



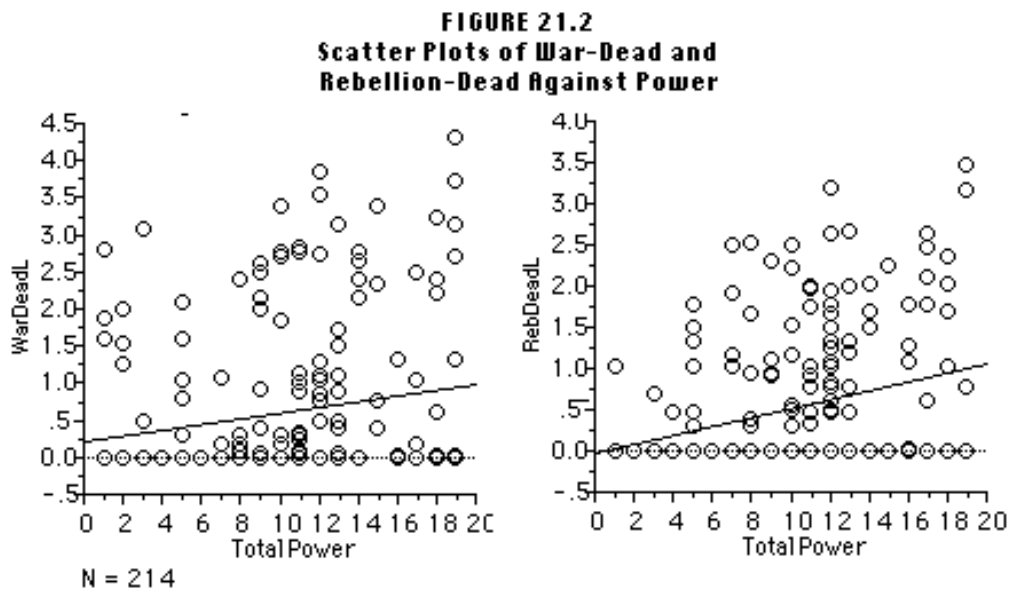
# Introduction to Statistics

## Test 1 (A)

Student: \_\_\_\_\_

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

PROBLEM 1. (1 point) The graph below is taken from *The Statistics of Democide*, by R.J. Rummell.



Mark the correct response:

- a) The correlation between Total Power and War Dead is positive and close to 1.
- b) The correlation is exactly zero.
- c) The correlation is negative.
- d) The correlation is positive but close to zero.

Response			
a)	b)	c)	d)

PROBLEM 2. (1 point) The table below comes from a recent survey of 1011 people (12<sup>th</sup> – 17<sup>th</sup> February 2015 carried out by Survation for the Scottish Daily Record) on Scottish attitudes to independence after the referendum last year.

Responses to the question are classified for different gender and age groups and for parties voted for in the last Scottish (Holyrood) and UK (Westminster) elections.

Table 18

Q12. If there was to be another referendum on Scottish independence when, if at all, do you think this referendum should take place?  
Base : All Respondents

	Total	Gender		Age						2011 Holyrood Vote				2010 Westminster Vote			
		Male	Female	16-24	25-34	35-44	45-54	55-64	65+	CON	LAB	LD	SNP	CON	LAB	LD	SNP
Unweighted Total	1011	470	541	90	139	162	233	225	162	111	176	74	300	120	193	88	193
Weighted Total	1011	490	521	146	155	169	182	155	205	94	214	54	307	107	214	78	197
Within the next 2 years	195 19.3%	80 16.4%	115 22.1%	43 29.8%	38 24.4%	39 22.9%	32 17.4%	21 13.9%	22 10.9%	7 7.4%	19 8.7%	3 4.8%	92 30.0%	4 3.9%	23 10.6%	6 8.0%	60 30.6%
In 2 - 5 years time	228 22.5%	93 18.9%	135 25.9%	37 25.3%	41 26.3%	40 23.9%	42 23.0%	32 20.7%	36 17.4%	3 3.2%	52 24.2%	9 16.6%	100 32.5%	6 5.4%	57 26.8%	16 20.1%	62 31.5%
In 5 - 10 years time	167 16.5%	88 18.0%	79 15.1%	32 21.9%	21 13.3%	24 14.1%	30 16.6%	24 15.8%	36 17.5%	12 13.1%	25 11.8%	10 17.9%	56 18.1%	18 17.0%	33 15.6%	10 12.5%	40 20.5%
In 10+ years time	208 20.6%	136 27.8%	71 13.7%	21 14.2%	29 18.7%	27 16.0%	37 20.5%	35 22.5%	59 28.7%	32 34.3%	56 26.1%	21 38.3%	39 12.7%	40 37.0%	47 21.8%	23 29.7%	22 11.1%
Never	213 21.1%	93 18.9%	121 23.1%	13 8.9%	27 17.3%	39 23.0%	41 22.4%	42 27.1%	52 25.5%	40 42.0%	63 29.2%	12 22.4%	20 6.7%	39 36.7%	54 25.3%	23 29.7%	13 6.4%
SIGMA	1011 100.0%	490 100.0%	521 100.0%	146 100.0%	155 100.0%	169 100.0%	182 100.0%	155 100.0%	205 100.0%	94 100.0%	214 100.0%	54 100.0%	307 100.0%	107 100.0%	214 100.0%	78 100.0%	197 100.0%

