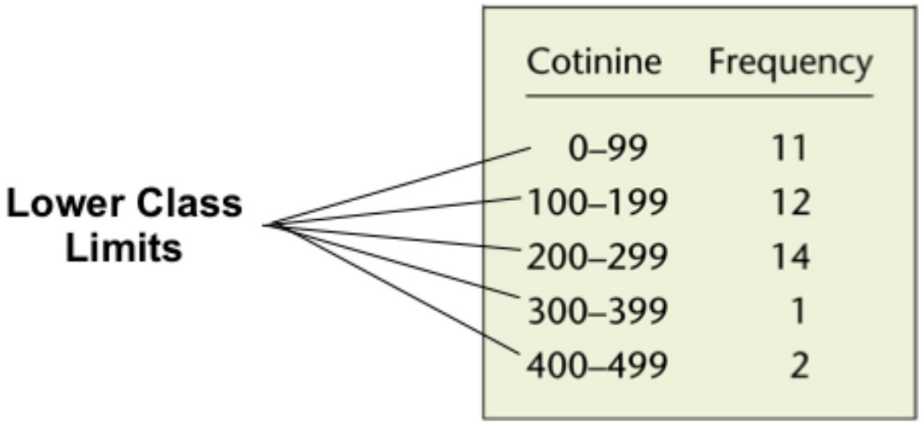
Section 2.2

Frequency Distribution

lists data values (either individually or by groups of intervals), along with their corresponding frequencies or counts

Lower Class Limits



Upper Class Limits

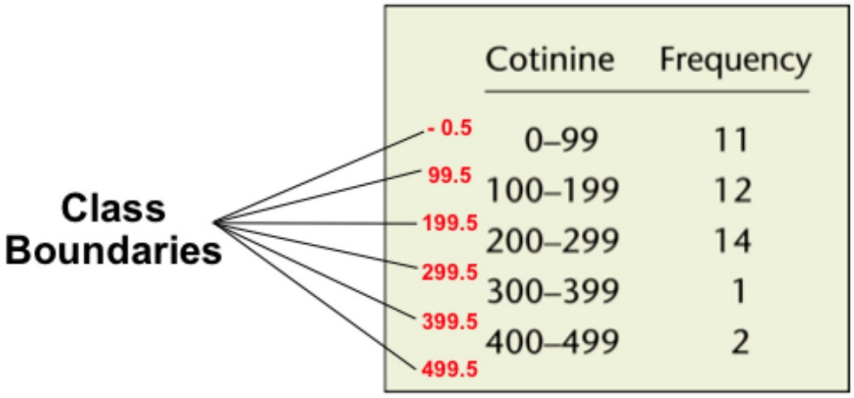
are the largest numbers that can actually belong to different classes

