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## ***Troubleshooting: Testing artificial data***

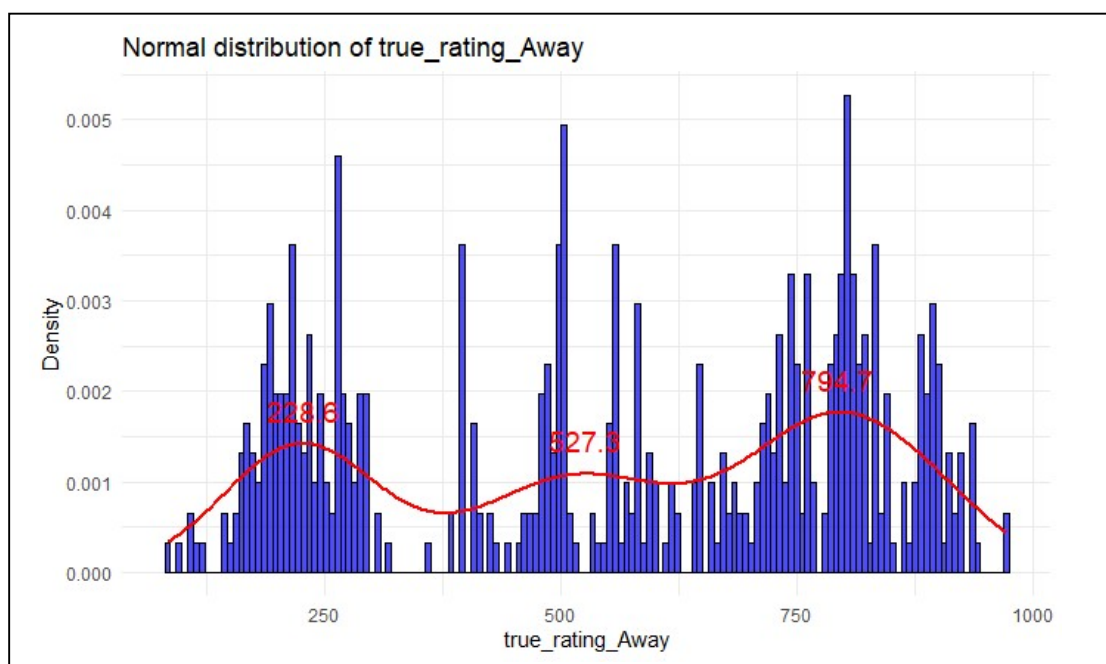
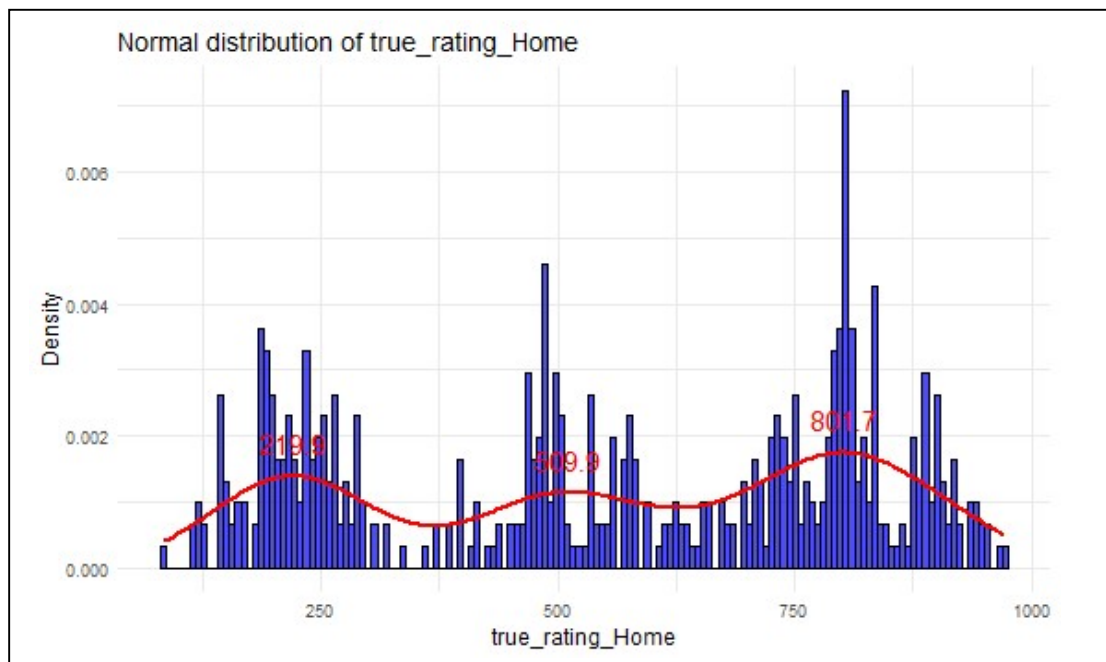
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- File-origin: test\_InternationalLeague\_network

