

# Using *MyPyramid.gov* to Test Fruit and Vegetable Knowledge

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Beltsville Human Nutrition  
Research Center

*Serving The Nation Since 1906. Improving Health Thru Research.*

APHA

Washington, DC

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# Background

- ✦ Americans have not increased their consumption of fruits and vegetables
- ✦ Only 28% are meeting USDA guidelines for fruits
- ✦ Only 32% are meeting the guidelines for vegetables
- ✦ Less than 11% meet the guidelines for both fruits and vegetables

- ✦ Nutrition plays a critical role
- ✦ Potential health benefits of consuming fruits & vegetables
  - Lower risk of
    - ✦ CHD
    - ✦ Stroke
    - ✦ Cancer
    - ✦ CVD
  - Increases in
    - ✦ Dietary fiber
  - Decreases in
    - ✦ Total fat
    - ✦ Saturated fat



## ✦ Purpose

- Test fruit and vegetable knowledge among individuals attending a health and fitness expo
- *MyPyramid.gov* was used as the test and nutrition education tool in a community setting
  - ✦ Classification of fruits and vegetables
  - ✦ Amounts needed for optimal health
  - ✦ Quantity to be consumed
  - ✦ Cup equivalents
  - ✦ Important sources of nutrients

# Methodology

## ✦ The Expo

- 80,000 participants
- Provides free screening and medical care
- Typically draws the under-insured and uninsured

## ✦ Target audience

- Those attending a 2 day health and fitness expo in Washington, DC

# Methodology

- ✦ Declaration of Exempt Status of Research
  - Medstar Research Institute
- ✦ An interactive computerized three-stage test
  - Stage One
    - ✦ Pre-test
  - Stage Two
    - ✦ Each respondent navigated at their leisure through the *MyPyramid.gov* website
  - Stage Three
    - ✦ Post-test
- ✦ Data collected on two separate days
  - Day 1 – Fruit Nutrition Challenge
  - Day 2 – Vegetable Nutrition Challenge

# NUTRITION CHALLENGE



# Nutrition Challenge



Respondent Information

STEP 1

Step 2

Step 3

## Please tell us a little about yourself

1. What is your gender?  Male  Female
2. In what age range do you belong?  9 - 13 years  14 - 18 years  19 - 30 years  31 - 50 years  51 years or older
3. In what race category do you consider yourself?  White, Non-Hispanic  Black, Non-Hispanic  Hispanic  Other
4. In which location do you reside?  District of Columbia  Maryland  Virginia  Other

Continue >>





Respondent Information

STEP 1

Step 2

Step 3

## Please answer a couple questions about the MyPyramid fruit group

1. What foods are in the fruit group?  Apples  Parsnips  Avacado  Oranges  Tomatoes
2. The amount of fruit you need is based on which of the following? (choose all that apply)  
 Age  Sex  Race  current body weight  level of Physical Activity
3. Given your gender and age, how many cup equivalents of fruit should you be eating daily?  
 1/2 cup  1 cup  1 1/2 cups  
 2 cups  2 1/2 cups  3 cups
4. What counts as a cup equivalent of fruit? (choose all that apply)  
 1 cup of fruit  1 cup 10% fruit juice  1/2 cup of dried fruit  
 1 cup of 100% fruit juice  1 cup dried fruit
5. Fruits have health benefits and are important sources of many nutrients. Which of the following nutrients are found in fruits? (choose all that apply)  
 Potassium  Dietary Fiber  Protein  Vitamin C  Folate

Continue >>



# Nutrition Challenge



Respondent Information

Step 1

STEP 2

Step 3



United States Department of Agriculture

## MyPyramid.gov



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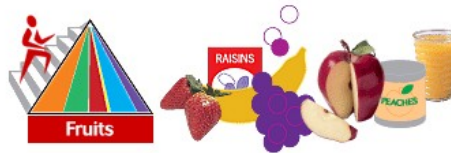
Go

