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<http://www.theses.fr/2021REN1G002> *Econométrie des données imparfaites : méthodes et applications* par Enora Belz, Université de Rennes

| Âge | Prix de mille euros de rente Viegarde | Barème de capitalisation de rentes | | | | | |
|-----|---------------------------------------|------------------------------------|--------|--------|--------|--------|--------|
| | | 65 ans | 60 ans | 55 ans | 25 ans | 20 ans | 18 ans |
| 0 | 18 975 | 18 653 | 18 472 | 18 225 | 13 915 | 12 318 | 11 558 |
| 1 | 19 075 | 18 295 | 18 056 | 18 253 | 13 759 | 12 048 | 11 245 |
| 2 | 19 043 | 18 710 | 18 509 | 18 731 | 13 463 | 11 743 | 10 934 |
| 3 | 19 015 | 18 654 | 18 443 | 18 352 | 13 115 | 11 460 | 9 728 |
| 4 | 18 985 | 18 606 | 18 395 | 18 204 | 12 767 | 11 160 | 9 320 |
| 5 | 18 956 | 18 520 | 18 291 | 17 972 | 12 418 | 10 815 | 9 370 |
| 6 | 18 927 | 18 434 | 18 195 | 17 652 | 12 060 | 10 230 | 8 716 |
| 7 | 18 898 | 18 348 | 17 957 | 17 277 | 11 685 | 9 877 | 8 295 |
| 8 | 18 869 | 18 260 | 17 718 | 16 595 | 11 318 | 9 500 | 7 924 |
| 9 | 18 835 | 18 232 | 17 449 | 17 358 | 10 797 | 8 844 | 7 099 |
| 10 | 18 803 | 18 213 | 17 180 | 17 245 | 10 265 | 8 351 | 6 561 |
| 11 | 18 764 | 18 147 | 17 889 | 17 439 | 10 339 | 8 288 | 6 455 |
| 12 | 18 735 | 18 079 | 17 446 | 17 315 | 9 838 | 7 704 | 5 779 |
| 13 | 18 706 | 18 010 | 17 371 | 17 144 | 9 338 | 7 204 | 5 206 |
| 14 | 18 677 | 17 983 | 17 524 | 17 048 | 8 833 | 6 775 | 4 324 |
| 15 | 18 648 | 17 914 | 17 455 | 16 982 | 8 333 | 6 324 | 3 824 |
| 16 | 18 619 | 17 845 | 17 281 | 16 756 | 7 833 | 4 320 | 2 770 |
| 17 | 18 590 | 17 776 | 17 207 | 16 722 | 7 333 | 3 920 | 1 657 |
| 18 | 18 559 | 17 642 | 17 024 | 16 443 | 6 833 | 2 718 | 1 052 |
| 19 | 18 529 | 17 573 | 16 840 | 16 114 | 6 333 | 2 318 | 856 |
| 20 | 18 497 | 17 517 | 16 754 | 16 034 | 5 833 | 1 856 | 691 |
| 21 | 17 934 | 16 953 | 16 470 | 15 263 | 3 332 | ... | ... |
| 22 | 17 865 | 16 884 | 16 391 | 15 173 | 3 132 | ... | ... |
| 23 | 17 827 | 16 780 | 16 164 | 15 381 | 1 885 | ... | ... |
| 24 | 17 798 | 16 711 | 16 035 | 15 253 | 1 681 | ... | ... |
| 25 | 17 769 | 16 642 | 15 876 | 14 959 | 1 481 | ... | ... |
| 26 | 17 740 | 16 573 | 15 707 | 14 824 | 1 281 | ... | ... |
| 27 | 17 709 | 16 514 | 15 449 | 14 492 | 1 081 | ... | ... |
| 28 | 17 679 | 16 455 | 15 191 | 14 130 | 881 | ... | ... |
| 29 | 17 649 | 16 396 | 15 033 | 14 241 | 781 | ... | ... |
| 30 | 17 619 | 16 337 | 14 875 | 13 777 | 681 | ... | ... |
| 31 | 17 590 | 16 278 | 14 716 | 13 699 | 581 | ... | ... |

Données

Données AGIRA (Association pour la Gestion des Informations sur le Risque Automobile), extraction en 2005 (63,098) puis en 2017 (364,829)

FICHIER DES INDEMNITES ALLOUEES

AUX VICTIMES D'ACCIDENTS DE LA CIRCULATION

(F.V.I.)

