

Proficient Motorcycling

from Motorcycle Consumer News

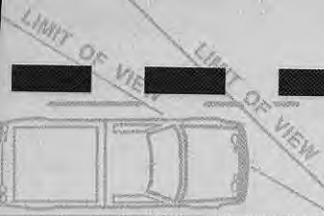
The Ultimate Guide to Riding Well

by

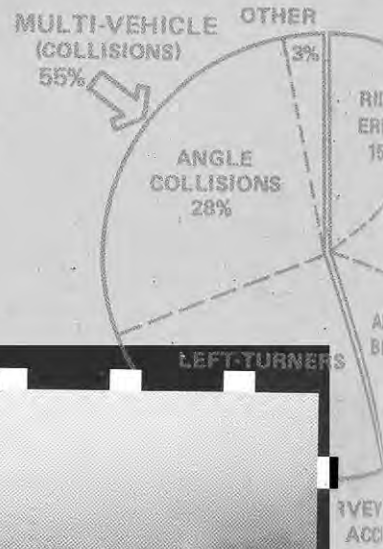
David L. Hough

CONTENTS

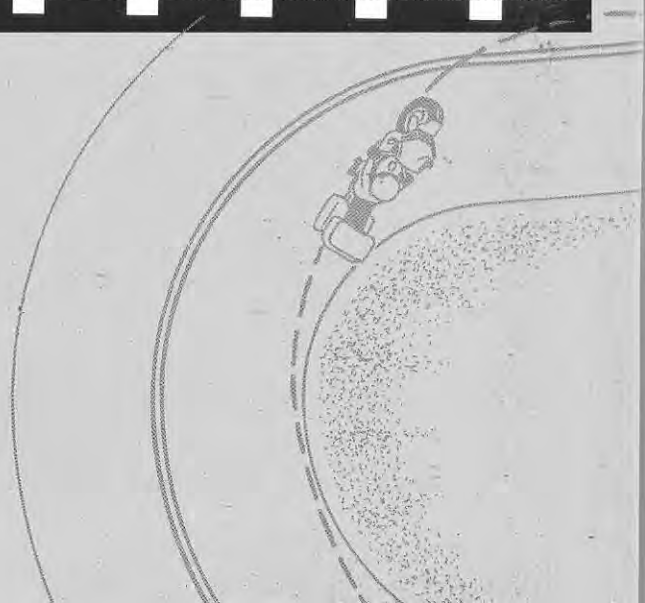
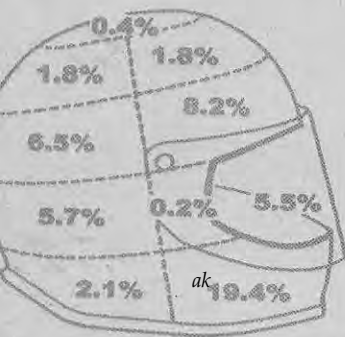
Foreword	6
Preface	9
Introduction	10
Chapter 1: Risk!	
Canyon Bites	13
How Far Are You Hanging It Out?	19
Fixing the Odds	29
Chapter 2: Motorcycle Dynamics	
What Keeps It Balanced?	39
What Makes It Turn?	48
Cornering Habits	56
Chapter 3: Dynamics	
Getting on the Gas	65
Delayed Apexing	69
The Lowdown on the Slowdown	76
Taking the Panic Out of Panic Stops	82
Right Pace, Right Place	90
Chapter 4: Urban Traffic Survival	
City Traffic	99
Booby Trap Intersections	104
Suburb Survival	110
Superslab Tactics	118
Aggressive Drivers	127
Evasive Action	132
Chapter 5: Booby Traps	
Surface Hazards	139
Curbs Ahead	147
Running Out of Pavement	154
Deer, Oh Dear!	162
Ferocious Fidos	169
Chapter 6: Special Situations	
When It Rains	177
When You're Hot, You're HOT	185
Dang Wind	191
Freezing Your Gas on the Pass	197
Night Owls	205
White Line Fever	212
Chapter 7: Sharing the Ride	
Batches of Bikers	219
The Second Rider	226
Let's Get Loaded	234
Sidecars	241
Resources	251
Glossary	252
Index	254



RISK!



Risk!

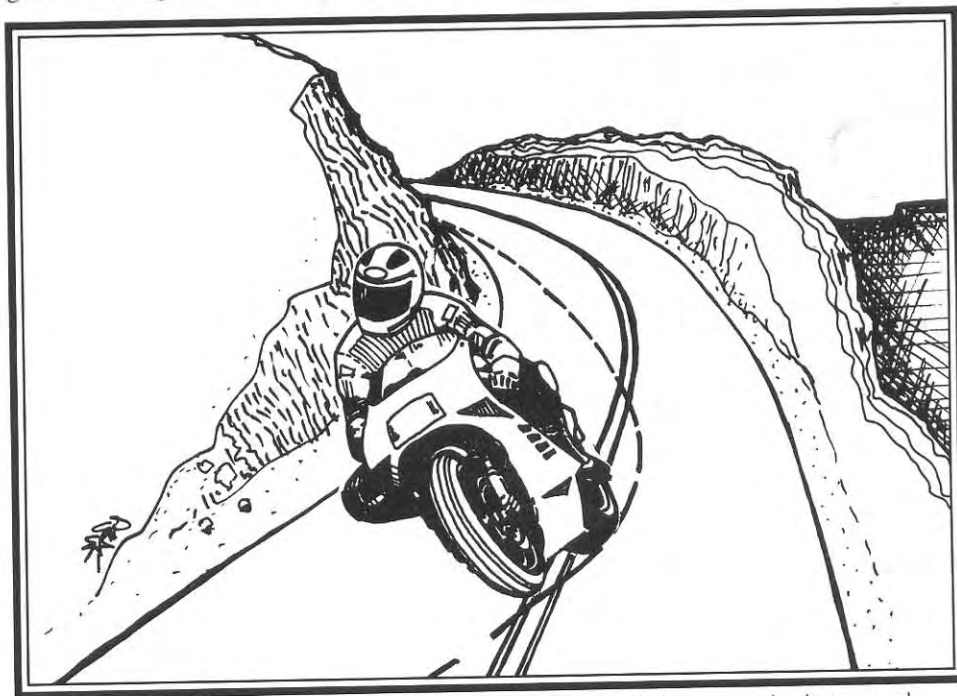


CHAPTER 1

RISK!

Canyon Bites

August 23, 1998: A sunny Sunday morning in the Colorado mountains. Perfect weather. Light traffic. The pavement is clean and dry. Norman and Christine are motoring eastbound through scenic Boulder Canyon, enjoying the ride and the view. Both riders are wearing protective gear, including high-quality full-coverage helmets. Norman is paying attention to the curves, planning good cornering lines, and keeping his Suzuki well in control.



Notice where the rider is crossing the centerline. When you are approaching a blind curve, remember this image, and make a point of avoiding the critical area.

Westbound, Mark and three of his buddies on fast sportbikes are dicing with each other, enjoying their race-bred machines, the excellent road conditions, and the rush of friendly competition at the spirited pace, showing little regard for the speed limit or the double yellow lines. At the moment, Mark is slightly more willing than the others to jack up the risks, and his Honda is pulling ahead of the pack.

Just east of Hurricane Hill, Norman slows the Suzuki for the sharp blind turn through the rocks, and leans the bike over into a nice curving arc that should kiss the centerline just at the apex. At the same instant, Mark carves into the same turn west-

bound on his Honda, realizing too late that the curve through the rocks is tighter than he had assumed. There is nothing Mark can do to prevent the Honda from drifting wide across the double yellow lines, right into the path of the approaching Suzuki.

Frantically, Norman shoves his grips toward the right to swerve the Suzuki away from a 100 mph head-on collision, and Mark pushes so hard on his grips that the Honda low sides in a shower of sparks and plastic. The Honda's tires clip the Suzuki just hard enough to send the Suzuki cartwheeling into the rocks. Norman dies instantly, his helmeted head ripped from his body. Mark tumbles to a stop, bleeding profusely but alive. A second later, Mark's buddy carves around the corner and spins through the mess of wadded-up bikes and bodies. Norman's wife, Christine, dies an hour later at the hospital.

This is a true story, and we're not relating it just to gross you out. Similar accidents occur over and over again to weekend motorcyclists on various twisty highways across America. And, yes, there is a moral: If you want to survive those entertaining twisties, it's not enough just to cruise along minding your own business. You've got to plan for the stupidity and arrogance of other motorists, including other motorcyclists. Let's consider some practical tactics for avoiding such "canyon bites" on your weekend rides.

The Double Yellow

Years ago, road crews were more frugal with those double yellow lines. We could pretty well depend on the double yellow no-passing zones warning us of hazards such as dips where another vehicle might be hidden from view. These days, road engineers continue to extend the double yellow lines farther and farther, until some highways are double-yellowed from one end to the other. If you're riding a quick motorcycle, it's frustrating to hang back behind a creeper car when you can see the road is clear and you know you have plenty of zip to get around. More and more of us are giving in to the temptation to just ignore the yellow lines and get on with the ride.

