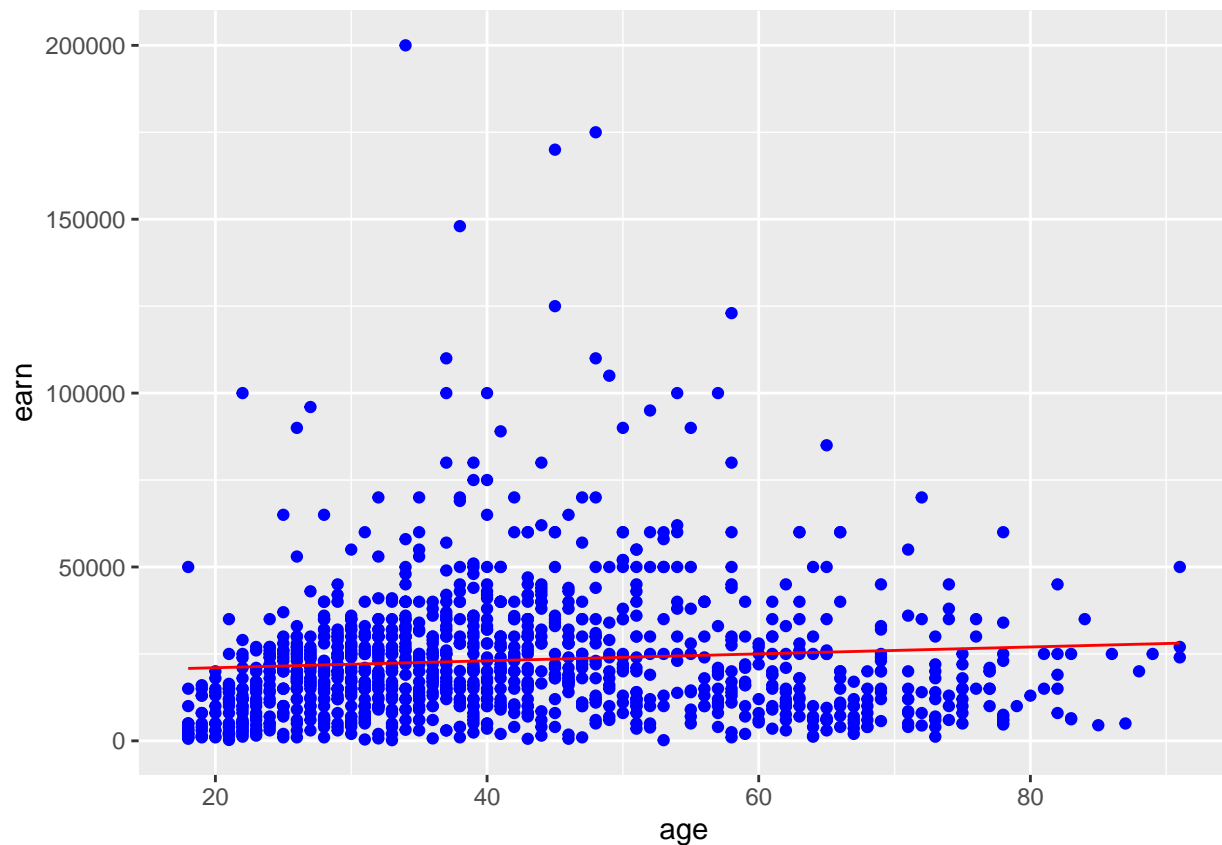


assignment_06

Stephen Smitshoek

05/05/2022

```
##
## Call:
## lm(formula = earn ~ age, data = heights_df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -25098 -12622  -3667   6883 177579
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) 19041.53    1571.26   12.119 < 2e-16 ***
## age          99.41       35.46    2.804  0.00514 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 19420 on 1190 degrees of freedom
## Multiple R-squared:  0.006561,    Adjusted R-squared:  0.005727
## F-statistic:  7.86 on 1 and 1190 DF,  p-value: 0.005137
```



