# Explaining the Differences in Tort Suits
# Across U.S. States

**Laurie Freely**
**Econ 493**
**Dr. Vandegrift**
**4/18/04**

**Introduction**

During the past few decades, the United States witnessed an upward trend in litigation. This is evidenced by an unimpeded demand for lawyers and an increasing dollar award for injured victims. A sample of 16 states shows that the number of tort filings rose 40 percent from 1975 to 2001. In 2001 alone, the National Court Statistics Project reported the filing of 93 million new cases. This trend reached its pinnacle in 1990 when filings increased 75 percent after 1973. However, since then, tort filings have shown a continual decline on average. (NCSC, 2002) From the period 1990 to 2000, the number of state court judges has risen on average about 1% per year to a total of 29,266 trial judges and quasi-judicial officers.

In addition, the number of tort suits has received an enormous amount of attention. For example, there has been a growing tendency for people to sue over incidents that previously might have been ignored. Incidents such as McDonald's infamous hot coffee spill and slipping and falling on someone's premises are examples of this tendency. Economists are increasingly involved in such lawsuits as experts that measure the damages associated with these incidents. The term "forensic economics" is applied to such consulting. (Thorton and Ward, 1999)

Despite this downward trend in tort filings, interest remains high in the area. Tort reform remains a controversial topic, especially with respect to medical malpractice suits. Doctors and insurance companies claim that the outcomes of these cases drive increases in the malpractice insurance rates paid by doctors or hospitals. Such increases, in turn, might adversely affect health care. The median award in medical malpractice trials is $286,000 in contrast to only a $18,000 median award for automobile

1

trials.  A study from nine states indicated a 24 percent increase of medical malpractice filings over the past ten years (NCSC, 2002). Thus, public interest remains high in the area of tort reform and the number of tort filings.

Tort reform is not limited to the area of medical malpractice.  Instead, tort reform initiatives have been offered in all areas of tort.  Nearly one-third of the states have had legislative fights for reform (Ballard, 2003).  The issue of tort reform has gone as far as attracting the acceptance of President Bush, who believes that reforms such as caps on awards are necessary.  Tort reform naturally attracts many critics who argue that such legislation could undermine the right of victims to receive a fair award (Austin and Day, 2003).  Therefore, the battle of tort reform is being fought by interest groups, legislators and lawyers, to name a few, those of whom have many different views on the subject.

With this in mind, it is necessary to explore the subject further to locate the driving force of tort filings and to explain the difference in the number of suits in different locations.  This information would be useful to economists in their studies, lawyers with their trials, politicians in their pursuit for or against tort reform, and many others interested in the area.

## Background

Posner (1997) attempts to explain the existence of a large variance in the number of tort suits across U.S. states and between the United States and England.  He reports data from 1986 which shows that, per 100,000 population, the range varies from 95.6 tort filings in North Dakota to 1302.4 tort filings in Massachusetts, with England falling near the bottom of the range with an average of 117.4 tort filings.

Using a reduced-form regression, Posner finds that much of the variation across states can be explained by basic demographic variables. Four significant variables account for approximately 75 percent of variation across states: education, urbanization, alcohol consumption and the male/female ratio. Education was found to have a negative effect on the number of tort filings, and urbanization, alcohol consumption and the male/female ratio (women are more likely to file) had a positive relationship with the number of tort filings.

Because tort rules vary little across states, the enormous difference in the rate of tort filings cannot be explained by legal or cultural variables. However, Posner finds that in England, the number of predicted tort suits is relatively low compared to the number of actual tort suits. This implies that the legal and/or general culture of England are actually raising the number of tort suits and that these factors are making the English more litigious than Americans.

Posner's article provides a good background to explain the variance in tort suits across certain areas. Due to flaws, it is useful as a basis for a more complete study. First, because auto accidents make up a large percentage of tort suits, it would be advantageous to include the per capita number of miles traveled as an independent variable. The number of miles traveled directly correlates to the number of accident suits. The Bureau of Justice Statistics and the National Center for State Courts report that automobile cases comprised approximately 60 percent of tort cases in the United State's 75 largest counties (NCSC, 2002). Also, Posner's statistical design is flawed. He treats repeated annual observations from the same state as independent. However, it would be more effective to use a panel procedure to control for state-level fixed effects.

