PART II
BICYCLING IN TRAFFIC

Principles of Traffic Law

Understanding the basic principles of traffic law will help you understand how to ride your bicycle in any traffic situation. All road users expect each other to act in accordance with these principles to avoid conflicts and collisions. Complying with traffic laws will decrease the likelihood of a crash by making your actions predictable, and make your ride more enjoyable. As a bicycle rider, in all states, you are accorded all the rights and assume all the duties of a vehicle driver. Therefore, drive your bicycle as you would any vehicle. Although a bicycle is very maneuverable, this does not mean that cyclists should violate traffic laws.

First Come, First Served

Operators of vehicles, including cyclists, are entitled to the lane width they need, with reasonable clearance behind and to each side, and reasonable stopping distance in front of them. Drivers must yield before moving into space occupied by vehicles that are there first.

Drive on the Right-Hand Side of the Road

Drivers of vehicles, including bicyclists, must drive on the right-hand side of the roadway. Traveling against traffic puts you in positions on the road where other drivers do not expect you, and makes it impossible for you to read signs and signals. To be predictable to motorists and other road users, never be a wrong-way rider. Many common crash types result from going against the flow.

Yielding to Crossing Traffic

Drivers on minor roads, including driveways and alleys, yield to traffic on more major roads. Yielding means proceeding onto a roadway only when it is safe to do so and obeying all traffic control devices (e.g. signs, signals and markings).

Yielding when Changing Lanes

Drivers who want to move into a new lane on the road must yield to traffic in their new lane of travel. Yielding means moving only after looking behind you to see that no traffic is coming and looking in front to see that the way ahead is clear. This is a special case of first come, first served.

Speed Positioning

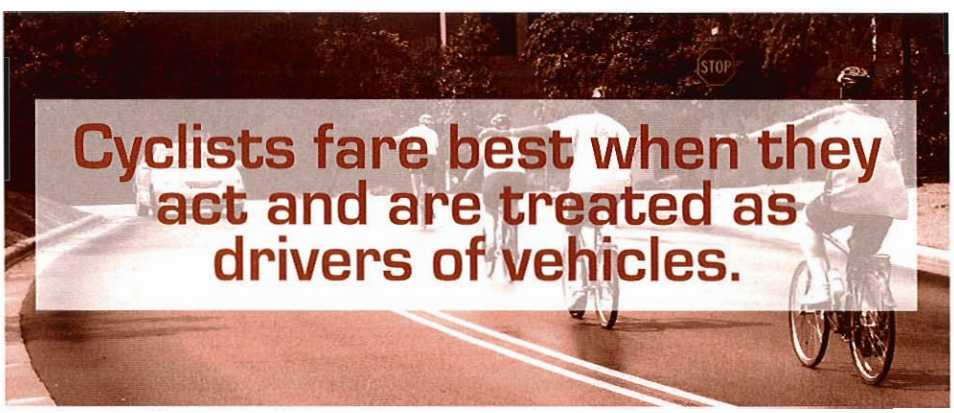
In general, stopped or parked vehicles are next to the curb, slower moving vehicles are to the left of them, and faster moving vehicles are closest to the centerline. Overtaking on the right violates this principle and therefore is more risky than overtaking on the left.

Because bicycles are narrow vehicles, lane positioning is important. In a lane that is too narrow to share safely, control the lane by riding in the center of the lane or just to the right of center. This is legal in all states. In a wide lane (about 14') that you can share safely, ride about three feet to the right of the motorized traffic.

If traveling at the speed of traffic, a bicyclist should control the lane unless it is a very wide lane. If traveling faster than other traffic, overtake on the left, keeping a safe distance from slower traffic.

Intersection Positioning

At intersections, drivers position their vehicles so as to avoid conflicts with the movement of other drivers. Right turners are to the right of center, left turners are to the left of center and straight-through cyclists are between these positions.



Changing Lanes Safely

Intersections — Turn Lane Rule

Ride in the rightmost lane that leads to your destination. In single-destination lanes, ride on the right-hand side of the lane. In multiple-destination lanes, ride in the side of the lane appropriate for your destination and current traffic conditions.

Riding in traffic requires knowledge, skill and confidence. You must be confident and assertive, but not reckless. In order to successfully change lanes in traffic the cyclist must:

- Plan ahead
- Look behind, perhaps several times
- Signal your intention
- Act carefully, smoothly and deliberately
- Negotiate as necessary
- Never move in front of another vehicle so close as to constitute a hazard.

