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Fuzzy Cognitive Mapping Analysis: Farmer 12

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Fuzzy Cognitive Mapping Analysis

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Farmer 12

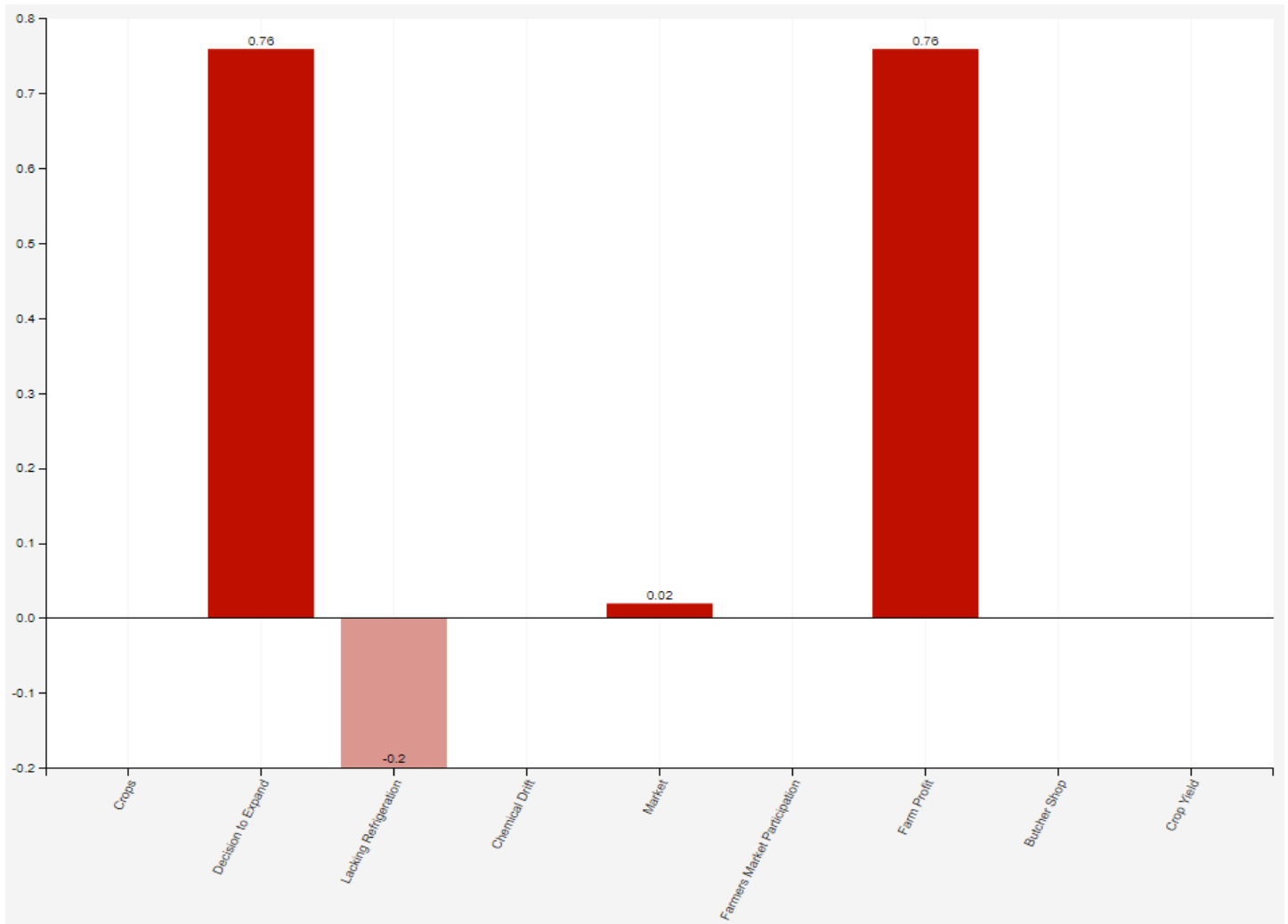
This analysis for Farmer 12 is part of a larger research project for the Mississippi Delta Council for Farm Worker Opportunities, Inc. Farmer 12 ceased farm production due to lacking markets and chemical drift, and now maintains a personal garden. Farmer 12 expressed an interest in returning to farm-level production, but only for a guaranteed market. The following variables are changed in this report's models to test their effects on Farmer 12's ability to return to farm-level production:

- More reliable primary market and available secondary market
- 50% decline in chemical drift
- Available refrigeration source

Author interviewed Farmer 12 to gather the variables analyzed below and used Fuzzy Cognitive Mapping (FCM) to determine each variables' relationships. Each model listed in this report is based on the farm's current state from the farmer's perspective and reflects the predicted outcomes of each variable when one or two driving variables are changed.

Continue to the next page to view suggestions and corresponding models.

