

When in Rome... do less knowledgeable judges mimic their peers?*

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Abstract

This paper examines the effect of ambiguity on judicial decisions and how judges anchor their decisions on their peers' judgments. We also show that this effect is mitigated the more knowledgeable the judge is in a particular subject, which is consistent with the comparative ignorance hypothesis. We profit from the migration of judges between different judiciary districts to estimate how their writing and substantive judicial decisions change when they have different colleagues. The study focuses on health litigation cases from 2011 to 2022, in the first instance of São Paulo State Court, Brazil, which allows for a clean control of different subjects. The findings indicate that judges change their pattern of decision when they migrate to a new district court, becoming more similar to their new peers and more dissimilar to their former peers. The effect of anchoring decisions on peers is mitigated as judges become more experienced in a particular subject. The results of the study have important implications for the design of judicial institutions to preserve independent judgments and the benefits of aggregating different perspectives on a subject, also known as the "wisdom of crowds."

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1 Introduction

Judges typically decide based on few and not always reliable facts, which makes judicial decisions particularly prone to ambiguity (Simon, 2004; Harel and Segal, 1999; Chen and Zang, 2021; Kahneman et al., 2021). But how this ambiguous setting affects judicial decisions? In this paper, we show that judges anchor their decisions on their peers’ judgment and that this effect is mitigated the more knowledgeable is a judge in a particular subject, which is consistent with the comparative ignorance hypothesis (Fox and Tversky, 1995). This result has important implications for the design of judicial institutions to preserve independent judgments and, as a consequence, the benefits from the aggregation of different perspectives on a subject, also known as the ‘wisdom of crowds’ (Vul and Pashler, 2008; van Dijk et al., 2014; Kahneman et al., 2021).

It is already well-known that judicial decisions are subject to bias. The judicial behavior literature is prolific in studies that identify gender, racial or political bias (Boyd et al., 2010; Chen et al., 2022; Engel, 2022; Erikson, 2022). There is also extensive experimental literature on how people react to ambiguity, the majority of it based on a canonical experiment in which participants choose between lotteries with known or unknown odds (Fox and Tversky, 1995). However, the literature on how judges behave in an ambiguous setting is still underdeveloped (Epstein et al., 2013; Engel, 2022)

Most judicial decisions require the application of the law – generic by nature – to concrete cases, which demands the appraisal of facts and how to interpret the law in different contexts. Except for extremely unique cases, judicial decisions are also comparative, as several other judges may face similar cases in lower courts; and a panel of judges revises lower courts’ decisions in upper courts. As judicial decisions are comparative and subject to ambiguity, it is expected that judges will be averse to ambiguity; moreover, the less knowledgeable is a judge in a particular subject, the more averse to ambiguity she will be, what became known as the comparative ignorance hypothesis (Fox and Tversky, 1995). Arguably, ambiguity aversion in judicial decisions may take numerous forms, such as bias towards acquittal in criminal cases. In this paper, we investigate if judges anchor their decisions on their peers’ judgment and, following the comparative ignorance hypothesis if this effect is mitigated by the judge’s experience in a specific subject.

To analyze the effect of peers on judges’ decisions we profit from the migration of judges between different judiciary districts in the first instance of Sao Paulo State Court, Brazil. We

compare the writing and the substantive judicial decision of a migrating judge with the ones by judges that were former peers, in the previous judicial district, and judges that became peers in the current district. Taking the median text of their peers as a reference point, it is possible to estimate how judges change their decision due to changes in who are their judicial district peers. It is important to note that we are not estimating the effect of peers in a panel of judges, a topic already discussed in previous articles (Boyd et al., 2010; de Mendonça Lopes, 2019). Decisions in the court of first instance are taken by a single judge that shares the same district with other judges (except for single-judge districts). As a consequence, issues related to strategic behavior or dissent aversion, typical of panels of judges, are intentionally excluded from our study.

We focus on judicial procedures related to health litigation, from 2011 to 2022, which are numerous and allow for a clean control of different subjects. All of the judicial districts and migrating judges from our database had to decide on health-related cases, which is the most frequent type of litigation in Brazilian State Courts (Ferraz, 2010; Azevedo et al., 2019). In a typical health litigation case, a plaintiff, usually a person or a group of people, demands health insurance companies or public authorities to provide different types of health treatments, which are classified as different subjects (e.g. prescription drugs or access to hospital beds).

Our findings show that judges change their pattern of decision when they migrate to a new district court. The judicial decisions written by migrating judges become more similar to their new peers (judges from their current judicial district) and more dissimilar to their former peers (judges from their previous district). Results are robust to different specifications and additional exercises to address some possible concerns, such as reverse causality or social pressure. On average, the writing of a migrating judge becomes 25.7% more dissimilar to the writing of her/his former peers and 2.5% more similar to the writing of her/his current peers. As for the similarity of the substantive decision (pro, against, or partially pro plaintiffs), the distance between the average decision of a particular judge and her/his former peers increases by 17.7% after the migration. We do not find any effect concerning the current peers regarding the substantive decision.

The effect of anchoring decisions on their peers is mitigated as a judge becomes more experienced in a particular subject. More knowledgeable migrating judges write and decide more dissimilar than their current peers. This finding is consistent with the comparative ignorance hypothesis, which implies that ambiguity aversion is more salient when people are confronted

with their own ignorance about a subject. In addition, our findings show that ambiguity aversion manifests in judicial behavior by anchoring judges' decisions on their peers.

We also address three possible concerns regarding our empirical strategy. First, to rule out reverse causality, we show that the judge's migration, although not random, is not correlated with the writing or decision pattern of judges in the recipient judicial district. In other words, there is no indication that a judge chooses a more similar judicial district when they migrate. Qualitative analysis and interviews also indicate that judges' migration in first-instance courts is typically a career path rather than a choice for particular judicial districts. Second, when a judge migrates to a new district, she/he may inherit the staff of a former judge in that same district. As the staff may be in charge of writing pieces of the judicial decision, this fact could explain the change in the judicial decisions of a migrating judge. This effect though should not last for long. By analyzing the dynamic effects of migration, we show that this is not the case. The more familiar a judge is with her/his new peers, the more similar are her/his decisions.

