

Heirloom

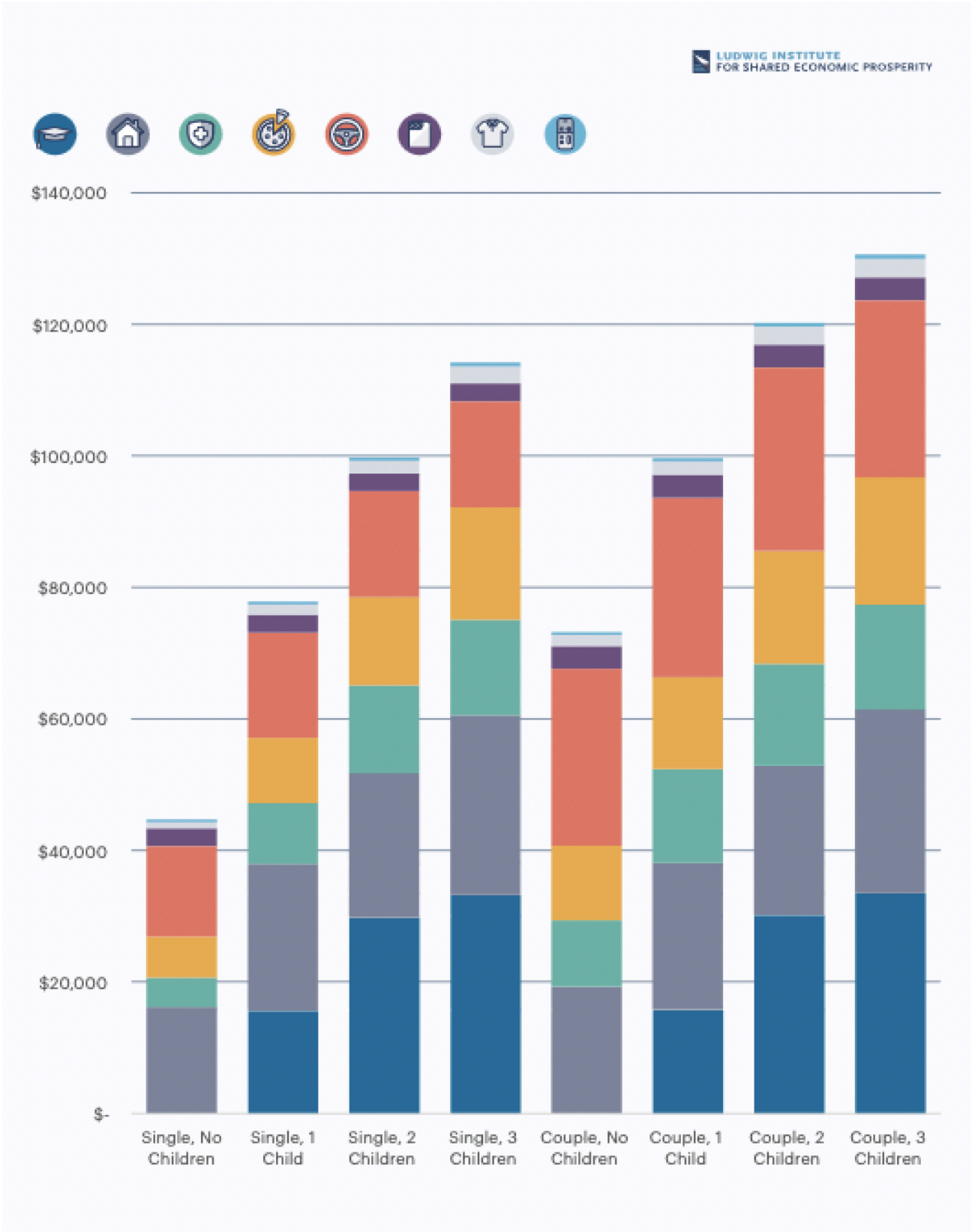
A short essay about creativity, constraints, and farming.

(UN) KNOWNS

A few years ago, I made an [economic proposal](#). Two years later, I wrote a [survey](#) to collect actuals on farming efforts. This essay takes as its point of departure what I see as the best case scenario for a just and equitable society by leveraging worker cooperatives. For an example of a worker cooperative that aims to distribute food directly to the consumer, we need to optimize for need. A proposed criteria for need might look like the following.

- Equal pay for everyone involved
- A livable wage for the workers
- The food should be healthy and organic
- The farming practices should be sustainable
- Costs that are the-same-as-or-cheaper than market rates

Constraint #1: What is a "livable wage?"



According to the MQL (Minimum Quality of Life) white paper published by the Ludwig Institute for Shared Economic Prosperity, the MQL salary for single worker with no children (pictured above) is around **67,000 dollars/year**. The MQL salary for single worker with 2 children is around **100,000 dollars/year**.

A [release from the Bureau of Labor Statistics](#) show that the median weekly earnings of workers is **\$1,235/week**, **~64,220/year**.

According to <https://vendordirectory.shrm.org/company/293514/news/3616622/how-to-determine-the-true-cost-of-an-employee>, the additional cost for a given employee (taxes, benefits, PTO, retirement, etc) is based on a multiplier of around **1.3%** of their base salary.

