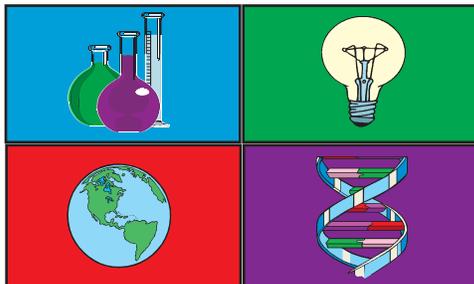


Science TODAY™ Teacher Edition

USA TODAY

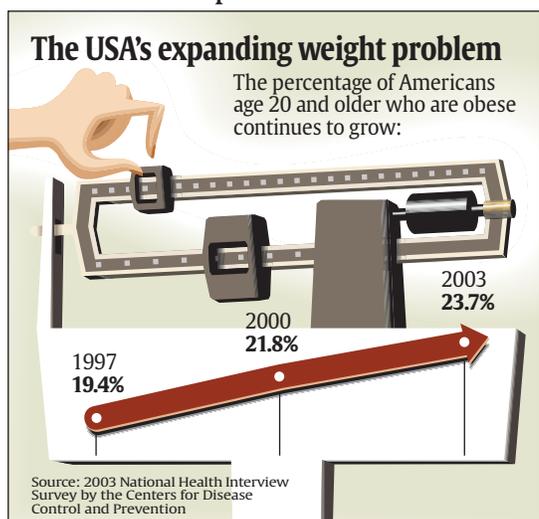
NO. 1 IN THE USA



The USA's expanding weight problem

By: Jeff Lukens

USA TODAY Snapshots



By Bob Laird, USA TODAY

Activity Overview:

This activity reveals the incidence of obesity in the United States. Students will examine both the USA TODAY Snapshot "The USA's expanding weight problem" and additional data on obesity in America. They will then construct a graph, analyze the trends in the data and make predictions about the future.

Concepts:

- Fitness
- Weight management
- Nutrition
- Reading a graph
- Rate of change (slope)
- Making predictions from a graph

Activity at a Glance:

- Grade level: 9-12
- Subject: Biology, Health
- Estimated time required: 30-45 minutes

Materials:

- TI-83 Plus family or TI-84 Plus family
- Overhead view screen calculator for instruction/demonstration
- Student handout
- Transparency
- TI-Navigator System (if available)

Prerequisites:

Students should be able to:

- enter data into the List Editor.
- create a linear regression model.
- make predictions from the model.
- determine independent and dependent variables.
- convert percentages to raw data.



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Objectives:

Students will:

- plot and analyze data from a graph and a table.
- use the graphing calculator to build a mathematical model to represent data.
- predict future trends in obesity data from the mathematical model.
- make recommendations for healthy nutritional lifestyle choices.
- indicate the potential social and economic issues associated with an increasingly obese American population.

Background:

For the past several years, many of the top selling non-fiction books have been diet books. Americans, because of the abundance and variety of food available, continue to struggle with maintaining nutritional balance.

For several years, the obesity rate in the United States has steadily risen. Although many factors have contributed to the increase in obesity, the bottom line typically is that we eat too much and exercise too little. At one time, obesity was a condition that only adults struggled with. Lately, however, more children are suffering from being too heavy. There are many contributing factors, but the reality is that children, like their adult role models, are eating more calories than they are burning. This activity uses real-world data to show students the increase in the incidence of obesity and to encourage students to make healthy lifestyle decisions.

Preparation:

- Provide one graphing handheld for each student.
- Each student should have a copy of the corresponding student activity sheet.

Classroom Management Tips:

- Students will have a better understanding of how to read the graphic and retrieve data if you use the transparency for a class discussion before the students start working.
- Remind students to read carefully all parts of the graphic before they start collecting data.
- Students can work individually or in small groups on this activity. Working in groups is especially helpful as they learn the various features of the handheld.

Data Source:

2003 National Health Interview Survey by the Centers for Disease Control and Prevention

National Science Education Standards:

Grades 9-12: Science in Personal and Social Perspectives Personal and Community Health

- Selection of foods and eating patterns determine nutritional balance. Nutritional balance has a direct effect on growth and development and personal well-being. Personal and social factors — such as habits, family income, ethnic heritage, body size, advertising, and peer pressure — influence nutritional choices.

Additional Resources:

- Student handout
- Transparency
- TI Technology Guide, for information on the following: TI-83 Plus family, TI-84 Plus family, List Editor, and regression models
- TI Navigator™ Basic Skills Guide for information on using the TI-Navigator Classroom Learning System
- USA TODAY Education case studies:
www.usatoday.com/educate/casestudies/index.htm

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Activity Extension:

- Have students read USA TODAY to find articles pertaining to obesity, nutrition and exercise and have them bring an article to class for a discussion.
- Encourage students to visit the USA TODAY Education website at www.education.usatoday.com and search for health-related case studies. Have them read a case study of their choice and answer the discussion questions.
- One of the keys to maintaining a balanced diet is understanding the different types of calories (fats, proteins and carbohydrates). Have students calculate the number and different types of calories that they eat during a particular day. What percentage of their total calorie intake consists of fats, carbs and proteins? Why is it important to limit the intake of saturated fats and simple carbohydrates (sugars)? Bonus: Ask students to calculate the number of calories that are burned by various activities (walking, running, playing tennis, etc.). Then, have them keep a daily journal that measures the number of calories they take in against the number of calories they burn.
- Have students research some of the countless diet plans. Allow them to share information about their research.
- Have students brainstorm a list of ideas for a new food or beverage item that they think would appeal to today's consumers. (Have them consider current diet trends, nutritional concerns, family and lifestyle needs, etc.) As a class, choose the most promising new product, and explain what it is, how to package and market it, and why consumers would want to buy it.
- Use this activity as a springboard into a discussion of the three main macronutrients found in food: carbohydrates, proteins, and lipids (fats). Discuss the role each of these nutrients plays in the health and maintenance of the human body.

Curriculum Connections:

- Algebra I
- Algebra II
- Human Anatomy & Physiology
- Physical Education
- Nutrition - Family and Consumer Sciences

Teacher Notes:

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Assessment and Evaluation:

Q. In this activity, which is the independent variable?

A. Year (time)

Q. What is the dependent variable?

A. Percentage of people who are obese

Q. What is the slope of the regression line?

A. 0.75

Q. What would be the appropriate unit label for the slope?

A. % obesity per year

Q. What does the slope of the graph indicate?

A. The percentage of the U.S. population that is obese is increasing at a rate of 0.75% per year

Q. If the population of the U.S. was about 281 million in the year 2000, how many people in the U.S. would have been considered obese in the year 2000?

A. Approximately 61.3 million people

Q. From the mathematical model, what do you predict the percentage of obese Americans will be in 2010?

A. Approximately 29.5%

Q. Name two factors that are critical in order to achieve and maintain a healthy body weight.

A. Nutrition (how much and what you eat) and exercise



If you are using the TI-Navigator Classroom Learning System, send the provided LearningCheck assessment to your class to gauge student understanding of the concepts presented in the activity. See the TI-Navigator Basic Skills Guide for additional information on how this classroom learning system may be integrated into the activity.