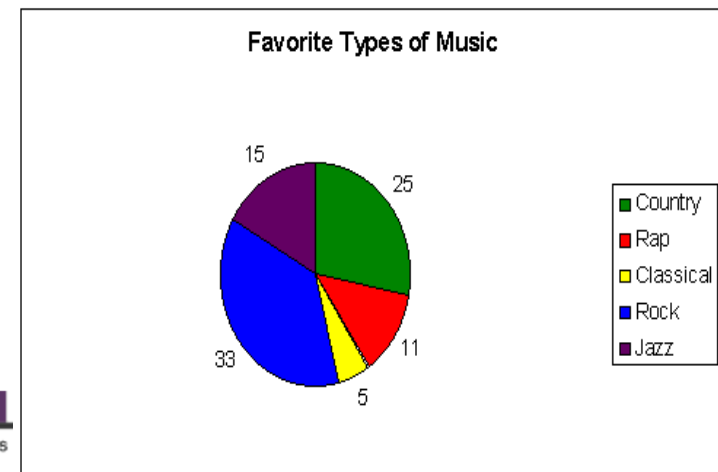
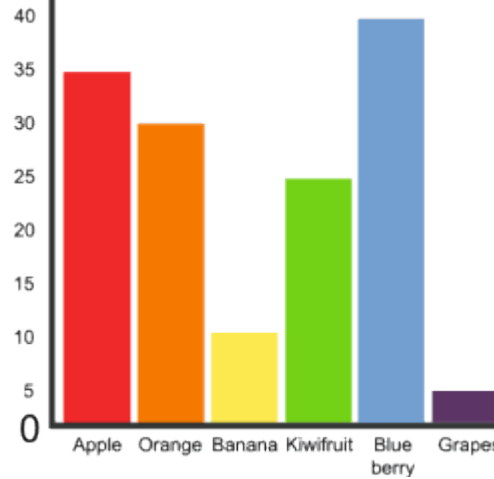
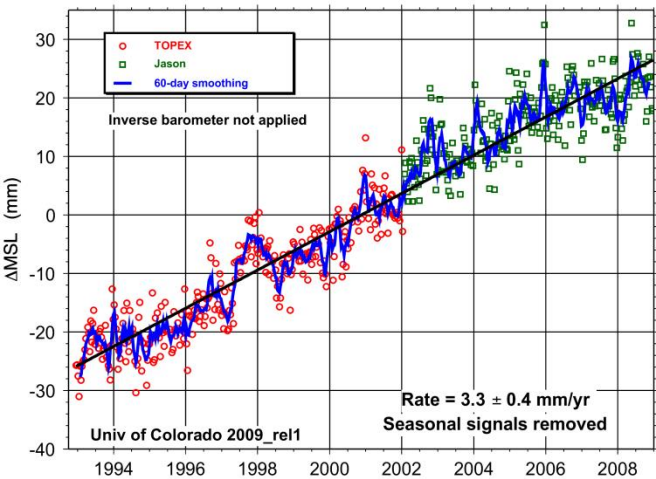




Graphing Skills

What do graphs show us and why are they useful?

Interpreting and creating different types of graphs.

What is the Purpose of Graphs?