Using this information, we might provisionally assume a living wage of **85,000 dollars/year**, which when multiplied for benefits/taxes/etc, becomes **110,500 dollars/year**. If this is acceptable, we can provisionally consider the constraint for a worker to cost **110,550 dollars/year**, which when reduced to (52) weeks, becomes

-2,125 dollars/week (n)

Where **(n)** is the number of worker owners for this particular effort.

Constraint #2 What is "affordable food?"

Based on a [report by the USDA Economic Research Service](#), the average retail price of fresh vegetables is around 2.34 dollars/pound. But first, let's get specific with [non organic Aldi pricing](#) as of Spring 2026.

5 pound bag of russet potatoes = 3.49 = **.70 dollars/lb**

1 pound of beefsteak tomatoes = 3.19 = **3.19 dollars/lb**

3 pounds of yellow onions = 2.19 = **.73 dollars/lb**

3 green peppers = 3.15 (at 5oz per ~ = **3.00 dollars/lb**)

1 Broccoli crown = 2.39 = **2.39 dollars/lb**

1 Cabbage = 2.37 = **0.79 dollars/lb**

These prices should inform the constraint that the price sold for the organic project should be $\leq$ retail for non-organic. We may provisionally select a target average price as

+2 dollars/lb (b)

Where **(b)** is the number of pounds of food produced by the farm.

OUTPUTS

Based on a data table showing expected yields per crop from gardensofeden.org, we can estimate the following model which divides up a relative percentage of acreage among several crops and calculates the estimated lbs/acre percentages as well as the dollar/acre percentage.

Plant	Percentage of total farmable acreage	Yield lbs/acre	Price dollars/lb	lbs/acre percentage	dollars/acre percentage
Potatoes	15.00%	15,200	\$0.70	2280	\$1,596.00
Onion	15.00%	19,800	\$0.73	2970	\$2,168.10
Tomato	25.00%	11,000	\$3.19	2750	\$8,772.50
Carrot	10.00%	19400	\$1.10	1940	\$2,134.00
Pepper	15.00%	6,900	\$3.00	1035	\$3,105.00
Cabbage	5.00%	13,700	\$0.79	685	\$541.15
Brocoli	5.00%	7,300	\$2.39	365	\$872.35
Cucumber	5.00%	8,400	\$0.85	420	\$357.00

Summing the lbs/acre column will give us an expected yield of **12,445 lbs/acre (a)**, where **(a)** is the number of acres. Consequently, summing the dollars/acre percentage and dividing by the expected lbs/acre percentage gives us an average estimate of **1.57 dollars/lb** based on this particular portfolio of crops. Let's transpose these numbers across a growing quantity of farmable acres.

Farmable acres	Est. lbs of production	Est avg income dollars/year	Est avg income dollars/week
1	12445	\$19,546.10	\$375.89
10	124450	\$195,461.00	\$3,758.87
20	248900	\$390,922.00	\$7,517.73
30	373350	\$586,383.00	\$11,276.60
40	497800	\$781,844.00	\$15,035.46
50	622250	\$977,305.00	\$18,794.33
60	746700	\$1,172,766.00	\$22,553.19
70	871150	\$1,368,227.00	\$26,312.06
80	995600	\$1,563,688.00	\$30,070.92
90	1120050	\$1,759,149.00	\$33,829.79
100	1244500	\$1,954,610.00	\$37,588.65
110	1368950	\$2,150,071.00	\$41,347.52
120	1493400	\$2,345,532.00	\$45,106.38
130	1617850	\$2,540,993.00	\$48,865.25
140	1742300	\$2,736,454.00	\$52,624.12

Constraint #3: Something will have to change.

Let's pause for a second. I have a couple friends that run an organic farm. They farm an acre of land. According to [a report on Farm labor conditions on organic farms in California](#), [Farms] with more than five different crops report 0.82 workers per acre.

Our model has hit its first internal constraint. At 1 acre we need at least 1 worker, the estimated gross income is around 20k/year, which falls massively short of the livable wage.

To make matters worse, even at scale we have a problem. If 100 acres requires 100 workers making \$110,500/year each. Then our gross income of \$1,954,610 still falls massively short of the \$11,050,000 labor cost. Something will have to change.

At what average price per pound can we afford livable wages for all workers? Well, at 100 acres, it can be expressed as

$$1244500\text{lbs} * x(\text{dollars/lb}) = \$11,050,000$$

Solving for x gives us an average of **\$8.88/lb**. Which doesn't account for operating costs, but also breaks our other internal constraint of the costs being the same-as-or-cheaper than market rates. What's the point of producing food that nobody can afford to buy?

So at what average wage can we afford to feed people at around \$2.00/lb? At 100 acres it can be expressed as

$$1244500\text{lbs} * \$2/\text{lb} = \$x * 100 \text{ workers}$$

Solving for x this time gives us an average salary of **\$24,890/worker**.

These constraints point to a need for negotiation. Maybe higher price, maybe less wage, but what about less workers, which might also be considered as a need for mechanization of labor. We also need to consider all operating costs, such as land cost and input costs.

This is as far as I am going to take this line of thought, for now. Any further modeling would just be full of my opinions on how things should be done. The point of this essay is to bring awareness to the constraints which shape our present, both from the outside, and internally. We can solve hard problems, but we need to be willing to find the best shared ways to do so. The domain of internal constraints is the domain of integrity and creativity, the problem of solving for the best case scenarios and leveraging everything we can leverage to do so.