When you need to change multiple lanes and traffic is heavy and moving at about your speed, negotiate with overtaking motorists and make two moves per lane, one to change lanes and one to move close to the far edge of the lane.

Lane/Intersection Positioning

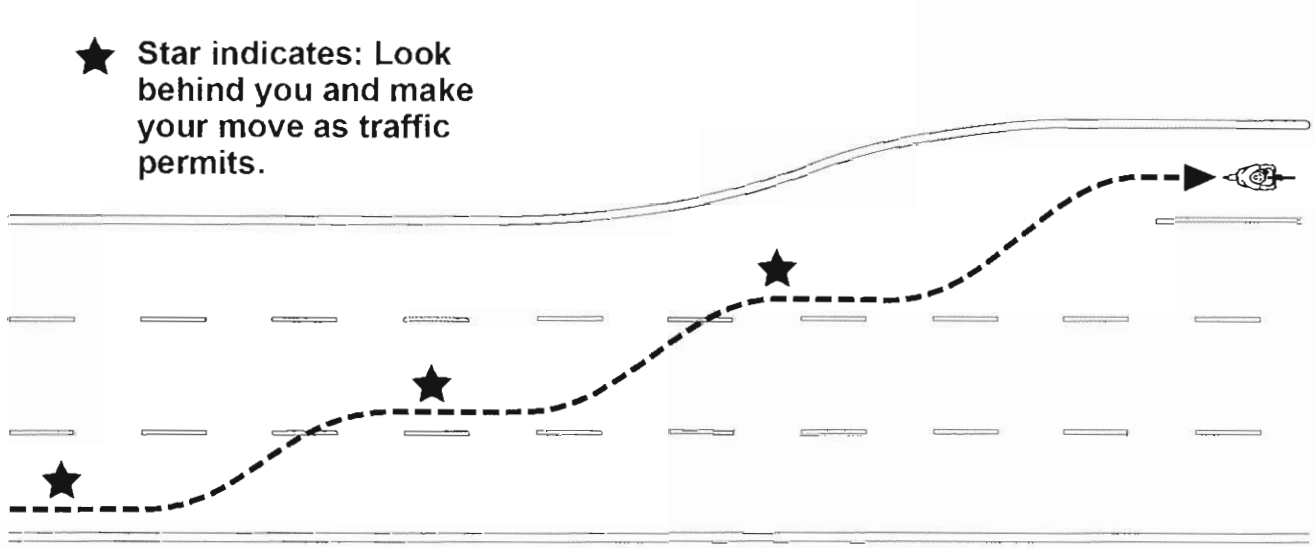
Most motor-vehicle/bicycle crashes occur during turns, but most such crashes can be avoided. When you approach a multi-lane intersection, think about where you would position yourself if you were driving a car. You wouldn't be in the right-turn-only lane if you were continuing straight. You wouldn't attempt a left turn from the right lane on a multi-lane one way road.

Generally speaking, as a bicyclist, you should be in the right-most lane that goes in the direction you are traveling. But, as a bicyclist you are driving a narrow vehicle, so you also can choose which part of the lane is the best position. The specific portion of the lane depends on the distinct characteristics of the intersection. The diagrams below and on the following pages show correct lane positioning for a variety of different scenarios.