Subjects

- ▶ My Pyramid Plan
- ▶ **Inside the Pyramid**
- ▶ Tips & Resources
- ▶ Dietary Guidelines
- ▶ For Kids
- ▶ For Professionals
- ▶ Related Links
- ▶ My Pyramid Tracker

You are here: [Home](#) / [Inside the Pyramid](#) / [What foods are in the Fruit Group?](#)

## Inside the Pyramid



### What foods are in the fruit group?

Any fruit or 100% fruit juice counts as part of the fruit group. Fruits may be fresh, canned, frozen, or dried, and may be whole, cut-up, or pureed. Some commonly eaten fruits are:

[View Fruits Food Gallery](#)

Apples  
Apricots  
Avocado  
Bananas

**Berries:**  
strawberries  
blueberries  
raspberries

**Mixed fruits:**  
fruit cocktail

Nectarines  
Oranges  
Peaches  
Pears  
Papaya  
Pineapple

### Fruits

- **What's in the Fruit Group?**
- How much is needed?
- What counts as a cup?
- Health benefits and nutrients
- Tips to help you eat fruits

### Related Topics


- Grains
- Vegetables
- **Fruits**
- Milk
- Meat & Beans
- Oils
- Discretionary Calories
- Physical Activity

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NBC4 Health and Fitness Expo 2007 - Fruit Group - [Fruit Group]

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 United States Department of Agriculture  
 Agricultural Research Service  
 Beltsville Human Nutrition Research Center

**Nutrition Challenge**


 Saturday, January 13  
 Sunday, January 14

Respondent Information      Step 1      Step 2      STEP 3


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**Please answer the same questions about the MyPyramid fruit group**

---

- What foods are in the fruit group?     Apples     Parsnips     Avacado     Oranges     Tomatoes
  
- The amount of fruit you need is based on which of the following? (choose all that apply)
  - Age     Sex     Race     current body weight     level of Physical Activity
  
- Given your gender and age, how many cup equivalents of fruit should you be eating daily?
  - 1/2 cup     1 cup     1 1/2 cups
  - 2 cups     2 1/2 cups     3 cups
  
- What counts as a cup equivalent of fruit? (choose all that apply)
  - 1 cup of fruit     1 cup 10% fruit juice     1/2 cup of dried fruit
  - 1 cup of 100% fruit juice     1 cup dried fruit
  
- Fruits have health benefits and are important sources of many nutrients. Which of the following nutrients are found in fruits? (choose all that apply)
  - Potassium     Dietary Fiber     Protein     Vitamin C     Folate