Mean Earn:

```
## [1] 23154.77
```

Corrected Sum of Squares Total:

```
## [1] 451591883937
```

Corrected Sum of Squares for Model:

```
## [1] 2963111900
```

Residuals:

```
## [1] 26485.214165 35192.939138 8075.706507 21912.548684 28081.648793
## [6] -12626.076179 5087.591080 8385.808394 -19129.047323 5373.923821
## [11] -18972.901261 7578.677650 -9725.481951 -12111.220463 -520.728121
## [16] -7807.060862 18075.706507 20584.619937 -17508.843548 30479.271879
## [21] -19111.220463 -7129.047323 -15728.453094 16882.837251 10485.214165
## [26] -12520.728121 1994.127596 27181.054565 18678.083421 -6526.670408
## [31] 2678.083421 52081.648793 4876.894964 -9626.076179 -19295.176288
## [36] 7876.894964 -3707.655091 5373.923821 -22502.901261 2976.300735
## [41] 882.837251 10075.706507 -12023.699265 -10129.047323 -3522.510807
## [46] -1924.293493 -17330.830009 -11608.249319 -502.901261 -2117.162749
```

##	[51]	10087.591080	-19502.901261	-4824.887722	12777.489193	-16830.830009
##	[56]	-10508.843548	-14707.655091	3075.706507	-5725.481951	-5824.887722
##	[61]	-6815.974292	-21801.118575	-20370.626234	-918.351207	-24110.032005
##	[66]	4274.518049	-18629.047323	-5918.351207	-13228.453094	-13801.118575
##	[71]	-13713.597377	-15701.712804	-7918.351207	-20518.351207	7777.489193
##	[76]	7678.083421	-12818.945435	-16626.076179	-13304.089718	-5105.278176
##	[81]	-2620.133893	-1327.858865	-19829.641551	-21522.510807	-1725.481951
##	[86]	-11228.453094	3701.852568	15391.750681	-2888.639773	-16894.582060
##	[91]	34695.910282	-7602.307032	-6281.916579	-7023.699265	-11327.858865
##	[96]	9684.025708	-4023.699265	-7719.539664	-228.453094	-2315.974292
##	[101]	14280.460336	14584.619937	-6315.974292	9976.300735	2692.939138
##	[106]	-6915.380063	2479.271879	3684.025708	-16824.887722	47181.054565
##	[111]	-18017.756978	-16427.264637	-1626.076179	-17129.047323	37479.271879
##	[116]	-17123.105036	7181.054565	47479.271879	26882.837251	21081.648793
##	[121]	6684.025708	-13017.756978	-216.568521	19795.316053	-7123.105036
##	[126]	-22099.335889	-5123.105036	7777.489193	5476.300735	-20212.524346
##	[131]	-6608.249319	19584.619937	8584.619937	-14608.249319	36485.214165
##	[136]	-3011.814691	-18828.453094	-20824.887722	5274.518049	-15224.887722
##	[141]	-7315.974292	68373.923821	-15216.568521	-2222.510807	-5830.830009
##	[146]	-13005.872404	385.808394	-2918.351207	-4614.191606	-13912.408920
##	[151]	17578.677650	-403.495490	3572.735363	2777.489193	-6105.278176
##	[156]	20186.996851	-8912.408920	-5620.133893	-608.249319	280.460336
##	[161]	-13397.553203	41385.808394	-18304.089718	14695.910282	-8315.974292
##	[166]	-1526.670408	-4011.814691	-3216.568521	1087.591080	26280.460336
##	[171]	-502.901261	-13707.655091	-6818.945435	11684.025708	101485.214165
##	[176]	-713.597377	-4824.887722	3882.837251	47777.489193	11286.402623
##	[181]	-15204.683947	12081.648793	-7818.945435	-10918.351207	-17801.118575
##	[186]	-16011.814691	10988.185309	20888.779537	-6228.453094	-11695.770517
##	[191]	-111.220463	2777.489193	590.562223	-1824.887722	2572.735363
##	[196]	20385.808394	46181.054565	38584.619937	9777.489193	-2321.916579
##	[201]	9479.271879	988.185309	146485.214165	12678.083421	17181.054565
##	[206]	10976.300735	-3228.453094	6684.025708	3876.894964	-16129.047323
##	[211]	-6298.147432	-5023.699265	10175.112278	-6228.453094	25491.156452
##	[216]	-14918.351207	15888.779537	16882.837251	10328.677650	-5900.524346
##	[221]	13081.648793	-19403.495490	-10421.322350	34695.910282	16584.619937
##	[226]	20181.054565	22578.677650	-16918.351207	-19192.799374	-2918.351207
##	[231]	-4327.858865	-20222.510807	43175.112278	26882.837251	-11818.945435
##	[236]	12976.300735	4678.083421	-21605.278176	19280.460336	-1924.293493
##	[241]	-6924.293493	-11129.047323	-20795.176288	-4327.858865	9497.098739
##	[246]	6175.112278	-7321.916579	-1427.264637	-1924.293493	-12716.568521
##	[251]	-8228.453094	-14210.626234	-19719.539664	2075.706507	-5520.728121
##	[256]	-12813.003149	8982.243022	-4626.076179	-19520.728121	-19029.047323
##	[261]	-19229.322350	-4626.076179	8175.112278	-7222.510807	783.431479
##	[266]	-15701.712804	25689.967995	25689.967995	-3912.408920	5590.562223
##	[271]	-1514.785835	5572.735363	-18818.945435	-4126.076179	-5324.887722
##	[276]	5081.648793	27988.185309	-6924.293493	-3222.510807	5672.141135
##	[281]	-9807.060862	-7321.916579	-10008.843548	1976.300735	-4620.133893
##	[286]	-21801.118575	-20707.655091	-21920.133893	-4087.451316	4081.648793
##	[291]	-10520.728121	-1713.597377	7379.866107	9894.721824	-3216.568521
##	[296]	9777.489193	-16123.105036	-10918.351207	-12123.105036	-19830.830009
##	[301]	-14099.335889	-6620.133893	2678.083421	3274.518049	9976.300735
##	[306]	11684.025708	-15824.887722	56584.619937	-1526.670408	-21818.945435
##	[311]	5181.054565	4672.141135	5572.735363	-5117.162749	-22906.466633
##	[316]	-5602.307032	-17813.003149	-304.089718	-9924.293493	-12707.655091

