**Data Analysis Exercise for Students**

*This exercise calls upon you to test the hypothesis in several research examples. You should use the instruction about selecting a statistic and the special York Excel file to complete this task. Email this assignment to the instructor.*

Case A: Improving the grades of at-risk middle school students

Project GO is designed to improve the grades of middle school students who are at-risk of failing a grade. The numerical grades given by teachers serve as the measure of the dependent variable. Students served by this program are given a set of services such as tutoring, group discussion, and case management from a social worker. This program is implemented in the second grading period of the school year. The grades of clients during the first grading period of the school year will be compared to their grades during the second grading period to see if the program is effective. The data are given below.

|  |  |  |
| --- | --- | --- |
| Student | Grade in 1st grading period | Grade in 2nd grading period |
| 1 | 56 | 71 |
| 2 | 61 | 77 |
| 3 | 68 | 78 |
| 4 | 51 | 35 |
| 5 | 55 | 65 |
| 6 | 67 | 81 |
| 7 | 66 | 77 |
| 8 | 67 | 62 |
| 9 | 55 | 78 |

Your task is to insert your answers to the following questions:

1. State the hypothesis being tested in Case A.
2. What is the dependent variable in Case A?
3. At what level is the dependent variable measured in Case A?
4. What research design is employed for Case A?
5. What statistic would be useful for testing the hypothesis for Case A?
6. What does this statistic do?
7. Did the data support the hypothesis? Answer either YES or NO and explain your answer with specific data.
8. Was practical significance achieved in Case A? Explain.

Case B: Reducing the anxiety of Mary Harper

Mary Harper is receiving therapy that is designed to reduce here anxiety, the goal she established for the treatment service. Progress was measured by an anxiety scale that provides higher scores for more anxiety. She was measured one time before therapy began (at the beginning of the first session) and six more times at the beginning of each of six weekly therapy sessions. The data are presented below.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Baseline | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 |
| 34 | 31 | 28 | 33 | 35 | 29 | 28 |

1. State the hypothesis being tested in Case B.
2. What is the dependent variable in Case B?
3. At what level is the dependent variable measured in Case B?
4. What is the research design employed for Case B?
5. What statistic would be useful for testing the hypothesis for Case B?
6. What does this statistic do?
7. Did the data support the hypothesis? Answer either YES or NO and explain your answer with specific data.
8. Was practical significance achieved in Case B? Explain.

Case C: Improving medical compliance for seniors with dementia

The Medical Assistance Program provides supports to seniors suffering from dementia who have been recently discharged from Memorial Hospital. The program is designed to improve compliance with taking medications. Patients are classified as either compliant or non-compliant at the first visit of the social worker to the home and are classified as either compliant or non-compliant one month later. The data on compliance are presented below.

|  |  |  |
| --- | --- | --- |
| **Patient number** | **1st meeting** | **One month later** |
| 1 | Non-compliant | Compliant |
| 2 | Non-compliant | Compliant |
| 3 | Compliant | Compliant |
| 4 | Non-compliant | Non-compliant |
| 5 | Non-compliant | Compliant |
| 6 | Non-compliant | Non-compliant |
| 7 | Compliant | Non-compliant |
| 8 | Non-compliant | Compliant |
| 9 | Non-compliant | Compliant |
| 10 | Compliant | Compliant |
| 11 | Non-compliant | Non-compliant |
| 12 | Non-compliant | Complaint |

*Answer the following questions about Case C*

1. State the hypothesis being tested in Case C.
2. What is the dependent variable in Case C?
3. At what level is the dependent variable measured in Case C?
4. What research design is employed for Case C?
5. What is the structure of the data? This can be drawn from Table C.1
6. What statistic would be useful for testing the hypothesis for Case C? This can be drawn from Table C.1

1. Did the data support the hypothesis? Answer either YES or NO here and nothing else.
2. What is your explanation of whether the data supported the hypothesis?