RECREATIONAL LIABILITY AND LITIGATION DELAY RAISED BY PRIVATE LANDOWNERS IN THE US

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Abstract

This study investigated the determinants of the landowners' liability from a legal standpoint and examined these factors that influenced litigation length of US recreational incidents within recreational use statute from 1958 to 2007 using Lexis/Nexis and Westlaw databases. Reviewing the 103 cases from a legal standpoint revealed that the landowners had no liability in general, but under some situations the landowners had liability (*e.g*. defective materials). Results were not affected by appellant type, recreational activity type, users or landowners' characteristics, users' injury severity levels, case location, or case entry time. Further parametric duration analysis concluded that strategic variables, such as severity levels, existing genuine issue, and a profit-motivated fee charge, lengthened litigation time. The user appealing the case took longer for the court to close the case than the landowner appealing the case. The difference among recreational activities was significant. Cases in the South had a shorter litigation time.

Keywords: Duration analysis, recreational use statute, landowners' liability, litigation delay

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Introduction

Private landowners' liability to recreational users has long been recognized as one of major disincentives for landowners to open their lands to the public (Benson 2001; Jones et al. 2001; Wright et al. 2002). Most landowners are concerned about the threat of liability and are therefore justified their restriction on public access based on liability. The National Private Landownership Study in 1997 provided that only 12% of private landowners allowed recreational access, mainly because of liability concern (Teasley et al. 1999). In Mississippi, landowners' liability expenditures were one of the largest in fee hunting (Jones et al. 2001). State wildlife administrators also rated liability as the second-most-significant access problem faced by landowners (Wright et al. 2002).

In order to encourage private landowners to open their land to recreational use, governments have made efforts to enact recreational use statutes (RUS) to reduce landowners' liability in the past four decades (Barrett 1977; Wright et al. 2002). Recreational users frequently employed traditional common-law theory against landowners (Eshee et al. 2005). These rules categorized recreational users as invitees, licensees, or trespassers. Among the three categories, invitees receive the greatest legal protection, licensees moderate protection, and trespassers little protection. If the entrant is a trespasser, the owner owes only a duty to refrain from willfully or wantonly inflicting injury, whereas if the entrant is an invitee, the owner owes a higher duty of ordinary care (Becker 1991; Noble 1991). Under RUS, landowners' duty owed to recreational users is limited, thus, landowners' liability to recreational users has been reduced significantly (Wright et al. 2002).

Unfortunately, private landowners have been vexed by increasing litigation by recreational users, even under the protection of RUS (Kaiser 1986). According to Wright et al. (2002), 330 cases were collected and involved lawsuits against private landowners since 1965. In reality, the perception of landowners' liability appears to be greater than the actual liability risks (Wright et al. 2002). This gap between the perception and actual liability risks further increases the liability concern for landowners.

The liability concern naturally leads to issues related to the delay in case litigation once recreational incidents happen. Traditional legal disputes often take considerable time to settle or to go to trial, ranging from 18 to 40 months (Fenn and Rickman 1999). But court cases related to recreational use might be longer. Delay in litigation has several significantly negative social costs (Fenn and Rickman 1999). It is costly both to the individuals involved and to society. It can also take an emotional toll on the individuals and can be burdensome to health providers (Hughes and Savoca 1997). Moreover, the delay may cause evidence to deteriorate.

This study was motivated by these unaddressed issues associated with liability concern and delay in case litigation raised by private landowners. The objective of this study was to investigate the determinants of landowners' liability from a legal standpoint and, using duration analysis, examine the factors that influence litigation time of US recreational incidents within RUS. The case data were collected from Lexis/Nexis and Westlaw databases from 1958 to 2007. The final case list (103 cases) was produced and 15 variables were identified and coded. A qualitative analysis was used to investigate the determinants of landowners' liability and a quantitative

duration analysis was employed to examine these factors that have influence on case litigation time. The results will improve our understanding of the determinants of the landowners' liability and case litigation time of US recreational incidents and factors that influence variations in length. In the rest of this paper, we first present literature review related to liability and litigation delay. Then we introduce the methodology of duration analysis. Next, we describe cases' sources and variables. Furthermore, we investigate the determinants of the landowners' liability from a legal standpoint case by case and present the results of the duration analysis, followed by conclusions and discussions.

