No. 06-11543

In The
Supreme Court of the United States

LARRY BEGAY,

Petitioner,

v.

UNITED STATES OF AMERICA,

Respondent.

On Writ of Certiorari To The United States Court Of Appeals For The Tenth Circuit

BRIEF OF THE NATIONAL ASSOCIATION OF CRIMINAL DEFENSE LAWYERS AS AMICUS CURIAE SUPPORTING THE PETITIONER

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INTEREST OF AMICUS CURIAE

The National Association of Criminal Defense Lawyers ("NACDL") is a non-profit organization with a direct national membership of more than 12,000 attorneys, in addition to more than 35,000 affiliate members from all 50 states. The American Bar Association recognizes NACDL as an affiliate organization and awards it full representation in the ABA's House of Delegates.

NACDL was founded in 1958. Its mission is to ensure justice and due process for the accused; to foster the integrity, independence, and expertise of the criminal defense profession; and to promote the proper and fair administration of justice. In furtherance of this and its other objectives, NACDL files approximately 35 *amicus curiae* briefs each year, in this Court and others, addressing a wide variety of criminal justice issues.[1]

STATEMENT OF THE CASE

The district court applied the Armed Career Criminal Act's ("ACCA") mandatory minimum sentence to Petitioner Larry Begay based on Mr. Begay's present possession of a firearm, coupled with his prior New Mexico state convictions for driving while intoxicated ("DWI").

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[1] Letters of consent have been filed with the Clerk. Pursuant to Rule 37.6, *amicus* states that no counsel for a party authored any part of the brief, and no person or entity other than an *amicus* and its counsel made a monetary contribution to the preparation or submission of this brief.

The ACCA mandates imposition of a fifteen-year minimum sentence and raises the maximum sentence from ten years to life for violators of 18 U.S.C. § 922(g)(1) and § 924(a)—that is, convicted felons who knowingly possess a firearm—who have three prior convictions for a drug trafficking offense or a "violent felony." 18 U.S.C. § 924(e)(1). Section 924(e)(2)(B)(ii) provides that a "violent felony," in addition to crimes having as an element the use of physical force against another, means an offense that "is burglary, arson, or extortion, involves use of explosives, or otherwise involves conduct that presents a serious potential risk of physical injury to another."

The district court rejected Mr. Begay's sentencing arguments and found that the offense of DWI in New Mexico, when committed by a recidivist who therefore faces more than a year's imprisonment, is a "violent felony" for purposes of the ACCA. The Court applied the fifteen-year mandatory minimum sentence under the ACCA to Mr. Begay, sentencing him to 188 months. Mr. Begay appealed and a divided panel of the Tenth Circuit affirmed on that point, remanding only for reconsideration of the weight given the Guidelines floor in light of this Court's recent cases.

SUMMARY OF ARGUMENT

In concluding that felony DWI presents a serious potential risk of physical injury to another, the sum total of the Tenth Circuit's analysis was as follows: "DWI certainly presents such a risk. Many would say that the gravest risk to their physical

safety from criminal misconduct is from drunken drivers." *United States v. Begay*, 470 F.3d 964, 971 (10th Cir. 2006). The Tenth Circuit's reliance upon its own subjective perception of presumed public opinion is misplaced and illustrative of the constitutional risks that inhere when courts engage in judicial factfinding -- particularly when that factfinding is uninformed by available statistical evidence.

In reality, drunk driving – while far more risky than driving sober -- is less of a contributing factor to injuries resulting from automobile accidents and much less dangerous to the physical safety of others than is commonly believed. Official statistics disclose that alcohol is "involved" at all in only about two percent of all motor vehicle crashes.[2] Other driving behaviors pose a significantly greater risk of causing a crash. For example, drowsy driving is a contributing factor in 22 to 24 percent of crashes and near crashes and distracted driving accounts for more than 22 percent of all crashes and near crashes.[3] Most important for present purposes, the

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[2] U.S. DEP'T OF TRANSP., NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., *National Survey of Drinking and Driving Attitudes and Behaviors, 2001*, TRAFFIC TECH 280, at 2 (2003)[hereinafter TRAFFIC TECH], *available at* http://www.nhtsa.dot.gov/people/injury/research/traffic-tech2003/TT280.pdf. For an elaboration of the counter-intuitive meaning of the concept "involved" as used by NHTSA in this context, *see* note 20 *infra* and accompanying text. For an explanation of the term "crash" as used by NHTSA, *see* note 5 *infra*.

[3] U.S. DEP'T OF TRANSP., NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., DOT HS 810 594, THE IMPACT OF DRIVER INATTENTION ON NEAR-CRASH/CRASH RISK: AN ANALYSIS USING THE 100-CAR

risk that a drunk driving episode will result in an injury to someone other than that driver is less than three tenths of a percent (0.0025%) or one in 386 DWI episodes.[4]

Application of the ACCA to recidivist DWI offenders such as Mr. Begay can result in extraordinary increases in the otherwise applicable sentence. Accordingly, the determination of whether felony DWI is a "violent felony" under the ACCA must be based upon a clear-eyed assessment of the real risk of physical injury to another that DWI poses and not upon a court's impression of public opinion.

NATURALISTIC DRIVING STUDY DATA, at x (2003)[hereinafter IMPACT OF DRIVER INATTENTION], *available at* http://www-nrd.nhtsa.dot.gov/departments/nrd-13/810594/images/810594.pdf.

[4] Evidence in Support of Def.'s Objection to Penalty Enhancement at 19, *United States v. Vela-Ornelas*, Case No. EP-00-CR-885-H (W.D.Tx. 2000)[hereinafter Zador Affidavit] attached as Appendix A. The same statistics show, moreover, that a drunk driver will kill someone other than himself only once out of every 21,000 drunk driving episodes (less than one-half of one-hundredth of a percent of all episodes). *Id.*

ARGUMENT

I. STATISTICS REGARDING THE POTENTIAL RISK OF INJURY TO ANOTHER POSED BY DWI ARE AVAILABLE AND RELEVANT TO A DETERMINATION OF WHETHER DWI IS A "VIOLENT FELONY" WITHIN THE MEANING OF THE ACCA.

