



# Statistics for Social Sciences I

## Test 1 (A)

Name: \_\_\_\_\_

Group: \_\_\_\_\_

Date: \_\_\_\_\_

**PROBLEM 1.** (1 point) The following table, giving the Democracy ratings of the Middle Eastern countries, comes from the 2015 Democracy Index which rates the state of democracy in 167 countries numerically between 0 and 10 and classifies them as one of four regime types *full democracies* (ratings > 8), *flawed democracies* (6-8), *hybrid regimes* (4-6) and *authoritarian regimes* [0-4].

Country	2015 Democracy Rating	Position	Classification
Israel	7.77	34	Flawed democracy
Cyprus	7.53	39	Flawed democracy
Turkey	5.12	97	Hybrid regime
Lebanon	4.86	102	Hybrid regime
Palestinian Authority	4.57	110	Hybrid regime
Iraq	4.08	115	Hybrid regime
Jordan	3.86	120	Authoritarian regime
Kuwait	3.85	121	Authoritarian regime
Egypt	3.18	134	Authoritarian regime
Qatar	3.18	134	Authoritarian regime
Oman	3.04	142	Authoritarian regime
Bahrain	2.79	146	Authoritarian regime
United Arab Emirates	2.75	148	Authoritarian regime
Yemen	2.24	154	Authoritarian regime
Iran	2.16	156	Authoritarian regime
Saudi Arabia	1.93	160	Authoritarian regime
Syria	1.43	166	Authoritarian regime

For this data set

- a) The modal Democracy Rating is 3.18 and the range of the Democracy ratings is [1.43 – 7.77]
- b) The median Position is 134 and the interquartile range of positions is 132.
- c) The range of positions is [34 – 166] and the relative frequency of Authoritarian Regimes is 0.647.
- d) The range of Democracy Ratings is 6.34 and the interquartile range of Positions is 45.

a)	b)	c)	d) X
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**PROBLEM 2. (1 point)** The table below shows an index number reflecting the relative, average Democracy Rating of North African and Middle Eastern countries with respect to the base year of 2006.

Year	2006	2008	2010	2011	2012	2013	2014	2015
Index	100.000	98.305	99.435	102.260	105.367	103.955	103.107	101.130

The Democracy Rating of North African and Middle Eastern countries in 2015 is 3.58. Therefore, the Democracy Rating of these countries in 2014 is:

- a) 3.69
- b) 3.65
- c) 3.54
- d) None of the above.

a)	b) X	c)	d)
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**PROBLEM 3. (2 points)** The table below is a summary of the output of a regression line modeling the position in the Democracy Rating List as a function of the 2015 Democracy Rating calculated using the data in Problem 1.

Resumen

<i>Estadísticas de la regresión</i>	
Coefficiente de correlación múltiple	-0,996868004
Coefficiente de determinación R <sup>2</sup>	0,993745817
R <sup>2</sup> ajustado	0,993328871
Error típico	3,120542818
Observaciones	17

	<i>Coefficientes</i>	<i>Error típico</i>
Intercepción	203,0367877	1,819926143
Variable Rating	-21,34947763	0,43730985

Norway gained a rating of 9.93 in the 2015 list. Use the regression line to predict their position in the overall list. Does this prediction appear reasonable? If not, why?

**Using the regression line, we have that the position of Norway is predicted to be  $203,0367 - 21,349 \cdot 9.93 = -8.96$ . This is clearly impossible!**

**The reason is that the regression line is not reliable for prediction very far away from the data we have (as is the case here).**

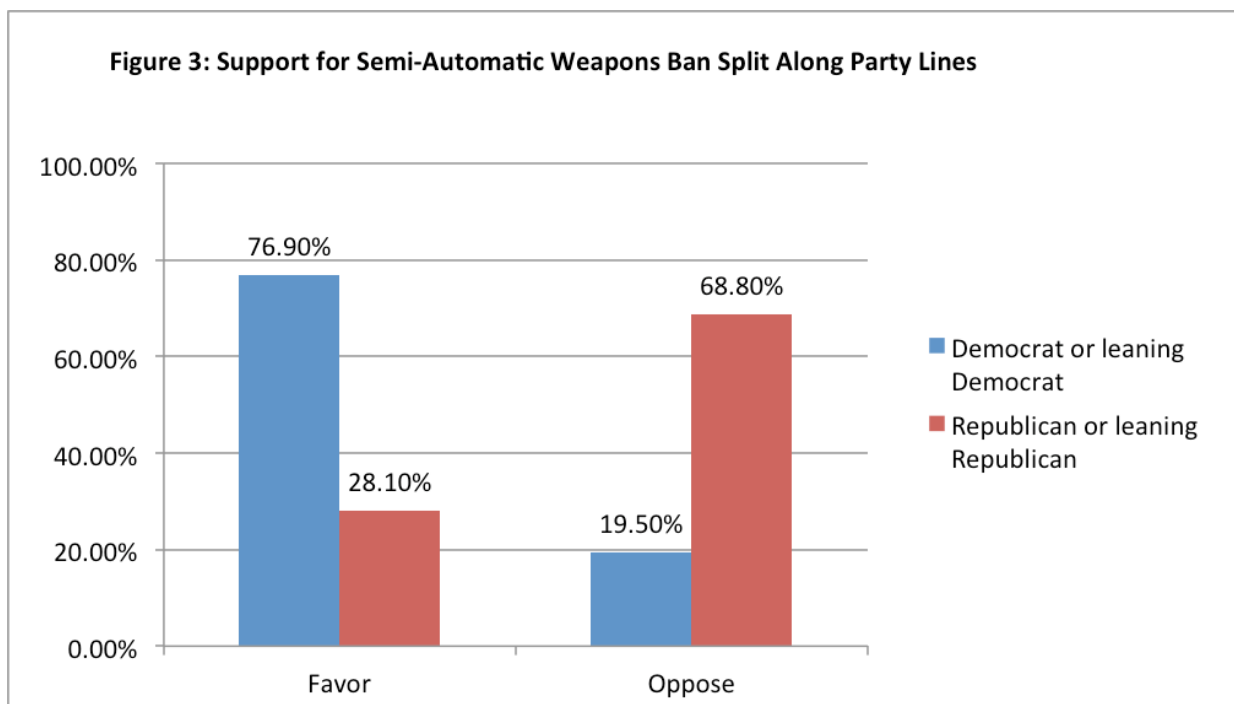
**PROBLEM 4. (2 points)** The following table of frequencies summarizes the number of countries in the world with different Democracy Rating Levels.

