Graphs and Charts

- Quantitative data can frequently be illustrated in a compelling way using charts and graphs.
  - see www.gapminder.org for fascinating, interactive charts
- Spreadsheet systems usually provide graphing and charting capabilities.
- Here are some examples.

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	A	B
1	**Major**	**Fall Enrollment 2009**
2	Art and Art History	112
3	Asian Studies	53
4	Biology	243
5	Business	511
6	Chemistry	95
7	Classical Languages	27
8	Communications A&S	347
9	Computer Science	81
10	Economics	44
11	Education	608
12	Engineering	366
13	English	198
14	French	26
15	GEO	35
16	Germanic Languages	13
17	History	104
18	HPERDS	164
19	Interdisciplinary	33
20	International Dev.	82
21	Mathematics	70
22	Music	62
23	Nursing	316
24	Philosophy	76
25	Physics	37
26	Political Science	121
27	Psychology	191
28	Religion	65
29	Sociology & Soc Work	157
30	Spanish	157
31	Undecided	364
32	**Total**	**4758**

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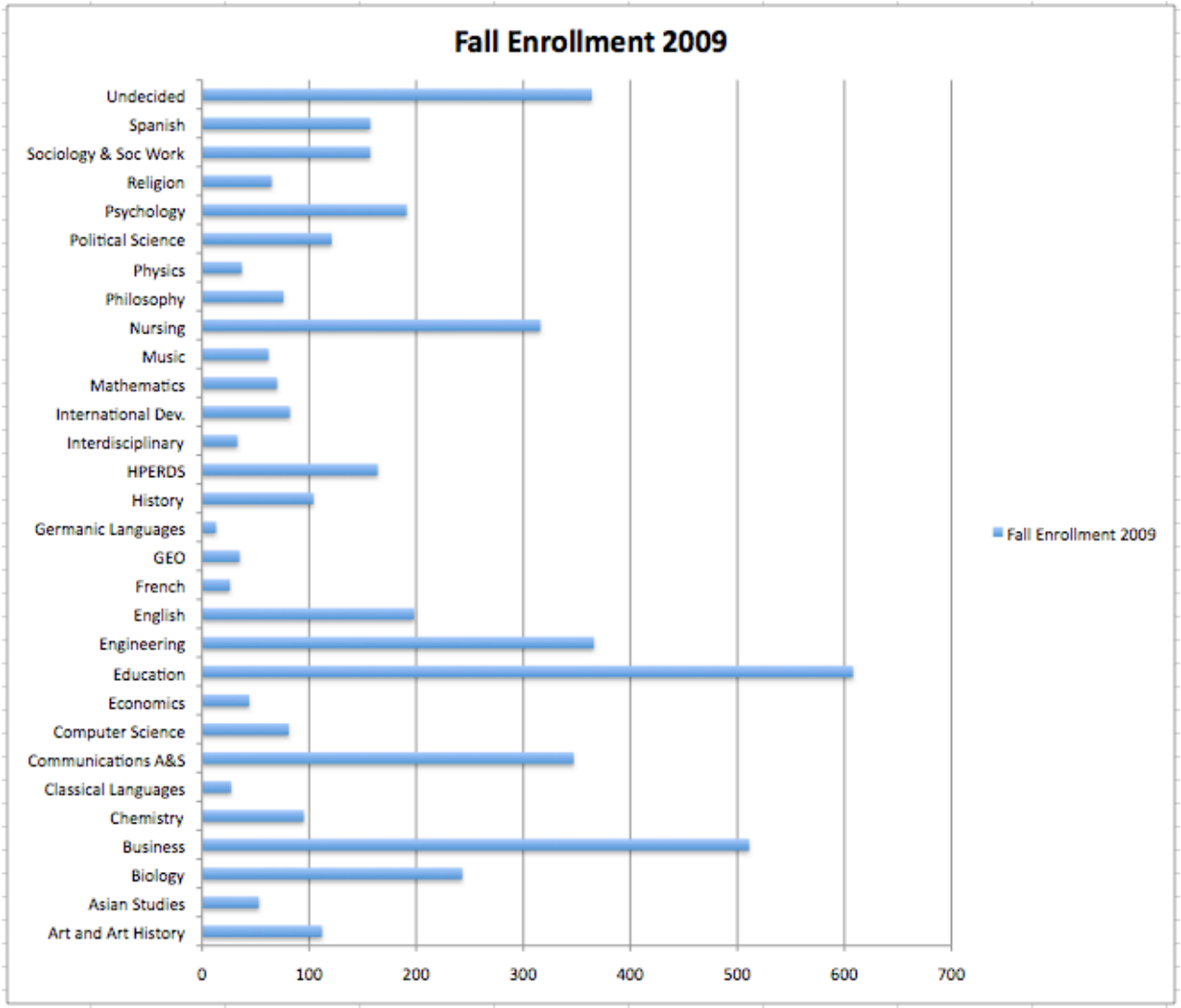
Bar chart of same data



