

# data\_preparation

Team 1 Data Prep

2024-03-24

Let's run our analysis!

And see how genre preferences as inferred from average ratings evolve over time

Let's start with loading the data

## basic skeleton model

Let's start with a simple skeleton model and build it from there in gradual steps. So the most basic form is to start regressing all our genres on the average rating. So let's do that!

```
## Notes from the estimations:  
## [x 20] Some variables have been removed because of collinearity (see $collin.var).
```

##	simple_model.1	simple_model.2	simple_model.3
## Sample (slide_window_5)	1925 - 1929	1930 - 1934	1935 - 1939
## Dependent Var.:	averageRating	averageRating	averageRating
##			
## Constant	6.481*** (0.0689)	6.334*** (0.0399)	6.355*** (0.0449)
## romance	0.0096 (0.0827)	-0.0048 (0.0457)	0.0805 (0.0508)
## war	0.1300 (0.1675)	0.1908. (0.1022)	-0.0312 (0.1081)
## crime	-0.3578** (0.1186)	-0.0233 (0.0559)	-0.2369*** (0.0584)
## thriller	0.2520 (0.2347)	-0.1514 (0.2490)	0.0427 (0.1683)
## history	0.3864. (0.2119)	-0.0664 (0.1357)	0.0885 (0.1028)
## comedy	-0.1302 (0.1079)	0.1289* (0.0547)	0.0500 (0.0574)
## fantasy	0.1357 (0.2610)	0.3534* (0.1673)	0.5634** (0.2128)
## adventure	-0.1247 (0.1562)	0.0468 (0.0904)	0.0657 (0.0814)
## mystery	0.0878 (0.2295)	-0.1388. (0.0815)	0.0159 (0.0883)
## biography	-0.3665 (0.2777)	0.2803. (0.1628)	0.2775** (0.1072)
## action	0.0266 (0.1840)	-0.3784*** (0.0970)	-0.4330*** (0.0783)
## scifi	0.6559 (0.6295)	-0.2359 (0.2724)	0.8755** (0.3193)
## western	-0.2653 (0.2704)	-0.6274*** (0.1118)	-0.3514*** (0.0733)
## horror	0.3770 (0.2618)	-0.2715* (0.1299)	-0.4617* (0.1920)
## sport	-0.3354 (0.2834)	-0.4689** (0.1773)	-0.3187. (0.1632)
## documentary	-0.1392 (0.5124)	0.8656 (0.6555)	
## musical	-0.3287. (0.1828)	-0.2260* (0.1142)	-0.1449 (0.1125)
## filmnoir	0.9020* (0.4545)	0.4027* (0.1799)	0.4704*** (0.1295)
## animation			
## adult			

```

## realitytv
## talkshow
## gameshow
## short
## news
## -----
## S.E. type                IID                IID                IID
## Observations              532                996                1,012
## R2                        0.05473              0.08917              0.11862
## Adj. R2                   0.02156              0.07239              0.10355
##
##                               simple_model.4      simple_model.5      simple_model.6
## Sample (slide_window_5)    1940 - 1944      1945 - 1949      1950 - 1954
## Dependent Var.:           averageRating      averageRating      averageRating
##
## Constant                   6.466*** (0.0550)  6.662*** (0.0399)  6.750*** (0.0428)
## romance                    0.1321* (0.0596)  0.1363* (0.0556)  -0.0466 (0.0573)
## war                        -0.0349 (0.0688)  0.2038* (0.0882)  -0.1485. (0.0771)
## crime                      -0.3353*** (0.0761) -0.1523** (0.0546) -0.3477*** (0.0582)
## thriller                   -0.1202 (0.1174)  -0.1502 (0.1110)  0.0380 (0.1057)
## history                    0.1614 (0.1140)  -0.0127 (0.1224)  -0.1051 (0.0908)
## comedy                     -0.0812 (0.0738)  0.0298 (0.0701)  0.1177. (0.0644)
## fantasy                    0.1185 (0.1663)  0.5009*** (0.1463)  0.0271 (0.2117)
## adventure                  -0.0768 (0.0958) -0.3930*** (0.0838) -0.4025*** (0.0707)
## mystery                    0.0965 (0.0964)  -0.0783 (0.0850)  -0.0780 (0.0986)
## biography                  0.1658 (0.1246)  -0.0660 (0.1314)  -0.1142 (0.0933)
## action                     -0.3823*** (0.1008) -0.3071** (0.0933) -0.3462*** (0.0851)
## scifi                      -0.7111 (0.5173)  0.0305 (0.6747)  -0.6288** (0.2169)
## western                    -0.3675*** (0.0877) -0.4420*** (0.0749) -0.4950*** (0.0837)
## horror                     -0.5045*** (0.1355) -0.5403** (0.2071)  0.0691 (0.2106)
## sport                      -0.0317 (0.5018)  -0.3875* (0.1816)  -0.4790** (0.1462)
## documentary                0.0515 (0.4123)  -0.1625 (0.6708)
## musical                    -0.1344 (0.1519)  -0.3180* (0.1458)  -0.2798* (0.1189)
## filmnoir                   0.2128* (0.0963)  0.1185* (0.0604)  -0.0068 (0.0720)
## animation                  0.8611. (0.5084)  0.0375 (0.6708)  0.4500 (0.7557)
## adult
## realitytv
## talkshow
## gameshow
## short
## news
## -----
## S.E. type                IID                IID                IID
## Observations              928                1,135                1,367
## R2                        0.09545              0.10952              0.09792
## Adj. R2                   0.07653              0.09434              0.08588
##
##                               simple_model.7      simple_model.8      simple_model.9
## Sample (slide_window_5)    1955 - 1959      1960 - 1964      1965 - 1969
## Dependent Var.:           averageRating      averageRating      averageRating
##
## Constant                   6.688*** (0.0415)  6.723*** (0.0422)  6.457*** (0.0395)
## romance                    -0.0413 (0.0607)  0.0619 (0.0714)  0.0543 (0.0635)
## war                        -0.0003 (0.0737)  0.1645. (0.0879)  0.1743* (0.0883)

