

Managing Risk



Avoiding Hazards and Minimizing Risks

Hazard

A condition or situation that has a **high likelihood** of resulting in an accident.
We want to avoid hazards or do something to turn a hazard into a risk.

Risk

A condition or situation that **could** result in an accident.
We want to take action to make the risk as low as possible.

Avoiding Hazards and Minimizing Risks

Driving a car

- Wear a seat belt or booster seat.
- Maintain the tires and brakes.
- Drive at the speed limit and slow down when it's raining.

Skiing and Snowboarding

- Have the proper equipment including a good helmet.
- Rest when you get too tired to stay in control.
- Only ski on marked trails and only on ones that match your skill level.

Hiking

- Have plenty of water and sunscreen.
- Let someone know where you are going to hike.
- Be able to recognize poison oak and poisonous snakes.

Avoiding Hazards and Minimizing Risks

The PAVE Checklist

Pilot: Qualified, Current, and Proficient to fly the airplane

Airplane: Capable of carrying the passengers, in the expected weather conditions, and complies with all of the legal requirements for the flight.

Environment: The airports of takeoff and landing are suitable for the flight, weather is adequate for both plane and pilot, and NOTAMs have been checked.

External Pressures: The desire to please passengers or arrive at a destination at a specific time that may affect the pilots judgement.

Avoiding Hazards and Minimizing Risks

Pilot situations where you should avoid flying

- Don't fly if you haven't slept well.
- Don't fly if you are sick or taking medications.
- Don't fly if you are hung over.

Pilot situations where you can mitigate risk

- If you haven't flown in a busy airspace before, take a CFI with you.
- Don't fly hungry. Take plenty of water and a snack with you.
- If you haven't slept well the night before, take a nap before flying.

Pilot situations with low risk

- You have flown recently in the airplane you plan to fly.
- You have satisfied the legal requirements for carrying passengers.
- You are rested, healthy, and well-fed. Enjoy the skies.

Avoiding Hazards and Minimizing Risks

Aircraft conditions where you must avoid flying

- The airplane is out of annual.
- Any of the items on the minimum equipment list are inoperative.
- The aircraft doesn't pass the pre-flight inspection or runup checks.

Aircraft conditions where you can mitigate risk

- Offload baggage or take on less fuel to be within a safe weight.
- Do a thorough inspection and lubrication of moving parts once a month.
- Fix all squawks before the next flight.

Aircraft conditions with low risk

- Plan to have at least one hour of fuel when you land.
- Have a good margin for landing distance and weight.
- The plane files often with no issues.

Avoiding Hazards and Minimizing Risks

Weather conditions to avoid

- Thunderstorms are a hazard to be avoided. Waiting 30 minutes is often enough.
- Small GA airplanes are not capable of being flown in icing conditions.
- If it is hot or high altitude, fly in the early morning to avoid high density altitudes.

Weather conditions to mitigate

- Get a good pre-flight weather briefing and have good alternates.
- Make sure that you are competent and current to forecasted weather.
- Verify the takeoff and landing distances for the airport and your plane.

Weather conditions with low risk

- Nice sunny weekends mean more pilots are flying—be extra vigilant.
- Warm weather heats up the ground heats up and may cause turbulence down low—be prepared.
- Always have an alternate—accidents may close your airport or the fog might roll in early.

Avoiding Hazards and Minimizing Risks

External pressures but you must cancel the flight

- Flying with drunk or unruly passengers.
- Sick passengers—they may not realize how altitude will affect them.

External pressures that can be mitigated

- Have an alternate travel plan if you must be somewhere at a specific time.
- Don't rush your preflight or attempt to outrun weather.
- Make sure passengers know they can't be late.

External pressures with low risk

- You are planning a sight-seeing flight on a nice day.
- Passengers know they can only bring one bag that weighs less than 10 lbs.
- The weather is good, the plane runs fine, and you have plenty of time.

Normalization of Deviance

Rules

- I've flown below minimums lots of times when the weather is bad.
- I've landed with less than a half-hour of fuel lots of times.
- Icing is predicted but they say that all the time and are usually wrong.

