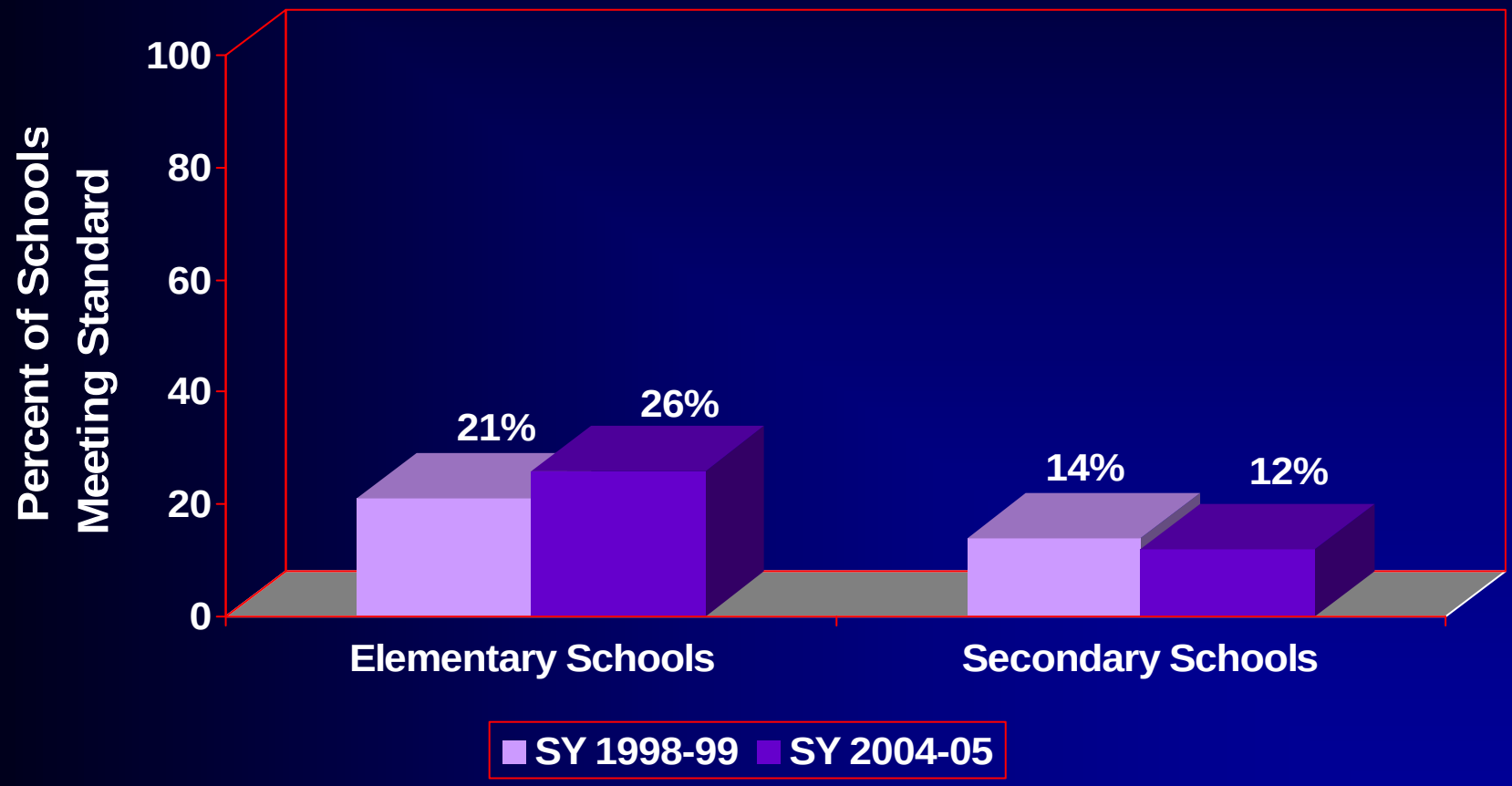
There Was No Significant Difference in the Proportion of Schools Meeting the *Total Fat* Standard in Lunches *Served* Between SY1998-99 and SY2004-05



SOURCES: SNDA-III, Menu Survey, SY 2004-05 and SNDA-II, Menu Survey, SY 1998-99.