##	[321]	3403.635254	-17228.453094	3280.460336	479.271879	-1321.916579
##	[326]	-204.683947	-8496.958974	-19415.380063	2671.546906	11982.243022
##	[331]	3976.300735	2379.866107	1774.518049	-9228.453094	-6029.641551
##	[336]	-18327.858865	-19701.712804	-11900.524346	-7123.105036	151186.996851
##	[341]	-20526.670408	-15304.089718	17807.200626	-12093.393602	-3117.162749
##	[346]	12976.300735	18175.112278	8801.258340	25590.562223	75292.344909
##	[351]	13175.112278	1479.271879	11684.025708	11602.446797	5789.373766
##	[356]	-17918.351207	125181.054565	7777.489193	-15623.105036	-19719.539664
##	[361]	-2900.524346	16882.837251	7081.648793	-8719.539664	-7421.322350
##	[366]	3379.866107	-13526.670408	2274.518049	-20577.712804	-11526.670408
##	[371]	-10222.510807	27578.677650	1373.923821	17578.677650	-15626.076179
##	[376]	-17023.699265	87280.460336	18777.489193	-3795.176288	-327.858865
##	[381]	-17924.293493	2379.866107	6385.808394	-10111.220463	-16520.728121
##	[386]	-9614.191606	21274.518049	2678.083421	14397.692968	41982.243022
##	[391]	-6222.510807	-18099.335889	-2918.351207	-12198.741660	18602.446797
##	[396]	-18198.741660	-9824.887722	-14123.105036	-6222.510807	-20298.147432
##	[401]	-3222.510807	-1918.351207	19385.808394	13870.952677	-18496.958974
##	[406]	-2117.162749	-16223.699265	-6614.191606	87.591080	-21099.335889
##	[411]	-10327.858865	-11725.481951	17379.866107	16286.402623	2075.706507
##	[416]	2373.923821	-2321.916579	35988.185309	-12713.597377	-18017.756978
##	[421]	4976.300735	65882.837251	18175.112278	-6626.076179	-20029.641551
##	[426]	-3005.872404	-11813.003149	175.112278	15391.750681	16584.619937
##	[431]	10689.967995	-14824.887722	-8719.539664	-9608.249319	-16421.322350
##	[436]	-12117.162749	-12123.105036	-3117.162749	-19298.147432	14385.808394
##	[441]	4192.939138	-3415.380063	-16707.655091	11888.779537	-21915.380063
##	[446]	20075.706507	3771.546906	-8029.641551	5888.779537	-14327.858865
##	[451]	7186.996851	-8216.568521	26087.591080	-16029.641551	-20230.830009
##	[456]	-10111.220463	17479.271879	1379.866107	572.735363	-2620.133893
##	[461]	-2706.945435	-13701.712804	17982.243022	-11011.814691	37876.894964
##	[466]	2473.329592	15379.866107	-18725.481951	-9023.699265	-16129.047323
##	[471]	-2719.539664	175.112278	3491.156452	-1117.162749	6584.619937
##	[476]	7777.489193	7876.894964	6099.475654	2684.025708	-421.322350
##	[481]	2678.083421	-10427.264637	-11310.032005	-13216.568521	-11514.785835
##	[486]	-18403.495490	34280.460336	13280.460336	7075.706507	-12930.235780
##	[491]	-17830.830009	-3117.162749	8292.344909	-10801.118575	-6321.916579
##	[496]	-21795.176288	-15315.974292	9578.677650	-6927.264637	-8924.293493
##	[501]	-14526.670408	24497.098739	-10520.728121	-6105.278176	-15508.843548
##	[506]	-2520.728121	32479.271879	-13017.756978	-7930.235780	-2123.105036
##	[511]	8373.923821	-10421.322350	3678.083421	-9225.481951	-13924.293493
##	[516]	-7222.510807	43473.329592	3870.952677	-13129.047323	-6129.047323
##	[521]	-11017.756978	12280.460336	17876.894964	7771.546906	-7123.105036
##	[526]	-2620.133893	-22204.683947	-19930.235780	-13327.858865	-15830.830009
##	[531]	3274.518049	-4707.655091	7578.677650	-10520.728121	-12222.510807
##	[536]	-4930.235780	23075.706507	15590.562223	-2093.393602	-5210.626234
##	[541]	-4423.699265	-18701.712804	7777.489193	-5713.597377	1286.402623
##	[546]	-19204.683947	46783.431479	-7421.322350	2678.083421	13175.112278
##	[551]	-3427.264637	5976.300735	-6129.047323	175.112278	12976.300735
##	[556]	-5614.191606	12280.460336	-4729.047323	-719.539664	5192.939138
##	[561]	-4725.481951	2379.866107	-14111.220463	17280.460336	-12804.089718
##	[566]	11485.214165	81087.591080	76982.243022	-3111.220463	-14608.249319
##	[571]	11373.923821	4473.329592	33204.823712	-5514.785835	-10105.278176
##	[576]	-16029.641551	36783.431479	-13900.524346	5181.054565	18684.025708
##	[581]	-20321.916579	-2321.916579	4982.243022	-15204.683947	8876.894964
##	[586]	-5719.539664	-6918.351207	12181.054565	-18626.076179	-6918.351207

