SURVIVAL OF THE FITTEST? THE ORIGINS AND EVOLUTION OF THE SUBSTANTIAL-SIMILARITY DOCTRINE

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The substantial-similarity doctrine had its origins in the nineteenth century, arising as a way of aiding courts in determining whether accident re-creation evidence, either through actual re-creation or analysis of other similar accidents, is relevant and admissible.[1] In recent decades, the doctrine has become an enigma for some courts, in part because its foundational principles had become so well understood that for many years they were never expressly stated. A small but growing number of courts are replacing this useful tool for evaluating evidence with a near-blanket rule of exclusion that rejects relevant and reliable evidence.[2] A review of the doctrine's birth and evolution, combined with a series of thought-experiments, helps define the appropriate bounds for the doctrine. The substantial-similarity doctrine, in its original form, is defended against the emerging trends towards blanket rules, both in terms of coherency of the legal system and in terms of product safety.

I. INTRODUCTION

The phrase "substantially similar" sounds fairly innocuous, yet in the wrong hands, it can be devastating to legitimate legal arguments. For example, imagine that you are a plaintiff, suing the manufacturer of a piece of farm equipment.[3] You climbed onto the equipment to check on a problem, got your arm caught in the machinery, and were so badly injured that the arm had to be amputated.[4] When you sue the manufacturer, they claim there was no reason for them to expect that anyone would climb on top of their product. During discovery, you find documentation of other prior accidents in which other individuals had also been injured climbing on top of the manufacturer's products. This, of course, rebuts the manufacturer's claims. However, when you attempt

1. *See* Darling v. Town of Westmoreland, 52 N.H. 401 (1872).
2. *See* Chism v. CNH Am. LLC, 638 F.3d 637 (8th Cir. 2011).
3. *Id.* at 639.
4. *Id.*

to introduce the evidence at trial, the court declares the evidence inadmissible because: (1) the prior accidents did not involve the same model; and (2) none of the other injured parties were standing on top of the product in the same way that you were.[5] You explain that the evidence is necessary to counter the manufacturer's claims that no one climbs on their product, but the court is unmoved. Armed with what it sees as a bright-line evidentiary rule, the court rejects the evidence because it is not "substantially similar."[6] You are therefore unable to rebut the manufacturer's claim that it could not have foreseen someone climbing on its product, even though the evidence exists.[7]

Or, perhaps, you are an auto manufacturer that is being sued by the owner of one of the SUVs you manufactured.[8] Apparently, the driver swerved to avoid an animal in the road, and the SUV rolled. The driver and one passenger died as a result. The surviving passengers have brought suit claiming that your product's high center of gravity leads it to roll over too easily on dry pavement.[9] Plaintiffs have introduced evidence that you knew, prior to manufacturing the decedents' SUVs, that SUVs have a higher risk of rollovers than smaller cars. You ask your expert to prepare testimony showing the available data on the safety of the decedents' and other SUVs, to show the entirety of your knowledge regarding SUV safety prior to manufacturing the decedents' SUV. Your expert prepares testimony comparing the safety of the decedents' vehicle to a wide range of other vehicles under a wide range of circumstances. The court refuses to admit the testimony, however, because the testimony is not limited to safety under "substantially similar" circumstances.[10] You are therefore unable to rebut the plaintiffs' claims that you knew your SUV was unreasonably dangerous, even though the evidence exists.[11]

It is the nature of the common law to evolve. Benjamin Cardozo famously remarked that a legal principle tends "to expand itself to the limit of its logic."[12] As illustrated by the examples above, and as we discuss at greater length below, danger arises when a legal principle begins to expand *beyond* the limit of its logic. The particular doctrine at issue is the substantial-similarity doctrine, which provides that evidence of other incidents, unless shown to be substantially similar to the incident

5. *Id.*
6. *See id.* at 639-42.
7. *Id.*
8. *See* Jaramillo v. Ford Motor Co., 116 F. App'x 76, 77-79 (9th Cir. 2004).
9. *Id.*
10. *Id.*
11. *Id.*
12. BENJAMIN N. CARDOZO, THE NATURE OF THE JUDICIAL PROCESS 51 (1921).

at issue, is inadmissible to prove how that incident at issue occurred, that a product had a defect, or that someone had notice of a defect or dangerous condition. The doctrine arose as a way of simplifying the process of screening "experimental evidence." In essence, the doctrine applies when a party wishes to prove something about the present accident by offering prior events as a way of recreating the event in question.

In the above examples, if the evidence had been about anything other than prior accidents, it almost certainly would have stood a better chance of being admitted.[13] Instead, the courts interpreted a century-old doctrine in a way that minimizes the trial-related usefulness of similar, but not identical, evidence of prior accidents. This restrictive interpretation is relatively new, and while examples like these are not the norm,[14] they have become more common in recent years. Plaintiffs and defendants with valid legal claims are therefore more likely to see their evidence rejected by courts based on a misapplication of substantial-similarity requirements. We believe that this trend deserves greater attention than it has received, for if left unchecked it could become an impediment to both product liability litigation and product safety. In this article, we trace the history and evolution of the doctrine and offer a series of thought experiments designed to better define the nuances of the doctrine, properly understood.

This article is unique in that it examines the evolution, meaning, and consequences of courts' use of the substantial-similarity doctrine itself. Most articles that mention the doctrine do so in a cursory fashion, addressing the doctrine's position within the scope of some other issue being addressed.[15] The only article to deal with the doctrine in a broad fashion argued for the abolishment of the doctrine in favor of application of the Federal Rules of Evidence.[16] Hoffman's article accurately portrays

13. As we discuss in greater detail later in this article, the fact that evidence passes muster under one evidentiary standard does not mean that it automatically passes muster under all evidentiary standards, and must be admitted.

14. Because the doctrine is often invoked and addressed orally on the eve of trial in connection with motions in limine and without a published written order, it is difficult to obtain precise data on its use.

15. *See, e.g.*, David G. Owen, *Proof of Product Defect*, 93 KY. L.J. 1, 19-28 (2004); Jessica M. Silbey, *Judges as Film Critics: New Approaches to Filmic Evidence*, 37 U. MICH. J.L. REFORM 493, 522-26 (2004); Fred Galves, *Where the Not-so-Wild Things Are: Computers in the Courtroom, the Federal Rules of Evidence, and the Need for Institutional Reform and More Judicial Acceptance*, 13 HARV. J.L. & TECH. 161, 211-15 (2000).

16. Jonathan M. Hoffman, *If the Glove Don't Fit, Update the Glove: The Unplanned Obsolescence of the Substantial Similarity Standard for Experimental Evidence*, 86 NEB. L. REV. 633 (2008).

the "nebulous" state of the literature and case law as it pertains to the doctrine.[17] However, Hoffman limited his analysis almost exclusively to the doctrine's application to expert re-creation of accidents, avoiding a broad category of evidence—statistical analysis of prior accidents—to which the doctrine may apply.[18]

Hoffman concludes that the substantial-similarity doctrine no longer provides any benefits in a modern trial setting, especially in the context of statistical analysis.[19] We disagree. However, even if Hoffman's conclusions were correct, we see no indication that the doctrine is likely to be abandoned any time soon. If the doctrine is to be maintained, as we believe it should be, it should be maintained on correct principles. Those principles must first be defined, and this article fills a gap in the academic literature by examining the doctrine's history, evolution, and its appropriate place in modern evidence law.

Some courts' misunderstanding and misapplication of the doctrine may result from the lack of information and analysis of the substantial-similarity doctrine in the academic literature. In most cases, the outcome is consistent with a correct understanding of the substantial-similarity doctrine, but the courts' application of the doctrine seems to indicate that the proper outcome was obtained by luck or intuition, rather than proper legal principles. For example, in *Stovall v. DaimlerChrysler Motors Company*,[20] the court properly rejected prior-accident evidence, but did so by applying a near blanket rule of exclusion:

> Before admitting evidence of other incidents, however, the proponent of the evidence must prove, and the trial court must determine, that the other incidents are substantially similar to the incident at issue in the trial. And "[t]he showing of substantial similarity must include a showing of similarity as to causation." Without such showing, the evidence is irrelevant as a matter of law.[21]

Evidence of other incidents may be relevant for a wide range of purposes, and a near blanket rule of exclusion makes it more likely that the next time Georgia courts must decide substantial-similarity questions, they will exclude admissible evidence.

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17. *Id.* at 635, 665.

18. *Id.*

19. *Id.* at 665.

20. 608 S.E.2d 245 (Ga. App. 2004).

21. *Id.* at 247 (alteration in original) (citations omitted) (quoting Cooper Tire & Co. v. Crosby 543 S.E.2d 21, 23-24 (2001)).

We do not wish to appear to be pessimistic about the state of the doctrine in U.S. courts. Most courts appear to be adhering to the doctrine as originally envisioned, with an understanding that it is based on basic principles of relevance,[22] and that its application must be determined on a case-by-case basis:

> "Evidence of similar accidents occurring under substantially similar circumstances and involving substantially similar products may be probative . . . [of any number of factors]." The question of admissibility of substantially similar accidents is necessarily determined on a case-by-case basis, with consideration to be given to any number of factors, including the product or component part in question, the plaintiff's theory of recovery, the defenses raised by the defendant, and the degree of similarity of the products and of the other accidents.[23]

Although most courts continue to apply the doctrine correctly, the trend towards blanket exclusion is troubling, particularly where the evidence is relevant and reliable. The trend appears most pronounced in cases involving complex modern field accident databases or statistics, which were not contemplated when courts created the doctrine. Without a clear declaration of the doctrine, more courts are likely to impose the type of over-inclusive blanket exclusionary rule applied by the Georgia court in *Stovall*.[24] That, in turn, will lead to greater numbers of cases where courts exclude legitimate and relevant evidence.

That this trend has received little attention might be attributable to the fact that the substantial-similarity doctrine has humble nineteenth-century origins and has not played a role in many controversial, high-profile decisions. On the other hand, when it comes to admission of expert testimony in product liability cases, the doctrine is often more crucial than *Daubert*,[25] *Kumho Tire Co.*,[26] and their state law equivalents, about which so much has been written.

If we have correctly interpreted the trend, it poses a risk to our tort system if left unchecked. The substantial-similarity doctrine is at a

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22. *See* FED. R. EVID. 401. "Evidence is relevant if (a) it has any tendency to make a fact more or less probable than it would be without the evidence; and (b) the fact is of consequence in determining the action." *Id.*

23. Brazos River Auth. v. GE Ionics, Inc., 469 F.3d 416, 426 (5th Cir. 2006) (alterations in original) (quoting Jackson v. Firestone Tire & Rubber Co., 788 F.2d 1070, 1082 (5th Cir. 1986)).

24. *Stovall*, 608 S.E.2d at 247.

25. Daubert v. Merrill Dow Pharmaceuticals, 509 U.S. 579 (1993).

26. Kumho Tire Co. v. Carmichael, 526 U.S. 137 (1999).

crossroads. In each jurisdiction, the doctrine will either (1) remain a narrow and specific doctrine designed to facilitate courts' screening of other-incident evidence, or (2) expand to exclude all other incident evidence, regardless of the purpose for which it is offered. If the doctrine becomes a blanket rule of exclusion, plaintiffs will find it far more difficult to introduce evidence that shows a history of defective products by certain manufacturers. Defendants will also find it difficult to introduce evidence to show their history of consumer safety enhancements or to defend their design decisions. Plaintiffs and defendants with legitimate claims or defenses will be unable to present them, leading to an increase in both false-positive and false-negative outcomes.

In addition to maintaining the integrity of the tort system, keeping the substantial-similarity doctrine within its original scope has the added benefit of being good policy because it encourages product safety. Much of the other-incident evidence to which the substantial-similarity doctrine is applied is statistical analysis of prior accidents. This same analysis is regularly conducted by safety scientists in the course of attempting to improve product safety outside the context of litigation. If certain safety improvement tools and methodologies are declared inadmissible in the event of litigation, manufacturers that are sued for designing a product a certain way would in some cases be forbidden from defending their design choices. Depriving manufacturers of the ability to explain, in terms of product safety, why they made certain choices sends them the message that they should stop using those tools and methodologies. In other words, the trend in substantial-similarity jurisprudence may discourage manufacturers from relying on modern science to analyze product performance in the field and to make products safer. Our proposal not only promotes coherence in legal doctrine for its own sake, but also promotes product safety.

II. THE HISTORY AND PURPOSE OF THE SUBSTANTIAL-SIMILARITY DOCTRINE

How did a narrow and common-sense application of basic relevance principles become, in the minds of a minority of courts, an encompassing and inflexible rule of automatic evidence preclusion—even where the evidence at issue was unquestionably relevant and reliable? The answer is that some courts lost sight of the narrow purpose of the doctrine and cut it loose from its historical context. Once cut loose from its historical moorings, the doctrine looked less like a rule of relevance and more like a rule of fairness.

Common law has been described as growing in an organic fashion,[27] so it should not be too surprising that certain common law doctrines evolve through a number of life stages. Similar to organic lifeforms, common law doctrines are shaped by the environment in which they arise and exist. The doctrine of substantial similarity, by our count, has evolved through three distinct but related forms, each one retaining the fundamental principles that gave birth to the doctrine. We also believe that the doctrine stands on the cusp of a new transformation, but unlike the previous changes, the most recent evolutionary trends threaten to change the doctrine into something foreign to the doctrine's *raison d'être*. Much like a retrovirus, a number of recent court decisions threaten to rewrite the doctrine's DNA, making it incompatible with its ancestors. In this section, we trace the doctrine's history and show where a minority of courts have mistakenly altered the doctrine's foundation. In this way, we hope to delineate the proper boundaries of the doctrine and prevent future aberrations.

