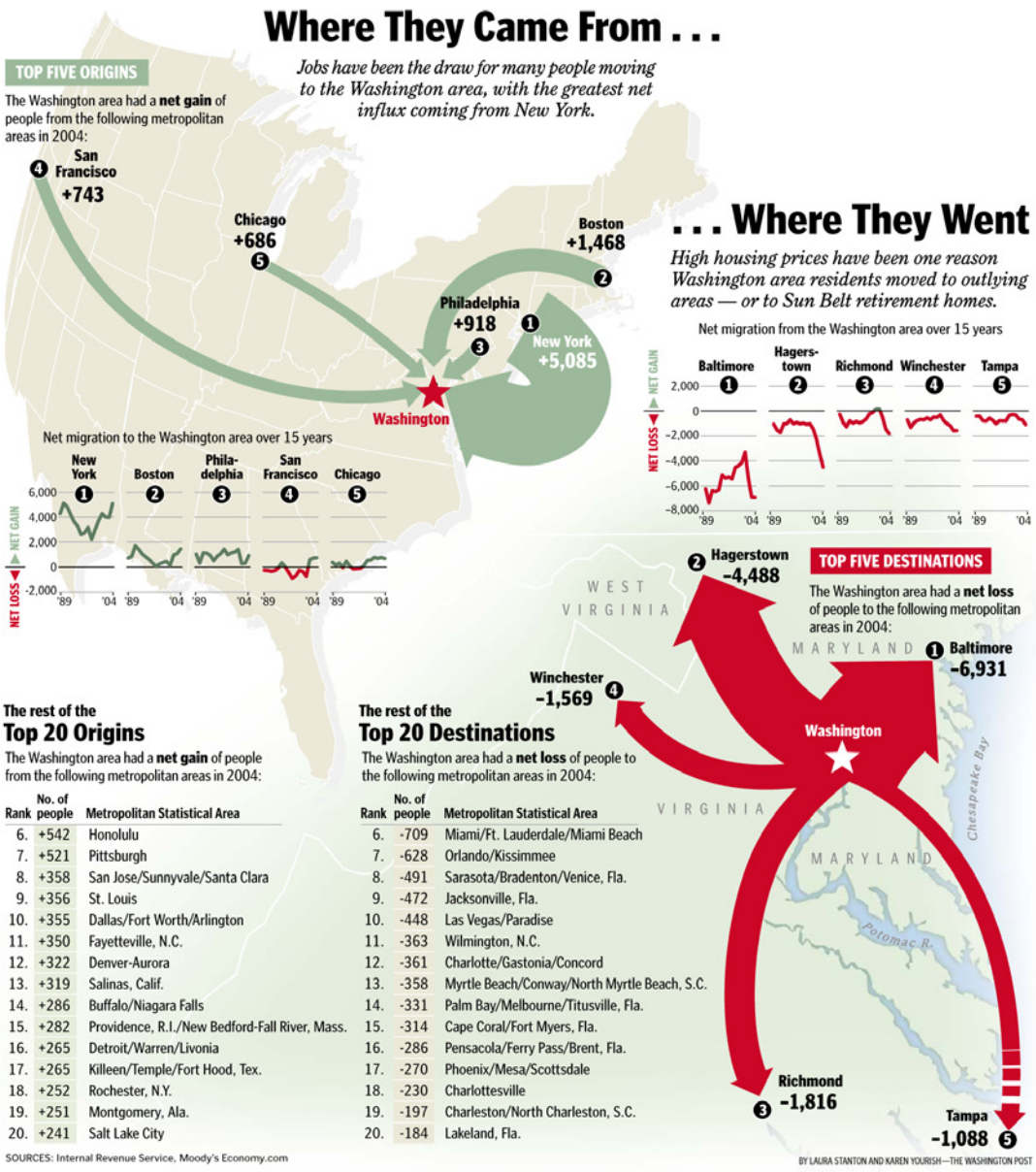
[The Washington Post]

VOLUME 7, ISSUE 5

Informational Graphics

The Visual Dimension



Rank	No. of people	Metropolitan Statistical Area
6.	+542	Honolulu
7.	+521	Pittsburgh
8.	+358	San Jose/Sunnyvale/Santa Clara
9.	+356	St. Louis
10.	+355	Dallas/Fort Worth/Arlington
11.	+350	Fayetteville, N.C.
12.	+322	Denver-Aurora
13.	+319	Salinas, Calif.
14.	+286	Buffalo/Niagara Falls
15.	+282	Providence, R.I./New Bedford-Fall River, Mass.
16.	+265	Detroit/Warren/Livonia
17.	+265	Killeen/Temple/Fort Hood, Tex.
18.	+252	Rochester, N.Y.
19.	+251	Montgomery, Ala.
20.	+241	Salt Lake City

Rank	No. of people	Metropolitan Statistical Area
6.	-709	Miami/Ft. Lauderdale/Miami Beach
7.	-628	Orlando/Kissimmee
8.	-491	Sarasota/Bradenton/Venice, Fla.
9.	-472	Jacksonville, Fla.
10.	-448	Las Vegas/Paradise
11.	-363	Wilmington, N.C.
12.	-361	Charlotte/Gastonia/Concord
13.	-358	Myrtle Beach/Conway/North Myrtle Beach, S.C.
14.	-331	Palm Bay/Melbourne/Titusville, Fla.
15.	-314	Cape Coral/Fort Myers, Fla.
16.	-286	Pensacola/Ferry Pass/Brent, Fla.
17.	-270	Phoenix/Mesa/Scottsdale
18.	-230	Charlottesville
19.	-197	Charleston/North Charleston, S.C.
20.	-184	Lakeland, Fla.

INSIDE

A Word About Informational Graphics

Cave drawings, mathematic charts, troop movement diagrams and Metro maps. Through the ages, humans have instinctively known that visuals communicate information quickly.

Informational graphics are an important tool in communicating news and explaining complex ideas. The News Art department of *The Post* produces thousands of artworks each year — the maps, charts and informational graphics that help readers comprehend stories quickly.

These are drawn by hand, mixed media or computer assisted. "Our latest interest is in 3-dimensional graphics software that gives us the ability to model, for example, anything from the international space station to a mosquito. Our cartographers are experimenting with GIS-based mapping systems and satellite photography," states Michael Keegan, AME/News Art.

They are the work of 4 managers, 2 designers, 6 informational graphics specialists, 3 cartographers, 10 feature section designers, 2 part-time staff and 5 graphics editors (assigned to National, Metro, Foreign, Business, Food, Home, Health and Sports). They please the eye, inform and educate *Post* readers every day.

The examples that are included in this guide reflect the variety and types of informational graphics to be found in *The Post*. Use them in art and language arts, biology and health, mathematics and science, history and technology classes. They reflect career opportunities and inter-disciplinary studies. They are sources of information, models and inspiration for projects.

Lesson: Informational graphics communicate information quickly and accurately, explain complex ideas, and draw the reader into text.

Level: Low to high
Subjects: Art, Computer Graphics, Mathematics, Science
Related Activity: Language Arts, Geography, History, Technology

NIE Online Guide
Editor — Carol Lange
Art Editor — Carol Porter

Contributing to this guide: KidsPost Deputy Editor Brenna Maloney drew upon her experience as Metro graphics editor and Features graphics editor at *The Washington Post* and graphics editor at *National Geographic Magazine* to answer all of our questions. She provides insight into the role of the graphics editor, working as a liaison between major sections of the newspaper and News Art's artists and cartographers.

Washington Post News Art Assistant Managing Editor Michael Keegan advised and gave his full support to this project.

Send comments about this guide to: Margaret Kaplow, Educational Services Manager, kaplowm@washpost.com

Informational Graphics: The Visual Dimension

The informational graphics, also called infographics, in this guide stand alone to communicate information and model interdisciplinary projects. Select from the suggested activities ones that are appropriate for the age of your students, time available and curriculum fit.

Define Infographics

Give students *The Post*. With a crayon or marker they are to circle in each section anything that is not a headline, story, photograph and caption or an advertisement. What remains are maps, art illustrations, charts and graphs. This is the work of the News Art department.

The artists and cartographers in News Art create the visuals that communicate ideas that can be hard to understand with words alone.

These informational graphics — maps, charts and graphs (fever-line, pie or bar), timelines, flow diagrams, poll charts and art illustrations help readers comprehend stories quickly. Teachers may use "Informational Graphics Collection" at this time to acquaint students with the many types of devices.

Read the Graphic Cartoon

Editorial cartoons are often based on events and actions. Although they have a point of view, they are more than the cartoonist's opinion. Research and the results of studies inform the images that appear before the reader. Give students "Test: Interpret This Graph" by *Washington Post* editorial cartoonist Tom Toles. Questions that you may discuss include:

- What is the topic of the graph?
- What does the graph indicate?
- How does this graph differ from an informational graph that News Art or students might prepare on the same topic? [Toles includes no statistics, no time frame, no source of data.]
- Who is taking the test?
- What additional message is conveyed through word choice ("tall," "short," and "like") in the written response?
- From the continuation of the "answer" found in the lower right of the box, what do students believe is Toles' perspective? Ask them to write a brief summary of his main idea.
- Do students agree with Toles' point of view? Why?
- Is the graph an effective device to convey his commentary in compact, visual format?

Teachers might provide students with the facts, scores from international testing in math and science covering a ten- to 25-year period. Have students plot the numbers. Do they indicate the same decline or has Toles exaggerated to make his point?

Meet a Graphics Editor

The liaison between the reporters in the sections of *The Washington Post* and the News Art department is the graphics editor. Read and discuss our interview with Brenna Maloney, former Metro graphics editor and Features graphics editor for *The Washington Post* and new deputy editor, KidsPost.

Maloney gives insight into the job and the process of creating an informational graphic. In addition

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What Does That Mean?

Informational graphics are visual presentations of data, complex ideas, locations and functions. They are the graph, chart or art communicating ideas that can be hard to understand with words alone.

At *The Washington Post,* the News Art department creates the infographs — maps, charts, and illustrations that help readers comprehend stories quickly.

A map can be as simple as intersecting streets or as detailed as a relief map in which mountains, ice flow and animal movement are represented.

Charts, whether fever-line, pie or bar, with clarity display numeric relationships that may be hard to describe succinctly in a story. Timelines, flow diagrams and poll charts illustrate detailed information.

Informational graphics place readers at the scene.

They show the physical layers and complicated movements of machines and humans, inanimate objects and living beings.

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to a focus on a career, the interview can be used in conjunction with graphics for which she was the graphics editor and/or reporter: "Chew on This," "Invasion of the Critters," and "Sinus Surgery."

You might ask students to prepare an organization chart of News Art based upon information provided in the interview. Compare it with the organizational chart provided in this guide. (See "Informational Graphics Collection.")

Review the Types of Infographics

Distribute "Informational Graphics Collection" Students are to find examples of the devices listed. Teachers may follow-up this activity with an application/ decision making problem. Give them data from your current study. Ask students to create an informational graphic using the data, selecting the best format in which to present the data.

Illustrate a Concept

The successful informational graphic draws the reader to and into the story, explains complex ideas and makes the point quickly. As part of a unit of study or research project, teachers could require students to produce an informational graphic. In this guide, we provide two examples of informational graphics and an editorial cartoon on the topic of global warming.

Before giving students the infographics, teachers may wish to read the opening paragraphs of the science news articles that these illustrate. (See "Climate Change Brings Risk of More Extinctions.") What information is conveyed by the reporter?

Science reporter David A. Fahrenthold covers the risk of extinction caused by the alteration of natural ecosystems. Give students "Animals Struggle With Effects of Global Warming" (third in the monthly series, In the Greenhouse). Looking only at the globe portion and headline, can students tell where and what animals are "struggling"? What do they already know about any of these regions? Read and discuss the explanatory copy. Note and discuss the use of black, stylized images and one color.

"As Temperatures Rise, Health Could Decline" (fifth in the series) is written by *Post* reporter David Brown. Discuss what is understood about the impact of climate change on human health as presented in the opening paragraphs of the article. The remainder of the article reports on the five areas into which researchers group health effects — heat stress, extreme weather, air pollution, waterborne and food-Borne Disease, and Vector-Borne Disease. News Art artist Patterson Clark illustrates the concepts in the "Health Risks of Global Warming" informational graphic.

- Discuss the concepts presented in the top portion of the illustration.
- Brown notes that researchers, aware of policymakers, have organized their findings in accessible groupings. Are the five main groups apparent to students who view the infograph?
- In what ways do the arrows and human figures assist in conveying the health risks?

A political dimension of global warming is addressed in editorial

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Read About It

The Newspaper Designer's Handbook
Tim Harrower
McGraw-Hill, 2007
In its sixth edition, the step-by-step guide includes creation of maps, charts and diagrams as well as layout and typography guides. The examples are excellent and the suggested exercises develop student skills.

A Practical Guide to Graphics Reporting: Information Graphics for Print, Web and Broadcast
Jennifer George-Palilonis
Focal Press, 2006
How to create diagrams, charts, maps and other information graphics. Includes CD-ROM with interactive, animated information graphics.

The Best of Newspaper Design
Society of News Design
Rockport Publishers, annual
A collection of professional winners in categories including art and illustration, news, and information graphics

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cartoonist Tom Toles' Jan. 2, 2008, cartoon. He does not provide much of the data one would expect in a fever-line presentation. The reader, in the lower right corner, even calls attention to his failure to provide a time frame; Toles' response re-enforces his less than optimistic point of view. Discuss with students the international documents and current context of the cartoon.

- Why are the keys essential to understanding the illustration?
- In what ways does having knowledge of fever-line charts help convey Toles' point of view?
- Toles has a very sparse style. Some cartoonists would have added lines to show the most active countries on the chart to serve as a contrast to the U.S. policies. Would this have conveyed the message more clearly? What if other countries and another key that indicated swiftness of signing documents and level of involvement were added?

Practice Presenting Data

What should one use? A bar or pie chart, fever-line or chart? "Visualize the Numbers" is a template for circle, line and bar charts. Provide students with data drawn from a news, science, business or sports article — or have them read the article to collect the data. Give students data that might appear on standardized testing; ask them to select the appropriate template and plot data.

Analyze the Effect of Design

Examine several informational graphics to study the impact of color on the design and on the reader's response. After discussion, students could be asked to write a one-page analysis of the use and impact of black and white and colors in infographics.

