1342-Notes_Navidi_2-3_more-graphs-for-quantitative-data

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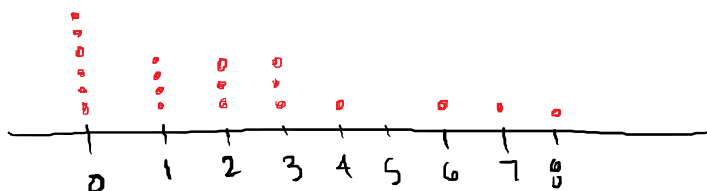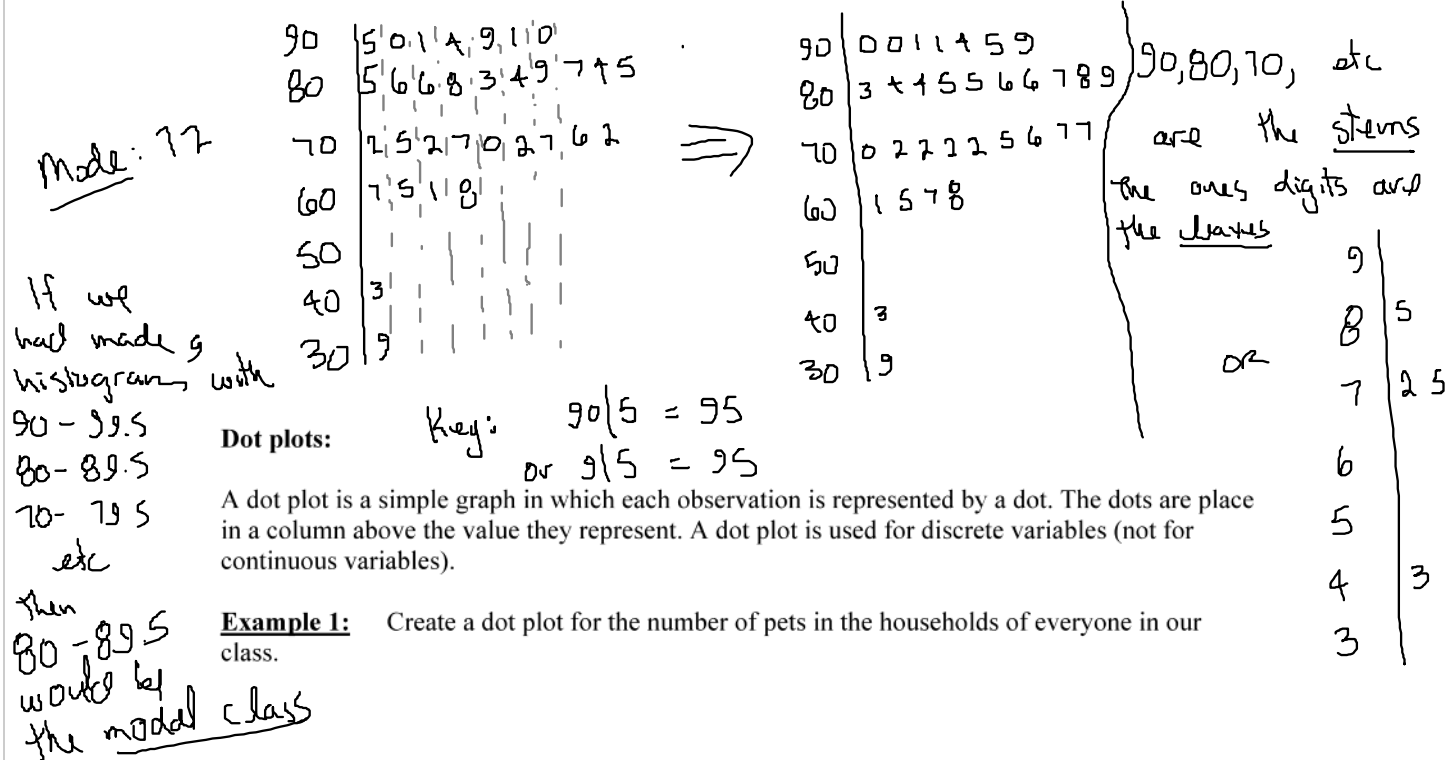📄 1342-Notes_Navidi_2-3_more-graphs-for-quantitative-data

2.3: More Graphs for Quantitative Data

Stem-and-leaf plots:

A *stem-and-leaf plot* provides a similar summary display of relative frequencies as a bar chart or histogram, but preserves the individual data points. In a stem-and-leaf plot, each value is divided into a "stem" and a "leaf." For example, the number 29 could be represented as a stem of 20 and a leaf of 9. The number 15.7 could be represented as a leaf of 15 and a stem of 0.7.

Example 1: Suppose the data below represent the scores of students on a class exam. Create a stem-and-leaf plot to summarize the data.

85	72	86	70	94	89	77	85
43	95	88	83	99	61	39	90
72	86	90	67	84	87	84	76
75	77	91	65	72	68	91	72

```
90 | 5 0 1 4 9 1 0
80 | 5 6 6 8 3 4 9 7 7 5
70 | 2 5 2 7 0 2 7 6 2
60 | 7 5 1 8
50 |
40 | 3
30 | 9
```

Mode: 72

⇒

```
90 | 0 0 1 1 4 5 9
80 | 3 4 4 5 5 6 6 7 8 9
70 | 0 2 2 2 2 5 6 7 7
60 | 1 5 7 8
50 |
40 | 3
30 | 9
```

90, 80, 70, etc are the **stems**

The ones digits are the **leaves**

If we had made a histogram with
90 – 99.5
80 – 89.5
70 – 79.5
etc

then
80 – 89.5
would be
the **modal class**

Key: 90|5 = 95 or 9|5 = 95

OR

```
9 |
8 | 5
7 | 2 5
6 |
5 |
4 | 3
3 |
```

Dot plots:

A dot plot is a simple graph in which each observation is represented by a dot. The dots are place in a column above the value they represent. A dot plot is used for discrete variables (not for continuous variables).

Example 1: Create a dot plot for the number of pets in the households of everyone in our class.

Time-series plots:

A *time-series plot* is used to analyze trends in data over time. The horizontal axis represents time; the vertical axis represents the value of the variable.

<u>Example 2:</u>   Create a time series plot for the U.S. national deficit since 1990. Data are from
https://www.thebalance.com/us-deficit-by-year-3306306 .

Fiscal Year	Deficit (in billions)	Fiscal Year	Deficit (in billions)	Fiscal Year	Deficit (in billions)
1990	$221	2000	($236)	2010	$1,294
1991	$269	2001	($128)	2011	$1,300
1992	$290	2002	$158	2011	$1,300
1993	$255	2003	$378	2012	$1,087
1994	$203	2004	$413	2013	$679
1995	$164	2005	$318	2014	$485
1996	$107	2006	$248	2015	$438
1997	$22	2007	$161	2016	$585
1998	($69)	2008	$459	2017	$665
1999	($126)	2009	$1,413	2018 (est)	$779