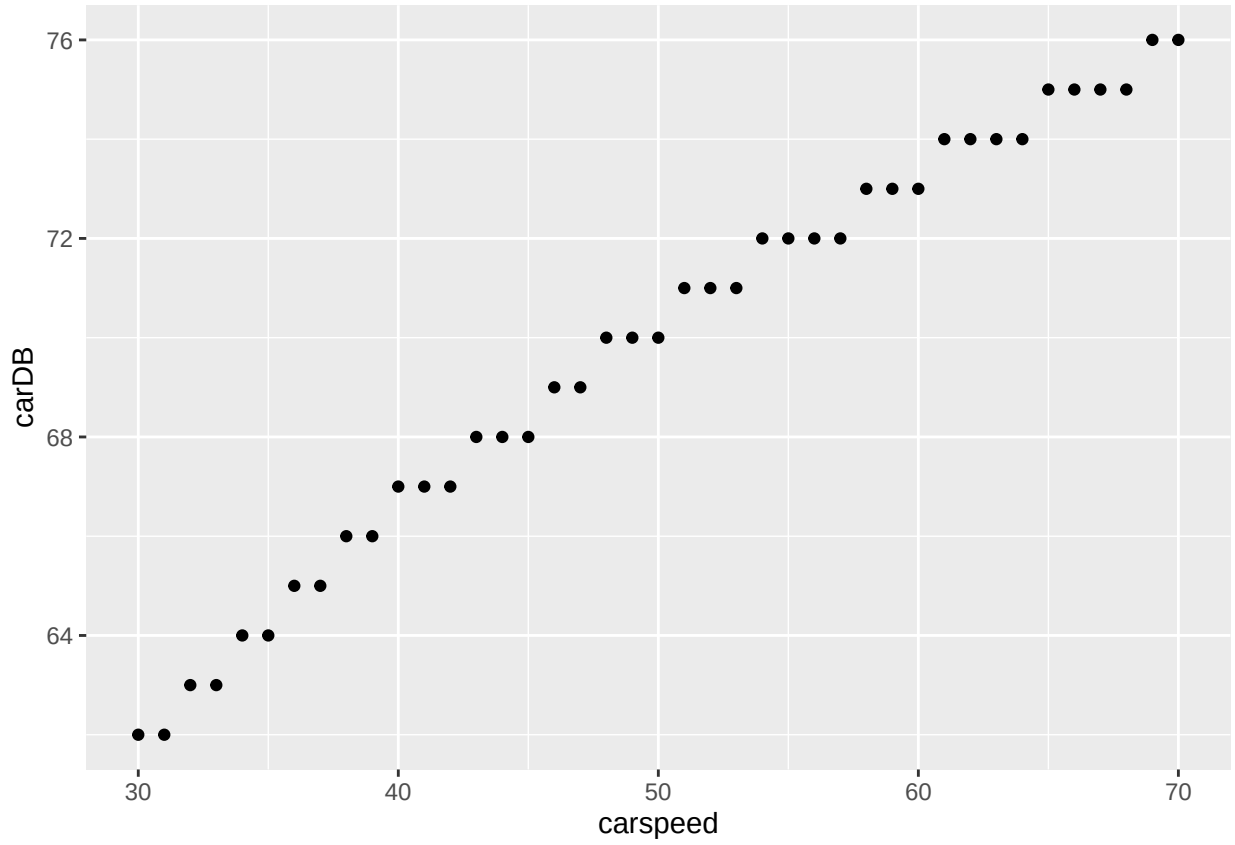
Testing

2022-11-17

```
set.seed(400)
library(bootstrap)
library(ggplot2)
```

```
carDB <- c(62,62,63,63,64,64,65,65,66,66,67,67,67,68,68,68,69,69,70,70,70,71,71,71,72,72,72,72,73,73,73
carspeed <- c(30:70)
carinfo <- data.frame(carspeed) |> cbind(carDB)

ggplot() +
  geom_point(aes(carspeed, carDB), data = carinfo)
```




```
## ---------------------------------------------------------------------
# set up the bootstrap
B <- 1000

