
SPEA-V348 Management Science · Week 4 review

Decision making under risk

Both sessions, every slide, fully revealed. Read it without me in the room.

Mon Sep 14 and Wed Sep 16, 2026

The week at a glance

Mon Sep 14	Expected value, expected opportunity loss, and the value of a perfect forecast, all from the farmer's table
Wed Sep 16	The band where the answer holds, what the crystal ball is worth as the odds move, and the cost-table flip on the farmer's propane order
Reading	Taylor 13e, Chapter 12, pp. 582 to 587, stopping where "Decision Trees" begins
Due	The Week 4 workbook, on Canvas. Tier 1: AI as a tool, with disclosure

ON THE SITE · the Week 4 page

The widgets, both self-checks, the propane cost table, and the workbook download all live here.

v348.jima.me/week/w04/

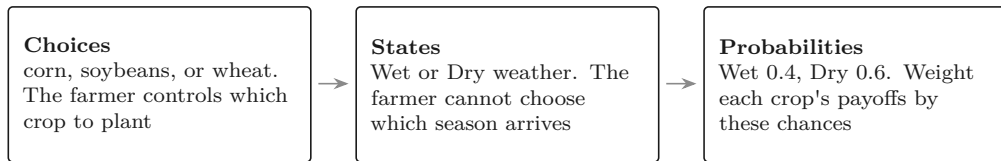


Session 1

Mon Sep 14

Probabilities guide the crop choice

A choice, an uncertain season, and the chance of each outcome



Taylor's heading for it is *decision making with probabilities*, and the environment is **risk**: the states are still out of your hands, but you can say how likely each one is. Exactly one state happens, so the probabilities add to 1: here $0.4 + 0.6$.

*Three numbers come out of one table today: what a choice is **worth**, what it **costs you to be wrong**, and what a **crystal ball** would be worth.*

Taylor 13e, p. 582. Rows are the farmer's choices; columns are the possible seasons.

The farmer

The question this session answers

PUZZLE

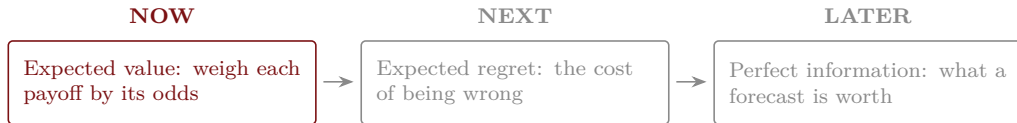
Before the season starts, a farmer commits to **one** crop: corn, soybeans, or wheat. This year there is a forecast: **Wet with probability 0.4, Dry with probability 0.6**. Net profit, in \$ thousands (so 50 means \$50,000):

Crop	Wet (0.4)	Dry (0.6)
Corn	50	10
Soybeans	40	25
Wheat	20	35

*Which crop, given the odds, and what would **knowing the weather** in advance be worth?*

Where we are

Three numbers today, in this order



The puzzle's first question, which crop, is answered by the first number. Its second, what knowing the weather is worth, waits for the third, and the regret table between them is what turns the third into a one-line answer.

Screen for dominance first, as always

The one free move, and here it finds nothing

- Corn wins the Wet column, wheat wins the Dry column, soybeans wins neither outright. No row is beaten in **every** state, so nothing can be deleted.
- That is exactly why the odds have to do the deciding. A table with a dominated row settles part of the argument before any probability is used.

*Screen for a choice beaten in every state before computing expected values.
This week's take-home asks you to check dominance too.*

Expected value, one line per crop

Multiply each crop's Wet payoff by 0.4 and its Dry payoff by 0.6, then add

Crop	Wet (0.4)	Dry (0.6)	Expected value
Corn	50	10	$0.4(50) + 0.6(10) = 20 + 6 = 26$
Soybeans	40	25	$0.4(40) + 0.6(25) = 16 + 15 = \mathbf{31}$
Wheat	20	35	$0.4(20) + 0.6(35) = 8 + 21 = 29$

The **expected value criterion** keeps the largest: **soybeans, \$31,000**. Corn's 50 is the biggest number on the table and it still loses, because the season is more likely to be dry.