Concern related to the liability of providing outdoor recreational use by private landowners has been an active research topic in law (Barrett 1977; Lee 1995; Noble 1991). One reason is that the liability has acted as one of the major disincentives for landowners to open their lands to the public. Reduction or immunity from the liability will result in promotion of outdoor recreation on private lands, especially fee-based recreation, which has several benefits to landowners and society (Jones et al. 2001; Sun et al. 2007). Despite widespread concern for the benefits and costs of the liability, few studies have documented actual bodily injuries and property damages resulting from recreational activities in the US. For example, Wright et al. (2002) examined rural landowners liability risks through an analysis of the 50 state RUS and compiled a database of 637 court cases from 1965 to 2000. They reported the number of cases by state and recreation type. Unfortunately, they did not reveal more details, such as verdict of injuries liability, and no such work has been done to investigate the determinants of the landowners' liability and case litigation delay once incidents happened on private premises.

The further concern with case litigation time and the social costs resulting from the litigation delay has motivated extensive literature investigating the causes of delay in the resolution of legal disputes using a duration method from political science, policy, medical science, law and economics (Fenn and Rickman 2001; Fournier and Zuehlke 1996; Hughes and Savoca 1997; Kessler 1996; Spier 1992; Spurr 2000, 2002). Nevertheless, applications in forestry or natural resources were limited. Among the limited studies, Malmsheimer and Floyd (2004) used four competing judicial decision models to test if federal judges substitute their own preferences for federal natural resource agencies' management decisions. However, no such work has been conducted to investigate causation of the delay in case litigation within RUS in the US.

Overall, the review revealed that there is a great need to understand liability determinants from a legal standpoint and to examine the causes of litigation delay within RUS, given the importance of recreational use for both recreational users and private landowners at present.

Methods

Qualitative Analysis

Qualitative analysis is a common approach in law to review litigation data and to investigate determinants of landowners' liability (Goebel and Goebel 1999; Wright et al. 2002). Initially, descriptive outcomes of these cases within recreational use statute were analyzed using descriptive statistics. These major characteristics included number of cases by state, party position, court type, numbers of NIPF owners and forest business owners, a fee charge, and

liability of owners. The determinants of the landowners' liability were further investigated from a legal perspective case by case. These factors included appellant type, recreational activity type, users or landowners' characteristics, users' injury severity levels, existing genuine issue of material fact, a fee charge, case location, and case entry time. All these cases were classified into two categories: the landowners had no liability and the landowners had liability.

Under each category, these factors (*e.g.* a fee charge) were examined based on liability theory in recreational litigation. Generally, plaintiff (recreational user) filed lawsuits against defendant (landowner) based on negligence rules when recreational incidents happened on private premises. In order to prevail on a cause of action for negligence, the plaintiff must prove that a) the defendant owed the plaintiff a duty to exercise reasonable care; b) the defendant breached that duty; c) that breach caused harm to the plaintiff; and d) the plaintiff suffered actual loss (Aronovsky 2000). Duty is the obligation that each person in society owes others to act in a manner that is not negligent toward them. However, RUS provided landowners a defense because under RUS, landowners did not owe recreational users a duty to keep the property safe or to give warning of a dangerous condition except for willful or malicious conduct (see 47 ALR4th 271-272). Correspondingly, it is impossible for the landowners to breach their duty and cause the users' losses. Note that RUS did not change negligence rules, but limited landowners' duty. The judgment summary at the higher court for each case also provided a way to identify factors which determined the landowners' liability.

This qualitative analysis painted a whole picture of investigating the determinants of the landowners' liability from a legal standpoint, the further duration analysis was conducted to examine case litigation delay. Duration analysis is a class of statistical methods that investigates survival times (*i.e.*, the occurrence and timing of events) (Allison 1995; Greene 2003). In this study, duration (*T)* is measured by the time between the beginning of an observation period and the occurrence of an event that is the decision of case in a court. Cases that are remanded and are not decided are censored in the sense that their duration is at least the observed litigation time.

