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PROFESSIONAL ARTICLE

Duration of Court Events Required for Litigation – An Empirical Study to Provide a Theoretical Basis for an Objective Measurement System for Judicial Workload

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The balanced operation of the judiciary is a fundamental social interest, regardless of the legal system and of the form of government. This is largely determined by the workload of judges, which is simply measured by the number of cases in the majority of judicial administration systems, but it also depends largely on their complexity. The latter can best be captured through the amount of total judicial working time incurred, until the cases are settled. However, we do not know how to measure it. Is there a justifiable difference between individual cases in this respect? The territorial distribution of cases with different working time demands is also unknown. To answer these questions, I conducted a retrospective empirical study on the records of completed criminal lawsuits at first instance regional courts. The obtained data were analysed by statistical methods. The research proved that the working time demand can be reliably estimated subsequently, and it shows an extremely large deviation. Additionally, the territorial distribution of cases with different working time demand is uneven. This necessitates the development of a judicial workload measurement system, based on the next phase of the research, which would also consider differences in working time demands through a weight that can be assigned to the case.

Keywords: measurement of judicial workload; working time demand in court cases; distribution of court cases; weighting of court cases; duration of proceedings

1. Introduction

Some of the judicial administration systems, such as the Hungarian system, merely collect statistics on the number of cases received, completed and pending and measure the workload and performance of judges and courts through them. I think this is an unjustified simplification of reality, because judicial workload is a much more complex concept than

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being measurable by a single factor. My research was aimed at developing a comlex workload measurement system, the first step of which, as described in this study, was to demonstrate objectively, through the example of criminal casess at first instance district courts, that judicial working time demand per case is a much more reliable means of measuring the judicial workload and allocationing judicial resources than simply the statistical number of cases.

The principle of the separation of powers is of ancient origin, but – thanks in large part to the work of Montesquieu (1689–1755)[1] – it became widely known in the age of enlightenment, and is now considered as one of the most important constitutional criteria of the rule of law. According to the classic wording by Montesquieu, legislation, enforcement, and the judiciary must be separated from each other both personally and organisationally.[2] Thus, the judiciary is one of the three branches of power and, as the Hungarian Constitutional Court has pointed out, the first among equals.[3] Considering the monopoly of the courts[4] regarding judicial activity, there is no alternative way, no other institutional system that could ensure the enforceability of the law if the judiciary does not function properly. Regarding their constitutional and social significance mentioned above, the balanced functioning of the courts is a priority.

In addition to the legality of court decisions, one of the most reliable signs is their timeliness. For the citizens seeking their rights, one of the most important parameters of the operation of the courts is the duration of the lawsuits in addition to the soundness of decisions, i.e. the time elapsed from the starting of the case to the resolution, expressed in calendar days (hereinafter: proceeding duration), which, moreover, is an important official measure of the functioning of the judiciary, in addition to caseload.[5]

However, the need to complete the proceedings as soon as possible within a reasonable timeframe, is not only a legitimate expectation of the citizen, but is also a fundamental human right, guaranteed by the Rome Convention for the Protection of Human Rights and Fundamental Freedoms of 4 November 1950.[6] It later appeared directly in the legislation of almost all states, including Hungary.[7] Section 2 of the Act III. of 1952 on the Code of Civil Procedure, previously in force, made the enforcement of this the task of the court.[8] In the meantime, the right to litigation within a reasonable timeframe has also become a constitutional fundamental right in Hungary. Article XXVIII. (1) of the Fundamental Law of Hungary states that for two decades courts and judges in Hungary have had a normative duty to strive to complete proceedings within a reasonable time.

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[1] Although Montesquieu drew most of the theorems formulated in this regard from Chapter XII. of Treatises on Government Civil of John Locke (1632–1704).

[2] C. Montesquieu [2000], pp. 248–249.

[3] In its Resolution No. 17/1994. (III. 29.), the Constitutional Court stated: "In the constitutional structure of the separation of powers, the independence of the judiciary has a prominent role. The main feature of the judiciary is that it is permanent and neutral in relation to the other two branches of power by "political" nature."

[4] M. Dezső – K. Fűrész – I. Kukorelli – J. Sári – P. Schmidt – I. Takács [1998], p. 385.

[5] For example see evaluation reports of the European Commission for the Efficiency of Justice (hereinafter: CEPEJ) (https://www.coe.int/en/web/cepej/home).

[6] Article 6(1) of the Convention states: „In the determination of his civil rights and obligations or of any criminal charge against him, everyone is entitled to a fair and public hearing within a reasonable time by an independent and impartial tribunal established by law."

[7] Pursuant to Section 9 of the Act LXVI of 1997 on the Organizational and Administrative Structure of Courts (hereinafter: Bszi.) all citizens have the right to due process of law administered in a fair proceeding by an objective and unbiased court within a reasonable timeframe.

[8] Pursuant to Section 2 (1) of the Pp. the court shall – in accordance with Section 1 – seek to enforce the parties' right to reach a resolution in disputes and respect their right to a fair trial, and to reach a conclusion within a reasonable time period.

2. Problem

The duration of court proceedings, considering their importance, is at the heart of judicial-administrative research worldwide. It is examined for its variation over time,[9] its territorial differences[10] and its correlation[11] with other features of the proceedings. However, I was not concerned with the duration of proceedings, but with what lies behind it as a reason.

In my previous research in this field, I have pointed out that if the number of cases received exceeds a certain amount, the number of completed cases cannot keep pace,[12] because due to physical and physiological limitations, the judge cannot increase his work capacity indefinitely. There is a functional relationship between the number of cases received, completed and pending: the number of cases pending at the end of a given period is equal to the number of cases pending at the beginning of the period, plus the number of cases received during the period minus the number of cases completed during the period. Consequently, if more cases are received in a unit time than the judge can complete, the number of pending cases will inevitably increase by the end of the period. As a result, the judge is forced to deal with more and more cases simultaneously. And if the judge divides his/her working time and deal with several cases simultaneously, the time between two consecutive hearings or all other procedural acts in each case will necessarily increase, i.e. the duration of the proceedings will increase overall. One of the main reasons for the increase in duration of proceedings is that the number of cases received is too high.