In *James v. United States*, 550 U.S. --, 127 S.Ct. 1586, 1593 (2007), this Court addressed the question of whether attempted burglary constitutes a "violent felony" within the meaning of 18 U.S.C. § 924(e)(2)(B)(ii). The majority opinion in *James* acknowledged that when relevant statistics are available, they should inform courts' risk assessments under the ACCA. *See James*, 127 S.Ct. at 1598. With regard to drinking and driving, there is a wealth of raw data and statistical analysis available. In order to obtain meaningful statistics, however, it is first necessary to define the parameters of the analysis.

In determining whether a particular offense falls under the rubric of the "otherwise" clause of the ACCA, courts must employ the "categorical approach" set forth in *James*, 127 S.Ct. at 1593, and its antecedents. Under the categorical approach, courts may "'look only to the fact of conviction and the statutory definition of the prior offense,'" without recourse to the "particular facts disclosed by the record of conviction." *Shepard v. United States*, 544 U.S. 13, 17 (2005) (quoting *Taylor v. United States,* 495 U.S. 575, 602 (1990)). This approach thus

requires courts to "consider whether the *elements of the offense* are of the type that would justify its inclusion within the residual provision, without inquiring into the specific conduct of this particular offender." *James*, 127 S. Ct. at 1594.

Recidivism is not an element of the DWI offense, at least in New Mexico, as it "does not relate to the commission of the offense, *but goes to the punishment only . . .." Almendarez-Torres v. United States,* 523 U.S. 224, 244 (1998) (quoting *Graham v. West Virginia,* 224 U.S. 616, 629 (1912)). New Mexico's criminal code provides that first, second and third DWI convictions under N.M. Stat. § 66-8-102 (1978) constitute misdemeanors. N.M. Stat. § 66-8-102(E) & (F) (1978). Fourth or subsequent DWI convictions are treated as felonies punishable by a custodial sentence exceeding a year. N.M. Stat. § 66-8-102(G) (1978); N.M. Stat. § 31-18-15(A)(6) (2001). Because New Mexico's recidivist DWI statute is a punishment provision and does not add an element to the offense definition, this Court must, under the categorical approach, determine whether the elements of N.M. Stat. § 66-8-102 (1978), standing alone, meet the requirements of the residual clause. Thus, the relevant statistical analysis addresses the probability that a single drunk driving episode will lead to physical injury to another.

II. THE RISK THAT A SINGLE DWI EPISODE WILL LEAD TO INJURY TO ANOTHER PERSON IS EXTREMELY LOW.

The National Highway Traffic Safety Administration ("NHTSA"), a division of the Department of Transportation, compiles data related to traffic safety and motor vehicle crashes.[5] In addition, NHTSA solicits and sponsors traffic safety-related empirical research by various organizations. NHTSA's raw data is accessible to independent researchers also. Among the information gathered by the NHTSA are data relating to drinking and driving.

According to a 2001 survey conducted by the Gallup Organization on behalf of the NHTSA, drivers made a total of between 809 million and 1 billion driving trips in the United States in the year 2000 within two hours of consuming alcohol.[6] Relatedly, extrapolations from Centers for Disease Control and Prevention ("CDC") surveys reveal that in 2002, drivers took approximately 159 million driving trips after having (in their own estimation) "had perhaps too much to drink."[7] Using such

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[5] The NHTSA and most highway safety experts use the term motor vehicle "crash" in place of the more colloquial "car accident." *See* Zador Affidavit, *supra* note 4, at 9-10

[6] TRAFFIC TECH, *supra* note 2 at 1.

[7] Kyran P. Quinlan, M.D., MPH, *Alcohol-Impaired Driving Among U.S. Adults 1993-2002*, 28 Am. J. Preventive Med. 346, 348 (2005).

estimates, experts can assess the probability of various harms caused to another by alcohol-impaired drivers per incident of drunk driving.

Dr. Paul Zador, a research statistician and alcohol researcher holding a Ph.D. in mathematical statistics from Stanford University, has spent more than two decades conducting research regarding motor vehicle crashes associated with alcohol-impaired driving. Dr. Zador is affiliated with Westat, Inc., an employee-owned research corporation that provides statistical analysis to federal, state, and local governments, foundations and businesses.[8] Dr. Zador had occasion to estimate the risk that intoxicated driving will result in harm to another person when he prepared and submitted an expert report in connection with the sentencing proceedings in *United States v. Vela-Ornelas*, Case No. EP-00-CR-885-H, a Western District of Texas, El Paso Division case.

In his affidavit filed in 2000 using then available data, Dr. Zador analyzed NHTSA crash information in light of estimates of the self-reported incidence of impaired driving.[9] Using this data, Dr. Zador estimated that "five one thousands of one percent of all DWI episodes, or less than one out of

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[8] Zador Affidavit, *supra* note 4, at 21-27; *see also* www.westat.com (last visited Nov. 11, 2007).

[9] *Id.* at 17. Dr. Zador recognized that survey participants may have under-reported drinking and driving episodes. Nonetheless, Dr. Zador used the more conservative under-reported number in calculating the risks of death or injury.

every 21,000 DWI episodes[10], resulted in a fatal injury to someone other than the intoxicated driver or an intoxicated non-occupant." According to Dr. Zador's analysis, there was one fatality per 188,333 episodes[11] of driving within two hours of drinking. In his affidavit, Dr. Zador calculated the risk of any personal injury to someone other than the impaired driver per DWI episode at 0.0025%, just under three tenths of one percent. This equates to one injury per 386 DWI episodes and one injury per 3395 self-reported episodes of driving within two hours of drinking.[12] All of these figures reveal levels of risk of "physical injury to another" as a result of drunk driving which are more than 15 times lower than the 3.8% risk of violence arising out of a burglary that this Court characterized as "only rarely" in

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[10] *Id.* at 18-19. Dr. Zador calculated this figure by dividing the number of DWI episodes (90,000,000) by the number of fatalities to someone other than an intoxicated driver or intoxicated non-occupant (4200).

[11] *Id.* Dr. Zador reached his estimate of 188,333 by dividing the number of episodes of driving within two hours of drinking (791,000,000) by the number of fatalities to someone other than an intoxicated driver or intoxicated non-occupant (4200). The reference in Dr. Zador's affidavit to "188,333 thousand episodes" is a typographical error.