```

## crime	-0.3032***	(0.0615)	-0.2121**	(0.0708)	-0.1704*	(0.0682)
## thriller	0.1141	(0.0965)	0.0790	(0.1044)	-0.1619.	(0.0919)
## history	0.0043	(0.1068)	0.0281	(0.1045)	0.3705***	(0.1106)
## comedy	0.0006	(0.0756)	0.0014	(0.0776)	0.0354	(0.0657)
## fantasy	0.1871	(0.1968)	0.1969	(0.1840)	0.1181	(0.1348)
## adventure	-0.3896***	(0.0860)	-0.6202***	(0.0850)	0.0565	(0.0867)
## mystery	0.0805	(0.1214)	0.0023	(0.1116)	0.2619*	(0.1116)
## biography	0.0445	(0.1164)	-0.0058	(0.1590)	0.1753	(0.1509)
## action	-0.2205*	(0.0936)	-0.2588**	(0.0892)	-0.2789***	(0.0712)
## scifi	-0.4273.	(0.2231)	-0.3140	(0.2705)	-0.0539	(0.2062)
## western	-0.2425*	(0.1166)	-0.3602**	(0.1327)	-0.4038***	(0.0943)
## horror	-0.4096**	(0.1527)	-0.5815***	(0.1455)	-0.5125***	(0.1106)
## sport	0.1894	(0.2792)	-0.0715	(0.2809)	-0.1358	(0.2907)
## documentary	0.4604	(0.3587)	-0.2421	(0.5606)	0.2169	(0.3776)
## musical	-0.1003	(0.1303)	0.2330	(0.1527)	-0.0175	(0.1482)
## filmnoir	-0.1486	(0.1017)				
## animation			1.063.	(0.5601)	0.1419	(0.3808)
## adult					-3.993***	(0.9965)
## realitytv						
## talkshow						
## gameshow						
## short						
## news						
## -----						
## S.E. type		IID		IID		IID
## Observations		1,540		1,555		1,971
## R2		0.05301		0.08107		0.05749
## Adj. R2		0.04180		0.07031		0.04831
##						
##	simple_model.10		simple_model.11		simple_model.12	
## Sample (slide_window_5)	1970 - 1974		1975 - 1979		1980 - 1984	
## Dependent Var.:	averageRating		averageRating		averageRating	
##						
## Constant	6.527***	(0.0357)	6.609***	(0.0340)	6.542***	(0.0337)
## romance	-0.1766**	(0.0641)	-0.1358*	(0.0609)	-0.1163*	(0.0572)
## war	0.4079***	(0.1066)	0.1923.	(0.1045)	0.0814	(0.1008)
## crime	-0.1077.	(0.0553)	-0.1417*	(0.0614)	-0.0657	(0.0656)
## thriller	-0.2957***	(0.0749)	-0.3922***	(0.0793)	-0.2905**	(0.0898)
## history	0.4689***	(0.0938)	0.5271***	(0.0955)	0.5618***	(0.0957)
## comedy	-0.0452	(0.0604)	0.0097	(0.0586)	0.0711	(0.0551)
## fantasy	0.2672*	(0.1345)	0.1836	(0.1461)	-0.0877	(0.1339)
## adventure	-0.0050	(0.0923)	-0.0827	(0.0858)	-0.1555.	(0.0926)
## mystery	0.2011*	(0.0928)	0.1868.	(0.1009)	0.1655	(0.1086)
## biography	0.2196*	(0.1080)	0.1763.	(0.0976)	0.1168	(0.0910)
## action	-0.3691***	(0.0609)	-0.5239***	(0.0586)	-0.4769***	(0.0650)
## scifi	-0.3308.	(0.1751)	-0.6920***	(0.1560)	-0.2959.	(0.1672)
## western	-0.4494***	(0.1137)	-0.4296*	(0.1731)	-0.2940	(0.2407)
## horror	-0.8364***	(0.0872)	-0.9116***	(0.0942)	-0.7391***	(0.1166)
## sport	-0.2332	(0.2221)	-0.1169	(0.1523)	-0.2164	(0.1543)
## documentary	-0.0892	(0.3368)	-0.3050	(0.3534)	0.5764	(0.3695)
## musical	0.4724**	(0.1560)	-0.0808	(0.1702)	0.1461	(0.1513)
## filmnoir						
## animation	0.4049	(0.3055)	0.7133***	(0.2037)	0.7521***	(0.1655)
## adult	-0.9695***	(0.1926)	-0.8500***	(0.1314)	-0.7032***	(0.1557)

```

## realitytv          1.973. (1.007)
## talkshow          -1.509 (0.9945)
## gameshow
## short
## news
## -----
## S.E. type          IID          IID          IID
## Observations      2,447          2,450          2,629
## R2                 0.10885        0.13124        0.07959
## Adj. R2            0.10150        0.12408        0.07288
##
## simple_model.13    simple_model.14    simple_model.15
## Sample (slide_window_5) 1985 - 1989    1990 - 1994    1995 - 1999
## Dependent Var.:      averageRating    averageRating    averageRating
##
## Constant           6.518*** (0.0329)    6.372*** (0.0305)    6.255*** (0.0264)
## romance            -0.1425** (0.0550)    -0.0958* (0.0481)    -0.0365 (0.0395)
## war                0.2901** (0.0983)    0.3484** (0.1102)    0.4167*** (0.0998)
## crime              -0.0089 (0.0552)    0.0361 (0.0495)    0.0793. (0.0449)
## thriller            -0.3785*** (0.0707)    -0.6998*** (0.0590)    -0.5636*** (0.0525)
## history            0.3924*** (0.0925)    0.5787*** (0.1012)    0.4941*** (0.0856)
## comedy             0.0856 (0.0520)    0.1355** (0.0466)    0.0579 (0.0387)
## fantasy            -0.0481 (0.1066)    0.2195* (0.1025)    0.0195 (0.0931)
## adventure          0.0845 (0.0909)    0.1712. (0.0894)    0.1116 (0.0860)
## mystery            0.1398 (0.0927)    0.0217 (0.0775)    0.0211 (0.0709)
## biography          0.1605. (0.0883)    0.1315 (0.0811)    0.2262** (0.0737)
## action             -0.7820*** (0.0565)    -0.6154*** (0.0536)    -0.5315*** (0.0538)
## scifi              -0.1735 (0.1659)    -0.5043** (0.1626)    -0.6150*** (0.1219)
## western            -0.2531 (0.2062)    -0.2186 (0.1749)    -0.2989 (0.2061)
## horror             -0.9012*** (0.1073)    -0.5389*** (0.1196)    -0.4909*** (0.1091)
## sport              -0.1052 (0.1718)    0.0178 (0.1638)    0.1184 (0.1260)
## documentary        1.027* (0.4019)    0.8689** (0.2830)    0.9143*** (0.2454)
## musical            0.4452** (0.1672)    0.5561** (0.1876)    0.0293 (0.1366)
## filmnoir
## animation          0.9504*** (0.1587)    0.8542*** (0.1359)    0.8622*** (0.1334)
## adult              -0.5437. (0.3208)    -0.0585 (0.4727)    -0.7937 (0.6160)
## realitytv          -1.172 (1.054)    -1.835. (1.066)
## talkshow           -2.550*** (0.6088)
## gameshow           -1.056 (0.7504)
## short              0.5282 (1.054)    2.287* (1.066)
## news
## -----
## S.E. type          IID          IID          IID
## Observations      3,105          3,633          4,856
## R2                 0.12692        0.12487        0.08737
## Adj. R2            0.12126        0.11954        0.08341
##
## simple_model.16    simple_model.17    simple_model.18
## Sample (slide_window_5) 2000 - 2004    2005 - 2009    2010 - 2014
## Dependent Var.:      averageRating    averageRating    averageRating
##
## Constant           6.268*** (0.0242)    6.236*** (0.0216)    6.235*** (0.0211)
## romance            -0.1000** (0.0363)    -0.0410 (0.0355)    0.0185 (0.0344)
## war                0.3863*** (0.0975)    0.2236* (0.0935)    -0.0254 (0.0846)