From my point of view, there is another important factor: the complexity of the cases. Based on our experience in application of the law we all as practicing lawyers feel, that there can be significant differences between court cases that fall into one category and are to be considered equal (e.g., second-instance criminal litigation, first-instance civil noncontentious proceedings, etc.). Judicial adjudication of an economic crime series of high value, with many participants and lasting many years is much more difficult than a judgement of a shoplifting by one accused. In civil cases, it matters how many civil proceedings the claimant enforces with complicated facts, on what legal basis it rests, and against how many defendants and in what amount. Thus, in addition to the number of cases, their quality is also crucial, regarding the duration of proceedings in the operation of a court. Therefore, in an organizational unit with a higher proportion of complex cases, even with the same number of cases, the duration of proceedings is longer.

In my view, the number and quality of cases together determine the average duration of proceedings, as a judicial workload. The judicial workload is the key to the chain of causality between the volume and nature of the case and the duration of proceedings of the court: number of cases received + complexity of cases received → judicial workload → duration of proceedings → duration of judicial activity. Therefore, duration of proceedings alone cannot necessarily be ensured by keeping the number of cases received at an appropriate level.[13] The task of the court administration is more complex: in fact, the workload of judges needs to be monitored and kept at an appropriate level. According to the above, the workload of judges depends not only on the number of received cases, but it is also affected by their complexity, and "weight".

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[9] D. Weatherburn – J. Fitzgerald [2015].

[10] D. A. Sipes – M. E. Oram – M. A. Thorton – D. J. Valluzzi – R. Van Duizend [1988].

[11] W. Wan – D. Weatherburn [2017].

[12] Brazilian researchers have reached similar conclusions: an increase in court caseload generates an increase in the judge's production, but this relationship is far more complex (G. A. Oliveira – T. A. Guimaraes – L. Akutsu [2017] pp. 651–652).

[13] Essentially, all modern court workload management systems are based on this principle. See e.g.: H. Gramckow [2011] p. 2.

The workload of judges must therefore be measured accurately and kept at an appropriate level in all organizational units, as this is the key to the proper functioning of judicial systems. Indeed, if the average workload of judges differs significantly in each court, the same dispute will take much longer before an overburdened court than before another court in a more favourable position. Such differences may also arise within an organizational unit if cases are distributed among the judges working there, regardless to the requirement of equal distribution of workload. This, in turn, creates an inequality of civil rights, which fundamentally violates constitutional rights.

The other reason is, that it is not permissible from a purely employment law point of view, that for the same judicial salary, a judge is not required to work in one court as hard as one would in another. The unequal workload therefore violates the principle of equal rights not only for clients but also for the employees.

Thirdly, all employers need to be aware of the workload of their employees and, of course, their performance. Without it, there is no efficient organization of work, effective management control, and balanced organizational operation. It follows from the above, that the measuring of the judicial workload is a universal need, independent of the country and of the legal system, and it is an important professional challenge for the judicial administration.

The solution of the problem was also made urgent in Hungary by the fact, that by the 2000s huge differences had emerged among the courts operating in different parts of the country, in terms of the duration of proceedings. There were also large differences in the caseload and workload of individual courts and judges.[14] Therefore Section 76 (4) (a) of Act CLXI of 2011 on organisation and administration of courts (hereinafter: Bszi), which came into effect on 1 January, 2012., made it the duty of the President of the National Office for the Judiciary[15] (hereinafter: NOJ)[16] to determine the methods for measuring the judicial workload and the average national workload of litigation and noncontentious proceedings by case and court level.[17] The differences in litigation between the various courts have undoubtedly diminished significantly since then,[18] but the workload measurement system has not really changed. Although the IT system has been adapted to handle the weights assigned to each case, and the weights for each case group have been defined,[19] but weights are not determined on an objective basis but by estimates based on unknown methods[20] and are not used in practice. So the workload measurement in Hungary is still based on the number of cases. At the same time, complex workload measurement methods are becoming more accepted and widespread in the world,[21] but we have lagged behind. The aim of my research was there-

[14] M. Bencze – Á. Kovács – Zs. Ződi [2017] pp. 9, 24.

[15] For more details on the powers and responsibilities of the President of NOJ, see: https://birosag.hu/en/national-office-judiciary.

[16] The NOJ is the central body of court administration in Hungary.

[17] Level of jurisdiction: an organizational unit established as a result of the horizontal division of the judicial organization, usually administratively separate (Curia, regional courts of appeal, regional courts, district courts, administrative and labour courts, First and Second Instance judgments); branch: a professional unit within each level managing each case group, vertical division of a court level; case group: sets of court cases based on the subject matter and the identity or specialty of the applicable substantive and procedural rules (Section 2 (18) of Decree 14/2002 (VIII. 1.) Ministry of Justice on rules of court administration).

[18] https://birosag.hu/en/news/category/about-courts/balanced-judicial-workload.

[19] For a more detailed description of the system, see: M. Bencze – Á. Kovács – Zs. Ződi [2017] pp. 33–34.

[20] This was also objected to by the CEPEJ. See Case Weighting in Judicial Systems (CEPEJ Studies No. 28, as adopted by CEPEJ in July 2020) p. 11., https://rm.coe.int/study-28-case-weighting-report-en/16809ede97.

[21] See for example: Case Weighting in Judicial Systems (CEPEJ Studies No. 28, as adopted by CEPEJ in July 2020) p. 10., https://rm.coe.int/study-28-case-weighting-report-en/16809ede97; CEPEJ Compendium of "Best Practices" on Time Management of Judicial Proceedings (Strasbourg, 8 December 2006), https://rm.coe.int/16807473ab; A. Lienhard – D. Kettiger [2011].

fore, to develop a method for measuring the judicial workload that also takes into account the number of cases received and their complexity, and to prove its validity by means of statistics in order to become part of the tools of the judicial administration.[22]

The inventory of cases received is no longer a problem at the 21st century level of info-communication technology. Then in the beginning, I had to face the fact that the other factors, namely the complexity and intricacy of cases, the effort of law enforcement to solve them, concerning the amount of intellectual activity, is extremely difficult to measure. It can be said, therefore, that the aim of the research was no less than to measure the immeasurable. In view of this, I followed the well-known principle, widely attributed to Galileo Galilei (1564–1642): measure what is measurable, and make measurable what is not so.[23]

The first task was therefore to make the complexity of the cases measurable. I assumed that the total time spent on dealing with the case could be relevant to the complexity of the case. I based this on the empirical fact that we need more time to solve more difficult mental tasks. The reason for this is that the human mind – due to neurological and physiological limitations – does not solve them by starting to think faster, more efficiently, more logically, but by devoting more time to the given task. Therefore, I have concluded that the complexity of a given court case can best be measured by the amount of actual working time required to resolve it. It is important to note that this is not the same as the duration of proceedings already mentioned.