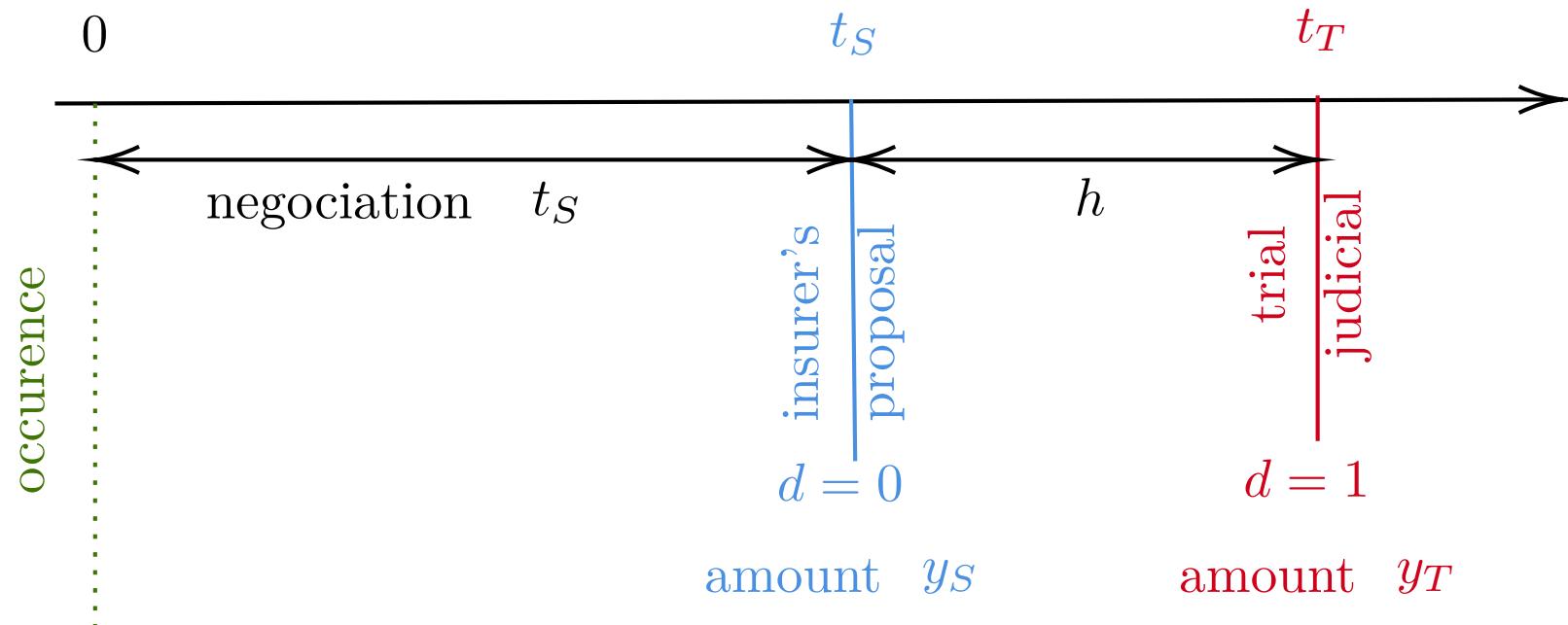
1 – Les objectifs poursuivis

Créé en 1988 en collaboration avec les Pouvoirs Publics, le fichier FVI a été mis en place pour répondre aux obligations résultant de l'article 26 de la loi du 5 juillet 1985 (loi Badinter).

Ce texte fait obligation aux assureurs et aux magistrats de communiquer les montants des indemnisations versées pour des dommages corporels survenus lors d'accidents automobiles.

L'objectif poursuivi est de permettre à toute victime ou à ses représentants, de connaître les montants des indemnités auxquels elle pourrait prétendre. La publication des décisions doit en outre contribuer à limiter les écarts constatés entre différentes Cours d'Appel pour des situations comparables.

Econometric Model



$$\begin{cases} \text{negotiated settlement} & : \log(y_S) = \lambda_{S0} + \boldsymbol{\lambda}_{S1}^\top \mathbf{x} + \boldsymbol{\omega}_S + \varepsilon_S \\ \text{trial} & : \log(y_T) = \lambda_{T0} + \boldsymbol{\lambda}_{T1}^\top \mathbf{x} + \boldsymbol{\omega}_T + \varepsilon_T \end{cases}$$

$$\begin{cases} \text{negotiated settlement} & : \log(t_S) = \beta_{S0} + \boldsymbol{\beta}_{S1}^\top \mathbf{x} + \boldsymbol{\delta}_S + \nu_S \\ \text{trial} & : h = \log(t_S) - \log(t_T) = \beta_{T0} + \boldsymbol{\beta}_{T1}^\top \mathbf{x} + \boldsymbol{\delta}_T + \nu_T \end{cases}$$