A third and last concern is about the mechanism that explains the observed behavior. The evidence shows that when in a district, judges do as their peers in that district do. But is this a consequence of ambiguity aversion or just social pressure that leads to conformity? Judges not only share the judicial district but, as it is defined by a geographic area, they may share the same club or other social groups that could provide different sorts of channels for social pressure. The analysis of dynamic effects helps to address this concern and provides evidence that mainly supports the ambiguity aversion hypothesis.

Our findings have implications for the design of judicial institutions. One important feature of the judiciary, with monocratic decisions in lower courts, by autonomous judges, subject to appeals to the upper courts, is the aggregation of interpretations, allowing for the 'wisdom of crowds' (in the judicial case, a 'crowd' of expert judges). The 'when in Rome' effect reduces the value of autonomous decisions, since they present a bias towards similarity. The results suggest that specialized courts would mitigate this problem since they allow for the accumulation of expertise in a few subjects. As more knowledgeable judges take more independent (or dissimilar) decisions, the wisdom of crowds would be preserved. This paper is organized as follows. The next section presents the related literature to underline the paper's main contributions and develops the hypotheses to be tested on judicial decisions. Section 3 presents the data and our empirical strategy. Results are presented in Section 4, followed by final remarks in Section 5.

2 Related Literature

Judicial decisions are subject to errors and bias. This fact is at odds with the normative assessment of what one should expect from a fair judgment, such as impartiality, coherence, and the restriction to the elements explicitly brought to the case (Kahneman et al., 2021).

Several types of judicial bias have already been documented in recent and prolific literature. Most of the research on judicial behavior may be divided into two branches. The first assumes unconstrained rationality and strategic interactions, following the standard rational choice model, in which preferences are given and judges evaluate the likely outcome of alternative actions; sometimes also taking into account the strategic responses of other judges, the court of appeals, lawyers and other actors that may affect their payoffs (Epstein et al., 2013; Epstein and Weinshall, 2021). For instance, Epstein et al. (2013) (359) show that judges change their decisions to increase the likelihood of being promoted to higher courts; more specifically, when judges are in a career stage to be considered for promotion (“auditioners”), they bias their decisions towards the preference of those actors who may affect their appointment to the higher court. Also, judges may change their voting pattern to avoid dissent, which is costly due to reputational concerns and workload (de Mendonça Lopes, 2019). Judges may be also sensitive to social pressure which helps to explain why they tend to favor their own gender and ethnic group (Chen et al., 2022; Erikson, 2022). Moreover, judges decide differently according to the gender composition in the panel to which they belong (Boyd et al., 2010), which is again consistent with the idea of a rational choice to respond to social pressure.

The second branch is mainly empirical and largely atheoretical or based on non-rational models. For instance, judicial decisions are sensitive to all sorts of things that affect judges’ emotional status, such as the result of sports events (Mocan and Eren, 2017) or the weather (Chen and Loecher, 2019). Sometimes the studies do not provide the underlying mechanism for their (quite unexpected) findings, as in Heyes and Saberian (2019) who found that the local temperature is correlated to the decision to grant or not asylum to illegal immigrants; and Chen and Philippe (2019) who show that judges are more lenient when the trial is on the defendant’s birthday. Taken altogether, there is plenty of evidence that most trials do not seem to conform to an ideal fair judgment.

Interestingly, not much of the literature is explicitly based on a proper theoretical represen-

tation of judicial decisions. The setting of judicial decision-making is typically ambiguous in several dimensions. Judges have to rely on an incomplete and not always precise set of facts. When deciding, judges face uncertainty about how to apply the rules of judicial adjudication to concrete cases and uncertainty about the behavior of other judicial adjudicators with whom they have to interact (Chen and Zang, 2021). As stated by Kahneman et al. (2021) p.42, “a matter of judgment is one with some uncertainty about the answer and where we allow for the possibility that reasonable and competent people might disagree”. The uncertainty in judicial decisions is so ubiquitous that they even play a role in the deterrence of potential offenders, as shown by Harel and Segal (1999).

Judicial decisions are also mostly comparative. The organization of the judiciary – in a design consistent with the principle of the ‘wisdom of crowds’ – comprises multiple judges in the first instance that autonomously decide (sometimes similar) cases. The decision of a single judge may then be appealed to a higher court, where it will be appraised by a panel of judges¹. Therefore, a judge is aware that other judges face similar cases and that their decisions will be evaluated by a panel of more experienced judges.

Since judicial decisions are subject to ambiguity and comparative, one should inquire what is its expected effect on judicial behavior. The literature on decision-making under ambiguity offers some first insights on this venue. Theoretical models, as in Klibanoff et al. (2005) and Nishimura and Ozaki (2006), separate environmental uncertainty (i.e. the lack of objective knowledge about events and their probability distribution) from the subjective preference relative to ambiguity (Machina and Siniscalchi, 2014). Those theoretical models were tested empirically by observing, through experiments, how each person reacts to uncertainty and how they fit in each model (Halevy, 2007). Apart from the study of ambiguity itself, the literature has also evolved to incorporate ambiguity in other fields of economics: in industrial organization, for instance, Eichberger et al. (2009) study how firms cooperate or compete given the ambiguity level of the demand; in finance, Friberg and Seiler (2017) observes the impact of ambiguity of demand on firms’ financial decisions.

The main reference from which we guide our empirical analysis is Fox and Tversky (1995). In a series of six studies, based on the original experiment proposed by Ellsberg (1961) of choices

¹In some jurisdictions, there is an additional level for the court of appeals aiming to consolidate the jurisprudence about recurrent issues.

between bets with clear or vague prospects, they observe that ambiguity aversion is relevant when people are confronted, through comparison, with their own ignorance in a particular subject. The comparison that triggers ambiguity aversion may be due to different alternatives with clear and vague prospects, as in Ellsberg (1961), to different alternatives for which the same individual is more or less knowledgeable, or when people have to decide together with individuals that may be perceived as more knowledgeable than themselves. Similar results were also found by CHOW and SARIN (2001) and Du and Budescu (2005).

Given the driving forces of their findings, comparison, and knowledge (or ignorance), Fox and Tversky (1995) named it ‘*comparative ignorance hypothesis*’. In short, a comparison is a required condition as “ambiguity aversion is driven primarily by a comparison between events or between individuals, and it is greatly reduced or eliminated in the absence of such comparison” (Fox and Tversky, 1995) p.539. Moreover, knowledge is an important mediator of ambiguity aversion, since it is brought to mind “only through a comparison with superior knowledge about other domains or of other people.” (Fox and Tversky, 1995) p.540.

