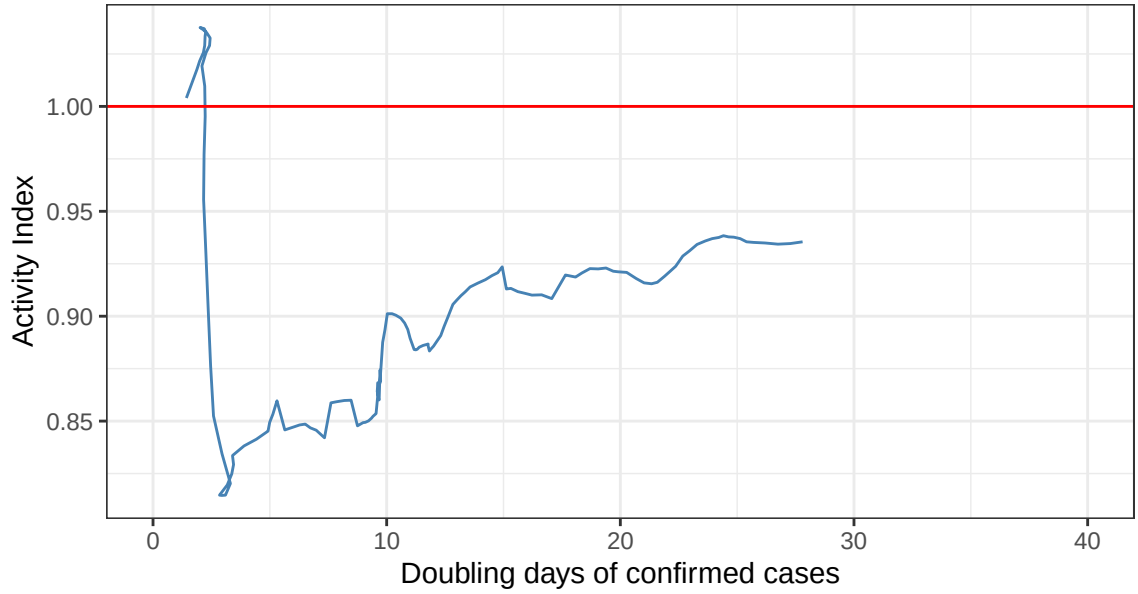
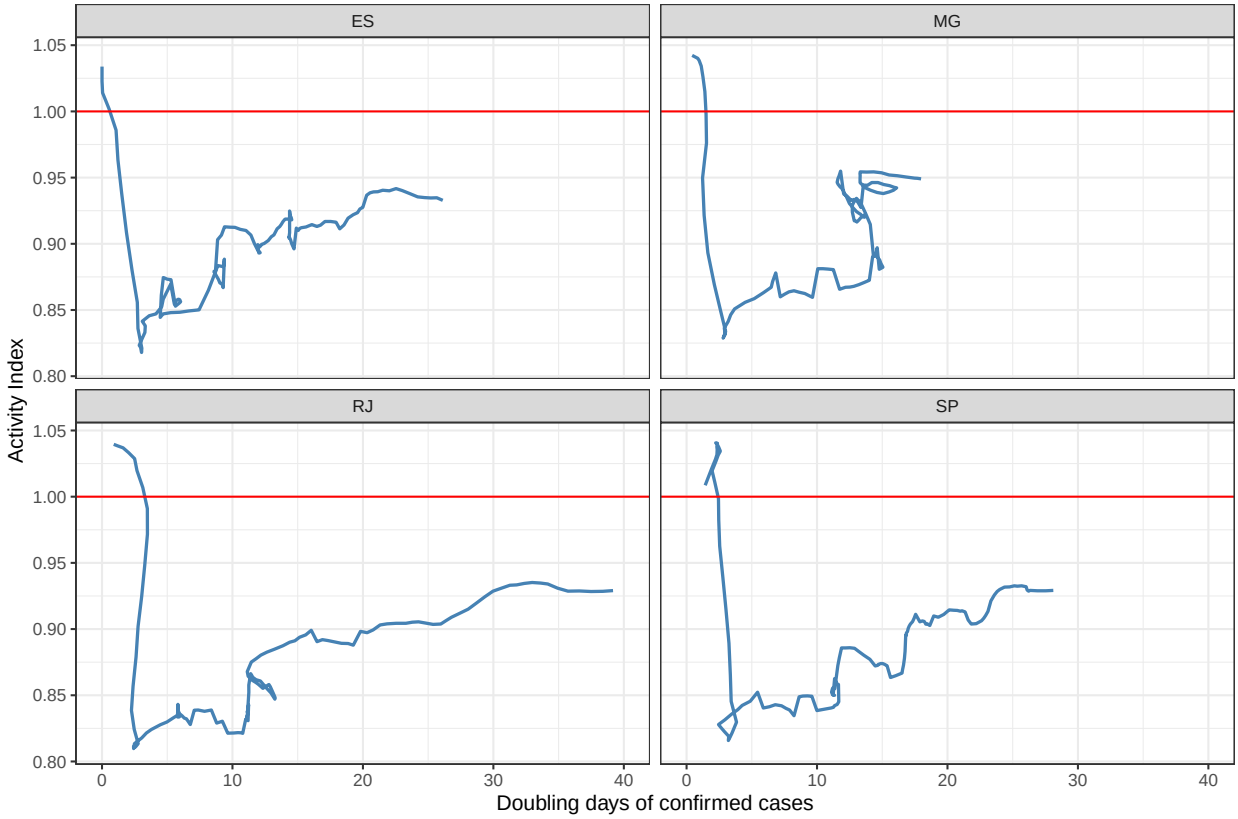
Atividade x COVID

Usando dados de mobilidade

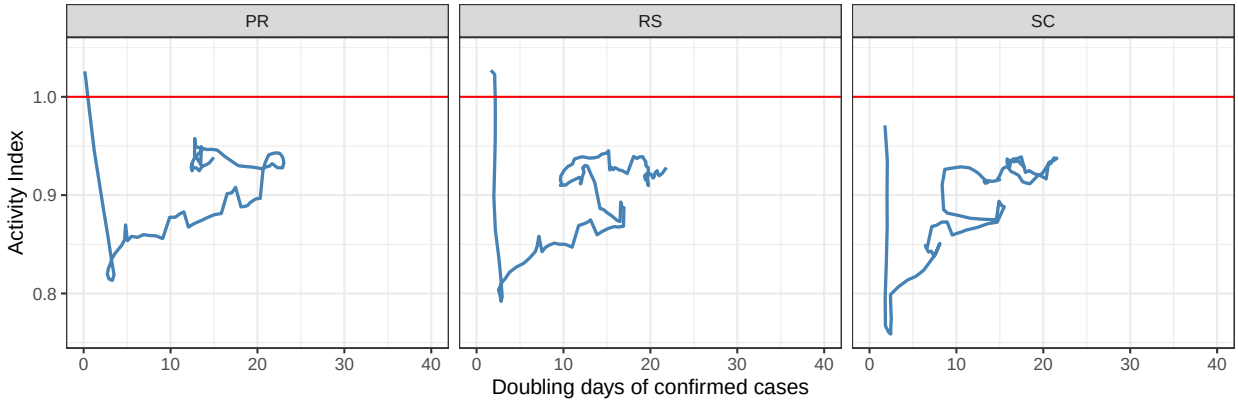
Brasil



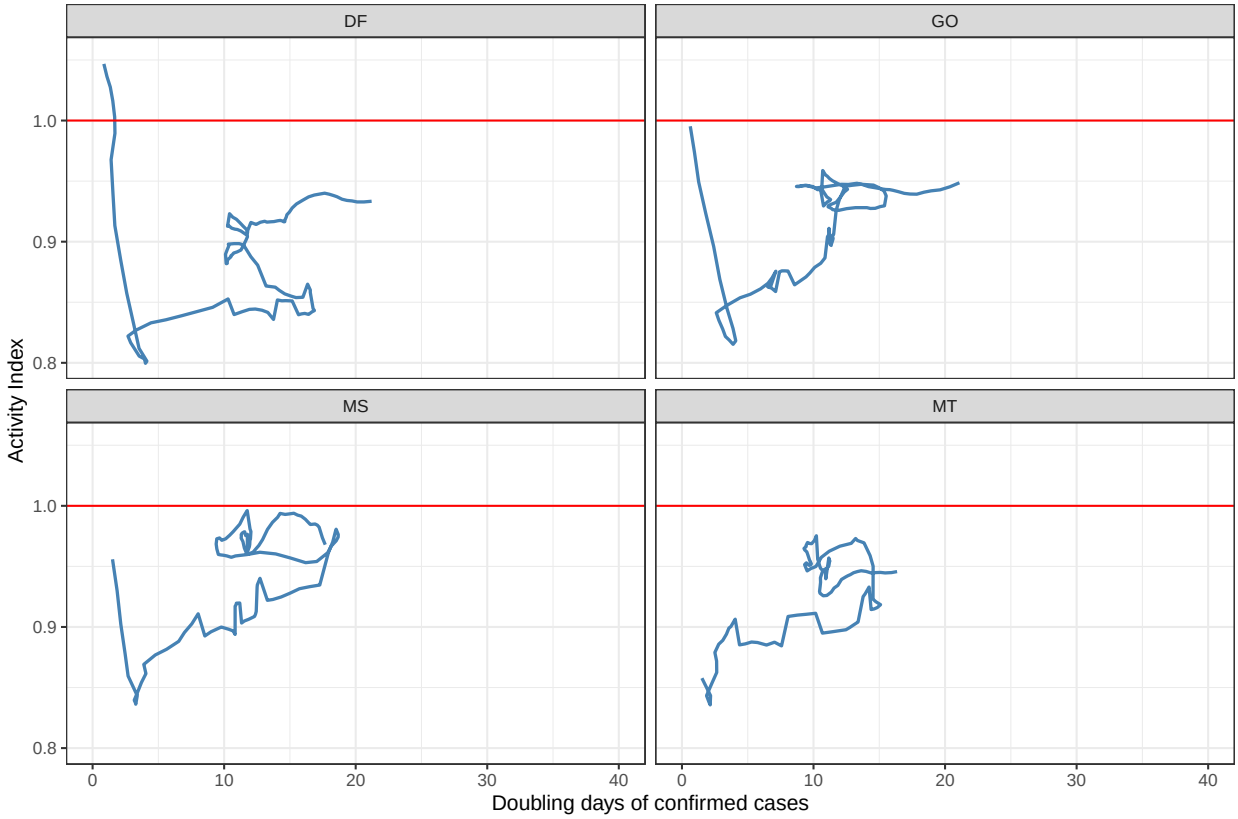
Região Sudeste



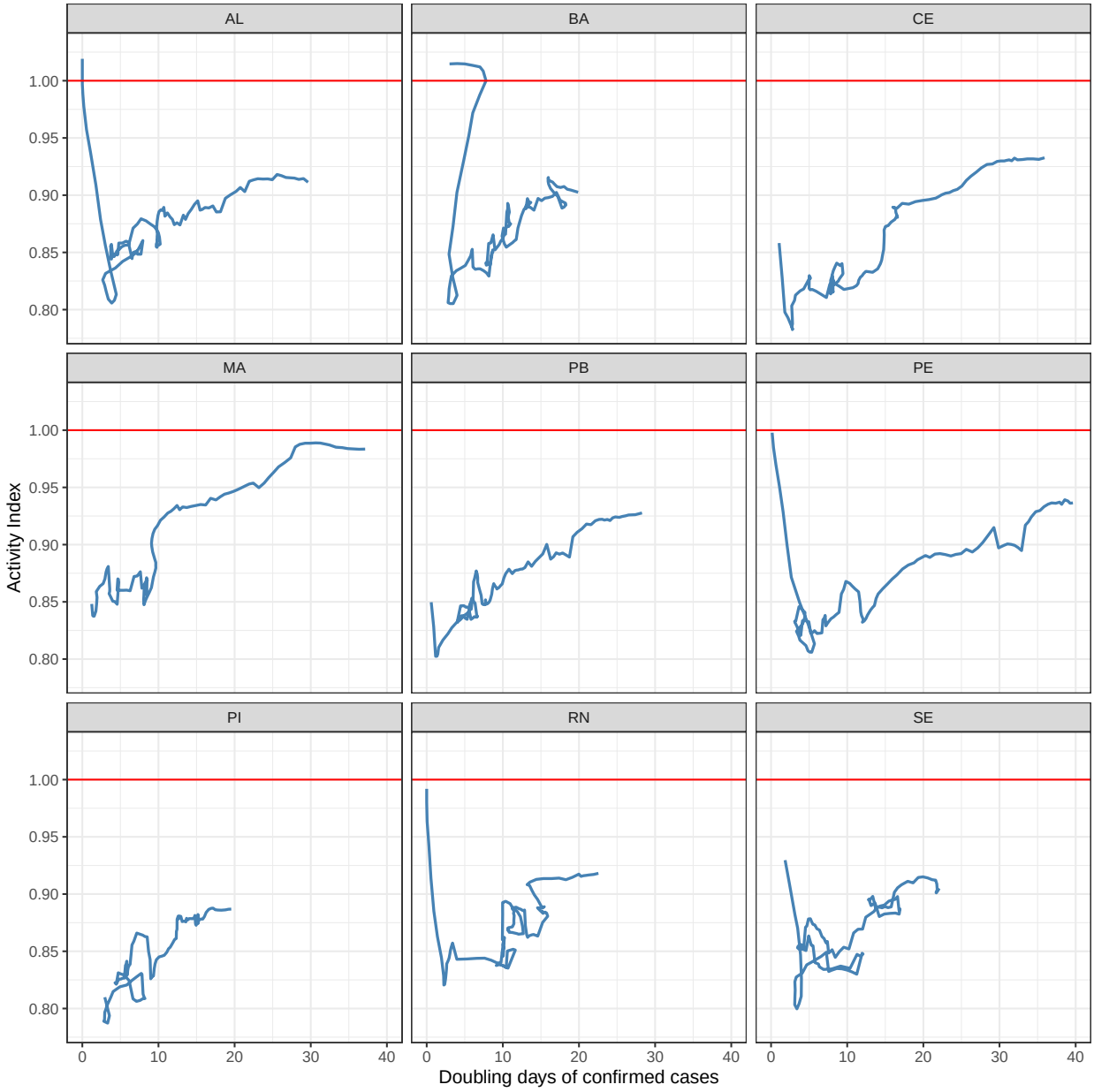
Região Sul


PR
RS
SC
Activity Index
1.0
0.9
0.8
0
10
20
30
40
Doubling days of confirmed cases