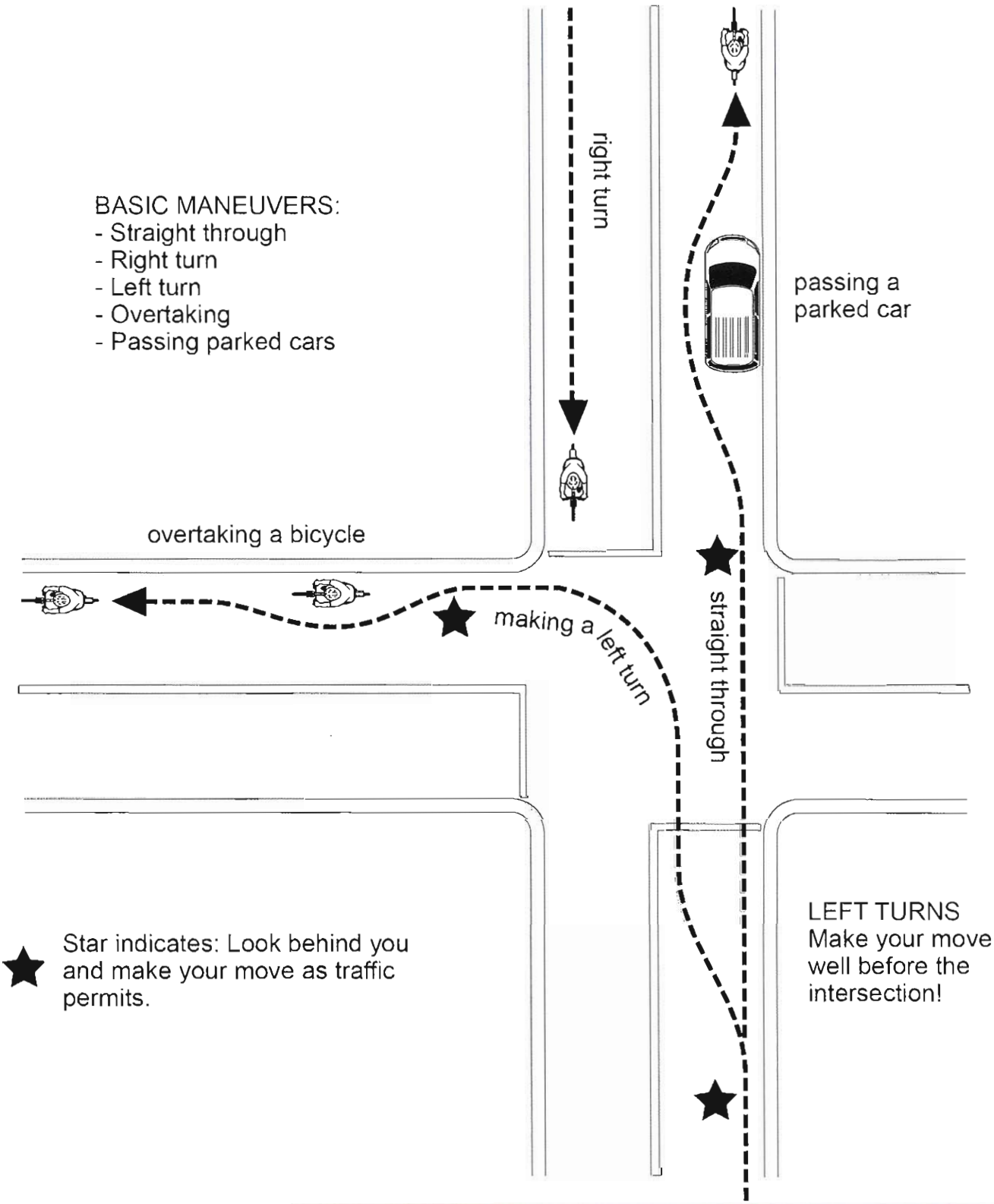
BIKE LANES

More and more communities are striping bike lanes on their streets. Well designed and maintained bike lanes should enable you to follow the same principles of traffic law — they are simply travel lanes for preferential and exclusive use by bicyclists. You should be prepared to merge into the regular travel lane to make left turns and to avoid debris or illegally parked cars. Pay special attention in bike lanes that are adjacent to parked cars and always ride outside the door zone.

LEFT TURN ACROSS MULTIPLE LANES



LANE POSITIONING



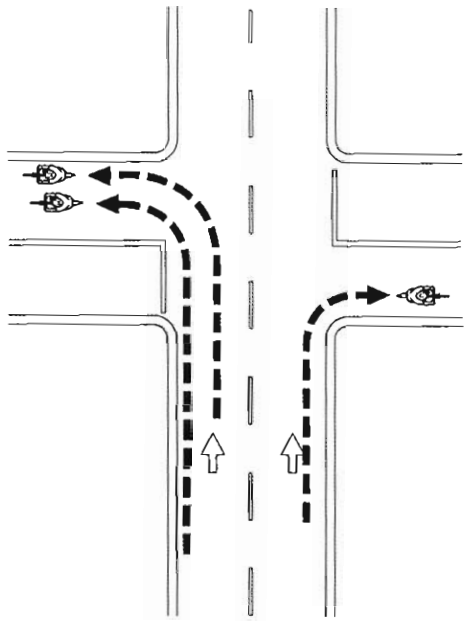
BASIC MANEUVERS:
- Straight through
- Right turn
- Left turn
- Overtaking
- Passing parked cars

★ Star indicates: Look behind you and make your move as traffic permits.

LEFT TURNS
Make your move well before the intersection!