Other analysts have attempted to explain the variance in the number of tort suits. Lee, Browne and Schmit (1994) explored how joint and several tort reform affect the rate of tort filings. Their purpose was to test the theory that certain tort reform legislation reduced the number of tort filings. As the subject of tort reform normally causes heated debates in Congress, evidence would be useful to either party in such a debate. Joint and several tort liability is useful to this article because like many U.S. doctrines, they originated in England.

Lee et. al. reach a rather intriguing conclusion. They find that between 1985 and 1990 there is only weak evidence that joint and several tort reform has decreased the volume of tort filings. Although this is rather surprising, this does not imply that other methods of tort reform do not affect the rate of tort filings as well. These findings provide the grounds for further research in the area of determining the cause of the relatively massive volume of tort filings in the United States when compared with other nations.

Cooter and Rubinfeld (1989) point out that a victim should not bring suit if the costs outweigh the benefits of filing. Consequently, an explanation of an increase or decrease in tort suits should hinge on a consideration of benefits and costs of filings. Just as courts are relying more on economic analysis to determine the outcome of cases, this paper utilizes economic analysis to attempt to define the causes of the variance in tort suits across the states.

Patricia Danzon (1984) considers reform of medical malpractice. She examines the frequency of medical malpractice claims across the U.S. states. The data shows that the number of claims against physicians and hospitals spiked dramatically in the mid-

seventies and the spread between the most litigious and least litigious states narrowed from 1975 to 1978.

She also finds that factors concerning medical care and medical malpractice litigation contribute to an explanation of the frequency of such claims. The growth and diversity of medical services, particular to the time after the mid-1960's, is a significant contribution to the phenomena of an increase in litigation and diversification of medical services among states during that time. Interestingly, she finds that the supply of lawyers does not have an effect on claim frequency but the structure of the law favoring the plaintiff does. She proves this by adding that tort reforms enacted to minimize awards have drastically reduced severity of malpractice claims. Like Posner, she identifies urbanization as a cause of higher claim frequency, however she identifies the variable as the single most significant predictor of claim frequency and severity. She leaves unanswered the question of which characteristics of urbanization influence this trend and is also puzzled by the post-1975 decline in claim frequency. Like many others, she too leaves important questions unanswered that prompt further investigation in the area and support the writing of this paper.

Danzon (1987) focused specifically on the effect of tort reforms on the frequency and severity of malpractice claims. Tort reforms such as caps on awards, collateral source offset and statutes of repose have a consistently significant effect on the frequency and severity of malpractice claims although claim frequency and severity continued to increase despite the enactment of tort reforms. However, evidence might underestimate the complete long-run effect of tort reform. If thresholds for caps are not modified upward to correct for inflation, these caps will have a larger downward effect over time.

In addition to caps, collateral source offset and statutes of repose may also constrain tort litigation. In the case of negligence, if the number of years is greater for a person to have the ability to bring about a lawsuit in the area of torts, the frequency and severity of these suits is bound to decline. Miceli (1999) argues that increasing the length of time a person can file suit, deterrence is enhanced and the probability that an injurer would be found negligent is reduced. Due to this probability, fewer victims file suit as more time passes.

Miceli bases his model of statutes of limitations for tort suits based on the tradeoff between deterrence and litigation costs. A longer statute is found to enhance deterrence, but to increase litigation costs and visa versa for a shorter statute. The aim is to balance the effects to locate the optimal length of time allowed to file a tort suit. He points out that the optimal length of time is longer for negligence cases than for cases regarding strict liability because a lengthened statute increases deterrence and in turn makes it more difficult for plaintiffs to prove negligence at trial. At any rate, tort reform advocates will also attempt to locate this optimal balance of increased incentives for care (deterrence) and increased litigation costs to find a way to decrease the number of tort suits.

**Empirical Model and Data**

To analyze the effects of tort reform across U.S. states we employ a fixed-effects panel data procedure. The fixed effects procedure estimates a time-invariant intercept term for each of the cross-sections. Pooling the data and assuming a common intercept ignores individual effects and may produce biased results.

In the fixed effect model, individual effects are fixed over time, but are unique to each cross-section. This model assumes that such differences across the states are explained by the constant term.

