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Individual Report 1

Our country faces many problems today, one in particular that I focused on was the amount of spending on assistance for childcare. In order to investigate this issue further, I examined the proportions opinions of American adults, who think we are either spending too much, about right, or too little on assistance for childcare. After looking into the process of the General Social Survey (GSS), I believe this investigation is both random and representative. Through my findings, I noticed that GSS uses addresses to account for a “cross-section” of the country. Therefore, this meets the representative condition of an SRS because it depicts a segment of the country rather than just one state. Additionally, households from all over the United States were randomly selected to participate. Within each family an adult was selected a random to take part in the survey. GSS performed an SRS by having each household from all over the country have the same chance to be selected for this survey (para. 2). This survey proved to be well constructed by having both necessary elements of an SRS – random and representative. I initially thought the proportions of American adults who thought too much money is spent on assistance for childcare would be p1 = 0.15. This lead me to believe that p2 = 0.55 for the proportion of adults who thought about the right amount was spent on assistance for childcare. Lastly, I expected p3 = 0.3 for those who though too little was spent on assistance for childcare.

This survey analyzes one categorical variable, meaning a bar graph or pie chart would be acceptable to demonstrate the statistics. I originally thought the proportions of opinions of spending on assistance for childcare was p1 = 0.15, p2 = 0.55. and p3 = 0.3. This survey was tested using a Chi-Square Goodness-of-Fit test, which deals with more than two categories. For this problem, the three categories were the opinions of spending on assistance for childcare: too much, about right, or too little. From the data, my expected proportions do not fit the figures because my numbers were quite off from the results as shown in the expected counts. Also, my initial proportions of p1 = 0.15, p2 = 0.55. and p3 = 0.3 were substantially different from the percents shown in the pie chart.

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| --- | --- | --- |
| **Opinions of Spending on Assistance for Childcare** | **Observed Counts** | **Expected Counts** |
| **Too Much** | 163 | 405 |
| **About Right** | 981 | 1485 |
| **Too Little** | 1556 | 810 |

The parameter of my study was the proportions of opinions of amount of spending on assistance for childcare. Next, I used a Chi-Square Goodness-of-Fit test to measure the distance of the observed counts from the expected counts to see if there was a significant evidence that they were different. In order to carry out a Chi-Square Goodness-of-Fit test, I first had to determine if the GSS was an SRS. As I mentioned previously, both random and representative conditions were satisfied. Next, I calculated the expected counts by multiplying the sample size (2700) for each proportion (0.15) for too much, (0.55) for about right, and (0.3) for too little. All three of these expected counts were greater than five, so I was able to proceed with the Chi-Square Goodness-of-Fit test. I then defined my null hypothesis as H0 = p1 = 0.15, p2 = 0.55, p3 = 0.3, and my alternative hypothesis was Ha = at least one proportion of adult opinions on assistance for childcare is different. Using my calculator, I computed the test statistic was *X*2(2) = 1002.71. I found that the P-value was so small that the calculator showed it as 0. The P-value represents the likelihood of seeing the differences in the observed and expected counts. This also means if H0 is true then there is a chance equal to the P-value that the value of the test statistic will be equal to or greater than the calculated value. Therefore, I conclude there is significant evidence that at least one proportion of the opinions of the amount of spending on assistance for childcare by American adults is different. I came to this assumption because my P-value was so small that it had to be less than my alpha (0.05), so I rejected he null hypothesis to accept the alternative hypothesis that at least on proportion of the opinions of American adults for amount of spending on assistance for childcare is different than my original predictions.

In conclusion, there was significant evidence that the proportions of American adult opinions on the spending of assistance for childcare were different than p1 = 0.15, p2 = 0.55. and p3 = 0.3. My inferential conclusion does not support my initial impression, which proved to be incorrect because the expected counts varied greatly from the observed counts. This was also demonstrated with such a small P-value. The Chi-Square Goodness-of-Fit test indicated at least one of my proportions was different from my original values of opinions of American adults who believed the amount of spending on assistance for childcare was either too much, about right, or too little.

Works Cited

*General Social Survey*. NORC, 2016, <http://www.gss.norc.org/for-survey-participants>. Accessed 22 March 2018.