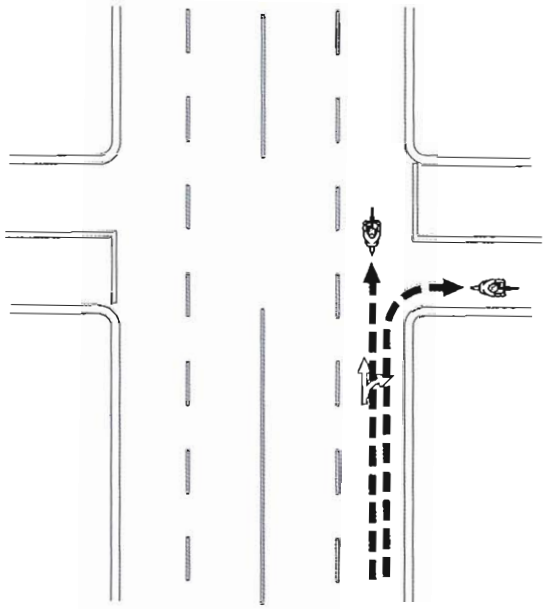
BICYCLING IN TRAFFIC

ONE-WAY STREET



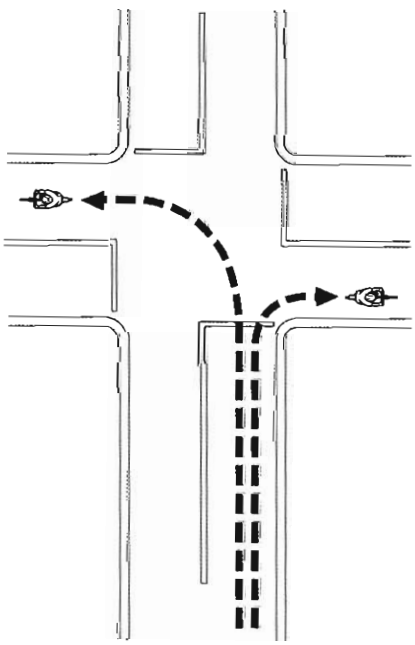
Left turn from left side of lane if there is little turning traffic, from center or right side of lane if left and straight traffic is heavy.

DUAL DESTINATION RIGHT-TURN LANE



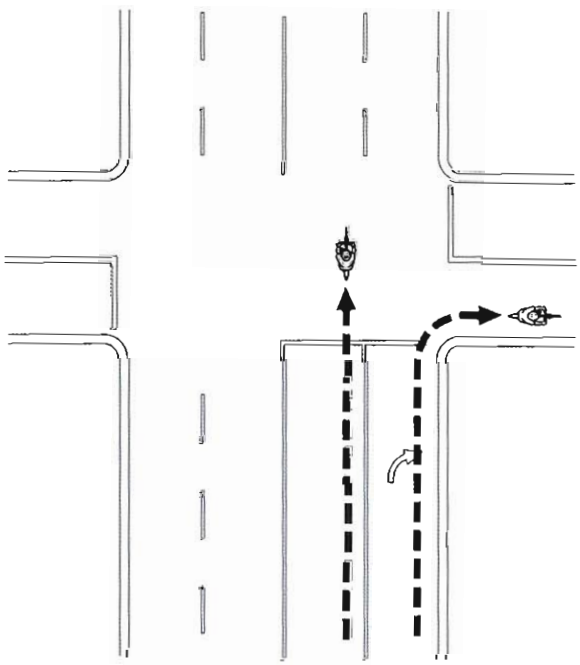
Right turn from right side of lane. Straight from center of lane.

TWO-WAY STREETS



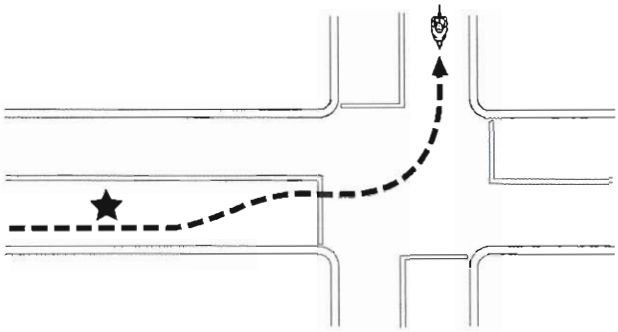
Left turn from left side of lane. Right turn from right side of lane.