In my view, therefore, the judicial workload has to be understood as the time required for all the work expected to complete the cases per judge quickly and professionally in accordance with the rules of procedure (hereinafter: working time required).[24] This includes all measures, preparatory and decision-making activities, carried out to resolve the court case, to which the judge is entitled by law. The workload is adequate if, with the lowest number of pending cases, it is equal to or less than the number of working hours of the judge to be worked per unit of time. A judge's monthly working hours are approx. 168 hours,[25] so for cases that are expected to take 12 working hours to complete, a maximum of 14 can be received in one month (168/12 = 14). If more time-consuming cases are received, or more average cases are received, then, by the end of the month the amount of expected working time for pending cases will increase, but even the number of cases pending before them and these, as described above, will inevitably increase the duration of proceedings in this cases.

In the past, there have been studies in Hungary that have not focused on the issue of the duration of proceedings but have specifically sought to determine the duration of substantive investigative, prosecutorial and judicial work on individual criminal cases. However, these researches were not specifically aimed at measuring workload, but at exploring the cost relationships of individual stages of criminal proceedings, as a whole.[26] This is undoubtedly an important aspect, but that is not why I wanted to measure the cost of judicial working time. According to the above, the time required for cases strongly influences the timeliness of the operation of the judicial organization, which manifests itself in the average duration of proceeding.

In developing the system for measuring the judicial workload based on the above definition, I assumed that a simple inventory of cases received could only lead to a correct result, if

[22] For a description of the organization of the Hungarian judicial administration, see: https://e-justice.europa.eu/content_judicial_systems_in_member_states-16-hu-en.do.

[23] Linking the idea to Galileo is, in fact, nothing more than a shining example of academic negligence. Recent source research proves that it can be traced back to up to two French thinkers, Thomas-Henry Martin (1813–1884) and Antoine Augustin Cournot (1801–1877). See: A. Kleinert [2009].

[24] See: L. Örkényi [2012].

[25] (21 working days/month) * (8 hours/working day) = 168 hours/month.

[26] See: Á. Kövér [2002].

the working time required was the same for all cases or, failing that, the distribution of cases with different working loads was uniform in all other respects (geographically, regardless of the level of instant, case). Otherwise, the system will also have to consider differences in working time required.

However, the existence of such differences and the uneven distribution were only a matter of widespread professional belief but was not objectively proven by scientific means. Nor were we certain for sure what factors influence the working time required for each case.[27] The subject of the lawsuit, the amount of the claim, the number of defendants, the motion for expert evidence, etc.? This is important, because if working time demand as a dependent variable can be relevantly related to certain characteristics of the initial documents[28] as an independent variable, a linear prediction model may be used to construct a prediction model that allows the expected working time required to be estimated with certainty. If it is possible, a workload measurement system can be developed, in which an algorithm, derived from the pre-constructed prediction model, can be estimated from the pre-constructed prediction model from the application characteristics, recorded at the time of the arrival of the case. Based on this, a weighting number[29] can be attached to each case upon arrival, expressing the expected need for working time. In a workload measurement system, this weighting could take over the function of the number of cases. This would allow to detect changes in the workload of each department immediately and to take the necessary administrative measures in time.

3. Key questions

Before starting the research, I formulated the following questions:

a) Is there any statistical difference between court cases in terms of working time requirements? Or, is the common-judicial opinion, based on practical experience, wrong that there are more complex and simpler cases?
b) If there is such a difference, or is the territorial distribution of cases with different labour requirements equal? That is: Is there a difference between the average timeframe required for cases before the courts in different parts of the country?
c) If the territorial distribution of cases of different complexity is not equal, is the duration of proceedings for completing cases related to certain characteristics of application is different also? What are these characteristics and how strong is the correlation? Based on them, can a reliable prediction model be created, with the support of which the expected working time demand of incoming cases can be estimated in advance, with sufficient certainty?

[27] There is no clear consensus in professional discussions on the range of relevant factors or the extent of their impact, and in many cases even on the direction of the impact.

[28] Decree Nr. 14/2002. (VIII. 1.) on court administration of the Ministry of Justice, according to § 2, point 12, the initial document is a document that has no antecedents in court. In essence, it means an application or document that is registered in court as a new case, e.g. indictment, application, etc.

[29] The workload measurement system outlined is thus essentially an estimation procedure which, like any other procedure for making forecasts for the future, is the more reliable the wider the past database is, and makes more use of the tools of modern mathematics and statistics. Incidentally, all the more demanding foreign judges' workload measurement systems currently known to me (Germany, the Netherlands) also try to estimate the expected workload in advance on the basis of the information known at the time the case arrives. Thus, never afterwards, based on regular measurements of some parameters, the work done in each case is determined, but it is predicted with more or less certainty at the beginning of the procedure by a pre-recorded method. In principle, the only difference between the individual estimation procedures is the width of the range of information available at the starting of the case. I note, that the head of administration, who distributes cases among judges within a court, still does the same thing every day: by reviewing the application he tries to judge the expected complexity of the cases, and on the basis of his appraisal, he decides to which judge the case has to be delegated, taking into account the workload of each judge, their ability and the complexity of the cases assigned to them.

The study is limited to the first part of the research related to the determination of the working time demand of cases and to the statistical analysis of the territorial distribution of cases with different working time demand (questions a) and b) above). Discussion of further studies aimed at exploring the relationship between initial variables and working time demand and creating a prediction model (questions c) above) would go beyond the scope of this study, could therefore be the subject of a subsequent study.

