Does Being a Part of GRΣΣK Life Affect Your Academic Performance?

Team 8

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Part 1: Research Objective and Research Questions

a. We expected to use our collected data to see if greek life students do better in school than non-greek life students. Our group is split between the thinking that greek life students are better off than non-greek life students.

b. Research questions
   i. Are you in a fraternity/sorority?
   ii. How many hours a week do you spend studying?
   iii. How many hours of sleep on average do you get?
   iv. What is your current major?
   v. What is your current GPA?
   vi. Current level of stress?
   vii. On average how many hours a week do you spend partying?
   viii. Do you take any unprescribed pills to help you study (adderall, vyvanse, etc.)

c. Our research objective is important because greek life is a big part of Indiana University Bloomington. Fraternities are always having parties on the weekends and sometimes during the week. There are many people that believe greek life has a negative impact on students grades because of the all the extra partying that goes on. We want to study it because three of us in our group are involved in greek life here at IU and we believe that it does not have a negative impact on our academics. This is because there are over 100 other guys in our chapter and many of them have the same majors. Having all these guys means that there is always someone who can help someone else out with homework/studying. This works as an added resource that non-greek life members don’t always have. Despite all the negative views that seem to reflect on greek life we are looking to change this by showing that a house full a brothers can have many positive effects.

d. Our main research question is, how does being in a fraternity/sorority affect GPA? Our rationale to conduct our study was a survey which we sent out to IU students. We sent the survey in numerous group chats, some of which had sorority and fraternity members while others had non-greek life members. We received over 90 responses from members of all three categories. However, the majority of the responses were from fraternity members and the second most responses were from sorority members. With these responses we assessed the results by comparing one question with another. From there we were able to make a final conclusion to our question. Our research question is important because the university is currently looking push back against greek life and close down any chapters out of line. If being in greek life truly does influence academics in a positive way then the university can understand that and realize there's more to greek life than just parties. This research question should be interesting to students here at IU because of the amount of people involved in greek life. Incoming freshman can see positive outcomes from being in greek life and learn that it might be something they’re interested in being apart of.
Part 2: Dataset and Select Variables of Interest

a. Our dataset comes from our own research that we conducted using a custom Google Form. Our goal was to figure out whether or not being involved in Greek life has an affect on academic performance. We received over 90 responses on our form which asked 8 questions; Are you in a fraternity, sorority or neither?, How many hours per week do you spend studying?, How many hours of sleep do get on average per night?, What is your current major?, What is your current cumulative GPA?, What is your current level of stress 1 being very low 10 being very high?, Do you or have you taken an unprescribed pill to help you study (Adderall, Vyvanse, etc.)?, and How many hours do you spend partying on average per week? Our population is the students at Indiana University and our sample is slightly unorthodox due to our sampling method. Our sampling method consisted of reaching out to students in various group chats with both students in greek life and students outside of greek life. It is important to note that our sample is slightly biased due to the way we asked for responses. Out of the 97 responses that we received, 53.6% were in a fraternity, 26.8% were in a sorority and 19.6% were in neither. Although we would have liked to have more students outside of greek life participate in our survey, we feel that we can still answer our question as accurately as we possibly can, keeping the bias in mind.

b. Our outcome variable is the student’s cumulative GPA. Since we are weighing whether or not being a part of greek life has an effect on GPA, we will be able to most accurately tell if there is an effect by measuring how high their GPA is weighed against our independent variables we chose which are, whether or not they are in greek life, hours spent per week studying, stress level on a scale of 1 through 10 and hours spent per week partying.

c. Variable Description:
   i. Cumulative GPA - students were asked to enter their cumulative GPA in a text field which held no restrictions. We made sure to mention that the form was anonymous in hopes of getting the most truthful responses possible. If we did not make this distinction, we feel that students may have entered different GPAs because of possible response bias, where students would have answered untruthfully because of fear of judgement, or issues with giving information they may have considered private.
   ii. In greek life or not - this question asked students to select whether they were in a fraternity, sorority or neither from a list containing only those three questions. We chose to limit this question to those three responses because any other response would stray from our goal of identifying which group they belonged to.
   iii. Hours spent per week studying - we asked students to estimate how many hours per week they spent studying which we did in ranges which were less than 1, 2-3, 4-5, 6-7 and 8 or more. We chose to make this question a list with options in order to keep our data more organized versus having an unknown range of options which we would have gotten if this question was free response.
Part 3: Descriptive Statistics

Source of Data:

All of the data we received for this research came anonymously through a survey we created and sent to different group chats with Indiana University Bloomington students. After eliminating responses that were not taken seriously by the participant, we ended with 95 total respondents. Of the 94 random IU students, 76 did participate in greek life and 19 did not. We believe the reason for the large difference in sample sizes is due to the fact that many of the greek students who responded were people we had a closer connection with so they were more willing to do it because they knew who they were doing it for.

