

Graphic Exploration

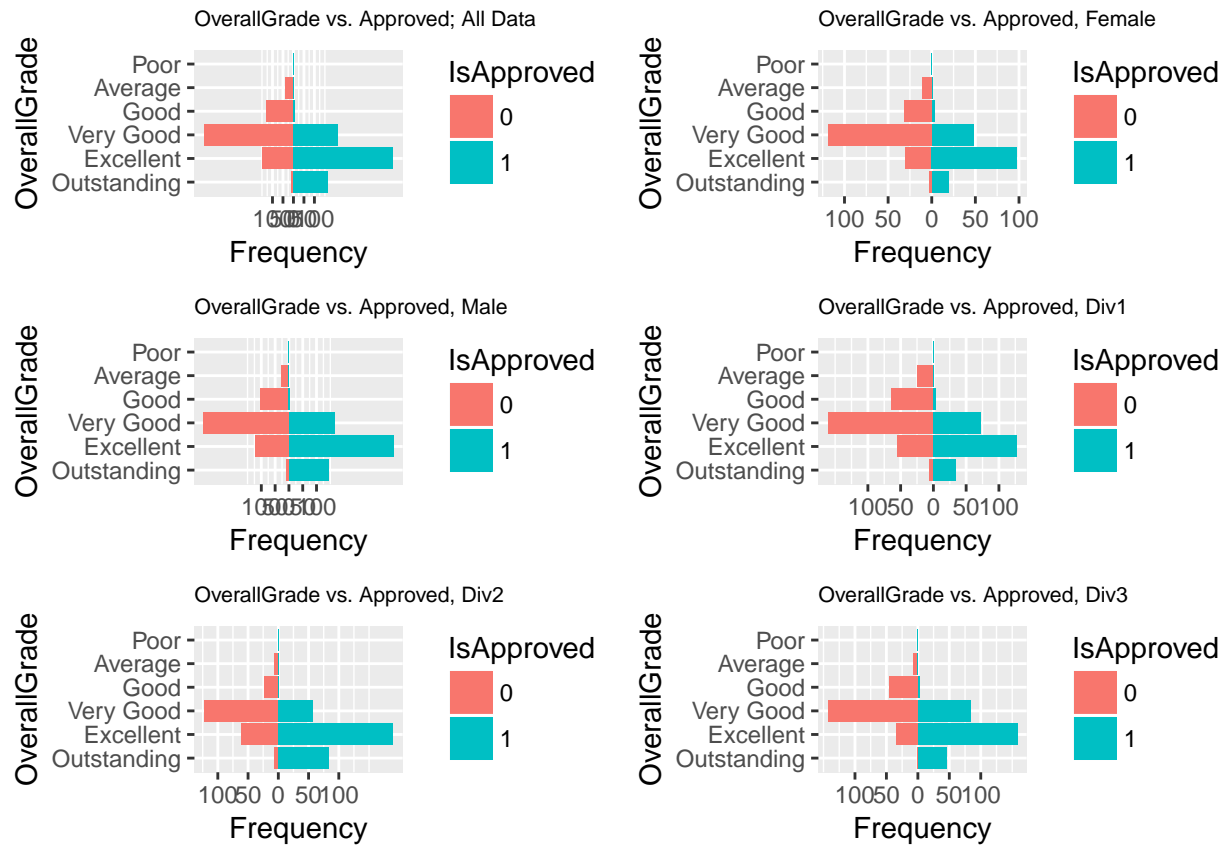
Leslie O'Bray

May 1, 2018

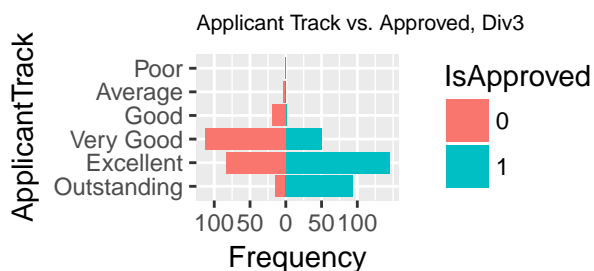
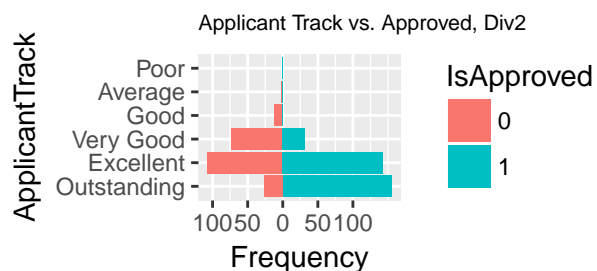
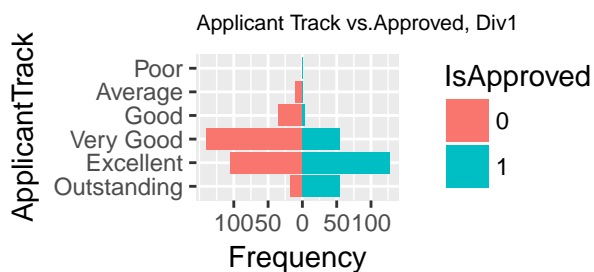
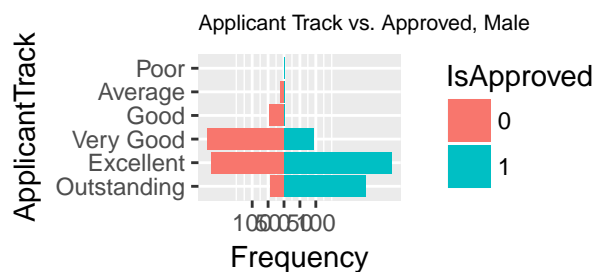
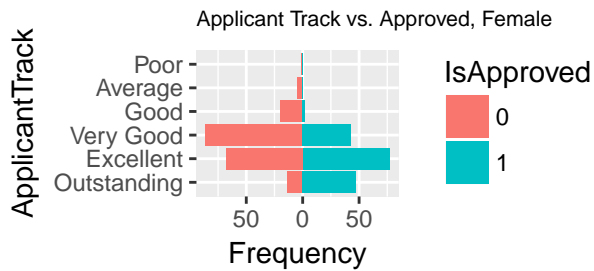
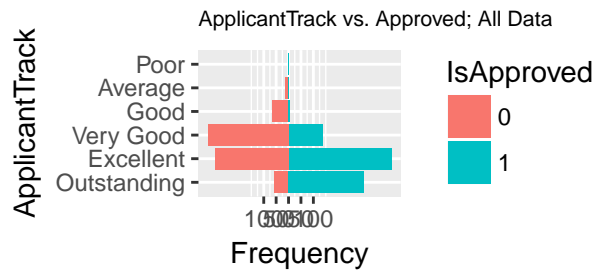
Exploratory Analysis: Mirrored bar plots