Weight each payoff by its chance, add across the row, keep the best row. One rule, no attitude to declare.

Taylor 13e, pp. 582 to 583. Taylor also calls it expected monetary value; the Key Concepts page abbreviates that EMV.

What 31 means, and does not mean

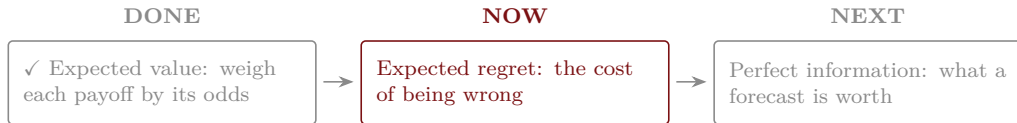
- No season ever pays \$31,000. Soybeans return **40 or 25**; 31 is the average over many seasons with these odds.
- The farmer plants **once a year**. A 0.6-probability dry year can still wreck one season even when the average says soybeans.
- So expected value is the right lens for a **repeated, survivable** decision, and a weaker one for a single ruinous bet. Week 6 gives that gap a name: utility.

Report an expected value as a long-run rate, never as a promise about this season.

Taylor 13e, p. 583.

Where we are

One number down, two to go



Soybeans, at \$31,000, and 31 is a long-run rate that no single season pays. Expected value says which crop to plant; it does not say what choosing wrong would cost you, and that is the second number.

Regret, weighted by the odds

Expected opportunity loss: what being wrong costs you, on average

$$\text{EOL} = \sum P(\text{state}) \times \text{regret}$$

The regret: column best less your payoff. Soybeans if Wet: $50 - 40 = 10$

Weighted by the chance of that state, the same 0.4 and 0.6 that weighted the payoffs

Added across the row: soybeans regret 10 in both states, so $0.4(10) + 0.6(10) = 10$

Taylor 13e, pp. 583 to 584. Minimax regret kept a row's worst regret; EOL averages them by the odds.

The full regret table, with the odds on it

Crop	Regret if Wet (0.4)	Regret if Dry (0.6)	EOL
Corn	$50 - 50 = 0$	$35 - 10 = 25$	$0.4(0) + 0.6(25) = 15$
Soybeans	$50 - 40 = 10$	$35 - 25 = 10$	$0.4(10) + 0.6(10) = \mathbf{10}$
Wheat	$50 - 20 = 30$	$35 - 35 = 0$	$0.4(30) + 0.6(0) = 12$

Column bests 50 (Wet) and 35 (Dry). The smallest expected regret is **soybeans at 10**, the crop EV chose.

Corn regrets nothing when wet and most when dry; the winner keeps its **weighted** regret smallest, read **down** each column and never across a row.

Why the two rules always agree

Each crop's expected value, with its expected regret stacked on the end

		41, every row
Corn	EV 26	+ EOL 15
Soybeans	EV 31	+ EOL 10
Wheat	EV 29	+ EOL 12

- Every bar ends at the **same 41**. In each state a crop's payoff plus its regret is that column's best, so weighting by the odds gives every row the same total.
- The longer the value, the shorter the regret piece: ranking rows by smallest EOL is ranking them by largest EV, read from the other end. The two rules cannot disagree.

*Hold on to the **41** and the **10**. The next block gives both a name.*

Taylor 13e, pp. 583 to 584 note the agreement; the constant-sum bars are why it holds on every table.

Where we are

Two numbers down, one to go



Soybeans again, with an expected regret of \$10,000, and every row's EV plus EOL came to 41. Neither number yet says what a perfect forecast is worth.

Suppose you could know the weather

Expected value with perfect information: a benchmark, not a plan

If it will be Wet (0.4)
plant the wet-year winner,
corn, and earn 50

If it will be Dry (0.6)
plant the dry-year winner,
wheat, and earn 35

Average the two by the
odds
 $0.4(50) + 0.6(35) = 20 + 21 =$
41

*41 is the farmer's average profit with a **perfect forecast**. You cannot plant corn and wheat at once, so it is not a choice; it is what always being right would earn.*

Taylor 13e, pp. 585 to 586.