Legally speaking, it's no more illegal to pass over a double yellow than to exceed the posted speed limit, but the laws of physics are self-enforcing. Being on the wrong side of the road at warp passing speeds is certainly an invitation to a head-on collision with a car that may suddenly appear from around a corner, or a farm truck chuffing out of a hidden side road. You'll have to decide for yourself when and where you are willing to risk passing over the double yellow. My advice is to never ever be out in the wrong lane while crossing a bridge, approaching the crest of a hill, or rounding a blind curve. But what about a long uphill sweeper, where you can see the road 8 or 10 seconds ahead? What about a wide intersection with no one in the left turn lane? And when you come up behind a vehicle waiting to turn left from a busy two-laner, is it smart to come to a sitting-duck stop, or should you swerve over onto the shoulder, pass on the right, and keep moving?

Regardless of the law, before you decide to zip around any slow-moving or stopped vehicle, take a good look at the situation and try to figure out what's happening and what's about to happen. It's not just you and the road out there. Is there a side road or driveway into which the other vehicle could turn? Is there a tree-shaded intersection ahead from which another vehicle could suddenly materialize? It's unwise to pass in any areas where there are roads or driveways along the highway, even if it isn't a no-passing zone. And before you pull around a stopped vehicle, take a good look behind you to ensure that someone else isn't in the process of zooming around you.

Sight Distance

We often use the phrase, *adjust your speed to sight distance*. Let's be specific about what that means. At any given speed, a certain minimum distance is needed to stop a specific motorcycle. If you expect to avoid that wild deer or those motorcycles splattered on the pavement just around that next blind turn, your speed must be limited to your stopping distance. For example, let's say your machine is capable of coming to a stop from 60 mph in 120 feet. If you can't see any farther ahead than 120 feet, your speed shouldn't be any faster than 60 mph.

Of course in real world situations, it also takes a half-second or so to react, and another second of progressive front brake squeeze to get full on the stoppers. At 60 mph, 1.5 seconds will eat up an extra 132 feet. *Uh-oh!* That means that your actual stopping distance from 60 mph is more like 252 feet. If your sight distance is only 120 feet, your speed should really be no more than perhaps 40 or 45 mph.

While we're riding, very few of us can accurately judge distance in feet, yards, meters, or car lengths. The pavement goes by in a blur, too quickly to make a mental measurement of distance. The trick is to make time measurements. Pick out some fixed object ahead such as a signpost, and count the seconds it takes you to get there. Count out loud, *one-thousand-and-one, one-thousand-and-two*. . . . By taking an actual measurement of your sight distance and comparing it to your speed, you can make intelligent decisions about how far you are hanging it out.

I'll offer some guidelines:

SPEED	MINIMUM SIGHT DISTANCE
40 to 50 mph	4 sec.
50 to 60 mph	5 sec.
60 to 70 mph	6 sec.
70 to 80 mph	7 sec.

Give these numbers a try, and see if you agree with the minimums. If these minimums make you a little nervous, add a second. If your reflexes are really quick and you can make consistent hard stops without flipping or high siding, shave off a second. The point is that you arrive at a method of gauging honestly how your speed stacks up to you and your bike's stopping performance. If you consistently find that you are entering blind situations at speeds too fast to stop within your minimum sight distances, the message should be obvious: get on the binders and slow down quickly whenever sight distance closes up.

Ride Your Own Ride

When you are out riding with others, it's amazingly easy to get stampeded into doing things that you wouldn't do if riding by yourself. Speed is so intertwined with self-worth and motorecycling that most of us will risk an accident rather than risk being seen as a slow (unskilled) rider. When someone zips past me and cuts in too close, my natural reaction is to crank up the gas and show them some speed (skill, bravado, daring, etc.).

One of the hazards of riding in a fast group or following a big dog rider is that we tend to fixate on catching the taillight of the bike ahead. This usually means focusing on steering and throttle, while ignoring a whole bag of other cornering tactics that maximize traction and minimize risk. It's often the second or third rider in a group who takes the soil sample attempting to stay with the leader. On more than a few occa-

sions, I've seen small groups of three to six riders pull out onto a busy highway, with the tail-end riders so fixated on catching the taillights ahead that they didn't even remember to look for approaching traffic as they roosted out of the parking lot.

When riding a twisty road with other riders, the smart tactic is to back off from the bike ahead until you can't see its taillight. Then you can ignore your position in the group and ride your own ride, choosing for yourself what line to follow, when to brake, when to roll on the gas, and what your maximum speed should be entering a blind turn. One advantage to this tactic is that you aren't challenging the guy or gal ahead to race. But you may find it amazing that you can back off 4 or 5 seconds, and arrive at the rest stop only 4 or 5 seconds behind the leader, without having to take unnecessary risks.

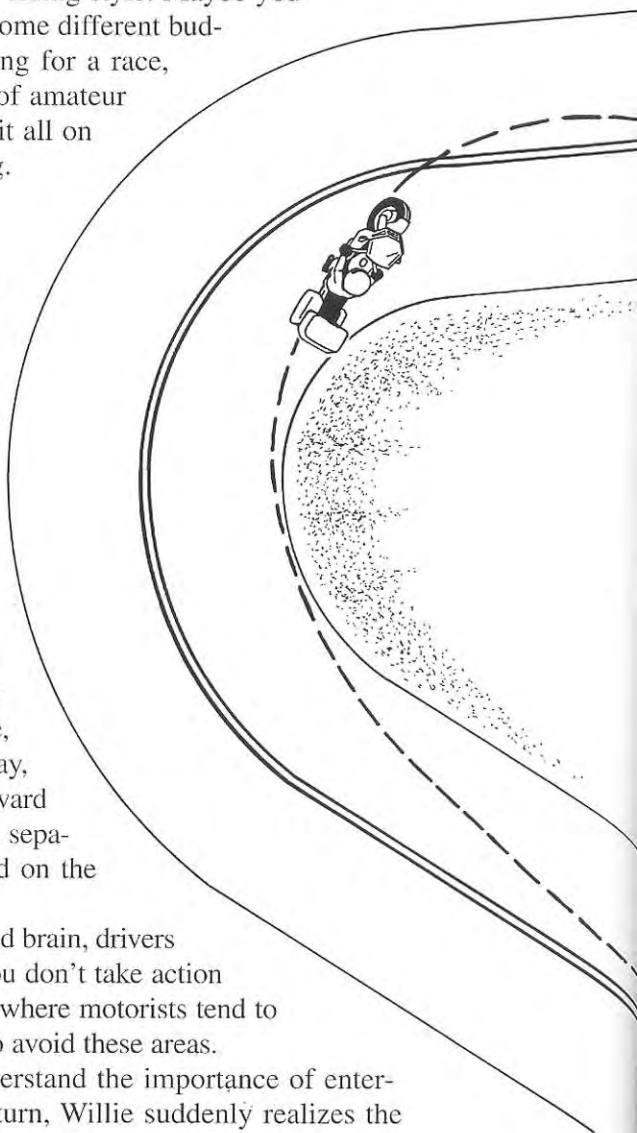
An obvious spin-off to this tactic is when you discover that the three or four people you've been riding with can't accept your riding style. Maybe you should go back to the motorcyclist store and get some different buddies. And if you're the one who is always looking for a race, that's a hint it's time to consider the advantages of amateur road racing on a closed track rather than risking it all on public roads, as Mark and his buddies were doing.

Wandering Drivers

The other day a minivan driver who had been tailgating me for several miles of double yellow finally zoomed on by, straddling the centerline. Even though my old BMW sidecar rig was maintaining 60 in a 55 zone, I think the close pass was a message, perhaps *you've been holding me up long enough*, or *motorcycles don't belong on the highway*, or maybe just *move it or lose it, biker boy*. While such aggressive actions tend to anger me, they don't scare me quite as much as do drivers who wander over the centerline or the fog line, or those who change speed for no apparent reason. I can only assume that wandering drivers don't have their brain fully engaged in Drive, or their brains are fogged with chemicals. Either way, it's a scary situation for vehicles to be hurtling toward each other at closing speeds in excess of 100 mph, separated only by a pair of 4-inch yellow lines painted on the pavement.

Whether it's an act of aggression or a disengaged brain, drivers who wander over centerlines can pick you off if you don't take action to stay out of the way. There are specific locations where motorists tend to wander out of their lane. You can adjust your line to avoid these areas.

