**Interpret trends and/or patterns**

To disprove the null hypothesis, I will be using data from the .gov website and then use several analytical tools to better interpret and represent the data.

|  |  |  |  |
| --- | --- | --- | --- |
| year | Boys | Girls | Total |
| 2005/2006 | 96.7 | 98.1 | 97.3 |
| 2006/2007 | 97.4 | 98.7 | 98.0 |
| 2007/2008 | 98.1 | 99.1 | 98.6 |
| 2008/2009 | 98.3 | 99.5 | 98.9 |
| 2009/2010 | 98.5 | 99.4 | 99.0 |
| 2010/2011 | 98.8 | 99.4 | 99.1 |
| 2011/2012 | 99.6 | 99.7 | 99.6 |
| 2012/2013 | 99.7 | 99.7 | 99.7 |
| 2013/2014 | 97.7 | 98.7 | 98.2 |
| 2014/2015 | 99.1 | 99.3 | 99.2 |
| 2015/2016 | 99 | 99.4 | 99.2 |
|  |  |  |  |

The data above is a raw data table which I created in excel from the data I could find from the government website of GCSE results, this table contains historical information of what percentage of boys and girls get a GCSE achievement at key stage 4 in percentage.

The bar chart above is created from the table of data and is a better visualisation of the data. This graph starts from 2005 and then has up till 2016 results within it so it has historical information so it should be accurate and reliable. This bar chart refutes the hypothesis I am trying to prove and in fact indicates that instead the null hypothesis if correct as it indicates that there is a difference between the two genders and has been for some time.

The graph above contains the averages of how many percentage achieved at one GCSE for males, females, and the total from 2005 up to 2016. The first thing to notice from this chart is it one again goes against the original hypothesis I was trying to prove but instead supports the null hypothesis. The graph shows that females have historically on average achieved at least one GCSE more than males have and it even shows that the female percentage for this is higher than the total which is less because it is an average from both males and females.

This information for the percentage rate of at least one GCSE achievement disproves the hypothesis an instead proves the null hypothesis as it shows a clear trend and indicates that females have a higher success rate at the GCSE level.

Another way to get a better gauge for the achievement rate for males and females is to look at the pass rates for English and maths as they are fundamental subjects and everyone at GCSE level must take them. the subjects themselves are not easier for one gender so they will be a good way to measure the performance of each gender.

|  |  |  |
| --- | --- | --- |
| year | boys | females |
| 2005/2006 | 42.6 | 51.2 |
| 2006/2007 | 43.0 | 52.0 |
| 2007/2008 | 44.0 | 53.0 |
| 2008/2009 | 46.3 | 54.7 |
| 2009/2010 | 49.8 | 58.4 |
| 2010/2011 | 56.0 | 63.4 |
| 2011/2012 | 55.4 | 64.8 |
| 2012/2013 | 54.8 | 65.4 |
| 2013/2014 | 53.2 | 63.0 |
| 2014/2015 | 50.5 | 59.5 |
| 2015/2016 |  |  |
| 2016/2017 |  |  |
| 2017/2018 |  |  |
| 2018/2019 |  |  |
| 2019/2020 |  |  |

The data above is data I have collected from government sources from 2005 to 2015 for the percentage pass rate of GCSE English and maths for grades between A\* to C. I used this data to show a line graph.

The first thing to notice from this line graph is that females have maintained a significant lead over males for GCSE English and math pass rates, the difference is around 8%percent and has stayed around for at least 10 years. This trend once again refutes the hypothesis I had proposed.

For this graph, I extended the time period so I could create some trendlines to try and get an idea of what the pass rates may look like in the future and to see if it will match the hypothesis. The trendline show the same difference between males and females which is forecasted to stay around up till the trendlines stop.

The data for the success rate at GCSE English and maths once again disagrees with the original hypothesis and show that there is indeed a difference between the two genders.