Considering the weighted totals, what proportion (2 decimal places) of the survey respondents said they voted for the Conservative (CON) party in the 2011 Holyrood elections?

(Note: some respondents to the survey did not vote or voted for a minor party in these elections).

- a) 94.0%
- b) 9.30%
- c) 14.05%
- d) 100.00%

Response			
a)	b)	c)	d)

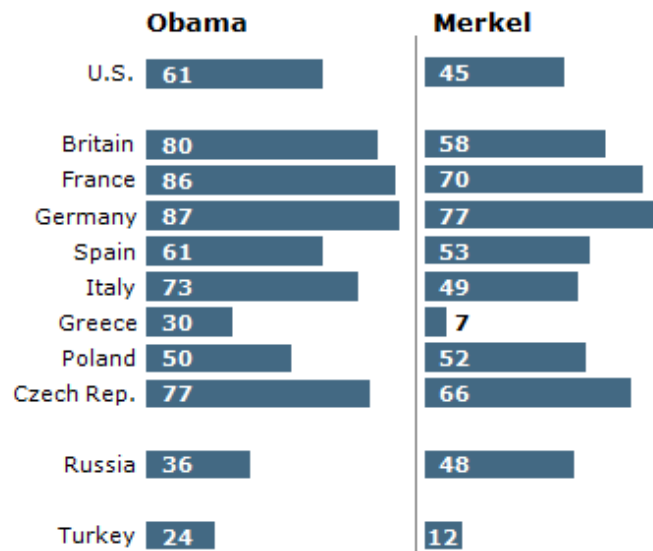
PROBLEM 3. (1 point) Following on from the previous question, what is the proportion of the people who said that there should never be another referendum on Scottish independence that voted for the Conservative party in the 2011 Holyrood elections?

- a) 18.78%
- b) 29.63%
- c) 42.00%
- d) 21.10%

Response			
a)	b)	c)	d)

PROBLEM 4. (1 point) The following table taken from a 2012 survey by the Pew Research Center reflects the confidence in world leaders expressed by citizens of various different countries.

### Confidence in World Leaders



Mark the correct response:

- a) The median rating for Obama is 73 and the range of the ratings for Merkel is 70.
- b) The median rating for Obama is 61 and the second quartile for Merkel is 66.
- c) The modal rating for Obama is 61 and the first quartile for Merkel is 45.
- d) The mean rating for Obama is 73 and the interquartile range for Merkel is 21.

Response			
a)	b)	c)	d)

PROBLEM 5. (1 point) The table below shows summarises the stunting prevalence indices for babies in 180 countries from the WHO (World Health Organisation) database.

