Exercise 1

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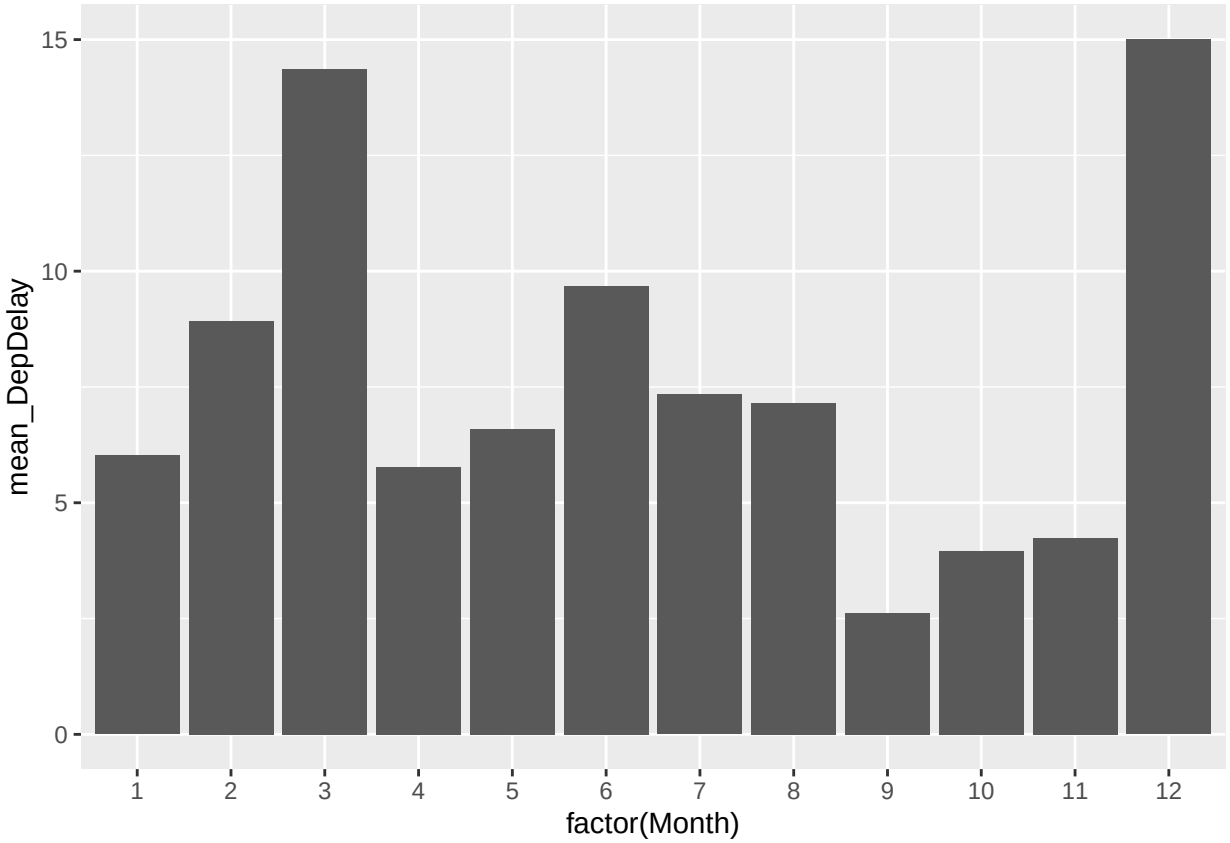
Question1 - Flights at ABIA

Question a: What's the best time of year to fly to minimize delays?

