BS 851

Homework 10

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**Part A**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  | **Z** | **Significance Level** |
| 600 | 0.4 | 0.00079 | 3.3569 | 0.000788 |
| 750 | 0.5 | 0.00306 | 2.9885 | 0.00280 |
| 1,000 | 0.6667 | 0.01210 | 2.5396 | 0.01110 |
| 1,200 | 0.8 | 0.02442 | 2.3154 | 0.02058 |
| 1,500 | 1 | 0.05 | 2.0337 | 0.04198 |

Alpha-spent is the amount of the overall alpha, usually , that is willing to be “spent” at time . By the end of the experiment, the whole is willing to be spent. The significance level is the p-value associated with a critical chi-squared value that the experimental p-value is compared to determine if there is a significant difference between treatments.

**Part B**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  | **Z** | **Significance Level** |
| 560 | 0.3733 | 0.00048 | 3.4873 | 0.000488 |
| 750 | 0.5 | 0.00306 | 2.9790 | 0.00290 |
| 1,000 | 0.6667 | 0.01210 | 2.5391 | 0.01112 |
| 1,200 | 0.8 | 0.02442 | 2.3153 | 0.02060 |
| 1,500 | 1 | 0.05 | 2.0337 | 0.04198 |

**Part C**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  | **Z** | **Significance Level** |
| 560 | 0.3111 | 0.00048 | 3.4917 | 0.00048 |
| 750 | 0.4167 | 0.00306 | 2.9775 | 0.00290 |
| 1,000 | 0.5556 | 0.01210 | 2.5392 | 0.01112 |
| 1,200 | 0.6667 | 0.02442 | 2.3154 | 0.02060 |
| 1,800 | 1 | 0.05 | 2.0766 | 0.03784 |

**Part D**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  | **Z** | **Significance Level** |
| 560 | 0.3111 | 0.00048 | 3.4917 | 0.00048 |
| 822 | 0.4567 | 0.00306 | 2.9832 | 0.00286 |
| 1,000 | 0.5556 | 0.01210 | 2.5290 | 0.01144 |
| 1,200 | 0.6667 | 0.02442 | 2.3133 | 0.02070 |
| 1,800 | 1 | 0.05 | 2.0762 | 0.03788 |

**Part E**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **No SVR** | **SVR** | Total |
| **Active Control** | 289 (70.32%) | 122 (29.68%) | 411 |
| **New Treatment** | 251 (61.07%) | 160 (38.93%) | 411 |
| Total | 540 | 282 | 822 |

A chi-squared test was used to test whether there was a difference in the proportion of sustained virological response between treatment groups. The chi-squared statistic was 7.7946 with 1 degree of freedom and the resulting p-value was 0.0052. With a p-value greater than the α=0.00286 significance level, the null hypothesis of there being no difference in in the proportion of sustained virological response between treatment groups was not rejected. There is insufficient statistical evidence to suggest early efficacy of the new treatment. The Data Safety and Monitoring Board should not recommend stopping the study early.