4. Empirical methods

4.1. Possibilities of measuring working time

In order to be able to answer any of these questions, it would have been necessary that I knew the amount of time spent on completion in as many court cases as possible. Since such data was not available, the first step was to determine the working time required for cases. I chose the First Instance criminal lawsuits of the district courts (lowest court level) (hereinafter: criminal lawsuits) as the basic target of the investigation.[30] The reason for the decision is that this case is of great importance in the judicial system among all cases and it is of considerable social significance, of amount of cases,[31] and also there were large differences in timeliness between courts. Timeliness has a priority in this case to achieve the purpose of the sentence. Experience has shown that there are large differences in the complexity of criminal proceedings, and the relative constraints of criminal proceedings[32] and the informative nature of the application, which fundamentally determines the subsequent course of proceedings, have given some confidence in the structure of the prediction model.[33]

One possible way to determine the working time required, would have been to organize a prospective research, in which a panel of criminal judges involved in the investigation, carefully records the number of hours worked on new cases received during the investigation. This would have been a solution similar to the "time study" method.[34] I might have obtained accurate data on the working time required for criminal lawsuits with this method. However, it was rejected, because judges, who were already heavily overburdened at the time, would have had additional administrative tasks related to the research. On the other hand, the database thus generated would have been created under uncontrolled circumstances. Thirdly, at that time, the more complex criminal proceedings against many defendants in some courts took years, so the full database would only have been available to me years later.

Considering these, I chose a solution based on certain measurable characteristics of completed criminal records, in order to determine the need for working time retrospectively. The data recording was carried out by a team of 12 pre-trained assistant judges at a central location in just one week. In this way, I obtained the necessary data quickly, using standardized methods and conditions, without further burden on the judges.

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[30] Regarding the organizational structure of the Hungarian judiciary, see: M. Bencze – Á. Kovács – Zs. Ződi [2017] pp. 1–3.

[31] At the time of research planning, 25.175% (77,980 lawsuits) of First Instance lawsuits received (309,699 case excluding infringement lawsuits) were district court criminal lawsuits. Data source:

[32] At the time of the research, Act XIX of 1998 on Criminal Procedure (hereinafter: CP.) regulated it. Since then, new legislation has been enacted, the Act XC. of 2017 on Criminal Procedure (hereinafter: NCP.), wich has significantly altered the Hungarian criminal procedure in its structure and its content. For a description of the NCP rules, see: Cs. Herke [2020].

[33] For the procedure of criminal proceedings in Hungary, see: https://birosag.hu/en/criminal-proceedings [accessed 30 January 2021], and Fair Trials International, *Criminal Proceedings and Defence Rights in Hungary* (booklet, last updated January 2015), https://www.fairtrials.org/wp-content/uploads/Criminal-Proceedings-and-Defence-Rights-in-Hungary.pdf [accessed 30 January 2021].

[34] M. Kleiman – C. G. Lee – B. J. Ostrom – R. Y. Schauffler [2017] p. 650.

4.2. Sampling

The next step was to select the cases to be investigated, i.e., sampling. I did not have the opportunity to take a representative sample for the whole country, therefore, from a logistical point of view, I selected the district courts of Nógrád county, Borsod-Abaúj-Zemplén county (hereinafter: BAZ county) and Budapest (together hereinafter: examined counties). Of these, Budapest was intended to represent the most economically and socially developed, and richest central region of the country (Budapest and Pest county) with its crime structure typical to such areas and with overburdened criminal courts, dealing with many cases. Nógrád county represents the more rural and agricultural areas of the country (13 counties in total), with a lower crime rate, a traditional crime structure, and less burdened courts. BAZ county represents rural areas with one or more developed, larger industrial cities, and which are more burdened by crime (5 counties in total) with the typical crime patterns here, and with larger and more burdened courts.

For sampling, I selected the criminal cases completed in year 2010 (77,699 cases) because most of them were already in the archives at the time of the research. The sample was compiled from the database of the examined counties by random sampling in order to be nationally representative, – through the number of cases sampled from them – the other counties were represented by them for a similar social, economic, criminal, caseload situation (Budapest and Pest counties in total: 25,330, Nógrád county and 12 other counties in total: 29,231, BAZ County and 4 other counties with a total of 23,138 completed criminal lawsuits in year 2010). Considering, that I did not have any information on the characteristics of the statistical distribution of the data to be examined, when determining the sample size, I kept in mind that any possible subsequent multiple linear regression studies (to answer later the questions 3. c) above) required a sample corresponding to six times the independent variable to be examined (up to 50–100), i.e., at least 300–600 items. Thus, 253 criminal cases from Budapest, 292 from Nógrád county, 231 from BAZ county and a total of 776 criminal cases were included in the sample. Due to technical obstacles, the files of 232 cases in Budapest, 278 in Nógrád county and 228 in BAZ county were finally examined, for a total of 738 cases (95.1% of the planned sample, 38 were missing).

4.3. Method of calculating working time required

The next step was to develop a methodology for the study. It is a fact of judicial experience that the time required for criminal proceedings consists of four items:

i) timeframe needed for the judge to prepare for the hearing (hereinafter: "preparatory period");
ii) duration of hearing;
iii) timeframe needed to prepare the decisions which may be appealed;
iv) timeframe required for all other activities.

Preparatory period: Preparation for the hearing essentially means studying the investigation file,[35] its appendices, the indictment[36] (hereinafter together: investigation file), reviewing the applicable legislation before the trial. Investigation files are delivered to the court on paper, pages numbered, and the time required to review them can be estimated by multiplying all page numbers by the processing time of one page (page number × reading time/page).

[35] Criminal proceedings have investigative, prosecutorial, and judicial phases. Documents created during the investigative phase of the investigating authority are collectively referred to as investigation files.

[36] A document concluding the criminal proceedings conducted by the prosecution. Application of criminal proceedings in court.

Investigation files are sometimes enclosed with other significant but less important appendices for the criminal legal assessment of the case. They are without numbering and packed in boxes or in batches (accounting records, telephone call lists, etc.). Based on professional opinions, I considered that no more than 1/3 of them should be studied. In the absence of page numbering, their extent can be measured by their thickness in cm, which was multiplied by 0.33 and converted to page number using an empirically determined constant, from which the required time could be calculated similarly to the investigation files. In cases, where no trial was held (e.g., the prosecution dropped the charge, the accused died, etc.), I considered the preparation time to be zero.