A. Birth of the Doctrine

The doctrine's first evolutionary step arose as a variation on the general concept that like things ought to be treated alike. Prior to its application to tort law, various courts had referenced "substantial similarity" in other contexts, including statutory construction,[28] application of import duties,[29] intellectual property protection under patents,[30] resolution of probate disputes,[31] and trademark infringement.[32] In each case, the court allowed introduction of evidence that was relevant to a disputed point in the case, even though the evidence arose on an unrelated occasion, because the circumstances were similar enough that it helped to resolve the disputed point.

In 1872, the New Hampshire Supreme Court adopted the idea of substantial similarity as a tort doctrine.[33] In *Darling v. Town of Westmoreland*, a rider had been injured when his horse backed up,

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27. *See, e.g.*, Bryan Druzin, *Law Without the State: The Theory of High Engagement and the Emergence of Spontaneous Legal Order Within Commercial Systems*, 41 GEO. J. INT'L L. 559, 579 (2010).

28. Dauchy v. Brown, 24 Vt. 197, 208 (1852) (considering the substantial similarity of a Massachusetts law to a more recent Vermont law, in order that the established construction of the former could aid in the construction of the latter).

29. Boker v. Redfield, 3 F. Cas. 808, 810 (S.D.N.Y. 1859) (No. 1606A).

30. Johnson v. Root, 13 F. Cas. 807, 816 (D. Mass. 1861) (No. 7410), *reh'g granted.*

31. Gifford v. Black, 22 Ind. 444, 446 (1864).

32. Bradley v. Norton, 33 Conn. 157, 165 (1865).

33. Darling v. Town of Westmoreland, 52 N.H. 401, 405 (1872).

contrary to the commands of the rider, and fell off a bridge.[34] The rider claimed that the horse had been spooked by a pile of lumber that was situated near the road.[35] The owner of the land on which the lumber was located responded that the horse was a mean-tempered and ill-mannered nag.[36]

The court noted that the rider's claims required proof of two separate elements: first, that the rider's horse was, in fact, spooked by the lumber; and second, that it was the nature of the lumber to spook horses of reasonable gentleness.[37] At trial, the rider had attempted to offer the testimony of another rider who claimed that his horse had been spooked by the same pile of lumber under the same conditions.[38] The trial court refused to allow the testimony, and the New Hampshire Supreme Court held that decision to be error.[39] The court reasoned that if the fright of the plaintiff's horse was relevant to the question of whether the pile of lumber was frightening to horses, then the fright of another horse under the same circumstances must also be relevant to the same question.[40]

The court held that this type of "experimental evidence" is preferable to speculation; as long as the evidence is relevant to at least one issue before the court, the fact that the evidence did not pertain to the chain of events being considered by the court did not require the evidence to be excluded.[41] The rules of evidence, the court stated,

> [had been] sometimes inadvertently relied upon, in cases of this kind, where the plaintiff avers damage caused by the dangerous *character* of something for which the defendant was responsible, to admit the plaintiff's experience, on the occasion of his alleged injury, as competent evidence of the character of the thing complained of, and to exclude the experience of others equally relevant and equally material on that point.[42]

The motivating principle, therefore, was that the character of something is shown by consistent and repeated results, not a single event. An important caveat was also present: the "experiments" used to prove character had to be similar in nature to the experience of the complaining

34. *Id.* at 401.
35. *Id.*
36. *Id.*
37. *Id.* at 403-04.
38. *Id.* at 404.
39. *Darling*, 52 N.H. at 405.
40. *Id.* at 405.
41. *Id.*
42. *Id.* (emphasis added).

party.[43] So long as the experiments were similar to those of the complaining party, they were to be treated similarly by the courts and admitted for the purpose of proving the character of the thing.[44]

Before we proceed to the second and third life stages of the doctrine, we note two issues raised by the New Hampshire court's opinion that are descriptive of the substantial-similarity doctrine's characteristics during its formative years.[45] First, the court was clear that its holding was an application of well-established general principles of relevance, not the creation of a new doctrine of relevance.[46] In other words, although a new common law creature was born, it was directly descended from well-established rules. Second, the court's holding applies only to those claims in which the character of something is alleged to be harmful, as character can more easily be proved by showing the persistence of the relevant harmful traits over time.[47] The more an "experiment" diverges from the circumstances of the complaining party's injury, the less helpful it is in allowing the fact-finder to draw inferences about the allegedly harmful character and, therefore, the less material it is to the elements of the case. In keeping with our biological analogy, then, the doctrine was intended to inhabit a narrow range of legal environments.

To understand precisely those environments to which the doctrine was well adapted, it is helpful to consider the 1872 New Hampshire court's description of this type of evidence as "experimental."[48] It cannot be reasonably denied that, if a party wishes to introduce evidence purporting to recreate an accident from which the plaintiff received injuries, the accident re-creation must actually replicate the relevant conditions—basic scientific principles demand nothing less,[49] and

43. *Id.*

44. *Id.* The requirement of similarity, it should be noted, serves as a reasonable limitation on liability. An individual cannot be held liable for every possible risk. No producer, for example, is liable for the risk that an act of God will result in injury to another. *See, e.g.*, Baltimore & Ohio R.R. Co. v. Sulphur Spring Indep. School Dist., 96 Pa. 65 (1880). Even under modern strict liability theories, a producer is only responsible for defects which render his product unreasonably dangerous. *See* RESTATEMENT (SECOND) OF TORTS, § 402A(1) (1965) ("One who sells any product in a defective condition unreasonably dangerous to the . . . consumer or to his property is subject to liability for physical harm thereby caused . . . ."). Under a theory of negligence, liability can only be imposed if the defendant violated a duty, such as the duty of reasonable care in mitigating a known defect in the character of the product. *Id.*

45. *See Darling*, 52 N.H. at 401.

46. *Id.* at 408.

47. *Id.* at 408-09. As noted by the New Hampshire court, this is in stark contrast to the general rule in criminal law that one cannot prove the character of a defendant to commit crimes by introducing past criminal conduct. *Id.*

48. *Id.*

49. *See* Dunn v. Nexgrill Indus., Inc., 636 F.3d 1049, 1056-57 (8th Cir. 2011).

anything less would not provide the jury with a solid foundation from which to draw relevant inferences. A party that wishes to introduce evidence of prior accidents often will do so with the intent of proving what caused the present accident. In effect, that party is attempting to re-create the accident using prior accidents as "natural experiments." In order for those prior accidents to constitute natural experiments, the conditions surrounding them must closely approximate the conditions of the present accident, and the substantial-similarity doctrine applies to guarantee that dissimilar accidents are excluded.[50]

Over the next thirty years, the doctrine established itself as a rule of relevance within the narrow range of cases that dealt with this type of "experimental" evidence. Only eleven years after the New Hampshire court's decision, the doctrine was invoked by the United States Supreme Court, which affirmed that, when it is alleged that something has a harmful character, that character can be shown by the fact that others have been similarly harmed: "The frequency of accidents at a particular place would seem to be good evidence of its dangerous character—at least, it is some evidence to that effect."[51] The boundaries of the doctrine were refined during this period, with courts concluding that, as a defendant's knowledge of a harmful characteristic was often material to the imposition of liability, evidence of other accidents could also be used to show knowledge of the allegedly harmful character under those circumstances.[52] Courts not only more closely defined what the doctrine was, but also defined what it was not: when evidence of other accidents tended to show that they occurred under different circumstances, that evidence did not tend to show the harmful character of the thing, and the evidence was to be excluded.[53]

B. A Name

The second stage of the doctrine's life began in the early twentieth century, when it was given its current name. The principles underlying the doctrine were already well understood, and it began to be accepted

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50. Of course, the rub is that the parties will often disagree on what are the *relevant* conditions. As we make clear, *infra*, Section III, the substantial similarity doctrine applies only to those conditions which would either: (1) have provided the responsible party with prior knowledge of a danger; or (2) establish the existence of a defect.

51. District of Columbia v. Arms, 107 U.S. 519, 525 (1883).

52. *See Arms*, 107 U.S. at 525; Findlay Brewing Co. v. Bauer, 35 N.E. 55, 57 (Ohio 1893).

53. Galveston, Houston & San Antonio Ry. Co. v. Ford, 46 S.W. 77, 78 (Tex. Civ. App. 1898).

specifically under the "substantial similarity" name.[54] Experimental evidence, in the form of accident re-creation, was now accepted as "prima facie competent and relevant" so long as it served to "establish the fact [or facts] it [was] offered to prove."[55] Any deviation from the conditions of the accident in question placed the decision of admissibility within the discretion of the trial court, to determine whether the experiment continued to allow the fact-finder to derive useful and relevant inferences.[56] Evidence of "natural experiments," in the form of other similar accidents, were also competent, and could be used to show that the defendant failed to exercise due care after the other accidents provided notice of the potential risk to others.[57] As described above, the underlying principles themselves were not new, but were merely the rules of relevance applied in a particular way. The application gained general acceptance under the name of substantial similarity because the doctrine was useful to fact-finders faced with "experimental evidence."[58]

The doctrine's first life stage was characterized by its birth and formation as a coherent doctrine. During its second life stage, the doctrine received a name and became well known by that name. While this evolutionary stage may not seem worth mentioning, in the grand scheme, it was the adoption of a recognized doctrinal name that allowed the doctrine to move into its third life stage. In the next stage of its evolution, the doctrine became a useful analytical shortcut, allowing courts to cut through often complex testimony to the relevant points upon which their cases revolved.

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54. *See* Tackman v. Bhd. of Am. Yeomen, 106 N.W. 350, 351 (Iowa 1906) ("[I]t is now well settled that, when the conditions are shown to be *substantially the same*, evidence of actual experiment is an acceptable aid in determining the issues in a case.") (emphasis added).

55. May Dep't Stores Co. v. Runge, 241 F. 575, 579 (8th Cir. 1917).

56. *Id. See also* Saldania v. Atchison, Topeka & Santa Fe Ry. Co., 241 F.2d 321, 322 (7th Cir. 1957) ("[T]he conditions of the demonstration which were viewed by the jury were substantially similar to those existing at the time plaintiff claimed to have received the second injury. Such variations as did exist could not have confused the jury."); Hopkins v. E. I. Du Pont De Nemours & Co., 199 F.2d 930, 934 (3d Cir. 1952) ("[W]e feel that the conditions were sufficiently similar to allow a logically relevant inference. The differences go only to the weight of the testimony.").

57. *E.g.*, Muller v. Kirschbaum Co., 148 A. 851, 853-54 (1930) ("Knowledge of the likelihood of injury is imparted by information of like occurrences under similar circumstances, and is a fact to be considered by the jury in determining whether proper precautions were taken.").

58. *See May Dep't Stores Co.*, 241 F. at 579.

C. Shortcuts

The twentieth century saw accelerated technological progress, which led to increasingly complex technical evidence being offered in tort cases. Judges and juries in these cases were faced with the daunting prospect of having to sort through expert testimony that they, for the most part, were ill-equipped to handle. One development that was particularly relevant to the substantial-similarity doctrine was the increased sophistication of statistical tools[59] and the increased effort at accumulating the type of data that statisticians could apply in tort cases.[60] Beginning in the middle of the twentieth century, the state of statistical evidence underwent significant positive changes: larger databases became available, more reliable data gathering occurred, and information technology and statistical techniques improved. As a result, statistical data became available regarding a much larger number of past incidents that might be relevant because they have some value in serving as "natural experiments" for the accident in dispute.[61]

As described above, basic evidentiary principles provide the tools necessary to determine the admissibility of this type of evidence. However, the process of determining the relevance of prior incidents, individually or in the aggregate, promised to become increasingly difficult as the number of prior incidents for which the availability of data rose dramatically.[62] Fortunately, the process of statistical analysis meshed well with the requirements of the substantial-similarity doctrine. Specifically, injury or accident statistics consist of data regarding other incidents, and the analysis of those statistics requires the identification of variables that are relevant to the hypothesis to be tested. To determine the admissibility of a statistical analysis, the court can look to the variables selected to establish whether the proponent's statistical analysis

59. The increased sophistication of statistical analysis was driven, in part, by the development of technologies that assisted in "crunching the numbers."

60. Rudimentary statistical analysis had played a role in the development of the substantial-similarity doctrine from its earliest years. In *Field v. Davis*, the disputed evidence consisted of testimony regarding the absence of accidents in a five-year period preceding the accident in question and the relatively large number of interactions between the defendant and individuals similarly situated to the plaintiff. Field v. Davis, 27 Kan. 400, 405-06 (1882).

61. *See May Dep't Stores Co.*, 241 F. at 579.

62. As the number of observations rises, the ability to obtain statistically significant results increases, but the complexity of analyzing each prior accident in order to confirm substantial similarity increases as well. Therefore, statistical analysis, generally, becomes more helpful, but whether that analysis can be admitted into evidence becomes a more difficult question.

meets the requirement that other incidents be substantially similar.[63] Over time, therefore, the doctrine became a shortcut that simplified one of the many tasks faced by the courts: they did not have to consider the minutiae of each prior accident, but needed only to satisfy themselves that the conditions of past accidents and the present accident were substantially similar in a material aspect of the case. If so, the evidence was admissible and the jury was entitled to give it whatever weight it thought appropriate.