Child Stunting Index	Frequency
(0-10]	16
(10-20]	34
(20-30]	47
(30-40]	56
(40-60)	27
> 60	0

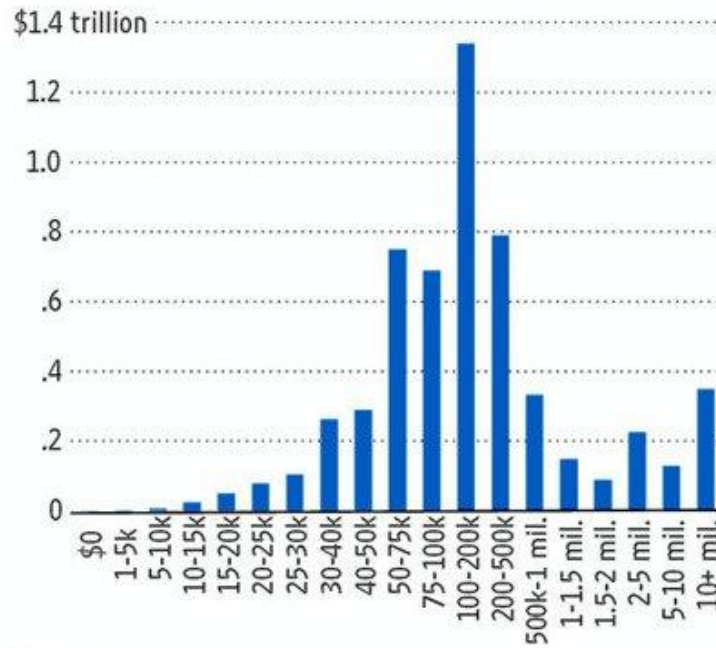
Using this table, estimate the average stunting prevalence index:

PROBLEM 6.

(3 points) The following graph appeared in an article of the Wall Street Journal on US tax levels.

### The Middle Class Tax Target

The amount of total taxable income (left scale) for all filers by adjusted gross income level for 2008



Source: IRS

Comment briefly on the adequacy of this graph.

PROBLEM 7. (2 points) The following is an extract from the American Community Survey questionnaire for 2015 issued by the US Census Bureau.

**Housing (continued)**

**12** How many automobiles, vans, and trucks of one-ton capacity or less are kept at home for use by members of this household?

None  
 1  
 2  
 3  
 4  
 5  
 6 or more

**13** Which FUEL is used MOST for heating this house, apartment, or mobile home?

Gas: from underground pipes serving the neighborhood  
 Gas: bottled, tank, or LP  
 Electricity  
 Fuel oil, kerosene, etc.  
 Coal or coke  
 Wood  
 Solar energy  
 Other fuel  
 No fuel used

**14 a.** LAST MONTH, what was the cost of electricity for this house, apartment, or mobile home?

Last month's cost - Dollars

\$     .00

OR

Included in rent or condominium fee  
 No charge or electricity not used

**b.** LAST MONTH, what was the cost of gas for this house, apartment, or mobile home?

Last month's cost - Dollars

\$     .00

OR

Included in rent or condominium fee  
 Included in electricity payment entered above  
 No charge or gas not used

**c.** IN THE PAST 12 MONTHS, what was the cost of water and sewer for this house, apartment, or mobile home? If you have lived here less than 12 months, estimate the cost.

Past 12 months' cost - Dollars

\$     .00

OR

Included in rent or condominium fee  
 No charge

**d.** IN THE PAST 12 MONTHS, what was the cost of oil, coal, kerosene, wood, etc., for this house, apartment, or mobile home? If you have lived here less than 12 months, estimate the cost.

Past 12 months' cost - Dollars

\$     .00

OR

Included in rent or condominium fee  
 No charge or these fuels not used

**15** IN THE PAST 12 MONTHS, did you or any member of this household receive benefits from the Food Stamp Program or SNAP (the Supplemental Nutrition Assistance Program)? Do NOT include WIC, the School Lunch Program, or assistance from food banks.

Yes  
 No

**16** Is this house, apartment, or mobile home part of a condominium?

Yes → What is the monthly condominium fee? For renters, answer only if you pay the condominium fee in addition to your rent; otherwise, mark the "None" box.

Monthly amount - Dollars

\$     .00

OR

None

No

**17** Is this house, apartment, or mobile home - Mark (X) ONE box.

Owned by you or someone in this household with a mortgage or loan? Include home equity loans.  
 Owned by you or someone in this household free and clear (without a mortgage or loan)?  
 Rented?  
 Occupied without payment of rent? → SKIP to C on the next page

Classify the types of variables in Questions 12, 13, 14a, 17 in the following table.

Question	Variable type					
	Qualitative	Quantitative	Continuous	Discrete	Nominal	Ordinal
12						
13						
14a						
17						