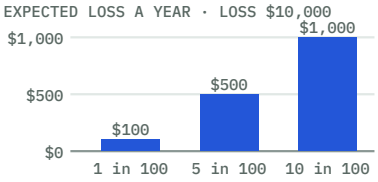
What is insurance for?

The expected loss; how a pool pays the unlucky few; the premium; which risks to insure and which to carry yourself; adverse selection and moral hazard; what the data say about extended warranties.

1 Expected loss

the average cost of a risk

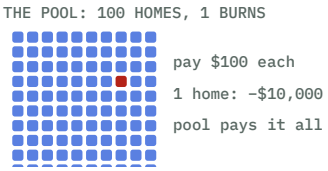
- **Expected loss**: "the chance of a loss times its size: the average cost per year" `expected loss = chance × loss`
- Home fire: 1 in 100 × $10,000 = **$100** a year · 5 in 100 → $500 · 1 in 10 → $1,000
- = the **expected value** of Behavioral Lesson 3 (the average over many tries) · most years: $0 · one year: $10,000
- Practice: bike $600, 1 in 20 stolen → **$30** · flood $20,000, 3 in 100 → **$600**



2 Pool and premium

a small sure cost

- **Insurance**: "paying a small, sure amount (the premium) so that someone else covers a big, rare loss"
- **Risk pooling**: 100 homes × $100 = $10,000 pool → 1 home burns → the pool pays it **$10,000** ⇒ nobody carries $10,000 alone
- **Premium**: "the price you pay for an insurance policy" (policy = the insurance contract) `premium = expected loss + costs and profit` → $100 + $30 (made-up 30%) = **$130**
- ⇒ on average a policy pays back **less** than it costs: −$30 a year · fine for a loss you could not carry · practice: bike $30 + $15 = $45 → −$15 a year; flood $600 + $180 = $780



3 The rule

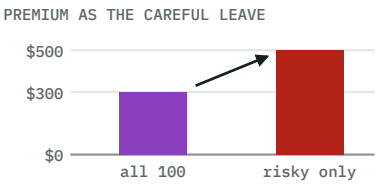
insurance: the big and rare

- **Insurance** → a loss you **could not carry** → big, rare: a hospital stay abroad ($40,000-50,000) · damage you cause to others · the home
- **Self-insure**: "pay a small loss from your own savings instead of buying a policy" → small, frequent: a $100-150 phone screen · a warranty on a $40-60 gadget
- Test: "could this loss be paid from savings without real trouble?" yes → self-insure · no → insure
- Phone: $1,000, 1 in 10 breaks in 2 years → fair price **$100** · plan **$150** ⇒ $50 too much · bike: $45 a year set aside for 10 years → ≈ $150 left after ≈ $300 of thefts

4 Adverse selection

trap 1: who buys

- **George Akerlof**, American economist: "The market for lemons", 1970 ("lemon" = a used car that turns out bad) · Nobel 2001 → buyers know their risk better than the seller
- **Adverse selection**: "when the buyers who most want insurance are the riskiest, which pushes the price up"
- 50 careful ($100) + 50 risky ($500) → one price `($100 + $500) ÷ 2 = $300` → careful pay $300 for $100 → leave → only risky ⇒ **$500**
- Practice: 60 × $200 + 40 × $700 = $40,000 ÷ 100 = **$400** → low-risk leave → toward **$700**
- **Compulsory insurance** (e.g. drivers' liability: pays for damage to others) → the low-risk cannot leave → the pool stays mixed, premium near the average · a choice for each country



5 Moral hazard

trap 2: how people act

- **Moral hazard**: "taking more risk because someone else pays for the loss"
- **Deductible**: "the first part of any loss that you pay yourself" (say $500) → you still lose something ⇒ you keep taking care · the insurer pays less ⇒ lower premium
- Practice: car, 1 in 10 crashes a year, $2,000 a crash, +20% → no deductible $200 → **$240** · $500 deductible → $1,500 a crash → $150 → **$180** · driver saves $60, takes on 1/10 × $500 = $50

6 The evidence

extended warranties

- **Extended warranty**: "a policy that pays for repairs after the maker's own guarantee ends"
- Consumer Reports (US consumer magazine), 2013, 12,000+ subscribers, car warranties → **55%** never used it · typical price ≈ **$1,200** · users saved ≈ **$800** in repairs ⇒ less than the price
- About this kind of product, not a rule for every policy · the first question: "how big and how rare?" before "how much?"

Watch out: "I never used it, so it was wasted" × (you paid for the year you might have needed it) · "insure everything" × (small risks: the premium costs more than the loss on average) · the fair price is the expected loss, not the loss

This is a lesson, not financial advice. It shows what the evidence says about choices like these; what is right for you depends on your life.