

Exploration 1: Where Do Nickels Come From?

Ask a Question:

- Where were my nickels minted?
- When were my nickels minted?

Collect appropriate data:

A nickel's mint location (if present) is located on the head side of the coin below Jefferson's ponytail. We recorded the mint locations and years for 100 nickels ("S" indicates San Francisco, "D" indicates Denver, "P" indicates Philadelphia, and "N" indicates that no mint location was present):

Location	Year	Location	Year	Location	Year	Location	Year
P	1997	P	1986	D	1993	P	1990
D	1989	N	1976	D	1983	D	1973
D	1995	P	1985	P	1995	D	1974
D	1986	D	1997	P	1986	D	1997
P	1983	P	1984	S	1968	D	1976
D	1993	P	1995	D	1995	D	1981
N	1976	P	1985	N	1975	P	1989
P	1989	P	1988	P	1990	P	1997
D	1982	N	1978	D	1984	P	1993
D	1989	D	1988	P	1997	D	1986
D	1972	D	1998	P	1981	N	1975
D	1996	P	1990	D	1976	D	1990
P	1995	D	1982	P	1984	P	1990
D	1998	P	1998	N	1974	P	1989
N	1978	P	1983	D	1976	D	1989
P	1991	D	1973	D	1998	D	1971
D	1985	D	1986	D	1985	D	1980
D	1987	D	1987	D	1971	P	1996
D	1988	D	1991	D	1996	P	1986
D	1983	P	1990	D	1991	N	1972
D	1972	N	1973	P	1986	P	1996
P	1995	D	1982	D	1995	P	1991
D	1998	P	1996	P	1982	D	1994
D	1995	S	1970	S	1970	D	1982
P	1991	P	1996	D	1975	D	1991

To address the question “where were the nickels minted?” do the following:

- a. Create a *tally chart*, *frequency table* and a *circle graph* for the distribution of mint locations. Label your graph with mint locations and percentages. Explain how you created your circle graph. That is did you use an area model, a circumference model or a central angle model? What is the central angle of each sector? Show a sample calculation of how you found it?
- b. What conclusions can you make about “Where do nickels come from?” Do you think this sample is representative of all nickels? Explain. What further questions do your findings illicit?

To address the question “when were these nickels minted?” do the following:

- c. For each mint location create a *bar graph* for mint years in decades. Each bar will represent one decade for example 1960-1969, 1970-1979, etc. Label your graph. Use the same scale on the axes for each mint location so that you can compare your results. Fit all four graphs on the same page. What observations can you make about when nickels were minted from the different mint locations?
- d. When were the coins with no mint location minted? Does this suggest any new statistical questions?
- e. Suppose you knew that the coins with no given mint year were in fact minted in either Philadelphia, Denver, or San Francisco. Can you pinpoint where these coins were minted? Defend you answer, using the data in this problem.

Extending your findings

- f. Is the data collected from the class consistent with the data you analyzed above? Explain. Why might this be?
- g. What standards have been addressed in this exploration?
- h. What have you learned by doing this exploration?