**Student name:**

**Student number:**

**Due date**: Friday, 9 February (Week 2), day end. Via Léa.

**Grade value**: 10% (part of the 20% “Occasional Exercises and Assignments” evaluation item)

**Length**: As required. Just answer the questions correctly and completely.

**Submission details:** Answers must be submitted on the Answer Form for this assignment. Make sure to keep a copy of your submission. Submit the answers in “Assignments and Dropbox” in Lea. ***This is a compulsory assignment. All students must complete it if they want to receive a grade other than 0 for this evaluation item.***

**Advice and Guidance:**

* Answers should take the form of complete, proper sentences expressing complete thoughts.
* All cited content form the articles must be presented in quotation marks.
* **Authorized** documentary sources for this assignment are, where relevant: dictionaries, College-subscribed encyclopedias, specialized educational web sites, other websites relevant to the assignment, academic books and articles.
* Documentary sources, used in answers must be suitably and correctly referenced. **A reference in the form of a Url alone is not a suitable reference.** Referencing flaws, faults and omissions will give rise to point deductions.
* The Vanier College library webpage gives you access to reference material like dictionaries and encyclopedias.
* Answers will be graded for language proficiency. Spelling, grammar, punctuation and other language formalities will be assessed and will enter into grade outcomes.
* If you are uncertain whether a particular documentary source is valid for the purposes of this assignment, please consult the teacher.

\*\*Submissions MUST be each student’s own, independent and individual work. Answers must draw on the article provided or on authorized sources indicated in the questions.\*\*

**Note: Questions in this ANSWER FORM appear in summary form only. In most cases there is just the main question and the answer section. Please see the detailed questions on the Detailed Questions document.**

|  |  |  |
| --- | --- | --- |
| **Part** | **Grade weighting** | **Answer-Question Ratio (A/Q)** |
| **1** | **1.5 points** | **5/5 (1.1-1.5)** |
| **2** | **2 points** | **4/4 (2.1-2.4)** |
| **3** | **2.5 points** | **1/1 (3.1)** |
| **4** | **3 points** | **7/7 (7.1-7.7)** |
| **5** | **1 point** | **1/1 (5.1)** |

**1. Staging and Setting (Articles 1, 2 & 3)**

**Answer all of the questions (1.1 to 1.5).(1.5 points)**

**1.1 Who is David Spiegelhalter (a co-author of Article 2)?**

Write answers in the blank cells of the Answer table below. It may be necessary to use more than one source. Provide references to the sources used.

|  |  |
| --- | --- |
| 1.1 Answer | |
| **Current or latest professional academic position**  **(academic title and position he holds or held and the name of the institution or university where he held it)** | Chair of the Winton Centre for Risk and Evidence Communication |
| **Other honorary and professional (academic and non-academic) positions and affiliations**  **(organizations or institutes with which he is affiliated and holds or held positions)**  **Just name TWO positions or affiliations.** | Emeritus Winton Professor for the Public Understanding of Risk in the Statistical Laboratory, Centre for Mathematical Sciences, University of Cambridge  Commentator on risk issues for BBC4 |
| **Areas of professional and academic interest and activity**  **(topic areas of interest and activity on risk and connected subjects)**  **Name three topic areas (one is provided)** | 1. *Risk communication. The communication of information about risk and risks*  2. Health and human sciences; Medical statistics and demography  3. Biostatistics |
| **Noted contributions on the subjects of risk and uncertainty**  **(publications and media work)**  **Just provide the titles of some noted book publications and video documentaries** | *Tails you Win: the Science of Chance*  *Climate Change by Numbers* |
| References:  <https://www.statslab.cam.ac.uk/~david/>  <https://wintoncentre.maths.cam.ac.uk/about/people/>  <https://royalsociety.org/people/david-spiegelhalter-12329/>  <https://www.nobelprize.org/events/nobel-week-dialogue/gothenburg-2019/panellists/adam-smith-2-2/> | |

**1.2** **Who is Michael Blastland, a co-author, along with Spiegelhalter, of Article 3?**

|  |
| --- |
| 1.2 Answer  Blastland is a freelance writer and broadcaster for BBC Radio 4. He researches on numbers and evidence in public argument. He is also the author of *The Tiger that isn’t*  and The Numbers Game. |

**1.3** **What is the title of the book that Spiegelhalter and Blastland co-authored and published?**

|  |
| --- |
| 1.3 Answer |
| Title, Basic Books edition:  The Norm Chronicles; Stories and Numbers About Danger and Death |
| Title, Profile Books edition:  The Norm Chronicles; Stories and numbers about danger |