For practice, give students "Sight for Your Eyes: What Do Colors Mean?"

- If only black and white were available for printing, would this article have the same impact? Would infographics even have been used?
- How important are the illustrations in full color?
- There are several color swatches in "Some Other Colors." What if four of them had been used instead of red, blue, green and yellow in the larger panel?

Use the other example from KidsPost in this guide, "Putting Pieces Together" to compare and contrast the design elements. Typography as well as color might be discussed. Contrast the tones of the two graphics. The topic of creating a family tree could be presented in a very traditional manner. How does the artist's style influence the mood?

Organize Your Group

Use both the KidsPost "Putting the Pieces Together" and the News Art organizational chart as examples. Students might be asked to create an organizational chart of the legislative branch of government, your school system or a club to which they belong. How does typography and type of line influence the tone?

Chew on This

Laura Stanton took a whimsical look at the digestion process. Read Graphic Editor Brenna Maloney's comments about this work. (See "Meet the Graphic Artist.") Does the illustration need

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Graphics & Design

www.aiga.org/
American Institute of Graphic Arts
The professional association for design site is rich in visual stimulus. Be sure to view the Inspiration section archives.

www.snd.org
The Society of News Design
SND's mission is to enhance communication through excellence in visual journalism. Publishes *The Best of Newspaper Design*. Explore the site for resources (in print, video, PDF and podcast formats).

www.spj.org/sdxa2002b.asp
Society of Professional Journalists
SPJ Sigma Delta Chi awards include Informational Graphics.

www.societyillustrators.org
Society of Illustrators
Site includes video archive of lectures and online exhibit. Begun in 1901, its first monthly dinners were attended by such prominent illustrators as Howard Pyle, Maxfield Parrish, N.C. Wyeth, Charles Dana Gibson, Frederic Remington and special guests like Mark Twain and Gloria Swanson.

www.spd.org
Society of Publication Designers
Web site has helpful Resources section. SPD encourages artistic excellence by judging annually the work of thousands of design professionals in the United States and abroad. "The activities of SPD promote the art director's role as visual journalist and partner in the editorial process — the partner responsible for telescoping and shaping information, the one who gives tone to an editorial voice."

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to be anatomically correct in this context? If the text is accurate, do readers/students get the same understanding of the process of digestion? Discuss the importance of knowing one's audience when creating an informational graphic.

Face a Problem

"Sinus Surgery: It Was All in His Head" is a more anatomically correct illustration, including a photograph and computer model of the patient's skull. This information graphic comes closer to the work of a medical illustrator. This informational graphic could be used in a biology, technology, advanced art or pre-med course.

Discussion in a biology course would cover defining and locating sinuses, detailing the ailment and attempted remedies. In a technology course, the focus could be on the use of computer imaging, CR scans, cameras and the microdebrider that both removes minute particles and shaves tissue. In a pre-med course, additional dialogue would be spent on the knowledge, precision and steady hand of the surgeon.

Prepare a Problem Poster

"Invasion of the Critters" is a one-page research paper. As a poster it conveys essential information without pages to plod through. Would readers have read a long article that jumped to a second page, even if main points were bulleted? Unlikely.

The content can be broken into four main sections, from top to bottom:

1. Research: Present the background and why homeowners should care (text)
2. Prevention: Provide ways to keep the problem away from a resident's door (text illustrated with appealing house and critters)
3. Facts: Put the problem into perspective (data, charts and graphs)
4. Solution: If all else fails, how do owners get rid of the problem? (text and illustration)

Read Graphic Editor Brenna Maloney's comments about this work (See "Meet the Graphic Artist.").

"Invasion of the Critters" is an example of handling a problem sometimes faced when preparing a graph. If the range of numbers is too great, how does one best visually represent the data? Discuss how this team handled the problem by focusing on one mouse. In order to be as accurate as possible, what did the team have to assume? [Half of the offspring would be female]

Preparing a similar informational graphic utilizes skills in research, language arts, art, technology and mathematics. Depending on the topic, history and science will also be incorporated. Either assign or have students select a problem from a list that teachers provide. The project may be done alone, in pairs or teams. Students are to complete research. Be sure they compile a list of sources — as Brenna Maloney states: "I am not looking for just any source, I am looking for the best source."

Students should prepare a draft of their informational graphic after they have written the succinct narrative and sketched the illustration, prepared a graph or chart and reviewed that they have covered all four steps of the assignment.

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Past Post Guide

The creation of maps to enhance articles and to assist readers in placing events in their geographic location is an important role of the News Art department. Examples of the work done by *Post* cartographers are not included in this guide. We encourage teachers to download the entire NIE online guide that focuses on maps.

Putting Yourself on the Map

Maps are found daily in *The Post*. Activities in this guide encourage a study of these maps to enhance reading of the newspaper, increase understanding of international and local events and to improve geography skills.

For younger students, teachers are provided a lesson plan to create a handland. For older students, a two-page illustrated handout presents 12 types of maps. Examples of infographics in this guide include a map of South America ("Latin America's New Leftists"), maps of Europe and Africa comparing fertility rates ("Children: Too Many, Too Few"), and a student handout on inset maps.

An interview with *Post* cartographer Richard Furno presents the creative process from the perspective of the News Art member. It makes a good pairing with the interview of Brenna Maloney, a graphics editor, found in this guide.

INSIDE online guides for use with *The Washington Post* are found at www.washpost.com/nie. Select and download Putting Yourself on the Map (Volume 6, Issue 2, December 19, 2006) in the Lesson Plans section.

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Package the Court

"Another Milestone for Stevens" is a good example of packaging several forms of informational graphics to give a statistical sketch of a Supreme Court Justice. Review and discuss the different kinds of information that is provided. This was published November 16, 2007. When will Stevens have served the ninth-longest tenure?

Government students could be assigned other Supreme Court justices (past and present) to create a similar informational graphic package.

Get Smart

How do they do that? In this case, how will the new SmarTrip card be able to compute all fares and special passes and allow riders to automatically add money?

An evaluation of the infographic would include:

- Is the card recognizable to current users? Does this help draw attention of the Metro rider to the article?
- How many layers compose the card? Do we know the exact number or get a sense of the type of information embedded or printed on layers?
- Does the text provide enough information to explain how the card will work?

Compare and Contrast

Give students "The Price of Protection." Looking first at the three illustrations, compare and contrast the protective wear worn by soldiers in the three wars. Note the details and number of items that can be contrasted from headgear to footwear.

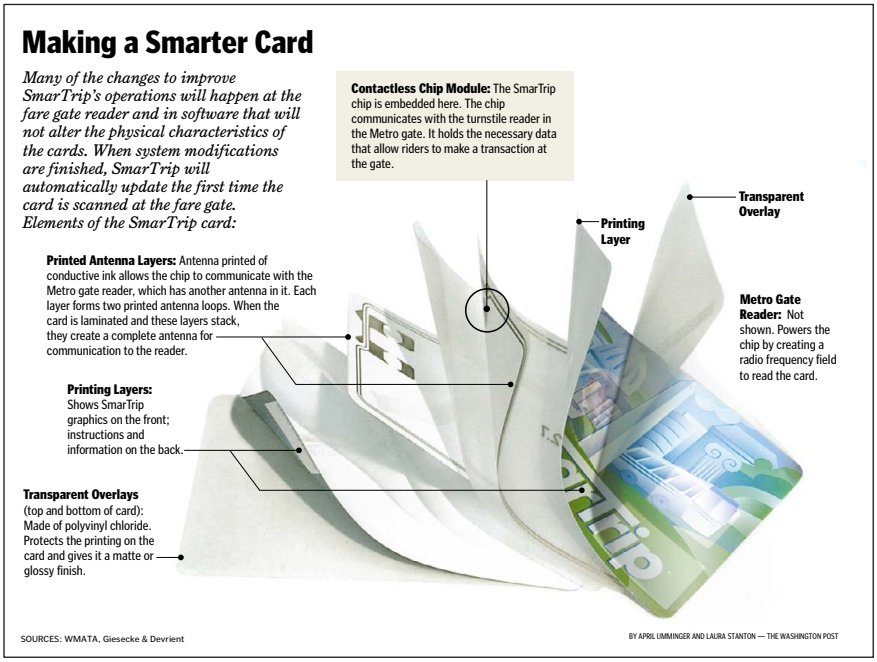
Use the data given to crunch the numbers. Do students' numbers correlate with those given in the text?

Using the most recent figures on military having served in Iraq and Afghanistan, those that were injured and those who died, compare costs to those reported on November 13, 2007, when this ran in *The Post*. Student teams could be asked to research Revolutionary War, Civil War and Spanish American War uniforms, their expense and casualty/injury rates. They will need to convert expenses to inflation-adjusted dollars.

Having the best sources for data is an important aspect of creating an infographic. With students review the Defense Manpower Data Center online material. Where else would you go to gather accurate data for the project?

Artist's Production Notes

Laura Stanton: *Smarter Card*



This is an example of storytelling with an handout image that doesn't tell you much on its own—but if you write text to explain it, you can turn it into an informative graphic. The graphic uses an image provided by Metro. Graphics editor April Umminger worked with Metro to write text explaining what each layer did. One piece of text had the information about the layer that would interact differently under the new system. As the graphic artist, I popped that piece out by putting it in a box to set it off from the other text, so that readers immediately focus on that piece of information

When doing graphics, I ask myself, "What's the point?"— the single most important idea I am trying to convey — and then I do everything I can to simplify the graphic so that point is obvious. Something should stand out as the one piece of information readers need to take away. This can work with a list, a chart, or, in this case, an image that someone else gave us. We highlight the focus using boldface text, color shading or pointer boxes — but probably not all three at once.

An Integrated Curriculum For The Washington Post Newspaper In Education Program

Meet the Graphics Editor

What does a graphics editor do?

Each of the major sections at *The Washington Post* — National, Metro, Foreign, Business and Sports — has a graphics editor. These editors act as a liaison between their desk and the News Art department to create informational graphics. A graphics editor works with reporters and desk editors to conceptualize graphics, collect data, report and write text for a graphic.

In addition, graphics editors are responsible for gathering as much visual reference materials — charts, maps, diagrams, and photographs — as needed by the artist who will illustrate the graphic. When these materials have been collected and the text of the graphic reported and written, the graphics editor assists the artist and the art director in designing and executing the graphic.

Brenna Maloney

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Who decides that an informational graphic is needed to accompany a story?

It is the graphics editor's responsibility to make that call. Sitting in on daily meetings with his or her section helps the graphics editor to be aware of all the stories being worked on, both dailies and long-term projects. Often, editors and reporters approach the editor with ideas for graphics or come to talk about upcoming stories they are working on. Otherwise, it's up to the graphics editor to stay connected to his or her reporters and know what is going on so that he or she can assess the news and the need for graphics. I was in Metro for eight years and had over 100 reporters to keep track of.

When does a graphics editor get involved in the process?

I'd like to say, "Immediately," but that is not always the case. Sometimes reporters have been working on a story for a long time, but have been so focused on the story, that they have not considered graphic possibilities.

Or the project is of such a delicate nature, as in the case of many of the Investigative projects, that the graphics editor literally can't be pulled in until almost the end. If the story is a daily, the graphics editor will usually have a good sense of it early on and can begin the reporting at the same time the story is being reported out. The timing really does vary. Sometimes we are playing catch-up, other times, we are in on a project from its inception. The more time we have, obviously, the more thorough we can be.

Is the story finished when you get it to illustrate? Or are you involved as the story is taking shape?

Rarely do I work on a graphic when the story is finished. It is usually in some form of draft, or, in the case of breaking news, the event itself is happening at that moment and we are reacting to it.

How much time do you have to create an illustration?

Simple graphics, like a bar chart or a fever line, can be illustrated in 15 minutes, provided the graphics editor and/or reporter has already done the reporting and has the data at their fingertips. Other graphics take more time —months of reporting. The size of the graphic is not always indicative of the reporting time needed.

I once spent two full days trying to track down the data for a 4-inch bar chart that ran in the Health section. The data was just very hard to get.

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I've also been in situations where I've had to produce a full-page graphic in a single week, which we did (more than once) in the aftermath of 9-11.

Who provides the numbers, data and other information that is used in charts? How much research is involved?

A great deal of reporting is involved for each graphic. Sometimes the reporter on the story will bring the graphic editor a data set he or she wants charted, so the reporting work is already done for us. Often, we need to consult with multiple sources on a graphic, so a reporter can "get you started," but there's still a lot of work for the graphic editor to do. I am not looking for just any source, I am looking for the best source. And that can take time.

How do you decide whether a fever-line, pie or bar chart should be used? When do you use a timeline, flow diagram or poll chart?

Our reporting will dictate that. We have to answer this question: What is the most effective way to convey this information? I always like to answer: With a FULL-PAGE, FULL-COLOR BUTT-KICKING GRAPHIC! But the reality, of course, is that I may only have an hour to produce it and a news hole of four inches (a full page is 120-inches, as a point of reference). So, I need to be efficient and I need to convey the information in the clearest, most useful and direct way that I can. Often it's trial and error ... a bar chart doesn't work, so I try a different way.

To what extent is the graphic illustration your decision or the work of a team?

I literally could not do my job without the help of the News Art staff. Frankly, I can't draw my way out of a paper bag, so I really do need an artist to translate my reporting and writing into a solid informational graphic. I work very closely with artists and cartographers. Over the years, we've developed a good rhythm and flow to the work. Some are great at breaking news; some are genius at features work. So I try to work with the best person I can for the type of assignment I'm on. But it is always, always a collaborative effort. And, really, that is why the job is so much fun.

Why do you require a dummy or draft of the infographic?

Any reporter working on a story will write a draft. Graphics are no different, except that instead of reading the draft, the editor also will LOOK at the draft. Drafts help editors and reporters envision where they are taking the story. They also help layout and design people know what to expect: Is this going to be a tiny graphic? A large one? A display graphic?

Who has the final decision of what is published? Have you ever worked a long time on an illustration that was not published?

Well, the final final decision would come from the managing editor, but a graphic, just like any story, can get "killed" anywhere along the way for any number of good reasons. I've killed many a graphic because it didn't make sense or it didn't hold together or it was off-point or it was badly executed. I've had a few killed because there was literally no space in that day's newspaper to put it in. And yes, I have had a few killed that I worked on for a long time. It doesn't happen often, but it does happen.