More Reliable Primary Market + Available Secondary Market

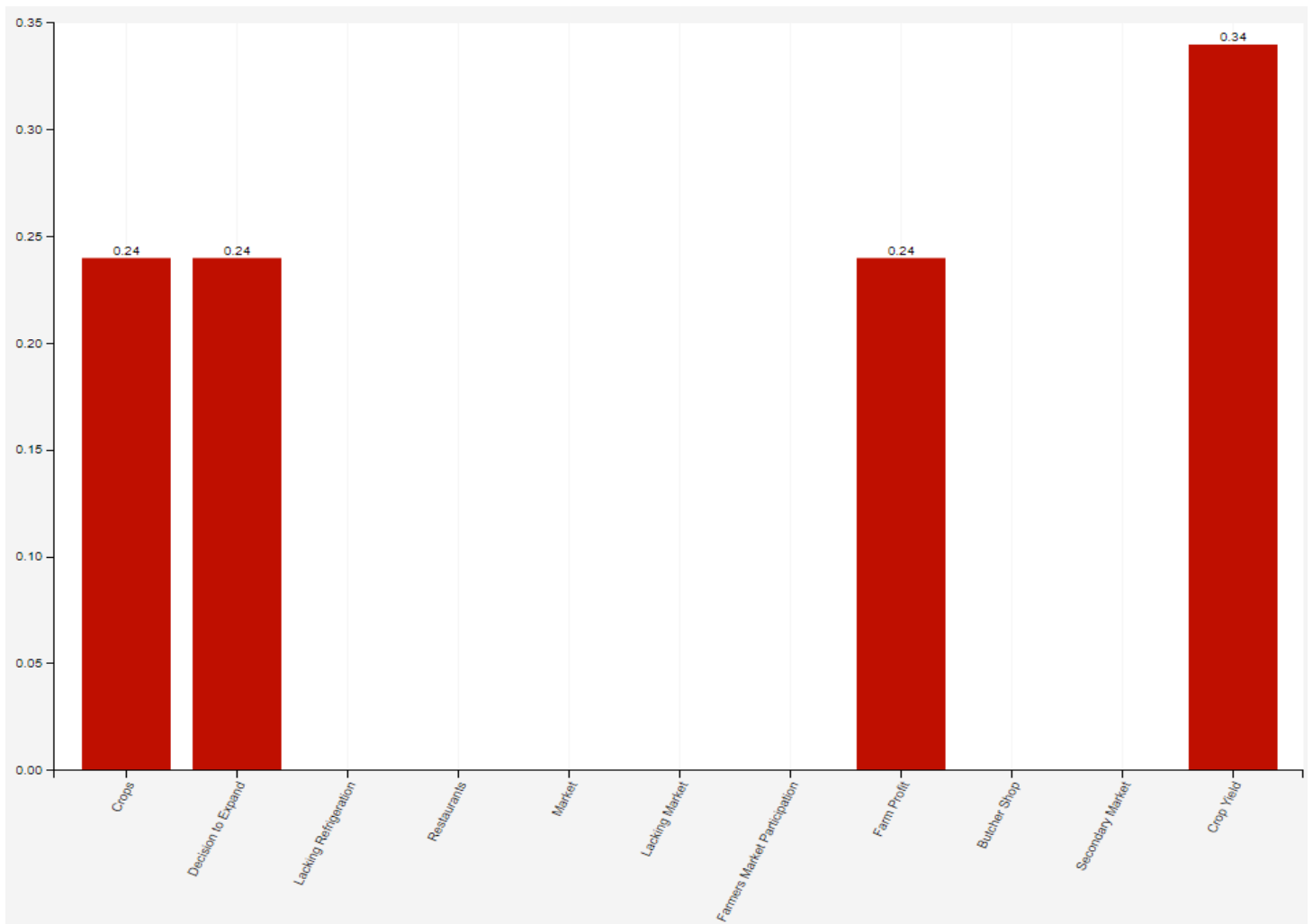


Decreasing *Lacking Market* 100% and increasing *Secondary Market* 100% affects four other variables. The following are the most substantial changes:

- *Farm Profit* increases 76%.
- *Decision to Expand* increases 76%.

If Farmer 12 can maintain a primary market through contract or otherwise, and obtain one addition market for secondary sale, Farmer 12 likely can expand current operations by almost 80%. This does not necessarily get Farmer 12 close to their former farm-level production, but is a stable stepping stone toward expansion.