### Structure

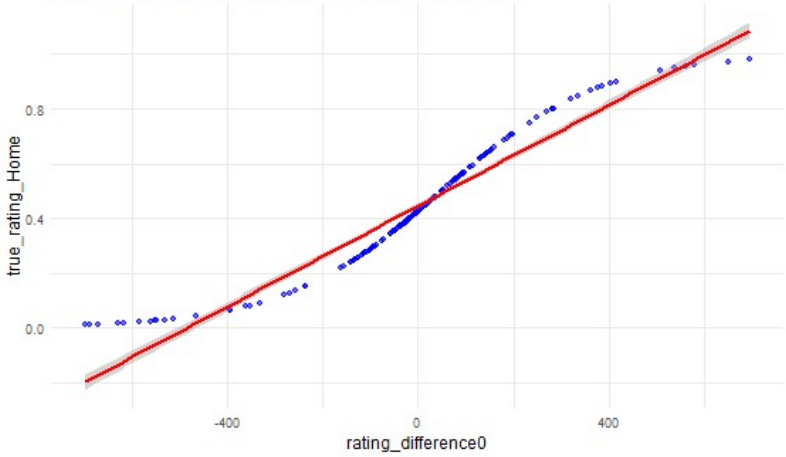
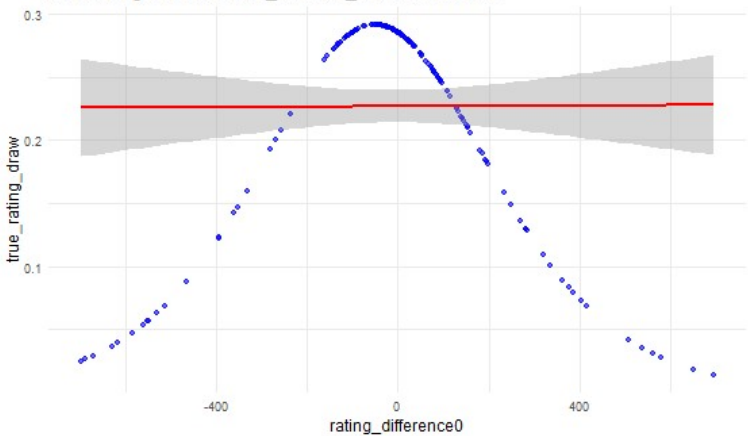
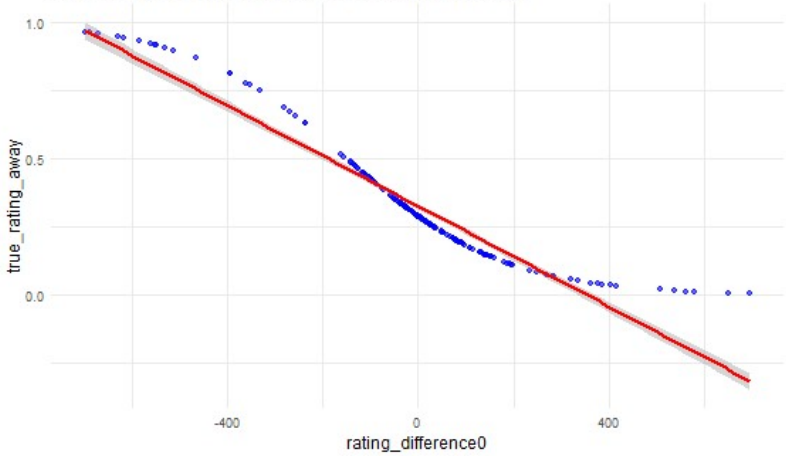
Testing distribution <ul style="list-style-type: none"><li>- True_rating_Home</li><li>- True_rating_Away</li></ul>	
Testing forecast <ul style="list-style-type: none"><li>- Season 0 both countries</li><li>- Season 1 both countries</li><li>- Season 2 both countries</li></ul>	Small deviation in beta-parameter
Testing league network <ul style="list-style-type: none"><li>- Season 0 country 1</li><li>- Season 1 country 1</li><li>- Season 2 country 1</li><li>- Season 0 country 2</li><li>- Season 1 country 2</li><li>- Season 2 country 2</li></ul>	
Testing national network <ul style="list-style-type: none"><li>- Season 0 country 1</li><li>- Season 1 country 1</li><li>- Season 2 country 1</li><li>- Season 0 country 2</li><li>- Season 1 country 2</li><li>- Season 2 country 2</li></ul>	Why do we have one and second legs in the national?
Testing international network <ul style="list-style-type: none"><li>- After season 0</li><li>- After season 1</li></ul>	
Testing home advantage	

## Testing normal distribution

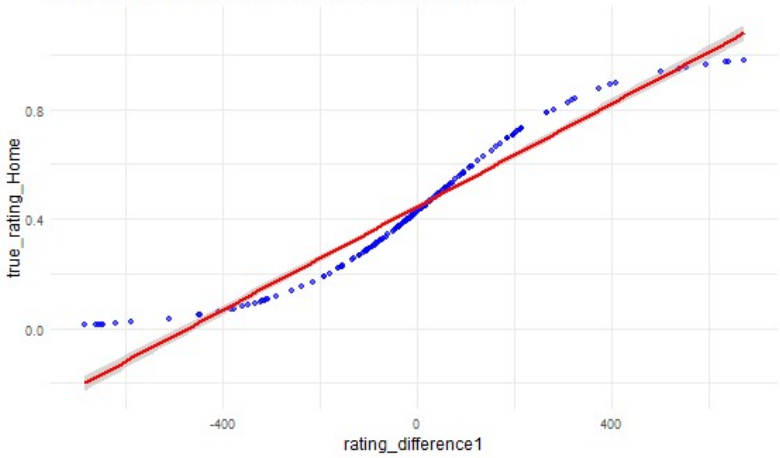
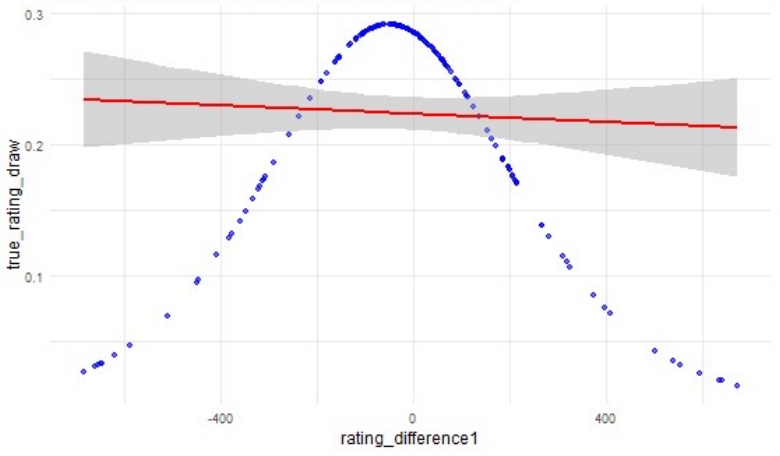
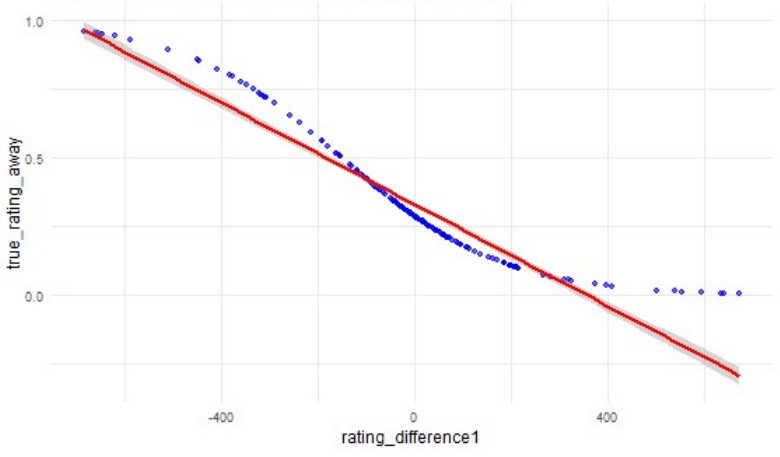


