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Factors Determining Child Custody in Taiwan after Patriarchy's Decline: Decision Tree Analysis on Family Court Decisions

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Abstract

The doctrine of 'best interests of the child' has guided courts in determining post-divorce child custody cases in Taiwan since 1996 amendments to the Civil Code. Amended Article 1055-1 requires judges to consider factors such as 'the age, sex, and wishes of the child' and 'the age, occupation, character, health condition, economic condition, and lifestyle of the parents.' However, previous studies have not clarified which factors judges consider primary. This article collects Taiwanese family court decisions from 2012 to 2017, involving 1,126 children whose parents were both Taiwanese and who both sought to acquire custody, in which Taiwanese district courts granted sole custody to the husband or wife. The article employs decision tree methodology, a commonly used machine learning technology. The article concludes that the three most significant factors considered by Taiwanese judges are first, which parent is the child's current primary caregiver, followed by the wishes of the child and the judge's assessment of parent-child interaction. This result runs counter to widely held beliefs that parental gender and parents' occupations and economic resources are still prime factors in judges' contemplation. Decision tree learning, we suggest, can assist parents' and lawyers' case evaluations and speed up extrajudicial custody determination arrangements.

Key words: child custody; best interests of the child; sole custody; empirical legal study; decision tree learning

Background

Patriarchy's decline

Patriarchy was the judicially recognised norm for centuries in both Western and East Asian nations. Traditionally and legally, the father was entitled to the custody of the children of a marriage and could deny a mother access to her children. As Danaya Wright observed, 'Judges in England in the eighteenth and most of the nineteenth centuries unhesitatingly enforced a father's unlimited right to custody of his children in every case where he had not forfeited his paternal rights through

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some malfeasance, such as cruelty or desertion.’¹ Likewise, Michael Grossberg’s assessment of judicial patriarchy in America concluded that ‘[t]he assumption of patriarchal authority by the bench rested to a significant degree on the nineteenth century’s increasingly rigid segregation of home-bound female and worldly male functions. It represented a refined version of the distinction between the male authority to govern the home and the female responsibility to maintain [it].’²

Patriarchal approaches had declined, however, by the beginning of twentieth century and were gradually displaced by the ‘tender years doctrine’ favouring the mother in custody determinations.³ Then responding to societal pressure for sexual equality and gender neutrality, in the 1970s and 1980s most US states eliminated the ‘tender years’ presumption, leaving a void filled with a ‘child’s best interests’ standard to determine child custody.⁴

In East Asia, countries such as South Korea⁵ and Taiwan,⁶ influenced by Confucianism but experiencing a wave of democratisation in recent decades, faced enormous challenges in reconciling Confucian patriarchal ideology with the concept of gender equality found in their amended Civil Codes. As their societies democratised, both South Korea⁷ and Taiwan⁸ started to shift from paternal privilege to ‘the best interests of the child’ by modifying statutes regarding child custody. However, the new gender-neutral standard may not in fact change the ‘law in action’ as soon as legislators expected.⁹ What is the ‘law in action’ in Taiwan, and to what extent has it departed from the traditional Confucian paternal preference?

The legal framework regarding child custody in Taiwan

Taiwan’s shift from paternal supremacy to gender-neutral rules regarding custody occurred relatively recently, in 1996. Previously, Taiwan’s Civil Code had recognised numerous paternal preferences in parental rights, the assignment of children’s surnames, and domicile and post-divorce arrangements. These patriarchal clauses became some of the major targets for legal reform over the past thirty years in Taiwan.

At first, reform of parental rights was part of the movement for women’s rights and gender equality.¹⁰ Up until 1996, Article 1089 of the Civil Code provided that in the event that parents

¹Danaya C Wright, ‘De Manneville v. De Manneville: Rethinking the Birth of Custody Law under Patriarchy’ (1999) 17 Law and History Review 247, 248.

²Michael Grossberg, ‘Who Gets the Child? Custody, Guardianship, and the Rise of a Judicial Patriarchy in Nineteenth-Century America’ (1983) 9 Feminist Studies 235, 237.

³Robert H Mnookin, ‘Child-Custody Adjudication: Judicial Functions in the Face of Indeterminacy’ (1975) 39 Law and Contemporary Problems 226, 235.

⁴Mary Ann Mason & Ann Quirk, ‘Are Mothers Losing Custody? – Read My Lips: Trends in Judicial Decision-Making in Custody Disputes – 1920, 1960, 1990, and 1995’ (1997) 31 Family Law Quarterly 215, 220–221.

⁵Regarding Korean family law in the Confucian legal tradition and the revision of the Civil Code in 1989, see Kay C Lee, ‘Confucian Ethics, Judges, and Women: Divorce Under the Revised Korean Family Law’ (1995) 4 Pacific Rim Law & Policy Journal 479. In addition, see Jinsu Yune, ‘Tradition and the Constitution in the Context of the Korean Family Law’ (2005) 5 Journal of Korean Law 194, 197–199 (illustrates conflicts between traditional values and constitutional standards in the process of drafting family law measures in the 1958 Civil Code).

⁶Hwei-Syin Chen, ‘Changes in Marriage and Family-Related Laws in Taiwan: From Male Dominance to Gender Equality’, in Wei-Hung Lin & Hsiao-Chin Hsieh (eds), *Gender, Culture And Society: Women’s Studies In Taiwan* (Ewha Womans University Press 2005) 398 (pointing out that although the first version of the Civil Code in Taiwan was ‘westernised,’ it still contained many traditional Chinese moral notions and concepts).

⁷In 2005, the Korean Civil Code was amended to provide a comprehensive framework for protecting children’s rights to safety and support and to ensure the best interests of the child. See Hyunjoon Shim, Insuk Choi & Bailey L Ocker, ‘Divorce in South Korea: An Introduction to Demographic Trends, Culture, and Law’ (2013) 51 Family Court Review 578, 585–586.

⁸Taiwan’s path to legal reform is discussed later in the next section.

⁹For example, Lee discussed two cases in which the father was awarded custody because of his superior property status: Lee (n 5) 501–502.

¹⁰See Chao-Ju Chen, ‘The Chorus of Formal Equality/ Feminist Custody Law Reform and Fathers’ Rights Advocacy in Taiwan’ (2016) 28 Canadian Journal of Women and the Law 116, 124–127 (thoroughly describing the role of feminist

disagreed on how to exercise parental rights over a minor, the father had the right of final decision. In 1994, in response to feminist movements in the Post-Martial Law Period,¹¹ Taiwan's Constitutional Court¹² held Article 1089 to be unconstitutional in Judicial Yuan Interpretation No. 365.¹³ In that pathbreaking decision, the Grand Justices of the Constitutional Court found that Article 1089 was inconsistent both with Article 7 of the Constitution, which proclaims that both sexes are equal under the law, and with Article 9, Paragraph 5 of the Additional Articles of the Constitution, which eliminates sexual discrimination. In their reasoning, the Grand Justices recognised the 'best interests of the child' standard, which had been adopted worldwide, for the first time.¹⁴ This ruling laid the groundwork for the highly significant 1996 Civil Code parentage amendments.¹⁵

Following Judicial Yuan Interpretation No. 365, the 1996 Civil Code amendments addressed not only Article 1089 but also Article 1055. The previous Article 1055 had stipulated that, in both consensual and judicial divorce, the custody of children belonged to the father unless either it had been agreed otherwise in a consensual divorce (Article 1051) or the court had decided otherwise (Article 1055). Prior to the amendment, there had been only one form of child custody: sole custody. The 1996 the Civil Code amendments repealed Article 1051 and amended Article 1055, replacing paternal preference with the 'best interests of the child' doctrine, and recognising joint custody and non-custodial parents' visitation rights.

Child custody in reality

Both before and after the 1996 amendments, the vast majority of custody arrangements in Taiwan were made voluntarily between the parents rather than being judicially decided. For example, according to the Judicial Statistics Yearbook, for *judicial* divorces in 2020, the custody of 1,307 children were assigned.¹⁶ By comparison, according to Ministry of the Interior statistics, the *total* number of children for whom custody arrangements were made in 2020 was 56,045.¹⁷ So 98 per cent of child custody arrangements were made voluntarily between the parents.