RIGHT-TURN ONLY LANE



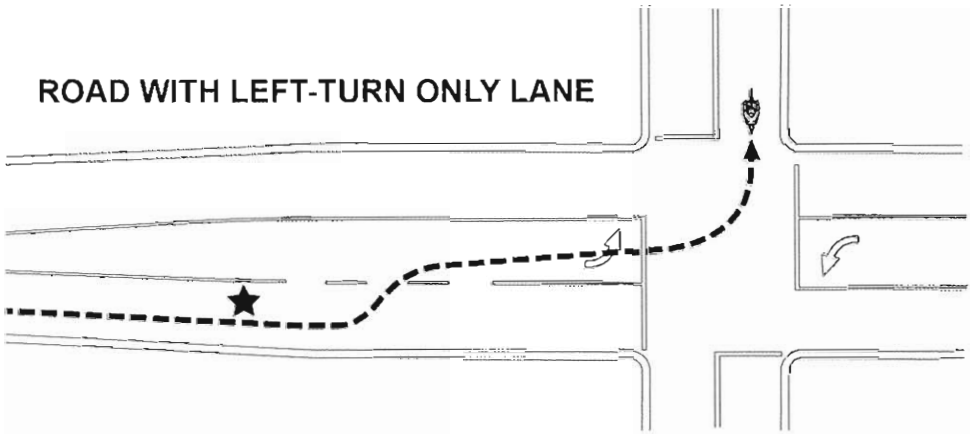
Right turn from right side of right-turn only lane. Straight from right side of through lane.

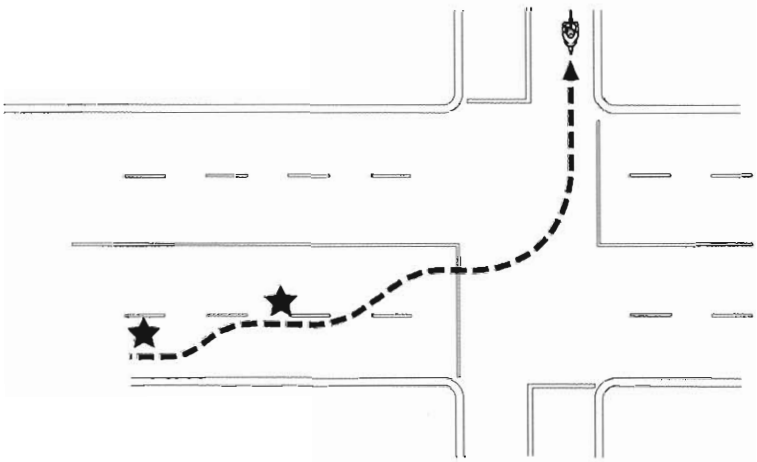
MAKING LEFT TURNS



TWO-LANE ROAD
WITHOUT A TURN LANE

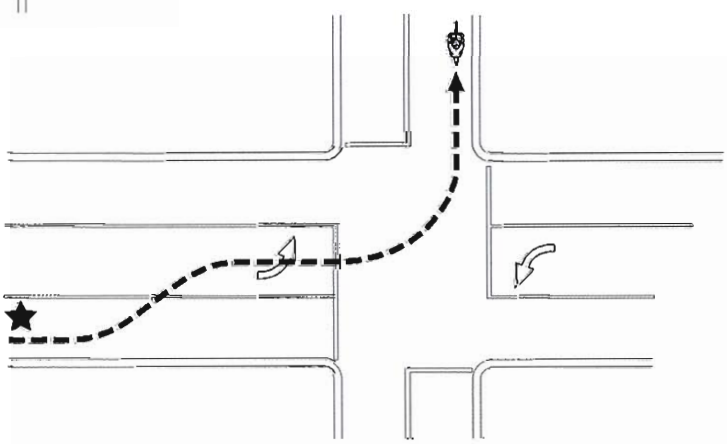
ROAD WITH LEFT-TURN ONLY LANE





MULTI-LANE ROAD
WITHOUT A TURN LANE

ROAD WITH CONTINUOUS
LEFT-TURN LANE



Why Crashes Happen

Why Crashes Happen: Statistics

Approximately 50 percent of all bicycle crashes are falls. They are often caused by road surface hazards — impact with potholes, storm grates, skidding on wet manhole covers, loose gravel or dirt — or by the front wheel being diverted by railroad tracks, expansion joints or other cracks in the pavement. To avoid these, be alert to the hazards. Be careful turning, braking, or accelerating on a slippery surface. Steer around hazards if you can; the rock dodge technique allows you to do this quickly, as necessary.

