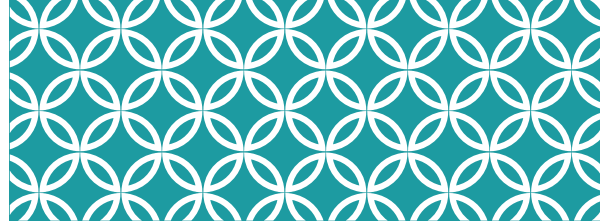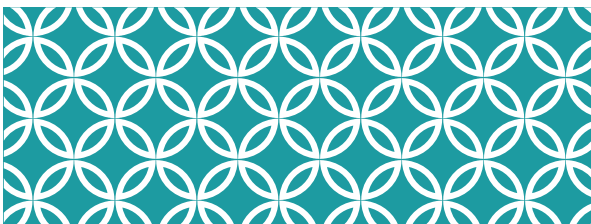OVERVIEW OF DATA | Lesson 2.1

OVERVIEW OF USING DATA: DEFINITIONS AND GOALS | Lesson 2.1.1

OVERVIEW OF USING DATA: DEFINITIONS AND GOALS

- **Data**: The facts and figures collected, analyzed, and summarized for presentation and interpretation.
- **Variable**: A characteristic or a quantity of interest that can take on different values.
- **Observation**: Set of values corresponding to a set of variables.
- **Variation**: The difference in a variable measured over observations.
- **Random variable/uncertain variable**: A quantity whose values are not known with certainty.

TABLE 2.1 - DATA FOR DOW JONES INDUSTRIAL INDEX COMPANIES

Company	Symbol	Industry	Share Price ($)	Volume
Alcoa	AA	Manufacturing	8.03	8,360,181
American Express	AXP	Financial	66.83	5,020,905
Boeing	BA	Manufacturing	87.82	3,377,781
Bank of America	BAC	Financial	11.67	65,564,239
Caterpillar	CAT	Manufacturing	80.60	4,418,069
Cisco Systems	CSCO	Technology	26.47	37,824,927
Chevron Corporation	CVX	Chemical, Oil, and Gas	116.21	4,331,463
DuPont	DD	Chemical, Oil, and Gas	48.97	5,610,522
Walt Disney	DIS	Entertainment	61.28	5,893,711
General Electric	GE	Conglomerate	21.81	74,030,249
The Home Depot	HD	Retail	74.04	5,627,195
Hewlett-Packard	HPQ	Technology	19.68	20,229,367
IBM	IBM	Technology	190.29	13,890,330
Intel	INTC	Technology	22.38	33,303,041
Johnson & Johnson	JNJ	Pharmaceuticals	84.04	6,094,620
JPMorgan Chase	JPM	Banking	47.28	12,334,210
Coca-Cola	KO	Food and Drink	42.60	8,916,978
McDonald's	MCD	Food and Drink	99.84	5,571,538
3M	MMM	Conglomerate	103.79	1,830,264
Merck	MRK	Pharmaceuticals	47.18	6,601,650
Microsoft	MSFT	Technology	28.77	76,918,154
Pfizer	PFE	Pharmaceuticals	30.91	16,917,714
Procter & Gamble	PG	Consumer Goods	81.42	7,894,506
AT&T	T	Telecommunications	36.28	14,762,872
Travelers	TRV	Insurance	64.79	1,284,813
UnitedHealth Group Inc.	UNH	Healthcare	59.94	3,730,520
United Technologies Corporation	UTX	Conglomerate	92.92	2,466,956
Verizon Communications	VZ	Telecommunications	52.08	9,643,848
Wal-Mart	WMT	Retail	78.07	4,766,959
ExxonMobil	XOM	Chemical, Oil, and Gas	87.02	9,446,864

TYPES OF DATA | Lesson 2.1.2

TYPES OF DATA

- **Population**: All elements of interest
- **Sample**: Subset of the population
  - **Random sampling** - A sampling method to gather a representative sample of the population data.
- **Quantitative data**: Data on which numeric and arithmetic operations, such as addition, subtraction, multiplication, and division, can be performed.
- **Categorical data**: Data on which arithmetic operations cannot be performed.

TYPES OF DATA

- **Cross-sectional data**: Data collected from several entities at the same, or approximately the same, point in time.
- **Time series data**: Data collected over several time periods.
  - Graphs of time series data are frequently found in business and economic publications.
    - Help analysts understand what happened in the past, identify trends over time, and project future levels for the time series.

FIGURE 2.1 - DOW JONES INDEX VALUES SINCE 2002

SOURCES OF DATA

- Sources of data
  - Experimental study - A variable of interest is first identified.
    - Then one or more other variables are identified and controlled or manipulated so that data can be obtained about how they influence the variable of interest.
  - Nonexperimental study or observational study - Make no attempt to control the variables of interest.
    - A survey is perhaps the most common type of observational study.

FIGURE 2.2 - CUSTOMER OPINION QUESTIONNAIRE USED BY CHOPS CITY GRILL RESTAURANT