Duration of hearings: It means the time spent in the courtroom, which could be determined with precision from the start and end dates and hours, recorded in the minutes of the proceedings.

Timeframe needed to prepare the decisions which may be appealed: According to CP. the judge must give reasons in writing for the judgment and orders made in the course of the proceedings, against which there is a right to appeal (together hereinafter: decisions). The length of the reasoning can be tens of pages for more complex judgments. The duration of decision making is the time required to make, word, describe, dictate, and review the decision. I estimated the amount of time required depending on the scope of the decisions (total number of pages of decisions * time required/page).

Timeframe required for all other activities: Measuring the time required for other activities is the most difficult task, because it includes all time expenditures not mentioned in the previous points.[37] The scope of the submissions[38] is very important, as on one hand they need to be read and processed, and on the other hand the necessary measures need to be taken. As the submissions make up the majority of the documents created in the court proceedings (the length of the decisions and minutes is not significant), the time requirement can be well estimated by measuring the thickness (in cm) of the documents created during the court proceedings. I converted the data on the length of the document into a quantity of time with the help of the constant used at the preparation time. However, submissions must not only be read but also resolved, and there is an (administrative) activity which cannot be estimated based on the length of the file, but which certainly exists. Based on my professional experience, I consider all the time required for all of this to be equal to the time it took to read the submissions, so I multiplied it by 2.

The constant multipliers used in the calculations (reading speed/page, and decision-making time/page) were determined on the basis of a non-representative questionnaire survey conducted among the judges, so they are based on professional consensus.[39] According to the results, in case of criminal lawsuits, the time required to edit the decision is 38.79 minutes/page, and the reading speed is 76.03 minutes/50 pages. I determined (by measurement) the constant value for the conversion of the thickness of the documents in cm into number of pages as follows: 1 cm thick court file contains an average of 86 sheets, which, considering the 10% double-sided sheet ratio, is approx. corresponds to 95 pages.

[37] These include studying a new case, scheduling a hearing, reading, studying, settling documents between hearings, giving information, taking any action, transcripts, note, making a non-appealable order, correcting minutes, giving instructions, and so on.

[38] At the court proceedings, documents are generated either concerning the activities of the court (minutes, orders, judgments, transcripts, requests, etc.) or by external sources (written requests, submissions, preparatory documents, appeals, requests, etc.). The summary name of the latter is the submission.

[39] During the investigation, I distributed Limesurvey questionnaires to all judges, which was to be completed on a voluntary basis, anonymously. Of the judges working in the criminal branch at the district court, 179 completed the form, so there is a broad professional participation behind the results.

Consequently, during the investigation of the number of pages of the investigation file, the thickness of the appendices in cm, the difference between the start and end dates and times of the hearing (s), the number of decisions and the thickness of the court documents in cm have to be measured and recorded. I compiled a paper-based questionnaire and its electronic equivalent in the Limesurvey program.[40] I prepared a detailed guide for filling in the questionnaire to have a uniform interpretation of the questions and to standardize the data recording. Contributors recorded the content of the completed questionnaires on a computer.

The rows of the data matrix extracted from the Limesurvey program in .xls format contained the examined cases, and the columns contained the values of the individual variables. After filtering out, checking, and correcting the data that seemed to be incorrect, I calculated the working time demand for each case as described above. Descriptive statistics were prepared from the data obtained in this way, they were plotted on diagrams, and Shapiro-Wilk W test and Kolgomorov-Smirnov test were performed to examine normality. In order to compare the individual district courts and the three counties, as well as the district courts in the county seats[41] and the other district courts, I also made descriptive statistics and diagrams in this breakdown. I also performed hypothesis tests (Mann-Whitney test, Kruskal-Wallis test). The significance level used in the investigation was $\alpha = 0.05$. Data were analysed using commercially available Microsoft Excel and Statistical programmes.

5. Results

The descriptive statistics of working time demand obtained as a result of the calculations are summed up by district courts and in total in **Table 1**. The result of the Kolmogorov-Smirnov test performed on the whole sample: $d = 0.2314$, $p < 0.01$; Lilliefors test: $p < 0.01$; Shapiro-Wilk: $W = 0.5716$, $p = 0.000$.

Kruskal-Wallis test performed on the averages of working time requirements of each district court: $H (17, N = 738) = 30.22246$ $p = 0.0248$. Summary and descriptive statistics on the values of working time by districts courts in the county seats and other district courts are shown in **Table 2**, and the results of the Mann-Whitney U test performed are shown in **Table 3**.

For descriptive statistics on the working time values of the district courts in each county, see **Table 4**. Kruskal-Wallis test for means: $H (2, N = 738) = 0.6977$ $p = 0.7055$.

6. Conclusions

6.1. Reliability of the estimation method

The first question is the reliability of working time data, which are largely based on ex-post estimates. In deciding this, we can assume that if we multiply the working time demand by the average number of criminal cases completed by a judge per month in 2010 (15.4),[42] we get 162.31 hours per month, which is 7.38 hours per day (162.31/about 22 working days

[40] For practical reasons of course, the data sheet also included questions about the characteristics of the initial document that we thought would affect the amount of judicial working time needed to complete the case (e.g. type of offense charged, number of defendants, the motion for expert evidence, number of witnesses, foreign element, etc.). These initial document characteristics were determined too by professional consensus on the basis of the non-representative questionnaire survey aforementioned.

[41] District Court in the county seat: the district court operating in the county seat (in Balassagyarmat District Court in Nógrád county, in Miskolc District Court in BAZ county, in Budapest the Pest Central District Court). The discrimination is justified by the different composition of the cases at the district courts in the county seat. Section 17 (5) and (6) of CP. lists the crimes, mainly less frequent, and requiring special knowledge (e.g. traffic, economic crimes) for which the district courts in the county seat had exclusive jurisdiction at the time of the research. Their range has narrowed recently, so the gap between the composition of cases before the seat and other district courts has narrowed.