Regression Table Output

| | Dependent variable: | | | | |
|-----------------------------|---------------------|---------------------|-----------------------|---------------------|---------------------|
| | Procedure | log(Amount) | log(Length Procedure) | Time difference | |
| | Probit | Compromise | Judicial | Compromise | |
| | (1) | (2) | (3) | (4) | (5) |
| Intercept | 282.07*** | -260.90*** | -64.27*** | 20.15*** | -13.19*** |
| Court Location | | | | See Table (III.5) | |
| Time Difference | -0.31*** (0.06) | | | | |
| log(Settlement date) | -0.08*** (0.02) | | | | |
| log(Amount) diff. | 0.26*** (0.04) | | | | |
| log(Amount) diff. (+) | -0.36*** (0.06) | | | | |
| Male | 0.001 (0.02) | 0.06*** (0.002) | 0.05*** (0.012) | -0.01*** (0.002) | 0.001 (0.009) |
| Age 26-65 (ref: 0-25) | -0.01 (0.02) | 0.08*** (0.003) | 0.10*** (0.013) | -0.04*** (0.002) | 0.07*** (0.001) |
| Age 65+ | -0.42*** (0.03) | 0.40*** (0.011) | 0.11*** (0.021) | -0.18*** (0.006) | 0.11*** (0.017) |
| No details (ref: Driver) | 0.42*** (0.03) | -0.16*** (0.015) | 0.10*** (0.015) | 0.002 (0.005) | 0.21*** (0.014) |
| Passenger | -0.13*** (0.03) | 0.18*** (0.005) | -0.01 (0.019) | 0.01*** (0.003) | 0.04** (0.014) |
| Biker | 0.13** (0.05) | 0.03*** (0.007) | 0.12*** (0.03) | 0.08*** (0.005) | 0.01 (0.023) |
| Pedestrian | 0.34*** (0.03) | -0.05*** (0.009) | 0.09*** (0.02) | 0.08*** (0.006) | 0.01 (0.015) |
| IPP 26-70 (ref: 0-25) | -0.30*** (0.05) | 1.24*** (0.014) | 0.93*** (0.027) | 0.16*** (0.009) | -0.12*** (0.018) |
| IPP 70+ | -0.81*** (0.13) | 2.51*** (0.04) | 2.04*** (0.01) | 0.30*** (0.025) | -0.21*** (0.043) |
| Degree of Suffering | 0.41*** (0.01) | 0.37*** (0.01) | 0.62** (0.01) | 0.07*** (0.004) | -0.06*** (0.008) |
| log(Length Hospitalization) | 0.21*** (0.01) | 0.06*** (0.006) | 0.16*** (0.007) | 0.06*** (0.003) | -0.06*** (0.006) |
| log(Length Recovery) | 0.23*** (0.02) | 0.08*** (0.005) | 0.25** (0.009) | 0.39*** (0.002) | -0.11*** (0.002) |
| log(Length Incapacity) | 0.02*** (0.005) | 0.07*** (0.001) | 0.09*** (0.003) | 0.0004 (0.0006) | -0.004* (0.002) |
| Year of Accident | -0.14*** (0.003) | 0.14*** (0.003) | 0.04*** (0.003) | -0.01*** (0.003) | 0.01*** (0.007) |
| Salary | 0.18*** (0.02) | | | | |
| IMR0 | | 1.60*** (0.054) | | 0.07** (0.028) | |
| IMR1 | | | -0.32** (0.135) | | 0.63*** (0.096) |
| Observations | 256 469 | 243 465 | 13 004 | 243 465 | 13 004 |
| R ² | 0.7317 | 0.7551 | 0.411 | 0.411 | 0.107 |
| Adjusted R ² | 0.7316 | 0.7542 | 0.4109 | 0.4109 | 0.104 |
| Log Likelihood | -45 234 | | | | |
| Akaike Inf. Crit. | 90 564 | | | | |
| Residual Std. Error | 0.54 | 0.63 | 0.45 | 0.48 | |
| F Statistic | 15 434 *** | 929.1*** | 3951*** | 36.09*** | |

Note:

*p<0.1; **p<0.05; ***p<0.01

| | (1) | (2) | (3) | (4) | (5) |
|-----------------|---------------------|---------------------|--------------------|---------------------|---------------------|
| Agen | 0.02 (0.082) | -0.01 (0.058) | -0.002 (0.042) | -0.03*** (0.008) | 0.05 (0.035) |
| Aix-en-Provence | 0.52*** (0.018) | -0.39*** (0.108) | -0.06** (0.015) | 0.002 (0.017) | -0.10*** (0.013) |
| Amiens | -0.05 (0.064) | 0.10** (0.044) | 0.01 (0.035) | 0.03*** (0.007) | -0.02 (0.03) |
| Angers | -0.03 (0.077) | 0.10** (0.053) | 0.09** (0.046) | -0.04*** (0.008) | 0.06** (0.031) |
| Besançon | -0.07 (0.073) | 0.12** (0.051) | 0.01 (0.043) | 0.04*** (0.008) | -0.04 (0.033) |
| Bordeaux | -0.05 (0.048) | 0.05 (0.035) | 0.13*** (0.028) | -0.02*** (0.005) | 0.03 (0.023) |
| Bourges | -0.03 (0.098) | 0.11 (0.068) | 0.06 (0.056) | -0.07*** (0.011) | 0.03 (0.042) |
| Caen | 0.12* (0.06) | -0.03 (0.048) | 0.10*** (0.035) | 0.0002 (0.008) | -0.06** (0.029) |
| Chambéry | -0.07 (0.074) | 0.05 (0.054) | -0.03 (0.047) | -0.04*** (0.008) | 0.08** (0.033) |
| Colmar | -0.11 (0.081) | 0.17*** (0.043) | 0.05 (0.039) | 0.03*** (0.009) | 0.09** (0.038) |
| Dijon | -0.30*** (0.067) | 0.21*** (0.074) | -0.02 (0.045) | -0.03*** (0.012) | 0.03 (0.032) |
| Douai | -0.06 (0.048) | 0.08** (0.035) | 0.01 (0.027) | 0.04*** (0.006) | 0.03 (0.022) |
| Grenoble | -0.40*** (0.066) | 0.23*** (0.043) | -0.09** (0.014) | -0.03*** (0.01) | 0.08** (0.031) |
| Limoges | -0.23** (0.053) | 0.17** (0.082) | 0.04 (0.058) | -0.10*** (0.012) | 0.08* (0.048) |
| Lyon | -0.29*** (0.043) | 0.17*** (0.061) | -0.04 (0.026) | 0.03*** (0.009) | -0.03 (0.021) |
| Metz | 0.05 (0.075) | 0.08 (0.052) | 0.08 (0.044) | -0.01 (0.009) | 0.02 (0.044) |
| Montpellier | -0.07 (0.053) | 0.12*** (0.041) | 0.05* (0.03) | 0.004 (0.006) | 0.04* (0.025) |
| Nancy | 0.15** (0.065) | -0.02 (0.055) | 0.13*** (0.038) | -0.01 (0.009) | -0.07** (0.031) |
| Nîmes | 0.02 (0.054) | -0.01 (0.037) | -0.04 (0.032) | -0.04 (0.005) | 0.02 (0.026) |
| Orléans | -0.60*** (0.085) | 0.33*** (0.126) | -0.07 (0.053) | 0.004 (0.02) | 0.01 (0.043) |
| Paris | -0.12*** (0.026) | 0.08** (0.035) | 0.05*** (0.017) | 0.08*** (0.006) | 0.05*** (0.013) |
| Pau | 0.09 (0.06) | -0.10** (0.044) | 0.01 (0.039) | -0.09*** (0.007) | 0.05* (0.029) |
| Poitiers | -0.14* (0.07) | 0.15*** (0.053) | 0.09** (0.044) | -0.03*** (0.008) | 0.01 (0.029) |
| Reims | -0.10 (0.082) | 0.11* (0.059) | -0.04 (0.055) | -0.04*** (0.009) | 0.01 (0.039) |
| Rennes | -0.40*** (0.042) | 0.25*** (0.085) | 0.003 (0.028) | -0.05*** (0.013) | 0.07*** (0.021) |
| Riom | 0.16** (0.067) | -0.06 (0.057) | 0.04 (0.04) | -0.04*** (0.01) | -0.04* (0.027) |
| Rouen | -0.08 (0.06) | 0.08* (0.045) | -0.02 (0.029) | 0.03*** (0.007) | -0.003 (0.026) |
| Toulouse | -0.35*** (0.05) | 0.21*** (0.078) | -0.04 (0.034) | -0.06*** (0.012) | 0.02 (0.023) |
| Versailles | -0.14*** (0.052) | 0.06 (0.046) | 0.06* (0.035) | 0.03*** (0.007) | 0.01 (0.025) |

