Comparing Hazard and Risk

People make decisions based on perceived hazard or risk, believing that they are the same. **Hazard and risk are different**, leading to different potential outcomes or regulatory decisions - we break down the distinction below.

**Hazard**
Anything that can cause harm. (i.e. water, a bully, fire, etc.)

**Hazard Assessment**
The process of identifying harm that a situation, substance, or chemical can cause. **Hazard assessments do not consider possible exposure.**

**Hazard Assessment Steps**
1. **Hazard Identification**
   Identify and evaluate a hazard’s properties and the type of adverse health effects it causes.
2. **Hazard Characterization**
   Describe the adverse effects that may result from exposure to the hazard without consideration of real-world exposure.

**Potential Outcome**
Hazard-based decision making will likely result in avoiding the hazard altogether (i.e. regulatory ban, etc.).

**Risk**
The possibility that a hazard will actually cause harm. (i.e. drowning, being punched, burned, etc.)

**Risk Assessment**
A four-step process designed to answer questions about the type of harm a hazard will cause, the extent of harm from exposure to the hazard, probable contact with the hazard (or exposure to the hazard), and concluding presence or absence of risk.

**Risk Assessment Steps**
1. **Hazard Identification**
   Identify and evaluate a hazard’s properties and the type of adverse health effects it causes.
2. **Dose-Response Assessment**
   Considers the extent of harm resulting from the hazard at various levels of exposure.
3. **Exposure Assessment**
   Identify how, when and how much of a hazard people may encounter.
4. **Risk Characterization**
   Combines hazard identification, dose-response, and exposure to characterize possible risk.

**Potential Outcome**
Risk-based decision-making allows benefits to be maximized with safety measures in place to minimize the potential hazard (i.e. regulations requiring safety measures).

Consider cars...

Driving a car can be hazardous activity as its inappropriate or unsafe use can cause harm to people and the environment. If the safety of cars was evaluated with a hazard-based assessment, they would likely be avoided or banned.

Driving a car can be risky when factors like weather and varying degree of driving ability are considered. If car safety was studied using a risk-based assessment, the benefits (freedom, convenience and practicality) of owning and driving a car outweigh the risks when safety measures to mitigate those risks are adopted.