[12] *See id.* These figures are calculated by dividing the number of DWI episodes (90,000,000) by the total number of reported injuries (233,000). The rate of injury per incidence of driving within two hours of drinking is calculated by dividing the total number of reported driving within two hours of drinking episodes (791,000,000) by the total number of reported injures (233,000).

Tennessee v. Garner, 471 U.S. 1, 21 (1985).[13] Dr. Zador's calculations as they appeared in his affidavit are forth out below:

Table 2: Rate of harm caused to another per 100 episodes of DWI and driving within two hours of drinking, by harm severity. [14]

	Type of episode, N	
Harm severity, N	DWI, 90,000,000	Driving within two hours of drinking, 791,000,000
Fatal, 4,200	0.005	0.0005
Injury, 233,000	0.260	0.029
Property damage only, 259,000	0.290	0.033
Total, 491,000	0.540	0.062

In performing his statistical analysis, Dr. Zador recognized and adjusted for limitations of the NHTSA data so as to provide conservative risk

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[13] Even if the Congressional inclusion of burglary as a *per se* violent offense under the ACCA were deemed to imply some sort of acceptance of 3.8% as a measure of unacceptable risk, the statistics show that the risk of injury from DWI is 15 times lower (0.038/0.0025 = 15.2). *Cf. Leocal v. Ashcroft*, 543 U.S. 1 (2004) (for lack of mens rea element, Florida DUI is not "crime of violence" under 18 U.S.C. s 16(b))

[14] This table was titled "Table 2" in Zador's Affidavit, *supra* note 4, at 19.

estimates. For example, the NHTSA includes within its injury estimates injuries ranging from minor to fatal. This results in double counting of fatalities.[15] In addition, NHTSA does not segregate nonfatal injuries to intoxicated drivers and intoxicated non-occupants as it does for fatalities[16]. Thus, according to Dr. Zador, his estimates of the risk of injury to a person other than an intoxicated driver or intoxicated non-occupant "are likely to overestimate damage to another by as much as a factor of three."[17]

Importantly, Dr. Zador was charged with determining the risk of injury to *another* from drinking and driving. As a result, Dr. Zador excluded from his calculations deaths of intoxicated drivers and intoxicated non-occupants. Statistics show that a drunk driver is far more likely to kill himself in a crash than anyone else.[18] NHTSA, of course, includes such deaths in its fatality counts.[19]

Most significantly, NHTSA's expansive crash coding definitions give rise to marked overstatement

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15 *Id.* at 14-15.

16 *Id.*

17 *Id.* at 13.

18 *See* U.S. DEP'T OF TRANSP., NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., DOT HS 810 821, *2006 Traffic Safety Annual Assessment – Alcohol-Related Fatalities*, TRAFFIC SAFETY FACTS RESEARCH NOTE, Aug. 2007, at 1 [hereinafter *2006 Annual Assessment]*, *available at* www-nrd.nhtsa.dot.gov/Pubs/810821.pdf.

19 Zador Affidavit, *supra* note 4, at 15.

of risk. For example, NHTSA codes a crash as "alcohol related" even if all drivers were sober but a non-occupant – such as an injured pedestrian or bicyclist -- had a positive blood alcohol concentration ("BAC").[20] A fatal crash is deemed by NHTSA to be "alcohol related" when it involves a participant with a BAC as low as .01 grams per deciliter (g/dl) or higher.[21] All states, the District of Columbia and the Uniform Vehicle Code now set the threshold for a finding of a per se DWI violation at .08 BAC.[22] Under this NHTSA definition, however, a fatal accident will be deemed "alcohol related" even if only a single person involved in the crash had a BAC of .01, whether he was the driver or not. For NHTSA to identify a crash resulting in injury as "alcohol related," police must merely report it as such. No objective criteria need be met and police need not make a finding of driver impairment.[23] For this

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[20] *Id.* at 10.

[21] U.S. DEP'T OF TRANSP., NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., DOT HS 810 631, TRAFFIC SAFETY FACTS 2005: A COMPILATION OF MOTOR VEHICLE CRASH DATA FROM THE FATALITY ANALYSIS REPORTING SYSTEM AND THE GENERAL ESTIMATES SYSTEM, at 56 [hereinafter TRAFFIC SAFETY FACTS 2005], *available at* http://www-nrd.nhtsa.dot.gov/Pubs/TSF2005.pdf.

[22] U.S. DEP'T OF TRANSP., NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., DOT HS 810 571, DIGEST OF IMPAIRED DRIVING AND SELECTED BEVERAGE CONTROL LAWS, April 2006, *available at* http://www.nhtsa.dot.gov/people/injury/alcohol/ImpairedDrivingBeverageControlDigest.pdf.

[23] TRAFFIC SAFETY FACTS 2005, *supra* note 21 at 56; Zador Affidavit, *supra* note 4, at 10.

reason, Dr. Zador limited his analysis to those crashes in which BAC exceeded the legal limit, producing figures which are far more useful and reliable for purposes of examining risk under the ACCA's "otherwise" clause.[24]

In short, none of the available data, when viewed in light of the criteria made pertinent by the ACCA's "otherwise" clause, suggest that DWI poses a "serious potential risk of physical injury to another." 18 U.S.C. § 924(e)(2)(B)(ii).

III. DISTRACTED DRIVING AND DROWSY DRIVING CAUSE MANY MORE MOTOR VEHICLE CRASHES THAN DOES ALCOHOL.

In 2002, the NHTSA undertook a "nationally representative survey of drivers in order to collect data on the nature and scope of the distracted driving problem . . .."[25] Approximately 3.5 percent of drivers have been involved in a motor vehicle crash in the previous five years that they attribute to

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[24] At the time Dr. Zador performed his analysis, the legal limit in the majority of states was .10 BAC. Although Dr. Zador noted a trend toward instituting a .08 BAC threshold, he explained that "conclusions based on the .10 percent threshold will not materially differ from conclusions based on the lower, and more inclusive, threshold." Zador Affidavit, *supra* note 4, at 10-11.

