

Status of Informational Graphics in the U.S.

Good morning.

It is a pleasure to be here, and I'm delighted that Thomas Hermann invited me to participate in this very important seminar.

I hope my discussion will serve as an introduction to the very important area of informational graphics and their role in attracting and assisting newspaper readers. When discussing informational graphics, I am referring to several different types of visual devices. Among them are:

- diagrams
- maps
- charts
- tabular lists

Collectively, we can refer to them as informational or info graphics.

To understand where informational graphics are today and where their future lies, we first must go back and look at their evolution.

Newspaper informational graphics were not invented by the *Chicago Tribune* or *USA Today*.

To find their beginnings, we must go back at least 180 years to when *The Times* of London ran on its Page One of April 7, 1806, a diagram of a murder scene. It had all the elements of a graphic of 1989: A headline, a legend to explain the various locations. Most important, it helped the reader understand the story.

Informational graphics can trace their history back even further than the early 1800s, when newspapers started using them. The earliest maps were created on clay tablets and were geography maps, showing only locations.

The earliest known chart is believed to be a 10th or 11th century work showing the orbits of planets as a function of time. The chart is believed to have been part of a text for monastery schools. It wasn't until the development of modern graphic designs that charts became a means to communicate information.

One of the "fathers" of modern graphic design was William Playfair, an English political economist who lived in the late 1700s and early 1800s.

He created the first known "business informational graphic"—a time series (or line) chart using economic information. It was published by Playfair in 1786 in his "The Commercial and Political Atlas."

Playfair published 43 time series charts in that atlas. He also published the first bar chart, a style of presentation he invented because he did not have year-over-year statistics for Scotland's exports and imports. Using only the single year of data he did have, Playfair created the bar chart, complete with scale of values at the top and a legend on the right side.

Playfair understood that vast tables of statistical information were hard to understand and that the visual presentation of such information would have a more lasting impression upon the reader.

More than 100 years after Playfair's death, Otto Neurath, an Austrian statistician, put forth the same argument while discussing the independence of separate languages—visual and word. Neurath said in 1925 that

"Words divide, pictures unite...to remember simplified
pictures is better than to forget accurate figures."

THE EARLY USE OF INFORMATIONAL GRAPHICS IN NEWSPAPERS

The use of informational graphics in newspapers was for many years limited by the lack of time to create such devices and by the technology of printing them. Only maps and simple diagrams were used, and then only with major news stories.

One example is a 1909 *Chicago Daily News* map depicting the route taken by the discoverer of the North Pole. Another is the 1906 *New York Press* map showing the scenes of disaster from the San Francisco earthquake.

Early maps in newspapers often were used to help clarify and interpret information about a city. An example shows the arid areas of Los Angeles. It was published by the *Los Angeles Times* in 1889.

Not all newspaper informational graphics in the early part of the 20th century were maps. Occasionally, there would be diagrams or charts. They were crude according to the artistic standards of today, but they depicted information in much the same way as today's charts and diagrams do.

The Chicago Daily Record-Herald diagram showing the location of the bullets that killed President William McKinley is an example of an early informational graphic. While lacking the artistic touch of today's diagrams, this 1901 informational graphic serves the same purpose as did the informational graphics that depicted the bullet wounds of former President Ronald Reagan in another assassination attempt 80 years later. Both show information visually that would be hard to give to readers with words alone.

WAR PLAYS A ROLE

Sadly, it seems that war has played a role in the development of informational graphics in newspapers.

During World War I, informational graphics in the form of maps were used to communicate events occurring halfway around the globe. These maps were unpolished, with hand-lettering, but they must have seemed revolutionary to readers.

By the late 1930s, when war again was stretching across Europe, detailed and complex graphics were being published by some newspapers. By today's standards, some of these graphics are extremely sophisticated.

One such example is an eight-column graphic published in 1939 by the *Chicago Daily Tribune* depicting the Maginot Line, a series of fortifications between France and Germany. The informational graphic showed the underground posts and living quarters of the troops defending France.