Parametric Duration Analysis

Parametric duration analysis provides a complete characterization of the relationship between case duration and various factors influencing the duration. There are four equivalent ways to describe the relation in duration analysis. Treating duration *(T)* as a random variable, its probability density function (PDF) can be denoted as *f*(t) and its cumulative distribution function (CDF) can be denoted as *F*(t). Mathematically, they can be expressed as:

$$f(t) = \frac{dF(t)}{dt} = \lim_{\Delta t \to 0} \frac{\Pr(t \le T < t + \Delta t)}{\Delta t} \tag{1}$$

$$F(t) = \Pr(T \le t) = \int_0^t f(x)\,dx \tag{2}$$

Another is survivor function *S (t),* defined as the probability that an event time will be greater than *t*. The other is hazard function *h (t),* representing the instantaneous rate of closing at time *t*, given that the case has survived up to t. Hazard function provides a notion of duration

dependence. Positive duration dependence implies that the hazard rate increases with time (*i.e.*, *dh (t)/dt* > 0 and vice versa). Thus, they can be expressed as:

$$S(t) = \Pr(T \geq t) = \int_t^{\infty} f(x)dx = 1 - F(t) \tag{3}$$

$$h(t) = \lim_{\Delta t \to 0} \frac{\Pr(t \leq T < t + \Delta t / T \geq t)}{\Delta t} = \frac{f(t)}{S(t)} \tag{4}$$

Equations (1)-(4) show that they are equivalent. Given any one of them, the others can be recovered. The functions of *f(t)* and *F(t)* are foundations of parameter estimation and *S(t)* and *h(t)* are more related to research questions (*e.g.* how long does it take for a case to be decided if it is remanded?). As a whole, these four functions provide the theoretic framework for empirical analysis.

The accelerated failure time (AFT) model (Allison 1995) describes a relationship between survival functions of any two individuals. If $S_i(t)$ is the survival function for individual *i*, $S_j(t)$ for another individual *j*, the AFT model holds:

$$S_i(t) = S_j(\phi_{ij} t) \text{ for all } t \tag{5}$$

where ϕ_{ij} is a constant that is specific to the pair (*i, j*). Actually, the AFT estimation is similar to an ordinary linear regression. Because litigation time delay is generally explained by bargaining game or nonstrategic models (Fenn and Rickman 2001; Fournier and Zuehlke 1996; Malmsheimer and Floyd 2004; Spier 1992), we assumed that the value of case length (T_i) is a function of a vector of variables, $x_{i1},\ldots, x_{ij}$, indicating type of appellant, type of recreational activity, parties' bargaining power, and legal environment. Then, the model is expressed as:

$$\log T_i = \beta_0 + \beta_1 x_{i1} + \ldots + \beta_k x_{ik} + \sigma\varepsilon_i \tag{6}$$

where $\beta_0,\ldots, \beta_k$, and σ are parameters to be estimated; ε_i is a random disturbance term with variance σ. If there are no censored data, we can estimate the model by ordinary least squares (OLS).

But it is difficult to handle censored data with OLS because duration data usually have some censored observations. In this study, all remanded cases were interval censored. These interval-censored data must be incorporated into likelihood function first. Interval censoring occurs when the time of event occurrence is known to be somewhere between times *a* and *b*, but the exact time is not known. We assumed all remanded cases in this study would be decided within one year after the judgment date by the higher court. The contribution to the likelihood for an observation censored between times *a* and *b* is just $S_i(a) - S_i(b)$, where $S_i(.)$ is the survival function for observation *i*. Suppose there is *r* uncensored observations and (*n*-*r*) censored observations. Arranging the data such as uncensored cases first, then censored cases, the likelihood can be written as follows:

$$L = \prod_{i=1}^{r} f_i(t_i) \prod_{i=r+1}^{n} [S_i(a_i) - S_i(b_i)]$$
$$= \prod_{i=1}^{n} f_i(t_i)^{\delta_i} [S_i(a_i) - S_i(b_i)]^{1-\delta_i} \quad (7)$$

The censoring indicator δ_i acts as a switch, turning the appropriate function on or off, depending on whether the observation is censored. The equation shows how censored and uncensored cases are combined in maximum likelihood estimation (MLE). Taking the logarithm of both sides of equation (7), the likelihood function is expressed as:

$$\log L = \sum_{i=1}^{n} \delta_i \log[f_i(t_i)] + \sum_{i=1}^{n} (1 - \delta_i) \log[S_i(a_i) - S_i(b_i)] \quad (8)$$

Once a particular distribution is chosen, the effect of covariates is incorporated by specifying a scale parameter $\lambda = \exp(-\beta' X)$ where $\boldsymbol{X}$ is a vector of covariates and $\boldsymbol{\beta}$ is the vector of parameters. To estimate the parameters in this model, MLE method was applied. Empirically, a combined category including all cases was estimated using MLE first. Then these cases were classified into three events: confirmed without liability, reversed, and remanded. A multinomial logit analysis was conducted to examine the difference among the three events. If there was no significant difference among the three events, we focused on the category in which all cases were confirmed and the landowners had no liability, while treating other cases as interval-censored data because they were related to the study objective.