**Check**



Respondent Information

Step 1

Step 2

STEP 3

## Please answer the same questions about the MyPyramid fruit group

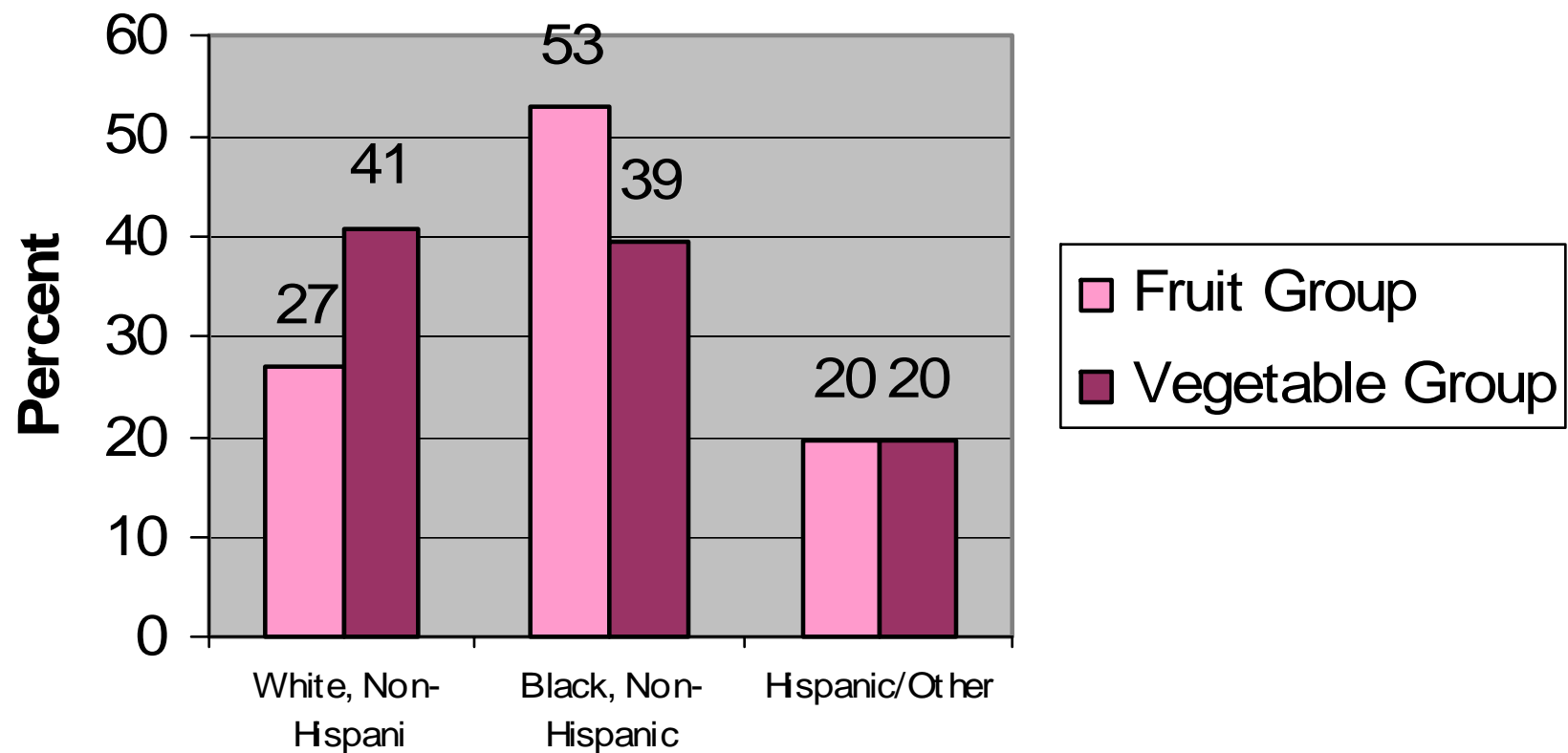
1. What foods are in the fruit group?  Apples  Parsnips  Avacado  Oranges  Tomatoes
2. The amount of fruit you need is based on which of the following? (choose all that apply)  
 Age  Sex  Race  current body weight  level of Physical Activity
3. Given your gender and age, how many cup equivalents of fruit should you be eating daily?  
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Finish