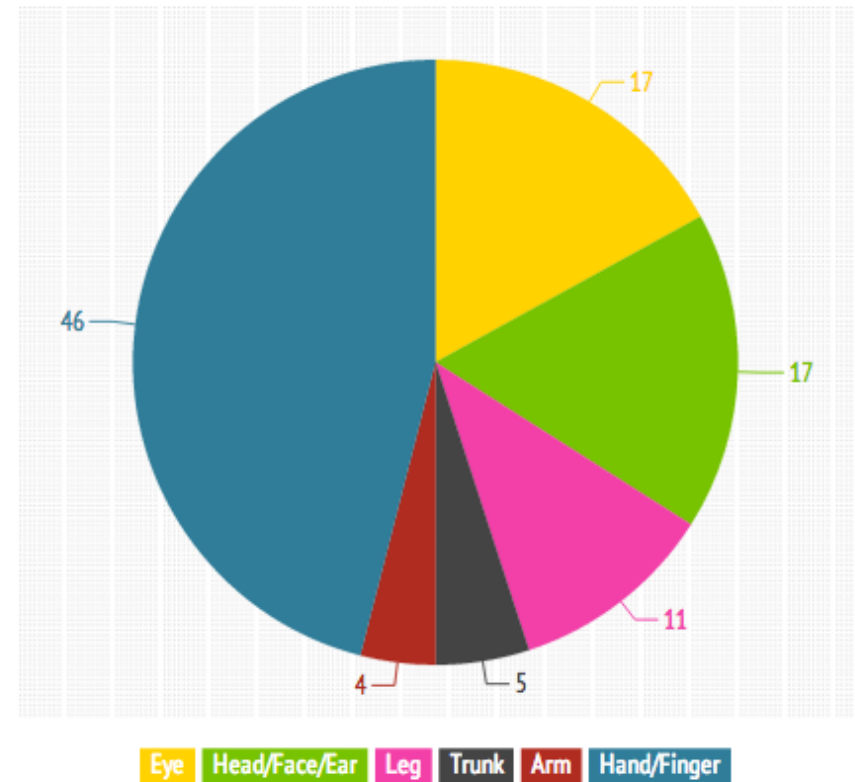
To visually express a set of data.

To summarize different amounts of information into one picture.

Easiest way, sometimes only way, scientists can represent numerical data.

Gives an idea of how the different variables are affected by one another.

Body regions injured by fireworks



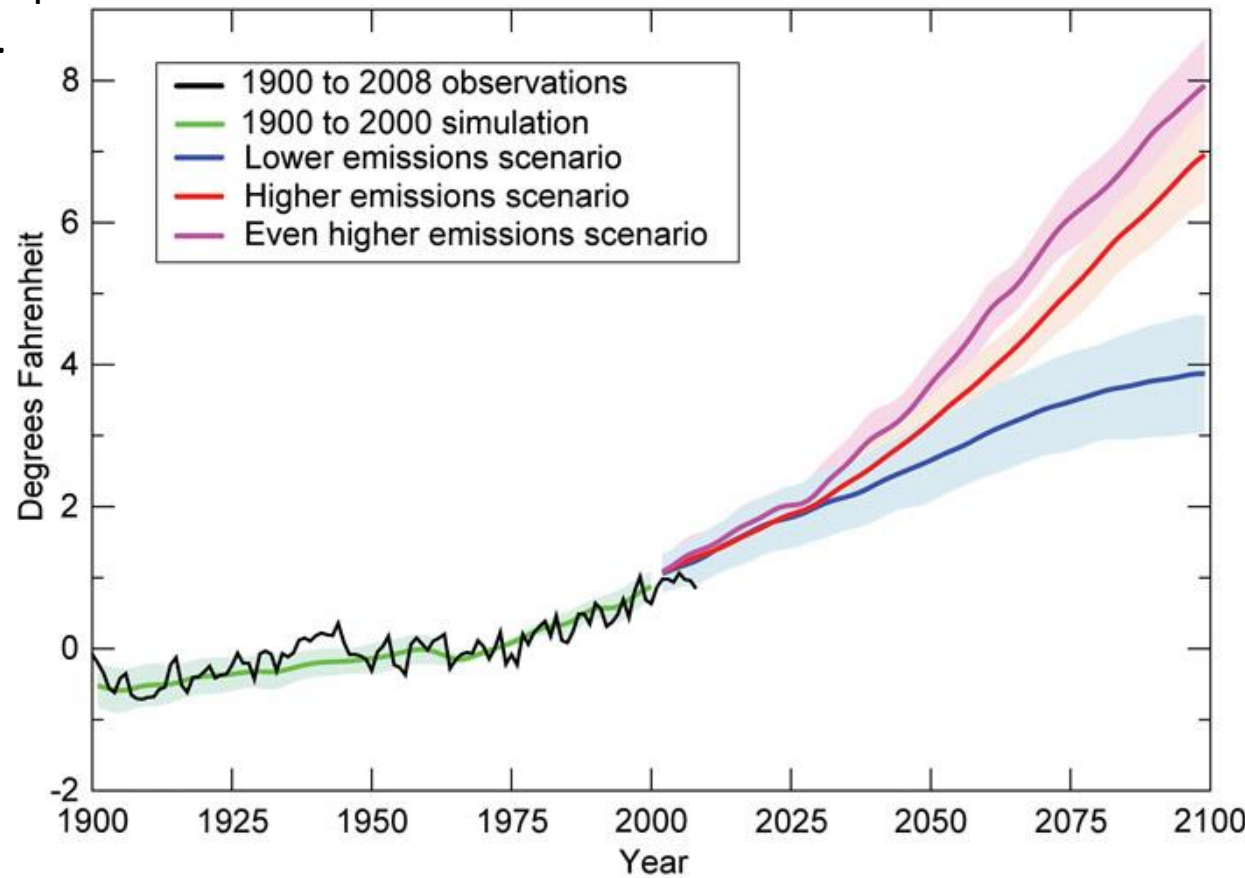
Source: The Consumer Product Safety Commission