External Review Step: Relationship of the different grades on IsApproved

OverallGrade and IsApproved

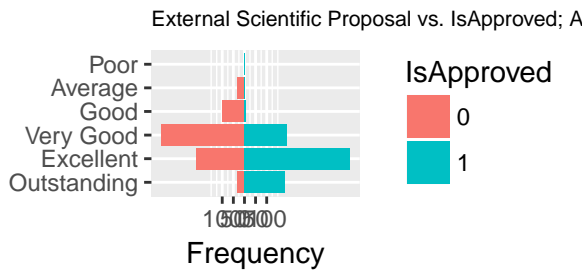


ApplicantTrack and IsApproved

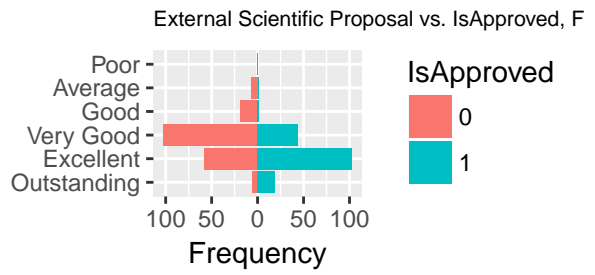


ScientificProposal and IsApproved

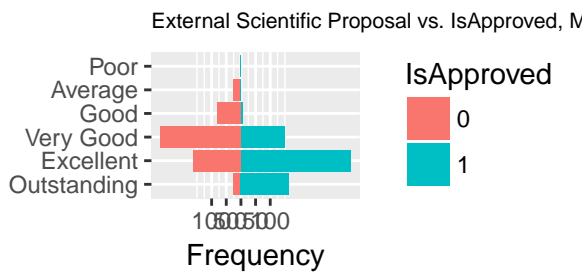
ScientificRelevance



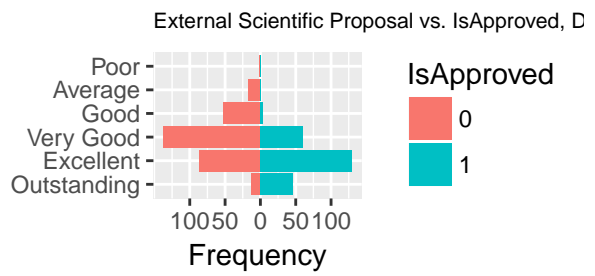
ScientificRelevance



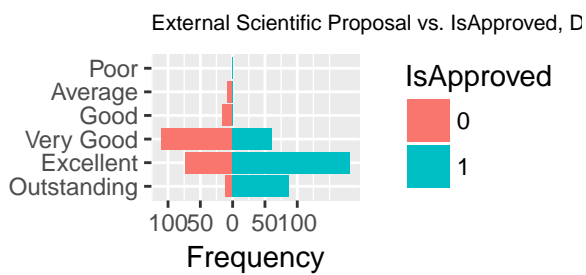
ScientificRelevance



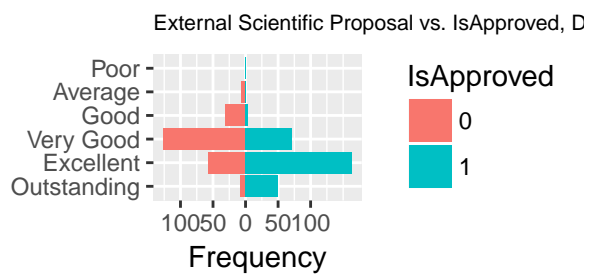
ScientificRelevance



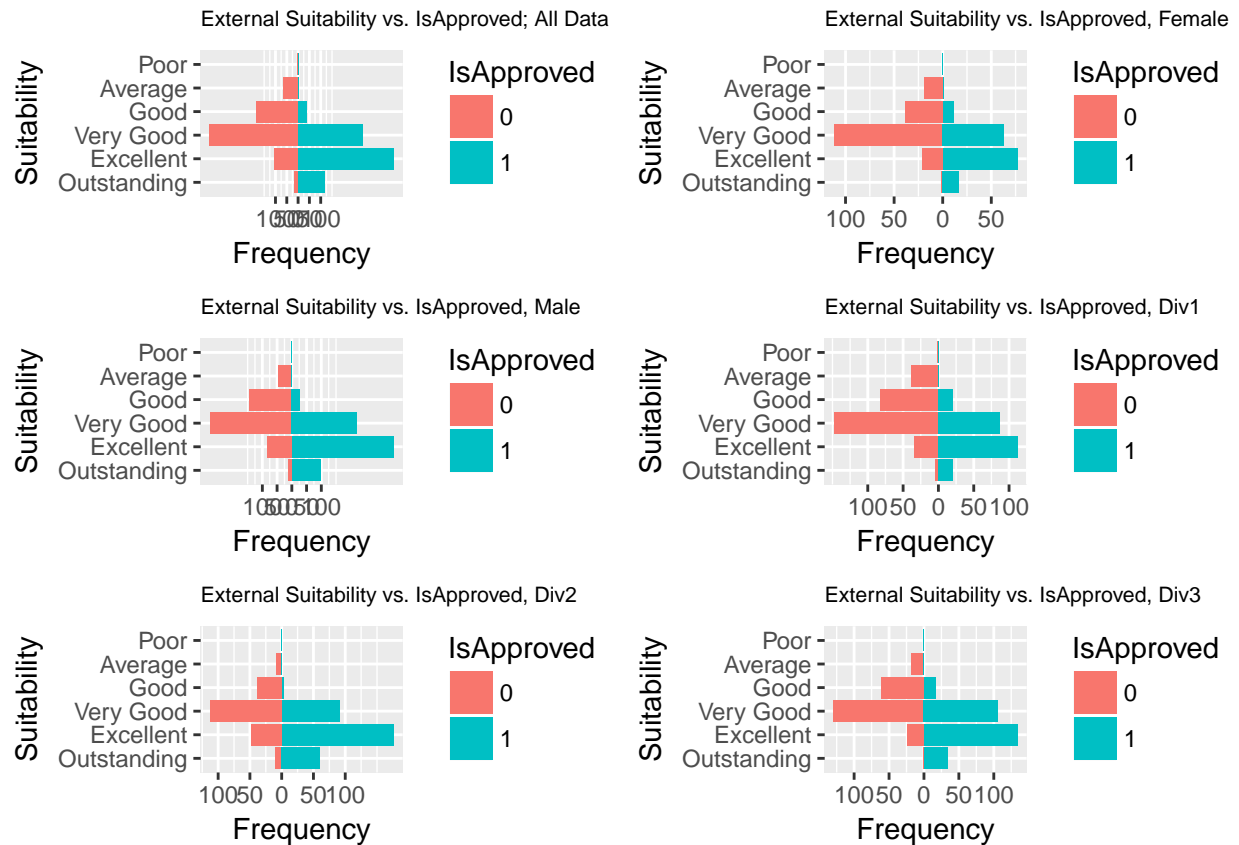