It is worth it mentioning Curley et al. (1986) who show that ambiguity aversion is enhanced when people anticipate that their decision will be evaluated by their peers. The design of the judiciary is such that decisions are mostly comparative and in lower instances always subject to review by (more senior) peers. For both reasons, one should expect significant ambiguity aversion.

The empirical literature on ambiguity aversion and behavior regularities has already addressed this issue. Muchnik et al. (2013) studies herd behavior and conformity to peers, observing how each person evaluates a subject, before and after knowing her peer’s evaluation. Lorenz et al. (2011) studies social influences, observing how each person changes her guess about a subject before and after discussing the subject with her peers. Also, Dimant (2015) and Gaviria and Raphael (2016) observe how people react to peers’ influences in unethical actions.

To the best of our knowledge, there are no empirical studies on ambiguity aversion and implied behavior in the judiciary, despite the features described in the previous paragraphs that suggest that judicial decisions are particularly prone to ambiguity aversion. The remaining question is how ambiguity aversion manifests itself in judicial decisions, which differ in essence from the choice between bets with more or less vague prospects.

Judges do not choose cases. Cases are randomly assigned to judges within a court. For that

reason, ambiguity cannot be avoided by the choice of less vague alternatives (cases). However, judges that are ambiguity averse may rely more on their colleagues' decisions in similar cases, both on the substantive decision and on how they write (facts brought to the case, legal references, and reasoning). That kind of reaction to ambiguity has already been documented in contexts different from the judiciary, such as in politics (Macy et al., 2019) and in the markets Salganik and Watts (2008) in what the literature calls "opinion cascades". We submit that it is rational for a judge to follow other judges when they are not familiar with a particular subject, which leads us to the first hypothesis to be empirically investigated.

Hypothesis 1 (H1). *When judges move to a new court, they will change their decision pattern away from their previous fellow judges and closer to the new ones.*

It is important to acknowledge that the same implied behavior expressed by hypothesis 1 is consistent with an alternative explanation based on social influence bias (Muchnik et al., 2013). As judges share, beyond the court facilities, the same local community, such as churches, clubs, etc., their social interaction may be a mechanism of conformity that could translate to their judicial decisions. Our empirical strategy address this issue with some tests to rule out this alternative explanation.

Following the comparative ignorance hypothesis, by Fox and Tversky (1995), we expect that the more knowledgeable is a judge in a particular subject, the less she or he will rely on their peers' decisions. This statement is grounded on the idea that ambiguity aversion is triggered by the perception of incompetence or ignorance. Hence, more knowledgeable judges should be less averse to ambiguity, and less knowledgeable judges more averse to it. That takes us to our second hypothesis.

Hypothesis 2 (H2). *Judges that are less familiar with a particular subject will approximate more their decision pattern to what the other judges in their court do.*

It is important to note that the above hypotheses do not relate to the judicial behavior in a panel of judges, as already addressed by extensive literature. As a non-comprehensive illustration Revesz (1997). Farhang and Wawro (2004), Sunstein et al. (2004), Peresie (2005), Kastellec (2007), Lorenz et al. (2011), Boyd et al. (2010) and Sunstein et al. (2017) studied the panel composition in appellation courts and its effects in the decision outcome, varying the characteristics of the panel composition as gender, ideology and vote order. In the studies

above, the eventual effect of ambiguity aversion, as proposed in our hypotheses, would be likely entangled with strategic interaction and other aspects of group decision-making, such as aversion to dissent. For that reason, we focus on first-instance judicial decisions, where a single judge decides individually on cases assigned to her/him. Still, single judges share the court with other judges who may be taken as a reference for her/his decisions.

3 Data

The Brazilian judiciary is divided into two main branches, the state court, and the federal court. Each is composed of lower courts (*Primeira Instância*), where the decisions are taken by a single judge, appealation courts (*Segunda Instância*), where the lower courts' decisions are revised by a panel of judges, and higher courts, the Supreme Court (*Supremo Tribunal Federal*), which deals with constitutional cases, and the higher court of appeals (*Superior Tribunal de Justiça*). The peer effects have been studied in previous articles (Boyd et al., 2010; de Mendonça Lopes, 2019) more focused on appealation or higher courts, where the dynamic between judges is openly shown.

This study focuses on the lower courts' decisions in São Paulo State Court, Brazil, more specifically in health-related cases, observing the single judge's behavior during her period in each judiciary district. In a typical case, there is a person or group or person suing the health provider, the local government, or the health plan, to access treatment or receive products or medication. Normally, the same case covers many different claims and the judges may grant all or part of the claims or deny all.

The São Paulo State Court (*TJSP*) provides the data on lower courts' decisions since early 2000, with a case identification number, class, subject, judge, judiciary district, court, decision date, and the decision text. Since the dataset is more reliable in the last years, we focused the analysis on the cases from 2011 to 2022 in subjects related to health. In this timeframe, there are 99.762 cases, from 332 judiciary districts, in 39 subjects and taken by 973 judges. This dataset was gathered using a python-based script² that accesses the court website and goes page by page, storing the information above. It was identified through an information access law (*LAI*), the number of judges in each district, and separated them between single judges and multiple

²This script is identified as *sentencas_crawler*, available on www.github.com/henriqueyjw/judicial.behavior

judge districts. Among the 319 districts, 116 were single-judge districts with 15.390 cases, and 216 were multiple-judge districts with 71.231 cases. Table 1 presents all cases separated by the size of the judicial district and the number of judges migrating to those districts.

	Number of districts	Number of migrations	Number os cases
Single Judge District	116	752	15.390
Multi Judge District	216	2.659	71.231

Table 1: Database per size of the judicial district.

The identification strategy is based on the judge’s migration among districts, observing her behavior after a migration compared to her previous and current peers. Since the focus is peer effects, is not considered the migrations to single-judge districts. There are 3.413 migrations between judiciary districts or courts³, where 762 moved to a single-judge district and 2.661 to multiple judges.

The case outcomes were classified as granted (*concedido*), partially granted (*parcialmente concedido*), denied (*indeferido*), or extinct without result (*extinto*), based on the decision texts and using a python-based script⁴ that finds patterns of texts. This technique is called Regular Expression and is based on one or more patterns for each category. Among those 99.762 cases, 3.843 were not comparable, either because was the only case in the subject or districts or judge, then the analysis was built in a subset of 95.919 cases with the following results for each size of the county.