Some Things Graphs Show

Graphs can show trends

Graphs can show how one thing affects another

Graphs can show relationships and present and predict possibilities for the future.



Types of Graphs and the Information They Can Display

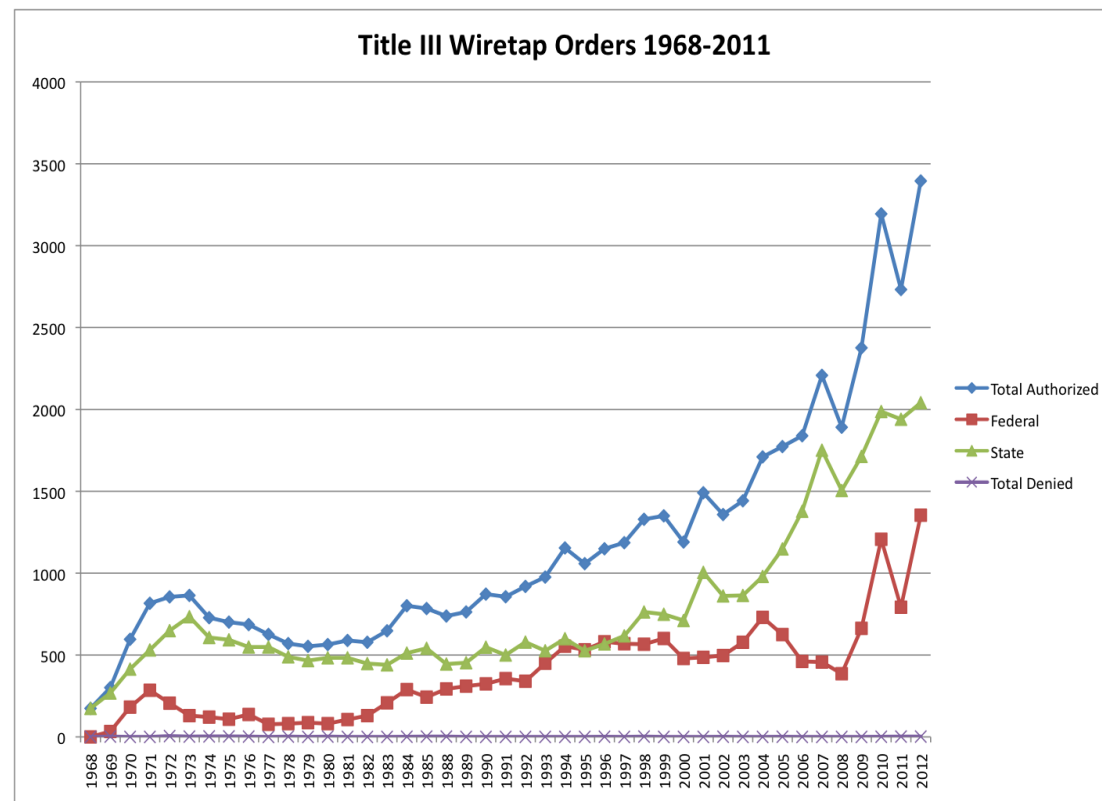
Bar Graphs

- Used to compare values or amounts in different categories.
- May represent frequencies, sums, averages, or percentages.