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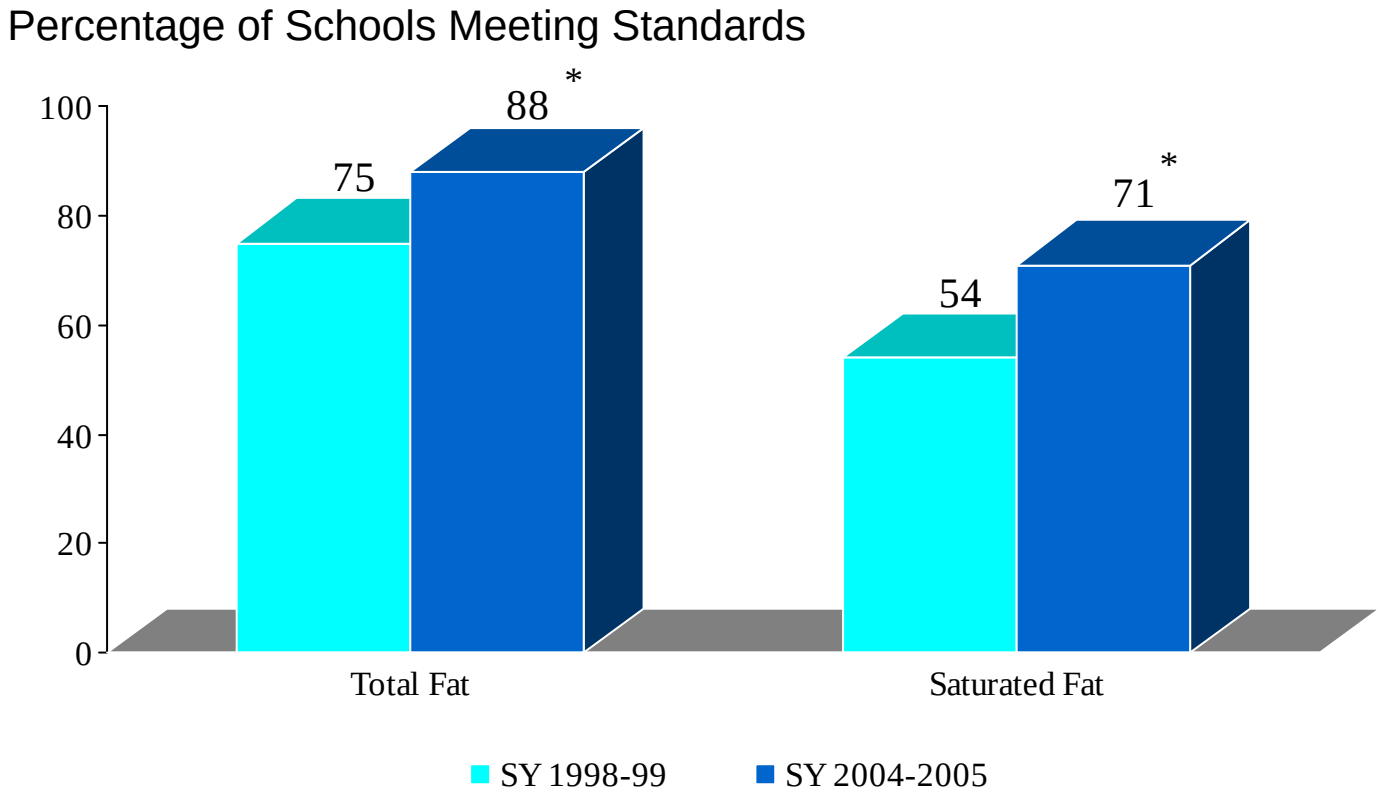
For Breakfast, Significantly More Schools Met Standards for Total Fat and Saturated Fat



Source: School Nutrition Dietary Assessment-III, Menu Survey (Volume I, Table VIII.1), and School Nutrition Dietary Assessment-II, Menu Survey (Fox et al. 2001).