# Testing forecast

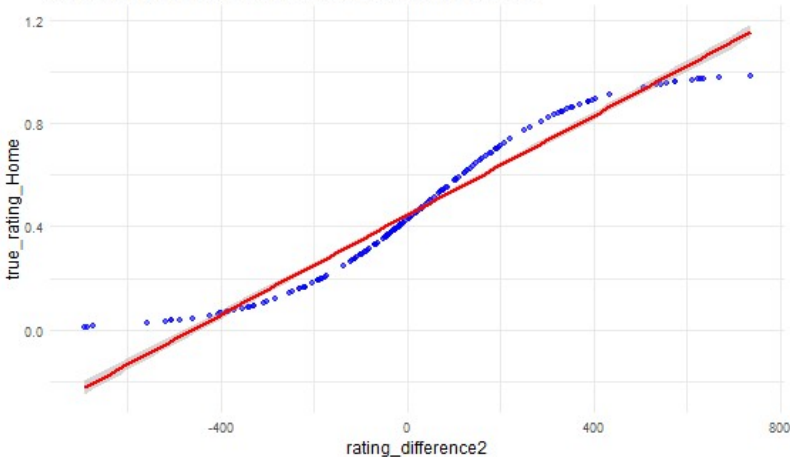
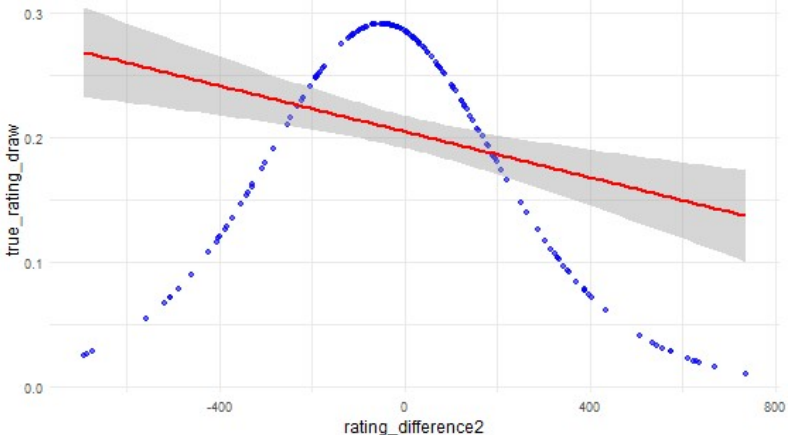
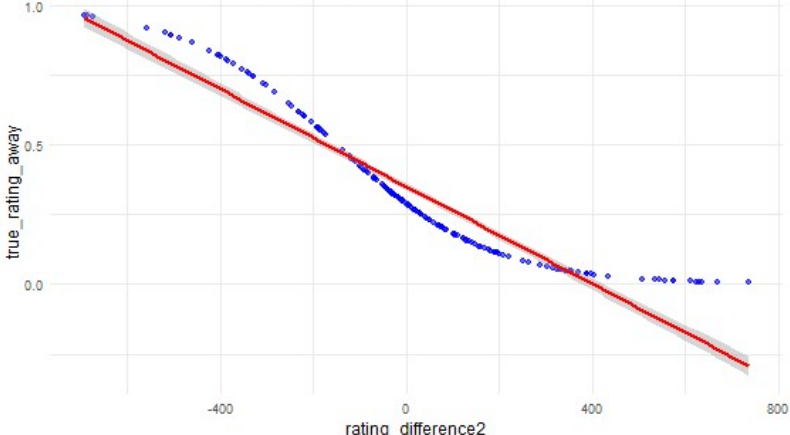
Linear regression for **season 0** for both countries (league and national)

Visualization	Intercept	$\beta$ -parameter
<p>Linear Regression of true_forecast_home in season 0</p>  <p>The plot shows a positive linear relationship between rating_difference0 and true_rating_home. The data points are blue dots, and the regression line is a solid red line. The y-axis is labeled 'true_rating_home' and ranges from 0.0 to 0.8. The x-axis is labeled 'rating_difference0' and ranges from -400 to 400.</p>	0.47	0.0009
<p>Linear Regression of true_forecast_draw in season 0</p>  <p>The plot shows a nearly flat linear regression line (red) and a parabolic trend line (blue) for true_rating_draw against rating_difference0. The y-axis is labeled 'true_rating_draw' and ranges from 0.1 to 0.3. The x-axis is labeled 'rating_difference0' and ranges from -400 to 400. A grey shaded area represents the confidence interval around the red line.</p>	0.27	-0.000003
<p>Linear Regression of true_forecast_away in season 0</p>  <p>The plot shows a negative linear relationship between rating_difference0 and true_rating_away. The data points are blue dots, and the regression line is a solid red line. The y-axis is labeled 'true_rating_away' and ranges from 0.0 to 1.0. The x-axis is labeled 'rating_difference0' and ranges from -400 to 400.</p>	0.3	-0.0009