**1.4** **What is the title, the name of the publisher and the year of publication of the book that Spiegelhalter and Anthony Masters co-authored and published?**

|  |
| --- |
| 1.4 Answer  Covid By Numbers; Making Sense of the Pandemic with Data  Publisher: Pelican Books, 2021 |

**1.5** **What is the purpose of the “RealRisk” project? That is, what is its principle aim or purpose?**

|  |
| --- |
| 1.5 Answer  RealRisk analyzes research and statistics interpreted as relative risks, odds ratios, or hazard ration. Said research are calculated and are converted into absolute risks, which is more easier to understand for the general public |

**2. Statistical information and knowledge about risk and danger: writing about Covid-19 during the pandemic (Article 1)**

**(2 points)**

**Answer all of the questions 2.1 to 2.4 including all parts of the questions.**

**2.1 What was the purpose or objective of the weekly column that Spiegelhalter and Masters were writing in *The Guardian* between January 2021 and January 2022? (para. 2)**

|  |
| --- |
| 2.1 Answer |
| To write about “Covid numbers, covering everything form infections to deaths, vacciens to mental health, masks to lockdowns.” |

**2.2** **What challenges did Spiegelhalter and Masters say they faced, as statisticians, in writing about Covid-19 numbers on a weekly basis for *The Guardian* between January 2021 and January 2022. (Paras. 3 and 4)**

|  |  |
| --- | --- |
| 2.2 Answer | |
| **Challenges** | **Explanation of the challenges** |
| 1. The challenge of presenting and explaining statistics (Para. 3) | There is so many good information and numbers to show. However, they can use them sparingly, which is difficult as they are precious to them |
| 2. The challenge of dealing with media demands (Para. 4) | They have to fend off controversies and blame coming from the wide range of opinions of many experts |

**2.3** The authors state: “Unfortunately, this pandemic has been rife with false claims and misinformation, particularly about vaccines.” (para. 6) Answer the following three questions relating to this statement.

**2.3.1** **How, or by what means, did the authors deal with “false claims and misinformation” about Covid-19, especially about vaccines? Put differently, what approach did they take to try to combat or counter misinformation and people’s acceptance of wrong information? (para. 6)**

|  |
| --- |
| 2.3.1 Answer |
| In order to counter false claims and misinformation, the authors use the idea of “inoculation”, warning people about misinformation and incorrect facts before they receive |

**2.3.2** **What is “empirical evidence”?** The authors say that their approach to false claims and misinformation was “supported by empirical evidence”. (para. 6)

|  |  |
| --- | --- |
| 2.3.2 Answer |  |
| **“empirical” (adjective): definition**  **(the definition must refer to knowledge and a way of acquiring knowledge)** | That pursues knowledge by means of direct observation, investigation, or experiment (as distinct from deductive reasoning, abstract theorizing, or speculation); that relates to or derives from this method of pursuing knowledge. |
| **“empirical evidence”: explanation** | It is information gained from observation and documentation of a matter through experiments |
| Reference:  Empirical? - Oxford Dictionnary | |

**2.3.3** **What was the result of their approach or strategy for dealing with false claims and misinformation about vaccines and vaccination, especially in their June 2021 article about Covid-19 deaths among vaccinated older people?**

To answer, fill in the following table

|  |  |
| --- | --- |
| 2.3.3 Answer | |
| Question | Response |
| (a) What was their claim about vaccines when it was reported that most older people who died from Covid-19 had been vaccinated? (para. 7) | It wasn’t because the vaccine worked, but because it is still under development. |
| (b) How was their article and claim interpreted by readers and by people commenting on social media sites? (para. 8) | It was interpreted as an anti-vaccination article, as the Twitter link to their article included only the title and not the subtitle. |
| (c) What is their general impression about how media handled statistical reporting about Covid-19? (para. 12) | That there was a valiant attempt by most to explain their difficulties |

**2.4** **According to the statisticians Spiegelhalter and Masters, *how should* statistical data be treated in and by the media and *why should* it be treated that way? (para. 13)**

|  |
| --- |
| 2.4 Answer |
| So that people can speak honestly and carefully on behalf of numerical evidence, as it leads to better debate ad potentially better decisions |

**3. Risk and technology: the case of nuclear power and nuclear waste (Article 2) (2.5 points)**

**Answer the questions 3.1 and 3.2 including all of parts of the questions.**

**3.1 What is the risk that is being discussed in this article about the nuclear waste that accompanies the generation of energy by nuclear power plants (chiefly in the United Kingdom, but elsewhere as well)?**

Describe the risk that is being discussed in this article. Do so by filling in the following table below. Provide the relevant information for all 4 “Elements of Description” in the blank cells in the column headed “Details of Description”.

