There are three problems in this exam. For the first two problems, your task will be to analyze the provided data from the Norwegian Citizen Panel Round 19, 2020[1]. The Norwegian Citizen Panel is a platform for internet surveys of public opinion in important areas of society and politics in Norway. Participants are randomly recruited from the Norwegian population register.

In Problem 1, you will be asked to perform some specific tasks. In Problem 2, we will ask you to develop your own research plan and present the findings. Include images/screenshots from SPSS only when the tasks tell you to. In Problem 3 we will ask you to think about how one of the topics covered in the survey data could be investigated through a content analysis.

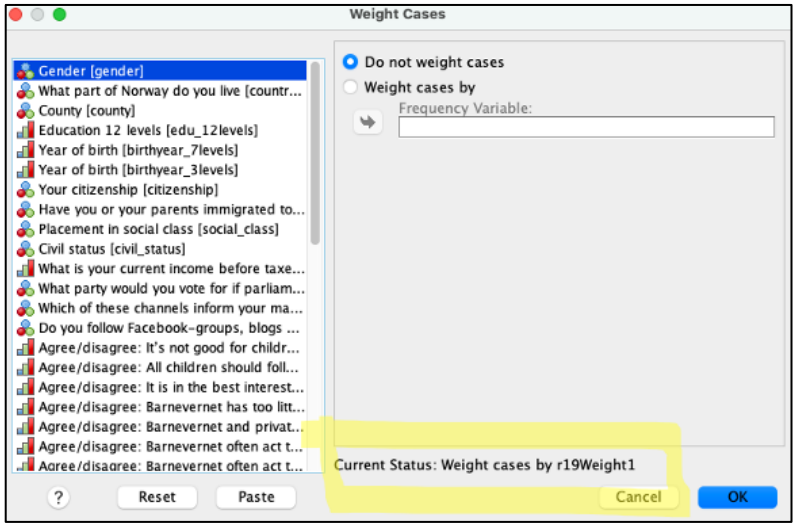
Before starting, we suggest you read through the entire test, and then take a little time to familiarize yourself with the dataset. *Also pay attention to what low and high values on Likert-scales indicate on the different variables.*

There are no requirements for how many pages your exam-report needs to be.

About the Norwegian Citizen Panel dataset

The original dataset is very large, and respondents have been selected to respond to different parts of the questionnaire. The dataset you will work with is much simpler, and we have removed most variables.

Before proceeding, make sure the data are weighted (they should be by default). In SPSS, click on "Data" in the top menu, scroll down to "Weight Cases" and make sure the Current Status is "Weight cases by r19Weight1".



If the Current Status is "Do not weight cases," scroll down on the variable list, and click the weight-variable called "Weight based on age, gender, and geography" into the "Weight cases by" field and press OK. *Note: you will **not** get a lower grade if you happen to work with unweighted data* (you will only get slightly different results on some tasks).

[1] Ivarsflaten, Elisabeth et al. (2024). Norwegian Citizen Panel Round 19, 2020 [Data set]. Sikt - Norwegian Agency for Shared Services in Education and Research. https://doi.org/10.18712/NSD-NSD2940-V6

This weight has been calculated by the people responsible for the Norwegian Citizen Panel to compensate for biases in the sample compared to the population (the unweighted sample is for example older than the population). No need to reflect on this in your exam-report.

Some useful background-information for non-Norwegian students

- Whenever you see "barnevernet" in the dataset, this refers to the Norwegian child welfare services.
- *Resett* was a Norwegian online newspaper (closed in 2022). It was by many considered an "alternative" and far-right news outlet.
- *Document.no* is another Norwegian online website/alternative online news-site, leaning toward the far-right end of the political spectrum.
- *Manifest* is a left-leaning online news and current affairs site.
- *Vårt land, VG* and *Aftenposten* are traditional Norwegian newspapers.

AND FINALLY: THE ACTUAL TASKS IN THIS EXAM. Best of luck to you all ☺

Overall considerations for grading exam reports:

- Precise use of statistical concepts.
- Understanding of measurement levels and ability to choose tests accordingly.
- Understanding of level of significance and probability values.
- Understanding of null hypothesis testing, types of hypotheses.
- Ability to reflect on the purpose of tests and draw meaning from the data.
- Whether or not students have worked with weights on or off should not affect the grade

Problem 1

In this task, we will refer to the following variables:

- edu12levels
- gender
- birthyear_7levels and/or birthyear_3levels
- trustmedia_corona
- trustmedia_immigration
- trustmedia_barnevernet
- trustmedia_economy
- Mean_onlinemedia

Perform the following tasks:

a) Create a new variable based on edu12levels. The new variable should have the following four categories: Primary school or less; Upper secondary school and tertiary vocational education; Higher education 4 years or less; Higher education more than 4 years. Recode "Old value" 12 and 97 as "New value" "System-missing". In your exam-report, include a frequency table of your new education variable.