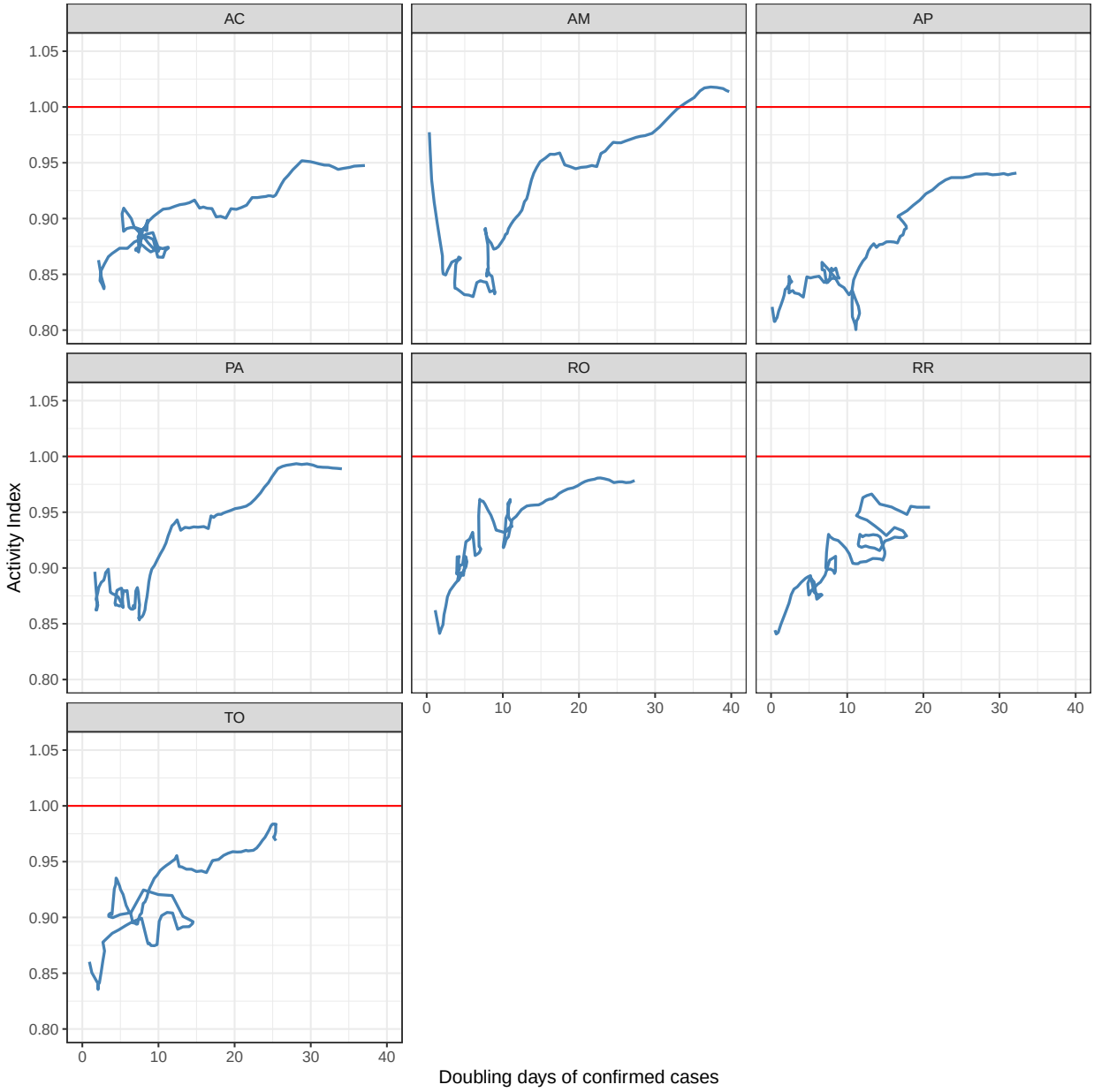
Região Centro-Oeste



Região Nordeste



Região Norte



Usando dados de energia

Trocando os dados de mobilidade pela diferença percentual entre o consumo de energia atual e o esperado.

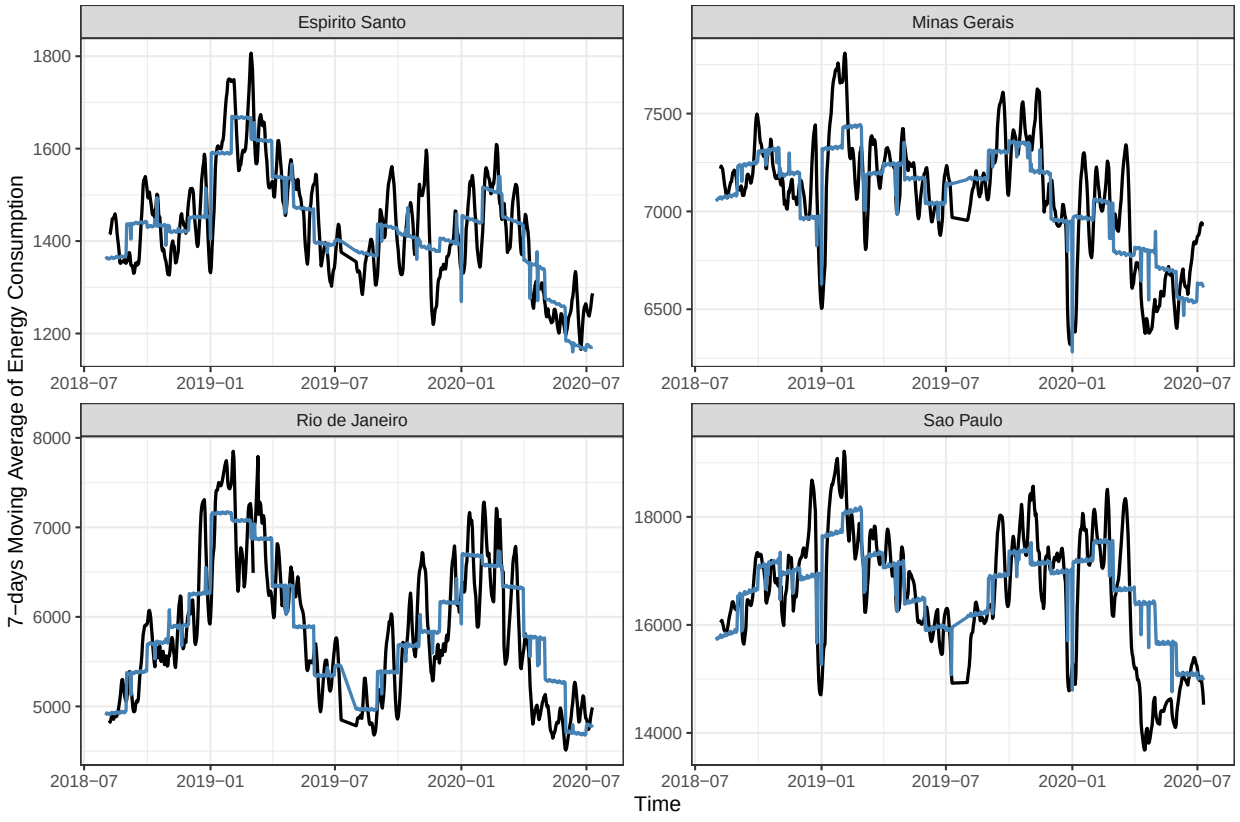
Para definir o contrafactual, fazemos uma regressão para cada estado, com os dados de 08/2018 até 02/2020, da seguinte forma:

$$\begin{aligned}\text{Consumo Diario}_t = \beta_0 + \sum_{i=2}^{3} \psi_i D_{\text{ano}_{it}} + \sum_{i=2}^{12} \delta_i D_{\text{mês}_{it}} + \sum_{i=2}^{7} \lambda_i D_{\text{dia da semana}_{it}} + \\ + \sum_{i=2}^{k} \theta_i D_{\text{feriado}_{it}} + \phi_1 t + \phi_2 t^2 + \epsilon_t\end{aligned} \tag{1}$$

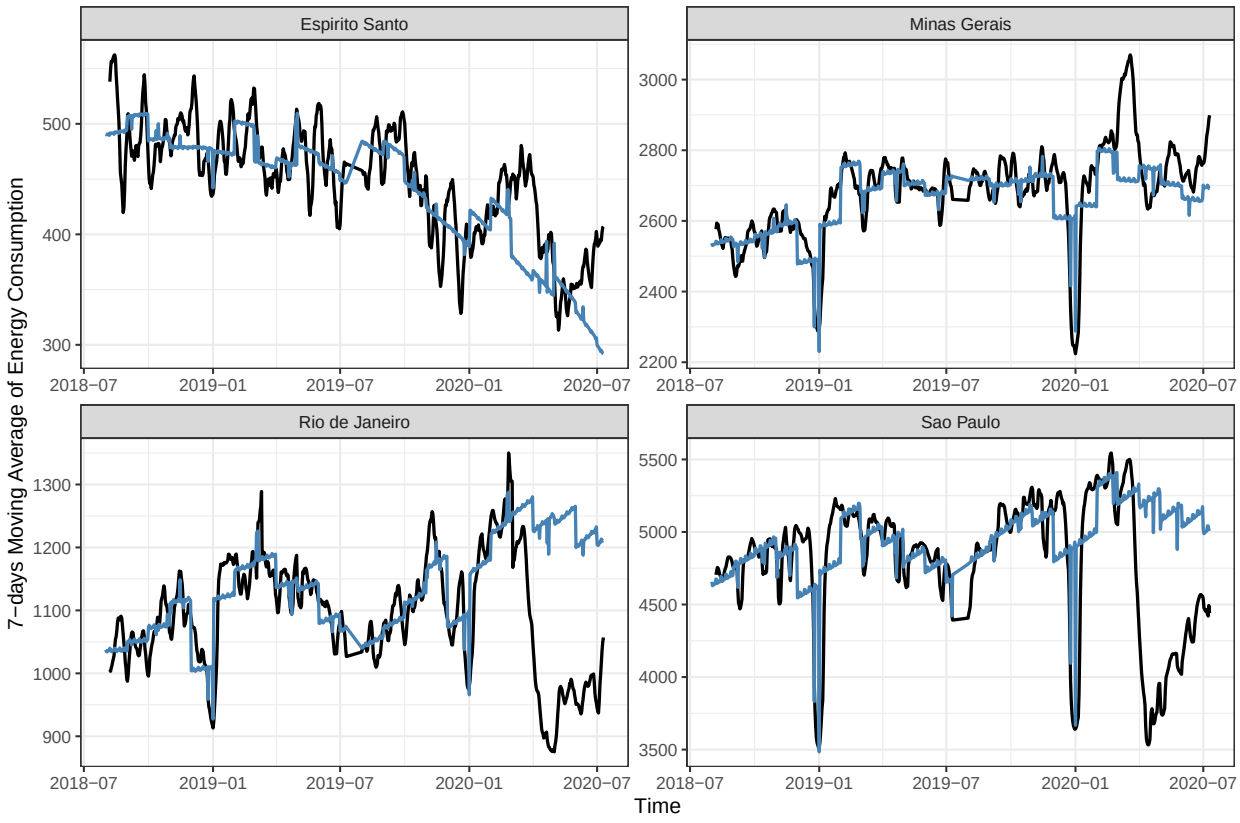
A partir de 1, usamos os valores preditos para os dados a partir de Março de 2020 como o esperado para o consumo de energia. A diferença percentual mostrada nos gráficos abaixo se baseia nesses valores.

Testando o fit

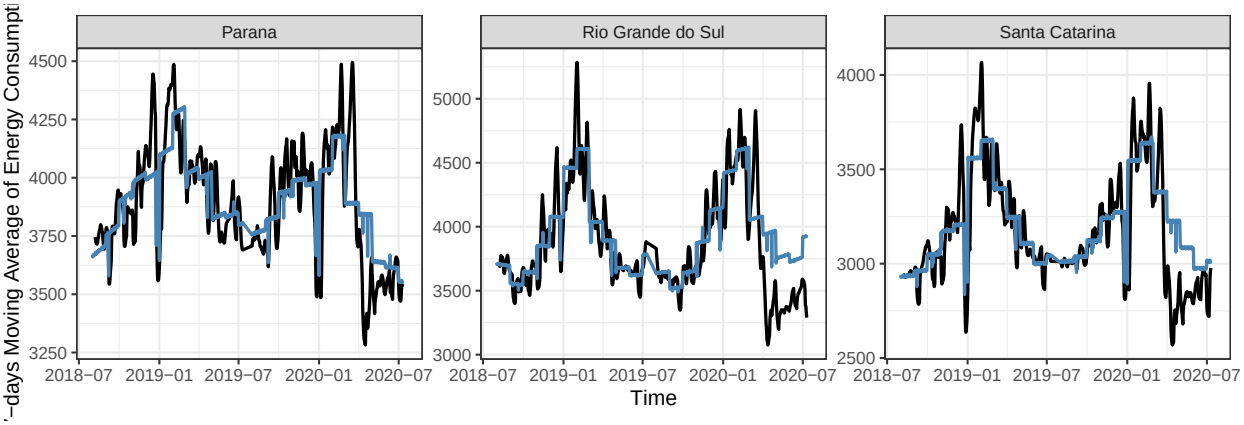
Região Sudeste



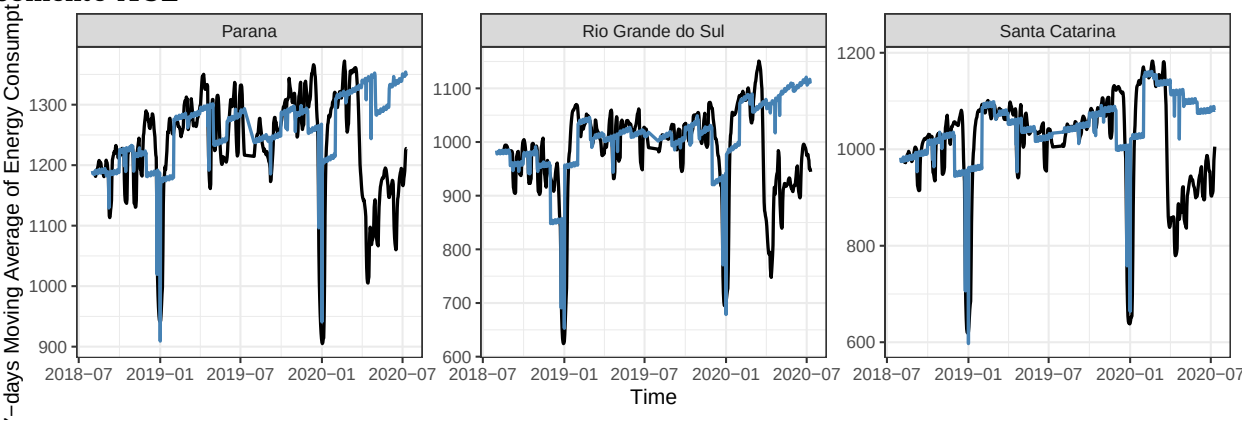
Somente ACL


Espirito Santo
Minas Gerais
Rio de Janeiro
Sao Paulo
7−days Moving Average of Energy Consumption
Time
2018−07
2019−01
2019−07
2020−01
2020−07