D. New Life Stage?

For all the benefits which arise from the emergence of a useful shortcut, it should not be ignored that shortcuts pose inherent risks to not only the coherency of doctrine itself, but also to related doctrines and the legal system as a whole. Once a shortcut exists, there arises a temptation to turn the shortcut into a more broadly-applicable doctrine. The motivation for this phenomenon is easy to understand, especially in the context of the modern judiciary. Faced with increasingly complex cases that require an increasing amount of judicial resources to resolve, those resources conserved by the use of a shortcut would be available for other cases. The fact that a doctrine has become a shortcut may, in many cases, help cement its status as a general principle because a shortcut does not typically require repetition of its underlying principles, and those principles may, in the course of time, fade into the background. If the shortcut were based on broad principles, this entire process might be benign or even beneficial to the judicial process. In some cases, however, a narrowly-applicable shortcut may be subject to these evolutionary pressures. In such cases, expanding a narrow shortcut to cover a broad range of subjects can disserve the underlying principles that made the doctrine useful in the first place.

The substantial-similarity doctrine is facing these evolutionary pressures and, if not curbed, the resulting changes will harm the usefulness of the doctrine. Most courts still appear to understand that the doctrine's original purpose was to ensure that juries were not asked to draw inferences about the present case from other incidents unless the

63. Of course, this relies on the assumption that proper statistical methods are used. Poor or incorrect methodologies can yield unreliable results, and it may be tempting for a jury to rely heavily on those results. "Juries are more likely to be convinced of the validity of testimony when it is supported with a reference to statistics or statistical language, regardless of the appropriateness of the statistical reference." Michael D. Freeman, Annette M. Rossignol & Michael L. Hand, *Forensic Epidemiology: A Systematic Approach to Probabilistic Determinations in Disputed Matters*, 15 J. FORENSIC & LEGAL MED. 281, 288-89 (2008).

incidents were "substantially similar."[64] A minority of courts, however, have lost sight of the doctrine's evidentiary origins and narrow scope and are applying it as a broader rule of general applicability.[65]

One such decision was issued in *Miller ex rel. Miller v. Ford Motor Company*, where the plaintiff sought to recover damages for injuries sustained in a rollover crash on the basis that the vehicle occupied by the plaintiff was unreasonably dangerous.[66] The defense proffered broad statistical evidence regarding the rollover rates for a range of vehicles in an attempt to show that the vehicle in question did not have a higher rollover rate than other vehicles.[67] The plaintiff challenged the evidence on the ground that the other accidents included in the statistical analysis were not substantially similar to that which caused the injuries complained of, and the district court agreed.[68]

To a district court faced with the circumstances of *Miller*, application of the substantial-similarity doctrine would likely seem logical; a plaintiff attempts to show a specific defect, and the defendant responds with broad statistical evidence. Unless the defendant is clear as to why the evidence is relevant, it will look as if the defendant is simply trying to bury the plaintiffs and the court in extraneous evidence. The *Miller* court stated that it understood that the purpose of the doctrine was to avoid the "strong potential for prejudice resulting from the admission of evidence of other accidents . . . ."[69] In making that statement, the *Miller* court encapsulated a major source of misunderstanding regarding the doctrine. As described above, the substantial-similarity doctrine was intended to avoid a specific type of prejudice. The history of the doctrine makes clear the prejudice to be avoided—i.e., admission of a misleading accident re-creation or misleading notice argument. While the *Miller* court did not specify precisely what type of prejudice would arise if evidence of other accidents were to be introduced, the generality of its declaration indicates that it did not understand the history or purpose of

64. *See Darling*, 52 N.H. at 405; *see also supra* notes 39-41 and accompanying text.

65. *See, e.g.*, Chism v. CNH Am. LLC, 638 F.3d 637, 641-42 (8th Cir. 2011); Forrest v. Beloit Corp., 424 F.3d 344 (3d Cir. 2005); Jaramillo v. Ford Motor Co., 116 F. App'x 76, 78-79 (9th Cir. 2004); Miller ex rel. Miller v. Ford Motor Co., No. 2:01-CV-545-FTM-29DNF, 2004 WL 4054843, *1-2 (M.D. Fla. July 22, 2004); Cooper Tire & Rubber Co. v. Crosby, 543 S.E.2d 21, 23-24 (Ga. 2001). We are unaware of any common characteristics between these and other incorrectly-decided cases that would explain why some, but not all, courts have begun to shift to the new and (in our opinion) inappropriate version of the substantial-similarity doctrine.

66. *Miller*, 2004 WL 4054843, at *1.

67. *Id.* at *2.

68. *Id.* at *1-2.

69. *Id.* at *1.

the doctrine or the prejudice the doctrine guards against. More damaging, by excluding evidence based on general and nonspecific "prejudice," as opposed to the type of prejudice contemplated by the doctrine, the *Miller* court made it harder for future courts to correctly protect against the real risks of prejudice.[70]

The substantial-similarity doctrine applies to exclude evidence of other, dissimilar accidents only when that evidence is offered as an "experimental" form of accident re-creation. Prejudice arises from this evidence because it could lead a jury to misunderstand how an accident actually occurred. If the other accidents are substantially similar to the accident in question, however, improper inferences and unfair prejudice are unlikely. Similarly, if the evidence of other accidents is not offered as a form of accident re-creation, to prove notice, or to draw materially similar inferences, and instead is offered to prove other relevant issues, the substantial-similarity doctrine should not apply at all. But even if it did, the danger of improper inferences is substantially lessened.[71]

In *Miller*, the defendant's attempt to introduce evidence of other accidents could have been motivated by a host of improper motives. However, evidence of rollover rates could have been helpful to the fact-finder in placing the rollover rates of a single vehicle into the context of the automotive industry as a whole.[72] In exercising its legitimate discretion, the *Miller* court could still have concluded that the context argument was not relevant, or was unfairly prejudicial for other reasons; but its incorrect reliance on the substantial-similarity doctrine precluded such useful discussions. If the substantial-similarity doctrine had not been invoked, the court would have had to engage in the effort of determining what weight to afford the individual comparisons present in the proffered testimony. That is not an enviable task, and any court's desire to shorten the required analysis is understandable. Doing so can be costly if the analysis includes a misapplication of the substantial-similarity doctrine.

The next section describes that the trend away from the original understanding of the doctrine leads to the mistaken exclusion of relevant evidence, even when the evidence is proffered for reasons entirely unrelated to the purposes of the substantial-similarity doctrine. Such evidence can be vital to the fact-finding process, so its exclusion deprives the courts of helpful information that may help reach a just conclusion.

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70. *Id.* at *2.

71. In fact, if properly limited by the trial court, introduction of such evidence need not lead to any improper inferences, and the risk of unfair prejudice can be eliminated entirely.

72. *Miller*, 2004 WL 4054843, at *1.

Further, a distortion in one evidentiary standard can also lead to distortions in other evidentiary standards. This happens when the misapplied shortcut is used in place of other, more appropriate evidentiary standards. For example, if the substantial-similarity doctrine is applied as a blanket rule of exclusion, courts need not address whether the proffered evidence could or should be excluded under rules governing the reliability of expert testimony, the hearsay rule, or the best evidence rule. As those other rules fall into relative disuse, and are not developed in decisional law, they are more likely to become distorted as well.

Whether due to misunderstanding, confusion, or a sincere desire for judicial efficiency—and almost certainly at the urging of both plaintiffs and defendants—a small number of courts have begun to use the substantial-similarity doctrine as a means of excluding any statistical evidence that is inconvenient to the story those plaintiffs or defendants wish to tell. In the next section, we engage in a series of thought experiments that we think helps illuminate the proper boundaries of the doctrine and aid courts in its application.

III. EXPLORING THE SCOPE OF THE SUBSTANTIAL-SIMILARITY DOCTRINE

The substantial-similarity doctrine is one of many evidentiary rules at play in any given case, and has its proper place within the larger framework established by evidentiary rules. In most product liability cases, plaintiffs will allege either that the manufacturer's product was unreasonably dangerous and/or that the manufacturer had knowledge of the product's character. In those cases, prior accidents will be an important part of the relevant body of evidence. However, the fact that these cases will involve some evidence to which the substantial-similarity doctrine may be applied, if offered to prove certain propositions, does not mean that all evidence of past accidents should automatically be subjected to a substantial-similarity analysis. To a limited but growing number of courts, the doctrine has become a near blanket exclusion of conclusions drawn from statistical evidence, "unless the proponent first shows that there is a 'substantial similarity' between [the body of statistical data] and the claim at issue in the litigation."[73]

We urge caution against any blanket rule of exclusion, but we are especially concerned about the choice to establish a blanket rule of exclusion against conclusions drawn from statistical data regarding other accidents *unless* each data point fully and independently meets the

73. *Cooper Tire & Rubber Co.*, 543 S.E.2d at 23 (citations omitted). *See also Stovall*, 608 S.E.2d at 247.

requirements of the substantial-similarity doctrine. Our concern arises because the minority of courts that are following this path have twisted the doctrine—originally designed to operate as a shortcut for evidence offered for specific purposes—into an exception that prevents the courts from considering the purpose for which the evidence might be offered or even the fact that the evidence might be offered for multiple purposes.

In this section, we present a series of thought experiments that we believe will illuminate precisely how the doctrine is intended to fit within the larger evidentiary framework. The increasing complexity of tort cases has been a motivating factor behind the recent movements away from a proper use of the substantial-similarity doctrine. These thought experiments will help courts and parties understand the ways in which the doctrine can properly simplify cases, as well as the ways in which improper application of the doctrine can distort the search for justice by excluding relevant evidence. Before we do that, a few introductory comments regarding the process are in order.

First, any evidence offered to a court must be screened for relevance. According to Rule 401 of the Federal Rules of Evidence and many of the state evidentiary counterparts, evidence is relevant if it has "any tendency to make a fact more or less probable than it would be without the evidence; and . . . the fact is *of consequence in determining the action.*"[74] The expansive language of the rule indicates that a relevance determination should be in all cases a case-specific determination, heavily reliant on the claims and defenses as framed by the parties. Trial court determinations of relevance will be (correctly) afforded significant deference on appeal, regardless of whether the substantial-similarity doctrine is in play. The trial court's application of Federal Rule of Evidence 403 (or its state-law equivalent), balancing the offered evidence's probative value against the potential prejudice,[75] will only further strengthen the deference afforded on appeal. However, when the trial court applies the substantial-similarity doctrine, its declaration of the rule may be considered a declaration of law, subject to a much less deferential standard on review.[76]

Second, expert evidence must be screened for reliability. Rule 702 of the Federal Rules of Evidence provides for the introduction of evidence

74. FED. R. EVID. 401 (emphasis added).

75. FED. R. EVID. 403.

76. *See, e.g.*, Shands Teaching Hosp. & Clinics, Inc. v. Dunn, 977 So. 2d 594, 598 (Fla. Dist. Ct. App. 2007) ("[T]he de novo standard applies if the issue presented on appeal is whether the trial court erred in applying a provision of the Florida Evidence Code."). *But see* Ahlberg v. Chrysler Corp., 481 F.3d 630, 637 (8th Cir. 2007) ("We review decisions concerning the admissibility of prior-accident evidence for a clear and prejudicial abuse of discretion.").

that relies on "scientific, technical, or other specialized knowledge," so long as the witness offering the evidence is "qualified as an expert by knowledge, skill, experience, training, or education" and the evidence is "based on sufficient facts or data; . . . the testimony is the product of reliable principles and methods; and . . . the expert has reliably applied the principles and methods to the facts of the case."[77] In *Daubert v. Merrell Dow Pharmaceuticals, Inc.* the Supreme Court imposed on the trial courts the duty of "ensur[ing] that any and all scientific testimony or evidence admitted is not only relevant, but reliable."[78] Later, in *Kumho Tire Co. v. Carmichael*, the Supreme Court clarified that the trial courts were to engage in this gatekeeping function for all expert testimony.[79]

In most cases, the substantial-similarity doctrine will be invoked to challenge the admission of expert testimony, so the trial court will be required to analyze the applicability of the doctrine at the same time it performs its gatekeeping function under *Daubert* and *Kumho Tire*.[80] However, a substantial-similarity analysis requires consideration of the prior accidents themselves, while a *Daubert* analysis requires consideration of the methodologies used to process the data from those accidents. Each analysis is complicated enough on its own, and in the interest of clarity, a court should be sure to separate the two analyses. Otherwise, both doctrines could be further confused.

Finally, the substantial-similarity doctrine may be legitimately invoked in a variety of scenarios,[81] but it is commonly used to challenge expert testimony that relies on analysis of field accident data[82] extracted

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77. FED. R. EVID. 702. One of the primary considerations before a court on a *Daubert* or related state challenge is whether the expert has utilized reliable methodologies in arriving at her expert opinions. There are a number of potential pitfalls present in any statistics-based testimony, and a court should take care to assure that the expert has properly applied "epidemiologic concepts and data to forensic issues" arising from the case. Freeman, et al., *supra* note 63, at 282.

78. *Daubert*, 509 U.S. at 589.

79. *Kumho*, 526 U.S. at 147-48.

80. *See Daubert*, 509 U.S. at 589; *Kumho*, 526 U.S. at 148.

81. Challenges to the content of expert testimony will typically be made prior to trial, with a motion to exclude or motion in limine. However, as will be evident throughout the scenarios in this section, the admissibility of much of the defendant's evidence will depend upon the content of the plaintiff's case. Therefore, if questions are raised regarding the defendant's evidence, the trial court will often take the matter under advisement or issue a preliminary ruling with the condition that the party losing the motion have the right to revisit the motion later during trial. *See* FED. R. EVID. 103(b).