Rating	Absolute Frequency
(8-10]	20
(6-8]	59
(4-6]	36
[0-4]	52
Total	167

Estimate the mean world Democracy rating based on this table.

$$(9 \times 20 + 7 \times 59 + 5 \times 36 + 2 \times 52) / 167 = 5.25$$

**PROBLEM 5. (1 point)** The following graphic comes from a 2013 survey of attitudes to gun control in the USA. The survey was carried out on 1110 adults.



If 601 of the survey respondents were Democrat or leaning Democrat and that the rest were Republican or leaning Republican, the number of respondents in favour of a ban on automatic weapons is:

- a) 605
- b) 105
- c) 583
- d) None of the above.

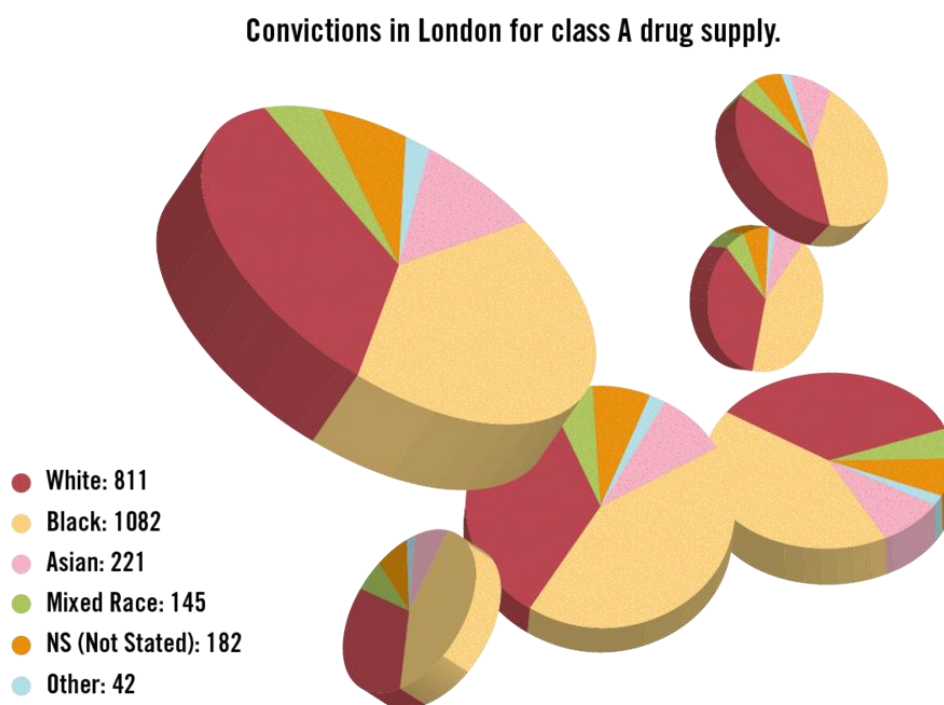
a) X	b)	c)	d)
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**PROBLEM 6.** (1 point) What type of variable is the Regime Classification in Question 1?

- a) Qualitative and Nominal
- b) Qualitative and Discrete
- c) Quantitative and Ordinal
- d) None of the above.

a)	b)	c)	d) <b>X</b> <b>Qualitative &amp; ordinal</b>
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**PROBLEM 7.** (2 points) The following graphic appeared in the article **Why Are So Many Black People Being Convicted of Drug Dealing in London?** published in Vice magazine online on February 26<sup>th</sup> 2016.



Comment on the graphic. What do you think is good and bad about it? Are there any alternatives that might be considered?

**Good: graphic is attractive with the pill image invoking drug culture.**

**Bad: use of 3 dimensional pie charts leads to distortion which can mislead. Multiple repetitions of the same graphic can also confuse. Maybe too many different groups to illustrate clearly on a pie chart.**

**Alternatives: 2d pie chart or probably better a bar chart could be used**

## Space for calculations