Legislative Network Visualization with R

François Briatte

demos: briatte.org

COSPONSORSHIP NETWORKS

Sénat, 2012—2017

Chamber National Assembly Senate

Legislature 1986—1988 1988—1993

1993—1997 1997—2002 2002—2007

2007—2012 2012—2017 ■ Map

Click a node to show its ego network.

Double click to zoom in or out.

Hide ■ Edges ■ Labels ■ Weak ties

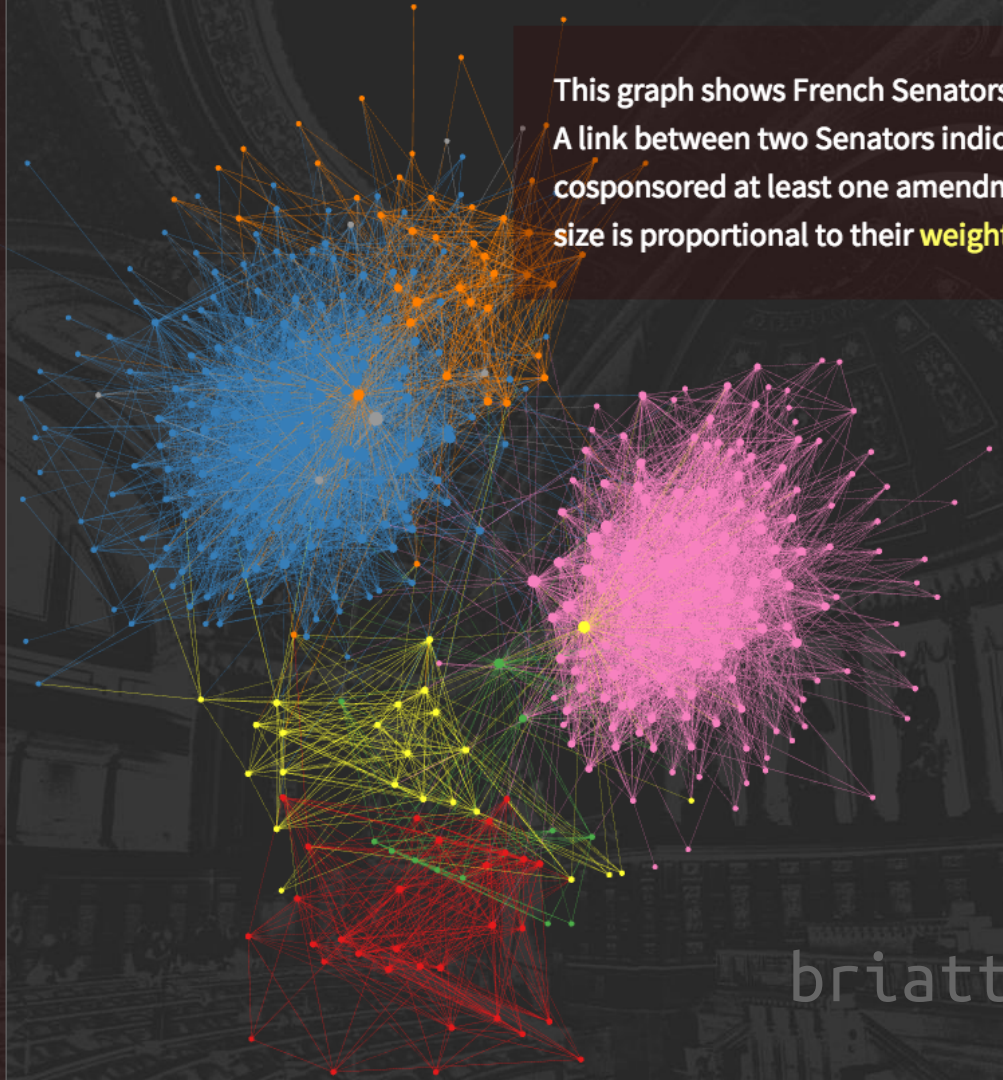
Download network full series

RESET ZOOM ANIMATE

Inspired by Baptiste Coulmont and James Fowler, built with GEXF, R and sigma.js. Background photo by Romain Vincens (Wikimedia).