Its style might not be modern, but the graphic provided as much detailed information as the most complicated and detailed graphic today would provide.

Another example of the Tribune's early commitment to informational graphics—and somewhat in the style of *USA Today's* graphics that aid readers in under-

standing an event—was the full page of maps published the day after the Japanese bombed Pearl Harbor.

During World War II, many editors introduced modern visual devices such as “at a glance” boxes that provided war news; detailed maps of battles; and diagrams and other informational graphics that described ships, planes and other equipment.

A page from the *Topeka Daily Capital* in 1945 gave readers a visual summary of the war in maps and graphics. An unusual presentation of such information is found in the chart showing gains and losses in the Pacific Ocean by both sides.

MODERN NEWSPAPER INFORMATIONAL GRAPHIC

Newspapers continued to use informational graphics, but it was not until the 1970s that they realized the full and exciting potential of presenting information in a visual form.

American newspapers that were pioneers in the use of informational graphics included the *St. Petersburg Times*, *The Christian Science Monitor*, the *Chicago Tribune* and *The New York Times*. They showed other newspapers that informational graphics could delight and inform readers.

This time it was space exploration that seemed to be the event that aided in the growth of informational graphics. Some examples from the *Chicago Tribune* show the roots of U.S. newspapers’ informational graphic use.

In 1974, the *Chicago Tribune* created a new position in the newsroom — graphics editor. This editor, one of the country’s first full-time visual journalists, worked with the reporters and editors in the newsroom and the artists in art department.

Maxwell McCrohon, then managing editor of the *Tribune*, said the role of graphics editor was to bridge the gap between two different worlds. The benefit would be to the reader, who would be presented more information in an easier-to-read form.

The early 1980s provided newspaper editors with some unique stories that would be helped greatly by informational graphics and would stimulate even more use of the devices.

Some of these stories included the space shuttle, the eruption of Mount St.

Helens in Washington, the U.S. hostages in Iran and a failed rescue attempt, and the attempted assassination of President Ronald Reagan.

THE 1980S AND GRAPHICS

On the heels of the big news events of the early 1980s came *USA Today*, which was born on Sept. 15, 1982, and forever changed the newspaper industry and its use of informational graphics and color. Whether newspaper editors liked or disliked *USA Today's* treatment of the news and its visual impact (flashy, colorful), they could not dismiss the concept of a newspaper devoting so much attention to informational graphics.

USA Today does not use informational graphics out of some design whim or fancy, but rather in response to what it perceives as its readers' needs for more information presented in an easier-to-understand fashion.. While not all of the paper's graphics succeed—some are too trivial; some are too simple—they have helped change the way the rest of the industry looks at informational graphics. They have gone from a big city luxury to a journalistic necessity.

Today, graphics editors and coordinators are common in newspaper newsrooms. Working with other visual journalists and computers, they are a far cry from the artists who not long ago hand-lettered maps and charts.

Why are U.S. newspapers so in love with informational graphics?

And, more important, why are newspaper editors still in love with informational graphics?

While there is no simple answer to these questions, I believe that the American lifestyle (and perhaps sooner than later the European lifestyle) demands that newspapers present information in a format that is easier and faster to read and understand. And while not every newspaper informational graphic is successful in assisting the reader in his or her quest for data, many perform the function that we strive for — the faster comprehension of news and information.

Are we doing a better job with informational graphics?

We are doing better; in fact, I guess I would consider the U.S. newspapers leaders in the field of informational graphics and in the structures in newsrooms necessary to produce these complex and exacting pieces of work.

We are better than 20 years ago because of technology and the overall im-

provements of newspaper publishing

We are better than 10 years ago because of the increasing awareness that informational graphics are a way of reaching and keeping newspaper readers.

We are better than 5 years ago because of technology (again), but this time the technology of the desktop computer has led to the freedom to create, store, change, modify, update, improve, add to, subtract from graphics not only created for an individual newspaper but for a group of newspapers or a whole network of newspapers.