In this NIE online guide, we reproduce "Invasion of the Critters" (Nov. 8, 2007) that you, Patterson Clark and Todd Lindeman completed. Tell us about the project. The use of the mice to illustrate how quickly the critters multiply is great.

Ha ha ha ha ha ha ha ha ha ha ha ha ha. Would you believe me if I told you that I literally spent six SOLID hours counting those mice? Yeah. What a booger of a day THAT was. By that point in the project I knew just a little bit TOO much about the rodents and pesticides. I was starting to lose friends because I would begin conversations with things like, "Hey, Bob, nice tie today! Did you know that fast-acting rodenticides can kill a rat in a matter of hours because they interfere with the clotting process?" Yeah. It was bad. Anyhow, the artist, Todd Lindeman, and I were trying to sort out an

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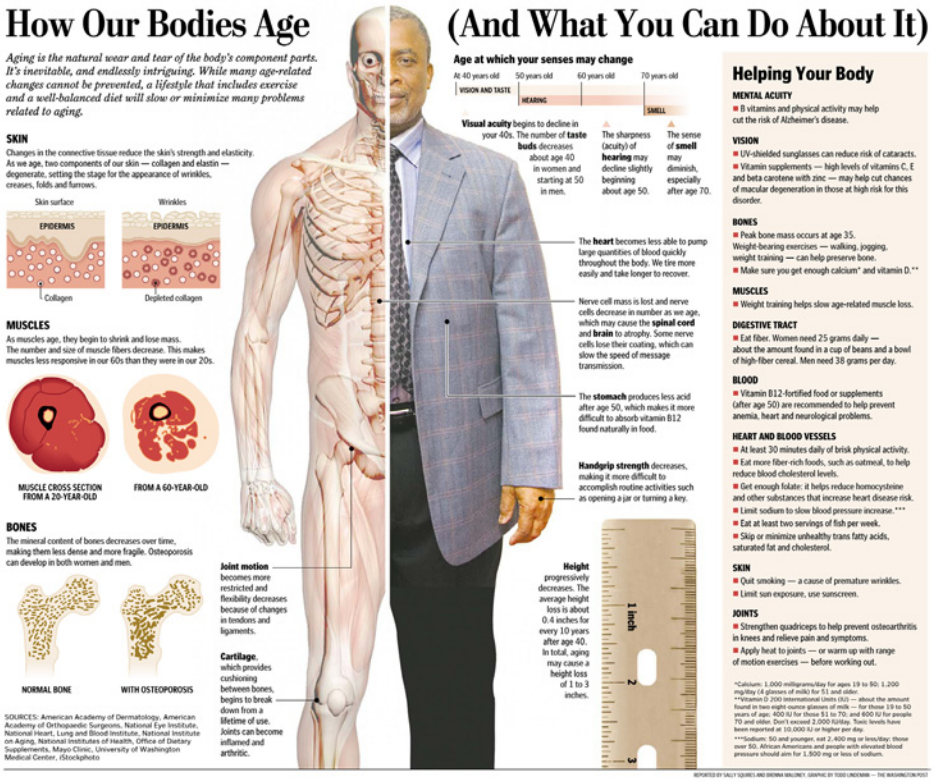
effective way to illustrate how serious a rodent problem can become if left alone. But we were getting tangled up in the math. If you start with two rats and they mate and she had six babies but only half of them are girls .... Well, we were into advanced algebra in no time. So, I contacted two separate rat experts and tried to work through the numbers over the phone. It was a nightmare. But it HAD to be correct. Readers will look at a graphic like that and they WILL COUNT EACH RAT and try the math themselves. You really, really need to be certain of what you are putting into a graphic. Six hours later, we were.

We also include "Chew on This"(Nov. 20, 2007) in this guide. The credits indicate that you did the reporting and Laura Stanton did the graphic. How did you work as a team and who provides the information that is published?

I can easily say that Laura Stanton is one of the greatest newspaper artists in the known universe and every single graphics editor, to a man, would agree. On the digestion piece, I had done tons and tons of reporting, but there was not enough time to illustrate this piece in an anatomically correct way. Laura came to the rescue with a more relaxed approach. Why not make the art fun, she suggested? The text already had that bent, so her feature-y approach to the art made it a hit. (Only one small regret ... even though the art is not drawn to scale or anatomically correct, our epiglottis really is too low and we heard about that from readers. A lot of readers.)



December 5, 2006

What training did you have?

I have a bachelor's degree in something called public and corporate communications (which included a lot of journalism, English, writing and communications courses) and a master's degree in journalism. I was teaching journalism to high schoolers in the non-profit world before I came to the graphics world. I answered an ad that ran in *The Post: Knight-Ridder Tribune* (now *McClatchy Tribune*) was looking for a "graphics reporter."

Do you have a favorite project or illustration? Why do you like it?

I really do love working on full-page graphics. I like having that large canvas to tell a story exclusively through visuals. I find this work intense and challenging.

About the Graphics Editor

Brenna Maloney earned a bachelor's degree from Butler University in Indianapolis and a master's degree from Michigan State University in East Lansing. She was a graphics reporter for *Knight-Ridder Tribune* (now *McClatchy Tribune*) for 4 years before becoming metro graphics editor at *The Washington Post*. After 8 years at *The Post,* Maloney became the first graphics editor for *National Geographic Magazine*. A year later, missing newspaper work, she returned to *The Post* as features graphic editor for the Health, Food and Home sections. She is currently deputy editor for KidsPost. She lives in Washington, D.C., with her husband and two young sons.

Name _____ Date _____

Informational Graphics Collection

Have you ever read an article about a technical subject and wished it were illustrated? Or wanted a map to locate an event taking place in another state or country? Maps, charts and informational graphics help readers to understand stories more quickly and help explain complex topics.

"We produce thousands of pieces of art work each year and turn away many requests for others we simply don't have the resources or time to execute," explains Michael Keegan, AME/News Art.

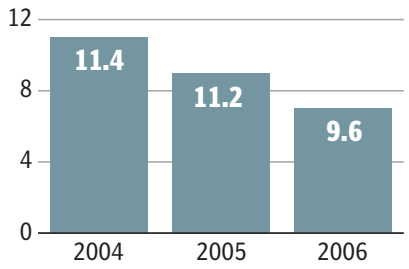
Research ("Eyes on the News") completed by the Poynter Institute shows newspaper readers take in 80% of the artwork and are three times more likely to read text with a visual element. For this assignment, you will be putting this research to the test.

To the right is a list of the types of informational graphics to be found in *The Washington Post*. Find examples of ten different devices. Clip the examples. Paste each example on a clean sheet of paper and label it. Be sure to include date, section and page number.

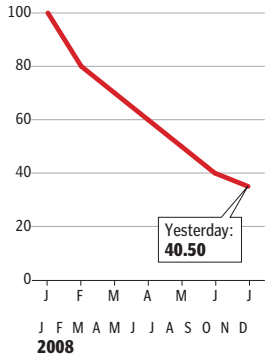
Type of Informational Graphics

- **Bar graph**
- **Line or fever-line graph**
- **Line or bar graph indicating positive and negative values**
- **Pie chart**
- **Labeled drawing or graphic**
- **Illustration**
- **Text placed in close proximity to a supportive illustration or other visual, forming a unit**
- **Highly schematic or stylized illustration**
- **Illustration that shows an inset magnified for detail**
- **Coding using shading or patterns**
- **Map with an inset map**
- **Cutaway drawing**
- **Cross-section**
- **Organizational chart**
- **Procedural flow chart**
- **Poll chart**

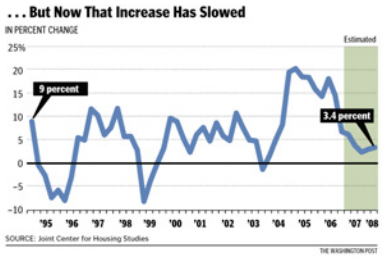
Bar graph



Line or fever-line graph

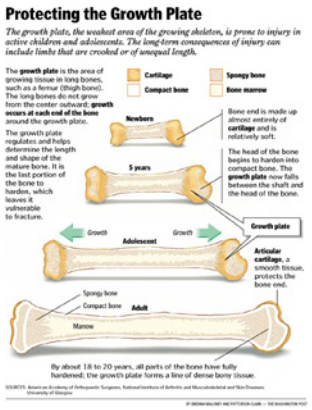


Line or bar graph indicating positive and negative values

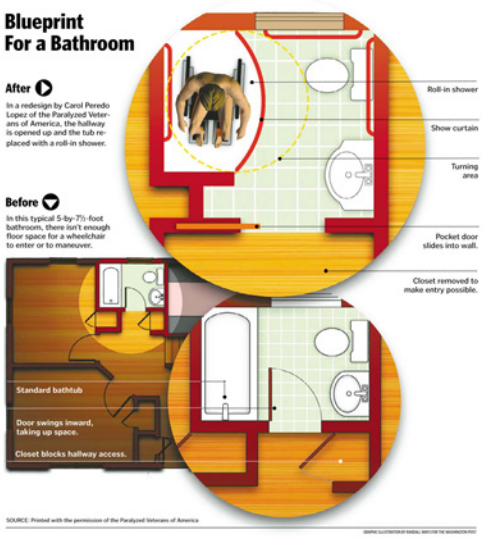


Pie chart

Labeled drawing or graphic



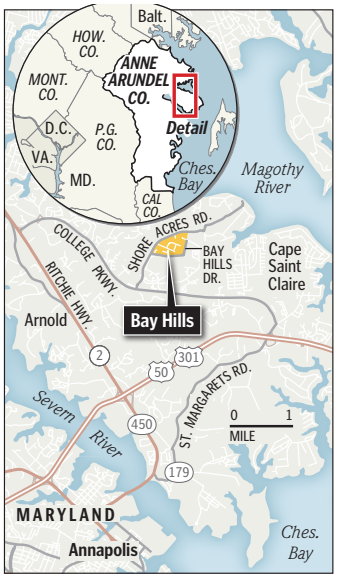
Text placed in close proximity to a supportive illustration or other visual, forming a unit



Illustration

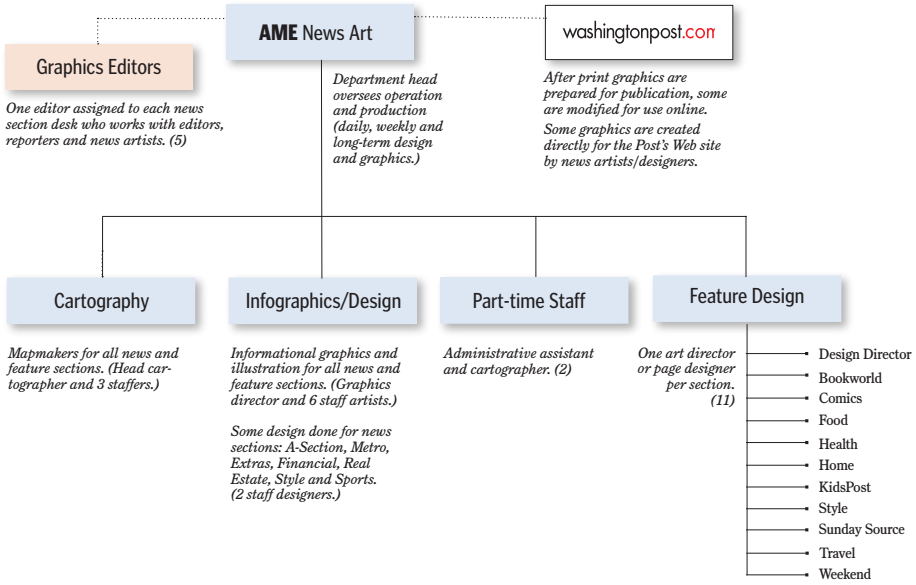
Name _____ Date _____

Map with an inset map

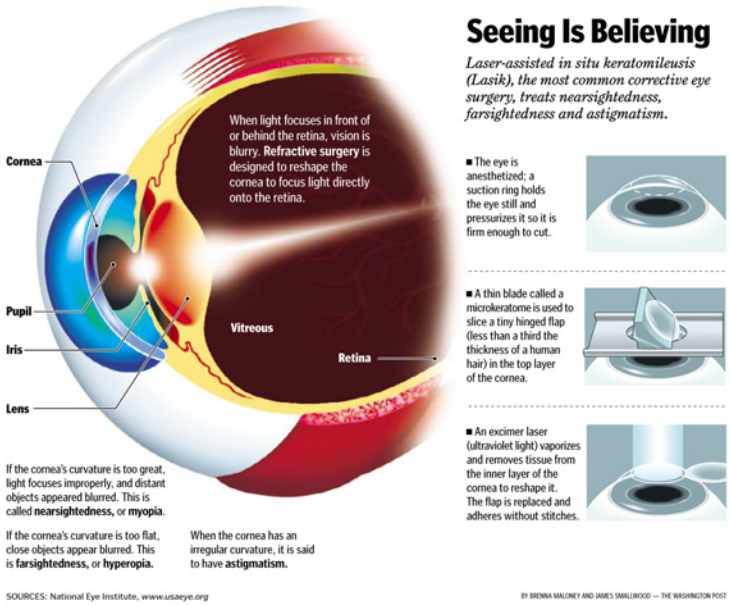


BY LARIS KARKLIS — THE WASHINGTON POST

Organizational chart

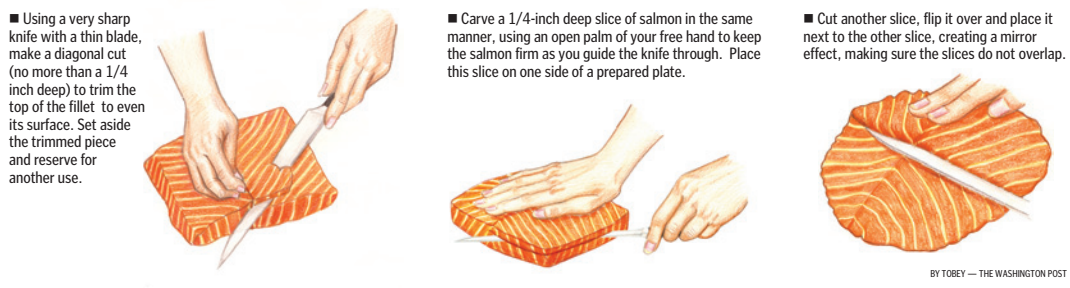


Cutaway drawing and cross-section



Unit chart: Coding using shading or patterns

Labeled drawing or graphic



Name _____ Date _____

Visualize the Numbers

Select from the templates the one that is best to present the data you have collected and analyzed. The scale on the vertical axis of the chart should be indicated in equal increments. Be sure to include the source of your information.