(1) $Tortf_{it} = X'_{it}\delta + \alpha_i + u_i$

Where $i$ corresponds to states and $t$ corresponds to years; $Tortf_{it}$ = the number of per capita tort filings, $X'_{it}$ = an array of explanatory variables, $\alpha_i$ = the time invariant for unobserved state effects and $u_{it}$ = the error term that varies across states and years.

Data was retrieved from the *Court Statistics Project* (number of tort filings*), The Statistical Abstract of the U.S.* (population, personal income, educational attainment, population density, death rates by accidents and adverse effects, number of males and females, percent of the population under 25 and the percent of the population over 65), National Institute on Alcohol Abuse and Alcoholism, *Surveillance Report #62* (per capita alcohol consumption) and the Bureau of Transportation Statistics (total vehicle miles traveled). The GDP Deflator was used to convert personal income in current dollars to personal income in constant (2000) dollars. Each variable is in terms of a per capita basis to correct for any differences in the population of each state. The data contains observations on each variable across 16 U.S. states for the time period 1995-1999. Table 1 displays the means, standard deviations and provides definitions of the independent and dependent variables. The per-capita rate of tort filings per 10,000 population ranged from 8.26 suits to 53.67 suits.

Per-capita tort filings per 10,0000 population (Pctort) is regressed on the percentage of the population that graduated high school (education), population per square mile (Popdens), number of deaths per 100,000 population by accidents

(Deathacc), Per-capita alcohol consumption (Alcohcons), percentage of the population that is under 25 years of age (Perunder25), percentage of the population over 65 years of age (Perover65), ratio of male to females (Mfratio), per-capita vehicle miles traveled in millions of miles (Miltravpop) and real per-capita income in thousands of 2000 dollars (Pcinc). It was expected that with an increase in all independent variables, with the exception of the male/female ratio and per-capita income, an increase in the number of per-capita tort filings would result. From Posner's (1997) conclusions, women are more likely to file suit, so it is expected that an increase in the male/female ratio would decrease per-capita tort filings. The effect of income on tort filings was unclear as Posner (1997) discussed because a higher per-capita income increases the costs of accidents to victims as well as the expected benefits of suits but at the same time increases the opportunity costs of going to court.

However, it is possible that there may be a problem with two-way causality and correlation among independent variables. Two-way causality may occur with the number of deaths by accidents because in addition to the expectation that an increase in deaths by accidents would tend to increase the number of per-capita tort filings, it is also possible that an increase in tort filings would tend to lower the amount of death by accidents as a result of individuals utilizing a higher degree of care. The problem of correlation is possible among the male/female ratio and the percentage of the population over 65. This is addressed by running two separate regressions and excluding one of these variables in each.

The empirical study that Posner (1997) conducted found that the education, percent urban, alcohol consumption and male/female ratio variables were significant. He

concluded that there was a positive relationship between the percentage of the population living in an urban setting and the rate of tort filings as well as the per-capita alcohol consumption and the rate of tort filings. He found a negative relationship between the male/female ratio and the rate of tort filings, indication that women are more likely to sue. Finally, he concluded that an increase in educational attainment tends to decrease the rate of tort filings.

**Results**

Table 2 shows fixed effects regression on per-capita tort filings. Column 1 of table 2 shows the results of a fixed-effect regression with per-capita income, educational attainment, population density, deaths by accidents, per-capita alcohol consumption, percent of the population under 25 years of age, male/female ratio and the number of vehicle miles traveled by population. Because the male/female ratio and the percentage of the population over 65 exhibit correlation, the first column does not include the percentage of the population over 65 and the second column does not account for the male/female ratio. Both models are useful in explaining the effect on tort filings since the *F-test* rejects the null hypothesis and the *p-values* are less than .01. Also, the coefficient of determination ($R^2$) is fairly high in each, which indicates that the fraction of the sample variation of the y values that is attributable to the regression model is high.

Among the variables tested, four are significant. To begin, population density is significant at the 1% level in both regressions. Surprisingly, the sign is negative. It was anticipated that an increase in the population density would cause an increase in the number of tort filings. This is not the case. A one-unit increase in the population per

square mile of land area causes a 0.766 unit decrease in the per-capita tort filings for the first equation and a 0.838 unit decrease in the second equation.