The value of perfect information, in symbols

$$\text{EVPI} = \text{EV with PI} - \text{best EV}$$

With the oracle: the best payoff in each state, averaged by the odds. Here 41

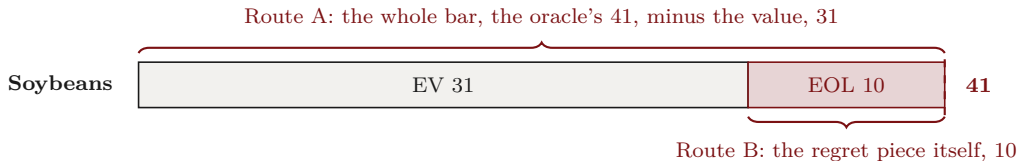
Without it: the best you can do blind, the largest expected value. Here soybeans, 31

The gap: what always being right adds. $41 - 31 = 10$, so \$10,000

Taylor 13e, pp. 585 to 586. EVPI is the most any information about the weather could ever be worth.

Two routes, one number

The soybean bar from the last block already holds both



- **Route A, information.** The 41 was the oracle's average all along: payoff plus regret is the column best in every state. Then $41 - 31 = 10$.
- **Route B, regret.** The soybean row's EOL, the 10 between its 31 and 41.

*EVPI = EOL of the best decision, on **every** payoff table: you priced the crystal ball before you knew it.*

Taylor 13e, p. 586. The regret you cannot dodge blind is exactly what a perfect forecast recovers.

Three numbers, one table, on your laptop

IN CLASS

Open the widget on the Week 4 page. Click **Expected value**: a fourth column appears carrying **26, 31 and 29**, one per crop, with soybeans marked. Check all three against the arithmetic in your notes, not just the winner. Then click **Reveal EVPI**: it marks the best cell in each column and reports 41, 31, and the gap of 10. Check that the 10 is the soybean row of the regret table you just built. Then press **Next** twice on the three bars under that table: every bar ends at 41.

ON THE SITE · the criteria widget

The farmer's table with every criterion live, and the EVPI button that Session 1 has now earned.

v348.jima.me/week/w04/



The same arithmetic in a summer meal program

How large should a school district's meal site be? Net benefit in \$ thousands

Site	High turnout (0.4)	Low turnout (0.6)	Expected net benefit
Full site, hot meals	70	10	$0.4(70) + 0.6(10) = 34$
Grab-and-go table	45	30	$0.4(45) + 0.6(30) = \mathbf{36}$

The grab-and-go table wins by two: it gives up some upside for a much better low-turnout outcome, and low turnout is the likelier state.

*Expected value rewards the option that is **good in the likely state**, not the one with the biggest single number.*

In practice: the long run, and where the 0.4 came from

IN PRACTICE

A single play is not the long run. Corn's dry year pays 10 and soybeans' pays 25. A farmer who cannot get through a 10 season refuses corn even at odds wet enough for corn's average to win, and gives up expected value for a floor: *risk aversion*, which Week 6 measures.

“Wet 0.4” is itself a forecast: records, a weather service, or a hunch. Garbage odds make a confident-looking expected value that is still wrong; ask who estimated them and how.

Nudge them before you bet the farm. Wednesday slides the 0.4 and finds the band over which soybeans stay the pick.

A long-run rate, on estimated odds. Say both next to the recommendation.

Back to the farmer

Three numbers, one table

\$31,000

soybeans: the largest expected
value

\$10,000

soybeans: the smallest
expected regret

\$10,000

what a perfect forecast is
worth

- Plant **soybeans**. Corn's 50 is not enough when the season is more likely dry, and the regret table agrees.
- Knowing the weather in advance would lift the average from 31 to 41, so **nothing about the weather is worth more than \$10,000**, and nothing short of perfect is worth that much.

Wednesday asks how much of this survives once you stop trusting the 0.4.