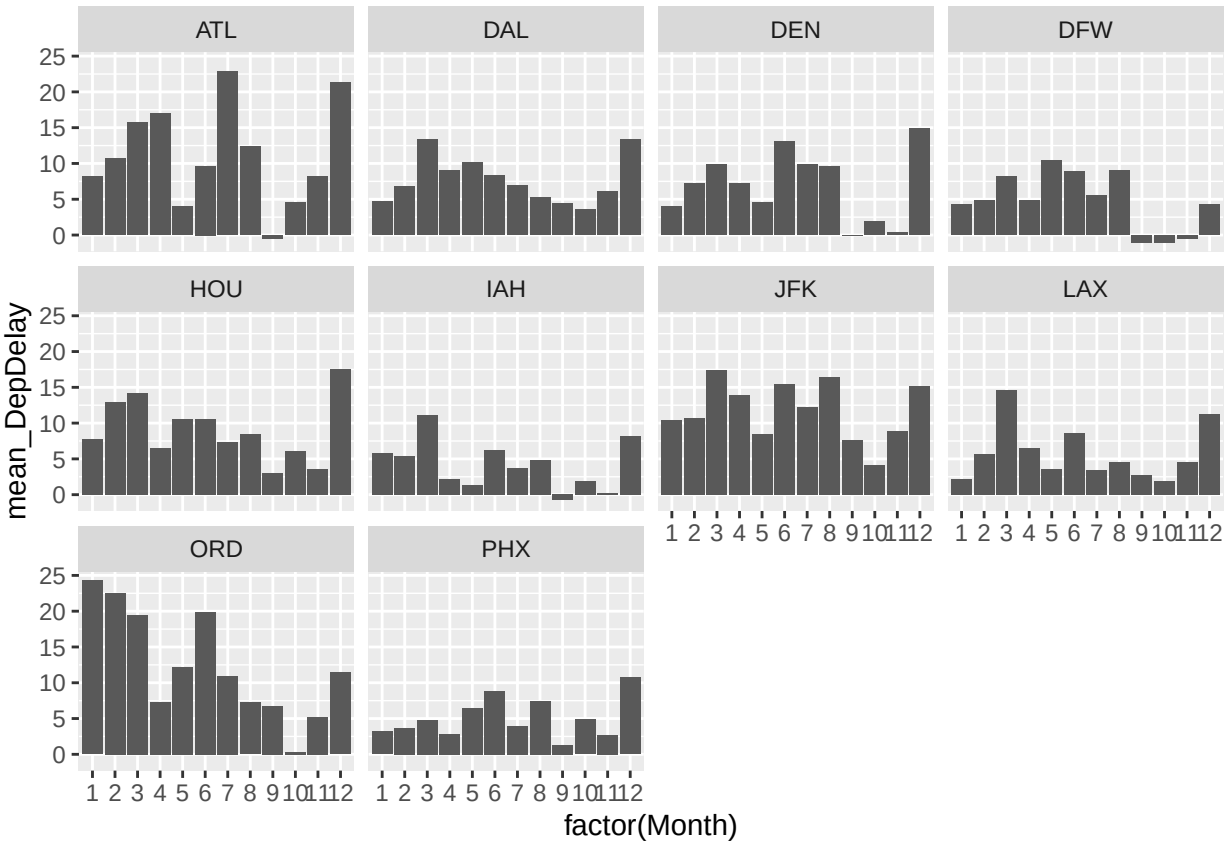


Question b: Does the best time to fly to min delays change by destination?

```
##    Dest  freq
## 1   ABQ   435
## 2   ATL  2252
## 3   AUS 49637
## 4   BNA   792
## 5   BOS   368
## 6   BWI   730
## 7   CLE   380
## 8   CLT   659
## 9   CVG   653
## 10  DAL  5573
## 11  DEN  2673
```

```
## 12  DFW  5506
## 13  DSM     1
## 14  DTW     1
## 15  ELP  1349
## 16  EWR   949
## 17  FLL   481
## 18  HOU  2319
## 19  HRL   367
## 20  IAD   670
## 21  IAH  3691
## 22  IND   218
## 23  JAX   226
## 24  JFK  1358
## 25  LAS  1231
## 26  LAX  1733
## 27  LBB   692
## 28  LGB   245
## 29  MAF   470
## 30  MCI   459
## 31  MCO   632
## 32  MDW   712
## 33  MEM   834
## 34  MSP    55
## 35  MSY   444
## 36  OAK   236
## 37  OKC    88
## 38  ONT   305
## 39  ORD  2514
## 40  ORF     1
## 41  PHL   290
## 42  PHX  2783
## 43  RDU   231
## 44  SAN   719
## 45  SEA   149
## 46  SFO   610
## 47  SJC   968
## 48  SLC   548
## 49  SNA   245
## 50  STL    95
## 51  TPA   367
## 52  TUL    88
## 53  TUS   228
```

Top 10 popular destinations



2) Wrangling the Olympics

(2.A) What is the 95th percentile of heights for female competitors across all Athletics events

95th percentile of heights for female competitors across all Athletics events is 186.

