BIOS 6312 - Modern Regression Analysis
Spring 2021
Lab #7

Objective: Using the `mri` data, examine the association between cerebrovascular event prior to MRI and common lifestyle risk factors.

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1. $exp(\beta_{1(1)})$: The ratio of relative risks of experiencing a transient ischemic attack vs. no prior cerebrovascular event (comparing subgroups who differ in smoking status by one pack year and who are of same age, gender, and race) is 1.01.

   $exp(\beta_{1(2)})$: The ratio of relative risks of experiencing a stroke vs. no prior cerebrovascular event (comparing subgroups who differ in smoking status by one pack year and who are of same age, gender, and race) is 1.01.

2. There is sufficient evidence of an overall association between smoking history and prior cerebrovascular event (p = 0.0228).

3. $exp(\beta_{1(1)})$: The ratio of relative risks of experiencing a transient ischemic attack vs. no prior cerebrovascular event (comparing subgroups who differ in alcohol intake for the two weeks prior to MRI by one oz/week and who are of same age, gender, and race) is 0.842.

   $exp(\beta_{1(2)})$: The ratio of relative risks of experiencing a stroke vs. no prior cerebrovascular event (comparing subgroups who differ in alcohol intake for the two weeks prior to MRI by one oz/week and who are of same age, gender, and race) is 0.955.

4. $exp(\beta_{1(1)})$: The ratio of relative risks of experiencing a transient ischemic attack vs. no prior cerebrovascular event (comparing subgroups who have diabetes or not and who are of same age, gender, and race) is 2.49.

   $exp(\beta_{1(2)})$: The ratio of relative risks of experiencing a stroke vs. no prior cerebrovascular event (comparing subgroups who have diabetes or not and who are of same age, gender, and race) is 2.48.

5. Comparing subgroups differing in smoking history by one pack year but of the same age, gender, and race, the subgroup with the longer smoking history has an estimated 0.129% higher odds of having a higher level of global brain atrophy as compared to the subgroup with a shorter smoking history.