As for the type of custody, information about custody arrangements prior to 2002 is unfortunately hard to come by, as no official statistics were published. Afterwards, official statistics demonstrate that, examining all divorce cases (both judicial and consensual) from 2002 to 2020,

organisations on family law reform in the 1990s). The movement for women's rights and gender equality occurred from 1987, when martial law was lifted, through the early 2000s.

¹¹The Martial Law Period in Taiwan was between 1949 to 1987, when Taiwan was under the control of the Kuomintang-led government of the Republic of China. Citizens' electoral rights were circumscribed and rallies and other forms of nongovernmental political activities were prohibited. The lifting of martial law was proclaimed on 14 July 1987 followed by the liberalisation and democratisation of Taiwan, which is generally referred to as the 'Post-Martial Law Period' (1987–present).

¹²The Constitutional Court of Taiwan is called the 'Council of Grand Justices.' It is composed of 15 members. For a brief explanation of its nature and its influence on democratisation in Taiwan, see Susana N Vittadini Andrés, 'The Council of Grand Justices and the Democratization Process in Taiwan' (2005) 1 Views & Policies 39, 64–65.

¹³Interpretation No 365 has been translated into English and is available online: Constitutional Court ROC (Taiwan), 'Decisions – No. 365' (23 Sep 1994) <<https://cons.judicial.gov.tw/en/docdata.aspx?fid=100&id=310546>> accessed 28 Mar 2022.

¹⁴*ibid* (stating that the implementation of Article 1089 shall be provided for based on the principles of gender equality and the best interests of the child).

¹⁵Regarding Judicial Yuan Interpretation No 365 and other rulings' influence on family law, see generally Li-Ju Lee, 'The Constitutionalization of Taiwanese Family Law' (2016) 11 National Taiwan University Law Review 273, 283–285.

¹⁶Judicial Yuan, 'The Assignment of Child Custody in Judicial Divorces in District Courts' <<https://www.judicial.gov.tw/tw/lp-1267-1.html>> accessed 22 Aug 2021 (select '6 The Assignment of Child Custody in Judicial Divorces in District Courts' in PDF format).

¹⁷Department of Household Registration, Ministry of Interior, 'Child Custody According to Grounds', <<https://www.ris.gov.tw/app/portal/346>> accessed 22 Mar 2022 (find 'Annual Local County Data'; 'Others', select '01 Child Custody According to Grounds' in XLS format).

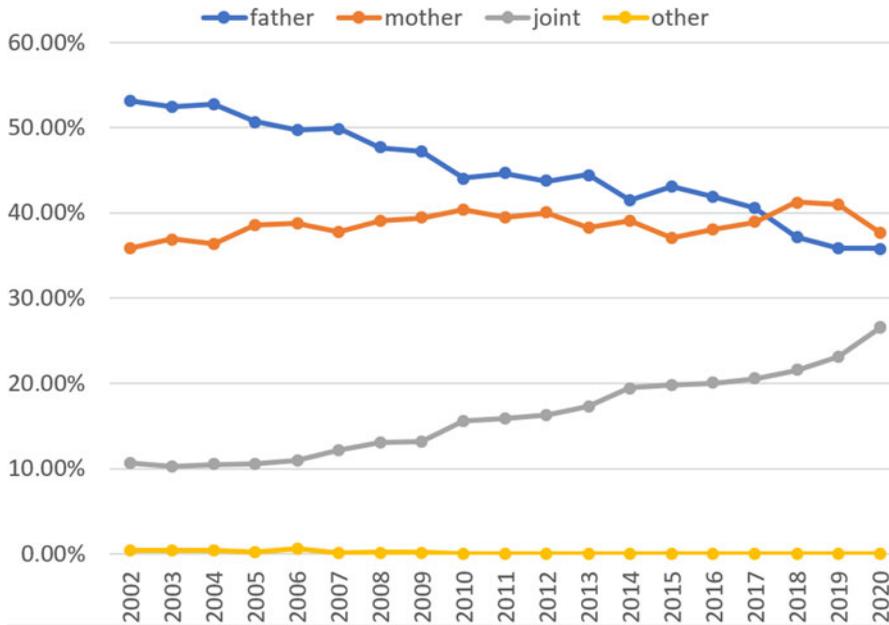


Figure 1. Custody Arrangements in All Divorce Cases (Including Consensual and Judicial Divorce, 2002–2020)¹⁸

fathers had priority at first, although the gap between paternal and maternal sole custody gradually narrowed. Finally in 2018, the number of mothers granted sole custody exceeded the number of custody granted to fathers. In addition, joint custody has become more common (Figure 1).

Custody arrangements decided in judicial divorces show a picture different from non-judicial divorce cases. Prior to 1996, it is estimated that courts awarded custody to fathers in some eighty to ninety per cent of cases.¹⁹ According to Hung-En Liu’s empirical study analysing court decisions from 1998 to 2000 (the years immediately after the 1996 law reform), maternal sole custody was prevalent, although economic competence was regarded as a necessary, but not sufficient, factor in determining custody. This might have privileged fathers.²⁰ After 2002, sole custody continued to go chiefly to the mother (Figure 2). Contrary to a growing preference outside the judicial system for joint custody, the courts tended not to consider joint custody. This is because parents who are not able to agree to an amicable divorce and who enter the judicial process are believed to be highly conflicted, circumstances that courts tend to consider as unsuitable for joint custody.²¹

Issues and literature review

To assist the court in determining the child’s best interests, the new Article 1055-1 lists several factors that judges must consider, such as the age, sex, birth order, health condition, and the wishes of

¹⁸Data retrieved from the website of the Ministry of Interior, Taiwan: *ibid*.

¹⁹Hung-En Liu, ‘Mother or Father: Who Received Custody? The Best Interests of the Child Standard and Judges’ Custody Decisions in Taiwan’ (2001) 15 *International Journal of Law, Policy and the Family* 185, 186.

²⁰Hung-En Liu, ‘Custody Decisions in Social and Cultural Contexts: In-Depth and Focus Group Interviews with Nineteen Judges in Taiwan’ (2004) 17 *Columbia Journal of Asian Law* 225, 225.

²¹Hung-En Liu (劉宏恩), ‘Lihunho Zinyu Jianhu Anjian “Zinyu Zuijia Liyi Yuanze” de Zaijainshi: Shipingxi 2013 Nian 12 Yue Xiuzheng zhi Minfa di 1055-1 Guiding (離婚後子女監護案件「子女最佳利益原則」的再檢視——試評析二〇一三年十二月修正之民法第一〇五五條之一規定) [Revisiting the Principle of the “Best Interests of the Child” in Custody Cases: Evaluating the New Article 1055-1 of the Civil Code Revised in December 2013]’ (2014) 234 *Yuedan Faxue Zazhi* (月旦法學雜誌) [The Taiwan Law Review] 193, 201–202.

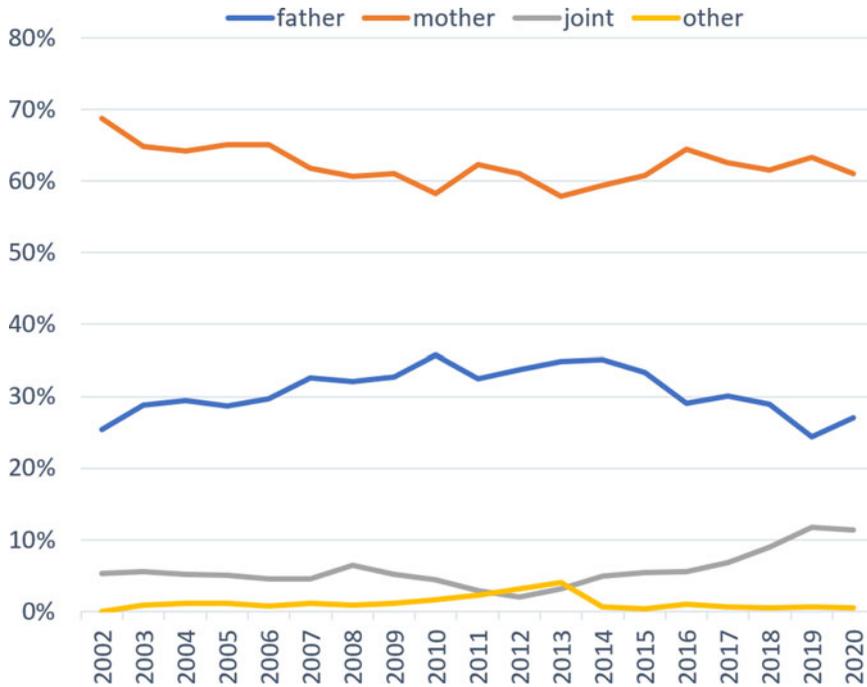


Figure 2. The Assignment of Custody in Judicial Divorces (2002-2020)²²

the child, and the age, occupation, character, economic ability and lifestyle of the parents, etc.²³ In fact, such a broad standard gives judges considerable discretion in deciding what is in the best interests of the child.²⁴

²²Data retrieved from the website of the Judicial Yuan, Taiwan: The Assignment of Child Custody in Judicial Divorces in District Courts (n 16).