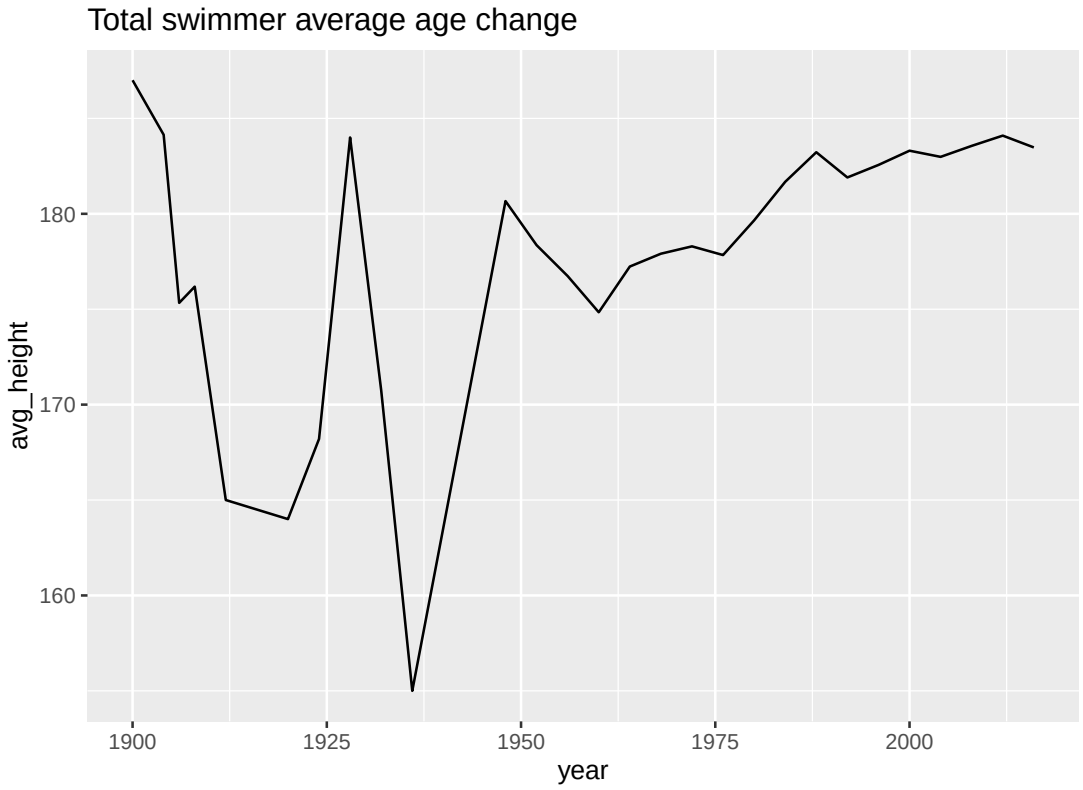
(2.B) Which single women's event had the greatest variability in competitor's heights across the entire history of the Olympics, as measured by the standard deviation?