The examples I'm showing you now reflect that growth, the improvements in content and technique.

If you look at the informational graphics created to cover the recent San Francisco earthquake, you can see the power of an informational graphic to convey not only simple information such as

- where is the quake
- but complex information about
- how earthquakes strike and how the earth's plates move.

THE FUTURE

And what of the future?

Of all the jobs created in the newspaper industry in the last 100 years, the graphics editor is perhaps the most innovative and daring. Here is an editor who moves between words and visuals and has become a vital part of the newsroom of the 1990s. Here is proof, at least in American newsrooms, that newspapers can change the way they deal with readers in the presentation of newspaper.

It is fairly easy to proclaim that these are the glory days of informational graphics, and that there is no end in sight.

Although it might seem to the journalists nearest to the conception and execution of these popular devices that the tide of newspaper graphics has peaked, a survey of U.S. news executives shows that almost all editors expect to use even more informational graphics in the future.

Of the more than 350 members of the American Society of Newspaper Editors who responded to the survey, 92 percent think their newspapers will be using more informational graphics in the next five years. (This survey was done in connection with the American Press Institute's 1988 J. Montgomery Curtis seminar.)

In addition, 90 percent of these editors said informational graphics will play a greater role in their newspapers in the year 2000, larger in importance than any visual areas surveyed.

This belief that informational graphics will continue to play a greater role in newspapers also cuts across circulation size, with both small and large newspapers answering the same. Close behind graphics as an area of importance was the use of color and design.

WANTED: TOOLS, PEOPLE, NEW ATTITUDES

In both the survey and interviews, the overwhelming support and desire for more and better informational graphics were evident. And contrary to the predictions of some observers, informational graphics are not likely to become merely a "fad" in the industry. In fact, they are likely to become a much more integral part of the daily presentation delivered to readers.

The overwhelming belief in the use of informational graphics also may lead to different and seeming "non-traditional" methods of both creating and presenting these devices. For example, more than two-thirds of the editors surveyed used graphics without stories today and only slightly less than that number thought it likely that they will be using large informational graphics about major news events without stories in the year 2000.

The use of informational graphics without an accompanying story will continue to put even greater pressure on newsrooms to develop an editing system that can respond to the needs of gathering information for graphics — a very different type of process than many journalists are trained to do for today's newspaper. Along with the changes in newsroom structure will come the need for a different type of editor — an editor of visual material. This person will give direction to and set tone and style for informational graphics in much the same way city editors have set tone and style for reporters.

The challenge for the newspaper industry is to develop informational-graphics specialists who can cut across very different areas of the newspaper. What will be

needed are visual journalists who can write tightly (for the limited space in an informational graphic), translate and edit technical information into everyday language for the average reader, understand news and what is and isn't important to both the reader and the newspaper, and do it all on deadline. These specialists also will need to develop ways to deliver information in graphics in visually exciting ways without distorting data.

Most of all there will be a need to change "attitudes" in the newsroom about what an informational graphic is and how it fits within the policy and direction of the newspaper. These editors might be reflecting the growing feeling that it is "information" in the graphics readers are interested in digesting, not drawings or pictures. (A caveat: Readers also are attracted by presentation; otherwise we should just run tabular material and sell all of those Macintosh computers.)

Just as readers fail to make the firm distinction between advertising copy and editorial copy, many readers may fail to see the story accompanying an informational graphic as an essential part of the package all the time. This issue will need to be examined by a more thorough study of readers and graphics.

The danger, however, is that many newspapers will allow a meaningless graphic to attempt to tell a complicated story. For all of our attention and desire for more informational graphics, American news executives must be made to understand the disservice the "garbage graphic" does the reader and ultimately the newspaper. When we run misleading graphics because of a lack of data points or "empty graphics" that are merely type-breakers, we communicate very little and take up precious news space.

The biggest challenge, though, will be to persuade editors to put additional money into the visual areas of the newspaper—more staff members, more equipment and more space in the paper. And those staff members will need to be trained in both "word" and "visual" journalism.