# Linear regression for **season 1 for both countries (league and national)**

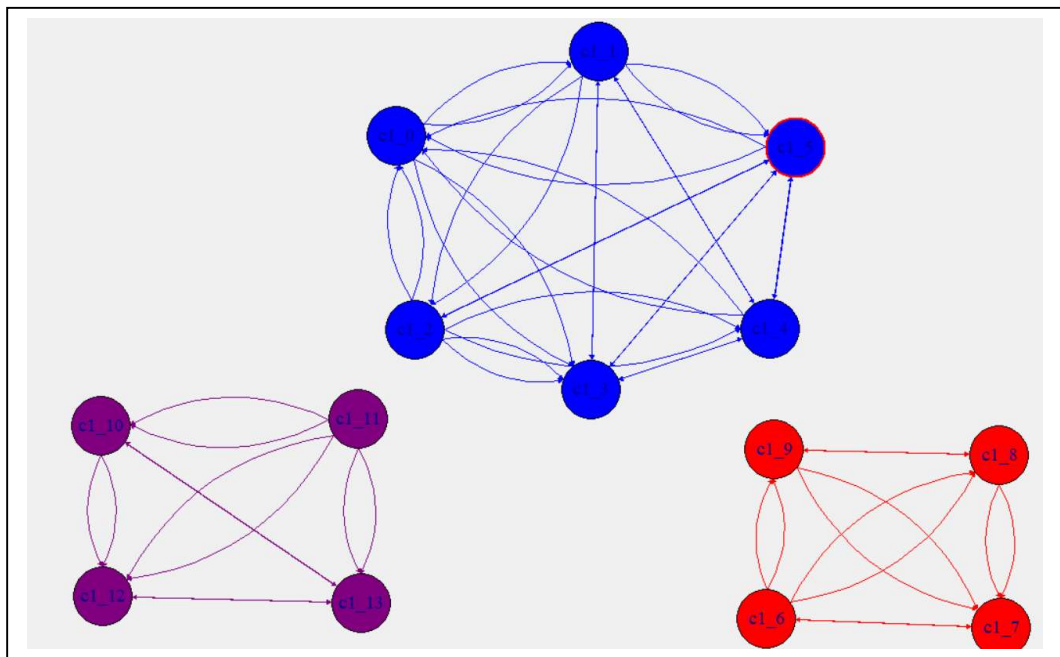
Visualization	Intercept	$\beta$ -parameter
<p>Linear Regression of true_forecast_home in season 1</p>  <p>The plot shows a positive linear relationship between rating_difference1 (x-axis, ranging from -600 to 600) and true_rating_home (y-axis, ranging from 0.0 to 1.0). Blue dots represent data points, and a red line shows the linear regression fit. A grey shaded area around the red line indicates the confidence interval.</p>	0.45	0.0009
<p>Linear Regression of true_forecast_draw in season 1</p>  <p>The plot shows true_rating_draw (y-axis, ranging from 0.0 to 0.3) against rating_difference1 (x-axis, ranging from -600 to 600). Blue dots represent data points. A red line shows a nearly flat linear regression fit, while a blue parabolic curve represents a quadratic trend. A grey shaded area around the red line indicates the confidence interval.</p>	0.23	-0.00002
<p>Linear Regression of true_forecast_away in season 1</p>  <p>The plot shows a negative linear relationship between rating_difference1 (x-axis, ranging from -600 to 600) and true_rating_away (y-axis, ranging from 0.0 to 1.0). Blue dots represent data points, and a red line shows the linear regression fit. A grey shaded area around the red line indicates the confidence interval.</p>	0.3	-0.0009

# Linear regression for **season 2 for both countries (league and national)**

Visualization	Intercept	$\beta$ -parameter
<p>Linear Regression of true_forecast_home in season 2</p> 	0.44	0.0009
<p>Linear Regression of true_forecast_draw in season 2</p> 	0.21	-0.00009
<p>Linear Regression of true_forecast_away in season 2</p> 	0.3	-0.0009

# Testing league network

Season 0 in country 1



Blue: level1

- 30 matches
- Every team has 10 matches

Red: level2

- 12 matches
- Every team has 6 matches

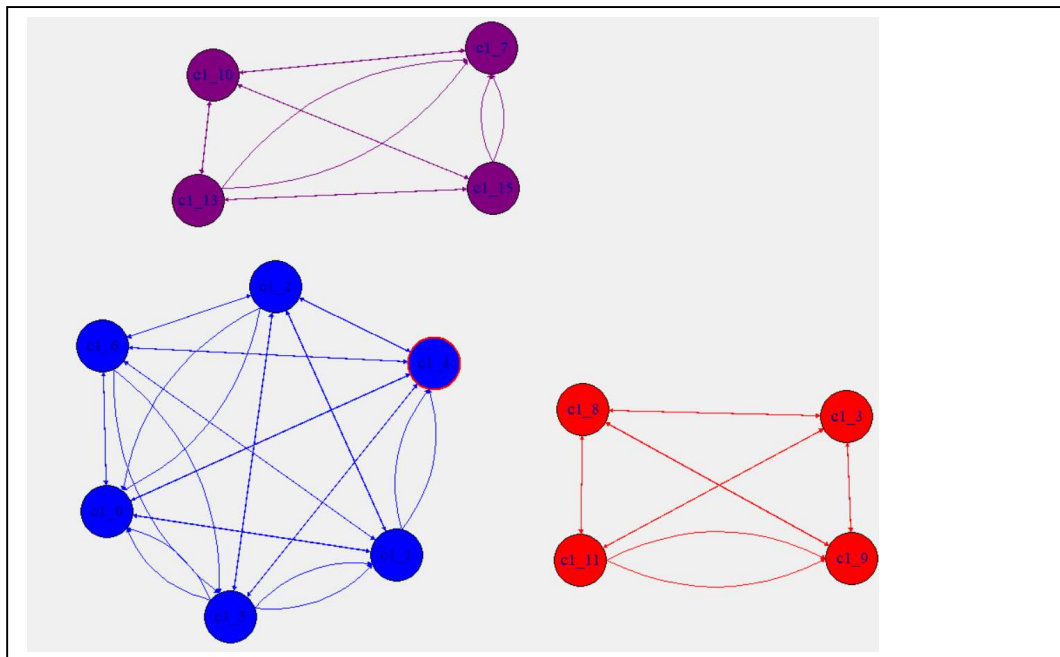
Purple: level3

- 12 matches
- Every team has 6 matches

Promotion\_number = 1

Rating\_mode = "interchange"