Real per-capita income is also significant at the 1% level for both regressions. In both, a one-unit increase (thousand dollars) corresponds to a 1.74 unit increase in the number of tort filings. From a theoretical perspective, income might either increase or decrease tort filings. A higher per-capita income increases the costs of accidents to victims and consequently the expected benefits of suits. This, in turn would increase tort filings. On the other hand, an increase in per-capita income increases the opportunity costs of going to court which would decrease tort filings. It is evident that the effect of the former is stronger than the effect of the latter. These results, as well as the results for population density are different than the results suggested by Posner (1997) because in his model these variables were insignificant.

There are two variables that are significant at the 5% level: the percentage of the population over 65 and the per-capital vehicle miles traveled. In both instances the signs of the coefficients are negative. A one-unit increase in the percent of the population over 65 years of age leads to a 7.45 unit decrease in the per-capita tort filings. This can mean that people over the age of 65 are more careful, thus taking less risk and are not involved in as many accidents. They may also have less knowledge of the court system. Also, a one-unit increase in the vehicle miles traveled per population leads to a 6.37 unit decrease in per-capita tort filings in the first equation and a 5.81 unit decrease in the second equation. This is surprising. Auto accidents are a key source of tort filings and one can reasonably expect that more driving leads to more accidents.

The remaining variables are insignificant which suggests that they have no effect on the number of tort filings. These variables are the percent of the population with a high school diploma, the number of deaths by accidents, per-capita alcohol consumption, percent of the population under 25 years of age and the male/female ratio. Previously, Posner showed that educational attainment, per-capita alcohol consumption and the male/female ratio were significant. It is rather surprising that these results differ. The differences in the results are likely caused in part by the biases brought about by the pooling procedure that Posner employs and his failure to control for state-specific effects in his simple cross-section estimates that use variables created by averaging variables of a number of years. Also, some of the signs of the coefficients differ from previous expectations, but due to their insignificance, this is not important.

## Conclusion

During the time period 1992 to 2001 the growth rates of tort filings in 30 states have decreased 15% on average. This model only encompasses the years 1995-1999 but succeeds in explaining many of the fluctuations in tort suits by providing quantitative measures of the factors that have contributed to the increase. Such factors were examined using the panel-data procedure from 16 states for five years.

The results insinuate that population density, per-capita income, vehicle miles traveled per population and percent of the population over 65 are all significant in explaining per-capita tort filings. On the other hand, education, percent of the population under 25, per-capita deaths by accidents, per-capita alcohol consumption and the male/female ratio are not proven to change the rate of tort filings. It was quite surprising

that a few of the variables were not significant because they contradicted the findings in Posner's (1997) analysis. This suggests that some of the causes in the fluctuating rate of tort filings remain unexplained. Although this study succeeds in demonstrating some of the factors that induce changes in the rate of tort filings, the results should prompt further study on the subject.

# Bibliography

Austin, A. and J. Day, 2003, "Rising Awards Adds Fuel to Debate on Tort Reform," *Chicago Lawyer*, November, 24.

Ballard, M., 2003, "17-Front Tort War: One-Third of States Have Bills Pending," *National Law Journal*, 25(34), 1.

Cooter, R. and D. Rubinfeld, 1989, "Economic Analysis of Legal Disputes and Their Resolution," *Journal of Economic Literature*, 27, 1067-1097.

Danzon, P., 1984, "The Frequency and Severity of Medical Malpractice Claims," *Journal of Law and Economics*, 27, 115-148.

Danzon, P., 1987, "Symposium: Issues in Tort Reform: The Effects of Tort Reforms on the Frequency and Severity of Medical Malpractice Claims," *Ohio State Law Journal*, Spring, 413.

Lee, H., M. Browne and J. Schmit, 1994, "How Does Joint and Several Tort Reform Affect the Rate of Tort Filings?  Evidence from the State Courts," *Journal of Risk and Insurance*, 61(2), 295-316.

Miceli, T., 2000, "Deterrence, Litigation Costs, and the Statute of Limitations for Tort Suits," *International Review of Law and Economics*, 20, 383-394.

National Center for State Courts, 2002, *Examining the Work of State Courts*. (www.ncsconline.org)

National Institute on Alcohol Abuse and Alcoholism, *Surveillance Report #62: Per Capita  Ethanol Consumption for States, Census Regions, and the United States, 1977-2000*.  (www.niaaa.nih.gov)

Posner, R., 1997, "Explaining the Variance in the Number of Tort Suits Across the U.S. States and Between the United States and England," *Journal of Legal Studies*, 26, 477-489.