For each category, five widely-used distributions, such as exponential, Weibull, log-normal, log-logistic, and gamma, were considered and only one distribution was selected. Since gamma distribution is the most unrestricted, likelihood ratio statistics can be used to compare nested models and make a selection: that is, taking the differences of the log-likelihood between nested models and multiplying by two yields the likelihood ratio χ^2 statistics. If the statistic is not significantly different from zero, then the two models are statistically the same.

Because the actual regression format was a semi-logarithmic one in parametric duration analysis, a simple transformation provided interpretive values. For quantitative variables, a transformation of $100(e^{\beta} - 1)$ is needed to give the percentage changes in the expected case length for each 1-unit change in the variable. For dummy variables, the value gave the estimated ratio of the expected duration time between the group in consideration and the base (Allison 1995).

Case sources and variables

Case data were obtained using fact patterns from two legal databases, Lexis/Nexis and Westlaw. Lexis/Nexis and Westlaw are computerized legal databases containing case law decisions, legal statutes, and law review articles, as well as synopses of lawsuit verdicts and settlements gleaned from legal periodicals. Three methods were used to thoroughly search the databases (Mersky and Dunn 2002). First, it was searched by the keyword combination of “recreational use statute”, “private land” and “activities such as hunting.” This search resulted in 754 cases from

Lexis/Nexis and 708 cases from Westlaw. Many were unrelated to recreational use on private land, but were for other types of land (*e.g.* an injury sustained by diving into swimming pool in residential backyard). In this study, private land includes all private forestland, farmland, and undeveloped/unimproved land. After identifying case by case, we kept only 62 cases from Lexis/Nexis and 75 cases from Westlaw because they were related to the study objective. The two databases overlapped on 42 cases. Second, a search by West KeyCite was conducted for each of the cases from the keyword search. As a citatory service provided by Westlaw, the KeyCite revealed all subsequent cases that have cited the case of interest and, furthermore, reported whether there has been any negative treatment for the instant case. With the help of the KeyCite search, the case list was further modified and expanded through cited cases and citing reference. Finally, a search by West Key Number was conducted. The West Key Number digest has more than 400 topics and 10,000 keys. The cases from the previous two search steps revealed that more than 100 West Key Numbers were related to recreational use on private land. Typical Key Numbers were 272XVII (F) recreational use doctrine and statutes. The West Key Numbers that appeared frequently were used to search the database again. This search produced the final case list (104 cases) for this study. Note that only cases that proceeded through trial and reached the appeals court were included in this analysis. Then we coded all variables as specified below case by case. The definition and means of dependent and independent variables were presented in Table 1.

The dependent variable in the analysis was defined as the length of time in months that a case lasts before being decided in the court from the date of accident. Generally, a case length is calculated from the date of entry in the court to its closure in the court. But in this analysis, many cases do not have filing date to the court. Instead, the case length was calculated from the date of the accident to its closure in the court. The minimal duration time in the data set is 13 months, while the maximum duration time for a case during the span of this data is 103 months. Note that average case length of 50 was taken for the cases that do not have happening data.

Since no such work has been done to investigate causation variables for recreational use cases, we identified 15 independent variables serving as the causation of litigation delay before the courts. The first variable, recreational user appealing to the higher court, provided a case-specific measure of appellant type. A second set of variables captured the influence of the type of activity on the court decision according to legal model suggested by Malmsheimer and Floyd (2004). In this study, five dummy variables were employed to capture their impacts in the litigation. There were hunting, boating, off-road vehicle, snowmobiling, and other (other than hunting, boating, off-road vehicle, or snowmobiling).

A third set of variables indicated strategic behavior and deliberate actions of the plaintiff and defendant (Spurr 2000). Severity levels of injury were used to capture the behavior and actions of the plaintiff. Three dummy variables were employed for different levels of severity of injury of the claimant: light injury, severe injury, and death. Likewise, existing genuine issue of material fact and fee charge were used to secure the landowner's behavior and actions. In this study, two dummy variables were used to see if existing genuine issue of material fact and fee charge have influence on the case time in the litigation before the courts.