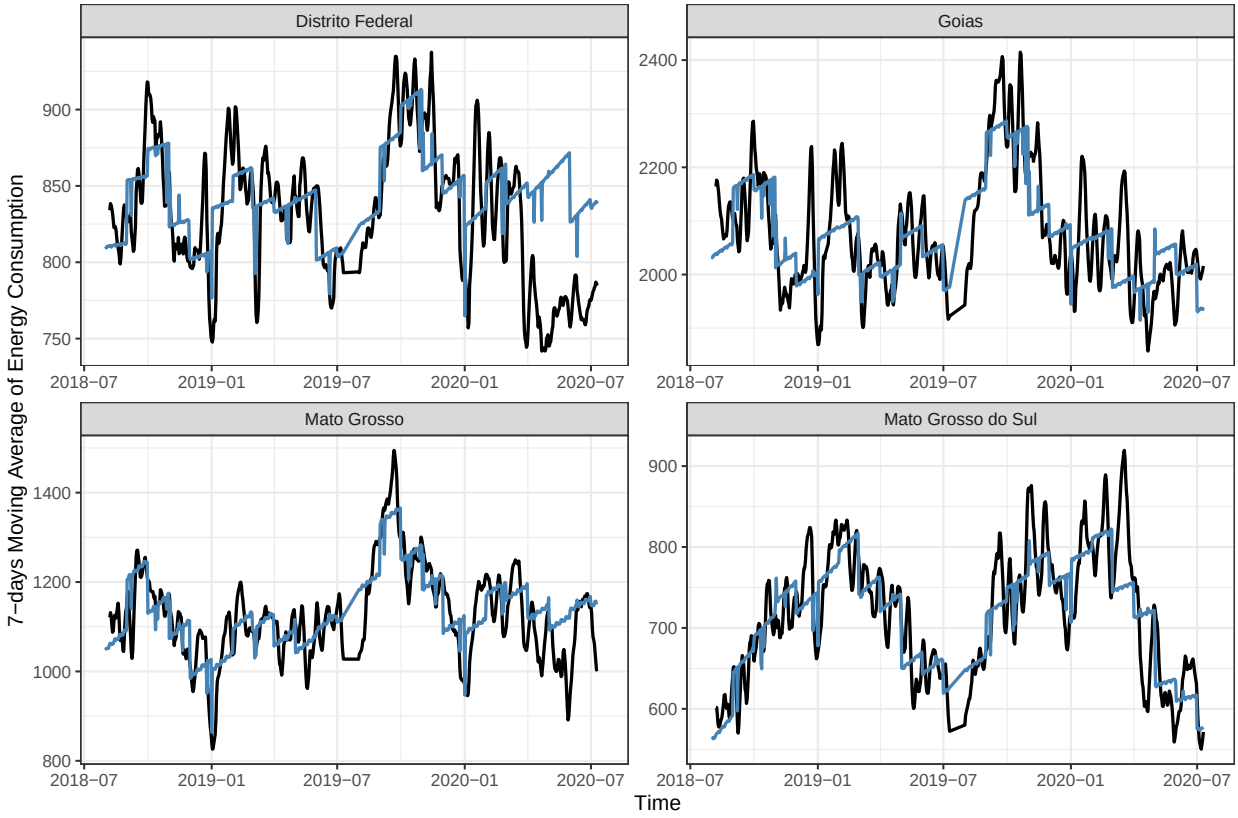
Região Sul


Parana
Rio Grande do Sul
Santa Catarina
-days Moving Average of Energy Consumpti
Time
2018−07
2019−01
2019−07
2020−01
2020−07

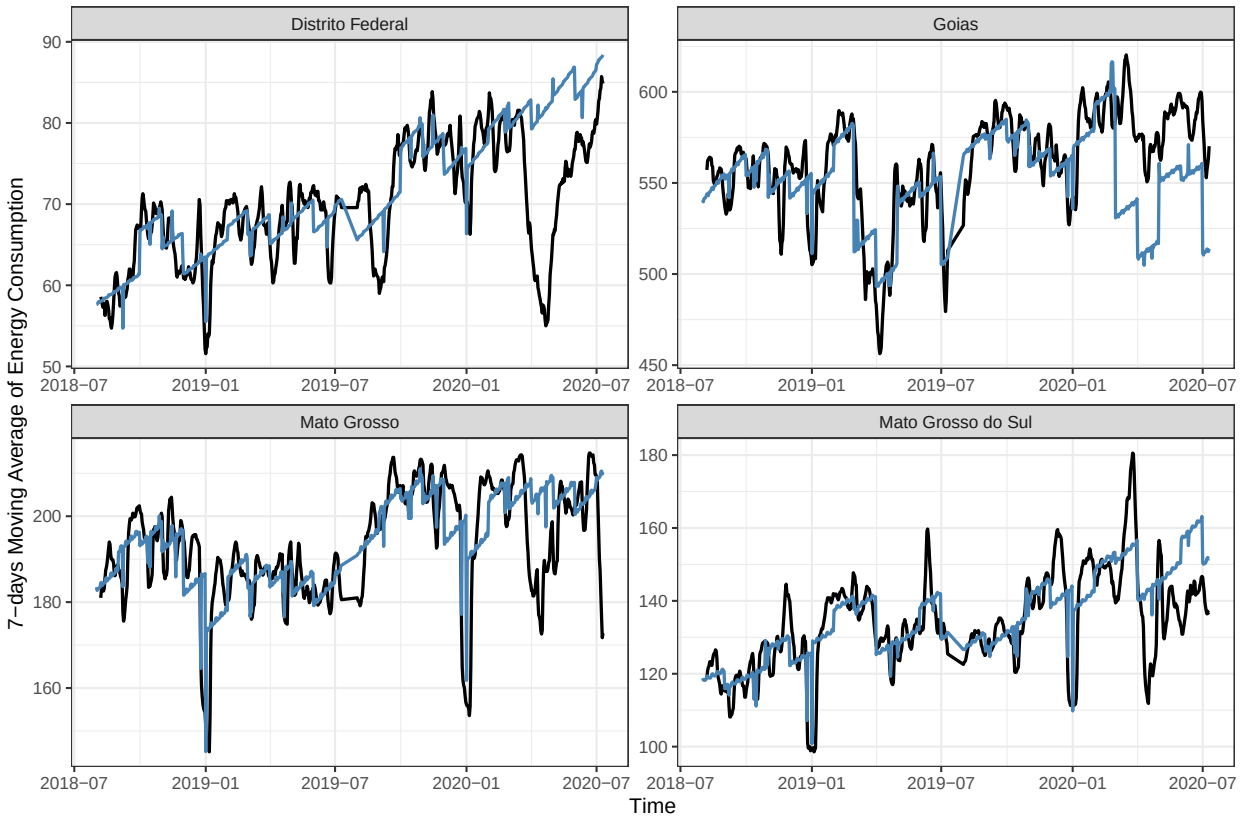
Somente ACL


Parana
Rio Grande do Sul
Santa Catarina
Time
2018−07
2019−01
2019−07
2020−01
2020−07

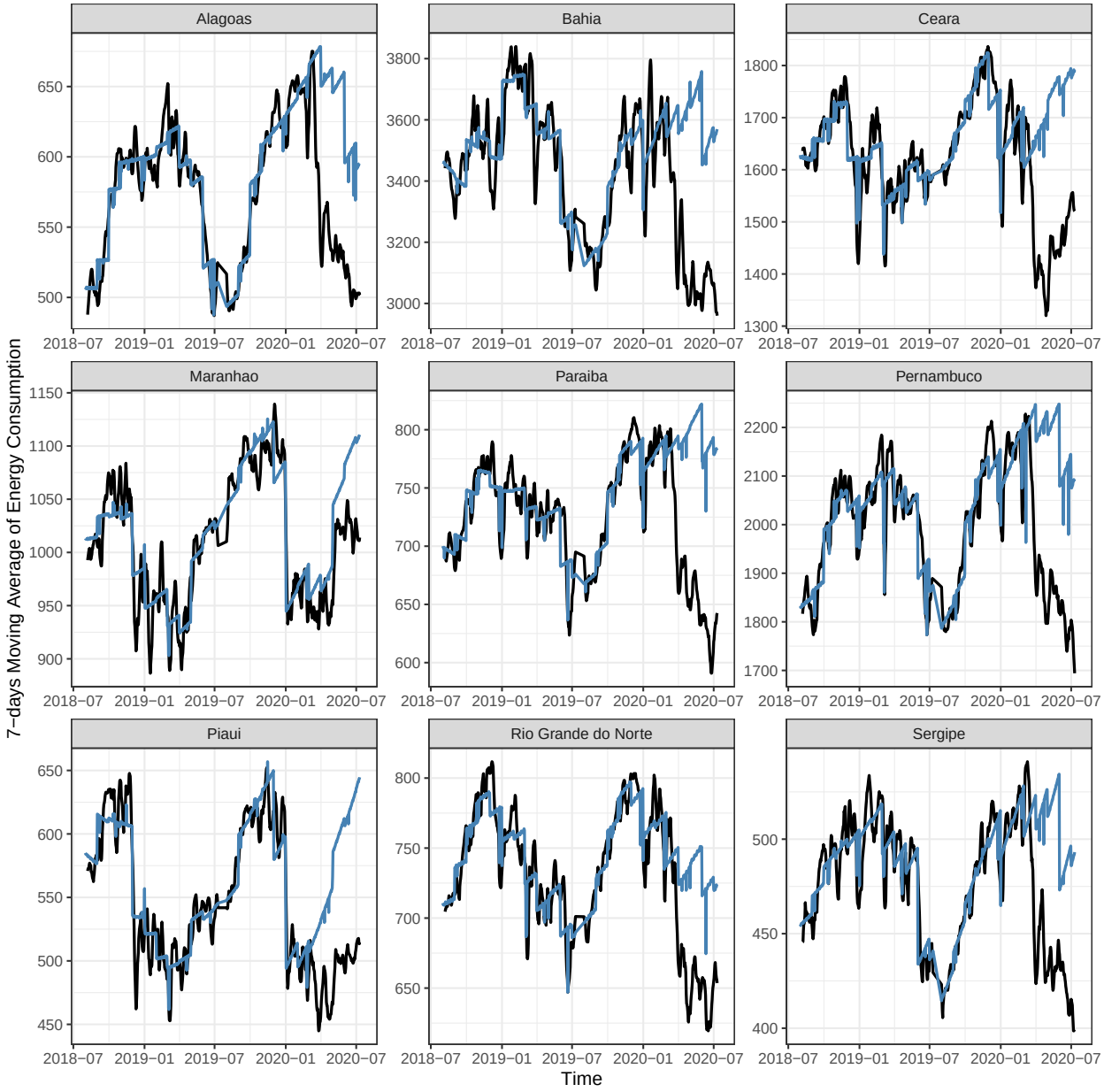
Região Centro-Oeste



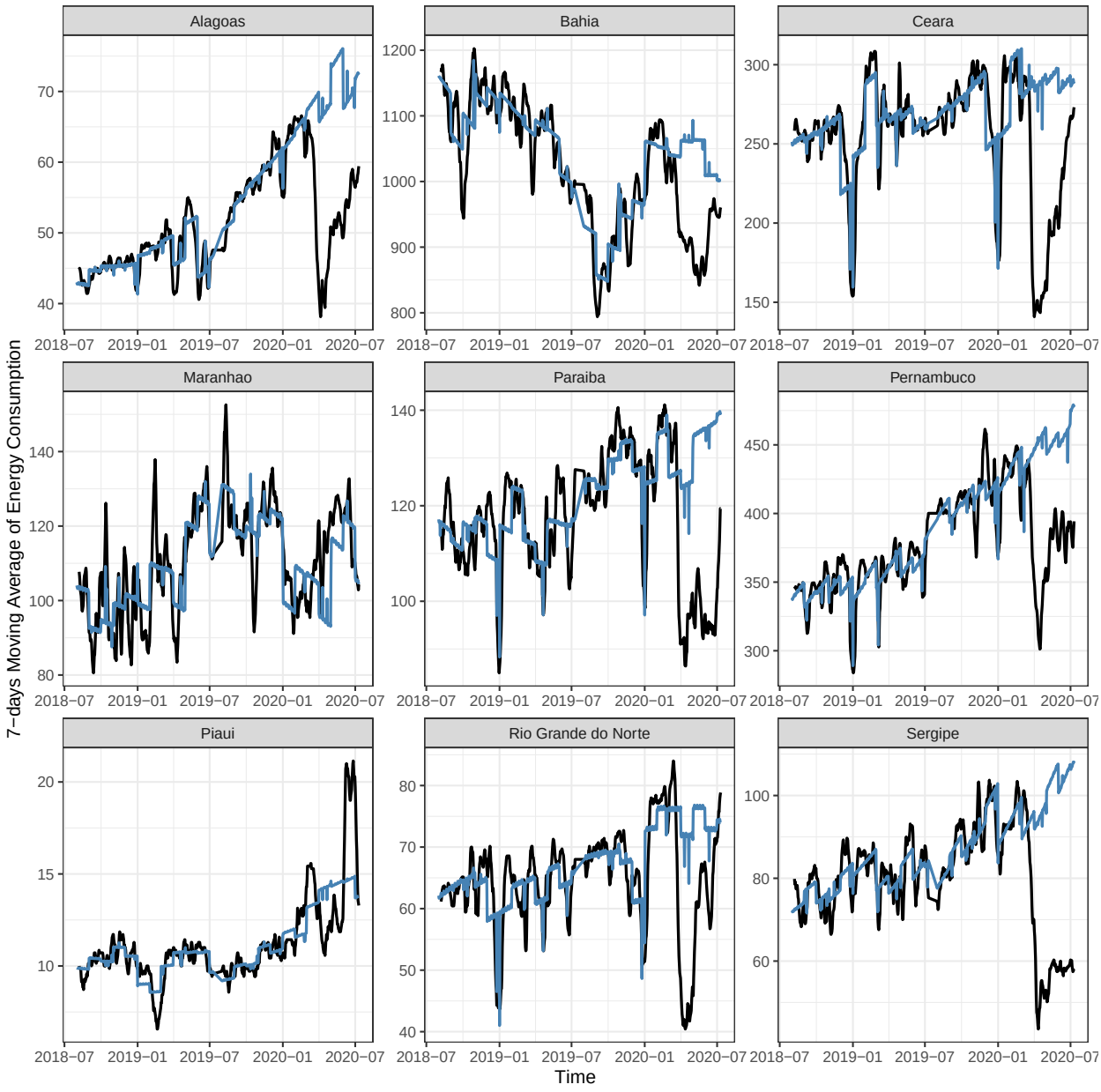
Somente ACL


Distrito Federal
Goias
Mato Grosso
Mato Grosso do Sul
7−days Moving Average of Energy Consumption
Time
2018−07
2019−01
2019−07
2020−01
2020−07