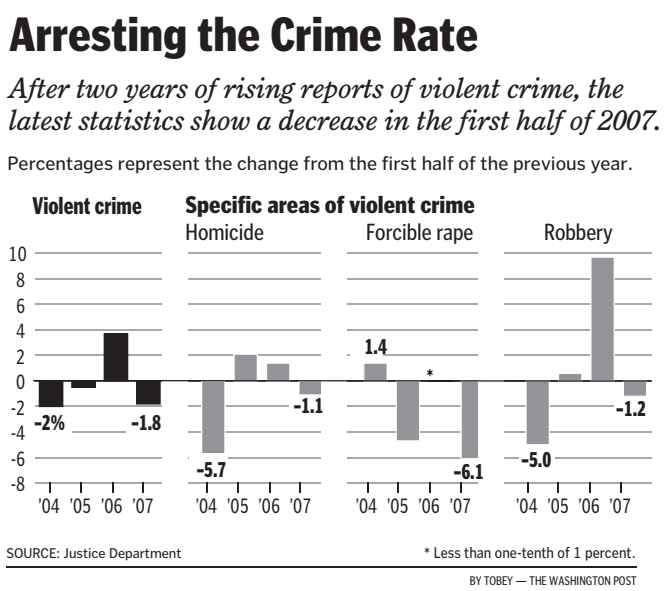
BAR CHART

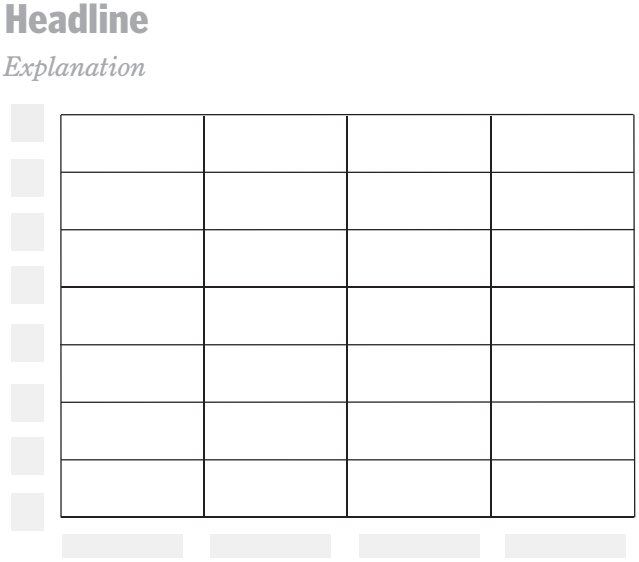
This chart compares two or more items side by side. Bars are used to represent the data. Place the bars in logical order: alphabetical, chronological or ranked by size.

Each item may be labeled either inside the bar or at an end.

Always start the lowest value at zero (0) on left scale.

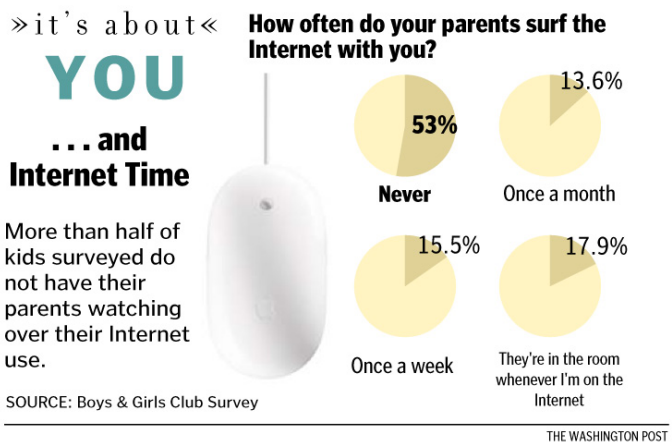
More complex charts may include negative numbers. Establish a baseline of zero. The negative numbers fall below the baseline and need a minus sign. Positive numbers are above the baseline and do not need a plus sign.

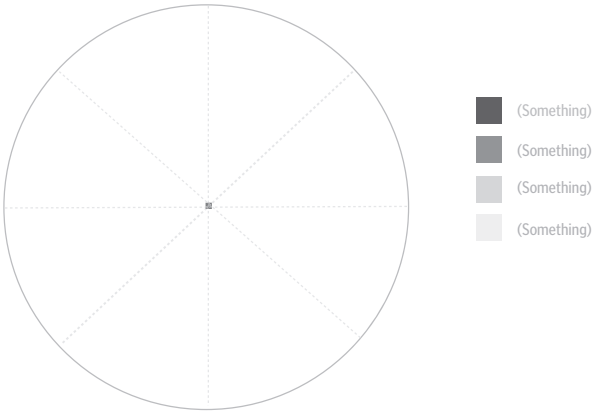




PIE CHART

This chart represents the parts that make up a whole. The whole totals 100% of something. Segments (or pie slices) divide the circle into accurate proportions, so 25% of the total would be one-quarter of the pie. You can label inside or outside of the pie. Shade or color-code for clearer distinction.





An Integrated Curriculum For The Washington Post Newspaper In Education Program

Sight for Your Eyes: What Do Colors Mean?

You know how your favorite color looks, but have you ever thought about how it makes you feel?

Colors can affect your emotions. For example, it is generally accepted that red makes people feel agitated, even if they are not fully aware of it.

"Bright colors are very stimulating, and muted colors are very soothing," said Jill Morton, a color expert based in Hawaii who has worked with major companies to come up with colors for their products.

Morton said that one reason colors might affect us is that over thousands of years humans have learned to respond to colors based on their roles in nature. Green, for instance, might make people feel fresh and hopeful because it is associated with healthy crops and abundant food. Likewise, red might represent aggression and fear because of its association with fire and blood.

Today, colors are used in marketing to try to get people to react a certain way. For example, Morton chose the colors for a new kind of pain medicine for adults. The company wanted to stress how quickly the medicine works, so Morton made the tablets red (to suggest something fast) and gray (something high-tech).

There was a controversy two years ago when a college football team in Iowa painted the visitors' locker room pink. Pink is supposed to be a calming color, so the thought was it might make the visiting team less aggressive on the field.

Some people don't believe in these reactions, but there are studies to support them. One showed that Olympic athletes who wore red uniforms won their competitions slightly more often than those who wore other colors.

KidsPost's **Margaret Webb Pressler** reports on some basic theories about the psychology of colors or the emotional reactions they stir.

In a Crayola survey of Americans' favorite crayon colors, seven of the top 10 were shades of blue.

Red

Causes the heart to beat faster.

How it can make you feel:
Agitated and jumpy, rushed, hungry, fearful, strong, passionate.

Cues in nature:
Red meat, blood, fire, berries.

How red is used:
To show energy, strength and speed (examples: race cars and fire engines). Red is often found on the walls of fast-food restaurants because it makes you hungry. It also makes you eat more quickly.

Blue

Recedes, so objects appear farther away.

How it can make you feel:
Content, clean, tranquil, spiritual, trusting, depressed.

Cues in nature:
Few nature references. The main ones are the sky, oceans and lakes, blueberries and fish. Also mold and bruises.

How blue is used:
It's the most common paint color for bedrooms; also, police uniforms. Blue suits suggest loyalty.

Green

The most restful color to the eye.

How it can make you feel:
Fresh, hopeful, young, lucky, peaceful.

Cues in nature:
Plants, grass and trees; some lakes, rivers and shallow ocean areas.

How green is used:
Popular for home decorating. Also helps people feel calm in schools, hospitals and rooms where people prepare to go on television.

Yellow

The most visible color of the spectrum; the eye notices yellow first.

How it can make you feel:
Cheerful, hopeful, excited, focused.

Cues in nature:
The sun, fruits and vegetables, flowers, autumn leaves.

How yellow is used:
To get attention; on emergency vehicles, road signs and taxis. Keeps you alert and concentrating, so it's a popular color for writing paper. Can be overwhelming to the eye, so it's used little in fashion.

ISTOCKPHOTO

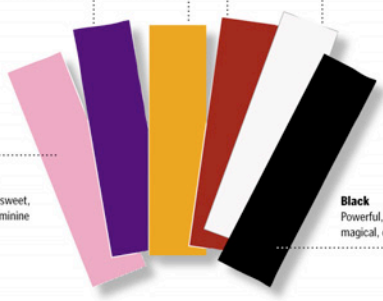
SOME OTHER COLORS

Purple Sophisticated, expensive, passionate, mysterious

Orange Stimulating, energizing, tasty, warm

Brown Dependable, friendly, natural, healthy

White Pure, innocent, peaceful, sterile, truthful



Pink Happy, fun, comforting, sweet, child-like, feminine

Black Powerful, strong, magical, ominous

WHAT IS COLORBLINDNESS?

People who are colorblind can't see the full range of colors because the color-sensing cells in their eyes don't work properly.

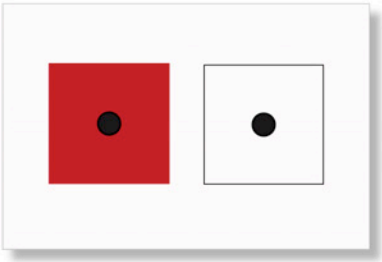
There are different kinds of colorblindness. Some people can see all shades of red, green and blue, but one of those colors doesn't show up well. The most common type of colorblindness is the inability to see greens accurately.

A few colorblind people are unable to see one of those three pigments — blue, red, green — at all. And in rare cases, a person might be totally colorblind and see the world only in shades of gray.

About 8 percent of males are colorblind; it's rare in females. That means about one out of every 12 boys reading this page can't see the colors accurately.

Normal color vision

Common colorblindness



TRICK YOUR EYES

Draw a 3x3-inch square on a piece of white paper and color the square red, similar to the diagram above. Put a black dot in the middle. Draw another 3-inch square next to it. Leave this box white, with a black dot in the center.

Stare at the black dot on the red square for 30 seconds. Then quickly move your eyes to the black dot on the white square. The white will appear greenish.

Why? The eye becomes tired looking at the red, so it comes up with green — the opposite of red — to make up for it.

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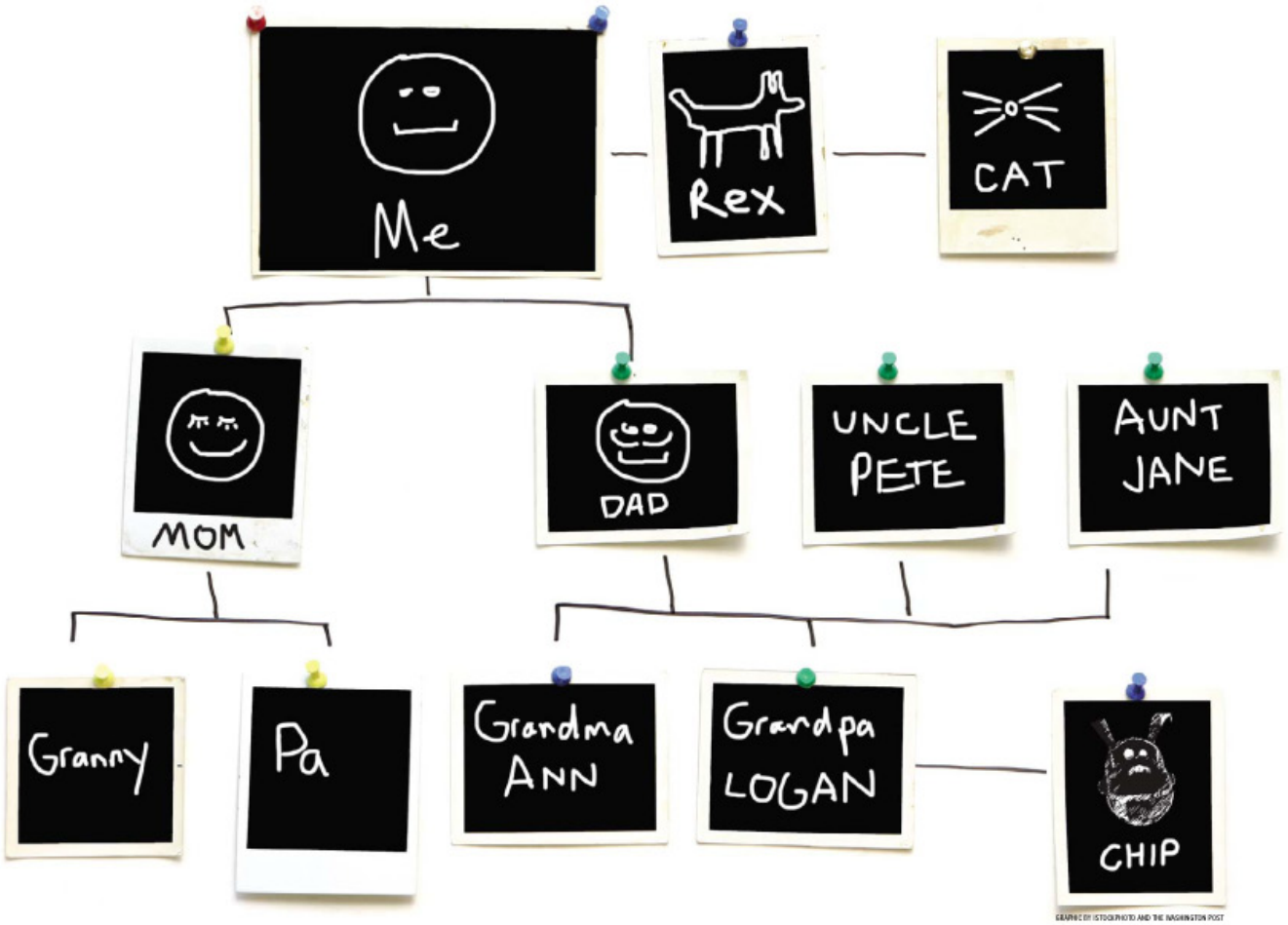
Putting the Pieces Together



GRAPHIC BY ISTOCKPHOTO AND THE WASHINGTON POST

When Digging Into Family History, You Might Uncover a Treasure-Trove of Information

Ricky Drummond's ancestors owned a castle in the highlands of Scotland with a garden surrounding it. One of his great-times 10[-grandfathers came to the New World in 1637 and became one of the first colonial governors of what is now North Carolina.

