

Assignment #2

Due Thursday 6/10/10 by 6 p.m. in the Econ 300/QAC201 slot in the Economics Alcove

Please show the calculations used to arrive at your answers. Round final answers to the second decimal place if necessary.

- A. The incomes of American households in 2008 were distributed around a mean of \$68,424 and a median of \$50,303 (http://www.census.gov/hhes/www/cpstables/032009/hhinc/new01_001.htm).
- 1) What can you say about the symmetry of the distribution?
 - 2) What would be the estimated total income for the whole country (about 117 million households)?
- B. The method of forecasting by consensus has become popular. For example, on December 10, 2007, *Business Week* got 54 economists' predictions for the real GDP growth rate for 2008. The proportions in each forecast range are shown below:

<u>growth rate</u>	<u>proportion of forecasters</u>
0.0—0.4%	.02
0.5—0.9%	.02
1.0—1.4%	.05
1.5—1.9%	.26
2.0—2.4%	.35
2.5—2.9%	.26
3.0—3.4%	.02
3.5—3.9%	.00
4.0—4.4%	.02

- 1) What is the average forecast? What is the standard deviation?
[hint: Assume the mean value for each interval is the midpoint of the interval.]
 - 2) The actual growth rate for 2008 was 0.4% [<http://www.bea.gov>]. What do you think of the method of consensus forecasting?
 - 3) The actual growth rate for 2008 was much lower than in the preceding two years (2007: 2.1%; 2006: 2.7%). Why would guesses in the 1.5— 2.4% range have been reasonable for the 2008 growth rate? Why do you think so many forecasters were higher?
- C. The U.S. annual average unemployment rates were as follows over the last ten years (http://www.bls.gov/cps/prev_yrs.htm):

<u>Year</u>	<u>Unemployment rate</u>	<u>Year</u>	<u>Unemployment rate</u>
2000	4.0%	2005	5.1%
2001	4.7%	2006	4.6%
2002	5.8%	2007	4.6%
2003	6.0%	2008	5.8%
2004	5.5%	2009	9.3%

- 1) Calculate the average and standard deviation for the first 5 years, 2000-2004.

- C. 2) Calculate the average and standard deviation for the last 5 years, 2005-2009.
- 3) Calculate the average and standard deviation for all 10 years. How are these answers related to the answers in parts 1 and 2?
- D. The following 18 200 and 300-level courses were offered in the Wesleyan economics department in Spring 2010:

<u>Course and section</u>	<u>Number of students</u>	<u>Course and section</u>	<u>Number of students</u>
Econ 213	29	Econ 302-2	35
Econ 224	35	Econ 308	25
Econ 225	35	Econ 310	18
Econ 253	31	Econ 318	17
Econ 270	32	Econ 328	25
Econ 300-1	28	Econ 331	11
Econ 300-2	17	Econ 341	28
Econ 301-1	37	Econ 343	15
Econ 302-1	23	Econ 385	25

- 1) What is the average class size?
- 2) Do the 466 students attending these courses have a different view? (I have made the simplifying assumption that no one is taking more than one of these courses.) Calculate the average class size that a student sees. Explain in words why this number is different from the average in part 1.
- E. Suppose that a group of 100 Wesleyan professors consists of 4 subgroups, in the following proportions (the approx. composition of the tenure-track professors in Division II plus psychology):

	<u>men</u>	<u>women</u>
economics	10%	5%
other departments	47%	38%

If a professor is chosen at random to be surveyed, what is the chance that the professor will be:

- 1) A man?
- 2) A man, or an economics professor?
- 3) A man, and an economics professor?
- 4) If the chosen professor is in fact a man, what is the chance that he is an economics professor?
- F. Iggy the internet marketer sends out 100,000 emails per day, and for each email has a .002% chance (2 out of 100,000 chance) of making a sale.
- 1) What is the chance he will make no sales at all on a given day?
- 2) What is the chance he will make at least one sale?
- 3) If he sells for 260 days of the year, about how many of the days will he make at least one sale?
- 4) What do these results tell you about the likelihood of stamping out spamming in our time, even though almost everyone dislikes it?