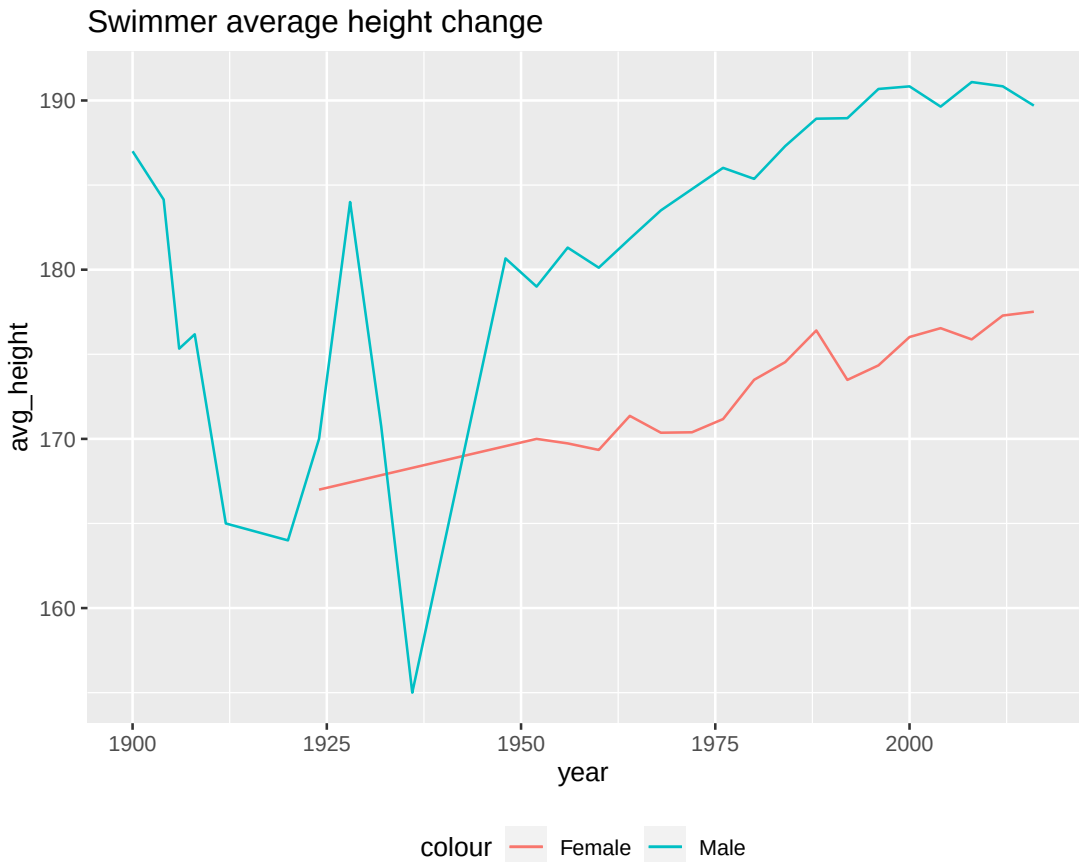
Rowing Women's Coxed Fours has the greatest variability, with standard derivation equals to 10.9

(2.C) How has the average age of Olympic swimmers changed over time? Does the trend look different for male swimmers relative to female swimmers?

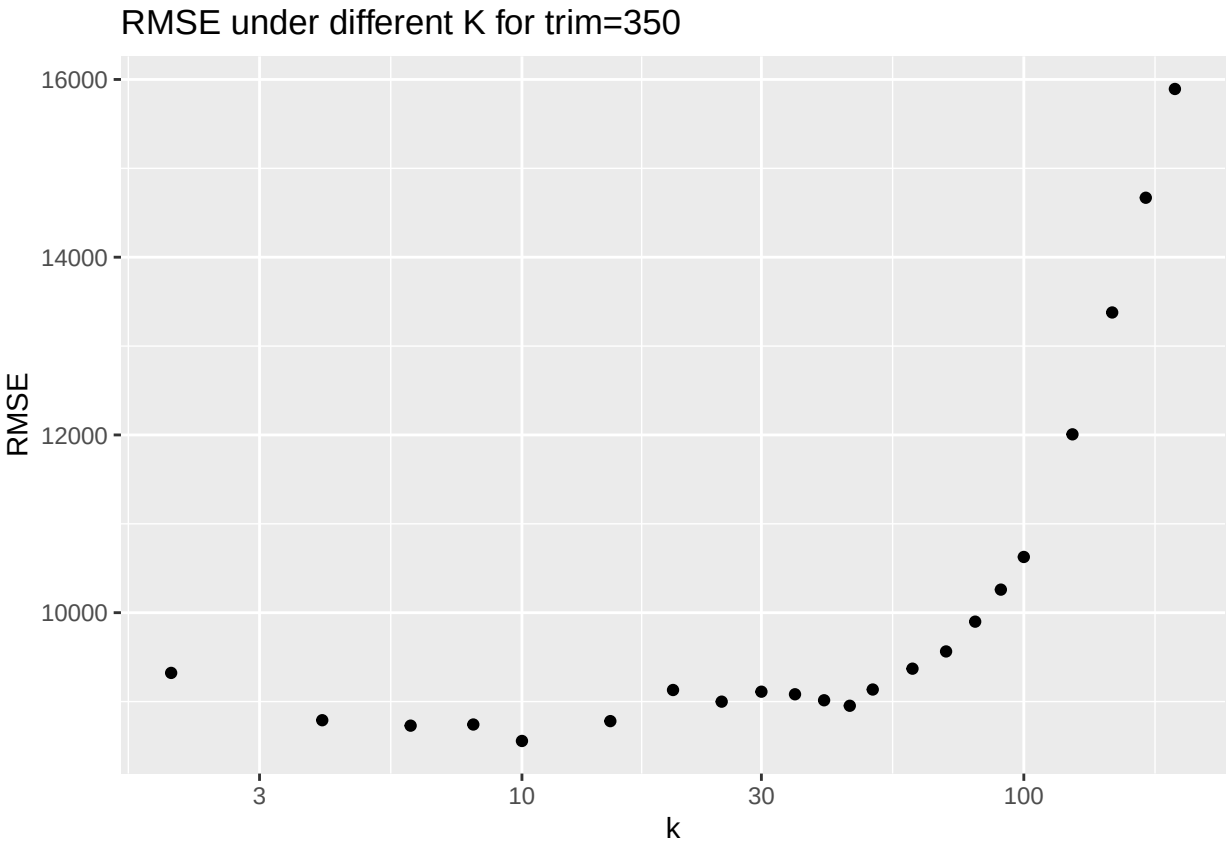
The trend between female and male swimmers is different before around 1935,where age of male swimmers decreases and then increases, and then decreases, and age of female swimmers slightly increases.