[42] Total criminal lawsuits completed in 2010/number of judges in absentia in criminal branches/12 = 77699/420.51/12 = 15.4.

Table 1: Descriptive statistics on working time demand in each district court and in total.

Name of the organizational unit	Valid N	Mean	Confidence −95,000%	Confidence +95,000%	Median	Minimum	Maximum	Lower Quartile	Upper Quartile	Std.Dev.	Standard Error	Skewness	Kurtosis
Sátoraljaújhely District Court	17	11,3814	4,2052	18,5576	6,3182	1,2608	56,9165	3,0542	11,4482	13,9574	3,3852	2,4758	6,9554
Ózd District Court	22	6,3907	3,5609	9,2205	4,2454	1,0841	28,3225	2,2542	7,5216	6,3824	1,3607	2,3306	6,1257
Szerencs District Court	13	6,3832	4,3387	8,4277	6,2253	0,8345	12,4442	5,1358	8,8271	3,3833	0,9384	0,0569	–0,2552
Szikszó District Court	7	15,8837	0,7532	31,0142	8,1104	1,7503	43,5773	5,0633	34,7378	16,3601	6,1835	1,1989	–0,3221
Encs District Court	12	5,7940	2,0428	9,5451	4,1057	0,8752	22,5136	2,1372	6,9630	5,9039	1,7043	2,3346	6,3278
Kazincbarcika District Court	30	9,4608	5,3176	13,6040	5,9392	1,3805	54,1954	3,5021	10,5542	11,0957	2,0258	3,0332	10,0802
Tiszaújváros District Court	18	5,7999	3,0717	8,5281	4,1117	0,7045	18,6588	2,1412	7,3492	5,4861	1,2931	1,4499	1,0213
Mezőkövesd District Court	9	12,9794	2,6120	23,3468	10,2300	0,5022	46,1591	7,4224	13,3427	13,4874	4,4958	2,1562	5,5726
Miskolc District Court	100	12,9096	10,0089	15,8102	8,4959	0,0438	92,9890	4,2595	17,1477	14,6184	1,4618	3,1480	13,1113
Salgótarján District Court	114	9,6178	7,4731	11,7625	6,0906	0,0438	84,8051	3,5479	11,2526	11,5583	1,0825	3,4594	17,0652
Balassagyarmat District Court	140	10,2252	8,2856	12,1648	7,3788	0,0875	79,8467	2,7313	13,1159	11,6072	0,9810	2,8597	11,5436
Pásztó District Court	24	8,4970	3,5454	13,4487	5,7291	0,0438	57,5372	2,3284	8,8281	11,7264	2,3936	3,4548	14,0105

(Contd.)

Name of the organizational unit	Valid N	Mean	Confidence −95,000%	Confidence +95,000%	Median	Minimum	Maximum	Lower Quartile	Upper Quartile	Std.Dev.	Standard Error	Skewness	Kurtosis
Budapest II. and III. District Court	19	13,2632	7,3289	19,1975	8,4814	1,3277	44,1877	4,4397	18,3782	12,3122	2,8246	1,4022	1,1840
Buda Central District Court	18	8,6796	4,6581	12,7011	6,2827	0,0438	26,8881	3,7288	12,5005	8,0869	1,9061	1,1381	0,4109
Budapest XVIII. and XIX. District Court	11	7,9613	2,6093	13,3133	5,9799	0,3451	27,4502	1,4262	9,9417	7,9666	2,4020	1,6858	3,0425
Budapest IV. and XV. District Court	21	19,0585	−3,4650	41,5820	5,9680	0,4376	231,1443	1,7503	12,6717	49,4810	10,7976	4,3278	19,2998
Budapest XX., XXI. and XXIII. District Court	19	5,6486	1,7240	9,5732	2,7051	0,0438	27,7697	0,7635	6,2475	8,1426	1,8680	2,1474	3,9459
Pest Central District Court	144	11,3928	9,3578	13,4279	7,2579	0,0219	81,0327	2,8124	17,1662	12,3543	1,0295	2,2673	7,6849
Altogether	738	10,5279	9,4937	11,5621	6,4640	0,0219	231,1443	2,9066	12,8627	14,3115	0,5268	6,5537	80,9821

Table 2: Descriptive statistics on working time demand in district courts in the county seats and non-seat district courts, total and by county.

Organizational unit	Valid N	Mean	Confidence −95,000%	Confidence +95,000%	Median	Minimum	Maximum	Lower Quartile	Upper Quartile	Std. Dev.	Standard Error	Skewness	Kurtosis
All seat district courts	384	11,3621	10,0842	12,6401	7,5926	0,0219	92,9890	3,1577	15,0516	12,7365	0,6500	2,8027	11,3117
Other district courts	354	9,6230	7,9701	11,2758	5,7186	0,0438	231,1443	2,7540	10,9526	15,8126	0,8404	8,6451	110,7650
Miskolc District Court	100	12,9096	10,0089	15,8102	8,4959	0,0438	92,9890	4,2595	17,1477	14,6184	1,4618	3,1480	13,1113
Other district courts in BAZ county	128	8,6157	6,8639	10,3676	5,1996	0,5022	56,9165	2,9918	10,0717	10,0161	0,8853	2,8638	9,2572
Balassagyarmat District Court	140	10,2252	8,2856	12,1648	7,3788	0,0875	79,8467	2,7313	13,1159	11,6072	0,9810	2,8597	11,5436
Other district courts in Nógrád county	138	9,4229	7,4783	11,3675	6,0562	0,0438	84,8051	2,8147	10,9781	11,5524	0,9834	3,4132	15,9516
Pest Central District Court	144	11,3928	9,3578	13,4279	7,2579	0,0219	81,0327	2,8124	17,1662	12,3543	1,0295	2,2673	7,6849
Other district courts in Budapest	88	11,4018	5,9868	16,8168	5,7987	0,0438	231,1443	1,5540	12,4490	25,5571	2,7244	7,5201	64,2798

Table 3: Results of the Mann-Whitney test for comparing working time data of district courts in the county seats and non-seat district courts in total and by county.