[25] U.S. DEP'T OF TRANSP., NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., DOT HS 809 566, NATIONAL SURVEY OF DISTRACTED AND DROWSY DRIVING ATTITUDES AND BEHAVIOR: 2002 VOL. I, at 1 (2003).

having been distracted.[26] Some of the distracting behaviors drivers cited as causing crashes include looking for something inside or outside the car, dealing with children, looking at an animal outside the car and dealing with technology such as a radio.[27] Another .1 percent of all drivers attribute a crash they have had to cell phone use.[28] Fully .7 percent of drivers attribute a crash in the past five years to drowsy driving.[29] Thus, in total, 4.3 percent of all drivers have had a crash within the past five years attributable to distracted or drowsy driving.

Following up on this data, in April 2006, the NHTSA published a study quantifying the impact of distractions and drowsiness on driver safety. In particular, the study assessed the causal role of drowsy and distracted driving on motor vehicle crash risk. The study concluded that "driving while drowsy was a contributing factor for 22 to 24 percent of the crashes and near-crashes . . .."[30] Further, "secondary-task distraction contributed to over 22 percent of all crashes and near crashes."[31] By

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26 *Id.*

27 *Id. at* 3.

28 *Id.*

29 *Id.* at 5.

30 IMPACT OF DRIVER INATTENTION, *supra* note 3 at 8.

31 *Id.*

comparison, alcohol was involved in about two percent of reported crashes.[32]

CONCLUSION

The question in this case, is not whether it is a good idea to drink and drive. The question presented in this case is whether a felony DWI episode involves conduct that presents a serious potential risk of physical injury to another such that a mandatory minimum fifteen year sentence is warranted when a person with a history of such convictions is found to possess a firearm. 18 U.S.C. § 924(e)(2)(B)(ii).

Private advocacy groups and indeed the federal government, publicize data regarding "alcohol related" crashes and fatalities. A layperson might conclude that "alcohol related" means "alcohol caused." Such is not the case. The broad definition of "alcohol related" means that many crashes that are not attributable to alcohol use at all will appear to fall within that category. The overinclusive definition of "alcohol related" thus results in overstatement of the actual statistical risks of DWI. Even under this broad definition, statistics show that the probability of a given drunk driver harming someone else is very low. Indeed, distracted driving and drowsy driving – which no one would call "violent" -- have each been implicated in far more motor vehicle crashes than has alcohol.

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[32] TRAFFIC TECH, *supra* note 2, at 2.

Although the public perception is that drunk drivers pose an extraordinary risk to others, the reality is that other common driving behaviors are much more likely to result in a crash. Indeed, the statistical risk that a drunk driver will injure or kill another person is quite low. Moreover, a drinking driver poses a greater hazard to himself than to anyone else. In short, notwithstanding the public perception, felony DWI does not pose a serious potential risk of physical injury to another and accordingly does not fall within the definition of a "violent felony" set forth in the ACCA.

Respectfully submitted,

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UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
EL PASO DIVISION

UNITED STATES OF AMERICA	)
	) CAUSE
v.	) NO. EP-00-CR-885-H
	)
JULIO CESAR VELA-ORNELAS	)

EVIDENCE IN SUPPORT OF DEFENDANT'S OBJECTION TO PENALTY ENHANCEMENT

Defendant, Julio Cesar Vela-Ornelas, by his attorney attaches Defendants' Exhibit 1, Affidavit by Dr. Paul Zador, in support of his Objection to Penalty Enhancement.

[Seal of Clerk]

Dr. Paul Zador

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AFFIDAVIT

Estimating the risk that Driving While Intoxicated (DWI) will lead to an accident harming another's person or property

1. My name is Paul L. Zador. I hold a Ph.D. in Statistics from Stanford University. I am a research statistician and alcohol researcher, with more than 30 of years experience in interdisciplinary research. I am familiar with all of the important studies on the risks of drinking and driving. Over the past two decades, I have conducted and published numerous respected and influential studies on motor vehicle crashes associated with alcohol-impaired driving. I have also evaluated the effectiveness of various legal and public health measures that are designed to reduce alcohol-impaired driving. You may consult my attached professional biography, attached hereto as Exhibit 1, for additional details of my alcohol research expertise.

2. I write this affidavit as an expert witness for the defense. Defense counsel has asked me generally to perform two tasks: First, to point out flaws in the use of statistics in an immigration court opinion entitled *Matter of Magallanes*. Second, to give a reasoned, reliable answer to the underlying fact question, "What is the probability that an episode of DWI will cause a crash involving harm to the person

or property of another?" Most of this affidavit's content is taken from an affidavit I prepared for Mr. William Maynard, defense attorney, in 1999 on the same question in another case.

3. Prior to preparing this affidavit, I have conferred with Mr. Maynard and I have reviewed :

(1) the relevant laws (8 U.S.C. § 1101(a)(43) and 1326, 18 U.S.C. § 16),

(2) a ruling from the Board of Immigration Appeals entitled *Matter of Magallanes*..

4. Based on my understanding of these documents and my conversations with Mr. Maynard, I understand that the primary issue in this litigation is whether felony DWI is a "crime of violence" under 18 U.S.C. § 16(b). I understand that there are underlying legal issues of statutory interpretation. For purposes of this affidavit I have treated the question, "Does felony DWI involve, by its nature, a substantial risk that physical force against the person or property of another may be used in the course of its commission?"
as if it were phrased,

"Does felony DWI involve, by its nature, a substantial risk of accidental harm to the person or property of someone other that the drinking driver?"

5. As a statistician and alcohol researcher, I understand that the answer to the question depends on an underlying fact question: "What is the probability that an episode of driving while intoxicated by alcohol will cause a motor vehicle crash involving harm to the person or property of another?"

6. I should preface my answer by explaining that there is no **valid national** study in existence which answers this specific question. There are no valid national studies which calculate the probability that an episode of DWI will cause a motor vehicle accident or one involving harm to another's person or property. Thus, the only way to try answer this question is to infer from data in studies of other characteristics of drinking, driving, and highway safety.