²³Article 1055-1 of the Taiwan Civil Code provides:

- I. When the court determines jurisdiction per Article 1055, it shall decide in accordance with the best interests of the minor child, consider all the conditions and the visiting reports of the social workers, especially check the following contents:
 - (1) The age, sex, numbers and healthy condition of the minor child.
 - (2) The willing of the minor child and the need of personality development.
 - (3) The age, occupation, character, health condition, economical ability and the lifestyle of the parents.
 - (4) The parent’s willing and attitude of protecting and educating the minor child.
 - (5) The emotional feelings between the parents and the minor child or between the other persons living together and the minor child.
 - (6) Whether one parent takes actions to hinder the other of exercising rights and assuming duties of the minor child.
 - (7) The tradition, culture, and values of different ethnic groups.
- II. When the court makes the preceding decision in accordance with the best interests of the minor child, besides social workers’ visiting reports or family matters investigation officers’ investigation reports, the court may also make decision based on investigation outcomes of specific matters made by police authorities, tax authorities, financial institutions, schools, and other related authorities, groups, or proper members with related professional knowledge.

This is the official translation of the Civil Code. Laws & Regulation Database of the Republic of China, Ministry of Justice <<https://law.moj.gov.tw/ENG/LawClass/LawAll.aspx?pcode=B0000001>> accessed 17 Feb 2021. It is an exact copy, retaining the unusual English-language usages.

²⁴See eg. Carolyn J Frantz, ‘Eliminating Consideration of Parental Wealth in Post-Divorce Child Custody Disputes’ (2000) 99 Michigan Law Review 216, 216 (arguing that the best interests standard itself is vague and this inevitably leads to serious

Although empirical legal studies methods have not been widely adopted by Taiwanese researchers,²⁵ including family law scholars, child custody is undoubtedly an exception. Several studies are available, all exploring the 'law in action' regarding custody.

Study on frequency of factors

Hung-En Liu's pathbreaking 2001 study collected seventy cases decided from 1998 to 2000 and categorised each of these cases by the factors that were considered by judges to decide the child's best interests. The results demonstrated that the courts tended to consider only some of the factors listed in Article 1055-1, such as 'interview report of social workers' (46 per cent), 'occupation and economic resources of the parents' (39 per cent), 'wishes of the child' (32 per cent), and 'age of the child' (27 per cent).²⁶ However, Liu's work did not discuss how these factors affected courts' actual decisions.

Study on relationship between factors and outcomes

Similarly, Yen-Ni Cheng coded factors that were considered in each of 540 cases from 2012 to 2014. Additionally, she applied Pearson's chi-square test²⁷ to determine the relationship between each factor and the final custodian (father/mother sole custody, joint custody, split custody,²⁸ or third-party custody). Her finding was that 'interview report of social workers,' 'wishes of the child,' 'primary caretaker,' 'current residence of the child,' 'wishes of the parents,' 'parent-child interaction,' and 'misbehavior of the parents' were significantly associated with the choice of custodian.²⁹ However, in terms of the 'age of the child,' recognising that many cases mentioned the principle of 'tender years' but in contrast to Liu's conclusion, Cheng argued that child age is not significantly related to the choice of custodian. If the child was under two years old, Cheng found, 79.4 per cent of the cases awarded mothers sole custody. Likewise, when the child was between 12 and 17 years old, 80.6 per cent of the cases awarded mothers sole custody. Cheng concluded that no matter how old the child was, there was no difference in determining maternal preference in custody cases. The principle of 'tender years' was no more than a pretext for the courts to justify the result of maternal sole custody if the child was young.³⁰

Long-Term observation

Chao-Ju Chen conducted an empirical study collecting 272 cases decided between 2000 and 2013, making diachronic comparisons possible. This study characterised four doctrines – the 'tender

disputes about which factors ought to be considered, so that some states address this issue directly in their child custody statutes).

²⁵Kai-Ping Su (蘇凱平), 'Zaifang Fashizheng Yanjiou Gainian yu Jiazhi: Yi Jiandan Lianghua Fangfa Yanjiou Woguo Jianxing Zhengce Weili (再訪法實證研究概念與價值：以簡單量化方法研究我國減刑政策為例) [Revisiting the Concept and the Merits of Empirical Legal Studies: Lessons from Taiwan's Commutation Policy]' (2016) 45 Taida Faxue Luncong (臺大法學論叢) [National Taiwan University Law Journal] 979, 984–985.

²⁶Liu (n 19) 195.

²⁷Pearson's chi-square test is one way to show the relationship between two categorical variables. A chi-squared probability of less than or equal to 0.05 is commonly interpreted as rejecting the null hypothesis that one variable is independent of the other variable. The alternative hypothesis corresponds to the variables having an association or relationship, although the causal relationship between the two variables, if any, is not specified.

²⁸Split custody refers to a child custody arrangement in which one parent has sole custody of one or more children while the other parent has sole custody of the remaining siblings. In the view of the individual child, split custody does not differ from sole custody. See Lori Kaplan, Linda Ade-Ridder & Charles B Hennon, 'Issues of Split Custody: Siblings Separated by Divorce' (1992) 16 Journal of Divorce & Remarriage 253, 253. In Taiwan's official statistics, 'split custody' is not an independent type of custody. Therefore, this article will also categorise split custody as sole custody.

²⁹Yen-Ni Cheng (鄭彥霓), 'Lihunho Weichengnian Zinyu Qinquan Zhuoding Zhi Shizheng Yenjiou (離婚後未成年子女親權酌定之實證研究) [Empirical Study of Child Custody After Divorce]' (Masters thesis, National Taiwan University 2015) 120.

³⁰ibid 59–60.

years' doctrine, the primary caretaker doctrine, the principle of continuity, and the 'friendly parent' doctrine – as the four doctrinal pillars supporting the 'best interests of the child' principle and observed whether each of the four was applied in the cases Chen collected.³¹ Chen observed that the significance of the 'tender years' doctrine has substantially diminished over the years. Chen also found that the courts tend to grant sole custody to mothers in cases where both parents seek custody, the majority of which involve 'responsible mothers.' Meanwhile, a father's chances of receiving sole custody granted by the courts are improving, especially when he is the only party who actively seeks custody, such as in the case of transnational marriages composed of a Taiwanese husband and a foreign wife³² who 'ran away' from Taiwan.³³ Therefore, Chen concluded that maternal preference is more a myth than a reality.³⁴

Through the examination of the texts of court decisions, the aforementioned literature points to several factors that have been frequently regarded by judges as important to the outcome of a case.³⁵ Nevertheless, a simple yet significant question has not yet been answered: among these factors, which ones take priority in Taiwanese judges' minds? By relying on the remarkable development of computer algorithms, this question becomes possible to answer.

Prediction of court decisions

Automatic prediction of court decisions is an enormous field expanding drastically in the past few years.³⁶ Numerous studies have attempted legal prediction through machine learning technology,³⁷ often with impressive results. For example, Ruger et al compared two methods of forecasting US Supreme Court decisions: the first was a decision tree model which predicted 75 per cent of the Court's affirm/reverse results correctly, while the second was a set of predictions made by legal experts, getting only 59 per cent right.³⁸ Katz et al³⁹ used the data from the US Supreme Court database to forecast justices' votes and reached an accuracy rate of 72 per cent through a 'random forest' classifier method⁴⁰, while later Kaufman et al adopted a 'boosted decision trees'

³¹Chen (n 10) 148–149.