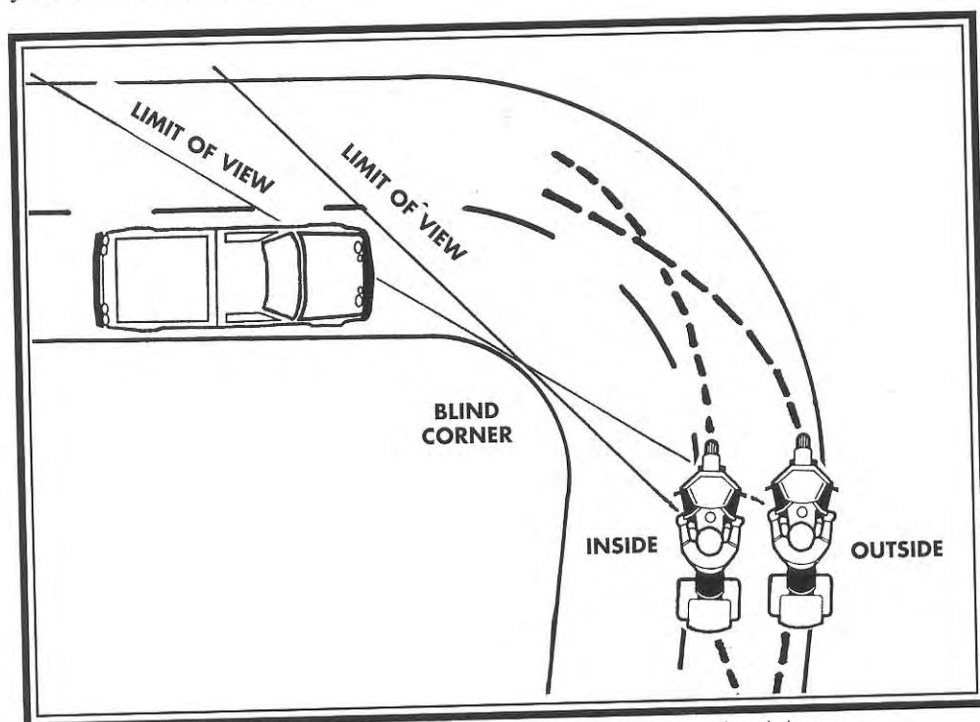
Consider Wandering Willie, who doesn't understand the importance of entering corners from the outside. Halfway around a turn, Willie suddenly realizes the road is turning tighter than the bike, but by then it's too late to prevent an excursion into the opposing lane. Imagine yourself approaching from the opposite direction and noticing that Wandering Willie is drifting into your lane about two-thirds of the way around the corner. Now, let's convert that top view to a perspective more like you'd see approaching the same corner. Place your left index finger on the location



Crossing the centerline is the result of apexing too early in a turn. Wandering drivers are an important reason to stay out of the outside of your lane.

ak

where opposing drivers tend to wander over, make a fist with your right hand, and bonk yourself in the forehead while shouting *No! No!* You don't ever want to put your bike in that location.



Avoiding that no-no area and entering a turn from the outside also improves your view through the corner.

The View

As it happens, avoiding that no-no area also improves your view through blind turns. The farther you are toward the outside of your lane as you enter a turn, the more you can see of what's coming, whether that's a Wandering Willie, a wild bull elk, or a patch of loose gravel. It's important to maximize your view, whether you intend to putt along and stay out of the way or attempt to increase your velocity. Remember, a longer sight distance enables a higher corner entry speed, if that's what you're looking for.

Out in the country, those right-hand turns present some special problems. The view is more limited than that of a left-hander of the same curvature, and there is a natural tendency to get a target fixation on the inside edge of the pavement, which tends to steer the bike too close to the inside too early. Come to think of it, that's why Willie ended up crossing the centerline two-thirds of the way around, right? Once we allow ourselves to enter a turn pointed toward the inside, it gets awfully difficult to avoid drifting wide a couple seconds later as we pass the road apex.

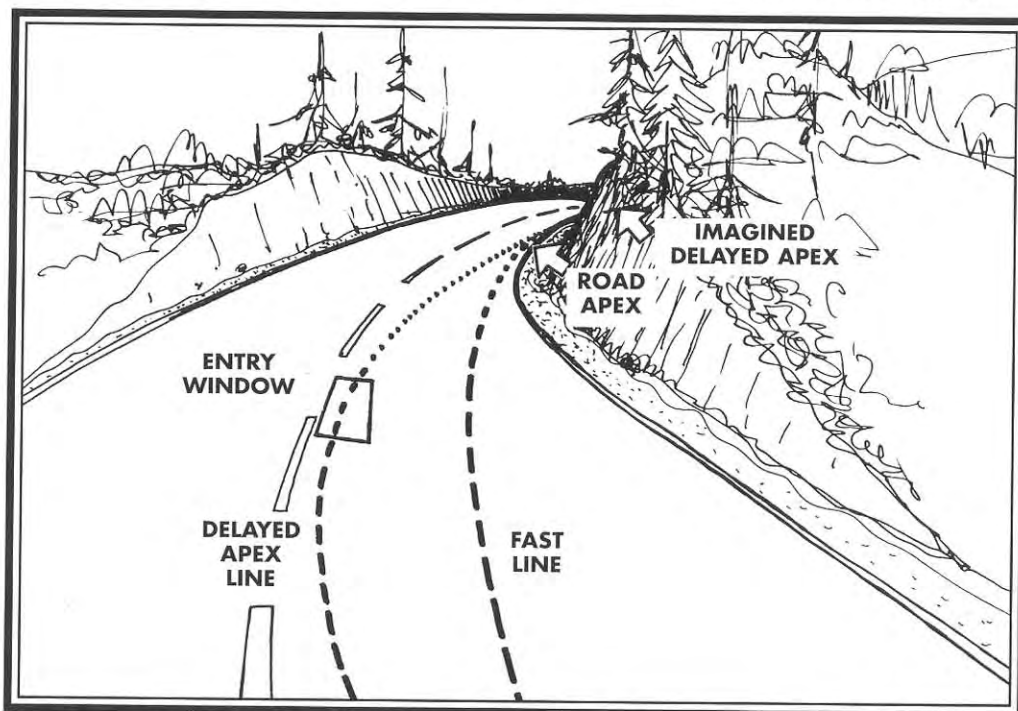
The smart tactic for staying in your lane is to enter right turns from close to the road centerline. That provides the best view around the corner, which increases sight distance, and puts the bike on a better line to exit the turn without sneaking over the centerline.

Get the Turn Over Sooner

It may sound like a paradox, but entering the turn from the outside allows you to lean the bike later but get the turn over sooner. And this becomes an advantage

because you can do the hardest leaning on pavement you can see better. Even if you can see all the way around the corner, surface hazards in the distance will be harder to recognize. And if you can't see the surface all the way around, it's smarter to spend your cornering traction early. If there are surface hazards around a blind corner, you'll encounter them with the bike in a more vertical position and with more traction available for avoidance maneuvers. And what if an oncoming vehicle crosses the centerline? Entering wide gives you the best view of what's coming. If you see a vehicle wandering on the approach, you can reduce speed further, turn tighter, and duck toward the inside to stay out of the way.

One way to think of this is by mentally sliding the apex a little farther around the corner than you think the road apex actually is. To reach the delayed apex, you have to enter the turn on a wider line. A different way of thinking about this is to imagine an entry window out by the centerline through which your tires must pass.



To improve the odds of staying in your lane while cornering, avoid the fast line and concentrate on a delayed apex just around the curve. That gives you the best view of the turn, and puts the bike on a better line.

Avoiding the Bite

Avoiding crashes while riding the twisties is not just a matter of motoring slowly down the center of your lane and waiting nervously to take evasive action. The best bite remedy is to practice smart cornering habits. If you think about all the points I've mentioned, you'll see a pattern emerge. The same wide-entry line that keeps you out of the no-no zone and provides a better view during left-handers is the mirror image of the wide-entry line into right-handers that gives you the best view, helps avoid crossing the centerline, and maximizes traction.

Next time you're out on the back roads, practice that delayed-apex line, and from time to time evaluate your speed habits with a quick sight-distance time hack. Don't be overcautious about using those big brakes to scrub off speed right away when sight distance suddenly closes up. That one little tactic might have saved Norman's and Christine's lives in Boulder Canyon in August 1998.

ak

David L. Hough



How Far Are You Hanging It Out?

I don't know how you learned to ride a motorcycle, but I taught myself. Back in the mid-sixties, my old buddy Ricochet Red had started commuting to work on a Honda 90 and quickly graduated to a big Honda 160. I tried Red's 160 and immediately saw the potential for beating automobile traffic on and off the Seattle ferry. Within a week, I found a clean used Suzuki 150 twin for \$300.

Of course there weren't many training courses around in the sixties. Red gave me a half-hour lesson behind the grade school one Saturday afternoon. Monday morning I climbed on the Suzuki and zipped off into rush-hour traffic. It rained that very first day, and I remember squish-squishing around the office as I mulled over the implications of traffic and weather. That was the start of my motorcycle education.