for(b in seq_len(B)) {
  ## Your Turn: Do the bootstrap!
  ## get bs dataset
```

```
  idx_star <- sample(1:41, 1000, replace = TRUE)
  x_star <- carinfo[idx_star,]
}
```

```
n <- 1000

set.seed(400)

carfunction <- function(n){
  dB <- x_star$carDB
  Mj <- runif(n,8.5*45,8.5*65)
  ESDB <- (Mj)/(dB)
  return(ESDB)
}

ESDB_stor <- data.frame(carfunction(n))

carfunction(n)
```

```
##    [1] 6.228319 5.534673 5.235261 8.191716 7.306956 5.764930 8.453106 7.501139
##    [9] 5.815232 6.203927 5.124585 6.363735 7.999207 7.558182 6.789806 5.605555
##   [17] 7.272837 7.186486 5.767669 8.046537 6.657156 5.779762 6.991528 5.853750
##   [25] 6.711447 6.785368 5.224074 5.748934 6.718758 6.582642 6.421805 6.049006
##   [33] 5.907670 6.376963 5.558068 7.130505 6.806863 8.140327 7.686237 8.306233
##   [41] 7.114466 7.460057 7.263572 6.900802 7.016969 6.488578 5.750438 6.121235
##   [49] 7.980570 6.260667 7.133196 6.724665 5.565614 5.618944 7.272991 6.078499
##   [57] 5.987499 8.189318 6.937340 8.827868 6.440736 6.551826 6.816036 6.700110
##   [65] 6.715705 6.090442 5.954284 6.259048 7.166884 8.562319 6.328372 7.157362
##   [73] 7.221273 7.691806 6.310729 7.829121 8.094714 7.159167 6.315350 6.311073
##   [81] 6.517763 6.500492 7.498242 6.555229 7.030874 6.636049 5.100227 5.754998
##   [89] 5.838107 5.867219 6.149665 6.904532 5.959657 8.570514 7.157693 6.383754
##   [97] 7.640435 7.082052 6.654036 6.728926 5.514265 6.888529 6.020629 6.758251
##  [105] 6.069894 5.987199 7.648267 5.716989 8.121903 6.202694 6.441475 5.424655
##  [113] 6.329525 5.671105 7.240555 7.926025 5.745165 6.333473 6.692866 6.018243
##  [121] 5.738538 7.725002 7.701443 7.394589 6.880277 7.143116 8.172988 8.190326
##  [129] 5.385970 6.510285 6.725716 7.085074 5.391873 7.790719 8.729637 6.653415
##  [137] 7.135869 6.756766 6.600646 7.561411 8.520415 6.709019 5.700845 7.571255
##  [145] 7.941216 5.675187 6.307330 6.001877 5.917724 6.599231 6.090786 7.438507
##  [153] 5.770484 6.995581 6.326738 8.019070 6.715917 6.007769 6.123962 7.631894
##  [161] 5.959330 5.941617 5.826469 6.965874 6.365596 6.908510 7.015063 5.928218
##  [169] 7.300864 7.078297 7.625894 6.479896 5.956894 6.680475 6.821599 6.032840
##  [177] 7.704306 5.913934 7.722018 5.763027 8.504487 6.595166 5.489188 5.974892
##  [185] 6.374341 8.238863 6.436906 5.455179 6.131419 6.284262 6.773219 8.158080
##  [193] 6.134135 7.112912 8.086968 6.788428 7.936340 6.527156 6.301356 6.728482
##  [201] 5.170023 7.299853 5.853918 6.549720 6.851653 7.382745 6.242759 8.103281
##  [209] 5.724254 6.790500 5.768426 6.078624 6.116496 6.246576 7.437655 5.961319
##  [217] 5.187568 8.337140 6.242950 6.424241 6.778002 5.832512 5.524577 6.153923
##  [225] 6.194649 7.309365 6.360153 5.073773 5.846715 8.044800 6.654603 7.804771
##  [233] 6.122746 6.157545 5.875670 6.288932 6.775038 5.919927 6.391529 7.708667
##  [241] 7.710086 6.938901 7.313894 6.759734 5.849665 7.679931 6.332000 7.050206
##  [249] 5.833273 6.565257 6.052824 7.032468 6.900473 7.884964 6.619425 6.939108
##  [257] 6.277661 6.880915 6.525347 7.567008 8.329353 7.422821 6.807622 8.329779
##  [265] 7.142310 6.769261 7.747165 7.261353 7.382736 6.167753 5.522688 7.218982
##  [273] 7.568167 6.934957 5.385881 5.909619 7.670051 7.130688 7.291044 5.796447
```

```
##  [281] 6.721238 6.965477 7.561209 6.739315 6.338634 7.725724 6.626634 6.936185
##  [289] 7.690049 7.310233 7.620663 5.297749 7.332264 6.519793 6.631813 6.599997
##  [297] 7.480316 7.825399 8.057484 7.128504 6.892725 6.928602 6.454347 5.714571
##  [305] 6.213094 6.449782 6.097173 8.183875 5.760896 6.344191 6.643626 7.280764
##  [313] 6.125336 6.079210 6.955265 7.616526 7.729876 5.958436 7.378298 5.424609
##  [321] 7.111041 6.200376 5.775286 6.218230 8.481003 7.264548 5.304204 5.886839
##  [329] 7.257839 7.259952 6.830321 7.540801 8.467011 6.590418 6.522880 6.699318
##  [337] 7.986045 7.387784 5.177244 6.706661 7.135512 7.099921 7.323250 6.668723
##  [345] 6.376198 6.608092 5.537372 6.064409 6.137263 6.056226 5.514969 6.692653
##  [353] 7.425363 5.708903 5.772785 7.227059 6.029925 5.600543 5.502357 7.243557
##  [361] 7.925961 6.894233 6.997124 6.659590 7.756637 7.101965 6.023466 6.848743
##  [369] 6.220238 7.914402 5.924509 5.653431 6.649371 6.169535 7.883784 7.632851
##  [377] 5.481993 7.336116 6.707629 7.673253 7.126023 8.560478 7.865583 6.104841
##  [385] 6.799935 6.078927 5.344903 6.272476 6.115470 6.090806 7.420377 7.549184
##  [393] 6.121699 7.037516 6.939965 6.500139 5.552734 6.106606 6.367154 7.688567
##  [401] 8.146447 6.246071 7.881776 6.548320 7.365907 5.815796 5.877980 5.524463
##  [409] 6.981013 5.409622 5.837553 5.837815 5.752533 6.115449 6.997531 7.523754
##  [417] 7.143828 6.267907 7.719472 8.157422 7.333953 6.566717 6.542089 5.688445
##  [425] 5.964960 6.748549 5.180445 6.983108 6.694785 8.000728 8.217650 7.212242
##  [433] 6.948387 6.795293 6.629458 8.428715 8.000651 5.789880 5.954336 6.493640
##  [441] 6.860473 8.145441 5.454561 6.914632 6.501746 6.963376 6.341007 7.276555
##  [449] 7.976424 6.653373 6.739890 7.156014 7.010833 7.143723 7.483687 7.579047
##  [457] 5.399170 5.666896 8.023198 6.269919 7.066031 6.591665 7.781930 7.581526
##  [465] 6.970080 8.112076 7.411369 6.247693 5.709732 5.881897 7.576016 5.873103
##  [473] 7.158489 6.985642 7.362345 7.103066 6.997905 8.428566 6.864093 6.294736
##  [481] 5.424797 8.135581 6.714891 5.762019 6.550890 7.301423 5.801618 6.727952
##  [489] 6.588824 7.357592 8.163849 5.760161 8.890087 8.137406 7.347605 6.815638
##  [497] 5.917742 8.190747 7.624333 5.708127 5.682157 