   The frequency table should demonstrate that the candidate has been able to create a new four-level education variable.

Education four levels

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Primary school or less	118	5.9	6.0	6.0
	Upper secondary school and vocational	666	33.2	34.0	40.1
	Higher education 4 years or less	696	34.7	35.6	75.6
	Higher education more than 4 years	477	23.8	24.4	100.0
	Total	1956	97.6	100.0	
Missing	System	48	2.4		
Total		2004	100.0		

b) Create the appropriate graph that shows the age-distribution of respondents (choose one of the birthyear-variables) and include this in your exam-report. Explain why you chose this type of graph.

Excellent answers: Since age here is an ordinal-level variable, a bar chart is an appropriate graph. Excellent answers have also chosen the "birthyear_7levels" variable since this gives a more detailed understanding of the age distribution.

Good answers: Candidates who choose other graphs that pertinently depict the age-distribution.

c) The dataset includes four variables on whether respondents trust information from Norwegian media when it comes to reporting on various topics (trustmedia_corona, trustmedia_immigration, trustmedia_barnevernet, trustmedia_economy). Create frequency tables for these four variables and include these in your exam-report.

The exam report must include all four frequency tables.

d) Is there an association between gender and the four trustmedia-variables (from task 1c)? Explain which statistical test to use for examining such associations. Perform the analysis. Report and interpret the results.

Candidates should report the results correctly in a form that explains what has been tested, and the results. E.g.,

A chi-square test of independence suggests a significant association between gender (male; female) and trust in media when it comes to reporting about Corona (to a very large extent; to a large extent; to some extent; not so much; not at all), X^2 (4, n=1938) = 28.432, p<.001. Women are more likely to trust media when it comes to reporting about Corona.

A chi-square test of independence suggests a significant association between gender (male; female) and trust in media when it comes to reporting about Immigration (to a

very large extent; to a large extent; to some extent; not so much; not at all), X^2 (4, n=1931) = 44.751, p<.001. Women are more likely to trust media when it comes to reporting about immigration.

A chi-square test of independence suggests a significant association between gender (male; female) and trust in media when it comes to reporting about barnevernet (to a very large extent; to a large extent; to some extent; not so much; not at all), X^2 (4, n=1934) = 20.176, p<.001. Men are more likely to trust media when it comes to reporting about barnevernet.

A chi-square test of independence suggests a significant association between gender (male; female) and trust in media when it comes to reporting about economy (to a very large extent; to a large extent; to some extent; not so much; not at all), X^2 (4, n=1933) = 32.252, p<.001. Women are more likely to trust media when it comes to reporting about economy.

Excellent answers refer to cross-tabulation (not need not include the table) and are able to interpret how the variables are associated.

Good answers choose correct test and report correct results but are less elaborate in their interpretation.

e) The survey includes five variables measuring how often respondents visit online media as an alternative to traditional news media (onlinemedia1, onlinemedia2, onlinemedia3, onlinemedia4, onlinemedia5). A reliability analysis showed that these items correlate strongly enough with each other that it makes sense to assume they all measure the same thing (Cronbach's alpha= .907). We have therefore created a new variable in the dataset (Mean_onlinemedia). This new variable shows the average score on these five items, and we will treat this new variable as a ratio-level variable.

Do people with different levels of education (your 4-level variable) differ when it comes to frequency of visiting online media as an alternative to traditional news media? Perform the analysis and report your results. What can you conclude from the test?

Candidates should explain what test is appropriate and why: ANOVA/simple analysis of variance since we're testing for differences between more than two groups on a ratio-level dependent variable.

Candidates should report the results correctly in a form that explains what has been tested:

A one-way between-groups variance was conducted to examine the impact of level of education on frequency of visiting online media as an alternative to traditional news media. Respondents were divided into four groups according to level of education (Group 1: Primary school or less; Group 2: Upper secondary and vocational; Group 3: Higher education 4 years or less; Group 4: Higher education more than 4 years). For the dependent variable, the minimum value is 1 and the maximum value is 7. Lower score indicates higher frequency of visiting online media.