Of course there were people around the office who clucked their tongues at my foolishness. Everyone knew motorcycles were dangerous, and riding a motorcycle to work in heavy traffic had to be high-risk foolishness. There were snide remarks and stupid jokes. One coworker even approached me, gripped my shoulder with fatherly sincerity, and offered the opinion, *I sure wouldn't want my son to ride one of those things*. When I arrived at the ophthalmologist carrying my helmet, the doctor gave me

THE HURT

When it comes to comprehensive motorcycle statistics in the USA, there has been only one real study completed in all of history—the famous Hurt Report.

Time warp back to 1979. There had been a big motorcycle-buying boom in the seventies, and a lot of those new riders managed to get involved in accidents. That big rise in accidents and fatalities got the attention of the U.S. Department of Transportation, and it decided to get into the act to protect us from ourselves. The National Highway Traffic Safety Administration (NHTSA) let a big contract to study motorcycle accidents, and the University of Southern California Traffic Safety Center got the job. The USC professor responsible for carrying it out was Hugh H. (Harry) Hurt, Jr. The Objectives of the study were to determine the causes of motorcycle accidents, analyze the effectiveness of protective gear such as safety helmets, and then figure out what countermeasures might help prevent accidents or reduce injuries.

Hurt put together a team of investigators who dashed out to every motorcycle accident scene, day or night, over two years. One of the important concepts was that all of the investigators were experienced motorcyclists. The team did an exhaustive study of each accident, determining approximately 1,000 data elements. They took photos, examined the wreckage, measured the skid marks, and interviewed the survivors of more than 900 motorcycle accidents, then interviewed 2,310 passing motorcyclists, and studied 3,600 police reports from the same area. Then they studied the data from every angle for another two years, and published the final report in January 1981.

Now, flash forward twenty years. Traffic is more intense but so is motorcycling. We've got rider training available all across the country, and motorcycles are technically a lot better than the ones we rode in the seventies. Is the Hurt Report still valid for today's motorcycling, and is Harry Hurt Jr. still around? I decided to find out.

I found Harry Hurt still working in safety research, still riding motorcycles, willing to talk with me, and sharp as a tack. Hurt is now President of the Head Protection Research Laboratory (HPRL), a nonprofit corporation formed to conduct research on motorcycle and bicycle accidents. The HPRL also conducts accident investigations and provides training. My first question about the Hurt Report was did Hurt think it was still valid after twenty years?

"We had no idea that study would last so long. We always assumed someone would commission another bigger study. As it worked out, no one ever came up with a contract. Nobody wants to do any new research projects."

Harry confided that he believes the report is still basically valid. It's not just that nothing has come along to replace it, but that he has personally seen evidence that motorcyclists are having the same type of accidents today as they did back in the seventies.

"I still do consulting for police departments and have investigated a num-

REPORT

ber of police motorcycle accidents over the years. Police motor officers get some extensive training. I mean really good training. But even professionals make the same sort of mistakes as novices, and today's riders seem to have the same sort of accidents as those in the NHTSA report."

But what about other evasive maneuvers such as swerving? Did Hurt feel that riders today face the same risks as those in the seventies? And when we did encounter a sudden hazard, didn't we resort to habits? Was there really any reason to practice evasive maneuvers? Hurt sliced through the questions like a hot knife through butter:

"Use the front brake. Use the front brake. Use the front brake."

My next concern was if all the research had been conducted in a big city, that left out a lot of back roads and therefore a lot of country-type accidents such as deer strikes. I wanted to know how Harry felt about that.

"Actually, we didn't limit our research to the city of Los Angeles. Our accident investigation teams went all over the Los Angeles basin, even up into the canyons and up on the Angeles Crest. So we did include "country" accidents in the study. Our data wasn't limited to the city. And the data did include animal strikes."

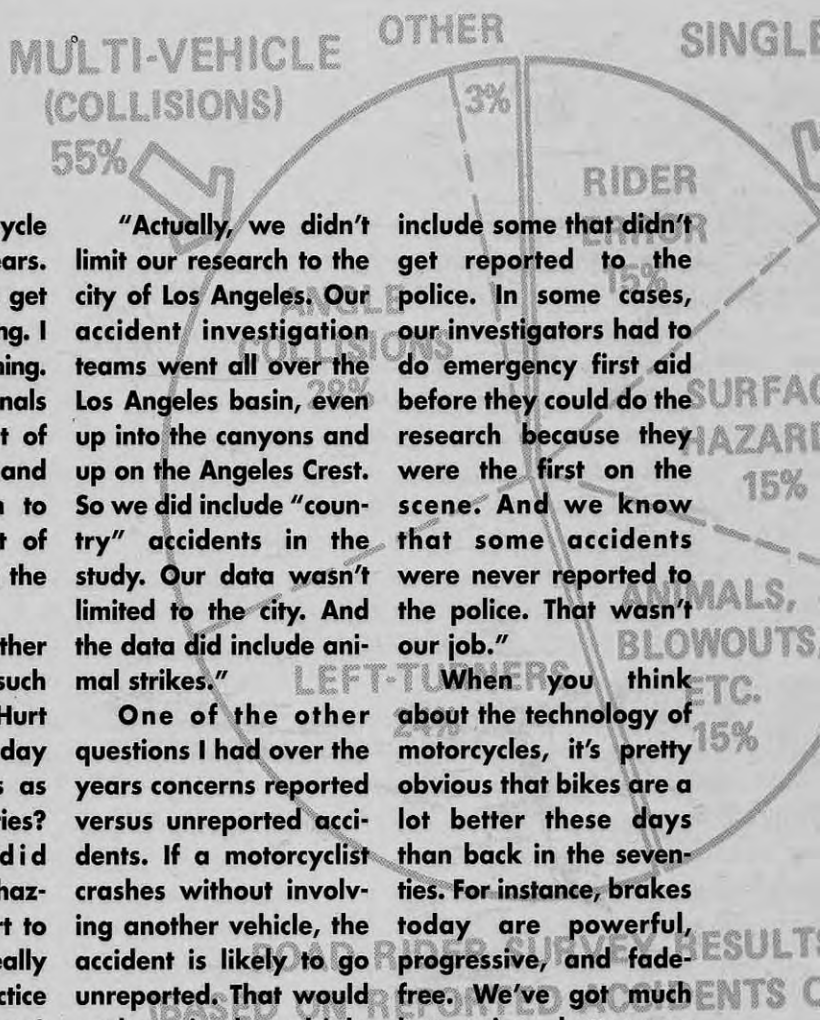
One of the other questions I had over the years concerns reported versus unreported accidents. If a motorcyclist crashes without involving another vehicle, the accident is likely to go unreported. That would make single-vehicle accidents seem less frequent than collisions. As motorcyclists, it would be important to know whether accidents such as dropping the bike on loose gravel or edge traps were as big a hazard as the infamous left-turning cars. Did the Hurt Report include unreported accidents?

"We studied every accident we knew about, and that did

include some that didn't get reported to the police. In some cases, our investigators had to do emergency first aid before they could do the research because they were the first on the scene. And we know that some accidents were never reported to the police. That wasn't our job."

When you think about the technology of motorcycles, it's pretty obvious that bikes are a lot better these days than back in the seventies. For instance, brakes today are powerful, progressive, and fade-free. We've got much better tires, better suspension, and stiffer frames. I asked Hurt whether he felt today's better motorcycles changed the accident scenarios.

"The more time goes by, the less things look different. Riders today have the same sort of accidents as riders in the 1970s, except that today they crash much more expensive bikes."



a 20-minute lecture on the hazards of riding motorcycles and a 5-minute eye exam.

I wouldn't admit it to anyone at the time, but that barrage of antimotorcycle flak caused me to have some serious doubts about motorcycling. I had a wife, two children, and a mortgage. And I sure didn't want to spend the rest of my life in a wheelchair. I recall one day toward the end of the second week when I nearly gave it up. I'd strapped my lunch box to the back of the bike, put on my helmet, and prepared to start the engine, but I was a little reluctant to get rolling. Factory traffic is notoriously aggressive at shift change. I sat on the bike for a long time in the corner of the parking lot, watching cars wedge into the stream and trying to control my rising panic. Eventually, I forced myself to get on the bike and ride home. And I'm still riding. Over the next thirty years, I gradually learned some important lessons about motorcycling. The first lesson was that my coworkers and my ophthalmologist didn't know diddly about motorcycling or motorcycle safety.

Looking back, I have to agree that the basic concern of my colleagues was probably realistic. A lot of people have been messed up in motorcycle crashes, and new riders are particularly vulnerable. But what neither my associates nor I understood at the time is that the risks of motorcycling vary significantly from individual to individual. One rider may have a serious accident soon after taking up motorcycling. Another rider may survive years and years without having a single crash.

Is it just a matter of chance that one rider suffers an accident while another rider avoids crashing? Is swinging a leg over a motorcycle just a two-wheeled form of Russian roulette? I don't think so. During the years I've been riding, writing, and teaching, quite a pile of statistics has been collected, and several important accident studies have been done. We don't have nearly as much data available as we'd like, but we have a much better idea of the risks now than anyone had back in the sixties.