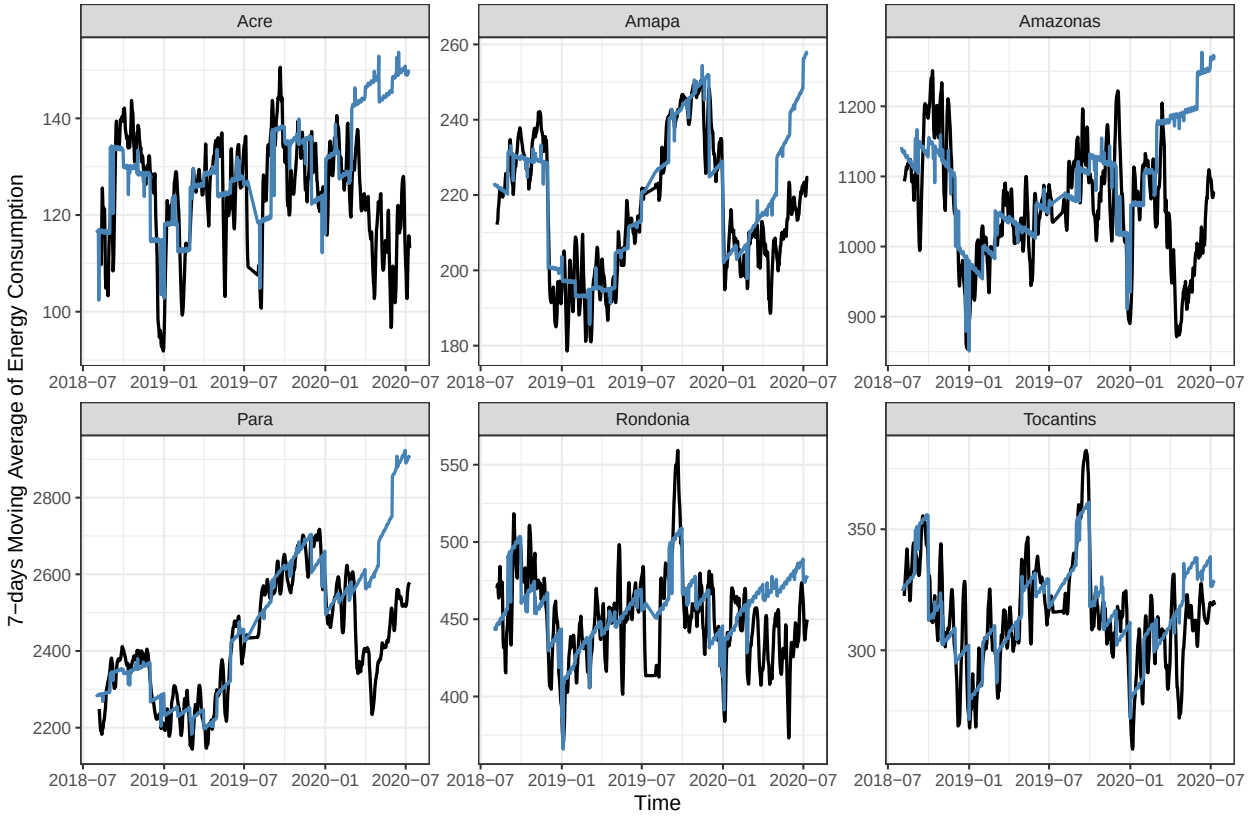
Região Nordeste



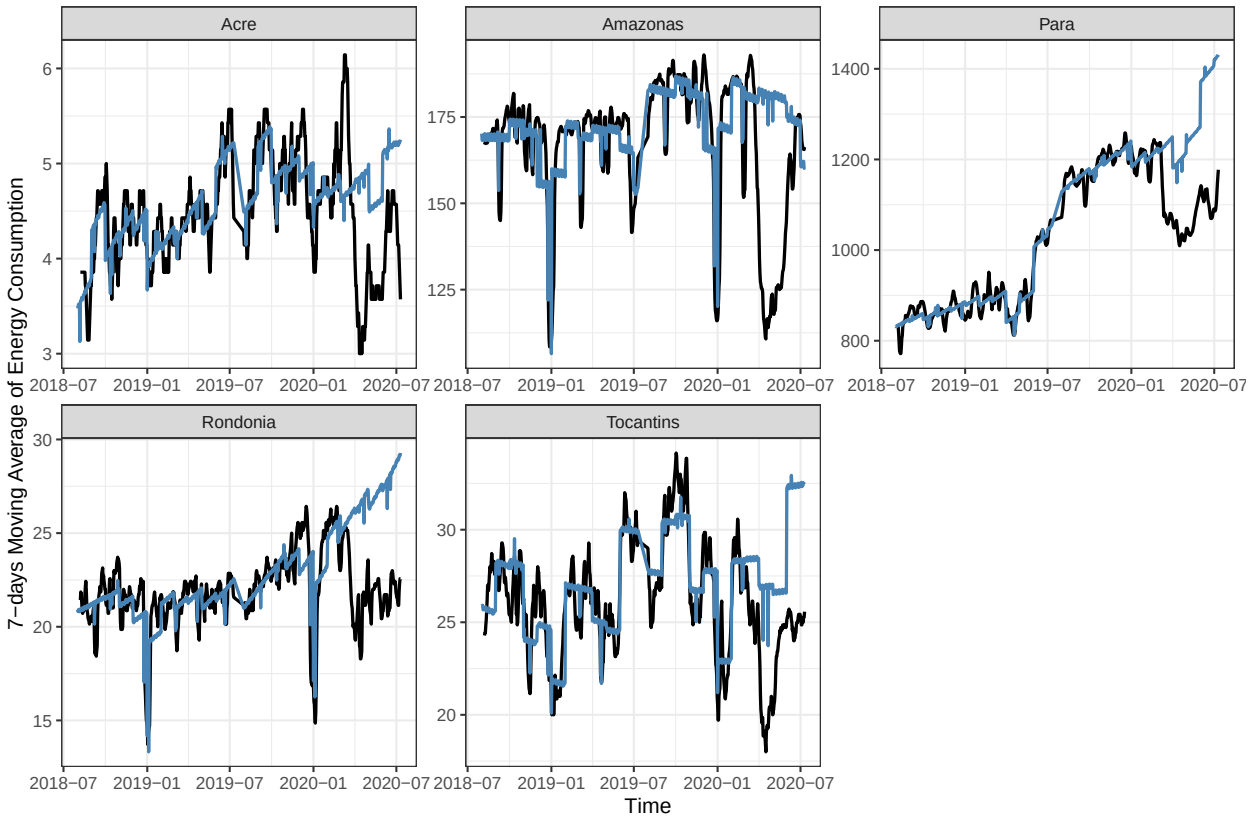
Somente ACL


Alagoas
Bahia
Ceara
Maranhao
Paraiba
Pernambuco
Piaui
Rio Grande do Norte
Sergipe
7−days Moving Average of Energy Consumption
Time
2018−07
2019−01
2019−07
2020−01
2020−07

Região Norte

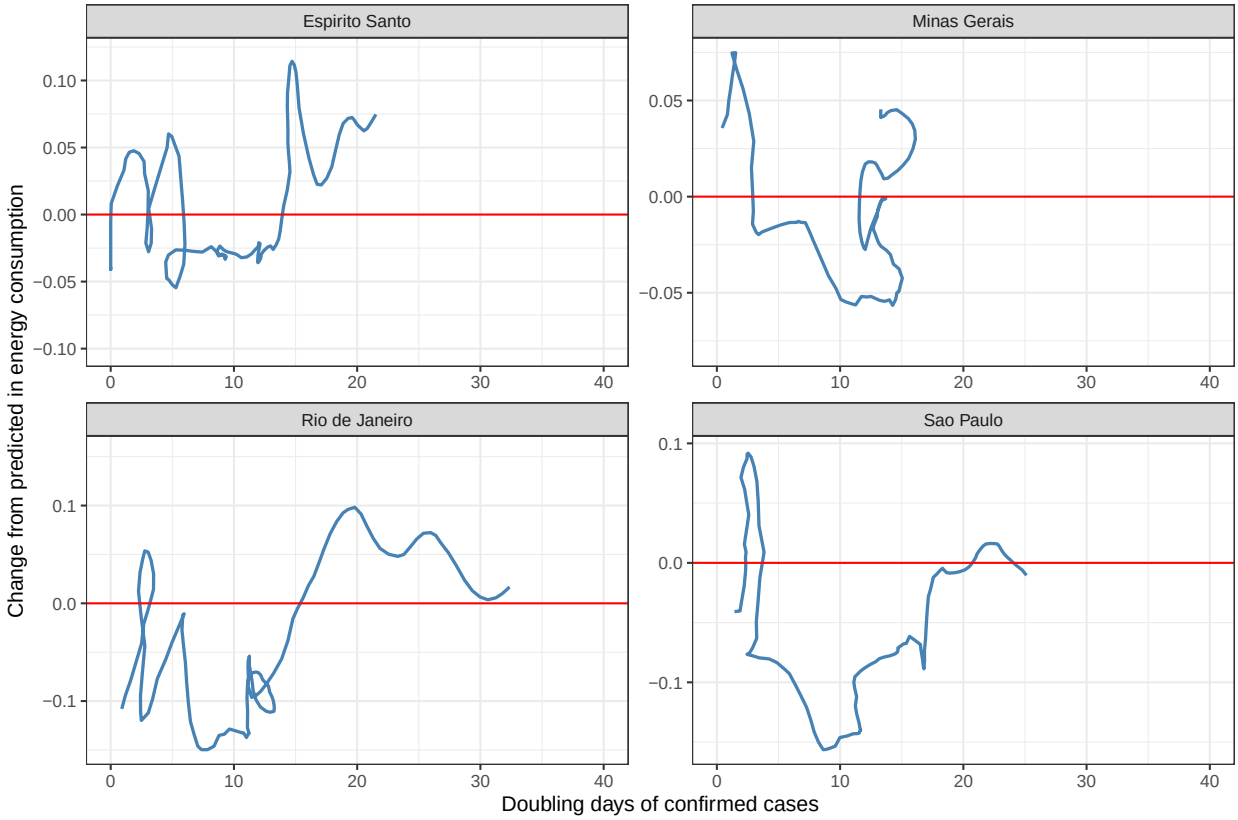


Somente ACL

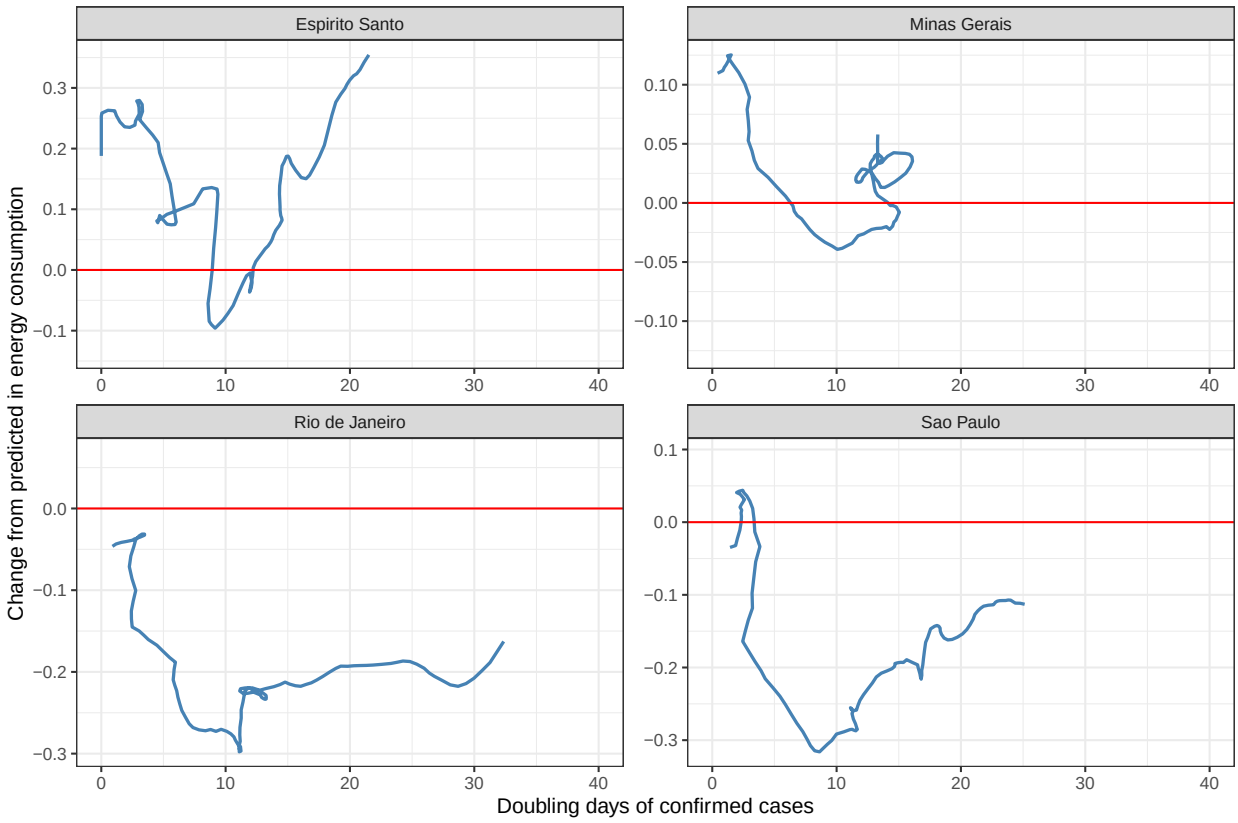

Acre
Amazonas
Para
Rondonia
Tocantins
7−days Moving Average of Energy Consumption
Time
2018−07
2019−01
2019−07
2020−01
2020−07