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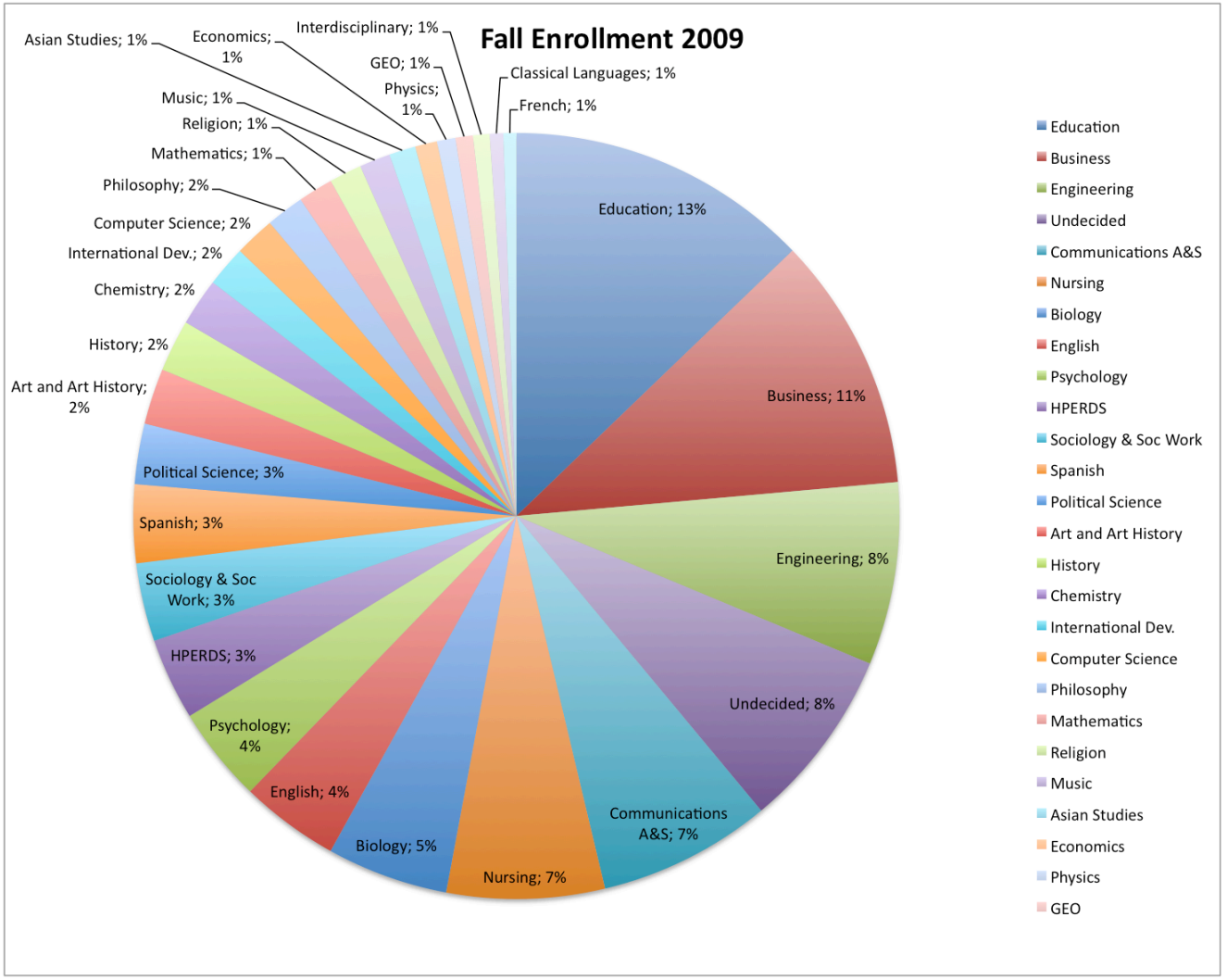
Pie chart of same data



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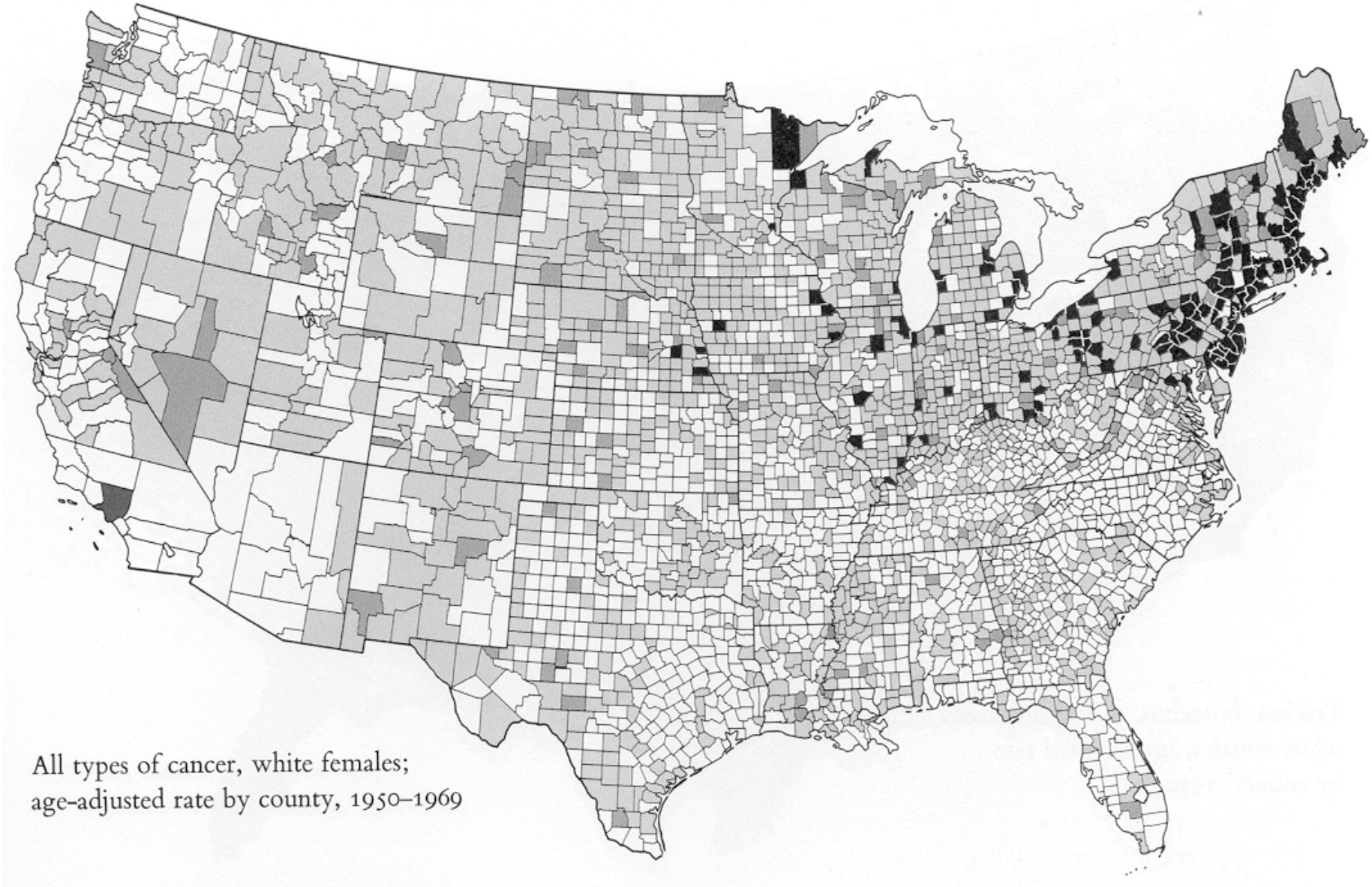