Yes, we understand the discomfort of bringing the risks out in the open and talking about them. After all, part of the thrill of motorcycling is challenging the odds. We ride motorcycles partly because they are more dangerous than other vehicles. Now we can be pretty vociferous about nasty crashes once we have survived them. But we're pretty tight-lipped about our individual potential for crashes that are still out in the future, especially if our relatives, coworkers, or doctors are asking tough questions.

Perhaps not talking about the risks will hold them at bay. Maybe talking about risks is inviting the odds to strike. Or maybe we just don't know enough about managing the risks to know how far we're hanging it out. Road racers understand the need for crash padding because they intend to ride at 99 percent of their limits, and they know how easy it is to punch through the envelope. But the street rider may also be riding at 99 percent of the risk envelope entering a busy intersection. If that's the case, then why doesn't the street rider wear abrasion and impact resistant riding gear?

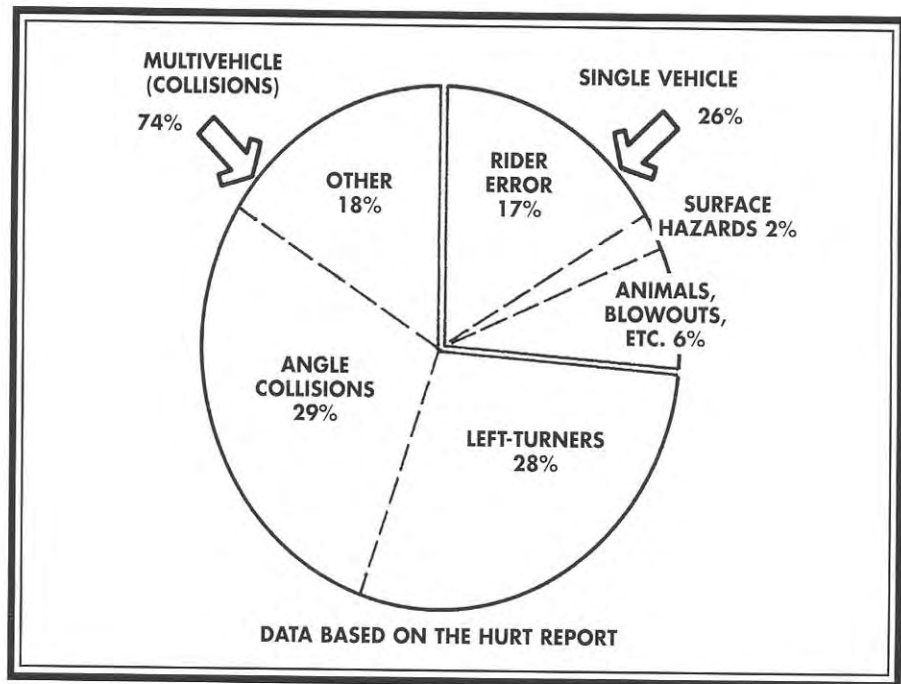
Let's take a short, fast ride through risk territory. I'll give you a little quiz at the end to help you see how you're doing.

Uh Oh. Statistics

If you ride primarily in city traffic, your specific risks are probably defined fairly well by the "Hurt Report" (Volume I: Technical Report, Motorcycle Accident Cause Factors and Identification of Countermeasures, January, 1981—Final

ak

Report conducted by the Traffic Safety Center of the University of Southern California). The Hurt Report is the only reliable motorcycle accident research ever conducted in the U.S. Unfortunately, more current statistics do not exist. The USC team, lead by Dr. Harry Hurt, investigated 1,100 motorcycle accidents that occurred in the area of the city of Los Angeles over a two-year period and analyzed 900 of those accidents for the report. That study is approaching retirement age, but we suspect that the same sort of accidents occur the same way in any other city even today. So let's take a look at some Hurt Report results.



The majority of motorcycle accidents aren't riders exceeding the limits of traction and sliding off into the weeds, but rather they're collisions with other vehicles, mostly automobiles. About 26 percent of urban motorcycle accidents are single vehicle accidents, as when a bike slides out on gravel in a corner. But 74 percent are multiple vehicle accidents, including at least one vehicle colliding with another.

The important point of this big picture is that almost three-fourths of urban motorcycle crashes are collisions. And roughly half of those motorcycle crashes are precipitated by auto drivers. About a fourth of all city motorcycle accidents are collisions with left-turning cars. The two most common errors motorcyclists make are believing the other driver sees them and not taking any evasive action. For example, 32 percent of accident victims rode into a collision without doing anything.

If you ride around in city traffic, it is important to know where collisions occur, what they look like, and the correct evasive action to get out of the way. The Experienced RiderCourse (ERC) offered at motorcycle training sites can help you develop such skills. If you haven't taken the ERC recently, you may have missed some important accident avoidance strategies.

About one-fourth of all motorcycle accidents in the Hurt Report were precipitated by rider error. For example, the motorcyclist goes wide in a turn and sideswipes a car or overcooks the rear brake trying to stop and then slides out. We might suspect that such riders don't really understand how to control their motorcycles. So that's probably a good hint that we ought to study our control skills.

In the meantime, let's consider the experience and licensing status of riders involved in crashes. In the following table, 1.0 indicates the average of those studied. Numbers higher than 1.0 indicate a greater than average accident involvement.

Motorcycle License Status of Accident Victims	Accident Involvement
Motorcycle	0.7
None (or revoked)	2.4
Auto only	2.0
Commercial/chauffeur	0.5
Learners permit	1.2
<i>Hurt Report, January 1981</i>	

Those statistics hint that riders with no license, a revoked license, or only an auto license are about twice as likely to be involved in a motorcycle accident as those with a permit, and three times as risky as a licensed motorcyclist. Now, it should be obvious that just getting a piece of cardboard doesn't change a rider's skill. We might suspect that the different odds are a result of better skills, more experience, or perhaps a different mental attitude.

Let's consider risk in relation to riding experience. Does your risk go down as you gain experience? In the following table, 1.0 would be average.

Experience Riding in Traffic	Risk
0 - 6 mo.	1.40
7 - 12 mo.	0.96
13 - 24 mo.	0.93
25 - 36 mo.	1.52
37 - 48 mo.	0.98
48 mo. +	0.83
<i>Hurt Report, January 1981</i>	

The numbers hint that a rider with less than six month's experience is almost twice as likely to have an accident as the rider with more than four year's. We would expect that. The shocker is that the rider with two to three year's experience is even more likely to crash than the new kid. The lesson here is that riders tend to get cocky as they think they have learned it all—about two years into the learning curve.

What about training? Did Ricochet Red do me a favor giving me that riding lesson in the schoolyard?

Training	Risk
Professional training	0.46
School/club course	0.50
Self taught	0.90
Taught by friends/family	1.56
<i>Hurt Report, January 1981</i>	

I guess Red did me a favor by limiting his advice to a half-hour. Apparently, riders taught by friends or family are about a third more likely to crash than those who teach themselves. But the smart ones who took a rider training class were half as likely to crash as we do-it-yourself types. Since the Hurt Report took place at just about the same time as the Motorcycle Safety Foundation came into existence, it would be interesting to have current statistics. Obviously, a lot more riders are getting professional training these days, and we can see that the motorcycle accident and fatality numbers are gradually decreasing. There's no proof that training is what's bringing down the statistics, but we believe there is a connection.

Booze

It isn't a popular subject to discuss at motorcycle rallies or biker bars, but too many motorcyclists have a serious problem with alcohol. I'm not just talking an innocently sober rider getting squished by a drunk driver, I'm talking about a motorcyclist riding while under the influence and crashing into something.

For comparison, let's consider the alcohol and drug involvement of riders who survive accidents:

Rider Alcohol and Drug Involvement	Survivors
None	86.0 percent
Alcohol or drug use	11.0 percent
Unknown	03.0 percent
<i>Hurt Report, January 1981</i>	

There seems to be a direct link between alcohol or drug consumption and fatal motorcycle accidents. Roughly half of all motorcycle fatalities involve a rider under the influence of alcohol or drugs, mostly alcohol. One big reason for motorcycle accident fatalities is crash speed. The greater the speed, the greater the injuries when the crash happens. And riders who have alcohol in the brain are much more likely to ride faster than their sober speed, even if they are not legally intoxicated. In the Hurt Report, 41 percent of riders who didn't survive crashes had some alcohol or drug involvement.

What's the message here? Well, the bottom line is that around 10 percent of motorcyclists involved in accidents have been drinking, but drinking riders represent over 40 percent of all motorcycle fatalities. If you allow yourself to ride a motorcycle after you've been drinking, even after just a few beers, you're really hanging it out.