Mudança para o previsto

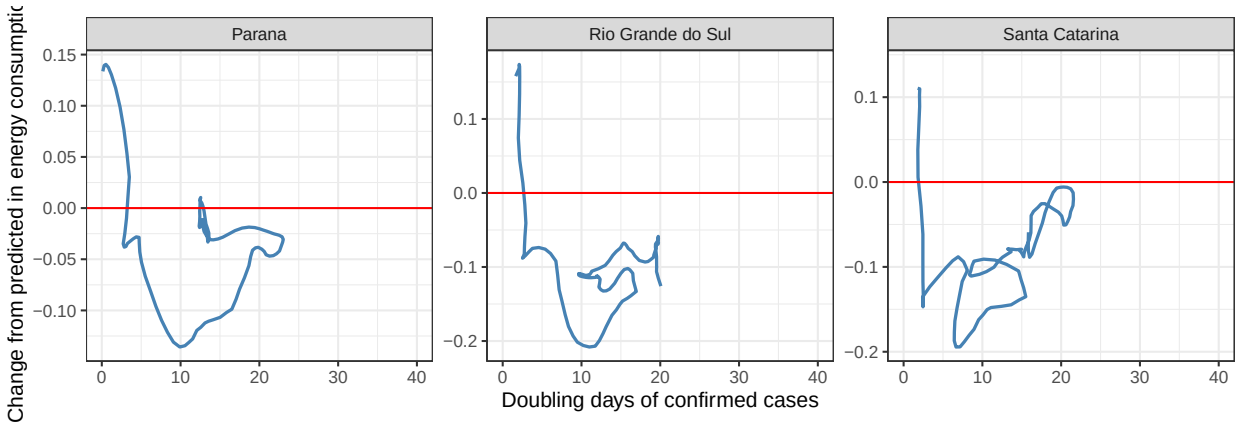
Região Sudeste



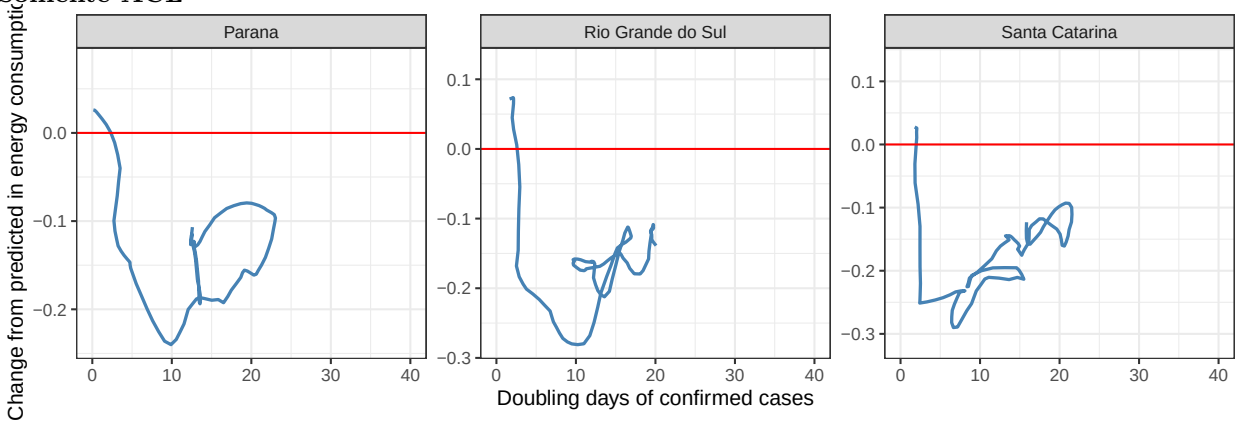
Somente ACL


Espirito Santo
Minas Gerais
Rio de Janeiro
Sao Paulo
Change from predicted in energy consumption
Doubling days of confirmed cases

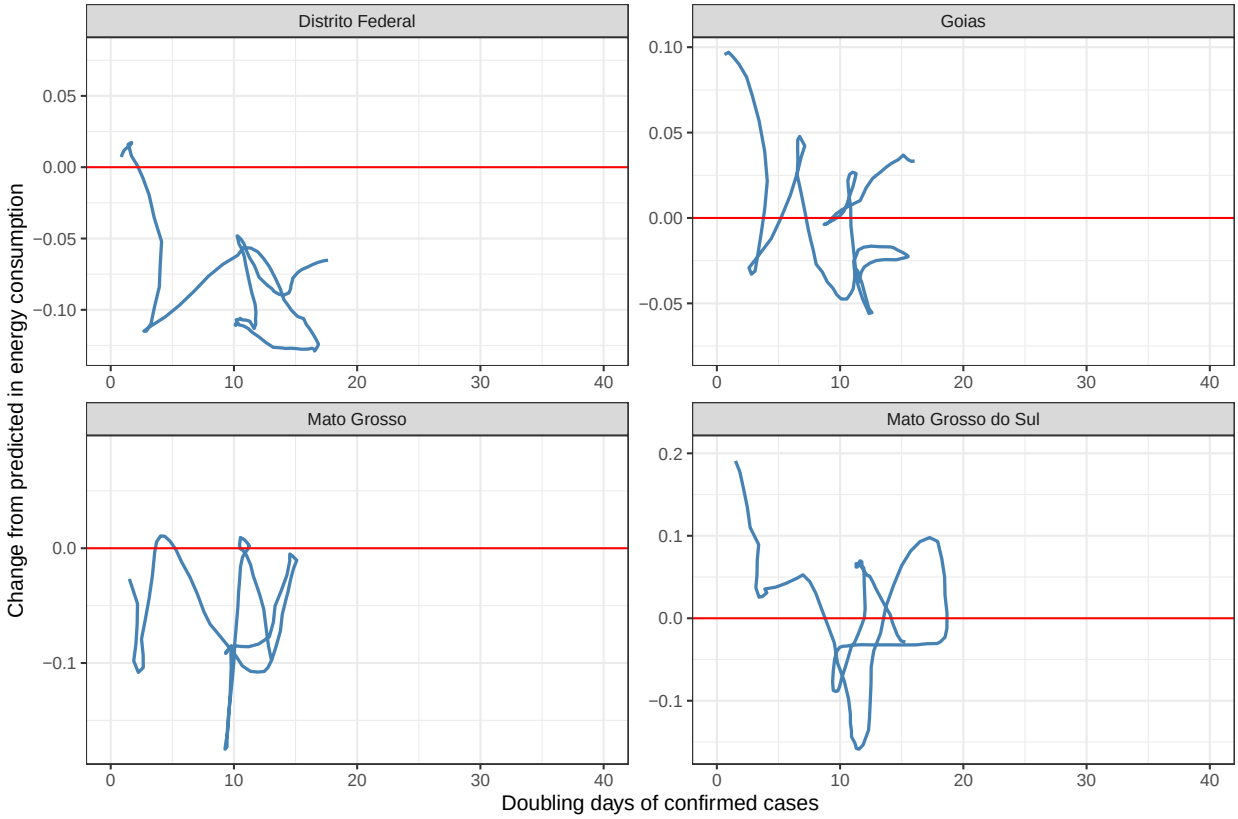
Região Sul


Parana
Rio Grande do Sul
Santa Catarina
Change from predicted in energy consumptic
Doubling days of confirmed cases
0.15
0.10
0.05
0.00
−0.05
−0.10
0.1
0.0
−0.1
−0.2
0
10
20
30
40

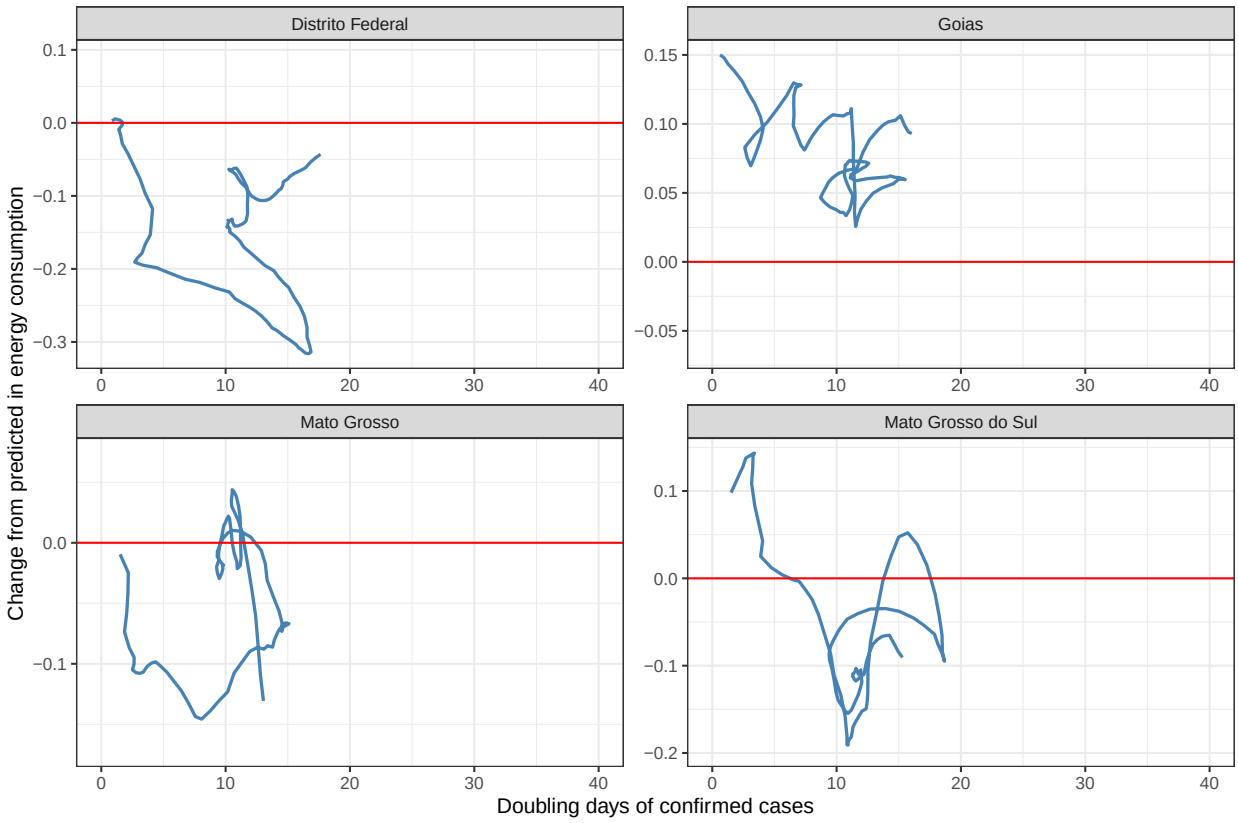
Somente ACL


Parana
Rio Grande do Sul
Santa Catarina
Change from predicted in energy consumptio
Doubling days of confirmed cases
0.1
0.0
−0.1
−0.2
−0.3
0
10
20
30
40