Ricky learned this by digging a little into his family's history.

Tomorrow is Ancestor Appreciation Day. A good way to start appreciating your ancestors is to learn something about them. This type of research is called genealogy (pronounced GENE-ee-ALL-oh-gee).

Ricky, who is 14, began working on a family history project last year for an assignment at All Saints Catholic School in Manassas. He was interested in the family stories his grandma had told him. What's more, she even had a book of mementos that confirmed most of them.

"She actually kept a book of documents," Ricky said. "That helped a lot."

A Connection to Times Past

For Ricky, learning about his ancestors helped him view history in a new way. He felt more connected to events. "I found it pretty interesting."

FAMILY PHOTO

Ricky Drummond, front left, interviewed family members about his ancestry. From left are his brother Cooper; father, Dorsey III; and grandparents Joy and Dorsey Jr.

Of the governor in his family tree, Ricky said: "It wasn't just a normal person who came over."

The more Ricky learned of his family's past, the more he wanted to record what he knew for future generations to use and enjoy. His grandma and his dad had written down many of their stories already. Ricky took on the task of writing the rest.

How to Get the Family Tree Started

Most of Ricky's information about his family's history came from his grandma.

Genealogists say that interviewing your relatives is a great way to get started. The more precise the details you can get from them now, the better. Memories can fade with time, after all, and it's easy for important details to simply slip away.

"The information [relatives] can provide doesn't always live on after they die," said Tish Como, a librarian at a genealogy research center at the Bull Run Regional Library in Manassas.

Local libraries are a good place to visit once you've finished asking your relatives for all the stories and facts they can remember.

Bull Run librarians are trained to sift through government census records; property deeds; and birth, marriage and death certificates. They can help even if you have only minimal information, such as the names of your grandparents and their birth dates.

To keep your material organized, consider making a family tree as shown above.

While much information is on the Internet, not all records are available and some of it costs money. (For some good Web sites, see the box at right.)

After working on his family history project, Ricky realized how valuable it is.

"I personally am lucky that my grandma is still alive, because she has the giant history book," he said. Someday, after he's added to it, he expects to pass it along to the next generation. "I think that is going to keep going down the family tree," he said.

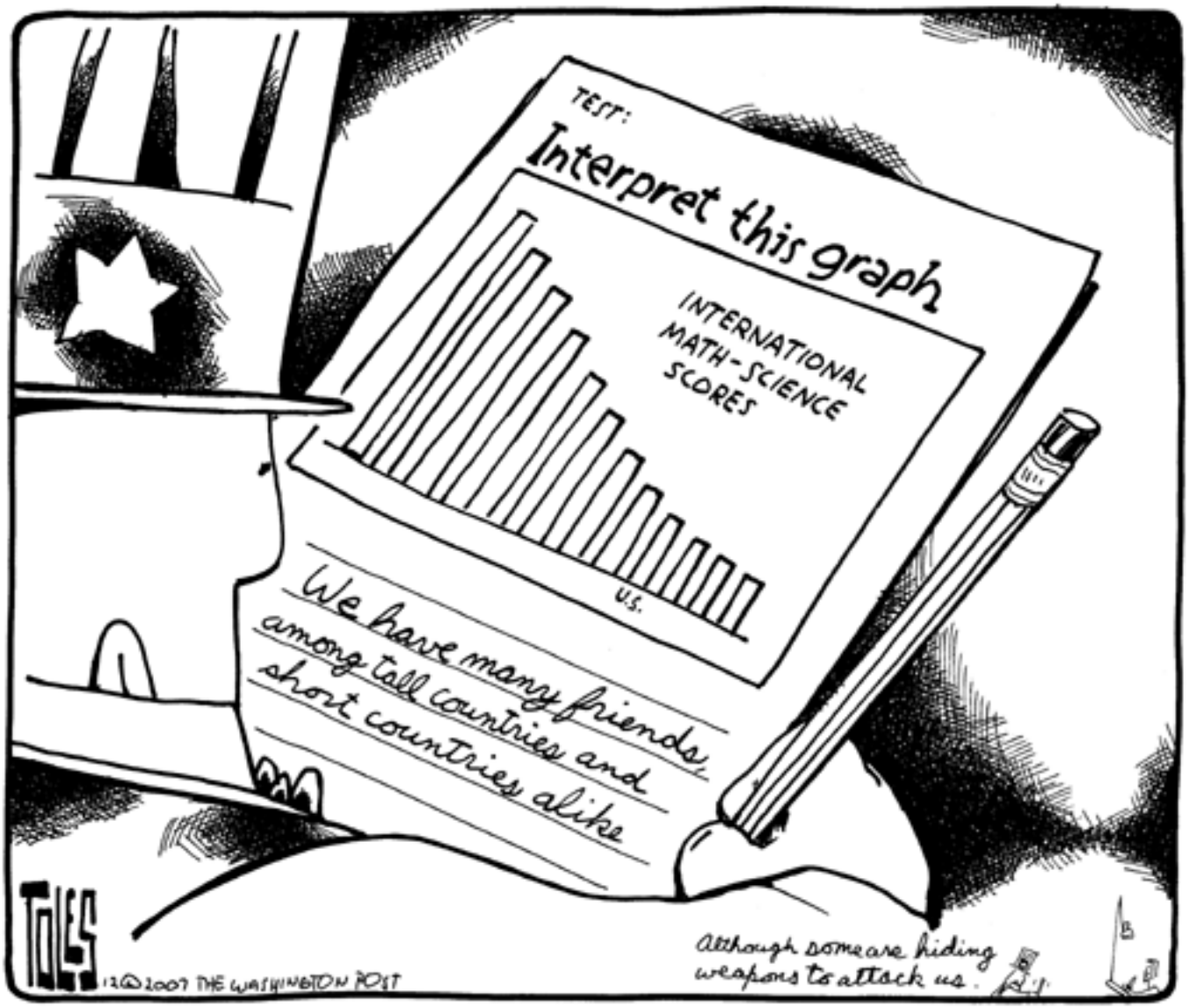
— Amy Orndorff

Grow Your Family Tree

Some sources to get you started:

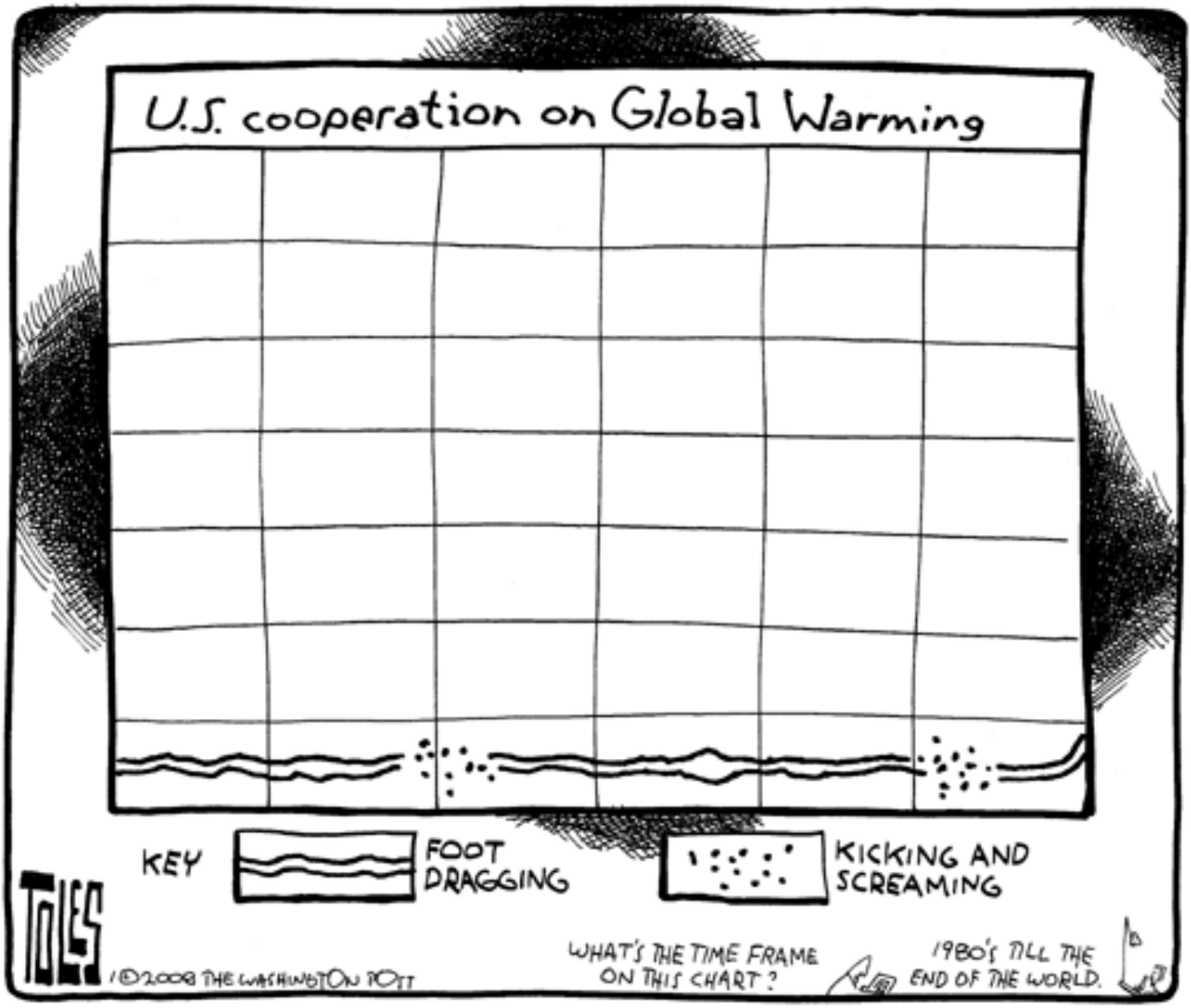
- *www.ancestry.com* will help you organize your information and share your tree with fellow genealogists.
- *www.cyndislist.com* lists lots of Internet sites that focus on genealogy.
- *www.familysearch.org* lets you research deceased family members even if you know only their names.
- *www.ellisisland.org* has immigrant passenger lists from U.S.-bound ships. Free, but you have to open an account.
- "The Kids' Family Tree Book" by Caroline Leavitt offers simple tips for collecting and recording research.

Tom Toles



December 6, 2007

Tom Toles



January 2, 2008

Chew on This

Take a deep breath, swallow hard and follow the food you eat on its day-long journey through the digestive system. Plus, Sally Squires separates the facts from the fiction of feasting and launches the Lean Plate Club Holiday Challenge, **F5.**

Food enters mouth

10 seconds later — Food reaches stomach

4 hours later — Enters small intestines

16 hours later — Enters large intestines

24 hours later — Feces reach rectum

You might feel the need to unbuckle your belt after feasting on your Thanksgiving dinner on Thursday. It's going to take about eight hours for your body to digest that meal and about 24 hours for it to pass through your 29-foot-long alimentary canal — made up of your mouth, esophagus, stomach, and small and large intestines.

MOUTH

Digestion begins as soon as food enters your mouth: chewing breaks down food into smaller pieces; **enzymes** (proteins that speed up chemical reactions) in saliva begin to break down complex carbohydrates into simpler sugars.

As the tongue rolls food into a **bolus** (lump) and pushes it to the back of the throat, the **soft palate** rises to keep food from entering the nasal cavity.

ESOPHAGUS

Once you swallow, the bolus travels down the **pharnyx** (throat) and into a 10-inch-long pipe called the **esophagus.** This pipe leads to the stomach.

Circular muscles in the esophagus wall contract in waves that push the bolus down. This process — **peristalsis** — also happens in the stomach and intestines. A slippery mucus helps keep things moving. The waves push the bolus down at two to three inches per second.

The flap-like **epiglottis** covers the trachea's entrance to prevent food from entering the windpipe.

Your stomach is about the size of your fist, but after a big meal, it can expand to more than 20 times its size. It can comfortably hold about 33 ounces, or roughly a liter of food.

Peristalsis in the pharnyx and esophagus is so powerful, you can swallow food into your stomach even when upside-down.

STOMACH

The J-shaped **stomach** is a flexible, muscular bag. The top end connects to the esophagus; the bottom end attaches to the small intestine. It serves three main functions:

A reservoir The upper baglike portion, the fundus, holds food and feeds it a part at a time to the lower portion, the antrum.

A mixer The stomach wall has three layers of muscle that run lengthwise, horizontally and diagonally. Working in different directions, the layers contract to pulverize food into a souplike consistency called chyme.

A funnel The lower part of the stomach empties its contents slowly into the small intestine.

Growling Tummy *When the stomach receives signals from your brain to begin digestion even though the stomach is empty, the movement of the muscles mixing the acids of the stomach produces vibrations we hear as growling, or rumbling, or gurgling.*

Buried in the stomach's lining are millions of glands that release the components of gastric juice.

Recipe for Gastric (stomach) Juice:
Hydrochloric acid
Pepsin (an enzyme)
Mix well.

The average adult stomach holds two to three pints — corrosive enough to strip paint. The stomach must continuously secrete mucus to protect against this acid.

BILE

PANCREAS

DUODENUM

SMALL INTESTINE

The bulk of digestion and absorption takes place in the small intestine — a long tube that's about 1 1/2 inches in diameter coiled beneath your stomach. End to end, an adult's small intestine is about 22 feet long. It is made up of three segments:

Duodenum: The pancreas releases an alkaline juice containing enzymes to break down starch, proteins and fats in the chyme. It also neutralizes stomach acids. Bile, produced in the liver and stored in the gallbladder, is squirted onto chyme to help break down fats.

JEJUNUM

Jejunum: Enzymes attached to the lining complete digestion by breaking foods into their simplest forms.

ILEUM

If the small intestine were a simple tube, it would have an inside surface area of about four square yards. But the small intestine is covered in tiny fingerlike projections, called microvilli, that increase the surface area to 250 square yards or more — greater in area than a tennis court.

BLOOD CELLS

Ileum: Nutrients still remaining in the chyme are absorbed into the bloodstream through the wall of the ileum.

LARGE INTESTINE

The large intestine —also know as the colon — is named for its diameter (two to three inches), not its length (about five feet). It receives watery waste containing undigested food. Water, a precious resource, is absorbed through the walls of the colon into the bloodstream so that it's not lost by the body. The liquid waste is transformed into a semi-solid waste, called feces.

