Conclusions

Contents

Overview

This rmarkdown report analyzes the models and draws inferences for the research question. The research question is whether voting blocs, echo nest music features and migration patterns can explain the points and voting patterns of the 2016 ESC. This can be converted into a statistical problem using multiple linear regression whereby determining whether voting blocs, echo nest music features and migration patterns significantly explain the points and voting patterns.

This question will be answer by:

1. Constricting t-tests
2. Observing the signs of the estimated coefficients
3. measuring the increase in variance explained (R-sq) with the addition of a predictor variable

Overall Model

```
##
## Call:
## lm(formula = my_model_overall_bct_from, data = processed_data)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -5.0536 -1.1089  0.0151  1.0563  3.5166
##
## Coefficients:
##                  Estimate Std. Error t value Pr(>|t|)
## (Intercept)       2.34256    0.49205   4.761 2.39e-06 ***
## Average_Points    0.23063    0.07052   3.270 0.001131 **
## VBlocs1_TC_3      0.63119    0.20909   3.019 0.002640 **
## CAP_DIST_km       0.14406    0.07003   2.057 0.040073 *
## FC_NonCitzens     0.19528    0.07672   2.545 0.011147 *
## ComLANGFAM_y      0.41135    0.15223   2.702 0.007071 **
## liveness         -0.31536    0.07359  -4.285 2.11e-05 ***
## key_3             0.55931    0.25282   2.212 0.027298 *
## METRIC_Citizens   0.10938    0.07389   1.480 0.139324
## TC_PerfType_Solo  1.03025    0.29123   3.538 0.000433 ***
## key_2            -0.98148    0.49017  -2.002 0.045672 *
## VBlocs1_TC_13    -2.18020    1.19805  -1.820 0.069258 .
## key_6            -1.51353    0.48278  -3.135 0.001797 **
## time_signature_4 -0.96580    0.39500  -2.445 0.014752 *
## ComVBlocs1_y     -0.44334    0.19117  -2.319 0.020703 *
## VBlocs1_TC_1      0.55605    0.18646   2.982 0.002971 **
## key_5            -0.52151    0.20959  -2.488 0.013094 *
## OOA               0.51475    0.25889   1.988 0.047209 *
## speechiness       0.11022    0.07251   1.520 0.128985
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.557 on 639 degrees of freedom
## Multiple R-squared:  0.2102, Adjusted R-squared:  0.1879
## F-statistic: 9.446 on 18 and 639 DF,  p-value: < 2.2e-16
```

T-tests

Make sure to report:

1. the adjusted R-sq value
2. the degrees of freedom
3. the f statistic for f test
4. the p-value for f test

Note the notation for levels of significance

- * for 0.05
- ** for 0.01
- *** for 0.001

	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	2.3425577	0.4920472	4.760840	0.0000024
Average_Points	0.2306260	0.0705182	3.270449	0.0011315
VBlocs1_TC_3	0.6311948	0.2090943	3.018708	0.0026397
CAP_DIST_km	0.1440610	0.0700278	2.057198	0.0400725
FC_NonCitzens	0.1952759	0.0767153	2.545463	0.0111471
ComLANGFAM_y	0.4113496	0.1522284	2.702187	0.0070714
liveness	-0.3153628	0.0735950	-4.285113	0.0000211
key_3	0.5593086	0.2528171	2.212306	0.0272984
METRIC_Citizens	0.1093750	0.0738941	1.480158	0.1393238
TC_PerfType_Solo	1.0302475	0.2912276	3.537602	0.0004330
key_2	-0.9814806	0.4901707	-2.002324	0.0456720
VBlocs1_TC_13	-2.1802004	1.1980475	-1.819795	0.0692580
key_6	-1.5135320	0.4827773	-3.135052	0.0017970
time_signature_4	-0.9658014	0.3950003	-2.445065	0.0147516
ComVBlocs1_y	-0.4433372	0.1911659	-2.319123	0.0207028
VBlocs1_TC_1	0.5560531	0.1864590	2.982173	0.0029711
key_5	-0.5215071	0.2095938	-2.488180	0.0130936
OOA	0.5147493	0.2588947	1.988258	0.0472094
speechiness	0.1102173	0.0725075	1.520082	0.1289850

