Risk Factors

The following describes the risk factors and risk scoring for each combination of focus crash types and facility types.

1. Head-on crashes on rural local road curves – (KAB[4]) 100 crashes over 4,989 miles (Maximum score of 6).
    a. No median or unprotected area less than 4 feet wide (weight of 2).
    b. Independent Horizontal Curve (weight of 1).
    c. Natural Log of Degree of Curvature between 2 and 4 (weight of 1).
    d. Presence of an intersection in the segment (weight of 2).
2. Overturn crashes on rural local road curves – (KAB) 195 crashes over 4,989 miles (Maximum score of 9).
    a. Average Shoulder width over 1 foot (weight of 1).
    b. Road is a Minor or Major Collector (weight of 2).
    c. Presence of an intersection in the segment (weight of 2).
    d. Curve is not independent (weight of 1).
    e. Natural log of degree of curvature between 1 and 4 (top 10 percent weight of 3, next 40 percent weight of 2, remaining 50 percent weight of 1).
3. Run-off road crashes on rural local road curves – (KA[5]) 151 crashes over 4,989 miles (Maximum score of 8).
    a. No median or unprotected area less than 4 feet wide (weight of 2).
    b. Presence of reverse and compound horizontal curve transitions (weights of 1).
    c. Presence of an intersection in the segment (weight of 2).
    d. Natural log of degree of curvature between 2 and 4 (top 10% weight of 3, next 40% weight of 2, remaining 50% weight of 1).
4. Fixed object crashes on rural local road curves – (KA) 120 crashes over 4,989 miles (Maximum score of 8).
    a. No median or unprotected area less than 4 feet wide (weight of 2).
    b. Presence of reverse and compound horizontal curve transitions (weight of 1).
    c. Presence of an intersection in the segment (weight of 2).
    d. Natural log of degree of curvature between 2 and 4 (top 10% weight of 3, next 40% weight of 2, remaining 50% weight of 1).
5. Night-time run-off road crashes on rural local road curves – (KAB) 280 crashes over 4,989 miles (Maximum score of 9).
    a. No median or unprotected area less than 4 feet wide (weight of 2).

[4] KAB represents the KABCO injury severity scale, where K is a fatal crash, A is a suspected serious injury crash, and B is a suspected minor injury crash.

[5] KA represents the KABCO injury severity scale, where K is a fatal crash and A is a suspected serious injury crash.

b. Average shoulder width over 1 foot (weight of 1).

c. Presence of compound horizontal curves (weight of 1).

d. Presence of an intersection in the segment (weight of 2).

e. Natural log of degree of curvature between 3 and 5 (top 10 percent weight of 3, next 40 percent weight of 2, remaining 50 percent weight of 1).

6. Head-on crashes on rural state curves of minor arterials and major collectors – (KAB) 113 crashes over 717 miles (Maximum score of 13).

    a. Total shoulder width over 4 feet (weight of 1).

    b. Minor arterial instead of major collector (weight of 2).

    c. AADT over 4000 vpd (weight of 1).

    d. Natural log of degree of curvature between 2 and 4 (top 10 percent weight of 3, next 40 percent weight of 2, remaining 50 percent weight of 1).

    e. Presence of an intersection (weight of 1).

    f. Presence of Type A warning signs (weight of 1).

    g. Presence of guardrail (weight of 1, if guardrail is not present).

    h. Presence of line up or down vertical curves (weight of 1, if vertical curve is present).

    i. Presence of reverse and compound horizontal curve transitions (weight of 2).

7. Overturn crashes on rural state curves of minor arterials, major collectors, and principal arterials - other – (KAB) 189 crashes over 831 miles (Maximum score of 14).

    a. Total shoulder width over 3 feet (weight of 1).

    b. Functional class is a major collector (weight of 1).

    c. Natural log of degree of curvature between 2 and 5 (top 10 percent weight of 3, next 40 percent weight of 2, remaining 50 percent weight of 1).

    d. AADT over 5000 vpd (weight of 1).

    e. Two through lanes (weight of 2).

    f. Presence of a crest vertical curve (weight of 1).

    g. Any guardrail is present (weight of 1, if guardrail is not present).

    h. Presence of Type A warning sign (weight of 1).

    i. Presence of intersections (weight of 1).

    j. Presence of short structures (weight of 1).

    k. Posted speed limit over 45 mph (weight of 1).