BLOOD CELL

RECTUM

RECTUM

The feces pass through your rectum and are expelled through your anus.

What's Happening To My Body When I . . .

HAVE HEARTBURN
If the bottom ring of muscles of the esophagus doesn't keep the lower part tightly closed between swallows, acid from the stomach can come back up into the esophagus, creating a burning sensation that travels from a person's chest up to the neck and throat.

BURP
A burp is nothing but gas. When you eat or drink, you also swallow air, made up of nitrogen and oxygen. Extra gas gets forced out of the stomach, up through the esophagus and out of the mouth as a burp.

PASS GAS
Much of the gas in your digestive system is odorless carbon dioxide, oxygen, nitrogen, hydrogen and sometimes methane produced by the breakdown of undigested foods by friendly bacteria in the colon. People routinely pass gas 14 to 23 times daily.

SOURCES: National Institute of Digestive Diseases and Kidney Disease; "Body: An Amazing Tour of Human Anatomy," by Richard Walker; "How the Incredible Human Body Works," by the Brainwaves; "The Human Body: A Comprehensive Guide to the Structure and Functions of the Human Body," edited by John O.E. Clark | GRAPHIC REVIEWED BY: Allan Geliebter, New York Obesity Research Center, St. Luke's Hospital

REPORTING BY BRENNA MALONEY; GRAPHIC BY LAURA STANTON — THE WASHINGTON POST

Invasion of the Critters

You didn't exactly invite them in, but squirrels, raccoons and other animals may be looking to join you in your warm, cozy home this fall. Every year when the temperature drops, rodents invade millions of homes in the United States. To reduce the number of unwanted guests, the word of the day is "exclusion" — sealing, screening and otherwise blocking entry to your home. Here's how:

The Big Three

Eighty percent of animal break-ins come from rats, mice and squirrels.

SQUIRRELS

Squirrels are social animals that nest with their families; one nest can have as many as 12 squirrels. Squirrels often live in attics or garage ceilings and can do tremendous damage to your house. Their chewing of fascia boards and shingles can create leaking roofs; chewing electrical wires could create the potential for a fire.

RATS

Norway rats can burrow three feet into the ground and chew through building materials such as glass, cinder block, wire and aluminum. They enter homes through holes in crawl spaces and foundations and prefer to nest close to kitchens and bathrooms. **Roof rats** can climb almost every type of siding material. They enter homes through bathroom vents, exhaust pipe holes and spaces between fascia boards and roofs, and can nest in attics or cabinets. Rats will eat nearly anything, even decaying material. They support many parasites.

MICE

The agile mouse can jump a foot high to gain access to your house. Once inside, these nibblers look to sample many kinds of food and, unlike rats, need little water to survive. Mice, like rats, contaminate your house through their urine, droppings and hairs. They can carry a wide range of diseases that can be passed on to humans.

Rats need only a space as small as a half dollar to squeeze into your home.

A mouse can squeeze through spaces as small as a nickel.

Look and Listen for the Signs

Listen for scampering or gnawing sounds late at night in the attic or behind walls. Remember that raccoons, mice and rats are nocturnal (awake at night) and squirrels are not (they sleep at night). Rodent droppings may be found in undisturbed areas of the house such as pantries, attics, garages, under baseboards and along walls. Look for black greasy smudges from their oily fur around openings. Signs of rodents' gnawing may be seen on walls near pipes and vents.

Starlings and sparrows have a knack for building nests in hidden, hard-to-reach openings in a house. The louvred vents for dryer exhausts and the openings behind roof fascia are favorites.

Chimney caps with grilles may deter animals.

Raccoons often establish their dens in chimneys. They can easily maneuver past a flimsy or poorly installed chimney cap. If raccoons can't get into your chimney, they might try seeking shelter under your porch or deck.

Repair fascia and sofits and rotted roof shingles; some insects are drawn to deteriorating wood.

Squirrels commonly enter the house though broken screens, roof tiles and gaps in the structure.

Given the chance, **bats** will happily take up residence in your attic.

Don't let your roof become a highway into your house. **Roof rats and squirrels** can climb plants or trees that are too close to the house.

Store garbage in sealed containers and dispose of it regularly.

If you have had a severe problem with pests, take down bird feeders. They can attract unwanted animals.

For the same reason, store firewood at least 20 feet away from the house and five inches off the ground.

Other Beasties

RACCOONS

For a homeowner, a **raccoon** may be your worst nightmare. Ranging from 22 to 44 pounds, a raccoon is a sizable intruder. Inquisitive, methodical, intelligent, strong and destructive, raccoons can leave quite a mess where they are nesting. Fecal matter and urine can ruin insulation, ceilings and any other area in which they nest. Do not attempt to trap a raccoon on your own; call a professional.

BATS

Bats can leave behind potentially disease-ridden guano. But before you think of chasing after them with a broom, remember that bats are a protected species nationwide. Bats can squeeze through an opening as small as 3/8 of an inch. If you have bats in your belfry, call in a professional to install a "bat flap," a layer of screen that lets the bats crawl out but blocks their way back in.

OPOSSUMS

On occasion, you may discover an **opossum** in your yard, going through your garbage, eating from your bird feeder or eating your pet's food outside. You may need to contact local wildlife authorities if it continues to be a nuisance.

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AROUND THE FOUNDATION

Copper mesh and steel wool stop mice and rats when stuffed into foundation cracks; they dislike chewing it. Hardware cloth prevents chewing and tunneling; this stiff quarter-inch mesh of galvanized steel can be found at most hardware stores. Place it over openings big enough for a rat or larger critter.

In fall, **snakes** will work their way into openings around basement doors or cracks in foundation mortar, looking for a place to hibernate.

Acrylic caulk closes narrow gaps in wood trim and siding.

Replace weatherstripping and repair loose mortar around the foundation to permanently seal cracks. Use spray foam to fill irregular cracks between foundation and framing.

Seal cracks and holes on the outside of the house, including entry points for utilities and pipes. Check for leaking water pipes or spigots; rats, in particular, look for a steady water source.

How Big Is Your Problem?

Mice are nocturnal creatures and, therefore, are rarely seen by the homeowner. The most obvious indicators of their presence are droppings, sounds of them running, gnawing or squeaking, and damage to stored food or materials used for nesting. The danger with mice is that a small infestation can become a sizable problem rather quickly. Consider:

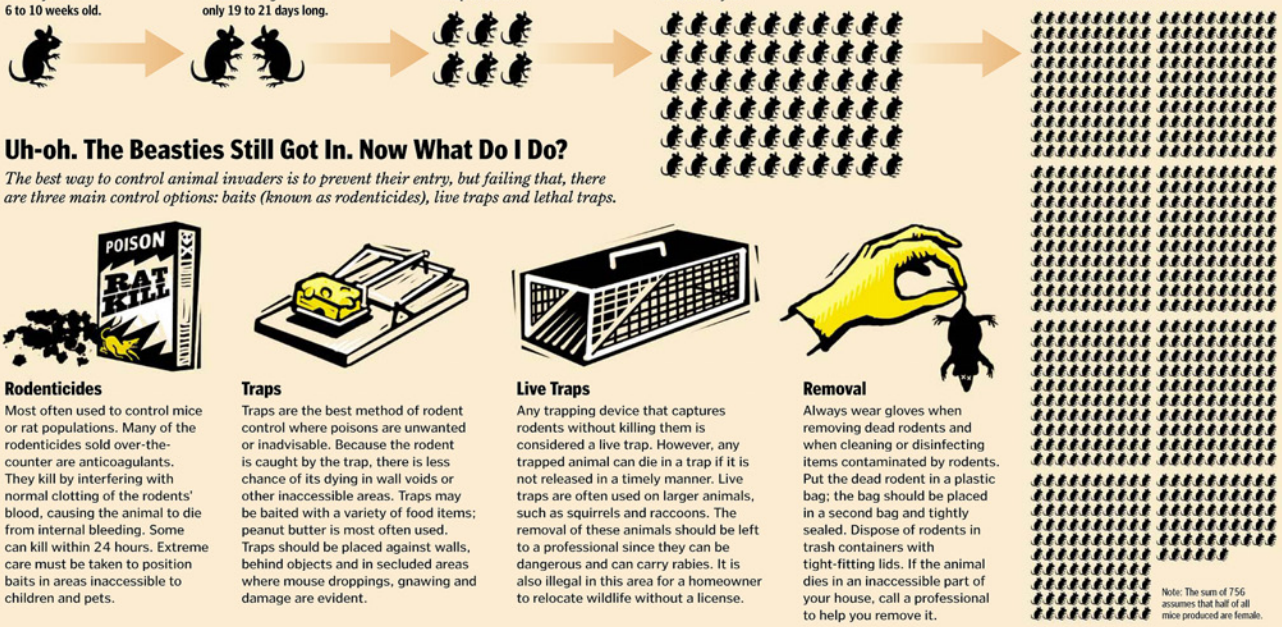
A mouse becomes sexually mature at 6 to 10 weeks old.

When two mice mate, the female's gestation is only 19 to 21 days long.

She can have a litter of up to 6 mice.

She can have up to 10 litters a year.

With ideal conditions and no mortality, there can be 756 heirs in 6 months.



Note: The sum of 756 assumes that half of all mice produced are female.

Uh-oh. The Beasties Still Got In. Now What Do I Do?

The best way to control animal invaders is to prevent their entry, but failing that, there are three main control options: baits (known as rodenticides), live traps and lethal traps.

Rodenticides

Most often used to control mice or rat populations. Many of the rodenticides sold over-the-counter are anticoagulants. They kill by interfering with normal clotting of the rodents' blood, causing the animal to die from internal bleeding. Some can kill within 24 hours. Extreme care must be taken to position baits in areas inaccessible to children and pets.

Traps

Traps are the best method of rodent control where poisons are unwanted or inadvisable. Because the rodent is caught by the trap, there is less chance of its dying in wall voids or other inaccessible areas. Traps may be baited with a variety of food items; peanut butter is most often used. Traps should be placed against walls, behind objects and in secluded areas where mouse droppings, gnawing and damage are evident.

Live Traps

Any trapping device that captures rodents without killing them is considered a live trap. However, any trapped animal can die in a trap if it is not released in a timely manner. Live traps are often used on larger animals, such as squirrels and raccoons. The removal of these animals should be left to a professional since they can be dangerous and can carry rabies. It is also illegal in this area for a homeowner to relocate wildlife without a license.

Removal

Always wear gloves when removing dead rodents and when cleaning or disinfecting items contaminated by rodents. Put the dead rodent in a plastic bag; the bag should be placed in a second bag and tightly sealed. Dispose of rodents in trash containers with tight-fitting lids. If the animal dies in an inaccessible part of your house, call a professional to help you remove it.

SOURCES: Bell Laboratories Inc.; Sean Carruth, vice president of communications, Critter Control; Cindy Mannes, vice president of public affairs, National Pest Management Association; Scott McCombe, general manager, Critter Control of Northern Virginia; National Wildlife Control Operator Association

BY BRENNA MALONEY, PATTERSON CLARK AND TODD LINDEMAN — THE WASHINGTON POST

An Integrated Curriculum For The Washington Post Newspaper In Education Program

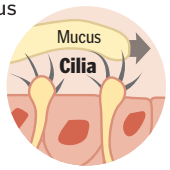
Sinus Surgery: It Was All in His Head

Sinuses are air-filled cavities in the skull that allow mucus to drain into the nasal passages. But they can get infected. And reinfected. In Seth Hamblin's case, years of chronic sinus infections led him down the path to image-guided endoscopic sinus surgery and, eventually, to better breathing.

Infection in the Sinuses

The sinuses are lined by mucus-secreting cells that keep the inside of the nose moist and protect it from dust and pollutants.

Tiny hair cells called **cilia** propel the mucus toward the back of the nose and throat, where it is swallowed.



Each sinus is connected to the nasal passages by a small opening in bone called an **ostium**.

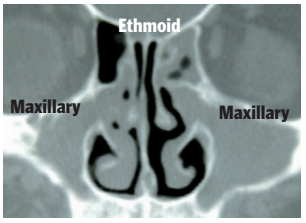
If bacteria infects the sinus cavities, the linings' membranes become inflamed **(sinusitis)**, blocking the ostia and preventing proper drainage.

For some people, like Seth, this can become a chronic condition. Over several years, he had run the gantlet of treatments: decongestants, antihistamines, nasal steroid sprays, antibiotics and extended antibiotics. Nothing gave lasting relief until his doctor recommended surgery.

Surgery Gives Relief

The aim of the surgery is to remove diseased tissue and open the natural sinus drainage pathways while preserving as much of the normal anatomy as possible.

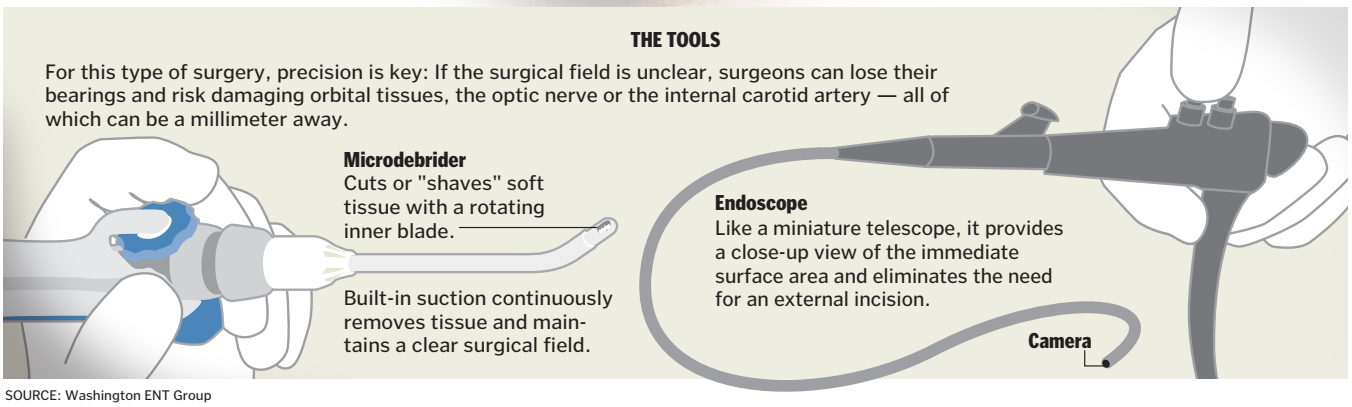
Before surgery, a computerized model of Seth's skull and sinuses was created with a series of CT scans. **The scans revealed heavy blockages of his ethmoid and maxillary sinuses.** (Dark areas indicate unblocked passages.)