TWEET CODE

This graph shows French Senators during the 14th legislature. A link between two Senators indicates that they have cosponsored at least one amendment, bill or resolution. Their size is proportional to their weighted degree.



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COSPONSORSHIP NETWORKS

Assemblée nationale, 1993—1997

Chamber [National Assembly] Senate

Legislature 1986—1988 1988—1993 [1993—1997] 1997—2002 2002—2007 2007—2012 2012—2017 ■ Map

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RESET ZOOM ANIMATE

Inspired by Baptiste Coulmont and James Fowler, built with GEXF, R and sigma.js. Background photo by Richard Ying and Tangui Morlier (Wikimedia).

TWEET CODE

You selected CHARLES EHRMANN (Centrists), an MP from Alpes-Maritimes who was serving a 5th term, and who had 13 cosponsors during the legislature. The mean weighted distance between this MP and all others was around 10.3.

YVES COUSSAIN

JOEL HART

JEAN GRENET

PIERRE ANDRE WILTZER

BERNARD MURAT

MICHEL HUNAULT

FRANCIS SAINT ELLIER

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EUROPEAN PARLIAMENT

Culture and Education

Committee AFCO AFET AGRI BUDG CONT CRIS CULT DEVE ECON EMPL ENVI FEMM IMCO INTA ITRE JURI LIBE PECH PETI REGI SURE TRAN

Click a node to show its ego network.

Double click to zoom in or out.

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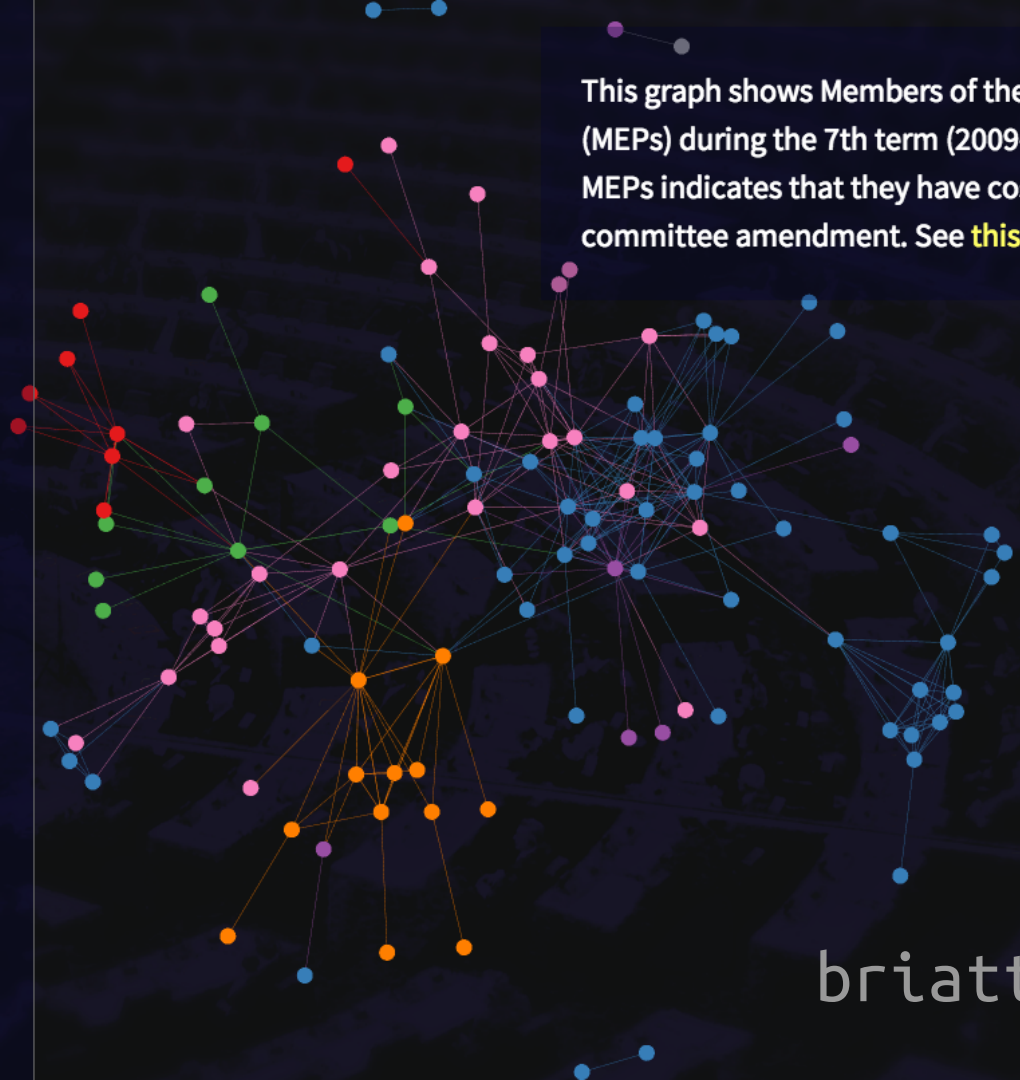
RESET ZOOM ANIMATE