Wednesday

EV

payoff times chance,
added across the row

EOL

regret times chance,
added across the row

41

what always being right
would earn

EVPI = 10

the gap, and the
smallest EOL

*Wednesday keeps the table and **stops trusting the 0.4**: slide the odds, find where the pick flips, watch what happens to the \$10,000, and decide whether a \$12,000 forecast is worth a meeting. Then it prices the farmer's propane order, a **cost table**, where every best flips.*

Group practice

15 minutes with your group, before photographs and the closing check

IN CLASS

An event planner books a festival venue: a small tent, a medium tent, or a large pavilion, with Rain at 0.3 and Clear at 0.7. Compute expected values, build the regret table and its EOL column, then price a perfect forecast. Compare the recommendations from EV and EOL, and explain how the smallest EOL relates to EVPI. **Every member's name goes on the sheet**; one of you photographs it and **uploads the photo to Canvas** before leaving. One participation point, half today's attendance record.

ON THE SITE · Week 4 practice sheet

The same sheet is on the site if you want it on a screen.

v348.jima.me/assets/docx/v348-w04-s1-group-practice.docx



Photograph your attempt, then check it together

Two minutes to capture your work; eight for the instructor's demonstration

IN CLASS

Check every member's name and photograph your group's own attempt before the solution is shown. One member uploads the photo to Canvas by the end of class.

We close by checking the method, the main results with units, and a common mistake. Participation credit is for attempting the work.

Session 2

Wed Sep 16

Three questions before planting

Same farmer, same table, less faith in the forecast

PUZZLE

The county extension agent asks how sure the farmer is about that **0.4**. It came from thirty years of rainfall records, and the last decade has run wetter than the rest.

A consultant offers a seasonal forecast for **\$12,000**, described as “highly accurate.”

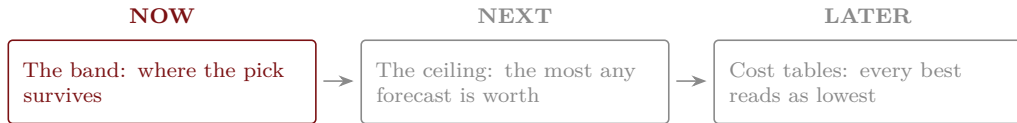
The propane dealer needs the dryer order before any forecast: **3 loads or 5?**

Monday's answer was soybeans at \$31,000, with a perfect forecast worth \$10,000. Both numbers were computed *from* the 0.4.

Does the answer survive a different set of odds? Is the forecast worth even a meeting? And how much propane should the farmer order?

Where we are

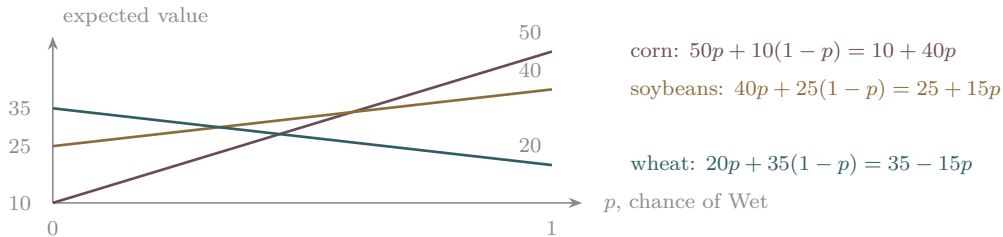
Three checks today, in this order



The agent's question, whether soybeans survive a different 0.4, is answered by the band. The consultant's \$12,000 is measured against a ceiling Monday already priced at \$10,000. The propane order is a cost table, like your take-home, so the last block reads it with every best flipped.

Each crop's expected value is a line

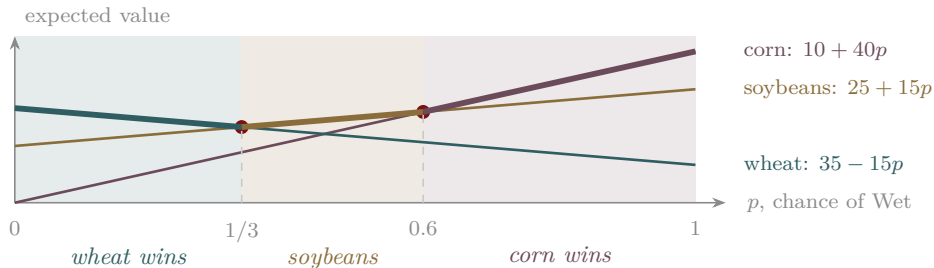
Call the wet probability p : from the dry payoff at $p = 0$ to the wet payoff at $p = 1$



- **Corn:** $50p + 10(1 - p) = 10 + 40p$, from 10 up to 50, the steepest line.
- **Soybeans:** $40p + 25(1 - p) = 25 + 15p$, from 25 to 40, a gentle rise.
- **Wheat:** $20p + 35(1 - p) = 35 - 15p$, from 35 down to 20, the only line that **falls**.