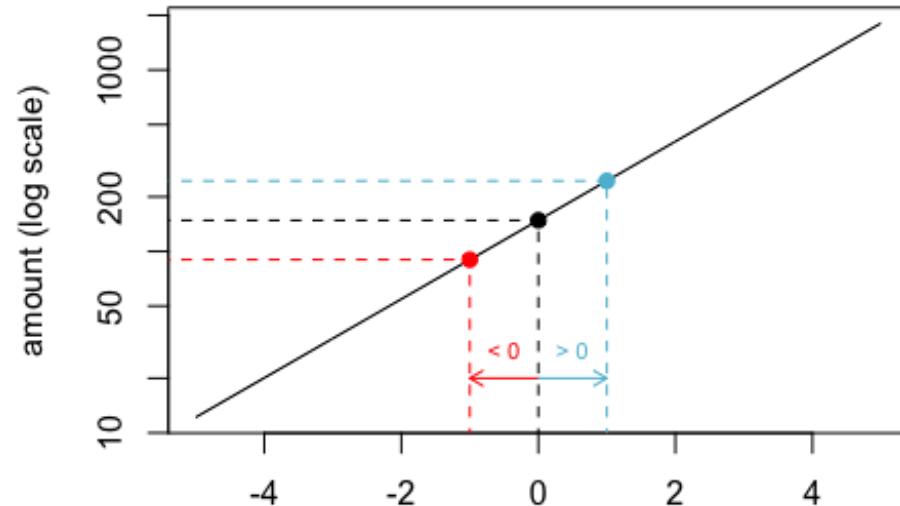
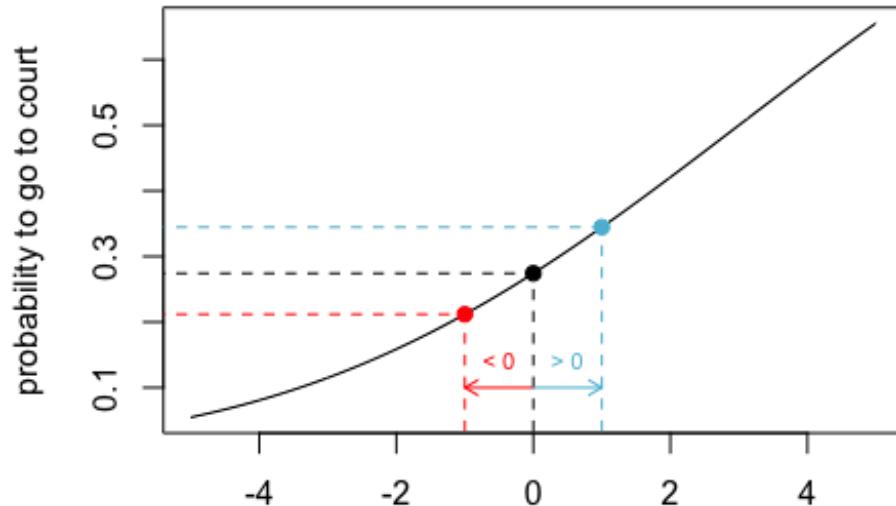
Note:

*p<0.1; **p<0.05; ***p<0.01

The Spatial Component

La variable spatiale est un facteur (centrée sur "France entière")

$$\begin{cases} \mathbb{P}[\text{court}] = H(\dots + \bar{\alpha} + \alpha_R \mathbf{1}_{\text{Rennes}} + \alpha_N \mathbf{1}_{\text{Nice}} + \dots) \\ \mathbb{E}[\log y_S] = \dots + \bar{\beta} + \beta_R \mathbf{1}_{\text{Rennes}} + \beta_N \mathbf{1}_{\text{Nice}} + \dots \end{cases}$$

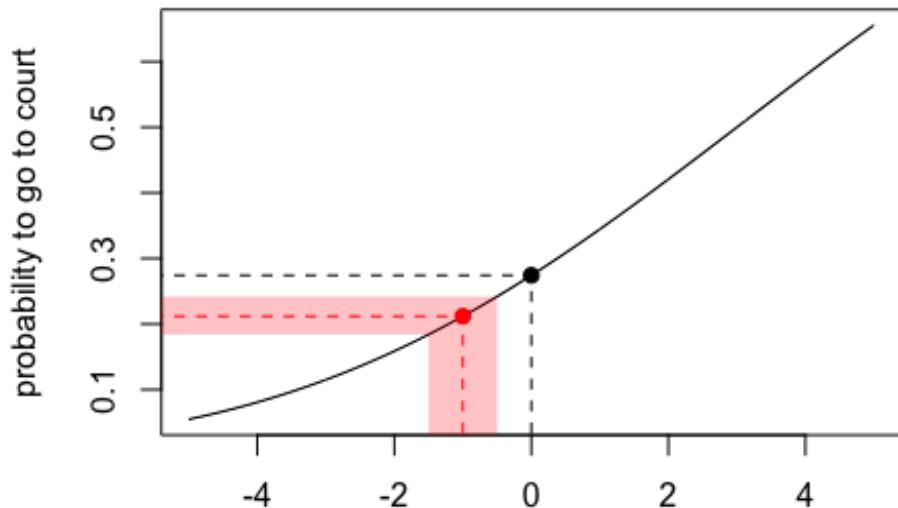
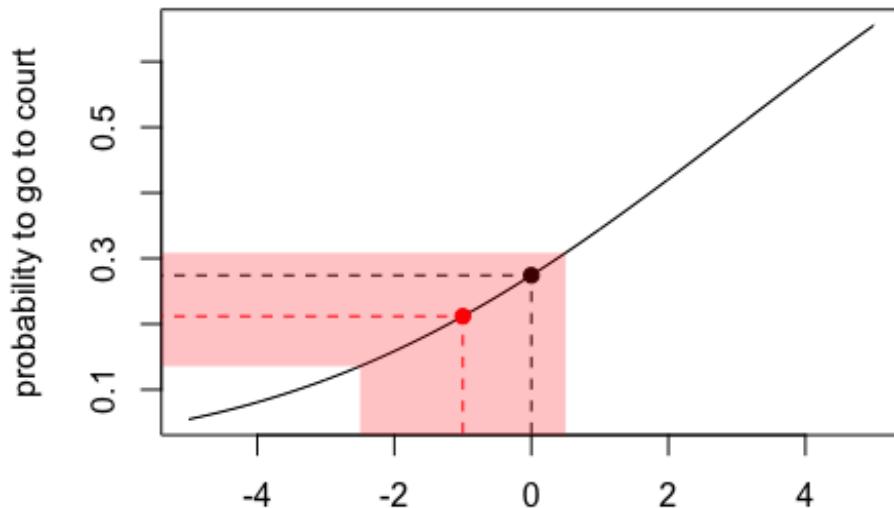