TWEET CODE

Amendments data from Parltrack (May 16, 2014).
Background photo by JLogan (Wikimedia).

This graph shows Members of the European Parliament (MEPs) during the 7th term (2009-2014). A link between two MEPs indicates that they have cosponsored at least one committee amendment. See this page for more plots.



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EUROPEAN PARLIAMENT

Civil Liberties, Justice and Home Affairs

Committee AFCO AFET AGRI BUDG CONT CRIS CULT DEVE ECON EMPL ENVI FEMM IMCO INTA ITRE JURI LIBE PECH PETI REGI SURE TRAN

Click a node to show its ego network.

Double click to zoom in or out.

Hide ■ Edges ☑ Labels ☑ Weak ties

Download network full series

RESET ZOOM ANIMATE

TWEET CODE

Amendments data from Parltrack (May 16, 2014).
Background photo by JLogan (Wikimedia).

You selected NILS TORVALDS (Centrists), an MEP who had 16 cosponsors in this committee over the entire term.

EP HOMEPAGE PARLTRACK PROFILE

briatte.org/epam

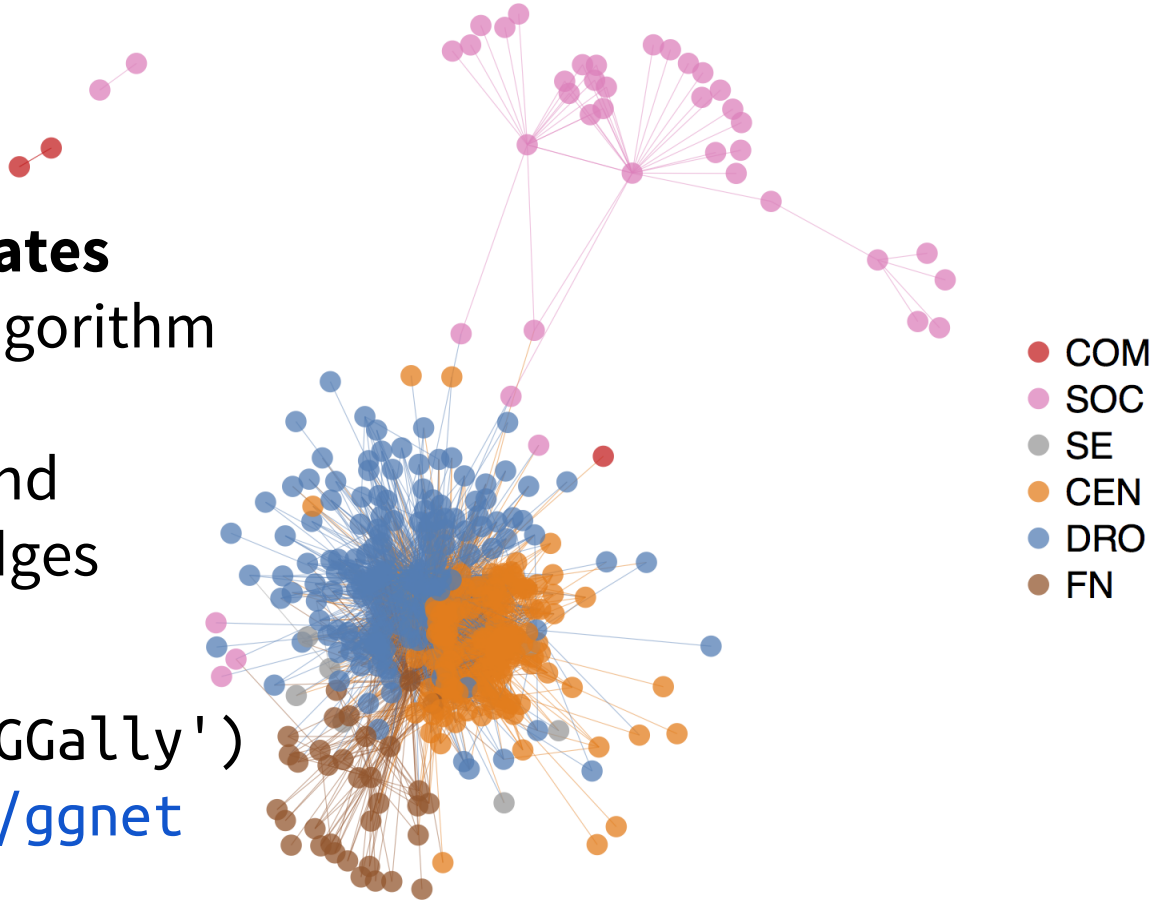
HOWTO

1. **Get the raw data** — HTML / SQL / JSON
   `XML, dplyr, jsonlite`
2. **Build networks** — Edge list / Sparse matrix
   `igraph, network, sna`
3. **Estimate models** — Latent / Temporal ERGMs
   `latentnet, ergm`

Graphs (1)

1. **get node coordinates**
   from placement algorithm

2. **pass to ggplot2** and
   plot nodes over edges




```
install.packages('GGally')
```