50% Chemical Drift Decline

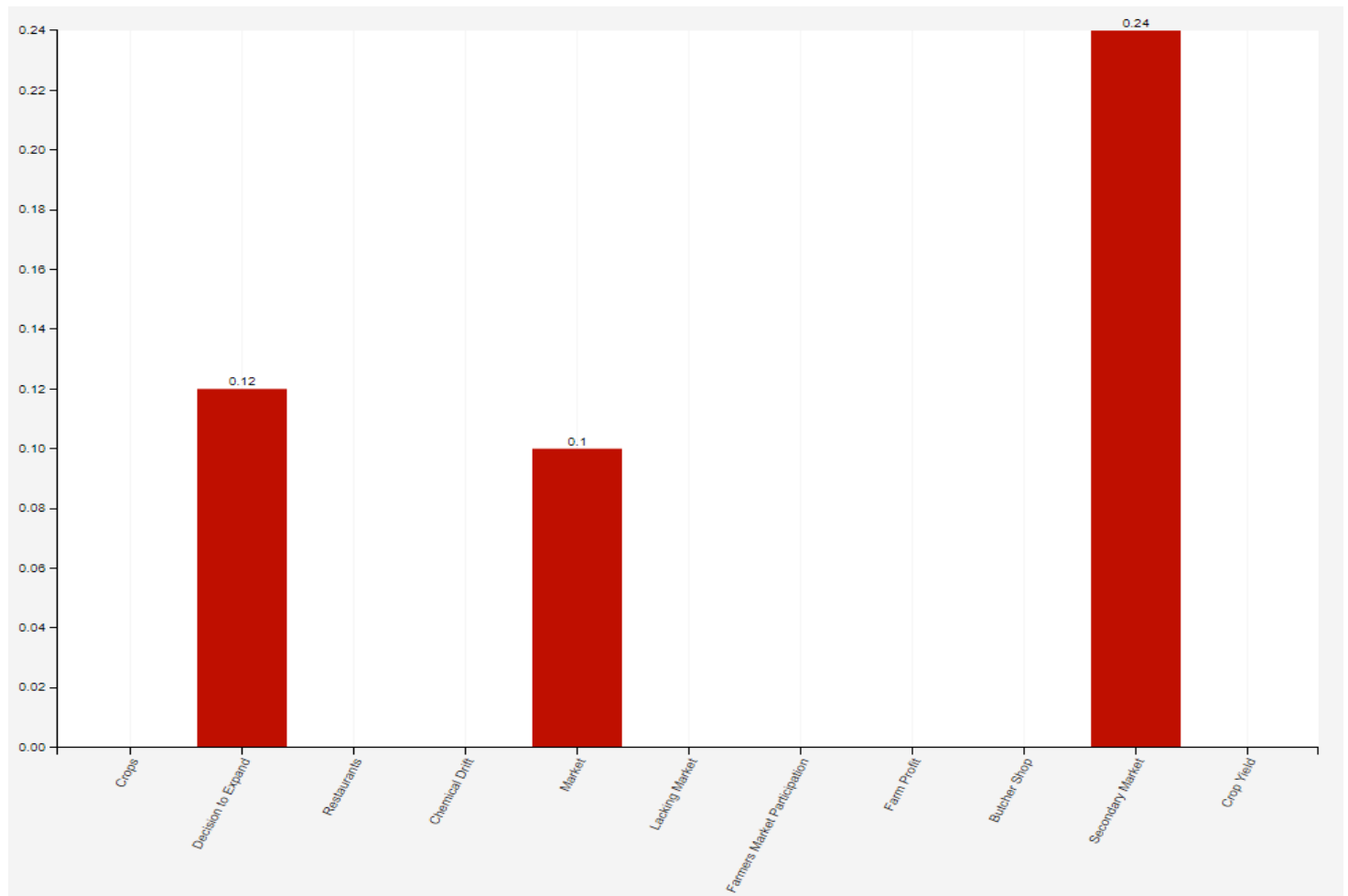


Decreasing *Chemical Drift* 50% affects four other variables. The following are the most substantial changes:

- *Farm Profit* and *Decision to Expand* increase 24%.
- *Crops* increases 24%.
- *Crop Yield* increases 34%.

If Farmer 12 can mitigate the effects of chemical drift on their crops by 50%, then Farmer 12 will likely see a 20-30% improvement in crop yield and a 20-25% increase farm profit and ability to expand production.

Available Refrigeration Source



Decreasing *Lacking Refrigeration* 100% affects three other variables. The following are the most substantial changes:

- *Decision to Expand* increases 12%.
- *Market* increases 10%.
- *Secondary Market* increases 24%.

If Farmer 12 is able to secure refrigeration for harvested produce, Farmer 12's ability to market their produce will likely increase 20-30%. Refrigeration will prolong produce shelf-life and allow Farmer 12 more time to secure a secondary market if needed and not secured already.

Conclusion

Because Farmer 12 lists *Lacking Market* as the largest hindrance to expansion, it makes sense that maintaining a contracted market and securing secondary markets would make the largest improvement in farm expansion. Contracts, buyer/seller agreements, and the proposed “available market list” would make these changes possible.

Chemical Drift is Farmer 12’s second largest hindrance. Though this is mostly out of Farmer 12’s control, Farmer 12 can implement chemical drift mitigation techniques, such as using high-tunnels and greenhouses, planting in windbreak zones, planting trees as a barrier, and asking neighboring pesticide users for notification before spraying.

Thirdly, *Lacking Refrigeration* is the third hindrance that could have a significant impact on Farmer 12’s ability to expand if remedied. Currently, Delta Advantage Center and Warehouses4Good are collaborating to refurbish and adapt the former Allen Canning Plant in Sunflower County to meet local producer and processor needs for cold storage. Farmers and processors organized under this project, for which Farmer 12 was interviewed, are potential users of the facility’s dry and cold storage warehouse zones. At the conclusion of this project, Farmer 12 should be able to take full advantage of such facilities.