Interprétation *ceteris paribus sic stantibus*, toutes choses étant égales par ailleurs

The Spatial Component

Le volume de données a un impact (direct) sur l'intervalle de confiance

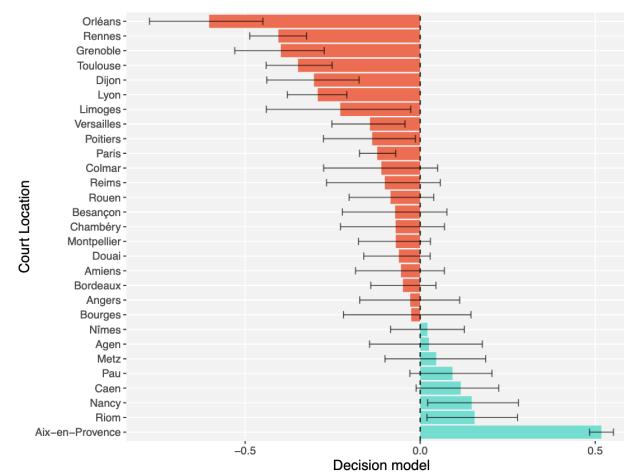
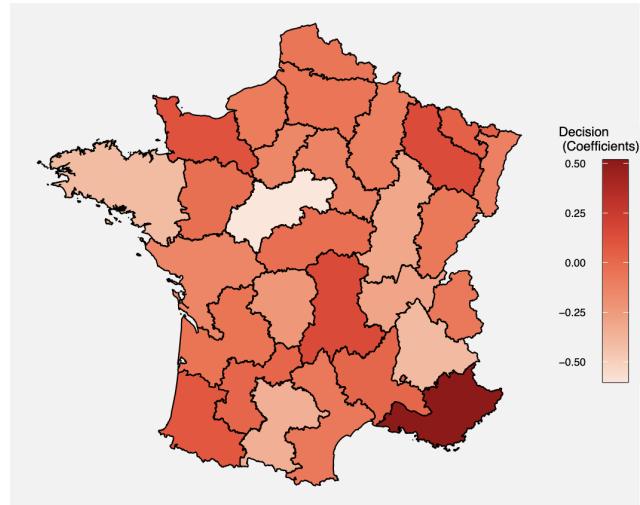
$$\begin{cases} \mathbb{P}[\text{court}] = H(\dots + \bar{\alpha} + \alpha_R \mathbf{1}_{\text{Rennes}} + \alpha_N \mathbf{1}_{\text{Nice}} + \dots) \\ \mathbb{E}[\log y_S] = \dots + \bar{\beta} + \beta_R \mathbf{1}_{\text{Rennes}} + \beta_N \mathbf{1}_{\text{Nice}} + \dots \end{cases}$$



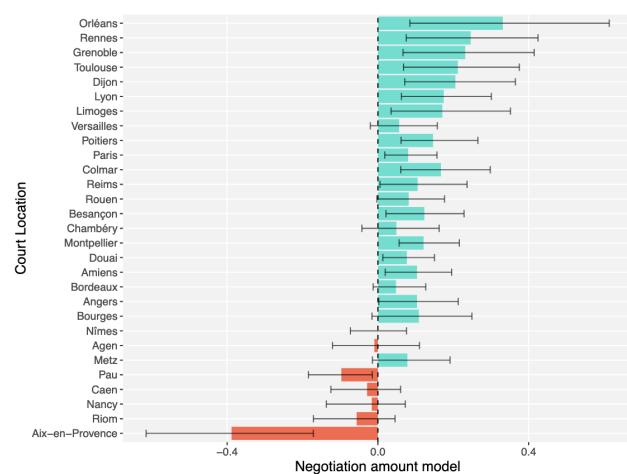
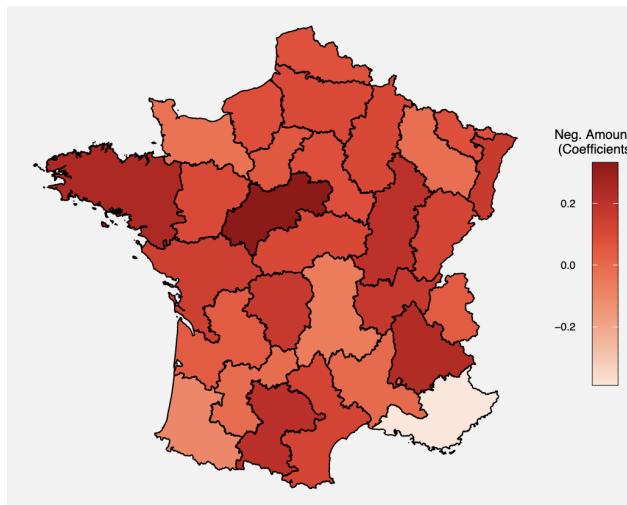
Interprétation *ceteris paribus sic stantibus*, toutes choses étant égales par ailleurs