82. Because this type of analysis is typically statistical analysis, an unfortunate number of parties attempt to exclude testimony based on the fact that the testifying expert does not have a Ph.D. in statistics. Statistical analysis does require a certain level of expertise, but statistical expertise is not the exclusive fiefdom of those with advanced degrees in statistics. Economists, scientists, medical researchers, engineers, and many

from government databases. In cases involving automobile crashes, the databases most often relied upon are those maintained by the National Highway Traffic Safety Administration (NHTSA).

The Fatality Analysis Reporting System (FARS) is a census database that includes all motor vehicle traffic crashes resulting in the death of an occupant of a vehicle or a non-motorist within 30 days of the crash.[83] Maintained by NHTSA since 1975, FARS contains 125 coded data elements from each reported fatal crash on U.S. roads.[84] The data are derived from police reports and include elements characterizing the crash, the vehicles, and the people involved, but no information about occupant injuries or interior contacts and injury sources.[85] FARS provides an overall measure of highway safety, helps identify traffic safety issues, suggests solutions, and provides an objective basis to evaluate the effectiveness of motor vehicle safety standards and highway safety programs.

The National Automotive Sampling System (NASS) was established in 1979 by NHTSA as part of a nationwide effort to reduce motor vehicle crashes, injuries, and deaths on U.S. roadways.[86] Created with the specific purpose of helping scientists and engineers analyze motor vehicle crashes and injuries, NASS has detailed data on a representative, random sample of minor, serious, and fatal crashes involving passenger cars, pickup trucks, vans, large trucks, motorcycles, and pedestrians. The Crashworthiness Data System (CDS) is part of NASS and was created in 1988 to allow for more in-depth investigation of tow-away, light-vehicle crashes.[87] CDS is a stratified sample database that provides

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other disciplines rely heavily on statistical techniques. As a result, persons with advanced degrees in those disciplines are just as likely to be qualified to offer testimony based on their own statistical analysis, as long as their analysis is the type of analysis typically conducted by experts in their field. Specific to field accident analysis, safety engineers are routinely asked to conduct field accident analysis in order to improve product safety, so a party challenging the qualification of an engineer offering field accident analysis should be required to explain why the challenged testimony is sufficiently different from the type of analysis regularly conducted by engineers in the normal course of their duties. *See* FED. R. EVID. 702 cmt.

83. *Fatal Crash Nat'l Statistics*, NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., FATALITY ANALYSIS REPORTING SYS. (2005), *available at* http://www-fars.nhtsa.dot.gov/Main/index.aspx.

84. *Id.*

85. *Id.*

86. NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., NAT'L AUTO. SAMPLING SYS. (NASS), http://www.nhtsa.gov/NASS (last visited Mar. 12, 2012) [hereinafter *NASS*].

87. *Crashworthiness Data Sys. Overview*, NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., *available at* www.nhtsa.gov/Data/National+Automotive+Sampling+System+(NASS)/NASS+Crashworthiness+Data+System (last visited Mar. 12, 2012).

comprehensive and detailed information on investigated accidents.[88] For the approximately 5,000 fatal and non-fatal injury crashes that are selected for investigation each year, over 650 variables are coded in multiple database files (e.g., accident, vehicles, occupants, and injuries, exterior and interior). Among other things, the database contains information regarding the crash, vehicles, restraint systems, interior contacts, medical records of injury, as well as information from the interviews conducted, vehicle registration, and the police report.[89] Each case is subjected to quality control review before being published in the database, and the data are extrapolated to national estimates using weighting factors provided by NHTSA.[90] The NASS-CDS database of cases is used by researchers to analyze the nature and extent of injuries occurring in automotive crashes, and by government agencies as part of the cost-effectiveness analyses that Congress requires NHTSA to conduct before promulgating or revising traffic safety regulations.

The FARS and NASS-CDS databases are the most comprehensive databases on automotive accidents, and they have proven extremely useful in allowing the automotive industry to increase passenger safety over the years. However, these databases each have their own limitations.

The FARS database includes data on every reported fatal automotive accident, but the number of variables available for each observation is limited. The more narrow range of available variables can complicate the construction of a subset that is substantially similar to the accident in question. Specifically, the accident at issue in the case may have particular characteristics that are not represented by the variables included in the FARS. Under such a scenario, any data analysis to which the substantial-similarity doctrine is applicable should be carefully reviewed by the court to determine whether the absent variables make it impossible to adequately conduct a substantial-similarity analysis.

The NASS-CDS, on the other hand, contains an extensive list of variables for each crash reported. However, because it is costly to accumulate all of those variables, only a representative sample of annual accidents is included in the database. When the relevant variables are not the type of common variables included in the FARS, the NASS-CDS will provide an alternative source of data for statistical analysis. However, because the NASS-CDS is a representative sample, the number of accidents included in the database will be significantly reduced. As a

88. *Id.*

89. Since 1997, electronic cases are available online that include the crash and injury information and photographs.

90. *See* sources cited *infra* note 91.

result, an expert attempting to offer experimental evidence about an accident, and appropriately limiting the analysis to the substantially-similar observations, may find that the total number of substantially-similar accidents is very small. This is problematic because the smaller the number of observations included in a statistical analysis, the more difficult it is to derive results that can be trusted.[91]

An expert attempting to introduce evidence which relies on a small number of NASS-CDS observations will almost certainly face a *Daubert* or similar state-based evidentiary challenge, claiming that the analysis is unhelpful to the fact-finder.[92] All is not lost, however, because the NHTSA provides weighting factors that allow any analyst to generate national estimates from the results of the representative sample. These weighting factors are often used by NHTSA in establishing new safety regulations. An analyst wishing to generate a national sample, whether for the NHTSA or for use in litigation, would use the weighting factors to expand what might be a mere handful of accidents in the database to an estimate of the total number of similar accidents occurring within the U.S. during a given year. That larger number of "observations" would then allow more sophisticated statistical analysis.

If the evidence is otherwise admissible and the expert has utilized well-accepted methodologies for generating her conclusions, any attempt to exclude the evidence based solely on the use of the weighting factors should be rejected. The weighting factors are generated by a team of government researchers, any number of which would be capable of passing muster as an expert under the relevant state or federal evidentiary rules. Moreover, the weighting factors are generated for the express purpose of aiding researchers in the automotive safety industry, and they are widely used for precisely that purpose. The purpose of the weighting factors is not to aid defense experts testifying in products liability litigation. Not only are testifying experts allowed to rely on the work of other experts in developing their own testimony,[93] but the fact that

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91. *See, e.g.*, Douglas Cumming & Sofia Johan, *Global Market Surveillance*, 10 AM. L. & ECON. REV. 454, 471 (2008) ("[S]tatistical significance is difficult to interpret given the small number of observations . . . ."); Robert M. Lawless, *The Paradox of Consumer Credit*, 2007 U. ILL. L. REV. 347, 361 (2007) ("The result is not statistically significant, however, which might represent nothing more than the small number of observations. . . .").

92. *See* Transcript of Hearing Proceedings, Neal v. DaimlerChrysler Corp., No. 03-CA-8085 (Fla. Cir. Ct. Aug. 25, 2006). *See also* David C. Viano & Chantal S. Parenteau, *Field Accident Data Analysis of 2nd Row Children and Individual Case Reviews*, SAE Technical Paper No. 2008-01-1851 (2008).

93. *See* United States v. McGhee, 627 F.3d 454, 460 (1st Cir. 2010), *vacated,* 651 F.3d 153 (1st Cir. 2011) ("Experts who testify regularly in court commonly and

evidence is generated for purposes other than litigation is a strong indicator of reliability,[94] and the fact that the relevant industry accepts the methodology as reliable is one of the primary indicia of reliability.[95]

Although the expert should be allowed to present testimony, including the use of the weighting factors, opposing counsel must be allowed to point out to the jury the risks associated with the use of the weighting factors. For example, the use of weighting factors allows the expert to generate national estimates, but her testimony will be based on those approximations, not on the type of precise data that would have been available if the FARS data could have been used. Therefore, there will be some uncertainty regarding the expert's conclusions, and the jury is entitled to be made aware of that uncertainty so they can determine how much weight to give the expert's testimony.

Note, however, that not all evidence derived from a small number of NASS-CDS accidents will be subject to the criticism that the results are statistically insignificant. In some cases, the expert's conclusions do not depend on statistical analysis. For example, a defense expert might attempt to rebut a plaintiff's claims by showing that the injuries complained of have never been experienced by any victim of any similar NASS-CDS accident. Because the expert is not attempting to establish a statistical probability of any form, statistical significance is simply not an issue.[96] However, if the defense expert's testimony is deemed otherwise admissible, the plaintiff would then be entitled to introduce rebuttal testimony in order to establish, if possible, that there is a reliable probability that the injuries described by the plaintiff could have occurred and yet not appear in government databases.[97]

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permissibly rely in some measure on information gathered by other experts.") (citation omitted); Tamraz v. Lincoln Elec. Co., 620 F.3d 665, 675 (6th Cir. 2010), *cert. denied*, 131 S. Ct. 2454 ("[A]n expert may in some circumstances rely on other experts' testimony"). *But see* Dura Auto. Sys. of Ind., Inc. v. CTS Corp., 285 F.3d 609, 614 (7th Cir. 2002) ("A scientist, however well credentialed he may be, is not permitted to be the mouthpiece of a scientist in a different specialty.").

94. Granfield v. CSX Transp., Inc., 597 F.3d 474, 486 (1st Cir. 2010) (citing Allison v. McGhan Med. Corp., 184 F.3d 1300, 1319-21 (11th Cir. 1999)) (affirming exclusion of expert testimony, in part, because testimony was prepared solely in preparation for trial).

95. *Daubert*, 509 U.S. at 594 ("[W]idespread acceptance can be an important factor in ruling particular evidence admissible . . . .").

96. Other evidentiary concerns may preclude admission of the evidence. For example, in some jurisdictions, courts have established separate foundational requirements for introducing evidence of the *absence* of similar accidents. *See* Forrest v. Beloit Corp., 424 F.3d 344, 355-56 (3d Cir. 2005).

97. Because the NASS data is a stratified sample of automotive accidents in America, it involves only 5,000 in-depth investigated crashes. *NASS*, *supra* note 86. It is therefore possible (but unlikely) that some accident situations will not be included in the database,

Generally, the data contained in the government datasets are accepted by experts working in the field of traffic safety as factual representations of the state of automobile crashes in the United States.[98] However, it does not, and should not, follow that any analysis of field accident analysis that confines itself to well-accepted data must also be acceptable and useful to the finder of fact. Each analysis must be judged, as described above, according to its relevance and reliability, including the methods used by the analyst. Moreover, each analysis must also be judged according to the purpose for which it is introduced.[99] It is tempting to conclude, as a general rule, that field accident analyses in a product liability case are an attempt to recreate the accident. In cases in which statistical techniques are used for actual accident reconstruction, it would of course raise legitimate substantially-similar concerns. It is often the case, however, that such expert analysis of field accident data are offered for relevant purposes unrelated to accident reconstruction. In those cases, the parties deserve to have the evidence considered by the court for *each* purpose for which it is offered, including purposes for which the substantial-similarity doctrine is not an appropriate test of admissibility.[100]

The following scenarios illustrate some of the circumstances in which a substantially-similar challenge to proffered testimony and evidence might arise. These thought experiments highlight certain questions that typically arise and warn against the most common analytical errors.

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even though the database includes more than fifteen years of field data. It may be impossible to find a case in the NASS database that is substantially similar to the one being litigated. However, it is also true that the NASS is designed to provide a meaningful collection of field accidents upon which the government and manufacturers improve automotive safety. Barring any evidence that NHTSA officials are consciously ignoring significant threats to public safety, the fact that an expert's conclusions are unsupported by a government data set that is routinely used outside of litigation by the foremost experts in the field, such as the NASS, should be considered strong evidence in opposition to the expert's claims.

98. *See id.* (discussing that the data provide the basis for NHTSA to conduct cost-benefit analyses for new regulations on automotive safety).

99. In this way, the substantial-similarity doctrine is similar to the hearsay rule, which precludes admission of out-of-court statements only to the extent that they are offered "to prove the truth of the matter asserted." FED. R. EVID. 801(c)(2).

100. Of course, much of the burden in this area falls on the party offering the evidence; a wise party will carefully craft its arguments to the court to make very clear all possible purposes for which the evidence will be relevant. For example, data analysis may focus on the specific severity of injury to children in a particular type of crash to demonstrate the mechanism of injury under the restricted group of data. In this way, the focus is on the injury, and the type of vehicle and its similarity to the one in litigation are not relevant to the general analysis of how the children are injured.

A. Scenario 1: Basic Application of the Doctrine

Peggy is backing her car, made by Detroit Auto Company ("DAC"), out of her driveway when it accelerates rapidly, crossing the street and striking a tree. Peggy is injured and sues DAC, claiming that a defect caused the sudden acceleration. At trial, Peggy's expert witness, Edward, wishes to testify that Peggy's car has a design defect that has materialized in a dozen other accidents in which DAC cars suddenly accelerated in much the same way Peggy's did, and caused accidents and injuries.[101]

Edward's testimony is an attempt to show something specific about Peggy's accident; that is, it occurred as a result of the same defect that caused the dozen previous accidents. Because he is attempting to imply a defect in the design of all similar cars based on an alleged pattern that has recurred in other accidents, the substantial-similarity doctrine applies to limit Edward's testimony to those accidents which are substantially similar to Peggy's.