	Not granted	Partially granted	Granted	Exticted	No result	Total
Single Judge District	856	687	11.250	2.376	1.870	17.039
Multi Judge District	4.266	6.536	43.589	16.118	8.371	78.880

Table 2: Number of cases per size of the judicial district.

Textual analysis using computer-based estimations has been a prolific field in data science, with developments of simple classification models to organize e-mails as span or not span to complex models that generate texts such as ChatGPT. This field is called Natural Language Processing and the text treatment usually follows the same steps. First, it is removed the words that have no significance in the text, such as prepositions, articles, or connections, also are called

³For São Paulo metropolitan region, the cases are separated between the courts, since each one is far from the others geographically and the number of cases is comparable to other judiciary districts.

⁴This script is identified as `sentencas_classificacao_resultado`, available on www.github.com/henriqueyjw

stopwords. Second, all remaining words are transformed into their radical mode, changing words in plural or singular into the same radical. The third step is to transform this standardized dataset of texts into a numbered matrix, where each line represents a single text feature. In this third step, since the Portuguese language presents many expressions with two or more words and many synonyms for the same word, we opted to use a method called hashing vectorization, presented by Weinberger et al. (2009); Moody (1988), where each column represents a group of words that are commonly associated and is used the representation with single words, bigrams, and trigrams. The final matrix has 10.000 columns of groups of words and turned all texts in the dataset into comparable vectors of numbers.

4 Methodology

This study investigates two aspects of the judicial decision, how it is written and the substantive decision in favor or against the plaintiff. For the decision texts, we mapped all districts that a judge who has been a member and separated all her peers' decision texts in each subject. Then, for each district, the texts are separated by subject to find the median text of each subject as comparable information to the judge's decisions. The comparison between the judge's decisions texts and her peers' median decision is computed by the Euclidean distance of texts' vectors, using the transformation of the text into a vector of numbers. Figure 1 show the process in an example with two words.



Figure 1: Finding the median text by subject

The strategy to evaluate the substantive decision is similar. Cases are codified as 1 if the decision granted the plaintiff's request, 0 for cases partially granted, and -1 if the plaintiff's

request was denied. Then, we computed the average result for each subject and judge and for her peers' decisions. The comparison between the judge's average outcome and her peers' average outcome is computed by the absolute difference between them. Figure 2 indicates how is built the comparable average result for judges and her peers.

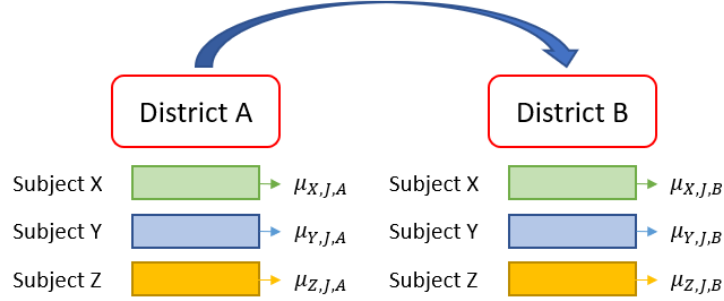


Figure 2: Defining the average result of judge J by subject and district

In Brazilian lower courts, a case is appraised by a single judge. Hence we do not expect strategic interaction such as already documented in a panel of judges, as already documented in previous studies (Boyd et al., 2010; de Mendonça Lopes, 2019) about courts of appeal and supreme courts.

To identify the effect of peers on judicial decisions, this paper analyzes the differences between the cases before and after the judge's migration from one district to another. In the dataset, is possible to map all judiciary districts that each judge passed in her career and the period that she stayed in each district. This information allows us to compare the difference in the judges' behavior in the new district, compared to the immediately previous district, and is captured in a variable hence called **migration**. For example, if a judge moves from district A to B and then to C, all her cases in district B and district C have the **migration** indication since those texts were written in districts different than the judge's original one, and all her cases in district A don't have the **migration** indication, because they were written in the judge's original district.

One can say that judges choose to change to judiciary districts where she has more similarities with the local judges, this concern may be interpreted as the reverse causality, which explains that the increase in text similarity after the migration is due to the judge objectively choosing a district which she has more similarities and not due the peers' effect. The dataset allows us to compare the judges' behavior in the current district and the next district and is captured in a variable hence called **before**. From our previous example, all her cases in district A and district B have the **before** indication since those texts were written in districts different than

the judge's last one, and all her cases in district C don't have the **before** indication because they were written in the judge's last district.

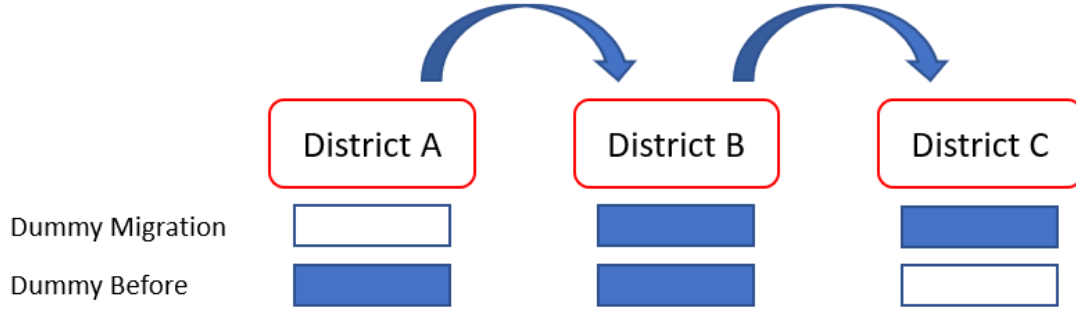


Figure 3: Defining the dummy migrations

In the Brazilian judiciary system, besides the specialized courts, normally a judge faces cases in many different subjects and is required to study and provide an outcome to them. Besides the judge's career and her past experiences in academics, is not easy to map the judge's experience in the subject. When a judge is writing a decision, she usually bases the outcome on some previous cases, items of the law, or any other regulation. It is plausible to assume that for each additional case in a specific subject, she accumulates more knowledge on cases related to that one, making the decision process less ambiguous. From this dataset, the effect of each additional case is mapped in a variable hence called **previous cases**. It maps the judges' knowledge on subjects related to health and captures the effect of each additional case on her behavior.