The Spatial Component

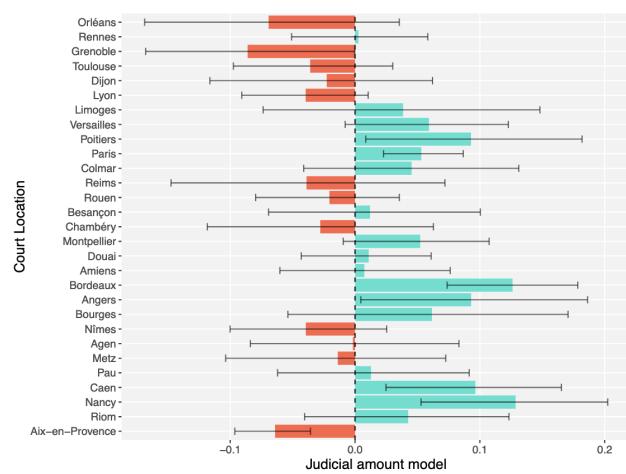
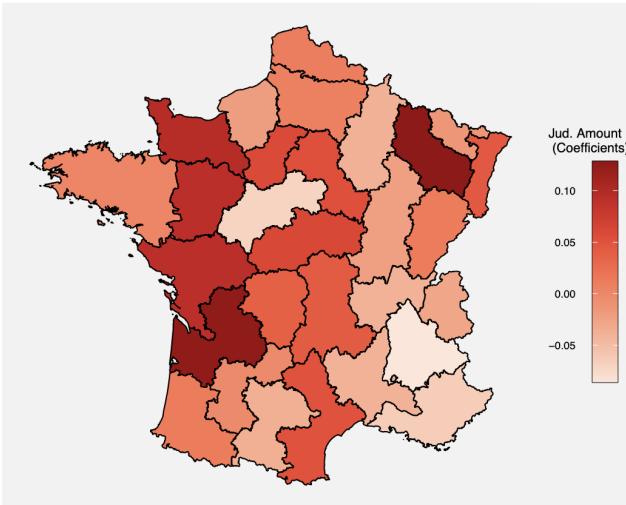
decision to go to court