Line Graphs

- Used to compare 2 or more variables.
- Show trends in data clearly – meaning they visibly show how one variable is affected by the other as it increases or decreases.

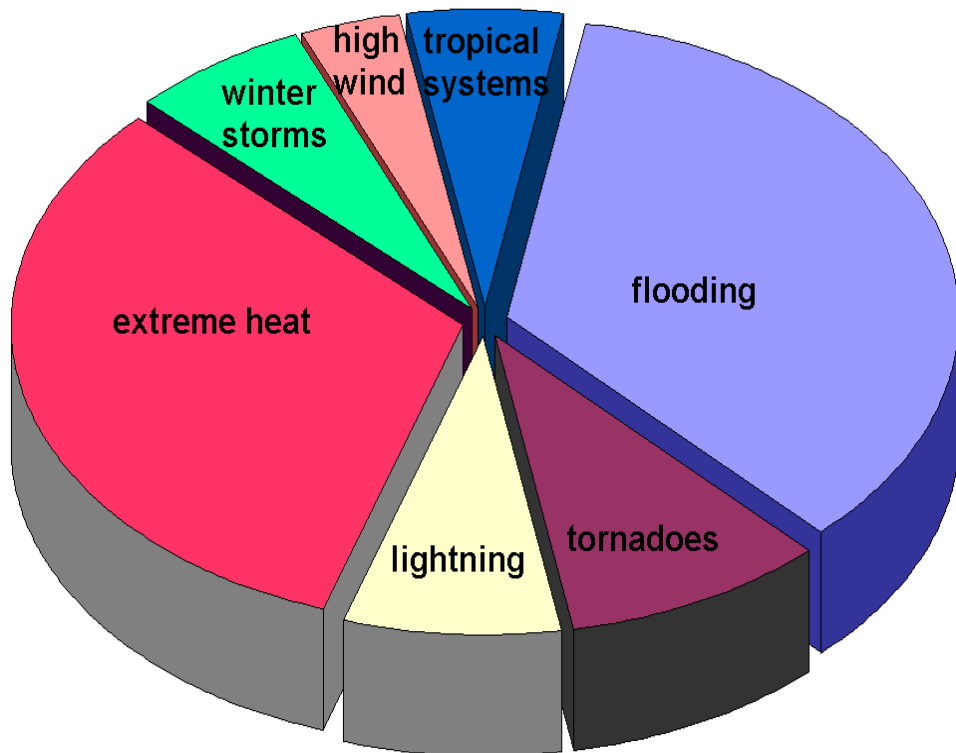


Types of Graphs and the Information They Can Display

Pie Graphs

-Used to express percentages and amounts and size relationships.