Three straight lines. Wherever two of them cross, the pick changes.

Slide the odds and watch the pick change



Soybeans overtake wheat where $25 + 15p = 35 - 15p$, at $p = 1/3$ (both worth 30); corn overtakes soybeans where $10 + 40p = 25 + 15p$, at $p = 0.6$ (both worth 34).

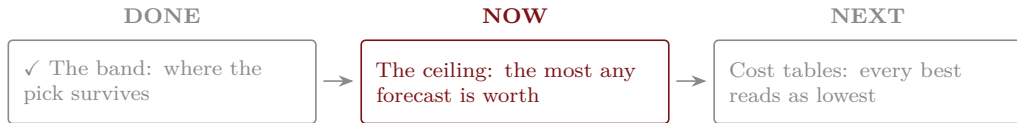
Read the band, not the point

- Below one-third, wheat. Between **one-third and 0.6**, soybeans. Above 0.6, corn.
- The agent's 0.4 sits inside the band, so soybeans stand. But it sits about **0.07 from the wheat edge** and **0.2 from the corn edge**.
- A wetter decade can push the odds up a long way without changing the advice. A drier one flips it to wheat quickly. The two directions are not equally safe.

*A sensitivity check reports a **band and a side to watch**, not a yes. “Soybeans, unless the wet probability drops below a third.”*

Where we are

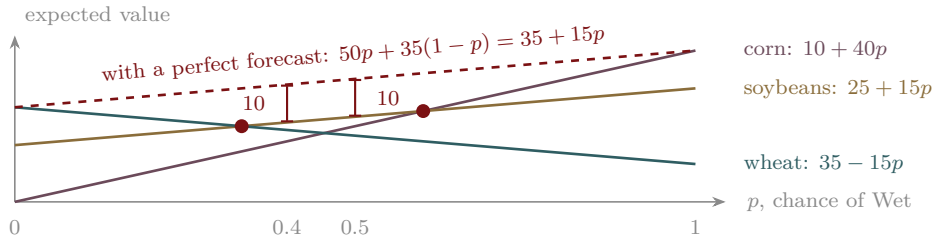
One check down, two to go



Soybeans hold for any wet probability between one-third and 0.6, and the 0.4 sits 0.07 from the wheat edge. The band says whether the pick survives; it does not say what happens to the \$10,000 as the odds move, or whether \$12,000 buys anything.

What the crystal ball is worth, on the picture

The oracle's average is a line too, and EVPI is the gap under it

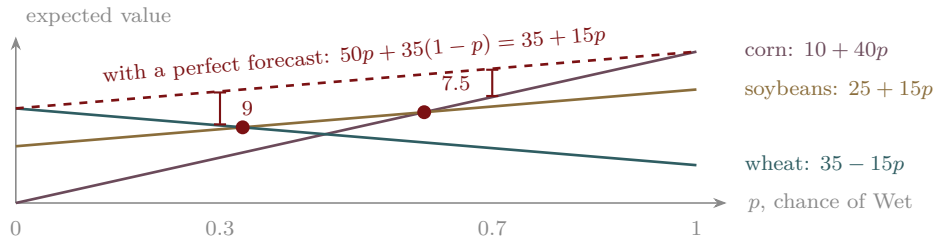


- **The oracle's line:** the best payoff in each state, averaged, $35 + 15p$.
- At Monday's 0.4 the gap under it is $41 - 31 = 10$, the EVPI you already have.
- At 0.5, $42.5 - 32.5 = 10$ again: both lines climb 15 per unit of p .

