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Safety Aspects of Two Cycling Safety Programs Compared

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1 CONDUCT OF A SAFETY PROGRAM

To create a safety program one must first define the field of the safety program. Then, within that field, one must identify the casualties that occur. Then one must classify the casualties, and determine the quantity or rate with which each type occurs. One ought to also identify the individual seriousness of each type. For each type, one might hypothesize one or more remedial procedures. The next step is to establish a priority listing that combines degree of total cost for each type and the remedial methods available for it. This then forms the guide for operating the safety program. The program will be modified as new facts are discovered.

2 CYCLING TRAFFIC-SAFETY FACTS

2.1 Car-Bike Collisions

So far as I know, in all the world there has been only one comprehensive and statistically robust study of bicycle/motor vehicle collisions (called car-bike collisions herein). That is the study done by Kenneth D. Cross for the U.S. National Highway Traffic Safety Administration.[1] The data base for this study is all the reported car-bike collisions in one year in four U.S. States selected to have different traffic conditions. The fraction of car-bike collisions that are reported is rather small, but those not reported are generally those with small consequences. Therefore, these data can be reasonably concluded to represent the U.S. Population of car-bike collisions.

The Cross statistics are very detailed, showing the proportion of the total car-bike collisions for each detailed type. I have analyzed them thoroughly in my book *Bicycle Transportation*. [2] For the purpose of this paper, the most relevant analysis is that between one type of car-bike collision and all the others. That one type is when a straight-ahead cyclist is hit from behind by a straight-ahead motorist. Call this the straight-ahead car-bike collision. This constitutes probably a bit less than 5% of car-bike collisions. The 95% of car-bike collisions are caused by turning and crossing movements by one or both parties. This is the relevant division: car-bike collisions are 5% straight-ahead, 95% turning and crossing movements.

2.2 History: Why the Cross Statistics are Ignored

Why use the Cross statistics? The more penetrating question is: Why aren't the Cross statistics used by any official program? History discloses the answers.

Motordom is a convenient name for the assemblage of organizations that promote motoring. Prominent members are the Automobile Club of Southern California and the California Highway Patrol. By 1925, Motordom had chased pedestrians off the roadways. It then tried to chase bicyclists off by using fear and denigration. First: Same-direction motor traffic is the greatest danger to cyclists and will kill those who get in its way. Second: Cyclists are not capable of obeying the rules of the road. The fear campaign is so successful that it created the cyclist-inferiority phobia. That is, a greatly exaggerated fear that causes people to act against their own self-interest. By 1944 Motordom had laws in some jurisdictions limiting cyclists to the right-hand edge of the roadway (Far to The Right, FTR laws) and prohibiting cyclists from any roadway that had a usable path adjacent (Mandatory Path laws, MPL).

Bicycle traffic declined from 1898 to 1960. Then, the demographic and social changes of the 1960s produced a large increase in bicycle traffic by young adults and by adults. Motordom worried that this would plug up “their” roads, and decided to stop this menace. California established the California Statewide Bicycle Committee, consisting of 8 members of Motordom and one cyclist (that was me; they let a viper into their nest). The Committee's concealed purpose (I had do deduce this from its actions) was to restrict cyclists by three laws: the FTR law, the MPL law, and the Mandatory Bike Lane (MBL) law.

At this time there were no statistics about car-bike collisions. Motordom had its beliefs, as stated above. Cyclists like myself had years of experience that showed that obeying the rules of the road for drivers of vehicles (RRDV) produced many fewer imminent collision situations than did riding in the official cyclist-inferiority manner. Early in the Committee's work, the Office of Traffic Safety, a fiefdom of the California Highway Patrol, contracted with Ken Cross for a statistical study. The study was limited to Santa Barbara County, where Cross lived; he had developed expertise in investigating Army helicopter crashes. Cross presented the completed study to the Committee. It showed straight-ahead car-bike collisions at only 0.5%. That did not suit Motordom at all. That report was suppressed. Being a Committee member, I had already received a copy; years later I put it on the internet.[3]

Meanwhile, Cross was contacted by the National Highway Traffic Safety Administration to use improved methods in a study of a year's collisions in four states selected to have different traffic conditions. This is now known as the Cross report, as shown in endnote 1. That study showed straight-ahead car-bike collisions to be no more than 5%, with 95% associated with crossing or turning movements by either or both parties. Cross gave me a copy at time of publication. Other copies were supposedly available from a government document center in Alexandria, VA, but something went wrong; they were very hard to get. Finally someone put that study on the internet.[4]

Government bicycle traffic professionals have ignored the Cross statistics. Their program was designed to restrict cyclists for the convenience of motorists, and is excused by the fear of same-direction motor traffic. Bicycle activists also ignore the Cross statistics; the fear of same-direction motor traffic impels them, and their target public, to desire the government's facilities. The Cross statistics completely disprove the bases for both the government's and the activists' programs.