Another concern is that judges inherit the staff in the new district and the team may be responsible for the observed effects since they write part of the judiciary decision. This concern is because the local team is used to the local vocabulary, writing style, or most common references used in health-related cases. One way to address this concern is by observing the judge's behavior in different periods after migration, compared to her previous and current peers. Using the previous migration mapping, it is defined as the migration date the midterm between the last case in the previous district and the first case in the current district. Using the migration date, it is mapped all cases judged from **zero to 90 days**, **91 to 180 days**, and **more the 180 days** in the current judiciary district.

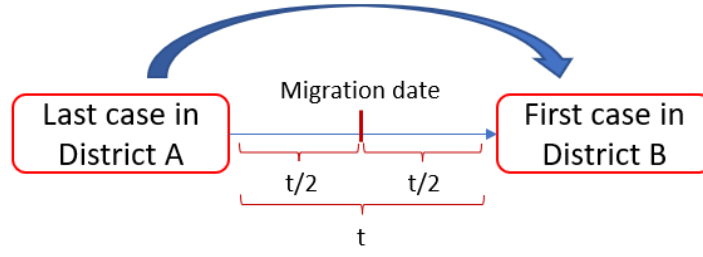


Figure 4: Defining the migration date

Based on the dataset and the variables presented, the judge's behavior is studied by two different OLS regressions, using controls as previous and current judicial districts, case class and subject, judge, and year. The explained variables are the difference between the judges' decision texts and her peers' median text, in equation 1, and the difference between the judges' average decision outcome and her peers' average outcome in equation 2

$$Text.Distance_i = \beta_1 Migration_i + \beta_2 Previous.Cases_i + X\beta + \varepsilon_i \quad (1)$$

$$Outcome.Distance_i = \beta_1 Migration_i + X\beta + \varepsilon_i \quad (2)$$

In the first hypothesis, the main variable of interest is **migration**, because it shows the change in the judges' behavior, where the baseline is her average behavior before the migration and the variable result is the behavior after the migration. In the second hypothesis, the primary variable of interest is **previous cases**, because it shows the impact of the increase in judges' knowledge of health-related cases on their behavior.

5 Results

For the estimation of writing similarity, we ran different specifications of an OLS regression (equation 1) using the judges, class, subject, year, and the judge's previous and current district as controls. Tables 3 and 4 present seven specifications with variations on the above controls, the preferable regression is the one with all controls, in the seventh column. As stated before, the dependent variable is the Euclidian distance between the judge's decision text and the median text in the same subject of other judges in the previous district (Table 3) and in the current district (Table 4), which indicates the similarity between both texts.

VARIABLES	Logit 1	Logit 2	Logit 3	Logit 4	Logit 5	Logit 6	Logit 7
Constant	1.190*** -0.0205	1.238*** -0.0216	1.365*** -0.0316	1.374*** -0.0313	1.137*** -0.0377	1.187*** -0.0376	1.437*** -0.0613
Previous Cases	4.64e-05*** -2.46E-06	4.63e-05*** -2.47E-06	2.97e-05*** -2.52E-06	3.00e-05*** -2.52E-06	4.59e-05*** -2.47E-06	4.52e-05*** -2.48E-06	2.85e-05*** -2.68E-06
Dummy Migration	0.239*** -0.00312	0.239*** -0.00309	0.213*** -0.00318	0.213*** -0.00315	0.262*** -0.00354	0.261*** -0.00351	0.223*** -0.00362
Observations	68,880	68,880	68,880	68,880	68,880	68,880	68,880
R-squared	0.449	0.464	0.479	0.495	0.467	0.483	0.511
Judge FE	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES
Subject FE	NO	YES	NO	YES	NO	YES	YES
Previous District FE	NO	NO	YES	YES	NO	NO	YES
Current District FE	NO	NO	NO	NO	YES	YES	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 3: Comparison of Judge's texts to her immediately previous district.

VARIABLES	Logit 1	Logit 2	Logit 3	Logit 4	Logit 5	Logit 6	Logit 7
Constant	0.884*** (0.0315)	0.863*** (0.0320)	0.733*** (0.0596)	0.715*** (0.0579)	0.778*** (0.0509)	0.757*** (0.0512)	0.736*** (0.0964)
Previous Cases	0.000183*** (3.28e-06)	0.000186*** (3.27e-06)	0.000168*** (4.45e-06)	0.000172*** (4.40e-06)	0.000191*** (3.43e-06)	0.000193*** (3.40e-06)	0.000177*** (4.52e-06)
Dummy Migration	-0.0253*** (0.00377)	-0.0243*** (0.00378)	-0.0188*** (0.00448)	-0.0196*** (0.00446)	-0.0234*** (0.00396)	-0.0218*** (0.00396)	-0.0222*** (0.00490)
Observations	77,467	77,467	77,467	77,467	77,467	77,467	77,467
R-squared	0.387	0.398	0.403	0.413	0.402	0.412	0.426
Judge FE	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES
Subject FE	NO	YES	NO	YES	NO	YES	YES
Previous District FE	NO	NO	YES	YES	NO	NO	YES
Current District FE	NO	NO	NO	NO	YES	YES	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 4: Comparison of Judge's texts to her current district.

The results in Tables 3 and 4 show that, when a judge migrates to a new district, her decision texts become more dissimilar from her former colleagues and more similar to her colleagues'

decisions in her current district, as predicted by hypothesis 1. Considering that, in our dataset, the average distance between the judge's decision text to her peers' ones is about 0.867, the migration to a new district is associated with an increase of 25.72% in the distance between the migrating judge and the text of her former peers, and to a decrease of 2.56% in the distance to the text of her current peers. In short, her writing becomes much more dissimilar to the writing of her colleagues at the previous district and slightly more similar to the writing of her current colleagues. increase in text similarity compared to the current district. Results are quite robust for every specification.

The results in Tables 3 and 4 also indicate that as a judge becomes more experienced in health-related cases, her writing becomes more dissimilar to the writing of her previous and current peers, as predicted in hypothesis 2. Considering that the average number of cases in our dataset is 100 and observing the coefficients in our preferable regression (column 7), an average judge has a net decrease in the similarity of 29.63% to her previous peers after a migration, while the similarity to her new peers almost vanished, increasing only 0.52%. Figure 5 presents the histogram with the number of cases per judge in the dataset.