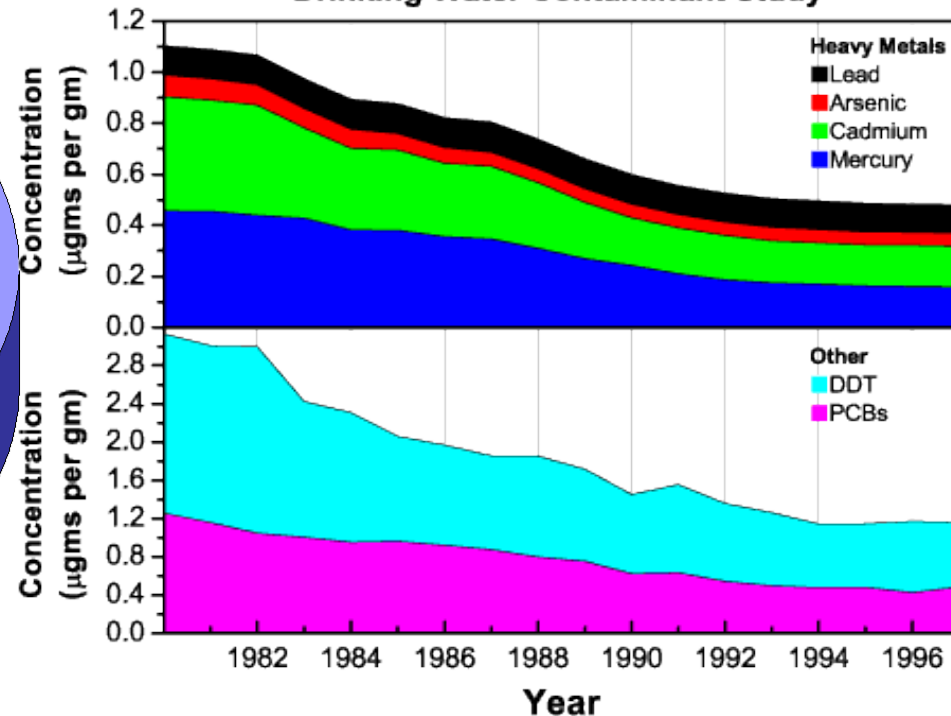
Texas Weather Deaths, 1988 to 2005



Area Graphs

-Used to express the cumulated totals over time. They show trends in related attributes.