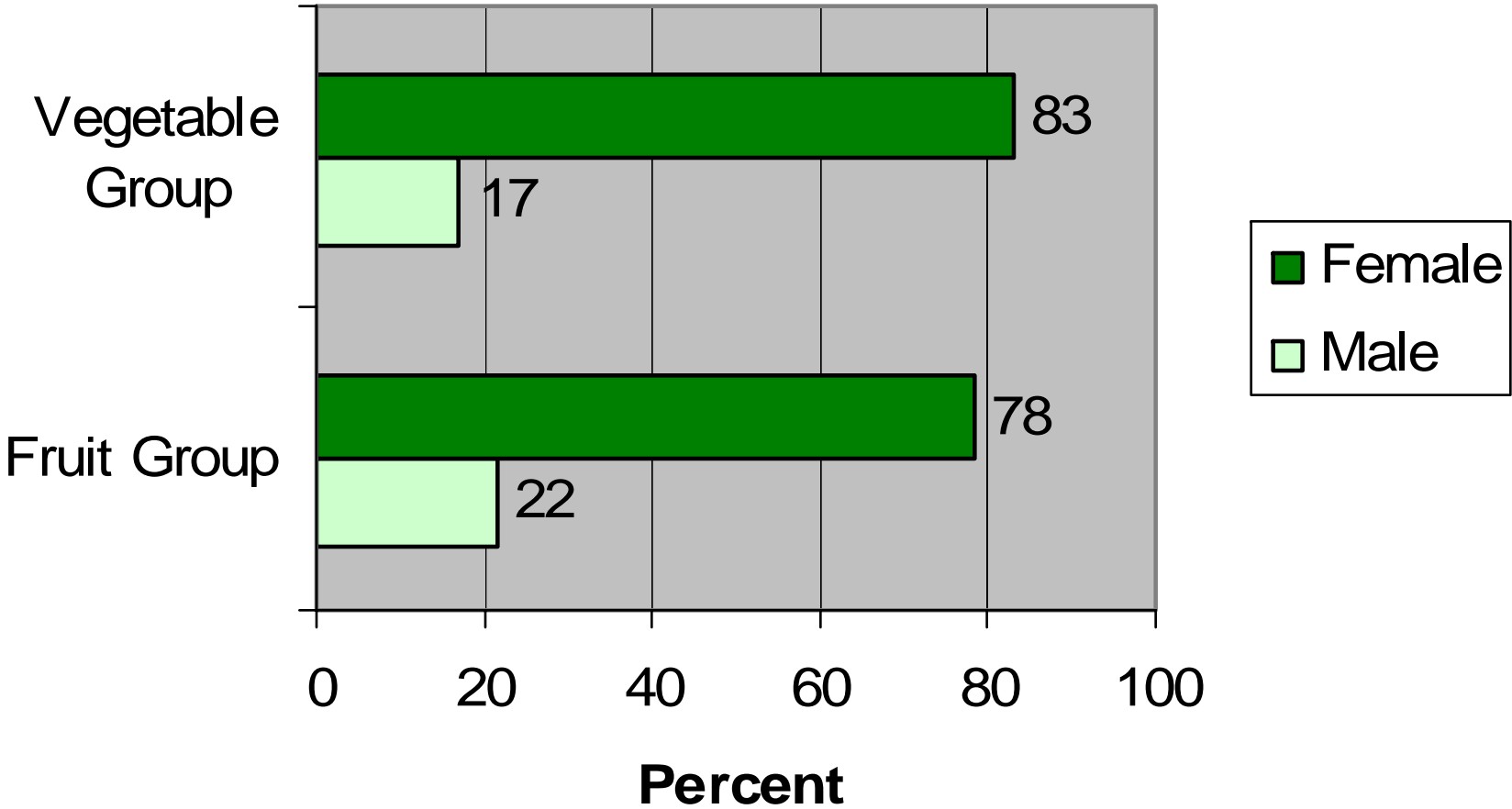
# Data Analysis

- ✦ Frequencies and means were used to determine descriptive statistics
- ✦ T-tests were used to determine if there were significant differences in total number of correct responses to questions for the pre- and post-test for fruit and vegetables for
  - Residence
  - Gender
  - Race/ethnicity
  - Age
  - All respondents
- ✦ Chi-Square were used to determine if there were significant increases in the number of individuals who answered all of the multi-part questions correctly for the post-test.