```

## crime	0.2020*** (0.0447)	0.1891*** (0.0421)	0.2111*** (0.0405)
## thriller	-0.4289*** (0.0571)	-0.4908*** (0.0507)	-0.4472*** (0.0446)
## history	0.4709*** (0.0856)	0.4042*** (0.0694)	0.2860*** (0.0579)
## comedy	-0.0442 (0.0346)	-0.1191*** (0.0323)	-0.1220*** (0.0303)
## fantasy	0.0860 (0.0848)	0.0851 (0.0801)	0.0649 (0.0687)
## adventure	-0.0219 (0.0765)	-0.1882** (0.0709)	-0.1434* (0.0649)
## mystery	0.0807 (0.0624)	-0.0345 (0.0593)	-0.0764 (0.0536)
## biography	0.2928*** (0.0742)	0.2822*** (0.0647)	0.2769*** (0.0564)
## action	-0.5159*** (0.0496)	-0.4373*** (0.0469)	-0.3350*** (0.0451)
## scifi	-0.2591* (0.1213)	-0.3646** (0.1205)	-0.3742*** (0.0888)
## western	-0.6134* (0.2782)	-0.5242* (0.2407)	-0.7213*** (0.1788)
## horror	-0.6848*** (0.0890)	-0.9777*** (0.0753)	-1.158*** (0.0653)
## sport	-0.1336 (0.1177)	-0.1961. (0.1114)	0.1527 (0.1054)
## documentary	0.8273*** (0.1524)	0.6730*** (0.1085)	0.6594*** (0.0718)
## musical	-0.3769** (0.1157)	-0.2252. (0.1276)	-0.1135 (0.1410)
## filmnoir			
## animation	0.8512*** (0.1006)	1.026*** (0.0866)	0.8607*** (0.0842)
## adult	-1.594* (0.7858)	-4.142*** (0.7982)	-0.0544 (0.5097)
## realitytv	-2.068** (0.6405)	-0.1319 (0.3567)	-1.054*** (0.2771)
## talkshow	1.400 (1.280)		
## gameshow	-1.900 (1.280)	-1.404 (1.181)	
## short	1.132 (1.109)	1.354*** (0.3793)	1.652** (0.5098)
## news	0.7538 (0.7843)	0.3546 (1.127)	0.2156 (0.3105)
## -----	-----	-----	-----
## S.E. type	IID	IID	IID
## Observations	6,071	7,349	8,595
## R2	0.07603	0.09068	0.10113
## Adj. R2	0.07237	0.08782	0.09882
##			
##	simple_model.19	simple_model.20	
## Sample (slide_window_5)	2015 - 2019	2020 - 2024	
## Dependent Var.:	averageRating	averageRating	
##			
## Constant	6.281*** (0.0190)	6.509*** (0.0257)	
## romance	0.0031 (0.0309)	0.0184 (0.0417)	
## war	0.0234 (0.0911)	-0.2699. (0.1408)	
## crime	0.1864*** (0.0354)	0.1891*** (0.0455)	
## thriller	-0.4195*** (0.0380)	-0.2233*** (0.0459)	
## history	0.3366*** (0.0550)	0.3166*** (0.0722)	
## comedy	-0.0616* (0.0280)	-0.0987** (0.0369)	
## fantasy	0.1391* (0.0587)	0.1057 (0.0798)	
## adventure	-0.0858 (0.0606)	-0.1332 (0.0825)	
## mystery	-0.0626 (0.0430)	-0.0981. (0.0564)	
## biography	0.2649*** (0.0534)	0.0706 (0.0726)	
## action	-0.3902*** (0.0409)	-0.3378*** (0.0517)	
## scifi	-0.5626*** (0.0857)	-0.7551*** (0.1103)	
## western	-0.0178 (0.1886)	-0.4177. (0.2421)	
## horror	-1.071*** (0.0545)	-1.144*** (0.0760)	
## sport	-0.0757 (0.0860)	0.0995 (0.1175)	
## documentary	0.7650*** (0.0917)	-0.0169 (0.1572)	
## musical	0.1556 (0.1404)	0.2303 (0.1637)	
## filmnoir			
## animation	0.7955*** (0.0712)	0.6882*** (0.1029)	
## adult	0.2509 (0.5118)		

```
## realitytv          0.1578 (0.3715)      0.7491 (0.6969)
## talkshow
## gameshow          1.233 (1.144)        1.029 (1.207)
## short             0.3836 (0.3818)      0.6193 (0.3825)
## news              -1.892* (0.8310)      0.6897 (1.206)
## -----
## S.E. type          IID                  IID
## Observations       10,634              6,717
## R2                 0.09146             0.06739
## Adj. R2            0.08949             0.06432
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

So we now have the most basic form of a regression to work with. If you click around a bit you see that within the 5 year time windows some genres become significant, others stay significant and some become insignificant. However, this is the most basic form of a regression and correlational at best. Therefore we are going to extent this formula a bit and see how it evolves to something that may become a little more causal.

## adding fixed effects

### titleType

We are observing behavior over time. But we are currently observing behavior for multiple types of behavior. Or more specifically, for both movies AND series. But these are two different things. So while we still want to know the general genre preference trends, we need to adjust for movie vs. series.

```
## Notes from the estimations:
## [x 20] Some variables have been removed because of collinearity (see $collin.var).
```

```
##          fixed_type_model.1  fixed_type_model.2  fixed_type_model.3
## Sample (slide_window_5)    1925 - 1929        1930 - 1934        1935 - 1939
## Dependent Var.:          averageRating        averageRating        averageRating
##
## romance                   0.0096 (0.0827)      -0.0048 (0.0457)      0.0805 (0.0508)
## war                       0.1300 (0.1675)      0.1908. (0.1022)     -0.0312 (0.1081)
## crime                     -0.3578** (0.1186)     -0.0233 (0.0559)     -0.2369*** (0.0584)
## thriller                  0.2520 (0.2347)      -0.1514 (0.2490)      0.0427 (0.1683)
## history                   0.3864. (0.2119)      -0.0664 (0.1357)      0.0885 (0.1028)
## comedy                   -0.1302 (0.1079)      0.1289* (0.0547)      0.0500 (0.0574)
## fantasy                   0.1357 (0.2610)      0.3534* (0.1673)      0.5634** (0.2128)
## adventure                 -0.1247 (0.1562)      0.0468 (0.0904)      0.0657 (0.0814)
## mystery                   0.0878 (0.2295)      -0.1388. (0.0815)      0.0159 (0.0883)
## biography                 -0.3665 (0.2777)      0.2803. (0.1628)      0.2775** (0.1072)
## action                    0.0266 (0.1840)     -0.3784*** (0.0970)   -0.4330*** (0.0783)
## scifi                     0.6559 (0.6295)      -0.2359 (0.2724)      0.8755** (0.3193)
## western                  -0.2653 (0.2704)     -0.6274*** (0.1118)   -0.3514*** (0.0733)
## horror                    0.3770 (0.2618)      -0.2715* (0.1299)     -0.4617* (0.1920)
## sport                    -0.3354 (0.2834)     -0.4689** (0.1773)     -0.3187. (0.1632)
## documentary              -0.1392 (0.5124)      0.8656 (0.6555)
## musical                  -0.3287. (0.1828)     -0.2260* (0.1142)     -0.1449 (0.1125)
## filmnoir                  0.9020* (0.4545)      0.4027* (0.1799)      0.4704*** (0.1295)
```