|  |  |
| --- | --- |
| 3.1 Answer | |
| **Element of Description** | **Details of Description** |
| **1. Identification and definition 1: The general circumstance.**  What is the **general** circumstance (the situation) of risk of harm, loss or injury with which the article is primarily concerned? (Para. 1, 2, 3, 5, 7, 16, 18 ,19)  Identify the general circumstance and not the specific cases of the general circumstance. | There is an underwater hole made to store massive amounts of nuclear fuel. Due to miners’ strikes, the fuel contaminated the water turning the are into and a radioactive sludge. There are numerous instances like this one |
| **2. Identification and definition 2: The specific cases**  What are the specific cases of the general circumstance that are mentioned in the article? (Para. 1, 2, 3, 5, 7, 17, 21, 22)  There are three specific cases.  One case is provided. | 1. (paras. 1, 2, 3, 5, 7)  B30 was built to hold a lot of nuclear waste. However, during the 1970s miners’ strikes, more fuel was generated, which caused a massive radioactive risk. |
| *2. (para. 17)*  B38 was heavily used during the miner’s strike of 1972. 2 years later, the [public became stricter towards the nuclear industry due to the launch of the Protect and Survive advice on surviving a nuclear attack |
| *3. (paras. 21, 22) There are leaks of radioactive water from the Magnox swarf storage silo (MSSS).*  *The silo was found to be leaking radioactive water into the ground in the 1970s. There are concerns that efforts to retrieve the radioactive waste, now, may reopen historic leak paths and introduce new ones. (para. 22)*  *“There are also grave concerns over leaks from the Magnox swarf storage silo (MSSS) described as ‘one of the highest-hazard nuclear facilities in the UK’’’. (para 21).* |
| **2. Identification and definition 3: The harm.**  What is the potential harm, injury or loss (the risk) that is being identified in the article? (paras. 3, 5, 7, 16)  The potential harm is stated indirectly. You have to deduce it from the content. It has to do with radioactivity. | *The fuel corrodes the water, turning it into a radioactive sludge (3)*  *It requires greater security check (16)* |
| **3. Identification and definition 4: The “primary identifiers”**  Who are the “primary identifiers” of the potential harm (the risk)? (paras. 5, 6, 22, 23)  State who (individuals or organizations) are identifying and naming the risk and making it publicly known, in the first instance. A “primary identifier” is an original, often first-hand, source of information on the risk. A “primary identifier” is involved in naming the risk for the first time based on first-hand information acquired directly or indirectly.  In this article, there are four “primary identifiers”. One is an individual who possibly works at the Sellafield plant, one is an online media source, one is an individual expert and one is an independent regulatory body.  List them all.  (Note: one answer is provided.) | Primary identifiers:  (1) individual (para. 5):  An “anonymous source” who leaked photos of B30 and B29 to an online website concerned with environmental matter. The individual probably works at the Sellafield site since they were able to take photos of B30 and B29. |
| (2) online media source and website (paras. 5 & 6):  The Ecologist |
| (3) expert (para. 6):  The military |
| (4) independent regulatory body (paras. 22 & 23):  Magnox swarf storage silo (MSSS) |
| **4. Identification and definition: The “secondary identifiers”**  Who is/are the “secondary identifiers” of the potential harm (the risk)?  State who (individual or organization) in involved in bringing the information about the risk to wider public attention. A “secondary identifier” is a relay or second-hand source for the information. It transmits information from “primary identifiers” to the public.  (The name of the “secondary identifier” is provided.) | Secondary identifier:  *The Guardian newspaper.* |

**3.2 What are the probability claims that are made about the risk?**

State in what terms probabilities of harm, loss or injury are expressed in the article. Do so by filling in the following table below. Provide the relevant information for the “Elements of Probability Claims” in the blank cells in the column headed “Specific Terms of Probability Claims”.

|  |  |
| --- | --- |
| 3.2 Answer | |
| **Elements of probability claims** | **Specific terms of probability claims** |
| **1. Probability claim 1: statement of likelihood.**  What claim of probability or likelihood, with regard to the harm, are the “identifiers” making in the article? In what specific terms is the probability or likelihood of harm being expressed and stated? (paras 7, 21) Quote the precise and specific phrases that express probability (likelihood) of an unwanted occurrence and identify the sources of the statements.  There are three statements in the article that can be said to express a probability of occurrence and of harm. Present **TWO** of them. One statement is by the nuclear safety expert and two are by the ONR. | 1. (para. 7)  “’give rise to a very big radioactive release.’” |
| 2. (para. 21)  “’one of the highest-hazard nuclear facilities in the UK’” |
| **2. Probability claim 2: numbers and narratives**  What form or format is used to express the probability or likelihood of the occurrence of harm?  State whether the probability claims are expressed in numerical form (quantitatively) as a percentage or ratio, for instance, or in narrative form (qualitatively) using words that express the likelihood of occurrence. | 1.  Qualitative |
| 2.  Qualitative |