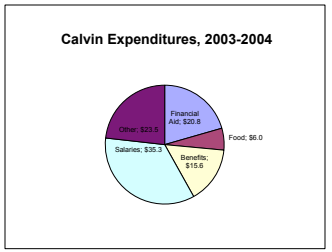
All types of cancer, white females;
age-adjusted rate by county, 1950–1969

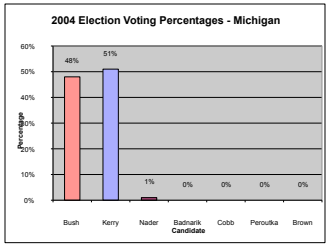
image from VDQI, 1983

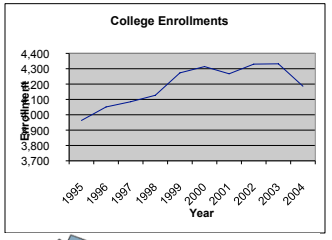
© Keith Vander Linden, 2005

Chart Types

- Pie charts
- Column/bar charts
- Line charts
- Maps







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Graph/Chart Issues

- Data values can, however, be obscured or misrepresented using charts.

- Here are some examples.

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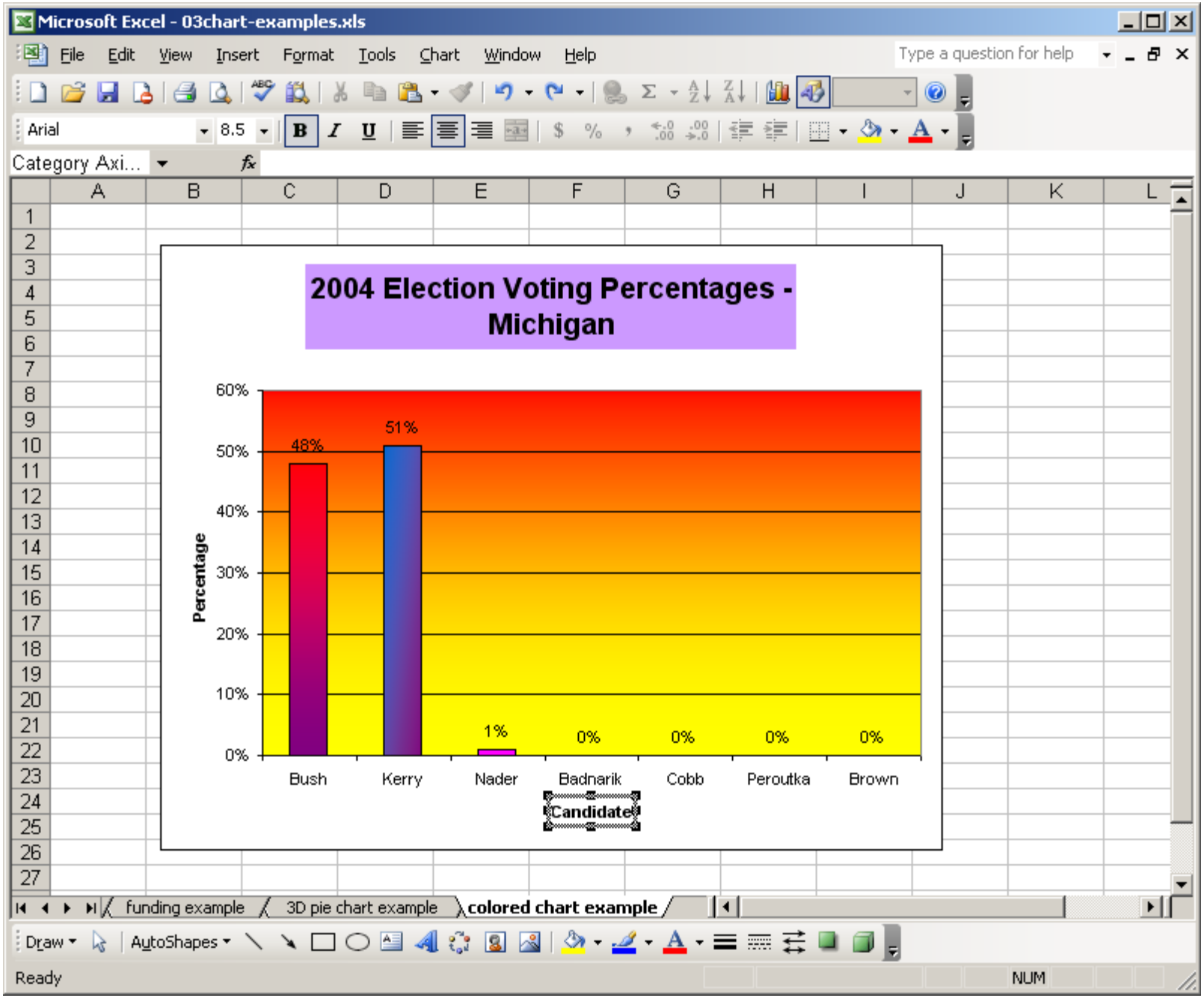