ScientificRelevance



ScientificRelevance

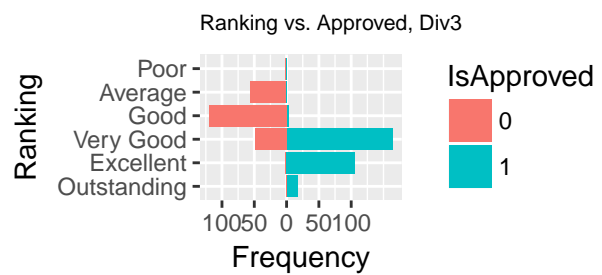
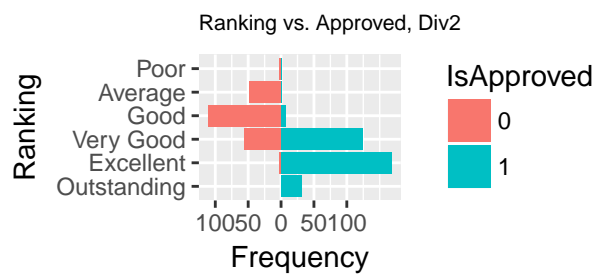
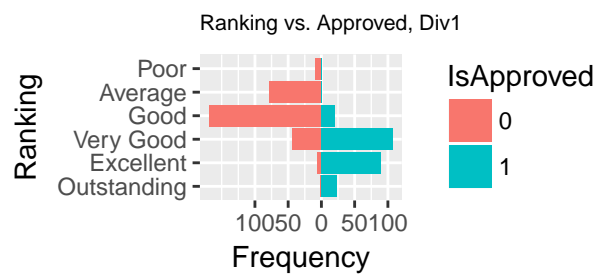
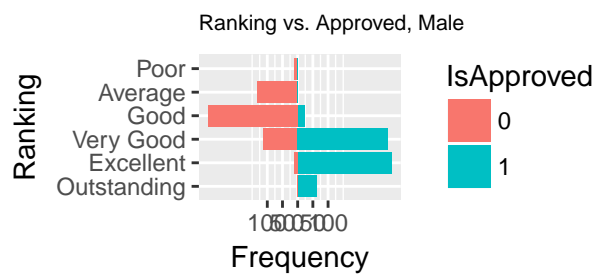
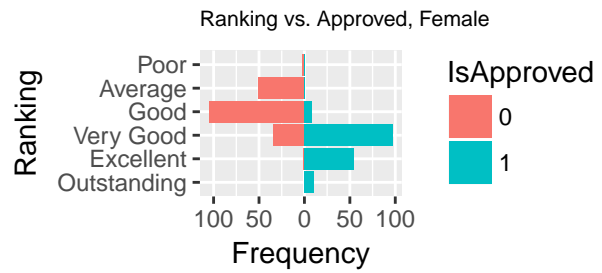
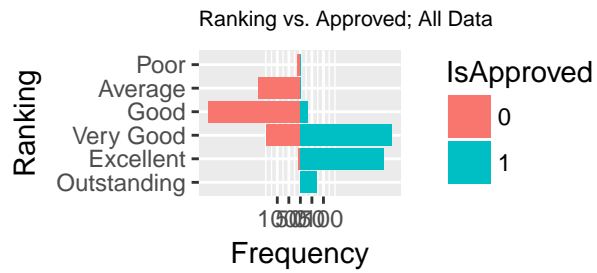


Suitability and IsApproved

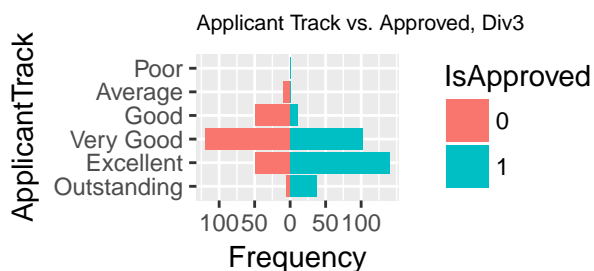
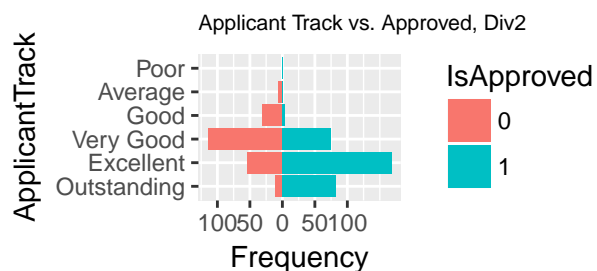
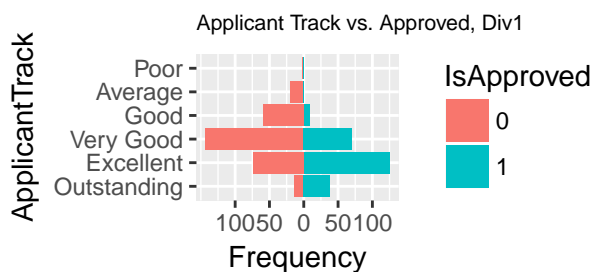
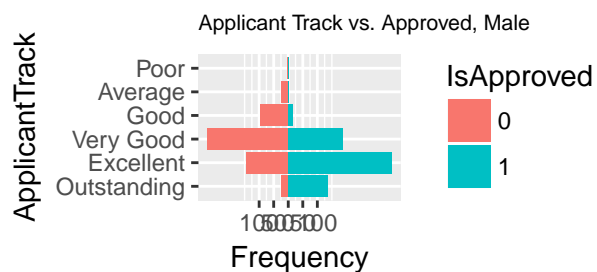
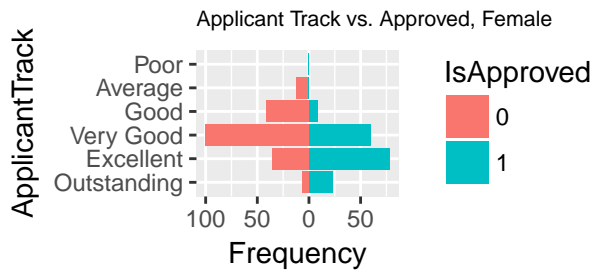
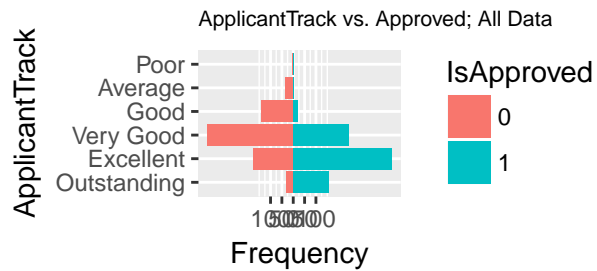