³²Transnational marriages have increased in number since the late 1980s in Taiwan. For an account of marriage migration in Taiwan, see Kuei-Fen Chiu, Dafydd Fell & Lin Ping, *Migration to and from Taiwan* (Routledge 2014) 135–243.

³³For more analysis on the foreign spouse issue, see Shu-Chin Kuo (郭書琴), 'Taojia de Qizi, Quexi de Beigao? — Wajji Peiou yu Shenfenfa zhi Faluwenhua Chutan (逃家的妻子, 缺席的被告? — 外籍配偶與身分法之法律文化初探) [A Runaway Wife and Absent Defendant? — Initiating a Case Study on Foreign Spouse from the Perspective of Cultural Study of Family Law]' (2007) 22 *Zhongzheng Daxue Faxue Jikan* (中正大學法學集刊) [National Chung Chen University Law Journal]1, 1.

³⁴Chen (n 10) 148–149.

³⁵In addition to content analysis, it is also possible to find out important factors by surveying judges. For example, researchers in the United States asked judges to rate decision-making criteria for joint custody versus sole custody. See Thomas J Reidy, Richard M Silver & Alan Carlson, 'Child Custody Decisions: A Survey of Judges' (1989) 23 *Family Law Quarterly* 75, 87 (observing that the age of the child, willingness to enter joint custody, quality of the parent-child relationship, amount of anger and bitterness between parents, and parents' psychological stability are the most relevant factors).

³⁶Masha Medvedeva, Martijn Wieling & Michel Vols, 'Rethinking the Field of Automatic Prediction of Court Decisions' [2022] *Artificial Intelligence and Law* <<https://doi.org/10.1007/s10506-021-09306-3>> accessed 26 Oct 2022.

³⁷Daniel Martin Katz, 'Quantitative Legal Prediction – Or – How I Learned to Stop Worrying and Start Preparing for the Data-Driven Future of the Legal Services Industry' (2013) 62 *Emory Law Journal* 909, 936–942 (enumerating literature regarding case predictions).

³⁸Theodore W Ruger et al, 'The Supreme Court Forecasting Project: Legal and Political Science Approaches to Predicting Supreme Court Decisionmaking' (2004) 104 *Columbia Law Review* 1150, 1150.

³⁹Daniel Martin Katz, Michael J Bommarito & Josh Blackman, 'A General Approach for Predicting the Behavior of the Supreme Court of the United States' (2017) 12(4) *PLOS ONE*: e0174698 <<https://doi.org/10.1371/journal.pone.0174698>> accessed 26 Oct 2022.

⁴⁰A 'random forest' consists of a large number of individual decision trees that operate as an ensemble: 'Random Forests', in Claude Sammut & Geoffrey I Webb (eds), *Encyclopedia of Machine Learning* (Springer 2011) 828. Random forests generally outperform decision trees, but their accuracy is lower than boosted trees.

method⁴¹ achieving an accuracy rate of 75 per cent.⁴² In addition to manually annotated data, some studies applied natural language processing⁴³ to deal with ‘unstructured’ raw judgment text data. Aletras et al used ‘support vector machine’ classifiers⁴⁴ to predict case outcomes of the European Court of Human Rights with an accuracy rate of 79 per cent on average.⁴⁵ As for appellate court cases, Raghupathi et al analysed cases on pharmaceutical patent validity in the United States Court of Appeals for the Federal Circuit by the Naïve-Bayes model,⁴⁶ achieving a 78 per cent overall accuracy rate.⁴⁷

Automatic outcome prediction methods have also been employed in analysing family court cases in various countries. A 1999 study adopted a ‘neural network’ approach⁴⁸ to analyse 400 Australian divorce cases to predict the assets that a husband or wife would receive upon property distribution after divorce.⁴⁹ In contrast with recent research applying natural language processing to unstructured judgment texts directly, this early study used raters to read the judgements and record values of variables. But the ‘neural network’ approach has difficulties in explaining outcomes, since the inferring steps of this algorithm are not made explicit.⁵⁰

In 2021, Muñoz Soro and Serrano-Cinca applied neural network and logistic regression to 1,884 Spanish appeal court rulings (second instance) on child custody and predicted whether the court would grant sole custody or joint custody with an accuracy exceeding 85 per cent.⁵¹ They found that “‘the relationship and attitudes of the parents” and “the psychophysical circumstances of the child” are the two factual elements that the judge took most into account when deciding the type of custody.⁵² However, this study did not provide insights on what the contents of the best interests of the child are.⁵³

⁴¹‘Boosting’ is a method of combining many weak learners (trees) into a strong classifier. Boosting is one of several classic methods for creating ensemble models, along with bagging, random forests, and so forth. Boosting in a decision tree ensemble tends to improve accuracy with some small risk of less coverage. See Microsoft, ‘Azure – Boosted Decision Tree Regression Component’ <<https://docs.microsoft.com/en-us/azure/machine-learning/component-reference/boosted-decision-tree-regression>> accessed 17 Mar 2022.

⁴²Aaron Russell Kaufman, Peter Kraft & Maya Sen, ‘Improving Supreme Court Forecasting Using Boosted Decision Trees’ (2019) 27 *Political Analysis* 381, 381.

⁴³Natural language processing (NLP) concerns the interactions between computers and human language, in particular how to program computers to process and analyse large amounts of natural language data. The goal is a computer capable of ‘understanding’ the contents of documents, including the contextual nuances of the language within them. See Wikipedia, ‘Natural language processing’ <https://en.wikipedia.org/wiki/Natural_language_processing> accessed 17 Mar 2022.

⁴⁴Support vector machines’ (SVMs) are a class of linear algorithms. In the simplest case of two-class classification, SVMs find a hyperplane that separates the two classes of data with as wide a margin as possible. Xinhua Zhang ‘Support Vector Machines’, in Claude Sammut & Geoffrey I Webb (eds), *Encyclopedia of Machine Learning* (Springer 2011) 941–946.

⁴⁵Nikolaos Aletras et al, ‘Predicting Judicial Decisions of the European Court of Human Rights: A Natural Language Processing Perspective’ [2016] *PeerJ Computer Science* 2:e93 1–19.S.

⁴⁶Naïve Bayes’ is a simple learning algorithm that utilizes Bayes rule together with a strong assumption that the attributes are conditionally independent, given the class. While this independence assumption is often violated in practice, naïve Bayes nonetheless often delivers competitive classification accuracy. Geoffrey I Webb, ‘Naïve Bayes’, in Claude Sammut & Geoffrey I Webb (eds), *Encyclopedia of Machine Learning* (Springer 2011) 713–714.

⁴⁷Viju Raghupathi, Yilu Zhou & Wullianallur Raghupathi, ‘Legal Decision Support: Exploring Big Data Analytics Approach to Modeling Pharma Patent Validity Cases’ (2018) 6 *IEEE Access* 41518, 41524.

⁴⁸‘Neural networks’ are learning algorithms based on a loose analogy of how the human brain functions. Learning is achieved by adjusting the weights on the connections between nodes, which are analogous to synapses and neurons. ‘Neural Networks’, in Claude Sammut & Geoffrey I Webb (eds), *Encyclopedia of Machine Learning* (Springer 2011) 716.

⁴⁹Andrew Stranieri et al, ‘A Hybrid Rule – Neural Approach for the Automation of Legal Reasoning in the Discretionary Domain of Family Law in Australia’ (1999) 7 *Artificial Intelligence and Law* 153, 164.

⁵⁰*ibid* 174.

⁵¹José Félix Muñoz Soro & Carlos Serrano-Cinca, ‘A Model for Predicting Court Decisions on Child Custody’ (2021) 16 (10) *PLOS ONE*: e0258993 1, 2 <<https://doi.org/10.1371/journal.pone.0258993>> accessed 26 Oct 2022.

⁵²*ibid* 17.

⁵³Although this study shows that best interests of the child is the only principle with significant coefficients in all regression models, the authors admits that this principle can operate in favour of both sole and joint custody, and it is highly indeterminate: *ibid* 4, 17.