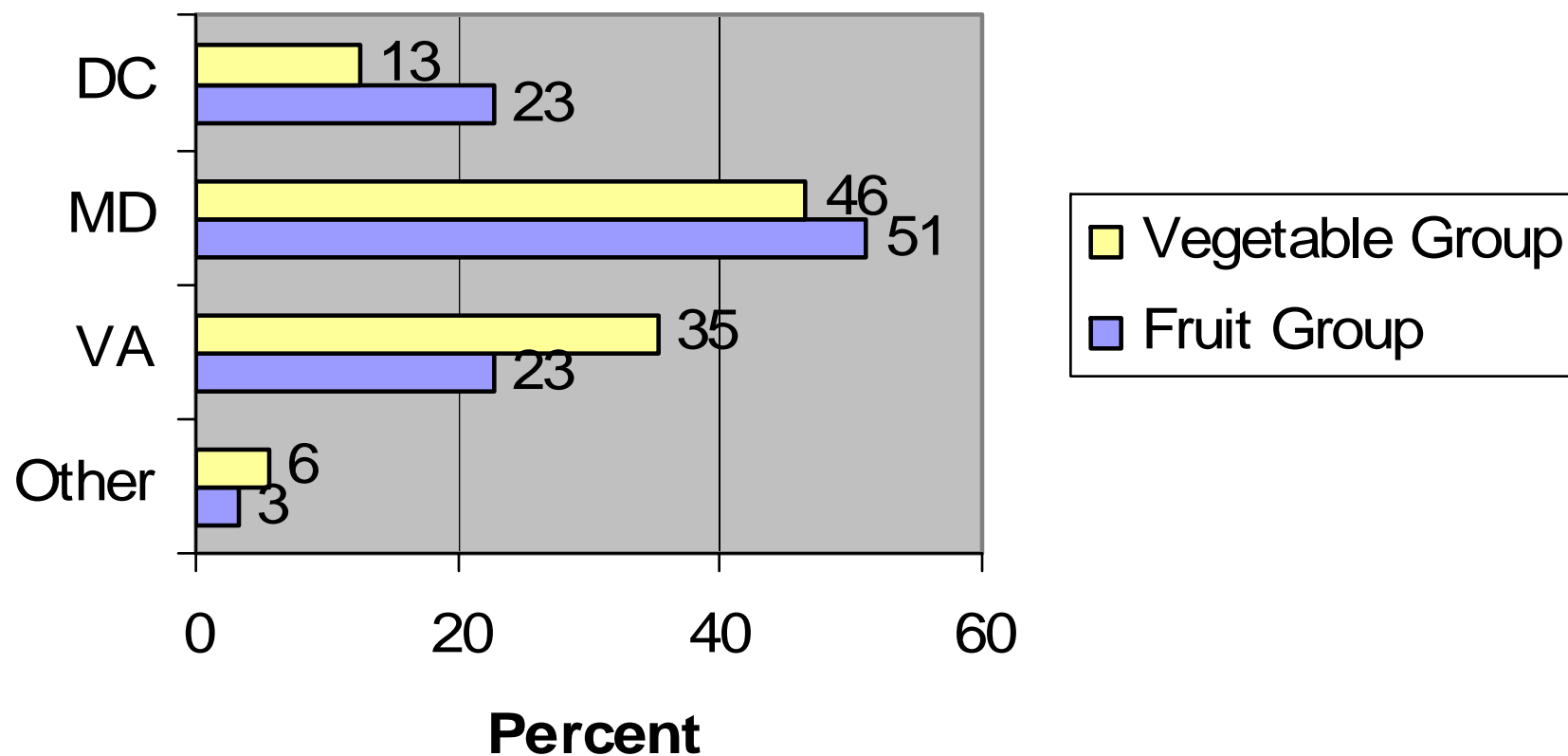
## Sociodemographic Race/Ethnicity Groups