Equations Used:

Mean:

Population Mean
\[ \mu = \frac{\sum x}{N} \]

Sample Mean
\[ \bar{X} = \frac{\sum x}{n} \]

Standard Deviation:
\[ S = \sqrt{\frac{\sum(x - \bar{x})^2}{n - 1}} \]

Regression and Test Statistic:
\[ r = \frac{n(\Sigma xy) - (\Sigma x)(\Sigma y)}{\sqrt{[n\Sigma x^2 - (\Sigma x)^2][n\Sigma y^2 - (\Sigma y)^2]}} \]
\[ t = \frac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} \]

Where \( \mu_1 = \mu_2 \).
The entire sample of 95 people had an average GPA of 3.46 with the median GPA being 3.5 and the most common was also 3.5 with a standard deviation of the GPAs was +/- 0.360. The highest GPA of all students was a 4.0 and the lowest was a 2.0. When we separated the GPAs by greek and non greek students, we found that greek students averaged a 3.45 GPA and a median of 3.5 which was basically the same as the population but the most common GPA was a 3.2. The standard deviation for greek students was +/-0.328, the maximum was 4.0 and the minimum was 2.5. While the non greek students had a lower maximum and a lower minimum GPA, the average of the 19 respondents was a 3.48 with a median of 3.6. The mode was substantially higher than greek students at 3.9 and the standard deviation was +/-0.476.
**Studying:**

<table>
<thead>
<tr>
<th>Mean</th>
<th>Median</th>
<th>Mode</th>
<th>Standard Deviation</th>
<th>Max</th>
<th>Min</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.24</td>
<td>6</td>
<td>5</td>
<td>4.412</td>
<td>17</td>
<td>1</td>
<td>95</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Studying</th>
<th>Greek</th>
<th>Non Greek</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>7.61</td>
<td>5.79</td>
</tr>
<tr>
<td>Median</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Mode</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>4.442</td>
<td>4.077</td>
</tr>
<tr>
<td>Max</td>
<td>17</td>
<td>14</td>
</tr>
<tr>
<td>Min</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Sample Size</td>
<td>76</td>
<td>19</td>
</tr>
</tbody>
</table>

The entire sample of 95 people averaged 7.24 hours of studying per week with the median being 6 and the most common being 5 hours of studying per week. The standard deviation of the whole sample was +/-4.412 with the highest being 17 and the lowest being 1. When we separated the amount of studying per week by greek and non greek students, we found that greek students averaged 7.61 hours, a median of 6, and a mode of 5 which was basically the same as the population. The standard deviation for greek students was +/-4.442, the maximum was 17 and the minimum was 1 hours of studying per week. The non greek students had a lower average hours of studying at 5.79 and a lower median at 5, but the modes were the same. The standard deviation for non greek students was +/- 4.077 and the maximum was 14. The minimum was identical at 1 hour of studying per week.
Sleeping:

<table>
<thead>
<tr>
<th>Mean</th>
<th>Median</th>
<th>Mode</th>
<th>Standard Deviation</th>
<th>Max</th>
<th>Min</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.0</td>
<td>7</td>
<td>6</td>
<td>1.776</td>
<td>12</td>
<td>2</td>
<td>95</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sleeping</th>
<th>Greek</th>
<th>Non Greek</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>7.11</td>
<td>6.55</td>
</tr>
<tr>
<td>Median</td>
<td>7</td>
<td>6.5</td>
</tr>
<tr>
<td>Mode</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>1.764</td>
<td>1.802</td>
</tr>
<tr>
<td>Max</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>Min</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Sample Size</td>
<td>76</td>
<td>19</td>
</tr>
</tbody>
</table>

The entire sample of 95 people there was a mean of 7.0 hours of sleep per night with the median also being 7 and the most common being 6 hours of sleep per night. The standard deviation of the whole sample was +/-1.776 with the highest being 12 and the lowest being 2. When we separated the amount of sleep per night by greek and non greek students, we found that greek students averaged 7.11 hours, a median of 7, and a mode of 6 which was basically the same as the population. The standard deviation for greek students was +/-1.764, the maximum was 12 and the minimum was 3 hours of sleep per night. The non greek students had a lower average hours of sleep at 6.55 and a lower median at 6.5, but 7 was the most common response rather than 6 for greek. The standard deviation for non greek students was +/- 1.802 and the maximum was 10. The minimum was identical at 2 hour of sleeping per night.
Stress:

