MIS 0855 Spring 2015 – Data Science

Day 2 – Data, Information, and Knowledge

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Data, Information, and Knowledge

● We tend to use data and information interchangeably.

● Can you think of a difference between data, information, and knowledge?

Data, Information, and Knowledge

● Data : Raw, unorganized facts that describe the characters of an event or an object

● Information : Data that is processed and organized with meaning and value

● Knowledge : Collection of information and data that is useful for decision makings

Data – Example

Student	Exam Score	Attendance
Bob	87	90%
Sue	98	100%
Jack	41	30%
Mary	77	80%
Phillip	65	60%
Steve	88	95%
Helen	72	82%

● What information can we find out from this data?

Information – Example

Student	Exam Score	Attendance
Bob	87	90%
Sue	98	100%
Jack	41	30%
Mary	77	80%
Phillip	65	60%
Steve	88	95%
Helen	72	82%

Exam Analysis:

Mean	75.4
Median	77
Lowest Score	41 (Jack)
Highest Score	98 (Sue)

● What can we find out from this information?

Knowledge – Example

Student	Exam Score	Attendance
Bob	87	90%
Sue	98	100%
Jack	41	30%
Mary	77	80%
Phillip	65	60%
Steve	88	95%
Helen	72	82%

Exam Analysis:

Mean	75.4
Median	77
Lowest Score	41 (Jack)
Highest Score	98 (Sue)

● The students who get lower exam scores also have lower attendance.

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Data – Another Example

Comcast Corporation (CMCSA) - NasdaqGS ⭐ Watchlist

58.03 ↑0.81(1.42%) 10:53AM EST - Nasdaq Real Time Price

Prices

Date	Open	High	Low	Close	Volume	Adj Close*
Dec 22, 2014	57.22	57.81	57.06	57.22	19,139,100	57.22
Dec 19, 2014	56.16	57.34	56.16	57.17	20,976,200	57.17
Dec 18, 2014	55.40	56.54	54.98	56.29	17,210,100	56.29
Dec 17, 2014	54.74	55.49	54.74	55.34	12,660,600	55.34
Dec 16, 2014	54.81	55.84	54.74	54.81	15,471,600	54.81
Dec 15, 2014	55.68	55.75	54.83	54.94	12,780,100	54.94
Dec 12, 2014	55.00	55.98	54.98	55.35	11,322,400	55.35
Dec 11, 2014	55.73	56.45	55.48	55.90	10,482,700	55.90
Dec 10, 2014	56.02	56.34	55.32	55.57	12,149,600	55.57
Dec 9, 2014	55.94	56.55	55.65	56.19	10,190,800	56.19
	56.69	56.02	56.36	9,560,200	56.36
	56.73	56.17	56.34	7,633,500	56.34
	57.23	56.10	56.38	15,036,200	56.38
Dec 3, 2014	57.06	57.25	56.52	57.14	10,377,100	57.14
Dec 2, 2014	56.49	57.16	56.30	57.02	9,929,100	57.02
Dec 1, 2014	56.97	56.97	56.28	56.60	11,351,300	56.60
Nov 28, 2014	57.28	57.28	56.78	57.04	5,535,500	57.04
Nov 26, 2014	56.77	56.91	56.45	56.86	9,200,800	56.86
Nov 25, 2014	55.64	56.69	55.40	56.62	17,547,400	56.62
Nov 24, 2014	54.32	55.04	54.26	55.02	12,912,900	55.02
Nov 21, 2014	54.85	55.19	53.86	54.08	18,891,900	54.08
Nov 20, 2014	54.37	54.47	54.05	54.38	9,240,400	54.38
Nov 19, 2014	54.33	54.41	53.91	54.38	16,690,500	54.38
Nov 18, 2014	54.20	54.58	53.77	54.42	13,817,800	54.42
Nov 17, 2014	54.01	54.35	53.69	54.15	13,055,700	54.15
Nov 14, 2014	54.48	54.48	53.77	54.10	10,018,600	54.10
Nov 13, 2014	53.70	54.61	53.41	54.30	20,752,800	54.30
	53.00				28,902,800	53.60
Nov 11, 2014	52.88	53.09	51.56	52.96	38,985,300	52.96
Nov 10, 2014	55.24	55.25	51.79			