B. Scenario 2: Use of Government Reports I

DAC calls its expert witness, Elaine, to introduce and explain a government report that concludes that sudden acceleration in DAC cars is likely caused by driver error, rather than by vehicle defect.[102]

Elaine's testimony is intended to demonstrate that it was unlikely that a sudden-acceleration defect caused Peggy's crash and injuries. Because Elaine intends to offer the evidence as an effective re-creation of the accident, the substantial-similarity doctrine applies, and Elaine should be required to limit her testimony to those portions of the government report that deal with accidents that are substantially similar to Peggy's.[103] One way that she could do so would be to show that the government study analyzed a number of accidents involving the exact make and model of car as that driven by Peggy, and to show the relative incidences of driver error versus vehicle defect. In other words, the general proposition that driver error is more likely to cause sudden acceleration *in all cars* is not relevant, but the specific proposition that, *in the car driven by Peggy*, driver error is a more common cause of accidents is directly relevant.

Note, however, that Elaine is entitled to rely on the entirety of the government report when preparing her own testimony. The substantial-

101. *See Stovall*, 608 S.E.2d at 248.

102. *See* Jones v. Ford Motor Co., 204 F. App'x 280, 283-85 (4th Cir. 2006).

103. *See id.* at 286.

similarity doctrine would apply to keep out the report itself and any testimony from Elaine that does not abide by the constraints of the doctrine, but an expert is entitled to rely on a wide range of materials in formulating his or her own testimony.[104]

C. Scenario 3: Rare Dangers I

Peter stops his SUV on the side of the highway. Another driver, driving a mid-size sedan at 100 miles per hour, drifts onto the shoulder and strikes Peter's SUV. The passive restraint systems in Peter's vehicle do not prevent injury. Peter sues DAC, the manufacturer of the SUV, under a theory of strict product liability, claiming that the failure of the passive restraint systems to prevent injury constitutes a design defect. DAC admits that the passive restraint system did not prevent the injury. However, DAC contends that it would be unreasonable to require automakers to install passive restraint systems capable of preventing any injury in a 100 mile per hour impact. DAC offers the testimony of its expert, Elaine, who will testify that 100 mile per hour collisions with stopped vehicles exert a force that is far beyond what occurs in practically all real-life accidents. Restated, Elaine testifies that such accidents are so rare and extreme in nature that DAC acted reasonably by not designing the passive restraints to prevent all injury in such accidents.[105]

This type of case is almost certain to see a substantially-similar challenge. After all, the defendant appears to be attempting to use expert testimony on field accident data to say something specific about the accident; if so, the testimony would implicate the substantial-similarity doctrine. However, a closer examination shows that the testimony is intended to say something about a *category* of accidents, not about the accident in question, other than that it is a rare and extreme *type* of

104. *See* FED. R. EVID. 703. "An expert may base an opinion on facts or data in the case that the expert has been made aware of or personally observed. If experts in the particular field would reasonably rely on those kinds of facts or data in forming an opinion on the subject, they need not be admissible for the opinion to be admitted. But if the facts or data would otherwise be inadmissible, the proponent of the opinion may disclose them to the jury only if their probative value in helping the jury evaluate the opinion substantially outweighs their prejudicial effect." *Id. See also, e.g.*, Conwood Co. v. U.S. Tobacco Co., 290 F.3d 768, 786 n.3 (6th Cir. 2002), *cert. denied*, 123 S. Ct. 876 (2003) ("[E]xperts are entitled to rely on documents, even hearsay documents that are otherwise inadmissible."); Trull v. Volkswagen of Am., Inc., 187 F.3d 88, 97 (1st Cir. 1999).

105. *See* Brewster v. Hyundai Motor Co., No. 2:2003-cv-00184, 2004 WL 3825469 (E.D. Tex. July 12, 2004). *See also* Brief of Defendant at 7, Clemens v. Nissan Motor Co., No. 3:04-CV-1584, 2006 WL 1434469 (N.D. Tex. April 3, 2006).

accident. No attempt is being made to recreate the accident through evidence based on field accident data, so the substantial-similarity doctrine should not apply. That is not to say that this type of evidence should not be scrutinized carefully using general relevance and reliability criteria. Various challenges to the testimony could be successful. For example, the proponent of the evidence should be required to show that the injuries sustained by the plaintiff would not have been sustained if the accident were of a more common, foreseeable type.

D. Scenario 4: Competing Expert Testimony as to Causation

Petunia is also in Peter's SUV, riding in the front passenger seat. She also sues DAC, and her expert, Edward, testifies that Petunia was injured by contact between her head and the second-row seatback as a result of the rear-impact collision. DAC is skeptical that her injuries could have occurred as described by Edward and proffers testimony from its expert, Elaine, based on analysis of field accident data. Elaine intends to testify as to the likelihood that, in an accident such as this, the injury could have been caused in the way described.[106]

The substantial-similarity doctrine applies here, but not in the manner that one would assume. Elaine's analysis identifies the different circumstances in which an *injury* like Petunia's injury could occur. It would make little sense to limit Elaine's analysis to substantially-similar *accidents*. The point of the analysis is to identify every known accident scenario in which a head injury like Petunia's has occurred. DAC is interested in discovering whether the *only* accidents in which Petunia's injury could occur are *dissimilar* to this accident. DAC is also interested in discovering whether injuries like Petunia's result from some other part of the car other than the seatback to refute her lawyer's specific theory of design defect. Assume that Elaine finds that injuries like Petunia's have occurred only in materially *dissimilar* accidents and that such injuries result not from the seatback but from other causes. In that scenario, Elaine's analysis would be useful and relevant for DAC's defense precisely because it includes and relied on dissimilar accidents. It would thus be inappropriate to limit Elaine's analysis to vehicles or accidents with substantially-similar characteristics.

This is not to say that the substantial-similarity rule should not apply to Elaine's opinions. It should. But instead of applying to the type of

106. *See* Appellate Brief, Cool v. General Motors Corp., No. 2259 EDA 2007, 2007 WL 5186724 (Pa. Super. Ct. 2007), *appeal denied*, 980 A.2d 111 (2009). *See also* Chantal S. Parenteau & David C. Viano, *Basilar Skull Fractures by Crash Type and Injury Source*, SAE Technical Paper No. 2011-01-1126 (2011).

accidents analyzed, the substantial-similarity doctrine must apply to the types of *injuries* Elaine used to perform her analysis. In other words, when identifying the types of accidents in which Petunia's type of injury is known to occur, Elaine must ensure that she identifies only accidents involving head injuries resulting from impact with the second-row seatback.[107] Elaine could opine regarding the likelihood that Petunia received her injuries in the way described by Edward, and that testimony could be helpful to the fact-finder, but only if Elaine restricted her analysis to the same type of injuries as those suffered by Petunia. It would of course make Elaine's analysis all the more convincing if she put the greatest emphasis on similar SUVs and similar conditions, but the nature of Elaine's analysis does not require it.

There is one admittedly extreme scenario where the substantial-similarity doctrine might not apply. Suppose that Elaine conducted her analysis and discovered that there are no recorded examples of a front passenger receiving injuries in the way described by Edward. Elaine's testimony would be offered for the same general purpose as before, to rebut Edward's testimony, but her testimony would no longer be an attempt to recreate anything about the accident. Instead, she would be testifying regarding the likelihood of Petunia's injuries occurring as described, regardless of the make, model, and year of the vehicle, or the particular conditions under which the accident occurred. The substantial-similarity doctrine would therefore not apply to exclude Elaine's testimony.

E. Scenario 5: When Remedies are Worse than the Defect I

During his testimony, Edward opines that the seat design in the SUV was defective because the front-passenger seat reclined too far in the accident, which allegedly caused Petunia to suffer a head injury. Edward testifies that a seat that remained rigidly upright would have prevented Petunia's injuries. DAC's expert witness, Elaine, wishes to testify that rigid front seats would have significantly increased the risk that Petunia would suffer a soft-tissue injury in this same accident, such as severe whiplash. Elaine, as a result, opines that Edward's alternative design would not really have been safer for Petunia than the SUV's actual design. Elaine further opines that Edward's alternative design would lead

107. This is not a traditional use of the substantial-similarity doctrine, but it would abide by the same foundational principles that gave birth to the doctrine over a century ago.

to higher rates of some injuries for vehicle occupants in the same position as Petunia in future accidents.[108]

The existence of a safer alternative design is a legitimate basis for a products liability claim,[109] but the manufacturer is entitled to rebut the evidence presented by the plaintiffs. Elaine's testimony regarding the potential dangers of rigid front seats is, therefore, relevant and should be admitted, assuming that the data analysis is conducted using reliable statistical methods. However, because Elaine is testifying about an increase in risk arising in this type of accident, her testimony is the type of "experimental" evidence that the substantial-similarity doctrine is designed to address, and the court should satisfy itself that the data used by Elaine is from substantially-similar accidents.

Petunia will likely argue that Elaine's testimony will require the jury to compare the severe injuries incurred by Petunia with the risk of whiplash in different types of accidents. This is a valid concern, but every design has benefits and flaws, and a plaintiff who raises an alternative-design argument opens the door to this type of comparison. The trial court should allow vigorous cross-examination by both parties of their respective experts, in order to make sure the jury has a comprehensive view of the benefits and flaws of the competing designs. This can allow the jury to determine whether the design chosen by the

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108. *See* Adams v. Chrysler, No. CV-07-2554-5 (Cir. Ct. Wash. Cty. Ark. 2007). *See also* David C. Viano, *Fracture-Dislocation of the Thoracic Spine in Extension with Upright Seats in Severe Rear Crashes*, SAE Technical Paper No. 2011-01-0274 (2011); David C. Viano & Chantal S. Parenteau, *Serious Injury in Very-Low and Very-High Speed Rear Impacts*, SAE Technical Paper No. 2008-01-1485 (2008); David C. Viano, Chantal S. Parenteau, Roger A. Burnett & Michael B. James, *Influence of Seating Position on Dummy Responses with ABTS Seats in Severe Rear Impacts*, SAE Technical Paper No. 2009-01-0250 (2009).

109. RESTATEMENT (THIRD) OF TORTS: PRODUCTS LIABILITY § 2(b) (1998). "A product . . . is defective in design when the foreseeable risks of harm posed by the product could have been reduced or avoided by the adoption of a reasonable alternative design by the seller or other distributor, or a predecessor in the commercial chain of distribution, and the omission of the alternative design renders the product not reasonably safe." *Id. See also, e.g.*, Louisiana Products Liability Act, LA. REV. STAT. ANN. § 9:2800.56 (1988) ("A product is unreasonably dangerous in design if, at the time the product left its manufacturer's control: (1) There existed an alternative design for the product that was capable of preventing the claimant's damage . . . ."); Rypkema v. Time Mfg. Co., 263 F. Supp. 2d 687, 692 (S.D.N.Y. 2003) ("[U]nder New York law, in a design defect case a plaintiff is required to prove the existence of a feasible alternative which would have prevented the accident."); Perez v. VAS S.p.A., 115 Cal. Rptr. 3d 590, 611 (Cal. Ct. App. 2010) ("[T]he determination of design defect requires balancing various factors, which include feasible alternatives . . . .") (quoting Hansen v. Sunnyside Prod., Inc., 65 Cal. Rptr. 2d 266, 274 (Cal. Ct. App. 1997)).

manufacturer was defective because a safer alternative design existed, as alleged.

F. Scenario 6: When Remedies are Worse than the Defect II

Elaine also wishes to testify that rigid front seats significantly increase the risk of serious injury in other types of crashes. For example, Elaine has studied all NASS accidents with severe injuries in low-speed read-end crashes, and has found that occupants with degenerative spine conditions, such as spinal stenosis, can be permanently disabled with upright seats. She wishes to offer this testimony to show the downside risks of the alternative design for people involved in other types of accidents.

Elaine will not be testifying about the accident, but about the safety of Edward's proposed alternative design, specifically that the alternative design will actually be more dangerous than the present design in a wide variety of circumstances. Her testimony, therefore, pertains only to the characteristics of the design. Without any attempt to opine based on a re-creation of the accident, the substantial-similarity doctrine would not be applicable.

G. Scenario 7: Determining Causation

Patti is driving her DAC SUV with husband Paul sitting in the passenger seat. One of the front tires on the SUV experiences a sudden deflation, and the SUV impacts a tree. Paul is seriously injured in the accident, but Patti walks away from the crash with only minor injuries. Patti and Paul sue DAC. As part of their case, they call Edward as an expert. Edward testifies that the injuries to Paul, and the fact that Patti was essentially unscathed, show that there was a defect in the manufacturing of the front passenger seating environment. DAC calls Elaine, who will offer expert testimony regarding the probability of one front-seat occupant escaping a crash relatively unscathed when the other front-seat occupant is severely injured.[110]

There are a number of possible ways to present evidence of this nature. One way would be to present field accident evidence to show, generally, the percentage of accidents in which one front-seat occupant is seriously injured and the other is not. This evidence is relevant to the

110. *See* Carlson v. Chrysler Corp., No. 07-540 (Dist. Ct. of Lancaster Cty. filed Sept. 23, 2007); *see also* David C. Viano & Chantal S. Parenteau, *Severe-Fatal Injury Risks in Crashes with Two Front-Seat Occupants by Seatbelt Use*, 11 TRAFFIC INJ. PREV. 294 (2010).

general proposition, and would be admissible to show that this scenario occurs in any number of other vehicles that the plaintiff does not allege are defective. However, there is some likelihood of confusion of the issues in the cases in which Elaine's conclusions are sensitive to the model of vehicle or accident configuration, because the circumstances of accidents can vary widely. This likelihood of confusion would lead many courts to be skeptical, and depending on how strong Elaine's conclusions are, we do not believe that it would always be an abuse of its discretion for a court to exclude general evidence of this sort when the expert's results change significantly based on the model of vehicle or accident configuration, especially if the same data may be used to generate more reliable evidence.[111]

Specifically, the same government datasets could be used to identify crashes that are substantially similar to the accident in question. By limiting her statistical analysis to accidents involving similar types of SUVs, and exhibiting similar characteristics (number of times rolled, distance traveled, obstacles encountered, etc.), Elaine could testify as to this particular accident, offering the type of experimental evidence that the substantial-similarity doctrine arose to address. By doing so, Elaine would avoid the likelihood of confusion inherent in more general evidence and would more effectively show the jury how likely Edward's conclusions are.