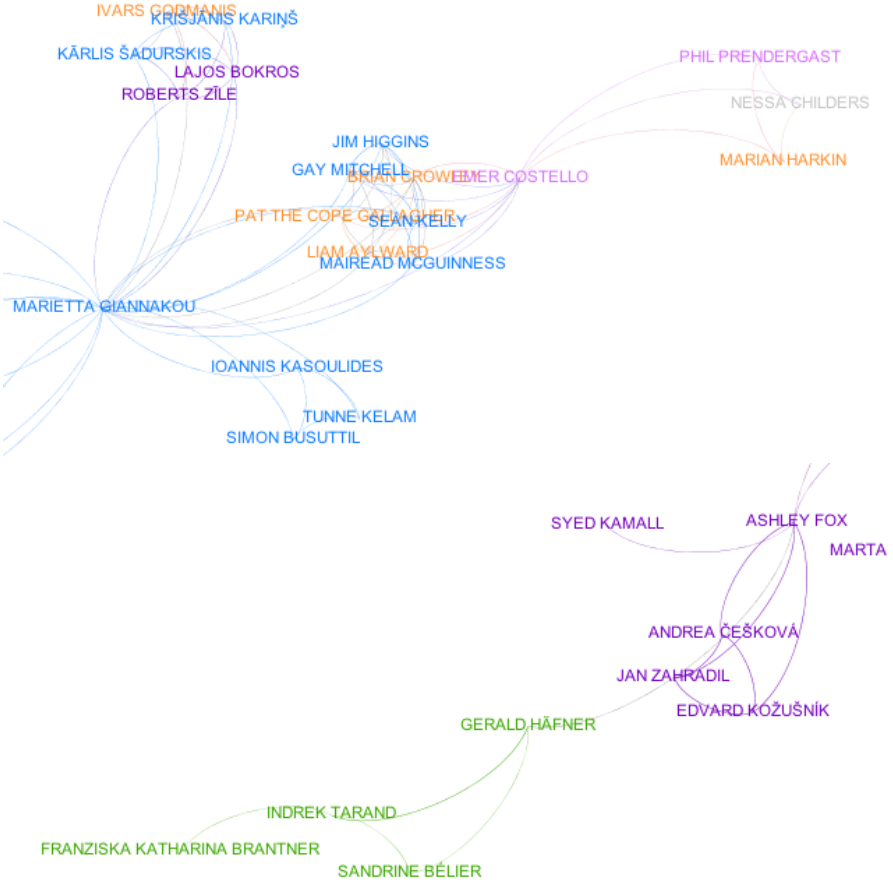
github.com/briatte/ggnet

Graphs (2)

1. **export to GEXF format**
   with `rgexf`