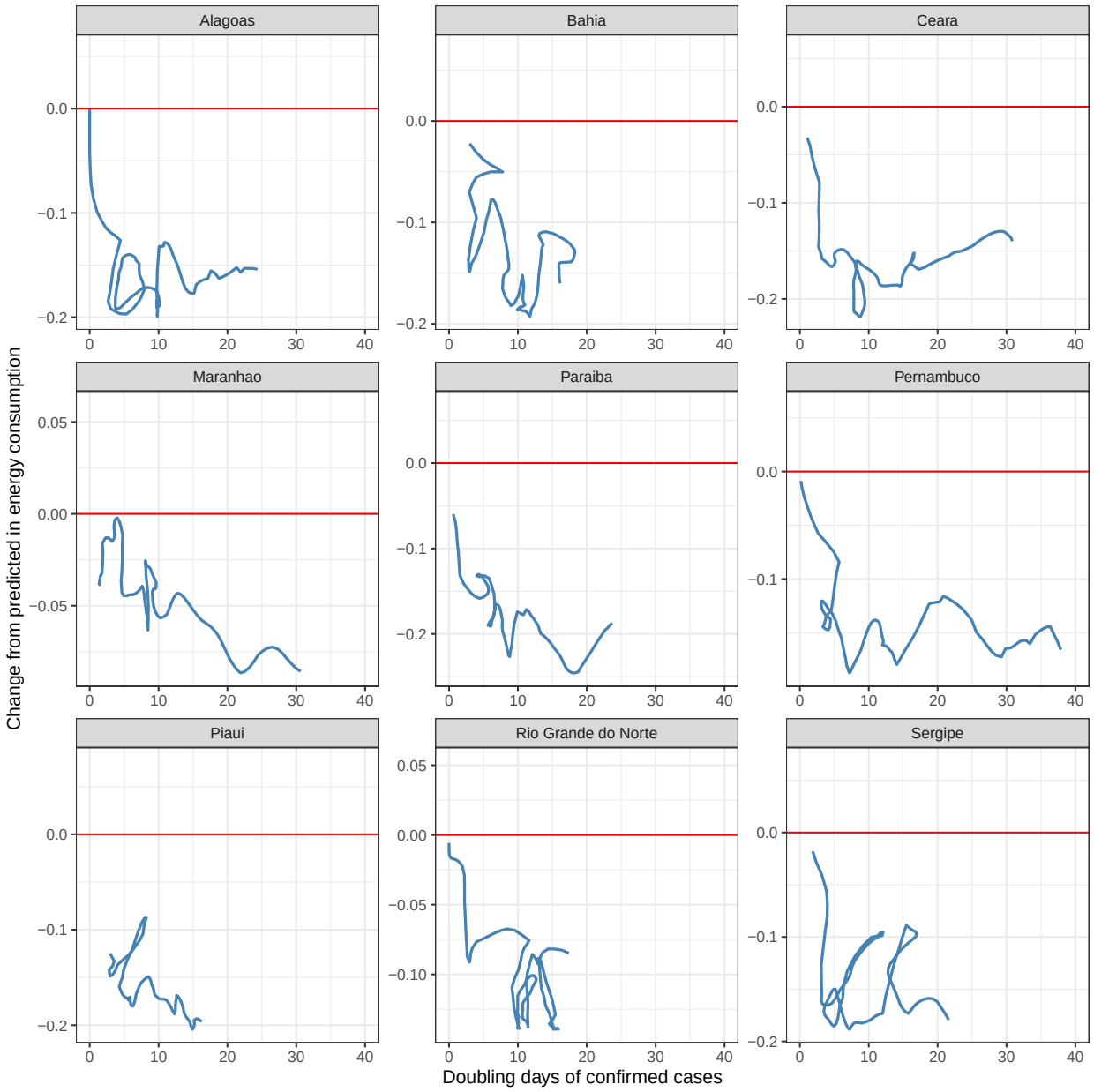
Região Centro-Oeste



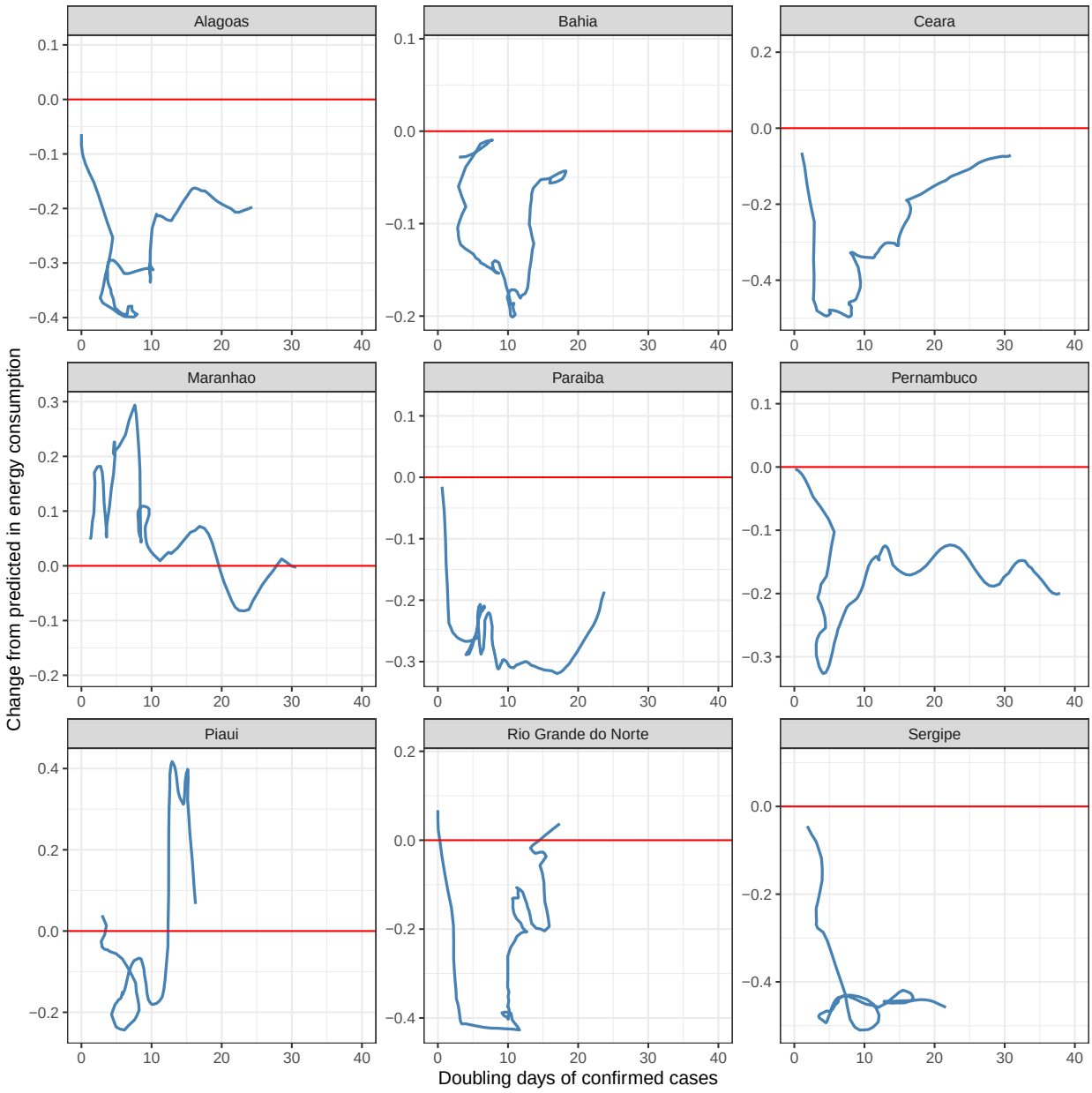
Somente ACL


Distrito Federal
Goias
Mato Grosso
Mato Grosso do Sul
Change from predicted in energy consumption
Doubling days of confirmed cases

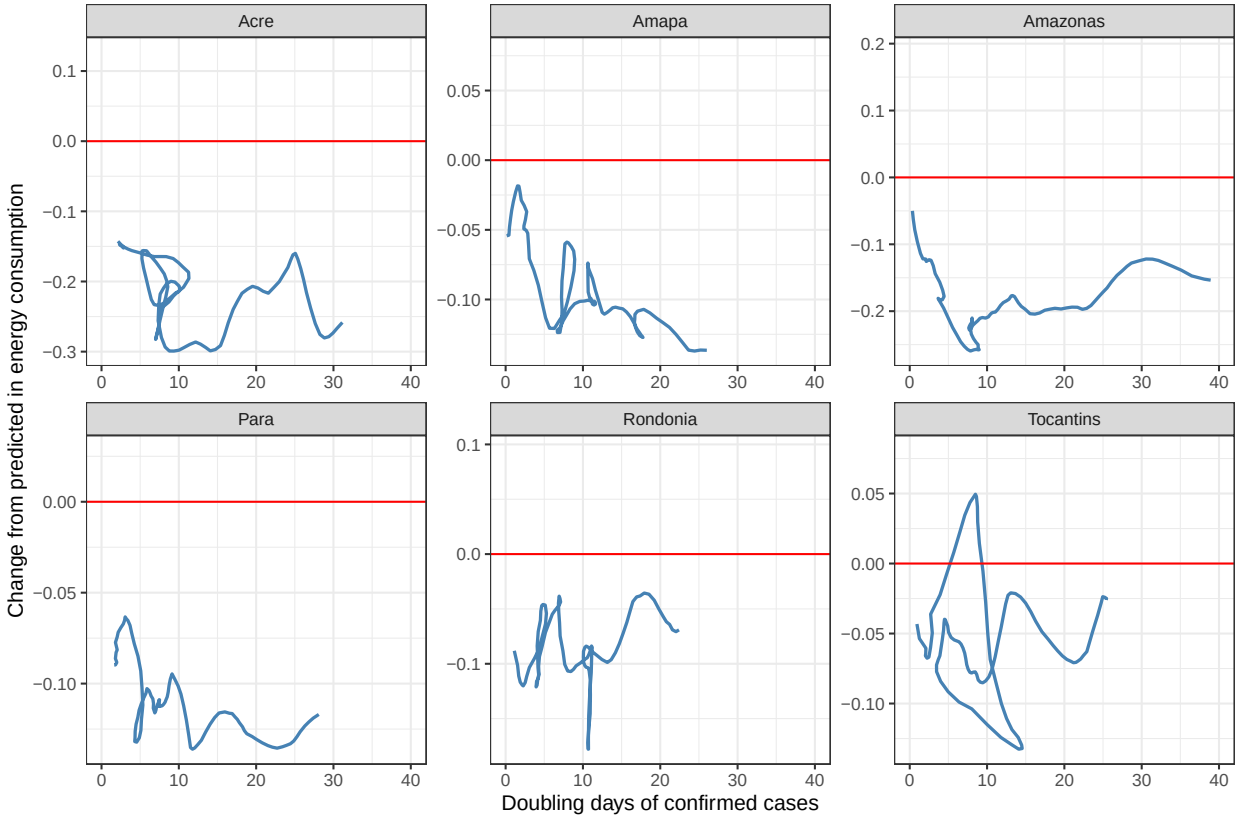
Região Nordeste



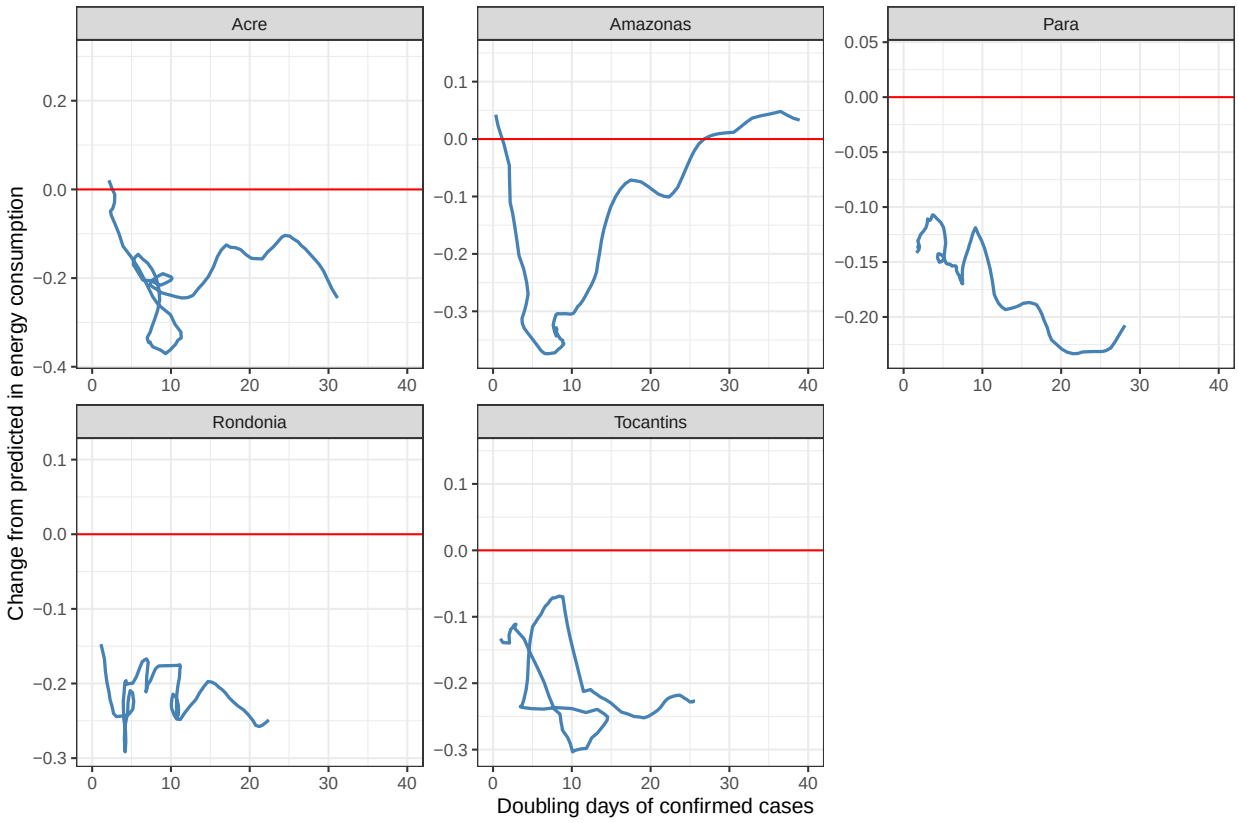
Somente ACL


Alagoas
Bahia
Ceara
Maranhao
Paraiba
Pernambuco
Piaui
Rio Grande do Norte
Sergipe
Change from predicted in energy consumption
Doubling days of confirmed cases