Internal Review Step: Relationship of the different grades on IsApproved

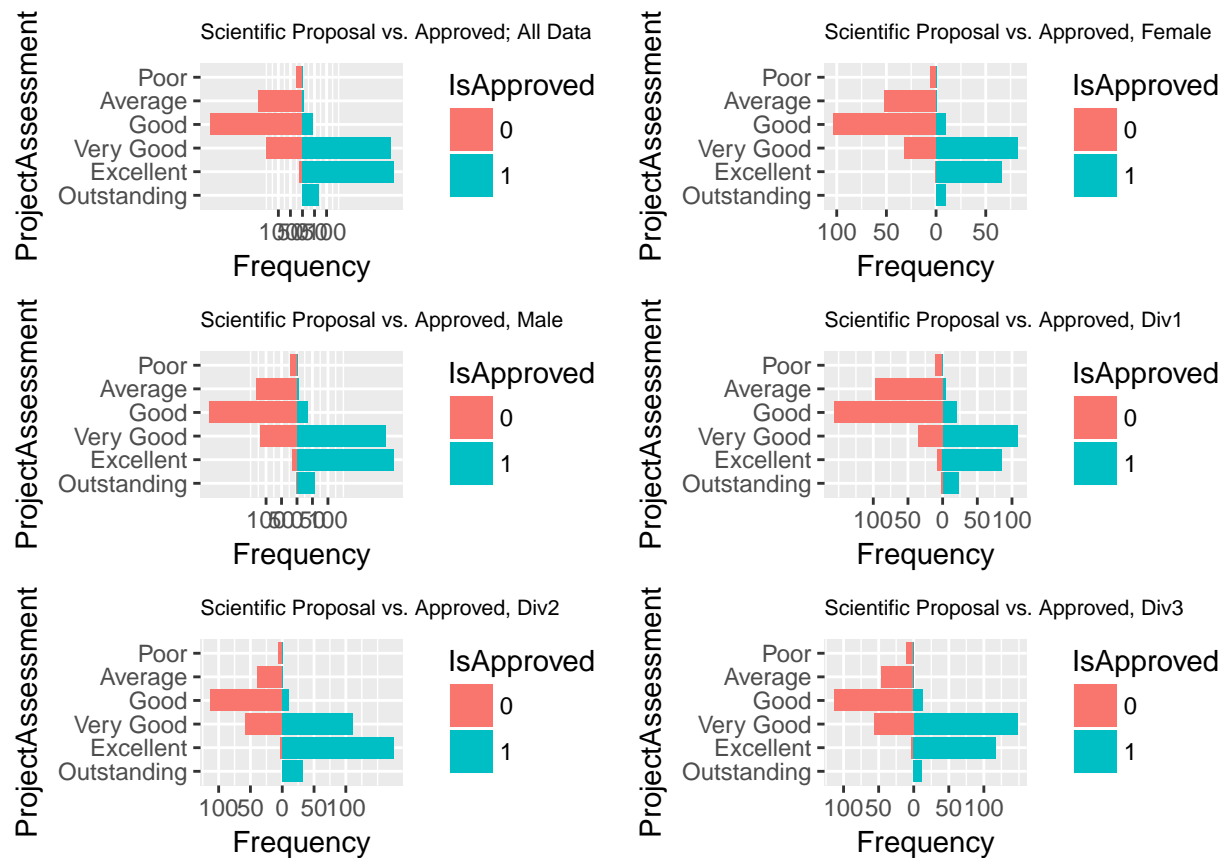
Ranking and IsApproved



ApplicantTrack and IsApproved



ScientificProposal and IsApproved



Exploratory Analysis: Distribution tables

External Reviewers

#Total

Gender

Division

m

f

Div 1

Div 2

Div 3

Result

Result

Result

Result

Result

Rejected

Accepted

Rejected

Accepted

Rejected

Accepted

Rejected

Accepted

Rejected

Accepted

Overall Reviewer grade

poor

1

1

1

average
39

27

11
1

25
1

6

7
good
140

102
4

31
3

64
4

23

46
3
very good
641

308
166

119

48

161

73

123

57

143

84

excellent

626

120

378

30

98

55

128

61

190

34

158

outstanding

176

10

144

3

19

6

35

6

83

1

45

#Total cases

1623

568

692

194

169

311

241

220

330

231

290

#Total

Gender

Division

m

f

Div 1

Div 2

Div 3

Result

Result

Result

Result

Result

Rejected
Accepted

Rejected
Accepted

Rejected
Accepted

Rejected
Accepted

Rejected
Accepted

Main Applicant Track
poor

1

1

1

average

15

10

5

10

2

3

good

72

47

3

20

2

36

4

12

19

1

very good

463

240

94

86

43

141

55

73

32

112

50

excellent

710

227

338

68

77

105

127

107

143

83

145

outstanding

362

44

257

14

47

18

55

26

155

14

94

#Total cases

1623

568

692

194

169

311

241

220

330

231

290

#Total

Gender

Division

m

f

Div 1

Div 2

Div 3

Result

Result

Result

Result

Result

Rejected

Accepted

Rejected

Accepted

Rejected

Accepted

Rejected

Accepted

Rejected

Accepted

ScientificRelevance

poor

2

1

1

2

average

34

26

7

1

18

1

8

7

good

108

81

6

19

2

53

4

16

31

4

very good

569

273

149

103

44

138

60

111

61

127

72

excellent

695

161

373

58

103

87

130

74

182

58

164

outstanding

215

26

164

6

19

13

46

11

87

8

50

#Total cases

1623

568

692

194

169

311

241

220

330

231

290

#Total

Gender

Division

m

f

Div 1

Div 2

Div 3

Result

Result

Result

Result

Result

Rejected
Accepted

Rejected
Accepted

Rejected
Accepted

Rejected
Accepted

Rejected

Accepted
Suitability
poor

3

2

1

2

1

average

67

47

19

1

39

1

9

18

good

222

144

28

39

11

83

20

39

3

61

16

very good

674

278

221

112

63

148

87

113

91

129

106

excellent

527

84

345

21

77

34

112

48

176

23

134

outstanding

130

13

98

2

17

5

21

10

60

34

#Total cases

1623

568

692

194

169

311

241

220

330

231

290

Internal Reviewers

#Total

Gender

Division

m

f

Div 1

Div 2

Div 3

Result

Result

Result

Result

Result

Rejected

Accepted

Rejected

Accepted

Rejected

Accepted

Rejected

Accepted

Rejected

Accepted

Overall Comparative Ranking

D

15

12

3

10

2

3

C

184

133

51

79

48

57

BC

431

295

23

105

8

169

21

111

7

120

3

B

544

115

298

34

97

44

107

56

124

49

164

AB

375

11

309

1

54

7

89

3

168

2

106

A

74

2

62

10

2

24

31

17

#Total cases

1623

568

692

194

169

311

241

220

330

231

290

#Total

Gender

Division

m

f

Div 1

Div 2

Div 3

Result

Result

Result

Result

Result

Rejected

Accepted

Rejected
Accepted

Rejected
Accepted

Rejected
Accepted

Rejected
Accepted
Main Applicant Track
poor

3

3

2

1

average
37

23

2

12

19

7

1

9

1

good

161

98

14

41

8

59

8

31

4

49

10

very good

623

277

186

100

60

143

70

115

74

119

102

excellent	
611	
143	
355	
35	
78	
74	
125	
55	
168	
49	
140	
outstanding	
188	
24	
135	
6	
23	
14	
38	
11	
83	
5	
37	
#Total cases	
1623	