H. Scenario 8: Use of Government Reports II

Phillip is riding his three-wheeled all-terrain vehicle (ATV) with his six-year-old son. The son is seated in front of Phillip on the ATV, and neither Phillip nor his son are wearing helmets. Phillip drives the ATV up a steep hill, and the ATV rolls, causing severe injuries to the six-year-old. Phillip sues D-Corp, the manufacturer of the ATV, in products liability, claiming that the ATV was defective and that D-Corp had notice of the defect. Phillip wishes to introduce into evidence government reports about ATV safety, including, among other things, injury statistics for all ATVs sold in the United States.[112]

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111. As an example of when it almost certainly *would* be an abuse of discretion to exclude the evidence, Elaine could present evidence that the frequency of these types of accidents, where the driver is unharmed but the passenger is severely harmed, is extremely constant for all accidents and vehicles. Such evidence would be highly relevant to refute Edward's testimony. We note that this determination by the trial court would be different from the legal question of whether the substantial-similarity doctrine applies, which would be reviewed under a de novo standard. *See* discussion, *supra* note 71 and accompanying text.

112. *See* Kloepfer v. Honda Motor Co., 898 F.2d 1452 (10th Cir. 1990).

The reports would likely be sufficient to pass muster under *Daubert* or the corresponding state evidentiary standards for expert testimony unless there is some dispute regarding the qualifications and methodology of the government researchers who compiled the reports. As presented, however, the evidence presents a substantial-similarity problem, as well as general evidentiary concerns. Specifically, Phillip's claim is that D-Corp's ATV was defective, and it appears that Phillip is offering the reports as evidence of either: (1) the dangerous character of ATVs, generally; or (2) the dangers of D-Corp's ATV, specifically. If Phillip is intending to show that all ATVs are defective, the evidence would have some relevance, but there would be a significant risk of undue prejudice, as D-Corp's ATV might be much safer than most ATVs, and D-Corp would be unfairly tarnished by the general condemnatory nature of the report. There is also a risk of undue prejudice, as it pertains to Phillip's notice claims, because the jury could conclude that D-Corp should be liable based solely on its knowledge that a *competing* product might be defective.

If, on the other hand, Phillip is intending to use the evidence to show the particular defect of D-Corp's ATV, or notice of the same, then the evidence is "experimental," and Phillip is attempting to recreate the accident by way of the report. A substantially-similar problem arises if the report does not specifically separate out injury rates by relevant design specifics—usually defined by ATV make, model and year[113]—and if it does not separate injury rates by the characteristics of the accidents that led to the injuries. If the reports list general categories of evidence, then the evidence is not substantially similar to the accident in question, and should be excluded. If the reports contain raw data regarding injury rates by make, model, year, and accident characteristics, it might be admissible, but only after redaction of all injury data that was not substantially similar, and only if offered by an expert who could explain the data to the jury and provide necessary context.

In this scenario, the government report includes injury rates for three-wheeled vehicles, and it is tempting to consider that an ATV with higher injury rates is defective, but such a conclusion ignores the risk-utility calculation that manufacturers and the public, of necessity,

113. A vehicle of a different make, model, or year will not always be classified as dissimilar in a substantial-similarity analysis. The court must make the determination of where the cut-off exists with regards to the similarity or dissimilarity of relevant products. A perfect match, however, is not required. Green v. Schutt Sports Mfg. Co., 369 F. App'x 630, 638 (5th Cir. 2010).

conduct every day.[114] While the government report is admissible, as described above, the trial court should carefully avoid allowing the proponent of the evidence to offer incorrect and unwarranted inferences that higher injury rates mean that the product is per se defective.

I. Scenario 9: Use of Government Reports III

The trial court decides to admit those government reports which detail the risks of three-wheeled ATVs as compared to four-wheeled ATVs. D-Corp hires Elaine as its expert, and Elaine wishes to offer rebuttal testimony in the form of field accident data analysis comparing the risks of riding three-wheeled ATVs with the risks of participating in other activities. Among the activities that are contrasted with the use of three-wheeled ATVs are the use of other off-road vehicles (snowmobiles, motorcycles, etc.), swimming, skiing, boating, bicycling, horseback riding, scuba diving, and aviation.[115]

Setting aside any questions regarding the propriety of admitting Phillip's evidence, the evidence is now before the jury, and D-Corp is entitled to rebut the inferences arising from the government reports. Evidence that would not have been relevant prior to the admission of Phillip's evidence has now gained relevance because Phillip has opened the door. Because the court chose not to limit Phillip's evidence with the substantial-similarity doctrine, it would be inappropriate to use the doctrine to limit Elaine's testimony. However, that does not mean that Elaine's testimony should be allowed in its entirety.

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114. This scenario illustrates the fact that all manufacturers must engage in some amount of risk-utility calculation. Each design is intended to have certain properties that give it unique usefulness in certain circumstances and higher risks in other situations. For example, field data shows that there are lower risks for severe injury and death in the heaviest vehicles on the road and, conversely, higher risks in the lightest ones. However, it is not a design defect to produce light vehicles, since the motoring public would not all want to drive vehicles as big and heavy as cement trucks, which are among the heaviest and safest. Likewise, rotating seats are known to provide the best overall protection of occupants in a range of rear-end crashes, but it is possible to find a specific accident where an upright seat may have offered greater protection. *See generally* Prasad P, Kim A, Weerappuli DPV, Robert V, Schneider D, *Relationship Between Passenger Car Seat Back Strength and Occupant Injury Severity in Rear End Collisions: Field and Laboratory Studies*. SOC'Y OF AUTO. ENG'R, Warrendale, PA. SAE 973343 (1997); Burnett R, Carter J, Roberts V, Myers B, *The influence of seatback characteristics on cervical injury risk in severe rear impacts*, ACCID. ANAL. PREV. 36(4): 591-601 (2004); Viano DC, *Seat Design Principles to Reduce Neck Injuries in Rear Impacts*, TRAFFIC INJ. PREV. 9(6): 552-60 (2008).

115. *See* Bittner v. Am. Honda Motor Co., 533 N.W.2d 476, 482 (Wis. 1995).

Phillip opened the door to some rebuttal evidence, but much of Elaine's testimony appears beyond the scope of Phillip's evidence. Specifically, Phillip's evidence compared the risks of three-wheeled ATVs and four-wheeled ATVs, so Elaine's testimony comparing the two should also be admitted. When it comes to Elaine's testimony considering the risks of other off-road vehicles, the court will need to determine whether motorcycles, snowmobiles and other off-road vehicles are in the same class of vehicle as three-wheel ATVs, at least as compared to four-wheel ATVs. If questions of general riskiness are similar for three-wheeled vehicles and other off-road vehicles, the latter category should also be allowed as rebuttal evidence. However, there does not seem to be any justification for allowing Elaine to testify regarding comparative risks of swimming, boating, bicycling, or any number of other activities because the circumstances in which these activities are enjoyed differ significantly from the circumstances that typically accompany ATV use.

Generally, the extent to which the trial court should admit evidence of the risks of dissimilar activities will depend largely on Phillip's presentation of the government reports. If Phillip makes broad claims about D-Corp's ATV being more dangerous than most other recreational activities, more leeway should be granted to D-Corp's rebuttal evidence. However, if Phillip keeps his claims narrow, arguing only that D-Corp's ATV was more dangerous than closely competing products, the trial court should impose similarly narrow constraints on D-Corp's rebuttal evidence.

J. Scenario 10: Choice of Time Interval for Statistical Analysis

Phyllis is driving her DAC sedan when she is rear-ended by another automobile. In a products liability lawsuit against DAC, Phyllis hires Edward as an expert witness. Edward provides analysis regarding the likely causes of Phyllis's injuries using the NHTSA databases. DAC's expert, Elaine, offers rebuttal testimony, pointing out that Edward's analysis only includes data from 1995 to 2000. Elaine argues that doing so is inappropriate, and offers her own analysis, using data from 1990 to 2005, and her conclusions differ significantly from those of Edward.

Edward and Elaine both offer "experimental" testimony about the accident in question. As a result, the substantial-similarity doctrine applies equally to both experts. Assuming that both experts limited their analyses to substantially-similar accidents, however, the only remaining question is whether Edward's testimony should be stricken. It would certainly be appropriate for the trial court to entertain a *Daubert* challenge by DAC for unreliable methodology. However, any time

statistical analysis is going to be conducted on historical data, some time interval must be chosen, and as long as Edward has a reasonable, professionally acceptable rationale for choosing his particular time interval, his evidence should be admitted.

Of course, when the subject is products liability, it is possible that there will be only one professionally acceptable time interval. For example, if the question before the court is the safety of an automobile manufactured in 2002, and the design of advanced airbags is relevant, it would be unreliable to include data prior to 1998 involving vehicles equipped with first generation systems, unless the data is sorted accordingly.[116] Assuming that professional standards are met, and the evidence admitted, the parties would then have competing experts—a common scenario in tort lawsuits—and rigorous cross examination should be sufficient to allow the jury to: (1) understand why the experts' respective time intervals were chosen; and (2) determine the appropriate weight to give to each expert's testimony. In any event, the question of admissibility would not turn on the substantial-similarity doctrine except to the extent that the time interval selected sweeps into the analysis a material number of substantially dissimilar products or incidents.

K. Scenario 11: Direct and Indirect Relevance

Phyllis is driving her DAC SUV during a rainstorm. She swerves to avoid a piece of debris in the road, and the SUV rolls. Phyllis sues DAC, claiming that the SUV was defective because it was more likely to roll due to a high center of gravity. Phyllis also claims that DAC had knowledge of the defect. Phyllis calls Edward as an expert witness, and Edward presents statistical evidence that SUVs roll more frequently than cars, and that DAC's SUV rolls more frequently than some SUVs. DAC wishes to call Elaine as its expert, who will offer data analysis comparing DAC's SUV to other SUVs and a range of other vehicle types, under a range of physical conditions.[117]

Edward offered testimony that did not comply with the substantial-similarity doctrine. The evidence introduced was not constrained to similar vehicles or similar road conditions. However, if the data from which Edward's testimony was derived was available to DAC prior to the manufacture of Phyllis's SUV, then Edward's testimony was relevant

116. Susan A. Ferguson & Lawrence W. Schneider, *An Overview of Frontal Air Bag Performance with Changes in Frontal Crash-Test Requirements: Findings of the Blue Ribbon Panel for the Evaluation of Advanced Technology Air Bags*, 9 TRAFFIC INJ. PREV. 421 (2008).

117. *Jaramillo*, 116 F. App'x at 76.

to the question of whether DAC had notice that the SUV exhibited general instability under a range of circumstances. In such a case, the trial court was correct in admitting Edward's testimony, but would need to be careful in assuring that Edward's testimony on the subject was limited to general notice of a potential defect, and that he did not use the evidence to testify regarding the specifics of Phyllis's accident. In a similar fashion, Elaine proposes to offer testimony that would not comply with the substantial-similarity doctrine, but it is not clear that the substantial-similarity doctrine is applicable to all purposes for which the evidence could be offered.

DAC may argue that Phyllis opened the door to non-substantially-similar evidence, and that argument would be valid to the extent that the trial court allowed Edward to use his evidence to testify regarding the accident at issue. However, if the trial court appropriately limited Edward's use of the evidence to notice, then Elaine's testimony is not relevant to notice, so she cannot escape the requirements of the substantial-similarity doctrine by relying on an opening-the-door argument. Unless, of course, the data Elaine relies on were also available to DAC prior to manufacture of Phyllis's SUV, in which case the evidence would be relevant to notice, as well.

Assuming that Elaine's evidence is not offered with respect to the issue of DAC's notice, its admissibility depends on the purpose for which it is introduced. As it pertains to the risk of rollover under the circumstances that resulted in Phyllis's injuries, the evidence would need to be substantially similar, so those portions that relate to similar SUVs and similar conditions would be admissible. Beyond that narrow question, the case for admissibility becomes weaker, but not non-existent. While not directly relevant, Elaine's non-substantially-similar evidence may be indirectly relevant to the existence of a defect. For example, Edward testified that SUVs roll more frequently than cars, but testimony of that nature is likely to be presented in averages, so a wider survey of rollover rates by cars, SUVs, and other vehicles could put the general safety of the DAC SUV into perspective. If the DAC SUV is reasonably safe under a majority of conditions, and has only a slightly higher risk of rollover on wet pavement than the average car in its class, or than a range of other vehicles generally considered safe, then the jury may be entitled to find that the DAC SUV is not unreasonably dangerous.

L. Scenario 12: General Standards of Safety I

As part of his testimony, Edward also testifies that the DAC SUV is unreasonably dangerous because its center of gravity and track width are

out of proportion. He offers his expert opinion as to a safe ratio of height of center of gravity to track width and identifies what design changes would need to be made to the DAC SUV in order to achieve that safe ratio. In doing so, Edward references a wide range of vehicles and road conditions.[118]

DAC may object to Edward's testimony, because it does not comply with substantial-similarity requirements. The doctrine does not apply in this case, however, because Edward's testimony is not an attempt to recreate the actual accident. Instead, what he is attempting to do is establish a general standard of safety. This type of analysis, to the extent it is relevant and helpful to the jury, requires data from a wide range of vehicles and circumstances. The trial court may still reach a number of conclusions which would prohibit admission of the testimony—that Edward is not qualified as an expert in general standards of safety, that the testimony would confuse the jury by diverting their attention from the allegations of a specific defect, or others—but application of the substantial-similarity doctrine here would, in effect, establish a de facto rule of inadmissibility for all testimony on general standards of safety.