amount y_S

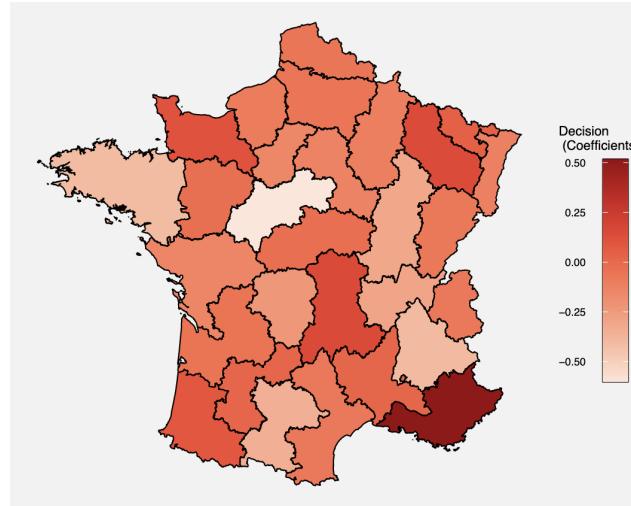


amount y_T

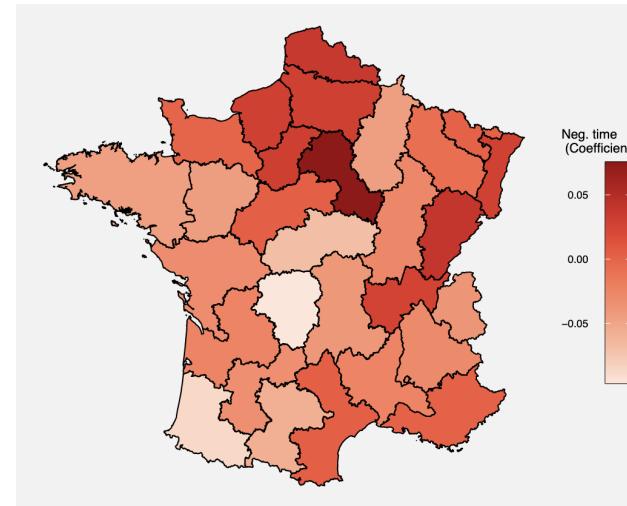


The Spatial Component

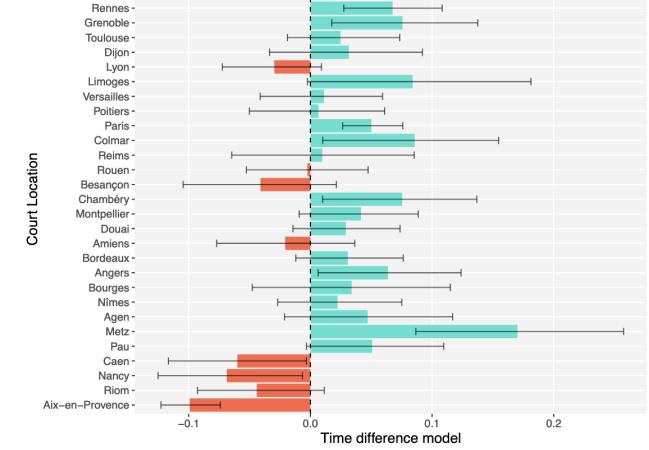
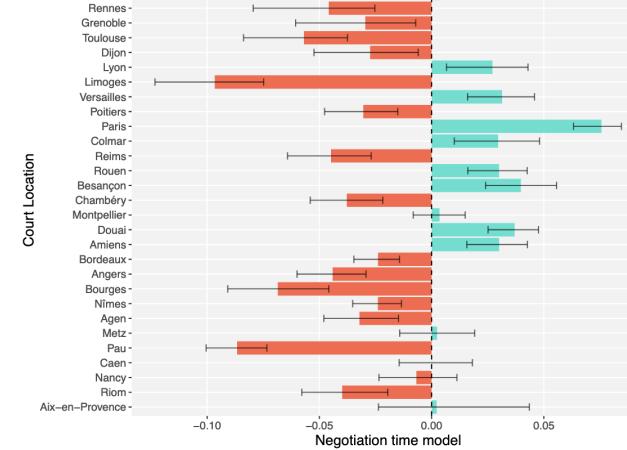
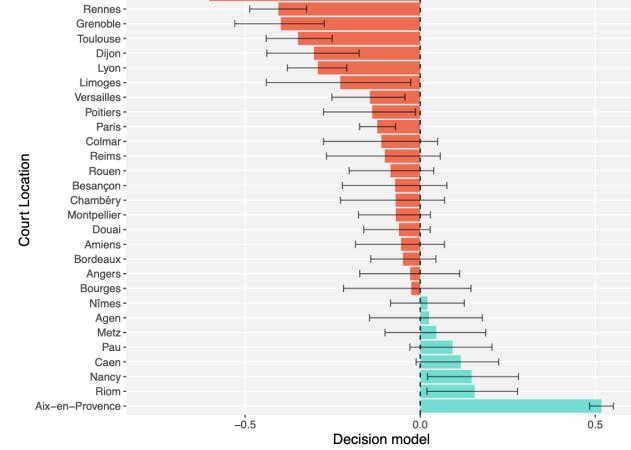
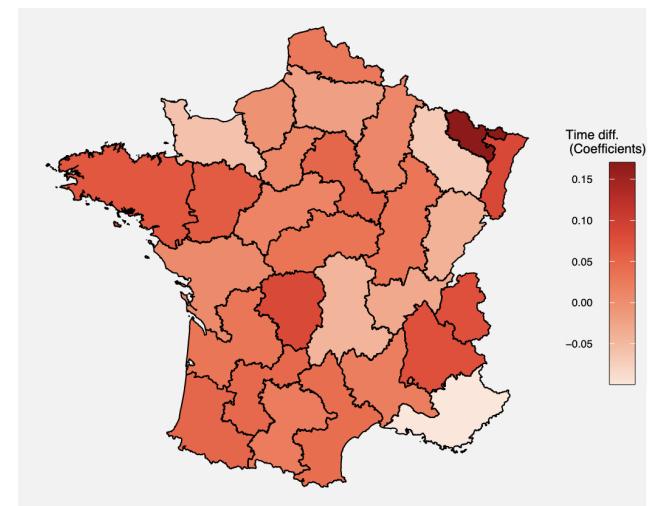
decision to go to court



time t_S



time h



Rennes vs. Aix-en-Provence: Temporal Evolution