Drinking Water Contaminant Study

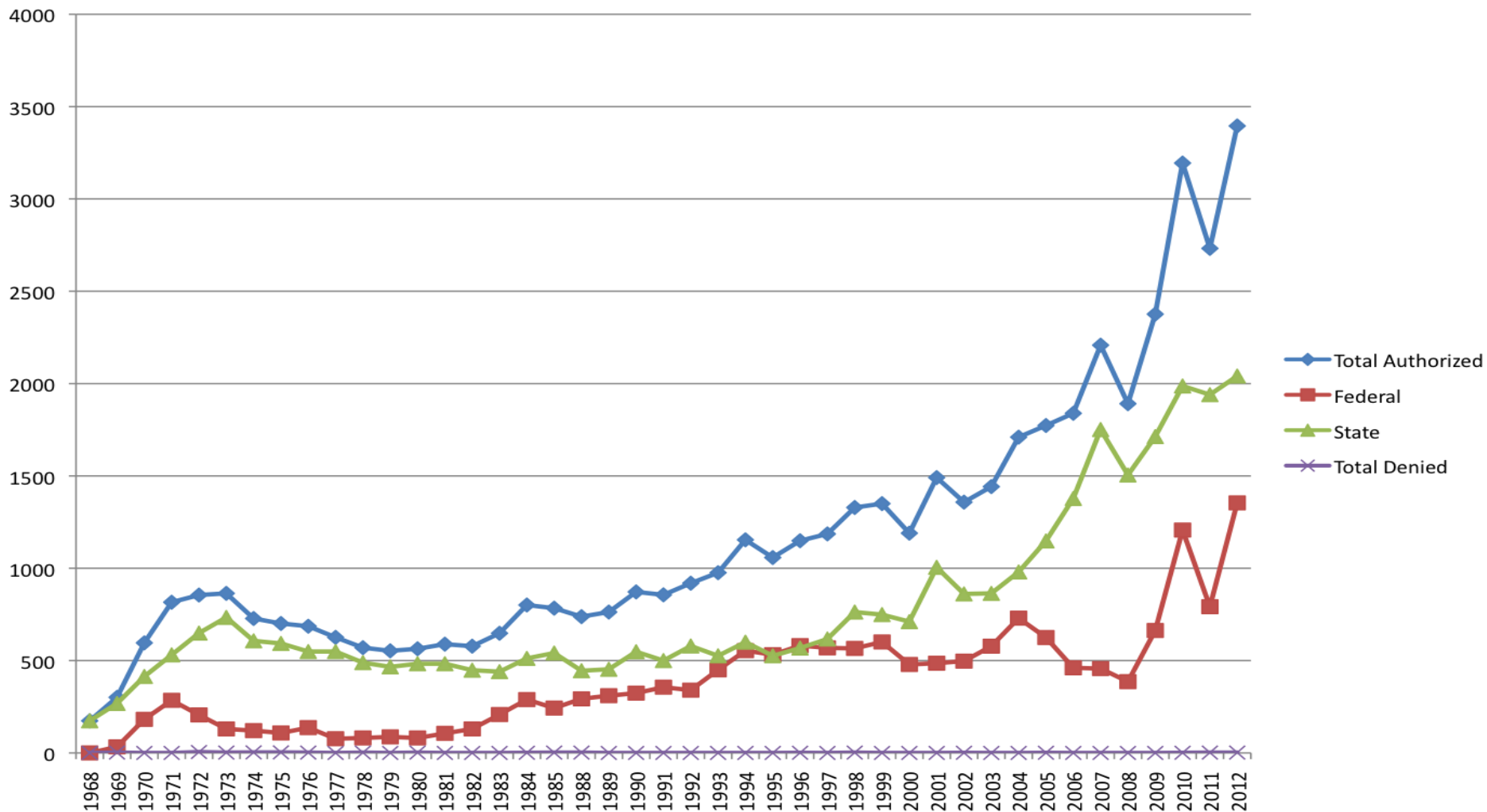


Analyzing and Interpreting Graphs



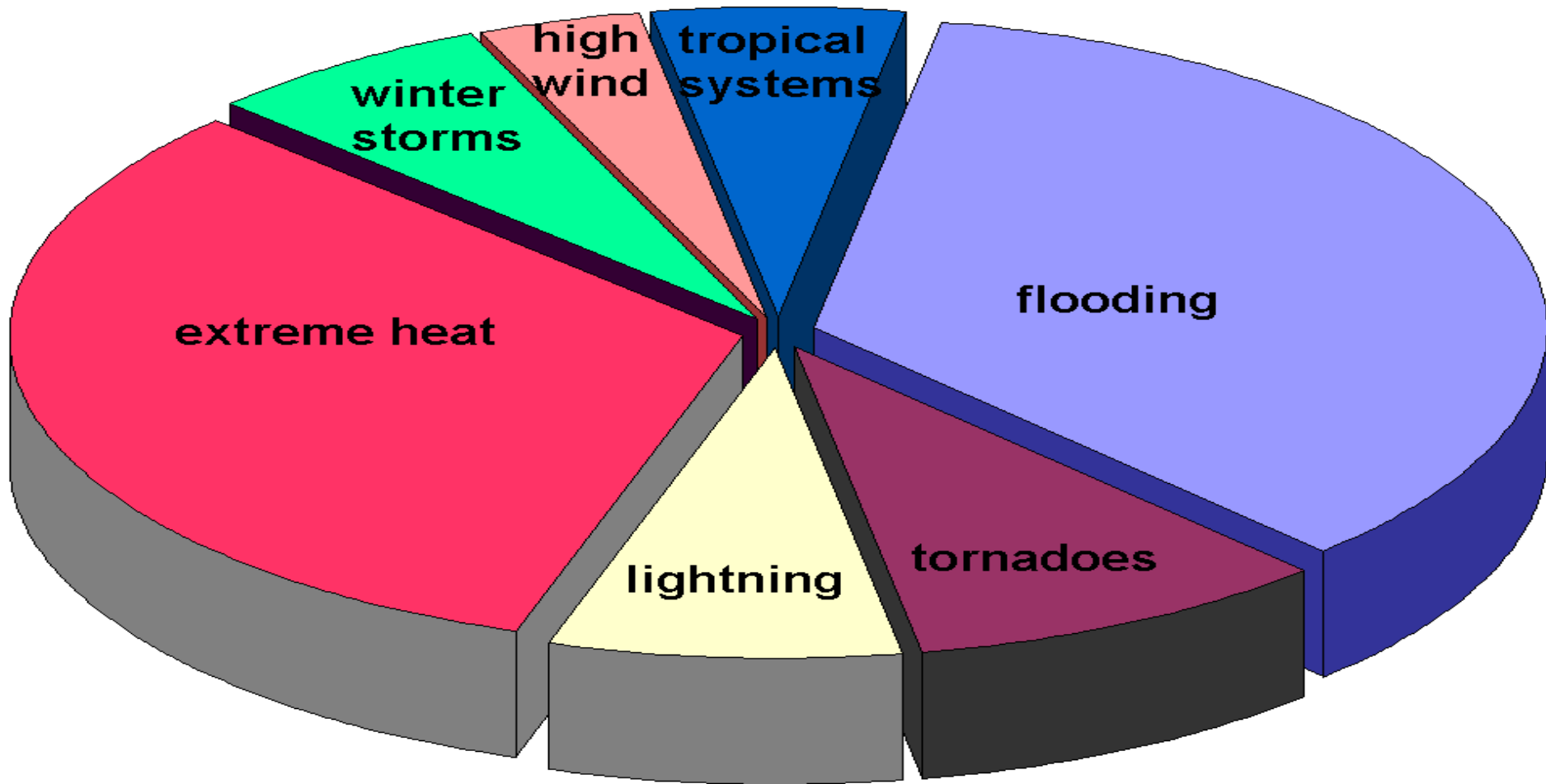
1. What is this graph of?
2. How many students contributed to the data?
3. What information is left out that we don't know?
4. What could the title of the graph be changed to in order to make the graph more clear?