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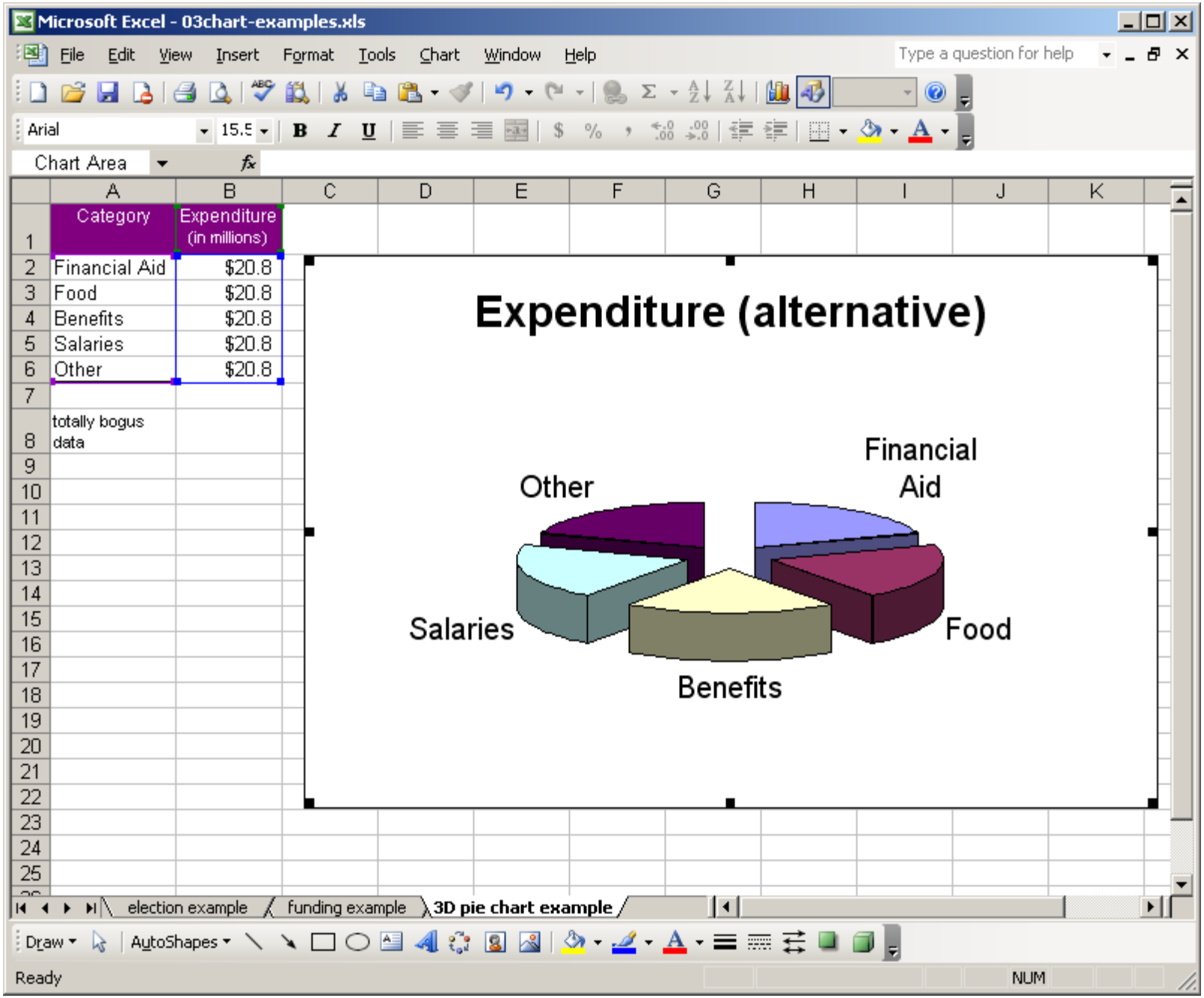

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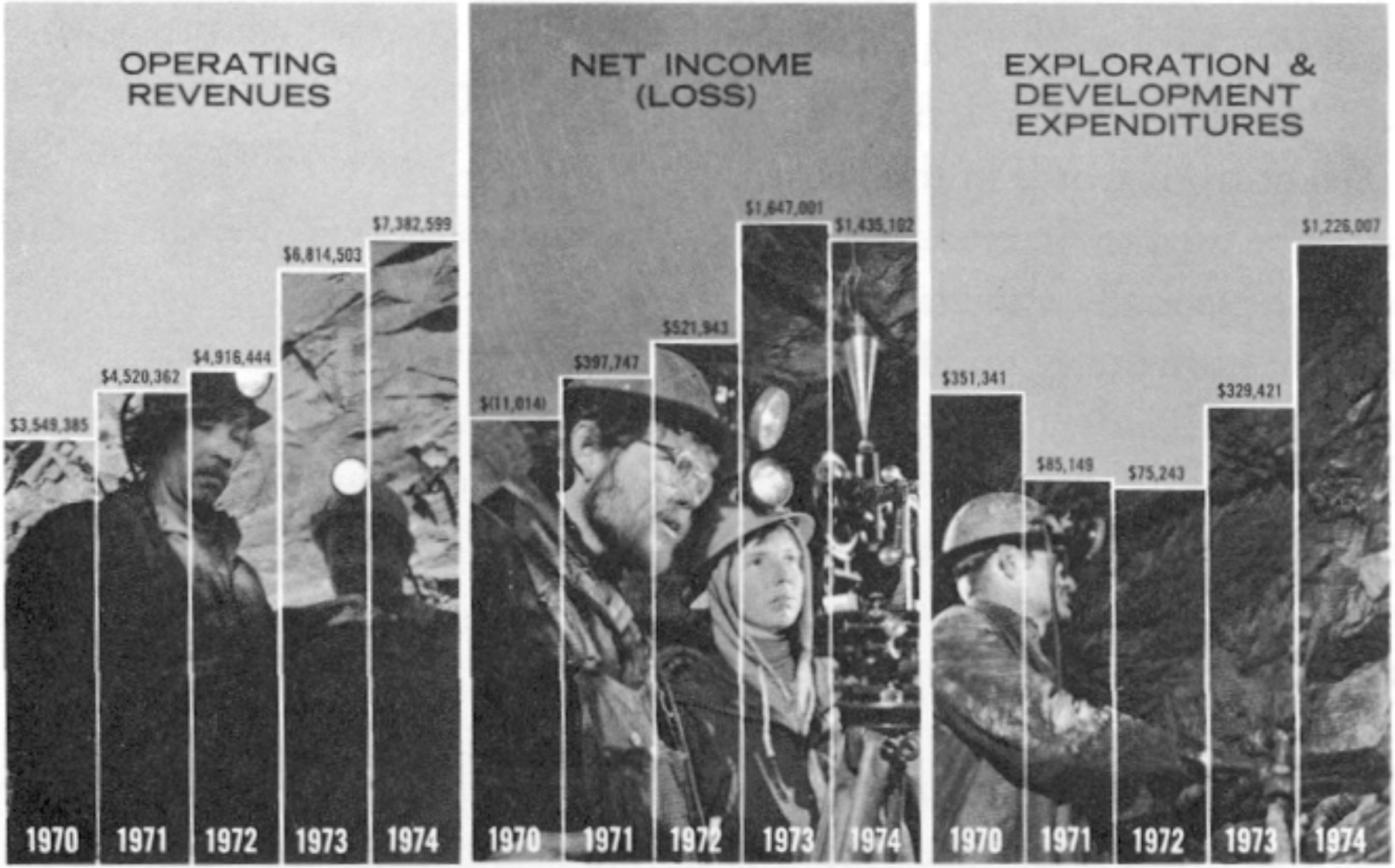