7. Whenever possible, statisticians use proportions to estimate probabilities. To calculate a proportion, one starts with a set of units that are classified on some property, and compares the number of units that has the property with the total number of units. A reasonable, and customary, approach is to identify episodes of DWI[1] as the units and compare the number of crashes meeting certain criteria with the total number of episodes meeting the same criteria. The ratio relevant for estimating risk is formed by dividing two counts:

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1 A trip during part of which the driver was at or above the *per se* BAC limit or otherwise impaired is called an episode of DWI.

$$\frac{\text{\# of crashes in which driver committing DWI caused harm to anothers' person or property}}{\text{\# of DWI episodes}}$$

How large a probability of a harmful event must be to justify calling it a substantial risk involves questions of law or subjective values, which are matters beyond research data. However, estimating numeric values for various harmful consequences associated with motor vehicle crashes is a matter to which statistical evidence is clearly relevant. Note, however, that it would not be desirable to set the probability threshold for 'substantial risk' so low as to include the youngest and oldest drivers whose fatal per mile crash risk is several times higher than the national average of fatal per mile crash risk. I would further note that the Eighth Special Report to the U. S. Congress on Alcohol and Health from the Secretary of Health and Human Services, (1993), grouped fatal automobile crashes with other unintentional injury deaths for purposes of comparison with intentional injury deaths (homicides and suicide).

8. Critique of statistics asserted in *Magallanes*. Before providing my own estimates, I will review the material that *Magallanes* presented in support of an affirmative answer to the question whether a felony DWI involves, by its nature, a substantial risk of accidental harm or physical force against the person or property of another..

Magallanes limits the evidence to data on aggregate damage associated with alcohol-related crashes, or with crashes involving alcohol. It makes no

attempt to quantify the size of the risk exposure. With no reference to a denominator, estimates for the numerator are not sufficient for estimating the size of the risk for the damage caused by felony DWI.

Focusing on some aggregate quantity in the numerator, while disregarding the denominator, is like ignoring portfolio size when considering total portfolio return. Yet, whether $10,000 was a return on an investment portfolio of $20,000, or on an investment portfolio $2,000,000, clearly makes a difference to the investor.

Moreover, many of the aggregate statistics cited in these documents are incorrect, or are not correctly interpreted.

Assertion. (in *Magallanes*). Drunk drivers cause an annual death toll of over 25,000 and in the same time span cause nearly one million injuries and more than five billion dollars in property damage (Cited from Michigan State Police v. Sitz, 496 U.S. 444, 451, 1990).

Analysis. The number 25,000 is a crude estimate for the average total number of yearly fatalities in which the highest BAC was at or above 0.01 percent during the early 1980s, a period when drunk driving was far more common that since the mid-80s. In 1993, for example, there were 17,473 fatalities in crashes in which the highest BAC was at or above 0.01 percent, and of these, approximately 14,000 occurred in crashes in which the highest BAC also exceeded 0.10 percent – the typical threshold for DWI in 1993. About 55 percent of these intoxicated

drivers caused their own death and another 14 percent of the victims were pedestrians or bicyclists, themselves with a BAC at or above 0.10 percent. The remaining roughly 30 percent of the 14,000 drivers, about 4,200 drivers, caused the death of another. This is still a huge number, but it is less than 20 percent of the 25,000 claimed. The estimates for injuries and property damage are similarly exaggerated. Clearly, drivers committing DWI predominantly kill themselves, not others.

Assertion. (in *Magallanes).* Driving under the influence vastly increases the probability that the driver will injure someone in an accident. (Cited from United States v. Rutherford, 54 F.3d 370, 376 (7-th Cir.))

Analysis. My own research showed that each BAC increase of 0.02 percent approximately doubles the risk of being involved in a fatal single-vehicle crash, and almost doubles involvement in other types of crashes as well (Zador, 1991). This means that having elevated BAC increases the risk of being involved in a crash relative to not having elevated BAC. Since this increase in risk is large, it is valid to say that high BACs substantially increase the *relative* risk of causing a crash. The fact question, however, defines crimes of violence in terms of the *probability* of causing a crash and not in terms of *increases in that probability*. Therefore, even a vast increase in probability cannot, without reference to the absolute level of that probability, meet the statutory requirement of proving substantial risk.

9. Summary of definitions and methodology for calculating risk. Before reviewing the statistical evidence concerning the probability of a crash associated with an episode of impaired driving, I'll first clarify what is meant by "driving while intoxicated" and "causing a motor vehicle crash involving harm to the person or property of another." I will also review the available data sources, as well as the relationship between the data and the concepts implied by the fact question.

The statutory definition of DWI varies among states, and within a state, it may vary over time. In 1993, almost all states had *per se* laws defining it as a crime to drive with a blood alcohol concentration (BAC) at or above a proscribed level, usually 0.10 percent. In 1993, the proscribed BAC level in Arizona was 0.10 percent for adults and 0.00 percent for drivers under age 21. While there has been an ongoing trend among states to lower the proscribed level, as recently as in 1996, only 14 states had instituted the typical next lower proscribed level of 0.08 percent. In addition to applying the *per se* definition, most states also permit the prosecution of drivers committing a DWI based on evidence of driver impairment that the arresting officer can observe directly or by conducting a field sobriety test.

The fact question refers to "motor vehicle crashes," rather than to "motor vehicle accidents." The use of the term "crash" has been adopted by the National Highway Traffic Safety Administration (NHTSA) and by most highway safety experts to emphasize that each crash must be presumed to have one or more causes, and cannot be viewed as

just an accidental occurrence. However, determining the cause of any specific crash is a resource-intensive activity requiring on-site investigations by well-trained experts, and there are no reliable national statistics on the prevalence of causes for motor vehicle crashes. For this reason, the precise number of crashes caused by drivers committing a DWI is simply not known, and the amount of harm caused to others is known even less. It is, however, possible to generate statistical estimates relevant for the numerator of the risk ratio by using two national data systems maintained by NHTSA, the Fatality Analysis Reporting System (FARS) and the General Estimates System (GES).

Ultimately, the data in both FARS and GES come from the police. FARS is a census of all motor vehicle crashes that occur on public roads in the United States and result in a fatality within 30 days. GES obtains its data from a nationally representative probability sample selected from all police-reported crashes that occur nationally. These crashes include those that result in a fatality or injury and those involving major property damage. In describing the data in GES, NHTSA notes that "[a]lthough various sources suggest that about half the crashes in the U. S. are not reported to the police, the majority of these unreported crashes involve only minor property damage and no significant personal injury. By restricting attention to police-reported crashes, the GES concentrates on those crashes of greatest concern to the highway safety community and the general public." (p. 2. U.S. DOT, 1991). Also, generally, the more violent a crash, the greater the likelihood that alcohol is a

factor; and drivers with illegal BACs are involved in only a small percentage of "fender-benders" … (Baker et al., 1992, p.253). Thus, disregarding crashes that are not reported to the police excludes only crashes that caused relatively little harm, and in which few of the drivers had an illegal BAC. Therefore, it is justified to limit crashes to those included in FARS and in GES, and I will do so.

