

Name: Key

**Problem Set 1.1: Uni-Variate Data Analysis**

Mark Twain – “If you don’t read the newspaper you are uninformed, if you do read the newspaper you are misinformed”.

[http://en.wikiquote.org/wiki/Talk:Mark\\_Twain](http://en.wikiquote.org/wiki/Talk:Mark_Twain), 12/27/11

Problem set 1-1

1. How can Oscar Mayer claim that the turkey is 98% fat free when almost 20% of the calories come from fat?

Source: CalorieCount, 98% Fat Free Turkey, <http://caloriecount.about.com/calories-oscar-mayer-deli-fresh-turkey-i133863>, 5/31/09

<b>Nutrition Facts</b>	
Serving Size 1 serving (56.0 g)	
Amount Per Serving	
<b>Calories</b> 50	Calories from Fat 9
% Daily Value*	
<b>Total Fat</b> 1.0g	<b>2%</b>
Saturated Fat 0.5g	<b>3%</b>
<b>Cholesterol</b> 25mg	<b>8%</b>
<b>Sodium</b> 470mg	<b>20%</b>
<b>Protein</b> 11.0g	
Vitamin A 0%	Vitamin C 20%
Calcium 0%	Iron 0%
* Based on a 2000 calorie diet	

Calories in Deli Fresh Turkey Breast Thick Carved Oven Roasted 98% Fat Free

Manufactured by [Oscar Mayer](#)

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**1 Secret To A Flat Belly:**  
Lose up to 10lbs a week by obeying this 1 "secret". ResV in the News!  
[CalorieLab.com/News](http://CalorieLab.com/News)

Written by Nils Ahbel, Edited by Gloria Barrett © 2005, All rights reserved.

$\frac{9}{50} \approx .18 \rightarrow 18\% \text{ fat}$  implies  $100 - 18 = 82 \neq 98$ .

Look at grams and you see  $\frac{1 \text{ gram}}{56 \text{ grams}}$  from fat.

$\frac{1}{56} \approx 0.0178 \approx 1.78\% \text{ from fat}$   
which is almost 2%

$100 - 2 = 98\%$

They are using the fat grams, not calories, to market the product.

2. The article, "El Niño Seen As Trigger For Violence In The Tropics", reports that from 1950 to 2004 civil conflict was more likely to occur in tropical countries during El Niño years. (El Niño, the opposite of La Niña, results in most tropical countries experiencing hotter, drier weather). There was a 3% chance of conflict during La Niña and that rose to 6% during El Niño. This change can be exaggerated or diminished depending on the way you compare 3% and 6%. Use subtraction, division, and percent change to create three comparative statistics.

Source: NPR, El Niño Seen As Trigger For Violence In The Tropics, <http://www.npr.org/2011/08/24/139914440/el-nino-seen-as-trigger-for-violence-in-the-tropics>, 8/24/11

Subtraction:  $6\% - 3\% = \underline{3\%}$

Division:  $\frac{6\%}{3\%} = \underline{2}$

Percent Change:  $\frac{6\% - 3\%}{3\%} = \frac{3\%}{3\%} = \underline{1}$

Using Subtraction:

Conflict rose by 3% from La Niña to El Niño years.

Using Division:

Conflict doubled in the El Niño years.

Using % change:

Conflict rose by 100% from La Niña to El Niño years.

For 3-6, refer to the table at the bottom of the page.

3. How many crimes were perpetrated in the US in 1995?

13867 thousand or 13,867,000

4. What percentage of the total crimes were violent crimes?

$\frac{1799}{13867} \approx 0.129732$  about 13%

5. What percentage of the Property Crime in Metropolitan Areas was Motor Vehicle Theft?

$\frac{1381}{10426} \approx 0.132457$  about 13%

6. Write a complete sentence that fully describes what the number 234, found in the Violent Crime row, means. Write the sentence in the style of a newspaper article.

According to the FBI, there were 234 violent crimes committed per 100,000 people in rural areas in the us in 1995.