image from VDQI, 1983

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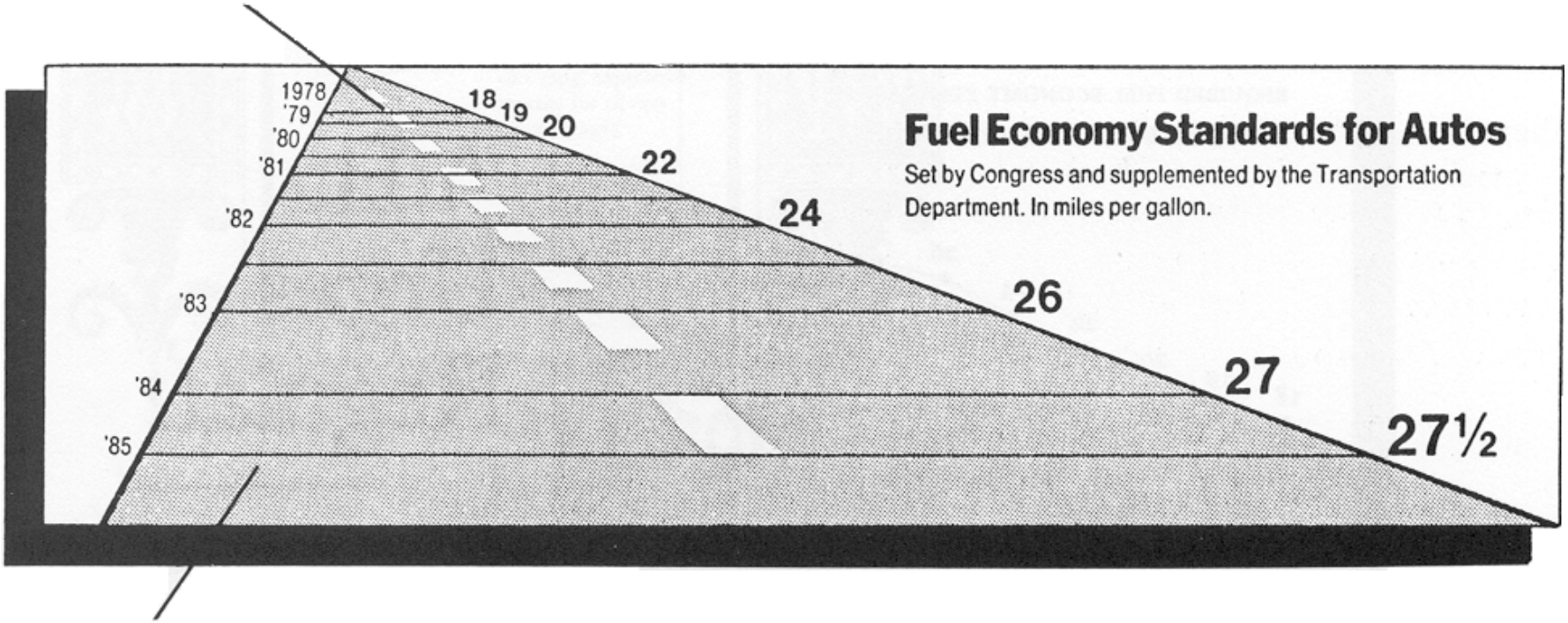