Organizational unit	Rank Sum (other district courts)	Rank Sum (seat district courts)	U	Z	p-level	Z adjusted	p-level	Valid N (other district courts)	Valid N (seat district courts)
All district courts	122622,5	150068,5	59787,5	–2,8274	0,0047	–2,8274	0,0047	354	384
BAZ county	13112	12994,0	4856,0	–3,1240	0,0018	–3,1240	0,0018	128	100
Nógrád county	18735	20046,0	9144,0	–0,7699	0,4414	–0,7699	0,4414	138	140
Budapest	9502,5	17525,5	5586,5	–1,5110	0,1308	–1,5110	0,1308	88	144

Table 4: Descriptive statistics on working time demand in each county.

County	Valid N	Mean	Confidence −95,000%	Confidence +95,000%	Median	Minimum	Maximum	Lower Quartile	Upper Quartile	Std.Dev.	Standard Error	Skewness	Kurtosis
BAZ county	228	10,4990	8,8801	12,1178	6,4870	0,0438	92,9890	3,5493	12,8299	12,4051	0,8215	3,2487	14,4350
Nógrád county	278	9,8269	8,4614	11,1925	6,5081	0,0438	84,8051	2,7779	11,4664	11,5661	0,6937	3,1103	13,3735
Budapest	232	11,3962	9,0093	13,7831	6,4490	0,0219	231,1443	2,3005	15,3722	18,4521	1,2114	7,8378	87,7522

per month). This is well in line with the legal working hours of 8 per day and 176 per month (approximately 22 working days * 8 hours per day).[43] It can therefore be concluded that the method used is suitable for determining the time required for criminal proceedings. The figures obtained express not only the relative but also the absolute working time demand of each criminal case. The method can be used in all other branches, after appropriate adaptation, by using the results of the anonymous questionnaire survey among judges.

6.2. Differences in working time demand for criminal lawsuits

Descriptive statistics on working time demand data (**Table 1**) show that the minimum value is 0.022, the maximum is 231.14 hours, the range is 231.118 hours, and the quotient of the maximum and minimum values is 10506. The minimum value (1.31 minutes)[44] seems a little low from a professional point of view, but in principle it cannot be ruled out. It is more important that only 8 of 738 cases had a more professionally acceptable value of less than 20 minutes (2.62 minutes for a further 5 cases and 5.25 minutes for 2 cases).[45] Although the maximum value[46] stands out strongly from the others (the time required for the subsequent case was 92.99 hours), after that, however, there are already a number of cases, so the need for 80–90 hours of working time cannot be considered extraordinary.

Table 1 also shows that the working time requirement was outside the 2.9- and 12.86-hour values in 50% of cases, the standard deviation was 14.31 hours, and that the average working time demand was 10.53 hours. However, **Figure 1** shows very well that the average case is almost non-existent.[47] Numerically, only 105 cases (14.22%) fall in the range of 8.42–12.63 (± 20% on average).

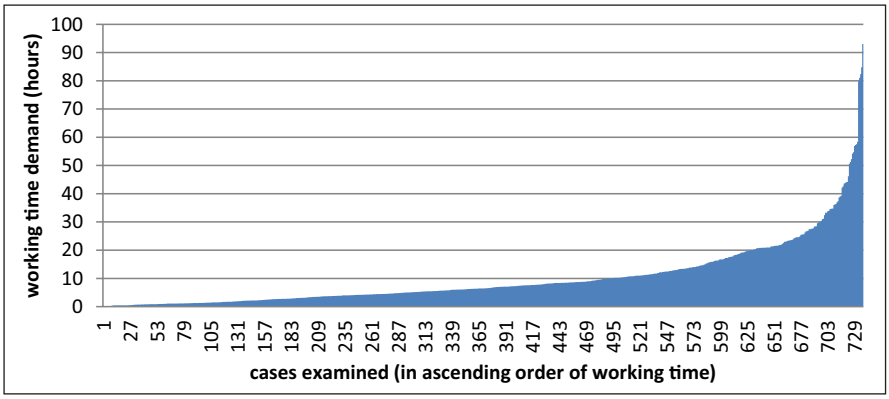

Figure 1: The working time demand in criminal proceedings.

[43] When evaluating the results, it should also be borne in mind that local criminal judges usually deal not only with litigation, but also with criminal non-litigation, violation, immigration, and possibly other cases, and unfortunately they do not work 8 hours a day ….

[44] The case requiring minimum working time was a private prosecution case that at the end an investigation was ordered (Number 1).

[45] If a serious professional concern aroused, it could easily be eliminated by setting a minimum value for working time demand (e.g. 20 minutes).

[46] The maximum working time demand was in a pending case at the Budapest IV. and XV. District Court. In the case, the length of the investigation file was 1339 pages, the length of the appendices was 650 pages, and the indictment was 7.4 pages (average: 2.58). The 3 defendants were charged with 19 acts, hearing of 27 witnesses were called. A 38-hour, 50-minute hearing was held on the case, 12,3 pages of appealable orders were made (average: 0.77), and a 53-page judgment (mean: 3.17) was written (Number 206)…(mean 12).

[47] I omitted the case with maximum working time demand for better representability.

Therefore, a conclusion can be drawn from the above data (rejecting the null hypothesis), that the professional opinion based on practical experience substantiates, that there is a very significant difference between the individual cases in terms of working time demand within a branch. This is certainly true in other cases. It can also be stated based on the obtained data that the applied method also shows minor differences, therefore it is suitable for a highly differentiated assessment of criminal proceedings, and when properly adapted, it would be suitable for this in other branches as well. It is therefore an equally unjustified and rude simplification of reality to treat court cases statistically, as a workload or performance, or from any other judicial administrative point of view. Consequently, the head of the court dealing with the distribution of cases between judges must act very carefully even within a department if the distribution is not entirely random. An algorithm that can estimate the expected working time based on the application can be a really practical help for them, which I tried to establish with multiple linear regression studies in the second part of the research.

I considered working time demand as a continuous variable and examined the normality of its distribution. Based on the descriptive statistics (**Table 1**), it can be stated that the mean is higher (10.53) than the median (6.46), and the slope value is greater than zero (6.55), so the distribution is strongly skewed to the right. The flatness is also greater than zero, so the distribution is also more peaked than normal. Accordingly, the calculations made show that the working time demand in court cases does not show a normal distribution, therefore, parametric procedures were not applicable in the hypothesis tests.