Table 1. Definitions and means of variables

Variable	Definition	Mean
Case length	The length of the case from the happening date of the accident to its closure in the court (in months)	49.961
Type of appellant		
User	Equal to 1 for the users appealing the case, otherwise 0	0.854
Type of activity		
Hunting	Equal to 1 for hunting, otherwise 0	0.194
Boating	Equal to 1 for boating, otherwise 0	0.049
Off-road vehicle	Equal to 1 for off-road vehicle, otherwise 0	0.262
Snowmobiling	Equal to 1 for snowmobiling, otherwise 0	0.078
Others	Equal to 1 for other than hunting, boating, off-road vehicle, snowmobiling; otherwise 0	0.417
Plaintiff		
Light injury	Equal to 1 for light injury, otherwise 0	0.039
Severe injury	Equal to 1 for severe injury, otherwise 0	0.777
Death	Equal to 1 for death, otherwise 0	0.194
Defendant		
Genuine issue	Equal to 1 for genuine issue existing, otherwise 0	0.184
Fee charged	Equal to 1 for fee charged, otherwise 0	0.136
Case location		
RegSouth	Equal to 1 for 13 states in the south, otherwise 0	0.214
RegNorth	Equal to 1 for 20 states in the north, otherwise 0	0.485
RegWest	Equal to 1 for 5 states in the west, otherwise 0	0.155
RegMid	Equal to 1 for 12 states in the mid-west, otherwise 0	0.155
Time of case born		
Entry70	Equal to 1 for cases born from 1960 to 1979, otherwise 0	0.117
Entry80	Equal to 1 for cases born in 1980's, otherwise 0	0.408
Entry90	Equal to 1 for cases born in 1990's, otherwise 0	0.417
Entry2000	Equal to 1 for cases born from 2000 to 2007, otherwise 0	0.058

Furthermore, a fourth set of geographic region and time-point indicator variables was used to pick up spatial and contemporary variations in the political culture that affects court decision (Malmsheimer and Floyd 2004; Wenner and Dutter 1988). In this paper, dummy variables were

included for the location of the case hypothesized to have an influence on its time duration. For simplicity, four regions were identified in this study. RegSouth is a dummy variable that is equal to one for cases that are decided in 13 states in the south; RegNorth is a dummy variable for 20 states in the north; RegWest is a dummy variable for five states in the West; and RegMid is a dummy variable for 12 states in the Midwest. Also four dummy variables were created for the year the case was born to represent the possible divergence due to the time of decision in the court. Entry70, Entry80, Entry90, and Entry2000 were used to represent the cases from 1958-1979, 1980's, 1990's, and 2000's.

Results

Qualitative Analysis

The results of descriptive statistics on recreational use cases within recreational use statute were presented. By state, the cases covered 27 states; more specifically, they covered 15 cases in Louisiana and 16 cases in New York. By party position, 68 cases were involved between recreational users and private landowners. 16 cases were between recreational users and lessees where users did not file lawsuit against landowners. 19 cases involved three parties: the user, the lessee, and the landowner. By court, 70 cases were from the court of appeals, while 33 cases were from the Supreme Court in a state. No case from different states was identified in federal courts. By ownership type, only 16 cases held some forestland or woodland and were classified as non-industrial private forest (NIPF); 37 cases involved forest business; and 50 cases were from farmland and undeveloped land. By charged fees, 14 cases involved a business relationship. By verdict of injurers' liability, liability for private landowners was not found at both the lower court and the higher court in 64 cases and liability was found at the lower court and reversed at the higher court in six cases. Thus, appellate courts or supreme courts confirmed that landowners had no liability in 68% of cases (*i.e.*, 64/103+6/103), plus four cases remanded for further proceedings with a direction in favor of the landowners. Among the other 25 cases where landowners had liability, the appellate courts or supreme courts confirmed the lower court decision in five cases, reversed the lower court decision in three cases, and reversed the lower court decision for further proceedings with a direction in favor of the recreational users in 17 cases. This summary revealed that the actual liability of landowners was lower than the landowners' previous perceptions.