Title III Wiretap Orders 1968-2011



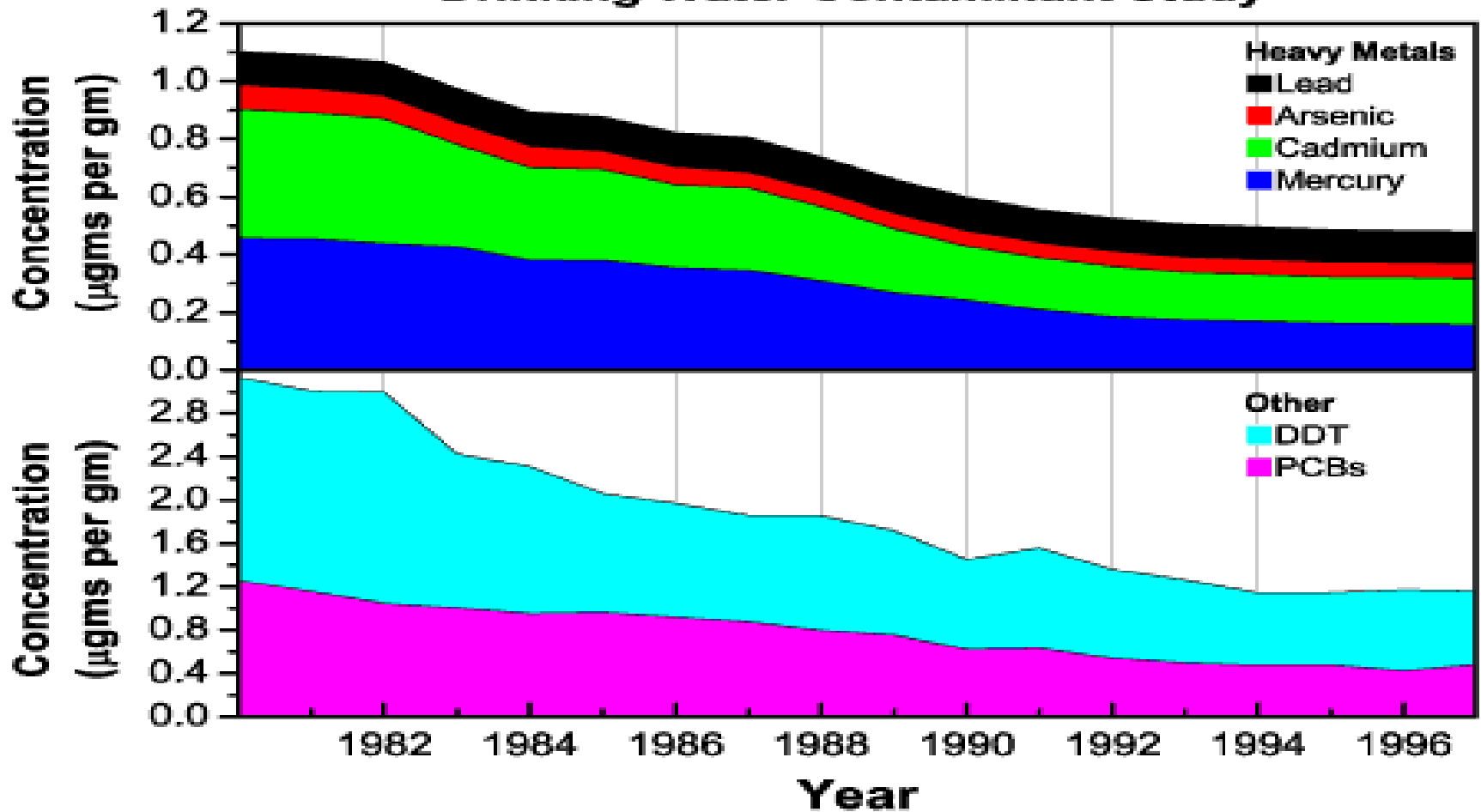
5. What type of graph is this and what does it tell us?
6. Which type of tap increased the most from 1993-2011?
7. What information would you like to have to make this graph clearer?