6.3. Territorial distribution of criminal cases with different working time demand

The next question is whether the territorial distribution of cases with different working time demand is even. First, I compared each district court, and the Kruskal-Wallis test performed shows a significant difference (df = 17, N = 738 H = 30.22246 p = 0.0248). We can therefore reject the null hypothesis that there is no difference between the individual district courts in terms of the working time demand for their cases.

Another possible dimension of territorial differences is the difference among the regional courts and that ones in the seat. The expectations were confirmed by the results reported in **Table 2**, the average working time of the cases at the three seat district courts involved in the investigation was 11.36 hours, compared to the average of 9.62 hours at the other district courts. Expectations regarding the authenticity of the measured and visible differences were confirmed by the results of the Mann-Whitney U test: U = 59787,5, p = 0,0047. Thus, rejecting the null hypothesis that there is no difference between the seat and the other courts, it can be clearly stated that there is a significant difference between these two groups of district courts. The working time demand for cases at the seat district courts is indeed greater.

However, when the data are examined separately in the three counties, there is a striking difference in favour of the seat district court only in the case of BAZ county, according to **Table 2**. Except for the only outlying average value (19.06 hours, Budapest IV. and XV. District Court), there seems to be a significant difference in Budapest as well. However, a significant difference is not expected in Nógrád county. The expectations were well confirmed by the results of the Mann-Whitney U test performed (data reported in **Table 3**): the difference is statistically significant only for BAZ county: U = 4856, p = 0.0018.

Finally, I compared the average working time demand of the cases resolve in each of the counties involved in the investigation. It can be seen from the data that the average working time demand of cases is the highest in Budapest, it is the lowest in Nógrád county, and close to the average in BAZ county. The averages of each county show a difference of 6–8% compared to each other and to the average, the difference between the maximum and minimum value is 1.57 hours, i.e. 14.91%. However, the question is whether these differences are statistically real. Kruskal-Wallis test is used to determine this: H (2, N = 738) = 0.6977558

$p = 0.7055$. Thus, keeping the null hypothesis, it can be stated that the difference of the means between the individual counties is not statistically significant. However, we cannot be sure whether the three counties involved in the study adequately represent their own category. Therefore, it cannot be ruled out that there is a county in the country that differs significantly from the national average. The difference detected may be coincidental but still significant in a professional sense because the difference of +8.26% and –6.65% compared to the average means that between the highest and the lowest value there is already a 14.91% difference. This seemingly small difference becomes important when its effect is cumulated with the effect of the difference in the number of cases received.

Thus, even on the basis of such a large sample, it can be seen that there may be significant detected differences between organizational units in terms of the average working time demand for criminal proceedings, quantified and statistically verified by the method I used. However, it also follows that there is a well-established common professional opinion that the distribution of criminal cases with different working time demand is territorially uneven. Each court receives cases of varying complexity in different proportions. The central judicial administration should consider the above-mentioned results, i.e. treat the data with reservations when evaluating the data from a statistical system currently used and based solely on the number of cases and deciding on the necessary action.

As the relevant characteristics of the initial document of each case (e.g. type of offense charged, number of defendants, the motion for expert evidence, number of witnesses, foreign element, etc.) were also recorded during the data collection, it became possible to examine what territorial distribution they show and which of them are actually related, what type and strength connection to the demand for judicial working time (questions 3. c) above). Using the initial document characteristics that proved to be relevant on this basis, I attempted to construct a multiple linear regression model that makes the expected working time demand predictable for each case. However, the statistical analyzes involved and the description of the results obtained may be the subject of a possible later study due to space constraints. It is also important to mention that the NCP. allows for a lot more leeway for criminal procedures based on agreement, respectively confession by the defendant (acceptance of the facts) enable a number of simplifications. Through this, the possible outcome of the criminal procedure became a lot more complicated and diversified, therefore the prediction based on initial document characteristics may become more uncertain.

7. Summary

In summary, it can be stated that the working time demand for criminal proceedings can be estimated with sufficient accuracy and reliability, not only in relative but also in absolute terms on the basis of completed case files. The method used can be adapted to all other court branches, so a similar investigation can be carried out in them.

The data obtained with this method prove the old, common, but unscientific, professional belief that there are significant differences in the working time demands of individual criminal litigations. The time required to complete those averages 10.53 hours, with a large variance. So, there are very difficult, labour-intensive, and also simpler criminal lawsuits.

It can also be noted that the territorial distribution of cases with different working time demand is not even. There are courts with a higher proportion of more complex cases, therefore the workload of judges working in different courts is not necessarily equal with the same number of cases. I think it is not a very bold conclusion that these findings can be applied to other branches, at other levels of the justice system or in other countries.

For the administration of justice, it follows, that it cannot treat cases within the same branch as equal, therefore, it cannot be satisfied with a simple inventory of cases when allocating cases, measuring the workload of judges, and comparing individual departments. This

applies both to the local administration of the judicial system, where cases are distributed among judges, and also to the central administration, where the allocation of resources within organizational units is decided, particularly to ensure a proportionate workload and the same timeliness throughout the judiciary. In view of this, the working time demand must also be taken into account besides the number of cases received in the court workload measurement system, operating in accordance with the expectations of the 21st century, and taking advantage of the opportunities provided by the info-communication technology of the 21st century.

My further research on the latter topic suggests that the expected working time demand can be related to several properties of the case file, which together already show a very strong effect on it. With the help of the multiple linear regression model built on this basis, the expected working time demand of each case can be predicted with reasonable certainty based on the initial document alone. Based on this, a weight number can be assigned to them upon arrival. This can significantly improve the accuracy of judicial workload and performance measurement aiding to the treating all cases as equal.

Competing Interests

The author has no competing interests to declare.

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The author is judge in civil law, the former deputy head of the Judicial Department of the National Office for the Judiciary (the central body of court administration in Hungary), responsible for statistics. Earlier worked for Pest Central District Court, later for Budapest Capital Regional Court, dealt with litigious cases at first instance, now for Metropolitan Court of Appeal at second instance.

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