The "sacred" word will need to become just one more piece of the informational puzzle that is put together daily for readers to digest in 38 minutes—the time they spent in 1988 reading a newspaper. With more and more information being sent to the home and workplace, newspapers will face tougher competition for the reader's time and attention. With the future predicting more visuals on the front page and typical front page story count staying the same, the length of many stories will need to be scrutinized.

Editors will need to ask themselves, whether they can afford *not* to present short pieces of information—either in graphics or words—to make their newspaper a more vital part of their readers hurried lives.

The bottom line for both journalists and readers is more and better informational graphics. Readers want and expect informational graphics from their newspapers —this is not new. What is new and exciting is that there seems to be no lessening of editors interest and demand for graphics. Perhaps editors have seen the potential of the visual presentation of information as a new and dynamic way of attracting and keeping readers of their newspapers. There is no doubt: informational graphics are NOT a fad.

The potential for informational graphics achieving the same status as the written word is both stimulating and difficult. Despite the “lip-service” paid toward photography as “reporting with a camera,” few newspapers have treated the picture as a equal partner with the written word in presenting information. To achieve the quality of informational graphics that we strive for and that readers deserve, all journalists need to break through the barriers that separate visuals and words and look at the presentation of information as the ultimate goal of any newspaper.

How a Graphics Editor Works

The graphics editor must be a journalist first—not a word journalist or a visual journalist, but a newspaper journalist who cares about the reader. Too often, the battle for space pits the word and visual journalists against each other, with the graphics editor stuck in the middle. While in that “stuck” position, the graphics editor needs to think about the reader.

Thinking about the reader means a strong understanding of what is news and what isn’t. Graphics projects must have news value, and they must be of interest to readers. In some ways, the graphics editor uses the skills of a news editor, picking and choosing the most newsworthy items. Instead of picking stories to go on Page One, the graphics editor picks the stories that will be served best by an informational graphic.

The graphics editor also must be on guard to prevent the creation of informational graphics that are overly complex or busy. The more complicated the graphic is the more danger that the reader will skip over the material or be confused.

KNOW THE READER

The successful graphics editor needs to think of the reader, continually asking the same questions a reader might. For example, in a hurricane a reader might want to know how to protect a home from the violent weather.

The graphics editor must look at information much like a reader who is seeing it for the first time would. Too often, an informational graphic is too complicated and assumes knowledge upon the part of the reader. Conversely, some graphics give the reader too little information.

Anticipating and planning for the news, as well as thinking and asking questions like a reader are elements that a graphics editor can control. He or she cannot control the unexpected news happenings, which occur regularly. But by developing skills in the areas he or she can control, the graphics editor will be much better prepared when big stories break.

CREATING A GRAPHIC

The process of creating an informational graphic begins with information. The graphics editor gets information for the graphic from a variety of sources, but

the two most common are staff reporters and the wire services (either in story form or in an already created graphic).

Ideally, a reporter who is developing a story will realize that the story could be helped by an informational graphic and will turn to the graphics editor for assistance. Many reporters understand how graphics can enhance stories and help gain their stories better play in the newspaper.

Reporters who take the time to research graphic information—such as annual statistics—also gain a greater appreciation of the scope and depth of the stories they are reporting. Even stories about the latest developments will benefit from a “look back in history.” A reporter working on a story about bank failures in the United States, for example, might have three or four years of information that show a trend. With more research, however, the reporter might find 20 or 30 years of information, which could be turned into a graphic. Ultimately, both the reporter and the reader will gain a better understanding of the story.

Gathering data for an informational graphic also can uncover additional points for the story and help the reporter to avoid making statements based on too little knowledge.

EDITING THE INFORMATION

Once the information has been gathered and turned over to the graphics editor or coordinator, it should go through the same editing process that a news story goes through when it is given to a city editor. The graphics editor must ask:

Is there enough informational to make a graphic, or should the data be part of the story only?

Is this graphic needed only to add visual relief to the page?