Similarly, defendants accused of producing unreasonably dangerous products should be entitled to introduce expert testimony regarding what the general standard of safety for the relevant product *should* be.[119] Testimony regarding general standards of safety is not subject to the substantial-similarity doctrine because the establishment of the standard occurs outside the immediate concerns of the accident in dispute. Once the standard has been established, the parties should have ample opportunity to argue about whether or not the product meets the standard or whether a failure to meet the standard caused the injuries, and it is to these two last questions that the substantial-similarity doctrine may be appropriately applied.

Of course, the process of establishing a general standard of safety raises additional concerns that a court should consider before allowing either party to attempt to present its expert testimony. One such concern would be that the process is likely to require the expenditure of significant judicial resources, and a trial court might refuse to engage in the process if industry standards are well-known and long-standing, providing the jury some measure by which to gauge whether the product was unreasonably dangerous. Another concern might be that a particular party has shown a willingness to expand testimony beyond its

118. *See* Volkswagen of Am., Inc. v. Marinelli, 628 So. 2d 378 (Ala. 1993).

119. *See* Tran v. Toyota Motor Corp., 420 F.3d 1310 (11th Cir. 2005) (discussing defendant's use of expert testimony regarding the general safety of automatic seatbelts in a wide variety of accidents).

appropriate bounds, leading the court to conclude that expert testimony about a general standard of safety would quickly become something else entirely. These considerations are legitimate, and a court would be well within its discretion to reject testimony on these grounds, but it would be inappropriate to use the substantial-similarity doctrine to exclude the testimony, particularly since other, legitimate grounds exist.

M. Scenario 13: Strange Circumstances

Petunia is using a D-Corp tractor to clear some of her farmland. Having attached a chain to a log, she begins to pull it with the tractor. After some distance, the front end of the log catches the edge of a large rock, causing the rear of the log to catapult off the ground. It strikes the cab of the tractor, forcibly ejecting Petunia out the front of the cab, and she is run over by the tractor as its momentum carries it forward. Petunia is severely injured and sues D-Corp, and calls Edward as her expert witness. Edward testifies that the tractor lacks certain safety features, and that the lack of those features has led to increased injuries in rollover accidents.[120]

Edward's testimony is certainly relevant to whether or not the tractor is unreasonably dangerous in the event of a rollover. Of course, that is no help in this case, for Petunia's injuries are not the result of a rollover accident. Imposition of a substantial-similarity requirement in a case such as this would almost certainly doom the plaintiff's chances, for the stranger the circumstances, the less likely an expert will be able to find an analogous factual scenario. This may seem like an unfair result, but to the extent that Edward attempts to use dissimilar accidents to recreate the accident, the general principles underlying the substantial-similarity doctrine reveal that to do otherwise would be unfair to D-Corp; if Petunia has no relevant evidence supporting her position, it does not advance the principles of fairness to allow her to use irrelevant evidence.

In the end, however, it is unlikely that such an uncomfortable conclusion need be reached. Edward could rely on the same evidence for a much more narrow purpose—to show that there are alternative, potentially safer designs available to D-Corp, and he could offer his expert opinion that one or more of those designs would have prevented Petunia's injuries. If presentation of the evidence were carefully managed by the trial court, the jury should not be tempted to draw improper inferences from Edward's testimony regarding the alternative designs, and could afford whatever weight they deemed appropriate to

120. *See* Barker v. Deere & Co., 60 F.3d 158 (3d Cir. 1995).

Edwards' speculation regarding application of those designs to D-Corp's tractor and injuries like those sustained by Petunia.

N. Scenario 14: Customer Complaints and Notice

Percy is driving his SUV when the front passenger tire explodes, causing the SUV to roll repeatedly. Percy receives severe injures, and brings suit against Duratire, the company that manufactured the tires on his SUV, claiming that the tires were defective and that Duratire had notice of the defect. In support of his notice claims, Percy wishes to introduce evidence that Duratire regularly replaced or repaired tires over the years, in response to customer complaints.

When a plaintiff such as Percy wishes to prove that the product manufacturer had notice that an accident like his own could have occurred because of a product defect, he is, in effect, arguing that the manufacturer should have *predicted* his own accident in a manner that is analogous to recreating it afterwards in an "experimental" fashion. The substantial-similarity doctrine, as a result, applies to Percy's evidence, at least as it pertains to any notice Duratire may have had regarding a defect in its tires that could have caused his injury. The process of receiving customer complaints would certainly have put Duratire on notice that some of its customers were dissatisfied with the quality of the particular product they purchased. However, there is no reason to suspect, as a general rule, that the concerns of a broad spectrum of Duratire customers are in any way related to the alleged defect that led to Percy's accident and injury. Notice of the particular defect alleged by Percy would only have been given to Duratire if the customer complaints leading to repair or replacement were substantially similar to a hypothetical complaint that Percy would have made in his circumstances.

O. Scenario 15: Comparison Evidence I

Patrick is driving a DAC passenger van when he loses concentration and drives onto the shoulder. Realizing his mistake, he veers back onto the road, but does so too sharply, causing the van to roll. During the rollover, the windows of the van are ejected and, because Patrick is not wearing his seatbelt, so is he. Patrick believes that, had the windows remained intact during the rollover, his injuries would have been far less severe. He sues DAC in products liability, claiming that the glass retention system was defective. At trial, he wants his expert witness, Edward, to present analysis of FARS data that shows that ejection from

the vehicle during rollover crashes is more likely in DAC vans because the glass regularly is ejected from the vehicles.[121]

Edward's testimony will have to include data from accidents involving non-DAC vans in order to provide a comparison of the relative risks of ejection. Because he is testifying that a non-DAC van would have performed better in the accident, he is offering precisely the type of experimental evidence that the substantial-similarity doctrine was created to deal with. The substantial-similarity doctrine will therefore apply, at least as it pertains to the characteristics of the accident and the general characteristics of the vans.

There is one limited avenue of testimony that could be relevant without having to satisfy the substantial-similarity doctrine. If Edward wishes to testify as to the general safety of DAC glass retention systems, he could do so with evidence regarding the performance of glass retention systems in a wide variety of cars, and under a wide variety of crash circumstances. In other words, if Edward keeps his evidence broad and his testimony narrow, he can avoid having to comply with the substantial-similarity doctrine. If, however, he narrows his evidence to just vans, or attempts to broaden the scope of his testimony, his testimony will violate either the substantial-similarity doctrine or other tests of relevance.

P. Scenario 16: Comparison Evidence II

Page is driving her DAC SUV when she loses control and the SUV rolls. She is injured and sues DAC, claiming that the SUV is inherently unstable. DAC concedes that SUVs are, generally, less stable than other types of vehicles but argues that their SUV is no more risky than SUVs generally. At trial, DAC asks its expert, Elaine, to present data analysis comparing the stability of DAC SUVs with the stability of other SUVs in a wide range of situations.[122]

Whenever a plaintiff claims that a product is unreasonably dangerous, the defendant manufacturer should present two categories of evidence. The first is evidence specific to the injuries suffered by the plaintiff; the manufacturer should address, as directly as possible, the contention that a defect in its product led to the plaintiff's injuries. The second is evidence tending to show that the product is safe.

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121. *See* Seese v. Volkswagenwerk A.G., 648 F.2d 833 (3d Cir. 1981).

122. *See Miller*, 2004 WL 4054843; Garay v. Mo. Pac. RR. Co., 60 F. Supp. 2d 1168 (D. Kan. 1999); Hernandez v. Ford Motor Co., No. C.A. C-04-319, 2005 WL 1830660 (S.D. Tex. Aug. 2, 2005).

As a practical matter, therefore, DAC should ask Elaine to consider whether the data she relies upon for her testimony could be used to determine the lack of specific defect under the circumstances that led to Page's accident. To the extent that it is possible, and Elaine attempts to testify as to the accident and whether the alleged defect caused it, the substantial-similarity doctrine would apply. Whether or not the data would allow that type of behavior, however, DAC is still entitled to argue, generally, that its SUV is safe, and Elaine's broad analysis is relevant to that question. More to the point, the substantial-similarity doctrine would not apply to exclude the evidence, even though it is clear that Elaine is not limiting her analysis to similar vehicles or accident characteristics.

Elaine's testimony compares the relative safety of the DAC SUV against a wide range of other vehicles under a range of circumstances. This sort of testimony is both relevant, as described above, and will be helpful to the jury in most circumstances. By its very nature, however, it will require consideration of accidents that are clearly dissimilar from the accident in question. If the substantial-similarity doctrine is relegated to a mere shortcut, without its foundational principles intact, this type of evidence will be excluded on a regular basis, which will hinder, rather than help, the search for justice.

Q. Scenario 17: Rare Dangers II

DAC asks Elaine to consider whether the dataset includes data that could be used to develop testimony about the accident in question. As Elaine conducts a preliminary review of the data, she concludes that the particular circumstances of this accident are incredibly rare in NASS, and she is prepared to testify to this fact.

Elaine's testimony pertains to a category of accidents, rather than the single accident that led to Page's injuries. Because she is not attempting to recreate the accident, but merely testify as to its frequency, the substantial-similarity doctrine does not apply, and Elaine should be allowed to testify. The court will likely have to deal with a range of other, legitimate challenges to Elaine's testimony. One issue that will arise, for example, is the fact that the database is so small, as described in the introduction to these thought experiments. In order to be able to say anything about the relative frequency of this type of accident, Elaine will have to use the weighting factors, which will allow for a national estimate. Opposing counsel will then be entitled to offer testimony as to the risks of using weighting factors, so that the fact-finder can decide what weight to give the evidence. All of this, however, will occur outside the substantial-similarity framework.

Another possibility is that Elaine discovers that, after analyzing all of the data, there is sufficient evidence that the SUV performs very well under the conditions that led to the plaintiff's accident. However, because the circumstances of the crash are quite rare, Elaine's analysis will be based on a small number of observations. That will mean that weighting factors will need to be used in order to allow Elaine to reach statistically significant results. While not a substantial-similarity problem, Elaine's analysis will again be subject to the criticism that use of the weighting factors is troubling from an evidentiary standpoint.

R. The Original Substantial-Similarity Doctrine Promotes Consumer Safety

As illustrated by these thought experiments, many of which are based on actual cases, the substantial-similarity doctrine can be highly beneficial to courts faced with complex analyses of field accident data. When understood and applied correctly, the doctrine helps assure that relevant evidence is presented to the fact-finder while, at the same time, thwarting attempts by the parties to lead the fact-finder to improper inferences from other accidents. At the same time, it is equally important to know when the doctrine should *not* apply, to ensure that relevant and helpful evidence is not erroneously excluded. As important as applying the doctrine correctly may be to reaching just results in litigation, it may be just as important in promoting consumer safety. The doctrine, applied correctly, helps promote consumer safety by more properly aligning the public interest in consumer safety with manufacturers' business incentives.

At the outset, we wish to make clear that we are *not* taking sides in the sometimes heated debate regarding the value of strict products liability lawsuits in general. That debate is certainly not lacking for participants, with a wide range of distinguished legal and economics scholars having offered diverse views on the subject.[123] This article addresses the importance of correctly understanding and applying the

123. *See, e.g.*, W. Kip Viscusi, *Does Product Liability Make Us Safer?*, Vanderbilt University Law School and Dept. of Economics Working Paper No. 11-11 (2011), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1770031; A. Mitchell Polinsky & Steven Shavell, *The Uneasy Case for Product Liability*, 123 HARV. L. REV. 1437 (2010); John C.P. Goldberg & Benjamin C. Zipursky, *The Easy Case for Products Liability Law: A Response to Professors Polinsky and Shavell*, 123 HARV. L. REV. 1919 (2010); George L. Priest, *Can Absolute Manufacturer Liability be Defended?*, 9 YALE J. ON REG. 237 (1992); Richard A. Epstein, *The Unintended Revolution in Product Liability Law*, 10 CARDOZO L. REV. 2193 (1989); William M. Landes & Richard A. Posner, *A Positive Economic Analysis of Products Liability*, 14 J. LEGAL STUD. 535 (1985).

substantial-similarity doctrine; it does not depend on which side of the products-liability war wins the day or, for that matter, whether there is even a "right" answer to the question. As described above, the substantial-similarity doctrine precedes the adoption of strict products liability, and a correct application of the doctrine would be just as important in a world where product defect suits sounded only in negligence, breach of warranty, and fraud.

The contribution of the substantial-similarity doctrine to product safety, under either negligence or strict products liability, derives from the incentives that manufacturers face. It is axiomatic to most economists that firms are profit maximizers.[124] It is also axiomatic (to the same economists) that the individuals who manage those firms are utility maximizers.[125] Firm decisions are naturally motivated by business pressures, but those decisions will also be tempered by the individual preferences of the managers. In the case of product design and manufacturing, improvements in product safety are motivated, at the firm level, by customer expectations tempered by reputational factors,[126] government regulation, and the probability of legal liability. At the individual managerial level, improvements will be motivated by some of the same pressures, but may also be motivated by personal goals to "win" in product performance (e.g., safety), or other goals related to leadership in the industry.