The results of investigating the determinants of the landowners' liability case by case within RUS from a legal standpoint delivered some insights. In this study, 74 cases alleged that the conduct of the landowners was negligent or willful and malicious in the lower court, but all claims were dismissed. Four other cases were reversed and remanded for further proceedings with a direction in favor of the landowners. For example, in Castille v. Chaisson (LA 1989), parents of a minor who drowned in a pond while hunting filed action against the landowner, alleging causes of action in negligence. The court of appeals in Louisiana held that the property owner had RUS immunity against tort liability and owed no duty to warn hunters of the existence of the man-made pond. This investigation revealed that the landowners had no liability in general, as long as there was no profit-motivated fee charge and genuine issue of material fact did not exist. These factors, such as appellant type, recreational activity type, users or

landowners' characteristics, users' injury severity levels, case location, and case entry time, had no influence on determining the landowners' liability.
In contrast, under some circumstances where genuine issue of material fact did exist and there was a profit-motivated fee charge, the landowners had liability to the recreational users. Other factors had no influence on the determination of the landowners' liability. In this study, eight cases were found that the landowners were liable for the users' injuries, plus 17 cases remanded for further proceedings with the direction in favor of the users. Among the 25 cases, nine cases involved a profit-motivated fee charge, four cases involved improper conduct of the landowners, five cases involved defective material or injury-causing condition, and six cases involved failure to have safety rules, warn user of danger, or mark hazards. For instance, in Sauberan v. Ohl (NY 1997), the appellate court held that the landowner's allegedly improper conduct in telling a hunter to shoot at a target that the landowner could not see removed him from protection under RUS. Only one case was found to have vicarious liability, which is a substituted liability that the landowner bears for the actionable conduct of the lessee according to the relationship. In Scott v. Wright (IA 1992), the user filed a lawsuit against the driver's negligence and the landowners on the theory of vicarious liability for the driver's negligence. The Supreme Court of Louisiana held that the statute making the owner of the tractor liable for damages when the vehicle was driven by another with the owner's consent applied to the vehicle driven on private property.

Parametric Duration Analysis

One thing to bear in mind is that the nonparametric analysis was univariate with regard to time *t* only, parametric duration analysis provided a relationship between case duration and its causation. Since multinomial logit analysis revealed that there was no difference among the three events, the empirical results had two categories: combined data including all cases and confirmed data where the landowners had no liability. The results of maximum likelihood estimation for each of the two categories showed that the log-likelihood was -141.5 and -191.8 for the exponential distribution, -55.7 and -105.4 for Weibull, -55.6 and -104.6 for lognormal, -52.8 and -102.5 for log-logistic, and -54.2 and -103.7 for gamma, respectively. The likelihood tests revealed that log-normal distribution was the best for each of the two categories. The results of log-normal distributions for each of them are presented in Table 2.

The first category for combined data in the first column in Table 2 indicated that all coefficients had the expected signs and 8 out of 15 variables were significant at the 5% and 10% levels. These were recreational user appealing the court as well as hunting, snowmobiling, other activities, severe injury, genuine issue, fee charge, and RegSouth. For a recreational user appealing to the higher court, the coefficient's value was 16%. Thus, for the recreational user appealing the case, the litigation time was increased by 16%, compared with the landowner appealing the case.

Among recreational activities, hunting, snowmobiling, and others have negative and significant impacts on survival time and the corresponding values were -34, -30, and -27, respectively. This implied that hunting had a 34% shorter case length, snowmobiling had a 30% shorter litigation time, and others had a 27% shorter time than boating when the base activity used was boating. An intuitive explanation is that it takes more time for the fact finder (*i.e.*, jury or judge alone) to uncover information for boating incidents.

Table 2. Results of log-normal distributions for each of two specifications for US cases within RUS over 1958-2007

Variable	Combined all data		Confirmed data without liability	
	Coefficient	Standard error	Coefficient	Standard error
Intercept	4.120	0.194**	4.148	0.192**
User	0.163	0.097*	0.128	0.095
Hunting	-0.409	0.165**	-0.406	0.162**
Off-road vehicle	-0.226	0.167	-0.226	0.165
Snowmobiling	-0.364	0.198*	-0.367	0.195*
Others	-0.312	0.163*	-0.311	0.161*
Light injury	-0.104	0.172	-0.102	0.169
Severe injury	-0.200	0.081**	-0.195	0.080**
Genuine issue	0.246	0.085**	0.246	0.084**
Fee charged	0.182	0.103*	0.176	0.102*
RegSouth	-0.210	0.101**	-0.211	0.100**
RegWest	-0.002	0.095	0.002	0.094
RegMid	-0.062	0.097	-0.061	0.096
Entry80	0.128	0.106	0.133	0.104
Entry90	0.031	0.105	0.036	0.103
Entry2000	-0.140	0.161	-0.129	0.159
Number of cases	103		103	
Scale	0.297		0.293	
Log-L	-55.594		-104.634	

*Significant at 10% level. **Significant at 5% level.