# Sociodemographics: Gender Groups



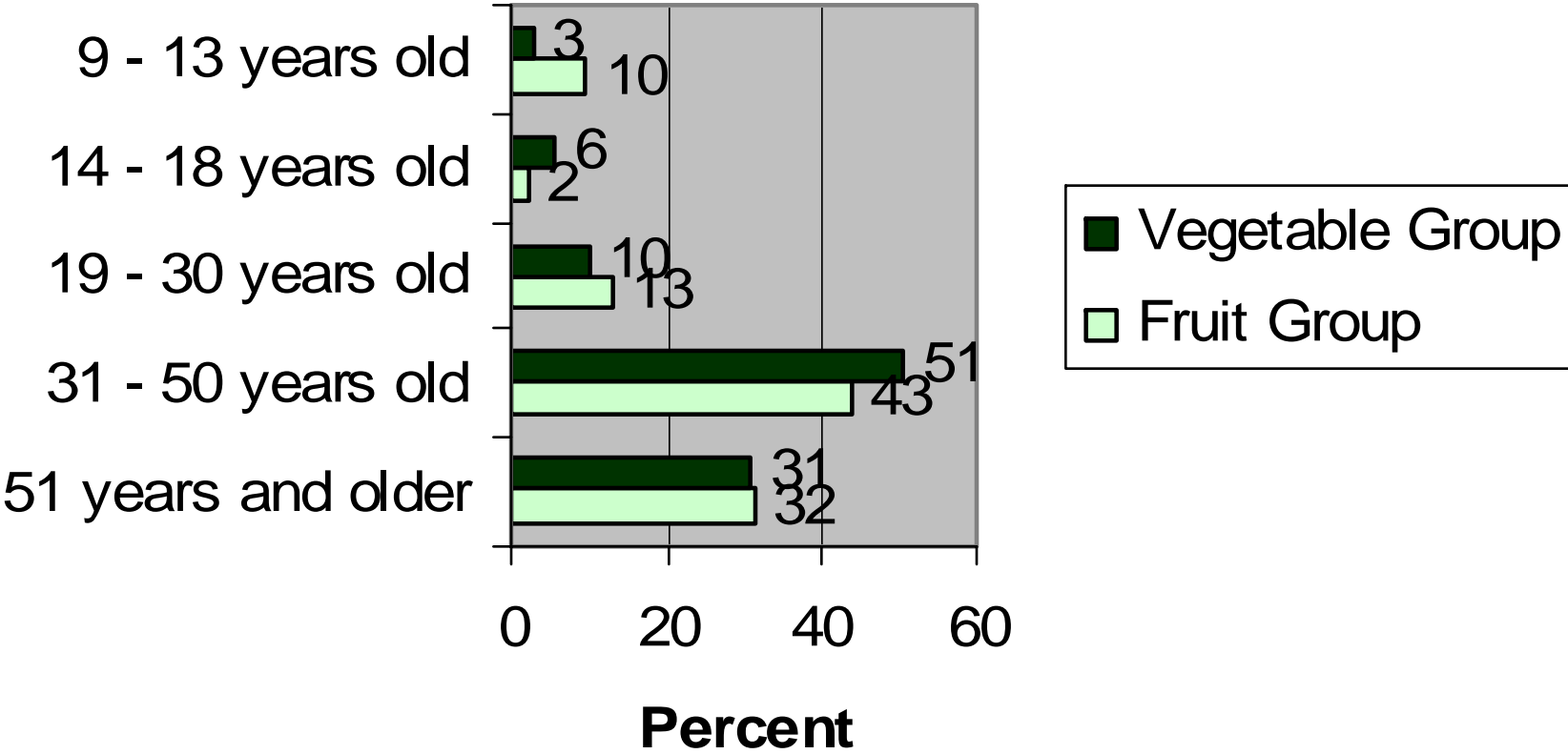
## Sociodemographics State of Residence





# Sociodemographics

## Age Groups



# Results for Fruits



## Difference in correct responses to fruit questions by residence

	Mean	Maximum	Minimum
Pre-test	14.457**	24	8
Post-test	16.109**	24	7
DC Pre-test	14.381*	19	9
DC Post-test	16.619*	24	11
MD Pre-test	14.468*	24	8
MD Post-test	16.064*	24	7
VA Pre-test	14.714	21	9
VA Post-test	15.762	24	9

P < .05 = \*

P < .01 = \*\*

P < .001 = \*\*\*

## Difference in correct responses to fruit questions by gender

	Mean	Maximum	Minimum
Male Pre-test	14.150	21	8
Male Post-test	16.100	24	7
Female Pre-test	14.542 *	24	8
Female Post-test	16.111 *	24	8

P < .05 = \*

P < .01 = \*\*

P < .001 = \*\*\*

## Difference in correct responses to fruit questions by race

	Mean	Maximum	Minimum
Non Hispanic White Pre-test	14.360	21	9
Non Hispanic White Post-test	15.880	24	7
Non Hispanic Black Pre-test	14.469	24	8
Non Hispanic Black Post-test	15.939	24	8
Hispanic/Other Pre-test	14.556	21	11
Hispanic/Other Post-test	16.889	24	12