And the second instance appeal judgments may have selection bias issues, such as the effects of settlement of cases pending appeal.⁵⁴

Regarding Taiwan, in a 2017 study we employed a neural network approach to predict court decisions on child custody in 2012–2014 with an accuracy rate of 98.6 per cent,⁵⁵ but we were not able to identify factual elements that influenced court decisions. That result is not sufficiently useful for legal professionals. Compared to the 2017 article, this Article incorporates more recent data for 2015 through 2017 and uses a different tool. Our goals encompass not merely the prediction of custody outcomes, but also the identification of the factors that judges consider first in custody cases when ascertaining the ‘best interests of the child.’ To accomplish these goals, we established a dataset and carefully coded it to determine the specific factors considered. Instead of a ‘neural network’ approach, we adopted decision tree learning in order to attain a more explainable result, as discussed below.

Research design

This section elaborates on how the data sample was collected and coded, and how decision tree learning was applied.

The data

All cases except juvenile and sexual assault cases decided by district courts in Taiwan since 2000 are open to the public on the official website of the Judicial Yuan.⁵⁶ We focus on child custody decisions decided by district courts at first instance because the vast majority of child custody cases are handled by these courts, few of their decisions are appealed, and almost none of the appeals succeed.⁵⁷ Using carefully chosen causes of action, keywords and decision dates,⁵⁸ we identified 3,028 child custody decisions between 1 January 2012 and 31 December 2017.⁵⁹

⁵⁴Yun-Chien Chang et al, ‘Pain and Suffering Damages in Wrongful Death Cases: An Empirical Study’ (2015) 12 *Journal of Empirical Legal Studies* 128, 137.

⁵⁵Sieh-Chuen Huang (黃詩淳) & Hsuan-Lei Shao (邵軒磊), ‘Yunyong Jiqixuexi Yuce Fayuan Caipan: Fazixunxue zhi Shijian (運用機器學習預測法院裁判：法資訊學之實踐) [Predicting Family Court Cases by Machine Learning: An Application of Legal Informatics]’ (2017) 270 *Yuedan Faxue Zazhi* (月旦法學雜誌) [The Taiwan Law Review] 86, 91.

⁵⁶Judicial Yuan, ‘Law and Regulations Retrieving System’ <<https://law.judicial.gov.tw>> accessed 28 Mar 2022 (in Chinese).

⁵⁷Chris Guthrie, Jeffrey J Rachlinski & Andrew J Wistrich, ‘Blinking on the Bench: How Judges Decide Cases’ (2007) 93 *Cornell Law Review* 1, 4; Theodore Eisenberg & Michael Heise, ‘Plaintiphobia in State Courts Redux? An Empirical Study of State Court Trials on Appeal’ (2015) 12 *Journal of Empirical Legal Studies* 100, 103 (in the dataset only 11.6% of the cases stimulated an appeal). In Taiwan, between 2009 and 2017, only 13.84% of the child custody cases were appealed and only 0.16% of these cases were reversed. See Ching-Wen Chiang (姜晴文), ‘Falu Ziliaofenxi de Youhua yu Yingyong: Yi Lihunhou Weichengniaozinyu Qinqun Zhuoding de Caipan wei Sucai (法律資料分析的優化與應用：以離婚後未成年子女親權酌定的裁判為素材) [The Optimization and Application of Legal Analytics: A Study on Child Custody Cases]’ (Masters thesis, Graduate Institute of Law, College of Law, National Taiwan University 2019) 92–93.

⁵⁸Our search terms have two combinations. One is: 裁判案由=(離婚+監護-改定) AND 全文內容=[離婚&審酌&(子女最佳利益+子女之最佳利益)] AND 裁判期間=(民國 101 年1月1日至 106 年 12 月 31 日). The literal translation of these first search terms is: cause of action = (divorce OR custody NOT modification) AND keywords = (divorce AND consider AND best interests of the child) AND decision date = (2012/1/1-2017/12/31). The second is: 裁判案由=(離婚+監護-改定-監護宣告) AND 裁判主文=(任之+擔任+行使+負擔+行使與負擔+行使或負擔) AND 裁判期間=(民國 101 年1月1日至 106 年 12 月 31 日). The literal translation of the second search term is: cause of action = (divorce OR custody NOT modification NOT adult guardianship) AND dispositions = (to be OR to become OR act and bear OR act or bear) AND decision date = (2012/1/1-2017/12/31). We limited the search to district court cases rendered between January 1, 2012 and December 31, 2017. We started with 2012 rather than 2000 because earlier literature has already analysed much of the 2000–2012 data, and because we intended to focus on relatively recent cases.

⁵⁹This number does not encompass all child custody cases decided by Taiwanese district courts. For example, in the year of 2017, there were 1,726 judicially decided cases of children’s custody. See ‘The Assignment of Child Custody in Judicial Divorces in District Courts’ (n 16). However, this study collected child custody cases decided in 2017 involving only 476 children. A reason for the small number of child custody cases reported in 2017, suggested in our interviews with three judges handling family law cases, relates to the fact that in order to protect minors, each district court has different standards on

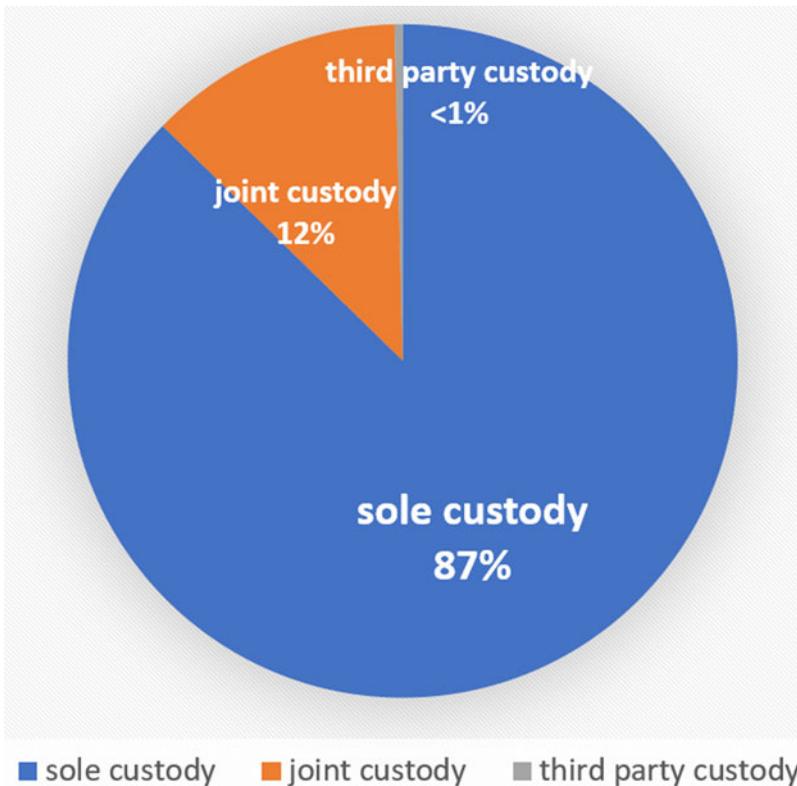


Figure 3. Types and Percentage of Custody Arrangements in Taiwan's District Courts (2012–2017)

We then limited our sample to cases in which both parents were Taiwanese and both sought to acquire custody. This is because sometimes one parent (usually the defendant) does not come to court or keeps silent, as frequently occurs in transnational marriage cases. In these cases, social workers have difficulty conducting interviews, and judges may not receive sufficient information about absent or silent parents. In cases of default judgement, plaintiffs are very likely to receive custody.⁶⁰ Judges do not need to weigh the factors between two parties to decide custody – it is almost automatically granted to the party who showed up (the plaintiff). So, we excluded these cases from our dataset. Among the 3,028 cases, the 2,096 cases in which one of the parents did not express any opinion regarding the choice of custodian and the 97 cases of transnational marriage were therefore excluded.⁶¹ The remaining 835 cases (3028-2096-97 = 835) contain 1,290 children. Among them, 1,126 children were placed under sole custody (87.3 per cent), 159 under joint custody (12.3 per cent), and five under third party custody (0.4 per cent) (Figure 3).