An additional 33 percent of the crashes involve animals, other bikes or something else besides motor vehicles. Only about 17 percent of bicyclist crashes involve motor vehicles (the table to the right is about bicycle/motor vehicle crashes).

Who is at fault?	Action	%
Bicyclist	Wrong-way riding facing traffic	14%
Bicyclist	Left turn from the right side of the road	11%
Bicyclist	Failure to yield from driveway	9%
Bicyclist	Running a stop sign or signal	8%
Bicyclist	Swerving in front of car	5%
Total Bicyclist		**47%**
Motorist	Left turn in front of the bicyclist	13%
Motorist	Right turn in front of the bicyclist	11%
Motorist	Running a stop sign or signal	8%
Motorist	Opening car door into path of the bicyclist	7%
Motorist	Failure to yield from driveway	6%
Motorist	Didn't see the cyclist	3%
Total Motorist		**48%**
Undetermined		**5%**

Jerrold Kaplan, 1974, William E. Moritz 1996.
The highlighted lines are the only crashes that involve cyclists hit from behind.

Breaking Down Crash Statistics

Most motorist/cyclist collisions involving child cyclists are caused by the child. The causes of motorist/cyclist collisions involving adult cyclists are about evenly distributed between motorists and cyclists.

Research into bicycle crashes has shown that bicyclist crash rates decrease with experience measured by miles or years of cycling. Bicyclists who ride regularly under adverse conditions (rain, darkness, in the mountains, etc.) tend to be more experienced and have lower crash rates than fair-weather riders.

You can ride safely in traffic. There are preventive measures that you can take to reduce the likelihood of a crash and avoidance techniques to learn and use if a crash is imminent.

Avoiding Crashes

Sudden Stops

The most serious type of fall is the one caused by a sudden stop that vaults you headfirst over the handlebars. When pedestrians and animals appear quickly in your line of travel, you must make a quick decision on how to deal with the situation. Always maintain control of your bike. When riding in urban settings, keep both hands on the handlebars in the braking position for best control.

Dogs

When a dogs is chasing you, the most serious risk is a collision with the animal. Speak in a loud voice and continue to move away from the dog's territory. Keep riding and talk to the dog to let him know you are human or dismount and put the bicycle between yourself and the dog. You should always report dog attacks or chases.

Wind Blasts

Gusting wind and gusts caused by vehicles can affect cyclists. Large trucks can blast you away in the front and suck you in at the back. You need to correct the lean caused by a wind blast, so maintain sufficient space between yourself and other vehicles, claiming the lane if necessary. Hold the handlebars firmly and lean slightly to compensate for the effect of any gust. Practice and experi-

ence will help you gain confidence in dealing with wind blasts.

Sidewalks

Riding on the sidewalk is a significant cause of car/bike crashes — especially if you are also riding against traffic. At every driveway and intersection you can surprise turning motorists who are simply not looking for you (they are also poor judges of speed). If you must ride on the sidewalk, ride at walking pace and stop or yield at every intersection.

Surface Defects and Other Hazards

Stay alert to the road surface and hazards that may be present. Extra caution needs to be taken when riding over metal obstacles, as they can be very slippery. Proceed slowly and do not brake or turn quickly on metal grates, plates or slats. Water over the road can cause dangerous conditions. Wider tires on your bike are one way to improve stability.

Railroad Tracks

Be conscious of the angle of railroad tracks as you approach them. You need to cross tracks with your bicycle perpendicular to the rails. It is also a good idea to stand up and let your legs and arms act as shock absorbers.

Steel Plates

Steel plates are used by construction crews to cover work in progress. They can have sharp edges running parallel to your travel that will steer your bike out from under you or sharp edges facing you that you have to roll over. If this obstacle cannot be safely avoided, sit back and take the weight off of your front wheel while being careful to keep it straight. These obstacles can also cause a snakebite tube puncture.

Storm Grates

Storm grates and sewer drains are slippery when wet. Some designs may offer slots that can trap your front wheel. Exercise caution when riding over grates. If at all possible, avoid them.

Surface Cracks

A long, narrow pavement crack running parallel to your path of travel can cause a crash. In order to avoid this type of hole or crack, change your path of travel to cross the crack at a right angle. Be sure not to move suddenly into the path of another vehicle — scan behind you before moving left into traffic if you need to do so in order to avoid a surface crack.

Uneven Road Surfaces

Uneven road surface needs to be addressed just as a railroad track or pavement crack. Turn your wheel to cross onto a different level of pavement at a right angle.