## Season 1 country 1



Blue: level1

- 30 matches
- Every team has 10 matches

Red: level2

- 12 matches
- Every team has 6 matches

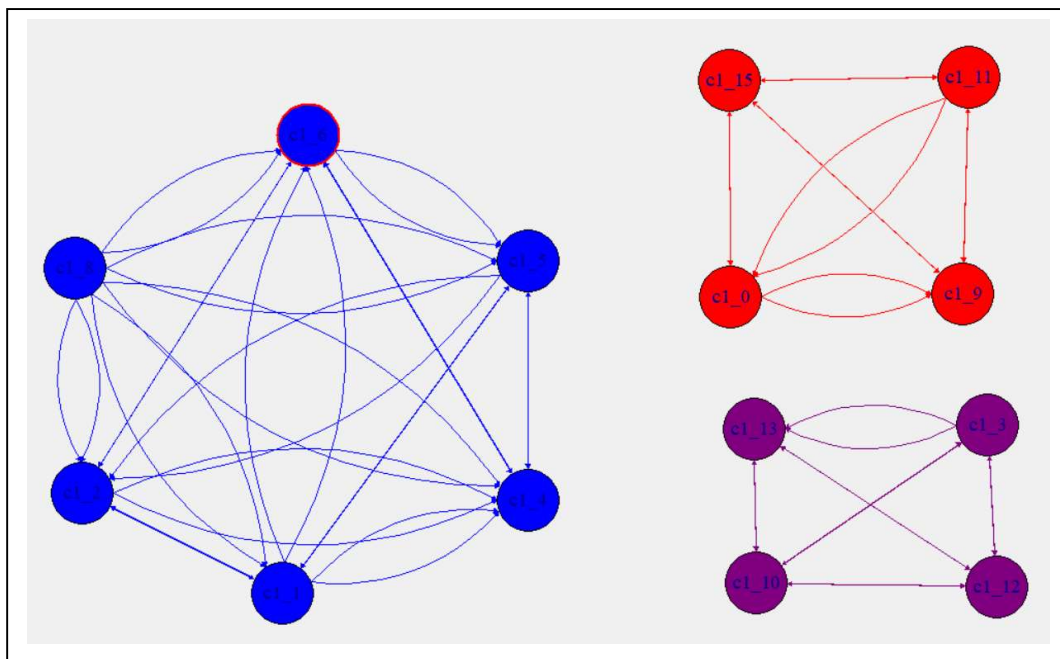
Purple: level3

- 12 matches
- Every team has 6 matches

Promotion\_number = 1

Rating\_mode = "interchange"

## Season 2 country 1



Blue: level1

- 30 matches
- Every team has 10 matches

Red: level2

- 12 matches
- Every team has 6 matches

Purple: level3

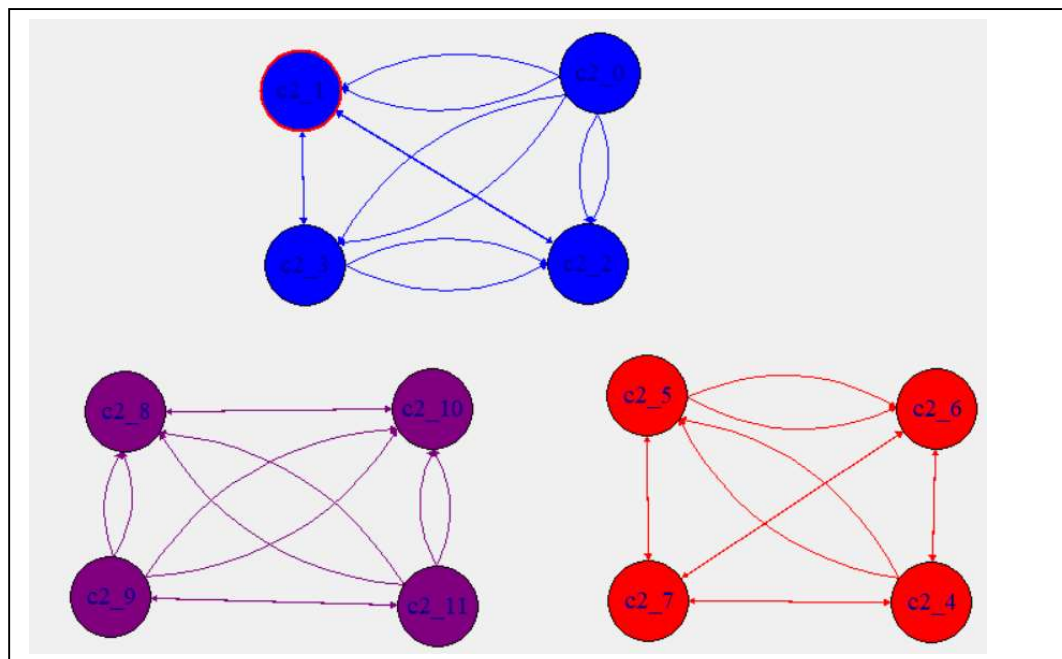
- 12 matches
- Every team has 6 matches

Promotion\_number = 1

Rating\_mode = "interchange"



## Season 0 country 2



Blue: level1

- 12 matches
- Every team has 6 matches

Red: level2

- 12 matches
- Every team has 6 matches

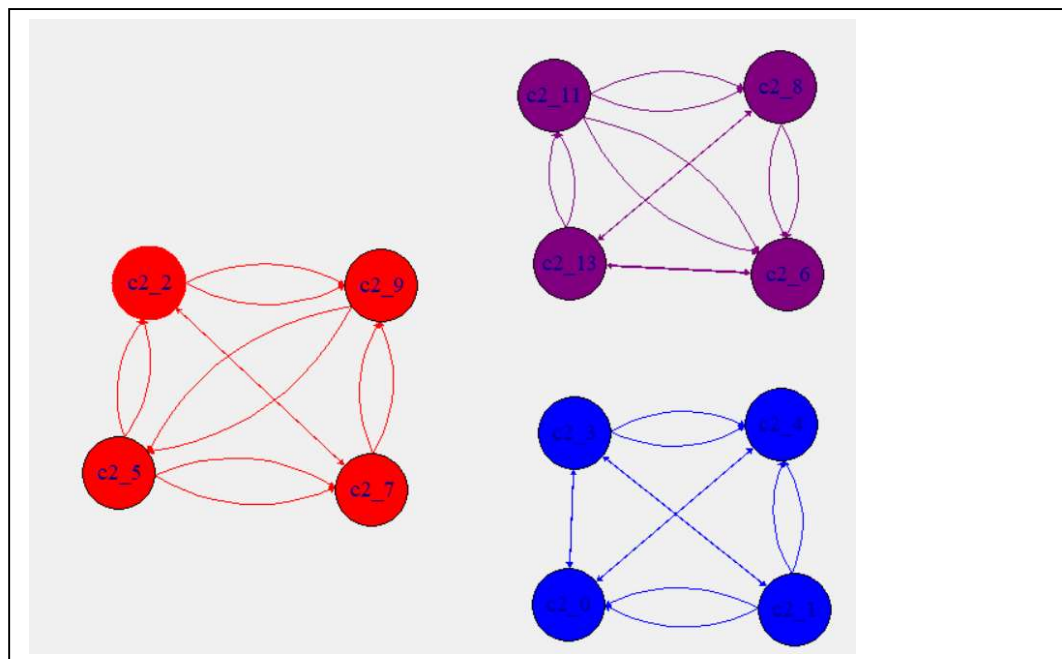
Purple: level3

- 12 matches
- Every team has 6 matches

Promotion\_number = 1

Rating\_mode = "interchange"