*Inside the band EVPI is **flat at 10**: a gap between parallel lines never changes.*

Outside the band, the ceiling falls

The blind pick is now right in the likelier state, and the oracle has less left to fix



- At 0.3, wheat: $35 - 4.5 = 30.5$ against the oracle's $0.3(50) + 0.7(35) = 39.5$, a gap of **9**.
- At 0.7, corn: $10 + 28 = 38$ against $0.7(50) + 0.3(35) = 45.5$, a gap of **7.5**. Each outer line meets the oracle's at its own corner, so the gap closes as the odds lean.

Quote EVPI with its odds: at 0.7 the ceiling is \$7,500, not \$10,000.

Every value of p , on your laptop

IN CLASS

Open the Week 4 page. The widget opens on **Move the odds**, so go straight to the slider. It draws the three lines, the oracle's dashed line above them, and the crystal ball's price as a bracket at the slider. Drag through the band and the bracket stays at **10** while the dot climbs soybeans' line; at **0.33** wheat has taken over, and past **0.6** corn has. At $p = 0.7$ corn is worth 38, soybeans have risen to 35.5, wheat has fallen to 24.5, and the bracket reads **7.5**.

ON THE SITE · the criteria widget

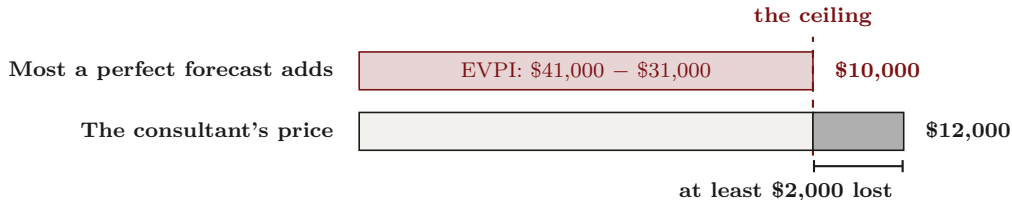
Session 2's build: the line algebra, the EVPI table, and the slider that reproduces both.

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The \$12,000 offer

The most a forecast can add to planting, the one decision it arrives in time for



- An imperfect forecast adds **less** than \$10,000, so “highly accurate” changes nothing: decline without a meeting.
- Below \$10,000 the accuracy question is live, and Week 6 prices it.

EVPI caps what any forecast is worth. Decline anything priced above it.

Taylor 13e, p. 585: nobody should pay more for information than they stand to gain from having it.

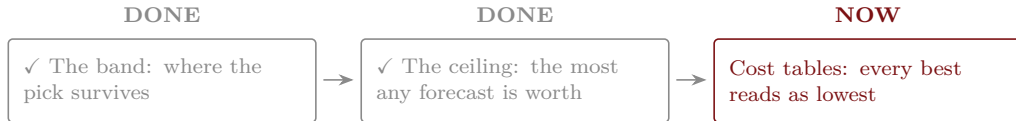
When the right answer is “stop studying”

- A small EVPI means information **cannot change the decision enough to matter**. Acting now is the better buy.
- Data costs more than its price: a survey takes weeks, and a **planting window closes**. Delay is a cost the table does not show.
- Information is worth something only if it could **change what you do**. A forecast that confirms soybeans has told you nothing you would act on.

EVPI tells you when to stop studying and start planting.

Where we are

Two checks down, one to go



The ceiling is \$10,000 anywhere in the band and \$7,500 out at 0.7, and \$12,000 sits above it, so the consultant gets no meeting. The crop table is all profits, but the propane order is a cost table, and so is your take-home: the last block runs all three tools upside down, starting from the one cost table you have already read.

You have already read one cost table

Monday's regret table: every cell in it is a loss, and you kept the smallest

Crop	Regret if Wet (0.4)	Regret if Dry (0.6)	EOL
Corn	0	25	15
Soybeans	10	10	10
Wheat	30	0	12

- Regret is a cost, so this table already reads **lower is better**: the column bests are the two zeros and the winner is the **smallest** weighted average, soybeans at 10.
- The farmer has a cost table of its own, on Monday's odds: the propane order. This block reads it the same way.

Read a cost table like the regret table: every “best” is the lowest number.

The propane order, cell by cell

The farmer's own cost table, in \$ thousands

The grain dryer burns propane at harvest, and the farmer pre-buys it now at the dealer's pre-season price of **10 a load**: 3 loads or 5. A wet season brings the grain in wet, so it needs **five** loads to dry; a dry season needs **three**.