2. **read with Gephi** (desktop)
   or Sigma.js (browser)

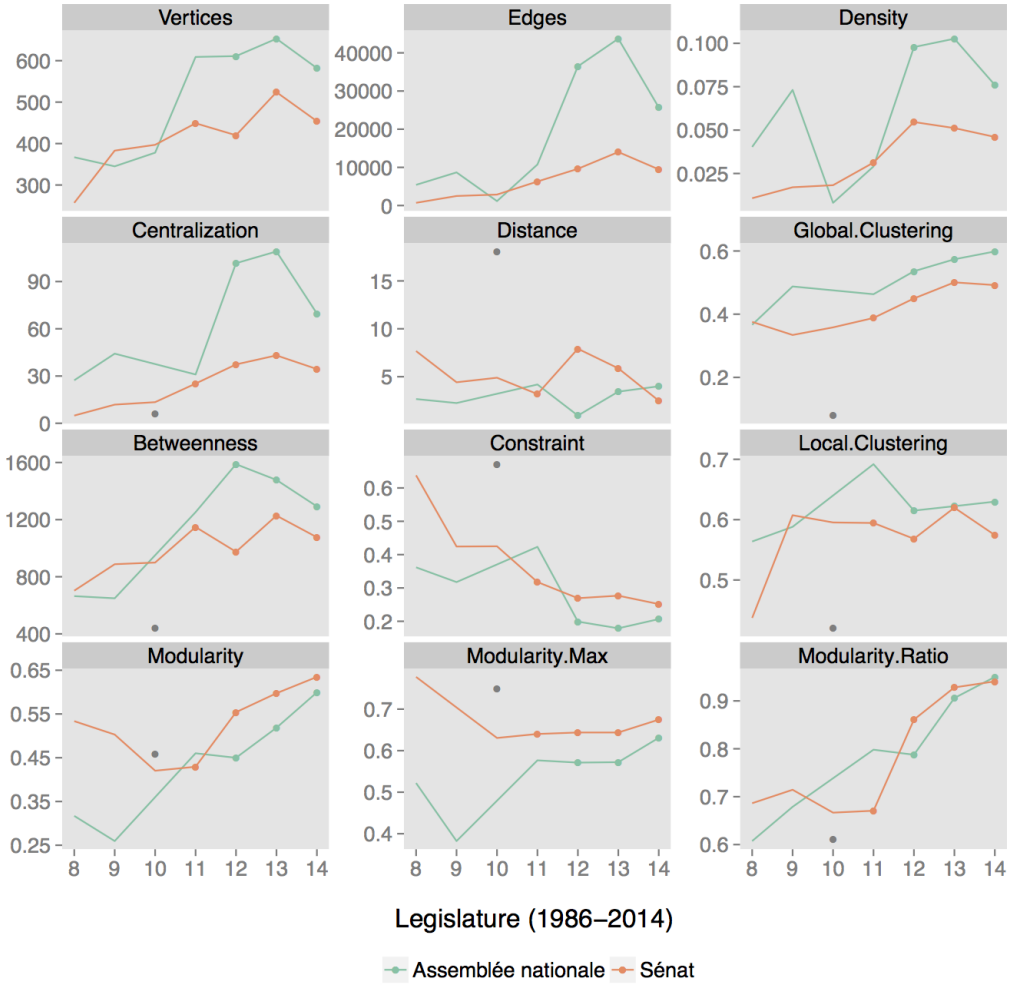
`github.com/briatte/epam`
`github.com/briatte/neta`