There was a statistically significant difference, F (3, 1895) = 11.359, p< .001. The difference is quite small. The effect size calculated using eta squared was .018. Post-hoc comparisons using the Bonferroni test [candidates may have used the Tukey test] indicated that the mean score for Group 1 (M= 4.87; SD=1.57) was significantly different from Group 3 (M= 5.34; SD= 1.48) and from Group 4 (M=5.57; SD= 1.44).

Excellent answers fully and correctly explain each step. Good answers might have some shortcomings on explaining why ANOVA is appropriate, smaller mistakes in reporting results, or shortcomings in interpreting results.

Problem 2

In this problem, develop your own research question (RQ) and hypothesis based on the dataset provided. The RQ and hypothesis should each investigate different aspects of the data; in other words, the hypothesis should NOT be just a statement version of the RQ. It is fine if the RQ and hypothesis are not related to each other at all. You may use any variables in the dataset, including those from Problem 1, but please do not repeat an analysis you already did in Problem 1.

In your answer, please include the following sections:

RQ and hypothesis: State one research question you would like to answer and one hypothesis you would like to test. Make sure to include the null hypothesis and indicate whether your hypothesis is directional or non-directional (when relevant).

Data analysis plan: Identify the variables you will use and the statistical test(s) you will conduct to answer your research question and test your hypothesis. Describe why you have chosen these test(s).

Results: Present the findings of your data analysis. Include tables, graphs, or other appropriate visualizations to illustrate your results.

Interpretation: Interpret the results of your data analysis. What do these results mean in the context of your research question and hypothesis? What conclusions might be drawn?

Candidates should present research questions and hypotheses that can be addressed with the data. Null hypotheses are included, and candidates clearly inform if research hypothesis is directional or non-directional (and why).

Differences between excellent, good, and fair answers relate to:

- Do candidates identify the variables and statistical tests necessary to address the research question and hypothesis? Do they understand the measurement-level of the variables?
- Do tests appear to have been correctly conducted? Is choice of directional/non-directional hypothesis reflected in test? Are results correctly reported? Do any graphs or visualizations help illustrate the results?
- Does the candidate interpret the results correctly? Does the candidate conclude what the results mean in the context of the research question and hypothesis?
- Does the candidate demonstrate independent thinking in their research design and comprehensively reflect on each step of the process?

- Candidates should be rewarded for choosing RQ and hypothesis that require statistical tests not included in Problem 1 (e.g., independent samples *t* test).
- This problem opens for candidates to show the knowledge and skills they have acquired. More elaborate exam-reports that have required more effort should be rewarded.

Problem 3

The Norwegian Citizen Panel survey asked people what they thought about coverage of Norwegian child welfare services (Barnevernet). In this final section, we want you to imagine you were going to do a research project on the coverage itself.

a) Write a research question about coverage of Barnevernet that could be answered through a content analysis. You are welcome to find your own angle into the topic.

b) Define and describe two variables that would help answer the research question as they might appear in the codebook for this research project.

Problem 3 asks the candidate to demonstrate that they understand what sort of research inquiries a content analysis can answer and how this method is applied. As stated in 3a, the candidate has a lot of flexibility in how exactly they focus and formulate their inquiry. It is not necessary for their research question to have a strong theoretical justification. However, task 3b requires that the candidate think through how the question might be answered. Note: It is not expected that these two variables alone would be sufficient to answer the research question that the candidate poses.

Candidates who receive a <u>good</u> grade:

- demonstrate that they understand the purpose (and limitations) of a quantitative content analysis in their formulation of the research question
- develop 2 variables with a logical connection to the research question that could plausibly be measured in a quantitative content analysis
- write a brief description of each variable and state how it is to be measured. If categorical, the categories must be included and should be exhaustive (e.g. include "Other") and mutually exclusive.

Candidates who receive <u>very good or excellent grades</u> *may*:

- develop a research question with clear relevance to existing media research
- develop a research question that seeks to find a relationship between two variables
- develop a detailed research question that focuses on a specific aspect of child welfare services coverage and/or specific media arena (e.g. television)
- write variables that operationalize theoretical concepts introduced in the research question
- demonstrate sophisticated thinking in their development of their variables – e.g. with precise definitions and well-thought-out levels of measurement
- include detailed coder instructions for how to measure the variables in the hypothetical data material