##	[591]	11783.431479	4678.083421	3075.706507	16882.837251	21684.025708
##	[596]	-7327.858865	2280.460336	16783.431479	11479.271879	17578.677650
##	[601]	13175.112278	-12111.220463	6684.025708	-17.756978	-20023.699265
##	[606]	-1526.670408	-15204.683947	36684.025708	-11117.162749	-105.278176
##	[611]	-4298.147432	-13526.670408	-19129.047323	-3026.076179	-1029.641551
##	[616]	77280.460336	26982.243022	3783.431479	-23807.060862	-3029.641551
##	[621]	-4327.858865	-16397.553203	-8520.728121	-18402.307032	10081.648793
##	[626]	578.677650	-13117.162749	572.735363	-7930.235780	10876.894964
##	[631]	13379.866107	-12222.510807	-19005.872404	-11315.974292	-13713.597377
##	[636]	-2514.785835	3777.489193	-2011.814691	-1409.437777	-1427.264637
##	[641]	-12818.945435	-11099.335889	-14427.264637	-7818.945435	3578.677650
##	[646]	-12123.105036	-18029.641551	3882.837251	6473.329592	-6725.481951
##	[651]	32976.300735	-1626.076179	-14915.380063	7976.300735	-2123.105036
##	[656]	-4496.958974	3373.923821	-18228.453094	-7912.408920	-12918.351207
##	[661]	-6824.887722	4385.808394	8979.271879	70789.373766	14982.243022
##	[666]	6882.837251	12683.431479	-9228.453094	-11526.670408	21584.619937
##	[671]	15391.750681	-225.481951	-11204.683947	13590.562223	-19830.830009
##	[676]	-12298.147432	-7123.105036	783.431479	-16827.858865	-7304.089718
##	[681]	-7029.641551	-11824.887722	-12722.510807	-14602.307032	-8701.712804
##	[686]	-15824.887722	-22307.060862	16882.837251	2081.648793	2994.127596
##	[691]	9485.214165	-21403.495490	-17923.699265	-2192.799374	10175.112278
##	[696]	-11807.060862	-13725.481951	-5818.945435	-11695.770517	-4222.510807
##	[701]	-9427.264637	-16912.408920	-20028.453094	-7129.047323	-6017.756978
##	[706]	6783.431479	689.967995	-321.916579	-6129.047323	-1087.451316
##	[711]	-1626.076179	-13421.322350	-5023.699265	-21814.191606	-5614.191606
##	[716]	1783.431479	-3117.162749	51982.243022	-19517.756978	9900.664111
##	[721]	8473.329592	-1795.176288	-20626.076179	34397.692968	8403.635254
##	[726]	-13321.916579	7608.389084	-13807.060862	-12210.626234	6684.025708
##	[731]	-5707.655091	-16105.278176	8075.706507	-13222.510807	-7023.699265
##	[736]	-14123.105036	-16496.958974	10280.460336	-9824.887722	-4719.539664
##	[741]	4894.721824	-9722.510807	-12620.133893	-17599.335889	-2614.191606
##	[746]	-5695.770517	-526.670408	-19210.626234	-620.133893	8373.923821
##	[751]	98192.939138	-15514.785835	-19526.670408	-17604.683947	-11526.670408
##	[756]	11186.996851	-9707.655091	-17228.453094	-5427.264637	-22121.916579
##	[761]	1473.329592	-5725.481951	-17912.408920	-23014.191606	5578.677650
##	[766]	-21602.307032	-7520.728121	-6526.670408	2976.300735	-6626.076179
##	[771]	16584.619937	5888.779537	-16924.293493	12578.677650	-6123.105036
##	[776]	4982.243022	-3216.568521	-1023.699265	-6216.568521	-11.814691
##	[781]	-1496.958974	16385.808394	-12930.235780	-4514.785835	19099.475654
##	[786]	-17321.916579	982.243022	-15930.235780	10578.677650	2572.735363
##	[791]	-15327.858865	65491.156452	33286.402623	-10609.437777	7280.460336
##	[796]	-8017.756978	-11496.958974	9075.706507	9982.243022	4894.721824
##	[801]	-10818.945435	-16228.453094	-3906.466633	4385.808394	-10123.105036
##	[806]	-4614.191606	-16520.728121	-19705.872404	-6824.887722	-6614.191606
##	[811]	-22095.176288	-16002.901261	-19528.453094	-16723.105036	-12123.105036
##	[816]	-2292.205145	11684.025708	4584.619937	18982.243022	20192.939138
##	[821]	30888.779537	13976.300735	2876.894964	-2824.887722	13988.185309
##	[826]	-7719.539664	-22991.016688	74274.518049	-12713.597377	-13421.322350
##	[831]	-16427.264637	25888.779537	-17415.380063	78771.546906	-7114.191606
##	[836]	8982.243022	6882.837251	-13216.568521	-5930.235780	-20792.205145
##	[841]	695.910282	-7906.466633	-2906.466633	-13117.162749	25192.939138
##	[846]	-2520.728121	-21723.105036	-8906.466633	-15602.307032	-10807.060862
##	[851]	-16029.641551	17578.677650	-19508.843548	1286.402623	-12111.220463
##	[856]	35578.677650	-3626.076179	-19830.830009	-2713.597377	-14204.683947