Big Bikes vs. Small Bikes

Periodically, we hear suggestions for limiting the power of motorcycles. States with tiered license categories based on displacement assume that big, powerful bikes are potentially more hazardous than small bikes. The insurance industry frequently attempts to show that powerful race-style motorcycles are overrepresented in accidents. Are bikes with big engines more likely to be involved in crashes?

Well, according to the Hurt Report statistics, larger machines are less likely

Engine Displacement vs. Accidents

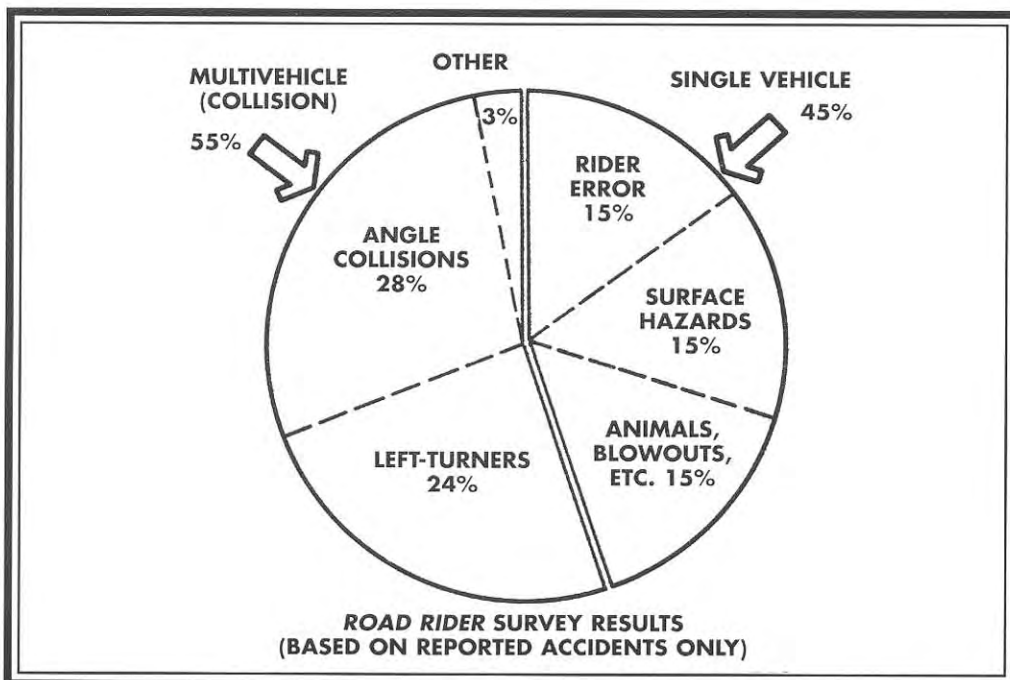
<u>Displacement</u>	<u>Percent of Accidents</u>	<u>Est. Machines in Use</u>
000 - 100cc	09 percent	08 percent
101 - 250cc	13 percent	09 percent
251 - 500cc	37 percent	26 percent
501 - 750cc	25 percent	34 percent
751 - + cc	16 percent	23 percent

Hurt Report, January 1981

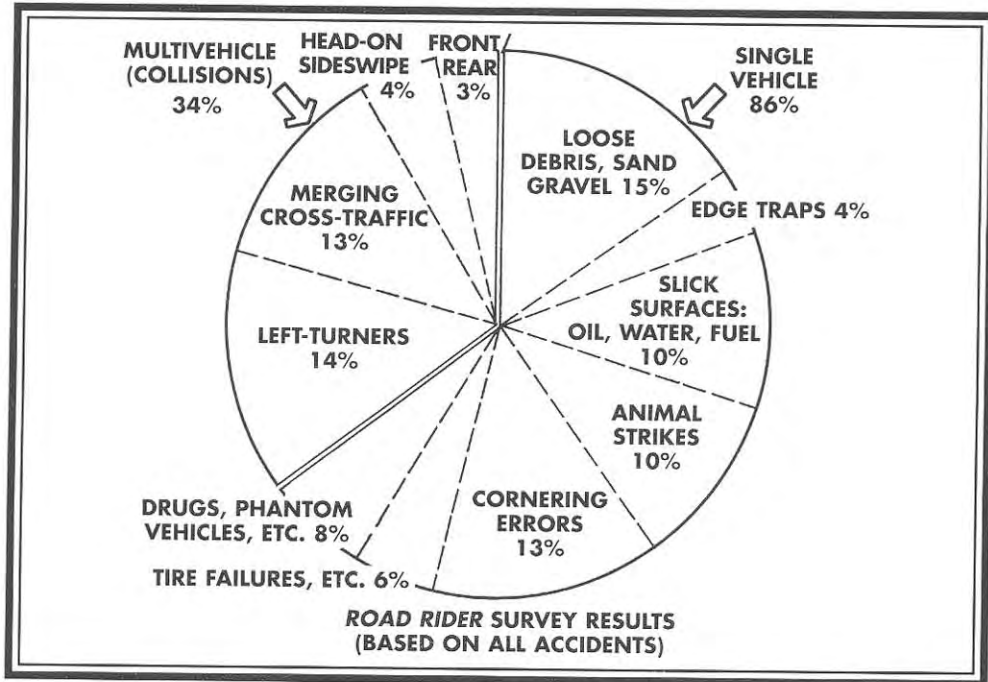
to be involved in accidents than smaller motorcycles if you factor in the numbers of machines on the road. Part of the reason may be that riders move up to larger motorcycles as they gain experience and perhaps have learned some valuable lessons in traffic survival along the way.

But remember that the Hurt Report statistics are primarily about urban riding. A lot of us live in the country or do much of our serious riding on roads far from the city. Back in the early 1980s, *Road Rider* magazine did a survey to come to grips with the sort of accidents readers had actually experienced, whether reported or not. Of course, the *Road Rider* survey wasn't nearly as sophisticated as the Hurt Report, but the responses were spread over the entire U.S. Among accidents reported to the authorities, *Road Rider* readers indicated approximately twice as many single vehicle accidents most notably due to surface hazards and wild animals. The Hurt Report shows 26 percent of all accidents are single vehicle. The *Road Rider* survey indicated 45 percent were single vehicle accidents. That would make sense, since many of those accidents were out in the country, away from a major city.

The *Road Rider* accident survey brought something else to our attention. A lot of motorcycle accidents don't get reported. Let's say someone slides out on loose gravel and smashes his or her bike into a ditch. If no one calls the police,



the rider is still mobile enough to ride, and the damaged bike can either be ridden home or hauled home in a friend's truck, the accident doesn't get reported. When we included both reported and unreported accidents from the *Road Rider* survey, the numbers came out quite differently from the Hurt Report. Single-vehicle accidents accounted for 66 percent of the total accidents, reported and unreported.

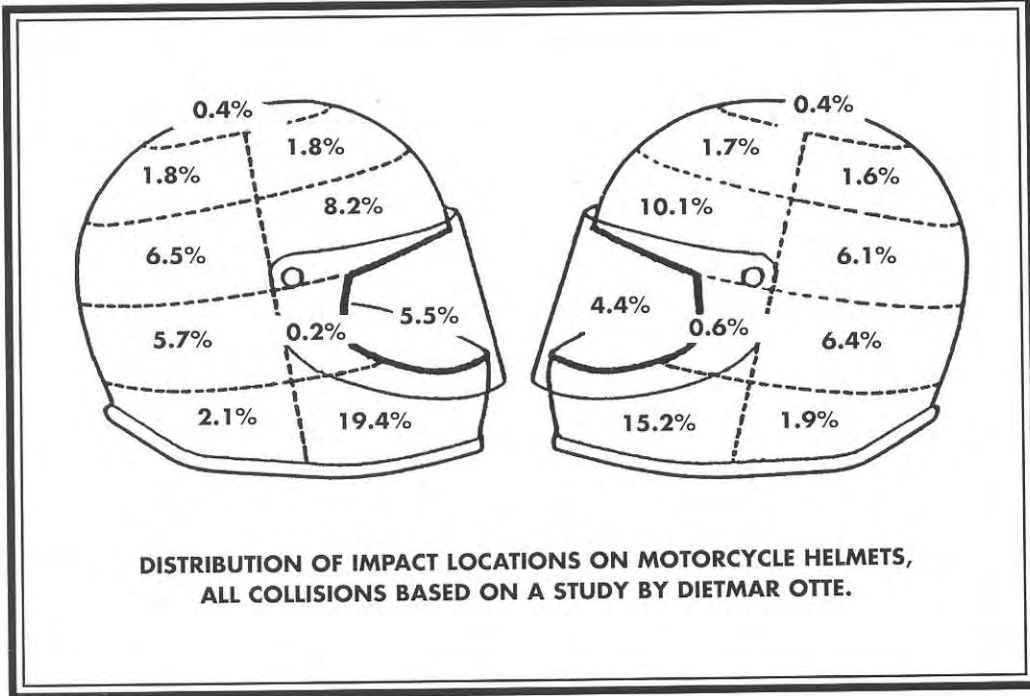


Note that the *Road Rider* survey hinted at more single-vehicle accidents, and a much higher percentage of these were caused by surface hazards, animal strikes, and cornering errors than the Hurt Report indicated. That would make sense because outside of cities, we would expect a higher percentage of those types of accidents. The point is you can get hurt just as badly in an unreported, single-vehicle accident as in a collision. And while the *Road Rider* survey isn't one of those huge, government-funded, university projects, we think it hints that motorcyclists face a somewhat different mix of hazards than the Hurt Report showed. That's why I will get a lot deeper into hazards such as edge traps and wild deer than the typical rider training course includes.