Using careful data collection and sophisticated statistical methods, NHTSA is able to determine, or at least estimate, the numeric value of the BAC of every person actively involved in a fatal crash.[2] For purposes of reporting these data, NHTSA identifies fatal crashes as alcohol-related if the highest BAC in the crash is at or above 0.01 percent. This means that even if the highest BAC in the crash was 0.01 percent, NHTSA would call it alcohol-related. Fortunately, NHTSA also reports crashes by the highest BAC in the crash. I note that according to NHTSA's definition, a crash is alcohol-related even if all drivers were sober but a non-occupant, that is a pedestrian or a bicyclist, had a positive BAC. BAC data are not available for most crashes in GES; instead alcohol involvement "is coded by police when evidence of alcohol is present" (p. 131. U.S. DOT, 1991). Since most states set their *per se* limit at 0.10 percent, it is reasonable to identify drivers committing a DWI as those drivers whose BAC was at or above the 0.10 percent at the time of their crash. FARS provides frequency counts for these drivers. Though a few states now use 0.08 percent as the *per se* limit, as of

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2 This term refers to drivers or non-occupants, that is pedestrians and bicyclists.

now NHTSA has not switched to publishing statistics for this more inclusive group. My own recent work shows that only about 4 percent of drivers in a fatal single-vehicle crash had a BAC between 0.08 and 0.10 percent, so that conclusions based on the 0.10 percent threshold will not materially differ from conclusions based on the lower, and more inclusive, threshold. While it is not possible to differentiate alcohol crashes involving alcohol from crashes in which a driver committed a DWI based on data in GES, drivers for whom the police reported alcohol involvement are likely to include most of the drivers with a high BAC. My own research shows that at checkpoints, police officers are able to identify a majority of drivers with a BAC of 0.10 percent or higher.

"Caused … to another" in the numerator for estimating the probability includes only crashes in which the driver committing DWI caused harm to another in the crash *and* that driver's BAC was, in turn, the proximate cause of that driver's mistake. How should one estimate this number starting with data on police-reported fatal crashes involving alcohol? The following three-step procedure is conceptually sound, and the first two steps are feasible.

· First, limit crashes to those in which a BAC exceeded the proscribed level.
· Second, exclude crashes in which the harm was caused not to another but to the person with the illegal BAC as well as the crashes in which the non-occupant victim had an illegal BAC.

- Third, one ideally would also like to exclude the crashes that would have occurred even if the driver with the illegal BAC did not have an illegal BAC either because the crash was not caused by the driver, or because the same driver would have caused it even when sober

Strictly speaking, the data are inadequate to exclude the third class of crashes. This failure will cause the number of fatal crashes attributed to drivers with an illegal BAC to be overestimated[3]. However, since the alcohol-related relative fatal crash risk is very high for drivers at an illegal BAC at or above a 0.10, the extent of this over-attribution is not large enough to make a material difference in the size of the numerator. I note that this would not be so for BACs that are below 0.10 percent[4]. I will derive our estimates for fatal crashes using the first two steps above.

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3 A highly respected alcohol researcher, Leonard Evans stated in his book entitled Traffic Safety and the Driver (p. 183, 1991) that "The press often reports that alcohol is involved in about half of all fatal crashes. While true, this does not address what role alcohol plays. Undoubtedly, coffee is involved in nearly all fatal crashes, yet eliminating coffee is unlikely to have much of a role on traffic crashes."

4 For BACs below 0.10 percent, it would be misleading to attribute all crashes to impairment by alcohol. At a BAC just above 0.01 percent, there is little or no impairment so that few, if any, of those crashes should be attributed to alcohol. As driver BAC rises, so does impairment and at or above 0.05 percent, a majority of, but still not all, crashes could be legitimately attributed to impairment. Note, however, that in 1998, only about 22 percent of all drivers who were fatally injured in an alcohol-related crash were fatally injured in a crash in which the highest BAC was below 0.10 percent.

Because of data limitations in GES, I will rely on a much more conservative approach for estimating the numerator for police-reported injury-producing and property-damage-only crashes. First, I will limit crashes to those that reportedly involved alcohol since there are no data to exclude crashes in which the driver BAC did not exceed 0.10 percent. Second, I will include all crashes in the numerator, not only those in which the damage was to another, since there is no published data for identifying victims by driver BAC. Not limiting the count to sober victims may result in over-estimating the number in the numerator for non-fatal crashes by as much as a factor of three[5].

I summarize the salient features of these definitions, as they affect estimation:

"Crash (or Accident)" refers to police-reported traffic events on public highways in which one or more motor vehicles cause damage to vehicles, objects, persons, or animals. Crashes range in severity from the most serious (fatalities) to the least serious (fender benders). Virtually all fatal crashes are reported to the police, but some minor crashes remain unreported.

"Harm" means property damage or personal injury.

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5 Here is a way to make a speculative adjustment: determine the proportion of fatal crashes in which the driver with an illegal BAC caused harm to another and apply that proportion to the total number of crashes involving alcohol. This assumes that the split between harm to oneself and to another is the same in fatal crashes as in injury and property damage only rashes. Note that in only about 30 percent of all fatal crashes involving an illegal BAC is the harm to a sober victim.

"Caused" means the numerator should include only accidents in which the drinking driver caused the accident *and* the driver's BAC was, in turn, the proximate cause of that driver's mistake. However, for lack of relevant data, I could not exclude crashes in which the sober driver was at fault or alcohol was not a factor.

"Another's" means the driver with BAC must not only be at fault, but he must injure another person or damage another's property. Specifically, this excludes one-vehicle crashes in which the drinking driver or pedestrian is the only victim.

"DWI" is defined by state laws that include a *per se* definition with a proscribed level typically at a BAC of 0.10 percent and some language prohibiting driving while one's abilities are impaired by alcohol consumption.

"Alcohol involvement" is defined as police-reported alcohol involvement in the crash.

"Alcohol-related crash" is defined by NHTSA as a crash in which the highest BAC is at or above 0.01 percent.