## Season 1 country 2



Blue: level1

- 12 matches
- Every team has 6 matches

Red: level2

- 12 matches
- Every team has 6 matches

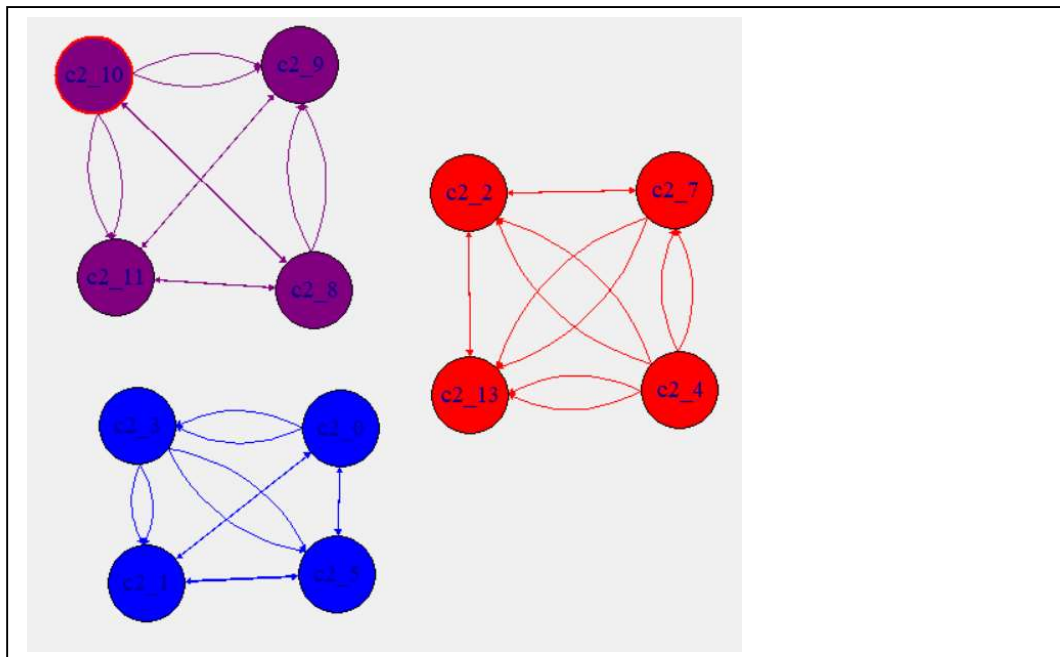
Purple: level3

- 12 matches
- Every team has 6 matches

Promotion\_number = 1

Rating\_mode = "interchange"

## Season 2 country 2



Blue: level1

- 12 matches
- Every team has 6 matches

Red: level2

- 12 matches
- Every team has 6 matches

Purple: level3

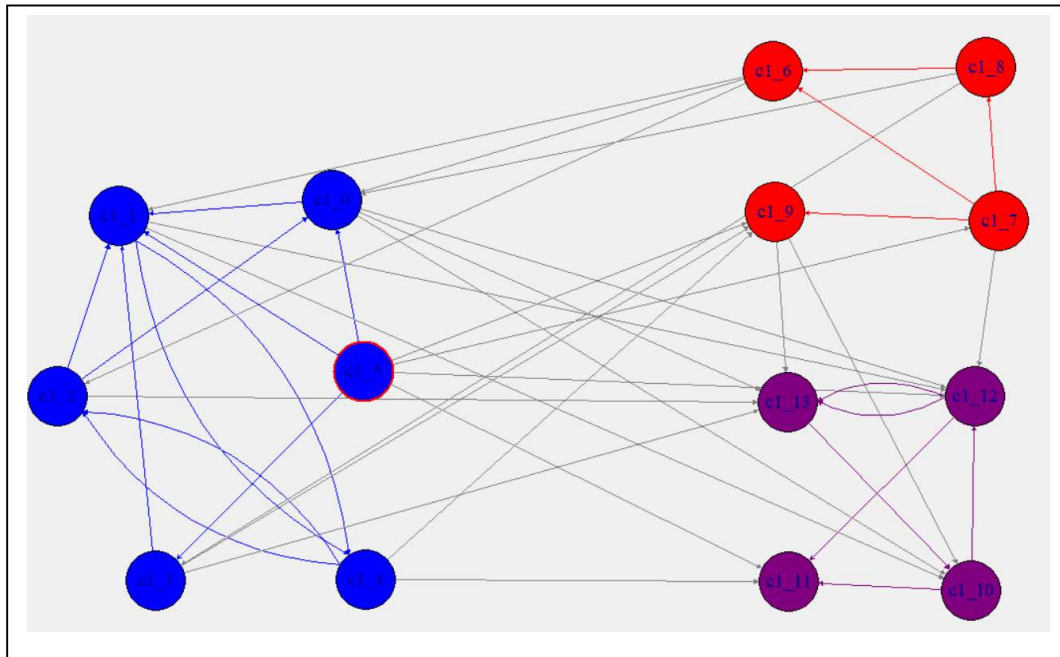
- 12 matches
- Every team has 6 matches

Promotion\_number = 1

Rating\_mode = "interchange"