Texas Weather Deaths, 1988 to 2005



8. What does this graph tell us?
9. What is missing to get a more accurate picture?
10. What type of weather caused the most deaths from 1988-2005?
11. Can you estimate what percentage of deaths occurred from extreme heat?

Drinking Water Contaminant Study



12. What type of graph is this and what does it tell us?
13. What is the overall trend of water contaminants from 1982-1996?
14. What is the most abundant contaminant in drinking water?
15. What information would you like to make this graph more relevant or meaningful to you?

Interpreting Data to Create Graphs

When interpreting data to create graphs it is important to see what and how the data is given. If the data is given in amounts or totals it's easy to do a bar graph. If the amounts are percentages a pie graph would be more appropriate.

Data table for 100 surveyed student's weekly television watching in hours.

Hours	0-2	3-5	6-8	9-11	12-14	15-17
# of Students	4	8	22	32	30	4

16. What type of graph should we make and what should its title be?

Weather related deaths in Texas from 1988-2005.

Type of Weather	Extreme Heat	Winter Storms	Lightning	Tornadoes	Flooding	Tropical Systems	High Winds
Number of Deaths (%)	26	8	10	12	30	9	5

17. What type of graph should we make and what should the title be?

Interpreting Data to Create Graphs

If the data has multiple variables that are affected by one another and are expressed over time a line or area graph should be created.

Average High and Low Temperatures for Murrieta CA. in degrees F

Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
68	69	72	75	79	84	90	92	88	80	75	70
52	53	57	58	59	63	65	66	63	60	56	53

18. What type of graph should we draw?
19. What should the title be?

Now You Collect Data and make a Graph

Make a data table and record the data for **2** of the **tasks** below. Come back to class and create a **graph for each task** expressing your results.

Task 1 How many different colors of flowers can you find in the quad? How many of each color can you find? Get a rough estimate. (Don't count every flower)

Task 2 How many steps are in the center of campus (the grass area)? How many on the stage? How many going up to the South hall stairway by my class?

Task 3 How many Trash Cans are in the quad? Of those how many are recyclable? How many are in blue metal containers?

Task 4 How many classrooms are in the West Hall? How many in the East Hall? How many in the South Hall? How many in the C Building?

Task 5 Count all the trees in the quad by location (Middle, Northeast, Northwest, Southeast, and Southwest) What are the percentages of trees in each location?