3 CLASSES OF CYCLING TRAFFIC-SAFETY PROGRAMS

In the Cyclist-Active class the cyclist acts in way that he knows will reduce car-bike collisions. A typical example is vehicular cycling, obeying the RRDV. In the Cyclist Passive class the cyclist is controlled by his fear of same-direction motor traffic and obeys the bikeways provided by the government. An appropriate name is cyclist-inferiority cycling.

3.1 Vehicular Cycling is Practical

There is no law requiring a driver to drive as fast as the driver ahead of him; traffic law always accommodates slow drivers. Most adults know how to obey the RRDV. Even though they cannot quote the statutes, they understand the principles and have the skill to use them. Only five or six simple rules express these principles. The first is to drive on the right-hand side of the roadway, not on the left and not on the pavement. Another is, when approaching an intersection, position yourself according to which direction you intend to go: left turners near the centerline, right turners near the curb, straight goers between them.[5] Classes of children from elementary and middle schools have been taught these skills in 15 class hours of roadway practice in real traffic. They have been tested by observing their behavior on real roads in real traffic, and have earned proficiency scores far better than the averages for adult commuting cyclists in the surrounding cities.[6]

The earlier discussion completely demolished Motordom's argument that same-direction motor traffic is cyclists' greatest danger. This discussion has completely demolished Motordom's other argument that cyclists are incapable of obeying the RRDV. With vehicular cycling proved to be practical, we can consider its advantages. Since there is no argument that Cyclist-Inferiority Cycling is impractical, it is unnecessary to demonstrate its practicality.

4 SAFETY ADVANTAGES OF THE TWO SAFETY SYSTEMS

The Cross statistics show, among others, the most frequent types and frequencies of urban car-bike collisions. I have tabulated these in *Bicycle Transportation* (op cit p 48-49). In accordance with standard safety practice, the full paper considers the most frequent twelve types in descending order of frequency, and the instructions each system provides the cyclist. The systems are designated VC and CI.

1 Cyclist on proper side runs stop sign. (9.3%) VC teaches that yielding is what makes this movement safe. CI teaches stopping but not yielding.

2 Motorist turning left hits cyclist head-on. (7.6%) VC teaches cyclists of the prevalence of this dangerous movement and how to observe it. The cyclist starts far enough from the curb to make a right turn if necessary. If he observes the movement, he stops if he can, turns right if he must. CI has no instructions for this.

3 Motorist restarting from stop sign hits wrong-way cyclist. (6.8%) VC teaches the danger of wrong-way cycling and never to do it. CI encourages wrong-way cycling, but otherwise has no instruction for this.

4 Cyclist turns left in front of overtaking car. (6.1%) VC teaches that before moving left or right on the roadway, the cyclist must observe and yield to traffic in his new line of travel. CI instructs the cyclist to give a left-arm signal and then turn left, on the false assumption that signaling creates the right-of-way.

5 Cyclist hit as traffic signal changes. (5.9%) VC has no specific instruction for this. CI has no instruction for this.

6 Motorist turns right. (4.8%) VC teaches cyclists to never ride on the right-hand side of traffic that may turn right. CI directs the cyclist to ride on the right-hand side of traffic that may turn right.

7 Cyclist exits residential driveway. (4.3%) VC teaches cyclists how to observe and yield to roadway traffic, and that yielding is what makes that movement safe. CI has no instruction on this, though its emotions may suggest stopping without yielding.

There is no more room in this abstract for the twelve analyses that are in the full paper.

5 SAFETY CONCLUSIONS FROM THE COMPARISON

For eleven of the twelve most frequent types of urban car-bike collision, vehicular cycling has either specific instructions on how to avoid this type of collision, or its general instructions put the cyclist in locations where such collisions are less likely.

For the twelve most frequent type of urban car-bike collision, inferiority cycling has no preventive instructions. For four types inferiority cycling suggests only partial actions while ignoring the required safety parts. For four types, inferiority cycling encourages cyclists to ride in the way that causes the collision. For two types (cyclist turning left, motorist turning right), inferiority cycling instructs cyclists to ride into obvious danger created by violating the RRDV.

Which of these two systems is a better safety program for cyclists?

6 REFERENCES

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