568

692

194

169

311

241

220

330

231

290

#Total

Gender

Division

m

f

Div 1

Div 2

Div 3

Result

Result

Result

Result

Result

Rejected
Accepted

Rejected
Accepted

Rejected
Accepted

Rejected
Accepted

Rejected
Accepted
Project Assessment
poor

27

21

6

11

6

10

average
188

131

4

52

1

97

4

39

1

47

good

428

282

33

103

10

157

20

114

10

114

13

very good

518

119

285

32

82

36

108

58

111

57

148

excellent

392

13

312

1

66

8

86

3

175

3

117

outstanding

70

2

58

10

2

23

33

12

#Total cases

1623

568

692

194

169

311

241

220

330

231

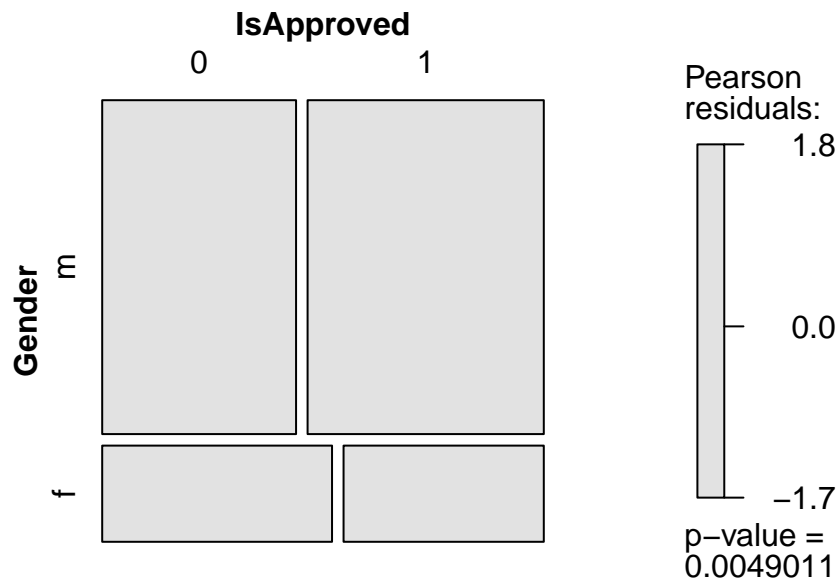
290

Exploratory Analysis: Graphic exploration

Applications

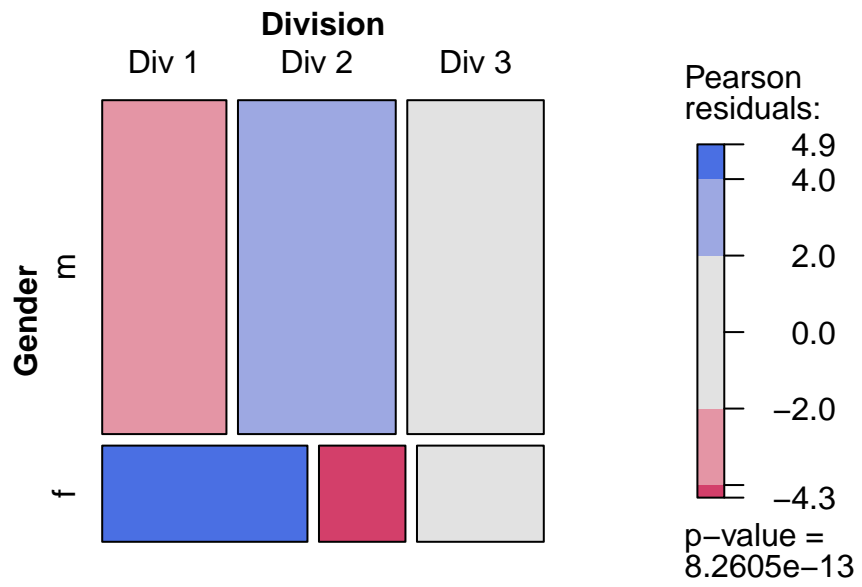
Is there evidence of gender bias?

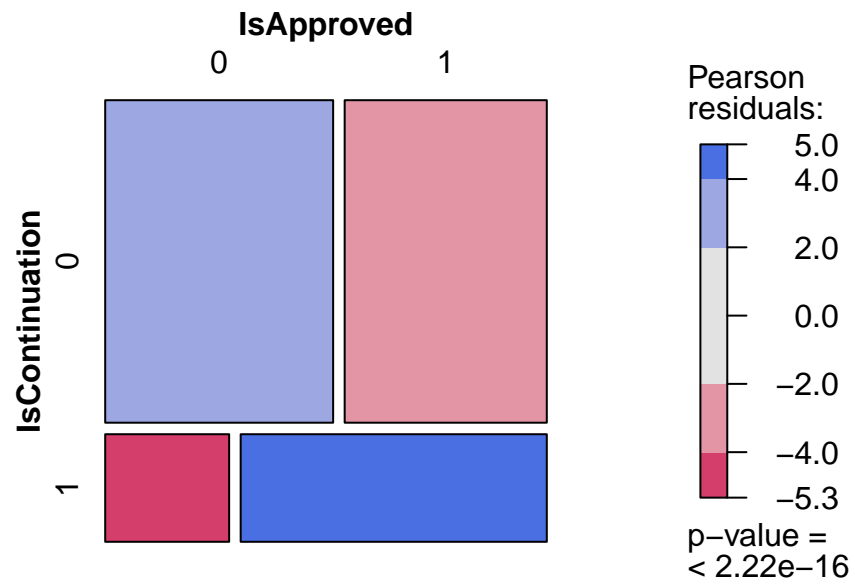
Apparently there is no association between gender and approval (generally + in each division)

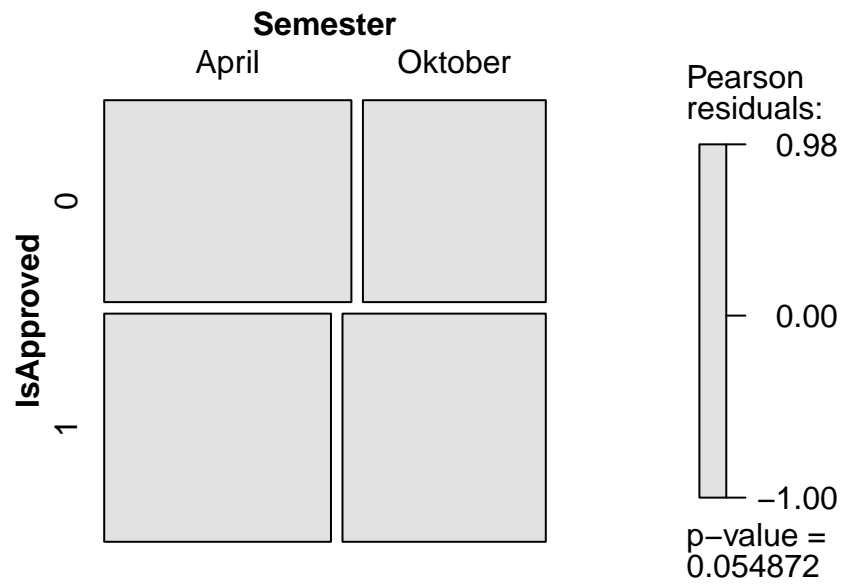


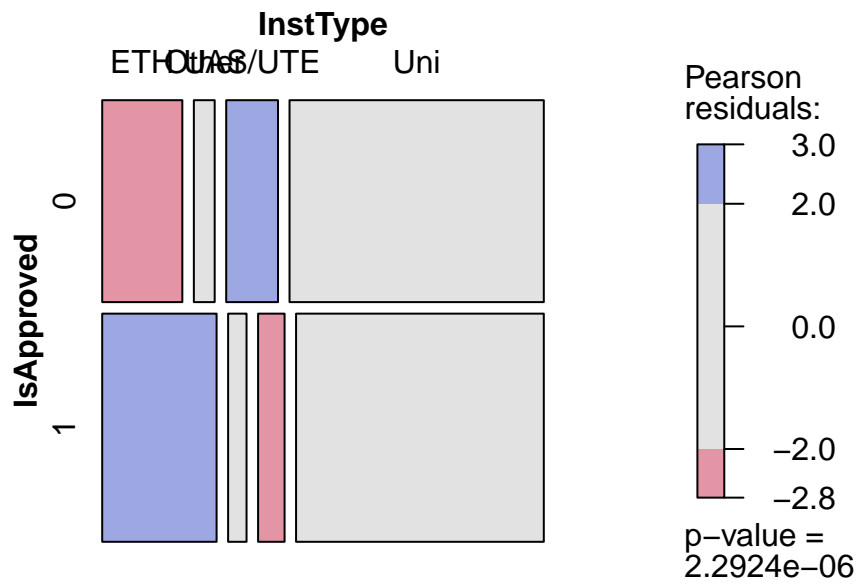
Division = Div 1		Division = Div 3	
IsApproved	Gender	Pearson	Pearson
	mf	residuals:	residuals:
10		— -0.99	— -0.41
		p-value =	p-value =
		0.10963	0.48541
Division = Div 2			
IsApproved	Gender	Pearson	
	mf	residuals:	
10		— -0.45	
		p-value =	
		0.44673	

There are more women than men applying for Division 1 and the opposite for Division 2. Also, if the project is a continuation it is more likely to be approved. It seems that there is no time effect: proposals are equally likely to be approved in April and October. Apparently proposals from ETH are more likely to be approved, especially than those from UAS/UTE.