## Difference in correct responses to fruit questions by age

	Mean	Maximum	Minimum
31-50 yo pre-test	14.475	22	8
31-50 yo post-test	15.300	22	9
51+ yo pre-test	14.137 *	19	9
51+ yo post-test	16.172 *	24	7

P < .05 = \*

P < .01 = \*\*

P < .001 = \*\*\*

# Results for Vegetables



## Difference in correct responses to vegetable questions by residence

	Mean	Maximum	Minimum
Pre-test	14.930 **	26	7
Post-test	16.577 **	26	8
DC Pre-test	15.333	26	9
DC Post-test	18.444	26	10
MD Pre-test	14.456 *	21	10
MD Post-test	16.000 *	22	8
VA Pre-test	15.640	25	7
VA Post-test	16.920	26	10

P < .05 = \*

P < .01 = \*\*

P < .001 = \*\*\*



## Difference in correct responses to vegetable questions by gender

	Mean	Maximum	Minimum
Male Pre-test	14.250	18	9
Male Post-test	15.583	24	10
Female Pre-test	15.068 *	26	7
Female Post-test	16.780 *	26	8

P < .05 = \*

P < .01 = \*\*

P < .001 = \*\*\*

## Difference in correct responses to vegetable questions by race

	Mean	Maximum	Minimum
Non Hispanic White Pre-test	15.310 **	19	7
Non Hispanic White Post-test	17.448 **	26	10
Non Hispanic Black Pre-test	14.321	26	9
Non Hispanic Black Post-test	16.143	26	8
Hispanic/Other Pre-test	15.357	25	11
Hispanic/Other Post-test	15.643	24	10

P < .05 = \*

P < .01 = \*\*

P < .001 = \*\*\*

## Difference in correct responses to vegetable questions by age

	Mean	Maximum	Minimum
31-50 yo pre-test	15.528 *	26	10
31-50 yo post-test	17.444 *	26	8
51+ yo pre-test	13.364	18	7
51+ yo post-test	14.682	24	10

P < .05 = \*

P < .01 = \*\*

P < .001 = \*\*\*

# Questions

- ✦ Q1 = What foods are in the fruit/vegetable group?
- ✦ Q2 = The amount of fruits/vegetables you need is based on which of the following?
- ✦ Q3 = What counts as a cup equivalent of fruits/vegetables?
- ✦ Q4 = Fruits/Vegetables have health benefits and are important sources of many nutrients. Which of the following nutrients are found in fruits/vegetables?

# Who Answered All Choices Correct for a Question

Question	Fruit		Vegetable	
	Pre-test	Post-test	Pre-test	Post-test
Q 1	13.04***	38.04***	23.94	29.58
Q 2	7.61**	20.65**	9.86*	25.35*
Q 3	23.91	32.61	12.68	19.72
Q 4	26.09	33.70	16.90	28.17

P < .05 = \*

P < .01 = \*\*

P < .001 = \*\*\*

# Summary

- ✦ For fruits, there was a significant difference between the pre-test and post-test for people who could identify fruit but not for vegetables.
- ✦ There was a significant difference between the pre-test and post-test for people who knew what the amount of fruits/vegetables they needed was based on.

# Other Results

## ✦ Fruits

- Avocados is a fruit
  - ✦ 39.13% to 57.61% getting this correct
- How many cup equivalents of vegetables do you need?
  - ✦ 9.86% to 22.54% getting it correct

## ✦ Vegetables

- Tomatoes is a vegetables
  - ✦ 50.70% to 59.15% getting this correct
- How many cup equivalents of vegetables do you need?
  - ✦ 14.13% to 29.35% getting it correct

# Conclusions

- ✦ Navigating *MyPyramid.gov* increased fruit and vegetable knowledge when comparing pre- and post-tests.
- ✦ This technology could allow health professionals to design appropriate community based intervention strategies in an effort to increase fruit and vegetable consumption in populations of greatest need.



# Acknowledgements

- ✦ Jenny Allen, EEO Specialist
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