```

## animation
## adult
## realitytv
## talkshow
## gameshow
## short
## news
## Fixed-Effects: -----
## titleType                      Yes                      Yes                      Yes
## -----
## S.E. type                      IID                      IID                      IID
## Observations                   532                  996                  1,012
## R2                             0.05473                0.08917                0.11862
## Within R2                      0.05473                0.08917                0.11862
##
##                               fixed_type_model.4  fixed_type_model.5  fixed_type_model.6
## Sample (slide_window_5)      1940 - 1944      1945 - 1949      1950 - 1954
## Dependent Var.:              averageRating      averageRating      averageRating
##
## romance                      0.1321* (0.0596)  0.1556*** (0.0002)  -0.0182 (0.0163)
## war                          -0.0349 (0.0688)  0.2249*** (0.0006)  -0.1038** (0.0142)
## crime                        -0.3353*** (0.0761) -0.1449*** (0.0005) -0.3240*** (0.0190)
## thriller                     -0.1202 (0.1174) -0.1357*** (0.0005)  0.0764** (0.0107)
## history                      0.1614 (0.1140)   0.0033* (0.0005)   -0.0935 (0.0512)
## comedy                       -0.0812 (0.0738)   0.0243* (0.0055)   0.1135* (0.0261)
## fantasy                      0.1185 (0.1663)   0.5786*** (0.0008)  0.1569* (0.0358)
## adventure                    -0.0768 (0.0958) -0.3744*** (0.0002) -0.3856** (0.0395)
## mystery                      0.0965 (0.0964) -0.0647*** (0.0008) -0.1214 (0.0671)
## biography                    0.1658 (0.1246) -0.0485*** (0.0004) -0.0751** (0.0090)
## action                      -0.3823*** (0.1008) -0.3129*** (0.0033) -0.3215*** (0.0156)
## scifi                        -0.7111 (0.5173)   0.0385*** (0.0009)  -0.7564. (0.3007)
## western                     -0.3675*** (0.0877) -0.4181*** (0.0010) -0.4528*** (0.0226)
## horror                      -0.5045*** (0.1355) -0.5285*** (0.0006) -0.1998 (0.1735)
## sport                       -0.0317 (0.5018) -0.3735*** (0.0005) -0.4375*** (0.0229)
## documentary                  0.0515 (0.4123) -0.1359*** (0.0011)
## musical                     -0.1344 (0.1519) -0.3002*** (0.0003) -0.2351*** (0.0148)
## filmnoir                     0.2128* (0.0963)  0.1366*** (0.0014)  0.0295* (0.0074)
## animation                    0.8611. (0.5084)  0.0641*** (0.0011)  0.5071*** (0.0259)
## adult
## realitytv
## talkshow
## gameshow
## short
## news
## Fixed-Effects: -----
## titleType                      Yes                      Yes                      Yes
## -----
## S.E. type                      IID                      by: titleType      by: titleType
## Observations                   928                  1,135              1,367
## R2                             0.09545                0.13503              0.13776
## Within R2                      0.09545                0.11343              0.09543
##
##                               fixed_type_model.7  fixed_type_model.8  fixed_type_model.9
## Sample (slide_window_5)      1955 - 1959      1960 - 1964      1965 - 1969

```

```

## Dependent Var.:          averageRating          averageRating          averageRating
##
## romance                  -0.0214 (0.0129)          0.0729 (0.0269)          0.0897** (0.0077)
## war                      0.0120 (0.0166)          0.1743* (0.0375)          0.1794*** (0.0046)
## crime                   -0.3720* (0.0661)          -0.2367* (0.0458)          -0.2334** (0.0384)
## thriller                 0.1573** (0.0136)          0.1223** (0.0093)          -0.1379** (0.0145)
## history                 -0.0259 (0.0245)          0.0559 (0.0233)          0.3376*** (0.0191)
## comedy                   0.0045 (0.0361)          0.0133 (0.0092)          0.0532* (0.0141)
## fantasy                  0.0520 (0.0981)          0.1665 (0.0714)          0.0961. (0.0369)
## adventure               -0.3670*** (0.0036)          -0.6124** (0.0339)          -0.0358 (0.0327)
## mystery                  0.0417 (0.0224)          0.0141. (0.0040)          0.1524** (0.0133)
## biography               0.0426 (0.1338)          0.0223* (0.0028)          0.1903** (0.0161)
## action                  -0.2579* (0.0569)          -0.2567** (0.0085)          -0.2353*** (0.0119)
## scifi                   -0.4175. (0.1521)          -0.4341* (0.0958)          -0.1177 (0.1525)
## western                 -0.2582** (0.0221)          -0.3630** (0.0199)          -0.3803*** (0.0245)
## horror                  -0.4479. (0.1632)          -0.6250* (0.1385)          -0.4950** (0.0475)
## sport                    0.2044* (0.0351)          -0.1234 (0.0952)          -0.1723* (0.0514)
## documentary             0.4785*** (0.0086)          -0.2187*** (0.0050)          0.2721*** (0.0157)
## musical                 -0.0986* (0.0250)          0.2403. (0.0661)          -0.0335 (0.0220)
## filmnoir                -0.0652 (0.0482)
## animation
## adult
## realitytv
## talkshow
## gameshow
## short
## news
## Fixed-Effects:
## titleType                Yes                Yes                Yes
## -----
## S.E. type                by: titleType                by: titleType                by: titleType
## Observations              1,540              1,555              1,971
## R2                        0.10929              0.11349              0.11063
## Within R2                 0.06431              0.08649              0.05970
##
## fixed_type_model.10 fixed_type_model.11 fixed_type_model.12
## Sample (slide_window_5) 1970 - 1974 1975 - 1979 1980 - 1984
## Dependent Var.:          averageRating          averageRating          averageRating
##
## romance                  -0.1560** (0.0231)          -0.1115** (0.0177)          -0.1082 (0.0497)
## war                      0.3899** (0.0437)          0.1295 (0.1211)          0.0075 (0.0515)
## crime                   -0.1375 (0.0740)          -0.1891* (0.0331)          -0.1309** (0.0199)
## thriller                 -0.2278** (0.0279)          -0.3459** (0.0379)          -0.2442* (0.0524)
## history                 0.4033*** (0.0148)          0.3892* (0.1026)          0.4285* (0.0745)
## comedy                   -0.0143 (0.0357)          0.0430 (0.0222)          0.0693. (0.0238)
## fantasy                  0.2687* (0.0819)          0.1891 (0.1425)          -0.1651 (0.1083)
## adventure               -0.1112** (0.0128)          -0.1856. (0.0681)          -0.2407* (0.0652)
## mystery                  0.0525 (0.1211)          0.0985 (0.0754)          0.0370 (0.0946)
## biography               0.2324** (0.0326)          0.1297** (0.0145)          0.1064. (0.0334)
## action                  -0.3374** (0.0412)          -0.4517** (0.0440)          -0.4382** (0.0699)
## scifi                   -0.4453*** (0.0324)          -0.7197** (0.1032)          -0.2954. (0.0962)
## western                 -0.3823* (0.0931)          -0.4391. (0.1447)          -0.3293* (0.0919)
## horror                  -0.7802* (0.1622)          -0.8774*** (0.0534)          -0.7016* (0.1441)
## sport                   -0.2576* (0.0693)          -0.0627 (0.0504)          -0.2495* (0.0589)

```



## documentary	0.0176* (0.0049)	-0.2157*** (0.0095)	0.6668*** (0.0146)
## musical	0.5641*** (0.0046)	-0.0112 (0.1377)	0.1976 (0.1644)
## filmnoir			
## animation	0.1679 (0.2462)	0.4077 (0.1765)	0.5041 (0.2503)
## adult	-0.8690*** (0.0087)	-0.7653*** (0.0200)	-0.6248*** (0.0063)
## realitytv	0.7376*** (0.0143)		
## talkshow		-2.487*** (0.0353)	
## gameshow			
## short			
## news			
## Fixed-Effects:	-----	-----	-----
## titleType	Yes	Yes	Yes
##	-----	-----	-----
## S.E. type	by: titleType	by: titleType	by: titleType
## Observations	2,447	2,450	2,629
## R2	0.18022	0.20332	0.13872
## Within R2	0.10286	0.11746	0.06906
##			
##	fixed_type_model.13	fixed_type_model.14	fixed_type_model.15
## Sample (slide_window_5)	1985 - 1989	1990 - 1994	1995 - 1999
## Dependent Var.:	averageRating	averageRating	averageRating
##			
## romance	-0.1161** (0.0198)	-0.1153 (0.0557)	-0.0368. (0.0132)
## war	0.2345* (0.0703)	0.3376* (0.0631)	0.4616* (0.1229)
## crime	-0.0357 (0.0370)	0.0098 (0.0106)	0.0510 (0.0843)
## thriller	-0.3286*** (0.0206)	-0.6285*** (0.0214)	-0.4932*** (0.0181)
## history	0.3322* (0.0696)	0.5029* (0.0989)	0.3778*** (0.0284)
## comedy	0.0778* (0.0137)	0.1080. (0.0398)	0.0537 (0.0665)
## fantasy	-0.0122 (0.1374)	0.1693. (0.0700)	-0.0240 (0.0788)
## adventure	-0.0423 (0.2075)	0.0509 (0.1734)	0.0318 (0.1454)
## mystery	0.0150 (0.1312)	-0.0082 (0.1859)	-0.0481 (0.0449)
## biography	0.1715. (0.0553)	0.1932* (0.0417)	0.2787 (0.1379)
## action	-0.7151** (0.0678)	-0.6002* (0.1040)	-0.5300** (0.0708)
## scifi	-0.1440 (0.0808)	-0.4838** (0.0468)	-0.5796* (0.1545)
## western	-0.2598 (0.1516)	-0.1788 (0.1703)	-0.1772 (0.3956)
## horror	-0.8172** (0.0839)	-0.4881* (0.0984)	-0.4959* (0.1378)
## sport	-0.1019 (0.1943)	0.0982** (0.0159)	0.1815 (0.1430)
## documentary	1.001 (0.4397)	0.7831 (0.3485)	0.9527 (0.4806)
## musical	0.4699* (0.1177)	0.5246** (0.0799)	0.0798 (0.0508)
## filmnoir			
## animation	0.4875 (0.3040)	0.5359 (0.2479)	0.4524 (0.2095)
## adult	-0.4578*** (0.0207)	-0.1008 (0.3185)	-0.6569 (0.4895)
## realitytv		-1.798*** (0.0475)	-2.438*** (0.0542)
## talkshow		-3.167*** (0.0381)	
## gameshow	-1.941*** (0.0165)		
## short		-0.0979 (0.0475)	1.350*** (0.0562)
## news			
## Fixed-Effects:	-----	-----	-----
## titleType	Yes	Yes	Yes
##	-----	-----	-----
## S.E. type	by: titleType	by: titleType	by: titleType
## Observations	3,105	3,633	4,856
## R2	0.19508	0.16963	0.13839
## Within R2	0.11069	0.11240	0.07984