6.482664 5.962973 6.749400
##  [505] 6.146200 6.182296 6.873698 6.156755 5.664573 6.469292 7.289089 6.254209
##  [513] 7.569589 6.333058 7.118031 6.157474 5.823237 6.680211 6.478022 8.085634
##  [521] 7.048035 6.888010 6.054128 7.263967 6.196671 5.376181 5.244440 6.929734
##  [529] 5.980284 5.710675 5.653847 7.507465 7.813767 6.202237 5.320887 7.660447
##  [537] 7.515423 7.995130 7.893450 6.628451 6.276419 5.824877 5.134749 8.095446
##  [545] 7.575368 6.468423 6.420207 7.373102 6.987112 6.331252 6.114691 5.809558
##  [553] 6.620381 7.752127 6.769162 7.519714 8.236985 6.768293 5.893744 7.049211
##  [561] 7.823837 7.307104 6.413429 5.825005 5.468447 8.139528 6.916203 7.550027
##  [569] 7.884187 7.087079 6.655025 6.576071 7.059174 7.106747 7.004112 7.418901
##  [577] 6.216230 6.877053 6.716239 5.774750 5.375858 6.859917 5.796963 5.430667
##  [585] 6.050284 5.180481 6.965721 5.442548 6.996164 6.442811 8.029980 6.444201
##  [593] 6.206046 6.805083 7.329929 8.391455 6.506366 7.896704 6.939620 8.299096
##  [601] 6.821829 7.481490 5.755950 6.979269 6.681995 6.770827 5.815362 8.180608
##  [609] 7.270775 6.479849 8.299376 6.383947 6.420208 6.308492 6.049979 7.868146
##  [617] 6.341965 6.649585 7.564713 5.548441 6.296528 6.983836 6.129454 6.247477
##  [625] 5.747728 7.739387 7.673278 7.240537 7.550868 6.991387 6.794253 7.383959
##  [633] 6.297338 7.666774 7.116482 7.829928 5.342728 5.548820 5.442717 6.884009
##  [641] 8.240252 7.129386 6.054951 6.097395 6.921436 6.593263 5.107975 6.946368
##  [649] 7.335286 6.855685 5.750904 7.565448 5.926264 6.101863 7.178649 7.463391
##  [657] 6.483793 7.921115 7.380859 6.689081 6.753997 6.392826 7.396810 5.807849
##  [665] 6.427120 6.103463 5.669532 6.961016 6.370599 8.271197 5.968144 6.797539
##  [673] 6.467505 5.823022 6.803461 7.664331 8.897955 5.942636 5.586430 6.490149
##  [681] 7.306717 6.410276 6.793182 6.103755 7.401165 6.307558 6.606359 6.055893
##  [689] 6.655515 8.201340 7.248098 5.647077 5.723462 7.165285 6.961076 5.805388
##  [697] 6.122194 7.478316 7.952533 7.961255 6.318424 5.764649 5.273740 5.371383
##  [705] 6.991722 7.670596 8.380953 7.512437 6.955868 5.765974 6.002524 6.997873
```

```
##  [713] 7.645122 6.834596 7.230236 6.072448 7.674176 6.655060 6.388312 8.196169
##  [721] 6.992045 6.202717 5.365370 6.280469 5.326137 5.414903 5.747574 8.177384
##  [729] 6.666285 6.327128 7.165580 6.492269 7.307118 6.343857 5.627330 7.118715
##  [737] 7.486883 5.436653 7.061975 6.123451 6.680060 5.882803 5.382708 7.502663
##  [745] 6.797922 7.180023 6.647008 6.779365 5.806961 7.940229 8.478941 7.024493
##  [753] 5.715164 6.418981 7.904584 6.199114 6.838887 7.229379 6.108630 5.549604
##  [761] 6.302366 8.056620 6.320142 6.886201 6.235223 7.363974 5.665295 7.015448
##  [769] 5.544315 