As pointed out in previous literature, parents' willingness to enter joint custody is one of the most relevant factors for the court to grant joint custody.⁶² Since joint custody is more desirable

whether to upload decisions regarding family disputes to the Internet. See 'Jianhu Xuangao Zhi Shiwu Yu Lilun Zhi Duihua Zuotanhui (監護宣告之實務與理論之對話座談會) [Seminar on Conversations Between the Practice and Theory of Guardianship]' (2015) 115 *Renquan Huixun* (人權會訊) [Human Rights Quarterly] 17, 31. Therefore, this research may not represent the complete 'law in action' in Taiwan in the years we studied, due to limited samples.

⁶⁰Chen (n 10) 143–144.

⁶¹This means more than two-thirds of the cases were excluded. This ratio of cases where both parents actively sought custody is slightly lower than the number in previous empirical studies. See Chen (n 10) 144, Table 2 (ratio between 34%~46%).

⁶²See Reidy et al (n 35) 87; Muñoz Soro & Serrano-Cinca (n 51) 17.

due to its better outcomes than sole custody,⁶³ if both parents are willing to enter joint custody the court usually follows parents' wishes without comparing each parent's performance in such detail as it does in sole custody cases. That is to say, the court first decides whether joint custody is a possible option. If it is not, then the court weighs each parent's performance and selects one parent as sole custodian.⁶⁴ Our goal here is to capture courts' decision-making process in this last step: comparing parents' performance. Therefore, we include only the 1,126 children in the sole custody cases in our final sample.

Dataset construction

Court judgements in Taiwan are publicly available but only in raw text style, ie, they are unstructured narrative data. Moreover, in divorce judgments, parties' names are often redacted for privacy reasons. Therefore, coding variables from raw texts is a difficult process.

Judgments of Taiwanese courts typically contain four sections: the *title* (including the case number, the parties, and their lawyers); *operative provisions* (the case outcome, whether the divorce was upheld, and if so, the child's custodian),⁶⁵ *facts and reasons* (including parties' arguments, the facts recognised and reasons articulated by the court), and *miscellaneous items* (the judgement date and the names of the judge and clerk).

The custodian outcome of the case, ie, whether the mother or the father receives custody, is our dependent variable. However, this outcome is not easily extracted automatically by machine from the *operative provisions* or the *facts and reasons*. Parties' names are often anonymised, so it is not evident whether the plaintiff is the mother or the father. But close attention to the *operative provisions* and the *facts and reasons* – a task human researchers can best perform – can often resolve this point.

Take, for example, the case *Taipei District Court 102 (2013) Hun No 183*.⁶⁶ The published opinion confirms that the plaintiff won the divorce litigation and was granted custody. But names of the parties are anonymised, so the plaintiff's gender is unclear. However, the report of the guardian *ad litem* mentions that the plaintiff is breastfeeding the child. So, we know that the plaintiff was the mother.

Other cases illustrate the point. Phrases such as 'defendant offers the child sufficient father's love (父愛) and care,'⁶⁷ or 'plaintiff is the primary caretaker who provides love and care so that mother and daughter have good conversations on life and education (母女二人於生活及教育上有共同話題)'⁶⁸ appear often in the section on *facts and reasons*. Human researchers can determine the parties' gender in such cases more easily than machines can. So, we coded case outcomes manually.

To ascertain the independent variables, after examining the provisions of Article 1055-1, social workers' evaluation items and existing literature, we identified nineteen factors⁶⁹ that judges may consider in custody cases (Table 1).

⁶³Linda Nielsen, 'Joint Versus Sole Physical Custody: Children's Outcomes Independent of Parent-Child Relationships, Income, and Conflict in 60 Studies' (2018) 59 *Journal of Divorce & Remarriage* 247, 247.

⁶⁴Joint custody is granted in a smaller proportion of cases in Taiwan than in many Western countries. Compare 'The Assignment of Child Custody' (n 16) (11–12% in Taiwan) with Muñoz Soro & Serrano-Cinca (n 51) 4 (35% in Sweden and 38% in Spain).

⁶⁵See Aletras et al (n 45) 7.

⁶⁶See Lawnote, 'Taipei District Court 102 (2013) Hun No 183' <<https://www.lawsnote.com/judgement/5772ce552948d2d-c33ebd1b6>> accessed 22 Mar 2022.

⁶⁷Lawnote, 'Xinbei District Court 105 (2016) Hun No 397' <<https://www.lawsnote.com/judgement/5b187e7a6cd6d-f38ab0487a4>> accessed 22 Mar 2022.

⁶⁸Lawnote, 'Xinbei District Court 105 (2016) Hun No 599' <<https://www.lawsnote.com/judgement/58749bff6c1fc7078ca27099>> accessed 22 Mar 2022.

⁶⁹A few of these nineteen factors may not be completely independent from one another. For example, it is possible that the parent who is the child's primary caretaker might have more parenting time but fewer economic resources than the parent who works full-time. That is, some of the factors may affect or associate with other factors. However, it is difficult to

Table 1. Nineteen variables (factors) that Family Court judges may consider in child custody decisions

	Factor	Label	Source
Child	Sex	childSex	§1055-1 I ①
	Age	childAge	§1055-1 I ① and ‘tender years’ doctrine
	Willing	childWill	§1055-1 I ②
	Emotional feelings between the other persons living together and the child	otherRelationship	§1055-1 I ③
Parent	Health condition	parentHealth	§1055-1 I ③
	Character (drug use, alcohol consumption and criminal records)	parentMoral	§1055-1 I ③
	Economy	parentEconomy	§1055-1 I ③ (occupation and economic assets)
	Willing	parentWill	§1055-1 I ④ (the parent’s willingness to protect and educate the child)
	Undue behavior (domestic violence towards the child)	undueBehavior	§1055-1 I ④ (the parent’s attitude toward protecting and educating the child)
	Parenting time	careTime	§1055-1 I ③ (the lifestyle of the parent)
	Parenting environment	careEnvironment	§1055-1 I ③ (the lifestyle of the parent)
	Friendly parent	friendlyParent	§1055-1 I ⑥
	Primary caretaker	caregiver	Social worker’s evaluation item
	Understanding the child	parentUnderstanding	Social worker’s evaluation item
	Parenting plan	carePlan	Social worker’s evaluation item
Both	Parent-child interaction	interaction	§1055-1 I ③ (the emotional feelings between the parents and the child)
	Current residence	currentResidence	Social worker’s evaluation item
Others	Support system	supportSystem	Social worker’s evaluation item
	Social worker’s report	socialWorkerRep	§1055-1 II

Coding is based on each individual child, as multiple children in the same family may have different ages, sexes, wishes, interactions with parents, etc. The coding rule is simple: due to a child’s right to live with his or her parents (as stipulated in the Convention on the Rights of the Child),⁷⁰ if

distinguish which one is the reason for or cause of the other. For example, the rating items in Reidy et al (n 35) 85, also include primary caretaker and parenting skills. Therefore, as in previous literature, this Article employs these factors as long as there is no problem of collinearity.

⁷⁰Paragraph 1, Article 9 of the Convention on the Rights of the Child states that:

States Parties shall ensure that a child shall not be separated from his or her parents against their will, except when competent authorities subject to judicial review determine, in accordance with applicable law and procedures, that such separation is necessary for the best interests of the child. Such determination may be necessary in a particular case such as one involving abuse or neglect of the child by the parents, or one where the parents are living separately and a decision must be made as to the child’s place of residence.

it is not against the best interests of the child, the judge should grant custody to a parent. Therefore, if both parents meet the minimum criteria to be custodian, then the judge selects the parent considered more capable (since joint custody is not often preferred).⁷¹

To capture this decision-making process statistically, we adopt the following approach. We take the judge's conclusion regarding the relative strength of the mother's and the father's performance on each of the nineteen factors and we score it.⁷² As for scoring of independent variables, for example, for the variable 'parenting time', if the judge concluded that the mother performs better, we categorise it as 3. If the conclusion was that the father performs better, we label it as 1. If the performance is equivalent (ie, both mother and father perform well or badly) or not mentioned by the judge, the category is 2. Thus, our variables are all categorical.