<table>
<thead>
<tr>
<th>Mean</th>
<th>Median</th>
<th>Mode</th>
<th>Standard Deviation</th>
<th>Max</th>
<th>Min</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.45</td>
<td>7</td>
<td>8</td>
<td>2.221</td>
<td>10</td>
<td>1</td>
<td>95</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stress</th>
<th>Greek</th>
<th>Non Greek</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>6.39</td>
<td>6.68</td>
</tr>
<tr>
<td>Median</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Mode</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>2.251</td>
<td>2.136</td>
</tr>
<tr>
<td>Max</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Min</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Sample Size</td>
<td>76</td>
<td>19</td>
</tr>
</tbody>
</table>

The entire sample of 95 people had an average stress level of 6.45 with the median being 7, the most frequent being 8, and a standard deviation of +/- 2.221. The highest stress level of all the respondents was a 10 and the lowest was a 1. When we separated student stress levels by greek and non greek students, we found that greek students averaged 6.39, 7 for the median, and 8 for the mode. All of these statistics were very similar to the combined statistics. The standard deviation for greek students was +/- 2.251, the maximum was 10 and the minimum was 1. The non greek students had a mean stress level of 6.68, an identical median, and a much lower mode at 5. The standard deviation was +/- 2.136, the maximum stress levels were the same at 10, and the minimum stress level was higher at 3.
The entire sample of 95 people averaged 5.6 hours of partying per week with the median being 5 and the most common being 5 hours of studying per week. The standard deviation of the whole sample was +/- 3.037 with the highest being 14 and the lowest being 0. When we separated the amount of partying per week by greek and non greek students, we found that greek students averaged 6.14 hours, a median of 6, and a mode of 7 which was different than the population but expected. The standard deviation for greek students was +/- 2.726, the maximum was 14 and the minimum was 0 hours of partying per week. The non greek students had a lower average hours of partying at 3.42 and a lower median at 3, and a much lower mode of 0. The standard deviation for non greek students was +/- 3.305, the maximum was 10, and the minimum was the same at 0 hours of partying per week.
From the data that we collected through survey questions asked to Indiana University students we can see that the average GPA of Non Greek affiliated students is just slightly higher than the average GPA of Greek affiliated students. As you can see the average of GPA’s is just slightly off by 0.03 of a point. So regardless we can conclude that being a part of greek life does not affect your academic performance as much as it would not being in greek life.
The first graph shows the comparison between studying hours and GPA for Non Greek affiliated students, while the second graph shows the same comparison of hours studying to GPA for
Greek affiliated students. It can be seen that we collected much more data for Greek affiliated students, although it is also shown that Greek affiliated students spend a lot more time studying than Non Greek students. We can also see from the data that Non Greek students appear to have more instances per sample size of having less study hours per week and still maintain a high GPA. The data also shows that on average the more time either type of student studies the higher their GPA is regardless of being in greek life or not.

**Hours partying per week compared to GPA (Non Greek)**

- On average how many hours a week do you spend partying?
- What is your current GPA? (this form is 100% anonymous)

**Hours partying per week compared to GPA (Greek)**

- On average how many hours a week do you spend partying?
- What is your current GPA? (this form is 100% anonymous)
The graphs above compares hours partying per week to the GPA of both Greek and Non Greek students. We hypothesized that Greek students would party more and in turn Non Greeks would have a higher average GPA compared to Greek students in this category. The graphs do show that Greek students party many more hours than Non Greek students. There were also many instances that showed some Non Greek students would not party at all during the week, while all data collected from Greek life students showed that each and everyone would party for at least a couple hours per week. It is apparent that hours partying did not have much of a factor on each type of students GPA, because both Non Greek and Greek were still very similar in GPA. It also can be seen that the less partying a student does the higher their GPA is on average.

Stress Levels compared to GPA (Greek)

What is your current GPA? (this form is 100% anonymous)

Current level of stress (1-10) 1 being very low 10 being very high?

What is your current GPA? (this form is 100% anonymous)
From the results of the graphs comparing stress levels to GPA it can be seen that on average Non Greek students had higher stress levels averaging a stress level of 6.68. While Greek students were very close behind with an average of 6.39. We hypothesized that since Greek students are involved in another extracurricular activity such as Greek life, that their average stress level would be higher than someone not in greek life. This did not seem to be true from our data but we can assume that it had to do with the much larger sample size of Greek students that responded compared to Non Greek students.

