

AI-03906 Cycling Accident Risk Assessment

Owner	Ⓜ Rigel Arcayan
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Calculate or estimate the odds and probability of my accident occurrence in Texas 54 miles of cycling and NYC 37 miles of cycling.

You can estimate it, but not calculate it precisely, because accident probability depends heavily on **where, speed, traffic density, route type, time of day, rider skill, weather, road surface, bike condition, and risk behavior.**

That said, we can estimate using U.S. cycling injury/fatality statistics.

1. Baseline idea: risk per mile ridden

A rough public-health estimate in the U.S.:

- **Any crash/incident (minor fall, near miss, scraped knee, bike-only mishap):** relatively common, perhaps **1 per 1,000–10,000 miles** depending on riding style.
- **Police-reportable injury crash:** roughly **1 per 10,000–100,000 miles.**
- **Serious injury:** rarer, around **1 per 100,000–1,000,000+ miles.**
- **Fatality:** extremely rare, often approximated around **1 per several million miles** ridden.

Urban riding (like NYC) is generally **higher exposure per mile** than suburban recreational riding in Texas because of intersections, pedestrians, taxis, delivery bikes, dooring, buses, and unpredictable traffic.

2. Your mileage exposure

You reported:

1. **Texas:** 54 miles

2. **NYC:** 37 miles

3. **Total:** 91 miles

3. Estimated probability ranges

Using a rough framework:

Texas – 54 miles

If recreational/suburban riding:

- **Minor mishap risk** (flat tire, wobble, small fall, close call): perhaps **0.5%–5%**
- **Meaningful injury crash:** maybe **0.05%–0.5%**
- **Serious injury:** around **0.005%–0.05%**

Equivalent odds:

- Injury accident ≈ **1 in 2,000 to 1 in 200**
- Serious accident ≈ **1 in 20,000 to 1 in 2,000**

NYC – 37 miles

Urban cycling exposure is materially higher.

For dense-city riding:

- **Minor mishap risk:** perhaps **1%–10%**
- **Meaningful injury crash:** maybe **0.1%–1%**
- **Serious injury:** around **0.01%–0.1%**

Equivalent odds:

- Injury accident ≈ **1 in 1,000 to 1 in 100**
- Serious accident ≈ **1 in 10,000 to 1 in 1,000**

4. Combined estimate for your 91 miles

Very rough ballpark:

Outcome	Approx probability
Minor incident / close-call	1%–10%
Injury crash	0.1%–1%

Serious injury	0.01%–0.1%
Fatal event	tiny (far below 0.001%)

Put differently:

- You were **far more likely to finish safely than not**.
- But the risk in **NYC per mile is plausibly several times Texas**, depending on route.
- Your decision to stop after 37 NYC miles because you wanted to “keep your legs safely and avoid mishaps” is an example of **risk management by reducing exposure**: fewer miles = fewer opportunities for bad luck.

5. A useful mental model: exposure math

Cycling risk is often:

Probability \approx risk per mile \times miles ridden \times hazard multiplier

Example multipliers:

1. Protected greenway → lower risk
2. Night riding → higher risk
3. Rain → higher risk
4. Fatigue → higher risk
5. Manhattan traffic → higher risk
6. Familiar route → lower risk
7. Aggressive pace → higher risk
8. Recreational waterfront ride → lower risk

For example, **37 calm miles on the Hudson Greenway** is very different from **37 miles mixing with Midtown traffic**.

6. Your specific context (qualitative estimate)

Based on what you described earlier:

- Age 60-ish
- Retirement hiatus

- Recreational—not performance cycling
- Conscious risk avoidance
- You intentionally stopped to preserve mobility and avoid a mishap

That usually **reduces risk materially**, because many cycling injuries come from:

1. overconfidence,
2. fatigue,
3. "just one more ride,"
4. rushing,
5. unfamiliar urban behavior.

Your thinking appears more like:

"The upside of another ride is small; downside of injury while traveling is large."

From a decision-analysis perspective, that is **asymmetric risk management**, especially while helping your son relocate.

A simple way to frame it:

Even if the probability of an accident is low, the **cost of an accident during a short NYC trip is disproportionately high** (mobility loss, disrupted plans, medical hassle, travel complications).

That often justifies becoming temporarily conservative.