Thornton, R and J. Ward, 1999, "The Economist in Tort Litigation," *Journal of Economic Perspectives*, 13(2), 101-112.

U.S. Bureau of the Census, various years, *Statistical Abstract of the United States*, US GPO, Washington DC. (http://census.gov/staab/www/)

U.S. Bureau of Transportation Statistics, various years, *U.S. Highway Vehicle Miles Traveled*.  (www.bts.gov)

U.S. Department of Justice, 1995, *Three out of Four Tort Cases Settled out of Court* (Washington D.C.).
(www.ojp.usdoj.gov/bjs/pub/press/tcilc.pr)

Table 1. Mean and Standard Deviations

| Variable | Mean | Standard Deviation | Minimum | Maximum |
|---|---|---|---|---|
| Pctort | 20.82 | 8.64 | 8.26 | 53.67 |
| Education | 84.98 | 4.35 | 76.1 | 92.8 |
| Popdens | 129.87 | 135.93 | 1.1 | 529.1 |
| Deathacc | 36.43 | 6.99 | 24.7 | 56.2 |
| Alcohcons | 2.16 | 0.35 | 1.2 | 2.86 |
| Perunder25 | 36.74 | 3.76 | 31.7 | 47.3 |
| Perover65 | 11.96 | 2.77 | 4.9 | 18.6 |
| Mfratio | 0.978 | 0.04 | 0.93 | 1.11 |
| Miltravpop | 9.52 | 1.25 | 6.6 | 11.81 |
| Pcinc | 26.12 | 2.99 | 20.49 | 32.84 |

$Pctort_{it}$: Per-capita tort filings per 10,000 population for state i in year t.
$Education_{it}$: Percentage of the population for state i in year t that graduated high school.
$Popdens_{it}$: Population per square mile of land area for state i in year t.
$Deathacc_{it}$: Number of deaths per 100,000 population by accidents for state i in year t.
$Alcohcons_{it}$: Per-capita alcohol consumption for state i in year t.
$Perunder25_{it}$: Percentage of the population under 25 years of age for state i in year t.
$Perover65_{it}$: Percentage of the population over 65 years of age for state i in year t.
$Mfratio_{it}$: Ratio of males to females for state i in year t.
$Miltravpop_{it}$: Per-capita vehicle miles traveled in million miles for state i in year t.
$Pcinc_{it}$: Real per-capita income (in thousands of 2000 dollars) for state i in year t.

Table 2.  Fixed-effects regression results

| Variable | (1) | (2) |
|---|---|---|
| Education | 0.068 | 0.116 |
|  | (0.19) | (0.33) |
| Popdens | -0.766*** | -0.838*** |
|  | (-3.56) | (-3.88) |
| Deathacc | 0.019 | -0.108 |
|  | (0.09) | (-0.49) |
| Alcohcons | -7.31 | -7.46 |
|  | (-0.92) | (-0.96) |
| Perunder25 | -0.219 | -0.081 |
|  | (-0.21) | (-0.08) |
| Perover65 |  | -7.45** |
|  |  | (-2.12) |
| Mfratio | 306.62 |  |
|  | (1.44) |  |
| Miltravpop | -6.37** | -5.81** |
|  | (-2.61) | (-2.43) |
| Pcinc | 1.74*** | 1.74*** |
|  | (3.58) | (3.67) |
|  | $R^2 = 0.87$ | $R^2 = 0.88$ |

*t*-values in parentheses.  *** = significant at 0.01   ** = significant at 0.05
All cross-section estimates are suppressed.

$Education_{it}$: Percentage of the population for state i in year t that graduated high school.
$Popdens_{it}$: Population per square mile of land area for state i in year t.
$Deathacc_{it}$: Number of deaths per 100,000 population by accidents for state i in year t.
$Alcohcons_{it}$: Per-capita alcohol consumption for state i in year t.
$Perunder25_{it}$: Percentage of the population under 25 years of age for state i in year t.
$Perover65_{it}$: Percentage of the population over 65 years of age for state i in year t.
$Mfratio_{it}$: Ratio of males to females for state i in year t.
$Miltravpop_{it}$: Per-capita vehicle miles traveled in million miles for state i in year t.
$Pcinc_{it}$: Real per-capita income (in thousands of 2000 dollars) for state i in year t.