After 1950, age of all swimmers has an increasing trend.

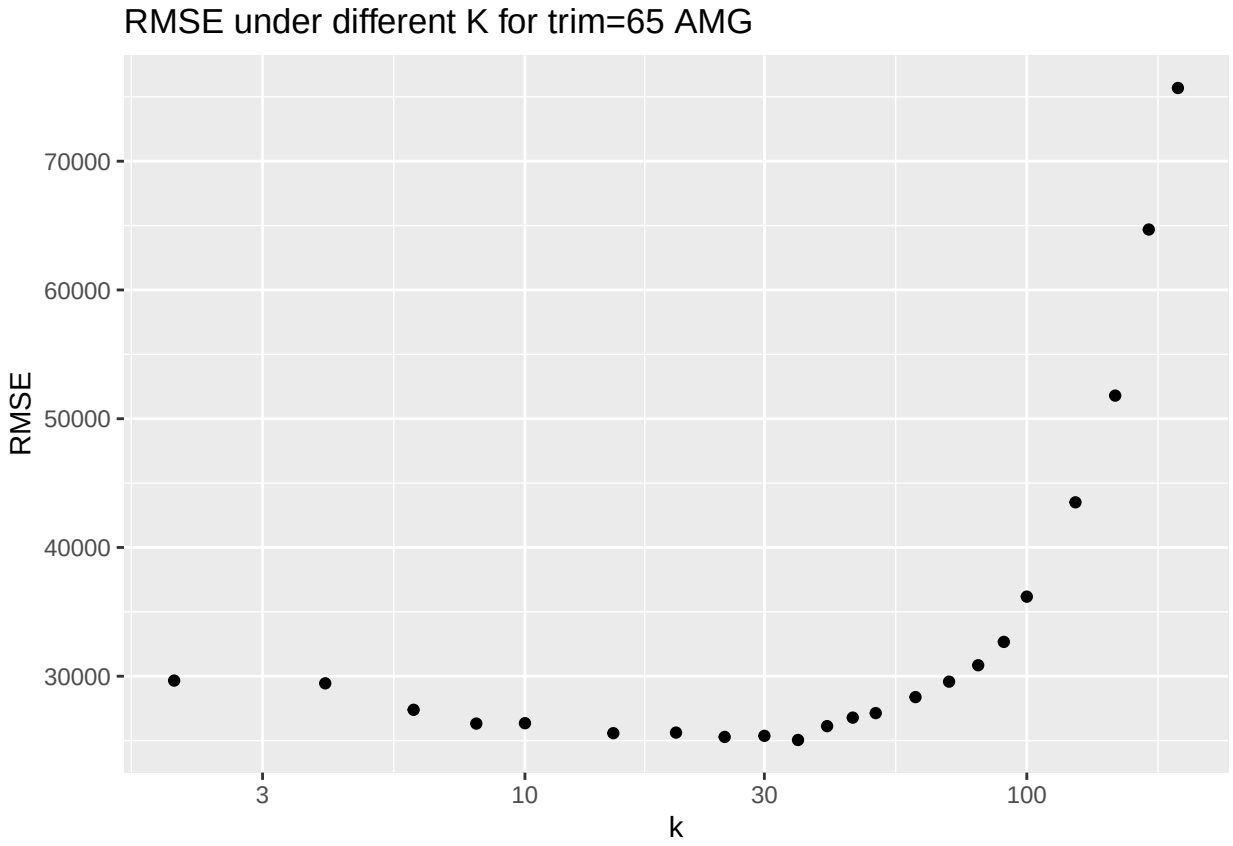

Total swimmer average age change
avg_height
180
170
160
1900
1925
1950
1975
2000
year


Swimmer average height change
avg_height
190
180
170
160
1900
1925
1950
1975
2000
year
colour
Female
Male