Upper Class Limits

Cotinine	Frequency
0–99	11
100–199	12
200–299	14
300–399	1
400–499	2

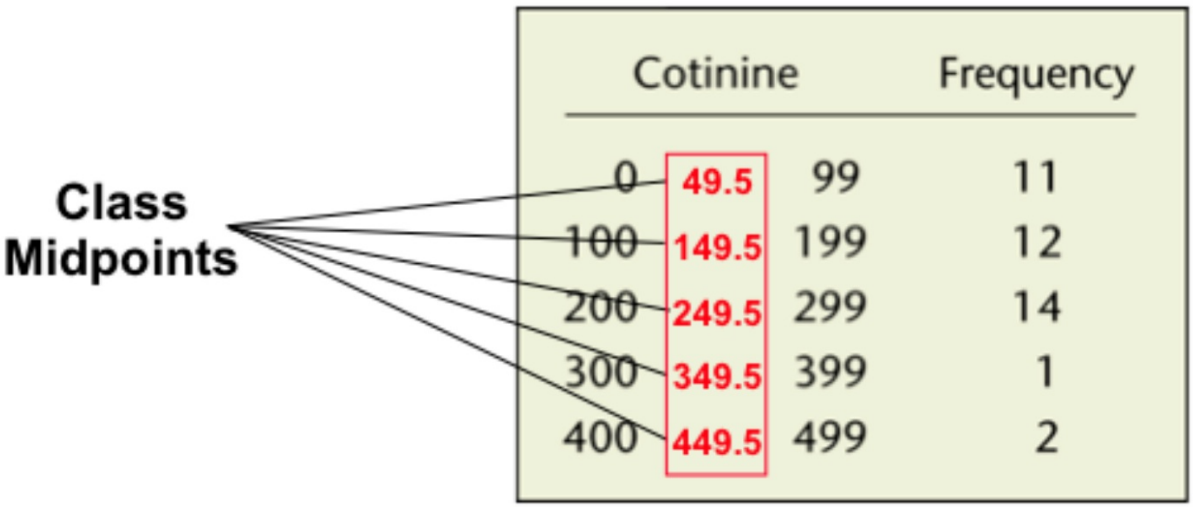
Class Boundaries

number separating classes



Class Midpoints

midpoints of the classes



Class Width

is the difference between two consecutive lower class limits or two consecutive lower class boundaries

Class Width

	Cotinine	Frequency
100	0–99	11
100	100–199	12
100	200–299	14
100	300–399	1
100	400–499	2

Relative Frequency Distribution (Percent)

$$\text{relative frequency} = \frac{\text{class frequency}}{\text{sum of all frequencies}}$$

Percent

Cotinine	Frequency
0–99	11
100–199	12
200–299	14
300–399	1
400–499	2

Total Frequency = 40

Table 2-3
Relative Frequency Distribution of Cotinine Levels in Smokers

Cotinine	Relative Frequency
0–99	28%
100–199	30%
200–299	35%
300–399	3%
400–499	5%

11/40 = 28%

12/40 = 30%

etc.

.28
.30
.35
.03
.05

Cumulative Frequency Distribution

Cotinine	Frequency
0–99	11
100–199	12
200–299	14
300–399	1
400–499	2

Table 2-4
Cumulative Frequency Distribution of Cotinine Levels in Smokers

Cotinine	Cumulative Frequency
Less than 100 (0-99)	11
Less than 200 (0-199)	23
Less than 300 (0-299)	37
Less than 400 (0-399)	38
Less than 500 (0-499)	40

Cumulative Frequencies

Frequency Tables

Table 2-2
Frequency Distribution of Cotinine Levels of Smokers

Cotinine	Frequency
0–99	11
100–199	12
200–299	14
300–399	1
400–499	2

Table 2-3
Relative Frequency Distribution of Cotinine Levels in Smokers

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Table 2-4
Cumulative Frequency Distribution of Cotinine Levels in Smokers

Cotinine	Cumulative Frequency
Less than 100	11
Less than 200	23
Less than 300	37
Less than 400	38
Less than 500	40

Purpose of Frequeny Distributions

1. **Large data sets can be summarized.**

2. **Can gain some insight into the nature of data.**

3. **Have a basis for constructing graphs.**

Steps to construct a frequency distribution

1. Decide on the number of classes (should be between 5 and 20) .

2. Calculate (round up).

$$\text{class width} \approx \frac{\text{(highest value) – (lowest value)}}{\text{number of classes}}$$

3. Starting point: Begin by choosing a lower limit of the first class.
4. Using the lower limit of the first class and class width, proceed to list the lower class limits.
5. List the lower class limits in a vertical column and proceed to enter the upper class limits.
6. Go through the data set putting a tally in the appropriate class for each data value.

Make a frequency distriution (with 4 classes)

Distances run (per week, in km) by members of the Midtown Meteors

48	62	55	38	46	40	53	63	34	45	36	51
52	45	33	47	55	42	39	57	49	56	48	60

Class Width $= \frac{63-33}{4} = \frac{30}{4} = 7.5 = 8$

Distances run (km)	frequency
33-40	𝍸 |
41-48	𝍸 ||
49-56	𝍸 ||
57-64	||||

Distances Run	f
33-40	6
41-48	7
49-56	7
57-64	4

Make a relative frequency distribution (with 5 classes)

Number of books read in the past year by a certain group of adults.

3 14 9 17 2 22 12 8 9 15 16 8 13
20 12 4 15 24 18 10 6 11 18 15 25