A **microdebrider** and **endoscope** were fed through Seth's nose and into his sinus cavity. The instruments were equipped with sensors that transmitted infared signals. Software integrated this data with the CT scans, providing his surgeon with a "real time" view of the precise location of the instruments. With this enhanced view, Seth's surgeon could reach the damaged areas without causing harm to surrounding tissue.

THE TOOLS

For this type of surgery, precision is key: If the surgical field is unclear, surgeons can lose their bearings and risk damaging orbital tissues, the optic nerve or the internal carotid artery — all of which can be a millimeter away.



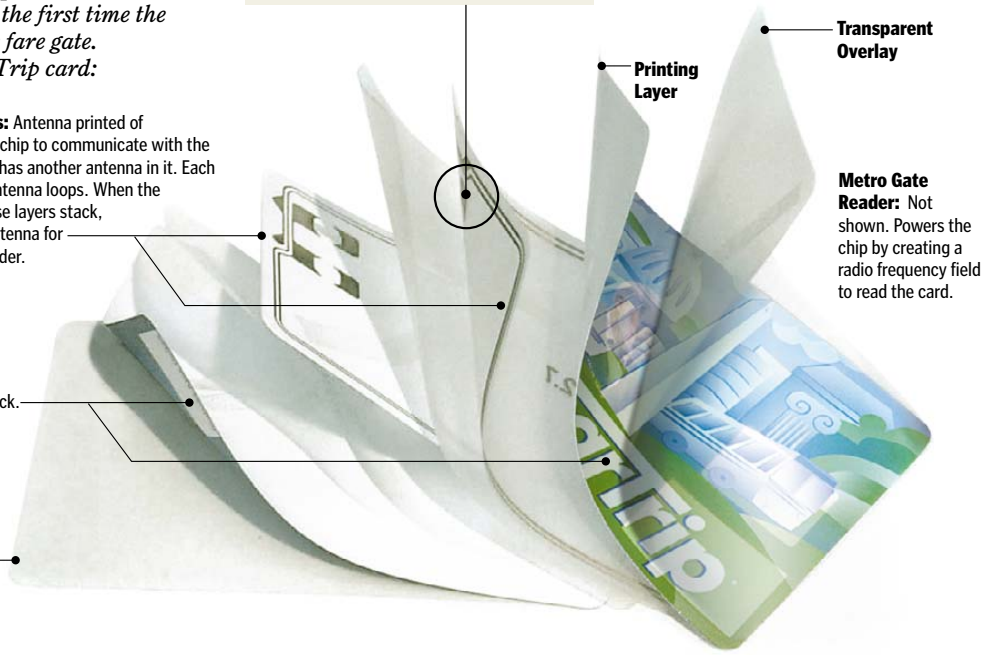
SOURCE: Washington ENT Group

BY BRENNA MALONEY AND LAURA STANTON — THE WASHINGTON POST

An Integrated Curriculum For The Washington Post Newspaper In Education Program

Making a Smarter Card

Many of the changes to improve SmarTrip's operations will happen at the fare gate reader and in software that will not alter the physical characteristics of the cards. When system modifications are finished, SmarTrip will automatically update the first time the card is scanned at the fare gate. Elements of the SmarTrip card:



SOURCES: WMATA, Giesecke & Devrient

BY APRIL UMMINGER AND LAURA STANTON — THE WASHINGTON POST

Rocket (and Subway) Science

Metro Hopes Upgrade Will Make for a Smarter SmarTrip Card

By Lena H. Sun
Washington Post Staff Writer

Metro's electronic SmarTrip cards are no geniuses, but the agency hopes to make them Mensa ready over the next year. New technology will allow the cards to compute all fares and special passes that Metro and most of its regional bus partners offer, and make it far easier to add money for trips.

As it stands, SmarTrip cards can't do too much: Riders can use them to pay for a single bus or subway ride and to park at Metro lots, most of which do not accept any other form of payment.

The cards cannot factor an array of special passes — such as Metrorail's 7-Day Fast Pass, Montgomery County's Ride-About and Alexandria's DASH Pass — that many riders use to save money. So riders who park and use special passes must carry SmarTrip cards and old-fashioned paper cards. It costs Metro about $500,000 a year for paper fare cards.

Technology upgrades will enable the electronic cards to calculate special passes, allowing riders to ditch their paper cards and saving the agency money.

To put money on the cards, riders must now use machines in subway stations or on buses. Each trip deducts from their total, like a debit card.

The new technology will enable riders to automatically add money to SmarTrip cards the same way drivers do with the popular E-

See **SMARTRIP**, *C6, Col. 5*

About the Changes

As part of the technology upgrades, Metro and its contractor are reformatting the chip inside the card and replacing outdated fare collection equipment. Once those technology changes are completed by the end of next year, the card will be able to:

- **Compute all fares and special passes** offered by Metro and most of its regional bus partners.
- **Allow riders to automatically add money**, like E-ZPass, by linking SmarTrip to a credit card and loading money when the balance dips below a designated level.

An Integrated Curriculum For The Washington Post Newspaper In Education Program

Another Milestone for Stevens

John Paul Stevens, at 87 years and seven months, today becomes the second-oldest justice in Supreme Court history. For those wondering if he is tiring of the job: He already has hired clerks for the term that begins in October 2008.

While Stevens is second-oldest, he has served the 10th-longest tenure:

Oldest justices

90	87 and 210 days	87 and 209 days	86	85
Oliver W. Holmes Jr.	John Paul Stevens	Roger B. Taney	Harry A. Blackmun	Hugo Black

Supreme Court tenures

William O. Douglas	36 years, 7 months
John Marshall	34 years, 6 months
Stephen Field	34 years, 6 months
Hugo Black	34 years, 1 month
John Harlan	33 years, 10 months
William Brennan	33 years, 9 months
William Rehnquist	33 years, 9 months
Joseph Story	33 years, 7 months
James Wayne	32 years, 5 months
John Paul Stevens	31 years, 11 months

His opinions by the numbers

In 3,358 cases resulting in opinions or judgments:

IN THE MAJORITY	IN THE MINORITY
74%	26%

In 76 cases in which the court overturned its own precedent:

62%	38%

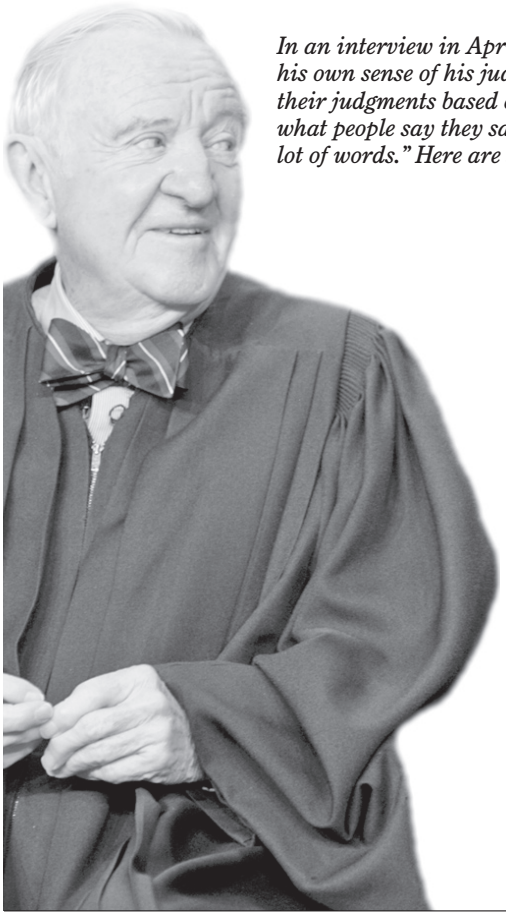
In 42 cases that overturned congressional laws:

52%	48%

In 3,312 opinions that could be classified as liberal or conservative:

ON LIBERAL SIDE	ON CONSERVATIVE SIDE
62%	38%

SOURCE: Analysis by Lee Epstein, Northwestern University School of Law; Supreme Court cases



In an interview in April, Stevens said he did not want to articulate his own sense of his judicial legacy. "I just hope people will make their judgments based on what my written opinions say, and not on what people say they say. There's a long record there, and an awful lot of words." Here are some notable excerpts from that record:

In Parents Involved in Community Schools v. Seattle School District (2007), Stevens dissented in the 5 to 4 majority's decision to bar school systems from using race in making school assignments:
"There is a cruel irony in the Chief Justice's reliance on our decision in Brown v. Board of Education. . . . It is my firm conviction that no Member of the Court that I joined in 1975 would have agreed with today's decision."

In Bush v. Gore (2000), Stevens dissented from a divided court's decision to halt the Florida recount:
"Although we may never know with complete certainty the identity of the winner of this year's Presidential election, the identity of the loser is perfectly clear. It is the Nation's confidence in the judge as an impartial guardian of the rule of law."

In Clinton v. Jones (1997), Stevens wrote for the majority that civil litigation against a sitting president could go forward:
"The Court is not persuaded of the seriousness of the alleged risks that this decision will generate a large volume of politically motivated harassing and frivolous litigation and that national security concerns might prevent the President from explaining a legitimate need for a continuance, and has confidence in the ability of federal judges to deal with both concerns."

SOURCES: A forthcoming entry by Joseph T. Thai in the Encyclopedia of the Supreme Court; "The Third Branch"

THE WASHINGTON POST

Originally published November 16, 2007

An Integrated Curriculum For The Washington Post Newspaper In Education Program

Climate Change Brings Risk of More Extinctions

By David Fahrenthold
Washington Post Staff Writer

• *Originally published September 17, 2007*

BLACKWATER NATIONAL WILDLIFE REFUGE, Md. — What has gone missing here is almost as spectacular as the 8,000 acres of swampy wilderness that remain. And that makes it Chesapeake Bay's best place to watch climate change in action.

Visitors can see ospreys gliding overhead, egrets wading in the channels and Delmarva fox squirrels making their unhurried commutes between pine trees.

But then the road turns a corner, and Blackwater's marsh yields to a vast expanse of open water. This is what's missing: There used to be thousands more acres of wetland here, providing crucial habitat for creatures including blue crabs and blue herons. But, thanks in part to rising sea levels, it has drowned and become a large, salty lake. "If people want to see the effects" of Earth's increasing temperature, refuge biologist Roger Stone said, "it's happening here first."

But not just here. Around the world, scientists have found that climate change is altering natural ecosystems, making profound changes in the ways that animals live, migrate, eat and grow. Some species have benefited from the shift. Others have been left disastrously out of sync with their food supply. Two are known to have simply disappeared.

If warming continues as predicted, scientists say, 20 percent or more of the planet's plant and animal species could be at increased risk of extinction. But, as the shrinking habitat at Blackwater shows, the bad news isn't all in the out years: Some changes have already begun. "This is actually something we see from pole to pole, and from sea level to the highest mountains in the world," said Lara Hansen, chief climate change scientist at the World Wildlife Fund, a private research and advocacy group. "It is not something we're going to see in the future. It's something we see right now."

The temperature increase behind these changes sounds slight. The world has been getting warmer by 0.2 degrees Fahrenheit every decade, a U.N. panel found this year, in part because of carbon dioxide and other human-generated gases that trap heat in Earth's atmosphere.

By nature's clock, the warming has come in an instant. The mechanisms that helped animals adapt during previous warming spells — evolution or long-range migration — often aren't able to keep up. Scientists say that effects are beginning to show from the Arctic to the Appalachian Mountains. One study, which examined 1,598 plant and animal species, found that nearly 60 percent appeared to have changed in some way.

"Even when animals don't go extinct, we're affecting them. They're going to be different than they were before," said David Skelly, a Yale University professor who has tracked frogs' ability to react to increasing warmth. "The fact that we're doing a giant evolutionary experiment should not be comforting," he said.

Some of the best-known changes are happening near the poles, where the air and the water are warming especially quickly. As they do, sea ice is receding. For some animals, this has meant literally the loss of the ground beneath their feet.

Polar bears, for instance, spend much of their life on the Arctic ice and use it as a hunting ground for seals. When ice on Canada's western Hudson Bay began to break up earlier — three weeks earlier in 2004 than in 1974 — the effect was devastating. The bear population fell by 21 percent in 17 years. Shrinking ice has also been blamed for cannibalism among polar bears in the waters off Alaska, something scientists had not seen before 2004. This month, a U.S. Geological Survey report predicted that two-thirds of the world's polar bears could die out in 50 years.

Walruses, too, rely on the ice; mothers stash their calves on it, then dive down to feed on the ocean floor. When ice recedes from prime feeding areas, mothers and calves can get separated.

In 2004, University of Tennessee professor Lee W. Cooper was off the north Alaskan coast when he saw about a dozen calves swimming toward his boat. His theory: The calves, alone and desperate without ice nearby, thought the boat might be a large iceberg.

There was nothing the scientists could do to help, Cooper said. "I think they were doomed."

Other changes have been less deadly, but they show centuries-old patterns shifting. Scientists have noticed changes in the timing of seasonal migrations, presumably caused by the earlier onset of warm weather.

In some cases, migrating animals suddenly find themselves out of rhythm, missing the weather conditions or the food they need. In parts of the Rocky Mountains, American robins arrive two weeks earlier than they used to — and often discover the ground snow-covered and little food to be found.

In some cases, migrating animals suddenly find themselves out of rhythm, missing the weather conditions or the food they need. In parts of the Rocky Mountains, American robins arrive two weeks earlier than they used to — and often discover the ground snow-covered and little food to be found. ...

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CONTINUED FROM PAGE 24

Animals Struggle With Effects of Global Warming

As temperatures rise, climate change creates challenges for the world's fauna.

A VARIETY OF RESPONSES

Shifting Habitats
The American pika, a small rodent that lives in California mountains, cannot tolerate temperatures much higher than 80 degrees. As temperatures have risen, some pika populations have moved more than 1,300 feet further up the slopes to find a cooler home.

Predators Decline as Prey Declines
On Isle Royale, Mich., higher temperatures mean that one species of tick is growing more numerous and becoming more troublesome for the island's moose. As the population of moose has declined, so has the population of wolves, which prey on the moose for food.