```

##
## fixed_type_mod..16 fixed_type_model.17 fixed_type_mod..18
## Sample (slide_window_5) 2000 - 2004 2005 - 2009 2010 - 2014
## Dependent Var.: averageRating averageRating averageRating
##
## romance -0.1189** (0.0138) -0.0640* (0.0201) -0.0154 (0.0323)
## war 0.3890** (0.0380) 0.2532** (0.0376) -0.0289 (0.0572)
## crime 0.1501* (0.0362) 0.1322 (0.0981) 0.0830 (0.0821)
## thriller -0.3780* (0.0877) -0.4290** (0.0610) -0.3751* (0.0646)
## history 0.4033* (0.1240) 0.3093. (0.0992) 0.1773 (0.0782)
## comedy -0.0513 (0.0428) -0.1315 (0.0780) -0.1335. (0.0508)
## fantasy 0.0410 (0.1167) 0.0499 (0.1045) -0.0153 (0.0938)
## adventure -0.1036 (0.1093) -0.2411 (0.2199) -0.1287 (0.1146)
## mystery -0.0045 (0.1051) -0.0775 (0.1367) -0.1297 (0.0727)
## biography 0.3170. (0.1000) 0.3383*** (0.0244) 0.3306* (0.0819)
## action -0.4913* (0.1205) -0.4257* (0.1155) -0.3386. (0.1069)
## scifi -0.2762 (0.1438) -0.4498 (0.2721) -0.4062 (0.1838)
## western -0.6407 (0.7004) -0.4987 (0.3581) -0.7087* (0.1621)
## horror -0.6415** (0.0937) -0.9299** (0.1274) -1.098** (0.1348)
## sport -0.1271 (0.0632) -0.2006** (0.0312) 0.1621 (0.0809)
## documentary 0.8020* (0.1492) 0.7253** (0.0577) 0.7428** (0.0648)
## musical -0.3135. (0.1087) -0.1750. (0.0609) -0.0440 (0.0201)
## filmnoir
## animation 0.4398** (0.0434) 0.5822* (0.1234) 0.4243 (0.2160)
## adult -1.723 (0.9180) -4.277* (0.8468) -0.3217 (0.4724)
## realitytv -2.689*** (0.0613) -0.7805*** (0.0545) -1.839. (0.6182)
## talkshow 1.394*** (0.0046)
## gameshow -1.906*** (0.0046) -1.401*** (0.0132)
## short 0.5238** (0.0667) 0.6488* (0.1803) 0.8418*** (0.0285)
## news 0.1306* (0.0382) 0.3768*** (0.0240) 0.1229 (0.4859)
## Fixed-Effects: -----
## titleType Yes Yes Yes
## -----
## S.E. type by: titleType by: titleType by: titleType
## Observations 6,071 7,349 8,595
## R2 0.11586 0.13983 0.17814
## Within R2 0.06584 0.08016 0.09822
##
## fixed_type_mod..19 fixed_type_model.20
## Sample (slide_window_5) 2015 - 2019 2020 - 2024
## Dependent Var.: averageRating averageRating
##
## romance -0.0395 (0.0760) 0.0064 (0.1111)
## war 0.0654 (0.0550) -0.1584 (0.2166)
## crime 0.0394 (0.1085) 0.0456 (0.0261)
## thriller -0.4097* (0.1134) -0.2177* (0.0567)
## history 0.2035** (0.0336) 0.1895* (0.0331)
## comedy -0.0798 (0.0913) -0.0980 (0.0632)
## fantasy -0.0033 (0.1591) -0.0198 (0.1254)
## adventure -0.1055. (0.0338) -0.1802. (0.0580)
## mystery -0.1531. (0.0622) -0.2231 (0.1209)
## biography 0.3339** (0.0391) 0.0763. (0.0249)
## action -0.3720* (0.0880) -0.2779. (0.0966)
## scifi -0.6141* (0.1892) -0.7391*** (0.0289)

```

```

## western          0.0060 (0.2644)    -0.4839 (0.5071)
## horror           -0.9596** (0.0931)   -0.9915* (0.2133)
## sport            -0.0400 (0.0681)     0.0962 (0.0800)
## documentary      0.7497** (0.0701)    -0.1117 (0.5269)
## musical          0.2026* (0.0384)     0.2543** (0.0377)
## filmnoir
## animation        0.3987 (0.3121)      0.3990 (0.2149)
## adult            0.0262 (0.3953)
## realitytv        -0.6446* (0.1694)     0.2331** (0.0199)
## talkshow
## gameshow         0.5784*** (0.0336)    0.3971** (0.0335)
## short            -0.3711** (0.0425)    -0.0016 (0.1332)
## news             -1.806 (1.094)       0.0147 (0.0445)
## Fixed-Effects:  -----
## titleType                Yes                Yes
## -----
## S.E. type                by: titleType        by: titleType
## Observations              10,634              6,717
## R2                        0.19012             0.15038
## Within R2                 0.08572             0.05597
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

```

If you compare these results against our skeleton model you may see that the standard errors have increased. This is good! this means our analysis has become a little more robust. But let's check our R-squared to be sure.

Good most of our r-squares are improving. This means this added fixed effects was a good one.

### title of movie vs. serie

Next one we want to capture some unobservable effects that are know to the raters but unknown to us. For example, script, plot and actor quality. But also things like music and other elements captured in the series that are outside of the data set.

Last, because while out regression assumptions are mostly respected we still may want to increase the robustness of the coefficients. We do this by loosening these assumptions a little, given that heteroscedasticity appears to be a little shady we loosen that assumption a little and then check the R-squared again.