Unavoidable Accidents

Even with the best of licensing, training, and skills, some accidents simply are unavoidable. For example, a wild deer suddenly jumps out of the shadows and knocks you off your bike, or an oncoming coal truck swerves over the centerline in a blind corner, forcing you off the road. When you get your chance to crash one of these days, you'll be hitting the landscape in whatever gear you typically wear.

Knee, elbow, and shoulder armor cushions the blows and protects your skin from the pavement. Leg and arm injuries can be painful, but chest and head injuries are more likely to be critical or fatal. That's why some riders wear a spine protector as well as knee and elbow armor. A helmet is designed to pad the brain, but it also can provide facial protection. According to a German study by



Dietmar Otte and Günter Felton that was published in *The Proceedings of the 1991 International Motorcycle Conference*, the majority of helmet strikes in accidents are to the left and right chin areas. You need to remember these points every time you fire up the engine to go for a ride.

Quiz Time

Okay, now that I've rambled through a few of the statistics, put on your thickest skin and tally up your personal score. The numbers are weighted in an approximate relationship to the statistics.

	Add	Subtract
1. Have motorcycle license	10	
2. Commercial driving license	5	
3. Learner's permit, no license	2	
4. License revoked		10
5. No motorcycle license		10
6. Less than six month's experience		2
7. Twenty-five to thirty-six month's experience		5
8. More than forty-eight month's experience	8	
9. Taught by friends or family		2
10. Self-taught		2
11. Passed Motorcycle RiderCourse	10	
12. Passed Experienced RiderCourse	10	
13. No training within last five years		5
14. Sometimes ride after drinking		20
15. Never ride after drinking	20	
16. Often ride in city traffic		5
17. Mostly ride 250 to 500cc		2
18. Mostly ride 750cc or larger	2	
19. Can name twenty common surface hazards	5	

	Add	Subtract
20. Know technique to cross edge traps	5	
21. Practiced quick stops this year	5	
22. Not practiced quick stops this year		5
23. Frequently use countersteering	5	
24. Don't understand countersteering		5
25. Rider age under twenty-seven		5
26. Rider age over forty	5	
27. Always wear armored riding gear	5	
28. Usually wear only denims		5
29. Always wear approved helmet	5	
30. Seldom wear approved helmet		5

Hey, It's Subjective

Sure, sure, we know this is awfully subjective. The point is to be honest with yourself about your motorcycling risk exposure. If you don't like the questions we stacked up, go back through the statistics and write your own quiz. With our quiz, a total score of 80 or higher is a pretty good indication you're doing a lot of the right things. On the other hand, if your score is less than 40, maybe you're hanging it out further than you intended. Wherever you are on the risk scale, I'll be offering some suggestions about managing the risks.

Fixing the Odds

All right, we've looked at an accident, reviewed some motorcycle accident statistics, and offered a little quiz to help you get some perspective on your relative risk. We recognize that such exercises may be way off track. After all, statistics are based on averages, and there are very few Joe Average motorcyclists. What's more, we might also be a little suspect of accident studies that look only at how and why people crashed.



Rider training can benefit almost all riders in one way or another.

It's sort of like the patient who went to the doctor complaining of a sore tongue:

Patient: "*Doctor, my tongue really hurts.*"

Doctor: "*Does your tongue hurt all the time?*"

Patient: "*No, but it really hurts when I bite down hard on it.*"

Doctor: "*Well, don't do that!*"

The statistics based on accidents give us hints about what *not* to do, but they don't tell us what successful riders *do* to avoid crashing. The traditional approach to absorbing a helmet full of the right stuff is just to keep riding and riding. *Experience*, the veterans might suggest, *is the best teacher*. In other words, just ride far enough and long enough and life will eventually present you with all the lessons to be learned. That's probably true, but the trouble is some of the motorcycling errors can ambush you before you learn enough to avoid them. It's a lot safer and less risky to learn what you can from other people's mistakes and experiences. That's why I pay attention to the grizzled old motorcycling veterans when they occasionally drop hints about lessons learned.

I happened to be along one day when the *MCN* editors were picking up a test motorcycle for a photo shoot. Mostly, they were engrossed in details of the new machine, the fleeting time, the need to find a photogenic location, and the urgency of beating the evening rush hour. The dealer, obviously a veteran rider, was on a different mental plane. He knew I wrote skill articles, and he offered some advice about one small but important detail: adjusting mirrors. *Most people adjust their mirrors so that the view converges behind the motorcycle. I figured out that it is more important to see more of what's coming up in adjacent lanes. So I adjust my mirrors more toward the sides.* As we rode away with the test machine, I observed that I also adjusted my mirrors far enough outward that I could pick up only a corner of the saddlebags at the inside edges. *Big deal!* you may be thinking. *Who cares how the mirrors are adjusted? Let's get to the really important stuff!*

Well, maybe a helmet full of such small details adds up to the important stuff. Sure, our physical riding skills have a lot to do with keeping the bike under control. But what goes on between the ears is even more important because that's where we decide what to tell our muscles. Novices start out with the physical skills of mastering the clutch, throttle, brakes, and balance. Veterans understand that motorcycling is really more of a mental process of scrutinizing the situation, evaluating the hazards, and deciding what to do with the motorcycle.

Formal rider training courses can give you a big dose of information all at once. But you can also gain a lot of information from motorcycle magazines and books. A year's worth of monthly reading adds up to a big dose of information to help stack the motorcycling risk deck in your favor. A lot of motorcyclists miss out simply because they don't take the time to read what's available.

The trouble with knowledge is that it's a lot like French bread—it doesn't stay fresh very long. A number of veteran motorcyclists have told me they clip and save helpful articles in a notebook to study again on cold winter nights. You'd think the veterans would have learned it all by now, but that's not the way it works. They are still around because they continue to refresh their knowledge.

If you've found time to take the MSF Experienced RiderCourse, you've skewed the odds even more in your favor. The one-day ERC includes both accident avoidance strategies for the brain, and skill exercises for the muscles. I've bumped into a lot of veteran riders who take the ERC every couple of years as a refresher. If you haven't gotten around to taking any rider training, I strongly

suggest you make that a high priority. The track schools are useful for learning motorcycle control skills or for getting in some track time, but to hone your accident avoidance skills for public roads, the ERC gets to the basic techniques.

Now and then you'll exit a restaurant to find someone circling your machine. He or she will be a little wide-eyed and irrational, perhaps drooling at the mouth. When you hear the typical questions about fuel mileage and engine size, you know you're talking to someone infected with the motorcycle bug. Do the novice a favor by pointing him or her toward the nearest rider training course, where motorcycling can be tried out under the guidance of a trained instructor. Bikes are provided for those who don't own one. If the novice decides to become a motorcyclist, that initial training provides a good foundation for gaining experience. And if that new rider is a relative or friend, all the more reason to send him or her to the local training site rather than act as a teacher yourself.

Emergency Reactions Follow Habits

One of the important lessons I've learned is that in an emergency, actions follow habits. Riding through the high desert of eastern Oregon one night, two eyes alongside the road suddenly reflected back the headlight beam. I rolled off the throttle and squeezed the brake lever gently. This is deer country, and the reliable tactic for avoiding a deer strike is to stop short of a collision. Those shining eyes were too low to the ground to be a deer, but whether a deer, raccoon, or skunk, I didn't want to hit it.



When the critical moment presents itself, chances are your reaction will follow your habits. If you expect to have the right skills in a crisis, you must practice the right techniques every time you ride.

When the reflecting eyes suddenly darted toward the pavement, my hand squeezed the brake lever, the BMW transferred its weight onto the front tire, and my hand squeezed even harder, braking the front wheel to the maximum just short of a skid. Twenty feet from impact, the headlight beam illuminated a very large porcupine bobbling out toward the centerline, then changing its mind, making a U-turn, and scrambling back toward the verge. As Porky ambled off the pavement, my hand eased off the brake, the suspension stabilized, and I rolled back on the throttle.

What amazes me still, is that I don't recall any decision to brake hard. My right hand just produced a classic quick stop, as if it had been controlled by some animal-sensing device programmed to cover the lever and then make a stop in the shortest distance without falling down. Of course, we all carry such a device. It's located on the bike somewhere between our ears. In an emergency, the brain follows whatever programs have been learned through practice. If you always favor the front brake for normal stops, and you have experienced enough power stops to know what an impending skid feels like, your brain has a quick-stop program available for emergencies.