image from VDQI, 1983

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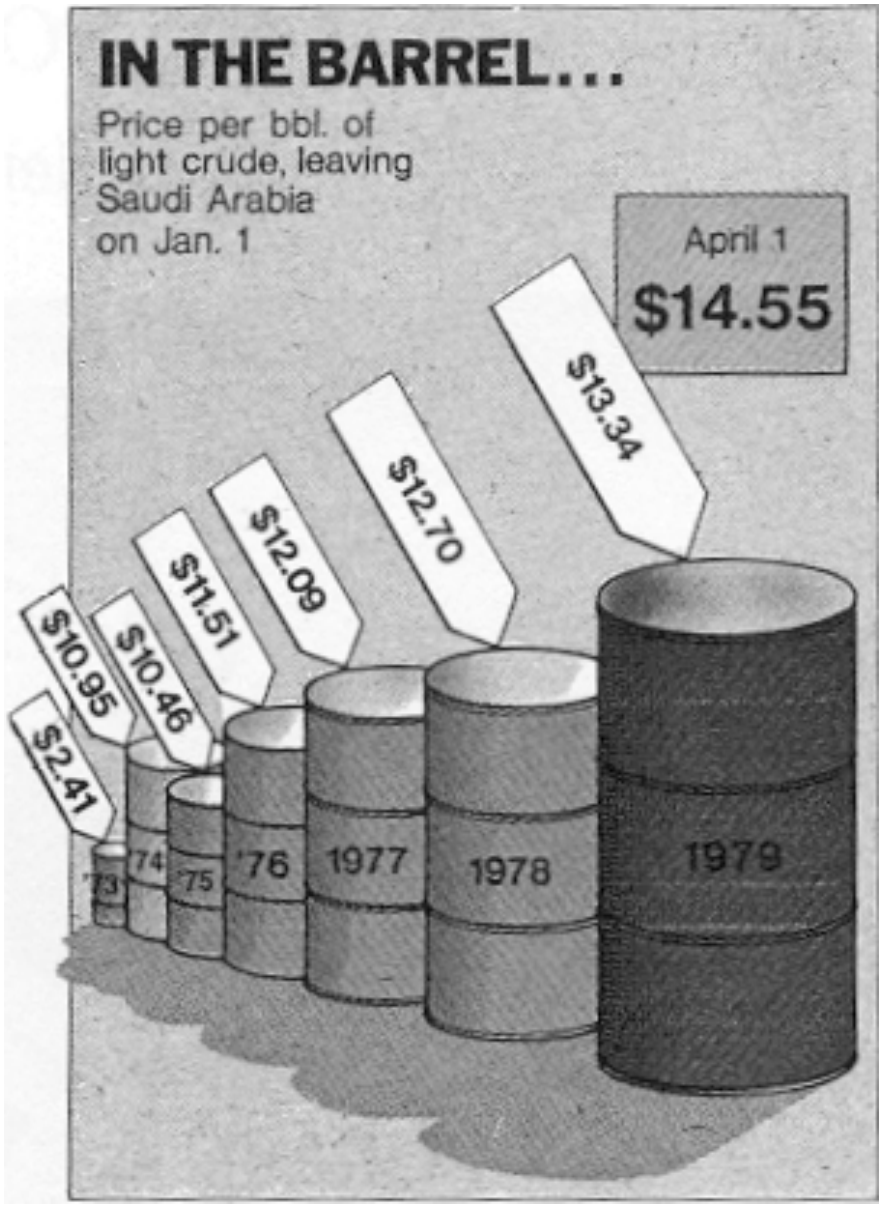

image from VDQI, 1983

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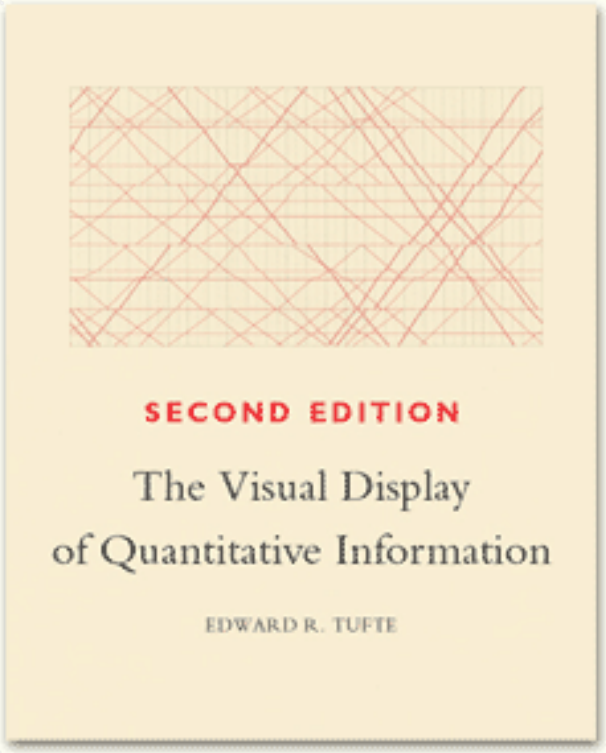
Edward Tufte (1940-)

VDQI, 1983

Lying graphics cheapen the graphical art everywhere … When a chart on television lies, it lies millions of times over; when a New York Times chart lies, it lies 900,000 times over to a great many important and influential readers. *VDQI*, p. 53-79