Decision tree learning

Decision tree learning is a method commonly used in data mining and machine learning.⁷³ The reason to adopt this approach is that its predictive power performs better than statistical techniques such as regressions.⁷⁴ Decision trees have 'the advantage over logistic regression of ... not depending on underlying assumptions about the distribution of the explanatory variables.'⁷⁵ In addition, decision tree procedure inherently reveals key interactions among all predictor variables without the need for the analyst to specify them *a priori*. It produces an output that conforms to the hierarchical and dichotomous nature of judicial decision-making.⁷⁶ And decision trees are easily interpretable.⁷⁷ Since our goal is to create a model that predicts the value of a target variable (here, custody granted to father or mother, 1 or 0, a dichotomous structure) based on several input variables (here, the 19 factors listed above), and to identify top factors, variables, and predictors, we chose decision tree analysis as a tool.

A decision tree is a flow-chart-like structure, where each internal (non-leaf) node represents a feature, and each branch represents a value the node can assume. During the building process, input data are split according to the evaluation of selected features (denoted as variables here) starting at the root node, then one at a time until the subset of a node shares the same target variable or splitting does not influence the target variable. After obtaining the tree, fed instances are classified starting at the root node and sorted based on their feature values, to determine the target variable

Generally, Article 9 is considered to be the basis of the child's right to live with the parents unless it is deemed incompatible with the child's interests. See Marian Roberts, *Mediation in Family Disputes: Principles of Practice* (4th edn, Routledge 2014) 201. Full provisions of the Convention can be found at Human Rights Office of the High Commissioner, United Nations <<https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-rights-child>> accessed 29 Mar 2022.

⁷¹See Liu (n 21) 201–202.

⁷²Among the nineteen factors, children's age and sex are not relevant to a parent's performance. We coded children's sex: male=1, female=0. And due to the fact that the CHAID algorithm (see below Kass (n 78)) accepts only categorical variables, we coded children's age into 5 categories: 0–2 years old=1, 3–6 years old=2, 7–11 years old=3, 12–17 years old=4, 18–20 years old=5.

⁷³See eg, William J Frawley, Gregory Piatetsky-Shapiro & Christopher J Matheus, 'Knowledge Discovery in Databases: An Overview' (1992) 13 *AI Magazine* 57, 66; Lior Rokach & Oded Maimon, *Data Mining with Decision Trees: Theory and Applications* (World Scientific 2008) 1.

⁷⁴Benjamin Alarie, Anthony Niblett, & Albert H Yoon, 'Using Machine Learning to Predict Outcomes in Tax Law' (2016) *Canadian Business Law Journal* 231, 235–237.

⁷⁵Theodore Eisenberg & Geoffrey P Miller, 'Do Juries Add Value? Evidence from an Empirical Study of Jury Trial Waiver Clauses in Large Corporate Contracts' (2007) 4 *Journal of Empirical Legal Studies* 539, 573.

⁷⁶Jonathan P Kastellec, 'The Statistical Analysis of Judicial Decisions and Legal Rules with Classification Trees' (2010) 7 *Journal of Empirical Legal Studies* 202, 210.

⁷⁷Leo Breiman, 'Statistical Modeling: The Two Cultures' (2001) 16 *Statistical Science* 199, 206. Decision tree learning is generally considered to have higher explanation ability and transparency of knowledge. See SB Kotsiantis, 'Supervised Machine Learning: A Review of Classification Techniques' (2007) 31 *Informatica* 249, 263.

Table 2. Confusion Matrix of Child Custody Test Set

Test_set_N = 226		Results predicted by the machine	
		Positive (mother = 0)	Negative (father = 1)
Actual results	Positive (mother = 0)	True positive, TP = 181	False negative, FN = 7
	Negative (father = 1)	False positive, FP = 1	True negative, TN = 37

Seed = 7739

result. This study adopts the CHAID (Chi-squared Automatic Interaction Detector) algorithm to make strategic splits.⁷⁸

As is usual for machine learning experiments, we ran the decision tree learning process through random sub-sampling validation in the following steps: (1) 226 (20 per cent) of the children were randomly designated as test cases and taken out of the data sample, hiding their outcomes. (2) The remaining 900 children (80 per cent) were used as a training set for the algorithm. (3) The trained algorithm (model) predicted the outcome of the test cases. (4) The predicted outcome was compared to the test cases' previously hidden real outcomes to see if the predictions were correct, mistaken, or absent, and the result was recorded. (5) The preceding steps were repeated 1,000 times. (6) The results of the 1,000 trials were then averaged, in order to derive the following accuracy rates. In this way, the bias is smaller than randomly partitioning the training set and the test set and only performing training and testing once.

Results

Model efficacy

In supervised training, to evaluate the performance of a machine-built classification model, a confusion matrix is usually used to visualise the results of the test set.⁷⁹ The matrix is composed of two dimensions, with the data column containing results predicted by the machine and the data row containing the actual results (see Table 2).

A set of four indices is commonly used to evaluate model performance during the machine learning process. The first and the most instinctive index is *accuracy*, the percentage of correct predictions by the machine, defined as $(TP+TN) / \text{total sample size}$. The second is *precision*, the proportion of true positives among all samples classified as positive, defined as $TP/(TP+FP)$. The third index is the rate of correctly classified true positives, named *recall*, defined as $TP/(TP+FN)$. And fourth, to take both precision (P) and recall (R) rate into account in case of a conflict, the F1 Score (the 'F-measure') is used to evaluate the model. The F1 Score is the harmonic mean of the two indices, defined as $F1 \text{ score} = 2/(1/P+1/R)$.

Our model's accuracy is 96.5 per cent in its test set and its F1 score is 0.9783, indicating that the model is quite satisfactory.

Model demonstration

For the custodian outcome of the case, '1' represents sole paternal custody; '0' represents sole maternal custody. As shown in Figure 4, the left number '.75' under the root node indicates that 75% of test set cases are classified '0' (custody for mother) and right number '.25' means 25 per cent of the cases are classified '1' (custody for father). The feature/ independent variable under the root node is

⁷⁸Gordon G Kass, 'An Exploratory Technique for Investigating Large Quantities of Categorical Data' (1980) 2 Applied Statistics 29, 119–127.

⁷⁹Kai Ming Ting, 'Confusion Matrix', in Claude Sammut & Geoffrey I Webb (eds), *Encyclopedia of Machine Learning and Data Mining* (Springer 2017) 260.