Hours of sleep per night compared to GPA (Greek)

From the results of the graphs comparing stress levels to GPA it can be seen that on average Non Greek students had higher stress levels averaging a stress level of 6.68. While Greek students were very close behind with an average of 6.39. We hypothesized that since Greek students are involved in another extracurricular activity such as Greek life, that their average stress level would be higher than someone not in greek life. This did not seem to be true from our data but we can assume that it had to do with the much larger sample size of Greek students that responded compared to Non Greek students.
These two graphs above describe the relationship between the amount of sleep a student gets on average and their GPA. We hypothesized that Greeks would be getting less sleep than Non Greeks due to the assumptions that Greeks party more and are ultimately living with many more roommates than Non Greeks. It turns out on average Greeks get 7.11 hours of sleep while Non Greeks get on average 6.55 hours. This is very close and not as much of a difference than we hypothesized. We can also conclude that the data could be skewed because of the amount of responses from Greek students compared to Non Greek students.

**Part 5: Hypothesis Testing (and/or estimation)**

Hypothesis: If someone participates in greek life, their GPA will be lower than someones who is not a part of greek life

H0: X1=X2

H1: X1<X2

Type of Statistical Method: Two Sample Test

Test statistic= -0.2598
\[
\frac{(3.45 - 3.48) - (0)}{\sqrt{\frac{0.328^2}{76} + \frac{0.476^2}{19}}}
\]

P-Value = 0.3978

Confidence interval:

\[
1.984 \cdot \sqrt{\frac{0.328^2}{76} + \frac{0.476^2}{19}}
\]

E = 0.2991

-2591 < μ1 - μ2 < 0.1991

The confidence interval does include 0 meaning there does not appear to be a significant difference between the two proportions so there is not sufficient evidence to warrant rejection of the claim that greek life affects your GPA.

Rationale: We chose to use the regression method due to the fact that we would be able to draw an answer as to if there is correlation between our data or not.

<table>
<thead>
<tr>
<th>GPA (Greek)</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is your current GPA? (this form is 100% anonymous)</td>
</tr>
<tr>
<td>Trendline for What is your current GPA? (this form is 100% anonymous) R^2 = 0.053</td>
</tr>
</tbody>
</table>

r = 0.2302
The correlation coefficient, $r^2$, is very close to zero and the $r$ value is 0.2302. This figure falls in the region of no significant correlation in our data hence, we reject the null hypothesis.

The correlation coefficient, $r^2$, is -0.128 meaning the $r$ value is -0.3578 and showing us that there is a weak correlation between our data points. Because the $r$ value is so low, we reject the claim of significant linear correlation in the dataset and therefore fail to reject the hypothesis that greek life affects your GPA..

**Part 6: Summarized Conclusions**

When conducting our survey, it is important to point out that our data was primarily from Greek students (~80% Greek, ~20% Non-Greek) which may have affected our final results. If we were to conduct this test again, we would make sure we get 50 non greek and 50 greek students to keep a consistency and make sure our results can not be potentially skewed.
GPA:

We originally hypothesised that greek students would have a lower average GPA than non greek students. While this hypothesis did prove true according to our data, the average GPA was lower by just 0.03 points. On a 0-4 GPA scale, 0.03 is fairly irrelevant compared to what we expected the difference to be. We can conclude that being a part of greek life does not affect your academic performance as much as it would not being in greek life.

Studying:

From looking at our data and the graphs we made about each tested category, we saw that greek students averaged more hours studying per week than non greek students by over 1 hour per week. However, when we look at our stats for GPA, we can see that the one hour difference in hours studied does not make the greek students GPAs higher than non greek students. The data also shows that on average the more time either type of student studies the higher their GPA is regardless of being in greek life or not.

Sleeping:

We hypothesized that Greeks would be getting less sleep than Non Greeks due to the assumptions that Greeks party more and are ultimately living with many more roommates than Non Greeks. It turns out on average Greeks get 7.11 hours of sleep while Non Greeks get on average 6.55 hours. This is very close and not as much of a difference than we hypothesized. We can also conclude that we this data could be skewed because of the amount of responses from Greek students compared to Non Greek students.

Stress:

From the results of the graphs comparing stress levels to GPA it can be seen that on average Non Greek students had higher stress levels averaging a stress level of 6.68. While Greek students were very close behind with an average of 6.39. We hypothesized that since Greek students are involved in another extracurricular activity such as Greek life, that their average stress level would be higher than someone not in greek life.

Partying:

We hypothesized that Greek students would party more and in turn Non Greeks would have a higher average GPA compared to Greek students in this category. The data did show that there was a significantly higher number of hours partying each week compared to non greek students.