No. 314. Crimes and Crime Rates, by Type and Area: 1995

[In thousands, except rate. Rate per 100,000 population; see headnote, table 313. Estimated totals based on reports from city and rural law enforcement agencies representing 96 percent of the national population. For definitions of crimes, see text, section 5]

TYPE OF CRIME	UNITED STATES		METROPOLITAN AREAS <sup>1</sup>		OTHER CITIES		RURAL AREAS	
	Total	Rate	Total	Rate	Total	Rate	Total	Rate
Total . . . . .	13,867	5,278	12,045	5,761	1,158	5,315	664	2,083
Violent crime . . . . .	1,799	685	1,619	774	105	484	75	234
Murder and nonnegligent manslaughter . . . . .	22	8	19	9	1	5	2	5
Forcible rape . . . . .	97	37	81	39	8	38	8	25
Robbery . . . . .	581	221	560	268	16	72	5	17
Aggravated assault . . . . .	1,099	418	959	459	80	369	60	187
Property crime . . . . .	12,068	4,593	10,426	4,986	1,053	4,833	590	1,850
Burglary . . . . .	2,595	988	2,192	1,048	201	924	202	634
Larceny-theft . . . . .	8,001	3,045	6,853	3,278	799	3,669	348	1,091
Motor vehicle theft . . . . .	1,473	561	1,381	660	52	240	40	125

<sup>1</sup> For definition, see Appendix II.

Source: U.S. Federal Bureau of Investigation, *Crime in the United States*, annual.

For 7-8, refer to the table at the bottom of the page.

7. How many families received child support that had incomes of \$15,000 and over?

$$4421 - 1054 = 3367$$

3367 thousand or 3,367,000 families

8. Consider the unemployment compensation of white families.

a. What percentage of white families receiving specified sources of income received unemployment compensation?

$$\frac{4336}{58872} \approx .07361 \quad \underline{\text{about } 7\%}$$

b. What percentage of families who received unemployment compensation were white?

$$\frac{4336}{5022} \approx .863401 \quad \underline{\text{about } 86\%}$$

Think about the way these questions were asked. They come from the same data.

No. 581. Number of Families Receiving Specified Sources of Income, by Characteristic of Householder and Family Income: 1995

[In thousands. Families as of March 1996. Based on Current Population Survey; see text, sections 1 and 14, and Appendix III]

SOURCE OF INCOME	Total families <sup>1</sup>	Under 65 years old	65 years old and over	White	Black	Hispanic origin <sup>2</sup>	Under \$15,000	\$15,000 to \$24,999	\$25,000 to \$34,999
Total	69,597	58,292	11,306	<u>58,872</u>	8,055	6,287	9,723	10,040	9,828
Earnings	59,055	54,301	4,753	50,186	6,555	5,406	5,358	7,367	8,279
Wages and salary	57,324	52,965	4,359	48,589	6,480	5,276	4,991	7,050	7,937
Social Security, railroad retirement	16,356	5,862	10,494	14,370	1,592	915	2,716	3,885	3,116
Supplemental Security Income (SSI)	2,421	1,921	500	1,592	669	360	1,026	591	323
Public assistance	3,616	3,530	86	2,153	1,262	767	2,493	594	251
Veterans payments	1,735	1,054	681	1,507	172	55	163	247	278
Unemployment compensation	<u>5,022</u>	4,807	215	<u>4,336</u>	514	503	521	732	850
Workers compensation	1,571	1,458	114	1,337	165	137	122	210	265
Retirement income	10,001	4,208	5,792	9,106	697	339	473	1,786	2,019
Private pensions	6,328	2,259	4,069	5,810	410	211	337	1,314	1,425
Military retirement	956	673	283	851	79	29	8	83	131
Federal employee pensions	1,182	445	737	1,030	125	27	47	150	226
State or local employee pensions	1,911	785	1,126	1,746	127	57	70	260	361
Other income	10,322	9,895	427	8,496	1,393	776	1,761	1,509	1,472
Alimony	248	237	11	210	33	12	38	31	46
Child support	<u>4,421</u>	4,378	43	3,645	664	307	<u>1,054</u>	801	774
Education assistance	4,784	4,648	137	3,895	642	371	603	596	591

<sup>1</sup> Includes other items not shown separately. <sup>2</sup> Persons of Hispanic origin may be of any race.

Source: U.S. Bureau of the Census, "Current Population Survey, Annual Demographic Survey, March Supplement"; published 18 November 1996; <<http://ferret.bls.census.gov/macro/031996/faminc/09000.htm>>.

\*1 ton = 2000 pounds (lbs)

For 9-10, refer to the table at the bottom of the page.