Measures

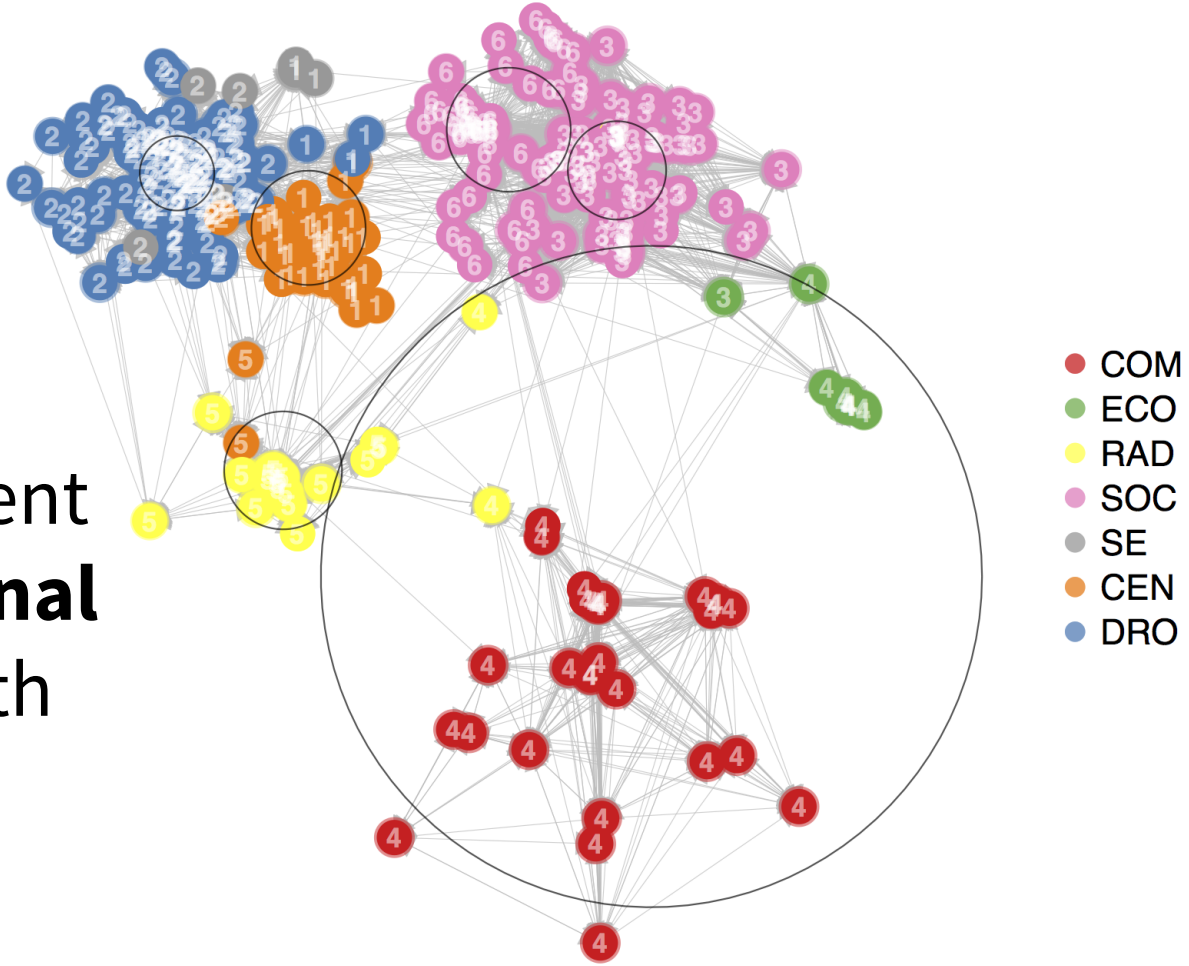
`tnet` for **weighted degree** measures

`igraph` for **party modularity**



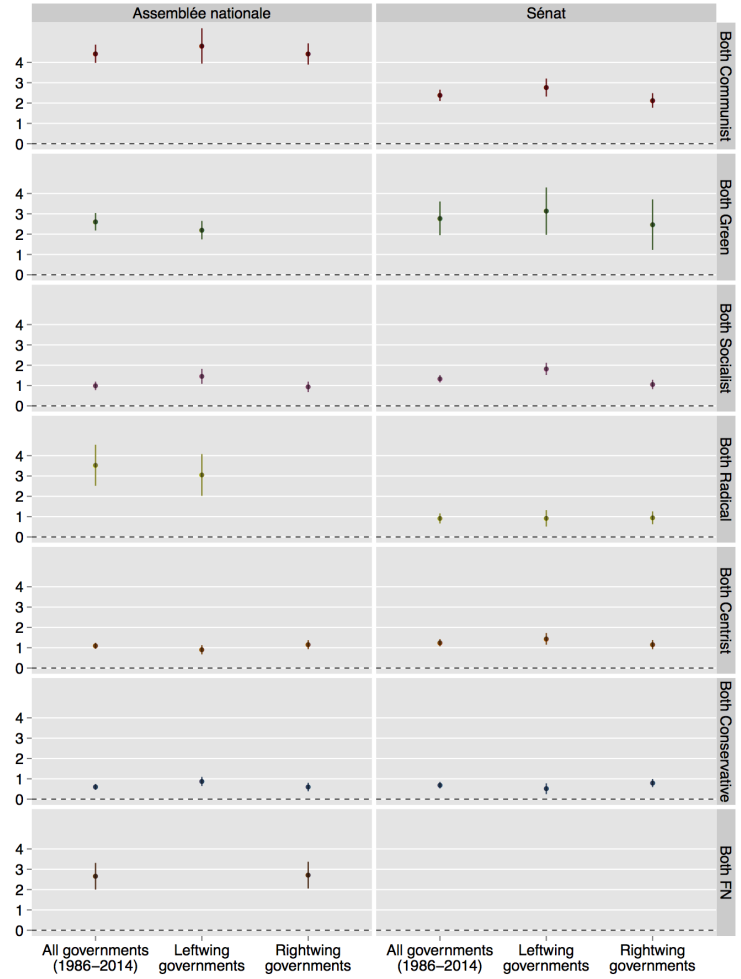
Models (1)

`latentnet` for cluster assignment in a **2-dimensional latent space** with *k* party groups



Models (2)

`ergm` for exponential random graph models to estimate **party discipline** (differential homophily)



Thank you for for your attention

Network plots

`github.com/ggobi/GGally`
`github.com/briatte/ggnet`

Mentioned work

`github.com/briatte/epam`
`github.com/briatte/neta`

Next project

Tunisian Constitution

Next project

Biographie
Commissions
Votes
Questions
Transparence
Amendements sur la constitu...

Amendement sur Préambule Soumis par 15 élus

Amendement relatif au cinquième paragraphe:

Ajout de la lutte contre toutes les formes de colonialisme et de racisme et à leur tête le sionisme.

Amendement sur l'article 2 Soumis par 12 élus

Modifier:

La Tunisie est un Etat à caractère civil, basé sur la citoyenneté, la volonté du peuple "et la primauté de la Constitution et la suprématie du droit".

Biographie
Commissions
Votes
Questions
Transparence
Amendements sur la constitu...

19 mai 2014
- Vote relatif au renvoi du projet de loi N°44/2012 relatif aux tribunaux spécialis...
- Vote relatif à la liste consensuelle des candidats à l'instance de la vérité et de la...

09 mai 2014
- Vote relatif au communiqué de la séance plénière suite au retrait des deux moti...
- Vote relatif à la tenue de la séance plénière d'examen des deux motions de cen...

01 mai 2014 Loi électorale
- Proposition de la loi dans sa totalité
- Retour à l'article 167 de la proposition de loi
- Amendement de l'article 23 ter: Cinquième des têtes de listes des jeunes + 30 ...