6.677755 6.038534 7.382843 6.620449 7.057158 6.105155 6.567554
##  [777] 6.173225 7.338363 5.284762 8.107809 6.821327 8.419542 5.240550 6.115283
##  [785] 5.707218 5.413781 5.585616 8.032404 6.151023 7.575541 7.065669 6.016816
##  [793] 7.371674 6.133649 7.261255 6.266712 7.095189 5.212878 6.990013 7.860461
##  [801] 7.496245 6.587550 5.245534 6.336868 8.393306 6.065163 5.654414 6.427094
##  [809] 5.653252 5.814770 5.843774 6.482462 5.663571 7.027721 7.789035 7.847393
##  [817] 6.859824 6.106502 7.398038 6.871613 6.532901 7.666278 5.455419 7.154830
##  [825] 7.094099 6.830841 7.786051 6.124782 6.389981 6.326013 5.657311 6.775658
##  [833] 5.799256 6.842226 7.393890 7.902551 7.128510 6.291049 6.404050 6.859718
##  [841] 6.155739 8.069473 5.885937 6.217478 5.830496 5.969520 6.825169 5.749283
##  [849] 5.378910 7.320786 5.866403 6.579509 5.417281 6.658297 8.034288 6.380042
##  [857] 7.233624 7.535380 6.633603 5.952714 5.526463 5.629141 6.610115 8.252637
##  [865] 6.543935 6.158771 6.171612 5.639770 6.674597 6.017435 6.853934 8.739996
##  [873] 6.910770 5.540876 7.475872 7.862072 5.422188 7.495027 8.387548 8.291130
##  [881] 6.194850 6.145681 7.013746 7.014013 6.451289 6.454219 5.925304 6.829933
##  [889] 7.129794 5.745889 7.532444 8.537268 7.087232 6.764949 5.989198 5.879769
##  [897] 5.701740 6.197672 6.038798 5.229434 8.167769 7.321613 5.622216 8.347395
##  [905] 5.213005 6.937151 5.996553 7.040248 6.740472 8.247071 7.711417 5.465942
##  [913] 6.024923 6.517290 7.922929 6.929578 7.463284 7.323606 7.155660 5.937935
##  [921] 6.448064 6.987172 7.162822 7.371934 5.727326 7.196664 6.220357 7.339567
##  [929] 6.982641 6.741488 5.193641 7.152253 7.032328 6.269850 7.576637 5.126526
##  [937] 6.756530 7.331051 8.118628 6.567615 6.930619 5.065607 5.594900 5.975314
##  [945] 6.655937 6.739980 5.523722 7.874146 6.470456 7.997520 6.247893 5.286210
##  [953] 8.640844 6.819558 7.479046 6.459017 8.631841 7.628198 8.500822 7.174974
##  [961] 8.013217 6.987597 7.442618 6.423741 7.224632 7.976178 6.922938 6.323191
##  [969] 6.371463 7.098248 5.998724 8.498311 6.119714 8.257391 8.228670 6.794402
##  [977] 6.479678 6.406699 5.855612 7.311329 7.307216 6.826841 7.178742 7.142614
##  [985] 7.368743 5.956361 7.424781 7.256908 7.080490 7.382296 6.295982 6.812223
##  [993] 5.416758 8.237722 7.062822 7.394334 6.416767 6.254236 7.128010 5.108686
```

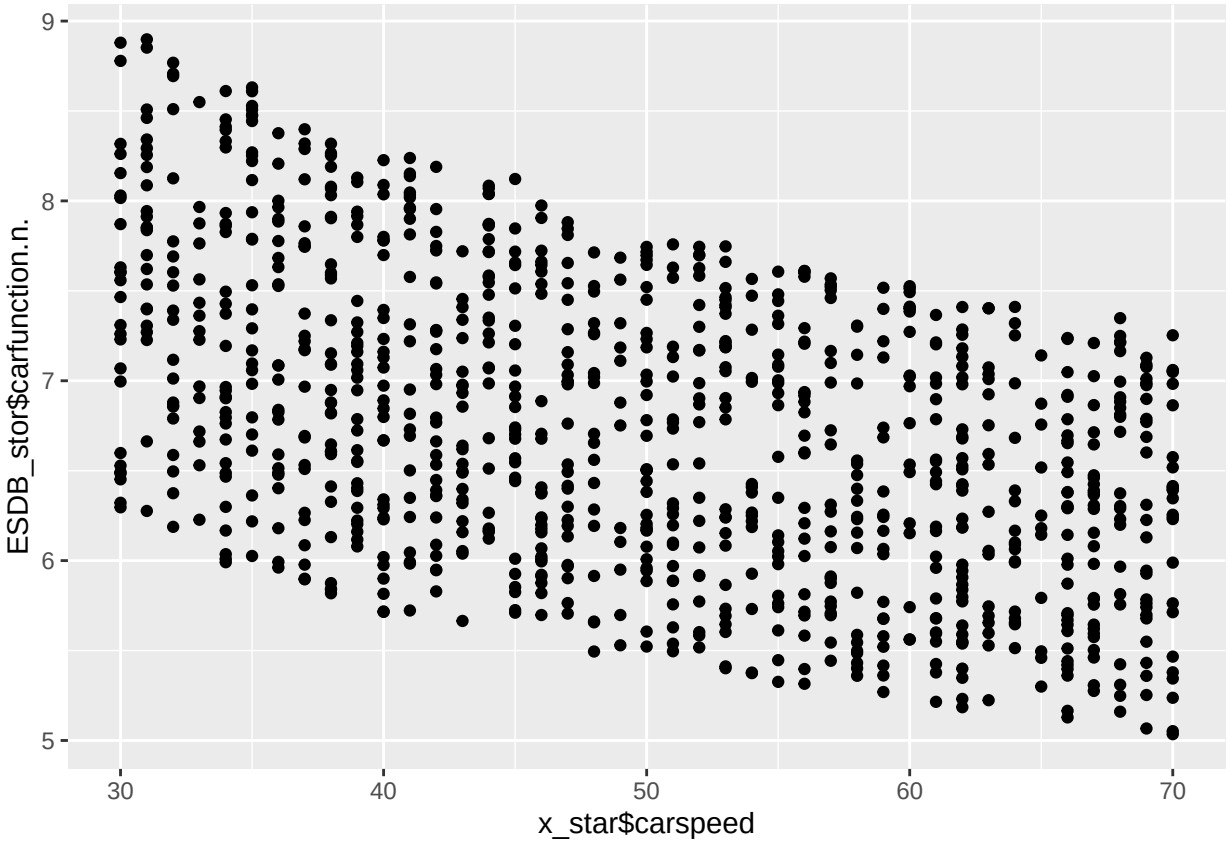
```
mean(carfunction(n))
```

```
## [1] 6.739746
```

```
summary(carfunction(n))
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   5.042   6.089   6.727   6.745   7.319   8.836
```

```
# wont work to knit
ggplot() +
  geom_point(aes(x = x_star$carspeed, y = ESDB_stor$carfunction.n.))
```


ESDB_stor$carfunction.n.
9
8
7
6
5
30
40
50
60
70
x_star$carspeed