CRASH PREVENTION

STEP 1: Control Your Bike: Don't fall or collide with others

About half of cyclist crashes are single rider falls. If you can skillfully control your bike, by starting, stopping, signaling and turning smoothly, you will not fall down all by yourself or run into other cyclists, dogs and pedestrians.

STEP 2: Obey the Rules: Don't cause traffic crashes

For adult cyclists, about half of the car/bike crashes are caused by cyclists who make unsafe decisions. Follow traffic laws, obey signs and signals and use correct lanes for turns and through movements, so you don't cause a collision.

STEP 3: Choose the Right Position in the Lane: Discourage other driver's mistakes

Unsafe decisions by motorists cause about half of the car/bike crashes for adult cyclists. Know when to control the lane or when to share a lane. Use your lane position to tell drivers what you are doing and discourage them from making right hooks, left crosses or other unsafe movements. More than 90 percent of crashes can be avoided with the first three steps in crash prevention.

STEP 4: Learn Hazard Avoidance Skills: Avoid other driver's mistakes

When all else fails and you are faced with a critical situation, understand how to maneuver your bicycle to avoid crashing or at least limit the consequences of a crash.

STEP 5: Wear a Helmet: Protection to survive a crash

When all your skill and techniques fail and you are involved in a crash, you need to be wearing a helmet. Gloves and sunglasses are also helpful. Think of these as the seat belt and air bags in your car.

Hazard Avoidance Maneuvers

Riding safely on the road requires knowledge and understanding of traffic laws and the principles that determine and govern these laws. However, even when you ride predictably and occupy your proper place on the roadway, situations may arise that necessitate maneuvering to avoid hazards or collisions. The ability to execute an evasive maneuver could mean the difference between a close call and a crash. Be sure to practice these often: For any of these maneuvers to work when you need them, they must come naturally.

ABOVE: Quick stop

Quick Stop

When you are riding in traffic and something stops suddenly in front of you, you need to bring your bicycle to a Quick Stop, under control and in a short distance.

There is an art to stopping a bicycle in an emergency. When you apply the front or rear brake, the bicycle begins to slow down and your weight transfers forward. The more weight on a wheel, the more effective the braking and the less likely it is to skid.

If you are like many people, you instinctively grab both brakes in an emergency and apply them equally until the bike begins to skid. You have no control and a wheel that is skidding offers you virtually no stopping power. So the logic for effective braking is:

- Braking with the rear brake alone will help prevent pitch-over, but it is not very effective.
- In theory, you can stop fastest with the front brake, but an error will pitch you over.
- For a fast, safe stop, use both brakes. This produces the optimum deceleration. If the rear wheel starts to skid, ease up slightly on the front brake. With practice, you will use the front brake harder (up to three times harder) and the rear brake more lightly to decrease your stopping distance.
- When braking hard, slide your body back on the saddle as far as possible. You can transfer even more weight to the rear wheel by moving your rear end straight back and placing your stomach on the seat.
- When carrying a heavy load on the rear of your bike, you will be able to brake harder with less danger.

Rock Dodge

Rock Dodge is a maneuver to avoid any small object in the road. It is an essential skill for any cyclist to master.

To execute a Rock Dodge, keep riding straight until you are very close to the object. Just before you reach the object, turn the handlebars suddenly to the left — without leaning — so the front wheel goes around the object. Immediately straighten out and keep riding.

When you steer to the left of the rock, you automatically lean right. When you straighten up, you bring the bike back under you. Your front wheel snakes around the rock, your back wheel passes on the other side, but your body and handlebars have barely moved. The motion is subtle and the entire action happens in a split second.

This technique will feel unnatural at first and will take practice before

you can do it smoothly. Once you master the Rock Dodge, practice it regularly.

Avoidance Weave

The Avoidance Weave is used when you suddenly encounter a series of hazards like potholes or rocks that could cause a crash.