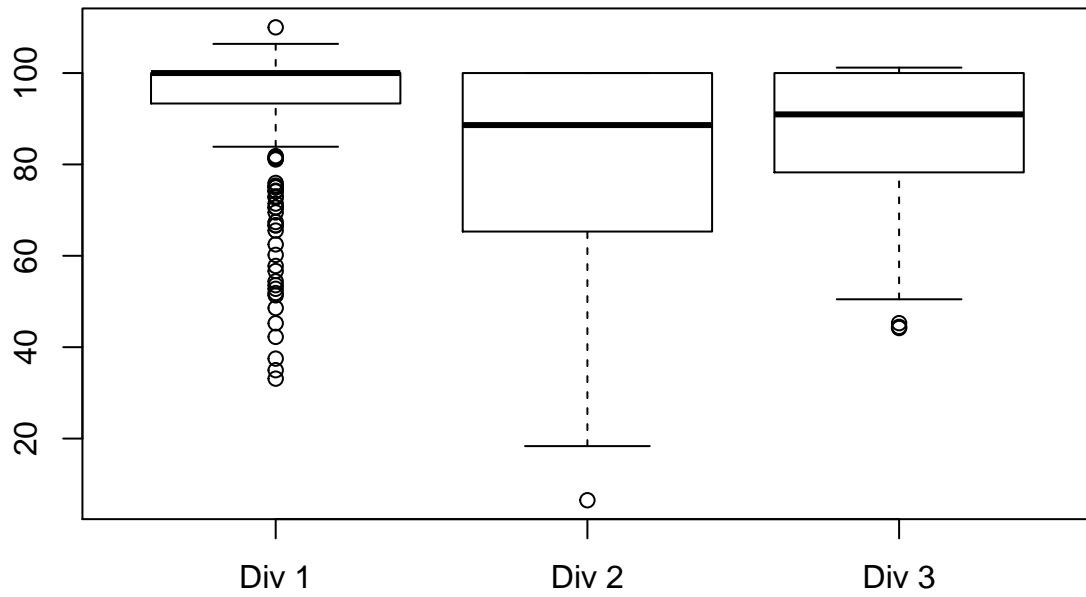




How does the Amount requested relates to Amount granted?

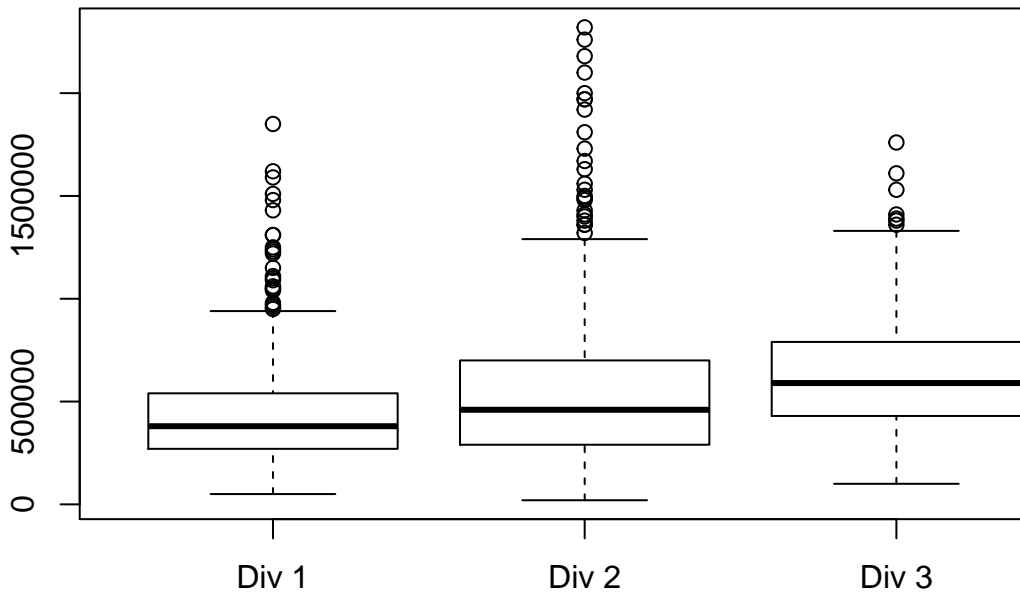
On average in Division1 applicants receive almost all the amount of money requested, even if there are lots of outliers. Division 2 is the one with the smallest percentage of money granted.

Percentage of amount granted of the amount requested



Probably the previous result is due to the fact that in Division1, the AmountRequested, on average, is smaller