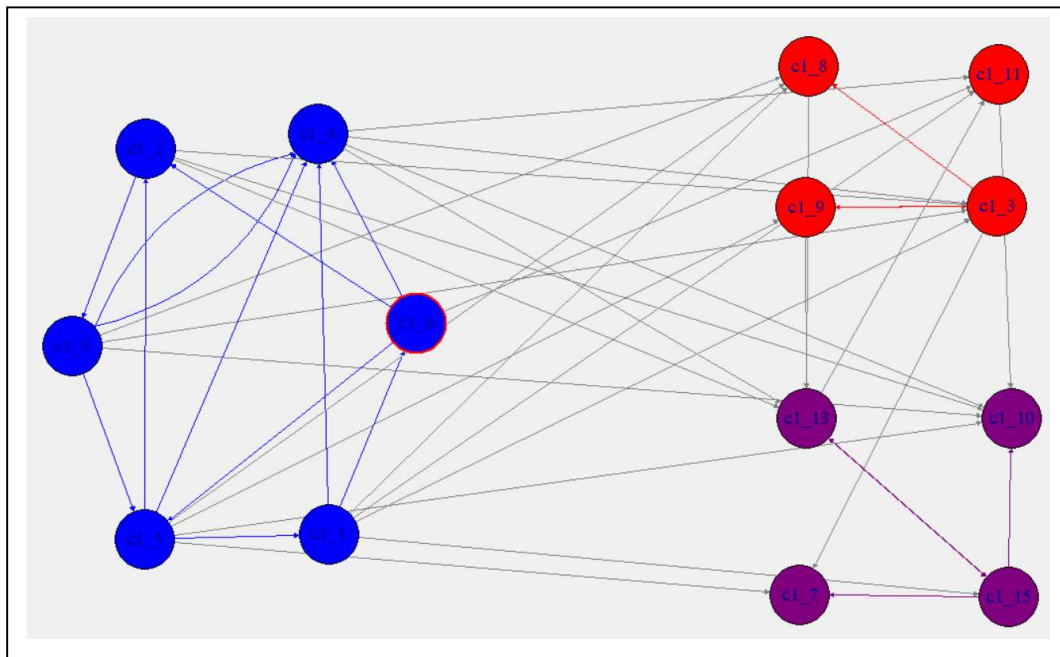
# Testing national network

## Season 0 country 1



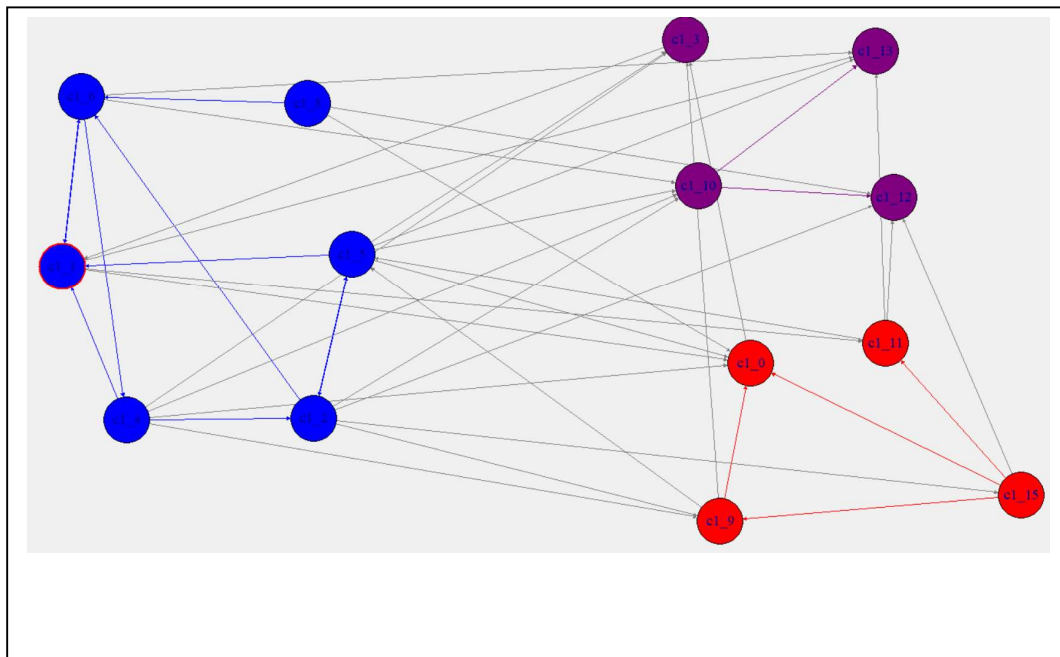
Crossovers	Number of matches
Number of edges from level 1 to level 2	9
Number of edges from level 2 to level 3	3
Number of edges from level 1 to level 3	10

## Season 1 country 1



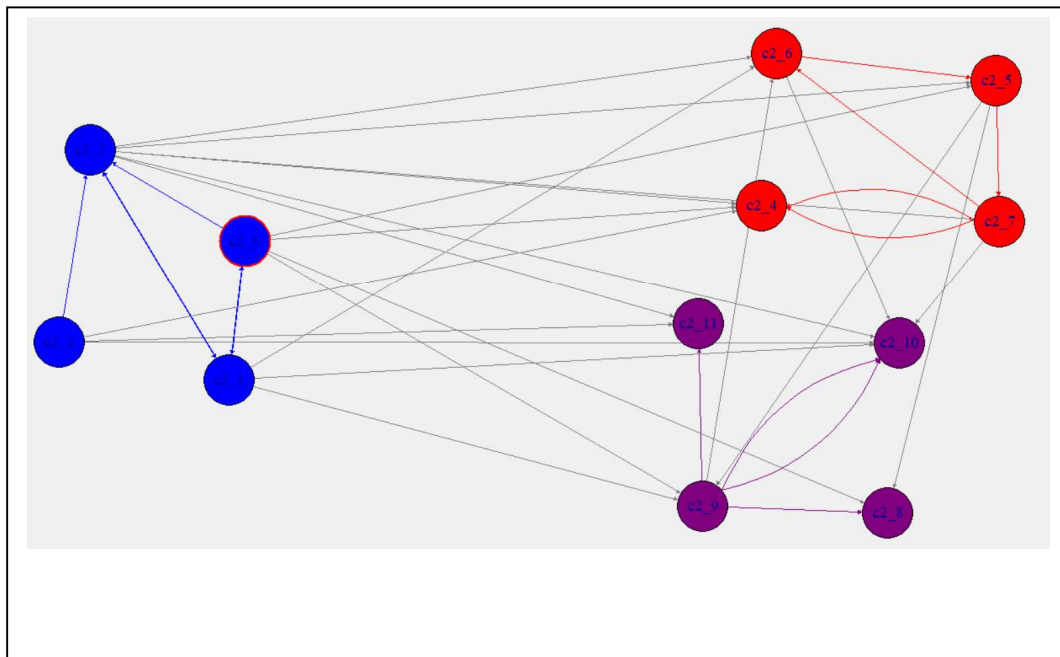
Crossovers	Number of matches
Number of edges from level 1 to level 2	11
Number of edges from level 2 to level 3	5
Number of edges from level 1 to level 3	8