```

## Notes from the estimations:
## [x 20] Some variables have been removed because of collinearity (see $collin.var).

```

##	fixed_tth_model.1	fixed_tth_model.2	fixed_tth_model.3
## Sample (slide_window_5)	1925 - 1929	1930 - 1934	1935 - 1939
## Dependent Var.:	averageRating	averageRating	averageRating
##			
## romance	0.0096 (0.0819)	-0.0048 (0.0434)	0.0805 (0.0523)
## war	0.1300 (0.1653)	0.1908* (0.0887)	-0.0312 (0.1319)
## crime	-0.3578** (0.1163)	-0.0233 (0.0594)	-0.2369*** (0.0595)
## thriller	0.2520 (0.1858)	-0.1514 (0.1584)	0.0427 (0.1844)
## history	0.3864 (0.2494)	-0.0664 (0.0976)	0.0885 (0.0826)
## comedy	-0.1302 (0.1128)	0.1289* (0.0509)	0.0500 (0.0604)
## fantasy	0.1357 (0.1583)	0.3534** (0.1160)	0.5634*** (0.1705)
## adventure	-0.1247 (0.1769)	0.0468 (0.0931)	0.0657 (0.0856)

## mystery	0.0878 (0.1931)	-0.1388 (0.0865)	0.0159 (0.0691)
## biography	-0.3665 (0.4633)	0.2803 (0.2050)	0.2775** (0.0963)
## action	0.0266 (0.1683)	-0.3784*** (0.1098)	-0.4330*** (0.0708)
## scifi	0.6559 (0.8432)	-0.2359 (0.4564)	0.8755*** (0.2393)
## western	-0.2653 (0.2749)	-0.6274*** (0.0956)	-0.3514*** (0.0744)
## horror	0.3770* (0.1917)	-0.2715 (0.2065)	-0.4617. (0.2510)
## sport	-0.3354 (0.2361)	-0.4689** (0.1652)	-0.3187* (0.1455)
## documentary	-0.1392 (0.2807)	0.8656*** (0.0423)	
## musical	-0.3287* (0.1380)	-0.2260* (0.1074)	-0.1449 (0.1038)
## filmnoir	0.9020*** (0.2684)	0.4027* (0.1947)	0.4704*** (0.1330)
## animation			
## adult			
## realitytv			
## talkshow			
## gameshow			
## short			
## news			
## Fixed-Effects:	-----	-----	-----
## titleType	Yes	Yes	Yes
## -----	-----	-----	-----
## S.E. type	Heteroskedas.-rob.	Heteroskedast.-rob.	Heteroskedast.-rob.
## Observations	532	996	1,012
## R2	0.05473	0.08917	0.11862
## Within R2	0.05473	0.08917	0.11862
##			
##	fixed_tth_model.4	fixed_tth_model.5	fixed_tth_model.6
## Sample (slide_window_5)	1940 - 1944	1945 - 1949	1950 - 1954
## Dependent Var.:	averageRating	averageRating	averageRating
##			
## romance	0.1321* (0.0591)	0.1556** (0.0509)	-0.0182 (0.0548)
## war	-0.0349 (0.0675)	0.2249** (0.0741)	-0.1038 (0.0749)
## crime	-0.3353*** (0.0814)	-0.1449** (0.0558)	-0.3240*** (0.0599)
## thriller	-0.1202 (0.1178)	-0.1357 (0.1126)	0.0764 (0.1097)
## history	0.1614 (0.1226)	0.0033 (0.1020)	-0.0935 (0.0876)
## comedy	-0.0812 (0.0732)	0.0243 (0.0695)	0.1135. (0.0608)
## fantasy	0.1185 (0.1987)	0.5786*** (0.1545)	0.1569 (0.1905)
## adventure	-0.0768 (0.0982)	-0.3744*** (0.0911)	-0.3856*** (0.0754)
## mystery	0.0965 (0.0891)	-0.0647 (0.0930)	-0.1214 (0.0929)
## biography	0.1658 (0.1326)	-0.0485 (0.1068)	-0.0751 (0.0759)
## action	-0.3823*** (0.1113)	-0.3129* (0.1242)	-0.3215** (0.0980)
## scifi	-0.7111 (0.6334)	0.0385 (0.0912)	-0.7564* (0.3562)
## western	-0.3675*** (0.0709)	-0.4181*** (0.0795)	-0.4528*** (0.0784)
## horror	-0.5045** (0.1801)	-0.5285. (0.3034)	-0.1998 (0.3441)
## sport	-0.0317 (0.6210)	-0.3735* (0.1847)	-0.4375*** (0.1138)
## documentary	0.0515 (0.1150)	-0.1359*** (0.0407)	
## musical	-0.1344 (0.1091)	-0.3002* (0.1314)	-0.2351. (0.1309)
## filmnoir	0.2128* (0.1038)	0.1366* (0.0597)	0.0295 (0.0641)
## animation	0.8611*** (0.1033)	0.0641 (0.0407)	0.5071*** (0.0433)
## adult			
## realitytv			
## talkshow			
## gameshow			
## short			
## news			

