ST 705 Linear models and variance components
Homework problem set 12

April 15, 2020

1. (2 points) Exercise 6.15 from Monahan.

2. (2 points) Exercise 6.18 from Monahan.

3. (2 points) Exercise 6.19 from Monahan.

4. (2 points) Exercise 6.25 from Monahan.

5. (2 points) Consider the following 150 sorted p-values:

   0.0003 0.0005 0.0009 0.0009 0.0012 0.0022 0.0025 0.0033 0.0035 0.0052 0.0238 0.0263
   0.0446 0.0470 0.0506 0.0564 0.0585 0.0660 0.0662 0.0685 0.0805 0.0814 0.1084 0.1118
   0.1217 0.1247 0.1288 0.1305 0.1447 0.1463 0.1487 0.1541 0.1614 0.1896 0.1931 0.2181
   0.2187 0.2218 0.2354 0.2389 0.2485 0.2592 0.2976 0.3012 0.3050 0.3054 0.3122 0.3183
   0.3202 0.3233 0.3481 0.3491 0.3506 0.3543 0.3677 0.3738 0.3811 0.3872 0.3940 0.3992
   0.4033 0.4185 0.4240 0.4277 0.4361 0.4412 0.4436 0.4890 0.4894 0.4912 0.4954 0.4972
   0.5081 0.5193 0.5198 0.5199 0.5232 0.5254 0.5255 0.5290 0.5292 0.5395 0.5397 0.5408
   0.5444 0.5629 0.5638 0.5664 0.5767 0.5876 0.5937 0.5960 0.6021 0.6203 0.6378 0.6396
   0.6438 0.6513 0.6532 0.6671 0.6857 0.6983 0.7085 0.7122 0.7302 0.7306 0.7426 0.7429
   0.7454 0.7486 0.7495 0.7534 0.7613 0.7633 0.7653 0.7681 0.7766 0.7806 0.7821 0.7828
   0.7866 0.7867 0.7870 0.7901 0.8039 0.8084 0.8116 0.8140 0.8159 0.8212 0.8229 0.8304
   0.8594 0.8698 0.8771 0.8874 0.8886 0.8973 0.9027 0.9043 0.9066 0.9169 0.9208 0.9269
   0.9330 0.9452 0.9454 0.9670 0.9781 0.9970

   How many hypotheses would be rejected using without using any multiple test adjustment
   (set α to whatever you like)? How many would be rejected using Boinferroni adjustment?

6. (2 points) Exercise 8.16 from Monahan.