images from www.edwardtufte.com, Oct., 2004

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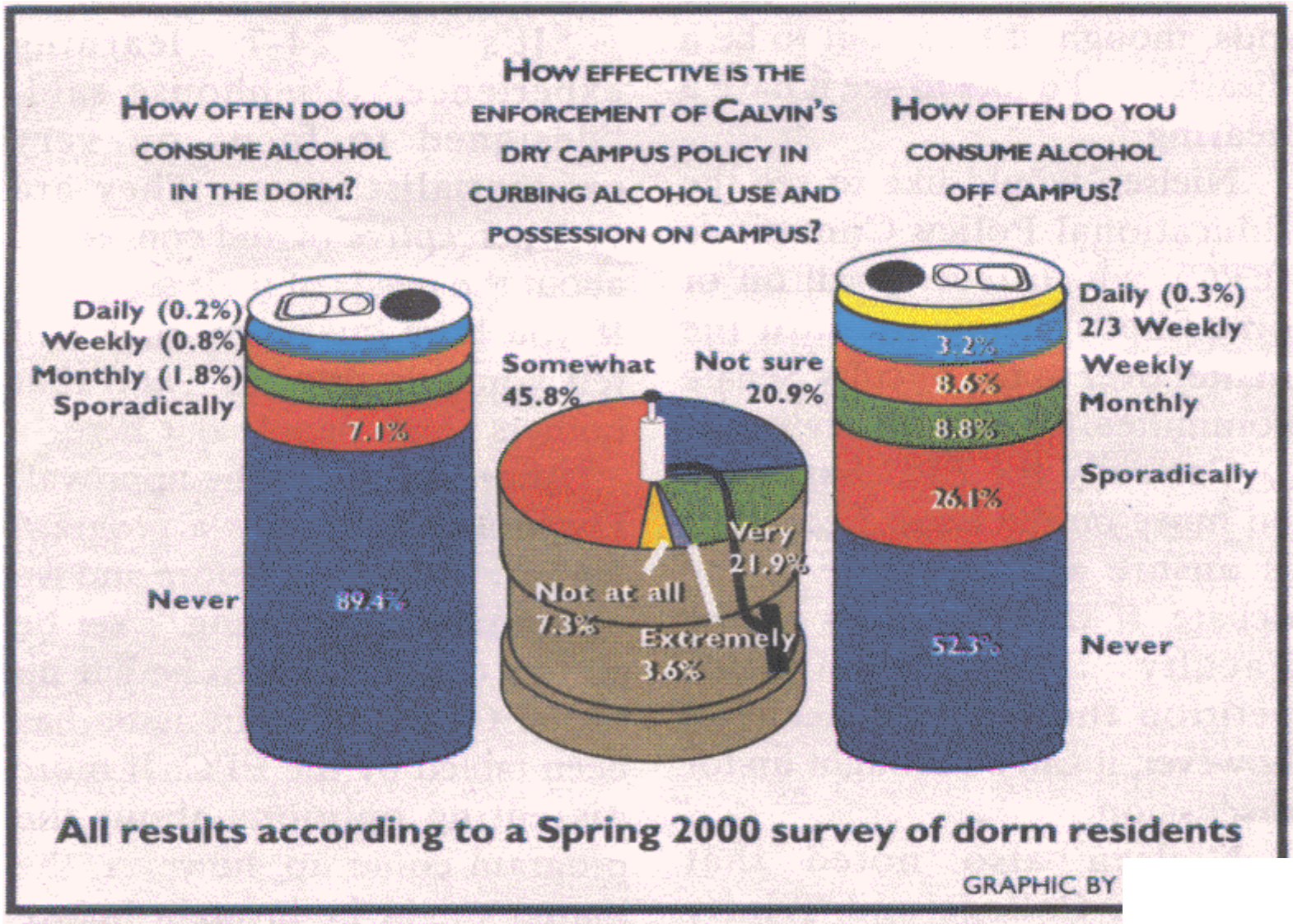

from Calvin College Chimes, Oct. 6, 2000

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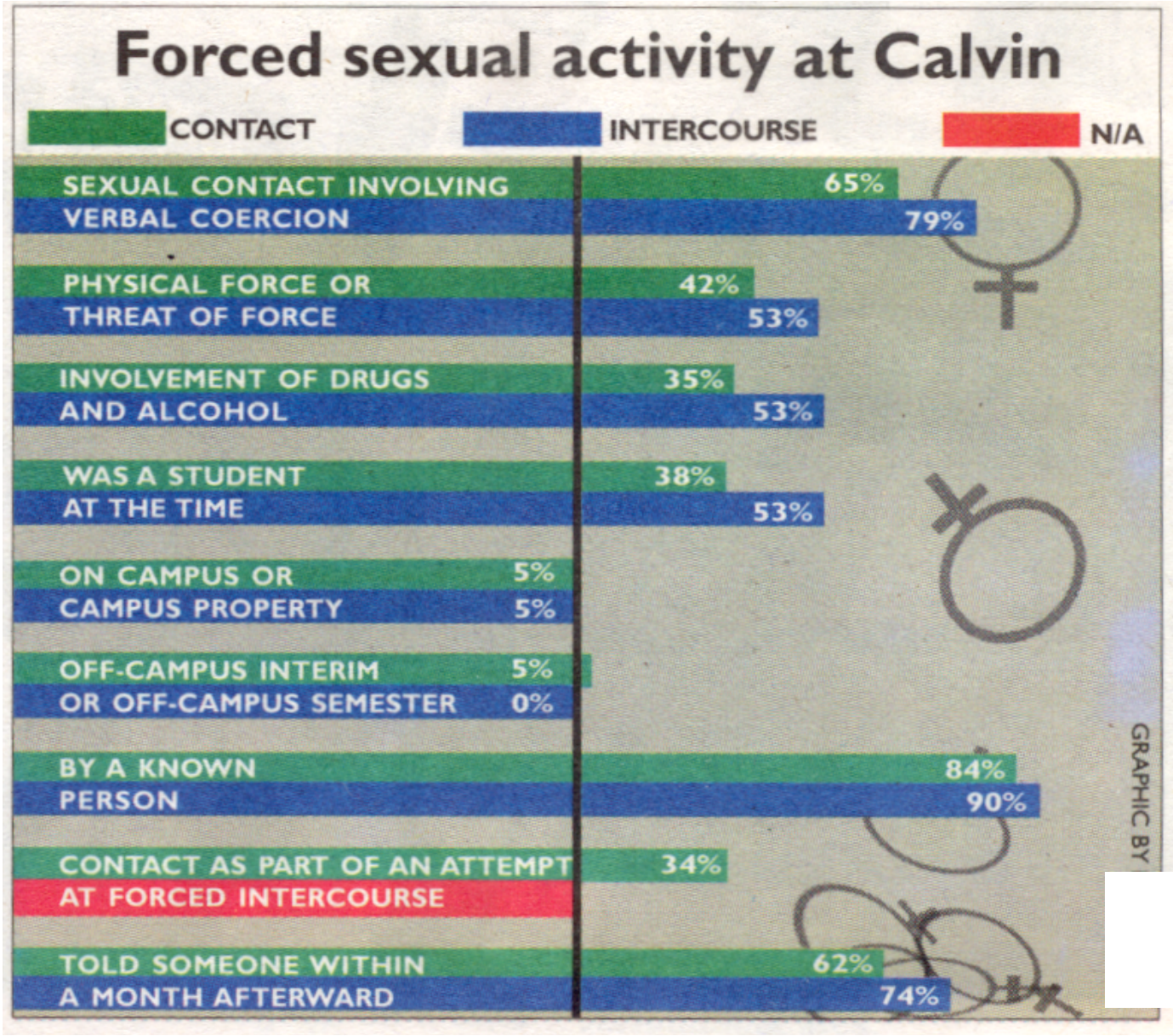