The moral of that story is that we must constantly practice the right skills if we expect to use them in a pinch. If you expect to be able to handle the loose gravel or the wandering motorist you discover as you round a blind turn, you must practice control skills such as rolling on the throttle in curves, countersteering, and maximum-effort stops, as well as choosing cornering lines that maximize traction.

To put this another way, there aren't really any emergency maneuvers you can pull out of your bag of tricks when something goes wrong. There are only proficient control skills you can practice every day as you ride along. And, if we assume there are physical habits to be practiced, then there must also be proficient mental skills that we must practice so that they become habits.

Booby Traps

The roadways are full of booby traps just waiting to spring shut on the unwary motorcyclist. Road surfaces have potholes, bumps, loose gravel, edge traps, grated bridge decks, shiny steel plates, slick plastic arrows, and spilled diesel oil. Streets may ascend or descend hills right where the railroad tracks cross the pavement. That curve ahead may be the one that tightens up and slants the wrong way halfway around, just beyond your line of sight. That intersection ahead may have offset lanes or a spoke of three or five streets. Freeway lanes may disappear with no warning. Road signs may be placed just far enough from the intersection to mislead a visitor.



The roadways are full of booby traps just waiting to spring out on the unwary motorcyclist.

A critical stop sign may be covered by untrimmed bushes or painted on the road surface where it is obscured by the glare of the morning sun.

Veteran riders allow for such booby traps. They have become veterans by riding a little more conservatively than their personal limits; scrutinizing the situation far ahead; taking a second look at strange happenings; and avoiding sudden, impulsive moves. Swerving across three lanes of traffic to get to your turnoff is a clue that your motorcycle is traveling faster than your awareness of the situation. Sudden darting maneuvers don't leave you the extra observation time, additional space, or reserve traction needed to negotiate whatever booby traps you're likely to encounter. Likewise, experienced riders don't snuggle up to the back bumpers of other vehicles at stop signs because once in a while the driver ahead accidentally selects Reverse instead of Drive when the light turns green, or there may be an open manhole hidden from view just up ahead.

Maintain the Machine

Part of your motorcycle education should include the motorcycle itself. If you believe the Hurt Report, only a small percentage of accidents are caused by defects in the machine. Of course, it may be that on long-distance trips away from the city there are more frequent accidents caused by motorcycle defects. But, whatever the actual statistics, if you happen to have a blowout on your bike while zipping down the superslab, your tire failure statistics will be 100 percent. Tires provide the critical connection between motorcycle and road surface, yet many motorcyclists don't keep their tires pumped up to correct pressure, and many wait too long to replace worn tires. If you find yourself asking any of the following questions, the answer is always the same: Yes.

Should I check the rear tire pressure before the ride?

Should I increase pressure when carrying a heavier load?

Should I replace that worn tire before the trip?

Should I buy the more expensive tire just for a little more traction?

Should I replace that tire just because of a little sidewall cracking?



No one else is going to be as interested in the condition of your machine as you are.

ak

There are a few other mechanical details that you should take care of before a ride. Hydraulic brake systems should be flushed every couple of years or annually in humid climates. Brake pads get hard with age. Worn brake pads should be replaced long before metal screeches on metal. Electrical problems should be traced down and fixed, especially those relating to lights. Critical fasteners such as fork tube clamps, axle bolts, and suspension connectors should be checked for tightness. You don't have to get your hands greasy yourself, but at least take an active interest in the condition of your motorcycle. Don't expect a mechanic back at the shop to keep everything in perfect condition without frequent checks. The bottom line is that no one else is going to be as interested in your machine as you are.

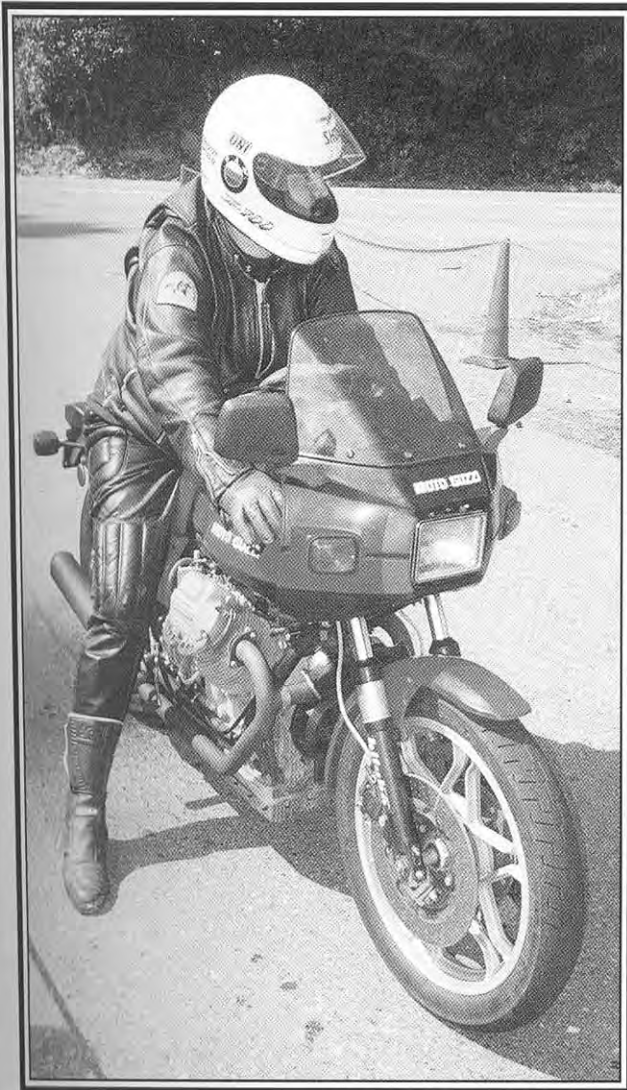
Body Armor

One of these days you will get your turn to crash and try out your body armor. But even if you don't get to crash, your riding gear has a lot to do with your ability to control a bike. I'll leave it up to your imagination how I know

this, but a couple of yellow jackets dropping into your boot takes a lot of attention away from the task of keeping your motorcycle pointed between the lines. A sunburned neck can make it too painful to turn your head to find that car hidden in your blind spot. A bouncing stone cracking into your shin can distract you from the left-turning car ahead.

Riding gear is more than just uncomfortable body armor worn reluctantly day after day just in case today happens to be your turn to crash. A good riding jacket protects against wind, heat, and cold. A good helmet insulates the head from wind, sun, and cold rain; and a shatterproof face shield also keeps your face from getting chapped. Leather gloves not only protect your palms from road rash during a spill but also keep your knuckles from getting burned by wind and sun, and help your fingers avoid blisters. Tall leather boots provide ankle support as well as protection from a hot exhaust pipe or nasty biting insects.

But if today does happen to be your turn to crash, it's handy if your gear also provides impact and abrasion protection. Competition-weight leather slides for something like 80 to 100 feet on rough concrete before it grinds through to your underwear.



If today is going to be your turn to crash, what do you want between your body and the pavement?

Cotton denim rips to shreds in about 5 feet. Fabric riding suits with armored patches can be almost as abrasion resistant as leather, and a lot easier to clean after a few days under a broiling sun. Of course, we can adjust our gear to the riding conditions. The more hazardous the situation, the greater the need for good stuff. When I'm making a nighttime transit through deer country on my two-wheeled rocket, I'm inclined to wear my leathers. When I'm driving the sidecar rig, I usually wear a two-piece fabric riding suit.

The ultimate purpose of a helmet is to prevent brain injuries during an accident. You can crack your skull and survive, but scrambled brains will bring you to a permanent halt. One really important reason for protecting your brain is that the brain doesn't heal itself like other body tissue. If you bang your head hard enough to black out for a few seconds, you've injured your brain. And a concussion can turn into epilepsy a year or two down the road. So, if you intend to get back in the saddle after the big crash, consider the importance of keeping brain injuries to a minimum. Even a \$50 helmet that's DOT approved can provide excellent protection because it's the crushable foam inside that protects the brain, not the outer shell.

Identify Yourself

Consider why a blind man carries a cane painted white. Why not a black cane? The color of the cane isn't for the blind man, it's to warn sighted folks that the man with the cane has a visual handicap. The same principle applies to motorcyclists. Novice riders who haven't yet learned to figure out what's happening around them on the street might be wise to warn others of their handicap. In England, learners must carry a learner plate, a large white rectangular plate with a red L on it.

If you are still going through your novice phase of motorcycling, say your first three years or 20,000 street miles, there is good reason to wear conspicuous riding gear such as a reflective vest. You can't prevent other drivers from running into you, but you can at least make yourself conspicuous enough to give them a chance to see you coming while you're learning how to get out of the way.



If you are just learning to ride, it's smart to wear conspicuous riding gear such as a bright, reflective vest.