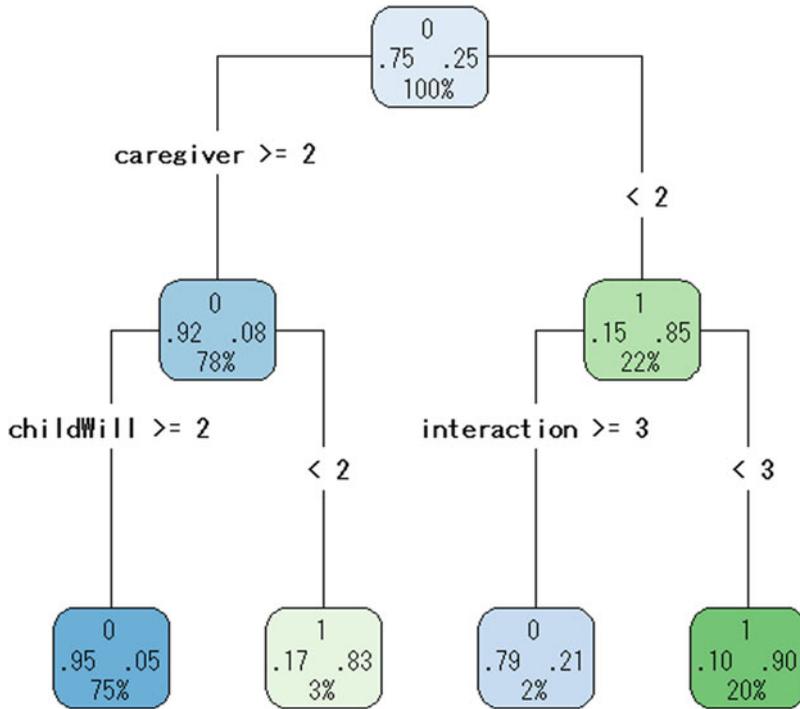


Figure 4. Decision Tree of Child Custody Cases in Taiwan

‘caregiver’ (marked in the branch). This feature best divides the data, which indicates that judges in Taiwan primarily consider who the current caregiver of the child is in the first place. Regarding the independent variable ‘caregiver,’ if the judge considers that the mother performs better (the mother is the primary caregiver), we categorise it as 3. If the judge concludes that the father is the primary caregiver, the label is 1. If the performance is equivalent (ie, both mother and father are caregivers) or not mentioned by the judge, the category is 2. Thus, in Figure 4, the black line (branch) on the left side shows that when the caregiver ≥ 2 , ie, if the caregiver is the mother (represented by the number ‘3’) or both mother and father (represented by the number ‘2’), it comes to the next node. Here, 92 per cent of cases resulted in maternal custody and 8% in paternal custody. Also, the number ‘78%’ in this node means that ‘caregiver ≥ 2 ’ shares 78 per cent of the whole sample, ie, 176 children ($226 \times 78\%$), while ‘caregiver < 2 ’ (father is the primary caregiver) shares the remaining 22 per cent ($226 \times 22\% = 50$ children).

Next, the variable ‘childWill’ appears, meaning that the model predicts that judges will, secondarily, consider the child’s wishes. If the child prefers the mother or has no preference (≥ 2), the model again follows the black line (branch) on the left side coming to the end node, which is labelled with a probability distribution indicating that in the test set, custody has a very high probability (95 per cent) of going to mother (the label ‘0’). On the contrary, even if the mother is the primary caregiver, in the case that the child prefers the father (‘childWill < 2 ’), the probability that the mother gets custody becomes fairly low (17 per cent in the test set). It can be observed that on the right branch, representing when the father is the caregiver (‘caregiver < 2 ’, meaning that caregiver = 1) of the root node, judges next observe the interaction between parents and the child. If the father performs as well as or better than the mother (‘interaction < 3 ’, meaning that interaction = 1 or 2), we see ‘.90’ at the right end node, meaning that the father has a high probability (90 per cent) of being the custodian. In contrast, if the mother interacts with the child better than the father (‘interaction ≥ 3 ’), the mother is likely to acquire custody (79 per cent).

Discussion

Previous literature attempted to determine what factors affect custody decisions by surveying judges or by analysing court cases with statistical tools. This study, by contrast, used decision tree learning, an artificial intelligence technique, to answer a very specific question: what factors affect cases resulting in sole custody when both parents actively seek custody? With the assistance of cognitive computing and artificial intelligence, our research method can offer more detailed, practical information and a much more comprehensive picture of custody decisions in Taiwan.

We demonstrate that among the numerous factors stipulated in Article 1055-1 of the Taiwan Civil Code, ‘primary caregiver,’ ‘child’s wishes’ and ‘parent-child interaction’ are the three most significant factors contemplated by judges. This pattern of judges’ decision-making regarding child custody appears to be relatively constant and stable during the six-year period studied.⁸⁰ Although ‘occupation and economic resources of the parents’ was once considered an important factor in child custody⁸¹ and is still widely accepted by the public,⁸² our analysis does not identify it as significantly affecting judges’ decisions nowadays.

Furthermore, in custody disputes addressed by judicial decisions, the mother seems to have overwhelming supremacy: in our dataset, mothers had a 75 per cent likelihood of receiving sole custody (see the root node in Figure 4). But this cannot simply be attributed to judges’ preference for mothers over fathers. The majority of Taiwanese cases are those in which the mother happened to be the primary caregiver and the child prefers the mother, represented by the leftmost end node in Figure 4. Meanwhile, as previously mentioned, the most significant factor judges consider is ‘primary caregiver,’ suggesting that the reason that mothers are given custody more readily than fathers is not because of their gender, but simply because in most cases they are already the primary caregivers. This supplements Chen’s observations that Taiwanese courts tend to grant sole custody to mothers in cases where both parents seek custody. Chen attributed this to ‘responsible mothers’.⁸³ Our study finds that when a father is the primary caretaker, ie, a ‘responsible father’, although fewer in number (only 22 per cent of our sample), he also has high chances (85 per cent) to acquire sole custody (the node in the second row in Figure 4). In this sense, we agree with Chen that maternal preference is a myth.

Another concern arises: if the mother loses the status of primary caretaker due to, for example, fleeing the marital home, will the mother fail to acquire child custody? As seen above in Figure 4, when the father is the caregiver, judges in Taiwan look into the interaction between parents and the child. If such a mother interacts with the child better than the father does (these cases are rare, only 2 per cent of our whole sample), the mother still has a high probability of being granted custody (79 per cent). This means that a mother fleeing from home may still have opportunities to be appointed custodian unless she was completely absent from the legal proceedings.⁸⁴

⁸⁰The outcome of this study, which contains cases from 2012 to 2017, is basically the same as our former research on cases from 2012 to 2014. See Sieh-Chuen Huang (黃詩淳) & Hsuan-Lei Shao (邵軒磊), ‘Zhuoding Zinyu Qinquan zhi Zhongyao Yinsu: Yi Jueceshu Fangfa Fenxi Xiangguan Caipan (酌定子女親權之重要因素：以決策樹方法分析相關裁判) [What Factors Determine Child Custody in Taiwan? Using Decision Tree Learning on Court Decisions]’ (2018) 47 *Taida Faxue Luncong* (臺大法學論叢) [NTU Law Journal] 299, 323 (which also points out that ‘primary caregiver,’ ‘child’s wishes’, and ‘parent-child interaction’ are nodes of the decision tree). But the accuracy of the model employed in this article is 96.5%, higher than in that earlier study (95.2%).

⁸¹Liu (n 19) 204–205.

⁸²See eg, ‘Jiating Zhufu Lihun Qiang Xiaohai Zhuding Shuma (家庭主婦離婚 搶小孩注定輸嗎) [Will the Housewife Definitely Lose the Child Custody Battle After Divorce?]’ (Yi Zhoukan (壹週刊) [Next Digital], 21 Aug 2016) <<http://www.nextmag.com.tw/realtimenews/news/42930083>> accessed 22 August 2021 (stating that in many television shows, the housewife is usually in an inferior position compared to her husband when seeking child custody after divorce).

⁸³Chen (n 10).

⁸⁴In the case of the mother’s failure to appear (which was excluded in our research), due to default judgments, the father typically acquires custody. See Chen (n 10) 143–144.

Conclusion

This study, aiming at understanding the ‘law in action’ in Taiwanese family law, clarifies how Taiwanese judges actually apply their statutory obligation to decide custody battles in the ‘best interests of the child.’ Our study not only identifies the outcome of each case (typically, sole custody going to mother or father), but also pinpoints the three key factors that judges contemplate in making their decisions in accordance with the legal standard. Those key factors underlying the outcomes are: (1) ‘primary caregiver’, (2) ‘child’s wishes’, and (3) ‘parent-child interaction’.

This research should also help legal scholars identify particular custody cases as either typical or exceptional by comparing the machine-predicted results to actual judgements. A case may be exceptional, worth further exploration and research, if the two outcomes are inconsistent. In addition, this study should assist parents and their lawyers to preliminarily evaluate their possibilities of acquiring custody. Family lawyers can save time and costs in giving legal advice. And when the outcome of litigation can be predicted in advance by the parties, the likelihood of cases going to court will fall and the likelihood of settlement will increase. Thus, machine learning helps us predict what the ‘law in action’ is and hence contributes to legal certainty.

A limitation of this study is that the features we input into the model are based on the facts recognised by the judge, not the mother’s or father’s version of the facts. If the parties dispute the facts and hence one cannot be sure of these features, our model may not be able to offer accurate advice. Nevertheless, our research can help the parties narrow the disputes to facts and factors which are most likely to be considered by the judge, rather than litigating all potential issues and factors listed in the statutes. Similar methods might offer useful sources of predictive information to parents and their attorneys and to scholars in other countries in which patriarchy is in decline. In sum, our results should assist parents’ legal advisors, speed custody determination arrangements, and pave the road for future studies.