##	[861]	-9620.133893	-7789.234002	2479.271879	-22715.974292	3373.923821
##	[866]	14175.112278	-7321.916579	-20611.220463	-3416.322350	37590.562223
##	[871]	1783.431479	25789.373766	14894.721824	4373.923821	-1813.003149
##	[876]	-1918.351207	-19394.901261	4596.504510	-20795.176288	5075.706507
##	[881]	-19216.568521	-21782.741660	-22689.828230	21982.243022	-5514.785835
##	[886]	-15228.453094	-7427.264637	13572.735363	-6924.293493	-9924.293493
##	[891]	-22713.597377	9678.083421	-19430.235780	-18327.858865	11783.431479
##	[896]	46186.996851	-824.887722	29169.169991	-6129.047323	-13520.728121
##	[901]	-11526.670408	6286.402623	-5129.047323	-4111.220463	75590.562223
##	[906]	-13315.974292	9695.910282	-15123.105036	-13725.481951	-13011.814691
##	[911]	1286.402623	1485.214165	6186.996851	25578.677650	-6614.191606
##	[916]	4572.735363	-15105.278176	35689.967995	75.706507	-21092.205145
##	[921]	1777.489193	-3017.756978	-15023.699265	6186.996851	1175.112278
##	[926]	-3017.756978	-18924.293493	6882.837251	-9327.858865	17181.054565
##	[931]	-6327.858865	12485.214165	-14310.032005	-10813.003149	-11725.481951
##	[936]	7280.460336	777.489193	-5801.118575	-8192.799374	-5602.307032
##	[941]	2695.910282	-13993.987831	-14496.958974	-1327.858865	2976.300735
##	[946]	789.373766	-5017.756978	-19801.118575	-5327.858865	22181.054565
##	[951]	-900.524346	-10818.945435	-18830.830009	-10830.830009	-8620.133893
##	[956]	-7123.105036	-12918.351207	-24203.495490	-10204.683947	-15403.495490
##	[961]	-18830.830009	-18321.916579	-12222.510807	-19827.858865	-3626.076179
##	[966]	-17427.264637	6373.923821	-11228.453094	-18228.453094	-9129.047323
##	[971]	-4514.785835	13081.648793	-17906.466633	12578.677650	16684.025708
##	[976]	-6526.670408	-15315.974292	491.156452	5181.054565	-520.728121
##	[981]	72.735363	-18327.858865	1175.112278	-8298.147432	-6099.335889
##	[986]	-7614.191606	-6626.076179	30777.489193	4274.518049	-17824.887722
##	[991]	-14906.466633	18888.779537	-5321.916579	-18818.945435	26186.996851
##	[996]	30888.779537	4882.837251	-18813.003149	-5912.408920	-4204.683947
##	[1001]	-10321.916579	7795.316053	24596.504510	-20397.553203	-8906.466633
##	[1006]	10988.185309	1684.025708	-1626.076179	-4620.133893	7204.823712
##	[1011]	3473.329592	-6695.770517	7099.475654	-22298.147432	-6695.770517
##	[1016]	17678.083421	-9017.756978	-11813.003149	2876.894964	43801.258340
##	[1021]	13491.156452	-7824.887722	-7719.539664	-5123.105036	34397.692968
##	[1026]	-10900.524346	-2590.422459	-7304.089718	