Study Topic 1: The effect of vaccination status on mask wearing behavior

Research Question: Does vaccination status influence mask wearing behavior? Specifically, are people who have been fully vaccinated relaxed in their compliance with wearing masks?

Variable selection:

COVID_vaccinated: indicates the participant's vaccination status (e.g., "fully vaccinated," "Some times vaccinated," or "not vaccinated").

COVID_prevention_masks: Compliance with wearing a mask, indicating how compatible the participants are with wearing the mask (e.g., "Very closely," "some of the time").

Analysis method:

Group analysis: Data were grouped by vaccination status (e.g., "fully vaccinated," "partially vaccinated," and "not vaccinated") to compare the degree of compliance with mask wearing behaviors among groups.

Chi-square test: Chi-square test is used to examine whether there is a statistically significant association between vaccination status and mask wearing behavior.

Visualization: A group bar chart was used to show the distribution of compliance with mask wearing among people with different vaccination status, so as to more intuitively observe the relationship between different vaccination status and mask wearing behavior.

Expected results:

If the results show that the fully vaccinated group is relatively relaxed in their mask wearing behavior, this may indicate that they have increased confidence in the protection of the virus after vaccination, thus reducing mask use.
On the other hand, if fully vaccinated groups are still strictly wearing masks, it indicates that they maintain a high level of compliance with vaccination measures, which may be subject to individual awareness of protection or policy requirements.

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Study Topic 2: The effect of Age on loneliness Research question: Are there significant differences in the scores of companionship need, feeling left out, and feeling isolated among different age groups? Variable selection: age: Age (assuming this variable is included in the data set) LONELY_ucla_loneliness_scale_companionship, LONELY_ucla_loneliness_scale_left_out, LONELY_ucla_loneliness_scale_isolated Analysis of loneliness variables: Analysis of Variance (ANOVA) : The sample was grouped by age to compare scores on the loneliness dimension for different age groups. Visualization: Use a boxplot to show the distribution of loneliness by age. Expected outcome: It is possible to observe whether there are age differences, such as differences in feelings of exclusion or isolation between younger and older adults.
Differences in loneliness between age groups:

Higher loneliness among older people: It is expected that older people may score higher on "feelings of exclusion" and "feelings of isolation" than younger people. This may reflect an increased sense of isolation as people age with fewer social connections, fewer social opportunities, or the death of close friends and family members.
Higher companionship need among young people: Young people may score higher on "companionship need" because they tend to have more frequent social interactions and want more social support systems. However, it is also possible that middle-aged people (especially with high work and family burdens) score high on companionship needs but struggle to meet them due to busy lives.
Patterns of social contact in different age groups:
Young people may be less lonely: If the results show that young people score lower on "feelings of exclusion" and "feelings of isolation," this may indicate that young people have more social opportunities or are more easily integrated into social networks.
Prevalence of loneliness: If all age groups have high scores on loneliness, this may indicate that loneliness is a widespread problem, not just limited to one particular age group. This suggests that we need to pay attention to loneliness in society as a whole.

Study topic 3: The effects of anxiety and depressive symptoms on well-being

Research problem

Do symptoms of anxiety and depression reduce an individual's happiness? Specifically, do individuals with more severe symptoms report lower levels of well-being?

Variable selection

Anxiety score:
WELLNESS_gad_anxious: Measures an individual's anxiety, with a higher score indicating more anxiety.
Depression score:
WELLNESS_phq_little_interest: Indicates the frequency at which an individual's interest in daily activities declines.
WELLNESS_phq_feeling_down: Indicates whether an individual has a tendency to feel depressed.
Happiness score:
WELLNESS_subjective_happiness_scale_happy: Measures an individual's subjective happiness score. The higher the score, the stronger the happiness.

Analytical method

Correlation analysis:
The relationship between anxiety and depression symptoms and well-being was analyzed to examine whether there was a significant negative correlation.
Regression analysis:

With anxiety and depression symptoms as independent variables and happiness as dependent variables, multiple regression analysis was performed to assess the degree of influence of anxiety and depression on happiness. It is assumed that the two have a negative effect on happiness, and the higher the anxiety and depression symptoms, the lower the happiness.
Visualization:
Box plot or group bar chart: Shows the distribution of happiness at different levels of anxiety and depression. A boxplot can show the median and distribution of happiness, while a grouping bar chart can visually compare happiness scores at different anxiety and depression levels.

Expected result
Negative effects of anxiety and depression symptoms:
Lower happiness: Individuals with more severe expected anxiety and depression symptoms have lower happiness scores. This may indicate that negative emotions (such as anxiety and depression) have a significant negative impact on well-being, i.e. the more severe an individual's anxiety or depression symptoms, the lower their well-being.
The happiness difference of different symptoms:
High anxiety and depression: Assume that happiness scores in the group with high anxiety and depression are significantly lower than those in the group with no or mild anxiety and depression. This difference would reveal the

dampening effect of negative mental states on happiness.
Effects of moderate symptoms: Moderate levels of anxiety and depression may also lead to reduced well-being, but not to the same extent as in the highly symptomatic group, which can help us understand the different effects of different levels of negative emotions on well-being

Regarding group collaboration, I hope to work with Zimo Zhao and Jade Wang because we already have a foundation of cooperation from our previous TUT sessions, which have yielded very good results.