Amount requested per Division

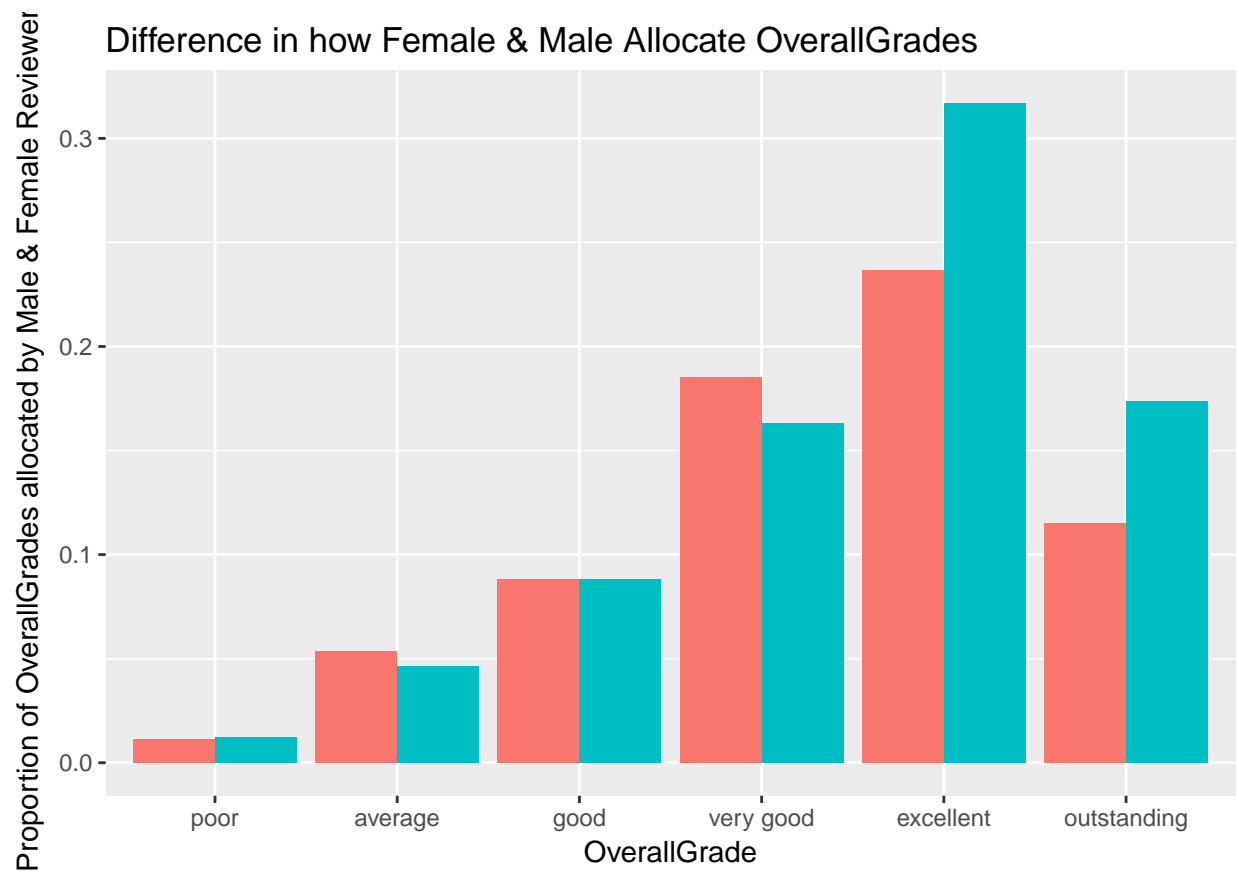


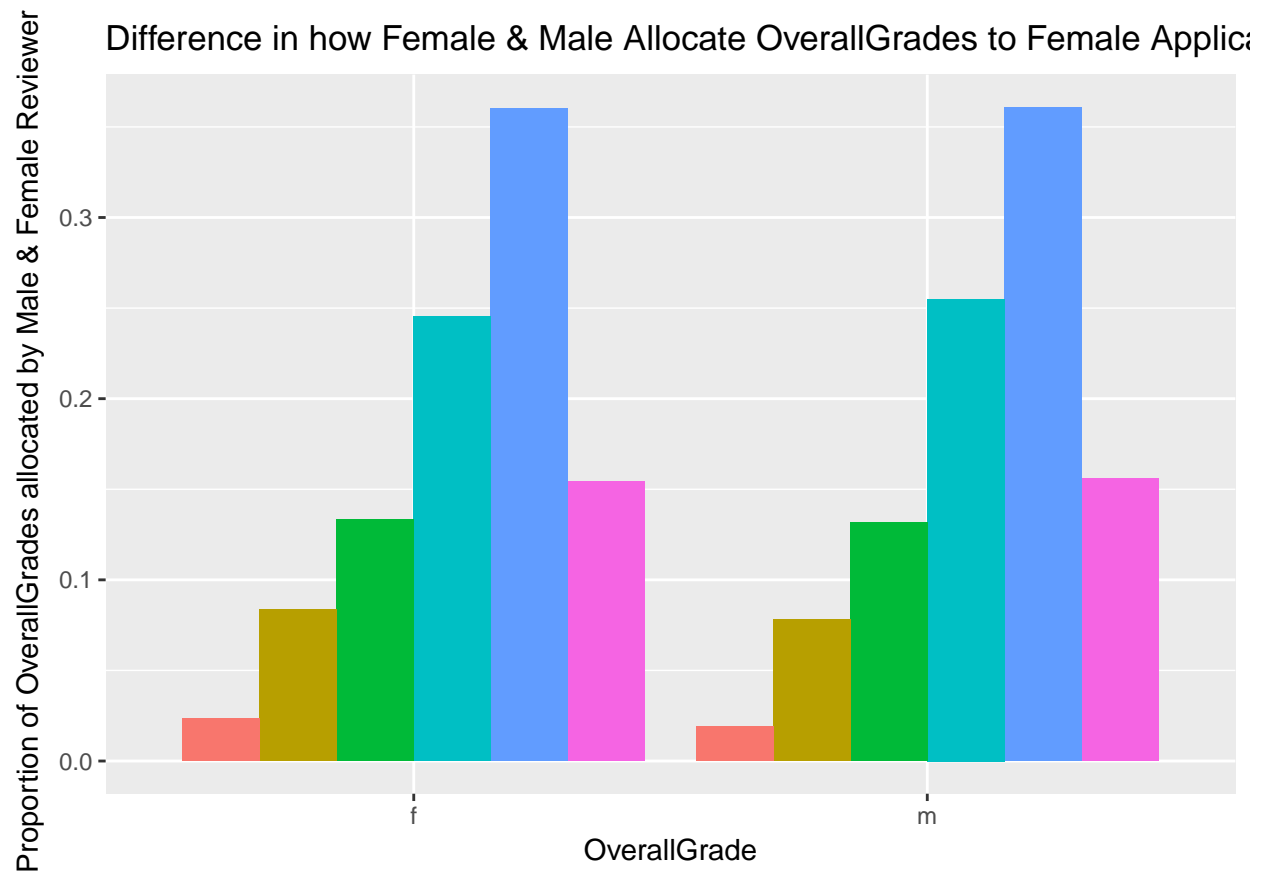
than in all the other divisions.

External Reviewers

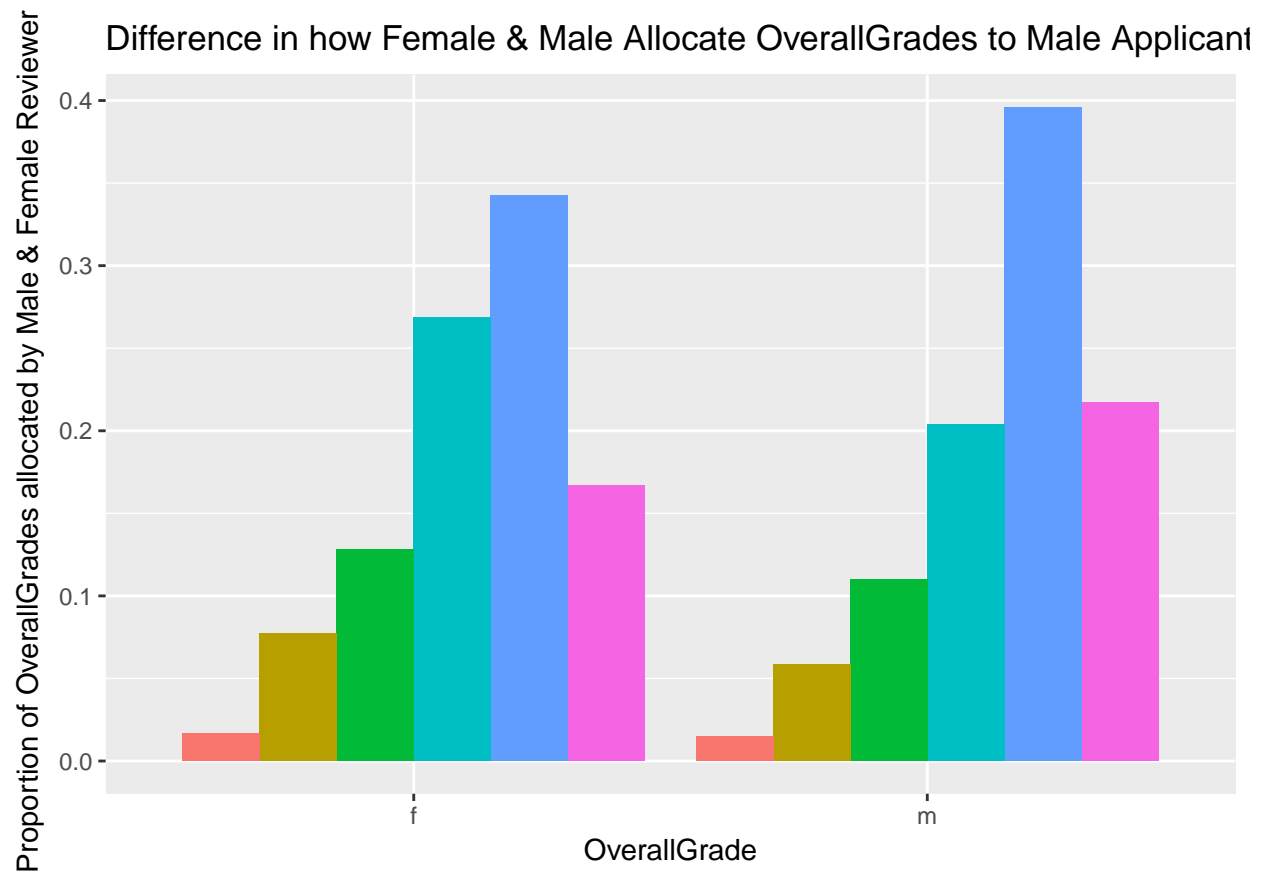
Is there evidence of gender bias?