● What kind of information can we get from this data?
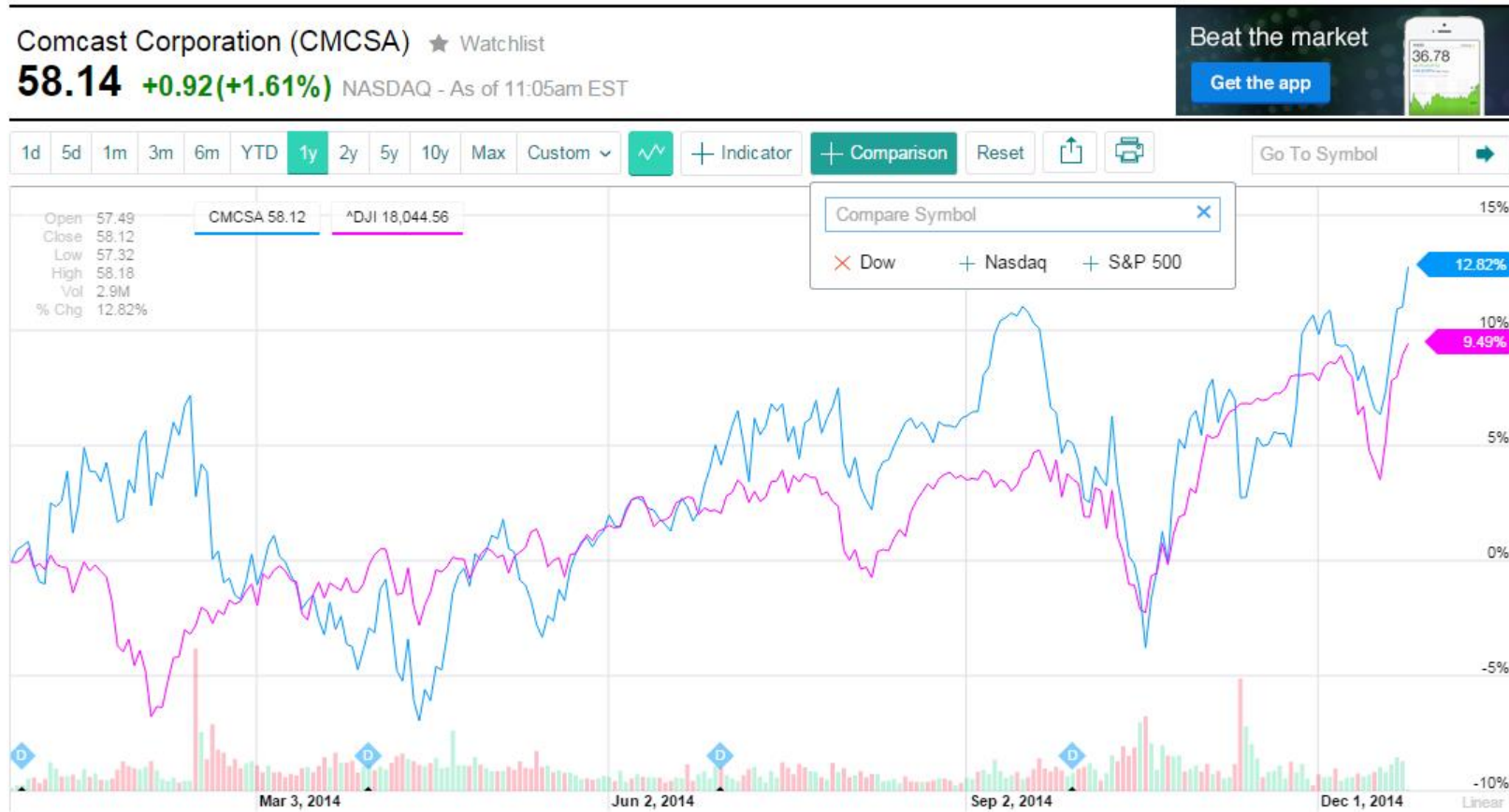
http://finance.yahoo.com/q/hp?s=CMCSA
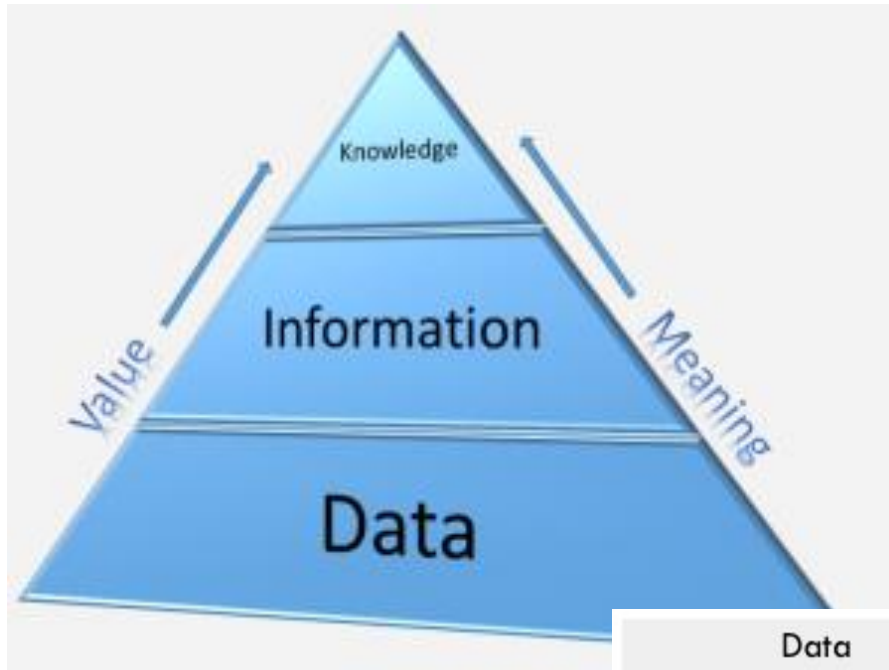
Information – Another Example

● Comcast stock has risen by 12.8 for the last one year.

Knowledge – Another Example

● Comcast has outperformed the Dow-Jones Index by 3.33%-point.

Other examples in data, information, and knowledge?

http://www.open-bigdata.com/about/
http://www.nickdiakopoulos.com/2011/12/16/data-information-knowledge-visualization/