Região Norte

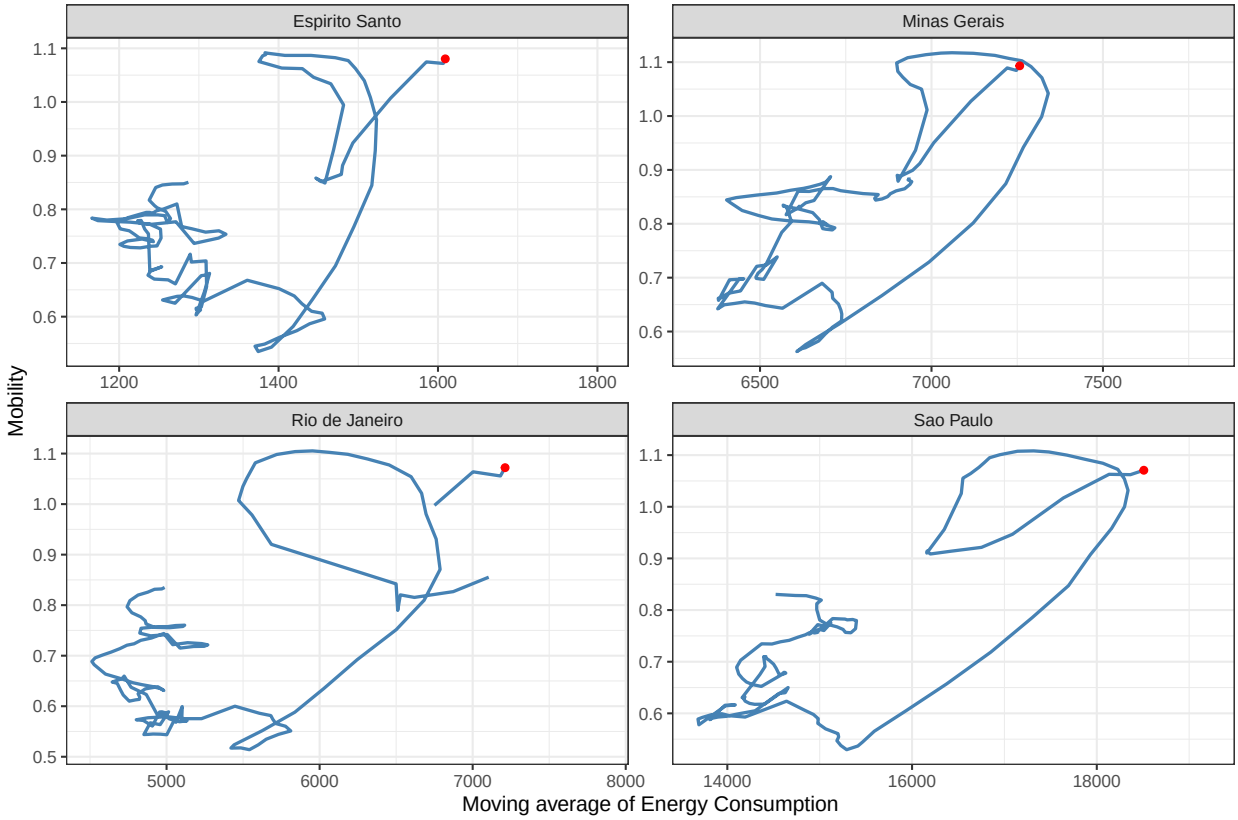


Somente ACL

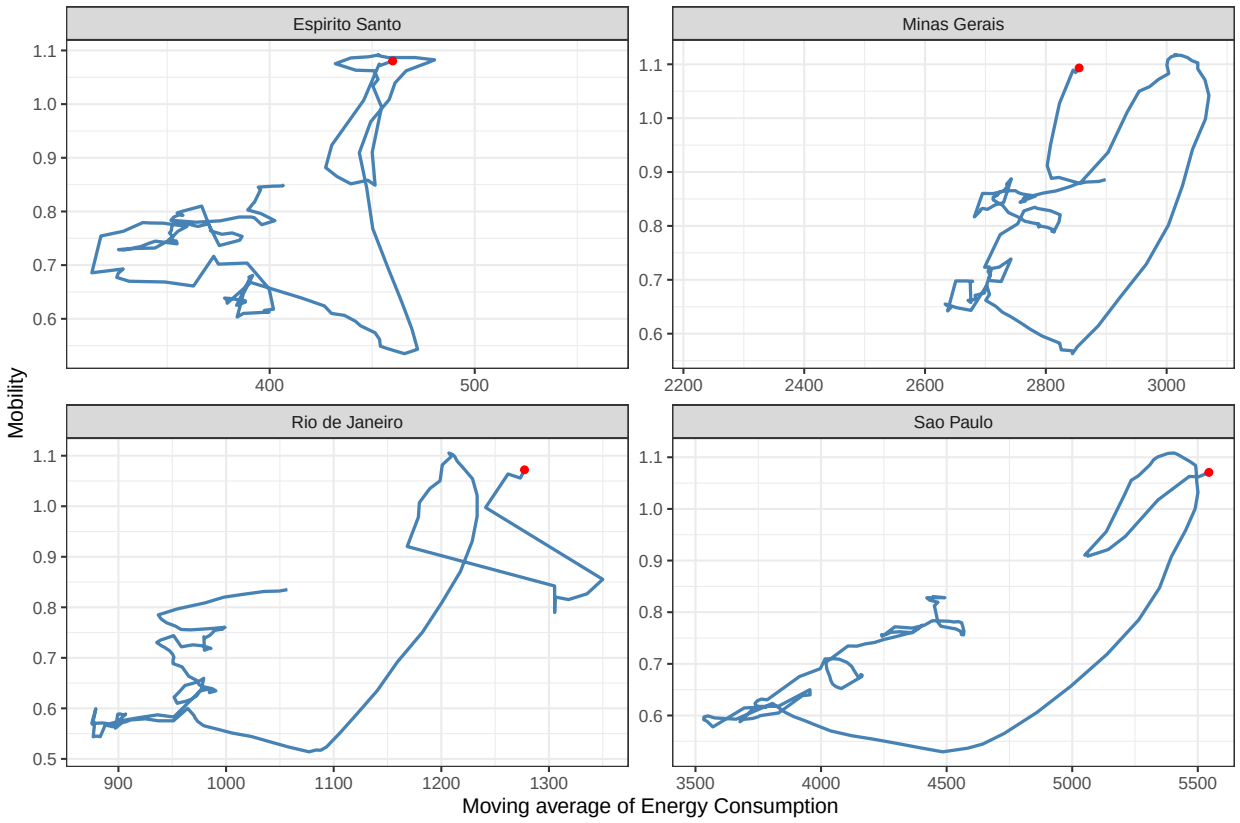

Acre
Amazonas
Para
Rondonia
Tocantins
Change from predicted in energy consumption
Doubling days of confirmed cases

Relação Mobilidade x Consumo de Energia

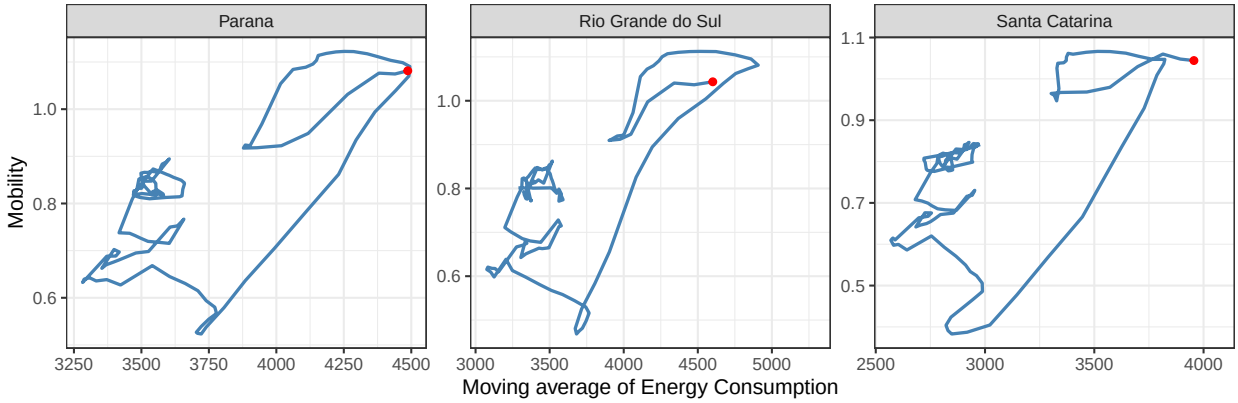
Região Sudeste



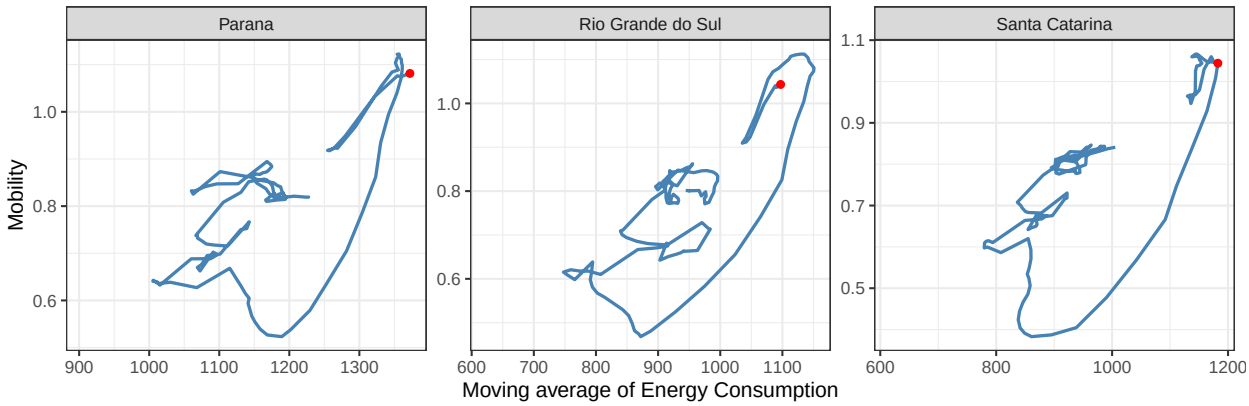
Somente ACL


Espirito Santo
Minas Gerais
Rio de Janeiro
Sao Paulo
Mobility
Moving average of Energy Consumption

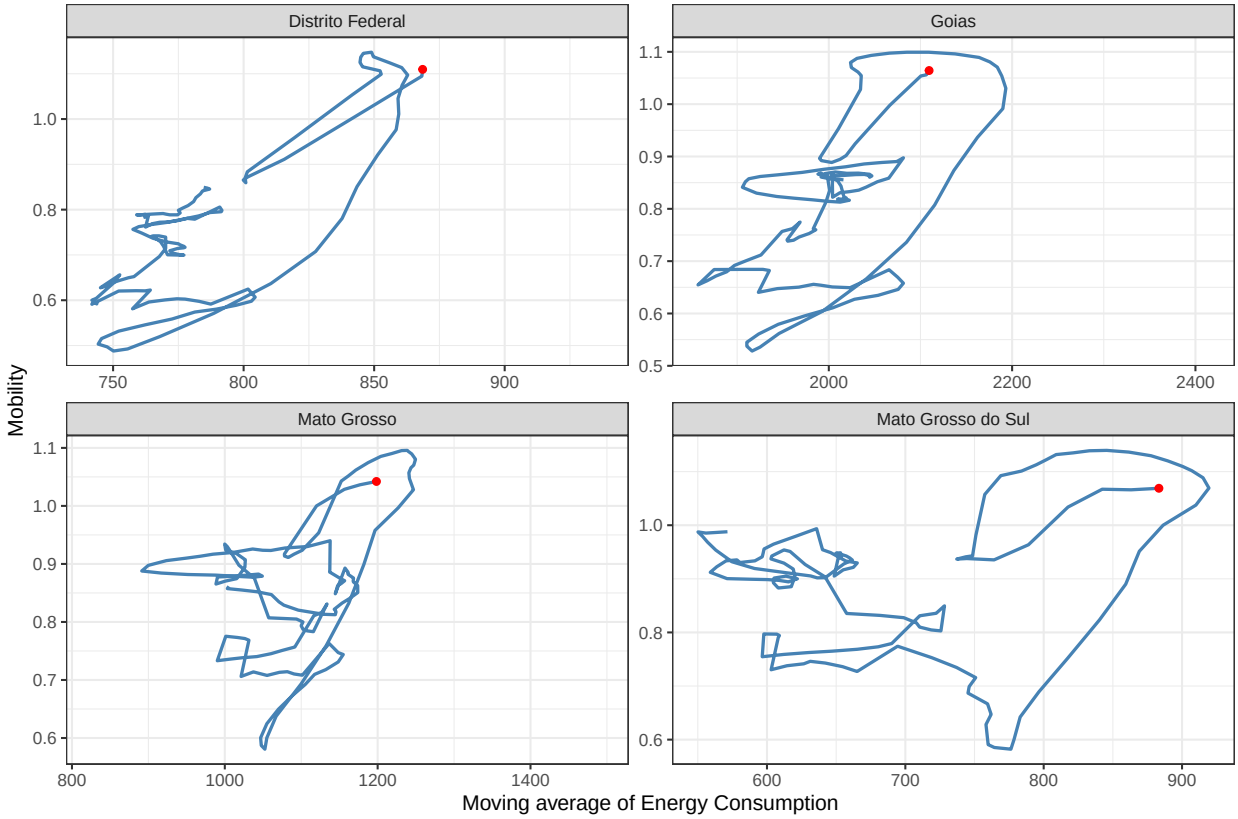
Região Sul


Parana
Rio Grande do Sul
Santa Catarina
Mobility
Moving average of Energy Consumption
1.0
0.8
0.6
3250
3500
3750
4000
4250
4500
1.0
0.8
0.6
3000
3500
4000
4500
5000
1.1
0.9
0.7
0.5
2500
3000
3500
4000

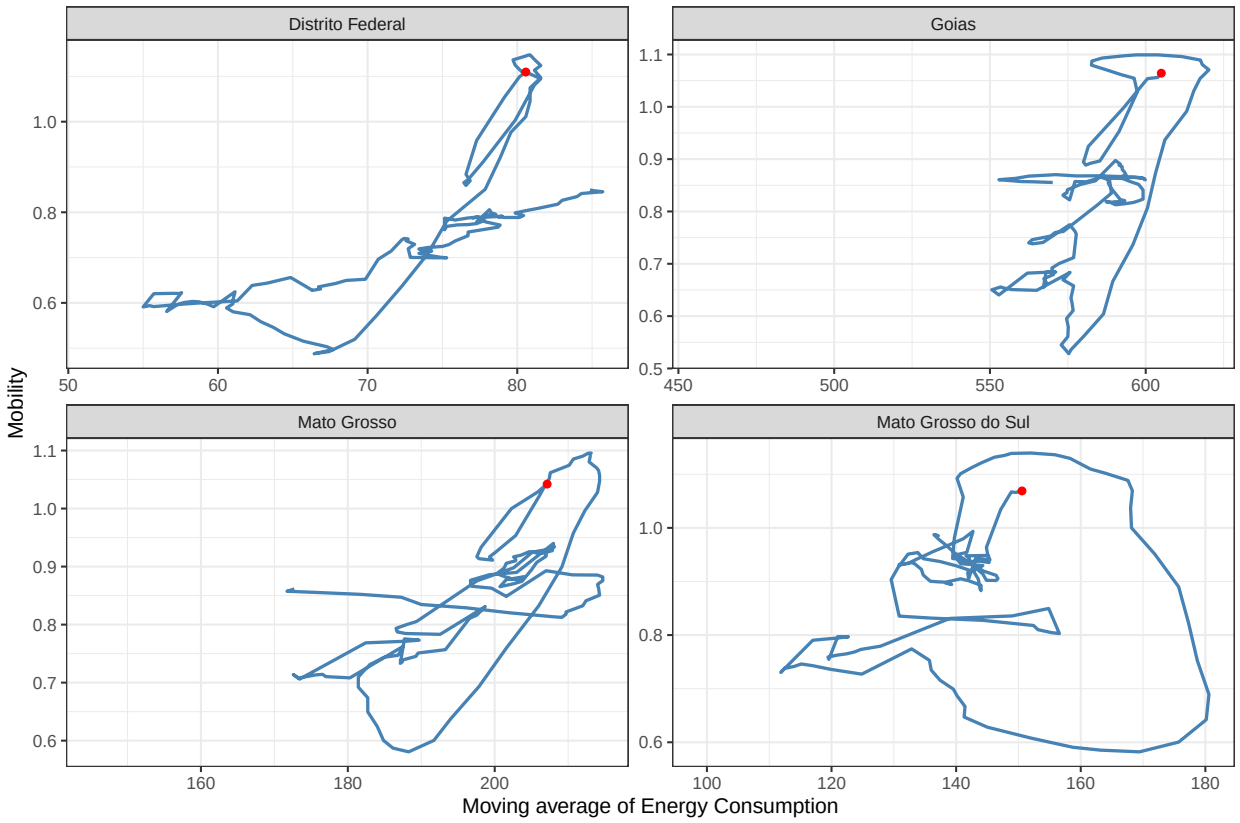
Somente ACL


Parana
Rio Grande do Sul
Santa Catarina
Mobility
Moving average of Energy Consumption
1.0
0.8
0.6
900
1000
1100
1200
1300
1.0
0.8
0.6
600
700
800
900
1000
1100
1.1
0.9
0.7
0.5
600
800
1000
1200