Is the information complete? Are there missing years or explanations?

Is the information clear enough so an artist can create a graphic readers will understand?

If there are “holes” in the information, the graphics editor should work with the reporter or city editor to fill them. Incomplete information in a graphic can be much more visible, and embarrassing, than incomplete information in a story.

The graphics editor must look at the information for a graphic in much the same way readers might see it when they open the paper. It is safe to assume that readers don’t bring any background or inside understanding of a graphic before they look at it. Therefore, what is understood or apparent to the reporter or even the graphics editor might not be so clear to the reader.

DISPLAYING THE INFORMATION

Once the decision has been made that there is enough information for an informational graphic, the graphics editor, working with either the art director or an artist, needs to decide on the type of graphic device that will best display the infor-

mation. It might be a table or a chart. A diagram or a facts box. A map or a combination of several. (Each type will be discussed in the next three chapters.)

At this point, either the reporter or the graphics editor requests that a graphic be made. The use of a graphic or art request form helps develop proper communication between all parties and helps avoid misunderstandings.

The type of information that should be on the request form includes: when the graphic is needed (what day or edition), what section is running the graphic and the size of the graphic (this information should be filled out by the graphics editor or the art director and discussed with either the section editor or news editor). The headline and source line for the graphic also are put on the form. The form may include information as to where the story that will run with the graphic can be found in the newspaper's computer system.

It is important for those who fill out request forms to understand that as much information as possible should be included. And while it is not necessary for the form to tell an artist HOW to draw the graphic, the artist needs to have all of the data available.

WORKING WITH AN ARTIST

The next step should involve both the graphics editor and artist. Together, they should decide on the possible direction, size and nature of the graphic. The artist should ask questions if any points are unclear. If the graphics editor can't answer those questions, the reporter should be brought into the discussion.

Sometimes, on more complex and complicated informational graphics, the artist and reporter will work as a team. They will discuss and tailor the information for the graphic so both are satisfied. The graphics editor also would be part of this process, making sure the graphic meets standards set by the newspaper and also satisfies the needs of the reader.

While the graphic is being drawn, the graphics editor should be aware of its progress and be available to answer any questions from the artist. Such questions could range from a concern about the placement of information to confusion over data in the graphic. The graphics editor needs to smoothly and quickly answer the questions by checking with the reporter or other sources of information.

CONFERRING WITH EDITORS

During this process, the graphics editor also needs to communicate with either the news editor, if the graphic is planned for news pages, or the editor of the section where the graphic will run. Information that must be communicated includes the type of graphic, its size and whether or not it is in color.

ACCURACY COUNTS

When the artist is finished with the graphic, the graphics editor should check it for accuracy. He or she also should examine the graphic's overall visual approach. While there shouldn't be any change in the approach of the graphic if the artist and

the graphics editor communicated direction earlier, it is still a good practice to double-check.

Here is another chance for the graphics editor to look at the material as an editor and also as a reader. The graphic must “make sense,” it must stand on its own merits. Few graphics should need a story as support; each one should tell its own story with its own headline. It should communicate information clearly.

In addition to checking the “concept,” the graphics editor must do “fact” checking. The spelling of each word needs to be checked. And there’s much more:

Are all of the months in a chart in the correct order?

Are the oceans labeled properly in a map (the Pacific and Atlantic sometimes get flopped).

Do all of the figures add up? Sometimes, errors are caught when addition or subtraction is double-checked.

Is the chronology correct?

Does information in the graphic agree with information in the story? For example, if a graphic shows the number of people injured in accidents, the story should use the same numbers.

In other words, even the little things should not be overlooked. If any element is incorrect in an informational graphic, the entire device is called into question. That hurts the credibility of the graphic and the newspapers.

Even the reporter can help check the information. It is generally a good practice to give the reporter a copy of the graphic. The copy editor working on the story also should have a copy of the graphic as the story is being edited. Both the reporter and copy editor can provide additional sets of eyes on the graphic and can help prevent errors.