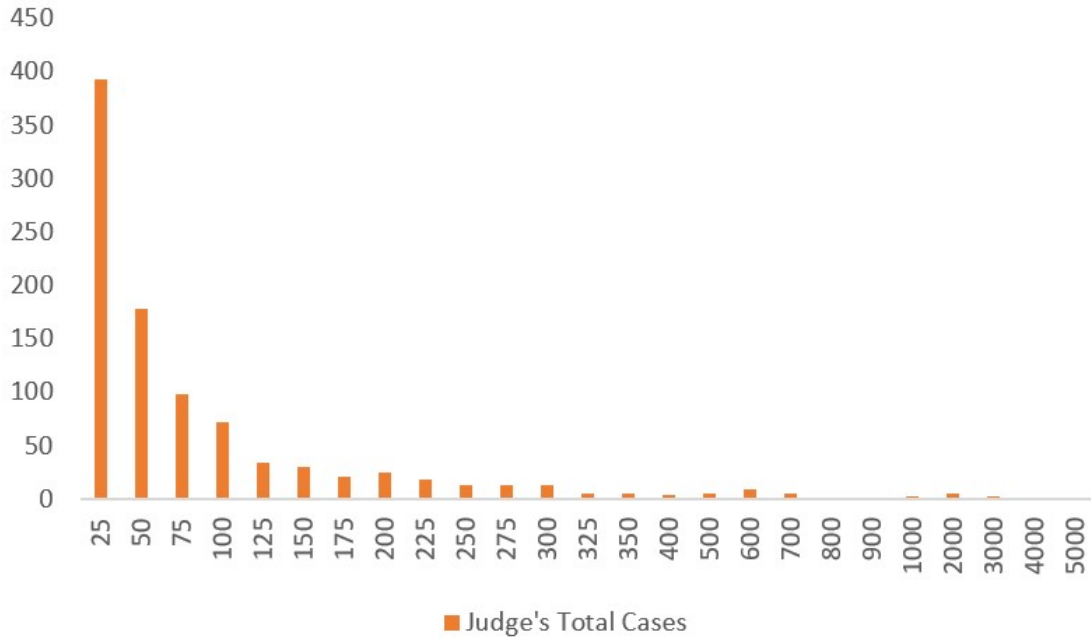


Figure 5: Frequency of total cases per judge

The migration to a new court affects not only the writing but also the substantive judicial decision. Using the same specifications above, we ran seven OLS regressions using the same controls, but now taking the dependent variable as the difference between the substantive decision

(in favor, partially in favor, or against the plaintiff) of a particular judge and that of her peers in the previous or current courts, as stated in equation 2. Again, the preferable regression is the seventh with all controls. Tables 5 and 6 present the results for each specification, comparing the migrating judge's decision with her former peers (Table 5) and with her current peers (Table 6).

VARIABLES	OLS 1	OLS 2	OLS 3	OLS 4	OLS 5	OLS 6	OLS 7
Constant	0.435**	0.699***	0.463	0.711**	0.51	0.769**	0.401
	-0.214	-0.201	-0.313	-0.283	-0.341	-0.318	-0.475
Dummy Migration	0.0686***	0.0591***	0.0707***	0.0633***	0.0774***	0.0638***	0.0656***
	-0.0158	-0.0156	-0.0166	-0.0165	-0.0181	-0.0179	-0.0193
Observations	5,366	5,366	5,366	5,366	5,366	5,366	5,366
R-squared	0.2	0.262	0.248	0.309	0.275	0.331	0.376
Judge FE	YES	YES	YES	YES	YES	YES	YES
Subject FE	NO	YES	NO	YES	NO	YES	YES
Previous District FE	NO	NO	YES	YES	NO	NO	YES
Current District FE	NO	NO	NO	NO	YES	YES	YES
Robust standard errors in parentheses							
*** p<0.01, ** p<0.05, * p<0.1							

Table 5: Comparison of Judge's case results to her immediately previous district.

VARIABLES	OLS 1	OLS 2	OLS 4	OLS 6	OLS 5	OLS 6	OLS 7
Constant	0.489**	0.632***	1.009***	0.468	0.306	0.468	0.861**
	-0.245	-0.219	-0.328	-0.299	-0.321	-0.299	-0.439
Dummy Migration	0.0274*	0.015	0.0287	0.0132	0.0221	0.0132	0.0265
	-0.0154	-0.0153	-0.0179	-0.0158	-0.0161	-0.0158	-0.0189
Observations	5,533	5,533	5,533	5,533	5,533	5,533	5,533
R-squared	0.221	0.274	0.318	0.353	0.308	0.353	0.389
Judge FE	YES	YES	YES	YES	YES	YES	YES
Subject FE	NO	YES	YES	YES	NO	YES	YES
Previous District FE	NO	NO	YES	NO	NO	NO	YES
Current District FE	NO	NO	NO	YES	YES	YES	YES
Robust standard errors in parentheses							
*** p<0.01, ** p<0.05, * p<0.1							

Table 6: Comparison of Judge’s case results to her current district.

The results in tables 5 and 6 show that the judge’s average outcome becomes less similar to her previous peers’ decisions after she moves to a new district, but there is no statistical effect in her outcome similarity to her current peers. Considering that, in our dataset, the average distance between the judge’s substantive decision and her peers’ is about 0.371, this change in behavior accounts for a 17.7% decrease in outcome similarity after a migration, in the preferable regression.

6 Possible Concerns and Discussion

The results presented so far are subject to at least three possible concerns. The first is reverse causality. As the migration of a judge is not random, it could be argued that a judge chooses to leave a district where she feels at odds with her peers and go to a district where judges would be more similar to her. Second, judges usually have a staff that supports them in several activities, including writing and discussing the case. As the staff does not follow the judge when she migrates to a new district, the results shown in the previous section could reflect a change in the staff, and not on the judge’s own writing. Third, the finding that judges mimic their peers is not only consistent with ambiguity aversion, as we claim, but also with a plausible

alternative explanation that social pressure drives judges' behavior towards conformity. Next, we provide some additional exercises to address these concerns and, hence, provide more robust support to our findings.

To rule out reverse causality, we investigated if judges might be choosing the next judicial district using proximity to their new peers as the main factor in their migration choice. For that we analyze the writing and substantive decisions of the migrating judges before the migration, measuring their similarity to their former and current peers. Based on the same dataset and equation 1, we ran seven OLS regressions using the case judge, class, subject, year, and the judge's current and next district as control. Tables 7 and 8 present the results respectively for the distance between the judge's decision text and the pre-migration and post-migration district median text.