Equipment

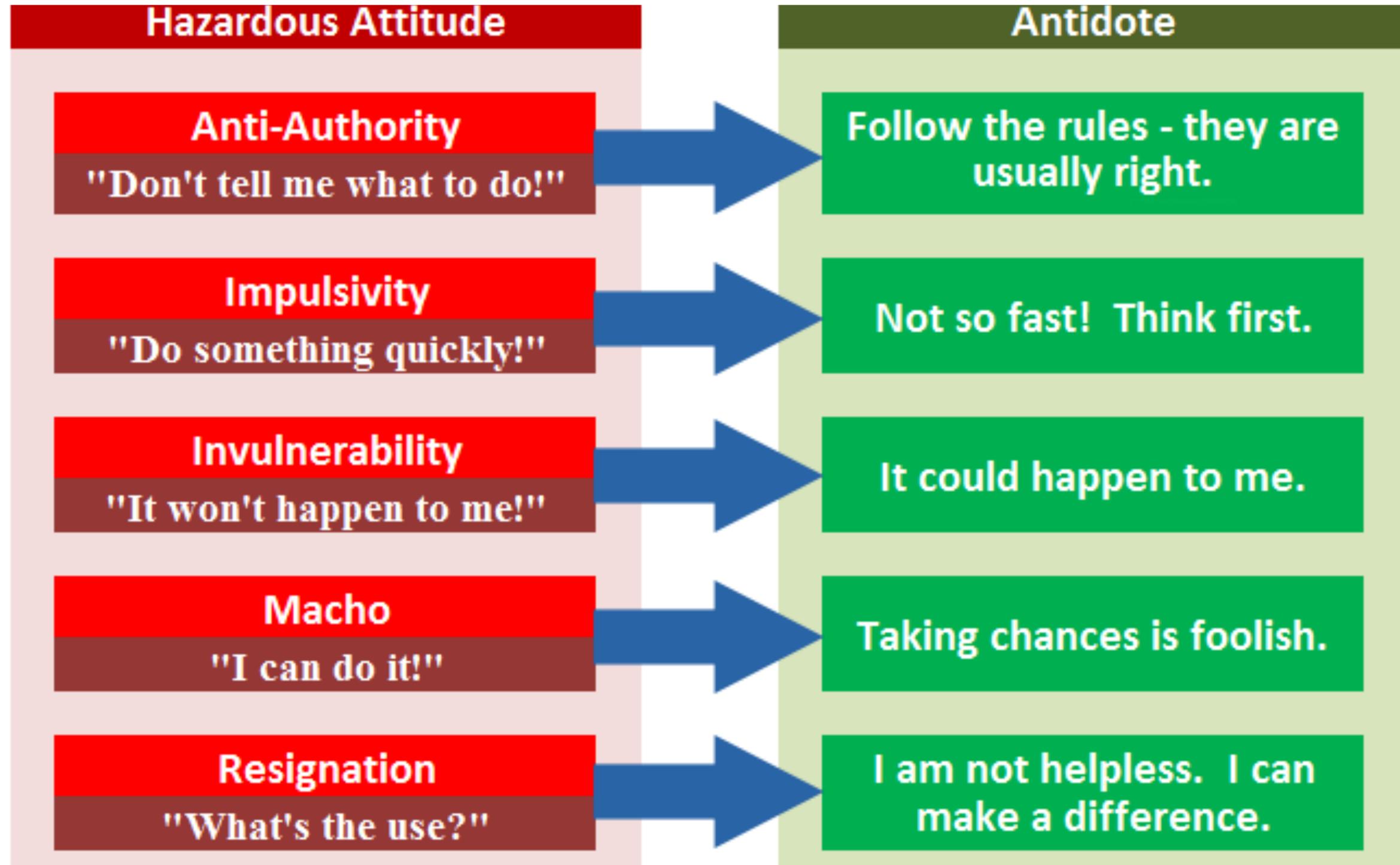
- The alternator has gone out on me before and I had no problems.
- The tires need replaced, but I've been flying on them without problems.
- The plane has been burning a lot of oil, but we can check it at the annual.

Pilot

- High altitude never affects me so I can fly at 15,000' without oxygen.
- I fly with a bad cold and lack of sleep all the time.
- I fly after taking medicines that warn about operating machinery all the time.

Hazardous Attitudes

The FAA's Hazardous Attitudes and the Antidote



Anti-Authority

That's a stupid rule and I'm not going to follow it

- I work on cars so I know how to fix things that are not allowed by Part 43.
- I've flown lots of times at night so I don't need to follow the rule about flying passengers at night.
- It's only a short hop to the next airport so I can fly just under the clouds.

The government just makes these rules to make big companies rich

- This part from Autozone is the same as the one from Aircraft Spruce and costs a tenth as much.
- My airplane is running fine, I don't need an annual inspection.
- ADSB is just a way for the government to spy on us.

No one will know that I've broken this rule

- I get a thrill out of flying under bridges and if I turn off ADSB no one will know.
- The rule says I need to have a half-hour of fuel when I land, but how will they know if I don't?.
- Even though I'm a student pilot, I know how to fly and my family really wants to go up with me.