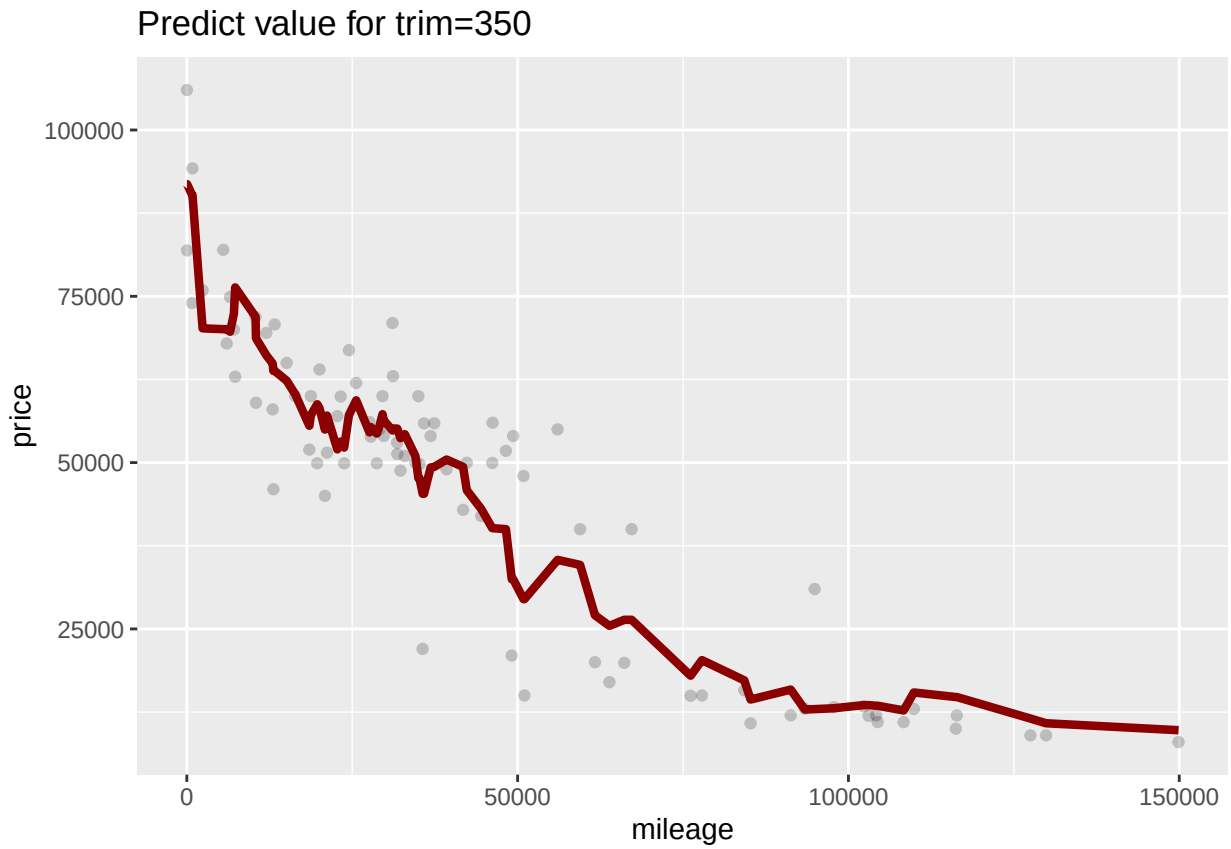
Question 3

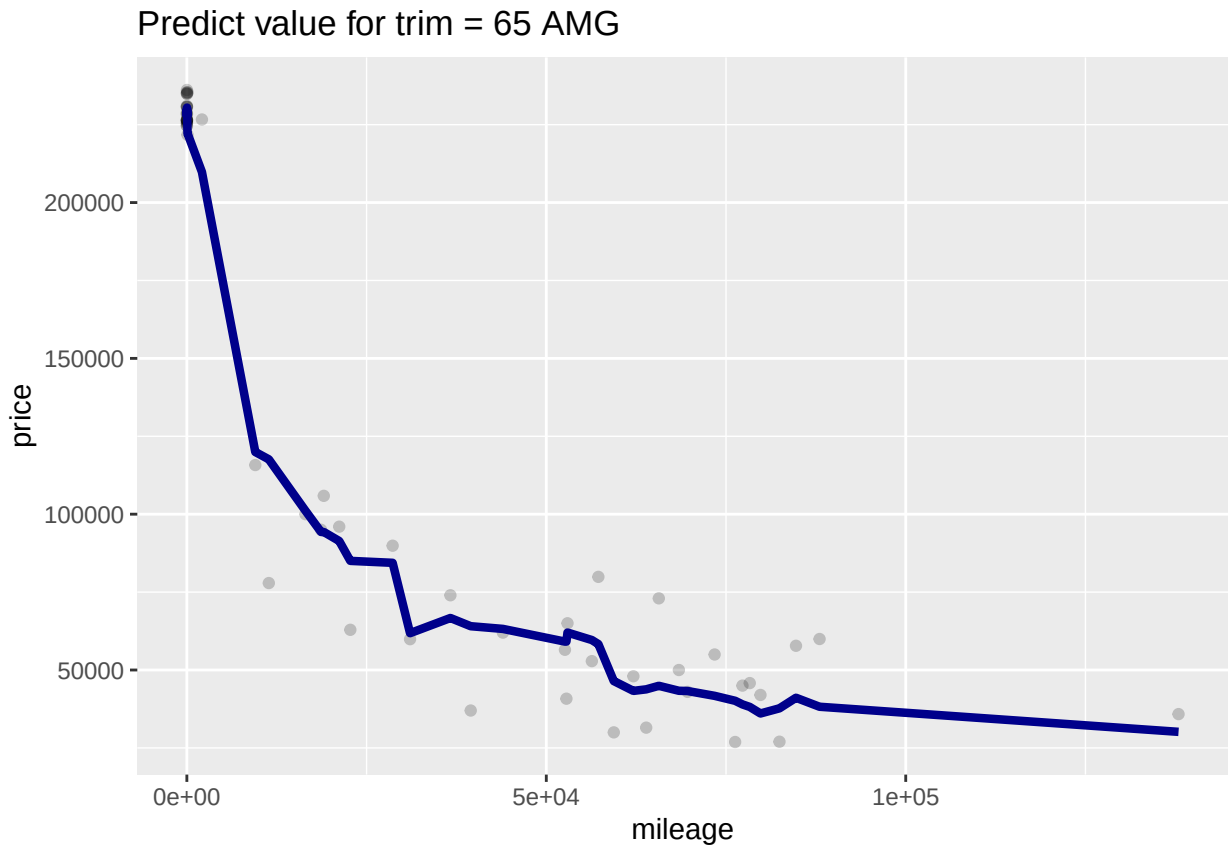


From the above plot, when k = 10, we can get the minimal RMSE.



From the above plot, when k = 35, we can get the minimal RMSE.





From the above two plots, under the same mileage, trim = 65AMG has a higher value. This may because

people have a preference for trim 65AMG or people have a higher demand for this sub-model.