*SNDA-III result is significantly different from the SNDA-II result at the .05 level.

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3. What do we know about the diets of participants and nonparticipants?

Participants and Nonparticipants

- Overall, the diets of NSLP participants were the same or better than the diets of nonparticipants.
- NSLP participants consumed more nutrients at lunch than nonparticipants.
- Both groups failed to meet standards for total fat and saturated fat.

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Participants and Nonparticipants

- At all school levels, the *average* lunch consumed by NSLP participants provided significantly larger percentages of energy from protein and greater amounts of many key nutrients than lunches consumed by nonparticipants.

- This pattern is, in large part, attributable to the fact that participants were four times as likely as nonparticipants to drink milk at lunch.

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Daily Intakes

- **NSLP participants at all school levels consumed significantly greater amounts of 6 key nutrients at lunch.**
- **These differences are *not sustained* over 24 hours.**

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Competitive Foods

Model 123 with Odyssey® Styling

- About 19 percent of participants consumed competitive foods versus 37 percent of nonparticipants.
- Among both groups, competitive food categories most frequently consumed were desserts and snacks and beverages other than milk. The most popular choices included candy, cookies, carbonated soft drinks, and sweetened juice drinks.

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Low-income and elementary students participate at higher rates.

- Nearly 9 out of 10 low-income students participate in elementary school and about 6 of 10 low income students participate in high school.
- Not quite two-thirds of students with family incomes above 185 percent of poverty participate in elementary school and one-third participate in high school.

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Summary

In SY 2004-05 . . .

- **Most schools offered and served lunches meeting SMI standards for vitamins, minerals and protein**
- **Significantly more schools served lunches meeting standard for saturated fat than in SY 1998-99**
- **Less than one-third of schools offered or served lunches consistent with SMI standards for fat or saturated fat**
- **Sodium levels in lunches served remained high**

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Top Sources of Total Fat and Saturated Fat in NSLP Lunches

Total fat

- Salad dressings
- Condiments/spreads
- Pizza products
- Peanut butter sandwiches
- French fries

Saturated fat

- Pizza products
- Condiments/spreads
- 2% milk
- Salad plates/salad bars
- Hamburgers and cheeseburgers

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SNDA-III has much more information

<u>Volume I:</u> School Foodservice Operations, School Environment and Meals Offered and Served

- **menu planning system used,**
- **characteristics of school environment (school policies on lunch time, open campus)**
- **availability of competitive foods (vending, a la carte, other)**

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SNDA-III has much more information

Volume II: Student Participation and Dietary Intakes

- Reasons for participation, satisfaction with school meals, characteristics of participants-nonparticipants
- Dietary intake at lunch and breakfast and over 24 hours
- Types of foods consumed, food sources of calories/nutrients
- Frequency and sources of competitive foods

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SNDA-III has much more information

<u>Volume II:</u> Appendices. Thirteen appendices, including:

- **Definition of School Meal Program Participation**
- **Technical Appendix on the Multivariate Analysis of Mean Dietary Intakes**
- **Unadjusted Mean Intakes of School Meal Program Participants and Nonparticipants**
- **Technical Appendix on the Propensity Score Matching Analysis of Nutrient Inadequacy and Excess**
- **Means and Distributions of Usual Daily Intakes: NSLP Participants and Nonparticipants**
- **Food Sources of Nutrients: NSLP Participants and Nonparticipants**

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SNDA-III has much more information

<u>Volume III:</u> Sampling and Data Collection

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The SNDA-III Summary of Findings and Full Report (3 volumes) are available on the FNS web site:

http://www.fns.usda.gov/oane/

SNDA-III addresses four questions:

- What are the characteristics of meals offered by schools?
- What is the role of school meals in the diets of school children?
- Which, and how many, school children participate in the programs?
- What is the availability of other foods sold at school?

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