## Season 2 country 1



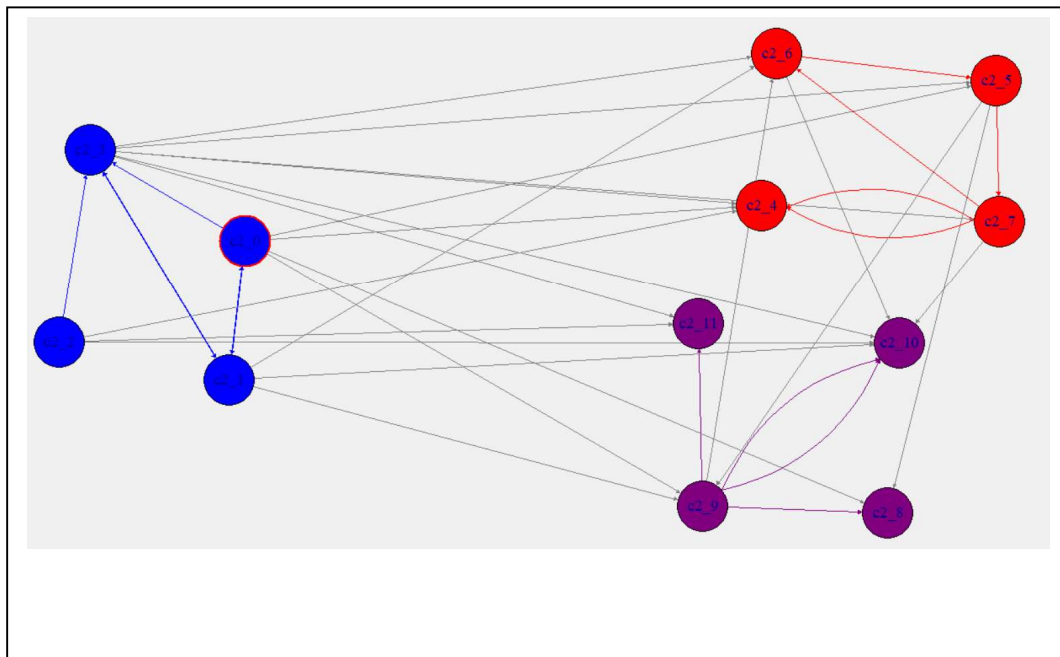
Crossovers	Number of matches
Number of edges from level 1 to level 2	10
Number of edges from level 2 to level 3	5
Number of edges from level 1 to level 3	12

## Season 0 country 2



Crossovers	Number of matches
Number of edges from level 1 to level 2	8
Number of edges from level 2 to level 3	5
Number of edges from level 1 to level 3	8

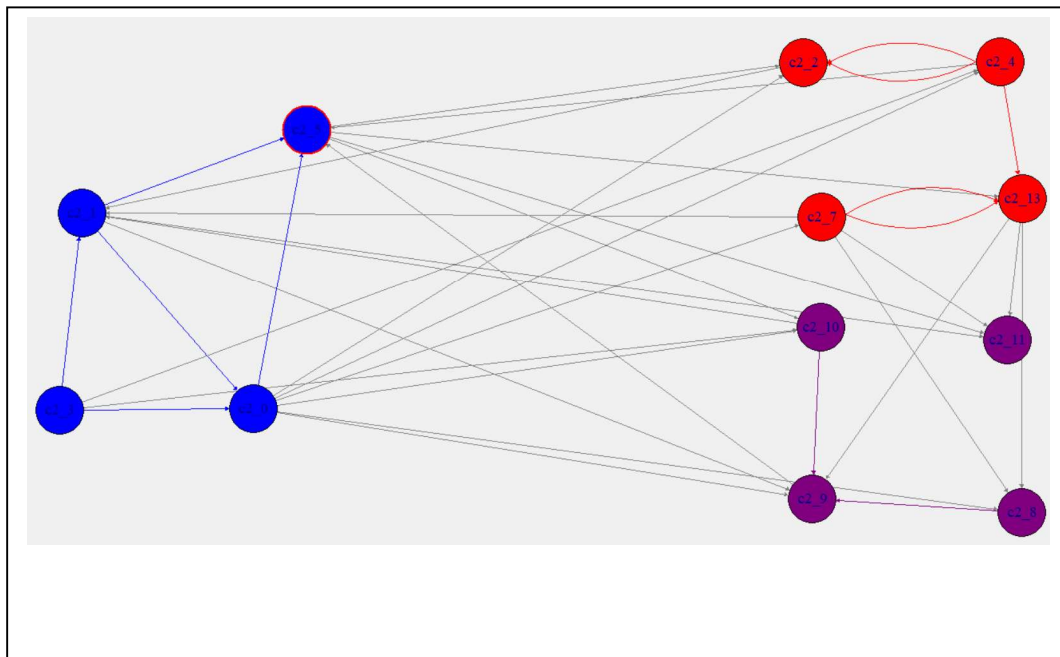
## Season 1 country 2



Crossovers	Number of matches
Number of edges from level 1 to level 2	10
Number of edges from level 2 to level 3	3
Number of edges from level 1 to level 3	8



## Season 2 country 2



Crossovers	Number of matches
Number of edges from level 1 to level 2	9
Number of edges from level 2 to level 3	5
Number of edges from level 1 to level 3	10

## Testing international network

international competition after season: 0

international season 0: ['c1\_2', 'c1\_1', 'c2\_0', 'c2\_3']

international competition after season: 1

international season 1: ['c1\_5', 'c1\_2', 'c2\_1', 'c2\_3']

international competition after season: 2

international season 2: ['c1\_8', 'c1\_1', 'c2\_3', 'c2\_0']

c1\_1 vs c2\_0 on Day 110

c1\_2 vs c2\_3 on Day 120

c2\_0 vs c1\_2 on Day 129

c1\_2 vs c2\_0 on Day 131

c2\_3 vs c1\_2 on Day 295

c2\_0 vs c1\_1 on Day 310

play International Competition Season 0

c1\_5 vs c2\_1 on Day 45

c2\_1 vs c1\_5 on Day 139

c2\_3 vs c1\_2 on Day 150

c1\_5 vs c1\_2 on Day 151

c1\_2 vs c1\_5 on Day 159

c1\_2 vs c2\_3 on Day 310

play International Competition Season 1

## Testing home advantage

- Average home probability: 0.44
- Average away probability: 0.34