Invulnerability

I'm not afraid of bad weather

- I can fly with this 30 kt crosswind.
- Night time flying has smoother air than in the daytime.
- If the weather gets too bad I can always fly lower.

It has wings and a prop, I can fly it

- I don't need to read the manual since all airplanes fly the same.
- These new avionics are complicated but I can figure it out in the air.
- An emergency gear extension is hardly ever necessary, so why practice it.

I'm in good shape

- I really need to get there today, so I can fly for 8 hours.
- I just ran a marathon, but I have to get back to work tomorrow.
- This fever won't stop me from flying.

Macho

Everyone else is doing it so I'll prove I can do it too

- There is an extreme cross wind but lots of pilots are landing and taking off so I won't chicken out.
- It's still really foggy but the guy in front of me just took off.

I don't need special training or equipment

- I'll bet I can do a roll in my Cessna 172.
- I can land on that riverbank.

What will my passengers think?

- What will they think of my piloting skills if I say we can't go?
- I really don't feel well today, but I promised my buddy I'd give him a ride.
- I really should go around because this approach isn't stabilized, but that would be embarrassing.

Impulsivity

Deciding on the spur of the moment

- Let's buzz my friends house.
- If we check the weather and do a good pre-flight we won't get there on time.

Doing the first thing that comes to mind rather than thinking things through

- Forgetting that there is a checklist for engine-out and landing in a field instead.
- Taking off and being too close to trees, pulling up, stalling the airplane.

Doing things to impress passengers

- Doing a roll in your 172 because a passenger asks if you can.
- Flying really low over the water to spot whales and dolphins.

Resignation

The engine quits

- Instead of following the checklist you adopt the attitude that there's nothing I can do, we're going to crash.

You fly into a cloud bank

- Instead of doing what you were trained to do—look at the instruments, maintain level flight, and do a 180° turn—you adopt the attitude that there's nothing I can do, we're going to crash.

You start porpoising down the runway

- Instead of doing what you were trained to do—apply power and go around—you adopt the attitude that there's nothing I can do, we're going to crash.

**There are old pilots and
there are bold pilots,
but there are no old, bold
pilots.**

W. W. Windstaff, circa WWI

Anti-Authority

Impulsivity

Invulnerability

Macho

Resignation

**Normalization
of Deviance**

Nobody who gets too relaxed builds up much flying time.

Ernest K. Gann

Anti-Authority

Impulsivity

Invulnerability

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**In flying I have learned that
carelessness and
overconfidence are usually
far more dangerous than
deliberately accepted
risks.**

Wilbur Wright

in a letter to his father, September 1900

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**Normalization
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**Usually it is because
someone does too much
too soon, followed very
quickly by too little too
late.**

**Steve Wilson, NTSB investigator,
when asked about the cause of most aviation
accidents**

Anti-Authority

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**Normalization
of Deviance**

Superior pilots use their superior judgment to avoid situations in which they have to use their superior skills.

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of Deviance**

**It's better to be on the
ground wishing you were
in the air than in the air
wishing you were on the
ground.**

Every CFI

Anti-Authority

Impulsivity

Invulnerability

Macho

Resignation

**Normalization
of Deviance**

**There is nothing as
useless as the runway
behind you.**

Every CFI

Anti-Authority

Impulsivity

Invulnerability

Macho

Resignation

**Normalization
of Deviance**

You can always go around

Every CFI

Anti-Authority

Impulsivity

Invulnerability

Macho

Resignation

**Normalization
of Deviance**

**No matter what the plane
does to you, fly the plane.
When you stop flying the
plane, you aren't a pilot
anymore.
You're baggage.**

Every CFI

Anti-Authority

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Resignation

**Normalization
of Deviance**

**The airplane flies because
of Bernoulli, not Marconi.**

**Aviate! Navigate!
Communicate!**

Every CFI

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**In the good old days
almost all of the pilot error
accidents were just that—
pilot error.**

**In most, though, the basic
error had more to do with
the decision to start the
flight than anything else.**

Richard Collins

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**That which is legal is not
always safe, and that
which is safe is not always
legal.**

John Deakin

Anti-Authority

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**Normalization
of Deviance**

**The greatest safety device
in aviation.
The credit card.**

Juan Brown

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**Taking off is optional.
Landing is not.**

Every CFI

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**In deciding whether to fly
if I'm tired or if the weather
is marginal, I rely on a tie-
breaking question:
How would this look in an
NTSB report?**

James Fallows

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