8. Run-off road crashes on rural state curves of minor arterials and major collectors – (KA) 161 crashes over 717 miles (Maximum score of 11).

a. Total shoulder width over 3 feet (weight of 1).
b. Functional class is minor arterial (weight of 1).
c. AADT over 3000 vpd (weight of 1).
d. Presence of compound horizontal curves (weight of 1).
e. Presence of Type A warning signs (weight of 1).
f. Posted speed limit over 35 mph (weight of 1).
g. Presence of crest vertical curves (weight of 1).
h. Presence of intersections (weight of 1).
i. Natural log of degree of curvature between 2 and 5 (top 10 percent weight of 3, next 40 percent weight of 2, remaining 50 percent weight of 1).
j. Presence of long structures (weight of -1).

9. Fixed object crashes on rural state curves of minor arterials and major collectors – (KA) 105 crashes over 717 miles (Maximum score of 11).
    a. The segment is two lanes (weight of 2).
    b. Average shoulder width less than 5 feet wide (weight of 1).
    c. Speed limit over 45 mph (weight of 1).
    d. Natural log of AADT exceeds 8 (AADT exceeds 2980 vpd) (weight of 2).
    e. The curve is not independent (weight of 1).
    f. An intersection is present within the curve (weight of 1).
    g. Natural log of degree from 2 to 5 degrees (top 10 percent weight of 3, next 40 percent weight of 2, remaining 50 percent weight of 1).
10. Night-time run-off road crashes on rural state curves of minor arterials and major collectors – (KAB) 202 crashes over 717 miles (Maximum score of 10).
    a. Total shoulder width less than 5 feet (weight of 1).
    b. Functional class is a minor arterial (weight of 1).
    c. Horizontal curve is not independent (weight of 1).
    d. AADT over 3000 vpd (weight of 1).
    e. No guardrail present (weight of 1).
    f. Presence of intersections (weight of 1).
    g. Presence of short structures (weight of 1).
    h. Natural log of degree of curvature (top 10 percent weight of 3, next 40 percent weight of 2, remaining 50 percent weight of 1).

11. Overturn crashes on Interstates – (KA) 54 crashes over 716 miles (Maximum score of 4).
    a. AADT (weight of 0 to 1, continuous).
    b. Lack of guardrail (weight of 1).
    c. Type A warning signs (weight of 2).
12. Head on crashes on rural state tangents of minor arterials, major collectors, and principal arterials – other – (KAB) 137 crashes over 1,234 miles (Maximum score of 8).
    a. AADT over 3,000 vpd (weight of 2).
    b. Functional class is a minor arterial (weight of 1).
    c. Absence of outside rumble strips (weight of 2).
    d. Presence of guardrail (weight of 1).
    e. Sum of average lane and shoulder width is less than 15 feet (weight of 1).
    f. Natural Log of traffic volumes (weight of 0 to 1, continuous).
13. Overturn crashes on rural state tangents of minor arterials, major collectors, and principal arterials – other – (KAB) 211 crashes over 1,234 miles (Maximum score of 6).
    a. Presence of Intersections (weight of 1).
    b. AADT over 2,000 vpd (weight of 1).
    c. Posted speed limit over 35 mph (weight of 1).
    d. Presence of rumble strips along the centerline (weight of 1).
    e. Average shoulder width 5 feet or less (weight of 1).
    f. Natural log of AADT (weight of 0-1, continuous).
14. Run-off road crashes on rural state tangents of minor arterials and major collectors. – (KA) 116 crashes over 1,020 miles (Maximum score of 6).
    a. Speed limit over 45 mph (weight of 1).
    b. Functional class is minor arterial (weight of 1).
    c. Average shoulder width is over 5 feet (weight of 1).
    d. Intersection is present in segment (weight of 1).
    e. AADT under 9000 vpd (weight of 1).
    f. Natural log of AADT (weight of 0-1, continuous).