Do males or females rate females differently in the OverallGrade? (Two visualization options)



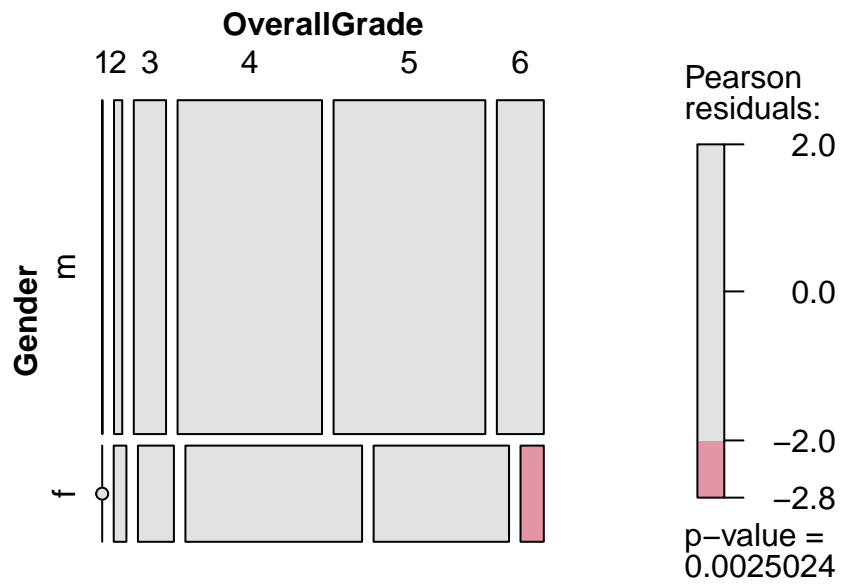


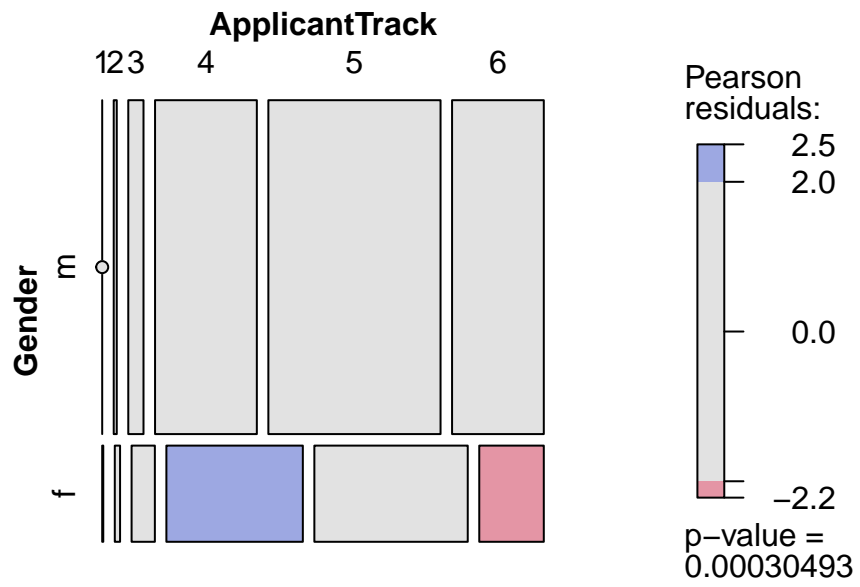
We see male and female reviewers rate female applicants almost identically.

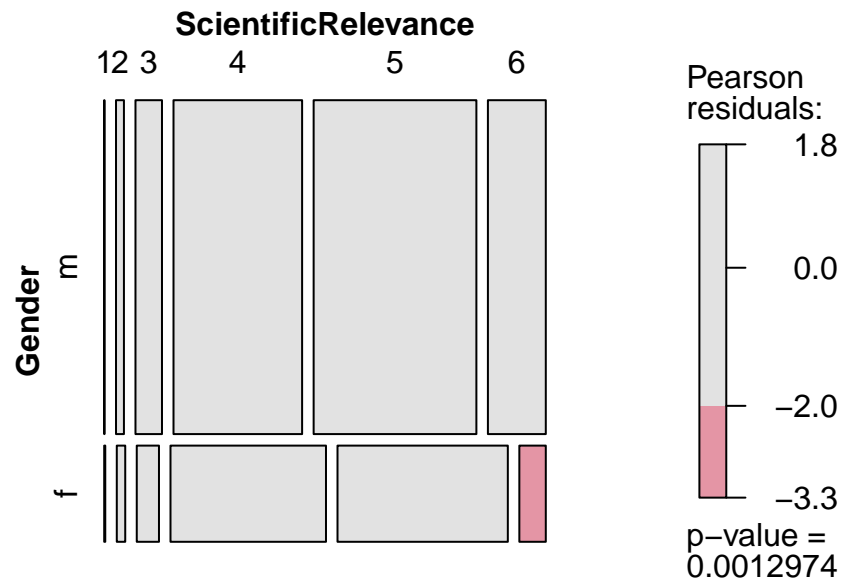


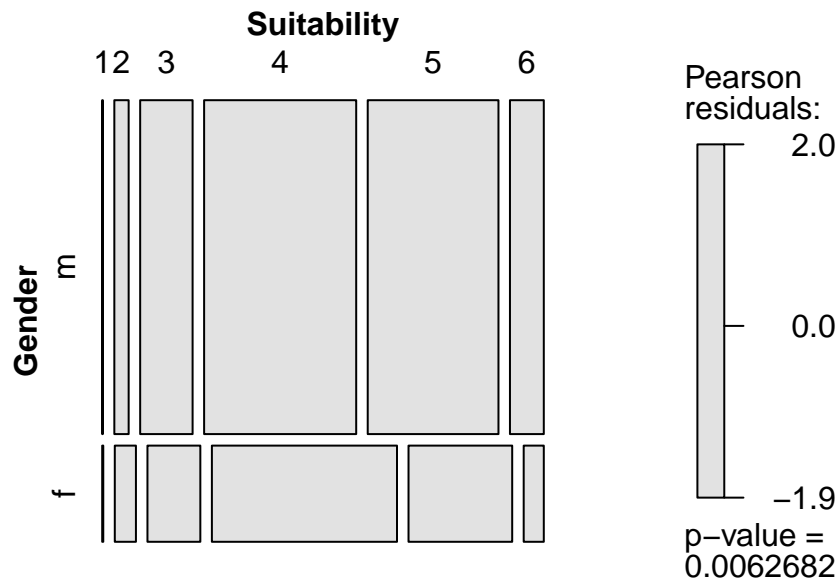
We observe that female reviewers give fewer “Excellent” and “Outstanding” to male applicants, and give more “Very Goods.”

Need to fix everywhere since ordinal variables cannot be used in chi squared test.









Even when combining Variables for Project Assessment, Applicant Track and the Overall Grade using a simplified version with 0 and 1, it doesn't seem that there is a gender bias in the external evaluation.

Internal Reviewers

Is there evidence of gender bias?

We repeated the same analysis for the internal evaluation: it seems that it is more likely to get a low grade (from 1 to 3) for the both Track Record and Project Assessment if the applicant is female! The same holds for the Ranking.