46286.402623	5093.533367
##	[1031]	-16111.220463	7578.677650	4777.489193	23684.025708	-9228.453094
##	[1036]	1578.677650	-9520.728121	57280.460336	-15830.830009	-5.872404
##	[1041]	4584.619937	-13029.641551	-14111.220463	-14117.162749	-2719.539664
##	[1046]	-14099.335889	-10602.307032	-2620.133893	5379.866107	-20864.047323
##	[1051]	8602.446797	3777.489193	4578.677650	-8023.699265	9678.083421
##	[1056]	-12222.510807	-15023.699265	4385.808394	35590.562223	-13204.683947
##	[1061]	-11496.958974	-10304.089718	3777.489193	4473.329592	-3900.133893
##	[1066]	-14298.147432	57081.648793	25081.648793	-3725.481951	59497.098739
##	[1071]	11286.402623	-16228.453094	-12228.453094	8274.518049	55192.939138
##	[1076]	12777.489193	-10421.322350	177578.677650	-19514.785835	-18830.830009
##	[1081]	-1900.524346	-19327.858865	-7023.699265	-19502.901261	-21496.958974
##	[1086]	-19629.047323	4186.996851	-13520.728121	35789.373766	-19730.235780
##	[1091]	-24003.495490	-16315.974292	-1123.105036	19192.939138	6379.866107
##	[1096]	-17830.830009	-9228.453094	-1824.887722	-25098.147432	15473.329592
##	[1101]	-17005.872404	12976.300735	2280.460336	-3924.293493	7379.866107
##	[1106]	-5900.524346	-11017.756978	-15801.118575	-5813.003149	-1626.076179
##	[1111]	7684.025708	-16620.133893	-11017.756978	-9321.916579	3578.677650
##	[1116]	-7123.105036	8175.112278	-21117.162749	-16228.453094	31373.923821
##	[1121]	-18830.830009	3075.706507	-15830.830009	-725.481951	-4725.481951
##	[1126]	-10719.539664	18584.619937	-1321.916579	-19502.901261	3572.735363

```
## [1131] -17930.235780 -22101.712804 -16930.235780 -4807.060862 27988.185309
## [1136] 36684.025708 -8117.162749 65988.185309 497.098739 -19129.047323
## [1141] -9105.278176 2274.518049 -6824.887722 18684.025708 -13315.974292
## [1146] -5620.133893 7578.677650 9280.460336 13578.677650 -11029.641551
## [1151] -1924.293493 2075.706507 -5222.510807 -813.003149 2678.083421
## [1156] 25988.185309 -2023.699265 7678.083421 -15918.351207 -19795.176288
## [1161] 7777.489193 -18427.264637 -3315.974292 15093.533367 -16695.770517
## [1166] -6719.539664 -13111.220463 -7315.974292 -3725.481951 -9626.076179
## [1171] -17129.047323 36485.214165 19982.243022 8081.648793 27081.648793
## [1176] 5075.706507 5391.750681 -9129.047323 -2023.699265 -11596.364746
## [1181] 2280.460336 -23701.712804 -18029.641551 86186.996851 28900.664111
## [1186] 33689.967995 -12620.133893 -2924.293493 -12192.799374 -14321.916579
## [1191] 35988.185309 -15725.481951
```