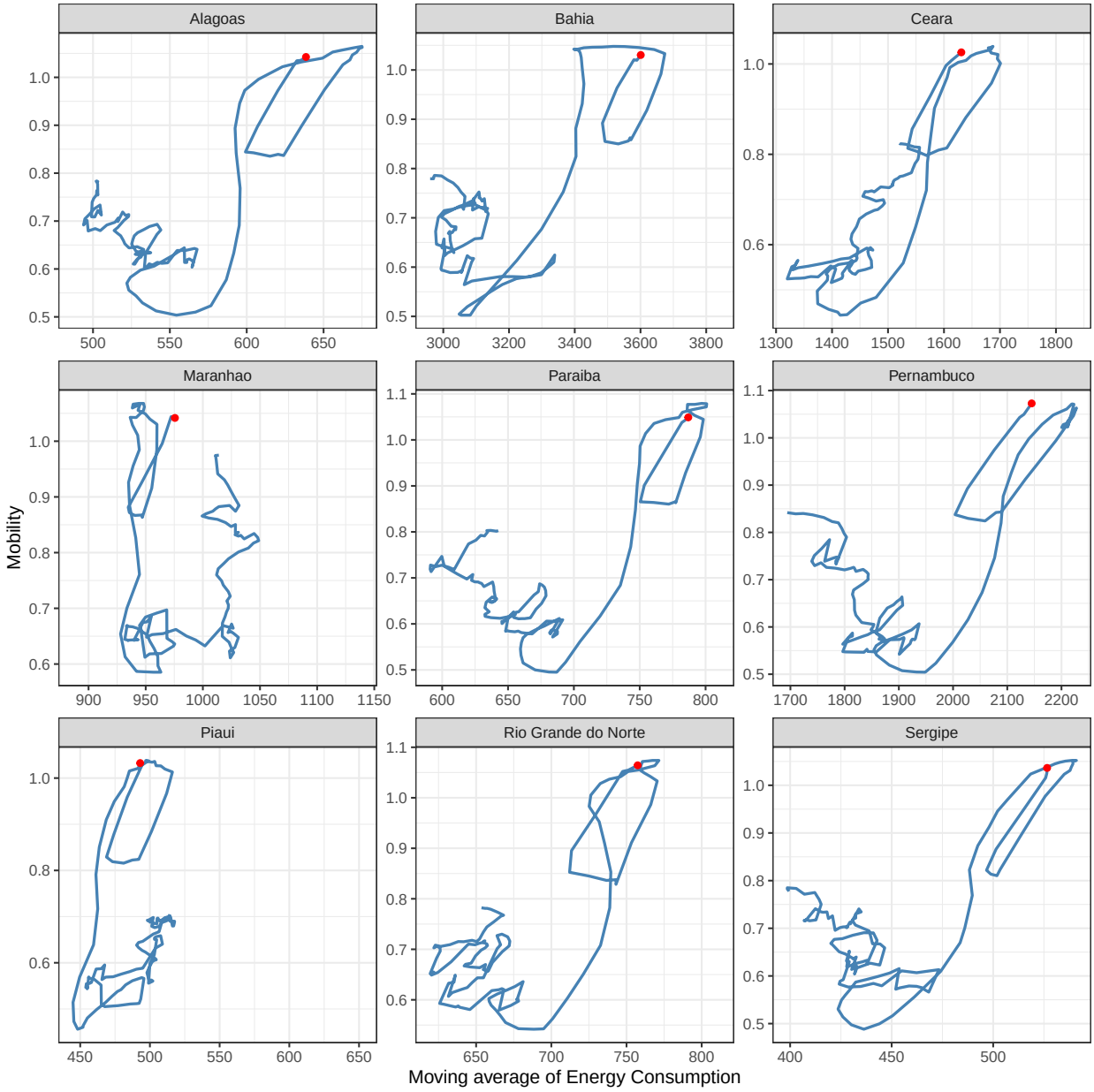
Região Centro-Oeste



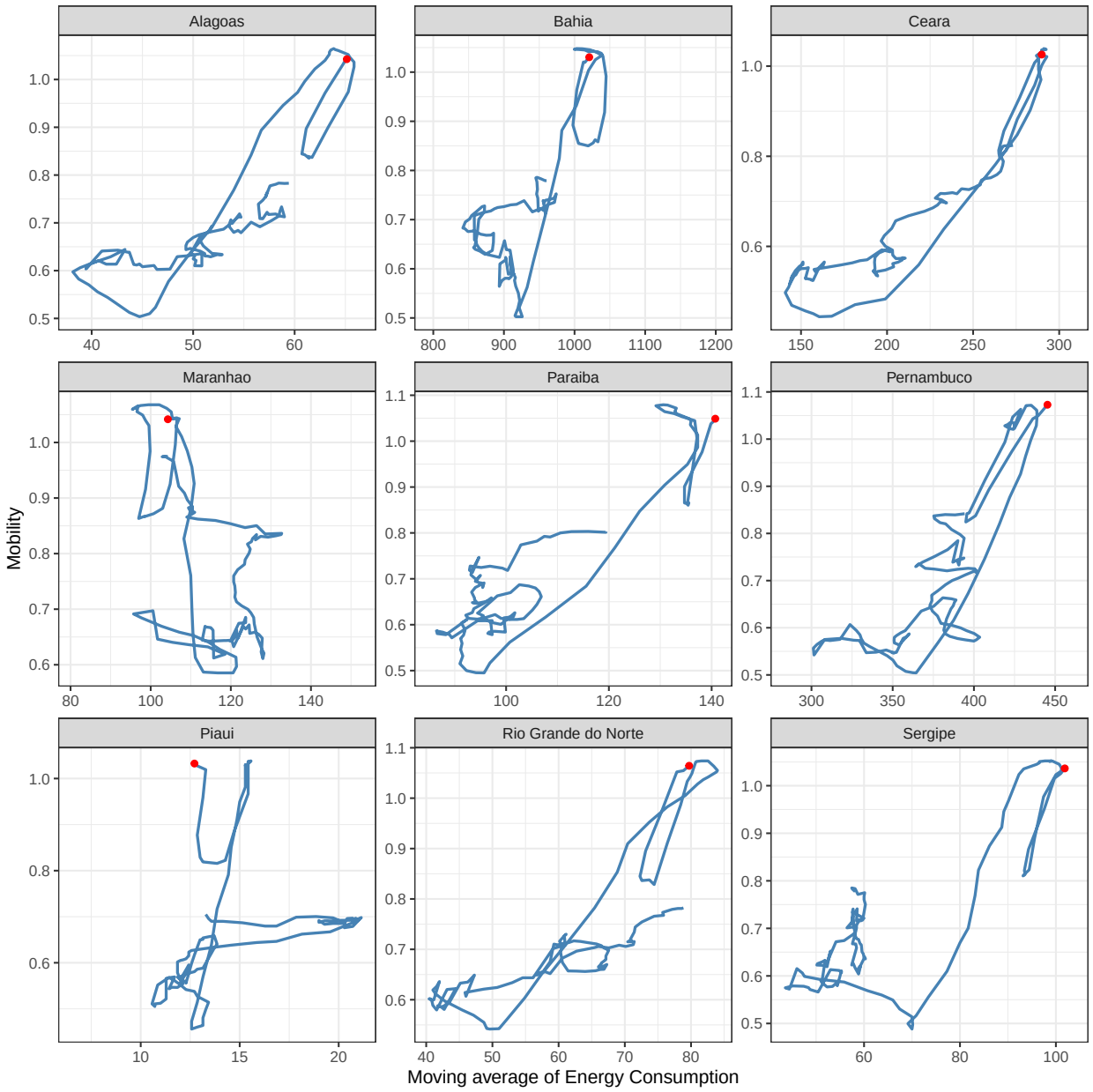
Somente ACL


Distrito Federal
Goias
Mato Grosso
Mato Grosso do Sul
Mobility
Moving average of Energy Consumption

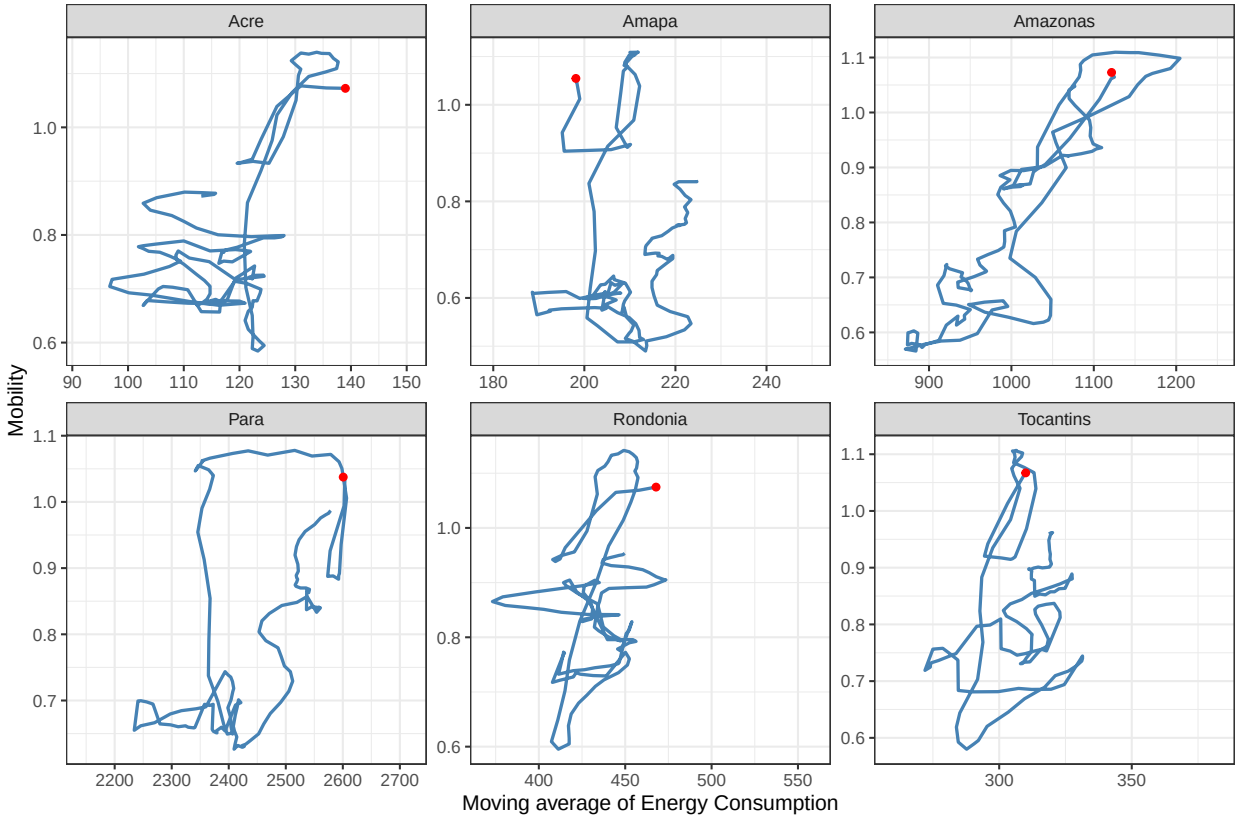
Região Nordeste



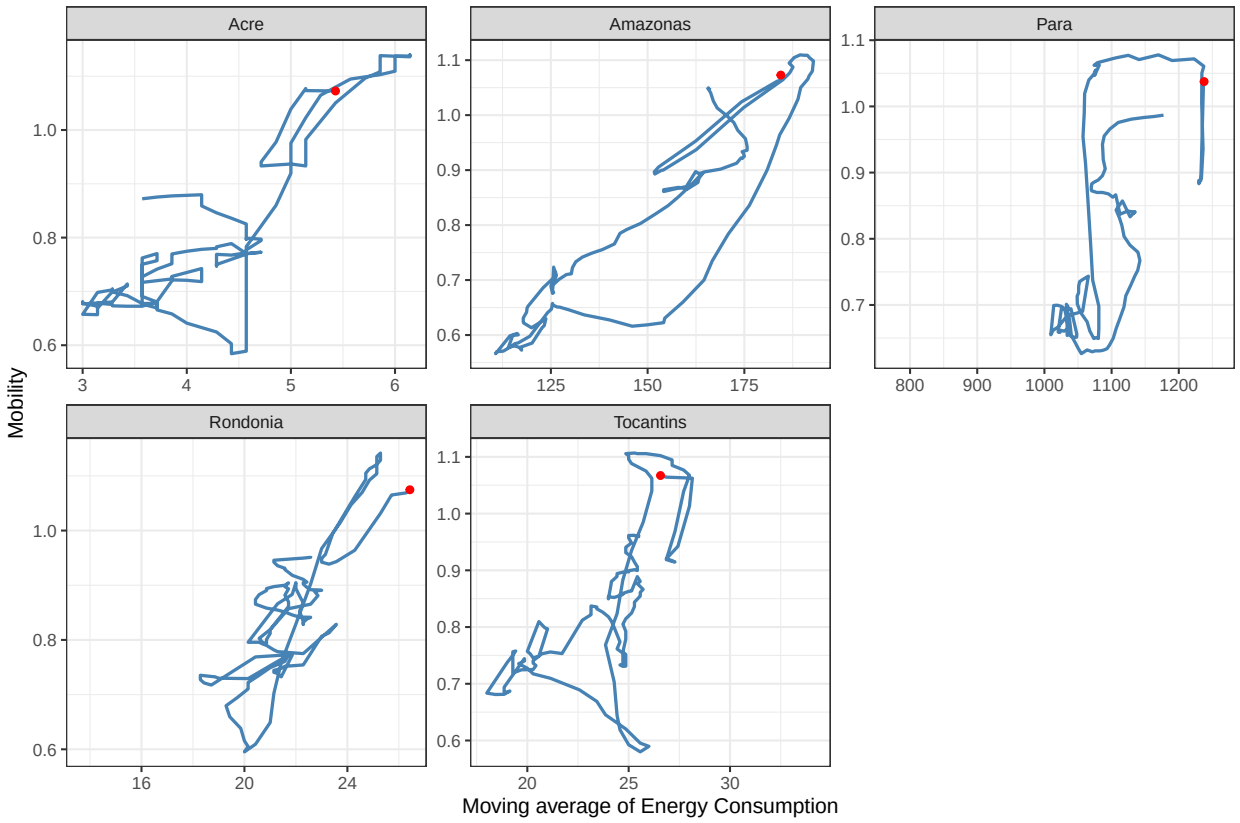
Somente ACL


Alagoas
Bahia
Ceara
Maranhao
Paraiba
Pernambuco
Piaui
Rio Grande do Norte
Sergipe
Mobility
Moving average of Energy Consumption

Região Norte



Somente ACL


Acre
Amazonas
Para
Rondonia
Tocantins
Mobility
Moving average of Energy Consumption