Shifting Migration Patterns
Many birds have begun making their annual migrations earlier — some British species have shifted by two to three weeks over the past 30 years. That can be a problem if the bird's main food source doesn't also shift its timing so it is available when the bird needs to eat.

Entire Ecosystem Changes
In the northern Bering Sea, near Alaska, warmer waters are causing an entire ecosystem shift. Native animals, such as walruses and gray whales, are finding less of the prey animals they rely on. At the same time, fish are moving in from less frigid areas.

Adaptation
Research on wood frogs in New England seems to show that they may be able to evolve and adapt to rising temperatures. That is good news, but scientists say that many animals will not be able to evolve in the same way.

CHANGES LOCAL AND BEYOND

Blackwater National Wildlife Refuge, Md.
Rising water levels threaten to turn most of this enormous swamp — which shelters baby fish and blue crabs along with migrating birds — into open water by 2030. A crucial habitat on the Eastern Shore could vanish.

Catoctin Mountain, Frederick County
The brook trout that live in mountain streams here cannot tolerate water much hotter than 68 degrees. As temperatures rise, the fish in central Maryland could be gone in a century.

Monteverde Cloud Forest, Costa Rica
Animals living in this forest depend on moisture from near-constant clouds of mist and fog. Climate change seems to be reducing this moisture. Two amphibian species have not been seen since the 1980s and are now presumed extinct.

South Pacific Ocean
Warming waters have become too hot for coral reefs in some places, leading to so-called "bleachings" in which large amounts of coral die. During 1998, warm temperatures killed off about 16 percent of all the world's coral.

Beaufort and Chukchi seas, off Alaska
Walrus mothers in this area typically leave their young on the sea ice while they dive down to find food on the bottom. But now, sea ice is melting more rapidly than before, which can leave walrus calves floating helplessly in open water.

BY DAVID FARENTHOLD AND PATTERSON CLARK — THE WASHINGTON POST

An Integrated Curriculum For The Washington Post Newspaper In Education Program

As Temperatures Rise, Health Could Decline

By David Brown
Washington Post Staff Writer

• *Originally published December 17, 2007*

Depending on where you are, this is going to be a hotter, wetter, drier, windier, calmer, dirtier, buggier or hungrier century than mankind has seen in a while. In some places, it may be deadlier, too.

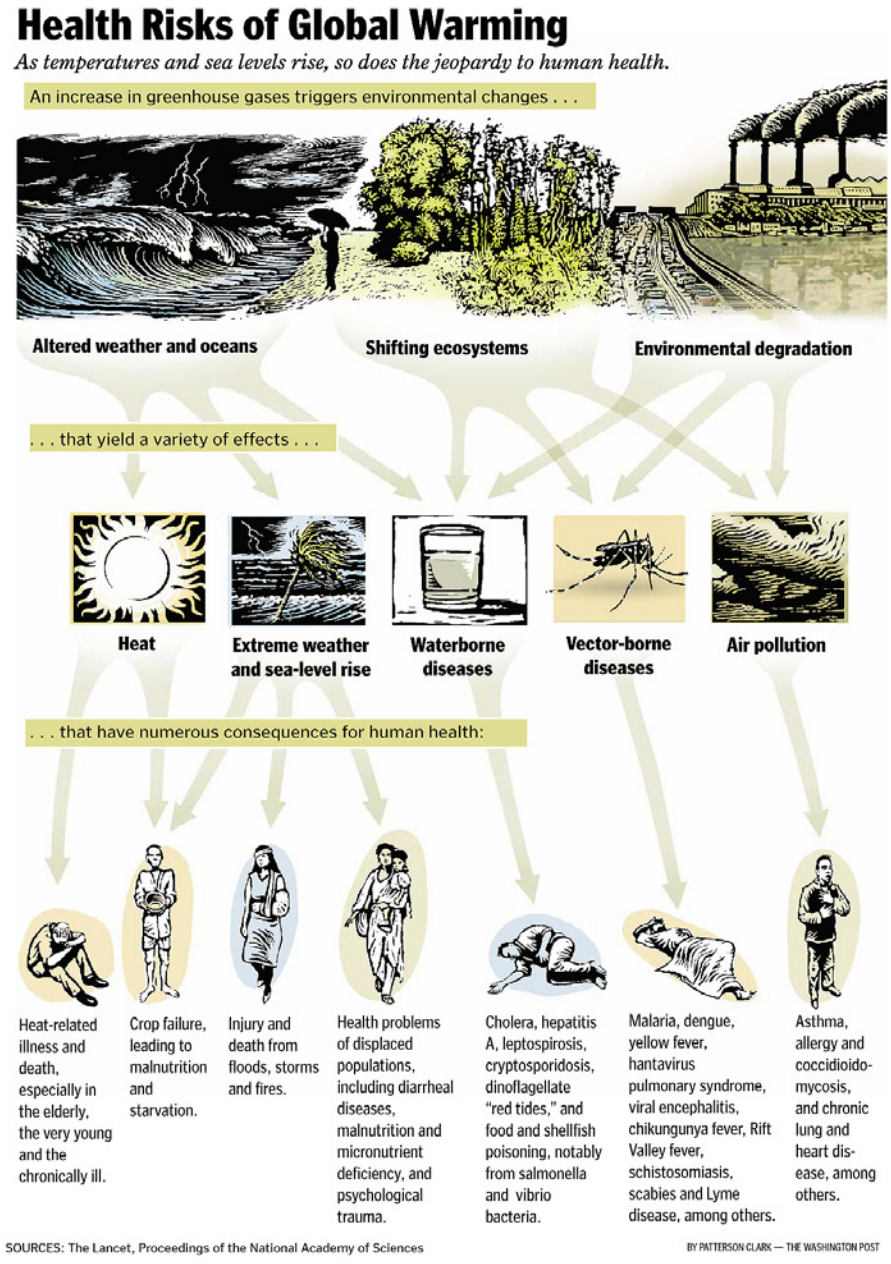
The effects of climate change are diverse and sometimes contradictory. In general, they favor instability and extreme events. On balance, they will tend to harm health rather than promote it.

That is the majority view of scientists trying to solve an equation whose variables range from greenhouse gas concentrations and the El Niño weather pattern to mosquito ecology and human cells' ability to withstand heat.

"We are not dealing with a single toxic agent or a single microbe where we can put our finger with certainty on an exposure and the response," said Jonathan A. Patz, a physician and epidemiologist at the University of Wisconsin at Madison. "Climate change affects everything."

Predictions of how global warming could affect people's health are crude. They are based on the experience of the past several decades, when there has been a small, well-documented rise in the temperatures of the planet's atmosphere and oceans. What that says about the future — a time when warming is expected to accelerate, but people may be able to prepare for it — is quite uncertain.

In the last quarter of the 20th century, the average atmospheric temperature rose by about 1 degree Fahrenheit. By 2000, that increase was responsible for the annual loss of about 160,000 lives and the loss of 5.5 million years of healthy life, according to estimates by the World Health Organization. The toll is expected to double to about 300,000 lives and 11 million years of healthy life by 2020.



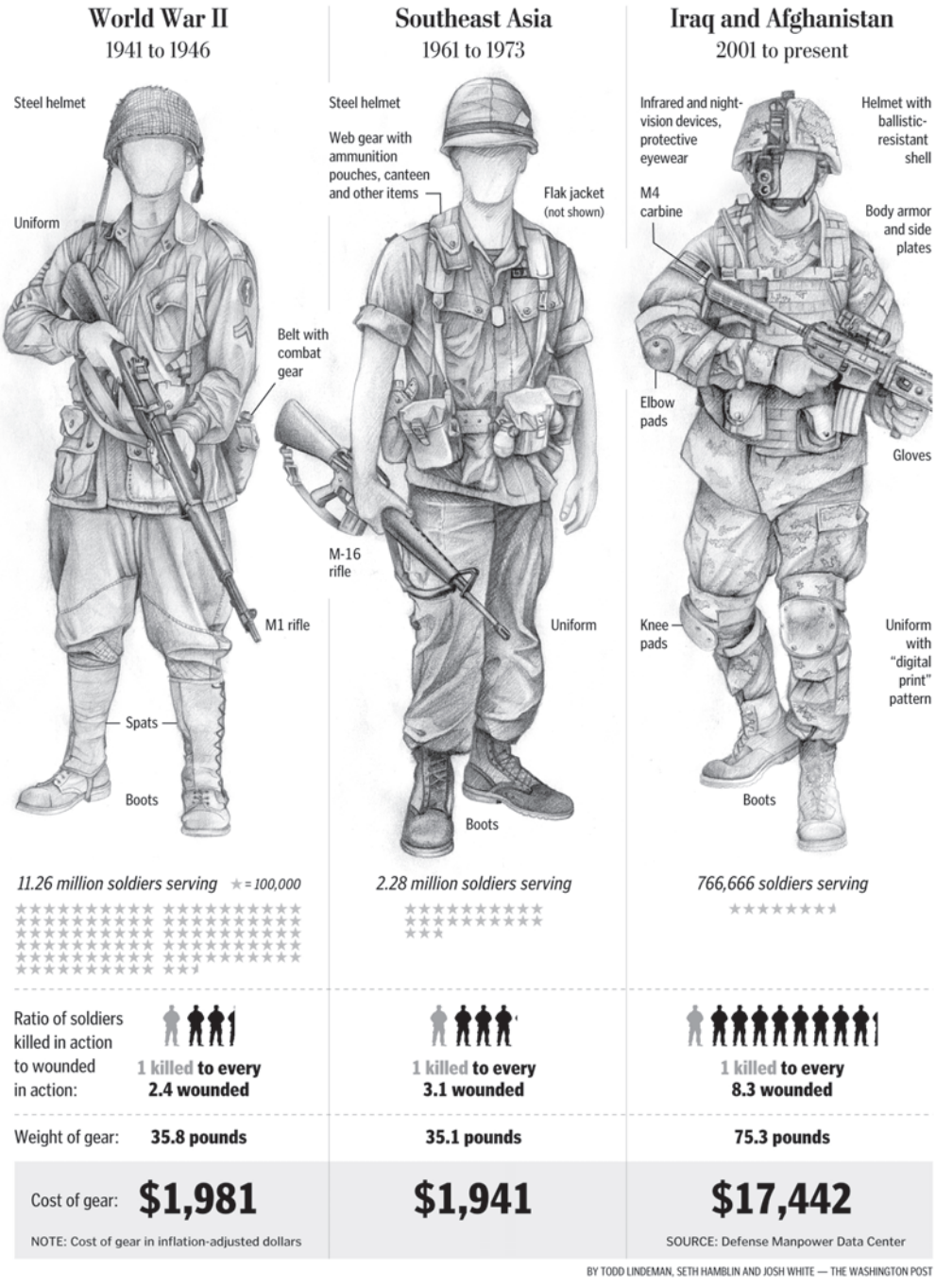
The biggest tolls were in Africa, on the Indian subcontinent and in Southeast Asia. Most of that increased burden of death and disease was from malnutrition, diarrhea, malaria, heat waves and floods. But those diseases will play a minor role, at best, in many regions that nevertheless will feel the effects of global warming.

To organize their thinking — and to focus the attention of policymakers — researchers tend to put the health effects of climate change into five groups. ...

The Price of Protection

Waging war has become more and more expensive, with current budget requests bringing the cost of operations in Iraq and Afghanistan to nearly $800 billion since 2001. Also rising is the cost of equipping America's soldiers. This week, a measure to spend $50 billion more on the Iraq war through March is likely to come up for a vote in the House. According to the Defense Manpower Data Center, modern equipment for today's soldiers is almost 10 times as expensive as it was during World War II, adjusted for inflation.

But the difference in protective wear — and in the way the United States fights wars — is part of a dramatic improvement in safety: Combat deaths have dropped from 2,086 per 100,000 soldiers in WWII to 310 per 100,000 soldiers in Iraq and Afghanistan, a current rate of about one-third of a percent.



BY TODD LINDEMAN, SETH HAMBLIN AND JOSH WHITE — THE WASHINGTON POST

Academic Content Standards

Maryland

Mathematics: Analyze Data

a) Interpret tables
b) Interpret box-and-whisker plots
c) Interpret scatter plots
d) Interpret circle graphs
(Standard 4.0, Knowledge of Statistics, Grade 8)

Visual Arts: Students will demonstrate the ability to organize knowledge and ideas for expression in the production of art
2) Demonstrate ways the elements of art and principles of design are manipulated to communicate ideas (Grade 6, Standard 3.0 Creative Expression and Production)

Reading: Analyze graphic and informational aids that contribute to meaning (Grade 7, Standard 2.0: Comprehension of Informational Text, Indicator 2, Objectives b and c)

The Maryland Voluntary State Curriculum Content Standards can be found online at http://mdk12.org/assessments/vsc/index.html.

Virginia

Mathematics: The student, given a problem situation, will collect, organize, and display a set of numerical data in a variety of forms, using bar graphs, stem-and-leaf plots, and line graphs, to draw conclusions and make predictions. (Probability and Statistics, Grade 5, 5.18)

Visual Arts: The student will create works of art by representing and interpreting ideas from other fields of knowledge (Visual Communication and Production, Grade 7, 7.11)

Visual Arts: The student will analyze the effect the elements of art and the principles of design have on the communication of ideas. (Judgment and Criticism, Grade 8, 8.16)

Standards of Learning currently in effect for Virginia Public Schools can be found online at www.pen.k12.va.us/VDOE/Superintendent/Sols/home.shtml.

Washington, D.C.

Mathematics: Organize and describe distributions of data by using a number of different methods, including frequency tables, histograms, standard line and bar graphs, stem-and-leaf displays, scatter plots, and box-and-whisker plots. (Probability and Statistics, PS.8)

Reading/English Language Arts: Synthesize information from multiple sources (e.g., maps, illustrations, schematic diagrams, manuals, product information, consumer publications) to draw conclusions about the ideas presented. (Document and Procedural Text, 10.IT-DP.6)

Social Studies, Geography: Students use map and globe skills to determine the absolute locations of places and interpret information available through a map or globe's legend, scale, and symbolic representations. (2.1)

Visual Arts: Each student will be able to make connections between visual arts, the other content areas, careers and the artist's role in society (Standard 6, Making Connections)

Learning Standards for DCPS are found online at www.k12.dc.us/dcps/Standards/standardsHome.htm.