10. Estimating the number of Fatalities caused to another by a driver with a BAC at or above 0.10 percent.

An intoxicated driver committing a DWI may cause damage to himself or herself or to another. According to NHTSA, there were a total of 12,456

fatalities in fatal crashes involving at least one intoxicated driver committing a DWI in 1998 (see Table 1). The majority, 56 percent, among these fatalities were the drivers themselves. This left 5,446 fatalities, or 44 percent of the total, who were not themselves intoxicated drivers. This last group also included 1,739 (14 percent) intoxicated non-occupants. Excluding the latter group, this leaves a total of 3,707 fatalities who were victims of intoxicated drivers committing a DWI. This comes to about 30 percent of all fatalities in fatal crashes involving at least one intoxicated driver.

The above estimate includes all fatalities who were themselves not intoxicated drivers or intoxicated non-occupants. This estimate excludes the 7,010 intoxicated drivers who themselves became traffic fatalities. The majority, or 5,214, among the latter died in single-vehicle crashes that did not involve other drivers, only themselves. The remaining 1,796 died in crashes that involved at least one other driver who may or may not have been intoxicated. Nonetheless, their exclusion is justified because they themselves were committing a DWI at the time of the crash.

In 1993, there were a total of 13,977 fatalities in fatal crashes involving at least one intoxicated driver, 12 percent more than in 1998. In my best judgment, intoxicated drivers committing a DWI caused fatal injuries to another and not to themselves or to an intoxicated non-occupant roughly in the same proportion in 1993 as in 1998. Therefore, I estimate that in 1993, there were about 4,200 fatal victims of intoxicated drivers committing a DWI. In other words,

fatal injuries caused to another by intoxicated drivers committing a DWI accounted for about 10 percent of the total number of 40,150 fatalities that occurred in 1993.

Table 1. Types of Fatalities in Fatal Crashes Involving at Least One Intoxicated Driver or Non-occupant, 1988[1]

Type of Fatality	#	%of Total
Total Fatalities	12,456	100
Intoxicated driver	7,010	56
Fatalities, other than an intoxicated driver	5,446	44
Intoxicated non-occupants (Pedestrians and Bicyclists)	1,739	14
Victims: fatalities who were neither intoxicated drivers nor intoxicated non-occupants	3,707	30

[1]U. S. Department of Transportation, National Highway Safety Administration .
Traffic Safety Facts 1998 (DOT HS 808 950)

Police-reported injury and property damage only crashes involving alcohol.

According to NHTSA's General Estimates System, there were a total of 6,110,000 police-reported crashes in 1991. The police coded the presence of some evidence for alcohol involvement by someone in the crash for 491,000, or 8 percent, of all crashes. Of all crashes, 4,073,000 resulted in property damage only, 1,681,000 in minor or moderate injury, and 357,000 in

severe or fatal injury. The percentage of crashes involving alcohol increased with increasing crash severity. Among the property damage only crashes, 6 percent (or 259,000) involved alcohol. The comparable figures for minor or moderate injury crashes, and for severe or fatal injury crashes were 10 percent (or 165,000) and 19 percent (or 68,000), respectively. Since these estimates include damage caused to intoxicated non-occupants and to the drivers themselves, they are likely to overestimate damage to another by as much as a factor of three. Also, since the estimates for severe and fatal injuries include fatalities, fatalities are double-counted.

Episodes of impaired driving

Researchers have estimated the annual frequency of impaired driving episodes from national surveys. According to Liu et al (1997), drivers reported driving about 123 million times during 1993 after "having had perhaps too much to drink." Since this estimate was based on self-reports, it is probably much lower than the true number of such episodes because some of the respondents may have been reluctant to admit to impaired driving. According to my own unpublished estimates for 1995, drivers admitted to being above the proscribed BAC level in their state in about 90 million episodes, and they admitted to almost 800 million episodes of driving within two hours of drinking. To put these estimates in context, drivers undertook a total of about 230 billion trips in the United States in 1995. Since almost 100 million of these involved a driver committing a DWI, and in almost 800 million the driver had a drink within two hours driving, roughly

one out of every 2,000 trips involved a DWI, and roughly one out of every 300 trips started within two hours of drinking. It is also worth noting that NHTSA (1998) estimated from data collected by Substance Abuse and Mental Health Administration, about 45 million drivers admitted to driving at least once within two hours of drinking in 1996.

Estimated probability of harm caused to another by alcohol-impaired drivers.[6]

Table 2 presents estimates for rate of harm per episode of self-reported DWI and episode of self-reported driving within two hours of drinking, by harm severity. As Table 2 shows, five one thousands of one percent of all DWI episodes, or less than one out of every 21,000 DWI episodes, result in a fatal injury to someone other than the intoxicated driver or an intoxicated non-occupant. There was one fatality per 188,333 thousand episodes of driving within two hours of drinking. Also, there was one crash per 183 DWI episodes and 1,611 episodes of drinking within two hours, respectively.

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6 The estimates provided here are substantially lower than those published by Miller et al in 1996. In my judgment, the estimates in Miller et al are vastly inflated, especially for non-fatal crashes. Because of limitations of space, I can only illustrate here the kind of erroneous assumptions that Miller et all make to derive their estimates. For example, they assumed, contrary to factual evidence, that drivers committing DWI cause non-fatal crashes in the same proportion as they do fatal crashes. As cited above, research evidence shows that alcohol plays a much smaller role in causing crashes of low severities than in causing fatal crashes. Among police-reported property-damage-only crashes only six percent involved alcohol, and the comparable percentage in non-police reported crashes was even less.

Table 2. Rate of harm caused[7] to another per 100 episodes of DWI and driving within two hours of drinking, by harm severity.