Sum of Squares for Error:

```
## [1] 448628772037
```

R Squared R^2 :

```
## [1] 0.006561482
```

Number of observations:

```
## [1] 1192
```

Number of regression parameters:

```
## [1] 2
```

Corrected Degrees of Freedom for Model:

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

Degrees of Freedom for Error:

```
## [1] 1190
```

Corrected Degrees of Freedom Total:

```
## [1] 1191
```

Mean of Squares for Model:

```
## [1] 2963111900
```

Mean of Squares for Error:

```
## [1] 376998968
```

Mean of Squares Total:

```
## [1] 379170348
```

F Statistic:

```
## [1] 7.859735
```

Adjusted R Squared R2:

```
## [1] 0.005726659
```

p-value:

```
## [1] 0.005136826
```


Code

```

# Assignment: ASSIGNMENT 6
# Name: Smitshoek, Stephen
# Date: 2022-05-03

## Set the working directory to the root of your DSC 520 directory
setwd("C:\\Users\\sksmi\\PeytoAccess\\Personal\\Bellevue\\DSC520\\dsc520")

## Load the `data/r4ds/heights.csv` to
heights_df <- read.csv("data\\r4ds\\heights.csv")

## Load the ggplot2 library
library(ggplot2)

## Fit a linear model using the `age` variable as the predictor and `earn` as
the outcome
age_lm <- lm(earn ~ age, data=heights_df)

## View the summary of your model using `summary()`
summary(age_lm)

## Creating predictions using `predict()`

age_predict_df <- data.frame(earn = predict(age_lm,
heights_df[, "age", drop=FALSE]), age=heights_df$age)

## Plot the predictions against the original data
ggplot(data = age_lm, aes(y = earn, x = age)) +
  geom_point(color='blue') +
  geom_line(color='red', data = age_predict_df, aes(y=earn, x=age))

mean_earn <- mean(heights_df$earn)
## Corrected Sum of Squares Total
sst <- sum((mean_earn - heights_df$earn)^2)
## Corrected Sum of Squares for Model
ssm <- sum((mean_earn - age_predict_df$earn)^2)
## Residuals
residuals <- heights_df$earn - age_predict_df$earn
## Sum of Squares for Error
sse <- sum(residuals^2)
## R Squared  $R^2 = SSM/SST$ 
r_squared <- ssm/sst

## Number of observations
n <- length(heights_df$age)
## Number of regression parameters
p <- 2
## Corrected Degrees of Freedom for Model (p-1)
dfm <- p - 1
## Degrees of Freedom for Error (n-p)
dfe <- n - p
## Corrected Degrees of Freedom Total:  $DFT = n - 1$ 
dft <- n - 1

## Mean of Squares for Model:  $MSM = SSM / DFM$ 

```

```
msm <- ssm / dfm
## Mean of Squares for Error:  MSE = SSE / DFE
mse <- sse / dfe
## Mean of Squares Total:  MST = SST / DFT
mst <- sst / dft
## F Statistic F = MSM/MSE
f_score <- msm / mse

## Adjusted R Squared  $R^2 = 1 - (1 - R^2)(n - 1) / (n - p)$ 
adjusted_r_squared <- 1 - (1 - r_squared) * (n - 1) / (n - p)

## Calculate the p-value from the F distribution
p_value <- pf(f_score, dfm, dft, lower.tail=F)
```