

Problem Identification and Model Planning

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The problem identified is that the relationship between reported levels of family tension before and after participating in the Homeless Teen Program is not adequately comprehended. The rationale for studying this problem is that the program strived to address the underlying issues that led to homelessness in the first place. The program specifically seeks to mitigate teen homeless causations such as family problems. Family intervention programs are expensive, and the CAC wants to justify their expense while also considering funding their residence for homeless teens. Demonstrating the effectiveness of family intervention programs will enable them to receive another grant from Helping Hands. Therefore, understanding the relationship between family tension and family intervention program effectiveness is crucial for the CAC's funding and expansion plans.

Helping Hands would be interested in knowing about the relationship between reported levels of family tension before and after the application of the intervention. First, the organization would want to comprehend if their investment in the program is making a meaningful impact. On comprehension of the program's effectiveness, the organization would have the liberty and capacity to make informed decisions about future funding opportunities. The organization would also be benefitted from the knowledge of the issue for them to plan for future replication of the intervention program in other communities in a similar demographic. Therefore, recognizing factors contributing to the success of the intervention would facilitate the organization to disseminate best practices in future homeless intervention endeavors.

The analytics lifecycle is a series of stages that guide data use to solve a business problem. The method can facilitate the comprehension of the state of reported levels of family tension before and after participation in the teen homeless intervention program. The analytical lifecycle can be applied to the problem through a cycle of stages. CAC could delegate a team to research,

learn and comprehend the issue to develop appropriate solutions. The team would first have to understand the problem through the recognition of the various elements adequately. Secondly, the data preparation would be done by the IT systems and management department. The data needed would include family tension levels before and after the involvement in the teenage homeless program. Specifically, the data would consist of family feuds, domestic violence, sexual abuse, and struggles, among other tensions.

Data exploration would be conducted by obtaining detailed descriptive statistics and using data visualization techniques to comprehend the issue's insides fully. Transform and select would involve data cleaning, normalization, or aggregation of the collected statistics. It will include accessing the data for discrepancies, among other issues, that may help reflect the reliability of the data. The fifth stage of the analytics lifecycle involves analytical modeling. The IT department in CAC may use a paired t-test to determine whether there is a statistically significant difference in reported levels of family tension before and after participating in the family intervention program. The next process would involve using statistical techniques to test the models and ensure they are robust. The models would then be actualized by creating reports or dashboards summarizing the findings and providing insights. The final stage of the process would involve evaluating and monitoring the results over time to ensure they remain valid and relevant. The step may involve ongoing data collection and analysis to identify any changes or trends in the data.

Comprehension of the reported levels of family tension before and after teenagers participate in the homeless teen program by CAC requires adequate quantitative data. Evident variables to be used include the independent and dependent variables. The independent variables would consist of the age of the teenagers, sex, educational level, and health condition, among

other appropriate information. On the other hand, dependent variables will include family problems before and after enrollment of teens in the intervention program, criminal or incarceration history, and foster care history, among others. The independent variables are appropriate because they provide a background on each teen enrolled in the homeless program. However, the factors are not directly linked to the occurrence of the issue stated. On the other hand, dependent variables are useful in identifying how one problem leads to another.

The appropriate statistical analysis to be conducted is a paired t-test. The test will determine the difference between the reported levels of family tension before and after participating in the family intervention program. The paired t-test is appropriate because it facilitates the comparison of the means of the two related data groups. Additionally, the paired t-test is well-suited for analyzing normally distributed data with equal variances, which is likely to be the case for our data.

Qualitative data will be used to complement our quantitative data. The data will be essential in providing more in-depth insights into the experiences of the teens participating in the family intervention program. The information to be utilized will be data collected by case managers. Specifically, it will include information on family backgrounds, academic problems, legal issues, and mental health problems experienced by teens.

The qualitative data is appropriate because it can help us understand the unique circumstances of each teen. It can also help in understanding how these circumstances may have impacted their reported levels of family tension before and after participating in the program. By analyzing the qualitative data, they can identify any emerging patterns or themes. Specifically, the patterns can be explored on specific types of family conflict or mental health issues that are

more common among the teens who reported higher levels of family tension after participating in the program.

Content analysis will be used in the study of the qualitative data. The method involves identifying and categorizing specific themes or patterns within the data. The first crucial step in actualizing the paradigm will be to review the data and identify common themes and designs. Common ways may involve family conflict, mental health issues, or involvement in criminal activities and drug use. The next step in the methodology will include developing a coding scheme to categorize the data into these themes systematically. The approach will allow the identification of commonalities in the data. There will then be a comparison of the information to gain a more comprehensive understanding of the relationship between reported family tension levels and program participation. The method is appropriate in the study and resulting solution of the problem faced by CAC because it will facilitate the analysis of information in a structured and systematic way allowing for accurate synthesis of patterns.

The group collaboration process was simple, integrative, and collaborative. The process was started by discussing the problem statement provided in the scenario. We also brainstormed on potential questions that could be asked using the available data. The discussion on the merits of each question then followed the identification of the possible questions. We then decided to focus on the relationship between reported levels of family tension before and after participating in the family intervention program. The next phase in the group collaboration was identifying the appropriate quantitative and qualitative data required to address the identified problem. We also discussed content analysis's strengths and weaknesses in analyzing the qualitative data.

Our collaboration process was valuable. The collaboration allowed each contributor to share their views and opinions. The involvement facilitated the process to be intuitive in understanding

the identified challenge and the required strategies and information to address the problem. The identification of potential challenges and limitations of the approach was further made easier by the group collaboration process. In general, working together as a group assisted us in developing a strategy that was more exhaustive and reliable in its analysis of the issue at hand.