Among these strategic variables, severe injury as an approximation of the bargaining power of the plaintiff (recreational user) had a negative and significant effect with a coefficient value of -0.20. Its transformed value was -18%. This suggested that severe injury had 18% shorter case duration than death used as the base. Similarly, existing genuine issue of material fact had a significantly positive effect with a coefficient value of 0.25. Its transformed value was 28%. This indicated that existing genuine issue of material fact increased case duration by 28% than that without the genuine issue. Fee charge variable also had a significantly positive effect with a coefficient value of 0.18. Its transformed value was 19%. This indicated that a fee charge increased litigation time by 20%. Turning to spatial and temporary variables, only the RegSouth variable had a negative and significant effect on litigation time, indicating that the case litigation

time was 19% shorter in the south than in the north. The time of case entry had no effect on the litigation time.

One limitation of the first category is that it combined all data together without considering variation among confirmed, reversed and remanded cases. The benefit of the second category was to emphasize confirmed cases where all cases were decided and private landowners had no liability. The results of the second category were close to the first one. The only exception is that appellant type had no significant effect on the case litigation time. This further implied that landowners' concern on case litigation delay can be reduced to some extent as the appellant type chosen by users had no effect.

Discussion

This study focused on the issues associated with liability and delay in case litigation raised by private landowners. Review of the recreational cases revealed that the landowners generally had no liability, but under some situations the landowners could have liability if genuine issues of material fact did exist (*e.g.* defective materials) and there was a profit-motivated fee charged. These findings were independent of appellant type, recreational activity type, users or landowners' characteristics, users' injury severity levels, case location, and case entry time.

Parametric duration analysis also was used to examine the influence of several case-specific characteristics. The estimated coefficients and the corresponding transformed values for some of the eight significant variables have important policy implications for decreasing litigation delays.

Among the eight significant variables, strategic variables potentially have the greatest impact on timely litigation. On the plaintiff's (recreational user) side, litigation time for these severe injury cases can be shortened by 18% in death cases. An intuitive explanation is that one would expect the stakes to be higher for more severe injuries, leading to longer negotiations. This result is consistent with the results in literature for other law cases (Fenn and Rickman 2001; Spurr 2000). Coupled with the results of the summary on the landowners' liability, the implication is that the recreational users could take a risk while engaging in recreational activities. Injury severity levels just postpone litigation time, but cannot eliminate the landowners' liability under RUS. Likewise, on the defendant's (landowner) side, existing genuine issues of material fact can increase litigation time by 28% more than cases without the genuine issues. The implication is that existing genuine issue of material fact cannot waiver the landowners' liability but can prolong litigation time. The landowners also should be aware that a profit-motivated fee charge cannot remove liability but can increase litigation time. From a policy perspective, reducing genuine issues, such as improper conduct, defective material, and failure to have safety rules, is critical because it can remove the landowners' liability and reduce litigation delay. A further investigation of these fee-charged cases implied that leasing private lands to lessees for maintenance of the lands cannot naturally lead to vicarious liability of the landowners. The key implication is that the lessees should be non-profit motivated. Of course, the landowners themselves should be non-profit motivated as well.

Appellant type is another key variable. Generally, the party who has lost at the lower court level is appealing to an appellate court. Combined with the results of the summary on the landowners'

liability, the implication is that users cannot be keen on the higher court reversing the judgment of the lower court if they cannot provide proof of negligence, in which the landowners' duty owed to the users is much lower than required by common-law. Results of duration analysis of the second category (confirmed cases where landowners had no liability) further implied that users appealing to the higher court cannot affect the landowners' liability nor litigation time. From policy standpoint, reducing confusion on understanding of the intention of RUS is important.

Recreational activities, such as hunting, snowmobiling, and others, have significantly negative impacts on litigation time. Despite their relatively large marginal impacts, they have limited policy value because recreational activities rely on land availability and features. Similarly, regional variable, *RegSouth*, despite its significantly negative effect on extending litigation time by 19%, has limited policy implication as well.