	Type of episode, N	
Harm severity, N	DWI, 90,000,000	Driving within two hours of drinking, 791,000,000
Fatal, 4,200	0.005	0.0005
Injury, 233,000	0.260	0.029
Property damage only, 259,000	0.290	0.033
Total, 491,000	0.540	0.062

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/s/ Paul Zador
PAUL ZADOR

SWORN AND SUBSCRIBED TO BEFORE ME by the said PAUL ZADOR on this the 7th day of September, 2000

/s/ Patricia L. Lawrence
NOTARY PUBLIC
State of Maryland

Patricia L. Lawrence
Notary Public State of Maryland
My commission expires
September 1, 2002

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EXECUTIVE SUMMARY

Dr. Paul L. Zador, a research statistician, study design methodologist, and alcohol researcher, has more than 30 years experience in interdisciplinary research and reporting on the results. His expertise covers a wide range of statistical and econometric techniques, with special emphasis on the research design and data analysis issues that arise in evaluation studies. Over the past two decades, he conducted and published numerous influential studies on motor vehicle crashes associated with alcohol-impaired driving and evaluated the effectiveness of various legal and public health measures designed to reduce alcohol-impaired driving. His current research interests include estimating the prevalence of impaired driving in the United States and the causal role of alcohol-impairment in fatal motor vehicle crashes, evaluating the long-term effectiveness of measures against impaired driving, and evaluating the effectiveness of antidrug media campaigns to reduce drug abuse among children. Dr. Zador is an active

participant in the work of the Transportation Research Board's Committee on Alcohol, Other Drugs, and Transportation. He serves as a member of the National Institute of Health's (NIH's) National Institute of Alcoholism and Alcohol Abuse's (NIAAA's) Special Review Panel for grant applications. He was an invited guest editor of a special issue of *Alcohol, Drugs and Driving* on international perspectives on alcohol involvement in highway crashes.

ONGOING OR RECENTLY COMPLETED STUDIES

Alcohol-Related Relative Risk of Fatal Motor Vehicle Crashes. Among drivers, the relative risk of being involved in a fatal motor vehicle crash is known to rise rapidly with increasing driver BAC (Blood Alcohol Content; see Zador, 1991). Dr. Zador and associates used recent data from the 1996 National Roadside Breathtesting Survey of Drivers on driver *exposure* and from the Fatal Accident Reporting System maintained by the National Highway Traffic Safety Administration (NHTSA) on *fatal crashes* to refine and update relative crash risk estimates for different types of fatal crashes by driver age, gender, and BAC. The results of this publication will be published in *Journal of Studies on Alcohol* (Zador et al., May 2000). This work was funded by NHTSA.

Estimates far the prevalence of alcohol-impaired driving trips. Dr. Zador and associates estimated the extent of alcohol-impaired driving in the USA using self-reported information on drink-

and-drive episodes and arrests for drinking and driving (source: NHTSA's National Survey of Drinking and Driving Attitudes and Behavior) and administrative arrest records on arrests (source: FBI Uniform Crime Reports). The study compared prevalence estimates under alternative definitions of what constitutes drunk driving and provided an interpretive context for comparable previous estimates that were recently published in **the** *Journal* of *the American Medical Association (JAMA).* The results from this investigation will be published by NHTSA in a special report, and will also be submitted to JAMA for publication (Zador, Krawchuk and Moore, 1999). This work was funded by NHTSA.

Estimating Performance Impairment at Low Blood Alcohol Levels in Relation to Driver Characteristics - Dr. Zador is the co-investigator of a major randomized laboratory study designed to estimate the effect of positive blood alcohol levels on multiple driving-related performance measures by age, sex, and drinking experience. Dr. Zador participated in designing the study and writing the report; he was responsible for analyzing the data. A preliminary report of the findings is under review by the sponsoring agency (NHTSA).

Evaluation of the effectiveness of alcohol interlock devices. Dr. Zador is co-investigator and statistician in two ongoing randomized multi-year case-control studies designed to evaluate the long-term effectiveness of alcohol ignition interlocks (as an adjunct to other measures) to prevent drunk driving among repeat DWI offenders. Both studies

measure interlock effectiveness by comparing survival without re-arrest for a DWI offense between otherwise comparable repeat offenders with and without the interlock device. Study subjects will also be assessed on a range of alcohol-related attitudes and behavior. Dr. Zador participated in developing the research designs for these studies, and will be responsible for analyzing and interpreting the results. One of the two studies is funded by the National Institute of Alcoholism and Alcohol Abuse of NIH, the other by the National Highway Traffic Safety Administration (NHTSA) of the U.S. Department of Transportation.

Evaluation of the National Youth Anti-Drug Media Campaign (NYAMC). This major five-year evaluation study was designed to measure the long-term effectiveness of a national media campaign against the abuse of illegal drugs by children and youths. The data for this evaluation will be collected from parents and their children in eight cross-sectional national surveys and in four longitudinal surveys by Westat Inc.'s research team (Westat is an employee-owned survey research organization in Rockville, MD). Research results will be released on a regular basis and will be used to help frame the national dialogue on antidrug abuse policies. Dr. Zador and his associates will assess the causal impact of the antidrug media campaign using state-of-the art statistical techniques (that is, propensity modeling of exposure to campaign messages, estimation of growth curves to describe how individuals change over time, and so on). Dr. Zador participated in planning this study and will be responsible for conducting several of the planned

statistical analyses. This research is funded by the National Institute on Drug Abuse, NIH.

Persistent Effects of Treatment Studies (PETS). This multi-year research study is funded by the Center for Substance Abuse Treatment (CSAT), Substance Abuse and Mental Health Services Administration. PETS is a major initiative to assess the long-term (up to 3 years) effectiveness of substance-abuse treatment in the publicly funded treatment system. The major focus of PETS is to track the outcomes and continued progress of 7,000 clients over a 3-year period following treatment. Among other things, plans call for evaluating the clinical and cost effectiveness of substance-abuse treatment at both the individual and societal levels in terms of multiple outcome measures. A major focus of the project will be to develop standard methods for evaluating treatment outcomes. As a Westat senior analytic statistician, Dr. Zador is occasionally called on to review complex methodological issues. For instance, he has assessed the potential usefulness of meta-analytic techniques for combining long-term effectiveness estimates derived on the basis of disparate outcome measures.

EMPLOYMENT HISTORY

Senior Statistician, Westat, 1993-Present
Statistician, lnsurance Institute for Highway Safety, 1972-1993
Principal Statistician, Computer Applications, Inc., 1966-1971
Member of the Technical Staff, Bell Telephone Laboratories, 1961-1966

EDUCATION

Ph.D., Mathematical Statistics, Stanford University, Stanford, California, 1964

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B.A., Mathematics, Oxford University, Oxford, England, 1958

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