Every load short in a wet season is an emergency top-up at **16**. Propane left over in a dry season is already paid for.

Loads bought	Wet (0.4): needs five	Dry (0.6): needs three
3 loads	$3(10) + 2(16) = 62$	$3(10) = 30$
5 loads	$5(10) = 50$	$5(10) = 50$, two loads unused

Each cell is the loads you paid for plus the top-ups that season forces. Your take-home's cells are built the same way.

When the table is costs, everything flips

The propane order: total cost in \$ thousands, and lower is better

Loads bought	Wet (0.4)	Dry (0.6)	Expected cost	EOL
3 loads	62	30	42.8	4.8
5 loads	50	50	50	12

- The **lowest** expected cost wins: three loads, $0.4(62) + 0.6(30) = 42.8$, even though a wet season then costs 62 once the top-ups are paid.
- Regret is your cost minus the column's **lowest** cost. Column bests are 50 and 30, so three loads regrets 12 in a wet season and five loads regrets 20 in a dry one: EOL $0.4(12) = 4.8$ against $0.6(20) = 12$.

Week 4 page, Session 2, Build the skill 3. Taylor 13e, p. 583: when the payoffs are costs, the best decision is the one with the lowest expected value.

And the crystal ball flips with it

The same propane order, with an oracle

38

expected cost with an oracle

4.8

EVPI: 42.8 minus 38

4.8

the smallest EOL, once again

EV with perfect information weights each column's **lowest** cost, $0.4(50) + 0.6(30) = 38$, and EVPI is the best expected cost minus that: positive, as a saving should be. The other way round is a sign error.

Two more flips: a row is **dominated** when it costs **more** in every column, and a figure that is the same in every row never enters a cell, because it cannot move the pick.

*Same three tools, every “best” read as “lowest.” Write **lower is better** at the top of a cost table before you compute anything. Your take-home is one.*

The propane order, on your laptop

IN CLASS

Scroll to the propane table on the Week 4 page; its widget is set to read **lower is better**. Press **Expected value** and it keeps the lowest row, 3 loads at 42.8. Press **Minimax regret** and every cell becomes cost minus the column's lowest: 12 and 0, then 0 and 20. Press **Reveal EVPI**: 38 against 42.8, and a gap of 4.8, a saving. Then **Move the odds**: the slider is the same wet probability, and the cost lines cross at $5/8$, marked 0.63; past it, five loads are the cheaper order.

ON THE SITE · the cost-table widget

Same three tools, every best read as lowest, on a table built the way your take-home's is.

v348.jima.me/week/w04/



In practice: every input is an estimate

IN PRACTICE

The odds came from somewhere. Thirty years of records beats a hunch, but a decade-long shift is exactly where the record and the future part company. Put the source of the probability next to the recommendation.

The payoffs are estimates too. Every cell rests on a price, a yield, and a cost. Nudging a payoff is the same habit as nudging the odds, pointed elsewhere.

“Highly accurate” is a claim, not a figure. Once a price sits below the EVPI ceiling, the forecast’s value depends on how often it is right, and that number has to come from its track record.

A recommendation with its band and its sources attached is worth more than a bare number.

Back to the three questions

- **To the agent:** soybeans hold for any wet probability between **one-third and 0.6**. A wetter decade can nudge the 0.4 upward a long way; a slide below one-third flips the advice to wheat. **The drier tail is the one to watch.**
- **To the consultant:** no meeting. \$12,000 is above the \$10,000 a **perfect** forecast would be worth to planting, so no accuracy claim can rescue an imperfect one at that price.
- **To the dealer:** **three loads**, an expected \$42,800 against \$50,000 for five. Three stay the cheaper order until the chance of a wet season passes **5/8**, a little beyond corn's 0.6.

Without paying the consultant, the farmer still plants soybeans, \$31,000, orders three loads, and now knows how far each answer can be pushed.