Overall, these results from the duration analysis of litigation delay are consistent with results in literature for other law cases. They help us understand the liability concerns and litigation delays faced by the private landowners, and thus promote the supply of outdoor recreation by the landowners. Nevertheless, caution should be taken in reaching any definite conclusions from our findings due to low levels of data availability and technical constraints. Further research is needed to extend the databases and to investigate the liability for other parties related to recreational use statute such as public ownership.

Literature Cited

Allison PD. 1995. Survival analysis using SAS: A practical guide. Cary (NC): SAS Publishing.

Aronovsky RG. 2000. Liability theories in contaminated groundwater litigation. Journal of Environmental Forensics 1(3):97-116.

Barrett J. 1977. Good sports and bad lands: the application of Washington's recreational use statute limiting landowner liability. Washington Law Review 53(1):1-29.

Becker J. 1991. Landowner or occupier liability for personal injuries and recreational use statutes: how effective is the protection? Indiana Law Review 24(5):1587-1613.

Benson DE. 2001. Wildlife and recreational management on private lands in the United States. Wildlife Society Bulletin 29(1):359-371.

Eshee WD, Liddell P, Liddell G. 2005. The legal environment of business (2nd ed.). Boston (MA): Pearson Custom Publishing.

Fenn P, Rickman N. 1999. Delay and settlement in litigation. The Economic Journal 109(457):476-491.

Fenn P, Rickman N. 2001. Asymmetric information and the settlement of insurance claims. The Journal of Risk and Insurance 68(4):615-630.

Fournier GM, Zuehlke TW. 1996. The timing of out-of-court settlements. The Journal of Economics 27(2):310-321.

Goebel RH, Goebel MR. 1999. Clinic practice guidelines for pressure ulcer prevention can prevent malpractice lawsuits in older patients. The Journal of Wound, Ostomy and Continence Nursing 26(4):175-184.

Greene WH. 2003. Econometric analysis. Delhi (India): Pearson Education, Inc.

Hughes JW, Savoca E. 1997. Measuring the effect of legal reforms on the longevity of medical malpractice claims. International Review of Law and Economics 17(2):261-273.
Jones WD, Munn IA, Grado SC, Jones JC. 2001. Fee hunting: an income source for Mississippi's non-industrial private landowners. Forest and Wildlife Research Center, Mississippi State University, MS. 15p.
Kaiser R. 1986. Liability and law in recreation, parks and sports. Englewood Cliffs (NJ): Prentice-Hall Inc.
Kessler D. 1996. Institutional causes of delay in the settlement of legal disputes. The Journal of Law, Economics and Organization 12(2):432-460.
Lee RD. 1995. Recreational use statutes and private property in the 1990s. Journal of Park and Recreation Administration 13(3):71-83.
Malmsheimer R, Floyd D. 2004. U.S. courts of appeals judges' review of federal natural resource agencies' decisions. Society and Natural Resources 17(6):533-546.
Mersky RM, Dunn DJ. 2002. Fundamentals of legal research (8th ed.). New York (NY): Foundation Press.
Noble M. 1991. Recreational access to agricultural land: insurance issues. Indiana Law Review 24(6):1615-1640.
Spier K. 1992. The dynamics of pre-trial negotiation. The Review of Economic Studies 59(1):93-108.
Spurr SJ. 2000. The duration of personal injury litigation. Research in Law and Economics Journal 19(1):223-246.
Spurr SJ. 2002. The future of capital punishment: determinants of the time from death sentence to execution. International Review of Law and Economics 22(1):1-23.
Sun C, Pokharel S, Jones WD, Grado SC, Grebner DL. 2007. Extent of recreational incidents and determinants of liability insurance coverage for hunters and anglers in Mississippi. Southern Journal of Applied Forestry 31(3):151-158.
Teasley RJ, Bergstorm JC, Cordell HK. 1999. Private lands and outdoor recreation in the United States. In: Cordell HK, Betz C, Bowker JM, editors. Outdoor Recreation in American Life: A National Assessment of Demand and Supply Trends. Champaign (IL): Sagamore Publishing.
Wenner LM, Dutter LE. 1988. Contextual influences on court outcomes. Western Political Quarterly 41(1):113-134.
Wright BA, Kaiser RA, Nicholls S. 2002. Rural landowner liability for recreational injuries: myths perceptions, and realities. Journal of Soil and Water Conservation 57(3):183-191.