Directional / Sign effects

Report the sign effects of each significant coefficient:

- \+ indicates the predictor variable has a positive effect on the dependent variable
- \- indicates the predictor variables has a negative effect on the dependent variable

	coefficients
(Intercept)	2.3425577
Average_Points	0.2306260
VBlocs1_TC_3	0.6311948
CAP_DIST_km	0.1440610
FC_NonCitzens	0.1952759
ComLANGFAM_y	0.4113496
liveness	-0.3153628
key_3	0.5593086
METRIC_Citizens	0.1093750
TC_PerfType_Solo	1.0302475
key_2	-0.9814806
VBlocs1_TC_13	-2.1802004
key_6	-1.5135320
time_signature_4	-0.9658014
ComVBlocs1_y	-0.4433372
VBlocs1_TC_1	0.5560531
key_5	-0.5215071
OOA	0.5147493
speechiness	0.1102173

Explained Variance

Investigate the increase of variance explained by incorporating specific predictor variables. Observe the increase in R-sq when a predictor variable is included / excluded from the model. Do this for voting blocs, Echo Nest music factors and Migration patterns

- The removal of the voting block features from the overall model decreases the R-sq value from 0.21017 to 0.18477.
- The removal of the echo nest features from the overall model decreases the R-sq value from 0.21017 to 0.14996.
- The removal of the migration features from the overall model decreases the R-sq value from 0.21017 to 0.19337.

Televote Model

```
##
## Call:
## lm(formula = my_model_tele_bct, data = televote_data)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -3.5750 -0.9910  0.1048  1.0039  3.5859
##
## Coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)     2.20146    0.23204   9.487  < 2e-16 ***
## METRIC_Citizens 0.32805    0.07444   4.407 1.44e-05 ***
## Average_Points  0.37777    0.08563   4.412 1.41e-05 ***
## VBlocs1_TC_3    1.03212    0.34744   2.971 0.003201 **
## VBlocs2_TC_1   -0.74662    0.23770  -3.141 0.001844 **
## mode_1          0.67751    0.18157   3.731 0.000226 ***
## key_11          0.96359    0.30170   3.194 0.001546 **
## OOA             0.63129    0.34247   1.843 0.066216 .
## acousticness    0.31079    0.13003   2.390 0.017432 *
## danceability   -0.28922    0.12150  -2.380 0.017888 *
## key_7          -0.67034    0.37194  -1.802 0.072459 .
## VBlocs1_TC_13  -1.79588    1.09465  -1.641 0.101884
## ComLANGFAM_y    0.28818    0.19755   1.459 0.145623
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.458 on 314 degrees of freedom
## Multiple R-squared:  0.3196, Adjusted R-squared:  0.2936
## F-statistic: 12.29 on 12 and 314 DF,  p-value: < 2.2e-16
```

T-tests

Make sure to report:

1. the adjusted R-sq value
2. the degrees of freedom
3. the f statistic for f test
4. the p-value for f test

Note the notation for levels of significance

- * for 0.05
- ** for 0.01
- *** for 0.001

	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	2.2014608	0.2320438	9.487265	0.0000000
METRIC_Citizens	0.3280524	0.0744442	4.406686	0.0000144
Average_Points	0.3777742	0.0856284	4.411785	0.0000141

	Estimate	Std. Error	t value	Pr(>|t|)
VBlocs1_TC_3	1.0321223	0.3474431	2.970623	0.0032013
VBlocs2_TC_1	-0.7466186	0.2377043	-3.140955	0.0018443
mode_1	0.6775139	0.1815681	3.731458	0.0002259
key_11	0.9635931	0.3017046	3.193830	0.0015464
OOA	0.6312933	0.3424654	1.843378	0.0662160
acousticness	0.3107877	0.1300299	2.390126	0.0174319
danceability	-0.2892173	0.1214971	-2.380446	0.0178881
key_7	-0.6703445	0.3719414	-1.802285	0.0724594
VBlocs1_TC_13	-1.7958806	1.0946550	-1.640591	0.1018837
ComLANGFAM_y	0.2881785	0.1975464	1.458789	0.1456229