“VISUAL REPORTING”

Often, the graphics editor will do his or her own research for a graphic. In these cases, the graphics editor is a graphics reporter, seeking specific information to create a visual report.

At many newspapers an in-house library—at one time called a morgue and now more commonly called a reference center—offers reference materials and assistance in research projects.

Like any good reporter, the graphics editor also keeps personal file of sources, including:

The person who keeps state unemployment statistics.

A good contact at the local office of the National Weather Service.

Librarians at public and university libraries who can provide specific research.

Public affairs officers and other officials of trade associations.

Contacts at other newspapers who might provide information (or even graphics) during a big story.

Understanding Informational Graphics

Each type of informational graphic has a unique and special use. Some graphics are better at giving readers information than others. The following pages discuss different types of graphics and the type of information they best convey.

Tables or Lists

Best used when:

- Specific, accurate information needs to be presented. The best examples of a list graphic are the daily stock market tables and the weather page tables. Each has specific information that readers are interested in.

- Lists can also be effective when showing a comparison between two or more items in a number of topics, i.e., comparing school districts' dress codes in a community.

- When using lists showing national, international information, highlight the specific area of interest to your readers such as your state or the U.S.

- An alphabetical list is the easiest for readers to find specific information they are interested in.

- Use rules, light screens or white space to break long lists into readable amounts; such devices help readers follow the multi-column information across a chart. Avoid big gaps between columns, as this makes it harder for readers to read across.

DOW INDUSTRIAL

The Dow takes it's largest plunge since October, 1987.

Biggest point losses

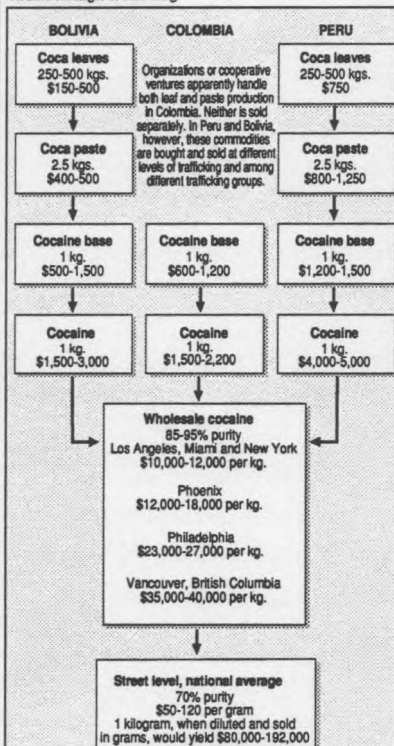
Date	Loss	Close
Oct. 19, 1987	508.00	1,738.74
Oct. 13, 1989	190.58	2,569.26
Oct. 26, 1987	156.83	1,793.93
Jan. 8, 1988	140.58	1,911.31
Oct. 16, 1987	108.35	2,246.74
April 14, 1988	101.46	2,005.64
Oct. 14, 1987	95.46	2,412.70
Oct. 6, 1987	91.55	2,548.63
Sept. 11, 1986	86.61	1,792.89

Source: Arizona Republic financial news

The Arizona Republic

COCAINE PRICES

At different stages of trafficking.



Source: Drug Enforcement Administration

THE ARIZONA REPUBLIC

Line/Fever Charts

Best used when:

- Data covers a long period of time, i.e. over a number of years, months, days, hours. Although it is possible to portray a large amount of data in a column (vertical bars) chart, a line chart (or a rectilinear coordinated chart as it is known in the statistics community, is the most effective use of space.

- The emphasis is on movement rather than the actual amount.