```

## Fixed-Effects: -----
## titleType                      Yes                      Yes                      Yes
## -----
## S.E. type                      Heteroskedast.-rob. Heteroskedast.-rob. Heteroskedast.-rob.
## Observations                    928                1,135                1,367
## R2                             0.09545              0.13503              0.13776
## Within R2                      0.09545              0.11343              0.09543
##
## fixed_tth_model.7    fixed_tth_model.8    fixed_tth_model.9
## Sample (slide_window_5) 1955 - 1959    1960 - 1964    1965 - 1969
## Dependent Var.:       averageRating      averageRating      averageRating
##
## romance                -0.0214 (0.0568)    0.0729 (0.0638)    0.0897 (0.0589)
## war                    0.0120 (0.0760)    0.1743* (0.0854)    0.1794* (0.0845)
## crime                  -0.3720*** (0.0666) -0.2367*** (0.0674) -0.2334*** (0.0685)
## thriller               0.1573 (0.0960)    0.1223 (0.0998)    -0.1379. (0.0829)
## history                -0.0259 (0.0923)    0.0559 (0.0951)    0.3376*** (0.0935)
## comedy                 0.0045 (0.0727)    0.0133 (0.0755)    0.0532 (0.0661)
## fantasy                0.0520 (0.2069)    0.1665 (0.2291)    0.0961 (0.1425)
## adventure              -0.3670*** (0.0866) -0.6124*** (0.0827) -0.0358 (0.0849)
## mystery                0.0417 (0.1307)    0.0141 (0.0957)    0.1524 (0.0988)
## biography              0.0426 (0.1159)    0.0223 (0.1548)    0.1903 (0.1519)
## action                 -0.2579** (0.0943) -0.2567** (0.0931) -0.2353*** (0.0633)
## scifi                  -0.4175 (0.2986)    -0.4341. (0.2458)    -0.1177 (0.2097)
## western                -0.2582* (0.1017) -0.3630** (0.1328) -0.3803*** (0.0752)
## horror                 -0.4479* (0.2131) -0.6250** (0.2014) -0.4950*** (0.1100)
## sport                  0.2044 (0.3008)    -0.1234 (0.4619)    -0.1723 (0.4016)
## documentary            0.4785*** (0.1192) -0.2187 (0.6329)    0.2721 (0.3301)
## musical                 -0.0986 (0.1080)    0.2403. (0.1440)    -0.0335 (0.1607)
## filmnoir               -0.0652 (0.0914)
## animation              0.7633 (0.5335)    0.0152 (0.1879)
## adult                  -3.957*** (0.0614)
## realitytv
## talkshow
## gameshow
## short
## news
## Fixed-Effects: -----
## titleType                      Yes                      Yes                      Yes
## -----
## S.E. type                      Heteroskedast.-rob. Heteroskedast.-rob. Heteroskedast.-rob.
## Observations                    1,540                1,555                1,971
## R2                             0.10929              0.11349              0.11063
## Within R2                      0.06431              0.08649              0.05970
##
## fixed_tth_model.10    fixed_tth_model.11    fixed_tth_model.12
## Sample (slide_window_5) 1970 - 1974    1975 - 1979    1980 - 1984
## Dependent Var.:       averageRating      averageRating      averageRating
##
## romance                -0.1560* (0.0614)    -0.1115. (0.0611)    -0.1082* (0.0545)
## war                    0.3899*** (0.0969)    0.1295 (0.1033)    0.0075 (0.0963)
## crime                  -0.1375** (0.0533)    -0.1891** (0.0632)    -0.1309* (0.0599)
## thriller               -0.2278** (0.0727) -0.3459*** (0.0825) -0.2442** (0.0792)
## history                0.4033*** (0.0688)    0.3892*** (0.0769)    0.4285*** (0.0877)

```

## comedy	-0.0143 (0.0598)	0.0430 (0.0590)	0.0693 (0.0533)
## fantasy	0.2687* (0.1209)	0.1891 (0.1382)	-0.1651 (0.1439)
## adventure	-0.1112 (0.0939)	-0.1856* (0.0880)	-0.2407* (0.0976)
## mystery	0.0525 (0.0835)	0.0985 (0.0970)	0.0370 (0.0861)
## biography	0.2324* (0.0986)	0.1297 (0.0790)	0.1064 (0.0732)
## action	-0.3374*** (0.0590)	-0.4517*** (0.0537)	-0.4382*** (0.0648)
## scifi	-0.4453** (0.1715)	-0.7197*** (0.1863)	-0.2954 (0.1807)
## western	-0.3823*** (0.1052)	-0.4391* (0.1708)	-0.3293 (0.3083)
## horror	-0.7802*** (0.0846)	-0.8774*** (0.1000)	-0.7016*** (0.1223)
## sport	-0.2576. (0.1462)	-0.0627 (0.1570)	-0.2495. (0.1389)
## documentary	0.0176 (0.2313)	-0.2157 (0.5384)	0.6668** (0.2285)
## musical	0.5641*** (0.1486)	-0.0112 (0.1651)	0.1976 (0.1890)
## filmnoir			
## animation	0.1679 (0.2055)	0.4077*** (0.1193)	0.5041*** (0.1190)
## adult	-0.8690*** (0.1154)	-0.7653*** (0.0998)	-0.6248*** (0.0910)
## realitytv	0.7376*** (0.1068)		
## talkshow		-2.487*** (0.0844)	
## gameshow			
## short			
## news			
## Fixed-Effects:	-----	-----	-----
## titleType	Yes	Yes	Yes
## -----	-----	-----	-----
## S.E. type	Heteroskedast.-rob.	Heteroskedast.-rob.	Heteroskedast.-rob.
## Observations	2,447	2,450	2,629
## R2	0.18022	0.20332	0.13872
## Within R2	0.10286	0.11746	0.06906
##			
##	fixed_tth_model.13	fixed_tth_model.14	fixed_tth_model.15
## Sample (slide_window_5)	1985 - 1989	1990 - 1994	1995 - 1999
## Dependent Var.:	averageRating	averageRating	averageRating
##			
## romance	-0.1161* (0.0524)	-0.1153* (0.0490)	-0.0368 (0.0381)
## war	0.2345** (0.0828)	0.3376*** (0.0852)	0.4616*** (0.0858)
## crime	-0.0357 (0.0546)	0.0098 (0.0501)	0.0510 (0.0431)
## thriller	-0.3286*** (0.0704)	-0.6285*** (0.0612)	-0.4932*** (0.0532)
## history	0.3322*** (0.0604)	0.5029*** (0.0823)	0.3778*** (0.0684)
## comedy	0.0778 (0.0510)	0.1080* (0.0448)	0.0537 (0.0375)
## fantasy	-0.0122 (0.1102)	0.1693 (0.1065)	-0.0240 (0.0943)
## adventure	-0.0423 (0.0936)	0.0509 (0.0800)	0.0318 (0.0838)
## mystery	0.0150 (0.0822)	-0.0082 (0.0721)	-0.0481 (0.0686)
## biography	0.1715** (0.0629)	0.1932** (0.0588)	0.2787*** (0.0586)
## action	-0.7151*** (0.0637)	-0.6002*** (0.0624)	-0.5300*** (0.0614)
## scifi	-0.1440 (0.1679)	-0.4838*** (0.1325)	-0.5796*** (0.1307)
## western	-0.2598 (0.2006)	-0.1788 (0.1558)	-0.1772 (0.1763)
## horror	-0.8172*** (0.1114)	-0.4881*** (0.1208)	-0.4959*** (0.0966)
## sport	-0.1019 (0.1368)	0.0982 (0.1200)	0.1815. (0.1023)
## documentary	1.001* (0.3969)	0.7831** (0.2407)	0.9527*** (0.2753)
## musical	0.4699** (0.1741)	0.5246** (0.1918)	0.0798 (0.1404)
## filmnoir			
## animation	0.4875*** (0.1377)	0.5359*** (0.1034)	0.4524** (0.1572)
## adult	-0.4578. (0.2631)	-0.1008 (0.4429)	-0.6569. (0.3740)
## realitytv		-1.798*** (0.0840)	-2.438*** (0.0781)
## talkshow		-3.167*** (0.1279)	