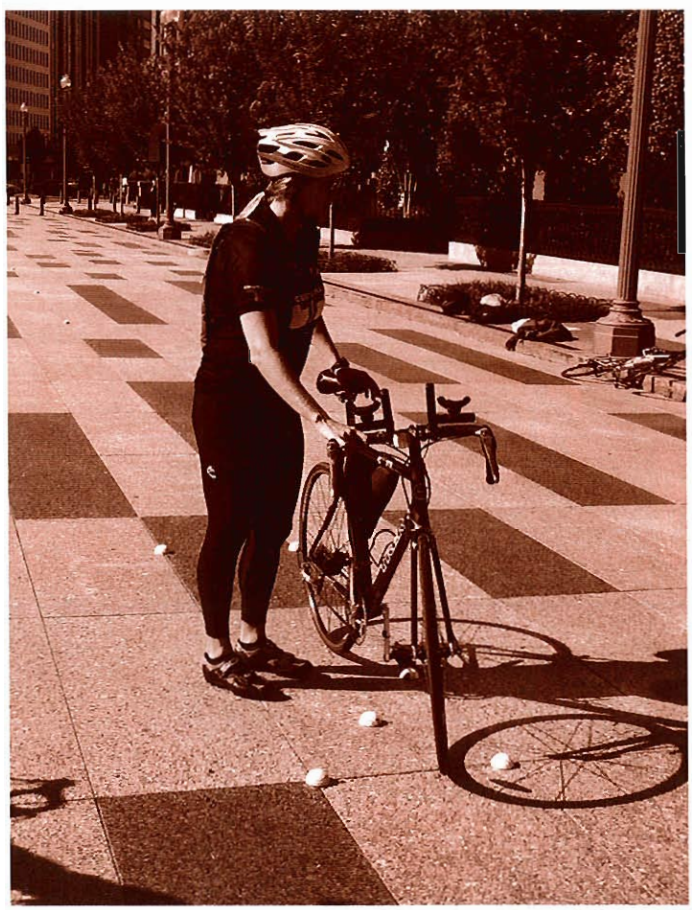
The Avoidance Weave is a set of swooping turns. To avoid a series of hazards successfully, look ahead past the hazards and begin a turn before you reach each hazard. Continue to look ahead and turn sharply until you are through the hazards. It's important to lean your bicycle and get into a rhythm.

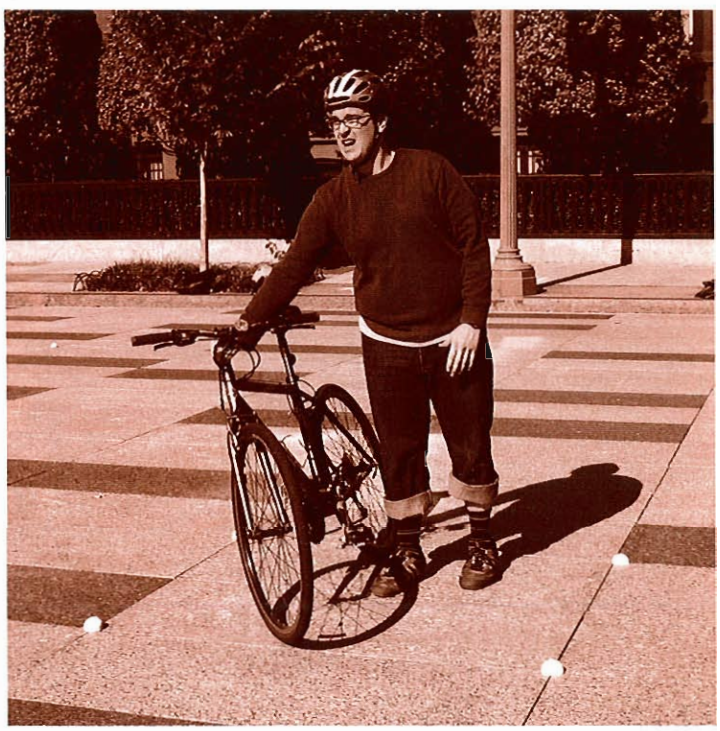
Instant Turn

The Instant Turn is used to avoid an unexpected vehicle passing directly in front of you. In these instances, you won't have the time or space to do a Quick Stop. An Instant Turn allows you to avoid the crash and go in the direction of the vehicle. Even if you do crash, it will be at an angle and the consequences will be less than crashing head on.

Many people think that a turn is produced simply by turning the front wheel, but you actually lean first and turn second. Because they happen so fast, the two moves appear simultaneous. To force the lean quickly you have to perform a maneuver that feels unnatural and sounds even more unlikely. Turn your front wheel left — the wrong way, toward the car. By doing this you're forcing a right lean. The moment you have a lean started, turn your front wheel sharply right and you'll find yourself in a tight right turn.

This doesn't ever feel natural, and you must train yourself to do it. The quick twitch in the wrong direction at the start of the instant turn is the most important and least intuitive part of the turn. You are deliberately unbalancing yourself by steering the whole bike out from under you.





LEFT: Teaching the rock dodge

ABOVE: Demonstrating the instant turn