9. How many pounds of Waste were generated in the US in 1995?

208.1 million tons = 416 200 millions pounds → 416.2 billion lbs

416 200 000 000 lbs  
or

10. In 1995, were "Other Nonferrous Metals" a problem as far as recovery is concerned?

No, because about 70% of the "other nonferrous metals" were recovered.

For a. and b. below, write as if the sentences will appear in a newspaper article.

a) Write a sentence that convinces that Other Nonferrous Metals are recovered the most of all materials.

In the US in 1995, almost 70% of "other nonferrous metals" generated were recovered, more than any other category.

b) Write a sentence that convinces that Other Nonferrous Metals are recovered the least of all materials.

In the US in 1995, only 0.9 trillion tons of "other nonferrous metals" were recovered, the least of all waste categories.

No. 385. Generation and Recovery of Selected Materials in Municipal Solid Waste: 1970 to 1995

[In millions of tons, except as indicated. Covers post-consumer residential and commercial solid wastes which comprise the major portion of typical municipal collections. Excludes mining, agricultural and industrial processing, demolition and construction wastes, sewage sludge, and junked autos and obsolete equipment wastes. Based on material-flows estimating procedure and wet weight as generated]

ITEM AND MATERIAL	1970	1980	1985	1990	1991	1992	1993	1994	1995
Waste generated, total	121.9	151.5	164.4	197.3	196.9	202.2	205.4	209.6	208.1
Paper and paperboard	44.2	54.7	61.5	72.7	71.0	74.3	77.4	80.8	81.5
Ferrous metals	12.6	11.6	10.9	12.6	12.7	12.1	11.9	11.8	11.6
Aluminum	0.8	1.8	2.3	2.8	2.8	2.9	2.9	3.0	3.0
Other nonferrous metals	0.7	1.1	1.0	1.1	1.1	1.1	1.1	1.4	1.3
Glass	12.7	15.0	13.2	13.1	12.6	13.1	13.6	13.4	12.8
Plastics	3.1	7.9	11.6	17.1	17.7	18.4	19.0	19.3	19.0
Yard waste	23.2	27.5	30.0	35.0	35.0	35.0	33.3	31.5	29.8
Other wastes	24.6	31.9	33.9	42.8	44.0	45.3	46.2	48.5	49.1
Materials recovered, total	8.6	14.5	16.4	33.9	37.7	41.4	44.8	52.0	56.2
Paper and paperboard	7.4	11.9	13.1	20.2	22.5	24.5	25.5	29.5	32.6
Ferrous metals	0.1	0.4	0.4	2.6	3.1	3.4	3.9	4.1	4.2
Aluminum	-	0.3	0.6	1.0	1.0	1.1	1.1	1.2	1.0
Other nonferrous metals	0.3	0.5	0.5	0.7	0.7	0.7	0.7	1.0	0.9
Glass	0.2	0.8	1.0	2.6	2.6	2.9	3.0	3.1	3.1
Plastics	-	-	0.1	0.4	0.5	0.6	0.7	0.9	1.0
Yard waste	-	-	-	4.2	4.8	5.4	6.9	8.0	9.0
Other wastes	0.6	0.6	0.7	2.1	2.6	2.9	3.1	4.2	4.3
Percent of generation recovered, total	7.1	9.6	10.0	17.2	19.1	20.5	21.8	24.8	27.0
Paper and paperboard	16.7	21.8	21.3	27.8	31.7	33.0	32.9	36.5	40.0
Ferrous metals	0.8	3.4	3.7	20.4	24.1	27.7	32.8	35.0	36.5
Aluminum	-	16.7	26.1	35.9	35.6	38.7	35.8	37.8	34.6
Other nonferrous metals	42.9	45.5	50.0	66.4	65.5	63.4	63.1	73.3	69.5
Glass	1.6	5.3	7.6	20.0	20.3	22.0	22.1	23.3	24.5
Plastics	-	-	0.9	2.2	2.5	3.3	3.5	4.9	5.3
Yard waste	-	-	-	12.0	13.7	15.4	20.8	25.4	30.3
Other wastes	2.4	1.9	2.1	4.9	5.8	6.4	6.8	8.6	8.7

- Represents zero.

Source: Franklin Associates, Ltd., Prairie Village, KS, Characterization of Municipal Solid Waste in the United States: 1995. Prepared for the U.S. Environmental Protection Agency.

this is  
0.9  
1.3