Professors Goldberg and Zipursky argue that reputational forces, government regulation, and legal liability all provide incentives to increase safety, and that it would be unwise to consider those incentives independently because "the three modes of 'regulation' influence one another."[127] This assertion is not only true in the context proposed by Goldberg and Zipursky, but in a much broader context as well. The probability of legal liability assuredly plays a role in manufacturers' product safety decisions, and does so in connection with the same manufacturers' responses to direct government regulation and to market incentives, including reputational factors. The overlapping uses of the FARS and NASS-CDS databases provide some evidentiary support for this conclusion. The FARS and NASS-CDS databases were created by

124. *See, e.g.*, David Romer, *Do Firms Maximize? Evidence from Professional Football*, 114 J. POL. ECON. 340, 340 (2006) ("A central assumption of most economic models is that agents maximize simple objective functions: consumers maximize expected utility, and firms maximize expected profits.").

125. *Id.*

126. For example, demand should increase for a car that receives high marks for safety from independent consumer product testing entities, while demand should decrease for a similar car that receives poor safety marks.

127. Goldberg & Zipursky, *supra* note 123, at 1930.

the government to help advance the cause of product safety, primarily through improved government regulation and more informed market decisions by consumers and firms. The databases are regularly used in precisely this way.[128] As illustrated above, however, the databases are also regularly used by manufacturers to defend against legal liability.

The overlap between market forces, government regulation, and litigation will mean that even marginal changes in one area will affect manufacturers' responses to the other two pressures, and will therefore impact final product safety decisions. If current trends continue and more courts adopt an incorrect interpretation of the substantial-similarity doctrine, the impact on product safety is likely to be negative. This will occur as many of the most commonly-used techniques for improving product safety are rendered unusable in defeating legal liability and manufacturers will shift at least some of their focus to analytical techniques that would pass muster under the new evolution of the substantial-similarity doctrine. In the same vein, manufacturers would face strong incentives to adopt those safety measures that can be defended in court based on admissible analytical techniques, rather than those measures that would actually improve safety.

As but one example of how this might happen, consider the case of *Adams v. Chrysler*,[129] a case heard before the Circuit Court of Washington County in Arkansas, and discussed in Scenario 5.[130] In *Adams*, extensive analysis had been conducted on the risks associated with seatbacks that remained rigidly upright during crashes,[131] as compared to the risks associated with seatbacks which yielded rearward during crashes. The plaintiff argued that the manufacturer's seatbacks were defective because they were backward-yielding, and that this

128. For example, the first U.S. study of the effectiveness of Electronic Stability Control by Charles Farmer, *Effect of Electronic Stability Control on Automobile Crash Risk*, 5 TRAFFIC INJ. PREV. 317 (2004), led to the wide-spread use of the technology to prevent loss of control crashes and rollovers. Likewise, studies of power window closures and trunk entrapment of children led to the revision of important vehicle safety regulations by the NHTSA. *See* Federal Motor Vehicle Safety Standards; Power-Operated Window, Partition, and Roof Panel Systems, 71 Fed. Reg. 18673-01 (proposed Apr. 12, 2006) (to be codified at 49 C.F.R. pt. 571); Federal Motor Vehicle Safety Standards; Power-Operated Window, Partition, and Roof Panel Systems, 73 Fed. Reg. 38331-02 (proposed Jul. 7, 2008) (to be codified at 49 C.F.R. pt. 571); *Report to Congress Committee on Commerce of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate, Motor Vehicle Trunk Entrapment*, U.S. DEPT. OF TRANSP., NAT'L HIGHWAY TRAFFIC SAFETY ADMIN. (2000), *available at* http://www.nhtsa.gov/cars/problems/studies/Trunk/index.html.

129. No. CV-07-2554-5 (Cir. Ct. Wash. Cty. Ark. 2007).

130. See *supra* note 108-109 and accompanying text.

131. *Id.*

characteristic led to the plaintiff's injuries.[132] This claim was a reflection of a safety debate that had been ongoing for some time within the automotive community.[133]

It is claimed that certain safety benefits arise from seats which remain upright during rear impacts because human tolerance is substantial when the head, neck and torso are supported in a severe rear impact. However, other risks are exacerbated under those same circumstances. Specifically, research indicates that when the passenger is older and predisposed to injury by stenosis of the spine, a seatback that remains upright can cause compression of the spinal cord and paralysis with or without cervical fractures.[134] These risks are particularly high in crashes where the change in speed of the struck vehicles is lower than fifteen miles per hour. Safety engineers in the automotive industry analyzed data from government databases and conducted laboratory tests to determine the relative risks. Figure 1 shows the results of that research, indicating that rigid seatbacks, known in the industry as ABTS (All Belts to Seats), result in higher stresses on the human body than conventional seatbacks, which yield backward.[135]

132. *Adams*, No. CV-07-2554-5.

133. THE DEBATE BETWEEN STIFF AND YIELDING SEATS: A NEW GENERATION OF YIELDING SEATS WITH HIGH RETENTION IN REAR CRASHES (David C. Viano et al. eds., 2003); DAVID C. VIANO, ROLE OF THE SEAT IN REAR CRASH SAFETY (2002).

134. David C. Viano, Chantal S. Parenteau, Priya Prasad & Roger Burnett, *Stiff versus Yielding Seats: Analysis of Matched Rear Impact Tests*, SAE Technical Paper 2007-01-0708 (2007).

135. David C. Viano & Chantal S. Parenteau, *BioRID Dummy Responses in Matched ABTS and Conventional Seat Tests on the IIHS Rear Sled*, 12 TRAFFIC INJ. PREV. 339 (2011).

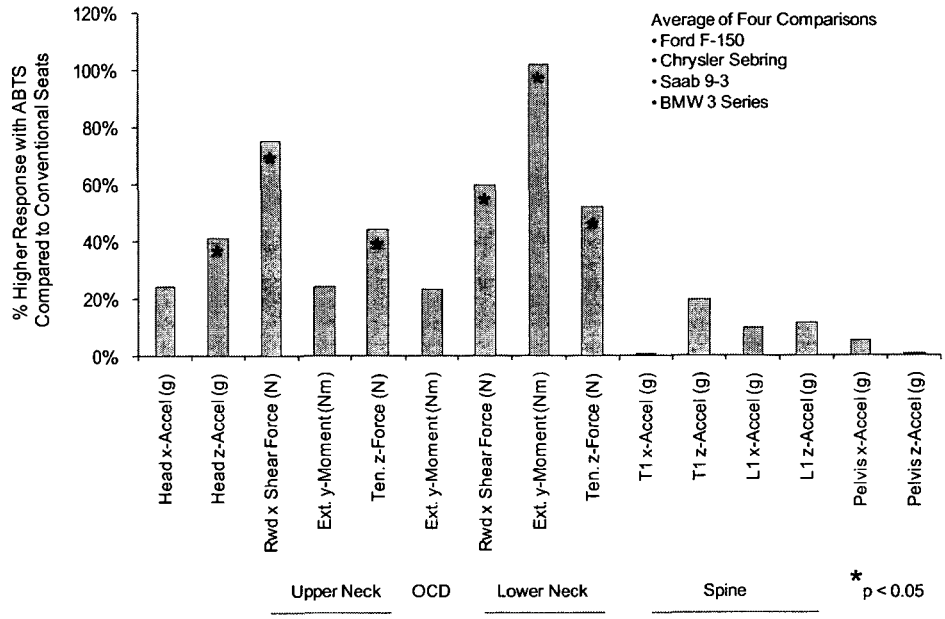

Figure 1: Percent higher responses with ABTS compared to conventional seats.[136]

This research provides some evidentiary support for the automotive industry's continued use of rearward-yielding seatbacks, instead of ABTS seats. However, certain plaintiffs bringing strict products liability claims—for example those who have been injured in a rear-collision accident with a change in speed higher than fifteen miles per hour—would almost certainly challenge the admission of this evidence based on the minority courts' view of the substantial-similarity doctrine. This evidence might or might not convince a jury; whether it is ultimately convincing to the fact-finder is largely unimportant to the present question. What is important is that, as described above, this analysis is relevant to the type of risk-balancing that every manufacturer and the government must engage in on a continuing basis.[137] If more courts were

136. *Id.* at 341.

137. Industry and government have determined, through repeated study of field accident data, that yielding seats provide a high degree of protection in rear crashes. *See* S. C. Partyka, *Seat damage and occupant injury in passenger car towaway crashes*, OFFICE OF VEHICLE SAFETY STANDARDS, NAT'L HIGHWAY TRAFFIC SAFETY ADMIN. (June 8, 1992). NHTSA has concluded that occupant protection in rear impacts is complex since it affects not only seatback strength but also head restraints and seatbelt performance in all crash modes. For these and other reasons, NHTSA decided not to revise the seat strength requirement in FMVSS 207, the relevant regulation. *See* Federal

to follow the erroneous minority of courts in adopting a flawed view of the substantial-similarity doctrine, some of the important evidence based on field accident data would no longer be admissible in a large number of cases.

What impact would this have on manufacturers' product safety decisions? Essentially, evidence of the competing risks would no longer be admissible, but the competing risks would remain. From an institutional standpoint, limiting those risks benefits manufacturers by improving the company's reputation, reducing friction between the company and government regulators, and limiting product liability lawsuit expenses. From a personal standpoint, limiting those risks benefits manufacturers in more intangible ways. Manufacturers engage in safety analyses in order to limit risks, but there are a variety of methodologies that can be used to analyze/improve safety, and each separate method requires the expenditure of resources. These costs then translate into increased consumer prices. Manufacturers, therefore, must limit the number and scope of safety analyses or else increasing product prices will drive consumers to competitors.

Shifts in the way the substantial-similarity doctrine is applied may change the incentives faced by manufacturers when choosing which safety analyses to utilize. Those analyses that will be admissible in court to defend against tort liability will gain greater prominence. For those cases where the "best" analysis is also admissible in court, no harm will result. At the margin, however, there will be situations where the "best" analysis would be inadmissible under a changed substantial-similarity doctrine. Manufacturers would be encouraged to shift their emphasis away from any such analyses, thereby sacrificing some amount of consumer safety in return for increased protection from tort liability.

Of course, the answer is not quite that simple. The calculations that a manufacturer must engage in are complex, and if the change in safety analysis methodologies leads to a significant increase in actual accidents, the benefits of admissibility will be outweighed, making use of the "best" methodology more likely. To sum up, then, we do not argue that a shift in the substantial-similarity doctrine will result in a complete shift away from best practices, but only that marginal shifts will occur, and that those marginal shifts can impose heavy costs on consumers. That the costs are the result of an unnecessary evolutionary trend in basic evidentiary rules makes it difficult to justify those costs.

Motor Vehicle Safety Standards; Seating Systems, 69 Fed. Reg. 67068-01 (Nov. 16, 2004) (terminating the rule making proceeding to amend FMVSS No. 207).

IV. CONCLUSION

The substantial-similarity doctrine arose, organically, from common law courts applying foundational principles of relevance. Designed to simplify the analysis courts would have to conduct prior to ruling on the admissibility of experimental evidence, the doctrine evolved into a shortcut whose origins have begun to fade from some courts' memories.

The evidentiary principles that gave birth to the doctrine have remained essentially unchanged for over a century, but the world, generally, and our legal system, specifically, have changed in fairly dramatic ways. The rapid advance of technology has led to increasingly complex factual scenarios to which experimental evidence might be offered. The complexity of the world has led government agencies and private entities to collect increasing amounts of data in order to better track past trends and anticipate future trends. Advances in data collection, statistical methods and the computing power necessary to conduct statistical analysis have allowed statisticians, economists, engineers, and many other disciplines to utilize data analysis to improve product safety and report on trends in a variety of venues, including during litigation. In the background, the legal system has seen an increase in tort liability, most notably through the creation of strict products liability, which is one area in which the substantial-similarity doctrine is likely to be invoked.

All of these factors have combined to place increasing stress on the courts. Some courts have responded to the increased pressure by turning the substantial-similarity doctrine into a near blanket exclusion of field accident analysis or other statistical analysis.[138] Doing so certainly limits complexity, but it does so in a way that improperly excludes a wide range of relevant evidence. In other words, courts that misapply the substantial-similarity doctrine have applied the doctrine as a way of avoiding their gatekeeping function, rather than as a way to *facilitate* the gatekeeping function. In this article, we have presented a few thought experiments that show how these ill-advised decisions by a minority of courts have led the substantial-similarity doctrine to the brink of a change that could accurately be called the creation of a new doctrine, rather than the type of small, evolutionary step that is typical in the common law.

In the face of the same stress, most courts have continued to apply the doctrine in a way that properly excludes evidence of dissimilar

138. *See* Chism v. CNH Am. LLC, 638 F.3d 637 (8th Cir. 2011); Stovall v. DaimlerChrylser Motors Corp., 608 S.E.2d 245 (Ga. App. 2004); *see also supra* notes 2 and 24 and accompanying text.

accidents only when offered as experimental evidence, typically to prove a defect, notice of a defect, or to otherwise recreate some aspect of the event in question. These courts have held the line in protecting not only the doctrine's continued viability, but also the basic principle that relevant evidence should be presented to the fact-finder. This article supports the majority view and the original vision of the substantial-similarity doctrine. That support is necessary if current evolutionary pressures are to be resisted and principles of relevance retained. If the minority trend gains momentum, plaintiffs and defendants will find themselves unable to support their legitimate legal arguments with readily available and otherwise relevant evidence. For society as a whole, the costs will be even greater, as exclusion of relevant and helpful evidence will hinder, rather than help, the search for justice, and will discourage product safety.