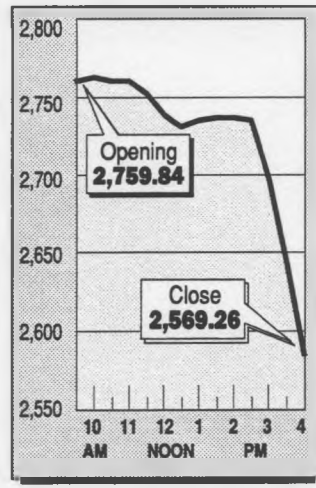
- Showing a projection, estimate or forecast, such as population growth. It is more graphically or visually accurate to show a dotted line coming off a solid line as an indication of a forecast than to show columns or bars of the same information. The columns or bars of the forecast data would not appear to be different enough and hence would not alert the reader as quickly as possible that the data is different.

- The data is a step or staircase presentation, such as the Prime Rate or the Federal Discount Rate. Such presentations are used to show abrupt fluctuations in data, the steepness of a trend. Such data would be viewed less accurately if done as a line or cure chart, since the information would be rounded or smoothed.

- The data is comparing monthly or seasonal data of an item, such as auto sales, with data of a previous period. Line charts are more accurate in reflecting seasonal changes and comparing like periods with each other.

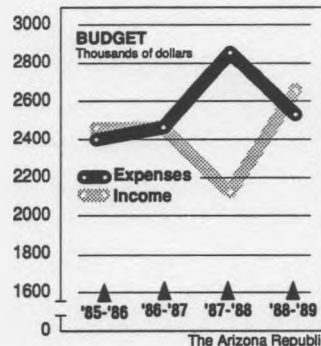
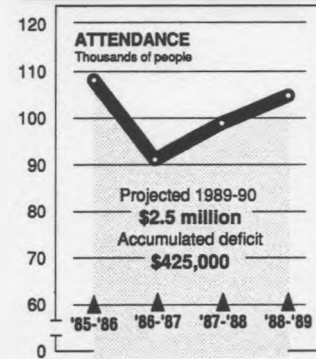
DOW ON FRIDAY

Activity of the Dow Jones industrial average by half-hour.



The Arizona Republic

ARIZONA THEATRE COMPANY



The Arizona Republic

Pie Charts

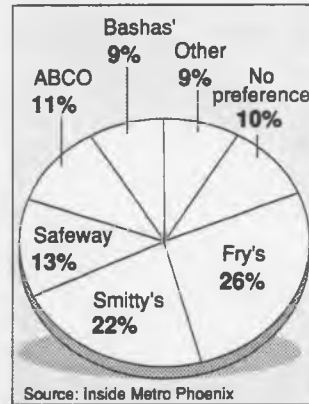
Best used when:

- You want to make a comparison of segments and show relationships to the whole.
- If you need to show a change in the mood of a group or community over a period of time in several different categories.

When comparing two or more pie charts, shadings, colors, etc. should be constant, with the labels kept in the same order in all the charts.

SUPERMARKET PREFERENCES

Where Valley shoppers buy most of their groceries.



The Arizona Republic

Pictograms

This style of presentation has been rediscovered lately and is an easy way of dressing up statistical data. Because the pictograph must be easily identified so a reader can quickly follow the information being presented, use these guidelines:

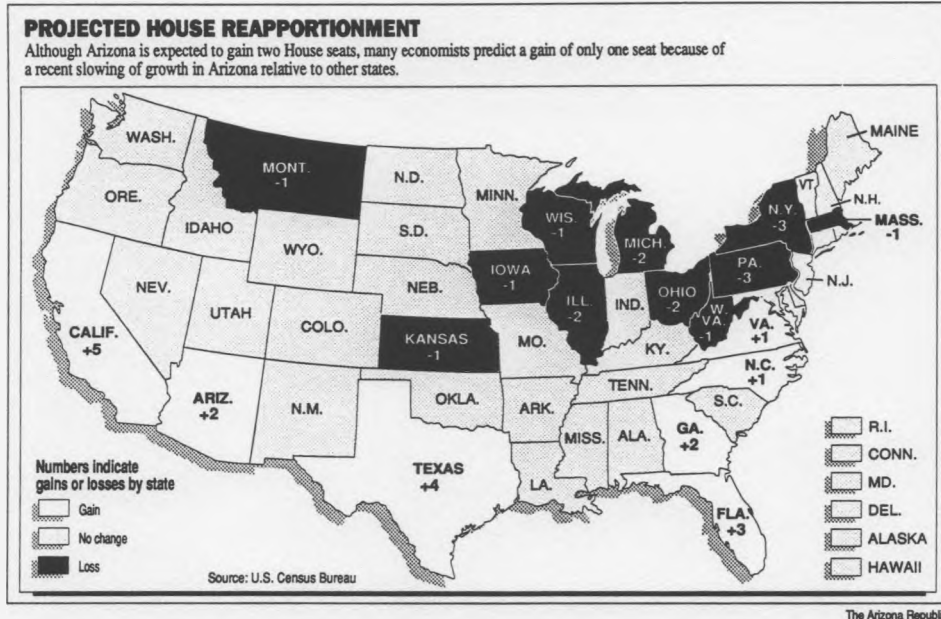
- When using a symbol, treat it as a unit of measure, and design it in such a manner so it can be recognized when divided. It is best not to divide a symbol into a measure less than a quarter.
- Put statistical data with a pictograph symbol to ensure accurate comparisons
- When showing symbols in various heights, remember the information must be calculated on a volume, or three-dimensional basis. Making a symbol larger, without taking into account the overall volume, is misleading.

DEER POPULATION

Number of deer in the Tonto National Forest from 1981-85.



The Arizona Republic



Map Graphics

Effective when:

- Presenting data that is simple and best suited for showing patterns of distributions.

Keep the number of shades to a minimum. The legend should run from either white to black or vice versa. White generally is perceived as less or low and black as a high and many -number symbol.

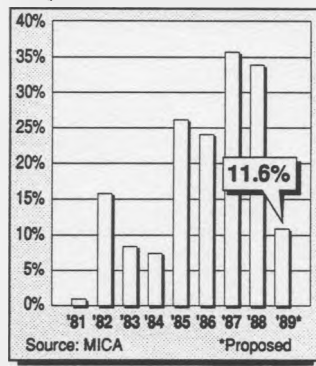
Vertical Bar Charts

Effective when:

- Depicting numerical values of a given item over a period of time. these charts accent the individual dates of the data, rather than the trend or movement.
- Presenting data where there are missing or irregular time periods, i.e., 1955, 1965, 1976, 1985, 1987 (1987 being the latest date information is available.) There should, however, be an indication that the data is the latest year available; tell the reader there is a difference in the data visually or with information on the chart.
- Plotting deviation from the normal, i.e. percent chart figures which can go either in the plus quadrant (I) or the minus quadrant (IV)

INSURANCE-RATE HIKES

Average annual increase in medical-malpractice insurance in Arizona.



The Arizona Republic

Horizontal Bar Charts

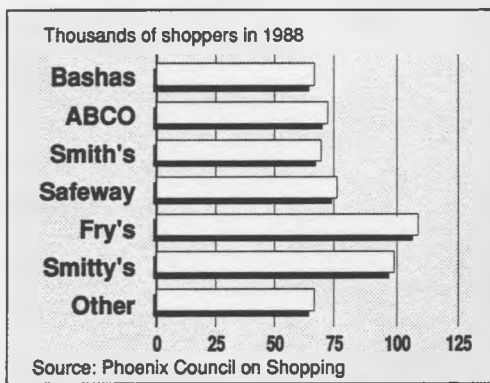
Effective when:

- Showing different items originating from a common base line, for example a breakdown of Society of Newspaper Design members by income.
- A grouping of horizontal bars, with a legend, can be used to make comparisons of like items at different time periods.

When using a horizontal bar chart, a decision must be made as to whether the data should be arranged numerically, alphabetically, chronologically, geographically, etc. When arranging the data numerically, either descending or ascending order is acceptable. An alphabetical arrangement is sometimes used when listing U.S. states or cities, so a reader might quickly compare his or her state/city with others.

SUPERMARKET PREFERENCES

Where Valley shoppers buy most of their groceries.



The Arizona Republic