VARIABLES	Logit 1	Logit 2	Logit 3	Logit 4	Logit 5	Logit 6	Logit 7
Constant	0.881*** -0.0314	0.858*** -0.032	0.757*** -0.0508	0.742*** -0.0511	0.736*** -0.0737	0.716*** -0.0736	0.340*** -0.102
Previous Cases	0.000184*** -3.29E-06	0.000187*** -3.27E-06	0.000192*** -3.44E-06	0.000194*** -3.41E-06	0.000173*** -4.80E-06	0.000179*** -4.74E-06	0.000182*** -4.78E-06
Dummy Before	-0.00918*** -0.00343	-0.00628* -0.00341	-0.0147*** -0.0036	-0.0120*** -0.00358	-0.0181*** -0.00427	-0.0160*** -0.00424	-0.0137*** -0.00474
Observations	77,247	77,247	77,247	77,247	77,247	77,247	77,247
R-squared	0.387	0.398	0.402	0.413	0.403	0.414	0.428
Year FE	YES	YES	YES	YES	YES	YES	YES
Subject FE	NO	YES	NO	YES	NO	YES	YES
Current Court FE	NO	NO	YES	YES	NO	NO	YES
Next Court FE	NO	NO	NO	NO	YES	YES	YES
Robust standard errors in parentheses							
*** p<0.01, ** p<0.05, * p<0.1							

Table 7: Comparison of Judge's texts to the pre-migration district.

VARIABLES	Logit 1	Logit 2	Logit 3	Logit 4	Logit 5	Logit 6	Logit 7
Constant	0.861*** -0.031	0.881*** -0.0304	0.886*** -0.0384	0.898*** -0.0378	0.845*** -0.0402	0.848*** -0.038	0.779*** -0.0531
Previous Cases	6.29e-05*** -2.32E-06	6.05e-05*** -2.27E-06	6.98e-05*** -2.45E-06	6.59e-05*** -2.40E-06	7.14e-05*** -3.55E-06	7.19e-05*** -3.43E-06	7.33e-05*** -3.49E-06
Dummy Before	0.190*** -0.00277	0.190*** -0.00274	0.195*** -0.00299	0.196*** -0.00296	0.162*** -0.00326	0.162*** -0.00321	0.166*** -0.00359
Observations	77,803	77,803	77,803	77,803	77,803	77,803	77,803
R-squared	0.518	0.543	0.526	0.551	0.545	0.569	0.576
Year FE	YES	YES	YES	YES	YES	YES	YES
Subject FE	NO	YES	NO	YES	NO	YES	YES
Current Court FE	NO	NO	YES	YES	NO	NO	YES
Next Court FE	NO	NO	NO	NO	YES	YES	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 8: Comparison of Judge's texts to the post-migration district.

The coefficients for the migrating judge show that before the migration judges' writing was more similar to the previous district peers (Table 7) and less similar to the next district peers (Table 8). As a consequence, there is no empirical support for the claim that judges choose to move to districts that are closer to their decision pattern, which allows us to rule out the reverse causality claim.

The second concern is due to the staff that helps judges in several activities, including writing. Since the staff usually do not follow the judge when she moves to a new district, the new judges inherit the staff from a previous judge. This may explain why the writing of a migrating judge moves away from their previous peers and moves closer to their current peers. If this observed behavior is due to a change in the staff, one should expect the effect to fade out as judges stay longer in their current district and the staff adapts to her style of writing and judging. The test if that is the case we run the same set of regressions adding three dummies to investigate the dynamic effects (the first 90 days after the migration, from 90 to 180 days, and more than 180 days). Results are presented in tables 9 and 10, with the comparison between the migrating judge's decisions with their previous and current peers respectively.

VARIABLES	Logit 1	Logit 2	Logit 3	Logit 4	Logit 5	Logit 6	Logit 7
Constant	1.182*** -0.0207	1.230*** -0.0218	1.353*** -0.0315	1.362*** -0.0313	1.127*** -0.038	1.177*** -0.0379	1.431*** -0.0614
Previous Cases	4.72e-05*** -2.47E-06	4.71e-05*** -2.47E-06	3.13e-05*** -2.54E-06	3.15e-05*** -2.55E-06	4.67e-05*** -2.48E-06	4.61e-05*** -2.48E-06	3.01e-05*** -2.71E-06
Dummy Migration Zero to 90	0.245*** -0.00323	0.244*** -0.0032	0.218*** -0.00326	0.217*** -0.00323	0.267*** -0.00362	0.266*** -0.00359	0.227*** -0.00367
Dummy Migration 91 to 180	0.239*** -0.00335	0.239*** -0.00331	0.212*** -0.00334	0.211*** -0.0033	0.261*** -0.00376	0.261*** -0.00371	0.221*** -0.00376
Dummy Migration More than 180	0.229*** -0.0032	0.229*** -0.00316	0.203*** -0.00334	0.203*** -0.0033	0.251*** -0.00362	0.251*** -0.00358	0.214*** -0.00378
Observations	68,880	68,880	68,880	68,880	68,880	68,880	68,880
R-squared	0.449	0.464	0.479	0.495	0.468	0.483	0.512
Year FE	YES	YES	YES	YES	YES	YES	YES
Subject FE	NO	YES	NO	YES	NO	YES	YES
Previous Court FE	NO	NO	YES	YES	NO	NO	YES
Current Court FE	NO	NO	NO	NO	YES	YES	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 9: Comparison of Judge's texts to her previous district, according to the period after the migration.