**4. Risk: Conceptual distinctions and clarifications (Article 3)**

**Answer all of the questions. (4.1 to 4.7) (3 points)**

**4.1** **What are the two sources of evidence about risk that the authors of Article 3 identify?** (Para. 2)

|  |
| --- |
| 4.1 Answer  The numbers  The stories people tell |

**4.2** In paragraph 2, the authors state: “In fact, if there were such a thing as a risk-calculating machine that claimed to give you objective odds on danger, we'd be the first to warn of malfunctions.”

**Question: What are “odds”?**

|  |
| --- |
| 4.2 Answer  The chances or balance of probability in favour of something happening or being the case; probability, likelihood. |
| Reference  Odds 6.a.: Oxford English Dictionary |

**4.3** **What are “objective odds”?**

|  |
| --- |
| 4.3 Answer |
| Objective: Of a person or his or her judgement: not influenced by personal feelings or opinions in considering and representing facts; impartial, detached.  Objective odds: Impartial probability; chances of something happening that is not influenced by opinion. |
| Reference  Objective 1.8.a.: Oxford English Dictionary |

**4.4** **What two generally held beliefs about the reality or fundamental nature of risk do the authors question and contradict and what do they say is, in fact, the case when it comes to the reality of risk? (para. 3)**

|  |  |
| --- | --- |
| 4.4 Answer | |
| **Commonly held views about the reality of risk** | **Authors’ alternative views about the reality of risk** |
| 1.  Risk is seldom objective | 1.  Risk is essential |
| 2.  Risk can foretell your future | 2.  Placing an uncertain bet on a horse using scraps of imperfect information |

**4.5 In questioning these commonly held views, what do they say must be taken into account to better understand the nature and reality of risk? (Para. 3)**

|  |
| --- |
| 4.5 Answer  Risk might come in, or it might not |

**4.6** **What do the authors say some people mistakenly do with numbers about dangers and hazards?** **That is, what do they say is the “hazard” with how some people treat “risk numbers” (i.e. numerical expressions of risk and hazard)? State what the mistake is and what it means. (Para. 3)**

|  |
| --- |
| 4.6 Answer |
| They use risk as a means to foretell your fate |

**4.7** **What criticism do the authors direct at media reporting? What do they say is the media’s likely response to the criticism? (Para. 10)**

|  |
| --- |
| 4.7 Answer |
| Criticism of media reporting:  There is a reporting bias |
| Possible media response:  There is no way they could risk proportionately as they can go out of business |

**5. Argument or main points of Article 3 (1 point)**

**5.1** **What is the argument in Article 3?**

To answer, fill in Table **5.1.2** below.

In Table 5.1.1, the Reasons (R) and the Conclusion (C) that make up the argument are provided *in random order*. Put the five statements – four Reasons and one Conclusion - in their proper order in Table 5.1.2. The order of the statements should follow logically from each other such that the three Reasons lead to or produce the Conclusion. Conclusions are like “Therefore” statements: they express the point or the main claim of the argument.

The argument has been simplified for the purposes of this exercise. You can put the entire phrases in the proper places in **Table 5.1.2** or just the numbers of the phrases or both.

|  |  |
| --- | --- |
| **5.1 Answer** | |
| **Table 5.1.1: Argument in Article 3: Random order** | |
| **1.** However, numbers alone can be deceptive and can never be the sole and final word on risks, dangers and hazards. (para. 2 & 4); | |
| **2.** In addition to numbers, the stories people tell are big influences on the sense of where danger lies (para. 2); | |
| **3.** Therefore, both numbers and stories have strengths and weaknesses as sources of evidence about risks, dangers and hazards and should both be considered in accounting for risks, dangers and hazards. | |
| **4.** People think that numbers matter above all as a source of evidence on risks, dangers and hazards (paras. 2); | |
| **5.** Numbers and stories, as sources of evidence about risks, dangers and hazards, can each deceive us and distort our sense of risk, but, also, can each give us clarity on the risk (the potential danger or hazard). (paras. 2-5); | |
| **Table 5.1.2: Argument in Article 3: Proper or Organized Order** | |
| **R1** | 4 |
| **R2** | 1 |
| **R3** | 2 |
| **R4** | 5 |
| **C** | 3 |

|  |
| --- |
| Argument number sequence: |

**-END-**