from Calvin College Chimes, Sept. 29, 2000

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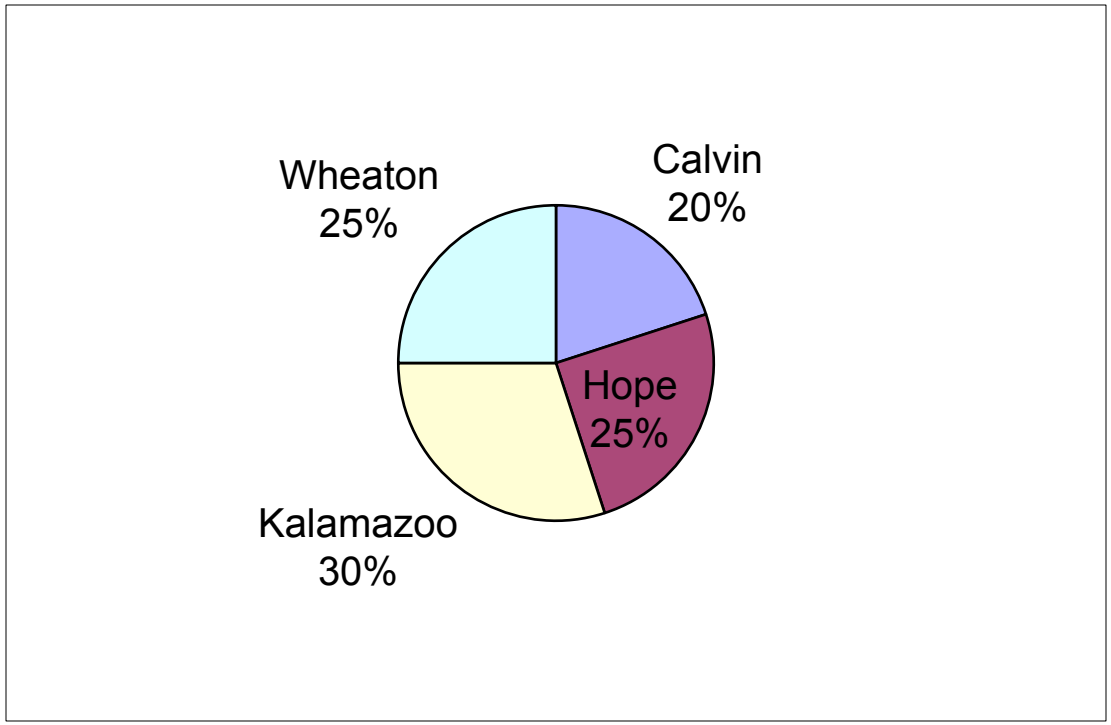

image from Exploring Microsoft Excel 97, Grauer & Barber, 1998

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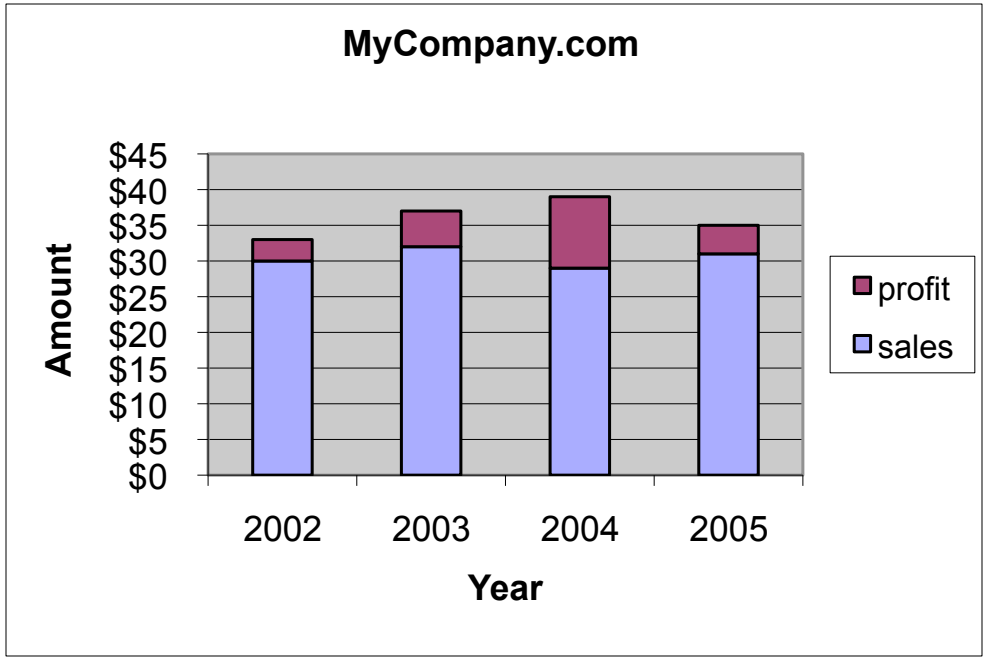

image from Exploring Microsoft Excel 97, Grauer & Barber, 1998

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Using Charts/Graphs Properly

- Decide what you want to present.
- Present it accurately and unambiguously.
  - Let the graphic values/change accurately depict the data values/change.
  - Clearly label all relevant details.
  - Don't graphically mix dissimilar elements.
  - Use the right type of graph.
  - Don't add "chartjunk".

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Technology and Lying

- It is as easy to lie or mislead with technology.

- "When he lies, he speaks his native language, for he is a liar and the father of lies." - John 8:44

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