VARIABLES	Logit 1	Logit 2	Logit 3	Logit 4	Logit 5	Logit 6	Logit 7
Constant	0.887*** -0.0317	0.866*** -0.0322	0.738*** -0.0593	0.719*** -0.0575	0.777*** -0.0511	0.756*** -0.0514	0.742*** -0.0958
Previous Cases	0.000182*** -3.28E-06	0.000184*** -3.27E-06	0.000168*** -4.44E-06	0.000173*** -4.40E-06	0.000190*** -3.43E-06	0.000192*** -3.40E-06	0.000178*** -4.51E-06
Dummy Migration Zero to 90	-0.0193*** -0.00403	-0.0186*** -0.00404	-0.0139*** -0.00469	-0.0147*** -0.00466	-0.0176*** -0.0042	-0.0162*** -0.0042	-0.0169*** -0.00509
Dummy Migration 91 to 180	-0.0140*** -0.00473	-0.0142*** -0.0047	-0.00879* -0.00533	-0.0106** -0.00529	-0.0121** -0.00489	-0.0116** -0.00486	-0.0139** -0.00567
Dummy Migration More than 180	-0.0458*** -0.00427	-0.0438*** -0.00426	-0.0378*** -0.005	-0.0379*** -0.00497	-0.0456*** -0.00446	-0.0429*** -0.00445	-0.0420*** -0.00538
Observations	77,467	77,467	77,467	77,467	77,467	77,467	77,467
R-squared	0.388	0.398	0.404	0.414	0.403	0.413	0.426
Year FE	YES	YES	YES	YES	YES	YES	YES
Subject FE	NO	YES	NO	YES	NO	YES	YES
Previous Court FE	NO	NO	YES	YES	NO	NO	YES
Current Court FE	NO	NO	NO	NO	YES	YES	YES
Robust standard errors in parentheses							
*** p<0.01, ** p<0.05, * p<0.1							

Table 10: Comparison of Judge's texts to her current district, according to the period after the migration.

The results still support the comparative ignorance hypothesis. Table 9 shows that when a judge migrates to a new district her writing becomes more dissimilar to their peers and that this effect is stable as time goes by. Table 10 provides even more interesting results. After migrating to a new district court, judges' decisions become more similar to their new peers', and this effect is stronger after six months in the new district. Compared to the average distance from the previous peers, the judges move away about 26.18%, 25.49%, and 24.68% after a migration, in the period between zero and 90 days, 90 to 180 days, and more than 180 days respectively. And in the new district, they move closer to their new peers by about 1.95%, 1.60%, and 4.84% respectively, meaning that after six months in the new district, judges approximate further their text to their peers.

The third concern is about the mechanism that drives the results of our study on judges' decision-making patterns. While we believe that judges' ambiguity aversion leads them to rely on their peers' decisions when writing their own, an alternative explanation is that judges conform to their peers because of social pressure. It is plausible to say that judges want to be accepted

by their peers and that this would be more likely when they conform to the decision patterns of other judges in the same district. When they move to a new court, they also move to a different location, they may go to a club or a church where their new colleagues are already members, and their children may attend the same school as the other judges' offspring. In this alternative explanation, the desire to be accepted would drive our findings. However, we argue that judges with expertise in a particular subject are less susceptible to ambiguity aversion, and therefore less likely to base their decisions on their colleagues' writing and substantive decision.

To address this concern, we examined the relationship between judges' expertise and their decision-making patterns. As shown in Table 3 and 4, judges with more expertise, measured by the number of decisions on health-related issues, are more independent in their decision-making. When a judge with above-average expertise moves to a new district, there is no significant effect on their writing and substantive decision. This finding contradicts the social pressure explanation, as one would expect the willingness to be socially accepted to be independent of a judge's level of expertise. Therefore, our study suggests that judges' expertise in a particular subject mitigates ambiguity aversion, and hence the tendency to base their decisions on their colleagues' writing and substantive decision.

Our study has relevant implications for the design of judicial institutions. One of the key findings of our research is that less knowledgeable judges tend to be less autonomous in their judicial decisions. This can reduce the variability of perspectives on recurrent subjects, such as health litigation. The problem is that the judiciary is designed to take advantage of different perspectives and, as such, achieve better decisions in what the literature name as the "wisdom of crowds" or "many minds" (Sunstein, 2006). Although there is some criticism of the idea that many minds would produce better decisions than individuals (Vermeule, 2009), the design of judicial institutions tends to follow that principle, with several judges in the first instance appraising cases that share some similarities, subject to review by a panel of judges in superior courts.

Despite this design to explore the benefits of 'many minds', when judges lack expertise in a particular subject, they may be more likely to rely on the decisions of their peers, rather than making independent judgments. This can reduce the diversity of perspectives within the judiciary, and in turn, mitigate the benefits of the "wisdom of crowds." If judges are too reliant on their peers, this benefit may decrease.

Our findings also suggest a potential solution to this problem. Specialized courts allow for the accumulation of knowledge by judges. This, in turn, can increase the autonomy of judges in their judgments, and mitigate the negative effects of less knowledgeable judges on the variability of perspectives within the judiciary.

The literature points out trade-offs to consider with specialized courts. On the one hand, specialization would allow the accumulation of expertise and a greater division of labor, which would lead to greater speed in the judicial service and the required depth to deal with complex issues. On the other, specialized courts may increase the likelihood of “tunnel vision” among judges, where they focus too narrowly on their area of expertise and fail to consider broader societal implications (Jordan, 1981; Bruff, 1991; Zimmer, 2009). Our findings bring another ingredient in favor of specialized courts that should be taken into account in the design of judicial institutions.

7 Conclusion

When in a new district court, judges do as the other judges in that court do. Taking the distance between judicial decisions as a measurement of similarity, we found that judges’ substantive decisions and writing styles change when they migrate to a new district court, becoming more similar to their new peers and less similar to their former peers. This effect is not due to reverse causality, social pressure, or inherited staff, but rather to ambiguity aversion, being consistent with the comparative ignorance hypothesis. The more knowledgeable a migrating judge is about a particular subject, the more dissimilarly they write and decide compared to their current peers. These results are robust to several specifications and are observed in first-instance courts, where single judges decide each case, and, hence, are not subject to strategic effects already documented in panels of judges.

Our findings provide relevant implications for the design of judicial institutions. As judges tend to rely more on their peers, the perspectives on recurrent subjects become less diverse, mitigating the benefits of the “wisdom of crowds”, which is one of the foundations for the organization of the judiciary. This problem is mitigated by specialized courts, which allow judges to accumulate knowledge, increasing the autonomy of their judgment.

The empirical evidence herein also dialogues with the literature on decision-making with

ambiguity, which is mainly based on lab experiments. Judicial decisions are particularly suitable to observe ambiguity and ambiguity aversion in real settings, as judges typically have to decide based on few and not always reliable facts, cases are randomly allocated, and there is a large variability to support statistical inference. Our results, though, should be taken with caution, since they may be specific to health litigation and particularities of the Brazilian judiciary. Additional investigations are welcome.

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