This week's take-home

One file, on Canvas, by Sunday at 11:59 PM

- A university IT department buys **exam-season loaner laptops** before it knows how many will be requested. **Build the cost table** from the pallet price, the fleet credit, and the emergency-rental penalty.
- Screen it for **dominance** against the warranty-bundle row, rank the buys on expected cost and on expected opportunity loss, and put a ceiling on what the demand survey could be worth.
- The second response re-runs the expected costs at odds of 40 / 40 / 20: today's band question, on a cost table.

ON THE SITE · the brief and the workbook

Download the workbook here. **Tier 1:** AI as a tool, disclosed.

v348.jima.me/week/w04/



Carry into Week 5

$\frac{1}{3}$ to 0.6

the band where
soybeans hold

10, then 7.5

EVPI as the odds leave
the band

a ceiling

decline anything priced
above EVPI

lower wins

on a cost table, every
best flips

*Next week a payoff table like this one is **redrawn as a tree**: laid out left to right in the order things happen, which is the only form that keeps working once decisions come in stages.*

Review

Week 4

Can you define these without looking?

Nine terms this week introduced

decision under risk	expected value (EMV)	expected value criterion	expected opportunity loss
EV with perfect information	EVPI	sensitivity check	cost table
crossing point			

ON THE SITE · Key Concepts

Most of these have a one-line definition and a worked example behind them (filter by week); the two frames after this one define them all.

v348.jima.me/concepts/



Definitions: three numbers from one table

Decision under risk	A probability on every state of nature. Taylor's heading: decision making with probabilities
Expected value (EMV)	$\sum P(\text{state}) \times \text{payoff across a row}$: the long-run average, never a promise about one season
Expected value criterion	Keep the row with the largest expected value. On a cost table, the smallest
Expected opportunity loss	$\sum P(\text{state}) \times \text{regret across a row}$, with regret the column best minus your cell; minimizing it picks the row that maximizes EV
EV with perfect information	The best payoff in each state, averaged by the odds: what always being right would earn
EVPI	EV with perfect information minus the best blind EV; also the smallest EOL. The ceiling on what any information is worth

Definitions: stressing the answer

Sensitivity check

Move an estimated input and see whether the recommendation changes. Report the band over which it holds and the side to watch

Crossing point

The probability at which two decisions have the same expected value, so the pick changes. Here $1/3$ and 0.6 ; Week 5 names it the flip probability

Cost table

A payoff table whose cells are costs. Lowest expected cost wins, regret is your cost minus the column's lowest, and EVPI is the best expected cost minus EV with perfect information

Test yourself

If one of these is slow, that is where to reread

1. A crop pays 40 in a wet year and 25 in a dry one, with wet at 0.4. What is its expected value, and why will the farmer never actually earn that number?
2. Every row of the farmer's table has $EV + EOL$ equal to 41. Where does the 41 come from, and what does that constant prove about the two criteria?
3. A consultant's imperfect forecast is priced at \$12,000 and EVPI is \$10,000. What is the one question you do not need to ask, and why?
4. Soybeans hold for wet probabilities between one-third and 0.6, and the forecast says 0.4. Which direction of error should the farmer worry about more?
5. On a cost table, what replaces "largest" in the expected value criterion, and what replaces "column best" in the regret?

Numbers worth remembering

\$31,000

soybeans, the largest
expected value

41

what always being
right would earn

\$10,000

EVPI, and the smallest
EOL

$\frac{1}{3}$ to 0.6

the band where
soybeans hold

Question	On the farm	The move
Which crop, with the odds	Soybeans, 31	largest row average, $0.4(40) + 0.6(25)$
What being wrong costs	Soybeans, 10	smallest weighted regret, $0.4(10) + 0.6(10)$
What a crystal ball is worth	10	$41 - 31$, or the smallest EOL
How much propane	Three loads, 42.8	lowest expected cost, $0.4(62) + 0.6(30)$

Carry into Week 5

- Week 5 **redraws a payoff table as a tree**: squares for what you decide, circles for what nature decides, laid out left to right in the order things happen.
- Folding a tree back is this week's arithmetic in a new shape: average at every circle, keep the best branch at every square.
- The tree can do the one thing a table cannot: hold a **second decision** that waits on an outcome you cannot see yet.

ON THE SITE · Week 5

The reading and the before-class self-check are posted. Do the self-check before Monday.

v348.jima.me/week/w05/