```

## gameshow                -1.941* (0.7549)
## short                   -0.0979 (0.0840)   1.350*** (0.0800)
## news
## Fixed-Effects:  -----
## titleType                Yes                Yes                Yes
## -----
## S.E. type              Heteroskedast.-rob. Heteroskedast.-rob. Heteroskedast.-rob.
## Observations              3,105              3,633              4,856
## R2                        0.19508              0.16963              0.13839
## Within R2                 0.11069              0.11240              0.07984
##
## fixed_tth_model.16   fixed_tth_model.17   fixed_tth_model.18
## Sample (slide_window_5) 2000 - 2004      2005 - 2009      2010 - 2014
## Dependent Var.:        averageRating      averageRating      averageRating
##
## romance                 -0.1189** (0.0370)   -0.0640. (0.0333)   -0.0154 (0.0309)
## war                     0.3890*** (0.0895)   0.2532** (0.0892)   -0.0289 (0.0929)
## crime                   0.1501*** (0.0440)   0.1322** (0.0423)   0.0830* (0.0388)
## thriller                 -0.3780*** (0.0598)   -0.4290*** (0.0527) -0.3751*** (0.0440)
## history                 0.4033*** (0.0724)   0.3093*** (0.0573)   0.1773** (0.0547)
## comedy                  -0.0513 (0.0325)   -0.1315*** (0.0319) -0.1335*** (0.0280)
## fantasy                 0.0410 (0.0782)   0.0499 (0.0825)   -0.0153 (0.0667)
## adventure               -0.1036 (0.0855)   -0.2411** (0.0780)   -0.1287. (0.0712)
## mystery                 -0.0045 (0.0560)   -0.0775 (0.0582)   -0.1297** (0.0489)
## biography               0.3170*** (0.0630)   0.3383*** (0.0520)   0.3306*** (0.0457)
## action                 -0.4913*** (0.0584)   -0.4257*** (0.0537) -0.3386*** (0.0503)
## scifi                   -0.2762* (0.1301)   -0.4498** (0.1431) -0.4062*** (0.1130)
## western                 -0.6407* (0.3050)   -0.4987* (0.2193)   -0.7087** (0.2387)
## horror                  -0.6415*** (0.0956)   -0.9299*** (0.0814) -1.098*** (0.0748)
## sport                  -0.1271 (0.1210)   -0.2006. (0.1077)   0.1621. (0.0953)
## documentary             0.8020*** (0.1310)   0.7253*** (0.0913)   0.7428*** (0.0675)
## musical                 -0.3135* (0.1404)   -0.1750 (0.1744)   -0.0440 (0.1682)
## filmnoir
## animation              0.4398*** (0.0765)   0.5822*** (0.0684)   0.4243*** (0.0680)
## adult                  -1.723* (0.7667)   -4.277*** (0.7640)   -0.3217 (0.2835)
## realitytv              -2.689*** (0.7401)   -0.7805 (0.4997)   -1.839*** (0.5054)
## talkshow               1.394. (0.7373)
## gameshow               -1.906** (0.7373)   -1.401** (0.4969)
## short                  0.5238*** (0.0684)   0.6488** (0.2044)   0.8418 (0.6035)
## news                   0.1306 (1.117)   0.3768*** (0.0520)   0.1229 (0.4418)
## Fixed-Effects:  -----
## titleType                Yes                Yes                Yes
## -----
## S.E. type              Heteroskedast.-rob. Heteroskedast.-rob. Heteroskedast.-rob.
## Observations              6,071              7,349              8,595
## R2                        0.11586              0.13983              0.17814
## Within R2                 0.06584              0.08016              0.09822
##
## fixed_tth_model.19   fixed_tth_model.20
## Sample (slide_window_5) 2015 - 2019      2020 - 2024
## Dependent Var.:        averageRating      averageRating
##
## romance                 -0.0395 (0.0286)   0.0064 (0.0387)
## war                     0.0654 (0.0972)   -0.1584 (0.1345)

```

```

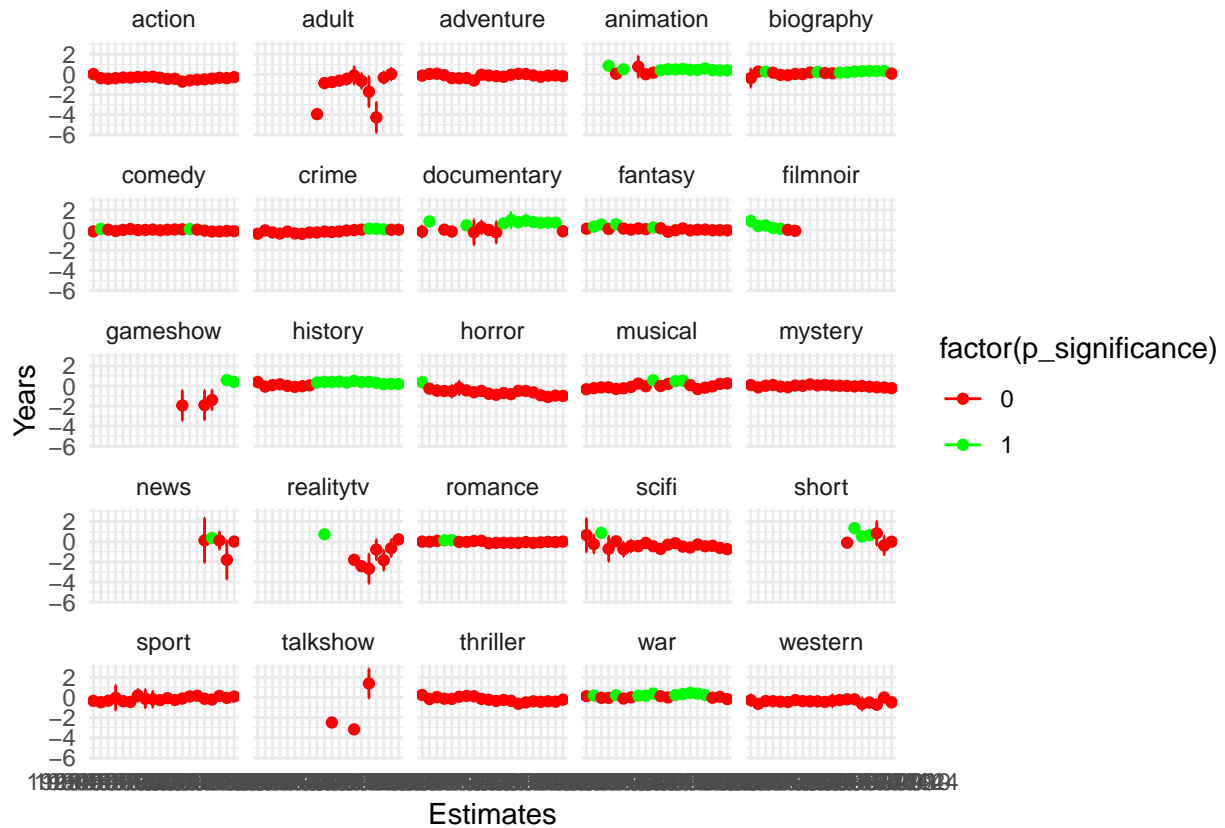
## crime                0.0394 (0.0333)    0.0456 (0.0428)
## thriller             -0.4097*** (0.0373) -0.2177*** (0.0438)
## history              0.2035*** (0.0485)    0.1895** (0.0644)
## comedy              -0.0798** (0.0259)   -0.0980** (0.0339)
## fantasy              -0.0033 (0.0549)    -0.0198 (0.0732)
## adventure            -0.1055. (0.0595)   -0.1802* (0.0873)
## mystery             -0.1531*** (0.0394) -0.2231*** (0.0530)
## biography           0.3339*** (0.0466)    0.0763 (0.0652)
## action              -0.3720*** (0.0461) -0.2779*** (0.0578)
## scifi               -0.6141*** (0.0815) -0.7391*** (0.1093)
## western              0.0060 (0.1934)    -0.4839* (0.2329)
## horror              -0.9596*** (0.0607) -0.9915*** (0.0835)
## sport               -0.0400 (0.0764)    0.0962 (0.0981)
## documentary         0.7497*** (0.0702)   -0.1117 (0.2351)
## musical              0.2026 (0.1382)    0.2543. (0.1495)
## filmnoir
## animation           0.3987*** (0.0613)    0.3990*** (0.0778)
## adult               0.0262 (0.2896)
## realitytv           -0.6446 (0.4248)    0.2331 (0.2402)
## talkshow
## gameshow            0.5784*** (0.0400)    0.3971*** (0.0627)
## short               -0.3711 (0.4620)   -0.0016 (0.1707)
## news                -1.806. (0.9666)    0.0147 (0.0597)
## Fixed-Effects:      -----
## titleType                                Yes                               Yes
## -----
## S.E. type           Heteroskedast.-rob. Heteroskedast.-rob.
## Observations                10,634                6,717
## R2                        0.19012                0.15038
## Within R2                 0.08572                0.05597
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

```

Good this has a small but positive effect. Now we want to plot the results.

## Saving 6.5 x 4.5 in image





As you can see from the plot some genres, such as romance, are largely significant and are nicely consistent over the years. However, genres such as game-shows or news (which only rose after the 2000's) do not have observations for all years and the observations that are there are remarkably volatile given their large confidence intervals.

Additionally, some genres are never significant, e.g., sports and thriller. While others become significant and never stop, e.g., history. There are also speaks in genres like war, where it seems to be falling in and out of favor.