Directional / Sign effects

Report the sign effects of each significant coefficient:

- \+ indicates the predictor variable has a positive effect on the dependent variable
- \- indicates the predictor variables has a negative effect on the dependent variable

	coefficients
(Intercept)	2.2014608
METRIC_Citizens	0.3280524
Average_Points	0.3777742
VBlocs1_TC_3	1.0321223
VBlocs2_TC_1	-0.7466186
mode_1	0.6775139
key_11	0.9635931
OOA	0.6312933
acousticness	0.3107877
danceability	-0.2892173
key_7	-0.6703445
VBlocs1_TC_13	-1.7958806
ComLANGFAM_y	0.2881785

Explained Variance

Investigate the increase of variance explained by incorporating specific predictor variables. Observe the increase in R-sq when a predictor variable is included / excluded from the model. Do this for voting blocs, Echo Nest music factors and Migration patterns

- The removal of the voting block features from the televote model decreases the R-sq value from 0.31961 to 0.28686.
- The removal of the echo nest features from the televote model decreases the R-sq value from 0.31961 to 0.27165.
- The removal of the migration features from the televote model decreases the R-sq value from 0.31961 to 0.27753.

Jury Model

```
##
## Call:
## lm(formula = my_model_jury_form, data = jury_data)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -3.0963 -1.1107 -0.0648  1.0644  3.6173
##
## Coefficients:
##                 Estimate Std. Error t value Pr(>|t|)
## (Intercept)      1.83982    0.41895   4.391 1.53e-05 ***
## VBlocs2_TC_4     1.69551    0.27077   6.262 1.21e-09 ***
## key_3            1.00919    0.26191   3.853 0.000141 ***
## TC_PerfType_Solo 1.53092    0.42200   3.628 0.000332 ***
## liveness        -0.26215    0.07656  -3.424 0.000696 ***
## ComVBlocs1_y    -0.43580    0.21889  -1.991 0.047320 *
## ComLANGFAM_y     0.39571    0.19859   1.993 0.047142 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.476 on 324 degrees of freedom
## Multiple R-squared:  0.2127, Adjusted R-squared:  0.1981
## F-statistic: 14.59 on 6 and 324 DF,  p-value: 9.53e-15
```

T-tests

Make sure to report:

1. the adjusted R-sq value
2. the degrees of freedom
3. the f statistic for f test
4. the p-value for f test

Note the notation for levels of significance

- * for 0.05
- ** for 0.01
- *** for 0.001

	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	1.8398226	0.4189523	4.391485	0.0000153
VBlocs2_TC_4	1.6955145	0.2707750	6.261711	0.0000000
key_3	1.0091938	0.2619094	3.853217	0.0001405
TC_PerfType_Solo	1.5309157	0.4220042	3.627727	0.0003321
liveness	-0.2621547	0.0765632	-3.424031	0.0006963
ComVBlocs1_y	-0.4358035	0.2188863	-1.991004	0.0473201
ComLANGFAM_y	0.3957054	0.1985860	1.992615	0.0471423

Directional / Sign effects

Report the sign effects of each significant coefficient:

- \+ indicates the predictor variable has a positive effect on the dependent variable
- \- indicates the predictor variables has a negative effect on the dependent variable

	coefficients
(Intercept)	1.8398226
VBlocs2_TC_4	1.6955145
key_3	1.0091938
TC_PerfType_Solo	1.5309157
liveness	-0.2621547
ComVBlocs1_y	-0.4358035
ComLANGFAM_y	0.3957054

Explained Variance

Investigate the increase of variance explained by incorporating specific predictor variables. Observe the increase in R-sq when a predictor variable is included / excluded from the model. Do this for voting blocs, Echo Nest music factors and Migration patterns

- The removal of the voting block features from the televote model decreases the R-sq value from 0.21266 to 0.11738.
- The removal of the echo nest features from the televote model decreases the R-sq value from 0.21266 to 0.11738.